


This course teaches about how to service this new series of black-and-white printers and copiers.

This is very similar to the previous models in the Gim-MF1/P1 series. The main difference is that these new models have the Kibo controller, whereas the previous models have a GW+ controller.

Sometimes, these two different sets of models will be referred to as the 'Kibo model' and the 'GW model'.



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Product Outline

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No additional notes



How Many Models?

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- GIM-P1a (M171): SP 3600DN
 - Kibo controller
 - Four-line LCD panel
- GIM-MF1a (M172): SP 3600SF
 - Kibo controller
 - Four-line LCD panel
 - Normal ADF built in (scans only one side at a time)
- GIM-MF1b (M173): SP 3610SF
 - Kibo controller
 - Four-line LCD panel
 - Single-pass ADF built in (both sides scanned at once)
- There are no meter click models (PM is always by users).
- The capacity of the built-in paper tray is 250 sheets for the Kibo model, not 500 sheets.
- In a similar way to machines using the old GDI controller, there are no printer/scanner options for the Kibo model.

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There is a PM table in the service manual. The parts in this table should be thought of as yield parts, and only to be replaced if the machine is used more than its expected average volume.



Kibo Controller

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- This is a new Ricoh-native controller for mid-to low-end products.
- It supports @Remote but not SDK.

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No additional notes



Appearance: GIM-MF1a/b

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MF1a: Built-in ADF
MF1b: Built-in single-pass ADF

250-sheet tray
Ethernet and USB
One optional tray can be added
(250-sheet or 500-sheet)



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The operation panels are different from the GW versions.



Appearance: GIM-P1a

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4-line
LCD panel




250-sheet tray
Ethernet and USB
One optional tray can be added
(250-sheet or 500-sheet)

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No additional notes



Comparison with Predecessor Model



«Rn-P2 vs Gim-P1a»

Durability

- > Unit life : 35K -> **50k**

1st print

- > 8.0 sec -> **6.5 sec**

TEC

- > 1.74 kWh -> **0.90 kWh**

Operation

- > LCD operation panel: 2 lines -> **4 lines**

Compactness

- > 370(W) x 392 (D) x 262 (H) mm ->
370(W) x 392 (D) x 258 (H) mm

«Rn-MF2 vs Gim-MF1a/b»

Durability

- > Unit life : 35K -> **50k**

1st print

- > 8.0 sec -> **6.5 sec**

TEC

- > 2.48 kWh -> **0.90 kWh**

Scanning

- > ARDF -> **One-pass Duplex Scanner(MF1b)**

Compactness

- > RN-MF2a : 420(W) x 397 (D) x 442 (H) mm
RN-MF2b : 420(W) x 397 (D) x 462 (H) mm ->
400(W) x 392 (D) x 426 (H) mm

Wi-Fi

- > **Available as an option**

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No additional notes



Main Specifications - 1

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- Print Speed
 - Single-sided: 30 cpm (MF1), 30 ppm (P1)
 - Duplex: 15 ppm (MF1), 30 ppm (P1)
- First Copy (GIM-MF1): 13.5 s or less
- First Print (GIM-P1): 6.5 s or less
- Warm-up: 19 s or less
- Memory
 - 512 MB standard (MF1), 256 MB standard (P1)
 - No optional extra memory
- HDD: No built-in or optional HDD

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No additional notes



Main Specifications - 2

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- Input Paper Capacity
 - Standard Tray: 250 sheets, (80g/m², 20lb. Bond)
 - Bypass: 100 sheets
 - Option: 250 or 500 sheets (only one tray can be installed)
 - Maximum: Up to 850 sheets total capacity (Std tray + Option x 1 + Bypass)
- Paper Size
 - Standard Tray, Optional Trays: A4, B5, A5, B6, A6, Legal, Letter, HLT, Executive, F, Foolscap, Folio, 16K
 - Custom size: Min. 3.93" x 5.82", Max. 8.46" x 14.0", Min. 100 mm x 148 mm, Max. 216 mm x 356 mm
 - Bypass: A4, B5, A5, B6, A6, Legal, Letter, HLT, Executive, F, Foolscap, Folio, 16K
 - Custom size: Min. 2.36" x 8.50", Max. 8.46" x 35.43", Min. 60 mm x 216 mm, Max. 216 mm x 900 mm"

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Note that the capacity of the standard tray is 250 sheets (for the GW version, it is 500 sheets).



Main Specifications - 3

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- Paper Weight: 52-162 g/m² (14-43 lb), All trays, simplex or duplex
- Paper Type
 - Standard Tray: Plain paper, Middle thick paper, Thick paper 1 to 2, Thin paper, Special paper 1 to 3, Color paper, Letterhead, Preprinted, Bond, Cardstock, Label paper, Coated paper, Envelopes
 - Optional Tray: Plain paper, Middle thick paper, Thick paper 1 to 2, Thin paper, Special paper 1 to 3, Color paper, Letterhead, Preprinted, Bond, Cardstock, Label paper, Coated paper
 - Bypass: Plain paper, Middle thick paper, Thick paper 1 to 3, Thin paper, Special paper 1 to 3, Color paper, Letterhead, Preprinted, Bond, Cardstock, Label paper, Coated paper, Envelopes
- Output Paper Capacity (80g/m², 20lb. Bond): Up to 125 sheets

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No additional notes



Main Specifications - 4

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- **Maximum Power Consumption**
 - GIM-MF1
 - US: 1050W (Full system)
 - EU, Asia: 1010W (Full system)
 - China: 1010W (Full system)
 - GIM-P1
 - US: Less than 1130W (Full system)
 - EU, Asia, China : Less than 990W (Full system)
- **Average Output Volume:**
 - GIM-MF1: 1.6k
 - GIM-P1: 1.1k
- **Estimated Life: 5 years or 360k prints
whichever comes first**

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No additional notes



- Standard: PCL6/5e, PostScript3
- Option: None

No additional notes



Consumables

- Toner cartridges: Two types
 - Starter: 1.5K pages
 - Low yield: Approx. 3K pages
 - Mid yield: Approx. 6K pages
 - Not interchangeable with the GW version cartridges
- PCDU:
 - Approx. 20K pages
 - The PCDU is the same as the user PM version for the GW model and is interchangeable with that PCDU.
- Maintenance kit: Approx. 120K pages
 - Contains the fusing unit, transfer roller, and feed rollers and friction pads
 - Not interchangeable with the GW version maintenance kit

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Toner yield is measured at standard temperature and humidity. The yield may change depending on the circumstances and printing conditions.



Options: Paper Feed

		Also used with these models:	Similar to:	Note
M441: Paper Feed Unit PB1060		Gim-MF1 GW models	Ti-P1	250 sheets; only one optional paper feed unit can be installed
M440: Paper Feed Unit PB1070		Gim-MF1 GW models	Ti-P1	500 sheets; only one optional paper feed unit can be installed

No additional notes



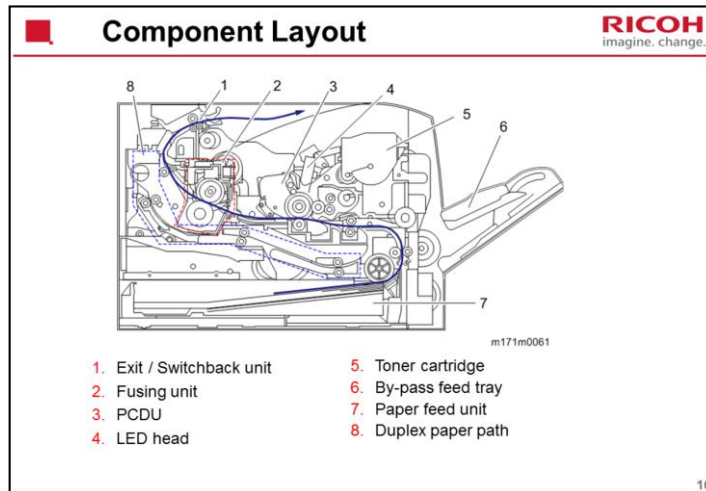
Options: Controller

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		Also used with these models:	Similar to:	Note
M455: IEEE802.11 Interface Unit Type P6	New			For the Kibo version only

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No additional notes

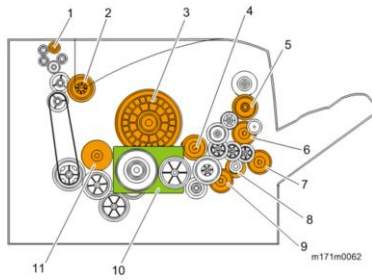


This slide shows the major components. Details will be covered later.
The paper exit area is different from the GW versions of this model.



