

MP520

Service Manual

Revision 0

QY8-13BN-000

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Scope

This manual has been issued by Canon Inc., to provide the service technicians of this product with the information necessary for qualified persons to learn technical theory, installation, maintenance, and repair of products. The manual covers information applicable in all regions where the product is sold. For this reason, it may contain information that is not applicable to your region.

This manual does not provide sufficient information for disassembly and reassembly procedures.
Refer to the graphics in the separate Parts Catalog.

Revision

This manual could include technical inaccuracies or typographical errors due to improvements or changes made to the product. When changes are made to the contents of the manual, Canon will release technical information when necessary. When substantial changes are made to the contents of the manual, Canon will issue a revised edition.

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CANON INC.

Inkjet Device Quality Assurance Div. 1

451, Tsukagoshi 3-chome, Saiwai-ku, Kawasaki-shi, Kanagawa 212-8530, Japan



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1. MAINTENANCE

1-1. Adjustment, Periodic Maintenance, Periodic Replacement Parts, and Replacement Consumables by Service Engineer

(1) Adjustment

Adjustment	Timing	Purpose	Tool	Approx. time
EEPROM initialization	- At logic board replacement	To initialize settings	None. Perform in the service mode.	1 min.
Destination settings (EEPROM settings)	- At logic board replacement	To set destination.	None. Perform in the service mode.	1 min.
Ink absorber counter resetting (EEPROM settings)	- At logic board replacement - At ink absorber replacement	To reset the ink absorber counter.	None. Perform in the service mode.	1 min.
Ink absorber counter value setting (EEPROM settings)	- At logic board replacement	To set the ink amount data in the ink absorber to the ink absorber counter.	None. Perform in the service mode.	1 min.
Paper feed motor position adjustment	- At paper feed motor replacement	To adjust the belt tension. (Position the paper feed motor so that the belt is stretched tight.)	None.	5 min.
Carriage rail position adjustment	- At carriage unit replacement - After carriage rail removal and re-assembly	To adjust the distance between the print head and paper (between the carriage and the platen).	None.	5 min.
Print head alignment	- At print head replacement - At logic board replacement - When print quality is not satisfying	To secure the dot placement accuracy.	None.	3 min. (Manual)
Grease application	- At carriage unit or carriage rail replacement - At LF earth spring or paper feed roller replacement - At PG - AP arm lever replacement	To maintain sliding properties of the following items: - Carriage rail - LF earth spring - Eject roller - PG - AP arm lever	- FLOIL KG-107A - IF-20 - MOLYKOTE PG641	1 min.
Ink system function check	- At logic board replacement - At spur base replacement - At carriage unit replacement	To maintain detection functionality for presence of the ink tanks and each ink tank position.	None. Perform in the service mode.	1 min.
LCD language settings	- At logic board replacement	To set the language to be displayed on the LCD.	None. Perform in the user mode.	1 min.
Document pressure sheet position adjustment	- At document pressure sheet replacement - At document pressure plate ass'y replacement	Hold the sheet with the long side down, then position its upper left corner approx. 1 mm in from the platen glass reference edges (back left).	None.	1 min.



The screws securing the paper feed motor may be loosened only at replacement of the paper feed motor unit.

(2) Periodic maintenance

No periodic maintenance is necessary.

(3) Periodic replacement parts

There are no parts in this machine that require periodic replacement by a service engineer.

(4) Replacement consumables

There are no consumables that require replacement by a service engineer.

1-2. Customer Maintenance

Adjustment	Timing	Purpose	Tool	Approx. time
Print head alignment	At print head replacement	To ensure accurate dot placement.	- Machine buttons - Computer (MP driver)	3 min. (Manual)
Print head cleaning	When print quality is not satisfying.	To improve nozzle conditions.	- Machine buttons - Computer (MP driver)	1 min.
Print head deep cleaning	When print quality is not satisfying, and not improved by print head cleaning.	To improve nozzle conditions.	- Machine buttons - Computer (MP driver)	2 min.
Ink tank replacement	When an ink tank becomes empty. ("No ink error" displayed on the monitor or on the machine LCD, or short flashing of an ink tank LED)	To replace the empty ink tank.	---	1 min.
Rear tray paper feed roller cleaning	- When paper does not feed properly. - When the front side of the paper is smeared.	To clean the paper feed rollers.	- Machine buttons - Computer (MP driver)	2 min.
Front tray paper feed roller cleaning	- When paper does not feed properly. - When the front side of the paper is smeared.	To clean the paper feed rollers.	Manually clean the roller with a cotton swab.	1 min.
Bottom plate cleaning	When the back side of the paper is smeared.	To clean the platen ribs.	- Machine buttons - Computer (MP driver)	1 min.
Scanning area cleaning	When the platen glass or document pressure sheet is dirty.	To clean the platen glass and document pressure sheet.	Soft, dry, and clean lint-free cloth.	1 min.
Exterior cleaning	When necessary	To clean the machine exterior	Soft, dry, and clean lint-free cloth (cloth for cleaning glasses, etc.)	1 min.

1-3. Special Tools

Name	Tool No.	Application	Remarks
FLOIL KG-107A	QY9-0057-000	To the sliding portions of the carriage rail and main chassis.	In common with the S520.
ELECTRICITY GREASE IF-20	CK-8006-000	To the LF earth spring sliding portions.	
MOLYKOTE PG641	CK-0562	To the PG - AP arm lever sliding portions.	In common with the S520.

1-4. Serial Number Location



On the spur base unit (visible at the front right when the scanning unit is opened).

◀<1. MAINTENANCE>▶▶

2. LIST OF ERROR DISPLAY / INDICATION / TROUBLESHOOTING

Errors and warnings are displayed by the following ways:

1. Operator call errors are indicated by the Alarm LED lit in orange, and the error and its solution are displayed on the LCD in text and by icon.
2. Messages during printing from a computer are displayed on the MP driver Status Monitor.
3. Error codes are printed in the "operator call/service call error record" area in EEPROM information print

Buttons valid when an operator call error occurs:

1. ON/OFF button: To turn the machine off and on again.
2. OK button: To clear and recover from an error. In some operator call errors, the error will automatically be cleared when the cause of the error is eliminated, and pressing the OK button may not be necessary.
3. Stop/Reset button: To cancel the job at error occurrence, and to clear the error.

2-1. Operator Call Errors (by Alarm LED Lit in Orange)

Error	Error code	Message on the LCD	Solution
No paper in the rear tray.	[1000]	Rear tray. There is no paper. Load paper and press [OK].	Confirm that the rear tray is selected as the paper source. Set the paper in the rear tray, and press the OK button.
No paper in the front tray.	[1003]	Front tray. There is no paper. Load paper and press [OK].	Confirm that the front tray is selected as the paper source. Set the paper in the front tray, and press the OK button.
Paper jam.	[1300]	The paper is jammed. Clear the paper and press [OK].	Remove the jammed paper, and press the OK button.
Paper jam in the rear guide.	[1303]		
Ink may have run out.	[1600]	The following ink may have run out. Replacing the ink tank is recommended. (U041)	Replace the applicable ink tank, or press the OK button to clear the error without ink tank replacement. When the error is cleared by pressing the OK button, ink may run out during printing.
Ink tank not installed.	[1660]	The following ink tank cannot be recognized. (U043) (Applicable ink tank icon)	Install the applicable ink tank(s) properly, and confirm that the LED's of all the ink tanks light red.
Print head not installed, or not properly installed.	[1401]	Print head is not installed. Install the print head. (U051)	Install the print head properly.
Print head temperature sensor error.	[1403]	The type of print head is incorrect. Install the correct print head. (U052)	Re-set the print head. If the error is not cleared, the print head may be defective. Replace the print head.
Faulty EEPROM data of the print head.	[1405, 1682]		
Multiple ink tanks of the same color installed.	[1681]	More than one ink tank of the following color is installed. (U071)	Replace the wrong ink tank(s) with the correct one(s).
Ink tank in a wrong position.	[1680]	Some ink tanks are not installed in place. (U072)	Install the ink tank(s) in the correct position.
Warning: The ink absorber becomes almost full.	[1700, 1701, 1710, 1711]	Contact the support center or service center for ink absorber replacement. Press [OK] to continue printing.	Replace the ink absorber, and reset its counter. [See 3-3. Adjustment / Settings, (10) Service mode.] Pressing the OK button will exit the error, and enable printing without replacing the ink absorber. However, when the ink absorber becomes full, no further printing can be performed unless the applicable ink absorber is replaced.

The connected digital camera or digital video camera does not support Camera Direct Printing.	[2001]	The device may be incompatible. Remove the device and check the manual supplied with the connected device.	Remove the cable between the camera and the machine.
The remaining ink amount unknown.	[1683]	(Applicable ink tank icon) The remaining level of the following ink cannot be correctly detected. Replace the ink tank. (U130)	An ink tank which has once been empty is installed. Replace the applicable ink tank with a new one. Printing with a once-empty ink tank can damage the machine. To continue printing without replacing the ink tank(s), press the Stop/Reset button for 5 sec. or longer to disable the function to detect the remaining ink amount. After the operation, it is recorded in the machine EEPROM that the function to detect the remaining ink amount was disabled.
Ink tank not recognized.	[1684]	The following ink tank cannot be recognized. (U140) (Applicable ink tank icon)	A non-supported ink tank is installed (the ink tank LED is turned off). Install the supported ink tanks.
Ink tank not recognized.	[1410 to 1419]	The following ink tank cannot be recognized. (U150) (Applicable ink tank icon)	A hardware error occurred in an ink tank (the ink tank LED is turned off). Replace the ink tank(s).
Scanning unit (printer cover) open.	[1200]	Cover is open. Close cover.	Close the scanning unit (printer cover).
Non-supported hub	[2002]	An unsupported USB hub is connected. Remove the hub.	Remove the applicable USB hub from the PictBridge (USB) connector.
No ink (no raw ink).	[1688]	The following ink has run out. Replace the ink tank. (U163) (Applicable ink tank icon)	Replace the empty ink tank(s), and close the scanning unit (printer cover). Printing with an empty ink tank can damage the machine. To continue printing without replacing the ink tank(s), press the Stop/Reset button for 5 sec. or longer to disable the function to detect the remaining ink amount. After the operation, it is recorded in the machine EEPROM that the function to detect the remaining ink amount was disabled.

