

MP640 / MP648

Service Manual

Revision 0



QY8-13CN-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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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	Service Tool* ² Perform in the service mode.	1 min.
	Destination settings (EEPROM settings)	- At logic board replacement	To set destination.	Service Tool* ² 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.	Service Tool* ² 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.	Service Tool* ² Perform in the service mode.	1 min.
	Ink absorber replacement	- When the ink absorber becomes full	To replace the ink absorber with a new one.	Screwdriver, a pair of tweezers, etc.	15 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.
	CD / DVD detection sensor light volume correction* ¹	- At carriage unit replacement - At logic board replacement	To correct the light volume for the CD / DVD detection sensor.	Service Tool* ² Perform in the service mode.	5 min.
	Automatic print head alignment	- At print head replacement - At logic board replacement	To secure the dot placement accuracy.	None. Perform in the user mode.	5 min.
	Manual print head alignment	- When print quality is not satisfying			10 min.
	Grease application	- At carriage unit replacement - At Easy-Scroll Wheel replacement	To maintain sliding properties of the carriage rail.	FLOIL KG-107A	1 min.
	Ink system function check	- At logic board replacement - At spur unit replacement - At carriage unit replacement	To maintain detection functionality for presence of the ink tanks and each ink tank position.	Service Tool* ² 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.
	Platen glass protection sheet (document pressure sheet)	- At protection sheet replacement - At document bottom cover replacement	To maintain scanning accuracy, hold the sheet with the long side down, then fit its upper left corner to the platen	None.	1 min.

	position adjustment	- At scanner unit replacement	glass reference mark (back left).		
	LF / Eject correction	- At logic board replacement - At paper feed roller replacement	To correct line feeding (LF roller diameter).	Service Tool* ² Perform in the service mode.	5 min. (LF correction and Eject correction is performed at the same time.)
		- At logic board replacement - At platen unit replacement	To correct line feeding (eject roller diameter).	Service Tool* ² Perform in the service mode.	
	Carriage rail position adjustment	- At carriage unit replacement - At carriage unit removal	To set the carriage rail to the original position prior to removal or replacement of the carriage unit, put a mark on the main chassis before removal of the carriage unit.	None.	1 min.
N	CD / DVD print position adjustment	- At logic board replacement - When printing shifts from the correct position	To set the center of CD / DVD printing.	Service Tool* ² Perform in the service mode.	Varies depending on the degree of print shift.

N: New adjustment item

*1: Only for CD / DVD printing supported regions.

*2: Install the Service Tool to a pre-registered computer.



-
- The screws securing the paper feed motor may be loosened only at replacement of the paper feed motor unit.
 - For the automatic print head alignment, use Matte Photo Paper (MP-101), which is packed with the machine before shipment. If Matte Photo Paper (MP-101) is not available, perform manual print head alignment using plain paper.
-

(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
Automatic print head alignment	- At print head replacement - When print quality is not satisfying (uneven printing, etc.)	To ensure accurate dot placement.	- Machine buttons - 1 sheet of Matte Photo Paper (MP-101) - Computer (MP driver)	5 min.
Manual print head alignment	- At print head replacement - When print quality is not satisfying (uneven printing, etc.)	To ensure accurate dot placement.	- Machine buttons - Computer (MP driver)	10 min.
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.
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 of the selected paper source (rear tray or cassette).	- Machine buttons - Computer (MP driver)	2 min.
Bottom plate cleaning	When the back side of the paper is smeared.	To clean the platen ribs. (Feed the paper from the rear tray.)	- 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 pressure sheet.	Soft, dry, and clean lint-free cloth.	1 min.
Exterior cleaning	When necessary	To clean the machine exterior, or to wipe off dusts.	Soft, dry, and clean lint-free cloth.	1 min.

1-3. Special Tools

Name	Tool No.	Application	Remarks
FLOIL KG-107A	QY9-0057-000	To the carriage rail sliding portions.	In common with the MP610, etc.

1-4. Sensors

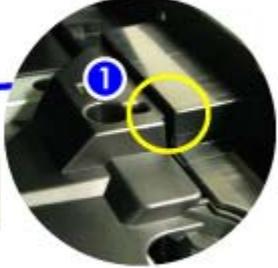
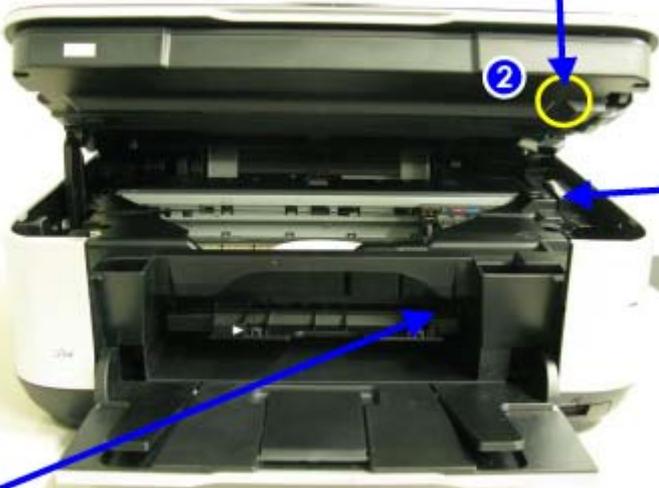
No.	Sensor	Function	Possible problems
1	Scanner open sensor	Detects opening and closing of the scanning unit (cover).	- The carriage does not move to the center even when the scanning unit is opened.
2	FB encoder sensor	Detects rotation of the scanner motor, and controls scanning operation.	- Faulty scanner - FB motor error - Faulty scanned or copied images
3	Inner cover sensor	Detects opening and closing of the inner cover.	- The inner cover is open when it should be closed. - The inner cover is closed when it should be opened.
4	PE sensor	Detects the leading and trailing edges of paper.	- No paper - Paper jam
5	ASF cam sensor	Detects the position of the ASF cam (for paper feeding from the rear tray).	- ASF cam sensor error - Paper feeding problem
6	APP encoder sensor	Detects rotation of the APP encoder, and controls paper feeding and purging operation.	- APP sensor error - APP position error
7	Carriage encoder sensor	Detects the position of the carriage.	- Carriage position error - Printing shifts from the correct position. - Uneven printing - Strange noise
8	Temperature & Ink amount sensor	Detects the temperature of the inside of the machine and the remaining ink amount.	- Internal temperature error - Low-ink or out-of-ink warning
9	Ink sensor	Detects the position of an ink tank.	- Wrong position of an ink tank - Installation of multiple ink tanks of the same color - No recognition of an ink tank
10	LF encoder sensor	Detects rotation of the LF encoder, and controls paper feeding.	- LF position error - Uneven printing
11	Eject encoder sensor	Detects rotation of the eject encoder, and controls paper feeding.	- LF position error - Uneven printing
12	Valve cam sensor	Detects the position of the purge valve cam, and controls purging operation.	- Valve cam sensor error
13	Pump roller sensor	Detects the position of the pump roller, and controls purging operation.	- Pump roller sensor error
14	Purge cam sensor	Detects the position of the purge main cam, and controls purging operation.	- PG cam sensor error



