Toscana-P1 S/W
Machine Code: J015/J016

SERVICE MANUAL

Sep. 2007
Subject to change

Safety Instructions

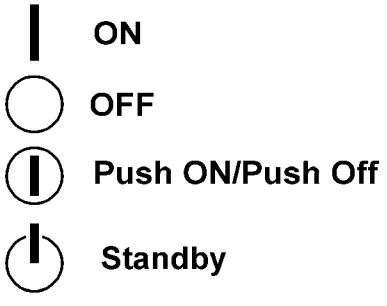
For your safety, please read this manual carefully before you service machine. Always keep this manual handy for future reference.

Safety Information

Always obey the these safety precautions when using this product.

Switches and Symbols

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



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Responsibilities of the Customer Engineer

Maintenance

Maintenance shall be done only by trained customer engineers who have completed service training for the machine and all optional devices designed for use with the machine.

Installation

The main machine and options can be installed by either the customer or customer engineer. The customer or customer engineer must follow the installation instructions described in the operating instructions.

Reference Material for Maintenance

Maintenance shall be done with the special tools and the procedures prescribed for maintenance of the machine described in the reference materials (service manuals, technical bulletins, operating instructions, and safety guidelines for customer engineers).

Important

- **Use only consumable supplies and replacement parts designed for use with the machine.**

Before Installation, Maintenance

Shipping and Moving the Machine

⚠CAUTION

- Work carefully when lifting or moving the machine. If the machine is heavy, two or more customer engineers may be required to prevent injuries (muscle strains, spinal injuries, etc.) or damage to the machine if it is dropped or tipped over.
- Personnel moving or working around the machine should always wear proper clothing and footwear. Never wear loose fitting clothing or accessories (neckties, loose sweaters, bracelets, etc.) or casual footwear (slippers, sandals, etc.) when lifting or moving the machine.
- Always unplug the power cord from the power source before you move the machine. Before you move the machine, arrange the power cord so it will not fall under the machine.

Power

⚠WARNING

- Always turn the machine off and disconnect the power plug before doing any maintenance procedure. After turning the machine off, power is still supplied to the main machine and other devices. To prevent electrical shock, switch the machine off, wait for a few seconds, then unplug the machine from the power source.
- Before you do any checks or adjustments after turning the machine off, work carefully to avoid injury. After removing covers or opening the machine to do checks or adjustments, avoid touching electrical components or moving parts (gears, timing belts, etc.).
- After turning the machine on with any cover removed, keep your hands away from electrical components and moving parts. Never touch the cover of the fusing unit, gears, timing belts, etc.

Installation, Disassembly, and Adjustments

⚠CAUTION

- After installation, maintenance, or adjustment, always check the operation of the machine to make sure that it is operating normally. This ensures that all shipping materials, protective materials, wires and tags, metal brackets, etc., (attached to protect the machine during shipping), have been removed and that no tools remain inside the machine.
- Never use your fingers to check moving parts that are causing spurious noise. Never use your fingers to lubricate moving parts while the machine is operating.

Special Tools

⚠CAUTION

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

During Maintenance

General

⚠CAUTION

- Before you begin a maintenance procedure always switch the machine off.
- Disconnect the power plug from the power source.
- Allow the machine to cool for at least 10 minutes.
- Avoid touching the components inside the machine that are labeled as hot surfaces.

Safety Devices

⚠WARNING

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

Organic Cleaners

⚠CAUTION

- During preventive maintenance, never use any organic cleaners (alcohol, etc.) other than those described in the service manual. (Refer the "2. Preventive Maintenance" in the Service Manual.)
- Make sure the room is well ventilated before using any organic cleaner. Always use organic solvents in small amounts to avoid breathing the fumes and becoming nauseous.

- Switch the machine off, unplug it, and allow it to cool before doing preventive maintenance. To avoid fire or explosion, never use an organic cleaner near any component that generates heat.
- Wash your hands thoroughly after cleaning parts with an organic cleaner to avoid contamination of food, drinks, etc. which could cause illness.

Power Plug and Power Cord

⚠CAUTION

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

After Installation Servicing

Disposal of Used Items

⚠WARNING

- Ink is flammable. Never attempt to incinerate empty ink cartridges.

⚠CAUTION

- Always dispose of used items in accordance with the local laws and regulations regarding the disposal of such items.

- To protect the environment, never dispose of this product or any kind of waste from consumables at a household waste collection point. Dispose of these items at one of our dealers or at an authorized collection site.

Points to Confirm with Operators

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

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

  Important

  - **Make sure the operators understand the following points:**
  - **The operator must lift the output tray to release the paper cassette before loading paper.**
  - **Paper is loaded in the standard paper cassette without removing it from the printer.**
  - **The operator should never attempt to remove the paper cassette from the printer.**

Special Safety Instructions For Ink Cartridges

Accidental Exposure To Ink

⚠CAUTION

- If ink gets on the skin, wash the affected area immediately with soap and cold running water.

- If ink gets into the eyes, immediately flush the eyes with cold running water. If there are signs of irritation or other problems, seek medical attention.
- If ink is swallowed, drink a strong solution of cold water and table salt to induce vomiting. Seek medical attention immediately.
- Ink is difficult to remove from fabric. Work carefully to avoid staining clothing when performing routine maintenance or replacing cartridges.

Handling and Storing Ink Cartridges

⚠WARNING

- Ink is flammable. Never store ink cartridges in a location where they will be exposed to high temperature or an open flame.

⚠CAUTION

- Always store ink cartridges out of the reach of children.
- Always store ink cartridges in a cool, dry location that is not exposed to direct sunlight.

Ink Cartridge Disposal

⚠CAUTION

- Attach the caps to empty ink containers for temporary storage to avoid accidental spillage.
- Return empty ink cartridges to a local dealer who can accept such items for collection and recycling or disposal.
- If the customer decides to dispose of empty ink cartridges, make sure that they are disposed of in accordance with local laws and regulations.

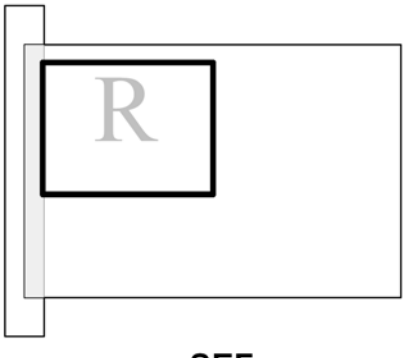
Conventions Used in this Manual

Symbols and Abbreviations

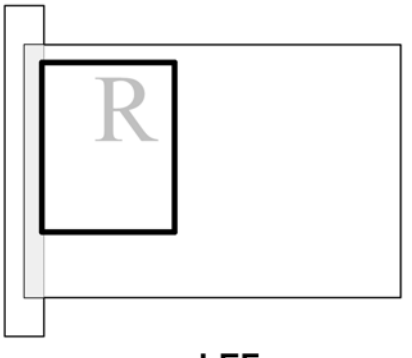
This manual uses several symbols.

Symbol	What It Means
	Screw
	Connector
	E-ring
	Clip ring
	Clamp
	Pawls (sensors)
	Spring

This manual uses the following abbreviations.



SEF



LEF

Throughout this service manual, "SEF" denotes "Short Edge Feed" and "LEF" denotes "Long Edge Feed".

Warnings, Cautions, Notes

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

⚠WARNING

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

⚠CAUTION

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

Important

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

Note

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

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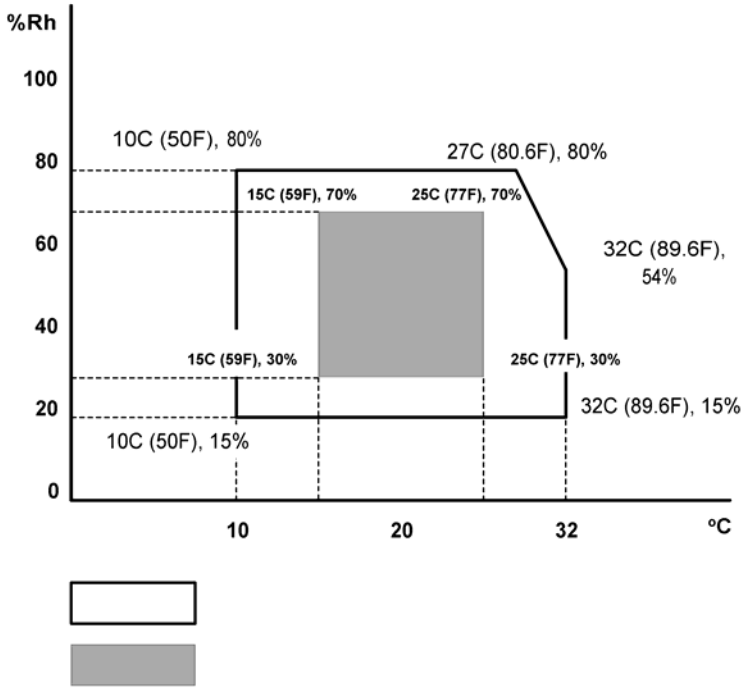
1. Installation

Preparation

Environment



Set up the machine in a location that meets these minimum requirements:

Temperature Range:	10°C to 32°C (50°F to 89.6°F)
Humidity Range:	15% to 80% RH
Ambient Illumination:	Less than 1,500 Lux (never expose to direct sunlight).
Ventilation:	More than 30 m3/hr/person in the work area
Ambient Dust:	Less than 0.10 mg/m3

Choosing a Location

1. Always install the machine:

- On a sturdy, level surface.
- Where it will not become damp.

2. Make sure the machine is never exposed to:
   - Extreme changes from low to high temperature or high to low temperature.
   - Cold or cool air directly from an air conditioner.
   - Heat from a space heater.
3. Never install the machine in areas near:
   - Dust, lint, or corrosive fumes.
   - Strong vibration.
4. Do not use the machine at any location higher than 2,000 m (6,500 ft) above sea level.
5. Set up and use the machine on a sturdy, level surface.
   - Place a carpenter's level on the machine front-to-back, and side-to-side and confirm that it is level.
   - variations between the front/back and left/right level readings should be less than 2 degrees.

Required Software Environment

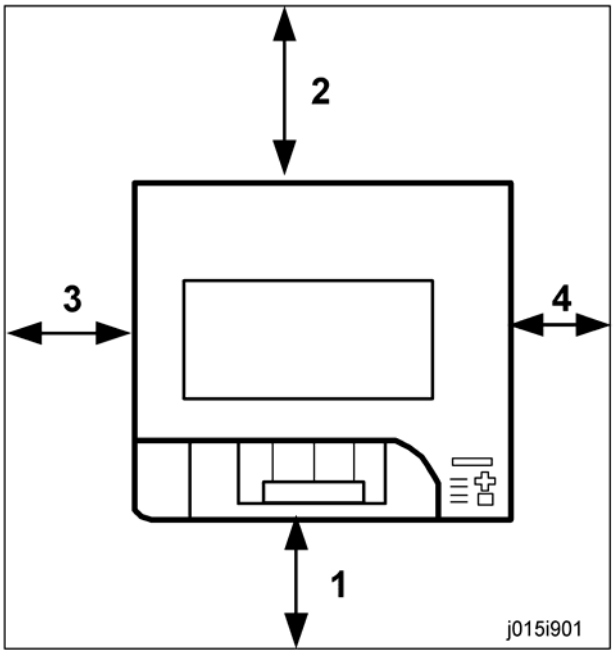
Software	Windows 98, Window Me, Windows 2000, Windows XP, Windows 2003, Window NT 4.0 or later
Hardware	80-100 MB of HDD space available

Limitations

These limitations apply to the use of this printer:

- Ver. 4.0 or later is required for Windows NT.
- Windows NT does not support a USB connection to the printer. Use a network connection.
- The USB connection is supported by Windows 98, Windows Me, Windows 2000, Windows XP, Windows Server 2000.
- USB connection with Windows 98 and Windows Me is limited to USB 1.1.

Minimum Space Requirements



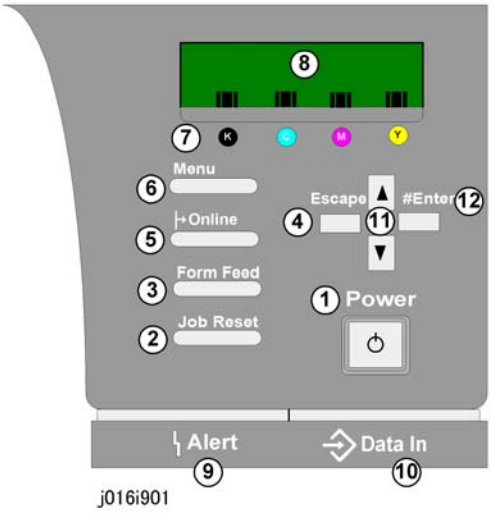
1	At least 300 mm (11.9 in.) for **J015**, 320 mm (12.6 in.) for **J016**
2	At least 120 mm (4.8 in.) for **J015**, 190 mm (7.5 in.) for **J016** At least 290 mm (11.5 in.) with Multi-Bypass Tray (**J016 only**)
3	At least 100 mm (4.0 in.)
4	At least 30 mm (1.2 in.)

Power Source

North America	100-120 V, 50-60 Hz
Europe	220-240V 50-60 Hz

Using the Operation Panel

Here is a brief description of how to use the keys on the printer operation panel. This information is provided as a quick summary of important information described in the Operating Instructions.



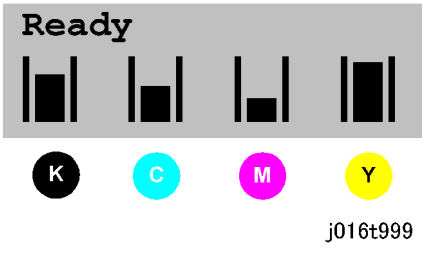
Key Summary Table

	Key/Indicator	What It Does
1	Power	Push to turn the printer on/off
2	Job Reset	Push to cancel the print job in progress.
3	Form Feed	When the printer is offline, push to print all the data in the printer buffer.
4	Escape	Push to restore the display to the previous condition.
5	Online	Push to toggle the printer between online/offline. When lit the printer is online, and when off the printer is offline.
6	Menu	Push to view the current printer settings.
7	Cartridge End LEDs	Indicate the statuses of the print cartridges.
8	Display	Shows the current printer status and error messages.
9	Alert	The symbol appears in the LCD when an error occurs. • Red indicates an error that will stop printing.

	Key/Indicator	What It Does
		• Yellow indicates and a potential error (follow the instruction that appears in the display).
10	Data-In	The symbol appears in the LCD when the printer is receiving data. Lights and stays on when data is in the printer buffer to be printed.
11	▲or▼	Push once to increment the display setting by 1 (up or down). Press and hold to increment the setting by 10.
12	#Enter	Push to execute the menu item on the display.

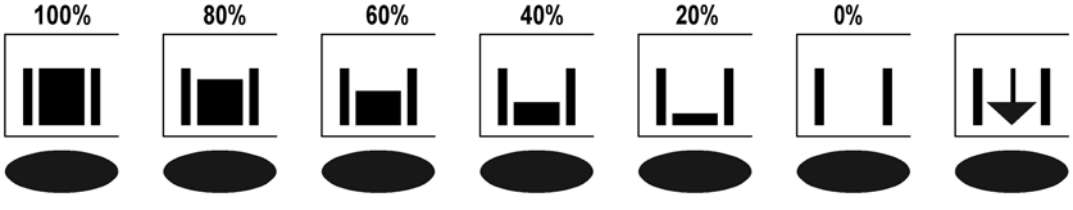
Printer Display Summary

Operation Panel Ink Low/Ink End Indicator



j016t999

The printer shows a 6-level dynamic display that keeps the operator informed about the status of the ink levels in the tanks. The example below for Black (K)shows the progression in the display from full on the left to completely empty on the right.



- At 100% the ink cartridge is completely full.
- The 0% display is the cartridge near end alert. Printing is still possible until the ink in the print head is gone.
- The arrow display is the ink cartridge end alert. The printer cannot be used until the ink cartridge has been replaced.

Display Menu Summary

Here is a summary of the function menus. Items needed for printer maintenance or troubleshooting are marked with an asterisk (*).

Menu/Menu Item	Function
Counter	Displays or prints the number of pages printed in B&W and full color.
Show Counter	Displays the counters on the LCD ("Black", "Color")
Print Counter	Prints the "Page Counter" report that lists: • Machine serial number • Total Full Color (pages) • Total Mono Color • Total Duplex
Paper Input	
Tray Paper Size	Specifies size of paper loaded in the paper tray.
Paper Type	Specifies type of paper loaded in the paper tray.
Aut. Tray Select	Specifies whether to select automatically the tray according to paper size and type (Tray 1 or optional bypass tray).
Tray Priority	Specifies priority paper tray selection (Tray 1 or bypass tray). Default: Tray 1
List/Test Print	
Config.Page*	Prints information that tells you the current configuration of the printer. • **System Reference**. Lists printer version, attached options, name of print language, amount of ink remaining for each ink cartridge. • **Paper Input**. Lists the specified Tray Priority setting and the Paper Input menu settings. • **Host Interface**, Interface Information. Lists the settings of the Host Interface menu
Maintenance	
Nozzle Check*	Prints the cross-hatch test pattern so you can visually confirm whether inks are ejecting correctly from the print head.
Head-cleaning*	Cleans the print head. Clean the print head when certain colors are missing or printing faintly. Head cleaning consumes ink.

Menu/Menu Item	Function
Head-flushing*	Cleans the print head more thoroughly than "Head-cleaning". Flushing consumes more ink. Use this function only after "Head-cleaning" fails to solve the problem.
Head Position*	Adjusts the alignment of the print head if the Nozzle Check test pattern shows broken vertical lines, or if printed images are blurred.
Adj. Paper Feed*	Adjusts the paper feed setting if the Nozzle Check test pattern shows horizontal misalignment, or if printed images appear uneven.
Registration	Adjusts the print starting point for each paper tray. Use the Nozzle Check test pattern as reference.
Key Repeat	Enables/disables repetition of a key pushed and held down on the operation panel.
Paper Feed Test*	Feeds and ejects 1 blank sheet of paper to remove moisture inside the machine.
De-condensation*	Feeds and ejects 3 blank sheets of paper to remove moisture inside the machine.
System	
Auto Continue	Determines how the printer handles a print job when the specified paper size and type is not loaded in the tray. **Off**: The job does not print if the specified paper size/type is not loaded in the tray. The job will execute once the specified paper size/type is loaded. **On**: The job prints even if the specified paper size/type is not loaded in the tray.
Sub Paper Size	Determines whether to print on A4 paper if LT size paper is specified in the printer driver, and vice versa. **Default**: Off
Energy Saver	Switches the energy saving function on/off. When this function is on, the printer will automatically shut down some of its functions automatically after it remains idle for the prescribed amount of time. The "E. Saver Timer" can be set for 5, 15, 30, 35, 60 min. Once the printer enters the energy save mode, it will require some time to recover full operation once it receives a print job.
Notify by Email*	Determines whether a notification is sent to a specified email address when a printer error occurs. Be sure to cycle the printer off/on after doing this setting.
Unit of Measure	Determines the units of measure ("mm" or "in.") **Default**: mm

Menu/Menu Item	Function	
Ink CU Replace*	Sets the ink storage counter after the ink collector unit is replaced.	
Env. Slctr Alert	The direction of printing (uni- or bi-directional) is determined by the setting of the envelope selector. • When the selector is set to the rear, printing is uni-directional for envelopes • When set forward printing is uni-directional or bi-directional depending on the paper type. This feature menu item has two setting: • **Display Alert** (default). An alert is displayed if the envelope selector is back and set for envelope printing. • **No Alert & Print**. No alert is displayed. A message prints to tell the operator that the envelope selector is set for envelope printing.	
Host Interface		
I/O Timeout	Determines how long the printer waits for the interface to respond. After the specified time elapses, the printer can receive data from another interface. If the specified time is too short, a timeout might occur while a data transfer is in progress. If this occurs, the print job will be interrupted by a new job from another interface. Default: 15 sec.	
Network Setup	Use to do the network settings.	
	Setting	**Default**
	DHCP	On
	IP Address	0.0.0.0
	Subnet Mask	0.0.0.0
	Gateway Address	0.0.0.0
	Active Protocol	All Active
	Ethernet Speed	Auto Select
USB Setting	Two settings are available: USB Speed. • Auto: 480 Mbps or 12 Mbps automatically adjusted • Full Speed: 12 Mbps fixed Default: Auto. Normally, this setting does not require changing.	

Menu/Menu Item	Function
	Port Setting. Specifies communication settings for a USB connection. On/Off Default: Off
Language	Determines the language used for all prompts and messages on the operation panel display.
English	English, German, French, Italian, Dutch, Swedish, Norwegian, Danish, Spanish, Portuguese. Default: English

Operation Panel Status and Error Messages

Here is a summary of the status and error messages that appear on the display of the printer operation panel. A status message tells you the current status of the printer, and does indicate a problem. There is no reason to take any action, other than wait while the printer completes its task.

Message	Type	What It Means
Cannot use. High Temp. Power Off On	Error	The printer is overheated. Turn the printer off. Allow it to cool. Turn the printer on again.
Cannot use. Low Temp. Power Off On	Error	Temperature inside the printer is abnormally low. Cycle the printer off/on.
Change Setting Tray #	Error	The size of the paper in the selected tray does not match the paper size selected for the print job. Load the tray with the specified size, then on the operation panel change the paper size setting for the tray. Or you can load the other tray with the specified paper size, push [Form Feed], select the other tray, and push [#Enter].
Change Settings Tray #	Error	The type of paper in the selected tray does not match the specified paper type. Load the tray with the paper of the specified type, and then change the paper type setting for the tray. Or you can load the required paper in the other tray, push [Form Feed], select the other tray, and push [#Enter].
Close Duplex Unit Cover	Error	The duplex unit cover is open. Close it. **(J016 only)**

Message	Type	What It Means
Close Top Cover or reset Duplex Unit Correctly	Error	The top cover is open, or the duplex unit is not installed and locked in place. Close the top cover, or set the duplex unit correctly.
Dry Waiting...	Status	Ink on a printed OHP transparency is drying. Please wait.
Energy Saver	Status	The printer is in the energy save mode. It will awaken from this mode after a key is pushed on the operation panel when the printer receives a print job.
Guide Board is open Close the Guide Board	Error	Close the guide board.
Hardware Problem Ethernet	Error	An error has occurred in the network interface board.
Ink Collector Full Replace Ink Collector Unit	Error	The ink collector unit is full. Replace the ink collector unit on the back of the printer.
Ink Collector Unit Almost Full	Error	The ink collector unit is almost full. Make sure that an replacement is available.
Ink Depleted	Error	Ink has run out in an ink cartridge. Change the indicated ink cartridge immediately. The printer cannot be used until the cartridge has been replaced.
Load Paper: Tray # or Form Feed	Error	The tray has run out of paper. Reload the tray. Or you can push [Form Feed], select the other tray, and push [#Enter].
Loading Ink...	Status	The ink tanks inside the print head are filling with ink from the ink cartridges. Wait for the operation to finish.
Low ink.	Error	One or more of the ink cartridges is running low. Determine which cartridge is low and obtain a replacement. The printer can be used for a short time, but the cartridge should be replaced as soon as possible.
Maintenance in progress...	Status	The printer is busy cleaning or flushing the print head. Please wait.
Offline	Status	Printer is offline. Push [Online] to set the printer for printing.
Power Off/On Call Service if error reoccurs	Error	An error has occurred inside the printer.

Message	Type	What It Means
Printing...	Status	A print job is printing.
Ready	Status	The printer is ready and able to print.
Remove Misfeed Bypass	Error	Paper has jammed feeding from the bypass tray Remove the jammed paper. **(J016 only)** **Note**: This is the result of a registration sensor late error or registration sensor lag error.
Remove Misfeed Duplex	Error	Paper has jammed in the duplex unit. Open the duplex unit and remove the jammed paper. **(J016 only)** **Note**: This is the result of 1) Trailing edge sensor lag error during either simplex or 2) Duplex printing, registration sensor late error during duplex printing.
Remove Misfeed Output	Error	Paper has jammed at the output tray. Remove the jammed paper.
Remove Misfeed Top Cover	Error	Paper has jammed under the top cover. Open the top cover and remove the jammed paper.
Remove Misfeed Tray 1	Error	Paper has jammed feeding from Tray 1 (registration sensor late error). Remove the jammed paper.
Reset Duplex Unit correctly	Error	The duplex unit is not installed correctly. Remove it and install it again. **(J016 only)**
Reset the cartridge	Error	No ink cartridge is installed, or the ink cartridge is not installed properly.
Resetting job...	Status	The printer is re-initializing a print job. Please wait.
Right Front Cover is open Close Right Front Cover	Error	The right front cover is open. Close it.
Setting change...	Status	The printer is changing its settings. Please wait.
Temp. alert Please wait...	Error	The printer is overheated. Wait for the printer to cool. When you see "Ready" on the operation panel, the printer is ready to resume operation.
Waiting...	Status	The printer is busy. Please wait.

Status Monitor Messages

Here is a brief summary of the Status Monitor error messages. For more, please refer to the User Guide.

Important

- **At the time of writing the exact wording of the messages that show on the Status Monitor computer screen has not been decided. Therefore, the exact wording of these messages may change without prior notice.**

If the Status Monitor Does Not Open...

The Status Monitor should open for every print job. If the Status Monitor does not open for the shared printer:

- Check the printer settings in Windows.
- Confirm whether the Web Browser supports Status Monitor. (Internet Explorer Ver. 4.0 or later supports the Status Monitor.)

Status Monitor Messages

Status Monitor Message	What It Means
Cartridge End	• One or more ink cartridges empty? • Check the operation panel display. You will see "LOW" displayed over the indicator of the cartridge that is almost empty. Printing can continue for a short time but the ink cartridge should be replaced as soon as possible.
Cartridge/Print head Tank Empty	• One or more ink cartridges empty? • Check the operation panel display. You will see "Ink Depleted" displayed over the indicator of the cartridge that is almost empty. Note: The ink cartridge and the ink tank inside the printer head are both empty. The printer cannot be used until the empty cartridge has been replaced.
Cover Open	• Top cover open? • Duplex unit cover open? • Duplex unit installed properly and locked in place? If the covers are closed, open and close them
Cover Open/Ink cartridge(s) Not Detected	• Right front cover open? • All ink cartridges installed (x4)? • All ink cartridges installed correctly?

Status Monitor Message	What It Means
Duplex Unit Not Detected	• Duplex unit attached correctly? • Duplex locks lever down and locked? Even if you do not used duplex printing, the duplex unit must always be attached.
Ink Collector Unit Almost Full/ Full	The ink collector unit is full and must be replaced.
Ink Collector Unit Not Detected	• Ink collector unit attached correctly?
Network Interface Board Error	• Network interface card installed properly?
No Paper/Tray Not Detected (Bypass Tray)	• Bypass tray empty? • Load bypass tray, press [#Enter]
No Paper/Tray Not Detected (Tray 1)	• Tray 1 empty? • Paper loaded correctly?
No Response From Printer	• Printer turned on? • Printer USB connection secure? • "USB" selected on the "Ports" sheet of the printer driver?
Out of Printable Temperature Range	• Printer located where the temperature range is 10 to 32°C (50 to 89.6°F)? • Turn the printer off and allow it to cool. If humidity is higher than 54%, the high end of the temperature range will be lower. The printer will not return to standby mode until it has acclimated to the room temperature. Wait for the Power lamp to stop flashing
Paper Size Mismatch/Paper Type Mismatch (Auto Tray Select)	Tray specified for automatic selection loaded with the paper size, paper type specified for the print job? Can print with [Form Feed]? Push [Form Feed]> Select Size/Type for Bypass> [#Enter]
Paper Size Mismatch/Paper Type Mismatch (Bypass Tray)	• Bypass tray loaded with paper size, paper type specified for the print job? • Can print with [Form Feed]? Push [Form Feed]> Select Size/Type for Bypass> [#Enter]

Status Monitor Message	What It Means
Paper Size Mismatch/Paper Type Mismatch (Tray 1)	• Tray 1 loaded with paper size, paper type specified for the print job? • Can print with [Form Feed]? Push [Form Feed]> Select Size/Type for Tray 1> [#Enter]
Printer Error	• An error has occurred in the printer. • Cycle the printer off/on. • If the printer has just been moved from a cold location to a warm room, wait at least 1 hour and try again.

Common Important Procedures

Note

- In the procedures below, "select" means push ▼ or ▲ on the printer operation panel until you see the item in the display on the printer operation panel.

To turn the printer on and off

1. To turn the printer on, press and hold the [Power] key for at least 1 sec.

   The [Power] key flashes and continues flashing until the printer warms up.

   When the printer is ready for operation, the [Power] key lights and remains on. At this time the printer is in standby mode and ready to print.
2. Press the [Power] key once to turn the printer off. The power LED flashes slowly for a few moments. Then it goes off.

To print the System Summary

1. Push [Menu] and select "List/Test Print".
2. Push [#Enter], select "Config. Page" then push [#Enter].
3. Push [Online] to return to standby mode.

To clean all the printheads

1. First, clean the print head:
   - Push [Menu], select "Maintenance", push #Enter].
   - Select "Head-cleaning" and push [#Enter].

- Push [Online] to return to standby mode.

2. If this doe not solve the problem, flush the printhead:
   - Push [Menu], select "Maintenance" and push [#Enter].
   - Select "Head-flushing" and push [#Enter].
   - Push [Online] to return to standby mode.

Important

- **These procedures consume ink.**
- **Flushing consumes more ink than cleaning.**
- **Flush the print head nozzles only if the cleaning (the first procedure) does not solve the problem.**

To print a Nozzle Check Pattern

1. Push [Menu], select "Maintenance", and push [#Enter].
2. Select "Nozzle Check" and push [#Enter]
3. Push [Online] to return to standby mode.

   For more about how to use the Nozzle Check pattern to diagnose and correct problems, see Section "4 Troubleshooting".

To restart an interrupted print job

Press the [Form Feed] key to start a print job again after you remove the cause of an error (paper jam, for example). The [Job Reset] key flashes or lights and stays in this condition for errors. For more, see Section “4. Troubleshooting”.

To feed a sheet manually

1. Set a sheet of paper in the bypass tray.
2. Press the [Form Feed] key when the software application prompts you to do so.

To feed 1 blank sheet (cleaning):

1. Push [Menu], select "Maintenance", and push [#Enter].
2. Select "Paper Feed Test" and push [#Enter]
3. Push [Online] to return to standby mode.

To feed 3 blank sheets (cleaning):

1. Push [Menu], select "Maintenance", and push [#Enter].
2. Select "De-condensation" and push [#Enter]
3. Push [Online] to return to standby mode.

Installation

Accessory Check

Check the accessories and their quantities against this list:

	Description	Quantity
1	Barcode Sticker	1
2	CD-ROM (Printer driver, Utilities, Manuals)	1
3	Contact Information Sheet	1
4	Help Desk Contact Information	1
5	Ink Cartridges	1
6	• Starter Cartridge - Yellow	1
7	• Starter Cartridge - Cyan	1
8	• Starter Cartridge - Magenta	1
9	• Starter Cartridge - Black	1
10	Output Tray	1
11	Paper Cassette	1
12	Power Cord	1
13	Quick Installation Guide (7 Languagegs)	1
14	Safety Information (English, 7 Languages)	1
15	Setup Guide (15 Languages)	1
16	USB Cable	1
17	User Registration Postcard	1
18	Warranty Statement	1

Important

- **The ink collector unit (3) is pre-installed in the back of the printer.**

- The power cord is attached to the NA model. The power cord is provided as a separate item for the EU model only.
- A USB cable and LAN cable are not provided and must be purchased separately.

1

⚠CAUTION

- Before you do any of the procedures in this manual, make sure the printer is turned off and unplugged from the power source. Do not turn the printer on until you instructed to do so.

Remove the Shipping Material

j016i915a

j016i916b

1. Remove the plastic shrink-wrap covering the printer.
2. Remove all the orange tape and shipping material from the front and back of the printer.

j016i920a

3. Pull the paper cassette out until it stops.

j016i935b

4. Remove the paper cassette cover.

j016i920b

5. Remove the tapes inside the paper cassette.

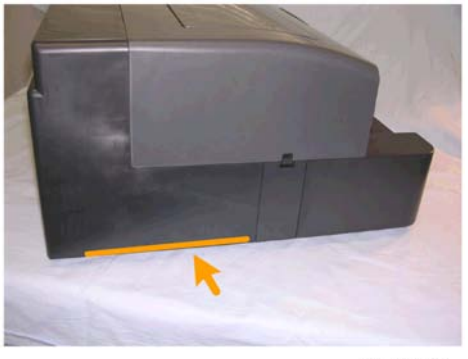
j016i920c

6. Reattach the cassette tray cover.

j016i920d

7. Push the paper cassette into the printer.

Carrying the Printer



j016i925

Hold the printer on both sides with the hands under the location indicated above.

Important

- **To prevent damage to the printer, never lift it with your hands under the front and back of the printer. Always lift and hold the printer by its sides.**

Install the Ink Cartridges (print Cartridges)

⚠CAUTION

- If ink gets on the skin, wash the affected area immediately with soap and cold running water.
- If ink gets into the eyes, immediately flush the eyes with cold running water. If there are signs of irritation or other problems, seek medical attention immediately.
- If ink is swallowed, drink a strong solution of cold water and table salt to induce vomiting. Seek medical attention immediately.

- Ink is difficult to remove from fabric. Work carefully to avoid staining clothing when performing routine maintenance or replacing cartridges.
- Always store ink cartridges out of the reach of children.

1. Unpack the four cartridges provided with the printer.

Important

- **The "Starter" ink cartridges provided for installation contain a limited supply of ink. Make sure that customer has a full set of ink cartridges available for replacement.**
- **Use only Ricoh Ink Cartridges designed for use with this printer.**

2. Open the right front cover.

j016i930a

3. Remove the Black Ink cartridge from its package.

j016i930b

4. Hold the black cartridge as shown.

Important

- **Never touch the metal contact plate on the rear side.**

5. Insert the black ink cartridge in the first slot on the left.
6. Press on the area marked "PUSH" to insert the cartridge completely.

7. Insert the other cartridges.

Note

- Each cartridge is marked with a color label.
- The Cartridge End LED marks below the display show you the order of insertion from left to right (K (Black), C (Cyan), M (Magenta), Y (Yellow).

8. Make sure that the four cartridges are inserted in this order, from left to right:
   - K (Black)
   - C (Cyan)
   - M (Magenta)
   - Y (Yellow)

j016i930c

9. Close the right front door.

Load Paper

j016i935a

1. Pull out the paper tray from the printer.

j016i936

2. Remove the paper tray cover.

j016i935c

3. Squeeze the paper guide release and slide the side fences to a position slightly wider than the paper size.

j016i935d

4. Squeeze the paper guide release and slide the bottom fence to a position slightly wider than the paper size.
5. Fan the stack to remove static cling.
6. Load the stack with the print side facing down.

j016i935e

7. Make sure the top of the stack does not exceed the load limit mark.

j016i935f

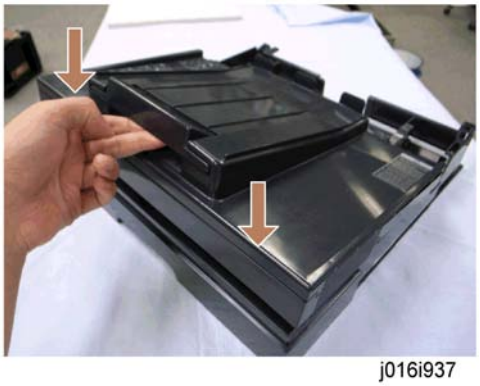
8. Squeeze the paper guide and move the side fences to the sides of the stack.

j016i935g

9. Squeeze the paper guide and move the bottom fence to the bottom of the stack.

Note

- The width side fences and bottom fence should not be too tight against the sides and bottom of the stack. If the stack bows upward, the fences are too tight.



j016i937

10. Place the paper tray cover on the paper tray.

j016i935i

11. Install the paper tray into the printe.

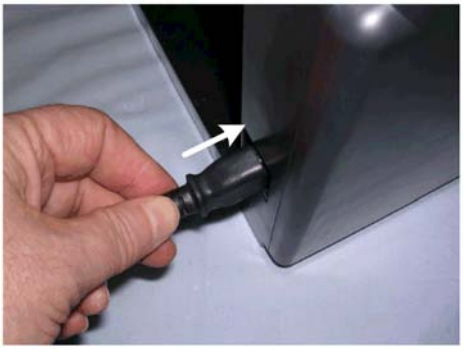
Connect the Power Cord

⚠WARNING

- Always connect the printer to a correct power source.
- Do not share the printer power source with another electrical device or appliance.
- Connect the power cord directly into the power source. Never use an extension cord.
- Never attempt to modify the power cord in any way.
- Never put heavy objects on the power cord.
- Make sure that the area around the power source is free of unwanted obstacles so you can disconnect the power cord quickly in case of an emergency.
- Make sure the power cord is not coiled or wrapped around any object such as a table or desk leg.
- Never coil the power cord around itself to make it shorter. This can cause the cord to overheat and cause a fire.

- Never handle the power cord with wet hands.

1. Remove packing material from the power cord.



j016i940

2. Connect the power cord to the printer.
3. Plug the power cord into the power source.

j016i945

4. At the right, rear corner of the printer open the small cover and confirm that the ink collector unit is installed.
5. Make sure the ink collector unit is push into the printer completely then close the cover.
6. Press the [Power] key.

- The printer starts feeding ink into the ink tanks and the "Online" LED starts flashing.
- Two alternating messages keep you informed about the progress of ink filling.
- Filling the ink tanks requires about 5 minutes.
- Do not use the printer or touch any key on the operation panel until you see the "Ready" message on the operation panel display.

Important

- **Never switch off the printer or disconnect the power cord while the tanks in the print head are filling.**

- If you accidentally turn the printer off while the ink tanks are filling, the printer will dump the ink and empty the tanks. The next time the printer is turned on, it will display the 'ink out' alert.
- You might hear a clicking sound while the ink tanks are filling. This is normal and the noise will stop after a few minutes.

Select Paper Size, Paper Type

This printer has no mechanism to automatically detect tray paper size and type. The paper size and type must be set with the menu on the operation panel.

1. [Menu]> Select "Paper Input"> [#Enter].
2. Select "Tray Paper Size"> [#Enter].
3. Select "Tray 1"> [#Enter].
4. Select the size of the paper loaded in the tray> [#Enter].
5. Press [Escape] once.
6. Select "Tray 1"> [#Enter].
7. Select "Paper Type"> [#Enter].
8. Select the type of paper loaded in the printer> [#Enter].
9. [Online]> "Ready" (Standby)

Print the System Summary.

Print a System Summary to confirm that the printer has been installed correctly.

j016i950

1. Pull out the extension of the output tray.
2. [Menu]> "List/Test Print"> [#Enter].
3. Select "Config. Page"> [#Enter]. The System Summary prints (2 pages).

4. Push [Online] to return to standby mode.

USB Connection

The printer driver and USB driver are on the installer CD-ROM provided with the printer.

Important

- **You cannot use the USB cable to connect the printer and PC if you use Windows 95 or Windows NT 4.0. You must use a network connection.**
- **You can only use the USB cable with Windows 98, Windows Me, Windows 2000, Windows XP, or Windows Server 2003.**
- **You must use USB 1.1 if you use Windows 98 or Windows Me. The printer is set for "Auto Detection" by default. In this mode the printer can use either USB 1.1 or USB 2.0.**

1. Mount the installer CD-ROM in the CD-ROM drive of the computer.
2. Follow the instructions on the screen to install the printer driver and USB driver.

Important

- **Do not connect the USB cable until you are instructed to do so by the installer.**

j016i955

1. Connect the Type B (hexagonal) connector of the USB cable [A] to the connection point on the back of the printer.
2. Connect the Type A (rectangular) connector of the USB cable into the PC.

Clean the Print Heads and Do a Test Print

1. [Menu]> "Maintenance"> [#Enter].
2. "Head-cleaning"> [#Enter]> "All Heads"> [#Enter].
3. [#Enter] to start cleaning all the print heads. Cleaning requires about 90 sec.
4. "Maintenance in progress" is displayed while the print heads are being cleaned.

5. Select "Nozzle Check"> [#Enter].
6. Select "Nozzle Check" and push[#Enter]. The Nozzle Check Pattern prints.
7. Check the four colored ladder patterns of the Nozzle Check Pattern.
8. Push [Online] to return to standby mode.

Options

1

Before You Install Options

Only one option (NIB J517) is available for the J015. The other options described in this section can be installed on the J016 only.

Option	J015	J016
Network Interface Board (J517)	**Yes**	No
Network Interface Board (J512)	No	**Yes**
Multi Bypass Tray (J514)	No	**Yes**
Paper Feed Unit (J516)	No	**Yes**
Duplex Unit (J515)	No	**Yes**

Network Interface Board

NIB J517 for J015

1. Make sure that the printer is switched off and disconnected from its power source.

j015i960a

2. Remove the rear cover.
3. Before you touch the network interface board, touch a metal surface to ground any static charge.

j015i962

4. Reattach the cover (x1).

NIB J512 for J016

1. Make sure that the printer is switched off and disconnected from its power source.

j016i960a

2. Turn the rear cover screw counter-clockwise and remove the cover.

j016i960b

3. Before you touch the network interface board, touch a metal surface to ground any static charge.
4. Insert the NIB as shown. Push the part marked "PUSH" to set the network interface board. Make sure the board is inserted completely.

j016i960c

5. Remove the connector hole cover plate and discard it.

j016i960d

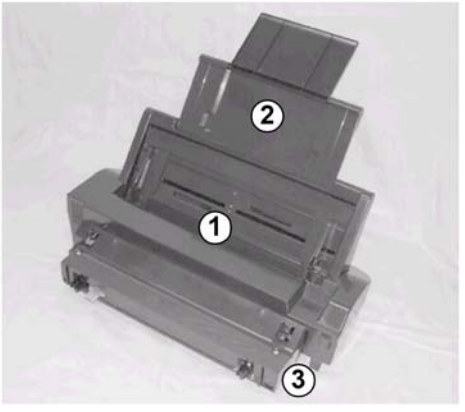
6. Align the tabs at the top and attach the cover to the back of the printer.

j016i960e

7. Fasten the screw with the black-head screw provided with the NIB. (You can discard the original silver screw.)

Multi Bypass Tray J514

The multi-bypass tray can be installed on the j016 only.



j016i970e

①	Bypass Tray	Holds up to 100 sheets of paper.
②	Extension Tray	Pull out for long paper
③	Jam Dial	Rotate to feed out jammed paper.

Installing the Multi Bypass Tray

1. Make sure that the printer is switched off and disconnected from its power source.
2. Remove the multi-bypass tray from its box.

j016i972

3. Remove all the orange shipping tape and plastic from the bypass tray.
4. Push the multi-bypass tray onto the back of the printer as shown unit it clicks.

j016i970g

5. Pull out the extension of the multi-bypass tray.
6. Load paper in the tray with the print side facing up.

Selecting the Paper Size/Type for the Multi Bypass Tray

This printer has no mechanism to automatically detect tray paper size and type.

- The paper size and type must be set with the menu on the operation panel every time a different size/type of paper is loaded in the Multi Bypass Tray.
- In the procedure below, the "Bypass" item does not appear in the menu until the Multi Bypass Tray has been installed correctly.
- If you do not see "Bypass" in the menu, confirm that the Multi Bypass Tray is installed correctly.

1. [Menu]> Select "Paper Input"> [#Enter].
2. Select "Tray Paper Size"> [#Enter].
3. Select "Bypass"> [#Enter].
4. Select the size of the paper> [#Enter].
5. Press [Escape] once.
6. Select "Bypass"> [#Enter].
7. Select "Paper Type"> [#Enter].
8. Select the type of paper> [#Enter].
9. [Online]> "Ready" (Standby)

Removing the Multi Bypass Tray

Occasionally the Multi Bypass Tray must be removed in order to remove jammed paper.

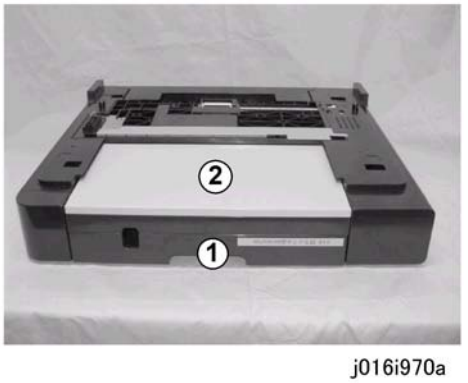
1

1. If there is paper in the tray, remove it.
2. If the extension tray is pulled out, push it in.

j016i970f

3. Pull the tray off the back of the printer.

Paper Feed Unit J516



j016i970a

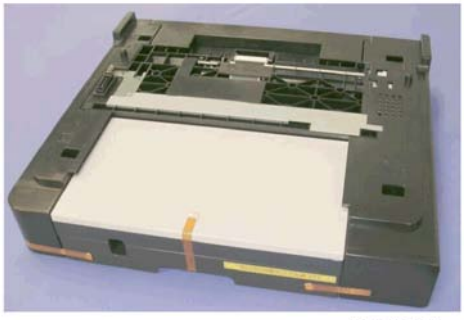
①	Tray	Holds up to 250 sheets of paper.
②	Tray Cover	Attached to the tray.

- The tray cover must be removed in order to load paper in the tray.
- The tray cover has an extension tray that can be pulled out to accommodate large paper sizes (A3 for example).

Installing the Paper Feed Unit

The Paper Feed Unit J516 is installed on the J016 only

1. Make sure that the printer power cord is not connected to the power source.
2. Remove the paper tray from its box.



j016i971b

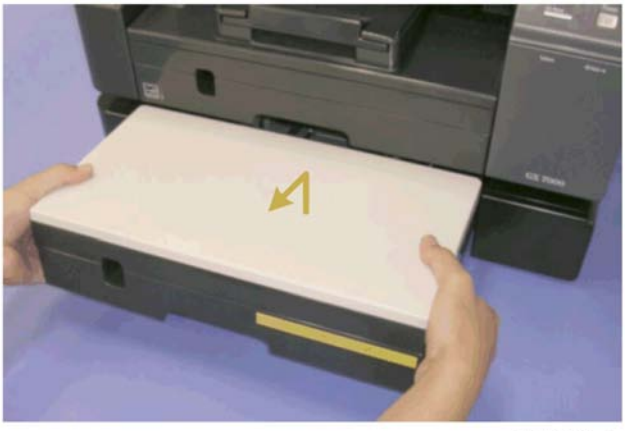
3. Remove all orange tape and other shipping material from the paper feed unit and paper cassette.
4. Position the paper feed unit where the printer will be set up.

j016i971c

5. Lift the printer and hold it over the paper feed unit.
6. Align the connection points on the bottom of the printer with the pegs on the paper feed unit.
7. Set the printer on top of the paper feed unit.
8. Confirm that the pegs of the paper feed unit are inserted in the holes on the bottom of the printer.

Loading Paper in the Paper Feed Unit

1. Pull the tray out of the paper feed unit until it stops.



j016i971d

2. Lift it slightly and pull it out of the paper feed unit.
3. Remove the cover.
4. Move the side and bottom fences to a position slightly wider and longer than the paper to be loaded.
5. Fan a stack of paper to remove static cling.
6. Load the paper in the printer. Confirm that the top of the stack is not higher than the load limit mark on the side of the tray.
7. Move the side and end fences to the sides and bottom of the stack. The top of the stack should be perfectly flat.
8. Attach the cover to the tray unit.

Selecting the Paper Size and Paper Type for the Paper Feed Unit

This printer has no mechanism to automatically detect tray paper size and type.

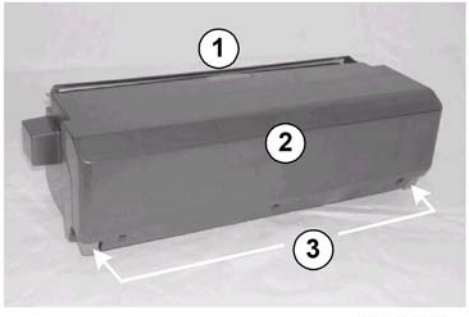
- The paper size and type must be set with the menu on the operation panel every time a different size/type of paper is loaded in the paper feed unit.
- In the procedure below, the "Tray 2" item does not appear in the menu until the Paper Feed Unit has been installed correctly.
- If you do not see "Tray 2" in the menu, confirm that the Paper Feed Unit is installed correctly.

1. [Menu]> Select "Paper Input"> [#Enter].
2. Select "Tray Paper Size"> [#Enter].
3. Select "Tray 2"> [#Enter].
4. Select the size of the paper> [#Enter].
5. Press [Escape] once.
6. Select "Paper Type"> [#Enter].

7. Select "Tray 2"> [#Enter].
8. Select the type of paper loaded in the printer> [#Enter].
9. [Online]> "Ready" (Standby)

Duplex Unit J515

The Duplex Unit J515 is installed on the J016 only



j016i970b

①	Cover Button	Press to open the duplex unit cover.
②	Cover	Released by pressing the cover button. Open the cover to remove paper jammed in the duplex unit.
③	Lock Levers	Press to remove the unit from the printer.

Installing the Duplex Unit

1. Switch the printer off.
2. If the Multi Bypass Tray is installed, remove it.

j016i973

3. Remove the duplex unit from its box and remove the orange tape.

j016i970d

4. Hold the duplex at the back of the printer as shown.
5. Push it onto the back of the printer until it locks in place.
6. Reattach the Multi Bypass Tray.

Removing the Duplex Unit

j016i970c

1. Switch the printer off.
2. If the Multi Bypass Tray is installed, remove it.
3. On both sides of the duplex unit, raise the lock levers at the same time to release the duplex unit from the back of the printer.
4. Pull the duplex unit off the back of the printer.

Important Information

1

Make sure that the customers understand the following points about moving, storing, and using the printer.

Checklist Before Moving the Printer

- Turn the printer off. Disconnect the power cord.

  Important

  - **Never disconnect the power cord without first turning off the printer.**
- To lift the printer, grip it at the center of each side by the hand recesses provided.
- Never grip the Duplex Unit on the back of the printer if it is installed.
- Make sure the covers and trays are closed. Secure them with tape. Attach the tape at the same area you removed at the time of installation.
- Disconnect the power cord. Tape the power cord to the back of the printer.
- Remove all paper in the feed trays.
- Do a test print to confirm that the printer operates correctly after you move it to another location. Do the cleaning procedures with the printer driver, if necessary.
- The ink cartridges should remain in the printer. It is not necessary to remove the before transporting the printer. However, ink must be purged from the print head tanks before the printer is transported. (See procedure below.)

Important

- **To avoid ink spillage, always hold the printer level when you move it. Work carefully to avoid dropping it or colliding with other objects in the work area.**

If the Printer Is Not Used Frequently...

1. Turn the power off, disconnect the USB cable, and unplug the power cord.
2. To prevent the print nozzles from drying out, periodically print something.
3. Turn the printer on for a few minutes once a month.
4. After storage or a long period of disuse, use the printer driver to print a nozzle check text pattern and clean the print head nozzles if necessary.

2. Preventive Maintenance

PM Table

There are no PM Parts in this machine.

Service Call Procedures

The "Service Call Procedures" listed below should be done by the service technician. For more details about how to do these procedures, please refer to "Cleaning Procedures" in Section 3.

Description	At Service Call, or As Required
External Covers	Damp cloth.
Feed Roller	Damp cloth. Release the feed clutch lock. Rotate the roller freely as you clean it.
Flushing Unit Gate	Dry cloth. Always remove the ink that has hardened around the flushing gate when you replace the waste ink tank. To remove hardened ink, you may need to use a small screwdriver or similar tool.
Friction Pad	Damp cloth. This is the cork friction pad on the front edge of the standard paper cassette.
Maintenance Unit	Damp cloth. Always use a tightly wrapped damp cloth to remove the ink that has hardened around the suction cap and wiper blade when you replace the waste ink tank.
Printer Operation, Print Quality	Print a Nozzle Check Pattern and check the results. Clean the print heads if necessary. For more, see "Image Adjustment" in section "3. Replacement and Adjustment".
Transport Belt	Slightly damp cloth. Then dry cloth. **Important**: To protect the surface of the transport belt, never use alcohol or any other type of organic solvent.

3. Replacement and Adjustment

Before Replacing Parts

Removal Table

The swap-and-repair system is used for this printer. The table below lists the level of difficulty for replacement of each item.

Level 1: Replaced by User

	Component	Comments
1	Duplex Unit	Installed on back of machine
2	End Fence	Inside paper cassette
3	End Fence	Inside PFU
4	Firmware Update	Through USB Connection
5	Ink Cartridge	
6	Ink Collector Unit	
7	Ink Collector Unit Cover	Behind
8	Paper Cassette	Standard
9	Paper Cassette (PFU)	Option. J016 only
10	Paper Output Tray	On top of paper cassette
11	Right Front Cover	Sometimes refer to as a Ink Cartridge Cover
12	Tray Upper Cover (PFU)	Option. J016 only

Level 2: Replaced by Service Technician

	Component	Comments
1	2nd Registration Sensor	Difficult
2	Air Release Solenoid	Easy
3	Carriage Position Sensor	Easy

	Component	Comments
4	Carriage Unit	Easy
5	Controller Board (J015)	Easy
6	Controller Board (J016)	Easy
7	Cooling Fan	Difficult
8	Cover: Rear	Easy
9	Covers: Front, Left, Right	Easy
10	Duplex Unit Detection Board	Difficult. J016 only.
11	Feed Roller	Easy
12	Flushing Unit	Easy
13	Friction Pad	Difficult
14	High Voltage Power Supply (HVPS)	Easy
15	Horizontal Motor	Difficult
16	Maintenance Unit	Easy
17	NIB (J015)	Easy
18	NIB (J016)	Easy
20	PSU	Easy
21	Transport Belt	Easy
22	Vertical Encoder Sensor	Easy
23	Vertical Encoder Wheel	Easy
24	Vertical Motor	Easy

Easy:

- Removal of left, right, and front cover may be required.
- Removal of the back cover is not required.

Difficult:

- Removal of all covers and the back cover are required.