2-2. Service Call Errors (by Cyclic Blinking of Alarm and Power LEDs)

Service call errors are indicated by the number of cycles the Alarm and Power LEDs blink, and the corresponding error code is displayed on the LCD.

Cycles of blinking of Alarm and Power LEDs	Error	Error code	Conditions	Solution (Replacement of listed parts, which are likely to be faulty)
2 times	Carriage error	[5100]	An error occurred in the carriage encoder signal.	- Carriage unit (QM3-2650) - Timing slit film (QC2-5687) - Logic board (QM3-2599) - Carriage motor (QK1-1500)
3 times	Line feed error	[6000]	An error occurred in the LF encoder signal.	- Timing sensor unit (QM3-2572) - Timing slit disk film (QC2-5687) - Feed roller (QL2-2206) - Logic board (QM3-2599) - Paper feed motor (QK1-3849)
4 times	Purge cam sensor error	[5C00]	An error occurred in the purge unit.	- Purge unit (QM3-2651) - Logic board (QM3-2599)

5 times	ASF (cam) sensor error	[5700]	An error occurred in the ASF cam sensor.	- Sheet feed unit (QM3-2647) - PE sensor board (QM3-2571) - Logic board (QM3-2599)
6 times	Internal temperature error	[5400]	The internal temperature is not normal.	- Logic board (QM3-2599) - Carriage unit (QM3-2650)
7 times	Ink absorber full	[5B00, 5B10, 5B01, 5B11]	The ink absorber is supposed to be full. <u>Message on the LCD:</u> Ink absorber full. Service required. <u>Error codes:</u> Overseas: 5B00: Main ink absorber 5B10: Borderless-print ink absorber Japan: 5B01: Main ink absorber 5B11: Borderless-print ink absorber	- Ink absorber kit (QY5-0192)
8 times	Print head temperature rise error	[5200]	The print head temperature exceeded the specified value.	- Print head (QY6-0070) - Logic board (QM3-2599)
9 times	EEPROM error	[6800]	A problem occurred in writing to the EEPROM.	- Logic board (QM3-2599)
10 times	VH monitor error	[B200]	The internal temperature exceeded the specified value.	- Print head (QY6-0070) - Carriage unit (QM3-2650) - Logic board (QM3-2599)
12 times	APP position error	[5C10]	An error occurred in the APP motor during purging operation.	- Sheet feed unit (QM3-2647) - Purge unit (QM3-2599) - Logic board (QM3-2651)
14 times	APP sensor error	[6A90]	An error occurred in the APP cam sensor.	- Sheet feed unit (QM3-2647) - Logic board (QM3-2599)
15 times	USB Host VBUS overcurrent	[9000]	The USB Host VBUS is overloaded.	- Logic board (QM3-2599)
19 times	Ink tank position sensor error	[6502]	None of the ink tank position is detected.	- Spur base unit (QM3-2653) - Logic board (QM3-2599)
22 times	Scanner home position error	[5010]	The scanner unit cannot detect the home position, or the scanner unit warming-up is not performed properly at power-on. On the LCD, "Scanner is not operating correctly." is displayed.	- Scanner unit (QM3-2643)
Power and Alarm LEDs lit	ROM / RAM error	---	The check sum value is incorrect in the ROM check or RAM check at hard-power-on.	- Logic board (QM3-2599)



Before replacement of the logic board ass'y, check the ink absorber counter value (by service test print or EEPROM information print). If the counter value is 7% or more, also replace the ink absorber kit (QY5-0192) when replacing the logic board ass'y. If the counter value is less than 7%, register the current ink absorber counter value to the replaced new logic board instead.

[See 3-3. Adjustment / Settings, (10) Service mode, for details.]

2-3. Other Error Messages

Message on the LCD	Cause	Solution
The selected paper cannot be fed from front tray. Change the paper source and press [OK].	The paper type being used is not supported for paper feeding from the front tray.	Change the paper source to the rear tray.
Borderless print is not available for paper from front tray. Change the paper source and press [OK].	Borderless print is attempted when the front tray is selected as the paper source.	Change the paper source to the rear tray.
Change the setting(s).	Settings made conflict each other. (e.g. Selecting borderless printing on plain paper)	Change the settings so that they will not conflict each other.
Device memory is full. Reduce the number of documents (photos, etc.) to scan or copy.	The memory is not sufficient to do the print job in copying.	Reduce the amount of data to be printed, or print from a computer.
Failed to scan. Either document cannot be scanned or is not placed on the platen glass.	The machine failed in scanning the document for Fit-to-page copy, or photos or films were not recognized in pre-scanning.	Press the OK button to clear the error.
Press <>. (<>: Color button icon)	The Black button was pressed, but it is invalid.	A temporary error. Press the Color button to continue the operation.
Press <>. (<>: Black button icon)	The Color button was pressed, but it is invalid.	A temporary error. Press the Black button to continue the operation.
There are no photos in memory card.	Supported image files are not in the memory card.	A temporary error. - Confirm that supported image files are in the memory card. - Images with double-byte characters used in the file name (or folder name) may not be recognized. Change the file (or folder) name so that it contains only single-byte alphanumeric characters. - If images are edited on the computer, print them from the computer.
The value exceeds the number of copies you can print.	During selecting images or specifying the number of copies, the total print quantity exceeds the prescribed value of 999.	A temporary error. The last operation before the error is cancelled, and the total print quantity returns to the value before the error.
Memory card is not set. Insert the card after checking the direction.	The memory card is not inserted in the slot properly.	Set a memory card.
DPOF information is not saved in the memory card.	DPOF print was selected in the menu, but no DPOF files are contained in the memory card.	A temporary error. The LCD automatically returns to the display before the error occurrence.
The number of copies to print is not set. Input the number of copies.	Printing was attempted without specifying the print quantity (with the print quantity left "0" (zero)).	A temporary error. Specify the print quantity.
This layout is available only for A4 or 8.5"x11"(215x279).	In Layout print, "Mixed 1, 2, or 3" which is available only with A4 or Letter size paper is selected, but the paper size is not set to A4 or Letter.	A temporary error. The LCD automatically returns to the display before the error occurrence.
Change the setting after removing the card.	With a memory card inserted in the slot, change of the Read/Write attribute was attempted.	A temporary error. Remove the memory card, then change the Read/Write attribute.
The card is currently write-enabled.	With the memory card set to the Read/write	A temporary error. Remove the memory

Set to read-only mode before performing operation.	mode, Card Direct printing operation was attempted from the menu.	card, change the memory card setting to Read-only, then perform Card Direct printing.
The paper size is not correct. Check the page size you have set.	Non-supported size of paper for Camera Direct printing via PictBridge connection is selected.	Cancel printing on the digital camera. Confirm the paper size, and print again.
Failed to scan Photo Index Sheet. Check the orientation, position and marking. <See manual>	The machine failed in scanning the Photo Index Sheet.	Press the OK button to clear the error. Confirm the following, then try again: - Fill in all the circles on the Photo Index Sheet. - Place the sheet in the correct orientation and position.

2-4. Warnings

Warning	Message on the LCD	Solution
Low ink	"!" is indicated for an applicable ink tank icon in the Status Monitor.	No special solution. Since the ink will be used up soon, prepare for a new ink tank.
Print head temperature rise	If the print head temperature does not fall, the print head error will occur.	When the print head temperature falls, the error is automatically cleared. If the print head error is indicated, repair servicing is required.
Protection of excess rise of the print head temperature	If the print head temperature does not fall, the print head error will occur.	If the print head temperature exceeds the specified limit, an intermission is inserted during printing.
Restrictions on paper	The current paper cannot be set. Change the size and type.	Re-select the supported paper type and size.
USB cable not connected	Set the PC to start scan.	Connect the USB cable, then turn on the computer.
Cancellation of image select information	Reset the selected photo information? Yes No	- Select Yes , and press the OK button. => The image selection is cancelled, and the menu or sub-menu is displayed. - Select No , and press the OK button. => The LCD returns to the display immediately before the message was displayed.
	Do you want to clear the image scanned from the photo? Yes No	
	Do you want to clear the scanned image and rescan? Yes No	

2-5. Troubleshooting by Symptom

	Symptom	Solution
Faulty operation	The power does not turn on. The power turns off immediately after power-on.	- Confirm the connection of - the power cord, and - between the logic board and the power supply unit. - Replace the - power supply unit, or - logic board.
	A strange noise occurs.	- Remove foreign material. - Attach a removed part if any. - Check the operation of the moving parts (such as purge unit, carriage unit, and paper feeding mechanism)

		<ul style="list-style-type: none"> - Replace a faulty part, if any.
	Nothing is displayed on the LCD.	<ul style="list-style-type: none"> - Confirm the connection between the operation panel, the LCD unit, and the logic board. - Replace the <ul style="list-style-type: none"> - LCD unit, or - logic board.
	A portion of the LCD is not displayed.	<ul style="list-style-type: none"> - Perform the button and LCD test in the service mode, and confirm that the LCD is displayed without any segments missing or flickering. - Confirm the connection between the operation panel, the LCD unit, and the logic board. - Replace the <ul style="list-style-type: none"> - LCD unit, or - logic board.
	Paper feed problems (multi-feeding, skewed feeding, no feeding).	<ul style="list-style-type: none"> - Examine the inside to confirm that no parts are damaged, and the rollers are clean. - Remove foreign material. - Adjust the paper guide properly. - Set the paper properly. - Confirm the following: <ul style="list-style-type: none"> - selected paper source - attachment of the rear cover (for feeding from the front tray) - connection of each harness and the logic board - Replace the <ul style="list-style-type: none"> - sheet feeder unit, - ASF cover unit, - bottom case unit (for paper feeding from the front tray), or - logic board.
	Carriage movement problems (contact to other parts, strange noise).	<ul style="list-style-type: none"> - Confirm that the carriage timing slit strip film is free from damage or grease. - Clean the carriage timing slit strip film (with ethanol and lint-free paper). - Remove foreign material. - Replace the <ul style="list-style-type: none"> - carriage timing slit strip film, or - carriage unit.
	Faulty scanning (no scanning, strange noise).	<ul style="list-style-type: none"> - Confirm the connection between the scanning unit and the logic board. - Replace the <ul style="list-style-type: none"> - scanning unit, or - logic board.
Unsatisfactory print quality	No printing, or no color ejected.	<ul style="list-style-type: none"> - Confirm that the ink tanks are installed properly. - Perform print head maintenance. - Replace the <ul style="list-style-type: none"> - ink tank, or - print head*¹. - Remove foreign material from the purge unit caps, if any. - Replace the <ul style="list-style-type: none"> - purge unit, or - logic board.
	Printing is faint, or white lines appear on printouts even after print head cleaning. Line(s) not included in the print data appears on printouts.	<ul style="list-style-type: none"> - Remove and re-install the print head. - Confirm that the ink tanks are installed properly. - Perform print head maintenance. - Replace the <ul style="list-style-type: none"> - ink tank,