Drive Layout

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- | | |
|-------------------------|--------------------------------|
| 1. Exit/switchback gear | 7. By-pass bottom plate clutch |
| 2. Fusing drive gear | 8. Relay clutch |
| 3. Drum gear | 9. Paper feed clutch |
| 4. Registration clutch | 10. Main motor |
| 5. Toner supply clutch | 11. Duplex clutch |
| 6. By-pass feed clutch | |

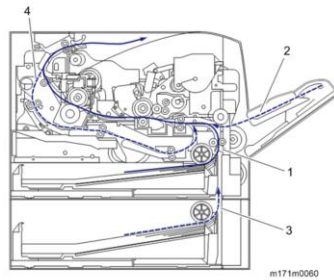
17

No additional notes



Paper Path

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1. Main paper feed path
2. By-pass paper feed path
3. Optional tray paper feed path
4. Duplex paper feed path

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No additional notes



Boards - 1

- BCU (Engine Board): Controls the following functions:
 - Engine sequence
 - Timing control for peripherals
 - In the P1 model, this board is called the BCU.
- CTL (Kibo Controller Board): Controls the following functions:
 - SDRAM
 - 10Base-T/100Base-Tx
 - USB2.0
 - Image processing, video control
 - Operation panel interface
- PSU (Power Supply Unit)
 - Generates DC power from the AC power supply
- HVPS (High-Voltage Power Supply)
 - Generates the high-voltage power required for process control.
- FCU: Controls the fax program.

No additional notes



- **PCDU Set Detection Board**
 - Detects whether or not the PCDU is installed correctly.
- **ID Chip Relay Board**
 - Relays the ID chip data of the toner cartridge.
- **DC Switch**
 - Controls the on/off operation of the DC power supply.
- **Toner End Detection Board (Toner End Sensor)**
 - Detects whether the toner has run out.

No additional notes



- See the following section of the manual for full details:
 - Replacement and Adjustment > Electrical Components
 - The controller board has no NVRAM.

ESA: This is sometimes called SDK



Replacing the BCU

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MF1 Model



P1 Model



- This board is called the BCU in the P1 models and in the MF1 models. This is because the Kibo controller board does the image processing in this series.
- Remove the EEPROM [A] from the old board and install it on the new board.
 - Install so that the indentation [B] on EEPROM is facing the direction of the dent [C] that is printed on the BCU board.
- Set the DIP switches on the new board to the same settings as the old board.
- After you install the new board, enter the machine's serial number into the new board.
 - If the machine's serial number is not entered correctly into the new BCU board, SC995-01 (serial number entry error) appears.

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No additional notes



m171m0003

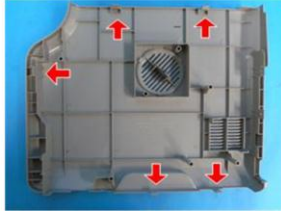
- Even if you turn the power switch off, +5V is still supplied. So do the following before you start work.
 1. Push the power switch [A] on the machine.
 2. Wait 3 minutes to shut down.
 3. Take out the power cord.
 4. Do either of the following:
 - Wait several minutes
 - Push the power switch [A] again to remove the residual charge.

No additional notes



Covers

- To improve the appearance of the machine, screw holes are mostly not visible. This means that the covers are held in place by a lot of tabs.
- The locations of these tabs are explained in the removal procedures. Pay attention to these diagrams, so that you do not damage the tabs.
 - Example: Left cover



m173m0018

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No additional notes



Starting the Machine Again

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- To start the machine, press the main power switch.
- If you press the main power switch between the beginning and the end of a shutdown, the machine will not start.

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No additional notes



Forced Shutdown

- In case normal shutdown does not complete for some reason, the machine has a forced shutdown function.
- To make a forced shutdown, press and hold the main power switch for 6 seconds.
- In general, do not use the forced shutdown. Forced shutdown may damage the hard disk and memory, and can cause damage to the machine. Use a forced shutdown only if it is unavoidable.

No additional notes



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Installation

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No additional notes



Who Installs the Machine?

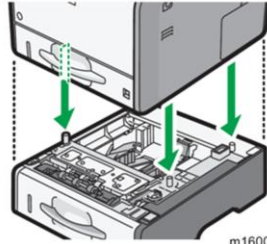
- These machines are installed by users.
- The customer should immediately change the administrator's password for Web Image Monitor, and enable SSL/TLS if required.
 - The Installation section of the service manual has a procedure.

No additional notes



Optional Paper Tray Units

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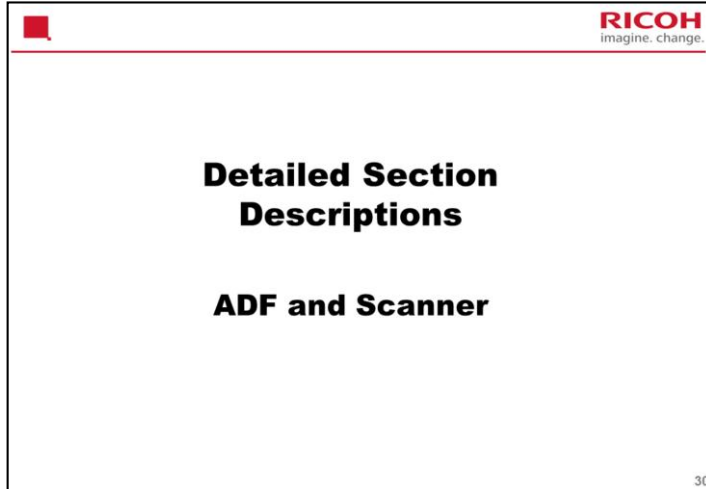


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- To attach two one-tray units at the same time, first stack them one on top of the other, and then attach them as a single unit to the machine.

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No additional notes



These are different from the GW version, and are not produced by Ricoh.



ADF and Scanner

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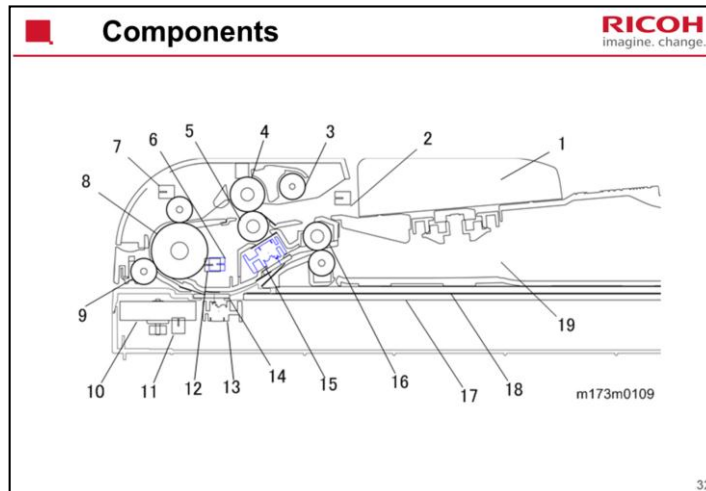
- These are not produced by Ricoh, so there are only brief descriptions of how they work.
- The ADF can be disassembled, but do not attempt to disassemble the scanner in the field.
 - You can remove the scanner as a complete unit. Disconnect the operation panel cable from the hook before you lift the scanner off the machine.