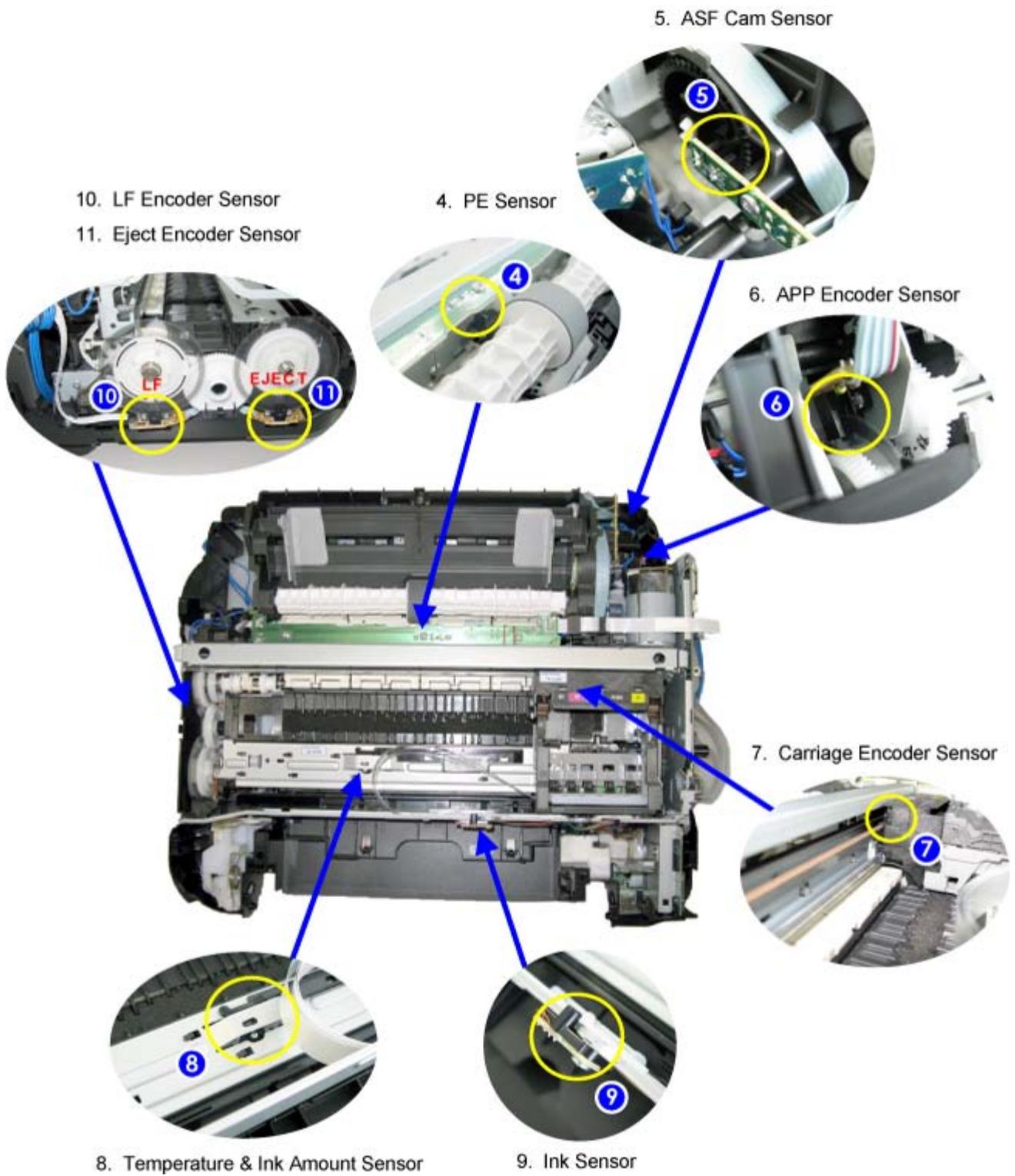
Click on the image to enlarge it.

2. FB Encoder Sensor
(inside the scanner unit)

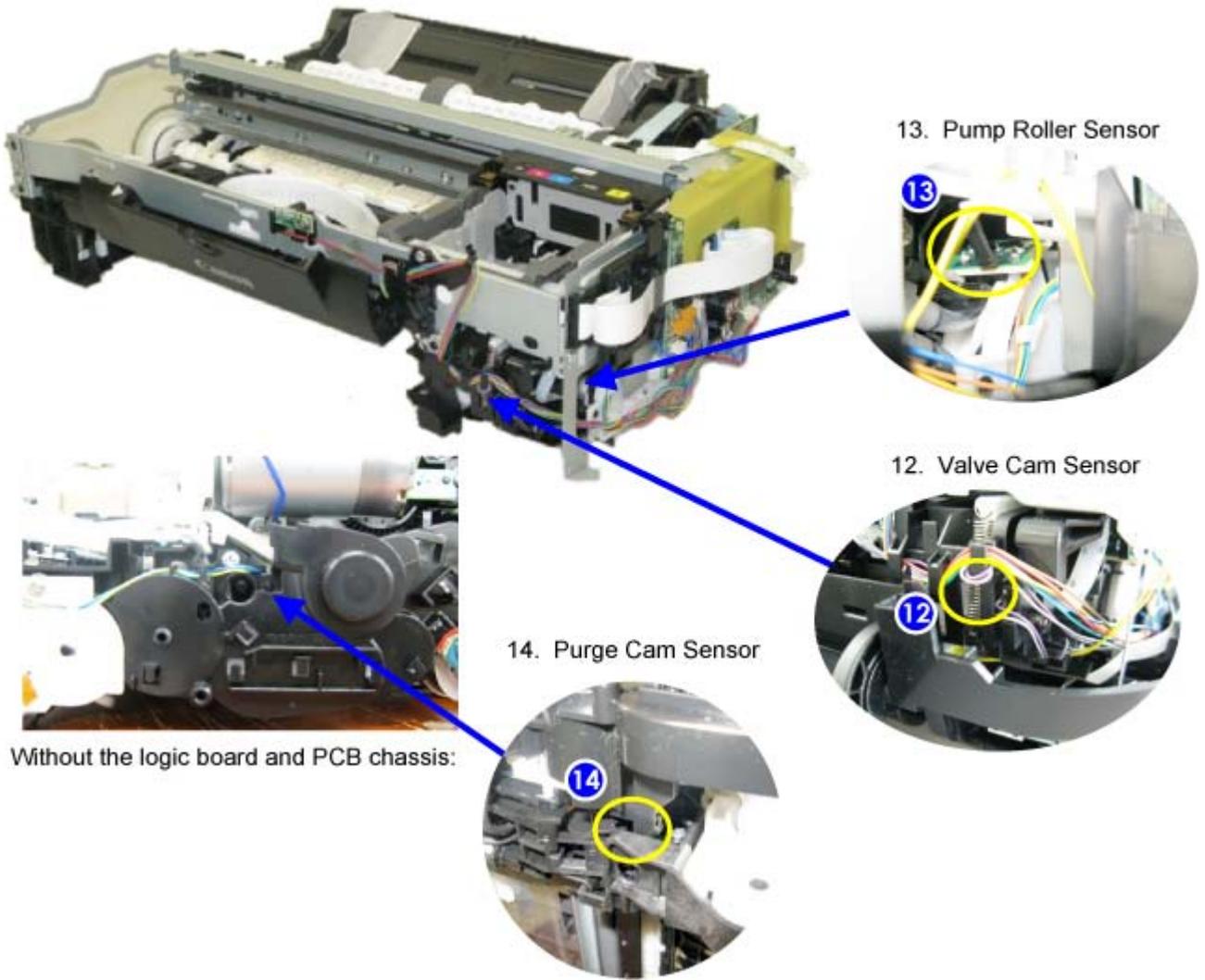
1. Scanner Open Sensor
(on the logic board)