		<ul style="list-style-type: none"> - print head^{*1} - purge unit, or - logic board.
	Paper gets smeared.	<ul style="list-style-type: none"> - Feed several sheets of paper. - Perform bottom plate cleaning. - Clean the paper path with a cotton swab or cloth. - Clean the rear tray paper feed rollers. - Clean the front tray paper feed rollers.
	A part of a line is missing on printouts.	<ul style="list-style-type: none"> - Replace the <ul style="list-style-type: none"> - ink tank, or - print head^{*1}.
	Color hue is incorrect.	<ul style="list-style-type: none"> - Confirm that the ink tanks are installed properly. - Perform print head maintenance. - Replace the <ul style="list-style-type: none"> - ink tank, or - print head^{*1} - Perform print head alignment.
	Printing is incorrect.	Replace the logic board.
	No ejection of black ink.	<ul style="list-style-type: none"> - Confirm that the ink tanks are installed properly. - Perform print head maintenance. - Replace the <ul style="list-style-type: none"> - ink tank, or - print head^{*1}. - Remove foreign material from the purge unit caps, if any. - Replace the purge unit.
	Graphic or text is enlarged on printouts.	<p>When enlarged in the carriage movement direction:</p> <ul style="list-style-type: none"> - Clean grease or oil off the timing slit strip film. - Replace the <ul style="list-style-type: none"> - timing slit strip film, - carriage unit, or - logic board. <p>When enlarged in the paper feed direction:</p> <ul style="list-style-type: none"> - Clean grease or oil off the timing slit disk film. - Replace the <ul style="list-style-type: none"> - timing slit disk film, - timing sensor unit, - LF roller, or - logic board.
Faulty scanning	No scanning.	<ul style="list-style-type: none"> - Confirm the connection between the scanning unit and the logic board. - Replace the <ul style="list-style-type: none"> - scanning unit, or - logic board.
	Streaks or smears on the scanned image.	<ul style="list-style-type: none"> - Clean the platen glass. - Confirm the connection between the scanning unit and the logic board. - Replace the <ul style="list-style-type: none"> - scanning unit, - logic board, or - document pressure sheet.

*1: Replace the print head only after the print head deep cleaning is performed 2 times, and when the problem persists.

3. REPAIR

3-1. Notes on Service Part Replacement (and Disassembling / Reassembling)

Service part	Notes on replacement*1	Adjustment / settings	Operation check
Logic board ass'y (QM3-2599)	<ul style="list-style-type: none"> - Before removal of the logic board ass'y, remove the power cord, and allow for approx. 1 minute (for discharge of capacitor's accumulated charges), to prevent damages to the logic board ass'y. - Before replacement, check the ink absorber counter value (by service test print or EEPROM information print). [See 3-4. Verification Items, (1) Service test print for details.] 	After replacement: <ol style="list-style-type: none"> 1. Initialize the EEPROM. 2. Set the destination in the EEPROM. 3. Set the ink absorber counter value. 4. Set the language to be displayed on the LCD. [See 3-3. Adjustment / Settings, (10) Service mode, for details of 1 to 4.] 5. Perform print head alignment in the user mode. 	<ul style="list-style-type: none"> - EEPROM information print - Service test print - Printing via USB connection - Copying - Direct printing from a digital camera (PictBridge)
Absorber kit (QY5-0192)		After replacement: <ol style="list-style-type: none"> 1. Reset the ink absorber counter. [See 3-3. Adjustment / Settings, (10) Service mode, for details.] 	<ul style="list-style-type: none"> - Ink absorber counter value print (Printing is performed automatically after the ink absorber counter is reset.)
Carriage unit (QM3-2650)	<ul style="list-style-type: none"> - The screws securing the carriage rail are allowed to be loosened only at carriage replacement. Before removing the screws, mark the positions of the screws on the carriage rail so that they will be returned to their original positions after the carriage is replaced. 	At replacement: <ol style="list-style-type: none"> 1. Apply grease to the sliding portions. [See 3-3. Adjustment / Settings, (6) Grease application, for details.] After replacement: <ol style="list-style-type: none"> 2. Adjust the distance between the print head and the paper (between the carriage rail and the platen). [See 3-3. Adjustment / Settings, (2) Carriage rail adjustment, for details.] 3. Check the ink system function. [See 3-3. Adjustment / Settings, (10) Service mode, for details.] 4. Perform print head alignment in the user mode. 	<ul style="list-style-type: none"> - Service test print (Confirm ink system function.) - Printing on thick paper.
Paper feed motor (QK1-3849)	<ul style="list-style-type: none"> - The red screws securing the paper feed motor are allowed to be loosened only for paper feed motor replacement. (DO NOT loosen them in any other cases.) 	At replacement: <ol style="list-style-type: none"> 1. Adjust the paper feed motor. [See 3-3. Adjustment / Settings, (1) Paper feed motor adjustment, for details.] 	
Spur base unit (QM3-2653)		After replacement: <ol style="list-style-type: none"> 1. Check the ink system function. [See 3-3. Adjustment / Settings, (10) Service mode, for details.] 	<ul style="list-style-type: none"> - Service test print

Document pressure plate ass'y (QM3-2642)		At replacement: 1. Adjust the document pressure sheet position. [See 3-3. Adjustment / Settings, (2) Carriage rail adjustment , for details.]	
Document pressure sheet (QC2-5194)			
Scanner unit (QM3-2643)			
Timing slit strip film (QC2-5687)	<ul style="list-style-type: none"> - Upon contact with the film, wipe the film with ethanol. - Confirm no grease is on the film. (Wipe off any grease thoroughly with ethanol.) - Do not bend the film 	After replacement: 1. Perform print head alignment in the user mode.	- Service test print
Timing slit disk film (QC1-9597)			
Print head (QY6-0070)		After replacement: 1. Perform print head alignment in the user mode.	- Service test print

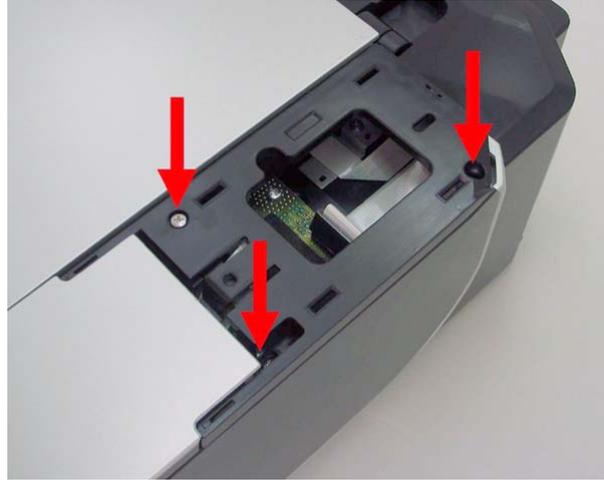
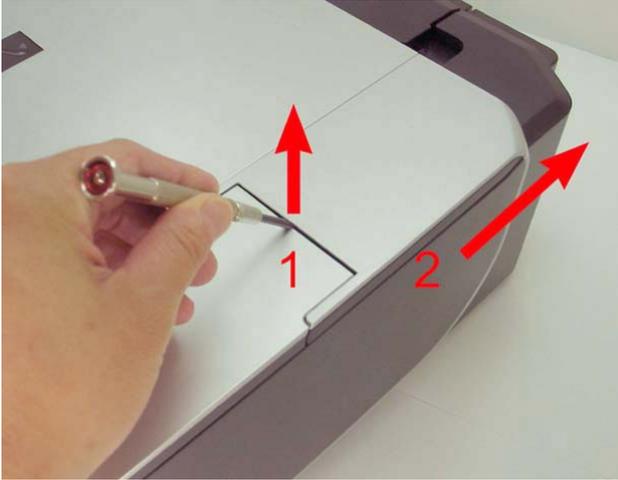
***1: General notes:**

- Make sure that the flexible cables and wires in the harness are in the proper position and connected correctly. See [3-2. Special Notes on Repair Servicing](#) or the Parts Catalog for details.
- Do not drop the ferrite core, which may cause damage.
- Protect electrical parts from damage due to static electricity.
- Before removing a unit, after removing the power cord, allow the machine to sit for approx. 1 minute (for capacitor discharging to protect the logic board ass'y from damages).
- Do not touch the timing slit strip film and timing slit disk film. No grease or abrasion is allowed.
- Protect the units from soiled with ink.
- Protect the housing from scratches.
- Exercise caution with the screws, as follows:
 - i. The screws of the paper feed motor may be loosened only at replacement of the paper feed motor unit (DO NOT loosen them in other cases).
 - ii. The screws securing the carriage rail may be loosened only at replacement of the carriage unit. After carriage unit replacement, print on thick paper to confirm that the distance between the print head and paper (between the carriage rail and the platen) is correct, and that the print head does not contact the paper during printing. If the print head contacts the paper, adjust the carriage rail position, while referring to [[3-3. Adjustment / Settings, \(2\) Carriage rail adjustment](#)].

3-2. Special Notes on Repair Servicing

(1) Side cover unit R removal

- 1) Remove the rear top cover.
Slightly lift the front bottom of the rear top cover, and slide it.
- 2) Remove the 3 screws and the rear middle frame.



