



This is a service training course for the Andromeda-P1 series of color printers.



Product Outline

No additional notes



How Many Models?

- Andromeda-P1a, 110 ppm
 - M205, Pro C9100
- Andromeda-P1b, 130 ppm
 - M238, Pro C9110

No additional notes



Options: Paper Feed

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		Also used with these models:	Similar to:	Note
D517: Multi Bypass Tray BY5010		Taurus-C1, Leo-C1/P1		
D517: Multi Bypass Banner Sheet Tray Type S3	New	Leo-C1/P1		Used with BY5010
D777: Vacuum Feed LCIT RT5100	New	Leo-C1/P1		
D777: Vacuum Feed Banner Sheet Tray Type S3	New	Leo-C1/P1		Used with RT5100
D778: Bridge Unit BU5010	New	Leo-C1/P1		Used with RT5100
D738: Cover Interposer Tray CI5030		Br-C1, Leo-C1/P1	Taurus-C1	

No additional notes



Options: Finishing (1)

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	Also used with these models:	Similar to:	Note
D735: Finisher SR5050	Br-C1, Leo-C1/P1	Taurus-C1, Katana-C2	
D734: Booklet Finisher SR5060	Br-C1, Leo-C1/P1	Taurus-C1, Katana-C2	
D449: Punch Unit PU5020	Br-C1, Taurus-C1, Katana-C2		For D734/D735
D736: Perfect Binder GB5010	Br-C1, Leo-C1/P1	Ag-C1, Aries-C1.5, Katana-C2	
D736: Cover Interposer Tray for Perfect Binder Type S1	Br-C1, Leo-C1/P1		
D736: Transit Pass Unit for Perfect Binder Type S1	Br-C1, Leo-C1/P1		
D737: Ring Binder RB5020	Br-C1, Leo-C1/P1		
D419: Ring Opener Type A	Taurus-C1, Leo-C1/P1, Katana-C2, Br-C1		Used with RB5020

No additional notes



Options: Finishing (2)

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		Also used with these models:	Similar to:	Note
D520: Trimmer Unit TR5040		Taurus-C1, Br-C1, Leo-C1/P1		
D740: Multi-Folding Unit FD5020		Br-C1, Leo-C1/P1	Taurus-C1, Katana-C2	
D776: High Capacity Stacker SK5030	New	Leo-C1/P1	Taurus-C1, Katana-C2, Aries-C1.5	
D456: Roll-away Cart Type 5010		Katana-C2, Taurus-C1		For use with SK5030

No additional notes



Options: EFI Controllers

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		Also used with these models:	Similar to:	Note
M465; Printer Controller E-43	New			EFI Pro80
M466; Printer Controller E-83	New			EFI QX100

No additional notes

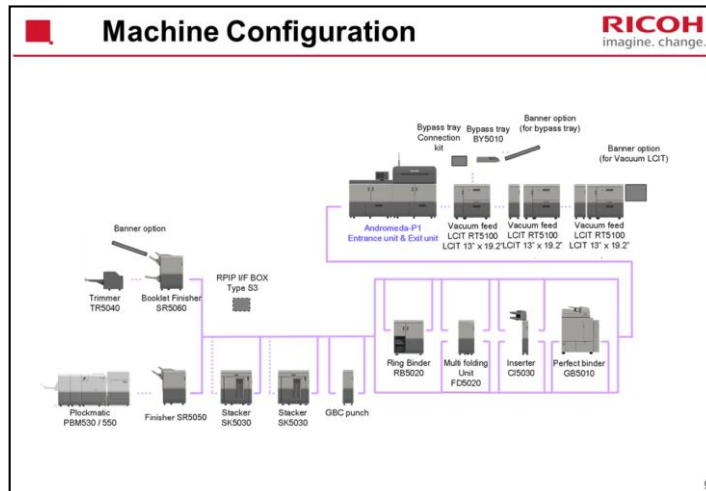


Options: Other

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		Also used with these models:	Similar to:	Note
M462: RPIP Interface Box Type S3	New	Leo-C1/P1		

Note that the Media Identification kit is a standard part of the machine, and not an option like in the Leo-C1/P1.



Configuration Rules

- Up to 3 Vacuum Feed LCIT can be connected via Bridge Unit.
- The Bypass Tray attaches only to the Vacuum Feed LCIT, and not to the mainframe.
- Ring Binder and Perfect Binder cannot be installed together.
- If Multi Folding Unit is installed, Standard Finisher or Booklet Finisher must be installed as the last unit downstream.
- The last unit downstream can be Stacker or Standard Finisher or Booklet Finisher or Trimmer.
- Two Stackers can be installed, if the following options are not included: Perfect Binder / Multi Folding Unit / Ring Binder
- The Trimmer Unit must be connected to the Booklet Finisher, not to the Standard Finisher.
- Plockmatic finishers can be connected to the Standard Finisher.
- Bypass Tray Connection Kit is required for installing the Banner tray on the Vacuum LCIT.
- Banner paper feed options can be attached to either the bypass tray or the Vacuum Feed LCIT, but not both.



Fiery Controllers

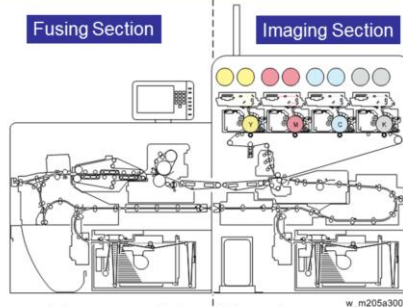
- E-43 and E-83 have higher specifications than E-42 and E-82.
- E-83 is a high-end controller, similar to the Aegis E-80 and Aries E-81/E-82.

No additional notes



Layout: Overall

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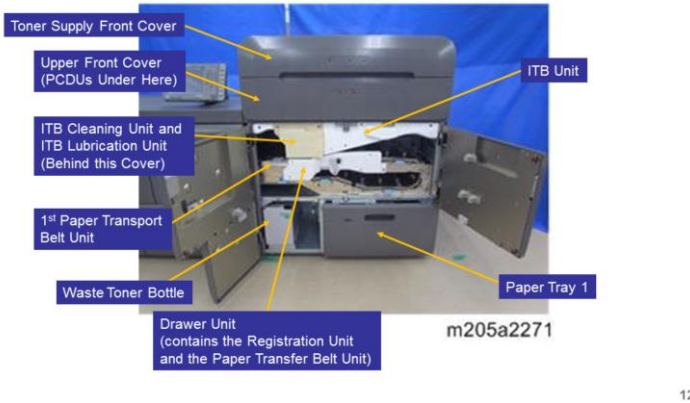
- The machine consists of two large modules:
 - Imaging Section
 - Fusing Section

No additional notes



Imaging Section with the Covers Open

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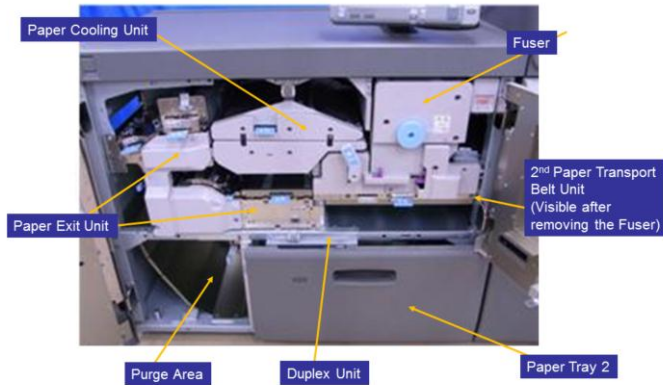
12

No additional notes



Fusing Section with the Covers Open

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No additional notes



RPIP Interface Box Type M3



No additional notes



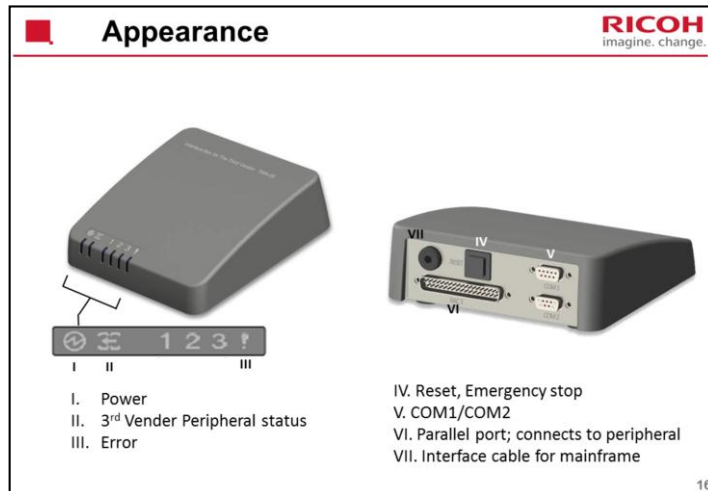
Overview

- RPIP Interface box Type S3 is an interface box that connects Ricoh printers with peripheral devices manufactured by 3rd party vendors.
- It consists of the hardware and core software. A parameter settings file for the 3rd party peripheral to be connected must be made and downloaded to the interface box.
- Only one 3rd party peripheral can be connected at a time.
- Only compatible with finishing peripherals at this time.
- The Plockmatic and GBC Punch do not require the RPIP Interface Box.

This interface box is for implementing local solutions similar to Plockmatic or GBC binder.

If a regional company chooses a 3rd party finishing peripheral as a local solution, RPIP Interface box Type S3 makes it possible to connect the peripheral.

However, the regional company must customize the parameters of RPIP Interface box Type S3 for the 3rd party peripheral with the assistance of the 3rd party vender.



3rd vender peripheral status LED

On Line: Lit

Off Line: Off

Processing a job: Blinking

Error LED

No error: Off

Hardware error: Lit

Data transmission error, Mainframe error: Blinking

Reset Button

-> For Emergency stop

Com1/COM2:

Use for customization

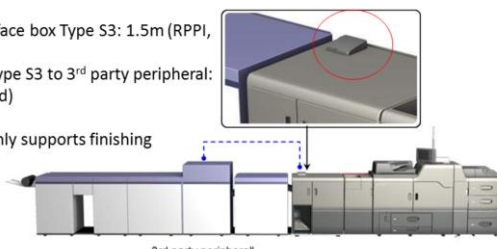
Connection

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Supported models:
Taurus-C2/P2
Andromeda-P1
Br-C1/P1 (March 2015)

Cable:
Engine to RPIP Interface box Type S3: 1.5m (RPPI, Included)
RPIP Interface box Type S3 to 3rd party peripheral: 3m (Parallel, Included)

Note: This version only supports finishing peripherals.



3rd party peripheral

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- 1) Taurus-C2/P2, Andromeda-P1: If there are no intermediate peripherals, connect the interface box to the mainframe
- 2) Taurus-P2, Andromeda-P1: If there are intermediate peripherals, connect the interface box to the most downstream Ricoh peripheral
- 3) Taurus-C2: If there are no intermediate peripherals, you can attach the interface box to the sloping left side of the toner supply unit.



Connection

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- Connect the RPIP interface box to the same socket on the main frame that you use to connect a peripheral.


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No additional notes




- When connecting a 3rd party peripheral immediately to the exit of a copier model, if there is nowhere to install the interface on the peripheral, attach it to a location on the machine that does not interfere with the machine's operation, and where the status LEDs of the interface can be seen.

No additional notes



Parameter setting procedure



Preparation 1: Connect PC and RPIP Interface Box with RS232C cable. Then change to write mode.
 Preparation 2: Launch RPIP Interface Box parameter setting tool on PC
 Preparation 3: Change mode to parameter writing on RPIP Interface Box

1. Turn on engine power. RPIP Interface Box also turns on at the same time as the engine.
2. Write parameters to EEPROM on RPIP Interface Box using parameter setting tool on PC.
3. Turn engine power Off/On. New parameters are effective after engine restart.

How to change into and out of write mode

	Move to write mode	Cancel write mode
Method 1	Turn on DIPSW1-8	Turn off DIPSW1-8
Method 2	Push Reset button more than three sec	

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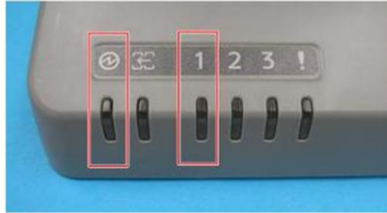
For details of the procedure, see the installation procedure in the service manual.

The dip switch mentioned above is on the main board of the RPIP interface. You have to take the cover off. Anyway, no need to do this if you use method 2 indicated above.



Write Mode

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- When the RPIP interface box is in write mode, the power LED and spare LED1 light up blue.
- Jobs cannot be received while in write mode.

No additional notes



RS-232C Cable

- The recommended cable is SANWA SUPPLY / KR-LK2, because this type of cable was used during testing. However, a cable from any reputable vendor should work OK.
- When using a USB-RS-232C adapter, use one from a reliable manufacturer, or it may result in illegible text or installation errors.

No additional notes



Media Type Analyser

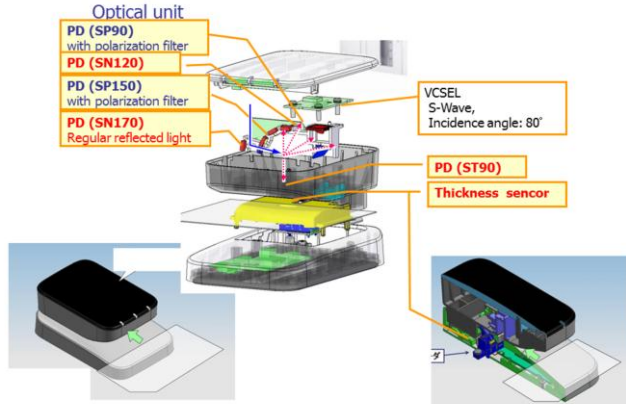


No additional notes



Structure

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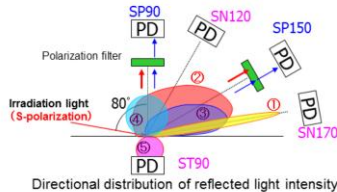
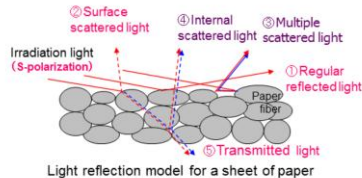


No additional notes



Method of Identifying Media Types

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Light reflected from a sheet of paper can be categorized into 5 types.

Directional distribution of reflected light varies with paper type.

Paper types can be identified by reflected light intensity detected in different directions and polarization states.

- ① : Surface glossiness
- ②③: Surface roughness
- ④ : Paper structure
- ⑤ : Weight (Thickness)

①②⑤ unchanged polarization
③④ rotated polarization
(polarization filters)

No additional notes



Function

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Ability of Detection:

Coating	Non Coated, Coated Glossy, Coated Matt
Weight	Wt.1 to Wt.9 (52.3gsm to 400.0gsm)
Color	Not possible to detect; colored paper may be incorrectly identified if scanned

Paper Setting Function:

Purpose	Method	Action
Registering a Custom Paper	Recalling from Paper Library	A list of paper types from the Paper Library will be displayed, with probabilities of a correct match.
	Making a "generic" setting from [* Not Programed]	[Paper Weight] and [Coated Paper Type] will be set using detected results.
Specifying a Custom Paper for the Paper Tray	Recalling from Custom Paper	A list of paper types from Custom Paper will be displayed, with probabilities of a correct match.

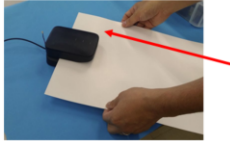
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No additional notes



Notes

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- Insert paper horizontally while holding with both hands.
- Align insert direction with paper feed direction.
- If the simplex and duplex sides of the paper have different properties, insert simplex side up.
- Detecting will be done during pulling out the paper.
- Don't scan paper that has already been printed on one side.
- Do not leave paper out of the package for long periods of time. This causes their characteristics to change and may result in misidentification.

No additional notes



Where to Install

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- Put it at the left side of the operation panel.
- Connect it to the USB port on the right side of the operation panel

No additional notes



Installation

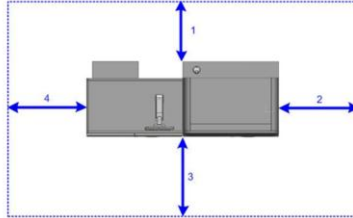
Main Engine

Details of all procedures are in the service manual. These slides only go over a few important points.



Space Requirements

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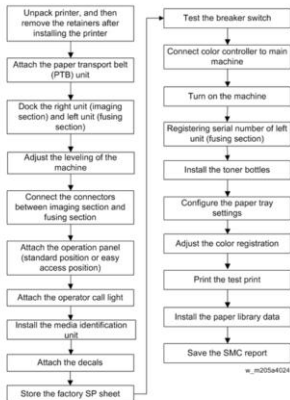
- The above space is required to use and maintain the machine.
 - [1] Rear 800mm (31.5")
 - [2] Right 1000mm (39.4")
 - [3] Front 1000mm (39.4")
 - [4] Left 1000mm (39.4")

No additional notes



Outline of the Procedure

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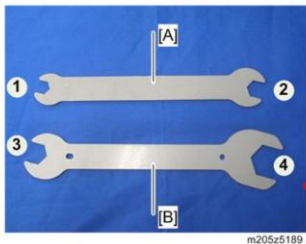


Note that the Media Identification kit is a standard part of the machine, and not an option like in the Leo-C1/P1.



Wrenches Provided with the Machine

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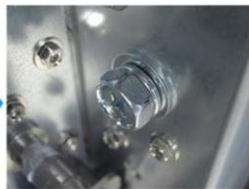
- [A] hexagon head bolt: 13-17
 - Small side: Use to fasten the M8 bolts when fastening the left and right units of the main machine to each other.
 - Large side: Use to adjust the casters of the rear box, if the height of the rear box and the imaging section are not the same.
- [B] hexagon head bolt
 - Small side: Use to adjust the leveling bolts of optional units.
 - Large side: Use to adjust the leveling bolts of the main machine (right unit and left unit).

The instructions in the manual explain the correct wrenches to use at the necessary times.



Tightening the Bolts

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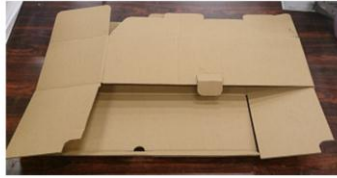
- Do not tighten the bolts too much, or you will not be able to loosen them again.

No additional notes



Tool Box - 1

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- During installation, and for replacement and adjustment, some special tools are used. These special tools are provided with the accessories, and can be stored inside a special tool box, that is also provided with the machine.

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Special tools provided with the machine include the following:

Two wrenches as explained previously

Knob for removing/attaching a PCU

Protective sheet for ITB removal

Handle for lifting the fusing unit

Tube for installing fusing lamps

See 'Installation > Main Machine Installation > Accessory Check > Assembling the Accessory Box' in the service manual for details on how to assemble the box and what to store in it.



Tool Box - 2

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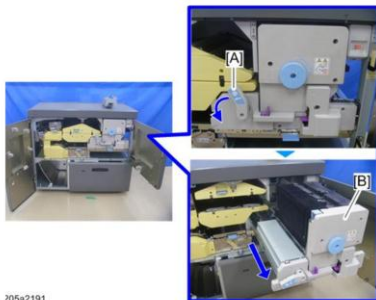
- The tool box can be stored next to the waste toner tank as shown above.

No additional notes



Installing the Transport Belt - 1

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- The 2nd transport belt sticks out from the fusing section, so the machine is shipped without this unit installed.
- You have to pull out the fusing unit.
 - Rotate handle [A] and pull out the unit [B].
 - The paper cooling unit opens automatically when you do this. Don't forget to close it when you have finished.

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Remove this unit when you have to move the machine.



Installing the Transport Belt - 2

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- Pull out the fuser unit more by holding the pawls [A] and [B] on the guide rail down.



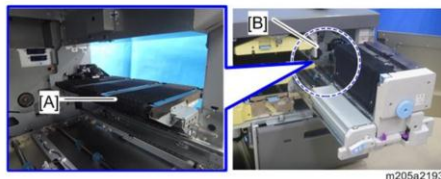
m205a2192

No additional notes



Installing the Transport Belt - 3

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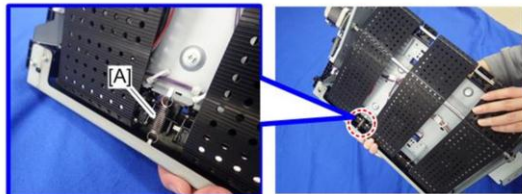
- Put the paper transport belt (PTB) unit [A] into the space [B] from the left side of the fuser unit.
 - See 'Installing Paper Transport Belt (PTB) Unit' bin the installation procedure for full details of the installation.

No additional notes



Installing the Transport Belt - 4

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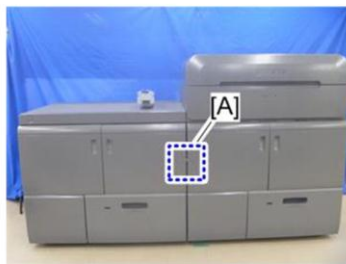
- Be careful not to remove the spring [A] on the underside of the unit

No additional notes



When Connecting the Two Halves of the Machine

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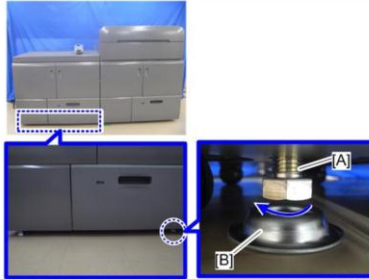
- Look here [A] to make sure that the positioning pin is inserted into the hole in the fusing section.

No additional notes



Machine Level Adjustment - 1

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m205a2242

- Place eight shoes [B] under each leveling bolt [A] of the imaging section and the fusing section.
- Continue to turn the nut until the leveling bolt [A] reaches the shoe [B].

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Example above: front of the fusing section



Machine Level Adjustment - 2

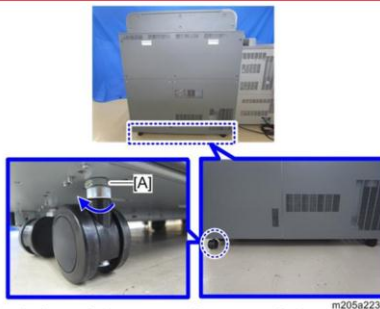
RICOH
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- Set a level 5 mm [C] from the edge at the 4 locations shown above.
- Adjust the height of each leveling bolt to level the unit within the specification ($\pm 2.5\text{mm}/1000\text{mm}$).

No additional notes

■ Adjusting the Height of the Rear Box **RICOH** imagine. change.



- If the height of the rear box and the imaging section are not the same, adjust the height by rotating the screw [A] of the casters at each corner.
 - Do this after connecting the connectors.

No additional notes



Operation Panel

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Standard Installation



m205a2568

Easy Access Installation



m205a2568

- There are two ways to install the operation panel.
 - 1. Standard installation: Operate the machine standing at the front of the machine.
 - 2. Easy access installation: Operate the machine from a sitting position.

The installation procedure explains both methods



Media Identification Unit

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m205a0024



m205a0025

- Place the media identification unit [A] at the left of the operation panel.
- Connect the USB cable [A] of the media identification unit to the USB port on the right side of the operation panel.

This is a standard component of the machine, and not an option.



Factory SP Sheet

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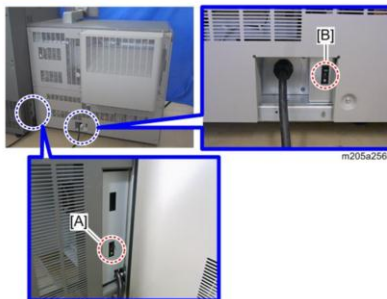
- Open the front left door [B] of the imaging section.
- The factory SP sheet [A] is taped to the side of the waste toner bottle [C]. Keep it here.

No additional notes



Testing the Breaker Switches - 1

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- There are two switches on the machine, one for the imaging section [A], and one for the fusing section [B].
- Test each switch at installation, and once a year after that.

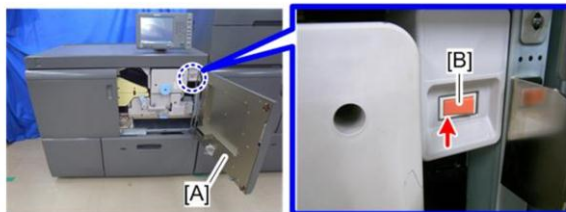
47

No additional notes



Testing the Breaker Switches - 2

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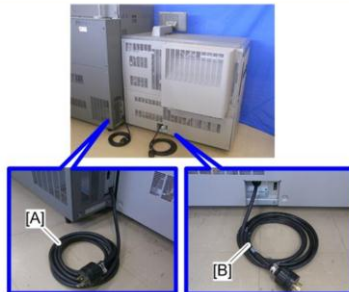


- Turn off the AC power switch [B] before you test the breaker switches.
 - Open the right door [A] of the fusing section to access this switch.

No additional notes

■ Turning the Machine Power On - 1

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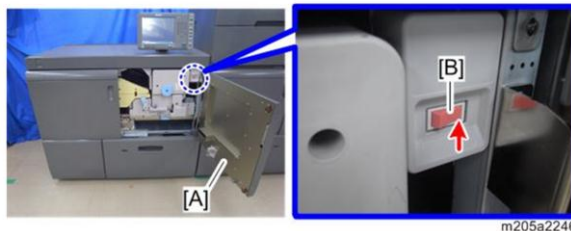
- Each section of the machine has its own power cord. Both must be plugged in.

No additional notes



Turning the Machine Power On - 2

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- Make sure that the AC power switch [B] is on.

Before the machine leaves the factory, the AC power switch is set to ON.
Leave the AC power switch ON when using the machine.



Turning the Machine Power On - 3

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m205a2247

- Lift the switch cover at the front left side of the fusing section and press the main power switch [A].

No additional notes



Turning the Machine Power Off

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- To turn the power off again, press the main power switch [A].
 - A message appears and after normal shut down, the machine powers down automatically.
 - The AC power switch should be kept on, unless you are going to service the machine.

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Forced shutdown can be done in the same way as for other recent models.



Notes about the AC Power Switch

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- Before the machine leaves the factory, the AC power switch is set to ON. If this switch is OFF, it must be set to ON before you can start the machine.
- As a safety precaution, turn the main power switch and the AC power switch OFF and disconnect the main machine power cord before servicing the machine.
- After servicing the machine, be sure to turn the AC power switch back ON.

No additional notes



Serial Number of Fusing Section

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m205z8001

- The imaging section and fusing section each have a serial number.
- The serial number of the fusing section is not stored in the machine at the factory.
- You must do it during installation with SP 5-811-006.
- The diagram shows where to find this number.
- This number must also be input again if the NVRAM for the controller is replaced.

No additional notes



Installing Toner Bottles - 1

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m205a2249

- Make sure the main power switch is on, then open the toner supply front cover [A].
- Turn each toner bottle upside down, and shake it 5-6 times with both hands.
- Install from left to right in this order: Y, M, C, K.

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Push the bottle in with your palm until you hear it click and lock.



Installing Toner Bottles - 2

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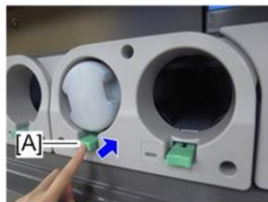
- After you install all the bottles, close the toner supply front cover.
- A short time later, 'Self checking' appears in the display, and toner filling and process control automatically start.

Toner filling ends when the sensor in the toner hopper detects that enough toner is added.



Removing a Toner Bottle

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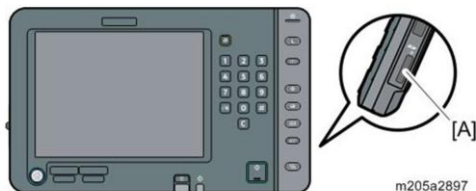
- When removing a toner bottle, press the green lever [A] and pull out the toner bottle.

No additional notes



SMC Report

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- The SMC report is stored on an SD card in SD card slot [A] of the operation panel.
- Do SP5992-001 to store the SMC report on the SD card.

No additional notes



- The service manual contains detailed procedures for the following.
 - Moving and Transporting the Machine (Short Distance)
 - Transporting the Machine (Long Distance)

No additional notes



Moving and Transporting the Machine Summary

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- Basically, you must do the following.
 - Turn the main power switch off and unplug the power cords.
 - Make sure all doors and trays are closed.
 - Separate the left unit (fusing section) from the right unit (imaging section).
- For long distance transport, you must also:
 - Clear the waste toner path.
 - Remove the toner bottles.
- See the service manual for full details of each procedure.

No additional notes



Moving and Transporting the Machine

Notes - 1

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m205a2903

- To avoid damaging the machine, place your hands at the corners of the main frame and push it slowly and straight.
- Do not push the rear box [A].

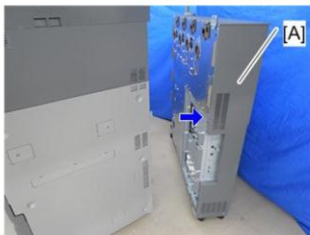
No additional notes



Moving and Transporting the Machine

Notes - 2

RICOH
imagine. change.



m205a1465

- Remove the rear box if the machine is too large to pass through a narrow door or passageway.
- After the rear box [A] is disconnected from the machine, it is unstable and can fall over.
- To avoid personal injury or damage to the rear box, use caution when you leave the box standing or transport it.

When the rear box is removed, the width is reduced from 980 mm to 760 mm.



Installation

Fiery Controllers

Details of all procedures are in the service manual. These slides only go over a few important points.



Connecting the E-43 Controller

RICOH
imagine. change.



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m205a2853

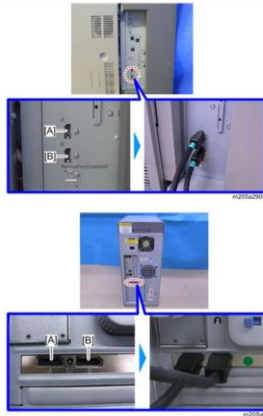
- The Fieri controller is connected at the right side of the machine.
- The Fieri is connected through the Gigabit Ethernet port on the machine.
 - The Fieri has two Gigabit Ethernet ports. One is for connection to the machine (shown here), and one is for connection to the customer's network (see later).

No additional notes



Connecting the E-43 Controller

RICOH
imagine. change.



- The Fiery is also connected through two DTU cables.
- The blue tag on the end that plugs into the machine is marked A or B. Make sure to plug the cable marked A into the port in the machine marked A, and so on.
- Loops in the DTU cables must not be less than 20 cm in diameter or there will be noise.

65

No additional notes



Connecting the E-43 Controller

RICOH
imagine. change.



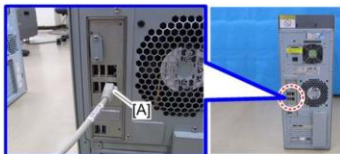
- The Fiery controller connects to the customer's network through this Gigabit Ethernet socket.

No additional notes



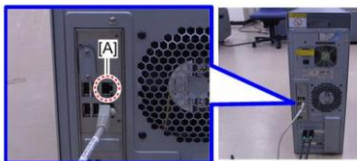
Connecting the E-83 Controller

RICOH
imagine. change.



▪ The process is the same as for the E-43 but the sockets on the controller are in different locations.

– The top diagram shows where to connect the Gigabit Ethernet cable from the machine.



– The bottom diagram shows the locations of the DTU sockets and the Gigabit Ethernet socket for the customer's network.

No additional notes



Turning on the Power with a Fiery Installed

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imagine. change.



- First, turn on the switch at the rear of the Fiery.
- Then press the main power switch at the front of the Fiery.
- Then press the main power switch at the front of the main machine's fusing section.

No additional notes



Turning off the Power with a Fiery Installed

RICOH
imagine. change.

- First, shut down the Fiery using the Restart Fiery – Shut Down command in the Fiery tab on the operation panel.
- Then press the main power switch on the front of the Fiery.
- When the activity light of the color controller is turned off, press the main power switch at the front of the main machine's fusing section.

No additional notes



Notes about Turning the Power Off

RICOH
imagine. change.

- When the activity light is lit or flashing, do not turn off the main machine. Doing so may damage the hard disk or memory and cause malfunctions.
- Make sure to turn off the main power switch before removing the power cables. Otherwise the hard disk or memory can be damaged.
- When you turn off the machine, wait at least two minutes before you turn on the machine again.

No additional notes



Fiery Controller Power

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imagine. change.



- There is a small switch [A] on the controller. Turn this on (down), so that the Fiery will switch on and off whenever the mainframe is switched on and off.
- Keep this switch turned off when you install the machine. The customers will turn it on themselves if they require it.

No additional notes



Fiery Controller Power

- Make sure to turn off the main power switch before removing the power cables. Otherwise the machine can break down.
- When you turn off the main machine, make sure that you turn off the color controller too. When you turn on the color controller, you need to turn it on within one hour after the main machine is turned on.

No additional notes



Fiery Controller Setup

- After turning the Fiery on for the first time, it must be set up. The customer must assist with this.
 - The site administrator should be available during the installation for assistance with network connectivity issues.
 - The site administrator should have a network cable and documentation for the network settings.
 - The site administrator should have a networked computer available during the installation. The appropriate software should already be installed.

No additional notes



Installation

Vacuum Feed LCIT RT5100

This section explains only the main points about the installation procedure.
For full details, see the field service manual.



Installing More than One LCIT

RICOH
imagine. change.



m205a2560

- The procedure in the service manual explains how to attach the LCIT to the main machine directly.
- However, the procedure is the same when attaching an LCIT to another LCIT already connected.
- Up to three vacuum feed LCITs can be connected by installing a bridge unit BU5010 between them.

75

No additional notes



Height and Leveling - 1

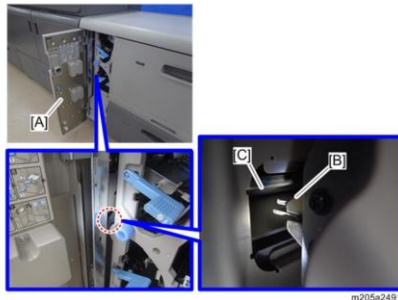
- Make sure that the machine is level, as explained in the manual.
 - Less than 5mm (0.2") from level (measure from left-to-right and front-to-rear)

No additional notes



Height and Leveling - 2

RICOH
imagine. change.



- At this time, open the front door [A] and make sure that the LCT exit [B] is at the same height as the main machine's paper entrance [C].

No additional notes



Tray Heaters (1)

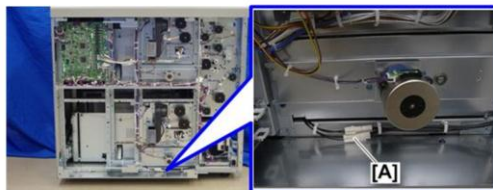
- A tray heater can be installed in tray 2. This is not included inside the LCIT at the factory. It must be installed by the technician.
- Two or more technicians are required to lift the paper tray off the rails because it is extremely heavy.

No additional notes



Tray Heaters (2)

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imagine. change.



d194d9169

- The tray heater is not operated by the ON/OFF switch, but is always ON when the AC power of the vacuum feed LCIT is plugged in. If you wish to turn the heater OFF, disconnect the relay connector [A].

No additional notes



Disconnecting the LCT

RICOH
imagine. change.



- To disconnect the LCT from the machine, open the front door [A] of the LCT, and then disconnect the LCT while pressing the connecting lever [B] in the direction of the arrow.

80

No additional notes



Installation

Bridge Unit BU5010 for Vacuum Feed LCIT RT5100

This section explains only the main points about the installation procedure.
For full details, see the field service manual.



Paper Trays are Heavy

- Two or more technicians are required to lift the paper tray off the rails because it is extremely heavy.

No additional notes



Installation

Vacuum Feed Banner Sheet Tray Type S3 (D777) for the Vacuum Feed LCIT

This section explains only the main points about the installation procedure.
For full details, see the field service manual.

This is a long procedure.



Installation Location

- When two or more vacuum feed LCITs are connected, the banner sheet tray can be connected to only the upstream vacuum feed LCIT.
- The tray weighs approximately 30 kg. Because it is very heavy, at least two people should carry it.

No additional notes

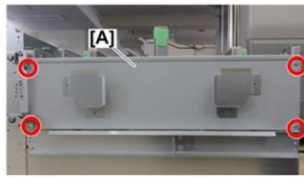


Do not discard these components

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imagine. change.



d194d9503



d194d9517

- Stay [A] (on the right side of the vacuum feed LCIT) and side plate [A] (from the paper tray) must be removed during the installation procedure.
- After removing these, keep them in storage. You will need them if you uninstall the banner sheet tray at some point in the future.

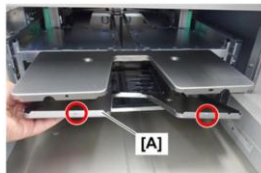
85

No additional notes



Take Care When Pulling the Paper Tray Out

RICOH
imagine. change.



d194d9535



d194d9536

- When attaching the lower bottom plate [A], it may be difficult to insert a screw driver.
- In such a case, pull the paper tray out slightly so it can be lowered.
- NOTE: If you pull the tray out too far, it may contact and deform the extension tray, so be very careful.

86

No additional notes



SP Setting After Installation

RICOH
imagine. change.

- Make sure the vacuum feed banner sheet tray is recognized as follows:
 - Change SP5-150-002 from 0 to 1.

The SP mode for the bypass banner sheet tray is 5-150-001.



Installation

Bypass Tray BY5010

This section explains only the main points about the installation procedure. For full details, see the field service manual.



Notes

- The bypass tray is connected to the Vacuum Feed LCIT RT5100.
- When two or more Vacuum Feed LCITs are connected, the bypass tray can be connected to only the downstream Vacuum Feed LCIT (the closest one to the main machine).
- The bypass unit weighs 20 kg (44 lb). More than one person should be working when setting the bypass unit on top of the LCIT.

No additional notes



Attachment Kit

- When installing the bypass tray on the Vacuum Feed LCIT RT5100, the Multi Bypass Attachment Kit for Vacuum Feed LCIT Type S3 is required.
- The installation procedure is in this section of the service manual.
 - Installing the bypass tray on the Vacuum Feed LCIT RT5100: Installation > Multi Bypass Attachment Kit for Vacuum Feed LCIT Type S3 (D777)

No additional notes



Before You Begin

- The Multi Bypass Tray must be installed on the LCIT before the LCIT is docked to the mainframe.
- If the LCIT is already installed, it must be disconnected from the mainframe before installation of the Multi Bypass Unit.
 - To prevent damage to the connectors and ground wire, before pulling the LCIT away from the mainframe, pull the LCIT about 20 cm (8") away from the machine.

No additional notes




- This is a long procedure. In summary:
 - Prepare the bypass tray
 - Mount the bypass tray on the LCIT
 - Modify the bypass tray: Replace pulleys and belts
 - Connect the bypass tray
 - Install the covers
 - Install a new motor in the bypass tray
 - Attach end fences and decals
 - Docking
 - Height adjustment


Install a new motor in the bypass tray: This motor drives the shaft that feeds paper from the bypass tray to the Vacuum-feed LCT. This motor is not installed in the Vacuum-feed LCT at the factory, because it is useless if the bypass tray is not installed.

Modifying the Bypass Tray for the Vacuum Feed LCIT **RICOH**
imagine. change.

Paper Feed and Paper Transport Motors



Relay Motor



- To work with the vacuum feed LCIT, the bypass tray has to be modified to match the feed speed of this LCIT.
- These parts around the motors must be replaced with parts from the attachment kit.

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Upper diagram

[A]: Timing Belt x2

[B]: Pulley Gear

[C]: Timing Pulley

Lower Diagram

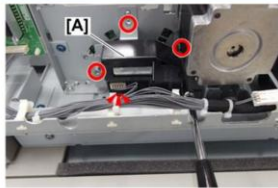
[A]: Timing Pulley

[B]: Timing Belt

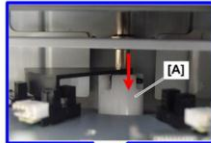


Be Careful

RICOH
imagine. change.



d194d8214



- When doing these modifications, you have to remove the lift motor [A].
- Remove it while pushing the coupling [A] of the motor.
- When the coupling is off the tray shaft, the tray may fall down suddenly. So work carefully.

94

No additional notes



Installation

Multi Bypass Banner Sheet Tray Type S3

This section explains only the main points about the installation procedure.
For full details, see the field service manual.



SP Setting After Installation

RICOH
imagine. change.

- Make sure the bypass feed banner sheet tray is recognized as follows:
 - Change SP5-150-001 from 0 to 1.

The SP mode for the LCIT banner sheet tray is 5-150-002.



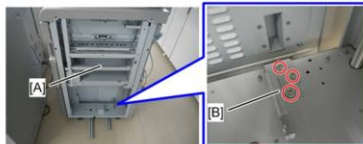
Installation

Stacker

This section explains only the main points about the installation procedure.
For full details, see the field service manual.



If the Upstream Unit is the Cover Interposer



d194z0073



d194z0074

- Re-attach the base bracket [B] of the cover interposer tray [A] in the opposite direction and then connect it to the stacker [C].
- Remove the rear lower cover of the stacker to tighten the base bracket screw.

No additional notes



Installation

Finishers

This section explains only the main points about the installation procedure.
For full details, see the field service manual.



Shipping Plates and Retainers

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imagine. change.

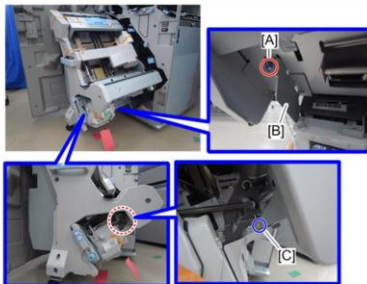
- Do not throw away the shipping plates. You will need these when the customer wants to move the machine to a new location.

No additional notes



Don't Remove this Screw

RICOH
imagine. change.



m205a2963

- When removing shipping plate [B], remove screw [A], but do not remove screw [C].
 - Screw [C] is a step screw that holds other brackets in place. Screw [C] must remain in the unit.

101

No additional notes



Casters



m205a2930

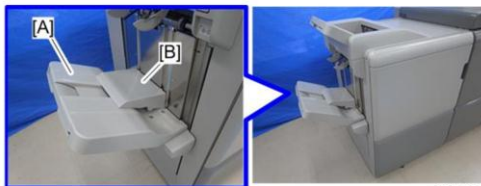
- The following procedure relieves stress on the rails of the stacker/stapler unit when it is pulled out of the machine.
 - Loosen the screws [A] of the caster cover.
 - When the caster [B] touches the floor, tighten the screws of the caster table.

If the casters come off the floor after the height adjustment of the finisher, adjust the height of caster. Otherwise, the guide rail might be strained when you pull out the stacker/stapler unit.



Auxiliary Tray for Z-folded Paper

RICOH
imagine. change.



m205a2940

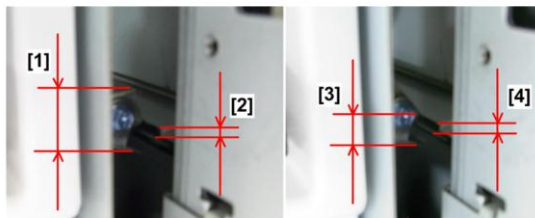
- Before feeding Z-folded paper from the multi-folding unit, attach the Z-fold auxiliary tray to the shift tray.
- Tell the user how to use this auxiliary tray.

No additional notes



Connecting the Finisher to the Upstream Unit - 1

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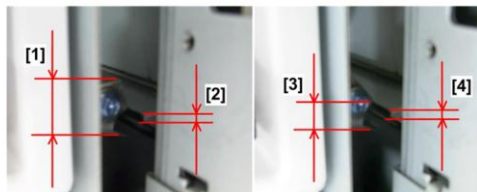
- Push the finisher close to the side of the upstream unit.
- Confirm that the height of the finisher entrance [1] is at the same height as the upstream unit's paper exit [2].

No additional notes



Connecting the Finisher to the Upstream Unit - 2

RICOH
imagine. change.



- Push the finisher closer to the side of the upstream unit, and then once again confirm that the height of the finisher entrance [3] matches the height of the upstream unit exit [4].
- If the exit and entrance are not at the same height, adjust the height of the finisher.
- Push the finisher against the side of the upstream unit.

105

No additional notes



If the Upstream Unit is the Cover Interposer

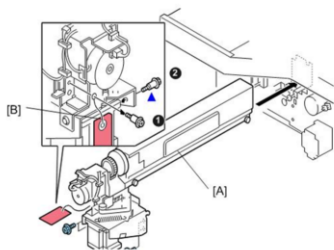
RICOH
imagine. change.

- An additional procedure must be done to prevent the cover interposer tray from falling over.
 - See the service manual for details: Installation > Booklet Finisher SR5060 (D734)/Finisher SR5050 (D735) > Installation > Docking to the Cover Interposer Tray

No additional notes



Punch Unit Removal



d4490012

- This screw must remain attached to the punch unit.
- Before removing the punch unit from the finisher, remove the screw from hole 2 and re-attach at hole 1.
 - This prevents the punch unit from wobbling from side to side while it is being removed and handled after removal.

No additional notes



Installation

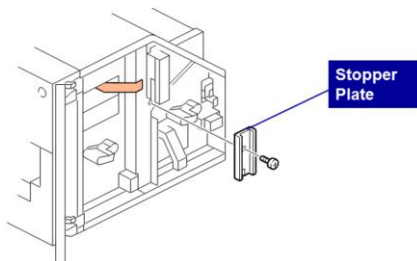
Trimmer (for the Booklet Finisher)

This section explains only the main points about the installation procedure.
For full details, see the field service manual.



Stopper Plate

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imagine. change.



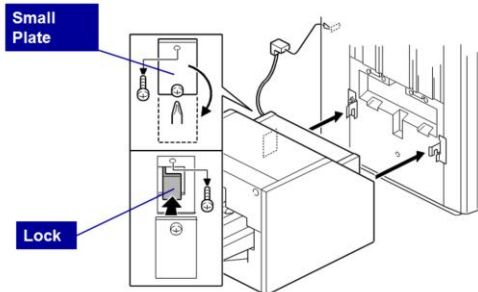
- Keep this stopper plate. You need to attach it before you move the machine to a new location.

No additional notes



Docking Bracket

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imagine. change.



- The lock is at the rear.
 - In the other peripherals, it is at the front.
- Remove the small plate in the rear cover to access the lock.

No additional notes



Moving the Finisher

- When moving the finisher, follow the instructions at the end of the installation procedure.

No additional notes



Installation

Media Identification Unit

This section explains only the main points about the installation procedure.
For full details, see the field service manual.



Installation Location

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imagine. change.



m205a0024

- Place the media identification unit [A] at the left of the operation panel.
- Connect the USB cable [A] of the media identification unit to the USB port on the right side of the operation panel.



m205a0025

No additional notes



Installation

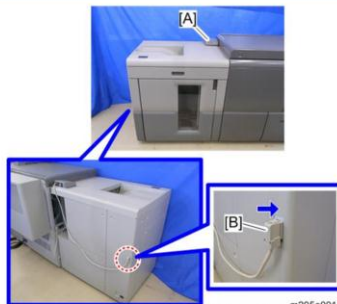
RPIP Interface Box

This section explains only the main points about the installation procedure. For full details, see the field service manual.



Connecting the Box

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imagine. change.



- Connect the interface cable [B] of the RPIP interface box [A] to the main machine or the most downstream Ricoh peripheral.