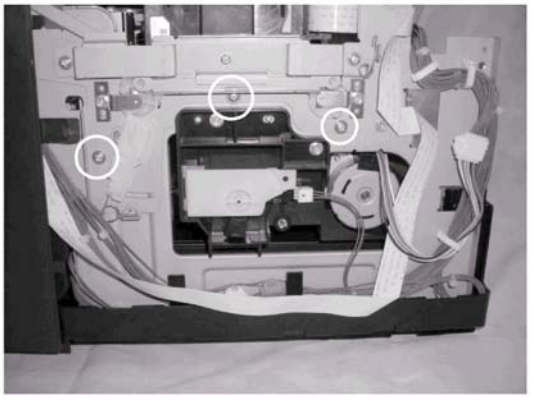
Level 3: Require precision adjustment at factory (Not Replaced in this Field)

	Component	Comments
1	Carriage Unit	
2	Ink Supply Pump Unit	
3	Transport Belt	
4	Charge Roller	
5	Temperature/Humidity Sensor	
6	Paper End Sensor	
7	Paper Feed Roller	

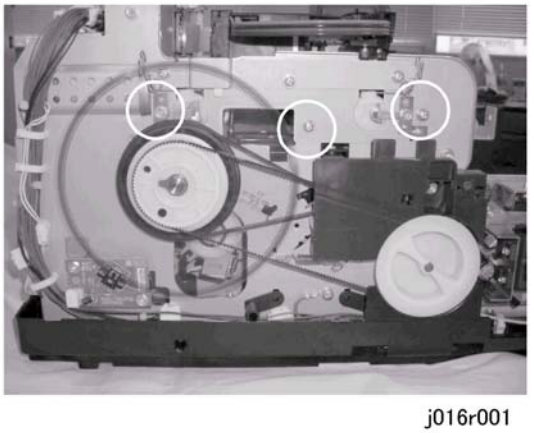
Important Notice

During parts removal never remove any of the screws shown below.

Right Back Cover Removed



Left Covers Removed



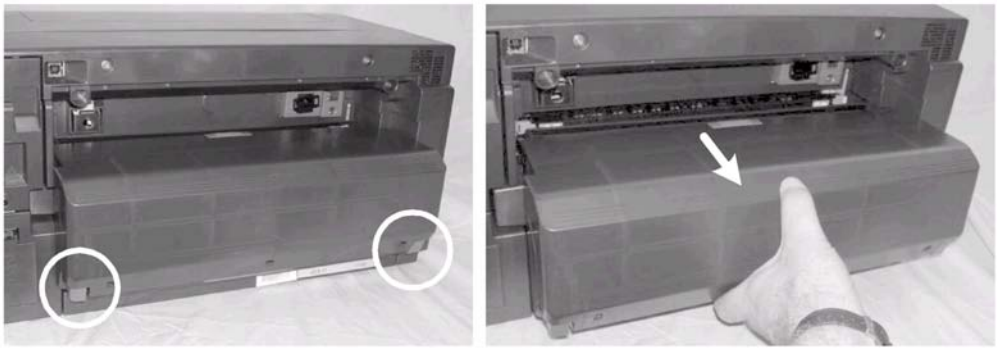
j016r001

These screws fasten the carriage brackets that keep the carriage unit correctly aligned. If these screws are loosened or removed, this could throw the carriage mechanism out of alignment.

Common Procedures

Easy Removals

Duplex Unit (J016 Only)



j016r020

1. Raise the left and right release tabs together to unlock the duplex unit.
2. Pull the duplex unit out of the machine.

Reinstallation

- The duplex unit must be installed in the machine at all times. The machine will not operate without the duplex unit installed.

j016r020a

- Reinstall the duplex unit carefully to avoid bending the contact pins.

Ink Collector Unit

Before you begin:

Never remove the ink collector unit unless it requires replacement. A message will appear and tell you that the ink collector unit needs to be replaced.

- You will need a self-sealing plastic bag to hold the ink collector unit.
- When you dispose of the used ink collector unit always obey the local laws and regulations regarding the disposal of such items.

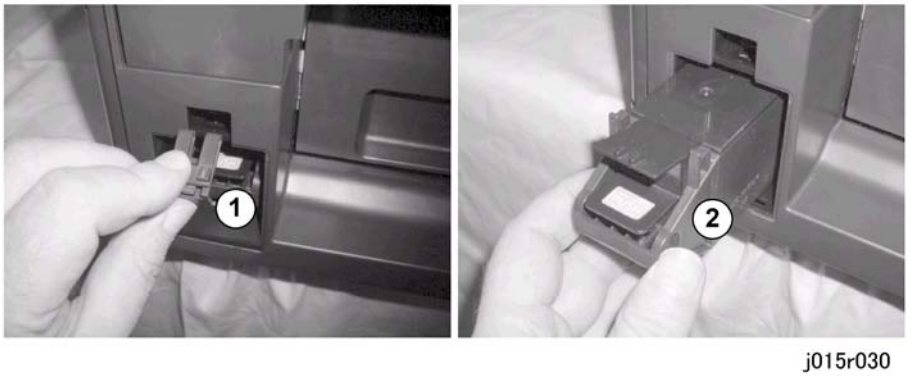
At any time you can determine if the ink collector unit needs to be replaced.

1. [Menu]> [▲] or [▼]> "System"> [#Enter]
2. [▲] or [▼]> "Ink CU Replace"> "Ink Collector Change Not Yet Required"> [#Enter].
3. [Menu]> Standby

⚠CAUTION

- Never attempt to clean and re-use an ink collector unit.

To remove the ink collector unit:



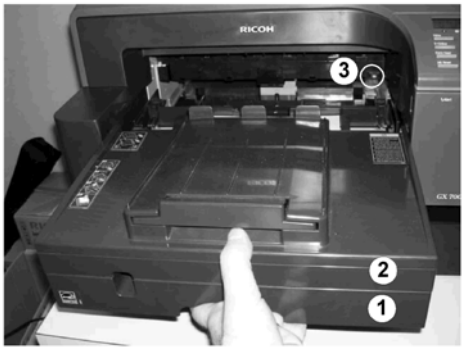
j015r030

1. Press the lock release ① and remove the cover.
2. Pull the ink collector unit ② out of the machine.
3. If you are replacing the ink collector unit, insert the new tank.
4. Reattach the cover.
5. Do SP5003 to reset the ink collector unit counter.
6. Discard the used ink collector unit.

Important

- **Obey the local laws and regulations regarding disposal of items such as the full ink collector unit. Never attempt to clean a full ink collector unit and use it again.**

Paper Cassette, Output Tray



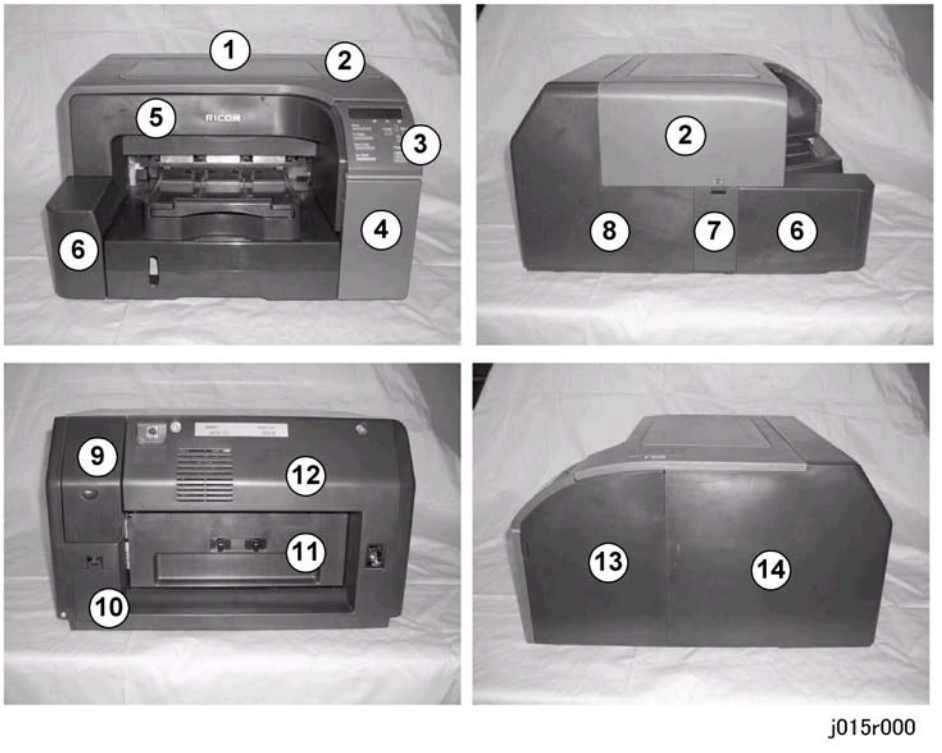
j015r094

1. Always remove the paper tray ① and output tray ② together.

Reinstallation

- The paper output tray is placed on top of the paper tray before reinstallation.
- If the output tray is not installed or installed incorrectly, the paper tray sensor switch ③ will signal and error.

Covers and Doors



j015r000

The body of the printer has 11 covers and three small doors. Duplicated numbers above show different view of the same cover.

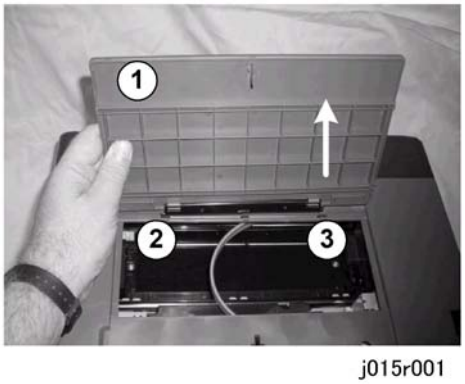
①	Top Cover	
②	Canopy Cover	Covers the top of the machine.
③	Operation Panel	Attached to ④.
④	Right Front Cover	Ink cartridge cover.
⑤	Front Cover (Logo)	
⑥	Left Front Cover	Covers the PSU
⑦	Jam Feed Door	Open to use the jam feed wheel.
⑧	Left Rear Cover	

⑨	NIB Cover	Covers the NIB (NIC).
⑩	Ink Collector Unit Cover	
⑪	Rear Jam Removal Door	Opens for jam removal at the rear
⑫	Rear Cover	
⑬	Right Front Cover	
⑭	Right Rear Cover	

Before You Begin

- The tabs of the covers are fragile. Work carefully to avoid breaking the tabs during cover removal and reinstallation.
- For extensive maintenance you may need to remove all the covers. The descriptions below are in the correct order of removal. When reinstalling the covers be sure to follow the procedures below in reverse order.
- The illustrations were made using the J015. Where significant differences exist between the J015 (the small machine) and J016 (the large machine) you will see the notations "**J015**" and "**J016**" in the illustrations. In all other cases assume that the procedures apply to both machines.
- It is very important that you understand how to remove and reinstall these covers before doing any replacement procedures.

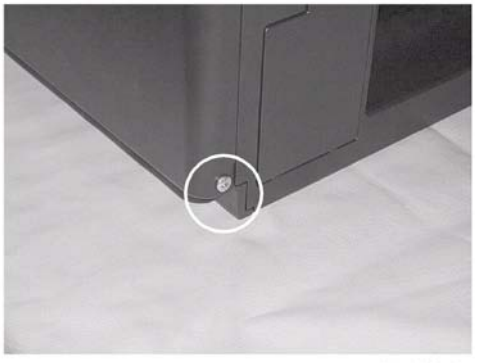
Top Cover



j015r001

1. Raise the top cover ① to the vertical.
2. Disengage tabs ② and ③.
3. Pull straight up to remove.

Right Back Cover

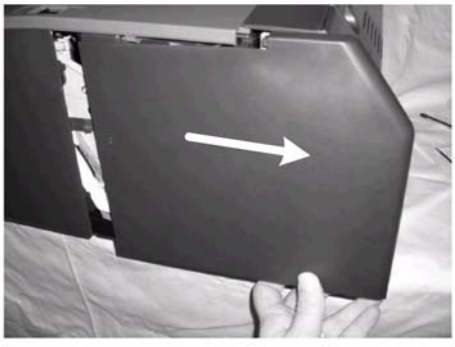


j014r002

1. Remove screw (x1).

j015r003

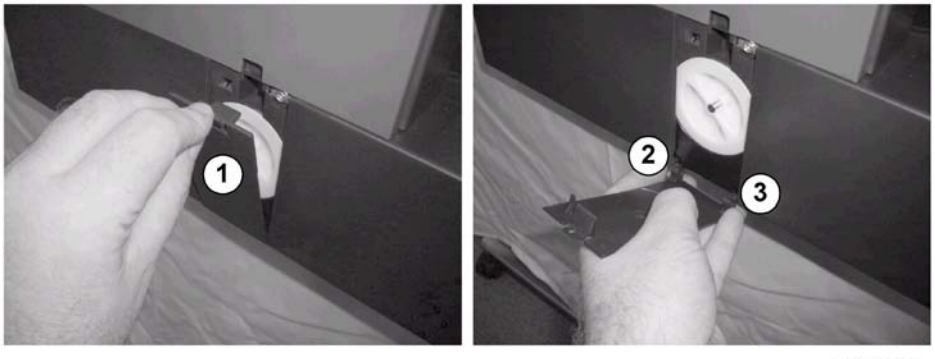
2. While pulling the cover toward the rear, insert the tip of a small flat-head screwdriver into the hole to release the tab behind the cover.



j014r004

3. Slide the cover to the rear and remove it.

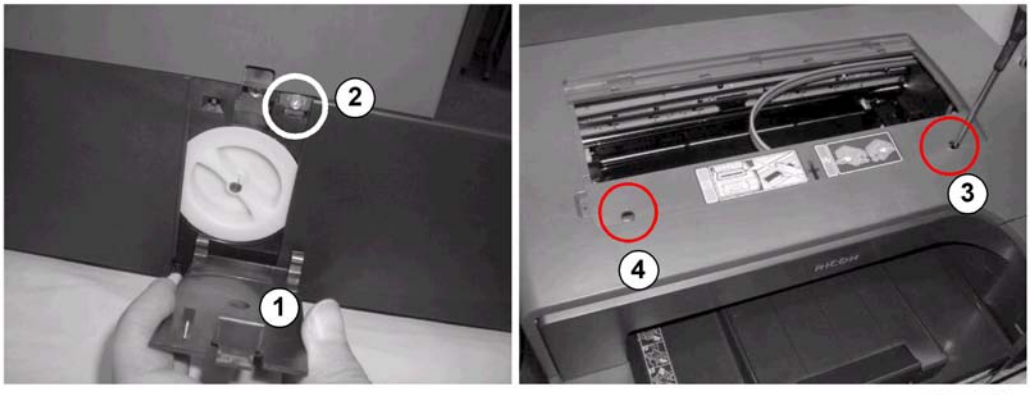
Jam Feed Door



j015r005

1. On the left side of the printer, open the jam feed door ①.
2. Disengage the hinges ②, ③ and remove the door.

Canopy Cover

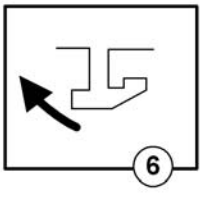


j015r006

Recommended

- Remove the top cover. It can fall out easily if you are not careful.

1. Open the jam feed door ①.
2. Remove screw ②.
3. Loosen (do not remove) the front cover screws ③ and ④. This loosens the front cover for easier removal of the canopy cover.



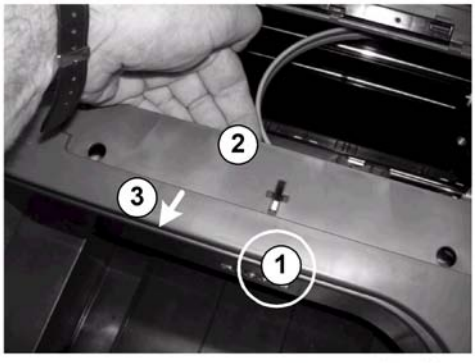
j016r006a

4. Remove the canopy cover ⑤ with releasing the tab ⑥

   There is a tab under the canopy cover (indicated by the red circle). If the canopy cover is difficult to remove:

   - Under the canopy cover pull the front cover forward slightly to disengage the tab.
   - Slide the canopy cover toward you to remove it.

Reinstallation



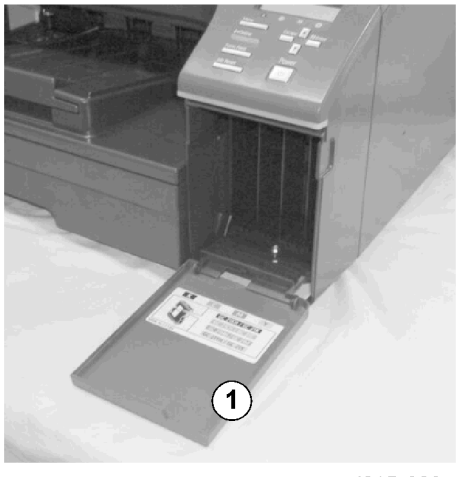
j015r007

- If you see a gap between the canopy cover and front cover at ①, or if the right side of the canopy cover is "floating" slightly above the operation panel, this means the tab under the canopy cover at ② is not engaged.
- Pull the front cover ③ forward slightly until the tab snaps into place.
- Be sure to retighten the front cover screws.

Important

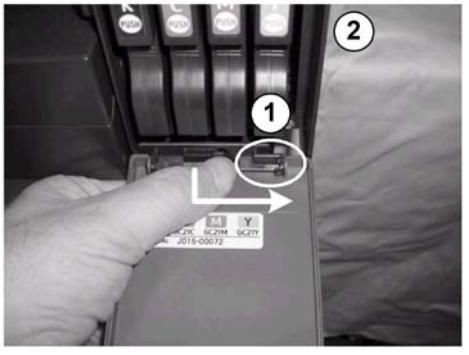
- **If the canopy cover is not perfectly flat this will cause a cover open error. If the canopy cover is bowed upward slightly, this will prevent the actuator on the bottom of the top cover from depressing the top cover sensor below.**

Right Front Door



j015r009

1. Open the right front door ①.



j015r008

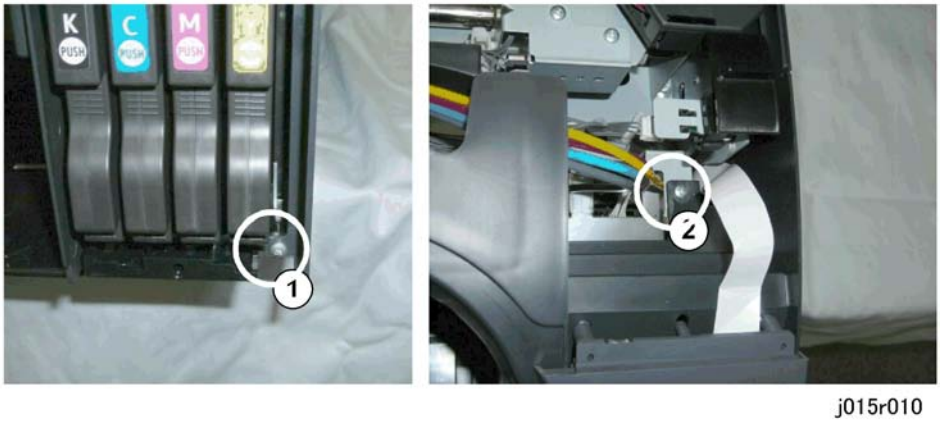
2. Pull the clip ① out slightly then slide the door and hinge to the right.
3. Disengage the tab and base ② under the printer and remove the door and hinge.

Right Front Cover, Operation Panel

Preparation

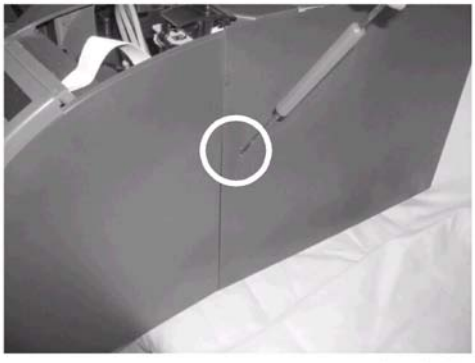
Remove:

- Top cover
- Canopy cover
- Right front door



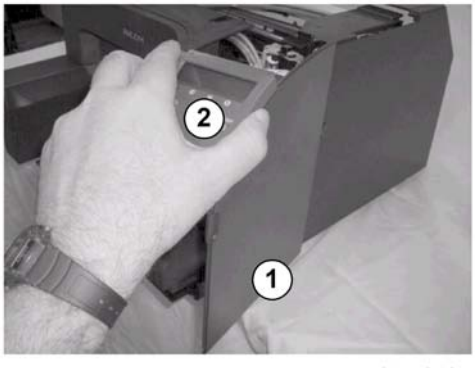
j015r010

1. At the bottom right corner of the cartridge unit, remove screw ①.
2. Near the top edge of the operation panel remove screw ②.



j015r011

3. If the right back cover has not been removed yet, insert the head of a small screwdriver into the hole to disengage the tab behind the cover.

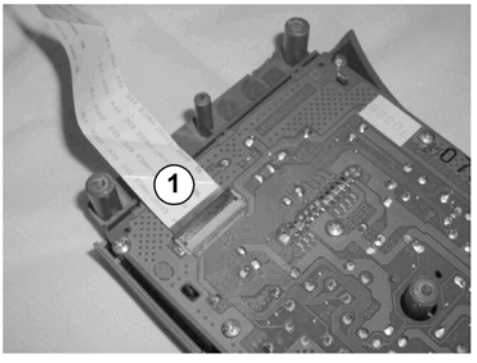


j015r012

4. Pull the pull of the cover away from the tab at ① then remove the right front cover and operation panel ②.

j015r013

5. Set the cover and operation panel on its side and remove the screws (x3).



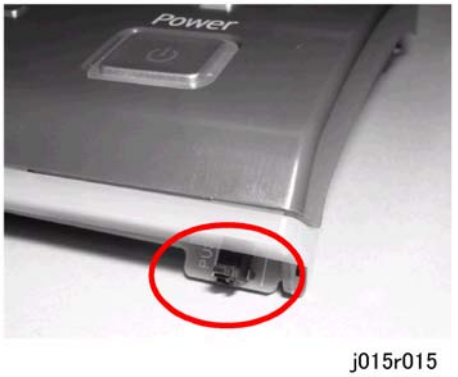
j015r014

6. Raise the latch of the FFC connector and disconnect the FFC ①.

Reinstallation

- When reattaching the FFC ① make sure that the green side is facing up.

Note:



j015r015

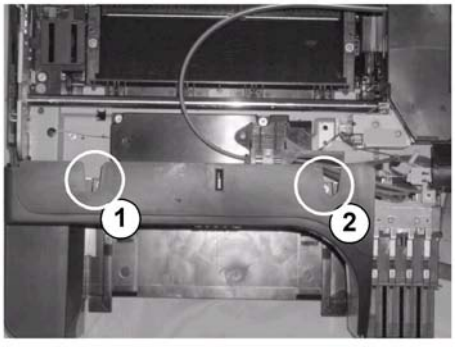
- The right front door sensor switch is permanently attached to the operation panel PCB. It cannot be detached and replaced separately.
- The operation panel PCB and sensor switch must be replaced as a unit.

Front Cover (Logo)

Preparation

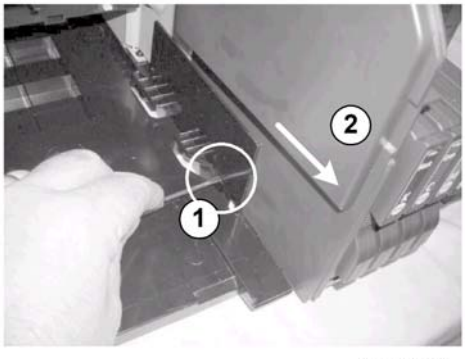
Remove:

- Paper cassette and output tray
- Canopy cover
- Right front cover



j015r016

1. Remove screws ① and ②.

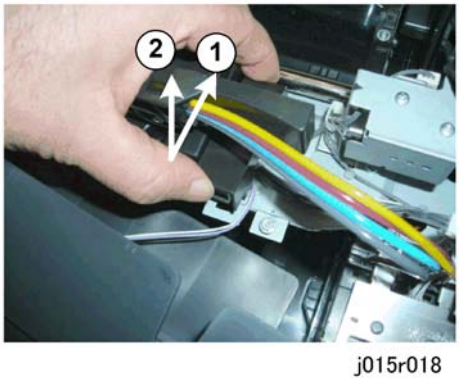


j015r017

2. Insert the tip of a small screwdriver into the hole ① and press down to disengage the latch behind the cover.
3. Pull the cover ② forward about 5 cm after the latch releases.

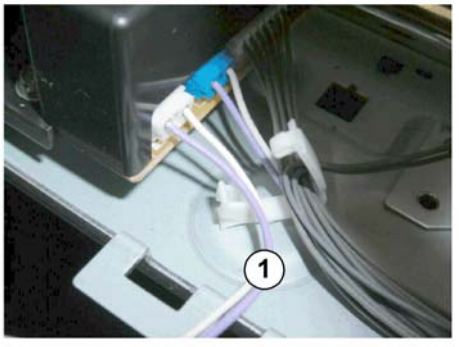
Important

- **The top cover sensor switch is still attached to the front cover. If you remove the cover it will break the sensor harness.**



j015r018

4. First, push the connector cover toward the back of the machine ① then raise its front edge ② to remove it.



j015r019

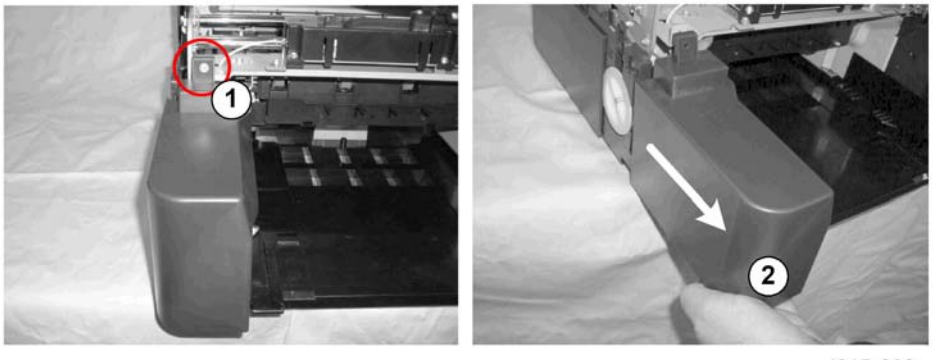
5. Disconnect connector ① (x1, x1).
6. Remove the front cover.

Left Front Cover

Preparation

Remove:

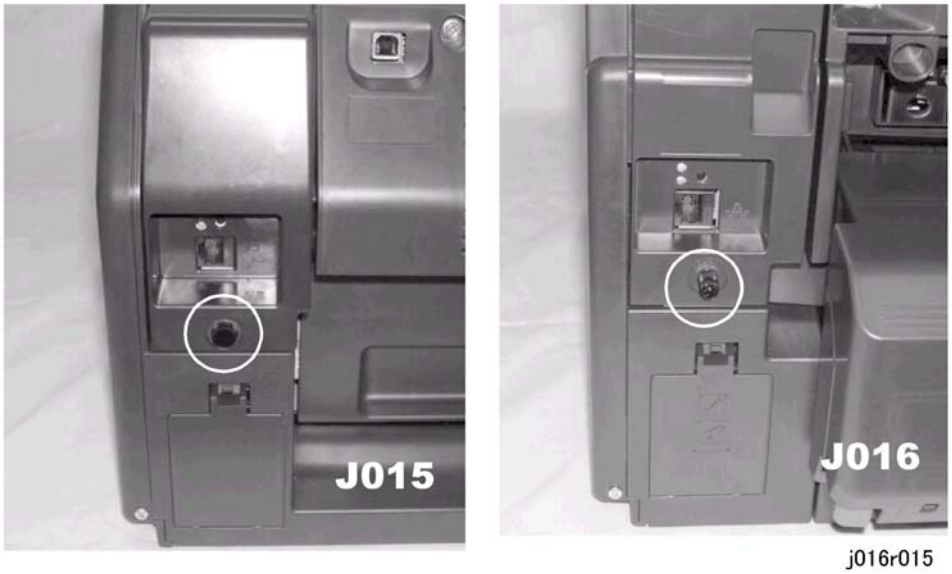
- Canopy cover
- Right front door
- Right front cover
- Front cover



j015r020

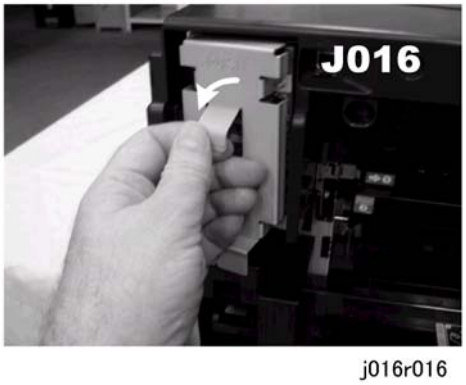
1. Remove screw ①.
2. Separate the front edge ② of the left front cover from its tabs and pull forward to remove it.

NIB Cover, NIB



j016r015

1. The NIB cover is fastened by one screw on both machines. Remove this screw and pull the cover away from the back of the printer.



j016r016

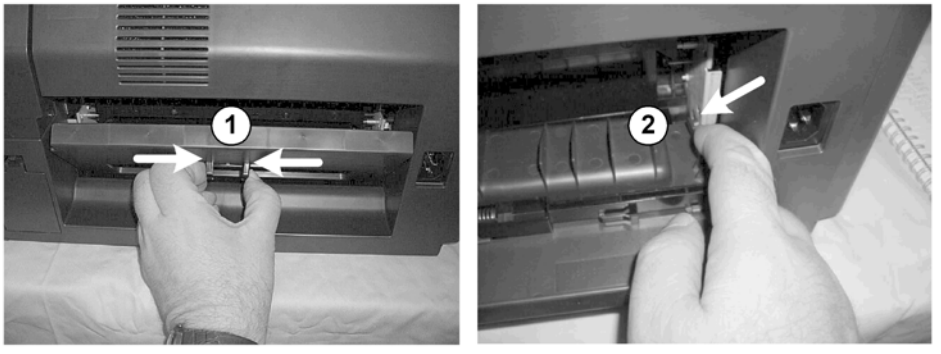
2. After removing the plastic cover of the J016, pull the small handle to remove the board.

   The NIB of the J015 is attached to the cover by four screws.

Important

- **Always remove the NIB before removing the back cover of the printer.**

Rear Jam Removal Door (J015 Only)



j015r021

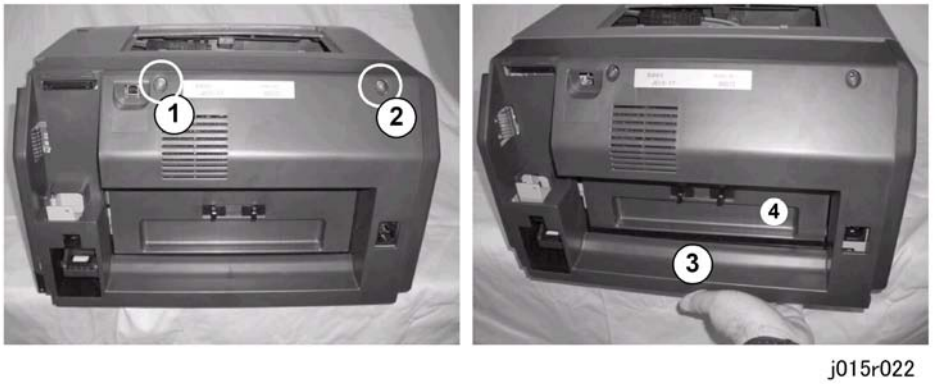
1. Press in the levers ① to unlock the door then pull it toward you to open it.
2. Press in on the right (or left tab) ② to release one end then remove the door.

Rear Cover

Preparation

Remove:

- Right rear cover
- NIB cover and NIB (if installed)
- Ink collector unit cover (do not remove ink collector unit)



j015r022

1. Remove the screws ① and ②.
2. At the bottom edge of the back cover ③ use your hand to disengage three tabs (two tabs on the J016).
3. Pull the back cover away from the printer. Note that the back cover can be removed without removing the rear jam removal door ④.

Important

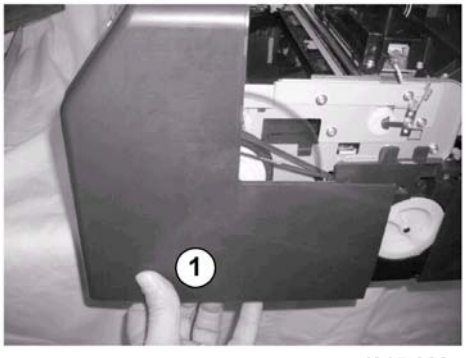
- **Do not remove the ink collector unit.**
- **To prevent ink spillage from the print head tanks, never turn the machine on its side or on its front edge.**

Left Rear Cover

Preparation

Remove:

- Right rear cover
- NIB cover and NIB (if installed)
- Ink collector unit cover (do not remove ink collector unit)
- Rear cover



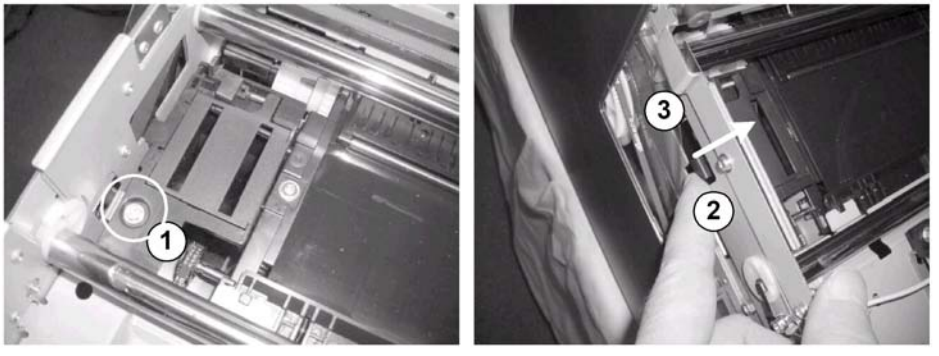
j015r023

1. At ① pull the cover away from the side of the printer (there are no screws).

Flushing Unit

Preparation:

- Top cover
- Canopy over

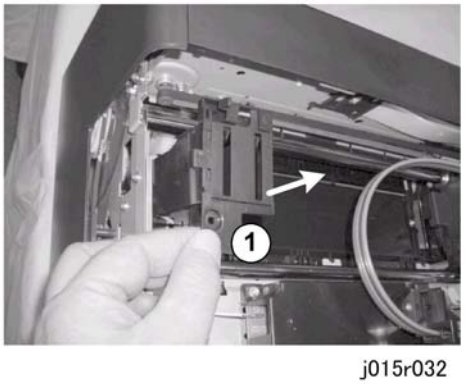


j015r032

1. Remove screw ①.
2. Lift the hook ② behind the vertical encoder wheel ③.

Important

- **Never touch the surface vertical encoder wheel around its edges.**



j015r032

3. Lift the flushing unit ① out of the machine.

Maintenance Unit

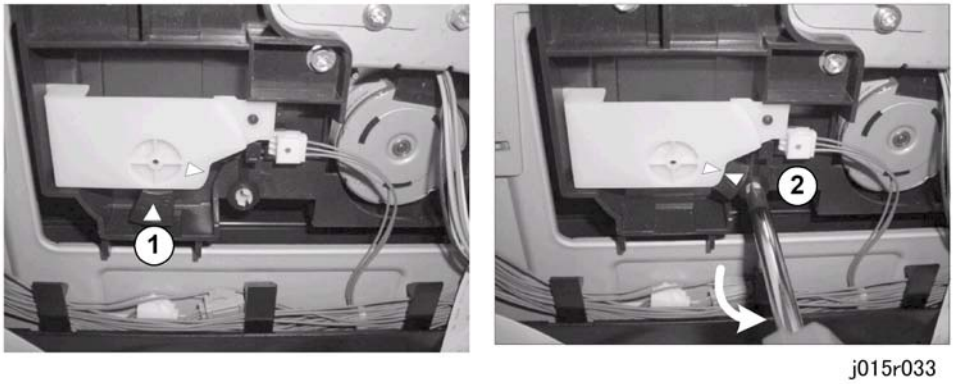
Preparation:

Remove:

- Right back cover

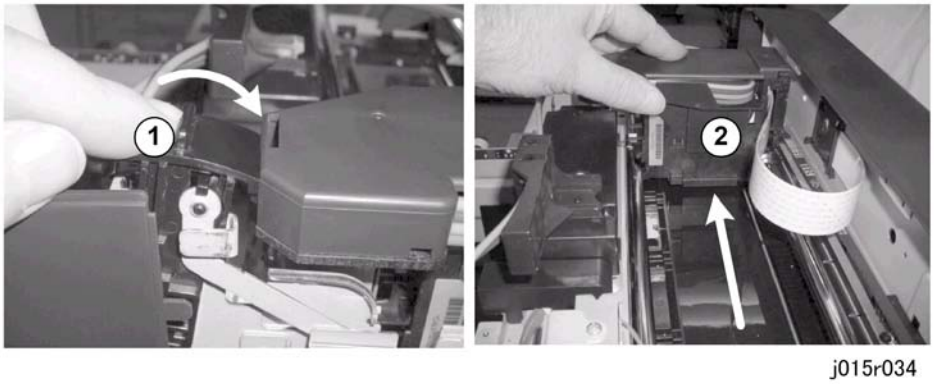
Important

- **The bottom edges of the maintenance unit are covered with ink.**
- **Spread a sheet of paper (not cloth) to place the unit after it is removed.**
- **Avoid touching the bottom of the maintenance unit.**



j015r033

1. To unlock the carriage use a plus (+) screwdriver to turn the screw ① counter-clockwise until the tips of the triangles ② align.

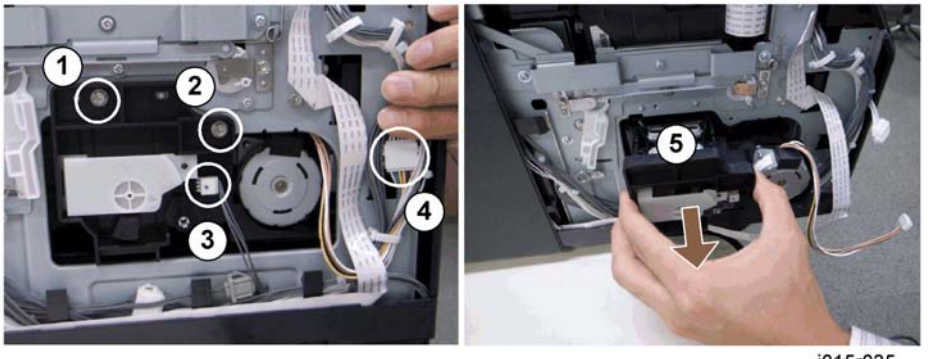


j015r034

2. Push the envelope selector ① to the rear.
   - Always push the envelope selector to the rear before you move the carriage manually.
   - Pushing the envelope selector to the rear raises the print head unit. This prevents damaging the print head unit when the carriage is moved manually.

- Moving the envelope selector to the rear also makes it easier to remove the maintenance unit.

3. Push the carriage ② to the left side of the machine.

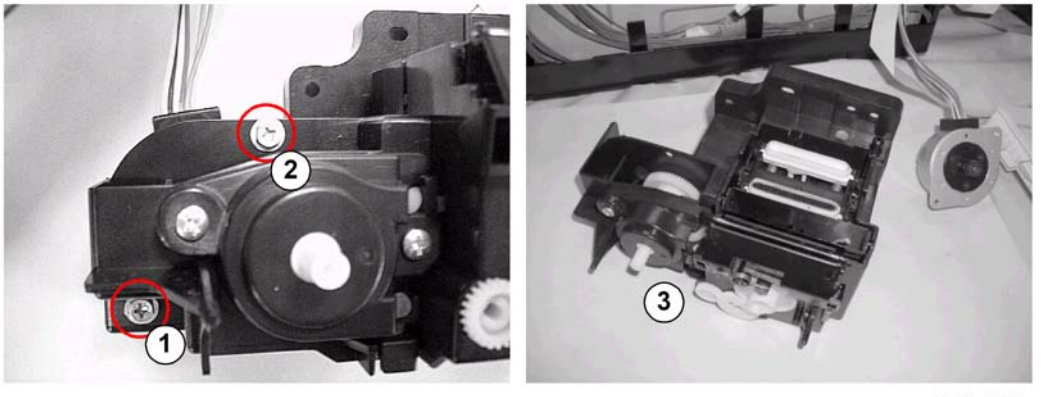


j015r035

4. Remove screws ① and ②.
5. Disconnect the connectors ③ and ④ (x2, x1).
6. Pull the unit ⑤ out of the unit as shown. If the maintenance unit is difficult to remove, make sure that the envelope selector is pushed completely to the rear position.

Important

- **Handle the maintenance unit carefully.**
- **The bottom of the unit is covered with ink. Place it on a piece of clean paper (not cloth).**
- **Never touch the bottom of the unit.**



j015r036

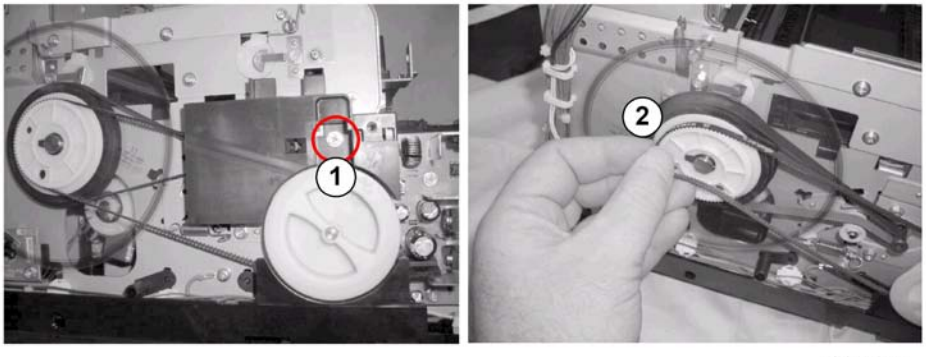
7. Remove screws ① and ②, to disconnect the maintenance unit motor from the maintenance unit (x2)
8. Set the maintenance unit ③ on a sheet of paper.

Encoders

Vertical Encoder Wheel

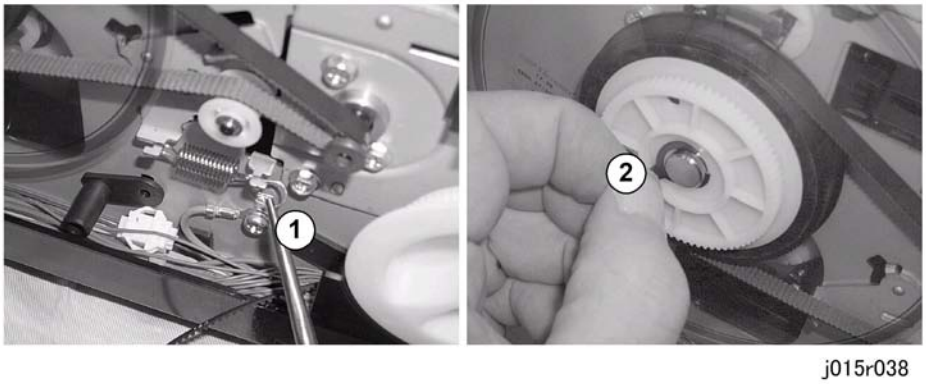
Preparation

- Remove:
- Right rear cover
- Canopy Cover
- Right front cover
- Front cover
- Left front cover
- Rear cover
- Left rear cover



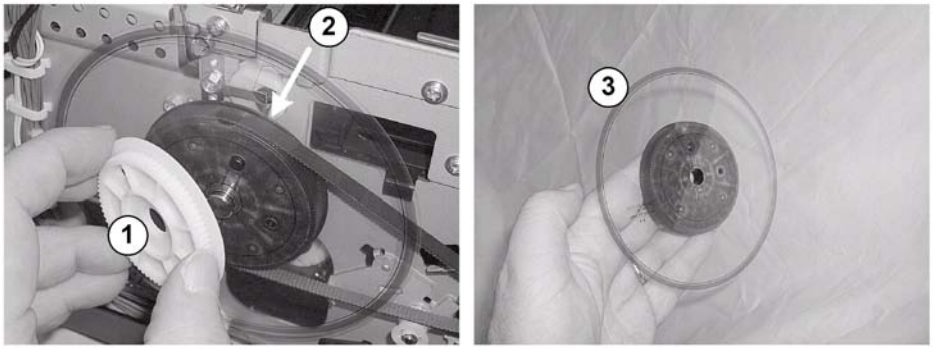
j015r037

1. Remove sensor plate ① (x1).
2. Remove the manual feed belt ②.



j015r038

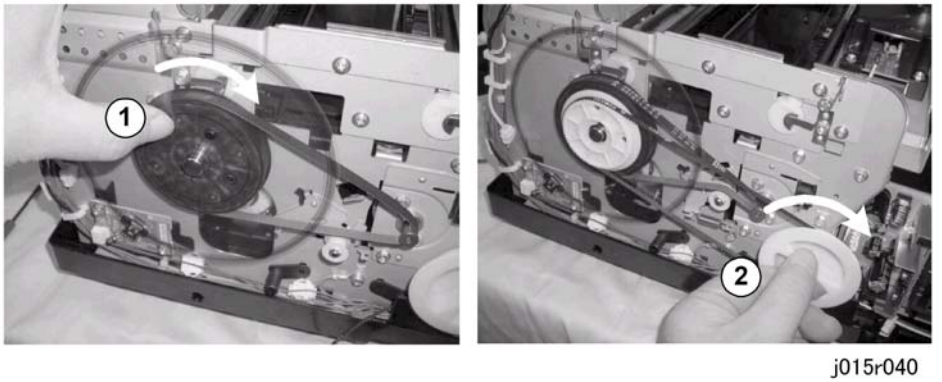
3. Use a pair of needle-nose pliers to remove the tension spring ①.
4. Remove C-clip ② to release the tension on the timing belt.



j015r039

5. Remove gear-wheel ①.
6. Carefully insert the tip of a long, thin screwdriver behind the drive-wheel ② and nudge the wheel slight to the front, then remove the wheel with the vertical encoder attached.
7. Handle the vertical encoder carefully. Never touch the edges ③.

Reinstallation



j015r040

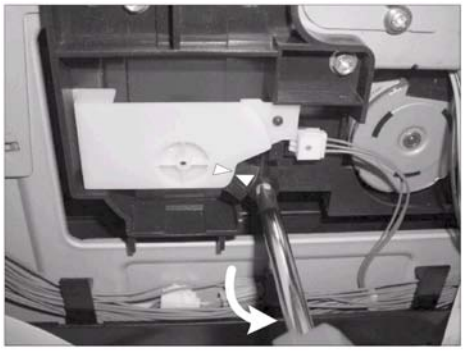
- When reinstalling the vertical encoder wheel ①, turn it slowly while pressing in slightly until it snaps into the correct position.
- After attaching the manual feed belt, turn the jam feed wheel ② to make sure that the wheel and belt rotate smoothly.

Horizontal Encoder Strip

Preparation

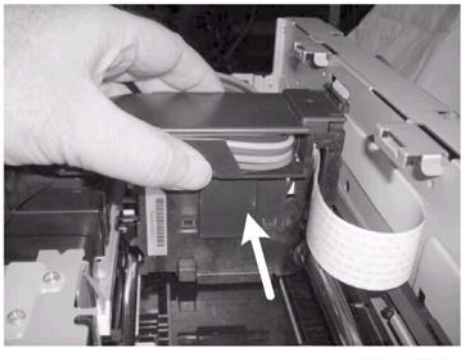
- Top cover

- Right backcover
- Canopy cover



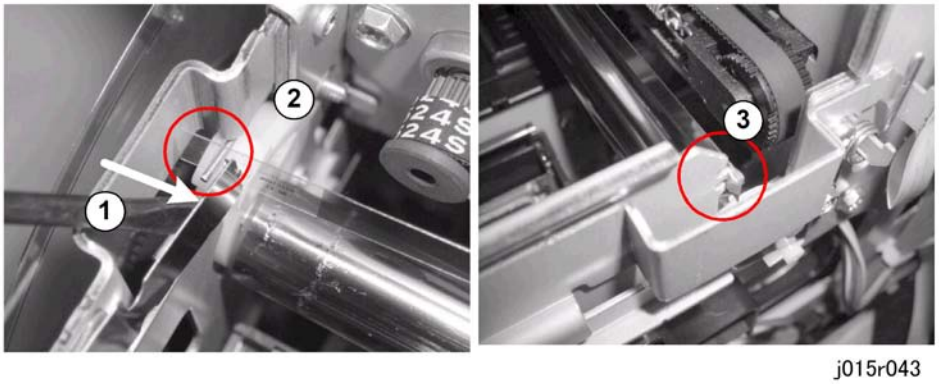
j015r041

1. After removing the right back cover, use a plus-screwdriver to align the triangles.
2. Push the envelope selector to the back position.



j015r042

3. Push the carriage to the center.



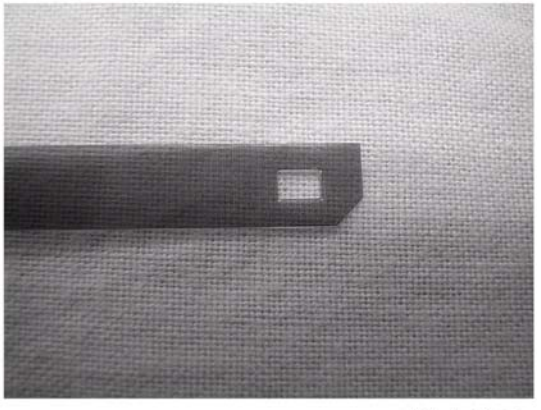
j015r043

4. On the left side:

- Use the tip of a small flat-head screwdriver to press in the leaf-spring ① to release tension on the encoder strip.
- Disconnect the end of the strip ② from the spring.

5. On the right side, disconnect the other end of the strip ③.

Reinstallation



j014r221

When you reinstall the horizontal encoder film:

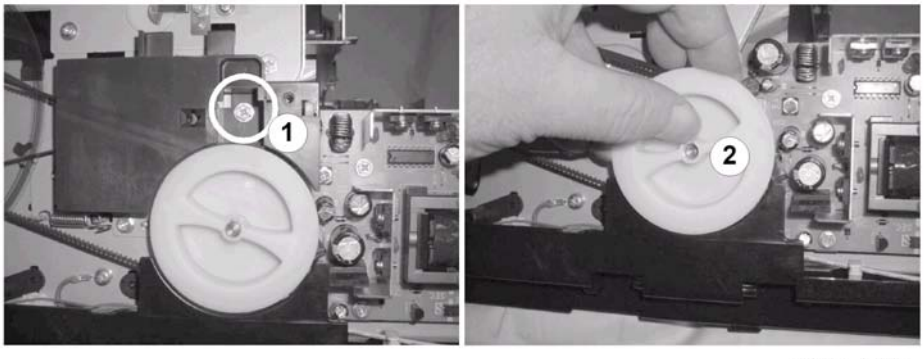
- First, on the right side attach the end of the strip with its beveled corner down as shown above.
- Next, attach the other end of the strip to the leaf-spring on the left.
- The machine will malfunction of the horizontal encoder strop is installed incorrectly.

Boards

PSU

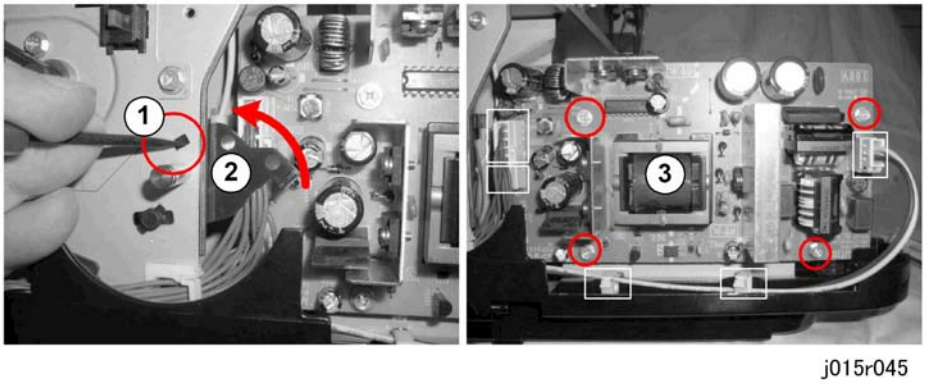
Preparation:

- Top cover
- Right back cover
- Canopy cover
- Front cover
- Left front cover
- Rear cover
- Left rear cover



j015r044

1. Remove the jam feed door sensor plate ① (x1).
2. Remove the jam feed wheel and timing belt ②.

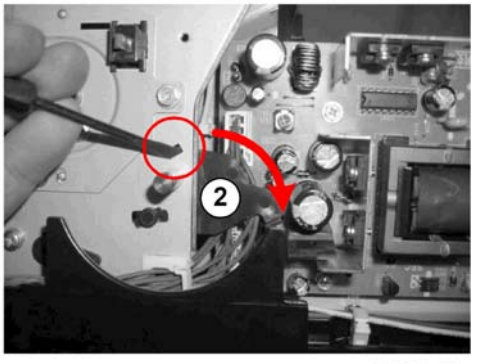


j015r045

Note: In the J015 a restraint plate keeps the connector harnesses on the left side of the PSU pushed into the machine where they will not interfere with other components. The J016 does not have this restraint plate (skip Steps 3 and 4 below).

3. Insert the tip of a small screwdriver into the hole ① to unlock the arm of the restraint plate ②.
4. Rotate the plate ③up until it locks.
5. Remove the PSU (x4, x3).

Reinstallation



j015r046

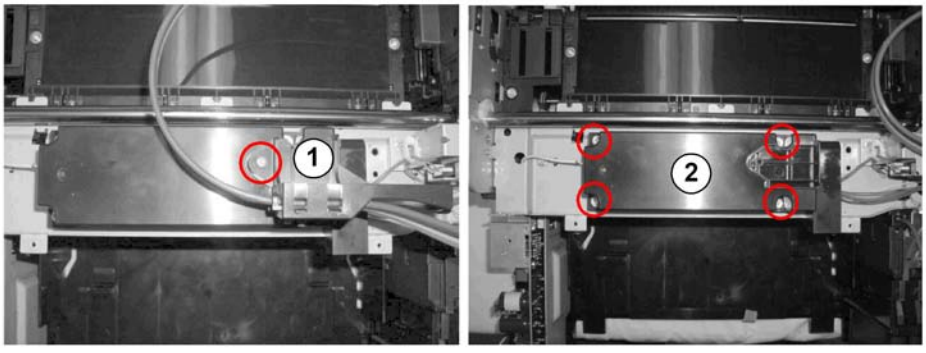
- Be sure to return the restraint plate to its original position in the J015.
- This plate keeps the harnesses pushed into the printer where they will not interfere with other components.

