RICOH UNIVERSITY
Learning ◆ Knowledge ◆ Performance

M116/M117
SERVICE MANUAL

LANIER RICOH savin

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Ricoh Americas Corporation

LEGEND

PRODUCT CODE	COMPANY		
	LANIER	RICOH	SAVIN
M116	SP 3500N	Aficio SP 3500N	SP 3500N
M117	SP 3510DN	Aficio SP 3510DN	SP 3510DN

DOCUMENTATION HISTORY

REV. NO.	DATE	COMMENTS
*	05/2012	Original Printing

M116/M117

TABLE OF CONTENTS

READ THIS FIRST

Safety Notices

Important Safety Notices

Prevention of Physical Injury

1. Before disassembling or assembling parts of the machine and peripherals, make sure that the machine power cord is unplugged.
2. The wall outlet should be near the machine and easily accessible.
3. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.
4. The machine drives some of its components when it completes the warm-up period. Be careful to keep hands away from the mechanical and electrical components as the machine starts operation.
5. The inside and the metal parts of the fusing unit become extremely hot while the machine is operating. Be careful to avoid touching those components with your bare hands.

Health Safety Conditions

Toner is non-toxic, but if you get either of them in your eyes by accident, it may cause temporary eye discomfort. Try to remove with eye drops or flush with water as first aid. If unsuccessful, get medical attention.

Observance of Electrical Safety Standards

The machine and its peripherals must be serviced by a customer service representative who has completed the training course on those models.

Safety and Ecological Notes for Disposal

1. Do not incinerate toner bottles or used toner. Toner dust may ignite suddenly when exposed to an open flame.
2. Dispose of used toner, the maintenance unit which includes developer or the organic photoconductor in accordance with local regulations. (These are non-toxic supplies.)
3. Dispose of replaced parts in accordance with local regulations.

⚠WARNING

- To prevent a fire or explosion, keep the machine away from flammable liquids, gases, and aerosols. A fire or an explosion might occur.

Handling Toner

- Work carefully when removing paper jams or replacing toner bottles or cartridges to avoid spilling toner on clothing or the hands.
- If toner is inhaled, immediately gargle with large amounts of cold water and move to a well ventilated location. If there are signs of irritation or other problems, seek medical attention.
- If toner gets on the skin, wash immediately with soap and cold running water.
- If toner gets into the eyes, flush the eyes with cold running water or eye wash. If there are signs of irritation or other problems, seek medical attention.
- If toner is swallowed, drink a large amount of cold water to dilute the ingested toner. If there are signs of any problem, seek medical attention.
- If toner spills on clothing, wash the affected area immediately with soap and cold water. Never use hot water! Hot water can cause toner to set and permanently stain fabric.
- Always store toner and developer supplies such as toner and developer packages, cartridges, and bottles (including used toner and empty bottles and cartridges) out of the reach of children.
- Always store fresh toner supplies or empty bottles or cartridges in a cool, dry location that is not exposed to direct sunlight.

⚠WARNING

- Do not use the cleaner to suck spilled toner (including used toner). Sucked toner may cause firing or explosion due to electrical contact flickering inside the cleaner. However, it is possible to use the cleaner designed for dust explosion-proof purpose. If toner is spilled over the floor, sweep up spilled toner slowly and clean remainder with wet cloth.

Laser Safety

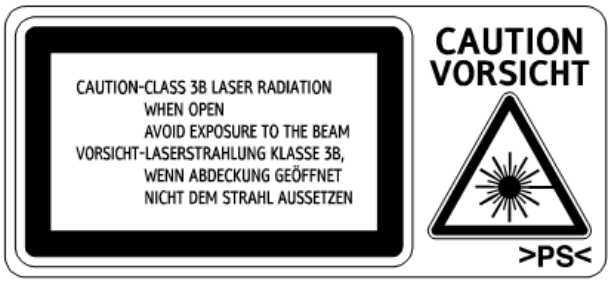
The Center for Devices and Radiological Health (CDRH) prohibits the repair of laser-based optical units in the field. The optical housing unit can only be repaired in a factory or at a location with the requisite equipment. The laser subsystem is replaceable in the field by a qualified Customer Engineer. The laser chassis is not repairable in the field. Customer engineers are therefore directed to return all chassis and laser subsystems to the factory or service depot when replacement of the optical subsystem is required.

⚠WARNING

- Use of controls, or adjustment, or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

⚠WARNING

- Turn off the main switch before attempting any of the procedures in the Laser Optics Housing Unit section. Laser beams can seriously damage your eyes.
- **CAUTION MARKING:**

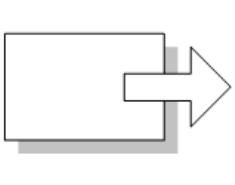


m012i500

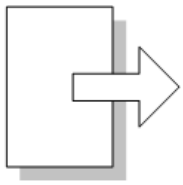
Symbols, Abbreviations and Trademarks

This manual uses several symbols and abbreviations. The meaning of those symbols and abbreviations are as follows:

	See or Refer to
	Clip ring
	Screw
	Connector
	Clamp
	E-ring
SEF	Short Edge Feed
LEF	Long Edge Feed



Short Edge Feed (SEF)



Long Edge Feed (LEF)

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PRODUCT INFORMATION

REVISION HISTORY		
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		None

1. PRODUCT INFORMATION

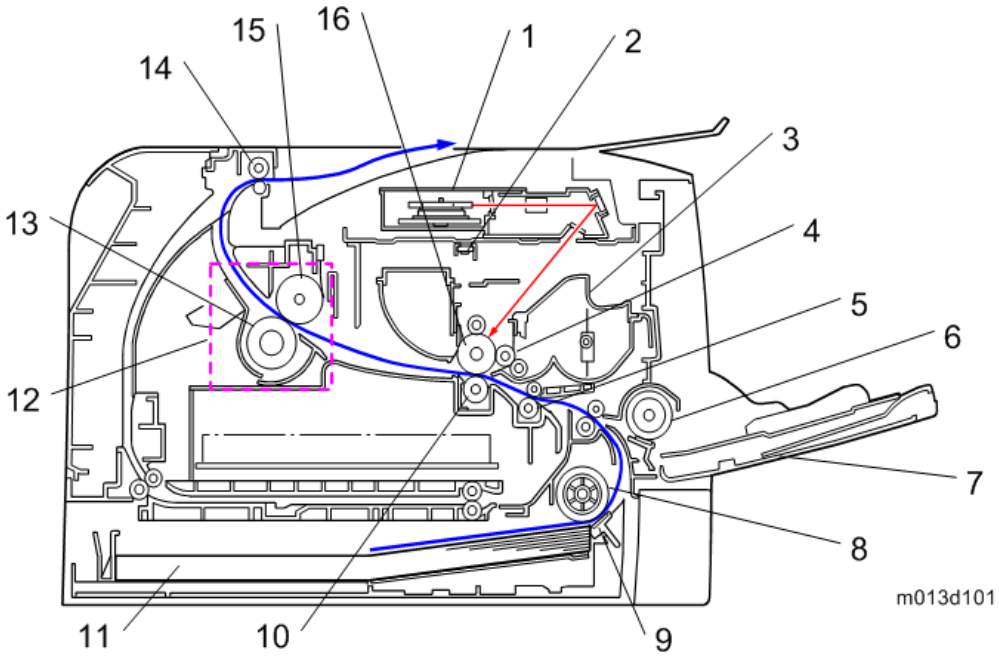
1.1 SPECIFICATIONS

See "Appendices" for the following information:

- "General Specifications"
- "Printer"
- "Supported Paper Sizes"

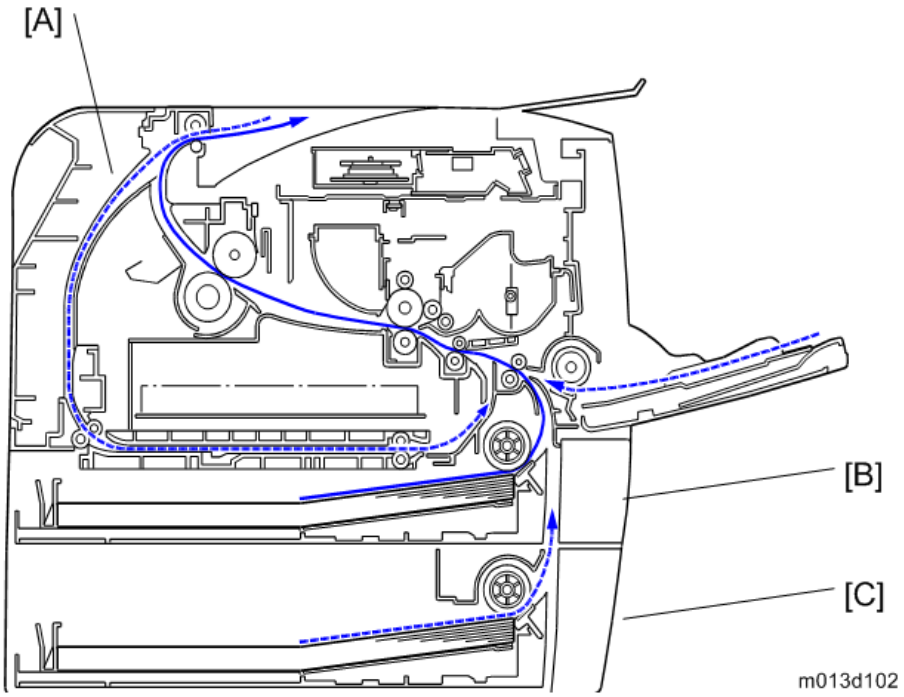
1.2 MACHINE OVERVIEW

1.2.1 COMPONENT LAYOUT



1.	Laser unit	9.	Friction pad
2.	Quenching lamp	10.	Transfer roller
3.	Cartridge (AIO-type)	11.	Paper Tray
4.	Development roller	12.	Fusing Unit
5.	Registration roller	13.	Pressure Roller
6.	By-pass feed roller	14.	Paper exit roller
7.	By-pass feed tray	15.	Hot Roller
8.	Paper feed roller	16.	Drum

1.2.2 PAPER PATH



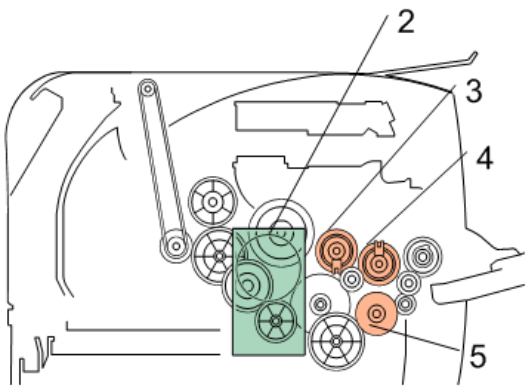
[A] Duplex section (For M117)

[B] Standard paper tray unit

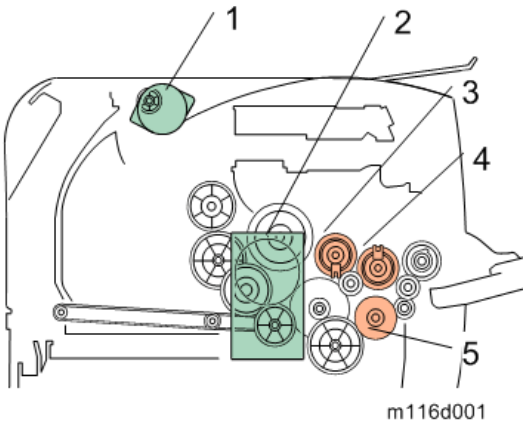
[C] Optional paper tray unit

1.2.3 DRIVE LAYOUT

- M116 -

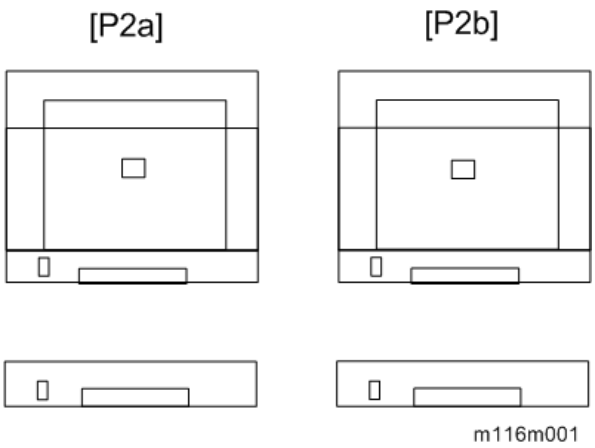


- M117 -



1. Duplex Motor 2. Main Motor 3. Registration Clutch	4. Relay Clutch 5. Paper Feed Clutch

1.3 MACHINE CONFIGURATION



Models	Duplex Unit	Optional Memory	Optional Tray (M355)	PCL PS
RN-P2a (M116)	NA	NA	250x1	Yes
RN-P2b (M117)	Auto	NA	250x1	Yes

NA: Not Available

INSTALLATION

REVISION HISTORY		
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		None

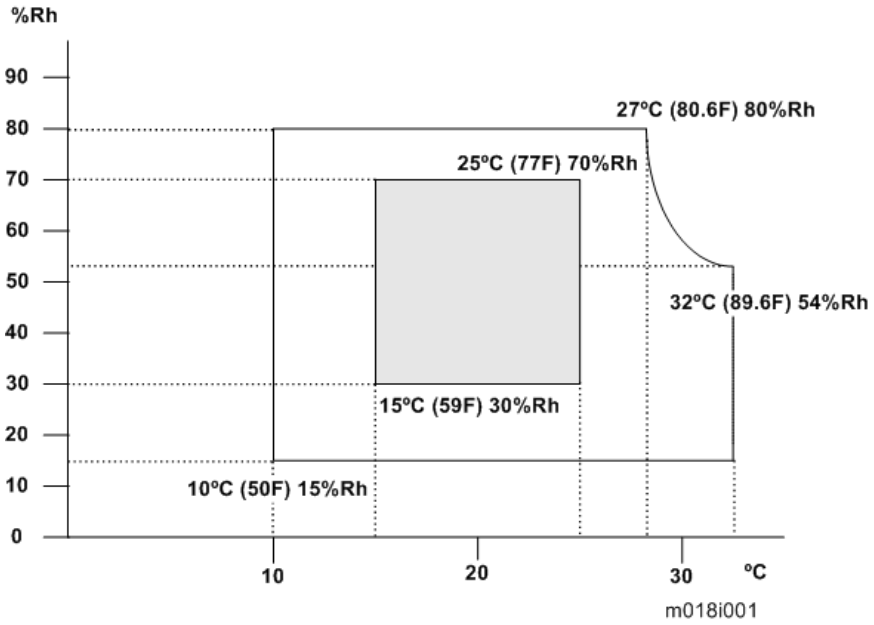
2. INSTALLATION

2.1 INSTALLATION REQUIREMENTS

2.1.1 ENVIRONMENT

⚠CAUTION

- This machine, which uses high voltage power sources, can generate ozone gas. High ozone density is harmful to human health. Therefore, the machine must be installed in a well-ventilated room.



1. Temperature Rage: 10°C to 32°C (50°F to 89.6°F)
2. Humidity Range: 15% to 80% RH
3. Ambient Illumination: Less than 2,000 lux (do not expose to direct sunlight)
4. Ventilation: 3 times/hr/person
5. Do not put the machine in areas with sudden temperature changes. This includes:
   - Areas directly exposed to cool air from air conditioning
   - Areas directly exposed to heat from a heating system.
6. Do not put the machine in areas exposed to corrosive gas.
7. Do not install the machine at locations over 2,000 m (6,562 ft.) above sea level.
8. Put the machine on a strong, level base. (Tilting towards any side must be no more than 3 mm.)
9. Do not put the machine in areas with strong vibrations.

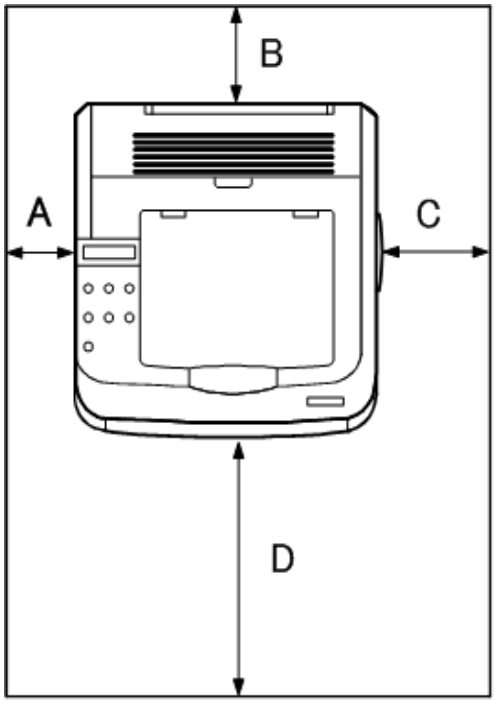
2.1.2 MACHINE LEVEL

Front to back: Within 5 mm (0.2") of level

Right to left: Within 5 mm (0.2") of level

2.1.3 MACHINE SPACE REQUIREMENT

Put the machine near a power source with these clearances:



m116i001

A: Over 10 cm (4")

B: Over 20 cm (7.9")

C: Over 20 cm (7.9")

D: Over 70 cm (27.6")

2.1.4 POWER REQUIREMENTS

⚠CAUTION

- Make sure that the plug is tightly in the outlet.
- Avoid multi-wiring.
- Make sure that you ground the machine.

Input voltage level	NA: 120 V, TW: 110 V, 60 Hz: Less than 10 A EU/ Asia/ CHN: 220 V to 240 V, 50 Hz/60 Hz: Less than 5 A
Permitted voltage fluctuation: 10%	
Do not set anything on the power cord.	

2.1.5 INSTALLATION PROCEDURE

Refer to the "Hardware Guide".

PREVENTIVE MAINTENANCE

REVISION HISTORY		
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		None

3. PREVENTIVE MAINTENANCE

3.1 PM INTERVALS

3.1.1 PM PARTS

There are no PM parts in this machine.

Note

- Other than the three Yield Parts listed below, there are essentially no PM parts required for this product.
- These three items will need to be replaced in cases where their yield is near, however, given the APV (Average Printer Volume) for this product, these "yield parts*1 " are expected to outlast the working life of the machine.

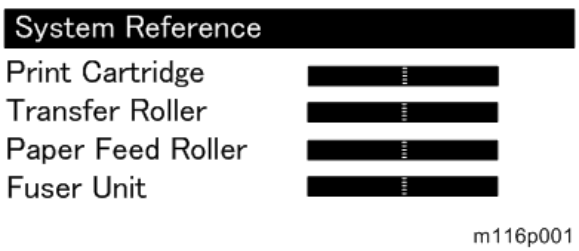
*1 **"Yield Parts":** Parts whose expected yield is longer than the machine lifetime when taking into consideration the machine's APV.

Description	Expected Yield	Q'ty/unit
Paper Feed Roller	120 K prints	1
Transfer Roller	120 K prints	1
Fusing Unit	120 K prints	1

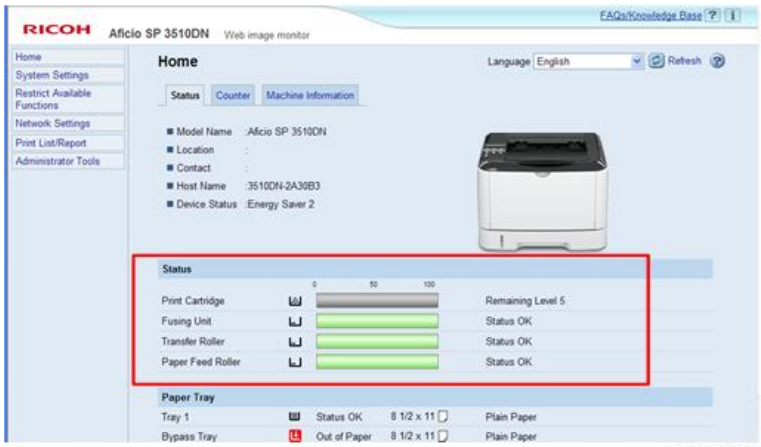
3.1.2 YIELD COUNTER

Yield counters for each yield part can be checked by the following methods.

Configuration Page in the “List/Test Print” menu



Web Image Monitor



m116p002

Note

- The machine displays "Fuser life end notice", "Transfer roller life end notice" or "Life End of Paper Feed Roller Unit" when one of these counters reaches each yield.

Counter Reset

The process below shows how to reset the yield counters.

1. Enter the "Service Mode".
2. Select "Eng Maintenance", and then press "OK" key.
3. Select "Reset FuserUnit", "Reset Trans Rol" or "Reset Feed " and then press "OK" key.
4. Select “Execute” and the press “OK” key.
5. Exit the Service Mode".

REPLACEMENT AND ADJUSTMENT

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

4. REPLACEMENT AND ADJUSTMENT

4.1 BEFORE YOU START

⚠CAUTION

- If there are printer jobs in the machine, print out all jobs in the printer buffer.
- Turn off the main power switch and unplug the machine before you do the procedures in this section.

4.2 SPECIAL TOOLS

- PC: Windows XP/Vista/7, Windows Server 2003/2003 R2, 2008/2008 R2
- USB or network cable

Note

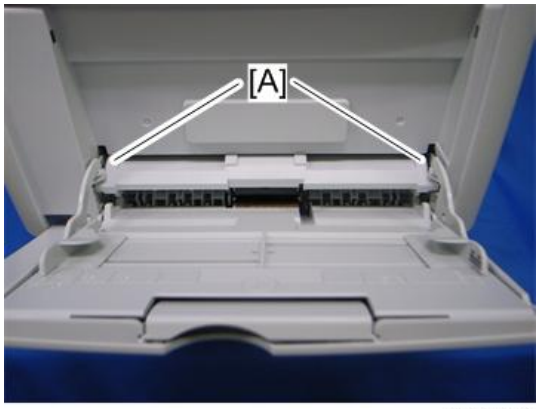
- A computer is necessary to update the firmware.

4.3 EXTERIOR COVERS

4.3.1 FRONT COVER

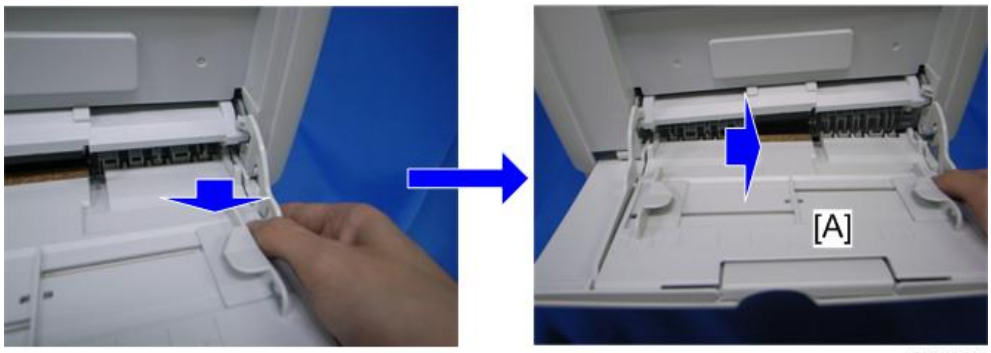
m116r101

1. Pull out the standard paper tray [A].



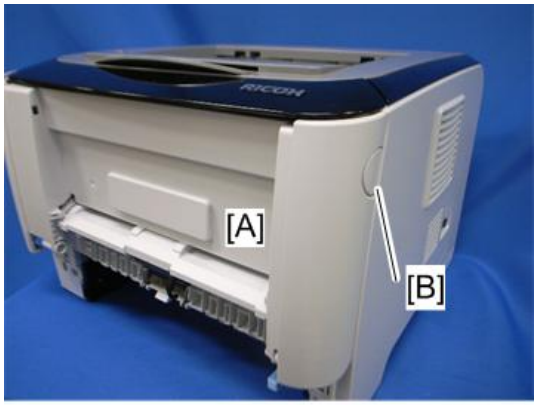
m012r511

2. Remove two tabs [A].



m012r512

3. On the right side, down the tab, and then slide the bypass tray [A] to the right.
4. Pull out the bypass tray [A].

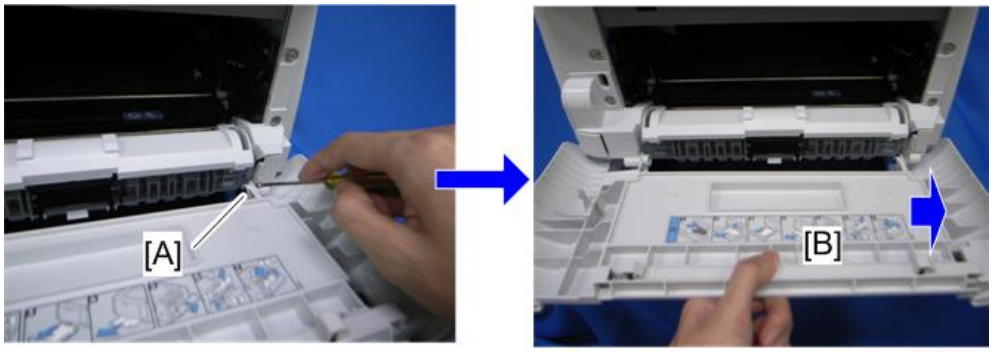


m012r693

5. Open the front cover [A].

Note

- To open the front cover, push the cover release button [B] and (carefully) pull the cover forward and open (it hinges downward).