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No additional notes

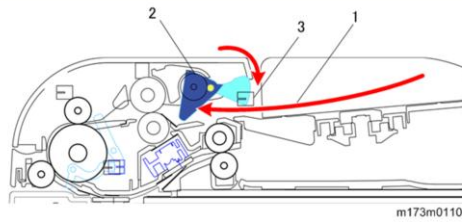


1. Original tray
2. Original set sensor
3. Pick-up roller
4. Paper feed roller
5. Separation roller
6. Scan sensor (M173 only)
7. Paper feed cover open/closed sensor
8. Transport roller
9. Pre-scanning roller
10. Scanner motor
11. Scanner HP sensor
12. Leading edge sensor
13. CIS 1
14. ADF exposure glass
15. CIS 2 (M173 only)
16. Exit roller
17. Exposure glass
18. Platen
19. Original exit tray



Original Detection

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- When an original [1] is placed in the feeder, it pushes the feeler [2], and the actuator enters the sensor [3].

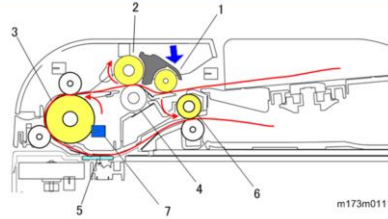
33

No additional notes



Original Feed (Single-sided Scan)

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- When the [Start] key is pressed, the pick-up roller [1] drops onto the top original of the stack. The original is fed from the paper feed roller [2] to the transport roller [3].
- The separation roller [4] ensures that only one sheet of the original enters the feeder.
- The original is fed by the transport roller [3], scanned on the ADF exposure glass [5], and then delivered by the exit roller [6].
- Original feed is detected by the leading edge sensor [7]. If an error occurs, it is reported as a paper jam.

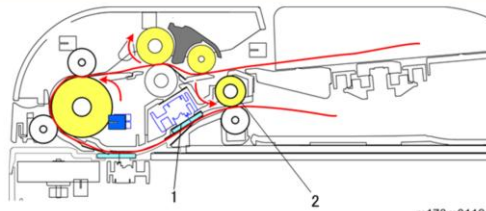
34

No additional notes



Original Feed (Duplex Scan)

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- The CIS [1] scans the other side of the paper.
 - This is CIS 2 in the component layout diagram.
 - CIS 1 is in the scanner.

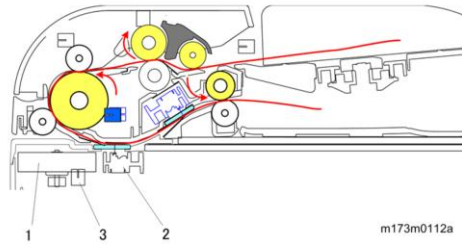
35

No additional notes



Scanner Drive

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- The scanner motor [1] drives the carriage which contains CIS 1 [2] through a belt.
- After scanning, the carriage returns to the scanner HP sensor [3].
- The actuator for the scanner HP sensor is on the underside of the ADF exposure glass.

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No additional notes

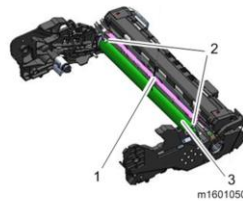
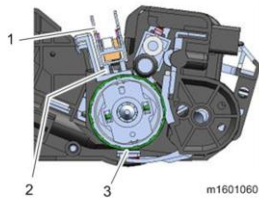


This section explains how a latent image is written on the drum.
The method is the same as the Ti-P1 (M109) and the GW version of the Gim-MF1/P1.



Overview

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- An LED array [1] writes the latent image on the OPC [3].
- A spacer [2] on the drum keeps the LED array at the correct distance from the OPC for correct focus.
- The LED writing method contributes to machine downsizing, and is superior to the LD writing method in image quality, noise reduction, and energy saving.

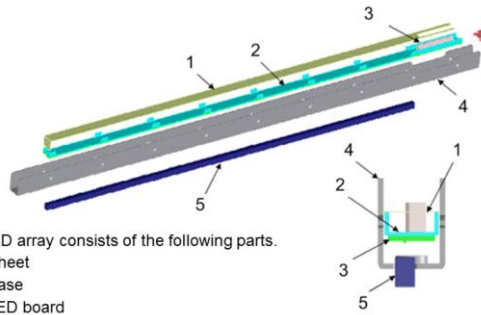
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No additional notes



Components of the LED Array

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- The LED array consists of the following parts.
 1. Sheet
 2. Base
 3. LED board
 4. Frame
 5. SLA (Self-focusing Lens Array)
- The LED array is replaced as one complete unit. The individual components shown above cannot be replaced in the field.

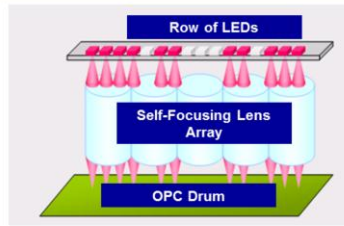
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No additional notes



Detailed Structure of the LED Array

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- Tiny LEDs capable of creating images at 1200 dpi are arranged in a line. Light beams emitted by the LEDs are focused using the Self-focusing Lens Array (SLA), creating an image on the OPC drum.
- Each LED head has 26 LED chips on board, and each chip has a line of LEDs 8mm in length.
- If a vertical line 8mm in width appears on the image parallel to the direction of paper feed, it may be caused by a broken LED chip.

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No additional notes



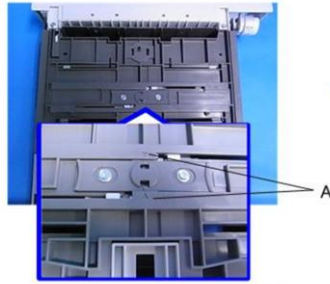
- **Image position adjustment**
 - Horizontal (main scan): Adjusted by moving the image position
 - Vertical (sub scan): The timing for the start of writing is changed.
 - No mechanical adjustments
- **LED light intensity**
 - An EEPROM on the LED head contains data which controls the light intensity of each element.
 - There is no adjustment.
- **Adjustment after replacement**
 - The EEPROM on the new LED array contains data on the characteristics of the LED array. No adjustment is needed by the technician.

No additional notes



Moving the Image Position

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- Loosen the screws on the bottom of the tray, and then move the holder to the right or the left (maximum adjustment: 2mm).
- When at the default (± 0) position, the holder is at the location marked by a triangle [A].

