Model PE-MF2
Machine Code:
M018/M019 Copiers

SERVICE MANUAL

November 2008
Subject to change

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.

⚠CAUTION

- The Controller board on the MF model contains a lithium battery. The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer. Discard batteries in accordance with the manufacturer's instructions and local regulations.

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

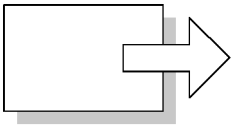
- Use of controls, or adjustment, or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

⚠WARNING
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:    3b_decal

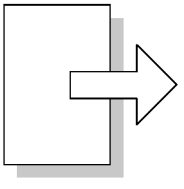
Symbols, Abbreviations and Trademarks

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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5. System Maintenance Reference

6. Troubleshooting

1. Product Information

Specifications

See "Appendices" for the following information:

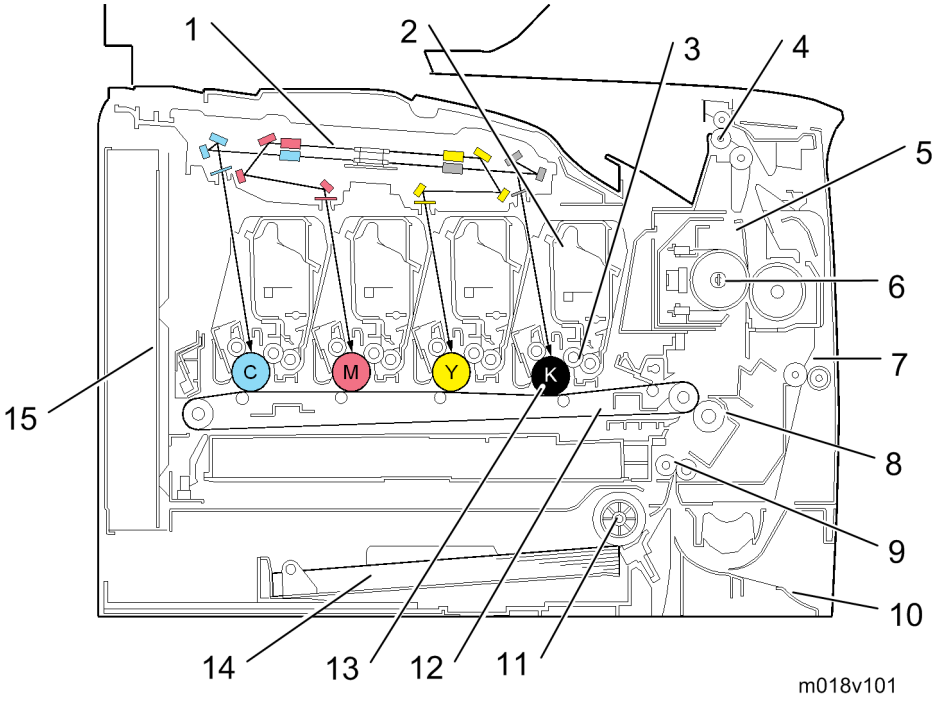
- "General Specifications"
- "Supported Paper Sizes"

Machine Overview

1

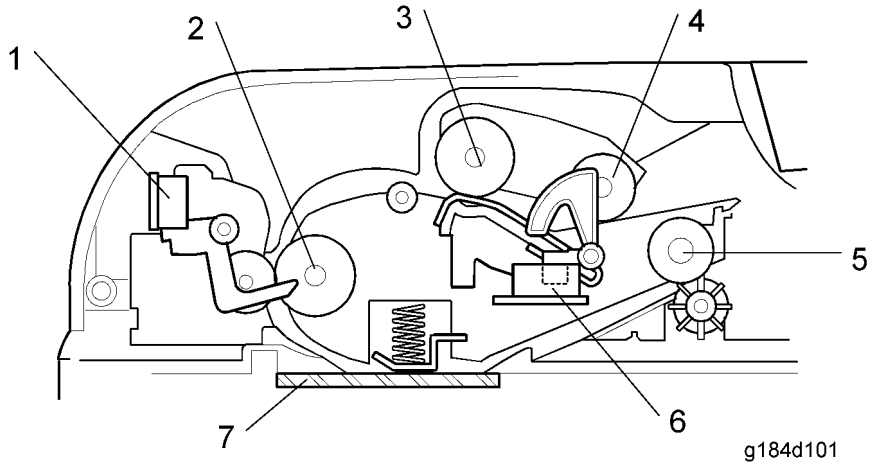
Component Layout

Engine



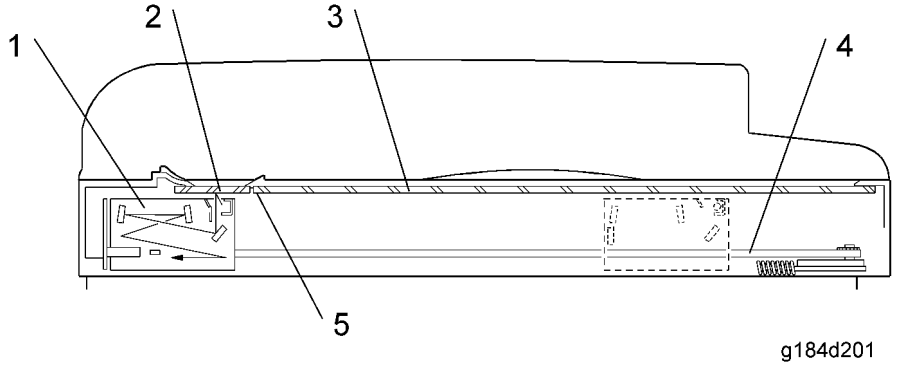
1. Laser Optics Housing Unit	9. Registration Roller
2. Print Cartridge (AIO)	10. By-pass
3. Development Roller (AIO)	11. Paper Feed Roller
4. Paper Exit	12. ITB (Image Transfer Belt) Unit
5. Fusing Unit	13. OPC (AIO)
6. Fusing Lamp	14. Tray 1
7. Duplex Path	15 EGB/Controller
8. Transfer Roller	

ADF



1. Feed Sensor 2. Feed Roller 3. Separation Roller 4. Pick-up Roller	5. Exit Roller 6. Original Set Sensor 7. DF Exposure Glass

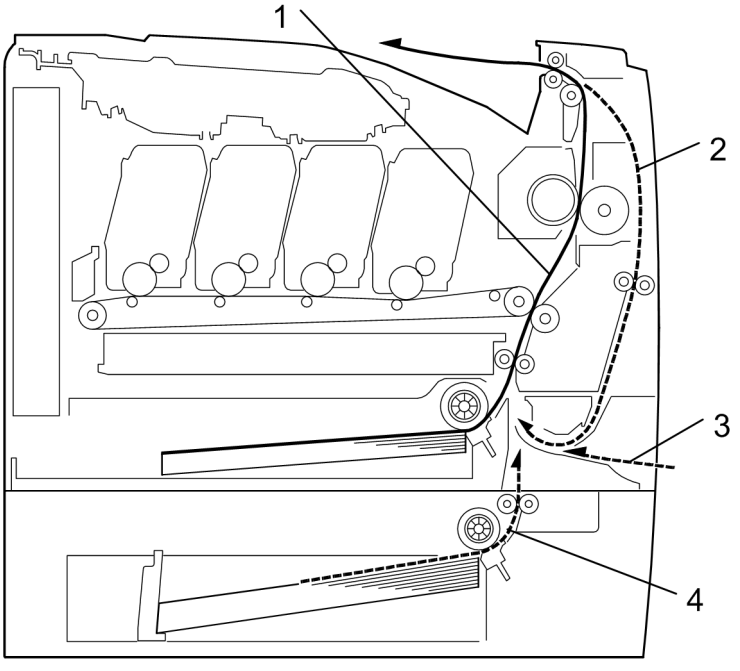
Scanner



1. Scanner Carriage Unit 2. DF Exposure Glass 3. Exposure Glass	4. Carriage Drive Bar 5. White Plate

Paper Path

Engine



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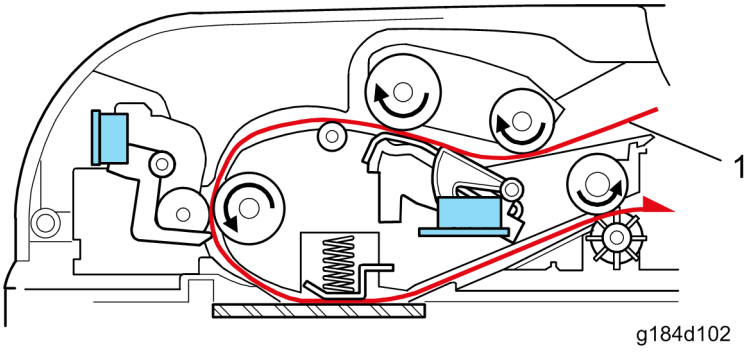
1. Paper path from tray 1
2. Duplex path
3. By-pass tray
4. Paper path from tray 2 (optional)

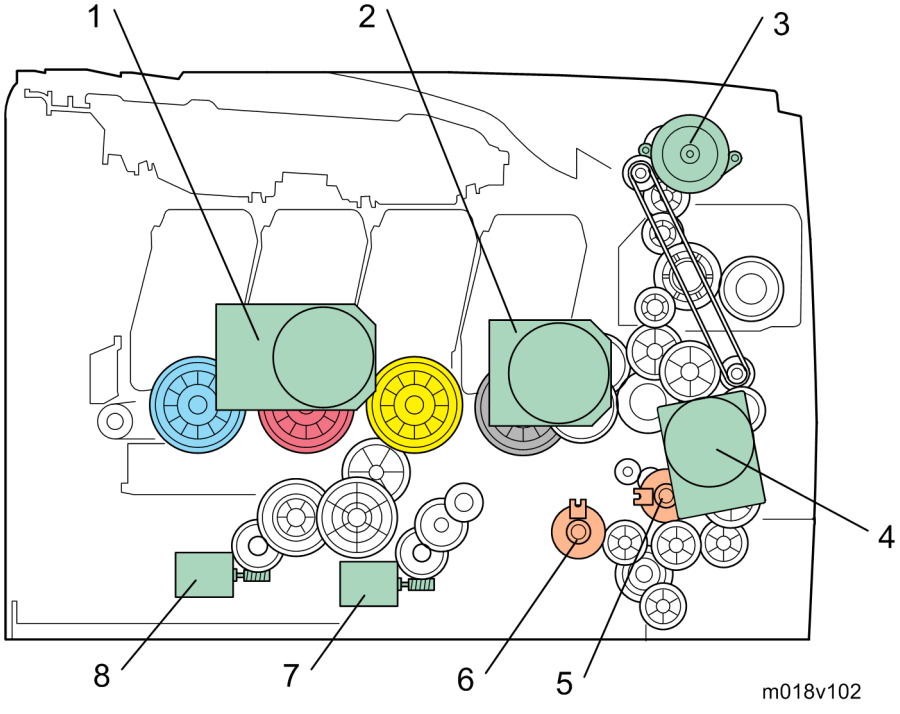
ADF



g184d102

1. Original path

Drive Layout



1. Color AIO Motor	5. Registration Clutch
2. Black AIO Motor	6. Paper Feed Clutch
3. Duplex Motor	7. Agitator Motor
4. Transport/Fusing Motor	8. ITB (Image Transfer Belt) Contact Motor

- **Color AIO Motor:**

  This drives the color AIOs (Cyan, Magenta and Yellow)
- **Black AIO Motor:**

  This drives the black AIO and the ITB (Image Transfer Belt).
- **Duplex Motor:**

  This drives the paper exit roller and the duplex roller.
- **Transport/Fusing Motor:**

  This drives the fusing unit, paper feed roller, registration roller and paper exit roller via the paper feed clutch, registration clutch and gears.

- **Registration Clutch:**

  This transfers drive from the transport/ fusing motor to the registration roller.

- **Paper Feed Clutch:**

  This transfers drive from the transport/ fusing motor to the paper feed roller.

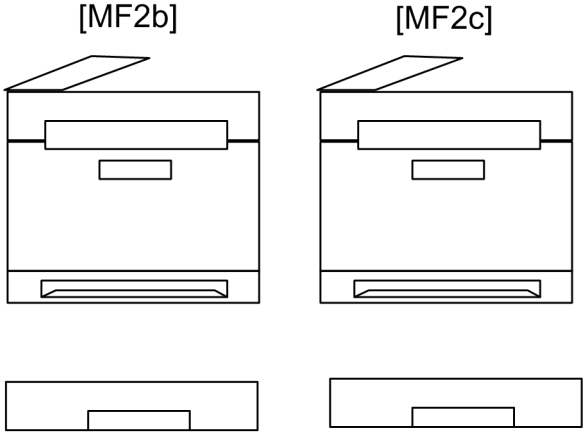
- **Agitator Motor:**

  This moves the agitators in the waste toner bottle.

- **ITB Contact Motor:**

  This moves the ITB into contact with and away from the color OPCs.

Machine Configuration



M018v501

Models	Duplex Unit	Optional Memory	Optional Tray (G849)	DDST (GDI)	PCL PS	Fax
PE-MF2b (M018)	Auto	N	500x1	Y	N	Y
PE-MF2c (M019)	Auto	Y	500x1	N	Y	Y

Guidance for Those Who are Familiar with Predecessor Products

1

The M018/M019 series models are similar to the G181/G183/G184 series. If you have experience with those products, the following information will be of help when you read this manual.

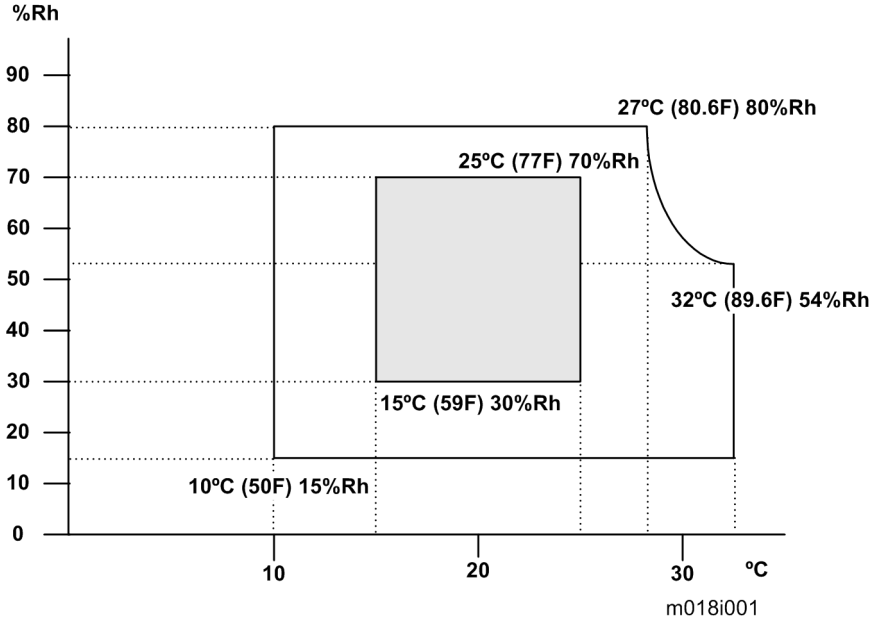
Different Points from Previous Products

	M018/M019	G181/G183/G184
Print Cartridge (AIO)	Longer life Print Cartridge (AIO)	-
Operation Panel	Four separated menu keys and user tool button	One menu key and no user tool button

2. Installation

Installation Requirements

Environment



1. Temperature Range: 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 that get sudden temperature changes. This includes:
    - Areas directly exposed to cool air from an air conditioner
    - Areas directly exposed to heat from a heater.
6. Do not put the machine in areas that get exposed to corrosive gas.
7. Do not install the machine at locations over 2,500 m (8,125 ft.) above sea level.
8. Put the machine on a strong, level base. (Inclination on any side must be no more than 5 mm.)
9. Do not put the machine in areas with strong vibrations.

Machine level

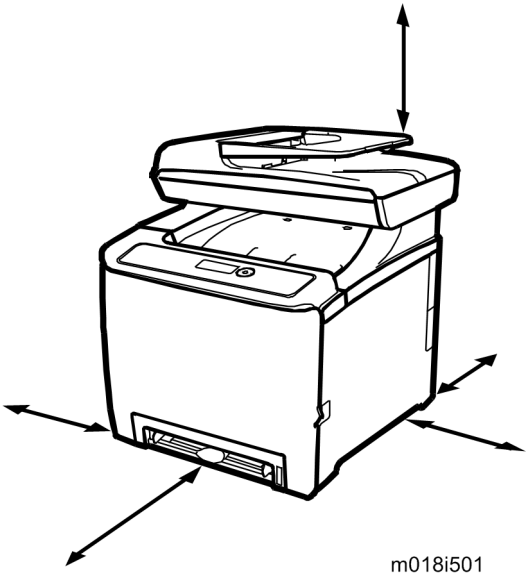
Front to back: Within 5 mm (0.2") of level

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

2

Machine Space Requirement

Put the machine near the power source with these clearances:



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Left side: Over 20 cm (7.9")

Rear: Over 20 cm (7.9")

Right side: Over 10 cm (4")

Front: Over 70 cm (27.5")

Top: Over 24 cm (9.5")

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	120 V, 60 Hz: More than 11 A (for North America) 220 V to 240 V, 50 Hz/60 Hz: More than 6 A (for Europe/ Asia)
Permitted voltage fluctuation: 10%	
Do not set anything on the power cord.	

Installation Procedure

Refer to the Quick Installation Guide for details about installing the machine.

3. Preventive Maintenance

Preventive Maintenance

See "Appendices" for the "User Replaceable Items".

4. Replacement and Adjustment

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.

Special Tools

- PC: Windows 2000/XP/Vista, Windows Server 2003/2003 R2, or Mac OS X.
- USB cable or Crossover cable

Exterior Covers

⚠CAUTION

- Turn off the main power switch and unplug the machine before you do the procedures in this section.

Rear Cover

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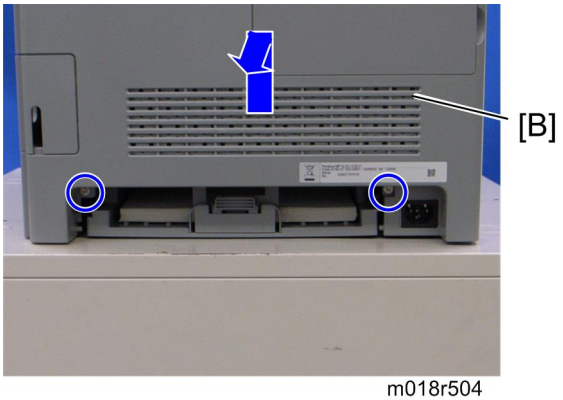
1. Rear tray cover [A]



m018r504

2. Rear cover [B] (x 2)

Operation Panel

m018r512

1. Open the top cover [A].

m018r522

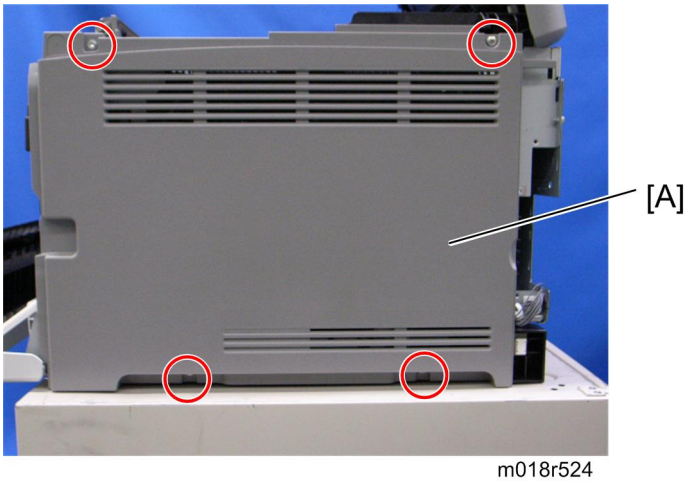
2. Open the front cover [B].
3. Front harness cover [C] (x 1)

m018r523

4. Operation panel [D] (x 1, x 1)

Right Cover

1. Rear cover (☛ p.25)
2. Operation panel (☛ p.26)



m018r524

3. Right cover [A] (x 4)

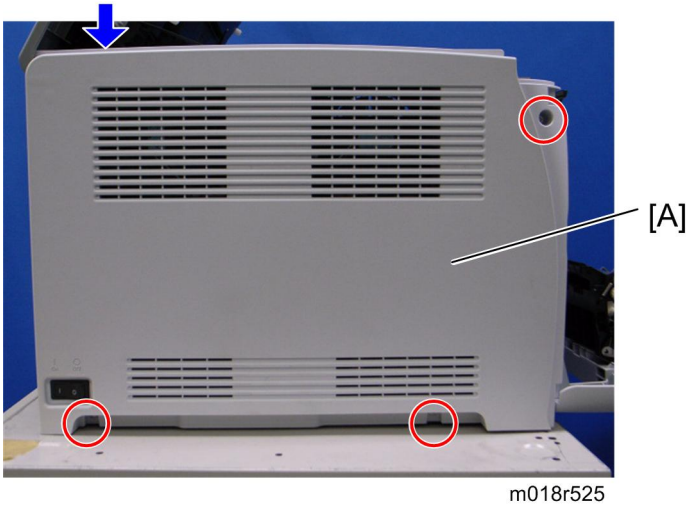
Note

- Top front screw: M3x8, others: M4x10

Left Cover

1. Rear cover (☛ p.25)

2. Operation panel (☛ p.26)



m018r525

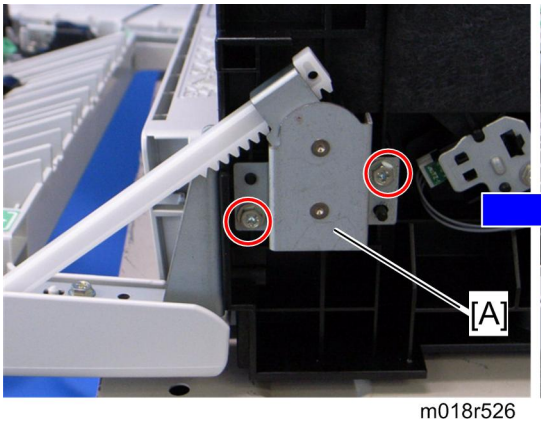
3. Left cover [A] (x 3, hook at arrow mark)

Note

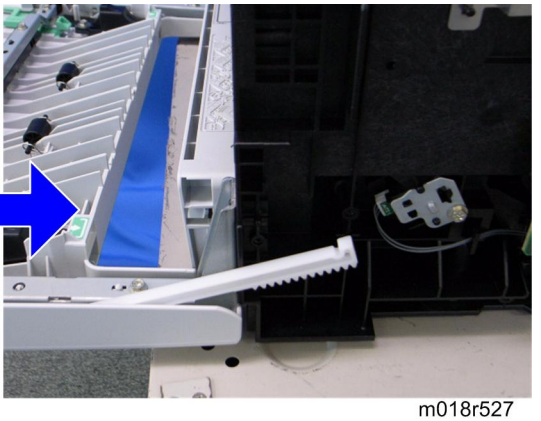
- Top front screw: M3x8, others: M4x10

Front Cover Unit

1. Rear cover (☛ p.25)
2. Operation panel (☛ p.26)
3. Transfer unit (☛ p.50)
4. Right cover (☛ p.27)

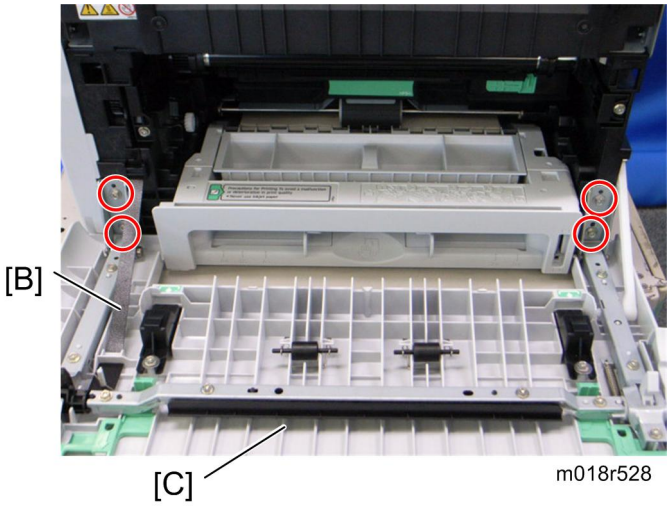


m018r526



m018r527

5. Cover link gear unit [A] (x 2)



6. Release the belt [B]
7. Front cover unit [C] (x 4)

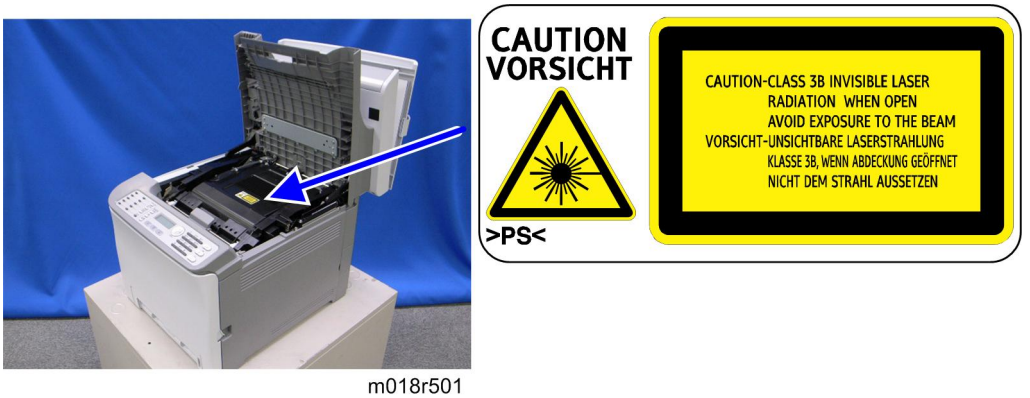
Laser Optics

⚠WARNING

- Turn off the main power switch and unplug the machine before beginning any of the procedures in this section. Laser beams can cause serious eye injury.

Caution Decal Location

Caution decals are attached as shown below.



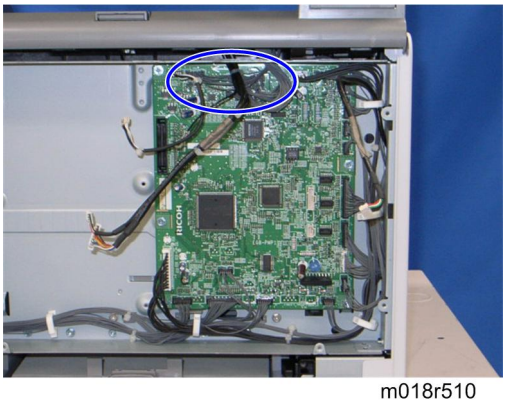
m018r501

⚠WARNING

- Be sure to turn off the main power switch and disconnect the power plug from the power outlet before beginning any disassembly or adjustment of the laser unit. This printer uses a class IIIb laser beam with a wavelength of 780 nm and an output of 7 mW. The laser can cause serious eye injury.

Laser Optics Housing Unit

1. Rear cover (☛ p.25)
2. Controller box cover (☛ p.66 "Controller Board")
3. Remove the controller bracket (☛ p.68 "EGB (Engine Board)")

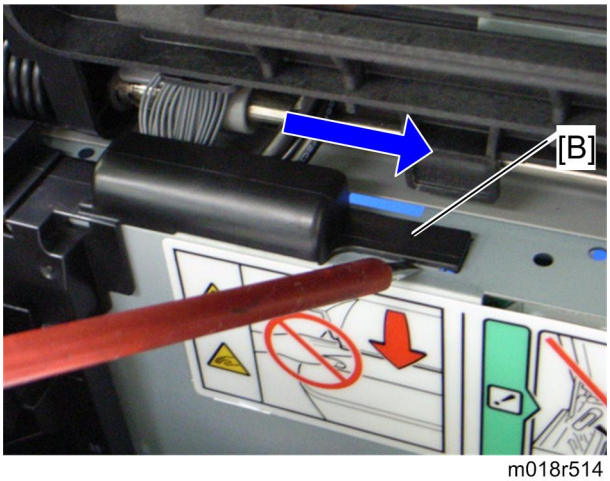


m018r510

4. Disconnect the three harnesses from CN301, 302 and 303 on the EGB (x 3).

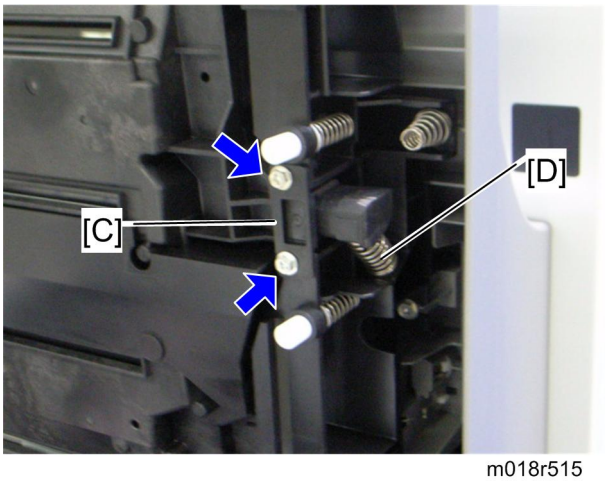
m018r512

5. Open the top cover [A].



m018r514

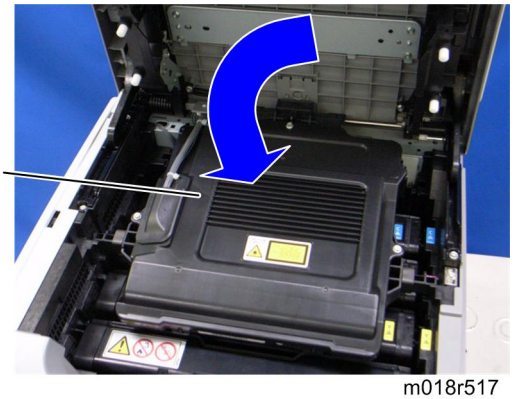
6. Lift up the hook [B] of the harness guide at the rear-left frame and slide the harness guide to the right.



m018r515

7. Remove the springs [D] (left side and right side).
8. Stoppers [C] (x 2 each; left side and right side)

m018r516

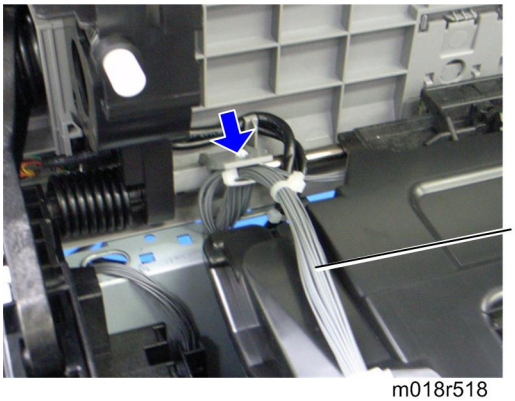


m018r517

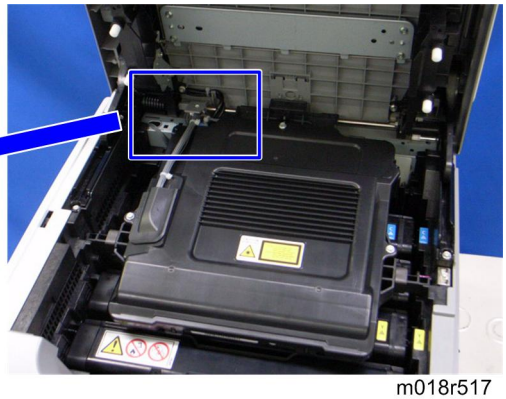
9. Remove the laser optics housing unit [E] from the top cover and place it on the main body.

