Perfect Binder
Machine Code: D391

SERVICE MANUAL

8 December, 2010
Revised

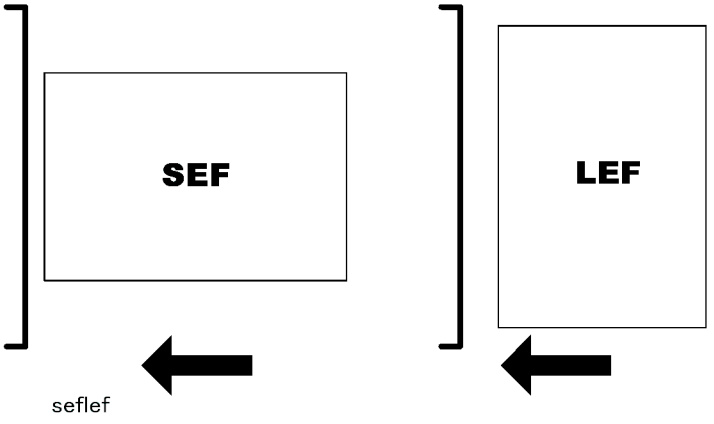
Safety, Conventions, Trademarks

Conventions

Common Terms

This is a list of symbols and abbreviations used in this manual.

Symbol	What it means
CT	Core Tech Manual
	Screw
	Connector
	E-ring
	C-ring
	Harness clamp
FFC	Flexible Film Cable
JG	Junction Gate
LE	Leading Edge of paper
LEF	Long Edge Feed
SEF	Short Edge Feed
TE	Trailing Edge of paper
S31E	The "Emitter" sensor of a sensor pair
S31R	The "Receptor" sensor of a sensor pair

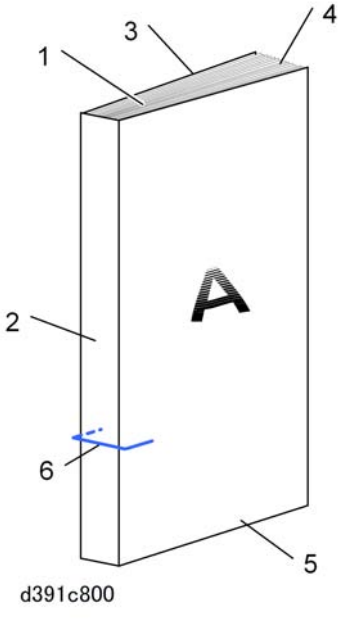


seflef

The notations "SEF" and "LEF" describe the direction of paper feed, with the arrows indicating paper feed direction.

Binding Terms

Here are some commonly used binding terms that appear in this service manual.



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1	Signature	The sheets collected and aligned for binding to the book cover are collectively referred to as the signature. Once the signature is glued to the cover, this becomes the book.
2	Spine	The edge of the signature where the glue is applied and joined with the cover.

3	Top Edge	The top edge of the book.
4	Fore Edge	The front edge of the book; the edge of the signature opposite the spine. This is edge of the book that the reader opens.
5	Bottom Edge	The bottom edge of the book.
6	Cover	Covers the pages (signature) of the book. The cover and signature are glued at the spine.

NOTE: The top, bottom, and fore edges of the book are trimmed in the trimming unit after the signature has been glued to the cover.

Warnings, Cautions, Notes

In this manual, the following important symbols and notations are used.

⚠WARNING

- A Warning indicates a potentially hazardous situation. Failure to obey a Warning could result in death or serious injury.

⚠CAUTION

- A Caution indicates a potentially hazardous situation. Failure to obey a Caution could result in minor or moderate injury or damage to the finisher or other property.

Important

- **Obey these guidelines to avoid problems such as misfeeds, damage to originals, loss of valuable data and to prevent damage to the finisher.**

Note

- This information provides tips and advice about how to best service the finisher.

General Safety Instructions

For your safety, please read this manual carefully before you use this product. Keep this manual handy for future reference.

Safety Information

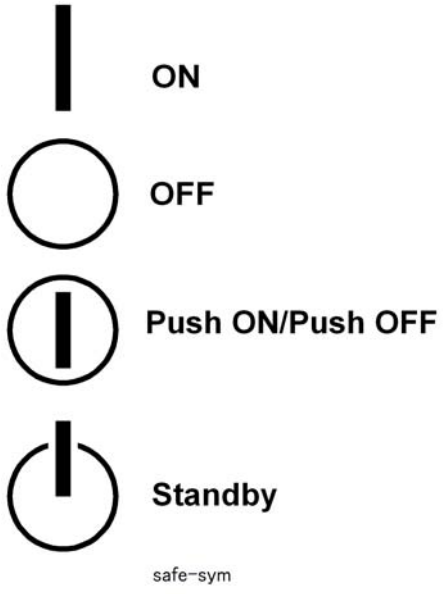
Always obey the following safety precautions when using this product.

Safety During Operation

In this manual, the following important symbols and notations are used.

Switches and Symbols

Where symbols are used on or near switches on finishers for Europe and other areas, the meaning of each symbol conforms with IEC60417.



Responsibilities of the Customer Engineer

Reference Material for Maintenance

- Maintenance shall be done using the special tools and procedures prescribed for maintenance of the finisher described in the reference materials (service manuals, technical bulletins, operating instructions, and safety guidelines for customer engineers).
- In regard to other safety issues not described in this document, all customer engineers shall strictly obey procedures and recommendations described the "CE Safety Guide".
- Use only consumable supplies and replacement parts designed for use of the finisher.

Before Installation, Maintenance

Power

⚠WARNING

- Always disconnect the power plug before doing any maintenance procedure. After switching off the finisher, power is still supplied to the main finisher and other devices. To prevent electrical shock, switch the finisher off, wait for a few seconds, then unplug the finisher from the power source.

- Before you do any checks or adjustments after turning the finisher off, work carefully to avoid injury. After removing covers or opening the finisher to do checks or adjustments, never touch electrical components or moving parts (gears, timing belts, etc.).
- After turning the finisher on with any cover removed, keep your hands away from electrical components and moving parts. Never touch the cover of the fusing unit, gears, timing belts, etc.

Installation, Disassembly, and Adjustments

⚠CAUTION

- After installation, maintenance, or adjustment, always check the operation of the finisher to make sure that it is operating normally. This ensures that all shipping materials, protective materials, wires and tags, metal brackets, etc., removed for installation, have been removed and that no tools remain inside the finisher. This also ensures that all release interlock switches have been restored to normal operation.
- Never use your fingers to check moving parts causing spurious noise. Never use your fingers to lubricate moving parts while the finisher is operating.

Special Tools

⚠CAUTION

- Use only standard tools approved for finisher maintenance.
- For special adjustments, use only the special tools and lubricants described in the service manual. Using tools incorrectly, or using tools that could damage parts, could damage the finisher or cause injuries.

During Maintenance

General

⚠CAUTION

- Before you begin a maintenance procedure: 1) Switch the finisher off, 2) Disconnect the power plug from the power source, 3) Allow the finisher to cool for at least 10 minutes.
- Avoid touching the components inside the finisher that are labeled as hot surfaces.

Safety Devices

⚠WARNING

- Never remove any safety device unless it requires replacement. Always replace safety devices immediately.
- Never do any procedure that defeats the function of any safety device. Modification or removal of a safety device (fuse, switch, etc.) could lead to a fire and personal injury. Always test the operation of the finisher to ensure that it is operating normally and safely after removal and replacement of any safety device.
- For replacements use only the correct fuses or circuit breakers rated for use with the finisher. Using replacement devices not designed for use with the finisher could lead to a fire and personal injuries.

Organic Cleaners

⚠CAUTION

- During preventive maintenance, never use any organic cleaners (alcohol, etc.) other than those described in the service manual.
- Make sure the room is well ventilated before using any organic cleaner. Use organic solvents in small amounts to avoid breathing the fumes and becoming nauseous.
- Switch the finisher off, unplug it, and allow it to cool before doing preventive maintenance. To avoid fire or explosion, never use an organic cleaner near any part that generates heat.
- Wash your hands thoroughly after cleaning parts with an organic cleaner to contamination of food, drinks, etc. which could cause illness.
- Clean the floor completely after accidental spillage of silicone oil or other materials to prevent slippery surfaces that could cause accidents leading to hand or leg injuries. Use “My Ace” Silicone Oil Remover (or dry rags) to soak up spills. For more details, please refer to Technical Bulletin “Silicone Oil Removal” (A024-50).

Ozone Filters

⚠CAUTION

- Always replace ozone filters as soon as their service life expires (as described in the service manual).
- An excessive amount of ozone can build up around finishers that use ozone filters if they are not replaced at the prescribed time. Excessive ozone could cause personnel working around the finisher to feel unwell.

Power Plug and Power Cord

⚠WARNING

- Before servicing the finisher (especially when responding to a service call), always make sure that the power plug has been inserted completely into the power source. A partially inserted plug could lead to heat generation (due to a power surge caused by high resistance) and cause a fire or other problems.
- Always check the power plug and make sure that it is free of dust and lint. Clean it if necessary. A dirty plug can generate heat which could cause a fire.
- Inspect the length of the power cord for cuts or other damage. Replace the power cord if necessary. A frayed or otherwise damaged power cord can cause a short circuit which could lead to a fire or personal injury from electrical shock.
- Check the length of the power cord between the finisher and power supply. Make sure the power cord is not coiled or wrapped around any object such as a table leg. Coiling the power cord can cause excessive heat to build up and could cause a fire.
- Make sure that the area around the power source is free of obstacles so the power cord can be removed quickly in case of an emergency.
- Make sure that the power cord is grounded (earthed) at the power source with the ground wire on the plug.
- Connect the power cord directly into the power source. Never use an extension cord.
- When you disconnect the power plug from the power source, always pull on the plug, not the cable.

After Installation, Servicing

Disposal of Used Items

⚠CAUTION

- Always dispose of used items (developer, toner, toner cartridges, OPC drums, etc.) in accordance with the local laws and regulations regarding the disposal of such items.
- To protect the environment, never dispose of this product or any kind of waste from consumables at a household waste collection point. Dispose of these items at one of our dealers or at an authorized collection site.

Points to Confirm with Operators

At the end of installation or a service call, instruct the user about use of the finisher. Emphasize the following points.

- Show operators how to remove jammed paper and troubleshoot other minor problems by following the procedures described in the operating instructions.
- Point out the parts inside the finisher that they should never touch or attempt to remove.
- Confirm that operators know how to store and dispose of consumables.
- Make sure that all operators have access to an operating instruction manual for the finisher.
- Confirm that operators have read and understand all the safety instructions described in the operating instructions.
- Demonstrate how to turn off the power and disconnect the power plug (by pulling the plug, not the cord) if any of the following events occur: 1) something has spilled into the product, 2) service or repair of the product is necessary, 3) the product cover has been damaged.
- Caution operators about removing paper fasteners around the finisher. They should never allow paper clips, staples, or any other small metallic objects to fall into the finisher.

Safety Instructions for this Finisher

1. The installation must be done by trained service technicians.
2. This finisher weighs 316 kg. (695 lb.). At least four persons are required to remove the finisher from its pallet and position it for installation.
3. To prevent fire hazards never use flammable solvents around the finisher.
4. Never place any object on the finisher.
5. If anything falls into the finisher, turn off the main power switch on the right side of the finisher, then disconnect the power cord from the power source.
6. Locate the finisher on a sturdy flat surface where it will not be exposed to excessive vibration.
7. To avoid fire hazard, confirm that the ventilation ports are not blocked, so air can flow freely.
8. Gas generated by the molten glue can irritate the eyes, throat, and nose. The finisher should always be used in a well ventilated room.
9. To avoid the dangers of fire and electrical shock, make sure that the finisher is never exposed to:
    - Excessive high temperatures and/or humidity
    - Dust
    - Water
    - Direct sunlight
    - Open flame
    - Corrosive gases

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Field Service Manual Revision History

Field Service Manual Version 2

Perfect Binder Machine Code: D391 Field Service Manual Version 2 Revision History

	Section	Description
1	Replacement and Adjustment > Common Procedures > Trimming Unit > Step 6	Replaced with correct photo; photo of the Signature Transport unit was falsely inserted instead of the Trimmer unit.
2	Replacement and Adjustment > Common Procedures > Signature Thickness Sensor (S50) Recalibration > Steps 10 & 13	LED indication corrected
3	Replacement and Adjustment > Perfect Binder Boards > When installing a new EEPROM in Master Control Board	New section added describing the required adjustments when replacing the EEPROM
4	Replacement and Adjustment > Inserter > Inserter Control Board	New section added describing the required adjustments when replacing the Inserter Control Board (Jam 255)
5	Troubleshooting > Jams > Low Performance Mode > Cancelling Low Performance Mode	Deleted the procedures described in this section; refer to "Common Procedures > Setting and Releasing Low Performance Mode".
6	Troubleshooting > Service Board Basics > Service Board LEDs	Entire section revised
7	Troubleshooting > Service Mode > Critical Adjustments	Introduction of the section revised
8	Troubleshooting > Service Mode > Critical Adjustments > Adjustment 1: Cover Horizontal Registration Position Adjustment	Correction of the paper sizes; Small size less than 288mm --> 297mm or less, Large size 288mm --> 298mm or more
9	Troubleshooting > Service Mode > Critical Adjustments > Adjustment 1: Cover Horizontal Registration Position Adjustment	LED indication corrected; "The LEDs remain OFF for 2 sec..." --> "The LEDs remain ON for 2 sec..." in the section "How Values of the Settings Are Displayed"

	Section	Description
10	Troubleshooting > Service Mode > Critical Adjustments > Adjustment 5: Glue Amount Adjustment	Revised description of the glue amount adjustment process
11	Troubleshooting > Service Mode > Critical Adjustments > Adjustment 8: Glue Amount Adjustment	Deleted; the adjustment is required only when replacing the EEPROM and its procedure is described in #3 above.
12	Troubleshooting > Output Checks > Perfect Binder D391 Output Check > Bookbinder Test Mode	Description added in the last part of the section; "Cover is fed only from the lower tray" in the table "SW2 Bank SW6: Cover Feed Source"
13	Details > Trimming Unit > Book Binding > Trimmings Collection and Disposal	Correction of the figure; indication of 'index 3' pointing the Trimmings Catcher

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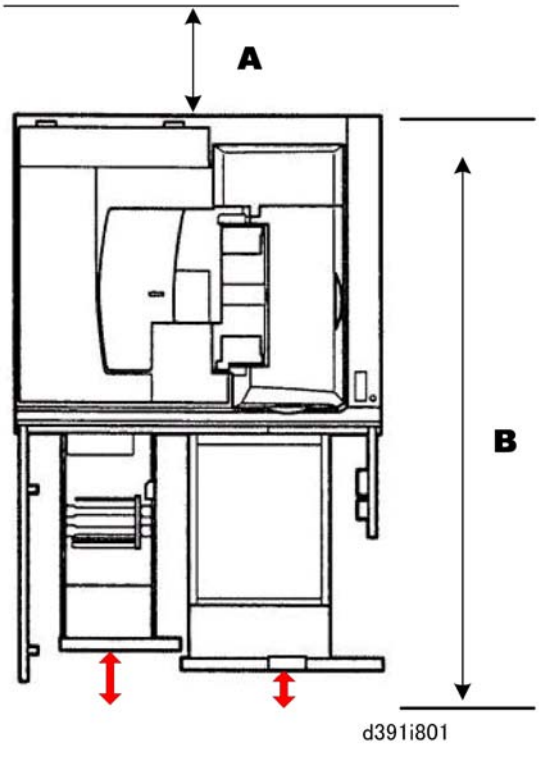
1. Installation

Installation Requirements

Choosing a Location

Required Space

Place the bookbinder near the power source, with at least the minimum amount of clearance around it, as shown below:



These are minimum space requirements. More space is recommended for easier maintenance.

A	At least 900 mm (36 in.)	Allows proper cooling
B	At least 1407 mm (56 in.)	Allows opening and closing of drawers

Power Supply

Input voltage level	NA: 208V 60 Hz
	EU: 220-240V 50/60 Hz
Permitted voltage	Fluctuation: +10, -15 %

Important

- **The bookbinder must have an independent power source. Avoid multi-wiring.**
- **The bookbinder must be properly grounded at the power source.**

What You Need

Here are some points to check before installation:

- The bookbinder is extremely heavy: 316 kg (695 lb.)
- At least four persons are needed to unload the bookbinder safely from its pallet.
- After removing the packing straps and cardboard cover, you will need a manual forklift to position the pallet so there is approximately 2 meters (6.5 ft.) of free space to the right side of the bookbinder when the ramps are pulled out as shown below.

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- Once the bookbinder has been removed from the pallet, it can be pushed on its casters by two service technicians.

Perfect Binder (D391) Installation

This section describes installation of these items:

- Perfect Binder GB5000 (D391) (hereafter the "bookbinder")
- Inserter-C1 (D391-18) (hereafter the "inserter")
- Transit Pass Unit Type GB5000 (D391-19) (hereafter the "relay unit")

Bookbinder Accessories

There are no accessories provided in the bookbinder box. The required accessories are provided with the relay unit and inserter unit.

Bookbinder Installation

Before You Begin

The bookbinder contains many large moving parts. Braces, cushions, and orange tape are attached inside and outside the bookbinder to immobilize and protect the working parts during handling and shipping.

Large red warning tags are attached with ribbons to braces, cushions, and screws that must be removed at installation. However, these items must not be discarded. Some braces must be reinstalled if the machine needs to be moved to a new location. Due to the large number of braces that must be retained (there are over 20), they should be marked for future reference as they are removed.

Here are some simple rules to follow during removal of the braces, cushions, and screws:

- Use a marker with indelible ink to mark each item or its tag as instructed when it is removed from the bookbinder. This will make it easier for the service technician to identify the brace for reinstallation. This will also help you to confirm that everything has been removed from inside the machine.
- After removing a brace, set the screws in the correct holes and tape them in place. This will make it easier to find the correct screws for reinstallation.
- The red warning tags must remain attached by the ribbons to the braces, cushions, and screws. If they are reattached before moving the machine, they will serve as reminders of the items that must be removed after the machine has been moved to the new location.
- Remove the orange tape carefully and save as much of it as possible.

Unloading the Bookbinder

⚠CAUTION

- The bookbinder weighs 316 kg (695 lb.). At least four service technicians are required to unload the bookbinder from its pallet.
- You will need a manual forklift to position the pallet for unloading.

1. Remove the packing straps and cardboard cover.

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2. Use a manual forklift [A] to position the pallet so there is at least 2 meters (6.5 ft.) of free space to the right side of the bookbinder [B].

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3. Remove the packing from the top of the machine [A].
4. Pull down the protective plastic cover [B] on all four sides.

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Important

- Collapsible metal handles are provided on the right and left side of the bookbinder.
- To avoid physical injury, always use these handles to lift either the right or the left side of the bookbinder.
- Never attempt to raise the left or right side of the bookbinder alone. Two people, one on each handle, should lift one side together.

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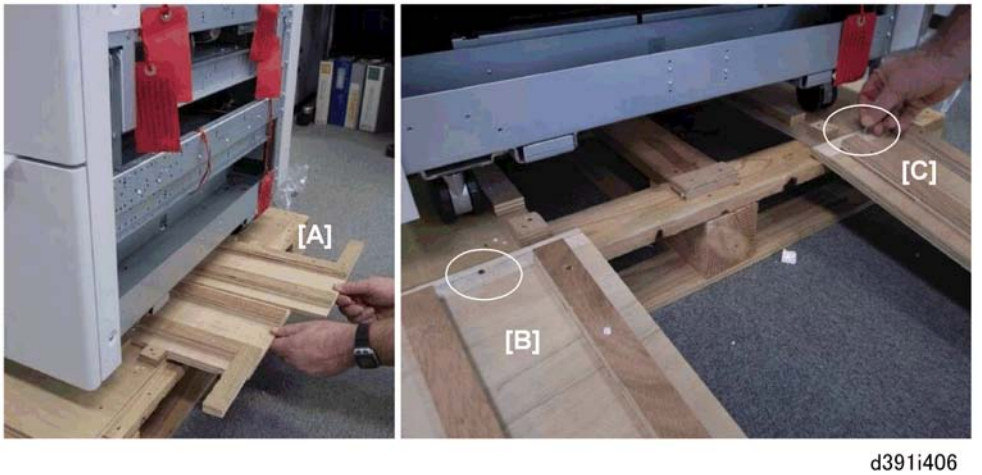
5. Position one person at the left to prevent the bookbinder from tipping over.
6. On the right [A], have two people use the handles to lift the machine, while another person removes the Styrofoam block and then pulls the plastic cover under the machine to the left as far as possible.
7. Position one person at the right to prevent the bookbinder from tipping over.
8. On the left [B], have two people use the handles to lift while another removes the Styrofoam block and the plastic cover together.



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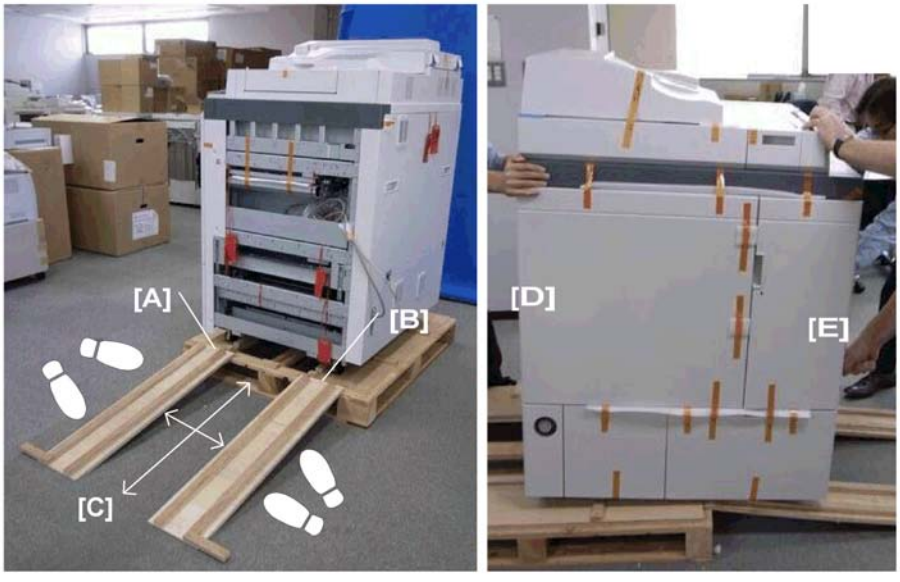
9. Pull out the two ramps [A].
10. Two nails are taped to one of the ramps. Align the holes in the top of each ramp with the holes in the pallet, then insert the nails into the holes to fasten the left ramp [B] and right ramp [C] to the edge of the pallet.



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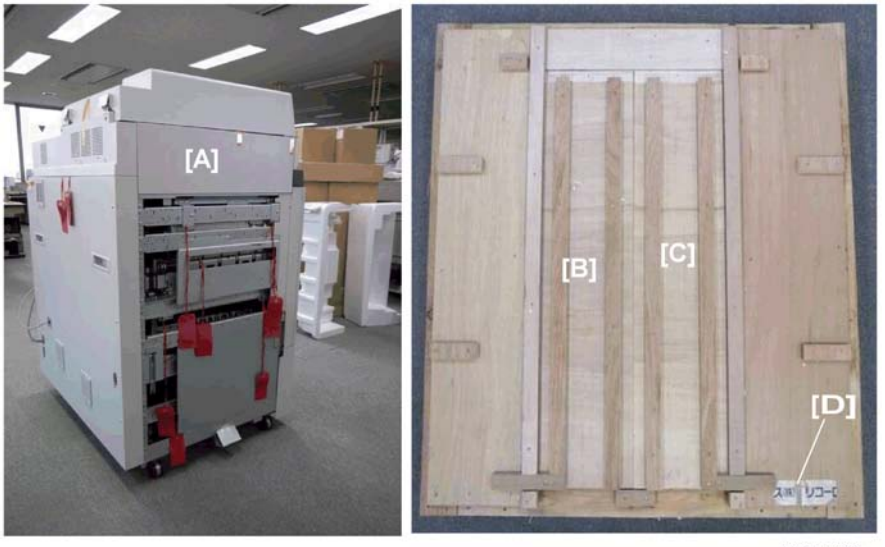
11. Confirm that:
    - Both ramps are firmly attached to the edge of the pallet with nails [A] and [B].
    - Both ramps extend straight out from the side of the pallet.
    - Area [C] between the ramps is free of obstacles.

⚠WARNING

- As the bookbinder is being pulled off the pallet, never step across either of the ramps and place your foot in the area between the ramps [C].

12. With one person [D] behind the bookbinder gently pushing, and two people in front pulling the bookbinder by the handles [E], slowly move the bookbinder down the ramps.



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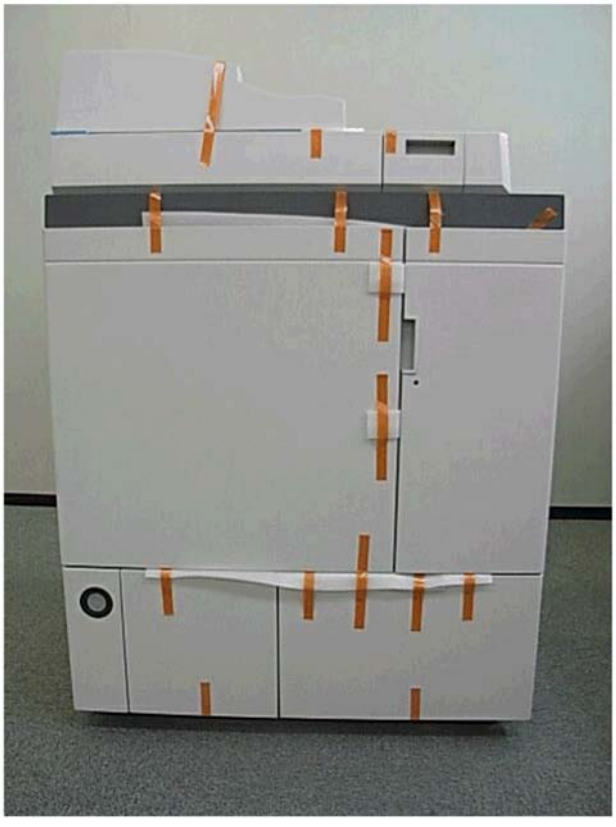
13. Once the bookbinder [A] is off the pallet, it can be pushed or rotated on its casters.
14. Remove the nail from each ramp and reattach the ramps [B] and [C] to the pallet.
15. Tape the nails [D] to the pallet.

Bookbinder Exterior Tape, Braces

Important

- **Braces, cushions, and screws removed from the machine for installation should be retained for reinstallation in the event that the bookbinder must be shipped to a new location.**



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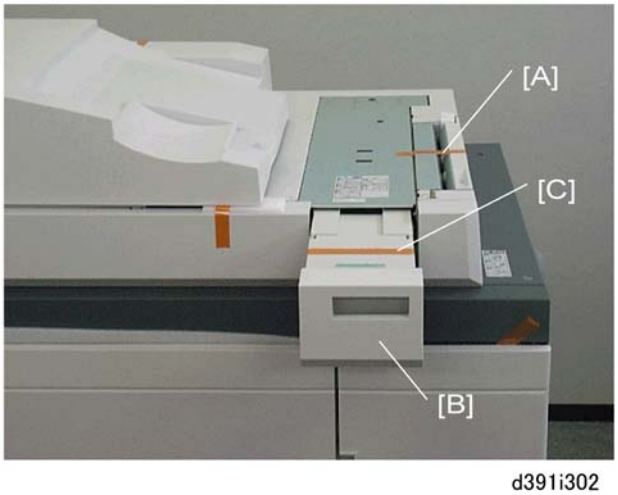
1. Remove all strips of tape and packing from the front and top.



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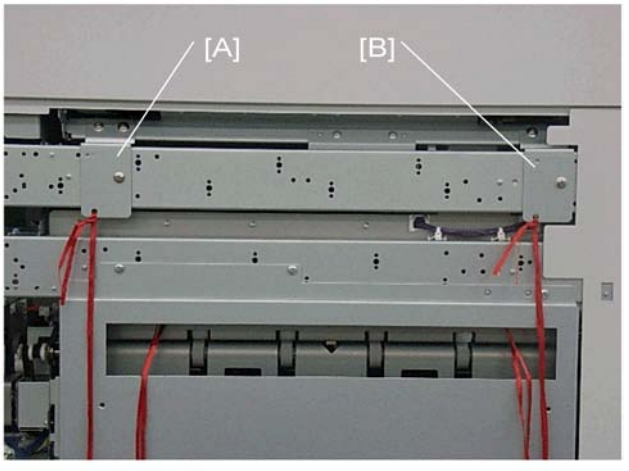
2. Remove tape [A].
3. Pull out the glue supply drawer [B] and remove long tape [C].

Left Side



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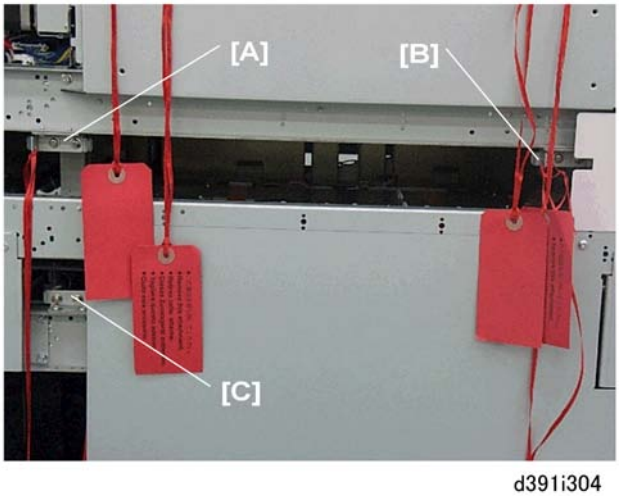
4. Remove upper braces [A] and [B] (x3 ea.)

Left Side



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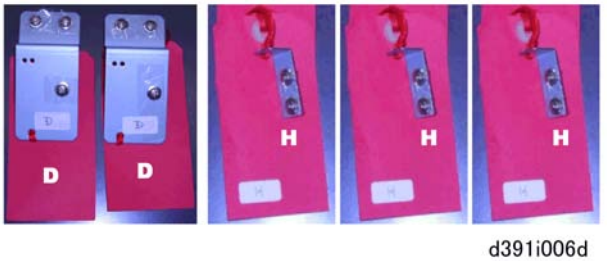
5. Remove lower braces [A], [B], [C] (x2 ea.)



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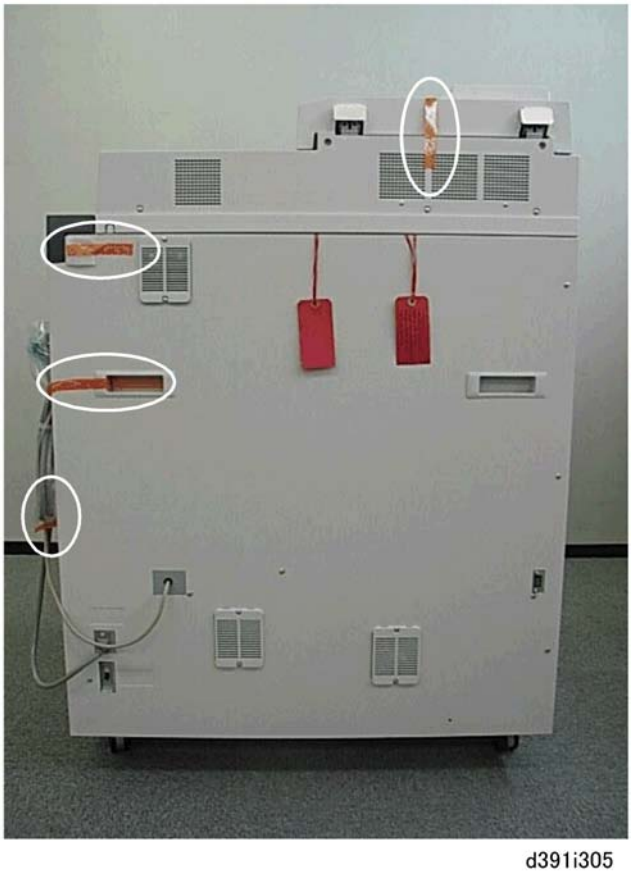
6. Mark the two (large) upper braces "D".
7. Mark the three (small) lower braces "H".

Rear



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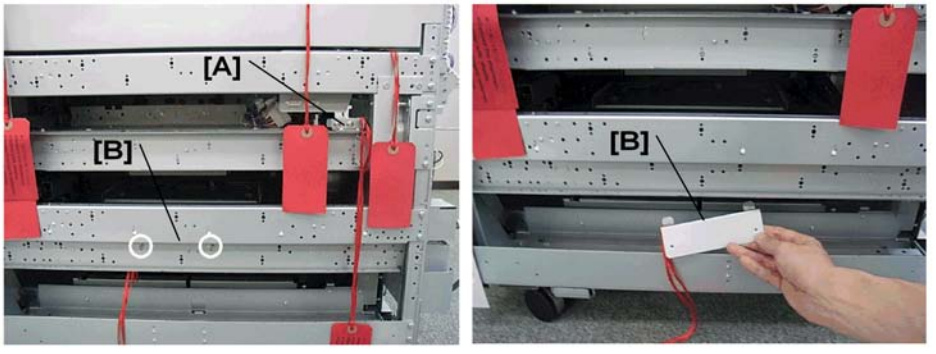
8. At the rear, remove all tape (as shown) from the back, top, power cord and interface cable.

Right Side: Near Bottom



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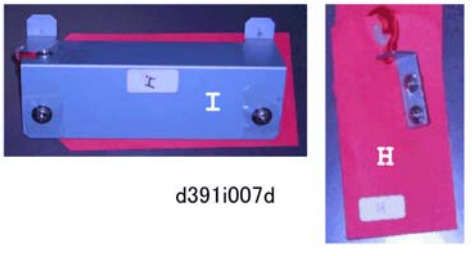
9. Remove brace x1 [A], brace [B] x1 and tags (x2 ea.)



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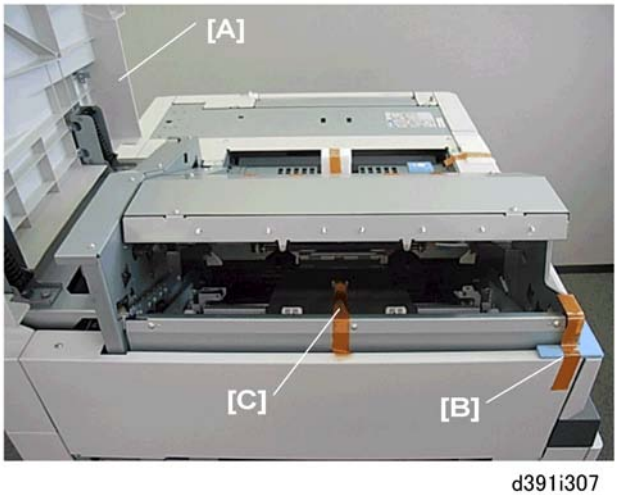
10. Mark the removed large brace "**I**" and mark the removed small brace "**H**".

Left Side



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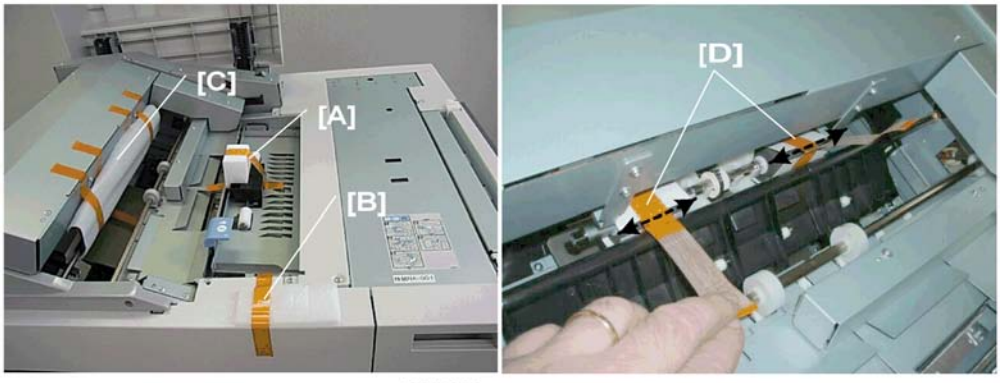
11. Open the top cover [A].
12. Remove tape, cushions [B] and [C]. Slide the cushion at [C] down to remove it.

Front: Top



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13. Remove the tape, cushions [A], [B].
14. Disconnect the tape at [C] then lower lever **Mk4**.
15. Carefully cut the strips of tape at [D] then remove the strips of tape and the cushions.

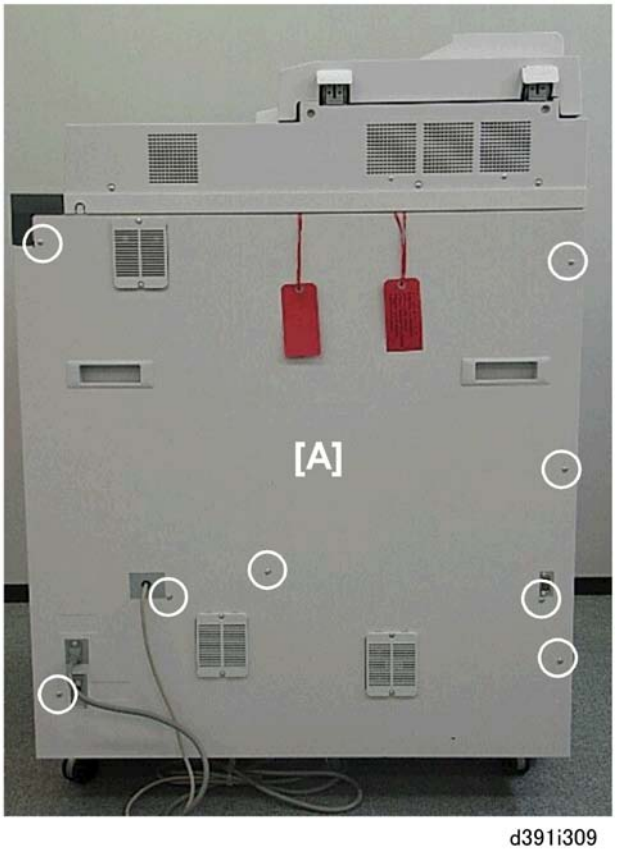
Important

- **Pulling on the strips of tape without cutting them could damage the roller shaft.**

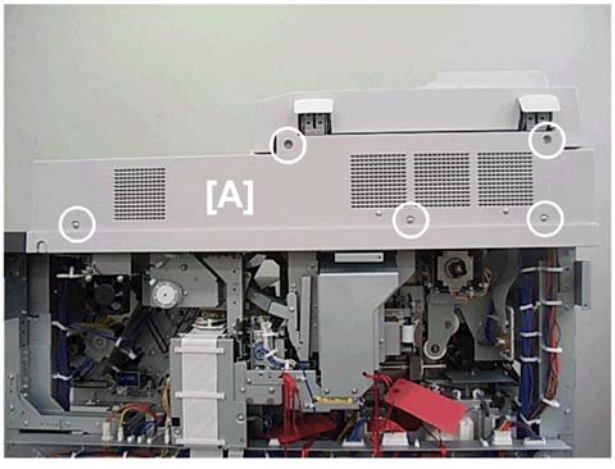
16. Lower the top cover.

Bookbinder Interior Tape, Braces

Rear



1. Remove rear cover [A] (x8)



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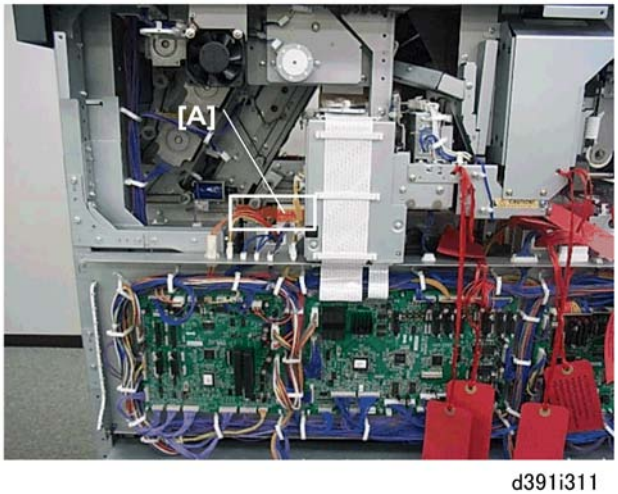
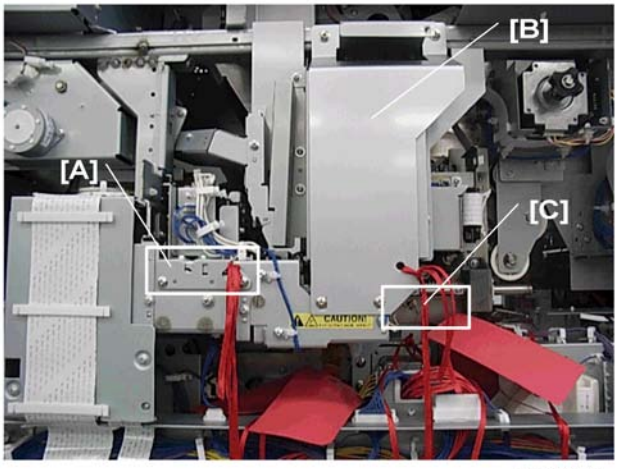
2. Remove rear upper cover [A] (x5)



d391i311

3. Remove tape, cushion [A]



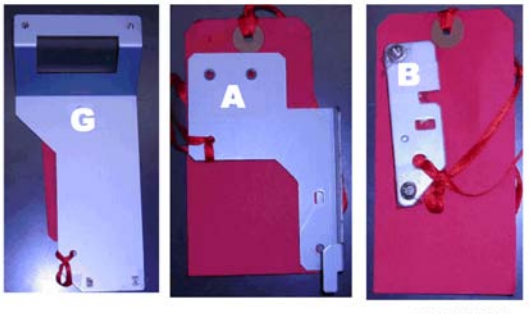
d391i312

4. Remove:

   [A] Brace, tag (x2)

   [B] Brace, tag (x4)

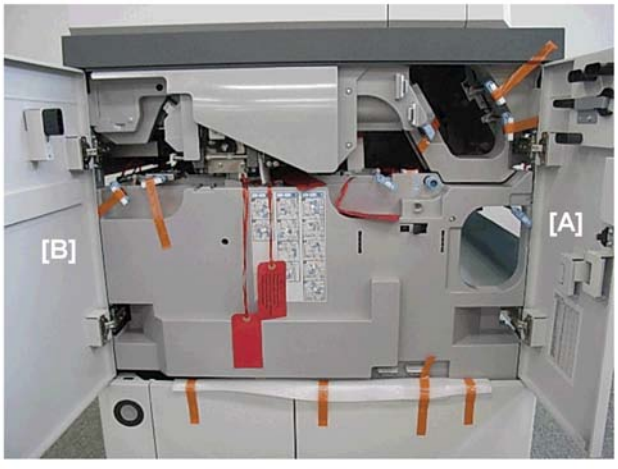
   [C] Brace, tag (x4). (These four screws are tagged with wire.)



d391i008d

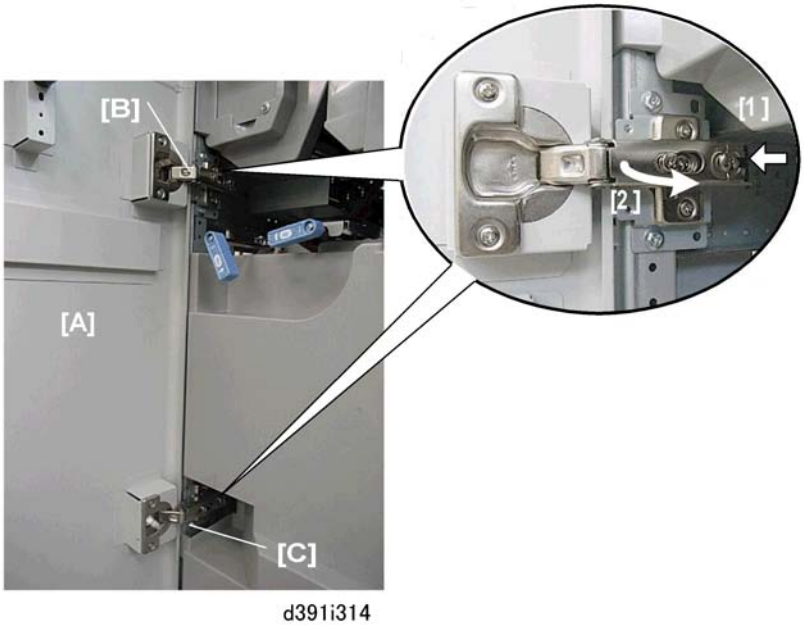
5. Mark the removed braces "G", "A", "B" as shown.

Front



d391i313

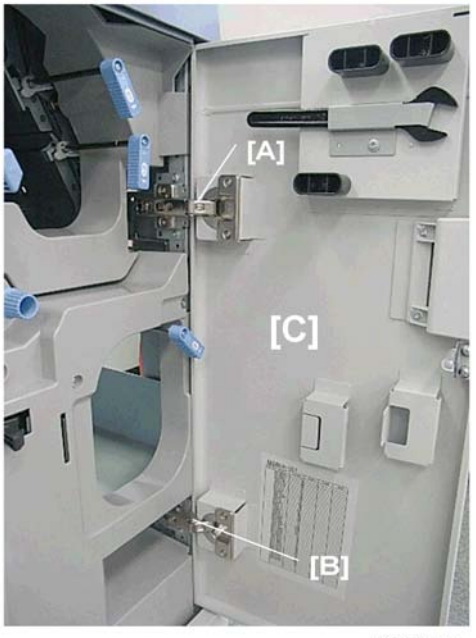
1. Open the right front door [A] then left front door [B]



d391i314

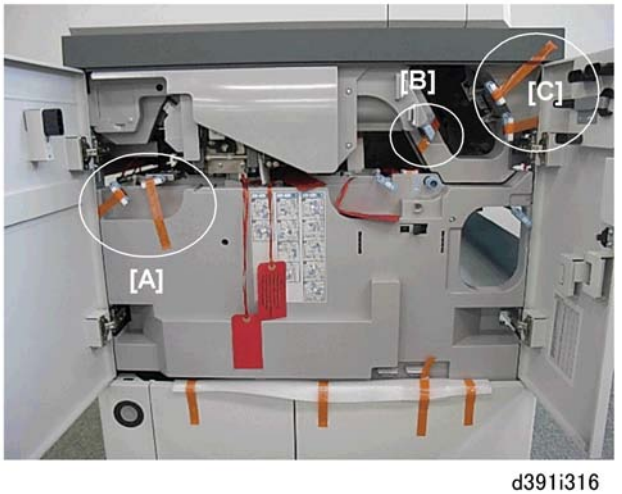
2. On the left door [A], remove the top hinge [B] and bottom hinge [C].
    - While holding the left front door with one hand, behind the top hinge [B], push the black lever [1] in the direction of the arrow to release the top hinge.
    - Swing the top hinge [2] out slightly.
    - While still supporting the left door with one hand, repeat the procedure to remove the bottom hinge [C].

- Remove the left door [A].



d391i315

3. Repeat Step 2 to remove the top hinge [A] and bottom hinge [B] then remove the right front door [C]. (You may have to lower lever Mk11 so you can remove the right door.)



d391i316

4. Remove the strips of tape, and cushions from the jam release levers (x5):

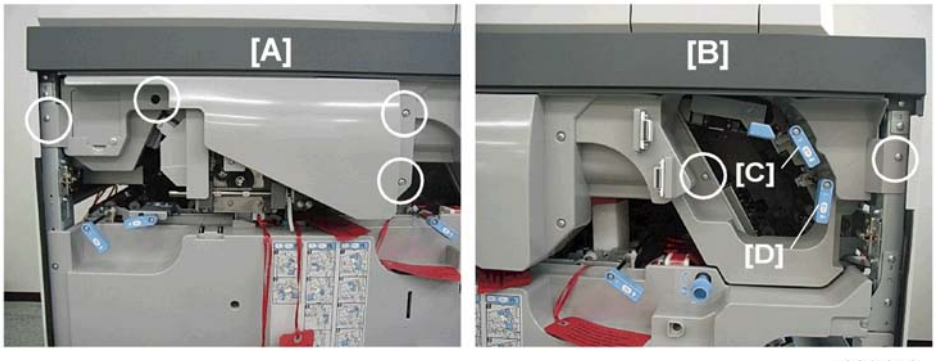
   [A] Mk7, Mk8

   [B] Mk12

   [C] Mk13, Mk14

d391i317

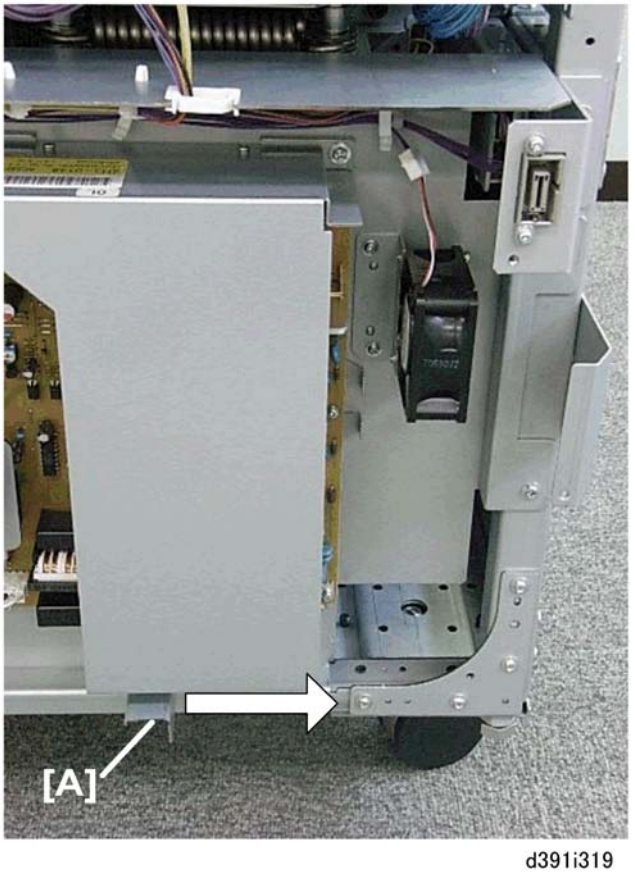
1. Raise lever Mk12 [A].



d391i318

2. Remove the screws of the upper inner cover on the left side [A] and right side [B] (x6).
3. Release jam release levers [C] and [D], then hold them in the released position as you remove the upper inner cover.

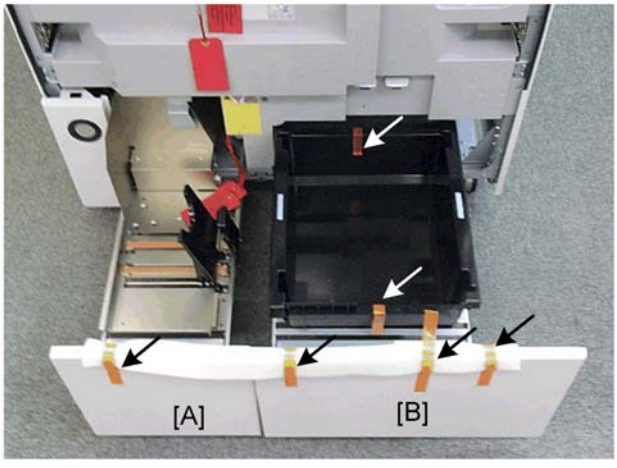
Rear



d391i319

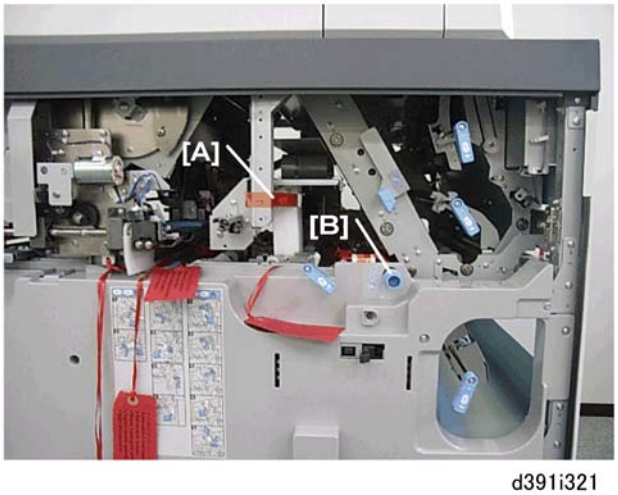
1. At the left rear corner, push the book stack release lever [A] completely to the right to release the book stacking tray.

Front



d391i320

2. Pull out the book stacking tray [A] and trimmings box [B] together.
3. Remove the strips of tape and cushions shown above.



d391i321

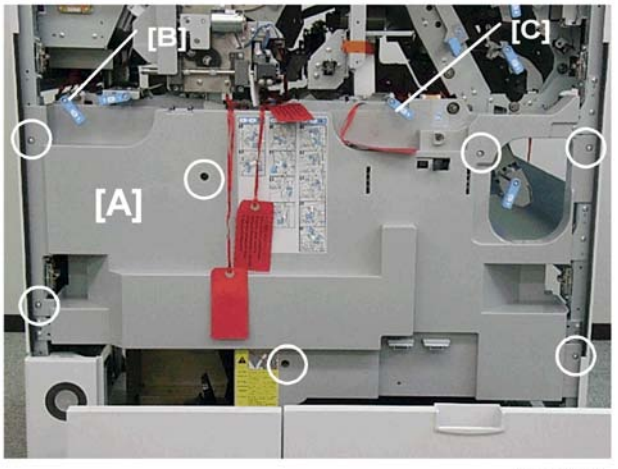
4. Remove:

   [A] Tape, cushion

   [B] Jam clear knob **Mk10**.

Important

- **Mk10 must be reattached at the end of installation.**

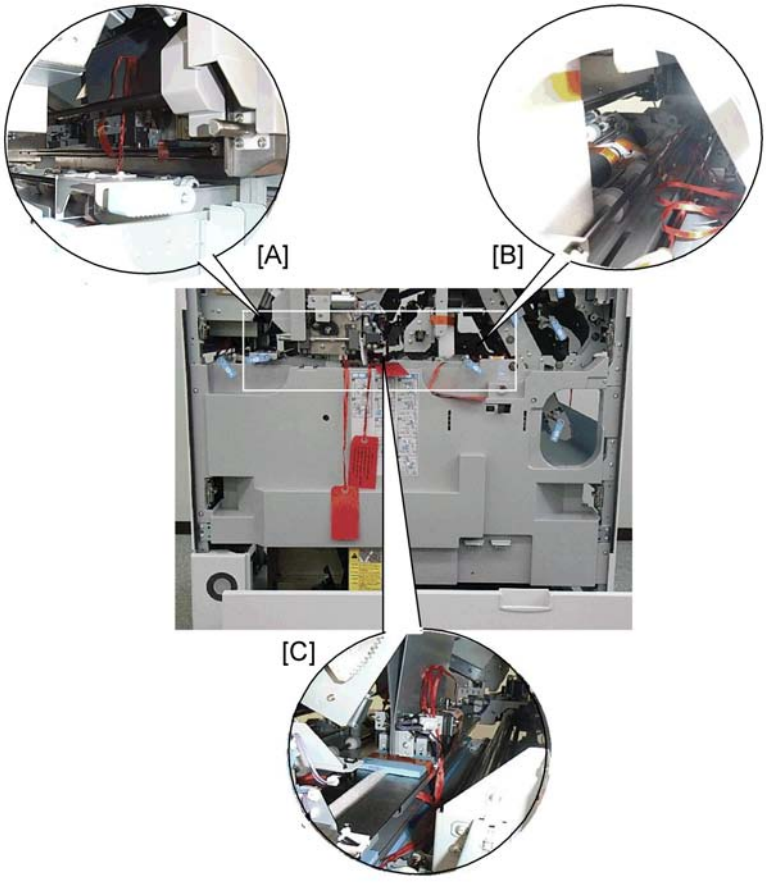


d391i322

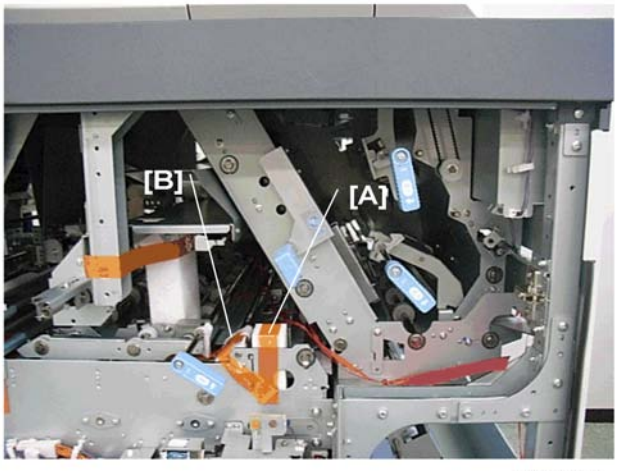
5. Remove the screws of the lower inner cover [A] (x7).
6. Raise the jam clear levers [B] and [C] as you remove the cover [A].
7. Return the jam clear levers [B] and [C] to their original positions.

Main Grip, Cover Transport Tape, Braces, etc.

Front

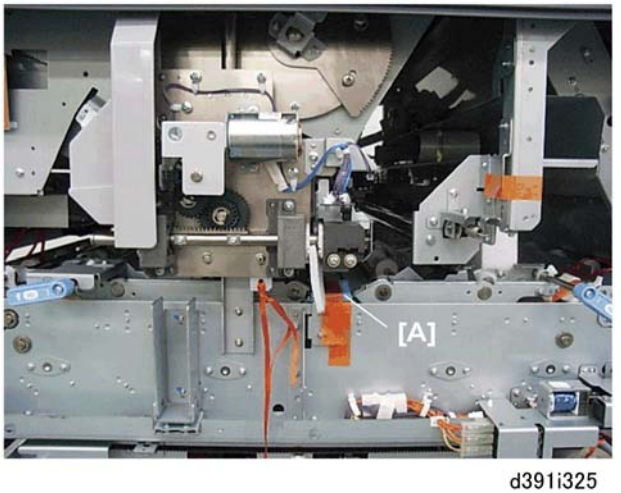


1. Remove the strips of tape and cushions from the horizontal transport unit at the left [A], right [B], and center [C].



d391i324

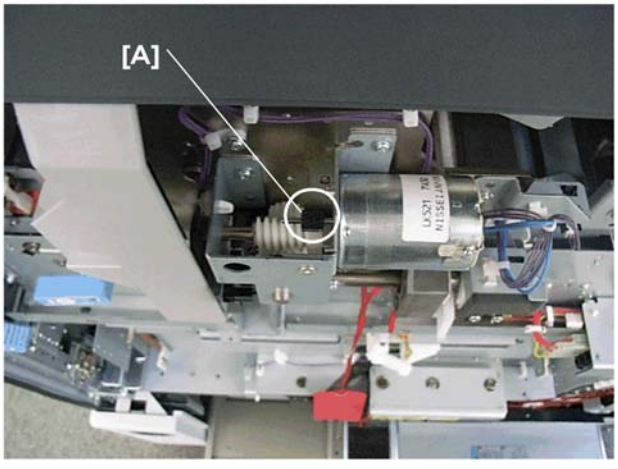
2. Remove tape [A] with tag.
3. Slide the registration unit to the rear then remove tape, cushion [B].



d391i325

4. Remove cushion [A] shown above:

Front



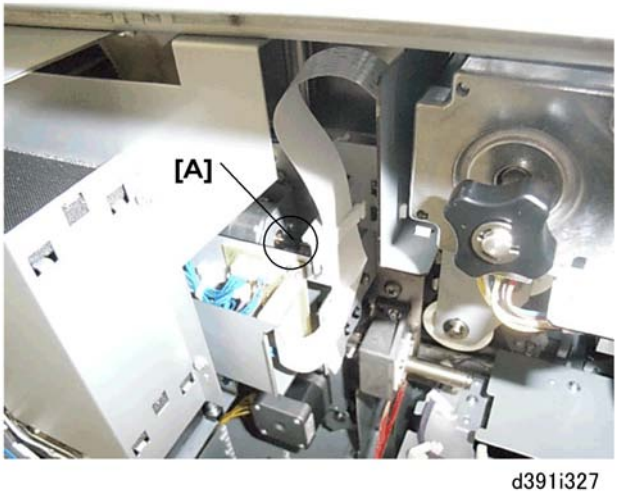
d391i326

- First, at the front, rotate the grip motor pulley [A] counter-clockwise about 3 mm to release the pressure on the cushion.

Important

- **Rotate the pulley only enough to release the cushion.**

Rear



d391i327

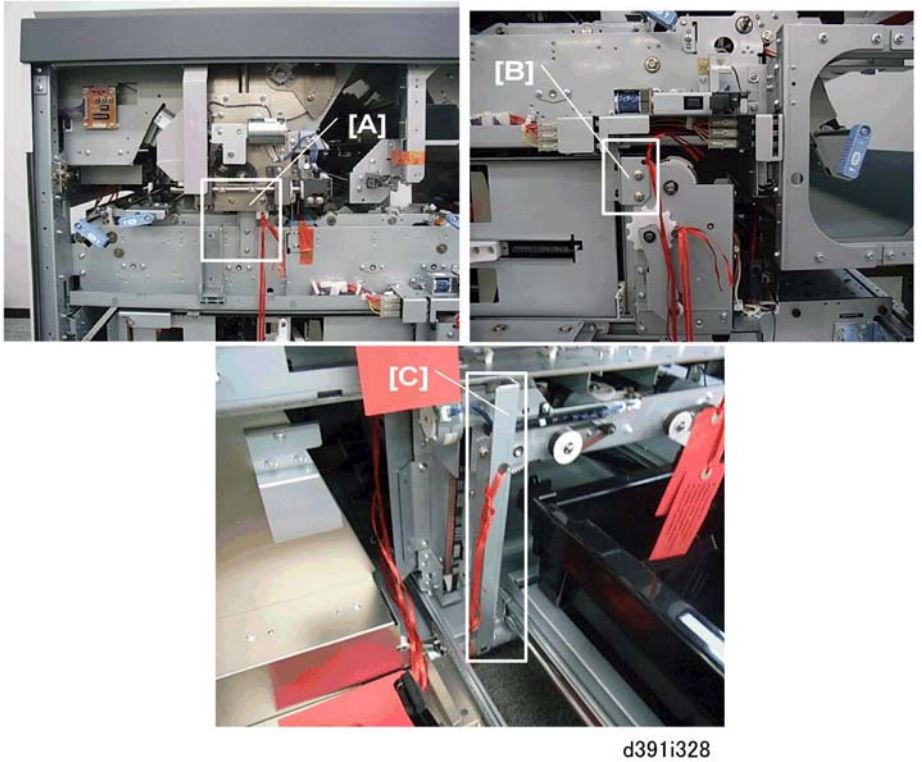
- Second, at the rear, manually rotate the grip motor pulley [A] counter-clockwise about 3 mm to release the pressure on the cushion.

Important

- **Rotate the pulley until the gap is about 18 mm (no wider).**
- **To prevent changing the correct value (15 mm), do not make this gap wider than 18 mm.**

1. Remove the cushion at the front.

Front



2. Remove:

   [A] Brace, tag (x4)

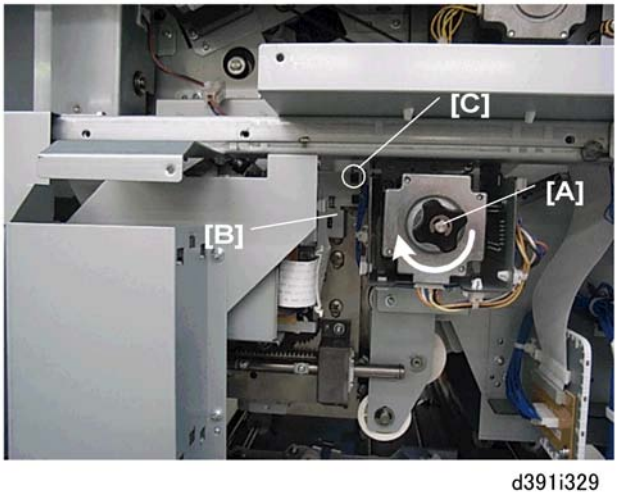
   [B] Brace, tag (x3)

   [C] Brace, tag (x2)

d391i012c

3. Mark the braces "F, "C", "E" as shown.

Rear

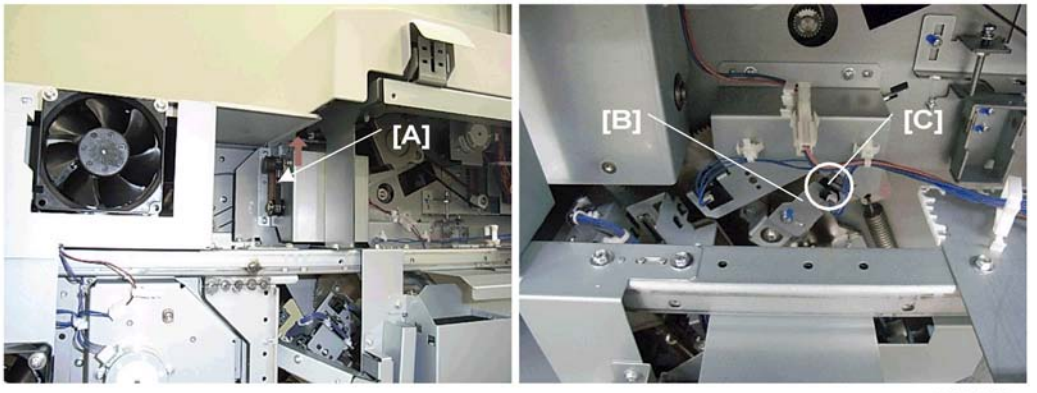


d391i329

4. Rotate knob [A] in the direction of the arrow to raise the grip unit until the actuator [B] reaches sensor [C].

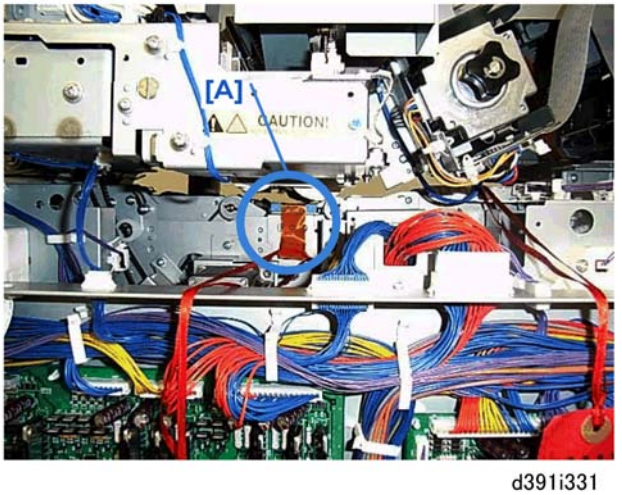
1

Rear



d391i330

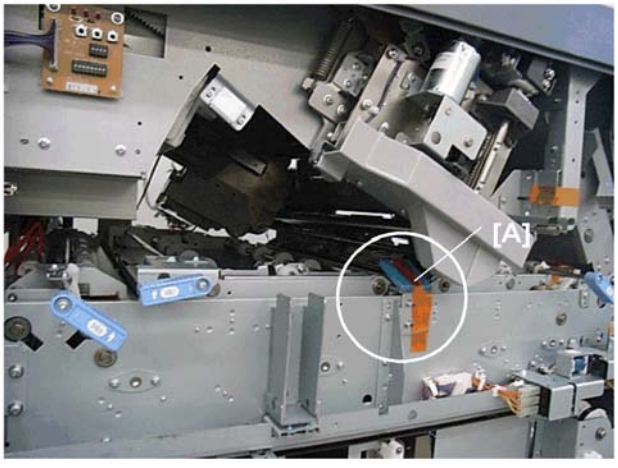
5. Push up the right side of the timing belt [A] to rotate the gear counter-clockwise until the actuator [B] reaches sensor [C].



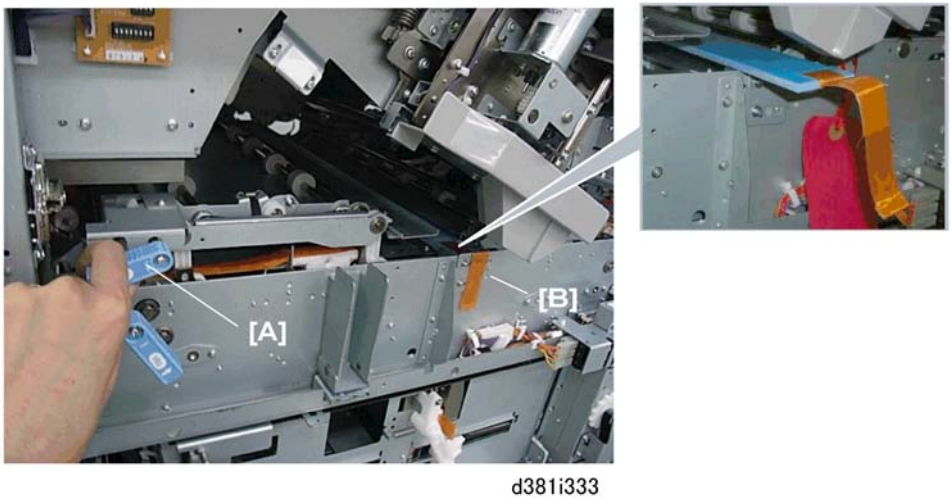
d391i331

6. At the rear remove the tape and cushions [A].

Front

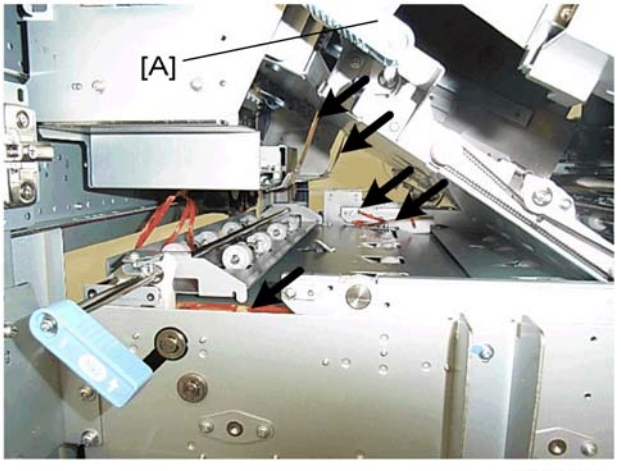


7. At the front remove the tape and cushion [A].



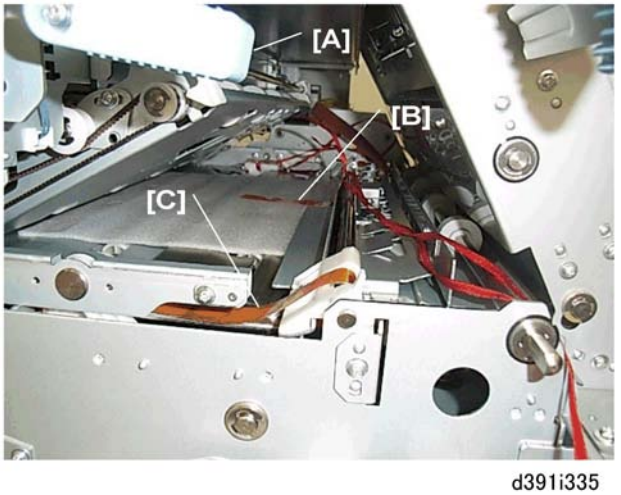
d381i333

8. Lift and push Mk7 [A] to the left and remove the tape and cushion [B].



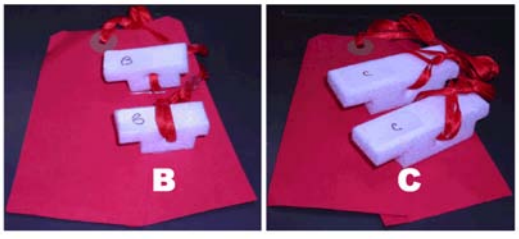
d391i334

9. Raise lever Mk7 [A].
10. Remove all strips of tape and cushions.
11. Return Mk7 to its original position.



d391i335

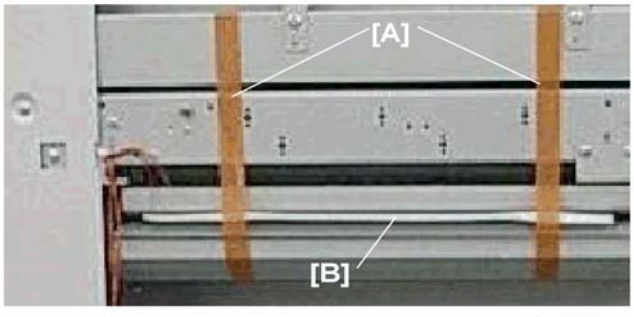
12. Raise Mk9 [A].
13. Remove the long strips of tape [B] and [C]



d391i014c

14. Label the small cushions "B" and the large cushions "C".

Right Side

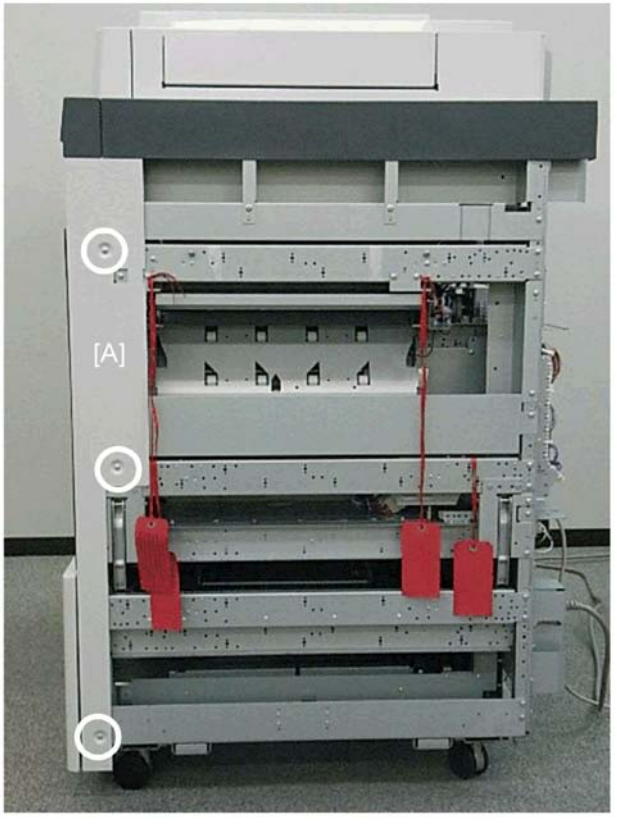


d391i336

1. Remove the two strips of tape [A].
2. At the front lower lever Mk8.
3. Remove the cushion [B].
4. Return lever Mk8 to its original position.

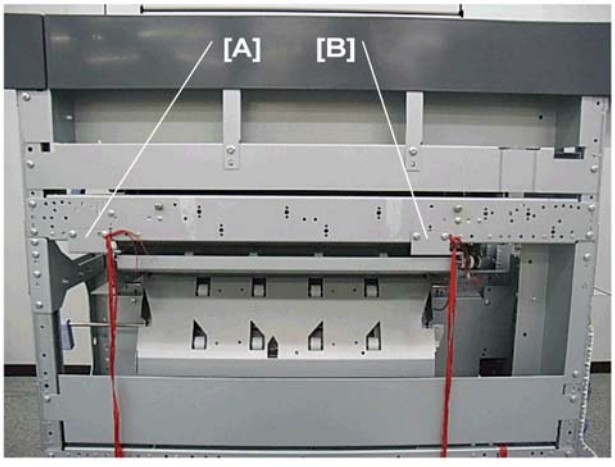
Trimming Unit Tape

Right Side



d391i337

1. Remove front right corner cover (x3).

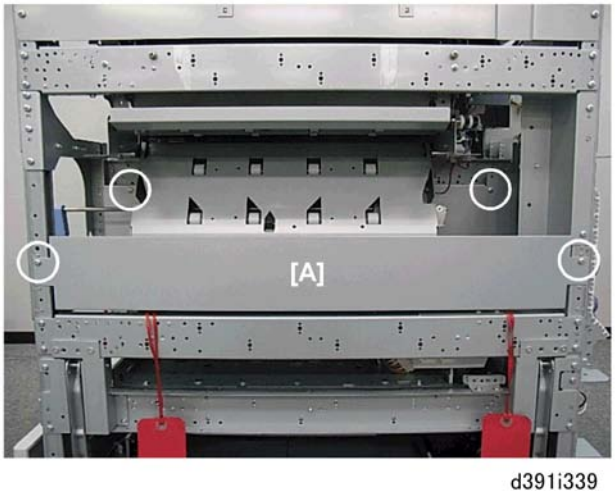


d391i338

2. Remove:

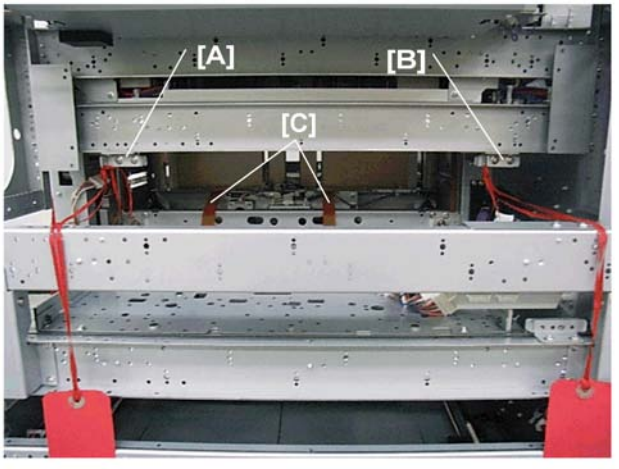
   [A] Brace, tag (x3)

   [B] Brace, tag (x3)



d391i339

3. Remove delivery bracket [A] (x4)



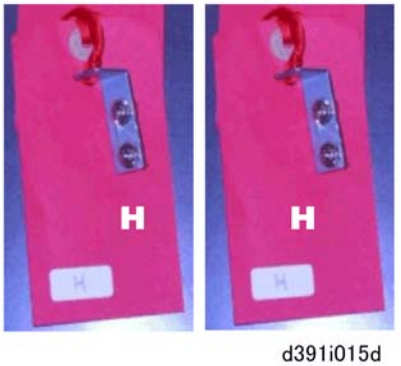
d391i340

4. Remove:

   [A] Brace, tag (x2)

   [B] Brace, tag (x2)

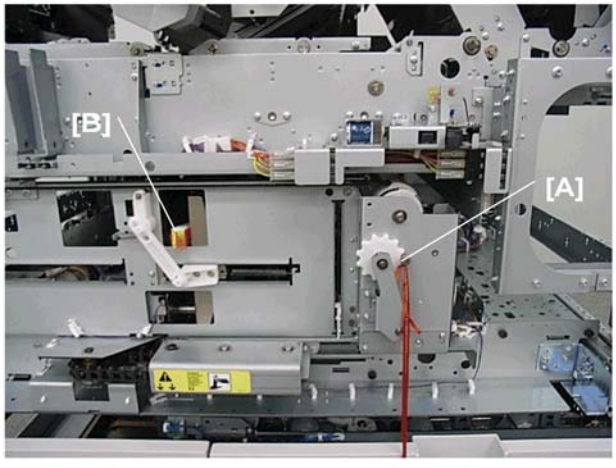
   [C] Long tapes (x2)



d391i015d

5. Label both braces "H".

Front



d391i341

1. Remove stepped screw, tag [A] (x1)

d391i015e

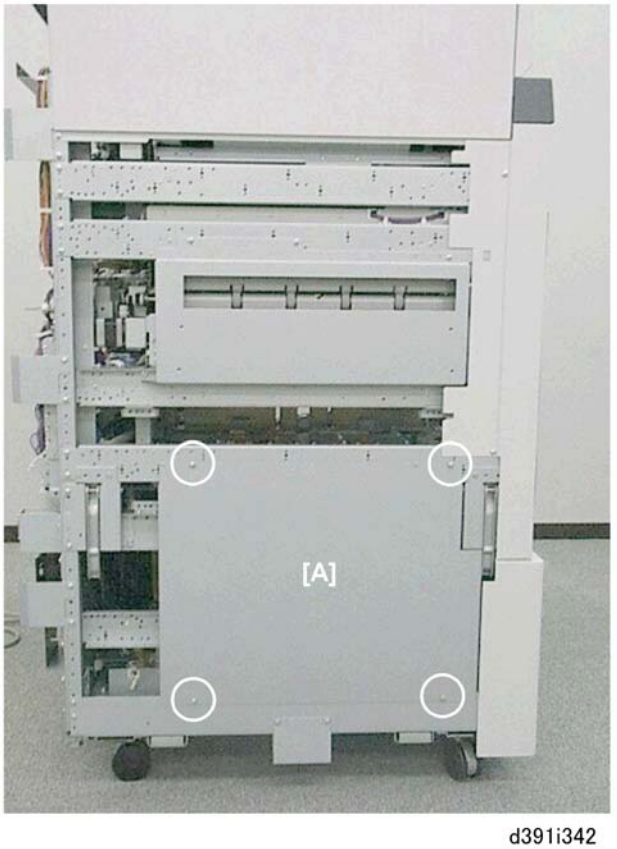
2. Mark the stepped screw "**1**".

Important

- **Cushion [B] (shown in the previous illustration) is firmly clamped in place and must be released before it can be removed.**

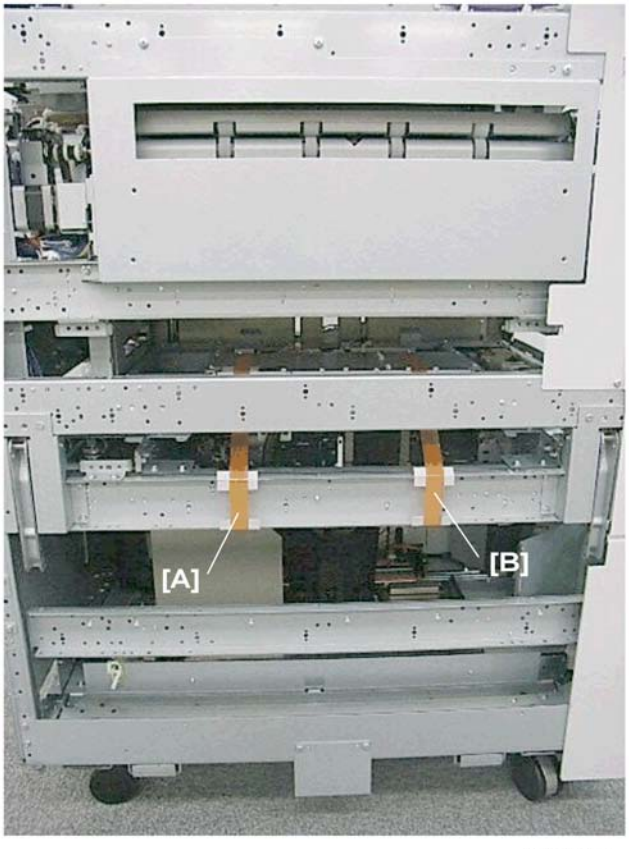
3. To remove cushion [B]:

Left Side



d391i342

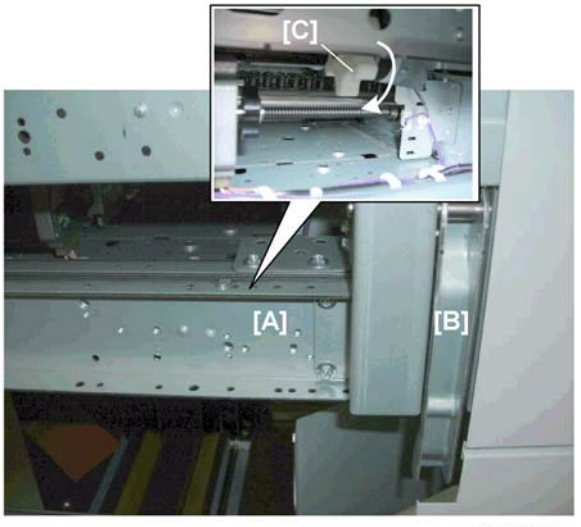
- Remove left flat panel [A] (x4),



d391i343

- Remove tape, cushions [A] and [B].

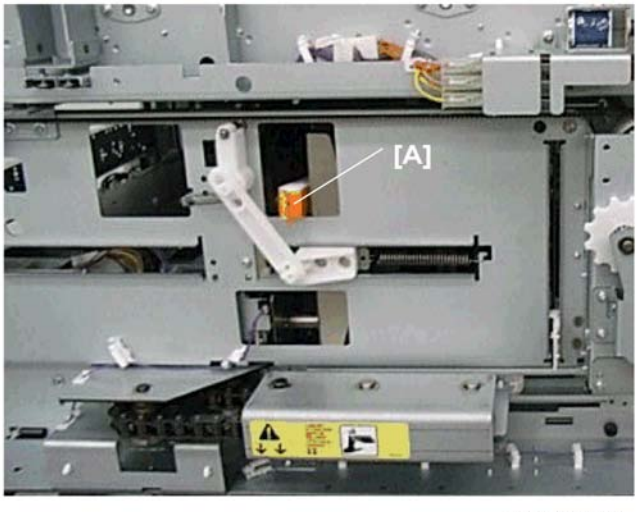
Front Left Corner



d391i344

- Behind the brace [A] near the carrying handle [B], rotate the white knob [C] to release the clamped cushion. (One full rotation should be enough to release the cushion.)

Front

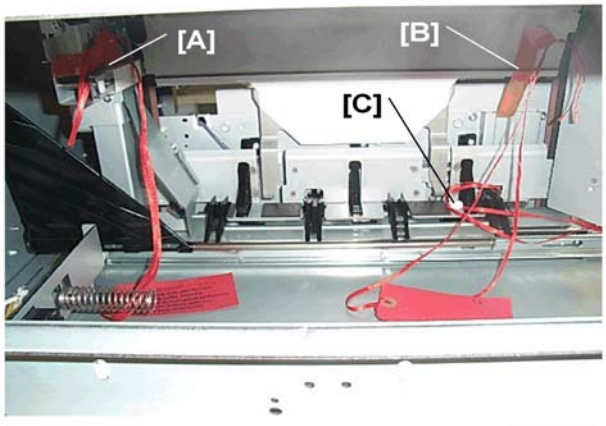


d391i345

- Remove cushion [A].

Book Stacking Tray Tape

Left Side: Book Stacking Delivery Tray Pulled Out



d391i346

1. Pull out the book stacking delivery tray trimmings box drawer.
2. Remove:

   [A] Tape, tag

   [B] Tape tag

   [C] Knurled head screw (x1). Remove with fingers.

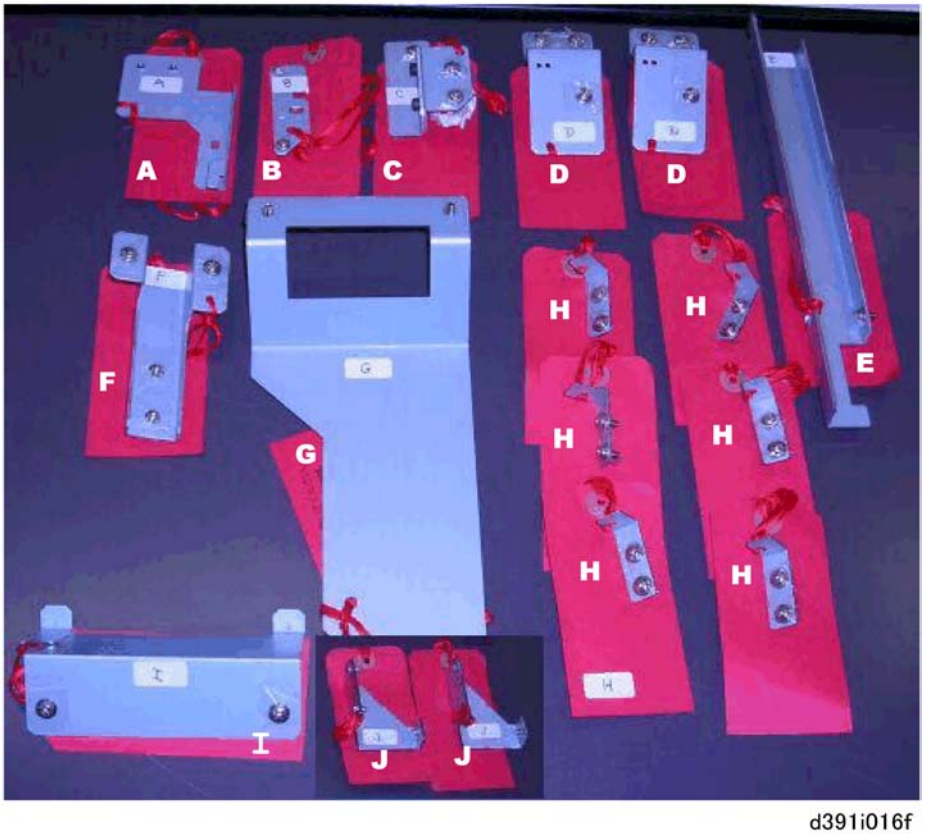
d391i016d

3. Label the screw "2".

Confirming Removal, and Storing Braces, Cushions, Screws

1. Visually inspect the machine and confirm that all braces, screws, and cushions with red tags have been removed and marked for storage.

   Braces



d391i016f

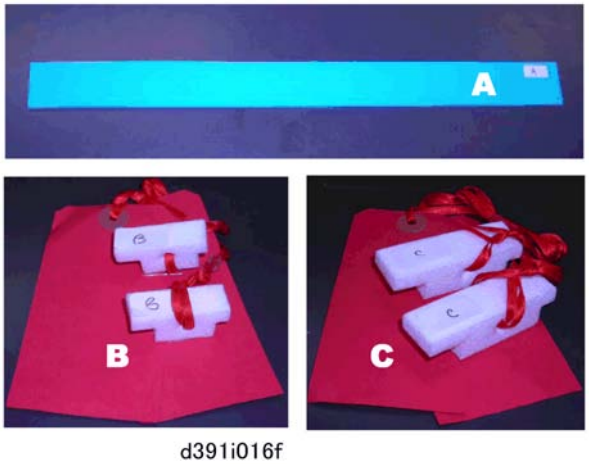
Mark	Item	Quantity
A	Brace A	1
B	Brace B	1
C	Brace C	1
D	Brace D	2
E	Brace E	1
F	Brace F	1
G	Brace G	1
H	Brace H	6
I	Brace I	1
J	Brace J	2

Screws

d391i016g

Mark	Item	Quantity
1	Step Screw	1
2	Plastic-head Screw	1

Cushions



d391i016f

Mark	Item	Quantity
A	Cushion A (Long)	1
B	Cushions B (Short)	2

C	Cushions C (Long)	2

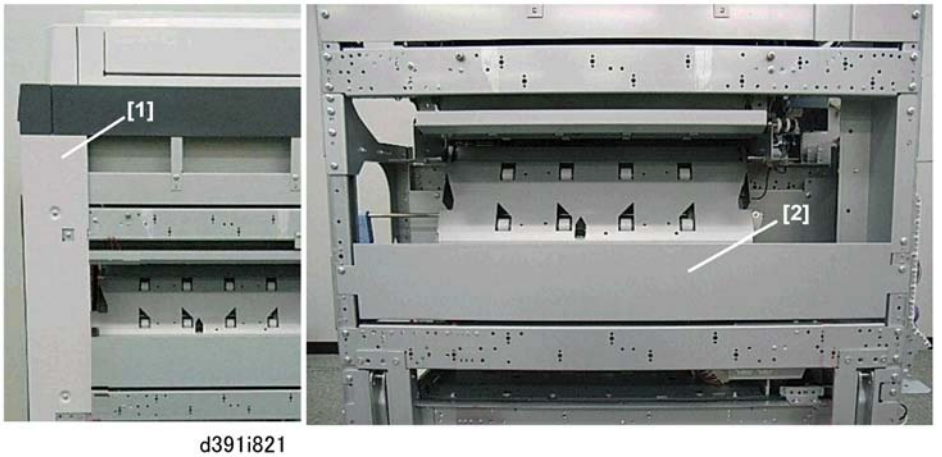
2. All of these items should be retained. Some of these items must be reattached if the bookbinder is moved to a new location. For more details, please refer to "Preparing the Bookbinder for Moving".

Check List

Confirm that the following parts have been reinstalled:

d391i820

[1] Left flat panel



d391i821

[1] Right corner cover

[2] Delivery bracket

d391i822

[1] Front inner cover (upper)

[2] Front inner cover (lower)

[3] Knob **Mk10**

d391i823

[1] Rear cover (upper)

[2] Rear cover (lower)

Important

- **To protect the boards from damage due to accidental short circuiting as result of contact with a metal tool, the rear lower cover should never remain off longer than necessary.**

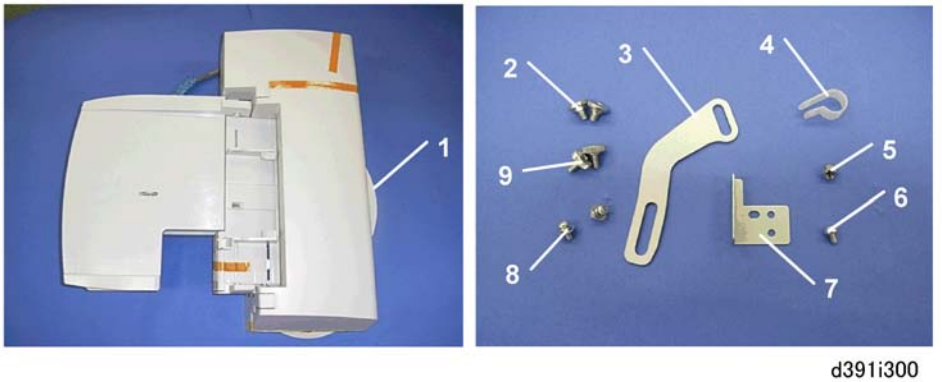
Inserter-C1 (D391-18) Installation

1

Inserter Accessories

Check the accessories and their quantities against this list.

No.	Description	Q'ty
1.	Inserter Unit	1
2.	Shoulder Screws (M5)	2
3.	Limiter Brace	1
4.	Clamp	1
5.	Cap Nut	1
6.	Screw (M4x7)	1
7.	Brace	1
8.	Screws (M4x8)	2
9.	Hinge Lock Screws (M4)	2

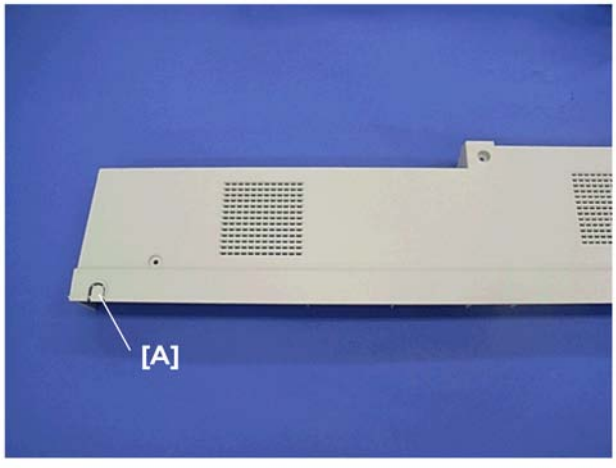


d391i300

Inserter Installation

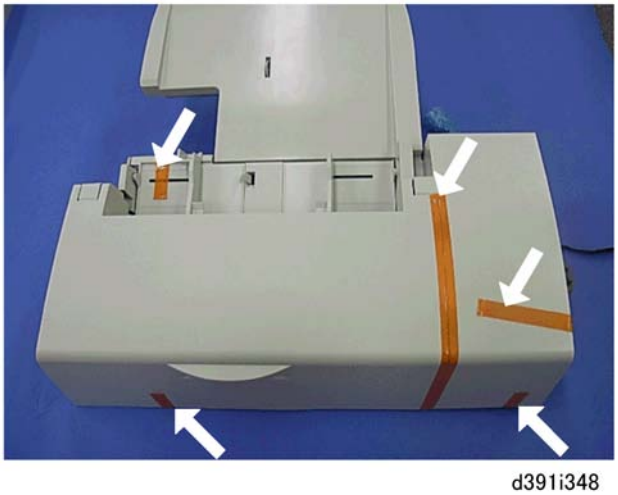
Mounting the Inserter

Bookbinder Rear Upper Cover



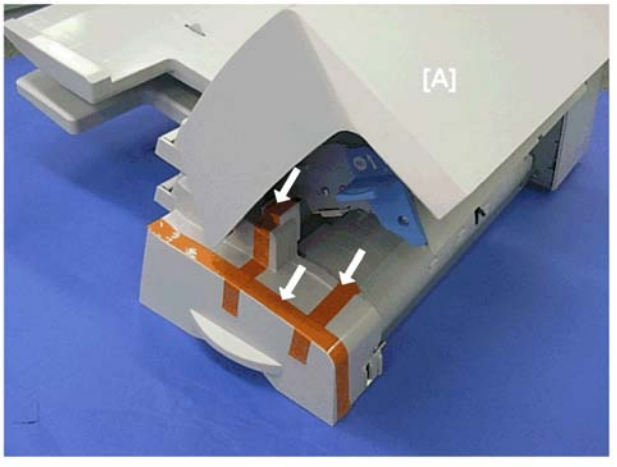
d391i347

1. Use a pair of nippers to remove the knockout [A] covering the interface cable hole.
2. Smooth the edges of the hole with a knife or file to prevent damage to the interface cable.



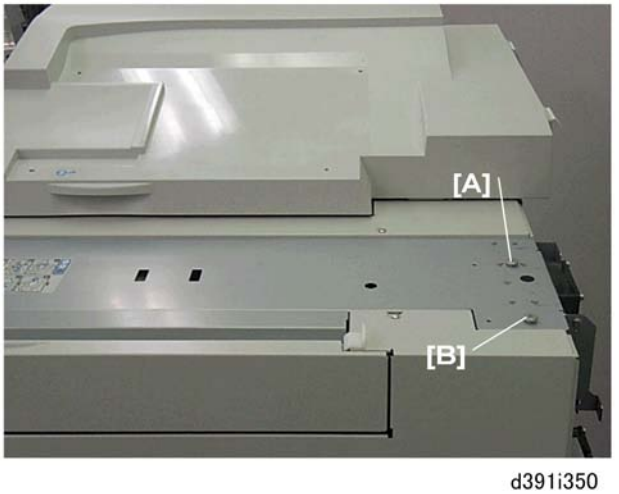
d391i348

3. Remove all visible strips of tape and cushions from the top and sides.



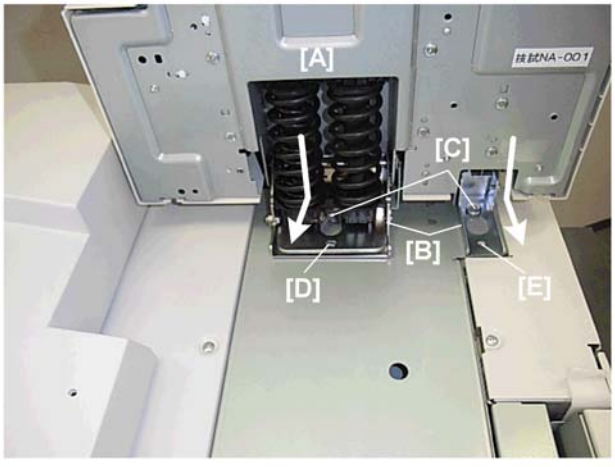
d391i349

4. Open the top cover [A], as well as strips of tape and cushion.



d391i350

5. Attach the shoulder screws [A] and [B] (x2: M4)



d391i351

6. Hold the inserter [A] behind the bookbinder.
7. Set the keyholes of the hinge plates [B] over the heads of the shoulder screws [C].
8. Slide the inserter forward so the hinge plates slide under the heads of the shoulder screws.
9. Secure the hinges with the hinge screws [D] and [E] (x2: M4).
10. Slowly lower the inserter onto the top of the bookbinder.
11. Confirm that positioning pins insert smoothly and completely into holes.

    If the positioning pin fits snugly in the hole, no adjustment is necessary.

    -or-

    If the pin does not insert completely into the hole, do the adjustment procedure described in the next section.

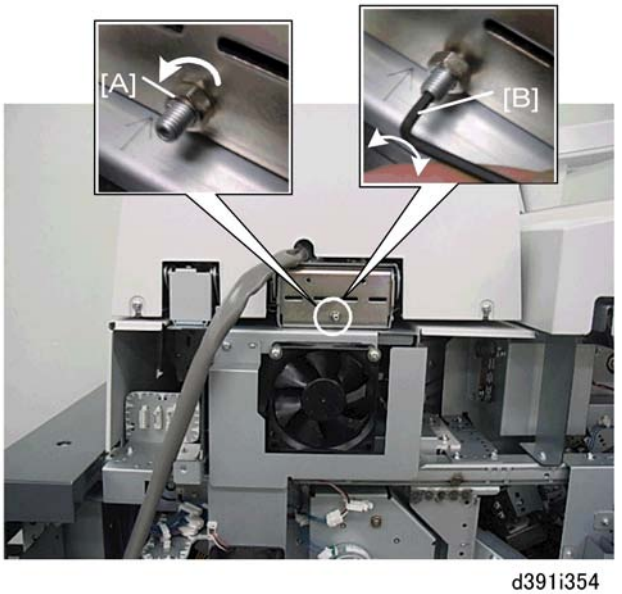
Adjusting the position of the hinge plate

This procedure is not required if the positioning pin slides freely in and out of the hole when the inserter top cover is lowered and raised. Do this procedure only if the pin does not move freely out and into the hole when the inserter top cover is raised and lowered.

1. Raise the inserter.

d391i353

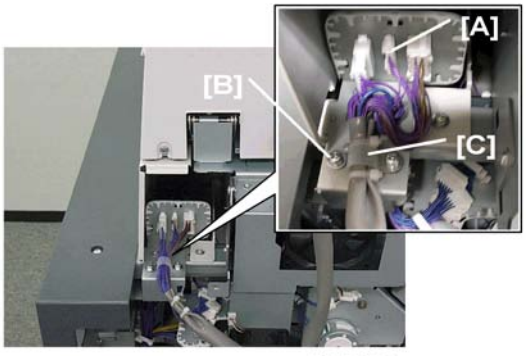
2. Loosen (do not remove) hinge screws [A] (x2: M4).



d391i354

3. Use a small wrench to loosen adjustment screw [A] (Do not remove!).
4. Insert a hex wrench (Allen key) [B] into the tip of the adjustment screw.
    - Rotating the screw clockwise moves the inserter to the right.
    - Rotating the screw counter-clockwise moves the inserter to the left.
5. Tighten the hinge screws (x2: M4).
6. Lower the inserter again to see if the positioning pin and hole fit snugly.
7. Repeat this procedure until the pin and hole engage and disengage completely and smoothly.

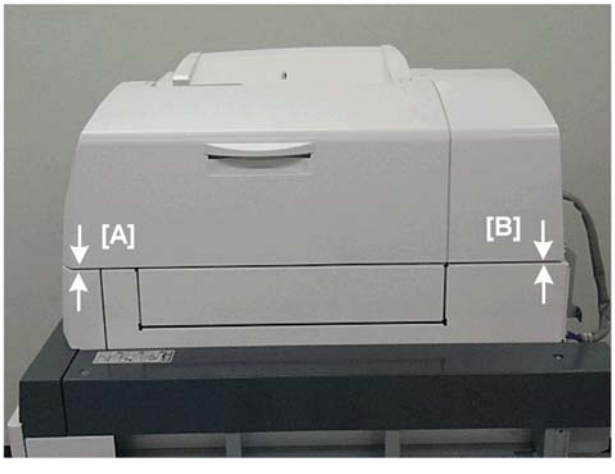
Connecting the Inserter



d391i355

1. Connect the inserter to the relay panel [A] (x3).
2. Fasten the ground wire [B] (x1: M4 x8).
3. Wrap the clamp [C] around the harnesses and ground wire.
4. Fasten the clamp (x1: M4 x8).