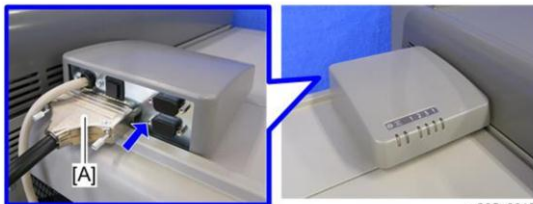
m205a0014

No additional notes



Connecting the Box

RICOH
imagine. change.



m205a0015

- Connect one end [A] of the parallel cable to the RPIP interface box.
- Connect the other end to the third party peripheral.

No additional notes



Installation

Common Adjustments (Height, Level, Skew, Side-to-side Registration)

This section explains only the main points about the installation procedure. For full details, see the field service manual.

These procedures are in the Installation > Common Adjustments section.



Height and Level Adjustment Overview

RICOH
imagine. change.

- The main machine should be installed first and adjusted to level front-to-back, and side-to-side.
- The paper path with optional peripheral units installed is very long. So, it is important that every unit be leveled to match the front-to-back and side-to-side measurements of the main machine.
- The height and level of each peripheral unit must be adjusted at installation. After that, there must be testing for skew and checking that side-to-side registration is correct.

This is the same as the Taurus-C1.



Height and Level Adjustment Leveling

RICOH
imagine. change.



- Turn the lower nut to lower the bolt.
 - The upper bolt is welded to the frame and does not move.
- Set a leveling shoe below the bolt. Continue to turn the lower nut until it stops against the shoe.
- Set a level on the front, rear, and side edges to determine if the unit is level.
- Adjust the height at each corner until the unit is level.

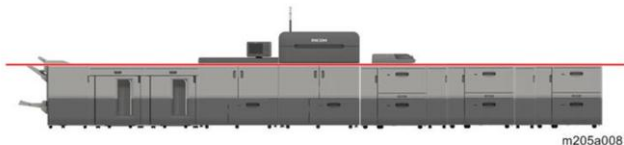
119

The number of leveling shoes will differ, depending on which unit you are leveling.



Height and Level Adjustment Leveling

RICOH
imagine. change.



- The top of the first peripheral on the left must be at the same height as the left side of the main machine.
- The tops of the other peripherals on the left where the units are joined must be at the same height.
- The top of the LCIT on the right must at the same height as the right side of the main machine.

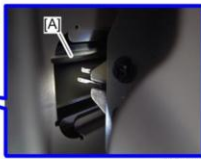
120

No additional notes



Height and Level Adjustment Guide Plates

RICOH
imagine. change.



m205a4111

- Between the right side of the main machine and the LCIT, make sure that the LCIT guide plate [A] moves freely and does not interfere with the main machine guide plate.

121

No additional notes



Skew and Registration Adjustment for Peripherals

RICOH
imagine. change.

- The paper feed path is extremely long when all the finishing options are installed.
- In such a long path, the cumulative effect of paper skew and deviation in side-to-side registration may require adjustment.
- After installation of each peripheral device, do some test prints and check for the presence of skew, and check that side-to-side registration is correct.

No additional notes



Skew and Registration Adjustment for Peripherals

RICOH
imagine. change.

- When you detect a problem with skew or side-to-side registration, do the adjustment on the joint bracket attached to the peripheral unit upstream of the unit where the problem occurred.
 - Side-to-side registration is corrected by shifting the upstream joint bracket left or right.
- Skew is eliminated by inserting spacers (shims) under the rear or front end of the joint bracket. These attached by screws to the peripheral units before they leave the factory.
 - The locations of the spacers are shown in the service manuals.

No additional notes



Skew and Registration Adjustment for Peripherals

RICOH
imagine. change.

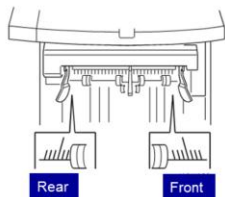
- Before adjusting skew or registration manually, be sure to enter the SP mode and set SP1206 to "2" (OFF).
 - When you are finished, re-set SP1206 to "1".

This SP disables side-to-side registration in the main machine's registration unit.



Where Skew and Side-to-Side Registration Are Measured


RICOH
imagine. change.



- Use the two scales at the output slot of each peripheral, as shown above.
- Important! There are two scales. The one at the rear is for DLT paper (LT LEF for the ring binder), and the one at the front is for A3 paper (A4 LEF for the ring binder). Use the correct scale.

125

No additional notes

 **Where to Adjust Skew and Side-to-side Registration?** **RICOH**
imagine. change.

- You can adjust at any junction between units except at the following locations:
 - Input to the Perfect Binder
 - Input to the Trimmer Unit
- Procedure: Service Manual, Installation, Common Procedures, Skew and Side-to-side Registration

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The procedure is the same as for the Taurus. The locations of the adjustment scales and the spacers are shown in the service manual.

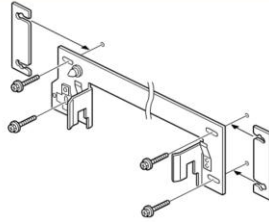
Basically, the peripherals which have a connecting bracket for the adjustment need to be adjusted to the upstream machine.

There are two scales at the exit of the multi-folding unit. One is above the proof tray, and one is at the exit from the folder to the next downstream peripheral.



Adjustment Bracket

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imagine. change.

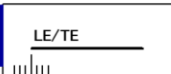
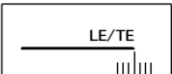
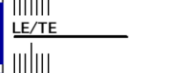
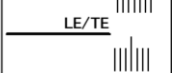
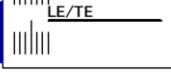
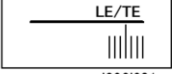


- There is a bracket like this at the locations mentioned on the previous slide.
 - To adjust skew, we can insert spacers under one end of the bracket.
 - To adjust registration, we can move the bracket from side to side.

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No additional notes

When Registration Should Be Adjusted **RICOH**
imagine. change.

	LT	A4
Registration shift is less than 2 mm: Do not adjust		
Registration shift is more than 2 mm: Adjust the machine		
Registration shift is more than 2 mm: Adjust the machine		

d392i901

- If the error is more than ± 2 mm, you should adjust the machine.
- The order is not important, but if possible, adjust for registration shift first, then for skew.

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LE: Leading edge

TE: Trailing edge

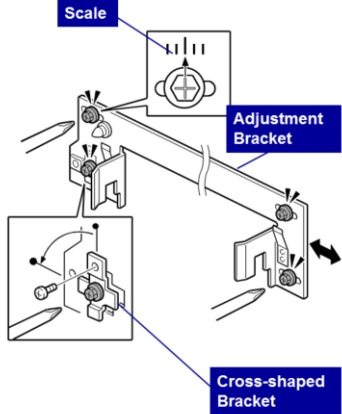
To check for registration shift

Look at the scale when the leading edge comes by and when the trailing edge comes by. Check where the side edge of the paper is on the scale.

If the side of the paper is within 2 mm of the central line on the scale, there is no registration shift.

If the side of the paper is more than 2 mm from the central line on the scale, you should adjust the machine.

Adjusting the Registration **RICOH**
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- Loosen the screws.
- Remove the 'cross-shaped' bracket, turn it 90 degrees, then tighten the screw to secure this bracket.
- Move the adjustment bracket by the same amount as the registration shift.
 - Use the scale to make sure that you move the bracket by the correct amount.
 - If the registration shift was toward the front of the machine, slide the adjustment bracket to the front.
- Then secure the adjustment bracket

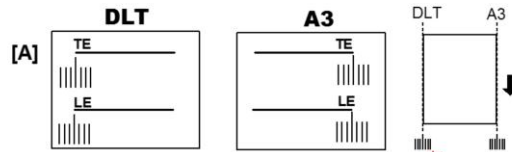
129

If you move the adjustment bracket, you cannot turn the small cross-shaped bracket back 90 degrees at the end of the procedure, so do not try it.



When Skew Should Be Adjusted - 1

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- Look at the scale when the leading edge comes by and when the trailing edge comes by.
- Check where the side edge of the paper is on the scale.
 - If the side of the paper comes past at the same place on the scale, there is no skew.
 - The above diagram shows an example where no adjustment is necessary.
- If the error is more than ± 2 mm, adjust the machine.
- Adjust for skew first, then for registration shift.

130

LE: Leading edge

TE: Trailing edge

To check for skew

Look at the scale when the leading edge comes by and when the trailing edge comes by. Check where the side edge of the paper is on the scale.

If the side of the paper comes past at the same place on the scale, there is no skew.

If the difference is more than 2 mm, you should adjust the machine.

When Skew Should Be Adjusted - 2 **RICOH**
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DLT A3

TE
LE

TE
LE

TE
LE

TE
LE

- In these examples, skew is present. The machine must be adjusted.
 - The red diagram on the right shows the type of skew.
 - The two diagrams on the left show how the two types of skew appear on the A3 and DLT scales.

131

LE: Leading edge

TE: Trailing edge

To check for skew

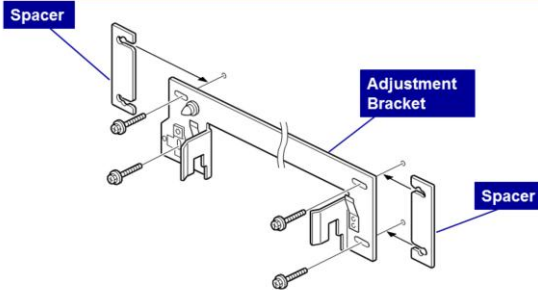
Look at the scale when the leading edge comes by and when the trailing edge comes by. Check where the side edge of the paper is on the scale.

If the side of the paper comes past at the same place on the scale, there is no skew.

If the difference is more than 2 mm, you should adjust the machine.

Adjusting the Skew

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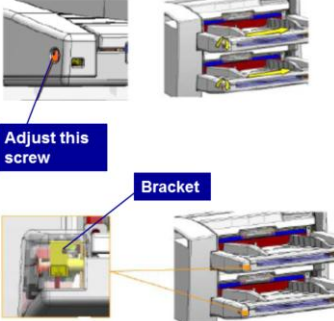
The diagram illustrates the process of adjusting the skew. It shows an 'Adjustment Bracket' which is a long, thin metal piece with several mounting points. Two 'Spacer' blocks are shown being inserted into the bracket. The spacers are rectangular blocks with a central slot. The diagram shows the spacers being inserted into the bracket from both sides, with arrows indicating the direction of insertion. The spacers are used to adjust the skew of the paper path.

- Insert spacers below the adjustment bracket.
 - The service manual shows you where to find the spacers inside the machine.

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If the trailing edge skews towards the rear, insert the spacer at the rear side of the machine.

Side-to-side Registration at the Entrance of the Cover Interposer **RICOH**
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- Adjust the screw at the side of the tray
 - Turn clockwise: The tray moves to the front
 - Turn anti-clockwise: The tray moves to the rear
- The tray can be moved a maximum of 2 mm in either direction.
 - To see the current setting, remove the tray cover and look at the scale on the bracket.

133

This slide shows how side-to-side registration can be adjusted at the entrance of the cover interposer.

The adjustment is made on the trays, not on the bracket between the peripherals.

There is no skew adjustment here. Skew can only be adjusted at the exit from the cover interposer (see the previous slide)



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Maintenance

134

No additional notes



- The basic PM cycle is 900k
- For details, see the service manual.
 - PM Table: Appendix > Preventive Maintenance > Preventive Maintenance Items
 - Cleaning: Appendix > Preventive Maintenance > Cleaning Points
 - Lubrication: Appendix > Preventive Maintenance > Lubrication Points

Important points about cleaning and lubrication will be mentioned in the related sections of the course.



Basic Procedure

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- Replace the part(s), following the instructions in the manual.
- After replacing all necessary parts, open the front doors, then turn on the AC and main power switches.
- Use SP7-622-xxx to clear the counters for the parts that you replaced.
- Close the front doors.
- All necessary cleaning and process control initialization begins automatically, depending on which counters were reset.

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SP7-622-xxx: The numbers are all displayed on the screen. Just select the one that you need.



Detailed Section Descriptions

Machine Overview

No additional notes

Layout: Overall

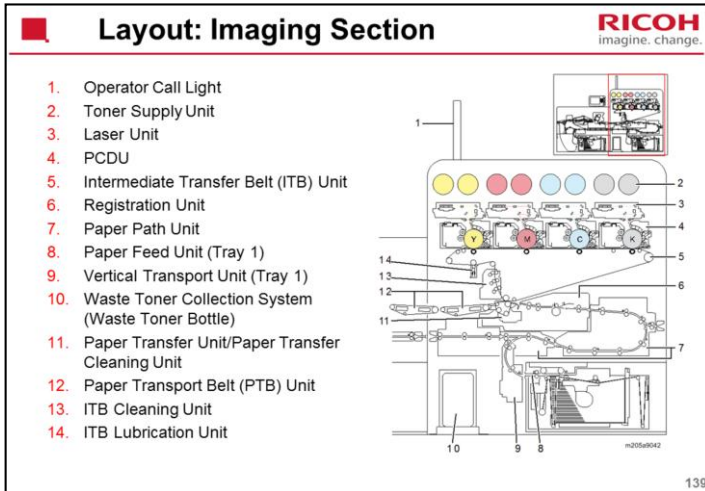
RICOH
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The diagram illustrates the internal layout of a Ricoh copier, divided into two main sections: the Fusing Section on the left and the Imaging Section on the right. The Imaging Section is shown with four color-coded toner cartridges (yellow, magenta, cyan, and black) and a drum unit. The Fusing Section shows the paper path leading to the fuser assembly. A dashed vertical line separates the two sections. A small reference code 'w_m205a3001' is located near the bottom center of the diagram.

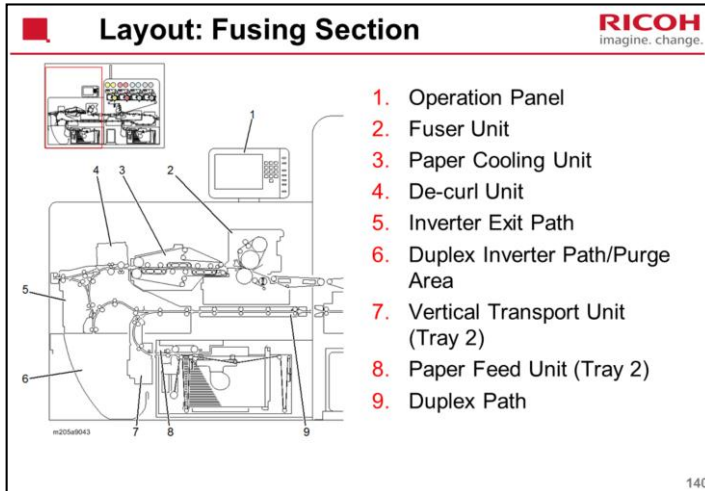
- The machine consists of two large modules:
 - Imaging Section
 - Fusing Section

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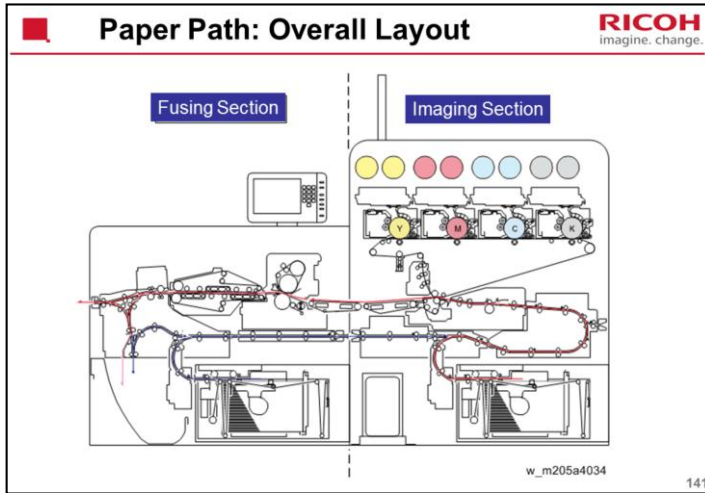
No additional notes



No additional notes



No additional notes

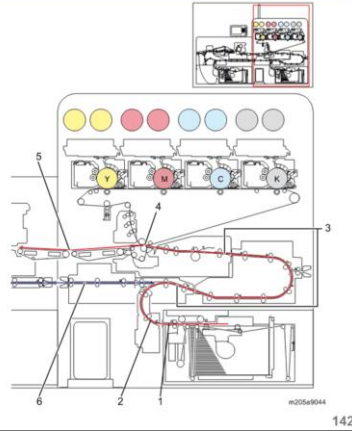


No additional notes

■ Paper Path: Imaging Section

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1. Paper Feed Path
2. Vertical Transport Path
3. Paper Path (Tray 1)
4. Paper Transfer Path
5. Paper Transport Path
6. Paper Path (Tray 2)

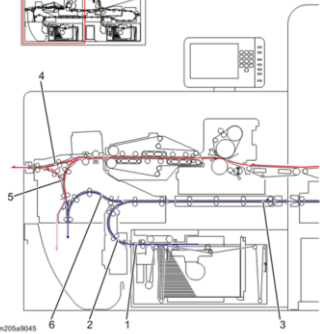
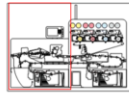


No additional notes



Paper Path: Fusing Section

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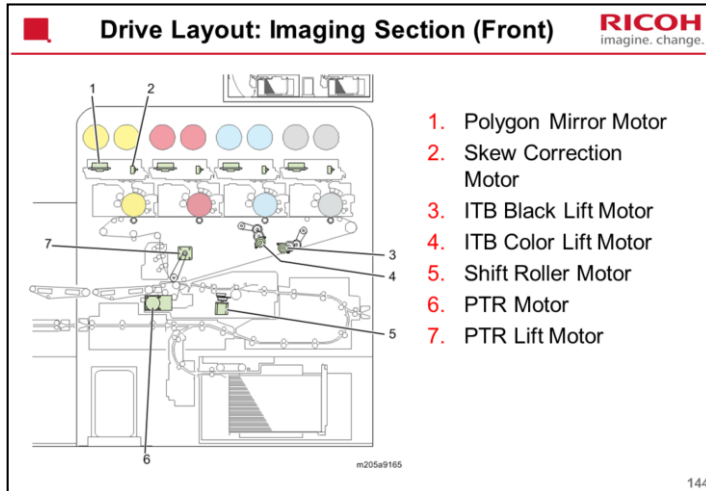


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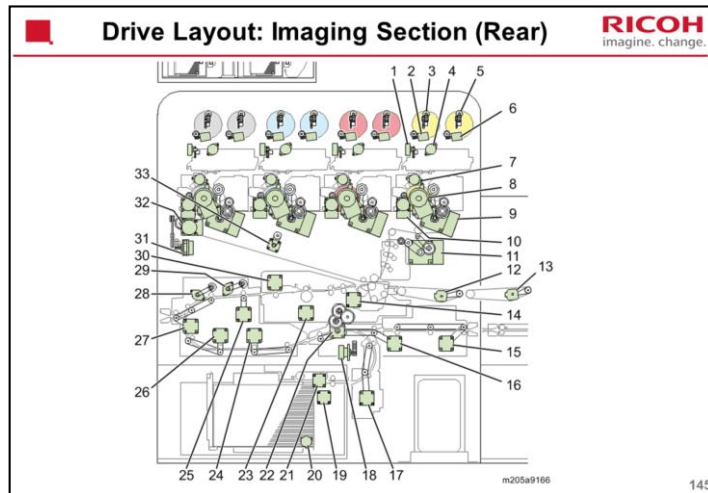
143

1. Paper Path (Tray 2)
2. Vertical Transport Path
3. Paper Path (Tray 2)
4. Straight-through Path
5. Inversion Path
6. Duplex Path

No additional notes

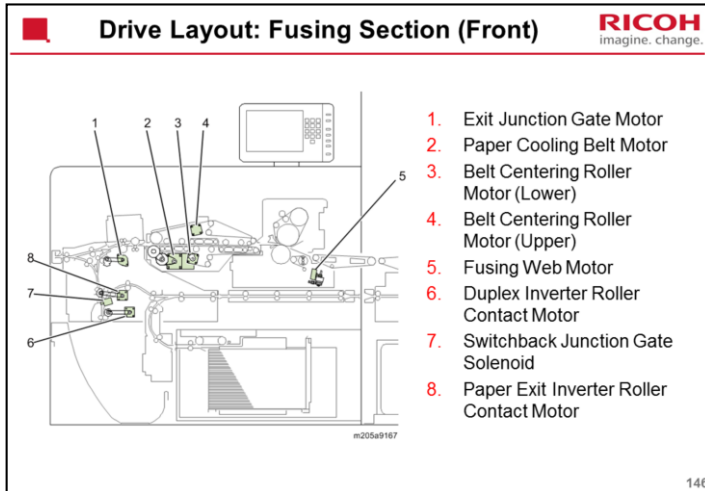


No additional notes

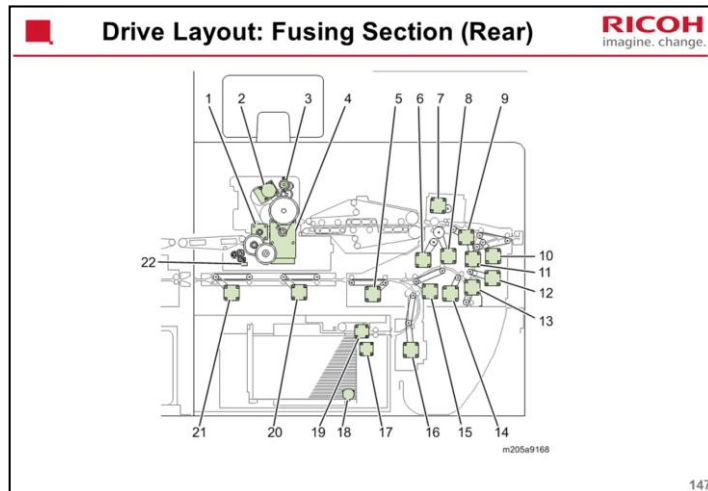


1. Toner Agitator Motor
2. Toner Bottle Motor 2
3. Toner Bottle Open Motor 2
4. Toner Supply Motor
5. Toner Bottle Open Motor 1
6. Toner Bottle Motor 1
7. Charger Cleaning Motor
8. Drum Motor
9. Development Motor
10. Drum Cleaning Motor
11. ITB Cleaning Motor
12. 1st PTB Motor
13. 2nd PTB Motor
14. PTR Timing Motor
15. Paper Transport Motor 4
16. Paper Transport Motor 5
17. Vertical Transport Motor (Tray 1)
18. Waste Toner Transport Motor (Lower)
19. Paper Transport Motor (Tray 1)
20. Tray Lift Motor (Tray 1)
21. Paper Feed Motor (Tray 1)
22. PTR Pressure Motor
23. Rotary Gate Motor
24. Paper Transport Motor 6
25. Registration Entrance Motor 2
26. Paper Transport Motor 7
27. Registration Entrance Motor 1
28. Registration Roller Lift Motor 2
29. Registration Roller Lift Motor 1
30. Registration Timing Motor
31. Waste Toner Transport Motor (Upper)

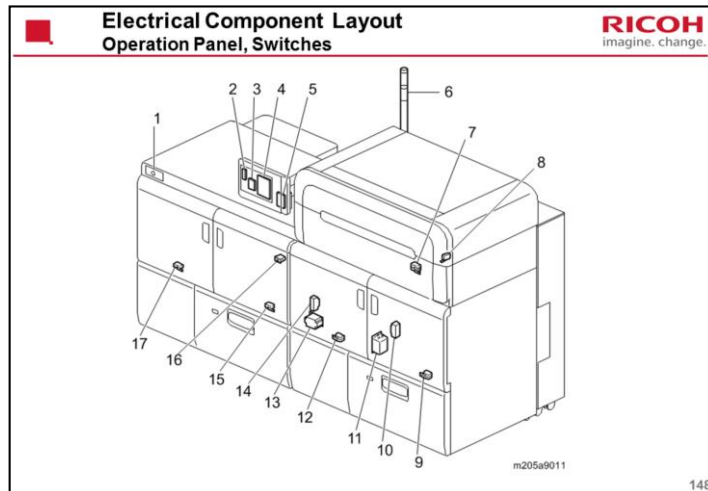
32. ITB Motor
33. PTR Pressure Motor



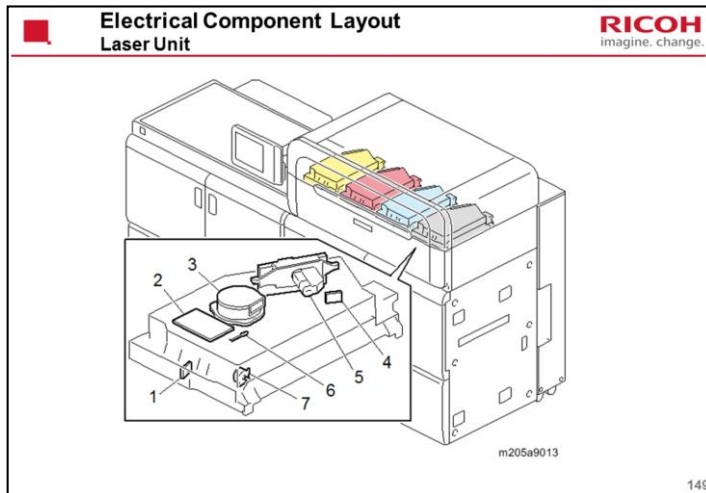
No additional notes



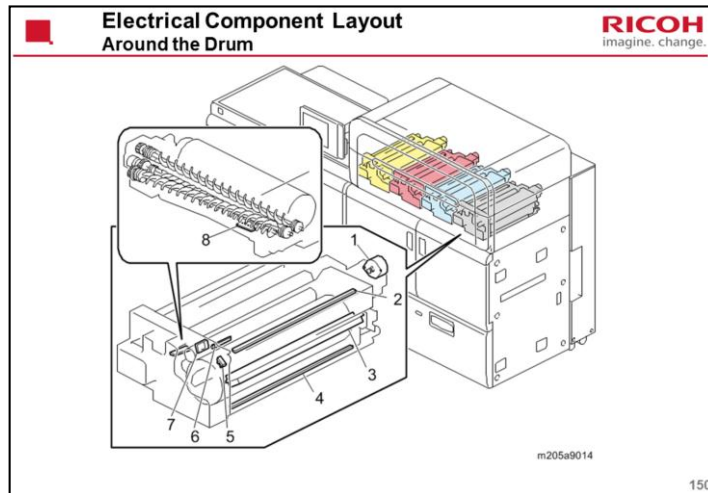
1. Press Roller Lift Motor
2. Fusing Refresh Roller Motor ('Refresh Roller' is also known as the 'Smoothing Roller' for the fusing belt).
3. Fusing Refresh Roller Contact Motor
4. Fusing Motor
5. Paper Transport Motor 1
6. De-curler Unit Motor 1
7. De-curler Unit Motor 2
8. De-curler Transport Motor 2
9. De-curler Transport Motor 1
10. Paper Exit Motor
11. Inverter Entrance Motor
12. Paper Exit Inverter Motor
13. Duplex Inverter Motor
14. Duplex Transport Motor 1
15. Duplex Transport Motor 2
16. Vertical Transport Motor (Tray 2)
17. Paper Transport Motor (Tray 2)
18. Tray Lift Motor (Tray 2)
19. Paper Feed Motor (Tray 2)
20. Paper Transport Motor 3
21. Paper Transport Motor 2
22. Cleaning Web Contact Motor



1. Main Power Switch (Push switch)
2. OPU:TP
3. LCDC
4. OPU:IO
5. SD Card/USB
6. Operator Call Light
7. Interlock Switch: Upper Front Cover
8. Toner Hopper Cover Open Switch
9. Interlock Switch: Right Front Door (Imaging Section)
10. Breaker (Imaging Section)
11. Noise Filter (Imaging Section)
12. Interlock Switch: Left Front Door (Imaging Section)
13. Noise Filter (Fusing Section)
14. Breaker (Fusing Section)
15. Interlock Switch: Right Front Door (Fusing Section)
16. AC Power Switch
17. Interlock Switch: Left Front Door (Fusing Section)



1. Laser Synchronization Detector (Leading Edge)
2. Polygon Motor PCB
3. Polygon Motor
4. Laser Synchronization Detector (Trailing Edge)
5. LD Unit
6. Thermistor
7. Skew Motor

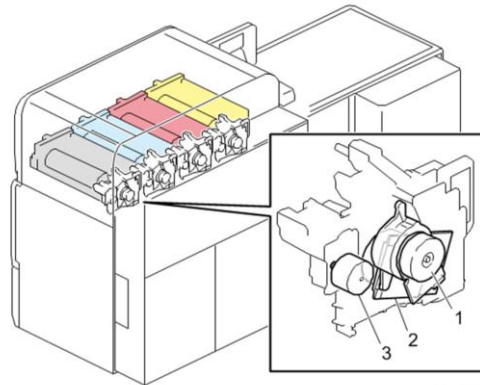


1. Charger Cleaning Motor
2. Quenching Lamp
3. Lubricant End Detection Switch
4. Quenching Lamp
5. Cleaning Pad HP Sensor
6. Potential Sensor
7. Temperature/Humidity Sensor (K/Y only)
8. Toner Density Sensor (TD Sensor)



Electrical Component Layout Around the Drum

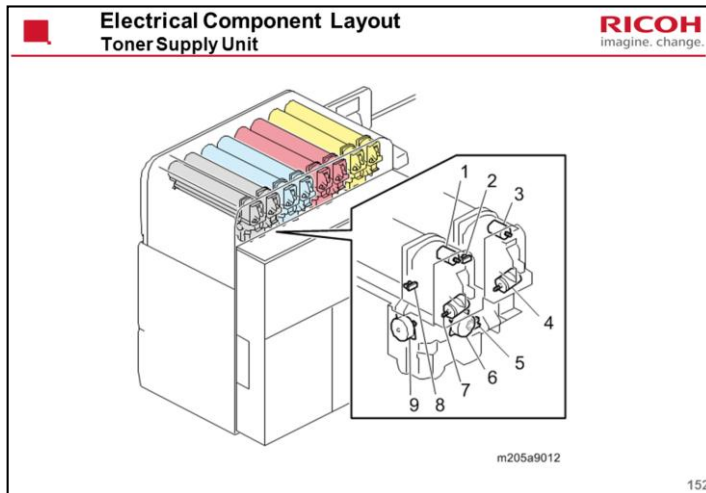
RICOH
imagine. change.



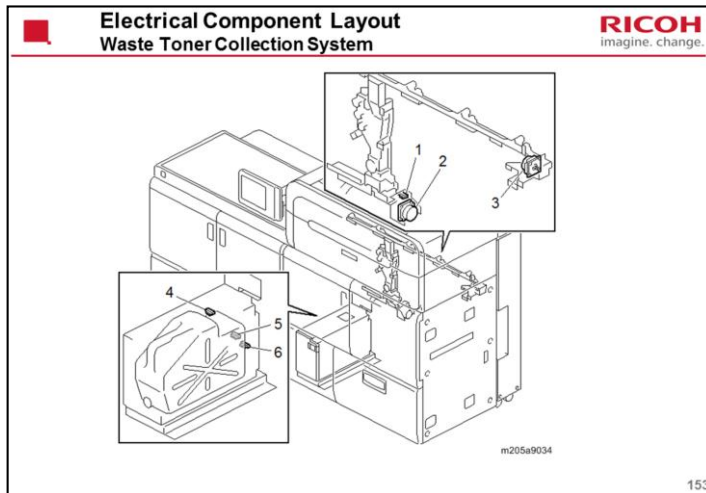
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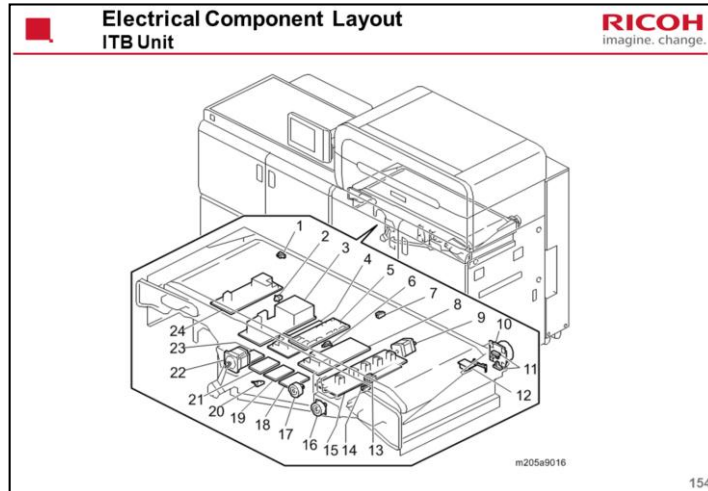
1. Drum Motor
2. Development Motor
3. Drum Cleaning Motor



1. Toner Bottle Open Motor 2
2. Toner Bottle Detect Sensor 1
3. Toner Bottle Open Motor 1
4. Toner Bottle Motor 1
5. Toner End Sensor
6. Toner Supply Motor
7. Toner Bottle Motor 2
8. Toner Bottle Detect Sensor 2
9. Toner Agitator Motor



1. Waste Toner Transport Motor Lock Sensor
2. Waste Toner Transport Motor (Lower)
3. Waste Toner Transport Motor (Upper)
4. Waste Toner Bottle Set Sensor
5. Waste Toner Bottle Full Sensor
6. Waste Toner Bottle Near Full Sensor



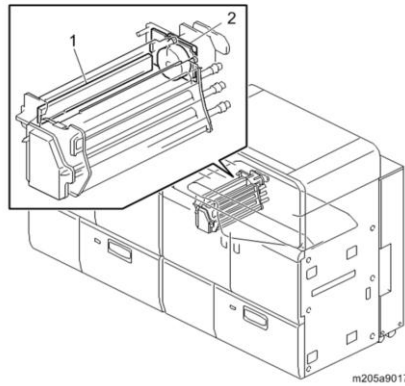
1. ITB Belt Centering Roller Sensor
2. ITB Cleaning Unit Set Sensor
3. AC Power Pack
4. ITB Cleaning HVP (-) (K, C)
5. TDRB
6. ITB Belt Overrun Sensor (Front)
7. ITB Color Lift Sensor
8. ITB Cleaning HVP (-) (M, Y)
9. PTR Pressure Motor
10. ITB Motor
11. ITB Motor Rotation Sensor
12. ITB Belt Centering Sensor
13. ITB Belt Speed Sensor
14. TB Black Lift Sensor
15. Transfer Power Pack
16. ITB Black Lift Motor
17. ITB Color Lift Motor
18. ITB Cleaning HVP (-) (K)
19. ITB Cleaning HVP (+) (C)
20. ITB Belt Overrun Sensor (Rear)
21. ITB Cleaning HVP (+) (M)
22. PTR Lift Motor
23. ITB Cleaning HVP (+) (Y)

24. DC Power Pack



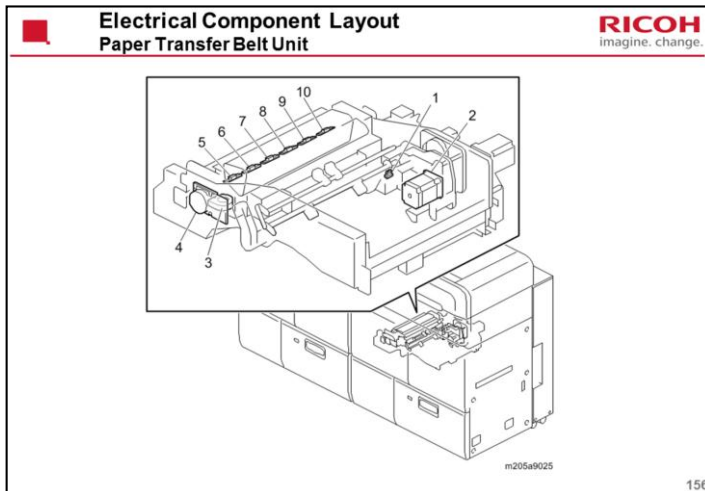
Electrical Component Layout
ITB Cleaning Unit

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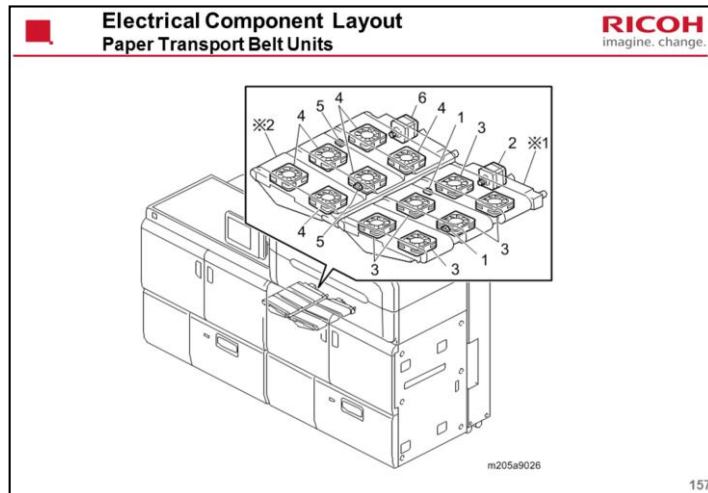


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1. ITB Lubrication Unit End Switch
2. ITB Cleaning Motor

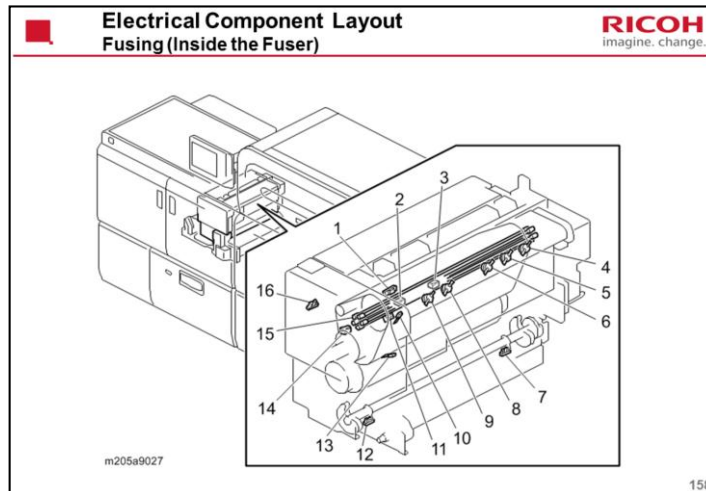


1. PTR Position Sensor
2. PTR Pressure Motor
3. ID Sensor Cleaning Fan
4. PTR Motor
5. MUSIC sensor: Front
6. ID Sensor: K
7. ID Sensor: C
8. ID/MUSIC Sensor: M/Center
9. ID Sensor: Y
10. MUSIC sensor: Rear



- *1. 1st Paper Transport Belt (PTB) Unit
- *2. 2nd Paper Transport Belt (PTB) Unit

- 1.PTB Transport Sensor
- 2.PTB Motor
- 3.PTB Fan
- 4.PTB Fan
- 5.PTB Transport Sensor
- 6.PTB Motor



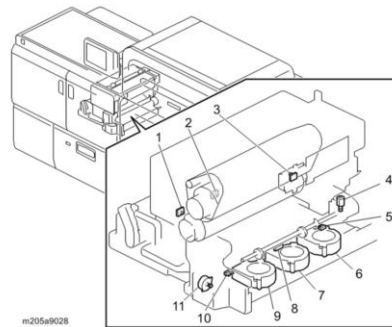
1. Fusing Exit Sensor (Back): Detects when paper wraps around the fusing belt
2. Fusing Exit Sensor (Center): Detects jams at the fusing belt or pressure roller; monitors paper feed timing
3. Fusing Exit Sensor (Rear): Detects jams at the fusing belt or pressure roller; monitors paper feed timing
4. Heating Roller Thermostat 5
5. Heating Roller Thermostat 4
6. Heating Roller Thermostat 3
7. Pressure Roller Home Position Sensor 2
8. Heating Roller Thermostat 2
9. Heating Roller Thermostat 1
10. Heating Roller Thermistor (Edge)
11. Accordion Jam Sensor
12. Pressure Roller Home Position Sensor 1
13. Fusing Belt Thermistor (Edge)
14. Fusing Exit Sensor (Front): Detects jams at the fusing belt or pressure roller; monitors paper feed timing
15. Fusing Lamps: The lamps are identical but must be connected carefully. This will be explained later.
16. Smoothing Roller Contact Sensor

Why do we have three fusing exit sensors in a row (front, middle, rear)?

If there is only the center sensor, and for example the pick off pawl catches the paper leading edge, the leading edge could still reach this sensor. Then the machine does not detect a jam and the fusing unit continues to operate, and a concertina jam occurs, pushing the pawl, and damages the pressure roller.

But if there is a front and rear sensor, and the above problem occurs, the three

sensors will not detect the leading edge at the same time, and a jam is detected.

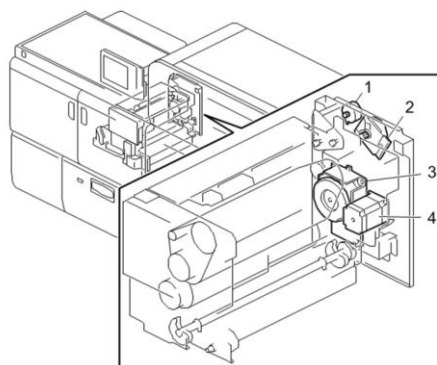


1. Pressure Roller Thermopile (Edge)
2. Pressure Roller Thermopile (Center)
3. Heating Roller Thermopile
4. Cleaning Web Contact Motor
5. Cleaning Web Contact Sensor
6. Pressure Roller Intake Fan 3
7. Pressure Roller Intake Fan 2
8. Web End Sensor
9. Pressure Roller Intake Fan 1
10. Web End Sensor
11. Fusing Web Motor



Electrical Component Layout Fusing (Fuser Belt Smoothing)

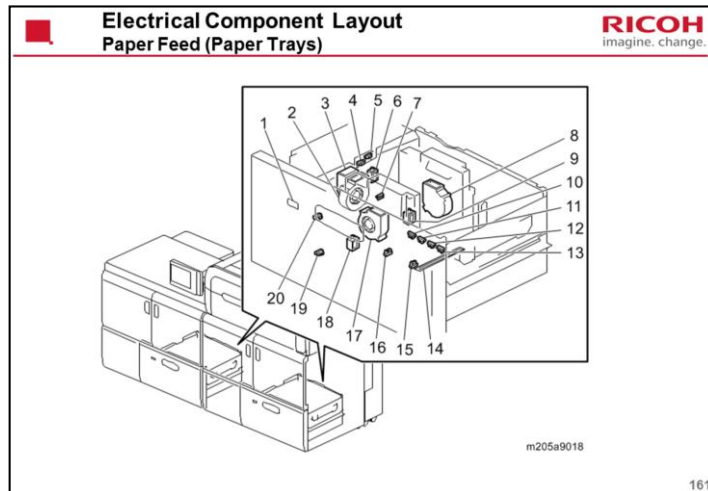
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1. Fusing Smoothing Roller Contact Motor
2. Fusing Smoothing Roller Motor
3. Fusing Motor
4. Pressure Roller Lift Motor

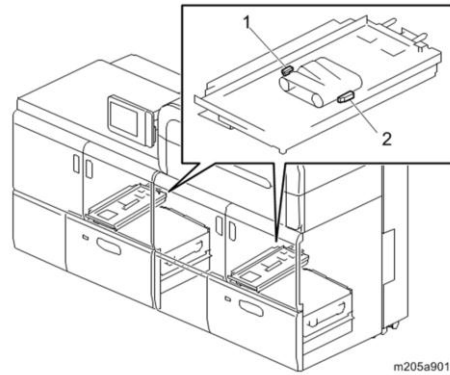


1. LED
2. Separation Fan
3. Float Fan
4. Upper Limit Sensor 2 (Paper Upper Limit Sensor)
5. Upper Limit Sensor 1 (Paper Upper Limit Sensor)
6. Float Solenoid
7. Paper Height Sub Sensor
8. Separation Rear Fan
9. Separation Solenoid Rear
10. Paper Size Sensor 1
11. Paper Size Sensor 2
12. Paper Size Sensor 3
13. Paper Size Sensor 4
14. Tray Heater
15. Paper Length Sensor 2
16. Paper Length Sensor 1
17. Separation Front Fan (Tray 2)
18. Separation Solenoid Front (Tray 2)
19. Lower Limit Sensor
20. Paper Height Middle Sensor



Electrical Component Layout
Paper Feed (Paper Transport Unit)

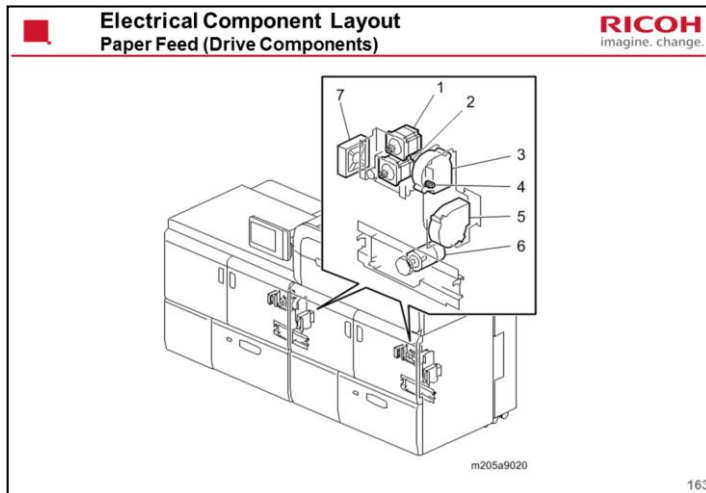
RICOH
imagine. change.