Note

- Always use two hands when carrying the laser optics housing unit. Be sure not to drop the laser optics housing unit.



m018r518



m018r517

10. Take out the harnesses [F] (x 1).
11. Pull out the harnesses from the rear side.

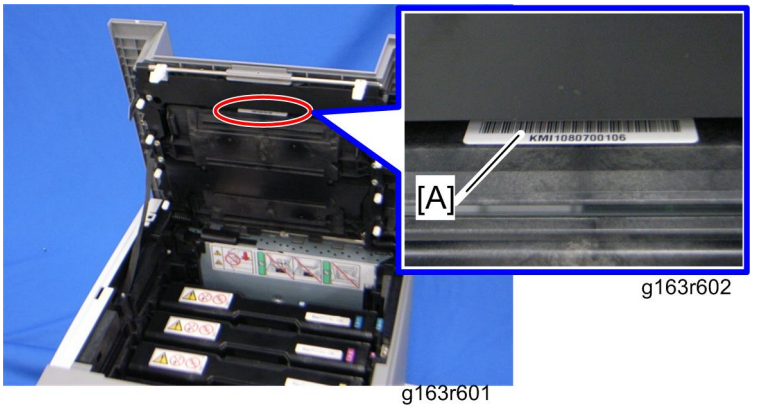
m018r519

12. Remove the laser optics housing unit.

After replacing the laser optics housing unit

Important

- **Do the following step 4 with the front cover of the machine open.**



g163r602

g163r601

4

1. Open the front cover and turn on the machine.
2. Look for the lot number [A] attached to the new laser optics housing unit. Then look for this lot number on the information sheet (this sheet will be released separately, and will contain lists of input data for each lot number)

   Input the data for this lot number from the information sheets with steps 3 to 7 below.
3. Open the front cover and turn on the machine.
4. Input the setting values for the laser optics housing unit ("User Tools" > "Maintenance Mode" > "Engine Maintenance" > "LSU Adjustment").
5. Close the front cover.
6. Execute "Color Registration" in the "Engine Maintenance" menu.
7. Adjust the registration settings for each tray and for the front and rear sides of the paper with the "Engine Maintenance" menu if necessary.

RTB 13
Steps were added after step 6.

AIO Cartridge

AIO Cartridge (All In One Cartridge)

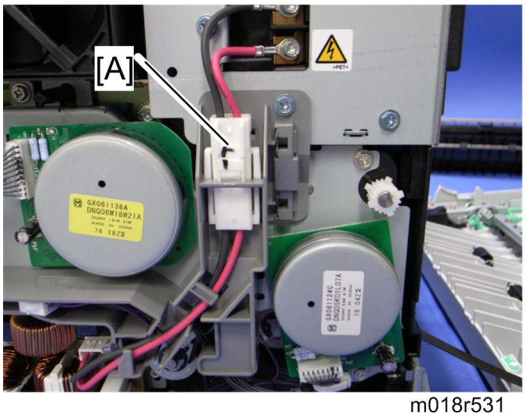
1. Open the top cover.

m018r568

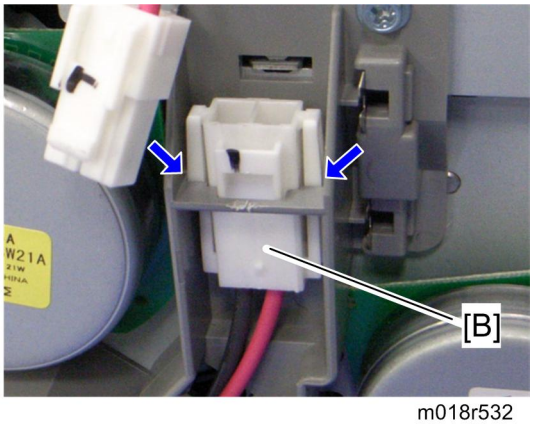
2. AIO cartridge [A]

Black AIO Motor

1. Left cover (☛ p.27)

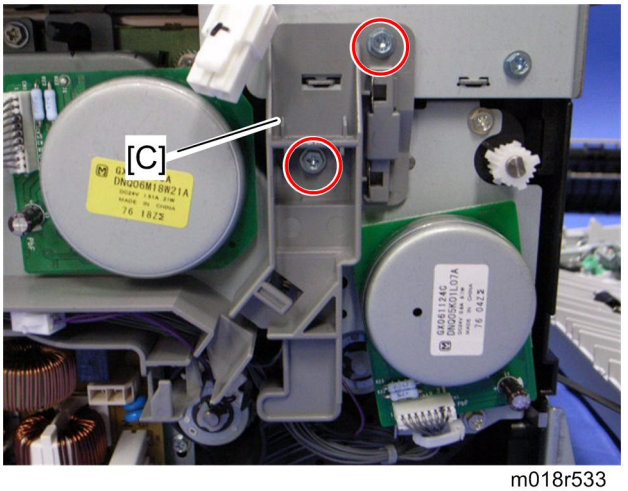


m018r531



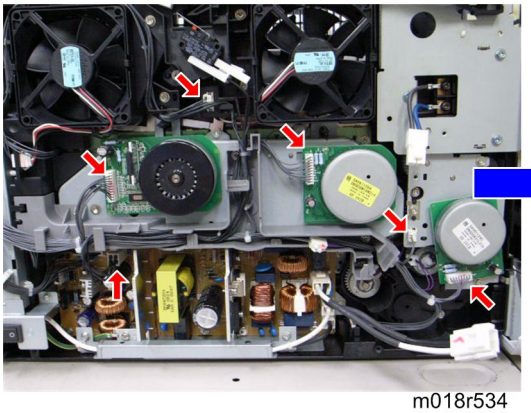
m018r532

2. Disconnect the fusing connector [A] and remove the fusing relay harness [B] (hooks).



m018r533

3. Fusing harness guide [C] (x 2)



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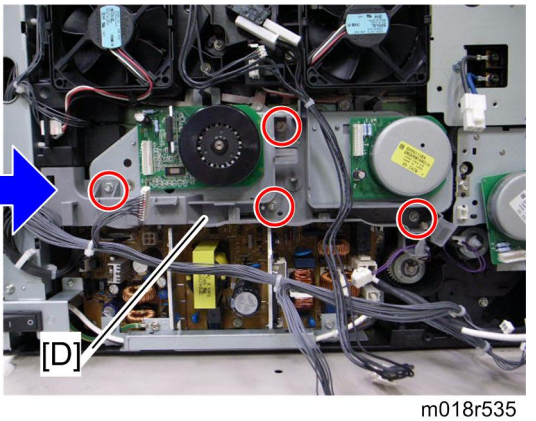
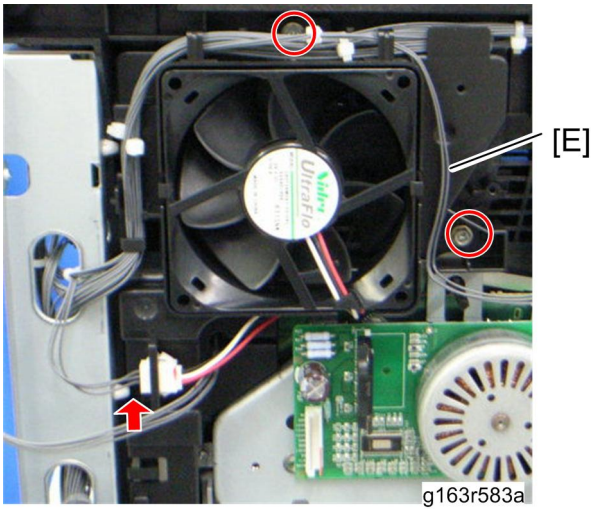
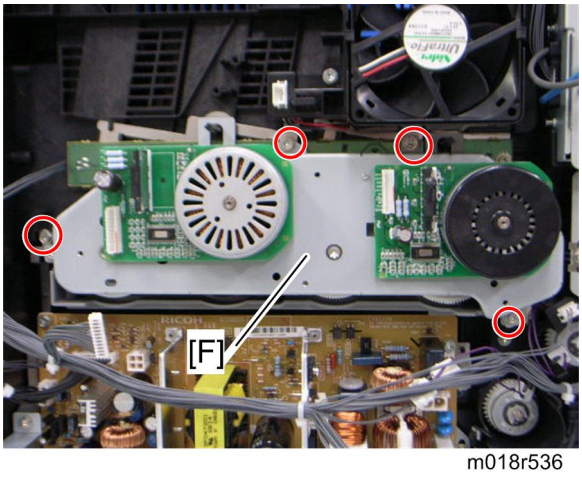


m018r535

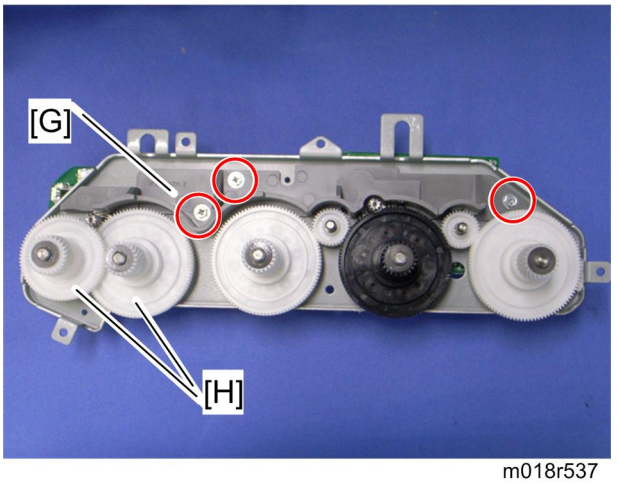
4. Disconnect the connectors shown by arrows in the above picture and release all harnesses on the harness guide [D].
5. Harness guide [D] (x 4)
6. Interlock switch base (☛ Interlock Switches)
7. Controller bracket (☛ p.66 "Controller Board")
8. Disconnect the connector (CN305) on the EGB.



9. LSU fan motor base [E] (x 2, x 1)

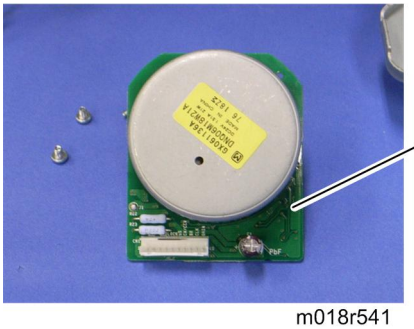


10. Drive unit [F] (x 4)



m018r537

11. Drive unit guide [G] (x 3)
12. Black AIO gear [H] (snap ring x 1)



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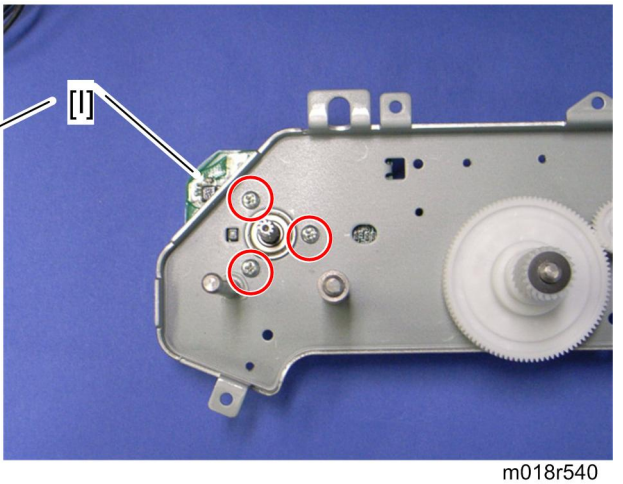
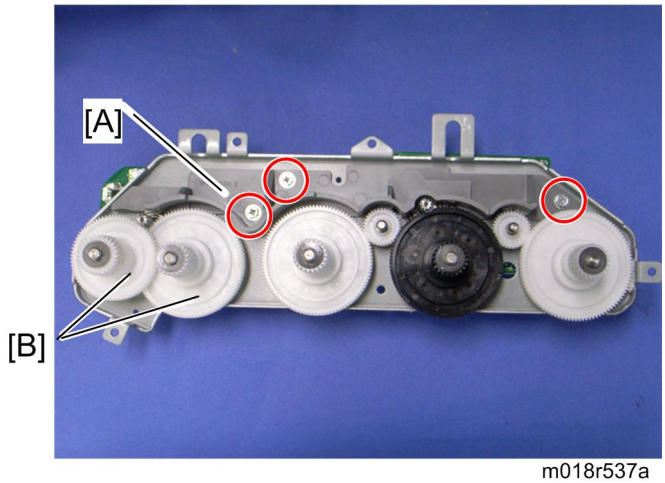


m018r540

13. Black AIO motor [I] (x 3)

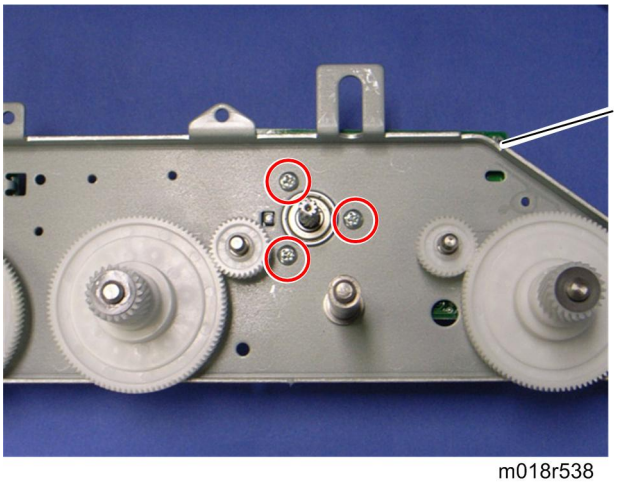
Color AIO Motor

1. Drive unit (☛ p.35 "Black AIO Motor")

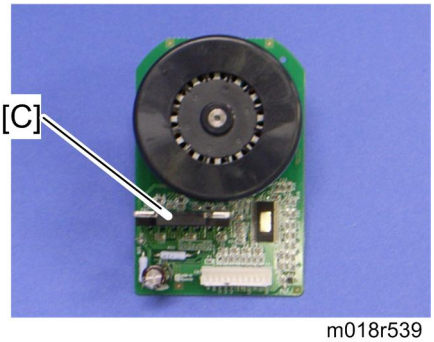


m018r537a

2. Drive unit guide [A] (x 3)
3. Color AIO gears [B] (ring stopper x 1 each)



m018r538



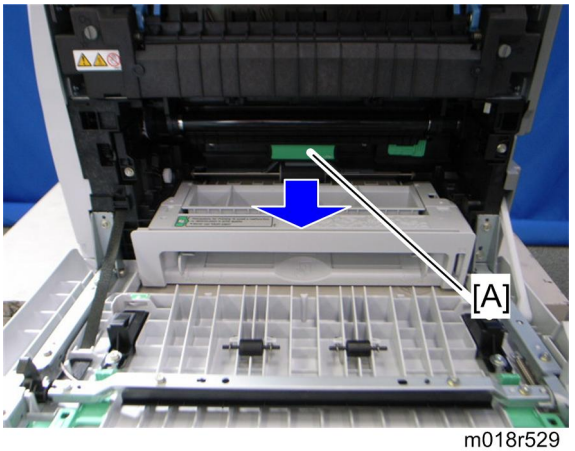
m018r539

4. Color AIO motor [C] (x 3)

Image Transfer

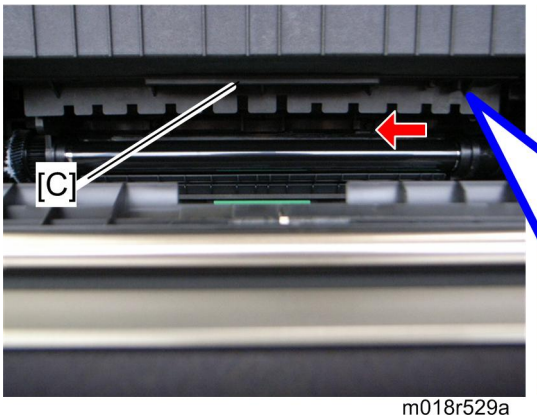
Image Transfer Belt Unit

1. Remove all the AIO cartridges (☛ p.35).
2. Transfer unit (☛ p.50)

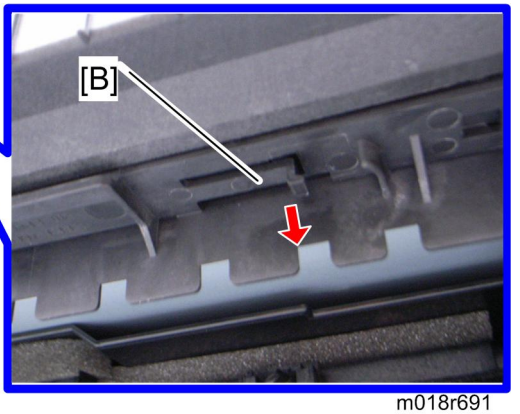


m018r529

3. Pull out the waste toner bottle [A].

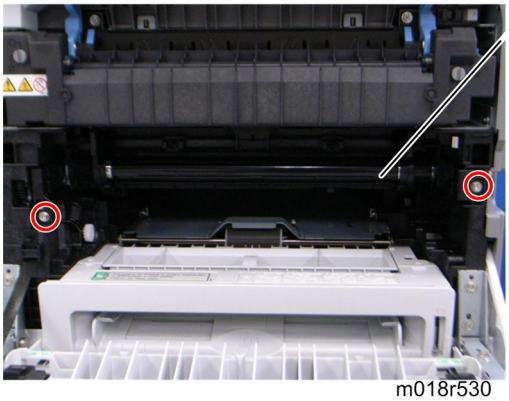


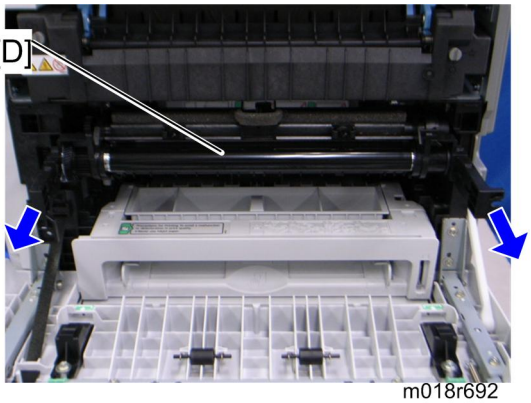
m018r529a



m018r691

4. Release the hook [B] under the guide plate.
5. Move the guide plate [C] underneath the fusing unit to the left, and then remove it.


m018r530



m018r692

6. Pull out the image transfer belt unit [D] (x 2).

After replacing the image transfer belt unit

Important

- **Do the following step 2 with the front cover of the machine open.**

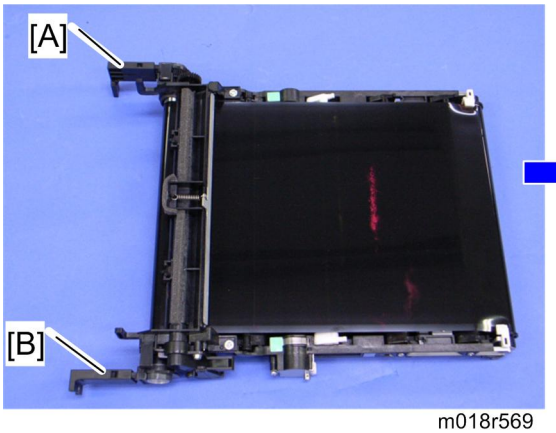
1. Open the front cover and turn on the machine.
2. Execute "Reset Transfer Unit Life Counter" with the "Engine Maintenance" menu.
3. Close the front cover.
4. Execute "Trans. Belt Adjust" with the "Engine Maintenance" menu.
5. Adjust the registration settings for each tray and for the front and rear sides of the paper with the "Engine Maintenance" menu if necessary.

ITB (Image Transfer Belt) Cleaning Unit

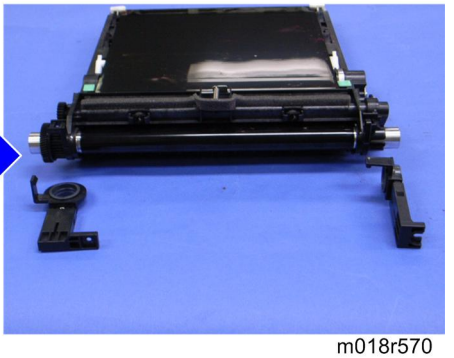
Note

- The ITB cleaning unit contains waste toner. When removing the ITB cleaning unit, put it on a sheet of paper.

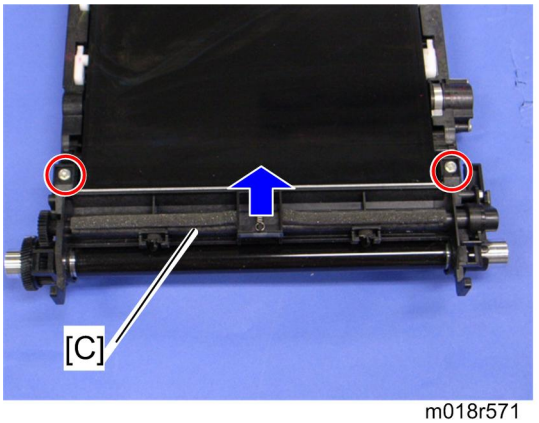
1. Image transfer belt unit (☛ p.40)



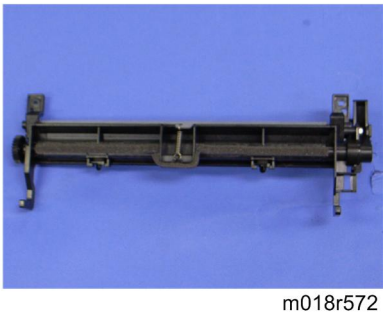
m018r569


m018r570

2. Left handle [A] (hook, bushing x 1)
3. Right handle [B] (hook, bushing x 1)



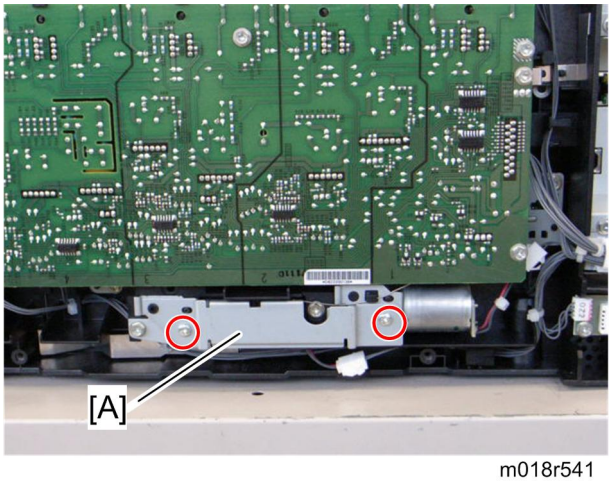
m018r571


m018r572

4. ITB cleaning unit [C] (x 2)

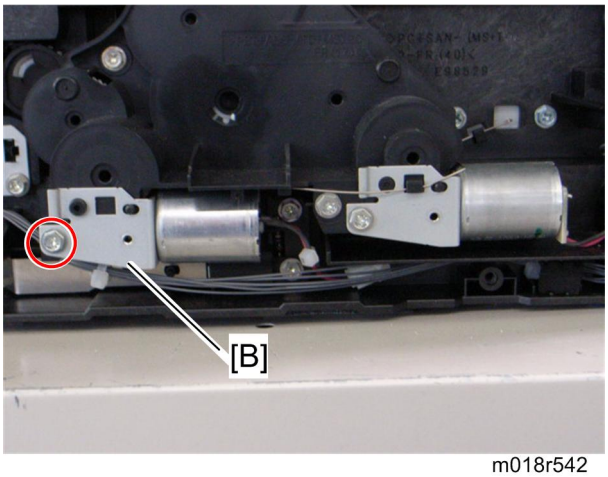
Agitator Motor

1. Right cover (☛ p.27)



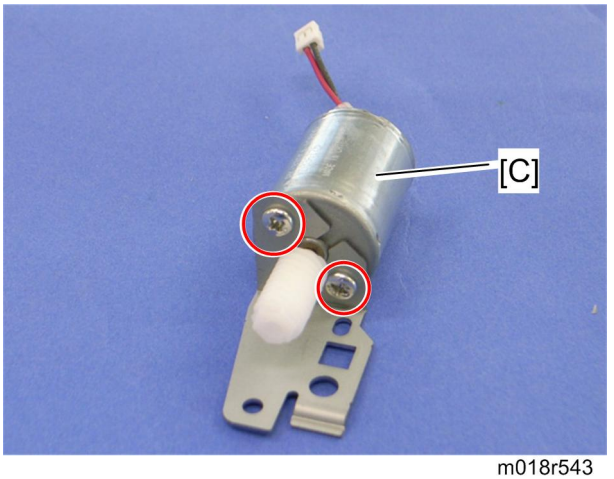
m018r541

2. Motor bracket [A] (x 2)



m018r542

3. Agitator motor assembly [B] (x 1, x 1)

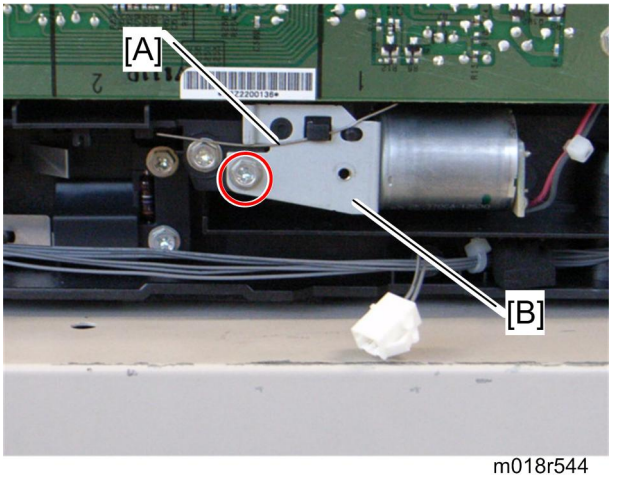


m018r543

4. Agitator motor [C] (x 2)

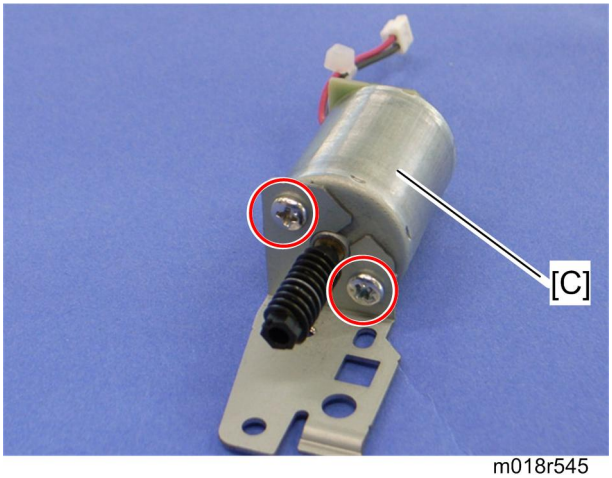
ITB (Image Transfer Belt) Contact Motor

1. Agitator motor (☛ p.42)



m018r544

2. Release the wire [A].
3. ITB contact motor assembly [B] (x 1, x 1)

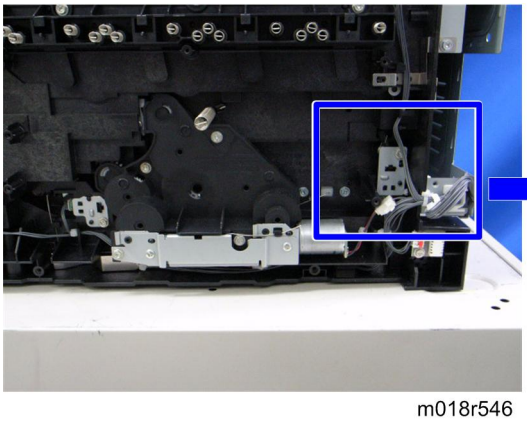


m018r545

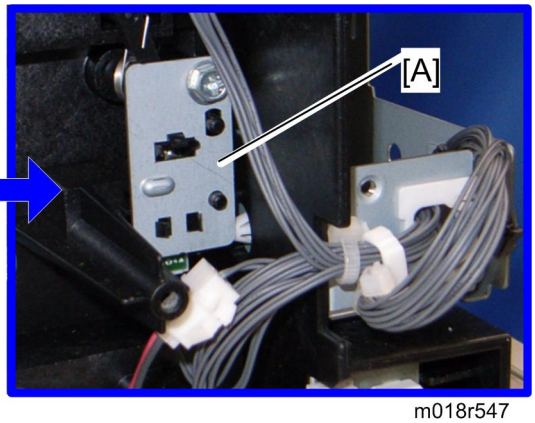
4. ITB contact motor [C] (x 2)