HVPS

Preparation:

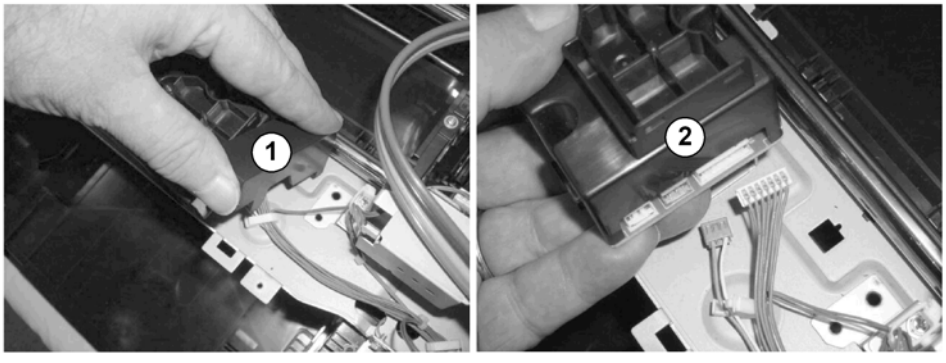
Remove:

- Canopy cover
- Right front cover
- Front cover



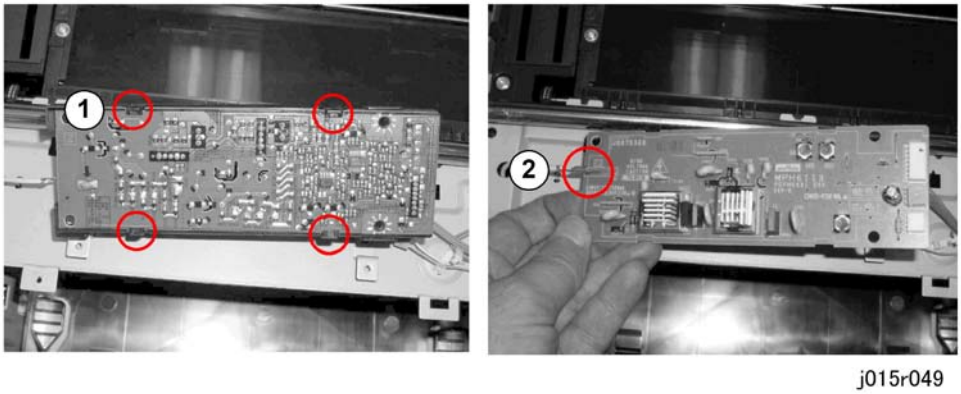
j015r047

1. Remove the ink tube housing ① (x1).
2. Remove the HVPS cover ② (x4).



j015r048

3. Remove the connector cover ①.
4. Disconnect the HVPS ② (x2)



j015r049

5. Separate the HVPS and cover ① (Hooks x4).
6. Disconnect the bayonet connector ②.

Printer Engine CTL Board, NVRAM

There are some differences between the J015 and J016 in CTL board replacement.

- The CTL board of the J015 is mounted vertically on edge. The fan must be removed before the control board can be removed.
- The CTL board of the J016 is mounted horizontal and flat. Removal of the fan is not required before control board removal.

3

Before Replacement

Before replacing the control board and NVRAM together, you should always print System Summary 2 and an Engine Summary Chart.

Important

- **You will need these reports to refer to previous settings that may require resetting.**

To print System Summary 2 (Service Summary with Log Data)

1. Press and hold [▲] [▼] for 3 sec.> [#Enter]> "Service Menu"
2. [#Enter]> "Bit Switch"> [▲] or [▼]> "Service Summary"
3. [#Enter]> "Press # to Start"> [#Enter]

To print the Engine Summary Chart:

Do SP5200 (Print SMC). (Printing requires about 2 minutes.)

1. Confirm that paper is loaded in the paper tray.
2. [▼] or [▲] for at least 3 sec.> [#Enter].

SYSTEM Ver.0.51 Service Menu

3. [▼]> "Engine Main."> [#Enter].

SP No. 1000

4. [▲] 4 times> "5000"> [#Enter]
5. [▲] twice> "5200"> [Yes] x 3 times

PRINT SMC 5200

6. [#Enter]

PRINT SMC EXEC

7. [#Enter]> "RUNNING"
    - Wait for the report to print (it does not start immediately).
    - Printing requires about 2 min.
8. [No] x 3 times> [▼] or [▲]> "End"> [#Enter]> Machine switches off.
9. [Power] to switch the machine on.

Note

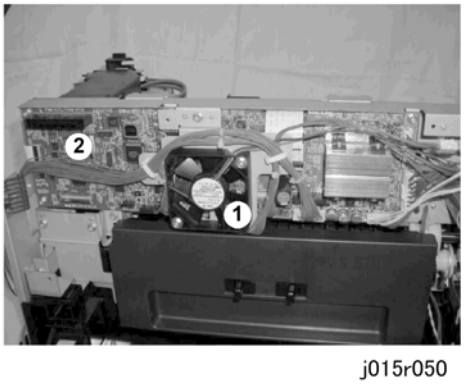
- For more details about these reports, please refer to Section "4. Troubleshooting".

CTL Board Replacement: J015

Preparation:

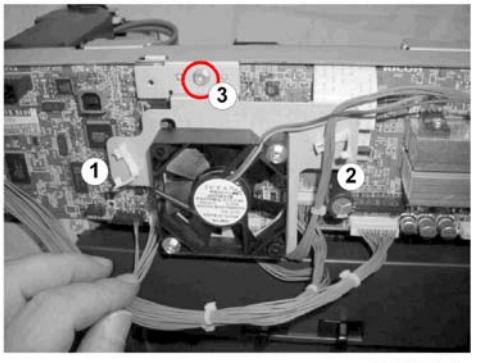
Remove:

- Right back cover
- Canopy cover
- Back cover
- Left Rear cover



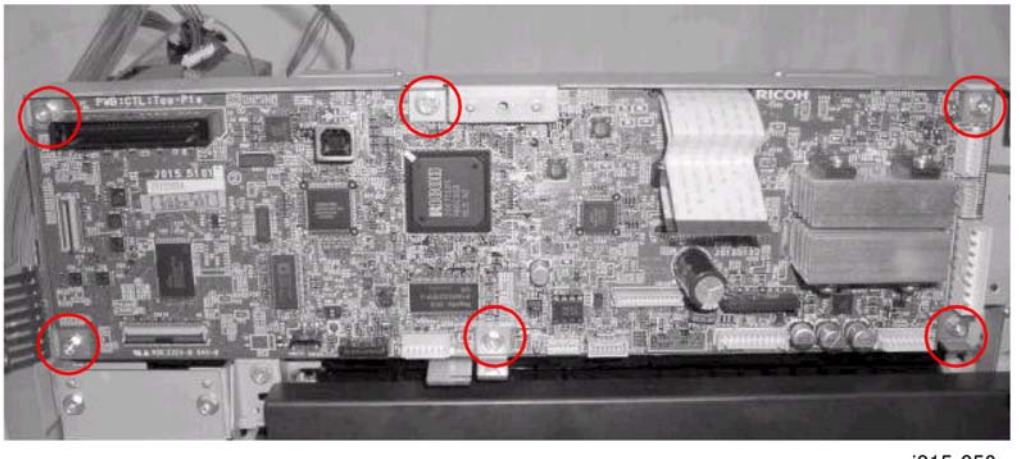
j015r050

1. The fan ① is mounted in front of the CTL board ② mounted vertically on its edge.



j015r051

2. Open harness clamps ① and ② then remove the fan bracket ③ (with fan attached) (x1).



j015r052

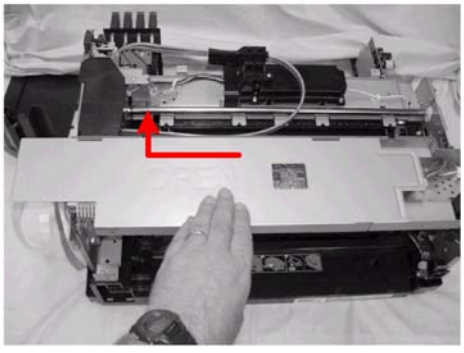
3. Remove the CTL board (x 10, FFC x3, x6).

CTL Board Replacement: J016

Preparation:

Remove:

- Right back cover
- Canopy cover
- Back cover
- Left Rear cover

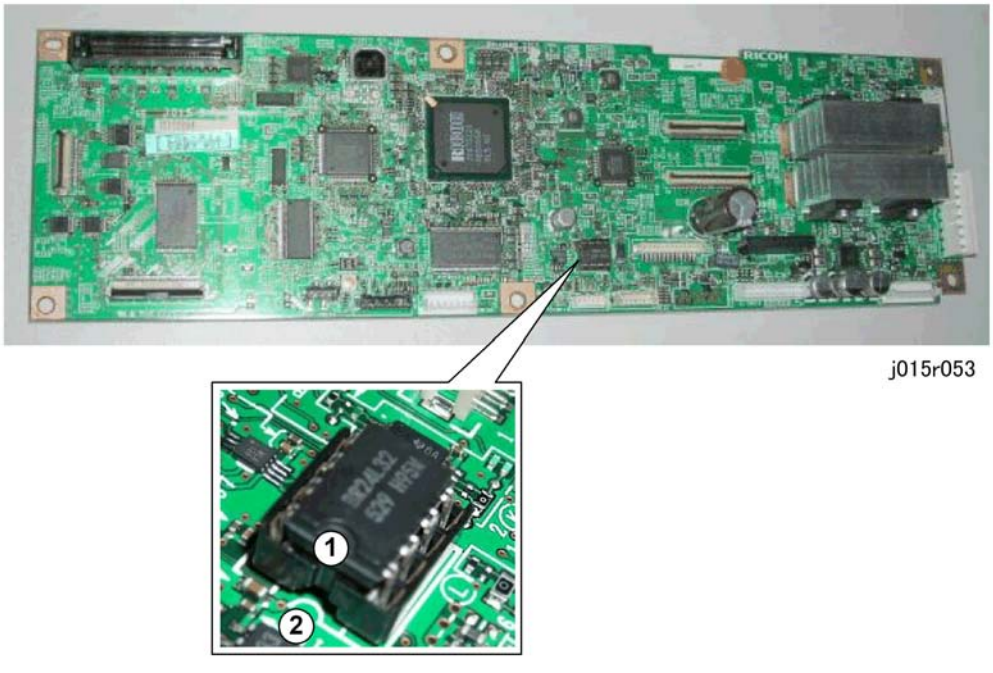


j015r054

1. The CTL board in the J016 is flat-mounted.
2. Slide the cover to the left until it stops then lift to remove it.
3. Remove the CTL board (x 10, FFC x3, x6).

If only the control board is being replaced...

1. Pull the NVRAM from the control board removed from the printer.
2. Install the NVRAM on the new control board.



j015r053

3. Attach the new NVRAM so the curvature of the white line on the board ① matches the curvature of the indentation ② on the NVRAM chip.

Note

- The NVRAM on the J016 CTL board is on the bottom of the board.

The table below lists the counters and other items that are cleared as a result of replacing the controller board with a new controller board and new NVRAM, or replacing only the NVRAM. Some items require manual resetting, and others do not require resetting.

Item	SP/UP	Reset Procedure
User Menu - Paper Size - System Setting - I/F Setting	All User Menu Items	Print a System Summary. Confer with the operator to determine how to do the settings.
Bit Switches	---	Print a Service Summary. See "5. Service Tables".
Settings Clear	---	Initial System Settings/Counter Settings
Plug-and-Play	---	Print a Service Summary. Confirm that the printer model numbers are correct, reset if necessary.
Counter Display Settings	---	Print a Service Summary and reset.
Print Head Rank	SP3100-3107	Do SP5200 to print Engine Summary. Refer to the previously printed summary chart and re-enter the SP settings.
Print Head Gap Adjustment	User Menu "Maintenance"	Do some test prints and adjust. This setting can be done with one execution of SP5102 for all print heads.
LF Adjustment	User Menu, "Maintenance"	Do some test prints and adjust.
Registration Adjustment (Vertical/Horizontal)	User Menu, "Maintenance"	Do some test prints and adjust.
Print Gamma	SP3300-3303	Enter the number recorded on the print head cover. This setting can be done with SP5102 for all print heads.
Ink Collector Unit Replace	---	The software counts for those items lost after NVRAM replacement and cannot be reset. These items must be replaced.
Flushing Unit Replace	---	

Motors

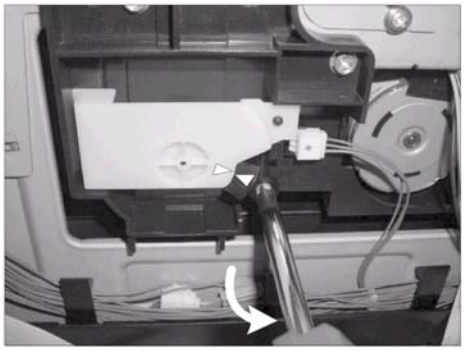
Horizontal Motor

Preparation:

- Right back cover
- Canopy cover

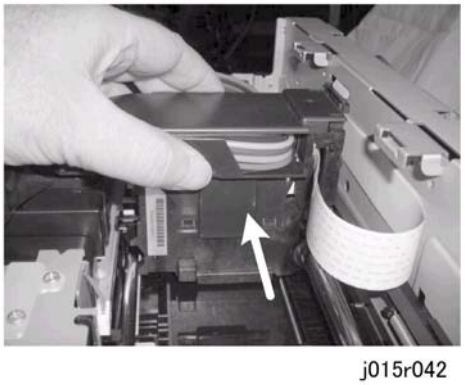
Preparation

- Top cover
- Right backcover
- Canopy cover



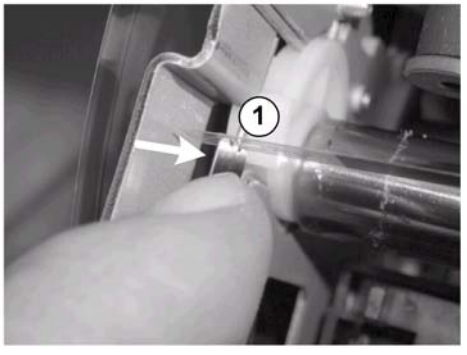
j015r041

1. After removing the right back cover, use a plus-screwdriver to align the triangles.
2. Push the envelope selector to the back position.



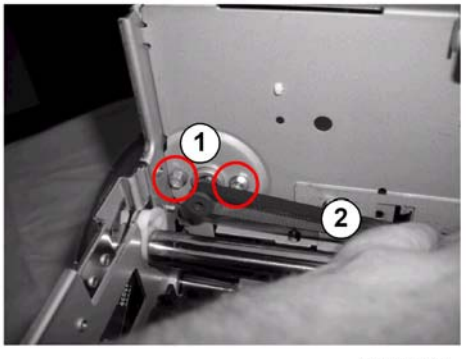
j015r042

3. Push the carriage to the center.



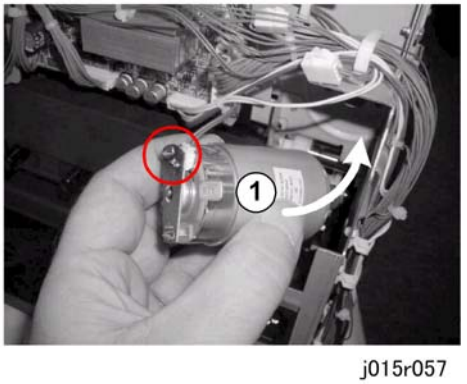
j015r055

4. Gently (to avoid bending) push the leaf spring ① to the right to release pressure on the horizontal encoder strip, then disconnect both ends of the strip and remove it.



j015r056

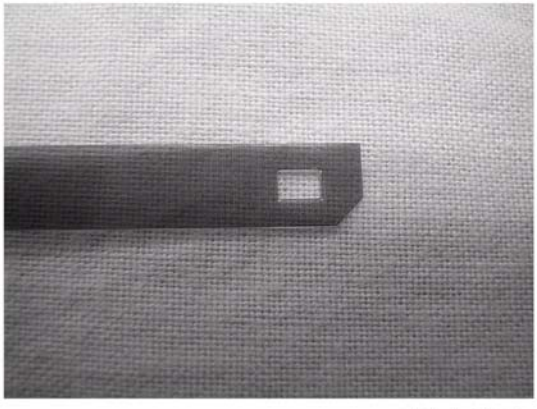
5. Inside the printer remove the screws ① (x2) and disconnect the timing belt ② from the motor.



j015r057

6. At the rear corner of the printer, remove the horizontal motor ① (x1).

Reassembly



j014r221

On the right side reattach the right notched end of the encoder strip first, with the beveled corner facing down.

Important

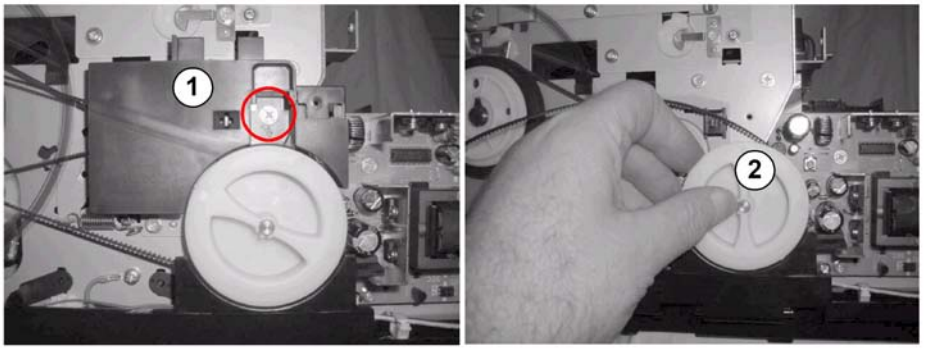
- **Attaching the film encoder strip incorrectly causes the machine to operate incorrectly.**

Vertical Motor

Preparation:

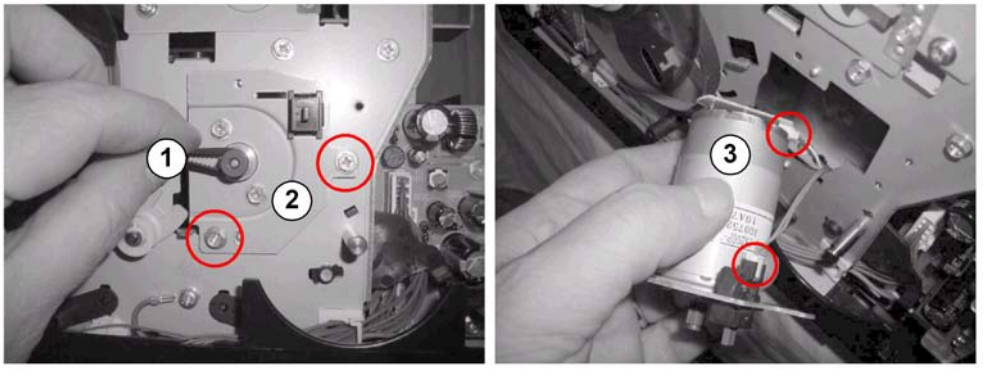
Remove:

- Canopy cover
- Right back cover
- Right front cover
- Front cover
- Back cover
- Left back cover
- Left front cover



j015r058

1. Remove the jam feed wheel sensor cover ① (x1).
2. Remove the jam feed wheel ② and timing belt.



j015r059

3. Disconnect the timing belt ①.
4. Remove the vertical motor plate screws ② (x2).
5. Pull the vertical motor ③ out and disconnect it (x2).

j015r060

6. Separate the motor and its faceplate ① (② is the jam feed door sensor) (x2).

Maintenance Unit Motor

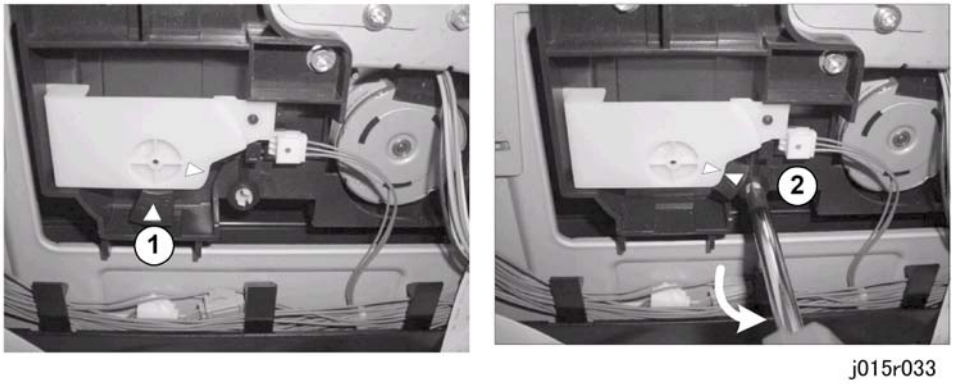
Preparation:

Remove:

- Right back cover

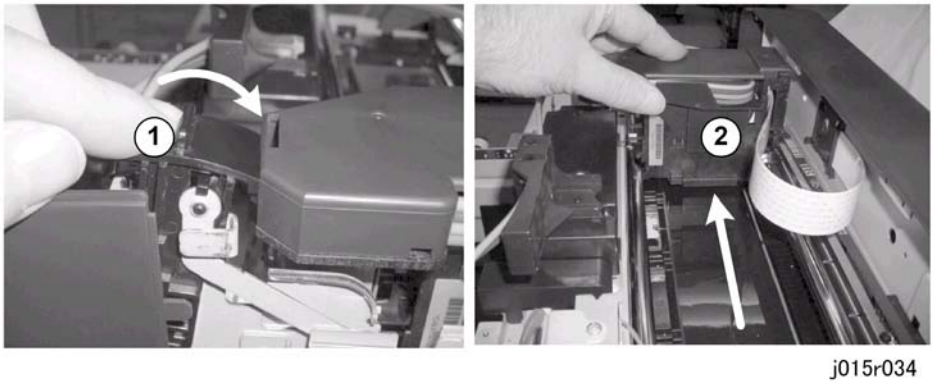
Important

- **The bottom edges of the maintenance unit are covered with ink.**
- **Spread a sheet of paper (not cloth) to place the unit after it is removed.**
- **Avoid touching the bottom of the maintenance unit.**



j015r033

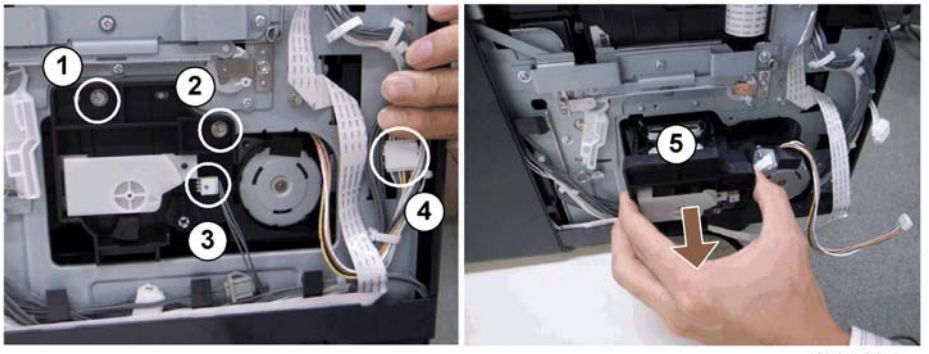
1. To unlock the carriage use a plus (+) screwdriver to turn the screw ① counter-clockwise until the tips of the triangles ② align.



j015r034

2. Push the envelope selector ① to the rear.
    - Always push the envelope selector to the rear before you move the carriage manually.
    - Pushing the envelope selector to the rear raises the print head unit. This prevents damaging the print head unit when the carriage is moved manually.
    - Moving the envelope selector to the rear also makes it easier to remove the maintenance unit.

3. Push the carriage ② to the left side of the machine.

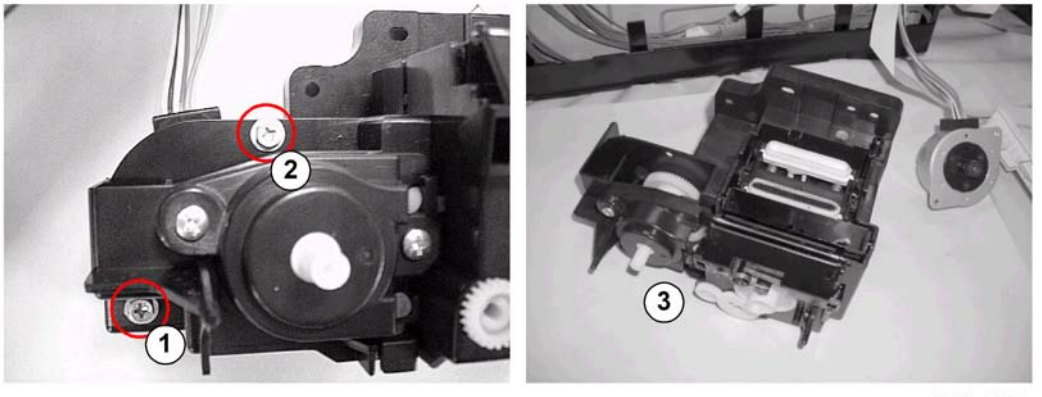


j015r035

4. Remove screws ① and ②.
5. Disconnect the unit ③ (x1) and maintenance unit motor ④ (x1).
6. Pull the unit ⑤ out of the unit as shown. If the maintenance is difficult to remove, make sure that the envelope selector is pushed completely to the rear position.

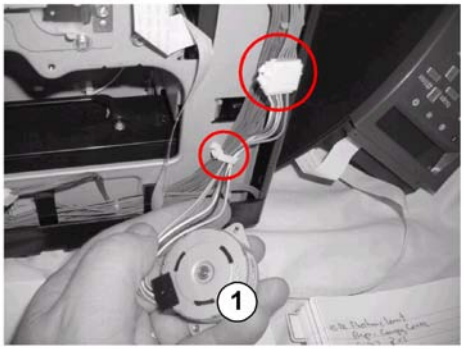
Important

- **Handle the maintenance unit carefully.**
- **The bottom of the unit is covered with ink. Place it on a piece of clean paper (not cloth).**
- **Never touch the bottom of the unit.**



j015r036

7. Remove screws ① and ②, to disconnect the maintenance unit motor from the maintenance unit (x2)
8. Set the maintenance unit ③ on a sheet of paper.



j015r061

9. Disconnect and remove the maintenance motor ① (x1, x1)

Fan

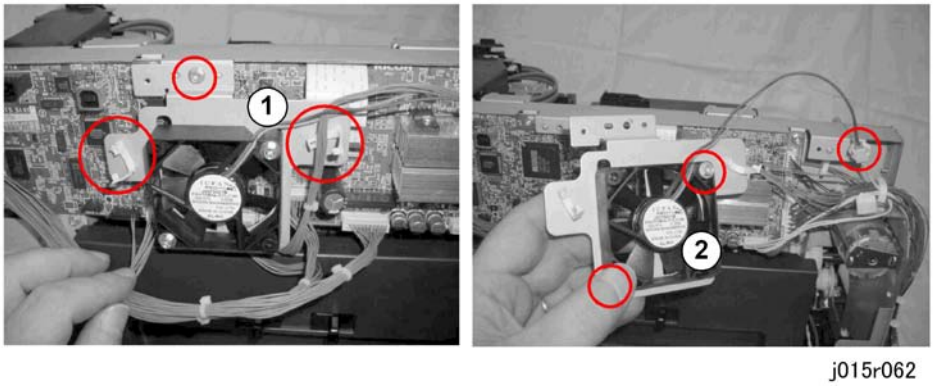
The fans in the J015 and J016 are mounted at different positions.

- The J015 fan is center mounted over the CTL board.
- The J016 fan is mounted at the left rear corner.

Preparation

- Right back cover
- Canopy Cover
- Rear cover
- Left back cover

J015 Fan

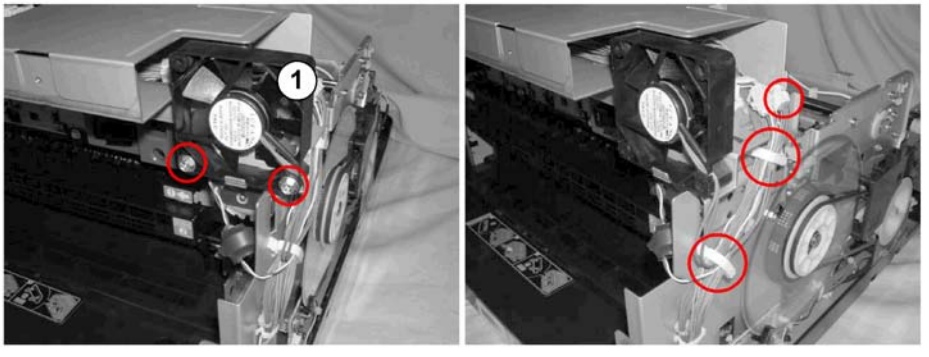


j015r062

1. Remove the fan motor bracket ① (x2, x1).

2. Remove the fan ② (x2, x1)

J016 Fan



j015r063

1. Remove the fan ① (x2, x2, x1).

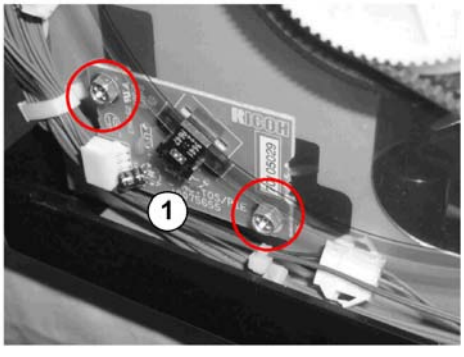
Sensors

Vertical Encoder Sensor

Preparation:

Remove:

- Right back cover
- Canopy cover
- Right front cover
- Front cover
- Rear cover
- Left rear cover



j015r064

1. Remove the vertical encoder sensor ① (x2, x1).

Important

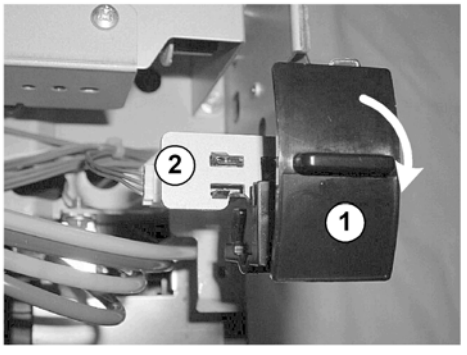
- Work carefully to avoid bending or scratching the edge of the vertical encoder wheel.

Carriage Position Sensor

Preparation:

Remove:

- Canopy cover



j015r065

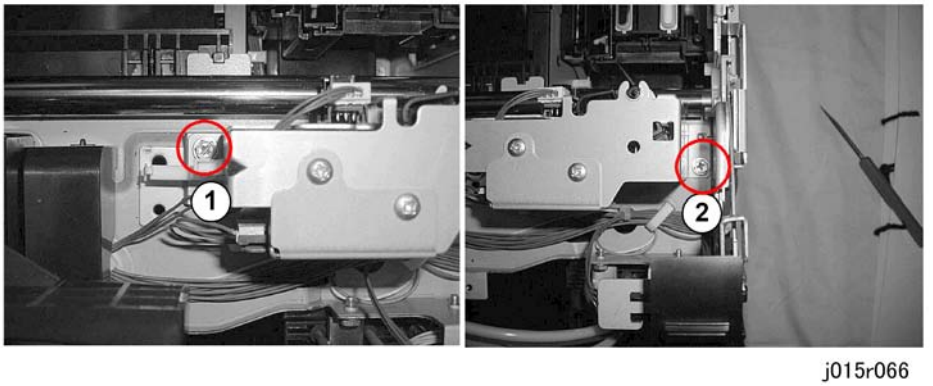
1. Move the envelope selector ① forward.
2. Remove the sensor ② from under the air release solenoid bracket (Hooks x3)
3. Disconnect the sensor (x1)

Ink Level Sensor

Preparation:

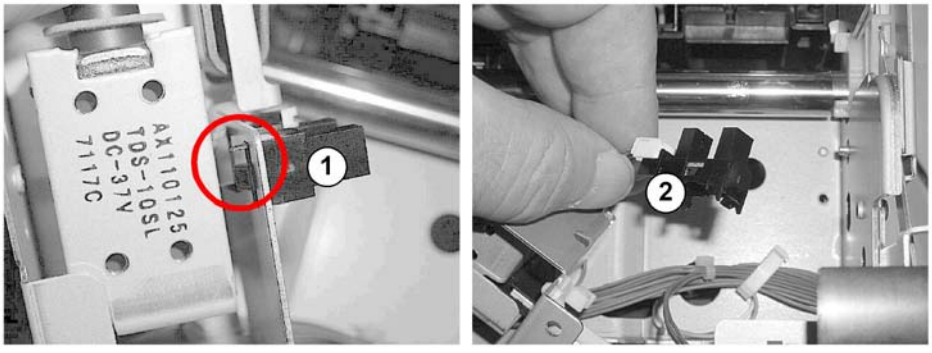
Remove:

- Right front cover
- Canopy cover



j015r066

1. Remove the solenoid bracket screws ① and ② (x2).
2. Lift the solenoid bracket.



j015r067

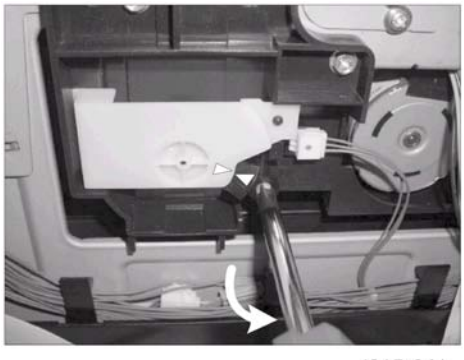
3. Use the tip of a small screwdriver to release the sensor hooks ① (Hooks x3).
4. Remove the sensor ② (x1).

1st Registration Sensor

Preparation:

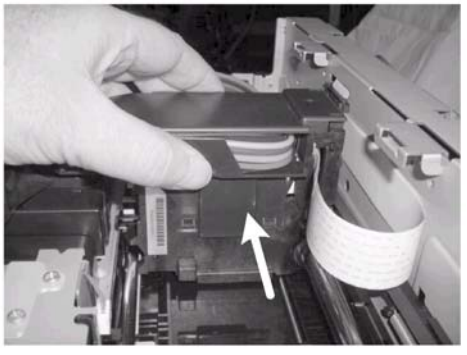
Remove:

- Right back cover
- Canopy cover



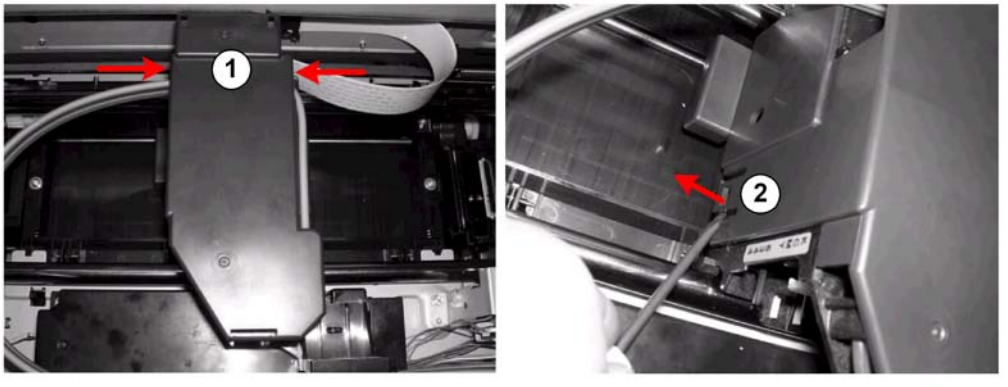
j015r041

1. After removing the right back cover, use a plus-screwdriver to align the triangles.
2. Push the envelope selector to the back position.



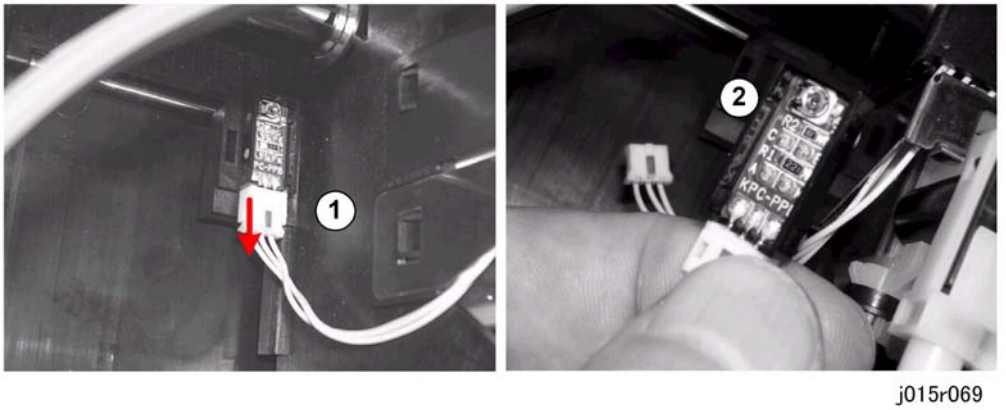
j015r042

3. Push the carriage to the center.



j015r068

1. Press in on both sides ① of the carriage unit cover to release the side hooks.
2. Use the tip of your finger or a small screwdriver to separate the tab from its hole on the side of the cover ②, then lift the cover off.



j015r069

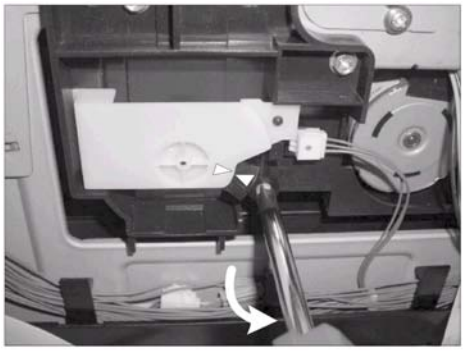
3. Pull the connector off of the 1st registration sensor ①.
4. Remove the 1st registration sensor ②.

2nd Registration Sensor

Preparation:

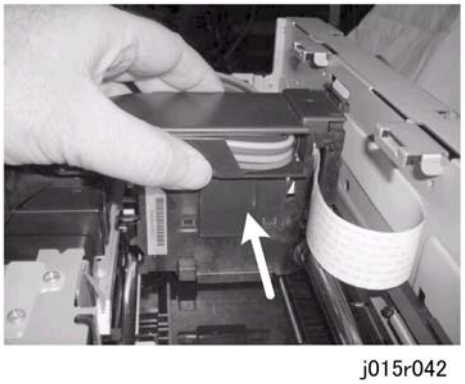
Remove:

- Right back cover
- Canopy cover
- Rear cover



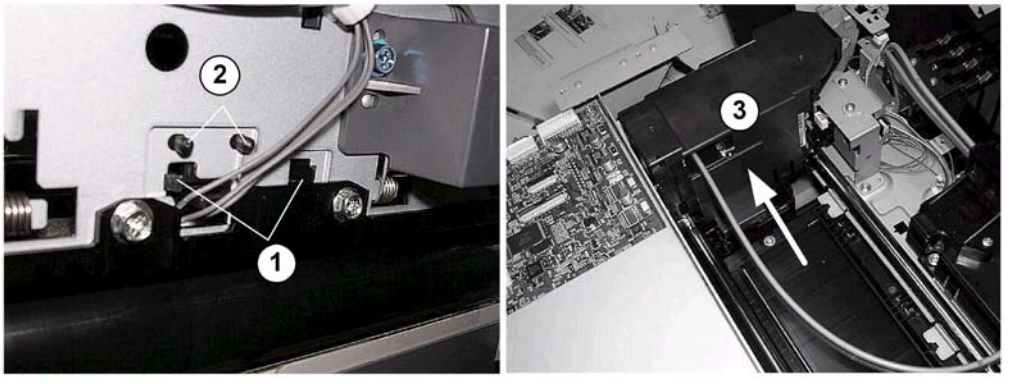
j015r041

1. After removing the right back cover, use a plus-screwdriver to align the triangles.
2. Push the envelope selector to the back position.



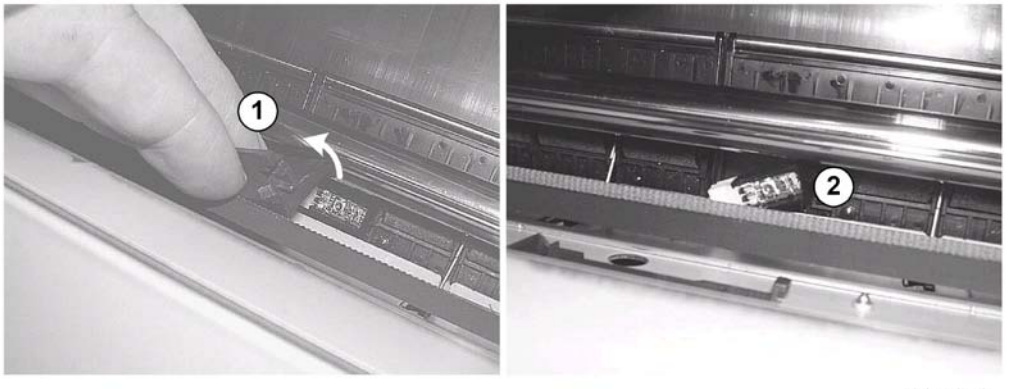
j015r042

3. Push the carriage to the center.



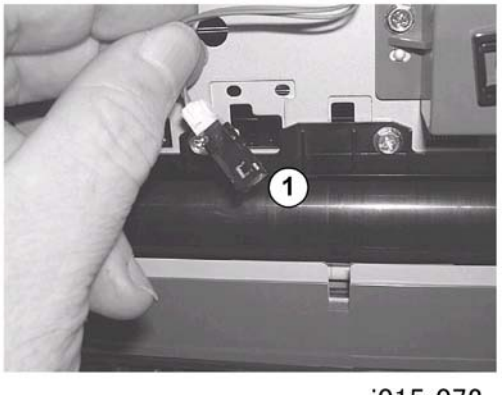
j015r070

4. To dislodge the sensor cover pinch the hooks inward ① to release them as you push on the boss pins ②.
5. Push the carriage ③ to the right side of the machine.



j015r071

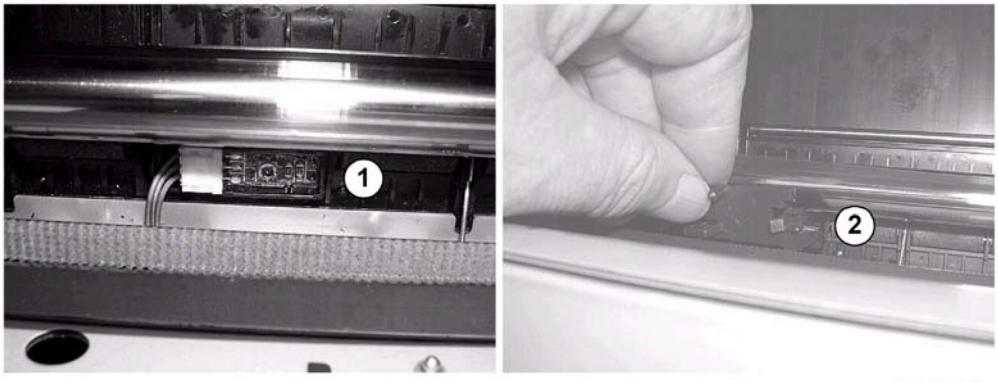
6. Remove the dislodged sensor cover ①.
7. Remove the sensor ②.



j015r072

8. Pull out the sensor ① and disconnect it (x1).

Reassembly

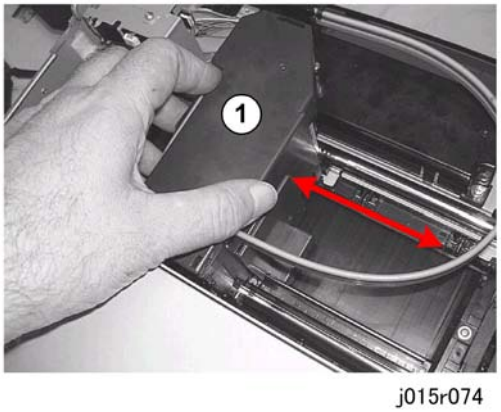


j015r073

1. Push the sensor ① through the hole on the back of the machine.
2. Push the sensor down to lock it in place.
3. Reattach the cover ②.

Note

- The cover cannot pass below the steel shaft. With its front edge down, lower the cover between shaft and the timing belt.



j015r074

4. Slowly move the carriage ① left and right to confirm that the carriage does not hit the sensor cover.

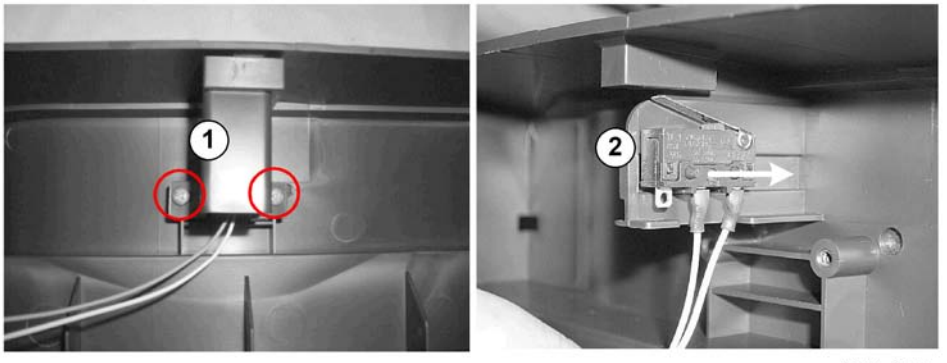
Top Cover Sensor

Preparation:

Remove:

- Right front cover
- Canopy cover
- Front cover

The top cover sensor is inside the front cover.



j015r075

1. Remove the screws of the sensor cover ① (x2).
2. Pull the sensor ② to slide it off its pegs (x2).

Reassembly

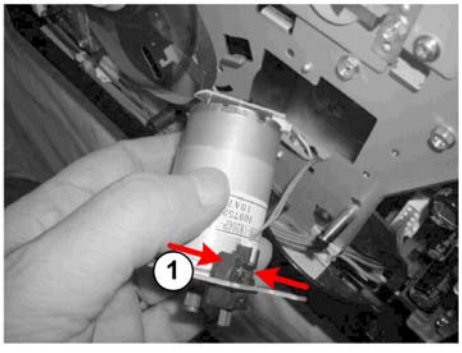
- Make sure the sensor is mounted on both pegs before you try to reattach the cover.
- The cover will not fit over the sensor until the sensor is set correctly on both pegs.

Jam Feed Door Sensor

Preparation

Remove:

- Right back cover
- Canopy cover
- Back cover
- Right back cover



j015r076

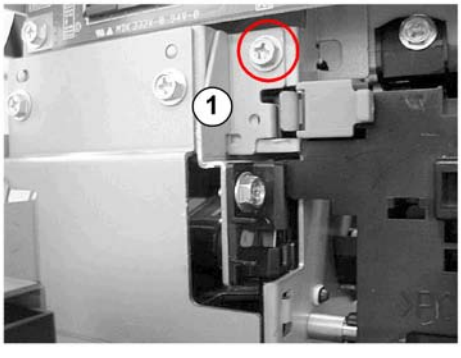
1. Remove the vertical motor plate. (See Vertical Motor).
2. Pinch in the sides of the sensor ① and remove it (x1).

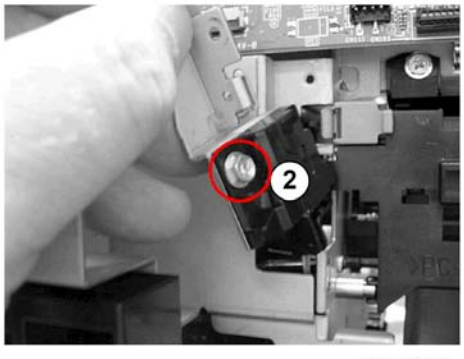
Rear Jam Removal Door Switch

Preparation

Remove:

- Jam removal door





j015r077

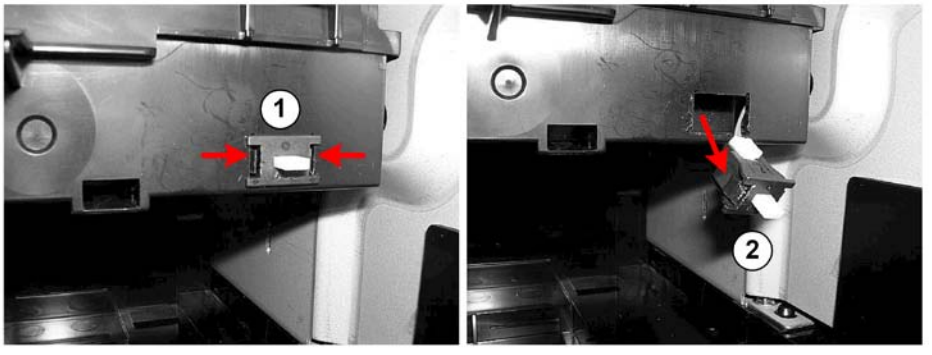
1. Remove the switch bracket ① (x1).
2. Remove the switch ② (x1, x1).

Paper Cassette Set Switch

Preparation

Remove:

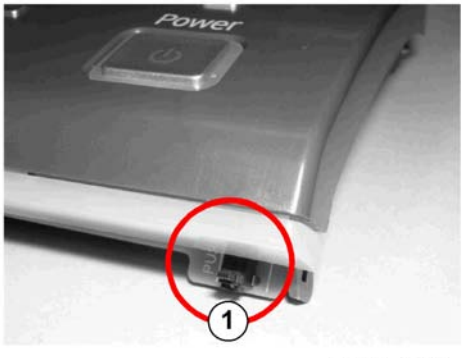
- Paper cassette and output tray



j015r078

1. Use the tips of two flat-head screw drivers to depress on the side edges of the sensor ① until it springs free.
2. Pull the sensor out ② and disconnect it (x1).

Right Front Door Switch



j015r079

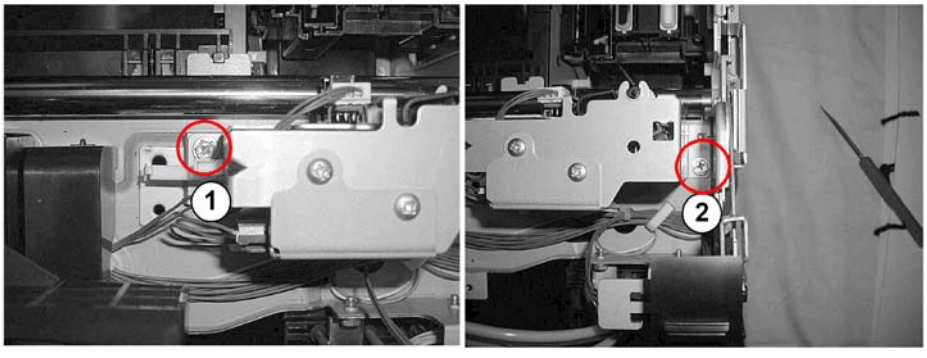
The right front door switch ① is permanently attached to the operation panel PCB. This switch and the operation panel must be replaced together. See Right Front Cover and Operation Panel.

Air Release Solenoid

Preparation:

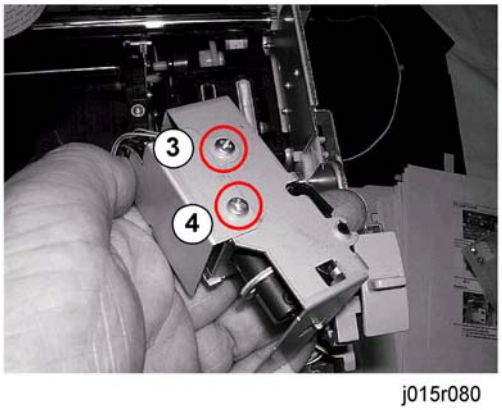
Remove:

- Canopy cover



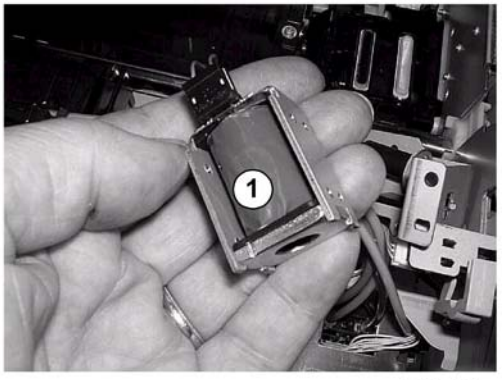
j015r066

1. Remove the bracket screws ①, ② (x2).



j015r080

2. Remove the air release solenoid screws ③, ④ (x2).



j015r081

3. Remove the air release solenoid ① (x1).

Cleaning Procedures

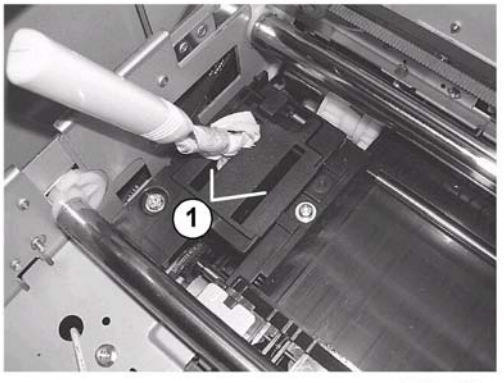
The responsibility of the service technician is limited because this machine is adjusted for optimum performance at the factory before it is shipped.

Return the printer to the repair center or replace the machine if a serious problem occurs.

There are no parts that require scheduled maintenance or replacement. However, the service technician should do the procedures described in this section when a service call is requested.

Description	At Service Call (or When Necessary)
External Covers	Damp cloth.
Feed Roller	Damp cloth. Release the feed clutch lock. Rotate the roller freely as you clean it.
Friction Pad	Damp cloth. This is the cork friction pad on the front edge of the standard paper cassette (Tray 1).
Printer Operation, Print Quality	Print a Nozzle Check Pattern and check the results. Clean the print heads if necessary. For more, see "Image Adjustment" "3. Replacement and Adjustment".
Ink Collector Unit	A message on the printer operation panel prompts you to replace the ink collector unit after it has become full. For more, see "3. Replacement and Adjustment".
Flushing Unit Gate	Dry cloth. Always remove the ink that has hardened around the flushing gate slots when you replace the ink collector unit. To scrape away hardened ink, you may need to use a small screwdriver
Maintenance unit	Damp cloth (use water). Always use a tightly wrapped damp cloth to remove the ink that has hardened around the suction cap and wiper blade when you replace the ink collector unit.