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No additional notes



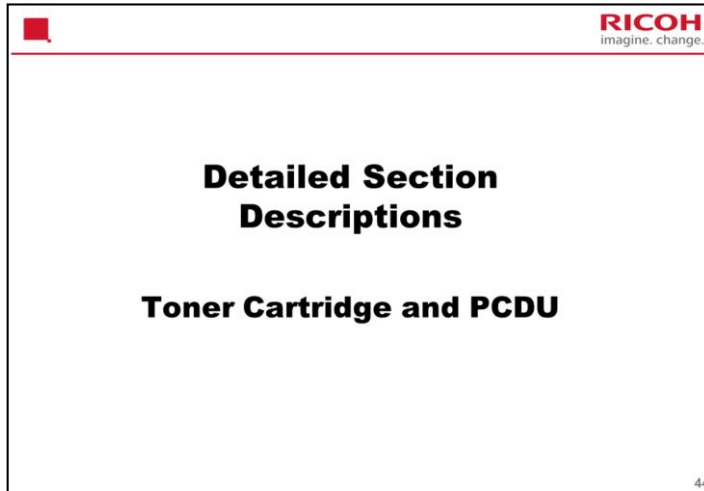
After Replacing the LED Unit

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- After replacing the LED unit, clean the lens of the new unit.
- Also clean the lens after working inside the machine around the LED unit.
- If springs become disengaged when removing the LED unit, refer to the replacement procedure in the service manual for the correct way to reattach the springs.

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No additional notes



This section explains the components of the toner cartridge and the PCDU. The method is the same as the Ti-P1 (M109) and the GW version of the Gim-MF1/P1.



Removing the Toner Cartridge and PCDU

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- Open the front cover.
- To take out both PCDU and toner cartridge, pull the green handle.
- To take out only the toner cartridge, push the green button on the right and pull the green handle.

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No additional notes



Toner Cartridges

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w_m1601021

- The toner cartridge contains the toner bottle, toner supply mechanisms, and the used toner collection box.
- The toner cartridge can separate from the PCDU (see the next slide) and can be replaced.
- The toner supply port on the toner cartridge has a shutter that opens when the toner cartridge is installed in the PCDU.

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No additional notes



Toner Cartridge Release Lever

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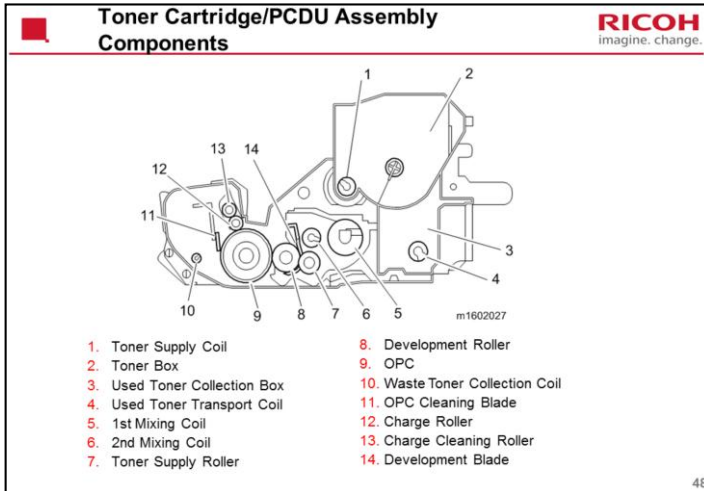


m1600280

- This lever releases the toner cartridge from the PCDU.
- The lever works in two steps. First, push the lever down to the horizontal position. Then stop there, then push the lever down to release the cartridge.

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No additional notes

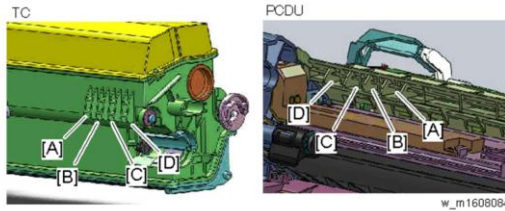


No additional notes



Two Types of Cartridge

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- There are two types of cartridge: 3,000 or 6,000 pages (ISO)
- The protrusions [A to D] on the cartridges are different. If you try to put the wrong type of cartridge in the machine, you will find that the toner cartridge does not fit properly into the PCDU on one side, preventing the front cover from closing.
 - Just in case somebody manages to defeat this mechanism, the machine also has a function to use the data from the ID chip to detect incompatibility.

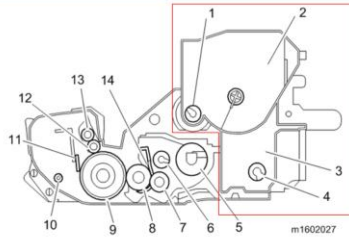
49

The toner cartridge (TC in the diagram) is different from the GW version of this model.



Toner Cartridge

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- The toner cartridge contains the toner box [2], toner supply coil [1], and the used toner collection box [3].
- The toner supply port shutter in the cartridge opens when the toner cartridge is installed in the PCDU.

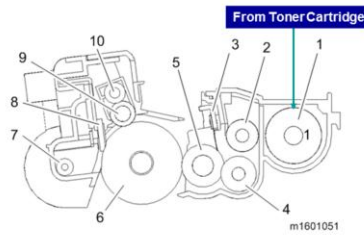
50

No additional notes



Toner Supply Mechanism

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- When the toner supply clutch turns on, a coil in the toner cartridge rotates to transfer toner to the cartridge exit and then the PCDU. Toner which falls into the PCDU is transferred to the development section by the 1st mixing coil [1].

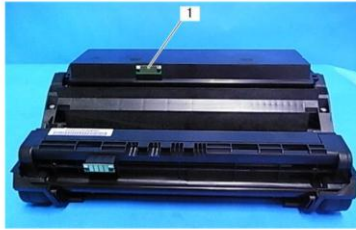
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No additional notes



ID Chip

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- Each toner cartridge has an ID chip that contains information such as product information and the number of prints.
- This ID chip also informs the machine when the cartridge is a new one.

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No additional notes



- Toner near-end: A counter determines when the toner has almost run out by calculating the remaining toner, based on the initial amount of toner and subsequently replenished toner.
 - Default setting: Toner near-end occurs when about 370 more pages (Gim-MF1a/b) can be printed before toner runs out. This is about 5 days at 1600 sheets per month.
 - For the Gim-P1a, this is 250 pages (5 days at 1100 sheets per month).
 - Near-end detection can be set to "Normal", "Notify Sooner", or "Notify Later". The default is "Normal".
 - [Menu] key > System Settings > Maintenance > Replacement Alert
- Toner end: A sensor checks whether toner is being added to the PCDU. If it cannot see that toner is being replenished, then the machine detects that toner has actually run out, and the machine cannot print.

Approximate number of prints that can be made with each setting:

In accordance with ISO/IEC19752 and A4 paper and with the print density set to the initial factory setting

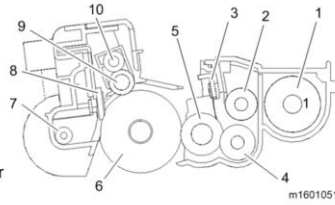


PCDU Layout

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- The PCDU contains the charge roller, photoconductor, development mechanism, and cleaning unit.

1. 1st Mixing Coil
2. 2nd Mixing Coil
3. Development Blade
4. Toner Supply Roller
5. Development Roller
6. OPC
7. Waste Toner Collection Coil
8. OPC Cleaning Blade
9. Charge Roller
10. Charge Roller Cleaning Roller



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No additional notes



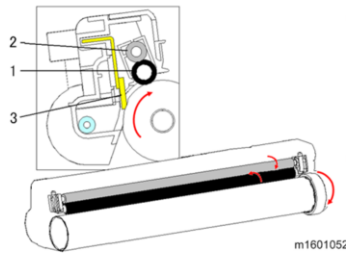
- The PCDU is driven by the main motor through a coupling.

No additional notes



Drum Charge and Cleaning

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- The charge roller [1] gives the drum surface a uniform negative charge.
 - The charge roller [1] rotates in the same direction as the OPC drum.
- If the charge roller [1] is dirty, the applied electric charge becomes uneven. Therefore, the charge roller is always in contact with the cleaning roller [2].
- The OPC cleaning blade [3] removes waste toner from the OPC.