ITB (Image Transfer Belt) Contact Sensor

1. Right cover (☛ p.27)
2. High voltage power supply board (☛ p.75)

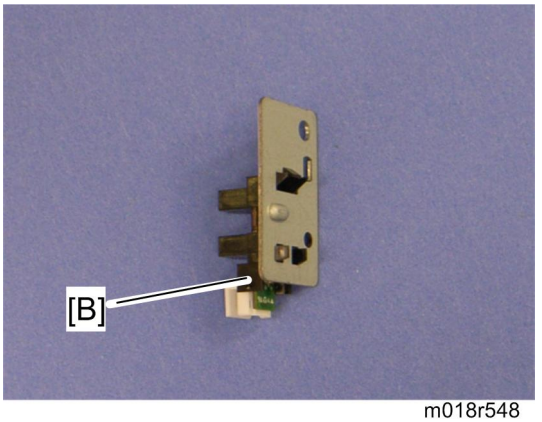


m018r546



m018r547

3. ITB contact sensor assembly [A] (x 1, x 1)



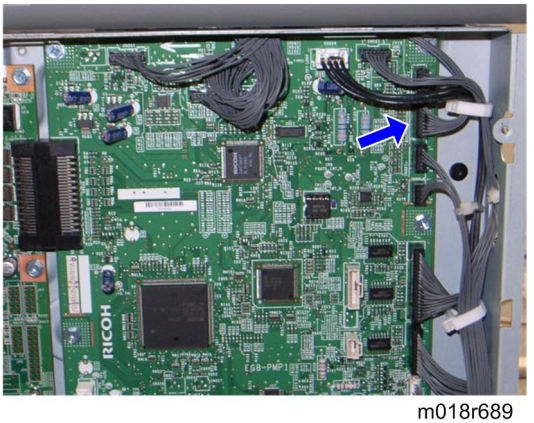
m018r548

4

4. ITB contact sensor [B] (hooks)

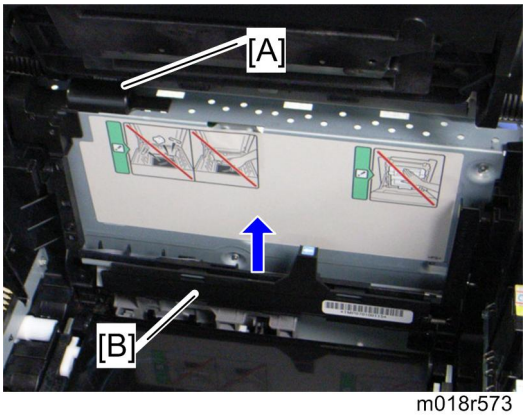
TM (Toner Mark) Sensor Base

1. Open the top cover.
2. Remove all AIO cartridges (☛ p.35).
3. Slide the ITB unit to the front side or remove it.
4. Rear cover (☛ p.27)
5. Controller box cover (☛ p.66 "Controller Board")
6. Controller bracket (☛ p.68 "EGB (Engine Board)")



m018r689

7. Disconnect CN306 on the EGB (x 1).

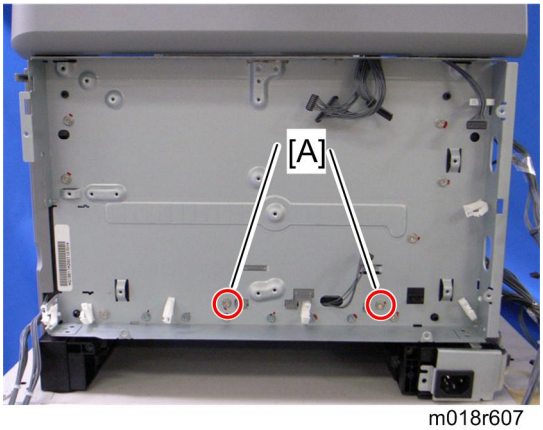


m018r573

8. Harness cover [A] (hook)
9. TM sensor base [B]

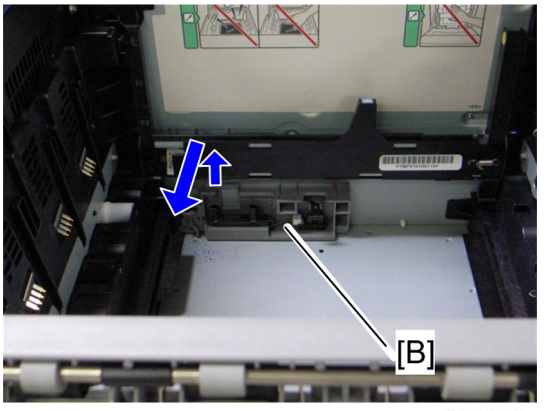
Waste Toner Bottle Set Sensor

1. Remove all AIO cartridges. (☛ p.35)
2. Image transfer belt unit (☛ p.40)
3. EGB (☛ p.68)



m018r607

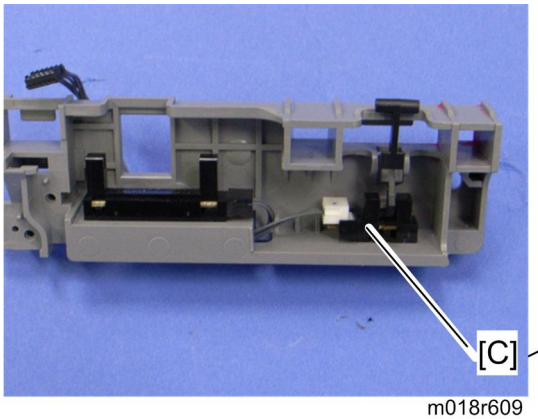
4. Remove two screws [A] for the waste toner sensor base.



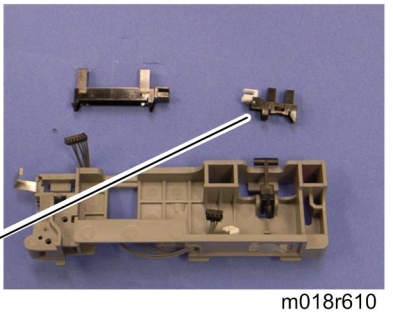
m018r608

4

5. Waste toner sensor base [B]



m018r609



m018r610

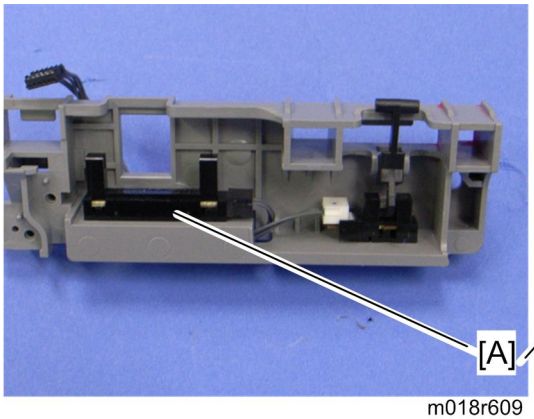
6. Remove the mylar fixing three hooks of the waste toner bottle set sensor.
7. Waste toner bottle set sensor [C] (hooks, x 1)

Note

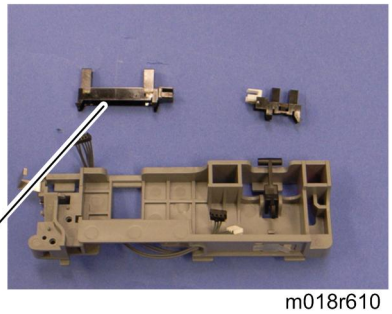
- When reinstalling the waste toner bottle set sensor, connect it to the white connector of the harness.

Waste Toner Overflow Sensor

1. Remove all AIO cartridges. (☛ p.35)
2. Image transfer belt unit (☛ p.40)
3. EGB (☛ p.68)
4. Waste toner sensor base (☛ p.47 "Waste Toner Bottle Set Sensor")



m018r609



m018r610

5. Remove the mylar fixing three hooks of the waste toner bottle set sensor.
6. Waste toner overflow sensor [A] (hooks, x 1)

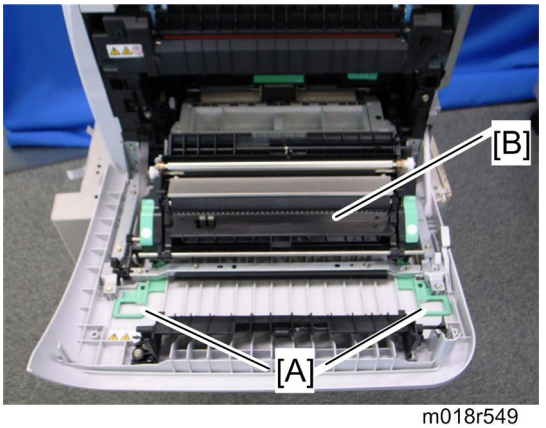
Note

- When reinstalling the waste toner overflow sensor, connect it to the black connector of the harness.

Paper Transfer

Transfer Unit

1. Open the front cover.

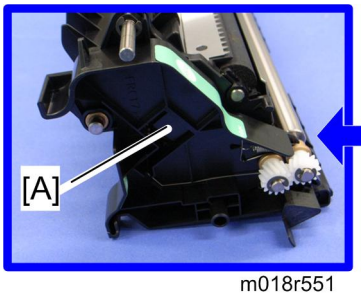


m018r549

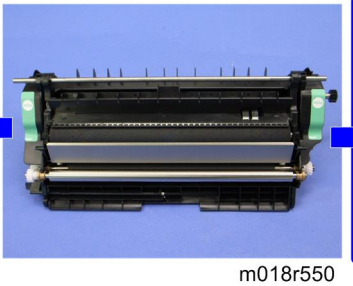
2. Release the locks [A].
3. Transfer unit [B]

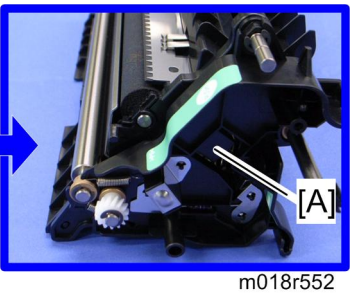
Transfer Roller

1. Transfer Unit (☛ p.50)



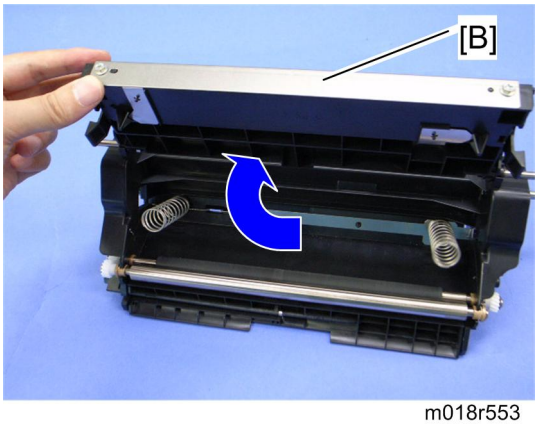
m018r551


m018r550



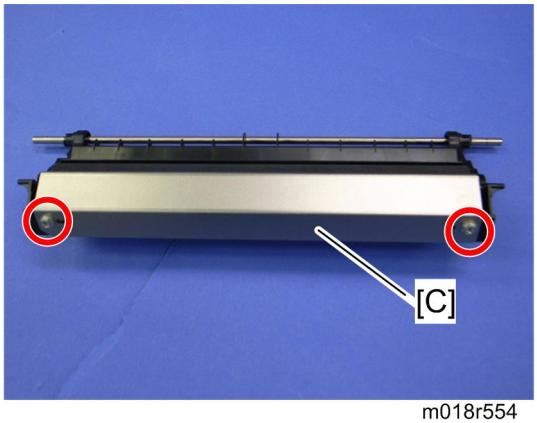
m018r552

1.
Release the two hooks [A] at both sides of the transfer unit.



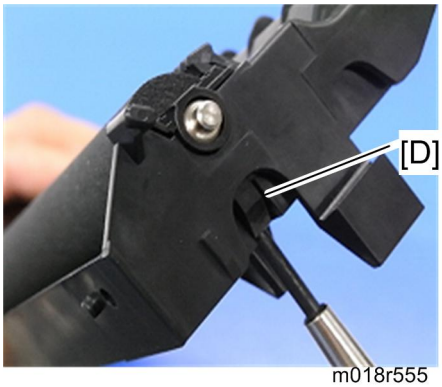
m018r553

2. Open the transfer roller unit [B] and remove it.

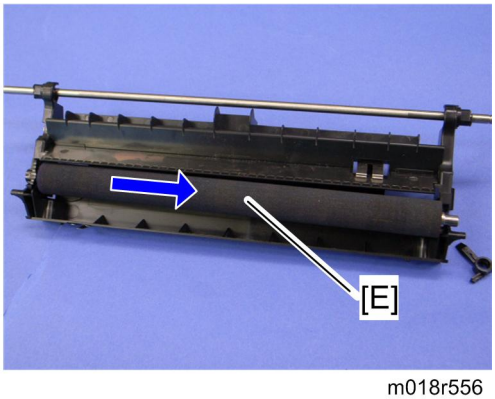


m018r554

3. Transfer roller assembly [C] (x 2)



m018r555

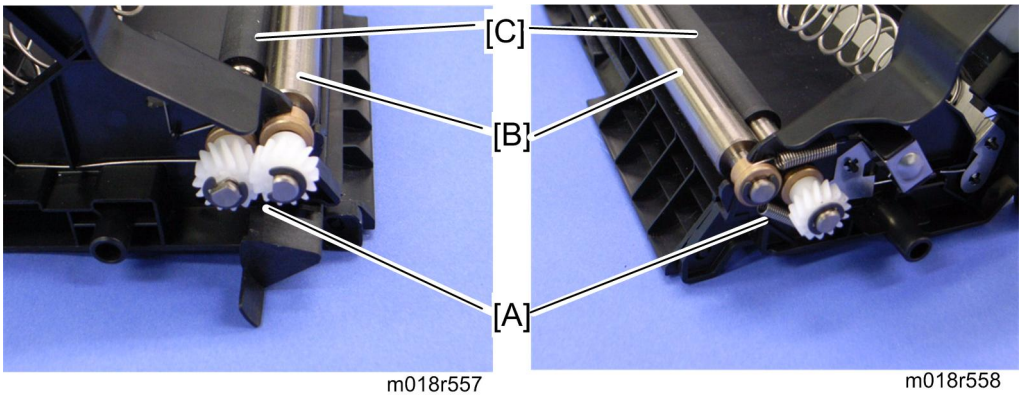


m018r556

4. Release the holder [D] at the left side of the transfer roller unit (hook).
5. Transfer roller [E]

Registration Roller

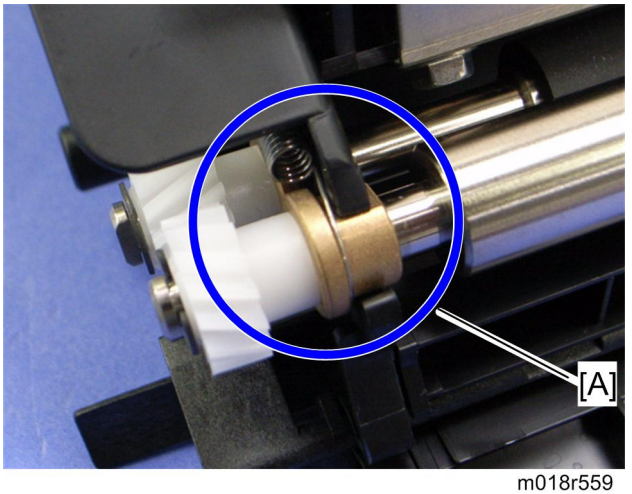
1. Transfer unit (☛ p.50)
2. Transfer roller unit (☛ p.50)



m018r557 m018r558

3. Tension springs [A] (both sides)
4. Registration idle roller [B] (C x 2, gear x 1, bushing x 2)
5. Registration roller [C] (C x 2, gear x 2, bushing x 2)

Reassembling the registration roller unit

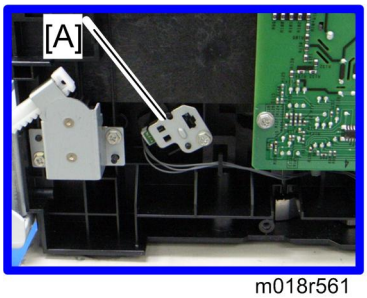


m018r559

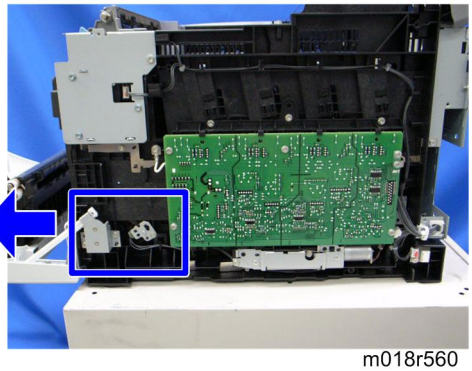
When installing the tension spring, make sure that the tension spring correctly hooks onto the bushing of the registration idle roller as shown above [A].

Registration Sensor

1. Rear cover (☛ p.25)
2. Right Cover (☛ p.27)

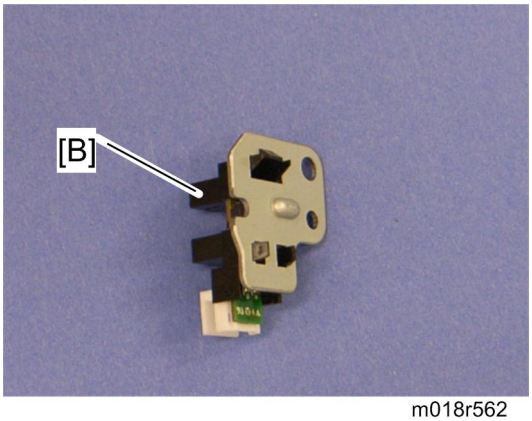


m018r561



m018r560

3. Registration sensor assembly [A] (x 1, x 1)

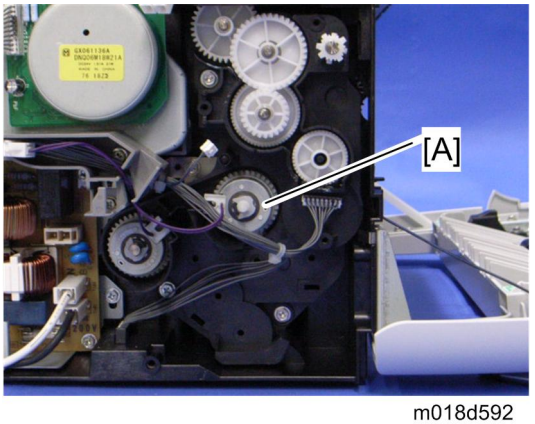


m018r562

4. Registration sensor [B] (hooks)

Registration Clutch

1. Rear cover (☛ p.25)
2. Left cover (☛ p.27)
3. Transport/Fusing motor (☛ p.57)



m018d592

4

4. Registration clutch [A] (x 1)

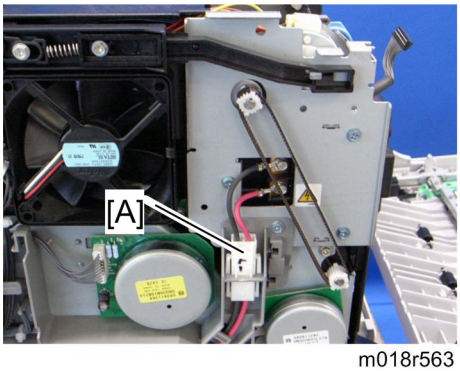
Image Fusing

⚠CAUTION

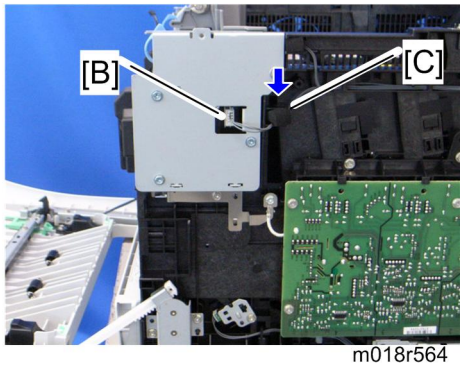
- Make sure that the fusing unit is cool before you touch it. The fusing unit can be very hot.
- Make sure to restore the insulators, shields, etc after you service the fusing unit.

Fusing Unit

1. Open the front cover.
2. Rear cover (☛ p.25)
3. Right cover (☛ p.27)
4. Left cover (☛ p.27)



m018r563

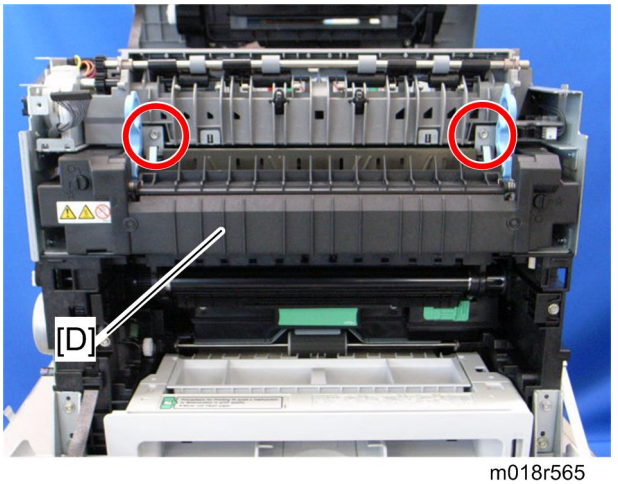


m018r564

5. Disconnect the connectors [A] (hook) [B].

Note

- The sponge [C] clamps the harness. Install this sponge in the same position after reinstalling the fusing unit.



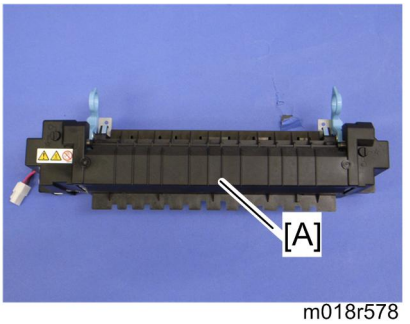
m018r565

6. Fusing unit [D] (x 2)

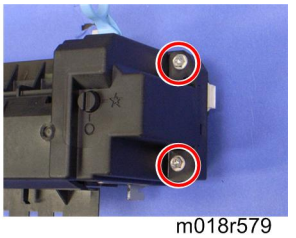
Fusing Lamp

1. Fusing unit (p.55)


m018r580

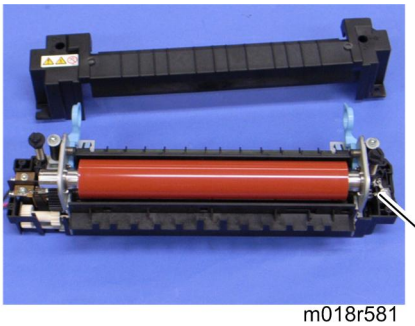


m018r578


m018r579

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


m018r584

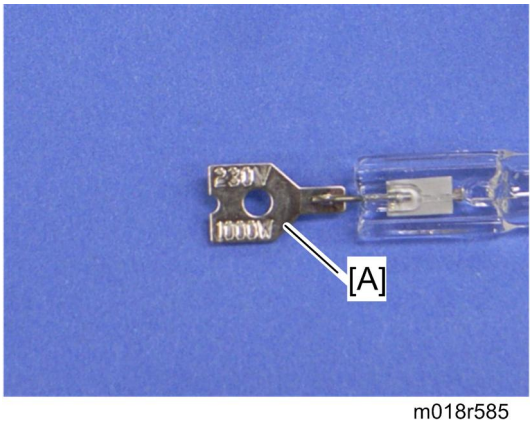

m018r581


m018r582

[B]

3. Fusing lamp [B] (x 2, ground cable x 1)

When Reinstalling the Fusing Lamp

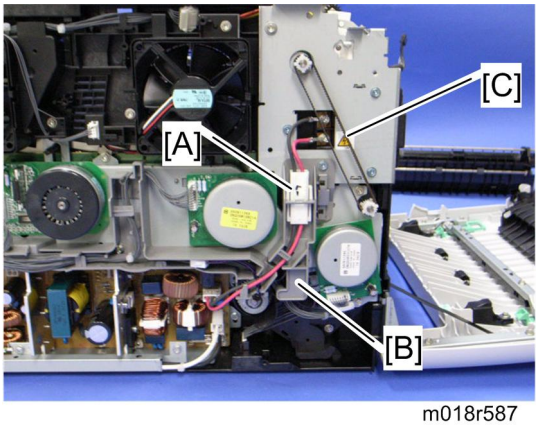


m018r585

The terminal [A], which shows the voltage and power ratings, must be placed at the left side of the fusing unit (fusing cable side).

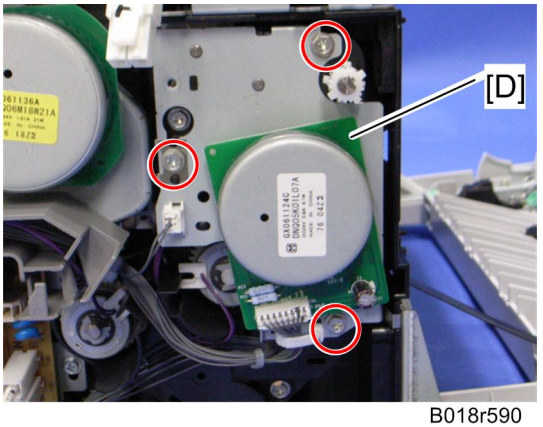
Transport/Fusing Motor

1. Rear cover (☛ p.25)
2. Left cover (☛ p.27)



m018r587

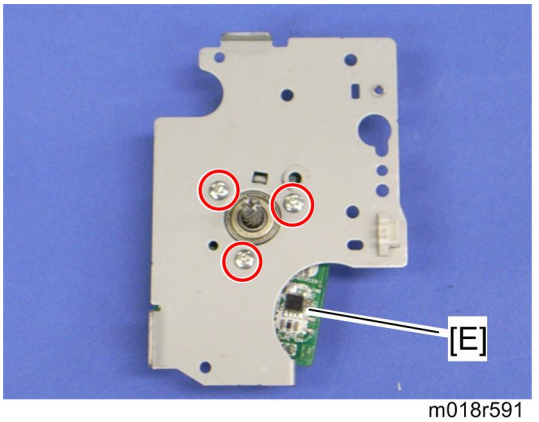
3. Disconnect the fusing connector [A] (hook).
4. Fusing harness guide [B] (x 2)
5. Duplex timing belt [C]



B018r590

4

6. Transport/Fusing motor assembly [D] (x 3, x 3, ground plate x 1)



m018r591

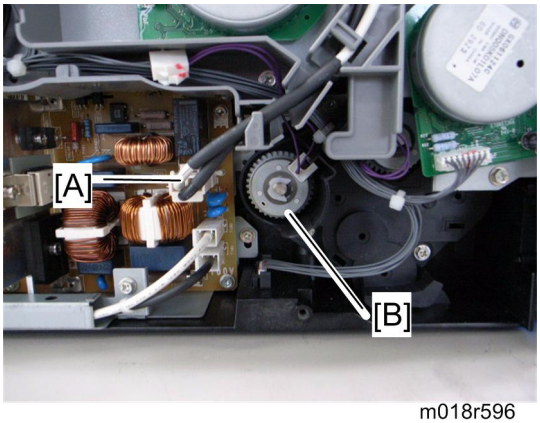
m018r592

7. Transport/Fusing motor [E] (x 3)

Paper Feed

Paper Feed Clutch

1. Rear cover (☛ p.25)
2. Left cover (☛ p.27)



m018r596

3. Disconnect the fusing relay harness [A] (hook).
4. Paper feed clutch [B] (x 1, x 1)

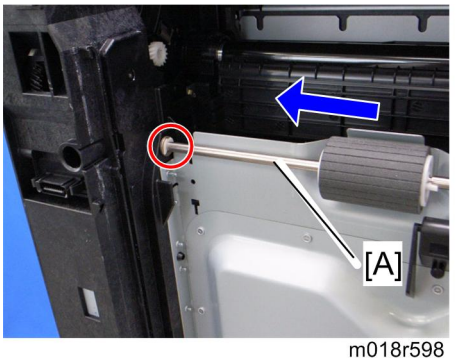
Paper Feed Roller

1. Remove all the AIO cartridges.
2. Remove the waste toner bottle.
3. Rear cover (☛ p.25)
4. Left cover (☛ p.27)
5. Paper feed clutch (☛ p.59)
6. Close the top cover and front cover.
7. Pull out the tray.