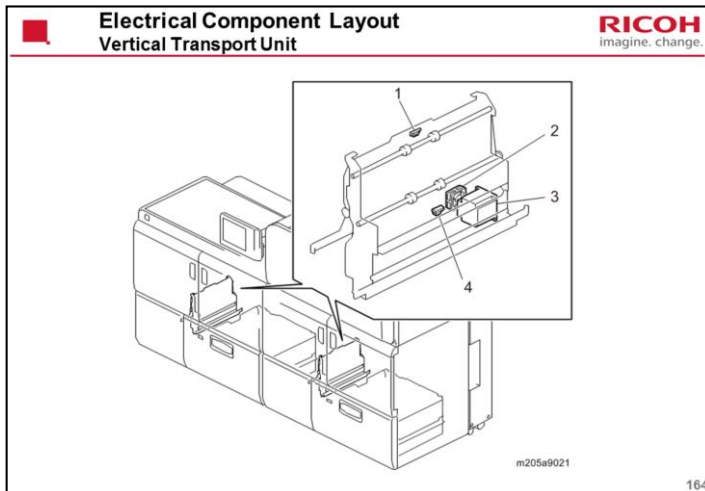
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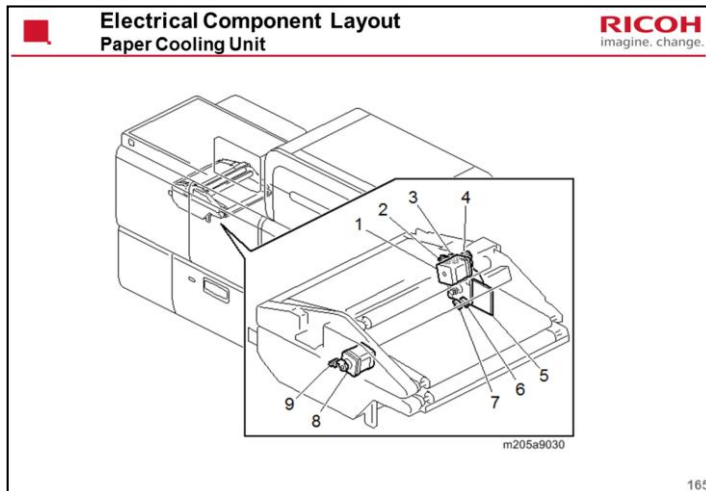
1. Paper Feed Sensor
2. Paper End Sensor



1. Paper Feed Motor
2. Paper Transport Motor
3. Suction Fan 1
4. Over Limit Sensor (Tray Upper Limit Sensor)
5. Suction Fan 2
6. Vertical Transport Motor
7. Paper Transport Motor Fan



1. Vertical Transport Sensor 2
2. Vertical Transport Motor Fan
3. Vertical Transport Motor
4. Vertical Transport Sensor 1

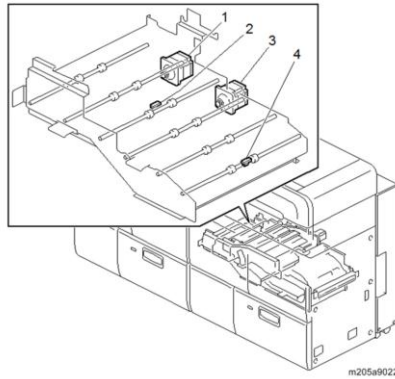


1. Belt Centering Roller Motor (Upper)
2. Belt Overrun Sensor (Upper 2)
3. Belt Overrun Sensor (Upper 1)
4. Belt Centering Roller Sensor (Upper)
5. Paper Cooling Belt Motor
6. Belt Overrun Sensor (Lower 1)
7. Belt Overrun Sensor (Lower 2)
8. Belt Centering Roller Motor (Lower)
9. Belt Centering Roller Sensor (Lower)



Electrical Component Layout Registration (Left Side)

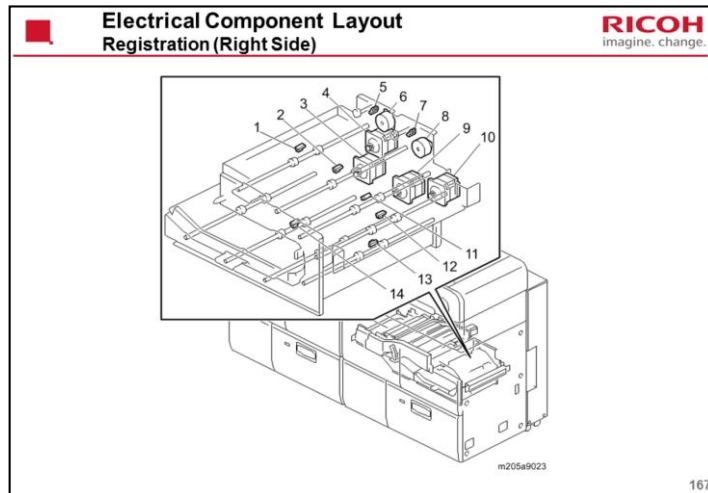
RICOH
imagine. change.



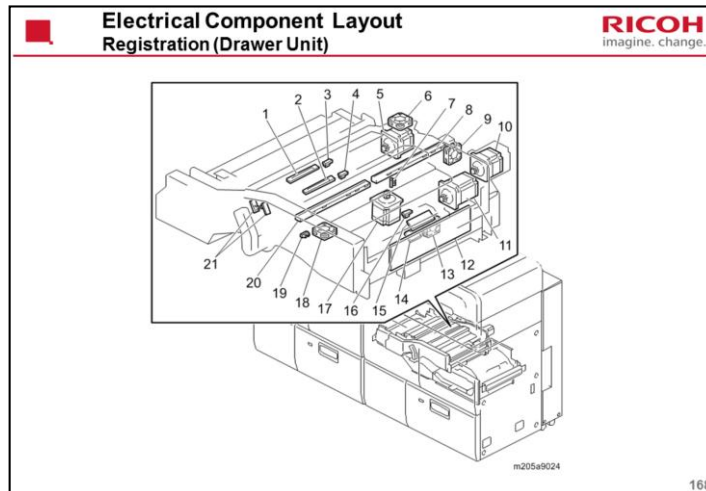
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166

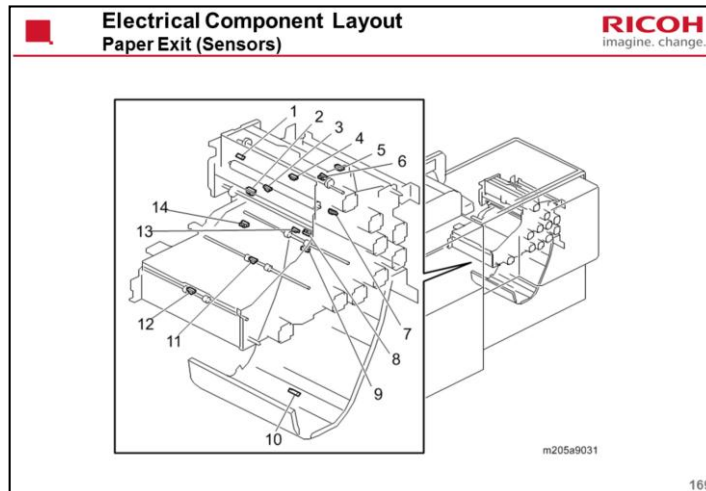
1. Paper Transport Motor 4
2. Paper Transport Sensor 4
3. Paper Transport Motor 5
4. Paper Transport Sensor 5



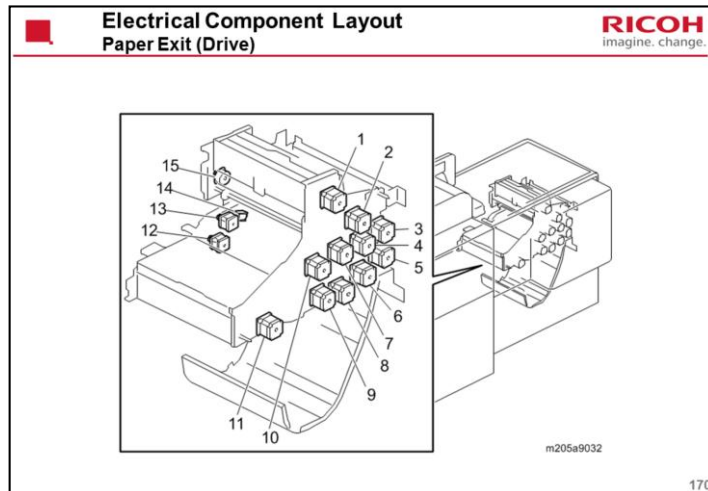
1. Registration Entrance Sensor 3
2. Registration Entrance Sensor 2
3. Paper Transport Motor 6
4. Registration Entrance Motor 2
5. Registration Roller Home Position Sensor 1
6. Registration Roller Lift Motor 1
7. Registration Roller Home Position Sensor 2
8. Registration Roller Lift Motor 2
9. Paper Transport Motor 7
10. Registration Entrance Motor 1
11. Registration Entrance Sensor 1
12. LCT Relay Sensor
13. Paper Transport Sensor 6
14. Paper Transport Sensor 7



1. CRB2 (CRB: CIS Relay Board)
2. CRB1
3. Auto Media Size Feedback Sensor 2 (also sometimes called T-ACT Sensor 2; T-ACT is an acronym for 'Two-face Auto Correct Technology')
4. Auto Media Size Feedback Sensor 1 (also sometimes called T-ACT Sensor 1)
5. PTR Timing Motor
6. PTR Timing Motor Cooling Fan
7. Shift Unit Home Position Sensor
8. CIS (Rear)
9. Registration Timing Motor Fan
10. Registration Timing Motor
11. Rotary Gate Motor
12. DRB
13. Registration Cooling Fan
14. URTB (Double-Feed Sensor: Emitter)
15. URRB (Double-Feed Sensor: Receptor)
16. Registration Timing Sensor
17. Shift Roller Motor
18. CIS Cleaning Fan
19. Rotary Gate Home Position Sensor
20. CIS (Front)
21. Registration Encoder Sensor



1. De-curler Unit Home Position Sensor 2
2. De-curler Unit Home Position Sensor 1
3. De-curler Entrance Sensor
4. De-curler Exit Sensor
5. Paper Exit Sensor
6. Exit Junction Gate Home Position Sensor
7. Paper Exit Inverter Sensor
8. Paper Exit Inverter Roller Home Position Sensor
9. Duplex Inverter Sensor
10. Purge Tray Paper Sensor
11. Duplex Transport Sensor 2
12. Paper Transport Sensor 1
13. Duplex Transport Sensor 1
14. Duplex Inverter Roller Home Position Sensor

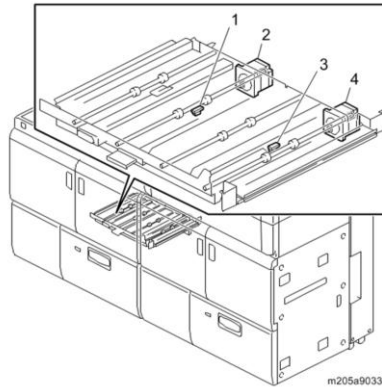


1. De-curler Unit Motor 2
2. De-curler Transport Motor 1
3. Paper Exit Motor
4. Inverter Entrance Motor
5. Paper Exit Inverter Motor
6. Duplex Inverter Motor
7. De-curler Transport Motor 2
8. Duplex Transport Motor 1
9. Duplex Transport Motor 2
10. De-curler Unit Motor 1
11. Paper Transport Motor 1
12. Duplex Inverter Roller Contact Motor
13. Paper Exit Inverter Roller Contact Motor
14. Switchback Junction Gate Solenoid
15. Exit Junction Gate Motor



Electrical Component Layout Duplex Path

RICOH
imagine. change.



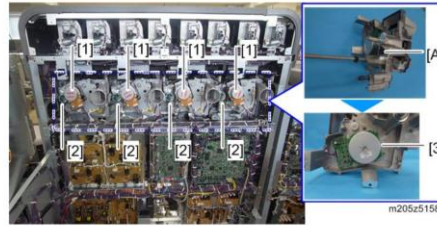
171

1. Paper Transport Sensor 2
2. Paper Transport Motor 2
3. Paper Transport Sensor 3
4. Paper Transport Motor 3



Electrical Component Layout Motors in the Imaging Section

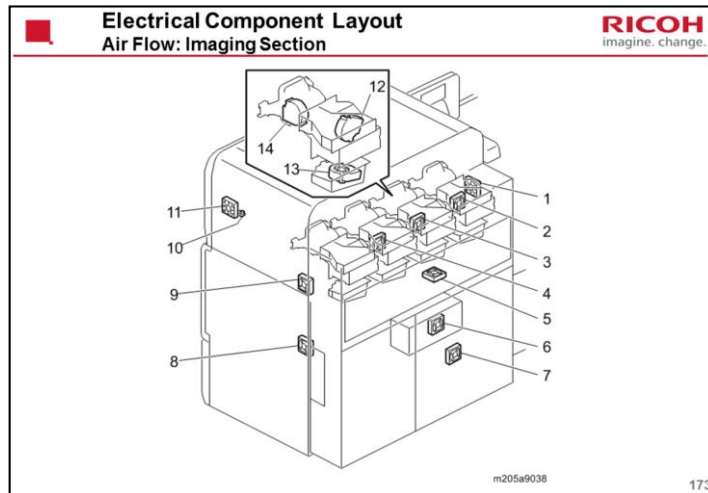
RICOH
imagine. change.



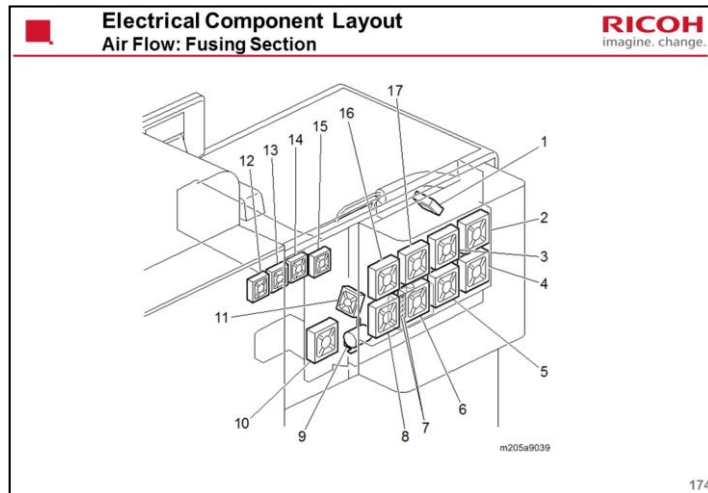
- To access these motors, open the rear box.
 1. Drum Motor (KCMY)
 2. Drum Cleaning Motor (KCMY)
 3. Development Motor (KCMY)
 - K, C, M, Y from the left
 - The development motor is located behind the Imaging Section Drive Unit [A]

172

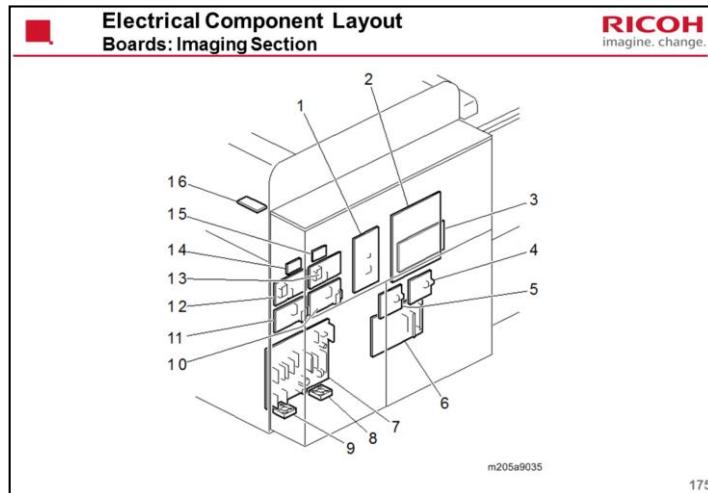
No additional notes



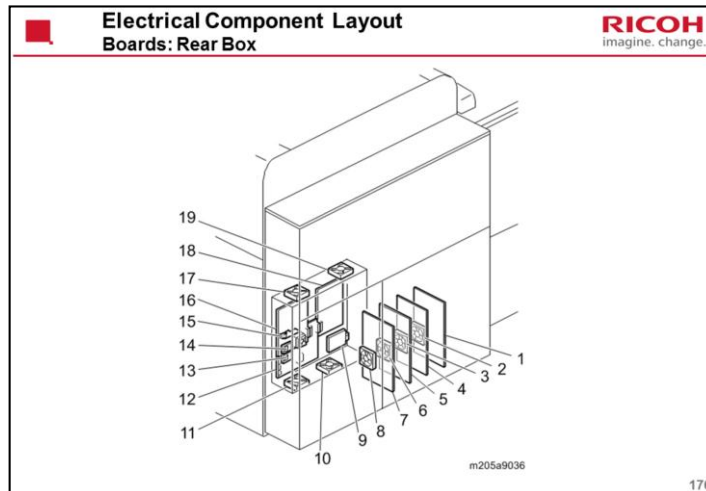
1. Exhaust Fan 3
2. Exhaust Fan 9
3. Exhaust Fan 8
4. Exhaust Fan 1
5. Waste Toner Collection Fan
6. PSU Exhaust Fan
7. Exhaust Fan 4
8. Registration Exhaust Fan
9. Exhaust Fan 2
10. Temperature/Humidity Sensor (Main)
11. Laser Unit Cooling Fan
12. Development Unit Cooling Fan
13. Ozone Exhaust Fan
14. Charger Entrance Fan



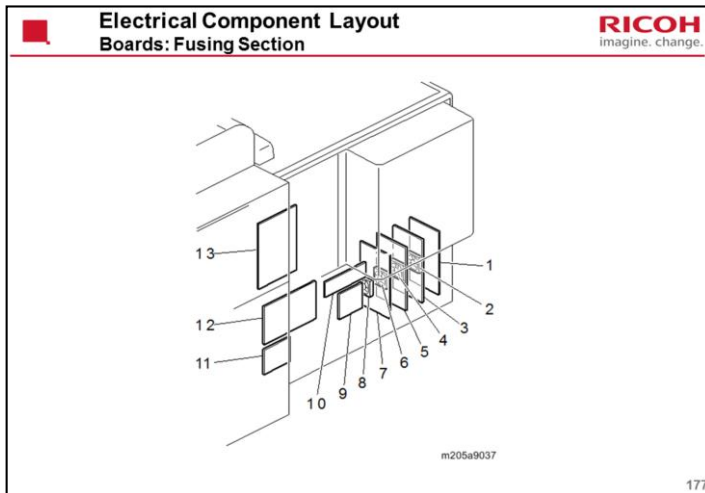
1. De-curler Motor Cooling Fan
2. Paper Cooling Belt Fan 4
3. Paper Cooling Belt Fan 3
4. Paper Cooling Belt Fan 8
5. Paper Cooling Belt Fan 7
6. Paper Cooling Belt Fan 6
7. Paper Cooling Remain Switch
8. Paper Cooling Belt Fan 5
9. Paper Coolant Pump
10. Pressure Roller Exhaust Fan
11. Paper Exit Inverter Motor Fan
12. Exhaust Fan 5
13. Exhaust Fan 6
14. Exhaust Fan 7
15. Anti-condensation Fan
16. Paper Cooling Belt Fan 1
17. Paper Cooling Belt Fan 2



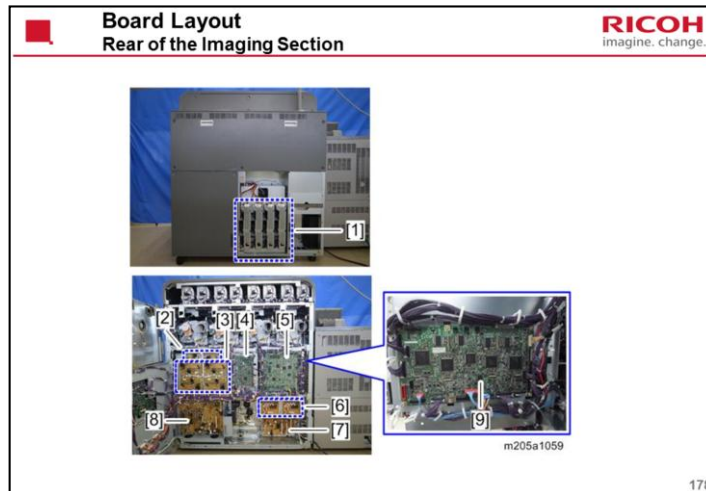
1. TDCU
2. IOB 1
3. BCU
4. NRYF 1
5. NRYF 2
6. AC Drive Board 1
7. PSU 3
8. PSU Fan 4
9. PSU Fan 3
10. Charge/Development HVP (Y)
11. Charge/Development HVP (M)
12. Charge/Development HVP (K)
13. Charge/Development HVP (C)
14. Drum Cleaning HVP (K)
15. Drum Cleaning HVP (CMY)
16. Potential Sensor Board



1. PSU 5
2. PSU Fan 6
3. PSU Fan 5
4. PSU 4
5. PSU 2
6. PSU Fan 2
7. PSU 1
8. PSU Fan 1
9. HDD
10. Controller Fan 4
11. Controller Fan 3
12. DTU (Data Transfer Unit)
13. SD Slot Board 1
14. SD Slot Board 2
15. Giga-Ethernet Board
16. Controller Board
17. Controller Fan 1
18. IPU
19. Controller Fan 2



1. PSU 9
2. PSU Fan 10
3. PSU 8
4. PSU Fan 9
5. PSU 7
6. PSU Fan 8
7. PSU 6
8. PSU Fan 7
9. NRYF 4
10. SDB
11. NRYF 3
12. AC Drive Board 2
13. IOB2



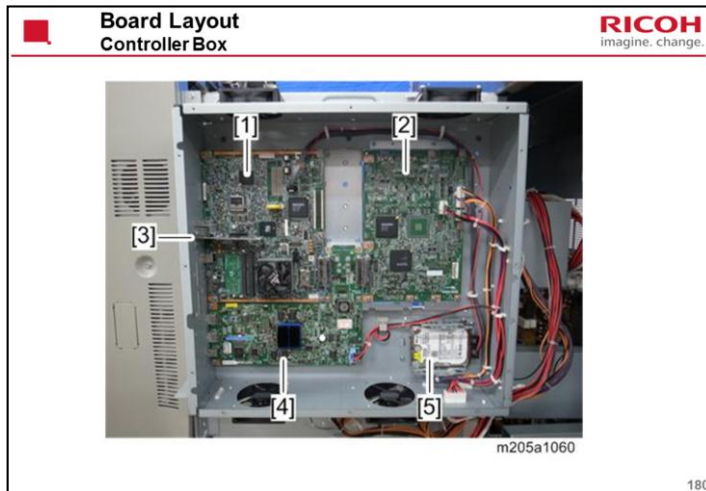
1. Drum Cleaning HVP (K/CMY)
K: left side, CMY: right side
2. Charge/Development HVP (K/C/M/Y)
K: upper left, C: upper right, M: lower left, Y: lower right
3. TDCU
4. IOB 1
5. NRYF 1-2
NRYF 1: right side, NRYF 2: left side
6. AC Drive Board 2
7. PSU 3
8. BCU
Located behind IOB 1
9. PSU 1, 2, 4, 5
PSU 1, PSU 2, PSU 3, PSU 4 from the left

To replace these electrical components, first open the rear box or remove the rear box right lower cover.



1. IOB 2
2. AC Drive Board 1
3. SDB
4. PSU 6-9
PSU 6, PSU 7, PSU 8, PSU 9 from the left
5. NRYF 3-4
NRYF 3: left side, NRYF 4: right side

To replace these components, first remove the rear upper left cover, duct cover, or rear lower cover of the fusing section.



1. Controller Board
2. IPU
3. Giga-Ethernet Board
4. DTU (Data Transfer Unit)
5. HDD unit

To replace the electrical components in the controller box, open the rear box, and then remove the controller box cover.



m205a1452

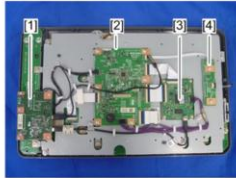


1. Potential Sensor Board



Board Layout Operation Unit

RICOH
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m205a1449

1. SD Card/USB
2. OPU:IO
3. LCDC
4. OPU:TP
5. KEY: Sub
6. KEY: Main
7. KEY: Appli

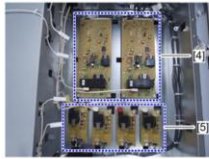
182

No additional notes



Board Layout ITB Unit

RICOH
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1. Paper Transfer DC Power Pack
2. Paper Transfer AC Power Pack
3. TDRB
4. ITB Cleaning HVP (-)
5. ITB Cleaning HVP (+)
6. Transfer Power Pack



183

No additional notes

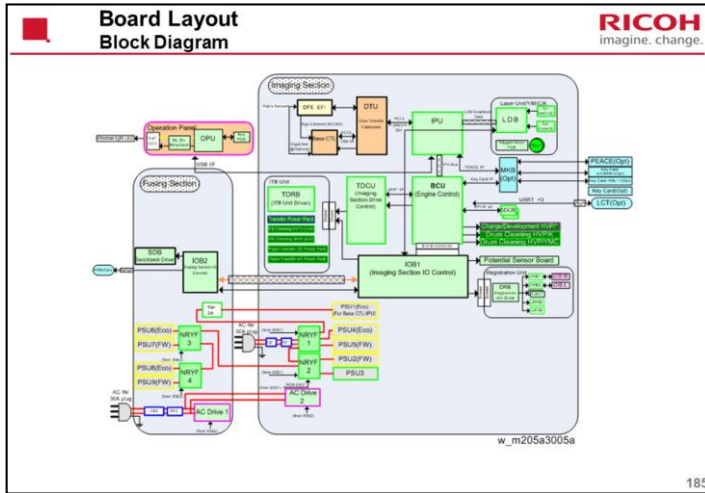


Board Layout Registration Unit



1. DRB
2. URTB
3. URRB
4. CRB (CIS Relay Board) 2
5. CRB (CIS Relay Board) 1
6. CIS2
7. CIS1
8. Auto Media Size Feedback Sensor 1
9. Auto Media Size Feedback Sensor 2

No additional notes



At the bottom left of this diagram, you can see how the various power supply boards are connected up.



Descriptions of the Main Boards - 1

RICOH
imagine. change.

- BCU (Base Control Unit): This board has two CPUs and controls the engine.
- Controller Board: This board has the main CPU, the sub CPU for energy saving control, and the microprocessor for switch control. It controls turning the machine on/off, energy saving, and printing timing for the external controller.
 - The LAN function on this board supports @Remote and Web Image Monitor.
 - Unlike other models, this controller board does not control image processing except for list printing and SMC printing.

186

No additional notes



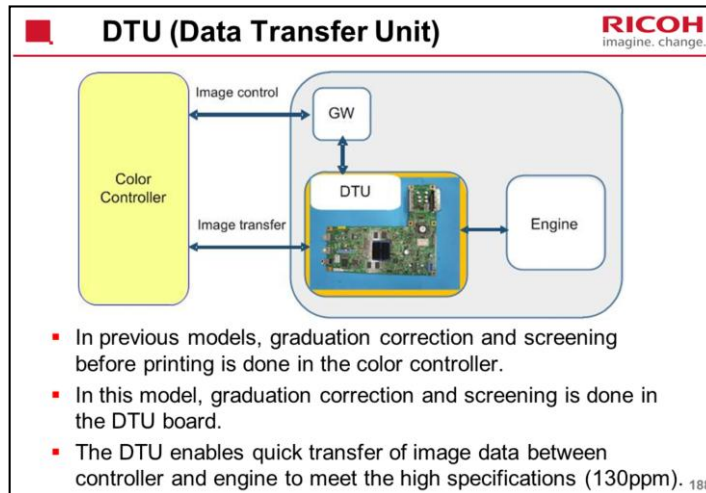
Descriptions of the Main Boards - 2

RICOH
imagine. change.

- IOB 1 (In/Out Control Board): Controls sensors, motors, and fans in the imaging section.
- IOB 2 (In/Out Control Board): Controls sensors, motors, and fans in the fusing section.
- TDCU (Transfer Unit Drive Control Unit): Controls sensors and motors in the ITB unit.
- TDRB (Transfer Unit Drive Board): Receives sensor signals and drives motors and fans in the ITB unit.
- DRB (Drive Board): Receives sensor signals and drives motors and fans in the registration unit.
- SDB (Switchback Drive Board): Receives sensor signals and drives motors and fans in the paper switchback and duplex path.
- NRYF1-4 (Noise Filter Relay Fuse Board): Contains noise filters, relays, and fuses for the AC input section.
- AC Drive Board: Controls AC for the fusing lamps.

187

No additional notes



The DTU also performs edge processing, if selected by the user. This makes sure that the edges of characters and shaded areas are sharp.

To correct the graduations, the DTU refers to the graduation settings stored in the color controller, and to the results of IBACC (IBACC calibrates the greyscale, especially the middle to highlight range).

If user performs graduation correction with color measurement tools, the correction applied to the graduation settings in the color controller are also transferred to the DTU.

Because IBACC is done frequently, customers should not need to do the ACC adjustment.



SD Card Slots



- [A]: SD card slot 1 (option slot)
- [B]: SD card slot 2 (service slot)
- Optional SD cards can be set in either slot 1 or slot 2. However, slot 2 is the service slot, so we recommend that you use slot 1 to install the SD card options.

No additional notes

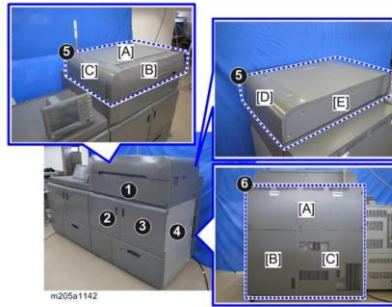


Details of all procedures are in the service manual. These slides only go over a few important points.



Imaging Section

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- Remove all covers from 5-A to 5-E when you work on the toner supply unit.
- Remove cover 5-E before you open the rear box.

191

- 1 Upper Front Cover
- 2 Left Front Door (Imaging Section)
- 3 Right Front Door (Imaging Section)
- 4 Right Cover (Imaging Section)
- 5 Toner Supply Unit Cover
- 5-A Toner Supply Top Cover
- 5-B Toner Supply Front Cover
- 5-C Toner Supply Left Upper Cover
- 5-D Toner Supply Right Upper Cover
- 5-E Toner Supply Rear Cover
- 6 Rear Box
- 6-A Rear Box Upper Cover
- 6-B Rear Box Left Lower Cover
- 6-C Rear Box Right Lower Cover



Fusing Section

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m205a1141

192

1. Left Cover (Fusing Section)
2. Left Front Door (Fusing Section)
3. Right Front Door (Fusing Section)
4. Rear Upper Left Cover (Fusing Section)
5. Duct Cover (Fusing Section)
6. Rear Lower Cover (Fusing Section)



Rear Box Open

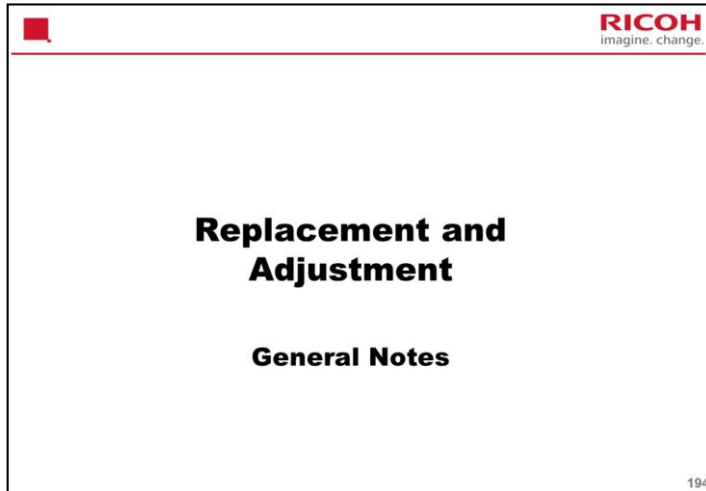
RICOH
imagine. change.



m205a1058

193

No additional notes



Details of all procedures are in the service manual. These slides only go over a few important points.



Before Starting to Work on the Machine

RICOH
imagine. change.

- Turn off the power using the procedure shown below.
 - Turn off the main power switch.
 - Turn off the AC power switch.
 - Disconnect the two power cords (one is located at the rear of the imaging section, one is located at the rear of the fusing section).
 - Wait 20 minutes for the machine to cool down.

195

No additional notes



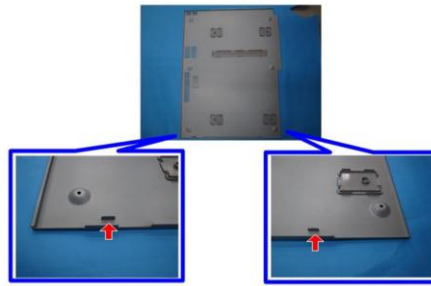
- The following units are heavy, so two or more people are required to remove/install them.
 - Paper Trays 1 and 2
 - Registration Unit (Right)
 - Registration Unit (Left)
 - Drawer Unit
 - Paper Exit Unit
 - Paper Cooling Unit

No additional notes



Many of the Covers have Hooks

RICOH
imagine. change.



- Take care not to break the hooks when removing covers.
- The service manual shows where these hooks are.

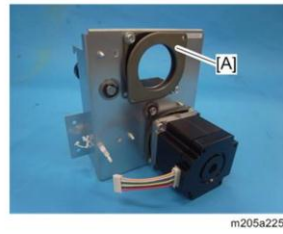
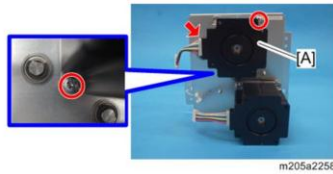
197

No additional notes



Motors

RICOH
imagine. change.



- Many of the motors have dampers attached between the motor and its supporting bracket.
- These dampers are adjusted in the factory. Do not adjust or remove them in the field.
 - Example above: Paper feed motor

198

No additional notes

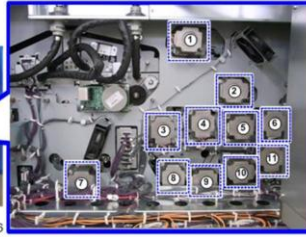


Motors at the Rear of the Paper Exit Unit

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imagine. change.



m205a2796



- When you need to access motors at the rear of the paper exit unit, pull out the paper exit unit to the service position.
 - How to pull the unit to the service position: Service Manual > Replacement and Adjustment > Paper Switch Back and Duplex Path Unit

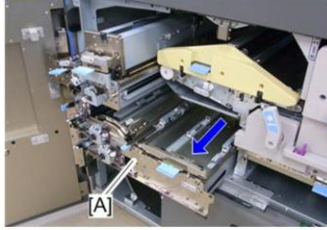
199

It's quite a long procedure.



Paper Exit Unit at the Service Position

RICOH
imagine. change.



- Here is the paper exit unit at the service position (pulled out by about 20 cm).
- Take care not to let the unit fall forwards out of the machine.
- The unit is heavy. Two people should work on it.

200

No additional notes



Cleaning

RICOH
imagine. change.

- Roller Cleaning
 - Clean with a dry cloth. Do not touch the surfaces of the rollers with bare hands.
- Sensor Cleaning
 - Clean with a blower brush. Do not use cloth or tissue paper.
 - Most of the sensors are below holes in plates, so they are difficult to see.
 - Insert the tip of the blower brush into the hole and squeeze to blow paper dust off the sensor.

201

No additional notes



Details of all procedures are in the service manual. These slides only go over a few important points.



When Removing a Power Supply Unit

RICOH
imagine. change.

- Do not touch solder and electronic parts on the PSU after removing it, because electric charge is left in the inside the PSU.
- After removing the PSU, do not put it on a conductive object such as one made from metal.

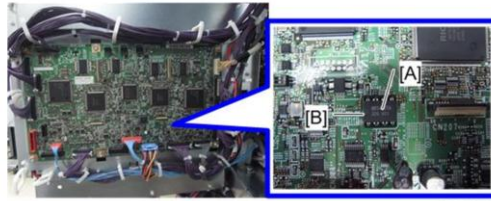
203

No additional notes



NVRAM on the BCU Board

RICOH
imagine. change.



m205a1093

- When you replace the BCU, remove the NVRAM (EEPROM) [A] from the old BCU, and then install it on the new BCU.
- Install it so that the indentation [B] on the NVRAM is facing to the left.

204

If you forget to install the NVRAM on the new BCU, the machine will not activate and remain in "Please wait" status even with the main power switch turned on.



After Replacing the BCU Board

RICOH
imagine. change.

- Do the following with SP mode, or an SC may occur.
 - Input the machine serial number.
 - Select the paper size system.
 - Specify the area code.
- See the procedure in the service manual for details.

205

No additional notes

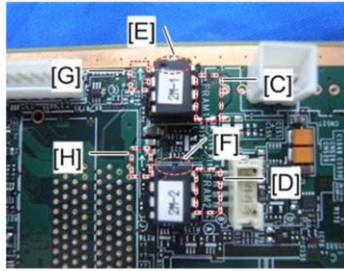


m205a1071

- When replacing the controller board, remove the NVRAMs [A, B] from the old controller board, and install them at the same position on the new board.
 - If this is not done, SC195-00 occurs.
- If you have to replace the NVRAMs, replace both of them as a set. Don't replace just one.

206

When installing new NVRAMs, follow the instructions in the manual carefully. There are SPs to do, and other things.



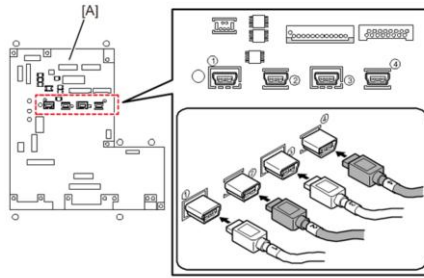
- Install NVRAM (2M-1) in the "FRAM-1" socket [C].
 - The indentation [E] must point in the direction of the arrow [G] on the controller board.
- Install NVRAM (2M-2) in the "FRAM-2" socket [D].
 - The indentation [F] must point in the direction of the arrow [H] on the controller board.

No additional notes



IPU Board

RICOH
imagine. change.



m205a1463

- When reconnecting the USB cables, match the numbers on the cables with the numbers printed on the board.

208

No additional notes



Detailed Section Descriptions

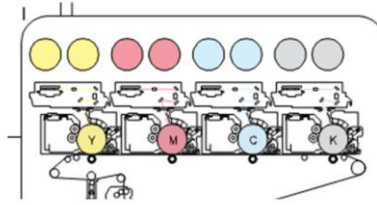
Laser Unit

No additional notes



Overview

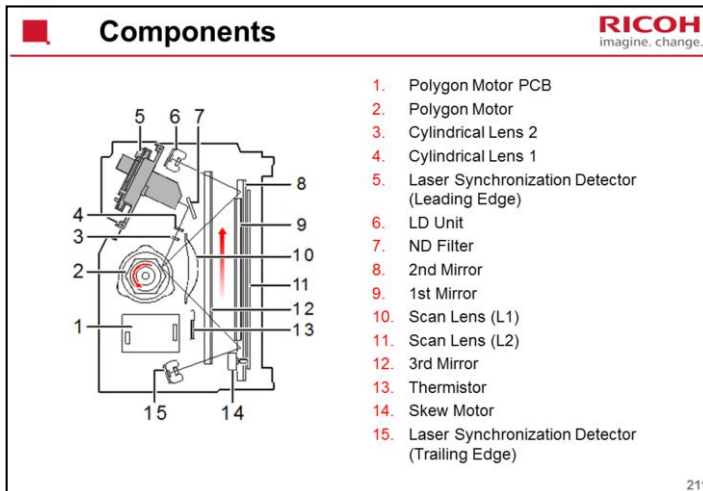
RICOH
imagine. change.



- There are 4 separate units, one for each color.
- The laser unit is under the toner supply unit for each color.

210

No additional notes

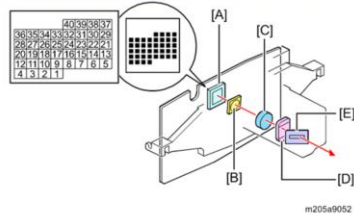


No additional notes



Laser Unit Structure

RICOH
imagine. change.



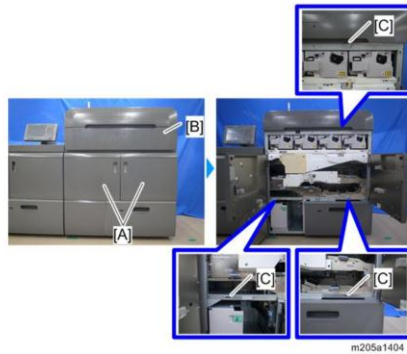
- 40-beam VCSEL array.
- Light path: VCSEL [A] > $\frac{1}{4}$ wavelength board [B] > Collimating lens [C] > TCL lens [D] > Aperture [E]

212

No additional notes

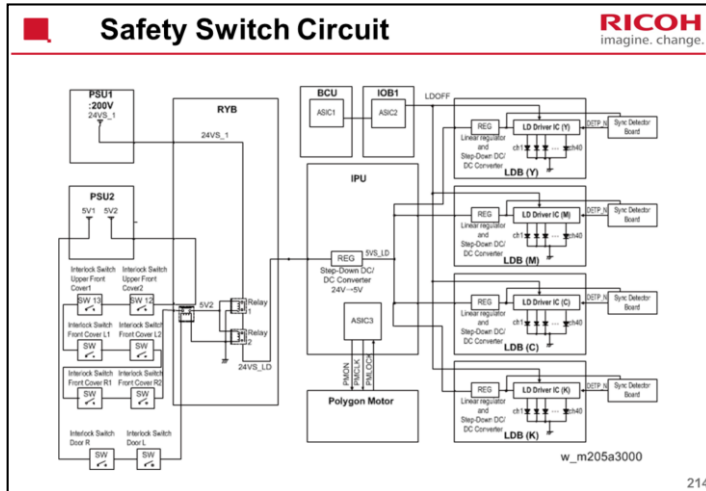


Safety Switch Locations



- The LD safety switches [C] disable the laser beams at these times:
 - When the front doors [A] of the imaging section are open
 - When the upper front cover [B] is not installed.

No additional notes

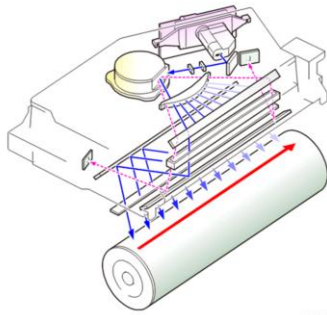


The LD safety switches are installed on the 5V line that connects the PSU to the LD.



Optical Path to the Drum

RICOH
imagine. change.



m205a9053

- The polygon motor has six mirrors.

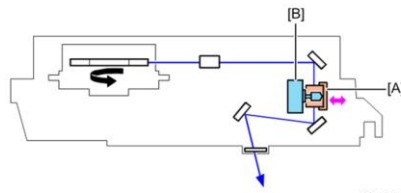
215

No additional notes



Skew Correction

RICOH
imagine. change.



m205a9054

- For each color, the scan lens (L2) [A] has an image skew correction motor [B] to correct skew.
- This corrects color registration errors in the sub scan direction.
- The laser unit for K also has this mechanism, but it is not used.

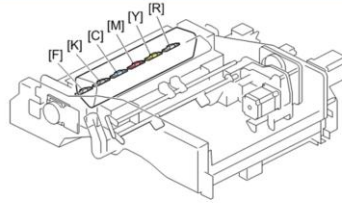
216

No additional notes



Image Position Correction

RICOH
imagine. change.



m205a9055

- To prevent color registration errors, the machine makes a pattern on the ITB and reads it with the MUSIC/ID sensor that is under the paper transfer belt unit.

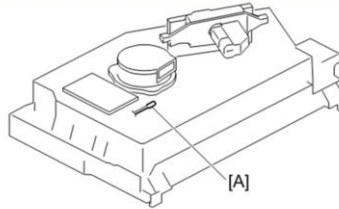
217

No additional notes



Thermal Monitoring

RICOH
imagine. change.



m205a9056

- The laser unit thermistor [A] in each laser unit monitors the temperature of each laser unit constantly.
- This sensor adjusts the image location in response to changes in the internal temperature.

218

No additional notes



Details of all procedures are in the service manual. These slides only go over a few important points.



Cautions

RICOH
imagine. change.

- Before adjusting or replacing the laser unit, turn the main power switch and AC power switch off then unplug the machine from the power source.
 - Allow the machine to cool for a few minutes.
 - The polygon motor continues to rotate for approximately one to three minutes after the machine is switched off.
- Do not turn on the power when the laser unit and the polygon cover are not installed.
- Ensure that after assembly, the polygon cover is completely closed.
- Do not turn on the power when the synchronization detectors are disconnected.
- Ensure that after assembly, the synchronization detectors are set correctly.

220

No additional notes



- Before removing the old unit, enter SP mode and zero the skew correction mechanisms.
 - If you do not do this, MUSIC may not work. because one or more of the motors may be at or near the upper or lower limit. Then, the range that the motor can move will be restricted and the adjustment may not be done correctly.

The procedure is in the service manual.



Replacing the Laser Unit - 2

RICOH
imagine. change.

- The laser unit for each color is under the toner bank for that color. The toner bank must be removed.
- The procedure is the same for each color.

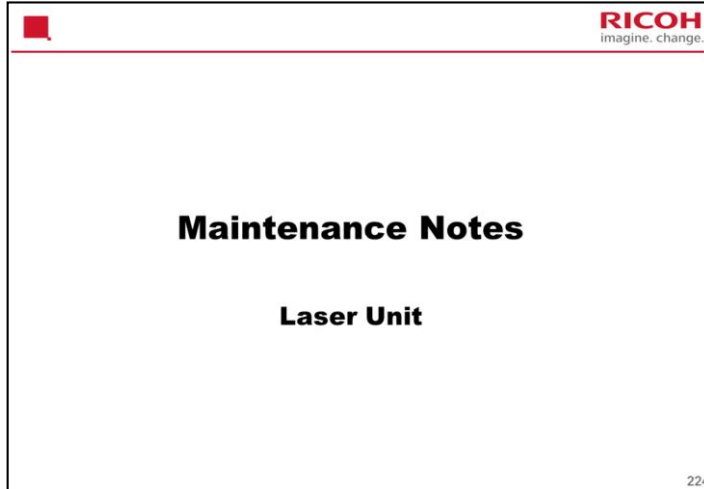
222

No additional notes



- After replacing the laser unit:
 - Enter SP mode and download the parameters from the new unit.
 - Initialize the on-time counter.
 - If you replaced the laser unit (Bk), adjust the skew using SP2-104-040 (Skew Adjustment Manual).
 - Adjust color registration with the user tool.

No additional notes

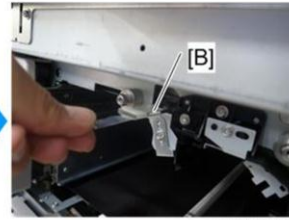
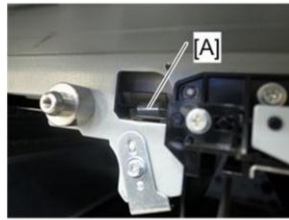


This section explains a few important points. For full details, see the procedures in the service manual. Obey all instructions in the service manual.



Clean the Toner Shield Glass

RICOH
imagine. change.



m205a1252

- Pull the strip [A] to take out the glass [B].
- Clean with a dry optical cloth.

225

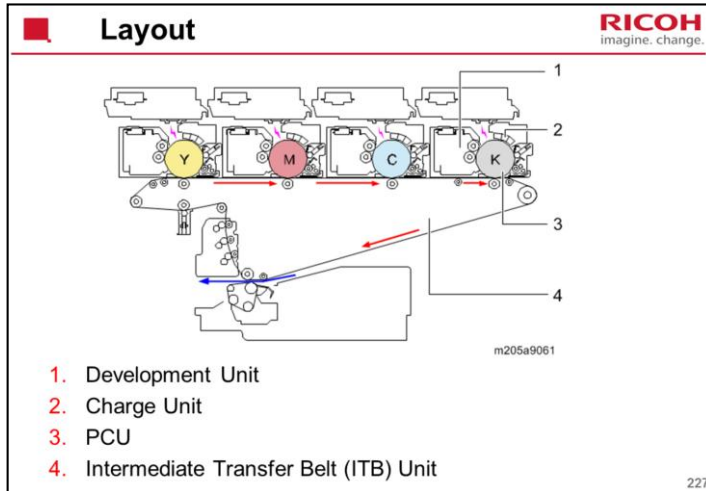
The procedure is in the maintenance section in the appendix of the service manual.