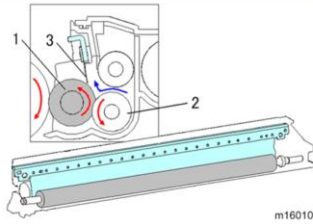
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No additional notes



Development

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imagine. change.



- The development mechanism contains the development roller [1], the toner supply roller [2], and the development blade [3].
- The toner supply roller [2] provides the development roller [1] with toner.
- The development blade [3] keeps the toner attached to the development roller [1] at an even thickness.

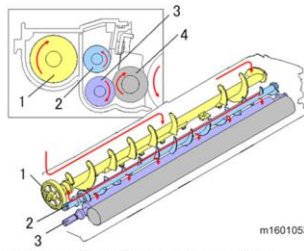
57

No additional notes



Mixing

RICOH
imagine. change.



- The toner moves as shown in the above drawing.
- The 1st mixing coil [1] moves the toner to the left side.
- The 2nd mixing coil [2] moves toner to the right side.
- Finally, the toner supply roller [3] supplies toner to the development roller [4].

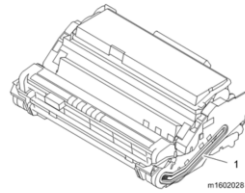
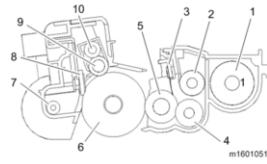
58

No additional notes



Waste Toner Collection

RICOH
imagine. change.



- Toner waste is collected by the waste toner collection coil [7 in the diagram on the left] and sent down to the waste toner bottle.
- The waste toner goes down the path shown by [1] in the diagram on the right

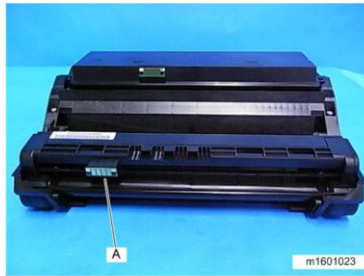
59

The waste toner collection mechanism will be explained in more detail later.



New PCDU Detection

RICOH
imagine. change.



- When a PCDU is placed in the machine, the ID chip [A] is read. In this way, the machine detects when a new PCDU is inserted.

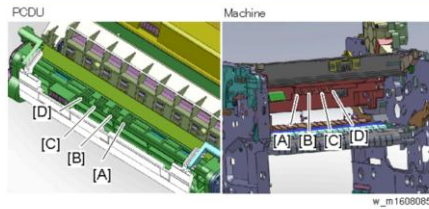
60

This is different from the Ti-P1.



Cannot Install the Wrong PCDU

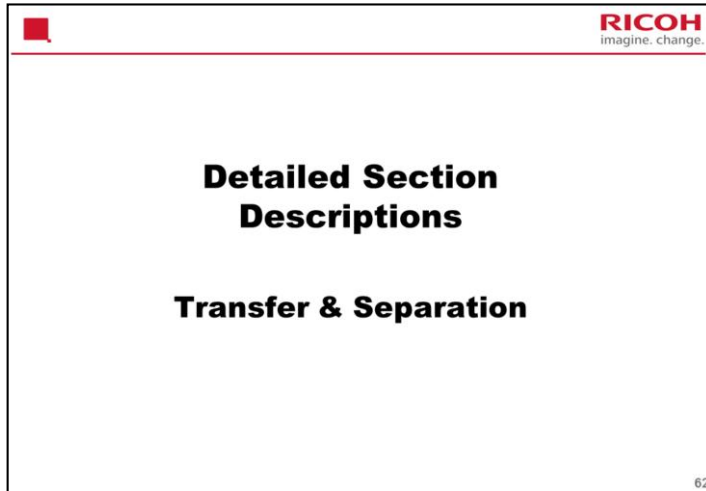
RICOH
imagine. change.



- The PCDU is the same as the user PM version for the GW model.
- The protrusions [A to D] on the PCDUs are different for each model. If you try to put the wrong type of PCDU in the machine, you will find that the PCDU does not fit in properly.
 - Just in case somebody manages to defeat this mechanism, the machine also has a function to use the data from the ID chip to detect incompatibility.

61

No additional notes



This is similar to the Rn-MF1 series, and similar to the GW version of the Gim-MF1/P1.

RICOH
imagine. change.

Image Transfer & Paper Separation

- The transfer roller is pressed against the drum.
- The PSU supplies a positive charge to the transfer roller, sending toner from drum to paper.
 - Current is set in accordance with paper type, size, number of prints, and feed tray.
- Separation of paper from the drum is aided by the drum's own curvature and a grounded discharge plate downstream from the transfer roller.

63

OPC – Organic Photo-Conductor (drum)

PSU – Power Supply Unit

You can adjust the transfer current applied for various situations (SP2-301 T bias control).

Increasing a transfer current level may produce ghost images—some part of image near the leading edge reappears in other part of the page.

Increasing a transfer current level might damage the OPC drum.



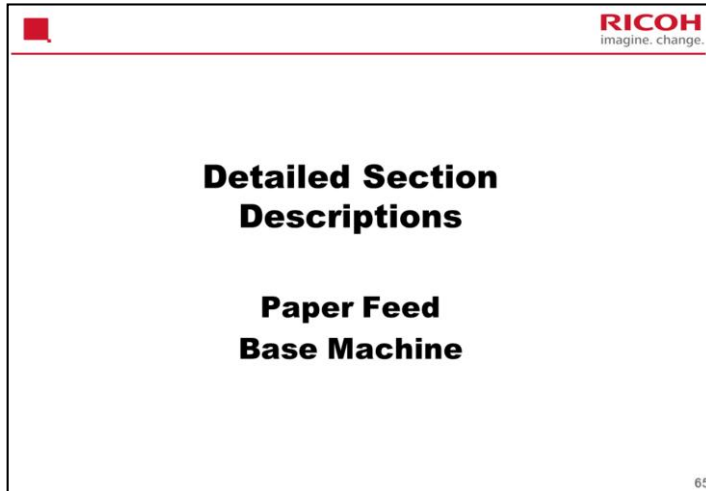
Transfer Roller Cleaning

RICOH
imagine. change.

- The transfer roller must be cleaned sometimes to prevent toner that has transferred to the roller surface from moving to the rear side of subsequent prints.
- Cleaning is done at the following times:
 - After initial power on
 - After clearing of a copy jam
 - At job end
- To clean the transfer roller, the PSU does the following:
 - First, it applies a negative cleaning current to the transfer roller, causing negatively charged toner on the roller to move back to the drum.
 - It then applies a positive cleaning current to the roller, causing any positively charged toner to migrate back to the drum.

64

No additional notes

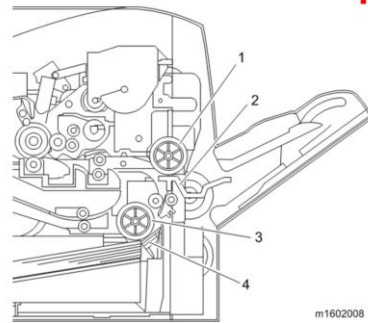


This section explains how paper is fed through the machine.
The method is the same as the Ti-P1 (M109), and the GW version of the Gim-MF1/P1.



Overview

RICOH
imagine. change.



m1602008

- The machine has a paper tray and a bypass tray.
 1. Bypass Feed Roller
 2. Bypass Friction Pad
 3. Tray 1 Paper Feed Roller
 4. Tray 1 Friction Pad

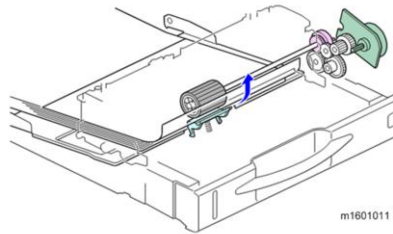
66

No additional notes



Drive

RICOH
imagine. change.