Inserter Gap Measurement



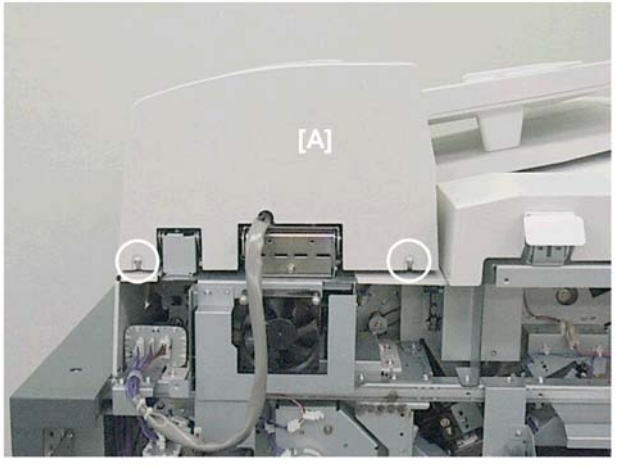
1. Measure the gap between the inserter and bookbinder at [A].
2. Measure the gap between the inserter and bookbinder at [B].
3. Calculate the difference between the two measurements.

If the difference between the measure gaps is less than 1 mm, no adjustment is necessary. Skip the next section.

-or-

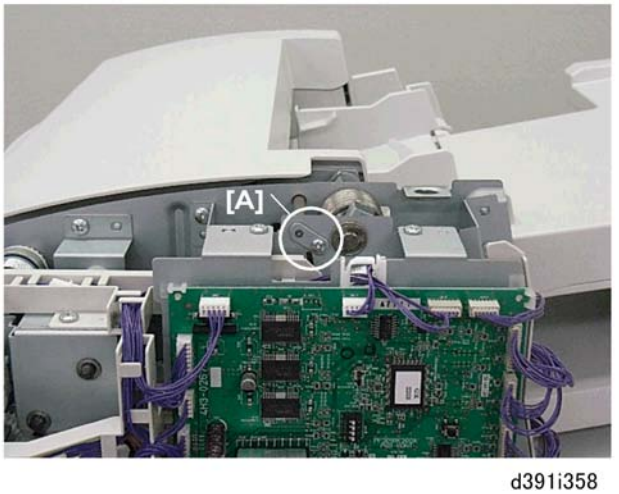
If the difference is more than 1 mm, you must go to the next section and adjust the height.

Inserter Gap Adjustment



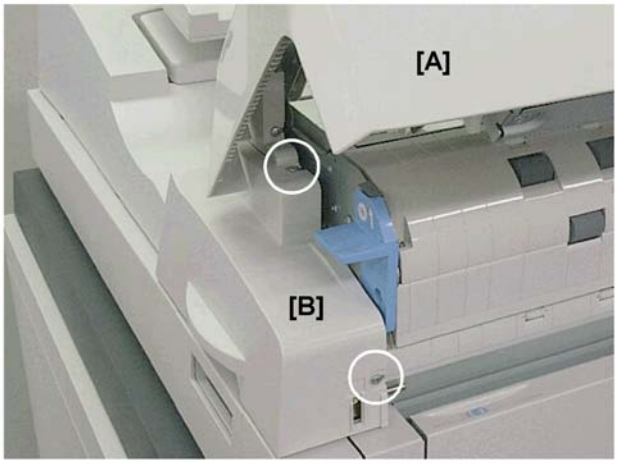
d391i357

1. Remove the inserter rear cover [A] (x2).



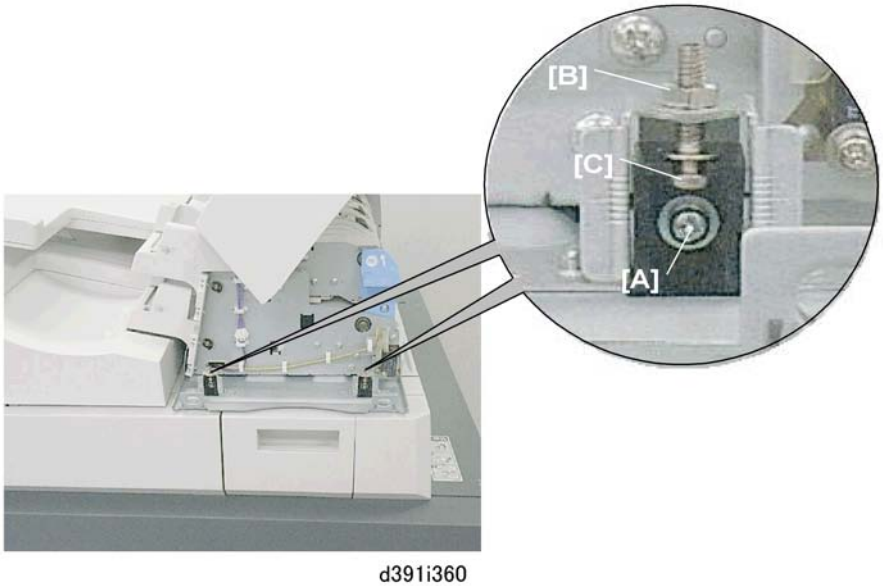
d391i358

2. Remove the top cover angle adjustment shaft [A] (x1).



d391i359

3. Open the top cover [A].
4. Remove the front cover [B] (x2).



d391i360

5. On the right side of the adjustment mechanism, loosen:

   [A] Screw

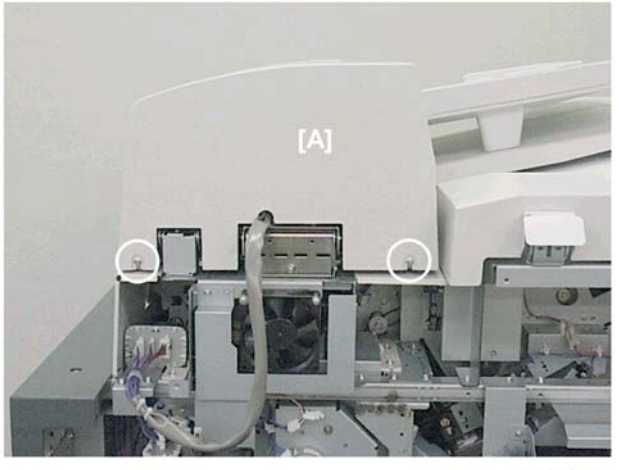
   [B] Hex nut

   - With a hex wrench turn adjustment screw [C] to adjust the gap by raising or lower the inserter.
   - Turning clockwise raises the inserter.
   - Turning counter-clockwise lowers the inserter

6. On the left side of the adjustment mechanism, adjust the height of the inserter on the left. (The procedure is the same as Step 5.)
7. Reattach:
    - Inserter front cover (x2)
    - Top cover angle adjustment shaft (x1)

Inserter Limiter Brace

The limiter brace limits the movement of the inserter unit when it is opened.

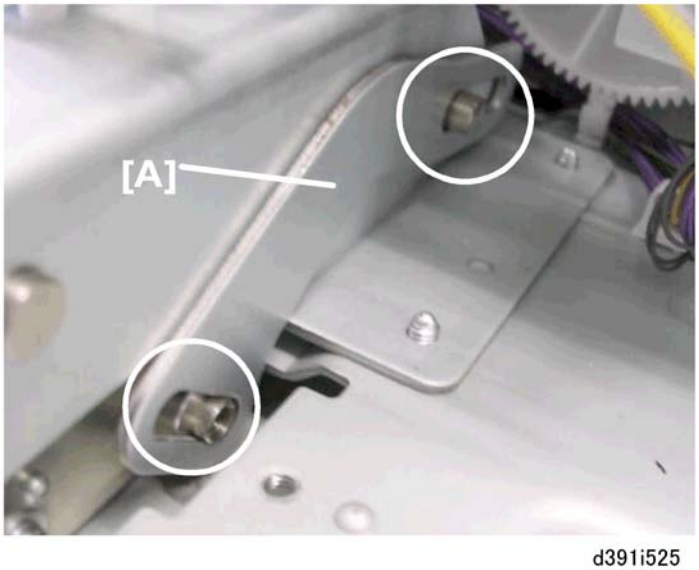


d391i357

1. If the rear cover [A] is attached, remove it (x2)

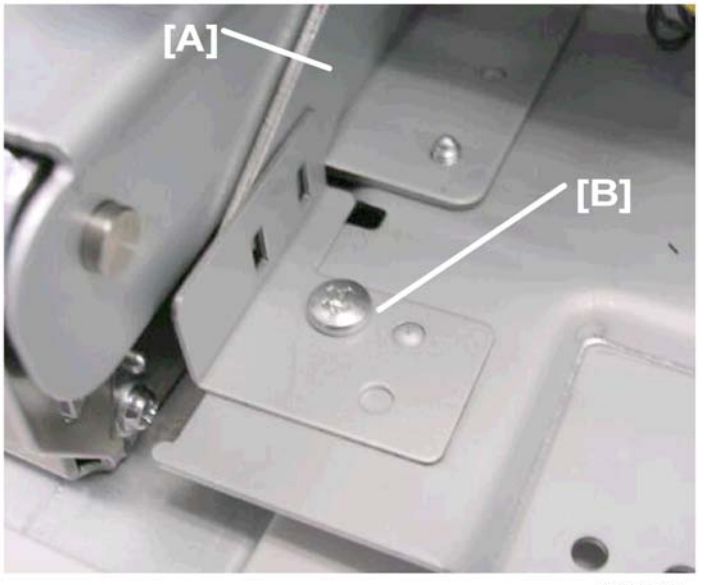
d391i524

2. Retrieve the items shown above from the relay unit accessories.



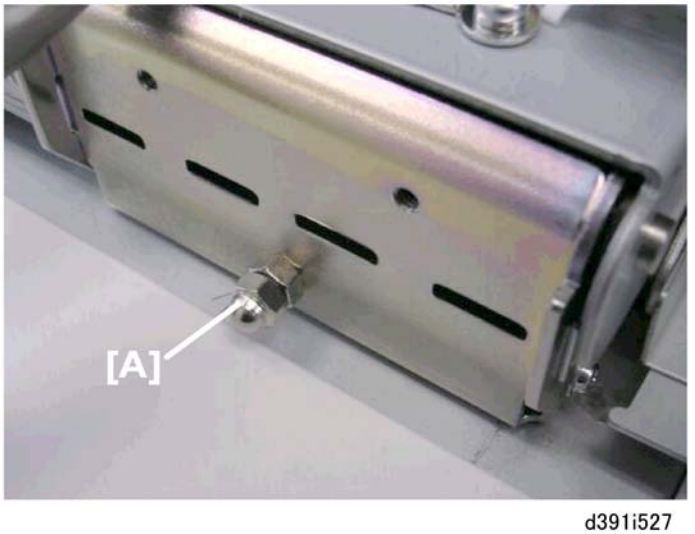
d391i525

3. Set the limiter brace [A] on the two posts (front and back).



d391i526

4. While holding the limiter brace [A] upright so it does not slip off its posts, attach brace [B] (x1). (Make sure that this screw is tight.)



d391i527

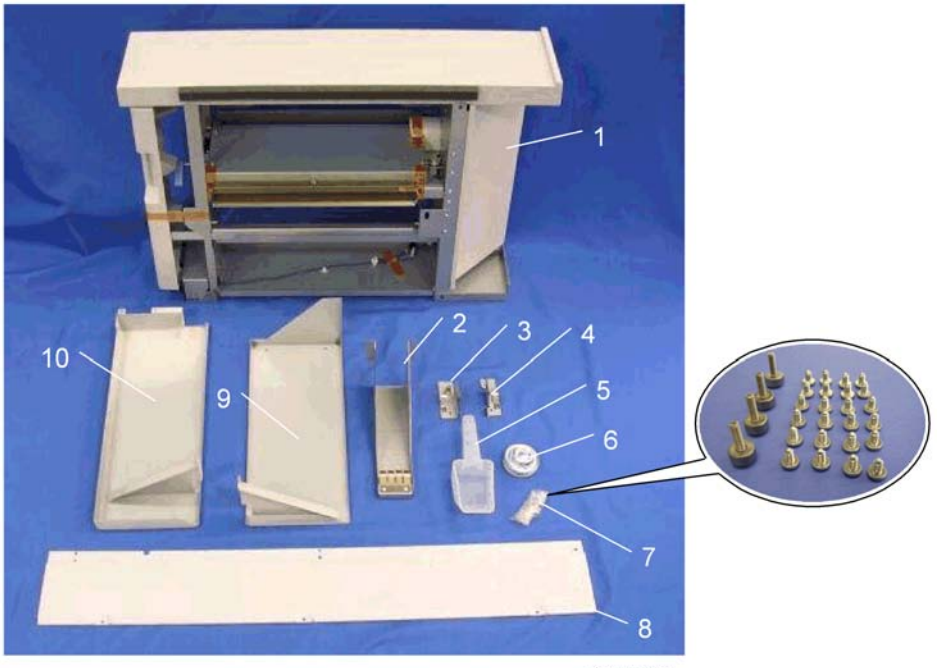
5. Attach cap nut [A] to the exposed threads of the screw.
6. Reattach the rear cover of the inserter (x2)

Transit Pass Unit (D391-19) Installation

Relay Unit Accessories

Check the accessories and their quantities against this list.

No.	Description	Q'ty
1.	Transit Pass Unit D391 (Relay Unit)	1
2.	Ground Plate	1
3.	Joint Bracket (Left)	1
4.	Joint Bracket (Right)	1
5.	Scoop (for loading glue pellets)	1
6.	Shoe Plates (for host machine)	4
7.	Screws	28
8.	Cover (Left: Rear for host machine)	1
9.	Front Cover (for relay unit)	1
10.	Rear Cover (for relay unit)	1



d391i501

Relay Unit Installation

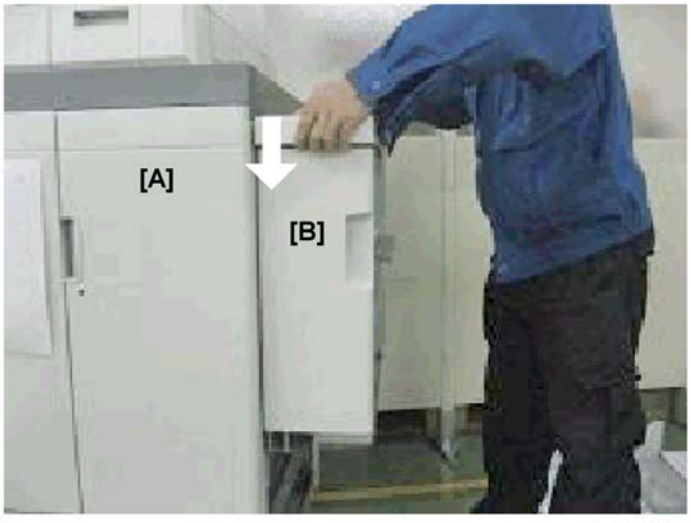
d391i502

1. From the relay unit remove:

   [A] Strips of tape x2

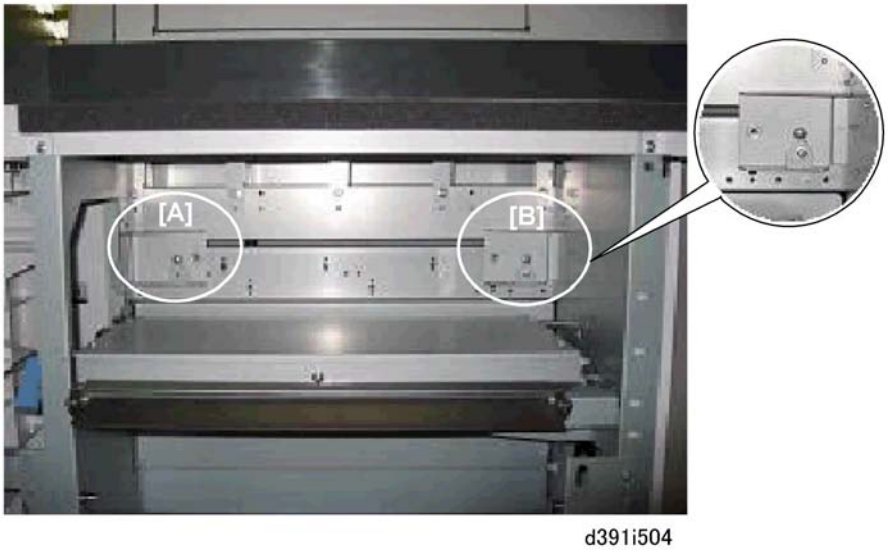
[B] Strips of tape x3, cushion x1

[C] Tape x1



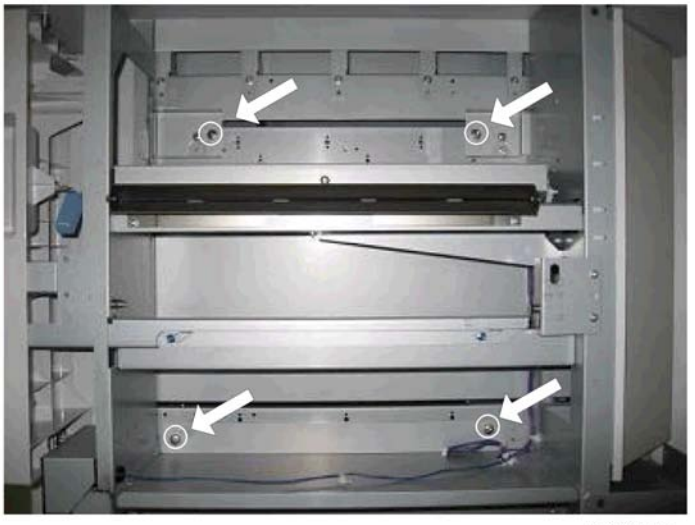
d391i503

2. On the right side of the host machine [A], lower the relay unit [B] onto the two shoulder screws (front and rear).



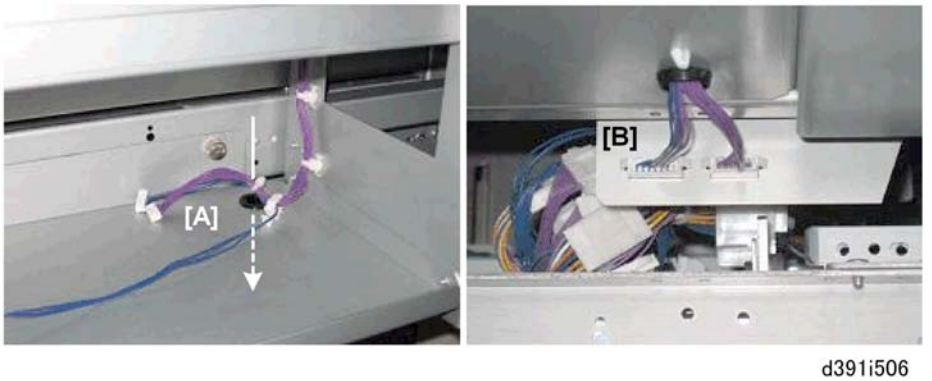
d391i504

3. Confirm that the slots on the left side of the relay unit are both hooked correctly on the heads of the shoulder screws [A] and [B].



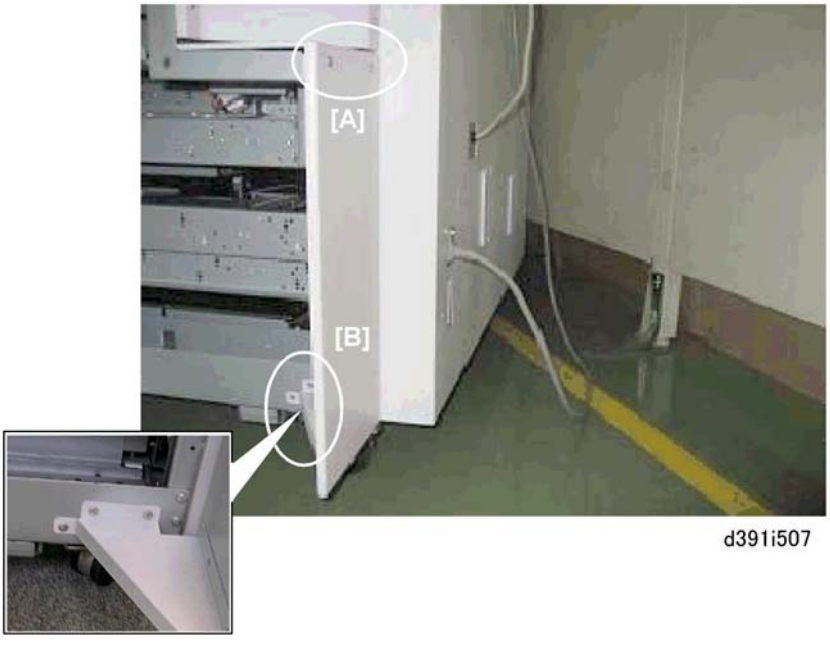
d391i505

4. Use the accessory screws (long, knurled heads) to fasten the relay unit to the side of the host machine (x4).



d391i506

5. Route the two relay unit harnesses through the grommet and hole [A].
6. Attach the harnesses at [B] below.



d391i507

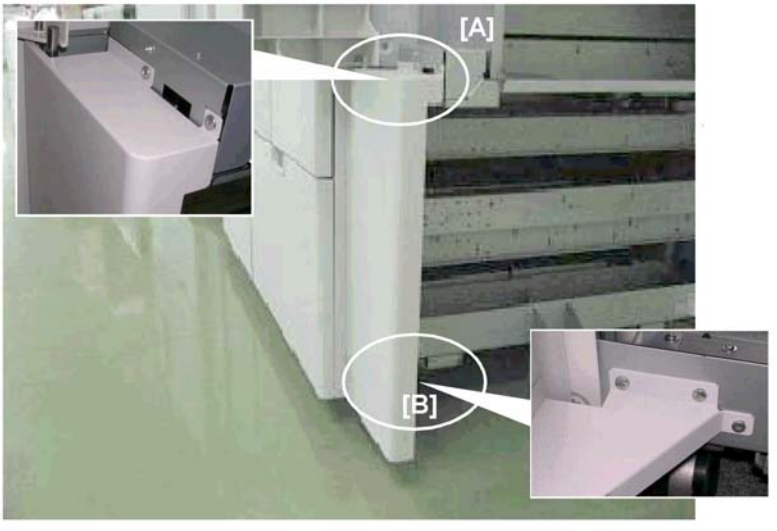
7. Attach the rear cover to the relay unit.

   [A] x2

   [B] x3

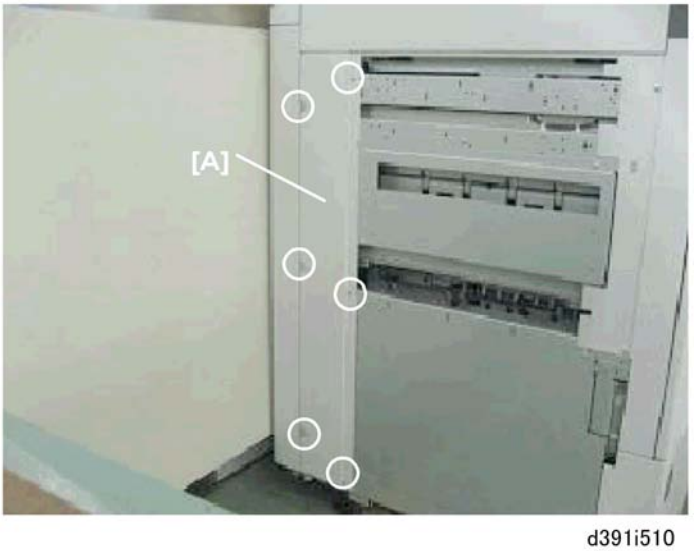
d391i509

8. Attach the ground plate [A] (x4)



d391i508

9. Attach the front cover to the relay unit.
   [A] x2
   [B] x3

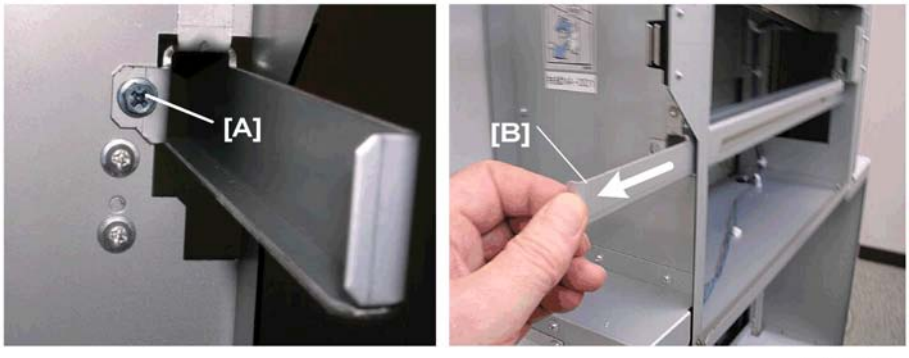


d391i510

10. At the left rear corner of the host machine, attach the cover [A] (x6).

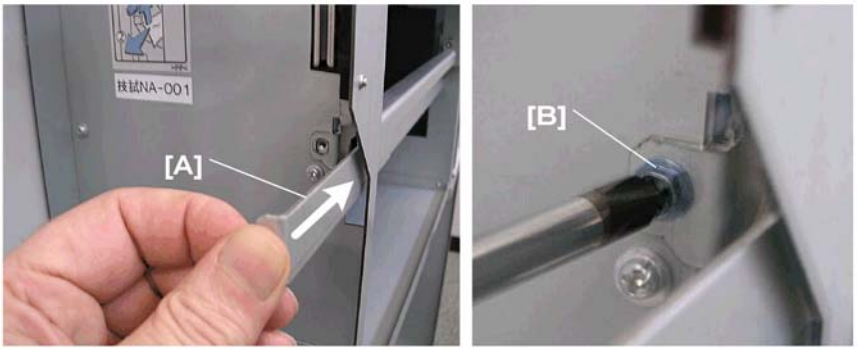
d391i513

11. On the right side of the host machine, attach:
    [A] Left joint bracket ("L") (x2)
    [B] Right joint bracket ("R") (x2)



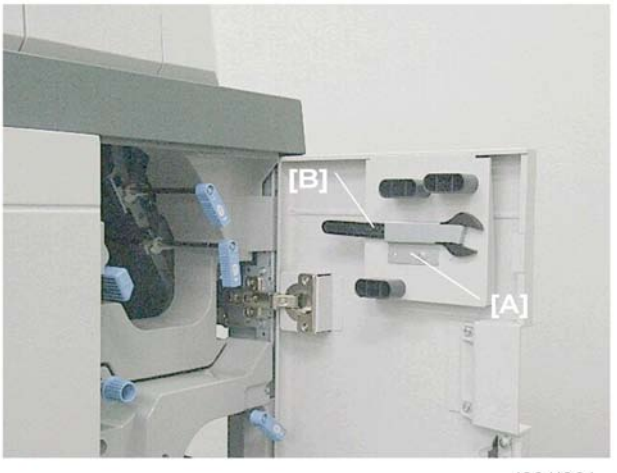
d391i518

12. Open the front door of the relay unit.
13. Remove screw [A].
14. Pull the lock bar [B] out to lower it.
15. Slowly push the bookbinder against the side of the host machine.



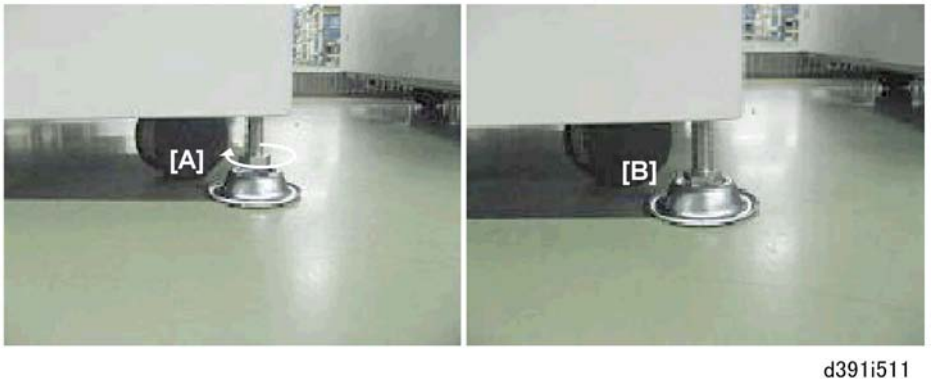
d391i519

16. Push in lock bar [A] to raise it and lock it in the cutouts of the joint brackets attached to the host machine.
17. Reattach screw [B] to fasten the lock bar in the raised position.



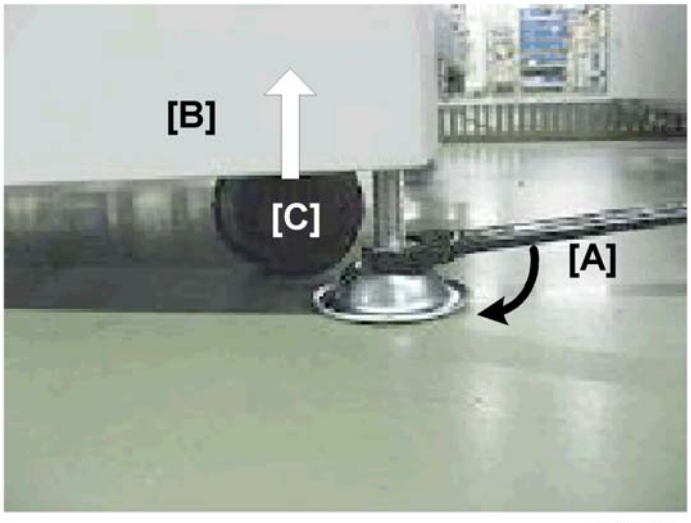
d391i361

18. Remove the brace [A] from the right front door of the bookbinder. (x1)
19. Remove wrench [B].



d391i511

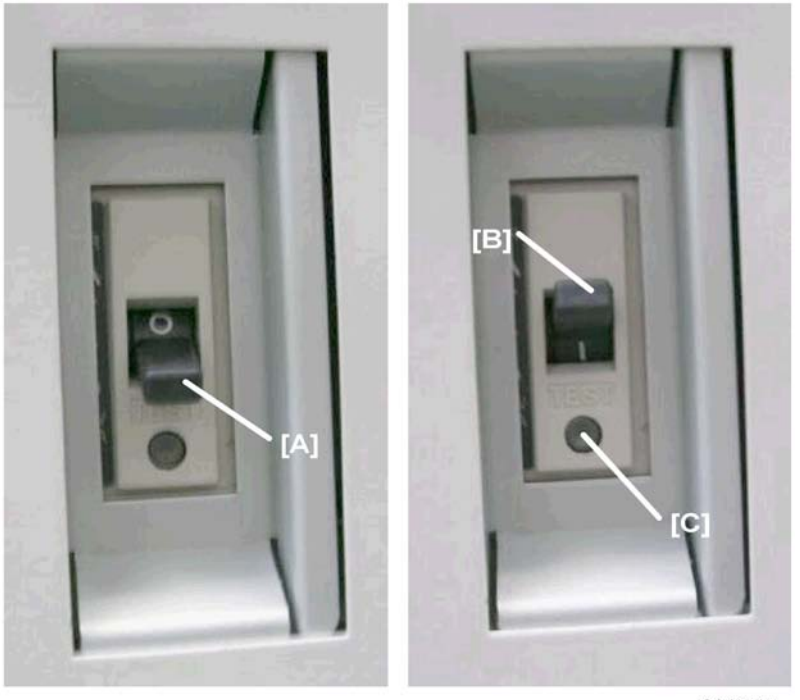
20. Place a shoe [A] under the stoppers at each corner of the bookbinder.
21. Use your fingers (or the wrench) to turn the nut in the direction of the arrow until the nut stops on top of the shoe.



d391i512

22. At each corner use the wrench [A] to turn the nut in the direction of the arrow to raise the bookbinder [B] until the caster [C] raises off the floor.
23. Place a level on the top edge of the front and right edge of the machine to confirm that the bookbinder is level.
24. Adjust the corner stoppers until the machine is level.
25. Connect the bookbinder interface cable to the host machine.

Testing the Breaker Switch



1. Turn off the host machine.

   Important

   - **The power supply to the bookbinder must be off.**

2. Plug the bookbinder power cord into its power source.
3. Locate the breaker switch [A] at the right lower corner of the machine below the power cord.
4. Raise the breaker switch [B] so you can see the "|" under the switch. This is the ON position. (Ignore this step if the breaker switch is already at the "|" position.)
5. Use the tip of a small screwdriver to push the breaker test button [C].

   The breaker switch should flip to the "O" (OFF) position. This indicates that the breaker switch is operating normally.

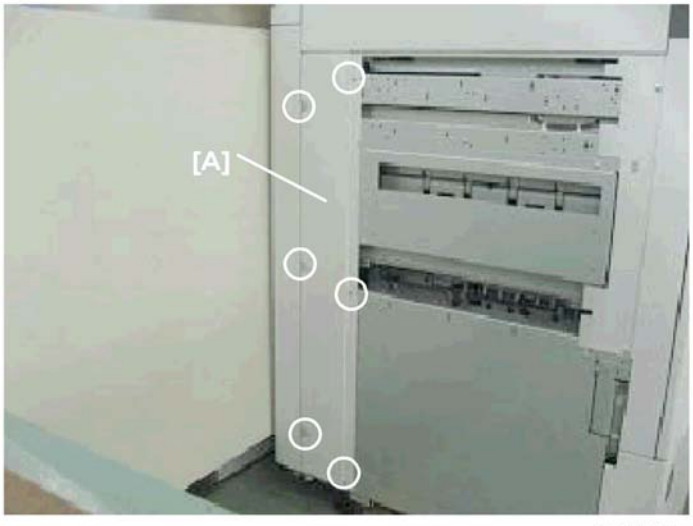
   If the breaker switch does not flip to the "O" position, the switch must be replaced.
6. Reset the switch to the "|" (ON) position for normal operation.

   Important

   - **The bookbinder will not turn on if the breaker switch is not reset to the "|" position.**

Docking, Completing the Installation

Docking the Bookbinder



d391i510

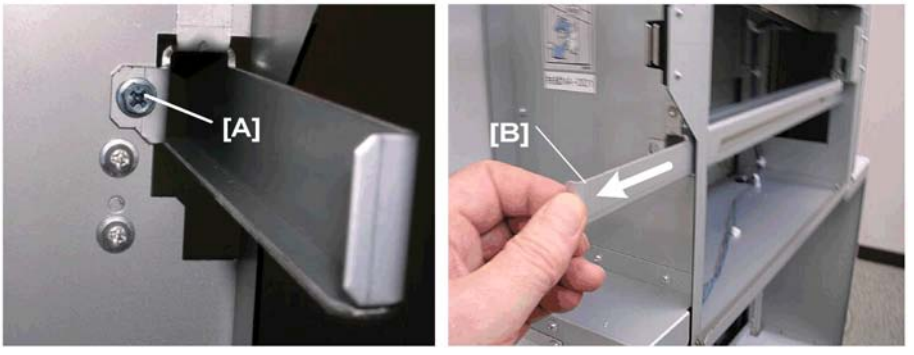
1. At the left rear corner of the host machine, confirm that cover [A] has been reattached (x6).

d391i513

2. On the right side of the host machine, attach:

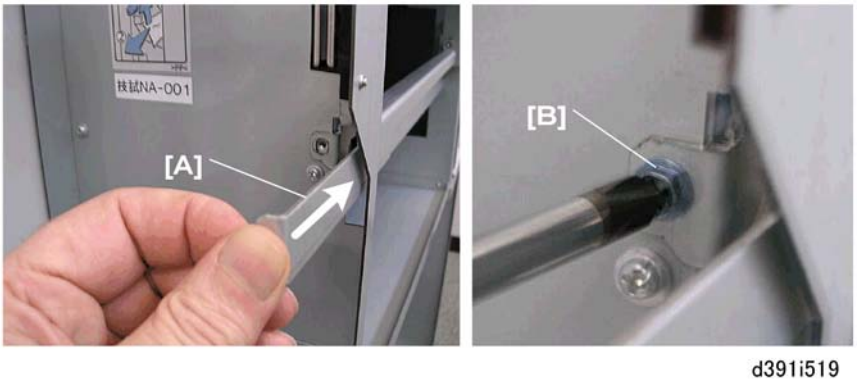
   [A] Left joint bracket ("L") (x2)

   [B] Right joint bracket ("R") (x2)



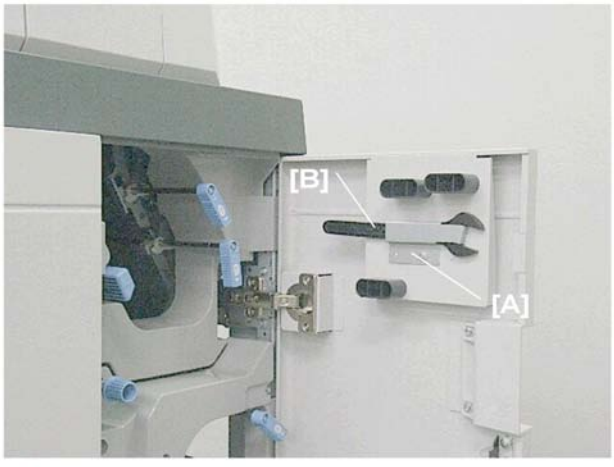
d391i518

3. Open the front door of the relay unit.
4. Remove screw [A].
5. Pull the lock bar [B] out to lower it.
6. Slowly push the bookbinder against the side of the host machine.



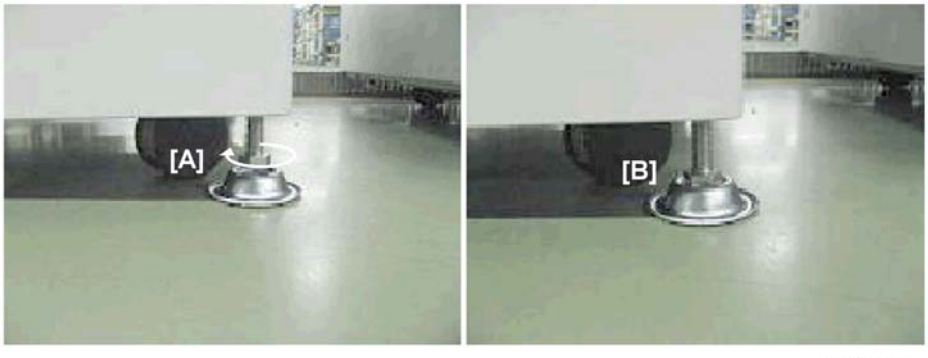
d391i519

7. Push in lock bar [A] to raise it and lock it in the cutouts of the joint brackets attached to the host machine.
8. Reattach screw [B] to fasten the lock bar in the raised position.



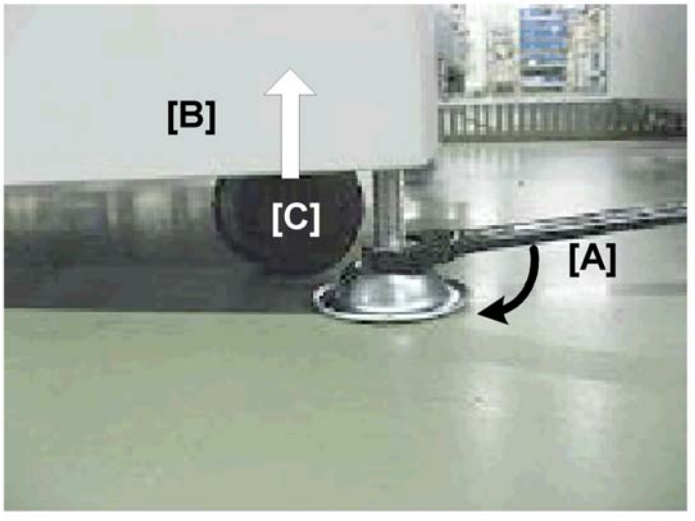
d391i361

9. Remove the brace [A] from the right front door of the bookbinder. (x1)
10. Remove wrench [B].



d391i511

11. Place a shoe [A] under the stoppers at each corner of the bookbinder.
12. Use your fingers (or the wrench) to turn the nut in the direction of the arrow until the nut stops on top of the shoe.



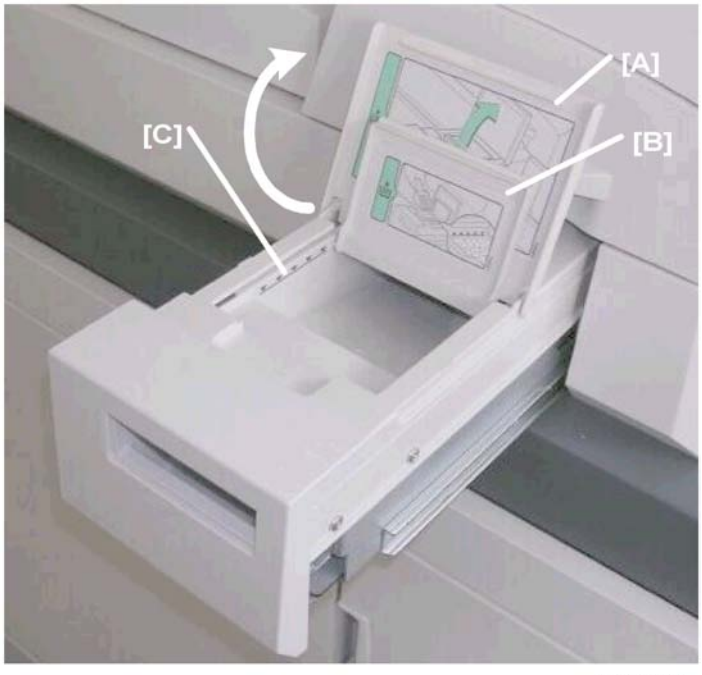
d391i512

13. At each corner use the wrench [A] to turn the nut in the direction of the arrow to raise the bookbinder [B] until the caster [C] raises off the floor.
14. Place a level on the top edge of the front and right edge of the machine to confirm that the bookbinder is level.
15. Adjust the corner stoppers until the machine is level.
16. Connect the bookbinder interface cable to the host machine.

Filling Bookbinder Glue Supply Unit

d391i514

1. Pull out the glue supply drawer until it stops.



d391i515

2. Raise the two covers [A] and [B].
3. Note the load limit marks [C] inside the drawer on both sides.

d391i156

4. Use the scoop [A] to fill the bin with glue pellets as far as the load limit marks on both sides of the drawer.

   Important

   - **Two scoops (about 380 g each) should be sufficient.**

5. Close both covers.
6. Push in the glue supply drawer.

Handling and Storing the Glue Pellet Supply

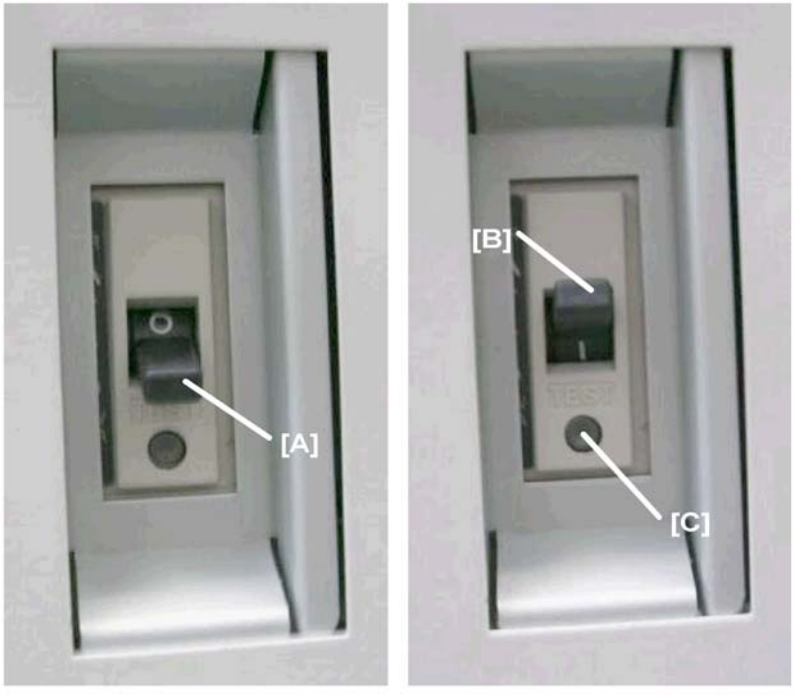
Exercise precaution when choosing a location for storing the glue pellets.

- Store the pellets where they will not be exposed to direct sunlight.
- The storage location should be within this temperature range: -20°C to 40°C.
- Never expose pellets to direct flame.
- Keep the pellets out of the reach of small children. If pellets are accidentally ingested, contact a physician immediately.
- Never dispose of pellets by incinerating them. Obey local laws and regulations that restrict disposal of such items.

When using the glue pellets:

- Use only glue pellets recommended for use with this bookbinder.
- Before the start of a job, press the glue warm-up button on the right front corner of the bookbinder to start heating the glue.
- Never fill the glue pellet supply drawer higher than the load limit marks shown on both sides of the drawer.

Testing the Breaker Switch



d391i517

1. Turn off the host machine.

   Important

   - **The power supply to the bookbinder must be off.**

2. Plug the bookbinder power cord into its power source.
3. Locate the breaker switch [A] at the right lower corner of the machine below the power cord.
4. Raise the breaker switch [B] so you can see the "|" under the switch. This is the ON position. (Ignore this step if the breaker switch is already at the "|" position.)
5. Use the tip of a small screwdriver to push the breaker test button [C].

   The breaker switch should flip to the "O" (OFF) position. This indicates that the breaker switch is operating normally.

   If the breaker switch does not flip to the "O" position, the switch must be replaced.
6. Reset the switch to the "|" (ON) position for normal operation.

   Important

   - **The bookbinder will not turn on if the breaker switch is not reset to the "|" position.**

Final Check

1. Connect the power cord of the copier to its power source.
2. Connect the power cord of the bookbinder to its power source.
3. Turn on the host machine.

Preparing the Bookbinder for Moving

This section describes which braces should be reattached to the bookbinder before it is moved to another location.

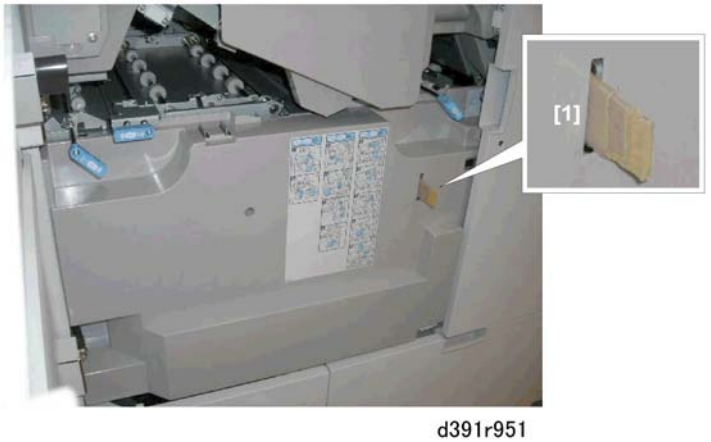
Setting the Bookbinder for Moving

Do this procedure to move the internal units to their home positions before moving the machine.

Important

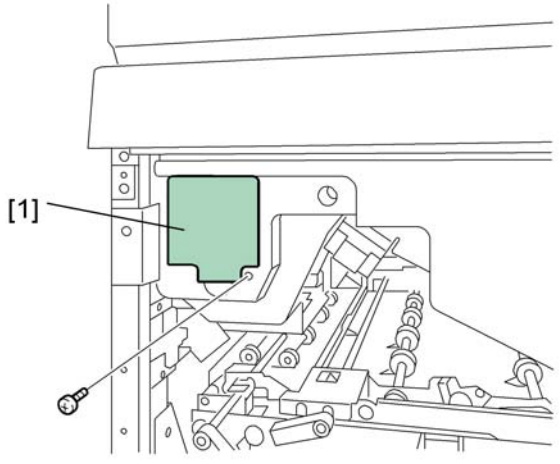
- **This procedure must be done before reattaching any braces to the perfect binder.**

1. Switch the host machine off.
2. Open the right and left front door.
3. Close the right door.

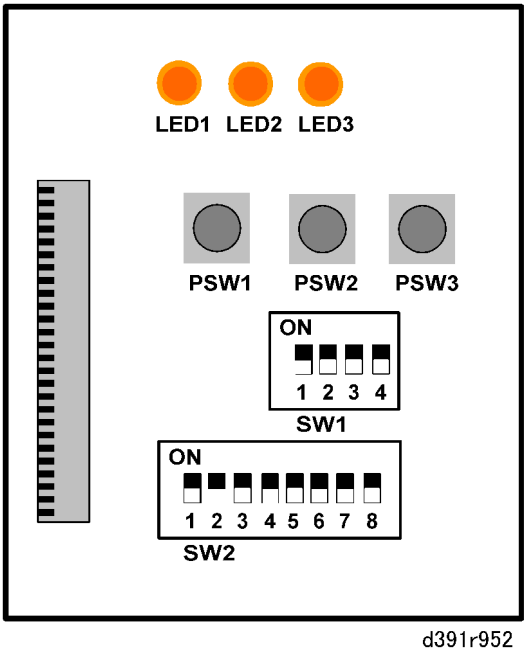


d391r951

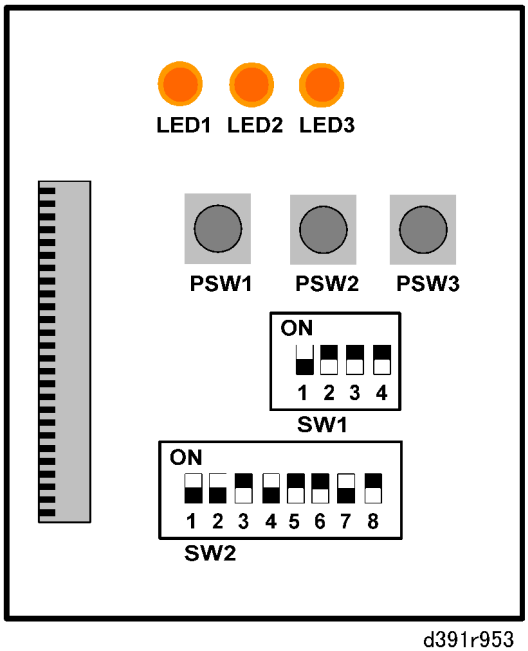
4. Insert piece of cardboard or folded piece of paper into the slot [1] of the left door switch.



5. Remove the service board cover [1] (x1).



6. On the SW1 bank set DIP SW1 to ON.
7. On the SW2 bank set DIP SWs 1, 2, 4, 7 to ON.



8. Turn the host machine on.

⚠CAUTION

- Wait about 30 sec.
- Make sure that you hands and tools are well clear of the parts inside the machine.

9. Slowly push [PSW1] 11 times.
   - Each push on the [PSW1] moves a unit to its shipping position (see table below).
   - After each push LED2 flashes until the task has been completed. Wait for LED2 to go off before you press [PSW1] again.

No.	Operation	Target Unit
1	• Moves the blade cradle to its initial position. • Moves the signature press blade to its END position. • Moves inside the trimming unit. • Opens the rotation guide plate. • Lowers the slide to mechanical stopper.	Trimming Unit (This requires more time. Wait for LED2 to go OFF before pressing [PSW1] again.
2	Closes the rotation guide plate.	Cutter Rotation Unit
3	Moves the trimmings buffer into the machine.	Trimmings Unit Cutter
4	Lowers the sub gripper, signature gripper.	Sub Grip Unit

No.	Operation	Target Unit
5	Lowers the stacking tray.	Stacking Tray
6	Retracts the right and left cover path guide plates.	Cover Unit
7	Opens the spine fold plate (movable side only)	Cover Unit
8	Closes the right and left cover path guide plates.	Cover Unit
9	Rotates the main gripper.	Main Grip Unit
10	Lowers the main gripper.	Main Grip Unit
11	Closes the main gripper.	Main Grip Unit

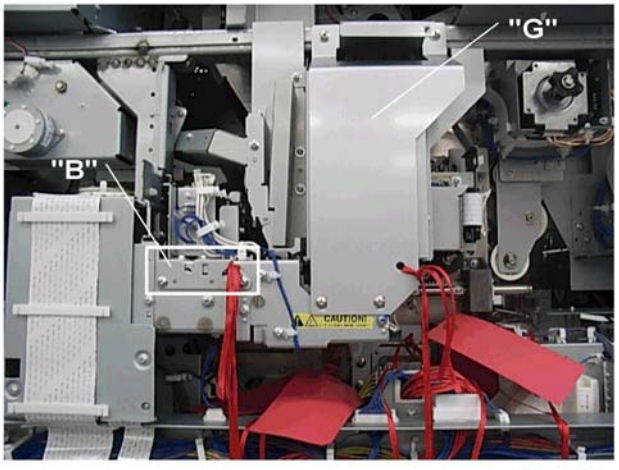
- All three LEDs on the Service Board light after all units have been moved to their shipping positions.

10. Set all the SW1 and SW2 DIP SWs to the down positions.
11. Switch off the host machine.
12. After moving the machine to its new location:
    - Remove any shipping brackets that have been reattached.
    - Connect and turn on the book binder. The internal units will automatically move to their start positions.

Same Floor

If the bookbinder will be moved to another location on the same floor where there are few bumps or ridges (cable protectors, for example), reattach the braces at two locations to stabilize the gluing unit and sub grip unit.

Gluing Unit



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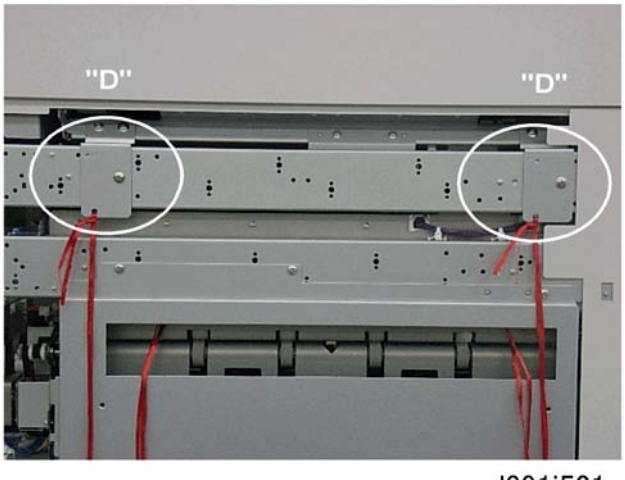
Brace	Quantity
Brace "B" (x4)	1
Brace "G" (x4)	1

Sub Grip Unit



d391i521

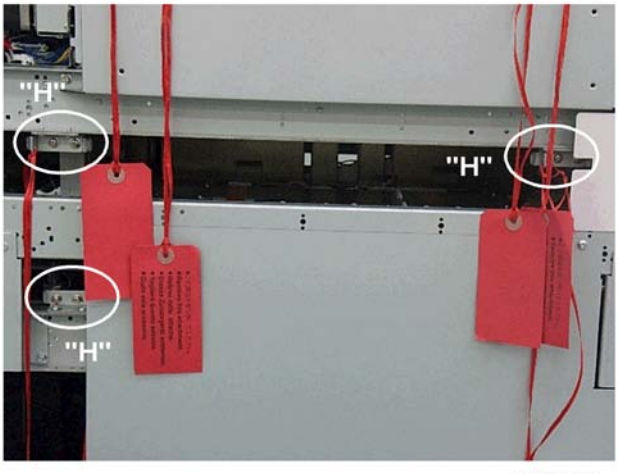
Brace	Quantity
Braces "D" (x3 ea.)	2

1

Another Floor (by Elevator)

If the bookbinder will be moved by elevator to a different floor in the same building attach the braces to stabilize the gluing unit, sub grip unit (described above) and the two additional locations described below.

Left Side (Paper Exit)



d391i522

Brace	Quantity
Braces "H" (x2 ea.)	3

Right Side (Paper Entrance)

d391i523

Brace	Quantity
Brace "H" (x2)	1

Shipping the Bookbinder

Follow the installation instructions in reverse and reattach as many of the braces and cushions as possible.

- Use the Service Board DIP SWs to set the components inside the machine to their correct moving positions before you reattach any braces. (See procedure above.)
- Make sure the braces are fastened with their screws and clearly marked for removal with the original red tags (or improvised tags).
- Do not turn on the bookbinder until you have confirmed that all braces have been removed.
- The book binder is extremely heavy. At least four persons will be needed to move the bookbinder onto its pallet.

2. Preventive Maintenance

PM Tables

For details about "PM Tables" for this peripheral, see the main service manual.

3. Replacement and Adjustment

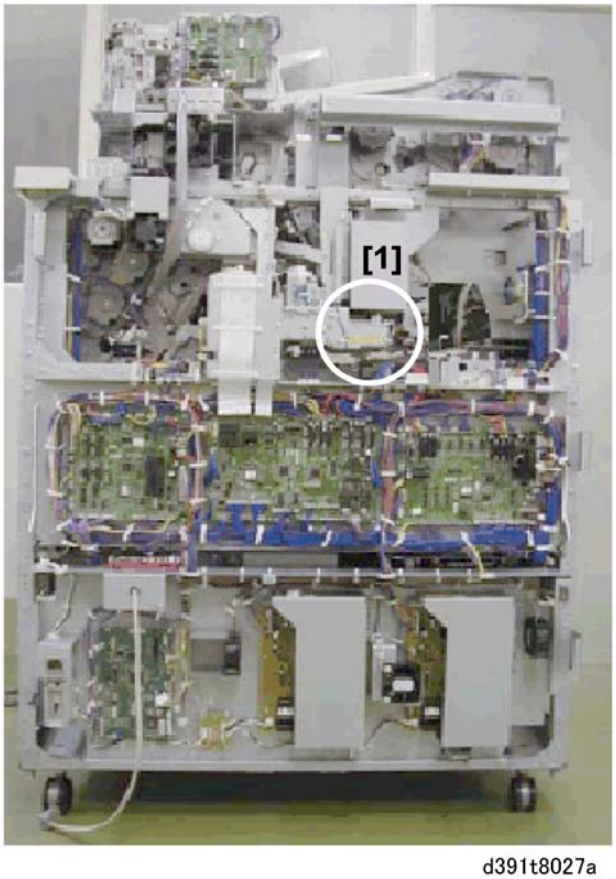
Basics

Parts Dangerous to Touch

This section points out some areas inside the machine where you should exercise extra precaution when working around the machine with the covers off.

Covers Off

Rear



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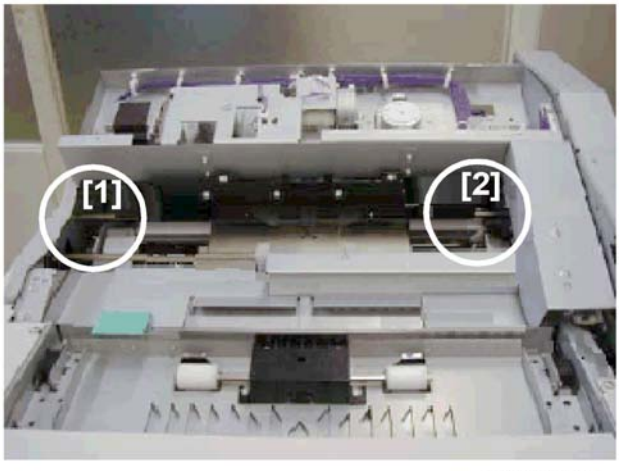
[1]	Gluing Unit

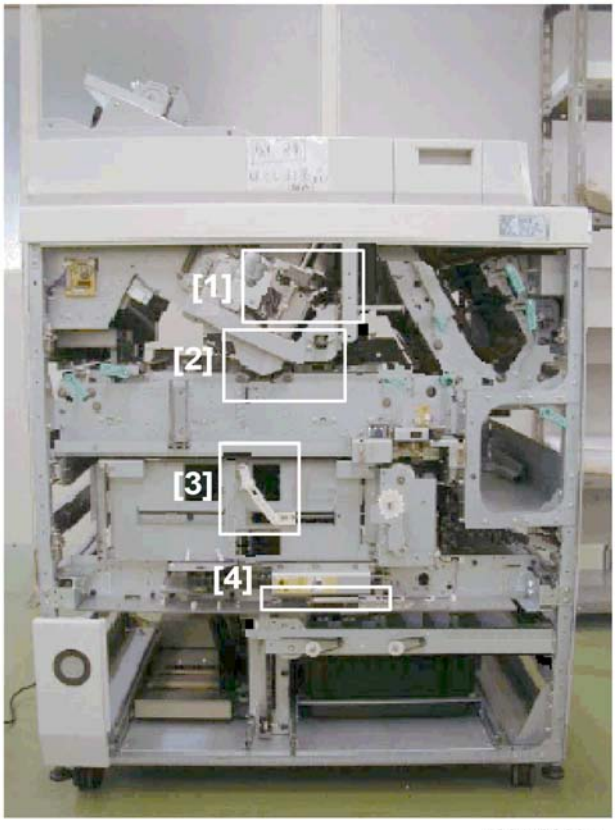
Top



d391t8027b

[1]	Sub Grip Area (Front)
[2]	Sub Grip Area (Rear)

Front



d391t8028a

[1]	Main Grip Unit
[2]	Spine Plates
[3]	Gripper
[4]	Blade

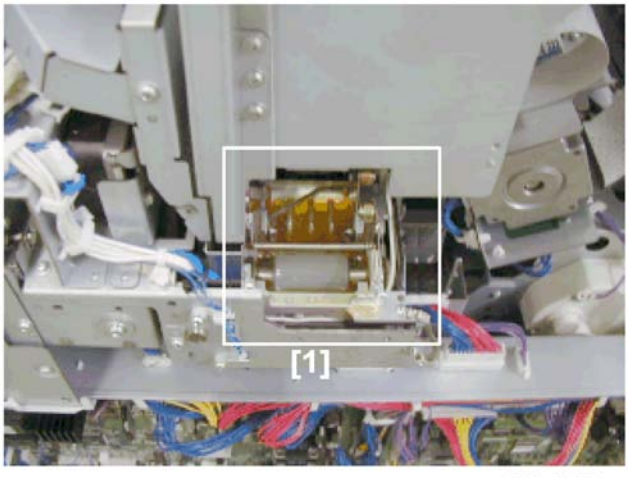
Gluing Unit

The gluing unit becomes extremely hot to keep the glue melted and ready for use. The glue and gluing unit remain hot for several minutes after the bookbinder is turned off.

- Always allow the gluing unit to cool for a few minutes before removing the cover.

- After removing the covers, touch the gluing unit only when necessary and only after it has cooled completely.

Gluing Unit



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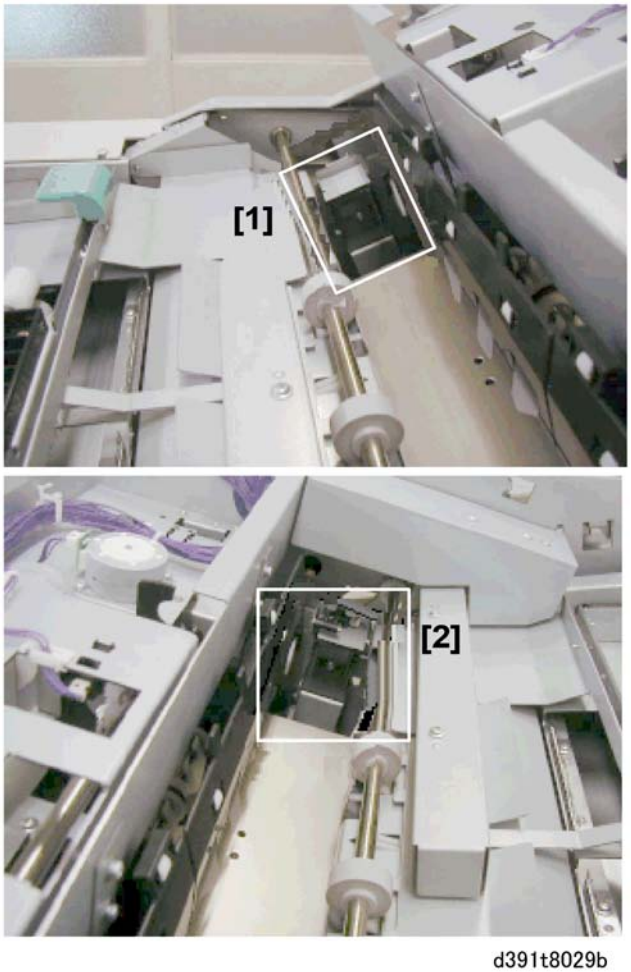
[1]	Gluing Unit

The illustration shows the glue vat with the top cover removed.

Sub Grip Unit: Front and Back

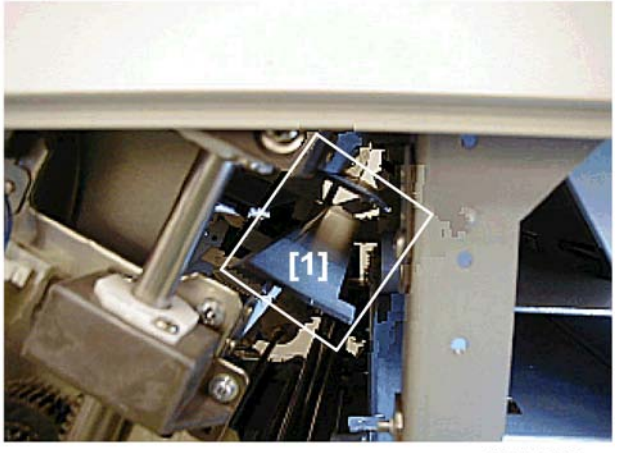


d391t8029b

⚠CAUTION

- Never put your fingers or a tool in or near the exposed areas of the sub grip unit at the front [1] or at the rear [2] while the bookbinder is powered on.

Main Grip Unit at Signature Turnover (from Sub Grip Unit)

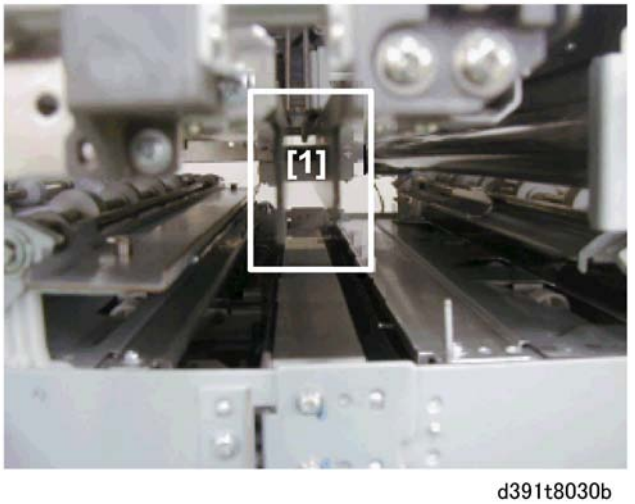


d391t8030a

⚠CAUTION

- Never put your fingers or a tool in or near the exposed areas of the main grip unit at [1] while the bookbinder is powered on.

Main Grip Unit at Turnover to Trimming Unit After Gluing

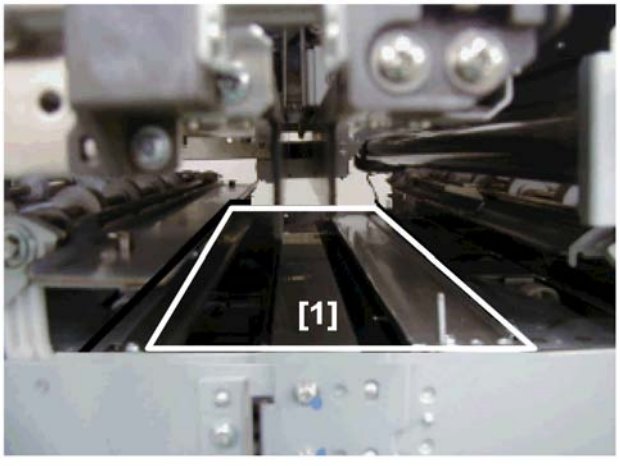


d391t8030b

⚠CAUTION

- Never put your fingers or a tool in or near the exposed areas of the main grip unit at [1] while the bookbinder is powered on.

Spine Fold Plate



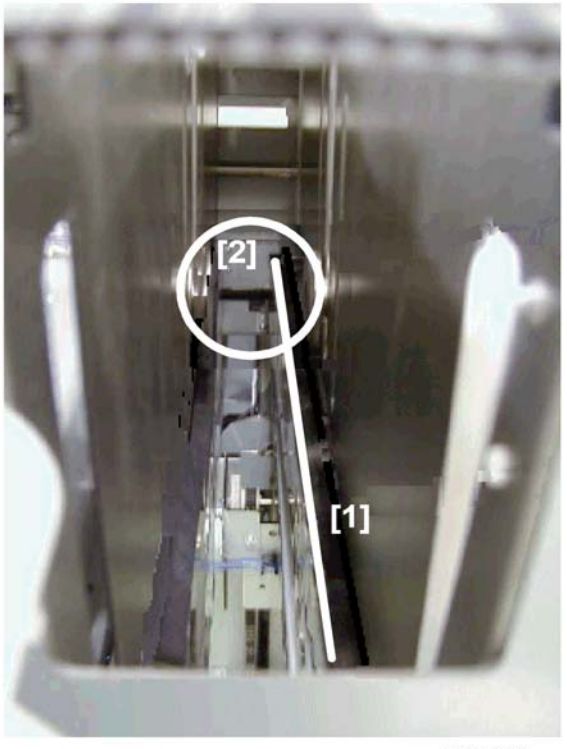
d391t8030c

⚠CAUTION

- Never put your fingers or a tool in or near the exposed areas of the spine plates at [1] while the bookbinder is powered on.

Trimming Unit

Gripper and Press Plate



d391t8031a

⚠CAUTION

- Never put your fingers or a tool in or near the exposed areas of the press plates at [1] or gripper at [2] while the bookbinder is powered on.

Blade at Retracted Position

d391t8031b

⚠CAUTION

- The blade is extremely sharp. Never touch the edge of the blade [1]. Always work carefully where the blade is exposed.

Using the Dials

Gluing Unit

The gluing unit is equipped with two dials that are used to raise and lower the stacking tray and the main grip unit.

Stacking Tray Lift Dial

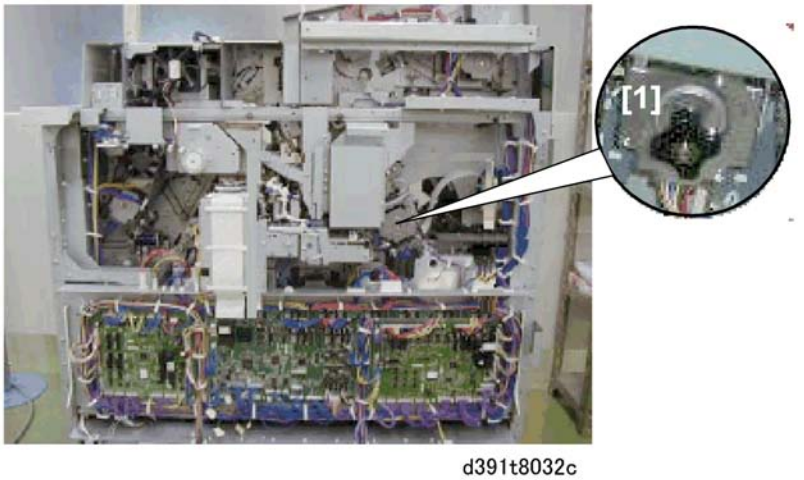
d391t8032b

The photo above shows the stacking tray lift dial [1] viewed from the rear of the bookbinder.

- Turn this dial clockwise to lower the stacking tray.
- Turn this dial counter-clockwise to raise the stacking tray.

.

Main Grip Unit Lift Dial



d391t8032c

The photo above shows the main grip lift dial [1] viewed from the rear of the bookbinder.

- Turn this dial clockwise to raise the grip unit
- Turn this dial counter-clockwise to lower the grip unit.

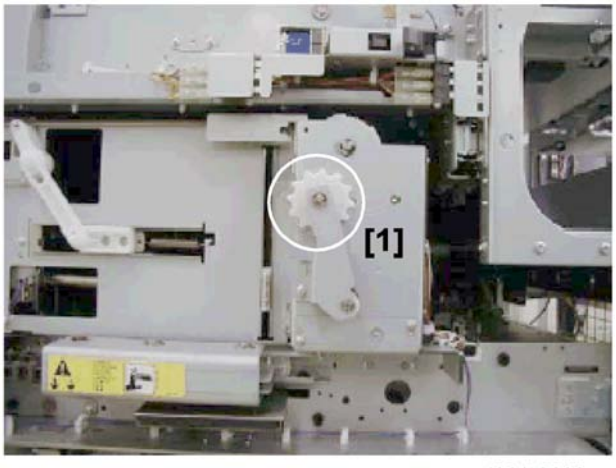
Trimming Unit

The trimming unit is equipped with four dials that:

- Raise the slide
- Open and close the grip
- Open and close the press plates
- Move the blade from side to side

There are also two pulleys where you can use a plus (+) screwdriver to raise and lower the book lift tray and move the trimmings buffer from side to side.

Slide Lift Dial



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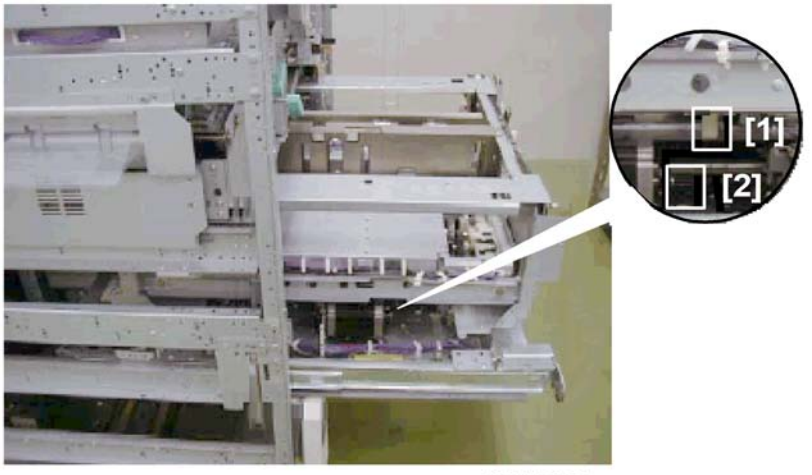
The photo above shows the slide lift dial [1] viewed from the front:

- Turn clockwise to lift the slide.
- Turn counter-clockwise to lower the slide.

Main Grip/Press Plate Dials



d391t8033b

The photo above shows the main grip unit pulled out and viewed from the front.

[1]	Main Grip Dial
[2]	Press Plate Dial

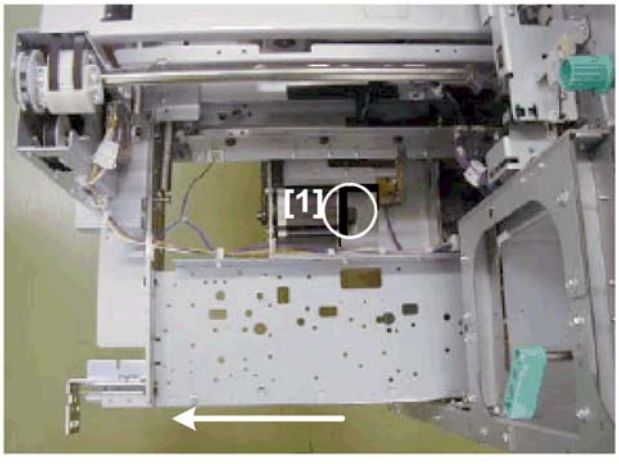
Main Grip Dial

- Turn clockwise to close the main grip.
- Turn counter-clockwise to open the main grip.

Press Plate Dial

- Turn clockwise to open the press plates.
- Turn counter-clockwise to close the press plates.

Blade Dial

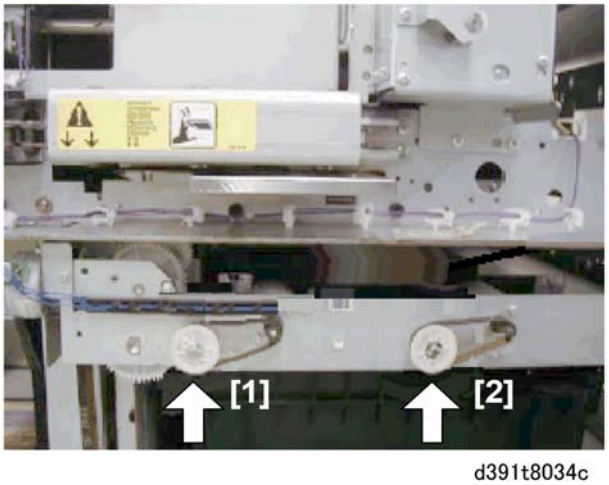


d391t8034b

The photo above shows the blade dial [1] with the trimming unit pulled out of the front of the bookbinder:

- Turn the dial clockwise to push the blade toward the cutting position.
- Turn the dial counter-clockwise to pull the blade away from the cutting position.

Book Lift Tray/Trimmings Buffer Pulleys



d391t8034c

The photo above shows the book tray lift pulley [1] and the trimmings buffer [2] viewed from the front.

Book tray lift pulley

- Turn the pulley clockwise to lower the tray.
- Turn the pulley counter-clockwise to raise the tray.

Trimmings buffer pulley

- Turn the pulley clockwise to move the trimmings buffer to the left.
- Turn the pulley counter-clockwise to move the trimmings buffer to the right.

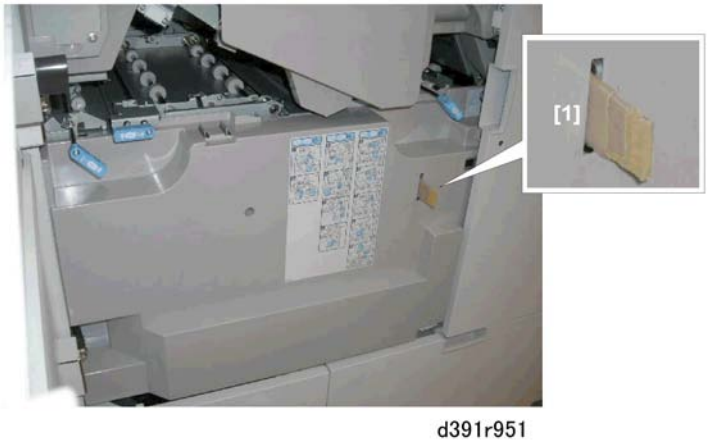
Common Procedures

Setting and Releasing Low Performance Mode

Do this procedure to set and release the low performance mode for the bookbinder. The bookbinder automatically enters the low performance mode if a bookbinding component malfunctions and binding is no longer possible.

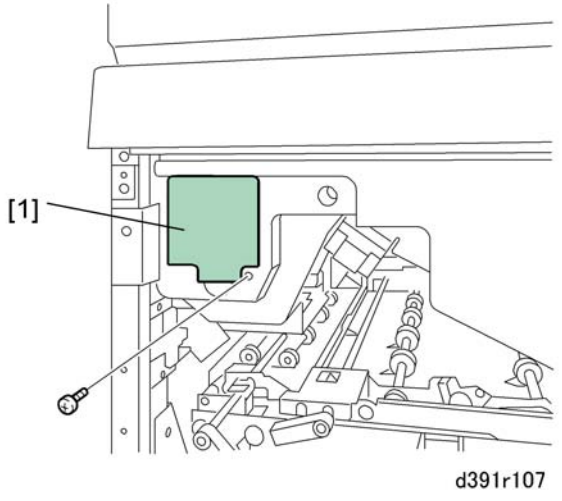
- In low performance mode the bookbinder can continue to operate, but only for straight-through downstream delivery.
- The machine can be released from the low performance mode by the service technician only.
- Set the bookbinder in low service mode if a replacement part is not immediately available so the operator can continue to use the host machine.

1. If the system is on, switch it off.
2. Open the right and left front doors.
3. Close the right door.



d391r951

4. Insert piece of cardboard or folded piece of paper into the slot [1] of the left door switch.



5. Remove the service board cover [1] (x1).
6. Set the SW1, SW2 banks as shown below.

SW1			
1	2	3	4
Up	*	*	*

SW2							
1	2	3	4	5	6	7	8
Up	Up	Up	Up	*	Up	Up	*

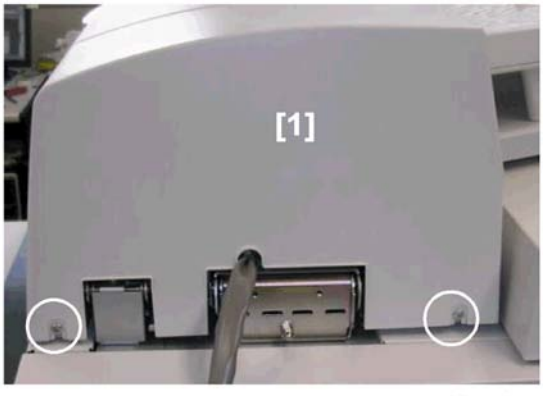
7. Switch on the host machine.
8. Press [PSW1]. LED2 and LED3 indicate the current machine mode.
   - Normal Mode. LED2, LED3 both flash for 2 sec.
   - Low Performance Mode. LED2 flashes for 2 sec., LED flashes for 0.3 sec.
9. If LED2, LED3 are both flashing at 2 sec. intervals (Normal Mode) push [PSW2] to select low performance mode.

   -or-

   If LED2 is flashing at 2 sec. intervals and LED3 is flashing rapidly (Low Performance Mode) push [PSW3] to select normal mode.
10. Push [PSW1] to save the setting. LED1 returns to flashing at 1 sec. intervals, and LED2, LED3 both go OFF.

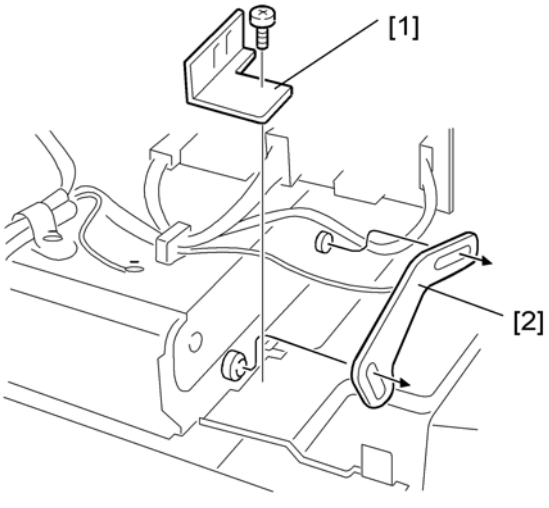
- You may need to set the machine for low performance mode if a replacement part is not available so the operator can continue to use the system.
- The low performance mode allows the bookbinder to perform downstream delivery so it does not interfere with other operations (bookbinding and trimming, however, are not available.)
- As soon as the problem has been corrected, do the same procedure to reset the bookbinder for normal mode.

Inserter Unit



d391r505

1. Remove inserter rear cover [1] (x2).



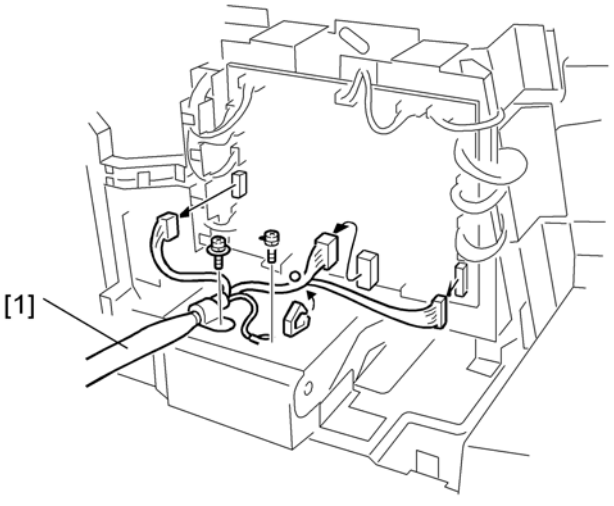
d391r501

2. Remove:

   [1] Plate [1] (x1)

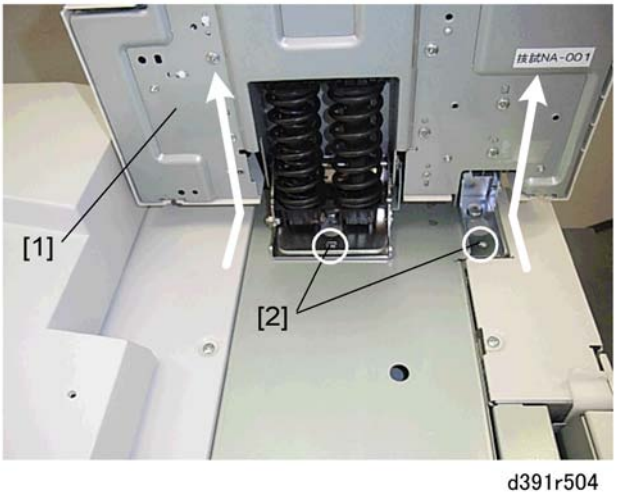
[2] Limiter brace [2] (x2)

3. Remove the bookbinder rear upper cover.



d391r503

4. Disconnect the inserter I/F cable [1] (x2, x3).

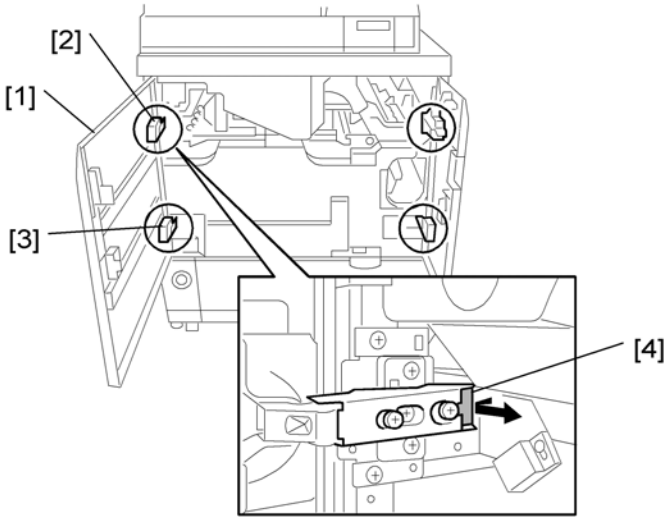


d391r504

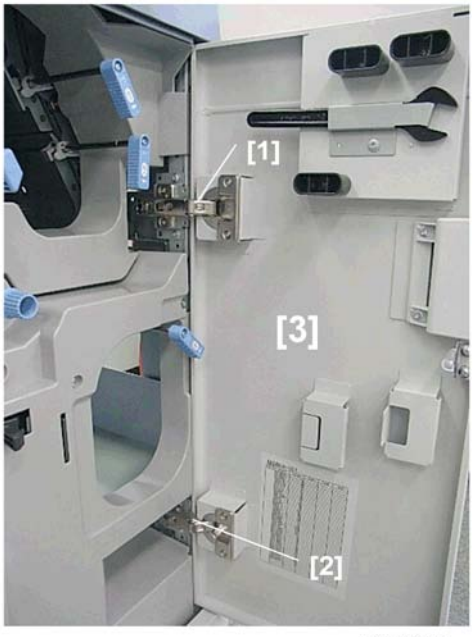
5. Raise the inserter [1].
6. Disconnect the inserter [2] from the bookbinder and remove it (x2).

Front Doors

1. Open the right front door and left front door.



2. On the left door [1] remove the top hinge [2] and bottom hinge [3].
    - While holding the left front door with one hand, behind the top hinge push the black lever [4] in the direction of the arrow to release the top hinge.
    - Swing the top hinge out slightly.
    - While still supporting the left door with one hand, repeat the procedure to remove the bottom hinge.
    - Remove the left door.

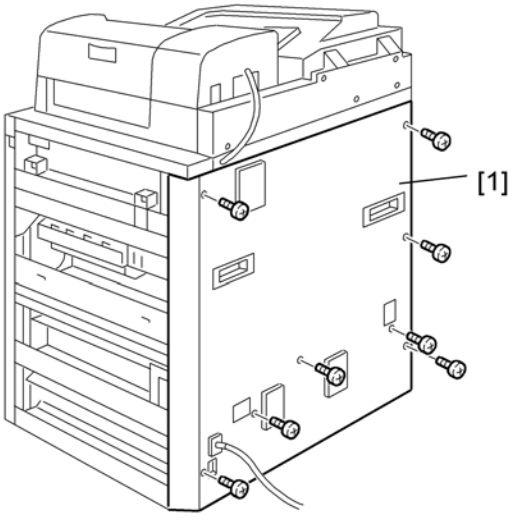


d391i315a

3. Repeat Step 2 to remove the top hinge [1] and bottom hinge [2] then remove the right front door [3]. (You may have to lower Mk11 so you can remove the right door.)

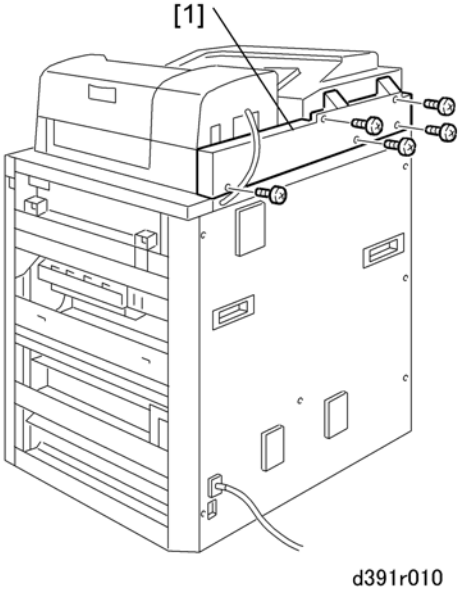
Covers

Rear Cover



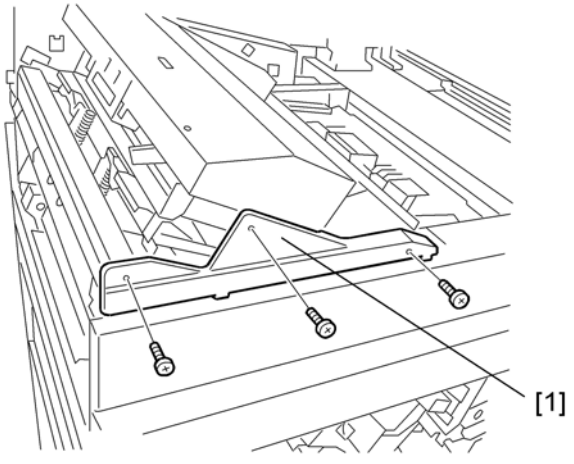
1. Rear cover [1] (x8)

Rear Upper Cover

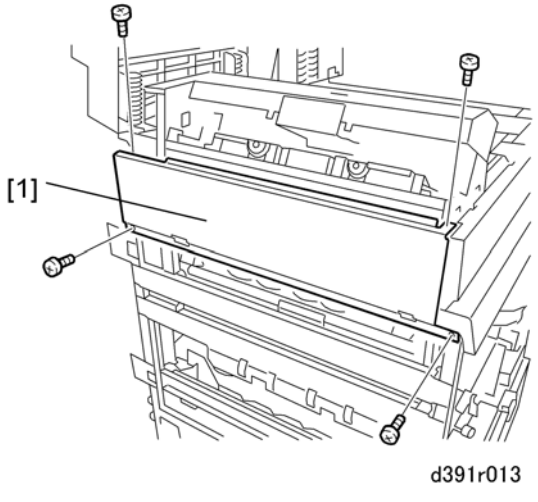


1. Rear upper cover [1] (x5)

Left Upper Cover

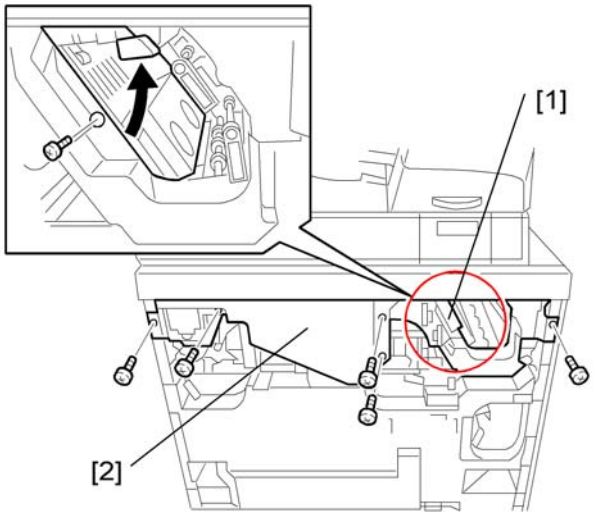


1. Open the inserter and upper cover.
2. Remove the front bar [1] of the stacking tray unit (x3).



3. Remove the left upper cover [1] (x4).

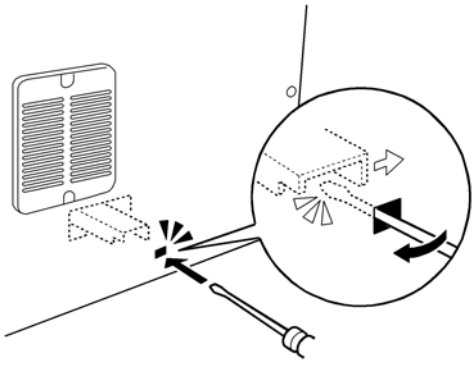
Front Inner Cover: Upper



d391r014

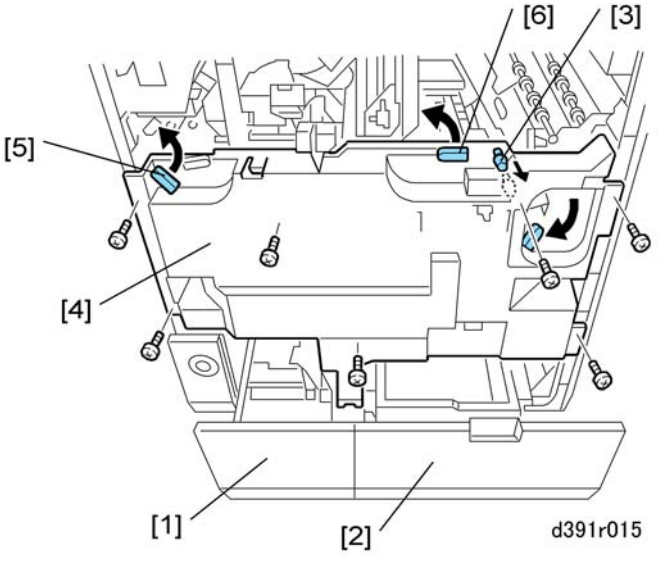
1. Remove both the left and right front door.
2. Raise jam lever **Mk12** [1].
3. Remove the front inner cover (upper) [2] (x6).

Front Inner Cover: Lower



d391r291a

1. At the right rear corner, unlock the book stack door.



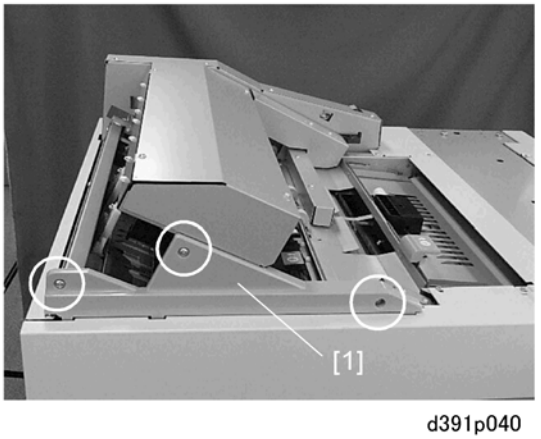
2. Pull out the book stacking tray [1] and trimmings box [2] together.
3. Pull off jam clear knob **Mk10** [3].

Important

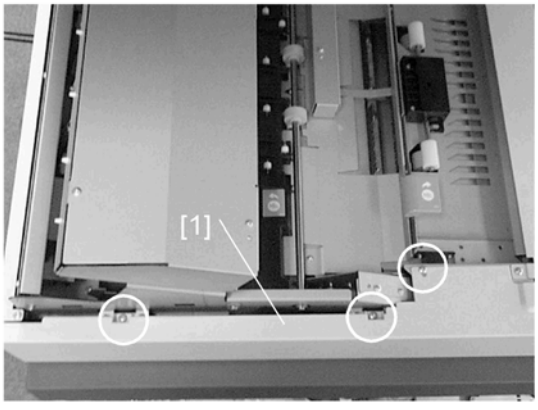
- **Mk10 must be reattached.**

4. Remove the screws of the lower inner cover [4] (x7).
5. Raise the jam clear levers **Mk8** [5] and **Mk9** [6] as you remove the cover.
6. Return the jam clear levers to their original positions.

Signature Path Exit Unit

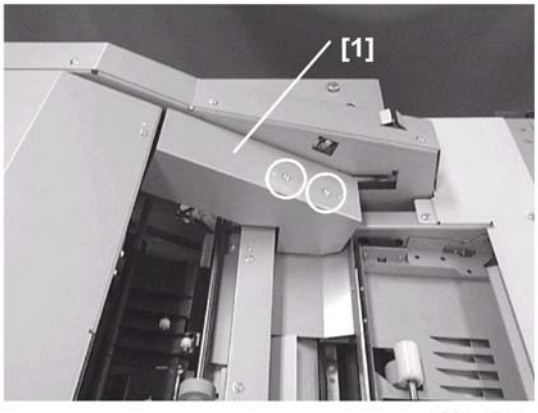


1. Remove the inserter.
2. Remove the stacking tray front cover [1] (x3)



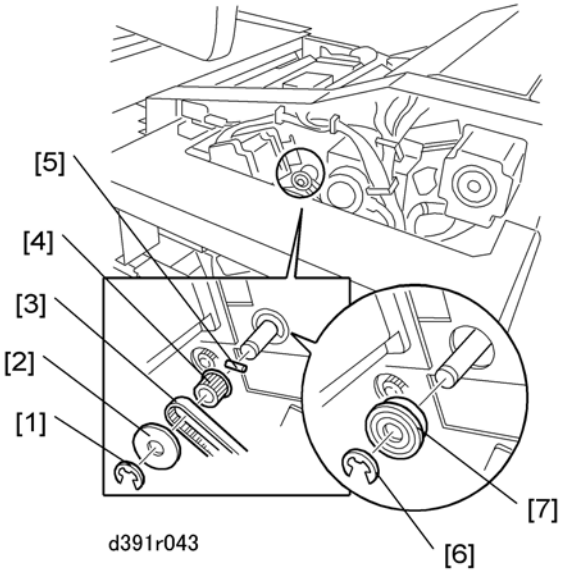
d391p041

3. Remove the top cover [1] (x3).

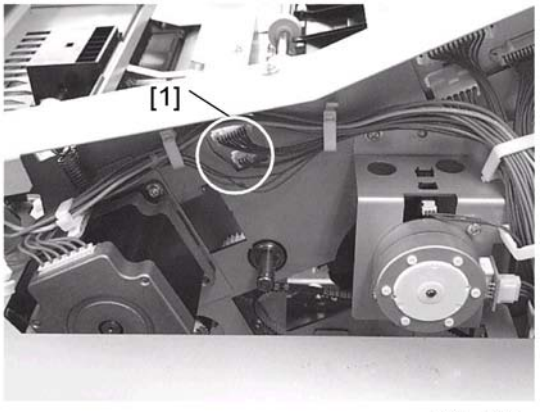


d391p042

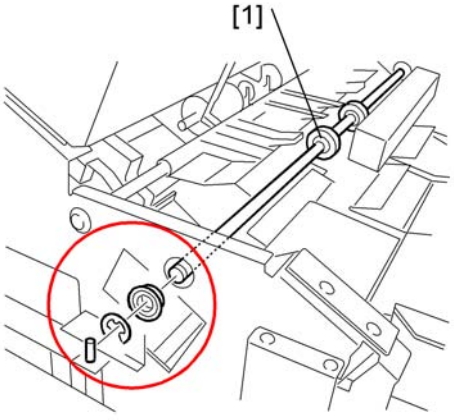
4. Remove the harness cover [1] (x2).



5. Remove the covers around the back and the rear upper cover.
6. Remove:
   [1] ℂ x1
   [2] Flange x1
   [3] Belt x1
   [4] Gear x1
   [5] Lock pin x1
   [6] ℂ x1
   [7] Bearing x1

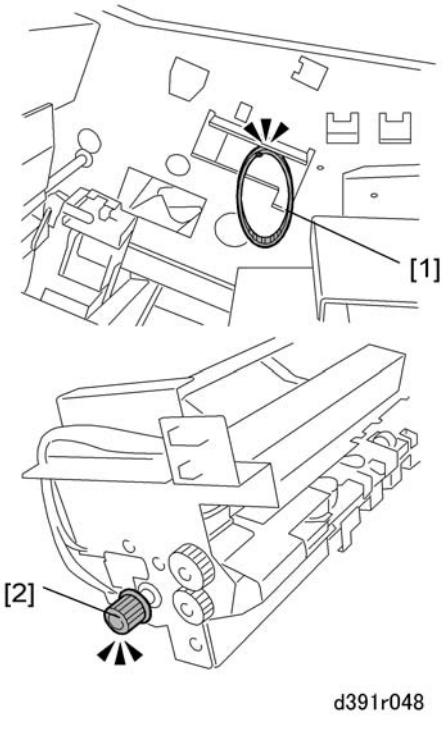


7. Disconnect connectors [1] (☞ x2).



d391r046

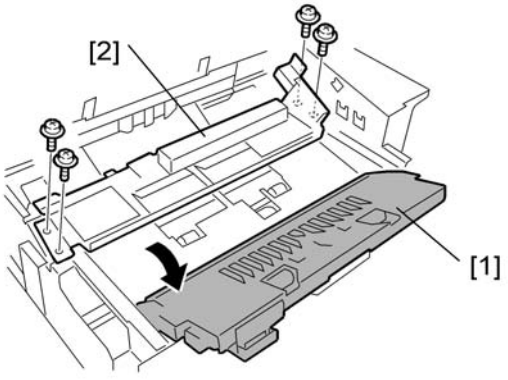
8. At the front, remove the signature exit roller [1] (Lock pin x1, ℂ x1, Bearing x1).



d391r048

Before Removing the Signature Path Exit Unit:

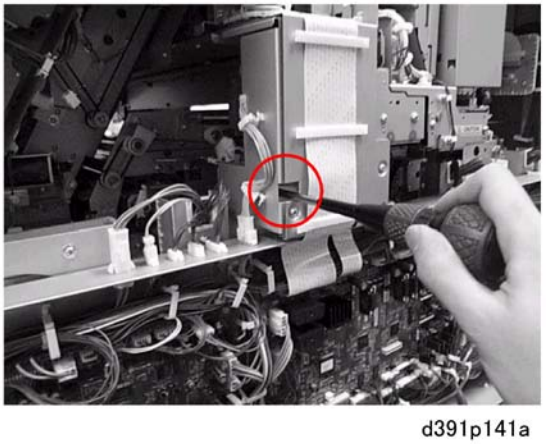
- Remove the signature path exit unit carefully and avoid dropping the belt [1] of the drive motor into the bookbinder.
- The belt must be reattached to its gear [2] at reinstallation.
- First removing the TE press lever motor (M3) will make it easier to remove and reinstall the signature path exit unit.



d391r047

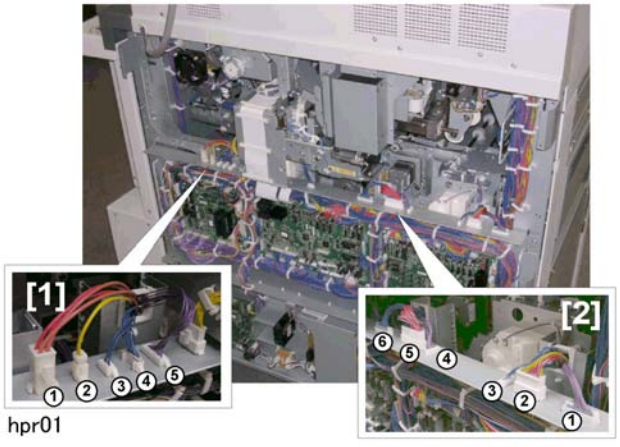
9. Open the transport guide [1].
10. Remove the signature path exit unit [2] (x 2 Left, x 2 Right)

Cover Transport Unit

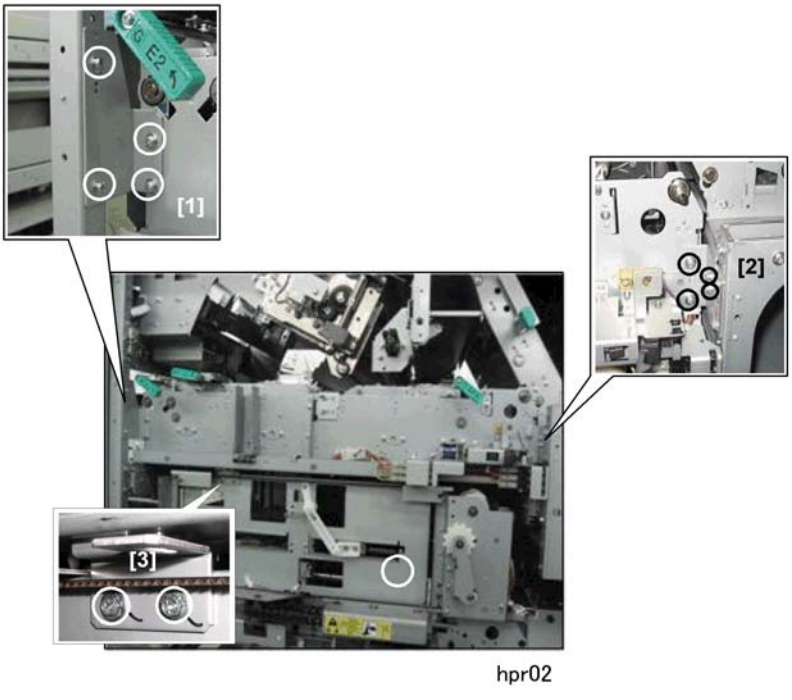


d391p141a

1. Remove:
    - Rear cover (☛ p.119)
    - Both doors (☛ p.116)
    - Front inner lower cover (☛ p.121)
    - Front inner upper cover (☛ p.121)
2. Remove screw (x1).