Detailed Section Descriptions

Photoconductor Unit

No additional notes

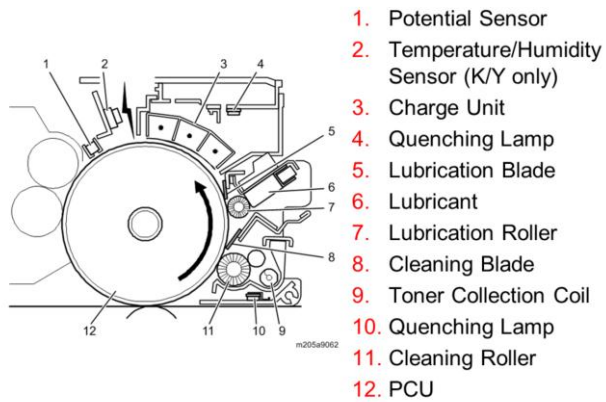


No additional notes



Around the Drum

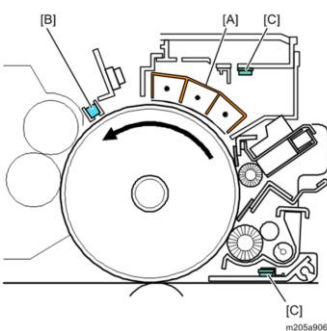
RICOH
imagine. change.



228

No additional notes

Charge and Quenching **RICOH**
imagine. change.



- The charge unit [A] is a Scorotron unit, using a charge wire and grid.
- The potential sensor [B] monitors the charge.
- Two quenching lamps [C] (LEDs) above and below the drum erase the charge on the drum after every drum rotation.

229

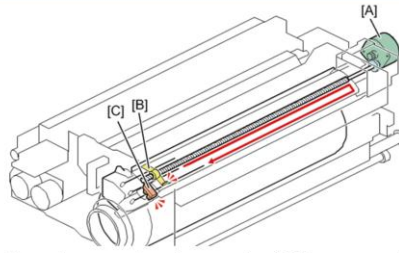
The lamp at the bottom removes charge from toner that is still on the drum after transfer (this is a pre-quenching lamp).

The lamp at the top is a quenching lamp. Light from this lamp shines through the grid of the charge corona unit (the grid on the right in the above diagram). As a result, some of the charge applied by this wire is dissipated, but the charge from the other two wires remains on the drum.



Corona Wire Cleaning



RICOH
imagine. change.



- When the charger cleaning motor [A] turns on, the cleaner moves from front to rear to clean the wires and grid.
- After cleaning, the cleaner returns to home position (detected by the cleaning pad HP sensor [C]).
- The machine automatically cleans the wires when process control is executed.

230

Dirty wires can cause uneven charging of the drum, which leads to poor image quality.

 SPs Related to Wire Cleaning	 <small>imagine. change.</small>
<ul style="list-style-type: none"> ▪ SP2-220-001: Timing of the automatic cleaning. ▪ SP2-220-006 to 009: Displays the number pages printed since the previous cleaning (converted to A4) ▪ SP2-220-010 to 013: Clears the SP2-220-006 to 009 counters <ul style="list-style-type: none"> – This SP is executed automatically when the automatic charger cleaning is completed. – Clear the counter with this SP when you remove the charge unit from the machine and clean it manually. – This SP is also executed automatically when the charge unit or corona wire is replaced and the remaining days counter of the charge unit is cleared. ▪ SP2-222-001 to 005: Manual wire cleaning <ul style="list-style-type: none"> – SP2-222-001 to 004 is for the single units (KCYM). SP2-222-005 is for all units. 	
231	

SP2-220-001: Selects the timing of the automatic charger cleaning. Default: 1

0: Done only when SP2-222-001 to 004 is executed.

1: Done when process control is executed after the printing count exceeds the number of pages specified in SP2-220-002 to 005. Cleaning is done before process control.

2: Done at the end of a job after the printing count exceeds the number of pages specified in SP2-220-002 to 005.

3: Done when the machine is turned on or recovers from energy saver mode under the specified environmental conditions, and when process control is done after the printing count exceeds the specified number of pages.

4: Done when the machine is turned on or recovers from energy saver mode under the specified environmental conditions, and at the end of a job after the printing count exceeds the specified number of pages.

SP2-220-002 to 005: Specifies the number of pages (converted to A4) for the automatic cleaning. Default: 3,000 pages

SP2-220-006 to 009: Displays the print page counter since the previous cleaning (converted to A4).

SP2-220-010 to 013: See the slide

SP2-220-014: Displays the environmental conditions when the power was turned on.

The environmental condition is determined according to absolute humidity calculated by the output of the temperature/humidity sensor (PCU1).

SP2-220-015: Specifies the environmental conditions for executing automatic cleaning at power on. Default: 6

Selections: “1: LLL”, “2: LL”, “3: ML”, “4: MM”, “5: MH”, “6: HH”

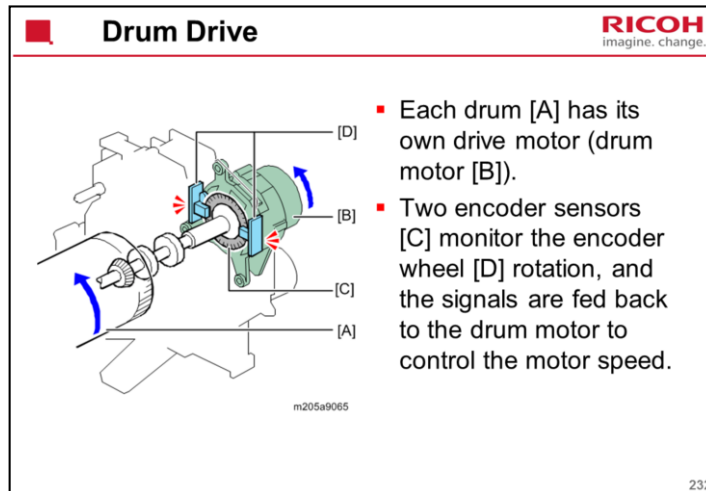
Thresholds between these states are determined by SP2-220-016 to 020

SP2-221-001 to 004: Displays the charger cleaning counter. Both automatic cleaning and manual cleaning (SP2-222-001 to 005) are counted.

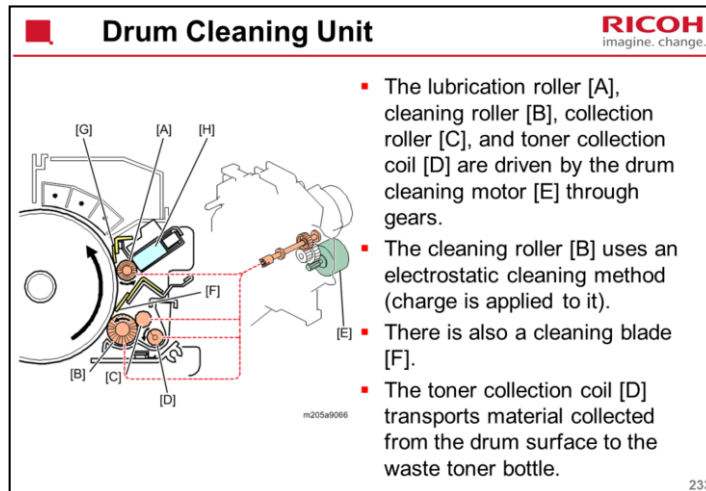
SP2-221-005 to 008: Clears the SP2-221-001 to 004 counters

This SP is executed automatically when the charge unit is replaced and the remaining days counter of the charge unit is cleared.

SP2-222-001 to 005: See the slide



The development unit and the PCU cleaning unit have different motors, to remove fluctuations in load in order to improve the precision of color registration.



The cleaning roller removes toner and silica (raw material of the lubricant) from the drum. This mechanism prevents toner and silica slipping past the cleaning blade [F], which helps to improve the service life of each part in the unit.

Drum Lubrication

RICOH
imagine. change.

The diagram illustrates the drum lubrication mechanism. It shows a cross-section of a drum with a counter blade method. The lubrication blade [G] and lubrication roller [A] apply lubricant [H] to the drum surface. The counter blade [F] is used to spread the lubricant uniformly. Other components labeled include [B], [C], [D], and [E].

- The lubrication blade [G] and lubrication roller [A] apply lubricant [H] to the drum surface.
- This improves the efficiency of cleaning.
- A counter blade method is used, to spread the lubricant uniformly.

m205a9066

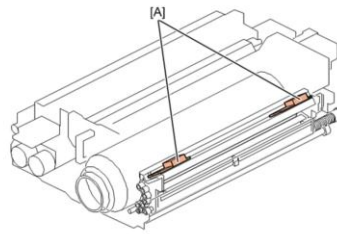
234

No additional notes



Lubricant Near-end Detection

RICOH
imagine. change.



m205a9067

- There are two lubricant end detection switches [A] on the back of the lubrication blade.
- When lubricant is detected to be low at either end, lubricant near-end occurs.

235

The lubrication blade is in the upper side of the cleaning unit.



Lubricant End Detection

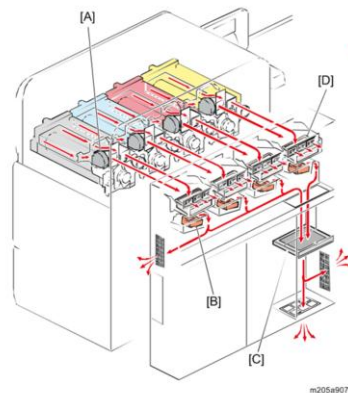
- When near-end is detected (as explained on the previous slide), the machine displays a near-end alert.
- A certain number of prints after this, lubricant end occurs, and the machine stops at the end of the job.
 - Number of prints: 32k (150 pages/job)

No additional notes



Cooling

RICOH
imagine. change.



- The charger entrance fans [A], ozone exhaust fans [B], ozone filters [C], and dust filters [D] cool the PCDU and remove ozone.

m205a9074

237

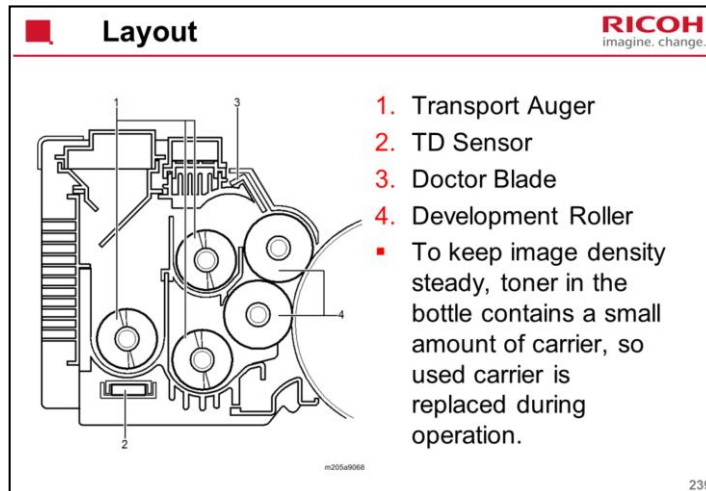
No additional notes



Detailed Section Descriptions

Development

No additional notes



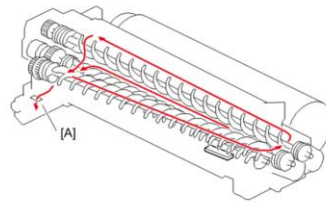
When a two-element developer is used, image quality varies gradually as the carrier ages, and regular developer replacement is essential to recover image quality. So replacement intervals are short and image quality can vary at every replacement.

The mechanism in this machine prevents carrier degradation in the developer unit by mixing a small amount of carrier with supplied toner and replacing developer gradually. This also helps to keep developer longer and to stabilize image quality for high speed printing.



Developer Turnover

RICOH
imagine. change.



m205a9069

- Toner and developer are supplied to the development unit from the toner bottle.
- If there is too much developer in the development unit, the excess developer is exhausted from the rear [A].

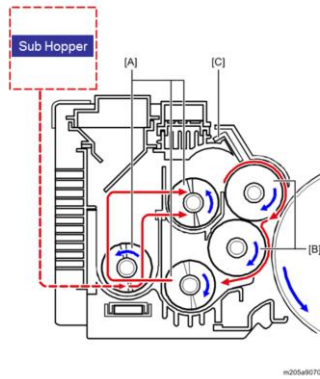
240

No additional notes



Agitation

RICOH
imagine. change.



- Three transport augers [A] mix toner from the toner bottle/sub hopper with the developer already in the development unit. Then, the mixture is transferred to the development rollers [B].
- The doctor blade [C] regulates the amount of mixed toner and developer on the development roller.

241

There are two development rollers (upper/lower). If the toner supply from the upper development roller is insufficient, the lower development roller covers a shortfall. The developer from the development roller is then transferred by lower transport auger.

Drive

RICOH
imagine. change.

- The development motor [C] drives the development rollers [A] and the transport augers [B] through couplings.
- Development bias is applied to the development sleeve shaft from the charge/development HVP.

m205a9071

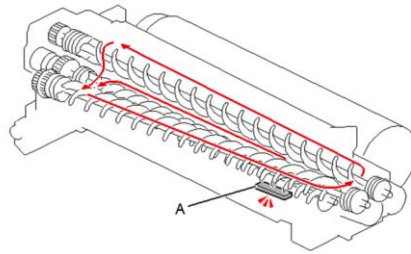
242

No additional notes



Toner Density Detection

RICOH
imagine. change.



m205a9072

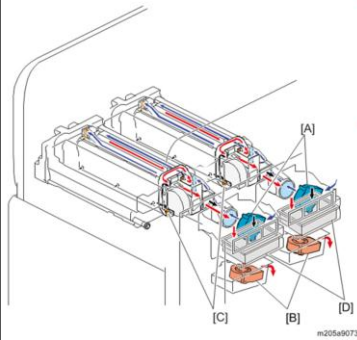
- The toner density sensor (TD sensor) at the front side of the inclined transport auger detects toner density.

243

No additional notes



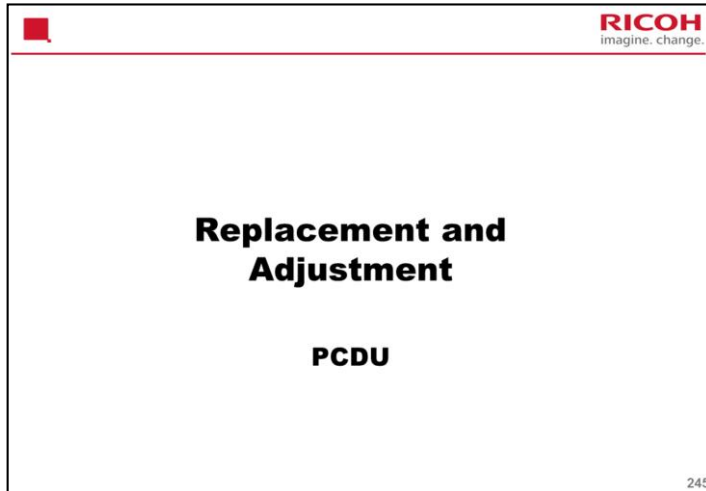
Cooling



- The development unit cooling fans [A] at the rear cool the development unit.
- Any toner scattered from the bottom of the development unit [C] is moved to the dust filter [D] by the ozone exhaust fan [B].

244

No additional notes



This section explains a few important points. For full details, see the procedures in the service manual. Obey all instructions in the service manual.



Overview



m205a1148

- The replacement procedures for the components of each PCDU are mostly the same, except for where noted in the service manual.

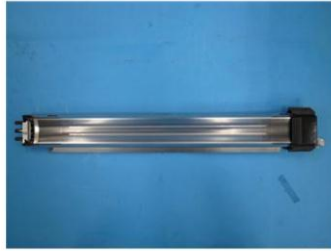
246

No additional notes



Charge Unit Removal

RICOH
imagine. change.



m205a1191

- After removal, place it on a clean flat surface with the grid pointing up.

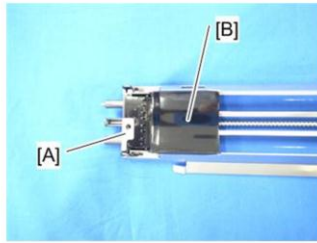
247

No additional notes



Charge Unit Re-assembly

RICOH
imagine. change.



m205a1196

- The cover [B] must be under the ground plate [A].

248

Be sure to handle the corona wires with care because they are very brittle and break easily.

Do not touch the corona wires with bare hands.

When you re-attach the corona wires, make sure they are inserted in the slits in the wire cushions.



Removing a PCDU

RICOH
imagine. change.

- Before removing a PCDU, remove the charge unit.

249

No additional notes

- When you replace the PCU cleaning lubrication roller, you must also replace the two polystyrene washers that are provided with the roller.
- After you replace the PCU cleaning roller or lubrication roller individually, you need to apply zinc stearate and yellow toner to them. This is not required if you replace the complete PCU cleaning unit.

No additional notes

■ Lubrication after Replacement - 1

RICOH
imagine. change.

- After you replace the PCU cleaning roller or lubrication roller individually, apply lubricant powder (D0159501, zinc stearate) and yellow toner (D0159500) to them. This is not required if you replace the complete PCU cleaning unit.
 - Use a soft brush to apply zinc stearate and yellow toner.
 - Prepare a 1:1 mixture of the two powders beforehand.
 - To prevent the PCU cleaning blade edge from being cracked or scratched, do not press the brush against it strongly.
 - If a mass of the powder adheres to the front side of the PCU cleaning blade, remove it with the brush to prevent the powder from entering the development unit.

251

Preparing the 1:1 mixture is the same as for V-C3.

1. Place a sheet of clean paper on a flat surface.
2. Pour a small amount of Yellow Toner (D0159500) from its bottle onto the paper.

This is V-C1 series yellow toner.

Do not use V-C2 or V-C3 or Andromeda yellow toner; this contains developer

3. Pour the same amount of Zinc Stearate (D0159501) from its bottle onto the paper.
4. Mix the two powders.

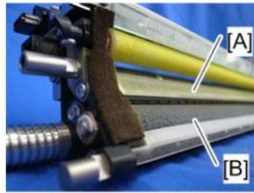




Lubrication after Replacement - 2

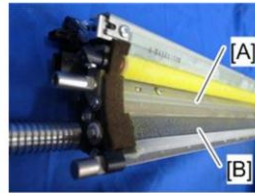
RICOH
imagine. change.

OK



m205a1379

NG



m205a1380

- To prevent the blade edge from being cracked or scratched, the PCU cleaning blade [A] must not contact the PCU cleaning roller [B] when you apply the mixture.

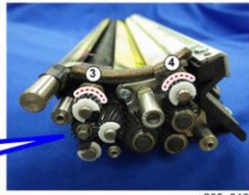
252

No additional notes



Cleaning Unit Gears

RICOH
imagine. change.



m205a0130

- When you replace the gears, apply grease (Barrierta S552R) to the areas shown above by red dotted lines (4 points), and then rotate the gears to apply the grease uniformly.

253

The maximum [A] and minimum [B] amount of grease you should use is shown in the manual .



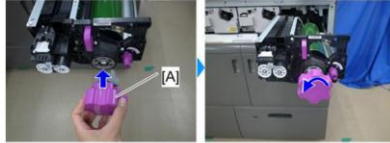
Removing the PCU from the PCDU - 1

RICOH
imagine. change.



m205a1330

- You need the special tool (torque limiter) to remove the PCU.
- Turn counterclockwise with the torque limiter [A] to unlock the PCU.



m205a1227

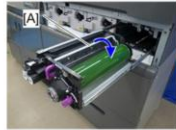
254

The torque limiter is one of the accessories provided with the machine. It is used to unlock and lock the drum.

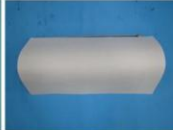


Removing the PCU from the PCDU - 2

RICOH
imagine. change.



m205a1228



m205a1229

- Rotate the lock handle [A] toward to you, then move the PCU in the upper right direction as viewed from front to remove it.
- After removing the PCU, place it on a clean, flat surface and cover it with a piece of paper to protect it from the light.

255

No additional notes



Attaching a New PCU - 1

RICOH
imagine. change.



m205a1416

- The new drum must be dusted with zinc stearate powder. Stand the drum on its end when you do this.
- Apply the amount shown. Only apply to half of the drum. If there is too much, remove it with a dry cloth.

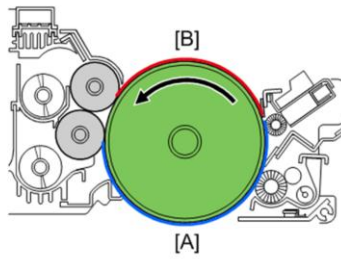
256

No additional notes



Attaching a New PCU - 2

RICOH
imagine. change.



- The powder must be applied within the blue area [A] as shown here.
 - If there is powder within the red area [B], powder may adhere to the development unit entrance seal and could cause vertical lines in printouts.

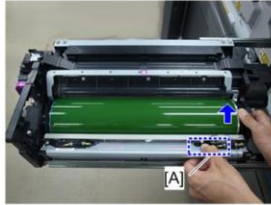
257

No additional notes



Attaching a New PCU - 3

RICOH
imagine. change.



- Attach the cleaning unit to the new drum.
- While pressing lightly on the PCU cleaning unit [A], rotate the PCU more than one-half turn in the direction of the arrow.

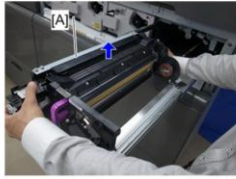
258

No additional notes



Removing the Development Unit

RICOH
imagine. change.



m205a1234



m205a1235

- Be sure to hold the right and left ends of the development unit when you lift it out.
- Otherwise, the development unit may get damaged.
- Place it on a clean flat surface.

259

No additional notes



Replacing Developer - 1

RICOH
imagine. change.



m205a1331

- Make sure that you have a funnel [A], developer disposal bag [B], and new developer [C].

260

No additional notes



Replacing Developer - 2

RICOH
imagine. change.

- First do SP 3-028.
 - This will dump toner to reduce toner density. (If toner density is already low enough, this SP will do nothing.)
 - This does the following:
 - Improves developer fluidity so that it can be removed more easily from the development unit.
 - Makes toner density close to the standard value, even if the development unit is not completely emptied and contains a small amount of old developer.
 - The result displayed in SP3-029-001 must be '1'.

261

No additional notes



Replacing Developer - 3

RICOH
imagine. change.



- Attach the developer disposal bag to the funnel.



m205a1339

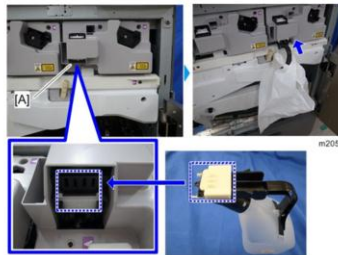
262

No additional notes



Replacing Developer - 4

RICOH
imagine. change.



- Attach the funnel to the draining port [A].
- Then execute SP3-022-003 to 006 to dump the developer.
 - It takes 150 seconds.
 - The result displayed in SP3-023-001 must be '1'.
- Remove the funnel.
Remove the waste developer bag from the funnel.

263

No additional notes



Replacing Developer - 5

RICOH
imagine. change.



m205a1336

- Attach the funnel to the draining port again.
- Fill the funnel with new developer.
- Then execute SP3-024-003 to 006 to add the new developer.
 - It takes 60 seconds.
 - The result displayed in SP3-025-001 must be '1'.
- Remove the funnel.

264

No additional notes



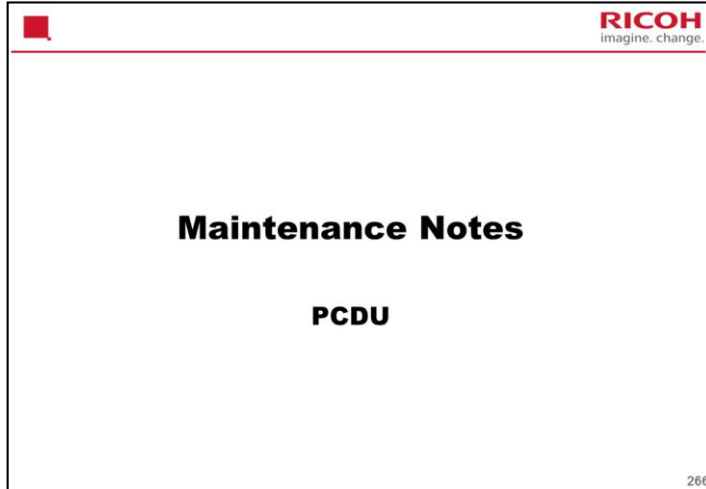
Replacing Developer - 6

RICOH
imagine. change.

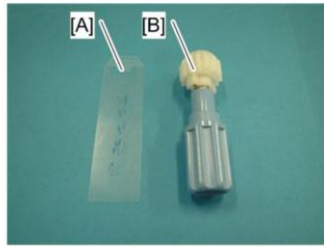
- Re-attach the cover and close the doors.
- The machine automatically initializes the TD sensor and executes process control.

265

No additional notes



This section explains a few important points. For full details, see the procedures in the service manual. Obey all instructions in the service manual.



- You will need two tools for cleaning these.
 - Mylar sheet [A]
 - Handle [B]

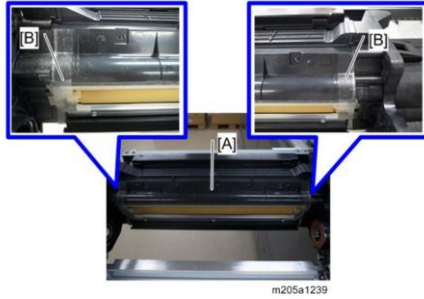
267

These two tools are registered as service parts.

They are not in the cardboard tool box.

D1793420: sheet (same as Br-C1)

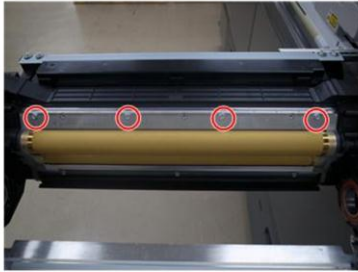
D1793421: handle



- When you remove the cover [A], take care not to damage the tape [B] on both ends of the cover.

These slides explain a few important points.

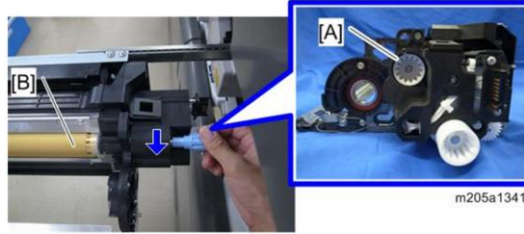
For the full procedure, see the service manual: Appendix > Preventative Maintenance > Cleaning Points



m205a1240

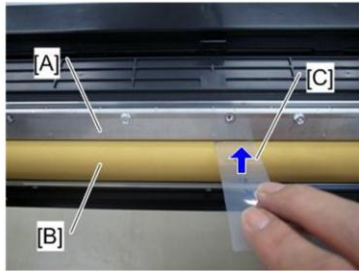
- Do not remove the screws that secure the doctor blade.

No additional notes



- Use the handle to rotate the development roller gear [A] in the direction of the arrow until no developer comes out on the development roller [B].

No additional notes



m205a1342

- Insert the sheet [C] into the gap between the doctor blade [A] and the development roller [B].
 - See the next slide for more details.

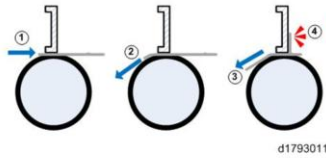
271

No additional notes



Doctor Blade and Development Roller - 6

RICOH
imagine. change.

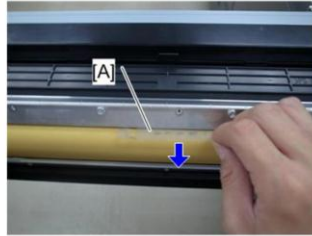
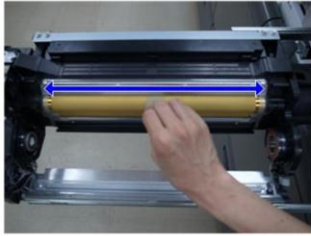


d1793011

- Insert the sheet with the flap [B] not pointing up.
- Lower the edge of the sheet to about a 45-degree angle.
- Slowly, pull the sheet out.
 - As you pull, the flap should catch on the back of the doctor blade and snap to the vertical against the back of the blade.

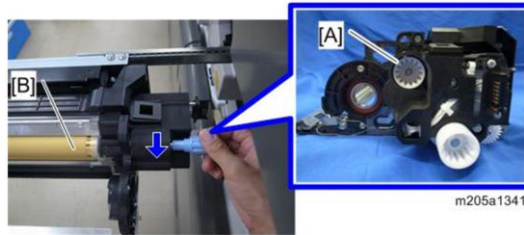
272

No additional notes



- Move the sheet from side to side.
- Turn the sheet around as shown above right [A] to remove it.

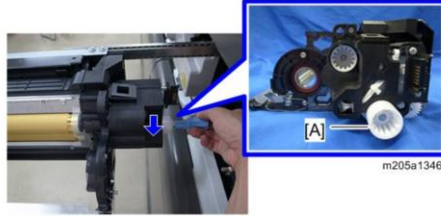
No additional notes



- Use the handle to rotate the development roller gear [A] 1/4 of a turn in the direction of the arrow.
- Remove any developer that came out onto the development roller with a vacuum cleaner.
- Repeat the steps on slides 6 to 8 three times.

274

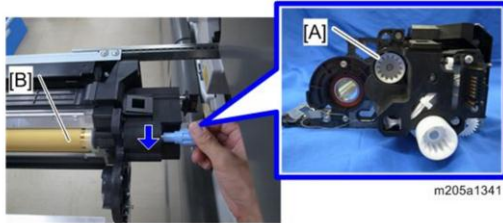
No additional notes



- To complete the procedure:
 - Rotate the transport auger gear [A] with the handle in the direction of the arrow more than 10 times.
 - If you rotate the handle in the wrong direction, rotate it in the correct direction as shown above more than 20 times. Otherwise, developer balance may be distorted and the development unit may be damaged.

275

No additional notes



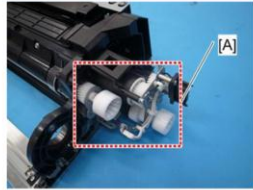
- Finally, rotate the development roller gear [A] with the handle in the direction of arrow one time to transfer developer to the development roller.

No additional notes

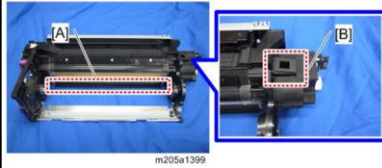


Development Gears and Roller

RICOH
imagine. change.



- Clean the gears [A] with a blower brush and a dry cloth.



- Clean the area [A] under the development roller and clean the toner entrance [B] with a blower brush and a dry cloth.

277

No additional notes



Other Cleaning Points

RICOH
imagine. change.

- Quenching lamp (lower): Blower brush and dry cloth
- Potential sensors: Blower brush
 - These sensors are sensitive to static electricity. Discharge any static on yourself before working on these sensors.
- Vent filter: Remove it and tap it on the table to remove dust etc
- Other filters: Vacuum cleaner
 - Except the front ozone filter, which is replaced.

278

The quenching lamp (upper), above the charge corona unit, cannot be reached easily. It takes one hour to disassemble the machine sufficiently to allow cleaning. So a cleaning procedure was not made at this time.

Ozone Filters

RICOH
imagine. change.

Front Ozone Filter

Rear Ozone Filter

- Front ozone filter: Replace at 1200k
- Rear ozone filter: Clean at 900k

279

No additional notes



Detailed Section Descriptions

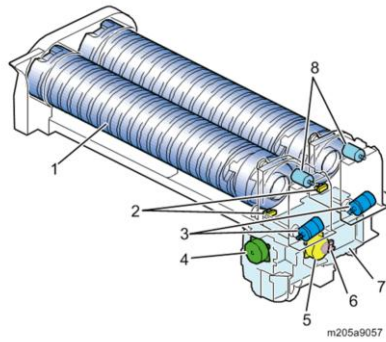
Toner Supply

No additional notes



Layout

RICOH
imagine. change.



1. Toner Bottles (x2 for each color)
2. Toner Bottle Detect Sensors (x2 for each color)
3. Toner Bottle Motor (x2 for each color)
4. Toner Agitator Motor
5. Toner Supply Motor
6. Toner End Sensor
7. Sub Hopper
8. Toner Bottle Open Motor

m205a9057

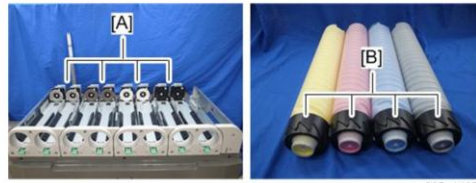
281

No additional notes



Differences Between the Bottles - 1

RICOH
imagine. change.



m205a1407

- To prevent installing a bottle in the wrong place, the shapes of the toner bottle drive gear [A] and toner bottle joint [B] are different for each color.

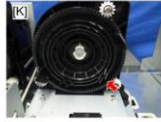
282

No additional notes

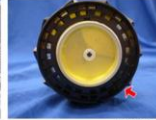


Differences Between the Bottles - 2

RICOH
imagine. change.



m205a1408



m205a1411

- Here are two examples, K and Y.
- The relative positions of the projections on the toner bottle drive gear and the holes in the toner bottle joint are different for each color.

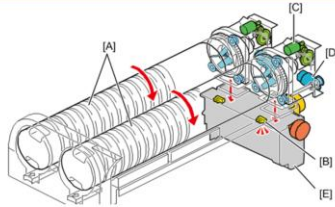
283

C and M are not shown here due to a lack of space. The principle is the same.



Drive

RICOH
imagine. change.



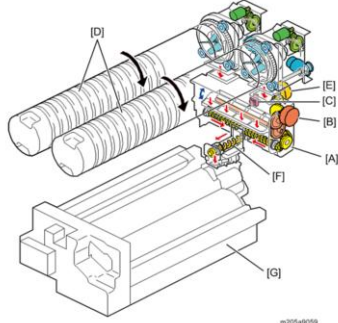
- When a toner bottle [A] is installed in the toner bank, the toner bottle detect sensor [B] detects it. Then the toner bottle open motor [C] turns on to open and lock the toner bottle cap.
 - If both bottles for a color are installed, only the bottle that is being used to supply toner is locked.
- The toner bottle motor [D] rotates the bottle to feed toner from the bottle into the sub hopper [E].
- Each toner bottle has a set of motors and sensors [B] to [D].

284

No additional notes

Toner Transport to the Development Unit

RICOH
imagine. change.



m20549059

- The toner fed into the sub hopper [A] is agitated by a coil driven by the toner agitator motor [B].
- When the toner end sensor [C] on the sub hopper detects a toner shortage in the sub hopper, toner is added from one of the toner bottles [D] (only one bottle rotates).
- Toner in the sub hopper is transported to the development unit [G] by the transport coil [F] (driven by the toner supply motor [E]).

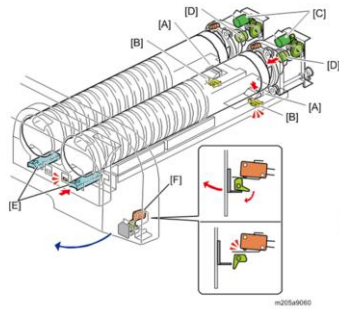
285

No additional notes



Bottle Lock Detection

RICOH
imagine. change.



- When a bottle is installed, the stopper [A] at the bottom of the bottle is pressed open and the toner bottle detect sensor [B] detects installation. Then the toner bottle open motor [C] starts and the toner bottle cap is opened, closed, locked by the cap motor [D].
- To release a toner bottle, press the release lever [E] to open the lock before removing the bottle.

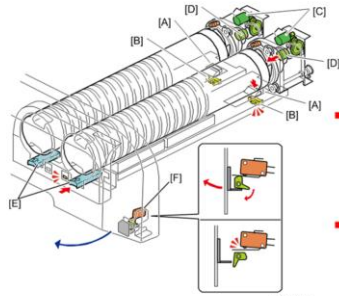
286

No additional notes



Toner Supply Front Cover

RICOH
imagine. change.



- There is an interlock switch [F] in the toner supply front cover. When the cover is opened, the machine stops toner supply for safety during toner bottle replacement.
- Printing does not stop when a 'replace toner bottle' message appears or the cover is opened.
- The cover should be closed as soon as possible after replacing a bottle, because toner supply is not done while the cover is open.

287

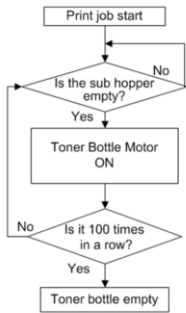
No additional notes



Toner Supply Flow Chart

RICOH
imagine. change.

Toner Supply Flow
(Toner Bottle to Sub Hopper)



w_m205a3004

288

- This chart shows the timing for turning on the toner bottle motor, and for detecting that the bottle is empty.

No additional notes



Detecting that a Bottle is Empty

RICOH
imagine. change.

- As stated on the previous slide: When the toner end sensor detects a shortage in the sub hopper, toner is supplied from a toner bottle.
- If the toner end sensor does not detect toner 100 times consecutively, the machine assumes the toner bottle is empty. The machine supplies toner from the other bottle.
- If both bottles are empty, or only one bottle is installed and it is empty, a near-end alert message appears on the operation panel. Printing does not stop.
- After the message appears, the machine can print about 2,000 sheets (A4/8.75% chart), then the toner end alert appears and the machine stops printing.

289

This is similar to the Br-C1.



- The toner bottles have no ID chip, so the machine cannot detect how much toner is in a bottle when it is placed in the machine.
- Basically, if the bottle is taken out and replaced after near-end, the machine assumes that the user has installed a new bottle.
- Also, if the bottle is taken out and replaced before near-end, then the machine assumes that the same bottle was put back in.

This section is adapted from Leo-C1.



- There are two ways that near-end is detected:
 - Estimated near-end: Based on pixel count, supply time, and filling time.
 - Definite near-end: Detected by sensor
- The next few slides show how these two near-end detections work together.

No additional notes

Toner Bottle Control Bottle Opening/Closing		RICOH imagine. change.
Toner Status	Bottle Cap Status	Note
Bottle Set	Closed → Open	
Full	Still Open	
Before Estimated Near End	Still Open	
Estimated Near End	Still Open	Estimated by pixel count, integrated supply time, integrated filling time
Near End ('Definite Near End')	Open → Closed	Bottle is empty; the machine is using only the toner remaining in the sub hopper Near end is detected by the Toner End Sensor in the Sub Hopper (at this time the toner bottle rotates in an attempt to supply toner; if the sensor does not detect toner, then near-end occurs).
Toner End	Still Closed	Estimated by pixel count and number of pages after near end was detected

292

This slide shows the timing for opening and closing the bottle cap.

If the cap is open, it can be closed and the bottle removed at any time after performing SP3162-001 to 004 (Bottle Open/Close CMYK) or the equivalent user tool.

Integrated filling time: The total time spent supplying toner from this bottle to the sub hopper

Integrated supply time: The total time spent supplying toner with this bottle from the sub hopper to the development unit

Why is monitoring the supply time important for toner near-end detection?

Counting the pixels only tells the machine the amount of toner consumed to print images.

However, the machine also supplies toner to keep the toner density inside the development unit at an optimal level. By monitoring the number of the toner supply occurrences, in addition to pixel counting, the machine monitors the toner consumption.



Toner Bottle Control Action when Bottle is Taken Out and Replaced

- If the bottle is taken out and replaced after "Estimated Near End":
 - The machine assumes that the user has installed a new bottle.
 - If the bottle is changed to one that is not full after "Estimated Near End":
 - The remaining toner display returns to "Full".
 - But, because the bottle is not full, near-end will be detected earlier than expected.
- If the bottle is taken out and replaced before "Estimated Near End":
 - The machine assumes that the same bottle was put back in.
 - If the bottle is changed to a full one before "Estimated Near End":
 - The remaining toner display does not return to "Full".
 - Estimated near end will be based on the state of the old bottle before changing.
 - Because of this, definite near end (detected by the toner end sensor) will be displayed a long time after 'estimated near end' occurs.

No additional notes



RICOH
imagine. change.

Replacement and Adjustment

Toner Supply

294

Details of all procedures are in the service manual. These slides only go over a few important points.

Layout



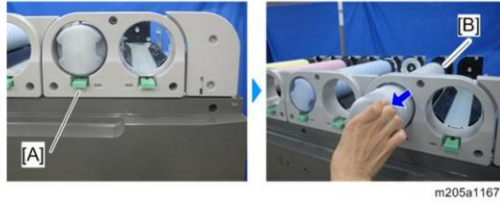
- Two toner bottles can be installed for each color.
- To make a distinction between left and right bottles of the same color, the bottle on the left side is named "1" and the bottle on the right side is named "2".
- Characters at the end of part names indicate the part's position.
- The same type of parts can be replaced in the same way if not otherwise noted.

No additional notes



Removing a Toner Bottle

RICOH
imagine. change.




- Push the lever [A], and then pull out the toner bottle [B]

296

No additional notes

■ If A Bottle Does Not Come Out **RICOH**
imagine. change.



- If there are any bottles which do not come out by pressing the green lever, use SP3-162.
 - There is also a user tool so that trained customers can pull out the bottles.

297

Y1: SP3-162-004
Y2: SP3-162-008
M1: SP3-162-003
M2: SP3-162-007
C1: SP3-162-002
C2: SP3-162-006
K1: SP3-162-001
K2: SP3-162-005

There is no need to do this when installing the toner bottle. The machine automatically opens the bottle when it is installed, and closes the bottle when the toner near end is detected, preparing for bottle change. The above SP is only used when the bottle needs to be removed before toner near end is detected.

Details of the mechanism will be explained later.



Removing a Sub Hopper - 1

RICOH
imagine. change.

- When you remove the sub hopper (C/M/Y), you need to remove the toner bottles of the corresponding color, and also bottles of the next color to the right. The following list shows which bottles to remove.
 - Sub hopper (K): Toner bottle (K1/K2)
 - Sub hopper (C): Toner bottle (K1/K2/C1/C2)
 - Sub hopper (M): Toner bottle (C1/C2/M1/M2)
 - Sub hopper (Y): Toner bottle (M1/M2/Y1/Y2)

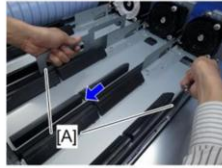
298

No additional notes



Removing a Sub Hopper - 2

RICOH
imagine. change.

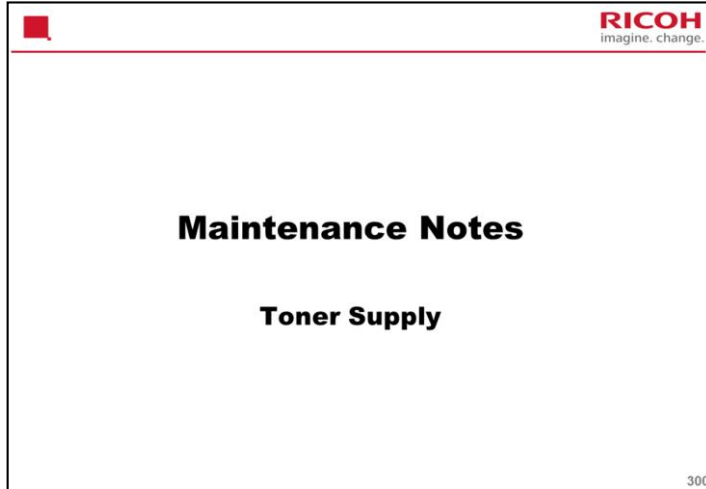


m205a1285

- If you remove the sub hopper (C/M/Y), move the toner bank immediately to the right slightly to a temporary position (about 1 or 2 mm to the right is enough).
 - In this example, we removed the toner bank for C, in preparation to remove the sub hopper for C. Then we moved the toner bank for K to a temporary position.

299

If you will remove the sub hopper for M, you must move the toner bank for C.
If you will remove the sub hopper for Y, you must move the toner bank for M.
This is done because it is not possible to lift the sub hopper vertically out unless the tone to the right is moved across a little bit. Actually, the sub hopper can be tilted a little to remove it, but we don't recommend this because toner can spill out.



This section explains a few important points. For full details, see the procedures in the service manual. Obey all instructions in the service manual.



Toner Bottle Entrance

RICOH
imagine. change.



m205a1401

- Remove the bottles.
 - If you had to turn the machine power on to remove a bottle with SP mode, then turn the machine off before you start cleaning.
- Clean the toner bottle entrance [A] with a blower brush and a dry cloth.

301

No additional notes



Detailed Section Descriptions

Process Control

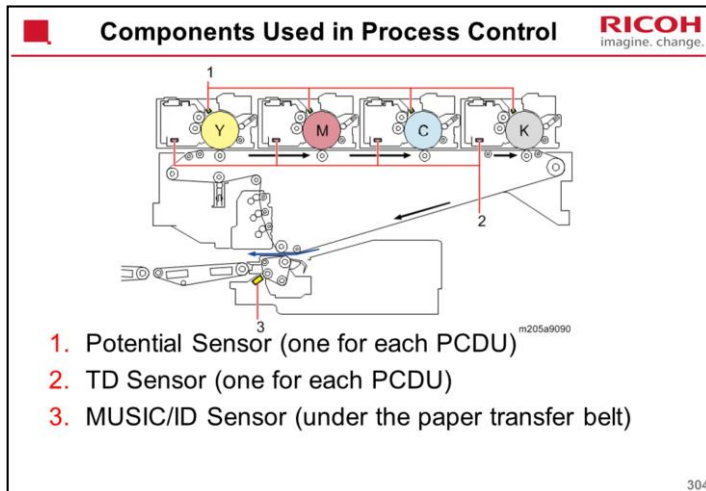
No additional notes



What Process Control is Done?

- Potential control
- Toner supply control
- DEMS
- Deposition control by paper type
- Main scan shading correction control
- IBACC

No additional notes



No additional notes

Potential Sensors

RICOH
imagine. change.

The diagram consists of four images. Top-left: A photograph of a printer's internal drum unit with a blue callout arrow pointing to the sensor area. Top-right: A photograph of a sensor board labeled [A] with a white arrow pointing to it. Bottom-left: A photograph of four sensor boards labeled [K], [C], [M], and [Y] stacked vertically. Bottom-right: A photograph of a single sensor board labeled [B] with a white arrow pointing to it. A blue callout arrow points from the [B] board to the [A] board. Reference numbers 'm205a2946' and 'm205a2945' are located below the top-right and bottom-right images, respectively.

- One board [A] is connected to 4 sensors [B].
- The position of the sensor for each color corresponds to the position where the gradation patterns are created on the Paper Transfer Belt for process control.

305

In other words, the position of the drum potential sensor for each color corresponds to the position of the ID sensor for each color in the Paper Transfer Unit.

The sensors themselves are exactly the same, but the location is different.



ID/MUSIC Sensors

RICOH
imagine. change.



- Sensors 1, 4, and 6 are used for laser color registration control (MUSIC).
- Sensors 2, 3, 4, and 5 are used for process control.
- The ITB is an elastic belt. It is difficult to read the sensor patches from this belt, so they are read from the paper transfer belt.

306

Why is it difficult to read sensor patterns off the elastic ITB?

The reflectivity of the elastic belt is lower than the ITBs in previous models, and the amount of light reflected does not change very much when toner is deposited. So, readings of image density from this belt are not so reliable. However, the paper transfer belt is made of the same material as ITBs of previous products, so sensor patterns can be read off this belt instead.



TD Sensor

- This is a non-contact sensor attached under the development unit.
- This sensor has an ID chip that stores information for toner density control.