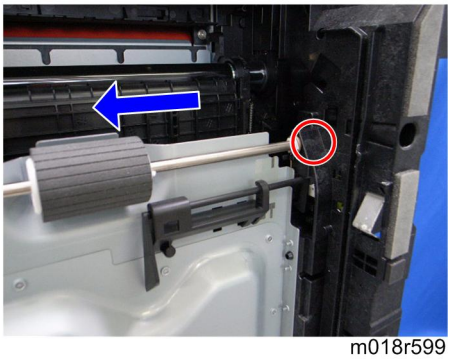
m018r597

4

8. Stand the machine with the rear side facing the table.

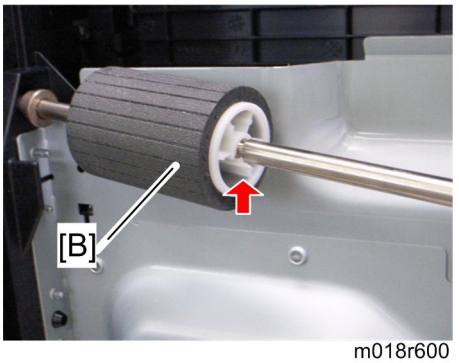


m018r598

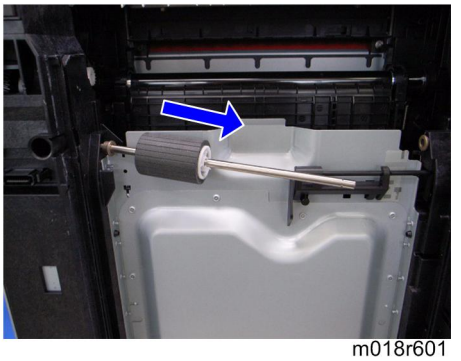


m018r599

9. Slide the paper feed shaft [A] to the left side (x 2).



m018r600

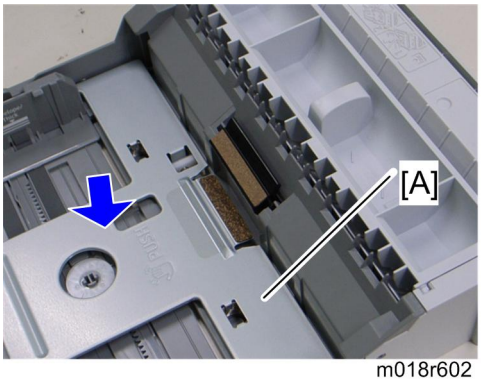


m018r601

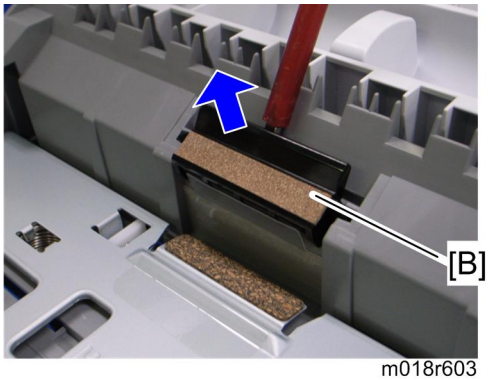
10. Paper feed roller [B] (hook)

Separation Pad

1. Pull out the tray.

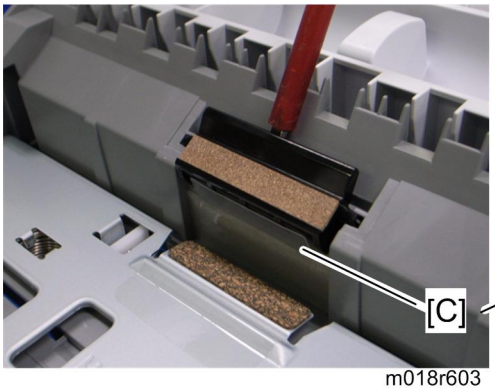


m018r602

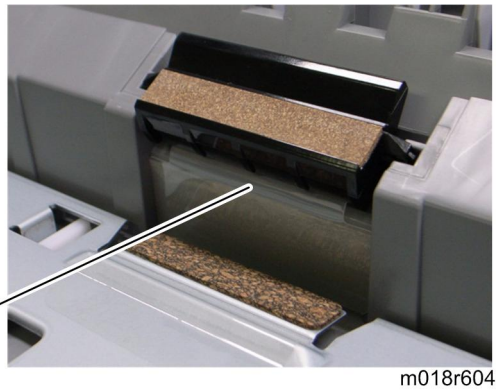


m018r603

2. Push down the bottom plate [A].
3. Separation pad [B] (hooks, spring x 1)



m018r603

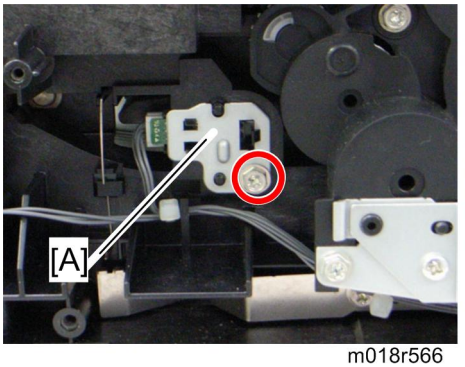

m018r604

Note

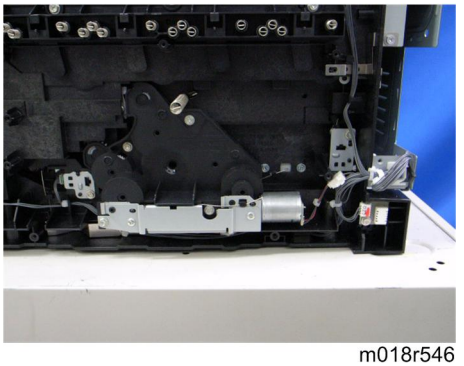
- When reinstalling the separation pad, make sure that the mylar [C] is not placed under the separation pad. The right side image above shows incorrect installation.

Paper End Sensor

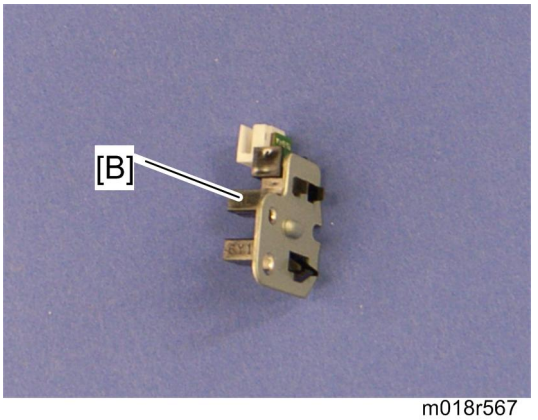
1. Rear cover (☛ p.25)
2. Right cover (☛ p.27)
3. High voltage power supply board (☛ p.75)



m018r566


m018r546

4. Paper end sensor assembly [A] (x 1)



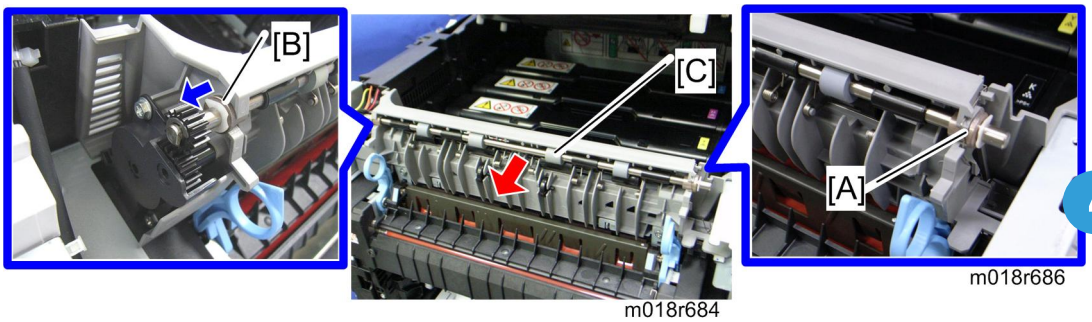
m018r567

5. Paper end sensor [B] (hooks)

Paper Exit

Paper Exit Roller

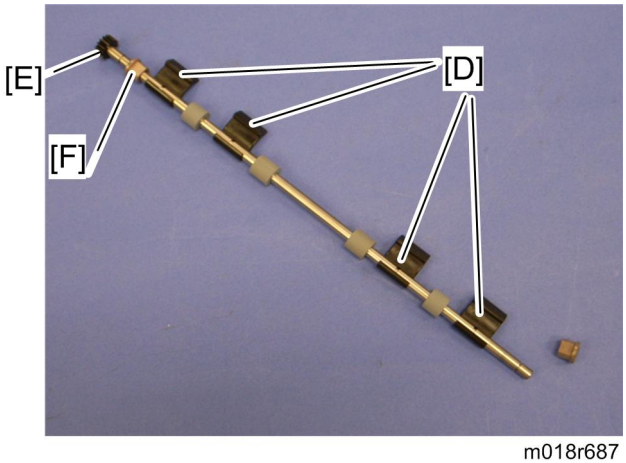
1. Operation panel (☛ p.26)



m018r684

m018r686

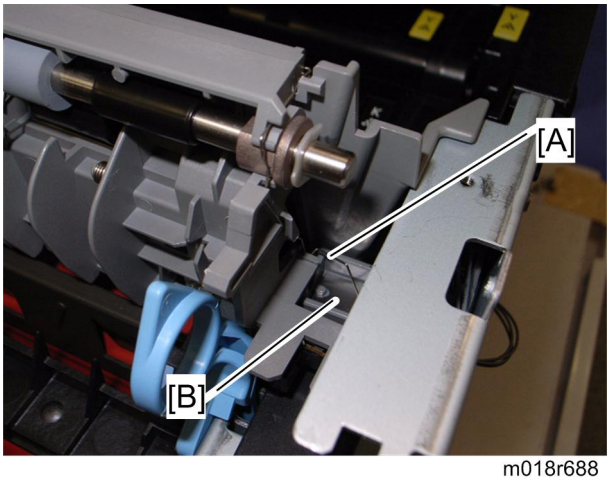
2. Remove the bushing [A] (x 1)
3. Move the bushing [B] to the left side (x 1).
4. Paper exit roller [B]



m018r687

5. Remove the four exit guides [D], gear [E] (x 1) and bushing [F].

When reinstalling the paper exit roller

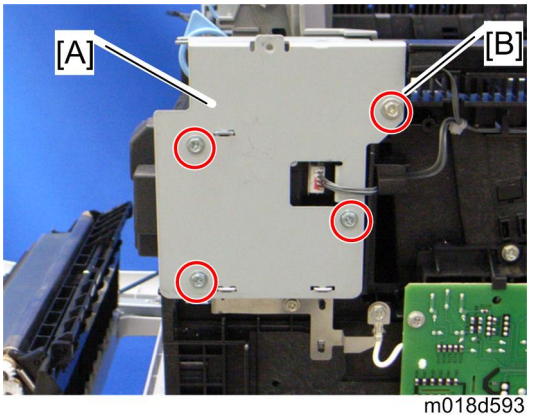


m018r688

Make sure that the ground wire [A] from the discharge sheet touches the ground plate [B] on the machine after reinstalling the paper exit roller.

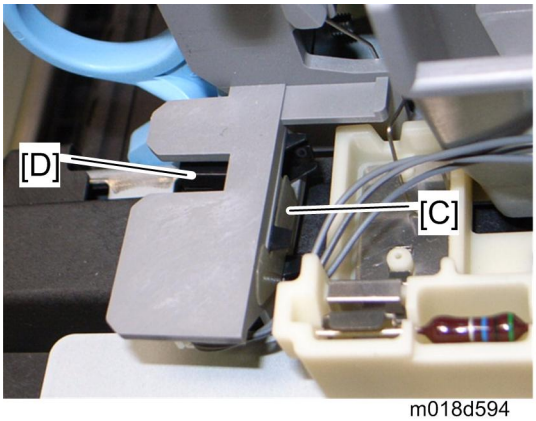
Paper Exit Sensor

1. Rear cover (☛ p.25)
2. Right cover (☛ p.27)



m018d593

3. Right bracket [A] (x 3: M3x8, x 1 [B]: M4x10)



m018d594


m018d595

4. Mylar [C]

Note

- This mylar is necessary for reinstalling the paper exit sensor.

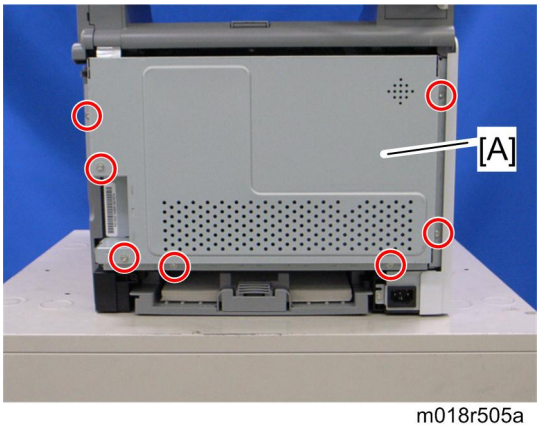
5. Paper exit sensor [D] (hooks, x 1)

Electrical Components

Controller Board

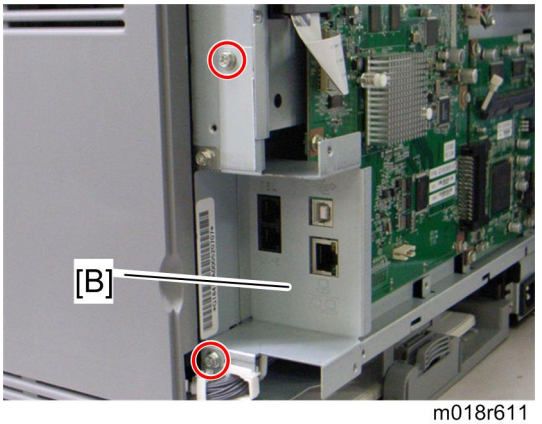
Main Controller Board

1. Rear cover (☛ p.25)



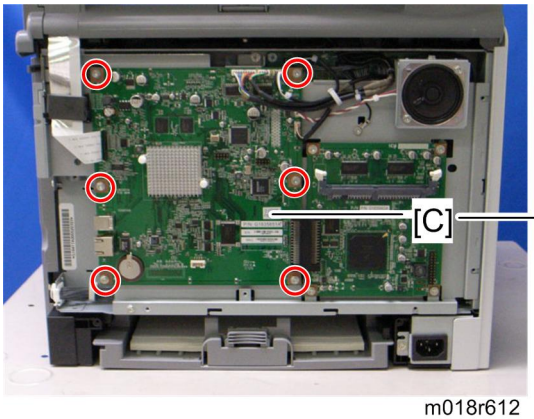
m018r505a

2. Controller box cover [A] (🔩 x 7)

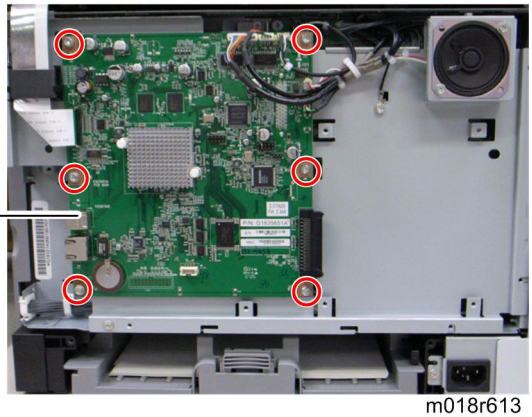


m018r611

3. Interface bracket [B] (🔩 x 2)



m018r612



m018r613

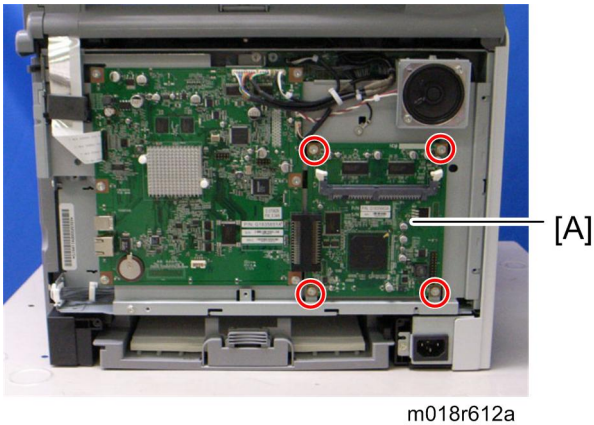
4. Main controller board [C] (flat cable x 1, all s, x 6)

Note

- The photo above left shows the PE-MF2c (M019), and the photo above right shows the PE-MF2b (M018).

PDL Board (M019 only)

1. Rear cover (☛ p.25)
2. Controller box cover (see "p.66 "Main Controller Board "" above)
3. Interface bracket (see "p.66 "Main Controller Board "" above)

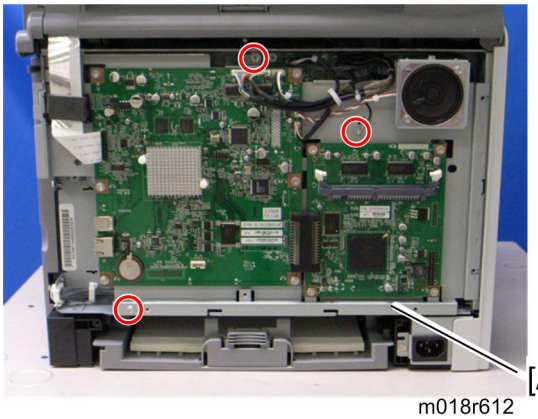


m018r612a

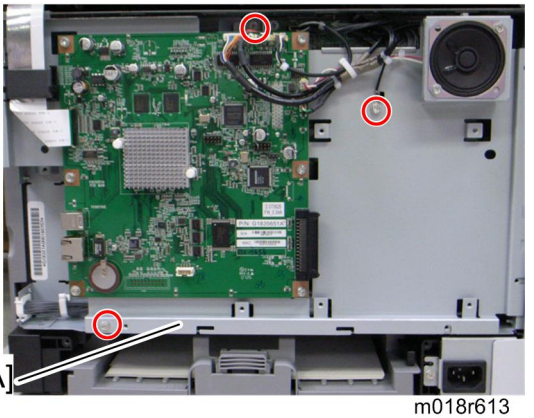
4. PDL board [A] (x 4)

EGB (Engine Board)

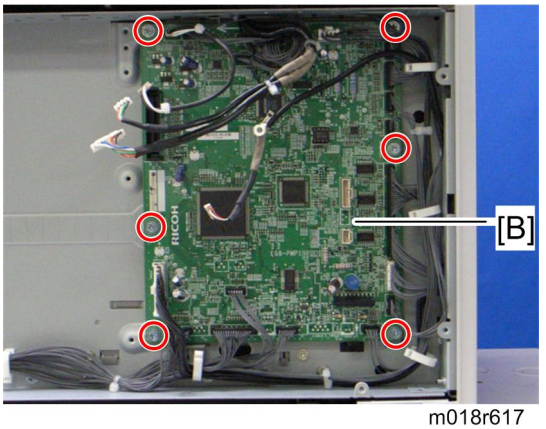
1. Rear cover (☛ p.25)
2. Controller box cover (☛ p.66 "Controller Board")



m018r612

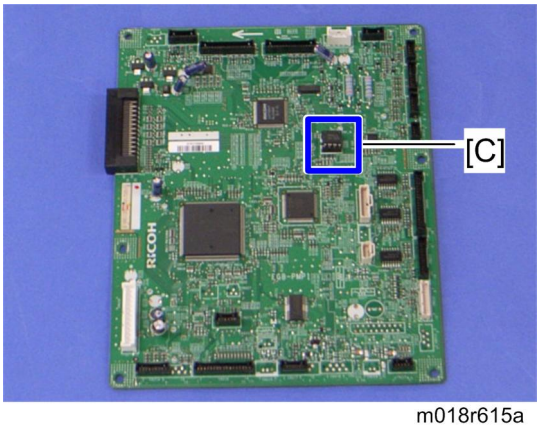

m018r613

3. Controller bracket [A] (x 3, ground cable x 1, all s, flat cable x 1)



m018r617

4. EGB [B] (x 6, all s)

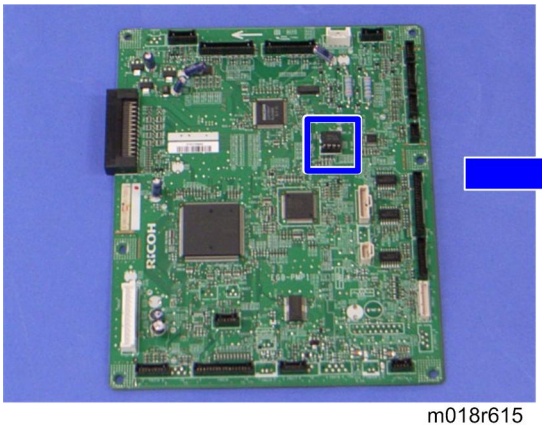


m018r615a

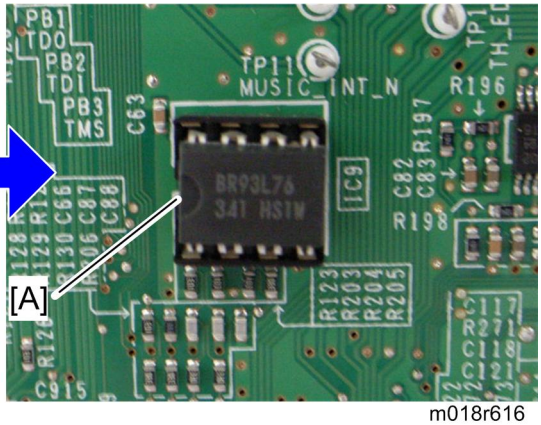
5. EEPROM [C]

When installing the new EGB

1. Remove the EEPROM from the old EGB.



m018r615



m018r616

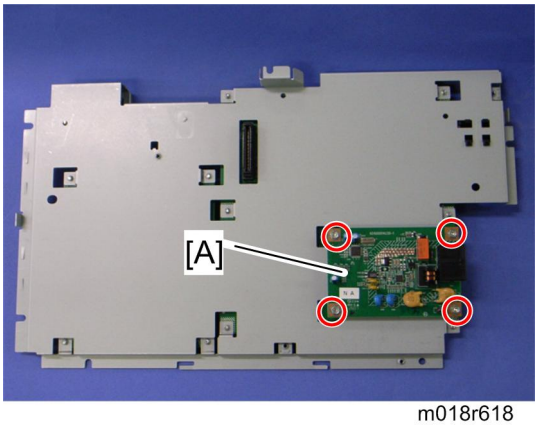
2. Install it on the new EGB with the mark [A] pointing to the left side of the board after you replace the EGB.
3. Replace the EEPROM if the EEPROM on the old EGB is defective.

⚠CAUTION

- 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 EGB.

FCU

1. Rear cover (☛ p.25)
2. Controller box cover (☛ p.66 "Controller Board")
3. Controller bracket (☛ p.68 "EGB (Engine Board)")

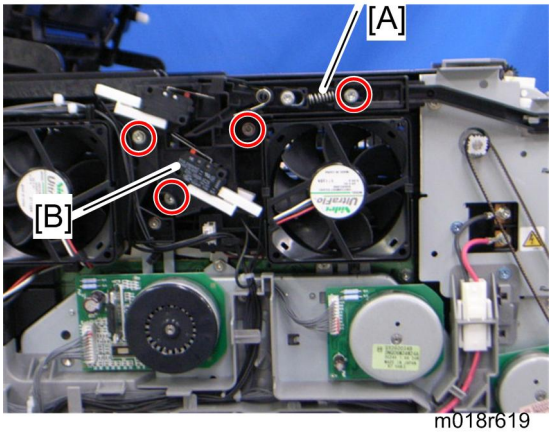


m018r618

4. FCU [A] (x 4)

Interlock Switches

1. Operation panel (☛ p.26)
2. Rear cover (☛ p.25)
3. Left cover (☛ p.27)

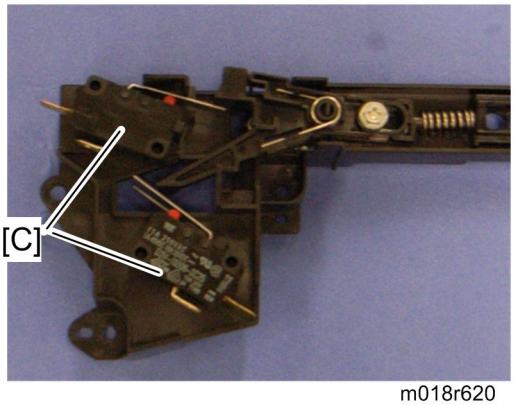


m018r619

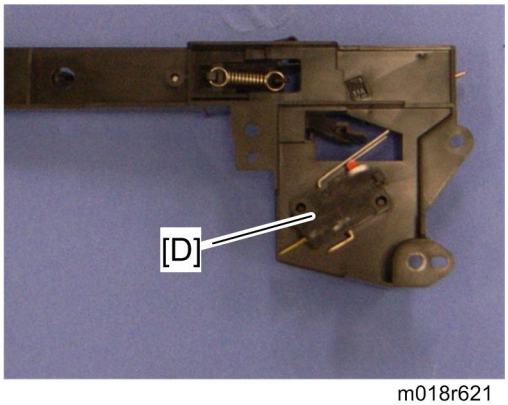
4. Remove the spring [A].
5. Interlock switch base [B] (x 4, all s)

Note

- Remove all the connectors after the interlock switch base has been removed.



m018r620

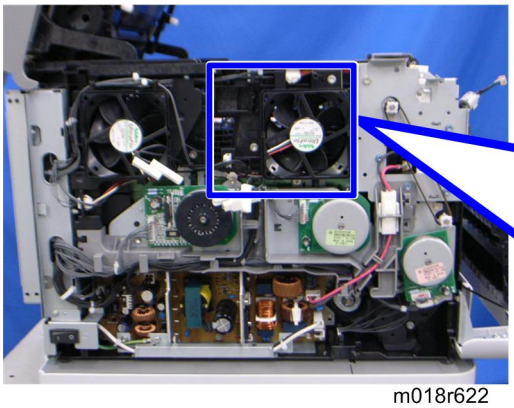


m018r621

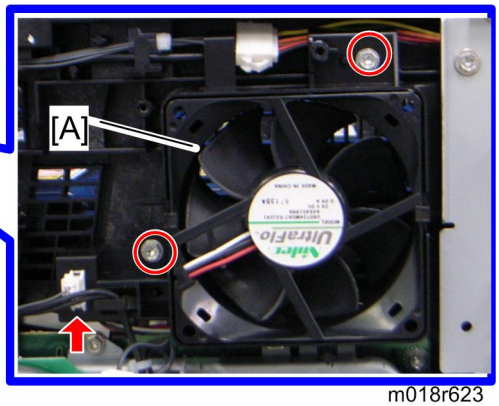
6. Two interlock switches [C] at the outside of the base and one interlock switch [D] at the inside of the base (hooks)

Fusing Fan Motor

1. Operation panel (☛ p.26)
2. Rear cover (☛ p.25)
3. Left cover (☛ p.27)
4. Interlock switch base (☛ p.70 "Interlock Switches")

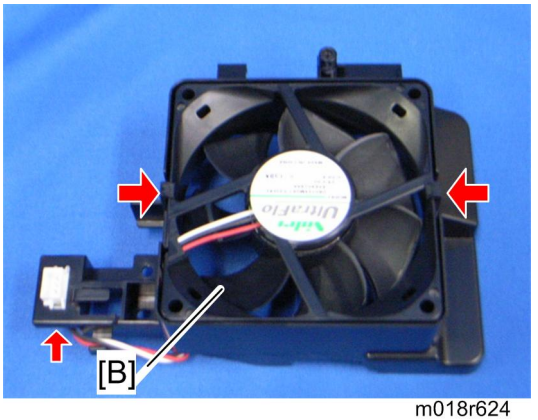


m018r622



m018r623

5. Fusing fan base [A] (x 2, x 1)



m018r624

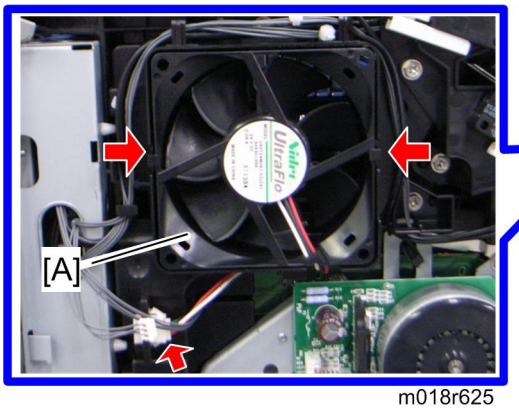
6. Fusing fan motor [B] (hooks, x 1)

⚠CAUTION

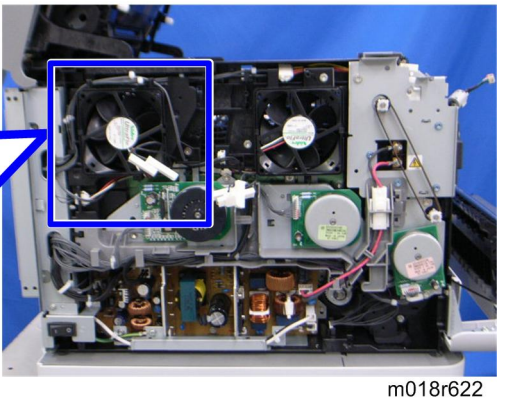
- Install the fusing fan motor with its decal facing the outside of the machine.

LSU Fan Motor

1. Operation panel (☛ p.26)
2. Rear cover (☛ p.25)
3. Left cover (☛ p.27)



m018r625


m018r622

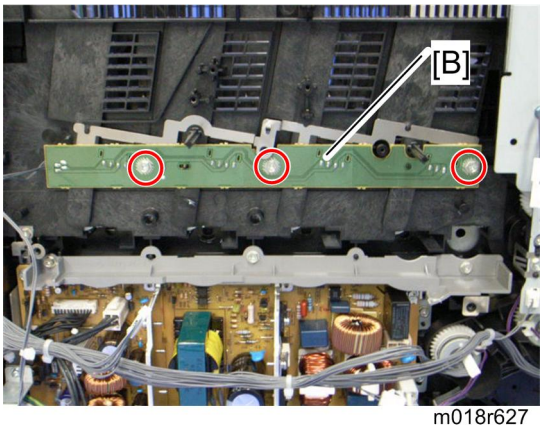
4. LSU fan motor [A] (hooks, x 1)

⚠CAUTION

- Install the LSU fan motor with its decal facing the outside of the machine.