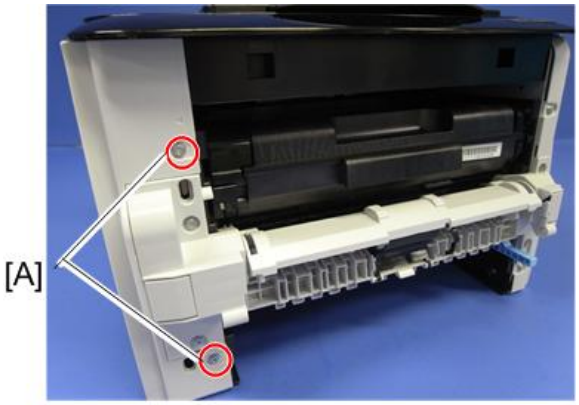


m012r691

6. Push the right hinge [A] to release.
7. Front cover [B]

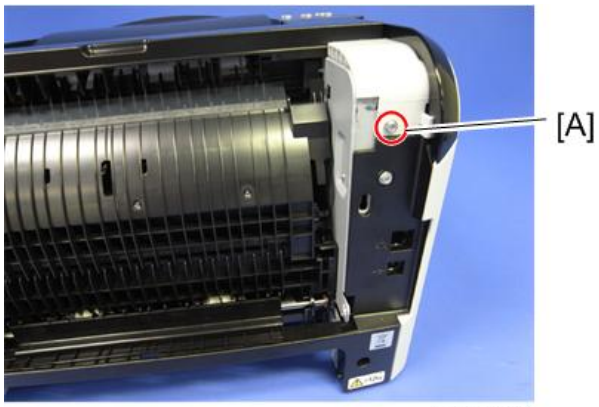
4.3.2 LEFT COVER

1. Front cover (☛p.4-2)
2. Rear cover (☛p.4-6)



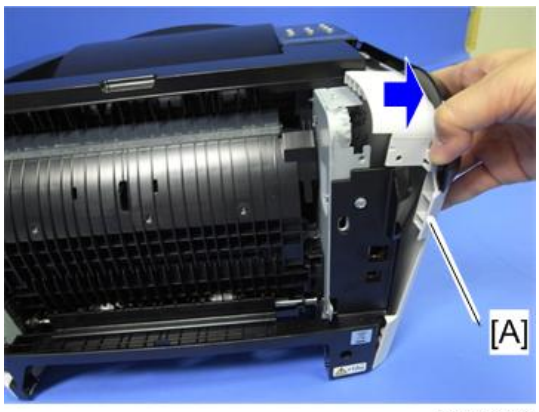
m116r102

3. Remove two screws [A] on the front side of the left cover.



m116r103

4. Remove a screw [A] on the rear upper side of the left cover.

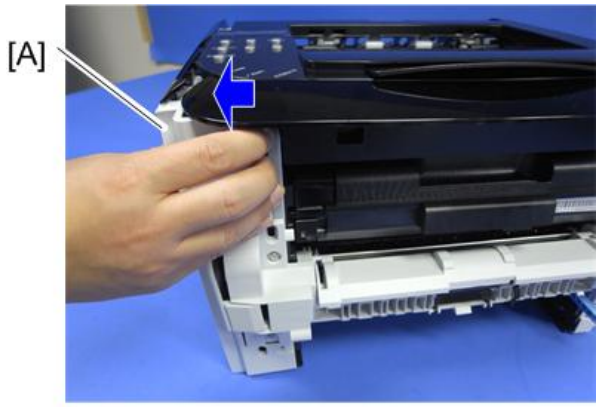


m116r104

5. Pull the rear upper part [A] of the left cover to release the hooks.

Note

- Located outside of the cover has marks indicating the position of the hook.

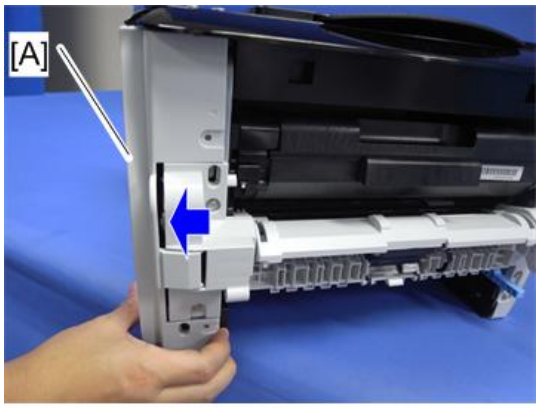


m116r105

6. Pull the front upper part [A] of the left cover to release the hooks.

Note

- Located outside of the cover has marks indicating the position of the hook.

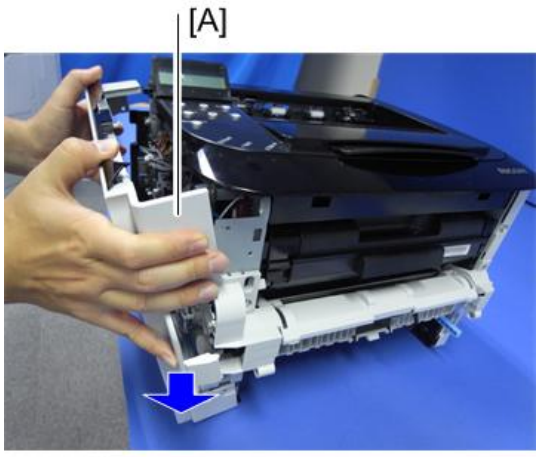


m116r106

7. Pull the front bottom part of the left cover [A] to release the hooks.

Note

- Located outside of the cover has marks indicating the position of the hook.



m116r107

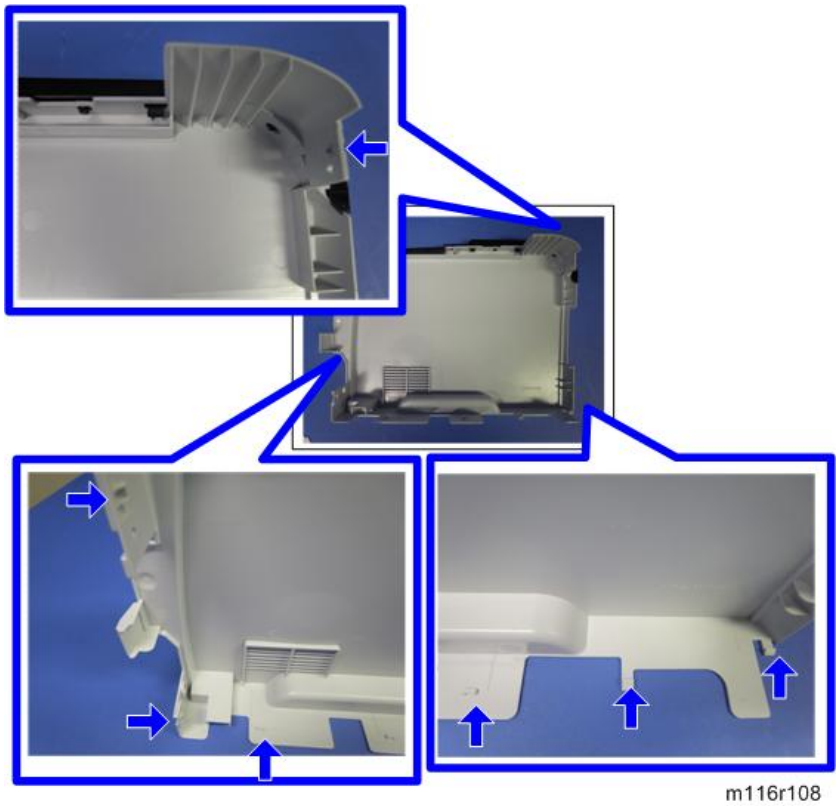
8. Remove the Left cover [A].

Note

- Located outside of the cover has marks indicating the position of the hook.

Note

- There are many hooks and tabs inside the left cover. Before removing the left cover, see the images below.



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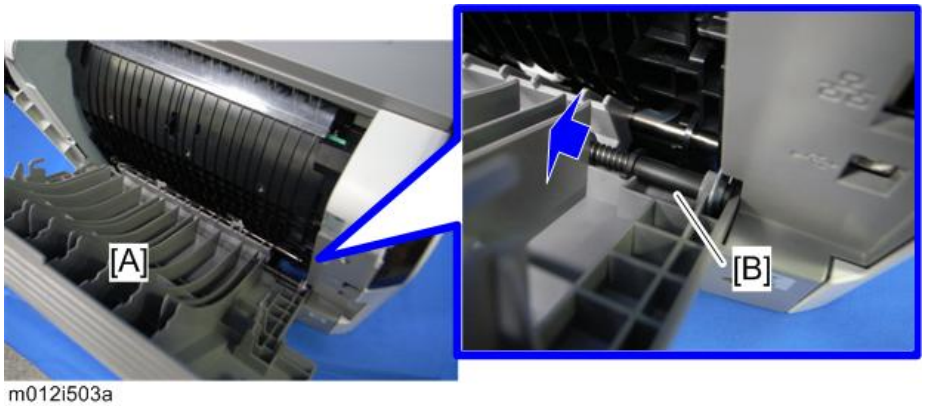
4.3.3 REAR COVER

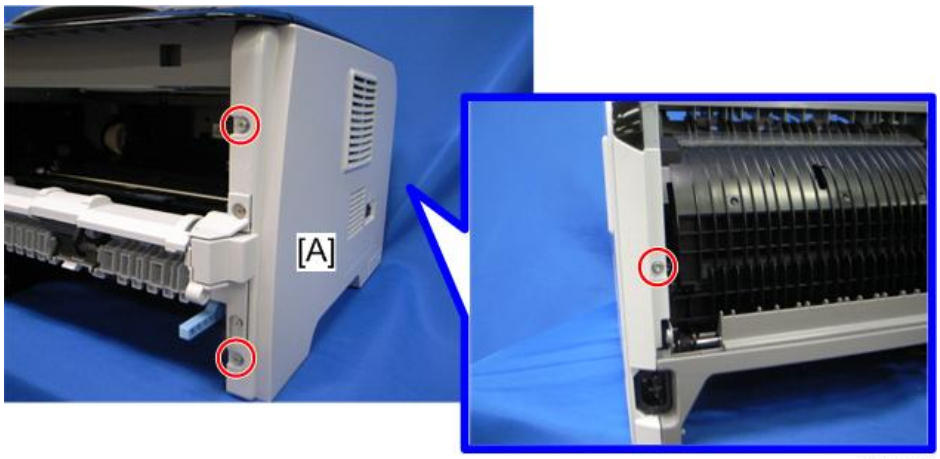


m012i503a

1. Open the rear cover [A]
2. Slide the shaft [B] in the direction of the blue arrow, and remove the rear cover [A].

4.3.4 RIGHT COVER

1. Front cover (☛p.4-2)
2. Rear cover (☛p.4-6)



m012r504

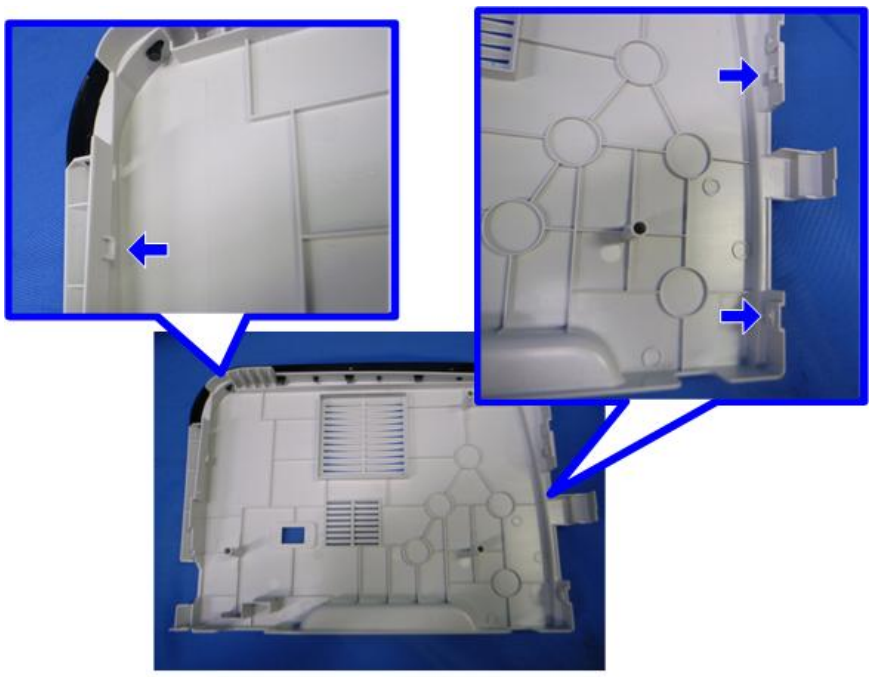
3. Right cover [A] (x 3, hook at arrow mark)

Note

- Located outside of the cover has marks indicating the position of the hook.

Note

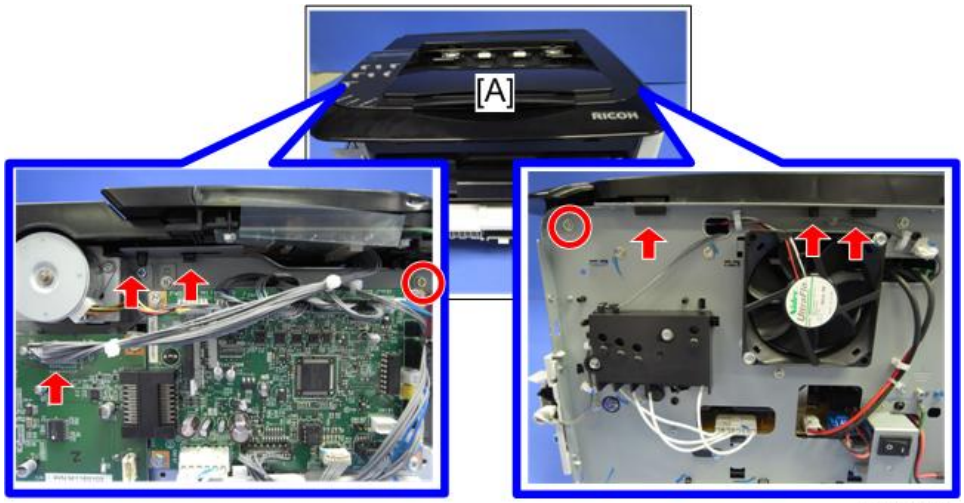
- There are many hooks and tabs inside the right cover. Before removing the right cover, see the images below.



m012r687a

4.3.5 TOP COVER

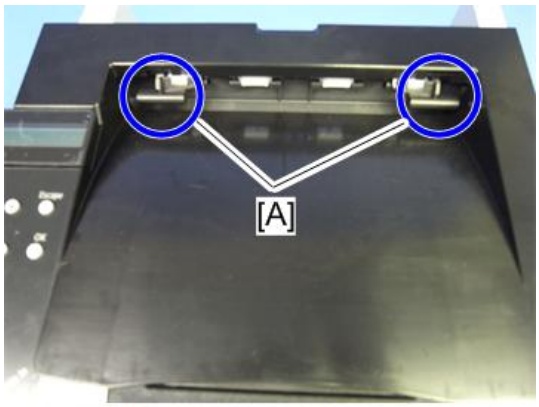
1. Front cover (☛p.4-2)
2. Rear cover (☛p.4-6)
3. Left cover (☛p.4-4)
4. Right cover (☛p.4-7)



m116r109

5. Top cover [A] (x 2, x 1, hook x 5)

When installing the top cover

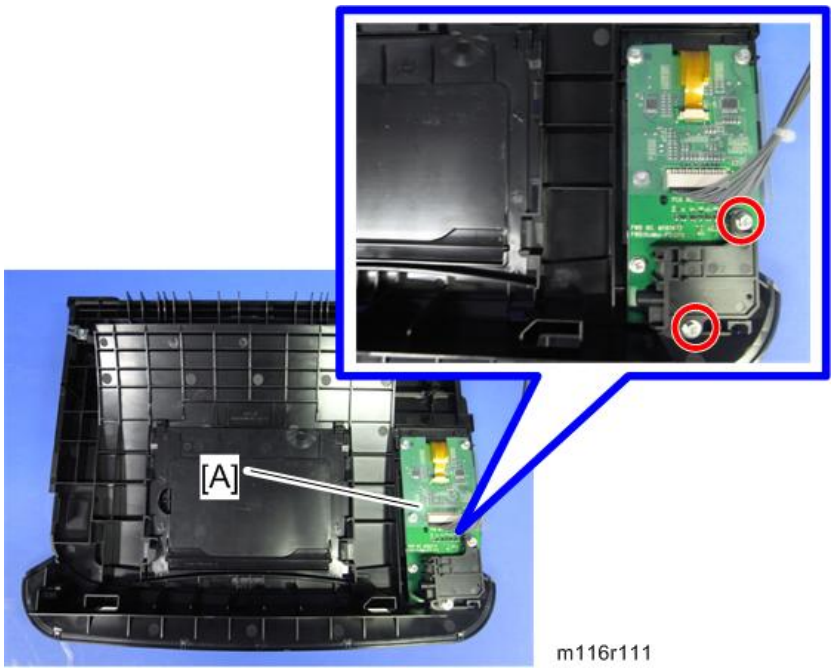


m116r110

- When re-installing the top cover, always verify that the two paperweights [A] are lifted. If they are not lifted to fit into the paper slot, the paperweights [A] could be damaged.
- Make sure that these paperweights [A] can be moved smoothly (up and down) after installing the top cover. If these paperweights do not move smoothly, try installing the top cover again.

4.3.6 OPERATION PANEL

1. Top cover (☛p.4-8)



2. Operation panel [A] (x 2)

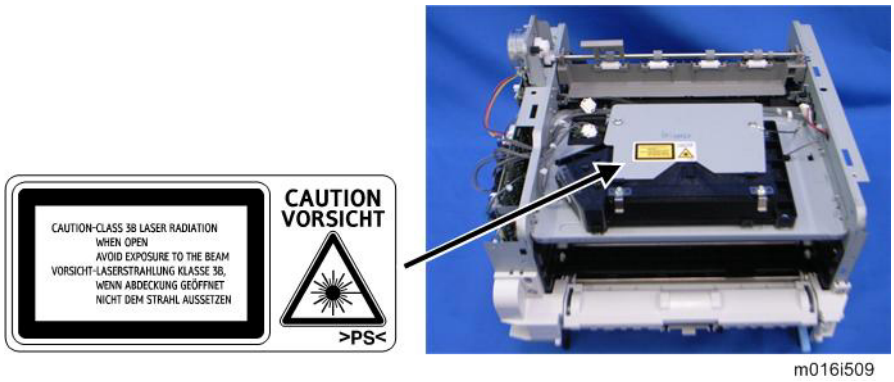
4.4 LASER UNIT

⚠CAUTION

- Turn off the main power switch and unplug the machine before attempting any of the procedures in this section. Laser beams can seriously damage your eyes.

4.4.1 CAUTION DECAL LOCATIONS

Caution decal is attached as shown below.



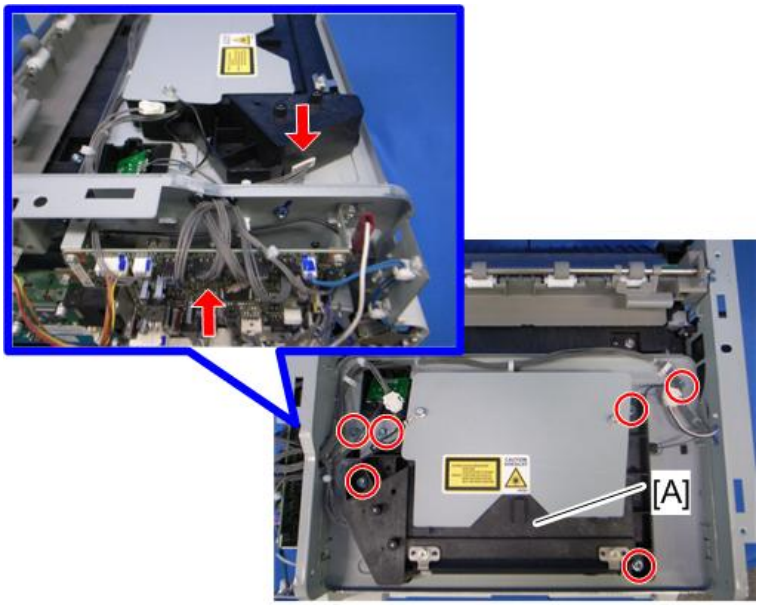
m016i509

⚠WARNING

- Be sure to turn off the main switch and disconnect the power plug from the power outlet before beginning any disassembly or adjustment of the laser unit. This machine uses a class IIIB laser beam with a wavelength of 648 to 663 nm and an output of 9 mW. The laser can cause serious eye injury.

4.4.2 LASER UNIT

1. Front cover (☛p.4-2)
2. Rear cover (☛p.4-6)
3. Left cover (☛p.4-4)
4. Right cover (☛p.4-7)
5. Top cover (☛p.4-8)



m012r704

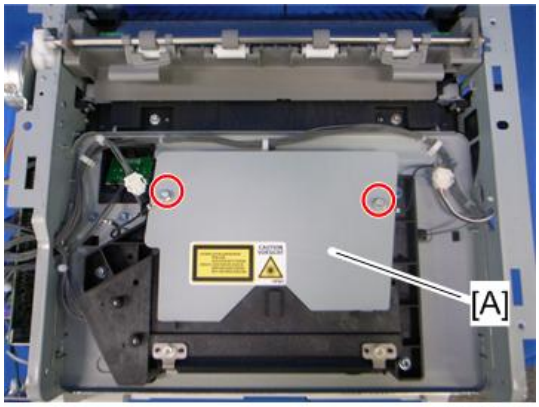
6. Laser unit [A] (x 3, ground screw x 3, x 2)

4.4.3 POLYGON MIRROR MOTOR

⚠CAUTION

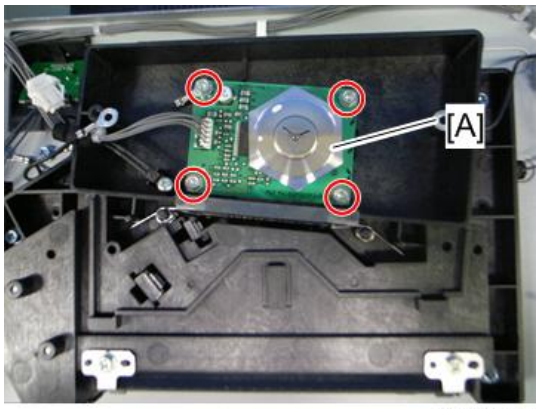
- Turn off the main switch and unplug the machine before attempting any of the procedures in this section. Laser beams can seriously damage your eyes.

1. Laser unit (☛p.4-11)



m012r149

2. Polygon mirror cover [A] (x 2)



m012r150

3. Polygon mirror motor [A] (x 4, x 1)

Note

- Never touch the surface of the mirror with bare hands.

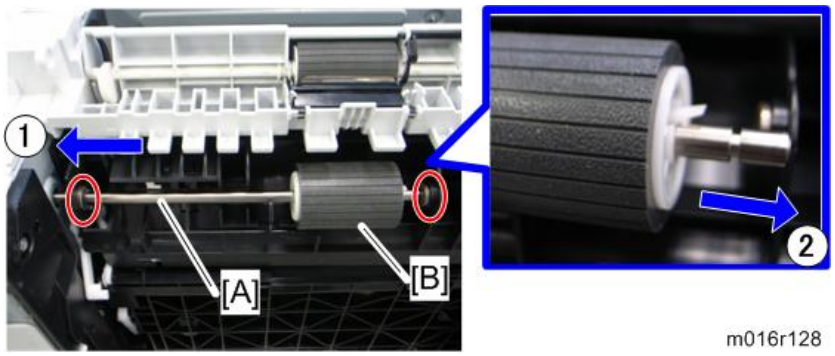
4.5 PAPER FEED AND EXIT

4.5.1 PAPER FEED ROLLER

1. Pull out the standard paper tray.
2. Remove the AIO.

m012r127

3. Set the machine with the rear side facing down, resting on the table.



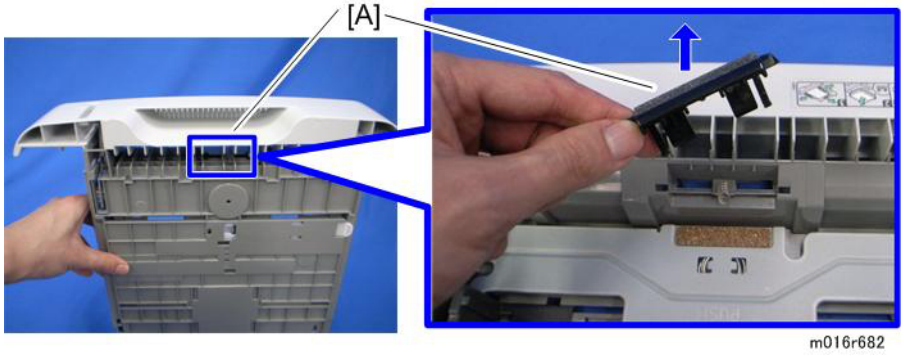
m016r128

4. Slide the paper feed shaft [A] to the left side (x 2).
5. Slide the paper feed roller [B] to right side, and remove it (hook).

After installing a new paper feed roller

1. Enter the "Service Mode".
2. Select "Eng Maintenance", and then press "OK" key.
3. Select "Reset Feed" and then press "OK" key.
4. Select “Execute” and the press “OK” key.
5. Exit the Service Mode".

4.5.2 FRICTION PAD

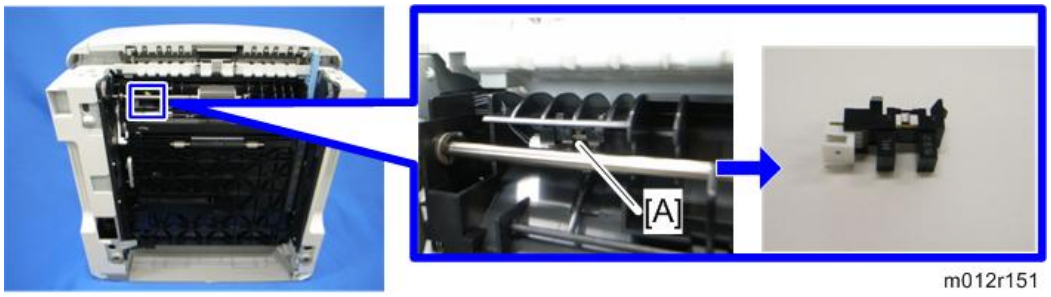


1. Remove the paper tray unit from the machine before removing the friction pad.
2. Friction pad [A] (2 hooks, 1 spring)

When reinstalling the friction pad follow this order:

1. Replace the spring.
2. Insert the right side of the friction pad first, followed by the left side.
3. Gently push the friction pad down into the slot and then pull forward very slightly.