No additional notes




Temperature/Humidity Sensors

RICOH
imagine. change.

- Temperature/Humidity Sensor (K PCU, Y PCU): This sensor affects potential control (developer agitation time, and target development gamma determination).
- Temperature/Humidity Sensor (Main Frame): This sensor controls environmental corrections for the transfer current and the fusing temperature.

308

The sensor for the Y PCU is probably a holdover from previous machines, where the Y PCU was close to the fusing unit. However, in this machine, the fusing unit is in a separate section of the machine, so the Y PCU will be less affected by fusing unit temperature than other models.

	Process Control at Installation and Developer Replacement	RICOH imagine. change.
<ul style="list-style-type: none">▪ If developer installation (SP3-024-001) succeeded, closing the front doors triggers the TD sensor initialization.▪ Then charge voltage adjustment, development bias adjustment, potential control adjustment, and MUSIC are automatically done. This completes initial process control.▪ Process control results:<ul style="list-style-type: none">– SP3-025-001 (Developer Fill: Exe Result: From Left:YMCK)– SP3-031-001 (TD Sens Init OK? From Left:YMCK)– SP3-012-001 (ProCon OK? History:Latest)		
309		

Result codes: If the display is all '1', this means execution was successful



Potential Control

What does it do?

- Potential control is done at set times to adjust the copy process, in order to achieve the target image density and produce the best quality images.
- These adjustments include changing the drum charge bias, development roller bias, and LD power.
- Gradation patterns are created at set intervals and read by the four potential sensors (one for each color) on the drum.
- These patterns are then developed and read by the ID sensors.
- The machine uses these readings to calculate development gamma for each color.

No additional notes

Potential Control
When is it done? - 1

RICOH
imagine. change.

- At power ON, or after returning from low power mode, or when the front doors are closed
 - If one of these conditions is met since the last time the machine was powered OFF:
 - Idle time exceeds a certain threshold
 - Temperature change exceeds a certain threshold
 - Humidity change exceeds a certain threshold
 - If the AC transfer status of the next print is different from when process control was last done

311

Process control executes if the AC transfer status of the next print is different from when process control was executed as shown below:

If the last process control was executed with AC transfer OFF, and the next print will be done with AC transfer ON.

If the last process control was executed with AC transfer ON, and the next print will be done with AC transfer OFF.

When is the AC transfer status changed?

If AC On / Off conditions that are set in the user settings and paper environment are different from the current machine status

Environment: LL: OFF, MM / HH: ON

Some specific paper: OFF, all other paper: On

Can the user change the AC transfer status?

You can set On/Off setting with User settings paper adjustment item in the "secondary transfer AC mode settings"



Potential Control When is it done? - 2

RICOH
imagine. change.

- **At the start of a job**
 - If one of these conditions is met since the last job was ended:
 - Idle time exceeds a certain threshold
 - Temperature change exceeds a certain threshold
 - Humidity change exceeds a certain threshold
 - If the AC transfer status of the next print is different from when process control was last done
- **During printing**
 - If the page counter exceeds a certain threshold
 - If the AC transfer status of the next print is different from when process control was last done
- **At the end of a job**
 - If the page counter exceeds a certain threshold

312

No additional notes



Checking the Results

RICOH
imagine. change.

- Potential control: SP3012-001 to 010
- ID sensor calibration: SP3323-001 to 010

313

No additional notes




Toner Supply Control

RICOH
imagine. change.


- The machine uses DANC Supply (with Vtref Correction).

314

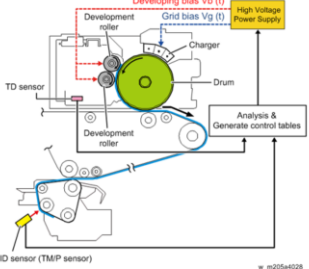
No additional notes



DEMS
(Development Electric-field Modulation System)



imagine. change.



- Small variations in the distance between the drum, charge roller, and development roller cause variations in charge on the drum, and this causes uneven image density.
- To correct for this, the machine monitors the image density as the drum, charge roller, and development roller rotate.
- To do this, the machine makes a pattern, while monitoring the angle of rotation of the drum and development roller (using the drum HP sensor and development roller HP sensor).
- The ID sensor monitors variations in density of the pattern.
- Then, during image creation, development bias and charge voltage are adjusted for different phases of drum and development roller rotation, based on the ID sensor readings.

315

During evaluation, DEMS was observed to reduce density variation by about 40%.

Banding at intervals of 190 mm (drum circumference) should be reduced by this mechanism.



DEMS
When is it done?

- DEMS is done automatically at set intervals.
 - At power ON, or after returning from low power mode, or when the front doors are closed, or at the end of a job, or when the number of pages reaches a certain value (SP3-670-031, 032: default 20k pages)
- DEMS must be executed manually whenever a PCPU is replaced, or taken out and put back in.
 - SP3040-1: DEMS:Execute ALL
 - SP3040-2: DEMS:Execute K
 - SP3040-3: DEMS:Execute C
 - SP3040-4: DEMS:Execute M
 - SP3040-5: DEMS:Execute Y

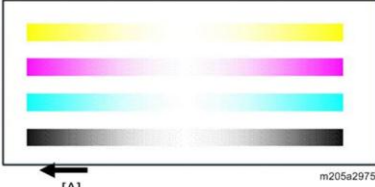
No additional notes



- In some cases, DEMS phase initialization must be done after replacing parts
 - SP3042-1: DEMS:Execute ALL
 - SP3042-2: DEMS:Execute K
 - SP3042-3: DEMS:Execute C
 - SP3042-4: DEMS:Execute M
 - SP3042-5: DEMS:Execute Y
 - SP3043: Checks the results of SP 3042.

No additional notes

IBACC **RICOH**
imagine. change.



- The machine makes a 16-gradation pattern on the paper transfer belt (see above for an example).
- The ID sensors measure variations in density between the middle and the highlight tone.
- The results are fed back to the gamma correction table.
- IBACC is done during process control and every 2000 pages.
 - The interval can be adjusted with SP 3660.

318

This is like ACC, except it is done automatically as stated above.

The counter for 2000 pages is reset if IBACC is done during a process control.

The DTU board processes the data during the IBACC process.



Deposition Control by Paper Type

RICOH
imagine. change.

- When image creation starts, the machine calculates the ideal deposition amount based on the paper type, and adjusts the charge voltage, development bias, and LD power to achieve this.
- The default values for each paper type can be corrected by advanced users. This changes the target mass per unit area (m/a)
 - Adjustment Settings for Skilled Operators: SP3-620-011 ~ 014 (KCMY) [Adjust Maximum Image Density]
- For paper types registered in the paper library, an additional correction can be applied.
 - Advanced settings for user paper settings: Toner Deposition Correction

319

Default values for each type of paper

Plain & other than the following: SP3-620-111 ~ 114(KCMY)

Gloss: SP3-620-121 ~ 124(KCMY)

Matte: SP3-620-131 ~ 134(KCMY)

Textured: SP3-620-141 ~ 144(KCMY)

The values calculated after all the corrections are stored in SP3-620-001 to 004.



Shading Correction Control

RICOH
imagine. change.

- This feature reduces deviations in image density across the main scan.
- The machine makes a pattern opposite each of the ID/MUSIC sensors.
- Readings from these patterns are fed back to the shading correction mechanism.

320

No additional notes



Detailed Section Descriptions

Paper Trays

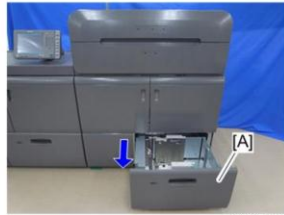
No additional notes



Two Trays

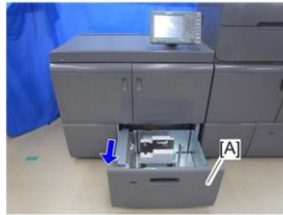
RICOH
imagine. change.

Tray 1 (Imaging Section)



m205a2133

Tray 2 (Fusing Section)



m205a2352

- Each tray weighs about 30kg.
- Two or more people should be present when removing a tray from the machine.

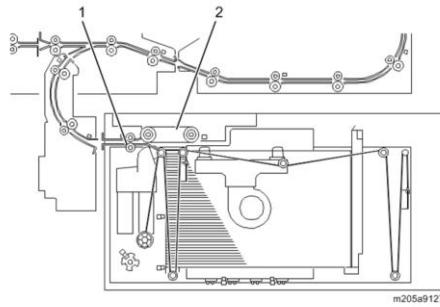
322

No additional notes



Overview

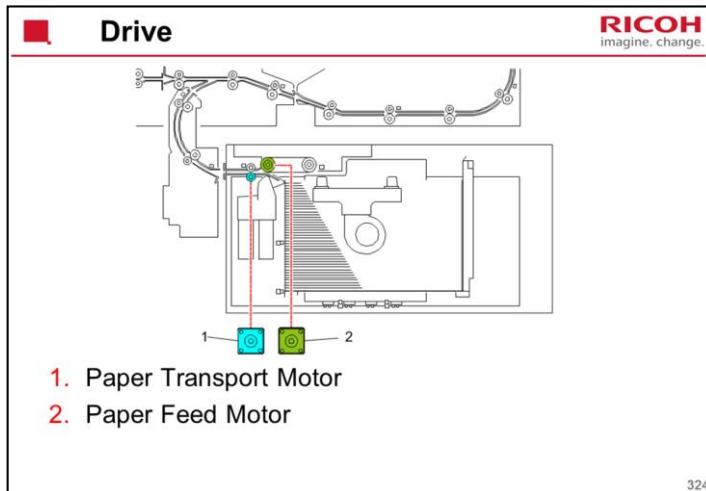
RICOH
imagine. change.



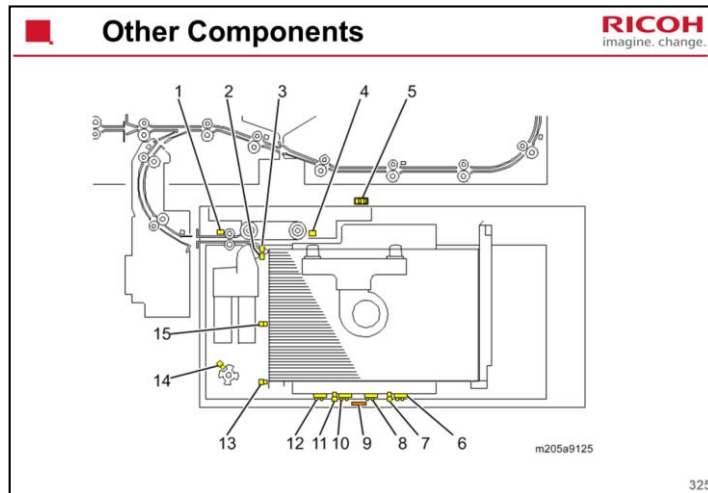
1. Paper feed unit (Paper tray)
2. Paper feed belt unit

323

No additional notes



No additional notes

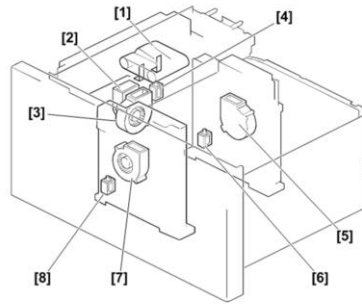


1. Paper Feed Sensor
2. Upper Limit Sensor 2
3. Upper Limit Sensor 1
4. Paper End Sensor
5. Over Limit Sensor
6. Paper Size Sensor 4
7. Paper Length Sensor 2
8. Paper Size Sensor 3
9. Tray Heater
10. Paper Size Sensor 2
11. Paper Length Sensor 1
12. Paper Size Sensor 1
13. Lower Limit Sensor
14. Paper Height Sub Sensor
15. Paper Height Middle Sensor



Air-driven Paper Feed

RICOH
imagine. change.



- Air from the 4 fans lifts and separates a sheet of paper from the stack and sucks it towards the paper feed belt.
1. Paper Feed Belt Unit
 2. Float Fan
 3. Separator Fan
 4. Float Fan Shutter Solenoid
 5. Rear Fan
 6. Rear Fan Shutter Solenoid
 7. Front Fan
 8. Front Fan Shutter Solenoid

d777d9119

326

No additional notes



Caution

RICOH
imagine. change.

- Do not pull out all trays in the vacuum feed LCIT when it is not linked to the main unit, because it could fall over.
- The tray weighs about 30 kg. It is heavy and requires careful handling by two persons.

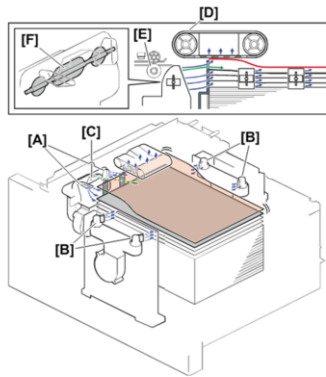
327

No additional notes



Separation and Feed - 1

RICOH
imagine. change.



- Air from the float fan [A] blows through two nozzles and lifts the top few sheets of the stack.
- Air from the separator nozzle [C] then separates the top sheet.
- The shutter [F] switches the air from the separation and float fans on and off.
- The paper is sucked against the feed belt [D], which feeds the paper to the grip roller [E] and out of the tray.
 - There is a duct below the belts with holes to suck air through.

d777d9120

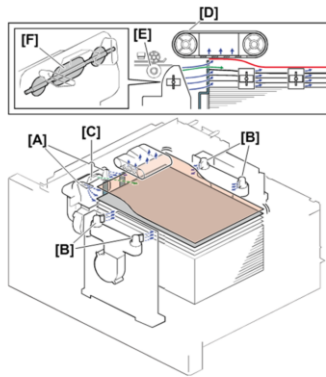
328

No additional notes



Separation and Feed - 2

RICOH
imagine. change.



- Air from the side fans (front and rear) blows from the side air nozzles [B], floating the next sheet of paper and assisting in holding it to the paper feed belt [D].
- The fans also prevent multiple sheets of paper from being fed.
- A shutter also controls the flow of air from these fans.

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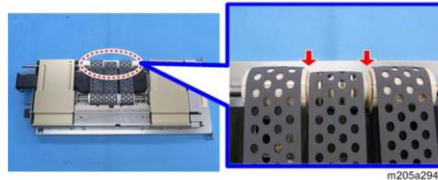
329

No additional notes



Feed Belt Structure

RICOH
imagine. change.



- The feed belt, located above the paper, is split into 3 belts.
- The center belt is at a different height from the two side belts (max 2 mm). This causes the 1st sheet of paper to curve when it is sucked against it, creating a gap.
- Air from the separation fan is blown into this gap to separate the sheets of paper.

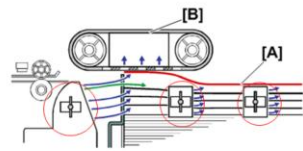
330

No additional notes

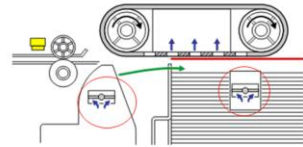


Fan Shutter Timing - 1

RICOH
imagine. change.



d777d9122



d777d9123

- After the 1st sheet of paper [A] is separated, it is sucked against the paper feed belt unit [B].
- After the 1st sheet sticks to the belt, the fan operates for a fixed period of time, then the fan shutter solenoids close the shutters, cutting off the air.

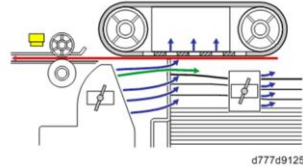
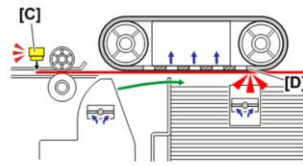
331

The float, rear, and front fans have shutters, which are driven by solenoids. The shutters are shown in the red circles.



Fan Shutter Timing - 2

RICOH
imagine. change.



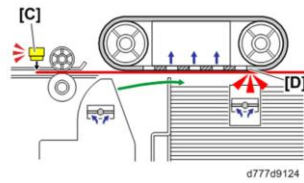
- The paper feed belt unit transports the paper. When the paper feed sensor [C] detects the leading edge of the paper, the shutter opens.
 - If the paper size is 321 mm or more, the shutter cannot open because the trailing edge of the paper has not passed through the suction starting position yet. So the machine counts the time until the trailing edge of the paper reaches the suction starting position.

332

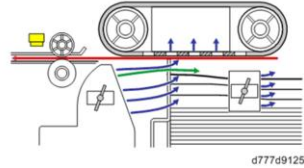
No additional notes



Fan Shutter Timing - 3



- When the trailing edge of the paper reaches the shutter open position, the fan shutters open, allowing air to blow, which lifts and helps the next sheet of paper to attach to the feed belt.



No additional notes



Paper Feed Parameters

RICOH
imagine. change.

- The values of the following paper feed parameters depend on paper weight and paper size.
 - Air volume provided by the fans
 - Control of the fan shutters
 - Paper stack height setting (High or Low)
- The paper feed parameter settings can be changed for each tray in SP mode (default: auto select from size and weight).
- The paper feed parameter settings can also be changed for paper types registered in IMSS.

334

No additional notes



Preventing Feed Errors using IMSS

RICOH
imagine. change.

- When double feed or non-feed occurs for a certain paper type, adjust the following IMSS setting for that paper type: "Paper Feed Mode (Adjust Fan Level)".
- If the setting is changed, the machine changes the air volumes of the fans.
 - 0: Standard: Factory default
 - 1: Moderate Dble Fd Red. (Lower): Use this when double feed occurs.
 - 2: Max Double Fd Red.: Use this when double feed occurs even when the setting was changed to "1".
 - 3: Mod. Nonfdng. Red: Use this when non-feed occurs
 - 4: Max Nonfdng. Red.: Use this when non-feed occurs even when the setting was changed to "3".

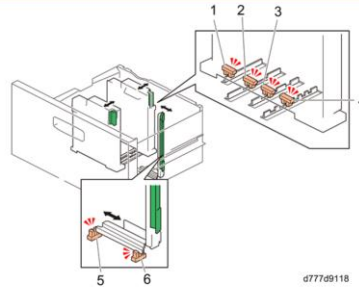
335

No additional notes



Paper Size Detection

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imagine. change.

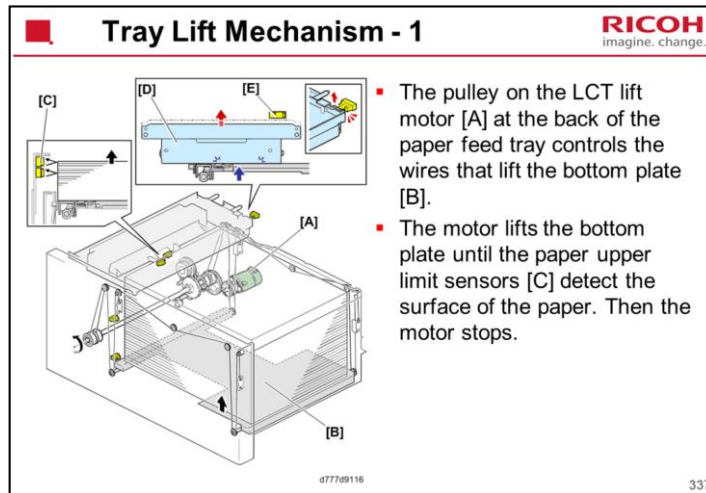


d777d9118

- Each tray has 4 width sensors [1 to 4], and two length sensors [5, 6].
- To move a side or end fence, squeeze the handle before trying to move.

336

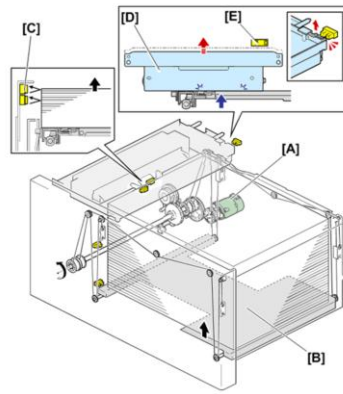
No additional notes



There are two wires of different lengths, which work together to keep the bottom plate level as they lift it. The short wire lifts the front of the bottom plate, while the long wire lifts the rear.



Tray Lift Mechanism - 2



d777d9116

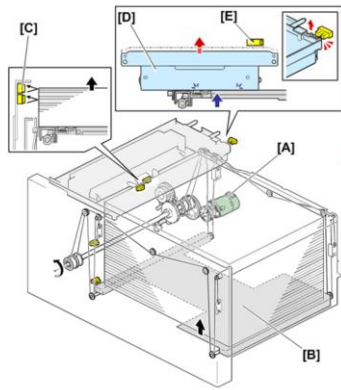
338

- There are two paper upper limit sensors. The sensor which is used depends on the weight of the paper.
- Paper upper limit sensor 2 on the lower side is used by default. However, depending on paper thickness, the machine may use the other sensor instead.

No additional notes



Tray Lift Mechanism - 3



- If the surface of the paper drops during printing, the upper limit sensor turns off, which turns the LCT lift motor on and lifts the paper.
- When the paper feed tray is pulled out, the bottom plate drops down by its own weight.

d777d9116

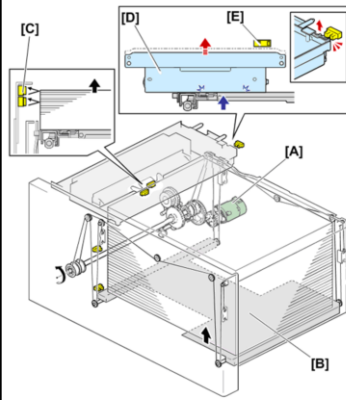
339

No additional notes



Tray Lift Mechanism - 4

RICOH
imagine. change.

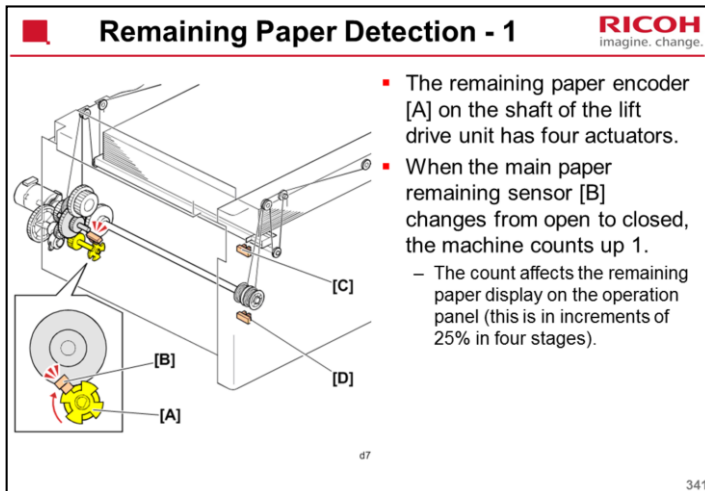


- If the paper feed unit [D] is lifted too much, the over limit sensor (tray upper limit sensor) [E] detects it, and stops the bottom plate. SC501-5/502-5 occurs.
- If this happens, the paper feed unit is too high, so grasp the handle and release the lock on the paper feed unit and then pull out the tray.

d777d9116

340

No additional notes

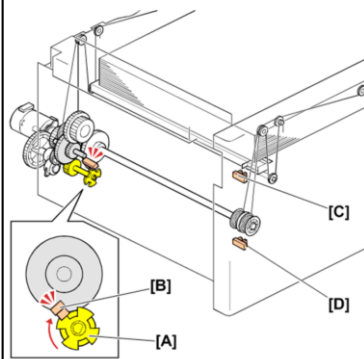


No additional notes



Remaining Paper Detection - 2

RICOH
imagine. change.



- The sub paper remaining sensor [C] corrects the encoder count when the actuator on the bottom plate passes through it.
 - This improves the accuracy of remaining paper detection by the sub paper remaining sensor.

d7

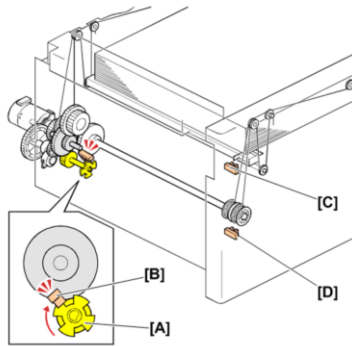
342

No additional notes



Remaining Paper Detection - 3

RICOH
imagine. change.



- If you turn the power ON/OFF when there is not much paper left in the paper feed tray, the LCIT lift motor lowers the bottom plate to the sub paper remaining sensor [C].
 - Not to the paper lower limit sensor [D].
 - The pulse count is not reset. The midway position is detected and it starts the pulse count from midway.

d7

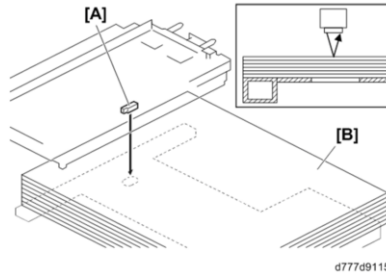
343

No additional notes



Paper End Detection

RICOH
imagine. change.



d777d9115

- The paper end sensor [A] is in the paper feed belt unit. It detects light reflected from the surface of the paper [B].
- When no paper is detected, the tray lift motor reverses and lowers the bottom plate.

344

No additional notes

Exit Roller Contact Mechanism **RICOH**
imagine. change.

The diagram illustrates the mechanical components of the Exit Roller Contact Mechanism. It shows a motor [A] connected to a belt [B], which drives a cam [C]. The cam [C] is mounted on a drive shaft [F] and is connected to a roller contact arm [D]. The roller contact arm [D] is positioned to interact with a slave roller [E]. A sensor [G] is used to detect contact between the roller contact arm [D] and the slave roller [E]. A blue arrow indicates the direction of paper flow.

- To allow paper registration in the main machine, the LCT exit roller is moved away from the paper.
- When the LCT exit roller contact motor [A] is ON, it turns the cam [C] on the drive shaft via the belt [B].
- The cam moves roller contact arm [D] up/down. This separates the slave roller [E] from the drive roller [F].
- The LCT exit roller contact sensor [G] detects whether they are in contact.

d777d9114 345

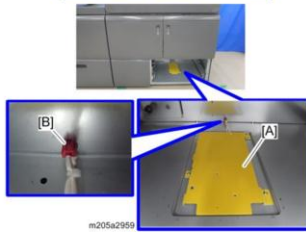
No additional notes



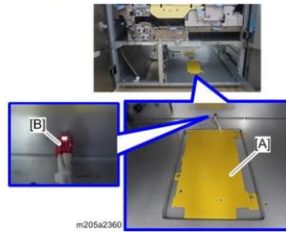
Anti-Condensation Heaters

RICOH
imagine. change.

Tray 1 (Imaging Section)



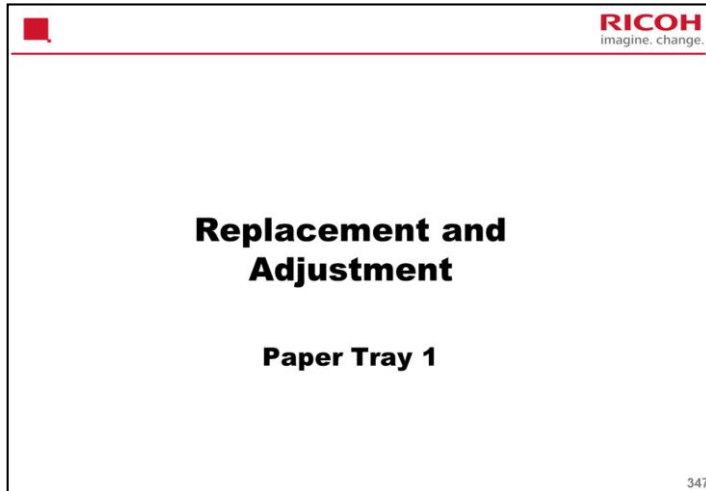
Tray 2 (Fusing Section)



- An optional tray heater can be installed under each paper feed tray.
- It is always ON when the AC power of the main machine is plugged in. If you wish to turn the heater OFF, disconnect the connector [B] of the heater [A].

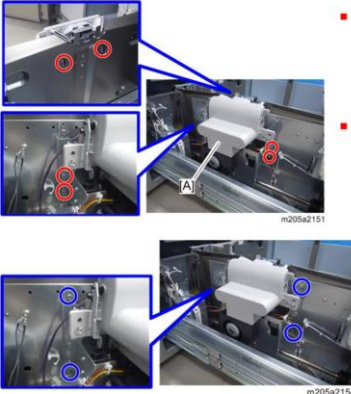
346

No additional notes



Details of all procedures are in the service manual. These slides only go over a few important points.

Don't Remove these Screws **RICOH**
imagine. change.



- When removing the Float/Separation Fan Duct (Tray 1), remove the screws in the red circles.
- Do not remove the screws in the blue circles.
 - The position of the bracket that these screws hold is adjusted at the factory and cannot be adjusted in the field.

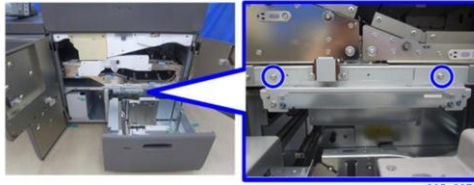
348

The service manual contains these photos.



Don't Remove these Screws

RICOH
imagine. change.



m205a2279

- When removing Paper Feed Belt Unit (Tray 1), do not remove these two screws.
- Removing these screws could cause the paper feed belt unit (tray 1) to be out of position and this will cause problems during paper feeding.

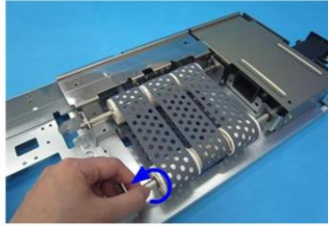
349

No additional notes



Paper Feed Belt (Trays 1 and 2) - 1

RICOH
imagine. change.



- When re-installing the paper feed belt (tray 1), make sure that the mechanism is not too slack and not too tight, as explained in the manual.
 - Try to get an idea of how this should be on a working machine during training, so that you know how tight the belt should be.

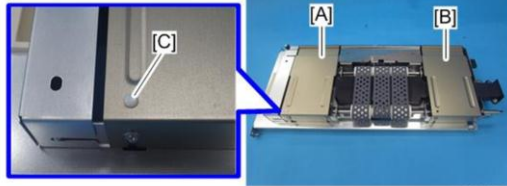
350

No additional notes



Paper Feed Belt (Trays 1 and 2) - 2

RICOH
imagine. change.



m205a2170

- Guide plates [A] and [B] are the same shape. To distinguish between them, there is a white plastic spot [C] on the guide plate in the front.

351

No additional notes



Upper Limit Sensors

RICOH
imagine. change.



- The position of the upper limit sensor bracket [A] is adjusted at the factory.
- When it is removed, install it at the same position, referring to the scale.
 - Take a note of the position relative to the scale before you take out the sensor assembly.

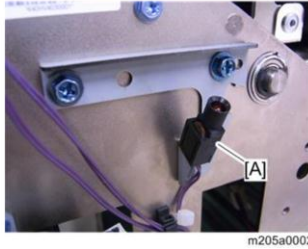
352

This is for the paper upper limit sensors.



LEDs

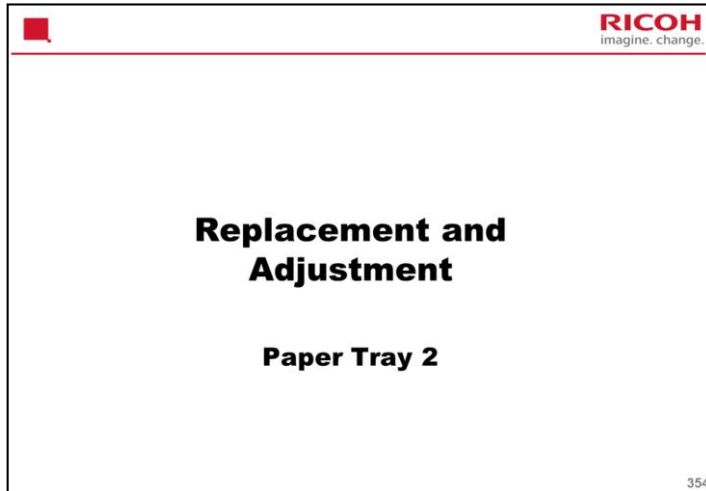
RICOH
imagine. change.



- There are many procedures in the service manual to remove xxx LED.
- These LEDs light up to show the location of jammed paper.
- If you remove a LED, be sure to install it the correct way round, or the operator will not be able to see it when it lights.

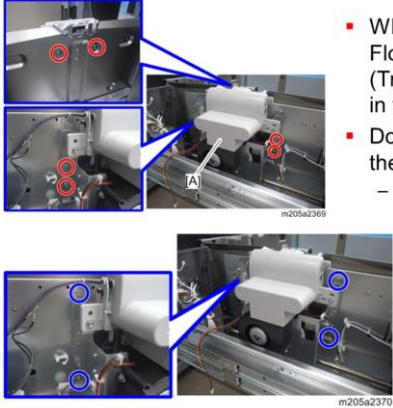
353

Example above: Duplex Inverter LED.



Details of all procedures are in the service manual. These slides only go over a few important points.

Don't Remove these Screws **RICOH**
imagine. change.



- When removing the Float/Separation Fan Duct (Tray 2), remove the screws in the red circles.
- Do not remove the screws in the blue circles.
 - The position of the bracket that these screws hold is adjusted at the factory and cannot be adjusted in the field.

m205a2369

m205a2370

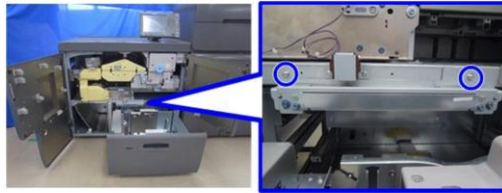
355

These diagrams are also in the service manual.



Don't Remove these Screws

RICOH
imagine. change.



- When removing Paper Feed Belt Unit (Tray 2), do not remove these two screws.
- Removing these screws could cause the paper feed belt unit (tray 2) to be out of position and this will cause problems during paper feeding.

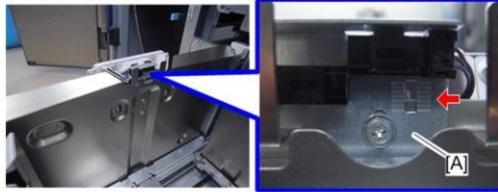
356

No additional notes



Upper Limit Sensors

RICOH
imagine. change.

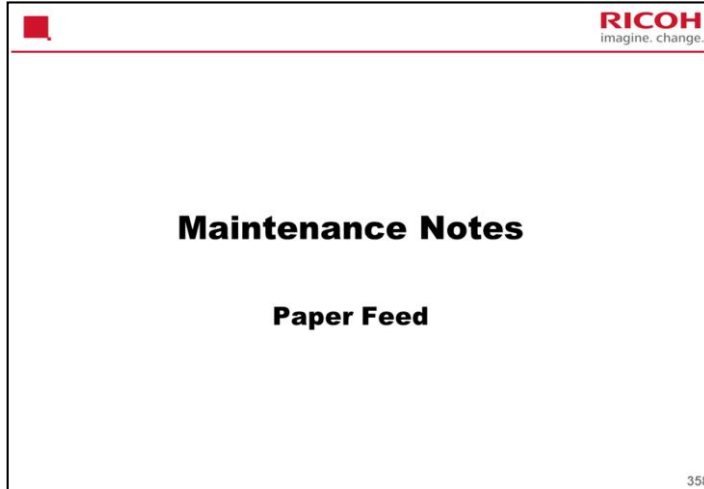


m205a2387

- The position of the upper limit sensor bracket [A] is adjusted at the factory.
- When it is removed, install it at the same position, referring to the scale.
 - Take a note of the position relative to the scale before you take out the sensor assembly.

357

No additional notes



This section explains a few important points. For full details, see the procedures in the service manual. Obey all instructions in the service manual.



Clean Sensors and Rollers

RICOH
imagine. change.

- Clean the sensors with a blower brush.
- Clean the rollers with a dry cloth.
- See the service manual for how to access the components that need cleaning.
 - Appendix > Preventative Maintenance > Cleaning Points

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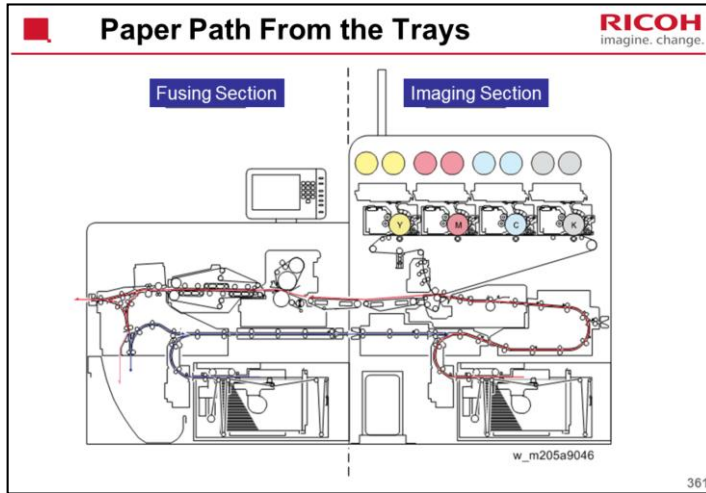
No additional notes



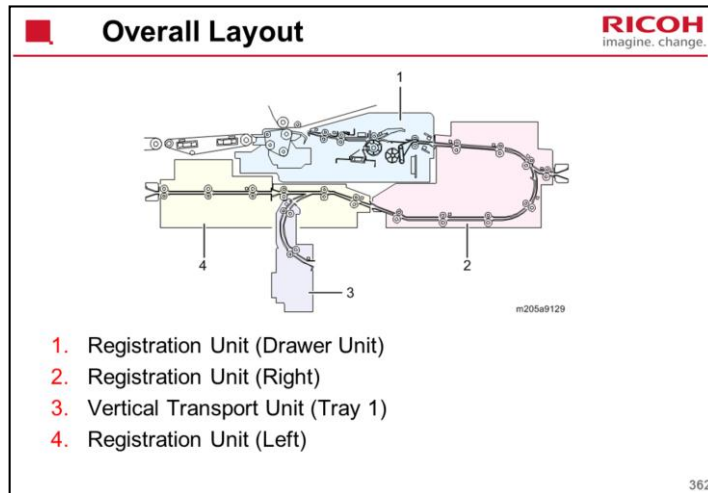
Detailed Section Descriptions

Registration Unit

No additional notes



No additional notes



Each tray has a vertical transport section (see the previous slide for Tray 2).



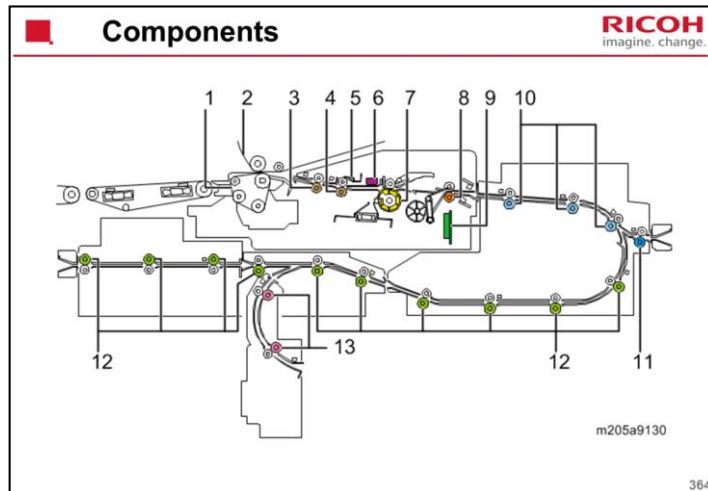
Basic Operation

RICOH
imagine. change.

- Paper is fed from the tray, up the vertical transport unit, and then to the paper registration unit.
 - For tray 2, the paper comes along the duplex feed path from the left of the machine.
 - Paper from the LCT comes in at the right of the machine.
- Each sheet is tested for double-feed, corrected for skew, positioned correctly for registration in both main scan and sub scan directions, and sent to the paper transfer belt unit.
- For duplex printing, after the first side is printed, the paper is sent down into the inverter path and then reverse fed back across the machine to the paper registration unit.

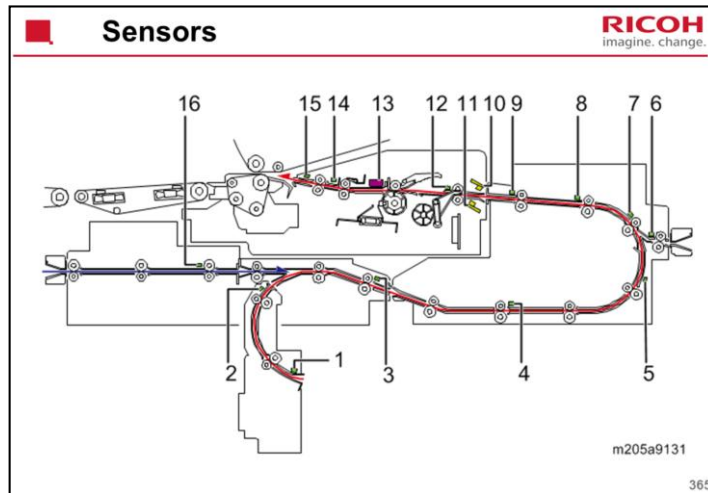
363

No additional notes



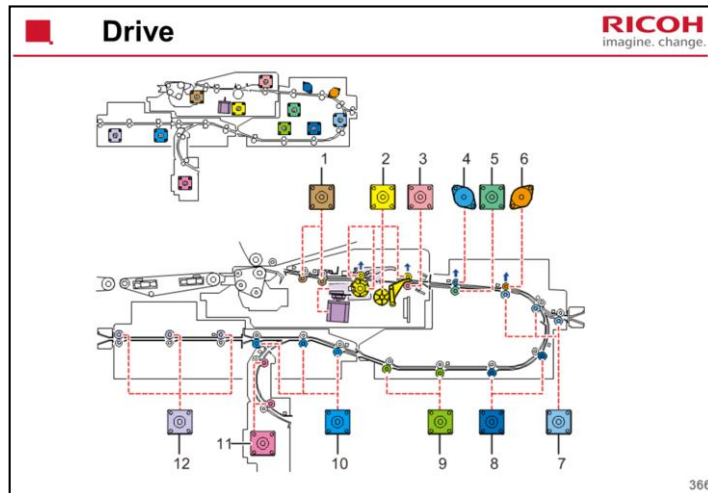
1. Paper Transfer Belt Unit
2. Intermediate Transfer Belt (ITB) Unit
3. PTR Timing Roller
4. Registration Relay Roller
5. Auto Media Size Feedback Sensor 1/2 (also known as the 'T-ACT sensors')
6. CIS1/2
7. Rotary Gate HP Roller
8. Registration Timing Roller
9. DRB
10. Registration Entrance Roller
11. LCT Relay Roller
12. Paper Transport Roller
13. Vertical Transport Roller

The vertical transport components for tray 2 are the same as for tray 1. We will see them in the duplex section.



1. Vertical Transport Sensor 1: Monitors movement of paper to check for paper jams.
2. Vertical Transport Sensor 2: Monitors movement of paper to check for paper jams.
3. Paper Transport Sensor 5: Monitors movement of paper to check for paper jams.
4. Paper Transport Sensor 6: Monitors movement of paper to check for paper jams.
5. Paper Transport Sensor 7: Monitors movement of paper to check for paper jams.
6. LCT Relay Sensor: Monitors movement of paper to check for paper jams.
7. Registration Entrance Sensor 1: Monitors movement of paper to check for paper jams.
8. Registration Entrance Sensor 2: Monitors movement of paper to check for paper jams.
9. Registration Entrance Sensor 3: Monitors movement of paper to check for paper jams.
10. URRB: Mounted above the URTB (double-feed sensor: emitter), the paper passes through the gap between these two sensors for the double-feed check.
11. URTB: Mounted above the URRB (double-feed sensor: receptor, the paper passes through the gap between these two sensors for the double-feed check.
12. Registration Timing Sensor: Determines the timing of the rotation of the rotary gate roller to stop paper in the paper path, also checks for paper jams.
13. CIS1/2: Checks paper position in the path to determine the amount of correction needed.
14. Auto Media Size Feedback Sensor 1: Monitors movement of paper in the path to detect end timing of measuring the amount of correction needed for double side magnification control. Also called T-ACT sensor 1.
15. Auto Media Size Feedback Sensor 2: Monitors movement of paper in the path to detect start timing of measuring the amount of correction needed for double side magnification control. Also called T-ACT sensor 2.
16. Paper Transport Sensor 4: Monitors movement of paper to check for paper jams.

The vertical transport components for tray 2 are the same as for tray 1. We will see them in the duplex section.



1. PTR Timing Motor
2. Rotary Gate Motor
3. Registration Timing Motor
4. Registration Roller Lift Motor 1
5. Registration Entrance Motor 2
6. Registration Roller Lift Motor 2
7. Registration Entrance Motor 1
8. Paper Transport Motor 7
9. Paper Transport Motor 6
10. Paper Transport Motor 5
11. Vertical Transport Motor (Tray 1)
12. Paper Transport Motor 4

The vertical transport components for tray 2 are the same as for tray 1. We will see them in the duplex section.

Double-feed Detection **RICOH**
imagine. change.

m205e9133

- Two ultrasound sensors detect double-feed.
 - [A] Emitter: URTB
 - [B] Receiver: URRB
- If double-feed is detected, Jam Code J099 is issued and the double-fed sheets are fed to the purge tray.

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When the paper passes between the sensors, an ultra-sound wave from the emitter passes through the paper to the receiver.

The receiver converts sound waves to voltage, and determines if a double feed has occurred by its output level.

If a double feed occurs, there is a space between the sheets. This space will generate a lower signal (lower than that of a single sheet).

When the emitter detects the lower signal, the machine considers that a double feed occurs and issue Jam Code J099 (double-feed detected). The double fed sheets are fed to the purge tray.



Double-feed Detection SPs - 1

RICOH
imagine. change.

- 1-302-001 to 002: Double-feed detection for trays 1 and 2 on/off
 - Default: On
- 1-302-003 to 008: Double-feed detection for the LCTs on/off
 - Default: On
- 1-302-009: Double-feed detection for the bypass tray on/off
 - Default: On

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No additional notes

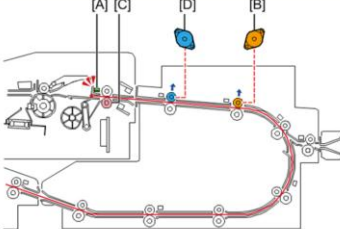


- 1-303-001: Action taken when double-feed detected
(0: Jam, 1: Purge 1, 2: Purge 2)
 - 0: The paper will be jammed at the moment when double feed is detected.
 - 1. Paper will be fed to Purge Tray 1 and machine stops.
 - 2. Paper will be fed to Purge Tray 2 and machine stops.
- The big difference between 1 and 2 is as follows.
 - Setting 1: Double fed paper goes through the fuser unit, and it may damage the fuser unit because there is no toner on the double fed papers.
 - Setting 2: Double fed paper does not go through the fuser unit. It prevents the fuser unit from being damaged, which can occur if thick paper is double-fed through the fusing unit.