3. Disconnect connectors at [1] (x5) and [2] (x6).

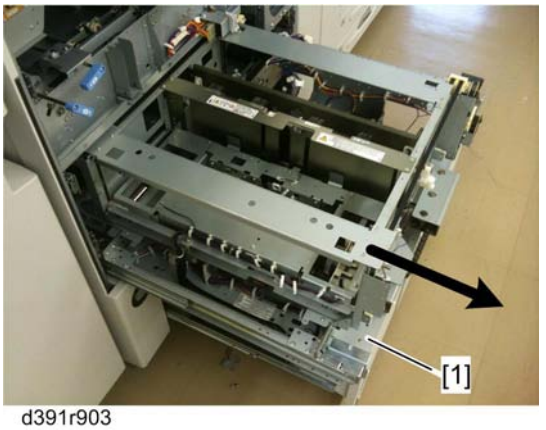


4. Remove:

   [1] Left brace (x4)

   [2] Right brace (x4)

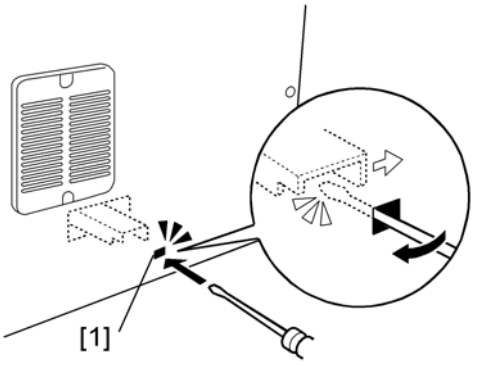
   [3] Lock plate (x2)



d391r903

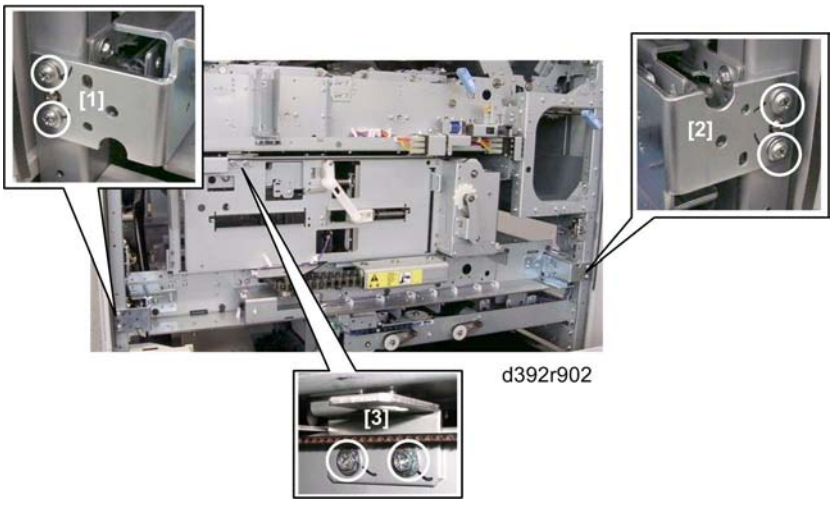
5. Pull out the cover transport unit [1] on its rails.

Trimming Unit



d391r291

1. Insert the tip of a small screwdriver into the small hole [1] near the left rear corner of the bookbinder.
2. Gently move the screwdriver in the direction of the arrow to release the stacking tray lock.
3. At the front pull open the book tray door and the trimmings box drawer.
4. Remove the front lower cover.
5. Confirm that all devices have been switched off and disconnected.



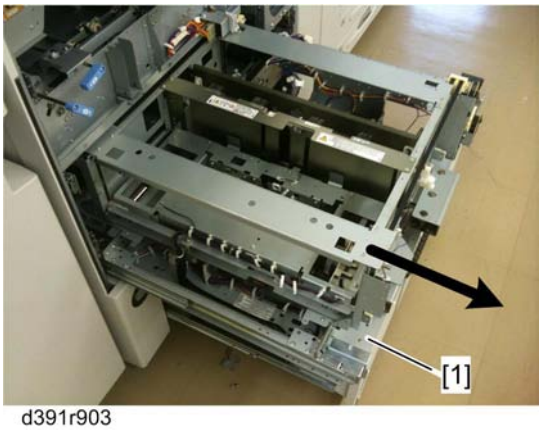
d392r902

6. Remove:

   [1] Left brace (x2)

   [2] Right brace (x2)

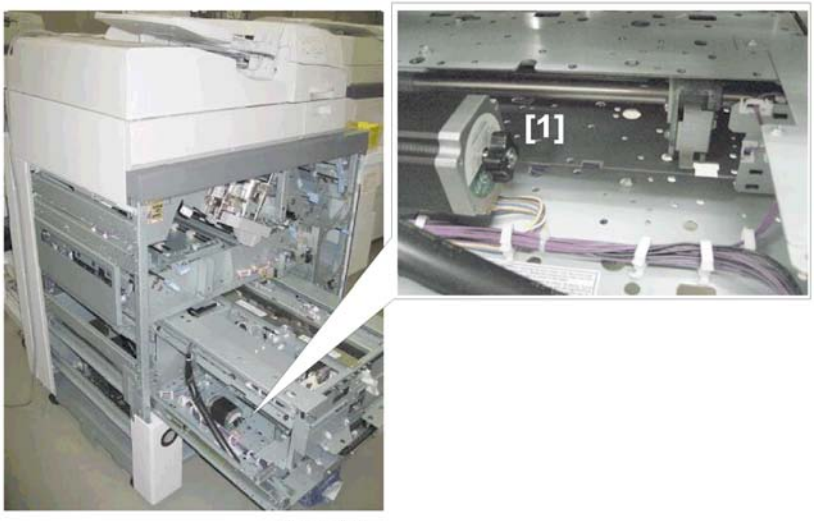
   [3] Lock plate (x2)



d391r903

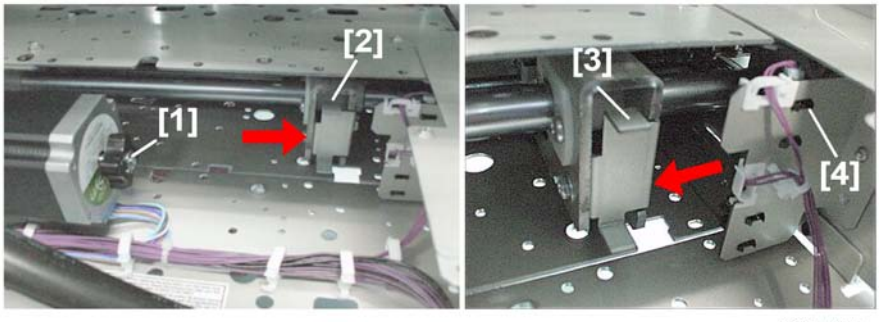
7. Pull out the trimming unit [1] on its rails.

Before Closing the Trimming Unit Drawer



d391r954

1. Check the area around the edge press plate motor (M36) [1].

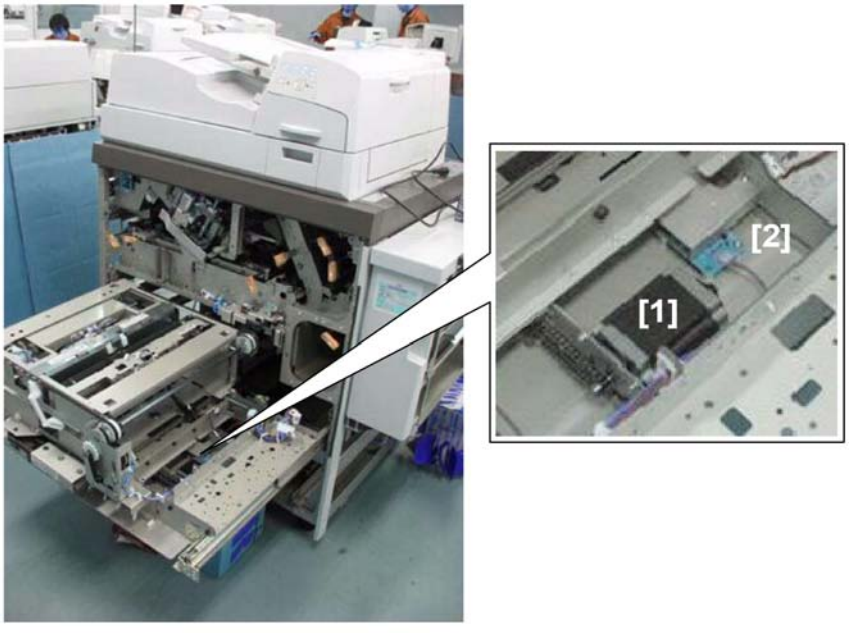


d391r955

2. Turning the motor knob [1] away from you releases the pressure exerted by the press plate but also moves the small plate [2] to the right. (You may have done this during the procedure.)
3. Check the position of the small plate [3] and confirm that it is not near the press limit sensor (S89) [4] as shown in the illustration on the right.
    - If the small plate is blocking the sensor, turn the knob [1] toward you to move the small plate [3] away from the sensor [4].
    - If the small plate is blocking the sensor this will prevent the motor from operating and cause an error (SC795-25) when the system is turned on.

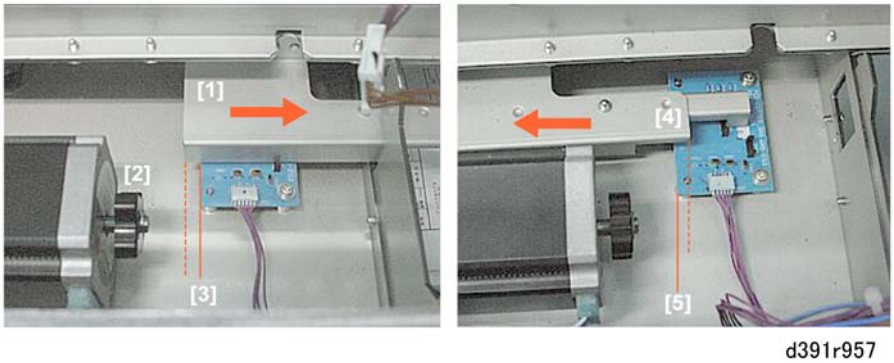
Important

- **To prevent SC795-25 always check the position of the small plate [3] before closing the trimming unit drawer.**



d391r956

4. Check the area around the cutter motor (M35) [1] and PCB [2] where the trimmer limit sensor (S86) is mounted.



d391r957

The illustration on the left shows the blade cradle at the rear, and the illustration on the right shows the blade cradle at the front.

5. If the edge of the plate [1] is not even with the left edge of the PCB, turn the motor knob [2] away from you to move the plate to the rear until the plate edge reaches the left edge of the PCB [3].

   -or-

   If the edge of the plate [4] is not even with the left edge of the PCB, turn the motor knob toward you to move the plate to the front until the plate edge reaches the left edge of the PCB [5].

   If the edge of the plate is not aligned correctly with the left edge of the PCB, the this will prevent the motor from operating and cause an error (SC795-30) when the system is turned on.

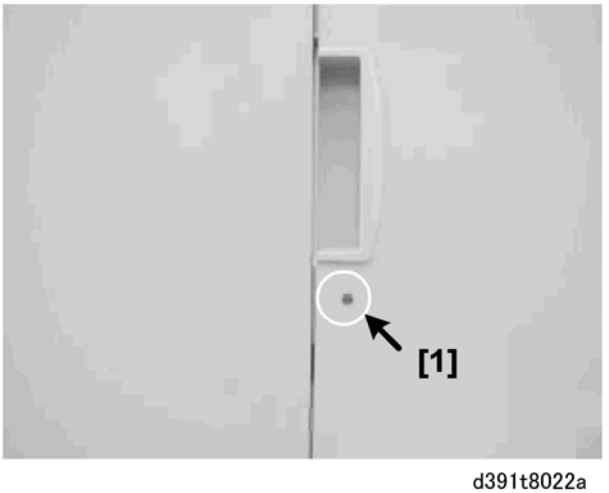
Important

- To prevent SC795-30 always check the position of the plate before closing the trimming unit drawer.

Opening Locked Doors Manually

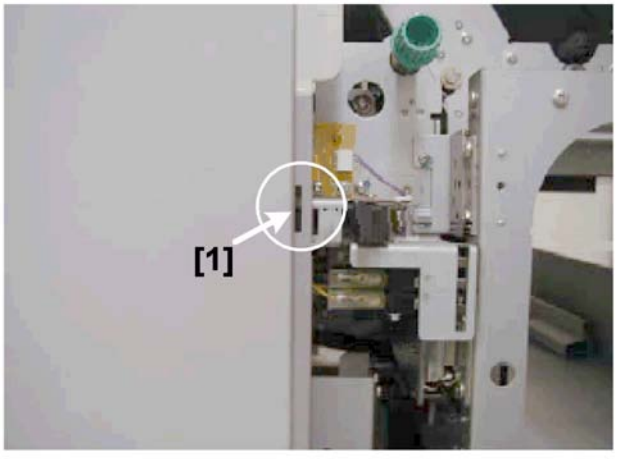
Front Doors

If the front doors remain locked after the power was turned off while the bookbinder was operating, cycling the bookbinder off/on will usually unlock the doors. However, if the front doors remain locked after cycling the machine off/on (or if you cannot switch the machine off/on), follow the procedure below to manually unlock the front doors.



d391t8022a

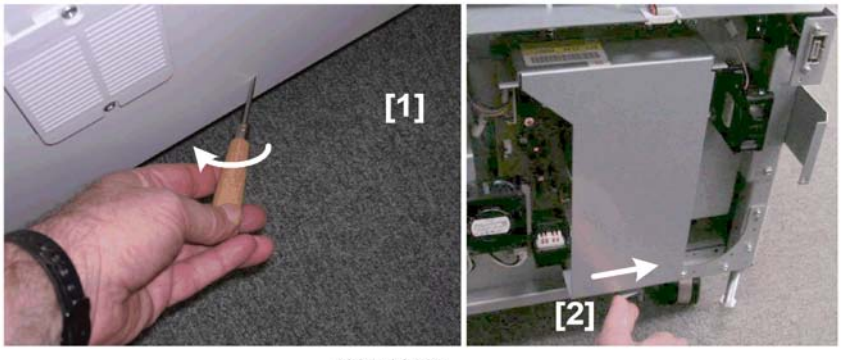
1. Insert the tip of a small screwdriver into the hole [1] and press in on the manual lock to release the doors.



d391t8022b

The manual release is located behind a cutout on the left edge of the left front door.

Book Stack Door



d391t8023c

1. Insert the tip of a small screwdriver into the small hole near the left rear corner of the bookbinder.
2. Move the screwdriver in the direction of the arrow to release the stacking tray lock.

Note

- If the rear cover has been removed, just push the lever [2] to the right to unlock the book stack door.

Signature Thickness Sensor (S50) Recalibration

The signature thickness sensor must be recalibrated after these components have been replaced:

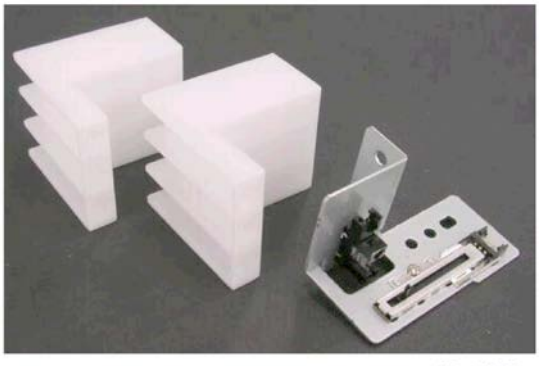
- Master control board

- EEPROM on the master control board
- Signature thickness sensor (S50)

Note

- This procedure is not required for replacement of the master control board if the EEPROM is removed from the old board and installed on the new master control board.

Special Tools

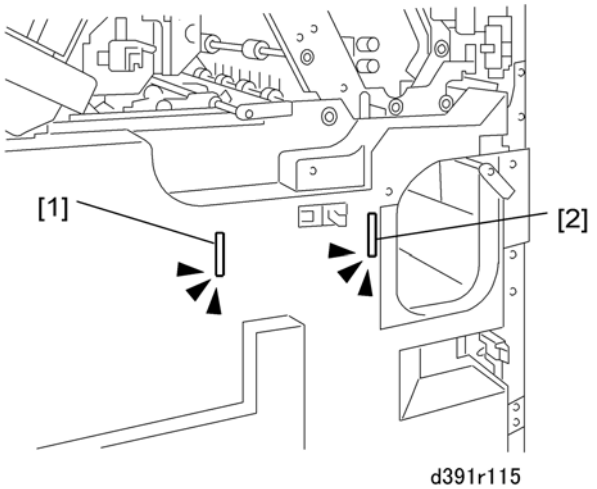


d391r933

Two special plastic jigs are provided with a new signature thickness sensor (S50).

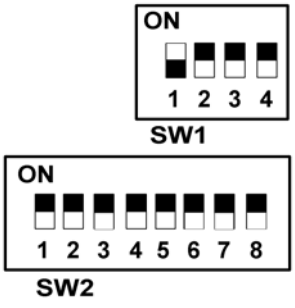
These jigs are required for the adjustments.

1. If the system is on, turn the host machine off.

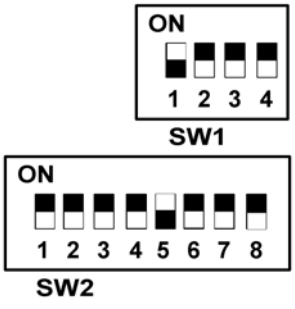


d391r115

2. Insert piece of cardboard or folded piece of paper into the slot [1] of the left door switch and the slot [2] of the right door switch.
3. Remove the service board cover (x1).



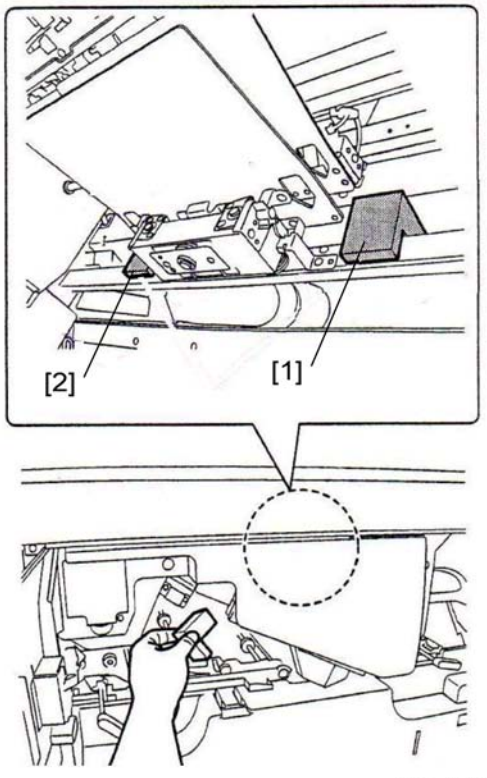
4. On the SW-1 bank set DIP SW1 to ON.
5. Turn the host machine on.



6. On the SW-2 bank set DIP SW5 to ON.
7. Press [PSW1] on the service board to open the main grip and move it to its home position.
8. Confirm that there is no paper in the main grip unit.
9. With nothing in the main grip unit, press [PSW1] to set signature width for 0 mm. The main grip closes, opens and retracts.
10. Check the LED display to confirm that the minimum value has been set.

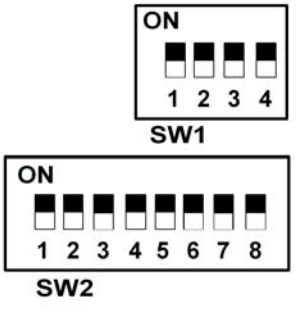
    LED1: ON, LED2: Flash, LED3: OFF (Saving min. setting)

    LED1: ON, LED2: ON, LED3: OFF (Minimum adjust. END)



d391r915

11. Set the jigs [1] and [2] (provided as accessories) in the main grip unit as shown above.
12. Press [PSW1] once. This sets the measurement for the maximum thickness (25 mm).
13. Check the LED display to confirm that the maximum value has been set:
    LED1: ON, LED2: ON, LED3: Flash (Saving maximum setting)
    LED1: Flash, LED2: OFF, LED3: OFF (Adjust. standby, or adjust. END)
14. Remove both jigs from the main grip unit.



15. Set all DIP SWs on the service panel to the OFF position. This completes the procedure.

Resetting Counters

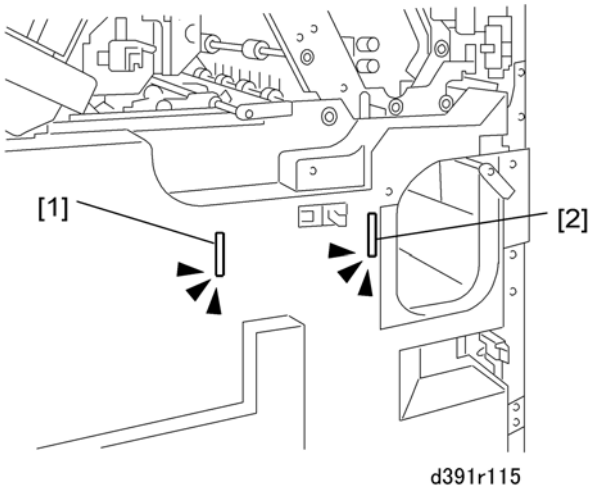
The counter for a bookbinder or inserter part must be reset to zero after the part has been replaced.

Bookbinder Counters

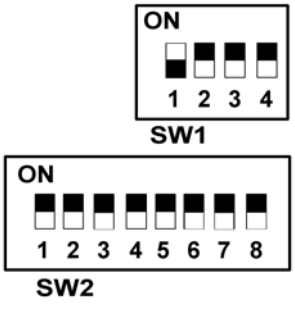
Bookbinder Component Counts

This operation clears the counts for PM parts stored in the EEPROM of the bookbinder.

1. If the system is on, turn the host machine off.



2. Insert piece of cardboard or folded piece of paper into the slot [1] of the left door switch and the slot [2] of the right door switch.



3. On the SW-1 bank set DIP SW1 to ON.
4. Turn the host machine on.
5. Set the SW2 bank for the item that has just been replaced (see table below).

SW2								Status
1	2	3	4	5	6	7	8	
Up	*	*	*	*	*	*	Up	Anti-Static Brush (Relay Unit)
*	Up	*	*	*	*	*	Up	Anti-Static Brush (Exit)
Up	Up	*	*	*	*	*	Up	Switchback Roller (Stacking Tray)
*	*	Up	*	*	*	*	Up	--- Not Used ---
Up	*	Up	*	*	*	*	Up	Switchback Roller (Cover Registration)
*	Up	Up	*	*	*	*	Up	TE Press Roller
Up	Up	Up	*	*	*	*	Up	Drawer Connector
*	*	*	Up	*	*	*	Up	Signature Thickness Sensor
Up	*	*	Up	*	*	*	Up	Main Grip, Sub Grip Motors
*	Up	*	Up	*	*	*	Up	Glue Heater
Up	Up	*	Up	*	*	*	Up	Ripple Roller
*	*	Up	Up	*	*	*	Up	Torque Diode Limiter (Signature Rotation)
Up	*	Up	Up	*	*	*	Up	Timing Belt (Signature Rotation)
*	Up	Up	Up	*	*	*	Up	Ball Screw Unit
Up	Up	Up	Up	*	*	*	Up	Cutting Blade
Up	*	*	*	Up	*	*	Up	Blade Cradle
*	Up	*	*	Up	*	*	Up	Deodorization Filters
Up	Up	*	*	Up	*	*	Up	--- Not Used ---
*	*	Up	*	Up	*	*	Up	--- Not Used ---
Up	*	Up	*	Up	*	*	Up	Anti-Static Brush (Stacking Tray)
*	Up	Up	*	Up	*	*	Up	Anti-Static Brush (Horizontal Transport)

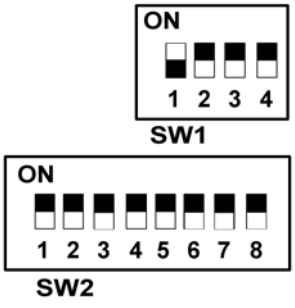
6. Push and hold down [PSW2] and [PSW3] together until LED1, LED2, and LED3 go ON for 2 sec. and then release.

   LED2, LED3 go OFF then LED1 resumes flashing at 1 sec. intervals.

Bookbinder Internal Counter Reset

Do this procedure to clear all the counts stored in the EEPROM of the bookbinder.

1. If the system is on, turn the host machine off.



2. On the SW-1 bank set DIP SW1 to ON.
3. Turn the host machine on.
4. Set the SW2 bank as shown below.

SW2								Counts For
1	2	3	4	5	6	7	8	
Up	*	*	*	Up	*	Up	*	Sheets fed through horizontal transport path
*	Up	*	*	Up	*	Up	*	Sheets fed through signature path
Up	Up	*	*	Up	*	Up	*	Books bound
*	*	Up	*	Up	*	Up	*	Number of blade cuts
Up	*	Up	*	Up	*	Up	*	Blade cradle usage, blade cradle movements to change cutting position
*	Up	Up	*	Up	*	Up	*	Book stacking door openings/ closings
Up	Up	Up	*	Up	*	Up	*	Glue temperature adjustments

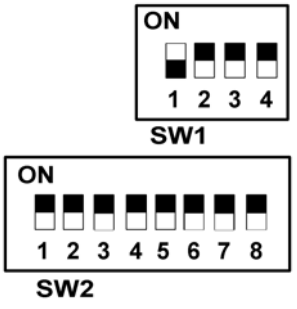
5. Push and hold down [PSW2] and [PSW3] together until LED1, LED2, and LED3 go ON for 2 sec. and then release.

   LED2, LED3 go OFF then LED1 resumes flashing at 1 sec. intervals.

Bookbinder EEPROM Initialization

Do this procedure to restore all the default factory settings in the EEPROM mounted on the master control board. The also resets all counters to zero.

1. If the system is on, turn the host machine off.



2. On the SW-1 bank set DIP SW1 to ON.
3. Turn the host machine on.
4. Set the SW2 bank as shown below.

SW2								Status
1	2	3	4	5	6	7	8	
*	*	*	*	Up	Up	Up	Up	Clears values for adjustments, unused areas
Up	*	*	*	Up	Up	Up	Up	Resets all counters to zero

5. Push and hold down [PSW2] and [PSW3] together until LED1, LED2, and LED3 go ON for 2 sec. and then release.

   LED2, LED3 go OFF then LED1 resumes flashing at 1 sec. intervals.

   LED1 flashes at 1000 ms intervals, LED2, LED3 go OFF.

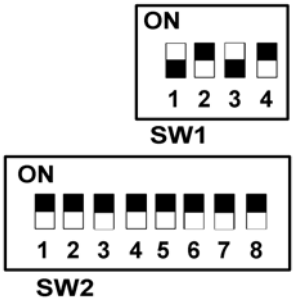
6. After clearing the adjustments and unused areas, restore all the settings to their factory defaults. (The factory settings are printed on the sheet of paper attached inside the right front door of the bookbinder).

Inserter Counters

Inserter PM Parts Counters

Do this procedure to clear the PM parts count stored in the inserter EEPROM mounted on the inserter control board.

1. If the system is on, turn the host machine off.



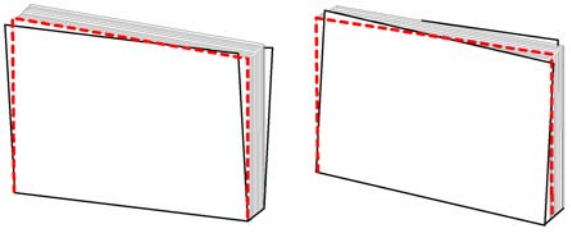
2. On the SW-1 bank set DIP SW1, SW3 to ON.
3. Turn the host machine on.
4. Set the SW2 bank as shown below.

SW2								Status
1	2	3	4	5	6	7	8	
Up	*	*	*	*	Up	*	*	Upper Tray Pickup Roller
*	Up	*	*	*	Up	*	*	Upper Tray Separation Roller
Up	Up	*	*	*	Up	*	*	Upper Tray Transport Roller
*	*	Up	*	*	Up	*	*	Upper Tray Torque Limiter
Up	*	Up	*	*	Up	*	*	Lower Tray Pickup Roller
*	Up	Up	*	*	Up	*	*	Lower Tray Separation Roller
Up	Up	Up	*	*	Up	*	*	Lower Tray Transport Roller
*	*	*	Up	*	Up	*	*	Lower Tray Torque Limiter

5. Push and hold down [PSW2] and [PSW3] together until LED1, LED2, and LED3 go ON for 2 sec. and then release. LED2, LED3 go OFF then LED1 resumes flashing at 1 sec. intervals.

Cover Skew Adjustment

Problem: Cover and signature not aligned correctly. (The cover & signature in the illustration below has not been trimmed.)



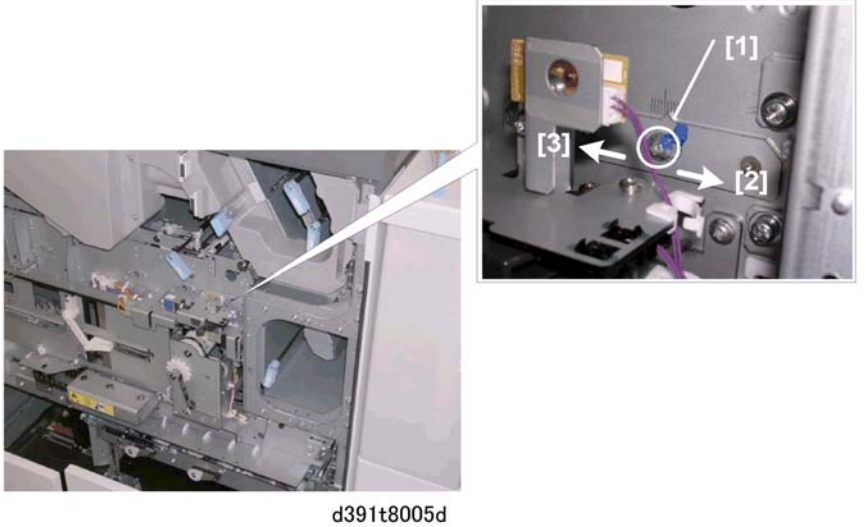
d391t8005a

3

Cause: Cover was not aligned correctly in the cover transport path before the signature and cover were jointed.

Solution: Adjust the position of the cover horizontal registration unit.

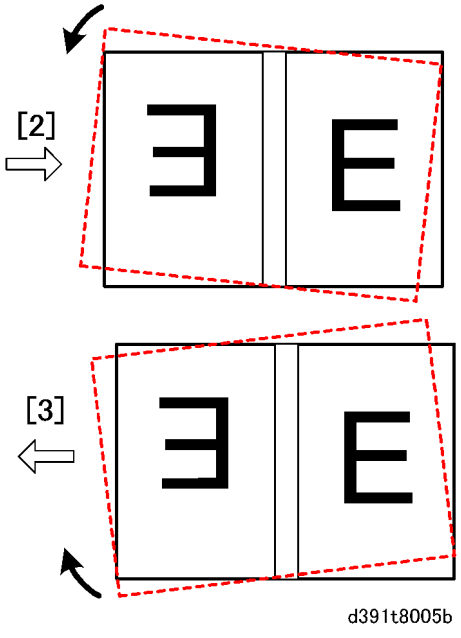
1. Remove the right and left front door.
2. Remove the lower inner cover (x6).



d391t8005d

3. Loosen the screw on the scale indicator.
4. Move the scale to the right [2] or to the left [3] and then tighten the screw.

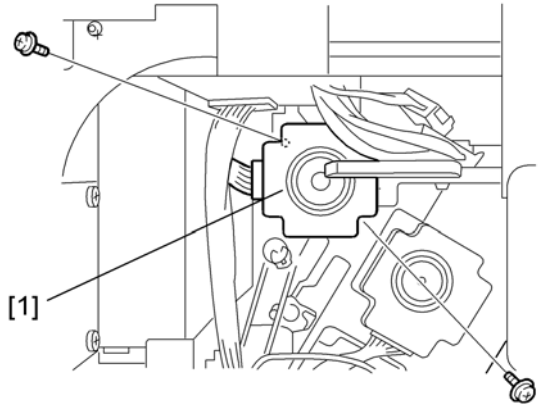
   The illustration below shows the effect of moving the scale.



5. Do some test prints and then repeat the adjustment until the cover and signature are correctly aligned.

Path Entrance Motors

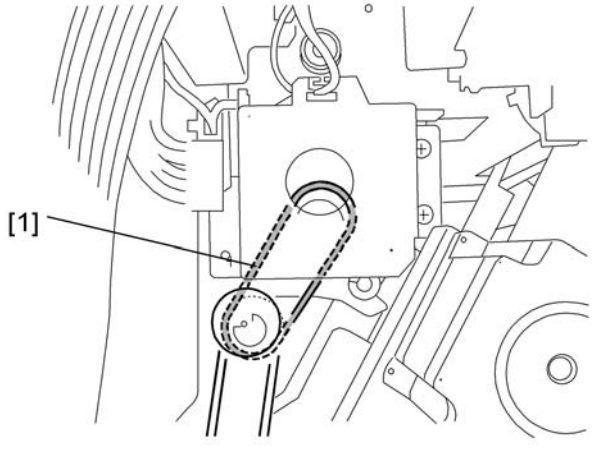
Vertical Transport Motor (M5 (INS))



d391r026

1. Remove the rear cover. (☛ p.119)
2. Remove the vertical transport motor (M5 (INS)) [1] (x2, x1)

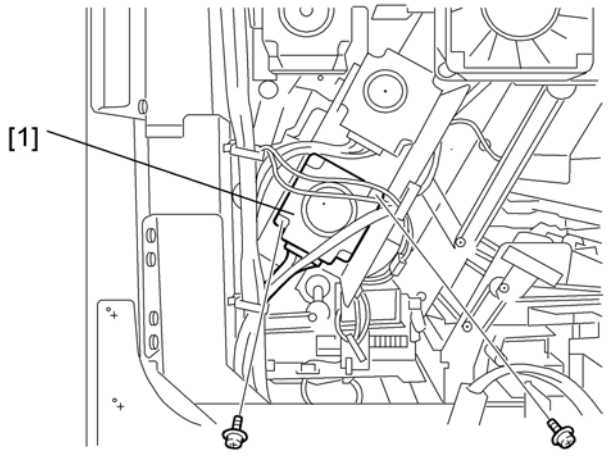
Re-installation



d391r027

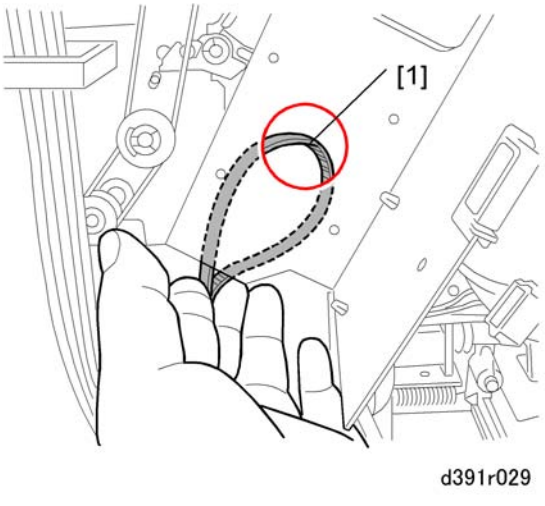
1. Be sure to reattach the timing belt [1] with the belt hung on the motor drive gear as shown above

Entrance Motor (M10)



1. Remove the rear cover (x8). (p.119)
2. Remove the entrance motor (M10) [1] (x2, x1)

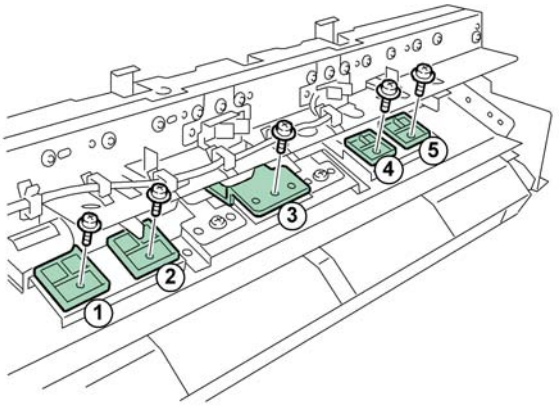
Reinstallation



1. Be sure to reattach the timing belt [1] with the belt hung on the motor drive gear as shown above.

Signature Path Exit Unit

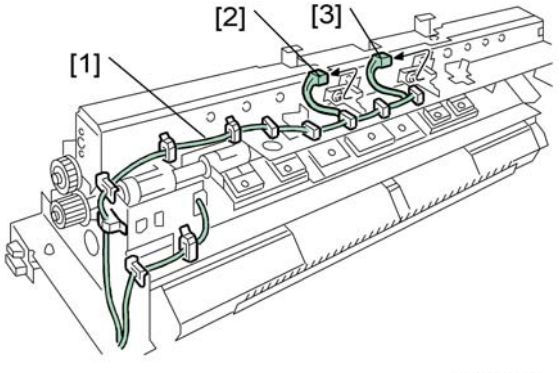
Ripple Idle Rollers



d391r049

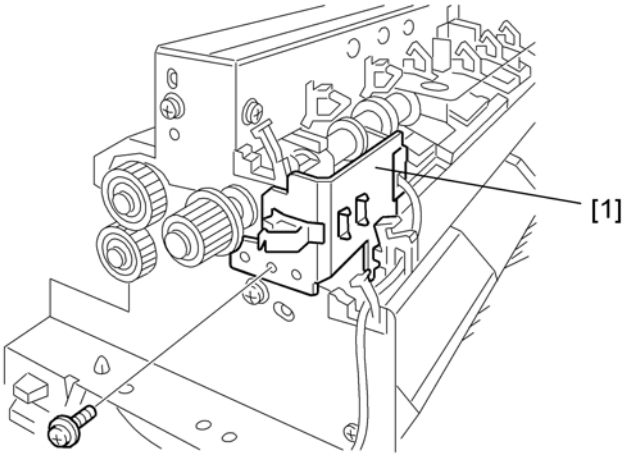
1. Remove the signature path exit unit. (☛ p.122)
2. Remove the **5** ripple idle rollers (x1 ea.)
3. Reset the counter for the ripple rollers. (☛ p.137)

TE Press Roller Unit



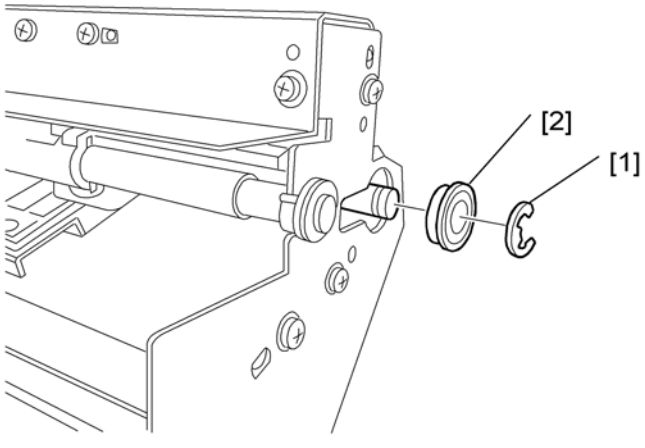
d391r050

1. Remove the signature path exit unit. (☛ p.122)
2. Release harness [1] (x11)
3. Disconnect sensors [2] and [3] (x2).



d391r051

4. Remove sensor plate [1] (x1).

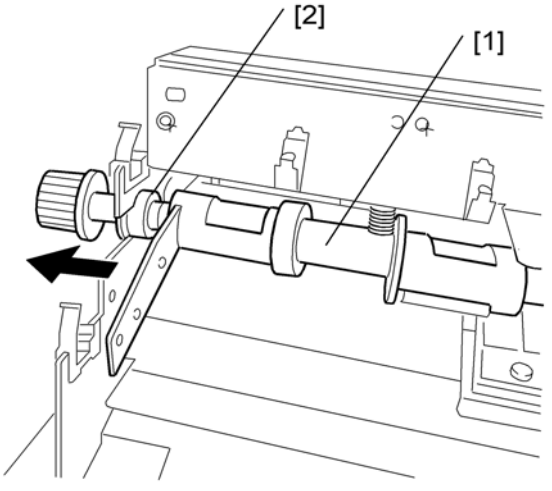


d391r052

5. Remove:

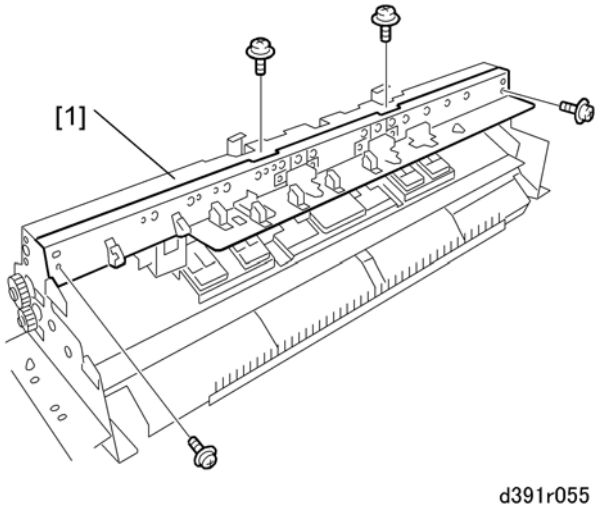
   [1] x1

   [2] Bearing x1



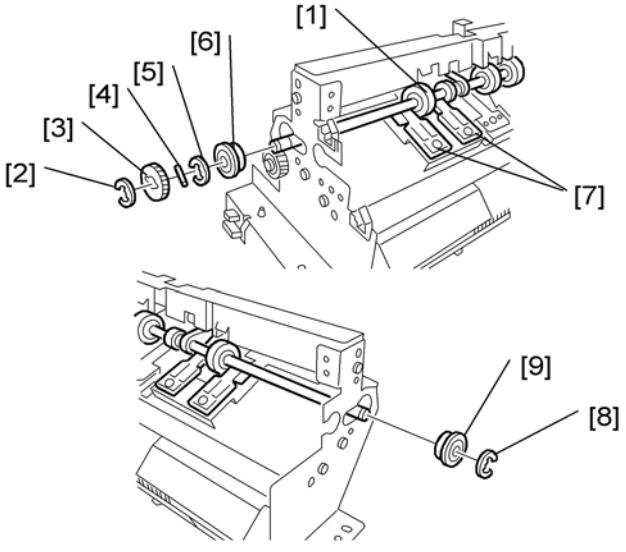
d391r053

6. Slide the pressure roller [1] in the direction of the arrow, release it from the ring [2], then remove the roller.



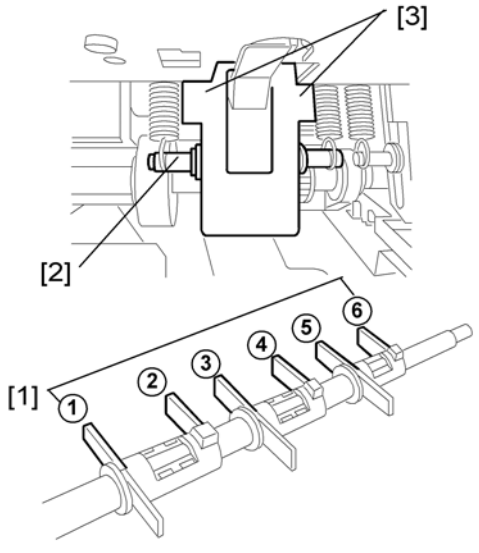
d391r055

7. Remove the TE press plate unit [1] (x4).



8. Remove the TE press roller unit [1].
   [2] C x1
   [3] Gear x 1
   [4] Lock pin x1
   [5] C x1
   [6] Bearing x1
   [7] Ripple idle rollers x2 (x1 ea.)
   [8] C x1
   [9] Bearing x1

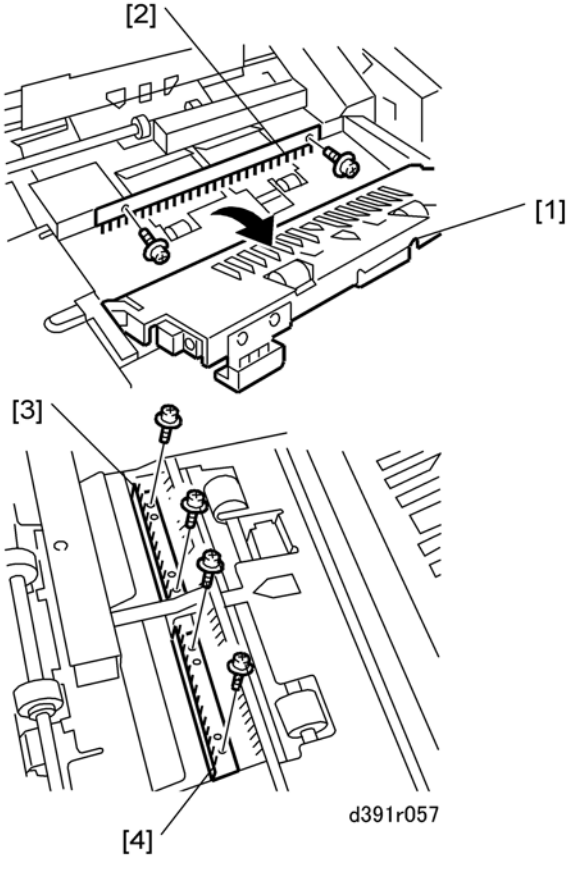
Reinstallation



d391r054

1. Pressure levers [1] must be positioned between the shaft of the TE pressure plate [2] and the rib [3].

Anti-Static Brush



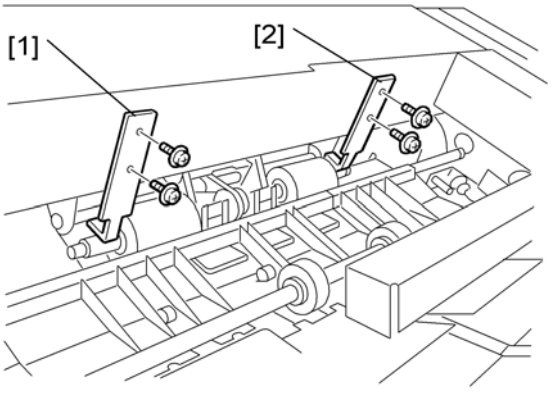
1. Remove:
   - Inserter unit (☛ p.115)
   - Top cover (☛ p.122)
2. Open the transport guide [1].
3. Remove the upper anti-static brush [2] (☞ x2)
4. Remove the lower anti-static brushes.

   [3] Front (☞ x2)

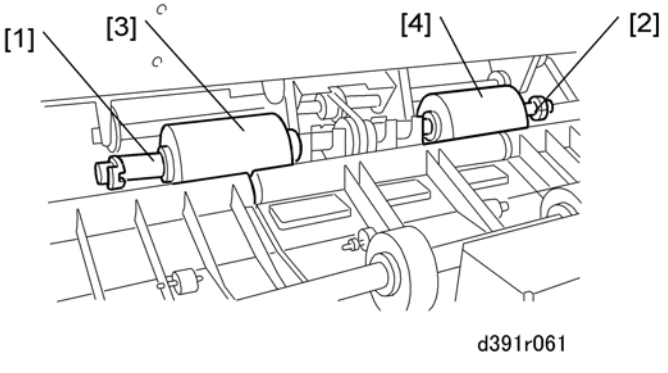
   [4] Rear (☞ x2)
5. Reset the counter after replacing the brushes. (☛ p.137)

Stacking Tray

Switchback Roller



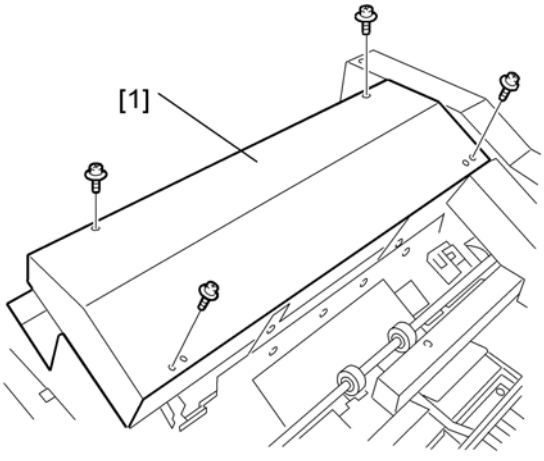
1. Remove:
   - Inserter (☛ p.115)
   - Top cover (☛ p.122)
2. Remove control plates [1] and [2] (🔩 x2 ea.)



3. At the front and rear, remove:
   [1] Collar x1
   [2] Collar x1
4. Remove the switchback rollers [3] and [4].

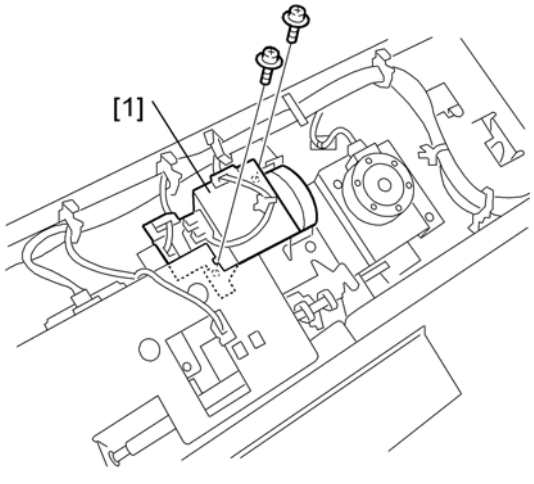
5. Reset the counter after replacing the switchback roller. (☛ p.137)

Anti-Static Brush



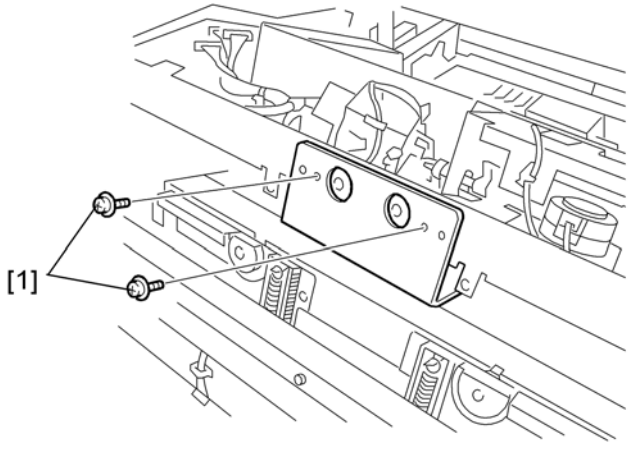
d391r062

1. Remove:
   - Inserter (☛ p.115)
   - Top cover (☛ p.122)
2. Remove the top cover of the jogging unit [1] (☞ x4)

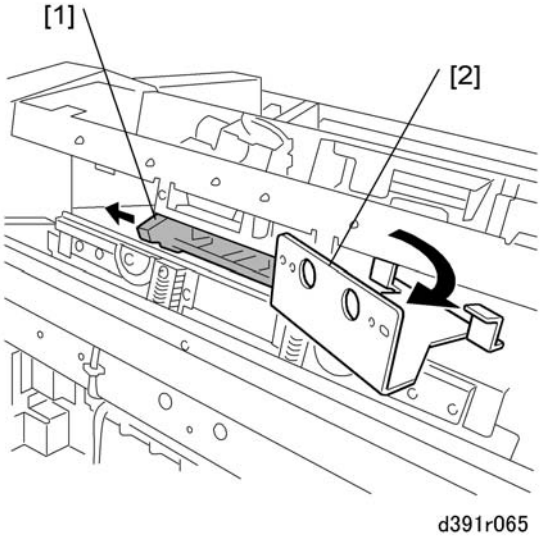


d391r063

3. Disconnect the stacking weight motor [1] (M6) (☞ x2).
4. Slide the motor to the side and disconnect the timing belt.

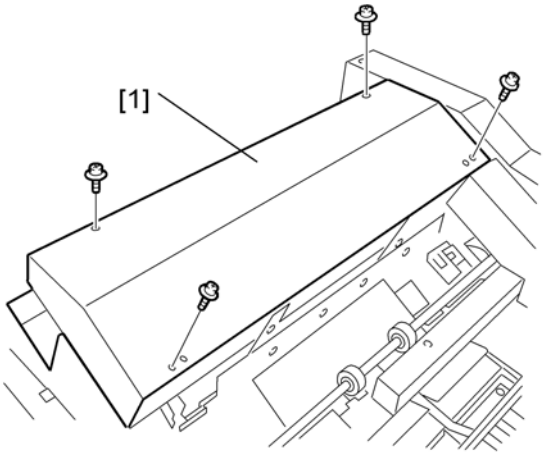


5. Remove the plate screws [1] (x2).

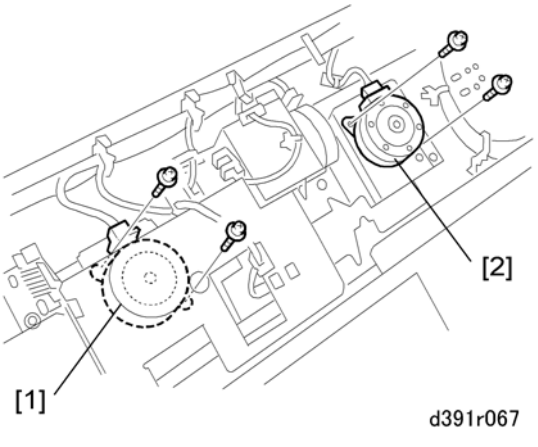


6. Shift the weight [1] to the left in the direction of the arrow as far as it will go.
7. Slowly rotate the anti-static brush [2] to the front and remove it.
8. Reset the counter after replacing the anti-static brush. (☛ p.137)

Jogger Motors (Front/Back) (M4/M5)



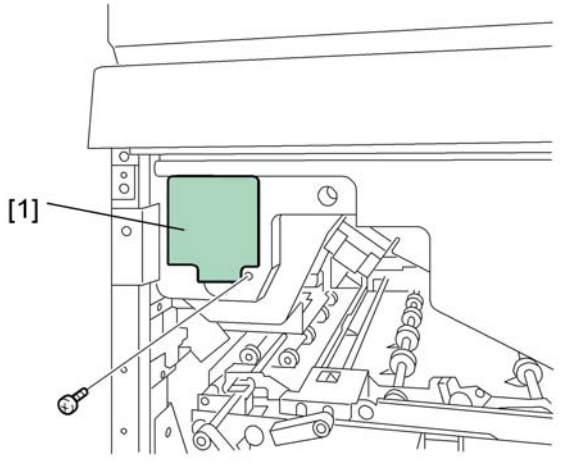
1. Remove:
   - Inserter (☛ p.115)
   - Top cover (☛ p.122)
2. Remove the top cover of the jogging unit [1] (x4)



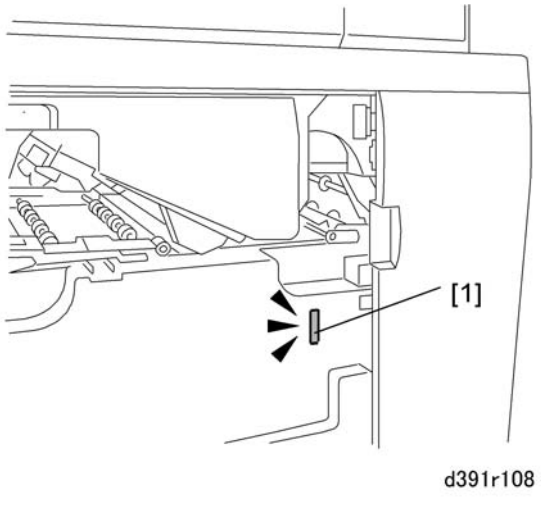
3. Remove:
   [1] Front jogger motor (M4) (x2, x1)
   [2] Rear jogger motor (M5) (x2, x1)

Main Grip Unit

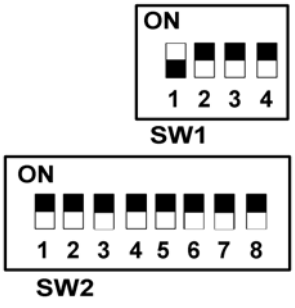
Signature Thickness Sensor (S50)



1. Open the right door and left door.
2. Remove the service board cover [1] (x1).



3. If the system is on, switch off the host machine.
4. Insert piece of cardboard or folded piece of paper into left door switch slot [1].

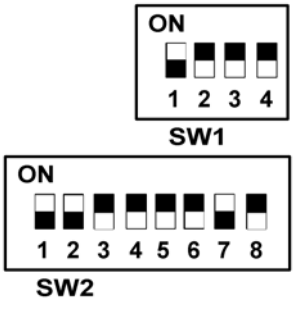


5. On the SW1 bank set DIP SW1 to ON.

Important

- **Confirm that the trimmer unit is inside the bookbinder. Before entering Service Mode the trimmer unit must be inside the machine.**

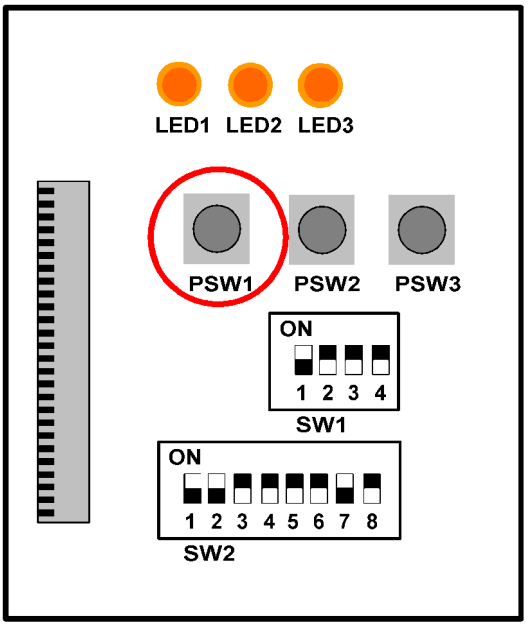
6. Turn the host machine on. The bookbinder is now in Service Mode.



7. On the SW2 bank set DIP SW 1, 2, and 7 to ON.

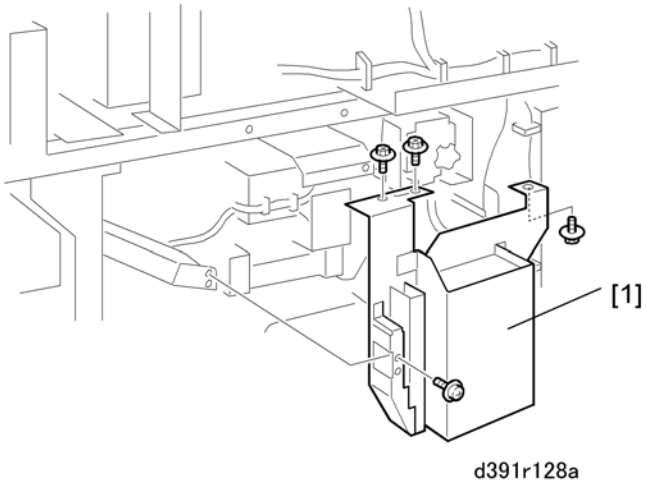
Important

- **Make sure your hands, loose clothing, and tools are well clear of the bookbinder.**



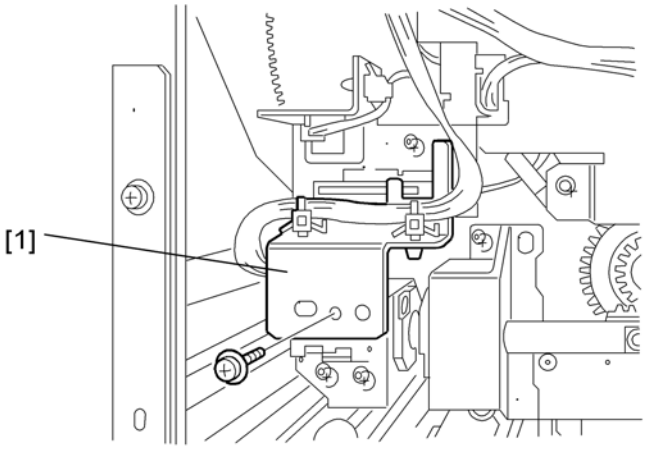
d391r900

8. Press [PSW1] to move the main grip unit.
9. Visually check to confirm that the main grip unit has moved to the binding position (it should be vertical).
10. Turn the host machine off and disconnect the host machine, bookbinder, and any other peripheral devices from the power supply.
11. Confirm that all devices have been switched off and disconnected.



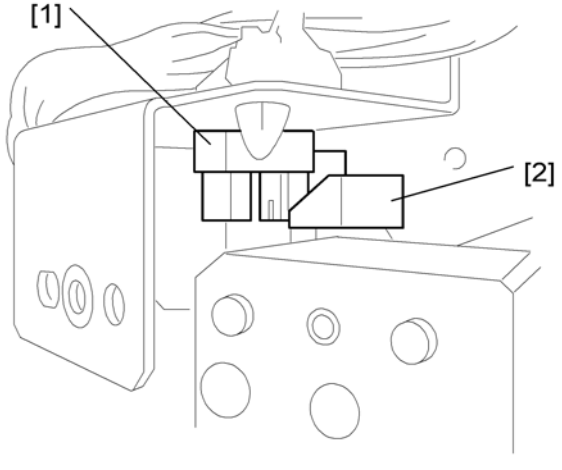
d391r128a

12. Remove the filter case bracket [1] (x4).



d391r111

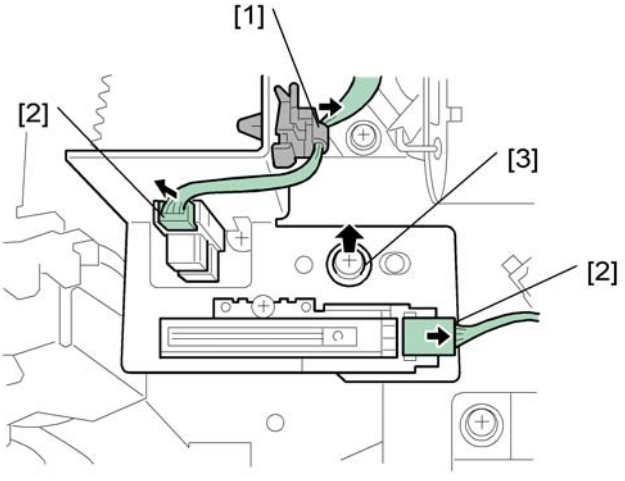
13. Remove the rear cover of the bookbinder.
14. Remove the sensor plate [1] (x1).



d391r112

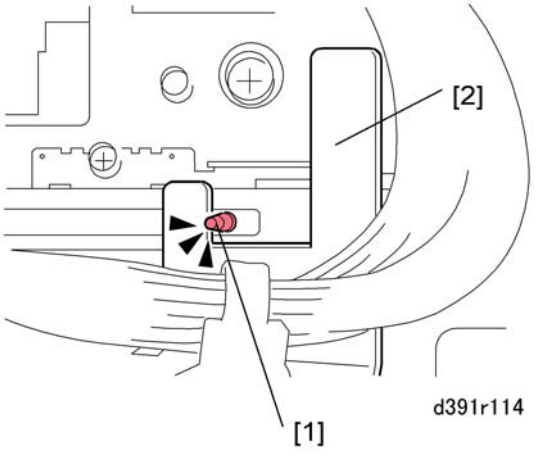
Important

- Work carefully with the protective plate removed to avoid hitting and damaging the exposed sensor [1] and actuator [2].



15. Remove the signature thickness sensor (S50)
    [1] Band x1
    [2] x2
    [3] x1

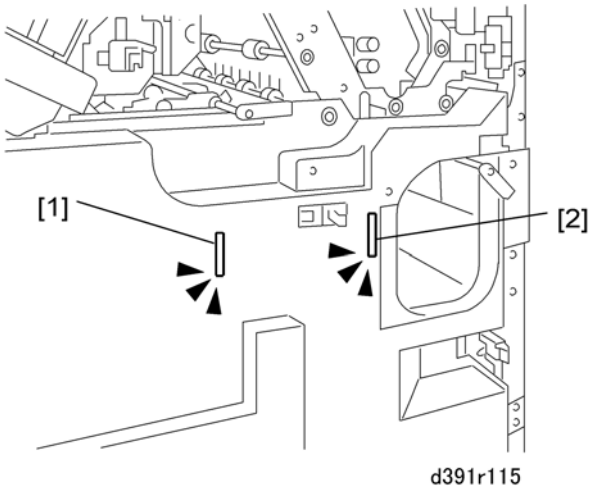
Reinstallation



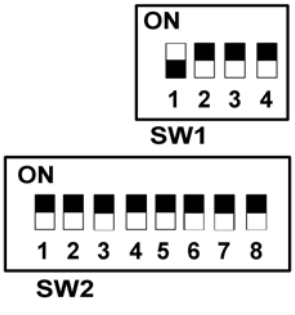
1. When reattaching the sensor plate confirm that the sensor pin [1] is positioned between the sides of the cutout [2] as shown above.
2. After replacement, the signature thickness sensor must be recalibrated. (See "Recalibrating Sensors".)
3. Reset the counter for the signature thickness sensor. (☛ p.137)

Grip Motor: Front (M23)

1. Turn the host machine off.
2. Remove:
   - Left door and right door (☛ p.116)
   - Front inner cover: upper (☛ p.121)



3. Insert piece of cardboard or folded piece of paper into the slots of the left [1] and right [2] door switches.
4. Remove the service board cover (x1).

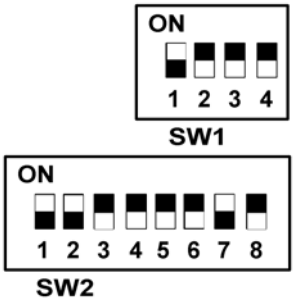


5. On the SW1 bank set DIP SW1 to ON.

Important

- **Confirm that the trimmer unit is inside the bookbinder. Before entering Service Mode the trimmer unit must be inside the machine.**

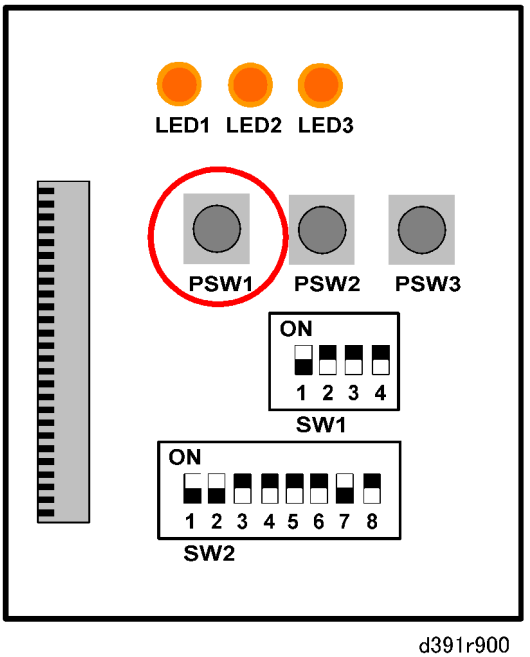
6. Turn the host machine on. The bookbinder is now in Service Mode.



7. On the SW2 bank set DIP SW 1, 2, and 7 to ON.

Important

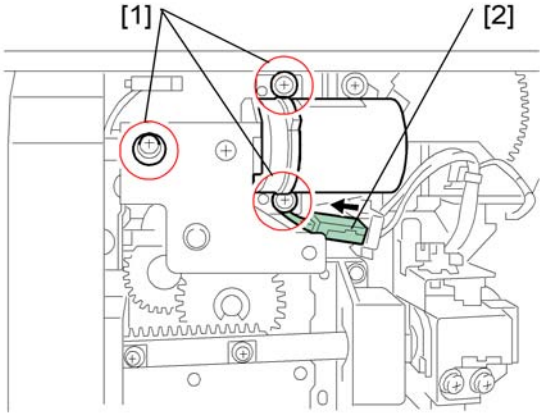
- **Make sure your hands, loose clothing, and tools are well clear of the bookbinder.**



8. Press [PSW1] to move the main grip unit.
9. Visually check to confirm that the main grip unit has moved to the binding position (it should be vertical).
10. Turn the host machine off and disconnect the host machine, bookbinder, and any other peripheral devices from the power supply.
11. Confirm that all devices have been switched off and disconnected.

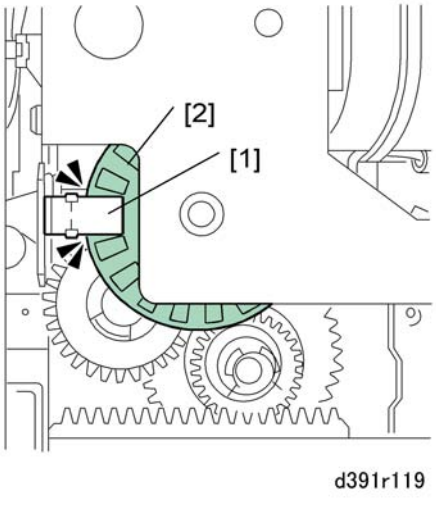
⚠CAUTION

- The power must be off with all power cords disconnected.



d391r118

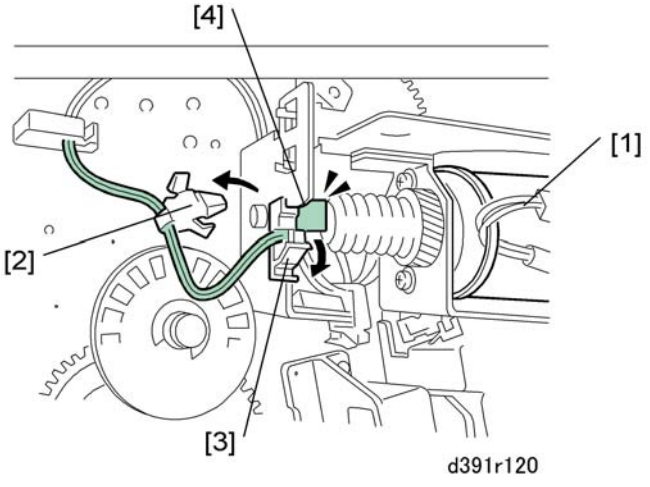
12. Remove the bracket screws [1] (x3).
13. Disconnect the connector [2] (x1).



d391r119

Important

- Work carefully during removal to avoid damaging the encoder wheel [2] and sensor [1].

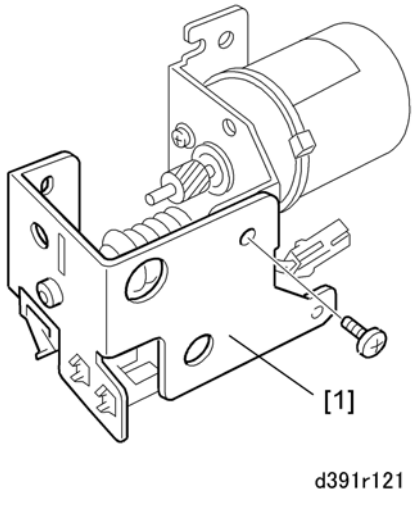


14. To free the motor [1], remove:

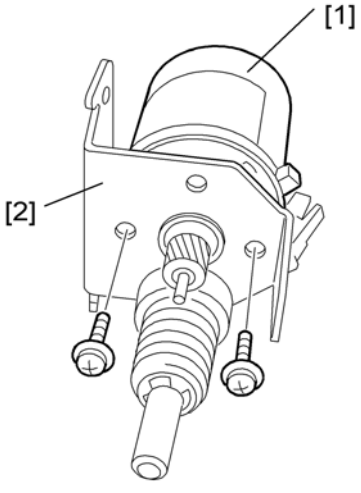
    [2] Band x1

    [3] x1

    [4] x1



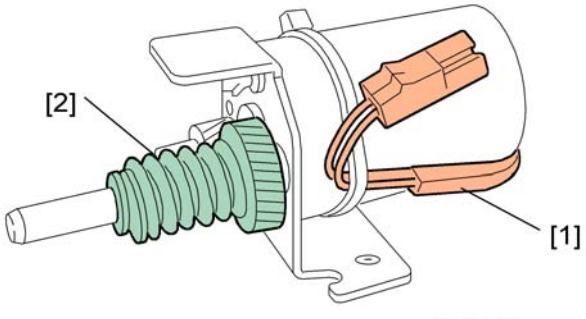
15. Remove the sensor bracket [1] (x2).



d391r122

16. Remove the motor [1] from the bracket [2] (x2).

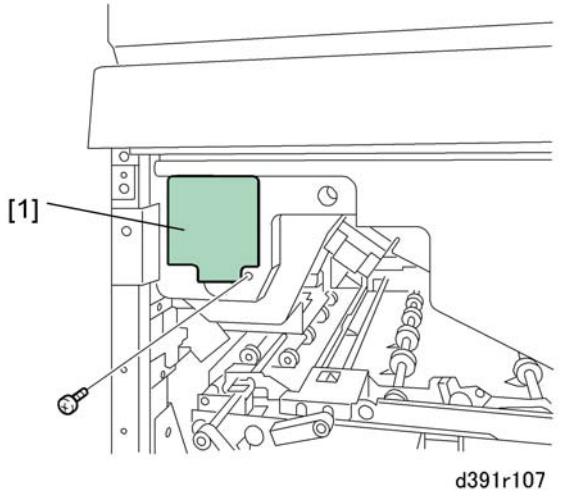
Reinstallation



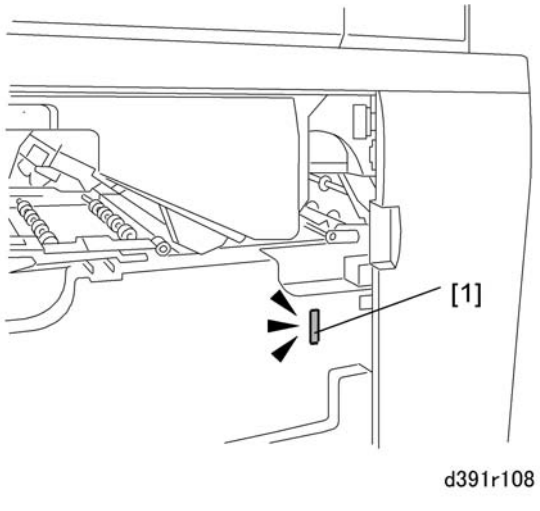
d391r123

Before reinstalling the motor confirm that the harness [1] and gear [2] are positioned as shown above.

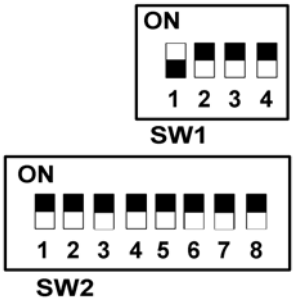
Grip Motor (Rear) (M24)



1. Turn the host machine off.
2. Open the right door and left door.
3. Remove service board cover [1]



4. Insert piece of cardboard or folded piece of paper into the left door switch slot [1].

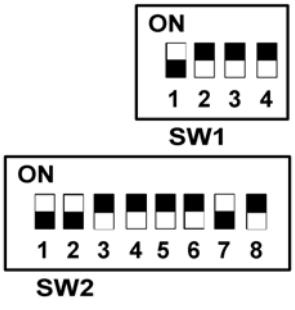


5. On the SW1 bank set DIP SW1 to ON.

Important

- **Confirm that the trimmer unit is inside the bookbinder. Before entering Service Mode the trimmer unit must be inside the machine.**

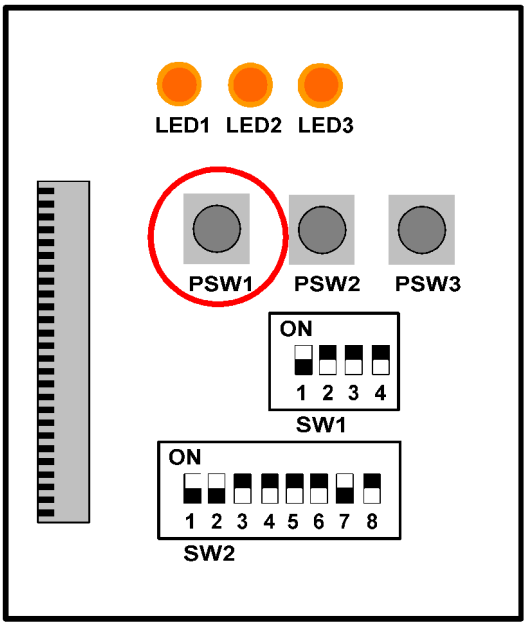
6. Turn the host machine on. The bookbinder is now in Service Mode.



7. On the SW2 bank set DIP SW 1, 2, and 7 to ON.

Important

- **Make sure your hands, loose clothing, and tools are well clear of the bookbinder.**

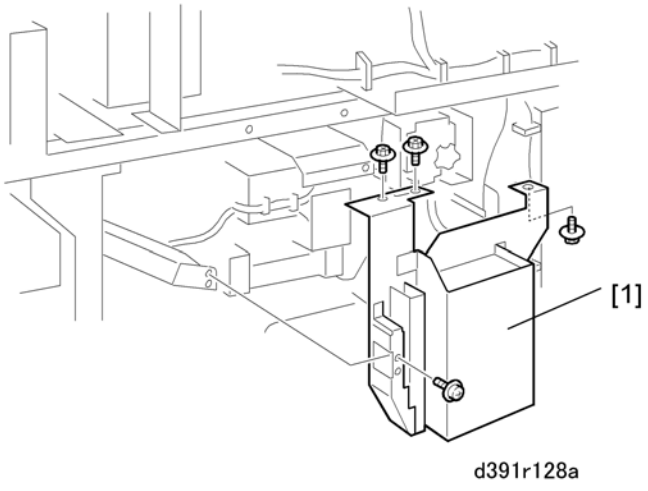


8. Press [PSW1] to move the main grip unit.
9. Visually check to confirm that the main grip unit has moved to the binding position (it should be vertical).
10. Turn the host machine off and disconnect the host machine, bookbinder, and any other peripheral devices from the power supply.
11. Confirm that all devices have been switched off and disconnected.

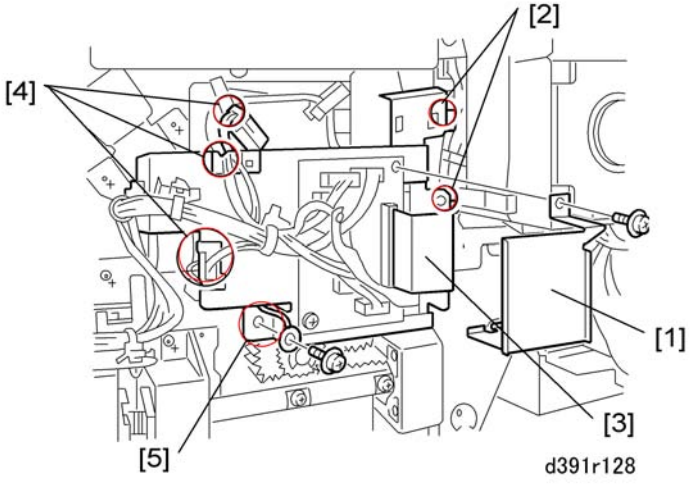
⚠CAUTION

- The power must be off with all power cords disconnected.

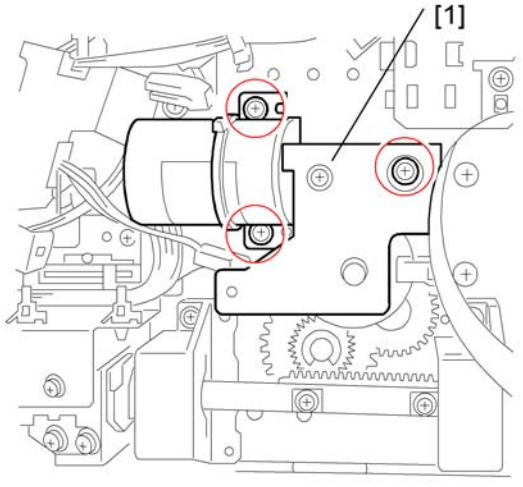
12. Remove the rear cover.
13. Remove the rear upper cover.



14. Remove the deodorization filter bracket [1] (x4).

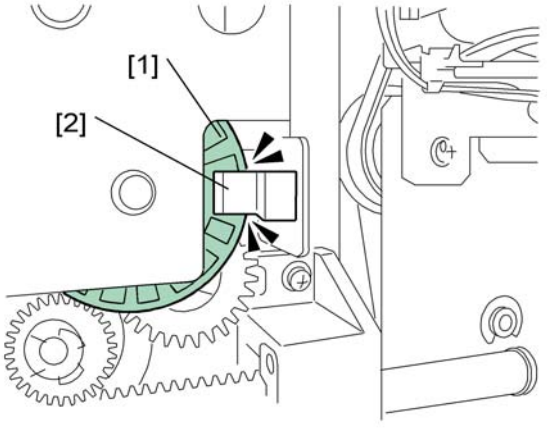


15. Remove the relay board:
    [1] Plate (x1)
    [2] Flexible press plates x2
    [3] FFC x1
    [4] x3, x3
    [5] x1



d391r129

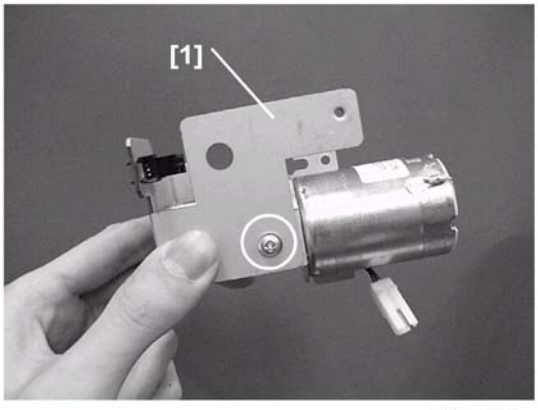
16. Disconnect the motor bracket [1] (x3).



d391r130

Important

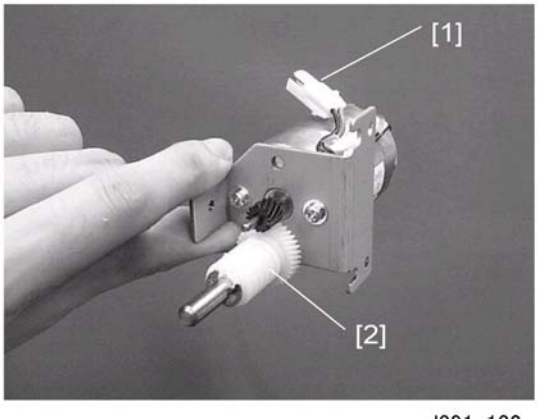
- Work carefully during removal to avoid damaging the encoder wheel [1] and sensor [2].



d391p131

17. Remove the sensor plate [1] (x1).

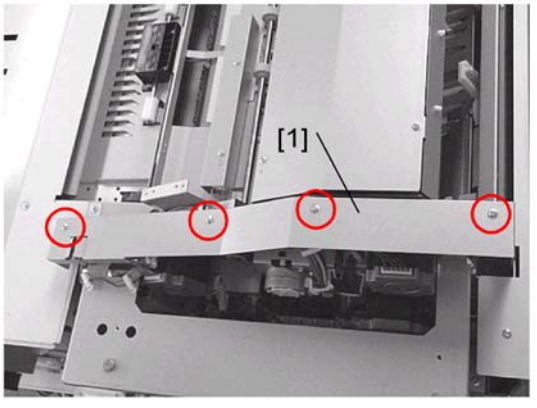
Reinstallation



d391p132

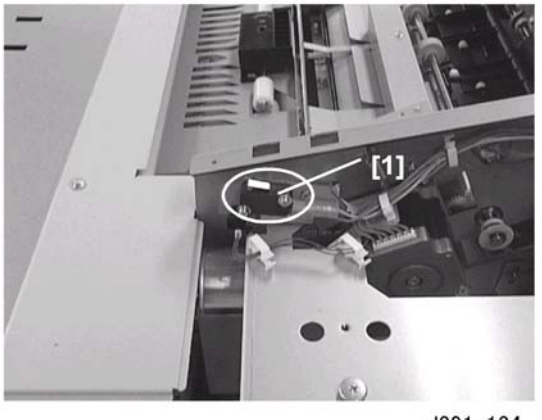
Before reinstalling the motor confirm that the harness [1] and gear [2] are positioned as shown above.

Grip Unit Rotation Motor (M21)



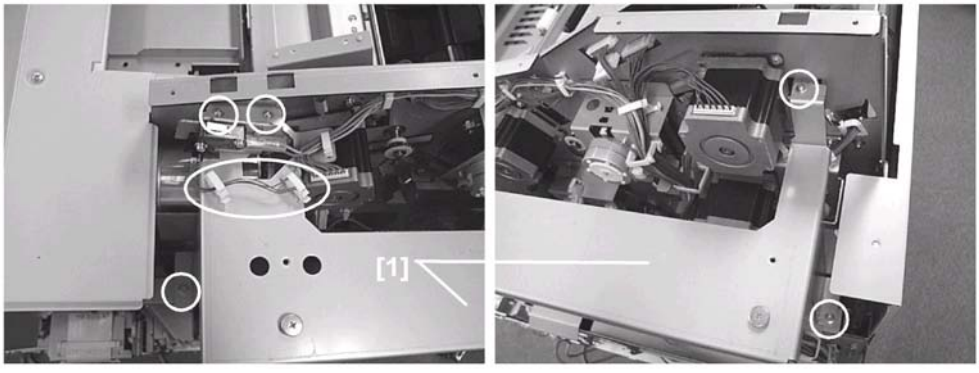
d391p133

1. Open the inserter.
2. Remove:
   - Top cover (☛ p.122)
   - Rear upper cover (☛ p.119)
   - Rear cover (☛ p.119)
3. Remove the harness cover [1] (🔩 x4).



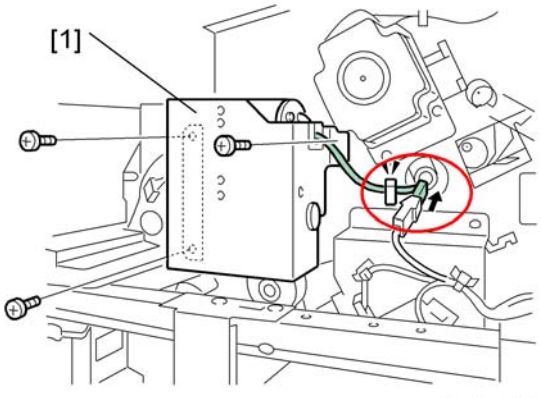
d391p134

4. Remove the top cover switch [1] (🔩 x2).



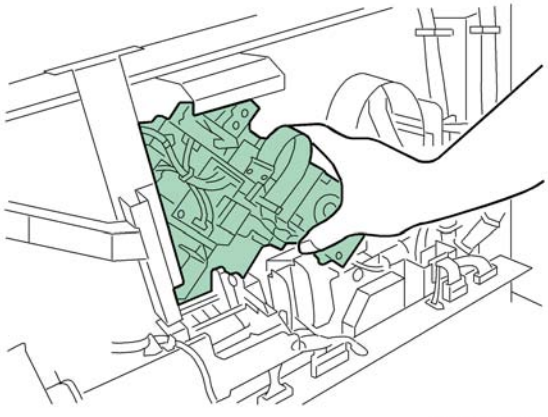
d391p135a d391p135b

5. Remove the top cover frame [1] (x5).



d391r136

6. Remove the protection plate [1] (x1, x1, x3).



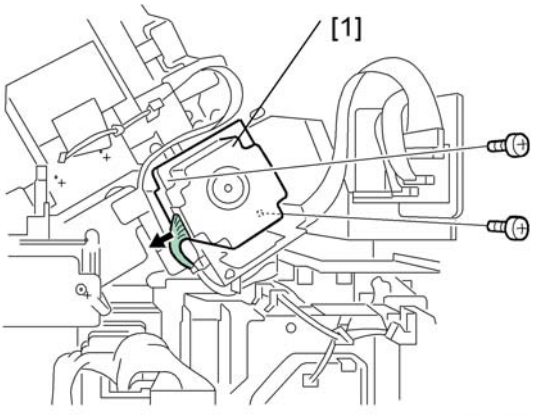
d391r137

7. While holding the main gripper steady with one hand, remove the grip unit rotation motor.

Important

- Holding the main gripper steady prevents it from wobbling and disturbing the position of the main gripper.

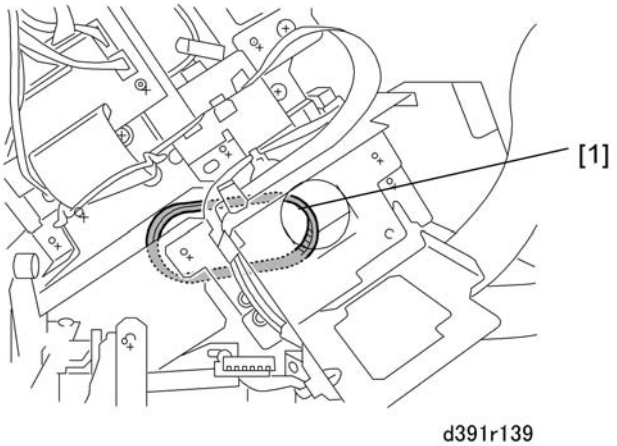
Main Grip Lift Motor (M22)



d391r138

1. Remove the rear cover. (☛ p.119)
2. Remove the main gripper lift motor [1] (x1, x2).

Reinstallation



d391r139

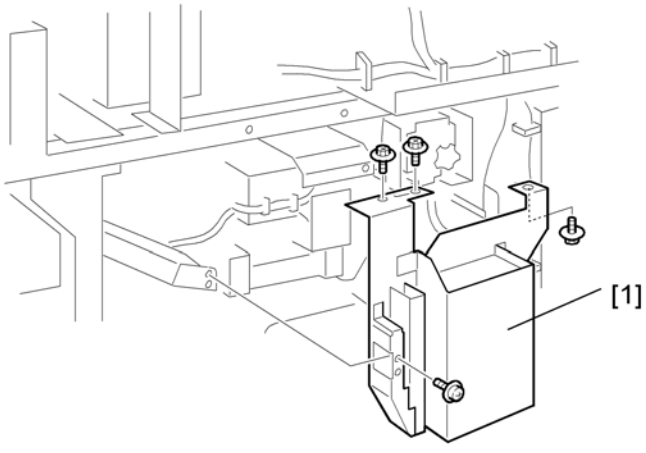
1. When you reinstall the main grip lift motor, do not forget to attach the belt [1].

Gluing Unit

Filters

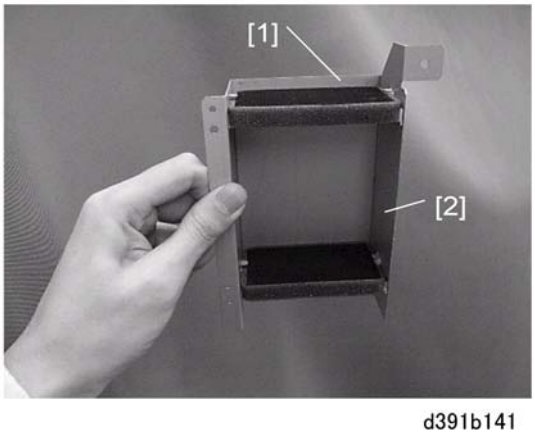
Deodorization Filter: Gluing Unit

1. Remove the rear cover. (☛ p.119)
2. Remove the rear upper cover. (☛ p.119)



d391r128a

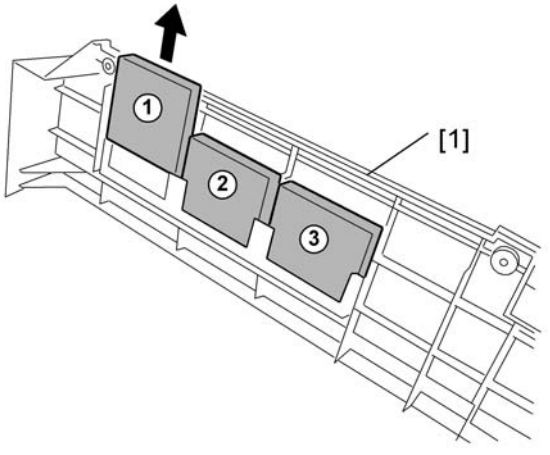
3. Remove the filter case [1] (x4).



d391b141

4. Remove the filter case [1] (x3).
5. Remove the filters [2].
6. Reset the counters after replacing the replaced filters. (☛ p.137)

Deodorization Filter: Rear Upper Cover



1. Remove rear upper cover [1] of the bookbinder (x5). (p.119)
2. Remove the deodorization filters (x3).

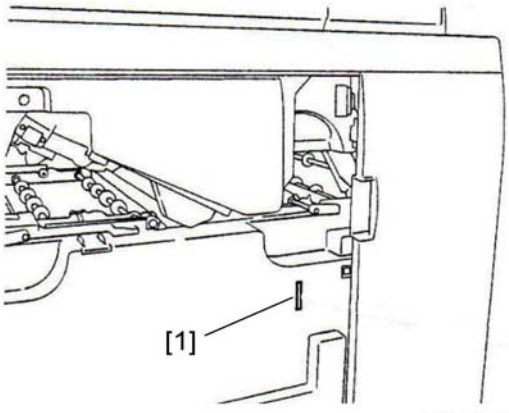
Glue Heater

1. If the system is on, turn it off.
2. Allow the glue heater to cool for at least 30 min.

CAUTION

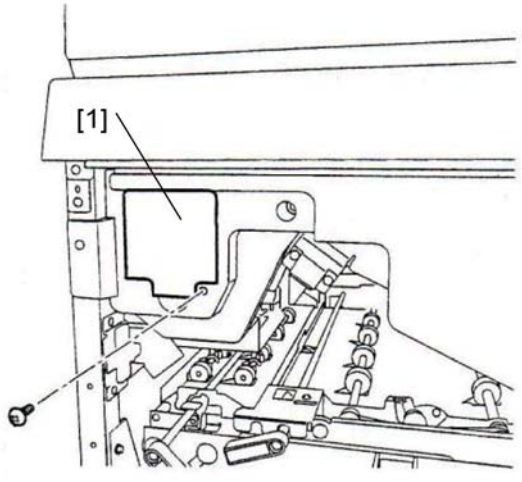
- The glue heater heats the glue to about 160C (F). At this temperature the glue is a liquid that flows easily. Allow the glue to cool until it is solid at the heater is no longer warm to touch.

3. Open the left door.



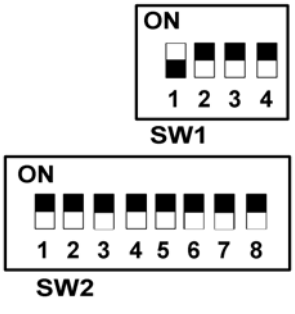
d391r941

4. Insert piece of cardboard or folded piece of paper into the slot [1] of the left door switch.



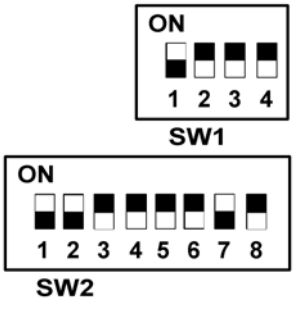
d391r940

5. Remove the cover [1] of the service board (x1).
6. If the system is on, switch off the host machine.



7. On the SW1 bank set DIP SW1 to ON.

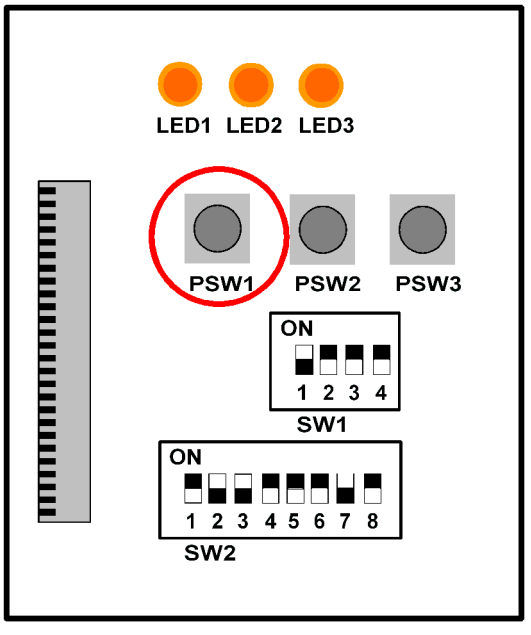
8. Turn the host machine on. The bookbinder is now in Service Mode.