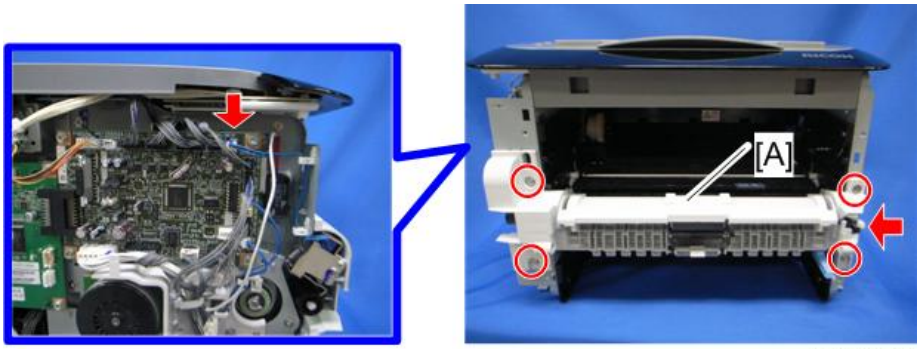
4.5.3 PAPER END SENSOR



1. Set the machine with the rear side facing down, resting on the table.
2. Paper end sensor [A] (hooks, x 1)

4.5.4 BY-PASS FEED ROLLER

1. Front cover (☛p.4-2)
2. Left cover (☛p.4-4)
3. Right cover (☛p.4-7)
4. Pull out the paper tray.

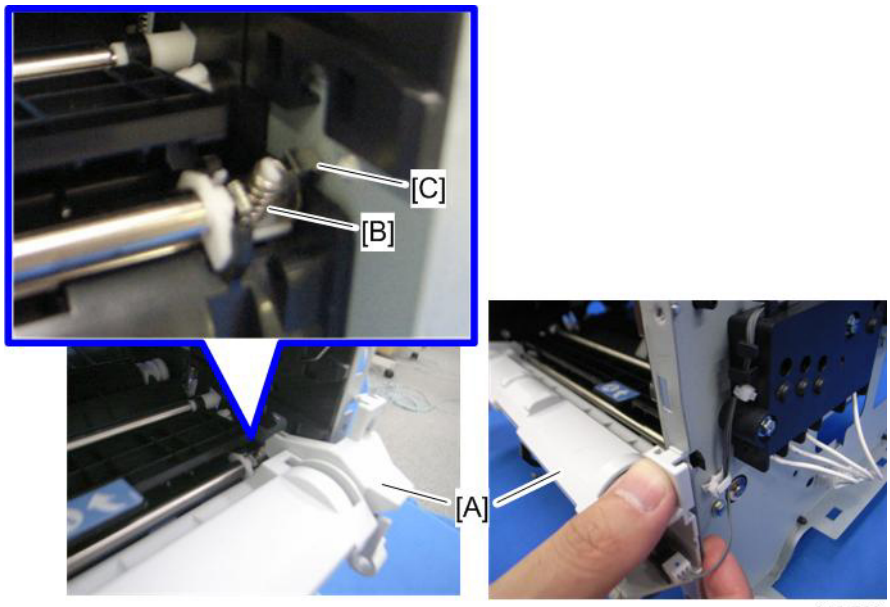


m012r153

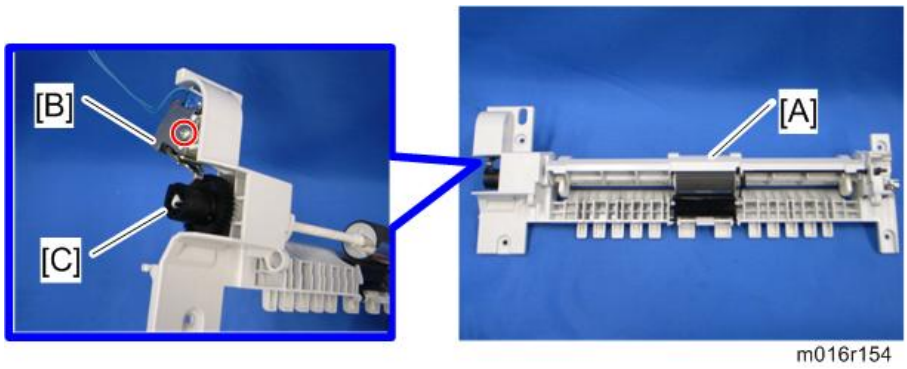
5. By-pass lower guide plate [A] (x 4, x 2)

Note

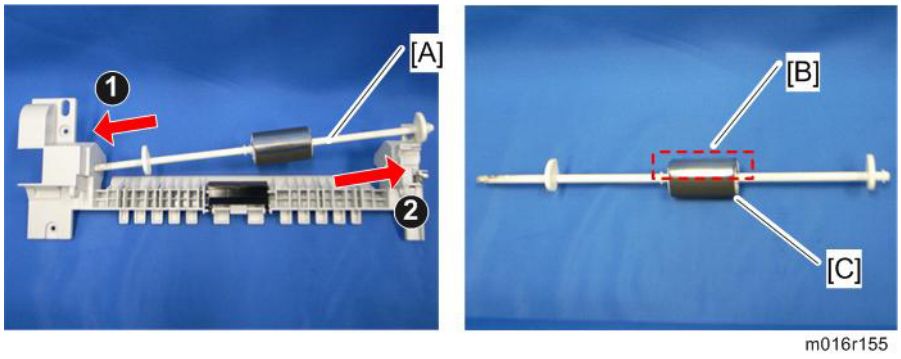
- Reinstall the by-pass lower guide plate [A] while pressing the spring [B].
- Be careful for the spring [B] and the ground plate [C] not to fall inside the machine during reinstallation.



m016r703



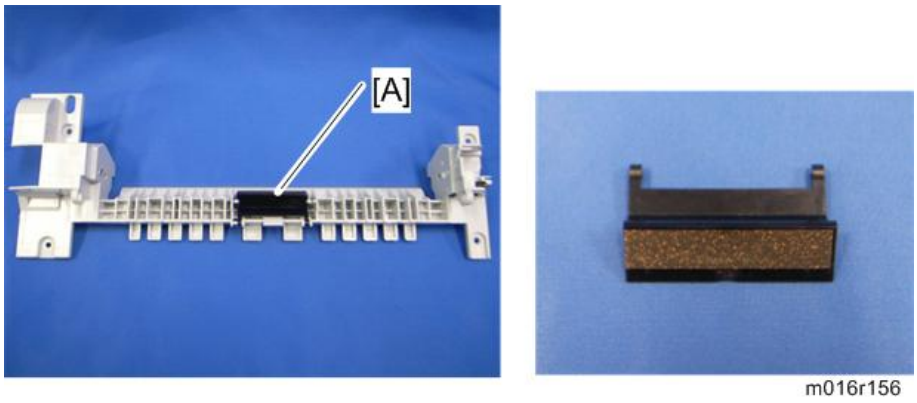
6. By-pass upper guide plate [A] (hooks)
7. By-pass solenoid cover, by-pass solenoid [B] (x 1)
8. Gear [C] (hook)



9. Slide the by-pass feed roller shaft [A] to the left side, and remove it.
10. Remove the metal cover [B] from the by-pass feed roller [C].

4.5.5 BY-PASS FEED ROLLER FRICTION PAD

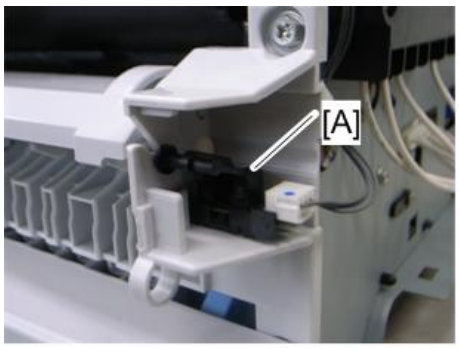
1. By-pass feed roller (☛p.4-15)



2. By-pass feed roller friction pad [A] (hooks, spring x 1)

4.5.6 BY-PASS FEED SENSOR

1. Front cover (☛p.4-2)
2. Right cover (☛p.4-7)

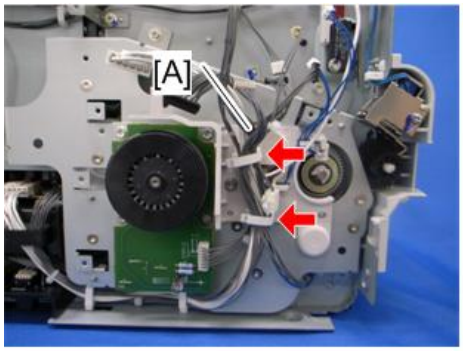


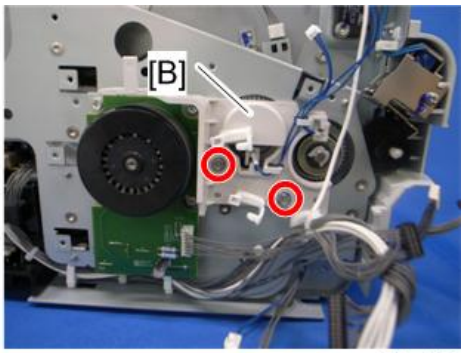
m016r152

3. By-pass feed sensor [A] (hooks, x 1)

4.5.7 PAPER FEED CLUTCH

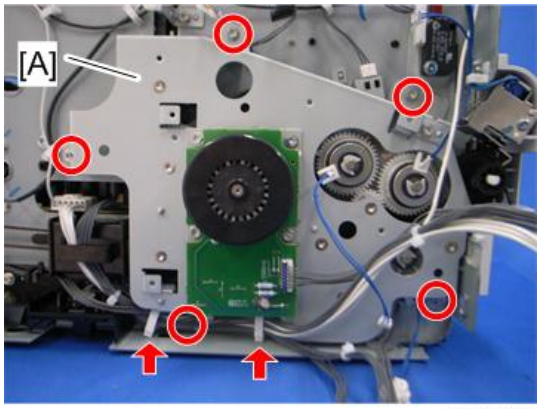
1. Top cover (☛p.4-2)
2. ECB (☛p.4-36 "ECB (Engine Controller Board)")
3. Controller board (☛p.4-38)





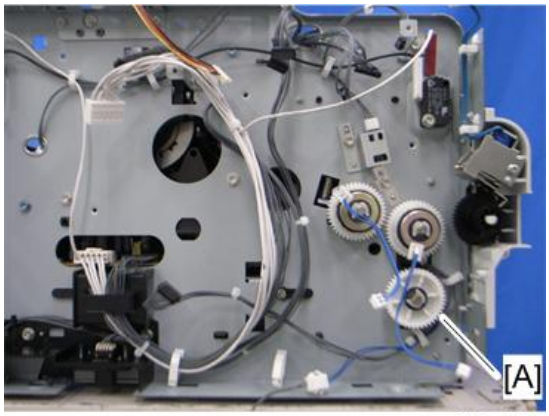
m012r109

4. Release all harnesses [A] from the clamps.
5. Harness guide plate [B] (x 2)



m016r704

6. Drive unit [A] (x 5, x 1, x 2, timing belt)

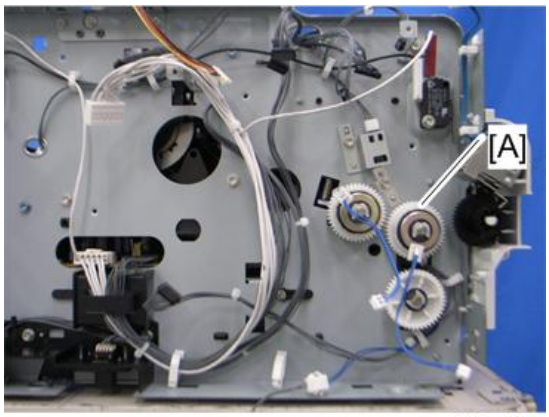


m016r113

7. Paper feed clutch [A] (x 1, x 1)

4.5.8 RELAY CLUTCH

1. Drive unit (p.4-17 "Paper Feed Clutch")

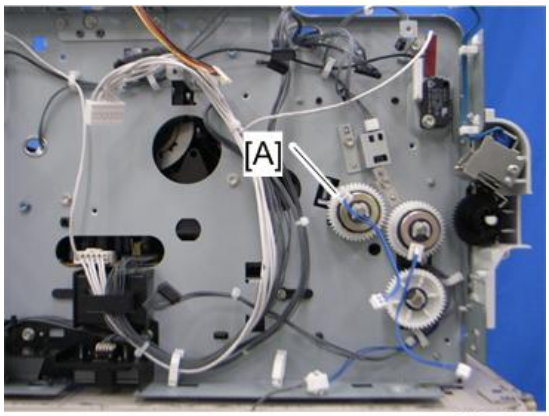


m016r111

2. Relay clutch [A] (x 1)

4.5.9 REGISTRATION CLUTCH

1. Drive unit (☛p.4-17 "Paper Feed Clutch")

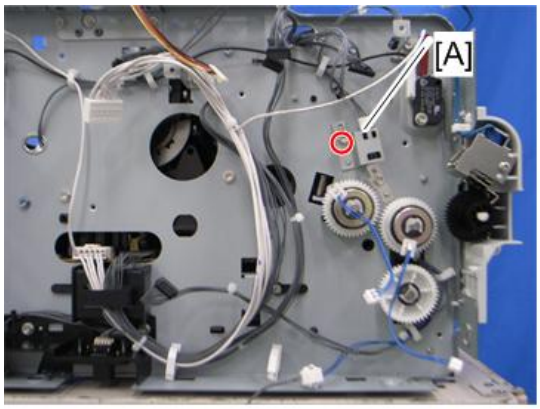


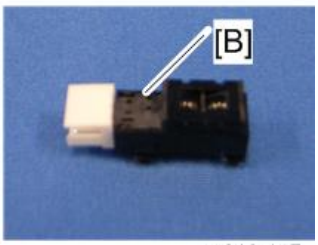
m016r112

2. Registration clutch [A] (☜ x 1)

4.5.10 TONER END SENSOR

1. Drive unit (☛p.4-17 "Paper Feed Clutch")



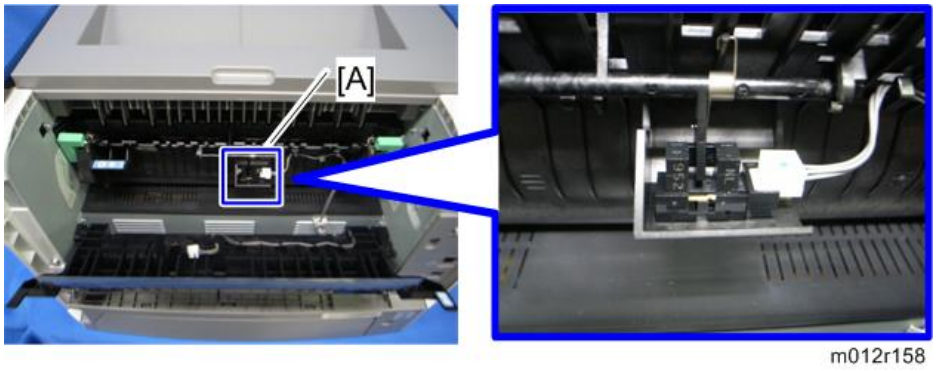


m016r147

2. Reflective sensor with bracket [A] (☜ x 1)
3. Reflective sensor [B]

4.5.11 PAPER EXIT SENSOR

1. Rear cover (☛p.4-6)

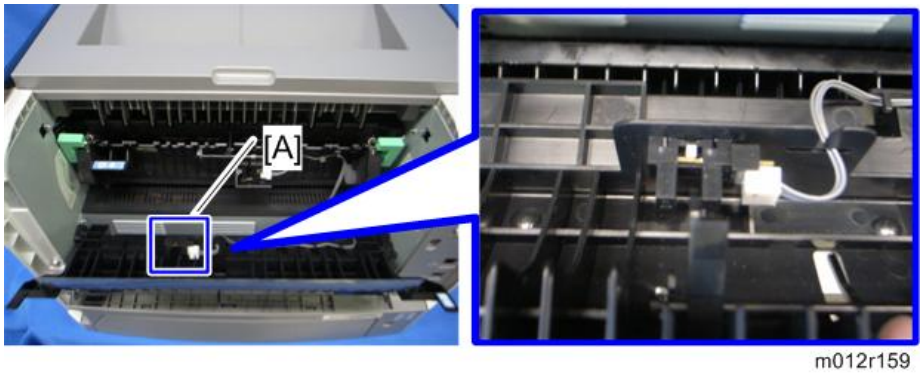


m012r158

2. Paper exit sensor [A] (x 1, hooks)

4.5.12 RELAY SENSOR

1. Rear cover (☛p.4-6)

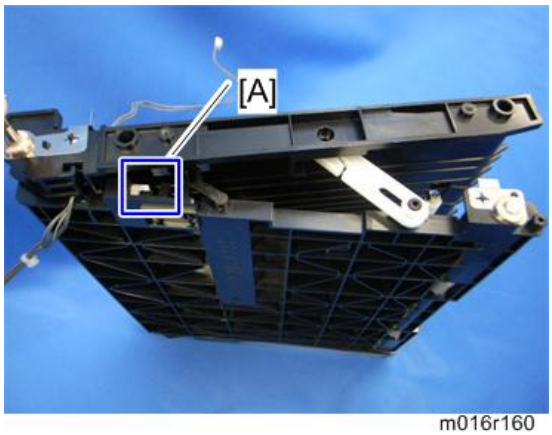


m012r159

2. Relay sensor [A] (x 1, hooks)

4.5.13 INVERTER SENSOR

1. Duplex transport guide (☛p.4-38 "PSU")

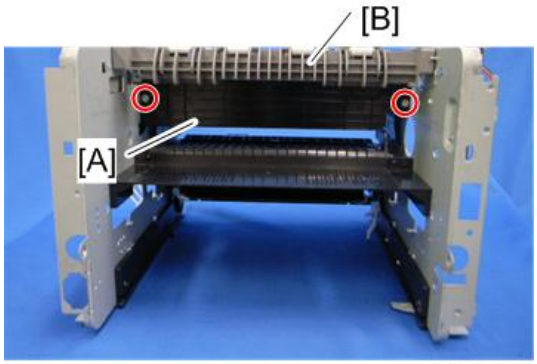


m016r160

2. Inverter sensor [A] (x 1, hooks)

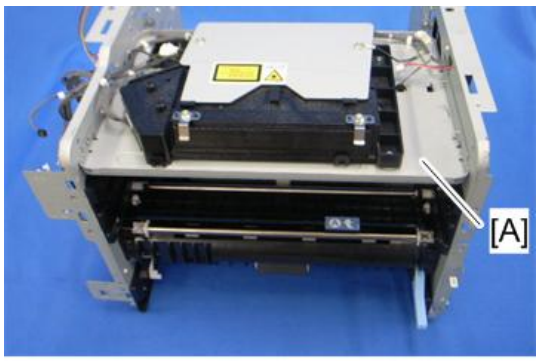
4.5.14 REGISTRATION ROLLER AND SENSOR

1. Pull out the paper tray.
2. PSU (☛p.4-38)
3. Paper feed clutch (☛p.4-17)
4. Relay clutch (☛p.4-18)
5. Registration clutch (☛p.4-19)



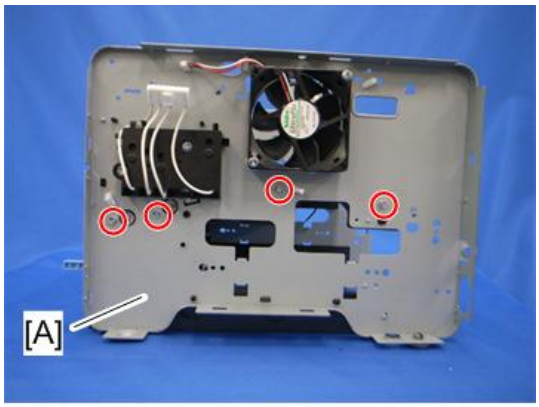
m012r696

6. Heat insulating plate [A] (x 2)
7. Exit roller base [B] (x 2)



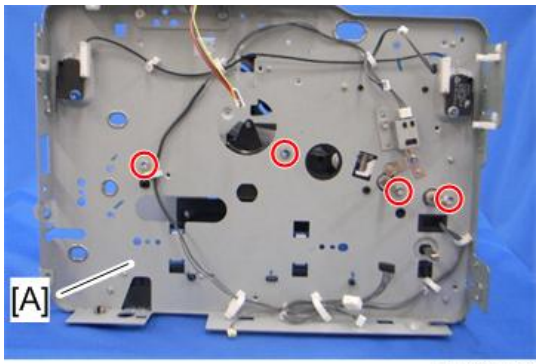
m012r694

8. Imaging unit base [A] (x 4)



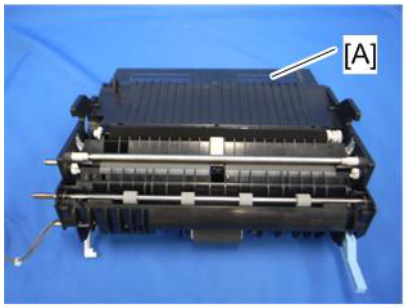
m016r697

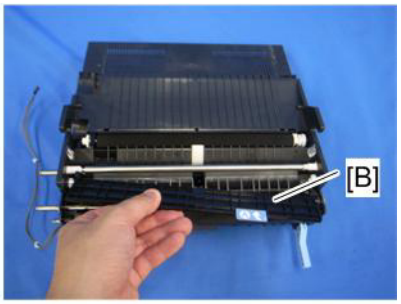
9. Remove the four screws in the right frame [A].



m012r698

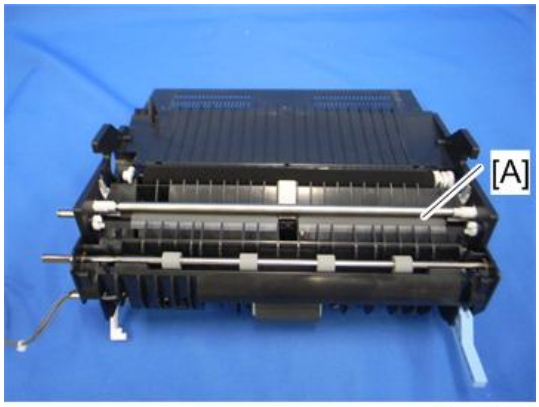
10. Remove the four screws in the left frame [A].





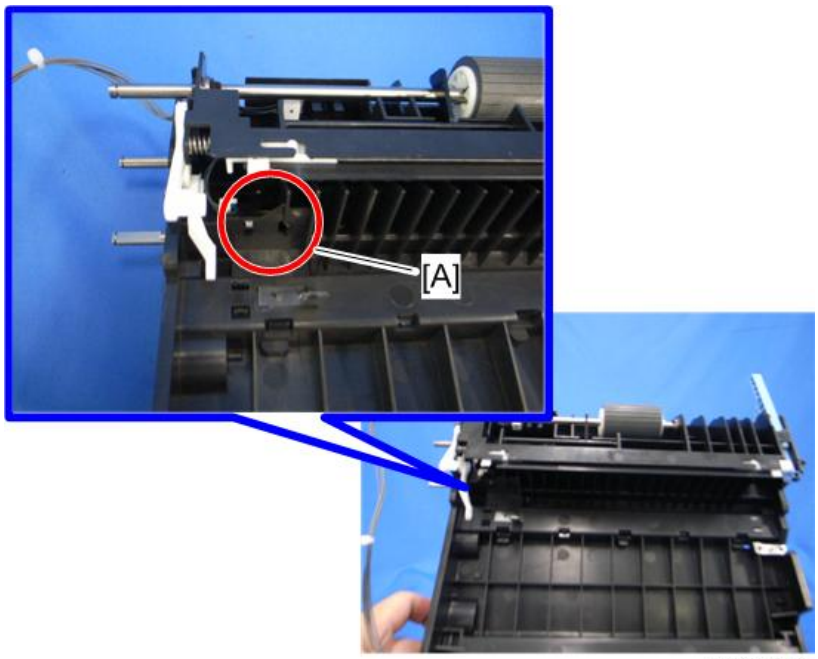
m016r699

11. Registration unit [A]
12. Upper guide plate [B]



m016r700

13. Registration roller [A]



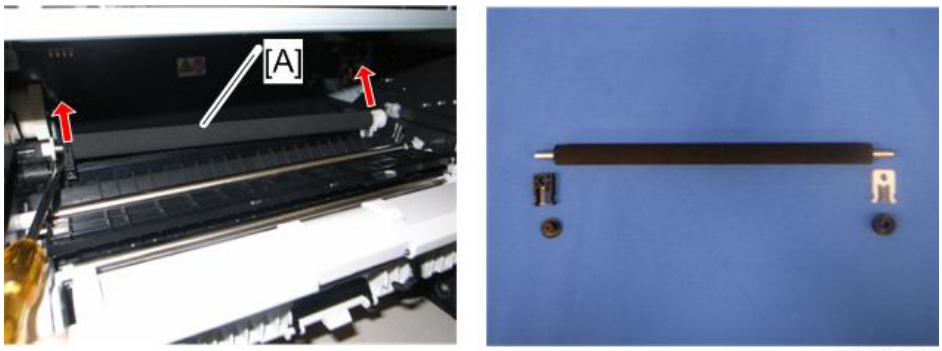
m016r701

14. Registration sensor [A]

4.6 PAPER TRANSFER

4.6.1 TRANSFER ROLLER

1. Front cover (☛p.4-2)
2. Remove the AIO.



m012r146

3. Remove the transfer roller [A] (Bushing x 2, spring x 2, gear x 1, collar x 1) as shown above.

Note

- Do not touch the transfer roller surface, when reinstalling the new transfer roller.