Flushing Gate Cleaning



j015r082

Dry ink flakes that collect around the flushing gate can cause streaking in printouts.

Preparation:

Remove:

- Canopy cover

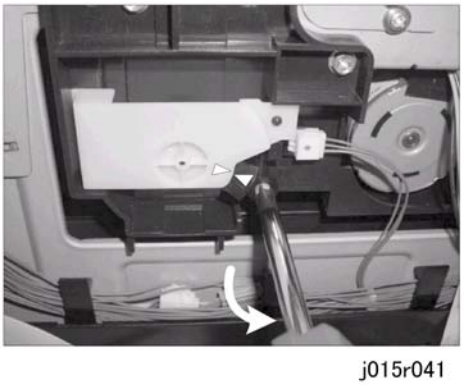
1. Wrap the tip of a screwdriver or other tool with a piece of soft cloth.
2. While pushing the lever ① to the left, use the tip of the screwdriver to remove ink that has hardened inside the slits of the flushing gate.
3. Use a damp cloth to wipe clean the ink splatter around the flushing gates.

Maintenance Unit Cleaning

Preparation

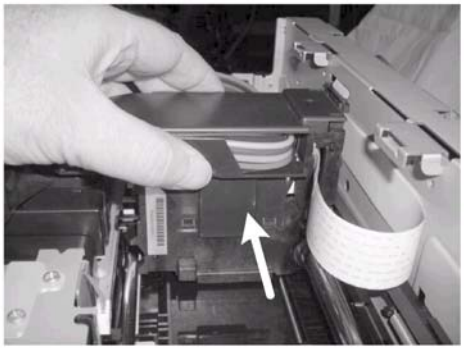
Remove:

- Right back cover



j015r041

1. After removing the right back cover, use a plus-screwdriver to align the triangles.
2. Push the envelope selector to the back position.

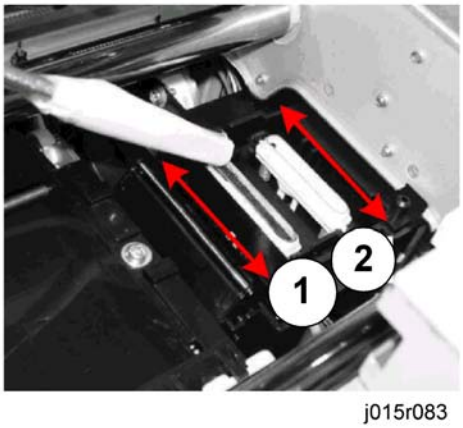


j015r042

3. Push the carriage to the center.
4. Wrap the tip of a screwdriver or similar tool with a piece of finely woven cloth which is slightly damp.

Important

- **The damp cloth prevents scratching the suction cup. A scratched suction cup could cause poor print quality. Never use tissue, cotton, or any other type of material to wrap the tip of the screwdriver. Such material can contaminate the maintenance unit with loose fibers.**



j015r083

5. Use the wrapped tip of the screwdriver to clean inside and around the right air vent ① and suction cap ②.

   Clean the vent and cap carefully to avoid:

   - Damaging the movable feeler inside the right air vent ①
   - Damaging the fragile lip of the suction cap ②.

Important

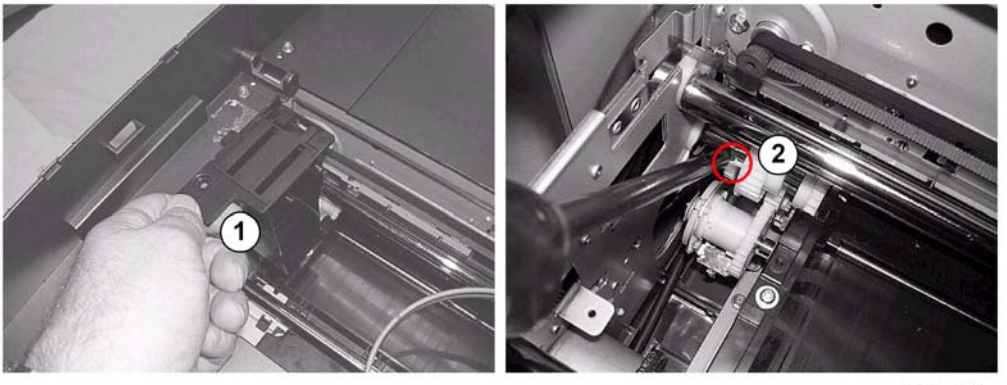
- **Do not insert the tip of the screwdriver down into either the right air vent or suction cap.**

Feed Roller Cleaning

Preparation

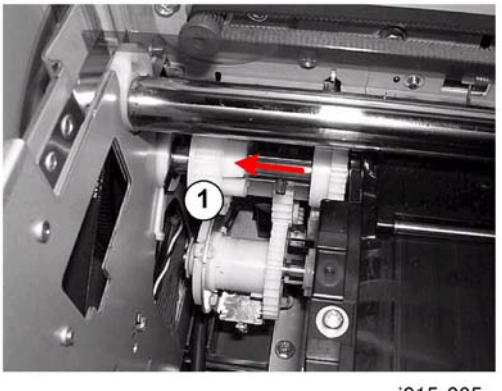
Remove:

- Canopy cover



j015r084

1. Remove the flushing unit ① (x1).
2. Use the tip of a long flat-head screwdriver to release the Teflon lock tab ② of the transport roller.



j015r085

3. Push the transport roller gear ① to the left. This unlocks the roller and allows it to rotate freely.
4. Rotate the roller and clean it with a dry cloth.

Important

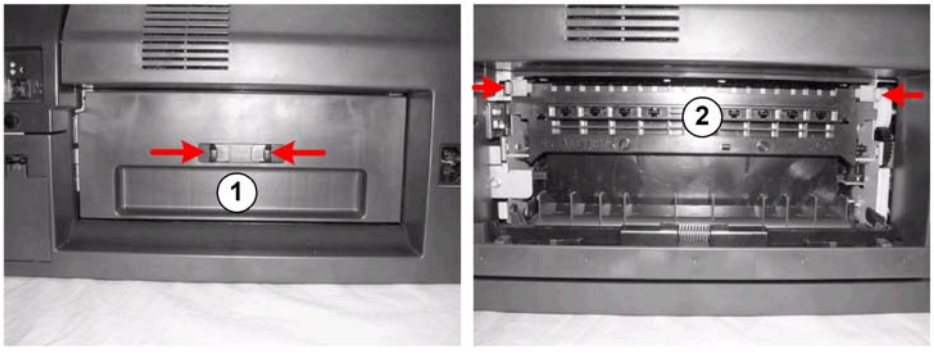
- **Lock the roller in place after cleaning.**

Transport Belt Cleaning

Preparation

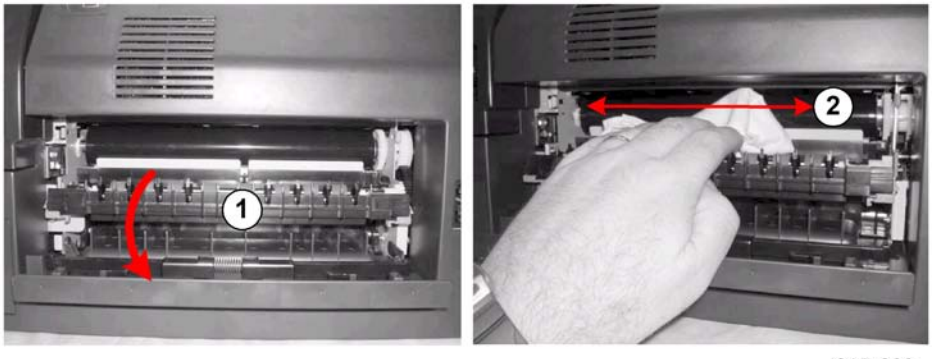
Remove:

- J015: None
- J016: Rear plate or Duplex unit, Multi Bypass Tray



j015r088

1. Release the left and right locks ① and open the rear jam removal door (J015). (The J016 does not have this door but make sure the rear plate, or duplex unit and multi bypass tray have been removed.)
2. Press in the end tabs of the transport roller ②.

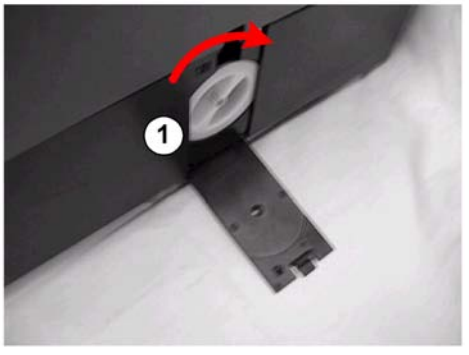


j015r089

3. Carefully lower the plate ① to expose the surface of the transport roller.
4. Move a clean, slightly damp cloth from side to side to clean the transport belt ②.

Important

- **Do not use tissue, cotton or any other material that may leave fibers on the surface of the transport belt.**
- **Use a slightly damp cloth moistened with clean water. Never use alcohol, or any other solvent to clean the belt.**



j015r090

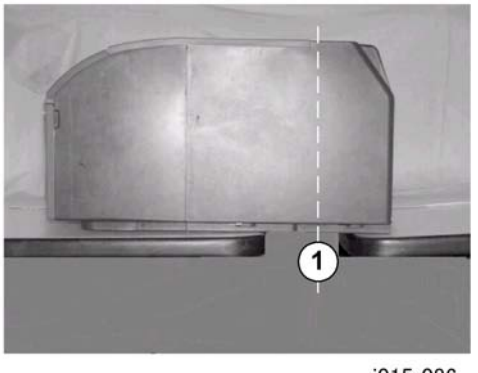
5. Open the jam feed wheel door and rotate the wheel ① far enough to expose the next section of the transport belt.
6. Repeat Steps 4 and 5 until the entire surface of the belt has been wiped clean.

Friction Pad Cleaning

The friction pad is located on the bottom of the machine.

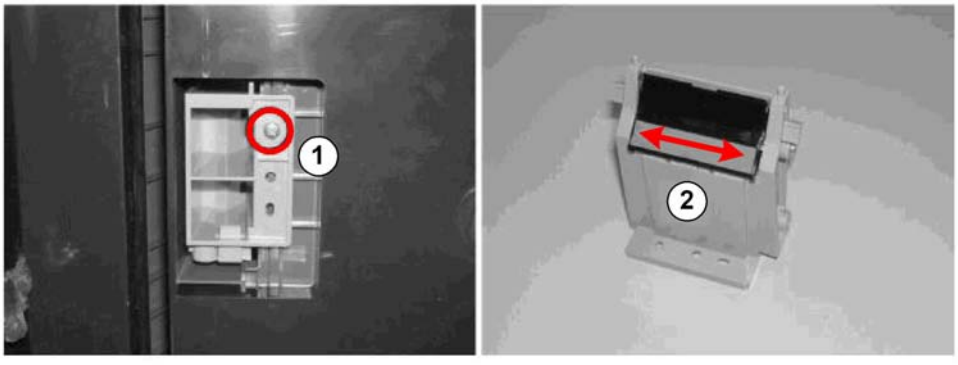
Important

- **To avoid ink spillage never set the machine on its side or turn it upside down to remove the friction pad.**



j015r086

1. Position the machine ① with the front and back supported by two tables as shown above. (The white line shows the position of the friction pad under the machine.



j015r087

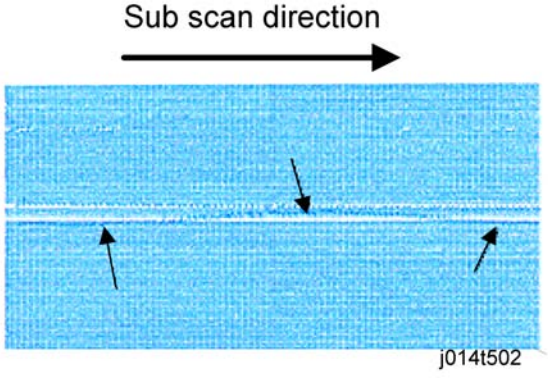
2. Under the machine remove the screw ① and remove the friction pad.
3. Use a damp cloth to clean the surface of the friction pad ②.

Horizontal Encoder Strip Cleaning

Clean the horizontal encoder strip if the following conditions occur:

- Vertical white lines on an image
- Double image
- Broken vertical lines
- JAM 14

Sample image of vertical white lines



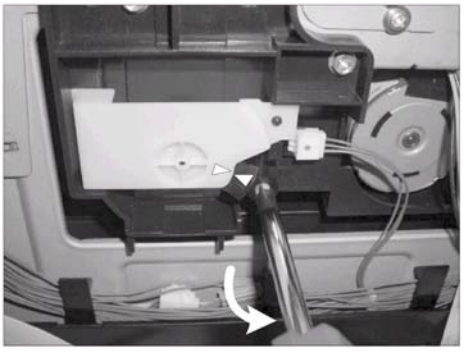
j014t502

Cleaning procedure

Preparation:

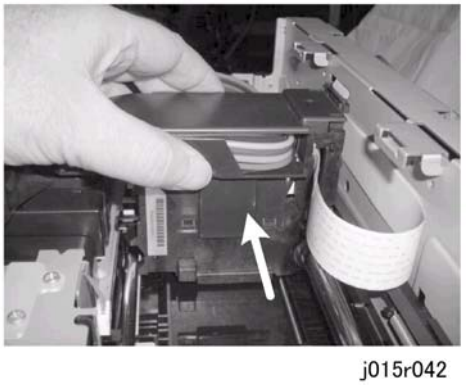
Remove:

- Right back cover
- Canopy cover



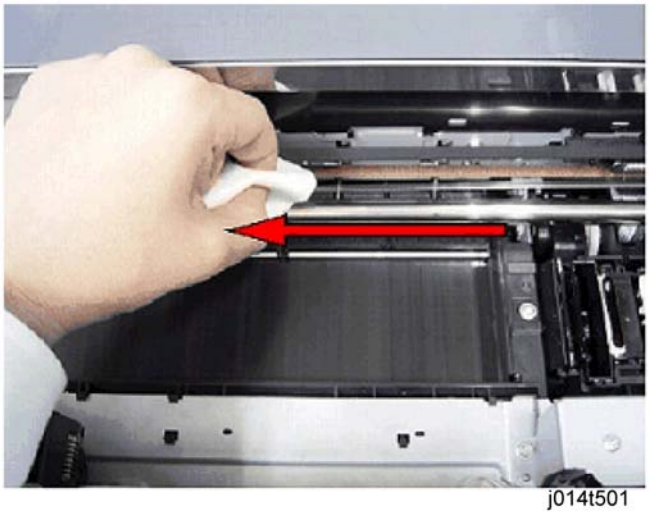
j015r041

1. After removing the right back cover, use a plus-screwdriver to align the triangles.
1. Push the envelope selector to the back position.



j015r042

2. Push the carriage to the center.


j014t501

3. Dampen a small piece of clean linen cloth with a small amount of alcohol.

Important

- **Never use cotton, soft tissue, or any other type of material that could shred and leave fibers on the encoder film strip.**

4. Gently wipe the horizontal encoder strip always from **right** to **left** in one direction.

Important

- **To avoid bending the spring plate on the left end of the encoder strip, always wipe the strip from right to left. The horizontal encoder strip is fragile. Never apply excessive tension to the horizontal encoder strip when cleaning it.**

5. Push the carriage unit to the right with your hand.
6. Repeat the procedure to clean the left side of the encoder strip.
7. Push the carriage unit to the left again, and then turn on the machine.
8. Confirm that the machine is in standby mode and ready to operate.

Important

- **Switch on the printer immediately after cleaning to ensure that the carriage returns to the right side of the machine and caps the print heads. If this is not done immediately, the print heads may dry out.**

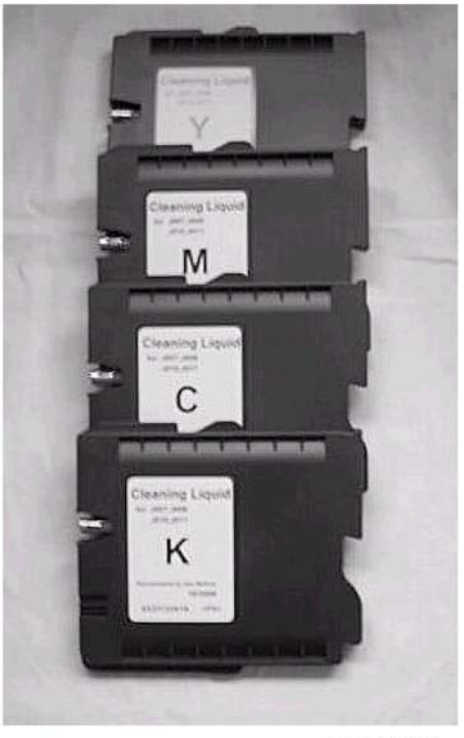
9. Do the "Nozzle Check" after cleaning, and then check the patterns for missing or broken lines.
10. Do "Print Head Cleaning" if the pattern is not satisfactory.
11. Do "Print Head Flushing" if the pattern is not satisfactory, even after three print head cleanings..
12. Do "Print-Head Flushing" and print another Nozzle Check Pattern.
13. If the Nozzle Check Pattern is still not satisfactory after flushing the print heads, replace the horizontal encoder strip.

Cleaning the Print Heads Before Storage

Do this procedure to clean the print heads before storing the machine for one month or longer.

Important

- **This procedure should be done at the Repair Center before storing a machine until it can be reused. This procedure is not intended for use at the job site by the customer and it should not be done to correct image problems.**



j015r091

1. Procure the four Cleaning Liquid cartridges.
2. Turn the machine on.
1. Push and hold [▼] or [▲] for 3 sec. and release> [#Enter].

SYSTEM Ver.0.51 Service Menu

2. [▼] or [▲]> "Engine Maint.> [#Enter]

SP No. 1000

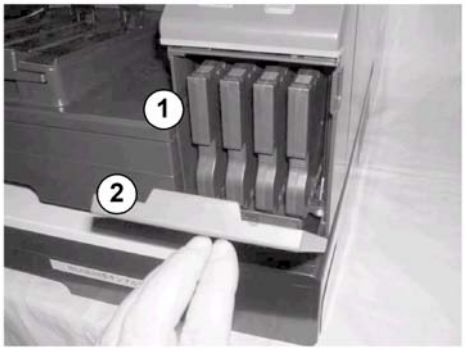
3. [▲] 4 times> "5000"> [Yes] 3 times
4. [▲] 7 times> "5007"> [Yes]

WASHING 5007

5. [Yes]

WASHING EXEC

1. Open the right front door and remove the color ink cartridges (K,C,M,Y).



j015r092

2. Replace the ink cartridges with the Cleaning Liquid cartridges ① and close the right front door .
3. Confirm that "WASHING" and "EXEC" are displayed, then push [#Enter].
4. When you see "OK?" push [#Enter].
   - "RUNNING" displays while the cleaning sequence executes.
   - When cleaning is finished, the display returns to "WASHING" and "EXEC"

Note

   - If the "Alert" lamp lights red, this indicates that an error has occurred. At this step you cannot see the error displayed on the machine operation panel.
   - Complete the procedure to return to standby mode, read the number of the error displayed to determine the cause of the error.

5. [Escape] 3 times> "Engine Maint."
6. [▼] or [▲] > "End" > [#Enter]
7. The machine switches off.
8. Remove the cleaning cartridges and store the machine.

Important

- The initial ink fill counter resets at the end of washing.
- The next time the ink cartridges are installed and the machine is switched on, the initial filling sequence will begin.
- Do not install the ink cartridges and turn the machine on until you are ready to use or service the machine.

Firmware Update

By performing firmware updates, you are allowing your printer to obtain the
newest internal control software available that provides improved operation.

This machine has three firmware modules. Update them in the following order:

- Printer
- Ethernet Board (Can be updated only if the network interface board is installed.)
- Master Controller

What You Need

The printer must be connected to the PC via a USB cable. These firmware modules cannot be updated over a network.

One of the following operating systems is required:

1. Windows 98 SE
2. Windows ME
3. Windows 2000
4. Windows XP
5. Windows Server 2003
6. Windows Vista

If you are using 3, 4, 5, or 6, you must login as an administrator
or as a user with administrator privileges.

The RPCS raster printer driver for the machine must be installed on the
computer. The TWAIN driver for this machine must be installed on the computer.

Important Points

1. Computer Power Options

   Before updating the firmware, in the computer power options confirm that "System Standby/System hibernates" is be set to “Never”. Checking the computer power options is slightly different for each operating system. Refer to the system online help for more information about this procedure.

2. During the Update Procedure

   While the update procedure is in progress:

   - Never switch off the printer
   - Never disconnect the USB cable

- Do not start any print job or run an application that uses the printer driver, Status Monitor, or SmartDeviceMonitor
- Do not manually set the computer in system standby or hibernation mode

Before You Begin...

Before you start the update, confirm the following:

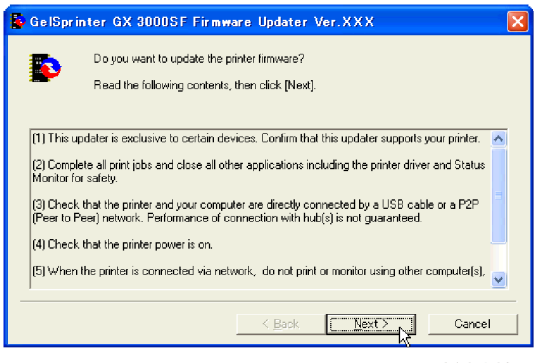
- The RPCS raster printer driver is installed on the computer.
- The TWAIN driver is installed on the computer.
- The machine is in standby mode ([Power] key is lit blue].
- No applications are running in the background.
- The printer is connected to the computer with a USB cable.

Note

- The following procedure uses Windows XP screenshots.

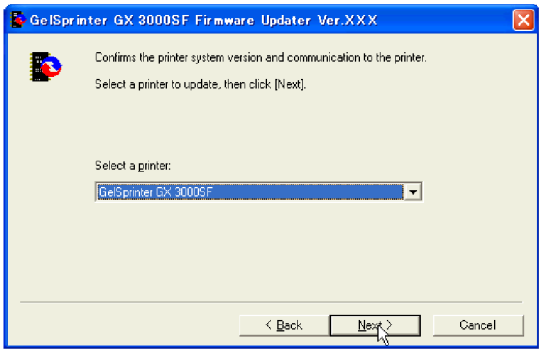
Update Procedure

1. Double-click **[GelSprinterGX(Machine No.)_Setup.bat]** to start the update.
2. Select [English], and then click [OK].



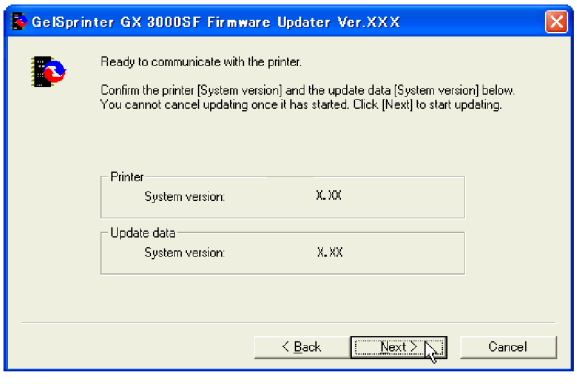
j014r940a

3. Check the displayed details, and then click [Next >].



j014r940b

4. Select the printer name, and then click [Next >].



j014r940c

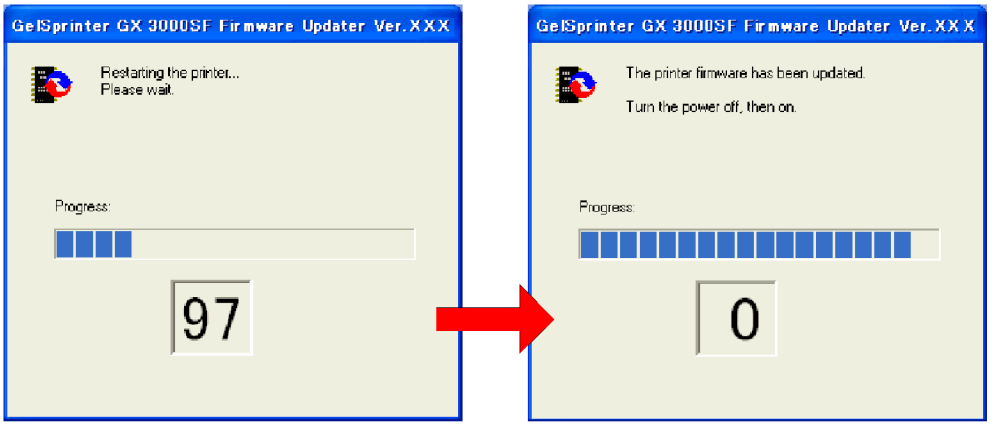
5. Check that the system version for [Update Data] is newer than the system version for [Printer], and then click [Next >].

Important

- **Once the firmware has been updated, you cannot restore to the previous version.**

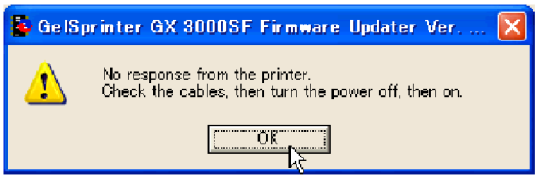
j014r940d

6. Click [OK] to start the update.



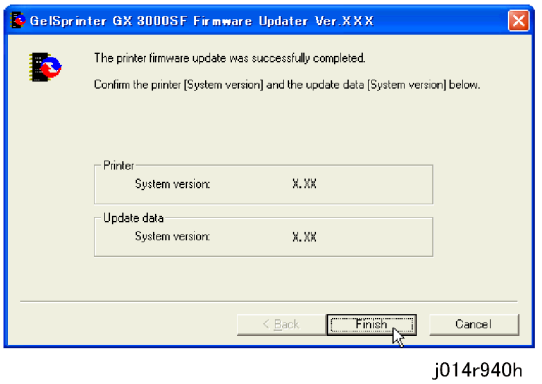
j014r940e j014r940f

7. Switch the printer off , wait a few seconds, and then turn it back on.



j014r940g

If the screen above appears, switch the printer off and then back on, and then click [OK].

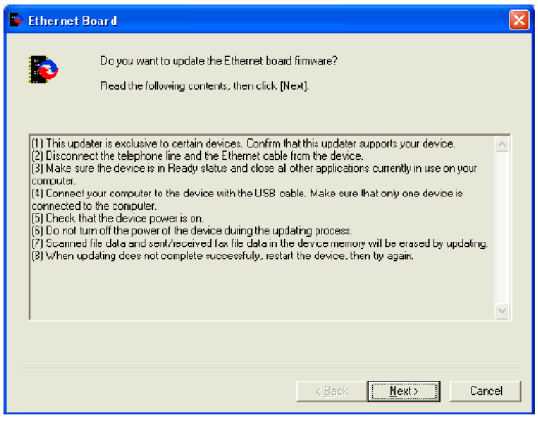


j014r940h

8. Check the version, and then click [Finish].

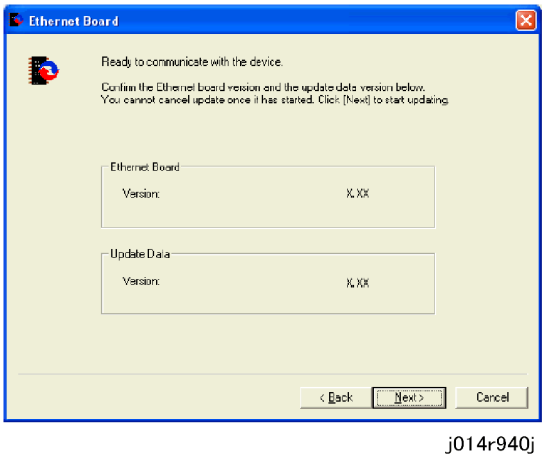
Next, the Ethernet Board Firmware Update Wizard starts.

- If the optional network interface board is not installed in the machine, the following message appears: "The Ethernet board is not installed. "
- If this message appears, press [OK] to cancel the Ethernet board firmware update.
- The Master Controller Firmware Update Wizard starts. Go to Step 14.



j014r940i

9. Click [Next >]

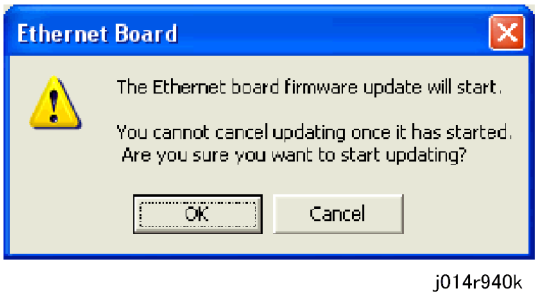


j014r940j

10. Check that the system version for [Update Data] is newer than the system version for [Ethernet Board], and then click [Next >].

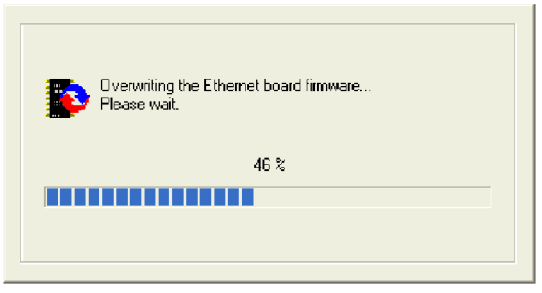
Note

- Once the firmware has been updated, you cannot restore it to the previous
- version.

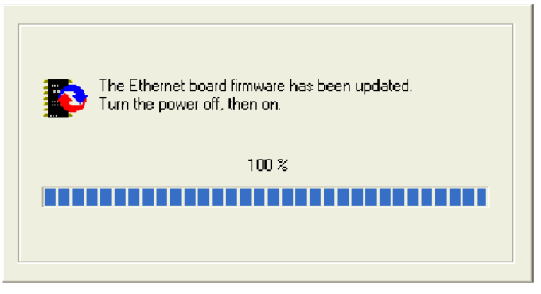


j014r940k

11. Click [OK] to start the update.

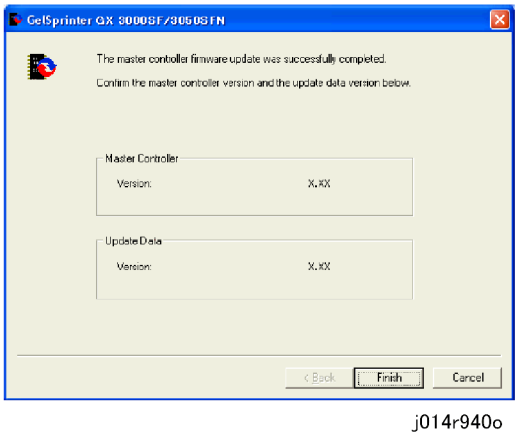


j014r940l



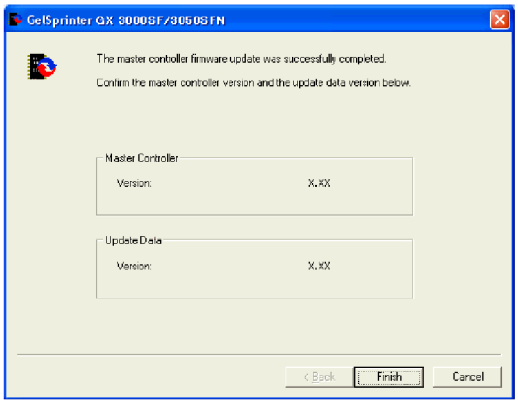
j014r940m

12. Switch the printer off, wait a few seconds, and then turn it back on.



j014r940o

13. Check the version, and then click [Finish] to start the master controller firmware update.
14. Click [Next >]

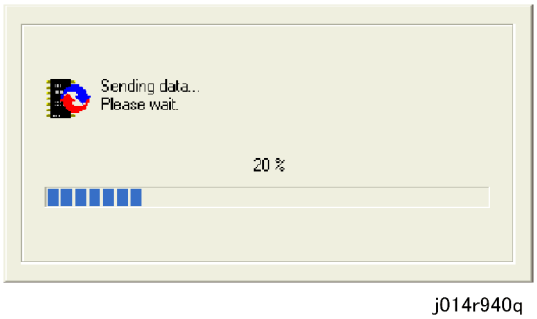


j014r940o

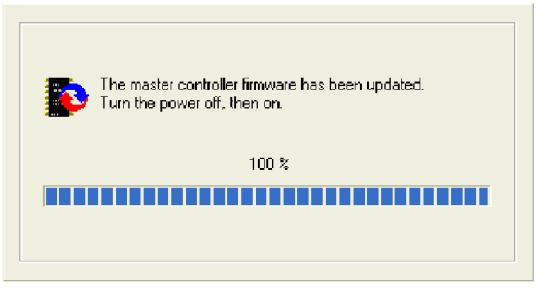
15. Check that the system version for [Update Data] is newer than the system version for [Master Controller], and then click [Finish].

j014r940p

16. Click [OK] to start the update.

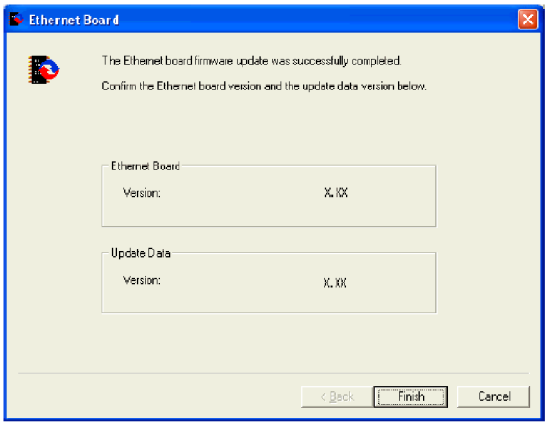


j014r940q



j014r940r

17. Switch the printer off, wait a few seconds, and then turn it back on.



j014r940s

18. Check the version, and then click [Finish].

    The update is complete.

4. Troubleshooting

Status Reports

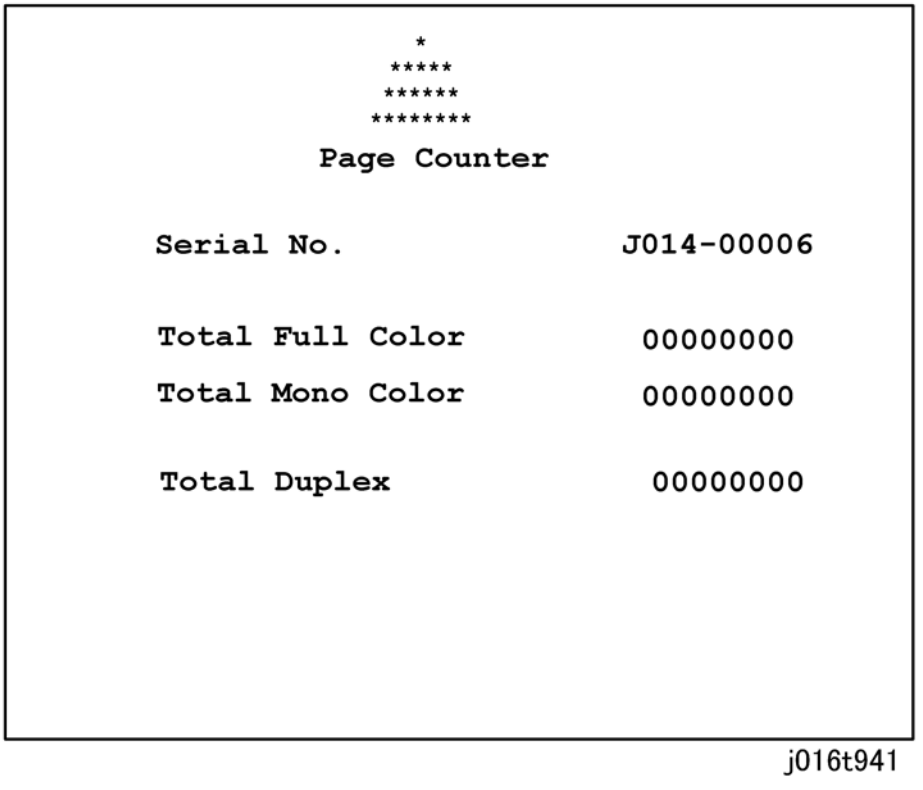
Four reports can be quickly printed to tell you what you know to need about the machine for setting and servicing. This section shows you how to print these reports:

1. Page Counter
2. System Summary 1 (Machine Configuration)
3. System Summary 2 (Machine Configuration + Error Log + More)
4. Engine Summary Chart

Here is a quick reference list that tells what type information is found in each report.

Item	Report Name	
Bit Switch Settings		3. System Summary 2
Color Usage	1. Page Counter	
Current System Settings	2. System Summary 1	3. System Summary 2
Firmware Version	2. System Summary 1	3. System Summary 2
Ink Collector Counter	2. System Summary 1	3. System Summary 2
Ink Remaining	2. System Summary	3. System Summary 2
Log Data (Counters)		3. System Summary 2
Machine ID	2. System Summary	3. System Summary 2
Page Count	1. Page Counter	
Paper Tray Information	2. System Summary	3. System Summary 2
Printer Log		3. System Summary 2
SC Codes (Most Recent)		3. System Summary 2
SP Code List	3. Engine Summary Chart	
Service Data	4. Service Data List	

1. Page Counter



j016t941

The counter lists the number of prints. The print totals do not include the number of test patterns that have been printed. The counter keeps totals for these items:

- **Total Full Color**. The total number of sheets printed with in color.
- **Total Mono Color**. The total number of sheets printed in monochrome.
- **Total Duplex**. The total number of sheets printed on both sides.

1. [Menu]> "Counter"> [#Enter]> "Show Counter"
2. [▼] or [▲]> "Print"> [#Enter]>"Press # Key"> [#Enter]

Note

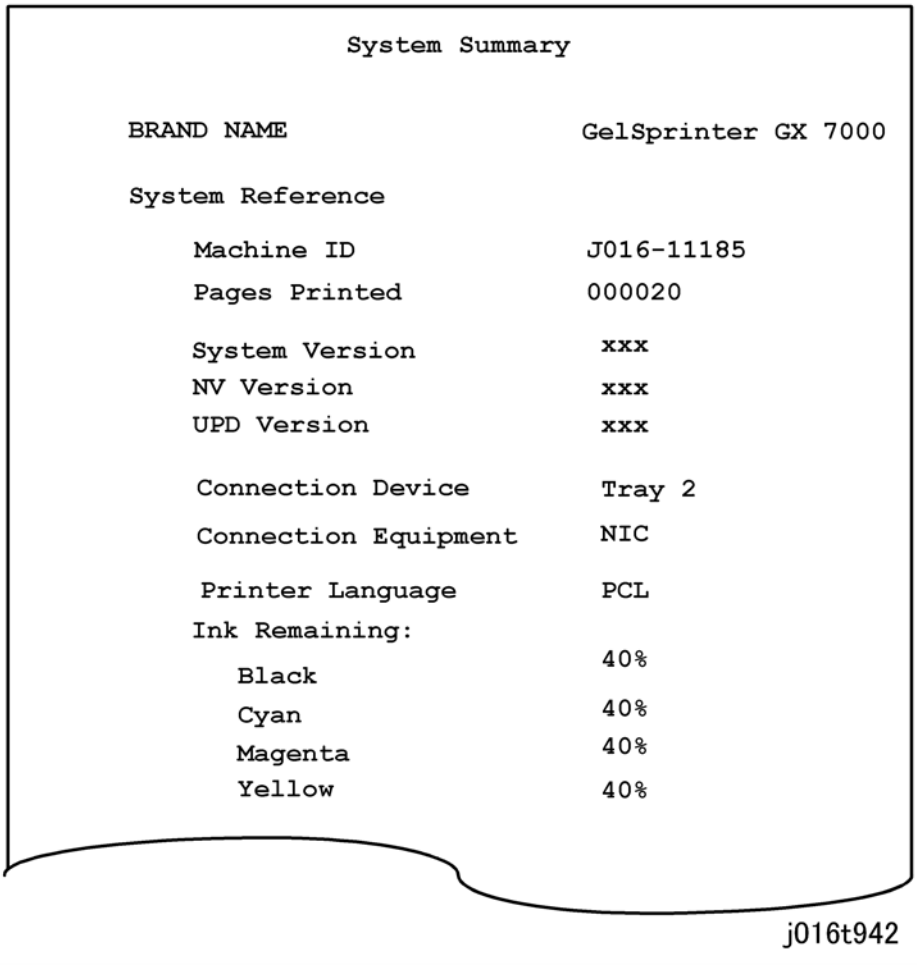
- A printed single-sided sheet counts as "1".
- A printed double-sided sheet counts as "2".
- The counter limit is 99,999.

2. System Summary 1 (Config. List)

The System Summary lists information about the configuration of the machine.

Important

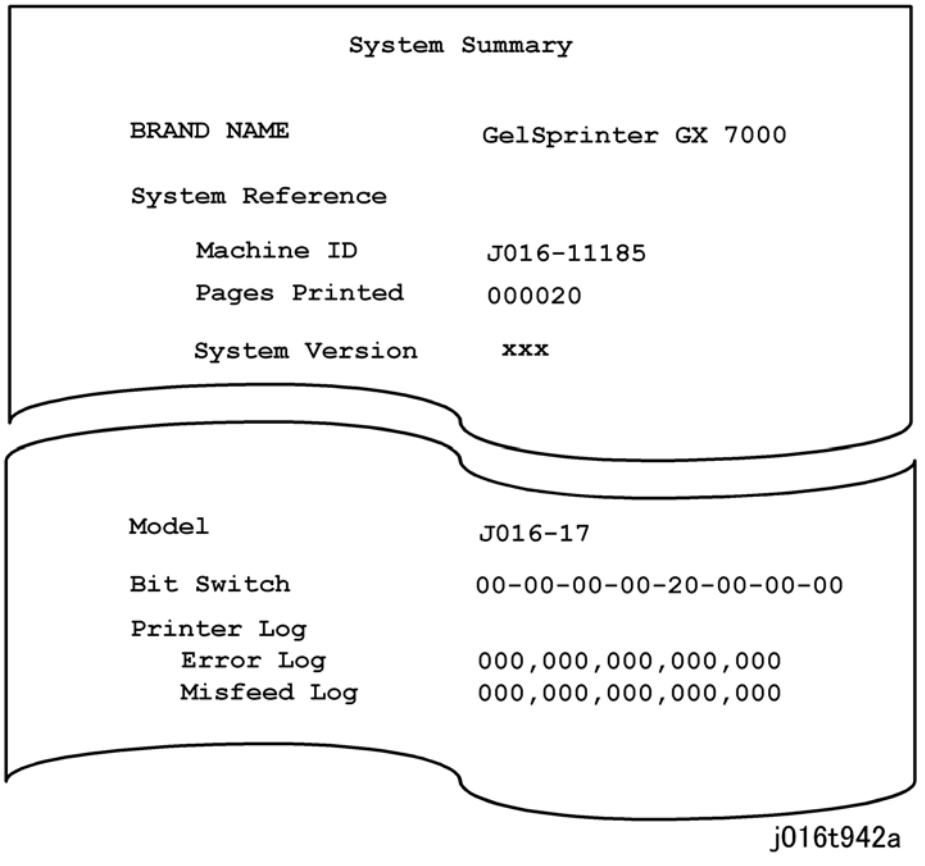
- This report does not show the log data. To see the log data, print System Summary 2.



To print the Service Summary:

1. Confirm that paper is loaded in the paper tray.
2. [Menu]> "Counter"> [▲] or [▼]> "List/Test Print".
3. [#Enter]> "Config. Page"> [#Enter]> "Processing..."

3. System Summary 2 (Log Data)



1. Press and hold [▲] [▼] for 3 sec.> [#Enter]> "Service Menu"
2. [#Enter]> "Bit Switch"> [▲] or [▼]> "Service Summary"
3. [#Enter]> "Press # to Start"> [#Enter]

4. Engine Summary Chart

The Engine Summary Chart lists all the current SP code settings.

```
ENGINE SUMMARY CHART
MODEL          :          IPSIO XXXXXXXX
SER_NO         :          JXXX---XXXXXXXX
DUMMY NO       :          JXXX---XXXXXXXX
Firm Ver       :          XXX.XXX.XXX
SENSOR 1       :          XXXXXXXXXXXXXXXX
SENSOR 2       :          XXXXXXXXXXXXXXXX
SENSOR 3       :          XXXXXXXXXXXXXXXX

SP No.                    Name           Value
1000                      REG:FD:NORM    100
.                         .              .
.                         .              .
2000                      FULLPOS1       23
.                         .              .
.                         .              .
.                         .              .
.                         .              .
```

j014t943

To print the Engine Summary Chart:

1. Confirm that paper is loaded in the paper tray. (The report is about 16 pages long.)
2. To enter the SP mode: [▼] or [▲] for 3 sec.> [#Enter].

SYSTEM Ver.0.51 Service Menu

3. [▼]> "Engine Maint."

SP No. 1000

4. [▲] x 4 times> "5000"> [#Enter]
5. [▲] twice> "5200"> [#Enter] x 3 times

PRINT SMC 5200

6. [#Enter]

PRINT SMC EXEC

7. [#Enter]> "RUNNING"
    - Wait for the report to print (it does not start immediately).
    - Printing requires about 2 min.
8. [Escape] x 3 times> [▼] or [▲]> "End"> [#Enter]> Machine switches off.
9. [Power] to switch the machine on.

Here is a brief summary of what is listed in the Engine Summary Chart.

Heading	Meaning
MODEL	Number of the Printer Model
SER_NO	Printer Serial Number
DUMMY_NO	
Firm Ver	Version number of the firmware in the printer
SENSOR 1	See details below.
SENSOR 2	
SENSOR 3	
SP No, Name, Value	SP number, name, value of current setting

Sensor 1: Input Sensors (1 of 2)

The status of these sensors are also displayed by SP5400.

No.	Meaning	No.	Meaning
0	Top Cover Switch	8	PFU Relay Sensor
1	Duplexer Set Sensor	9	Paper Sensor (Tray1)
2	Multi Bypass Set Sensor	10	Paper Sensor (Tray2)
3	Carriage Position Sensor	11	Not used
4	PFU Set Sensor	12	Env. Selector Sensor
5	Registration Sensor 1	13	Ink Coll. Tank Sensor
6	Registration Sensor 2	14	Maintenance HP Sensor
7	Trailing Edge Sensor	15	Right Front Door Sensor

Sensor 2: Input Sensors (2 of 2)

The status of these sensors are also displayed by SP5401

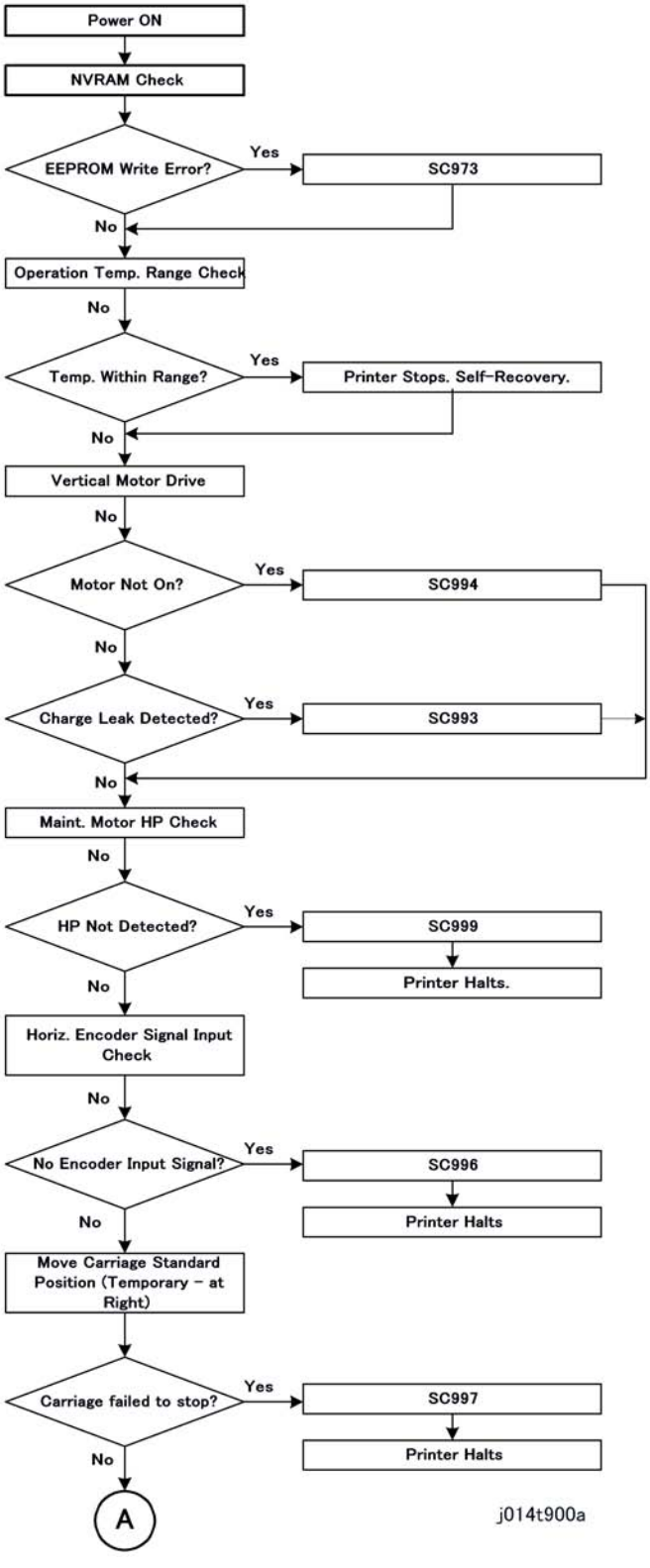
No.	Meaning
0	USB Connection Detection
1	Option Detection
2	Jam Feed Door Switch
3	Tray 1 Cover
4	Tray 2 Cover

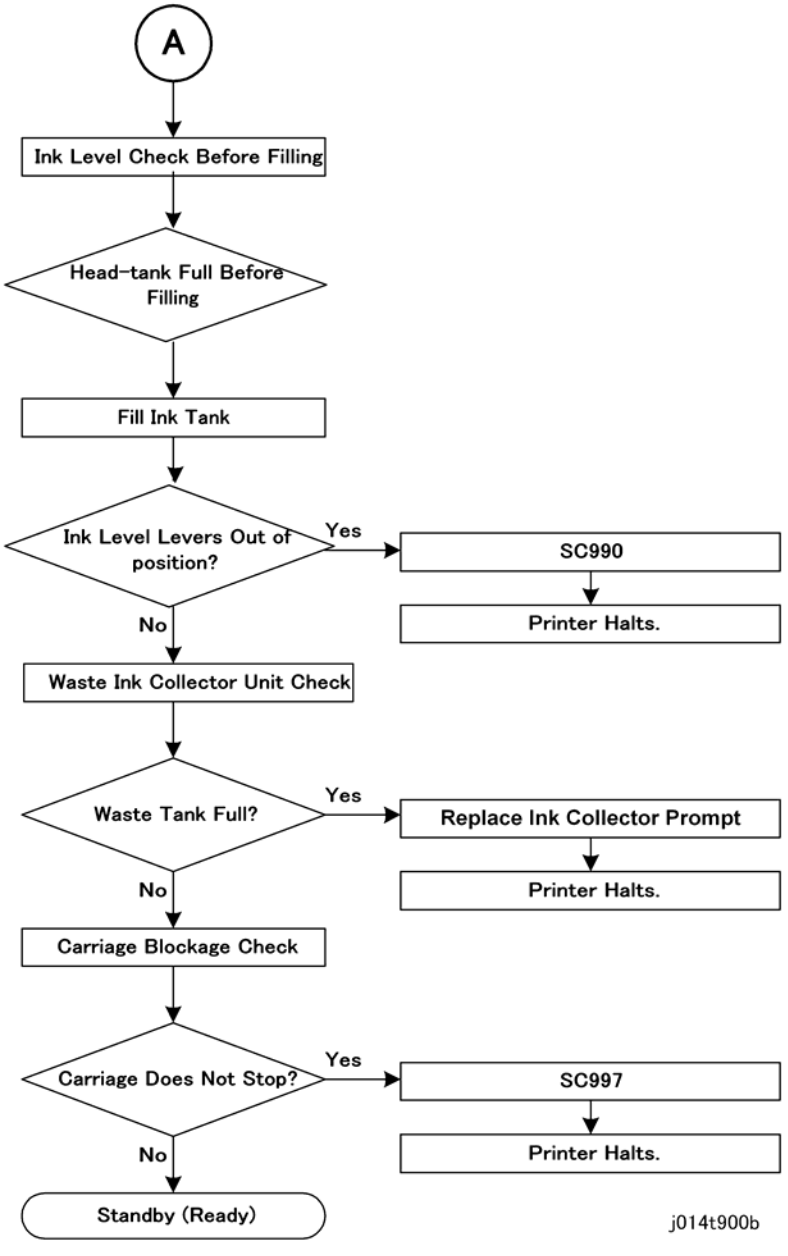
Sensor 3: Ink Cartridge Sensors

The status of these sensors are also displayed by SP5411

No.	Meaning	No.	Meaning
0	K Ink Cartridge Set	8	M Ink Cartridge Refill
1	K Ink Cartridge New	9	Y Ink Cartridge Set
2	K Ink Cartridge Refill	10	Y Ink Cartridge New
3	C Ink Cartridge Set	11	Y Ink Cartridge Refill
4	C Ink Cartridge New	12	Not Used
5	C Ink Cartridge Refill	13	
6	M Ink Cartridge Set	14	
7	M Ink Cartridge New	15	

Self-Diagnostic Test Flow


Power ON
NVRAM Check
EEPROM Write Error?
Yes
SC973
No
Operation Temp. Range Check
No
Temp. Within Range?
Yes
Printer Stops. Self-Recovery.
No
Vertical Motor Drive
No
Motor Not On?
Yes
SC994
No
Charge Leak Detected?
Yes
SC993
No
Maint. Motor HP Check
No
HP Not Detected?
Yes
SC999
Printer Halts.
No
Horiz. Encoder Signal Input Check
No
No Encoder Input Signal?
Yes
SC996
Printer Halts
No
Move Carriage Standard Position (Temporary – at Right)
Carriage failed to stop?
Yes
SC997
Printer Halts
No
A
j014t900a


A
Ink Level Check Before Filling
Head-tank Full Before Filling
Fill Ink Tank
Ink Level Levers Out of position?
Yes
SC990
Printer Halts.
No
Waste Ink Collector Unit Check
Waste Tank Full?
Yes
Replace Ink Collector Prompt
Printer Halts.
No
Carriage Blockage Check
Carriage Does Not Stop?
Yes
SC997
Printer Halts.
No
Standby (Ready)
j014t900b

SC Error Codes

Summary of Error Levels

Level	Definition	Typical Errors
A	The printer is damaged or disabled, and the printer cannot operate. Even after removing the cause of the problem, turning the printer off and on does not solve the problem.	SC Error Code. This is a Service Call Error.
B	An abnormal condition exists in the printer, and the printer cannot operate until the problem is corrected. Once the operator removes the cause of the problem, turning the printer off and on should restore the printer to normal operation.	Cover open. Paper jams. Ink cartridge out. Ink cartridge missing. Ink cartridge installed incorrectly. Paper size error.
C	The printer can continue to print, but if the problem is not corrected soon the printer will no longer be able to operate. The operator must correct the problem as soon as possible.	Ink near end. Ink collector unit near full.