- To start paper feed, the machine turns on the paper feed clutch, and the paper feed roller rotates.
- The friction pad ensures that only the top sheet is fed.
- When the paper activates the registration sensor, the paper feed clutch turns off.
- When the toner image on the transfer belt is at the correct position, the registration clutch turns on to feed the paper to the image transfer unit.

67

No additional notes



Paper End Detection

RICOH
imagine. change.

- If the tray becomes empty, a feeler enters a cutout in the bottom plate, and the paper end sensor at the other end of this feeler turns on.

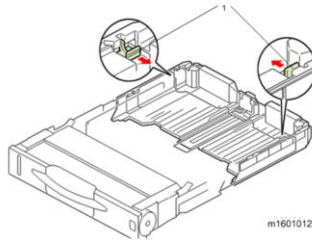
68

No additional notes



Adjustable Cassette

RICOH
imagine. change.



- When shipped from the factory, sizes up to A4 SEF can be loaded in the cassette.
- To support paper sizes larger than A4 SEF, unlock the tray extension lock ([1] in the diagram) to extend the tray.

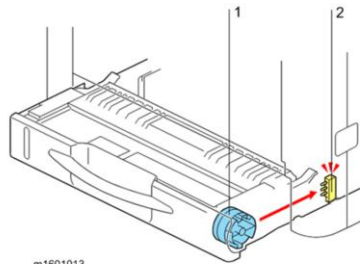
69

No additional notes



Paper Size Detection

RICOH
imagine. change.



m1601013

- The paper size switch [2] detects actuators attached to the paper size dial [1].
- The customer must select the correct paper size with this dial.

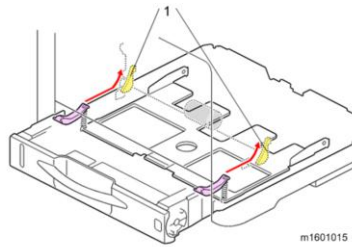
70

No additional notes



Bottom Plate Lift

RICOH
imagine. change.



- When you slide the paper feed tray into the unit, the bottom plate arm [1] slides along the sloping guide of the main frame, and then the bottom plate is pushed upward by the spring.
- As a result, the lifted bottom plate presses the sheet on the top of the stack up against the paper feed roller.

71

No additional notes



- The bottom plate has an automatic lifting system.
 - When paper is loaded into the tray, the end sensor turns on. When the sensor is on, the bottom plate goes down.
 - When it is off, the bottom plate goes up.
 - To start paper feed, the bottom plate moves up (see the next slide).
- When the main motor rotates in reverse, a one-way clutch transfers the drive to the bottom plate lifting system of the bypass tray.
- Then, a cam (on the left as you face the machine) starts rotating to lift the bottom plate up and down.
- The bottom plate position sensor detects up/down movement of the bottom plate by detecting a sensor actuator on the left side of the cam.
 - Sensor ON: Bottom plate is down
 - Sensor OFF: Bottom plate is rising

No additional notes



Bypass Feed

- Bypass feed uses a feed roller and friction pad mechanism.
- To start feed, the bottom plate goes up, then the bypass feed clutch starts.
- When the leading edge of the paper is out of the tray, the duplex exit clutch turns on to feed the paper into the machine along the same path as paper from the standard tray.
- The bypass feed clutch turns off when the paper activates the registration sensor.

No additional notes



Side-to-side Registration Adjustment Built-in Paper Tray

RICOH
imagine. change.



m1601059

- To adjust side-to-side registration, loosen the two screws on the underside of the tray and move the rack and pinion mechanism of the side guides from side to side.

74

No additional notes



Side-to-side Registration Adjustment Bypass Tray

RICOH
imagine. change.



m1601058

- To adjust side-to-side registration, loosen the screw at the right side of the tray and move the bypass bottom plate and side guides from side to side.

75

No additional notes



Detailed Section Descriptions

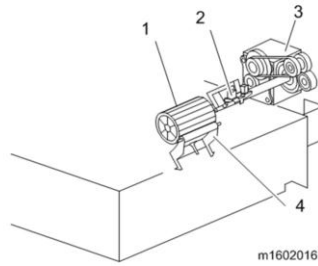
Paper Feed Optional Paper Feed Units (M440, M441)

No additional notes



Feed Mechanism

RICOH
imagine. change.



m1602016

- Feed roller and friction pad
 1. Paper feed roller
 2. Paper feed sensor
 3. Paper feed motor
 4. Friction pad

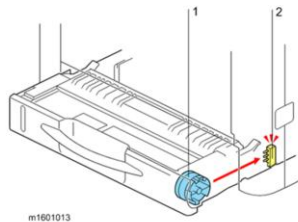
77

No additional notes



Paper Size Detection

RICOH
imagine. change.



m1601013



w_m1601014

- Paper size is detected by a combination of three detection switches [2].
- The switches are operated by the dial [1] on the right side of the paper feed tray.

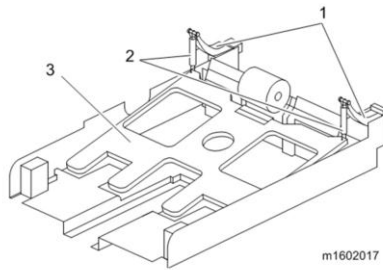
78

No additional notes



Lift

RICOH
imagine. change.



m1602017

- When you push in the paper cassette, the tray arms (1) rise along the groove in the tilted guide and lift the bottom plate (3) using springs (2).

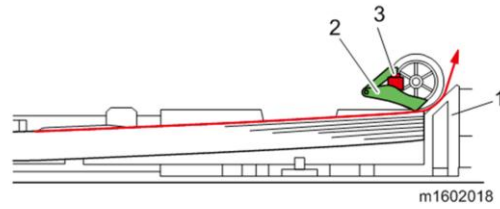
79

No additional notes



Paper End Detection

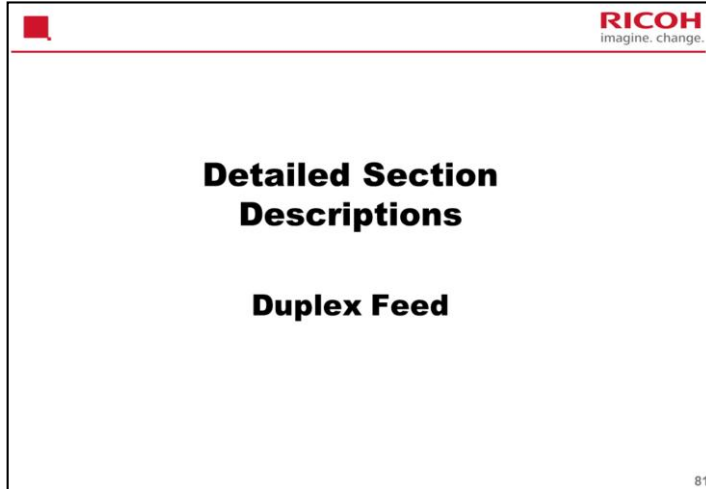
RICOH
imagine. change.



- When paper is all finished, the feeler (2) falls through an opening in the bottom plate and the paper end sensor (3) detects paper end.

80

No additional notes

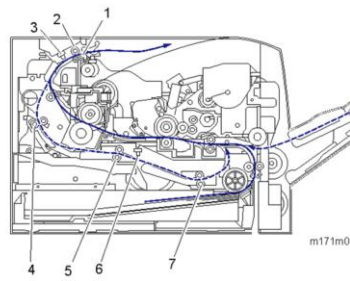


This is a bit different from the GW version of this model.