ID Chip Board

1. Operation panel (☛ p.26)
2. Rear cover (☛ p.25)
3. Left cover (☛ p.27)
4. Controller bracket (☛ p.66 "Controller Board")
5. Disconnect the connector (CN305) on the EGB.
6. Interlock switch base (☛ p.70 "Interlock Switches")
7. Fusing fan base (☛ p.71 "Fusing Fan Motor")
8. Drive unit (☛ p.35 "Black AIO Motor")
9. Take the harnesses aside around the LSU fan base [A].
10. LSU fan base [A] (x 2, x 1)

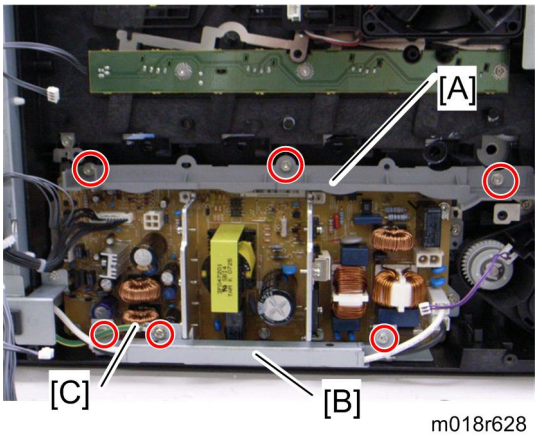


m018r627

11. ID Chip Board [B] (x 3)

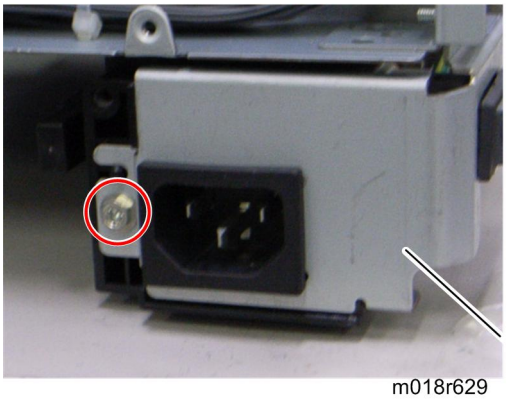
PSU

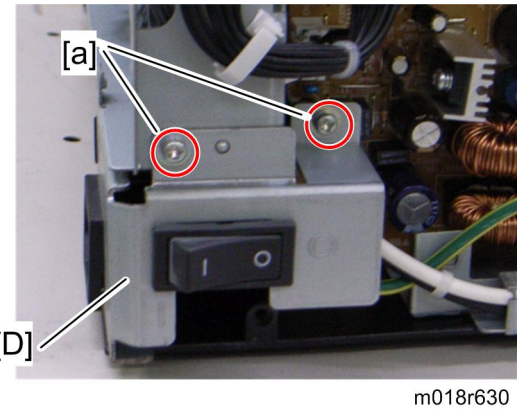
1. Operation panel (☛ p.26)
2. Rear cover (☛ p.25)
3. Left cover (☛ p.27)
4. Drive unit (☛ p.35 "Black AIO Motor")
5. LSU fan base (☛ p.72 "LSU Fan Motor")



m018r628

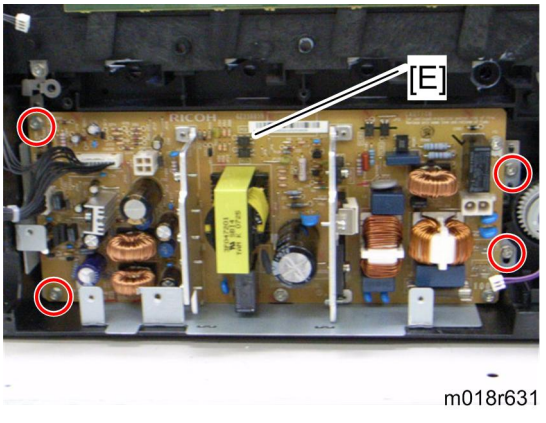
6. PSU guide [A] (x 3)
7. Power cord bracket [B] (x 2)
8. Ground cable [C] (x 1)


m018r629



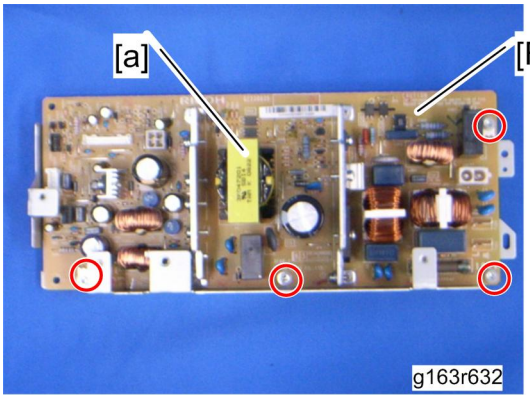
m018r630

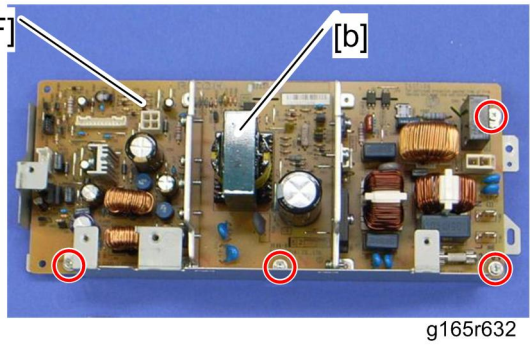
9. Power switch assembly [D] (washer screw [a] x 2, x 1, x 2)



m018r631

10. PSU assembly [E] (x 4, all s)





11. PSU [F] (x 4)

Important

- **There are two types of PSUs for this model. Do not install a wrong PSU in the machine.**
- **PSU has yellow [a] on the transistor is for NA models and PSU has green [b] on the transistor is for EU models.**

Fuse

There is the removable fuse on the PSU.

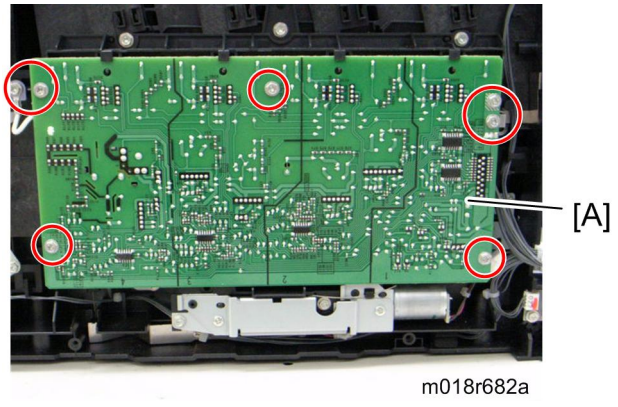
Fuse No.	Rating
FU101: NA	15 A, 125V
FU101: EU, ASIA	6.3A, 250V

⚠CAUTION

- Use a correct rating fuse for the fuse replacement. Never use a wrong rating fuse. If do so, the machine may be damaged.
- Never try direct connection of PSU circuit without a fuse.

High Voltage Power Supply Board

1. Remove all AIO cartridges.
1. Operation panel (☛ p.26)
2. Rear cover (☛ p.25)
3. Right cover (☛ p.27)

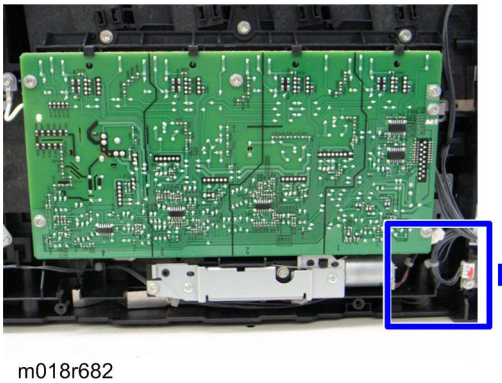


m018r682a

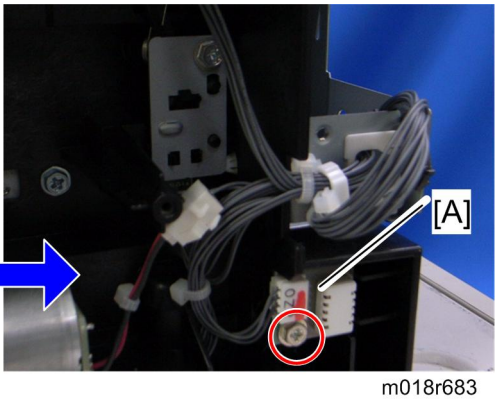
4. High Voltage Power Supply Board [A] (x 7, ground cable x 1, x 1)

Temperature/Humidity Sensor

1. Operation panel (☛ p.26)
2. Rear cover (☛ p.25)
3. Right cover (☛ p.27)



m018r682

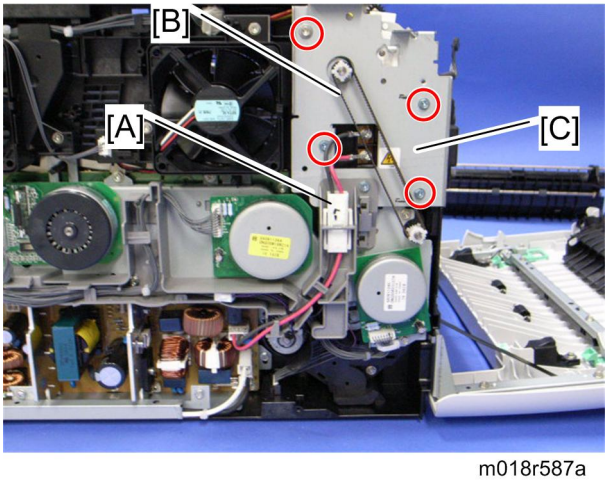


m018r683

4. Temperature/Humidity sensor [A] (x 1, x 1)

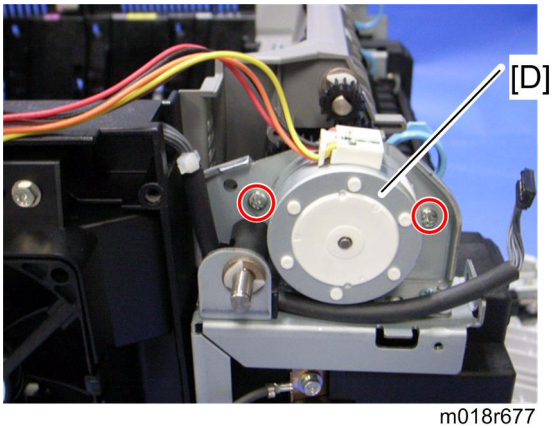
Duplex Motor

1. Operation panel (☛ p.26)
2. Rear cover (☛ p.25)
3. Left cover (☛ p.27)



m018r587a

4. Disconnect the fusing connector [A]
5. Duplex timing belt [B]
6. Left bracket [C] (x 4)

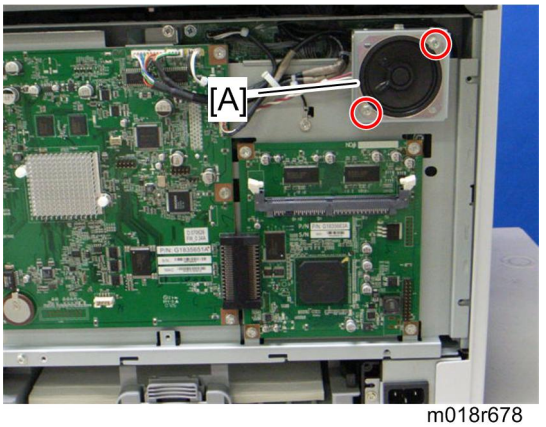


m018r677

7. Duplex motor [D] (x 2, x 1)

Speaker

1. Rear cover (☛ p.25)
2. Controller box cover (☛ p.66 "Controller Board")



m018r678

3. Speaker [A] (x 2, x 1)

EEPROM

Note

- Replacement and Reinstallation procedures for the EEPROM are included in the "EGB (Engine Board)" replacement procedure. Refer to "EGB (Engine Board)" for details.

When replacing an old EEPROM with a new EEPROM, EEPROM setting is required. Follow the EEPROM setting procedure described below.

Replacement Procedure

Important

- **Do the following steps 1 to 9 with the front cover of the machine open. After completing these steps, turn off the machine.**

1. Open the front cover and turn on the machine.

   Note

   - The machine may issue an error code (because the cover is open), but continue this procedure.

2. Enter the following keys consecutively in order to enter "Engine Maintenance" in the "Maintenance Mode Menu".
3. Select "Init Engine EEPROM" item and execute it to initialize the EEPROM.
4. Press the "Clear/Stop" key to exit the "Engine Maintenance" menu.
5. Select the "Serial No." item, and then input a serial number.

   Note

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

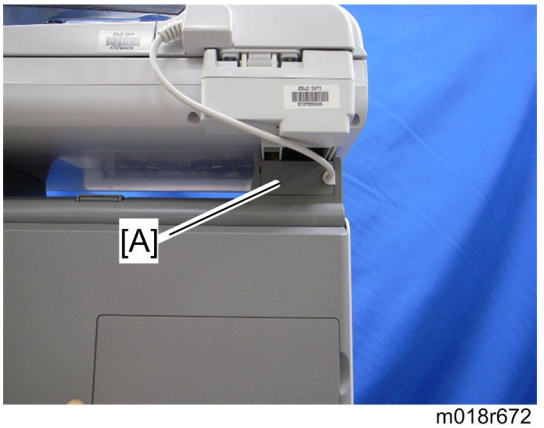
6. Exit the serial number input display, and then enter "Engine Maintenance" again.
7. Select "Destination", and then select a destination.
8. Select "Model", and then select a model.
9. Select "PnP Name", and then select a plug and play name.
10. Select "LSU Adjustment", and then input the LSU (laser optics housing unit) setting values.
11. Turn off the machine.
12. Turn on the machine with the front cover open.
13. Enter "Engine Maintenance" in the "Maintenance Mode Menu" again.
14. Close the front cover.
15. Select "Trans. Belt Adjust", and then execute "Trans. Belt Adjust" to adjust the ITB (Image Transfer Belt) unit.
16. Select "Fuser SC Detect", and then select "ON" or "OFF" for the consecutive fusing jam detection.

    Note

    - The default setting is "OFF". Select "ON" only if the customer wants to use this feature.
17. Select "Registration", and then adjust the registration for each direction (vertical and horizontal direction) and tray if necessary.
18. Select "2nd Transfer Fuser Temp", and then adjust the transfer roller bias and the temperature reduction of the fusing unit for each paper type and for the front and back sides. The default settings for normal operation are all '0'.
19. Exit "Engine Maintenance".

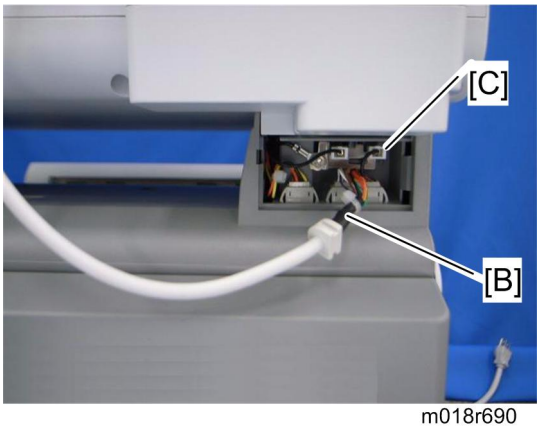
ADF

ADF Unit



m018r672

1. Stand left cover [A]

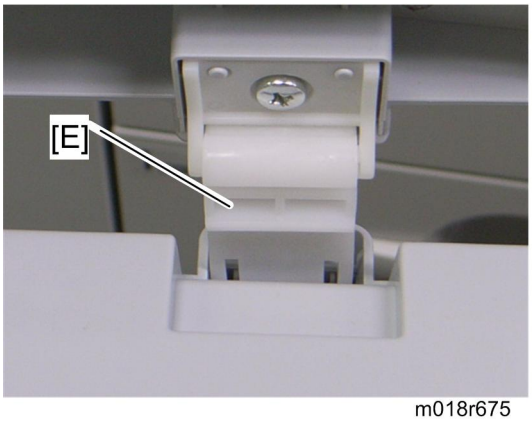


m018r690

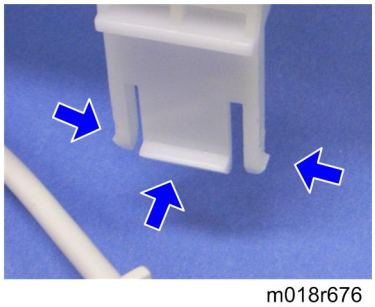
2. Disconnect the ADF harness [B] and power cord [C].

m018r674

3. Open the ADF unit [D]



m018r675

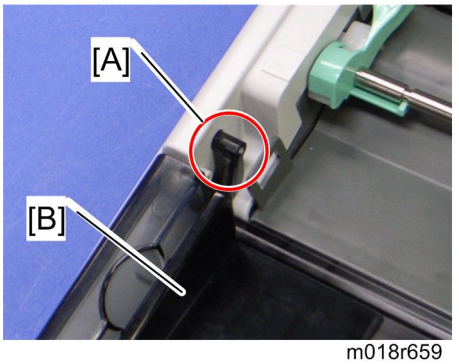


m018r676

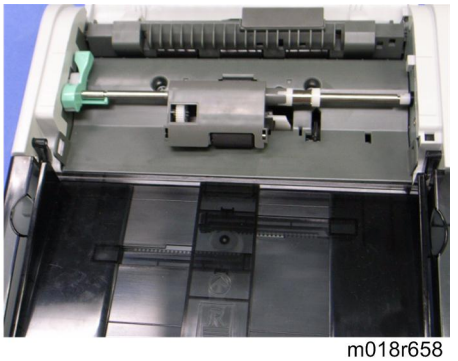
4. Release the three hooks of the right hinge [E]
5. Lift the ADF unit.

Original Tray

1. Open the ADF cover.



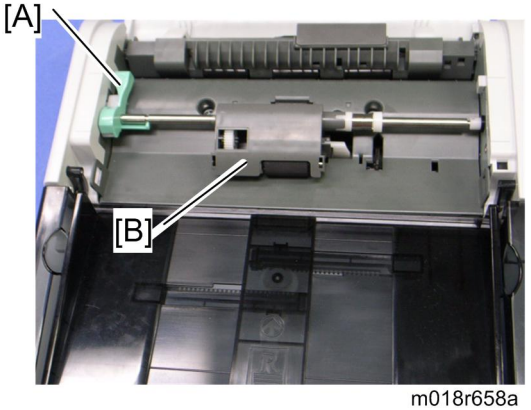
m018r659


m018r658

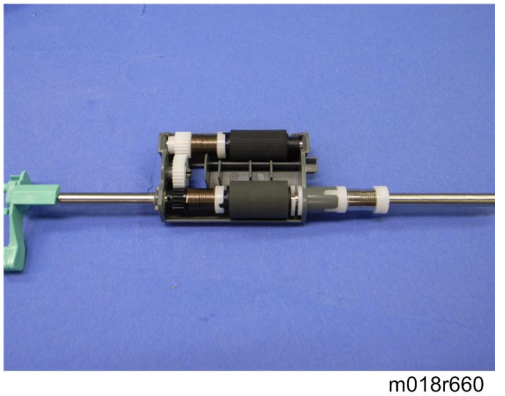
2. Release the front tab [A].
3. Original tray [B]

ADF Feed Unit

1. Open the ADF cover.



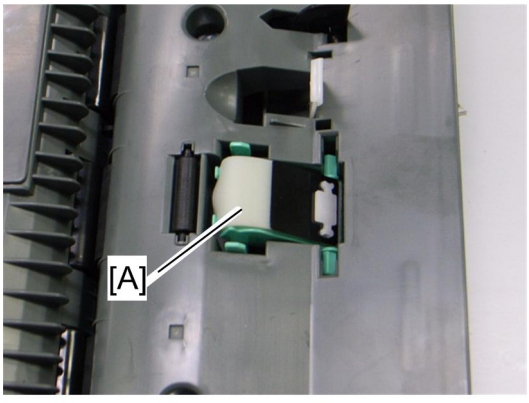
m018r658a


m018r660

2. Release the lock lever [A]
3. ADF feed unit [B]

ADF Separation Pad

1. Open the ADF cover.
2. ADF feed unit (☛ p.82)

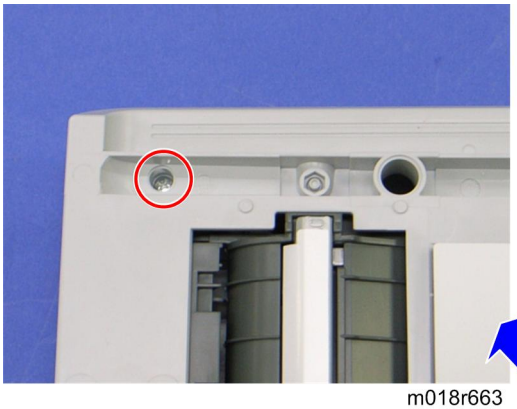


m018r661

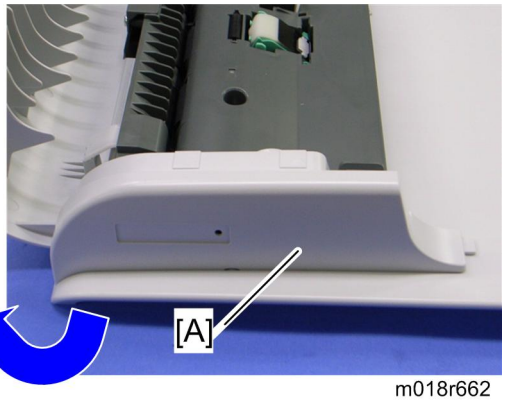
3. ADF separation pad [A] (hook x 2, spring x 1)

ADF Front Cover

1. ADF unit (☛ p.80)
2. Original Tray (☛ p.81)
3. ADF feed unit (☛ p.82)



m018r663

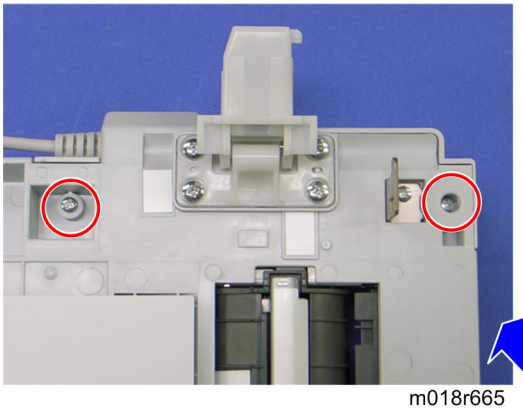


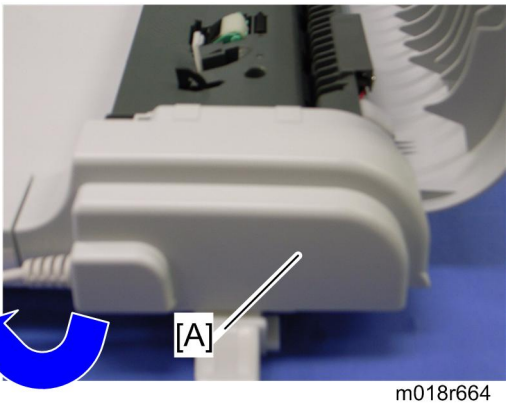
m018r662

4. ADF front cover [A] (x 1)

ADF Rear Cover

1. ADF unit (☛ p.80)
2. Original Tray (☛ p.81)
3. ADF feed unit (☛ p.82)


m018r665

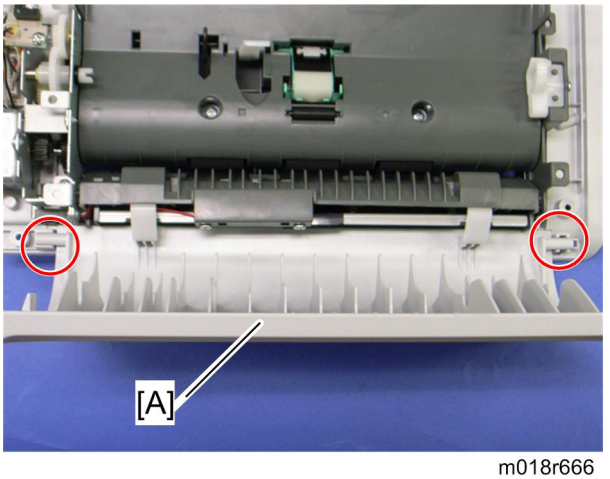


m018r664

4. ADF rear cover [A] (x 2)

ADF Cover

1. ADF unit (☛ p.80)
2. ADF front cover (☛ p.83)
3. ADF rear cover (☛ p.83)



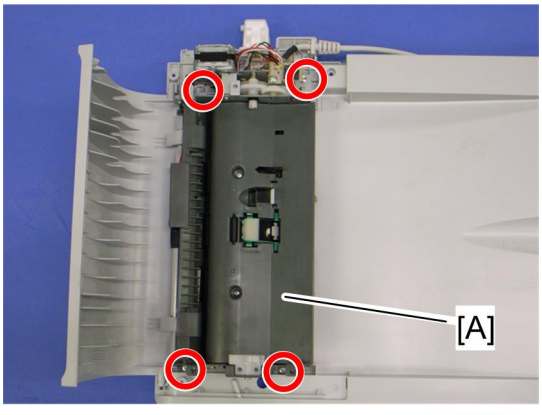
m018r666

4. ADF top cover [A] (two tabs)

ADF Motor

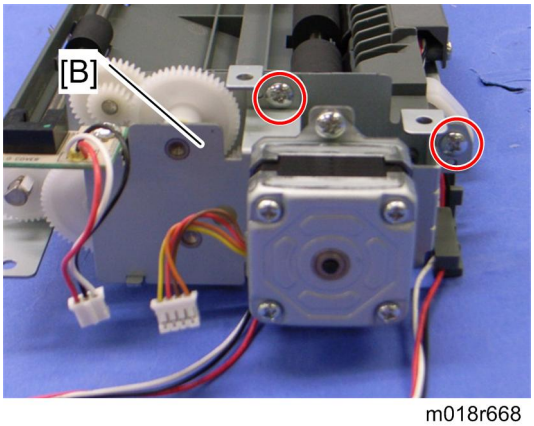
1. ADF unit (☛ p.80)
2. Original Tray (☛ p.81)

3. ADF feed unit (☛ p.82)
4. ADF front cover (☛ p.83)
5. ADF rear cover (☛ p.83)



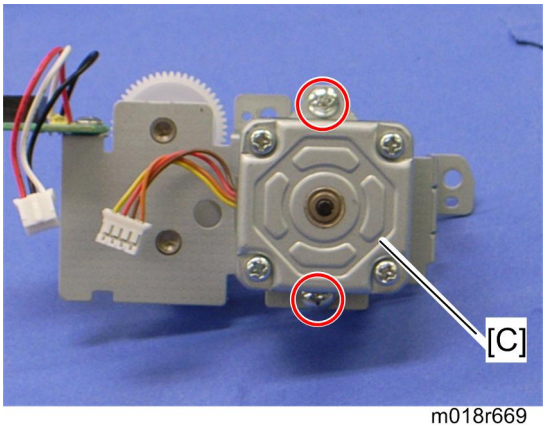
m018r667

6. ADF drive unit [A] (x 4, all s)



m018r668

7. ADF motor assembly [B] (x 2)

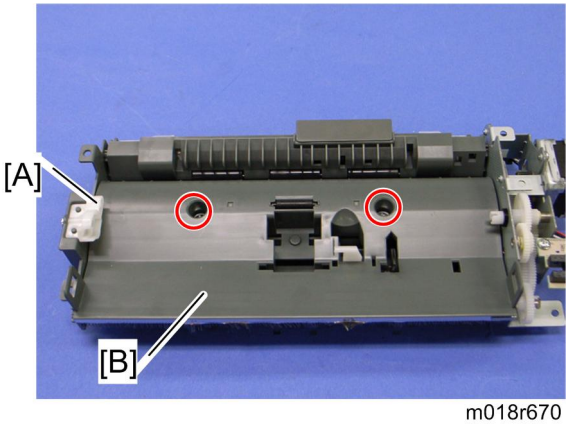


m018r669

8. ADF motor [C] (x 2)

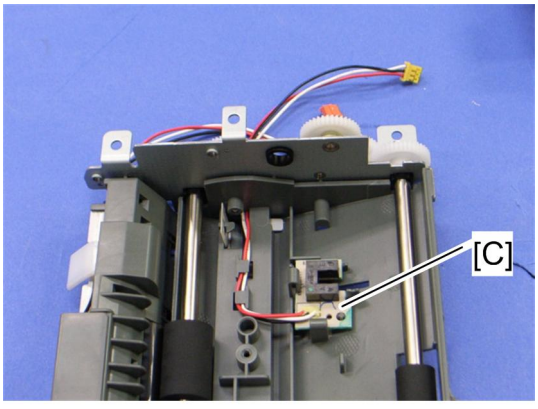
Original Set Sensor

1. ADF unit (☛ p.80)
2. ADF feed unit (☛ p.82)
3. ADF motor assembly (☛ p.84)



m018r670

4. Feed roller holder [A] (x 1)
5. Upper guide [B] (x 2)

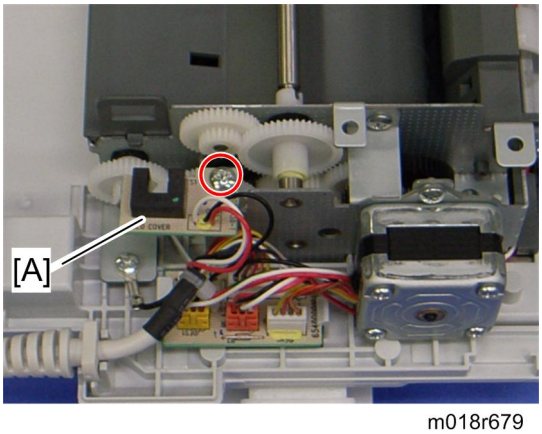


m018r671

6. Original set sensor [C] (hooks)

ADF Cover Open Sensor

1. Original tray (☛ p.81)
2. ADF rear cover (☛ p.83)

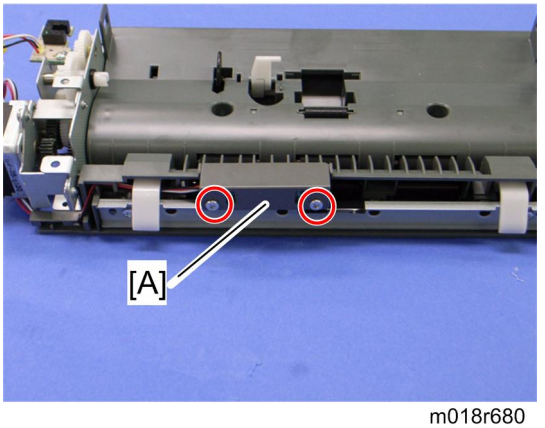


m018r679

3. ADF cover open sensor (x 1, x 1)

ADF Feed Sensor

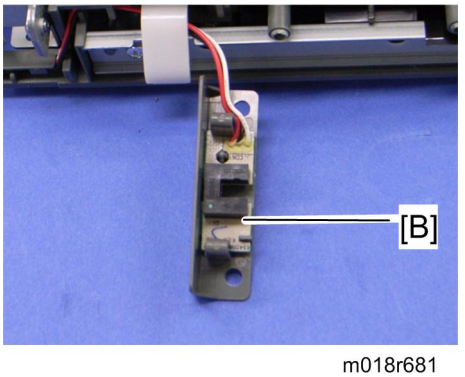
1. ADF unit (☛ p.80)
2. ADF feed unit (☛ p.82)



m018r680

4

3. Sensor cover [A] (x 2)

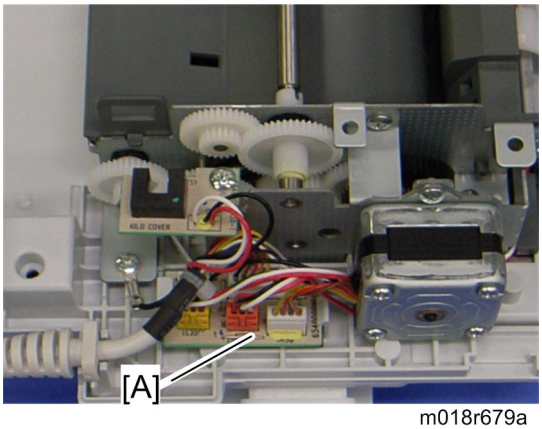


m018r681

4. ADF feed sensor [B] (hooks)

ADF Drive Board

1. Original tray (☛ p.81)
2. ADF rear cover (☛ p.83)



m018r679a

3. ADF drive board [A] (all s, hooks)

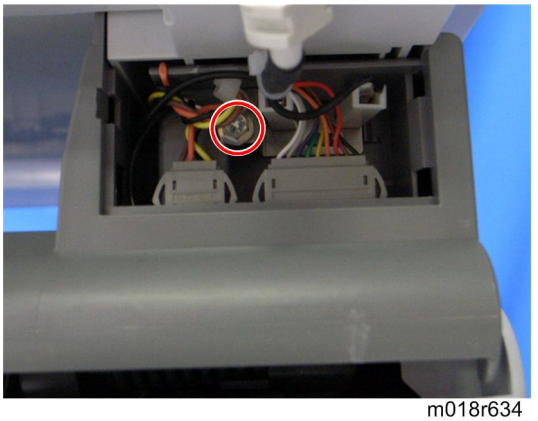
Scanner

Scanner Unit

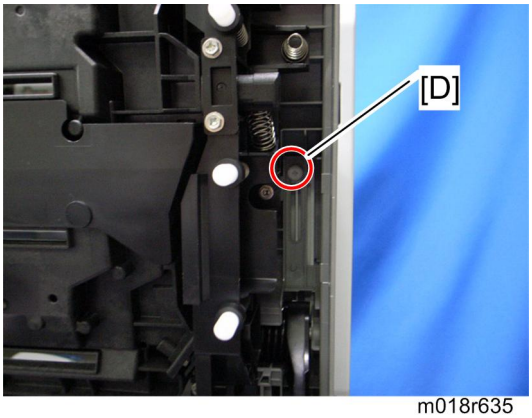
1. Controller box cover (☛ p.66 "Controller Board")

m018r633

2. Disconnect the flat cable [A].
3. Stand left cover [B] and right cover [C] (1 hook each)

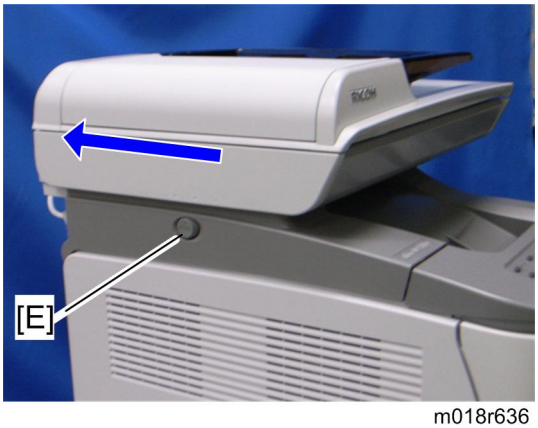

m018r634

4. Disconnect the scanner harness, power cord and ground cable (and the ADF harness and power cord if the ADF is installed in the scanner unit) (x 1).
5. Open the top cover of the machine.