Out-of-Range Temperature Errors

	Printer Status at Error	Status After Error
Power ON	Power to the printer turns on, and printer enters and remains in standby mode.	As soon as the temperature of the print heads reaches the operational temperature range, the printer enters the "Ready" mode.
During Printing	Printer halts printing and enters the standby mode.	The printer remains in the "Standby" mode. The operator must switch the printer off and on again to restore normal operation.

Important

Make sure that the room temperature is within the allowed range 10°C to 32°C (50°F to 89.6°F) with RH 15% to 80%. For more details, see Section "1. Installation".

Let one hour pass for the printer to adjust to room temperature before you use it after moving to a new location. This is very important after the printer is moved from a cold location into a warm room.

SC Code Tables

Print the System Summary (Config. Page) to see the 5 most recent SC codes.

1. [Menu]> "Counter"
2. [▼] or [▲]> "List/Test Print"> [#Enter]> "Config. Page"> [#Enter]

950		USB Chip ID Detection Error	
		At power on there was a power surge caused by unstable power supply.	• CTL board defective
951		USB Undefined Assignment Error	
		An undefined interrupt signal was detected at the ID chip.	• CTL board defective
970	**A**	Flash ROM Erase Error	
		The device erasing the Flash ROM generated an error.	• Flash ROM device defective.
971	**A**	Flash ROM Write Error	
		The device writing to the Flash ROM generated an error.	• Flash ROM device defective.
972	**A**	Flash ROM Verify Error	
		The verify operation after write failed (the data written to the Flash ROM did not match the content of the data in the Flash ROM).	• Flash ROM device defective.
973	**A**	EEPROM Write Error	
		An EEPROM write error was detected at power on, or during a print job.	• The EEPROM device is defective.
978	**A**	Ink Sump Full	
		The ink sump on the left side of the printer is full.	• Replace the ink sump.

		Note: A software counter monitors the usage of the ink sump. There are no sensors associated with the ink sump.	
979	A	Ink Supply Timeout	
		This error code is issued if full auto cleaning is done before the bubbles inside the print head are consumed (within 72 hours after power on).	• Cycle the machine off/on
984	A	DRV Circuit Temperature Abnormal	
		The temperature of the DRV board (driver board) is out of range.	• The temperature of the DRV board (driver board) circuit is not within the specified range: -13°C to 55°C (11.2°F to 131°F)
985	A	Print head Temperature Sensor Abnormal	
		Print head temperature sensor was detected as abnormal when the printer was turned on.	• Print head temperature sensor was detected as abnormal when the printer was turned on without the product number registered.
986	A	Humidity Sensor Abnormal	
		The printer detected that the humidity sensor was abnormal.	• Sensor connector loose, damaged, or defective. • Sensor defective
987	A	Protection During Transport	
		At power on the printer detected that the ink in a cartridge is non-standard ink.	• Use only ink cartridges that are designed for use with this printer. • Never use re-filled ink cartridges.
988	A	Ink Supply Error (Air Sensor Abnormal)	
		Printer detected air sensor was abnormal when suction was applied 3 times when the printer was powered on for the first time for ink tank filling or print head refreshing, but no air was detected.	• Cycle the printer off and on and try again. • If the problem persists, the print head air sensors may be defective.
990	A	Ink Level Lever Position Error	

		The position of one or more ink level levers could not be detected at initial filling. Correct voltage could not be created for operation of the print head tank, so the print heads cannot operate.	• Ink level sensor defective • Horizontal encoder film dirty, installed incorrectly, broken • Maintenance unit dirty, defective • Ink nozzles clogged
992	A	Ink Collector Unit Full Error	
		At power on, the printer detected that the left ink collector unit was full.	• Replace the ink collector unit with a new tank. • Never attempt to clean the old tank and reinstall it. • Obey the local laws and guidelines regarding disposal of items such as the ink collector unit.
993	A	High Voltage Leak	
		At power on or during a print job, a leak detection signal was detected. The signal was triggered by the accumulation of condensation or ink spillage onto the transport belt.	• This signal is triggered by the HVPS due to an accumulation of condensation or ink spillage onto the transport belt. • Clean the transport belt.
994	A	Vertical Motor Error	
		The vertical encoder input signal was judged to be abnormal when the vertical motor was operating.	• Vertical encoder connector loose, broken, or defective. • SENC defective.
996	A	No Input Signal from the Horizontal Encoder	
		No input signal from the horizontal encoder was detected during operation of the horizontal motor.	• Horizontal encoder sensor loose, broken, or defective. • Horizontal encoder film broken, disconnected, or installed upside down. • HRB defective
997	A	Input Signal from the Horizontal Encoder Abnormal	
		When the carriage moved to the right, the carriage did not stop at	• Horizontal encoder sensor loose, broken, or defective.

		the HP. Or, the carriage scan check failed.	• Horizontal encoder film broken, disconnected, or installed upside down. • HRB defective
999	A	Maintenance Stepping Motor Out of Home Position	
		The maintenance motor HP sensor failed to detect the motor at the home position.	• Maintenance HP sensor connector loose, broken, or defective • Maintenance motor connector loose, broken, or defective • Movable Feeder connector loose, broken.

Jam Codes

Here is a list of jam codes and what they mean.

Paper Feed Jams

Jam 1	Paper Misfeed in Paper Cassette(Failure to Feed: Tray 1)
Message:	Paper Misfeed: Tray 1
Jam	Paper late jam. The trailing edge sensor failed to detect the trailing edge of a sheet.
Cause:	• Obstruction at TE sensor, or obstruction at TE sensor • Bottom plate, bottom plate spring obstructed or damaged. • Paper path blocked by obstruction • Trailing edge sensor feeler obstructed or damaged
Problem Site	• Paper cassette (standard) • Trailing edge sensor • Paper feed clutch • CTL board
Action	Perform check, take action in this order: 1. Check Tray 1 (standard paper cassette) for damaged parts and replace them. 2. Check area around trailing edge sensor for obstruction and remove it. 3. Replace paper cassette friction pad. 4. Check paper feed clutch and replace if damaged.

Jam 2	Paper Misfeed in PFU (Failure to Feed: Tray 2) **J016 Only**
Message:	Paper Misfeed: Tray 2
Jam	Paper did not arrive at the relay sensor, so no signal from relay sensor
Cause:	• Feeler of relays sensor failed to return to its correct position
Problem Site	• Optional PFU (Tray 2) • CTL board
Action	Perform check, take action in this order: 1. Inspect PFU for faulty parts and replace.

Jam 3	Paper Jam in Duplex Unit **J016 Only**
Message:	Paper Misfeed: Duplex Unit
Jam	Jam occurred when inverting sheet or printing 2nd side of duplex sheet. Paper late jam. Trailing edge sensor failed to detect and signal the trailing edge of the sheet.
Cause:	• Duplex unit not operating correctly.
Problem Site	• Duplex unit
Action	Perform check, take action in this order: 1. Remove and reinstall duplex unit to confirm proper installation. 2. Open duplex unit cover and remove jammed paper, other obstruction. 3. Inspect duplex unit and replace damaged parts.

Jam 4	Paper Feed Jam in Duplex Unit **J016 Only**
Message:	Paper Misfeed: Guide Plate
Jam	Jam occurred when inverting sheet or printing 2nd side of duplex sheet. Paper lag jam. Trailing edge sensor detected the leading edge of the paper but failed to detect and signal the trailing edge because the paper stopped.
Cause:	• Paper jam or other obstruction at the trailing edge sensor • Jammed paper or other obstruction in the paper path • Trailing edge sensor feeler obstructed or damaged
Problem Site	• Trailing edge sensor

Action	Perform check, take action in this order: 1. Replace inverter guide plate. 2. Replace trailing edge sensor. 3. Replace CTL board.

Jam 5	Paper Misfeed in Standard Paper Cassette (Failure to Feed: Tray 1)
Message:	Paper Misfeed: Guide Plate
Jam	Paper lag jam. The trailing edge sensor detected the leading edge of the paper but failed to detect the trailing edge because the paper stopped.
Cause:	• Double-feed • Incorrect paper detection due to dirt or obstruction on the transfer belt • No signal from trailing edge sensor • Trailing edge sensor feeler positioned incorrectly
Problem Site	• Transfer belt unit • Trailing edge sensor
Action	Perform check, take action in this order: 1. Replace the inverter guide plate. 2. Replace trailing edge sensor. 3. Replace CTL board.

Jam 6	Multi Feed Bypass Unit Jam **J016 Only**
Message:	Paper Misfeed: Bypass Tray
Jam	The registration sensor did not detect the leading edge of the paper during paper feed from the bypass tray.
Cause:	• The registration sensor did not signal detection of the leading edge. • Obstruction or dirt on the transfer belt interfered with proper detection.
Problem Site	• Transfer belt unit • 1st Registration sensor • 2nd Registration sensor
Action	Perform check, take action in this order: 1. Clean the transfer belt.

	2. Replace 1st, 2nd Registration sensors. 3. Replace Multi Bypass Tray.

Jam 7	PFU Paper Transport Jam **J016 Only**
Message:	Paper Misfeed: Guide Plate
Jam	A paper lag jam occurred when feeding paper from the PFU. The trailing edge sensor detected the leading edge of the paper but not the trailing edge because the paper stopped at the trailing edge sensor.
Cause:	• Double-feed • Incorrect paper detection due to dirt or obstruction on the transfer belt • No signal from trailing edge sensor • Trailing edge sensor feeler positioned incorrectly
Problem Site	• Transfer belt unit • Trailing edge sensor
Action	Perform check, take action in this order: 1. Clean the transport belt. 2. Replace the trailing edge sensor. 3. Replace the PFU.

Jam 8	Multi Bypass Tray Exit Jam **J016 Only**
Message:	Paper Misfeed: Bypass Tray
Jam	A paper lag jam occurred during paper feed from the Multi Bypass Tray. After the 2nd Registration sensor detected the leading edge of the paper, it failed to detect the trailing edge because the paper stopped.
Cause:	• The 2nd Registration sensor failed to signal detection of the trailing edge of the paper.
Problem Site	• 2nd Registration sensor
Action	Perform check, take action in this order: 1. Replace 2nd Registration sensor. 2. Replace CTL board.

Jam 9	Paper Jam from Tray 1 Between TE Sensor and Registration Sensors
Message:	Paper Misfeed: Tray 1
Jam	A paper late jam occurred during paper feed from Tray 1. The registration sensor detected both leading and trailing edges of the paper, but the 1st Registration sensor failed to detect the paper.
Cause:	• Registration sensors failed to signal paper detection.
Problem Site	• 1st Registration sensor • 2nd Registration sensor • CTL board
Action	Perform check, take action in this order: 1. Replace the inverter guide plate. 2. Replace the trailing edge sensor. 3. Replace 1st, 2nd Registration sensors. 4. Replace the CTL board.

Jam 10	Paper Jam from Tray 2 Between TE Sensor and Registration Sensors
Message:	Paper Misfeed: Tray 2
Jam	A paper late jam occurred during paper feed from Tray 2. The registration sensor detected both leading and trailing edges of the paper, but the 1st Registration sensor failed to detect the paper.
Cause:	• Registration sensors failed to signal paper detection.
Problem Site	• 1st Registration sensor • 2nd Registration sensor • CTL board
Action	Perform check, take action in this order: 1. Replace the inverter guide plate. 2. Replace the trailing edge sensor. 3. Replace 1st, 2nd Registration sensors. 4. Replace the CTL board.

Jam 11	Duplex Paper Jam Between TE Sensor and Registration Sensors **J016 Only**

Message:	Paper Misfeed: Inverter Guide Plate
Jam	A paper late jam occurred while printing the 2nd side of a duplex print or inverting paper. The trailing edge sensor detected the leading and trailing edge of the paper but the registration sensors failed to detect the paper because it stopped. (The registration sensor did, however, detect the leading edge of the inverted paper from the duplex unit.)
Cause:	• The registration sensors failed to signal detection of the paper.
Problem Site	• Trailing edge sensor • 1st Registration sensor • 2nd Registration sensor • CTL board
Action	Perform check, take action in this order: 1. Replace the inverter guide plate. 2. Replace the trailing edge sensor. 3. Replace 1st, 2nd Registration sensors. 4. Replace the CTL board.

Jam 12	Initial Jam
Message:	Paper Misfeed: Inverter Guide Plate
Jam	The trailing edge sensor switches ON when the printer is switched on or while printer is initializing.
Cause:	• The trailing edge sensor does not change (go OFF). • Paper feed clutch remains ON.
Problem Site	• Trailing edge sensor • Paper feed clutch
Action	Perform check, take action in this order: 1. Clean the transfer belt. 2. Replace inverter guide plate. 3. Replace trailing edge sensor. 4. Replace 1st Registration sensor. 5. Replace 2nd Registration sensor.

	6. Replace CTL board.

Jam 13	Carriage Jam
Message:	Paper Misfeed: Upper Cover
Jam	The carriage was prevented from reaching its target position within the prescribed time.
Cause:	• A piece of paper or other object is obstructing the movement of the carriage. • A piece of paper or other object is obstructing the paper path. • The horizontal film encoder is dirty, slack, buckled, or damaged. • Horizontal feed motor belt is loose or broken.
Problem Site	• Horizontal encoder film strip • Horizontal feed motor belt • CTL board
Action	Perform check, take action in this order: 1. Clean the horizontal encoder film strip. 2. Inspect the path of the carriage and remove any jammed paper, paper scraps, or other objects. 3. Replace the horizontal encoder film strip. 4. Replace the CTL board.

Jam 15	Abnormal Paper Transport Sequence
Message:	Paper Misfeed: Inverter Guide Plate
Jam	The registration sensors detected the paper before the PFU relay sensor signaled detection of the leading edge.
Cause:	• The registration sensor signals did not change.
Problem Site	• 1st Registration sensor • 2nd Registration sensor
Action	Perform check, take action in this order: 1. Clean the transfer belt. 2. Replace the 1st Registration sensor. 3. Replace the 2nd Registration sensor.

Image Correction

You can see the image adjustment features on the “Maintenance” menu of the machine operation panel.

Note

- The test prints and adjustments described in this section can also be done with the printer driver. For more details about doing these test prints and adjustments with the printer driver, please refer to the User Guide.

Preparing for Test Printing

1. Make sure A4 size or LTR size paper is loaded in the machine.
2. Make sure the machine is ready to print.

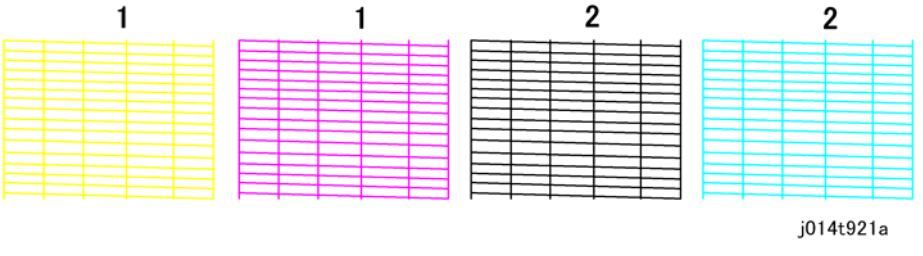
Nozzle Check

Main Nozzle Check Pattern

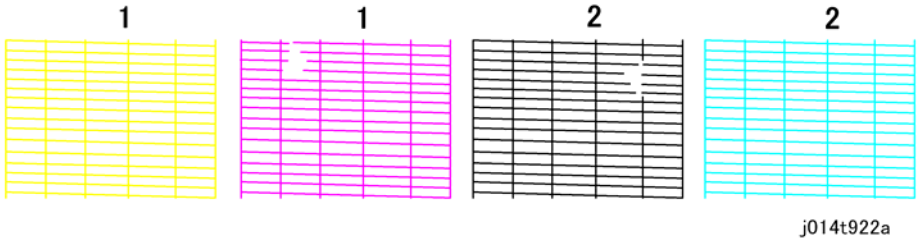
Do this procedure to print the Nozzle Check test pattern. Look at the pattern to determine if the printer is operating properly or not.

1. Push [Menu], select "Maintenance", and push [#Enter].
2. Select "Nozzle Check" and press [#Enter]. The Nozzle Check pattern prints.
3. Examine the Nozzle Check pattern for broken lines or white patches. The first sample below is normal, the second sample shows white patches.

Normal Pattern



Abnormal Pattern



Print Head Cleaning

Important

- **Print head cleaning consumes ink. Do this procedure only if you see a problem in the Nozzle Check test pattern.**

1. Check the ink level indicator in the printer driver or the operation panel display to determine if the ink cartridge is empty.
2. Print a Nozzle Check test pattern.
3. Look at the Nozzle Check pattern to determine which nozzles are blocked.

   Note

   - If one or more color is missing, is extremely faint, or shows broken lines, this tells you where there is a blockage.
4. Confirm that the envelope selector is forward.
5. [Menu]> "Counter"
6. [▼] or [▲]> "Maintenance" > [#Enter]> "Nozzle Check"
7. [▼] or [▲] > "Head-cleaning>" > [#Enter]> "All Heads"
8. [▼] or [▲]> Select the print heads to be cleaned: "All" (all print heads), "Head 1" (Black/Cyan), "Head 2" (Magenta/Yellow") > [#Enter]

   "*Please Wait*" displays until cleaning is finished.

   Important

   - **Do not try to start another procedure and never switch the machine off while head-cleaning is in progress,.**
9. [Escape] > To the previous level.
10. Print another Nozzle Check test pattern and check the result.
11. If the Nozzle Check test pattern is normal, the procedure is finished.

    -or-

If there is still a problem in the Nozzle Check pattern, repeat this procedure and print another Nozzle Check pattern. Do the procedure again if the results are still not satisfactory.

If three consecutive Nozzle Check pattern prints and head-cleanings do not solve the problem, then flush the print heads. (See procedure below.)

Important

- **Head flushing consumes ink. Do not flush the print heads unless three head cleanings have failed to correct the problem.**

Print Head Flushing

Flushing the print heads consumes much more ink than print head cleaning. Do not flush the print heads until you have done the print head cleaning procedure (see above) at least three times.

1. Confirm that the envelope selector is forward.
2. [Menu]> "Counter"
3. [▼] or [▲]> "Maintenance" > [#Enter]> "Nozzle Check"
4. [▼] or [▲] > "Head-flushing>" > [#Enter]> "All Heads"
5. [▼] or [▲]> Select the print heads to be flushed: "All" (all print heads), "Head 1" (Black/Cyan), "Head 2" (Magenta/Yellow") > [#Enter]

   "*Please Wait*" displays until flushing is finished. Do not start any other operation until cleaning stops.

   Important

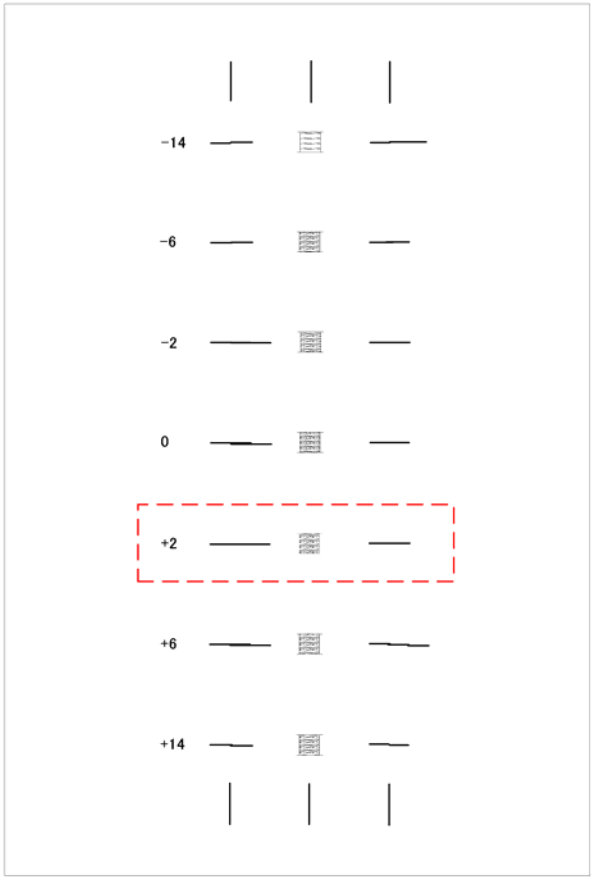
   - **Do not try to start another procedure and never switch the machine off while head-flushing is in progress,.**
6. [Escape] > to return to the previous level.
7. Print another Nozzle Check test pattern and check the result.
8. If the Nozzle Check test pattern is normal, the procedure is finished.
   - If there is still a problem in the Nozzle Check pattern, allow the machine to remain idle for 10 minutes and repeat the procedure.
   - If the problem persists, allow the machine to remain idle for 8 hours, and then flush the print heads again.
   - If the problem still persists, execute drive cleaning with SP5301. Only the service technician can do this procedure.

Adjust Paper Feed

Print the 'Adjust Paper Feed Test Pattern' and do this adjustment if you see broken horizontal lines, patchy images, or white lines printed at regular intervals.

1. [Menu]> "Maintenance"> [#Enter].
2. [▼] or [▲]> "Adj. Paper Feed"> [#Enter]> "Pr. Test Print".
3. [#Enter]. The test pattern prints.

   "*Please Wait*" displays until pattern printing is finished. Do not start any other operation until printing stops.
4. Check the printed numbers and patterns.



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- The adjustment value appears to the left of the lightest gray square with straight horizontal lines on both sides.
- If this number is "+2", for example, then the adjustment value is "+2".
- If horizontal lines beside the gray square are broken, look at where the lines are broken in the opposite direction.
- For example, if the "+2" square is the lightest gray square and the "+6" lines are broken, then the best adjustment value is between "+3" and "+5".

5. [▼]> "Adjustment"> [#Enter].

6. Press [▲] or [▼] until the number of the pattern that you selected in Step 4 appears.
7. [#Enter]. This completes the adjustment.
8. Push [Menu] to leave the menu mode.

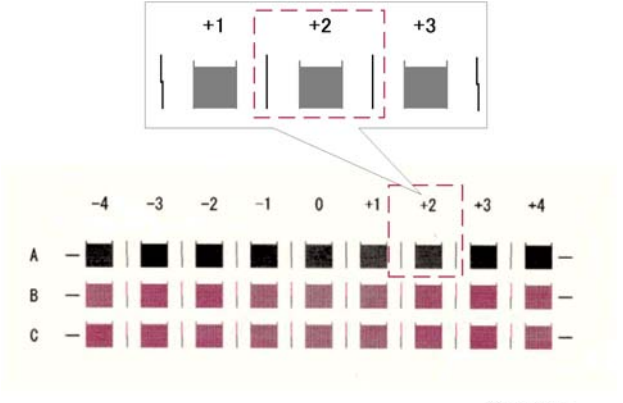
Head Position

The print head is out of position if you see these:

- Broken vertical lines
- Blurred, smeared or streaked colors

Do the following procedure to correct these problems.

1. [Menu]> "Counter"
2. [▼] or [▲]> "Maintenance"> [#Enter]> "Nozzle Check".
3. [▼] or [▲]> "Head Position"> [#Enter]> "Select "Pr. Test Pattern"
4. [#Enter]> [▼] or [▲]> "Standard", "Quality", or "High Speed"> [#Enter]. The test pattern prints.
   "*Please Wait*" displays until pattern printing is finished. Do not start any other operation until printing stops.



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5. Look at the patterns and determine which is the best.
   - The best pattern is the gray square with straight vertical lines on both sides.
   - The pattern setting is read as a matrix value from the pattern. For example, if the best pattern is in column "+2", line "A", the entry for adjustment will be "A" then "+2"
6. [▼]> "Adjustment"> [#Enter].
7. [▼] or [▲]> Select same setting selected for "Pr. Test Pattern" in Step 4 ("Standard", "Quality", "High Speed")> [#Enter].
8. [▼] or [▲]> Select the letter of the line of the best pattern noted in Step 5> [#Enter].

9. [▼] or [▲]> Select the number of the line of the best pattern noted in Step 5> [#Enter]. This completes the adjustment.
10. Push [Escape] to leave the Menu mode.

Registration

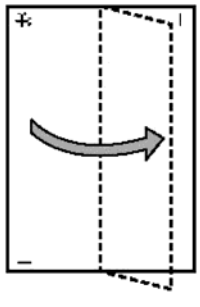
Do this procedure to adjust the print start position. The print start position is the point at the upper left corner of each sheet where printing begins. This procedure can be done for all the paper feed sources: Tray 1 (Standard), Tray 2 (Option), Multi-Bypass Tray (Option).

1. [Menu]> "Counter">
2. [▼] or [▲]> "Maintenance"> [#Enter].
3. [▼] or [▲]> "Registration"> [#Enter]> "Pr. Test Sheet"
4. [#Enter]> [▼] or [▲]> "Tray1", "Tray", or "Bypass".

   Note

   - "Tray 2" and "Bypass" do not appear unless these options have been installed on the J016. (These options are not available for the J015).
5. [#Enter]> [▼] or [▲]> "Plain Paper" or "Glossy Paper".
6. [#Enter]. The test pattern for Registration prints.

   "*Please Wait*" displays until pattern printing is finished. Do not start any other operation until printing stops.



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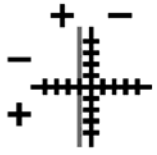
7. Fold the printed sheet in half lengthwise as shown.
8. Hold the corner of the folded paper in front of a light and look at the cross-pattern overlapping the single vertical line below.
9. Determine the 1st adjustment for the Read Direction.



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- The adjustment value in the Read Direction is the difference between the single vertical line and cross vertical line.
- If the difference is one calibration mark on the "+" side, for example, the adjustment is +1.0.

10. Fold the sheet in half widthwise.
11. Determine the 2nd adjustment for the Feed Direction. The value read after folding the sheet widthwise, is the adjustment value for the Feed Direction.
12. [▼] or [▲]> "Adjustment"> [#Enter].
13. [▼] or [▲]> Select the paper tray> [#Enter].
14. [▼] or [▲]> Select the paper type> [#Enter].
15. Enter the adjustment for the Read Direction determined in Step 9 and push [#Enter].
16. Enter the adjustment for the Feed Direction determined in Step 11 and push [#Enter]. This completes the adjustment.
17. Push [Menu] to leave the Menu mode.

Note

- The "Plain", and "Glossy" are provided because the sensor timing for each medium is different.

Drive Cleaning

Follow the procedure below to do drive cleaning. Here are some important points you should know about drive cleaning.

- Drive cleaning should be done only after head cleaning and head flushing fail to clean the print heads successfully.
- Drive cleaning is done by changing a bit switch setting in the SP mode and should always be done by the service technician.
- Drive cleaning forces the piezo element to switch off and on repeatedly to force ink out of the nozzle ports. (The piezo element does not operate during head cleaning or head flushing done with the operator panel or the printer driver.)
- Drive cleaning consumes more ink than either head cleaning or head flushing and requires more time to complete.
- Only one print head at a time can be cleaned with this procedure.

Note

- Before you do this procedure, make sure the ink cartridge of the color that is causing problems is not almost empty. Drive cleaning cannot be performed if a ink cartridge is almost empty.

1. Push and hold [▼] or [▲] for 3 sec. and release> [#Enter].

SYSTEM Ver.0.51 Service Mode

2. [▼]> "Engine Maint."

SP No. 1000

3. [▲] 4 times> "5000"> [Yes]
4. [▲] 3 times> "5300"> [Yes]> [Yes]
5. [▲] 1 time> "5301"> [Yes]

ENGINE SW1 5301

6. [Yes]

ENG SW1 00001001 Bit0 _

7. Set Bit1 to "1"
   - [▲] to move the cursor to Bit1 (2nd position from right)> [Yes]
   - [▲] to toggle the setting to "1"> [Yes].

ENG SW1 00001011 Bit0 _

8. [No] 3 times> [▼] or [▲]> "End"> [Yes]> Machine switches off.
9. [Power] to switch the machine on.
10. Confirm that the envelope selector is forward.
11. [Menu]> "Counter"
12. [▼] or [▲]> "Maintenance" > "Nozzle Check?"
13. [▼] or [▲] > "Head-flushing>" > [#Enter]> "All Heads"
14. [▼] or [▲]> Select the print heads to be flushed: "All" (all print heads), "Head 1" (Black/Cyan), "Head 2" (Magenta/Yellow") > [#Enter]

"*Please Wait*" displays until flushing is finished. Do not start any other operation until cleaning stops.

15. [Menu]> Standby

- The print head is flushed while the piezo element is rapidly switched on and off.
- Once this operation is completed, Bit 1 resets to "0" automatically.
- If you need to do this procedure again for another print head, you must repeat this procedure and set Bit 1 to "1" again in the SP mode.

Note

- Drive cleaning cannot be performed if the ink tank of the selected print head is almost empty.

5. Service Tables

Before You Begin

There are two service modes for this machine:

- **Service Mode.** This mode is menu driven and includes important items for some adjustments as well as other important functions such as displaying the firmware version number, clearing the memory, printing reports, and so on.
- **Engine Maintenance (SP) Mode**. Consists of SP codes SP1000 to SP7532. These are printer engine SP adjustments, primarily but not exclusively used by designers for machine adjustments.

Service Mode

Entering/Exiting Service Mode

To enter Service Mode:

1. Press and hold [▼] [▲] for 3 sec., release > [#Enter] > "Service Menu".
2. [#Enter]> "Bit Switch"
    - Bit Switch
    - Reset Settings
    - Service Summary
    - Version Display
    - Serial No. Edit
    - Counter Setting
    - Fax No. (Not Used)
    - E. Saver Display

To Exit the Service Mode

1. Press [Escape]> "Service Menu".
2. [▼] or [▲]> "End"> [#Enter]> Standby

Engine Maintenance (SP) Mode

Entering/Exiting SP Mode

To enter SP Mode

1. Press and hold [▼] [▲] for 3 sec., release> [#Enter].

   SYSTEM Ver. 0.51
   Service Menu

2. [▼] or [▲]> "Engine Maint."> [#Enter].

   Engine Maint. allows changing the settings of individual SP codes (SP1000 to SP7532. For more about individual SP code settings, refer to the tables in this section. There are no settings available for the following groups: SP4000, SP6000, SP8000, SP9000.

To exit SP mode

1. At any level in the SP mode press [No] to return to the first level.

   SYSTEM Ver. 0.51
   Service Menu

2. [▼] or [▲]> "End"> [#Enter].

   The machine leaves the SP mode and switches off.

3. Press [Power] to switch the machine on.

Using SP Mode Menus

Entering an Engine SP Code Directly

Do this procedure to enter an SP code directly if you know the number.

1. In the service tables of this section look up the number and name of the SP code to set.

   Example: Set SP1164 HUMI:B for -2.5%

   Calibrate Humidity Setting for Duplex

   Range: [-128 to +127/0/1/0.1%]

2. [▲] and [▼] for 3 sec.> {#Enter]> "Service Menu".

   SYSTEM Ver. 0.08
   Service Menu

3. [▼] or [▲]> "Engine Maint."> [#Enter]

SP No.
1000

4. "1" is entered at the first digit, press [#Enter] to move the cursor to the 2nd digit.
5. [▲] once> "1100"> [#Enter] to enter "1" at the 2nd digit and move the cursor to the 3rd digit.
6. [▲] x6 times> "1160"> [#Enter] to enter "6" at the 3rd digit and move the cursor to the 4th digit.
7. [▲] x4 times> "1164"> [#Enter].

CHG:HUMI:B
1164

8. [#Enter]

CHG:HUMI:B
_000

Note

- The first digit is blank. This is the digit for the sign (plus or minus).
- When this digit is empty, the value is set for plus (+) but the plus sign is not displayed.

9. [▼] or [▲]> "-000"> [#Enter]> Cursor moves to 1st zero

CHG:HUMI:B
-000

10. [▲]> "-000"> To enter the first "0", cursor moves to 2nd "0".
11. [#Enter] x2 times> "-020"> [#Enter] To enter "2" at the 2nd zero, cursor moves to 3rd "0".
12. [▲] x5 times> "-025"> [#Enter]

CHG:HUMI:B
-025

13. [#Enter] To save the setting.

SP No.
1164

14. [Escape]> "Engine Maint."
15. [▼] or [▲]> "End"> [#Enter]> Machine switches off.
16. [Power] to switch the machine on.

Service Mode

Entering Service Mode

1. Press and hold [▼] [▲] for 3 sec., release > [#Enter] > "Service Menu".
2. [#Enter]> "Bit Switch"

   These items are available on the Service Menu.

   - Bit Switch
   - Reset Settings
   - Service Summary
   - Version Display
   - Serial No. Edit
   - Counter Setting
   - Fax No. (Not Used)
   - E. Saver Display

These items are available on the Service Menu.

Bit Switch	Bit switches 1 to 8. (Described in detail below.)
Reset Settings	• **Initialize System**. Clears all SP code settings are restores their default settings. • **Clear Counters**. Clears all counters.
Service Summary	Prints the Service Summary. The service summary lists information about the current status of the machine. For more details, see Section 4.
Version Display	Displays the version number of the printer engine.
Counter Settings	• **Counter Display**. Switches the counter display on and off. • **LevColor Disp**. Switches the level counter display on and off. • **Coverage Count**. Switches the coverage counter on and off. • **Double Count**. Switches double counting on and off. **Note**: The default setting for all theses items is "Off".

Bit Switch Settings

Bit SW 1: Not used. Do not change these settings.

Bit SW 2. Not used. Do not change these settings.

Bit SW 3 Emulation

Bit	Function	Setting		Default	Details
		0	1		
0	Not Used				
1	Not Used				
2	PCL5e/5c	OFF	ON	0	Makes the printer compatible with old HP PCL printer drivers (HP4000, HP8000, etc.)
3	Not Used				
4	Not Used				
5	Not Used				
6	Not Used				
7	Not Used				

Bit SW 4. Not used. Do not change these settings.

Bit SW 5. Functions Common to All Models

Bit	Function	Setting		Default	Details
		0	1		
0	Not Used				
1	Counter menu display for charge on printer use, printing enabled after coverage counted up.	OFF	ON	0	This is a GW specification. 0: Does not print. 1: Prints
2	Error skip.	All	PPC only	0	Switches error skip on/off 0: Errors skipped regardless of paper size, paper type. 1: Error skipped only for PPC.
3	Not Used				

Bit	Function	Setting		Default	Details
		0	1		
4	Not Used				
5	Counter Display	OFF	ON	0	Switches the counter display on/off. 0: Counter not displayed. 1: Counter is displayed
6	Color Level Display	OFF	ON	0	Switches the color lever display on/off. 0: Color level not displayed 1: Color level displays
7	Repair Information	OFF	ON	0	Displays whether the machine has been repaired. 0: Machine not repaired 1: Machine repaired This bit should be set to "1" after repair so the CE can determine whether machine has been previously repaired.

Bit SW 6. Enable Functions for Individual Printer Models

Bit	Function	Setting		Details
		0	1	
0	Flushing Mist Prevention	OFF	ON	This switch determines whether the machine waits for a while before printing in low temperature (15°C or less). OFF: No waiting ON: Waiting until the flushing mist in low temperature goes off.
1	Paper Error Detection	OFF	ON	This switch sets whether the paper error detection executes. OFF: No detection ON: Paper error detection

Bit	Function	Setting		Details
		0	1	
2	Double-Count	OFF	ON	This switch sets whether the double-count counter is printed out in the system summary. OFF: No printing ON: Printing
3	Not Used			
4	Not Used			
5	Not Used			
6	USB Serial Signal	0	1	Determines how the USB signal is fixed. 0: Serial signal is set with the value in NVRAM. 1: USB serial signal fixed at "0" (value in NVRAM is not changed).
7	Hidden Functions	0	1	Determines whether hidden functions (hidden paper sizes A5 SEF, B6 SEF) are displayed. 0: No A5 SEF, B6 SEF display 1: A5 SEF, B6 SEF displayed

Bit SW 7. Enable Functions for Individual Printer Models

Bit SW 8: GW Bit Switch

Bit	Function	Setting		Details
		0	1	
0	Not Used			
1	Design Waveform Switching	OFF	ON	**DFU** Designates waveform switch 0: For product 1: For design
2	Speed Mode Priority	OFF	ON	
3	Operation Control Mode After Printer Idle	OFF	ON	

Bit	Function	Setting		Details
		0	1	
4	Maintenance Mode	OFF	ON	
5	Recycled Paper Menu Display	OFF	ON	This switch sets whether the recycled paper charge menu of the operational panel. 0: Not displayed 1: Displayed
6	Charge Setting for Recycled Paper	OFF	ON	This switch sets whether the charge bias is selected for normal paper or recycled paper. 0: Normal paper charge 1: Recycled paper charge
7	Not Used			

SP Mode Service Tables

SP Table Key

Notation	What It Means	
[range/**default**/step/units]	Example: [-127 to +128/**4.5**/1/0.1 mm].	
	-127 to +128	Range
	4.5	Default
	1	Screen increments
	0.1 mm	Unit change for every screen increment.

Here is a summary of common terms and abbreviations used in the SP code descriptions.

Term	What It Means
DFU	Denotes “Design or Factory Use”. Do not change this value.
DOM	"Domestic" market only (Japan)
EXP	"Export" markets (North America, Europe, Asia)
NA	North America
EUA	Europe/Asia
Sub Scan	This is printing vertically down the length of an SEF (portrait) page.
Main Scan	This is printing horizontally across the width of an SEF (portrait) page.
LEF	Long Edge Feed (paper feeds sideways with the long edge feeding first)
SEF	Short Edge Feed (paper feeds lengthways with the short edge feeding first)
FA	"Factory Adjusted". The default setting is set at the factory or service center.
LE	Leading Edge
TE	Trailing Edge
LE/TE	Leading Edge/Trailing Edge

Group 1000

Main Scan, Sub Scan Registration

1000	REG:FD:NORM:F	Adjust Sub Scan Registration (Normal Paper)
	Use this SP code to adjust writing in the sub scan registration for normal paper. Do this setting when registration does not match the direction of paper feed selected in the user image adjustment menu. [-128 to +127/**FA**/1/0.1 mm]	
1001	REG:TR1:NORM:F	Adjust Main Scan Registration (Normal Paper: Tray 1)
	Use this SP code to adjust writing in the main scan direction for normal paper loaded in Tray 1. Do this setting when registration does not match the image start position on the user image adjustment menu. [-128 to +127/**FA**/1/0.1 mm]	
1002	REG:TR2:NORM:F	Adjust Main Scan Registration (Tray 2: Normal Paper: FA)
	Use this SP code to adjust writing in main scan direction for normal paper loaded in Tray 2. Do this setting when registration does not match the image start position on the user image adjustment menu. [-128 to +127/**FA**/1/0.1 mm]	
1003	REG:MAN:NORM:F	Adjust Main Scan Registration (Bypass: Normal Paper: FA)
	Use this SP code to adjust writing in the main scan direction for normal paper loaded in the bypass tray. Do this setting when registration does not match the image start position on the user image adjustment menu. [-128 to +127/**FA**/1/0.1 mm]	
1004	REG:FD:GLOS:F	Adjust Sub Scan Registration (Glossy Paper: FA)
	Use this SP code to adjust writing in the the sub scan registration for glossy paper. Do this setting when registration does not match the direction of paper feed selected in the user image adjustment menu. [-128 to +127/**FA**/1/0.1 mm]	
1005	REG:TR1:GLOS:F	Adjust Main Scan Registration (Glossy Paper: FA)
	Use this SP code to adjust writing in the main scan direction for glossy paper loaded in Tray 1. Do this setting when registration does not match the image start position on the user image adjustment menu. [-128 to +127/**FA**/1/0.1 mm]	

1006	REG:TR2:GLOS:F	Adjust Main Scan Registration (Tray 2: Glossy Paper: FA)
	Use this SP code to adjust writing in the main scan direction for glossy paper loaded in Tray 2. Do this setting when registration does not match the image start position on the user image adjustment menu. [-128 to +127/**FA**/1/0.1 mm]	
1007	REG:MAN:GLOS:F	Adjust Main Scan Registration (Bypass: Glossy Paper: FA)
	Use this SP code to adjust writing in the main scan direction for glossy paper loaded in the bypass tray. Do this setting when registration does not match the image start position on the user image adjustment menu. [-128 to +127/**FA**/1/0.1 mm]	
1008	REG:FD:OHP:F	Adjust Sub Scan Registration (OHP: FA)
	Use this SP code to adjust writing in the sub scan direction for transparencies (OHP). Do this setting when registration does not match the direction of paper feed selected in the user image adjustment menu. [-128 to +127/**FA**/1/0.1 mm]	
1009	REG:TR1:OHP:F	Adjust Main Scan Registration (Tray 1: OHP: FA)
	Use this SP code to adjust writing in the main scan direction for transparencies (OHP) loaded in Tray 1. Do this setting when registration does not match the image start position on the user image adjustment menu. [-128 to +127/**FA**/1/0.1 mm]	
1010	REG:MAN:OHP:F	Adjust Main Scan Registration (Bypass: OHP: FA)
	Use this SP code to adjust writing in the main scan direction for transparencies (OHP) loaded in the bypass tray. Do this setting when registration does not match the image start position on the user image adjustment menu. [-128 to +127/**FA**/1/0.1 mm]	
1011	REG:FD2:NORM:F	Adjust Sub Scan Registration (Normal Paper: 2nd Registration: FA)
	Use this SP code to adjust writing in the sub scan registration for normal paper. Do this setting when it is necessary to fine adjust the line feed position. [-128 to +127/**FA**/1/0.1 mm]	
1012	REG:FD2:GLOS:F	Adjust Sub Scan Registration (Glossy Paper: 2nd Registration: FA)

	For Future Use. Use this SP code to adjust writing in the sub scan registration for glossy paper. Do this setting when it is necessary to fine adjust the line feed position. [-128 to +127/**FA**/1/0.1 mm]	
1013	REG:FD2:OHP:F	Adjust Sub Scan Registration (OHP: 2nd Registration: FA)
	For Future Use. Use this SP code to adjust writing in the sub scan direction for transparencies (OHP). Do this setting when it is necessary to fine adjust the line feed position. [-128 to +127/**FA**/1/0.1 mm]	

Paper Feed

1014	FDLEN:F	Adjust Amount of Paper Feed (FA)
	Do this SP adjust the amount of line feed for 1 scan line. Do this setting only if the line feed amount cannot be adjusted on the user menu of the printer operation panel with "Adj. Paper Feed". [-1000000 to +1000000/**FA**/1 µm]	
1015	FDLEN:OFFSET	Adjust Amount of LF Offset in Sub Scan Direction
	Use this SP to set the amount of line feed before the print head begins its 2nd pass during bi-directional printing. Do this SP when it is necessary to correct color offset that occurs during bi-directional printing. [-128 to +128/FA/1/Vertical Encoded Pulse Count]	

Carriage

1016	ADJ:SIDEBOARD	Adjust Sideboard (Carriage Home Position)
	Use this SP to set the reference position for installation of the right plate. Do this SP to correct the alignment of the capping position with the carriage. [-128 to +128/**FA**/1/0.1 mm]	

Suction Vents

1017	PRGPOS:R	Adjust Position of Right Suction Vent **DFU**
	Use this SP to adjust the venting position of the right air vent. Do this SP after it has been determined that the ink is not venting at the center of the right ink suction vent.	

	[-128 to +128/**FA**/1/0.1 mm]	
1018	PRGPORS:L	Adjust Position of Left Suction Vent **DFU**
	Use this SP to adjust the venting position of the left ink suction vent. (Do this SP after it has been determined that the ink is not venting at the center of the left ink suction vent. [-128 to +128/**FA**/1/0.1 mm]	

Charge Width Setting Mj1: Simplex (DFU)

1100	CHG:W1:EDGE:1	LE/TE: Mj1: ID1
1102	CHG:W1:EDGE:2	LE/TE: Mj1: ID2
1104	CHG:W1:EDGE:3	LE/TE: Mj1: ID3
1106	CHG:W1:EDGE:4	LE/TE: Mj1: ID4
1101	CHG:W1:MIDL:1	MIDLL: Mj1: ID1
1103	CHG:W1:MIDL:2	MIDLL: Mj1: ID2
1105	CHG:W1:MIDL:3	MIDL: Mj1: ID3
1107	CHG:W1:MIDL:4	MIDL: Mj1: ID4

Charge Width Setting Mj2: Simplex (DFU)

1108	CHG:W1:EDGE:5	LE/TE: Mj2: ID1
1110	CHG:W1:EDGE:6	LE/TE: Mj2: ID2
1112	CHG:W1:EDGE:7	LE/TE: Mj2: ID3
1114	CHG:W1:EDGE:8	LE/TE: Mj2: ID4
1109	CHG:W1:MIDL:5	MIDL: Mj2: ID1
1111	CHG:W1:MIDL:6	MIDL: Mj2: ID2
1113	CHG:W1:MIDL:7	MIDL: Mj2: ID3
1115	CHG:W1:MIDL:8	MIDL: Mj2: ID4

Charge Width Setting Mj3: Simplex (DFU)

1116	CHG:W1:EDGE:9	LE/TE: Mj3: ID1
1118	CHG:W1:EDGE:10	LE/TE: Mj3: ID2
1120	CHG:W1:EDGE:11	LE/TE: Mj3: ID3
1122	CHG:W1:EDGE:12	LE/TE: Mj3: ID4

Charge Width Setting Mj3: Simplex (DFU)

1117	CHG:W1:MIDL:9	MIDL: Mj3: ID1
1119	CHG:W1:MIDL:10	MIDL: Mj3: ID2
1121	CHG:W1:MIDL:11	MIDL: Mj3: ID3
1123	CHG:W1:MIDL:12	MIDL: Mj3: ID4

Charge Width Setting Mj4: Simplex (DFU)

1124	CHG:W1:EDGE:13	LE/TE: Mj4: ID1
1126	CHG:W1:EDGE:14	LE/TE: Mj4: ID2
1128	CHG:W1:EDGE:15	LE/TE: Mj4: ID3
1130	CHG:W1:EDGE:16	LE/TE: Mj4: ID4

Charge Width Setting Mj4: Simplex (DFU)

1125	CHG:W1:MIDL:13	MIDL: Mj4: ID1
1127	CHG:W1:MIDL:14	MIDL: Mj4: ID2
1129	CHG:W1:MIDL:15	MIDL: Mj4: ID3
1131	CHG:W1:MIDL:16	MIDL: Mj4: ID4

Charge Width Setting Mj1 : Duplex (DFU)

1132	CHG:W2:EDGE:1	LE/TE: Mj1: ID1
1134	CHG:W2:EDGE:2	LE/TE: Mj1: ID2
1136	CHG:W2:EDGE:3	LE/TE: Mj1: ID3
1138	CHG:W1:EDGE:4	LE/TE: Mj1: ID4
1133	CHG:W2:MIDL:1	MIDL: Mj1: ID1
1135	CHG:W2:MIDL:2	MIDL: Mj1: ID2
1137	CHG:W2:MIDL:3	MIDL: Mj1: ID3
1139	CHG:W2:MIDL:4	MIDL: Mj1: ID4

Charge Width Setting Mj2: Duplex (DFU)

1140	CHG:W2:EDGE:5	LE/TE: Mj2: ID1
1142	CHG:W2:EDGE:6	LE/TE: Mj2: ID2
1144	CHG:W2:EDGE:7	LE/TE: Mj2: ID3
1146	CHG:W2:EDGE:8	LE/TE: Mj2: ID4
1141	CHG:W2:MIDL:5	MIDL: Mj2: ID1
1143	CHG:W2:MIDL:6	MIDL: Mj2: ID2
1145	CHG:W2:MIDL:7	MIDL: Mj2: ID3
1147	CHG:W2:MIDL:8	MIDL: Mj2: ID4

Charge Width Setting Mj3: Duplex (DFU)

1148	CHG:W2:EDGE:9	LE/TE: Mj3: ID1
1150	CHG:W2:EDGE:10	LE/TE: Mj3: ID2
1152	CHG:W2:EDGE:11	LE/TE: Mj3: ID3)
1154	CHG:W2:EDGE:12	LE/TE: Mj3: ID4

1149	CHG:W2:MIDL:9	MIDL: Mj3: ID1
1151	CHG:W2:MIDL:10	MIDL: Mj3: ID2
1153	CHG:W2:MIDL:11	MIDL: Mj3: ID3
1155	CHG:W2:MIDL:12	MIDL: Mj3: ID4

Charge Width Setting Mj4: Duplex (DFU)

1156	CHG:W2:EDGE:13	LE/TE: Mj4: ID1
1158	CHG:W2:EDGE:14	LE/TE: Mj4: ID2
1160	CHG:W2:EDGE:15	LE/TE: Mj4: ID3
1162	CHG:W2EDGE:16	LE/TE: Mj4: ID4
1157	CHG:W2:MIDL:13	MIDL: Mj4: ID1
1159	CHG:W2: MIDL:14	MIDL: Mj4: ID2
1161	CHG:W2: MIDL:15	MIDL: Mj4: ID3
1163	CHG:W2: MIDL:16	MIDL: Mj4: ID4

Calibrate Humidity/Temperature for Duplex (DFU)

1164	CHG:HUMI:B	Calibrate Humidity Setting for Duplex
1165	CHG:TEMP:B	Calibrate Temperature Setting for Duplex

Charge ID Tables: Mj1

1200	CHG:PITCH:A1	Mj1: Less Than 10% Lookup Table
1201	CHG:PITCH:A2	Mj1: 10% → 25% Lookup Table
1202	CHG:PITCH:A3	Mj1: 25% → 35% Lookup Table
1203	CHG:PITCH:A4	Mj1: 35% → 45% Lookup Table
1204	CHG:PITCH:A5	Mj1: 45% → 55% Lookup Table

1205	CHG:PITCH:A6	Mj1: 55% → 65% Lookup Table
1206	CHG:PITCH:A7	Mj1: 65% → 75% Lookup Table
1207	CHG:PITCH:A8	Mj1: More than 75% Lookup Table
	Use this SP to configure the charge ID table for printing on normal paper in High Speed (Draft) mode. Do this SP when mist build-up on the paper in use is clogging the print head nozzles. This setting is linked to the charge pitch settings (SP1100 to 1107, SP1133 to 1139). [0 to 0xffff ffff/**0**/1/---] For more details, please refer to Section 4 "Transport Belt Charge Adjustments".	

Charge ID Tables: Mj2

1208	CHG:PITCH:B1	Mj2: Less Than 10% Lookup Table
1209	CHG:PITCH:B2	Mj2: 10% → 25% Lookup Table
1210	CHG:PITCH:B3	Mj2: 25% → 35% Lookup Table
1211	CHG:PITCH:B4	Mj2: 35% → 45% Lookup Table
1212	CHG:PITCH:B5	Mj2: 45% → 55% Lookup Table
1213	CHG:PITCH:B6	Mj2: 55% → 65% Lookup Table
1214	CHG:PITCH:B7	Mj2: 65% → 75% Lookup Table
1215	CHG:PITCH:B8	Mj2: More than 75% Lookup Table
	Use this SP to configure the charge ID table for printing on any paper in any mode except: normal paper in High Speed (Draft) mode and glossy paper in High Quality mode. Do this SP when mist build-up on the paper in use is clogging the print head nozzles during printing with any paper in any mode, except: normal paper in High Speed (Draft) mode and glossy paper in High Quality mode. This setting is linked to the charge pitch settings (SP1108 to 1115, SP1140 to 1147). [0 to 0xffff ffff/**0**/1/---] For more details, please refer to Section 4 "Transport Belt Charge Adjustments".	