Components

RICOH
imagine. change.



1. Paper Exit Roller
2. Exit / Switchback Roller
3. Exit / Switchback Sensor
4. Duplex Entrance Roller
5. Duplex Relay Roller
6. Duplex Entrance Sensor
7. Duplex Exit Sensor

m171m0c

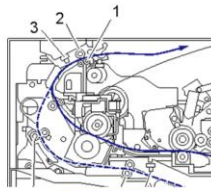
82

No additional notes

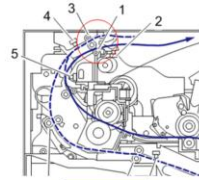


Comparing with GW Models

RICOH
imagine. change.



Kibo Model



GW Model

- One roller was removed, and the exit mechanism simplified.
- In addition, the paper overflow sensor was removed.

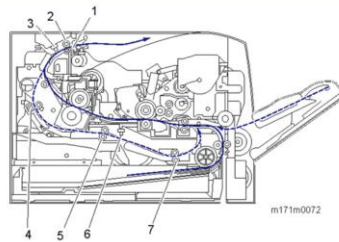
83

No additional notes



Operation

RICOH
imagine. change.



- For duplex printing, the machine turns the paper over by rotating the exit/switchback roller in reverse.
- After the paper's trailing edge passes the exit/switchback sensor [3], the junction gate returns to its original position before the paper is delivered completely, and the exit/switchback roller [1] rotates forward to feed the paper into the paper path for duplex printing.
- After printing on Side 2, the machine delivers the paper to the output tray.

84

When printing on one side, the paper is fed under the junction gate to the exit/switchback roller, and then delivered.

When printing on both sides, the paper is fed over the junction gate and exit/switchback roller to initiate the switchback operation.

The paper exit guide plate holds down the trailing edge of each sheet of paper after it exits, in order to prevent it from obstructing the following sheets of paper as they exit.



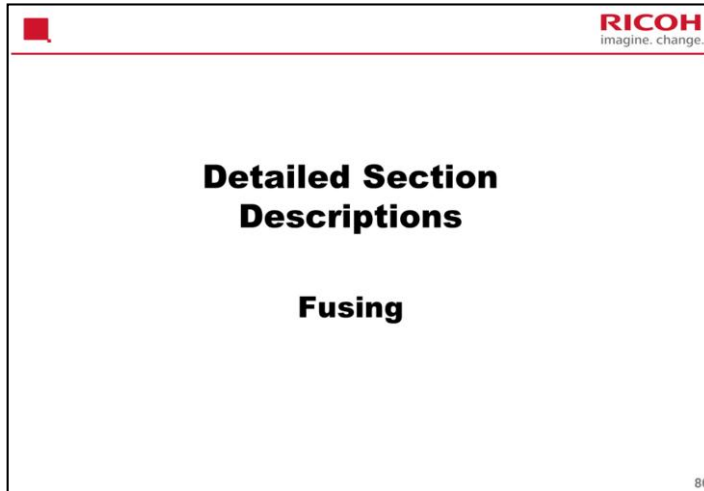
Exit Roller Drive

RICOH
imagine. change.

- ❑ In the GW version, the exit/switchback roller is driven by the paper exit motor. The motor drives forwards or in reverse, depending on which stage of the duplex feed operation the machine is in.
- ❑ However, in this version of the model, it is driven by the main motor and does not have a clutch, so it cannot be stopped on its own.
- ❑ Due to this, if the leading edge of a long sheet of paper fed from the duplex paper feed path waits at the registration unit with its trailing edge protruding out of the switchback roller, this paper may be jammed.
- ❑ To prevent this, the machine stops the exit / switchback roller by switching the junction gate solenoid and the exit / switchback gear on and off in accordance with the type of paper being fed.
- ❑ To change the direction of the exit / switchback roller, the junction gate solenoid drives a contact and release mechanism in the gears of the exit unit.

85

No additional notes



The mechanism is the same as the Sh-P1, but temperature control is based on the Ti-P1 and Rn-P1.

It is basically the same as the GW version of the Gim-MF1/P1, except that the paper guide plate for duplex feed attached to the fusing unit is different.

Overview **RICOH**
imagine. change.

1. Fusing exit roller
2. Hot roller strippers
3. Thermostat
4. Hot roller
5. Fusing lamp
6. Thermistor (Edge/Center)
7. Fusing entrance guide
8. Fusing pressure roller
9. Cleaning roller

- The hot roller and pressure roller fuse the toner image to the paper.
- After fusing, the paper passes through the fusing exit rollers and the paper exit rollers to the output tray.

81

The thermistor detects the temperature of the hot roller to control lamp on/off timing. (See the "Fusing Temperature control" slide.)

The thermostat provides backup overhear protection.



Fusing Unit Drive

RICOH
imagine. change.

- The main motor drives the fusing unit and the fusing exit rollers.

88

No additional notes



Envelope Lever

RICOH
imagine. change.

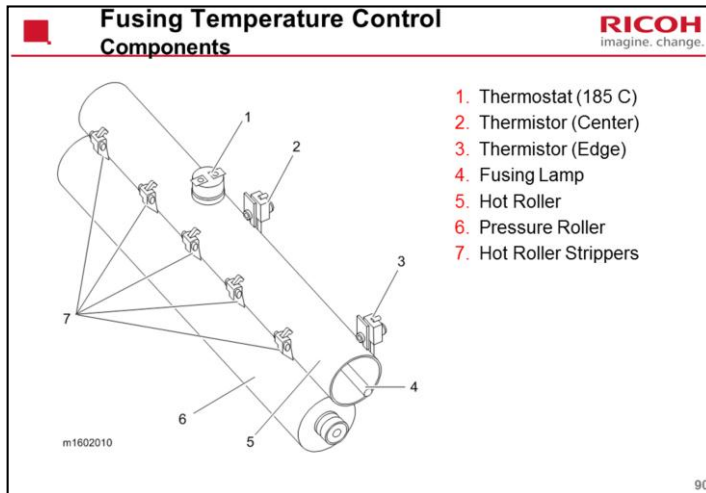


M1601016

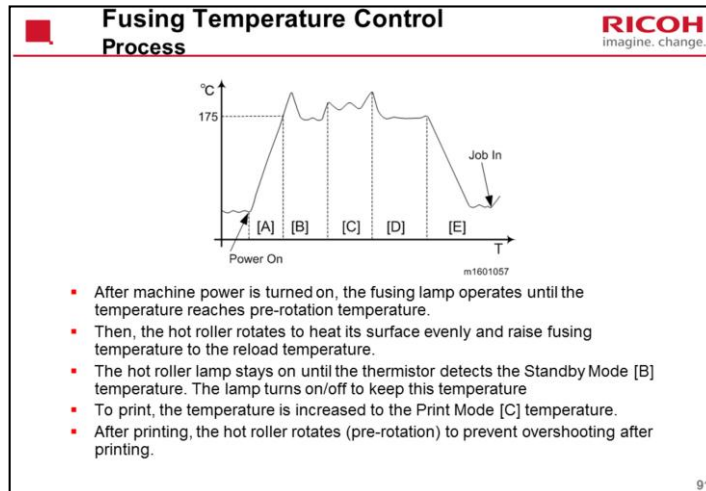
- The envelope lever [A] is on the right of the fusing unit.
- Lowering the lever decreases the fusing pressure (to approximately 20% of normal) to reduce wrinkles on envelopes.
- The machine cannot detect the position of this lever, so raise the lever to its original position after printing on envelopes.
- When shipped from the factory, the envelope lever is down, to prevent deformation of the pressure roller.
- Keep the envelope lever lowered when not using the machine for a long period (2 weeks or more).