9. On the SW2 bank set DIP SW 1, 2, and 7 to ON.

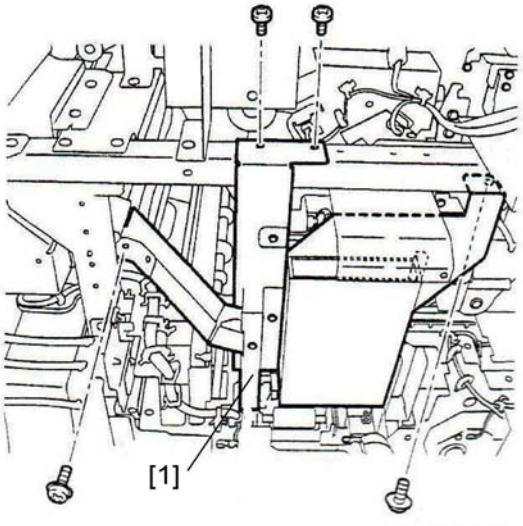
Important

- **Make sure your hands, loose clothing, and tools are well clear of the bookbinder.**



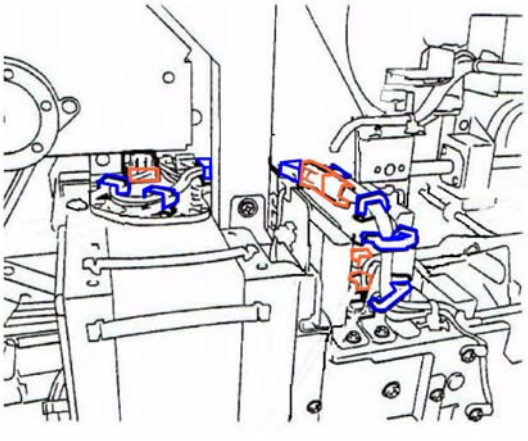
d391r900

10. Press [PSW1] to move the main grip to its initial position.
11. Switch the system off and disconnect the host machine and bookbinder from their power sources.
12. Remove:
    - Rear cover (☛ p.119)
    - Rear upper cover (☛ p.119)



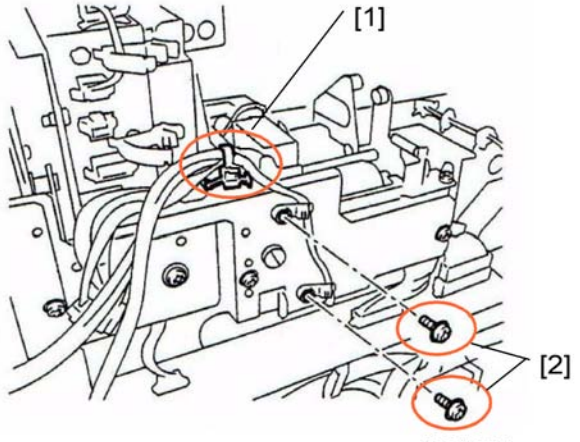
d391r942

13. Remove the glue unit transport stay [1] (x4).



d391r943

14. Disconnect the harnesses (x8, x5).

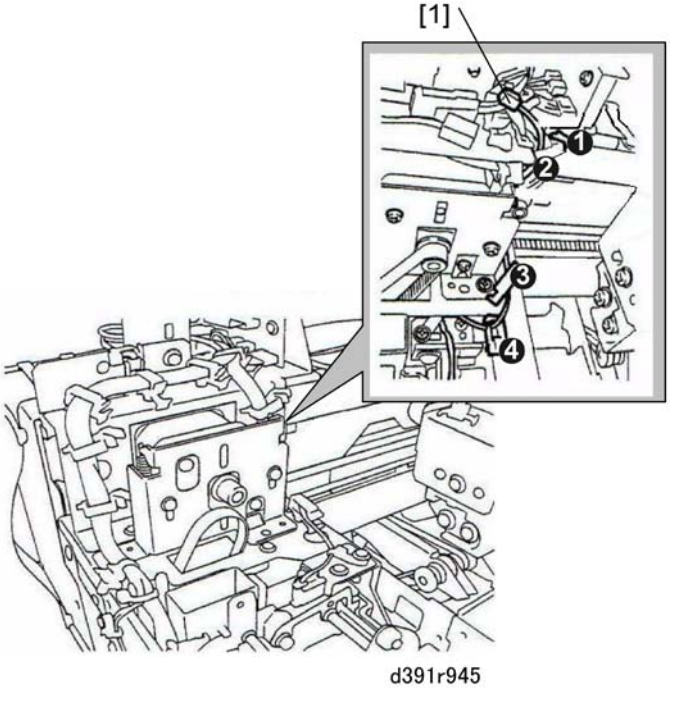


d391r944

15. Remove:

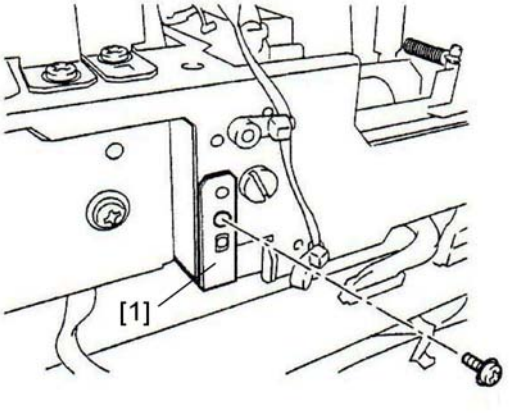
    [1] Standoff x1

    [2] x2



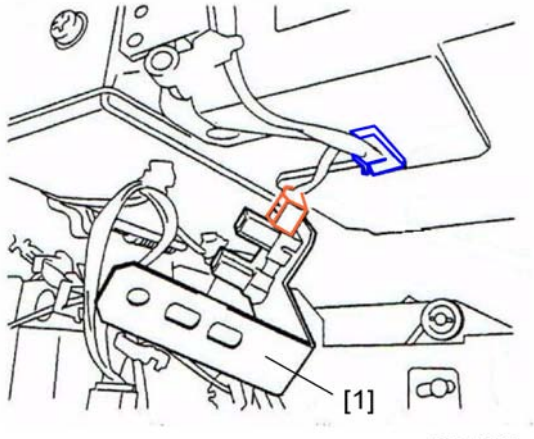
d391r945

16. Release the thermistor harness [1] at the front side of the glue heater unit (x4).



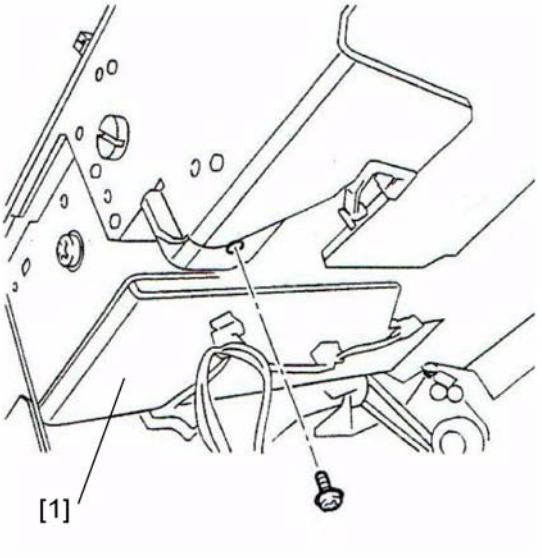
d391r946

17. Remove sensor bracket [1] (x1).



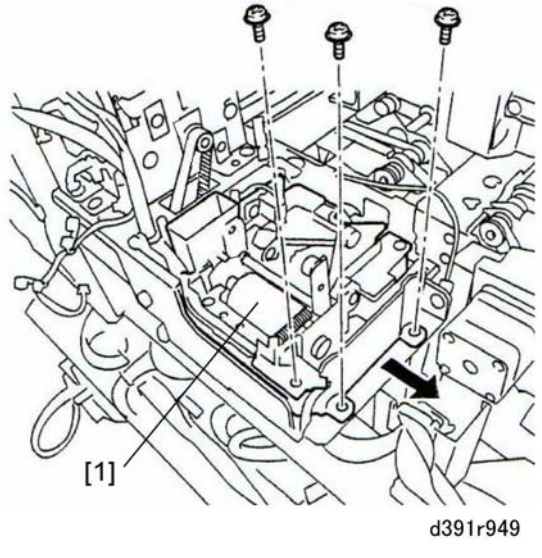
d391r947

18. Remove sensor bracket and sensor [1] (x1, x1).



d391r948

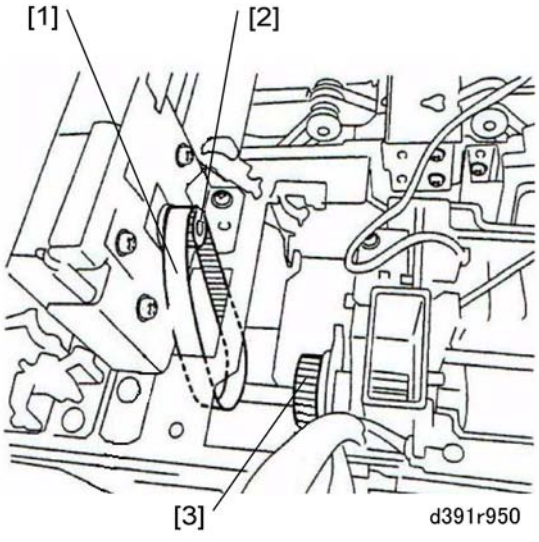
19. Remove the screw from the bottom of the glue heater unit [1] (x1).



d391r949

20. Remove the glue heater unit [1] (x3).

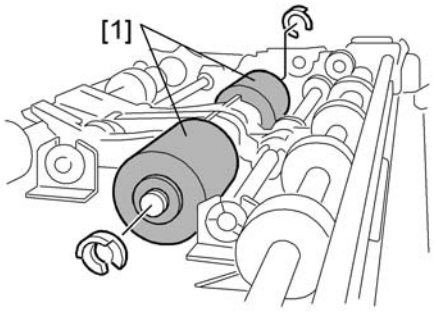
Reinstallation



1. Reconnect the timing belt [1] to the motor drive gear [2] and shaft gear [3].
2. Reset the counter after replacing the glue heater. (☛ p.137)

Cover Transport Unit

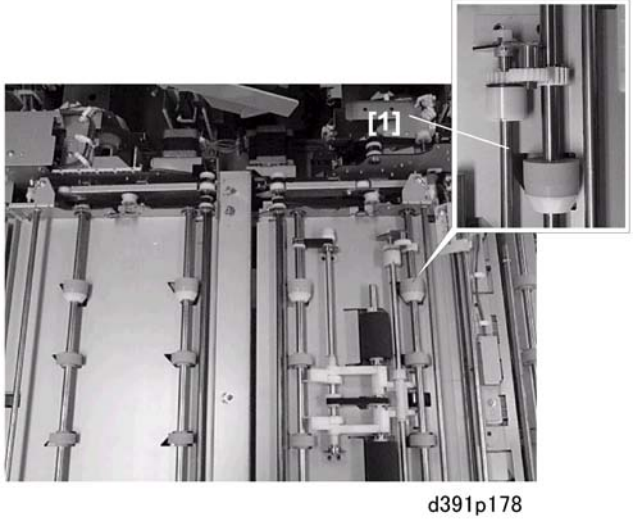
Switchback Rollers: Cover Transport



d391r174

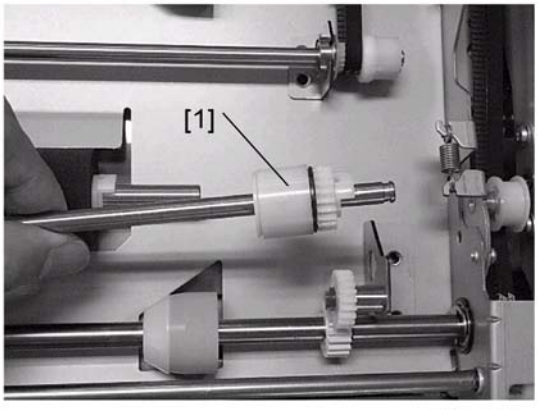
1. Open the right and left door.
2. Remove the switchback rollers [1] (x2).
3. Reset the counter after replacing the switchback rollers. (☛ p.137)

Torque Limiter



d391p178

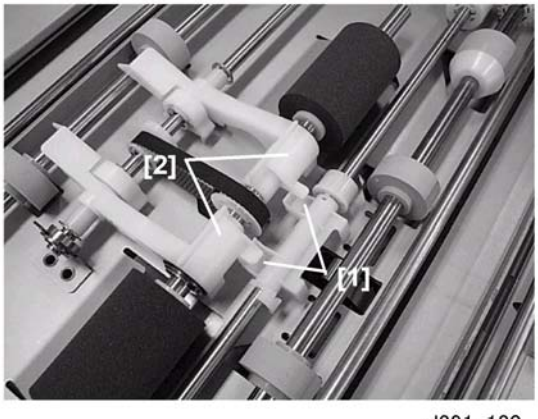
1. Pull out the cover transport unit drawer. (☛ p.126)
2. Remove the roller release lever shaft [1] (x1, Bushing x1).



d391p179

3. Remove the torque limiter [1] (x1, Gear x1).

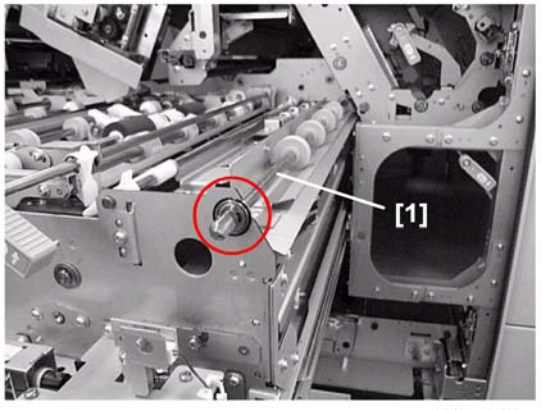
Reinstallation



d391p180

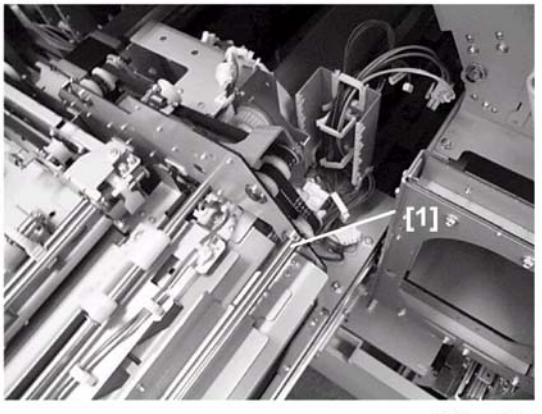
When you reinstall the roller release lever shaft, make sure that the pawls [1] of the shaft are below the roller holders [2].

Anti-Static Brushes: Upper and Lower Right



d391p181

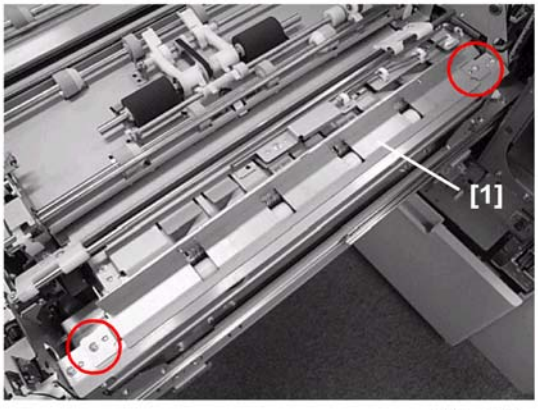
1. Pull out the cover transport unit.
2. Disconnect the roller [1] (ℂ x1, Bearing x1).



d391p182

3. Push the shaft of roller [1] to the rear.
4. Remove bearing, free the timing belt, and remove the roller.

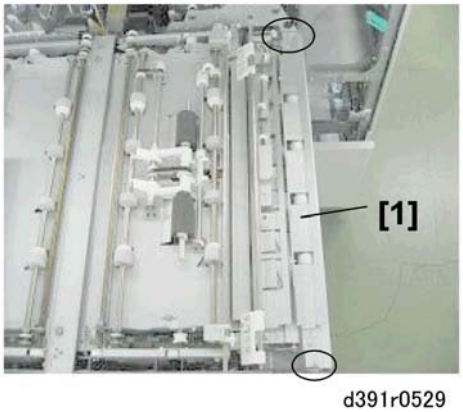
Anti-Static Brush: Upper Right



d391p183

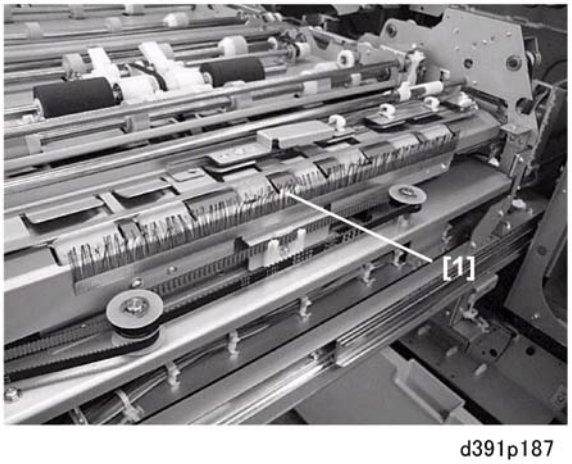
5. Remove the anti-static brush [1] (☞ x2).

Anti-Static Brush: Lower Right



d391r0529

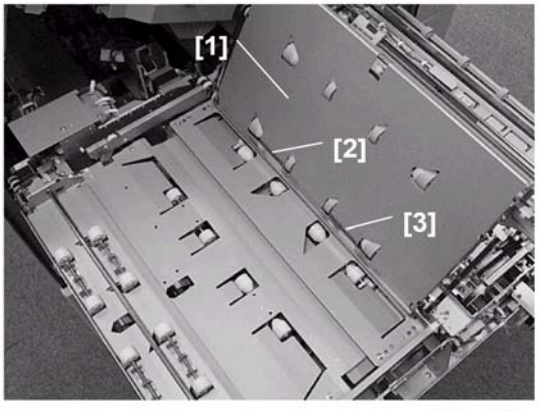
6. Remove the idle roller unit of transport roller 1 [1] (☞ x2).



d391p187

7. Remove the anti-static brush [1].
8. Reset the counter after replacing the brushes. (☛ p.137)

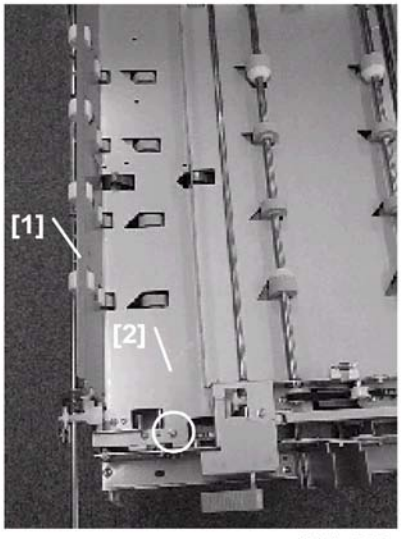
Anti-Static Brush: Left



d391p188

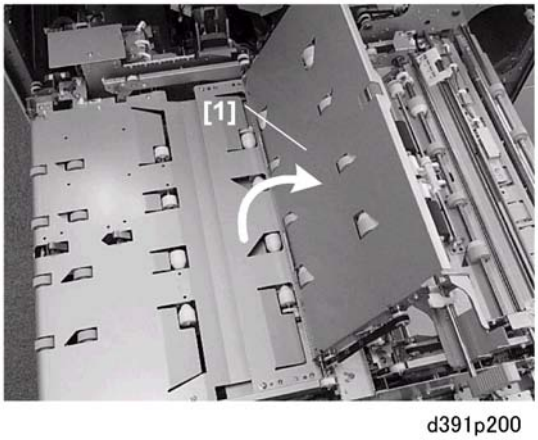
1. Pull out the cover transport unit. (☛ p.126)
2. Open cover [1].
3. Remove anti-static brushes [2] and [3].
4. Reset the counter after replacing the brushes. (☛ p.137)

Exit Rollers 1/2 Unit



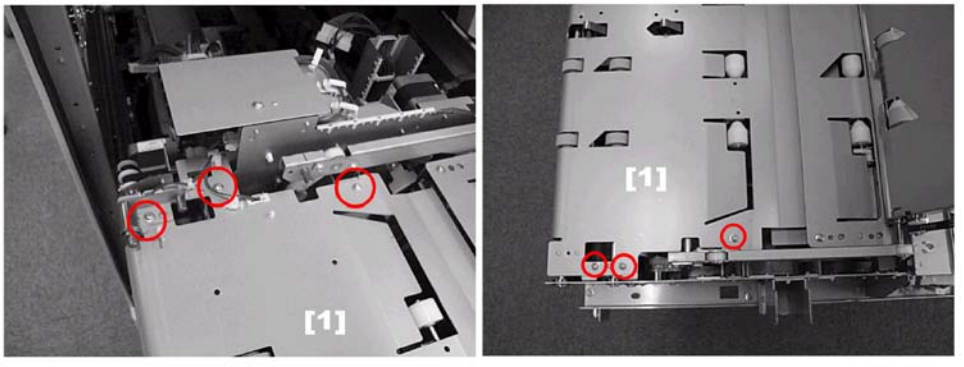
d391p199

1. Pull out the cover transport unit. (☛ p.126)
2. Open cover [1].
3. Remove guide plate [2] (☞ x1).
4. Remove exit idle roller unit.



d391p200

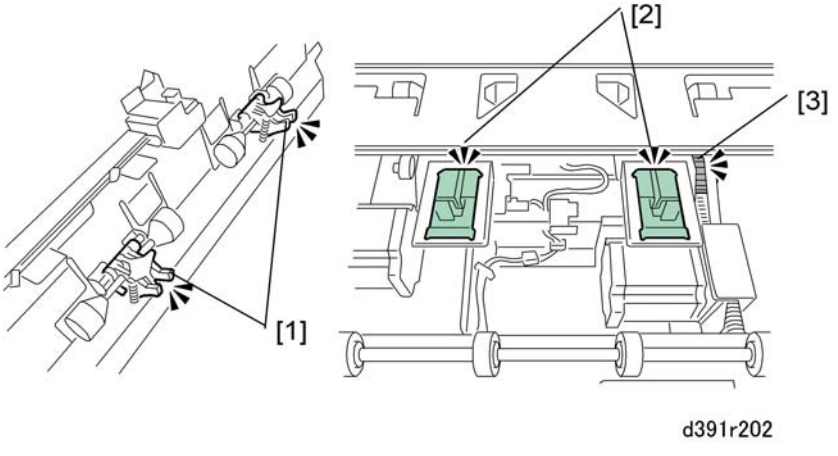
5. Open cover [1].



d391p201

6. Remove exit roller unit [1] (x6, x1).

Reinstallation

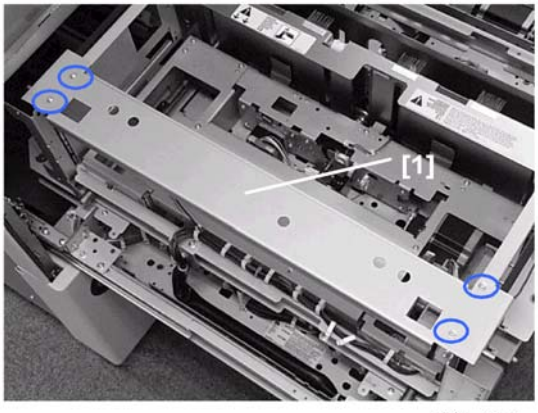


d391r202

Confirm that the pressure arms [1] on the rear of the exit roller unit are inserted into the holes [2] of the spine fold unit. If the fit is difficult, manually turn the gear [3] of the motor to move the spine fold unit.

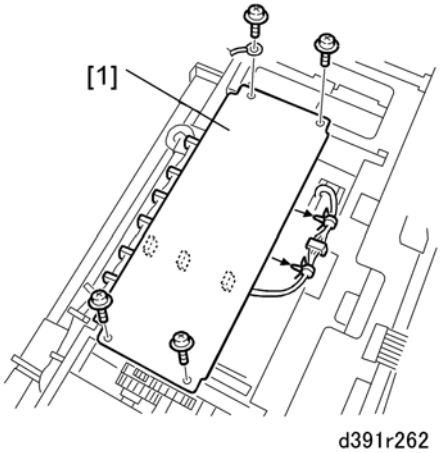
Trimming Unit

Torque Diode: Signature Rotation Unit



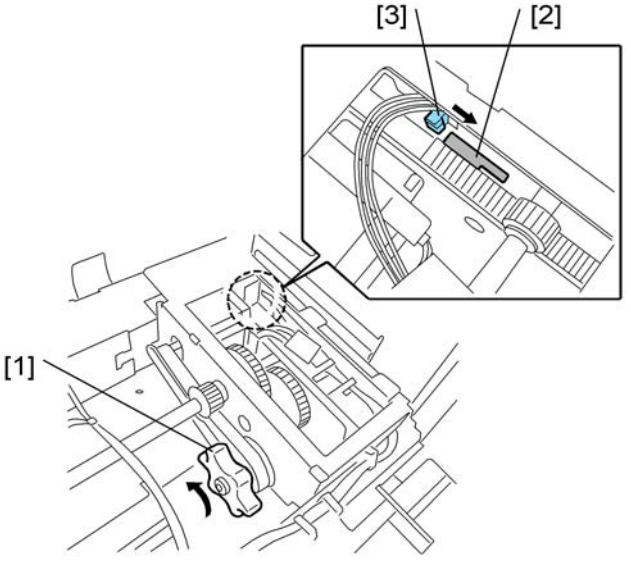
d391p261

1. Pull out the trimming unit drawer. (☛ p.128)
2. Remove left stay [1] (x4).

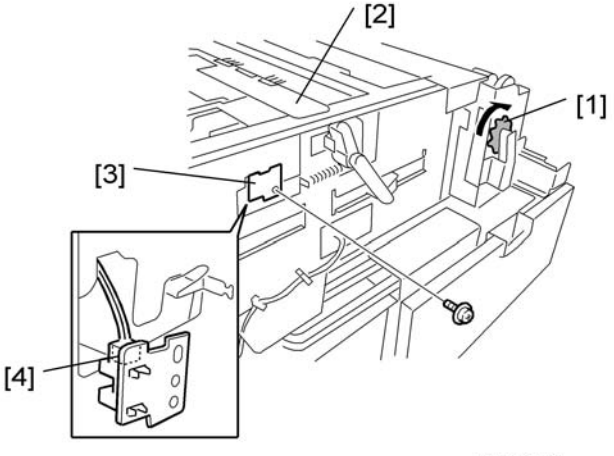


d391r262

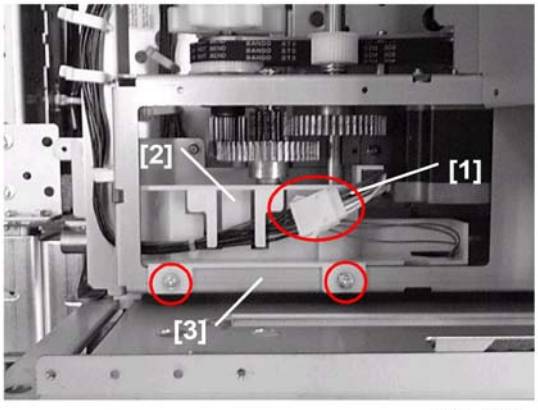
3. Remove harness plate [1] (x4, x9, x1)



4. Rotate knob [1] counter-clockwise until sensor plate [2] separates from sensor [3].

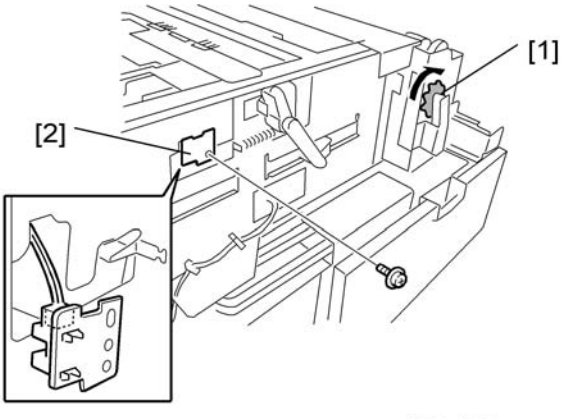


5. Rotate wheel [1] to raise the rotation unit [2] then remove sensor plate [3] (x1)
6. Disconnect sensor [4].



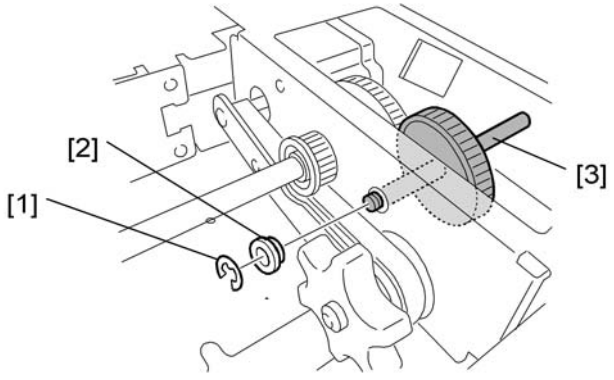
d391p266

7. Release connector [1].
8. While gently pressing down on the rotation unit [2], remove harness guide [3] (x2).



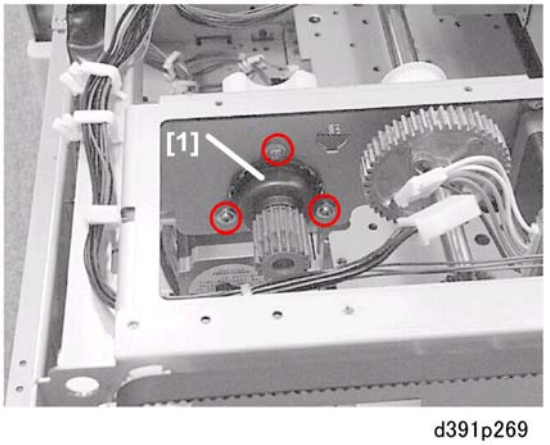
d391r267

9. Turn wheel [1] to move rotation unit until you can see the screw.
10. Remove the sensor plate [2] (x1).



d391r268

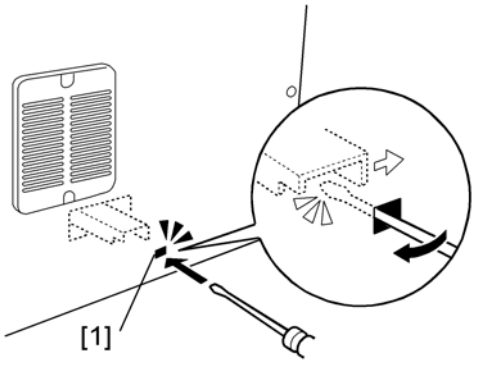
11. Remove:
    [1] C x1
    [2] Shaft x1
    [3] Gear x1



d391p269

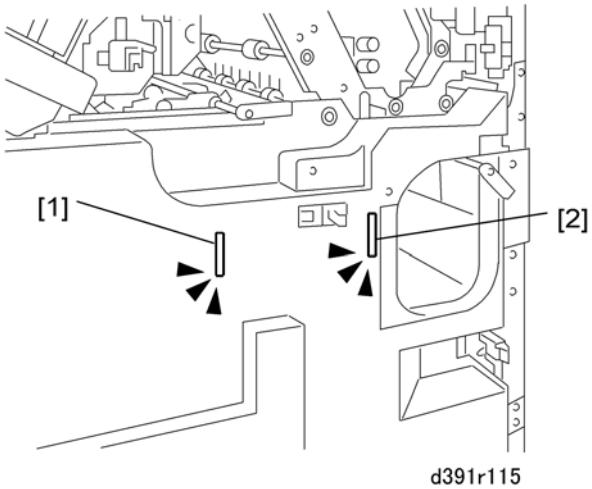
12. Move the rotation unit to a position where it is easy to work and remove the torque diode [1] (x3).
13. Reset the counter after replacing the torque limiter diode. (☛ p.137)

Blade Cradle



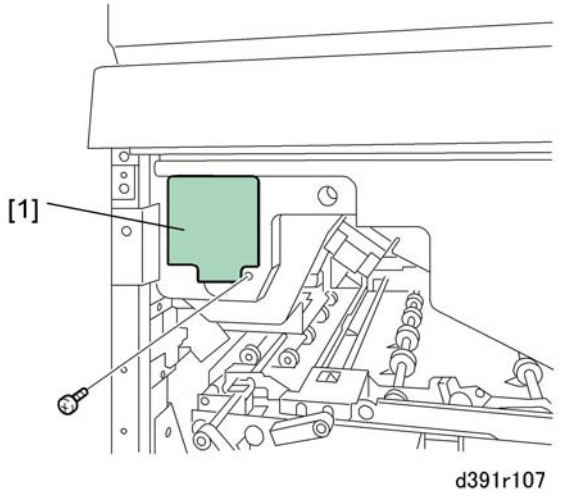
d391r291

1. Insert the tip of a small screwdriver into the small hole [1] near the left rear corner of the bookbinder.
2. Move the screwdriver in the direction of the arrow to release the stacking tray lock.
3. At the front open the book tray door and the trimmings box drawer.
4. Remove the front lower cover. (☛ p.121)

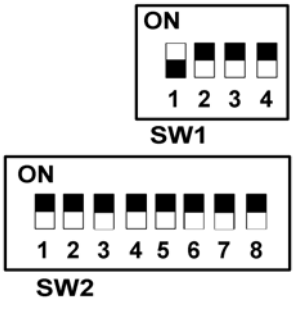


d391r115

5. Insert piece of cardboard or folded piece of paper into the slot [1] of the left door switch and the slot [2] of the right door switch.



6. Remove the service board cover [1] (x1).
7. If the system is on, switch off the host machine.

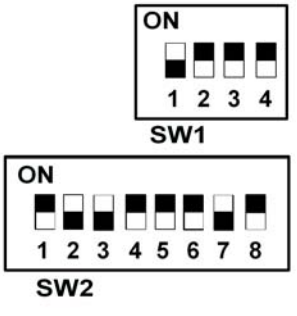


8. On the SW1 bank set DIP SW1 to ON.

Important

- **Confirm that the trimmer unit is inside the bookbinder. Before entering Service Mode the trimmer unit must be inside the machine.**

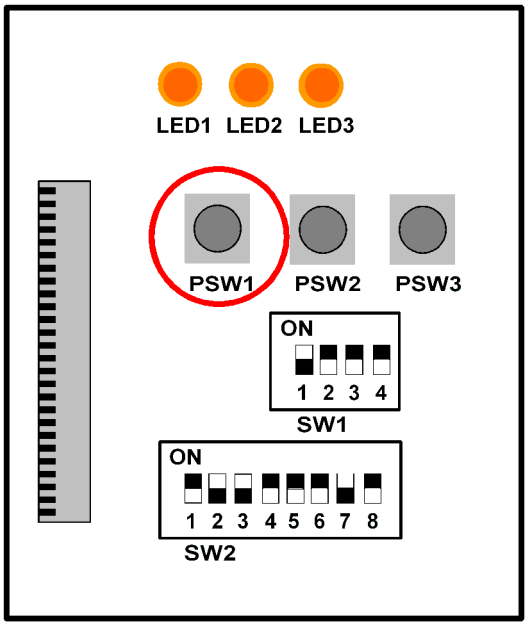
9. Turn the host machine on. The bookbinder is now in Service Mode.



10. On the SW2 bank set DIP SW 2, 3, and 7 to ON.

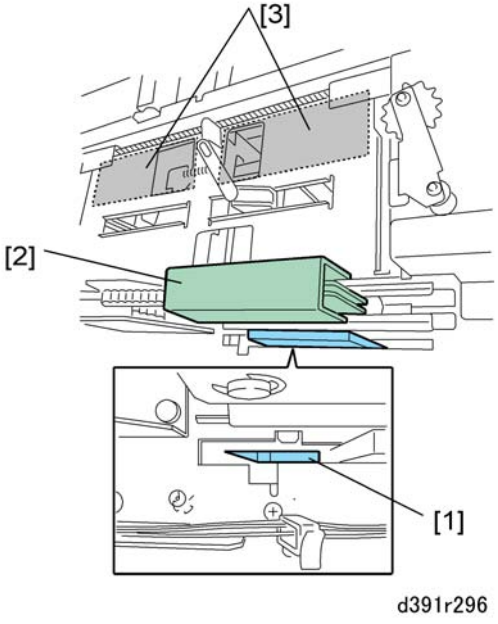
Important

- Make sure your hands, loose clothing, and tools are well clear of the bookbinder.



d391r900

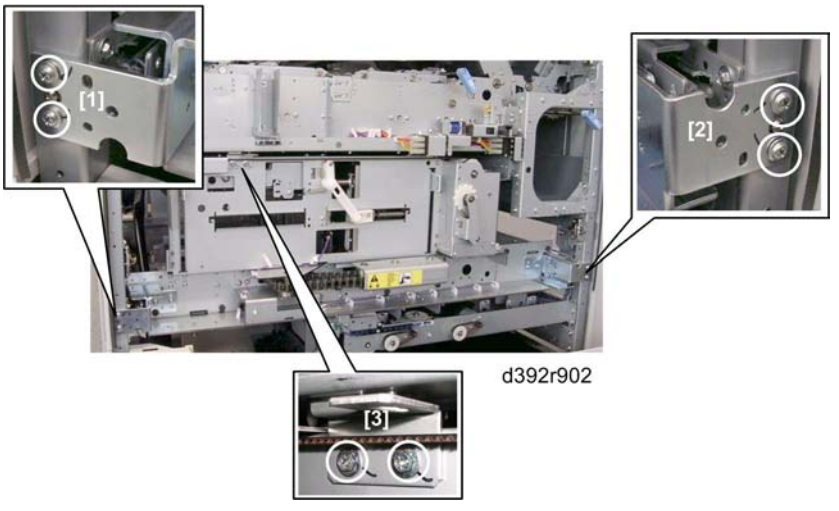
11. Press [PSW1].



d391r296

This operates the blade [1], edge press plate [2], and signature rotation unit [3]. The blade retracts to the safe position.

12. Turn the host machine off and disconnect the host machine, bookbinder, and any other peripheral devices from the power supply.
13. Confirm that all devices have been switched off and disconnected.



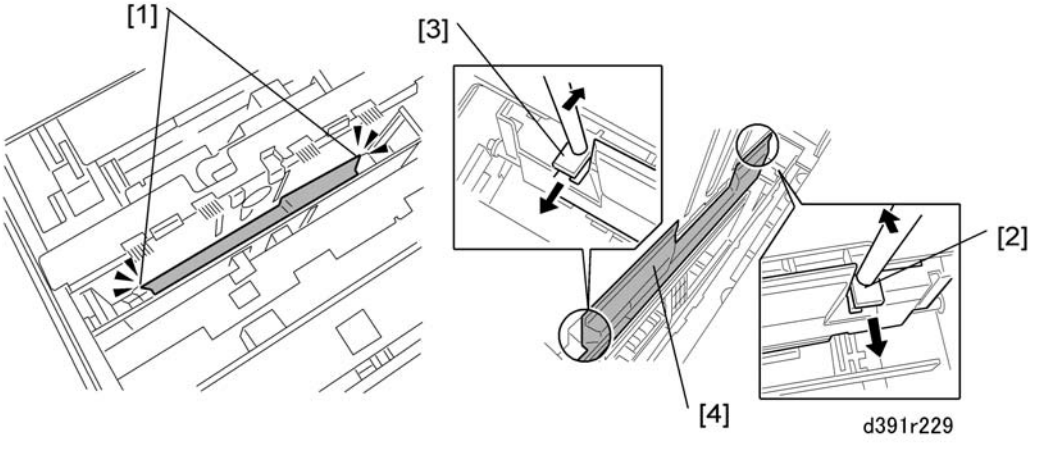
14. Remove:

    [1] Left brace (x2)

    [2] Right brace (x2)

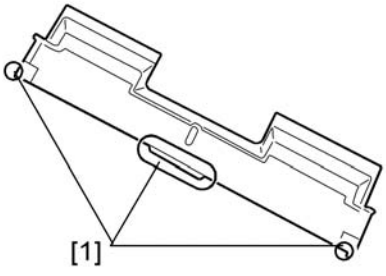
    [3] Lock plate (x2)

15. Pull out the trimming unit [4] on its rails.

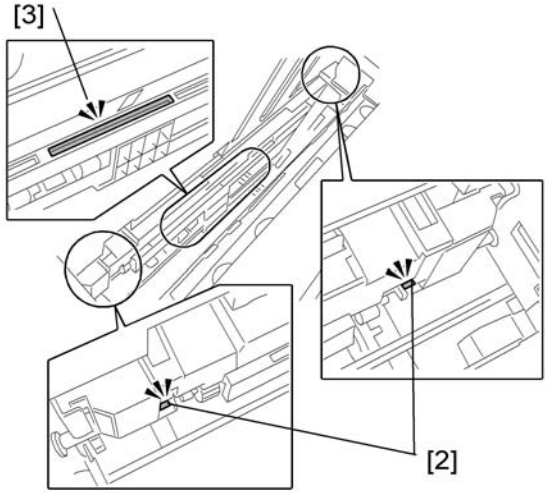


16. At the front and rear [1] insert a screwdriver at [2] and [3], press in the direction of the arrows to release the pawls of the blade cradle, then remove the blade cradle [4].

Reinstallation

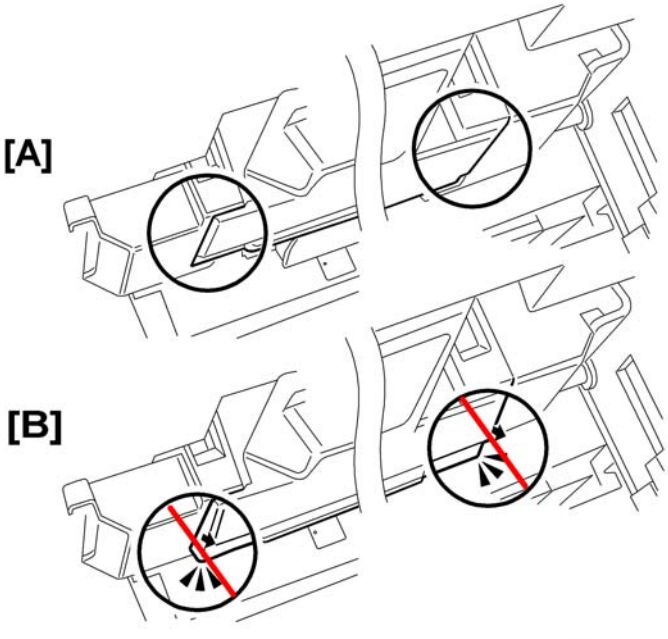


d391r301



d391r302

1. When reinstalling the blade cradle confirm that the three pawls [1] of the cradle are inserted in the holes of the trimming unit [2] and locked in the groove [3].



d391r303

2. After the blade cradle has been reinstalled, at the front and rear confirm that blade cradle is aligned correctly [A] and not floating away [B] from or misaligned with the trimming unit.

Important

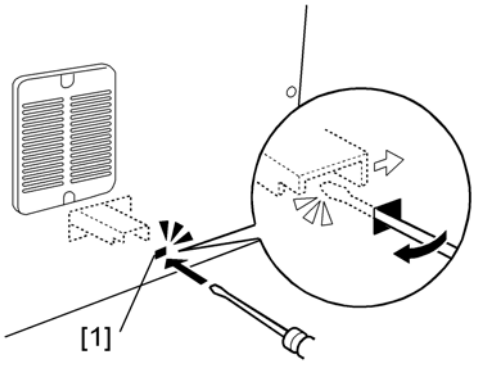
- Always replace the trimming blade and trimmings catcher after replacing the cradle. (The trimming blade, trimmings catcher, and blade cradle should always be replaced together.)

Trimming Blade, Trimmings Catcher

Important

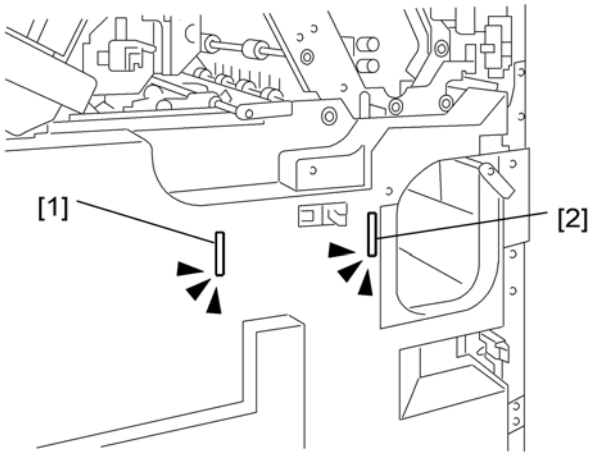
- The trimming blade and trimmings catcher are always replaced together.

Removing the Trimming Blade

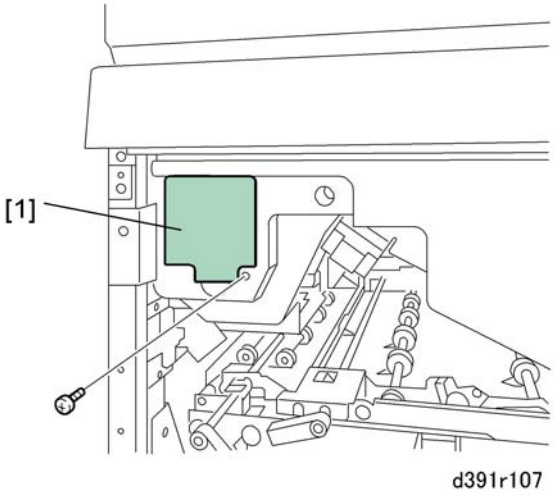


d391r291

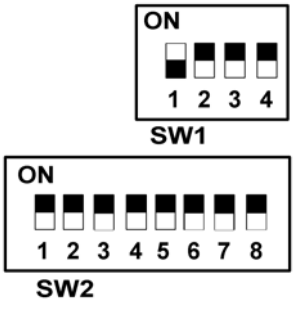
1. Insert the tip of a small screwdriver into the small hole [1] near the left rear corner of the bookbinder.
2. Move the screwdriver in the direction of the arrow to release the stacking tray lock.
3. At the front open the book tray door and the trimmings box drawer.
4. Remove the front lower cover.



5. Insert piece of cardboard or folded piece of paper into the slot [1] of the left door switch and the slot [2] of the right door switch.



6. Remove the service board cover [1] (x1).
7. If the system is on, switch off the host machine.

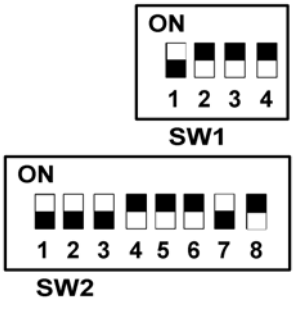


8. On the SW1 bank set DIP SW1 to ON.

Important

- **Confirm that the trimmer unit is inside the bookbinder. Before entering Service Mode the trimmer unit must be inside the machine.**

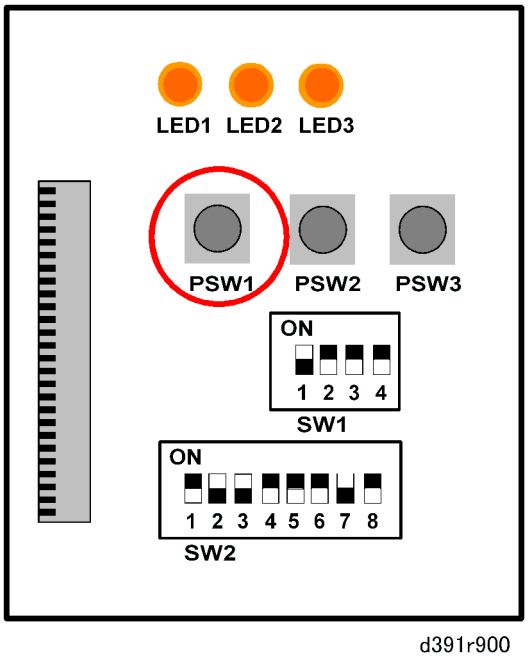
9. Turn the host machine on. The bookbinder is now in Service Mode.



10. On the SW2 bank set DIP SW 1, 2, 3, and 7 to ON.

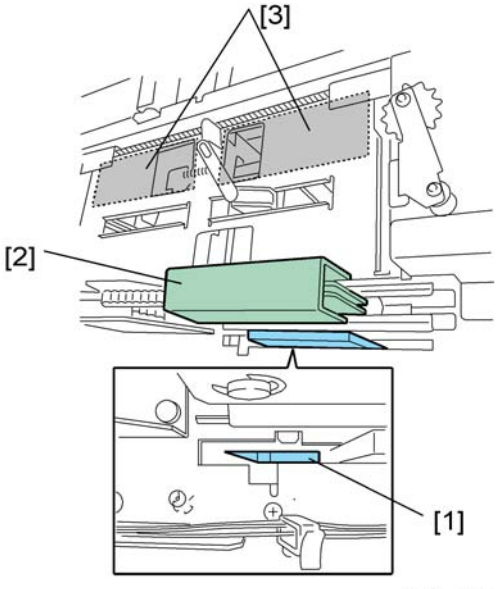
Important

- **Make sure your hands, loose clothing, and tools are well clear of the bookbinder.**



d391r900

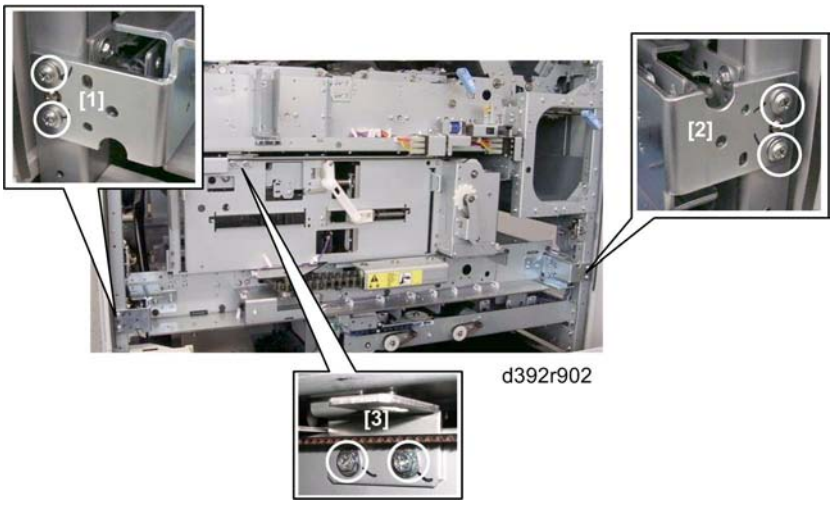
11. Press [PSW1].



d391r296

This operates the blade [1], edge press plate [2], and signature rotation unit [3]. The blade retracts to the safe position.

12. Turn the host machine off and disconnect the host machine, bookbinder, and any other peripheral devices from the power supply.
13. Confirm that all devices have been switched off and disconnected.



d392r902

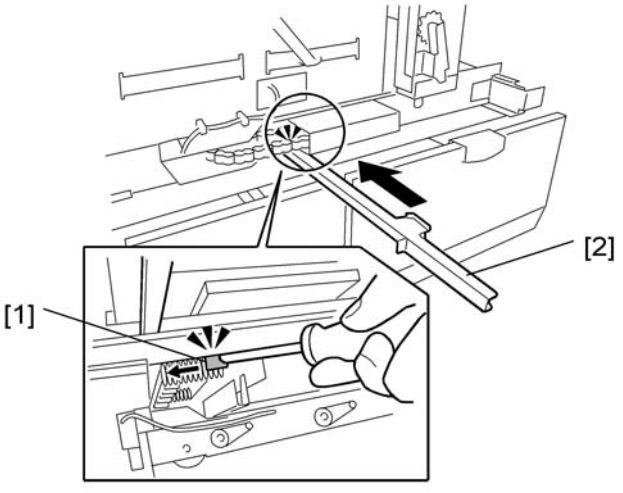
14. Remove:

    [1] Left brace (x2)

    [2] Right brace (x2)

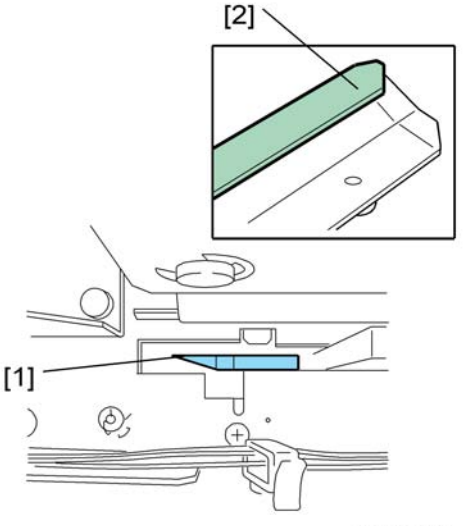
[3] Lock plate (x2)

15. Pull out the trimming unit [4] on its rails.



d391r313

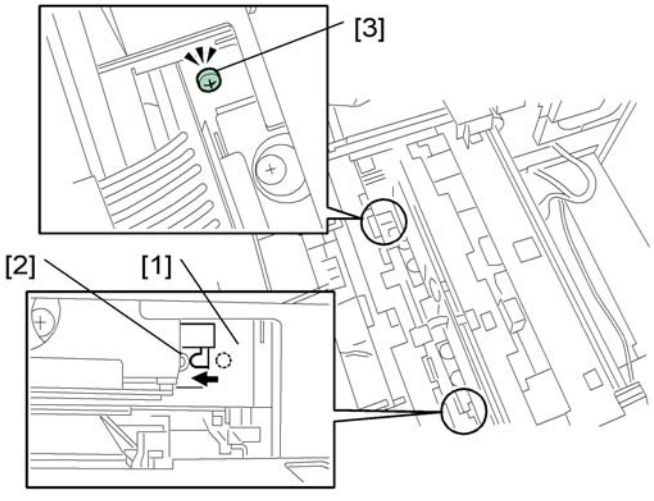
16. While pushing the lever [1] to the left with a screwdriver, insert the sheath [2] provided with the new blade along the edge of the old blade inside the bookbinder.



d391r314

Important

- Make sure that the edge of the blade [1] slides into the groove [2] of the sheath.

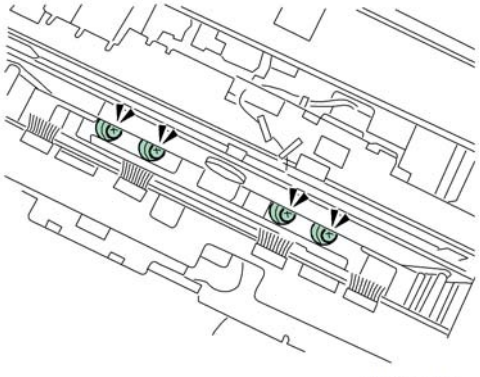


d391r315

17. Press in the direction of the arrow so the home position of the sheath [1] lines up with the cutout of the blade [2].
18. Use the accessory screw (provided with the sheath) to fasten the sheath at [3] (x1).

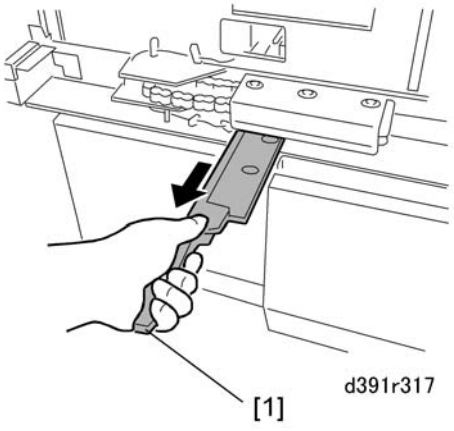
Important

- **Do not apply excessive force to this screw. Turn the screw until it is snug against the side of the sheath.**



d391r316

19. While holding the sheath press the blade slightly to the rear, and remove the blade screws (x4).

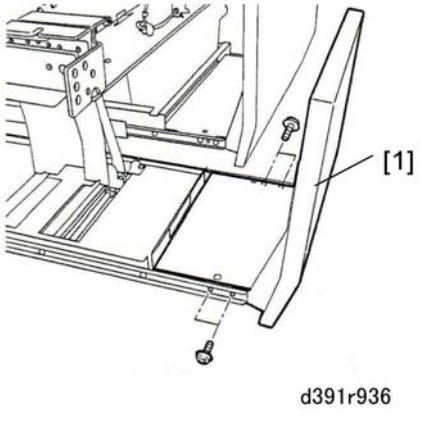


20. Hold the sheath by its grip and slowly pull the blade out.

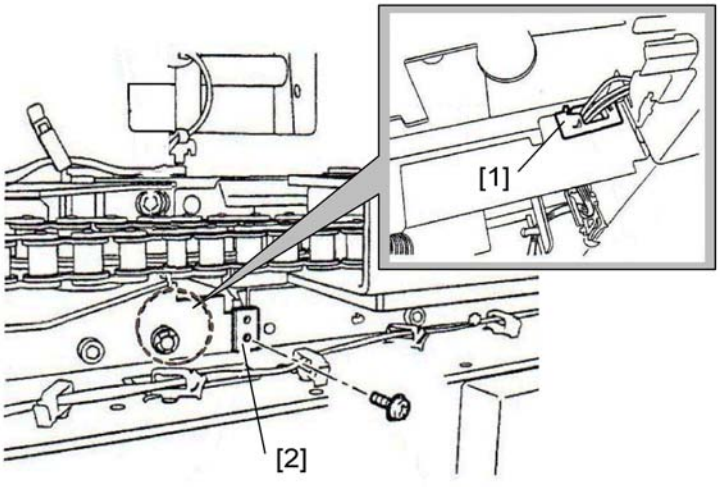
⚠CAUTION

- To avoid serious injury, you must pull on the blade by the attached sheath. The edge of the blade can cause a serious cut if the sheath becomes separated.
- Always hold the sheath and blade with two hands, one on the handle and one hand on the end near the screw. Never hold the blade and sheath by only the handle.

Replacing the Trimmings Catcher



1. Remove cover [1] (🔩 x4).

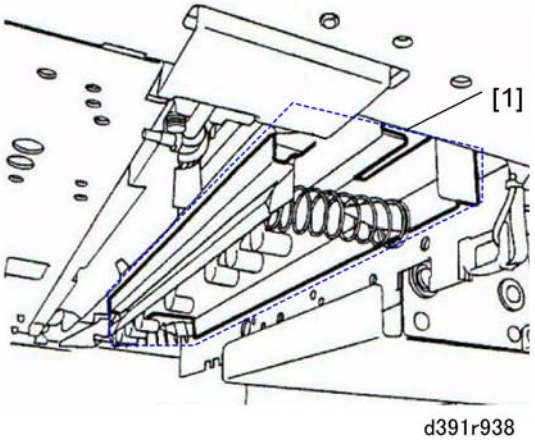


d391r937

2. Remove:

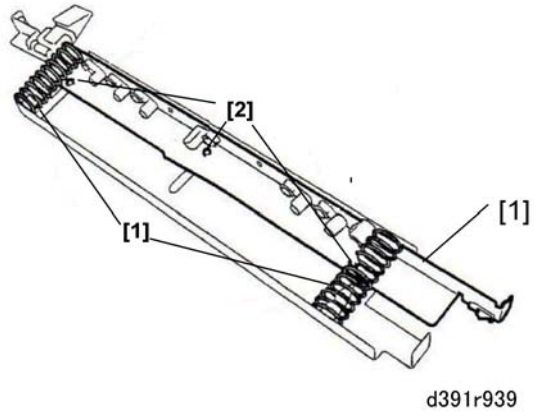
   [1] x1

   [2] Bracket (x1)



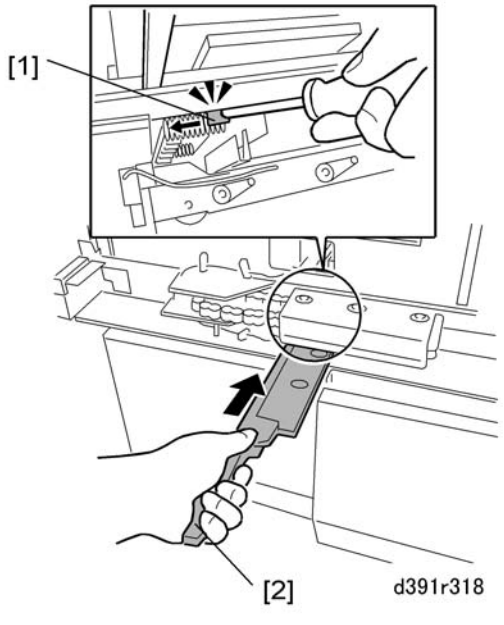
d391r938

3. Underneath the trimming unit remove the trimmings catcher unit [1].



4. Remove the slider plate [1].
   [1] Springs x 2
   [2] ℂ x 2

Installing the New Blade



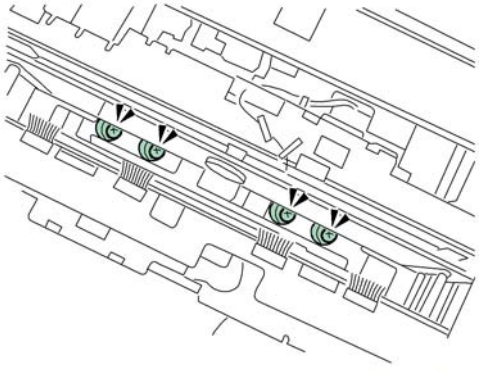
1. Pick up the new blade with the sheath attached.

⚠CAUTION

- Never remove the sheath of the new blade until the blade and sheath have been set in the trimmer unit.

- The sheath is removed only after the blade and attached sheath have been inserted in the trimmer unit.

2. While pushing the lever [1] to the left, push the new blade and sheath [2] into the bookbinder.

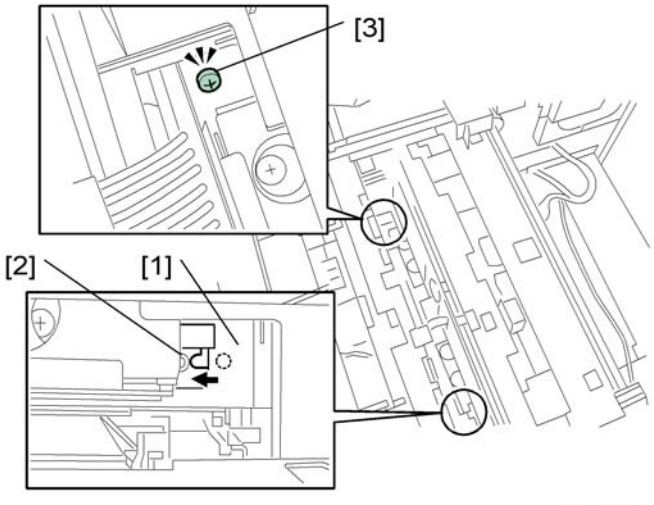


d391r316

3. While pressing the blade to the rear, attach the blade with the accessory screws (x4).

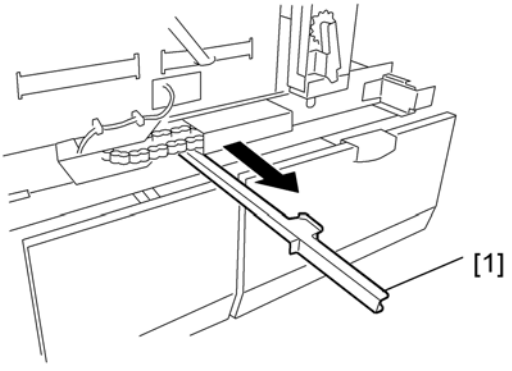
Important

- **You must use the lock screws to fasten the blade. They are lock screws specially designed for use with the blade.**



d391r315

4. Press in the direction of the arrow so the home position of the sheath [1] lines up with the cutout of the blade [2].
5. Remove the screw [3] to release the sheath from the blade (x1).



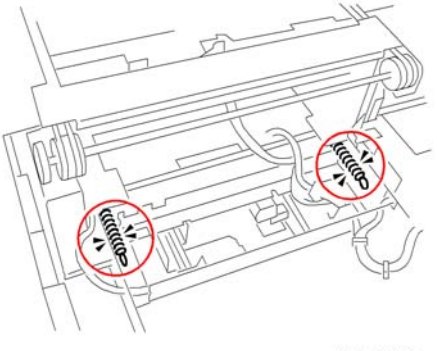
d391r321

6. Remove the sheath.
7. Make sure all the screws on the blade are tight.

Reinstallation

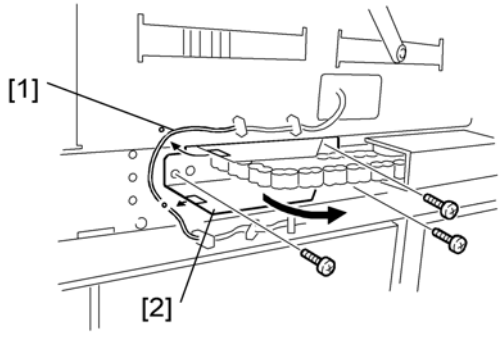
1. To prevent SC795-25 always check the position of the plate to the right of the edge press plate motor (M36) before you close the trimming unit drawer. (☛ p.128)
2. To prevent SC795-30 always check to make sure that the blade cradle plate is aligned with the left edge of the PCB where the trimmer limit sensor (S86) is mounted. (☛ p.128)
3. Reset the counter after replacing the blade. (☛ p.137)
4. Reset the counter after replacing the cradle. (☛ p.137)

Ball Screw



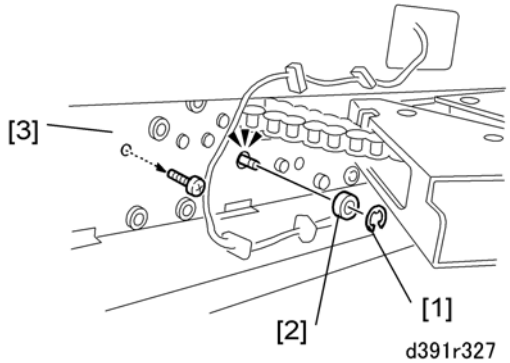
d391r325

1. Pull out the trimming unit drawer. (☛ p.128)
2. Remove the springs to relieve the tension on the chain.



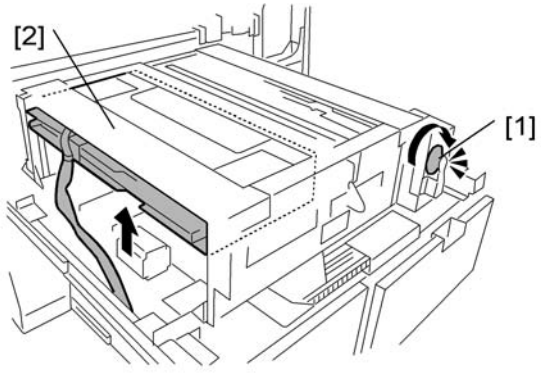
d391r326

3. Release harness [1] (x1).
4. After removing the screws, move the chain guide [2] in the direction of the arrow (x3).



d391r327

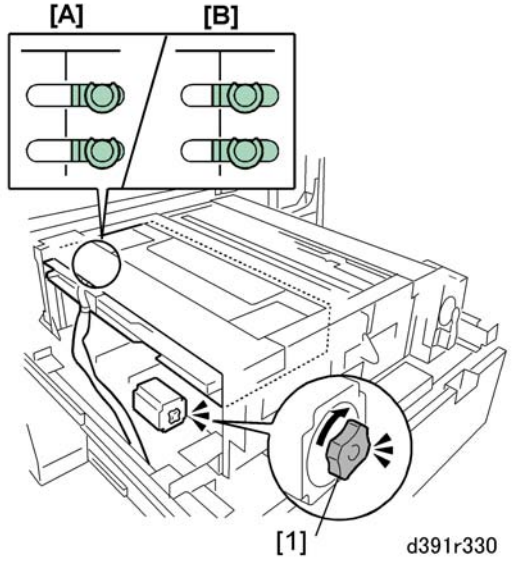
5. Remove e-ring [1] and bearing [2]. (If the bearing is too difficult to remove now, you can remove it later when the ball screw is removed.)
6. Remove the sensor frame [3] (x1).



d391r328

7. Turn knob [1] to raise the rotation unit [2] to its maximum height.

If a book is jammed at the edge press plate



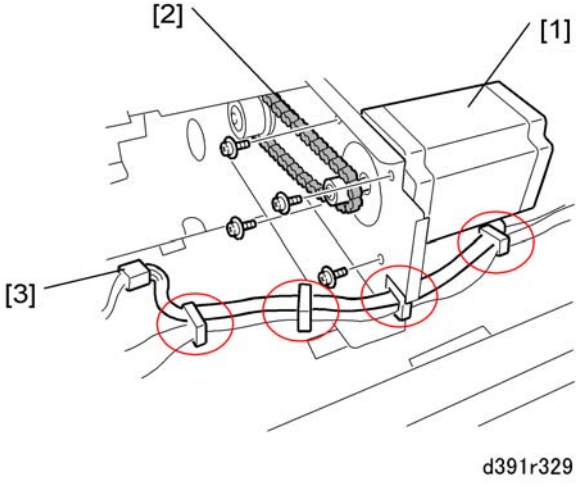
If a book is jammed at the edge press plate, rotate the knob [1] on the edge press plate motor clockwise about 10 times to relieve the pressure on the jam site before you attempt to remove the motor.

⚠CAUTION

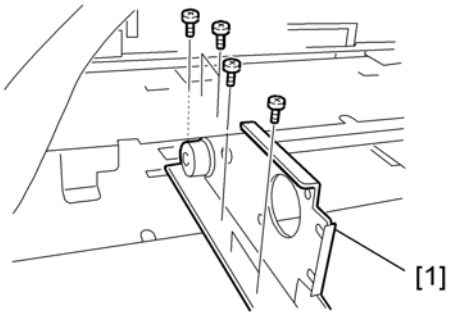
- The edge press plate exerts about 640 kg (1408b lb.) of pressure on a book caught and jammed in the trimming unit. Removing the edge press plate motor with this much pressure on the edge press plate could cause injury.

The reference line toward the rear tells whether to add pressure or reduce pressure:

- If the line is off as shown at [A] this indicates too much pressure.
- If the line is off as shown at [B] this indicates too little pressure.

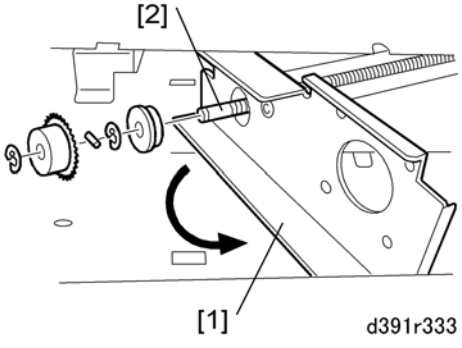


8. Disconnect the edge press plate motor (M36) [1] and chain [2] (x4, x1).
9. Mark the positions of the four harness clamps before you remove them.
10. Disconnect harness [3] (x8)



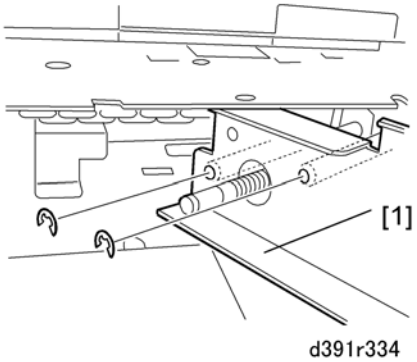
d391r332

11. Remove the screws from the motor frame [1] (x6).



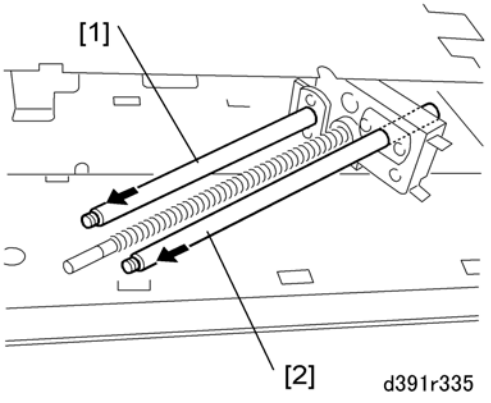
d391r333

12. Move the motor frame [1] in the direction the arrow then remove the shaft [2] (x1, Sprocket x1, Lock pin x1, x1, Bearing x1)

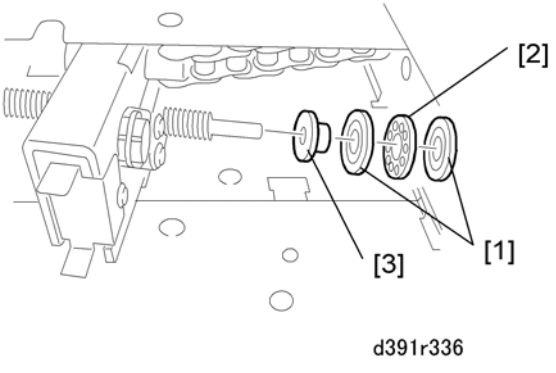


d391r334

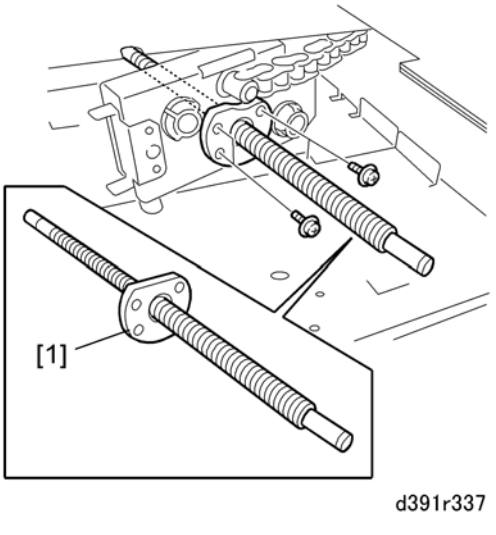
13. Remove the motor frame [1] (x2).



14. Pull out the shafts [1] and [2].



15. Remove the rings [1], bearing [2], and bushing [3] from the end of the ball screw.



16. Remove the ball screw [1] (x4). If it is difficult to remove, rotate the shaft.

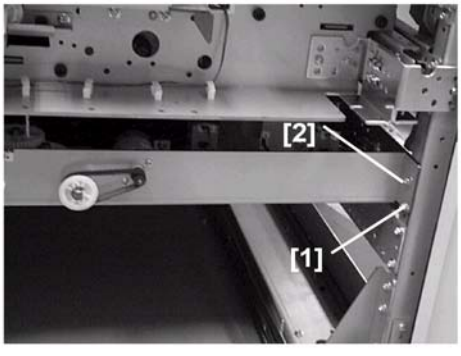
Important

- **The screw shaft and ball screw are always replaced together as one unit. Never attempt to separate the ball screw and shaft (you will not be able to reassemble them).**

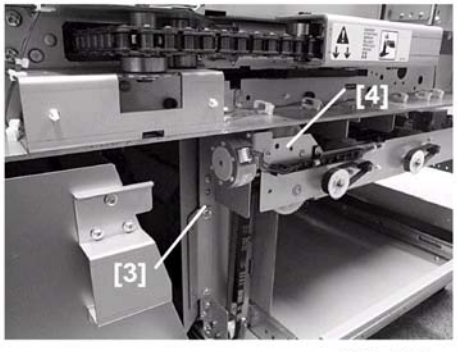
17. Reset the counter after replacing the ball screw unit. (☛ p.137)

Trimmings Buffer Motor (M37)

1. Open the book stack door. (☛ p.133)
2. Pull out the book output tray.
3. Pull out the trimmings box drawer and remove the box from the drawer.

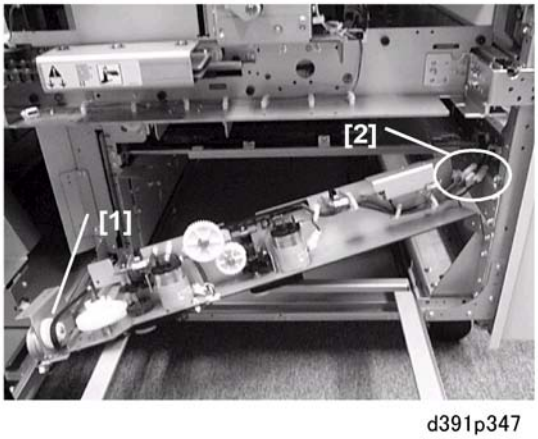


d391p346b



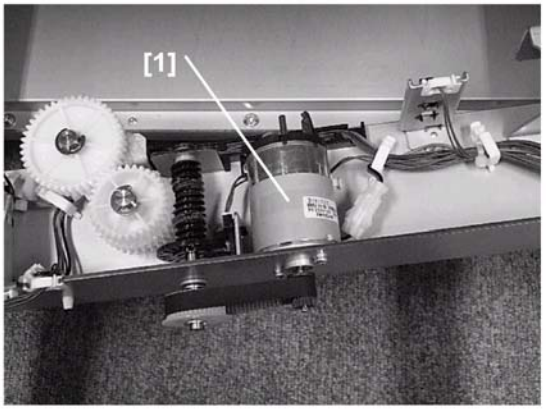
d391p346a

4. On the right loosen screw [1] and remove screw [2] (☞ x2).
5. On the left remove the screw [3] and lower the trimmings buffer drive unit [4] (☞ x2).



d391p347

6. Disconnect the timing belt [1] and connectors [2] to disconnect the drive unit (Timing belt x1, ☞ x5).

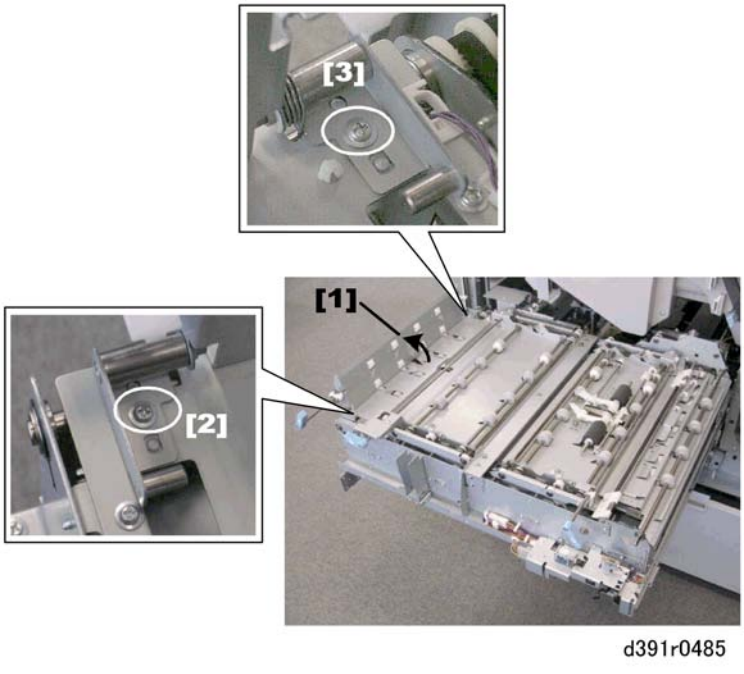


d391p348

7. Remove the trimmings buffer motor (M37) (x2, x1).

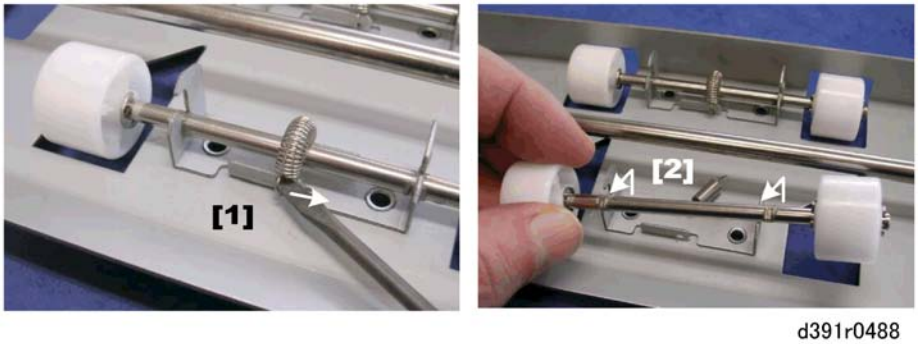
Horizontal Path Rollers

Exit Idle Roller Unit



d391r0485

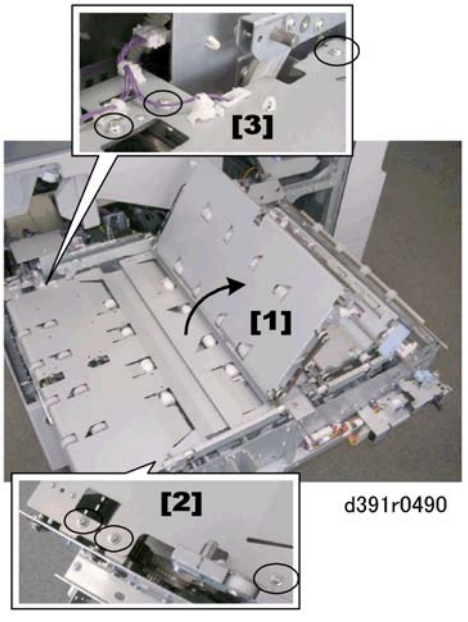
1. Pull out the cover transport unit. (☛ p.126)
2. Raise lever Mk8 to open the exit roller cover [1].
3. Remove the guide plates:
   [2] Front (☞ x1)
   [3] Rear (☞ x1)
4. Remove the exit roller cover [1].



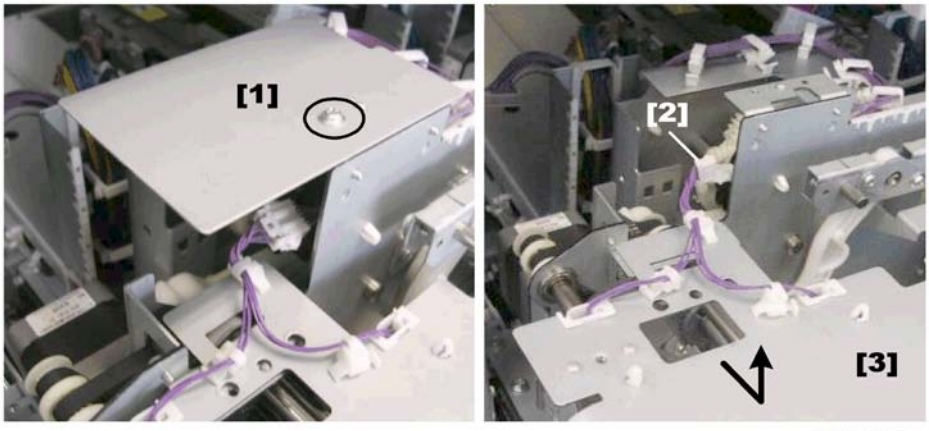
d391r0488

5. To remove the rollers, release and remove spring [1].
6. Rotate and pull out roller shaft [2] and remove the rollers (ℂx2 ea.).

Exit Roller, Horizontal Transport Roller 5

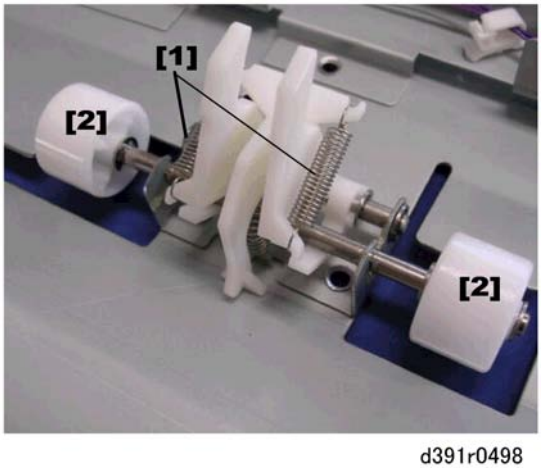


1. Pull out the cover transport unit. (☛ p.126)
2. Remove the exit idle roller unit. (☛ p.217)
3. Raise lever Mk8 to open the left horizontal path transport guide [1].
4. Remove:
   [2] Front (🔩 x3)
   [3] Rear (🔩 x3)



d391r0495

5. Remove the connector protection plate [1] (x1).
6. Disconnect the connector [2] (x1).
7. Remove the guide plate [3], turn it over, and lay it on a flat surface.

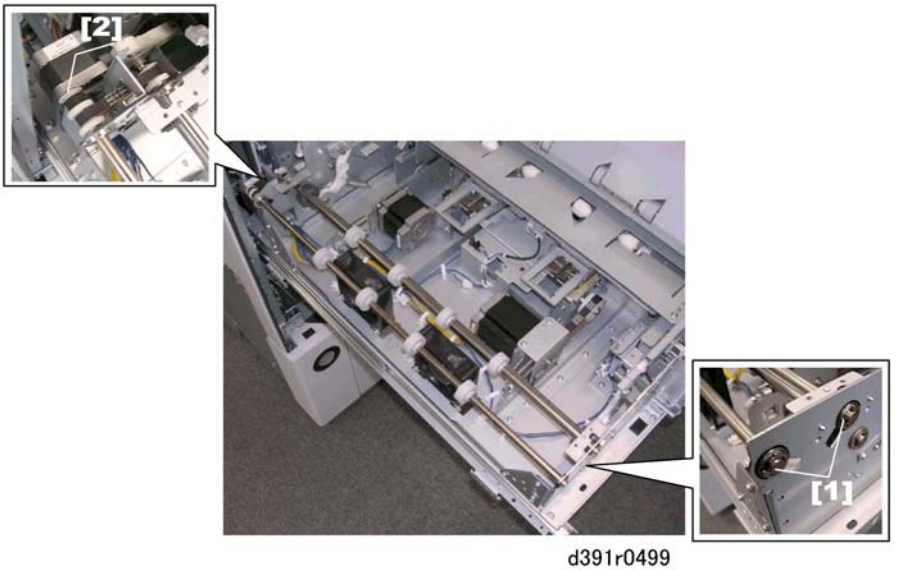


d391r0498

8. To replace the rollers: .

   [1] Springs x2

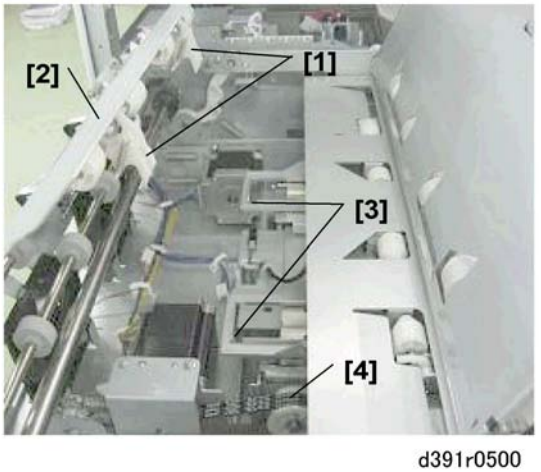
   [2] Rollers (x2)



d391r0499

9. Remove the exit roller and horizontal transport roller 5.
   [1] Front (ℂ x1, Bushing x2)
   [2] Rear (ℂ x2, Timing belts x3, Gears x2, Bushings x2).

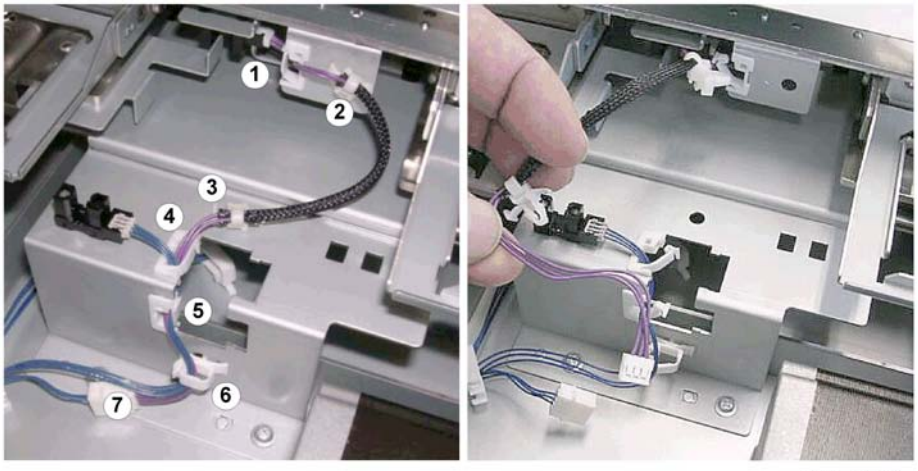
Reinstallation



d391r0500

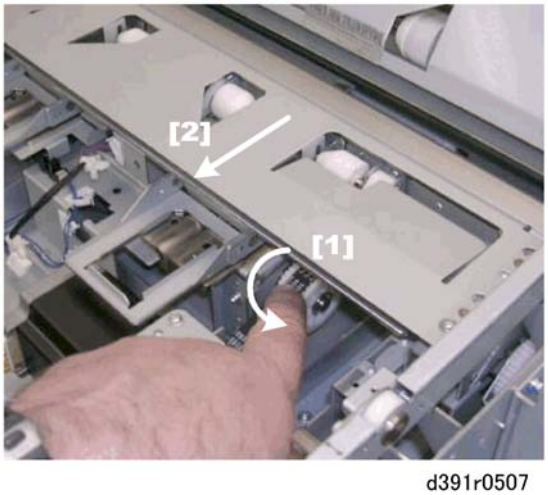
Make sure that the pressure arms [1] behind the exit unit [2] go through the holes of the left spine fold unit [3]. If this is difficult to do, turn the pulley [4] of the spine fold motor manually to move the left spine fold unit.

Horizontal Transport Roller 4



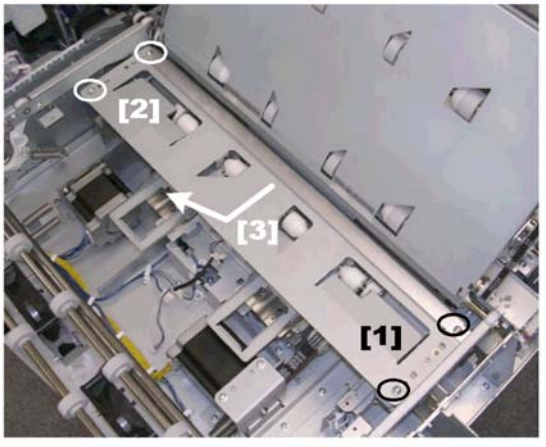
d391r0502

1. Pull out the cover transport unit. (☛ p.126)
2. Remove the exit idle roller unit. (☛ p.217)
3. Remove the exit roller unit. (☛ p.218)
4. Disconnect harness:
   - x4 (1), (4), (5), (6)
   - Standoffs x2 (2), (3)
   - x1 (7)



d391r0507

5. Manually rotate the spine fold drive gear [1] to move the left spine fold unit [2] to the left.



d391r0508

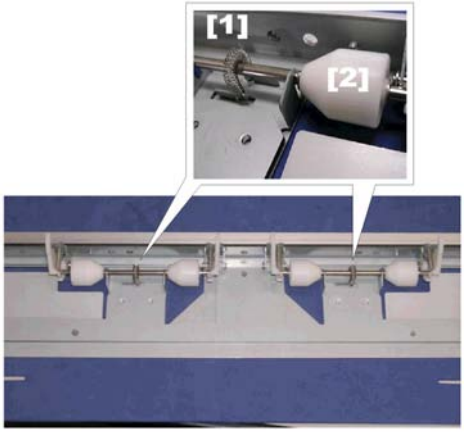
6. Remove the screws:
   [1] Front (x2)
   [2] Rear (x2)
7. Remove the left spine fold unit [3].

d391r0510

8. Remove the screws [1] (x2) then remove the brace [2] from the side of the left spine fold unit.

d391r0513

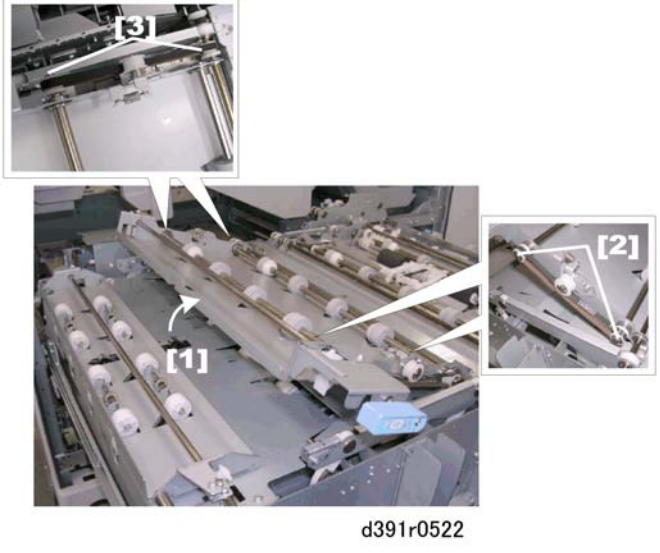
9. Remove the screws [1] (x3) and remove the roller bracket [2].
10. Turn over the roller bracket and lay it on a flat surface.



d391r0516

11. Remove the roller shafts [1] (Springs x1 ea.)
12. Remove the rollers [2] (℃ x2 ea)

Left Cover Transport Path Guide Roller



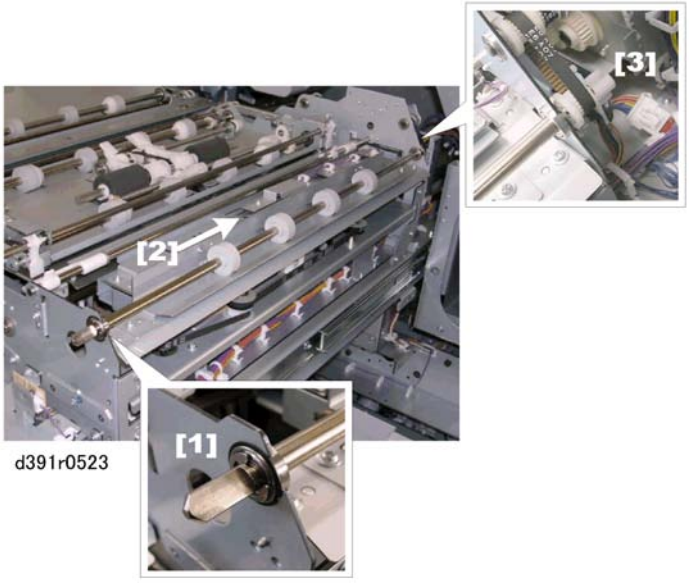
d391r0522

1. Pull out the cover transport unit. (☛ p.126)
2. Raise lever Mk7 to open the cover [1].
3. Replace the guide rollers:

   [2] Front (℃ x2, Timing belt x1, Gears x2, Bushings x2)

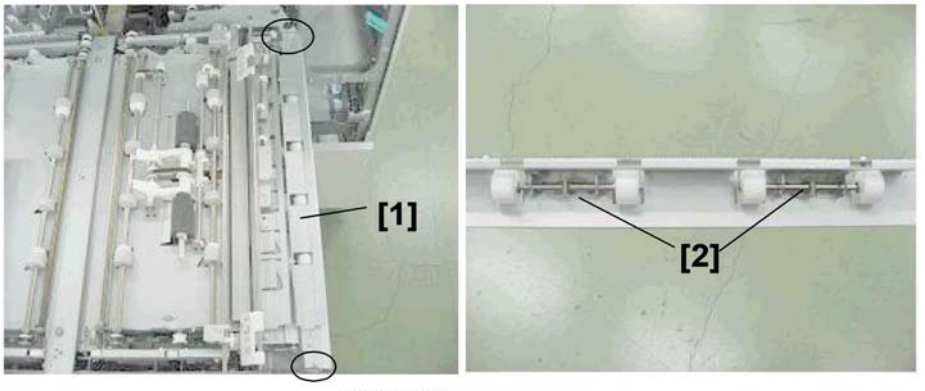
   [3] Rear (℃ x4, Timing belt x1, Gears x2, Bushings x2)

Horizontal Transport Roller 1 and Idle Rollers



d391r0523

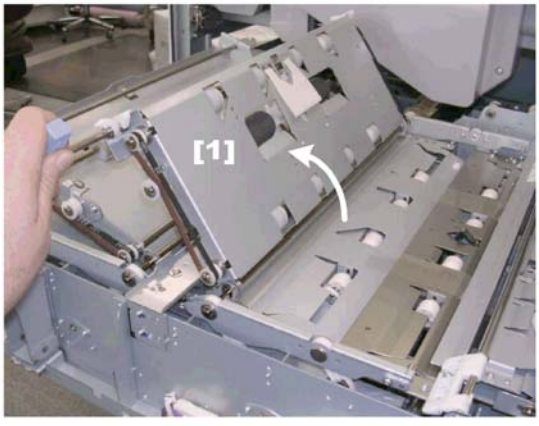
1. Pull out the cover transport unit. (☛ p.126)
2. At the front disconnect the roller [1] (ℂ x1, Bearing x1)
3. Push the roller [2] slightly to the rear.
4. At the rear disconnect the roller [3] (Timing belt x1, Gear x1, Bearing x1)



d391r0524

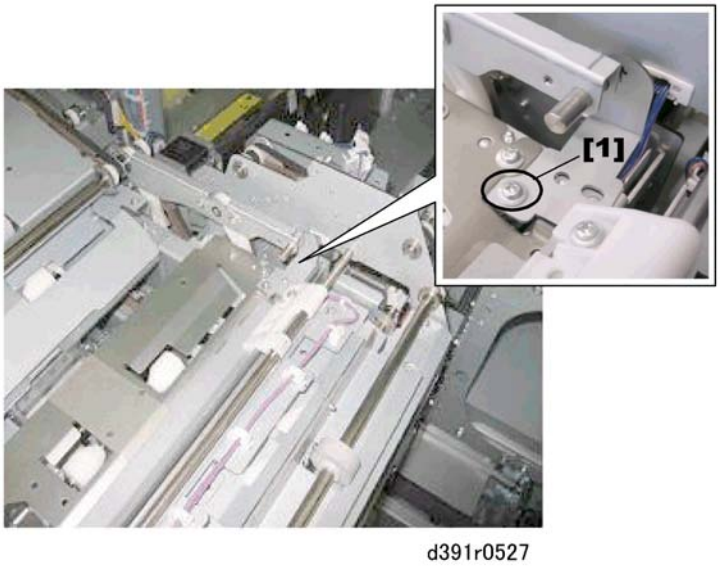
1. Remove the horizontal transport roller 1 idle roller unit [1] (🔩 x2).
2. Replace the rollers [2].

Horizontal Transport Roller 2



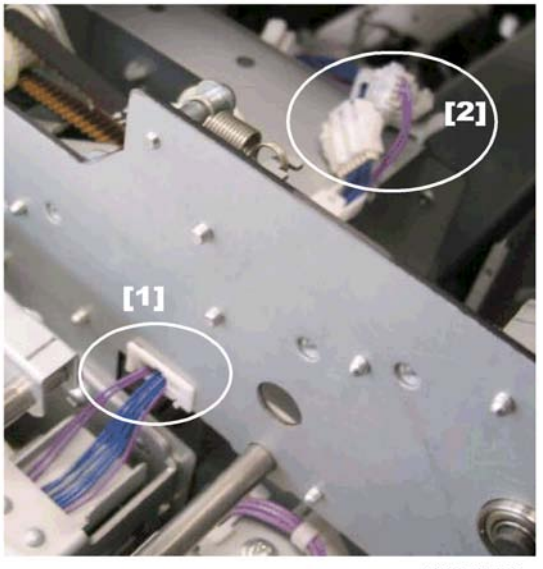
d391r0526

1. Pull out the cover transport unit. (☛ p.126)
2. Raise lever Mk9 [1] to see the rollers.



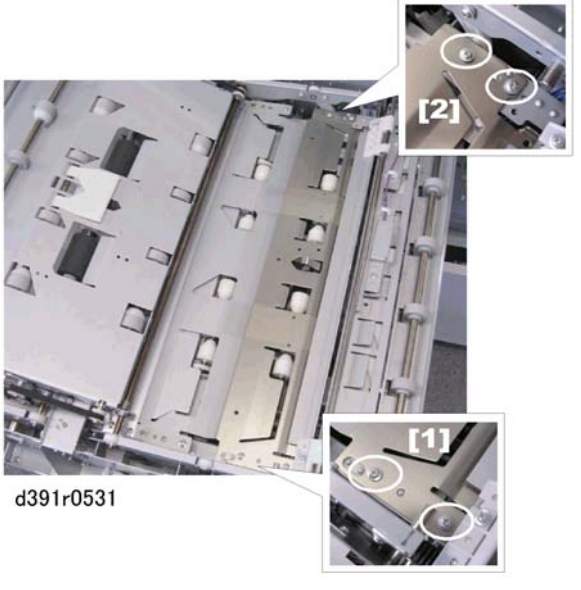
d391r0527

3. Remove the harness protection plate [1] (x1).



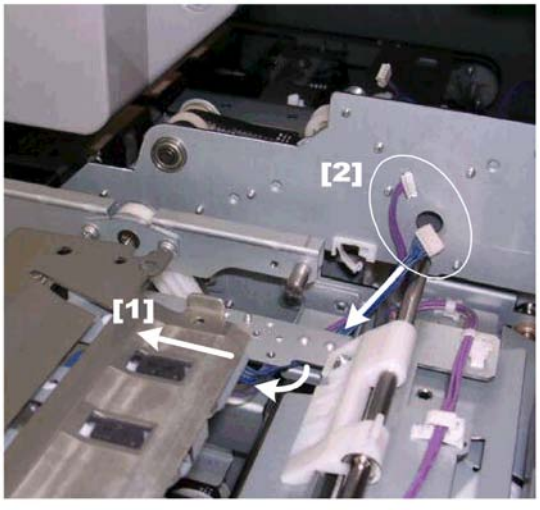
d392r0528

4. Disconnect the harness:
   [1] x1
   [2] x2



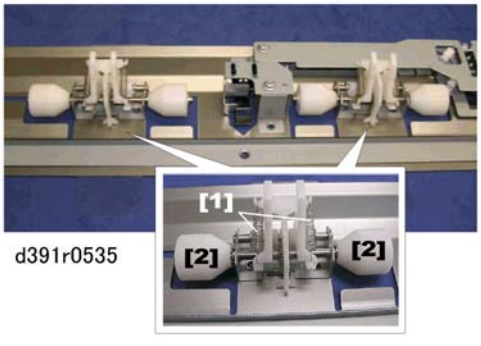
d391r0531

5. Remove the screws at the front [1] and rear [2] (x4).



d391r0534

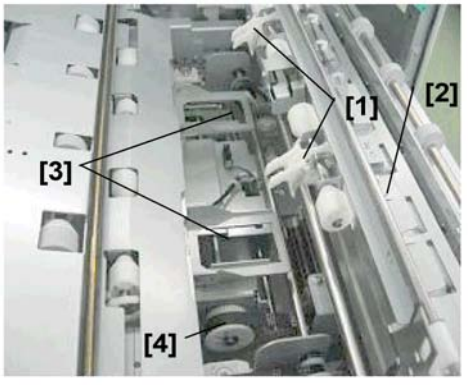
6. As you slowly remove the plate [1] guide the connectors [2] under the plate.
7. Turn over the plate and lay it on a flat surface.



d391r0535

8. Remove the roller shaft springs [1] (Springs x2 ea.)
9. Remove the rollers [2] (ℂ x2 ea.)

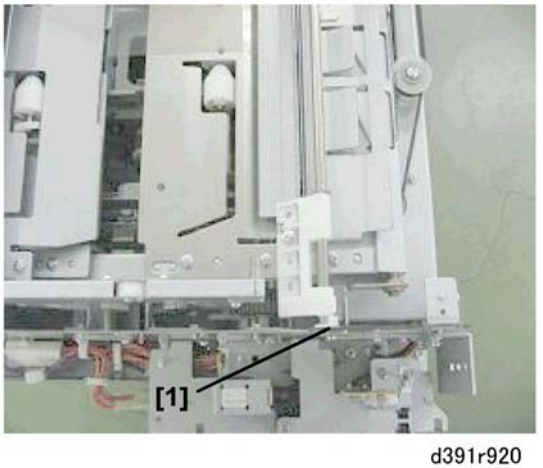
Reinstallation



d391r0536

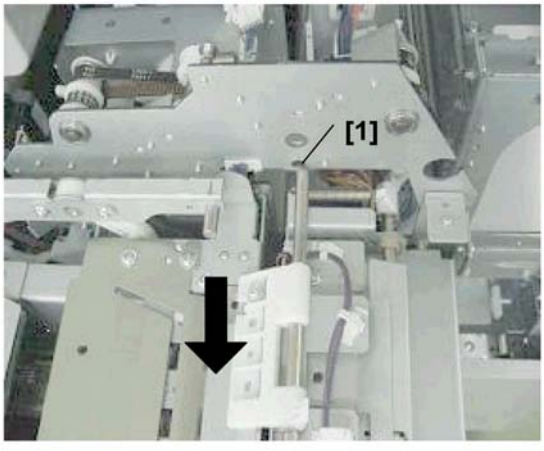
Make sure that the pressure arms [1] behind the exit unit [2] go through the holes [3] of the spine fold unit. If this is difficult to do, turn the pulley [4] of the spine fold motor manually to move the spine fold unit.

Horizontal Transport Roller 3



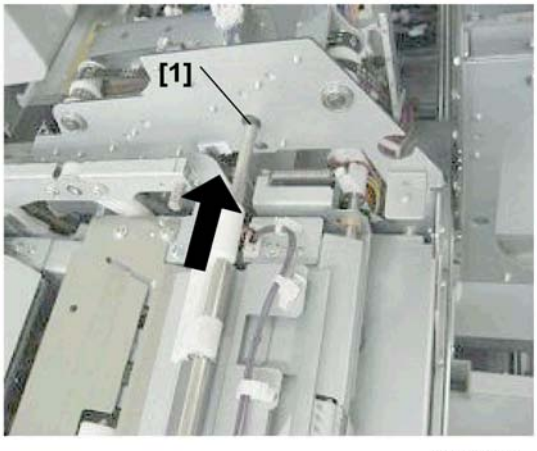
d391r920

1. Remove:
    - Horizontal transport roller 1 and idle rollers (☛ p.224)
    - Horizontal transport roller 2 idle roller unit (☛ p.225)
2. At the front disconnect the shaft [1] (⟲ x1).



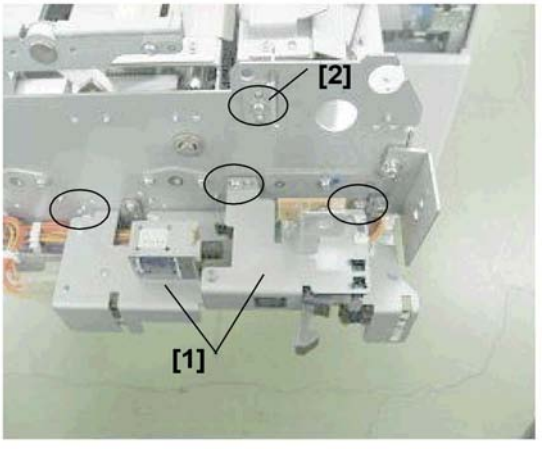
d391r921

3. Pull the guide plate shaft forward and out of the hole at [1].



d391r922

4. Push the guide plate to the rear and through the hole at [1].
5. Pull the guide plate forward again to remove it from the shaft.

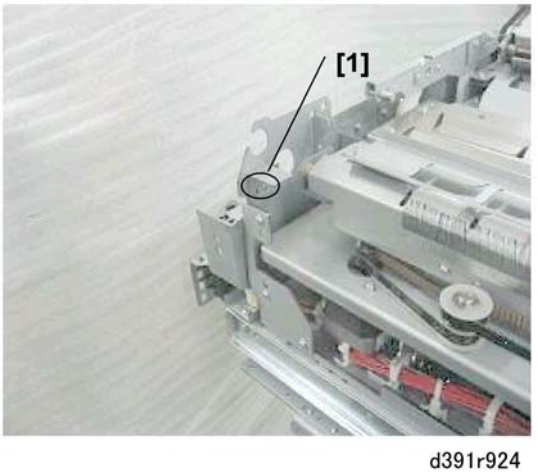


d391r923

6. Remove:

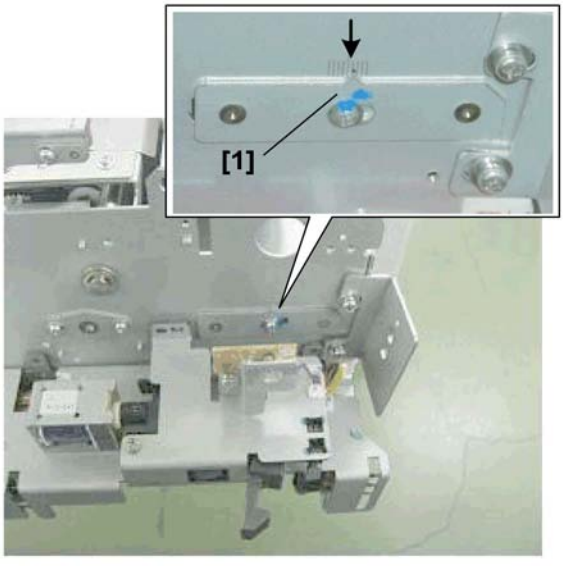
   [1] Front door interlock unit [1] (x3)

   [2] Guide standard plate [2] (x1)



d391r924

7. Remove plate [1] (x1)



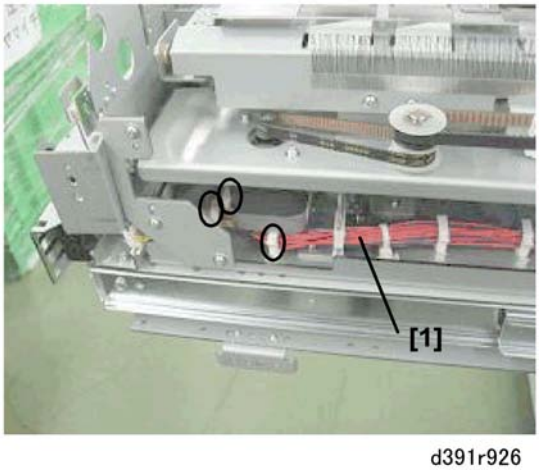
d391r925

8. Use a pen or pencil to mark the current position of the notch on the graduated scale.

Important

- **The notch must be realigned at this mark when it is reattached.**

9. Remove the notch plate [1] (x1).

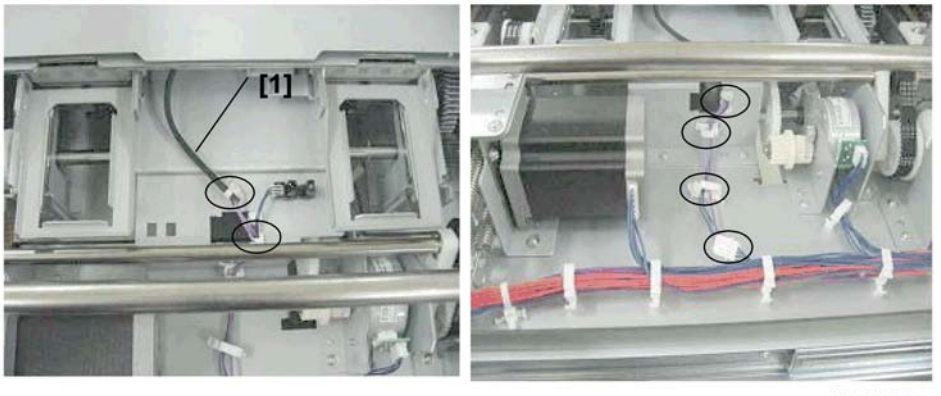


d391r926

10. Disconnect the harness [1] (x2, x3).

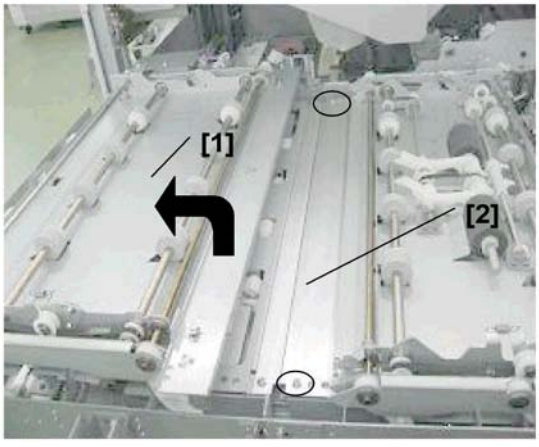
d391r927

11. Disconnect the harness:
    [1] x1
    [2] x1
    [3] x3



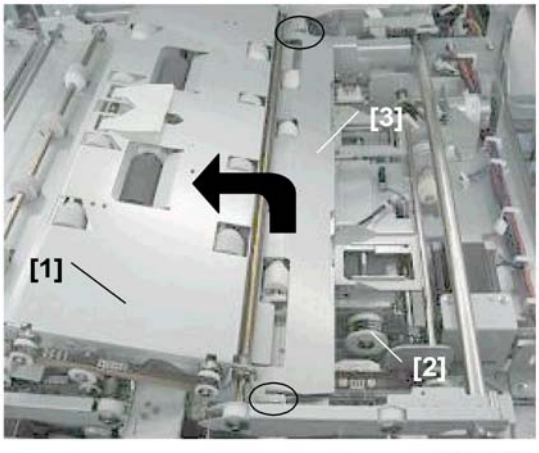
d391r928

12. Disconnect harness [1] (Band x1, x2, x4)



d391r929

13. Move the left transport path guide [1] to the left.
14. Remove the right spine fold plate [2] (x2).

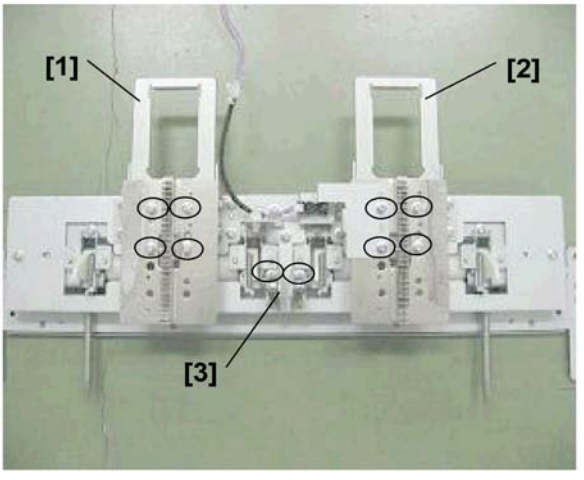


d391r930

15. Open the right cover transport path guide [1].
16. Manually turn the pulley [2] to move the right spine fold plate unit completely to the right.
17. Remove the right spine fold plate [3] (x2).