After installing a new transfer roller

1. Enter the "Service Mode".
2. Select "Eng Maintenance", and then press "OK" key.
3. Select "Reset Trans Rol" and then press "OK" key.
4. Select “Execute” and the press “OK” key.
5. Exit the Service Mode".

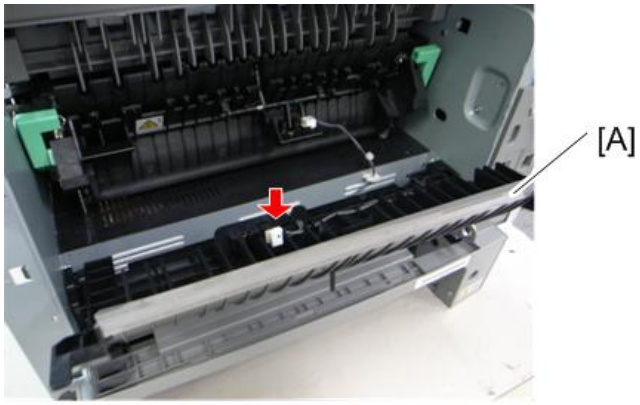
4.7 FUSING

⚠CAUTION

- Switch off the main power, unplug the machine from its power source, and allow the fusing unit to cool before removing it.

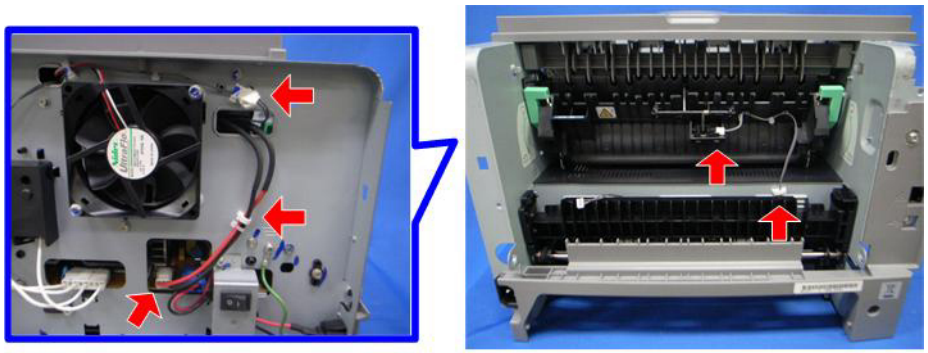
4.7.1 FUSING UNIT

1. Front cover (☛p.4-2)
2. Rear cover (☛p.4-6)
3. Left cover (☛p.4-4)



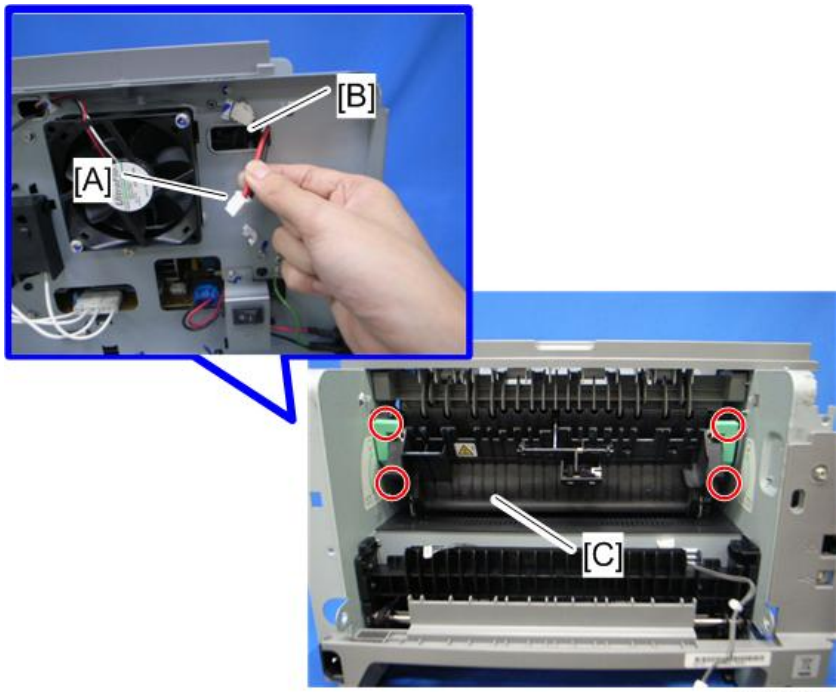
m016r169

4. Entrance guide [A] (x 1)



m012r130

5. Disconnect the three harnesses (x 2)

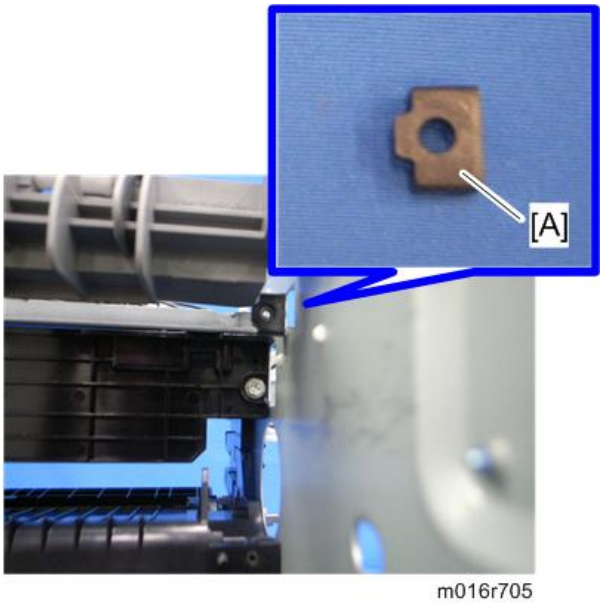


m012r684

6. Pass the cable [A] through the hole [B] inside the machine.
7. Fusing unit [C] (x 4)

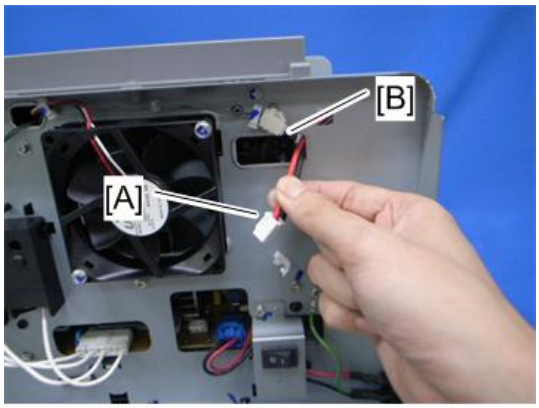
Note

- Make sure that the two bushings [A] remain be setting.



m016r705

Reinstallation



m012r702

Pass the cable [A] of fusing unit through the hole [B] outside, after setting the fusing unit.

After installing a new fusing unit

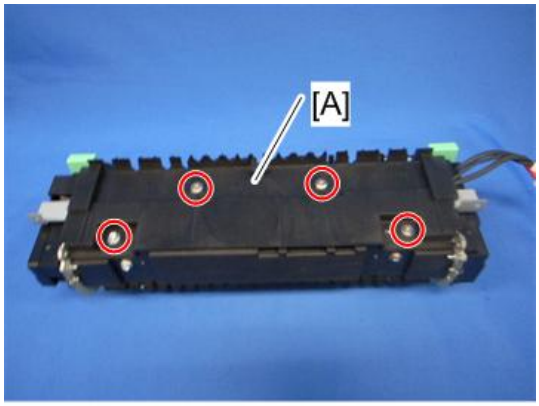
1. Enter the "Service Mode".
2. Select "Eng Maintenance", and then press "OK" key.
3. Select "Reset FuserUnit" and then press "OK" key.
4. Select “Execute” and the press “OK” key.
5. Exit the Service Mode".

4.7.2 THERMOSTAT

⚠CAUTION

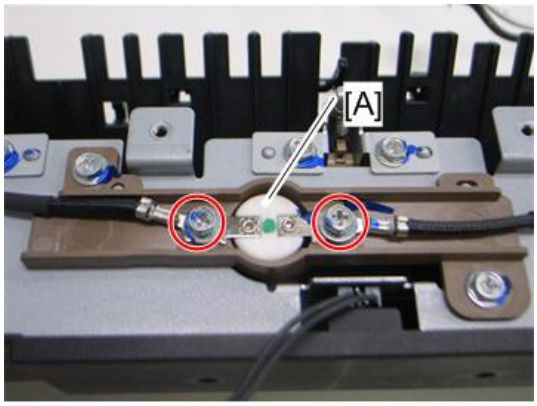
- Do not recycle a thermoswitch that is already opened. Safety is not guaranteed if you do this.

1. Fusing unit (☛p.4-25)



m012r141

2. Fusing upper cover [A] (x 4)

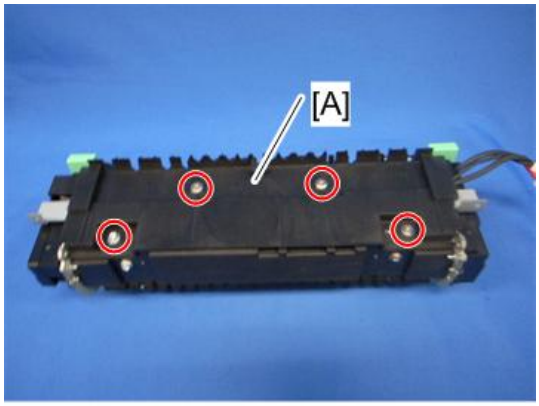


m016r142

3. Thermostat [A] (x 2)

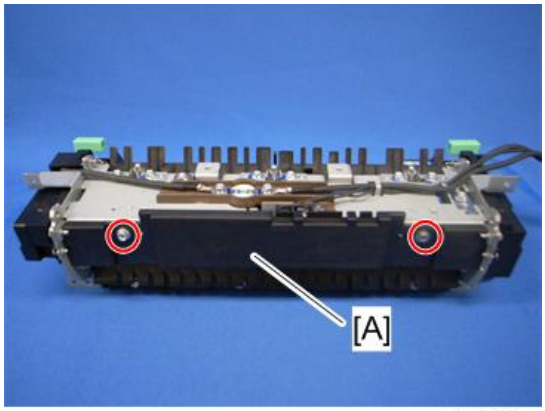
4.7.3 THERMISTOR

1. Fusing unit (☛p.4-25)



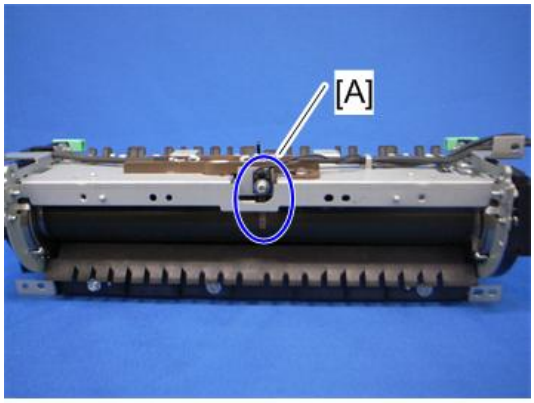
m012r141

2. Fusing upper cover [A] (🔩 x 4)



m012r132

3. Fusing front cover [A] (🔩 x 2)

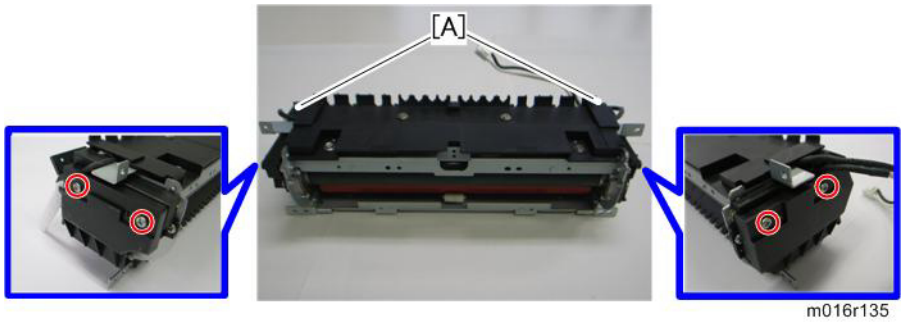


m012r131

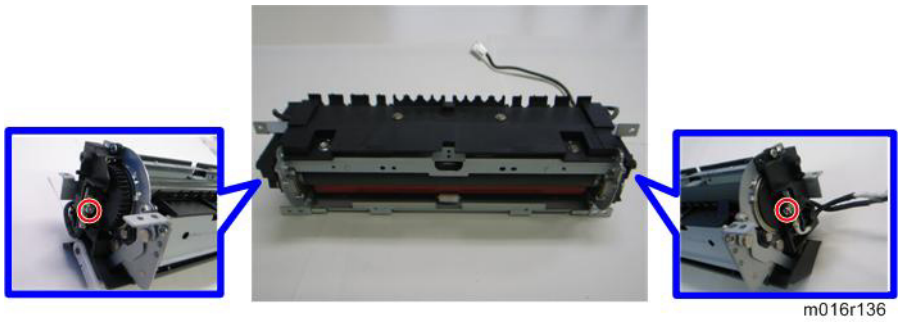
4. Thermistor [A] (🔩 x 1)

4.7.4 FUSING LAMP

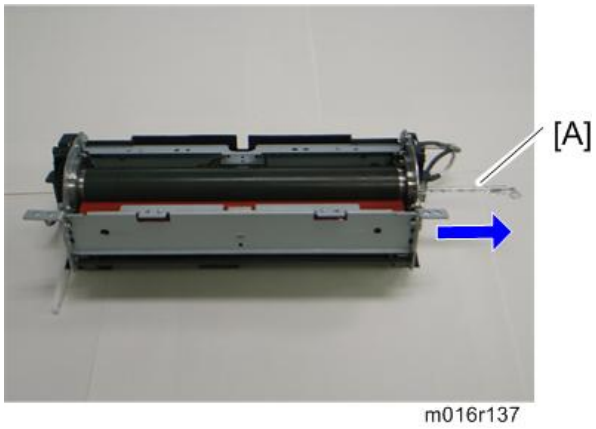
1. Fusing Unit (☛p.4-25)



2. Fusing side covers [A] (x 2 each)

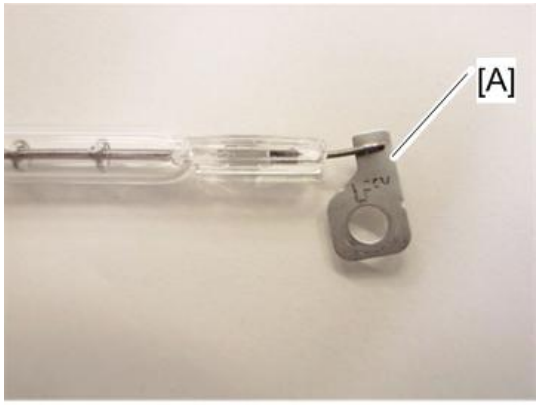


3. Ground-wires (x 1 each)



4. Fusing lamp [A]

When reinstall the fusing lamp

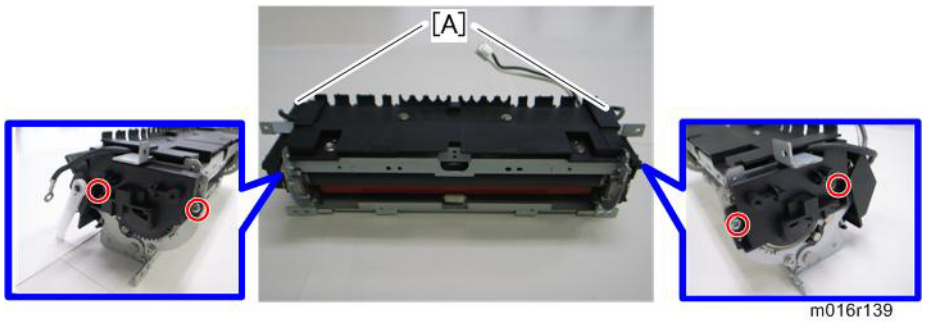


m016r138

The flat terminal [A] must be placed on the right side of the fusing unit (fusing cable side).

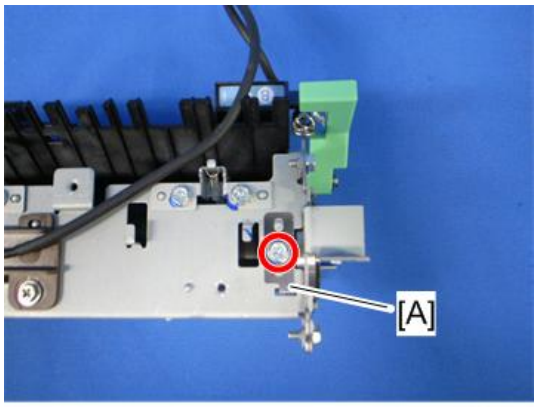
4.7.5 HOT ROLLER

1. Fusing lamp (☛p.4-30)



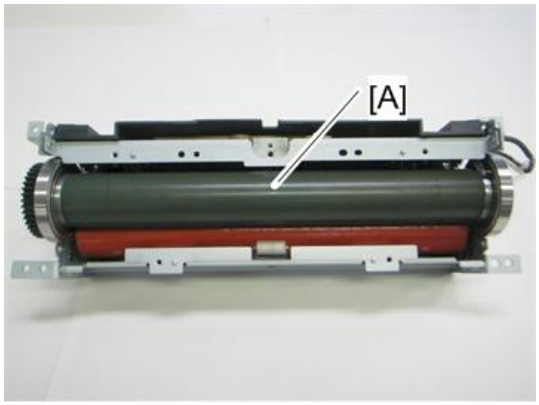
m016r139

2. Brackets [A] (x 2)



m012r705

3. Ground Plate [A] (x 1)

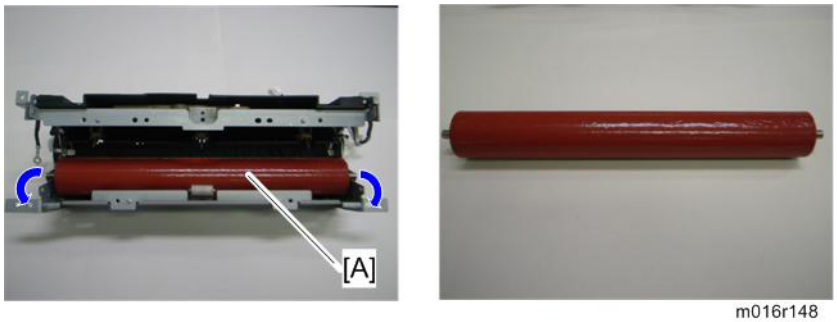


m016r140

4. Hot roller [A] (C-ring x 2, gear x 1, bushing x 2)

4.7.6 PRESSURE ROLLER

1. Hot roller (☛p.4-32)

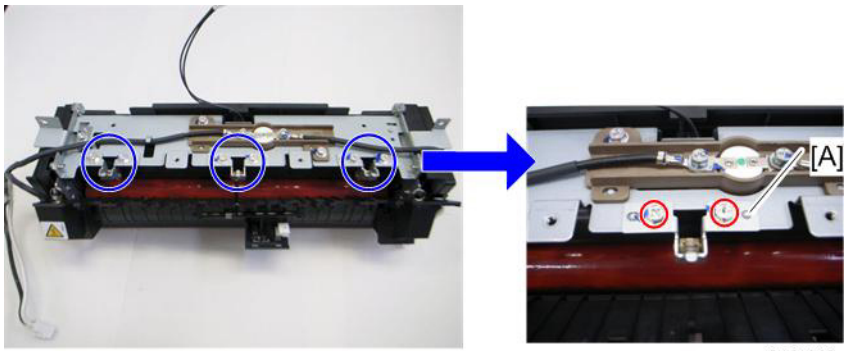


m016r148

2. Pressure roller [A] (Bearing x 2)

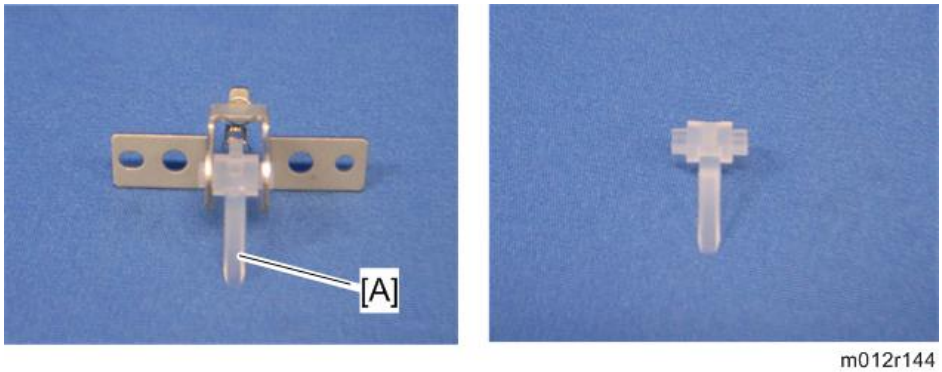
4.7.7 HOT ROLLER STRIPPER PAWLS

1. Fusing unit (☛p.4-25)
2. Fusing upper cover (☛p.4-28 "Thermostat")



m016r143

3. Metal holders [A] (1 holder for each pawl: x 2 each)



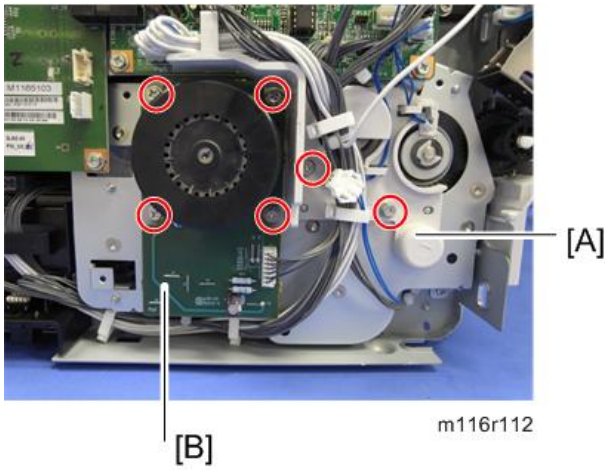
m012r144

4. Hot roller stripper pawls [A] (1 spring for each pawl)

4.8 MOTORS

4.8.1 MAIN MOTOR

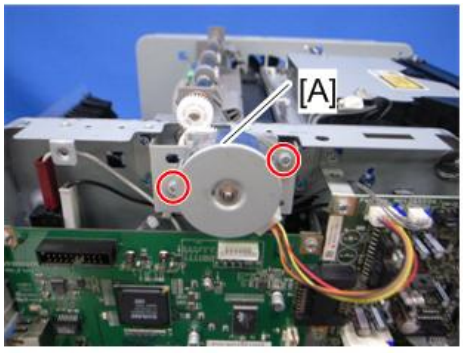
1. Front cover (☛p.4-2)
2. Left cover (☛p.4-4)

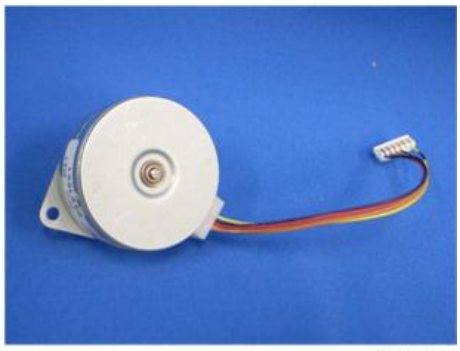


3. Harness guide [A] (x 2)
4. Main motor [B] (x 4, x 1)

4.8.2 DUPLEX MOTOR (FOR M117)

1. Front cover (☛p.4-2)
2. Rear cover (☛p.4-6)
3. Left cover (☛p.4-4)
4. Right cover (☛p.4-7)
5. Top cover (☛p.4-8)





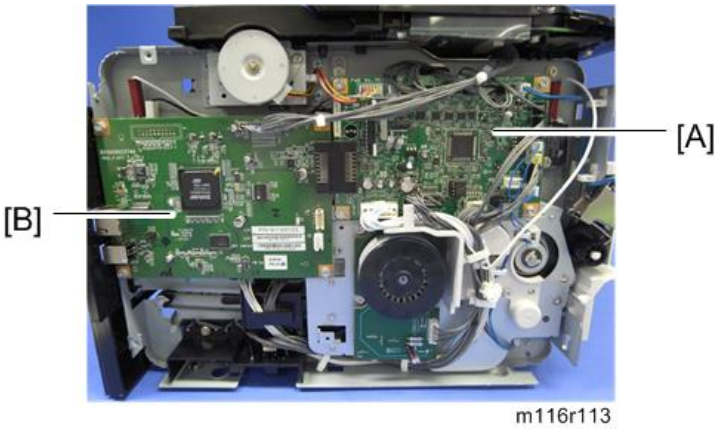
6. Duplex motor [A] (x 2, x 1)

4.9 ELECTRICAL COMPONENTS

⚠CAUTION

- Use a correct rating fuse for the fuse replacement. Never use a wrong rating fuse. If do so, the machine may be damaged.