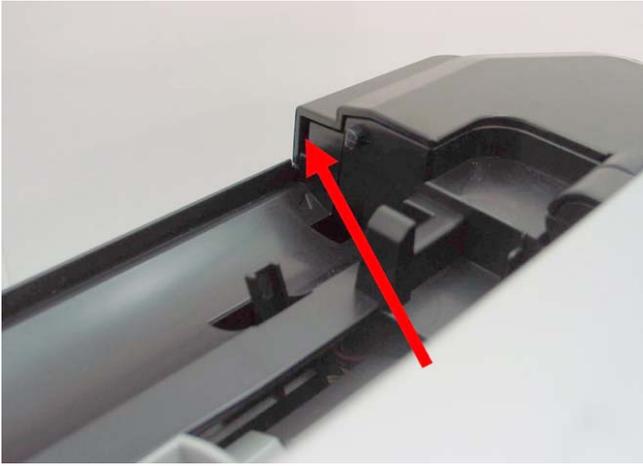
- 3) Release the 2 bosses and remove the ASF cover unit.
- 4) Slightly lift the front center (as indicated by the red arrow 1), and remove the panel top cover. Then remove the light guide (pointed by the red arrow 2).



- 5) Remove 2 screws from the back of the machine.
- 6) Open the card slot cover, and remove 1 screw.



7) Release the 4 claws, and remove the side cover unit R.



8) Remove the front cover R.

(2) Side cover unit L removal

1) Remove the front cover L.

Release the claw (No. 1 in the photo), and slide the cover to the right (No. 2 in the photo).



2) Remove 1 screw from the front of the machine.



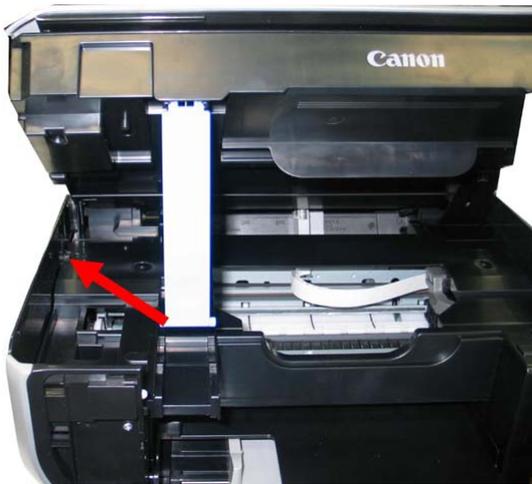
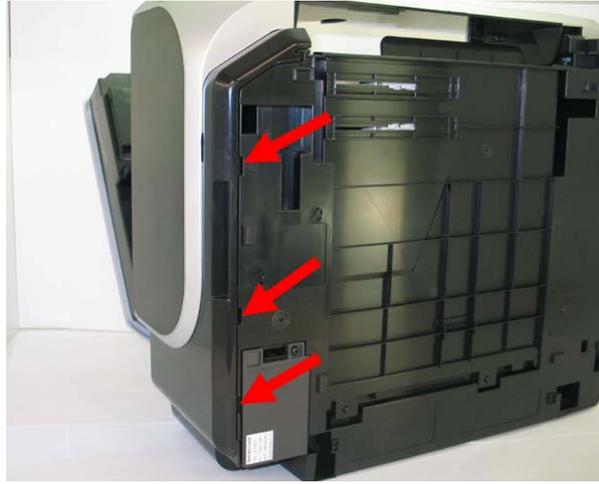
3) Remove 2 screws from the back of the machine.



4) Release the 2 bosses, and remove the ASF cover unit.

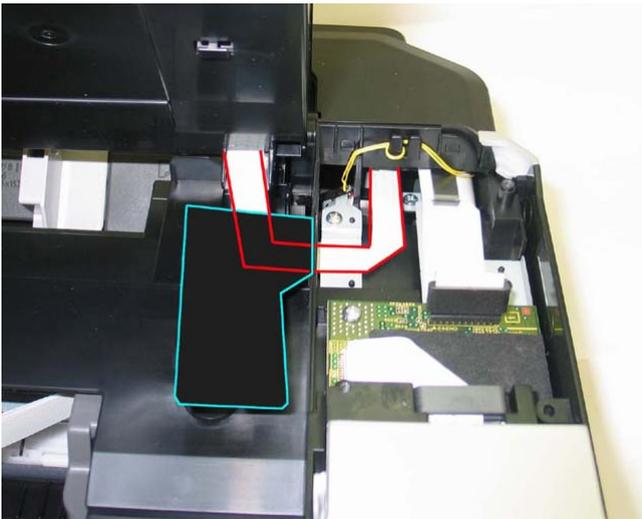


5) Release the 6 claws, and remove the side cover unit L.

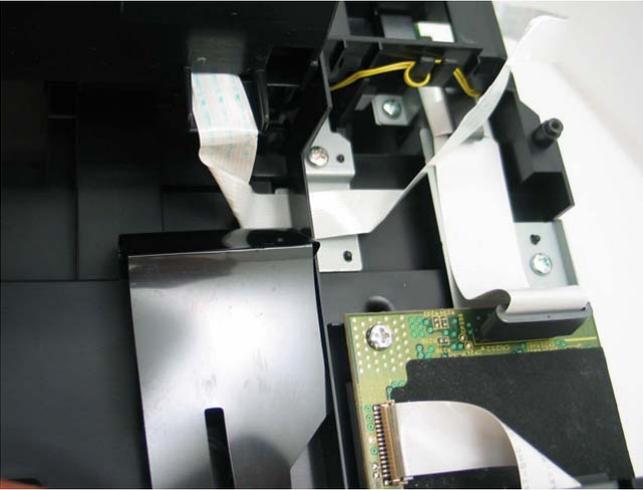


(3) Scanner flexible cable attachment

1) Attach the scanner flexible cable (indicated by the red line in the photo) so that it passes under the scanner flexible sheet (indicated by the blue line in the photo).

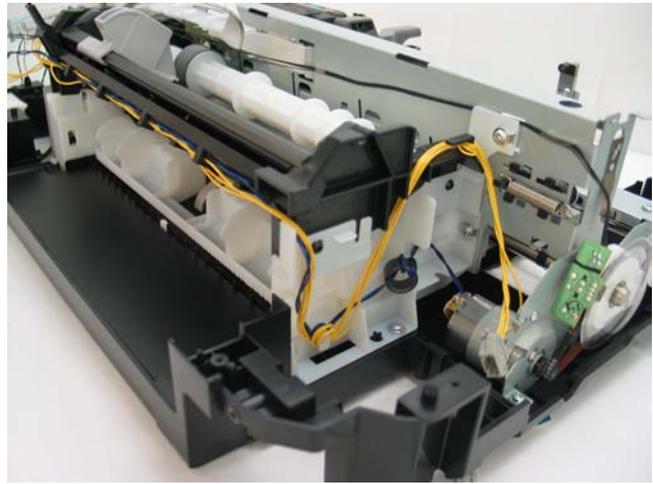
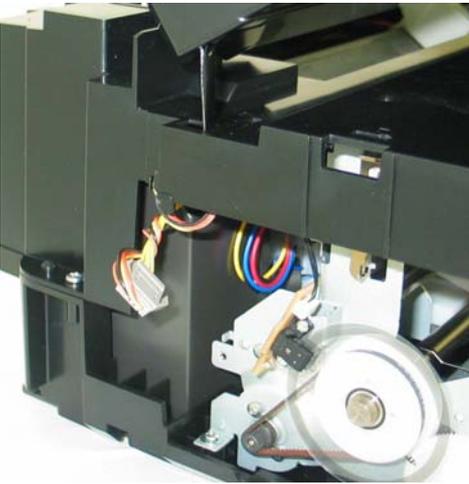


< Scanner flexible cable layout, seen with the scanner flexible sheet removed >



(4) Cable wiring and connection

1) Scanner relay cable and paper feed motor cable



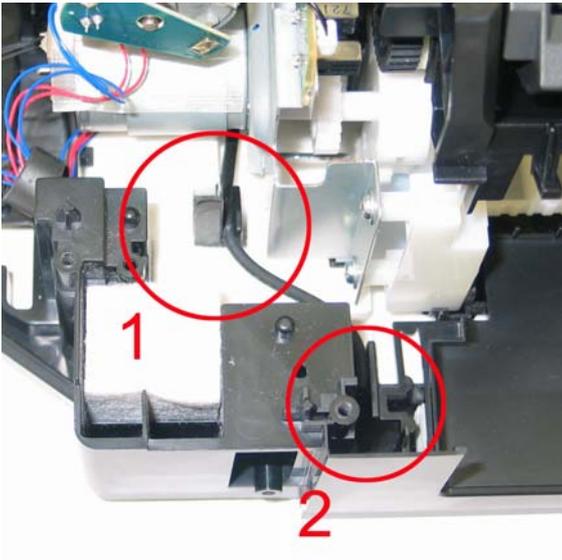
2) DC flexible cable



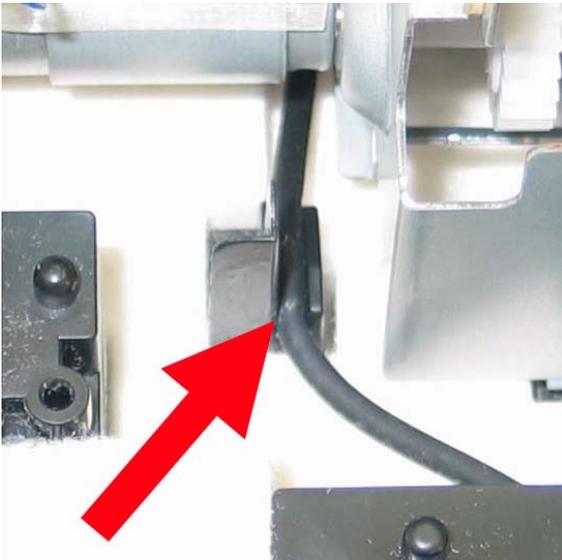
3) FCC guide, ASF sensor cable, timing sensor cable, and carriage flexible cables.