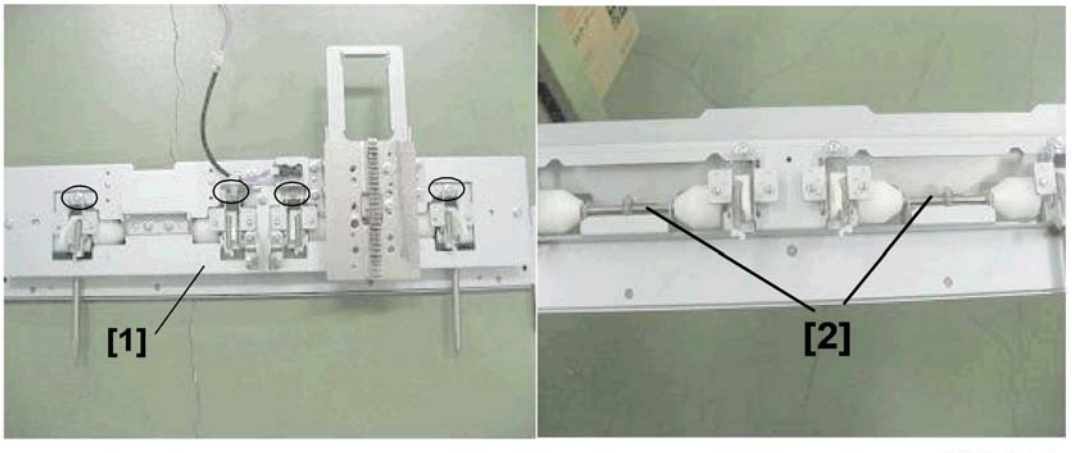
Important

- **At reinstallation the right spine fold plate [3] must be parallel to the right cover transport path guide [1].**



d391r931

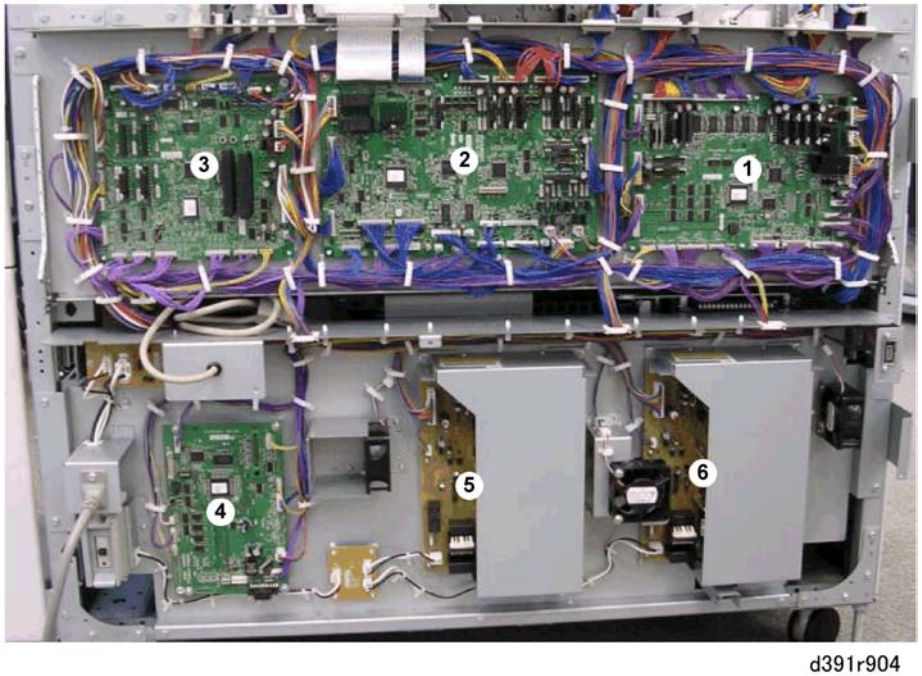
18. Remove plates [1], [2] (x4 ea.)
19. Remove the roller assembly screws [3] (x2).



d391r932

20. Remove the screws [1] (x4).
21. Replace the old roller set [2] with the new one.

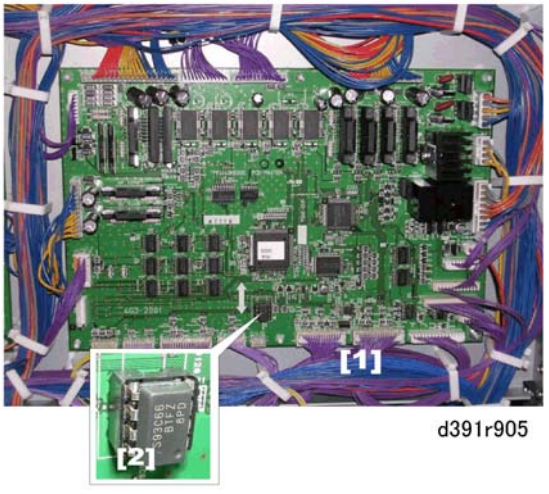
Perfect Binder Boards



d391r904

①	Master Control Board (PCB1)
②	Slave Control Board (PCB2)
③	Cutter Control Board (PCB3)
④	Relay Board (PCB12)
⑤	Power Supply Unit 1 (PCB20)
⑥	Power Supply Unit 2 (PCB21)

Master Control Board



1. Remove the rear cover. (☛ p.119)
2. Remove the master control board [1] (✋ x all, 🔧 x1, Standoffs x5).
3. Remove the EEPROM [2] from the old board and install it on the new board.

When installing a new EEPROM in Master Control Board

New EEPROM has no setting data in itself. The factory setting data (41 settings) for each machine must be input when installing a new EEPROM in the master control board.

- Refer to the factory setting data sheet which has been kept in the right front door for details about necessary settings to be input in the EEPROM.
- Refer to "Troubleshooting > Service Mode > Critical Adjustments" of this manual for details about how to input the factory setting data in the EEPROM on the master controller board.

1. CV-REG-L

Cover Horizontal Registration Position Adjustment (Large size control; 298mm or more)

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
*	*	*	*	*	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
    - The LED1 count indicates the sign of the value, plus (+) or minus (-). When LED1 is OFF, this indicates plus (+). When LED1 is ON, this indicates minus (-).
    - The LED2 count indicates the left digit (10's) of the 2-digit decimal value, the LED3 count indicates the right digit (1 to 9) of the 2-digit decimal value. Flash duration: 300 ms
    - For example, if LED2 flashes twice and the LED3 flashes 4 times, this is read as "24". To adjust this value to the actual reading: 24 x 0.1 mm = 2.4 mm where "2.4 mm" is the actual value.
    - The LEDs remain OFF for 2 sec. if the current value is "0".
    - The LED2 and LED3 displays automatically alternate
4. Input a value for the "CV-REG-L" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

2. CV-REG-S

Cover Horizontal Registration Position Adjustment (Small size control; 297 mm or less)

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
Up	*	*	*	*	Up	*	*

1. Set the SW2 bank as shown above.
2. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
3. Input a value for the "CV-REG-S" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

3. CV-CENT

Cover Center Adjustment

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
*	Up	*	*	*	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "CV-CENT" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

4. CLCT-SB

Stacking Tray Switchback Roller Adjustment

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
Up	Up	*	*	*	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "CLCT-SB" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

5. ALG-F-A4

Jogger Motor Adjustment (Front jogger motor; Small size; less than 298 mm)

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
*	*	Up	*	*	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "ALG-F-A4" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

6. ALG-R-A4

Jogger Motor Adjustment (Rear jogger motor; Small size less; than 298 mm)

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
Up	*	Up	*	*	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "ALG-R-A4" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

7. ALG-F-L

Jogger Motor Adjustment (Front jogger motor; Large size; 298 mm or more)

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
*	Up	Up	*	*	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "ALG-F-L" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

8. ALG-R-L

Jogger Motor Adjustment (Rear jogger motor; Large size; 298 mm or more)

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
Up	Up	Up	*	*	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "ALG-F-L" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

9. GLUING

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
*	*	*	Up	*	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "GLUING" on the factory setting data sheet by pushing [PSW2] to add 0.05 mm to the current value or [PSW3] to subtract 0.05 mm from the current value.
    - To lower the main grip unit to increase the pressure between the spine and gluing vat roller below, adjust in the plus (+) direction. The amount of glue will increase.
    - To raise the main grip unit to reduce the pressure between the spine and gluing vat roller below, adjust in the minus (-) direction. The amount of glue will decrease.

10. STK-DLV

Exit Motor Adjustment

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
Up	*	*	Up	*	Up	*	*

2. Set the SW2 bank as shown above.

3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "GLUING" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

11. GRP-CHNG

Main Grip Position Adjsutment

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
*	Up	*	Up	*	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "GRP-CHNG" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

12. SIZE-H

Trimming Position Adjustment, Fore edge cut adjust

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
*	*	*	*	Up	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "SIZE-H" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

13. SIZE-W

Trimming Position Adjustment, Bottom/Edge cut adjust

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
Up	*	*	*	Up	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "SIZE-W" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

14. CV-LNG

Trimming Position Adjustment, Fixed area shift between top/bottom edge

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
*	Up	*	*	Up	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "CV-LNG" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

15. 10RGT-1

Square Cut Adjustment, L1:Square Adj. For 10-Sheet Signature 1

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
Up	Up	*	*	Up	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "10RGT-1" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

16. 10RGT-2

Square Cut Adjustment, L2:Square Adj. For 10-Sheet Signature 2

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
*	*	Up	*	Up	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "10RGT-2" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

17. 10RGT-3

Square Cut Adjustment, L3:Square Adj. For 10-Sheet Signature 3

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
Up	*	Up	*	Up	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "10RGT-3" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

18. 200RGT-1

Square Cut Adjustment, L1:Square Adj. For 200-Sheet Signature 1

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
*	Up	Up	*	Up	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "200RGT-1" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

19. 200RGT-2

Square Cut Adjustment, L2:Square Adj. For 200-Sheet Signature 2

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
Up	Up	Up	*	Up	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "200RGT-2" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

20. 200RGT-3

Square Cut Adjustment, L3:Square Adj. For 200-Sheet Signature 3

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
*	*	*	Up	Up	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "200RGT-3" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

21. SLD-MTR

Slide Motor HP Adjustment

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
Up	*	*	Up	Up	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "SLD-MTR" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

22. STK-VR0

Stack Thickness Volume Adjustment: 0 mm

1. Enter the SP mode of the mainframe.
2. Use SP6524-001 to input the factory setting data of the STK-VR0.

23. STK-VR25

Stack Thickness Volume Adjustment: 25 mm

1. Enter the SP mode of the mainframe.
2. Use SP6524-002 to input the factory setting data of the STK-VR25.

24. GLU-LOW

Glue Remain Thermistor: Lower Limit

1. Enter the SP mode of the mainframe.
2. Use SP6525-001 to input the factory setting data of the GLU-LOW.

25. GLU-UP

Glue Remain Thermistor: Upper Limit

1. Enter the SP mode of the mainframe.
2. Use SP6525-002 to input the factory setting data of the GLU-UP.

26. GLU-TEMP

Glue Temperature Setting

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
*	Up	Up	*	*	Up	Up	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "GLU-TEMP" on the factory setting data sheet by pushing [PSW2] to add 1°C to the current value or [PSW3] to subtract 1°C from the current value.

27. GLU-MOVE

Gluing Unit Movement Adjustment

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
Up	Up	*	Up	*	Up	*	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "GLU-MOVE" on the factory setting data sheet by pushing [PSW2] to add 0.1 mm to the current value or [PSW3] to subtract 0.1 mm from the current value.

28. GLU-EDG1

Glue Application at Corners Adjustment, Top Edge Corner: 3 Cuts

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
Up	Up	Up	*	*	Up	Up	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "GLU-EDG1" on the factory setting data sheet by pushing [PSW2] to add 1 mm to the current value or [PSW3] to subtract 1 mm from the current value.

29. GLU-EDG2

Glue Application at Corners Adjustment, Bottom Edge: 3 Cuts

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
*	*	*	Up	*	Up	Up	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "GLU-EDG2" on the factory setting data sheet by pushing [PSW2] to add 1 mm to the current value or [PSW3] to subtract 1 mm from the current value.

30. GLU-EDG3

Glue Application at Corners Adjustment, Top Edge: No Trimming or Top Only

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
Up	*	*	Up	*	Up	Up	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "GLU-EDG3" on the factory setting data sheet by pushing [PSW2] to add 1 mm to the current value or [PSW3] to subtract 1 mm from the current value.

31. GLU-EDG4

Glue Application at Corners Adjustment, Bottom Edge: No Trimming or Top Only

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
*	Up	*	Up	*	Up	Up	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "GLU-EDG4" on the factory setting data sheet by pushing [PSW2] to add 1 mm to the current value or [PSW3] to subtract 1 mm from the current value.

32. GLU-AMT1

Glue Amount Adjustment, 1 (stack thickness 0-1.4mm)

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
*	*	*	*	Up	Up	Up	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "GLU-AMT1" on the factory setting data sheet by pushing [PSW2] to add 0.05 mm to the current value or [PSW3] to subtract 0.05 mm from the current value.

33. GLU-AMT2

Glue Amount Adjustment, 2 (stack thickness 1.5-3.4mm)

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
Up	*	*	*	Up	Up	Up	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "GLU-AMT2" on the factory setting data sheet by pushing [PSW2] to add 0.05 mm to the current value or [PSW3] to subtract 0.05 mm from the current value.

34. GLU-AMT3

Glue Amount Adjustment, 3 (stack thickness 3.5-6.4mm)

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
*	Up	*	*	Up	Up	Up	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "GLU-AMT3" on the factory setting data sheet by pushing [PSW2] to add 0.05 mm to the current value or [PSW3] to subtract 0.05 mm from the current value.

35. GLU-AMT4

Glue Amount Adjustment, 4 (stack thickness 6.5-11.4mm)

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
Up	Up	*	*	Up	Up	Up	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "GLU-AMT4" on the factory setting data sheet by pushing [PSW2] to add 0.05 mm to the current value or [PSW3] to subtract 0.05 mm from the current value.

36. GLU-AMT5

Glue Amount Adjustment, 5 (stack thickness 11.5-22.4mm)

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
*	*	Up	*	Up	Up	Up	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "GLU-AMT5" on the factory setting data sheet by pushing [PSW2] to add 0.05 mm to the current value or [PSW3] to subtract 0.05 mm from the current value.

37. GLU-AMT6

Glue Amount Adjustment, 6 (stack thickness 22.5-25.0mm)

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
Up	*	Up	*	Up	Up	Up	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "GLU-AMT6" on the factory setting data sheet by pushing [PSW2] to add 0.05 mm to the current value or [PSW3] to subtract 0.05 mm from the current value.

38. TBWRNLVL

Blade Replacement Alarm Frequency Setting

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
Up	*	*	*	*	Up	Up	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "TBWRNLVL" on the factory setting data sheet by pushing [PSW2] to add 1000 to the current value or [PSW3] to subtract 1000 from the current value.

39. TBPCOUNT

Setting Threshold Value for Shifting the Cutting Position

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
*	*	Up	*	*	Up	Up	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "TBPCOUNT" on the factory setting data sheet by pushing [PSW2] to add 10 to the current value or [PSW3] to subtract 10 from the current value.

40. TBP-POSW

Cutting Position Change Setting for the Blade Cradle

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW1 bank as shown above.

SW2							
1	2	3	4	5	6	7	8
Up	Up	*	Up	*	Up	Up	*

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "TBPCOUNT" on the factory setting data sheet by pushing [PSW2] to add "1" to the current value or [PSW3] to subtract "1" from the current value.

41. TBP-MVSW

Software DIP Switch Setting: 0-15

SW1			
1	2	3	4
Up	*	*	*

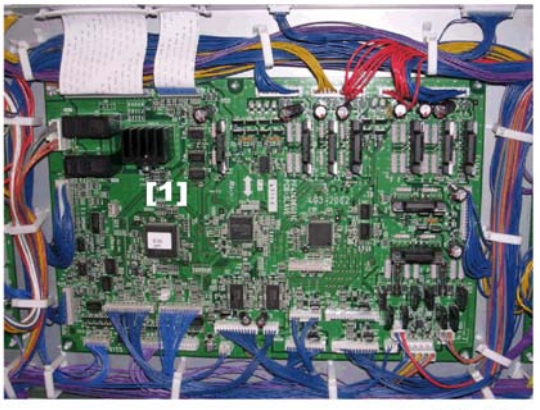
1. Set the SW1 bank as shown above.

SW2								Status
1	2	3	4	5	6	7	8	
*	*	*	*	Up	*	Up	Up	DIP0
Up	*	*	*	Up	*	Up	Up	DIP 1
*	Up	*	*	Up	*	Up	Up	DIP 2
Up	Up	*	*	Up	*	Up	Up	DIP 3

SW2								Status
1	2	3	4	5	6	7	8	
*	*	Up	*	Up	*	Up	Up	DIP 4
Up	*	Up	*	Up	*	Up	Up	DIP 5
*	Up	Up	*	Up	*	Up	Up	DIP 6
Up	Up	Up	*	Up	*	Up	Up	DIP 7
*	*	*	Up	Up	*	Up	Up	DIP 8
Up	*	*	Up	Up	*	Up	Up	DIP 9
*	Up	*	Up	Up	*	Up	Up	DIP 10
Up	Up	*	Up	Up	*	Up	Up	DIP 11
*	*	Up	Up	Up	*	Up	Up	DIP 12
Up	*	Up	Up	Up	*	Up	Up	DIP 13
*	Up	Up	Up	Up	*	Up	Up	DIP 14
Up	Up	Up	Up	Up	*	Up	Up	DIP 15

2. Set the SW2 bank as shown above.
3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Input a value for the "TBP-MVSW" on the factory setting data sheet by pushing [PSW2] to add "1" to the current value or [PSW3] to subtract "1" from the current value.

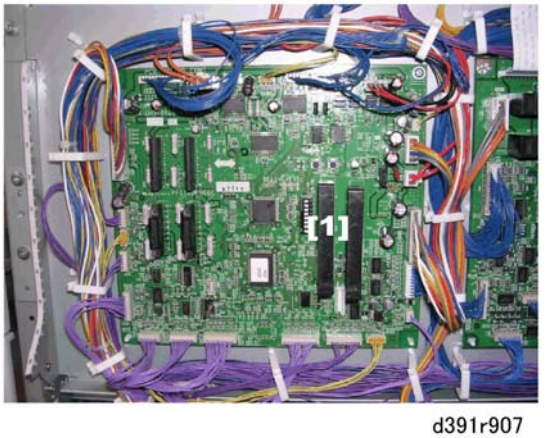
Slave Control Board



d391r906

1. Remove the rear cover. (☛ p.119)
2. Remove the slave control board [1] (FFC x all, x all, x1, Standoffs x5).

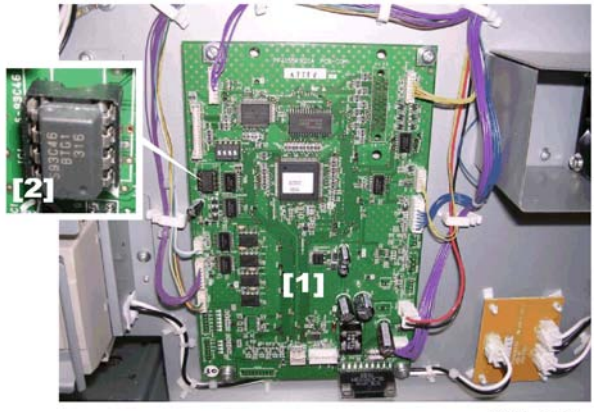
Cutter Control Board



d391r907

1. Remove the rear cover. (☛ p.119)
2. Remove the cutter control board [1] (x all, x1, Standoffs x3).

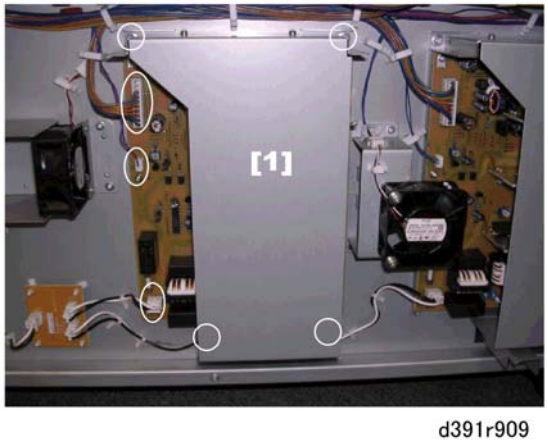
Relay Board



d391r908

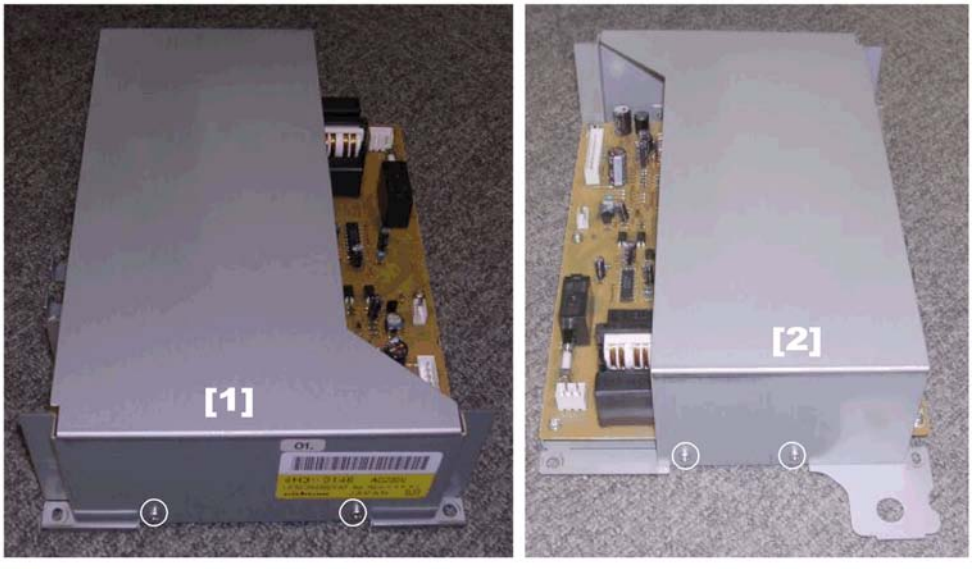
1. Remove the rear cover. (☛ p.119)
2. Remove the relay control board [1] (✋ x all, 🔩 x4).
3. Remove the EEPROM [2] from the old board and install it on the new board.

Power Supply Unit 1



d391r909

1. Remove the rear cover. (☛ p.119)
2. Remove power supply unit 1 assembly [1] (✋ x 3, 🔩 x4).



d391r910

3. Remove the protector plate.

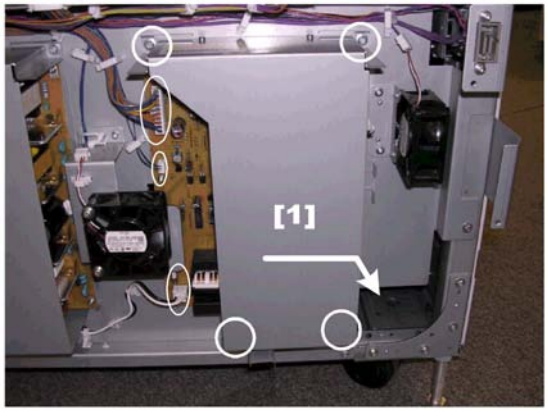
   [1] Top (🔩 x2)

   [2] Bottom (🔩 x2)

d391r911

4. Remove the power supply unit 1 PCB [1] (🔩 x9).

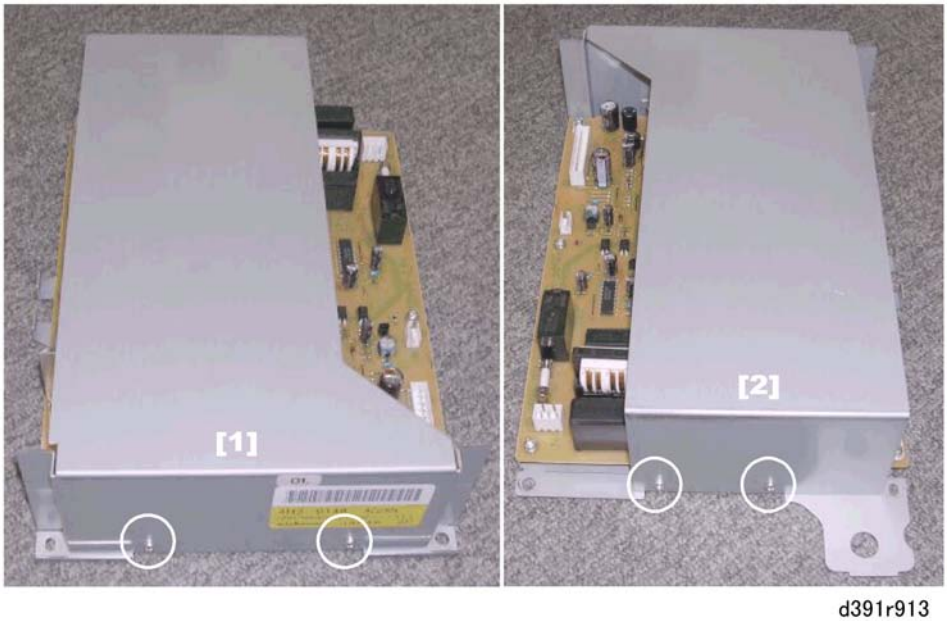
Power Supply Unit 2



d391r912

1. Remove the rear cover. (☛ p.119)
2. Remove power supply unit 2 assembly [1] (x 3, x4).

   Push the board to the right and pull it out from behind the fan. (It is not necessary to remove the fan.)



d391r913

3. Remove the protector plate.

   [1] Top (x2)

   [2] Bottom (x2)

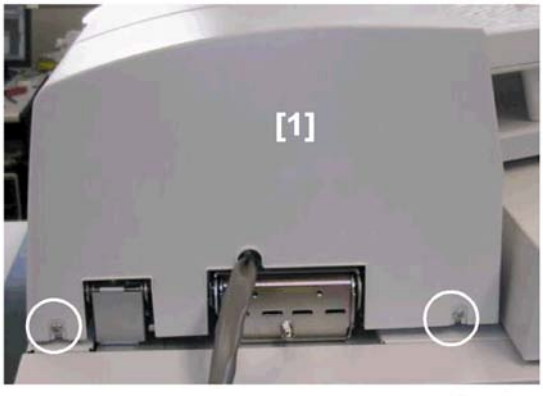
d391r914

4. Remove the power supply unit 2 PCB [1] (x9).

Inserter

Common Procedures

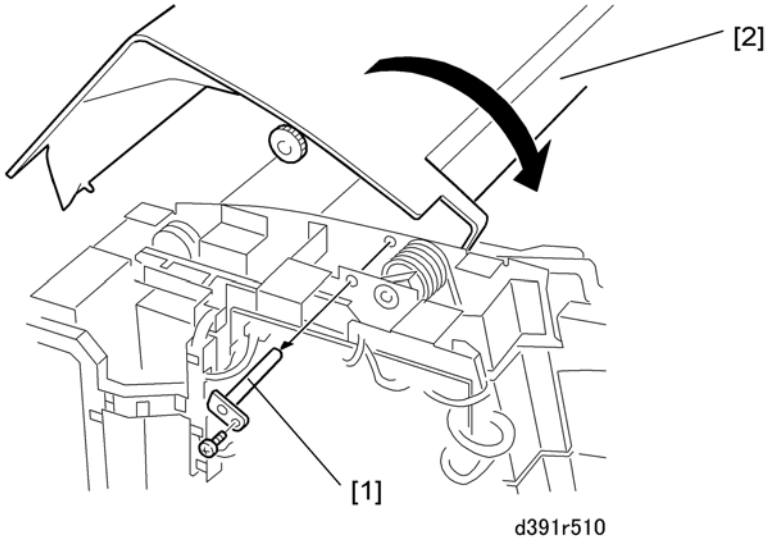
Rear Cover



d391r505

1. Rear cover [1] (x2).

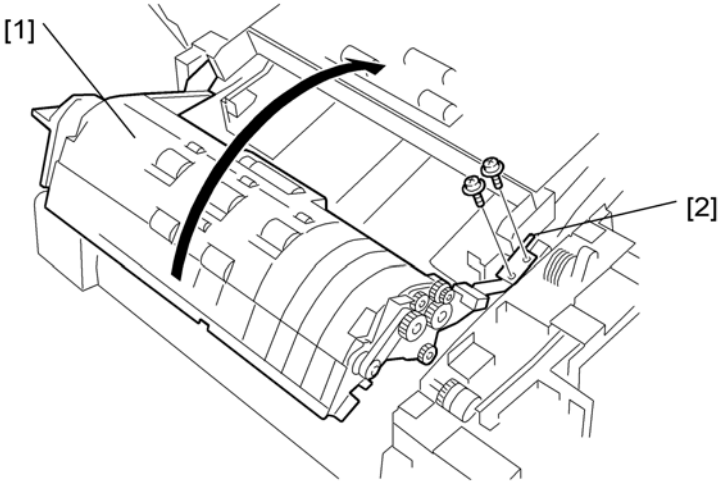
Releasing Top and Middle Covers



d391r510

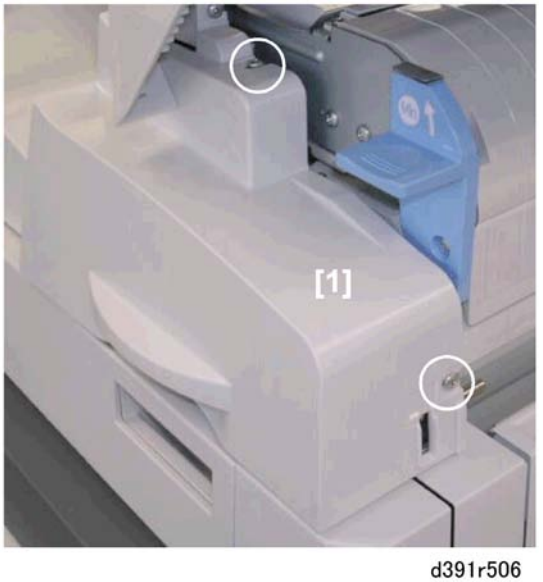
1. Remove rear cover. (☛ p.263)

2. Remove the shaft [1] of the limiter brace (x1).
3. Open the top cover [2] completely.



4. Open the middle cover [1].
5. Remove the limiter brace [2] (x2).
6. Open the middle cover completely.

Front Cover

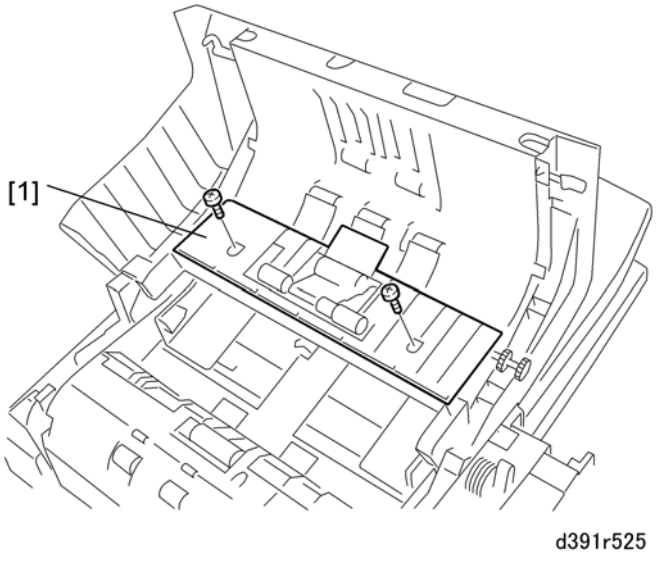


1. Release and open top cover.

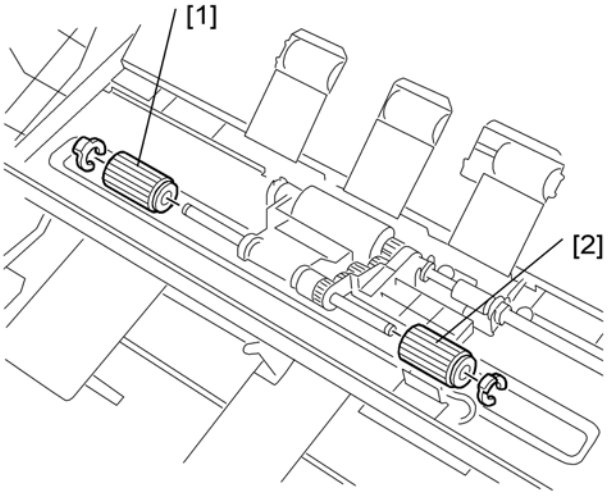
2. Remove the front cover [1] (x2).

Feed Rollers

Feed Roller: Tray A



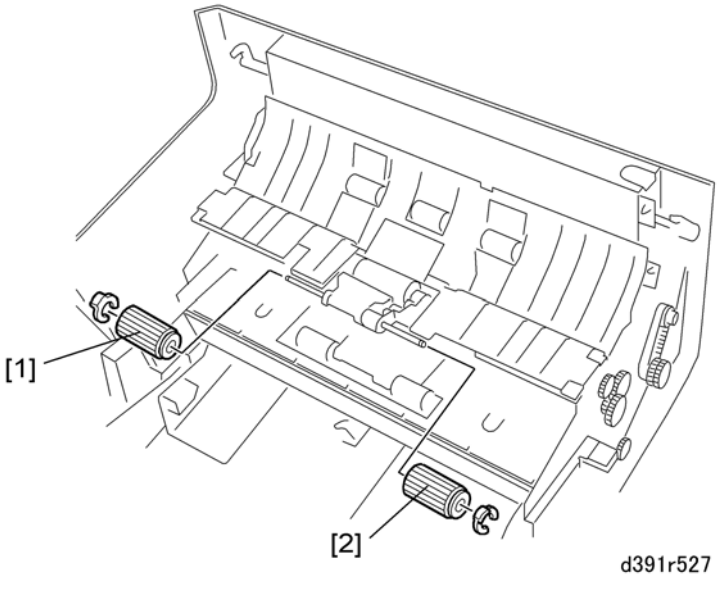
1. Remove the inserter rear cover. (☛ p.263)
2. Release and open the top cover completely. (☛ p.263)
3. Remove the transport guide [1] (x2).



4. Remove:
   [1] Feed roller (ℂ x1)
   [2] Feed roller (ℂ x1)

Feed Roller: Tray B

1. Remove the inserter rear cover. (☛ p.263)
2. Release and open the top and middle cover completely. (☛ p.263)



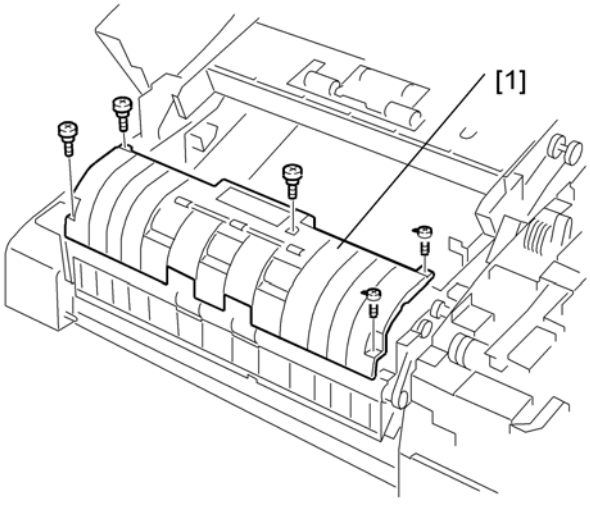
3. Remove:

   [1] Feed roller (ℂ x1)

   [2] Feed roller (ℂ x1)

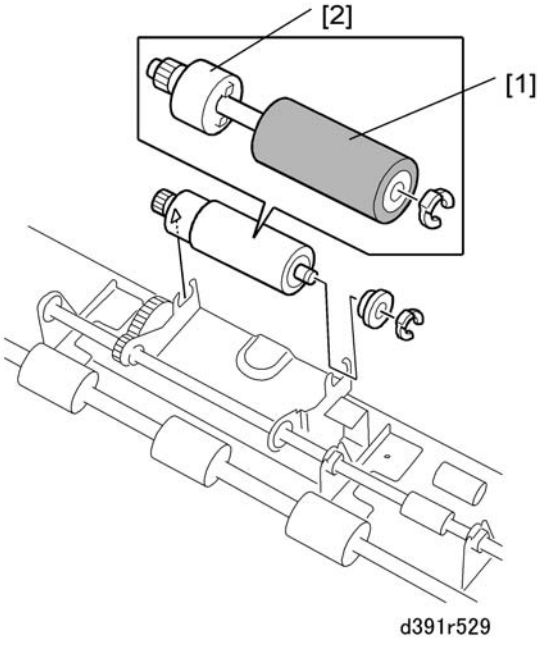
Separation Rollers

Separation Roller and Torque Limiter: Tray A



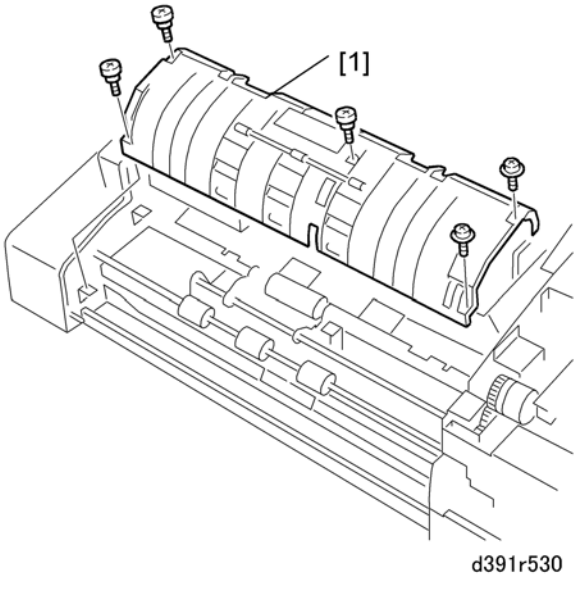
d391r528

1. Remove the inserter rear cover. (☛ p.263)
2. Release and open top cover completely. (☛ p.263)
3. Remove transport guide [1] (🖉 x5).

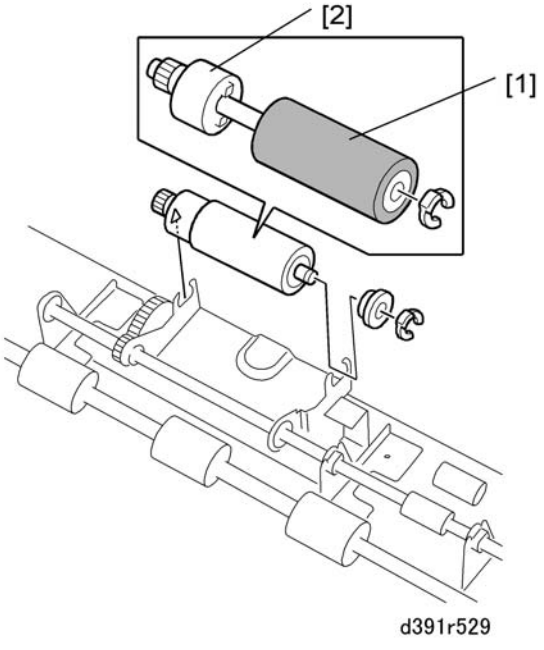


4. Remove the separation roller [1] (x1, Bushing x1)
5. Remove the torque limiter [2].
6. Reset the counter after replacing the separation roller or torque limiter. (☛ p.140)

Separation Roller, Torque Limiter: Tray B



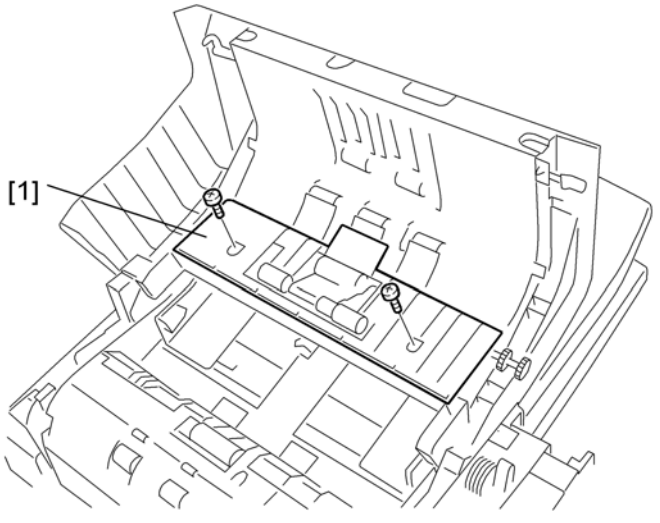
1. Remove the inserter rear cover. (☛ p.263)
2. Release and open top and middle cover completely. (☛ p.263)
3. Remove transport guide [1] (x5).



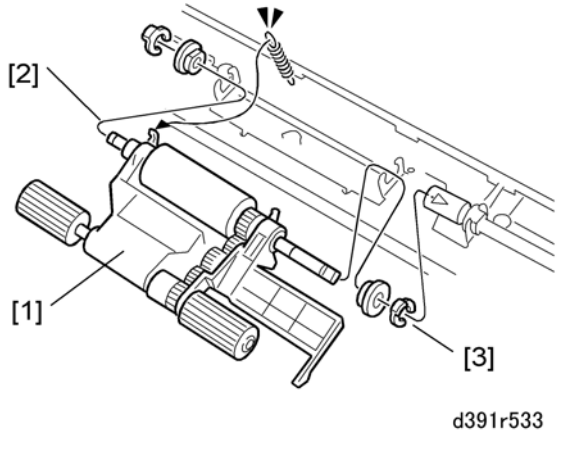
4. Remove the separation roller [1] (1, Bushing x1)
5. Remove the torque limiter [2].
6. Reset the counter after replacing the separation roller or torque limiter. (☛ p.140)

Pickup Rollers

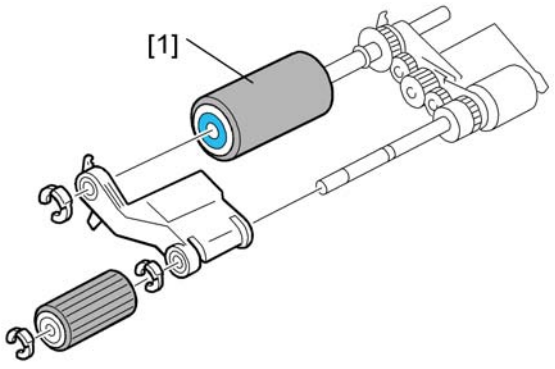
Pickup Roller: Tray A



1. Remove the inserter rear cover. (☛ p.263)
2. Release and open top cover completely. (☛ p.263)
3. Remove front transport guide [1] (x2).



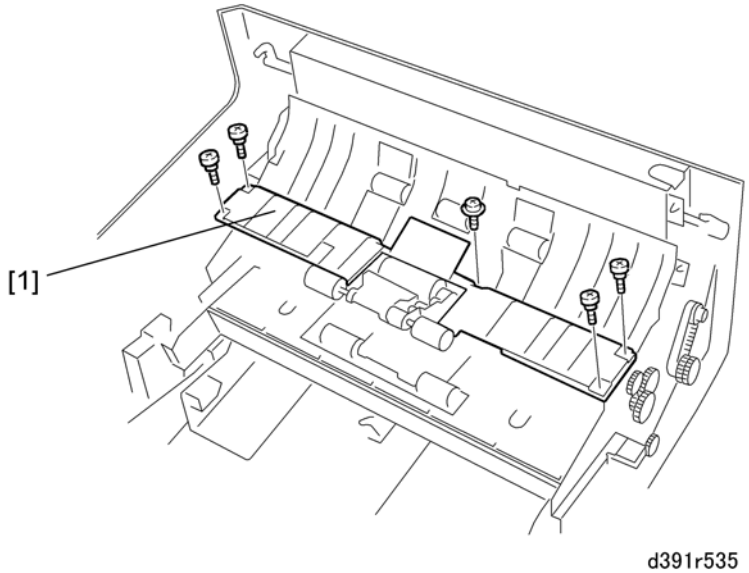
4. Remove the pickup roller unit [1]:
   [2] Front (Spring x1, x1, Bushing x1)
   [3] Rear (x1, Bushing x1)



d391r534

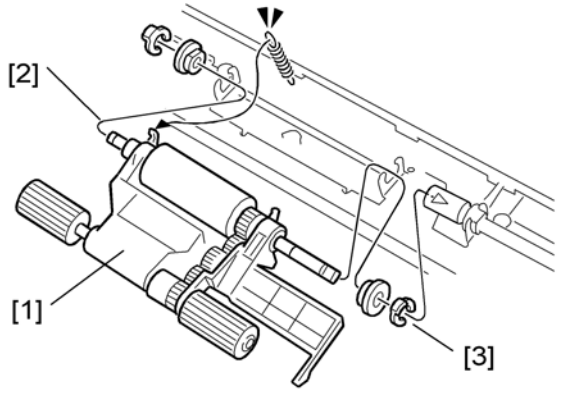
5. Remove the pickup roller [1] (C x3, Actuator x1)
6. Reset the counter after replacing the pickup roller. (☛ p.140)

Pickup Roller: Tray B



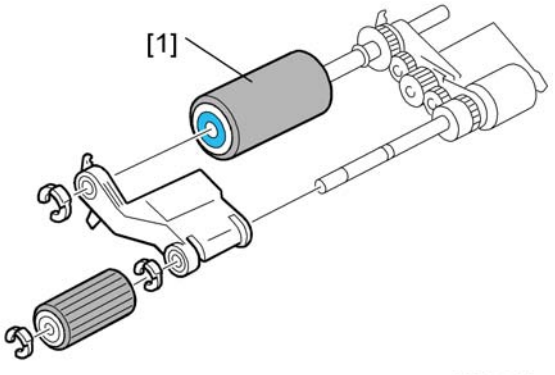
d391r535

1. Remove the inserter rear cover. (☛ p.263)
2. Release and open top and middle cover completely. (☛ p.263)
3. Remove the rear transport guide [1] (x5).



d391r533

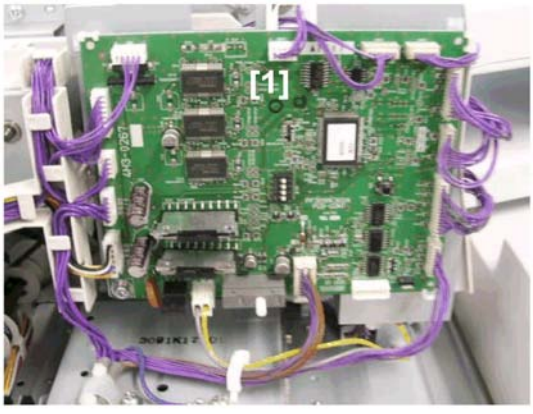
4. Remove the pickup roller unit [1]:
   [2] Front (Spring x1, ℂ x1, Bushing x1)
   [3] Rear (ⓒ x1, Bushing x1)



d391r534

5. Remove the pickup roller [1] (ℂ x3, Actuator x1)
6. Reset the counter after replacing the pickup roller. (☛ p.140)

Inserter Control Board



d391r513

1. Remove the inserter rear cover. (☛ p.263)
2. Remove the inserter control board [1] (x all, x1, Standoffs x3).

When replacing the inserter control board

The adjustment of the paper width sensor output value for the Inserter Trays (upper/lower) is required when replacing the inserter control board.

The following procedure adjusts the sensor output values for paper width for both upper and lower trays of the Inserter.

1. Open the right door and remove the service board cover (x 1).
2. Turn on the left door switch somehow with the left door open.
   - Keep the left door open and the machine turning on in order to check the LED status later.
3. Set "SW1" as in below, and turn on the machine power.

SW1	1	2	3	4
ON/OFF	ON	OFF	ON	OFF

4. Select the settings for "SW2" from below depending on the paper size. (Adjustment needed only for the required paper size.)

SW2	1	2	3	4	5	6	7	8	Tray/Paper Size
ON/OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Upper/ A4
ON/OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	Lower/ A4

ON/OFF	**ON**	OFF	**ON**	OFF	OFF	OFF	OFF	OFF	Upper/ LTR
ON/OFF	OFF	**ON**	**ON**	OFF	OFF	OFF	OFF	OFF	Lower/ LTR

5. Press "PSW1". [Standby status for A4 or LTR -] SEF

   LED status at standby: LED1 - ON

   LED2 - OFF

   LED3 - OFF

6. Set the side fences to PORTRAIT for the required size (A4 or LTR), then press "PSW1" again to start the adjustment.

   LED status during adjustment: LED1 - ON

   LED2 - FLASH at 1000 [msec] interval (LED 2 may turn on immediately)

   LED3 - OFF

   If adjustment is completed successfully, LED2 will turn ON.

   If adjustment results in failure, LED1 will flash at 100 [msec] interval and LED2 and LED3 will turn ON. Press "PSW2" to return to standby status.

7. Press "PSW1". [Standby status for A4 or LTR -] LEF

   LED status at standby: LED1 - ON

   LED2 - ON

   LED3 - OFF

8. Set the side fences to LANDSCAPE for the required size (A4 or LTR), then press "PSW1" again to start the adjustment.

   LED status during adjustment: LED1 - ON

   LED2 - ON

   LED3 - FLASH at 1000 [msec] interval

   If adjustment is completed successfully, LED1 will FLASH at 1000 [msec], LED2 and LED3 will turn OFF. (This may happen immediately.)

   If adjustment results in failure, LED1 will flash at 100 [msec] interval and LED2 and LED3 will turn ON. Press "PSW2" to return to standby status.

9. Upper Tray Adjustment completes.
10. Change Dip Switch 2 for the lower tray. Follow the above procedure to adjust the lower inserter tray.
11. Turn all Dip Switches Off.
12. Turn main Power Off/On.

Note

- Once the adjustments for both PORTRAIT and LANDSCAPE are completed successfully, the A/D values (value converted from analog to digital) are saved onto the EEPROM of the Inserter.

4. Troubleshooting

Service Call Tables

For details about "Service Call Tables" for this peripheral, see the main service manual.

Jams

Handling Paper Jams

What Happens When a Jam Occurs

When a jam occurs open the cover at the jam location, remove the jammed paper and close the cover. However, the operator should be cautioned about opening the top cover of the bookbinder.

- The top cover should be opened when only absolutely necessary.
- Opening the top cover can disturb paper that is already on the stacking tray.

When a Jam Occurs at Power On

A jam alert will occur at power on if there is paper or a signature in the horizontal paper path, vertical path, signature path, inserter path, or on the stacking tray. Open the cover at the jam location, remove the jam, and close the cover. If the signature jams beyond the stacking tray, recovery processing executes automatically and upstream sheets are output to the stacking tray and stop there. However, if one of the aforementioned jams occurs in the paper path at power on, recovery processing does not execute until after the jam has been removed.

Power Loss During Glue Application

If the system is turned off while glue is being applied to a signature:

- The gluing unit begins to warm the glue after the power is turned on.
- After the glue has been warmed up, the glue vat returns to its home position.
- The bookbinder enters recovery mode automatically and paper once again starts exiting the signature path to the stacking tray.

When an Error Occurs

Low Performance Mode

Cycling the system off/on usually restores the bookbinder to full operation after a jam has been removed.

- If an error occurs and cycling the machine off/on does not solve the problem, then the service technician must release the grip unit in the service mode, turn the bookbinder off, and then remove the jam.

- If a jam forces the bookbinder to enter the low performance mode, the bookbinder cannot recover from the error automatically. The jam must be removed and the machine reset by the service technician.

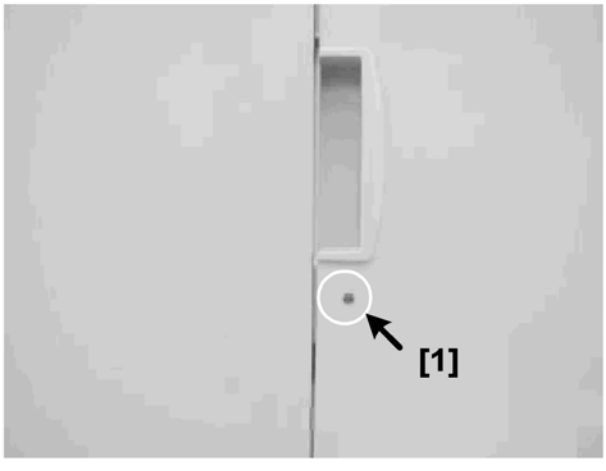
For more details about setting and releasing the low performance mode, see Section 3.

Unlocking the Front Doors Manually

If the front doors remain locked after the power was turned off while the bookbinder was operating, normally cycling the bookbinder off/on will unlock the doors.

However, if the front doors remain locked after cycling the machine off/on (or if you cannot switch machine off/on), follow the procedure below to manually unlock the front doors.

1. Confirm that the bookbinder is turned off.



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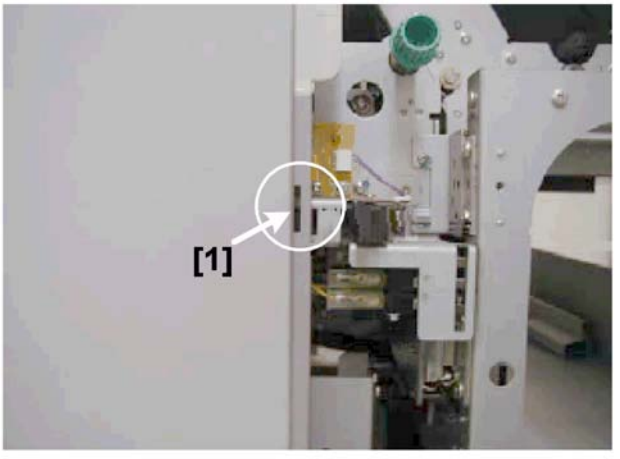
2. At [1] insert the tip of a thin metal scale (or a thin screwdriver) and press in on the manual lock to release the doors.



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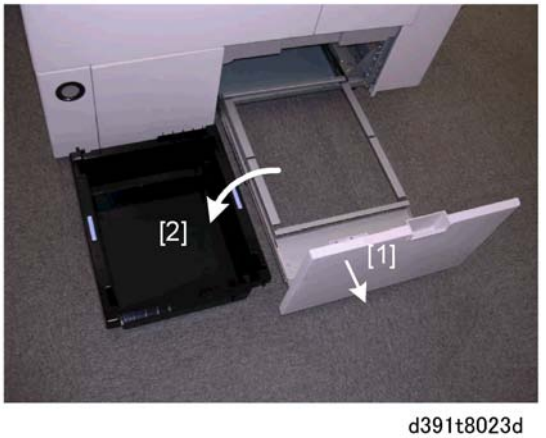
The manual release is located behind a cutout [1] on the left edge of the left front door.

When the Book Stack Door Cannot Be Opened

Follow the procedure below if an problem occurs that prevents opening the book stacking tray. For example, a strip of trimming stuck to the blade and jammed between the trimming unit and trimming buffer could block these mechanisms and prevent the stacking tray door from opening.

1. Turn off the bookbinder and disconnect its power cord.
2. Pull out the trimmings drawer.



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3. Open the trimmings box drawer [1] and remove the trimmings box [2].

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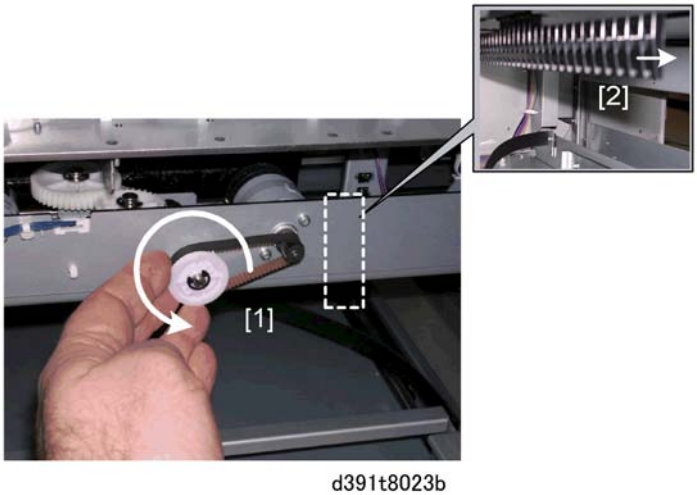
4. Insert the tip of a small screwdriver into hole [1].



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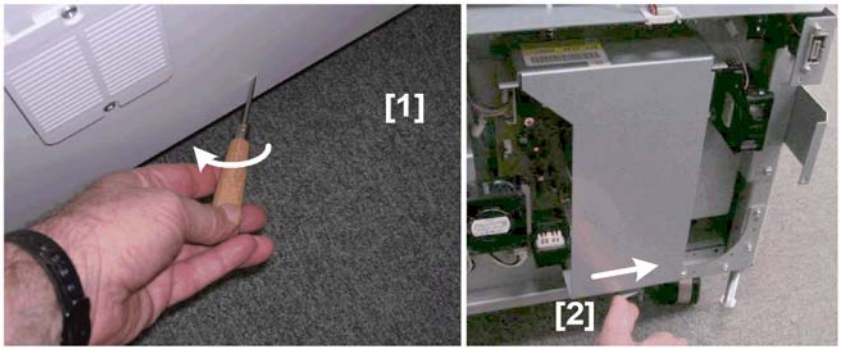
5. Turn the trimmings buffer drive pulley [1] counter-clockwise to move the trimmings buffer [2] to the right.
6. Confirm the movement of the trimmings buffer by checking the position of the actuator of the trimmings buffer full sensor.
7. Continue to turn the trimmings buffer drive pulley until you see the actuator behind the hole, then stop turning.

   If the trimmings buffer will not move to the right because it is blocked by paper scraps, turn the pulley clockwise to move the buffer left, remove the scrap, then move the buffer to the right



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8. Insert the tip of a small screwdriver into the small hole [1] on the rear cover of the bookbinder.
9. Move the screwdriver in the direction of the arrow to release the stacking tray lock.

Note

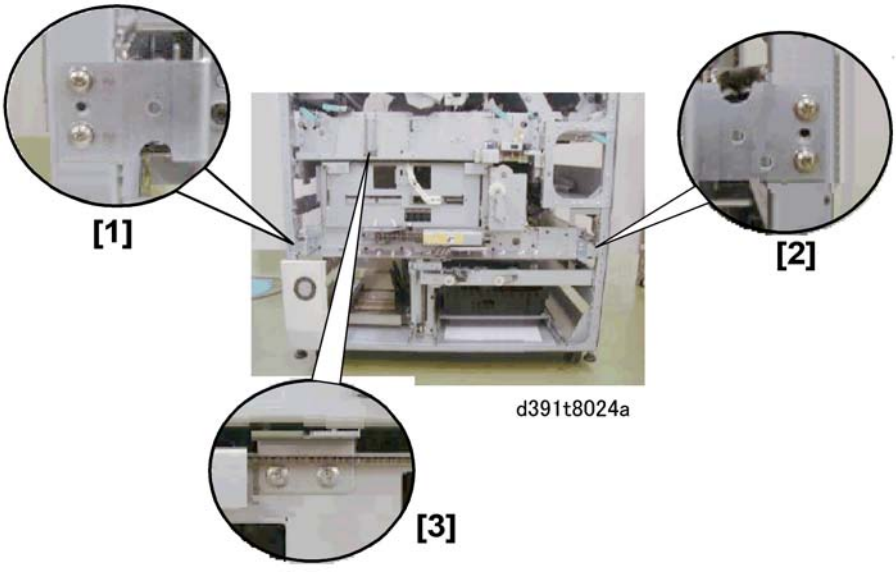
- If the rear cover has been removed, just push the lever [2] to the right to unlock the book stack door.

10. Open the book stack door.

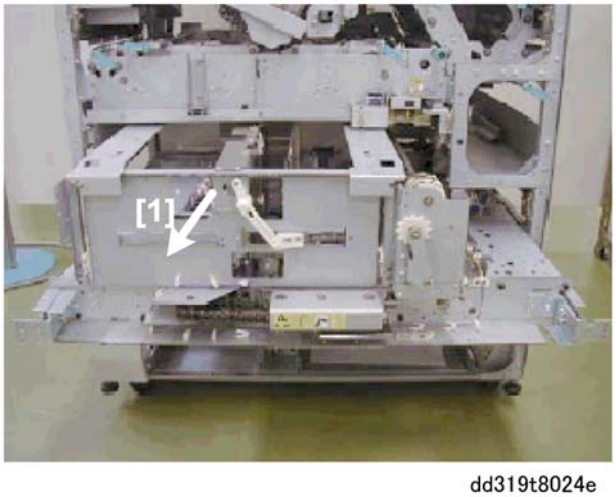
Signature, Trimmings Removal

Follow the procedure below if an problem occurs that prevents the removal of a signature or trimmings from the trimming unit. For example, a strip of trimming stuck to the blade and jammed between the trimming unit and trimming buffer could block the removal of the signature or trimmings.

1. Turn the bookbinder off.
2. Open the left and right door.
3. Remove the lower inner cover.



4. Remove the braces [1], [2], [3] from the trimming unit frame. (x3 ea.)

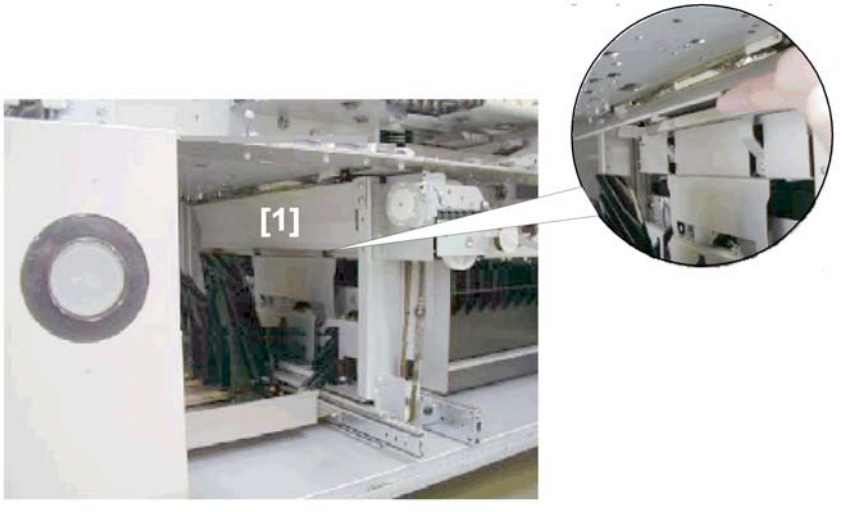


5. Pull out the trimming unit [1].
6. Retract the grip unit, open the press plates, or retract the blade, trimmings buffer as required.
7. Remove the signature and trimmings.

Removing Trimmings Jammed at the Blade

Follow the procedure below if an problem occurs that prevents the removal trimmings at the blade. For example, a strip of trimming stuck to the blade and jammed between the trimming unit and trimming buffer could block the removal of the signature or trimmings.

1. Turn off the bookbinder.
2. Remove the right and left door.
3. Remove the inner lower cover.



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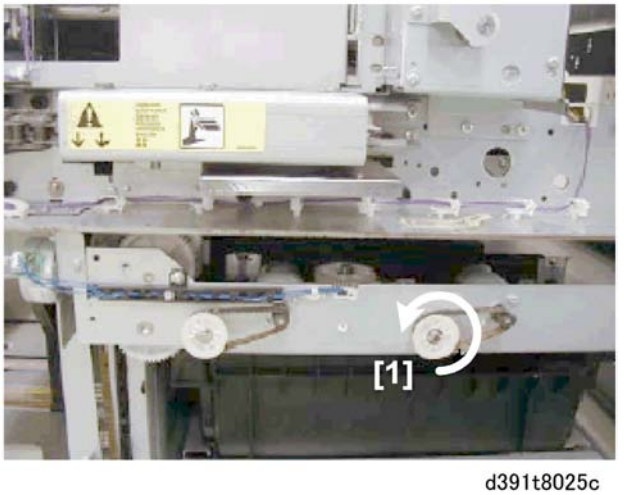
4. Open the book stack delivery door.
5. Lift the cover [1] and check the area for trimmings. If you see any trimmings remove them.

   Continue with the procedure below if you cannot pull out the scraps.



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6. Rotate the trimmings buffer pulley [1] counter-clockwise to move the trimmings buffer to the right.
7. Follow the procedure in the previous section to remove the jammed scraps from the trimming unit.
8. Insert your hands from the front of the bookbinder to remove the jammed sheets, pulling them in the direction of paper feed or paper exit.

Low Performance Mode

Moving to Low Performance Mode

When an error occurs in a location that is neither located in nor affects paper feed in the horizontal feed path:

- The current settings are written in EEPROM so the horizontal feed path can still operate in lower performance mode. In low performance mode only the horizontal feed path can be used, but only for downstream delivery.
- The machine must be cycled off/on to put the bookbinder in the low performance mode.

Low Performance Conditions

Here is a summary of the conditions that put the bookbinder in the low performance mode:

- The error must have no effect on the operation of the horizontal transport path.
- If a jam does occur in the horizontal path, the jam can be easily removed.
- When the error occurred all units where in positions that permit horizontal paper transport.

Unit	Position Where Horizontal Transport Possible
Sub Grip	Sub grip HP sensor (S37)
Main Grip	Rotate HP Sensor (S43)
Gluing Unit	Glue Vat HP Sensor (S73)
Cover Path	Closed
Spine Plate	Closed

Canceling Low Performance Mode

See "Replacement and Adjustment > Common Procedures > Setting and Releasing Low Performance Mode".

Service Board Basics

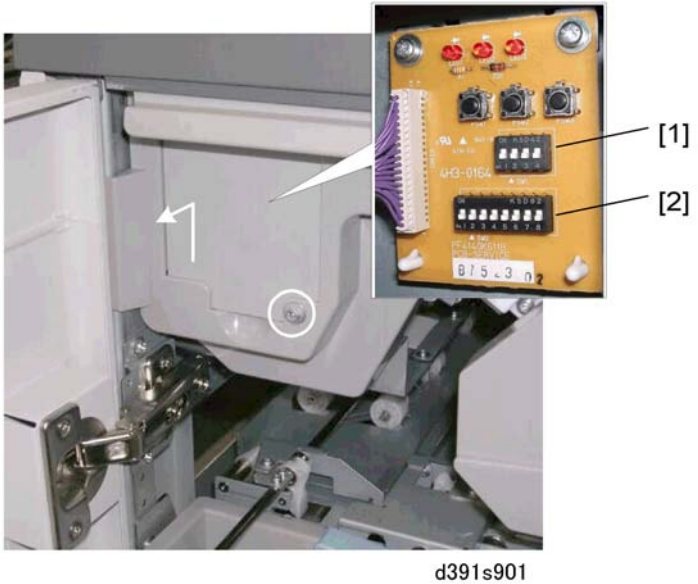
This section describes use of the Service Mode for the bookbinder and inserter.

Service Board Switches

The two banks of DIP switches on the Service Board (SW1, SW2) are used to set modes and do settings.

Important

- **The bookbinder enables a switch change on SW1 only after the system has been cycled off/on. The Service Board is located behind the left door near the front upper corner of the bookbinder (see below).**
- The Service Board is located behind a protective cover held in place by one screw.
- The front door switches must be ON to set the machine in the Service Mode. This is done by opening the right and left front doors and inserting cardboard shims into the slots of the front door switches.



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- The SW1 bank [1] is used to switch between Service Mode and Normal Mode. This setting is not recognized until the machine has been cycled off on.
- The SW2 bank [2] is used for detailed Service Mode settings. The system does not need to be cycled off/on after changing the settings of these switches.

SW1 Settings

SW1				Mode	Comment
1	2	3	4		
*	*	*	*	Normal Mode	Factory setting
Up	*	*	*	Bookbinder Adjustment Mode	
*	Up	*	*	Bookbinder Test Mode 1	With signature trimming
*	Up	*	Up	Bookbinder Test Mode 2	Without signature trimming
Up	*	Up	*	Inserter Adjustment Mode	For inserter

SW2 Settings: Normal Mode

Refer to the sections below for more details about SW2 settings in the adjustment mode and test mode.

Service Board LEDs

LED3 indicates status and details. Push [PSW3] to toggle between the **Status** and **Detail** display. For more about alarms, jams, errors, etc. please refer to the appropriate sections.

Display Items

Mode	Status	Detail
Normal Mode	Yes	No
Service Mode	Yes	No
Doors Open	Yes	Yes
Alarm	Yes	Yes
Jam	Yes	Yes
Error	Yes	Yes

Note: "Status" is automatically indicated. Press [PSW3] to indicate “detailed” status.

Status Display

The speed of the flashes at LED1 indicates normal status (medium/slow flashing) or abnormal status (rapid flashing). In the error status the display combinations of LED2 and LED3 give more information about the abnormal condition. When an error occurs in the Normal Mode or Service Mode, the LED1 display switches from Normal Mode to Error Mode.

Status	Mode/ Type of Abnormal Status	LED1	LED2	LED3	Comment
Normal	Normal Mode	FLASH	OFF	OFF	LED1 flash duration: 0.5 sec.
	Service Mode	FLASH	OFF	OFF	LED1 flash duration: 1 sec.
Abnormal	Error	FLASH	ON	ON	LED1 flash duration: 0.1 sec.
	Jam	FLASH	OFF	ON	
	Alarm	FLASH	ON	OFF	
	Open	FLASH	OFF	OFF	

Order of priority for indicating abnormal status:

Error > Jam> Alarm> Open

If multiple abnormal statuses occur, only one of the statuses is indicated according to the above order of priority.

Details Display

Once the status is determined from the above table (normal, error, jam, alarm, or open door), further information can be obtained by pressing [PSW3], which will change the signals displayed by the LEDs.

(1) Doors Open

LED1, LED2 distinguish between the Bookbinder and Inserter:

(LED1 lights, LED2 (OFF = Bookbinder, ON = Inserter))

- Count the number of times LED3 flashes to identify the location of the opened door/cover.

Bookbinder

LED1	LED2	LED3	Open Position	Comment
ON	OFF	FLASH	Count the number of flashes – LED3. x 1: Front Cover x 2: Top Cover x 3: Book Door x 4: Trim Scrap Box Door x 5: Glue Supply Drawer x 6: Relay Unit Front Door	Flash duration: 0.3 sec.

Inserter

LED1	LED2	LED3	Open Position	Comment
ON	ON	FLASH	Count the number of flashes – LED3. x 1: Joint x 2: Top Cover	Flash duration: 0.3 sec.

LED3 Flashes x times> LED3 OFF 1 sec.> LED Flashes x times> LED3 OFF...repeat

(2) Alarm

To indicate the detailed alarm status, LED1 lights and LED2, LED3 both flash. Flash duration: 0.3 sec. LED2 remains ON for 2 sec. to indicate "0". The LED2 and LED3 display alternate automatically:

Count the number of times LED2 and LED3 flash to identify the problem causing the alarm.

LED2 Flashes > OFF 1 sec.> LED3 Flashes > OFF 1 sec.> repeat

Example 1: Book Tray Full Display

Sequence	LED1	LED2	LED3	Comment
1	ON	FLASH x3	OFF	Flash duration: 0.3 sec.
2	ON	OFF	OFF	LED2, LED3 OFF 1 sec.
3	ON	OFF	FLASH x2	Flash duration: 0.3 sec.
4	ON	OFF	OFF	LED2, LED3 OFF 1 sec.

Example 2: Glue Vat Empty Display

Sequence	LED1	LED2	LED3	Comment
1	ON	ON	OFF	LED2 ON (2 sec.)
2	ON	OFF	OFF	LED2, LED3 OFF (1 sec.)
3	ON	OFF	FLASH x6	Flash duration: 0.3 sec.
4	ON	OFF	OFF	LED2, LED3 OFF (1 sec.)

Alarm Codes and LED Flash Equivalents Table (Switching with [PSW3] Presses)

Alarm Name	Alarm Information	
	LED2 Count	LED3 Count
Glue Near End	0	2
Stacking Tray Overflow	0	3
Paper Remains in Stacking Tray	0	5
Glue Out (Vat Empty)	0	6
Replace Gluing Unit	0	8
Bookbinding Malfunction	1	1
Trim Scrap Box Near Full	1	2
Trim Scrap Box Full	1	3
Near Time for Blade Replacement	2	1
Near Time for Blade Cradle Replacement	2	2
Blade Needs Replacement	2	3
Blade Cradle Needs Replacement	2	4
Book Tray Near Full	3	1
Book Tray Full	3	2

NOTE: "0" is indicated by the LED2 lighting for 2 sec.

(3) Error/Jam

For Error/Jam, [PSW3] must be pressed **TWICE** in order to obtain the exact information; obtain total of 4 signals from LED2 and LED3 (by toggling the signals pressing [PSW3]).

To indicate the error/jam status, LED1 lights and LED2, LED3 flash. Flash duration: 0.3 sec.

- The LEDs remain ON for 2 sec. to indicate "0".
- The LED2 and LED3 displays alternate automatically.

Example 1: Cause: Fan Lock Detection (Signature Fan 1 Lock: Front (FM8))

Sequence 1-4

Sequence	LED1	LED2	LED3	Comment
1	ON	FLASH x5	OFF	Flash duration: 0.3 sec.
2	ON	OFF	OFF	LED2, LED3 OFF (1 sec.)
3	ON	OFF	FLASH x1	Flash duration: 0.3 sec.
4	ON	OFF	OFF	LED2, LED3 OFF (1 sec.)

Display Switching with [PSW3] Presses

Sequence 5-8

	LED1	LED2	LED3	Comment
5	OFF	ON	OFF	LED2 ON (2 sec.)
6	OFF	OFF	OFF	LED2, LED3 OFF (1 sec.)
7	OFF	OFF	FLASH (x10)	Flash duration: 0.3 sec.
8	OFF	OFF	OFF	LED2, LED3 OFF (1 sec.)

Jam Code and LED Flash Equivalence Table

Jam Name	Jam Information			
	Sequence 1-4		Sequence 5-8	
	LED2	LED3	LED2	LED3
Bookbinder				
At Power On	1	3	0	0
Door Open	1	4	0	0
Paper Lag	1	7	0	0
Entrance Sensor Late	1	0	1	1

Jam Name	Jam Information			
	Sequence 1-4		Sequence 5-8	
	LED2	LED3	LED2	LED3
Signature Path Sensor 1 Late	1	0	1	2
Signature Path Sensor 2 Late Jam	1	0	1	3
Timing Sensor Late	1	0	1	4
Stacking Tray Paper Late	1	0	1	5
Sub Grip Signature Late	1	0	1	6
Cover Path Sensor 1 Late	1	0	1	7
Cover Path Sensor 2 Late	1	0	1	8
Horizontal Path Exit Sensor Late	1	0	1	9
Cover Registration Sensor Late	1	0	1	10
Cover Registration Sensor Late (During Cover Switchback)	1	0	1	11
Cover Horizontal Registration Sensor: Small Sensor Late	1	0	1	12
Cover Horizontal Registration Sensor: Large Sensor Late	1	0	1	13
Entrance Sensor Lag	1	1	2	1
Signature Path Sensor 1 Lag	1	1	2	2
Signature Path Sensor 2 Lag	1	1	2	3
Timing Sensor Lag	1	1	2	4
Stacking Tray Paper Lag	1	1	2	5
Cover Path Sensor 1 Lag	1	1	2	7
Cover Path Sensor 2 Lag	1	1	2	8
Horizontal Path Exit Sensor Lag	1	1	2	9
Cover Registration Sensor Lag	1	1	2	10

Jam Name	Jam Information			
	Sequence 1-4		Sequence 5-8	
	LED2	LED3	LED2	LED3
Cover Registration Sensor Lag (During Cover Switchback)	1	1	2	11
Cover Horizontal Registration Sensor: Small Sensor Lag	1	1	2	12
Cover Horizontal Registration Sensor: Large Sensor Lag	1	1	2	13
Paper Size Mismatch	1	15	10	5
Cover Size Short	1	15	10	4
Trim Width Over	1	15	10	2
Finish Size Over	1	15	10	3
Inserter				
At Power On	1	3	0	0
Door Open	1	4	0	0
Separation Sensor: Tray A Late	1	0	6	2
Separation Sensor: Tray B Late	1	0	6	4
Vertical Transport Sensor 1 Late	1	0	6	6
Vertical Transport Sensor 2 Late	1	0	6	8
Entrance Sensor Late	1	0	6	10
Separation Sensor: Tray A Lag	1	1	6	3
Separation Sensor: Tray B Lag	1	1	6	5
Vertical Transport Sensor 1 Lag	1	1	6	7
Vertical Transport Sensor 2 Lag	1	1	6	9
Entrance Sensor Lag	1	1	6	11
Paper Size Mismatch	1	15	7	2

Jam Name	Jam Information			
	Sequence 1-4		Sequence 5-8	
	LED2	LED3	LED2	LED3
Relay Unit				
At Power On	2	1	0	0
Door Open	2	1	0	1
Paper Lag	2	1	0	2
Transport Sensor Late	2	1	0	3
Transport Sensor Lag	2	1	0	4
Data Error	2	1	0	5
Front Door Open	2	2	0	0

Error and LED Flash Count Equivalency Table

Error Name	Error Details	Error Information			
		Sequence 1-4		Sequence 5-8	
		LED2	LED3	LED2	LED3
Bookbinder Internal Communication	Master<->Slave Control Board Communication Error 1	0	1	8	0
Bookbinder Internal Communication	Master<->Slave Control Board Communication Error 1	0	1	8	0
	Master<->Slave Control Board Communication Error 2			8	1
	Relay Unit<-> Master Control Board Error			8	2
	Slave<->Cutter Control Board Communication Error 1			8	3
	Slave<->Cutter Control Board Communication Error 2			8	4

Error Name	Error Details	Error Information			
		Sequence 1-4		Sequence 5-8	
		LED2	LED3	LED2	LED3
EEPROM (Bookbinder)	EEPROM read error	0	5	0	1
	EEPROM write error			0	2
Inserter Communication	Communication initialization error	0	8	8	2
	Bookbinder <-> Inserter Communication Error 2			8	3
Power Supply Check	24V Check Signal Error 1	5	0	0	2
	24V Check Signal Error 2			0	3
	24V Check Signal Error 3			0	4
	24V Check Signal Error 4			0	5
Fan Lock Detection	Power Supply Fan: Right	5	1	0	1
	Power Supply Fan: Center			0	2
	Power Supply Fan: Left			0	3
	Spine Plate Fan: Lower Front			0	4
	Spine Plate Fan: Lower Rear			0	5
	Spine Plate Fan: Upper Front			0	6
	Spine Plate Fan: Upper Rear			0	7
	Signature Fan 2: Front			0	8
	Signature Fan 2: Rear			0	9
	Signature Fan 1: Front			0	10
	Signature Fan 1: Rear			0	11
	Glue Supply Fan: Upper			0	12
	Glue Supply Fan: Lower			0	13

Error Name	Error Details	Error Information			
		Sequence 1-4		Sequence 5-8	
		LED2	LED3	LED2	LED3
Cutter, Signature Grip Motors	Main grip unit did not leave the HP position.	10	1	8	1
	Main grip unit did not arrive at the HP position after signature release.			8	2
	Grip end sensor did not detect operation end.			8	3
	Grip unit did not reach the grip end sensor.			8	4
Cutter, Trimmings Buffer Motors	Trimmings buffer did not leave the HP position on the left.	10	2	8	1
	Trimmings buffer did not reach the HP position on the left.			8	2
	Trimmings buffer did not leave the trimmings dump port.			8	3
	Trimmings buffer did not reach the trimmings dump port.			8	4
	The motor is not rotating.			8	5
	Trimmings buffer did not retract from the paper press plate sensor.			8	6
	Trimmings buffer did not reach the paper press plate sensor.			8	7
Book Buffer Tray, Book Tray/Motor	Buffer tray did not move toward the rear.	10	3	8	1
	Buffer tray did not move toward the front.			8	2

Error Name	Error Details	Error Information			
		Sequence 1-4		Sequence 5-8	
		LED2	LED3	LED2	LED3
Cutter, Press Motors	Press plate did not leave the HP position at press.	10	4	8	1
	Press plate did not arrive at the HP position at release.			8	2
	Press plate did not leave END at press.			8	3
	Press plate did not arrive at END at release.			8	4
	Blade reached the limit position.			8	5
Cutter, Signature Slider Motors	Slide motor did not leave HP position.	10	5	8	1
	Rotate motor 2 did not reach home position.			8	2
Cutter, Signature Rotation Motor 1	Rotate motor 2 did not leave home position.	10	8	0	1
	Rotate motor 2 did not reach home position.			0	2
Cutter, Signature Rotation Motor 2	Rotate motor 2 did not leave home position.	10	9	0	1
	Rotate motor 2 did not reach home position.			0	2

Error Name	Error Details	Error Information			
		Sequence 1-4		Sequence 5-8	
		LED2	LED3	LED2	LED3
Cutter Motor	Cutter blade did not move.	10	10	0	1
	The blade did not move away from the cutting point on the blade cradle.			0	2
	The blade did not move for a rear-to-front cut.			0	3
	The blade did not move away from the blade cradle to the front.			0	4
	When moving from the front the blade did not reach the blade cradle.			0	5
	When moving from the rear the blade did not reach the blade cradle.			0	6
	The blade reached the limit position.			0	7
Book Stacking Unit, Book Lift Tray Motors	Book lift tray does not raise.	10	11	0	1
	Book lift tray does not lower.			0	2
	The motor is not rotating.			0	3
Book Stacking Unit, Book Tray Motors	Book collection buffer tray did not leave the home position.	10	12	0	1
	Book collection buffer tray did not reach the home position.			0	2
Cutter, Blade Cradle Motors	Blade cradle did not raise.	10	13	0	1
	Blade cradle did not lower.			0	2
Book Stacking Unit, Door Lock Solenoid	Book stacking tray, book drawer did not lock.	10	14	0	1

Error Name	Error Details	Error Information			
		Sequence 1-4		Sequence 5-8	
		LED2	LED3	LED2	LED3
Glue Applicator, Glue Heater	Heater failed to start: Error 1	11	0	0	1
	Heater short.			0	2
	Heater wire break or short circuit			0	3
	Heater failed to start: Error 2			0	4
	Low temperature detected while regulating glue temperature.			0	5
	The thermostat inside the gluing unit detected an abnormally high temperature.			0	6
	Abnormal thermostat detection			0	7
	Glue level thermistor: Error 1			0	8
	Glue level thermistor: Error 2			0	9
	Glue level thermistor broken.			0	12
Glue Applicator, Glue Level Detection Sensors	The surface of the glue in the vat did not reach the lower limit position.	11	2	0	1
	The surface of the glue in the vat did not reach the upper limit (full) position.			0	2
	The glue surface has not dropped below the upper limit mark.			0	3
	Glue Level Thermistor Adjustment Error.			0	4

Error Name	Error Details	Error Information			
		Sequence 1-4		Sequence 5-8	
		LED2	LED3	LED2	LED3
Sensor Automatic Adjustment (1)	The value for the adjustment of the timing sensor exceeded the upper limit.	11	4	0	1
	The value for the adjustment of the cover registration sensor exceeded the upper limit.			0	2
	The value for the adjustment of the cover horizontal registration sensor (small) exceeded the upper limit.			0	3
	The value for the adjustment of the cover horizontal registration sensor (large) exceeded the upper limit.			0	4
Sensor Automatic Adjustment (2)	The value for the adjustment of the book exit sensor exceeded the upper limit.	11	4	0	5
	The value for the adjustment of the leading edge sensor exceeded the upper limit.			0	6
	The value for the adjustment of the entrance path sensor exceeded the upper limit.			0	7
	The value for the adjustment of the signature registration sensor exceeded the upper limit.			0	8

Error Name	Error Details	Error Information			
		Sequence 1-4		Sequence 5-8	
		LED2	LED3	LED2	LED3
Sensor Automatic Adjustment (1)	The value for the adjustment of the timing sensor was lower than the lower limit.	11	4	1	1
	The value for the adjustment of the cover registration sensor was lower than the lower limit.			1	2
	The value for the adjustment of the cover horizontal registration sensor (small) was lower than the limit.			1	3
	The value for the adjustment of the cover horizontal registration sensor (large) was lower than the limit.			1	4
Sensor Automatic Adjustment (2)	The value for the adjustment of the book exit sensor was lower than the lower limit.	11	4	1	5
	The value for the adjustment of the leading edge sensor was lower than the lower limit.			1	6
	The value for the adjustment of the entrance path sensor was lower than the lower limit.			1	7
	The value for the adjustment of the book registration sensor was lower than the lower limit.			1	8

Error Name	Error Details	Error Information			
		Sequence 1-4		Sequence 5-8	
		LED2	LED3	LED2	LED3
Transport Path Sensors (1)	Trimming unit entrance sensor blocked by paper, cannot detect.	11	5	0	2
	Signature registration sensor could not detect the presence of paper.			0	3
	Could not detect the absence of paper at the book exit sensor.			0	6
	Trimming unit entrance sensor blocked by paper, cannot detect. Detection possible on grip side.			0	7
	Cannot detect presence of paper in main grip.			0	8
	Could not detect the absence of paper at the cutter entrance.			1	2
Transport Path Sensors (2)	Signature registration sensor could not detect the absence of paper.	11	5	1	3
	Could not detect the absence of paper at the book arrival sensor			1	4
	Could not dump trimmed scraps from the trimmings buffer. Or, scraps jammed between trimmings buffer and press plate.			1	6
	Could not detect the absence of paper at the sub grip signature sensor			1	7
	Could not detect the absence of paper at the main grip signature sensor			1	8

Error Name	Error Details	Error Information			
		Sequence 1-4		Sequence 5-8	
		LED2	LED3	LED2	LED3
Signature Thickness Sensor	Signature thickness reading smaller than allowed minimum size.	11	6	0	1
	Signature thickness reading larger than allowed maximum size.			0	2
	The signature thickness reading did not change.			0	3
Glue Vat Motor	The glue vat HP sensor at the rear of the bookbinder failed to go ON.	11	7	0	1
	The glue vat HP sensor at the rear of the bookbinder failed to go OFF.			0	2
Glue Vat Roller Motor	The glue vat roller was not rotating.	11	8	0	1
Glue Supply Motor	The glue supply motor did not arrive at its home position.	11	9	0	1
	The glue supply motor did not leave its home position.			0	2
Spine Fold Motor: Left	The spine fold plate did not reach the left HP sensor.	11	10	0	1
	The spine fold plate did not leave the left HP sensor position.			0	2
	The sensor did not turn ON.			0	3
	The sensor did not turn OFF.			0	4
	The spine plate HP sensor left and spine plate close sensor turned ON at the same time.			0	5

Error Name	Error Details	Error Information			
		Sequence 1-4		Sequence 5-8	
		LED2	LED3	LED2	LED3
Spine Fold Motor: Right	The spine fold plate did not reach the right HP sensor.	11	11	0	1
	The spine fold plate did not leave the right HP sensor position.			0	2
	The sensor did not turn ON.			0	3
	The sensor did not turn OFF.			0	4
	The spine plate HP sensor: right and spine fold close sensor turned ON at the same time.			0	5
Spine Plate Motor	The spine plate open sensor did not go ON.	11	12	0	1
	Spine plate open sensor did not go OFF.			0	2
	Spine plate close sensor did not go ON.			0	3
	Spine plate close sensor did not go OFF.			0	4
Front Door Lock	Front door did not close and lock.	11	13	0	1
	The front door lock did not release.			0	2
	Front doors detected open even though doors are closed and locked.			0	3
Switchback Roller Motor (Stacking Tray)	Switchback flapper HP sensor did not go ON.	12	0	0	1
	Switchback flapper HP sensor did not go OFF.			0	2

Error Name	Error Details	Error Information			
		Sequence 1-4		Sequence 5-8	
		LED2	LED3	LED2	LED3
TE Press Lever Motor (Stacking Tray)	The press lever HP sensor did not go ON.	12	1	0	1
	The press lever HP sensor did not go OFF.			0	2
Jogger Fence Motor: Front	Jog Fence HP Sensor: Front/Small (S12) did not go ON.	12	2	0	1
	Jog Fence HP Sensor: Front/Small (S12) did not go OFF.			0	2
	Jog Fence HP Sensor: Front/Large (S14) did not go ON.			0	3
	Jog Fence HP Sensor: Front/Large (S14) did not go OFF.			0	4
Jogger Fence Motor: Rear	Jog Fence HP Sensor: Rear/Small (S13) did not go ON.	12	3	0	1
	Jog Fence HP Sensor: Rear/Small (S13) did not go OFF.			0	2
	Jog Fence HP Sensor: Rear/Large (S15) did not go ON.			0	3
	Jog Fence HP Sensor: Rear/Large (S15) did not go OFF.			0	4

Error Name	Error Details	Error Information			
		Cause Count		Details Count	
		LED2	LED3	LED2	LED3
Switchback Roller Lift Motor (Stacking Tray)	Switchback roller HP sensor did not go ON.	12	4	0	1
	Switchback roller HP sensor did not go OFF.			0	2
Stacking Tray Lift Motor (1)	Stacking tray lower limit sensor did not go ON.	12	5	0	1
	Stacking tray lower limit sensor did not go OFF.			0	2
	The paper detection sensor on the front of the stacking tray did not go ON.			0	3
	The paper detection sensor on the front of the stacking tray did not go OFF.			0	4
	The paper detection sensor on the rear of the stacking tray did not go ON.			0	5
Stacking Tray Lift Motor (2)	The paper detection sensor on the rear of the stacking tray did not go OFF.	12	5	0	6
	Stacking tray over flow sensor did not go ON.			0	7
	The stacking tray lower limit sensor and its paper overflow sensor went on at the same time.			0	8
	Stacking tray over flow sensor did not go OFF.			0	9
	Stacking tray overflow sensor went off with the stacking tray at its highest position.			0	10
Stacking Tray Motor	Stacking tray HP sensor did not go ON.	12	6	0	1
	Stacking tray HP sensor did not go OFF.			0	2

Error Name	Error Details	Error Information			
		Cause Count		Details Count	
		LED2	LED3	LED2	LED3
Stacking Weight Motor	Stacking weight HP sensor did not go ON.	12	7	0	1
	Stacking weight HP sensor did not go OFF.			0	2
Cover Guide Motor: Left	The Cover Guide HP Sensor: Left (S27) did not go ON.	12	9	0	1
	Cover guide HP sensor: left and cover guide open sensor: left went ON at the same time.			0	2
	The Cover Guide Open Sensor: Left (S28) did not go ON.			0	5
Cover Guide Motor: Right	The Cover Guide HP Sensor: Right (S22) did not go ON.	12	10	0	1
	Cover guide HP sensor: right and cover guide open sensor: right went ON at the same time.			0	2
	The Cover Guide Open Sensor: Right (S23) did not go ON.			0	5
Cover Horizontal Registration Motor	Cover Registration HP Sensor: Small/ Large (S71, S72) did not go ON.	12	11	0	1
	Cover Registration HP Sensor: Small/ Large (S71, S72) did not go OFF.			0	2
Sub Grip Lift Motor	The sub grip HP sensor did not go ON.	13	0	0	1
	Sub Grip HP Sensor did not go OFF.			0	2
Sub Grip Size Motor	Sub grip size HP sensor did not go ON.	13	1	0	1
	Sub grip size HP sensor did not go OFF.			0	2

Error Name	Error Details	Error Information			
		Cause Count		Details Count	
		LED2	LED3	LED2	LED3
Sub Grip Open Motor	The sub grip open sensor did not go on.	13	2	0	1
	The sub grip open sensor did not go OFF.			0	2
	The sub grip close sensor did not go ON.			0	3
	The sub grip close sensor did not go OFF.			0	4
	The sub grip open sensor and sub grip close sensor went ON at the same time.			0	5
Signature Move Motor	Signature grip HP sensor did not go ON.	13	3	0	1
	Signature grip HP sensor did not go OFF.			0	2
	Signature main grip position sensor did not go ON.			0	3
	Signature main grip position sensor did not go OFF.			0	4
	Main grip rotate enable sensor did not go ON.			0	5
	Main grip rotate enable sensor did not go OFF.			0	6
	The signature HP sensor and signature main grip position sensor went ON at the same time.			0	7

Error Name	Error Details	Error Information			
		Cause Count		Details Count	
		LED2	LED3	LED2	LED3
Main Grip Lift Motor	The main grip HP sensor did not go ON.	13	4	0	1
	Main grip HP sensor did not go OFF.			0	2
	The main grip press sensor 1 did not go ON.			0	3
	The main grip press sensor 1 did not go OFF.			0	4
	The main grip press sensor 2 did not go ON.			0	5
	The main grip press sensor 2 did not go OFF.			0	6
	Book Exit Sensor (S64) did not go ON			0	7
	The main grip HP sensor at the high position did not turn ON.			0	8
	The main grip HP sensor at the high position did not turn OFF.			0	9
Grip Unit Rotation Motor	The main grip rotate HP sensor did not go ON.	13	5	0	1
	Main grip rotate HP sensor did not go OFF.			0	2
	The main grip rotate to binding position sensor did not go ON.			0	3
	Main grip rotate to binding position sensor did not go OFF.			0	4
	Main grip rotate hp sensor and rotate to binding position sensor went ON at the same time.			0	5

Error Name	Error Details	Error Information			
		Cause Count		Details Count	
		LED2	LED3	LED2	LED3
Grip Motor: Rear	The main grip open sensor rear did not go ON.	13	6	0	1
	The main grip open sensor rear did not go OFF.			0	2
	The main grip close sensor rear did not go ON.			0	3
	The main grip close sensor rear did not go OFF.			0	4
	Main grip encoder sensor: rear defective			0	5
	Main grip open sensor: rear and main grip close sensor: rear went ON at the same time.			0	6
Grip Motor: Front	The main grip open sensor: front did not go ON.	13	7	0	1
	The main grip open sensor: front did not go OFF.			0	2
	The main grip close sensor front did not go ON.			0	3
	The main grip close sensor: front did not go OFF.			0	4
	Main grip encoder: front sensor defective.			0	5
	Main grip open sensor: front and main grip close sensor: front went ON at the same time.			0	6

Error Name	Error Details	Error Information			
		Cause Count		Details Count	
		LED2	LED3	LED2	LED3
Signature Exit Motor	Signature exit path HP sensor did not go ON.	13	8	0	1
	Signature exit path HP sensor did not go OFF.			0	2
	Signature exit path press sensor did not go ON.			0	3
	Signature exit path press sensor did not go OFF.			0	4
Signature Exit Roller Motor	Leading edge sensor did not go ON	13	9	0	1
EEPROM (Inserter)	EEPROM read error	0	5	1	0
	EEPROM write error			1	1
Drive Switching Motor (Inserter)	Drive JG sensor did not go OFF within the prescribed time after the drive switching motor turned on.	14	0	0	1
	Drive JG sensor did not go ON within the prescribed time after the drive switching motor turned on.			0	2
Lift Motor: Tray A (Inserter)	Inserter Tray A (upper tray) failed to leave its lower limit sensor within the prescribed time after Tray A lift motor turned on.	14	1	0	1
	Inserter Tray A (upper tray) failed to arrive at its lower limit sensor within the prescribed time after Tray A lift motor turned on.			0	2

Error Name	Error Details	Error Information			
		Cause Count		Details Count	
		LED2	LED3	LED2	LED3
Lift Motor: Tray B (Inserter)	Inserter Tray B (lower tray) failed to leave its lower limit sensor within the prescribed time after Tray B lift motor turned on.	14	2	0	1
	Inserter Tray B (lower tray) failed to arrive at its lower limit sensor within the prescribed time after Tray B lift motor turned on.			0	2
Relay Unit	Relay Unit EEPROM Error.	2	0	0	0
	ASAP communication error.			0	1
	Relay Board <-> Master Control Board communication error			0	2
	Slave <-> Master Control Board communication error			0	3
	Slave <-> Cutter Control Board communication error			0	4
	Master <-> Inserter Control Board communication error			0	5

Service Mode

Before You Begin

The Service Mode settings can be performed independently on the bookbinder for both bookbinder and the inserter. When the bookbinder is turned on it obeys the settings on the Service Board and enters the mode selected with the settings on the SW1 bank.

Service Mode Settings

SW1				Mode	Comment
1	2	3	4		
*	*	*	*	Normal Mode	Factory setting
Up	*	*	*	Service Mode	
*	Up	*	*	Bookbinder Test Mode 1	
*	Up	*	Up	Bookbinder Test Mode 2	Without signature trimming
Up	*	Up	*	Inserter Adjustment Mode	For inserter

Bookbinder Adjustment Mode

Each unit in the bookbinder can be adjusted on the bookbinder itself. However, these adjustments must be done with the bookbinder turned on.

Sensor Adjustments

The LED strength of the photosensors can be adjusted.

1. Set the SW1 bank as shown below.

SW1			
1	2	3	4
Up	*	*	*

1. Set the SW2 bank switches for the item to adjust.

SW2								Adjustment
1	2	3	4	5	6	7	8	
Up	*	*	*	*	*	*	*	Timing Sensor
*	Up	*	*	*	*	*	*	Cover Registration Sensor
Up	Up	*	*	*	*	*	*	Cover Horizontal Registration Sensor: Small
*	*	Up	*	*	*	*	*	Cover Horizontal Registration Sensor: Large
Up	*	Up	*	*	*	*	*	Book Exit Sensor
*	Up	Up	*	*	*	*	*	Cutter Entrance Sensor
Up	Up	Up	*	*	*	*	*	Signature Registration Sensor
*	*	*	Up	*	*	*	*	Trimmings Buffer Full Sensor
Up	*	*	Up	*	*	*	*	Leading Edge Sensor
Up	Up	Up	Up	*	*	*	*	All Sensors

1. Push [PSW1] to confirm that there is no paper at the sensor position.

- While doing adjustments LED1, LED2 flash at 1 sec. intervals and LED3 remains off.
- When the adjustment of the D/A output value of an emitter sensor is within range for the receptor sensor A/D input, the D/A output is written to and store in the EEPROM. LED2 goes OFF after the adjustment is completed.
- If the value of the emitter sensor LED D/A output is changed when the value is at its maximum or minimum setting, and if this new setting is out of the acceptable range for the receptor sensor LED A/D input, this causes a sensor adjustment error (LED1 flashes at 0.1 sec. intervals, LED2, LED3 go ON).

Note:

- When a sensor adjustment error occurs, push [PSW2] to cancel the EEPROM write operation and shift to adjustment mode standby.
- Adjustment of the cutter entrance sensor, signature registration sensor, and all other sensors must be done with the front doors closed. Before adjusting the cutter entrance and signature registration sensors, for example, the signature grip motor and signature press motor must be moved to their adjustment positions. Doing these adjustments with the front doors open will cause a signature grip motor error or press motor error.

LED1	LED2	LED3	Status
FLASH	OFF	OFF	Adjustment mode standby, or adjustment completed.

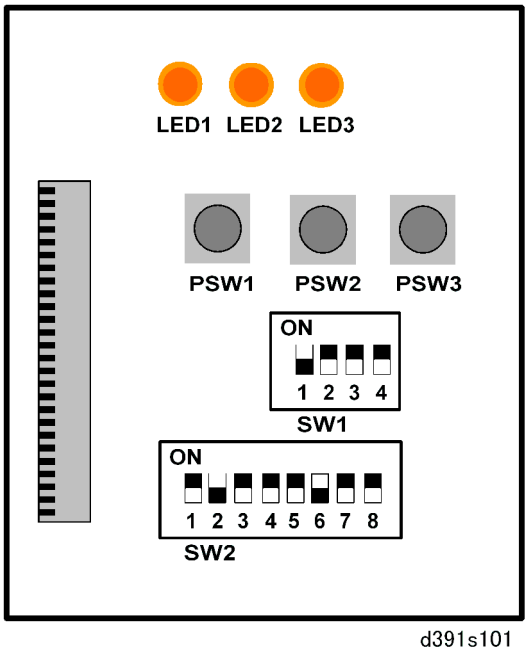
LED1	LED2	LED3	Status
FLASH	FLASH	OFF	Adjustment in progress. LED1, LED2 flash at 1 sec. intervals.
FLASH	ON	ON	Adjustment error. LED1 flashes at 0.1 sec. intervals.(Used for errors other than the all-sensor adjustment.)
FLASH	ON	FLASH	All sensor adjustment error (adjustment of all sensors at once failed). LED1 flashes at 0.1 sec. intervals. The LED3 flash count indicates which sensor adjustment failed.LED3 flash duration: 300 ms

LED3 Count	Target Sensor
1	Timing Sensor
2	Cover Registration Sensor
3	Cover Horizontal Registration Sensor: Small
4	Cover Horizontal Registration Sensor: Large
5	Book Exit Sensor
6	Cutter Entrance Sensor
7	Signature Registration Sensor
8	Trimmings Buffer Full Sensor
9	Leading Edge Sensor

LED3 Flashes x times> LED3 OFF 1 sec.> LED3 Flashes x times> LED3 OFF 1 sec.