3. Inner Cover Sensor



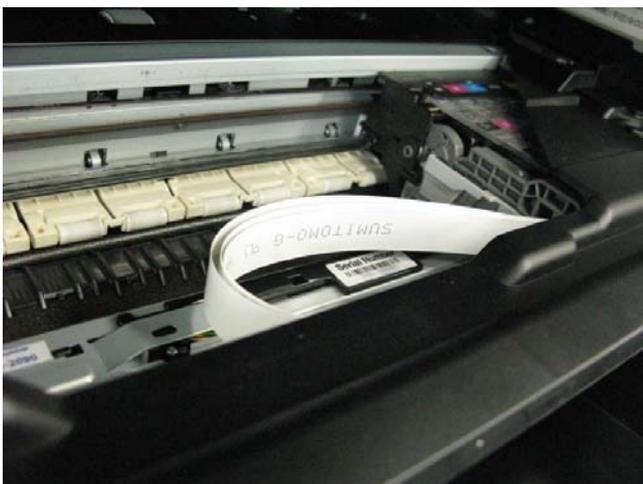
Inside the Purge Drive System Unit:



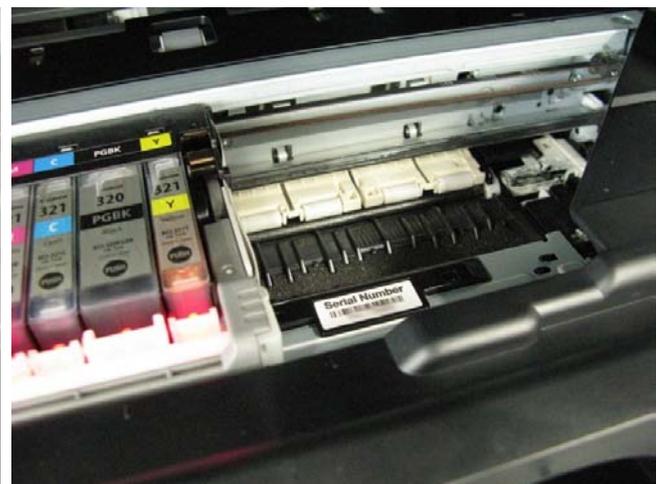
Without the logic board and PCB chassis:

1-5. Serial Number Location

On the inner guide over the upper portion of the spur holder (visible when the scanning unit (cover) is opened)



When the machine power is OFF.



When the machine power is ON.

2. LIST OF ERROR DISPLAY / 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 (the latest 10 error codes at the maximum) 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 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 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	U No.	Message on the LCD	Solution	Parts that are likely to be faulty
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.	- ASF unit - Pressure roller unit - PE sensor board unit
No CD / DVD tray*1.	[1001]	---	There is no CD-R tray. Attach the tray and press [OK].	Set the CD / DVD tray, and press the OK button.	- CD-R tray - Carriage unit
No CD / DVD*1.	[1002]	---	Printable disc is not set. Correctly place a disc in the CD-R tray and press [OK].	Set a printable disk in the CD / DVD tray, and insert the CD / DVD tray in the proper position. Then, press the OK button.	- CD-R tray - Carriage unit
No paper in the cassette.	[1003]	---	Cassette. There is no paper. Load paper and press [OK].	Confirm that the cassette is selected as the paper source. Set the paper in the cassette, and press the OK button. Note that the cassette is for plain paper only.	- Pick-up arm unit - Pressure roller unit - Cassette unit
Paper jam.	[1300]	---	The paper is jammed.	Remove the jammed paper and press the OK button.	- Pick-up arm unit - ASF unit - Pressure roller unit - Cassette unit - Rear guide unit
Paper jam in the rear guide.	[1303]	---	Clear the paper and press [OK].		
Paper jam in the under guide.	[1304]	---			
Ink may have run out.	[1600]	U041	The following ink may have run out. Replacing the ink tank is recommended.	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.	- Spur unit
Ink tank not installed.	[1660]	U043	The following ink tank cannot be recognized. (Applicable ink tank icon)	Install the applicable ink tank(s) properly, and confirm that the LED's of all the ink tanks light red.	- Ink tank - Carriage unit
Print head not	[1401]	U051	Print head is not	Install the print head properly.	- Print head

installed, or not properly installed.			installed. Install the print head.		- Carriage unit
Faulty print head ID.		U052	The type of print head is incorrect. Install the correct print head.	Re-set the print head. If the error is not cleared, the print head may be defective. Replace the print head.	- Print head - Carriage unit
Print head temperature sensor error.	[1403]				
Faulty EEPROM data of the print head.	[1405]				
Inner cover error.	[1841*2, 1846*2, 1851*1, 1856*1,]	---	Inner cover is open. Close the inner cover and press [OK].	Close the inner cover, and press the OK button.	- Spur unit - Inner cover unit
	[1850*1, 1855*1]	---	Open the inner cover, place the CD-R tray and press [OK].	Open the inner cover which functions as the CD / DVD tray feeder, set the CD / DVD tray in the feeder, and press the OK button.	- Spur unit - Inner cover unit
Time-out in CD / DVD print operation.	[1830*1]	---	Timeout error has occurred. Press [OK].	A prescribed period of time (12 minutes) has elapsed without any printing since printing was attempted. Press the Stop button to clear the error.	
Multiple ink tanks of the same color installed.	[1487]	U071	More than one ink tank of the following color is installed.	Replace the wrong ink tank(s) with the correct one(s).	- Ink tank
Ink tank in a wrong position.	[1680]	U072	Some ink tanks are not installed in place.	Install the ink tank(s) in the correct position.	- Ink tank
Warning: The ink absorber becomes almost full.	[1700]	---	The ink absorber is almost full. Press [OK] to continue printing. Contact the service center for replacement.	Replace the ink absorber, and reset its counter. [See 4-2. 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 ink absorber will become full soon (service call error).
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.	
Automatic duplex printing cannot be performed.	[1310]	---	This paper is not compatible with duplex printing. Remove the paper and press [OK].	The paper length is not supported for duplex printing. Press the OK button to eject the paper being used at error occurrence. Data which was to be printed on the back side of paper at error occurrence is skipped (not printed).	- Duplex printing feed roller unit - PE sensor board unit
Failed in automatic print head alignment.	[2500]	---	Auto head align has failed. Press [OK] and repeat operation. <See manual>	Press the OK button to clear the error, then perform the automatic print head alignment again. (In the MP640 / MP648, use Matte Photo Paper MP-101.)	- Carriage unit - Print head - Purge drive system unit