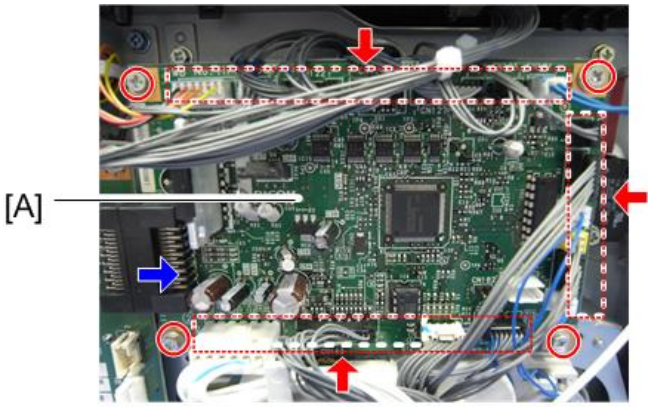
4.9.1 LAYOUT OF PC BOARDS



[A]	ECB (Engine Controller Board)
[B]	Controller Board

ECB (Engine Controller Board)

1. Front cover (☛p.4-2)
2. Left cover (☛p.4-4)

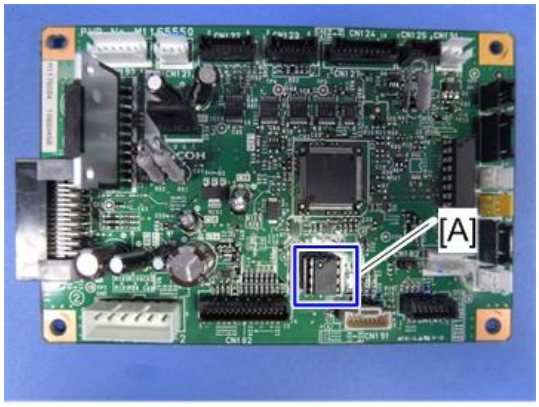


m116r114

3. ECB [A] (x 4, all s)

Note

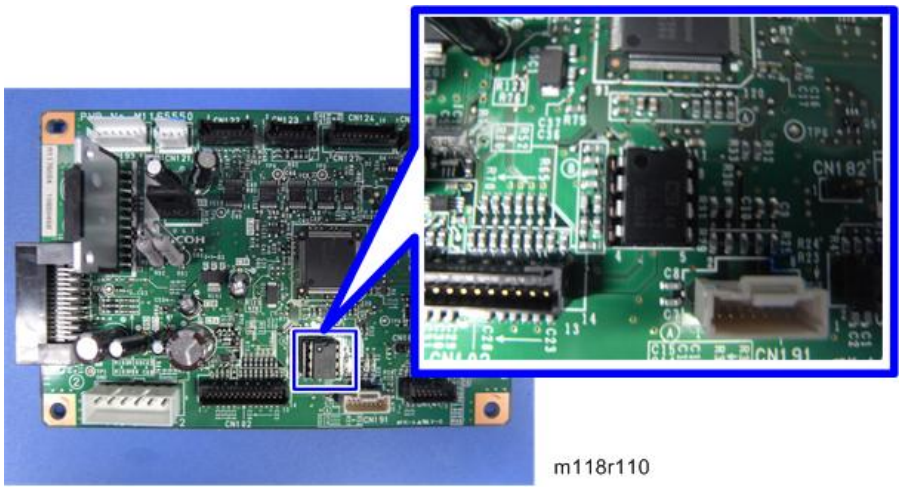
- Do not connect any connectors to CN181 when reinstalling the ECB [A]. CN181 is only used for factory.
- Do not change the dip switch. The dip switch is only for factory use.



m118r109

4. EEPROM (Electronically Erasable Programmable Read Only Memory) [A]

When installing the new ECB (Engine Controller Board)



m118r110

1. Remove the EEPROM from the old ECB.
2. Install it on the new ECB after replacing the ECB.
3. Replace the EEPROM if the EEPROM on the old ECB is defective.

Note

- Keep the EEPROM away from any objects that can cause static electricity. Static electricity can damage EEPROM data.
- Make sure that the EEPROM is correctly installed on the ECB.

EEPROM

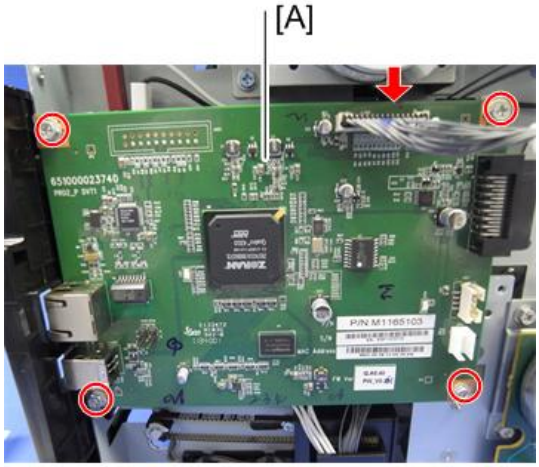
- Replacement procedures for the new EEPROM are included in the "ECB (Engine Controller Board)" replacement procedure. Refer to "ECB (Engine Controller Board)" for details.
- Do the following settings after installing a "new" EEPROM.
  -Input the PnP Name, Destination in Service Mode.
  -Adjust the Registration in Service Mode.
  -Input serial number on the serial number input display after installing the new EEPROM

Note

- Ask your supervisor about how to access the serial number input display.

Controller Board

1. ECB (☛p.4-36 "ECB (Engine Controller Board)")

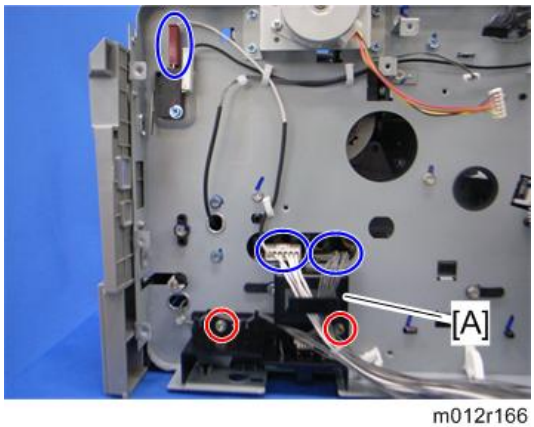


m116r115

2. Controller board [A] (x 4, x 1)

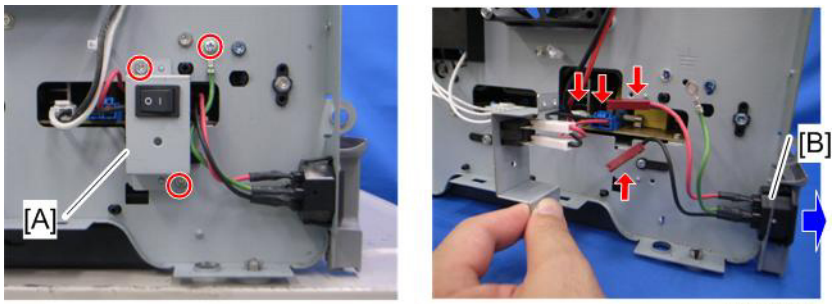
4.9.2 PSU

1. Pull out the standard paper tray.
2. Front cover (☛p.4-2)
3. Rear cover (☛p.4-6)
4. Left cover (☛p.4-4)
5. Right cover (☛p.4-7)
6. Top cover (☛p.4-8)
7. ECB (☛p.4-36 "ECB (Engine Controller Board)")
8. Drive unit (☛p.4-17 "Paper Feed Clutch")



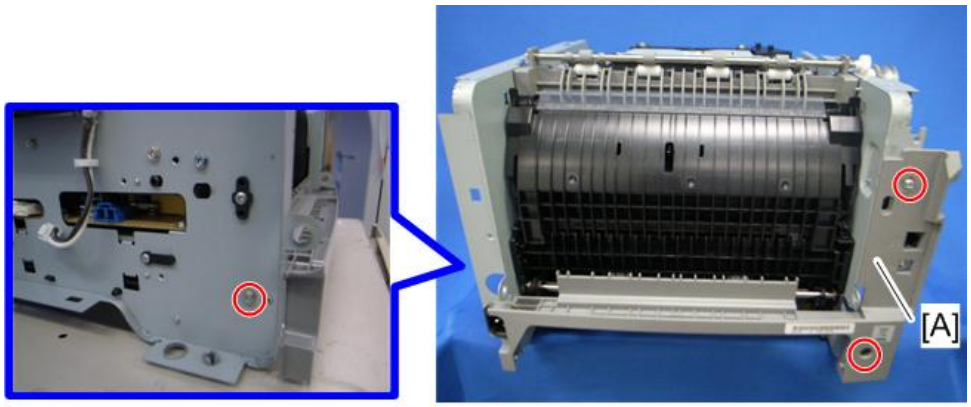
m012r166

9. Disconnect three connectors in left frame(x 1)
10. Bracket [A] (x 2)



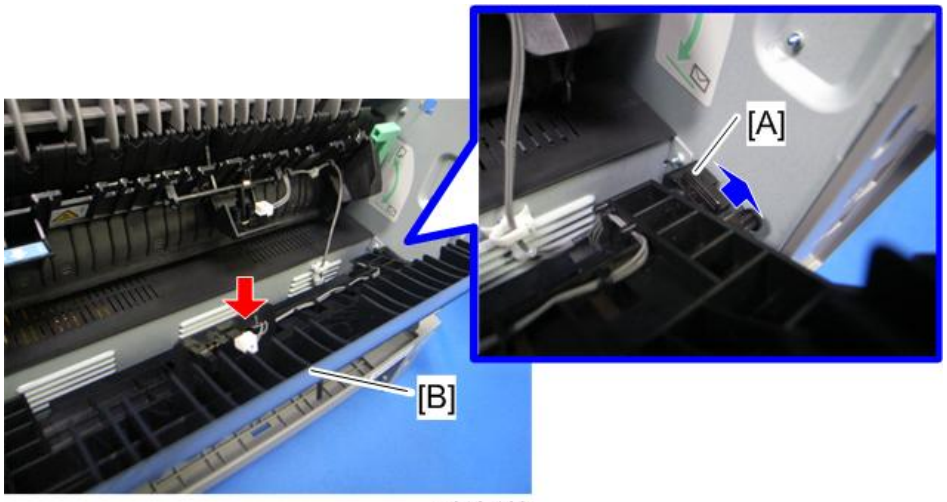
m016r167

11. Main power switch bracket [A] in right frame(x 2)
12. Remove the main power cord [B] as sown above(x 2).
13. Remove the ground wire and two connectors.



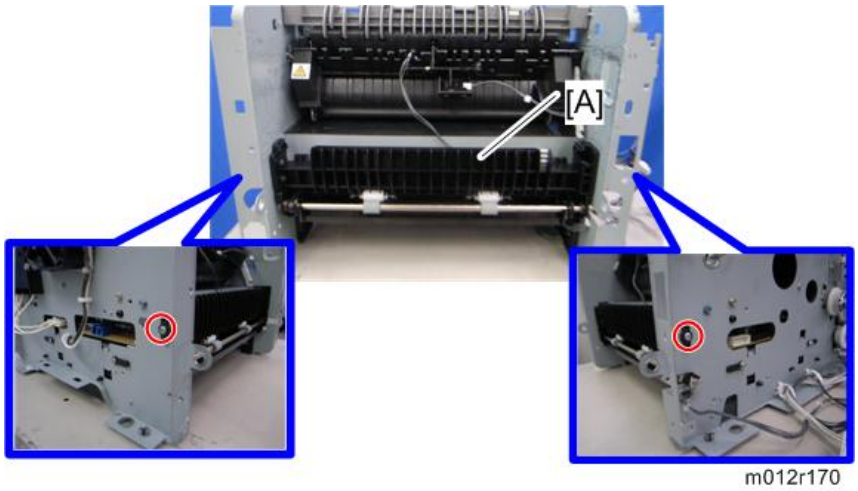
m012r168

14. Rear low cover [A] (x 3)

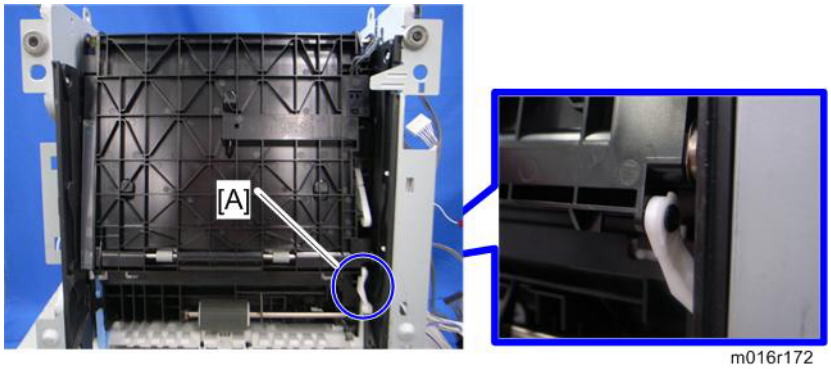


m012r169

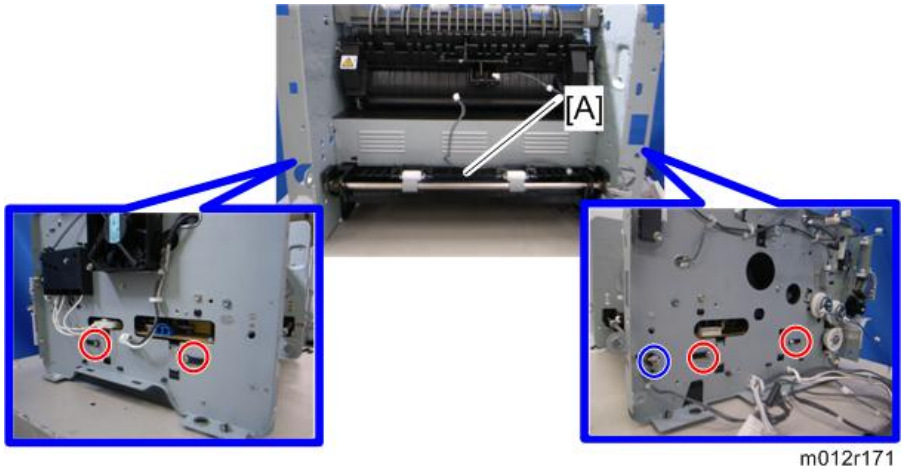
15. Release the lock [A], and then remove the entrance guide [B] (x 1).
16. Fusing Unit(☛p.4-25)



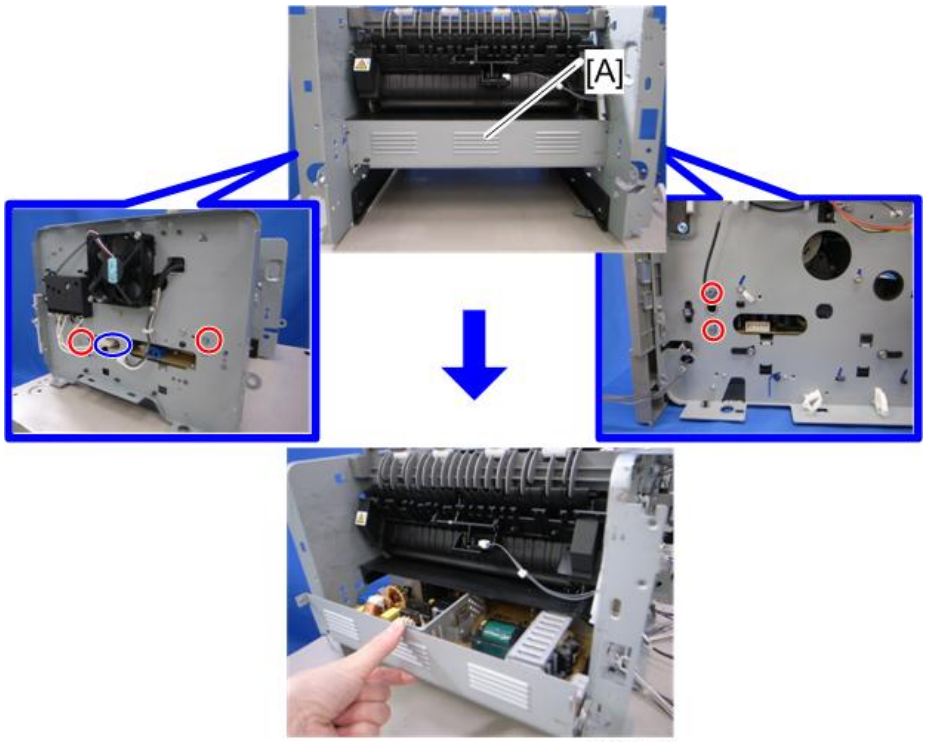
17. **For M117 only:** Duplex transport guide [A] (x 2)



18. **For M117 only:** Set the machine with the front side facing down, resting on the table.
19. **For M117 only:** Release the link [A] (x 1)



20. **For M117 only:** Duplex cover [A] (x 4, x 1, gear x 1)

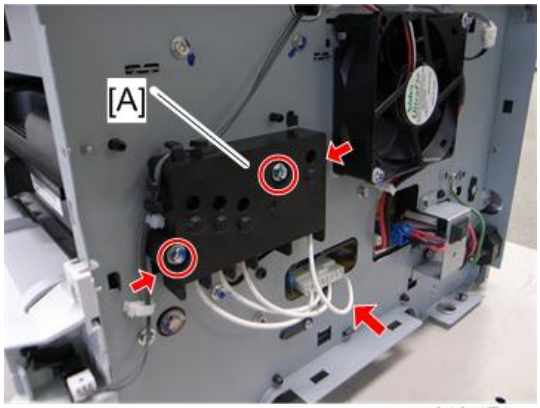


m012r173

21. PSU [A] (x 4, x 1)

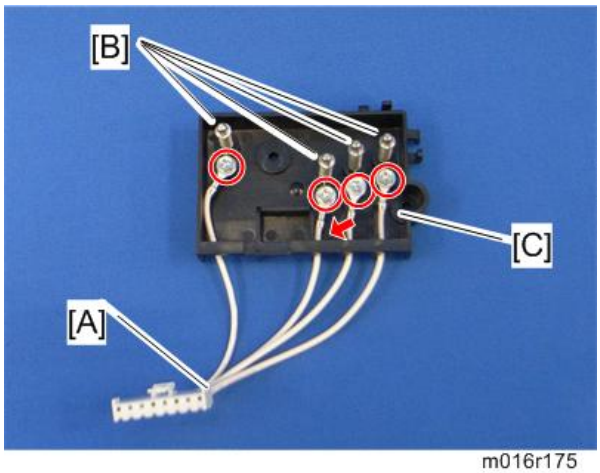
4.9.3 CHARGE TERMINAL CASE

1. Right cover (☛p.4-7)



m016r174

2. Charge terminal case [A] with the harness (x 2, x 1, hooks)



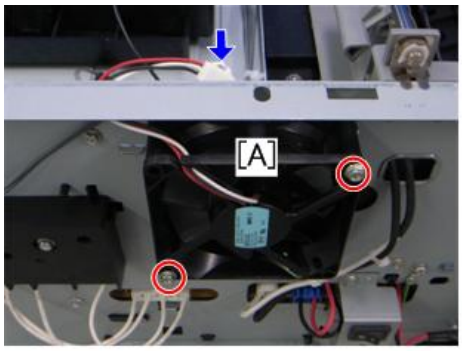
m016r175

3. Remove the harness [A] (x 4).
4. Remove the four springs and terminal pins [B].
5. Charge terminal case [C]

4.10 OTHERS

4.10.1 COOLING FAN

1. Right cover (☛p.4-7)



m016r124

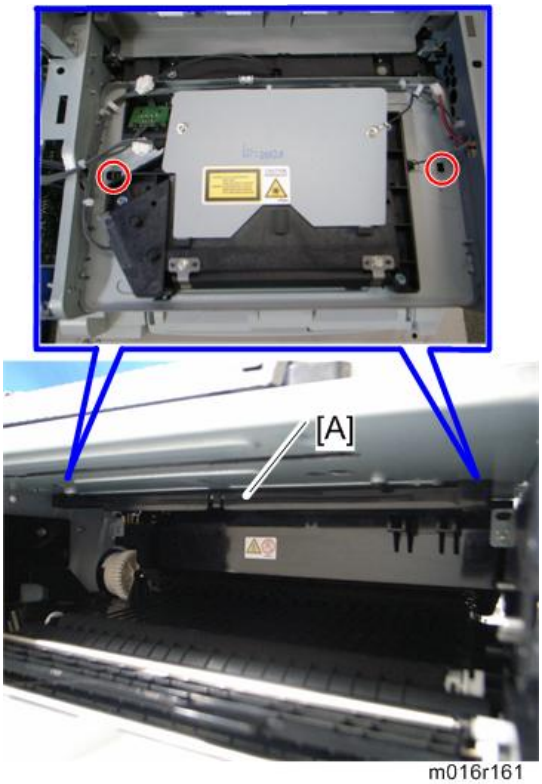
2. Cooling fan [A] (x 2, x 1)

⚠CAUTION

- Install the Cooling fan [A] with its decal facing the outside of the machine.

4.10.2 QUENCHING LAMP

1. Top Cover (☛p.4-8)



m016r161

2. Release two hooks of the quenching lamp with the case [A], and remove it.

m016r162

3. Remove the quenching lamp [A] from the case (hook x 3).

4.11 IMAGE ADJUSTMENT

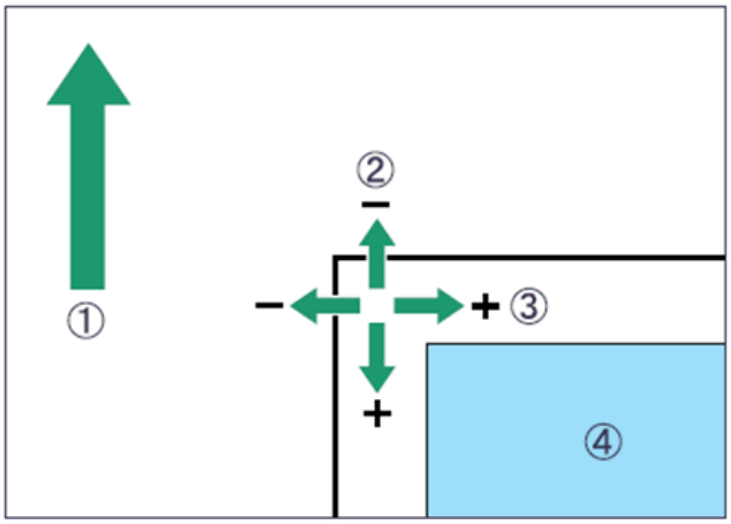
4.11.1 REGISTRATION ADJUSTMENT

User Adjustment

The paper registration can also be adjusted with the user mode ("Menu"). For details, see the "Software Guide".

Service Adjustment

1. Print the test pattern (☛p.6-10).
   - Print out the test pattern before changing the paper registration setting.
2. Enter the "Service Mode".
3. Select "Eng. Maintenance", and then press "OK" key.
4. Select the "Registration", and then press "OK" key.



m016t500

(1): Feed Direction
(2): Vertical Adjustment
(3): Horizontal Adjustment
(4): Print Area

5. Press the "Up" or "Down" keys to set the registration value from -15 to +15 (that is, from -1.5 to +1.5 mm, in 0.1 mm increments).
   - Increase the value to shift the print area in the plus direction.
   - Decrease to shift in the minus direction.
6. Adjust the margins of the test page so that they are equal in size.

SYSTEM MAINTENANCE REFERENCE

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

5. SYSTEM MAINTENANCE REFERENCE

5.1 SERVICE PROGRAM MODE

5.1.1 OVERVIEW

This model has several service menus. Each service menu has several adjustment items. This section explains how to enter each service menu and what you can do in each service menu.

5.1.2 ENTERING ENGINE MAINTENANCE MODE

While holding the <Stop/Start Key> and <Escape Key> at the same time, turn on the Main Power Switch to the “ON” position.

Note: There is no SOM (Smart Organizing Monitor) utility.

5.1.3 SERVICE MODE MENU

Selecting an Item

To select an item, press the "Up" or "Down" key.

Going into the Next Level/ Returning to the Previous Level

- To go into the next level of an item, select an item then press the "OK" key.
- To return to the previous level of an item, press the "Escape" key.

Exiting the Service Mode Menu

To exit the Service Mode menu, select the "End", and then press “OK” key.