How to Read the LEDs

1. Set DIP SW1 on the SW1 bank to ON.
2. Set the SW2 for the item that you want to check or adjust. For example, for the cover centering adjustment, DIP SW's 1 and 2 are set to ON as shown below.



3. Read the LED displays.
    - The three LEDs remain OFF for 2 sec. if the current value is "0".
    - When LED1 is OFF this indicates plus (+).
    - When LED1 is ON this indicates minus (-).
    - The LED2 count indicates the left digit (10's) of the 2-digit decimal value, the LED3 count indicates the right digit (1 to 9) of the 2-digit decimal value. Flash duration: 300 ms

    For example, if LED1 is OFF and LED2 flashes twice the left digit is "2. If LED3 flashes 4 times the right digit is "4" and the setting is read as "24". However, the adjustment is done in "0.1 mm" steps so the reading must be adjusted:

    24 x 0.1 mm = 2.4 mm

    where "2.4 mm" the actual current value. (The value is positive because LED1 is OFF.)

Critical Adjustments

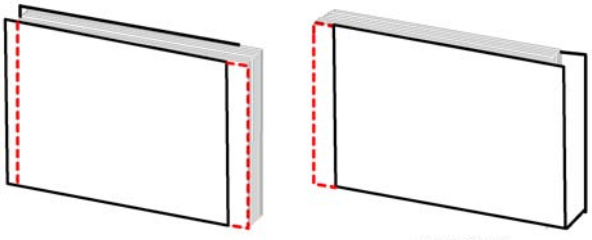
The following 13 adjustments are to be made either when requiring precise adjustment for the optimum performance of the bookbinder or after replacing the EEPROM on the main controller board.

Important

- **These adjustments are not required if the EEPROM is removed from the old board and inserted into the new board.**

Adjustment 1: Cover Horizontal Registration Position Adjustment

Do this adjustment when the cover has slipped up or down beyond either end of the signature spine.



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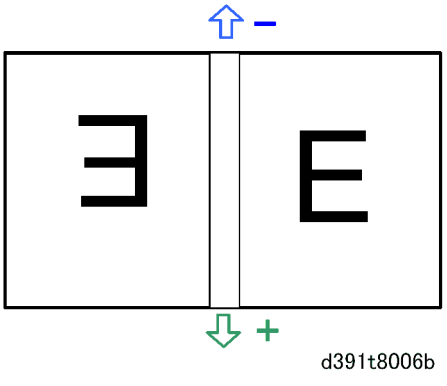
- If the cover has slipped toward the front, adjust in the plus (+) direction.
- If the cover has slipped toward the rear, adjust in the minus (-) direction.
- Always check the position of the cover at both ends of the spine.

There are two types of adjustments that can be done for cover horizontal registration, depending on the size of the cover.

- Small Size Adjustment: Cover size 297 mm or less
- Large Size Adjustment: Cover size 298 mm or more



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1. Set the SW1 bank as shown below.

SW1			
1	2	3	4
Up	*	*	*

2. Set the SW2 bank as shown below.

SW2								Status
1	2	3	4	5	6	7	8	
*	*	*	*	*	Up	*	*	Large size adjustment
Up	*	*	*	*	Up	*	*	Small size adjustment

- If the cover has slipped toward the front, adjust in the plus (+) direction.
- If the cover has slipped toward the rear, adjust in the minus (-) direction.
- Check the position of the cover at both ends of the spine.

1. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
2. Push [PSW2] to add 0.1 mm to the current value.

   -or-

   Push [PSW3] to subtract 0.1 mm from the current value.
3. LED1, LED2, LED3 light for 300 ms.
4. Look at LED1, LED2, LED3 to read the new adjusted value.
5. Repeat the steps above if you want to change the value again.
6. Push [PSW1] to write the new value into the EEPROM and shift to adjustment mode standby.

   LED1 flashes at 1 sec. intervals, LED2, LED3 go OFF.

   Adjustment Range

Adjustment Range	Steps	Default
±5.0 mm	0.1 mm	0 mm

How Values of the Settings Are Displayed

- The LED1 count indicates the sign of the value, plus (+) or minus (-). When LED1 is OFF this indicates plus (+), when LED1 is ON this indicates minus (-).
- The LED2 count indicates the left digit (10's) of the 2-digit decimal value, the LED3 count indicates the right digit (1 to 9) of the 2-digit decimal value. Flash duration: 300 ms
- For example, if LED2 flashes twice the LED3 flashes 4 times, this is read as "24". To adjust this value to the actual reading: 24 x 0.1 mm = 2.4 mm where "2.4 mm" is the actual value.
- The LEDs remain ON for 2 sec. if the current value is "0".
- The LED2 and LED3 displays automatically alternate.

Example 1: A Reading of 1.3 mm

	LED1	LED2	LED3	Comment
Left Digit	OFF	FLASH (x1)	OFF	Flash duration: 300 ms
	OFF	OFF	OFF	LED2, LED3 OFF (1 sec.)
Right Digit	OFF	OFF	FLASH (x3)	Flash duration: 300 ms
	OFF	OFF	OFF	LED2, LED3 OFF (1 sec.)

Example 2: A Reading of –2.5 mm

	LED1	LED2	LED3	Comment
Left Digit	ON	FLASH (x2)	OFF	Flash duration: 300 ms
	ON	OFF	OFF	LED2, LED3 OFF (1 sec.)
Right Digit	ON	OFF	FLASH (x5)	Flash duration: 300 ms
	ON	OFF	OFF	LED2, LED3 OFF (1 sec.)

Example 3: A Reading of 1.0 mm

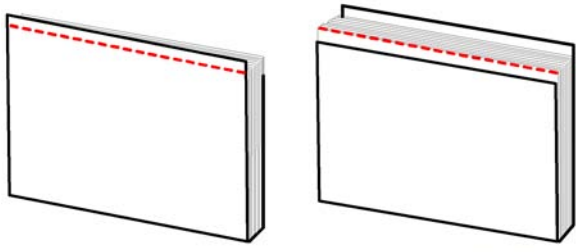
	LED1	LED2	LED3	Comment
Left Digit	OFF	FLASH (x2)	OFF	Flash duration: 300 ms
	OFF	OFF	OFF	LED2, LED3 OFF (1 sec.)
Right Digit	OFF	OFF	ON (2 sec.)	LED3 ON (2 sec.)
	OFF	OFF	OFF	LED2, LED3 OFF (1 sec.)

Example 4: A Reading of –0.7 mm

	LED1	LED2	LED3	Comment
Left Digit	ON	ON (2 sec.)	OFF	LED2 ON (2 sec.)
	ON	OFF	OFF	LED2, LED3 OFF (1 sec.)
Right Digit	ON	OFF	FLASH (x7)	Flash duration: 300 ms
	ON	OFF	OFF	LED2, LED3 OFF (1 sec.)

Adjustment 2: Cover Center Adjustment

Do this adjustment when the fore edges of the signature and cover are not aligned. (The cover/signature in the illustration below have not been trimmed.) The cover slipped out the correct cover stop position before the glued spine of the signature was pressed down onto the cover.



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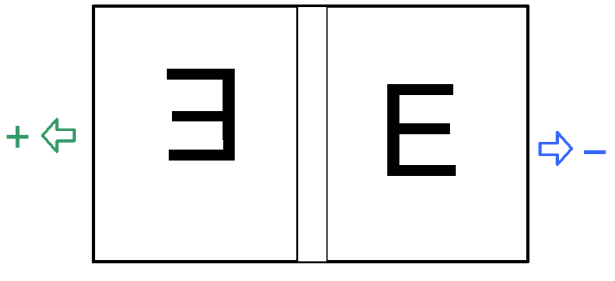
1. Set the SW1 bank as shown below.

SW1			
1	2	3	4
Up	*	*	*

2. Set the SW2 bank as shown below.

SW2							
1	2	3	4	5	6	7	8
*	Up	*	*	*	Up	*	*

3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.



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- If the cover has slipped downstream, adjust in the plus (+) direction.
- If the cover has slipped upstream, adjust in the plus (+) direction.
- Check both sides of the cover at the fore edge to confirm that the cover is centered.

4. Push [PSW2] to add 0.1 mm to the current value.

-or-

Push [PSW3] to subtract 0.1 mm from the current value.

5. LED1, LED2, LED3 light for 300 ms.
6. Look at LED1, LED2, LED3 to read the new adjusted value.
7. Repeat the steps above if you want to change the value again.
8. Push [PSW1] to write the new value into the EEPROM and shift to adjustment mode standby.

   LED1 flashes at 1 sec. intervals, LED2, LED3 go OFF.

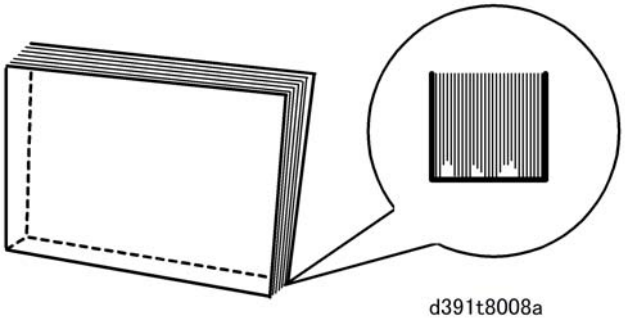
   Adjustment Range

Adjustment Range	Steps	Default
±5.0 mm	0.1 mm	0 mm

9. Read the current setting from the LED display. (See "How to Read the LEDs".)

Adjustment 3: Stacking Tray Switchback Roller Adjustment

Do the this adjustment for the switchback roller at the entrance of the stacking tray when you see that the trailing edges of the signature are not being aligned properly. Sheets of the signature are not aligned evenly at the spine (in the direction of paper feed) where the glue will be applied.



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The distance set for switchback alignment during signature jogging in the stacking tray is not correct.

1. Set the SW1 bank as shown below.

SW1			
1	2	3	4
Up	*	*	*

2. Set the SW2 bank as shown below. R1

SW2							
1	2	3	4	5	6	7	8
Up	Up	*	*	*	Up	*	*

3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
   - If you want to increase the length of time that the switchback roller remains in contact with the paper, adjust in the plus (+) direction.
   - If you want to reduce the length of time that the switchback roller remains in contact with the paper, adjust in the minus (+) direction.
4. Push [PSW2] to add 0.1 mm to the current value.

   -or-

   Push [PSW3] to subtract 0.1 mm from the current value.
5. LED1, LED2, LED3 light for 300 ms.
6. Look at LED1, LED2, LED3 to read the new adjusted value.
7. Repeat the steps above if you want to change the value again.
8. Push [PSW1] to write the new value into the EEPROM and shift to adjustment mode standby.

   LED1 flashes at 1 sec. intervals, LED2, LED3 go OFF.

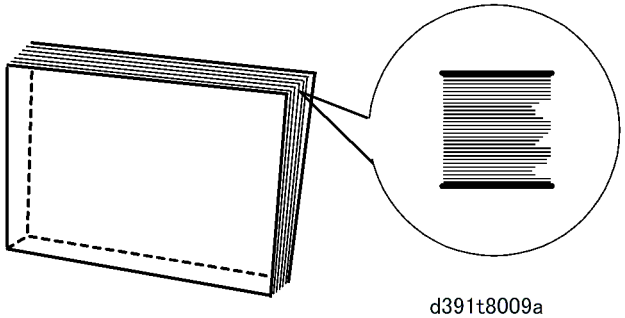
   Adjustment Range

Adjustment Range	Steps	Default
±5.0 mm	0.1 mm	0 mm

9. Read the current setting from the LED display. (See "How to Read the LEDs".)

Adjustment 4: Jogger Motor Adjustment

Do this adjustment to change the amount of pressure applied by the jog fences to the sides of the signature in the stacking tray. The edges of the paper on the fore edge of the signature are not evenly aligned. (The cover/signature in the illustration below have not been trimmed.)



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The front and rear jogger fences are not aligning the sheets during the jogging operation in the stacking tray as each sheet arrives in the tray.

There are two types of jogger motor adjustments, depending on the size of the paper being stacked to form the signature.

- Small Size Adjustment: Paper width less than 298 mm
- Large Size Adjustment: Paper size more than 298 mm

1. Set the SW1 bank as shown below.

SW1			
1	2	3	4
Up	*	*	*

2. Set the SW2 bank for the item to adjust.

SW2								Status
1	2	3	4	5	6	7	8	
*	*	Up	*	*	Up	*	*	Front Jogger Motor: Small Size
Up	*	Up	*	*	Up	*	*	Rear Jogger Motor: Small Size
*	Up	Up	*	*	Up	*	*	Front Jogger Motor: Large Size
Up	Up	Up	*	*	Up	*	*	Rear Jogger Motor: Large Size

3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.

   Adjusting the front jogger motor determines how far the front jogger fence moves to the rear when it pushes each sheet toward the rear fence. Adjusting the rear jogger motor determines how far the rear jogger fence moves the rear fence to the front and stops to set the standard position for jogging by the front fence.

- To increase the distance the front jogger motor pushes the front fence toward the rear against the side of the stack, adjust in the plus (+) direction.
- To decrease the distance the front jogger motor pushes the front fence toward the rear against the side of the stack, adjust in the minus (-) direction.

4. Push [PSW2] to add 0.1 mm to the current value.

   -or-

   Push [PSW3] to subtract 0.1 mm from the current value.
5. LED1, LED2, LED3 light for 300 ms.
6. Look at LED1, LED2, LED3 to read the new adjusted value.
7. Repeat the steps above if you want to change the value again.
8. Push [PSW1] to write the new value into the EEPROM and shift to adjustment mode standby.

   LED1 flashes at 1 sec. intervals, LED2, LED3 go OFF.

   Adjustment Range

Adjustment Range	Steps	Default
±3.0 mm	0.1 mm	0 mm

9. Read the current setting from the LED display. (See "How to Read the LEDs".)

Adjustment 5: Glue Amount Adjustment (Adj by Glue Removal Rod)

Do this adjustment when you see either excessive or insufficient glue being applied to the spine of the signature. This adjustment changes the gap between the glue removal rod and the surface of the signature when the roller touches the surface during the gluing unit's second pass from front to rear. This operation is done according to the thickness of the spine (see table below).

1. Set the SW1 bank as shown below.

SW1			
1	2	3	4
Up	*	*	*

2. Set the SW2 bank as shown below.

SW2								
1	2	3	4	5	6	7	8	Thickness
*	*	*	*	Up	Up	Up	*	0 to 1.4 mm

SW2								
1	2	3	4	5	6	7	8	Thickness
Up	*	*	*	Up	Up	Up	*	1.5 to 3.4 mm
*	Up	*	*	Up	Up	Up	*	3.5 to 6.4 mm
Up	Up	*	*	Up	Up	Up	*	6.5 to 11.4 mm
*	*	Up	*	Up	Up	Up	*	11.5 to 22.4 mm
Up	*	Up	*	Up	Up	Up	*	22.5 to 25 mm

3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
   - Raising the value of the setting increases the distance between the glue removal rod and the spine and increases the amount of glue applied to the spine.
   - Lowering the value of the setting decreases the distance between the glue removal rod and the spine and decreases the amount of glue applied to the spine.
4. Push [PSW2] to add 0.05 mm to the current value.

   -or-

   Push [PSW3] to subtract 0.05 mm from the current value.
5. LED1, LED2, LED3 light for 300 ms.
6. Look at LED1, LED2, LED3 to read the new adjusted value.
7. Repeat the steps above if you want to change the value again.
8. Push [PSW1] to write the new value into the EEPROM and shift to adjustment mode standby.

   LED1 flashes at 1 sec. intervals, LED2, LED3 go OFF.

   Adjustment Range

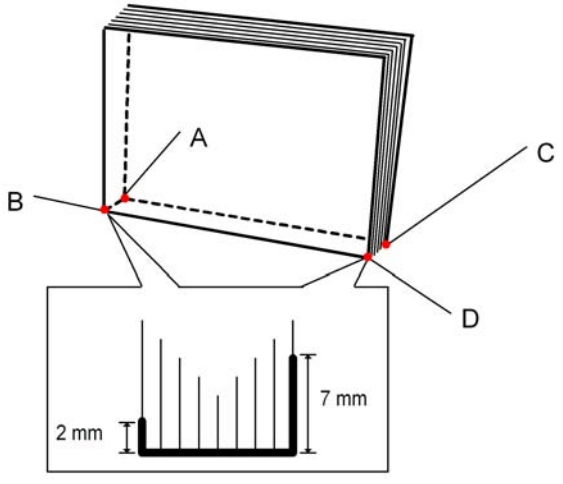
Adjustment Range	Steps	Default
±1.0 mm	0.05 mm	0 mm

9. Read the current setting from the LED display. (See "How to Read the LEDs".)

   Note: Remember that changing the value by one step changes the actual value by only 0.05 mm.

Checkpoints After Adjustment

After doing the adjustment print a sample and have it trimmed on its three edges: top, bottom, and fore edge. Confirm that the amount of glue (height) is within the specifications described below. If the measured amount of glue is not within specification, do the adjustment again.



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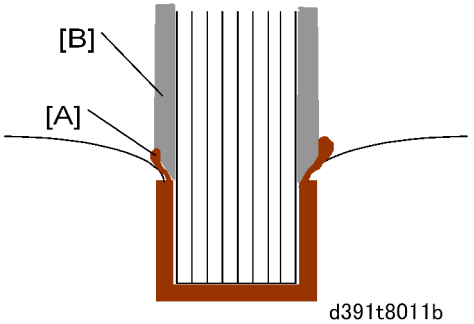
- The measured height of the glue at the top edge and bottom edge should be in the range 2.0 mm to 7.0 mm.
- The differences between the measured heights should be:

  |A - C| < 3.0 mm

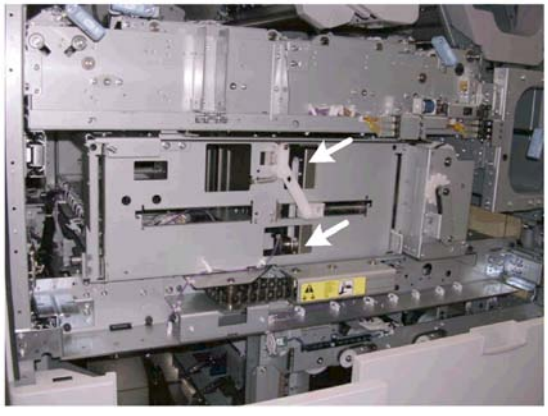
  |B - D| < 3.0 mm

Problems Caused by Excess Glue



d391t8011b

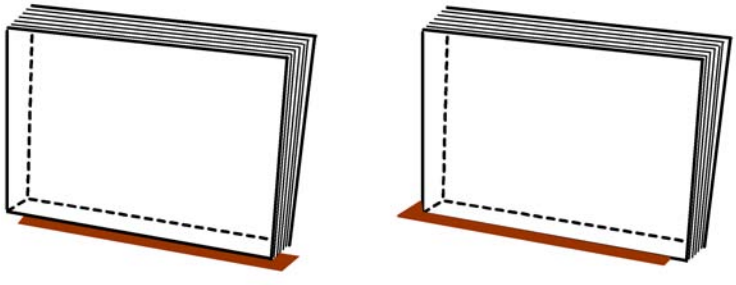
If there is an excessive amount of glue present when the signature and cover are joined, or when the three edges are trimmed, glue seepage at the corners could transfer from the signature [A] to the main grip [B] and interfere with operation. For this reason the amount of glue applied to the spine always must be within the ranges described above.



d391t8011c

If you suspect that trimmings are sticking to the blade you can visually check at the points shown above.

Adjustment 6: Gluing Unit Movement Adjustment



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Do this adjustment when you see that the glue vat roller is not covering the edge of the signature completely during application of the glue to the spine.

Glue is applied in two passes by a roller in the glue unit that moves first from rear to front and then front to rear. No glue is being applied to the end of the signature spine at the top edge or the bottom edge. The starting point for the application of glue to the spine is not set correctly.

1. Set the SW1 bank as shown below.

SW1			
1	2	3	4
Up	*	*	*

2. Set the SW2 bank as shown below.

SW2							
1	2	3	4	5	6	7	8
Up	Up	*	Up	*	Up	*	*

3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
   - To have the gluing unit apply more glue toward the front of the spine, adjust in the plus (+) direction.
   - To have the gluing unit apply more glue toward the rear of the spine, adjust in the minus (-) direction.
4. Push [PSW2] to add 0.1 mm to the current value.

   -or-

   Push [PSW3] to subtract 0.1 mm from the current value.
5. LED1, LED2, LED3 light for 300 ms.
6. Look at LED1, LED2, LED3 to read the new adjusted value.
7. Repeat the steps above if you want to change the value again.
8. Push [PSW1] to write the new value into the EEPROM and shift to adjustment mode standby.

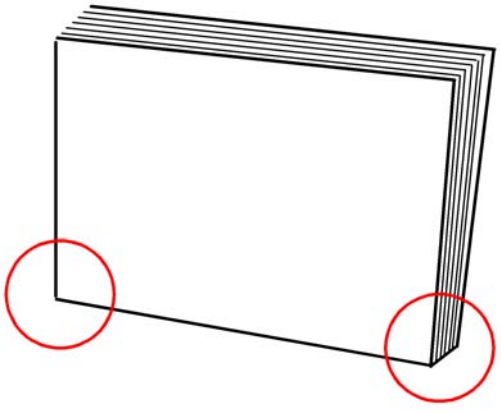
   LED1 flashes at 1 sec. intervals, LED2, LED3 go OFF.

Adjustment Range	Steps	Default
±8.0 mm	0.1 mm	0 mm

9. Read the current setting from the LED display. (See "How to Read the LEDs".)

Adjustment 7: Glue Application at Corners Adjustment

Do this procedure to adjust the size of the area at the ends of the spine where glue is applied if there is insufficient glue or an excessive amount of glue at either end the signature.



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1. Set the SW1 bank as shown below.

SW1			
1	2	3	4
Up	*	*	*

2. Set the SW2 bank as shown below.

SW2								
1	2	3	4	5	6	7	8	Status
Up	Up	Up	*	*	Up	Up	*	Top Edge Corner: 3 Cuts
*	*	*	Up	*	Up	Up	*	Bottom Edge: 3 Cuts
Up	*	*	Up	*	Up	Up	*	Top Edge: No Trimming or Top Only
*	Up	*	Up	*	Up	Up	*	Bottom Edge: No Trimming or Top Only

Note

- "3 cuts" means the signature is trimmed 3 times (bottom, top, fore edge).
- "No Trimming or Top Only" means the signature is not trimmed or is trimmed only once at the top edge.

3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
   - To increase the size of the area where glue is not applied at the corner of the spine, adjust in the plus (+) direction.

- To decrease the size of the area where glue is not applied at the corner of the spine, adjust in the minus (-) direction.

4. Push [PSW2] to raise the current setting by "1".

   -or-

   Push [PSW3] to lower the current setting by "1".

   LED1, LED2, LED3 light for 300 ms.

5. Look at LED1, LED2, LED3 to read the new setting.
6. Repeat the steps above if you want to change the setting again.
7. Push [PSW1] to write the new setting into the EEPROM and shift to adjustment mode standby.

   LED1 flashes at 1 sec. intervals, LED2, LED3 go OFF.

Adjustment Range

Value	Corner Area	Comment
0	0 mm	Bottom Edge (Default): No Trimming or Top Cut Only
1	1 mm	
2	2 mm	Top Edge (Default): No Trimming or Top Cut Only
3	3 mm	
4	4 mm	
5	5 mm	

8. Read the current setting from the LED display. (See "How to Read the LEDs".)
   - The LED2 count indicates the left digit (10's) of the 2-digit decimal value, the LED3 count indicates the right digit (1's) of the 2-digit decimal value. Flash duration: 300 ms
   - The LEDs remain OFF for 2 sec. if the current value is "0".
   - The LED2 and LED3 displays automatically alternate.

Example 1: 2 mm Setting Reading

	LED1	LED2	LED3	Comment
Left Digit 10's	OFF	ON (2 sec.)	OFF	LED2 ON (2 sec.)
	OFF	OFF	OFF	LED2, LED3 OFF (1 sec.)
Left Digit 1's	OFF	OFF	FLASH (x2)	Flash duration: 300 ms
	OFF	OFF	OFF	LED2, LED3 OFF (1 sec.)

Adjustment 8: Main Grip Position Adjustment

Do this adjustment when you see that the signature is not being passed properly from the grip unit to the trimming unit below (this adjustment changes the location where the main grip unit grips the signature to pass it to the trimming unit).

1. Set the SW1 bank as shown below.

SW1			
1	2	3	4
Up	*	*	*

2. Set the SW2 bank as shown below.

SW2							
1	2	3	4	5	6	7	8
*	Up	*	Up	*	Up	*	*

3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
   - To make the grip unit grip the signature a lower position, adjust in the minus (-) direction.
   - There is no adjustment in the plus (+) direction.
4. Push [PSW3] to subtract 0.1 mm from the current value.
5. LED1, LED2, LED3 light for 300 ms.
6. Look at LED1, LED2, LED3 to read the new adjusted value.
7. Repeat the steps above if you want to change the value again.
8. Push [PSW1] to write the new value into the EEPROM and shift to adjustment mode standby.

   LED1 flashes at 1 sec. intervals, LED2, LED3 go OFF.

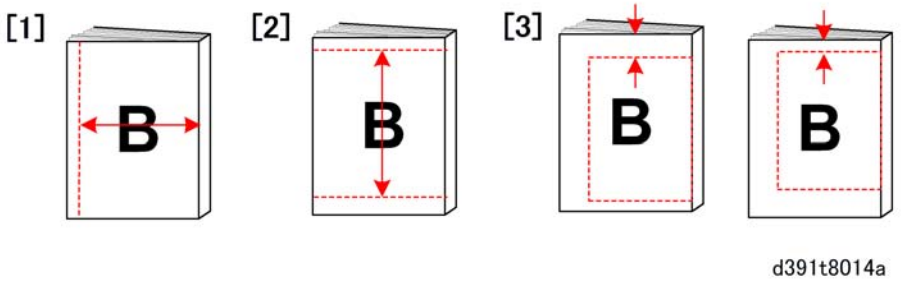
   Adjustment Range

Adjustment Range	Steps	Default
-5.0 mm to 0 mm	0.1 mm	0 mm

9. Read the current setting from the LED display. (See "How to Read the LEDs".)

Adjustment 9: Trimming Position Adjustment

Do this adjustment to correct the mechanical alignment of the signature and cutting blade if you see that cuts on the trimmed edges of the books are not aligned correctly.



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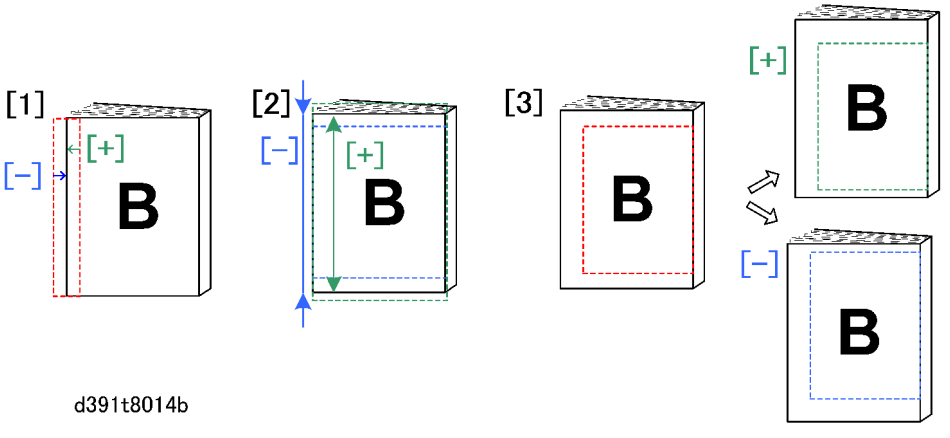
Case [1]	The size of the book is not correct because the trimming position of the 3rd cut (fore edge) was not correct.
Case [2]	The size of the book is not correct because the trimming positions of the 1st (bottom) and 2nd (top) cuts are not correct.
Case [3]	The size of the book is not correct because the trimming position of either the 1st cut (bottom) or 2nd cut (top) is not correct.



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For Case [1] above: Fore Edge Cut Shift

This adjustment elongates or reduces the width of the book by shift the fore edge cutting position toward or away from the fore edge.

- Raising the setting increases the area and the size of the book by shifting the cutting position toward the edge.
- Lowering the setting increases the area and the size of the book by shifting the 3rd cutting position away from the edge.

For Case [2] above: Top and Bottom Cut Shift

This adjustment elongates or reduces the height of the book by shifting the top and bottom cutting positions toward or away from the top and bottom edges of the book.

- Raising the setting increases the area and the size of the book by shifting the cutting positions toward the bottom and top edges.
- Lowering the setting increases the area and the size of the book by shifting the cutting positions away from the bottom and top edges.

For Case [3] above: Area Shift

This adjustment does not change the size of the area "B"; it shifts the area between the top and bottom edges.

- Raising the setting moves the area toward the bottom edge.
- Lowering the setting moves the area toward the top edge.

Important

- **The minimum width of the trimming is 6 mm. Any adjustment that results in setting the trimming smaller than 6 mm will be ignored.**

1. Setting Up for the Adjustment
2. Set the SW1 bank as shown below.

SW1			
1	2	3	4
Up	*	*	*

3. Set the SW2 bank as shown below.

SW2								Status
1	2	3	4	5	6	7	8	
*	*	*	*	Up	Up	*	*	Fore edge cut adjust
Up	*	*	*	Up	Up	*	*	Bottom/top edge cut adjust
*	Up	*	*	Up	Up	*	*	Fixed area shift between top/ bottom edge

4. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.

   To adjust the finished size:

   - To make the finished book larger, adjust in the plus (+) direction.
   - To make the finished book smaller, adjust in the minus (-) direction.

   To change the positions of the cuts but keep the same size for the finished book:

   - To make the width of the trimmed strip larger, adjust in the plus (+) direction.
   - To make the width of the trimmed strip smaller , adjust in the minus (-) direction.

5. Do a book binding and check the trimming cuts at the top, bottom, and fore edges.
6. Push [PSW2] to add 0.1 mm to the current value.

   -or-

   Push [PSW3] to subtract 0.1 mm from the current value.
7. LED1, LED2, LED3 light for 300 ms.
8. Look at LED1, LED2, LED3 to read the new adjusted value.
9. Repeat the steps above if you want to change the value again.
10. Push [PSW1] to write the new value into the EEPROM and shift to adjustment mode standby.

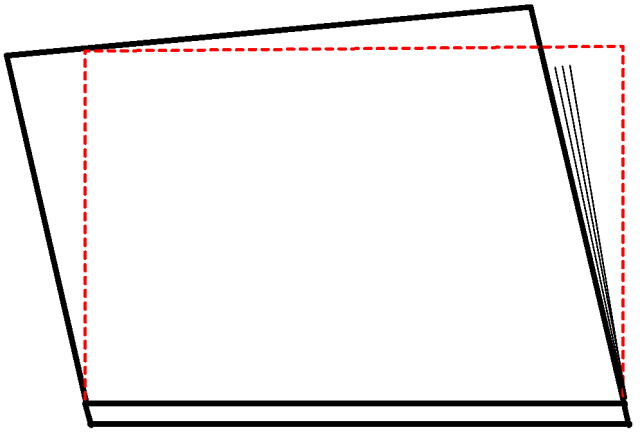
    LED1 flashes at 1 sec. intervals, LED2, LED3 go OFF.

Adjustment Range	Steps	Default
±5.0 mm	0.1 mm	0 mm

11. Read the current setting from the LED display. (See "How to Read the LEDs".)

Adjustment 10: Square Cut Adjustment

Do this adjustment to correct the amount of rotation of the signature when you see that cuts are the edges are not straight. These Service Mode settings affect the available settings in the User Tools.



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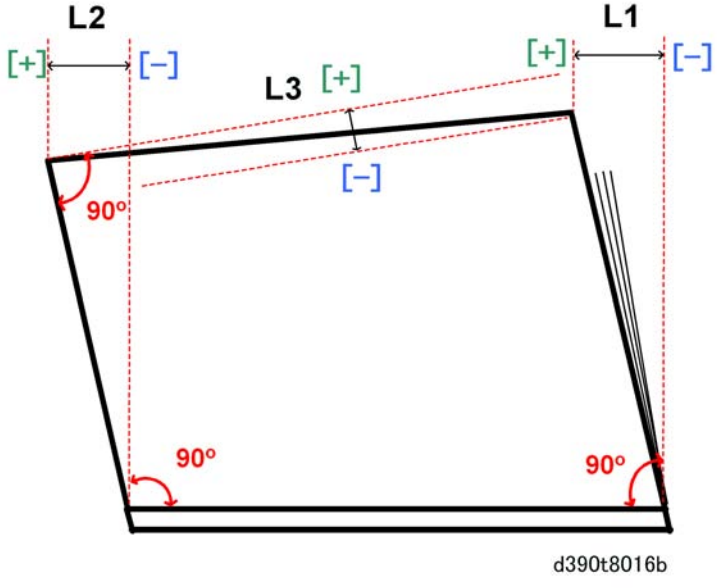
When the signature is rotated three times for the bottom, top, and fore edge trimming the inertia generated from the rotation of a heavy signature could make the signature rotate slightly beyond the optimum position for trimming (prescribed by motor pulse count in the firmware), causing the cuts to skew and giving the finished book a shape more like a trapezoid rather than a rectangle. Thicker and heavier signatures can generate different amounts of inertia so adjustments in the Service Mode can be done for signatures which

can vary in size from 10 to 200 sheets (see table below). It follows then that adjustments will have to be done for each cut position if this problem occurs.

However, if adjustments are done they must be done in very small increments and there is no way do measurements before adjustment, so input for the adjusted values must account for the square angle of the cuts and the differences in the lengths.



1. Set the SW1 bank as shown below.

SW1			
1	2	3	4
Up	*	*	*

2. Set the SW2 bank as shown below.

SW2								Status
1	2	3	4	5	6	7	8	
Up	Up	*	*	Up	Up	*	*	L1: Square Adj. for 10-Sheet Signature 1
*	*	Up	*	Up	Up	*	*	L2: Square Adj. for 10-Sheet Signature 2
Up	*	Up	*	Up	Up	*	*	L3: Square Adj. for 10-Sheet Signature 3

SW2								Status
1	2	3	4	5	6	7	8	
*	Up	Up	*	Up	Up	*	*	L1: Square Adj. for 200-Sheet Signature 1
Up	Up	Up	*	Up	Up	*	*	L2: Square Adj. for 200-Sheet Signature 2
*	*	*	Up	Up	Up	*	*	L3: Square Adj. for 200-Sheet Signature 3

4

L1 (Top Edge Skew), **L2** (Bottom Edge Skew), **L3** (Fore Edge Skew)

3. (1) Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
   - To increase the amount of rotation, adjust in the plus (+) direction.
   - To decrease the amount of rotation, adjust in the minus (-) direction.
4. Push [PSW2] to add 0.1 mm to the current value.

   -or-

   Push [PSW3] to subtract 0.1 mm from the current value.

   LED1, LED2, LED3 light for 300 ms.
5. Look at LED1, LED2, LED3 to read the new adjusted value.
6. Push [PSW1] to write the new value into the EEPROM and shift to adjustment mode standby.
7. Print another book with 3-edge trimming and the steps above if you want to change the value again.

   LED1 flashes at 1 sec. intervals, LED2, LED3 go OFF.

   Adjustment Range

Adjustment Range	Steps	Default
±10.0 mm	0.1 mm	0 mm

8. Read the current setting from the LED display. (See "How to Read the LEDs".)

Adjustment 11: Blade Replacement Alarm Frequency Setting

Do this adjustment to change the frequency of the blade replacement alarm if either problem occurs:

- Poor cutting even after the blade cradle has been replaced. (The blade replacement alert did not display even after the blade has exceeded its predicted service life: 40K cuts.)
- The blade replacement alert displays well before the end of the predicted service life of the blade: 40K cuts.

1. (1) Set the SW1 bank as shown below.

SW1			
1	2	3	4
Up	*	*	*

2. Set the SW2 bank as shown below.

SW2							
1	2	3	4	5	6	7	8
Up	*	*	*	*	Up	Up	*

Procedure

3. Push [PSW1] then look at LED1, LED2, LED3 to read the value (frequency) of the current setting.
   - To delay the blade replacement alarm, adjust in the plus (+) direction.
   - To advance the blade replacement alarm, adjust in the minus (-) direction.
4. Push [PSW2] to add 1000 to the current value.

   -or-

   Push [PSW3] to subtract 1000 from the current value.

   LED1, LED2, LED3 light for 300 ms.
5. Look at LED1, LED2, LED3 to read the new adjusted value.
6. Repeat the steps above if you want to change the value again.
7. Push [PSW1] to write the new value into the EEPROM and shift to adjustment mode standby.

   LED1 flashes at 1 sec. intervals, LED2, LED3 go OFF.

Adjustment Range

Adjustment Range	Steps	Default
10,000 to 100,000	1000	40000

- The LED2 count indicates the left digit (10,000's) of the 2-digit decimal value, the LED3 count indicates the right digit (1,000's) of the 2-digit decimal value. Flash duration: 300 ms
- For example, if LED2 flashes 3 times and LED3 flashes 5 times, this means the value is 35,000 ((10,000 x 3)+(1000 x 5)) and the replacement alarm wil go off after the 35,000th cut.
- The LEDs remain OFF for 2 sec. if the current value is "0".
- The LED2 and LED3 displays automatically alternate.

Example 1: Alarm Set to Trigger After 35,000 Cuts

Digit	LED1	LED2	LED3	Comment
Left :10,000's	OFF	FLASH x3	OFF	Flash duration: 300 ms
	OFF	OFF	OFF	LED2, LED3 OFF (1 sec.)
Right 1,000's	OFF	OFF	FLASH x5	Flash duration: 300 ms
	OFF	OFF	OFF	LED2, LED3 OFF (1 sec.)

Adjustment 12: Setting Threshold Value for Shifting the Cutting Position

Do this adjustment to force the cutting blade to shift to the next cutting position on the blade cradle before the standard number of cuts has been done. Lowering this setting shortens the predicted service life of the blade cradle. If trimming is executing poorly, we suggest doing the "Blade Cradle Cutting Position" adjustment described in the next section.

1. Set the SW1 bank as shown below.

SW1			
1	2	3	4
Up	*	*	*

2. Set the SW2 bank as shown below.

SW2							
1	2	3	4	5	6	7	8
*	*	Up	*	*	Up	Up	*

3. Push [PSW1] then look at LED1, LED2, LED3 to read the current threshold value.
   - To increase the threshold (increase the number of cuts done at each position), adjust in the plus (+) direction.
   - To decrease the threshold (decrease the number of cuts done at each position), adjust in the minus (-) direction.
4. Push [PSW2] to add 10 to the current value.

   -or-

   Push [PSW3] to subtract 10 from the current value.
5. LED1, LED2, LED3 light for 300 ms.
6. Look at LED1, LED2, LED3 to read the new threshold value.

7. Repeat the steps above if you want to change the threshold value again.
8. Push [PSW1] to write the new threshold value into the EEPROM and shift to adjustment mode standby.
   LED1 flashes at 1 sec. intervals, LED2, LED3 go OFF.
   Adjustment Range

Adjustment Range	Steps	Default
100 to 1000	10	550

Threshold Value Display

- The LED2 count indicates the left digit (100's) of the 2-digit decimal value, the LED3 count indicates the right digit (10's) of the 2-digit decimal value. Flash duration: 300 ms
- For example, if LED2 flashes 5 times and LED3 flashes 5 times, this means the value is 550 ((100 x 5)+(10 x 5)) and the blade cradle will be moved to another cutting position every 550 cuts.
- The LEDs remain OFF for 2 sec. if the current value is "0".
- The LED2 and LED3 displays automatically alternate.

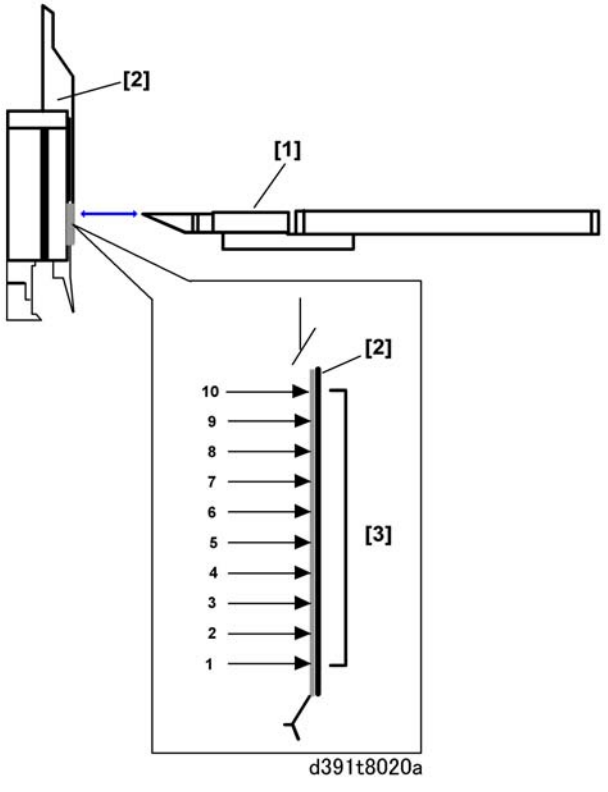
Example 1: 550 Cut Threshold

	LED1	LED2	LED3	Comment
Right Digit (100)	OFF	FLASH (x5)	OFF	Flash duration: 300 ms
	OFF	OFF	OFF	LED2, LED3 OFF (1 sec.)
Right Digit (10)	OFF	OFF	FLASH (x5)	Flash duration: 300 ms
	OFF	OFF	OFF	LED2, LED3 OFF (1 sec.)

Adjustment 13: Cutting Position Change Setting for the Blade Cradle

Do this adjustment to change the blade cradle to another cutting position. Changing this setting resets the number of cuts for the present cradle location to "0". This adjustment forces the blade cradle to shift immediately to the next higher cutting position before the standard number of cuts has been done.

- Changing this setting resets the number of cuts at the current cutting position on the cradle to zero so cutting can no longer continue there.
- Raising this setting by "1" will lower the blade cradle by 1 mm to the next higher cutting position.
- The maximum number of cuts at each position is 550. The service life of the blade cradle is 5,500 cuts (550 cuts and each of the 10 positions).



[1]	Blade
[2]	Blade Cradle
[3]	Cutting Positions 1 to 10.

1. Set the SW1 bank as shown below.

SW1			
1	2	3	4
Up	*	*	*

2. Set the SW2 bank as shown below.

SW2							
1	2	3	4	5	6	7	8
Up	Up	*	Up	*	Up	Up	*

3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting for the frequency of shifts in the cuttingi position.
    - To shift cutting to a point on the blade cradle that has not yet been used for cutting, adjust in the plus (+) direction.
    - To shift cutting to a point on the blade cradle that has already been for cutting, adjust in the minus (-) direction. (This adjustment is only rarely used.)
4. Push [PSW2] to increase the current setting by "1".

    -or-

    Push [PSW3] to decrease the current setting by "1".

    LED1, LED2, LED3 light for 300 ms.
5. Look at LED1, LED2, LED3 to read the new value for the frequency of blade cradle shifts.
6. Repeat the steps above if you want to change the value again.
7. Push [PSW1] to write the new value for the frequency of blade cradle shifts into the EEPROM and shift to adjustment mode standby.

    LED1 flashes at 1 sec. intervals, LED2, LED3 go OFF.

Setting Range

Adjustment Range	Steps	Default
0 to 5	1	0

Blade Cradle Shift Frequency Display

- The LED2 count indicates the left digit (10's) of the 2-digit decimal value, the LED3 count indicates the right digit (1's) of the 2-digit decimal value. Flash duration: 300 ms
- The LEDs remain OFF for 2 sec. if the current value is "0".
- The LED2 and LED3 displays automatically alternate.

Example 1: Blade Shift Frequency Setting of "2"

Digit	LED1	LED2	LED3	Comment
Left: 10's	OFF	ON (2 sec.)	OFF	LED2 ON (2 sec.)
	OFF	OFF	OFF	LED2, LED3 OFF (1 sec.)
Right: 1's	OFF	OFF	FLASH x2	Flash duration: 300 ms
	OFF	OFF	OFF	LED2, LED3 OFF (1 sec.)

Other Adjustments

Signature Exit Motor Adjustment

Do this procedure when you see that the signature is not feeding properly to the trimming unit (this adjustment changes the length of time that the signature exit roller remains in contact with the signature during transport to the trimming).

1. Set the SW1 bank as shown below.

SW1			
1	2	3	4
Up	*	*	*

2. Set the SW2 bank as shown below.

SW2							
1	2	3	4	5	6	7	8
Up	*	*	Up	*	Up	*	*

3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Push [PSW2] to add 0.1 mm to the current value.

   -or-

   Push [PSW3] to subtract 0.1 mm from the current value.

   - To increase the length of time the signature exit roller remains in contact with the signature when it is transported to the trimming unit, adjust in the plus (+) direction.
   - To decrease the length of time the signature exit roller remains in contact with the signature when it is transported to the trimming unit, adjust in the minus (-) direction.
5. LED1, LED2, LED3 light for 300 ms.
6. Look at LED1, LED2, LED3 to read the new adjusted value.
7. Repeat the steps above if you want to change the value again.
8. Push [PSW1] to write the new value into the EEPROM and shift to adjustment mode standby.

   LED1 flashes at 1 sec. intervals, LED2, LED3 go OFF.

Adjustment Range

Adjustment Range	Steps	Default
±5.0 mm	0.1 mm	0 mm

9. Read the current setting from the LED display. (See "How to Read the LEDs".)

Slide Motor HP Adjustment

Do this adjustment to fine adjust the size of the finished book.

1. Set the SW1 bank as shown below.

SW1			
1	2	3	4
Up	*	*	*

2. Set the SW2 bank as shown below.

SW2							
1	2	3	4	5	6	7	8
Up	*	*	Up	Up	Up	*	*

3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Push [PSW2] to add 0.1 mm to the current value.

   -or-

   Push [PSW2] to subtract 0.1 mm from the current value.
5. LED1, LED2, LED3 light for 300 ms.
6. Look at LED1, LED2, LED3 to read the new adjusted value.
7. Repeat the steps above if you want to change the value again.
8. Push [PSW1] to write the new value into the EEPROM and shift to adjustment mode standby.

   LED1 flashes at 1 sec. intervals, LED2, LED3 go OFF.

   Adjustment Range

Adjustment Range	Steps	Default
±2.0 mm	0.1 mm	0 mm

9. Read the current setting from the LED display. (See "How to Read the LEDs".)

Glue Temperature Setting

Do this adjustment to set the temperature of the glue.

1. Set the SW1 bank as shown below.

SW1			
1	2	3	4
Up	*	*	*

2. Set the SW2 bank as shown below.

SW2							
1	2	3	4	5	6	7	8
*	Up	Up	*	*	Up	Up	*

3. Push [PSW1] then look at LED1, LED2, LED3 to read the current temperature setting.
   - To raise the temperature, adjust in the plus (+) direction.
   - To lower the temperature, adjust in the minus (-) direction.
4. Push [PSW2] to raise the current temperature setting by "1".

   -or-

   Push [PSW3] to lower the current temperature setting by "1".
5. LED1, LED2, LED3 light for 300 ms.
6. Look at LED1, LED2, LED3 to read the new temperature setting.
7. Repeat the steps above if you want to change the value again.
8. Push [PSW1] to write the new temperature setting into the EEPROM and shift to adjustment mode standby.

   LED1 flashes at 1 sec. intervals, LED2, LED3 go OFF.

   Adjustment Range

Adjustment Range	Steps	Default
151°C to 155°C (303.8°F to 311°F)	1	153

9. Read the current setting from the LED display. (See "How to Read the LEDs".)
   - The LED2 count indicates the left digit (10's) of the 2-digit decimal value, the LED3 count indicates the right digit (1's) of the 2-digit decimal value. Flash duration: 300 ms
   - For example, if LED2 flashes 5 times and LED3 flashes 5 times, this means the value is 153°C ((10 x 5)+(1 x 3) +100) and the current temperature is set for 153°C.
   - The LEDs remain OFF for 2 sec. if the current value is "0".
   - The LED2 and LED3 displays automatically alternate.

   Example 1: Current Temperature 153C

	LED1	LED2	LED3	Comment
Left Digit 10's	OFF	FLASH (x5)	OFF	Flash duration: 300 ms
	OFF	OFF	OFF	LED2, LED3 OFF (1 sec.)
Left Digit 1's	OFF	OFF	FLASH (x3)	Flash duration: 300 ms
	OFF	OFF	OFF	LED2, LED3 OFF (1 sec.)

Shift to Energy Mode Setting

Do this adjustment to set the idle time that triggers the independent energy save mode for the bookbinder. One of the following times can be selected. (Default: 30 min.):

0 (No energy save mode), 10, 15, 20, 30, 40, 50, 60, 90 min.; 2, 3, 4 hours

1. Set the SW1 bank as shown below.

SW1			
1	2	3	4
Up	*	*	*

2. Set the SW2 bank as shown below.

SW2							
1	2	3	4	5	6	7	8
*	Up	*	*	*	Up	Up	*

3. Push [PSW1] then look at LED1, LED2, LED3 to read the current setting.
4. Push [PSW2] to increase the current setting by "1".

   -or-

   Push [PSW3] to decrease the current setting by "1".
5. LED1, LED2, LED3 light for 300 ms.
6. Look at LED1, LED2, LED3 to read the new adjusted value.
7. Repeat the steps above if you want to change the value again.
8. Push [PSW1] to write the new value into the EEPROM and shift to adjustment mode standby.

   LED1 flashes at 1 sec. intervals, LED2, LED3 go OFF.

   Adjustment Range

Value	Idle Time		Value	Idle Time
0	No shift		6	50 min.
1	10 min.		7	60 min.
2	15 min.		8	90 min.
3	20 min.		9	2 hr.
4 (Default)	30 min.		10	3 hr.
5	40 min.		11	4 hr.

Maintenance Mode

Some of the units inside the bookbinder must be moved and the grippers released before doing maintenance.

1. Set the SW1 bank as shown below.

SW1			
1	2	3	4
Up	*	*	*

2. Set the SW2 bank as shown below.

SW2								Status
1	2	3	4	5	6	7	8	
Up	*	*	*	*	*	Up	*	Grip release 1
*	Up	*	*	*	*	Up	*	Move main grip to rotation sensor HP
Up	Up	*	*	*	*	Up	*	Move main grip to binding position
*	*	Up	*	*	*	Up	*	Grip release 2
Up	*	Up	*	*	*	Up	*	Not Used
*	Up	Up	*	*	*	Up	*	Move blade cradle to replace position
Up	Up	Up	*	*	*	Up	*	Move blade to replace position

SW2								Status
1	2	3	4	5	6	7	8	
*	*	*	Up	*	*	Up	*	Open cover path
Up	*	*	Up	*	*	Up	*	Close cover path
*	Up	*	Up	*	*	Up	*	Lower stacking tray
Up	Up	*	Up	*	*	Up	*	Position units for shipping
*	*	Up	Up	*	*	Up	*	Move trimmings buffer left
Up	*	Up	Up	*	*	Up	*	Move trimmings buffer right

3. Push [PSW1] to have the bookbinder perform the operation selected with the SW2 bank DIP SWs.
4. To prevent any interference with the moving units, the LEDs indicate that no other operations can be performed.

Operation Details

Operation	What Happens
Grip release 1	Pushing [PSW1] one time: 1) Releases the sub grip, 2) Releases the main grip, 3) Opens the spine fold plate, 4) Retracts the cover guides and opens the signature path, 5) Releases the cutter grip. If the main grip is at the binding position, after it is released it moves to the upper HP grip sensor. If the gluing unit is not in its home position at the rear, the grip cannot release. In this case, move the gluing unit manually to its home position at the rear of the machine so the main grip can release. Always confirm that the gluing unit is not hot before you try to push it to the rear.
Move main grip to rotation sensor HP	Pushing [PSW1] rotates the main grip to its rotate home position. Always do this before you try to draw the cover transport unit out of the machine.
Move main grip to binding position	Pushing [PSW1] rotates the main grip to the binding home position. The main grip raises after it moves to the binding position. Always do this before you try to pull the gluing unit to the front.

Operation	What Happens
Grip release 2	Pushing [PSW1] one time: 1) Opens the spine fold plate, 2) Releases the sub grip, 3) Releases the main grip, 4) Opens the spine fold unit, 5) Retracts the cover guides and opens the signature exit path. If the main grip is at the binding position, after it is released it moves to the upper HP grip sensor. If the gluing unit is not in its home position at the rear, the grip cannot release. In this case, move the gluing unit manually to its home position at the rear of the machine so the main grip can release. Always confirm that the gluing unit is not hot before you try to push it to the rear.
Move blade cradle to replace position	Pushing [PSW1] moves and positions the blade cradle, press, and blade so the blade cradle can be replaced. Do this before blade cradle replacement.
Move blade to replace position	Pushing [PSW1] moves the blade cradle to its initial position 10.5 away from its HP sensor so the blade can be replaced. Do this before blade replacement.
Open cover path	Pushing [PSW1] opens the cover path.
Close cover path	Pushing [PSW1] closes the cover path.
Lower stacking tray	Pushing [PSW1] lowers the stacking tray so the stacking tray switchback roller can be replaced. Do this before stackng tray switchback roller replacement.
Position units for shipping	Every push on [PSW1] moves each unit to its position for shipping. Do this to move each unit to its initial position before moving or shipping the bookbinder to another location.
Move trimmings buffer left	Pushing and holding down [PSW1] moves the trimmings buffer to the left. The trimmings buffer moves to the limit of its movement and stops.
Move trimmings buffer right	Pushing and holding down [PSW1] moves the trimmings buffer to the right. The trimmings buffer moves to the limit of its movement and stops.

LED1	LED2	LED3	Status
FLASH	OFF	OFF	Maintenance Mode Standby, or Maintenace Operation End

LED1	LED2	LED3	Status
ON	FLASH	OFF	Maintenance Mode in progress. LED1 flashes at 1 sec. intervals.
FLASH	ON	ON	Operation not possible. LED1 flashes at 0.1 sec. intervals.

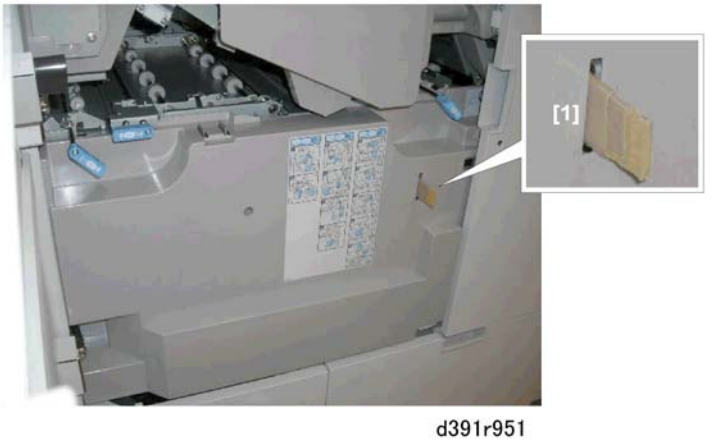
Output Checks

Perfect Binder D391 Output Check

Self-Diagnostic Mode

Do this procedure to check the operation of moving parts.

1. If the system is on, switch it off.
2. Open the right and left front doors.
3. Close the right door.



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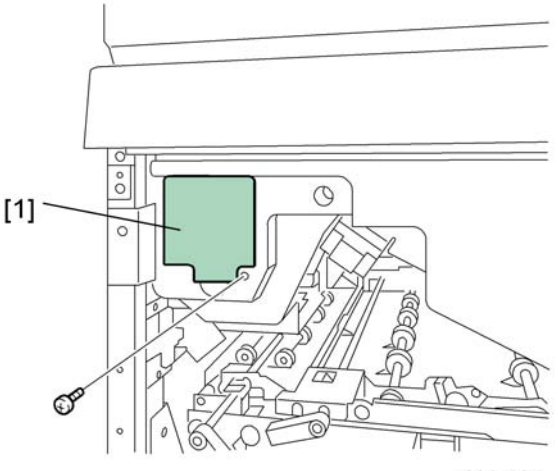
4. Insert piece of cardboard or folded piece of paper into the slot [1] of the left door switch.



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5. Remove the service board cover [1] (x1).
6. Set the SW1, SW2 banks as shown below.

SW1			
1	2	3	4
Up	*	*	*

7. Set the SW2 bank as shown below.

SW2								Status
1	2	3	4	5	6	7	8	
Up	*	*	*	*	*	Up	Up	Glue Vat Empty Sensor
*	Up	*	*	*	*	Up	Up	Glue Tank Full Sensor
Up	Up	*	*	*	*	Up	Up	Jog Fence HP Sensor: Front
*	*	Up	*	*	*	Up	Up	Jog Fence HP Sensor: Rear
Up	*	Up	*	*	*	Up	Up	Jog Fence HP Sensor: Front Large
*	Up	Up	*	*	*	Up	Up	Jog Fence HP Sensor: Rear Large
Up	Up	Up	*	*	*	Up	Up	Glue Tank HP Sensor: Front
*	*	*	Up	*	*	Up	Up	Trimmings Buffer Full Sensor
Up	*	*	Up	*	*	Up	Up	Press Limit Sensor (S89)
*	Up	*	Up	*	*	Up	Up	Blade Limit Sensor: Front
Up	Up	*	Up	*	*	Up	Up	Blade Limit Sensor: Rear
Up	Up	Up	Up	*	*	Up	Up	Check all, excluding press limit and blade limit sensors

8. Push [PSW1] to start self-diagnostic mode.
   - While in the self-diagnostic mode LED1, LED2 flash for 1 sec. and LED3 remains off.
   - If the self-diagnostic check succeeds (no problems detected), LED2 goes OFF. If the limit sensor self-diagnosis is OK, LED1, LED2, LED3 flash for 1 sec.
   - If the self-diagnosis does not succeed, LED1 flashes at 0.1 sec. intervals, and LED2, LED3 light. If the "All Check" fails, LED3 indicates the item where the check failed.

LED1	LED2	LED3	What It Means
FLASH	OFF	OFF	Self-diagnostic check standby, or check OK.
FLASH	FLASH	OFF	Self-diagnosis in progress. LED1, LED2 flash at 1 sec. intervals.
FLASH	ON	ON	Self-diagnostic check failed. LED1 flashes at 0.1 sec. intervals.
		FLASH	Check All self-diagnosis failed. LED1 flashes at 0.1 sec. intervals. The LED3 flash count indicates which self-diagnostic check failed. LED3 flashes at 300 ms intervals.
FLASH	FLASH	FLASH	Limit sensor self-diagnostic check OK. LED1, LED2, LED3 flash at 1 sec. intervals.
FLASH	FLASH	FLASH	Operation not possible. LED1, LED2, LED3 flash at 0.1 sec. intervals.

Check All Self-Diagnosis Failure

LED3 Count	Failure Point
1	Glue Vat Empty Sensor
2	Glue Tank Full Sensor
3	Jog Fence HP Sensor: Front
4	Jog Fence HP Sensor: Rear
5	Jog Fence HP Sensor: Front Large
6	Jog Fence HP Sensor: Rear Large
7	Glue Tank HP Sensor: Front
8	Trimmings Buffer Full Sensor

LED3 Flashes x times>LED3 OFF 1 sec.>LED3 Flashes x times> LED3 OFF 1 sec.

Details About Self-Diagnosis

Check Point	Check Method
1. Glue Vat Empty Sensor 2. Glue Tank Full Sensor	• No glue pellets in the glue hopper • Confirms whether the A/D input value at the receptor sensor does not detect glue when D/A output value of the emitter sensor is set at standard value. • Confirms whether the A/D input value at the receptor sensor does detect glue when D/A output value of the emitter sensor is set at zero.
3. Jog Fence HP Sensor: Front 4. Jog Fence HP Sensor: Rear 5. Jog Fence HP Sensor: Front Large 6. Jog Fence HP Sensor: Rear Large	• Confirms that the jog fences are moving and that the sensors are going ON/OFF.
7. Glue Tank HP Sensor: Front	• Confirms that the gluing unit is moving and that the front sensor is going ON/OFF. The main grip unit is moved to the binding position before this sensor is checked if it is not already at the binding position.
8. Trimmings Buffer Full Sensor	• Pulls all trimmings from the trimmings buffer. • Confirms whether the A/D input value at the receptor sensor does not detect trimmed scraps when D/A output value of the emitter sensor is set at standard value. • Confirms whether the A/D input value at the receptor sensor does detect trimmed scraps when D/A output value of the emitter sensor is set at zero.
Press Limit Sensor	• Confirms that the press unit operates and that there is no limit sensor error. • If the self-diagnostic check succeeds, turn the bookbinder off and move the press unit to the limit position manually so the unit is out of the error position.

Check Point	Check Method
Blade Limit Sensor (Movement to Front/Rear)	• Confirms that the blade moves and that there is no limit sensor error. If the self-diagnostic check succeeds, turn the bookbinder off and move the cutter blade to the limit position manually so the unit is out of the error position.

Bookbinder Test Mode

Do these procedures to test each operation inside the bookbinder. This test mode enables the detection of jams, errors, door open, etc. and suspends operation of the bookbinder if one occurs. However, no alarms are issued.

Note

- Do not use paper longer than 297 mm for testing in no cut or single cut mode because paper longer than this will not stack properly in the stacking tray. Operation cannot be guaranteed with paper longer than 297 mm.
- The finished size of the book may be too large in no-cut mode (depending on the number of sheets in the signature) when the cover and signature are joined if the short edge of the signature is more than 221 mm.

1. Set the SW1 bank as shown below.

SW1				Status
1	2	3	4	
*	Up	*	*	Trimming Enabled
*	Up	*	Up	No Trimming

2. Set the SW2 bank as shown below.

SW2							
1	2	3	4	5	6	7	8
x	x	x	x	x	x	x	Up

3. Push [PSW1] then do the procedures in the order described below.
4. Perform the stacking operation: 1) Transport sheets to stacking tray from bookbinder entrance, 2) Start stacking operation,

5. Perform cover transport from the inserter unit (or bookbinder entrance): 1) Signature transport, 2) Start cover transport after signature has been stacked.
6. Perform book output: 1) Start binding operation, 2) Glue application, 3) Book trimming Once the stacking tray returns to the signature turnover position, stacking in the tray can resume.
7. Loop to Step 4 above.
    - On the SW2 bank SW1, SW2, SW3 set the finished sizes of the signature and cover, and SW5 sets the transport speed of the signature and cover.
    - When [PSW1] is pushed to start signature transport and stacking, the size and speed latch.
    - The setting of SW6 on the SW2 bank determines whether the cover is fed from the host machine or the inserter on top of the bookbinder.
    - The cover feed source is enabled at power on and cannot be changed as long as the power remains on.
8. Turn off the system.

Signature, Cover Finished Size Settings (SW1 to 4 on SW2 Bank)

SW2				Signature Size	Cover Size	Finished Size
1	2	3	4			
*	*	*	*	A4 LEF	A3 SEF	B5
Up	*	*	*	-	-	-
*	Up	*	*	A4 LEF (Special)	SR A3 (SEF)	A4
Up	Up	*	*	Exe LEF	279.4 X 378.3 mm SEF	STMT
*	*	Up	*	B5 LEF	B4 SEF	A5
Up	*	Up	*	9 X 12 in. LEF	13 X 19.2 in. SEF	LTR
*	Up	Up	*	LTR LEF	LTR SEF	COM
Up	Up	Up	*	A4 LEF	A3 SEF	COM
*	*	*	Up	A4 LEF	A3 SEF	203.0 X 283.0 mm
Up	*	*	Up	LTR LEF	LTR SEF	208.9 X 265.4 mm
*	Up	*	Up	-	-	-
Up	Up	*	Up	Exe LEF	279.4 X 378.3 mm	177.1 X 252.7 mm
*	*	Up	Up	B5 LEF	B4 SEF	175.0 X 243.0 mm

SW2				Signature Size	Cover Size	Finished Size
1	2	3	4			
Up	*	Up	Up	-	-	-
*	Up	Up	Up	-	-	-
Up	Up	Up	Up	-	-	-

Note: "LEF" in the table above denotes standard size paper longer in main scan direction than sub scan direction.

4

SW2 Bank SW5: Signature and Cover Size Speeds

SW5	Signature Speed	Cover Speed
*	651mm/s	651mm/s
Up	434mm/s	434mm/s

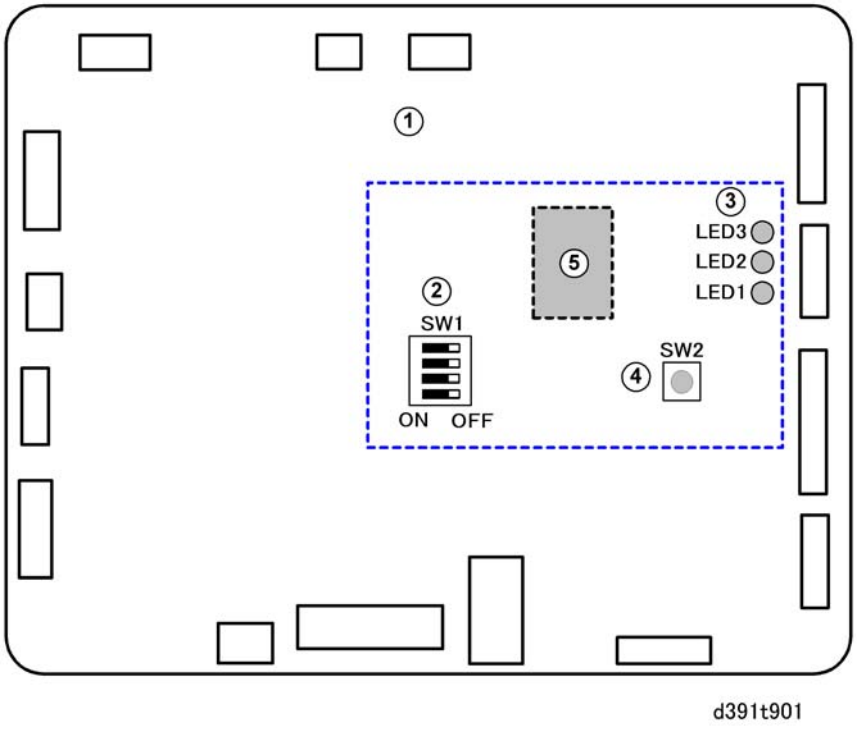
SW2 Bank SW6: Cover Feed Source

SW6	Cover Feed Source
*	Mainframe
Up	Inserter (Cover is fed only from the lower tray.)

The cover feed source is enabled at power on and cannot be changed as long as the power remains on.

Inserter D391 Output Check

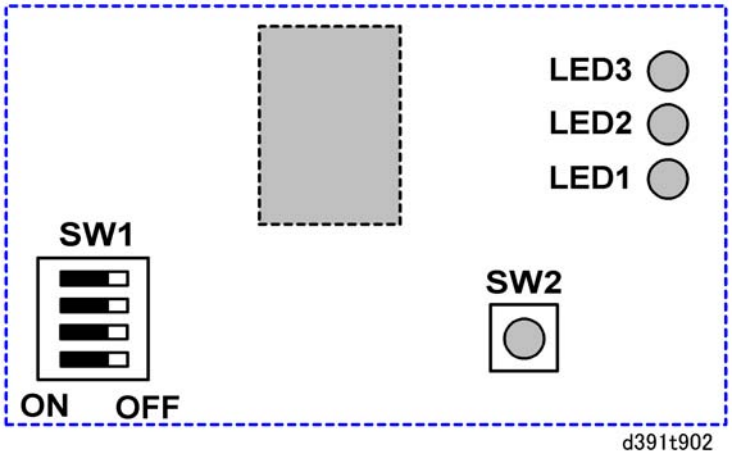
The inserter motors and sensors are tested with the DIP switches and LEDs on the inserter control board.



Inserter Control Board (Rear Cover Removed)

①	Inserter control board
②	DIP switches (Default OFF: Standby Mode)
③	LEDs 1, 2, 3
④	SW2 (a push-switch)
⑤	CPU (IC7)

Stand-by Mode, Service Mode



Mode		LED3	LED2	LED1
Standby Mode	Nothing Open	OFF	OFF	Flashing: 0.5 sec.
	Top Cover Open	OFF	ON	
	Inserter Open	ON	OFF	
Service Mode		OFF	OFF	Flashing: 1 sec.

Note: To set the inserter in the Service Mode, set the Perfect Binder in the Service Mode.

Error Display

If a problem is detected in the inserter, the LEDs display changes in the order described below.

(a) > (b) > (c) > (d)

(a) Jam or error

All LEDS light for 1 sec, all go off for 1 sec.

(b) Error cause

One or more LED goes ON for 1 sec, then OFF for 1 sec.

The combination of which LEDs go ON/OFF indicate the problem and location.

LED 3	LED 2	LED 1	Problem	Location
OFF	OFF	ON	Late paper jam	Tray A Lift Motor (M3 (INS))

LED 3	LED 2	LED 1	Problem	Location
OFF	ON	OFF	Lag paper jam	Tray A Lift Motor (M3 (INS))
OFF	ON	ON	At power on	Drive Switch Motor (M2 (INS))
ON	OFF	OFF	Firmware error	CPU flash memory
ON	OFF	ON	Cover open jam	Top cover
ON	ON	OFF	Paper size mismatch	Paper tray fences on Tray A, B

(c) Sensor where jam detected

One or more LED goes ON for 0.5 sec, then OFF for 0.25 sec.

The combination of which LEDs go ON/OFF which sensor and component was affected.

LED 3	LED 2	LED 1	Sensor	Component
OFF	OFF	ON	Tray A Registration Sensor (S5 (INS))	Tray A Lift Motor (M3 (INS))
OFF	ON	OFF	Tray B Registration Sensor (S13 (INS))	Tray A Lift Motor (M3 (INS))
OFF	ON	ON	Transport Sensor 1 (S14 (INS))	Drive Switch Motor (M2 (INS))
ON	OFF	OFF	---	CPU flash memory
ON	OFF	ON	Transport Sensor 2 (S18 (INS))	---
ON	ON	OFF	Paper width sensors	---

(d) Refresh and return to (a9

All LEDS light for 0.75 sec, all go off for 0.75 sec. then the display loops to (a).

Inserter Motor, Clutch Output Check

To check start/top operation of each motor

1. Open the left door.
2. Insert piece of cardboard or folded piece of paper into the slot of the left door switch.

   If the right door has been removed, insert piece of cardboard or folded piece of paper into the slot of the left door switch.

3. Remove the Service Board cover of the bookbinder.
4. On the SW1 bank set DIP SW1 to ON.
1. Remove the rear cover of the inserter (x2).

2. On the inserter control board set the DIP SWs as shown above.
3. Turn on the host machine.
4. Push and release SW2 to start the operation of each motor.

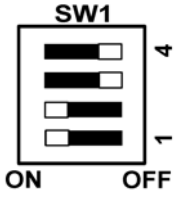
Press	What Happens
1	Push [SW2]. Starts Drive Switch Motor (M2 (INS)), rotates the pinion gear that moves the rack with the main drive gear of the tray feed motor to the front to engage the drive roller of Tray A and stops.
2	Push [SW2] to run Tray Feed Motor (M1 (INS)) at 250 mm/s for Tray A, press [SW2] to stop.
3	Push [SW2] to run Tray Feed Motor (M1 (INS)) at 500 mm/s for Tray A, press [SW2] to stop.
4	Push [SW2] to run Tray Feed Motor (M1 (INS)) at 1100 mm/s for Tray A, press [SW2] to stop.
5	Push [SW2]. Starts Drive Switch Motor (M2 (INS)), rotates the pinion gear that moves the rack with the main drive gear of the tray feed motor to the rear to engage the drive roller of Tray B and stops.
6	Push [SW2] to run Tray Feed Motor (M1 (INS)) at 250 mm/s for Tray B, press [SW2] to stop.
7	Push [SW2] to run Tray Feed Motor (M1 (INS)) at 500 mm/s for Tray B, press [SW2] to stop.
8	Push [SW2] to run Tray Feed Motor (M1 (INS)) at 1100 mm/s for Tray B, press [SW2] to stop.
9	Push [SW2] to run Vertical Transport Motor (M5 (INS)) at 1100 mm/s, press [SW2] to stop.

Press	What Happens
10	Push [SW2]. Starts Tray A Lift Motor (M3 (INS)), lifts Tray A, then stops.
11	Push [SW2]. Starts Tray A Lift Motor (M3 (INS)), lowers Tray A, then stops.
12	Push [SW2]. Starts Tray B Lift Motor (M4 (INS)), lifts Tray B, then stops.
13	Push [SW2]. Starts Tray B Lift Motor (M4 (INS)), lowers Tray B, then stops.
14	Push [SW2]. Switches ON Tray A Registration Clutch (CL1 (INS)), Tray B Registration Clutch (CL2 (INS)) then both switch OFF.
15	Loops to "1" above.

To check continuous motor feed

1. Open the left door.
2. Insert piece of cardboard or folded piece of paper into the slot of the left door switch.

   If the right door has been removed, insert piece of cardboard or folded piece of paper into the slot of the left door switch.
3. Remove the Service Board cover of the bookbinder.
4. On the SW1 bank set DIP SW1 to ON.
1. Remove the rear cover of the inserter (x2).



2. Set the DIP SWs as shown above.
3. Turn on the host machine.
4. Push and release SW2 to test continuous operation of a motor.

Press	What Happens
1	Lifts Tray A, positions it for paper feed.
2	Turns on motors for 50-sheet feed.
3	Lowers Tray A.
4	Lifts Tray B, positions it for paper feed.

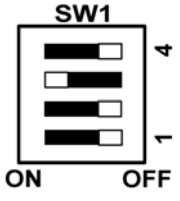
Press	What Happens
5	Turns on motors for 50-sheet feed.
6	Lowers Tray B.
7	Loops to "1" above.

Note:

- The first execution runs paper separation at 500 mm/s, paper feed at 1100 mm/s.
- The second execution runs paper separation at 250 mm/s, paper feed at 325 mm/s.
- These sequence repeats for the 2nd, 3rd tests, and so on.

Sensor Output Check

1. Remove the rear cover of the inserter (x2).

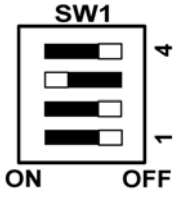


2. Set the DIP SWs as shown above.
3. Turn on the host machine.

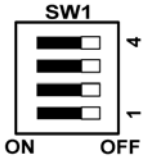
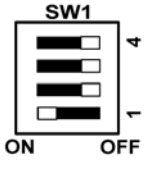
Sensor Output Check

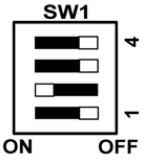
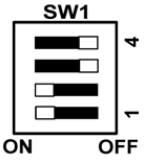
1. Open the left door.
2. Insert piece of cardboard or folded piece of paper into the slot of the left door switch.

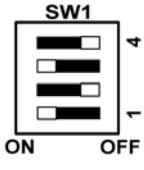
   If the right door has been removed, insert piece of cardboard or folded piece of paper into the slot of the left door switch.
3. Remove the Service Board cover of the bookbinder.
4. On the SW1 bank set DIP SW1 to ON.
5. Remove the rear cover of the inserter (x2).



6. Set the DIP SWs as shown above.
7. Turn on the host machine.
8. Set the DIP SWs and do the procedures as shown in the table below.

DIP SW	Procedure
	**Sensor Check 1** 1. Set the DIP SWs as shown on the left. 2. Push [SW2] three times. 3. After each switch press check the status of each LED in this order: LED1, LED2, LED3. • ON: Paper present • OFF: No paper Each LED displays the status of these sensors: • LED1: Tray A Paper Set Sensor (S1 (INS)) • LED2: Tray A Paper Feed Sensor (S4 (INS)) • LED3: Tray A Registration Sensor (S5 (INS))
	**Sensor Check 2** 1. Set the DIP SWs as shown on the left. 2. Push [SW2] three times. 3. After each switch press check the status of each LED in this order: LED1, LED2, LED3. • ON: Paper present • OFF: No paper Each LED displays the status of these sensors: • LED1: Tray A Paper Out Sensor (S3 (INS)) • LED2: Tray B Paper Out Sensor 1 (S8 (INS)) • LED3: Tray B Paper Out Sensor 2 (S9 (INS))

DIP SW	Procedure
	**Sensor Check 3** 1. Set the DIP SWs as shown on the left. 2. Push [SW2] three times. 3. After each switch press check the status of each LED in this order: LED1, LED2, LED3. • ON: Paper present • OFF: No paper Each LED displays the status of these sensors: • LED1: Tray B Paper Set Sensor (S6 (INS)) • LED2: Tray B Paper Feed Sensor (S10 (INS)) • LED3: Tray B Registration Sensor (S13 (INS))
	**Sensor Check 4** 1. Set the DIP SWs as shown on the left. 2. Push [SW2] three times. 3. After each switch press check the status of each LED in this order: LED1, LED2, LED3. • ON: Paper present • OFF: No paper Each LED displays the status of these sensors: • LED1: Transport Sensor (S14 (INS)) • LED2: --- Not Used --- • LED3: Transport Sensor 2 (S18 (INS))

DIP SW	Procedure
	**Sensor Check 5** 1. Set the DIP SWs as shown on the left. 2. Push [SW2] three times. 3. After each switch press check the status of each LED in this order: LED1, LED2, LED3. • ON: Paper present • OFF: No paper Each LED displays the status of these sensors: • LED1: Tray A Lower Limit Sensor (S11 (INS)) • LED2: Tray B Lower Limit Sensor (S12 (INS)) • LED3: Drive Switch Sensor (S16 (INS))
	**Sensor Check 6** 1. Set the DIP SWs as shown on the left. 2. Push [SW2] three times. 3. After each switch press check the status of each LED in this order: LED1, LED2, LED3. • ON: Paper present • OFF: No paper Each LED displays the status of these sensors: • LED1: --- Not Used --- • LED2: Top Cover Switch (S17 (INS)) • LED3: Inserter Cover Sensor (S15 (INS))

5. Service Tables

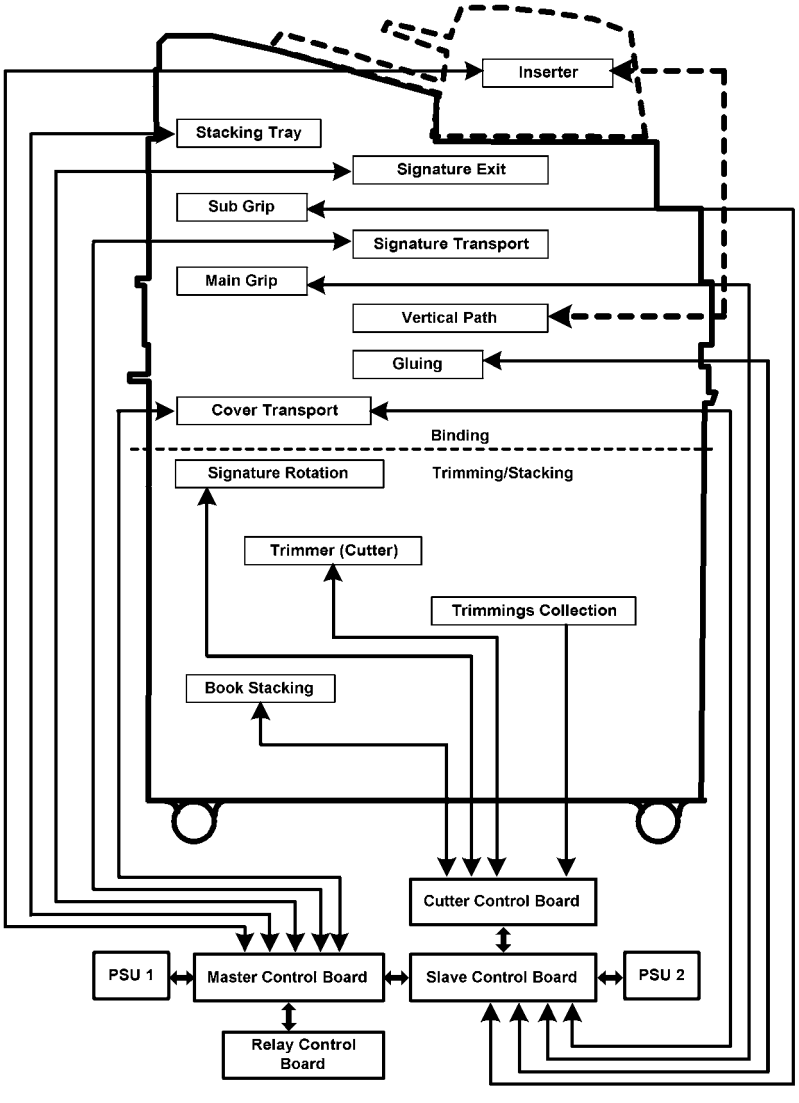
Service Program Mode

For details about "Service Program Mode" for this peripheral, see the main service manual.

6. Details

Basics

Overview



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The bookbinder is divided into two parts: the binding unit (top half) and trimming/stacking unit (bottom half). In the binding unit paper sent from the host machine is stacked and aligned (jogged) to form the

signature, and then the signature is glued on one edge and joined with the cover. In the trimming unit the book is trimmed, stacked, and output.

The binding unit is comprised of eight distinct units:

- Vertical Transport
- Signature Transport
- Signature Exit
- Stacking Tray
- Sub Grip
- Main Grip
- Gluing
- Cover Transport

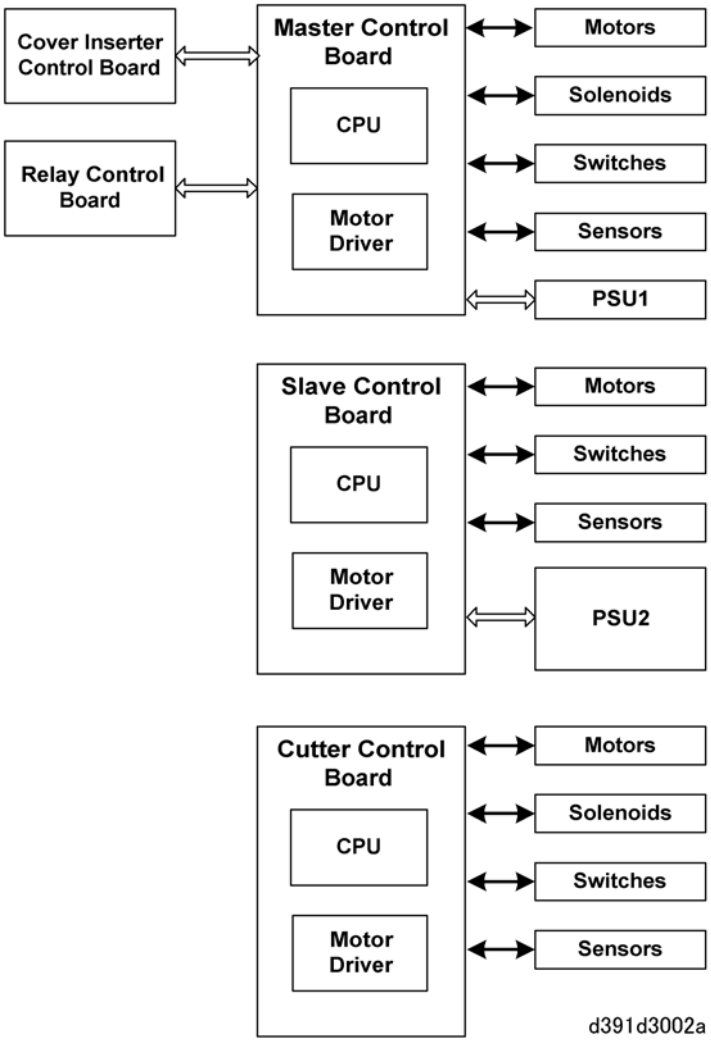
The trimming unit/stacking unit is comprised of four units:

- Signature rotation
- Trimmer (cutter)
- Trimmings collection
- Book stacking

The inserter installed on top of the bookbinder feeds covers through the vertical feed path to the bookbinder below.

General Board Layout

The master control, slave control, and cutter control boards control the operation of the bookbinder. Each board contains a 16-bit PCU that controls the operations assigned to each board. An optional control board can be connected to the master control board for communication with and control of connected devices.



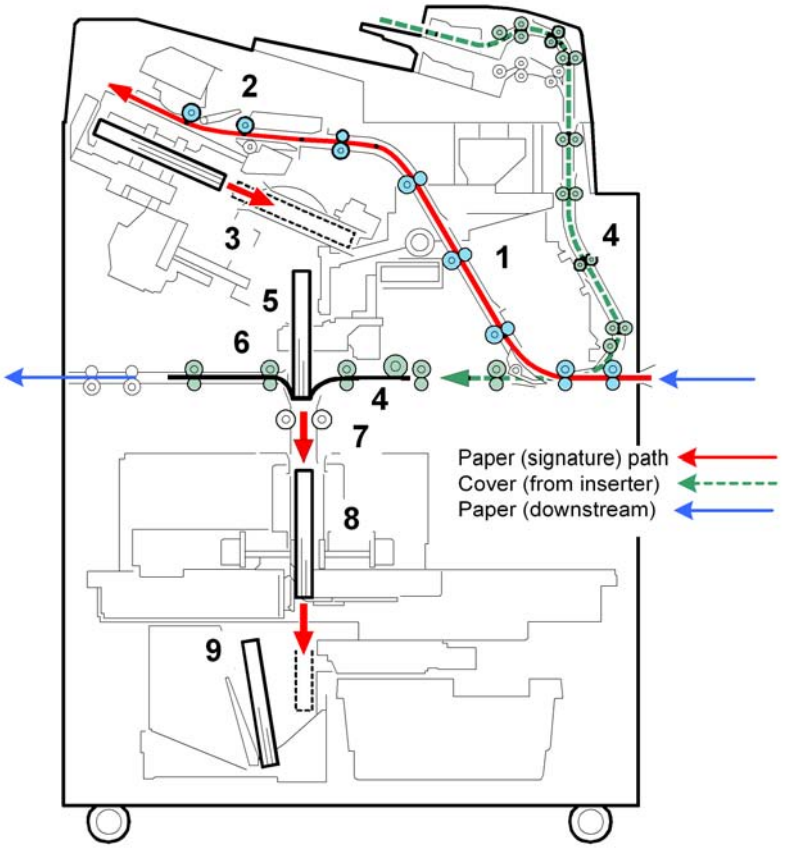
Every control board shares these common points in their configurations:

- The CPU of each board has a built-in ROM that contains the firmware for the control of operation sequences.
- The boards control and drive motors using commands sent from the host machine.
- The board circuits are also to communicate a steady stream of information from the bookbinder to the host machine.

Basic Operation

In response to the commands from the host machine the bookbinder feeds paper from the host machine to assemble a signature in the stacking tray, feeds a cover from the cover inserter, then assembles the cover

and signature by gluing them together. Without commands for creation of a bound book, the bookbinder feeds paper straight through the horizontal transport path for downstream delivery. Once the commands are received for binding sheets into a book, the operational control passes to the master control board, slave control board, and cutter control board.



1	The entrance junction gate directs paper from the host machine to the signature path transport rollers.
2	As each sheet arrives on the stacking tray, the sides and trailing/leading edges are jogged by side fences and positioning rollers to form the signature (stack).
3	After the last sheet is fed, the aligned signature (stack) is clamped in the sub grip and passed to the main grip that positions the signature for gluing.
4	One cover sheet feeds from the inserter mounted on top of the bookbinder and comes to rest below the signature.
5	Glue is applied to the spine of the signature.

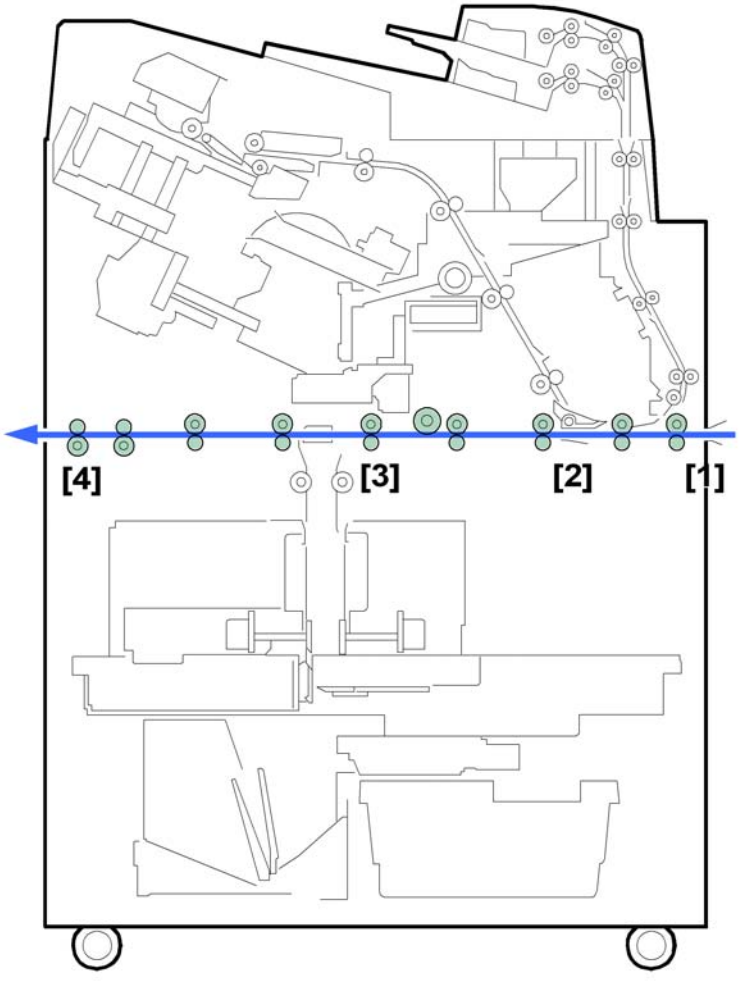
6	The glued spine of the signature is set in the center of the cover below and then pushed down so the halves of the cover wrap up around the signature to form the book.
7	The book (cover and signature now glued together) is moved to the trimming unit.
8	The book is rotated three times for trimming on the bottom, top, and fore edge.
9	The trimmed book is sent to the book stacking tray.

Exit Paths

The path that paper follows through the bookbinder depends on whether bookbinding is selected for the job.

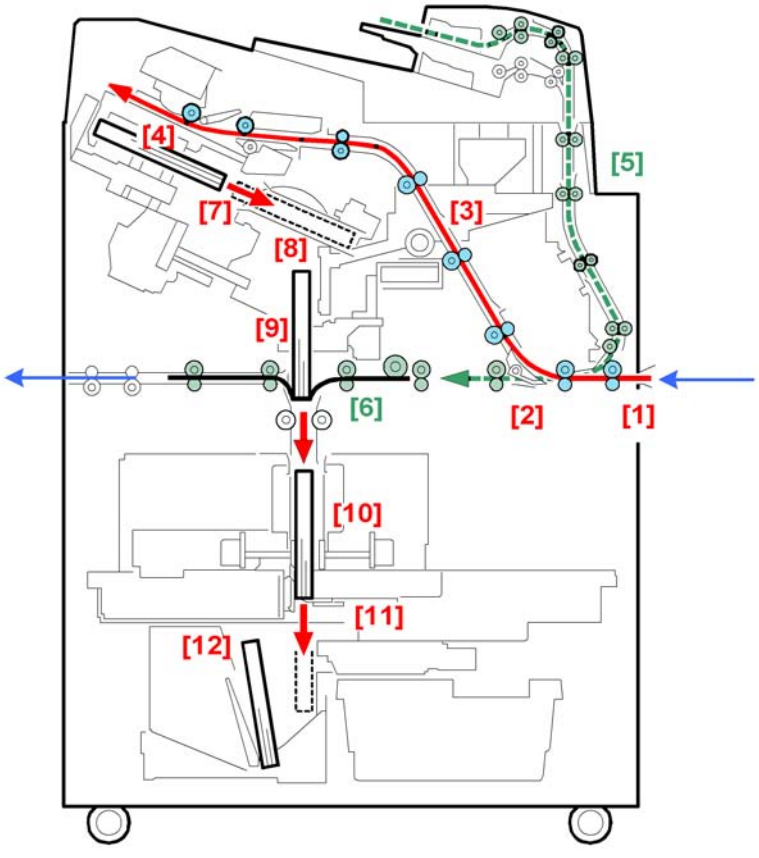
- **Downstream Delivery**. Paper enters the bookbinder passes straight through the bookbinder on the horizontal paper path and exits the bookbinder.
- **Bookbinding Delivery**. Paper enters the bookbinder, enters the signature paper path to the stacking tray and then down to the gluing unit where it is bound to a cover fed from the inserter unit, trimmed and then goes to the book stacking tray.

Downstream Delivery Exit



Paper from the host machine enters the bookbinder at the entrance rollers [1]. The entrance junction gate solenoid at [2] remains OFF so the entrance junction gate remains UP so paper can pass through the horizontal transport rollers [3]. The paper exits the bookbinder at [4].

Bookbinding Delivery Exit



Paper sent from the host machine enters the bookbinder at the entrance rollers [1]. The entrance junction gate solenoid turns ON and lowers the entrance junction gate [2] to guide paper to the signature path [3]. As each sheet arrives on the stacking tray [4], the sides and trailing/leading edges are jogged by side fences and positioning rollers to align the signature (stack) for binding.

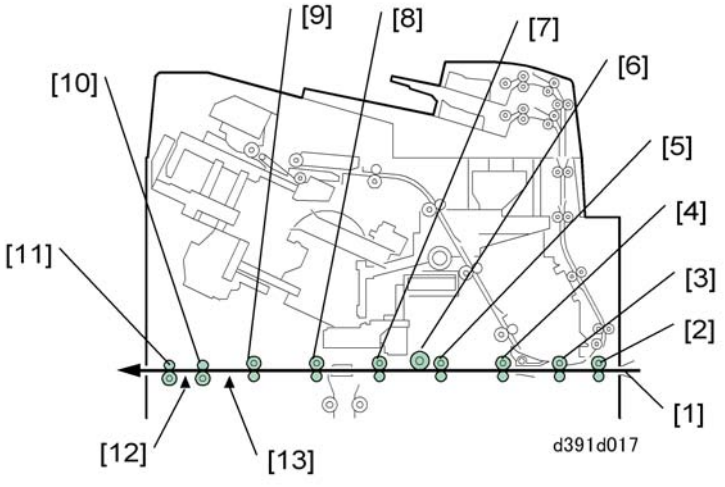
One cover sheet feeds from the inserter mounted on top of the bookbinder through the vertical transport path [5] and comes to rest below the signature and on top of the cover registration unit [6].

After the last sheet is fed to the stacking tray, the aligned signature (stack) is clamped in the sub grip [7] and passed to the main grip [8] that positions the signature for gluing in the gluing unit [9]. The main grip holds the signature as it is glued and then pushes the glued edge into center of the cover below. The sides of the cover fold up around the signature as it is lowered to form the book at [10].

Next, the book descends to the trimming unit [11] where the top, bottom, and fore edges of the book are trimmed.

Finally, the trimmed book is lowered into the book tray buffer and output to the stacking tray [12].

Downstream Delivery



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[1]	Paper
[2]	Entrance Roller
[3]	Signature Transport Roller 1
[4]	Horizontal Transport Roller 1
[5]	Horizontal Transport Roller 2
[6]	Buffer Roller
[7]	Horizontal Transport Roller 3
[8]	Horizontal Transport Roller 4
[9]	Horizontal Transport Roller 5
[10]	Exit Roller 1
[11]	Exit Roller 2
[12]	Horizontal Exit Sensor (S25)
[13]	Cover Path Sensor 2 (S26)

The paper [1] sent from the host machine is fed by the entrance roller [2] to the horizontal transport rollers. Next, the paper feeds through the horizontal transport rollers. The sensors in the horizontal transport path monitor the passing of each sheet in the paper path.

The following motors switch on just before the sheet arrives at the entrance roller:

- Entrance motor (M10). Drives the entrance roller [2] and signature transport roller [3].
- Cover motor (right) (M12). Drives transport roller 2 [5], transport roller 3 [7], and buffer roller [6].
- Cover motor (left) (M13). Drives transport roller 4 [8] and transport roller 5 [9].
- Exit motor (M14). Drives exit roller [10] and exit roller [11]

The rotation of the entrance roller feeds the paper into the horizontal feed path on top of the cove registration unit. The entrance roller and all other rollers rotate at the same speed as the exit roller of the host machine until the paper exits the bookbinder.

Blank Paper Handling

There is a recovery function to handle blank paper sent to the bookbinder by the host machine, depending on whether the feed is set for downstream delivery or book binding.

Downstream Delivery Mode with Blank Paper

When blank paper is fed to the entrance roller in the downstream delivery mode, the entrance junction gate remains up so the paper goes into the horizontal transport path. The blank paper passes straight through the horizontal transport rollers and exits the bookbinder.

Bookbinding Mode with Blank Paper

When blank paper is fed to the entrance roller in the bookbinding mode, the entrance roller and signature transport roller 1 feed the paper past the lowered entrance junction gate. The entrance junction gate guides the paper into the signature transport unit. When the signature path sensor 1 (S18) detects the leading edge of the paper, the master control board stops paper feed and the host machine issues a paper jam error. After the paper jam is issued, however, the blank paper is sent to the stacking tray where processing continues.

Automatic Exit

The bookbinder enters automatic exit mode when one of the following events occurs:

- If the bookbinder is switched off during bookbinding.
- When one or both front doors are opened
- When a paper jam occurs
- When any type of error occurs

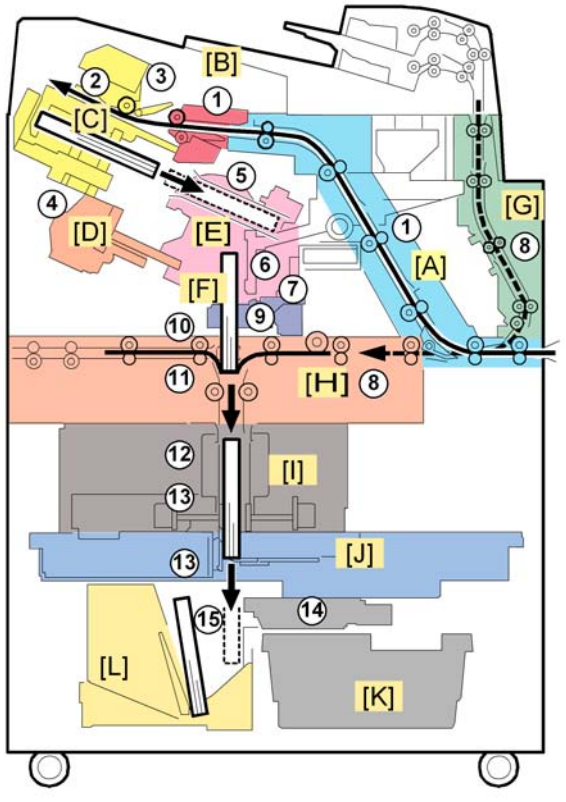
The bookbinding operation stops with the signature gripped in the sub grip or main grip unit.

When the bookbinder is turned on again, or after the front doors are closed, if the master control board, slave control board or cutter control board detect a signature in the sub grip, main grip, or trimming unit, the bookbinder enters the automatic exit mode.

However, even if a signature is detected in the sub grip unit before the signature is passed to the main grip unit, the bookbinder does not enter automatic exit mode to allow removal of the signature from the sub grip manually. In all other cases, if one of the control boards determines whether the signature can be removed manually, the bookbinder does not enter automatic exit mode.

Book Binding

Overview



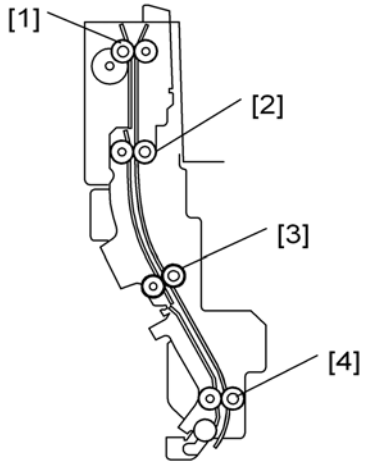
After paper sent from the host machine is aligned for binding in the stacking tray, the stack (signature) is aligned for gluing. Glue is applied to the spine of the signature and then the signature is joined with the cover. Next, the bound signature and cover (the book) is trimmed on its three open edges in the trimming unit.

Here is a summary of the bookbinding operation flow.

①	Paper sent from the host machine passes through the signature path [A] and out the signature path exit [B].
②	The paper is stacked and aligned (jogged) on the stacking tray [C] so all the edges are even.
③	As each sheet enters the stacking tray, its sides are aligned by the front and rear jogger fence and a positioning roller pulls the sheet to the right to align the trailing edge.

④	After the last sheet feeds the sub grip unit [D] with the aligned stack (signature) firmly clamped lowers away from the bottom of the stacking tray and passes the signature to the main grip unit [E].
⑤	The main grip unit rotates the signature clockwise until it is vertical with its spine pointing down and then lowers it to the spine alignment plate.
⑥	The grip unit drops the spine of the signature once onto the spine alignment plate to align the edges of the sheets in the spine so they are even.
⑦	The main grip unit once again clamps the signature and raises to the gluing unit [F]
⑧	One cover sheet feeds from the inserter down through the vertical path [G] and stops on top the cover transport unit [H]. Here the cover registration operation positions the cover to be joined with the signature.
⑨	The gluing unit [F] applies glue to the signature spine.
⑩	The main grip unit lowers the signature and pushes it into the center of the cover below supported by the cover fold plate.
⑪	Once the cover and signature are joined at the spine, the grip unit releases the signature, rises to a higher position, and then clamps the signature again. The cover fold plate retracts and the grip unit pushes the signature and cover down through the gap created by the retracted cover fold plate. As the grip unit pushes the signature and cover through the gap, the sides of the cover fold up around the front and back side of the signature.
⑫	The grip unit lowers the joined signature and cover (the book) to the book rotation unit [I] where the book is firmly clamped between two opposing plates, released and then clamped again to the book is positioned for the first cut.
⑬	In the trimming unit [J] the cutting blade (moving right to left) trims the bottom edge and retracts. The book is rotated 180°, the blade cuts the top edge, the book is rotated 90° and the blade cuts the fore edge.
⑭	The trimmer unit expels the trimmings from the cutting mechanism and they fall into the trimmings collection box [K].
⑮	Finally, the finished book is lowered to the book stacking tray [L].