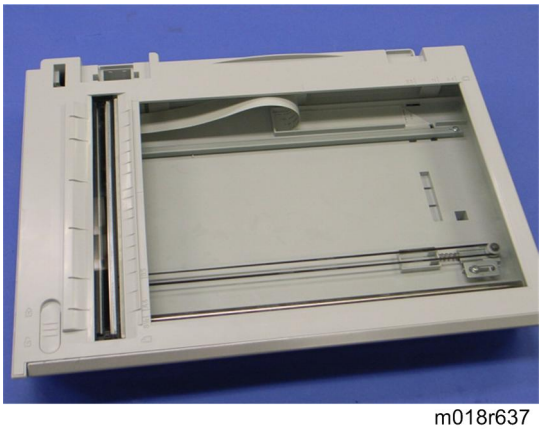
m018r635

6. Remove the stepped screw [D].



m018r636

7. Push the lock button [E] and slide the scanner unit to the rear side.
8. ADF unit (☛ p.80)

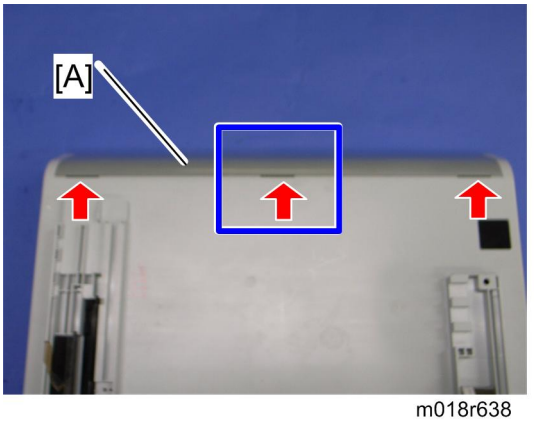


m018r637

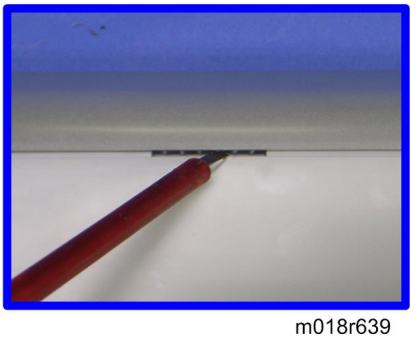
9. Scanner unit

Scanner Top Cover

1. Scanner unit (☛ p.90)

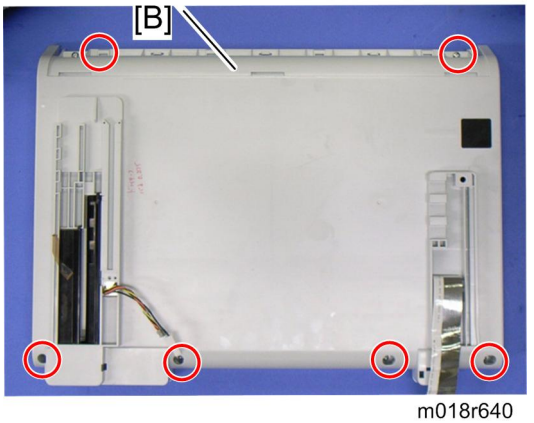


m018r638



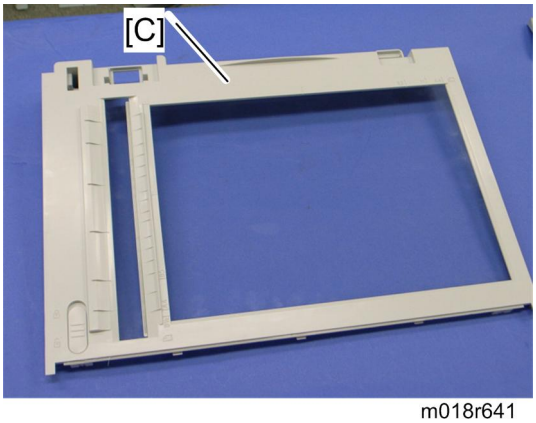
m018r639

2. Turn over the scanner unit.
3. Scanner front cover [A] (tabs x 3)



m018r640

4. Remove the six screws at the bottom of the scanner base [B].

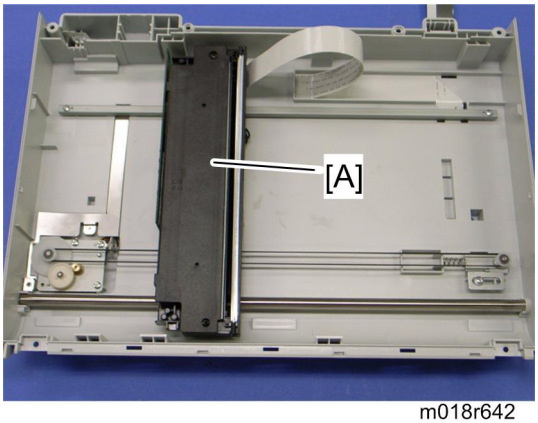


m018r641

5. Scanner top cover [C]

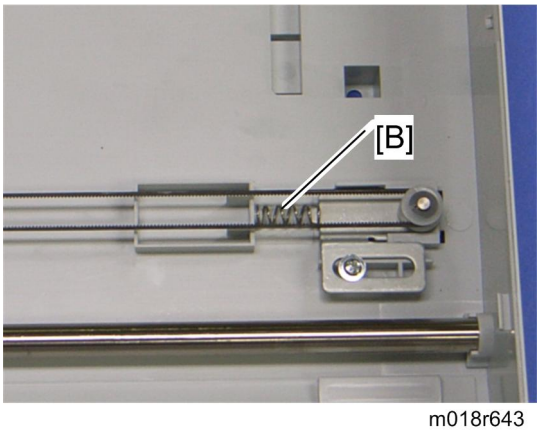
Scanner Carriage Unit

1. Scanner unit (☛ p.90)
2. Scanner top cover (☛ p.92)



m018r642

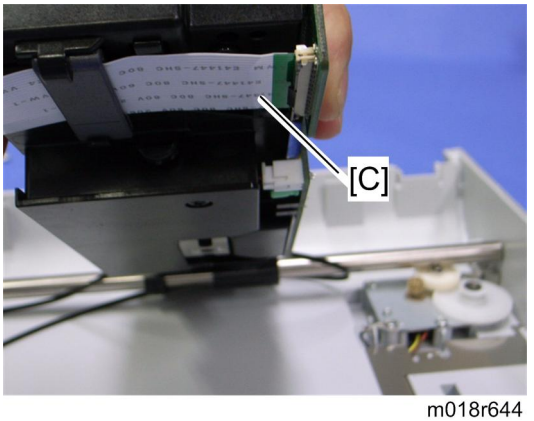
3. Slide the scanner carriage unit [A] to the right side.



m018r643

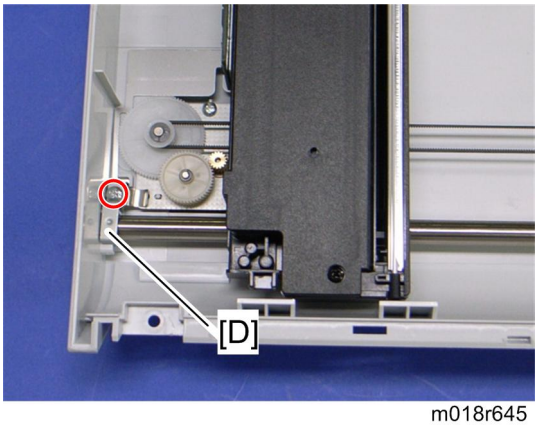
4

4. Remove the timing belt tension spring [B]



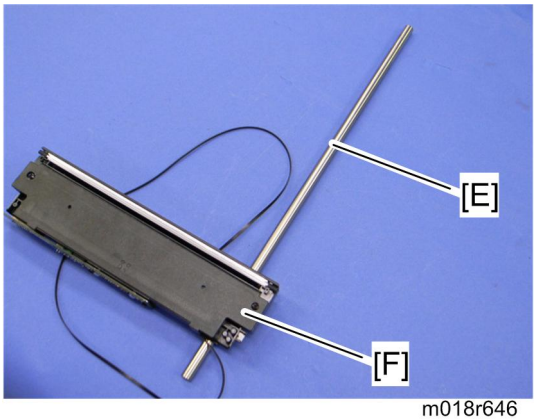
m018r644

5. Remove the flat cable [C] from the scanner carriage unit.



m018r645

6. Bar holder [D] (x 1)

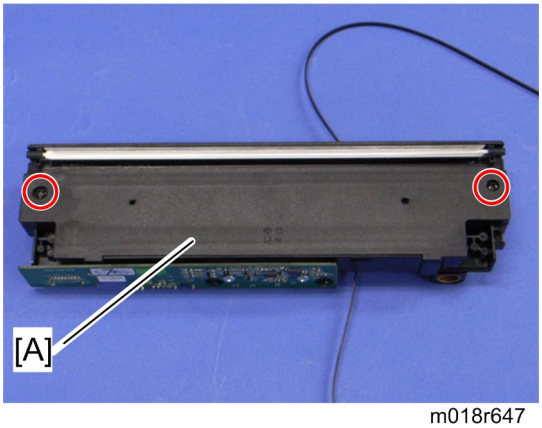


m018r646

7. Carriage bar [E] and scanner carriage unit [F]

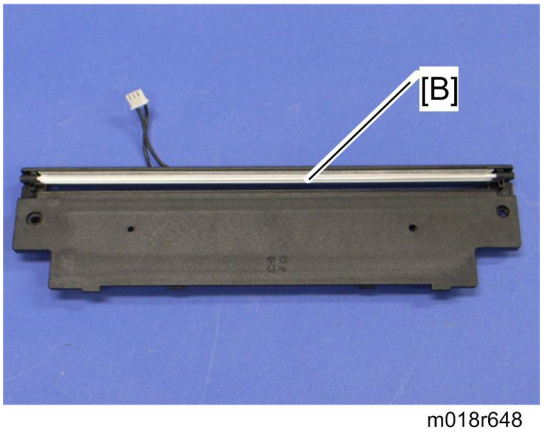
Exposure Lamp

1. Scanner carriage unit (☛ p.93)



m018r647

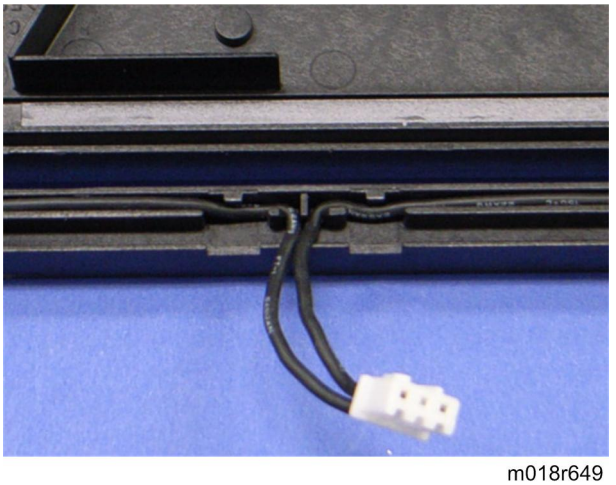
2. Carriage top cover [A] (x 2, x 1)



m018r648

3. Exposure lamp [B] (hooks)

When reinstalling the exposure lamp

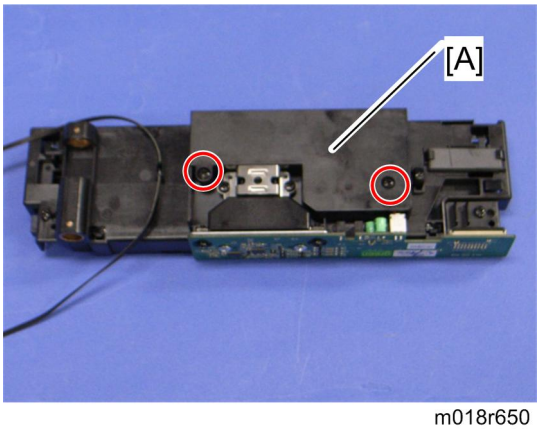


m018r649

Wire the lamp cords as shown above. Otherwise, the top cover pinches the lamp cords and damages them when reinstalling the top cover on the scanner carriage unit.

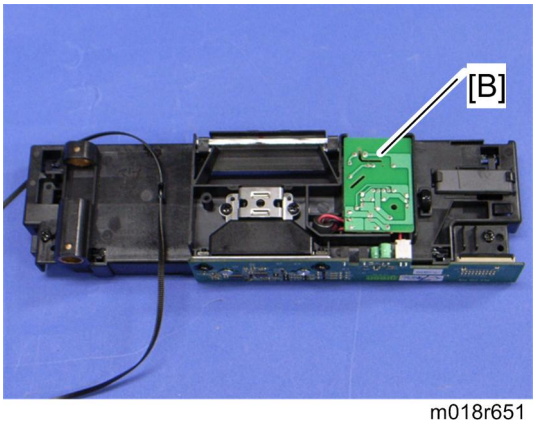
Lamp Stabilizer Board

1. Scanner carriage unit (☛ p.93)



m018r650

2. Carriage bottom cover [A] (x 2)

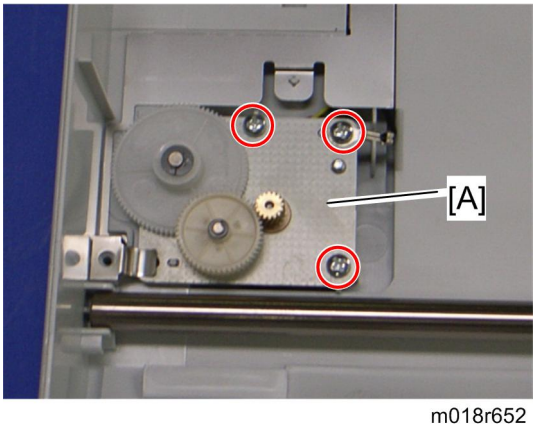


m018r651

3. Lamp stabilizer [B] (x 1)

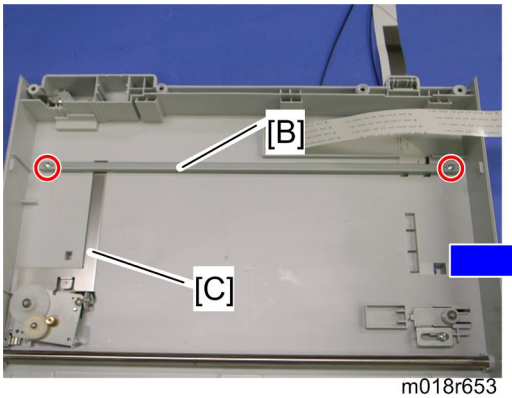
Scanner Motor

1. Scanner carriage unit (☛ p.93)

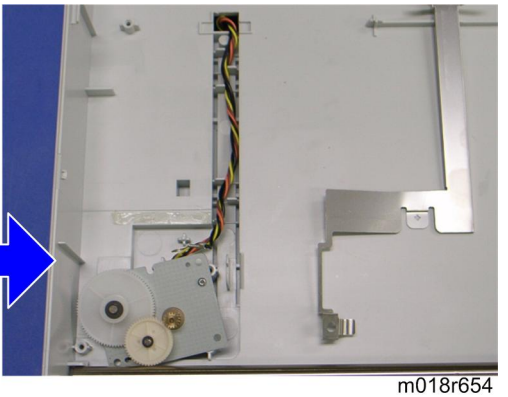


m018r652

2. Scanner motor [A] (x 3)



m018r653



m018r654

3. Carriage rail [B] (x 2)
4. Ground plate [C] (double-sided tape)
5. Scanner motor

5. System Maintenance Reference

Service Program

See "Appendices" for "Service Menu".

Overview

There is an LCD on these models. To execute the service program, access the "Maintenance Mode Menu" or "Fax Service Menu" with special key assignments. For details, refer to the "Service Menu" section.

Configuration Page Information

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.
2. Press the "User Tools" key.
3. Press the "▲" or "▼" key to select "Reports Print", and then press the "OK" key.
4. Press the "▲" or "▼" key to select "Configuration Page" or "Maintenance Page", and then press the "OK" key.
5. The configuration page or maintenance page is printed.

Firmware Updating

⚠CAUTION

- Do not turn off the main power of the machine during the firmware updating. If doing so, the engine board or controller board may be damaged.

Checking the Machine Firmware Version

1. Turn the machine on.
2. Press "User/Tools" key and select "Report Print" with the "Up" or "Down" key.
3. Press "OK" and select "Maintenance Page" with the "Up" or "Down" key.
4. Press "OK" to display the "Firmware version (Controller)" and "Engine FW version"

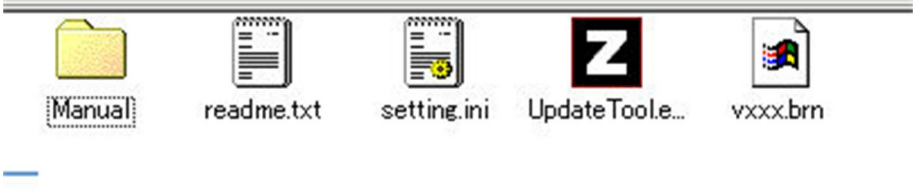
Updating the Controller Firmware

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.

Preparation

1. Download the firmware file on you PC.



m018s505

2. Unzip the firmware file.
    - The firmware file contains the manual folder and other updating applications as show above.

Updating Procedure

⚠CAUTION

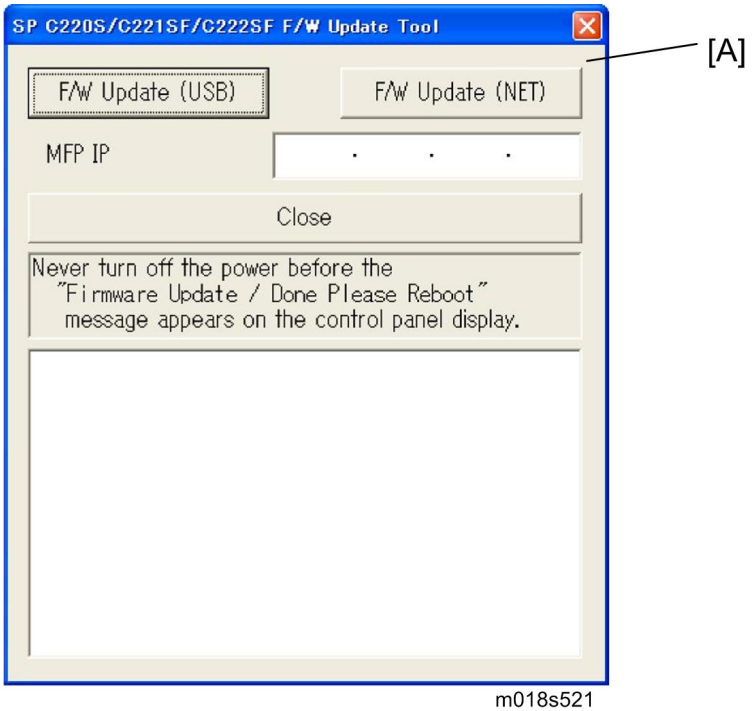
- The update may take a while to complete. Do not turn off the power during the update.
- Turn off the power only when the machine beeps and "Firmware Update Done Please Reboot" appears on the control panel display.

Important

- **When using a computer running on a Windows operating system, you must have an account that has Manage Printers permission. Log on as an Administrators or Power Users group member to acquire this permission.**
- **The following procedure is based on Windows XP as an example.**

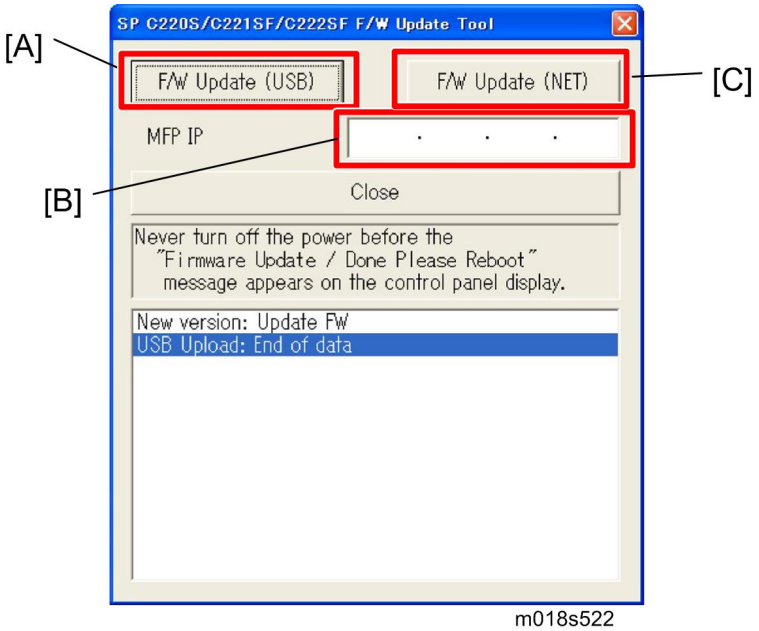
1. Disconnect the telephone line cable from the machine.
2. Turn on the machine.
3. Press any menu key on the machine's control panel.
4. Press the [▲] [▼] keys to select [Reports Print], and then press the [OK] key.
5. Press the [▲] [▼] keys to select [Configuration Page], and then press the [OK] key.

   The configuration page is printed out. Take note of the current firmware version (shown under "Firmware Version" on the configuration page).



m018s521

6. Double-click the [UpdateTool.exe] icon to launch the firmware update tool [A].



m018s522

7. For a USB connection, click [F/W Update (USB)] [A]. For a network connection, enter the machine's IP address in [MFP IP] [B], and then click [F/W Update (NET)] [C].
8. Check the control panel display for messages and the update's current percentage of completion.

   Note

   - The Update may take a while to complete. Do not turn off the power during the update.
   - Turn off the power only when the machine beeps and "Firmware Update Done Please Reboot" appears on the control panel display.
9. Wait until the machine beeps once and "Firmware Update Done Please Reboot" appears on the control panel display.
   - Click [Close] to the update tool.
10. Turn off the power, and turn it back on.
    - After you turn the power back on, "Initializing" appears on the control panel display.
11. Wait until the initial screen appears on the control panel display.
    - If the initial screen does not appear after more than one minute, the update is not complete. In this case, see "Updating Failure".
12. Repeat Steps 3 to 5 to print the configuration page again.

    Take note of the new firmware version (shown under "Firmware Version" on the configuration page).
13. Reconnect the telephone line cable to the machine.

Note

- The update's percentage of completion might not be displayed, depending on which version of the firmware is currently installed.
- In addition to printing a configuration page, you can check the machine's firmware version by accessing the machine using a web browser. For details, see "Checking Machine Status", in the User Guide.
- Depending on how it is configured, the machine might start up in fax mode following the firmware update.

Messages that appear in the update tool window

Message	Cause/ Solutions
Can't open ROM file. Please check ROM file.	The firmware file (*.brn/*.dwn) or setting file (*.ini) is not stored in the same folder as the update tool.
	• Make sure that the firmware file (*.brn/*.dwn) and setting file (*.ini) are stored in the same folder as the update tool. • Also, make sure that you do not modify the setting file.
	The path to the location of the update tool is too long.
	• Make sure that the path to the update tool is not too long. For convenience, save the update tool in a subfolder directly under your computer's C: drive.
Fail to open USB port.	The USB cable is not connected.
	• Make sure the USB connection between the machine and computer is secure. • If this message persists, try another USB cable.
	The USB printer driver is not installed in your computer.
	• Install the USB printer driver in your computer.
	The machine is turned off or an error has occurred.
	• Turn off the power, turn it back on, and then perform the update again. • If this message reappears after you turn the power back on, see "Error and Status Messages on the Screen" in the User Guide.

Message	Cause/ Solutions
Net Connection : FAIL(X)*1	The IP address specified for either the machine or your computer is invalid.
	• Check that both IP addresses are valid.
	The **[F/W Update (USB)]** or **[F/W Update (NET)]** button was clicked when the update was already in progress.
	• Clicking the **[F/W Update (USB)]** or **[F/W Update (NET)]** button during the update process does not interfere with any ongoing update. • Ignore this error message and complete the update using the procedure shown in this manual.
	The machine is turned off or an error has occurred.
	• Turn off the power, turn it back on, and then perform the update again. • If this message reappears after you turn the power back on, see "Error and Status Messages on the Screen" in the User Guide.
	The machine is being operated through the operation panel.
	• Cancel any operations being performed through the operation panel. • Put the machine into standby mode, and then perform the update again.
Net Server : Connecting...	Your computer is searching the network for the machine.
	• Wait a while until the machine is found.
Net Upload : End of data	Firmware has been transferred to the machine successfully.
	• Follow the instructions in this manual to complete the update.
USB Upload : End of data	Firmware has been transferred to the machine successfully.
	• Follow the instructions in this manual to complete the update.

Message	Cause/ Solutions
USB Upload : FAIL	The **[F/W Update (USB)]** or **[F/W Update (NET)]** button was clicked when the update was already in progress.
	• Clicking the **[F/W Update (USB)]** or **[F/W Update (NET)]** button during the update process does not interfere with any ongoing update. • Ignore this error message and complete the update using the procedure shown in this manual.
	The machine is being operated through the operation panel.
	• Cancel any operations being performed through the operation panel. • Put the machine into standby mode, and then perform the update again.

*1: "X" indicates an error code.

Updating Failure

If the initial screen does not appear and the message below remains on the operation panel display for more than one minute following firmware update, a power failure or similar interruption prevented the update from completing.

If this happens, use the following procedure to recover from the failure and complete the update.

Important

- **To recover the machine following a failed update, the machine must be connected to a computer by USB.**
- **When using a computer running on a Windows operating system, you must have an account that has Manage Printers permission. Log on as an Administrator or Power Users group member to acquire this permission.**

1. If you performed the update through a network connection, disconnect the network cable, and then connect the machine to your computer using a USB cable.
2. While "Initializing" is shown on the operation panel display, double-click the [UpdateTool.exe] icon to launch the firmware update tool.
3. Click [F/W Update (USB)].
4. Wait until "Please Download FW Again Now!" appears on the operation panel display.

   Make sure that you keep the power of the machine turned on.

5. Click [F/W Update (USB)] again.
6. Check the operation panel display for messages and the update's current percentage of completion.

   The update may take a while to complete. Do not turn off the power during the update.

   Turn off the power only when the machine beeps and "Firmware Update Done Please Reboot." appears on the operation panel display.
7. Wait until the machine beeps once and "Firmware Update Done Please Reboot." appears on the operation panel display.

   Click [Close] to close the update tool.
8. Turn off the power, and then turn it back on.

   After you turn the power back on, "Initializing" appears on the operation panel display.
9. Wait until the initial screen appears on the operation panel display.
10. Press any menu key on the machine's operation panel.
11. Press the [▲] [▼] keys to select [Reports Print], and then press the [OK] key.
12. Press the [▲] [▼] keys to select [Configuration Page] and then press the [OK] key.