Menu List

Display Info		
Model Name		Displays the Model Name, Depends on Engine Firmware Settings
FW Ver.	CTL FW Ver.	Displays the Firmware Version
	Engine FW Ver.	Displays the Engine Firmware Version
	PDL FW Ver.	Displays the PDL Firmware Version.
Counter	Total Page	Displays the total pages
	JAM Page	Displays the jam total

Engine Maintenance		
Brand	Do not change this setting (Designed for Factory Use). RICOH/ GESTETNER/ INFOTEC/ LANIEA/ NRG/ SAVIN/ SP	
PNP	Sets the model name to a host via USB device. Do not change this setting (Designed for Factory Use). [0x00 – 0x7F]	
Destination	Sets the destination and updates the engine setting. Do not change this setting (Designed for Factory Use). DOM/ NA/ EU (Default)/ ASIA/ CHN/ TAIWAN/ KOREA	
Registration	Horiz.: Tray 1	Adjusts the horizontal registration for tray 1. If the machine settings are reset to the factory defaults, this value does not change. [-40 to 40 / 0 (Default) / 0.1 mm/step]
	Vert.T1.Plain	Adjusts the vertical registration of plain paper for tray1. If the machine settings are reset to the factory defaults, this value does not change. [-40 to 40 / 0 (Default) / 0.1 mm/step]

Engine Maintenance		
	Vert.T1.Thick	Adjusts the vertical registration of thick paper for tray 1. If the machine settings are reset to the factory defaults, this value does not change. [-40 to 40 / 0 (Default) / 0.1 mm/step]
	Vert.T1.Thin	Adjusts the vertical registration of thin paper for tray 1. If the machine settings are reset to the factory defaults, this value does not change. [-40 to 40 / 0 (Default) / 0.1 mm/step]

Engine Maintenance		
Registration	Horiz.: Tray 2	Adjusts the horizontal registration for tray 1. If the machine settings are reset to the factory defaults, this value does not change. [-40 to 40 / 0 (Default) / 0.1 mm/step]
	Vert.T2.Plain	Adjusts the vertical registration of plain paper for tray 2. If the machine settings are reset to the factory defaults, this value does not change. [-40 to 40 / 0 (Default) / 0.1 mm/step]
	Vert.T2.Thick	Adjusts the vertical registration of thick paper for tray 2. If the machine settings are reset to the factory defaults, this value does not change. [-40 to 40 / 0 (Default) / 0.1 mm/step]
	Vert.T2.Thin	Adjusts the vertical registration of thin paper for tray 2. If the machine settings are reset to the factory defaults, this value does not change. [-40 to 40 / 0 (Default) / 0.1 mm/step]
Registration	Horiz.: Bypass	Adjusts the horizontal registration for the bypass tray. If the machine settings are reset to the factory defaults, this value does not change. [-40 to 40 / 0 (Default) / 0.1 mm/step]
	Vert.BP.Plain	Adjusts the vertical registration of plain paper for the bypass tray. If the machine settings are reset to the factory defaults, this value does not change. [-40 to 40 / 0 (Default) / 0.1 mm/step]
	Vert.BP.Thick	Adjusts the vertical registration of thick paper for the bypass tray. If the machine settings are reset to the factory defaults, this value does not change. [-40 to 40 / 0 (Default) / 0.1 mm/step]

Engine Maintenance		
	Vert.BP.Thin	Adjusts the vertical registration of thin paper for t the bypass tray. If the machine settings are reset to the factory defaults, this value does not change. [-40 to 40 / 0 (Default) / 0.1 mm/step]
Registration	Horiz.: Dup. Back	Adjusts the horizontal registration the back side in duplex mode. If the machine settings are reset to the factory defaults, this value does not change. [-40 to 40 / 0 (Default) / 0.1 mm/step]
	Vert. Dup. Plain	Adjusts the vertical registration of plain paper for the back side in duplex mode. If the machine settings are reset to the factory defaults, this value does not change. [-40 to 40 / 0 (Default) / 0.1 mm/step]
	Vert. Dup. Thick	Adjusts the vertical registration of thick paper for the back side in duplex mode. If the machine settings are reset to the factory defaults, this value does not change. [-40 to 40 / 0 (Default) / 0.1 mm/step]
	Vert. Dup. Thin	Adjusts the vertical registration of thin paper for the back side in duplex mode. If the machine settings are reset to the factory defaults, this value does not change. [-40 to 40 / 0 (Default) / 0.1 mm/step]
Machine ID	00* – 7F Displays the current brand ID number. Do not change this setting (Designed for Factory Use).	
Fuser SC Reset	This button is for resetting an SC related with the fusing errors.	
Reset Trans Rol	Clears the EM counter of the transfer roller.	
Reset Feed	Clears the EM counter of the paper feed roller.	

Engine Maintenance		
Reset FuserUnit	Clears the EM counter of the fusing unit.	
Motor Rotation	Displays the main motor rotation time.	
Print Cartridge	Kind ID	Displays the toner cartridge (AIO) information (Kind ID).
	Toner End His	Displays the toner cartridge (AIO) information (Toner End History).
	Ref Flag State	Displays the toner cartridge (AIO) information (Refill flag status).
	U Print Counter	Displays the toner cartridge (AIO) information (Unit Print Counter).
OPC Life Info	OPC Rotation.T	Displays the OPC life information (OPC rotation time).
	PreOPC Rota.T	Displays the OPC life information (Pre-OPC rotation time)
	Alert Status	Displays the OPC life information (Alert status)
	PreAlert Status	Displays the OPC life information (Pre-Alert status)
EM Counter Info	Trans Rol Rem	Displays the total counter (Remain of Transfer Roller).
	Trans Rol Time	Displays the EM counter (Transfer Roller: Time).
	Trans Rol Page	Displays the EM counter (Transfer Roller: pages).
	Paper Rol Rem	Displays the total counter (Remain of Paper Feed Roller).
	Paper Rol Page	Displays the EM counter (Paper Feed Roller: pages).

Engine Maintenance		
	Fuser Unit Rem	Displays the total counter (Remain of Fusing Unit).
	Fuser Unit T	Displays the EM counter (Fusing Unit: time).
	Fuser Unit P	Displays the EM counter (Fusing Unit: pages).
Total Counter	Engine Counter	Displays the total counter (Engine).
Eng Memory Clr	Resets the engine settings stored in the EEPROM to factory default.	
SC559 Detection	[On or Off (Default)]	
EM Life Display	Sets the display of alert when each EM parts yield of this machine is reached. [On or Off (Default)]	
Output check	Main Motor	Output check (Main Motor)
	Middle Clutch	Output check (Relay Clutch)
	Tray1 Clutch	Output check (Paper Feed Clutch)
	Bypass solenoid	Output check (Bypass solenoid)
	Regist Clutch	Output check (Registration Clutch)
	Reserve Clutch	Output check (Reserve Clutch)
	Fan High Speed	Output check (Fan High Speed)
	Fan Low Speed	Output check (Fan Low Speed)
	Erase Lamp	Output check (Quenching Lamp)
	Polygon Motor	Output check (Polygon Motor)
	Tray2 Motor	Output check (Tray2 Motor)
	D Motor Normal	Output check (Duplex Motor Normal)
	D Motor Reserve	Output check (Duplex Motor Reverse)
Buckle	Vert.T1.Plain	Adjusts the amount of paper buckle at the

Engine Maintenance		
Amount	Vert.T1.Thick	registration roller for each tray and paper type. [-8 to 8 / 0 (Default) / 1 mm/step]
	Vert.T1.Thin	Adjusts the amount of paper buckle at the registration roller for each tray and paper type. [-8 to 8 / -2 (Default) / 1 mm/step]
	Vert.BP.Plain	Adjusts the amount of paper buckle at the registration roller for each tray and paper type. [-8 to 8 / 0 (Default) / 1 mm/step]
	Vert.BP.Thick	
	Vert.BP.Thin	
	Vert.T2.Plain	Adjusts the amount of paper buckle at the registration roller for each tray and paper type. [-8 to 8 / 0 (Default) / 1 mm/step]
	Vert.T2. Thick	
	Vert.T2.Thin	
	Vert.Dup.Plain	Adjusts the amount of paper buckle at the registration roller for each tray and paper type. [-8 to 8 / 0 (Default) / 1 mm/step]
	Vert.Dup.Thick	
	Vert Dup.Thin	
Fuse Unit Temp	Plain Paper	Adjusts the fusing temperature for plain paper. [150 to 190 / 175 (Default) / 5°C/step]
	Thick Paper 1	Adjusts the fusing temperature for thick 1 paper. [160 to 200 / 185 (Default) / 5°C /step]
	Thick Paper 2	Adjusts the fusing temperature for thick 2 paper. [160 to 200 / 185 (Default) / 5°C/step]
	Standby	Adjusts the fusing temperature in the standby mode. [120 to 175 / 155 (Default) / 1°C/step]
	Low Power	Adjusts the fusing temperature in the low power mode. [80 to 135 / 120 (Default) / 5°C/step]
Fuse Unit Temp	Thin Paper	Adjusts the fusing temperature for thin paper. [140 to 165 / 150 (Default) / 5°C/step]

Engine Maintenance		
	Envelope	Adjusts the fusing temperature for envelope. [170 to 200 / 200 (Default) / 5°C/step]
	Postcard	Adjusts the fusing temperature for postcard. [160 to 200 / 185 (Default) / 5°C/step]
	Recycled Paper	Adjusts the fusing temperature for recycled paper. [150 to 180 / 160 (Default) / 5°C/step]
Charge Bias	Adjusts the charge bias. [1050 to 1300 / 1200 / 25 /step]	
Developer Bias	Adjusts the developer bias. [270 to 330 / 300 / 15 /step]	
TRoller Bias	Adjusts the transfer roller bias. [-6 to 6 / 0 / 1 /step]	
Subscan Magn	Adjusts the sub scan magnification. [-8 to 8 / 0 / 1 /step]	
Toner Near End	Sheets	Adjusts the printable sheets between "toner near end" to "toner end". [0 to 255 / 200 / 1 sheet/step]
	Dot Count	Adjusts the printable dot count between "toner near end" to "toner end". [0 to 255 / 100 / 1 dot/step]

Engine Maintenance		
Waste toner Dsp	Independent-Supply Toner	Sets the machine operation at "waste toner full" of the refilled AIO. [On or Off (Default)] Note ▪ With main motor rotation count feature, machine can be set to stop printing after print total exceeds a certain set value. If print count exceeds this value, then "Replace Print Cartridge" remains in display. Then a new AIO cartridge must be installed. This feature is a safety measure to prevent the used toner tank from becoming full (there is no toner overflow detection mechanism).
Test Pattern	Prints the test pattern.	
Control Mode	Corrects the face curl of paper. 0: OFF (28ppm) 1: Sets the engine speed at 14ppm after printing 1 minute. 2: Sets the engine speed at 14ppm. 3 to 255: not available [0 to 255 / 0 / 1 /step]	
AdjCharge Bias	Charge bias correction for dirty background 0: OFF (Default) 1: ON 2 to 255: not available [0 to 255 / 0 / 1 /step]	
1200dpi LD Power	Adjusts print density (density levels by increasing the number) [31 to 155 / 112 (Default) / 1 /step]	
Size Mism. Det.	Sets whether to detect the size mismatch in ejecting the paper or not. When “Yes” is set, the error recovery procedure is performed if size mismatch is detected. When “No” is set, the error recovery procedure is not performed regardless of the size mismatch. [Yes (Default)/ No]	

Factory Default		
Factory Default	Execute (OK)	Resets all the settings to factory default. Note ▪ Clears/ resets the contents of the controller board memory (all data programmed by the user, log data) to factory default. After executing, initial setup menu starts after power-on.

CTL Maintenance		
CTL Maintenance	PDL Mode	ON = "PDL Settings" is shown (Default) OFF = "PDL Settings" is hidden

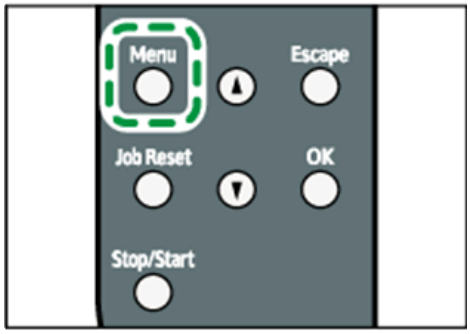
5.2 CONFIGURATION AND MAINTENANCE PAGE

5.2.1 OVERVIEW

The configuration page and maintenance page have information about the machine's status. Print this sheet as shown below. Check the configuration page or maintenance page when doing machine maintenance.

To Print the Configuration Page/ Maintenance Page

1. Turn on the machine.



m116s001

1. Press the "Menu" key.
2. Press the "Up" or "Down" key to select "List/Test Print", and then press the "OK" key.
3. Press the "Up" or "Down" key to select "Config. Page" or "Maintenance Pg.", and then press the "OK" key.
4. The configuration page or maintenance page is printed.

Other Types of Reports

You can also check other reports than two reports (configuration page and maintenance page) with "List/Test Print" in the "Menu ".

- Menu List
- Prints the menu list showing all available menus.
- Dup. Test Page
  Prints a test page for checking the duplex printing condition.
- PCL Font List
  Prints the current configuration and installed PCL font list.
- PS. Font List
  Prints the current configuration and installed PostScript font list.

Total Counter

Total Counter:

The total counter incremented by the **"engine controller board"** each time the board issues a print command to the engine.

The value is calculated as follows:

Total counter = Printer counter + Reports print

Application Counters:

Application counters exist for each individual primary machine function, and are incremented by the **"controller board"** each time the board issues a print request for the function in question.

5.3 FIRMWARE UPDATING

Important

- Never turn the machine's main power off while the firmware is being updated, as this could damage the ECB or controller board.

5.3.1 CHECKING THE MACHINE FIRMWARE VERSION

To update the firmware for this machine, you need the most recent version of the firmware (firmware file downloadable from the Internet).

1. Turn on the machine.
2. Press the "Menu" key.
3. Press the "Up" or "Down" key to select "List/Test Print", and then press the "OK" key.
4. Press the "Up" or "Down" key to select "Config. Page" or "Maintenance Pg.", and then press the "OK" key.
5. Check the "Firmware Version" (Controller) and "Engine FW version" on the list of the pages.

5.3.2 UPDATING THE CONTROLLER FIRMWARE

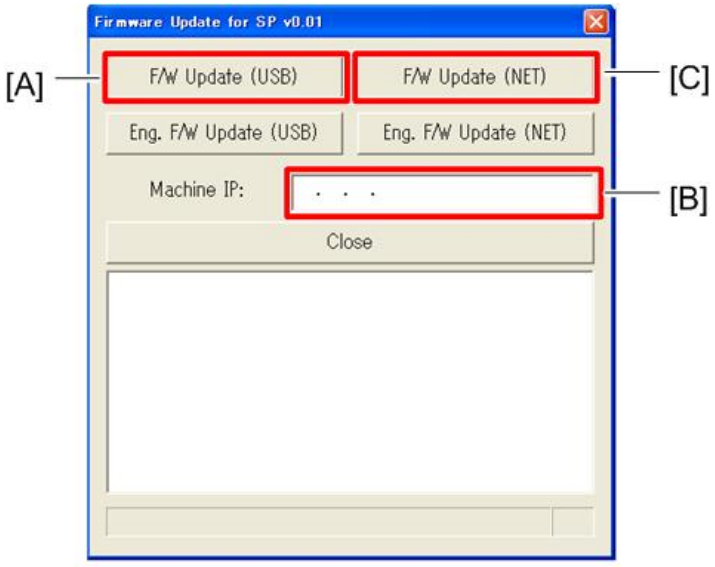
Using the following procedure to update the controller firmware, be sure to print the configuration page both before and after the update. Comparing pre- and post-update configuration pages allows you to check whether or not the update was successful.
Follow the procedure carefully, and note that it will vary in parts depending on which version of the firmware is currently installed.

Procedure

When updating firmware, always disconnect any other cable(s) than the one being used for the update operation.
(When updating firmware via USB cable, first disconnect any network and phone line cables, and when updating firmware via LAN cable, first disconnect any USB and phone line cables.)

1. Prepare:
   - Computer: Windows XP/Vista/7, Windows Server 2003/2003 R2, 2008/2008 R2
   - USB cable or LAN (Local Area Network) cable
2. Download the firmware files to your computer.
   - FwUpdateToolSP.exe (Service Mode execute file)
   - Setting.ini (Parameter setting)
   - xxx.brn (Controller Firmware)
3. Make a folder on a local drive of your computer and save the files there.
4. Connect a computer and the machine through a network or directly by USB.

5. Click the "FWUpdateToolSP.exe" file to execute the updating program.



m118s002

6. For a USB connection, click "F/W Update (USB)" [A]. For a network connection, enter the machine's IP address in "Machine IP" [B], and then click "F/W Update (NET)" [C].
   Check the firmware update tool window for messages and the update's current percentage of completion.

   Note

   - Do not turn the main power off from this point until the update procedure is completed.

7. Wait until "FW Update Done.***Please reboot the Machine.***" appears in the firmware update tool window. Also check that update completion message appears on the machine's control panel.
8. Turn off the power of the machine, and then turn it back on.
9. Print a configuration or maintenance page to check the machine's firmware version.

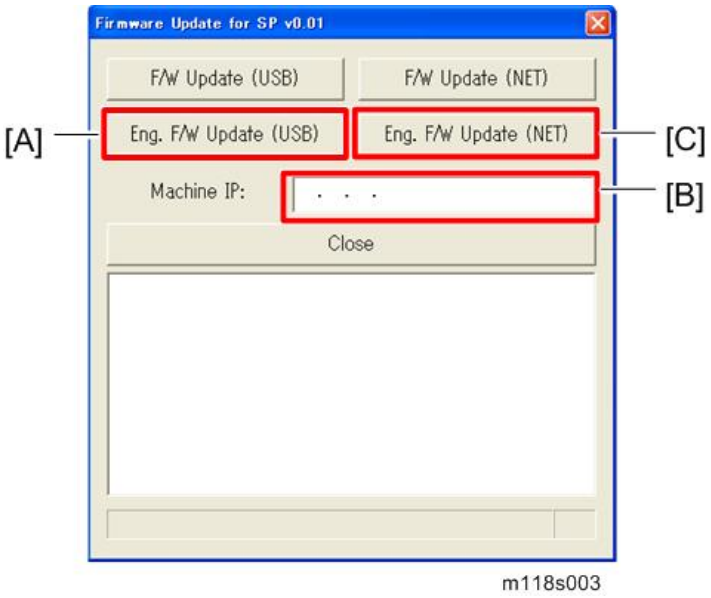
5.3.3 UPDATING THE ENGINE FIRMWARE

Procedure

When updating firmware, always disconnect any other cable(s) than the one being used for the update operation.

(When updating firmware via USB cable, first disconnect any network and phone line cables, and when updating firmware via LAN cable, first disconnect any USB and phone line cables.)

1. Prepare:
2. Computer: Windows XP/Vista/7, Windows Server 2003/2003 R2, 2008/2008 R2
   - USB cable or LAN (Local Area Network) cable
3. Download the firmware files to your computer.
   - FwUpdateToolSP.exe (Service Mode execute file)
   - Setting.ini (Parameter setting)
   - yyy.bin (Engine Firmware)
4. Make a folder on a local drive of your computer and save the files there.
5. Connect a computer and the machine through a network or directly by USB.
6. Click the "FWUpdateToolSP.exe" file to execute the updating program.



7. For a USB connection, click "Eng. F/W Update (USB)" [A]. For a network connection, enter the machine's IP address in "Machine IP" [B], and then click "Eng. F/W Update (NET)" [C]. Check the firmware update tool window for messages and the update's current percentage of completion.

Note

- You will see the progress percentage appear while the update is in progress.
- Do NOT turn the main power of the machine off during updating.

8. Wait until “FW Update Done.***Please reboot the Machine.***” appears in the firmware update tool window. Also check that update completion message appears on the machine’s control panel.
9. Turn off the power of the machine, and then turn it back on.
10. Print a configuration or maintenance page to check the machine's firmware version.

5.3.4 UPDATING THE BOOT LOADER FIRMWARE

This is also listed on the configuration page, but this firmware is not updated in the field.

5.3.5 UPDATING FAILURE

If the firmware update is not successful, the update process is suspended and an error message should display on the FW Update Tool screen. If this happens, DO NOT turn off the machine, and execute the update procedure again (unless the error message "Downloaded file is broken! Do NOT use print, scan, fax and copy function at the same time." is displayed).
If power is turned off accidentally during a firmware update, the firmware will not be correctly updated, and the machine may not start up normally. If the machine does not start up normally, the controller firmware and/or the engine firmware will need to be updated again.
When the machine does not start up normally, in most cases, the panel display will indicate one of the following two conditions:

- When attempting to restart the machine, the LCD panel display indicates "Initializing" indefinitely.
  In this case, the controller firmware update has failed. The controller firmware must be updated again.
- When attempting to restart the machine, the LCD panel display indicates "Please Download Engine FW Again!"

In this case, the engine firmware update has failed. The engine firmware must be updated again.

5.3.6 FW UPDATE TOOL MESSAGES

FW Update Tool Messages: Information

Message for USB update

Messages	Comment	Action
USB Upload : End of data	Send F/W file to Printer successfully. (Transmission Time: <30 sec)	Please reboot Printer after panel shows reboot message.
USB Upload : FAIL	Can not open USB printer driver while F/W file is transmitted.	Check USB cable connection. Check the installation of USB Print Driver if it is available. Check Printer status if it is available.
	F/W file transmission can not be completed. (Transmission will be canceled if timeout.)	Check USB cable connection. Check USB Print Driver if it is available. Check Printer status if it is available.
Can't open ROM file.Please check ROM file.	F/W file does not exist.	Check the download file name in setting.ini. "ImageFile=" Check the download file and fw update tool is in the same folder.
Can't open Eng. ROM file. Please check Eng. ROM file.	Engine F/W file does not exist.	Check the download file name in setting.ini. "EngImageFile=" Check the download file and fw update tool is in the same folder.

Messages	Comment	Action
New Version: Update FW	AIO FW is transmitting	Not available
Eng FW version: Update Eng FW	Engine FW is transmitting	Not available
Firmware is Updating...	AIO FW is updating	Not available
Eng Firmware is Updating...	Engine FW is updating	Not available
FW Update Done. *** Please reboot the Machine.***	F/W update is completed.	Please reboot the Machine.

Message for Network update

Messages	Comment	Action
Connecting…	Connect to Printer.	Please wait a moment.
Net Upload : End of data	Update F/W successfully. (Transmission Time: <30 sec)	Please reboot Printer after panel shows reboot message.
Net Upload : FAIL	Can not open FTP port of Printer before F/W file is transmitted. (Transmission will be canceled if timeout.)	(1) Check network cable connection. (2) Check Printer status if it is available. (3) Check Printer and PC IP address setting. (4) Check PC firewall setting about FTP.
	F/W file transmission can not be completed. (Transmission will be canceled if timeout.)	(1) Check network cable connection. (2) Check Printer status if it is available.

Messages	Comment	Action
Can't open ROM file. Please check ROM file.	F/W file does not exist.	Check the download file name in setting.ini. "ImageFile=" Check the download file and fw update tool is in the same folder.
Can't open Eng. ROM file. Please check Eng. ROM file.	Engine F/W file does not exist.	Check the download file name in setting.ini. "EngImageFile=" Check the download file and fw update tool is in the same folder.
New Version: Update FW	AIO FW is transmitting	Not available
Eng FW version: Update Eng FW	Engine FW is transmitting	Not available
Firmware is Updating...	AIO FW is updating	Not available
Eng Firmware is Updating...	Engine FW is updating	Not available
FW Update Done. *** Please reboot the Machine.***	F/W update is completed.	Please reboot the Machine.

FW Update Tool Messages: Error

Message for USB update

Messages	Comment	Action
Machine is not ready.	Can not get Printer status form USB status channel before F/W file is transmitted.	Check USB cable connection. Check USB Print Driver if it is available. Do not update F/W when Printer is in power-on stage.
Wrong Model.	F/W file is not matched for current machine.	Please check the version of F/W file and machine if it is suitable for Printer.
Machine is busy.	F/W update is running. Other Printer functions are running.	Please wait F/W update is completed. Please wait other Printer functions are completed.
FW Update Done. *** Please reboot the Machine.***	F/W update is completed.	Please reboot the Machine.
Machine loses communication. ***Please check FW Update Done. Then reboot the Machine.***	F/W file has transmitted. Polling F/W update progress fail.	Do not reboot engine till Engine Panel display "Firmware Update Done. Please reboot". Then reboot engine.
Downloaded file is broken! Do NOT use print, scan, fax and copy function at the same time.	F/W checks the downloaded file. And get wrong checksum. So stop to modify F/W.	Check the downloaded file is not broken. Do not use Printer functions when update firmware.

Message for Network update

Messages	Comment	Action
Machine is not ready.	Can not get Printer status form Network status channel before F/W file is transmitted.	Check PC network settings and IP address. Check Printer network settings and IP address. Do not update F/W when Printer is in power-on stage.
Wrong Model.	F/W file is not matched for current machine.	Please check the version of F/W file and machine if it is suitable for Printer.
Machine is busy.	F/W update is running. Other Printer functions are running.	Please wait F/W update is completed. Please wait other Printer functions are completed.
FW Update Done. *** Please reboot the Machine.***	F/W update is completed.	Please reboot the Machine.
Machine loses communication. ***Please check FW Update Done. Then reboot the Machine.***	F/W file has transmitted. Polling F/W update progress fail.	Do not reboot engine till Engine Panel display "Firmware Update Done. Please reboot". Then reboot engine.
Downloaded file is broken! Do NOT use print, scan, fax and copy function at the same time.	F/W checks the downloaded file. And get wrong checksum. So stop to modify F/W.	Check the downloaded file is not broken. Do not use Printer functions when update firmware.

TROUBLESHOOTING

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

6. TROUBLESHOOTING

6.1 SERVICE CALL CONDITIONS

See "Appendices" for the "Error Message".

6.1.1 SUMMARY

This machine issues an SC (Service Call) code if an error occurs with the machine. The error code can be seen on the operation panel.

Make sure that you understand the following points;

1. All SCs are logged.
2. At first, always turn the main switch off and on if an SC code is displayed.
3. First, disconnect then reconnect the connectors before replacing the PCBs (if the problem concerns electrical circuit boards).
4. First, check the mechanical load before replacing motors or sensors (if the problem concerns a locked motor).

Fusing related SCs

To prevent damage to the machine, the main machine cannot be operated until the fusing related SC has been reset by a service representative.

- Enter the "Eng Maintenance" in the “Service Mode”.

Press "O.K" in "Fuser SC Reset" with engine maintenance mode, and then turn the main power switch off and on.

6.1.2 ENGINE SC

SC 2xx (Laser Optics Error)

202	Polygon motor on timeout error
	The polygon mirror motor does not reach the targeted operating speed within 10 sec. after turning.
203	Polygon motor off timeout error
	The polygon mirror motor does not leave the READY status within 20 sec. after the polygon mirror motor switched off.
204	Polygon motor lock signal error
	The signal remains HIGH for 200 ms (or 4times in 50msec polling) while the polygon mirror motor is rotating.
	▪ Polygon motor/driver board harness loose or disconnected ▪ Polygon motor/driver board defective ▪ Laser optics unit defective 1. Turn the main power off/on the machine. 2. Replace the interface harness of the laser optics unit. 3. Replace the laser optics unit.
220	Beam Synchronize error
	The laser synchronizing detection signal for LD is not output within 400msec after the LD unit has turned on.
	▪ Disconnected cable from the laser synchronizing detection unit or defective connection ▪ Defective laser synchronizing detector ▪ Defective LD ▪ Defective ECB 1. Check the connectors. 2. Replace the laser optics unit. 3. Replace the ECB.