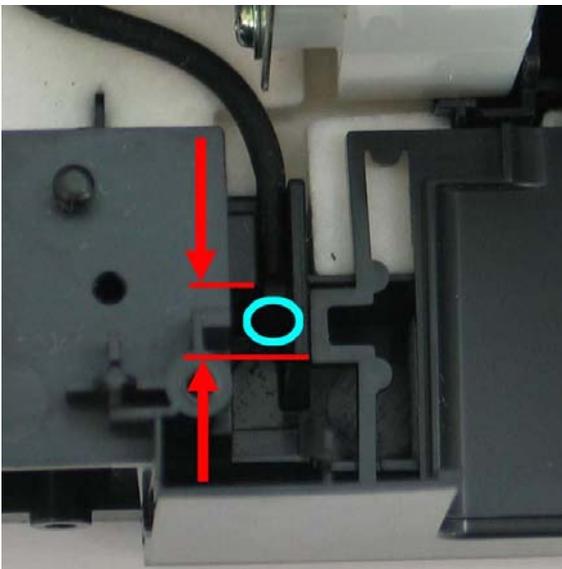
(5) Ink tube installation



< About Circle 1 in the photo >
Fit the tube between the ribs.



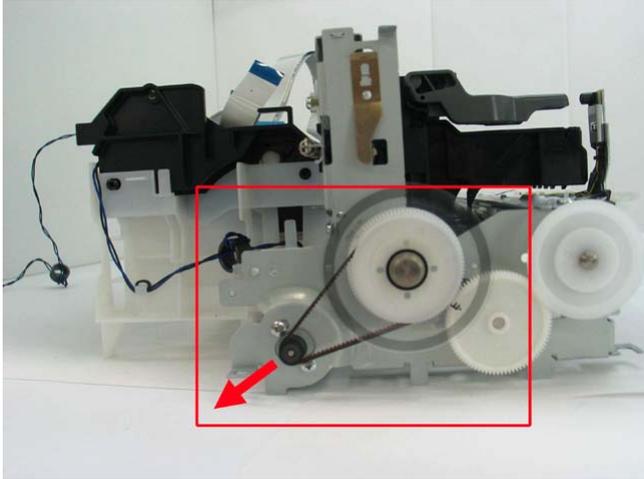
< About Circle 2 in the photo >
Fit the tube between the ribs, and adjust the tube so that the tube end (indicated by the blue circle in the photo) is between the edges of the right and left ribs (between the red lines in the photo).



3-3. Adjustment / Settings

(1) Paper feed motor adjustment

- 1) When attaching the motor, fasten the screws so that the belt is properly stretched (in the direction indicated by the blue arrow in the photo below).
- 2) After replacement, be sure to perform the service test print, and confirm that no strange noise or faulty print operation (due to dislocation of the belt or gear, or out-of-phase motor, etc.) occurs.



The screws securing the paper feed motor may be loosened only at replacement of the paper feed motor unit. DO NOT loosen them in other cases.

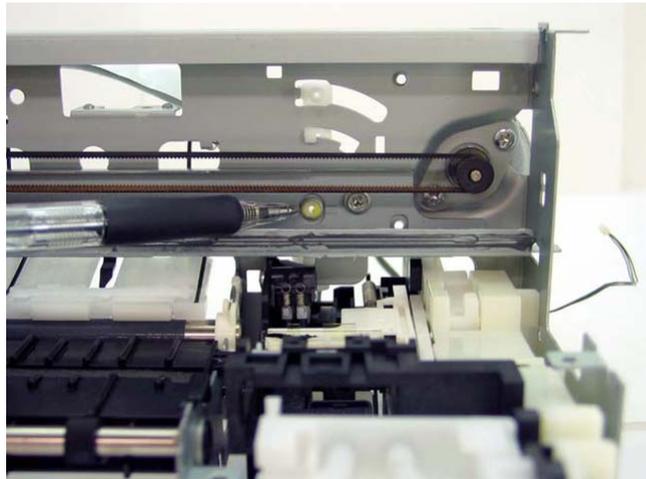
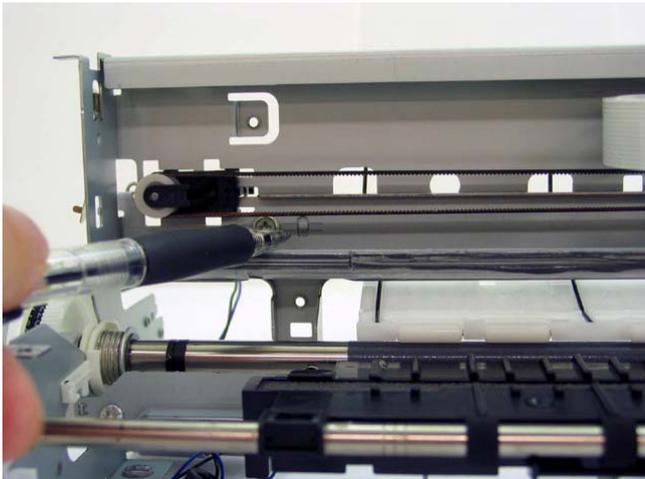
(2) Carriage rail adjustment

Perform the following adjustments when attaching the carriage rail:

- 1) Before loosening the screws, mark the following positions on the rail:

- Left side: Mark the boss position.

- Right side: Mark the hole position.



- 2) In attaching the carriage rail, make sure that the left boss and right hole fit to the marks made in step 1) respectively, then fasten the screws.
- 3) Be sure to perform the confirmation test detailed below; confirm that the print quality is proper and the print head is not contacting the paper.

<Confirmation test>

Using Photo Paper Pro, and with the paper thickness lever set to the left position (normal position), print an image and confirm that the print quality is proper, and the print head is free from contacting the paper.

If the print quality is not proper, or the print head contacts the paper, adjust the head-to-paper distance in the following procedures:

<How to adjust the head-to-paper distance>

- i. Mark the current position of the left boss and the right hole. (See the step 1 of the carriage rail adjustment above.)
- ii. Loosen the hexagon-head screws, and adjust the head-to-paper distance.
 - To prevent the print head from contacting the paper: Raise the carriage rail from the current position.
 - To improve the print quality: Lower the carriage rail from the current position.

(3) Document pressure sheet attachment

< How to attach the sheet >

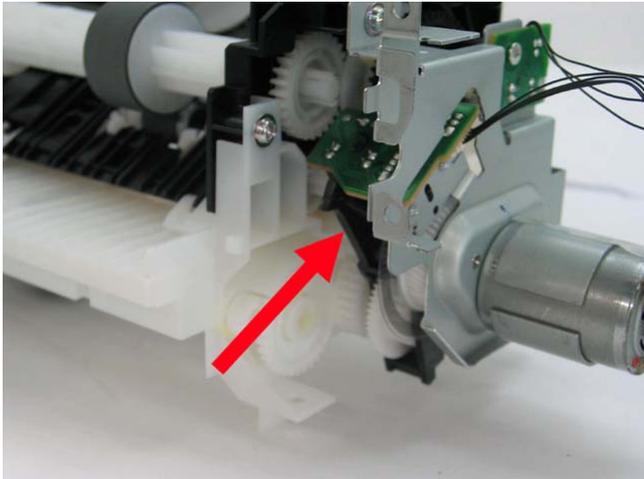
- 1) Peel off the cover sheet from the double-sided adhesive tape on the back of the document pressure sheet.
With the long-side down, position the upper-left corner of the document pressure sheet approx. 1 mm off the scanning reference edges (back left) on the platen glass.
- 2) Slowly close the document pressure plate ass'y. The document pressure sheet will attach to the plate.

< Confirmation after attachment >

- 1) Open the plate to confirm the following:
 - No extension of the sponge edges over the mold part of the upper scanner cover.
 - No gap between the platen glass reference edges and the corresponding sponge edges.
- 2) Open and close the plate to confirm the following:
 - The sponge must not be caught by the mold part of the upper scanner cover.

(4) Sheet feeder unit adjustment

Assemble the sheet feeder unit with the swing arm (pointed by the red arrow in the photo) in the raised position.



(5) Front tray paper feed roller cleaning

- 1) Press the ON/OFF button to turn off the machine.
- 2) Set 5 sheets or more of A4 or letter size plain paper in the front tray.
- 3) Push the rear cover tab to the right and pull out the rear cover.



- 4) While rotating the paper feed roller toward you using your finger, wipe off smears with a cotton swab. If a smear or stain is not removed easily, moisten the swab and clean the roller.



- 5) When cleaning is completed, remove the paper from the front tray, and re-set it.
- 6) Attach the rear cover.