No additional notes

Roller Release
Main Machine Relay Roller and LCT Relay Roller

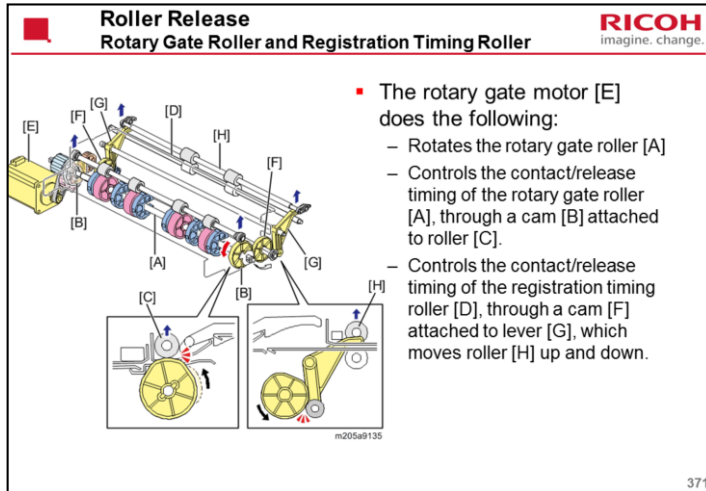
RICOH
imagine. change.



- When a sheet of paper is fed, the registration timing sensor [A] detects the leading edge.
- This signals registration roller lift motors 1 [D] and 2 [B] to turn on, to lift the relay rollers away from registration rollers 1 and 2.
- This releases the paper in front of the registration timing roller [C], so that it is free to move for registration.

370

No additional notes

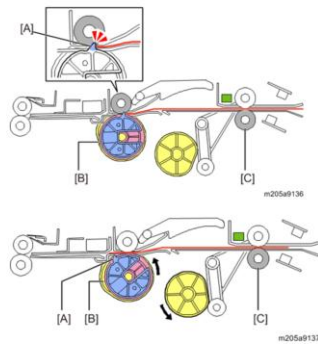


No additional notes



Skew Correction

RICOH
imagine. change.



- The leading edge of the paper fed by the registration timing roller [C] strikes the raised gate [A] of the rotary gate roller [B].
- This buckles the paper slightly and corrects skew.
- After this, the gate roller rotates, grips the paper, and feeds it to the shift unit.

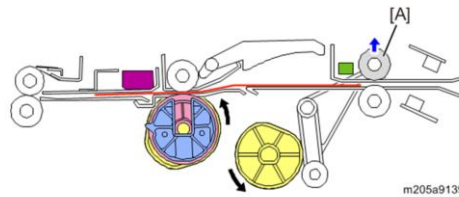
372

No additional notes



Main Scan Registration - 2

RICOH
imagine. change.



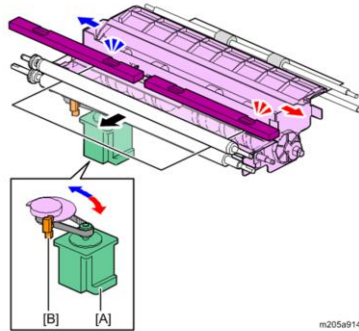
- The relay roller [A] is away from the registration timing roller, so it is free to move for registration in the main scan direction.

374

No additional notes



Main Scan Registration - 3



- The shift roller motor [A] moves the shift unit to the front and rear.
- The shift unit home position sensor [B] detects when the shift unit is at home position.

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375

No additional notes



SPs for Main Scan Registration

RICOH
imagine. change.

- 1-917-001 to 002: Enable/disable for trays 1 and 2
 - Default: Enabled
- 1-917-003 to 008: Enable/disable for the LCTs
 - Default: Enabled
- 1-917-009: Enable/disable for the bypass tray
 - Default: Enabled

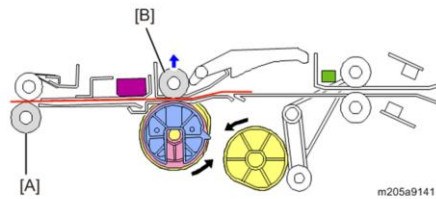
376

No additional notes



Sub Scan Registration - 1

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imagine. change.



- After registration in the main scan direction by the shift unit, the paper is fed to the PTR timing roller [A].
- The relay roller [B] is raised from the rotary gate roller [B] to free the paper.

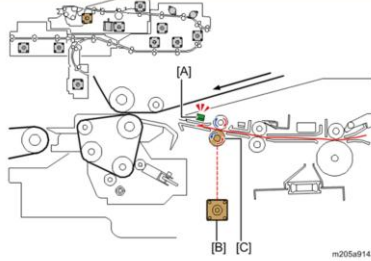
377

No additional notes



Sub Scan Registration - 2


RICOH
imagine. change.



- When the PTR timing sensor [A] detects the leading edge, the machine calculates when to start paper feed so the image will be in the correct place on the paper in the sub scan direction.
- The machine also adjusts the transfer timing motor [B] to drive the transfer timing roller [C] at the correct speed.

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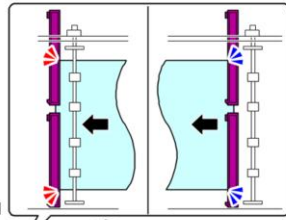
No additional notes

	Auto Magnification Control for Duplex Printing - 1	RICOH imagine. change.
<ul style="list-style-type: none">▪ Sometimes, paper shrinks after passing through the fusing unit, due to the applied heat.▪ The machine uses the CIS units in the registration unit to correct for this.▪ The machine measures the paper size for both front and rear sides.▪ The machine calculates a correction for the magnification (calculated from an average of the first four sheets), and applies it from the 8th page.▪ OHP and some types of colored paper cannot be detected by the CIS, so this will not work.▪ This function can be disabled for each paper tray with a TCRU setting.		
379		

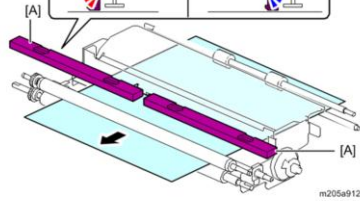
TCRU setting 0313: Activate Auto Corrctn. Snsr. for 2 Sided Magnif. Adjust.



Auto Magnification Control for Duplex Printing - 2



- Paper width: The two CIS units [A] detect the four corners of the paper



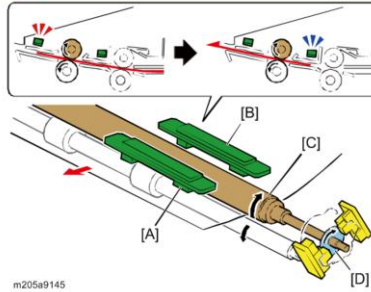
m205a9128

No additional notes



Auto Magnification Control for Duplex Printing - 3

RICOH
imagine. change.



m205a9145

- Paper length: The machine counts the rotations of PTR timing roller [C] using the registration encoder sensor [D].
 - The counts starts when sensor [A] detects the leading edge of the paper.
 - The counts starts when sensor [B] detects the trailing edge of the paper.

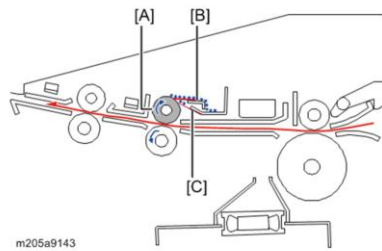
381

No additional notes



Paper Dust Collection

RICOH
imagine. change.



m205a9143

- The mylar scraper [B] cleans the surface of the idle roller.
- Then the mylar scraper [C] removes any paper dust missed by the first scraper.
- The scraper can be removed easily for cleaning.

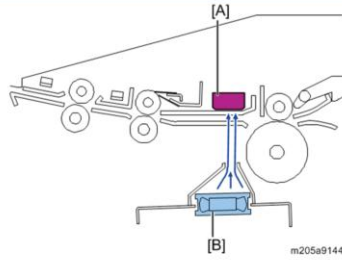
382

No additional notes



CIS Cleaning

RICOH
imagine. change.



- The CIS cleaning fan [B] blows air over the bottom of the CIS to keep it free of dust.

383

No additional notes



Details of all procedures are in the service manual. These slides only go over a few important points.

The procedures for the registration unit components are not all in the same section.

Some are in the section for Paper Tray 1, and some are in the Registration Unit section.



Drawer Unit



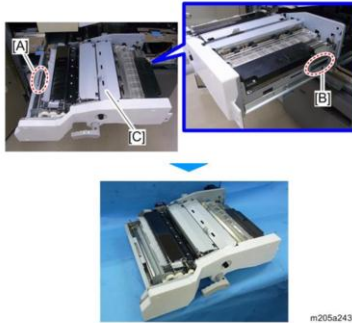
- The components are in the drawer unit.
- Sometimes, you have to remove this unit. It is heavy. Two people should be working.
 - Rotate the handle [A] at the front counter-clockwise.
 - Then you can pull the drawer unit [B] part of the way out.

No additional notes



Removing the Drawer Unit

RICOH
imagine. change.



- Hold handles [A] and [B] when you remove the drawer unit.

m205a2434

386

No additional notes

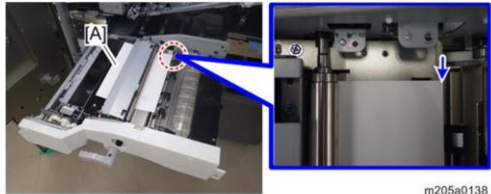
Putting Back the Drawer Unit **RICOH**
imagine. change.

■ When installing the drawer unit in the machine, the cut-outs [A], [B] in the left and right sides must be hooked onto screws [C], [D] of the guide rail.

387

No additional notes

After Replacing a CIS - 1 **RICOH**
imagine. change.



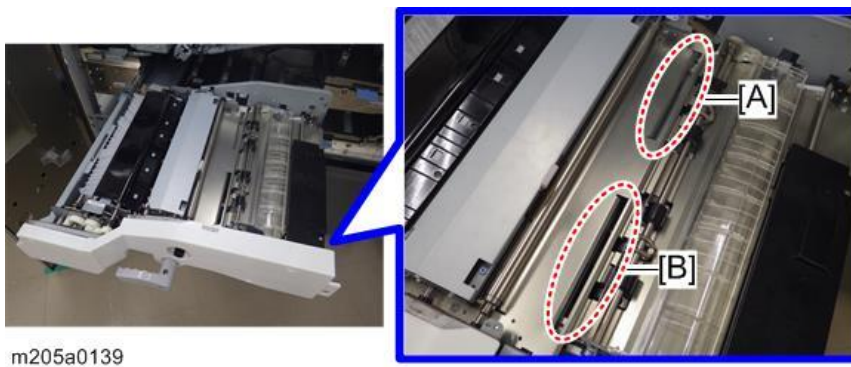
m205a0138

- After replacing a CIS, set A4 paper (plain paper, 80.0g/m²) in the drawer unit in LEF orientation before putting the CIS bracket back in drawer unit.
 - In the example shown above, the rear CIS was replaced.

388

The instructions in the manual also explain what to do if you replace the CIS at the front.

The opening must be covered. If you replaced CIS1 (rear), cover the hole [A] as shown below with the paper. If you replaced CIS2 (front), cover the hole [B] as shown below with the paper.





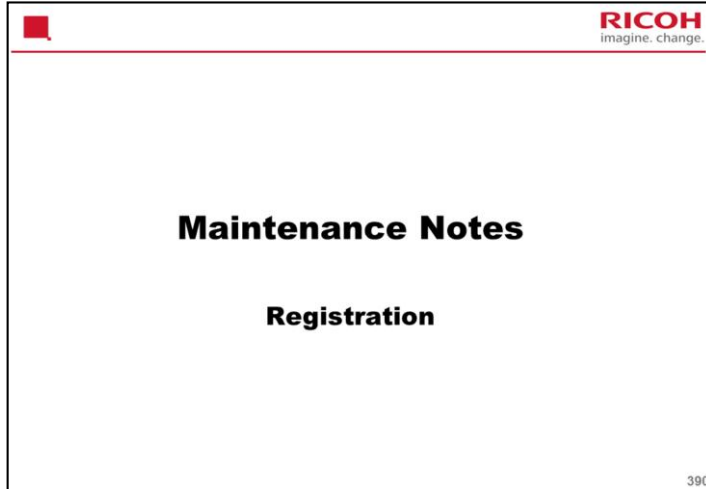
After Replacing a CIS - 2

RICOH
imagine. change.

- Reassemble the machine.
- Do the light quantity adjustment, as follows:
 - If you replaced CIS1 (rear), execute SP1-912-002.
 - If you replaced CIS2 (front), execute SP1-912-001.
- The result of the light quantity adjustment can be seen with the SP shown below. ('Succeeded' or 'Failed' is displayed.)
 - CIS1: SP1-913-002
 - CIS2: SP1-913-001

389

No additional notes



This section explains a few important points. For full details, see the procedures in the service manual. Obey all instructions in the service manual.



Clean Sensors and Rollers

RICOH
imagine. change.

- Clean the CIS units, discharge brush, and sensors with a blower brush.
- Clean the guide plate and rollers as described in the service manual.
 - Appendix > Preventative Maintenance > Cleaning Points
- See the service manual for how to access the components that need cleaning.
 - Appendix > Preventative Maintenance > Cleaning Points

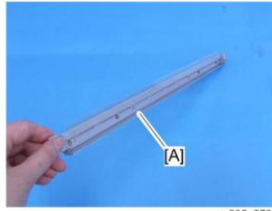
391

No additional notes



Empty the Dust Collection Tray

RICOH
imagine. change.



m205a2780

- When removing the tray, pull it up vertically.
- Do not tilt the tray or the dust will spill out.
- Place the tray [A] on some paper, and then tap the tray to remove the paper.
- Then wipe the tray with a dry cloth.

392

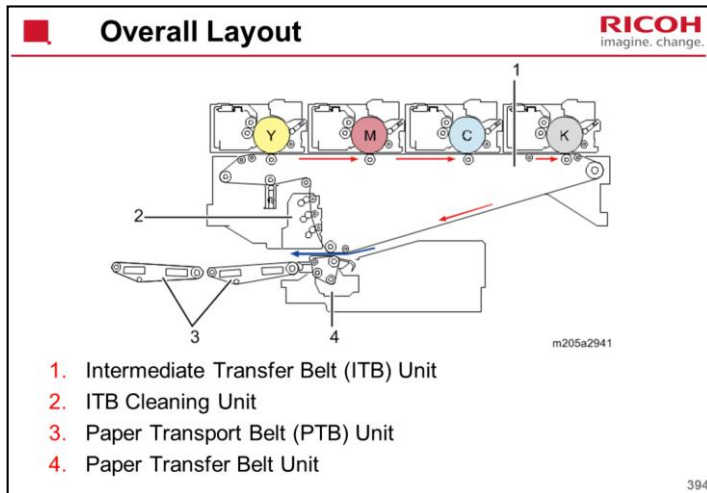
No additional notes



Detailed Section Descriptions

Image Transfer Unit

No additional notes

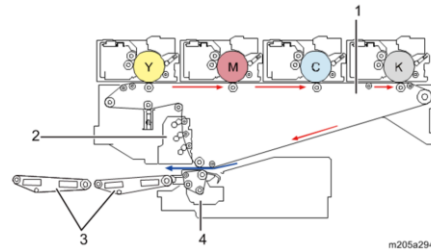


No additional notes



Principle

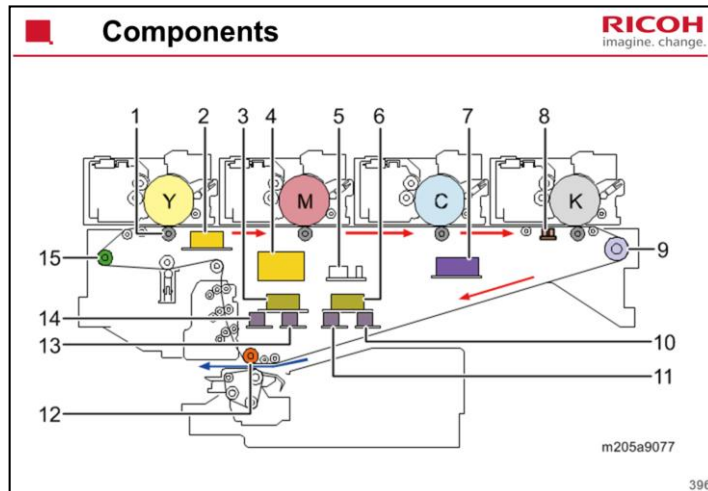
RICOH
imagine. change.



- After the toner image transfers from the drum, the ITB [1] carries it to the paper transfer point.
- The paper transfer belt [4] transfers the toner to the paper.
- The paper is transported to the fuser unit by the PTB (paper transport belt) unit [3].

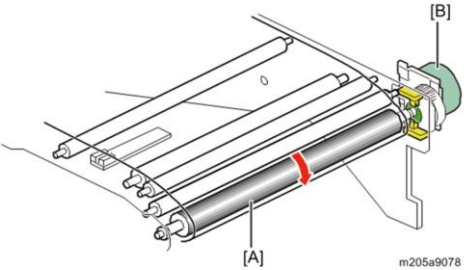
395

No additional notes



1. Image Transfer Roller
2. Paper Transfer DC Power Pack
3. ITB Cleaning HVP (-) (M, Y)
4. Paper Transfer AC Power Pack
5. TDRB
6. ITB Cleaning HVP (-) (K, C)
7. Transfer Power Pack
8. ITB Belt Speed Sensor
9. ITB Drive Roller
10. ITB Cleaning HVP (+) (K)
11. ITB Cleaning HVP (+) (C)
12. Paper Transfer Bias Roller
13. ITB Cleaning HVP (+) (M)
14. ITB Cleaning HVP (+) (Y)
15. Belt Centering Roller

Drive **RICOH**
imagine. change.



- The ITB motor [B] drives the ITB via the ITB drive roller [A].
- The ITB is an elastic belt, and this has different reflectivity from the ITBs used in previous models. Because of this, MUSIC patterns are not made on this belt, but on the paper transfer belt.

397

The elastic belt is better at maintaining even toner density with less toner. It is also effective for handling uneven paper, and transfer and separation are better for thin paper.

Why is it difficult to read sensor patterns off the elastic ITB?

The reflectivity of the elastic belt is much lower than the ITBs in previous models, and readings of image density do not change much when the quantity of deposited toner increases. However, the paper transfer belt is made of the same material as ITBs of previous products, so sensor patterns are read off this belt instead.

Transfer Bias

▪ A positive charge is applied to the underside of the ITB by the image transfer roller [1]. This pulls the toner from the drum to the ITB. Then a negative charge is applied to the paper transfer bias roller [4]. This pushes the toner to the paper.

398

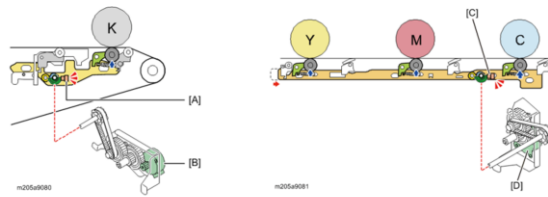
1. Image Transfer Roller
2. Paper Transfer DC Power Pack
3. Transfer Power Pack
4. Paper Transfer Bias Roller

AC transfer bias is used to improve transfer for paper that has poor transfer properties.



Contact and Separation

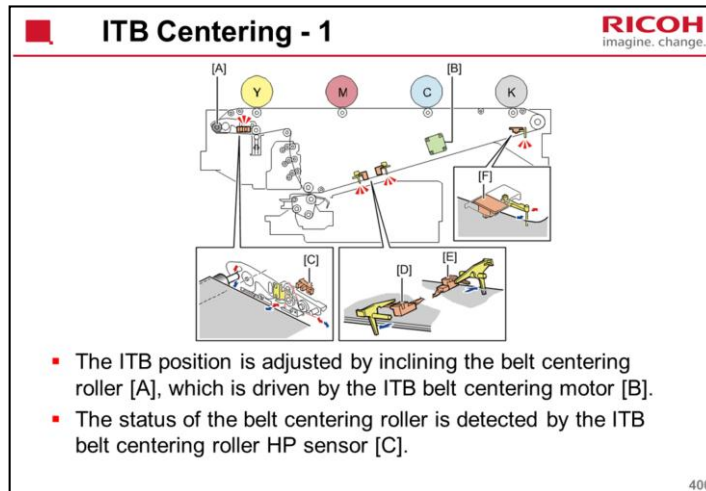
RICOH
imagine. change.



- In its default state, the ITB contacts none of the drums. During B/W printing, the ITB only contacts the K drum. For FC printing, the ITB color lift motor [D] lifts the ITB so that it contacts the CMY drums.
- Contact is detected by the ITB Black Lift Sensor [A] for the K drum and the ITB Color Lift Sensor [C] for the CMY drums.
- At the end of each job, the ITB moves away from all drums.

399

No additional notes



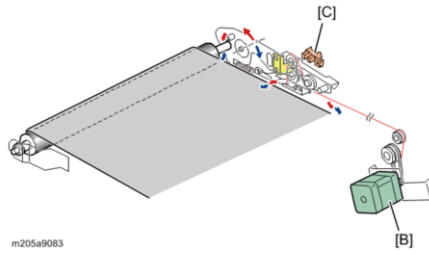
This mechanism steers the ITB perfectly straight on the image transfer rollers.

The belt centering roller HP sensor [C] detects when the belt centering roller is at home position before starting belt centering adjustment.



ITB Centering - 2

RICOH
imagine. change.



m205a9083

- The status of the belt centering roller is detected by the ITB belt centering roller HP sensor [C].
 - This sensor when the belt centering roller is at home position before starting belt centering adjustment.

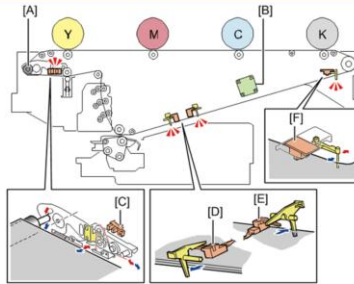
401

No additional notes



ITB Centering - 3

RICOH
imagine. change.



- ITB belt overrun sensor (Front) [D] and ITB belt overrun sensor (Rear) prevent damage to the ITB if a problem arises that cannot be corrected with the belt steering mechanism.
 - The machine stops when a ITB belt overrun sensor detects that the actuator moved, which occurs when the ITB is in an abnormal position.

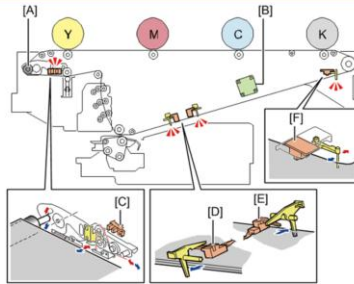
402

No additional notes



ITB Centering - 4

RICOH
imagine. change.



- The ITB belt centering sensor [F] detects the ITB position by measuring the distance between the edge of the belt and the peg of the ITB belt centering sensor.

403

No additional notes



ITB Centering - 5

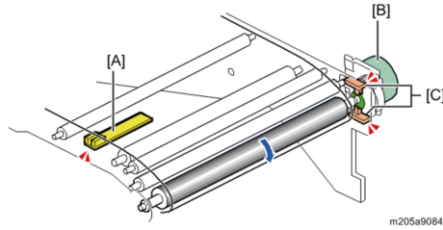
- Detection is done at these times:
 - At machine power-on
 - When the machine returns from low power mode.
 - When the front doors are closed.
 - When the machine executes belt position initialization
- If detection failed, the machine will issue SC471-01.

No additional notes



ITB Speed Control - 1

RICOH
imagine. change.



- The ITB rotation speed is measured during printing and when executing MUSIC.
- The ITB belt speed sensor [A] measures ITB rotation speed by detecting the encoder strip on the reverse side of the ITB. The results are fed back to the ITB motor [B].

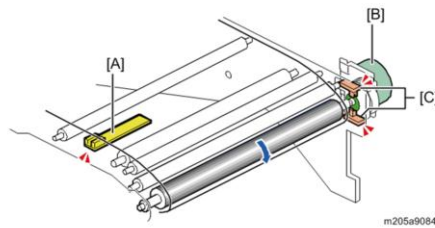
405

No additional notes



ITB Speed Control - 2

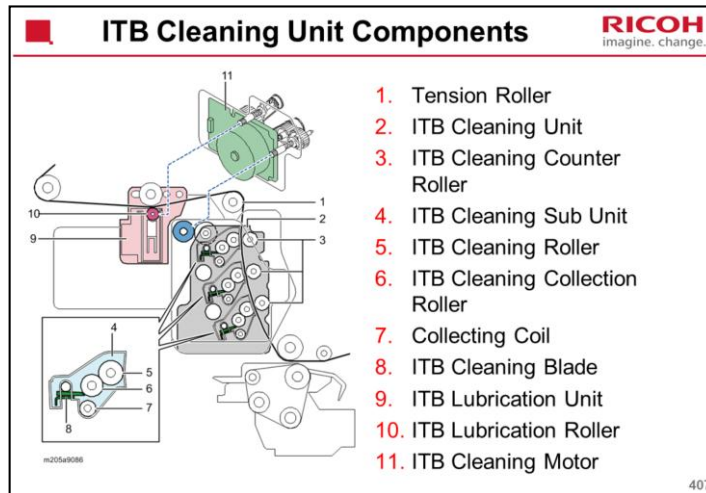
RICOH
imagine. change.



- ITB motor rotation speed is also measured by ITB motor rotation sensors [C], in case accurate ITB rotation speed cannot be detected by the ITB belt speed sensor due to dirt on the sensor.

406

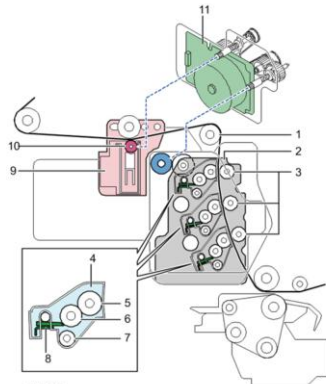
If the output from the speed sensor [A] falls below a certain threshold, the machine detects that this sensor is not reliable possibly due to dirt on the sensor.



The ITB lubrication unit is a separate unit from the ITB cleaning unit.

ITB Cleaning

RICOH
imagine. change.



- There are three cleaning sub-units.
- Each sub-unit [4] has an ITB cleaning collection roller [6], ITB cleaning roller [5], ITB cleaning blade [8], and a collection coil [7].
- Voltage is supplied to the collection roller and cleaning roller, and toner and paper dust are removed from the ITB electrostatically. The ITB cleaning blade then transfers these to the waste toner bottle via the collection coil.
- The ITB cleaning motor [11] drives the rollers and the collection coil via gears.

m205a9086

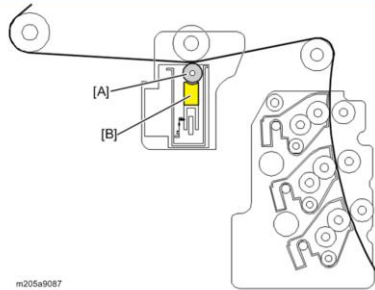
408

No additional notes



ITB Lubrication

RICOH
imagine. change.



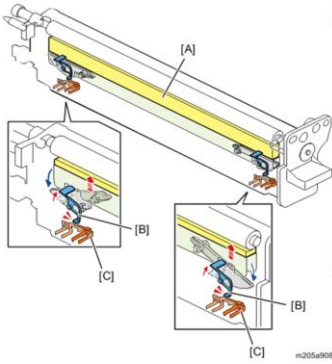
m205a9087

- Lubricant is provided to the ITB from the ITB lubricant bar [B] via the ITB lubrication roller [A].
- The ITB lubrication unit is a separate unit from the ITB cleaning unit.

409

No additional notes

ITB Lubricant Near-end and End Detection **RICOH**
imagine. change.



The diagram illustrates the ITB Lubricant Near-end and End Detection mechanism. It shows a cross-section of a lubricant bar [A] within a housing. As the lubricant is used up, the bottom of the bar [A] becomes higher. This causes the actuator [B] to rotate. The rotation of [B] pushes one of the ITB lubrication unit end switches [C].

- As lubricant is used up, the bottom of the lubricant bar [A] becomes higher and the actuator [B] rotates.
- Lubricant near-end is detected when the actuator [B] pushes any one of the ITB lubrication unit end switches [C].
- The machine can then print 500 km more, and after that, the machine stops and a lubricant end message is displayed.

m205a9088

410

No additional notes



Details of all procedures are in the service manual. These slides only go over a few important points.



Pulling Out the ITB to the Service Position - Overview

RICOH
imagine. change.

- When replacing parts in the ITB unit, pull the ITB unit out to the service position.

- Summary (see the service manual for full details):
 - Remove the inner front cover.
 - Rotate the release lever and the handle to separate the ITB unit from the PCUs.
 - Remove the ITB cleaning and lubrication units.
 - Remove 2 screws that secure the ITB unit.
 - Pull out the ITB unit.

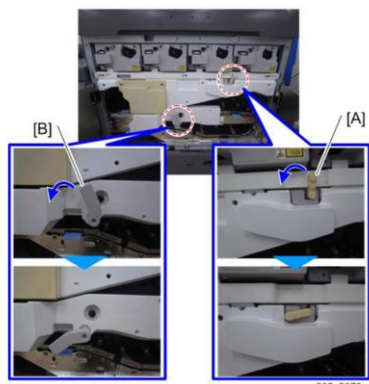
412

No additional notes



Pulling Out the ITB to the Service Position – Release Lever and Handle

RICOH
imagine. change.



- Rotate the release lever [A] and the handle [B] counter-clockwise and separate the ITB unit from the PCUs.

m205z5079

413

No additional notes



Pulling Out the ITB to the Service Position – Cleaning and Lubrication Units



m205z5156

- ITB Cleaning Unit



m205z5157

- ITB Lubrication Unit

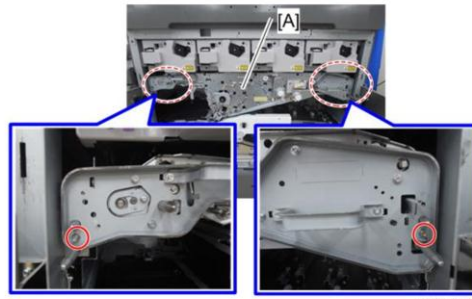
414

No additional notes



Pulling Out the ITB to the Service Position – Two Screws

RICOH
imagine. change.



- These two screws secure the ITB unit.

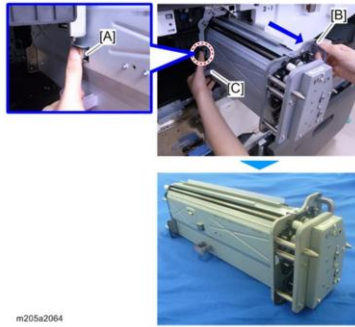
415

No additional notes



Pulling out the ITB Cleaning Unit

RICOH
imagine. change.



- Hold the two handles [B] and [C] and push the lock bar [A] to remove this unit.

m205a2064

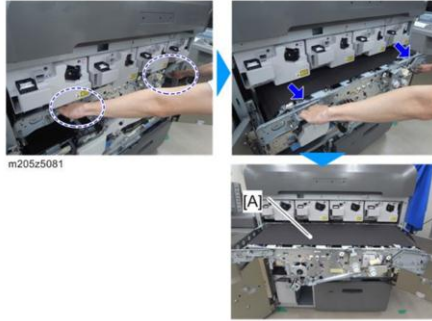
416

No additional notes



Pulling Out the ITB to the Service Position – Pull Out the ITB (1)

RICOH
imagine. change.



- Hold the grips at the left and the right and pull the ITB unit part of the way [A].

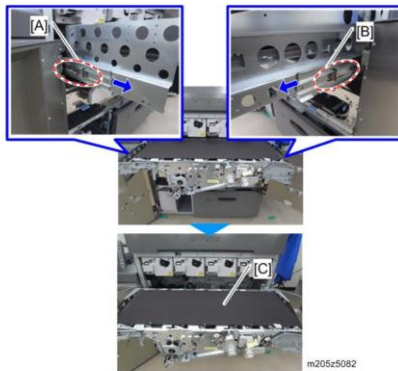
m205z5081

417

No additional notes



Pulling Out the ITB to the Service Position – Pull Out the ITB (2)



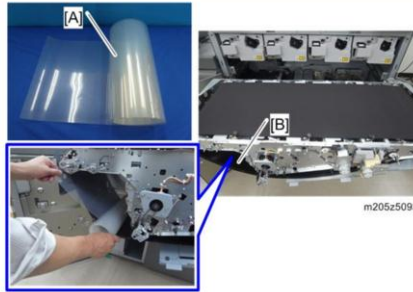
- Press the release levers [A] and [B], and then pull the ITB unit [C] out to the service position.

No additional notes



Removing the ITB - 1

RICOH
imagine. change.



- A protective sheet is provided with the machine. Use this when removing the ITB.
- Place the protective sheet [A] inside of the lower left part [B] of the ITB unit.

419

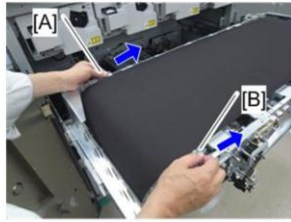
The belt is softer but heavier than previous models.

The protective sheet is one of the items in the cardboard tool box.



Removing the ITB - 2

RICOH
imagine. change.



m205z5094

- Hold both ends [A] and [B] of the protective sheet, and wrap it around inside the ITB [C] clockwise.

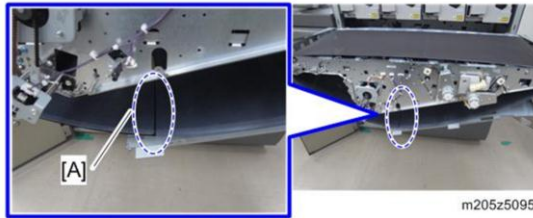
420

No additional notes



Removing the ITB - 3

RICOH
imagine. change.



- When the protective sheet is wrapped around the belt, the seam [A] comes to the bottom.

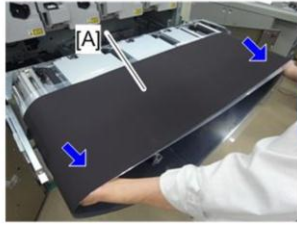
421

No additional notes



Removing the ITB - 4

RICOH
imagine. change.



- Put your hands into the protective sheet and remove the belt [A].

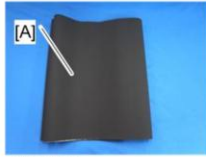
422

No additional notes



Installing an ITB - 1

RICOH
imagine. change.



m205z5097



- Spread out the [A] with glossy tape [B] at the front.

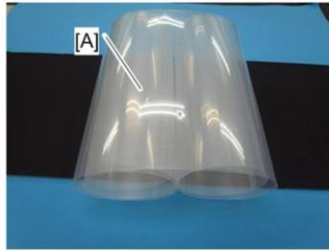
423

No additional notes



Installing an ITB - 2

RICOH
imagine. change.



m205z5098

- Make two loops in the protective sheet [A].

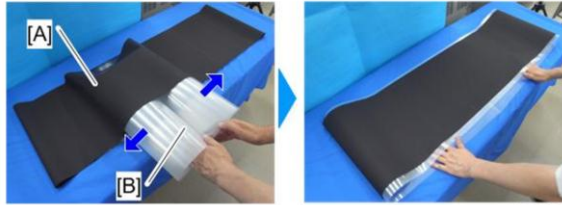
424

No additional notes



Installing an ITB - 3

RICOH
imagine. change.



m205z5099

- Place the protective sheet [B] inside the intermediate transfer belt [A] and spread it to the left and right.

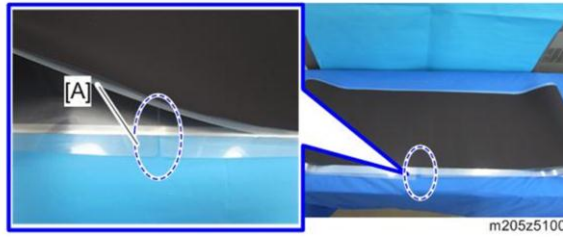
425

No additional notes



Installing an ITB - 4

RICOH
imagine. change.



- If done correctly, the seam [A] of the protective sheet comes to the bottom.

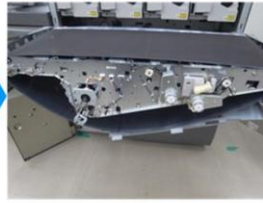
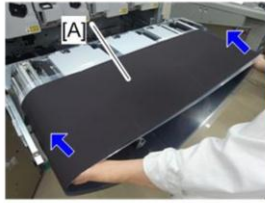
426

No additional notes



Installing an ITB - 5

RICOH
imagine. change.



m205z5101

- Put your hands into the protective sheet and install the belt [A].
 - Be careful not to touch the belt.
- Remove the protective sheet.

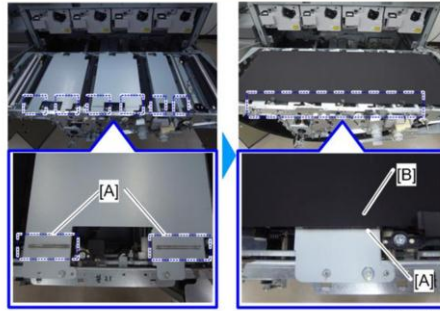
427

No additional notes



Installing an ITB - 6

RICOH
imagine. change.



- Set the front edge of the belt [B] on the two lines (belt set position) [A] printed on the stay.

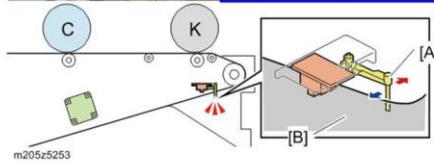
428

No additional notes



Installing an ITB - 7

RICOH
imagine. change.



- Make sure that the pin [A] of the ITB belt centering sensor does not ride over the belt [B].

429

No additional notes



Installing an ITB - 8

RICOH
imagine. change.

- After installing the new belt, do the following procedures.
 - Initialize the Belt Position
 - It may be necessary to adjust an adjustment plate depending on the results.
 - Initialize the ITB belt speed sensor light intensity, and initialize the sensor itself.
 - MUSIC (mode d)

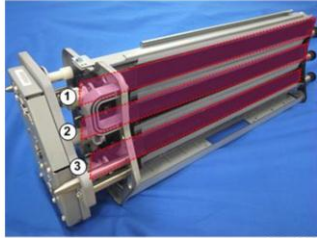
430

No additional notes



ITB Cleaning Unit: Three Sub-units

RICOH
imagine. change.

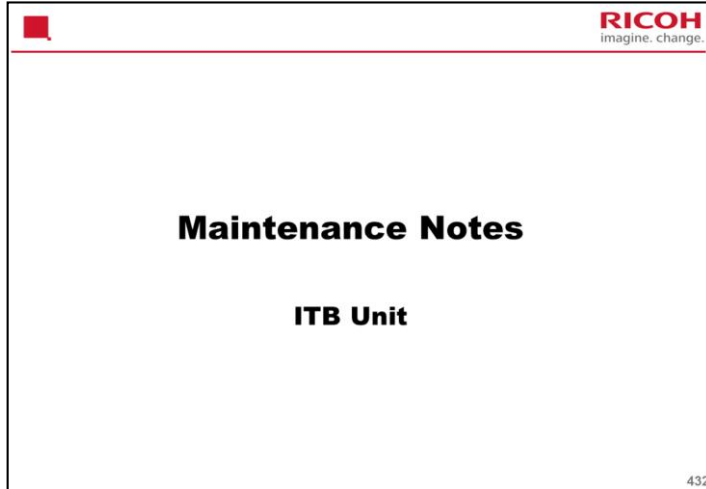


m205a2069

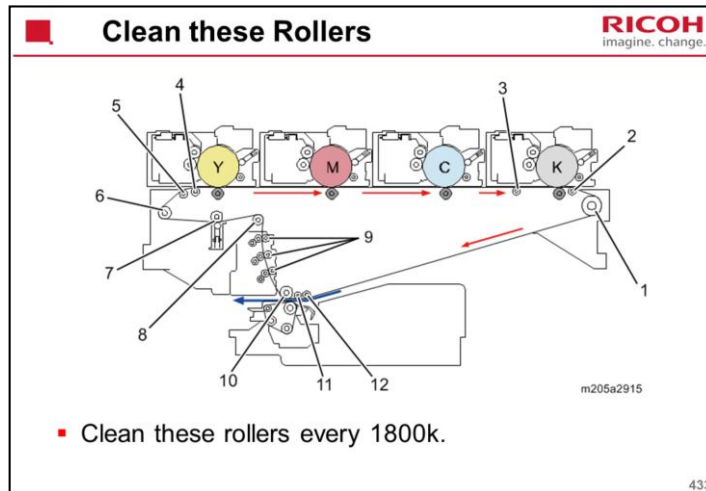
- These three sub-units all have the same structure and components.

431

These units are interchangeable.



This section explains a few important points. For full details, see the procedures in the service manual. Obey all instructions in the service manual.



1. Drive Roller
2. Idle Roller 4
3. Idle Roller 3
4. Idle Roller 2
5. Idle Roller 1
6. ITB Belt Centering Roller
7. ITB Lubrication Opposing Roller
8. Tension Roller
9. ITB Cleaning Opposing Roller
10. Paper Transfer Bias Roller
11. Press Roller
12. Transfer Sub Roller

The procedures are in the maintenance section in the appendix of the service manual.



Clean these Sensors

RICOH
imagine. change.

- ITB Belt Centering Sensor: Some disassembly is required.
- ITB Belt Speed Sensor: Needs cleaning every 900K prints. It also needs cleaning when you replace the EM/PM parts in the ITB unit.

- Use a blower brush to clean these sensors.

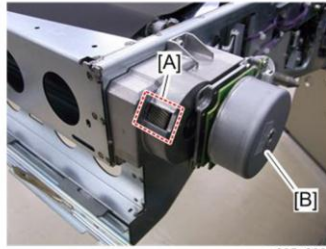
434

No additional notes



ITB Motor Drive Gears

RICOH
imagine. change.



m205a2901

- Lubricate with Molykote EM-50L (Dow Corning Toray Co.,Ltd.) every 1600K.
- Rotate the ITB motor [B] five times at 60 degree intervals, and apply the grease from the lubrication window [A] after each 60 degree rotation.

435

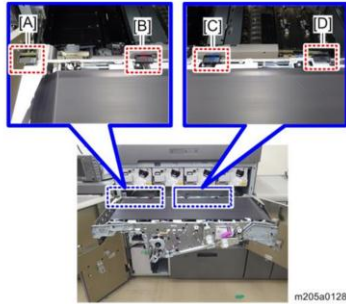
See the service manual for the detailed lubrication procedure.

Appendix > Preventative Maintenance > Lubrication Points



Developer Holders

RICOH
imagine. change.



- Clean the four developer holders.
- Remove toner by passing a magnetic screw driver over the openings.
- Then wipe any remaining toner away with a dry cloth.

436

No additional notes

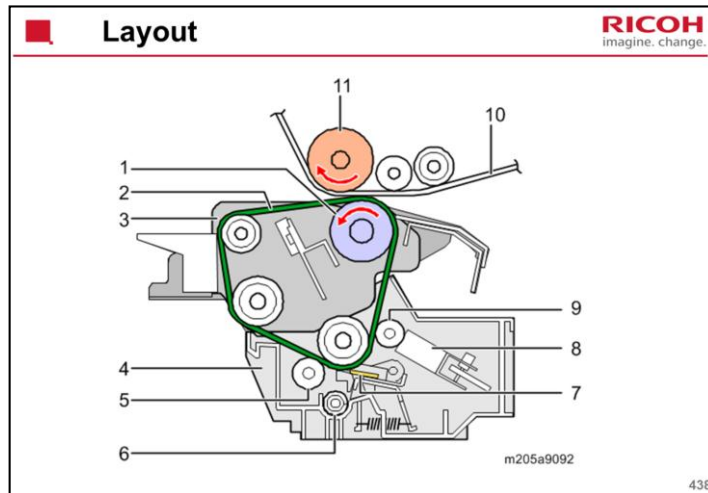


Detailed Section Descriptions

Paper Transfer Belt Unit

437

No additional notes

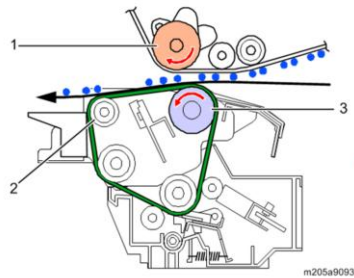


1. Paper Transfer Belt Roller
2. Paper Transfer Belt
3. Paper Transfer Belt Unit
4. Paper Transfer Cleaning Unit
5. Paper Transfer Cleaning Roller
6. Collection Coil
7. Paper Transfer Cleaning Blade
8. Paper Transfer Lubricant Bar
9. Paper Transfer Lubrication Roller
10. Intermediate Transfer Belt (ITB)
11. Paper Transfer Bias Roller



Transfer and Separation

RICOH
imagine. change.



- AC from the transfer power pack is applied to the paper transfer bias roller [1] to push the toner from the ITB to the paper.
- Paper separates from the ITB because of the curvature of the ITB.
 - The small diameter of the separation roller [2] also assists in separation.

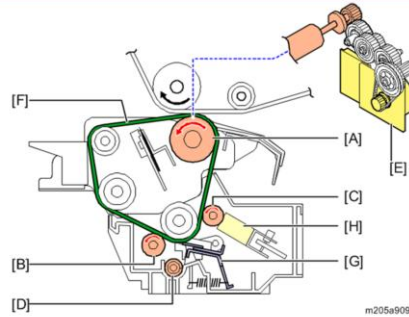
439

1. Paper Transfer Bias Roller
2. Paper Separation Roller
3. Paper Transfer belt roller



Drive

RICOH
imagine. change.



m205a9094

- The paper transfer belt motor drives paper transfer belt roller [A], paper transfer cleaning roller [B], paper transfer lubrication roller [C], collection coil [D] via gears and timing belts.

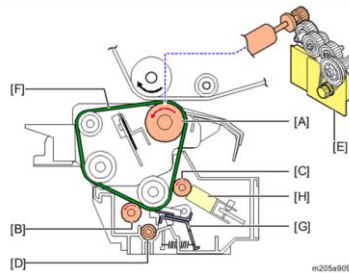
440

No additional notes



Cleaning

RICOH
imagine. change.



- The paper transfer cleaning roller [B] and paper transfer cleaning blade [G] remove paper dust and toner from the paper transfer belt [F].
- The paper dust and toner are transferred to the waste toner bottle via collection coil [D].

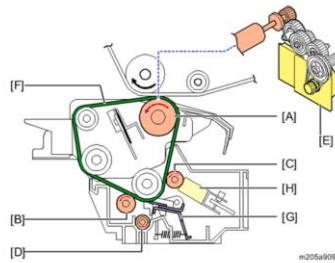
441

The cleaning roller loosens the paper dust and toner so that it can be easily removed by the blade



Lubrication

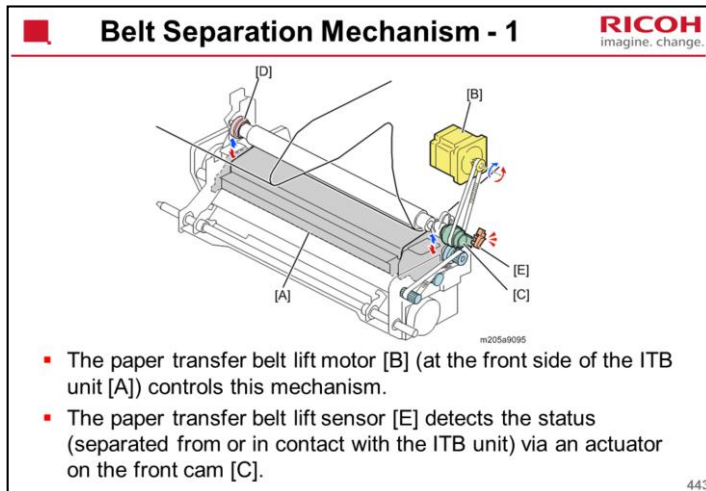
RICOH
imagine. change.