268	Laser Scanning Unit thermistor error
	At power on, the temperature sensor in the optics unit detected a temperature lower than -30°C for more than 4 sec. -or- It detected a temperature higher than 105°C for more than 1sec.
	▪ Thermistor disconnected (causes extremely low temperature reading) ▪ Thermistor damaged and short circuited (causes extremely high temperature reading) 1. Turn the machine's main power off, and then on. 2. Replace the thermistor.

SC 4xx (Image Transfer and Transfer Error)

491	Bias leak
	An error signal is detected for 0.2 seconds when changing the development unit.
	▪ Defective transfer roller ▪ Defective high voltage power pack 1. Turn the machine's main power off, and then on.

SC 5xx (Motor and Fusing Error)

500	Main motor error
	The machine does not detect a main motor lock signal within 2sec after the main motor started to rotate. -or- The machine does not release a main motor lock signal within 2sec after the main motor switched off. -or- The machine detects a main motor lock signal every 100ms for seven times consecutively, after the main motor started to rotate stably.
	▪ Overload of ▪ Torque load overload ▪ Defective main motor ▪ Disconnect or defective motor harness 1. Turn the machine's main power off, and then on. 2. Check or replace the main motor if the torque load is normal. 3. Replace the motor harness.
530	Exhaust fun Error
	The FAN lock signal – High for 10 seconds, after the fan motor started to rotate.
	▪ Disconnected or defective motor harness. 1. Turn the machine's main power off, and then on.
541	Fuser thermistor error
	The thermistor output is less than 0°C for 5 seconds after the fusing lamp turns ON.

	▪ Disconnected or defective thermistor ▪ Disconnected or defective fusing lamp 1. Check the harness connection of the thermistor. 2. Replace the fusing unit. Important ▪ Execute "Fuser SC Reset" to recover the machine after completing the recovery procedure. Otherwise, the machine continues to issue this SC code and cannot be operated.
542	Fuser reload error
	This SC is issued if one of following conditions occurs: The fusing temperature rises 8°C or less in 1.5 seconds; and this continues 5 times consecutively. -or- The fusing temperature has not reached 45°C within 9 seconds (after the fusing lamp comes ON while the machine is warming-up). -or- The fusing unit does not attain reload temperature within 35 s. (normal temperature) or 65 s (lower temperature – the thermistor output is less than 18°C) after the fusing temperature control starts.
	▪ Defective or deformed thermistor ▪ Incorrect power supply input at the main power socket 1. Defective fusing lamp
543	High temperature error (Soft)
	▪ The detected temperature stays at 225°C for 1 second, and this consecutively occurs 10 times.
	▪ Defective ECB ▪ Defective PSU 1. Replace the ECB 2. Replace the PSU Important ▪ Execute "Fuser SC Reset" to recover the machine after completing the recovery procedure. Otherwise, the machine continues to issue this SC code and cannot be operated.

544	High temperature error (hard)
	▪ During stand-by mode or a print job, the detected heating roller temperature reaches 250°C.
	▪ Defective ECB ▪ Defective PSU 1. Replace the ECB 2. Replace the PSU Important ▪ Execute "Fuser SC Reset" to recover the machine after completing the recovery procedure. Otherwise, the machine continues to issue this SC code and cannot be operated.
545	Fuser full heater error
	The fuser full heater remained ON at full capacity for more than 9 s after the fusing temperature attains reload temperature.
	▪ Deformed thermistor ▪ Thermistor not in the correct position ▪ Defective fusing lamp 1. Replace the fusing unit. 2. Replace the fusing lamp. Important ▪ Execute "Fuser SC Reset" to recover the machine after completing the recovery procedure. Otherwise, the machine continues to issue this SC code and cannot be operated.

547	Zero cross error
	▪ The zero cross signal is detected three times even though the fusing lamp relay is off when turning on the main power. ▪ The zero cross signal is not detected for 3 seconds even though the fusing lamp relay is on after turning on the main power or closing the front door. ▪ The detection error occurs twice or more in 11 zero cross signal detections. This error is defined when the detected zero cross signal is less than 45. ▪ The zero cross signal is not detected three times while the main power remains ON.
	▪ Defective fusing relay ▪ Defective fusing relay circuit ▪ Shorted +24V fuse on the PSU ▪ Unstable power supply. 1. Check the power supply source. 2. Replace the +24V fuse on the PSU. 3. Replace the PSU
559	Fuser 3times jam error
	The paper jam counter for the fusing unit reaches 3. The paper jam counter is cleared if the paper is fed correctly. This SC is activated only when this function is enabled with "Eng. Maintenance" (default "OFF").
	▪ Defective fusing unit ▪ Defective fusing control 1. Clear this SC to send a command after a jam removal. 2. Turn off this function after a jam removal. Important ▪ Execute "Fuser SC Reset" to recover the machine after completing the recovery procedure. Otherwise, the machine continues to issue this SC code and cannot be operated.

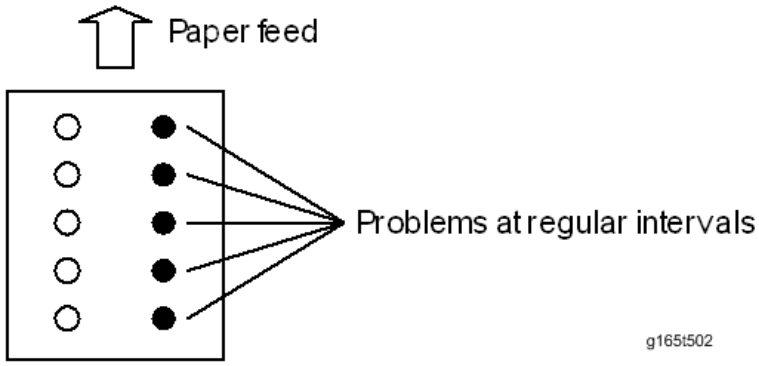
SC 6xx (Communication and Other Error)

669	EEPROM communication error
	An unexpected value exists in the initialization flag of the EEPROM
	▪ EEPROM not connected ▪ Defective EEPROM 1. Installing the EEPROM. 2. Replacing the EEPROM.
688	CTL_PRREQ_N signal does not come.
	The ECB does not receive a memory address command from the controller 20 seconds after paper is in the position for registration.
	▪ Defective controller board ▪ Communication error 1. Turn the machine's main power off, and then on. 2. Check if the controller board is firmly connected to the ECB.

6.2 IMAGE PROBLEMS

6.2.1 OVERVIEW

Image problems may appear at regular intervals that depend on the circumference of certain components. The following diagram shows the possible symptoms (black or white dots at regular intervals).



- Abnormal image at 29.8 mm intervals: Charge roller
- Abnormal image at 37.7 mm intervals: Registration roller
- Colored spots at 37.9 mm intervals: Print cartridge (Development roller)
- Abnormal image at 45.8 mm intervals: Transfer roller
- Colored spots at 75.3 mm intervals: Print cartridge (OPC drum)
- Abnormal image at 94.2 mm intervals: Fusing unit (Pressure roller)
- Abnormal image at 93.1 mm intervals: Fusing unit (Hot roller)
- Abnormal image at 100.5 mm intervals: Paper feed roller

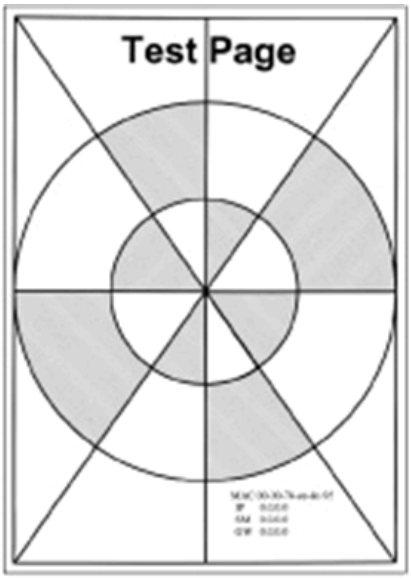
6.2.2 TEST PAGE PRINTING

When you check an image problem or other problems, it might be necessary to print a test page. Follow the test page print procedure below to print a test page.

Test Page Print Procedure

1. Press the "Menu".
2. Press the "Up" or "Down" keys to select "List/Test Print" and then press the "OK" key.
3. Press the "Up" or "Down" keys to select "Test Page" and then press the "OK" key.

- Test page sample



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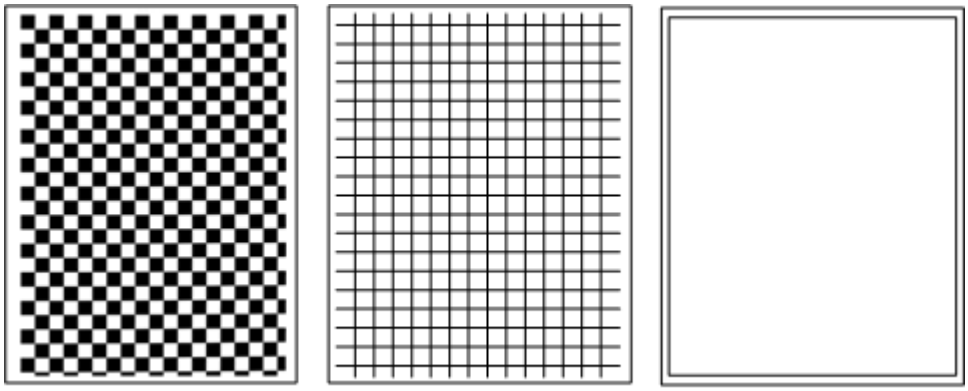
6.2.3 TEST PATTERN PRINTING

Follow the test pattern print procedure below to print a test pattern.

Test Pattern Print Procedure

1. Enter the "Service Mode".
2. Select "Eng Maintenance", and then press "OK" key.
3. Select "Test Pattern", and then press "OK" key.
4. The following three test pattern pages (Checker flag/ Grid pattern/ Trimming pattern) are printed.

- Test pattern samples



6.2.4 DARK LINES IN HALFTONE AREAS AT 75MM INTERVALS

Using the machine in a room where the humidity level is too low may cause dark lines in halftone areas at 75mm intervals. This is because low-humidity conditions tend to cause variations in light sensitivity across the surface of the drum.

Selecting [On] for [Low Humid. Mode] under the [Maintenance] (Menu) may help to prevent these lines from appearing.

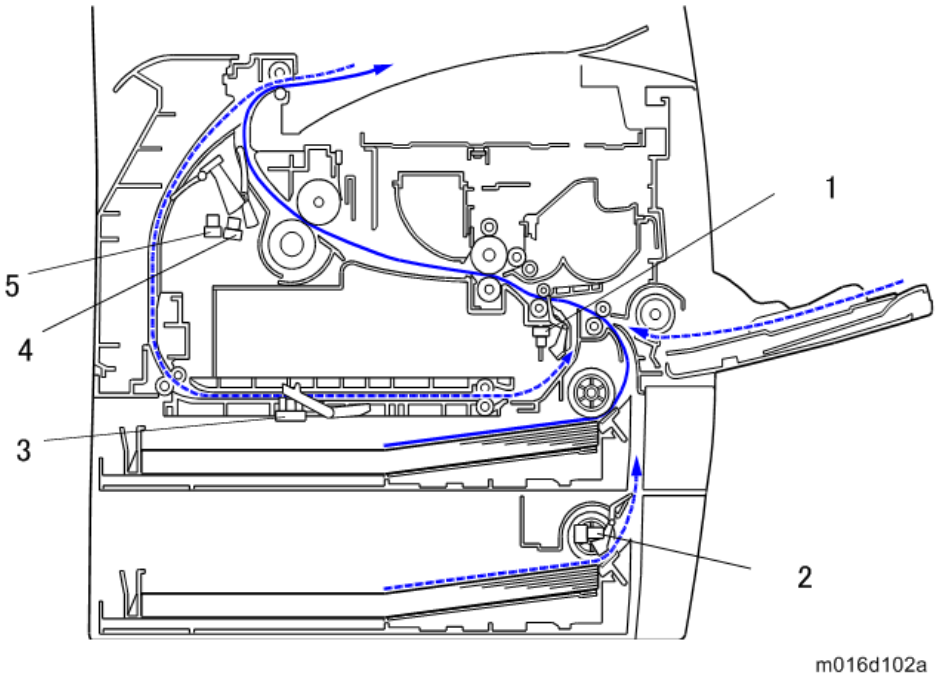
When the humidity mode setting is enabled, the drum is rotated slightly every 15 minutes. This keeps the light sensitivity constant across the entire surface of the drum.

6.3 JAM

6.3.1 JAM SENSOR LAYOUT

There are the sensors of the jam detection as shown below.

Paper Jam



1. Registration Sensor
2. Tray2 Paper Feed Sensor
3. Inverter Sensor
4. Paper Exit Sensor
5. Relay Sensor

6.3.2 JAM MESSAGE LIST

Here is a list of common jam messages, a description of the causes.
See the drawing shown above to check the sensor location.

Paper Jam

Related to jam code

Jam message	Cause	Sensor
Misfeed: PprTray	Paper does not reach registration sensor (bypass tray)	Registration sensor [1]
Misfeed: Tray 1	Paper does not reach registration sensor (tray1)	Registration sensor [1]
Misfeed: Tray 2	Paper does not reach tray2 convey sensor	Tray2 paper feed sensor [2]
	Paper does not reach registration sensor	Registration sensor [1]
Misfd: Dupl Unit	Paper does not reach registration sensor (duplex feed tray)	Registration sensor [1]
	Paper does not reach duplex entry sensor	Relay sensor [5]
	Paper does not reach duplex exit sensor	Inverter sensor [3]
Internal Misfeed	Paper stayed on registration sensor	Registration sensor [1]
	Paper does not reach exit sensor	Paper exit sensor [4]
Misfd: Stnd Tray	Paper stayed on exit sensor	Paper exit sensor [4]

Related to initialize jam

Jam message	Cause
Misfeed: Tray 2	Tray2 paper feed sensor [2]
Internal Misfeed	Registration sensor [1]
Misfd: Stnd Tray	Paper exit sensor [4]
Misfd: Dupl Unit	Relay sensor [5]
	Inverter sensor [3]

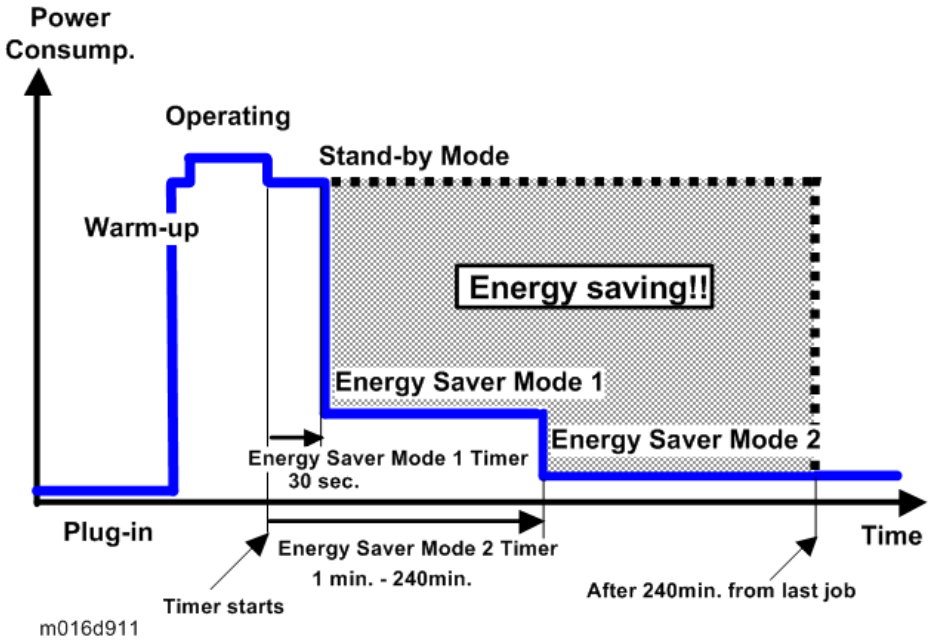
ENERGY SAVER

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

7. ENERGY SAVER

7.1 ENERGY SAVER MODES

Customers should use energy saver modes properly, to save energy and protect the environment.



The backlight of the screen is turned off and "Energy Saver Mode1" appears on the screen, and then the fusing lamp is turned off and "Energy Saver Mode2" appears on the screen.
The area shaded grey in this diagram represents the amount of energy that is saved when the timers are at the default settings. If the timers are changed, then the energy saved will be different. For example, if the timers are all set to 240 min., the grey area will disappear, and no energy is saved before 240 min. expires.

7.1.1 TIMER SETTINGS

The user can set these timers with Menu (System > Energy Saver 1 or Energy Saver 2)

- Energy Saver Mode 1 (30 sec.): This can be only turned on or off.
- Energy Saver Mode 2 (1 to 240 min.): This can be turned on or off and timer setting is adjustable (default: 1min.).

7.1.2 RETURN TO STAND-BY MODE

Energy Saver Mode 1

- Recovery time: 10 sec.

Energy Saver Mode 2

- Recovery time: 20 sec.

7.1.3 RECOMMENDATION

We recommend that the default settings should be kept.

- If the customer requests that these settings should be changed, please explain that their energy costs could increase, and that they should consider the effects on the environment of extra energy use.
- If it is necessary to change the settings, please try to make sure that the Energy Saver Mode 2 Timer is not too long. Try with a shorter setting first, such as 30 min., then go to a longer one (such as 60 min.) if the customer is not satisfied.
- If the timers are all set to the maximum value, the machine will not begin saving energy until 240 minutes has expired after the last job. This means that after the customer has finished using the machine for the day, energy will be consumed that could otherwise be saved.

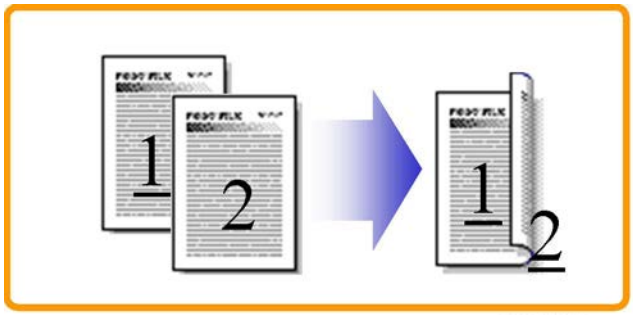
7.2 PAPER SAVE

7.2.1 EFFECTIVENESS OF DUPLEX/COMBINE FUNCTION

Duplexing and the combine functions reduce the amount of paper used. This means that less energy overall is used for paper production, which improves the environment.

1. Duplex:

Reduce paper volume in half!



d062d102

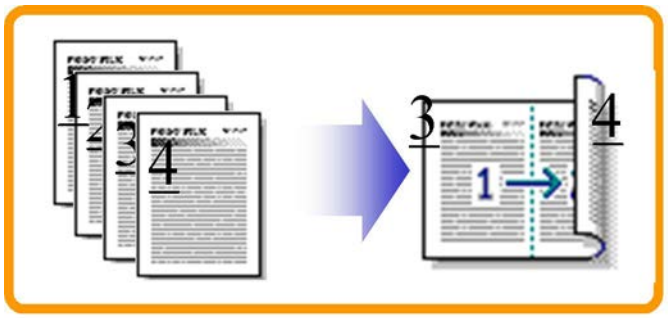
2. Combine mode:

Reduce paper volume in half!

d062d100

3. Duplex + Combine:

Using both features together can further reduce paper volume by 3/4!



d062d101

To check the paper consumption, look at the total counter and the duplex counter.

The total counter counts all pages printed.

- For one duplex page, the total counter goes up by 2.
- For a duplex job of a three-page original, the total counter goes up by 3.

The duplex counter counts pages that have images on both sides.

- For one duplex page, the duplex counter goes up by 1.
- For a duplex job of a three-page original, the duplex counter will only increase by 1, even though two sheets are used.

Total counter

This machine has a total sides printed counter only (so a duplex print is counted as two, not one).

You can check the total counter in the "Service Mode" or the “Menu”.

- Service Mode

  "Eng Maintenance" > "Total Counter" > "Engine Counter"
- Menu

“List/Test Print” > “Config. Page” or “Maintenance Pg.”

The following table shows paper savings and how the counters increase for some simple examples of single-sided and duplex jobs

Duplex mode:

Originals	Simplex Sheet used	Duplex Sheets used	**Paper Saved**	Total counter
1	1	1	**0**	1
2	2	1	**1**	2
3	3	2	**1**	3
4	4	2	**2**	4
5	5	3	**2**	5
10	10	5	**5**	10
20	20	10	**10**	20

If combine mode is used, the total and duplex counters work in the same way as explained previously. The following table shows paper savings and how the counters increase for some simple examples of duplex/combine jobs.

2 in 1 mode:

Originals	Simplex Sheet used	Duplex Sheets used	**Paper Saved**	Total counter
1	1	1	**0**	1
2	2	1	**1**	1
3	3	2	**1**	2
4	4	2	**2**	2
5	5	3	**2**	3
10	10	5	**5**	5
20	20	10	**10**	10

Duplex + 2 in 1 mode:

Originals	Simplex Sheet used	Duplex Sheets used	**Paper Saved**	Total counter
1	1	1	**0**	1
2	2	1	**1**	1
3	3	1	**2**	2
4	4	1	**3**	2
5	5	2	**3**	3
6	6	2	**4**	3
7	7	2	**5**	4
8	8	2	**6**	4
9	9	3	**6**	5
10	10	3	**7**	5
11	11	3	**8**	6
12	12	3	**9**	6

M116/M117
SERVICE MANUAL APPENDICES

M116/M117 APPENDICES

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APPENDIX:

SPECIFICATIONS

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

1. APPENDIX: SPECIFICATIONS

1.1 GENERAL SPECIFICATIONS

1.1.1 GENERAL SPECIFICATIONS

Configuration	Desktop	
Paper capacity	Main tray	250 sheets (80g/m^2) 100 postcards
	By-pass tray	50 sheets (80g/m^2) 8 envelopes 20 postcards
	Optional paper feed unit	Plain paper: 250 sheets (80g/m^2)
	Output tray	Face down: 125 sheets
Paper size	Main tray	A4, Letter, Legal, B5, A5, A6, HLT, Executive, Foolscap, Folio, Postcard **Custom size:** Max: 216 x 356mm (8.5 x 14 inch) Min: 100 x 148mm (3.937 x 5.8 inch)
	By-pass tray	A4, Letter, Legal, B5, A5, A6, HLT, Executive, Foolscap, Folio, Postcard, Envelope **Custom size:** Max.: 216 x 356mm (8.5 x 14 inch) Min.: 90 x 148mm (3.5 x 5.8 inch)
	Duplex	A4, Letter, Legal
	Optional paper feed unit	A4, LT, LG, B5, HLT, A5

Paper weight	Main tray	52-162 g/m^2 (14-43 lb)
	By-pass tray	52-162 g/m^2 (14-43 lb)
	Optional paper feed unit	60-105 g/m^2 (16-28 lb) A setting for outside of normal specifications paper (60 g/m^2 - 105 g/m^2) is provided. With this setting, it may be possible to print properly on outside of normal specifications paper.
Machine size (W x D x H)	370 x 392 x 262 mm (14.6 x 15.5 x 10.4 inch) Without Option	
Weight	M116: 11.7 kg(25.8 lb) M117: 12.7 kg(28.0 lb) With a starter AIO cartridge.	
Energy Saver Mode	Selectable 1 to 240 minutes (1 minute steps)	
Power consumption	Maximum	NA/TW: Less than 850 W (energy star compliant) EU/AP/CN: Less than 895 W (energy star compliant)
	Ready mode	120W
	Power save mode	70 W (energy saver mode1) 10 W (energy saver mode2)
Power	NA	120 V, 60Hz ± 3Hz
	TW	110 V, 60Hz ± 3Hz
	EU/AP/CN	220 - 240 V, 50/60Hz ± 3Hz
Noise	Printing	Less than 65.8 dB (A)
	Standby Mode	Less than 40 dB (A)
	Energy Save Mode	Less than 40 dB (A)

Warm up time	Less than 20 seconds
Machine life	5 years, 350,000 prints (whichever comes first)
Environmental Standard	Energy star program (M117)
Laser type	Class I

1.1.2 PRINTER

Print speed	Simplex	30 ppm LT, 28 ppm A4 (600 dpi)
	Duplex (M117 only)	15 ppm LT, 14 ppm A4 (600 dpi)
Printer drivers	PCL, PS3	
Font	80 fonts	
Resolution	1200 x 1200, 600 x 600 dpi	
Toner save mode	Supported	
First print time	Less than 8 seconds	
Duplex print	Supported (M117 only)	
PC interface	USB2.0, 10BASE-T/100BASE-TX	
Network	Protocol	TCP/IP, IPP
Memory	Standard	64 MB
Operation System	PCL: Windows XP/Vista/7 and Windows Server 2003/2003 R2/2008/2008 R2 PS3: Windows XP/Vista/7 and Windows Server 2003/2003 R2/2008/2008 R2, and Mac OS X 10.3 or later	

1.2 SUPPORTED PAPER SIZES

A	Supported, with size molded into tray. Need to select paper size by operation panel/driver.
B	Supported but size is not molded into tray. Need to select paper size by operation panel/driver.
C	Need to input paper size by operation panel and driver.
N	Not supported.