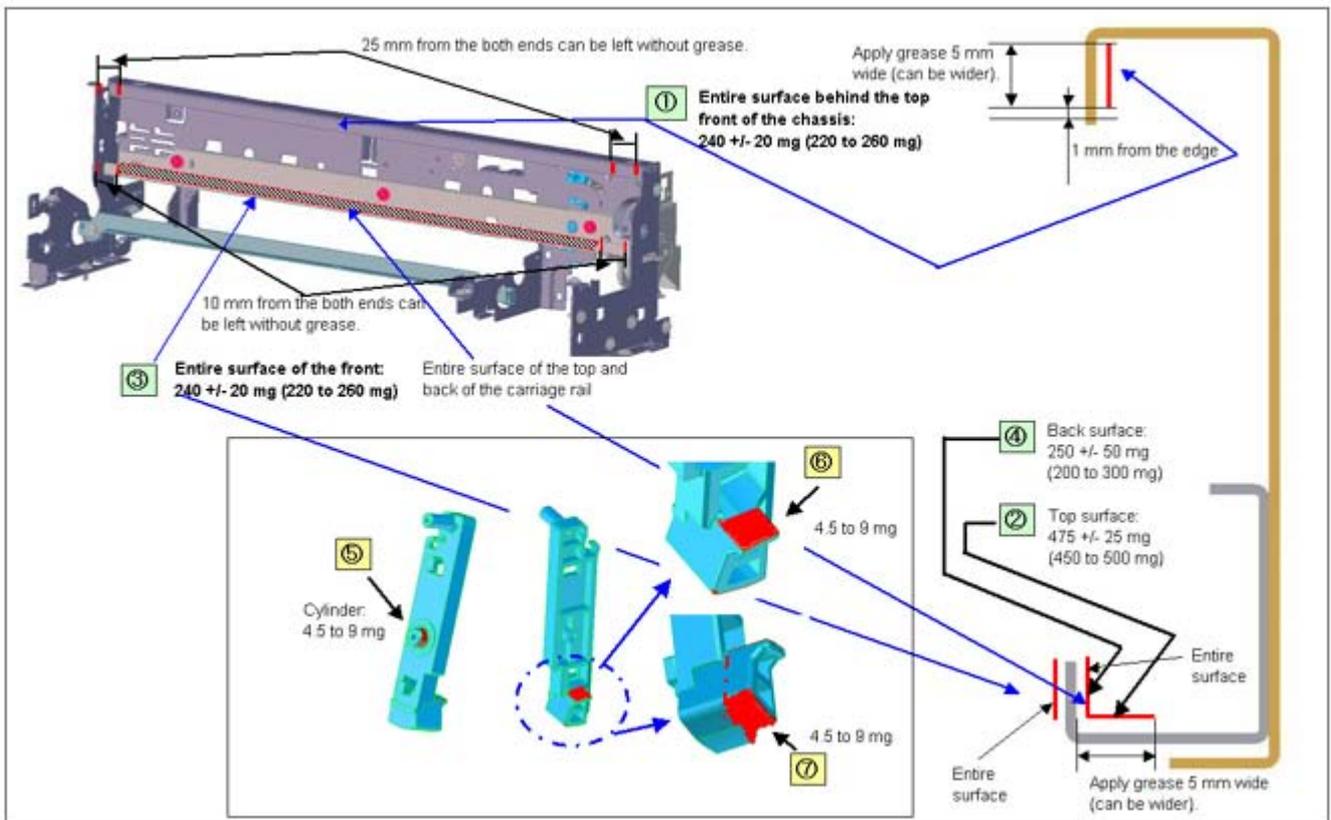
Make sure the rear cover fits in place. Improper attachment of the cover will cause paper jams.

(6) Grease application

1) Printer unit

No	Part name	Drawing No.	Where to apply grease / oil	Grease / oil	Grease / oil amount (mg)	Number of locations
1	Chassis ass'y	(1)	Behind the top front of the chassis where the carriage unit slides	Floil KG107A	240 +/- 20	1
2	Carriage rail	(2)	Top surface of the carriage rail where the carriage unit slides	Floil KG107A	475 +/- 25	1
3	Carriage rail	(3)	Front surface of the carriage rail where the carriage unit slides	Floil KG107A	240 +/- 20	1
4	Carriage rail	(4)	Back of the carriage rail where the carriage unit slides	Floil KG107A	250 +/- 50	1
5	AP-PG arm lever	(5)	Chassis sliding portion	Molykote PG-641	4.5 to 9.0	1
6	AP-PG arm lever	(6)	AP-PG swing arm contact portion	Molykote PG-641	4.5 to 9.0	1
7	AP-PG arm lever	(7)	AP-PG swing arm contact portion	Molykote PG-641	4.5 to 9.0	1

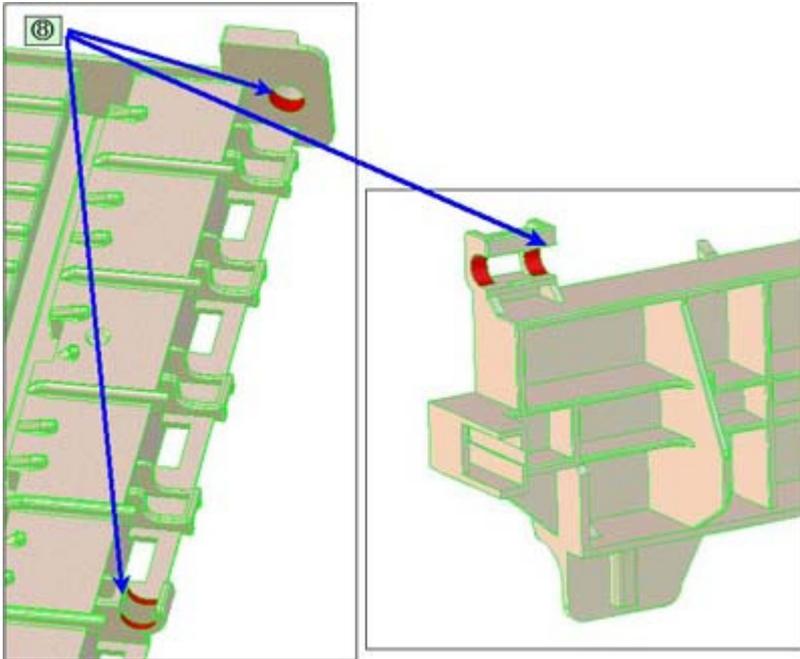
1 drop = 9 to 18 mg



2) Platen

No	Part name	Drawing No.	Where to apply grease / oil	Grease / oil	Grease / oil amount (mg)	Number of drops x locations
8	Platen	(8)	Eject roller sliding portion	Floil KG107A	4.5 to 9	1/2 x 3

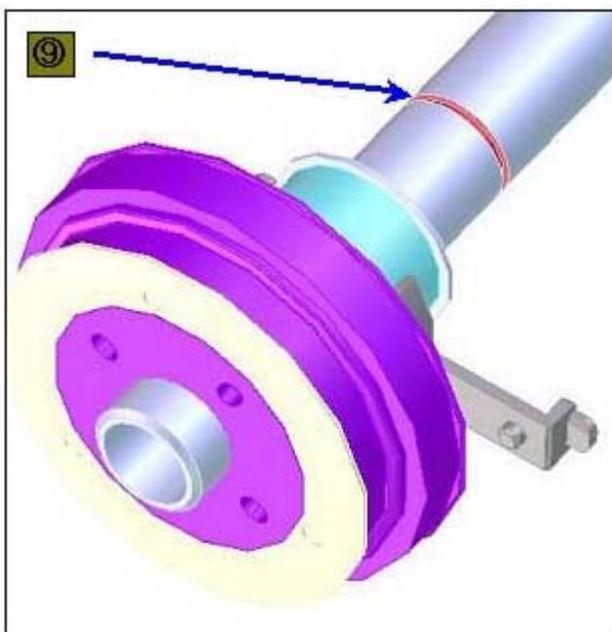
1 drop = 9 to 18 mg



3) LF roller

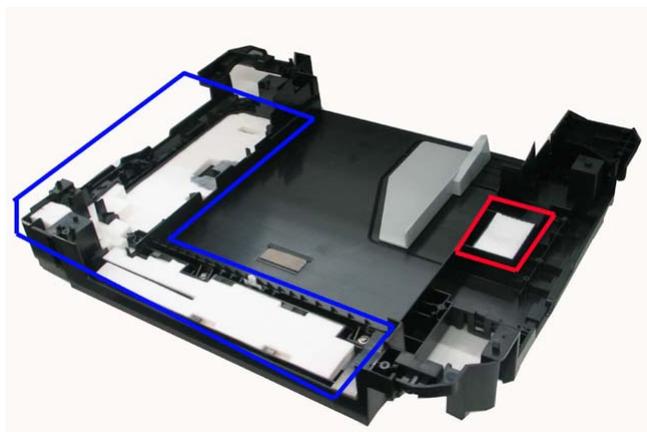
No	Part name	Drawing No.	Where to apply grease / oil	Grease / oil	Grease / oil amount (mg)	Number of drops x locations
9	LF roller	(9)	LF earth spring sliding portion	IF-20	9 to 18	1/2 x 1

1 drop = 9 to 18 mg



(7) Ink absorber replacement

- 1) At the time of an error indicating that the ink absorber is full, replace either the main or the borderless-print ink absorber according to the error message.
 - When the main ink absorber is full:
Replace the absorber indicated by the blue frame in the photo below (component of QY5-0192).
 - When the borderless-print ink absorber is full:
Replace 2 absorbers in the red circle in the photo below and the platen ink absorber (components of QY5-0192).



The main ink absorber and the borderless-print ink absorber have separate counters respectively. After ink absorber replacement, reset the applicable ink absorber counter according to the replaced ink absorber. For details, see [\(8\) Ink absorber counter setting](#).

2) Partial replacement of the main ink absorber

For the main ink absorber, the following replacement methods are available:

Replacement method	Difficulties	Ink absorber volume to be replaced	Print yield after replacement
Partial replacement	Low	Approx. 40% of the entire main ink absorber	Approx. 8,000 pages
Whole replacement	High	The entire main ink absorber	Approx. 20,000 pages

After ink absorber replacement, set the ink absorber counter value according to the replacement method. See [\(8\) Ink absorber counter setting](#), for details.

<How to perform the partial replacement>

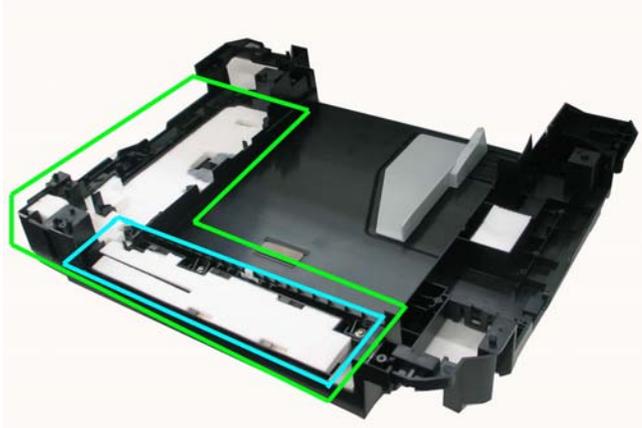
Remove the rear cover (No. 1 in the photo) and the ink absorber cover (No. 2 in the photo) from the rear side of the machine, and replace the portion of the main ink absorber (approx. 40%, No. 3 in the photo).

(Time required: Approx. 4 min. including the operation check after replacement)



<The portion replaced in the partial replacement>

- Entire main ink absorber: Indicated by the green lines
- The portion to be replaced in partial replacement: Indicated by the blue lines



(8) Ink absorber counter setting

Before replacement of the logic board, check the ink absorber counter value, and register it to the replaced new logic board. In addition, according to the ink absorber counter value, replace the ink absorber (ink absorber kit). When the ink absorber is replaced, reset the applicable ink absorber counter (to 0%).