The remaining ink amount unknown (raw ink present).	[1683]	U130	The remaining level of the following ink cannot be correctly detected. Replace the ink tank.	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 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 - Spur unit
Ink tank not recognized.	[1684]	U140	The following ink tank cannot be recognized. (Applicable ink tank icon)	A non-supported ink tank (an ink tank that is sold in a different region from where the machine was purchased) is installed (the ink tank LED is turned off). Install the supported ink tanks.	- Ink tank
Ink tank not recognized.	[1682]	U150	The following ink tank cannot be recognized. (Applicable ink tank icon)	A hardware error occurred in an ink tank (the ink tank LED is turned off). Replace the ink tank(s).	- Ink tank
No ink (no raw ink).	[1688]	U163	The following ink has run out. Replace the ink tank (Applicable ink tank icon)	Replace the empty ink tank(s), and close the scanning unit (cover). Printing with an empty ink tank can damage the machine. To continue printing without replacing the ink tank(s), press the Stop 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 that the function to detect the remaining ink amount was disabled.	- Ink tank - Spur unit
Non-supported hub.	[2002]	---	An unsupported USB hub is connected. Remove the hub.	Remove the applicable USB hub from the PictBridge (USB) connector.	
Time-out for the scanner device.	[2700]	---	Timeout error has occurred. Press [OK].	The buffer became full in the middle of scanning operation, and 60 minutes have elapsed since then, making re-scanning unstable. Press the OK button to clear the error.	

*1: Only for models supporting CD / DVD printing.

*2: Only for models not supporting CD / DVD printing.

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 with the message, "Printer error has occurred. Turn off power then back on again. If problem persists, see the manual." is displayed on the LCD.

Cycles of blinking of Alarm and Power LEDs	Error	Error code	Conditions	Solution (Check points and replacement items)
2 times	Carriage error	[5100]	An error occurred in the carriage encoder signal.	(1) Smearing or scratches on the carriage slit film; clean the timing slit film. (2) Foreign material or paper debris that obstructs the carriage movement; remove foreign material. (3) Ink tank conditions; re-set the ink tanks. (4) Cable connection (5) Part replacement: - Timing slit disk film - Carriage unit - Logic board - Carriage motor
3 times	Line feed error	[6000]	An error occurred in the LF encoder signal.	(1) Front door operation (opening and closing) during printing (2) Smearing or scratches on the LF / EJ slit film; clean the LF / EJ slit film. (3) Foreign material or paper debris in the LF drive; remove foreign material. (4) Cable connection (5) Part replacement: - LF / EJ slit film - LF / EJ timing sensor unit - Paper feed roller unit - Logic board - Paper feed motor
4 times	Purge cam sensor error	[5C00]	An error occurred in the purge unit.	(1) Foreign material or paper debris around the purge drive system unit; remove foreign material. (2) Cable connection (3) Part replacement: - Purge drive system unit - Logic board
5 times	ASF (cam) sensor error	[5700]	An error occurred in the ASF cam sensor (during paper feeding from the rear tray).	(1) Cable connection (2) Part replacement: - ASF unit - PE sensor board unit - Logic board
6 times	Internal temperature error	[5400]	The internal temperature is not normal.	(1) Cable connection (2) Part replacement: - Carriage unit - Logic board - Print head
7 times	Ink absorber full	[5B00, 5B01]	The ink absorber is supposed to be full. <u>Message on the LCD:</u> Ink absorber full. Contact	(1) Ink absorber condition (2) Part replacement: - Ink absorber kit and double-sided adhesive tape (3) Ink absorber counter value in the EEPROM;

			<p>the service center for replacement.</p> <p><u>Error codes:</u></p> <p>5B00: Main ink absorber is full (overseas).</p> <p>5B01: Main ink absorber is full (Japan).</p>	<p>reset the ink absorber counter.</p>
8 times	Print head temperature rise error	[5200]	The print head temperature exceeded the specified value.	<p>(1) Print head condition</p> <p>(2) Head contact pin condition of the carriage unit</p> <p>(3) Cable connection</p> <p>(4) Part replacement:</p> <ul style="list-style-type: none"> - Print head - Logic board - Carriage unit
9 times	EEPROM error	[6800, 6801]	A problem occurred in reading from or writing to the EEPROM.	<p>(1) Part replacement:</p> <ul style="list-style-type: none"> - Logic board
10 times	VH monitor error	[B200]	The internal temperature exceeded the specified value.	<p>(1) Head contact pin condition of the carriage unit</p> <p>(2) Cable connection (especially the carriage FFC)</p> <p>(3) Part replacement:</p> <ul style="list-style-type: none"> - Print head and logic board (Replace them at the same time.) - Power supply unit - Carriage unit
11 times	Carriage lift mechanism error	[5110]	The carriage did not move up or down properly.	<p>(1) Foreign material or paper debris that obstructs the carriage movement;</p> <p style="padding-left: 20px;">remove foreign material.</p> <p>(2) Part replacement:</p> <ul style="list-style-type: none"> - Switch system unit - Carriage unit
12 times	APP position error	[6A80]	An error occurred in the APP motor.	<p>(1) Foreign material or paper debris around the purge drive system unit;</p> <p style="padding-left: 20px;">remove foreign material, and confirm that the ink absorber right beneath the purge drive system unit stays in place and does not contact the unit.</p>
14 times	APP sensor error	[6A90]	An error occurred during paper feeding or purging.	<p>(2) Foreign material or paper debris around the ASF unit;</p> <p style="padding-left: 20px;">remove foreign material.</p> <p>(3) Cable connection</p> <p>(4) Part replacement:</p> <ul style="list-style-type: none"> - Purge drive system unit - Logic board
	Paper feed cam sensor error	[6B10]	An error occurred in the paper feed cam sensor during paper feeding from the cassette, or the paper absorbing a large amount of ink jammed in the PF rear guide.	<p>(1) Jammed paper in the PF rear guide (when a large amount of ink was absorbed in the paper);</p> <p style="padding-left: 20px;">remove the jammed paper and foreign material.</p> <p>(2) Foreign material or paper debris in the cassette or in the PF rear guide;</p> <p style="padding-left: 20px;">remove foreign material.</p> <p>(3) Part replacement:</p> <ul style="list-style-type: none"> - PF pick-up unit - Logic board
15 times	USB host Vbus overcurrent	[9000]	The USB host Vbus overloaded.	<p>(1) Part replacement:</p> <ul style="list-style-type: none"> - Logic board
16 times	Pump roller sensor error	[5C20]	The pump roller position cannot be detected.	<p>(1) Cable connection</p> <p>(2) Part replacement:</p> <ul style="list-style-type: none"> - Purge drive system unit
17 times	Paper eject	[6010]	An error occurred in the paper	<p>(1) Smearing or scratches on the LF / EJ slit film;</p>