Type	SEF/ LEF	Size	Input Tray			Auto Duplex
			Standard Tray	Option PFU	Bypass Tray	
A4	SEF	210x297	A	A	B	B
B5	SEF	182x257	A	A	B	N
A5	SEF	148x210	A	A	B	N
	LEF	210x148	N	N	C	N
B6	SEF	128x182	B	N	B	N
	LEF	182x128	N	N	N	N
A6	SEF	105x148	B	N	B	N
	LEF	148x105	N	N	N	N
Postcard	SEF	100 x 148	C	N	C	N
	LEF	148 x 100	N	N	N	N
	SEF	200 x 148	C	N	C	N
	LEF	148 x 200	C	N	C	N
Legal	SEF	$8_{1/2}$"x14"	A	A	B	B
Letter	SEF	$8_{1/2}$"x11"	A	A	B	B

Type	SEF/ LEF	Size	Input Tray			Auto Duplex
			Standard Tray	Option PFU	Bypass Tray	
Half Letter	SEF	$5_{1/2}$" x $8_{1/2}$"	B	B	B	N
	LEF	$8_{1/2}$" x $5_{1/2}$"	N	N	N	N
Executive	SEF	$7_{1/4}$"x$10_{1/2}$"	A	N	B	N
F	SEF	8" x 13"	B	N	N	N
Foolscap	SEF	$8_{1/2}$" x 13"	B	N	N	N
Folio	SEF	$8_{1/4}$" x 13"	B	N	N	N
16 Kai	SEF	195 x 267	B	N	B	N
Env. #10	SEF	$4_{1/8}$" x $9_{1/2}$"	N	N	B	N
Env. Monarch	SEF	$3_{7/8}$" x $7_{1/2}$"	N	N	B	N
Env. C5	SEF	162 x 229	N	N	B	N
Env. C6	SEF	114 x 162	N	N	B	N
Env. DL	SEF	110 x 220	N	N	B	N
	Width	100-216mm	C	N	C	N
	Length	148-356mm	C	N	C	N
	Width	90-216mm	N	N	C	N
	Length	140-356mm	N	N	C	N

APPENDIX:

SP MODE TABLE

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

2. APPENDIX: SP MODE TABLE

2.1 SERVICE MENU

See "Main Chapters" for "Service Program Mode".

APPENDIX:

TROUBLESHOOTING GUIDE

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

3. APPENDIX: TROUBLESHOOTING GUIDE

3.1 SERVICE CALL CONDITIONS

See “Main Chapters” for "Service Call Conditions".

3.2 ERROR MESSAGES

3.2.1 OVERVIEW

Error messages will be displayed on the LCD panel if the machine has a problem. These can be viewed by a customer.

3.2.2 ERROR MESSAGES LIST

Message	Causes	Solutions
Cover open	The front cover is open.	Open and then close the front cover.
Controller FW download failed	Controller FW could not be downloaded.	Turn off the main power, turn it back on, and then download the controller FW again.
Incor Prt Cart	Irregular toner is set.	Replace the toner to appropriate one.
Internal Misfeed	There is a paper jam in the fusing unit.	Remove the jammed paper. See the user's guide.
Load Paper #	The indicated tray # (1, 2, bypass) is out of paper.	Load paper into the indicated paper tray. See the user's guide.
Memory Overflow	This error occurs when FW memory is not enough to save the printing page.	Reduce the size of the data, and then try the operation again.
Misfeed: Tray 1	Paper has been jammed in the tray 1 paper input area.	Remove the jammed paper. See the user's guide.
Misfeed: Tray 2	Paper has been jammed in the tray 2 paper input area.	Remove the jammed paper. See the user's guide.
Misfd: BypssTray	There is a paper jam in Bypass tray.	Remove the jammed paper. See the user's guide.
Misfd: Dupl Unit	There is a paper jam in the duplex unit.	Remove the jammed paper. See the user's guide.

Message	Causes	Solutions
Misfd: Stnd Tray	There is a paper jam in the paper exit area.	Remove the jammed paper. See User Guide.
Replace Fusing Unit	It is time to replace the Fusing unit.	Replace the Fusing unit. ☛p.2-1 "Service Menu"
Replace Ppr. Feed Roller	It is time to replace the paper feed roller.	Replace the paper feed roller. ☛p.2-1 "Service Menu"
Replace Print Cartridge	The printer is out of toner.	Replace the print cartridge. See the user's guide.
Replace soon Print Cartridge	The printer is almost out of tonner .	Prepare a new print cartridge.
Replace Transfer Roller	It is time to replace the transfer roller.	Replace the transfer roller. ☛p.2-1 "Service Menu"
Reset Tray 1	The indicated paper input tray 1 is not installed correctly, or not installed.	Install the indicated paper input tray 1 correctly.
Service call SCXXX	There is a problem with the printer's controller.	☛p.3-1 "Service Call Conditions"
Set Er: Prt Cart	The indicated print cartridge is not set correctly, or not set.	Set the indicated print cartridge correctly.
	The error message appears even though the print cartridge is set correctly.	Using a dry cloth, carefully wipe the interface area on the print cartridge surface.
Size Msmtch: # Start/JobReset	The paper size setting in the tray # (1, 2, bypass) differs from that of actual paper size in the tray.	Load paper of the selected size in the tray, and then press the [Stop/Start] key to continue printing. Press the [Job Reset] key to cancel printing.

Message	Causes	Solutions
TypeMsmtch: # Start/JobReset	The paper type setting in the tray # (1, 2, bypass) differs from that of actual paper type in the tray.	Load paper of the selected type in the tray, and then press the [Stop/Start] key to continue printing. Press the [Job Reset] key to cancel printing.

(M355)

PAPER FEED UNIT TK 1080

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

(M355) Paper Feed Unit TK 1080

TABLE OF CONTENTS

Read This First

Safety and Symbols

Replacement Procedure Safety

⚠CAUTION

- Turn off the main power switch and unplug the machine before beginning any of the replacement procedures in this manual.

Symbols Used in this Manual

This manual uses the following symbols.

: See or Refer to

: Screws

: Connector

: Clamp

: Clip ring

: E-ring

REPLACEMENT AND ADJUSTMENT

1. REPLACEMENT AND ADJUSTMENT

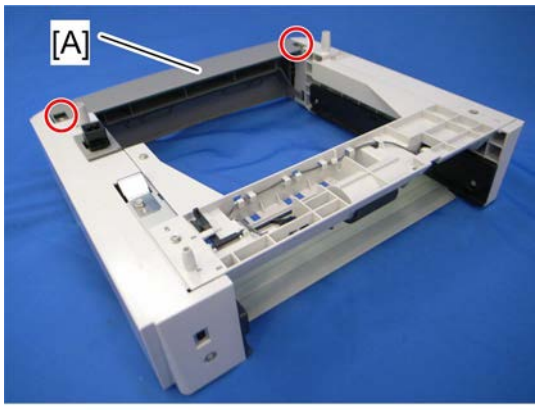
1.1 EXTERNAL COVERS AND PAPER FEED UNIT

⚠CAUTION

- Turn off the main power switch and unplug the machine before attempting any procedure in this section.

1.1.1 REAR COVER

1. Remove the paper tray unit from the main unit.
2. Pull out the paper tray.

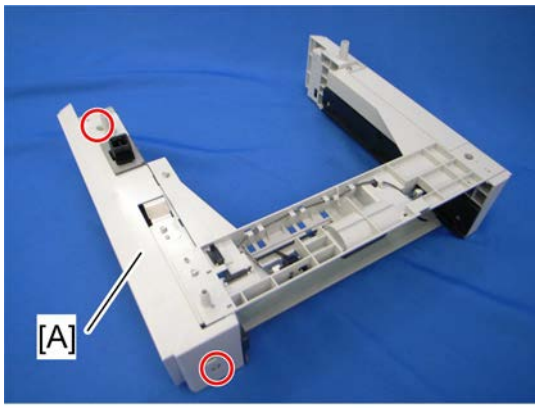


m355r500

3. Rear cover [A] (x2).

1.1.2 RIGHT COVER

1. Rear cover (☛ 1-1)

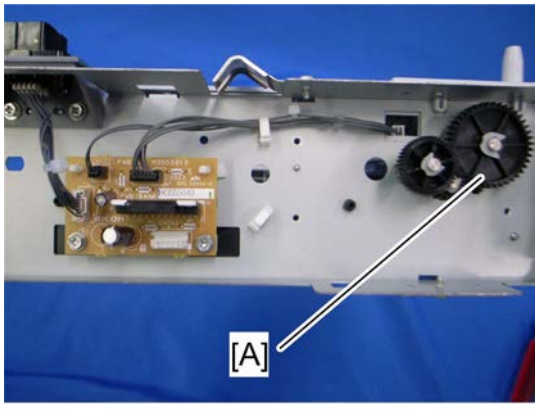


m355r501

2. Right cover [A] (🔩 x2).

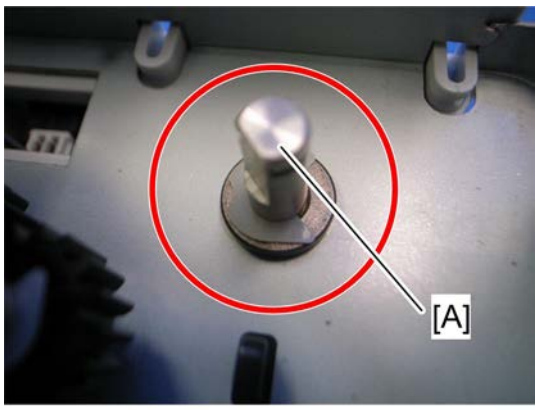
1.1.3 PAPER FEED UNIT

1. Right cover (☛ p.1-2)
2. Paper feed motor bracket (☛ p.1-8)



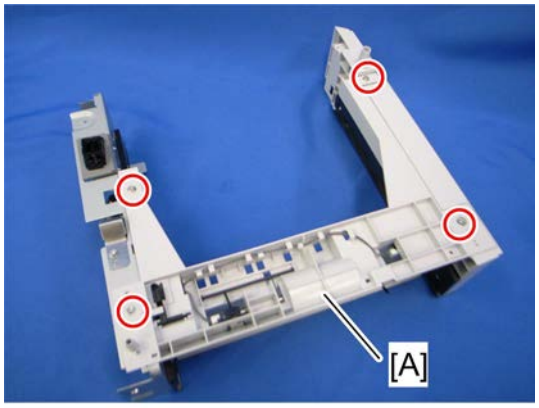
m355r502

3. Paper feed roller shaft gear [A] (C-ring x1)



m355r503

4. Release paper feed roller shaft [A] (C-ring x1, bushing x1).



m355r505

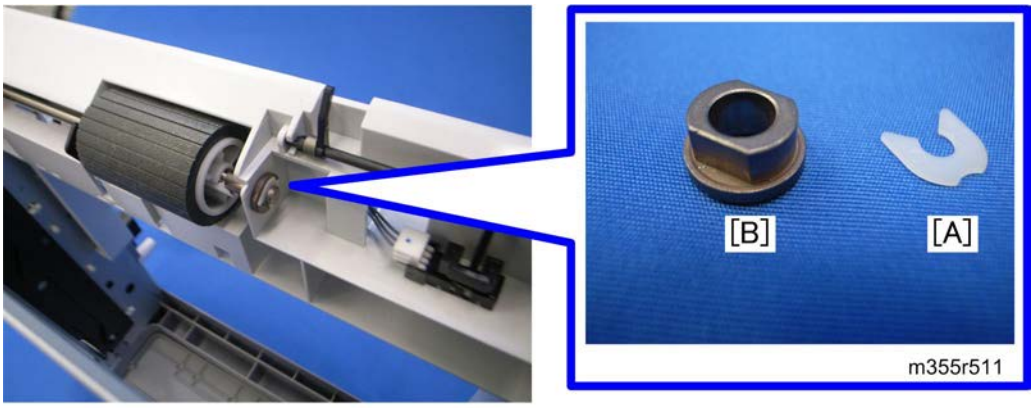
5. Paper feed unit [A] (x4)

1.2 PAPER FEED ROLLER

1.2.1 PAPER FEED ROLLER

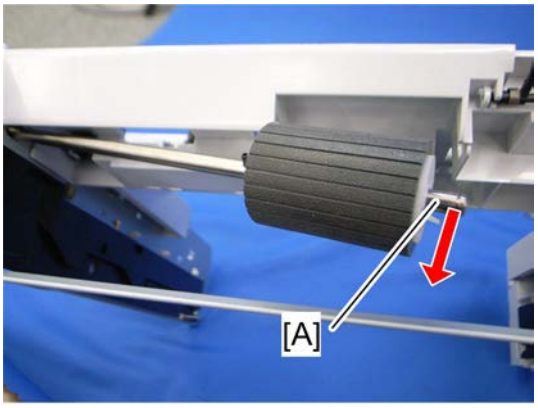
Remove the paper feed roller

1. Right cover (☛ p.1-2).



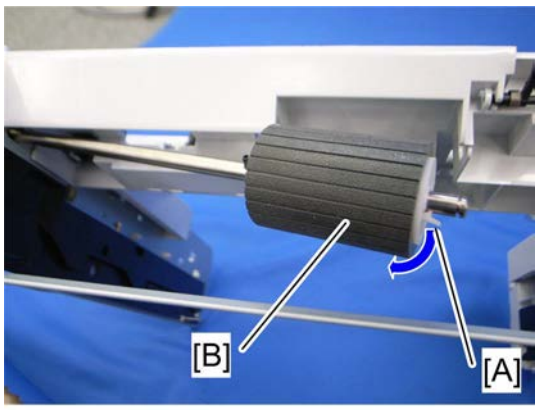
m355r510

2. Remove a C-ring [A] and a bushing [B].



m355r512

3. Release the paper feed roller shaft [A].

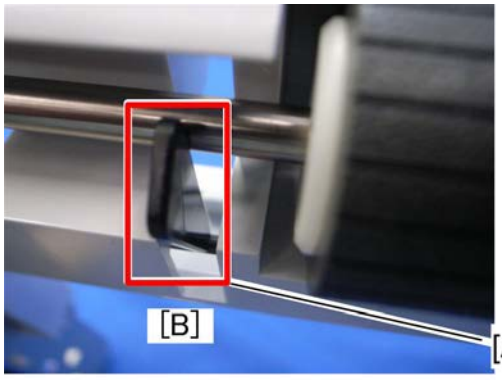


m355r513

4. Release the hook [A] and then move the paper feed roller [B] to the right.

Reinstall the paper feed roller

1. Attach the paper feed roller to the paper feed roller shaft.



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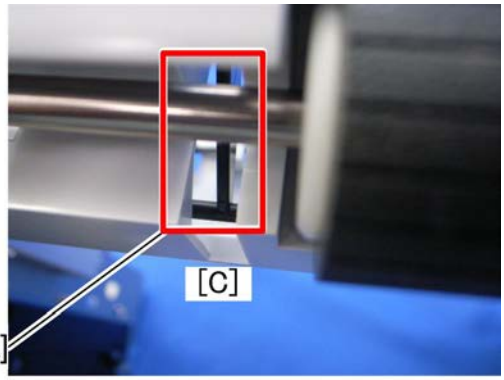


m355r515

2. Reinstall the paper feed roller shaft correctly.

Note

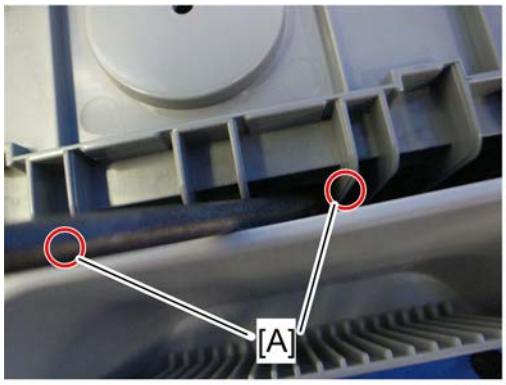
- As shown in the above pictures, the paper feed roller shaft must be installed behind the feeler [A]. The left picture [B] is correct. The right picture [C] is incorrect.

3. Close the right cover first, and then close the rear cover.

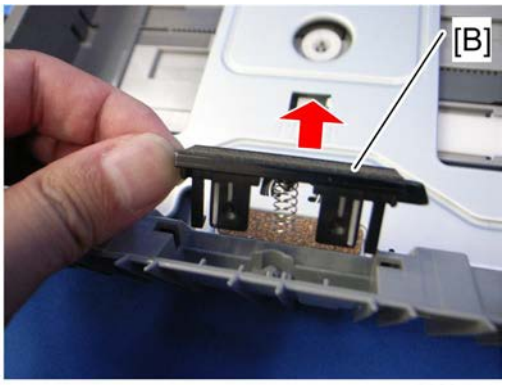
1.3 FRICTION PAD

1.3.1 FRICTION PAD

1. Pull out the paper tray.



m355r516



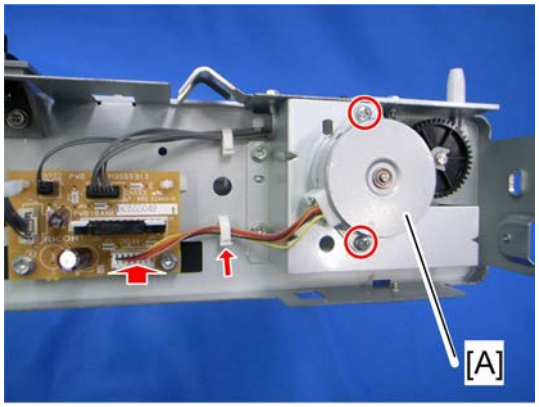
m355r517

2. Turn the paper feed unit over, and release two hooks [A].
3. Turn the unit over again, and remove the friction pad [B].

1.4 PAPER FEED MOTOR AND GEARS

1.4.1 PAPER FEED MOTOR

1. Right cover (☛ p.1-2)



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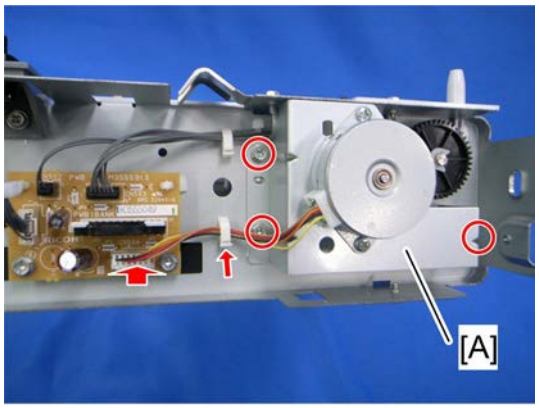
2. Paper feed motor [A] (x2, x1, x1)

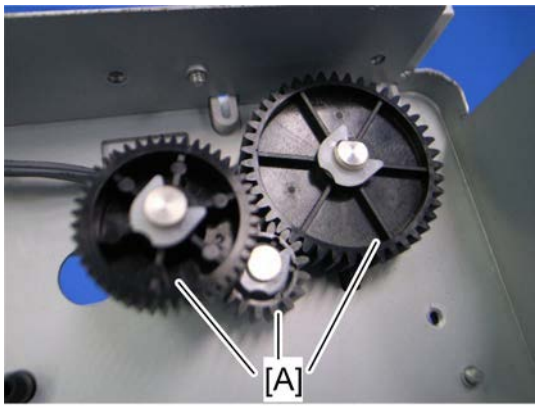
1.4.2 PAPER FEED GEARS

1. Right cover (☛ p.1-2)



m355r521

2. Paper feed motor bracket [A] (x3, x1, x1)



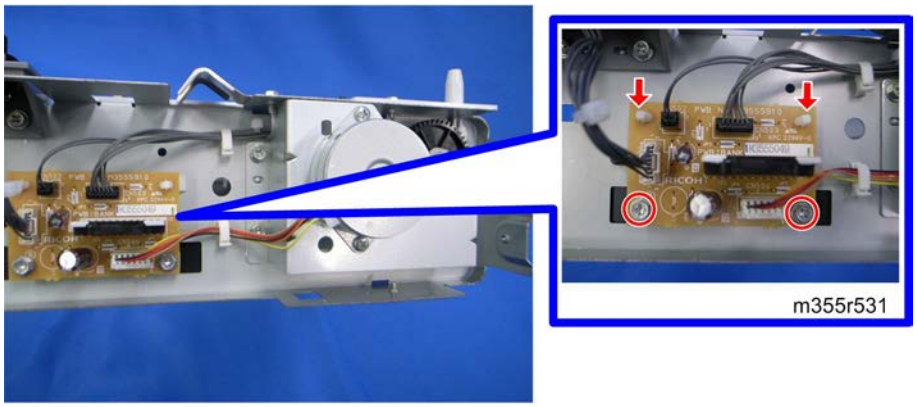
m355r522

3. Paper feed gears [A] (each C-ring x1)

1.5 PAPER TRAY BOARD

1.5.1 PAPER TRAY BOARD

1. Right cover (☛ p.1-2)



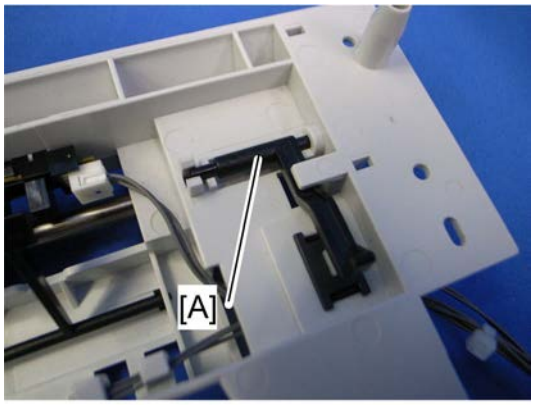
m355r530

2. Paper Tray Board (🔧 x2, locking support x2, 🔩 x 4)

1.6 PAPER TRAY UNIT SET SWITCH

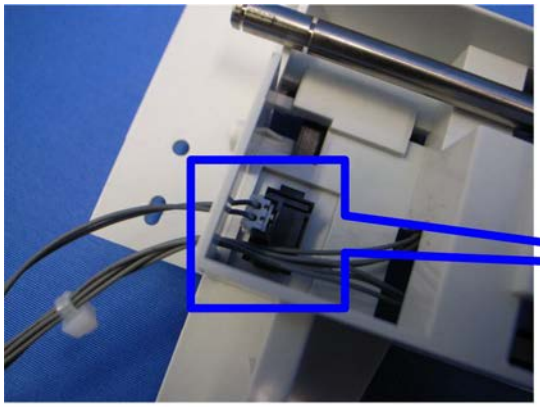
1.6.1 PAPER TRAY UNIT SET SWITCH

1. Paper feed unit (☛ p.1-2)



m355r540

2. Feeler [A]



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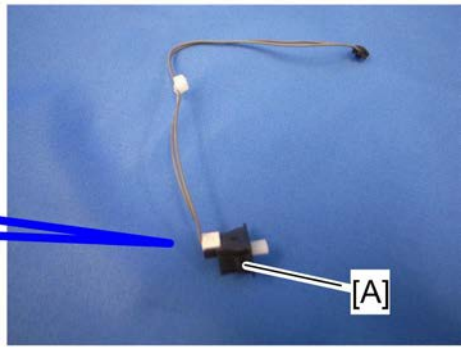


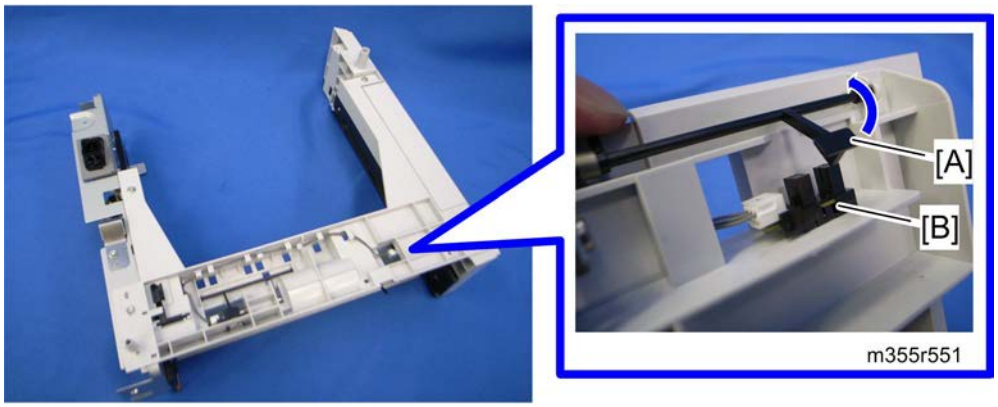
m355r542

3. Paper tray unit set switch [A] (hook x2)

1.7 SENSORS

1.7.1 PAPER FEED SENSOR

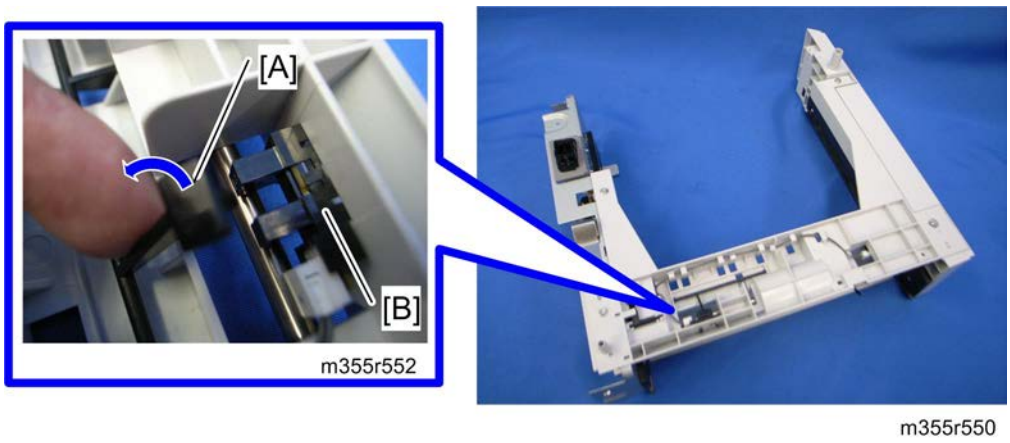
1. Right cover (☛ p.1-2)



2. Release the actuator [A] from the slot of the paper feed sensor [B]
3. Paper feed sensor [B] (all hooks, x1)

1.7.2 PAPER END SENSOR

1. Right cover (☛ p.1-2)



2. Release the actuator [A] from the slot of the paper exit sensor [B]
3. Paper end sensor [B] (all hooks, x1)