- To improve cleaning, the belt is lubricated by the paper transfer lubricant bar [H] via paper transfer lubrication roller [C].

442

No additional notes



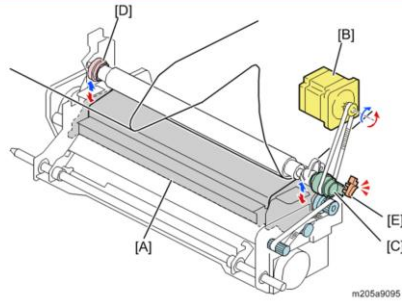
To suppress shock jitter, the timing and amount of spacing with the paper transfer belt roller are controlled for the thickness and type of paper (plain paper, glossy, coated, etc.).

In addition, adjustments can be made in Advanced Settings for user-defined paper types.



Belt Separation Mechanism - 2

RICOH
imagine. change.



- When the motor [B] rotates counter-clockwise, the cams [C, D] push down the PTB unit and separate it from the ITB unit.
- When the motor [B] rotates clockwise, the PTB unit comes into contact with the ITB unit.

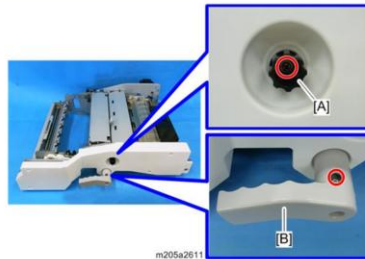
444

No additional notes



Pressure Lever

RICOH
imagine. change.



m205a2611

- The pressure lever moves the paper transfer belt unit into contact or away from the ITB.

445

No additional notes



Pressure Unit

RICOH
imagine. change.



- Pressure unit: This is the name for the component that pushes the paper transfer belt unit up against the ITB unit.

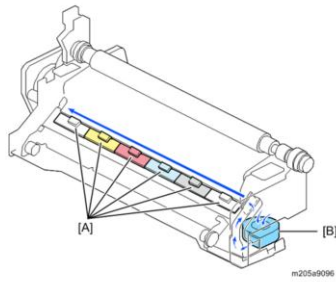
446

No additional notes



MUSIC/ID Sensor Cleaning

RICOH
imagine. change.



- The MUSIC/ID sensor cleaning fan [B] draws clean air into the machine to keep the area around the MUSIC/ID sensors [A] free of dust and stray toner.

447

No additional notes

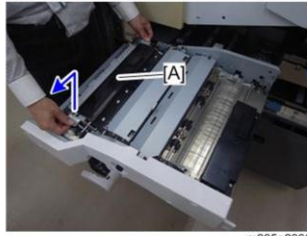


Details of all procedures are in the service manual. These slides only go over a few important points.



Lifting Out the Paper Transfer Unit

RICOH
imagine. change.



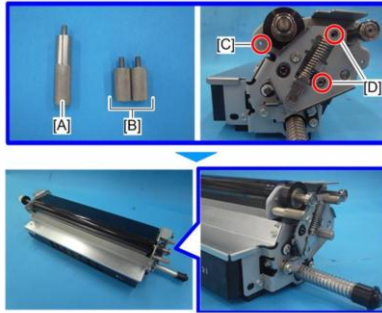
m205a2336

- Hold the unit by the two handles as shown.

449

No additional notes

■ Separating the Belt Unit and the Cleaning Unit - 1 **RICOH**
imagine. change.

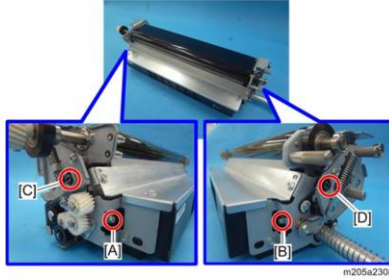


- Three jigs are provided with the machine, to help the belt unit to stand vertically.
- Insert them in the holes [C] and [D]

450

They are called 'Vertical Standing Support Jigs'.

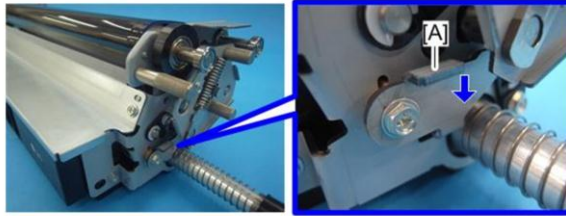
Separating the Belt Unit and the Cleaning Unit - 2 **RICOH**
imagine. change.



- Separate the two units by removing four screws.
- Remove the screws in the order of [A], [B], [C], [D].
- When re-installing the unit, fasten the screws in the order of [C], [D], [A], [B].

451

No additional notes



m205a2311

- Push the rear lever [A] down to unlock the paper transfer cleaning unit, and then separate the paper transfer unit from the paper transfer cleaning unit.

452

No additional notes



- Stand the unit on its end, with its rear side facing down.

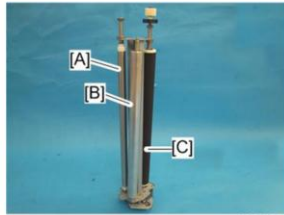
453

No additional notes



Removing the Belt

RICOH
imagine. change.



m205a2318



m205a2315

- When pulling out the paper transfer belt, avoid touching the frame and the gear.
- Before installing a new paper transfer belt, confirm that rollers [A], [B], and [C] are not dirty (see the diagram on the right). If they are dirty, clean them with a dry cloth.
- Do the same for the tension roller you removed earlier (see the diagram on the left).

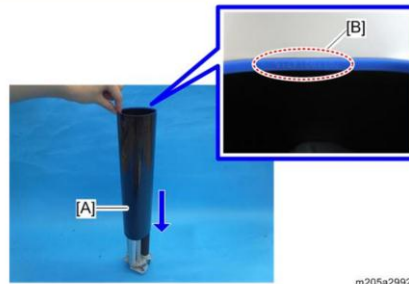
454

No additional notes



Installing a New Belt - 1

RICOH
imagine. change.



m205a2992

- When installing the paper transfer belt [A], make sure that the end with the lot number [B] is on the upper side.

455

The rear end of the unit is pointing down. This means the lot number is at the front when the belt is installed in the machine.



Installing a New Belt - 2

RICOH
imagine. change.



- After installing a new paper transfer belt, apply zinc stearate powder (D0159501) to the whole surface of the paper transfer belt evenly with a brush.

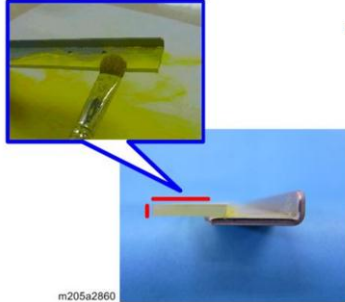
456

No additional notes



Installing a New Cleaning Blade

RICOH
imagine. change.



- Before installing, apply yellow toner (D0149500) evenly on the faces of the new blade (indicated here with red lines).

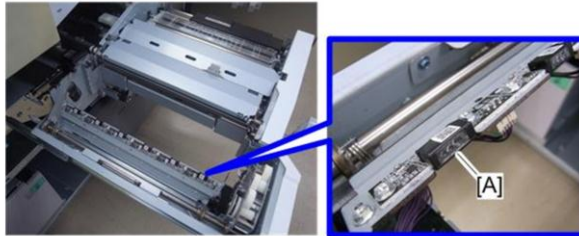
457

No additional notes



MUSIC/ID Sensors - 1

RICOH
imagine. change.



m205a2999

- Do not touch the detecting surface [A] of the MUSIC/ID sensors with your hands. If you touched the surface of the MUSIC/ID sensors, clean with a damp cloth.

458

No additional notes



MUSIC/ID Sensors - 2

RICOH
imagine. change.

Decal Attached
to Each Sensor



Rear

Fron



Locations of the
Six Sensors

- There are six sensors (labelled 1 to 6 from front to rear as shown below).
- Each sensor has a decal with 6 values on it.
- These values must be input into SP mode (36 values in total).

459

The information on this slide is not in the service manual at this time.



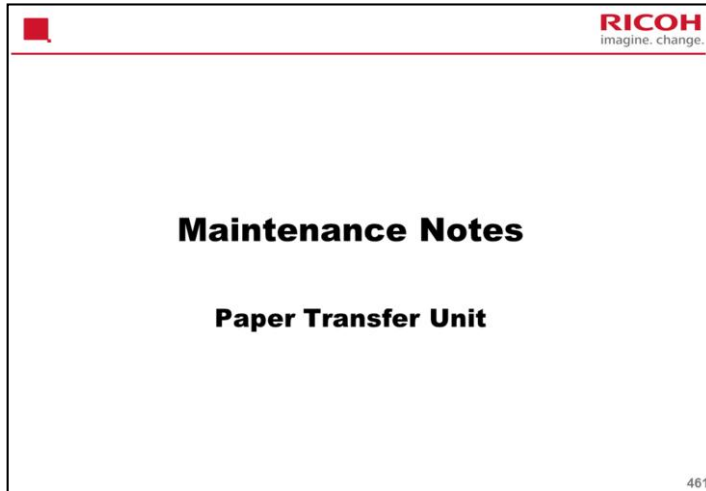
MUSIC/ID Sensors - 3

RICOH
imagine. change.

- Input the data from the 6 decals into the following SPs.
 - Sensor 1: SP 3-333-1 to -6
 - Sensor 2: SP 3-334-1 to -6
 - Sensor 3: SP 3-335-1 to -6
 - Sensor 4: SP 3-336-1 to -6
 - Sensor 5: SP 3-337-1 to -6
 - Sensor 6: SP 3-338-1 to -6
- Then do process control (SP 3-011-002).

460

The information on this slide is not in the service manual at this time.



This section explains a few important points. For full details, see the procedures in the service manual. Obey all instructions in the service manual.



Cleaning

- Clean the ID sensors with a damp cloth.
- Clean the guide plates with a dry cloth.
- See the service manual for how to access the components that need cleaning.
 - Appendix > Preventative Maintenance > Cleaning Points

No additional notes



Detailed Section Descriptions

Paper Transport Belt Unit

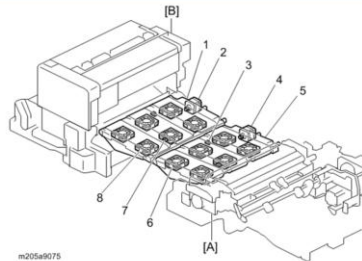
463

No additional notes



Layout

RICOH
imagine. change.



- This mechanism carries the paper with unfused toner from the transfer unit to the fusing unit.
- There are two units. The 1st unit is in the imaging section, and the 2nd unit is in the fusing section.
- The 2nd paper transfer unit has a guide plate.

464

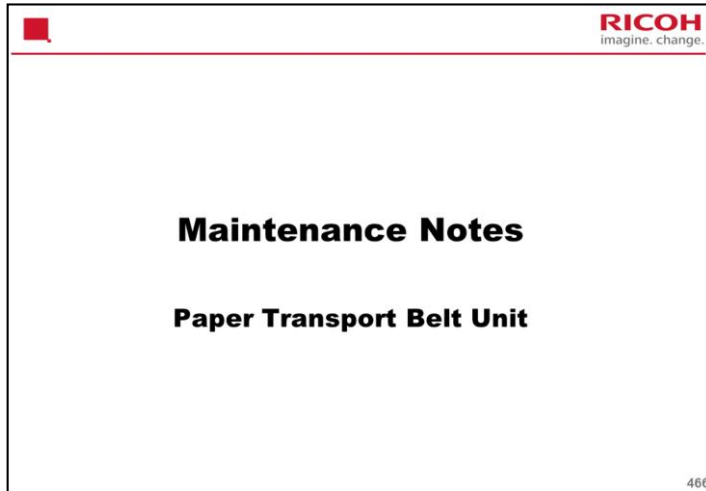
1. 2nd Paper Transport Belt (PTB) Unit
2. 2nd PTB Motor
3. PTB Transport Sensor 1
4. 1st PTB Motor
5. 1st Paper Transport Belt (PTB) Unit
6. PTB Fan 1
7. PTB Transport Sensor 2
8. PTB Fan 2

Mechanisms **RICOH**
imagine. change.

- PTB motors [A] drive the paper transport belt via gears and transport rollers.
- PTB fans [B] draw air through holes in the paper transport belts. This holds the paper on the belts.
- The PTB transport sensors [C] detect paper jams in the paper transport belt (PTB) Unit.

465

No additional notes



This section explains a few important points. For full details, see the procedures in the service manual. Obey all instructions in the service manual.



Cleaning

- Clean the transport belts with a damp cloth.
- Clean the guide plate and the ribs of the belts with a dry cloth.
- Clean the sensors with a blower brush.
- See the service manual for how to access the components that need cleaning.
 - Appendix > Preventative Maintenance > Cleaning Points

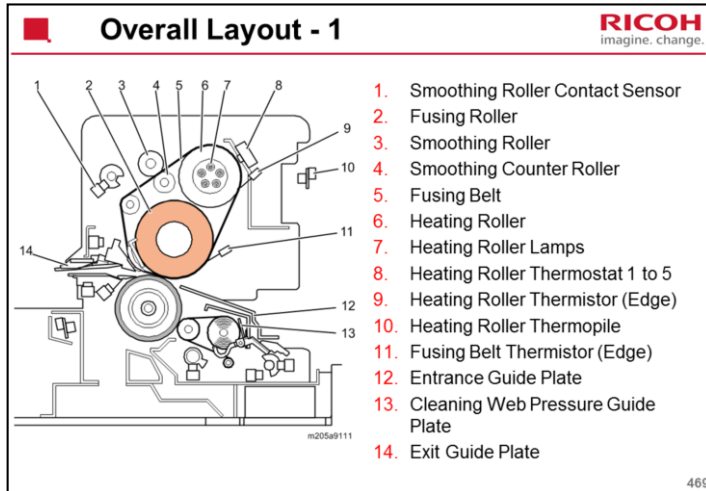
No additional notes



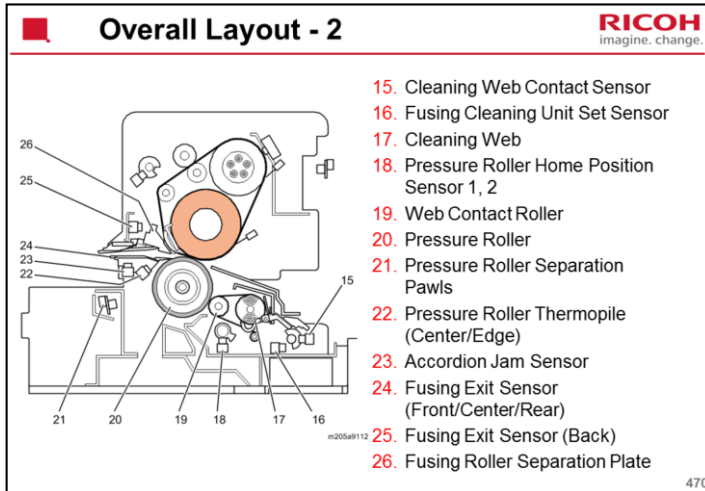
Detailed Section Descriptions

Fusing Unit

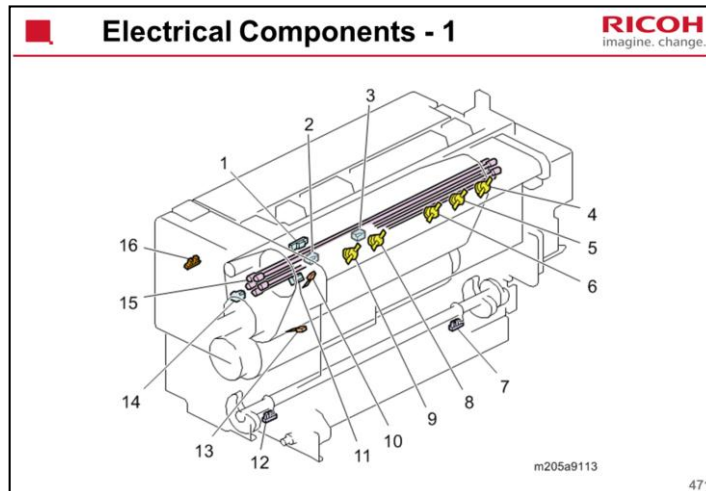
No additional notes



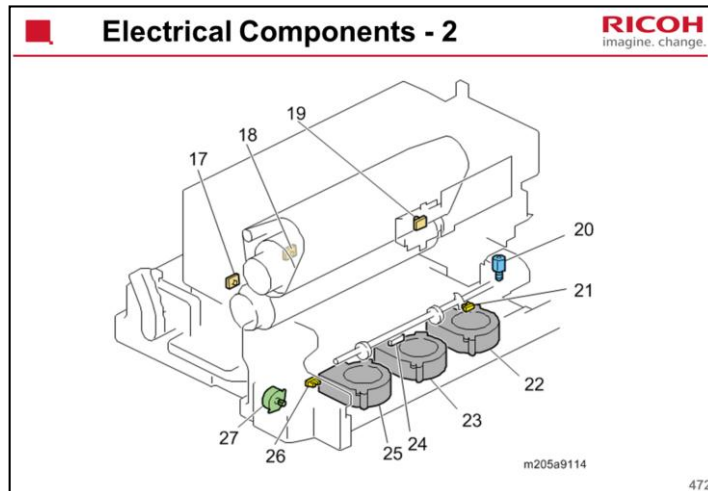
No additional notes



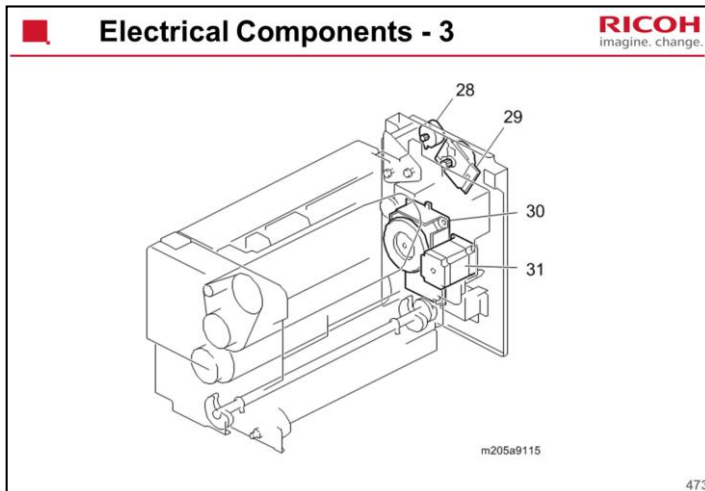
No additional notes



1. Fusing Exit Sensor (Back)
2. Fusing Exit Sensor (Center)
3. Fusing Exit Sensor (Rear)
4. Heating Roller Thermostat 5
5. Heating Roller Thermostat 4
6. Heating Roller Thermostat 3
7. Pressure Roller HP Sensor 2
8. Heating Roller Thermostat 2
9. Heating Roller Thermostat 1
10. Heating Roller Thermistor (Edge)
11. Accordion Jam Sensor
12. Pressure Roller HP Sensor 1
13. Fusing Belt Thermistor (Edge)
14. Fusing Exit Sensor (Front)
15. Heating Roller Lamps
16. Smoothing Roller Contact Sensor

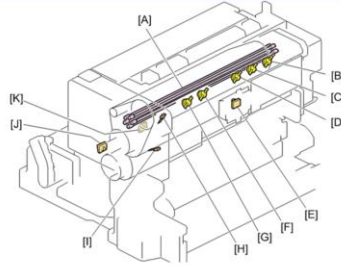


- 17. Pressure Roller Thermopile (Edge)
- 18. Pressure Roller Thermopile (Center)
- 19. Heating Roller Thermopile
- 20. Cleaning Web Contact Motor
- 21. Cleaning Web Contact Sensor
- 22. Pressure Roller Intake Fan 3
- 23. Pressure Roller Intake Fan 2
- 24. Fusing Cleaning Unit Set Sensor
- 25. Pressure Roller Intake Fan 1
- 26. Web End Sensor
- 27. Fusing Web Motor



- 28. Fusing Smoothing Roller Contact Motor
- 29. Fusing Smoothing Roller Motor
- 30. Fusing Motor
- 31. Pressure Roller Lift Motor

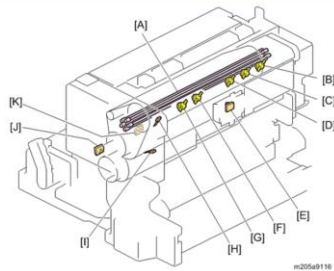
Temperature Control Components - 1 **RICOH** imagine. change.



- There are 5 heating roller lamps [A] (1000 W) inside the heating roller. The lamps heat the heating roller, and the heat from that roller is transferred to the fuser belt.
 - The target fusing temperature is based on the readings of temperature/humidity at the PCU. The operator can choose a different fusing temperature for the type of paper in use.

474

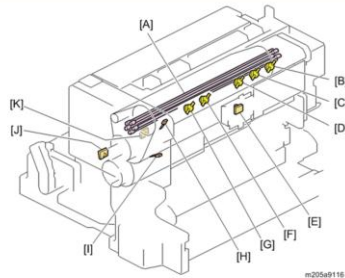
These lamps are identical.



- Fusing Belt Thermistor (Edge) [I]: Detects the surface temperature of the fusing belt. The machine adjusts the temperature by controlling the operation of the heating roller lamps or controlling the rotation of the fusing unit rollers at standby
- Heating Roller Thermistor (Edge) [H]: Detects the heating roller temperature.

No additional notes

Temperature Control Components - 3 **RICOH** imagine. change.



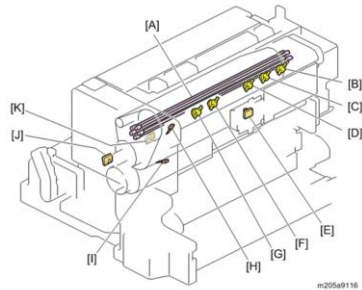
m205a9116

- Heating Roller Thermopile [E]: Detects the temperature of the fusing belt, and the machine adjust the temperature by controlling the operation of the heating roller lamps.
- Heating Roller Thermostat 1 [G], Heating Roller Thermostat 2 [F], Heating Roller Thermostat 3 [D], Heating Roller Thermostat 4 [C], Heating Roller Thermostat 5 [B]: Safety devices for the heating roller.

476

No additional notes

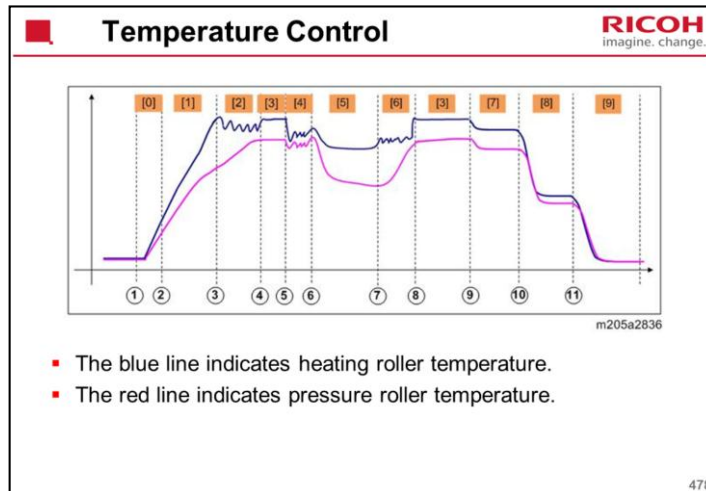
Temperature Control Components - 4 **RICOH** imagine. change.



- Pressure Roller Thermopile (Center) [K], Pressure Roller Thermopile (Edge) [J]: Detect the pressure roller temperature, and the machine adjusts the temperature by controlling the operation of the heating roller lamps

477

No additional notes



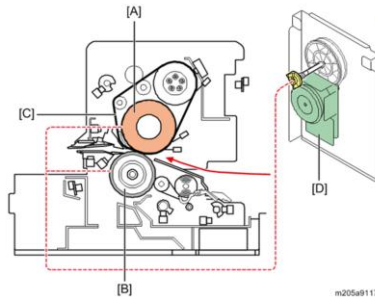
The circled numbers in the diagram above indicate the following

1. Power on
2. Fusing control switches on
3. Reload temperature
4. Fusing roller rotations stop
5. Job setup by user, preparing to print
6. Permission to start printing
7. Job paper feed ends
8. Fusing roller rotation ends
9. Shift to preheating mode
10. Shift to low power mode
11. Shift to sleep mode



Drive

RICOH
imagine. change.



- The fusing motor [D] drives the fusing roller [A], pressure roller [B] and the fusing belt [C] through gears.

m205a9117

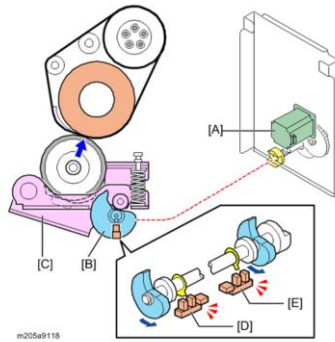
479

No additional notes



Fusing Pressure Control - 1

RICOH
imagine. change.



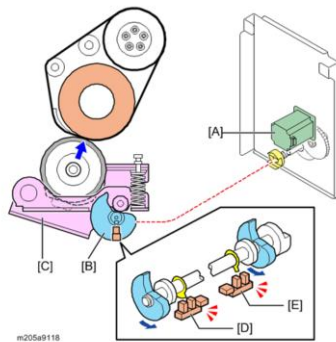
- At the start of a job, the pressure roller lift motor [A] rotates two cams [B] under the pressure arm [C] to lift the pressure roller up against the fusing belt and fusing roller above.
 - The machine can adjust the pressure depending on paper type and fusing unit temperature.

480

No additional notes

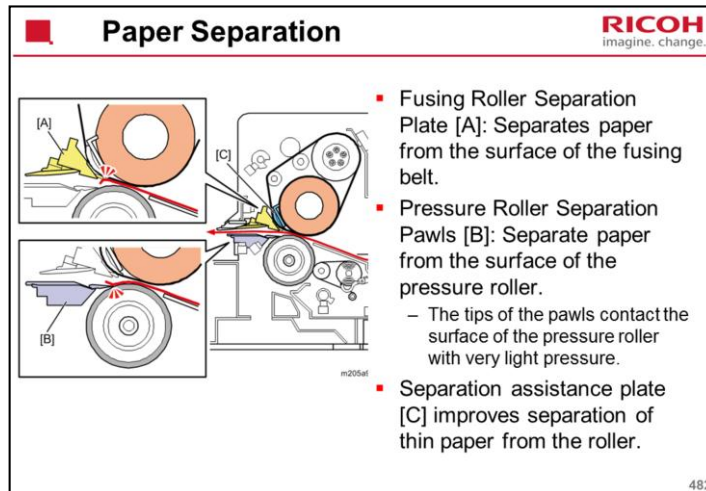


Fusing Pressure Control - 2



- At the end of the job, the pressure roller lift motor rotates the cams again to lower the pressure roller.
- Pressure roller home position sensor 1 [D] detects when the cam is at home position.
- Pressure roller home position sensor 2 [E] detects if there is a problem with the rotation of the cam.

No additional notes



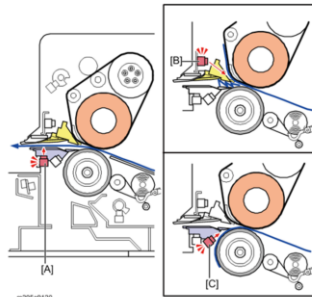
In previous models, paper is separated downward by using a hard pressure roller that pushes the fusing roller from below, in order to provide high separation performance for thick paper.

In this machine, nip width is optimized for printing on envelopes by softening the pressure roller.

Separation assistance plate [C] is added to the fusing roller to prevent thin paper from wrapping around it.



Jam Detection



m2056r120

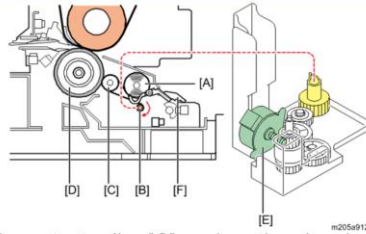
- The fusing exit sensor (front, center, rear) [A] detects jams by monitoring the ejected paper.
- The fusing exit sensor (back) [B] detects jams occurring at the fusing roller separation plate. It also detects when paper wraps around the fusing belt.
- The accordion jam sensor [C] detects when paper wraps around the pressure roller.

483

No additional notes



Cleaning - 1



- The web contact roller [C] pushes the cleaning web [A] against the pressure roller [D] to remove toner and paper dust.
- The cleaning web [A] unrolls from its supply roller onto a take-up roller [B].
- The cleaning web is treated with a small amount of silicone oil that coats the surface of the pressure roller and fusing belt.

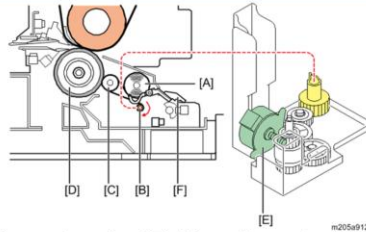
484

No additional notes



Cleaning - 2

RICOH
imagine. change.



- The fusing web motor [E] drives the web cleaning unit; every time this motor turns on the web feeds a prescribed distance.
- The portion of the web that has already been used for cleaning is rolled up onto a take-up roller to bring a fresh patch of the web into contact with the belt surface.

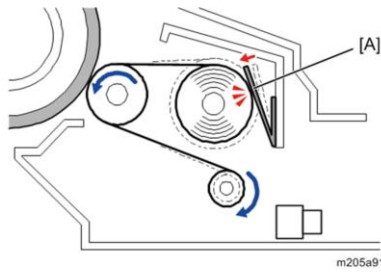
485

[F]: Actuator for web end sensor – see later slide



Cleaning - 3

RICOH
imagine. change.



- The pressure plate [A] presses the web to prevent slackening while the web is being wound up.

486

[F]: Actuator for web end sensor – see later slide



Web Near-end Detection

RICOH
imagine. change.

- When the web is near the end of its service life (default setting: when 83% of the web is used, at about 374k), the machine signals the near-end alert on the operation panel.
- With the default setting, the machine can print about another 76k before web end. Then the machine stops.

487

To change the default setting (83%): SP1-902-004

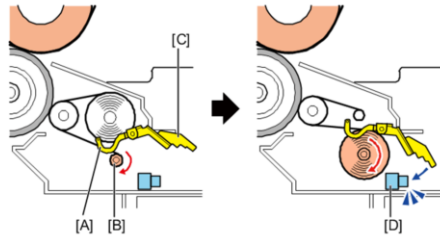
After near-end, the machine can print until the end sensor detects no more web. 70k is just an approximation.

Web life is 450k.



Web End Detection

RICOH
imagine. change.



- A feeler [A] remains suspended by the web stretched between the web supply roller and web take-up roller [B].
- When the web spools off the web supply roller, the actuator [C] drops into the web end sensor [D]. The machine issues the web end alert and stops printing immediately after the paper has left the fusing unit.

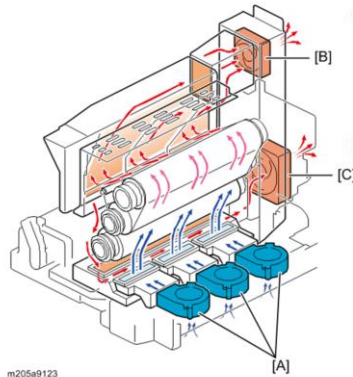
488

No additional notes



Cooling

RICOH
imagine. change.



m205a9123

489

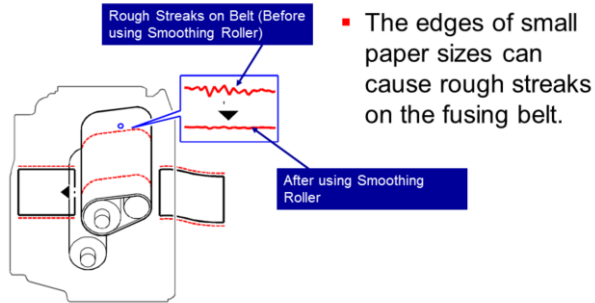
- The pressure roller intake fans [A] cool from under the pressure roller.
- The anti-condensation fan [B] and pressure roller intake fan 1 [C] at the rear of the fuser unit eject the heat generated from fusing.

No additional notes



Fusing Belt Smoothing (1)

RICOH
imagine. change.



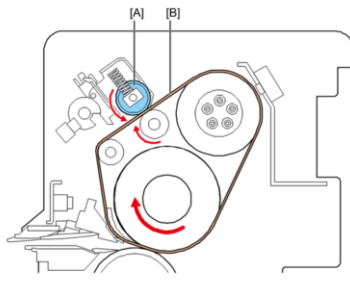
490

This is similar to Ch-C1.



Fusing Belt Smoothing (2)

RICOH
imagine. change.



- The smoothing roller is a countermeasure against damage to the belt caused by the edges of small sizes of thick paper.
- The smoothing roller polishes the surface of the fusing belt in order to remove roughness caused by paper edges and to prevent glossy streaks on prints.
- The smoothing roller rotates at a different speed to the fusing belt, in order to improve the smoothing.

491

No additional notes



Fusing Belt Smoothing (3)

RICOH
imagine. change.

- Manual execution:
 - SP 1-133-110 or the adjustment settings for skilled operators (0525-01).
 - The roller rotates for 4.5 minutes.
 - You can execute more than once.
- Automatic execution:
 - Every 2000 sheets for 45 seconds
 - When changing to wide paper after printing 2000 sheets of small-width paper
- Yield: 540 minutes
- Near-end: 486 minutes

492

After printing only a few sheets of small-width paper, there should be no scratches on the belt. However, if lines appear, please execute smoothing manually.



Fusing Belt Smoothing (4)

RICOH
imagine. change.

- When you do the belt smoothing more than three times in a row but no improvement appears, replace the belt.
- After doing the belt smoothing, dust from wear to the surface of the fuser belt may stick to the image, and this may result in dirt on the image for one turn of the belt (236 mm).
- For this reason, immediately after executing belt smoothing, feed a large sheet of paper (e.g. SRA3) and check the image, making sure no dust from wear to the belt is present.

493

This is not necessary after the automatic cleaning, because this is only done for a short time, so there is not much dust generated.



Details of all procedures are in the service manual. These slides only go over a few important points.



Before you Start

RICOH
imagine. change.

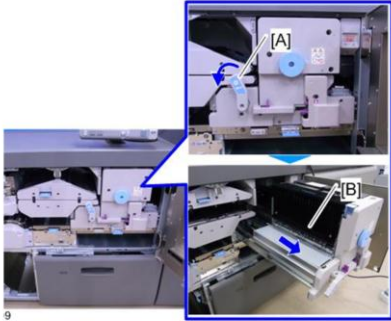
- Turn off the power before replacing parts.
 1. Turn off the main power switch.
 2. Turn off the AC power switch.
 3. Disconnect the two power cords (one is at the rear of the imaging section, one is at the rear of the fusing section).
- The fusing unit becomes extremely hot during operation. Do not start to work until the temperature inside the machine has dropped sufficiently.

495

No additional notes

Opening the Fusing Unit to the Service Position - 1

RICOH
imagine. change.



- Turn the handle [A] counterclockwise, and then pull the fuser unit out [B].
 - The paper cooling unit opens automatically when you do this.
 - However, the paper cooling unit does not automatically close when you push the fusing unit back in. Always make sure to close the paper cooling unit before you close the front cover.

9

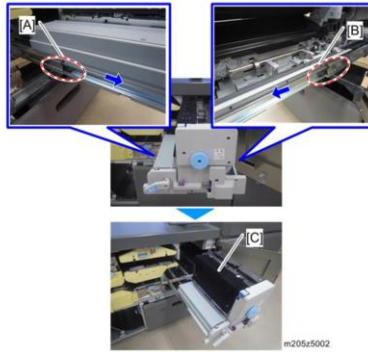
496

If the paper cooling unit is opened, and the handle is lowered, and then the handle is raised, the cooling unit does not automatically lower. The door can be closed in this condition, which is unusual (normally, if a unit is open, the door cannot be closed). Also, there is no alert if the cooling unit is still open when the door is closed. So there could be a problem if the user fails to close the cooling unit manually before closing the cover.



Opening the Fusing Unit to the Service Position - 2

RICOH
imagine. change.



- Push the lock levers [A], [B] and then pull the fuser unit [C] again.
- This is the normal position for servicing.
 - Most work can be done with the fusing unit in this position. But sometimes you have to lift it out. See the next slide for more on this.

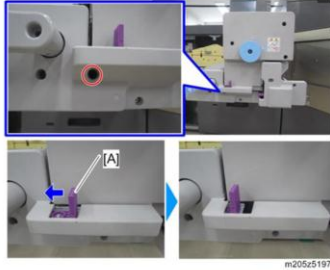
497

No additional notes



Lifting out the Fusing Unit - 1

RICOH
imagine. change.



- Two people are needed. This unit is heavy.
- Remove the fuser cleaning unit.
- Then unlock lever [A].

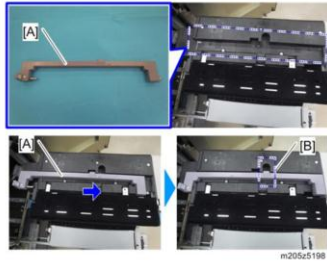
498

No additional notes



Lifting out the Fusing Unit - 2

RICOH
imagine. change.



- Attach the handle [A] (provided with the main machine) to the fuser unit.
- Slide the handle until it reaches the attachment position [B].

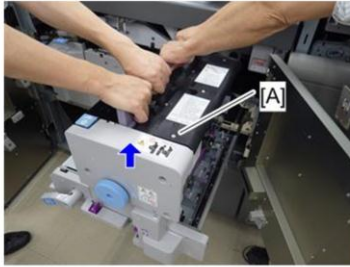
499

The handle is in the cardboard tool box.



Lifting out the Fusing Unit - 3

RICOH
imagine. change.



m205z5241

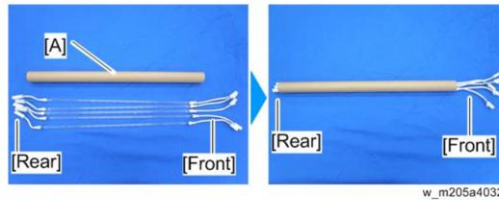
- Lift the unit out as shown above.

500

No additional notes



Special Tool for Installing the Fusing Lamps



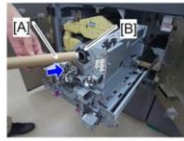
- This special tool is provided with the machine.
- Place the lamps inside this tool as shown above before installing them.

No additional notes



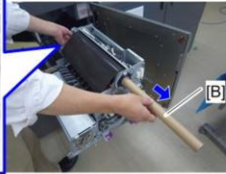
Using the Special Tool

RICOH
imagine. change.



m205z5185

- Insert the pipe [A], with the rear ends of the fusing lamps first, through the heating roller [B].



m205z5186

- Remove the pipe [B] while holding the connectors [A] at the rear of the fusing lamps.

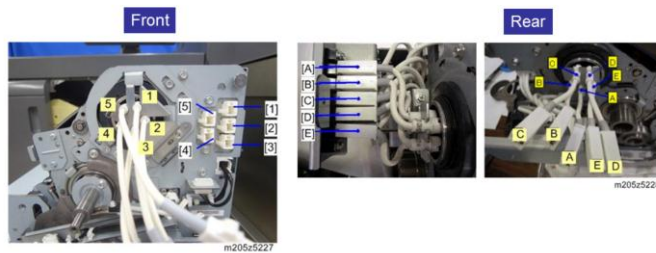
502

No additional notes



Connecting the Lamps

RICOH
imagine. change.



- Connect the lamps to the correct sockets, as shown in the two diagrams above.
 - The lamps are identical but must be connected correctly or fusing temperature control will not work.

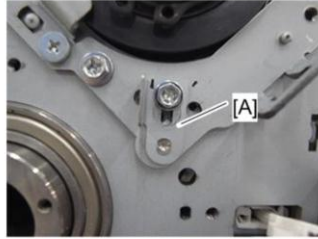
503

No additional notes



Fuser Belt Unit Removal Positioning Pin Bracket

RICOH
imagine. change.



m205z5213

- The position of the positioning pin bracket is adjusted at the factory.
- When installing the bracket, put it back into its original position (which is marked on the machine).
- Otherwise, the fusing belt leans to either the front or the rear and is caught by a gear, leading to malfunctions.

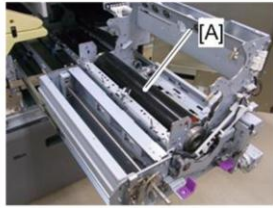
504

No additional notes



Pressure Roller

RICOH
imagine. change.

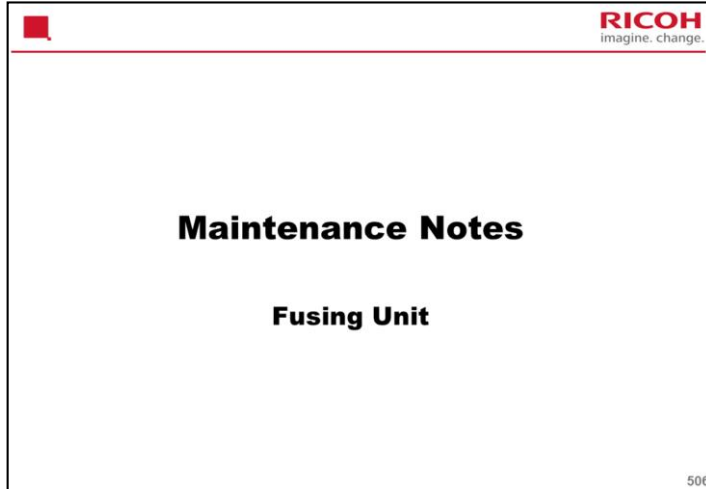


m205z5224

- Wrap a sheet of paper around the roller before you remove it.

505

No additional notes



This section explains a few important points. For full details, see the procedures in the service manual. Obey all instructions in the service manual.



Cleaning

RICOH
imagine. change.

- Thermopile: Clean with a blower brush
- Guide plates, pick-off pawls: Clean with a dry cloth

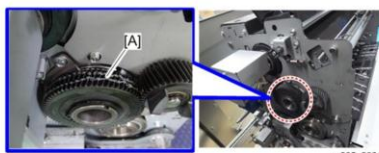
507

No additional notes

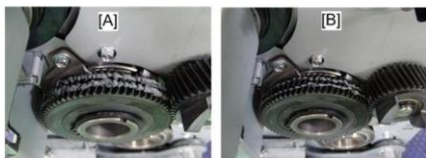


Fusing Roller Drive Gears (Upper and Lower) - Rear

RICOH
imagine. change.



- The maximum [A] and minimum [B] amounts of grease are shown below left.



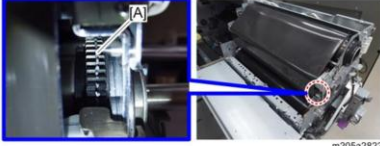
508

See the service manual for the detailed lubrication procedure.

Appendix > Preventative Maintenance > Lubrication Points

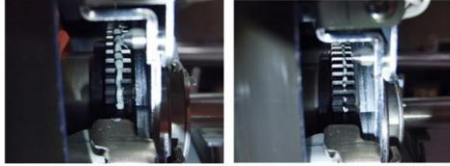
Fusing Roller Drive Gears (Upper and Lower) - Front

RICOH
imagine. change.



- The maximum [A] and minimum [B] amounts of grease are below left.

[A] [B]



m205a2822

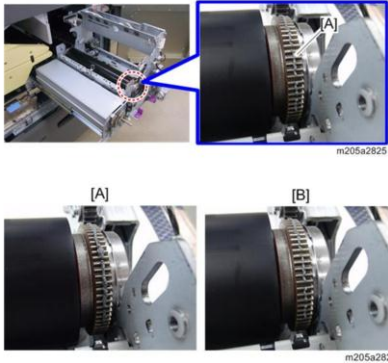
m205a2823

509

See the service manual for the detailed lubrication procedure.
Appendix > Preventative Maintenance > Lubrication Points

Pressure Roller Drive Gears

RICOH
imagine. change.



- Lubricate with FLUOTRIBO MG Grease every 1800K.
- Also lubricate when you replace the pressure roller.
- The maximum [A] and minimum [B] amounts of grease are shown below left.

510

See the service manual for the detailed lubrication procedure.
Appendix > Preventative Maintenance > Lubrication Points

Heating Roller Slip Rings - 1 **RICOH**
imagine. change.

Front **Rear**



The image contains three photographs of a heating roller slip ring. On the left, a small vertical slip ring is shown. In the center, a larger slip ring is shown in two views: a top-down view with a dashed white box highlighting a specific area, and a side view with a white arrow pointing to a point labeled '[A]'. On the right, another vertical slip ring is shown with a white arrow pointing to a point labeled '[A]'. The background is a solid blue color.

■ Lubricate with Barrierta S552R every 1800K.

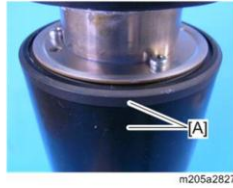
511

See the service manual for the detailed lubrication procedure.
Appendix > Preventative Maintenance > Lubrication Points

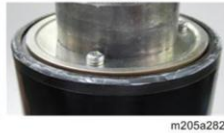
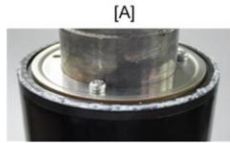


Heating Roller Slip Rings - 2

RICOH
imagine. change.



- If grease gets on area [A], remove it.
- The maximum [A] and minimum [B] amounts of grease are shown here.



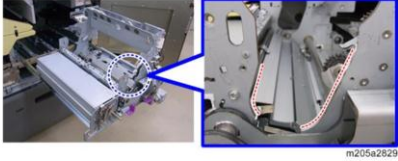
512

See the service manual for the detailed lubrication procedure.

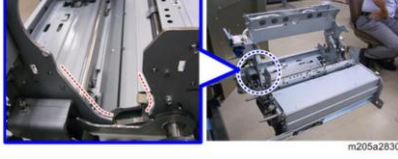
Appendix > Preventative Maintenance > Lubrication Points

Pressure Roller Bearing Tracks - 1 **RICOH**
imagine. change.

Front



Rear



- Lubricate the tracks (red dotted lines in the diagrams) with Barrierta S552R every 1800K.

513

See the service manual for the detailed lubrication procedure.
Appendix > Preventative Maintenance > Lubrication Points



Pressure Roller Bearing Tracks - 2

RICOH
imagine. change.

[A]



[B]



m205a2831

- The maximum [A] and minimum [B] amounts of grease are shown above.

514

See the service manual for the detailed lubrication procedure.