- How to check the ink absorber counter value:
See [3-4. Verification Items, \(1\) Service test print](#).
- How to set the ink absorber counter:
See "[Ink absorber counter setting](#)" below.

(9) User mode

Function	Procedures	Remarks
Print head manual cleaning	<ul style="list-style-type: none"> - Cleaning both Black and Color: Perform via the machine operation panel. - Cleaning Black or Color separately, or both Black and Color: Perform from the MP driver Maintenance tab. 	
Print head deep cleaning	Perform via the machine operation panel, or from the MP driver Maintenance tab.	
Rear tray paper feed roller cleaning	Perform via the machine operation panel.	
Front tray paper feed roller cleaning	Clean the rollers manually.	
Nozzle check pattern printing	Perform via the machine operation panel, or from the MP driver Maintenance tab.	Set a sheet of plain paper (A4 or Letter) in the rear tray or the front tray which is selected on the Paper Feed Switch button.
Manual print head alignment	Perform via the machine operation panel, or from the MP driver Maintenance tab.	Set 2 sheets of plain paper (A4 or Letter) in the rear tray or the front tray which is selected on the Paper Feed Switch button.
Bottom plate cleaning	Perform via the machine operation panel, or from the MP driver Maintenance tab.	Cleaning of the platen ribs when the back side of paper gets smeared. Fold a sheet of plain paper (A4 or Letter) in half crosswise, then unfold and set it in the rear tray with the folded ridge facing down.

(10) Service mode

Function	Procedures	Remarks
Service test print - Model name - Destination - ROM version - USB serial number - Ink absorber counter value (ink amount in the ink absorber) - Ink system function check result	See "Service mode operation procedures" below.	Set a sheet of A4 or letter size paper. For print sample, see 3-4. Verification Items, (1) Service test print, "Service test print sample."
EEPROM information print - Model name - Destination - ROM version - Ink absorber counter value (ink amount in the ink absorber) - Print information - Error information, etc.	See "Service mode operation procedures" below.	Set a sheet of A4 or letter size paper.
EEPROM initialization	See "Service mode operation procedures" below.	The following items are NOT initialized, and the shipment arrival flag is not on: - USB serial number - Destination settings - Ink absorber counter value (ink amount in the ink absorber)
Ink absorber counter reset	See "Service mode operation procedures" below.	Set a sheet of A4 or Letter sized plain paper. After the ink absorber counter is reset, the counter value is printed automatically.
Destination settings	See "Service mode operation procedures" below.	
Button and LCD test	See "Service mode operation procedures" below.	
Ink absorber counter setting	See "Service mode operation procedures" below.	

<Service mode operation procedures>

- 1) With the machine power turned off, while pressing the Stop/Reset button, press and hold the ON/OFF button. (DO NOT release the buttons). The Power LED lights in green to indicate that a function is selectable.
- 2) While holding the ON/OFF button, release the Stop/Reset button. (DO NOT release the ON/OFF button.)
- 3) While holding the ON/OFF button, press the Stop/Reset button 2 times, and then release both the ON/OFF and Stop/Reset buttons. (Each time the Stop/Reset button is pressed, the Alarm and Power LEDs light alternately, Alarm in orange and Power in green, starting with Alarm LED.)
- 4) When the Power LED lights in green (and "Service Mode CANON Idle" is displayed on the LCD), press the Stop/Reset button the specified number of time(s) according to the function listed in the table below, then press the ON/OFF button. (Each time the Stop/Reset button is pressed, the Alarm and Power LEDs light alternately, Alarm in orange and Power in green, starting with Alarm LED.)

Time(s)	LED indication	Function	Remarks
0 times	Green (Power)	Power off	Even when the print head is not installed, the carriage returns and locks in the home position capped.
1 time	Orange (Alarm)	Service test print	Service test print - Model name - Destination - ROM version - USB serial number

			<ul style="list-style-type: none"> - Ink absorber counter value (ink amount in the ink absorber) - Ink system function check result - Barcode (model name + destination) <p>See 3-4. Verification Items, (1) Service test print, "Service test print sample."</p>
2 times	Green (Power)	EEPROM information print	<p>EEPROM information print</p> <ul style="list-style-type: none"> - Model name - Destination - ROM version - Ink absorber counter value (ink amount in the ink absorber) - Print information - Error information, etc.
3 times	Orange (Alarm)	EEPROM initialization	<p>The following items are NOT initialized, and the shipment arrival flag is not on:</p> <ul style="list-style-type: none"> - USB serial number - Destination settings - Ink absorber counter value - Record of disabling the function to detect the remaining ink amount - Record of ink absorber counter resetting
4 times	Green (Power)	Ink absorber counter resetting	See " Ink absorber counter resetting " below and the print sample in 3-4. Verification Items, (2) Ink absorber counter value print.
5 times	Orange (Alarm)	Destination settings	Press the Stop/Reset button the specified number of time (s) according to the destination. See " Destination settings " below.
6 times	Green (Power)	Print head deep cleaning	Cleaning of both Black and Color
7 to 9 times	Orange (Alarm) at odd numbers, Green (Power) at even numbers	Return to the menu selection	
10 times	Green (Power)	Return to the menu selection	Not used in servicing.
11 times	Orange (Alarm)	Return to the menu selection	
12 times	Green (Power)	Button and LCD test	See " Button and LCD test " below.
13 times	Orange (Alarm)	Ink absorber counter setting	See " Ink absorber counter setting " below.
14 times or more	Green (Power)	Return to the menu selection	



If the Stop/Reset button is pressed 14 or more times, the Alarm LED (orange) or Power LED (green) lights steadily without any changes.

<Destination settings>

In the destination settings mode, press the Stop/Reset button the specified number of time(s) according to the destination listed in the table below, and press the ON/OFF button.

Time(s)	LED indication	Destination
0 times	Green (Power)	No change of the destination
1 time	Orange (Alarm)	Japan
2 times	Green (Power)	Korea
3 times	Orange (Alarm)	US
4 times	Green (Power)	Europe
5 times	Orange (Alarm)	Australia
6 times	Green (Power)	Asia
7 times	Orange (Alarm)	China
8 times	Green (Power)	Taiwan
9 times	Orange (Alarm)	Latin America
10 times	Green (Power)	Brazil
11 times	Orange (Alarm)	Canada
12 times or more	Green (Power)	Return to the destination selection



After setting the destination, confirm the model name and destination in service test print or EEPROM information print.

<Ink absorber counter resetting>

Reset the ink absorber counter (to 0%) when the ink absorber is replaced

- 1) Before replacement of the ink absorber, check the ink absorber counter value in EEPROM information print.
- 2) In the ink absorber counter resetting mode, press the Stop/Reset button the specified number of time(s) according to the replaced ink absorber to set its counter to 0%, or 60% (for partial replacement).

Time(s)	Replaced ink absorber	Counter value
0 times	Main ink absorber	Reset to 0%
1 time	Borderless-print ink absorber	Reset to 0%
2 times	Both the main and borderless-print ink absorbers	Reset to 0%
3 times	A portion of the main ink absorber (partial replacement)	Reset to 60%

<Ink absorber counter setting>

Set the ink absorber counter value to a new EEPROM after the logic board is replaced in servicing.

- 1) Before replacement of the logic board, check the ink absorber counter value in EEPROM information print.
- 2) In the ink absorber counter setting mode, press the Stop/Reset button the specified number of time(s) according to the ink absorber whose counter value should be transferred to the replaced new EEPROM.

Time(s)	Ink absorber	Remarks
0 times	Main ink absorber	Reset to 0%
1 time	Borderless-print ink absorber	Reset to 0%
2 times	Both the main and borderless-print ink absorbers	Reset to 0%
3 times or more	Not valid	Press the ON/OFF button to return to the ink absorber counter setting mode.

- 3) Press the ON/OFF button to proceed to the next step.
- 4) The ink absorber counter value can be set in 10% increments by pressing the Stop/Reset button. Press the Stop/Reset button the appropriate number of time(s) to select the value which is closest to the actual ink absorber counter value.

Time(s)	Ink absorber counter value to be set (%)
0 times	0%
1 time	10%
2 times	20%
3 times	30%
4 times	40%
5 times	50%
6 times	60%
7 times	70%
8 times	80%
9 times	90%
10 times or more	Not valid. Press the ON/OFF button to return to the ink absorber counter setting mode.

- 5) Press the ON/OFF button to set the selected value to the EEPROM. Print EEPROM information to confirm that the value is properly set to the EEPROM.

<Button and LCD test>

Confirm the operation after replacement of the operation panel unit, board, or LCD unit.

- 1) In the button and LCD test mode, press the Stop/Reset button. The LCD turns blue, waiting for a button to be pressed.
- 2) Press each button of the operation panel.

The LCD is divided into 25 segments, representing each button. The color of a segment corresponding to the pressed button changes to red.

After all the 15 buttons are pressed, the remaining segments (from 16 to 25) turn red at the same time.

1	2	3	4	5
1 6	1 7	1 8	1 9	6
1 5	2 4	2 5	2 0	7
1 4	2 3	2 2	2 1	8
1 3	1 2	1 1	1 0	9

- | | |
|-----------------------------|-----------------------|
| 1. ON/OFF button | 9. OK button |
| 2. NAVI button | 10. Back button |
| 3. HOME button | 11. [+] button |
| 4. Paper Feed Switch button | 12. [-] button |
| 5. Up cursor button | 13. Black button |
| 6. Right cursor button | 14. Color button |
| 7. Down cursor button | 15. Stop/Reset button |
| 8. Left cursor button | |

- 3) Rotate the Easy-Scroll Wheel clockwise and counterclockwise 1 round (24 steps) each, as follows:

- 3-1) Rotate the Easy-Scroll Wheel clockwise step by step. The LCD is divided into 24 segments, representing each step. The color of a segment corresponding to the step changes from red to green.

If the wheel is rotated counterclockwise before clockwise round completes, the color of segment(s) corresponding to the number of steps the wheel is rotated counterclockwise returns to red.

If the wheel keeps rotated clockwise over 1 round (25 steps or more), the color of segment(s) corresponding to the extra number of steps returns to red, starting with the "Start" segment in the figure below.