Charge ID Tables: Mj3

1216	CHG:PITCH:C1	Mj3: Less Than 10% Lookup Table

1217	CHG:PITCH:C2	Mj3: 10% → 25% Lookup Table
1218	CHG:PITCH:C3	Mj3: 25% → 35% Lookup Table
1219	CHG:PITCH:C4	Mj3: 35% → 45% Lookup Table
1220	CHG:PITCH:C5	Mj3: 45% → 55% Lookup Table
1221	CHG:PITCH:C6	Mj3: 55% → 65% Lookup Table
1222	CHG:PITCH:C7	Mj3: 65% → 75% Lookup Table
1223	CHG:PITCH:C8	Mj3: More than 75% Lookup Table
	For Future Use. Use this SP to configure the charge ID table for future print modes. Do this SP when mist build-up on the paper in use is clogging the print head nozzles. This setting is linked to the charge pitch settings (SP1116 to SP1123, SP1148 to SP1155). [0 to 0xffff ffff/**0**/1/---]	

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Charge ID Tables: Mj4

1224	CHG:PITCH:D1	Mj4: Less Than 10% Lookup Table
1225	CHG:PITCH:D2	Mj4: 10% → 25% Lookup Table
1226	CHG:PITCH:D3	Mj4: 25% → 35% Lookup Table
1227	CHG:PITCH:D4	Mj4: 35% → 45% Lookup Table
1228	CHG:PITCH:D5	Mj4: 45% → 55% Lookup Table
1229	CHG:PITCH:D6	Mj4: 55% → 65% Lookup Table
1230	CHG:PITCH:D7	Mj4: 65% → 75% Lookup Table
1231	CHG:PITCH:D8	Mj4: More than 75% Lookup Table
	Use this SP to configure the charge ID table for printing on glossy paper in Quality mode. Do this SP when mist build-up on glossy paper in use is clogging the print head nozzles. This setting is linked to the charge pitch settings (SP1124 to 1131, SP1156 to 1163). [0 to 0xffff ffff/**0**/1/---]	

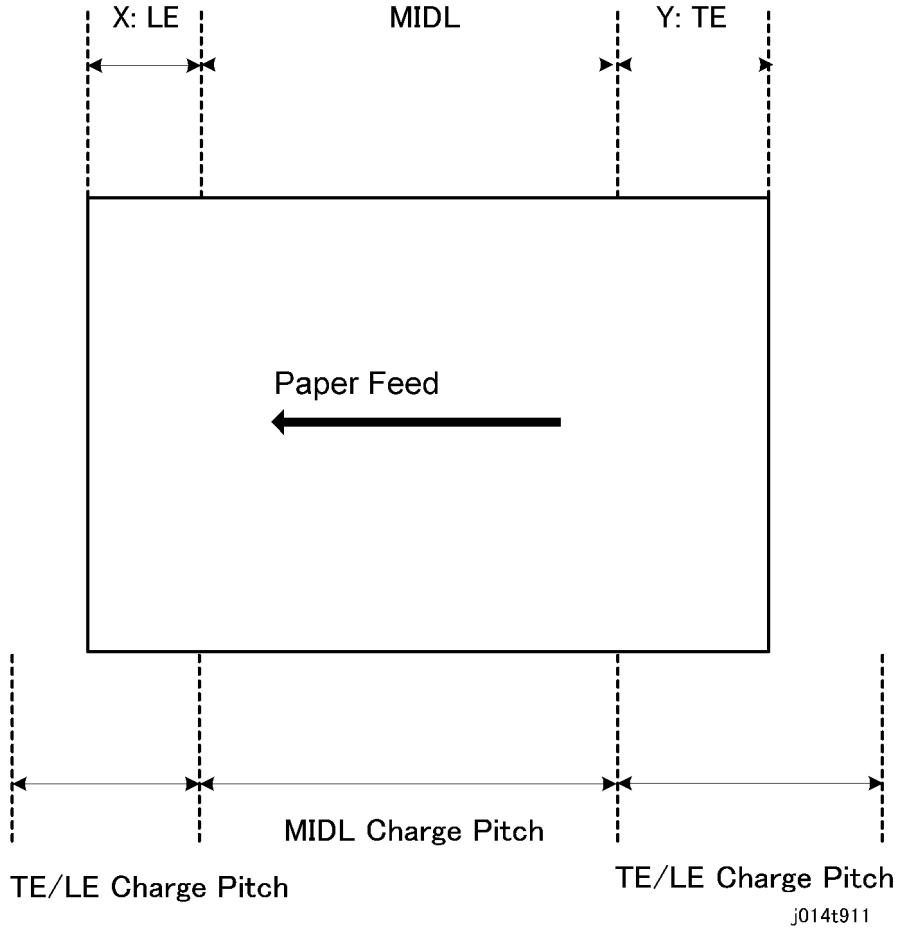
Set Charge Area 1

1232	CHG:AREA1:OHP	Set Charge of Area 1 for LE/TE: OHP
	Use this SP to set the size of the leading and trailing edges of transparencies (OHP). Do this setting when you want to adjust pitch amount of the charge applied to the leading and trailing edge of transparencies for printing. The areas of the leading and trailing edges is shown below. [0 to 0xffff ffff/**0**/1/---]	
1233	CHG:AREA1:F	Set Charge of Area 1 for LE/TE: Simplex: Any Other Than OHP
	Use this SP to set the size of the leading and trailing edges for the 1st side of any paper except transparencies (OHP). Do this setting when you want to adjust pitch amount of the charge applied to the leading and trailing edges on the 1st side any paper except transparencies. The areas of the leading and trailing edges is shown below. [0 to 0xffff ffff/**0**/1/---]	
1234	CHG:AREA1:B	Set Charge of Area 1 for LE/TE: Duplex: Any Other Than OHP
	Use this SP to set the size of the leading and trailing edges for the 2nd side (duplex printing) of any paper except transparencies (OHP). Do this setting when you want to adjust pitch amount of the charge applied to the leading and trailing edges on the 2nd side any paper except transparencies for duplex printing. The areas of the leading and trailing edges are shown below. [0 to 0xffff ffff/**0**/1/---]	

Set Charge Area 2

1235	CHG:AREA2:OHP	Set Charge of Area 2 for MIDL: OHP
	Use this SP to set the size of the MIDL area of transparencies (OHP). Do this setting when you want to adjust pitch amount of the charge applied to the MIDL area of transparencies for printing. The MIDL area is shown below. [0 to 0xffff ffff/**0**/1/---]	
1236	CHG:AREA2:F	Set Charge of Area 2 for MIDL: Simplex: Any Other Than OHP
	Use this SP to set the size of the MIDL on the 1st side of any paper except transparencies (OHP). Do this setting when you want to adjust pitch amount of the charge applied to the MIDL area on the 2nd side of any paper other than transparencies. The MIDL area is shown below. [0 to 0xffff ffff/**0**/1/---]	
1237	CHG:AREA2:B	Set Charge of Area 2 for LE/TE: Duplex: Any Other Than OHP

	Use this SP to set the size of the MIDL on the 2nd side of any paper except transparencies (OHP) for duplex printing. Do this setting when you want to adjust pitch amount of the charge applied to the MIDL area on the 2nd side of any paper other than transparencies for duplex printing. The MIDL area is shown below. [0 to 0xffff ffff/**0**/1/---]



Set Charge for Target Market

1238	CHG:REGION	Set Charge for Geographic Region
	Use the SP to set the charge for the areas listed below. 0: Enable geographical area setting 1: Japan	

	2: NA (North America) 3: Europe 4: China (Mainland) 5: China (Taiwan) "5" and "4" refer to same pitch table. 6: Asia. "4" "5" "6" refer to same charge pitch table If any item other than "0" is selected that item and its setting is enabled and takes priority. [0 to 255/**0**/1/---]

Print Head Temperature Thresholds

1300	HTEMP:H:STOP	Trigger Shutdown: Standby, Printing
1301	HTEMP:H:JUDG	Trigger Shutdown: Power On
1302	HTEMP:H:RCVR	Recovery After High Temp Shutdown
1303	HTEMP:L:RCVR	Recovery After Low Temp Shutdown
1304	HTEMP:L:JUDG	Trigger Shutdown: Power On
1305	HTEMP:L:STOP	Trigger Shutdown: Standby, Printing
	Use this SP to set the threshold for the operating temperature range of the print head. [0 to 65535/**0**/1/0.1°C]	

Ambient Temperature Thresholds

1306	ETEMP:H:STOP	High Temperature to Trigger Shutdown: Standby, Printing
1307	ETEMP:H:JUDG	High Temperature to Trigger Shutdown: Power On
1308	ETEMP:H:RCVR	Recovery After High Temp Shutdown
1309	ETEMP:L:RCVR	Recovery After Low Temp Shutdown
1310	ETEMP:L:JUDG	Low Temperature to Trigger Shutdown: Power On
1311	ETEMP:L:RCVR	Low Temperature to Trigger Shutdown: Standby, Printing
	Use this SP to set the threshold for the operating humidity range of the print head. [0 to 65535/**0**/1/0.1°C]	

Group 2000

Set Threshold for Near-Full Alert

2000	TH:WASTE:R:SNS	Ink Collector Unit Sensor
	Use this SP to set the threshold value to trigger near full alert for the Ink Collector unit sensor. [0 to 1023/**0**/1/---]	
2001	TH:WASTE:R:SOFT	Software Count : Ink Collector Unit Near Full
	Use this SP to set the threshold value to trigger the near-full alert for the ink collector unit sensor. [0 to 4294967295/**0**/1/nl]	
2002	TH:WASTE:R:FULL	Software Count : Ink Collector Unit Full Alert
	Use this SP to set the threshold value of the firmware counter to trigger the full alert for the right ink collector unit sensor. [0 to 4294967295/**0**/1/nl]	
2003	TH:WASTE:L:NEAR	Software Count : Left Ink Collector Unit Near Full
	Use this SP to set the threshold value of the firmware counter to trigger the near-full alert for the left Ink Collector unit sensor. [0 to 4294967295/**0**/1/nl]	
2004	TH:WASTE:L:FULL	Software Count: Left Ink Collector Unit Full Alert
	Use this SP to set the threshold value of the firmware counter to trigger the full alert for the left Ink Collector unit sensor. [0 to 4294967295/**0**/1/nl]	

Set Threshold for Automatic Print Head Cleaning

Note

- SP2100 to SP2110 are for future use and not used at the present time.

2100	TH:ACL:MIST:B	Before Capping (Mist Count)
	Use this SP to set the threshold value of the mist counter that triggers automatic print head cleaning before capping at the end of a print job. [0 to 4294967295/**0**/1/nl]	

2101	TH:ACL:MIST:P	During Printing
	Use this SP to set the threshold value of the mist counter that triggers automatic print head cleaning between pages during a print job. [0 to 4294967295/**0**/1/nl]	
2102	TH:ACL:FEED	Before Capping (Paper Dust Count)
	Use this SP to set the threshold value of the paper dust counter that triggers automatic print head cleaning before capping at the end of a print job. [0 to 65535/**0**/1/Pages]	
2103	TH:ACL:AL:T1H1	Idle Time (1 Hour): Humidity Step 1
2104	TH:ACL:AL:T1H2	Idle Time (1 Hour): Humidity Step 2
2105	TH:ACL:AL:T1H3	Idle Time (1 Hour): Humidity Step 3
2106	TH:ACL:AL:T1H4	Idle Time (1 Hour): Humidity Step 4
	Use this SP to set the threshold value for the de-capping time for automatic print head cleaning done before the start of printing. [0 to 65535/**0**/1/sec.]	
2107	TH:ACL:AL:T2H1	Idle Time (2 Hours): Humidity Step 1
2108	TH:ACL:AL:T2H2	Idle Time (2 Hours): Humidity Step 2
2109	TH:ACL:AL:T2H3	Idle Time (2 Hours): Humidity Step 3
2110	TH:ACL:AL:T2H4	Idle Time (2 Hours): Humidity Step 4
	Use this SP to set the threshold value for the de-capping time for automatic print head cleaning done before the start of printing. [0 to 65535/**0**/1/sec.]	

Set Threshold Idle Time for Maintenance Alarm

Note

- SP2111 to SP2114 are for future use and not used at the present time.

2111	TH:ALM:TM1	Time 1: 20 Hours
2112	TH:ALM:TM2	Time 2: 7 Days

2113	TH:ALM:TM3	Time 3: 1 Month
2114	TH:ALM:TM4	Time 4: 3 Months
	For Future Use. Use this SP to set the threshold time for the printer to remain idle for maintenance to execute before the start of a print job. (Default: 7 Days). These threshold values are related to SP2115 to 2118. [0 to 65535/**0**/1/sec.]	

Set Maintenance Method

Note

- SP2115 to SP2118 are for future use and not used at the present time.

2115	TH:ALM:TM1:MNT1	After Time 1 Alarm (SP2111): Venting
2116	TH:ALM:TM1:MNT2	After Time 2 Alarm (SP2112): Cleaning
2117	TH:ALM:TM1:MNT3	After Time 3 Alarm (SP2113): Cleaning *1
2118	TH:ALM:TM1:MNT4	After Time 4 Alarm (SP2114): Cleaning *2
	Use this SP to select the type of maintenance that will be executed before the first print job begins after the idle time threshold has elapsed. *1 Air venting/filling is done if Bit 1 of SW8-3 is ON. *2 Print head refreshing (flushing) is done if Bit 2 of SW8-3 is ON. [0 to 65535/**0**/1/hours.] **Note**: These SP codes are not available for this machine.	

Set Threshold for Venting During Printing

Note

- SP2200 to SP2202 are for future use and not used at the present time.

2200	TH:PRG:HUMI1	35% Humidity
2201	TH:PRG:HUMI2	65% Humidity
	Use this SP to set the threshold value in the humidity table switches to the table for air venting during printing. • SP2200: Looks up the low humidity table (35%).	

	• SP2201: Looks up the high humidity table (65%). [0 to 100/**0**/1/°C.]

2202	TH:PRG:TM	
	For Future Use. Use this SP to set the threshold time for the printer to flush the print heads before the start of a print job. [0 to 4294967295/**0**/1/nl]	

Group 3000

Adjust Printhead Gap for dpi

3000	GAP:300:H1:G:F	Print Head 1: 300 dpi: 1st Pass
3001	GAP:300:H1:B:F	Print Head 1: 300 dpi: 2nd Pass
3002	GAP:300:H2:B:F	Print Head 2: 300 dpi: 2nd Pass
3003	GAP:300:H3:G:F	Print Head 3: 300 dpi: 1st Pass
3004	GAP:300:H3:B:F	Print Head 3: 300 dpi: 2nd Pass
3005	GAP:300:H4:G:F	Print Head 4: 300 dpi: 1st Pass
3006	GAP:300:H4:B:F	Print Head 4: 300 dpi: 2nd Pass
	[-128 to +127/**FA**/1/count.]	
3007	GAP:600:H1:G:F	Print Head 1: 600 dpi: 1st Pass
3008	GAP:600:H1:B:F	Print Head 1: 600 dpi: 2nd Pass
3009	GAP:600:H2:B:F	Print Head 2: 600 dpi: 2nd Pass
3010	GAP:600:H3:G:F	Print Head 3: 600 dpi: 1st Pass
3011	GAP:600:H3:B:F	Print Head 3: 600 dpi: 2nd Pass
3012	GAP:600:H4:G:F	Print Head 4: 600 dpi: 1st Pass
3013	GAP:600:H4:B:F	Print Head 4: 600 dpi: 2nd Pass
	Use this SP to adjust the print head gap for 600 dpi printing.	

	[-128 to +127/FA/1/count.]	
3014	GAP:1200:H1:G:F	Print Head 1: 1200 dpi: 1st Pass
3015	GAP:1200:H1:B:F	Print Head 1: 1200 dpi: 2nd Pass
3016	GAP:1200:H2:B:F	Print Head 2: 1200 dpi: 2nd Pass
3017	GAP:1200:H3:G:F	Print Head 3: 1200 dpi: 1st Pass
3018	GAP:1200:H3:B:F	Print Head 3: 1200 dpi: 2nd Pass
3019	GAP:1200:H4:G:F	Print Head 4: 1200 dpi: 1st Pass
3020	GAP:1200:H4:B:F	Print Head 4: 1200 dpi: 2nd Pass
	Use this SP to adjust the print head gap for 1200 dpi printing. [-128 to +127/FA/1/count.]	

Set Print Head Rank (Wave)

3100	HRANK:H1:W	Print Head 1
3101	HRANK:H2:W	Print Head 2
3102	HRANK:H3:W	Print Head 3
3103	HRANK:H4:W	Print Head 4
	Use this SP to set the print head rank (wave rank) [0 to 7/FA/1/---]	

Set Print Head Rank (Voltage)

3104	HRANK:H1:V	Print Head 1
3105	HRANK:H2:V	Print Head 2
3106	HRANK:H3:V	Print Head 3
3107	HRANK:H4:V	Print Head 4
	Use this SP to set the print head rank (voltage rank) [0 to 7/FA/1/---]	

Set Amount for Standard Ink Coverage

3200	COVER:REG:B	Black: 319 u1
3201	COVER:REG:M	Magenta: 273 u1
3202	COVER:REG:C	Cyan: 187 u1
3203	COVER:REG:Y	Yellow: 276 u1
	Use this SP to adjust the standard amount of ink to be applied for full coverage areas. [0 to 65535/**0**/1/um]	

Gamma: K, C, M, Y

3300	GAMMA:K	
3301	GAMMA:C	
3302	GAMMA:M	
3303	GAMMA:Y	
	This SP prints the Gamma Adjustment Chart and allows you to set the optimum settings for gamma adjustment. The optimum settings are printed on a decal attached to the carriage.	

Group 4000

Not used.

Group 5000

Reset and Restoration Settings

5000	RST:FACT	Restore Factory Default Setting
	Resets and threshold settings and user adjusted values.	
5001	RST:INIT CNT:F	Reset Initial Tank Fill Count to Manufacturing Operation Count
	Resets the initial fill counter to the initial factory setting (-2).	

5002	RST:INIT CNT:A	Reset Initial Tank Fill Count to Factory Shipping
	Resets the initial fill counter to the initial factory setting before shipping (-1).	
5003	RST:WASTE:R	Reset Ink Collector Count/Flag: Right Ink Collector Unit
	Resets the ink flag and ink counter for the right Ink Collector unit.	
5004	RST:WASTE:L	Reset Ink Collector Count/Flag: Left Ink Collector Unit
	Resets the ink counter for the left Ink Collector unit.	

Maintenance, Replacement

5007	WASHING	Execute Auto Washing
	Executes the automatic flushing procedure.	
5100	INK DISCHARGE	Purge Maintenance: Right Vent
	For Future Use. Moves the carriage in order to access the right air vent for cleaning.	
5101	CARRIAGE CHANGE	Set Printer in Carriage Replace Mode
	Use this SP to reset the print head rank setting after print head replacement and to re-initialize the initial filling counter. **Carriage Replacement** 1. Enter the print head rank (wave) of • Print head 1. • Print head 2. • Print head 3. • Print head 4. 2. Enter the print head rank (voltage) of • Print head 1. • Print head 2. • Print head 3. • Print head 4. **Initial Fill Counter Reset** 1. Turn the printer off.	

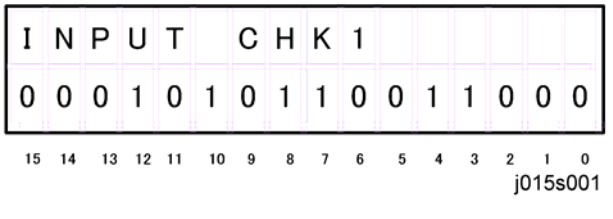
	2. After executing this menu, turn the printer on to start initial filling of the print head tanks. 3. After executing this menu, the carriage adjustment mode can be executed.	
5102	CARRIAGE ADJUST	Set Printer n Carriage Adjust Mode
	Use this SP to adjust the print head gap after print head replacement and print the Nozzle Check pattern. Carriage Adjustment Mode Flow Before executing this menu, you must execute the carriage replacement mode. 1. Print the print head gap adjustment chart (High Speed). 2. Adjust the gap (High Speed). 3. Print the print head gap adjustment chart (High Speed). 4. Print the print head gap adjustment chart (Std. (Speed Priority). Std. (Quality Priority)). 5. Adjust the gap (Std. (Quality Priority, Std. (Speed Priority)). 6. Print the print head gap adjustment chart (Std. (Speed Priority). Std. (Quality Priority)). 7. Print the print head gap adjustment chart (High Quality). 8. Adjust the gap (High Quality). 9. Print the print head gap adjustment chart (High Quality). 10. Print the Nozzle Check test pattern.	
5200	PRINT SMC	Print an Engine Maintenance Summary
	Use this SP to print an engine maintenance summary. You need at least 8 sheets of paper to do this print. It will take at least 3 minutes before the print will start.	
5300	DUMMY NUMBER	Set a Dummy Number
	Use this SP to set the dummy number.	
5301	ENGINE SW1	Engine Switch 1
	Bit	**Setting**
	0	Controls the operation of the suction cap on the maintenance unit. Never change this setting. 1: On (default) 0: Off
	1	Switches drive cleaning control on and off.

		1: Executes drive cleaning. Automatically resets to "0" (off) after drive cleaning is finished. Do this type of cleaning only after print head cleaning and print head flushing have failed to recover operation of the machine.
	2	This SP shows the cleaning execution flag after flushing the printer heads. Never change this setting. 1: Cleaning 0: No cleaning (default)
	3	Controls operation of the ink supply pumps. [0 to 1/1/1] 1: Disables operation of ink supply pumps after long period of storage. 0: Allows pumps to operate after long period of storage.
	4	Never change these settings.
	5	
	6	
	7	

5302	ENGINE SW2	Engine Switch 2
	Bit	**Setting**
	0 - 7	Not used

Input Check: Sensors 1/2

5400	INPUT CHK1	Check Input Sensors
	Use this SP to display the on/off status of each sensor and switch. The status of each sensor (0, 1) is displayed on the 2nd line of the display.	

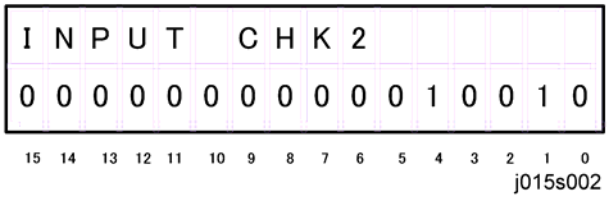


j015s001

No.	Meaning	No.	Meaning
0	Top Cover Switch	8	PFU Relay Sensor
1	Duplex Cover Sensor	9	Paper Sensor (Tray1)
2	Duplexer Set Sensor	10	Paper Sensor (Tray2)
3	Multi Bypass Set Sensor	11	Not used
4	PFU Set Sensor	12	Env. Selector Sensor
5	Registration Sensor 1	13	Ink Coll. Tank Sensor
6	Registration Sensor 2	14	Maintenance HP Sensor
7	Trailing Edge Sensor	15	Right Front Door Sensor

Input Check: Sensors

5401	INPUT CHK2	Check Input Sensors
	Use this SP to display the on/off status of each sensor. The status of each sensor (0, 1) is displayed on the 2nd line of the display.	



No.	Meaning
0	USB Connection Detection
1	Option Detection
2	Jam Feed Door Switch
3	Tray 1 Cover
4	Tray 2 Cover

Input Check: Temperature and Humidity

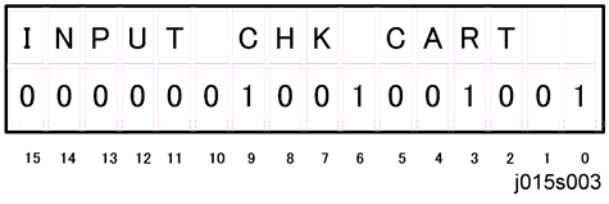
5402	INPUT CHK HTEMP	Display Print Head Temperature
	Displays the temperature reading of the print head temperature sensor. Units: 0.1°C	
5403	INPUT CHK HUTMP	Display Temperature/Humidity Sensor Reading: Temperature
	Use this SP to display the temperature reading of temperature/humidity sensor. Units: 0.1°C	
5404	INPUT CHK HUMI	Display Temperature/Humidity Sensor Reading: Humidity
	Use this SP to display the humidity reading of temperature/humidity sensor. Units: 0.1%	

Input Check: Air

5405	INPUT CHK AIR1	Tank 1: Analog
	Use this SP to display the analog reading of the air sensor in print head tank 1.	
5406	INPUT CHK AIR2	Tank 2: Analog
	Use this SP to display the analog reading of the air sensor in print head tank 2.	
5407	INPUT CHK AIR3	Tank 3: Analog
	Use this SP to display the analog reading of the air sensor in print head tank 3.	
5408	INPUT CHK AIR4	Tank 4: Analog
	Use this SP to display the analog reading of the air sensor in print head tank 4.	
5409	INPUT CHK AIR5	Tank 5: Analog
	Use this SP to display the analog reading of the air sensor in print head tank 5.	
5410	INPUT CHK AIR6	Tank 6: Analog
	Use this SP to display the analog reading of the air sensor in print head tank 6.	

Input Check: Ink Cartridge Set Sensors

5411	INPUT CHK CART	Display Status of Ink Cartridge Set Sensors
	Use this SP to display the status of the cartridge set sensors for each ink cartridge. The status of each sensor is assigned to a column in the 2nd line of the operation panel display as shown below.	



j015s003

No.	Meaning	No.	Meaning
0	K Ink Cartridge Set	8	M Ink Cartridge Refill
1	K Ink Cartridge New	9	Y Ink Cartridge Set
2	K Ink Cartridge Refill	10	Y Ink Cartridge New
3	C Ink Cartridge Set	11	Y Ink Cartridge Refill
4	C Ink Cartridge New	12	Not Used
5	C Ink Cartridge Refill	13	
6	M Ink Cartridge Set	14	
7	M Ink Cartridge New	15	

Input Check: Ink Cartridge Levels

5412	INPUT CHK RES:Y	Yellow Ink Cartridge
5413	NPUT CHK RES:M	Magenta Ink Cartridge
5414	NPUT CHK RES:C	Cyan Ink Cartridge
5415	NPUT CHK RES:K	Black Ink Cartridge
	Use this SP to display the amount of ink that remains in each ink cartridge. Units: %	

Input Check: Ink Collector Unit Sensor

5416	INPUT CHK WASTE	Current Analog Reading
	Use this SP to display the analog reading of the Ink Collector unit sensor.	

Encoder Readings

5417	INPUT CHK MENC	Horizontal Encoder
	Use this SP to display the current reading of the main scan encoder.	
5418	INPUT CHK SENC	Vertical Encoder
	Use this SP to display the current reading of the sub scan encoder.	

Board Temperature Sensors

5419	INPUT CHK PTEMP	PSU Ambient Temperature Sensor
	Displays the temperature reading of the PSU ambient temperature sensor. **Note**: At present nothing displays because there is no temperature sensor in the PSU. Units: 0.1°C	
5420	INPUT CHK DTEMP	Drive Board Temperature Sensor
	Displays the temperature reading of the temperature sensor in the DRV board circuits. Units: 0.1°C	

Group 6000

Not Used

Group 7000

Display Charge Count

7000	CHG CNT:S:P:M	Single Counter: Monochrome Application

7001	CHG CNT:S:P:L	Single Counter: Level Color Application
7002	CHG CNT:S:P:C	Single Counter: Color Application
7003	CHG CNT:W:P:M	Double Counter: Monochrome Application
7004	CHG CNT:W:P:L	Double Counter: Level Color Application
7005	CHG CNT:W:P:C	Double Counter: Color Application
	Use this SP to display the charge counts.	

Display Coverage Count

7006	COVER CNT:P:M	Monochrome Application
7007	COVER CNT:P:L	Color Application
7008	COVER CNT:P:C	Level Color Application
	Use this SP to display the charge counts.	

Display User Cleaning Count

7100	USER CL CNT:H1	Print Head 1 (Y / M)
7101	USER CL CNT:H2	Print Head 2 (K / C)
7102	USER CL CNT:H3	Print Head 3 For j011 only
7103	USER CL CNT:H4	Print Head 4 For j011 only
	Use this SP to display the total number of print head cleanings executed from the printer driver and from the printer operation panel.	

Display User Flushing Count

7104	USER RF CNT:H1	Print Head 1 (Y / M)
7105	USER RF CNT:H2	Print Head 2 (K / C)
7106	USER RF CNT:H3	Print Head 3 For j011 only
7107	USER RF CNT:H4	Print Head 4 For j011 only

	Use this SP to display the total number of print head flushings executed from the printer driver and from the printer operation panel.

Display Count: Air Purges/Re-fillings After SC990

7108	AOFL CNT:S:H1	Print Head 1 (Y / M)
7109	AOFL CNT:S:H2	Print Head 2 (K / C)
7110	AOFL CNT:S:H3	Print Head 3 For j011 only
7111	AOFL CNT:S:H4	Print Head 4 For j011 only
	Use this SP to display the number of air purge/ink tank re-fillings after SC990 has occurred.	

Display Count: Air Purges/Re-fillings After Ink End

7112	AOFL CNT:I:H1	Print Head 1 (Y / M)
7113	AOFL CNT:I:H2	Print Head 2 (K / C)
7114	AOFL CNT:I:H3	Print Head 3 For j011 only
7115	AOFL CNT:I:H4	Print Head 4 For j011 only
	Use this SP to display the number of air purge/ink tank re-fillings after an ink tank has run out of ink.	

Display Count: Air Purges/Re-Fillings After Air Detected

7116	AOFL CNT:A:H1	Print Head 1 (Y / M)
7117	AOFL CNT:A:H2	Print Head 2 (K / C)
7118	AOFL CNT:A:H3	Print Head 3 For j011 only
7119	AOFL CNT:A:H4	Print Head 4 For j011 only
	Use this SP to display the number of air purge/ ink tank re-fillings after the air sensor detected air in a print head ink tank.	

Display Count: Air Detected at Power On

7120	AIR CNT:P:T1	Print Head Tank 1 (M)
7121	AIR CNT:P:T2	Print Head Tank 2 (Y)
7122	AIR CNT:P:T3	Print Head Tank 3 (C)
7123	AIR CNT:P:T4	Print Head Tank 4 (K)
7124	AIR CNT:P:T5	Print Head Tank 5 For j011 only
7125	AIR CNT:P:T6	Print Head Tank 6 For j011 only
	Use this SP to display the number of times air was detected by the air sensor a print head tank at power on.	

Display Count: Air Detected Before Capping, Between Pages, or When Ink Cartridge Replaced

7126	AIR CNT:BPC:T1	Print Head Tank 1 (M)
7127	AIR CNT:BPC:T2	Print Head Tank 2 (Y)
7128	AIR CNT:BPC:T3	Print Head Tank 3 (C)
7129	AIR CNT:BPC:T4	Print Head Tank 4 (K)
7130	AIR CNT:BPC:T5	Print Head Tank 5 For j011 only
7131	AIR CNT:BPC:T6	Print Head Tank 6 For j011 only
	Use this SP to display the number of times the air sensor detected air in an ink tank (1) re-filling before capping at the end of a print job, (2) re-filling between pages, (3) after replacing and ink cartridge.	

Display Count: Air Detected in Print Head Tank After During Maintenance After Purge

7132	AIR CNT:A:T1	Print Head Tank 1 (M)
7133	AIR CNT:A:T2	Print Head Tank 2 (Y)
7134	AIR CNT:A:T3	Print Head Tank 3 (C)
7135	AIR CNT:A:T4	Print Head Tank 4 (K)

7136	AIR CNT:A:T5	Print Head Tank 5 For j011 only
7137	AIR CNT:A:T6	Print Head Tank 6 For j011 only
	Use this SP to display the number of times air was detected by the air sensor in a print head tank during automatic print head maintenance triggered by the printer remaining idle.	

Display Count: Automatic Cleanings Between Page Prints

7138	ACL CNT:P:H1	Print Head 1 (Y / M)
7139	ACL CNT:P:H2	Print Head 2 (K / C)
7140	ACL CNT:P:H3	Print Head 3 For j011 only
7141	ACL CNT:P:H4	Print Head 4 For j011 only
	Use this SP to display the number of automatic print head cleanings between page prints while print jobs were executing.	

Display Count: Automatic Cleanings Before Print Head Capping

7142	ACL CNT:B:H1	Print Head 1 (Y / M)
7143	ACL CNT:B:H2	Print Head 2 (K / C)
7144	ACL CNT:B:H3	Print Head 3 For j011 only
7145	ACL CNT:B:H4	Print Head 4 For j011 only
	Use this SP to display the number of automatic print head cleanings before print head capping.	

Display Count: Automatic Cleanings After Printer Has Remained Idle

7146	ACL CNT:A:TM1	Idle Time 1 < 10hours, < 7days
7147	ACL CNT:A:TM2	Idle Time 2 < 7days, < 1month
7148	ACL CNT:A:TM3	Idle Time 3 < 1month, < 3months
7149	ACL CNT:A:TM4	Idle Time 4 > 3 Months
	For Future Use. (SP7148 and 7149)	

	Use this SP to display the number of automatic print head cleanings triggered by automatic maintenance after the printer remained idle longer than the specified threshold time.

Display Count: Maintenance Operations After Printer Idle

7150	AMNT CNT:TM1	Idle Time 1 < 10hours, < 7days
7151	AMNT CNT:TM2	Idle Time 2 < 7days, < 1month
7152	AMNT CNT:TM3	Idle Time 3 < 1month, < 3months
7153	AMNT CNT:TM4	Idle Time 4 > 3 Months
	Use this SP to display the number of times maintenance executed automatically.	

Display Count: Total Ink Cartridge Out

7154	EMPTY CNT:C1	Ink Cartridge 1 (K)
7155	EMPTY CNT:C2	Ink Cartridge 2 (C)
7156	EMPTY CNT:C3	Ink Cartridge 3 (M)
7157	EMPTY CNT:C4	Ink Cartridge 4 (Y)
	Use this SP to display the number of times that each ink cartridge has become empty.	

Display Count: Ink Cartridge Out (Equal or More Than Guaranteed Service Life)

7158	END CNT:C1	Ink Cartridge 1 (K)
7159	END CNT:C2	Ink Cartridge 2 (C)
7160	END CNT:C3	Ink Cartridge 3 (M)
7161	END CNT:C4	Ink Cartridge 4 (Y)
	Use this SP to display the number of times that each ink cartridge equaled or surpassed the guaranteed service life of the cartridge.	

Display Software Count: Near End for Ink Collector Unit

7200	WASTE CNT:R:NEAR	Right Ink Collector Unit
	Use this SP to display the current software count for the flushing tank. Note: The near-end threshold is 413 ml.	

Display Count: Tank Full: Ink Collector Unit

7201	WASTE CNT:R:FULL	Right Ink Collector Unit
	Use this SP to display the current count for the number of times the status of the right Ink Collector unit has changed from near-full to full. Note: The full threshold is 3 ml.	

Display Count: Tank Full: Ink Collector Unit

7202	WASTE CNT:L:FULL	Left Ink Collector Unit
	Use this SP to display the current count for the number of times the status of the left Ink Collector unit has changed from near-full to full.	

Display Count: Swing Plate Contacts With Carriage

7203	SWNG PLATE CNT	Left Ink Collector Unit
	This SP code is for future use and not used at this time. This SP logs the number of times the swing plate operates to rid itself of accumulated ink due to air purging.	

Display Count: Mist Counter for Automatic Cleaning

7204	MIST CNT:T1	Print Head Tank 1 (M)
7205	MIST CNT:T2	Print Head Tank 2 (Y)
7206	MIST CNT:T3	Print Head Tank 3 (C)
7207	MIST CNT:T4	Print Head Tank 4 (K)

7208	MIST CNT:T5	Print Head Tank 5 For j011 only
7209	MIST CNT:T6	Print Head Tank 6 For j011 only
	Use this SP to display the number of times that the swing plate of the left Ink Collector unit has made contact with the carriage.	

Display Count: Paper Dust Counter for Automatic Cleaning

7210	FEED:CNT:H1	Print Head 1 (Y / M)
7211	FEED:CNT:H2	Print Head 2 (K / C)
7212	FEED:CNT:H3	Print Head 3 For j011 only
7213	FEED:CNT:H4	Print Head 4 For j011 only
	Use this SP to display the current reading of the ink mist counter that determines when to execute automatic cleaning.	

Display Count: Cap Off Time for Automatic Print Head Cleaning

7214	DECAP TIME	Print Head Tank 1
	Use this SP to display the de-capping time used to determine whether automatic cleaning is executed after the printer returns from idle mode.	

Display Humidity Reading Before Automatic Print Head Cleaning

7215	HUMI:ACL:AL	
	Use this SP to display the temperature reading before capping operation used to determine whether automatic print head cleaning is done after the printer returns from idle mode.	

Display Count: Ink Cartridge Replacements

7300	CART CHG CNT:K	K (Black)
7301	CART CHG CNT:C	C (Cyan)
7302	CART CHG CNT:M	M (Magenta)

7303	CART CHG CNT:Y	Y (Yellow)
	Use this SP to display the number of times the carriage has been replaced.	

7304	CART RFIL CNT:K	Ink cartridge refill count: K (Black)
7305	CART RFIL CNT:C	Ink cartridge refill count: C (Cyan)
7306	CART RFIL CNT:M	Ink cartridge refill count: M (Magenta)
7307	CART RFIL CNT:Y	Ink cartridge refill count: Y (Yellow)
	Use this SP to display the number of times the ink cartridges have been refilled.	

Display Date of Ink Collector Unit Replacement

7400	WASTE:DATE	YY:MM:DD
	Use this SP to displayt the date the Ink Collector units were replaced. Date Standard: 2000	

Display Standby Time

7401	PWAIT:DATE	YY:MM:DD
	Display the total time the printer has remained in standby mode. Date Standard: 2000	

Display Operation Start Date

7402	START:DATE	YY:MM:DD
	Display the total time the printer has remained in full operation. Date Standard: 2000	

Display SC Code Log

7403	SC CODE1	Log 1: Previous

7404	SC CODE2	Log 2: Previous -1
7405	SC CODE3	Log 3: Previous -2
7406	SC CODE4	Log 4: Previous -3
7407	SC CODE5	Log 5: Previous -4
	Use this SP to display the SC code history. • The occurrences of SC codes are stored in the order 1, 2, 3, 4, 5. • Duplicate occurrences of SC codes are not recorded (each SC code recorded only once).	

Display Jam Log

7408	JAM CODE1	Log 1: Previous
7409	JAM CODE2	Log 2: Previous -1
7410	JAM CODE3	Log 3: Previous -2
7411	JAM CODE4	Log 4: Previous -3
7412	JAM CODE5	Log 5: Previous -4
	Use this SP to display the jam code history. The occurrences of jam codes are stored in the order 1, 2, 3, 4, 5.	

Display Total Count: Jam Log

7413	JAM COUNT1	Log 1: Previous
7414	JAM COUNT2	Log 2: Previous -1
7415	JAM COUNT3	Log 3: Previous -2
7416	JAM COUNT4	Log 4: Previous -3
7417	JAM COUNT5	Log 5: Previous -4
	Use this SP to display the number of times jam codes have been issued. The occurrences of jam codes are stored in the order 1, 2, 3, 4, 5.	

Display Total Count: Ink Fill Log

7418	FILL PROGRESS1	Log 1: Previous
7419	FILL PROGRESS2	Log 2: Previous -1
7420	FILL PROGRESS3	Log 3: Previous -2
7421	FILL PROGRESS4	Log 4: Previous -3
	Use this SP to display the number of times initial tank filling has been performed.	

Display Maintenance Log

7422	LAST MNT:TM1	Log 1: Previous
7423	LAST MNT:TM2	Log 2: Previous -1
7424	LAST MNT:TM3	Log 3: Previous -2
	Use this SP the total time for all maintenance executions.	

Display Maintenance Log: By Type of Maintenance

7425	LAST MAINTE1	Log 1: Previous
7426	LAST MAINTE2	Log 2: Previous -1
7427	LAST MAINTE3	Log 3: Previous -2
	Use this SP to display the types of maintenance executed. The types of maintenance are number coded as shown below:	
	1	Maintenance at power on
	6	Maintenance idle operation
	7	Auto print head cleaning after ilde time elapsed
	8	Maintenance air detection
	9	ink collector unit filling before maintenance page
	10	ink collector unit filling between maintenance pages

	11	ink collector unit filling before maintenance capping
	12	Maintenance cartridge replacement
	13	Cleaning between maintenance pages
	14	Cleanings before maintenance capping
	15	Maintenance manual cleaning
	16	Maintenance manual flushing

Display Maintenance Log: Total Count

7428	LAST MNT CNT1	Log 1: Previous
7429	LAST MNT CNT2	Log 2: Previous -1
7430	LAST MNT CNT3	Log 3: Previous -2
	Use this SP to display the total count for all maintenance executions.	

Display Near Full Flag: Right Ink Collector Unit

7431	WASTE NEAR FLG	
	Use this SP to display the near-full flag of the right Ink Collector unit.	

Display Position of Tank Full Feeler for Each Print Head Tank After Air Purge

7500	INIT POS:T1	Print Head Tank 1 (M)
7501	INIT POS:T2	Print Head Tank 2 (Y)
7502	INIT POS:T3	Print Head Tank 3 (C)
7503	INIT POS:T4	Print Head Tank 4 (K)
7504	INIT POS:T5	Print Head Tank 5 For j011 only
7505	INIT POS:T6	Print Head Tank 6 For j011 only
	Use this SP to display the detected position of the print head tank full sensor at air venting/ink filling.	

Display Normal Position for Detection of Full Print Head Tank

7506	FULL POS:T1	Print Head Tank 1 (M)
7507	FULL POS:T2	Print Head Tank 2 (Y)
7508	FULL POS:T3	Print Head Tank 3 (C)
7509	FULL POS:T4	Print Head Tank 4 (K)
7510	FULL POS:T5	Print Head Tank 5 For j011 only
7511	FULL POS:T6	Print Head Tank 6 For j011 only
	Use this SP to display the usual position of the print tank full sensor when the ink collector unit is filled	

Display Count: Number of Drive Cleanings

7512	DCL CNT:H1	Print Head 1 (Y / M)
7513	DCL CNT:H2	Print Head 2 (K / C)
7514	DCL CNT:H3	Print Head 3 For j011 only
7515	DCL CNT:H4	Print Head 4 For j011 only
	Use this SP to display the number of automatic print head cleanings done during printing	

Display Count: Ink Supply Time Up

7516	PTMOUT:CNT:T1	Print Head Tank 1 (M)
7517	PTMOUT:CNT:T2	Print Head Tank 2 (Y)
7518	PTMOUT:CNT:T3	Print Head Tank 3 (C)
7519	PTMOUT:CNT:T4	Print Head Tank 4 (K)
7520	PTMOUT:CNT:T5	Print Head Tank 5 For j011 only
7521	PTMOUT:CNT:T6	Print Head Tank 6 For j011 only
	Use this SP to display the number of times near-end/end was detected by timeup while ink was being supplied to the ink collector units.	

Display Count: Automatic Print Head Cleanings (After De-Cap Time Elapsed)

7522	ACL:CNT:D:H1	Print Head 1 (Y / M)
7523	ACL:CNT:D:H2	Print Head 2 (K / C)
7524	ACL:CNT:D:H3	Print Head 3 For j011 only
7525	ACL:CNT:D:H4	Print Head 4 For j011 only
	Use this SP to display the number of times the automatic print head cleaning executed triggered by time exceeded the threshold set for the de-capping time.	

Display Count: Maintenance Cleanings of Right Vent

7526	PMNT:CNT	Right Vent Purges
	Use this SP to display the number of times the right air vent was cleaned during maintenance.	

Display Count: Air Detections Before Maintenance Cleanings

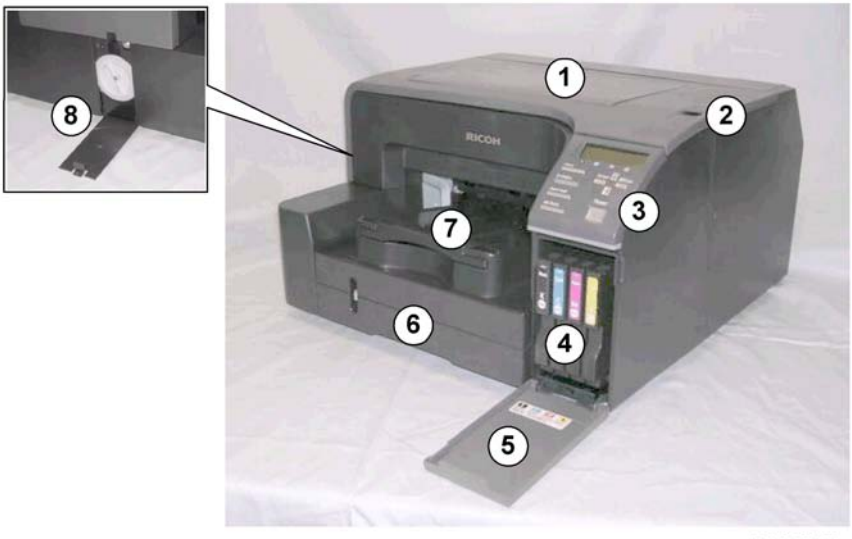
7527	PMNT CNT:A:T1	Print Head Tank 1 (M)
7528	PMNT CNT:A:T2	Print Head Tank 2 (Y)
7529	PMNT CNT:A:T3	Print Head Tank 3 (C)
7530	PMNT CNT:A:T4	Print Head Tank 4 (K)
7531	PMNT CNT:A:T5	Print Head Tank 5 For j011 only
7532	PMNT CNT:A:T6	Print Head Tank 6 For j011 only
	Use this SP to display the number of times air was detected during maintenance cleaning of the right ink suction vent.	

6. Detailed Section Descriptions

Important Parts

J015

Front View: J015



j016d907

1. **Top Cover**

   Open to see inside the printer if a jam occurs.

2. **Envelope selector**

   Push back to print on envelopes. Pull forward to print on all other types of paper.

3. **Operation panel**

   Operation keys and the 2-line LCT

4. **Ink cartridges (K), (C), (M), (Y)**

   Supply ink to the print heads.

5. **Right front cover**

   Open only to install or replace Ink cartridges. Otherwise, this cover should be closed.

6. **Tray 1**

   This is the standard tray that holds paper fed to the machine.

7. **Paper output tray and extension**

   Holds paper that has exited the printer. Pull out the output tray extension when printing on paper longer than B5.

8. **Paper jam feed wheel**

   Open this door and turn the wheel in either direction to remove a jam sheet. A decal attached to the door illustrates where the paper exits when turned to the left or right.

Rear View: J015

j016d908

1. **NIB connector cover**

   Open to connect telephone line, extension telephone, USB cable, or install the NIB. (The NIB is standard for the J014.)

2. **Ethernet Port**

   Connect the Ethernet cable here with NIB is installed.

3. **USB slot**

   This is the connection point for the USB cable from the PC.

4. **Vent**

   Vents air from inside the machine to prevent overheating. Never block this vent.

5. **Power cord**

   The connection point for the power cord. Use only the power cord provided with the printer. Make sure you ground (earth) the head of the plug at the power source.

   - The detachable power cord is provided with the EU model only.
   - The power cord of the NA model is permanently attached.

6. **Rear cover**

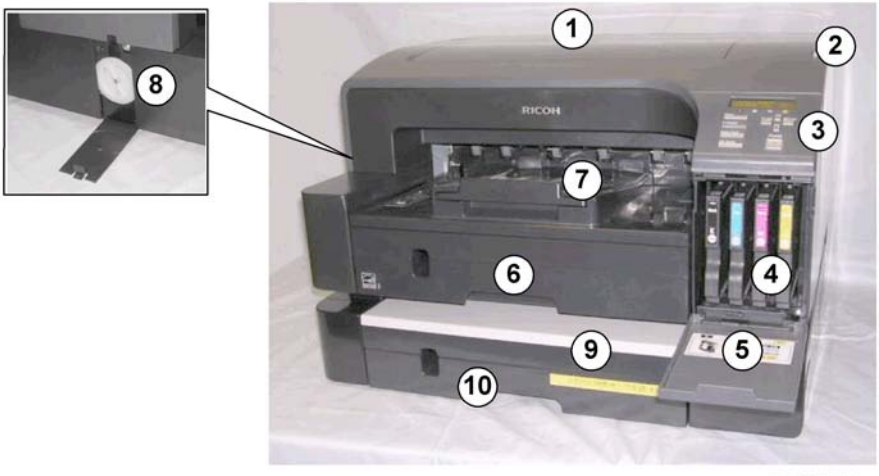
   Opens for paper jam removal. To remove paper that has jammed and wrapped around the guide board, rotate the jam feed wheel on the right side of the printer.

7. **Ink collector unit cover**

   Open and remove the ink collector unit when it needs to be replaced, or before servicing the printer.

J016

Front View: J016



j016d901

1. **Top Cover**

   Open to see inside the printer if a jam occurs.

2. **Envelope selector**

   Push back to print on envelopes. Pull forward to print on all other types of paper.

3. **Operation panel**

   Operation keys and the 2-line LCT

4. **Ink cartridges (K), (C), (M), (Y)**

   Supply ink to the print heads.

5. **Right front cover**

   Open only to install or replace Ink cartridges. Otherwise, this cover should be closed.

6. **Tray 1 (standard)**

   This is the standard tray that holds paper fed to the machine.

7. **Paper output tray and extension**

   Holds paper that has exited the printer. Pull out the output tray extension when printing on paper longer than A4 or LTR.

8. **Paper jam feed wheel**

   Open this door and turn the wheel in either direction to remove a jam sheet. A decal attached to the door illustrates where the paper exits when turned to the left or right.

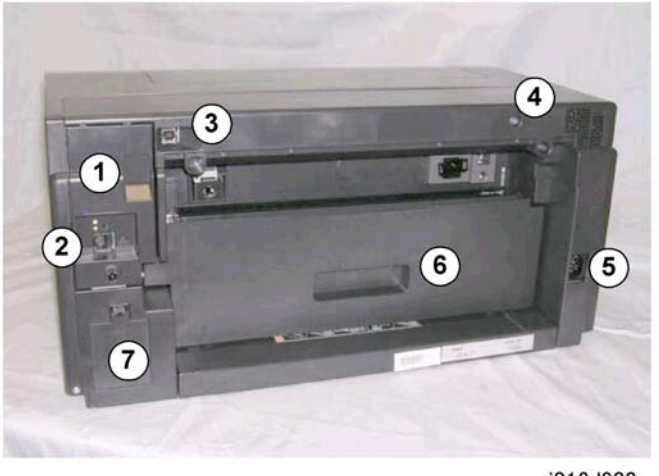
9. **Paper Feed Unit (option)**

   Houses Tray 2.

10. **Tray 2**

    Holds an additional 500 sheets of paper.

Rear View: J016



j016d902

1. **NIB connector cover**

   Open to connect telephone line, extension telephone, USB cable, or install the NIB. (The NIB is standard for the J014.)

2. **Ethernet Port**

   Connect the Ethernet cable here with NIB is installed.

3. **USB slot**

   This is the connection point for the USB cable from the PC.

4. **Vent**

   Vents air from inside the machine to prevent overheating. Never block this vent.

5. **Power cord**

   The connection point for the power cord. Use only the power cord provided with the printer. Make sure you ground (earth) the head of the plug at the power source.

   - The detachable power cord is provided with the EU model only.
   - The power cord of the NA model is permanently attached.

6. **Rear cover**

   Opens for paper jam removal. To remove paper that has jammed and wrapped around the guide board, rotate the jam feed wheel on the right side of the printer. This cover must be removed before installation of the duplex unit. This cover or the duplex unit must be installed for the printer to operate.

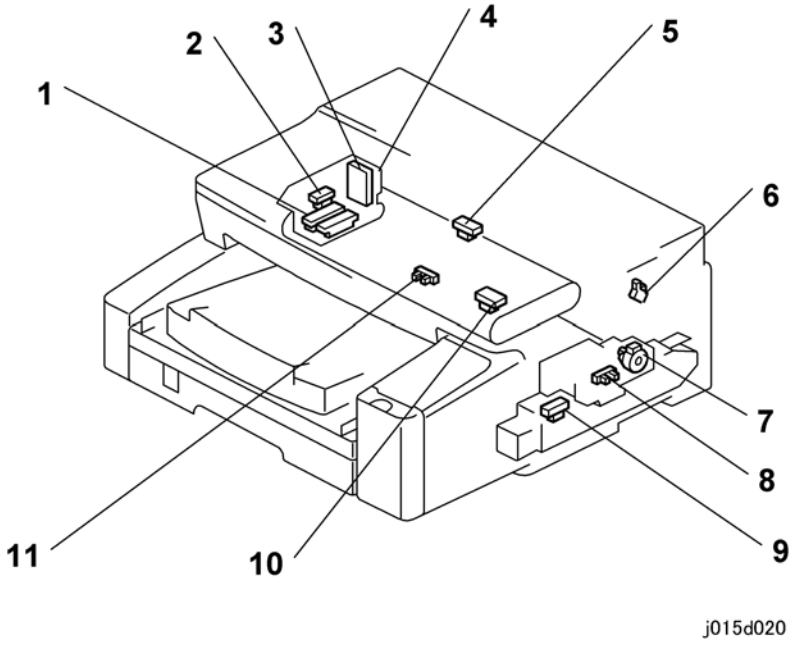
7. **Ink collector unit cover**

   Open and remove the ink collector unit when it needs to be replaced, or before servicing the printer.