Cover Transport: Vertical Path



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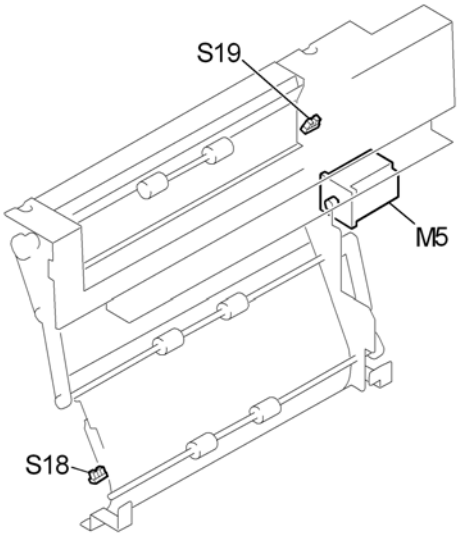

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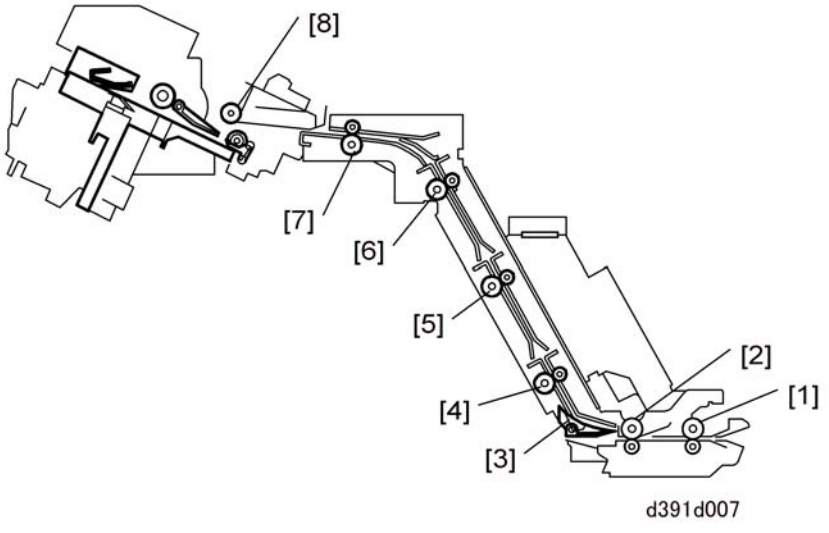
[1]	Vertical Transport Roller 1
[2]	Vertical Transport Roller 2
[3]	Vertical Transport Roller 3
[4]	Vertical Transport Roller 4
M5	Vertical Transport Motor (M5 (INS))
S18	Vertical Transport Sensor 1 (S19 (INS))
S19	Vertical Transport Sensor 2 (S18 (INS))

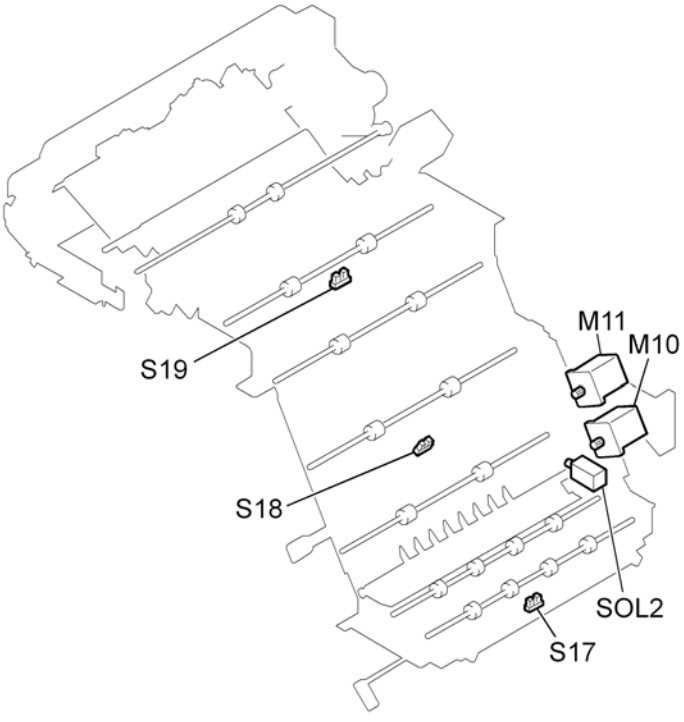
The vertical path rollers feed paper from the inserter as far as the signature transport roller 1. Covers fed from the inserter enter the vertical path at vertical transport roller [1]. The inserter control board (connected to the master control board) controls the operation of the vertical transport motor (M5 (INS)) that drives all the transport rollers in the vertical path. Vertical transport sensors 1 and 2 (S19/S18 (INS)) detect the leading and trailing edges of each cover and signal a jam if a cover stops or fails to arrive at the prescribed time.

Paper/Signature Transport

Signature Path Transport Operation



[1]	Entrance Roller
[2]	Signature Transport Roller 1
[3]	Entrance Junction Gate
[4]	Signature Transport Roller 2
[5]	Signature Transport Roller 3
[6]	Signature Transport Roller 4
[7]	Signature Transport Roller 5
[8]	Signature Exit Roller



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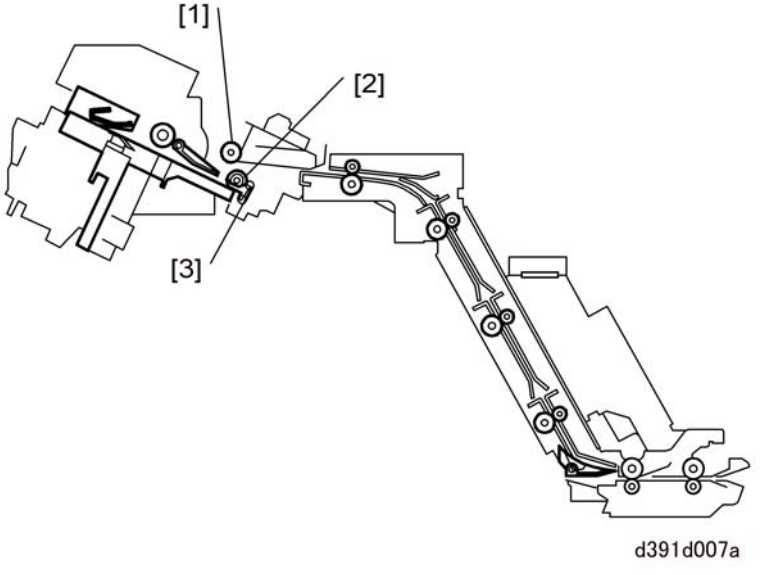
M10	Entrance Motor
M11	Signature Transport Motor
SOL2	Entrance JG Solenoid
S17	Entrance Sensor
S18	Signature Path Sensor 1
S19	Signature Path Sensor 2

The signature path rollers transport paper from the host machine to the stacking tray.

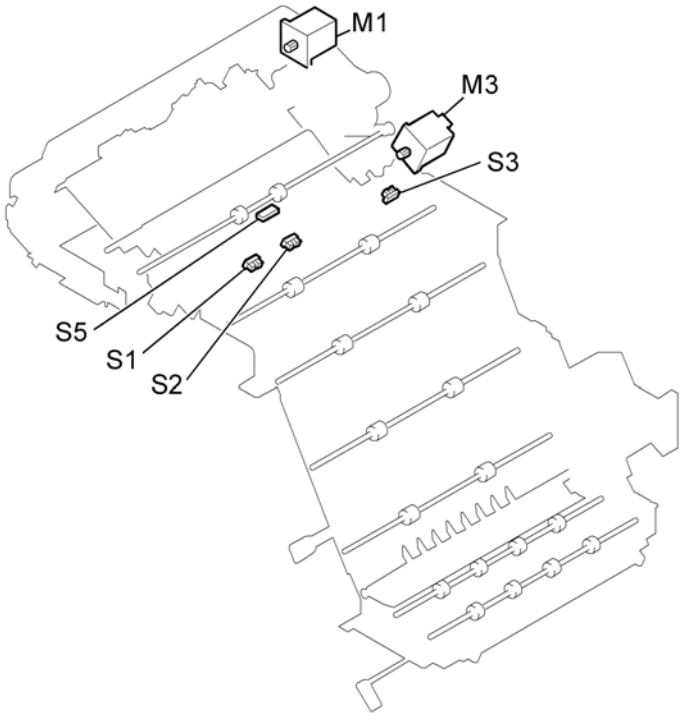
The master control board controls the operation of the entrance motor (M10) and signature transport motor (M11). These motors are switched on just before the leading edge of the first sheet arrives at the entrance roller and rotate at the same speed as the host machine exit rollers. When the motors switch on the entrance junction gate solenoid turns on and lowers the exit junction gate which guides the paper into the signature transport path.

The entrance sensor (S17), signature path sensor 1 (S18), and signature path sensor (S19) detect the leading and trailing edges of each sheet and signal a jam if a sheet stops or fails to arrive at the sensor position at the prescribed time.

Signature Path Exit



[1]	Signature Exit Roller
[2]	Stacking Roller
[3]	TE Press Lever



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M1	Stacking Roller Motor
M3	TE Press Lever Motor
S1	Paper Detection Sensor (Front)
S2	Paper Detection Sensor (Rear)
S3	TE Press Lever HP Sensor
S5	Timing Sensor

The signature path exit unit (located at the top of the signature path unit):

- Feeds paper onto the stacking tray
- Depresses the stacked trailing edges of the stack
- Detects the height of the stack in the stacking tray.

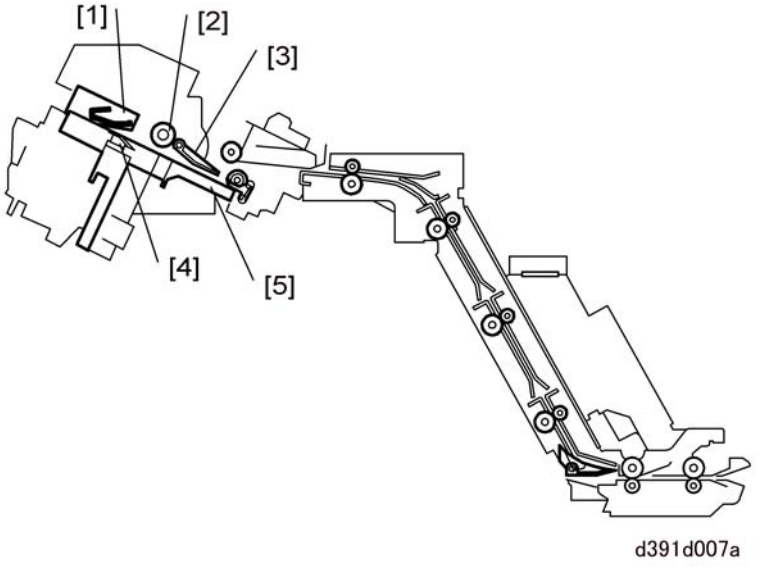
The master control board controls the operation of the stacking roller motor (M1). This motor is switched on just before the leading edge of the first sheet arrives at the entrance roller and rotates at the same speed as the host machine exit rollers. The stacking roller motor (M1) drives the signature exit roller and stacking roller.

The timing sensor (S5) detects the leading and trailing edge of each sheet and signals a jam if the paper stops or fails to arrive within the prescribed time.

Also, when the timing sensor (S5) detects the trailing edge of the sheet, the TE press lever motor (M2) turns on and lowers the TE press lever which presses down the trailing edge of the sheet as soon as it enters the stacking tray. Next, the TE press lever motor (M2) reverses and is then switched off by the TE press lever HP sensor (S3) when the lever returns to its home position.

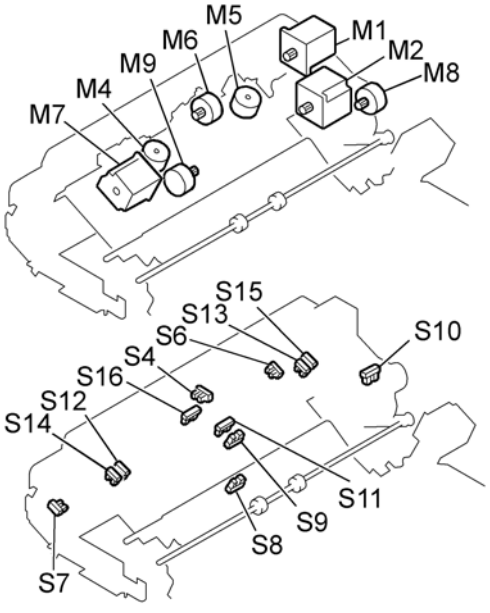
The signal from the paper detection sensors (front/rear) (S1/S2) lower the stacking tray. These sensors (mounted on the TE press lever) control the operation of the TE press lever motor (M3).

Stacking Tray Operation



[1]	Jog Fences
[2]	Switchback Rollers
[3]	Switchback Flapper
[4]	Stacking Tray Guide
[5]	Trailing Edge Guide

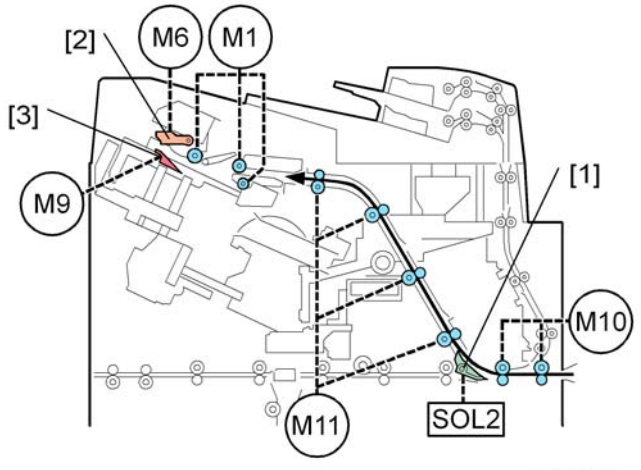
The stacking tray stacks and aligns (jogs) the front side, rear side, and trailing edge of each sheet as it arrives in the tray. After the last sheet has been fed and its edges aligned, this forms the signature to be bound to the cover.



d391d024

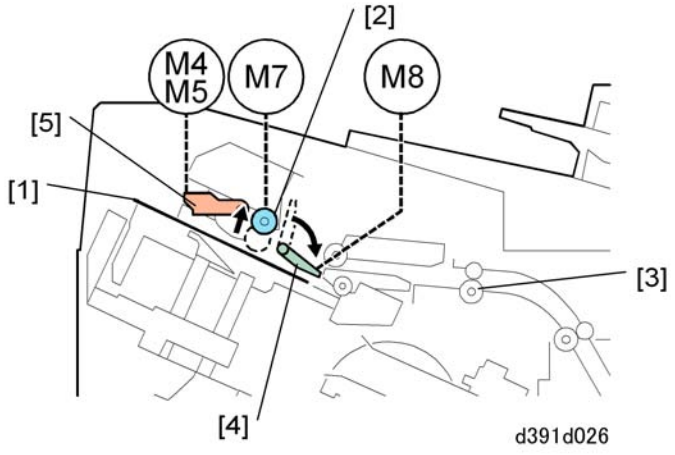
M1	Stacking Roller Motor
M2	Stacking Tray Lift Motor
M4	Jog Motor (Front)
M5	Jog Motor (Rear)
M6	Stacking Weight Motor
M7	Switchback Roller Lift Motor
M8	Switchback Flapper Motor
M9	Stacking Tray Motor
S4	Top Cover Sensor
S6	Stacking Tray Overflow Sensor
S7	Stacking Tray Lower Limit Sensor
S8	Tray Empty Sensor
S9	Stacking Tray HP Sensor
S10	Switchback Flapper HP Sensor

S11	Switchback Roller HP Sensor
S12	Jog Fence HP Sensor (Front: Small)
S13	Jog Fence HP Sensor (Rear: Small)
S14	Jog Fence HP Sensor (Front: Large)
S15	Jog Fence HP Sensor (Rear: Large)
S16	Stacking Weight HP Sensor



At the start of a job and before the leading edge of the first sheet of paper enters the bookbinder, the following motors turn on and start rotating at the same speed of the host machine exit rollers: entrance motor (M10), signature transport motor (M11), stacking roller motor (M1).

At the same time the entrance junction gate solenoid (SOL2) turns on and lowers the entrance junction gate [1] to guide paper into the signature path. The stacking weight motor (M6) and stacking tray motor (M9) also turn on and move the stacking weight [2] and stacking tray guide [3] to the correct positions for the job paper size.

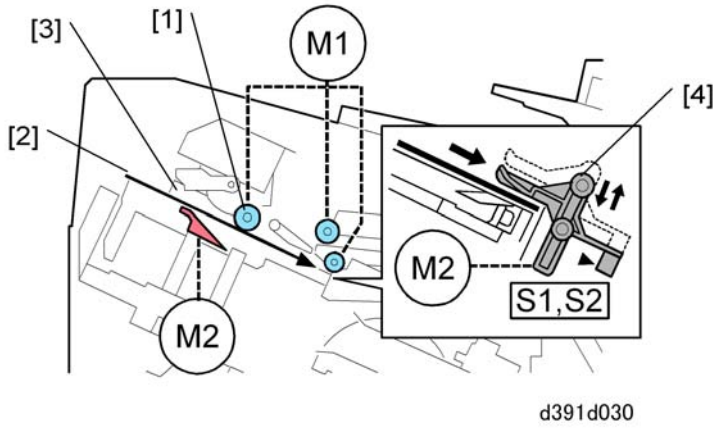


After the leading edge of the paper [1] is detected by the timing sensor (S5) and after the paper has traveled the prescribed distance, the switchback roller lift motor (M7) turns on. This lowers the switchback roller [2] to the transport position and the paper feeds into the nip of the switchback roller.

After the trailing edge of the paper has fed 10 mm past signature transport roller 5 [3] the line speed is increased to 1100 mm/s.

After the leading edge of the paper is detected by the timing sensor (S5) and the paper has traveled the prescribed distance, it stops at the switchback position. After the paper stops the switchback flapper motor (M8) turns on and moves the switchback flapper [4].

The switchback roller lift motor (M7) turns on and retracts the switchback roller from the paper to release it for jogging. First, the jog motor (rear) (M5) turns on and moves the rear jog fence [5] to the start position for the paper size where it will remain during jogging. Next, the jog motor (front) (M4) moves the front jog fence to the start position for the paper size. The front fence pushes the paper against the stationary rear fence during jogging.



After the side fences have jogged and aligned the sides of the stack, the switchback roller lift motor (M7) turns on and lowers the switchback roller [1] until it contacts the paper [2]. Next, the jog motor (front) (M4) and jog motor (rear) (M5) reverse and retract the front and rear jog fences [3] to their home positions.

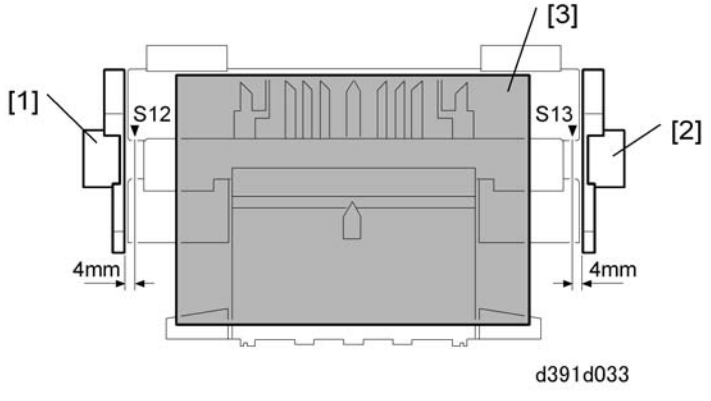
The stacking roller motor (M1) turns on and drives the switchback roller which feeds the paper at 700 mm/s in the reverse (switchback) direction. At this time the TE press lever motor (M3) raises and opens the TE press lever [4]. As soon as the sheet has fed in the switchback direction for the prescribed time, the motor reverses, and then lowers and clamps the trailing edge of the sheet. The signal from the paper detection sensors (front/rear) (S1/S2) lower the stacking tray. These sensors (mounted on the TE press lever) control the operation of the stacking tray lift motor (M2).

After the TE press lever has clamped the trailing edges of the sheets in the stack, the switchback flapper motor (M8) turns on and returns the switchback flapper to its home position to receive the next sheet. At the same time the switchback roller lift motor (M7) turns on, raises the switchback roller, and returns it to its home position to receive the next sheet. After the switchback roller has been raised, the stacking roller motor (M1) resumes its rotation at the same speed of the host machine exit rollers.

The size of the paper selected for the job determines:

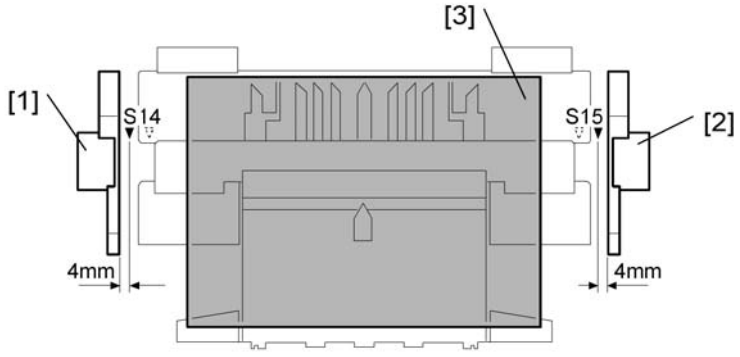
- Standby positions of the side fences
- Which sensor pair is used to detect the home positions of the fences

Paper Up to 298 mm Wide



[1]	Front Jog Fence
[2]	Rear Jog Fence
[3]	Paper
S12	Jog Fence HP Sensor: Front: Small
S13	Jog Fence HP Sensor: Rear: Small

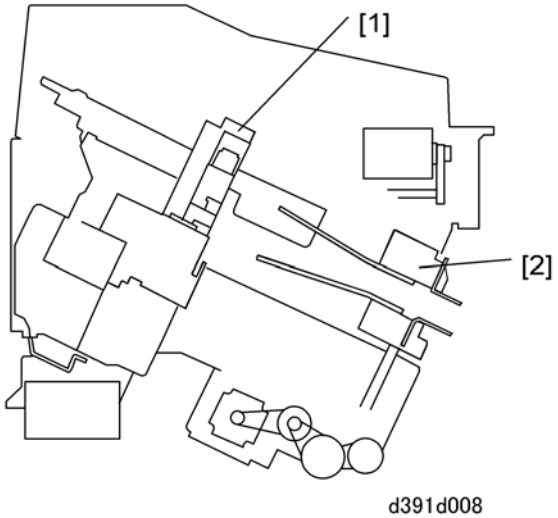
Paper Wider Than 298 mm



d391d034

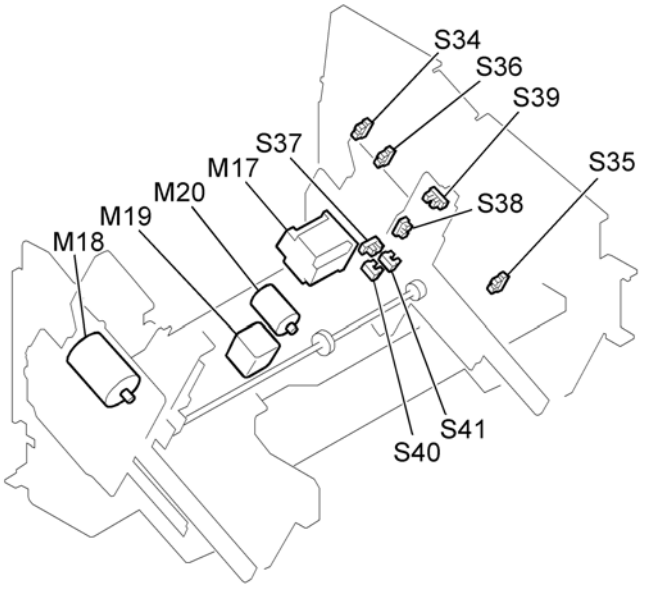
[1]	Front Jog Fence
[2]	Rear Jog Fence
[3]	Paper
S14	Jog Fence HP Sensor: Front: Large
S15	Jog Fence HP Sensor: Rear: Large

Sub Grip Operation



d391d008

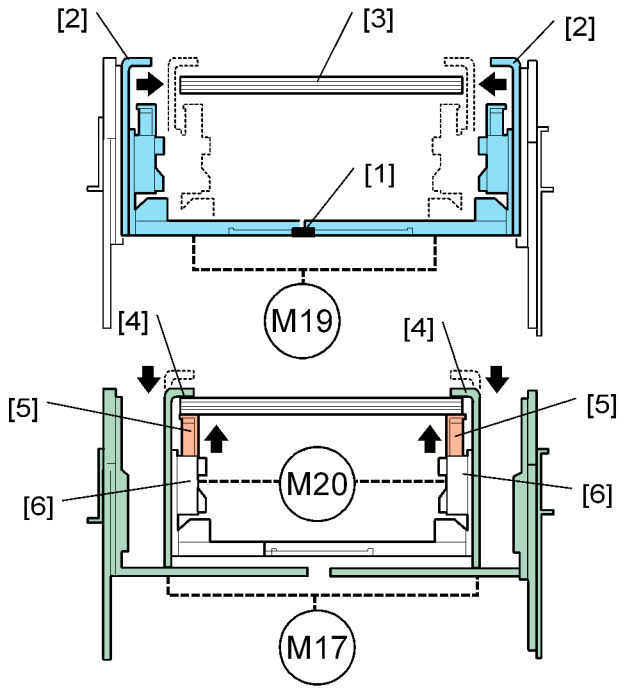
The sub grip unit [1] takes the aligned stack (signature) from the stacking tray unit and passes it to the main grip [2].



d391v041

6

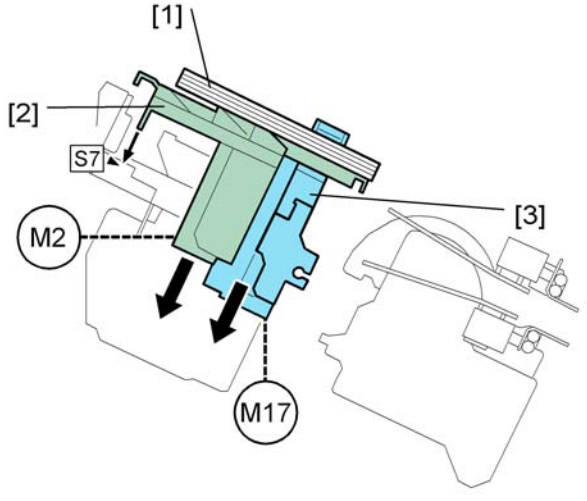
M17	Sub Grip Lift Motor
M18	Signature Move Motor
M19	Sub Grip Size Motor
M20	Sub Grip Motor
S34	Signature HP Sensor
S35	Signature Main Grip Position Sensor
S36	Main Grip Rotate Enable Sensor
S37	Sub Grip HP Sensor
S38	Size HP Sensor
S39	Sub Grip Signature Sensor
S40	Sub Grip Open Sensor
S41	Sub Grip Close Sensor



d391d036

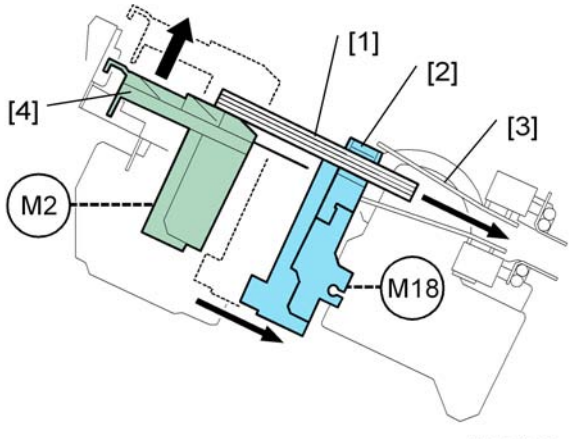
After all the sheets have been stacked and aligned in the stacking tray to form the signature, the sub grip size motor (M19) turns on and rotates the size move gear [1] (a pinion) which starts driving both sides of the sub gripper [2] toward the edges of the signature [3].

After the front and rear sub gripper plates close onto the sides of the signature in the sub grip unit, the sub grip unit lift motor (M17) turns on, lowers the sub grip unit 10 mm, and then reverses and moves the signature up to the arms [4] at the top of the front and back of the sub gripper plates [5]. Next, the sub grip motor (M20) turns on and raises the front and rear bottom plates [6] of the sub gripper until the signature is firmly clamped.



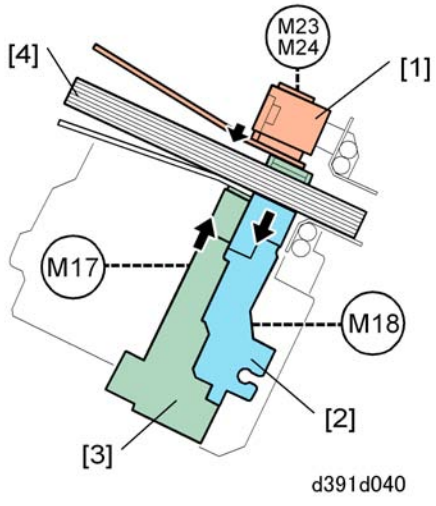
d391d038

With the signature [1] firmly clamped, the stacking tray lift motor (M2) and sub grip lift motor (M17) switch on and lower both the stacking tray [2] and sub grip unit [3] as far as the stacking tray lower limit sensor (S7) and then stop.



d391d039

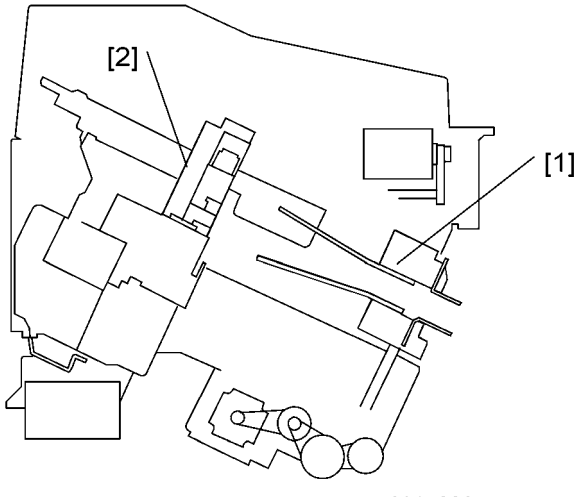
The signature move motor (M18) turns on and moves the signature [1] from the sub grip unit [2] to the main grip [3] transfer point. Next, the stacking tray lift motor (M2) turns on and raises the end of stacking tray at [4]. This action tilts the signature so it slides into the main grip unit.



d391d040

The grip motor: front (M24) and grip motor: rear (M23) switch on and close the main gripper [1] to clamp the signature tightly at the spine. Next, the sub grip motor (M20) turns on and opens the sub gripper [2] to release the signature in the sub grip unit. After the signature is released by the sub grip unit [3], the sub grip lift motor (M17) turns on and raises the sub grip unit about 5 mm away from the signature [4], then returns the sub grip unit to its home position.

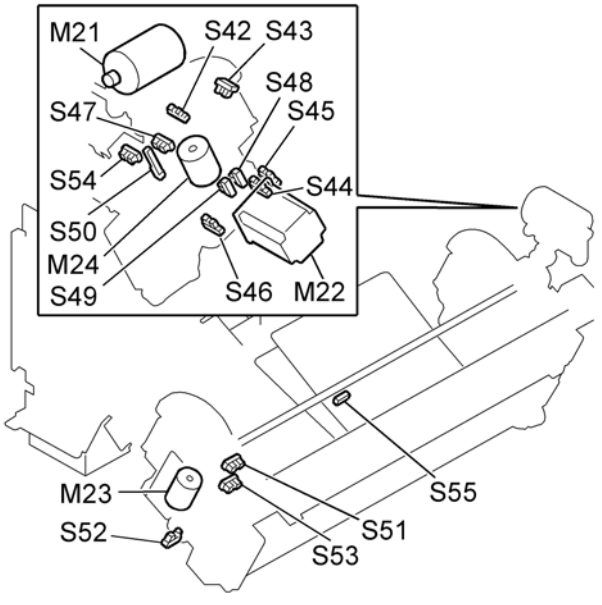
Main Grip Operation



d391d008a

The main grip unit [1] receives the signature from the sub grip unit [2], tamps the spine of the signature to align it for gluing, lowers the signature onto the gluing unit for the application of glue to the spine, and then passes the signature to the trimming unit.

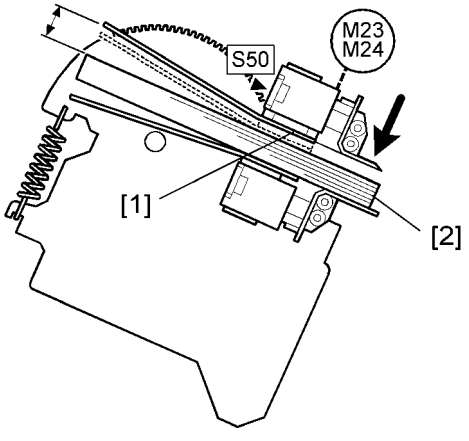
[1]	Mini-Gripper
[2]	Main Gripper



d391v043

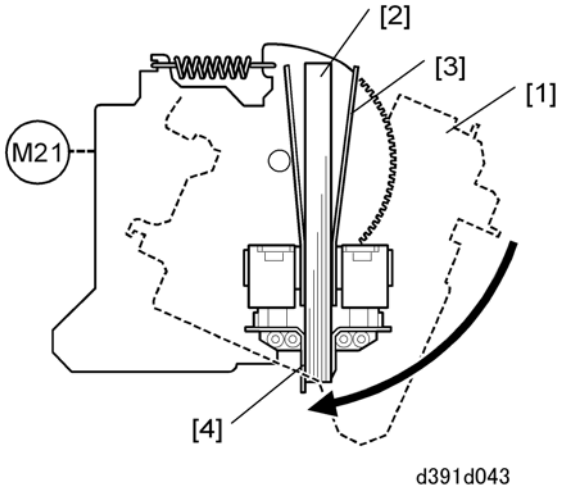
M21	Grip Unit Rotation Motor
M22	Main Grip Lift Motor
M23	Gripper Motor: Rear
M23	Gripper Motor: Rear
M24	Grip Motor: Front
S42	Rotate-to-Binding Position Sensor
S43	Main Grip Rotate HP Sensor
S44	Main Grip HP Sensor
S45	Main Grip HP Sensor: H
S46	Main Grip Encoder: Rear
S47	Main Grip Open Sensor: Rear
S48	Main Grip Press Sensor 1

S49	Main Grip Press Sensor 2
S50	Signature Thickness Sensor
S51	Main Grip Open Sensor: Front
S52	Main Grip Encoder: Front
S53	Main Grip Close Sensor: Front
S54	Main Grip Close Sensor: Rear
S55	Main Grip Signature Sensor

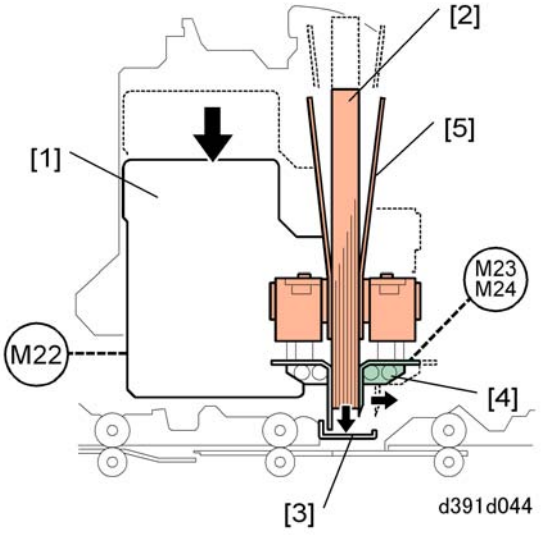


d391d042

The gripper motor: front (M24) the gripper motor: rear (M23) switch on and close the main grip [1], securely clamping the signature [2] passed from the sub grip to the main grip. At this time the signature thickness sensor (S50) measures the thickness of the signature.

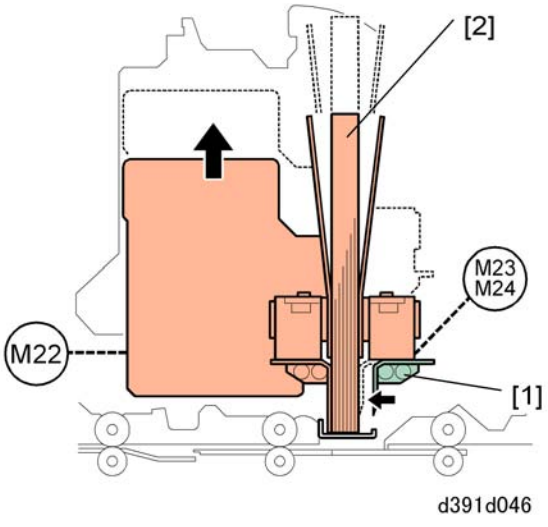


The grip unit rotation motor (M21) turns on and rotates the main grip unit [1] with the signature [2] clamped by the mini-gripper [3] and main gripper [4].

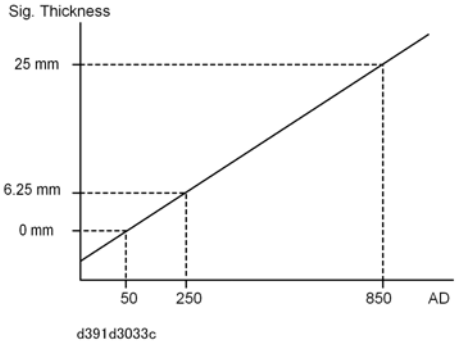


The main grip lift motor (M22) turns on and lowers the main grip unit [1] and signature [2] as far as the signature guide plate [3].

The gripper motor: front (M24) and gripper motor: rear (M23) switch on and open the main gripper [4] 7 mm. At this time the signature is held only by the mini-gripper [5] while the signature and mini-gripper are lowered together onto the signature guide plate. This tamps the spine of the signature so it will be aligned properly for gluing.

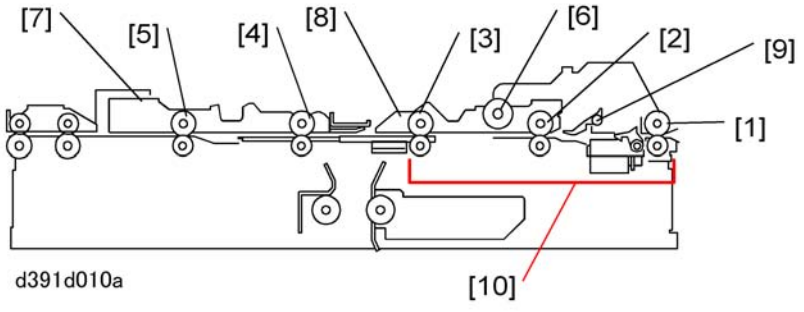


The gripper motor: front (M24) and gripper motor: rear (M23) switch on, close the main gripper [1], and clamp the signature [2]. The main grip lift motor (M22) turns on raises the grip unit and signature to the gluing position

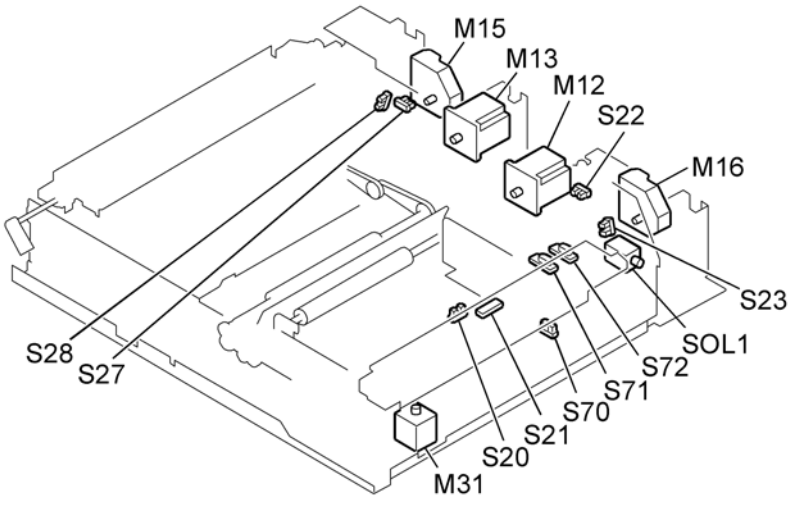


The signature thickness sensor (S50) measures the thickness of the signature the first time the grip unit closes onto the signature. A corresponding AD value is stored in EEPROM for mm readings from 0 to 25 mm as shown above.

Cover Transport and Registration

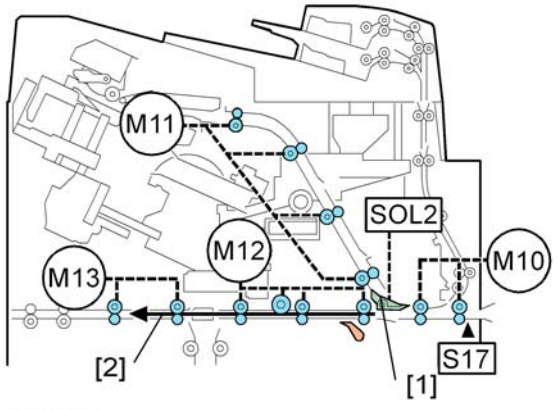


[1]	Horizontal Transport Roller 1
[2]	Horizontal Transport Roller 2
[3]	Horizontal Transport Roller 3
[4]	Horizontal Transport Roller 4
[5]	Horizontal Transport Roller 5
[6]	Buffer Roller
[7]	Cover Transport Guide: Right
[8]	Cover Transport Guide: Left
[9]	Cover Gripper
[10]	Cover Registration Unit



d391d049

M12	Cover Motor: Right
M13	Cover Motor: Left
M15	Cover Guide Motor: Left
M31	Cover Guide Motor: Right
M31	Cover Horizontal Registration Motor
SOL1	Cover Grip Solenoid
S20	Cover Path Sensor 1
S21	Cover Registration Sensor
S22	Cover Guide HP Sensor: Right
S23	Cover Guide Open Sensor: Right
S27	Cover Guide HP Sensor: Left
S28	Cover Guide Open Sensor: Left
S70	Registration Unit HP Sensor (S70)
S71	Cover Horizontal Registration Sensor : Small
S72	Cover Horizontal Registration Sensor: Large



d391d050

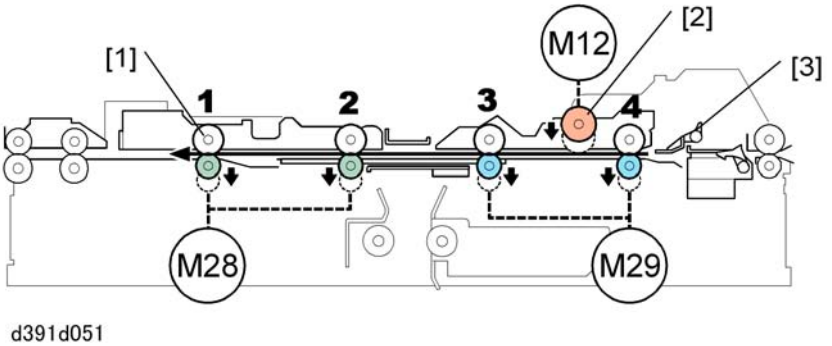
Before paper from the host machine arrives at the entrance of the bookbinder the following motors turn on and start rotating at the same speed as the host machine exit rollers:

- Entrance motor (M10)
- Signature transport motor (M11)
- Cover motor: right (M12)
- Cover motor: left (M13)

The entrance JG solenoid (SOL2) remains off and the entrance junction gate [1] remains open so the cover sent from the inserter above enters the cover transport path.

If the cover is fed from the host machine, when the entrance sensor (S17) detects the leading edge of the cover the rotation speed of cover motors (M12) and (M13) slow to 196.35 mm/s.

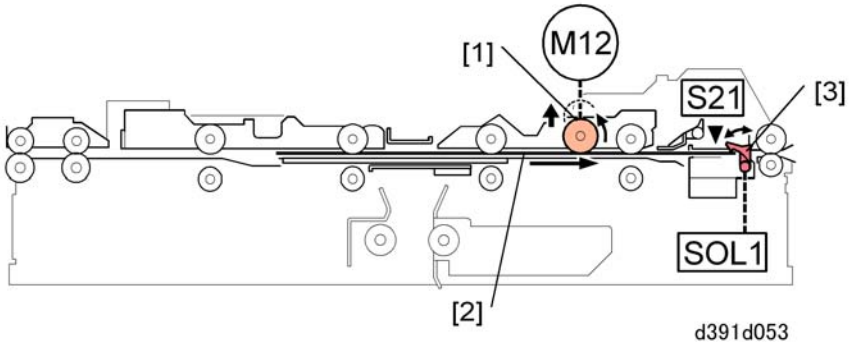
After the trailing edge of the cover passes cover registration sensor (S21) the sheet [2] continues to feed briefly for the prescribed time then the motors stop and the sheet stops.



d391d051

The spine fold motor: right (M29) turns on and lowers the transport rollers 3, 4 to release the trailing edge of the cover from the roller nip. The cover motor: right (M12) reverses and lowers the buffer roller [2] to close its nip on the cover.

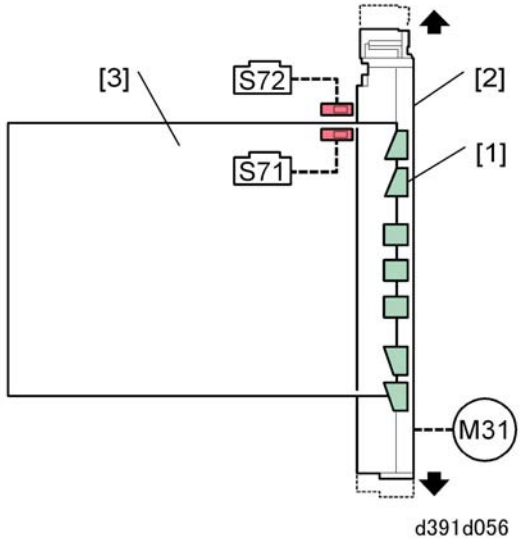
The spine fold motor: left (M28) turns on and lowers the transport rollers 1, 2 on the left side of the cover, releasing the cover from the nip. The cover grip solenoid (SOL1) energizes and opens the cover gripper [3].



The cover motor: right (M12) reverses and rotates the buffer roller [1] at 500 mm/s and feeds the cover [2] toward the switchback position. The cover is fed to a position at a prescribed distance away from the cover registration sensor (S21) then the motor stops. This is the cover vertical position ("vertical" means "direction of paper feed").

After the cover is aligned at the cover vertical position the gripper solenoid (SOL1) turns off and lowers the cover gripper [3] which clamps the trailing edge of the cover.

After the trailing edge of the cover is clamped, the cover motor: right (M12) rotates forward and retracts the buffer roller from the cover.

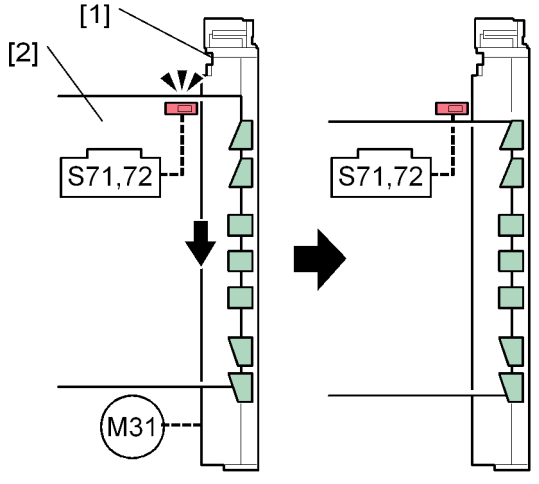


[1]	Cover Gripper
[2]	Cover Registration Unit

[3]	Cover

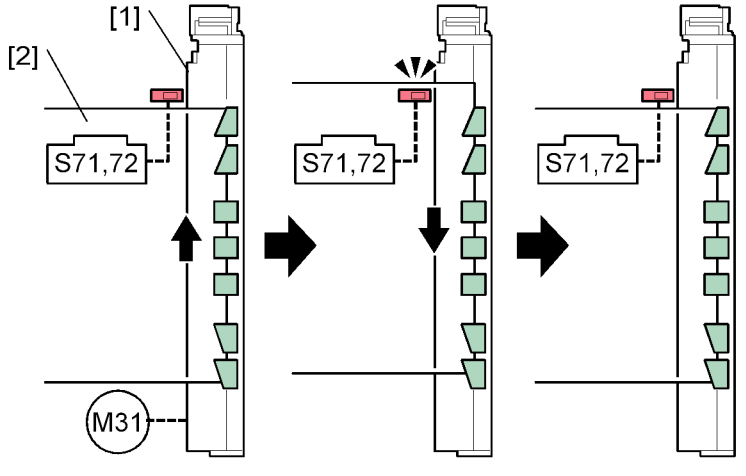
The cover horizontal registration motor (M31) turns on and positions the cover at the horizontal position as shown by the arrow. The size of the cover determines which sensor is used to position the cover:

- Cover registration sensor (S) (S71). Used for small paper sizes up to 297 mm wide.
- Cover registration sensor (L) (S72). Used for large paper sizes over 297 mm wide.



d391d057

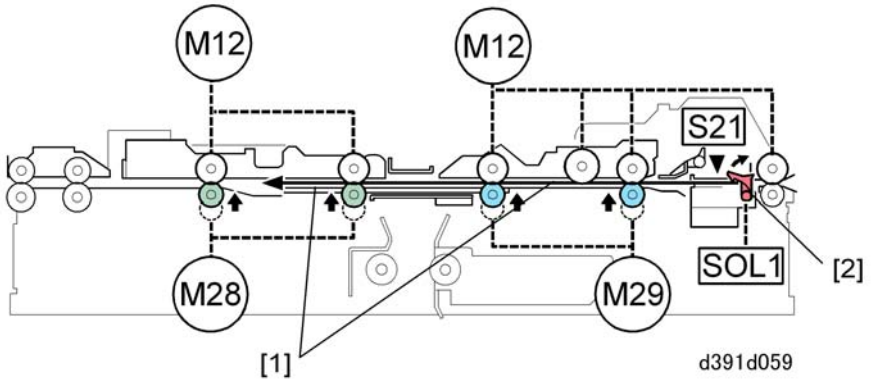
If the cover registration sensor (S71: Small) or (S72: Large) in the cover registration unit [1] is ON, the cover horizontal registration motor (M31) turns on and moves the cover [2] the prescribed distance away from the sensor after the sensor turns off.



d391d058

If the cover registration sensor (S71: Small) or (S72: Large) in the cover registration unit [1] is OFF:

- The cover horizontal registration motor (M31) turns on and moves the cover registration unit [1] and cover [2] until the sensor turns on, continues to move the cover the prescribed distance and then turns off.
- Next, the cover horizontal registration motor (M31) reverses and moves the cover the prescribed distance away from the sensor after the sensor turns off.



The spine fold motor: right (M29) on the right turns on, raises the two transport rollers on the right, and clamps the cover [1] in the roller nips.

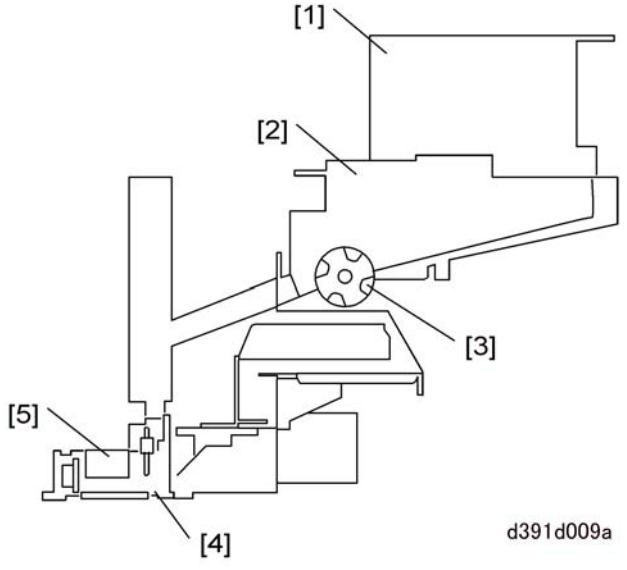
The spine fold motor: left (M28) turns on, raises the two transport rollers on the left and clamps the cover in the roller nips.

The cover grip solenoid (SOL1) energizes and opens the cover gripper [2] .

The cover motor: left (M13) and cover motor: right (M12) start rotating at 50 mm/s and feed the cover to the left. After the cover passes the cover registration sensor (S21) the motor and rollers continue to feed the cover a prescribed distance. (The distance is prescribed according to the signature thickness reading performed by the signature thickness sensor (S50)). Finally, the cover grip solenoid (SOL1) turns off and closes the gripper .

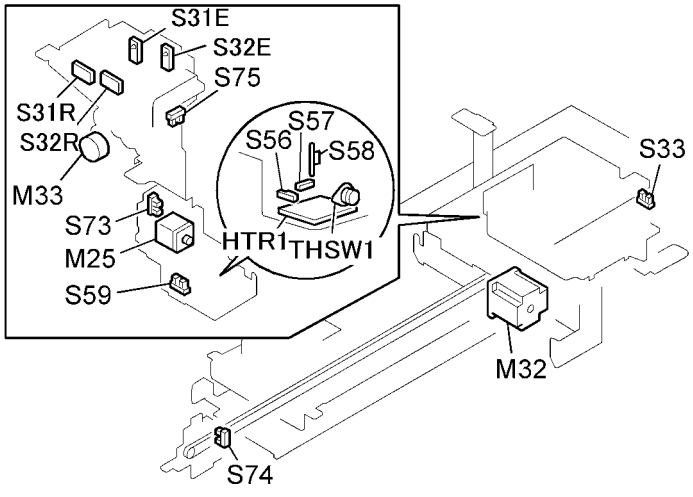
Gluing

Gluing Unit Operation



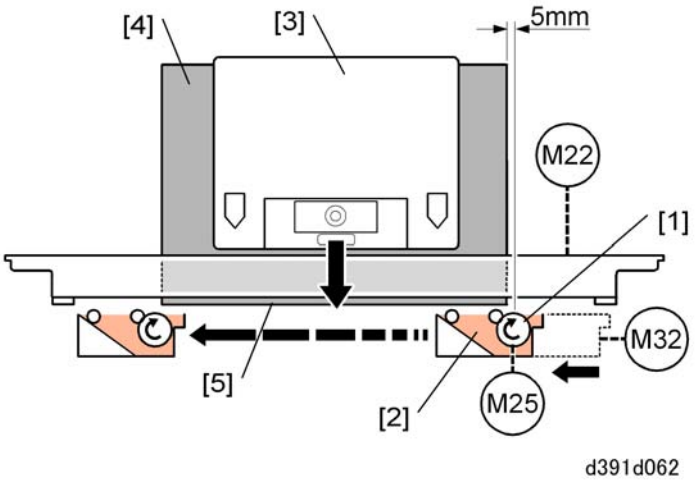
The gluing unit applies glue to the spine of the signature that will be joined with the cover to form the book.

[1]	Glue Hopper
[2]	Glue Dispenser
[3]	Glue Feeder
[4]	Gluing Unit
[5]	Glue Vat



d391v044

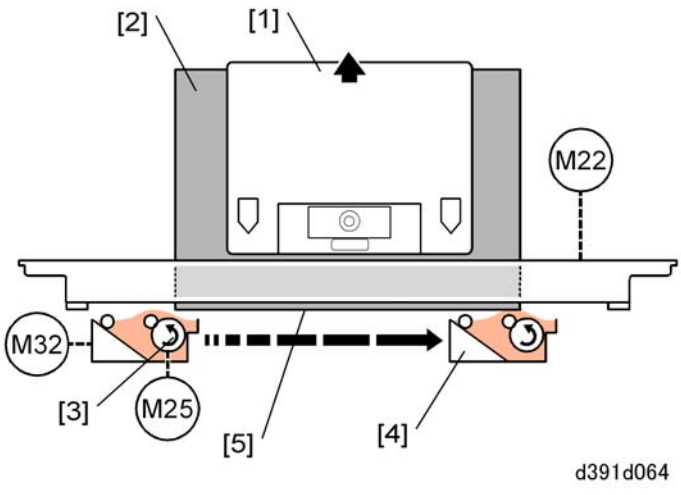
M32	Glue Vat Motor
M33	Glue Supply Motor
S31	Glue Vat Empty Sensor (S31E/S31R)
S32	Glue Vat Empty Sensor (S32E/S32R)
S33	Glue Supply Cover Sensor
S56	Glue Temperature Thermistor
S57	Glue Abnormal Temperature Thermistor
S58	Glue Level Thermistor
S59	Glue Vat Roller Rotation Sensor
S73	Glue Vat HP Sensor: Rear
S74	Glue Vat HP Sensor: Front
S75	Glue Roller HP Sensor
TS1	Thermostat
H1	Glue Heater



[1]	Glue Vat Roller
[2]	Glue Vat
[3]	Main Gripper Unit
[4]	Signature
[5]	Signature Spine

Once the glue has been heated long enough to melt it and has reached the optimum temperature for application, the glue vat roller motor (M25) turns on and rotates the glue vat roller [1] to start stirring the glue. The glue vat motor (M32) turns on moves the glue vat [2] to within 5 mm the signature spine where the glue will be applied. The main grip lift motor (M22) turns on and lowers the main grip unit [3] and signature [4] to the glue application position. (The illustration above is a view of the right side of the grip unit in the direction of paper feed.)

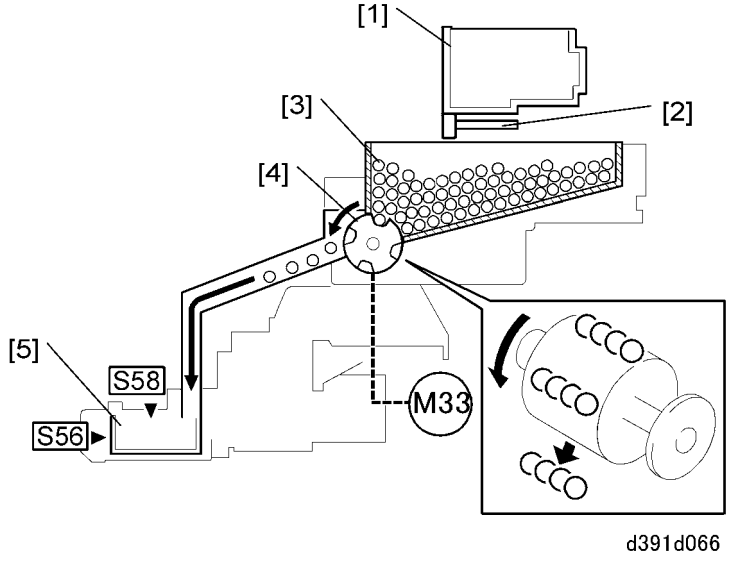
The glue vat motor (M32) turns on. As the motor drives the glue vat from the rear to the front along the length of the signature spine [5], the glue roller applies glue to the spine.



The main grip lift motor (M22) turns on, raises the main grip unit [1] and signature [2] slightly higher. Also, the glue vat roller motor (M25) turns on and reverses the rotation of the glue vat roller [3].

The glue vat move motor (M32) turns on and moves glue vat [4] from the front to the rear. As the vat moves from front to rear the glue applicator plate applies another layer of glue the signature spine [5].

Glue Supply



[1]	Glue Hopper
[2]	Shutter

[3]	Glue Bin (holds the glue pellets)
[4]	Glue Feeder
[5]	Glue Vat (holds after it has melted)

The operator pours glue pellets into the glue hopper [1].

When the operator closes the hopper, the shutter [2] opens the dry glue pellets fall down into the bin [3] where they are stored.

During the operation of the bookbinder, the glue temperature thermistor (S56) monitors the temperature of the glue in the vat, and the glue level thermistor (S58) measures the level of the glue in the vat. Both readings are relayed continuously to the slave control board.

After the temperature of the glue already in the glue vat has been raised to the correct level, and immediately after each application of glue to a signature spine, if the surface level of the glue is so low that it cannot be detected by the glue level thermistor (S58):

- The slave control board first confirms that the glue vat is at its home position at the rear of the machine
- The slave control board turns on the glue supply motor (M33).
- The glue supply motor (M33) rotates the glue feeder [4] to pellets from the glue bin to the glue vat [5].
- Each movement of the glue feeder (90° rotation) feeds four 0.22 g pellets to the glue vat.
- The feeder rotates three times (270°) to feed a total of 12 pellets.

Glue Temperature Control

The slave control board controls the temperature of the glue in the glue vat.

The glue temperature thermistor (S56) constantly monitors the temperature of the glue in the glue vat and relays its readings to the slave control board. The slave control board uses these readings to control the operation of the glue heater and glue vat roller motor (M25).

The slave control board sends the command to the heater to raise the temperature of the glue to 150°C at the beginning of a binding job, or when the bookbinder leaves the energy save mode. The operation depends on the temperature reading.

If the glue temperature is above 120°C:

- The slave control board turns on the heater and sets the target temperature for 152°C
- When the glue temperature thermistor (S56) detects a glue temperature of 150°C±5°C, the slave control board turns on the glue vat roller motor (M25) which starts rotating the glue vat roller at 82.5 mm/s
- The glue vat roller motor (M25) continues to rotate the glue vat roller for 90 sec. to stir the glue and then turns off.

- The heater remains on to maintain the target temperature.

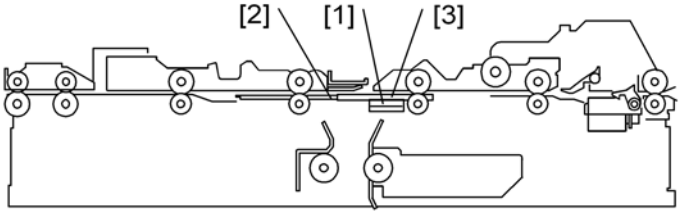
If the glue temperature is between 100°C and 120°C:

- The slave board turns on the heater and sets the target temperature for 152°C.
- When the glue temperature thermistor (S56) detects a glue temperature of 150°C±5°C, the slave control board turns on the glue vat roller motor (M25) which starts rotating the glue vat roller at 82.5 mm/s
- The glue vat roller motor (M25) continues to rotate the glue vat roller for 180 sec. to stir the glue and then turns off.
- The heater remains on to maintain the target temperature.

If the glue temperature is below 100°C:

- The slave control board turns on the heater and sets the target temperature for 173°C.
- As soon as the glue temperature thermistor (S56) detects the glue temperature over 120°C, after 285 sec. the target temperature is reset for 152°C.
- At the same time, when the glue temperature thermistor (S56) detects a glue temperature of 120°C, the slave control board turns on the glue vat roller motor (M25) which starts rotating the glue vat roller at 200 mm/s
- The glue vat roller motor (M25) continues to rotate the glue vat roller for 20 sec. at 200 mm/s to stir the glue and then slows to 82.5 mm/s
- The glue vat roller motor (M25) continues to rotate the glue vat roller for 30 sec. at 82.5 mm/s and then turns off.
- The heater remains on to maintain the target temperature.

Joining the Signature and Cover



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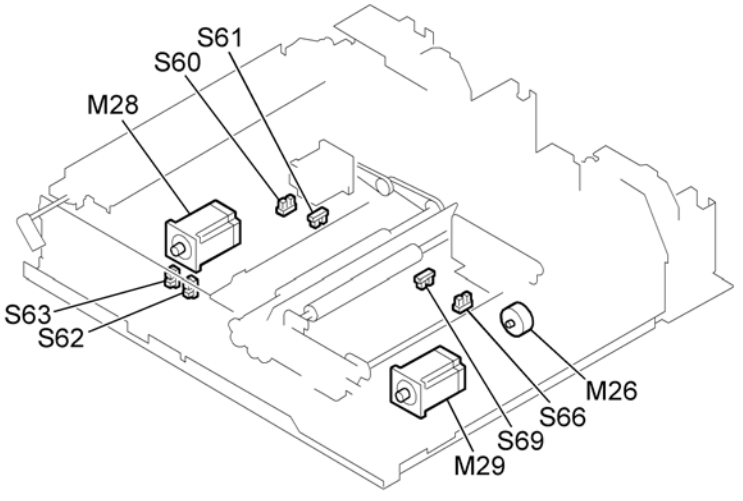
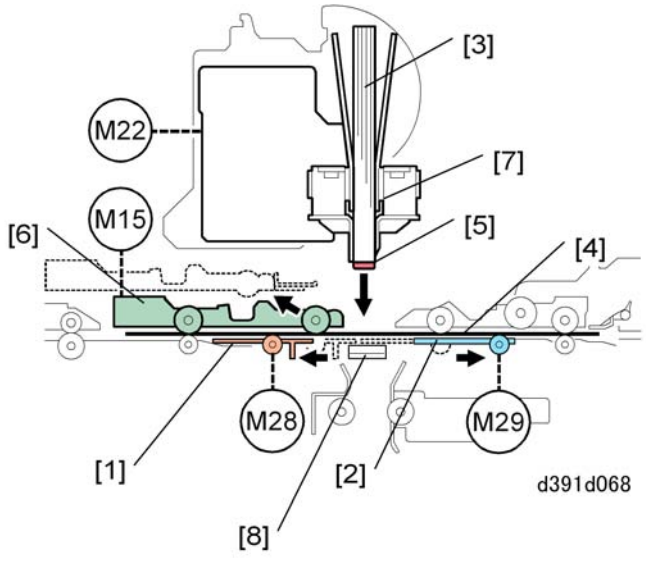
[1]	Spine Plate
[2]	Left Spine Fold Plate
[3]	Right Spine Fold Plate



d391d067

M26	Spine Plate Motor
M28	Spine Fold Motor: Left
M29	Spine Fold Motor: Right
S60	Spine Fold HP Sensor: Left
S61	Spine Fold Close Sensor: Left
S62	Spine Plate Open Sensor
S63	Spine Plate Closed Sensor
S66	Spine Fold HP Sensor: Right
S69	Spine Fold Closed Sensor: Right



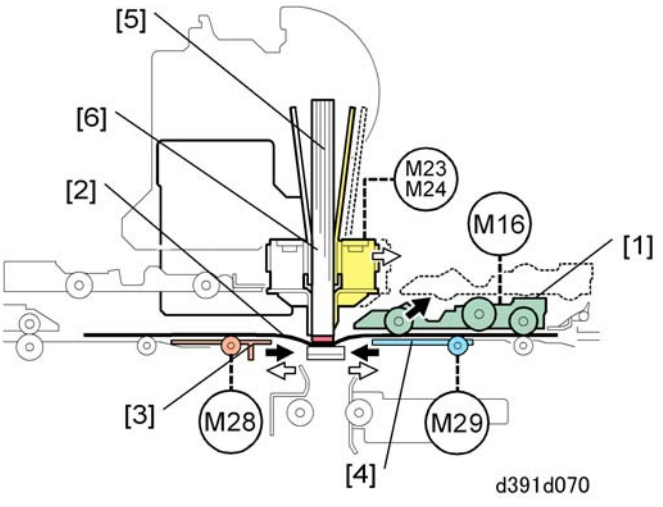
[1]	Spine Fold Plate: Left
[2]	Spine Fold Plate: Right
[3]	Signature
[4]	Cover
[5]	Glued Spine
[6]	Left Cover Transport Guide
[7]	Main Grip Unit
[8]	Spine Plate

The spine fold motor: left (M28) and spine fold motor: right (M29) switch on and move the left spine fold plate [1] and right spine fold plate [2] to their home positions from the spine fold close positions. The motors run long enough to separate the plates so the gap between them is large enough for the signature [3] to pass between them and stop. The run time is prescribed based on the signature thickness measured by the signature thickness sensor (S50).

The cover [4] is on the cover transport unit with the glued spine [5] of the signature above.

The cover guide motor: left (M15) turns on, opens the left cover transport guide [6] and releases the cover from the nips of the transport rollers.

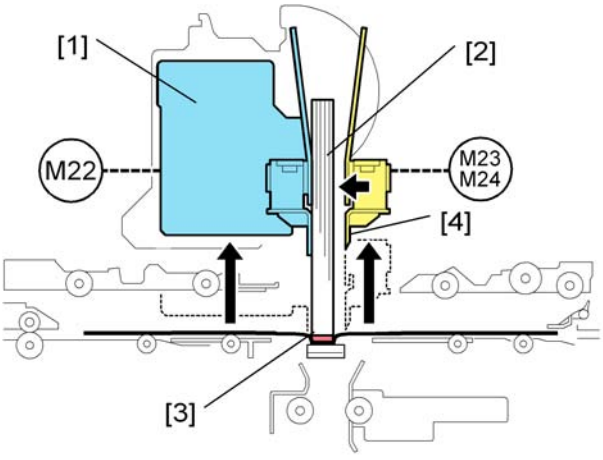
The main grip lift motor (M22) turns on, lowers the main grip unit [7] holding the signature , and presses the glued spine onto the center of the cover supported by the spine plate [8].



[1]	Cover Transport Guide: Right
[2]	Cover
[3]	Spine Fold Plate: Left
[4]	Spine Fold Plate: Right
[5]	Signature
[6]	Main Gripper

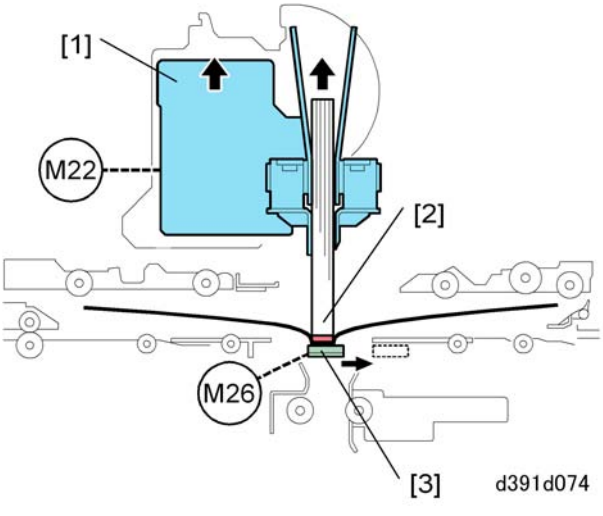
The cover guide motor: right (M16) turns on, opens the right cover transport guide [1] , and releases the cover [2] from the nips of the transfer rollers. The spine fold motor: left (M28) and spine fold motor: right (M29) turn on and close the left and right spine fold plates [3], [4] which clamp the signature [5] near its glued spine.

After holding the signature clamped at its spine glued to the cover for the prescribed time the spine fold motor: left (M28) and spine fold motor: right (M29) turn on. The left spine fold motor moves the left fold plate to its home position. The right spine fold motor remains on for the prescribed time and as it retracts the right fold plate, the grip motor: front (M24) and grip motor: rear (M23) turn on together and open the main gripper [6] 14 mm.



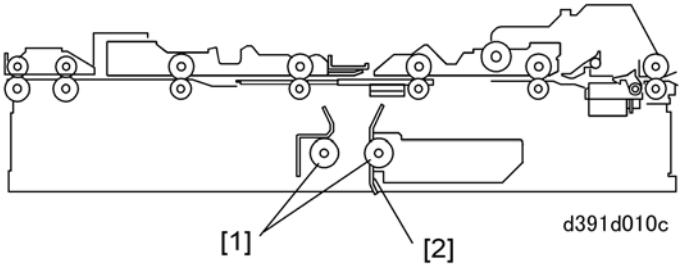
The main grip lift motor (M22) turns on and raises the main grip unit [1] where it can grip the signature [2] at a higher point, then the motor stops. The joined signature and cover [3] do not move.

After the main gripper [4] moves to the higher grip position, the grip motor: front (M24) and grip motor: rear (M23) turn on and clamp the signature again.

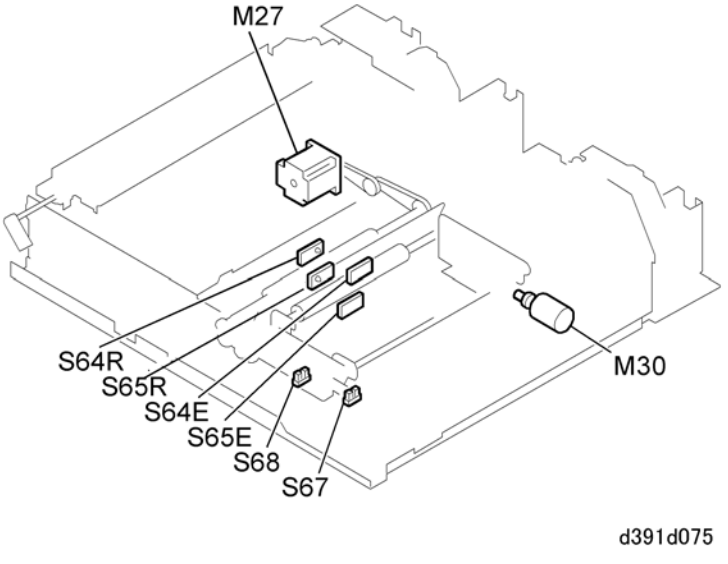


The main grip lift motor (M22) turns on, lifts the main grip unit [1], pulls the joined signature and cover [2] away from the spine plate [3], then stops a short distance away from the plate. The spine plate motor (M26) retracts the spine plate to the right.

Signature Transport

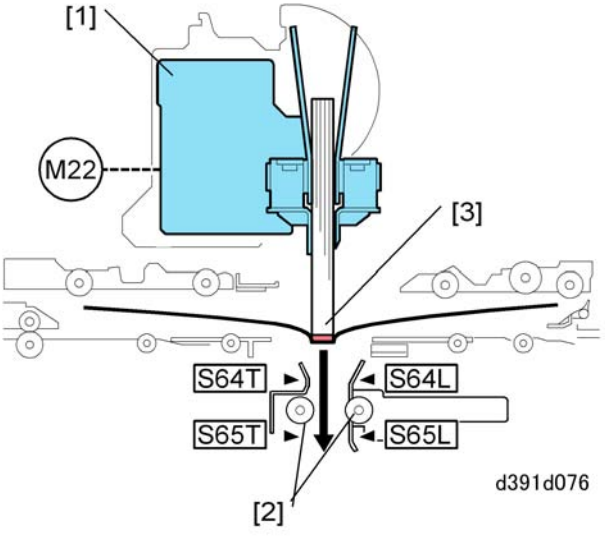


[1]	Signature Exit Roller
[2]	Signature Path Guide



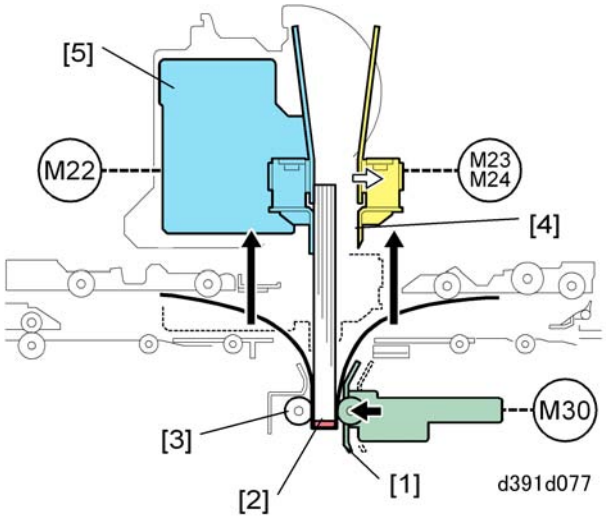
M27	Signature Exit Roller Motor
M30	Signature Path Exit Motor
S64	Book Exit Sensors (S64E: Emitter/S64R: Receptor)
S65	Leading Edge Sensors (S65E: Emitter/S65R: Receptor)
S67	Signature Exit Path HP Sensor
S68	Signature Exit Path Press Sensor

Now the cover is ready to be folded up around the joined signature to complete the formation of the book and the book is passed to the trimming unit.



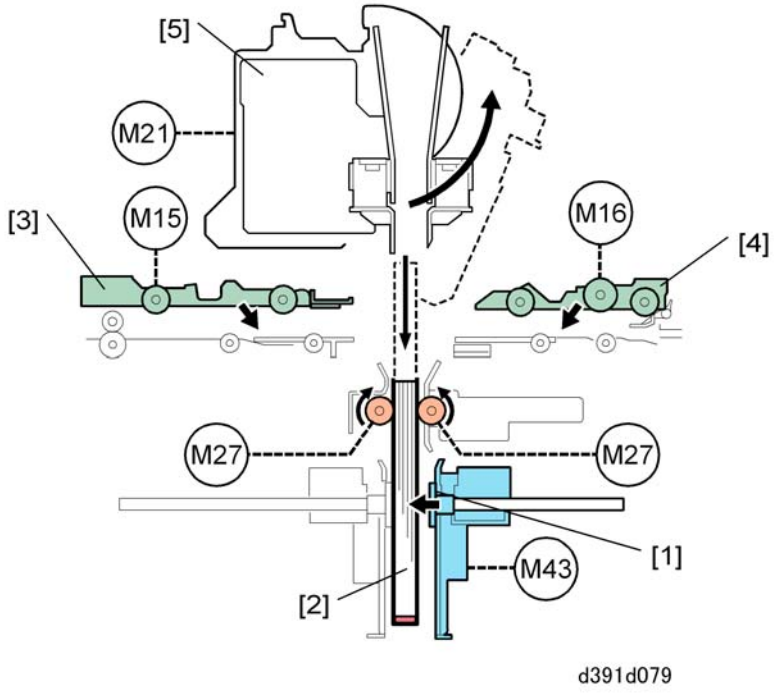
The main grip lift motor (M22) turns on and lowers the main grip unit [1] as far as the signature exit rollers [2]. Two sensor pairs in the signature transport path detect the presence of the joined cover and signature [3] as it is lowered:

- Book Exit Sensors (S64E: Emitter/S64R: Receptor). Detects the leading edge of the signature to confirm that it passes within the prescribed time.
- Leading Edge Sensors (S65E: Emitter/S65R: Receptor). Detects the leading edge of the book, stops the grip lift motor (M22), turns on the signature path exit motor (M30).

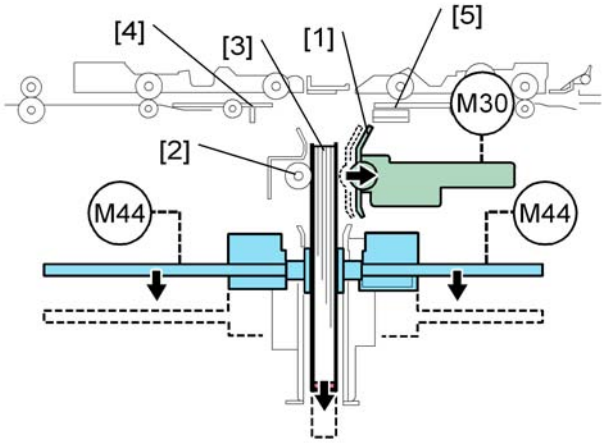


The signature path exit motor (M30) turns on, pushes the signature exit guide [1] to the left and lamps the signature and cover [2] in the nip of the signature exit rollers [3].

After the signature is firmly clamped in the nip of the signature exit rollers the grip motor: front (M24) and grip motor: rear (M23) turn on and retract the main gripper [4] away from the sides of the signature. The main grip lift motor (M22) turns on, raises the main grip unit [5] to its home position and stops.



The signature exit roller motor (M27) rotates long enough to lower the signature to reach the point where the signature can be passed to the trimming unit and stops. The book grip motor (M43) turns on, pushes the right book rotation plate [1] to the left and clamps the book [2] between the left and right rotation plates. (The left rotation plate is stationary). At the same time cover guide motors (M15: Left/M16: Right) turn on and close the left and right cover transport guides [3], [4]. Next, the grip unit rotation motor (M21) turns on and rotates the main grip [5] counter-clockwise to its home position.



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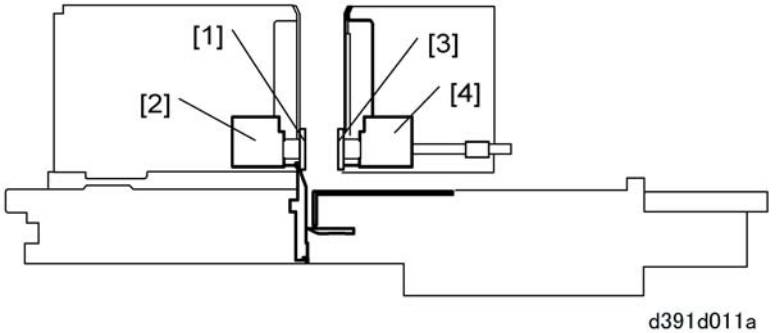
After the signature has been clamped in the trimming unit the signature path exit motor (M30) switches on and retracts the signature exit guide [1] which opens the nip of the signature exit rollers [2] and releases the signature [3].

After the signature rollers have opened, the slide motor (M44) turns on and lowers the signature (clamped between the rotation plates) into the trimming unit to align the signature for trimming. The spine plate motor (M26) turns on and moves the spine plate to its home position. At the same time the left and right spine fold motors (M28, M29) turn on and close the left and right spine fold plates [4] and [5].

Trimming Unit

The trimming unit receives the bound book and trims the three edges of the book (top, bottom, fore edge). The trimming unit trims the bottom edge first, rotates the book and trims the top edge, then rotates the book again to trim the fore edge.



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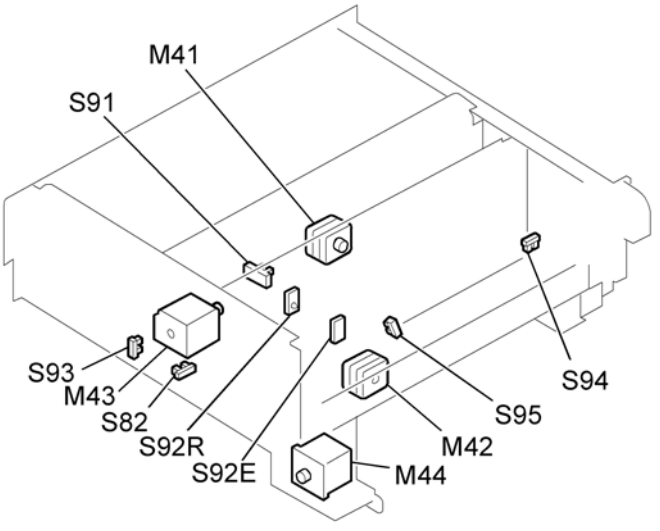
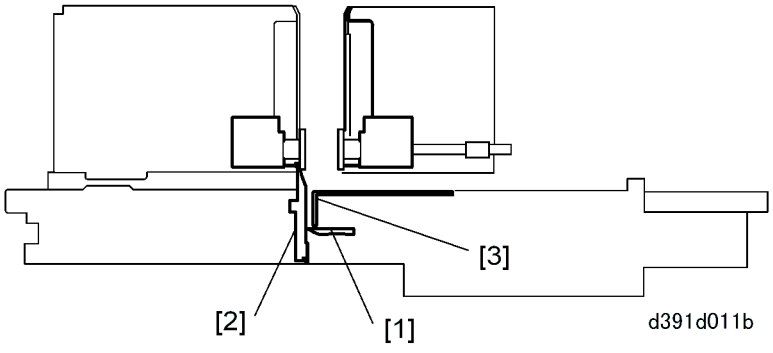
[1]	Book Rotation Plate: Left
[2]	Book Rotation Motor

[3]	Book Rotation Plate: Right
[4]	Book Rotation Motor 2

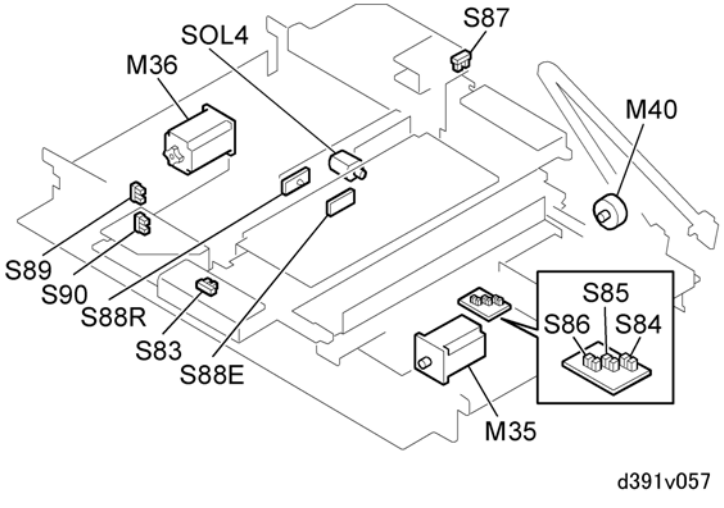


d391v055

M41	Book Rotation Motor 2
M42	Book Rotation Motor 1
M43	Book Grip Motor
M44	Slide Motor
S82	Slide HP Sensor
S95	Book Rotation HP Sensor 1
S92	Trim Unit Entrance Sensors (S92R, S92E)
S93	Grip HP Sensor
S94	Grip End Sensor
S91	Book Rotation HP Sensor 2



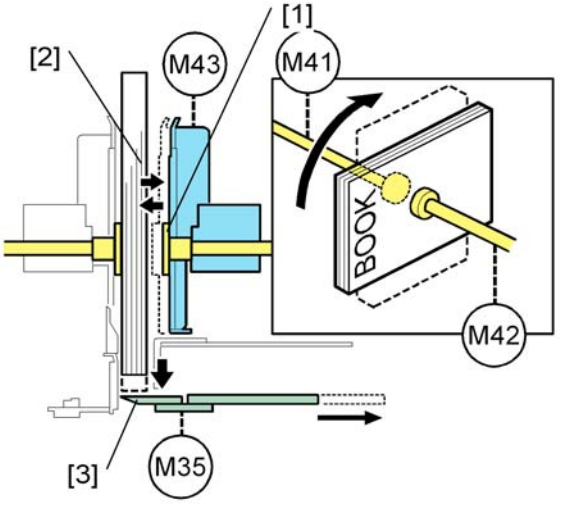
[1]	Blade
[2]	Blade Cradle
[3]	Edge Press Plate



M35	Cutter Motor
M36	Edge Press Plate Motor
M40	Blade Cradle Motor
SOL4	Trimmings Plunger Solenoid
S83	Blade Cradle HP Sensor
S84	Blade Sensor 1
S85	Blade Sensor 2

S86	Trimmer Limit Sensor
S87	Press End Sensor
S88	Book Registration Sensors (S88R/S88E)
S89	Press Limit Sensor
S90	Edge Press Plate HP Sensor

Trimming the Book



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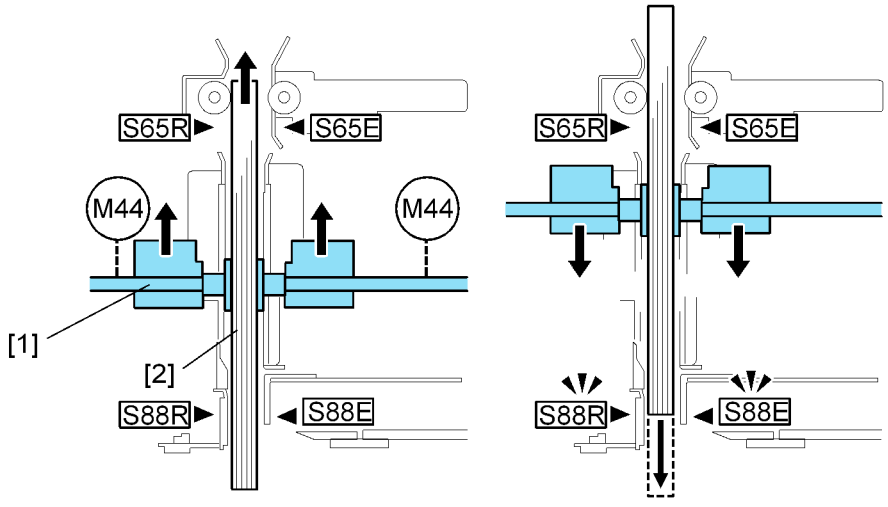
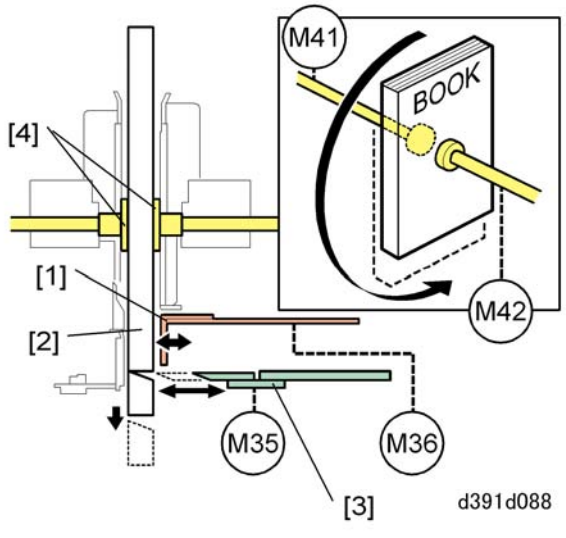
The book grip motor (M43) turns on, retracts the right rotation plate [1] and releases the book [2]. The book falls on top of the blade [3] so the spine of the book is perfectly horizontal against the top of the blade. The book grip motor (M43) turns on again and pushes the right rotation plate against the right side of the book.

With the book firmly clamped by the rotation plates, cutter motor (M35) turns on and retracts the blade. The Book Rotation Motor 1 (M42) and Book Rotation Motor 2 (M41) turn on and rotate the book clockwise 90 degrees (rear to front).



The slide motor (M44) turns on and raises the book rotation grip unit [1] and the book [2] until the leading edge sensor pair (S65R/S65E) (or book registration sensor pair (S88R/S88E)) detects the edge of the book and stops the motor.

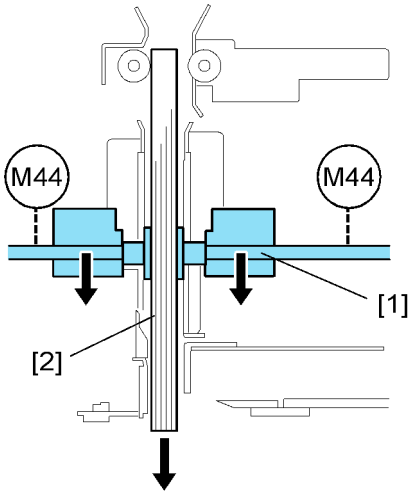
The slide motor (M44) turns on and lowers or raises the book to the proper trimming position.



The edge press plate motor (M36) turns on and pushes the edge press plate [1] against the book [2] to compress the edge of the book to be trimmed.

The cutter motor (M35) turns on and pushes the blade [3] against the edge of the book to perform the first cut on the bottom edge

The edge press plate motor (M36) turns on and retracts the edge press plate which releases the book edge. Book rotation motors 1 and 2 (M42, M41) both switch on and turn the book rotation plates [4] and the book counter-clockwise 180 degrees (front to rear).



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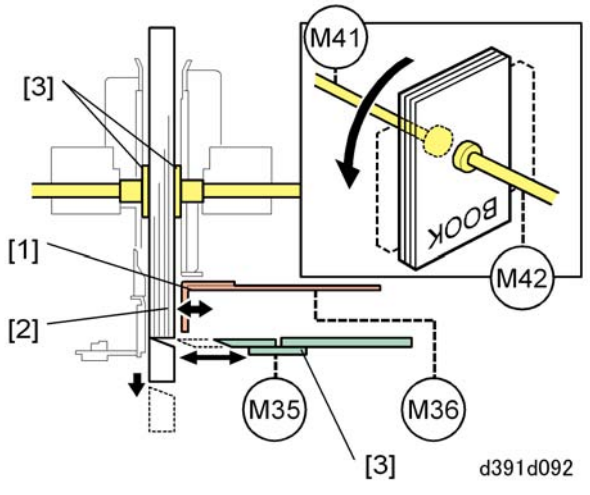
The slide motor (M44) turns on and raises or lowers the book rotation grip unit [1] and the book [2] until the bottom edge of the book is at the cutting position.



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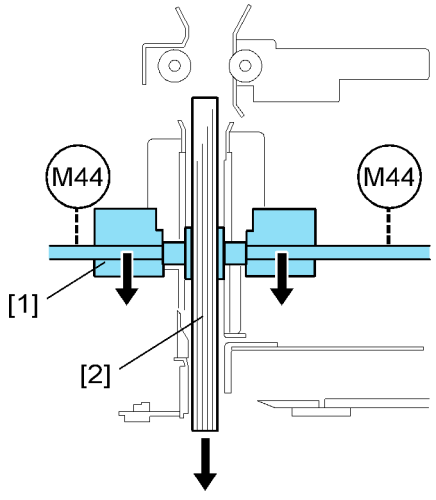
The edge press plate motor (M36) turns on and pushes the edge press plate [1] against the book [2] to compress the edge of the book.

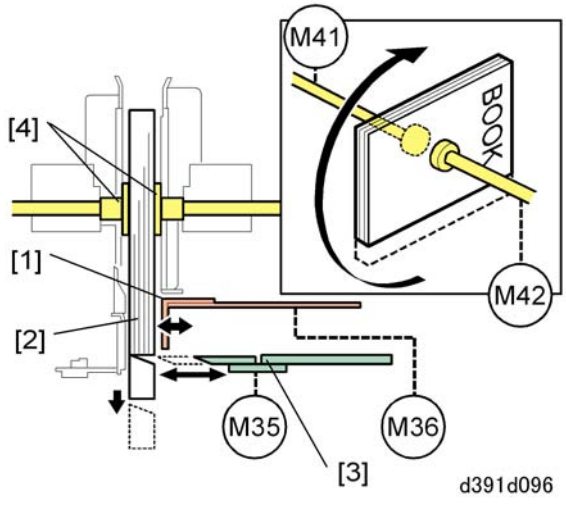
The cutter motor (M35) turns on and pushes the blade [3] against the edge of the book to perform the second cut on the bottom edge.

The edge press plate motor (M36) turns on and retracts the edge press plate which releases the book edge . Book rotation motors 1 and 2 (M42, M41) both switch on and turn the book rotation plates [4] and the book counter-clockwise 90 degrees (front to rear).



d391d095

The slide motor (M44) turns on and raises or lowers the book rotation grip unit [1] and the book [2] until the bottom edge of the book is at the cutting position.



d391d096

The edge press plate motor (M36) turns on and pushes the edge press plate [1] against the book [2] to compress the edge of the book.

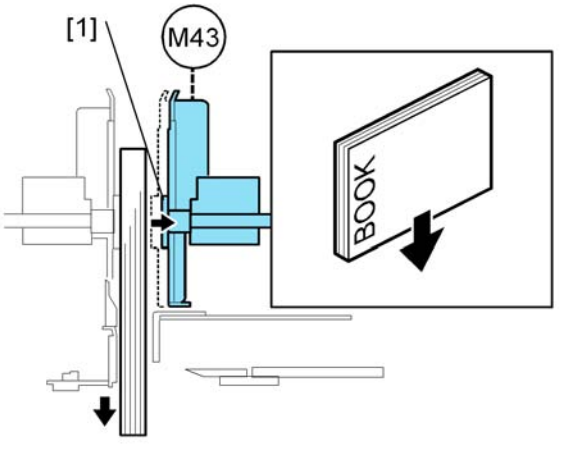
The cutter motor (M35) turns on and pushes the blade [3] against the edge of the book to perform the third cut on the fore edge.

If more than 35 mm needs to be trimmed from the fore edge, the edge is trimmed twice in order to reduce the size of the trimmings for collection and disposal.

- The first cut is done at the mid-point of the area to be removed.
- The blade and edge press plate are retracted.
- The edge press plate is pushed against the book edge then the blade does the final cut.

The cutter motor (M35) turns on and retracts the blade .

The edge press plate motor (M36) turns on and retracts the edge press plate to release the book edge. Book rotation motors 1 and 2 (M42, M41) both switch on and turn the book rotation plates [4] and the book clockwise 180 degrees (rear to front).



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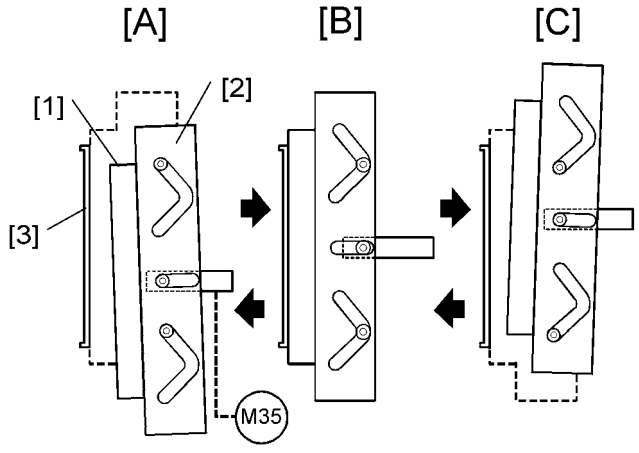
The book grip motor (M43) turns on and releases the right book rotation plate [1]. The book falls into the book stacking tray.

Blade Operation



d391d101

[A]	Retracted toward front before cutting
[B]	Cutting
[C]	Retracts to rear after cutting

The blade [1] is attached to a base plate [2] connected to the cutter motor (M35). After each cut against the blade cradle [3] the cutter motor alternately retracts the base plate and blade to the front or rear. As the blade starts the cut at a slight angle and is pulled away to either the front or rear, this creates a slight rocking motion of the blade along the line of the cut so the blade can cut more efficiently and be pulled away smoothly from the cut edges.

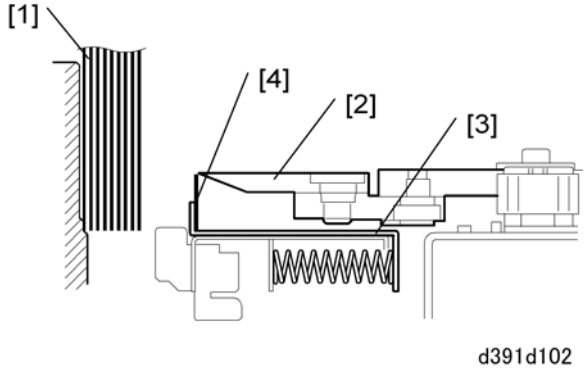
Blade sensor 1 (S84) and blade sensor 2 (S85) (both mounted on the cutter area sensor board) constantly monitor the position of the blade as it cuts. The combination of the states of these sensors (ON/OFF) tell the cutter control board where the blade is at all times during the cutting cycle.

Blade Sn 1 (S84)	Blade Sn 2 (S85)	Blade Position
OFF	OFF	Positioned for cutting stroke front to rear
		Retracting to front
OFF	ON	Retracted at front
ON	OFF	Retracting to rear
		Positioned for cutting stroke rear to front

Blade Sn 1 (S84)	Blade Sn 2 (S85)	Blade Position
ON	ON	Retracted to rear

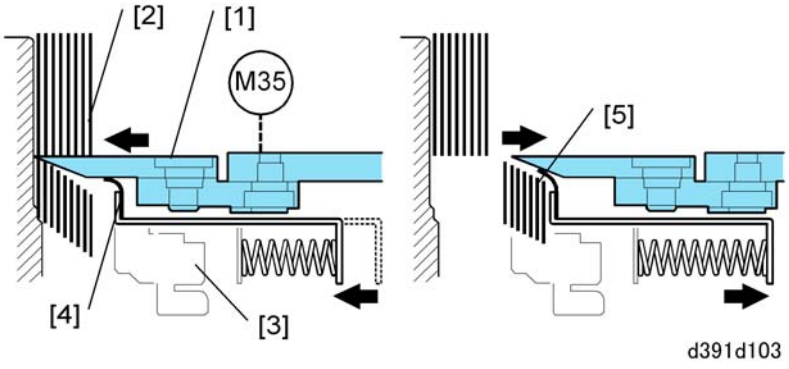
Trimmings Collection and Disposal

Normally, the trimmings should smoothly fall away from the blade after an edge is trimmed. However, trimmings can frequently stick to the blade after the first and second cuts at the top and bottom of the book. There may be an especially strong tendency for trimmings to adhere to the blade where it cuts into the glue on the end of the spine. To prevent this problem the trimming unit is provided with a trimmings catcher mechanism.



The drawing above shows the trimming catcher mechanism at the standby position.

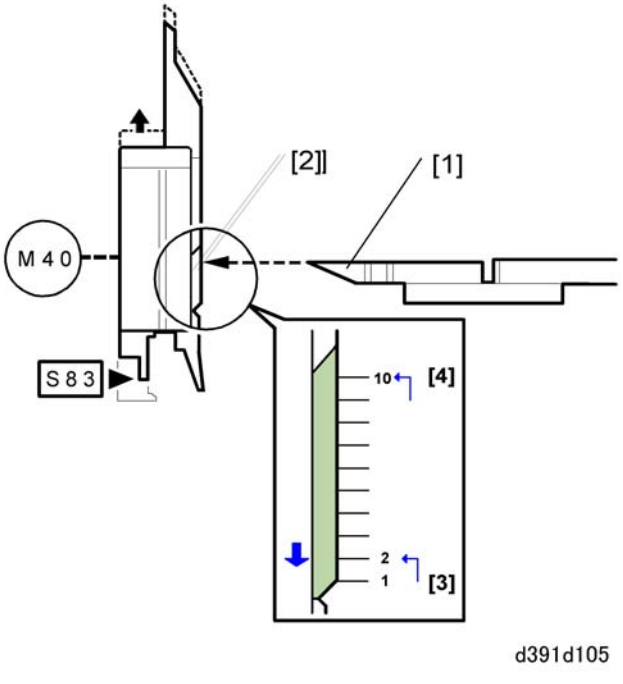
[1]	Signature
[2]	Blade
[3]	Trimmings Catcher
[4]	Trimmings Seat



The cutter motor (M35) turns on and drives the blade [1] against the edge of the book [2] to perform the cut. The trimmings catcher [3] and the trimmings seat [4] move with the blade when it performs the cut.

After the cut is done the cutter motor (M35) retracts the blade and trimmings catcher mechanism. The trimmings [5] are held in the trimmings seat as the blade is pulled away.

Blade Cradle Operation



Cutting is performed by pushing the blade [1] against the blade cradle [2] with the edge of the book between the blade and cradle.

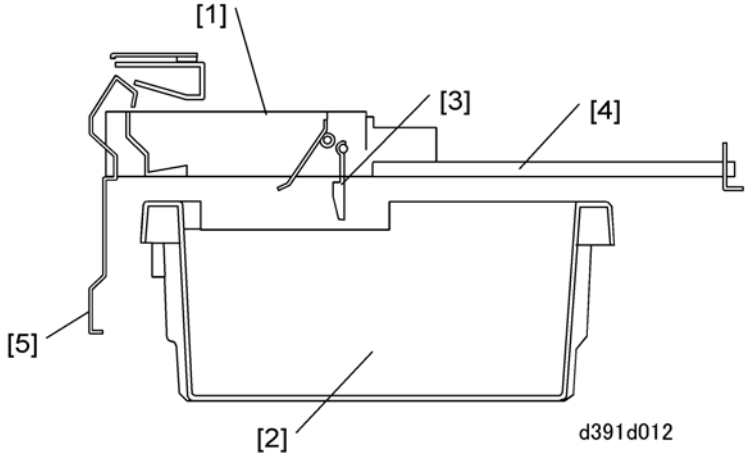
After every 550 cuts the blade cradle is lowered 1 mm to change the position where the blade repeatedly impacts the blade cradle. This reduces wear on the blade cradle and extends its service life. The blade does not move. The blade cradle motor (M40) lowers the blade cradle to change the cutting position.

- The blade starts cutting at the first position [3]
- After 550 cuts the blade cradle motor (M40) lowers the blade cradle to the next higher position.
- There are 10 cutting positions.
- After the last cut at the last position [4], the cutter control board issues a warning on the host machine that the blade cradle must be replaced.
- The service life of the blade cradle is 5,550 cuts (550 cuts at each of the 10 positions.)

Handling Trimmings

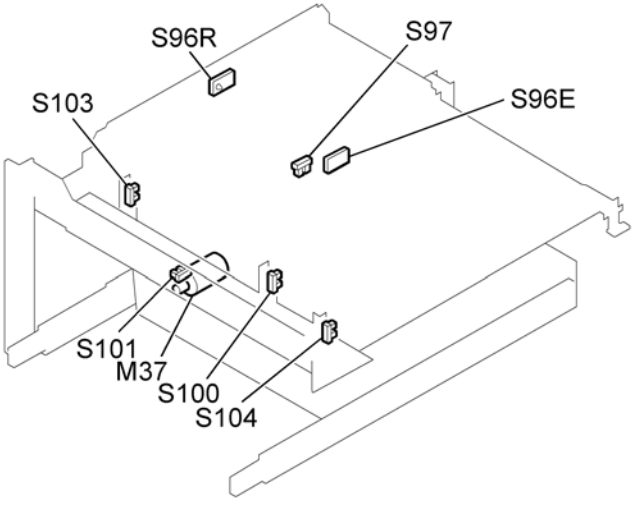
Trimmings are dumped into the trimmings box which can be easily removed by the operator and emptied. The frequency at which trimmings are sent to the trimmings box from depends on the size of the job.

- During a run of 10 to 99 books where trimming is done on three edges (top, bottom, fore edge) trimmings are sent to the trimmings box after the third cut.
- During a run of 100 to 200 books where trimming is done on three edges (top, bottom, fore edge) trimmings are sent to the trimmings box after the second cut and after the third cut.