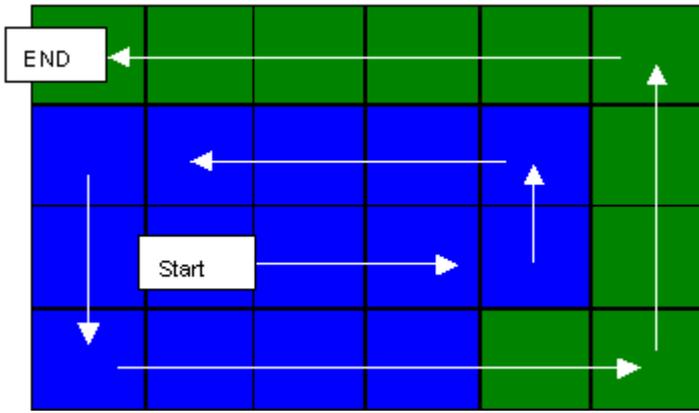


- 3-2) When the Easy-Scroll Wheel is rotated clockwise 1 round (24 steps), press the OK button.

- 3-3) Rotate the Easy-Scroll Wheel counterclockwise step by step. The LCD is divided into 24 segments, representing each step. The color of a segment corresponding to the step changes from green to blue.

If the wheel is rotated clockwise before counterclockwise round completes, the color of segment(s) corresponding to the number of steps the wheel is rotated clockwise returns to green.

If the wheel keeps rotated counterclockwise over 1 round (25 steps or more), the color of segment(s) corresponding to the extra number of steps returns to green, starting with the "Start" segment in the figure below.



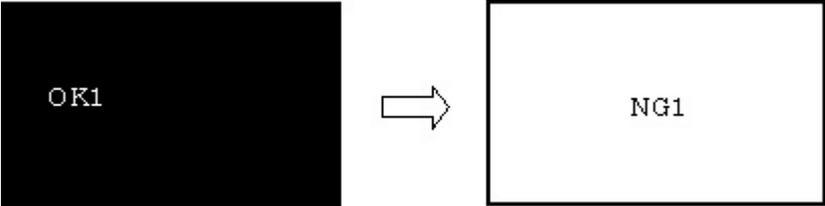
3-4) When the Easy-Scroll Wheel is rotated counterclockwise 1 round (24 steps, and all the segments are in blue), press the OK button. The color pattern is displayed on the LCD.
 If there is any segment that is not in blue when the OK button is pressed, the display remains unchanged.

Red	Black	White	Cyan
Green	White	Black	Magenta
Blue	Black	White	Yellow

3-5) Press the ON/OFF button to exit the button and LCD test, and return to the service mode menu selection.

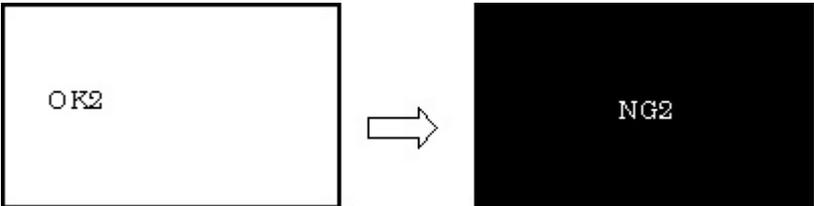
4) Check the transparent pattern, as follows:

4-1) Press the OK button. "OK1" in white is displayed on the black background.
 If the result is not good, "NG1" in black is displayed on the white background (transparent color) immediately after "OK1."



4-2) Press the OK button. "OK2" in black is displayed on the white background.
 If the result is not good, "NG2" in white is displayed on the black background (transparent color) immediately after "OK2."

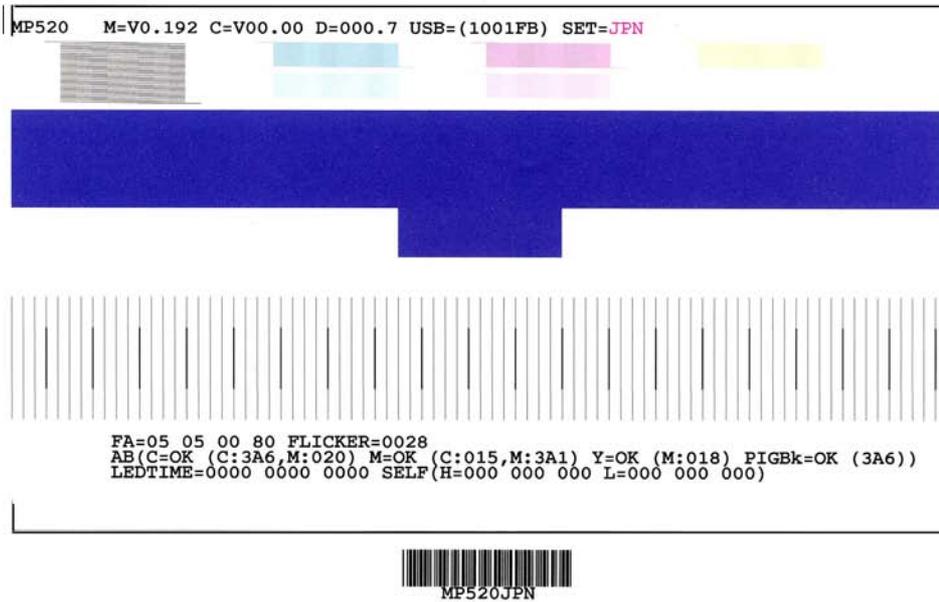
5) Press the ON/OFF button to return to the service mode menu selection.



3-4. Verification Items

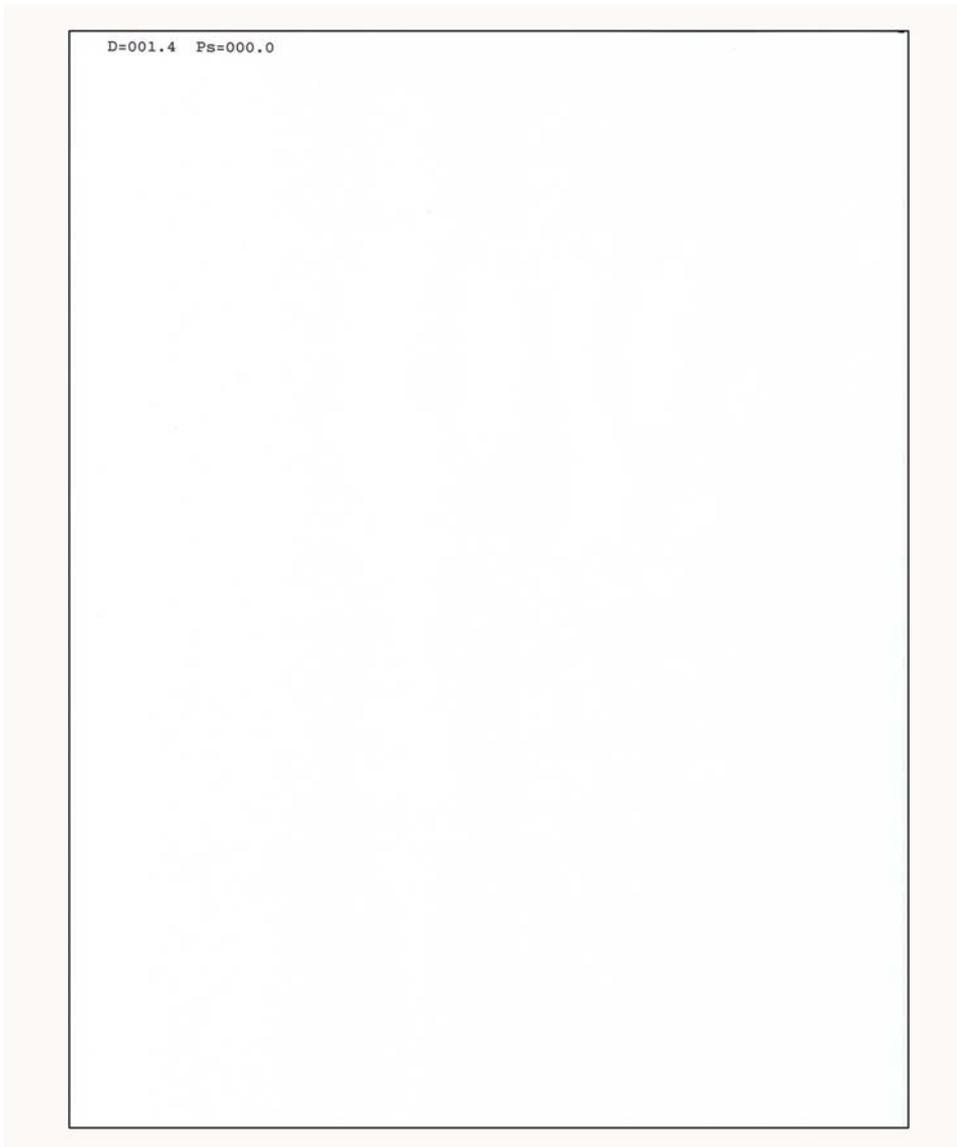
(1) Service test print

<Service test print sample>



(2) Ink absorber counter value print

<Print sample>



◀ <3-4. Verification Items> ▶ ▲

4. MACHINE TRANSPORTATION

This section describes the procedures for transporting the machine for returning after repair, etc.

- 1) In the service mode, press the ON/OFF button to finish the mode, and confirm that the paper lifting plate of the rear tray is raised.
- 2) Keep the print head and ink tanks installed in the carriage.

If the print head is removed from the machine and left alone by itself, ink (the pigment-based black ink in particular) is likely to dry. For this reason, keep the print head installed in the machine even during transportation.

- 3) Turn off the machine to securely lock the carriage in the home position. (When the machine is turned off, the carriage is automatically locked in place.)

This is to prevent the carriage from moving and applying stress to the carriage flexible cable, or causing ink leakage, during transportation.



If the print head must be removed from the machine and transported alone, attach the protective cap (used when the packing was opened) to the print head (to protect the print head face from damage due to shocks).

 <4. MACHINE TRANSPORTATION> 