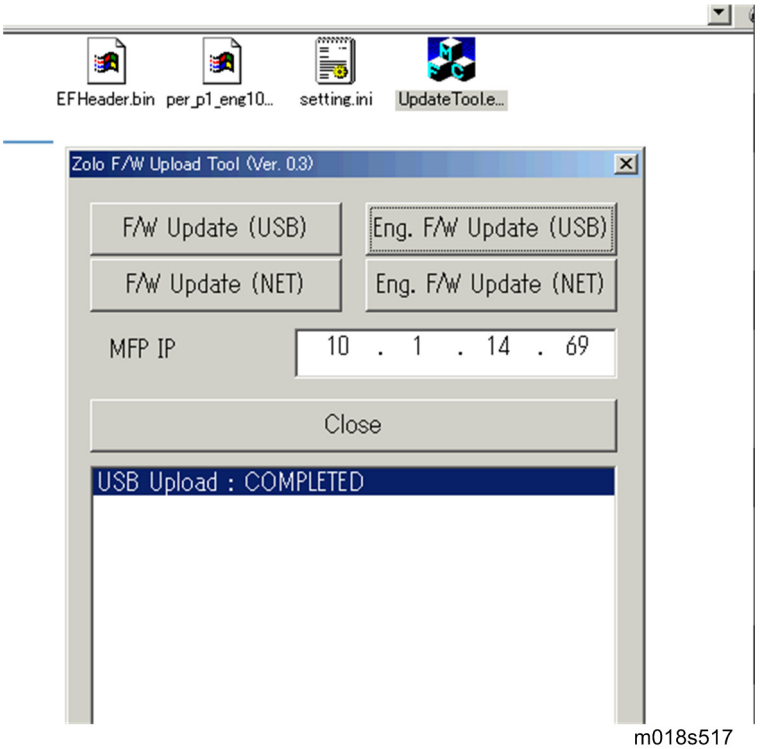
    Take note of the new firmware version (shown under "Firmware Version" on the configuration page).
13. Reconnect the telephone line cable to the machine.

Note

- The update's percentage of completion might not be displayed, depending on which version of the firmware is currently installed.
- In addition to printing a configuration page, you can check the machine's firmware version by accessing the machine using a web browser. For details, see "Checking Machine Status" in the User Guide.
- Depending on how it is configured, the machine might start up in fax mode following the firmware update.

Updating the Engine Firmware

1. Make a folder in your computer.
2. Save the files (".bin", ".fwu", ".ini" and ".exe") in the folder.



m018s517

3. Click the exe file to execute the updating program.
4. Click "Eng. F/W Update (USB or NET)" to send the engine firmware from PC to MF printer.
    - The "F/W Update (USB or NET)" buttons are for designer use only. Do not use these buttons.
5. The machine makes a beep sound when starting the firmware update.
6. The image above is displayed at the PC and "Firmware update" and "Updating" are displayed on the operation panel.
7. Then, you can close this window at your PC.

⚠CAUTION

- Do not turn off the machine until "Done Please reboot" is displayed in the operation panel. Otherwise, the controller board will be damaged.
- If “Done Please reboot” does not appear, the download failed. Try again. You can also switch from an Ethernet connection to a USB connection and see if that works. If you still cannot download the firmware, it may be necessary to change the EGB and/or the controller board.
- If power failed during the download, try again. If you still cannot download the firmware, it may be necessary to change the EGB and/or the controller board.

Boot Loader Firmware

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

6. Troubleshooting

Troubleshooting Guide

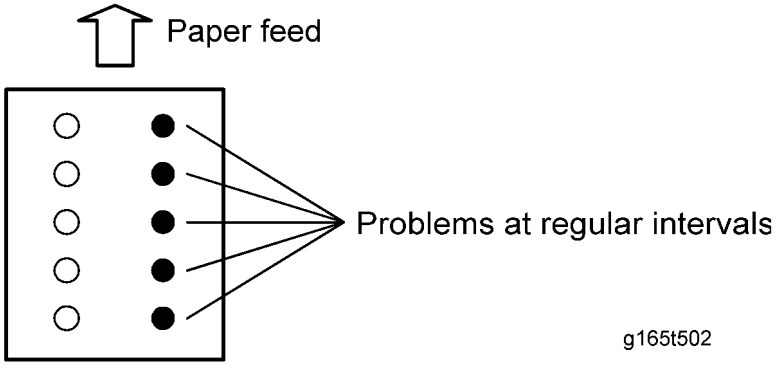
See "Appendices" for the following information:

- Error Messages
- Service Call Conditions

Image Problems

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).

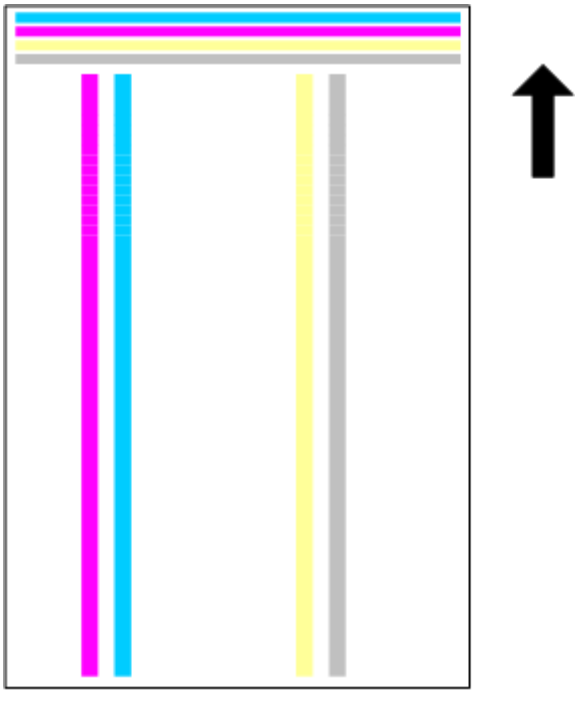


- Abnormal image at 24-mm intervals: Paper feed roller
- Abnormal image at 25.5-mm intervals: Image transfer belt unit
- Colored spots at 27-mm intervals: Print cartridge (Development roller)
- Abnormal image at 30-mm intervals: Charge roller
- Abnormal image at 38-mm intervals: Registration roller
- Abnormal image at 60-mm intervals: Transfer roller
- Colored spots at 76-mm intervals: Print cartridge (OPC drum)
- Abnormal image at 110-mm intervals: Fusing unit (Pressure roller)
- Abnormal image at 115.5-mm intervals: Fusing unit (Heat roller)

Checking a Sample Printout

Print out a mono-color pattern (all K, C, M, or Y), which will clarify if the cause is a problem with one of the AIOs, the image transfer belt, image transfer roller, or the fusing unit. A sample page is provided with the printer driver's CD. You can print the sample page from the printer driver's CD. Before printing, you have to adjust the printer driver settings to make the problem become obvious. For details about adjusting the settings, refer to "Printer Driver Setting for Printing a Sample" described below.

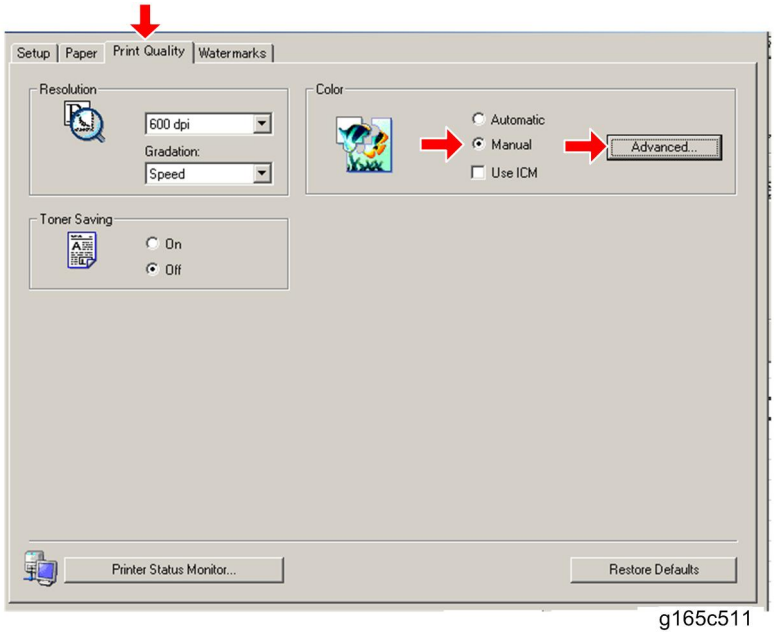
- Occurs with 1-3 colors: AIO unit(s) failure
- Occurs with all four colors: Image transfer belt, transfer roller or fusing unit failure



g165c502

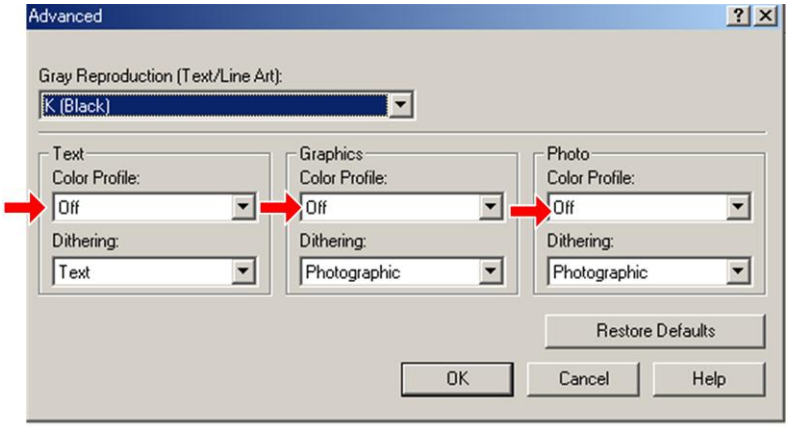
Printer Driver Setting for Printing a Sample

1. Click "Properties" on the printer driver.



g165c511

2. Click the "Print Quality" tab.
3. Check "Manual" in the color setting.
4. Click "Advanced...".



g165c510

5. Select "Off" from the pull-down menu in "Color Profile" in the "Text" area.
6. Select "Off" from the pull-down menu in "Color Profile" in the "Graphics" area.
7. Select "Off" from the pull-down menu in "Color Profile" in the "Photo" area.

Model PE-MF2
Machine Code: M018/M019

Appendices

January, 2009
Subject to change

TABLE OF CONTENTS

1. Appendix: Specifications

General Specifications

Engine

PE-MF2b: M018, PE- MF2c: M019

Type			Desktop
Technology			Flatbed with CCD array image-sensor
			Laser beam scanning and electro-photographic printing
			Mono-component toner development
			4-drum tandem method
Resolution (dpi, bit/pixel)			600 × 600 dpi Speed (1bit) 600 × 600 dpi Standard (2bits) 600 × 600 dpi Fine (4bits)
Printing Speed	General Paper	A4/LT	BW/FC: 20ppm (LT:21ppm)
First Print Speed (A4/LT, SEF, Std. Tray)	Mono		14.0 sec or less
	F/C		14.0 sec or less
Duplex Printing/ Copying	A4, LT, B5, LG, Exe		Auto
Dimensions (W x D x H)			420 x 493 x 476 mm
Weight			30 kg *Includes consumables.

Input capacity	Standard	Std Tray	250 sheets (80 g/m^2)
		Bypass tray	1 sheet
	Op. Paper Tray	Paper Feed Unit	500 sheets (80 g/m^2) x 1
	Max		Up to 751 sheets
Output capacity	Standard Tray	Face down	Up to 150 sheets (A4/LT or 80g/m^2, 20lb)
Input Paper Size	Standard Tray		A4, B5, A5, B6, A6, Legal, Letter, HLT, Executive, Foolscap, Folio Custom size: Min. 90mm x 148mm (3.6" x 5.92"), Max. 216mm x 356mm (8.64" x 14.24")
	Bypass Tray		A4, B5, A5, B6, A6, Legal, Letter, HLT, Executive, Foolscap, Folio Custom size: Min. 90mm x 148mm (3.6" x 5.92"), Max. 216mm x 356mm (8.64" x 14.24")
	Op. Paper Tray		A4, Letter
Media Type		Std. Tray	Plain Paper, Recycle Paper, Application Paper, Envelope, Glossy, Thick Paper, Label
		Bypass Tray	Plain Paper, Recycle Paper, Application Paper, Envelope, Glossy, Thick Paper, Label
		Op. Paper Feed Unit	Plain Paper, Recycle Paper
Paper Weight	Standard Tray		60-160g/m^2 (16-40lb)
	Bypass tray		60-160g/m^2 (16-40lb)
	Op. Paper Tray	Paper Feed Unit	60-105g/m^2 (16-28lb)

ADF	Capacity		35 sheets (80g/m^2, 20lb)
	Original size		Letter/A4: Width 139.7-215.9 mm (5.5" - 8.5"), Length: 139.7-355.6 mm (5.5" - 14")
	Original weight		52 - 105 g/m^2 (14 - 28lbs.)
Rating Power Spec.	NA version		120V, 60Hz
	EU version		220 to 240V, 50/60Hz
Power Consumption	NA version	Max.	1300W or less
		Energy Saver	PE-MF2b 20 W or less PE-MF2c 25 W or less
	EU version	Max.	1300W or less
		Energy Saver	PE-MF2b 20 W or less PE-MF2c 25 W or less
Warm-up Time			48 sec or less (from power on)
Energy Save Mode	Sleep Mode		48 sec (Uses approx 15W)
	Low Power Mode		10 sec (Uses approx 100W)

Copier

1st copy speed	Platen/ADF	B&W: Less than 30 sec. FC: Less than 30 sec.
Maximum original size	Platen	A4 (210 x 297mm) / Letter (215.9 x 279.4mm)
	ADF	A4 (210 x 297mm) / Letter (215.9 x 279.4mm)/ Legal (215.9 x 355.6mm)

Copy Speed	Single Document Multiple Copy	Platen	B/W: 20 cpm (A4), 21 cpm (LT) FC: 20 cpm (A4), 21 cpm (LT)
		ADF	B/W: 20 cpm, FC: 20 cpm (A4), B/W: 21 cpm, FC: 21 cpm (LT)
	Multiple Document Single Copy	ADF	B/W: 20 cpm, FC: 10 cpm
Multiple copy			Up to 99
Resolution (H x V)		Scanning	600 x 600 dpi (Flatbed), 600 x 300 dpi (ADF)
		Printing	600 x 600 dpi
Grayscale			256 levels
Reduction / Enlargement		Fix	NA: 50, 65, 78, 93, 129, 155, 200, 400% EU: 50, 71, 82, 93, 122, 141, 200, 400%
		Custom	25 – 400% in 1% steps
Image density adjustment			Yes, Manual only: 5 levels
Copy mode			Text/Photo/Mixed
Memory copy			Yes
Auto-duplex copy			No
Interrupt copy			No
Combine copy			2 in 1, 4 in 1 (Only ADF)
APS/AMS			No/No
Auto Tray Switch			No
Directional Magnification			No
Directional Size Magnification			No
Photo Mode			Yes
Auto Start			No

User Program	No
Electronic Sorting	Standard (collation, ADF only)
Image Rotation	No
Series Copy	No

Scanner

Scanning Device		CCD array image-sensor
Resolution		Scanner: 1200 x 1200 dpi
		Driver: Max. 19200 x 19200 dpi (interpolated)
Gray scale		256 levels
Scan modes/ speed (A4, 300dpi, USB2.0)		• ADF: B/W: less than 5 sec. / Gray Scale: less than 5 sec. / Color: less than 10 sec • Platen B/W: less than 5 sec. / Gray Scale: less than 5 sec. / Color: less than 10 sec
Maximum original size	Platen	Width max: Up to 216mm, Length max: Up to 297mm
	ADF	Width max: Up to 216mm, Length max: Up to 356mm
Scan Depth		48bit color processing (input), 24bit color processing (output)
PC Interface		USB2.0, 10/100Base-TX
TWAIN Compliment		TWAIN, WIA
Scanner utilities and Drivers		TWAIN Driver, Scanner utility (PageManager)

Fax

Circuit	PSTN/ PABX
Compatibility:	ITU-T Group 3

Coding system:	MH/MR/MMR
Modem speed:	Automatic Fallback: 33600 bps
Document size:	Platen: A4/ LT/ LG Width max: 216 mm (8.5"), Length max: 297 mm (11.7") ADF: A4/ LT/ DLT Width: 139.7-215.9mm (5.5" - 8.5") Length: 139.7-355.6 mm (5.5" - 14")
Scanning width:	Max. 210 mm (8.3")
Printing width:	Max. 208 mm (8.2")
Gray scale:	256 levels
Polling type:	Standard, Sequential
Contrast control:	Normal/Light/Dark (manual setting)
Resolution:	8 x 3.85/ 8 x 7.7 lines/mm 200 x 100/ 200 x 200 dpi
Scanning Speed	Less than 5 sec. (A4 SEF, 200 dpi)
Modem Speed	Automatic Fallback: 33600, 31200, 28800, 26400, 24000, 21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800, 2400bps
Transmission Speed	Approx. 3 sec *ITU No.1 chart, Compression: MMR, Resolution: Standard, Speed: 33.6kbps
SAF Memory	100 pages (ITU No.1 chart, Compression: MMR, Resolution: Standard)
Memory Backup	1 hour
One-touch dial:	20 (10 x 2)
Broadcasting:	100 stations
Communication source:	Public switched telephone network
PC Fax utility:	Not available
Automatic re-dial	5/4/3/2 times after 5 minutes (Default 5 times)
Auto Answer	1-99 rings (Default 2 rings)

Option

Paper Feed Unit

Paper Tray (500x1)	Paper Size	A4,Letter
	Paper Weight	60-105g/m^2 (16-28lb)
	Paper capacity	500 sheets x 1 tray
	Dimensions (W x D x H)	400 x 450 x 127mm/16 x 18 x 5.08 inch
	Weight	6 kg/13.2 lb

Supported Paper Sizes

A	Supported and the size is molded in the tray. Need to select paper size by operation panel/driver.
B	Supported but size is not molded in the 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. Dup.
				Standard Tray	Option PFU	Bypass Tray	
Plain Paper	A4	SEF	210x297	A	A	B	Y
		LEF	297x210	N	N	N	N
	B5	SEF	182x257	A	N	B	Y
		LEF	257x182	N	N	N	N
	A5	SEF	148x210	A	N	B	N
		LEF	210x148	N	N	N	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

Type		SEF/ LEF	Size	Input Tray			Auto. Dup.
				Standard Tray	Option PFU	Bypass Tray	
Plain Paper	DLT	SEF	11" x 17"	N	N	N	N
	Legal	SEF	8 1/2"x14"	A	N	B	Y
	Letter	SEF	8 1/2"x11"	A	A	B	Y
		LEF	11"x 8 1/2"	N	N	N	N
	Half Letter	SEF	5 1/2" x 8 1/2"	C	N	C	N
	Executive	SEF	7 1/4"x10 1/2"	A	N	B	Y
		LEF	10 1/2"x7 1/4"	N	N	N	N
	F	SEF	8" x 13"	B	N	B	N
	Foolscap	SEF	8 1/2" x 13"	B	N	B	N
	Folio	SEF	8 1/4" x 13"	B	N	B	N
Plain Paper	8 Kai	SEF	267 x 390	N	N	N	N
	16 Kai	SEF	195 x 267	C	N	C	N
		LEF	267 x 195	N	N	N	N
Envelope	Com10	SEF	4 1/8" x 9 1/2"	C	N	C	N
	Monarch	SEF	3 7/8" x 7 1/2"	C	N	C	N
	C6	SEF	114 x 162	C	N	C	N
	C5	SEF	162 x 229	C	N	C	N
	DL Env	SEF	110 x 220	C	N	C	N

Type		SEF/ LEF	Size	Input Tray			Auto. Dup.
				Standard Tray	Option PFU	Bypass Tray	
Custom		Width	90-216mm (3.6″x 8.5″)	C	N	C	N
		Length	148 – 356mm (5.8″x 14.24″)	C	N	C	N

2. Appendix: Preventive Maintenance

Preventive Maintenance

User Replaceable Items

Item	Yield
Print Cartridge (AIO)	Starter: Approx. 1.0 k prints/cartridge Short: Approx. 2.5 k prints/cartridge Long: 6.5 k for BK, 6.0 k for CMY (prints/cartridge)
Waste Toner Bottle	Approx. 25 k prints/ bottle (See condition 5)

Condition:

1. An A4 (8.5"x11")/ 5% chart was used to measure the above yield except the Print Cartridge (AIO).
2. The yield was measured at standard temperature and humidity.
3. The expected yield measurement for the Print Cartridge (AIO) is based on the ISO 19798 (ISO chart, continuous prints).
4. These yield values may change depending on the circumstances and printing conditions.
5. Waste Toner Bottle yield was measured for 3P/J when the printer is used 50% for color and 50% for black-and-white

3. Appendix: Troubleshooting Guide

Error Messages

Overview

The error codes will be displayed on the LCD if the machine has a problem. These can be recovered by a customer.

Error Messages List

000	Cover Open
	The front or top cover is open.
	1. Close the front or top cover. 2. Replace the interlock switches or actuator mechanism.

010	AIO Set Error (Black)
011	AIO Set Error (Magenta)
012	AIO Set Error (Cyan)
013	AIO Set Error (Yellow)
	• Black AIO not set • Defective connection of the ID chip terminal on the black AIO
	1. Install the AIO (black, magenta, cyan or yellow). 2. Reinstall or replace the AIO (black, magenta, cyan or yellow).

014	Waste Toner Bottle Set Error
	• Waste toner bottle not set • Disconnected or defective harness of the waste toner bottle set sensor • Defective waste toner bottle set sensor
	1. Install the waste toner bottle. 2. Check or replace the harness of the waste toner bottle set sensor. 3. Replace the waste toner bottle set sensor.

030	Tray/Paper Selection Error
	• No paper in the tray or tray not set in the machine • Paper size requested by the job does not match the paper in the tray
	1. Install the tray or put the correct size paper in the tray. 2. Check the paper setting in the user menu mode.

031	Paper Selection Error: Feed and Exit
	• Paper size requested by the job does not match the paper in the tray • Selection error for the paper feed and paper exit location in duplex mode
	Check the paper feed and exit location in the user menu mode.

050	Jam Error: No Feed from Tray 1
	• Paper slipped
	Remove the paper jam at tray 1.

052	Jam Error: No Feed from Optional Tray
	• Paper slipped
	Remove the paper jam at the optional tray (Tray 2).

055	Inner Jam Error: Registration/ Paper Exit
	A sheet of paper stays at the registration sensor or paper exit sensor. • Paper slipped • Paper double feed
	Remove the paper jam at the registration sensor or paper exit sensor.

056	Paper Exit Jam Error: Paper Exit/ Fusing Unit
	A sheet of paper stays at the paper exit sensor or winds around the rollers in the fusing unit. • Paper slipped • A sheet of paper is wound around the rollers in the fusing unit
	Remove the paper jam at the paper exit sensor or in the fusing unit.

070	Printing Error: No Paper
	• No paper in the tray
	Put paper in the tray.

080	Toner Near End: Black AIO
081	Toner End: Black AIO
	• Black toner near-end or end
	Replace the black AIO.

082	Toner Near End: Magenta AIO
083	Toner End: Magenta AIO
	• Magenta toner near-end or end
	Replace the magenta AIO.

084	Toner Near End: Cyan AIO
085	Toner End: Cyan AIO

	• Cyan toner near-end or end
	Replace the Cyan AIO.

086	Toner Near End: Yellow AIO
087	Toner End: Yellow AIO
	• Yellow toner near-end or end
	Replace the yellow AIO.

088	Waste Toner Bottle: Near Full
089	Waste Toner Bottle: Full
	• Waste toner bottle near-full or full
	Replace the waste toner bottle.

999	Color Registration (MUSIC) Error
	• Color registration (MUSIC) failure
	This error is not displayed even if this error occurs. It is just logged. This error is automatically recovered after the color registration (MUSIC) has been done successfully.

Fax Error Code

This section describes the dial, transmission (TX), and reception (RX) error codes that are printed on the TX Report/Activity Report.

Basic error code structure

Error codes consist of six hexadecimal digits (0–5).

Digit 5 (far left)	TX or RX
TX:	**1**xxxxx
RX:	**2**xxxxx

Digit 4	Coding (MH/MR/MMR)
MH:	x**1**xxxx
MR:	x**2**xxxx
MMR:	x**3**xxxx

Digit 3	MODEM mode
V27ter nonECM:	xx**1**xxx
V29 nonECM:	xx**2**xxx
V17 nonECM:	xx**3**xxx
V33 nonECM:	xx**4**xxx
V34:	xx**5**xxx
V27ter ECM:	xx**9**xxx
V29 ECM:	xx**a**xxx
V17 ECM:	xx**b**xxx

Digit 2	MODEM speed
2400:	xxx**1**xx
4800:	xxx**2**xx
7200:	xxx**3**xx
9600:	xxx**4**xx
12000:	xxx**5**xx
14400:	xxx**6**xx
16800:	xxx**7**xx
19200:	xxx**8**xx
21600:	xxx**9**xx
24000:	xxx**a**xx
26400:	xxx**b**xx

Digit 2	MODEM speed
28800:	xxx**c**xx
31200:	xxx**d**xx
33600:	xxx**e**xx

Error code table

Error Type		Error Description	Error Code
General		STOP	xxxx01
		RX T1 Time Out	Not logged in activity report
Local Mechanical error		Scanner Error during TX	1xxx11
		Memory Full during RX	2xxx14
TX Job Error		TX Job Lost	1xxx18
		TX Job deleted	1xxx19
Dial failure		Connection Fail	xxxx21
		Dial Fail	xxxx22
		Redial All Failed	xxxx23

Error Type		Error Description	Error Code
Comm. Error	1. Phase-B Error	TX T1 Time Out	xxxx31
		V8 negotiation Fail	xxxx32
		Retry Out	xxxx40
		Too many FTT	xxxx41
		Too many CRP	xxxx42
		T2 Time Out	xxxx43
		DCN received	xxxx44
		Command Rec Error	xxxx45
		Resp Rec Error	xxxx46
		Invalid Command/Response RX	xxxx47
		Remoter No RX capability	xxxx48
		T1 time out after EOM	xxxx49
	2. Phase-C Error	T2 Time Out	xxxx50
		Image Data not ready	xxxx51
		Phase-C Time Out	xxxx52

Error Type		Error Description	Error Code
	3. Phase-D Error	Retry Out	xxxx60
		T2 Time Out	xxxx61
		DCN received	xxxx62
		Too many CRP	xxxx63
		Too many PPR	xxxx64
		RNR time Out	xxxx65
		RTN/PIN Received, EOR/ERR/DCN	xxxx66
		Invalid Command/Response RX	xxxx67
		Command Rec Error	xxxx68
		Resp Rec Error	xxxx69
	4. Phase-E Error	Time Out	xxxx70
	5. Other general Comm Error	modem hang-up	xxxx80
		V34 abort received	xxxx81
		V34 t1 timeout, control channel error	xxxx82
		V34 t1 timeout, primary channel error	xxxx83
		data not sent until guard timer expire	xxxx84

Service Call Conditions

Summary

This machine issues an SC (Service Call) code if an error occurs on 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 issued.
3. First, disconnect then reconnect the connectors before you replace the PCBs, if the problem concerns electrical circuit boards.
4. First, check the mechanical load before you replace motors or sensors, if the problem concerns a motor lock.
5. 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 engine maintenance mode.
    - Press "O.K" in "Fuser SC Reset" with engine maintenance mode, and then turn the main power switch off and on.

Engine SC

SC 1xx (Other Error)

195	Serial Number Error
	The serial number stored in the memory (EGB) is not correct.
	• EEPROM defective • EGB replaced without original EEPROM 1. Check the serial number. 2. If the stored serial number is incorrect, contact your supervisor.

SC 2xx (Laser Optics Error)

202	Polygon motor error 1: ON timeout
	The polygon mirror motor does not reach the targeted operating speed within 5 sec. after turning on or changing speed
203	Polygon motor error 2: OFF timeout
	The polygon mirror motor does not leave the READY status within 3 sec. after the polygon motor switched off.
204	Polygon motor error 3: XSCRDY signal error
	The SCRDY_N signal remains HIGH for 200 ms while the LD unit is firing.
	• Polygon motor/driver board harness loose or disconnected • Polygon motor/driver board defective • Laser optics unit defective • IPU (EGB) defective 1. Replace the interface harness of the laser optics unit. 2. Replace the laser optics unit. 3. Replace the EGB (Engine Board).

220	Laser Synchronizing Detection Error: [K]/[Y]
	The laser synchronizing detection signal for LDB [K]/[Y] is not output after the LDB unit has turned on while the polygon motor is rotating normally.
222	Laser Synchronizing Detection Error: [M]/[C]
	The laser synchronizing detection signal for LDB [M]/[C] is not output after the LDB unit has turned on while the polygon motor is rotating normally.
	• Disconnected cable from the laser synchronizing detection unit or defective connection • Defective laser synchronizing detector • Defective LDB • Defective EGB 1. Check the connectors. 2. Replace the laser optics unit. 3. Replace the EGB.

240	LD error
	The IPU (EGB) detects a problem at the LD unit.
	• Worn-out LD • Disconnected or broken harness of the LD. 1. Replace the laser optics unit.

SC 3xx (Charge Error)

300	High voltage power output error
	The measured voltage is not correct when the EGB measures each charge output (charge, development, image transfer belt unit, and transfer unit).
	• Disconnected or defective high voltage harness • Defective high voltage power supply • Defective EGB 1. Check or replace the harnesses. 2. Replace the high voltage power supply board 3. Replace the EGB.

396	Black drum motor error
	The LOCK signal error is detected when the EGB monitors the black drum motor state. (This monitoring is done immediately after power-on, when the motor starts rotating, and immediately after the motor stops.)
	• Disconnected or defective motor harness. • Motor slips due to excessive load 1. Check the harness from the black drum motor. Replace it if necessary.

397	Color drum motor error
	The LOCK signal error is detected when the EGB monitors the color drum motor state. (This monitoring is done immediately after power-on, when the motor starts rotating, and immediately after the motor stops.)
	• Disconnected or defective motor harness. • Motor slips due to excessive load 1. Check the harness from the color drum motor. Replace it if necessary.

SC 4xx (Image Transfer and Transfer Error)

445	ITB (Image Transfer Belt) Unit: Home Position Error
	The ITB contact sensor does not detect the home position of the ITB for 5 seconds after the ITB unit initialization has been done.
	ITB (Image Transfer Belt) Unit: Contact Position Error
	The ITB contact sensor does not detect the contact position of the ITB for 5 seconds after the ITB unit has moved to the contact position.
	ITB (Image Transfer Belt) Unit: No-contact Position Error
	The ITB contact sensor does not detect the home position of the ITB for 5 seconds after the ITB unit has moved to no-contact position.
	• Defective ITB contact motor • Defective ITB contact sensor • Defective ITB unit 1. Replace the ITB contact motor. 2. Replace the ITB contact sensor. 3. Replace the ITB unit.