	encoder error		eject encoder signal.	<p>clean the LF / EJ slit film.</p> <p>(2) Foreign material or paper debris in the paper path; remove foreign material.</p> <p>(3) Cable connection</p> <p>(4) Part replacement: - LF / EJ slit film - LF / EJ timing sensor unit - Platen unit - Logic board - Paper feed motor</p>
19 times	Ink tank position sensor error	[6502]	None of the ink tank position is detected.	<p>(1) Ink tank position; confirm the ink tank position.</p> <p>(2) Re-set or replacement of ink tanks</p> <p>(3) Cable connection</p> <p>(4) Part replacement: - Spur unit - Logic board</p>
20 times	Other errors	[6500]	An unidentified error or a network error occurred.	<p>(1) Part replacement: - Logic board - WLAN board</p>
21 times	Drive switch error	[C000]	Drive was not switched properly.	<p>(1) Foreign material or paper debris in the drive switch area; remove foreign material.</p> <p>(2) Ink tank conditions; confirm that the ink tanks are seated properly, or re-set the ink tanks properly.</p> <p>(3) Part replacement: - Purge drive system unit - ASF unit - Carriage unit</p>
22 times	Scanner error	[5011]	An error occurred in the scanner.	<p>(1) Document pressure sheet conditions</p> <p>(2) Cable connection</p> <p>(3) Part replacement: - Document pressure sheet (sponge sheet) - Scanner unit - Logic board</p>
	FB motor error	[5012]	An error occurred in the scanner FB motor.	<p>(1) Cable connection</p> <p>(2) Part replacement: - Scanner unit</p>
	Scanner electric circuit error	[5050]	The AFE was faulty.	<p>(1) Cable connection</p> <p>(2) Part replacement: - Scanner unit</p>
23 times	Valve cam sensor error	[6C10]	The valve cam sensor was faulty at power-on or when purging was attempted.	<p>(1) Foreign material or paper debris around the purge drive system unit; remove foreign material.</p> <p>(2) Cable connection</p> <p>(3) Part replacement: - Purge drive system unit - Logic board</p>



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 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 4-2. [Service Mode](#), for details.]

2-3. Troubleshooting by Symptom

	Symptom	Solution
Faulty operation	The power does not turn on. The power turns off immediately after power-on.	(1) Confirm connection of the power supply unit: - Harness and connector conditions (2) Replace the following item(s): - Logic board - Power supply unit - Panel board
	A strange noise occurs.	(1) Examine and remove any foreign material or paper debris. (2) Replace the following item(s): - The part generating the strange noise - Logic board
	The LCD does not display properly. A portion of the LCD is not displayed. The display flickers.	(1) Confirm cable connection (LCD FFC and panel harness): - Harness and connector conditions - No cable breakage, etc. (2) Replace the following item(s): - LCD FFC - LCD viewer unit - Panel board - Logic board
	Paper feed problems (multi-feeding, skewed feeding, no feeding).	(1) Examine and remove any foreign material or paper debris. (2) Confirm that the paper guides are set properly. (3) Confirm the PF rear cover and the cassette conditions. (4) Confirm cable connection. (5) Replace the following item(s): - ASF unit (for paper feeding error from the rear tray) - PF pick-up unit (for paper feeding error from the cassette) - PE sensor board - Pressure roller unit - Cassette unit
	Faulty scanning (no scanning, strange noise).	(1) Confirm cable connection (scanner motor cable and CIS FFC): - Harness and connector conditions - No cable breakage, etc. (2) Replace the following item(s): - Scanner unit - Logic board
	The CD / DVD tray is not pulled in the feeder.	(1) Confirm the reflector of the back of the CD / DVD tray: - Cleaning of the reflector (2) Replace the following item(s): - Logic board - CD-R tray - Platen unit
Unsatisfactory print quality	No printing, or no color ejected. Faint printing, or white lines on printouts. Uneven printing. Improper color hue.	(1) Confirm the ink tank conditions: - Confirmation of the air-through of an ink tank - Re-setting of an ink tank - Whether the ink tank is Canon-genuine one or not - Whether the ink tank is refilled one or not (2) Remove foreign material from the purge unit caps, if any. (3) Perform cleaning or deep cleaning of the print head. (4) Perform print head alignment. (5) Replace the following item(s): - Print head ^{*1} , and ink tanks - Logic board - Purge drive system unit
	Paper gets smeared.	(1) Clean the inside of the machine. (2) Perform bottom plate cleaning.

		<p>(3) Perform paper feed roller cleaning.</p> <p>(5) Replace the following item(s):</p> <ul style="list-style-type: none"> - Pressure roller unit (if smearing is heavy) - Print head*¹ (when smearing is caused by the print head)
	The back side of paper gets smeared.	<p>(1) Clean the inside of the machine.</p> <p>(2) Perform bottom plate cleaning.</p> <p>(3) Examine the platen ink absorber.</p> <p>(4) Examine the paper eject roller.</p> <p>(5) Replace the following item(s):</p> <ul style="list-style-type: none"> - The part in the paper path causing the smearing
	Graphic or text is enlarged on printouts in the carriage movement direction.	<p>(1) Confirm that the carriage slit film is free from smearing or scratches:</p> <ul style="list-style-type: none"> - Cleaning of the timing slit film. <p>(2) Replace the following item(s):</p> <ul style="list-style-type: none"> - Timing slit film - Carriage unit - Logic board - Scanner unit (for copying)
	Graphic or text is enlarged on printouts in the paper feed direction.	<p>(1) Confirm that the LF / EJ slit film is free from smearing or scratches:</p> <ul style="list-style-type: none"> - Cleaning of the LF / EJ slit film.. <p>(2) Replace the following item(s):</p> <ul style="list-style-type: none"> - LF / EJ slit film - LF / EJ timing sensor unit - Platen unit - Logic board - Scanner unit (for copying)
	Streaks or smears on the printed CD / DVD.	<p>(1) Confirm that the CD or DVD is a recommended one or not, and change the printer driver settings accordingly.</p> <p>(2) Replace the following item(s):</p> <ul style="list-style-type: none"> - CD-R tray - Pressure roller unit (if smearing is heavy) - Platen unit
Faulty scanning	No scanning.	<p>(1) Replace the following item(s):</p> <ul style="list-style-type: none"> - Scanner unit - Logic board
	Streaks or smears on the scanned image.	<p>(1) Clean the platen glass and the document pressure sheet.</p> <p>(2) Confirm the position of the document pressure sheet.</p> <p>(3) Replace the following item(s):</p> <ul style="list-style-type: none"> - Scanner unit - Document pressure sheet - Logic board

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

*2: Only for CD / DVD printing supported regions.