Electrical Components

Overview

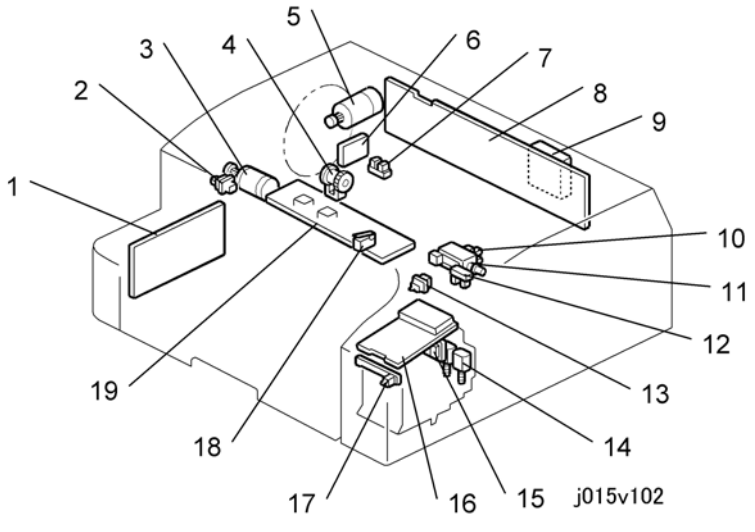
J015



j015d020

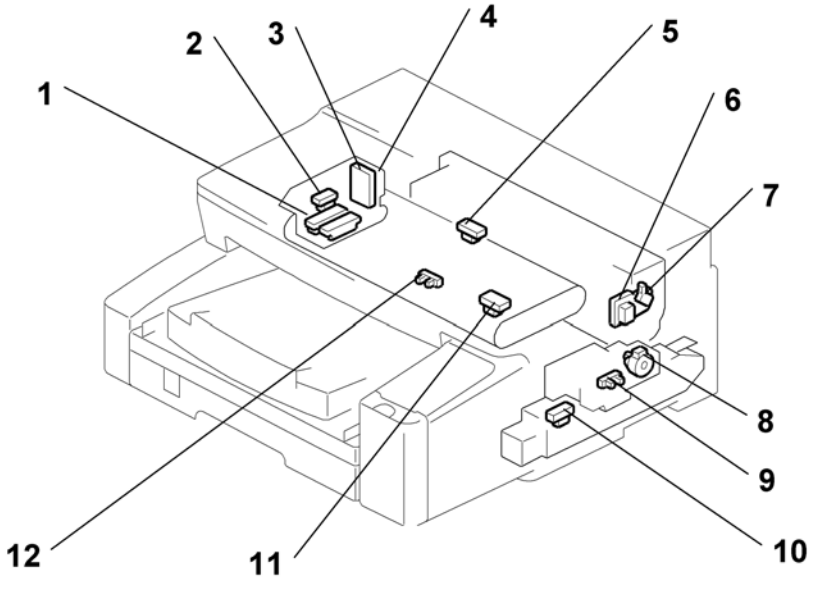
1	Print Heads
2	1st Registration Sensor
3	HRB
4	Horizontal Encoder Sensor
5	2nd Registration Sensor
6	Rear Jam Removal Door Switch
7	Maintenance Motor
8	Maintenance HP Sensor
9	Ink Collector Unit Sensor

10	Temperature/Humidity Sensor
11	Paper End Sensor



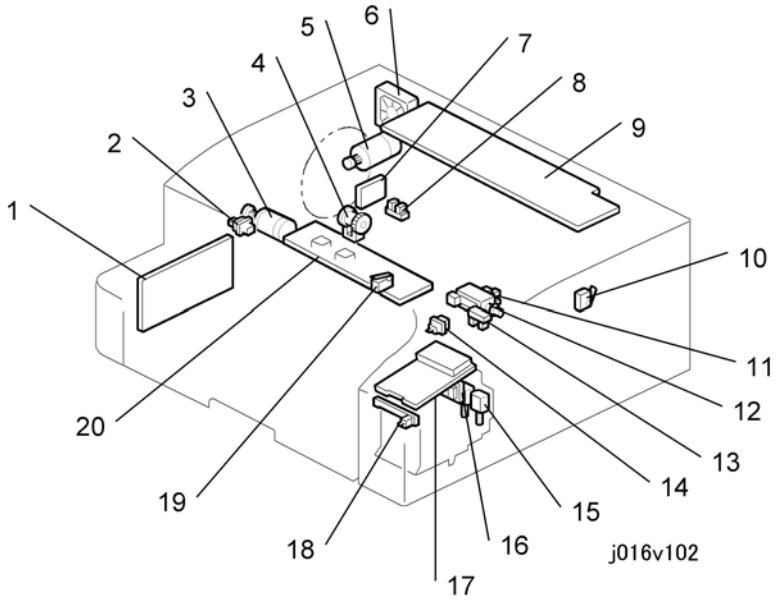
1	PSU	11	Air Release Solenoid
2	Jam Feed Door Switch	12	Carriage Position Sensor
3	Vertical Motor	13	Paper Tray Switch
4	Paper Feed Clutch	14	Ink Pump Motors (x2)
5	Horizontal Motor	15	CCB
6	SENC	16	OPU PCB
7	Vertical Encoder Sensor	17	Right Front Door Switch
8	Control Board	18	Top Cover Switch
9	Cooling Fan	19	HVPS
10	Ink Level Sensor		

J016



j016d020

1	Print Heads
2	1st Registration Sensor
3	HRB
4	Horizontal Encoder Sensor
5	2nd Registration Sensor
6	DIB
7	Duplexer Cover Switch
8	Maintenance Motor
9	Maintenance HP Sensor
10	Ink Collector Unit Sensor
11	Temperature/Humidity Sensor
12	Paper End Sensor



1	PSU	11	Ink Level Sensor
2	Jam Feed Door Switch	12	Air Release Solenoid
3	Vertical Motor	13	Carriage Position Sensor
4	Paper Feed Clutch	14	Paper Tray Switch
5	Horizontal Motor	15	Ink Pump Motors (x2)
6	Cooling Fan	16	CCB
7	SENC	17	OPU PCB
8	Vertical Encoder Sensor	18	Right Front Door Switch
9	Control Board	19	Top Cover Switch
10	Rear Plate, Duplexer Switch	20	HVPS

Electrical Component Summary

No.	Component	Function
Clutches		

No.	Component	Function
CL	Bypass Paper Feed Clutch – CL4 (J106 only)	A one-way clutch that controls the operation of the pick-up roller. Releases and allows the pick-up roller (a half roller) to rotate and pick-up the sheet and feed it. When the roller reaches its point of half-rotation, the pawl of the clutch stops the pick-up roller. The paper feed motor continues to rotate and drive the paper feed rollers that transport the paper out of the bypass unit.
CL	PFU Paper Feed Clutch – CL2 (J106 only)	A one-way clutch that controls the operation of the pick-up roller. Releases and allows the pick-up roller (a half roller) to rotate and pick-up the sheet and feed it. When the roller reaches its point of half-rotation, the pawl of the clutch stops the pick-up roller. The paper feed motor continues to rotate and drive the paper feed rollers that transport the paper out of the PFU paper tray.
CL	Paper Feed Clutch - CL1	This is the magnetic clutch that controls the operation of the paper feed roller.
Motors		
MT	Bypass Paper Feed Motor – STM4 (J106 only)	Mounted in the multi bypass tray. Drives the pick-up roller and paper feed rollers that feed paper from the bypass tray into the printer.
MT	Cooling Fan	Mounted on the right rear corner of the printer (viewed from the back). This fan pulls hot air from the interior of the printer and pushes it out through a ventilation port.
MT	Horizontal Motor - DCM1	Mounted on the left side of the printer, drives forward and reverse to control the timing belt that moves the carriage left and right during printing. The operation of the motor is controlled by the horizontal encoder sensor (a long film strip) mounted behind the carriage.
MT	Ink Pump Motor (KC) – DCM3	Runs forward to pump cyan (C) to Print Head 2, reverses to pump black (K) to Print Head 2.
MT	Ink Pump Motor (M) – DCM4	Runs forward to pump yellow (Y) to Print Head 1, reverses to pump magenta (M) to Print Head 1.
MT	Maintenance Motor – MT STM1	Mounted in the maintenance unit. Drives the maintenance unit: 1) Rotates forward to drive the shaft that raises and lowers the caps during print head cleaning, 2) Reverses to drive the simple tube pump that siphons ink from the print head through the right, 3) Raises

No.	Component	Function
		and lowers the wiper that removes ink collected around the print head.
MT	PFU Paper Feed Motor – STM2 (J106 only)	Mounted in the PFU. Drives the pick-up roller and paper feed rollers that feed paper from the PFU tray into the printer.
MT	Vertical Motor (DCM2)	Mounted behind the vertical encoder wheel and to the left of the PSU. This motor, controlled by the rotation fo the vertical encoder wheel and SENC board, drives the paper rollers that drive the transport belt.
PCBs		
PCB	CCB (Cartridge Control Board)	Mounted in the cartridge holder behind the right front door of the printer. This PCB relays signals between the control board on top of the printer and the ink pump motors that supply ink to the ink tanks. It also relays the ID chip signals that detect whether the ink cartridges are installed properly in the correct slots of the cartridge holder.
PCB	CTL (Control Board)	Mounted on top of the printer and below the top cover (protected by a metal plate). Controls overall operation of the printer, mainly: 1) image data processing, 2) interface management (USB, duplexer, bypass tray, PFU, etc.) 3) all sensors, motors, other devices.
PCB	DIB (Duplex Interface Board) (J106 only)	Mounted in the duplex unit. This PCB controls the operation of the duplexer. This PCB also contains the duplexer cover switch that detects when the duplexer cover is open and closed. The printer will not operate if the duplexer is not installed properly, or if the duplexer cover is open.
PCB	Duplexer Detection Board (J106 only)	Mounted behind the printer. The metal prongs of the DIB contact this board make the connection between the DIB and the duplexer cover switch mounted on the DIB. This contact must be closed for the printer to operate. The duplexer is not an option. It must be installed at all times, even when printing on only one side.
PCB	HRB (Head Relay Board)	Mounted behind the print heads on the carriage. This board performs many important functions: 1) contains the horizontal encoder sensor that reads the horizontal encoder (the film strip) that controls the reverse/forward timing of the horizontal motor

No.	Component	Function
		that moves the carriage during printing, 2) relays the readings of the 1st registration sensor mounted on the left edge of the carriage, 3) contains a small thermistor that detects the temperature around the print heads, 4) receives and relays signals from the ink collector unit to the control board.
PCB	HVPS (High Voltage Power Supply)	Mounted under the top cover and above the transport belt. Generates the voltages applied to the transport belt that hold the paper on the belt during printing. Two interlock switches, one connected to the top cover and the other to the duplexer cover, prevent the HVPS from operating if either or both covers are open.
PCB	ID Chip 1	The identification chip of the black (K) ink cartridge.
PCB	ID Chip 2	The identification chip of the cyan (C ink cartridge.
PCB	ID Chip 3	The identification chip of the magenta (M) ink cartridge.
PCB	ID Chip 4	The identification chip of the yellow (Y) ink cartridge.
PCB	Multi Bypass Tray Control Board	Mounted inside the multi bypass tray. This is the main control board that controls operation of the bypass tray and interfaces with the printer.
PCB	OPU (Operation Panel Unit	Mounted under the operation panel LCD and keypad. Controls the operation of the operation panel. The right front door sensor is also mounted on this PCB.
PCB	PFU Main Board (J106 only)	Mounted in the optional paper feed unit. This is the board that controls operation of the paper feed unit and interfaces with the printer.
PCB	PSU (Power Supply Unit)	Mounted under the left front cover. Supplies both 37V and 5.1V power to the HVPS and all motors in the printer.
PCB	SENC (Sub Scan Encoder)	A small PCB mounted below and slightly to the left of the vertical encoder wheel. The vertical encoder sensor is mounted and positioned on this PCB so the rim of the vertical encoder wheel passes through its gap as the wheel rotates. The sensor reads the code on the rim of the wheel to control the operation of paper feed timing and operation of the vertical feed motor.
Print Heads		

No.	Component	Function
PH	Print Head 1	Contains 2 ink tanks: M, Y
PH	Print Head 2	Contains 2 ink tanks: C, K
Sensors		
SN	1st Registration Sensor	Attached to the left side of the carriage. As the carriage moves from side to side during printing. The registration sensor performs two important functions for print control: 1) It detects the leading edge of every sheet, and 2) it detects the width of the 1st sheet of every print job when the carriage and sensor pass horizontally over the vertical edge of the 1st sheet as it feeds.
SN	2nd Registration Sensor	Located in the center of the printer above the transport belt and behind the horizontal motor timing belt. This photosensor detects the leading and trailing edge of each sheet when the printer is printing at high speed. These readings are used to control job timing and to detect paper jams.
SN	Air Sensors	A pair of vertical pins at the top of each ink tank. This pair of pins detects changes in the voltage differential on the surface of the ink inside the print head tank. When these terminals detect air in the tank, this actuates the air release solenoid and vents air from the tank through the air release valve. This allows more ink to enter the tank.
SN	Carriage Position Sensor	Mounted under the right, front corner of the top cover. Detects the position of the carriage and print heads above the paper. When the envelope selector is pulled forward, the feeler leaves the gap and switches the sensor off. This mechanism is used to detect the up and down position of the carriage and print heads.
SN	Ink Cartridge Set Switches	A microswitch for each ink cartridge connected in series and mounted on the ink cartridge detection plate at the back of the right front cover that holds the ink cartridges. A metal contact on the back of the ink cartridge makes contact with the microswitch when the ink cartridge is inserted. This tells the machine whether the ink cartridge is inserted or inserted correctly.
SN	Ink Collector Unit Sensor	A "smart" reflective sensor mounted at the back of the ink collector unit. Detects when the collector unit is almost full and alerts the operator that the ink collector unit needs to be replaced.

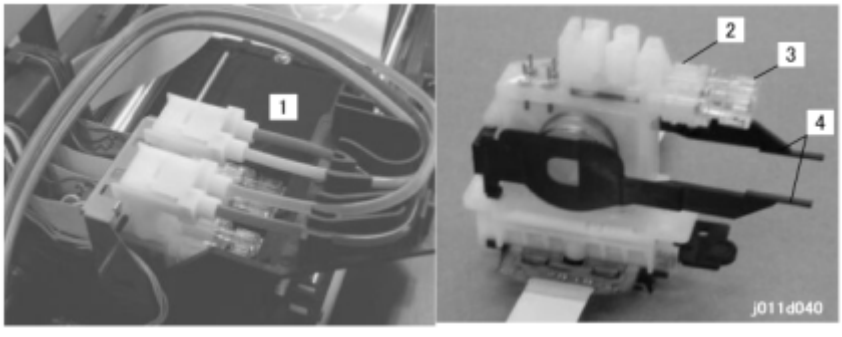
No.	Component	Function
SN	Ink Level Sensor	Mounted above the front guide rail. Monitors the positions of the ink level lever of each ink tank. The vacuum created inside the ink tanks as ink is consumed gradually draws the base of the spring-loaded arms in against the sides of the tank. Drawing the base closer to the side of the tank forces the tip of the arm out. The ink level sensor detects the position of the tip every time it passes through the gap of the sensor.
SN	Maintenance HP Sensor	An interrupt sensor mounted in the maintenance unit that controls the operation of the maintenance motor in the print head cleaning cycle. At the beginning of the cleaning cycle, a feeler leaves the gap of this sensor and switches the motor on. At the end of the cleaning cycle the feeler rotates into the gap, switches the sensor off. This switches the motor off and the caps and wiper remain down at the home position.
SN	PFU Paper Sensor 1 (J106 only)	Located below the bottom plate of the paper cassette in Tray 2 (the optional paper feed unit). A spring loaded bottom plate keeps the top of the stack against the pick-up roller for paper feed. A free-swinging feeler rests on top of the stack. After the last sheet feeds, one end of the feeler falls down through a cutout in the bottom plate. An actuator on the other end of the feeler swings up and out of the gap in the paper end sensor. This signals paper end.
SN	Paper End Sensor – Tray 1	Located below the transport belt. A spring loaded bottom plate keeps the top of the stack against the pick-up roller for paper feed. A free-swinging feeler rests on top of the stack. After the last sheet feeds, one end of the feeler falls down through a cutout in the bottom plate. An actuator on the other end of the feeler swings up and out of the gap in the paper end sensor. This signals paper end.
SN	Temperature/ Humidity Sensor	Located inside the printer near the transport belt. The temperature/ humidity sensor constantly measures temperature and humidity around the transport belt. The printer uses these readings to adjust the amount of charge applied to the areas of the belt that contact the leading edge, center, and trailing edge of the paper. For more, please refer to Section "4. Troubleshooting".
SN	Trailing Edge Sensor	Mounted at the right, rear corner of the printer (viewed from the back). The feeler of this interrupt sensor is mounted in the center of the paper path and connected to a long shaft. The end of the shaft has an actuator that moves in and out of the sensor gap. The feeler is pushed down by every sheet of paper and the actuator leaves

No.	Component	Function
		the gap, then the feeler pops up again after the trailing edge passes and the actuator enters the gap and switches the sensor off. The length of time the sensor remains on is used to measure the length of the paper for print timing control. The sensor issues a paper end alert if the sensor does not turn on after two rotations of the paper feed roller.
SN	Vertical Encoder Sensor	Mounted on the SENC PCB with the rim of the vertical encoder wheel positioned in its gap. This sensor reads the code on the rim of the vertical encoder wheel as it rotates to control the operation of the vertical motor during paper feed.
SN	Horizontal Encoder Sensor	Mounted on the carriage with the horizontal encoder (a film strip) positioned in its gap. This sensor reads the code on the edge of the horizontal encoder as the carriage and print heads move horizontally to control the operation of the horizontal motor during printing as the carriage moves left and right during printing.
Solenoids		
SOL	Air Release Solenoid – SOL 1	Located under the right corner of the front cover, near the envelope selector. When the air level sensors detect that there is air in a tank, the system activates the air release solenoid to suck air from the tank. The partial vacuum pulls in the sides of the tank. This changes the position of the feeler on the side of the tank (used for ink level detection) and pulls ink into the tank from the ink supply tube.
Switches		
SW	Top Cover Switch	Mounted under the front edge of the top cover of the printer. Detects when the top cover of the printer is open or closed. The printer will not operate if the top cover is open.
SW	Jam Feed Door Switch	Mounted on the left side, detects when the jam feed door is open and closed.
SW	Paper Tray Switch	Mounted inside the paper cassette well, detects when the paper tray and output tray are removed and inserted. Signals an error if both the paper tray and output tray are not inserted correctly.
SW	Duplexer Cover Switch (J106 only)	Mounted on the DIB inside the duplexer. Detects when the duplexer cover is open or closed. The printer will not operate if the duplexer cover is open.

No.	Component	Function
SW	Rear Jam Removal Door Switch (J015 only)	Detects when the door is opened and closed.
Thermistor		
TH	Thermistor	This is a small bulb thermistor on the end of a wire and attached to the HRB. This thermistor measures the temperature around the print heads.

Print Heads

Overview



1	Carriage Unit
2	Print Head Tank
3	Air Release Valve
4	Ink Level Levers

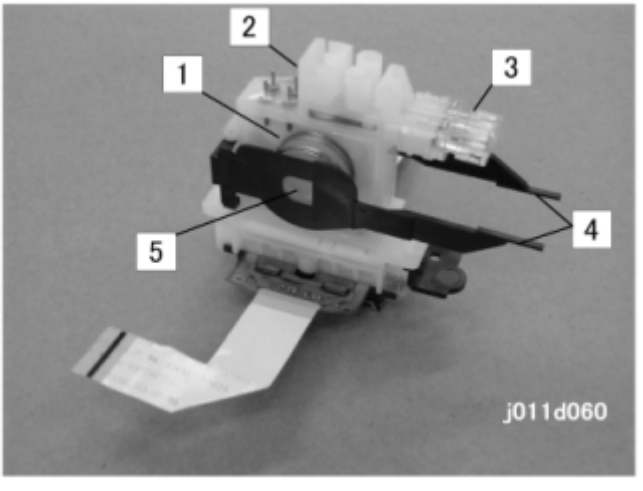
Print Head

The wide print head increases the width of the band printed with one pass. This lets the machine print faster.

Print Head Specifications

Item	J015/J016
Number of Print Heads	2 (Y/M, K/C)
Number of Nozzles	192 x 4 colors 192 nozzles x 2 lines/head
Array	Cross-Hatch (150 dpi x 2 lines)
Voltage Element	Piezoelectric

Print Head Tank



1	Ink Reservoir
2	Ink Supply Port
3	Air Release Valve
4	Ink Level Levers
5	Plastic Bellows

The printer employs a dual-tank system.

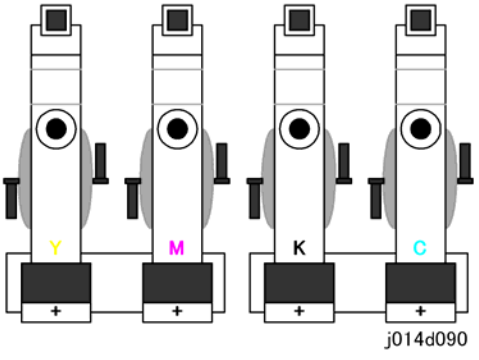
Each ink cartridge (Y, M, C, K) is connected to a print head tank via a plastic tube.

The first tank of the dual-tank system is the ink cartridge that supplies the ink through a tube to the print head tank unit. The second tank is the small ink reservoir inside the print head tank unit.

The high volume ink cartridges and the carriage components are extremely lightweight.

A print head tank has four main parts as shown above:

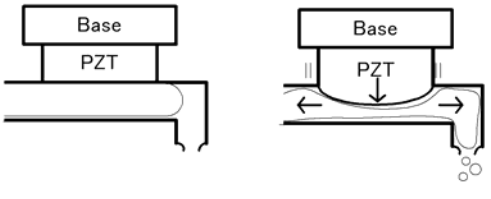
- **Ink reservoir**. This is where ink collects before it is fed to the print head below.
- **Ink supply port**. Ink enters here from the ink cartridge mounted under the operation panel.
- **Plastic bellows**. A spring forces out the flexible, thin plastic film on the left side of the ink tank.
- **Ink level lever**. When the ink tank is mounted in the printer, this lever pushes the bellows down to increase pressure in the ink reservoir. The ink level sensor mounted on the carriage detects the position of these arms to determine the amount of ink remaining in a tank. (The actuator spreads outward when the bellows gradually collapses as ink is consumed.)
- **Air release valve**. Purges air periodically to keep the ink inside the ink tank unit under the prescribed pressure and the amount of air in the tank low.



The illustration above shows the arrangement of the print heads and print head tanks.

- Two print head tanks are mounted on one print head unit.
- Each print head tank unit feeds to its own nozzle array (one for each color).
- Each print head tank holds 4.3 ml of ink.

Ink Ejection Device

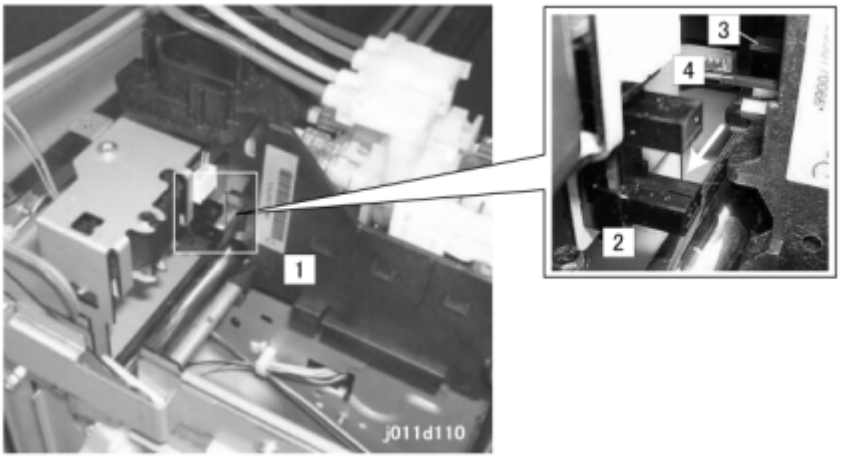


Each print head uses a piezo-electric element (PZT) . This forces ink from the ink reservoirs out of the ink nozzles and onto the paper.

This is done with pressure. At the prescribed time, an electric charge is applied to the PZT. This makes the PZT expand. The expansion of the PZT puts pressure on the ink below. This makes the ink move in both directions. The ink on the right is forced out the ejection port.

This device is unique. Other printers on the market use small heaters that form bubbles to eject ink from the ports.

Ink Near End



The printer detects ink near-end in two ways:

- The printer software maintains a count of how much ink is consumed from each cartridge and signals near-end when a cartridge is nearly empty.
- As a backup method, the ink level sensor monitors the positions of the ink level levers on the sides of the ink tanks. This is described below.

Each print head in the ink tank unit [1] has a ink level lever This lever presses against a spring loaded bellows in the center of the print head tank. The right side of each tank is constructed of flexible plastic:

- As ink enters the tank, the pressure of the ink pushes against the side of the tank and moves the lever away from the side of the print head tank.
- As ink is consumed during printing, the vacuum created by the ink leaving the tank pulls the lever toward the side of the print head tank.

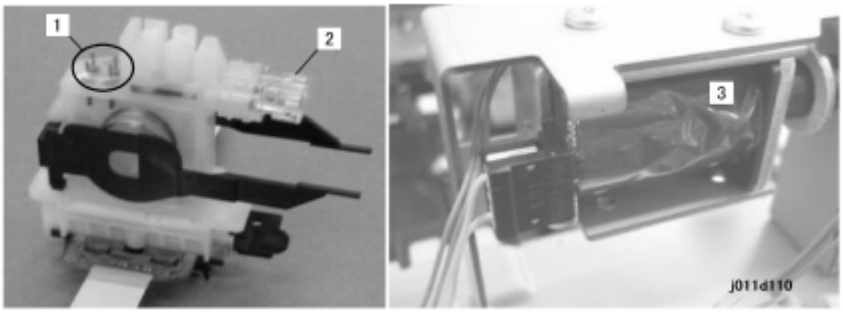
The ink level sensor [2], mounted above the front guide rail, checks the left and right positions of the ink level levers [3] and [4] every time the carriage passes.

When the ink level sensor detects that a lever is completely flat against the side of the tank, the printer sends a prescribed amount of ink to the tank from the ink cartridge.

The sensor signals the 'ink near-end' if the ink level lever does not return to the full position (away from the side of the tank) within the prescribed time after the printer requests a refill from the ink cartridge.

After the near-end alert, the printer will continue to print with the ink that remains in the partially filled tank until the printer issues the ink end alert.

Ink Out



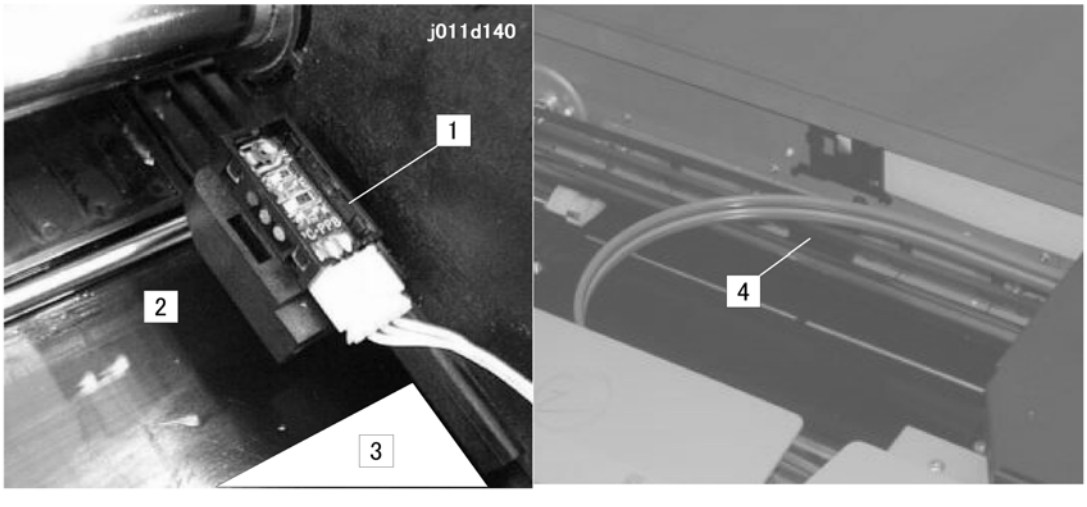
A pair of vertical sensor pins [1] is provided for each tank. These pins detect changes in the voltage differential on the surface of the ink inside the print head tank to detect the presence of air. When these terminals detect air in the tank, air escapes through the air release valve [2] opened by the air release solenoid [3]. This allows more ink to enter the tank.

This is a continuous operation. The sensor pin readings signal the ink-out condition when:

- The ink near-end alert has been issued.
- The continued presence of air in the tank indicates that no ink remains in the tank.

As a backup measure, the firmware counts the amount of ink consumed after every near end occurrence. When this count reaches the value prescribed for the ink cartridge, this will also signal an ink-out condition.

Registration Sensors



1	1st Registration Sensor
2	Transport Belt
3	Paper (Leading Edge)
4	2nd Registration Sensor

1st Registration Sensor

The 1st registration sensor is attached to the left side of the carriage and moves side to side with the carriage during printing.

The 1st registration sensor performs two important functions for print control:

- Detects the leading edge of every sheet
- Detects the width of the paper when the carriage and sensor pass horizontally over the vertical edge of the paper as it feeds.

Important

- **This is not automatic paper size detection. The paper size must be set with the printer driver.**
- **The printer will signal an alert if the detected size does not match the size selected for the print job.**

2nd Registration Sensor

The 2nd registration sensor is a photosensor mounted over the transport belt in the middle of the transport belt. The 2nd registration sensor detects the leading and trailing edge of each sheet during high speed printing. The printer uses this information for print control timing.

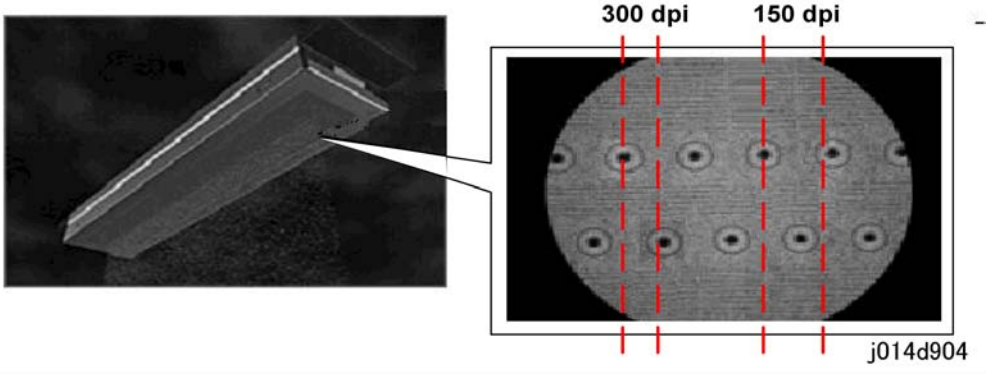
Ink

Viscous ink (liquid gel)

All four colors (Y, M, C, K) are fast drying pigment based ink suitable for high-speed simplex and duplex printing without stains on the backs of printed sheets. Due their high viscosity, the inks do not soak through the paper. Once the inks have dried they are resistant to the effects of exposure to water and sunlight so they will neither smear nor fade. There are two steps in the drying process. First, the ink quickly loses about 35% of its water content and gelatinizes, then the ink dries. .

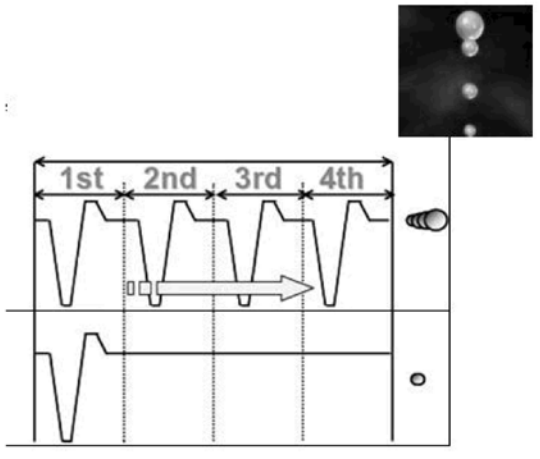
Wide Print Head

The large print heads are 1.27 in. wide (32.3 mm). Each head has 2 lines of nozzles for each color with 192 nozzles in each line (Total: 384 nozzles).



During 150 dpi printing only one line of nozzles eject ink as shown above. During 300 dpi printing the nozzle ports (alternately offset as shown above) of both lines eject ink.

The printing system employs Modulation Dot Technology through a piezo electric element that strictly controls the ink flow to form dots.



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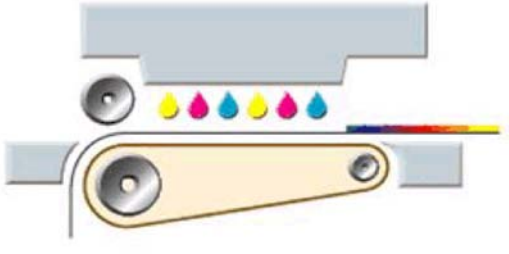
Four dots are required to form a large drop but only one is sufficient for a small drop. The four dots for a large drop are ejected very quickly as they form one dot before they reach the surface of the paper. The 4th dot in this case is ejected extremely fast under high pressure (1 Mega Pascal).

1. Dual Tank System

   A dual tank arrangement means no waste of liquid gel (ink). The ink is stored at two locations, in the ink cartridge and in a tank in the print head. When the level of the ink in the print head drops below a prescribed level, the tank will be refilled. The ink is vacuum fed from the ink cartridge, into the print head ink tank, then to the print head nozzles. Vacuum feeding guarantees that a ink cartridge is completely empty when the machine signals ink end. When a ink cartridge needs to be replaced, it is completely empty.

Belt Transfer System



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The machine employs an electrostatic transfer belt system to hold the paper in place during printing. The strong electrostatic charge on the belt holds the paper tightly to the surface of the belt as the paper is fed below the print heads that move above the surface of the paper. This system positions the paper more efficiently than a roller system and holds it in place. The printer can print over a wider area, the margins at

the top and bottom of the paper are only 4.2 mm (0.165"). The belt transfer system also allows use of wider print heads at faster printing speeds.

Level Color Mode

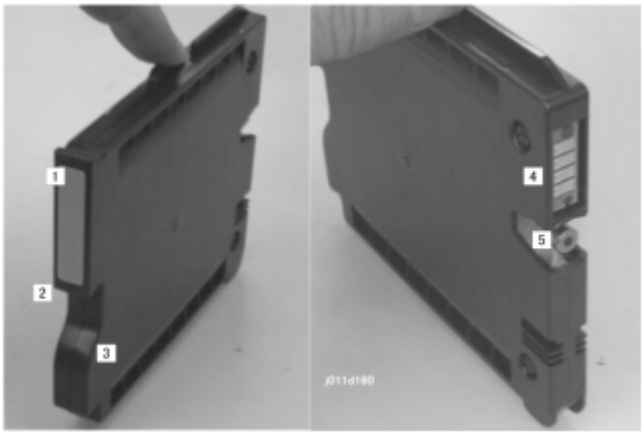
In order to conserve ink the printer can be set to the "Level Color Mode" to reduce the about of ink used in graphic images only (text is not affected). Once Level Color Mode is selected the amount of ink used to print images and graphics is reduced by almost 50%, the text remains at the same density of the normal color mode.

Ink Supply

Overview

1	Ink cartridges (x 4): Y, M, C, K
2	Ink Pump Unit
3	Ink Supply Tubes

Ink Cartridges (Print Cartridges)



1	Color index tab
2	Grip
3	Release
4	Contacts
5	Ink supply port

There is a separate ink cartridge for each color (Y, M, C, K). Each ink cartridge is vacuum packed. Ink cartridges are available in different sizes.

Note

- The starter cartridges are provided with purchase of the printer and contain less ink than the medium and large capacity ink cartridges that must be purchased.

Note

- The estimated service life of ink cartridges is only a rough estimate.
- The estimated service life may vary significantly due to the amount of coverage on a page, environmental conditions, and so on.
- After the printer signals the near end alert for a ink cartridge, approximately 40 pages can be printed before the end alert is issued.

All the colors (Y, M, C, K) are pigment inks.

- These inks require only standard PPC to get quality printouts (special print media are not required).
- The inks do not smear because they dry more quickly.
- They do not fade in bright light. This makes their colors highly durable.

Ink Cartridge (Print Cartridge) Set Sensors

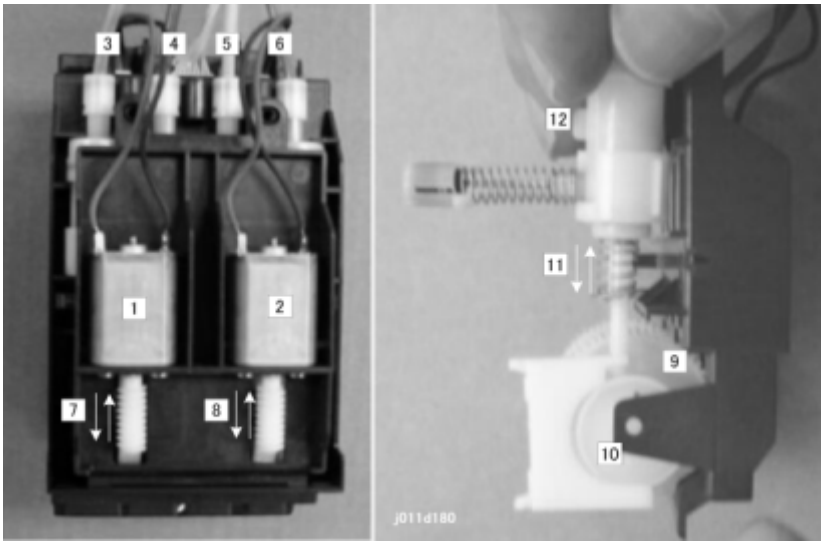
Four micro switches detect the ink cartridges. The switches are connected in series above the cartridge set detection plate [1]. Each tank is provided with a micro-switch. The machine can specifically detect which ink cartridge is not set correctly. An open switch signals when:

- A cartridge is not in the machine
- A cartridge is not installed correctly

To solve this problem, the operator must open the ink cartridge cover and confirm whether:

- A cartridge is not in the machine
- A cartridge is not installed properly

Ink Pumps



1	Ink Pump Motor 1
2	Ink Pump Motor 2
3 to 6	Ink Supply Tubes for Y, M, C, K ink.
7	Worm Gear (1st supply motor)
8	Worm Gear (2nd supply motor)
9	Gear
10	Cam
11	Plunger
12	Pump

The ink supply pump is divided into two compartments:

- M/Y compartment (for Magenta, Yellow Ink cartridges)
- K/C compartment (For Black, Cyan Ink cartridges)

Each compartment contains:

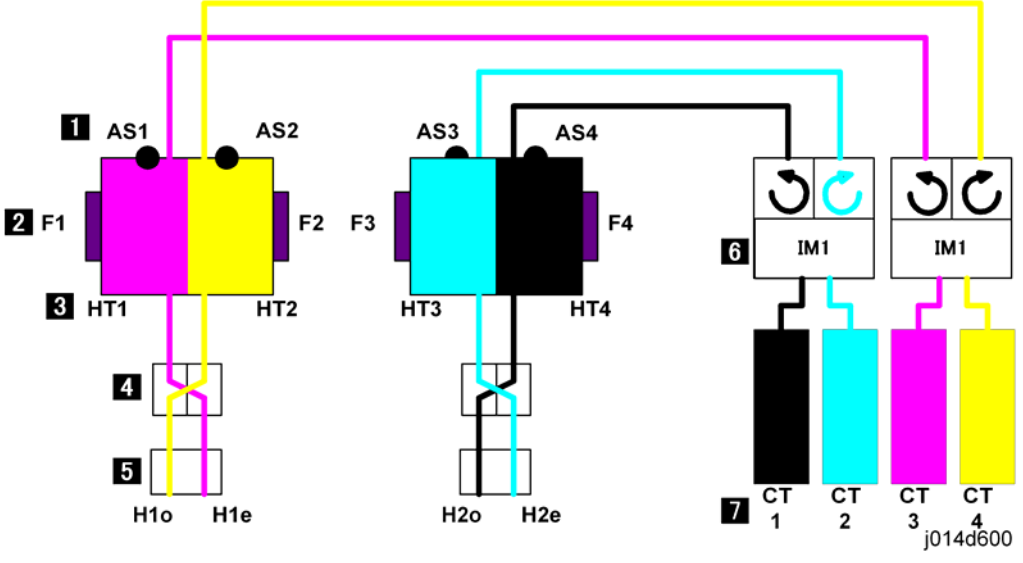
- 1 pump motor.
- 2 pumps (one for each ink cartridge)
- 2 cams

When a print head tank needs ink:

- The printer switches on one ink pump motor. The motor and its worm gear are rotated forward or reverse (depending on which type of ink is requested). Only one pump operates at a time.
- One or the other pump is operated, depending on whether the ink pump motor rotates forward or reverse. (Two pumps that share a motor cannot operate together at the same time.)
- A cam striking a plunger vibrates the plunger to form the vacuum in the line that sucks ink from the cartridge.
- The supply motor operates long enough to pump the prescribed amount of ink to the tank. Then it switches off.

Print Heads

The mechanisms that supply the ink from the ink cartridges to the print heads are identical for the machines of this series.



No.	Component	
1	AS	Air Sensors x2
2	F	Feelers x4
3	HT	Head Tanks x4
4	---	Filter Units x2
5	H	Print Heads x2

No.	Component	
6	IM	Ink Pump Motors x2
7	CT	Ink Cartridges x4

An air sensor [1], two feelers [2], and head tank [3] comprise the reservoir of the ink supply system.

The ink flows from the head tank through a filter [4] that contains the piezoelectric element that expands upon application of a electrical charge to force ink out of the nozzles of the print head [5].

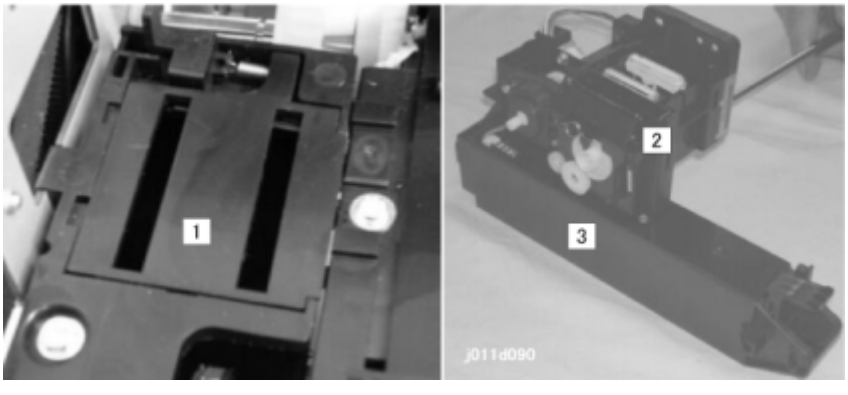
Two ink pump motors [6] drive the simple pump mechanisms that draw ink out of the ink cartridges [7] and send it to the head tanks.

One ink pump motor operates the pumps of two ink cartridges. The ink pump motor drives a single worm gear. The direction of rotation of the gear determines which pump is operated. For example, when the KC ink pump motor in the illustration above rotates the worm gear forward, the pump draws cyan ink (C) from the C ink cartridge, and when the motor reverses, it draws black ink (K) from the K ink cartridge.

The ink pump motor switches on in response to a request for more ink when the ink level sensor detects that the position of a feeler on the side of a tank indicates that a tank is low. Ink is also drawn into the tank from the ink supply tubes when the air sensors detect too much air in a tank and not enough ink. The air sensor activates the air release solenoid which creates a partial vacuum inside the tank that purges the air from the tank through a vent and at the same time draws more ink from the supply tubes into the tank.

Print Head Maintenance

Overview

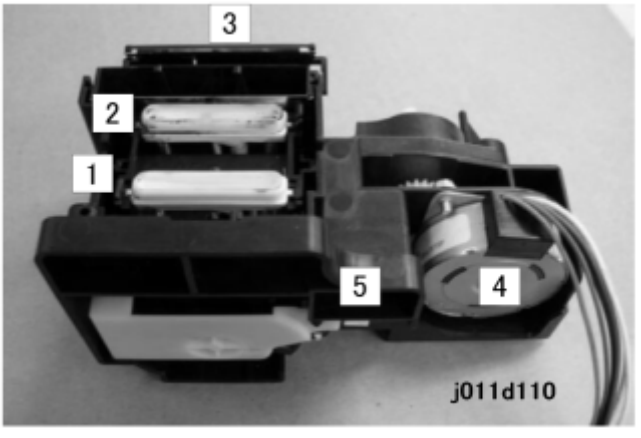


1	Flushing Gate
2	Maintenance Unit

3	Ink Collector Unit

Maintenance Unit

Overview



The maintenance unit performs two important functions:

- Keeps the surface of the print heads moist when they are not being used.
- Cleans the print heads with suction during print head cleaning. (The print heads are also cleaned automatically at prescribed intervals.

Caps [1] and [2] cover the print heads when the carriage is at the home position on the right side of the printer.

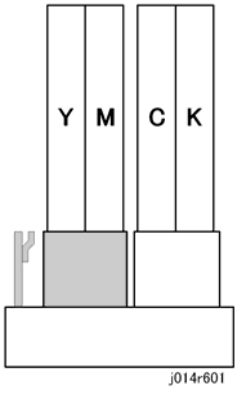
- Cap [2] is the only cap that can siphon excess ink from a print head. The ink gets siphoned from the head with a simple, pressure tube-pump mechanism.

During print head cleaning:

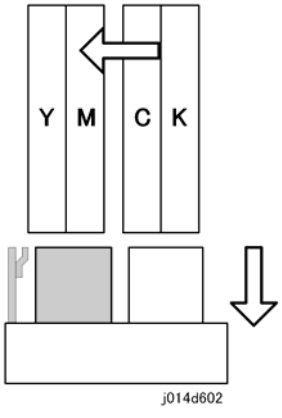
- The maintenance motor [4] runs forward. Two cams lower the bottom of the unit.
- Next, the motor reverses. When the motor reverses, it disengages a one-way clutch attached to the main shaft. This allows it to rotate a second shaft that rotates a cam against the side of the plastic tube. This alternating pressure and release on the side of the tube comprises a very simple pump mechanism.
- At the prescribed time, the motor runs forward again until a feeler on the main shaft reaches the gap of the maintenance HP sensor (located at [5] (but not shown). This switches the motor off.
- Another cam attached to the main shaft raises and lowers the wiper [3]. The wiper cleans the surface of the print head above as the carriage moves left and then right.

Maintenance Unit Cleaning Cycle

The operator can start the cleaning operation from the printer driver or the operation panel. You can Print Head 1 or Print Head 2 (or clean them both) if you start the clean job with the printer driver.

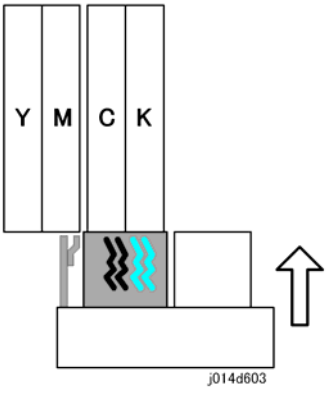


Cleaning starts with the carrier and print heads capped and resting on top of the maintenance unit as shown above.

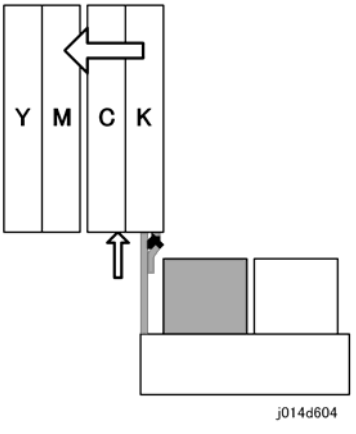


When the cleaning cycle starts, the maintenance unit is lowered by the rotation of the main shaft. The cams rotate away from the bottom of the unit.

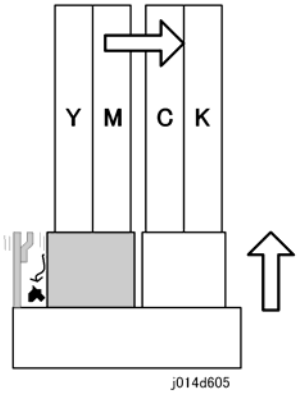
At the same time, the carriage moves the print head unit to the left.



The carriage moves the first print head above the first vent of the maintenance unit (in this example, Print Head 2 "K, C"). Only the first vent can siphon ink from the print head into the ink collector unit. Another cam on the main shaft presses the maintenance unit up so the C print head covers the first vent. Next, the maintenance motor reverses. The one-way clutch disengages the main shaft and engages the second shaft. This operates the tube-pump. The suction from the pump sucks ink from the surface of the print head.



Next, the maintenance unit lowers, and another cam raises the wiper. At the same time the carriage moves the print heads left far enough so the vacuumed print head brushes past the wiper. The wiper cleans the ink from the print head.



Next, the carriage moves the print heads back to the home position. The maintenance unit caps the print heads. A cam on the main shaft below vibrates the small scraper. This removes the ink bolus from the wall of the trap and sends it to the ink collector unit.

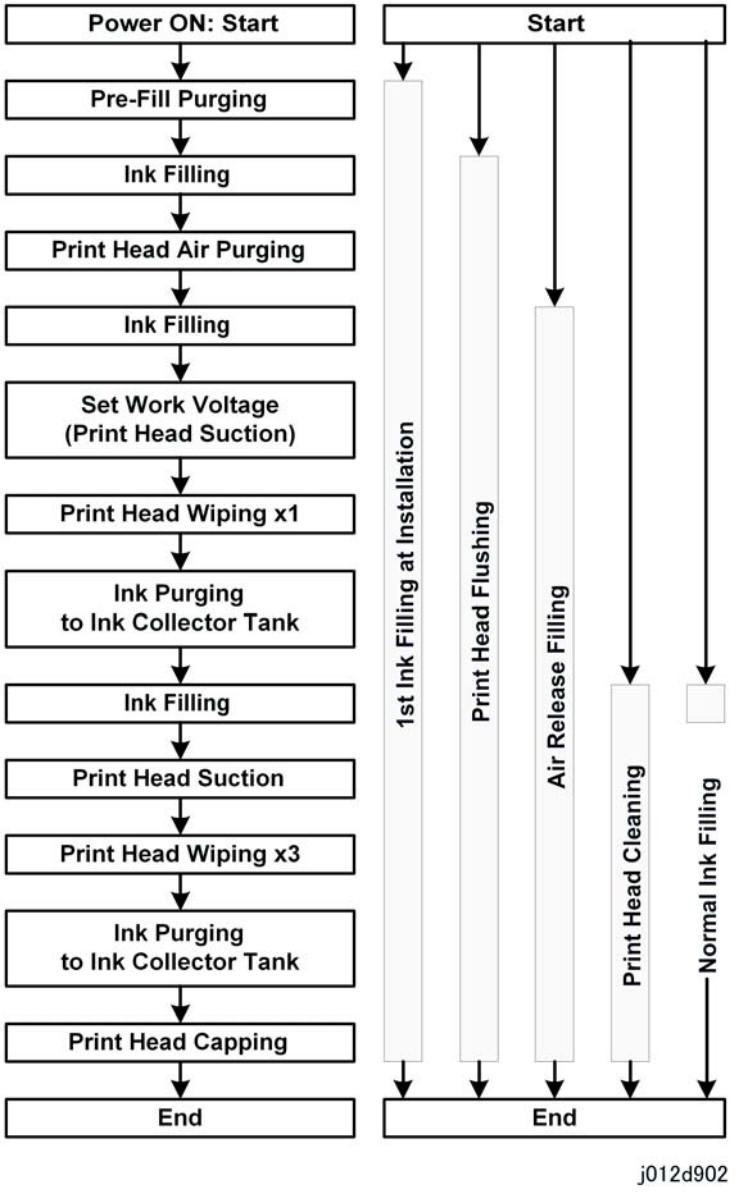
Important

- **This cycle is repeated for each print head selected for cleaning. For more, see Section "4. Troubleshooting".**
- **This cleaning cycle is also done automatically for all print heads if the printer stays idle for the time intervals shown in the table below.**

Cleaning Table

Idle Time	BitSW 8-3: OFF (Value is "0")	BitSW 8-3: ON (Value is "1")
0 < 10hours	No auto maintenance	
< 10hours, < 7days	Ink spit before printing	
< 7days, < 1month	Cleaning	
< 1month, < 3months	Air release and cleaning	
> 3 Months	Air Purge/Ink Filling	Flushing

Print Head Maintenance Cycles



There are three basic ink supply operations:

- Initial Filling
- Normal Filling
- Air Release Filling

Initial Filling

This occurs with the print head ink tanks empty the first time the printer is switched on with ink cartridges in the printer, or after a new ink cartridge has been installed to replace an empty cartridge after the print head ink tank has emptied. Ink supply to the empty print head ink tank from the ink cartridge starts automatically after the printer is switched on.

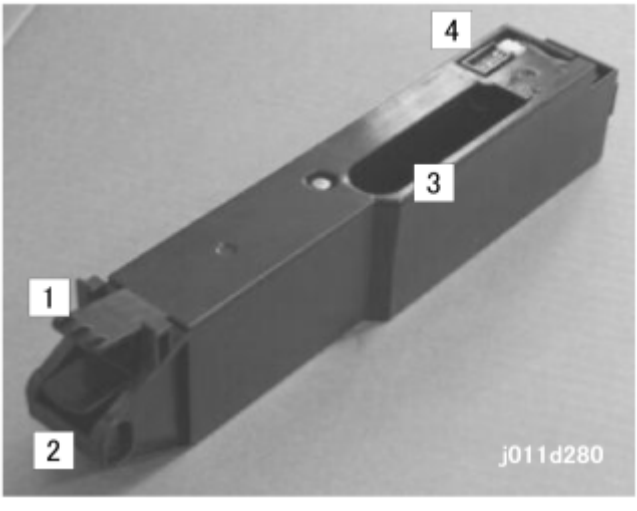
Normal Filling

The machine monitors the level of ink in each ink tank and replenishes the ink supply as soon as the amount of ink drops below the prescribed level.

Air Release Filling

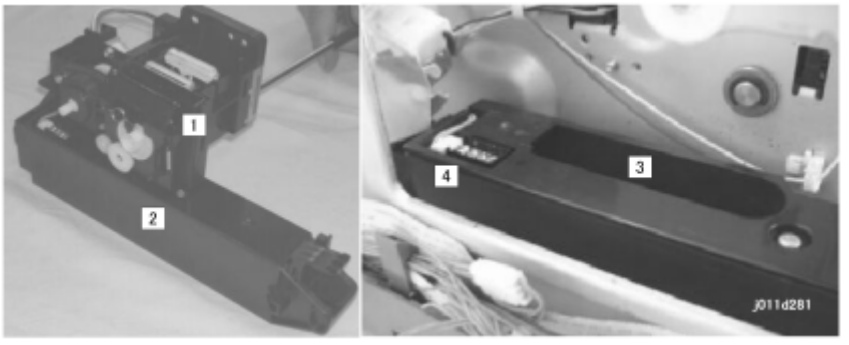
If air is detected inside a print head ink tank at power on, at the beginning of normal filling, at the start of automatic cleaning (done at prescribed intervals), or after air purging (also done at prescribe intervals), then all the ink is purged from the ink tank and replaced immediately with fresh ink.

Ink Collector Unit



1	Ink Collector Unit Release
2	Tank Handle
3	Tank Entrance Slot
4	Ink Collector Unit Sensor

The ink collector unit holds the used ink sent to it from the maintenance unit above.



Inside the printer, the maintenance unit [1] sits on top of the ink collector unit [2].

The ink from the maintenance unit enters the tank through the slot [3].

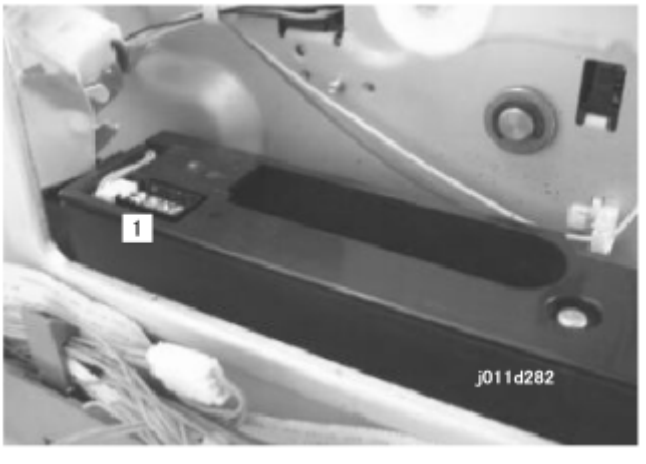
The ink collector unit [4] sensor detects when the tank is full and needs to be replaced.

Once the ink collector unit is full, discard it.