480	Agitator Motor Error
	The agitator motor error is detected twice for 10 msec during the initialization at power-on or after the cover is closed.
	• Disconnected or defective harness • Defective agitator motor 1. Check or replace the harness. 2. Replace the agitator motor.

490	ITB (Image Transfer Belt) Unit Set Error
	The TM sensor does not detect the reflection from the ITB.
	• No ITB unit in the machine • Dirty TM sensor 1. Check the installation of the ITB unit. 2. Clean the TM sensor.

SC 5xx (Motor and Fusing Error)

500	Transport/Fusing Motor Error
	The LOCK signal error is detected when the EGB monitors the transport/fusing motor state. (This monitoring is done immediately after power-on, when the motor starts rotating, and immediately after the motor stops.)
	• Disconnected or defective motor harness. • Motor slips due to excessive load 1. Check the harness from the transport/fusing motor. Replace it if necessary.

530	LSU Fan Motor Error
	A LOCK signal is not detected for more than ten seconds while the motor START signal is on and if this error occurs twice consecutively, this SC is issued.
	• Disconnected or defective motor harness. • Defective LSU fan motor 1. Check or replace the motor harness. 2. Replace the LSU fan motor.

531	Fusing Fan Motor Error
	A LOCK signal is not detected for more than ten seconds while the motor START signal is on and if this error occurs twice consecutively, this SC is issued.
	• Disconnected or defective motor harness. • Defective LSU fan motor 1. Check or replace the motor harness. 2. Replace the fusing fan motor.

541	Thermistor Error
	The thermistor output is less than 0°C for 7 seconds.
	• Disconnected thermistor • Defective harness connection 1. Check the harness connection of the thermistor. 2. Replace the fusing unit. **Important** • **Execute "Engine Maintenance Menu" to recover the machine after completing the recovery procedure. Otherwise, the machine continues to issue this SC code and cannot be operated.**

542	Print Ready Temperature Error
	• The heating roller temperature increase during a set time is not correct. • The fusing temperature does not reach the print ready temperature within a set time after the fusing lamp has turned on.
	• Defective thermistor • Incorrect power supply input at the main power socket • Defective fusing lamp 1. Check the voltage of the wall outlet. 2. Replace the fusing unit 3. Replace the fusing lamp. **Important** • **Execute "Engine Maintenance Menu" to recover the machine after completing the recovery procedure. Otherwise, the machine continues to issue this SC code and cannot be operated.**

543	High Temperature Detection Error
	This SC is issued if one of following conditions occurs: • The thermistor (center) detects 255°C or thermistor (end) detects 245°C. • The thermistor (center) detects a 3°C increment or more for five seconds at 220°C or more or the thermistor (end) detects a 4°C increment or more for five seconds at 210°C or more.
	• Defective I/O control (EGB) • Defective EGB 1. Replace the EGB **Important** • **Execute "Engine Maintenance Menu" to recover the machine after completing the recovery procedure. Otherwise, the machine continues to issue this SC code and cannot be operated.**

545	Heating Lamp Full-Power Error
	The fusing lamp is fully-powered for a certain time while the fusing unit stays in the stand-by mode and is not rotating.
	• Deformed thermistor • Thermistor not in the correct position • Defective fusing lamp 1. Replace the fusing unit. 2. Replace the fusing lamp. **Important** • **Execute "Engine Maintenance Menu" 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 not detected for three seconds even though the fusing lamp relay is on after turning on the main power or closing the front door.
	• Defective fusing lamp relay 1. Turn the main power switch off and on. **Important** • **Execute "Engine Maintenance Menu" to recover the machine after completing the recovery procedure. Otherwise, the machine continues to issue this SC code and cannot be operated.**

548	Low Temperature Error
	The center thermistor detects 100°C or less for 4 seconds.
	• Defective fusing lamp • Defective thermistor 1. Replace the fusing unit. 2. Replace the fusing lamp. **Important** • **Execute "Engine Maintenance Menu" to recover the machine after completing the recovery procedure. Otherwise, the machine continues to issue this SC code and cannot be operated.**

557	Zero Cross Frequency Error
	The detection error occurs ten times consecutively in ten zero cross signal detections. This error is defined when the detected zero cross signal is 17 or less/27 or more for 0.2 seconds.
	• Defective fusing lamp relay • Unstable input power source 1. Check the power supply source. 2. Replace the fusing unit. **Important** • **Execute "Engine Maintenance Menu" to recover the machine after completing the recovery procedure. Otherwise, the machine continues to issue this SC code and cannot be operated.**

559	Consecutive Fusing Jam
	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 "Engine 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 "Engine Maintenance Menu" 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 Error
	An unexpected value exists in the initialization flag of the EEPROM
	• EEPROM not initialized • Defective EEPROM 1. Initialize the EEPROM. 2. Replace the EEPROM. 3. Replace the EGB.

690	GAVD Communication Error
	The ID of the GAVD is not identified during initialization.
	The chip ID of the GAVD cannot be detected by the machine at power-on.
	• Defective EGB 1. Replace the EGB.

Controller SC

SC8xx

819	Service Cycle Power
	• Incorrect combination of EGB and controller board. • An unexpected error occurs in the EEPROM on the controller board.
	• Controller board defective 1. Install the correct EGB and controller boards for this machine. 2. Replace the controller board

823	USB/ Network Device Error
	An interface error in the USB connection or NIB connection occurs.
	• Controller board detective 1. Replace the controller board.

824	EEPROM Error
	An EEPROM check error at power-on occurs.
	• Controller board detective 1. Replace the controller board.

827	On-Board Memory Check Error
	An on-board memory check error at power-on occurs.
	• Controller board detective 1. Replace the controller board.

828	ROM Checksum Error
	A ROM checksum error at power-on occurs.
	1. Replace the controller board.

4. Appendix: SP Mode Tables

Service Menu

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.

Each menu is classified into two "Modes" depending on how you enter the service menus.

- "Menu Mode" can be executed by pushing a sequence of keys.
- "Special Mode" can be executed if you press certain keys at the same time as you turn the power on.

Each menu is classified as follows:

Menu Mode	
Maintenance Mode Menu	This is a menu for maintenance and service.
Special Mode	
Fax Service Test Menu	This is a menu for checking the fax mode.

Maintenance Mode Menu

RTB 11
Additional Maintenance Mode Information

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 "Return" key.

Exiting the Maintenance Mode Menu

To exit the maintenance mode menu, press the "Clear/Stop" or "Return" key until the "Ready" display appears.

Menu List

Display Info		
Model Name		Displays the Model Name, Depends on Engine Firmware Settings
FW Ver.	CTL FW Ver.	Displays the Firmware Version
	FAX FW Ver.	Displays the PDL Firmware Version.
	MCTL FW Ver.	Displays the Engine Firmware Version
	PDL FW Ver.	Displays the PDL Firmware Version.
Counter	Printer Counter	Displays the following counters of the printer engine. Total Page/ Color Image/ Black Image
	Scanner Counter	Displays the sum total of scanner counters for each mode. Total Page/ Black Page/ Color Page / ADF Used
	Jam Counter	Displays the number of paper jams at each location. Total/ ADF/ Printer Output Bin/ Internal/ Tray1 / Tray2/ Duplex
	Coverage 1/ Coverage 2	Coverage 1: [0 to 100 / **5** / 1/step] Coverage 2: [0 to 100 / **20** / 1/step] Changes the thresholds for each coverage counter.

Print Reports	
G3 Protocol dump list	G3 protocol dump of the latest communication is printed. Off (Default)/ Error/ On

Engine Maintenance		
Toner Limit	Text	Determines the maximum amount of ink/toner you can use in any area of your text. This is where you are controlling exactly how much ink will be used during printing. [200 to 400 / 250 (Default)/ 10/step] Setting 0: Off
	Graphic	Determines the maximum amount of ink/toner you can use in any area of your graphic. This is where you are controlling exactly how much ink will be used during printing. [200 to 400 / 250 (Default)/ 10/step] Setting 0: Off
	Image	Determines the maximum amount of ink/toner you can use in any area of your image. This is where you are controlling exactly how much ink will be used during printing. [200 to 400 / 250 (Default)/ 10/step] Setting 0: Off
P_NP Name	NA Model: RICOH/ 'nul' EU Model: RICOH/ NRG/ LANIER ASIA Model: RICOH/ LANIER China Model: RICOH	
Destination	Sets the destination and updates the engine setting. JPN/ NA (Default)/ EU/ ASIA/ China	

Engine Maintenance		
2nd Transfer Fuser Temp.	2nd Transfer Front	Adjusts the transfer roller current, based on the default value. [-15 to 15 / 0 (Default) / 1 µA/step]
	2nd Transfer Back	Adjusts the transfer roller current, based on the default value. [-15 to 15 / 0 (Default) / 1 µA/step]
	Fuser Temperature	Adjusts the temperature of the fusing unit, based on the default value. [-30 to 0 / 0 (Default) / 2°C/step]
	Media Type	Plain Paper (90-105 g/m^2)/ Plain Paper/ Thick Paper (1405-110 g/m^2)/ Thin Paper (60-75 g/^{2})/ Thick Paper (Post Card)/ Envelop/ Cardstock/ Bond paper/ Label Paper/ Prepunched/ Preprinted/ Letterhead/ Color/ Recycled
Registration	Horiz. Tray1	Adjusts the horizontal registration for tray 1. If the machine settings are reset to the factory defaults, this value does not change. [-15 to 15 / 0 (Default) / 4 mm/step]
	Vert.Tray1	Adjusts the vertical registration for tray 1. If the machine settings are reset to the factory defaults, this value does not change. [-15 to 15 / 0 (Default) / 0.24 mm/step]
	Horiz.Tray2	Adjusts the horizontal registration for tray 2. If the machine settings are reset to the factory defaults, this value does not change. [-15 to 15 / 0 (Default) / 4 mm/step]
	Vert.Tray2	Adjusts the vertical registration for tray 2. If the machine settings are reset to the factory defaults, this value does not change. [-15 to 15 / 0 (Default) / 0.3 mm/step]

Engine Maintenance		
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. [-15 to 15 / 0 (Default) / 4 mm/step]
	Vert.Bypass	Adjusts the vertical registration for the bypass tray. If the machine settings are reset to the factory defaults, this value does not change. [-15 to 15 / 0 (Default) / 0.3 mm/step]
	Horiz.Dup.Back	Adjusts the horizontal registration for the back side in duplex mode. If the machine settings are reset to the factory defaults, this value does not change. [-15 to 15 / 0 (Default) / 4 mm/step]
	Vert.Dup.Back	Adjusts the vertical registration for the back side in duplex mode. If the machine settings are reset to the factory defaults, this value does not change. [-15 to 15 / 0 (Default) / 0.3 mm/step]
Reset Count	Resets counters to factory defaults.	
Clear Count	Clears the Scanner and Jam Counters.	
Replace Fuser	Resets the maintenance counter for the fusing unit. This item appears only when the fusing unit life is almost expired or has expired.	
Init Engine EEPROM	This clears all counters except "Full Color" and "Black and White" in the total counter. When you execute "Init Engine EEPROM", the engine EEPROM is initialized. Turn the machine power off/on after you change this setting.	
Model	Displays only 1: MF2b 2: MF2c Displays the current model in a dropdown list. Do not change this setting (Designed for Factory Use).	

Engine Maintenance		
Brand ID	00* – 7F Displays the current brand ID number. Do not change this setting (Designed for Factory Use).	
LSU Adjustment	Input 160 bytes setting.	Character: alphanumeric "0-9", "a-f", "A-F", only valid data can be input. Input length: 160 bytes
Trans. Belt Adjust	When you execute "Trans. Belt Adjust", the transfer belt adjustment is done. This calibrates the motor speed to match the length of the new transfer belt.	
Fuser SC Detect	On/Off*	If On, the engine detects SC559. If Off, the engine does not detect "Fusing SC Reset".
Color Registration	The engine will do color registration and density tuning automatically. The machine will warm up automatically after this setting is changed.	
Reset Transfer Unit Life Counter	Resets the transfer unit life counter.	
Fuser SC Reset	This button is for resetting an SC related with the fusing errors.	
Special Mode	This adjusts the M/A of toner. [0 to 0x7F] 0x00: Normal (Default: no reduction) 0x06: 20% reduction 0x07: 10% reduction	

Scan Maintenance	
Mono Compression Setting	Sets the monochrome compression type for scanning. MH (Default)/ MR/ MMR

Scan Maintenance		
Regist Adjust	ADF Main Reg.	Adjusts the ADF Scan main-scan registration. [-2.0 to 2.0 / 0 (Default)/ 0.1 mm/step]
	ADF Sub Reg.	Adjusts the ADF Scan sub-scan registration. [-2.0 to 2.0 / 0 (Default)/ 0.1 mm/step]
	Flatbed Main Reg.	Adjusts the Flatbed Scan main-scan registration. [-2.0 to 2.0 / 0 (Default)/ 0.1 mm/step]
	Flatbed Sub Reg.	Adjusts the Flatbed Scan sub-scan registration. [-2.0 to 2.0 / 0 (Default)/ 0.1 mm/step]
Size Adjust	ADF Main Reg.	Adjusts the ADF Scan main-scan magnification. [-0.9 to 0.9 / 0 (Default)/ 0.1 %/step]
	ADF Sub Reg.	Adjusts the ADF Scan sub-scan magnification. [-0.9 to 0.9 / 0 (Default)/ 0.1 %/step]
	Flatbed Main Reg.	Adjusts the Flatbed Scan main-scan magnification. [-0.9 to 0.9 / 0 (Default)/ 0.1 %/step]
	Flatbed Sub Reg.	Adjusts the Flatbed Scan sub-scan magnification. [-0.9 to 0.9 / 0 (Default)/ 0.1 %/step]

Fax Maintenance		
Modem Settings	RX Level	Sets the reception level. [-43 dBm (Default)/ -33 dBm/ -26 dBm / -16 dBm]
	TX Level	Sets the transmission level. [0 dBm/ -1 dBm/ -2 dBm/ -3 dBm/ -4 dBm / -5 dBm/ -6 dBm/ -7 dBm/ -8 dBm/ -9 dBm / -10 dBm/ -11 dBm/ -12 dBm/ -13 dBm / -14 dBm/ -15 dBm]
	Cable Equalizer	These selectors are used to improve the pass-band characteristics of analogue signals on the telephone line. [0Km (Default)/ 1.8Km/ 3.6Km/ 7.2Km]

Fax Maintenance		
Protocol Definition	Training Retries	This sets the number of training retries to be repeated before automatic fallback. [1 Time/ 2 Times (Default)/ 3 Times/ 4 Times]
	Encoding	Sets the compression method for Tx/Rx. [MMR+MR+MH (Default)/ MR+MH/ MH]
Protocol Definition Timer	T0 Timer	Timeout for response from the called station in automatic sending mode [35 Sec/ 45 Sec/ 55 Sec (Default)/ 60 Sec/ 90 Sec/ 140 Sec]
	T1 Timer	Set the time length for the T1 timer. [40 Sec (Default)/ 50 Sec]
	T4 Timer	Set the time length for the T4 timer. [3 Sec (Default/ 4.5 Sec]

Fax Maintenance		
RX Settings	Silence Detection Time	Silence (No tone) detection time (Rx mode : FAX/ TAD Only) After the line is connected via the external telephone, the machine can detect silence (no tone) for the time length specified by this setting. [30 sec (Default)]
	CNG Tone Detection Time	CNG tone detection time (RX mode : FAX / TEL, FAX / TAD Only) After the line is connected via the external telephone, the machine can detect a CNG signal for the time length specified by this setting. [5 Sec (Default)/ 10 Sec]
	CNG Cycles	Number of CNG cycles to be detected This setting is only effective for FAX/TAD mode. [1.5 Cycle (Default)/ 2.0 Cycle]
	Tone Sound Monitoring	Determines the period when tones from the line are monitored. [No Monitoring/ Up To Phase B (Default)/ All TX Phases]
	Stop/Clear key	Pressing the Stop/Clear key can stop the current receiving operation. Received data is lost. [Not Functional (Default)/ Functional]
	Off-Hook Level	Sets the off-hook detection threshold. [10V (Default)/ 15V/ 20V/ 25V]
TX Settings	Redial Interval	Sets the redial interval when Tx fails. [5 Min/ 6 Min]
	Redialings	Sets the number of redials when Tx fails. [2 times/ 3 Times/ 4 Times/ 5 Times]

Fax Maintenance		
Overseas Comm Mode Settings	Overseas Comm Mode	This sets the machine to ignore a DIS signal sent from the called station once in a sending operation. [Off (Default)/ Ignore DIS Once]
	Minimum Time Length	If this setting is set to "On", the machine detects the CNG signal after the line is connected. If it is set to "Off", the machine detects the CNG signal as long as the line is connected. [100 Ms/ 200 Ms/ 300 Ms/ 400 Ms (Default)]
Dial Pulse Setting	Dial Pulse Type	This sets the number of pulses that are generated during dialing. • N: Dialing '0' generates 10 pulses --- Dialing '9' generates 9 pulses. • N+1: Dialing '0' generates 1 pulses --- Dialing '9' generates 10 pulses. • 10-N: Dialing '0' generates 10 pulses --- Dialing '9' generates 1 pulse.
Tone Signal Settings	Tone Signal Transmission Time Length	Sets the tone signal transmission time length [100 ms (Default)]
	Minimum Pause In Tone Dialing	Sets the minimum pause during tone dialing [100 ms (Default)/ 150 ms/ 200 ms]
	Attenuator For Pseudo Ring Backtone To the Line	Sets the attenuator for pseudo ringback tone to the line [0 to 15 / 10 (Default)/ 1 dB/step]
	DTMF Level	Sets the transmission level of DTMF tones. [-12 dBu / -11 dBu/ -10 dBu/ -8 dBu/ -6 dBu]
	DTMF Delta	Sets the level difference between high band frequency signals and low band frequency signals when sending DTMF tones. [2 dBu/ 3 dBu]

Fax Maintenance		
1Dial Tone Detection	Wait Time	The machine starts dialing after the specified interval without detection of a dial tone when Dial tone detection is set to "No detection". [3.5 Sec (Default)/ 7.0 Sec/ 10.5 Sec / 14.0 Sec]
	Timeout Length	This setting sets the time-out length for the 1st dial tone detection. The machine waits for a dial tone for the specified time and disconnects itself from the line when no dial tone is input. [10 Sec (Default)/ 15 Sec/ 20 Sec/ 30 Sec]
BT (Busy Tone) Detection	BT Setting	**DFU** [Off/ On] BT: Busy tone
	BT Frequency	**DFU** [300-550 Hz/ 300-650 Hz/ 325-525 Hz/ 340-550 Hz/ 350-500 Hz/ 350-550 Hz/ 375-475 Hz/ 380-520 Hz]
	BT Level	**DFU** [-35 dB/ -36 dB/ -37 dB/ -38 dB/ -39 dB]
	BT Cadence	**DFU** [0.10/ 0.15/ 0.20/ 0.25/ 0.30/ 0.35/ 0.40/ 0.45/ 0.50/ 0.75]
Comm Settings	RTN Rate	The machine checks the actual data reconstruction errors and then transmits an RTN depending on the decoding error rate that is set by this setting (Number of lines containing an error per page / Total number of lines per page). [10%/ 15%]
	V34 Modem	**DFU** [Permitted (Default)/ Prohibited]
	V17 Modem	**DFU** [Permitted (Default)/ Prohibited]

Fax Maintenance		
V34 Settings	Equalizer	These selectors set the equalizer's training level to be applied if training fails due to poor line connection. [Automatic (Default)/ 4 Points/ 16 Points]
	Redialing	Resend when a communication error occurs. [Disabled (Default)/ Not Disabled]
	First TX Speed	Sets the first transmission speed choice, before fallback. [2400 Bps/ 4800 Bps/ 7200 Bps/ 9600 Bps / 12000 Bps/ 14400 Bps/ 16800 Bps/ 19200 Bps/ 21600 Bps/ 24000 Bps/ 26400 Bps/ 28800 Bps/ 31200 Bps/ 33600 Bps (Default)]
	Symbol Rate	This setting limits the transmission speed range in V.34 mode by masking the desired symbol rate(s). [Not Used (Default)/ 3429 Sym/Sec / 3200 Sym/Sec/ 3000 Sym/Sec / 2800 Sym/Sec/ 2400 Sym/Sec]

Note

- The "Reseller Default" menu can be entered directly at power-on. If you want to enter this mode directly, try the following procedure.
  - Turn on the machine while pressing the "Copy" key.

RTB 2b
"Overall Ringings w/TAD" (FAX/TAD mode) can now be changed. (F/w ver 1.11)

Fax Service Test Menu

Entering the Fax Service Test Menu

Turn on the machine while pressing the "Fax" key.

Selecting an Item

To select the 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 "Return" key.

Exiting the Maintenance Mode Menu

To exit the maintenance mode menu, press the "Clear/Stop" or "Return" key until the "Ready" display appears.

Menu List

Fax Test		
Off-Hook Test	On Hook	Executes the on hook test.
	Off Hook	Executes the off hook test
CED Test		Executes the CED test.
CNG Test	1100 Hz	Executes the CNG test
ANSam		Executes the ANSam test.
Ring Tone Test		Executes the ring tone test.
DTMF Test	Tone [0] to [9]	Executes the DTMF tone 0 to 9 test.
	Tone [*]	Executes the DTMF tone * test.
	Tone [#]	Executes the DTMF tone # test.
	Tone Stop	Executes the Stop DTMF tone test.

Modem Test	[V34] 33600 bps	Generates the [V34] 33600 bps signal.
	[V34] 28800 bps	Generates the [V34] 28800 bps signal.
	[V17] 14400 bps	Generates the [V17] 14400 bps signal.
	[V17] 12000 bps	Generates the [V17] 12000 bps signal.
	[V17] 9600 bps	Generates the [V17] 9600 bps signal.
	[V17] 7200 bps	Generates the [V17] 7200 bps signal.
	[V29] 9600 bps	Generates the [V29] 9600 bps signal.
	[V29] 7200 bps	Generates the [V29] 7200 bps signal.
	[V27] 4800 bps	Generates the [V27] 4800 bps signal.
	[V27] 2400 bps	Generates the [V27] 2400 bps signal.
	[V21] 300 bps	Generates the [V21] 300 bps signal.
	Signal Stop	Generates the Stop signal.

5. Appendix: Machine Swap

Exchange and Replace Procedure

If the machine exchange and replacement is required, arrange to send a machine without the four print cartridges (AIO) to the customer site.

Instruction

Instruct the customer to do the following procedure.

Before the substitute machine gets to the customer site

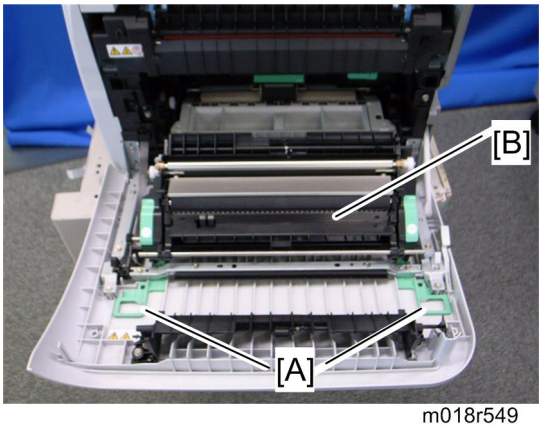
- Save the customer settings by using a web browser. For details, refer to the "User Guide".
- Clear customer settings in the problem machine.

When the substitute machine gets to the customer site

1. Remove the four print cartridges (AIO) from the problem machine.
2. Install the four print cartridges (AIO) into the substitute machine.
3. Restore the customer settings by using a web browser.
4. Send back the problem machine to the repair center.

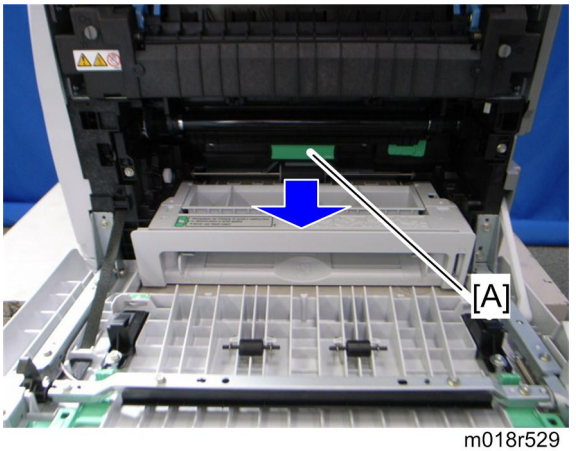
Cleaning Points after Machine Arrival at Depot

1. Open the front cover.



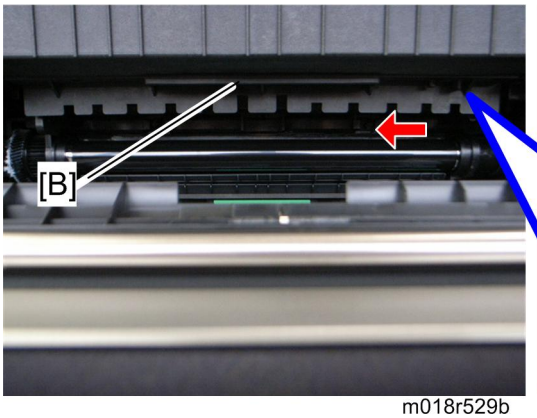
m018r549

2. Release the locks [A].
3. Transfer unit [B]

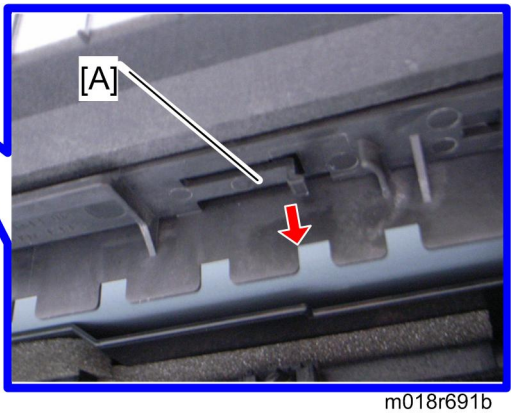


m018r529

4. Pull out the waste toner bottle [A].

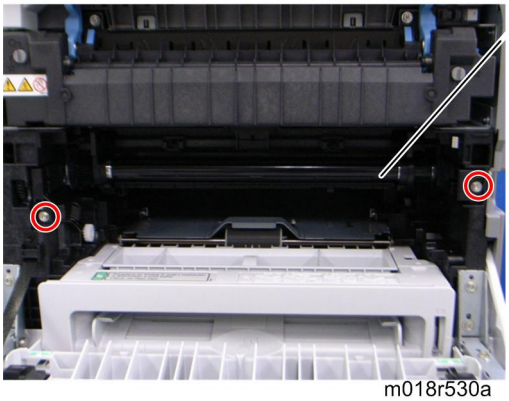


m018r529b

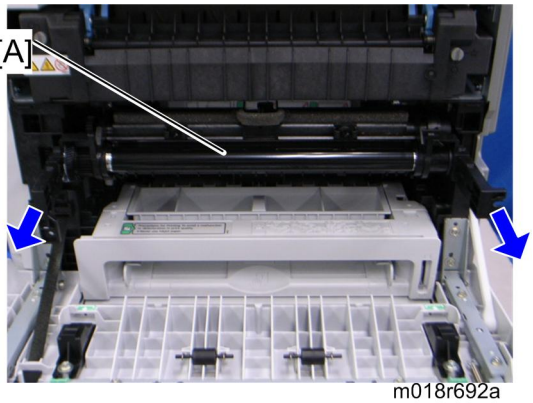


m018r691b

5. Release the hook [A] under the guide plate.
6. Move the guide plate [B] underneath the fusing unit to the left, and then remove it.

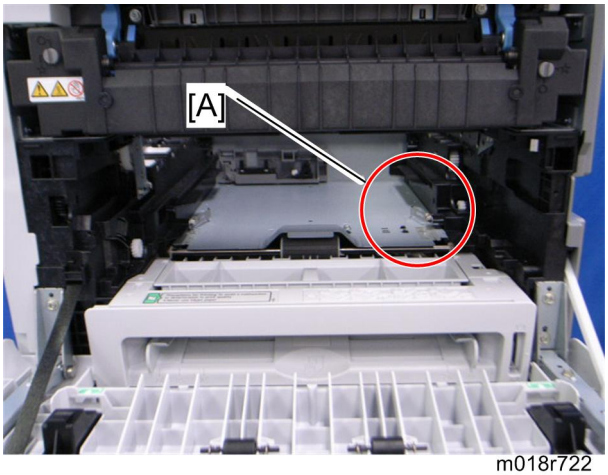


m018r530a



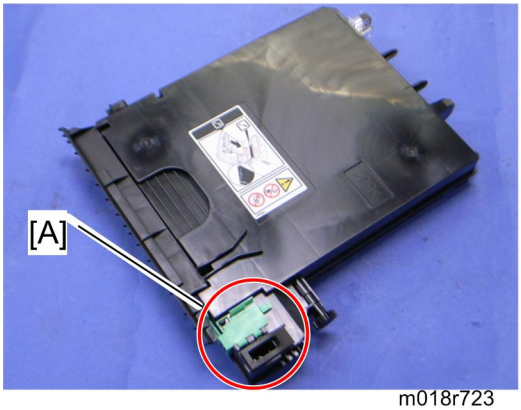
m018r692a

7. Pull out the image transfer belt unit [A] (x 2).

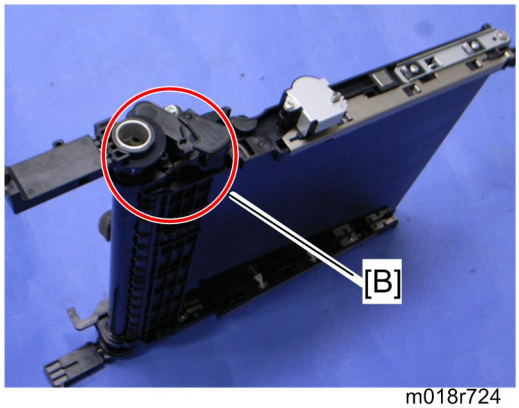


m018r722

8. Clean inside the machine, especially around the circled area [A].



m018r723



m018r724

9. Clean the circled area at the waste toner bottle [A] and circled area [B] at image transfer belt unit.
10. Reassemble the machine.

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