◀ <2. LIST OF ERROR DISPLAY / TROUBLESHOOTING > ▶ ▲

3. REPAIR

3-1. Major Replacement Parts

Service part	Recommended removal procedure*1 / Notes on replacement*2	Adjustment / settings	Operation check
Logic board ass'y	(1) Cassette unit (2) Left and right side covers (3) Document pressure plate unit (4) Scanner unit (5) Main case (6) Rear cover (7) Logic board ass'y - 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).	After replacement: 1. Initialize the EEPROM. 2. Set the ink absorber counter value. 3. Set the destination in the EEPROM. 4. Correct the CD / DVD and automatic print head alignment sensors. 5. Check the ink system function. 6. Perform LF / Eject correction (only when streaks or uneven printing occurs). 7. Perform button and LCD test. Perform 1 to 7 in the service mode. [See 4-2. Service Mode , for details.] 8. Perform print head alignment in the user mode. 9. Set the language displayed on the LCD in the user mode.	- EEPROM information print - Service test print - Printing via USB connection - Copying - Direct printing from a digital camera (PictBridge)
Absorber kit	(1) Cassette unit (2) Left and right side covers (3) Document pressure plate unit (4) Scanner unit (5) Main case (6) Rear cover (7) Print unit (8) Ink absorber - See 3-2. Part Replacement Procedures , (11) Ink absorber replacement , for details.	After replacement: 1. Reset the ink absorber counter. [See 4-2. Service Mode , for details.]	- Ink absorber counter value print (After the ink absorber counter is reset, the counter value is printed automatically.)
Carriage unit	(1) Cassette unit (2) Left and right side covers (3) Document pressure plate unit (4) Scanner unit (5) Main case (6) Rear cover (7) Timing slit strap (8) Carriage rail (9) Carriage unit - Before removal of the carriage rail, put a mark of the carriage rail position. - Keep the timing slit strap (carriage encoder film) free from stain or damage. When returning the strap, make sure of its orientation (left and right, front and	At replacement: 1. Apply grease to the sliding portions of the carriage rail. [See 4-3. Grease Application , for details.] 2. Check the ink system function. [See 4-2. Service Mode , for details.] 3. Perform print head alignment in the user mode.	- Service test print (Confirm CD / DVD sensor correction value, automatic print head alignment sensor value, and ink system function.)

	back). - See 3-2. Part Replacement Procedures, (7) Carriage unit removal , for details.		
Switch system unit	(1) Cassette unit (2) Left and right side covers (3) Document pressure plate unit (4) Scanner unit (5) Main case (6) Rear cover (7) Print unit (8) See 3-2. Part Replacement Procedures .	At replacement: 1. Adjust the paper feed motor. [See 4-4. Special Notes on Servicing, (2) Paper feed motor adjustment , for details.]	- EEPROM information print - Service test print
Paper feed motor	- The 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.) - See 3-2. Part Replacement Procedures, (9) Purge drive system unit (right plate) and switch system unit (left plate) removal , for details. - See 3-2. Part Replacement Procedures, (10) Engine unit reassembly , for details.		
Platen unit	(1) Cassette unit (2) Left and right side covers (3) Document pressure plate unit (4) Scanner unit (5) Main case (6) Rear cover (7) Print unit (8) See 3-2. Part Replacement Procedures , from this step.	After replacement: 1. Perform LF / Eject correction in the service mode (only when uneven printing or streaks appear on printouts after replacement). [See 4-2. Service Mode , for details.]	- EEPROM information print - Service test print
Spur unit	(1) Cassette unit (2) Left and right side covers (3) Document pressure plate unit (4) Scanner unit (5) Main case (6) Rear cover (7) Print unit (8) See 3-2. Part Replacement Procedures . - DO NOT contact the spur edges.	After replacement: 1. Check the ink system function. 2. Perform LF / Eject correction in the service mode (only when uneven printing or streaks appear on printouts after replacement). [See 4-2. Service Mode , for details.]	- EEPROM information print - Service test print
Purge drive system unit	(1) Cassette unit (2) Left and right side covers (3) Document pressure plate unit (4) Scanner unit (5) Main case (6) Rear cover (7) Print unit (8) See 3-2. Part Replacement Procedures . - See 3-2. Part Replacement Procedures, (9) Purge drive system unit (right plate) and switch system unit (left plate) removal , for details. - See 3-2. Part Replacement Procedures, (10) Engine unit reassembly , for details.	After replacement: 1. Confirm the purging operation and the machine operation. [See 4-5. Verification After Repair for details.]	- Service test print

Carriage rail and main chassis	See 3-2. Part Replacement Procedures , and Parts Catalog .	At replacement: 1. Apply grease to the sliding portions. [See 4-3. Grease Application , for details.]	- Service test print
Idler pulley parallel pin			
APP code wheel gear shaft			
Document pressure sheet	(1) Cassette unit (2) Left and right side covers (3) Document pressure plate unit (4) Scanner unit	At replacement: 1. Confirm the document pressure plate sheet position. [See 4-4. Special Notes on Servicing , (4) Document pressure sheet replacement , for details.]	- Service test print
Document bottom cover			
Scanner unit			
Panel board ass'y	(1) Right side cover (2) Document pressure plate unit (3) Panel board (4) LCD viewer - Be cautious not to scratch or damage the LCD cable.	At replacement: 1. Perform button and LCD test. [See 4-2. Service Mode , for details.]	- Service test print
LCD viewer unit			
Timing slit strip film	See 3-2. Part Replacement Procedures , and Parts Catalog . - 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. 2. Perform LF / Eject correction in the service mode (only when uneven printing or streaks appear on printouts after replacement). [See 4-2. Service Mode , for details.]	- EEPROM information print - Service test print
Timing slit disk feed film			
Timing slit disk eject film			
Print head		After replacement: 1. Perform print head alignment in the user mode.	- Service test print
Wireless LAN board ass'y	(1) Cassette unit (2) Left and right side covers (3) Document pressure plate unit (4) Scanner unit (5) Main case (6) WLAN board	After replacement: 1. Reset the LAN settings in the user mode. 2. Print the EEPROM information in the service mode to confirm that the WLAN MAC address is properly updated.	- EEPROM information print - Service test print

*1: To reassemble the unit after replacement, follow the procedures in the reverse order.

*2: General notes:

- Make sure that the flexible cables and wires in the harness are in the proper position and connected correctly. See [3-2. Part Replacement Procedures](#) 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, timing slit disk feed film, and timing slit disk eject film. No grease or abrasion is allowed.
- Protect the units from soiled with ink.
- Protect the housing from scratches.
- For the MP640 / MP648 automatic print head alignment, use Matte Photo Paper (MP-101) to ensure alignment accuracy.
- 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. Before loosening the 3 screws that fix the carriage rail to the main chassis, mark the screw positions so that the carriage rail will be re-attached to the main chassis in its original position. [See [3-2. Part Replacement Procedures](#), (7) [Carriage unit removal](#), for details.]