Appendix > Preventative Maintenance > Lubrication Points



Detailed Section Descriptions

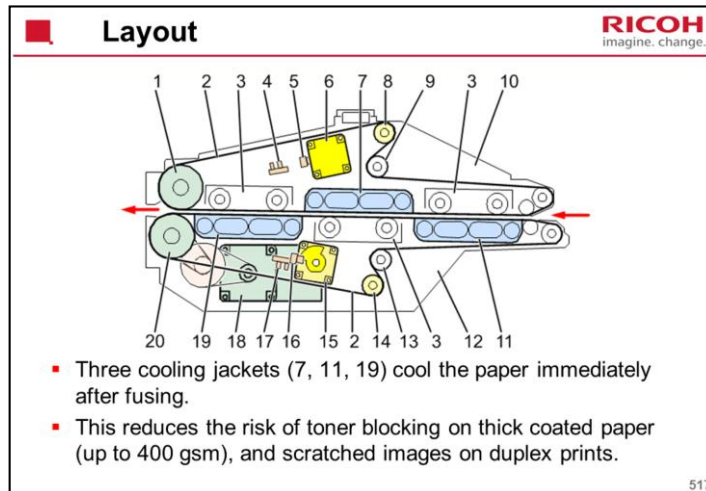
Paper Cooling Unit

No additional notes



- The paper cooling unit uses a cooling liquid flowing through coolant jackets to cool the paper after it leaves the fusing unit.

No additional notes



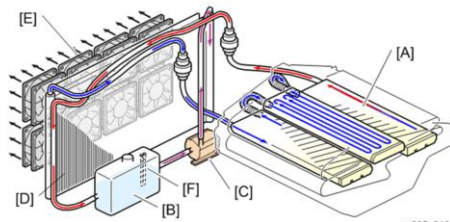
1. Drive Roller (Upper)
2. Paper Cooling Belt
3. Pressure Roller Unit
4. Belt Overrun Sensors (Upper)
5. Belt Centering Roller Sensor (Upper)
6. Belt Centering Roller Motor (Upper)
7. Coolant Jacket (Upper)
8. Belt Centering Roller (Upper)
9. Tension Roller (Upper)
10. Paper Cooling Unit (Upper)
11. Coolant Jacket (Lower: Entrance)
12. Paper Cooling Unit (Lower)
13. Tension Roller (Lower)
14. Belt Centering Roller (Lower)
15. Belt Centering Roller Motor (Lower)
16. Belt Centering Roller Sensor (Lower)
17. Belt Overrun Sensors (Lower)
18. Paper Cooling Belt Motor
19. Coolant Jacket (Lower: Exit)
20. Drive Roller (Lower)

Toner blocking: Paper sticking together because toner is still melted when stacking on the exit tray



Details - 1

RICOH
imagine. change.



- The coolant jackets [A] contact the paper through the paper cooling belt.
- A coolant liquid circulates through the cooling jackets to keep the belt cool.
- The upper and lower coolant jackets can be separated to remove jammed paper.

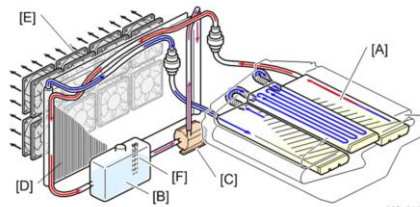
518

No additional notes



Details - 2

RICOH
imagine. change.



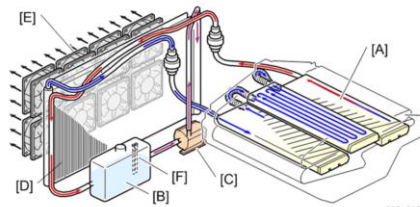
- The paper coolant pump [C] draws warm coolant through the tank [B] to the radiator [D].
- While in the radiator, the paper cooling belt fans [E] cool the warm coolant.
- After the radiator, the coolant goes through the three coolant jackets [A] in the following order: “lower: paper exit”, “upper”, “lower: paper entrance”, and then returns to the tank [B].

519

No additional notes



Details - 3



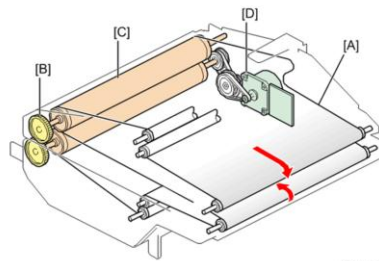
- The paper cooling remain switch [F] on the tank monitors the amount of cooling liquid.
- If the amount of cooling liquid decreases because of spilling or abnormal evaporation, an SC is issued to prevent the pump from being damaged by idle running.

No additional notes



Drive

RICOH
imagine. change.



m205a9102

- Paper from the fuser unit is transported to the de-curler by the paper cooling belt [A].
- The paper cooling belt motor [D] drives the paper cooling belt through the gears [B] and drive rollers [C].

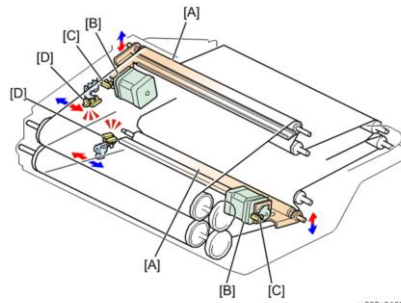
521

The paper cooling belt is made of polyimide.



Belt Centering - 1

RICOH
imagine. change.



- If the paper cooling belt is not straight, the belt centering rollers [A] incline to correct the belt position.
- The inclination angle of the belt centering rollers is controlled by the belt centering roller motors [B].

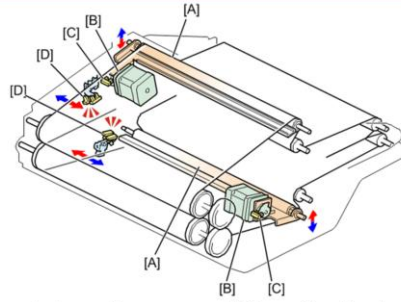
522

No additional notes



Belt Centering - 2

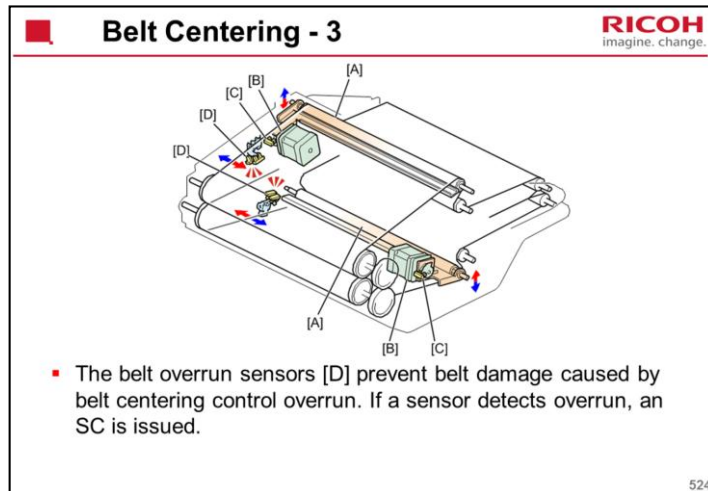
RICOH
imagine. change.



- The belt centering roller sensors [C] monitor the level of the belt centering rollers.
 - The belt position is adjusted in 1 mm increments constantly.

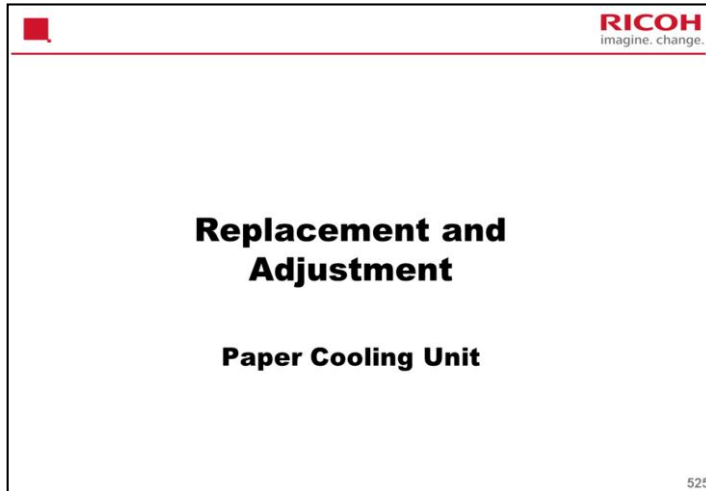
523

No additional notes



The sensors are at the rear, but they can detect over-run at the front and rear.

Each sensor contains two separate sensors, with one actuator between them, so motion of the belt to the front or to the rear can be detected if it goes too far.



Details of all procedures are in the service manual. These slides only go over a few important points.



This Unit is Heavy

RICOH
imagine. change.

- If you have to take it out of the machine, two people are need to do it safely.
- To change the belts, you don't need to take the unit out of the machine.

526

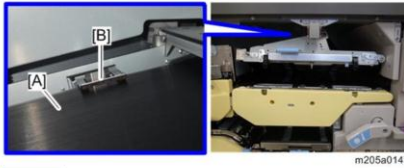
No additional notes



Paper Cooling Belts - 1

RICOH
imagine. change.

Upper



- When installing the paper cooling belt, insert the belt [A] in the opening of the belt overrun sensor [B].

Lower



527

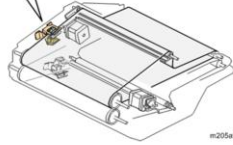
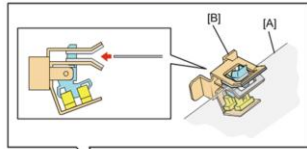
No additional notes



Paper Cooling Belts - 2

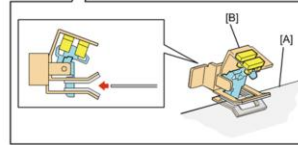
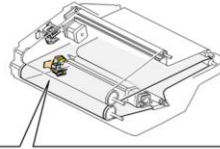
RICOH
imagine. change.

Upper



m205e9180

Lower



m205e9181

- If the belt [A] is not installed correctly inside the sensor [B], SC518-01 (upper belt overrun error) or SC518-02 (lower belt overrun error) will occur.

528

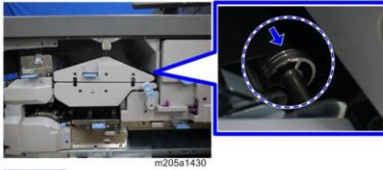
No additional notes



Paper Cooling Belts - 3

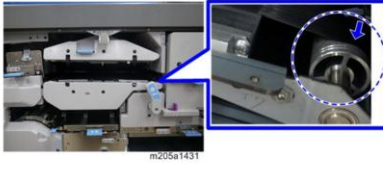
RICOH
imagine. change.

Upper



m205a1430

Lower



m205a1431

- When you re-attach the paper cooling belt, rotate it 3 times to relieve excessive tension in the belt.
- The edge of the belt must be between the lines engraved on the roller.
- This diagram shows the upper belt. The adjustment for the lower belt is the same.

529

No additional notes

■ Disconnecting the Coolant Tubes - 1 **RICOH**
imagine. change.



m205a1266

- When the tube is disconnected, a small amount of coolant leaks. So, when you disconnect the tube, cover the tube with cloth.
- After you re-connect the tube, make sure it is connected correctly by pulling it downward.

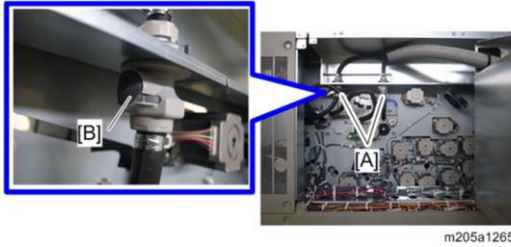
530

No additional notes



Disconnecting the Coolant Tubes - 2

RICOH
imagine. change.



m205a1265

- You have to push the button on the joint to disconnect the tube.
- Do not push the button on the joint except when you are disconnecting the tube. Do not push it after the tube is disconnected. Otherwise, cooling liquid will leak.

531

No additional notes

■ **Disconnecting the Coolant Tubes - 3** **RICOH**
imagine. change.

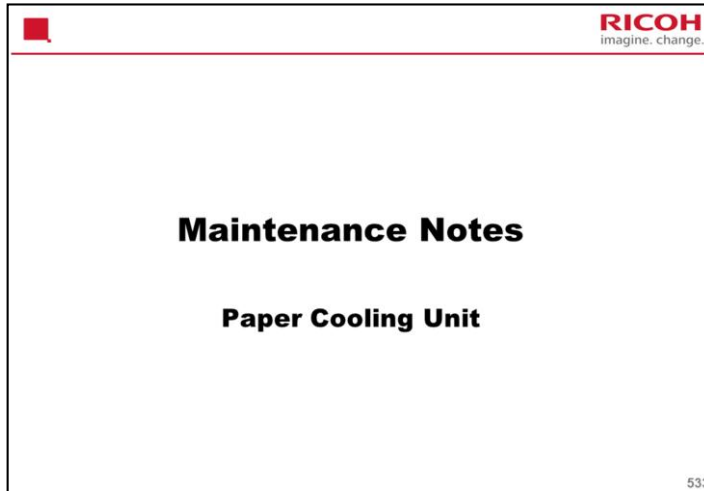


m205a1374

- Do not remove the bands on the tube.

532

No additional notes



This section explains a few important points. For full details, see the procedures in the service manual. Obey all instructions in the service manual.



Cleaning

RICOH
imagine. change.

- Clean the belts with a damp cloth.

534

No additional notes



Detailed Section Descriptions

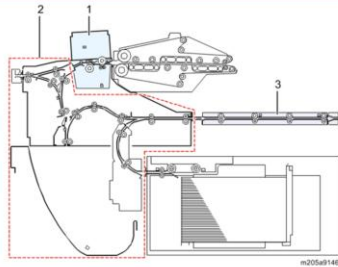
Paper Exit, Duplex, and Inversion

No additional notes



Overall Layout

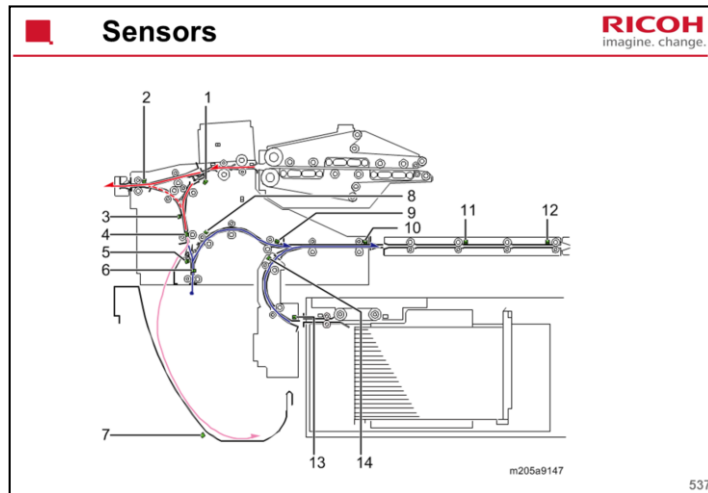
RICOH
imagine. change.



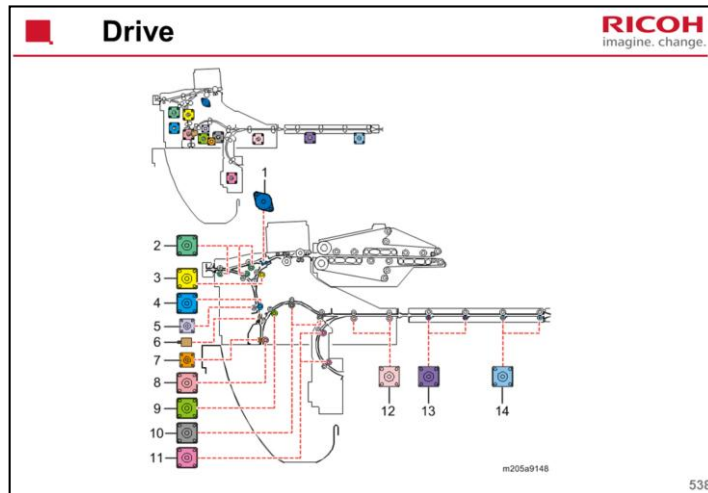
1. Decurler unit
2. Invert/exit mechanism
3. Duplex transport path (the vertical transport path for tray 2 also feeds into the duplex transport path).

536

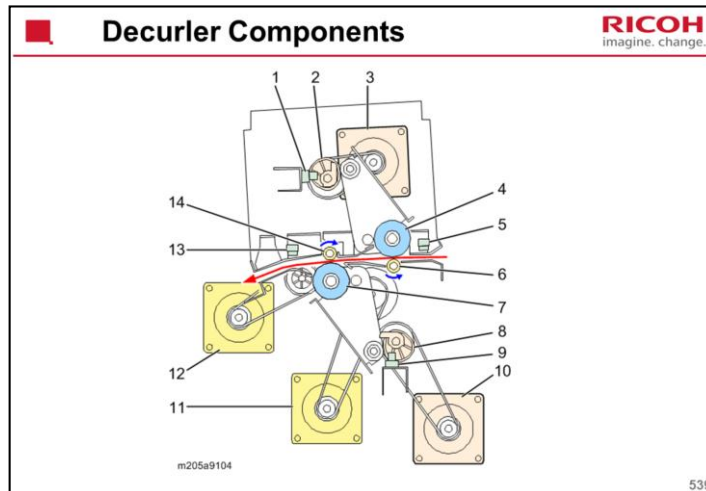
No additional notes



1. Exit Junction Gate Home Position Sensor
2. Paper Exit Sensor
3. Paper Exit Inverter Sensor
4. Paper Exit Inverter Roller Home Position Sensor
5. Duplex Inverter Sensor
6. Duplex Inverter Roller HP Sensor
7. Purge Tray Paper Sensor
8. Duplex Transport Sensor 1
9. Duplex Transport Sensor 2
10. Paper Transport Sensor 1
11. Paper Transport Sensor 2
12. Paper Transport Sensor 3
13. Vertical Transport Sensor 1 (Tray 2)
14. Vertical Transport Sensor 2 (Tray 2)



1. Exit Junction Gate Motor
2. Paper Exit Motor
3. Inverter Entrance Motor
4. Paper Exit Inverter Motor
5. Paper Exit Inverter Roller Contact Motor
6. Switchback Junction Gate Solenoid
7. Duplex Inverter Roller Contact Motor
8. Duplex Inverter Motor
9. Duplex Transport Motor 1
10. Duplex Transport Motor 2
11. Vertical Transport Motor (Tray 2)
12. Paper Transport Motor 1
13. Paper Transport Motor 2
14. Paper Transport Motor 3



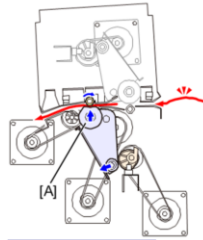
1. De-curler Unit Home Position Sensor 2
2. De-curler Pressure Cam 2
3. De-curler Unit Motor 2
4. De-curler Pressure Roller 2
5. De-curler Entrance Sensor
6. De-curler Transport Roller 2
7. De-curler Pressure Roller 1
8. De-curler Pressure Cam 1
9. De-curler Unit Home Position Sensor 1
10. De-curler Unit Motor 1
11. De-curler Transport Motor 2
12. De-curler Transport Motor 1
13. De-curler Exit Sensor
14. De-curler Transport Roller 1

The units are called 1 and 2 from left to right, but the paper goes through unit 2 first.

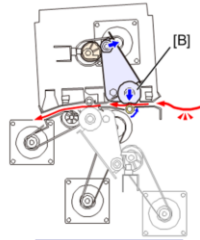


Decurler Operation

RICOH
imagine. change.



Correcting Face Curl



Correcting Back Curl

- De-curler pressure roller 1 [A] presses the paper from below and straightens the paper which is curled face up.
- De-curler pressure roller 2 [B] presses the paper from above and straightens the paper which is curled face down.

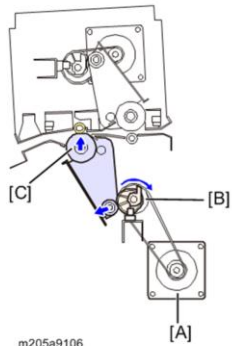
540

No additional notes



Decurler Operation - 1

RICOH
imagine. change.



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- To straighten curled paper, the decurler unit motor [A] rotates the pressure cam [B] to pressurize the decurler pressure roller [C].

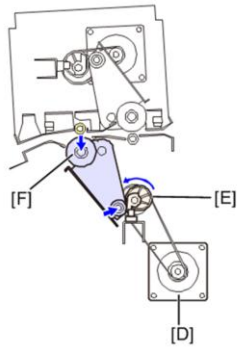
541

No additional notes



Decurler Operation - 2

RICOH
imagine. change.



- After the paper has gone through the decurler, the decurler unit motor [D] rotates the pressure cam [E] backwards to remove pressure from the decurler pressure roller [F].

542

No additional notes



Decurler Settings - 1

RICOH
imagine. change.

- There are 5 pressure settings for the decurler pressure roller.
 - Home Position: The home position of the decurler pressure roller (separated from the transport roller).
 - Default: The default pressure value (The roller presses the paper 0 mm).
 - Curl (Small): The roller presses the paper +5.0 mm more than the "Default" value.
 - Curl (Medium): The roller presses the paper +10.0 mm more than the "Default" value.
 - Curl (Large): The roller presses the paper +15.0 mm more than the "Default" value.

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'Default': The roller presses the paper 0 mm.

This can be adjusted with SP mode.

SP1-942-001: Adjusts the default for pressure roller 1.

SP1-943-001: Adjusts the default for pressure roller 2.



Decurler Settings - 2

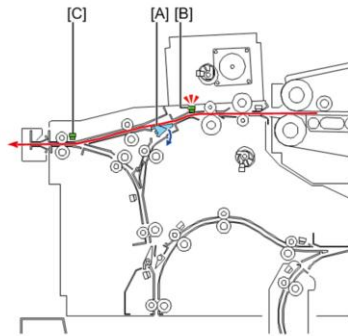
- For one-sided and duplex printing, the default setting is 'Default'.
- This can be adjusted with SP modes.
 - SP1-940-001 to 009: Setting for one-sided printing, for each tray
 - SP1-941-001 to 009: Setting for duplex printing (side 2), for each tray (for side 1, the setting for one-sided printing is used)

No additional notes



Paper Exit: Straight-through Path

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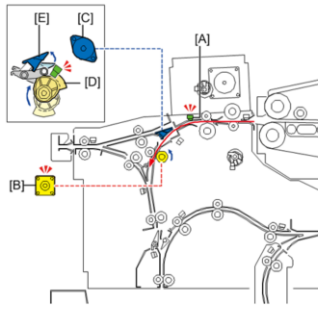


- When the exit junction gate [A] is down, the paper exits the machine.
- The decurler exit sensor [B] and the paper exit sensor [C] detect the leading edge and trailing edge of the paper as it exits the machine.

545

No additional notes

Inversion (Face-down Feed-out) - 1 **RICOH**
imagine. change.

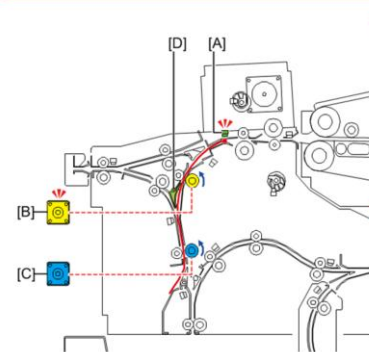


- When the decurler exit sensor [A] detects the leading edge of the paper, junction gate motor [C] rotate the cam [D] and the exit junction gate [E] opens the inverter path.
- Then the inverter entrance motor [B] turns on and feeds the paper down into the inverter unit.

546

No additional notes

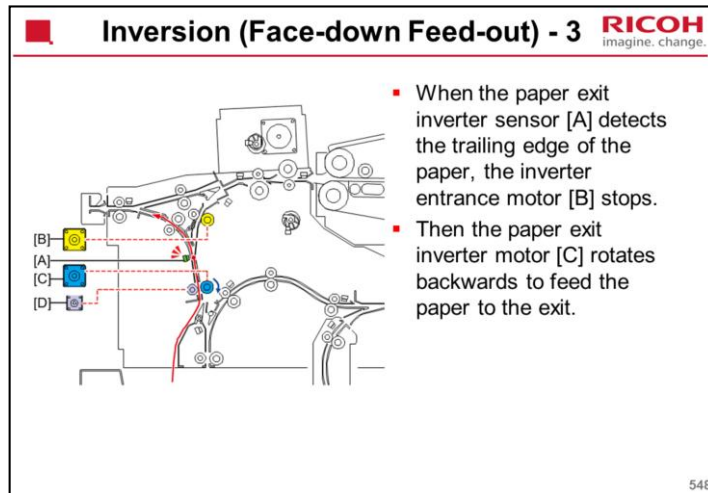
Inversion (Face-down Feed-out) - 2 **RICOH**
imagine. change.



- When the decurler exit sensor [A] detects the trailing edge of the paper, the inverter entrance motor [B] and the paper exit inverter motor [C] speed up slightly.
- The junction gate [D] normally closes the path on the right, but the paper pushes the junction gate open.

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No additional notes

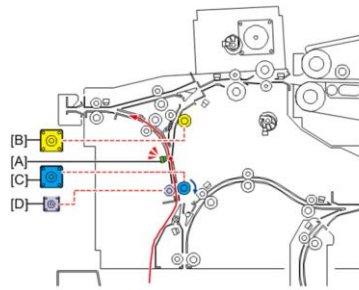


For inversion, the paper is fed towards the purge area before it is fed back into the machine.



Inversion (Face-down Feed-out) - 4

RICOH
imagine. change.



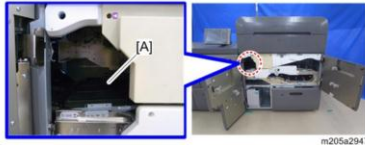
- After the paper is fed to the inverter exit roller, the paper exit inverter roller contact motor [D] turns on and separates the relay roller from the paper exit inverter roller to prepare for the next sheet of paper.

549

No additional notes



Purge

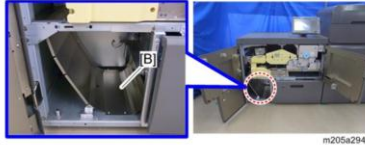


- When a jam occurs, the machine shunts remaining paper to the purge areas.

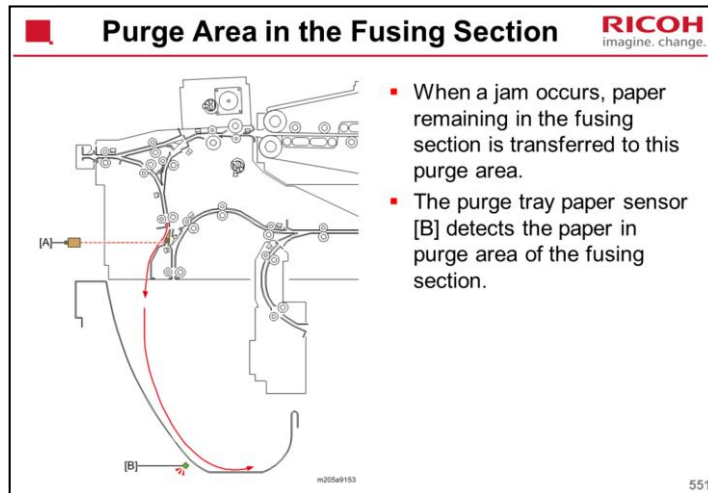
- There are two purge areas.

- [A]: One in the imaging section, on the paper transport belt

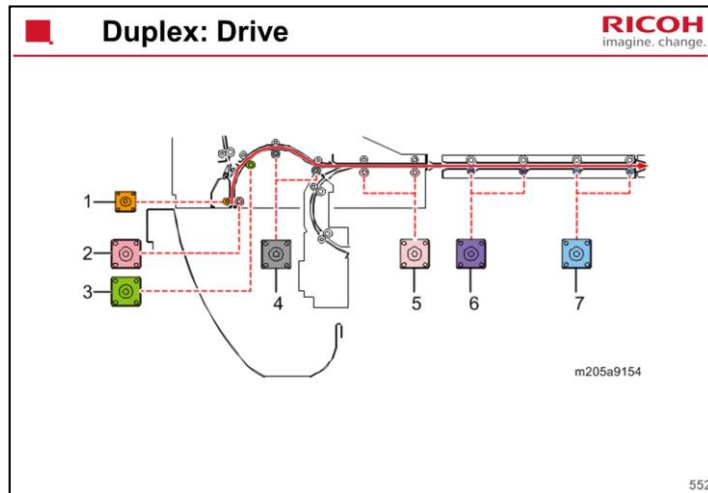
- [B]: One in the fusing section



The purge area in the imaging section is just where paper stops on the transport belt when a jam occurs. Paper is not shunted to a special area.



The switchback junction gate remains at the default position (opens the invert/exit path, closes the duplex path) when paper is being purged.

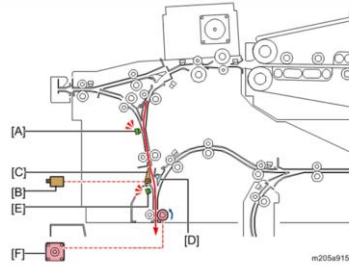


1. Duplex Inverter Roller Contact Motor
2. Duplex Inverter Motor
3. Duplex Transport Motor 1
4. Duplex Transport Motor 2
5. Paper Transport Motor 1
6. Paper Transport Motor 2
7. Paper Transport Motor 3



Duplex Transport - 1

RICOH
imagine. change.



- When the exit inverter sensor [A] detects the trailing edge of the paper, the switchback junction gate solenoid [B] turns on and opens the switchback junction gate [C].
- The paper pushes junction gate [D] open and then it enters the inverter path.

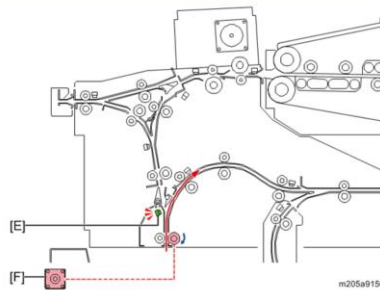
553

The junction gate [D] does not have any drive source. When the paper pushes the junction gate, it opens. After the paper passes through, spring brings the junction gate back to the normal state in order to open the duplex transport path.



Duplex Transport - 2

RICOH
imagine. change.



- When the duplex inverter sensor [E] detects the trailing edge of the paper, the duplex inverter motor [F] rotates backwards and feeds the paper up to the duplex transport path.
- This is the "switchback" operation.

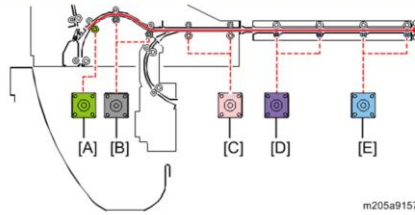
554

No additional notes



Duplex Transport - 3

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imagine. change.



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- Five motors drive the rollers that feed the paper along the duplex transport path.
 - Duplex transport motor 1 [A]
 - Duplex transport motor 2 [B]
 - Paper transport motor 1 [C]
 - Paper transport motor 2 [D]
 - Paper transport motor 3 [E]

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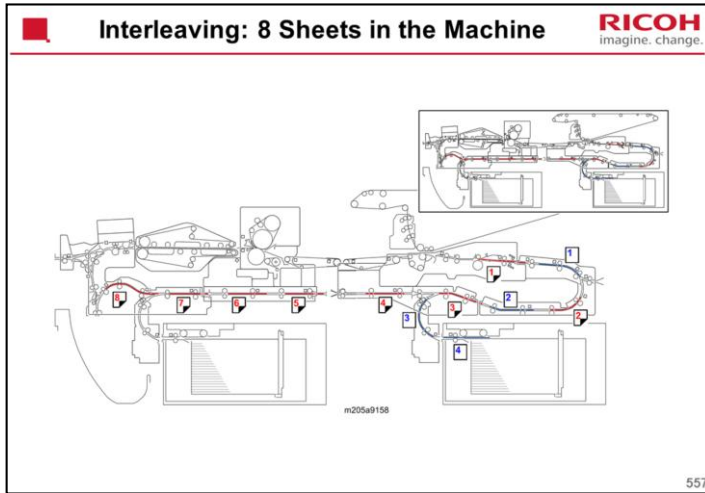
No additional notes



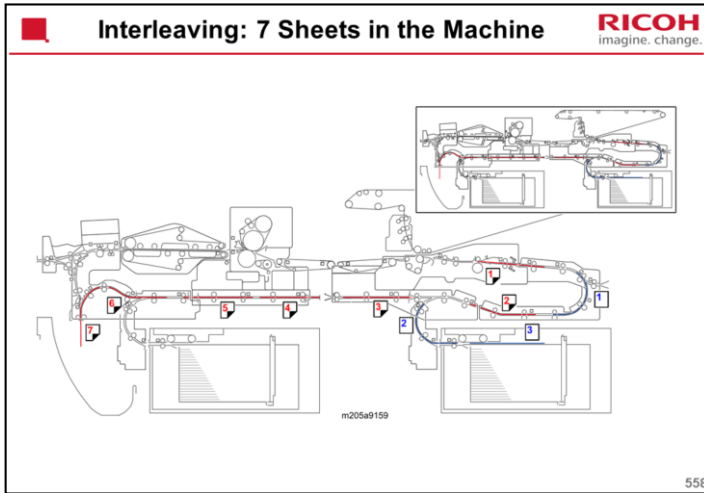
Interleaving

- Depending on the paper size, up to 8 sheets of paper can be travelling through the machine at the same time.
 - 139.7 (HLT LEF) to 215.9 (LT LEF): 8 sheets
 - 216 (LT LEF) to 297 (A4 SEF): 7 sheets
 - 297 (A4 SEF) to 364 (B4 SEF): 6 sheets
 - 364 (B4 SEF) to 487.7 (13"x19.2"): 5 sheets
 - 487.7 to 700.0 (only from optional LCT): 4 sheets

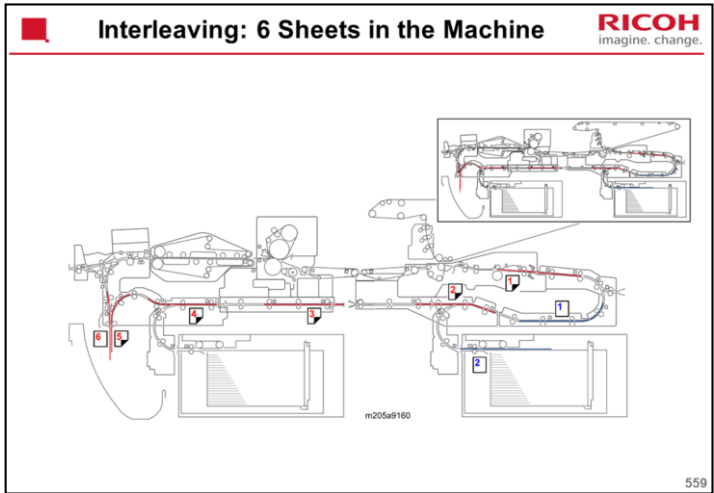
No additional notes



No additional notes



No additional notes

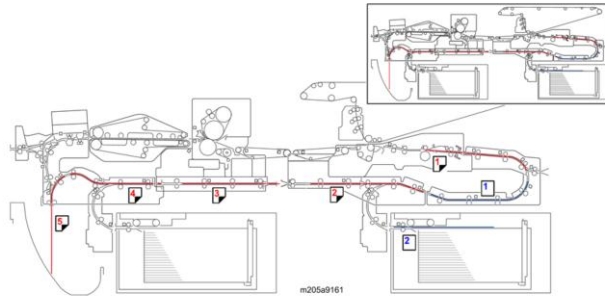


No additional notes



Interleaving: 5 Sheets in the Machine

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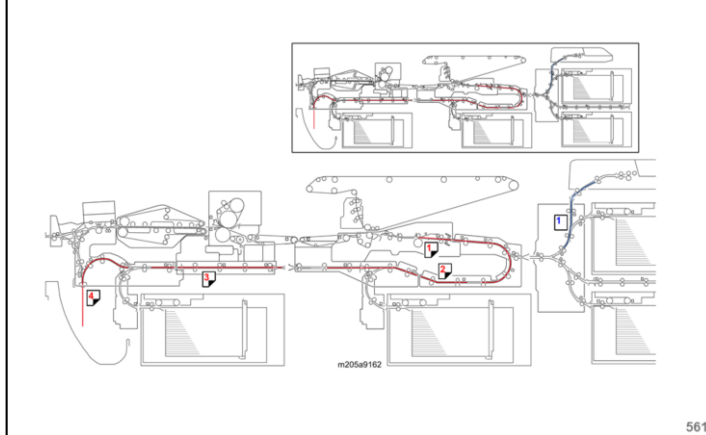
560

No additional notes

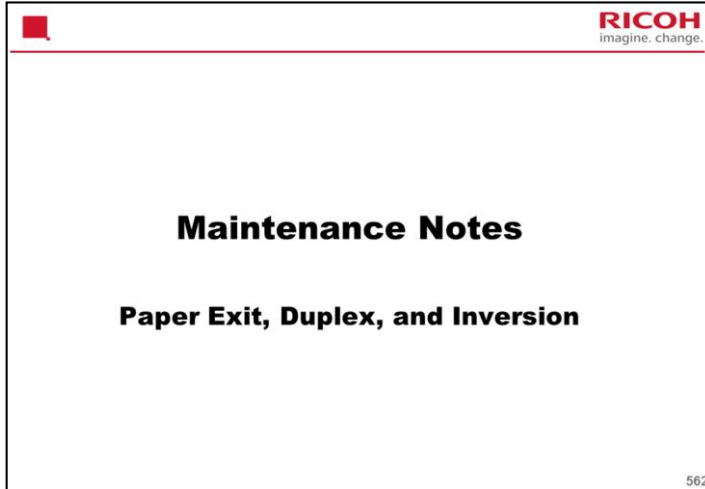


Interleaving: 4 Sheets in the Machine

RICOH
imagine. change.



No additional notes



This section explains a few important points. For full details, see the procedures in the service manual. Obey all instructions in the service manual.



Clean Sensors and Rollers

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imagine. change.

- Clean the discharge brush and sensors with a blower brush.
- Clean the rollers with a dry cloth.
- See the service manual for how to access the components that need cleaning.
 - Appendix > Preventative Maintenance > Cleaning Points

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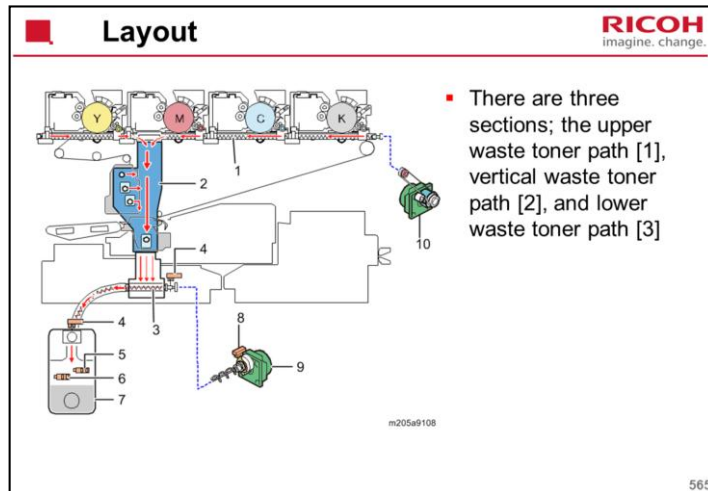
No additional notes



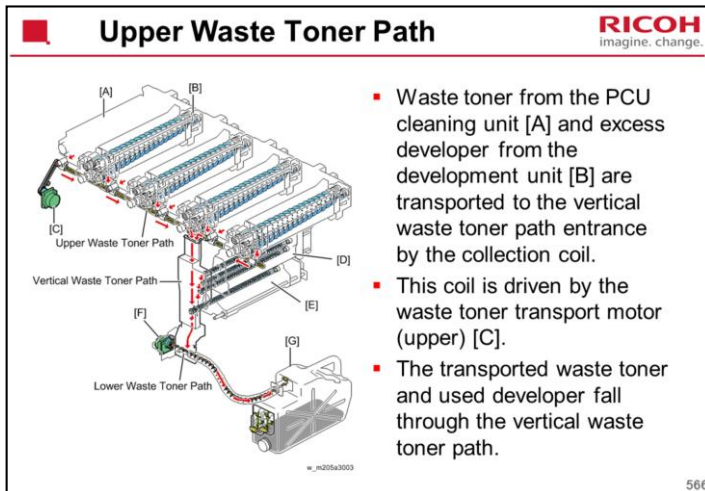
Detailed Section Descriptions

Waste Toner Collection

No additional notes



1. Upper Waste Toner Path
2. Vertical Waste Toner Path
3. Lower Waste Toner Path
4. Waste Toner Bottle Set Sensor
5. Waste Toner Bottle Full Sensor
6. Waste Toner Bottle Near-Full Sensor
7. Waste Toner Bottle
8. Waste Toner Transport Motor Lock Sensor
9. Waste Toner Transport Motor (Lower)
10. Waste Toner Transport Motor (Upper)

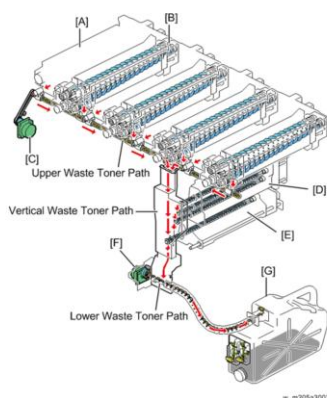


No additional notes



Vertical Waste Toner Path

RICOH
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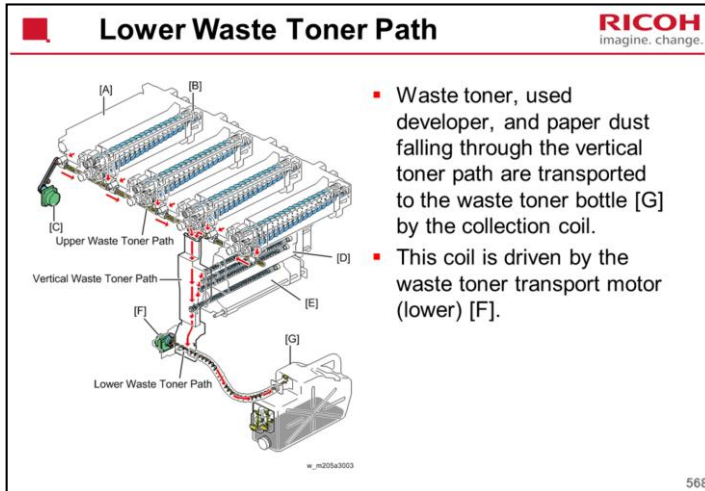


- Waste toner and paper dust from the ITB cleaning unit [D] and PTR unit [E] are transported to the vertical waste toner path, and then they fall to the lower waste toner path.

№_m205a3003

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No additional notes

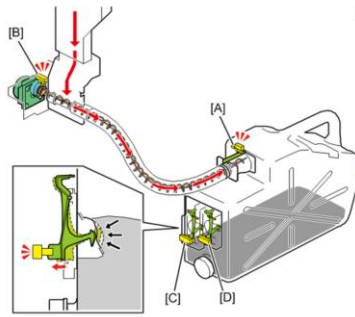


No additional notes



Sensors in the Waste Toner Bottle - 1

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imagine. change.



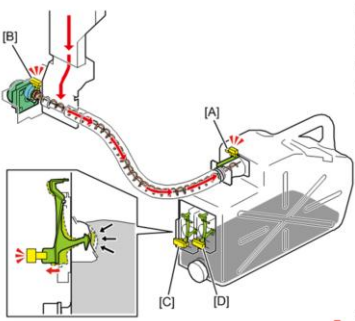
m205s9110

- When the waste toner bottle is set in the machine, the waste toner bottle set sensor [A] detects whether the waste toner bottle is set correctly.
- The waste toner transport motor lock sensor [B] monitors the rotation of the collection coil with a torque limiter. If the collection coil is clogged and cannot rotate, SC488-00 is issued and the machine stops.

569

No additional notes

Sensors in the Waste Toner Bottle - 2 **RICOH**
imagine. change.



- The waste toner bottle near full sensor [C] and waste toner bottle full sensor [D] monitor the amount of the waste toner in the waste toner bottle.
 - As the waste toner piles up in the waste toner bottle, the waste toner pushes the feeler, and then the actuator interrupts the sensor.
 - If the sensor is interrupted for 2 seconds, the machine assumes the waste toner bottle is near-full or full, depending on which sensor is actuated.
- The capacity of the bottle is approximately 220 K prints (each color: 8.75% coverage).

570

No additional notes



Replacement and Adjustment

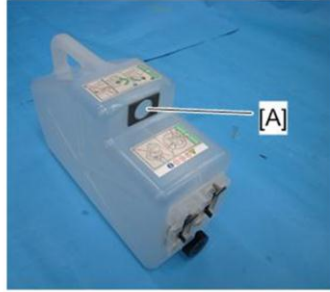
Waste Toner Collection

No additional notes



Don't Tilt the Bottle To the Rear

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imagine. change.



m205a1316

- To prevent the waste toner from spilling from the waste toner entrance [A], do not tilt the bottle towards the rear.
 - A cap is provided with a new bottle. Put it on the old bottle after removal.

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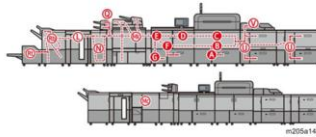
No additional notes



This section is a summary of the contents of the troubleshooting sections of the field service manual.



- **Self-Diagnostic Mode**
 - Service Call Codes
 - SC Logging
 - SC Automatic Reboot
 - SC Manual Reboot
 - The flow charts in this section show how the machine behaves when an SC occurs. Depends on the setting of SP5-875-001 (SC automatic reboot setting) (default value: 1 "OFF").
- **SC Code Descriptions**

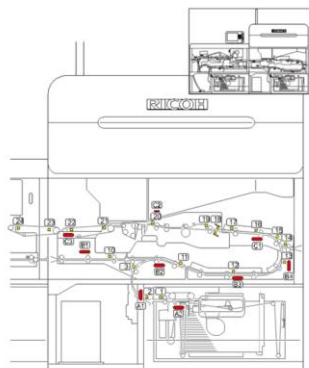


■ Jam Locations

- Locations are shown on the operation panel as shown above.
- Print engine jam history can be displayed using SP7-507.
- There is also a table of Jam Codes and Display Codes

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The jam code in the log data shows which sensor detects the jam. However, if paper is sent to the purge area, this jam code does not tell you where to find the paper. The display code on the operation panel will show where the paper is.



m20565191

- Sensor/LED Locations
 - Diagrams such as this one show each jam LED indicator and the sensors that detect the jams.
 - Tables show which LEDs are activated by which sensors.



- **Fan Defect Detection**
 - Diagrams show the locations of the fans
 - Tables show error codes related to fan problems, and which fan is defective for each code.
- **Adjustments**
 - Such as for improving fusing, and adjusting the leading and trailing edge margins.
- **Correspondence Tables for Adjustment Settings for Operators and SP Modes**
 - These tables show which SP modes are the equivalent adjustments for the TCRU adjustments.

Please ignore the SP codes in the IMSS adjustment table in the troubleshooting section



- Image Quality Problems
- Paper Transport
 - Skew and paper position errors detected due to misinterpretation of prepunched and preprinted paper by sensors in the registration mechanism
- Problems Related to Peripheral Devices
 - Finishers, folder, binders, stacker, LCIT
- Other Problems
- Problems caused by Blown Fuses



The End