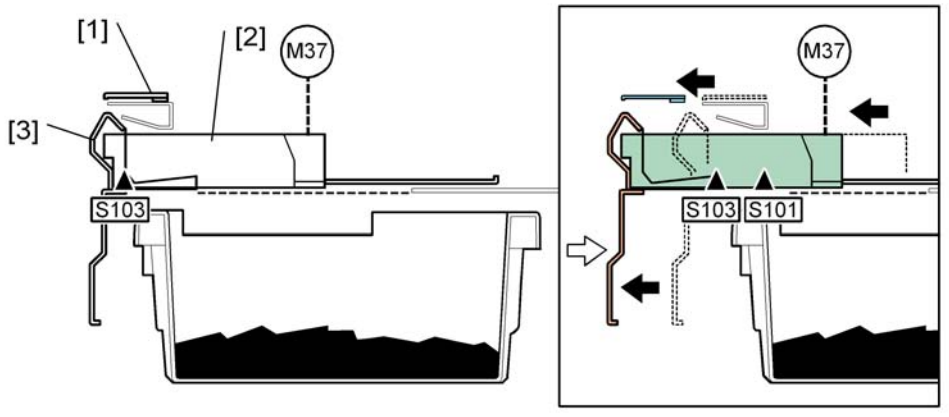
[1]	Trimmings Buffer
[2]	Trimmings Box
[3]	Trimmings Box Full Actuator
[4]	Trimmings Sub Hopper

[5]	Book Press Plate



d391v060

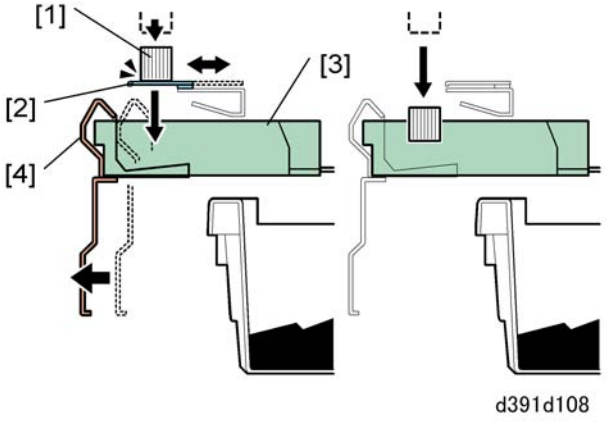
M37	Trimmings Buffer Motor
S96	Trimmings Buffer Full Sensors (S96R, S96E)
S97	Trimmings Box Full Sensor
S100	Trimmings Buffer HP Sensor: Left
S101	Trimmings Buffer Clock Sensor
S103	Trimmings Buffer HP Sensor: Right
S104	Book Press Plate Sensor



First Cut

The trimmings sub buffer [1] is linked to the trimmings buffer [2] and moves together with the down stroke of the book press plate [3].

- The trimmings buffer motor (M37) turns on at the start of the trimming operation and moves the trimmings sub buffer to the left to catch the strips trimmed form the signature by the blade.
- The trimmings buffer moves to the left until the trimmings buffer HP sensor: left (S103) goes ON then the amount of movement to the left is controlled by a flag in the trimmings buffer clock sensor (S101).



The trimmings [1] taken from the third cut (fore edge) fall onto the trimmings sub buffer [2].

- The trimmings fall onto the sub buffer after the first and second cuts (top then bottom edge).
- One end of the top and bottom edge trimmings may have a small amount of glue that could interfere with the retrieval of the longer trimmings after the third cut (fore edge) which is usually longer than the top and bottom trimmings.
- For this reason the trimmings are always dropped onto the sub buffer after the first and second cuts.

The trimmings buffer motor (M37) turns on and moves the trimmings buffer [3] slightly to the left by a prescribed distance and stops. The trimmings sub buffer disengages from the hook that links it to the book press plate [4] and returns to its home position, allowing the trimmings to fall into the trimmings buffer .

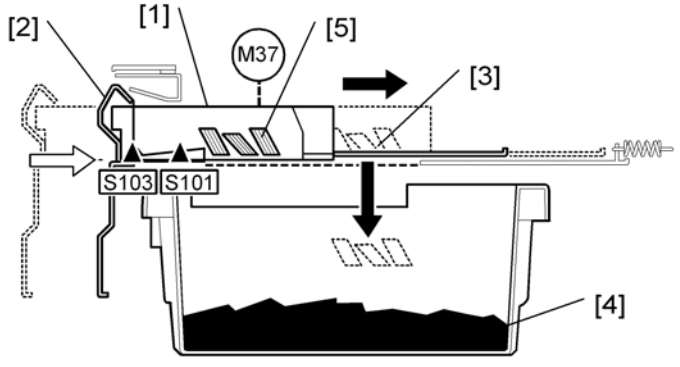
2nd Cut

This operation cycle for the 2nd cut is the same as 1st cut.

3rd Cut

The sub buffer operation (used for the 1st and 2nd cuts) is not used for the third cut on the fore edge. The trimmings are allowed to fall directly into the trimmings buffer.

After 3rd Cut

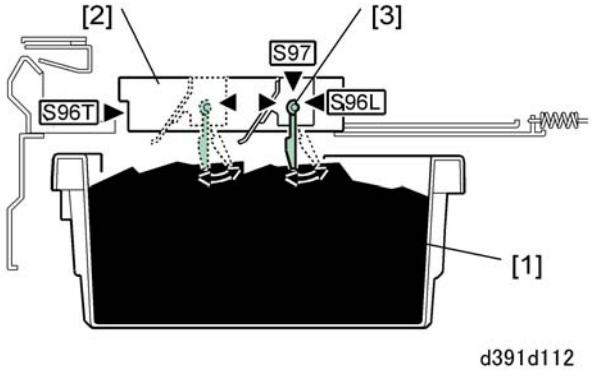


The trimmings buffer motor (M37) turns on and moves the trimmings buffer [1] to the top of the trimmings box on the right.

The trimmings buffer moves to the right until the trimmings buffer HP sensor: left (S103) goes ON then the amount of movement to the right is controlled by a rotation flag in the trimmings buffer clock sensor (S101).

First, the trimmings buffer and book press plate [2] stop at the home position with the dump port [3] of the book press plate over the trimmings box [4]. Next, the trimmings buffer moves over the dump port so the trimmings [5] can fall into the trimmings box below.

Trimmings Box Full Detection



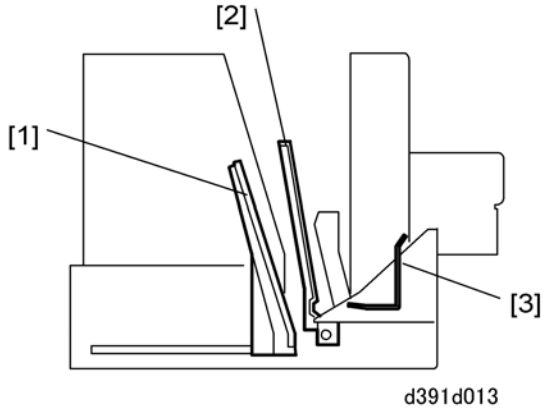
The trimmings box full sensor (S97) and its actuator, and the trimmings buffer full sensor pair (S96E, S96R), check the level of the trimmings accumulated in the trimmings box [1] and the trimmings buffer [2]. At power on and during machine operation:

- When the pile of trimmings in the box grows high enough to push the actuator [3] up and turn trimmings box full sensor (S97) ON twice, this signals that the box is almost full. The cutter control board issues a warning to the host machine that the trimmings box is almost full.
- If the sensor (S97) is turned on twice and the trimmings buffer full sensors (S96E, S96R) turn ON, this signals that the trimmings buffer and the trimmings box are full. The cutter control board issues a warning to the host machine that the trimming box is full.
- In both cases operation cannot continue until the trimmings box has removed, emptied, and reinstalled by the operator.

The capacity of the trimmings box is limited to the amount of trimmings generated by trimming the edges of about 15 books (B5 to A4 size) of 100 pages each (about 1,500 strips).

Stacking Trimmed Books

The trimmed books are sent to the book stacking unit where the books are delivered to the output tray for removal from the bookbinder by the operator.



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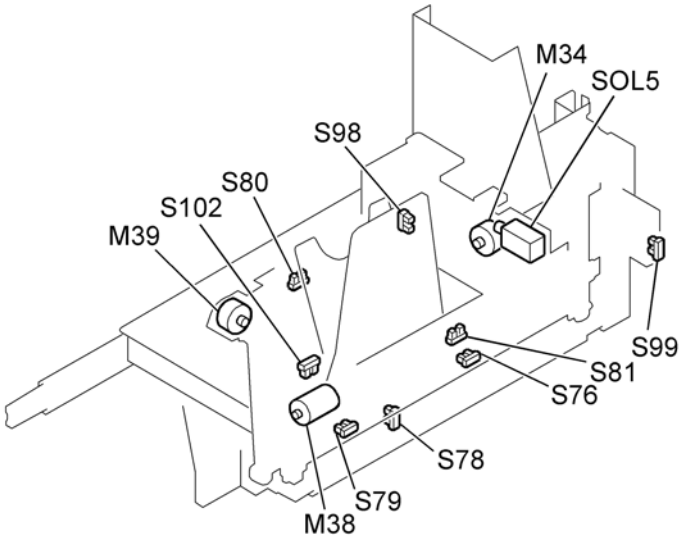
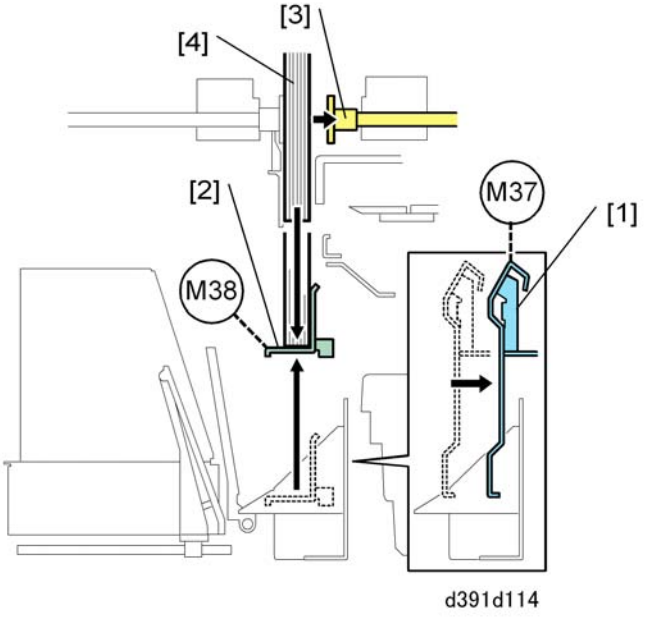
[1]	Book Lift Tray
[2]	Book Buffer Tray
[3]	Book Output Tray



d391v062

M34	Book Output Belt Motor
M38	Book Lift Tray Motor
M39	Book Buffer Tray Motor
SOL5	Book Door Lock Solenoid

S76	Book Arrival Sensor
S78	Book Buffer Tray HP Sensor
S79	Book Lift Tray HP Sensor
S80	Book Collection Tray HP Sensor
S81	Stacking Tray Book Sensor
S98	Book Door Sensor
S99	Trimmings Box Sensor
S102	Book Lift Tray Lock Sensor

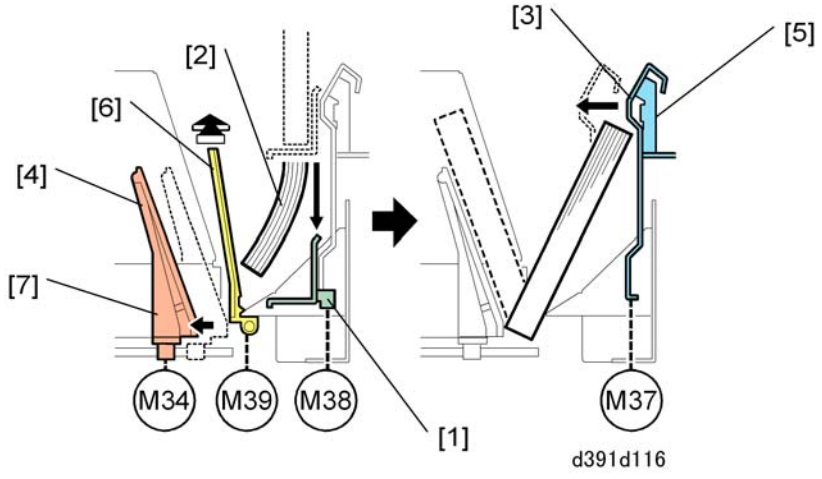


The trimmings buffer motor (M37) turns on and retracts the book press plate [1] in the transport path.

The operations described below are done while the next book is being trimmed.

The book tray lift motor (M38) turns on and raises the book lift tray. [2] The right book rotation plate [3] holding the book [4] in the trimming unit above retracts and releases the book. The book falls into the book lift tray.

The book door lock solenoid (SOL5) (not shown above) keeps the book delivery door locked while the book lift tray is operating.



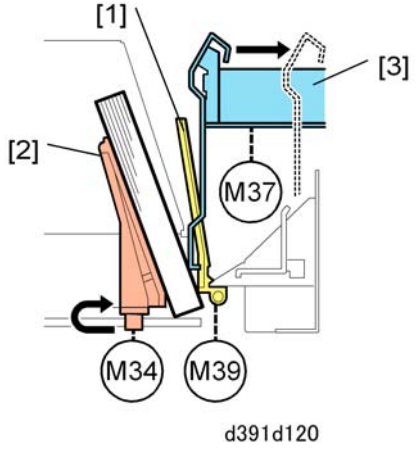
The book lift tray motor (M38) turns on and lowers the book lift tray [1] and the book [2] into the book buffer. The trailing edge of the book falls against the book press plate [3].

Book handling and trimming pause while the trimming unit above collects and disposes of trimmings.

Next, the book output belt motor (M34) turns on and moves the book output tray [4] to the left. The distance moved is equal to the width of the book plus a prescribed distance.

The trimmings buffer motor (M37) turns on and moves the trimmings buffer [5] and book press plate to the left. The book press plate pushes the book onto the book buffer tray [6].

The book buffer tray motor (M39) turns on and retracts the book buffer tray to the rear. Under its own weight the book slides onto the book output tray [7].



The book buffer tray motor (M39) turns on and returns the book buffer tray [1] to its home position at the front.

The book output belt motor (M34) turns on and moves the book output tray [2] to the left 10 mm and then to the right 10 mm so the book lines up properly on the output tray.

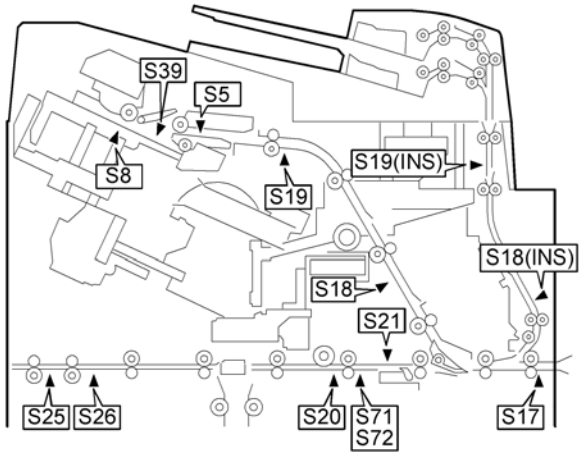
The trimmings buffer motor (M37) turns on and returns the trimmings buffer [3] to its home position.

Jam Detection

Overview

The shown and listed below are used to monitor the transport of paper and covers through the bookbinder. They confirm that the paper and covers feed smoothly and detect jams when they occur.

- Each sensor confirms that the leading and trailing edges of each sheet as it passes the sensor location.
- The sensor signals a jam if the leading or trailing edge fails to arrive at its location at the correct time.
- If a jam occurs the jam signal is sent to the CPU on the master control board, slave control board, or cutter control board.
- The board CPU shuts down the operation of the bookbinder and relays the jam signal to the host machine which issues the jam alert on the host machine LCD.
- The operator must then open the doors, remove the jam, and then close the doors so the machines can resume operation.



d391d121

S18 (INS)	Vertical Transport Sensor 1
S19 (INS)	Vertical Transport Sensor 2
S5	Timing Sensor
S8	Tray Empty Sensor
S17	Entrance Sensor
S18	Signature Path Sensor 1

S19	Signature Path Sensor 2
S20	Cover Path Sensor 1
S21	Cover Registration Sensor
S25	Horizontal Exit Sensor
S26	Cover Path Sensor 2
S39	Sub Grip Signature Sensor
S71	Cover Horizontal Sensor (Small)
S72	Cover Horizontal Sensor (Large)

Jams

Lag Jams (Paper Late Jam)

A late jam occurs when the sensor does not detect the leading edge (LE) or trailing edge (TE) within the prescribed time because the paper failed to arrive.

Note

- In the descriptions below the first line shows the jam code followed by the sensor number and sensor name.

1011: S17 Entrance Sensor

Failed to detect the LE within the prescribed time after host machine sent the paper exit signal.

1012: S18 Signature Path Sensor 1

Failed to detect the LE within the prescribed time after entrance sensor (S17) detected the paper.

1013: S19 Signature Path Sensor 2

Failed to detect the LE within the prescribed time after signature path sensor 1 (S18) detected the paper.

1014: S5 Timing Sensor

Failed to detect the LE with the prescribed time after signature path sensor 2 (S19) detected the paper.

1015: S8 Tray Empty Sensor

Failed to detect the LE within the prescribed time after timing sensor (S5) detected the paper.

1016: S39 Sub Grip Signature Sensor

Failed to detect signature LE while the signature was being sent from the sub grip unit to the main grip unit.

1017: S20 Cover Path Sensor 1

Failed to detect the LE within the prescribed time after entrance sensor (S17) detected the paper.

1018: S26 Cover Path Sensor 2

Failed to detect the LE within the prescribed time after cover path sensor 1 (S20) detected the paper.

1019: S25 Horizontal Exit Sensor

Failed to detect the LE within the prescribed time after cover path sensor 2 (S26) detected the paper.

101A: S21 Cover Registration Sensor

Failed to detect the LE within the prescribed time after entrance sensor (S17) detected the paper.

101B: S21 Cover Registration Sensor

Failed to detect the TE of the cover entering the cover registration unit within the prescribed time after switchback.

101C: S71 Cover Horizontal Sensor (Small)

Failed to detect side edge of the cover during horizontal registration of a small cover because it did not arrive within the prescribed time.

101D: S72 Cover Horizontal Sensor (Large)

Failed to detect side of the cover during horizontal registration of a small cover because it did not arrive within the prescribed time.

1068: S19 (INS) Vertical Transport Sensor 1

Failed to detect the LE within the prescribed time after the inserter transport (S14 (INS)) detected the paper.

106A: S18 (INS) Vertical Transport Sensor 2

Failed to detect the LE within the prescribed time after vertical transport sensor1 (S19 (INS)) detected the paper.

Late Jams (Paper Lag Jam)

A lag jam occurs when the sensor does not detect the trailing edge (TE) within the prescribed time because the paper has stopped.

Note

- In the descriptions below the first line shows the jam code followed by the sensor number and sensor name.

1121: S17 Entrance Sensor

Detected LE but failed to detect the TE within the prescribed time.

1122: S18 Signature Path Sensor 1

Detected LE but failed to detect TE within the prescribed time.

1123: S19 Signature Path Sensor 2

Detected LE but failed to detect TE within the prescribed time.

1124: S5 Timing Sensor

Detected LE but failed to detect TE within the prescribed time.

1125: S8 Tray Empty Sensor

Failed to detect signature TE within the prescribed time while the signature was being sent from the sub grip unit to the main grip unit.

1127: S20 Cover Path Sensor 1

Detected cover LE but failed to detect TE within the prescribed time.

1128: S26 Cover Path Sensor 2

Detected cover LE but failed to detect TE within the prescribed time.

1129: S25 Horizontal Exit Sensor

Detected cover LE but failed to detect TE within the prescribed time.

112A: S21 Cover Registration Sensor

Detected cover LE when the cover arrived in the cover registration unit but failed to detect TE within the prescribed time

112B: S21 Cover Registration Sensor

Failed to detect the TE of the cover leaving the cover registration unit within the prescribed time after switchback.

112C: S71 Cover Horizontal Sensor (Small)

Failed to detect side edge of the cover during horizontal registration of a small cover because it did not leave within the prescribed time.

112D: S72 Cover Horizontal Sensor (Large)

Failed to detect side of the cover during horizontal registration of a small cover because it did not leave within the prescribed time.

1169: S19 (INS) Vertical Transport Sensor 1

Detected the cover LE but failed to detect TE within the prescribed time.

116B: S18 (INS) Vertical Transport Sensor 2

Detected the cover LE but failed to detect TE within the prescribed time.

Other Jams

Note

- In the descriptions below the first line shows the jam code followed by the sensor number.

1200: Entrance Sensor S17

Detected LE of a sheet of paper sent from the host machine, but S17 detected the TE of the next sheet before S17 signaled the host machine that it had successfully fed the first sheet (detected the TE of the first sheet).

1300: S5, S8, S17, S18, S19, S20, S21, S25, S26

One or more of these sensors detected a sheet of paper in the paper path when the bookbinder was turned on:

- Timing Sensor (S5)
- Tray Empty Sensor (S8)
- Entrance Sensor (S17)
- Signature Path Sensor 1 (S18)
- Signature Path Sensor 2 (S19)
- Cover Path Sensor 1 (S20)
- Cover Registration Sensor (S21)
- Horizontal Exit Sensor (S25)
- Cover Path Sensor 2 (S26)

1400: S4, MSW1, MSW2

One of the following occurred:

- The top cover sensor (S4) detected top cover open during paper exit while downstream delivery was in progress.
- The right front door microswitch (MSW2) or left door microswitch (MSW1) detected that the right front door or left front door (or both) was open.

1700: S5, S8, S17, S18, S19, S20, S21, S25, S26

After opening and closing covers and doors to check for paper remaining the paper path, one or more of the following sensors detected paper still in the paper path of the bookbinder after the covers and doors were closed:

- Timing Sensor (S5)
- Tray Empty Sensor (S8)
- Entrance Sensor (S17)
- Signature Path Sensor 1 (S18)
- Signature Path Sensor 2 (S19)
- Cover Path Sensor 1 (S20)
- Cover Registration Sensor (S21)
- Horizontal Exit Sensor (S25)
- Cover Path Sensor 2 (S26)

1FA0: Stacking Tray Overflow Sensor S6

One of the following occurred:

- Detected paper overflow on the stacking tray while sheets being stacked and jogged on the stacking tray

- The bookbinder received a command to stack over 200 sheets in the stacking tray

1FA1: Job Specification Error

The bookbinder received a command to stack fewer than 9 sheets of paper in the stacking tray.

1FA2: Book Jam 1

The book jammed in the trimming unit because the width of the third cut on the fore edge was wider than 40 mm (1.6").

1FA3: Signature Jam 2

The book jammed in the trimming unit at the first or second cut because the length specified for the finished book (measured top to bottom of the book) was over 216 mm (8.5").

1FA4: ---

The signature jammed in the gluing unit because the cover was shorter than the spine where the spine and cover were joined.

1FA5: S5, S21

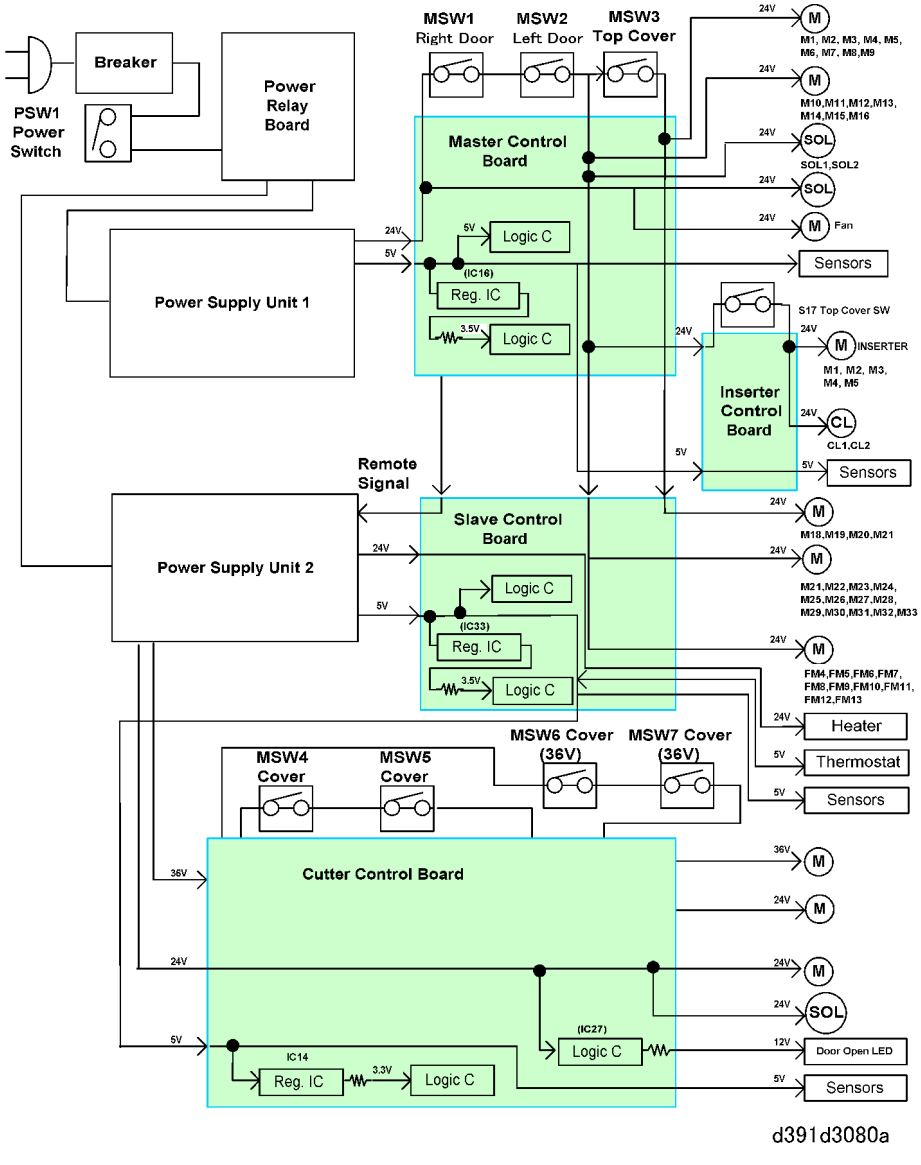
The paper stopped in the paper path because the timing sensor (S5) or cover registration sensor (S21) sensor detected that the size of the paper in the paper path did not match the paper size specified for the book binding job.

1FA6: ---

Blank paper stopped in the paper path because a blank paper discard command was received.

Power Supply

Overview



The bookbinder is driven by two DC power units, power supply units 1 and 2.

Power Supply Components

Name	Function
Power Supply Unit 1	Supplies DC power to the master control board, inserter control board: DC 5V, 24V
Power Supply Unit 2	Supplies DC power to the slave control board, cutter control board
Power Switch	Turns power supply units 1, 2 on/off
Microswitch	Turns the DC 24V, 36V circuits on/off
Breaker Switch	Trips the breaker and cuts power supply to the bookbinder if a power overload occurs

Electrical Circuit Protection Features

The DC 24V and DC 36V electrical circuits of all the motors and solenoids connected to the main control board, slave control board, and cutter control board are provided with fuses or other devices to protect these circuits from power overload.

The motor drive boards (small PCBs near the motors) are also equipped with protective devices.

The boards themselves are also protected with fuses at their 24VDC/36VDC power supply points.

If a short or other problem occurs in power supply units 1 or 2 (due to current or power overload), the affected power unit will shut down immediately in order to protect the board circuits. Fuses on boards blow and cut the AC power supply to the bookbinder as soon as such a problem occurs. When a current or voltage overload occurs, the machine must be turned off immediately and turned on again only after the problem has been corrected.

Energy Save Mode

The bookbinder features energy save modes to conserve energy when the binder remains on but idle. The bookbinder enters the energy save mode when one of the following occurs:

1. When the Energy Save button on the bookbinder (right front corner) is pressed to set the machine in energy save mode manually
2. After the machine remains idle for the specified time
3. When the host machine is turned off

When the bookbinder in the energy save mode, full operation can be restored by one of the following events:

- Pressing the energy save button
- Starting a book binding job on the host machine

- Switching on the host machine (after switching off the host machine sent the bookbinder into the energy save mode)

Here are some more details about these energy save modes.

1. Idle time to trigger energy save mode automatically

The bookbinder enters the energy save mode automatically after it has remained idle for a specified time. The gluing unit heater shuts down, glue temperature control stops, and the glue hardens quickly.

After the bookbinder has entered the energy save mode automatically, it can be restored to full operation by pressing the energy save button or by starting a book binding job on the host machine.

The length of the idle time that triggers the energy save mode must be set on the operation panel of the host machine. The default time is "0", so the bookbinder cannot enter energy save mode automatically until the idle time trigger has been entered. The idle time setting can be selected from a range of 1 to 240 minutes.

2. Host machine turned off

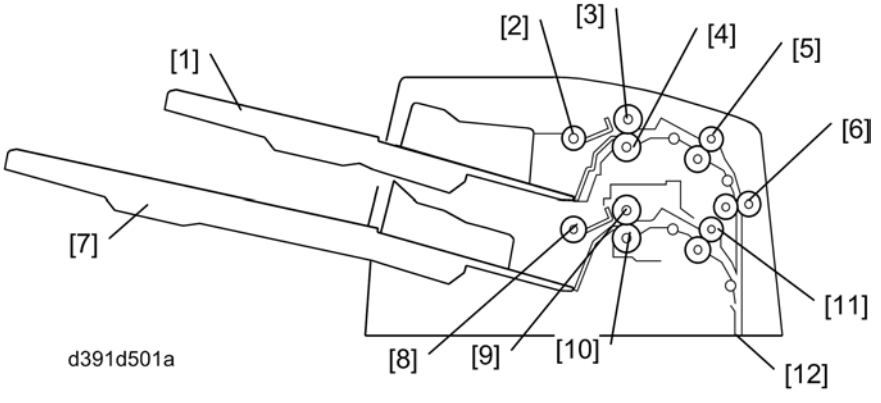
As soon as the host machine notifies the bookbinder that the host machine has been turned off, the bookbinder shuts down. If a job is in progress on the bookbinder, the bookbinder will not shut down until the operation has finished. All power to the bookbinder (with the exception of the CPU on the master control board) turns off and the bookbinder enters the energy save mode. Full power and full operation is restored to the bookbinder when the host machine is turned on again.

Inserter-C1 (D391)

Overview

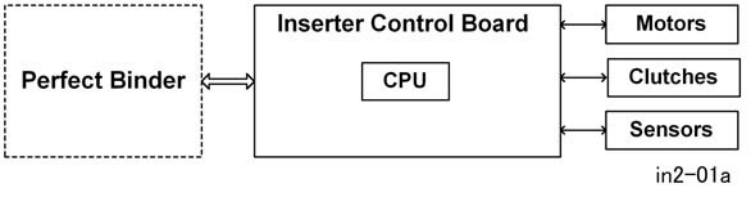
The Inserter-C1 (D391) (hereafter "inserter") is mounted on top of the bookbinder and feeds the book covers that the bookbinder binds to signatures.

Cross Section



[1]	Tray A	[7]	Tray B
[2]	Tray A Pickup Roller	[8]	Tray B Pickup Roller
[3]	Tray A Feed Roller	[9]	Tray B Feed Roller
[4]	Tray A Separation Roller	[10]	Tray B Separation Roller
[5]	Tray A Registration Roller	[11]	Tray B Registration Roller
[6]	Transport Roller 1	[12]	Vertical Transport Path

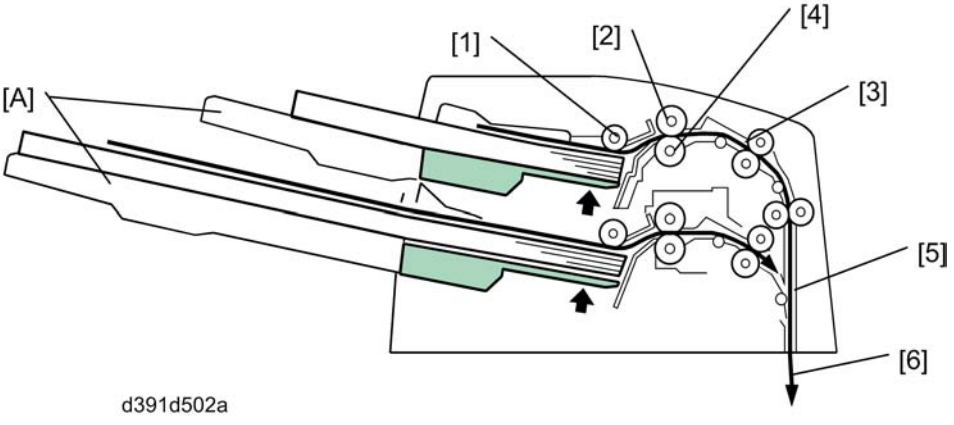
Basic Electrical Layout



The inserter control board and its CPU (IC7) control the operation of the inserter unit. The CPU reads and interprets the input signals from the bookbinder and the inserter sensors. The CPU uses this information to run the inserter motors and clutches according to pre-set timings. The inserter is supplied with DC 24V power from the bookbinder. The inserter control board communicates with the sensors through serial connectors and harnesses.

Basic Operation

The inserter supplies the covers to bind the signatures that are stacked and aligned in the book binder using printed paper sent from the host machine where the paper is stacked and jogged (aligned) before binding to the cover. The inserter control board operates the inserter in response to instructions received from the bookbinder.

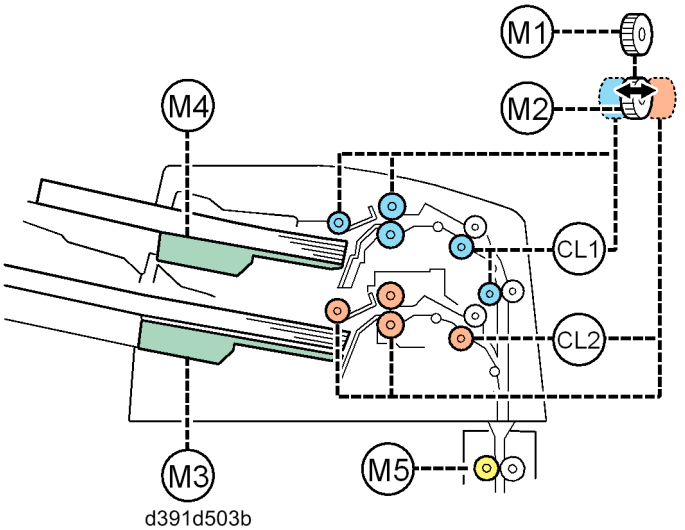


When the inserter receives the instructions for a bookbinding job, the cover feed operation starts at whichever tray [A] was requested for the job on the operation panel of the host machine. The selected tray is raised and then slightly lowered away from the pickup roller [1].

When the inserter receives the command to send the paper:

- The pickup roller [1] feeds paper from the tray.
- The feed roller [2] feeds paper to the registration roller [3] where it stops briefly against the roller to correct skew.
- If more than one sheet feeds at the feed roller, the torque limiter of the separation roller [4] will trigger and reverse feed the bottom sheet back to the tray. (This is the standard FRR mechanism.)
- The registration roller then feeds the sheet to the standby position [5] where it stops.
- When the bookbinder requests the cover for the binding operation, the vertical transport roller 1 [6] feeds the paper to the bookbinder below.

Motors and Sensors



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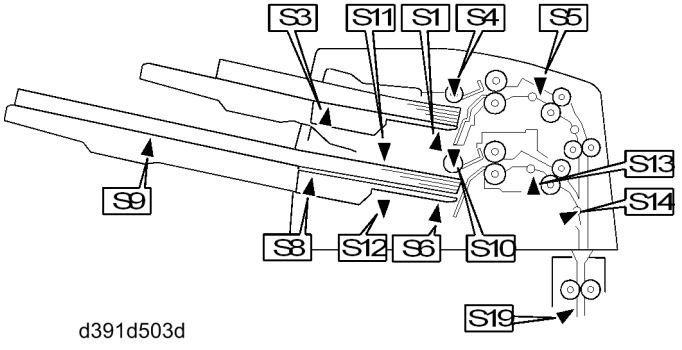


d391d503d

S1 (INS)	Paper Set Sensor: Tray A	S14 (INS)	Inserter Transport Sensor
S3 (INS)	Paper Out Sensor: Tray A	S19 (INS)	Vertical Transport Sensor 1
S4 (INS)	Paper Feed Sensor: Tray A	M1 (INS)	Tray Feed Motor
S5 (INS)	Registration Sensor: Tray A	M2 (INS)	Drive Switch Motor
S6 (INS)	Paper Set Sensor: Tray B	M3 (INS)	Lift Motor: Tray B
S8 (INS)	Paper Out Sensor 1: Tray B	M4 (INS)	Lift Motor: Tray A
S10 (INS)	Paper Feed Sensor: Tray B	M5 (INS)	Vertical Transport Motor
S11 (INS)	Lower Limit Sensor: Tray A	CL1 (INS)	Registration Clutch: Tray A

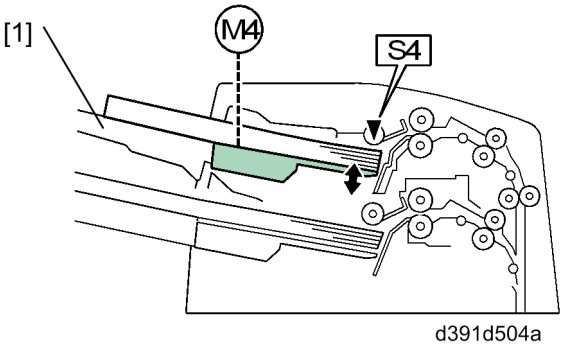
S12 (INS)	Lower Limit Sensor: Tray B	CL2 (INS)	Registration Clutch: Tray
S13 (INS)	Registration Sensor: Tray B		

Paper Feed and Transport

The section describes what happens during paper feed from Tray A (essentially the same as what happens with Tray B).

- Lift to pre-feed position
- Feed drive selection
- Paper pickup and feed
- Skew correction at the registration roller
- Transport 1: Feed to standby position
- Transport 2: Feed into vertical path
- Next cover feed

Lift to Pre-Feed Position

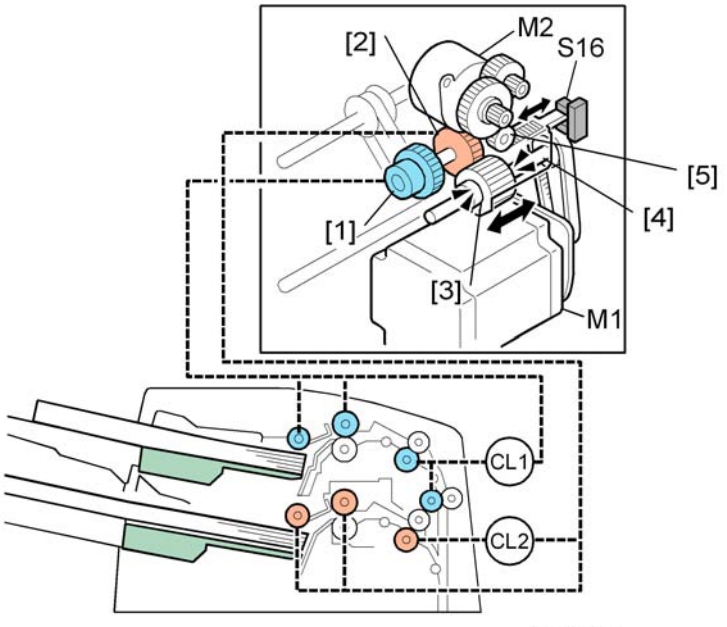


d391d504a

With paper loaded in the tray when the inserter receives a job start command from the bookbinder, the lift motor (M4 (INS)) for Tray A [1] turns on and raises the top tray until paper feed sensor (S4 (INS)) for Tray A detects the top of the paper stack and signals to stop the motor. Next, lift motor (M4 (INS)) reverses for a very brief time to lower the tray a short distance and then stops with the tray up and below the paper feed position.

This function keeps the tray at the proper feed position so the paper can be easily changed if the paper requested for the next job is different from the paper being used in the current job.

Drive Selection



d391d505

Drive gear [1] drives the rollers for Tray A, and drive gear [2] drives the rollers for Tray B. One tray feed motor (M1 (INS)) engages the drive gear of whichever tray is selected for the job.

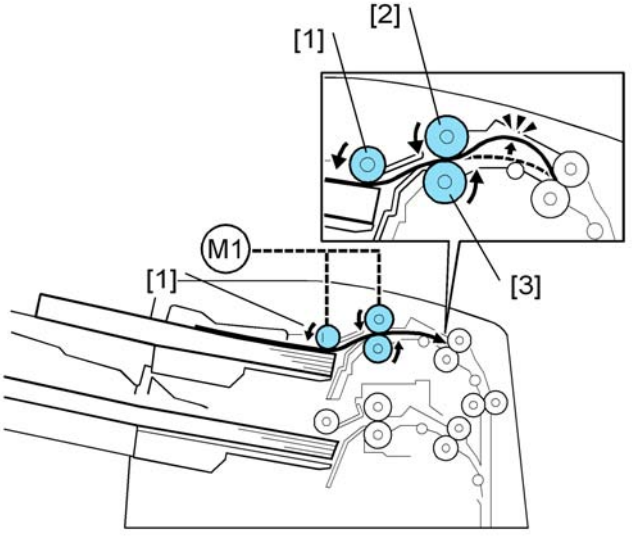
The switching gear [3] of the tray feed motor (M1 (INS)) is mounted on a rack [4] that is moved forward and back by pinion gear [5] driven by drive switch motor (M2 (INS)). The drive switch sensor (S16 (INS)) detects the position of the rack and the switching gear.

- When the rack is to the rear, the actuator on the rack enters the gap of the sensor and switches the sensor ON. The inserter knows that the switching gear is positioned to rotate the drive gear of Tray B.
- When the rack is to the front, the actuator on the rack leaves the gap of the sensor and switches the sensor OFF. The inserter knows the switching gear is positioned to rotate the drive gear of Tray A.

When the inserter receives the command to start feeding paper, it checks the status of the drive switch sensor (S16 (INS)):

- If the switching gear is positioned at the tray requested for the job, tray feed motor (M1 (INS)) turns on and rotates the drive gear of the tray to start feeding paper,
- If the switching gear is not positioned at the tray requested for the job, the drive switch motor (M2 (INS)) turns on (forward or reverse) to move the rack to the drive gear of the tray requested for the job.

Paper Pickup and Feed



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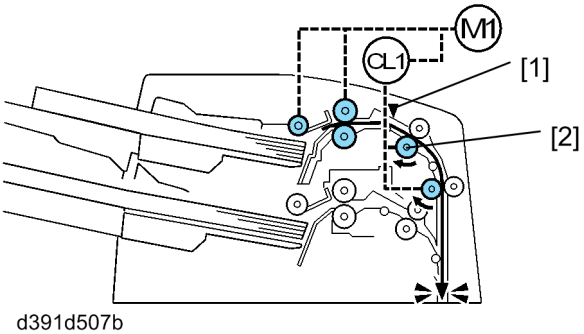
The tray lift motor (M4) turns on and lifts Tray A until the paper feed sensor (S4 (INS)) detects the top of the paper stack and stops the motor with the pickup roller [1] resting on top of the stack.

The feed mechanism is the standard FRR design. The tray feed motor (M1 (INS)) turns on and rotates both the pickup roller [1] and the feed roller [2]. The pickup roller pulls out the paper tray and the feed roller feeds it out of the tray. The separation roller [3] is equipped with a torque limiter to prevent double-feeding.

Skew Correction at the Registration Roller



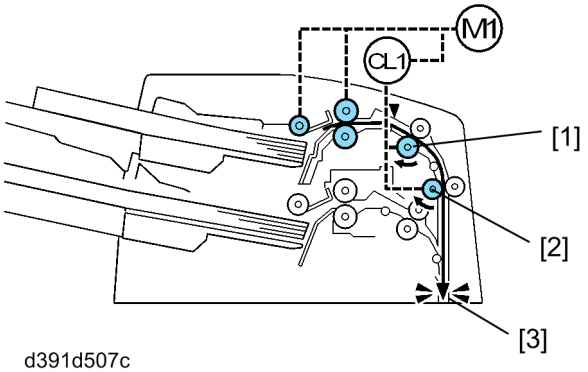
d391d507b

The registration sensor (S5 (INS)) [1] goes ON just as the paper reaches the registration roller [2] and switches the tray feed motor off. This brief pause in paper feed causes the paper to buckle slightly against the registration roller and corrects skew. .

The normal pause for skew correction may not be long enough to correct skew of thick paper or coated paper. When either type of paper is selected for the job, the registration clutch (CL1 (INS)) is switched on

to keep the registration roller disengaged slightly longer than normal to allow more time for the paper to buckle against the registration roller and correct skew.

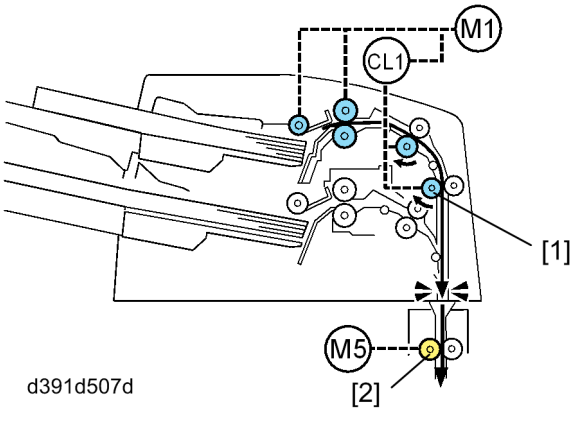
Transport 1: Feed to Standby Position



d391d507c

The tray feed motor (M1 (INS)) turns on again and starts rotating the registration roller [1] and transport roller [2] that feed the paper to the standby position [3]. The tray feed motor (M1 (INS)) stops when the paper reaches the standby position (about 105 mm in front of the bookbinder entrance).

Transport 2: Feed into vertical path



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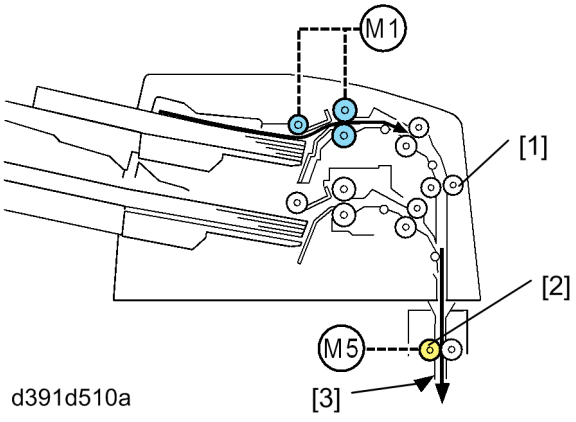
The paper remains at the standby position until the bookbinder requests the cover. Once the bookbinder issues the request for the cover, the tray feed motor (M1 (INS)) and vertical transport motor (M5 (INS)) turn on and feed the paper through transport rollers [1] and delivery rollers [2].

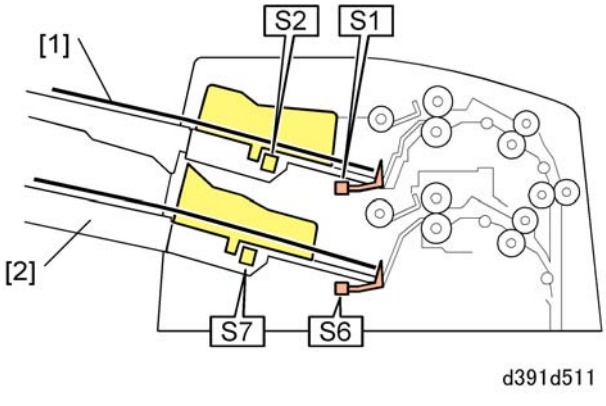
Next Cover Feed



Once the sheet in the feed path has fed 20 mm past transport rollers 1 [1], the tray feed motor (M1 (INS)) stops and then reverses to start feeding the next sheet. If another sheet is not available, the tray is lowered. When vertical transport sensor 1 (S19 (INS)) detects the passage of the trailing edge feeding into the vertical transport roller 1 [2] this signals the vertical transport motor (M5 (INS)) to turn off.

6

Paper Detection

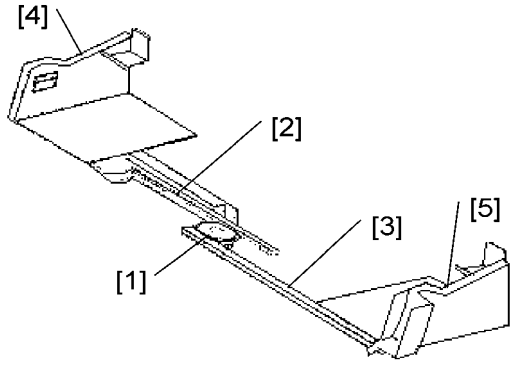


Tray A [1] and Tray B [2] are both provided with one paper set sensor (S1 (INS) for Tray A, S6 (INS) for Tray B) to detect the presence of paper on the trays.

When paper is loaded in Tray A, for example, the paper presses down a lever into a photosensor which turns it on and signals the presence of paper loaded in the tray. When this occurs S1 (INS) issues 1_EMPS and S6 (INS) issues 2_EMPS to the inserter control board. This tells the inserter control board that paper is loaded in one or both trays and lights the paper loaded display.

Paper Size Detection

The inserter can detect only the width of the paper loaded in the tray. Neither tray is long enough to measure the paper length in the direction of paper feed.

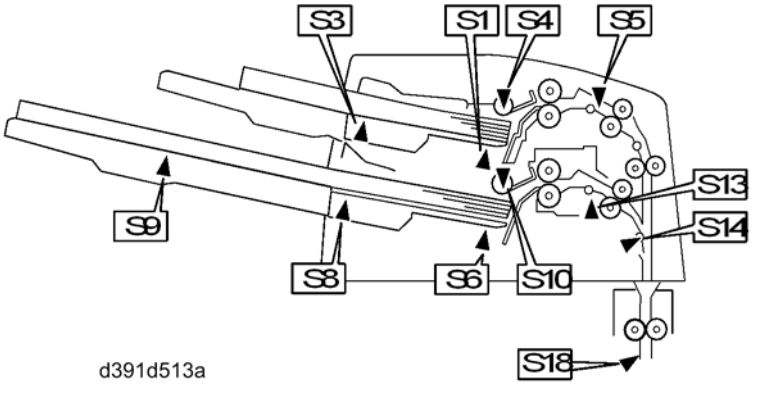


d391d512

A pinion gear [1] engaging two opposing racks [2] and [3], one attached to each side fence [4] and [5], ensures that both fences move exactly the same distance from the center of the tray when the operator sets the fences for the paper loaded in the tray.

Each tray has a paper width sensor (S2 (INS) in Tray A and S7 (INS) in Tray B). The sensor detects the position of the side fence rack in front of it. The sensor reads this analog value and sends it to the inserter control board which uses the signal to identify the paper size.

Jam Detection



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The sensors shown above and listed below are used to detect the presence of paper in the inserter paper path and signal a jam when one occurs.

S1	Paper Set Sensor: Tray A (S1 (INS))

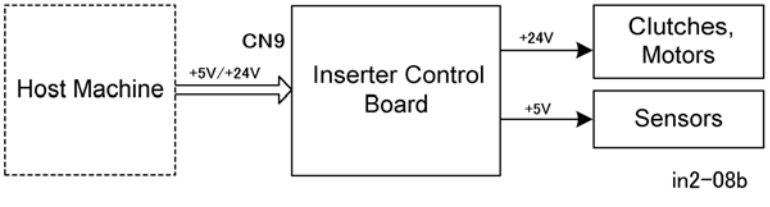
S3	Paper Out Sensor: Tray A (S3 (INS))
S4	Paper Feed Sensor: Tray A (S4 (INS))
S5	Registration Sensor: Tray A (S5 (INS))
S6	Paper Set Sensor: Tray B (S6 (INS))
S8	Paper Out Sensor: Tray B (S8 (INS))
S10	Paper Feed Sensor: Tray B (S10 (INS))
S13	Registration Sensor: Tray B (S13 (INS))
S14	Inserter Transport Sensor (S4 (INS))
S19	Vertical Transport Sensor 1 (S19 (INS))

The three sensors S18 (INS), 19 (INS), and S20 (INS) are in the bookbinder but they are controlled by the inserter control board.

Each sensor uses pulse counts to detect the leading and trailing edge of sheet of paper as it passes. If the leading or trailing edge fails to appear or leave within the prescribed time (these time intervals are checked against the prescribed time intervals stored in the CPU), this signals a paper jam.

- A jam alert shuts down operation of the inserter, the bookbinder, and the host copier.
- Once the jam is removed all covers of the inserter must be closed in order to resume operation.
- After all the covers are closed the inserter control board checks each sensor again for any remaining paper.

Power Supply

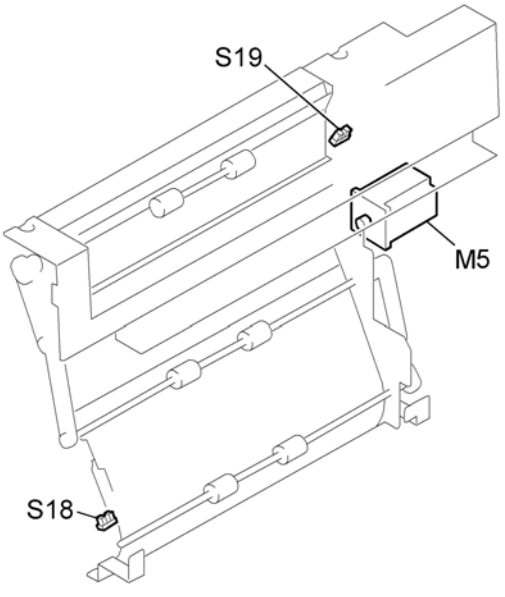


The bookbinder supplies power to the inserter (DC +5V, +24V). The DC +24V power is supplied to the clutches and motors. The DC +5V power goes to the sensors. Opening any cover of the inserter cuts the power supply, closing the cover restores the power supply.

Motor, Sensor Locations

Inserter

Inserter Vertical Path Motor and Sensors (Inserter)



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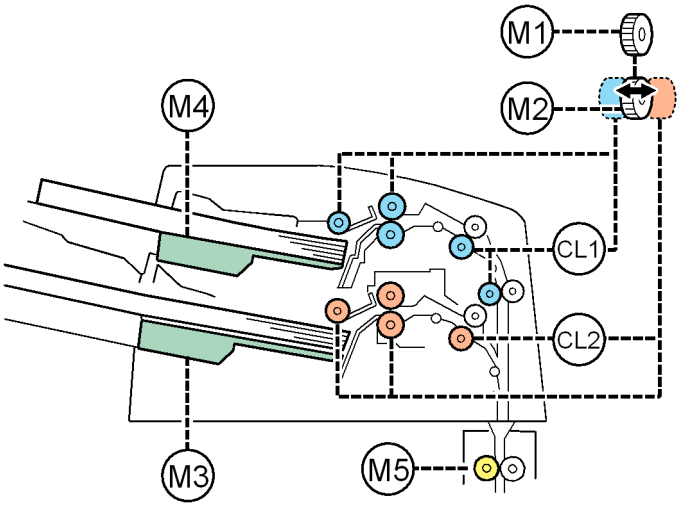
M5 (INS)	Vertical Transport Motor
	Drives all the rollers in the vertical feed path of the perfect binder.
S18 (INS)	Vertical Transport Sensor 2
	Detects the leading and trailing edge of every sheet that passes through the second transport roller (delivery roller) past the registration roller and signals a jam if either edge fails to pass within the prescribed time.
S19 (INS)	Vertical Transport Sensor 1
	The first sensor in the vertical transport path that feeds covers from the inserter to the perfect binder. Detects the leading and trailing edge of each sheet of paper in the path to the stacking tray to monitor timing and trigger jam alerts if the paper stops or fails to arrive. Located in the perfect binder, this sensor is controlled by the inserter.

Inserter Motors and Sensors



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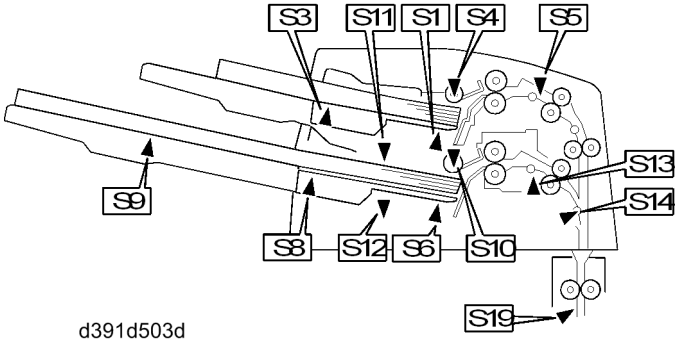

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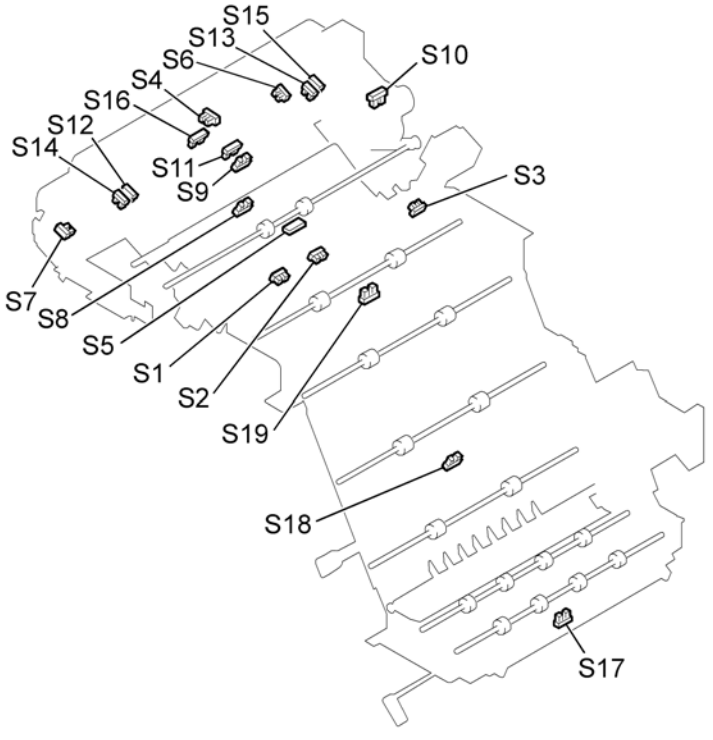
S1 (INS)	Paper Set Sensor: Tray A
	Detects paper on Tray A and signals that Tray A is ready to feed paper.
S2 (INS)	Paper Width Sensor Tray A
	Detects the position of the rear side fence. This signals the width of the paper loaded in Tray A.
S3 (INS)	Paper Out Sensor: Tray A
	Detects when the last sheet feeds from the Tray A and signals that the tray is empty.
S4 (INS)	Paper Feed Sensor: Tray A

	Detects the leading and trailing edge of every sheet that passes through the Tray A feed roller and signals a jam if either edge fails to pass within the prescribed time.
S5 (INS)	Registration Sensor: Tray A
	Detects the leading and trailing edge of every sheet that passes through the Tray A registration roller and signals a jam if either edge fails to pass within the prescribed time.
S6 (INS)	Paper Set Sensor: Tray B
	Detects paper on Tray A and signals that Tray B is ready to feed paper.
S7 (INS)	Paper Width Sensor Tray B
	Detects the position of the rear side fence. This signals the width of the paper loaded in Tray B.
S8 (INS)	Paper Out Sensor 1: Tray B
	Detects when the last sheet feeds from the Tray B and signals that the tray is empty.
S10 (INS)	Paper Feed Sensor: Tray B
	Detects the leading and trailing edge of every sheet that passes through the Tray B feed roller and signals a jam if either edge fails to pass within the prescribed time.
S11 (INS)	Lower Limit Sensor: Tray A
	Stops the tray lift motor to stop Tray A at its home position.
S12 (INS)	Lower Limit Sensor: Tray B
	Stops the tray lift motor to stop Tray B at its home position.
S13 (INS)	Registration Sensor: Tray B
	Detects the leading and trailing edge of every sheet that passes through the Tray B registration roller and signals a jam if either edge fails to pass within the prescribed time.
S14 (INS)	Inserter Transport Sensor
	Detects the leading and trailing edge of every sheet that passes through the first transport roller past the registration roller and signals a jam if either edge fails to pass within the prescribed time.
S19 (INS)	Vertical Transport Sensor 1
	Detects the leading and trailing edge of each sheet of paper in the path to the vertical transport path and triggers jam alerts if the paper stops or fails to arrive.

M1 (INS)	Tray Feed Motor
	Drives the rollers in Tray A or Tray B, whichever tray is selected for the jog. The drive gear of the motor is mounted on a rack is moved forward to engage the Tray A drive roller or moved to the rear to engage the Tray B drive roller.
M2 (INS)	Drive Switch Motor
	Rotates the pinion gear that moves the rack with the main drive gear of the tray feed motor to the rear or to the front to engage the drive roller of Tray B or Tray A.
M3 (INS)	Lift Motor: Tray A
	Lifts Tray A to the feed position and lowers the tray when the job is finished.
M4 (INS)	Lift Motor: Tray B
	Lifts Tray B to the feed position and lowers the tray when the job is finished.
M5 (INS)	Vertical Transport Motor
	Drives the delivery roller, the last roller in the paper feed path of the inserter.
CL1 (INS)	Registration Clutch: Tray A
	Energizes and disengages the registration roller in the Tray A paper path when a sheet of thick paper or coated paper reaches the registration roller. This allows a little more time for the thick or coated paper to buckle against the roller to correct skew. Operates only for thick or coated paper fed from Tray A.
CL2 (INS)	Registration Clutch: Tray
	Energizes and disengages the registration roller in the Tray B paper path when a sheet of thick paper or coated paper reaches the registration roller. This allows a little more time for the thick or coated paper to buckle against the roller to correct skew. Operates only for thick or coated paper fed from Tray B.

Bookbinder

Signature Output, Transport, Stacking Tray Sensors

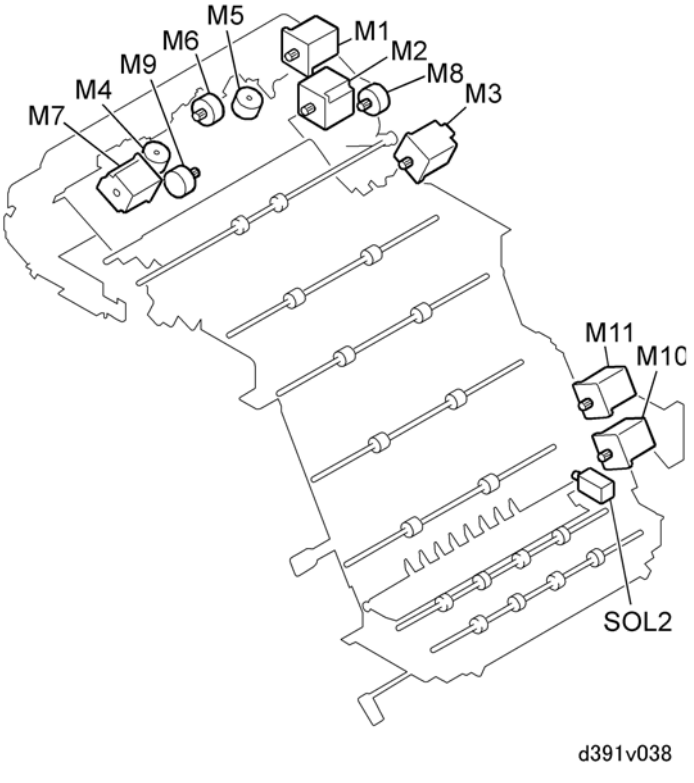


S1	Paper Detection Sensor (Front)
	Detects the sheet of paper.
S2	Paper Detection Sensor (Rear)
	Detects the sheet of paper.
S3	TE Press Lever HP Sensor
	Detects the home position of the TE press lever that compresses the trailing edge of the stack in the stacking tray.
S4	Top Cover Sensor
	Detects when the top cover of the bookbinder is opened and closed.
S5	Timing Sensor

	Detects the leading and trailing edge of each sheet of paper as it enters the stacking tray. When it detects the trailing edge, this turns on the TE press lever motor which lowers the press lever onto the trailing edge of the stack.
S6	Stacking Tray Overflow Sensor
	Detects when the number of sheets on the stacking tray has exceeded the capacity of the tray.
S7	Stacking Tray Lower Limit Sensor
	Detects when the sub grip unit is at its lowest position where it can pass the signature to the main grip unit.
S8	Tray Empty Sensor
	Detects when the stacking tray is empty.
S9	Stacking Tray HP Sensor
	Detects the home position sensor for the stacking tray guide.
S10	Switchback Flapper HP Sensor
	Detects the home position of the switchback flapper.
S11	Switchback Roller HP Sensor
	Detects the home position of the switchback roller which moves up and down as it reverse feeds each sheet in the stacking tray to align its trailing edge against the right side of the tray.
S12	Jog Fence HP Sensor (Front: Small)
	Detects the home position of the front jog fence (small size paper).
S13	Jog Fence HP Sensor (Rear: Small)
	Detects the home position of the rear jog fence (small size paper).
S14	Jog Fence HP Sensor (Front: Large)
	Detects the home position of the front jog fence (large size paper).
S15	Jog Fence HP Sensor (Rear: Large)
	Detects the home position of the rear jog fence (large size paper).
S16	Stacking Weight HP Sensor
	Detects the home position of the stacking weight.

S17	Entrance sensor
	Detects the leading and trailing edge of each sheet of paper as it enters the perfect binder from the host machine.
S18	Signature Path Sensor 1
	Detects the leading and trailing edge of each sheet of paper in the path to the stacking tray and triggers jam alerts if the paper stops or fails to arrive.
S19	Signature Path Sensor 2
	Detects the leading and trailing edge of each sheet of paper in the path to the stacking tray and trigger jam alerts if the paper stops or fails to arrive.

Signature Path Motors and Solenoid

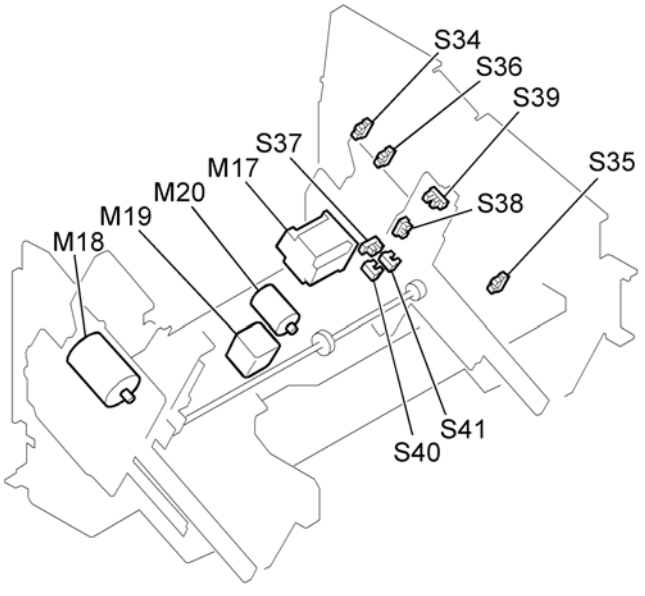


SOL2	Entrance JG Solenoid
	Operates the junction gate behind the entrance roller. When the gate is down, paper feeds up to the stacking tray. When the solenoid energizes the JG opens and allows paper to pass straight through the perfect binder.

M1	Stacking Roller Motor
	Drives the signature exit roller and stacking roller that feed each sheet out of the signature path into the stacking tray.
M2	Stacking Tray Lift Motor
	Lowers the stacking tray to where the signature is delivered to the sub grip unit. Raises the stacking roller after the signature is passed to the sub grip unit.
M3	TE Press Lever Motor
	Raises and lowers the press lever that presses down on the trailing edge of the signature in the stacking tray.
M4	Jogger Motor (Front)
	Moves the front jogging fence forward or backward once and stops at the base position for jogging the edge of each sheet against the front fence.
M5	Jogger Motor (Rear)
	Moves the rear jogging fence forward and backward to align the sides of each sheet with the edges of the signature stack.
M6	Stacking Weight Motor
	At the beginning of a job moves the stacking weight to the proper position for the paper size selected for the job.
M7	Switchback Roller Lift Motor
	Lowers the rotating switchback roller in the stacking tray onto each sheet as it enters the stacking tray. This pushes the trailing edge of each sheet against the right side of the stacking tray to align the spine for binding.
M8	Switchback Flapper Motor
	Raises and lowers the switchback flapper that presses down the trailing edge of each sheet as it enters the stacking tray.
M9	Stacking Tray Motor
	Moves the stacking tray guide to the proper position for the selected paper size.
M10	Entrance Motor
	Drives the entrance roller and transport roller 1 at the entrance of the perfect binder.

M11	Signature Transport Motor
	Drives the four transport rollers in the signature path that feeds paper from the entrance roller to the stacking tray.

Sub Grip Motors and Sensors



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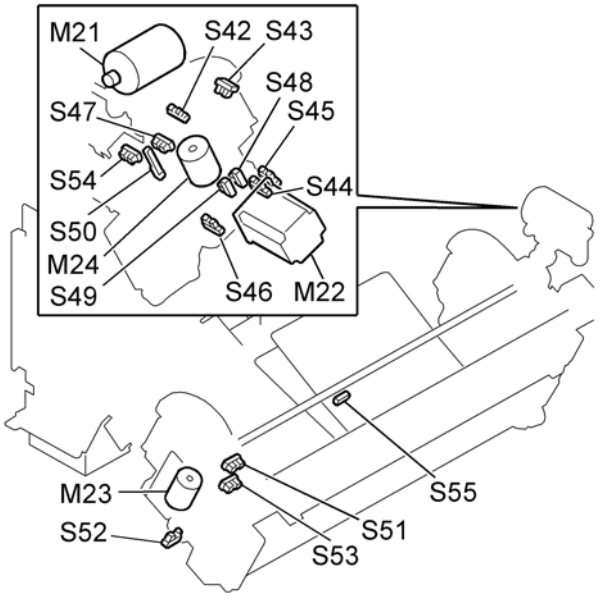
S34	Signature HP Sensor
	Detects when the main grip unit is at its lowest position (tilted ccw to the left) where it can receive the signature from the sub grip on the left.
S35	Signature Main Grip Position Sensor
	Detects when the main grip unit is at its home position.
S36	Main Grip Rotate Enable Sensor
	Detects when the main grip unit can be rotated clockwise to bring the signature to the vertical.
S37	Sub Grip HP Sensor
	Detects when the sub grip unit is at the home position (up and under the stacking tray).
S38	Sub Grip Size HP Sensor

	Detects when the sub grip unit is at the correct home position for the width of the selected paper size.
S39	Sub Grip Signature Sensor
	Detects the signature in the sub grip unit.
S40	Sub Grip Open Sensor
	Detects when the sub grip unit is open.
S41	Sub Grip Close Sensor
	Detects when the sub grip unit is closed.
M17	Sub Grip Lift Motor
	Lowers the sub grip unit to where the signature is passed to the main grip. Raises the sub grip unit to its home position below the stacking tray after the signature is passed to the main grip unit.
M18	Signature Move Motor
	Moves the sub grip unit and signature down and to the right so the signature can be passed to the main grip unit.
M19	Sub Grip Size Motor
	Rotates the gear that drives both sides of the sub gripper to the sizes of the signature in the sub grip unit to clamp the signature before the sub grip unit and signature are lowered toward the main grip unit.
M20	Sub Grip Motor
	Raises the front and rear plates of the sub gripper to clamp the signature in the sub grip unit. Opens the plates to release the signature from the sub grip unit to the main grip unit.

Main Grip Motors and Sensors



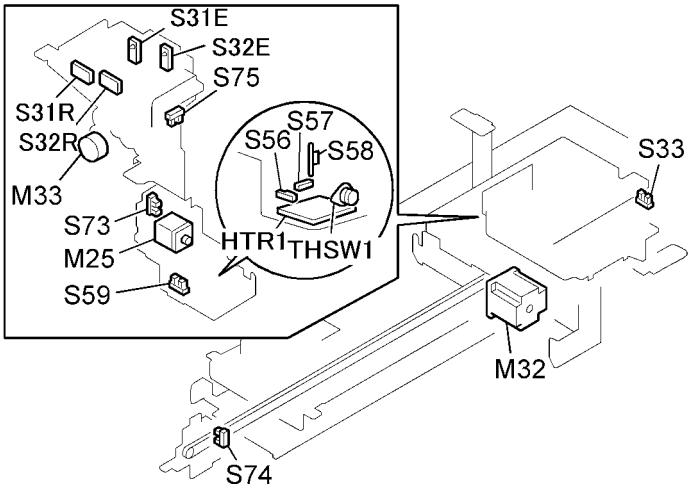
d391v043

S42	Rotate-to-Binding Position Sensor
	Detects when the main grip unit has rotated to the binding position.
S43	Main Grip Rotate HP Sensor
	Detects when the main grip unit is at the home position.
S44	Main Grip HP Sensor: Low
	Detects when the main grip unit can be rotated.
S45	Main Grip HP Sensor: High
	Detects when the signature is positioned for binding to the cover.
S46	Main Grip Encoder: Rear
	Detects the rotation position of the rear main grip motor (M24) which clamps the rear part of the signature spine in the main grip of the grip unit.
S47	Main Grip Open Sensor: Rear
	Detects when the main gripper is completely open.
S48	Main Grip Press Sensor 1

	Detects the press position of the main gripper during signature alignment.
S49	Main Grip Press Sensor 2
	Detects the press position of the main gripper when the main unit is ready to press the signature into the center of the cover.
S50	Signature Thickness Sensor
	Detects the thickness of the signature as soon as the signature has passed from the sub grip unit to the main grip unit.
S51	Main Grip Open Sensor: Front
	Detects when the main gripper is completely open.
S52	Main Grip Encoder: Front
	Detects rotation of the front main gripper motor (M23).
S53	Main Grip Close Sensor: Front
	Detects when the main grip has closed fully onto the front part of the signature spine.
S54	Main Grip Close Sensor: Rear
	Detects when the main grip has closed fully onto the rear part of the signature spine.
S55	Main Grip Signature Sensor
	Detects when the main grip has released the book into the trimming unit.
M21	Grip Unit Rotation Motor
	Rotates the main grip unit clockwise to the vertical after it receives the signature from the sub grip unit. Rotates the main grip unit counter-clockwise to its home position after the main grip releases the signature.
M22	Main Grip Lift Motor
	Raises and lowers the main grip unit with the signature when gluing the spine, joining the signature and spine, and passing the book to the trimming unit.
M23	Grip Motor: Rear
	Opens and closes the rear half of the main gripper that grips the spine of the signature in the main grip unit.
M24	Grip Motor: Front

	Opens and closes the front half of the main gripper that grips the spine of the signature in the main grip unit.

Gluing Unit Motors, Sensors, Heater, Thermostat

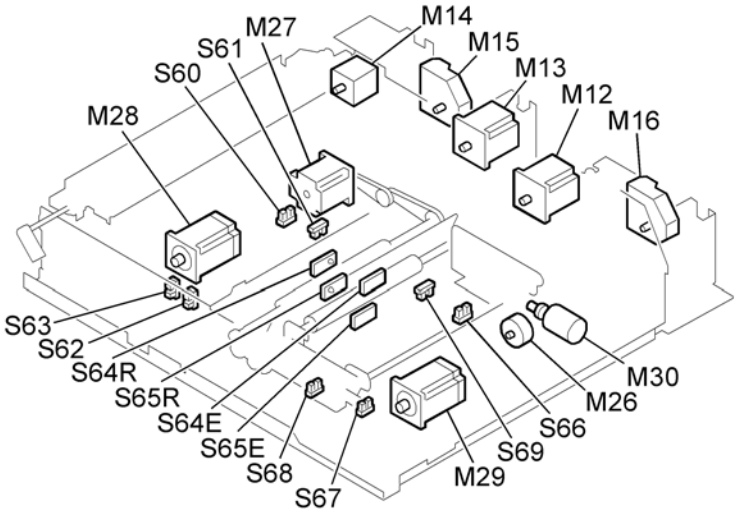


d391v044

S31E	Glue Vat Empty Sensor: Emitter
	Detects presence of glue in the vat (the emitter sensor of an Emitter/Receptor pair).
S31R	Glue Vat Empty Sensor: Receptor
	Detects presence of glue in the vat (the receptor sensor of an Emitter/Receptor pair).
S32E	Glue Vat Full Sensor: Emitter
	Detects when the glue vat is full (the emitter sensor of an Emitter/Receptor pair).
S32R	Glue Vat Full Sensor: Receptor
	Detects when the glue vat is full (the receptor sensor of an Emitter/Receptor pair).
S33	Glue Supply Cover Sensor
	Detects when the glue supply unit is opened or closed.
S56	Glue Temperature Thermistor
	Reads the temperature of the glue in the vat (this sensor is inside the glue unit).
S57	Glue Abnormal Temperature Thermistor

	Reads the temperature of the glue in the vat (this sensor is inside the glue unit). If temperature exceeds upper range, triggers an alert and cuts off power to the bookbinder.
S58	Glue Level Thermistor
	Monitors the amount of glue in the vat (this sensor is inside the glue unit).
S59	Glue Vat Roller Rotation Sensor
	Detects rotation of the glue roller to confirm that the motor and roller are operating.
S73	Glue Vat HP Sensor
	Detects when the glue vat is at the home position at the rear.
S74	Glue Vat HP Sensor: Front
	Detects when the glue vat has reached the farthest point at the front after making the first pass for gluing (rear to front).
S75	Glue Roller HP Sensor
	Detects the home position of the glue applicator roller.
M32	Glue Vat Motor
	Drives the gluing unit from front to back, and then back to front below the spine of the signature as the unit applies glue from the glue vat.
M33	Glue Supply Motor
	Drives the rotary feeder that feeds glue pellets (four at a time) from the glue bin to the gluing unit.
M25	Glue Vat Roller Motor
	Rotates the glue vat roller in the gluing unit to stir the glue after it has melted. This rotation coats the glue applicators that apply glue to the spine of the signature above.
HTR1	Glue Heater
	Mounted inside the gluing unit, melts the glue in the gluing unit before the glue is applied to the spine.
THSW1	Thermostat
	Switches off the power supply if it detects abnormally high temperature around the glue unit (this thermostat is inside the glue unit.

Cover Transport Motors and Sensors



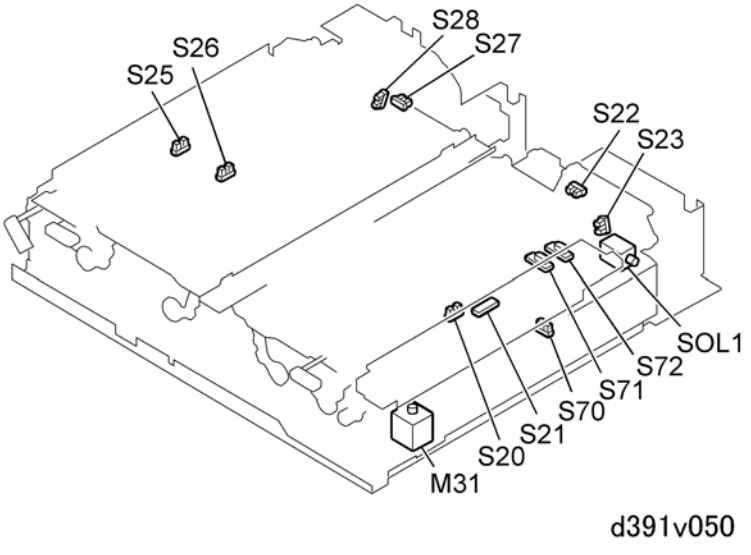
d391v049

S60	Spine Plate HP Sensor: Left
	Detects the home position of the left spine fold plate.
S61	Spine Fold Close Sensor: Left
	Detects when the left spine fold plate is at its closed position.
S62	Spine Plate Open Sensor
	Detects when the spine plate is open.
S63	Spine Plate Close Sensor
	Detects when the spine plate is closed.
S64E	Book Exit Sensor: Emitter
	Detects the leading edge of the book during binding and release of the book to the trimming unit (the emitter of an Emitter/Receptor pair).
S64R	Book Exit Sensor: Receptor
	Detects the leading edge of the book during binding and release of the book to the trimming unit (the receptor of an Emitter/Receptor pair).
S65E	Leading Edge Sensor: Emitter

	Detects the leading edge of the book during binding and release of the book to the trimming unit (the emitter of an Emitter/Receptor pair).
S65R	Leading Edge Sensor: Receptor
	Detects the leading edge of the book during binding and release of the book to the trimming unit (the receptor of an Emitter/Receptor pair).
S66	Spine Plate HP Sensor: Right
	Detects the home position of the right spine fold plate.
S67	Signature Exit Path HP Sensor
	Detects the home position of the right signature exit roller in the signature path.
S68	Signature Path Exit Press Sensor
	Detects application of pressure at the nip of the right signature exit roller in the signature exit path.
S69	Spine Fold Close Sensor: Right
	Detects when the right spine fold plate is at its closed position.
M12	Cover Motor: Right
	Drives s horizontal transport rollers transport roller 2, 3, and the buffer roller to feed a cover into the cover registration unit. Reverses to reverse rotation of the buffer roller to jog the trailing edge of the cover against the right side of the cover registration unit.
M13	Cover Motor: Left
	Drives horizontal transport rollers 4 and 5.
M14	Exit Motor
	Drives the two exit rollers in the horizontal paper path feed paper out of the perfect binder for downstream delivery.
M15	Cover Guide Motor: Left
	Opens and closes the left cover transport guide releases the cover from the nips horizontal transport rollers 4 and 5.
M16	Cover Guide Motor: Right
	Opens and closes the left cover transport guide releases the cover from the nips horizontal transport rollers 1, 2, and 3.

M26	Spine Plate Motor
	Retracts the spine plate to the right to open the well through which the main grip unit pushes the joined signature and cover so the sides of the cover can fold up around the sides of the signature.
M27	Signature Exit Roller Motor
	Drives the signature exit roller that feeds the bound signature to the trimming unit below.
M28	Spine Fold Motor: Left
	Performs two functions: 1) Raises and lowers transport rollers 4, 5 when the cover is aligned in the cover registration unit, and 2) Pushes the spine fold plate against the left side of the signature after the signature is pushed down on the cover against the spine plate.
M29	Spine Fold Motor: Right
	Performs two functions: 1) Raises and lowers transport rollers 2, 3 when the cover is aligned in the cover registration unit, and 2) Pushes the spine fold plate against the right side of the signature after the signature is pushed down on the cover against the spine plate.
M30	Signature Exit Path Motor
	Projects and retracts the signature exit guide which closes and opens the nip of the signature exit rollers above the trimming unit.

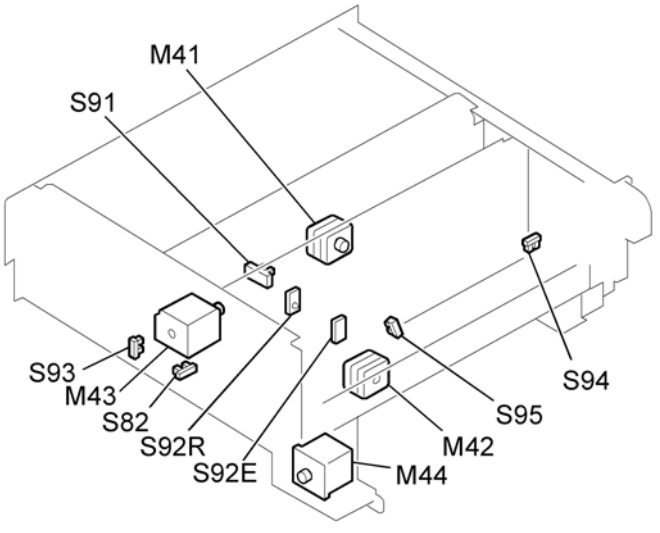
Cover Transport Unit Solenoid, Motors, Sensors



M31	Cover Horizontal Registration Motor
	Moves the cover in the cover registration unit to the front or back to position the cover for binding to the signature.
S20	Cover Path: Sensor 1
	Detects the cover in the paper path during transport and spine folding.
S21	Cover Registration Sensor
	Detects the cover only during cover gripping.
S22	Cover Guide HP Sensor: Right
	Detects home position of the path guide on the right edge of the cover in the cover transport path.
S23	Cover Guide Open Sensor: Right
	Detects when the right cover guide is opened and closed.
S25	Horizontal Path Exit Sensor
	Detects the leading and trailing edge of each sheet as it exits the bookbinder during straight-through feeding.
S26	Cover Path: Sensor 2
	Detects the cover in the paper path during exit and spine folding.
S27	Cover Guide HP Sensor: Left
	Detects home position of the path guide on the left edge of the cover in the cover transport path.
S28	Cover Guide Open Sensor: Left
	Detects when the left cover guide is open and closed.
S70	Registration Unit HP Sensor
	Detects when the cover registration unit is at the home position.
S71	Cover Horizontal Registration Sensor (S)
	Detects the rear edge of a small size cover (up to 297 mm) during cover registration in the cover registration unit.
S72	Cover Horizontal Registration Sensor (L)

	Detects the rear edge of a small size cover (larger than 297 mm) during cover registration in the cover registration unit.
SOL1	Cover Grip Solenoid
	Opens and closes to control operation of the cover gripper in the cover registration unit. The cover gripper clamps the cover so the cover registration guide can move the cover front/rear to position the cover for binding to the signature.

Signature Rotation Unit Motors and Sensors



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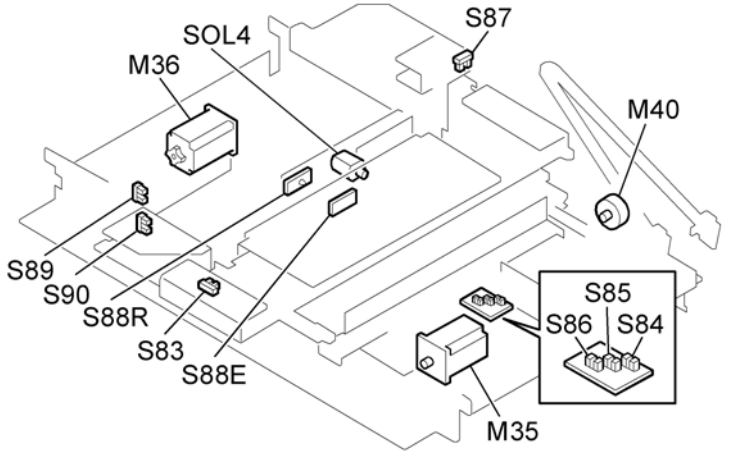
S82	Slide HP Sensor
	Detects the home position of the book rotation grip unit. The book rotation grip unit is raised and lowered by the slide motor (M44) when the book is being trimmed.
S91	Book Rotation HP Sensor 2
	Detects the stop position of the book rotation plates that rotate the book three times for trimming.
S92E	Trim Unit Entrance Sensor: Emitter
	Detects a book at the entrance of the trimmer unit. (The emitter of an Emitter/Receptor pair.)
S92R	Trim Unit Entrance Sensor: Receptor
	Detects a book at the entrance of the trimmer unit. (The receptor of an Emitter/Receptor pair.)

S93	Grip HP Sensor
	Detects the home position of the gripper in the main grip unit.
S94	Grip End Sensor
	Detects when the signature grip operation in the main grip unit has ended.
S95	Book Rotation HP Sensor 1
	Detects the position of rotate motor rotation motor 1 (M42) after it has been rotated to rotate the book for trimming
M41	Book Rotation Motor 2
	After the right book rotation plate is pushed against the right side of the book to clamp it for rotation, rotates the left book rotation plate and the book so the book can be trimmed at the bottom, top, and fore edges.
M42	Book Rotation Motor 1
	After the right book rotation plate is pushed against the right side of the book to clamp it for rotation, rotates the right book rotation plate and the book so the book can be trimmed at the bottom, top, and fore edges.
M43	Book Grip Motor
	Projects and retracts the right book rotation plate to clamp and release the book between the left and right book rotation plates.
M44	Slide Motor
	Lowers the book (clamped between the left and right rotation plates) into the trimming unit and positions each edge for trimming.

Trimming Unit Motor, Sensors, and Solenoid

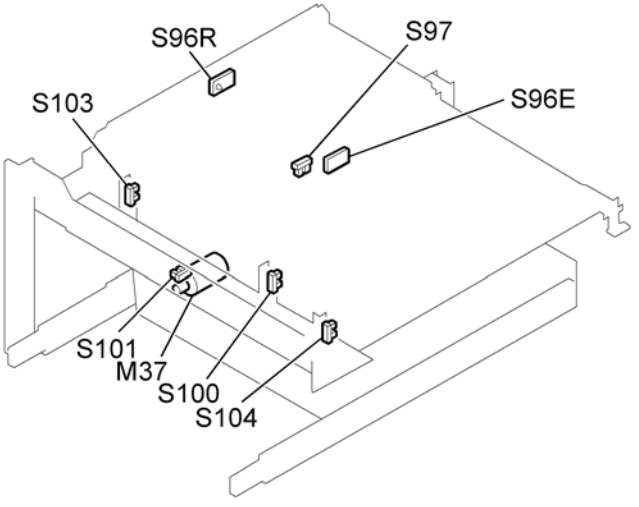


d391v057

M35	Cutter Motor
	Pushes the cutting blade against the edges of the signature to trim away the bottom, top, and fore edges, then retracts the blade away so the trimmings can be retrieved.
M36	Edge Press Plate Motor
	Pushes the edge press plate against the edge of the book to compress before the blade does the cut. Retracts the edge press plate so the book can be rotated for the next cut.
M40	Blade Cradle Motor
	Raises and lowers the blade cradle to switch the cutting position. The bottom and top cuts are done high on the cradle, and the fore edge cut is done low on the cradle.
S83	Blade Cradle HP Sensor
	Detects the home position of the blade cradle. The blade pushes against the blade cradle during cutting. The blade cradle is raised and lowered to change the cutting position.
S84	Blade Sensor 1
	Detects the left/right positions of the cutter blade and the cutter end (cutter area sensor is inside the base plate) as the blade moves slightly from one side to the other during cutting.

S85	Blade Sensor 2
	Detects the left/right positions of the cutter blade and the cutter end (cutter area sensor is inside the base plate) as the blade moves slightly from one side to the other during cutting.
S86	Trimmer Limit Sensor
	Detects any abnormal amount of movement in the trimming blade (cutter area inside base plate).
S87	Press End Sensor
	Detects completion of pressing of the edge press plate against the edge of the book. The edge press plate compresses the edge before it is cut.
S88E	Book Registration Sensor: Emitter
	Stops the slide motor that is raising the book rotation grip unit that is raising the book for cutting. (The emitter sensor of an Emitter/Receptor sensor pair).
S88R	Book Registration Sensor: Receptor
	Stops the slide motor that is raising the book rotation grip unit that is raising the book for cutting. (The receptor sensor of an Emitter/Receptor sensor pair).
S89	Press Limit Sensor
	Detects any abnormal amount of movement of the edge press plate when presses against the edge of the book before cutting.
S90	Edge Press Plate HP Sensor
	Detects the home position (right) of the edge press plate. The edge press plate pushed to the left to cut and then retracted by the edge press plate motor (M36).
SOL4	Trimmings Plunger Solenoid
	Pushes and retracts the trimmings plunger that grabs the paper strips under the blade which has cut them from the edges of the book.

Trimmings Collection Unit Motor and Sensors

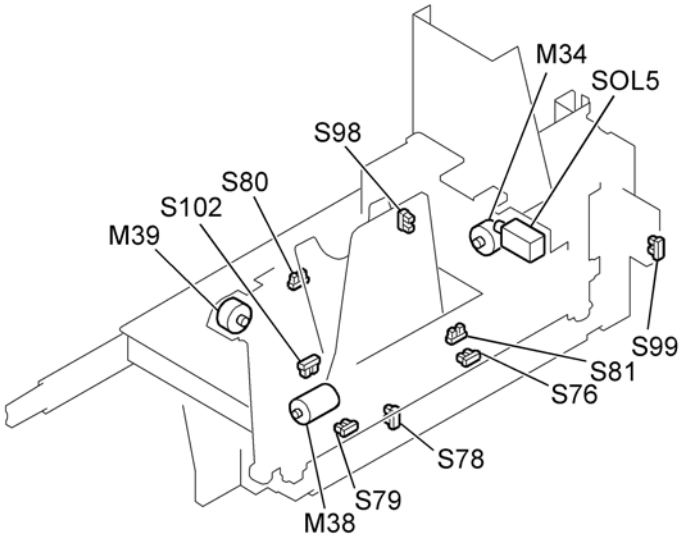


d391v060

M37	Trimmings Buffer Motor
	Moves the trimmings buffer to the left and right. (1) Moves it to the left to gather the trimmed strips from the cutter, moves it to the right to dump the strips into the trimmings box below. (2) Also moves it left to push the book press plate against the side of the book to nudge it from the lift tray onto the book buffer tray then moves it right to its home position.
S096E	Trimmings Buffer Full Sensor: Emitter
	Detects when the trimmings buffer is full of trimmed paper strips. (The emitter of an Emitter/Receptor pair.)
S096R	Trimmings Buffer Full Sensor: Receptor
	Detects when the trimmings buffer is full of trimmed paper strips. (The receptor of an Emitter/Receptor pair.)
S97	Trimmings Box Full Sensor
	Detects when the trimmings box is full of paper strips trimmed from the edges of the books.
S100	Trimmings Buffer HP Sensor: Right
	Detects the home position of the trimmings buffer on the right.
S101	Trimmings Buffer Clock Sensor

	Detects rotation of the trimmings buffer motor (M37) which moves the trimmings buffer left and right across the top of the trimmings box.
S103	Trimmings Buffer HP Sensor (Left
	Detects the home position (left) of the trimmings buffer above the trimmings box.
S104	Book Press Plate Sensor
	Detects the position of the book press plate. The book press plate presses against the side of the book when the trimmed strips are collected from under the blade.

Book Stacker Unit Motor, Sensors, and Solenoid



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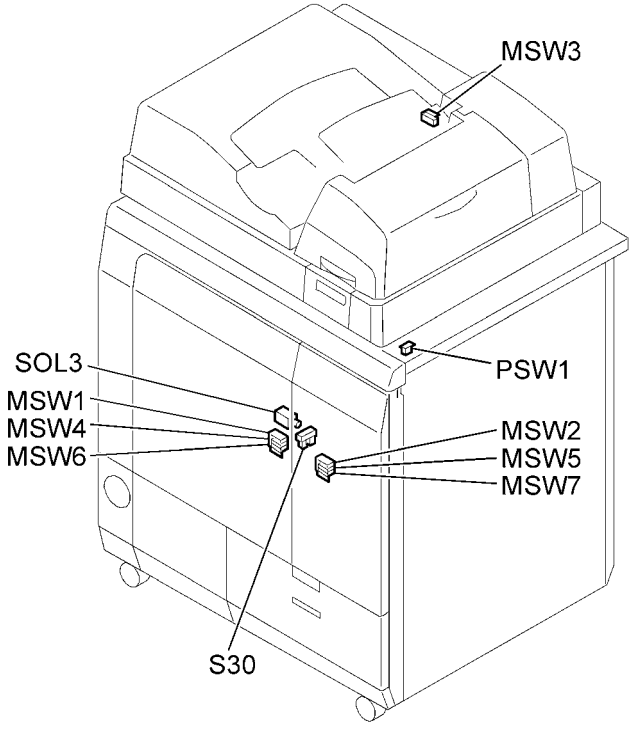
M34	Book Output Belt Motor
	Moves the book output tray to the positioned prescribed for the thickness of the book.
M38	Book Lift Tray Motor
	Raises and the book lift tray to receive the book from the trimming unit above then lowers the book into the book buffer.
M39	Book Buffer Tray Motor
	Retracts the book buffer tray to the rear so the book falls from the book buffer onto the output tray. Pushes the book buffer tray to the front to receive the next book from the book lift tray.

S76	Book Arrival Sensor
	Detects the arrival of the bound book in the book buffer below the trimming unit.
S78	Book Buffer Tray HP Sensor
	Detects the home position (forward) of the book collection buffer tray. The book buffer tray retracts to the rear to allow the book to fall onto the output tray.
S79	Book Lift Tray HP Sensor
	Detects the home position (down) of the book lift tray. The book lift tray is raised to receive the book from the trimming unit above and lower it into the book buffer.
S80	Book Tray HP Sensor
	Detects the home position of the book output tray.
S81	Book Output Tray Sensor
	Detects the presence of a book on the book output tray.
S98	Book Door Sensor
	Detects when the door of the book stacker unit is opened or closed.
S99	Trimmings Box Sensor
	Detects the presence or absence of the trimmings box. Triggers an alert if the box is not installed.
S102	Book Lift Tray Lock Sensor
	Detects rotation of the book lift tray motor (M38) which raises and lowers the book lift tray that lowers the book from the trimming unit to the book buffer.
SOL5	Book Stacker Lock Solenoid
	Operates the lock of the book door. Energizes and locks the book door while the machine is operating. This is a safety feature.

Other Switches, Sensors, and Solenoids

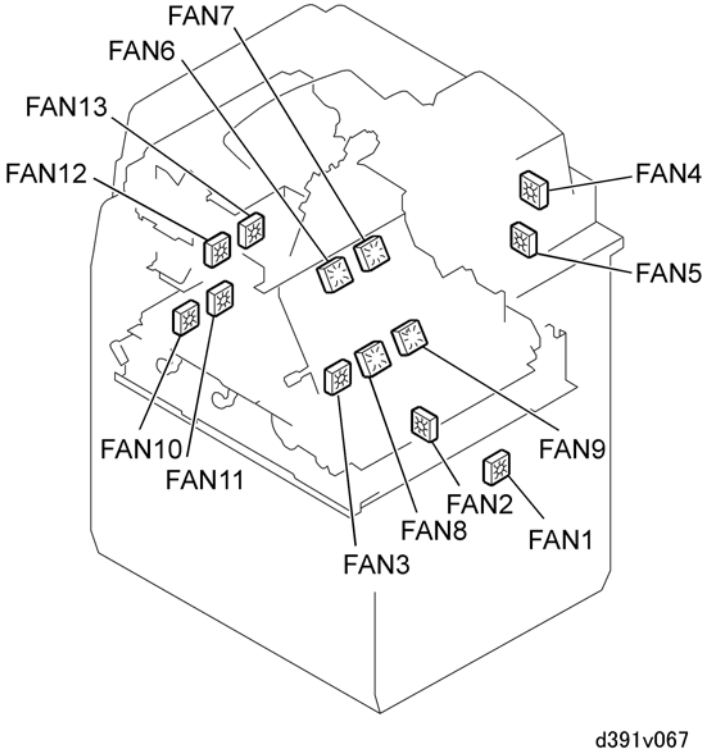


d391v065

MSW1	Left Front Door Switch: Upper
	Detects when the left front door is open and closed
MSW2	Right Front Door Switch (Upper)
	Detects when the right front door is open and closed
MSW3	Top Cover Switch
	Detects when the top cover is open and closed
MSW4	Left Front Door Switch: Center
	Detects when the left front door is open and closed
MSW5	Right Front Door Switch: Center
	Detects when the right front door is open and closed
MSW6	Left Front Door Switch (36V)

	Detects when the left front door is open and closed
MSW7	Right Front Door Switch (36V)
	Detects when the right front door is open and closed
PSW1	Glue Heater Button
	Starts heating the glue.
S30	Right Front Door Sensor
	Detects when the right front door is opened and closed.
SOL3	Right Front Door Solenoid
	Operates the lock of the right front door. Energizes and locks the right front door while the machine is operating. This is a safety feature.

Fan Motors

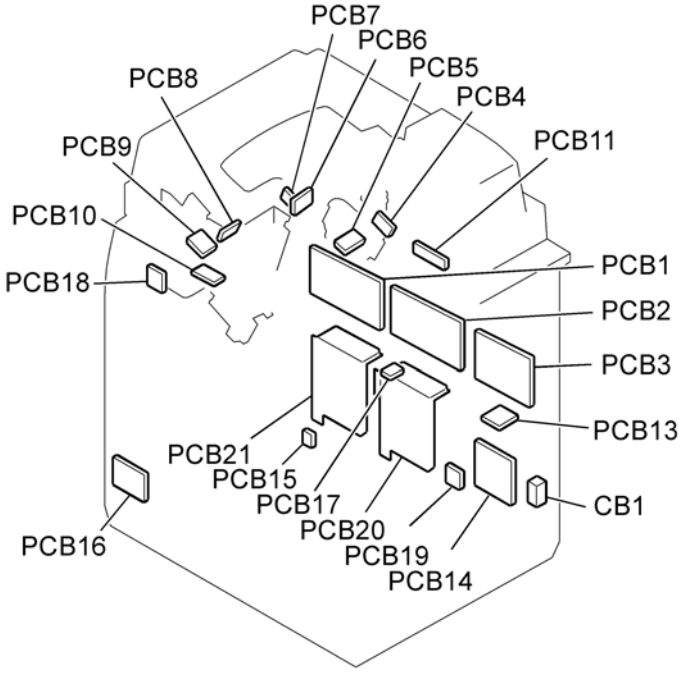


FM01	Power Supply Fan: Right

	Cools power supply unit 1.
FM02	Power Supply Fan: Center
	Cools both power supply units 1, 2.
FM03	Power Supply Fan: Left
	Cools power supply unit 2.
FM04	Glue Supply Fan :Upper
	Cools the area around the top of the gluing unit.
FM05	Glue Supply Fan :Lower
	Cools the area round the bottom of the gluing unit.
FM06	Signature Fan 2 :Front
	Mounted beside FM07 cools the area around the trailing edge of the signature clamped in the main grip.
FM07	Signature Fan 2 :Rear
	Mounted beside FM06 cools the area around the trailing edge of the signature clamped in the main grip.
FM08	Signature Fan 1 :Front
	Mounted beside FM09 cools the area around the leading edge of the signature clamped in the main grip.
FM09	Signature Fan 1 :Rear
	Mounted beside FM08 cools the area around the leading edge of the signature clamped in the main grip.
FM10	Spine Plate Fan :Lower Front
	Mounted beside FM11 cools the area around the spine plate where the signature is pressed onto the cover.
FM11	Spine Plate Fan :Lower Rear
	Mounted beside FM10 cools the area around the spine plate where the signature is pressed onto the cover.
FM12	Spine Plate Fan :Upper Front

	Mounted beside FM13 cools the area around the spine plate where the signature is pressed onto the cover.
FM13	Spine Plate Fan :Upper Rear
	Mounted beside FM12 cools the area around the spine plate where the signature is pressed onto the cover.

PCBs



CB1	Breaker Switch
	Trips a switch that cuts of the power supply to perfect binder if a power surge/drop occurs on the power supply line.
PCB1	Master Control Board
	Controls cover, paper, and signature transport, paper stacking and jogging, and interfaces with the inserter, relay unit, and slave control board. Draws power from PSU1
PCB2	Slave Control Board

	Controls sub grip, main grip, gluing unit, cover feed in the cover registration unit, and interfaces with the master, cutter, and inserter control boards. Draws power directly from PSU2.
PCB3	Cutter Control Board
	Controls signature rotation for trimming, trimming, trimmings collection, and book stacking.
PCB4	Main Grip Relay Board 1
PCB5	Main Grip Relay Board 2
PCB6	Main Grip Relay Board 3
PCB7	Sub Grip Relay Board 1
PCB8	Sub Grip Relay Board 2
PCB9	Sub Grip Relay Board 3
PCB10	Sub Grip Relay Board 4
PCB11	Glue Applicator Relay Board
	Interfaces between the gluing unit and the slave control board.
PCB12	Relay Board (Optional Control Board)
	--- Not present, not used with this machine ---
	--- Not Used ---
PCB13	Transceiver Board (Optional Control Board)
	--- Not present, not used with this machine ---
PCB14	EEPROM Board
	Interfaces between the relay unit and master control board.
PCB15	Front Cover LED
	Controls the small LED on the right front door. When this LED is OFF the doors can be opened. When ON the doors cannot be opened.
PCB16	Full LED Board
	Controls operation of the stacker door button and binding status lamp. (The lamp encircles the button.)

	Stacker Button	OFF	Standby, nothing on tray
		FLASH	Stacking, cannot press and open door
		ON	Book on tray, press button to open door and remove book.
	Binding Status Lamp	OFF	No binding in progress
		ON	Binding in progress
PCB17	Glue Heater Button/LED		
	Press this button to start heating the glue before a job starts.		
	ON	Ready	
	FLASH	Glue heating, please wait until ON	
	OFF	Not ready. Max. wait time after job start: 6 min.	
PCB18	Service Board		
	Located on the rear, upper left corner of the machine, the service board is used to set and release the modes: 1) Normal Operation, 2) Maintenance Mode, 3) Low Power Mode. Important settings can be read from the flashing sequences of the LEDs and settings can be done with the push-switches on the service board. Settings done with the service board are stored in the EEPROM.		
PCB19	Power Supply Relay Board		
	Supplies power to the relay unit.		
PCB20	Power Supply Unit 1		
	Supplies power to the master control board.		
PCB21	Power Supply Unit 2		
	Supplies power to the slave control board.		

7. Specifications

Specifications

For details about "Specifications" for this peripheral, see the main service manual.

MEMO