◀ <3-1. Major Replacement Parts> ▶ ▲

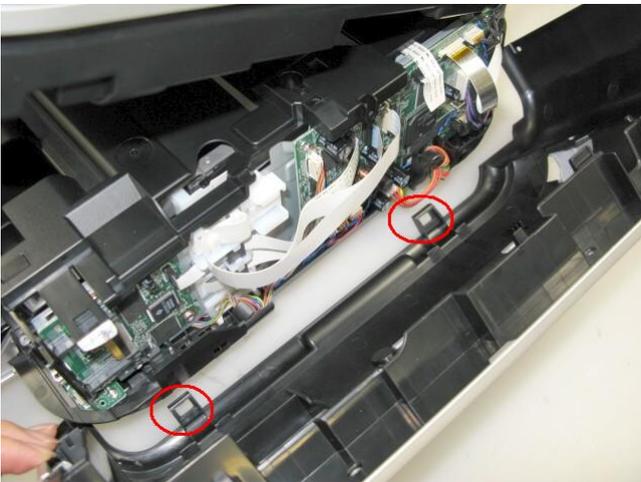
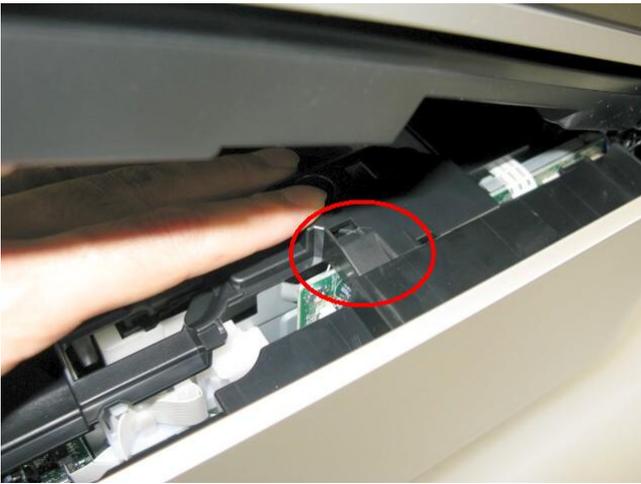
3-2. Part Replacement Procedures [\(Click on the image to enlarge it.\)](#)

Be sure to protect the machine from static electricity in repair servicing, especially for the LCD, operation panel board, scanner unit, logic board, card board, IrDA board, PE sensor board, and WLAN board.

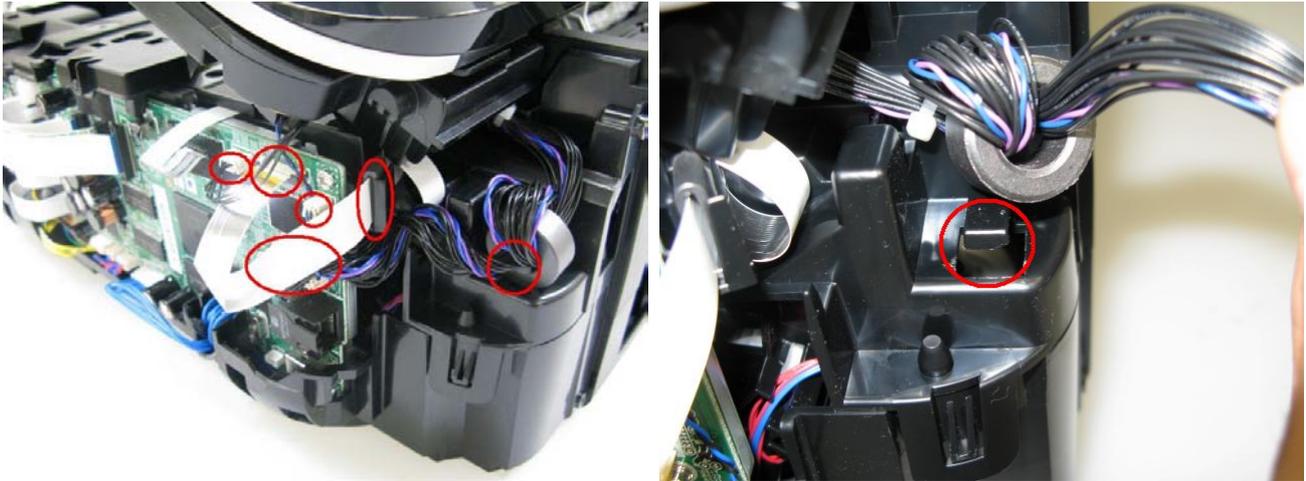
Some of the photos are of the iP4600, iP4700, and MP630, since their structures are same.

(1) External housing, scanner unit, and document cover removal

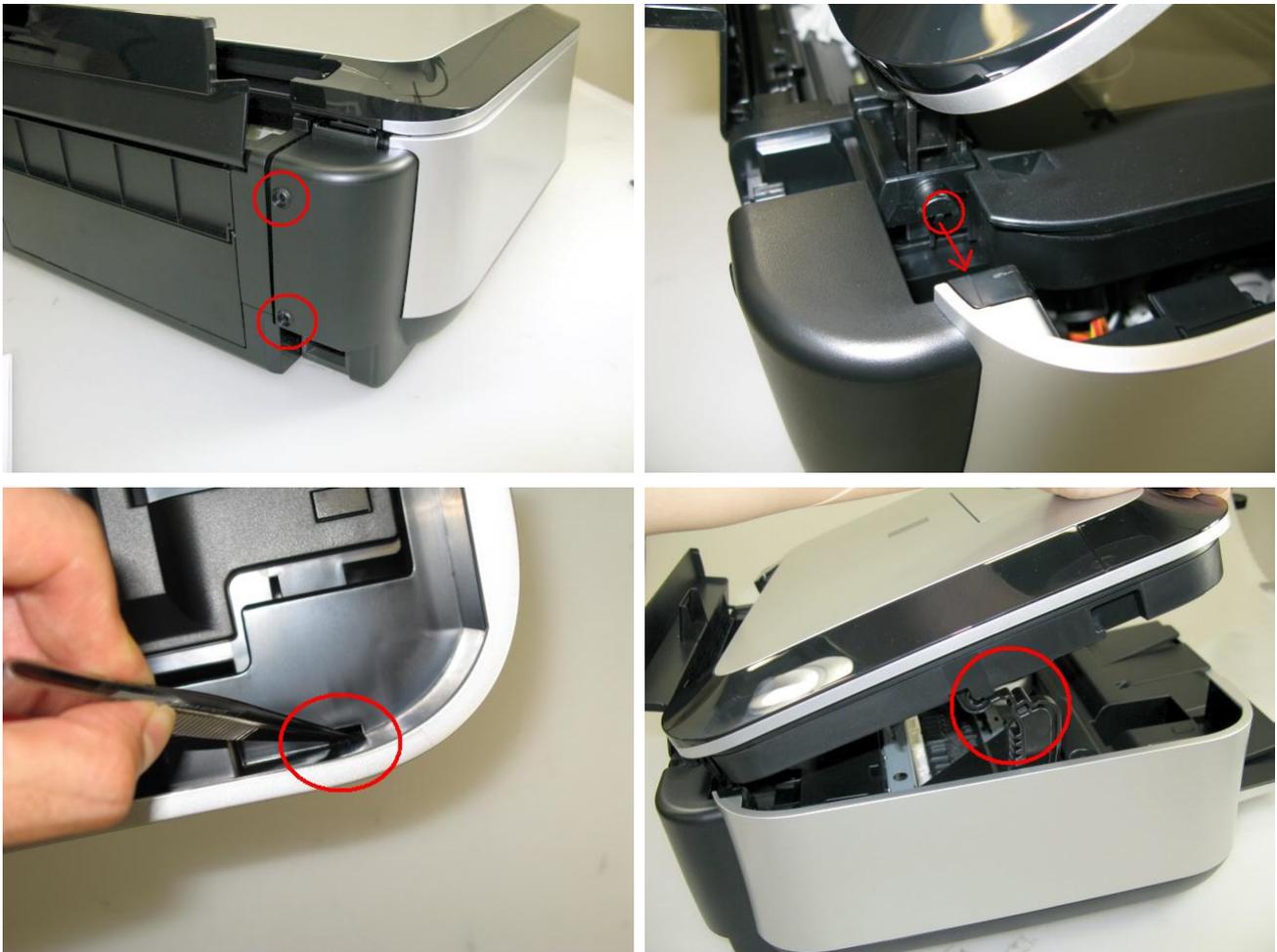
- 1) Remove the cassette.
- 2) Open the front door and scanner unit, then remove the side cover R (2 screws).
<The scanner unit hinges are fitted in the right and left side covers.>