Important

- **Obey the local laws and regulations regarding the disposal of items such as the ink collector unit.**
- **Never attempt to clean an ink collector unit and use it again.**

Ink Collector Ink level sensor



The ink collector ink level sensor [1] is a "smart" reflective photosensor.

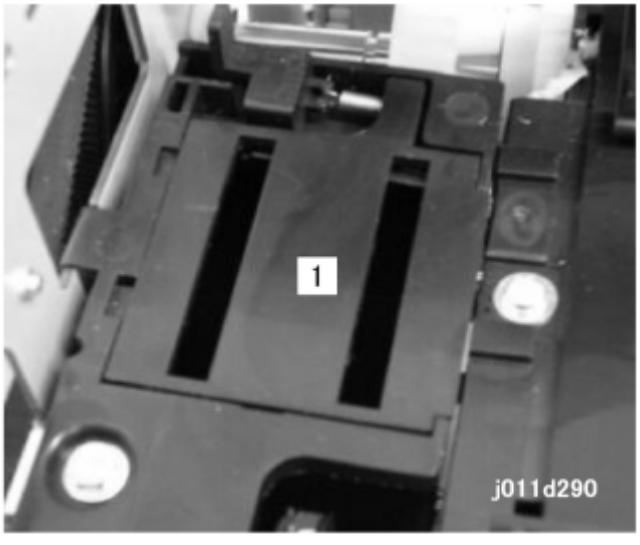
The photosensor measures the changes in the density of the ink materials in the tank. This lets the printer know when the tank is full.

A prompt tells the operator when the printer needs maintenance as soon as this sensor detects the near-full condition. After the near-full alert prompt appears, the printer is allowed to do up to 200 prints

Note

- These are only rough estimates. Fewer pages are printed if many normal and full print head cleanings are done after the maintenance alert.
- SC 992 (Ink Collector Unit Full Error) appears if no maintenance procedures are done. The printer cannot be used once SC992 has appeared. The ink collector unit must be replaced before the printer can be used.

Flushing Unit



During a long print job, the machine flushes all the nozzles with a very small amount of ink at about 15 second intervals. The ink flushed from the nozzles goes through the slots of the flushing gate [1] into a sump below. This keeps the nozzles clear and in good working condition.

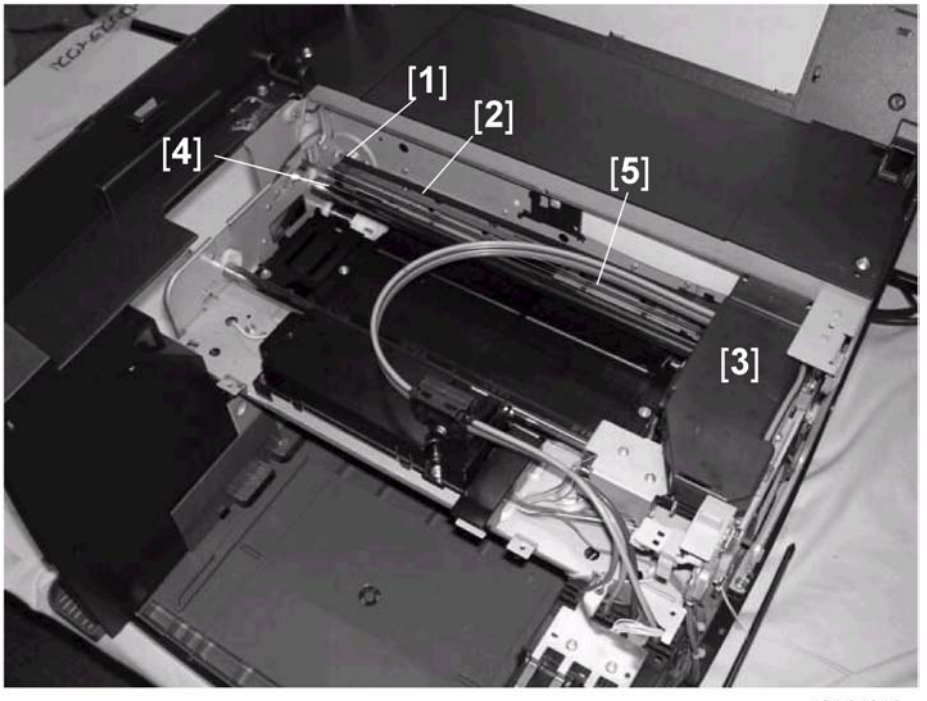
The flushing gates [1] and the ink collection sump (below the gate) are located on the left side of the printer.

Note

- The sump is not connected to the ink collector unit. Ink flushed into the sump remains there.
- The sump of the collection unit should never fill to capacity for the service life of the printer.
- The flushing gate and sump should never require replacement.

Carriage Drive

Overview



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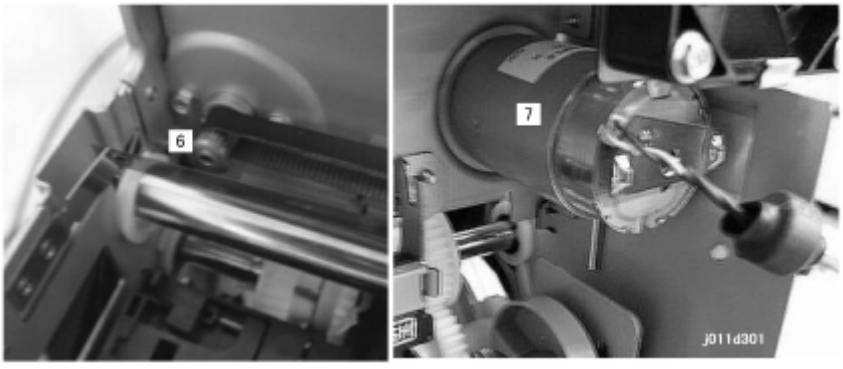
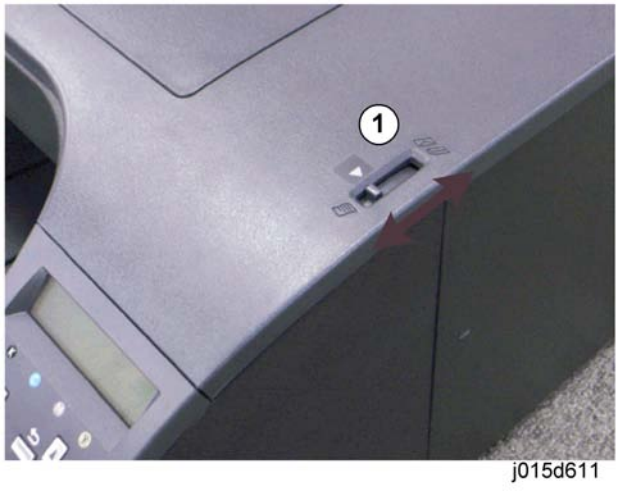
1	Horizontal Motor Drive Gear
2	Timing Belt
3	Carriage (Print Heads)
4	Guide Rod
5	Horizontal Encoder (Translucent Film)

A horizontal motor drive gear turning [1] drives a timing belt [2] connected to the carriage [3]. The forward and reverse rotation of the horizontal drive motor moves the carriage to the left and right side of the printer. The horizontal encoder strip [5], mounted in front of the timing belt is threaded through the horizontal encoder sensor mounted on the carriage. This sensor detects the position of the carriage at the time the carriage moves from side to side during printing.



The picture above shows the horizontal driver gear [6] of the horizontal drive motor [7] mounted on the left rear corner of the printer behind the duplex unit.

Envelope Selector



Move the envelope selector ① to adjust size of the gap between the print heads and the surface of the paper.

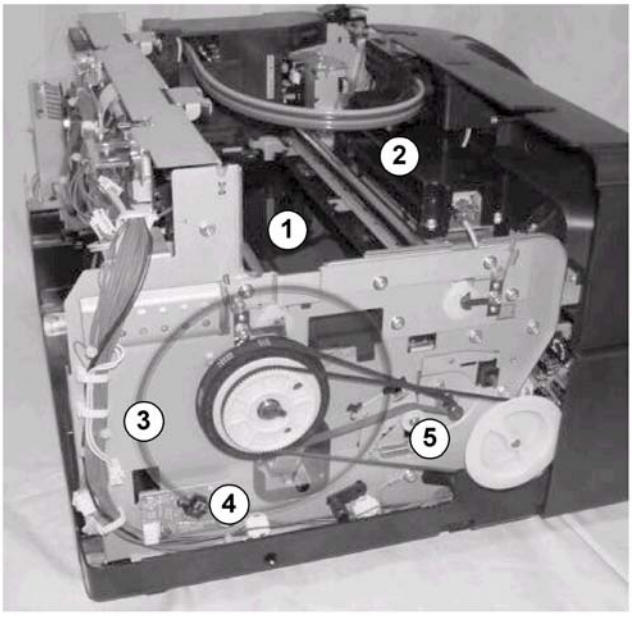
Pushing the lever to the back moves the print heads slightly away from the surface of thick paper and envelopes. This prevents chaffing the printed surface and smearing ink.

A cam operates when the envelope selector pushed back for printing on thick paper or envelopes. This moves a guide rod to create a gap about 0.8 mm wider than the gap for normal printing. Normally, this lever should be set forward for printing on normal paper.

When the envelope selector is pushed back, this raises a feeler into the gap of the carriage position sensor. When the envelope selector is pulled forward, the feeler leaves the gap and switches the sensor off. This mechanism is used to detect the up and down position of the carriage and print heads.

Paper Feed, Transport, Paper Exit

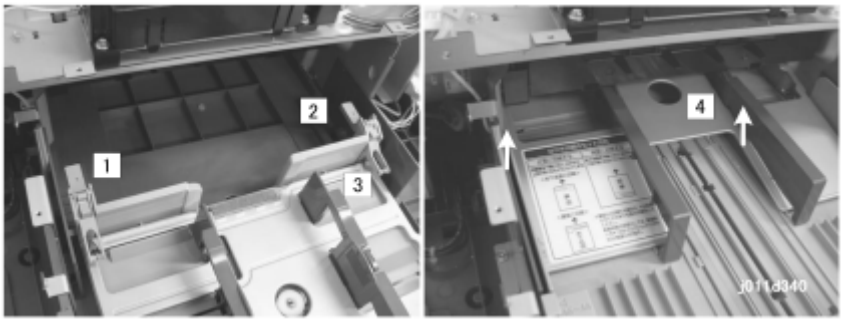
Overview



j015d001

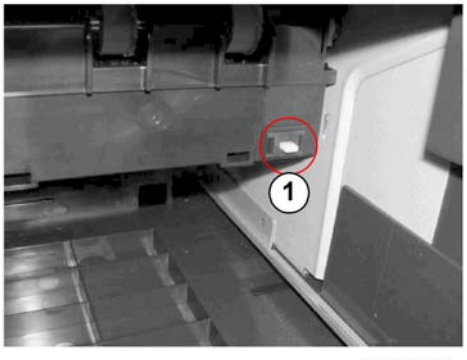
1	Transport Belt Unit
2	HVPS (High Voltage Power Supply)
3	Vertical Encoder
4	Vertical Encoder Sensor
5	Vertical Motor

Cassette Lock/Release



The arms [1] and [2] on both sides of the cassette [3] (guided by rails slanting upward) raise the bottom plate [4] when the paper cassette is pushed into the printer. This raises the paper in the cassette to the correct height for paper feed.

Tray Detection Switch

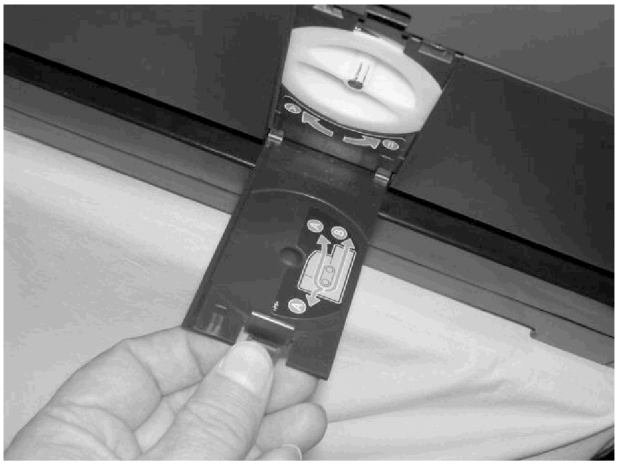


j015d003

The tray detection switch ① is a horizontally mounted push-switch. When the paper tray and output tray are installed correctly this switch is pushed in. This switches it on and tells the printer that the cassette and output tray are correctly installed. If the printer is switched on without the paper tray and output tray installed, this will cause an error.

Actually, the output tray pushes against this switch, so if the paper tray is installed without the output tray, this, too, will cause an error. The paper tray and output must always be installed together.

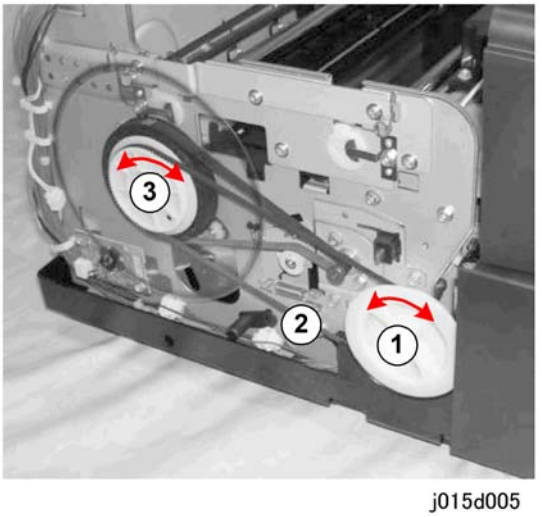
Jam Feed Door



j015d004

When a paper jam occurs the operator can open the jam feed door on the left side of the printer and rotate the wheel in either direction to feed the jammed sheet out of the printer at either the rear or front.

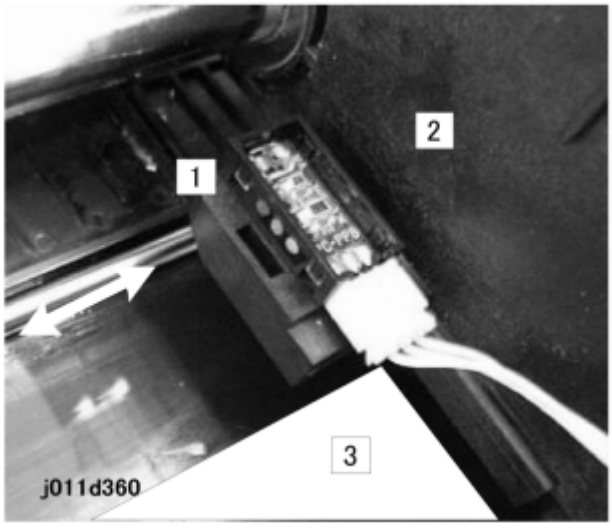
- Rotating the wheel clockwise feeds the jam out the front.
- Rotating the wheel counterclockwise feeds the jam out the back.
- Before feeding the jammed sheet out the back, the operator should remove should open the rear jam removal door (J015) or the duplexer (J016) or rear plate (J016).



j015d005

When the jam feed wheel ① is rotated manually, the belt rotates the feed roller ③ to feed the jammed paper to the front or rear.

Leading Edge and Paper Size Detection



There is no paper size sensor in the standard paper cassette or in the optional 500-Sheet Paper Tray. The paper size can be set on the printer operation panel. The paper size can also be selected with the software application or the printer driver.

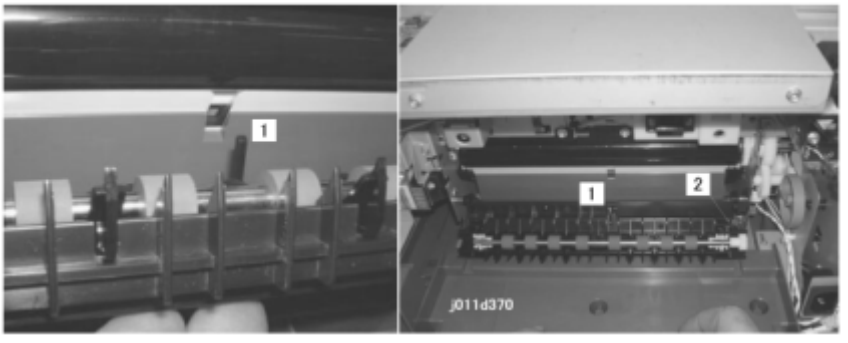
Important

- **The paper size (and other settings) in the software application always have priority over the printer driver settings.**

The 1st registration sensor [1] is mounted on the carriage unit [2] and moves from side to side with the carriage during printing.

- The 1st registration sensor detects the leading edge of the sheet [3] for feed timing.
- The 1st registration sensor also detects the width of the paper when it passes over and detects the left vertical edge of the paper. This ensures that the paper below is wide enough for the maximum printing area specified by the paper size selection for the print job.

Paper Jam, Trailing Edge Detection



The feeler [1] is pushed down by every sheet of paper that arrives and then pops up again when the trailing edge of the sheet passes over the feeler. When the paper presses down the feeler, this turns on the trailing edge sensor [2]. The length of time the trailing edge sensor remains on is used to measure the length of the paper for printing control.

A paper jam alert occurs when:

- The paper feed roller rotates forward twice.
- The trailing edge sensor does not go on after 2 rotations of the paper feed roller.

Paper Transport Drive

The vertical motor ① drives the timing belt ② that rotates the transport roller ③

The rotation of the transport roller also drives the paper feed roller when the paper feed clutch engages the feed roller (not shown above).

The edge of the vertical encoder ④, attached to the shaft of the transport roller, passes through the gap of the vertical encoder sensor ⑤ as the encoder wheel rotates. The vertical encoder sensor reads the coded markings on the rim of the vertical encoder and sends this information to the CPU. The CPU uses these readings to control the on/off timing of the transport belt and the paper feed roller:

Important

- **When servicing the machine, work carefully to prevent scratching, breaking, or bending the vertical encoder wheel.**

Paper Path

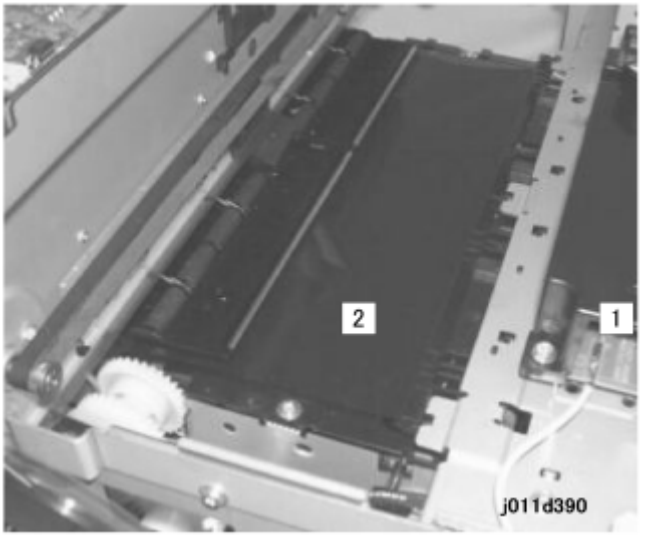
Here is a summary of the operation that sends paper through the printer:

1. The feed clutch energizes and engages the feed roller, then the rotation of the vertical motor drives the feed roller.
2. Paper feed roller feeds 1 sheet from the top of the stack in the paper cassette. A friction pad at the lip of the paper cassette prevents double-feeding.
3. The charge roller charges the transport belt. The electrostatic charge on the transport belt keeps the paper on the transport belt.
4. The sheet feeds onto the transport belt.
5. The feeler of the trailing edge sensor depresses and switches the trailing edge sensor on.
6. When the trailing edge sensor goes on, the carriage moves to the right of center. This lets the 1st registration sensor detect the leading edge of the paper.
7. The 1st registration sensor also detects the right edge of the sheet when the carriage and sensor move toward the carriage HP sensor on the right.
8. The detection of the right edge by the 1st registration sensor is used to determine the width of the paper in the paper path.

   Note

   - The 1st registration sensor reads the right edge of only the 1st sheet of the print job. Thereafter, the 1st registration sensor does not right edge for any until the beginning of the next print job.
9. An area equal to the length of each print head gets printed when the carriage goes across the sheet from right to left.
10. When the last line prints, the transport roller rotates only long enough to feed the length of the last sheet.
11. The print job count increases by 1 after the paper exits.

Transport Belt



This printer uses the BT (Belt Transfer) system to transport paper through the paper path.

A high voltage power supply pack (HVPS) [1] energizes the charge roller below the transport belt [2].

The charge roller applies a charge to the transport belt. This static charge attracts the paper to the transport belt and holds it in place so it does not move during printing.

A temperature/humidity sensor below the transport belt monitors the temperature and humidity near the charge roller and transport belt. The temperature/humidity readings of this sensor are matched with values in lookup tables cross-indexed with combinations of temperature and humidity readings. The values read from the tables are used to adjust the width of the bias (bias pitch) applied to the transport belt. This operation, called belt charge control, operates within the following ranges of temperature and humidity:

Temperature:	0C to 35C (32F to 95F)	Adjusted in 2.5C (4.5F) steps
Humidity:	0% to 100%	Adjusted in 10% steps

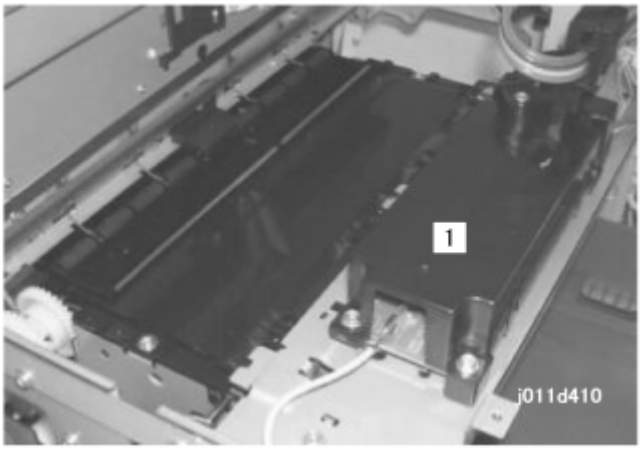
The machine uses the feedback of the temperature/humidity sensor to reduce the width of the charge applied to the transport belt below the print heads. This reduces the size of the electrical field to the smallest size that can still provide the optimum charge to keep the paper on the belt at the leading edge, center, and trailing edge of the paper without interfering with the operation of the print nozzles.

Belt charge control is done for every paper feed station (Tray 1, Tray 2, and bypass) and for every paper type (normal paper, envelopes, thick paper, and OHP).

The sharp curvature of the paper path separates the paper from the transport belt at the time paper gets fed out the paper exit.

For more details about how to adjust the transport belt charge control, please refer to Section "4. Troubleshooting".

Charge Leak Detection



The printer checks for charge leaks:

- Immediately after the printer is turned on.
- When it gets a leak detection signal from the high voltage power pack at the time of printer operation.

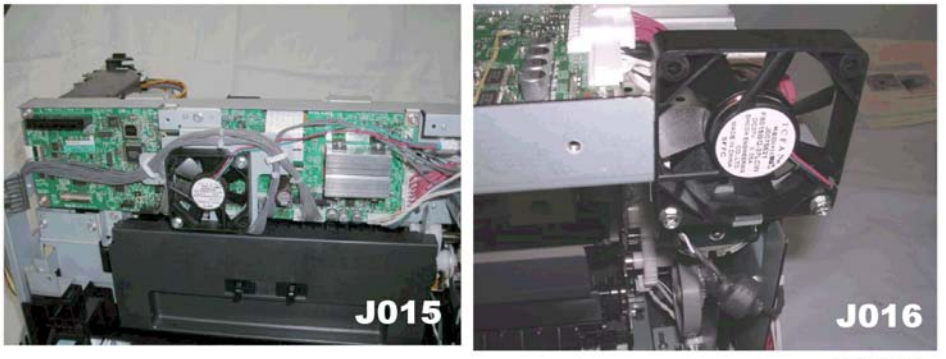
When a charge leak is detected:

- The voltage supply from the power pack [1] gets interrupted immediately
- The printer stops the current print job in progress.
- The carriage goes back to its home position.
- The print heads gets capped. The printer cannot operate.

To restore the printer to normal operation:

- Remove the cause of the leak.
- Turn the printer off and on.

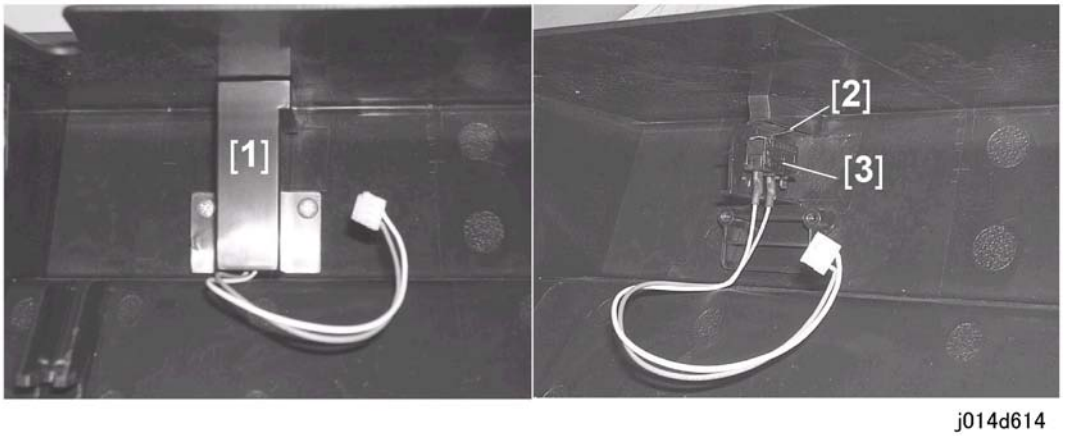
Cooling Fan



j015d610

The fan at the back of the printer draws hot air out of the printer and blows it out of the machine through the ventilation slots. This prevents a temperature rise inside the printer. The fan of the J015 is mounted in the center, and the fan of the J016 is located at the left rear corner.

Top Cover Switch



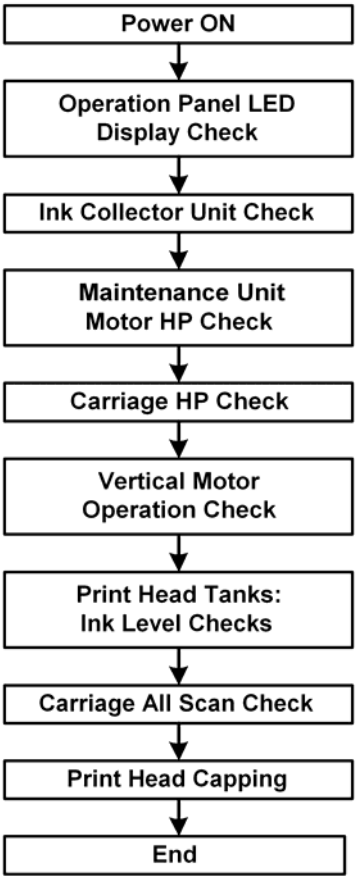
j014d614

The top cover sensor, mounted inside the front cover, is protected by a cover [1].

A plastic tab attached to the top cover depresses a feeler [2] which activates the sensor [3]. This tells the printer that the top cover is closed. The printer will not operate until the top cover is closed and this sensor has been activated.

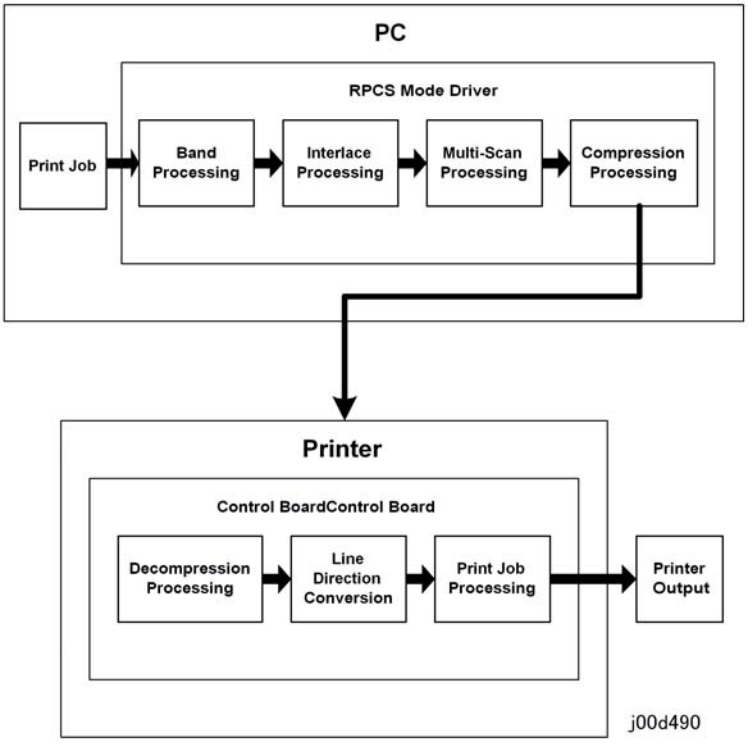
Basic Operation

Initialization Sequence at Power On



j012d901

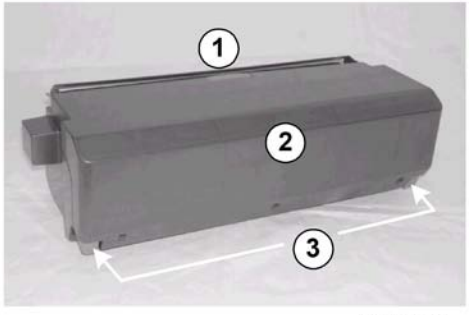
Image Processing



- Here is a brief summary of the steps in image processing:
- **Print Job**. The software application sends the print job to the printer driver.
- **Band Processing**. The print job gets divided into units of bands.
- **Interlace Processing**. The bands get broken into scan (print) units. Then the bits get converted for the direction of printing.
- **Multi-Band Processing**. Processing for individual lines.
- **Compression Processing**. The data gets compressed on the PC side. Then it goes to the printer.
- **Decompression**. The data gets decompressed when it gets to the printer.
- **Line Direction Conversio**n. The lines get converted to match the direction of printing. It gets rotated 90 degrees depending on whether the print job is for Portrait or Landscape orientation.
- **Print Job Processing**. The print job gets output.
- **Printer Output**. The print heads on the carriage print the job.

Duplex Unit (J016 Only)

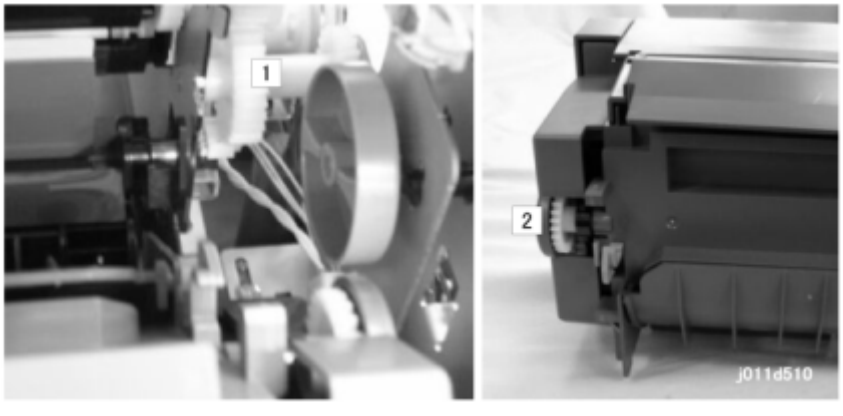
Overview



j016i970b

1	Duplexer Cover Button
2	Duplexer Cover
3	Duplexer Locks (x 2)

Duplex Drive



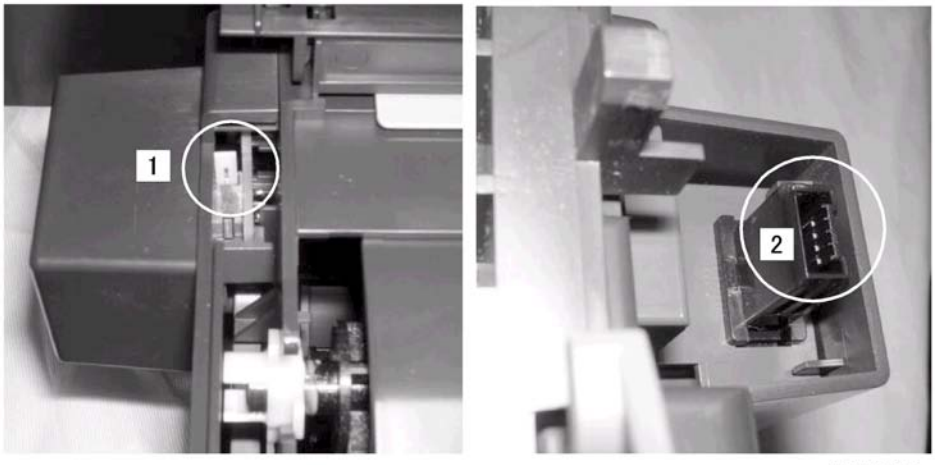
The main gear [1] of the vertical motor of the printer drives the duplex drive gear [2].

Here is a brief summary of how the duplex unit operates:

- The trailing edge sensor goes off after the trailing edge of the sheet passes overhead and the front side has printed.
- The vertical motor stops, and paper transport stops.

- The vertical motor reverses.
- The printed sheet feeds into the Duplex Unit.
- Once again, the vertical motor reveres.
- The inverted sheet feeds into the printer.
- The 2nd side of the sheet prints.

Duplexer Cover Switch



j016d530

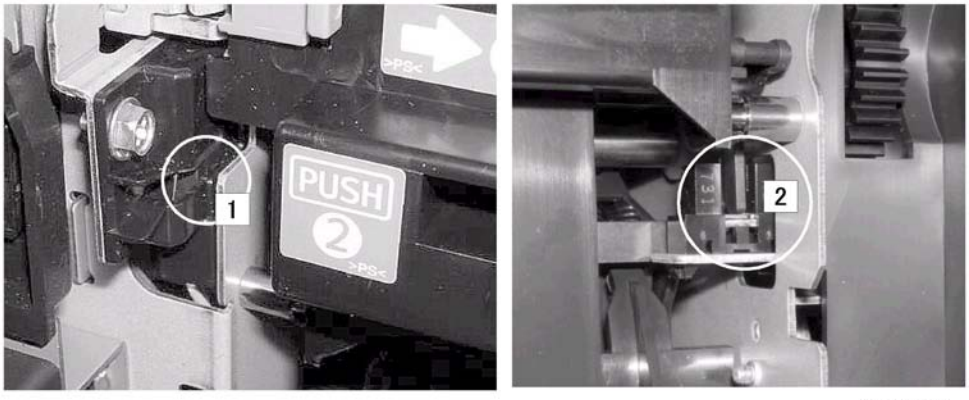
The Duplex Unit cover open switch [1] is a microswitch.

This switch detects if the cover is open or closed.

When the cover is closed the switch is closed. The circuit is closed at the 4 terminal pins [2] that connect to the DIB. The printer controls the Duplex Unit through the DIB.

The switch breaks the connection between the printer and Duplex Unit when the cover is open.

Duplexer Set Switch



j016d550

The Duplex Unit set switch [1], a micro-switch in the printer, detects the presence of the Duplex Unit.

This occurs when the Duplex Unit is installed correctly on the back of the printer:

A long tab on the right end of the duplex unit pushes a feeler away from the duplex set sensor [2] at the left rear corner of the printer. The machine issues an error when if either or both ends of the duplex unit is not set correctly.

Both these sensors are also deactivated by the rear plate of the J016 when the duplex unit is not installed. Either the rear plate or the duplex unit must be installed for the printer to operate.

Multi Bypass Tray (Option)

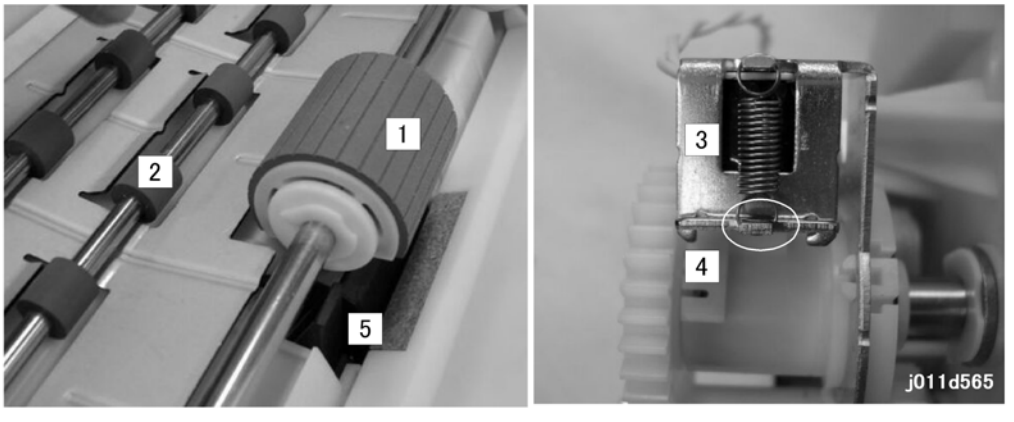
j016d560

The Multi Bypass tray is an external tray that can be detached and then reattached whenever it is needed.

The bypass tray is equipped with side fences [1] and [2] that can be adjusted to accept a variety of standard paper sizes and envelopes.

The tray extension [3] can be extended for long paper sizes.

The tray can hold 100 sheets of standard weight paper (80 g/m^2, A4/LT or less). For more details, please refer to the Section 7 "Specifications".



j011d565

When a print job starts with the bypass specified as the feed source:

- The bypass paper feed motor switches on and rotates the pick-up roller [1] and paper feed rollers [2].
- The bypass paper feed clutch [3] activates and raises its pawl [4]. This releases the pick-up roller and allows it to rotate.
- When the pick-up roller, a half roller, rotates through its arc of 180 degrees it picks up one sheet of paper and pulls it out of the tray.
- A rubber friction pad [5] below the pick-up roller provides enough resistance to stop any sheet other than the one in contact with the pick-up roller from double feeding.
- Once the pick-up roller completes its arc of rotation (as shown above), the pawl [4] of the paper feed clutch [3] locks the pick-up roller and will not release it until the next sheet feeds.
- However, the clutch allows the paper feed rollers [2] to continue to rotate and feed the sheet out of the bypass tray.

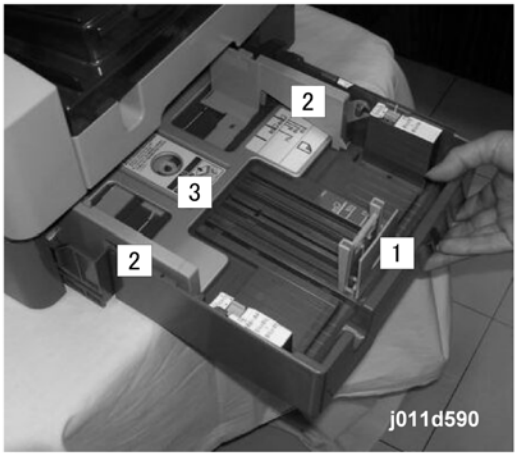
Paper Feed Unit (Option)

Overview

The Paper Feed Unit:

- Can be installed with the J016 only.
- Contains one universal paper cassette with adjustable fences that can hold a variety of standard paper and envelope sizes.
- Holds approximately 500 sheets of standard (80 g/m^2 (20 lb.)) A4/LT size paper

For more details, please refer to Section 7 "Specifications".



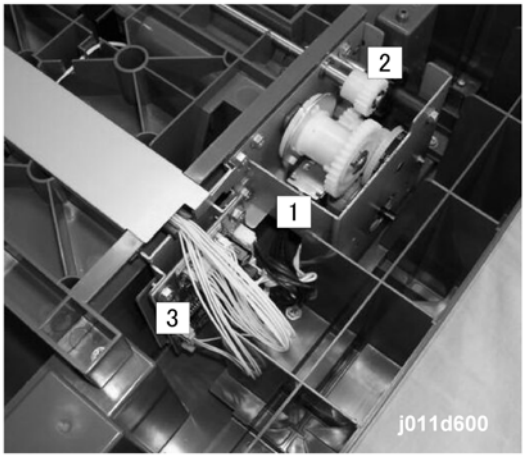
You can adjust and lock the end fence [1] and two side fences [2] to a variety of standard paper sizes.

When the paper cassette is inserted into the tray unit:

- Two guides force down the cassette arms on both sides of the bottom plate [3].

- The bottom plate rises against the bottom of the paper stack as guide rails raises the bottom stack when the cassette is pushed into the printer.
- The pressure of the bottom plate on the bottom of the stack keeps the top of the stack at the correct position to feed the paper.

Paper Feed



The paper feed motor [1] in the tray drives the feed roller [2]. The control board [3] controls the operation of the feed clutch (not shown). This engages the shaft where the feed roller is mounted. Then it rotates it at the prescribed times to feed paper from the tray.

A friction pad at the edge of the cassette below the feed roller does not let sheets double feed.

7. Specifications

Specifications

Printer Engine Base Specifications

The following terms are used in the tables below.

- **J1**. This refers to the "J1 Chart", A4/LT size normal paper with 2% BW coverage.
- **J2**. This refers to the "J2 Chart", A4/LT size normal paper with 3.5% color coverage.
- **High Speed**. This is the fastest print selection available in the printer driver. This mode minimizes the use of ink for draft prints.
- **Speed Priority**. This is the moderately fast selection available in the printer driver (quality is better than that of "High Speed").
- **Quality Priority**. This slowest selection in the printer driver but delivers the best quality print.

Basic

Configuration	Desktop		
Printing Method	On-Demand GEL JET Ink Printing Technology		
Warm-up Time	35 sec.		
Energy Mode Recovery	2 sec.		
First Print Time		**Windows**	**Mac**
	BW (J1)	< 9 sec.	< 20 sec.
	Color (J6)	< 6.5 sec.	< 15 sec.

Print Heads

Item	**Description**
Number of Heads	2 Heads (4-Color)
Lines/Head	2 Lines/Head
Number of Nozzles	192 Nozzles/Line

Nozzle Pitch	0.1693 (150 dpi)

Print Speed

J015: Normal Paper: Windows and Mac OS

Op. Mode	Col Mode	Simplex
High Speed	BW	> 18.0
	Color	> 13.5
Speed Priority	BW	> 10.0
	Color	> 7.5
Quality Priority	BW	> 5.0
	Color	> 3.5

J016 Normal Paper: Windows

Op. Mode	Col Mode	Simplex	Duplex	PTU
High Speed	BW	> 18.5	---	---
	Color	> 145	> 13.0	> 14.0
Speed Priority	BW	> 10.5	---	---
	Color	> 85	> 8.0	> 7.6

J016 Normal Paper: Mac OS

Op. Mode	Col Mode	Simplex	Duplex	PTU
High Speed	BW	> 19.0	---	---
	Color	> 16.0	---	> 14.4
Speed Priority	BW	> 9.50	> 7.10	---
	Color	> 8.00	> 6.00	> 7.60

Resolution

Paper	Mode	dpi (4 Color)	Dir.*2	Passes
Normal	High Speed	300 x 150*1	2	1
	Speed Priority	600 x 300	2	1
	Quality Priority)	600 x 600	2	1
Ink-Jet	High Speed	600 x 300	1	1
	Speed Priority	600 x 600	1	1
	Quality Priority	600 x 600	1	2
Glossy Paper	High Speed	600 x 1200	1	1
	Speed Priority	1200 x 1200	1	2
	Quality Priority	1200 x 1200	1	4

*1: If BW then 300 x 300 dpi.

*2: "2" means "bi-directional" printing, "1" means "printing in one direction only.

Print Area

Top, Bottom, Left, Right margins (mm)

			T	B	L	R
J015	Max.	Env	8	38	3	3
		Other	3	3	3	3
J016	Guaranteed	Env	9.2	39.2	4.2	4.2
		Other	4.2	4.2	4.2	4.2

Top, Bottom, Left, Right margins (inches)

			T	B	L	R
J015	Max.	Env	0.30	1.50	0.12	0.12

		Other	0.12	0.12	0.12	0.12
J016	Guaranteed	Env	0.36	1.50	0.20	0.20
		Other	0.20	0.20	0.20	0.20

Power

Power Supply	NA	100 to 120 V ±10%, 50 to 60 Hz ±3%
	EU/Asia	220 to 240V ±10%, 50 to 60 Hz ±3%

Power Consumption	J015	J016
Operating (Ave.)	35W	35W
Energy Saver Mode	< 4W	< 5W
Time Shift to E. Mode	5 min.	5 min.
Power Off	< 0.8 W	< 0.8 W

Environment

Operating Range	10 to 32°C, 15 to 80% RH
Recommended Range	15 to 25°C, 30 to 70% RH
Altitude	Use below 2,500 m (1.5 mi)
Ambient Light	Less than 2,000 Lux

Dimensions

J015

Printer (w x d x h)	Standalone	416 x 440 x 249 mm (16.4 x 17.3 x 9.8 in.)

J016

Printer (w x d x h)	Standalone (A3)	545 x 491 x 265 mm

		(21.5 x 19.3 x 10.4 in.)
	Standalone + All	545 x 626 x 366 mm (21.5 x 24.6 x 14.4 in.)

Weight

No.	Item	Wgt (kg)	Wgt (lb)
(1)	J015	13	28.6
(2)	J016	17	37.4
(a)	Bypass	2.9	6.38
(b)	Duplexer	1.7	3.74
(c)	PTU	5.9	13

Notes

- Options (a), (b), (c) are installed with the J016 only.
- With all options installed the J016 weights at least 27.5 kg (60.5 lb.)

Paper Types

Please refer to the operating instructions for an up-to-date list of the types of paper and other media that can be used for this printer.

Important

- **Use only recommended paper. Use of any other type of paper could cause problems.**

Paper Trays

Paper Feed: Tray 1

Method	Universal paper cassette	
Paper Capacity	Normal	250 80 g/m^2 (20 lb.)
	Postcards	70

	Glossy Paper	250
	Envelopes	20
Paper Size Range	Max. (W x L)	216 x 297 mm (8.5 x 11.7 in.)
	Min. (W x L)	88 x 139.7 mm (3.5 x 5.5 in.)
Size Detection	None. Printer operation panel setting required.	
Paper Out	Detected by sensor.	
Paper Weight	Normal PPC	60 to 255 g/m^2 (16 to 68 lb)
	Thick Paper	60 to 135 g/m^2 (16 to 36 lb)

Paper Feed: Tray 2

The optional paper feed tray (Tray 2) is installed with the J016 only.

Method	Universal paper cassette with printer mounted above.	
Installable units	1 only, below printer	
Paper Capacity	Normal Paper	500 80 g/m^2 (20 lb.)
Size Range	Max. (W x L)	297 x 432 mm (11.7 x 17 in.)
	Min. (W x L)	148 x 210 mm (5.8 x 8.3 in.)
Size Detection	Printer operation panel setting required.	
Paper Weight	60 to 105 g/m^2 (16 to 28 lb.)	

Multi Bypass Tray

The Multi Bypass Tray is installed with the J016 only.

Method	Universal paper cassette	
Paper Capacity	Normal	100 (80 g/m^2, 70 kg 20 lb, A4/LT or less)
	Ink Jet	10
	Postcards	50
	Glossy Paper (A4)	100

	Glossy Paper (A3)	10
	Envelopes	10
Size Range	Max. (W x L)	339 x 1295.4 mm (13.4 x 51 in.)
	Min. (W x L)	55 x 127 mm (2.2 x 5 in.)
Size Detection	None. Printer operation panel setting required.	
Paper Out	Detected by sensor.	
Paper Weight	60 to 255 g/m^2 (16 to 68 lb.)	

Paper Output Tray

Delivery	Face-up		
Output Tray Capacity	**Medium**	**J015**	**J016**
	Normal/Ink Jet	100	100-150
	Postcards	20	20
	Glossy Paper	1	1
	Envelopes	20	20
Paper Size	Same as paper feed		
Output Tray Full Detection	No		

Supported Paper Sizes

Type	Name	Feed	Size	Byp	T-1	T-2	F-up	Dplx
Plain	A3 W	SEF	12" x 18"	N	N	N	N	N
Paper	A3	SEF	297 x 420 mm	N	N	N	N	N
	A4	SEF	210 x 297 mm	Y	Y	Y	Y	Y
	A5	SEF	148 x 210 mm	Y	Y	Y	Y	Y
		LEF	210 x 148 mm	Y	Y	Y	Y	Y

Type	Name	Feed	Size	Byp	T-1	T-2	F-up	Dplx
	A6	SEF	105 x 148 mm	Y	Y	Y	Y	Y
	B4	SEF	257 x 364 mm	N	N	N	N	N
	B5	SEF	182 x 257 mm	Y	Y	Y	Y	Y
	B5	LEF	257 x 182 mm	N	N	N	N	N
	B6	SEF	125 x 176 mm	N	N	N	N	N
	B6	LEF	176 x 125 mm	N	N	N	N	N
	DLT	SEF	11" x 17"	N	N	N	N	N
	LT	SEF	81/2" x 11"	Y	Y	Y	Y	Y
	LT	LEF	11" x $8^{1}/_{2}$"	N	N	N	N	N
	LG	SEF	$8^{1}/_{2}$" x 14"	Y	Y	Y	Y	N
	HLT	SEF	$5^{1}/_{2}$" x $8^{1}/_{2}$"	N	N	N	N	N
	HLT	LEF	$8^{1}/_{2}$" x $5^{1}/_{2}$"	Y	Y	Y	Y	Y
	Exe	SEF	$7^{1}/_{4}$" x $10^{1}/_{2}$"	Y	Y	Y	Y	Y
	Exe	LEF	$10^{1}/_{2}$" x $7^{1}/_{4}$"	N	N	N	N	N
	F	SEF	8" x 13"	Y	Y	Y	N	Y
	Foolscap	SEF	$8^{1}/_{2}$" x 13"	Y	Y	Y	N	Y
	Folio	SEF	$8^{1}/_{4}$" x 13"	Y	Y	Y	N	Y
	8 Kai	SEF	267 x 390 mm	N	N	N	N	N
	16 Kai	SEF	267 x 195 mm	N	N	N	N	N
	16 Kai	LEF	195 x 267 mm	N	N	N	N	N
Env	Com10	LEF	$4^{1}/_{8}$" x $7^{1}/_{2}$"	Y	Y	Y	Y	Y
	Monarch	LEF	$3^{7}/_{8}$" x $7^{1}/_{2}$"	Y	Y	Y	Y	Y
	C6	LEF	114 x 162 mm	Y	Y	Y	Y	Y
	C5	LEF	162 x 229 mm	Y	Y	Y	Y	Y
	DL Env	LEF	110 x 220 mm	Y	Y	Y	Y	Y

Remarks:

Y	Supported
N	Not supported.
TBA	To Be Announced (Pending)

This table shows the smallest and largest paper sizes that can be loaded in the standard tray and options.

Custom Size Range

	Min./Max Width		Min./Max. Length	
	mm	**in.**	**mm**	**in.**
Standard Tray	88 to 297	3.5 to 11.7	139.7 to 432	5.5 to 17
PTU	148 to 297	5.8 to 11.7	210 to 432	8.3 to 17
Bypass Tray	55 to 330*1	2.2 to 13	127 to 1295	5 to 51

*1: A 320 x 450 mm (12.6 x 17.7 in.) paper size will feed. However, the quality of image reproduction and efficiency of paper feed cannot be guaranteed.

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Printer Interface, Operating Systems

J015

Interfaces	External Host I/F	USB1.1/2.0 (Hi-Speed)
	Controller Engine I/F	None
	Option I/F	Built-in NIC
Printer Driver	Ricoh RPCS	
Operating Systems	Windows 98/Me/XP/2000/2003 Server/Vista/NT 4.0 (SP4.0 or later)	

J016

Interfaces	External Host I/F	
	Standard	USB1.1/2.0 (Hi-Speed)

	Optional	10/100 BaseTX
	Controller Engine I/F	None
	Option I/F	• Duplexer I/F • Built-in NIC I/F • PTU I/F • Bypass I/F
Printer Driver	Ricoh RPCS	
Operating Systems	Windows 98/Me/XP/2000/2003 Server/Vista/NT 4.0 (SP4.0 or later)	

External Options

This is a list of the options available for the J015/J016 Printers.

J517	Network Interface Board Type GX3a	For J015 Only
J515	Duplex Unit AD1020	For J016 Only
J516	Paper Feed Unit TK1060	
J514	Multi Bypass Tray By1010	
J512	Interface Board Type GX3	

Consumables J015/J016

Ink Cartridges

J734	M size Ink Cartridge Black – K
J735	M size Ink Cartridge Cyan – C
J736	M size Ink Cartridge Magenta – M
J737	M size Ink Cartridge Yellow – Y
J738	L size Ink Cartridge Black – K

J739	L size Ink Cartridge Cyan – C
J740	L size Ink Cartridge Magenta – M
J741	L size Ink Cartridge Yellow – Y

- Four starter ink cartridges (K, C, M, Y) are provided with each printer. Thereafter, replacement ink cartridges must be purchased separately.
- Ink cartridges are available win two sizes: Large and Medium. The following tables compares the supply capacity of the Starter (small), Medium, and Large ink cartridges.
- After the starter ink cartridges, the J015 uses the M size cartridges only. The J016 uses both the M and L size ink cartridges.

Size	Color	Weight (g)/ Volume (cc)	Est. Service Life (Sheets)
Starter	K	27.3/25.28	400
	C	20.1/19/14	
	Y	20.1/19/14	
	M	20.1/19/14	
Medium	K	35.5/32.87	1,500
	C	26.7/25.43	1,000
	Y	26.7/25.43	
	M	26.7/25.43	
Large	K	68.0/62.96	4,000
	C	50.9/48.8	3,000
	Y	50.9/48.8	
	M	50.9/48.8	

- These are very approximate estimates.
- The estimated service life may vary significantly due to the amount of coverage on a page, environmental conditions, and so on.
- After the printer signals the near end alert for an ink cartridge, approximately 40 pages can be printed before the end alert is issued.

Ink Collector Unit

The service life of the ink collector unit (installed in the back of the printer) varies with printer use. The table below shows a rough estimation of the ink collector unit service life based on APV, the Average Print Volume (per month).

Expected Service Life of Ink Collector Unit

APV	Expected Service Life	Estimated Sheet Totals
750	5 years or more	45,000 pp.
1,700	3 years or more	62,000 pp.
6,000	1 year or more	72,000 pp.