89

No additional notes



No additional notes



[A]: Warming Up Mode

[B]: Standby Mode

[C]: Print Mode

[D]: Standby Mode

[E]: Auto Off Mode

[F]: Energy Saver Mode

The fusing temperature (Celsius) in each mode is as follows:

Standby Mode: 167

Energy Saver Mode: Ambient temperature

Print Mode

Plain paper 1: 167

Plain paper 2: 174

Middle Thick: 177

Thick 1: 180

Thick 2: 190

Thin Paper: 160

Envelopes: 205

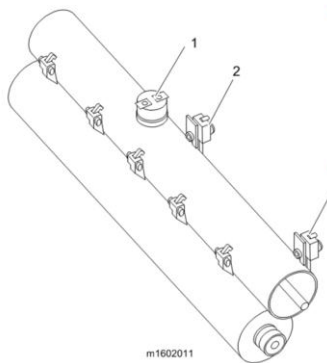
Post Cards: 190

Recycled Paper: 167

The fusing temperature, except for Energy Saver mode, can be adjusted in SP mode.

Fusing Temperature Control
Overheat Protection

RICOH
imagine. change.



The diagram shows a perspective view of a cylindrical fusing roller. A thermostat, labeled '1', is mounted on the top surface of the roller. A thermistor, labeled '2', is mounted on the top surface. A thermistor (edge), labeled '3', is mounted on the edge of the roller. The roller is shown with several other components, possibly sensors or actuators, along its length.

- The thermistor [2] and the thermistor (edge) [3] check the surface temperature of the hot roller.
 - If the temperature is more than 250 ° C, the power to the fusing lamp is cut. SC543 will be generated.
- If the thermistor protection fails, a thermostat [1] also checks the hot roller temperature.
 - If the thermostat detects more than 185 ° C, the thermostat opens, removing power from the fusing lamp. At this time, the machine stops.

m1602011

92

No additional notes



New Unit Detection

RICOH
imagine. change.



M1601019

- There are two types of fusing unit: one for emergency maintenance (EM) and another for periodical replacement.
- The fusing unit for periodical replacement has a new unit detection mechanism.
- When the machine is switched on after replacing the fusing unit, the engine board detects the fuse [A] under the drawer connector of the new fusing unit, and then blows the fuse.

93

No additional notes



Installing a New Fusing Unit

RICOH
imagine. change.

- At PM (done by the customer)
 - Install a fusing unit with new product detection capability from the Maintenance Kit. (User operation)
- At EM
 - Install a fusing unit without new product detection capability, and reset PM Counter Fuser setting (engine SP 7-804-003) after replacement.

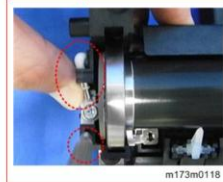
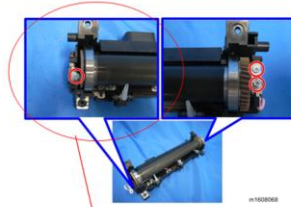
94

No additional notes



Removing the Fusing Lamp

RICOH
imagine. change.



- Be careful not to break the lamp when removing screws.
- Insert a pin or jeweller's screwdriver into the service hole (see the lower red circle in the photo below), and hold the flat nut with your finger (see the upper red circle in the photo).
- Otherwise, the lamp secured together with the flat nut moves with the rotation of the screw, which can break the lamp.

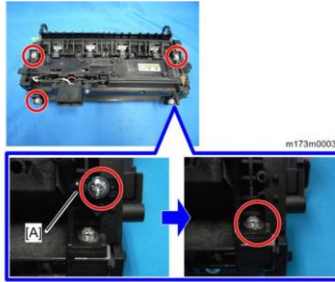
95

No additional notes



Reassembling the Fusing Unit

RICOH
imagine. change.



- When reassembling, be sure to attach the pin [A] to the correct position. If not, the fusing unit cannot be attached to the main body properly.

96

No additional notes



RICOH
imagine. change.

Troubleshooting

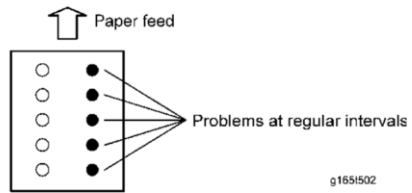
97

No additional notes



Problems at Regular Intervals

RICOH
imagine. change.



g1651502

- 29.9 mm: Charge roller
- 37.7 mm: Registration roller
- 45.8 mm: Image transfer roller
- 112 mm: Fusing pressure roller
- 94 mm: Fusing roller
- 100.5 mm: Paper feed roller
- 35.6 mm: Development roller
- 94.4 mm: Drum

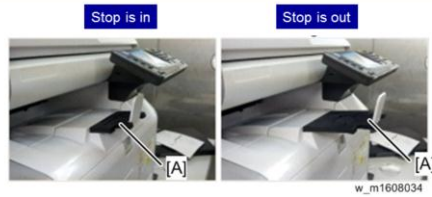
98

No additional notes



Paper Stacking Problems

RICOH
imagine. change.



- If the number of stacked sheets is substantial, the stack may start to spill.
- You can prevent this by adjusting the stop [A]. The stop supports paper up to Legal size.

99

No additional notes



Output is Severely Curled

RICOH
imagine. change.

- If the delivered paper is curled, it cannot be stacked properly. In such a case, raise the paper stop on the output tray and remove the delivered paper frequently.
- You can also adjust [Curl Prevention] in the UP mode (Maintenance).
 - If you set [Curl Prevention] to [Active], the machine idles for 20 seconds before it starts printing.
 - By adding the idle time before printing, it takes longer to print, but paper curling can be reduced.
 - To stop the 20-second idling, set [Curl Prevention] to [Inactive].

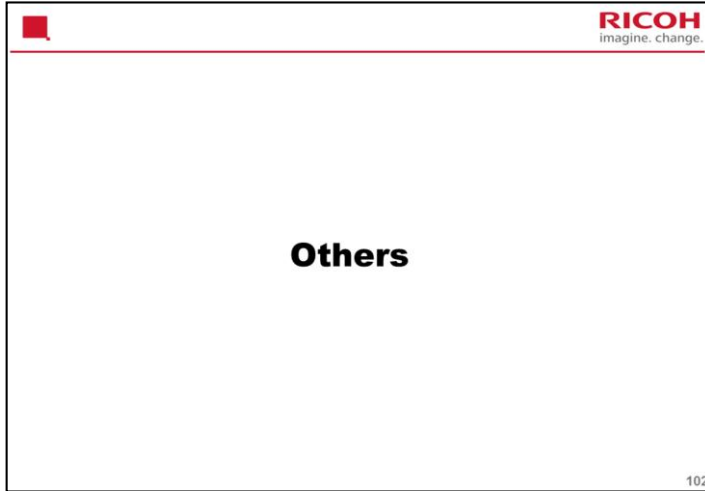
100

No additional notes



- **Banding: Execute Drum Rotation in the Maintenance Menu.**
 - The drum rotates for 30 s or 55 s depending on which level you select.
 - If this is done very often, the life of the drum will be reduced.
- **Black spots: Execute Fusing Roller Cleaning in the Maintenance menu.**
 - This uses paper from the bypass tray and prints on both sides of this paper.
 - Check the printout, and do the procedure again until the spots disappear.

Troubleshooting > When Vertical Banding is Generated, When Black Spots are Generated



No additional notes



Firmware Update

- Firmware in the GW models can be updated using an SD card.
- However, in the Kibo version, firmware must be updated using a computer with a special utility installed.
- See the service manual for details of the procedure.

No additional notes



The End