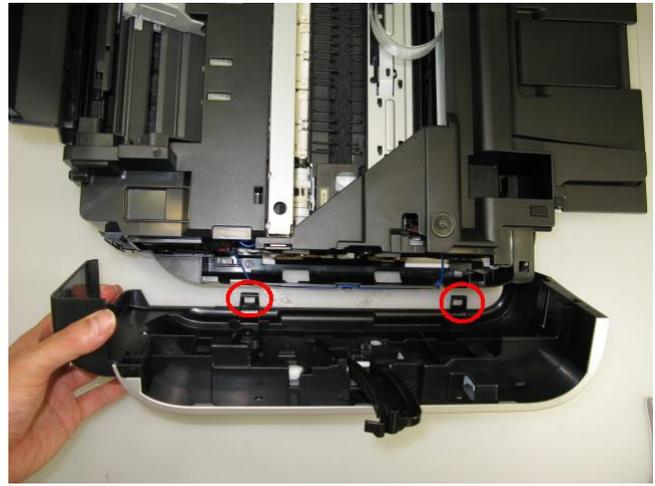
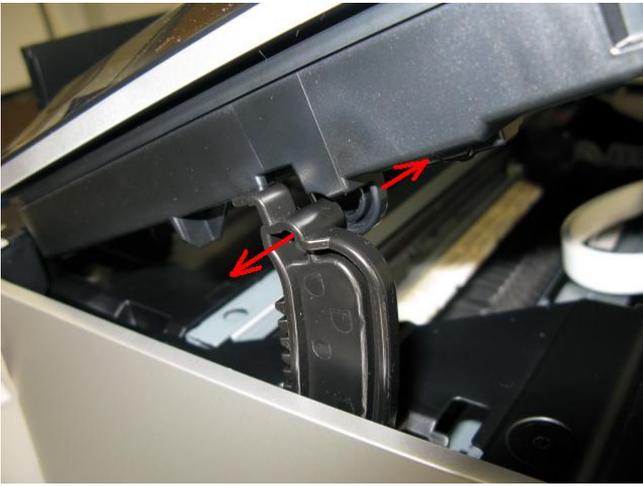


- 3) Remove the scanner cable, panel cable, FB encoder cable, and core.
<The core is fixed on the rib of the sub-case (back of the main case).>

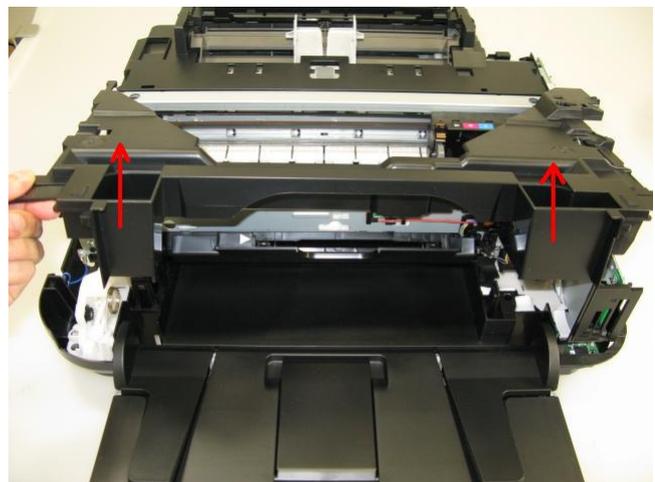
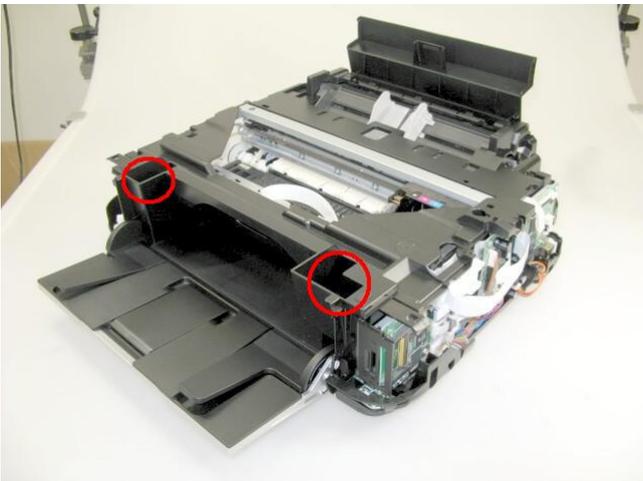


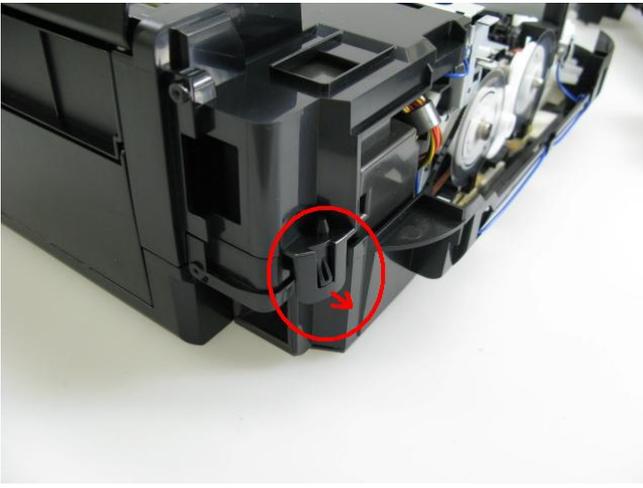
- 4) Remove the side cover L, scanner unit, then document pressure plate unit (2 screws).
<While holding the scanner unit, remove the side cover L, then disengage the scanner unit from the scanner support arm.>





5) Remove the main case and sub-case (no screws).



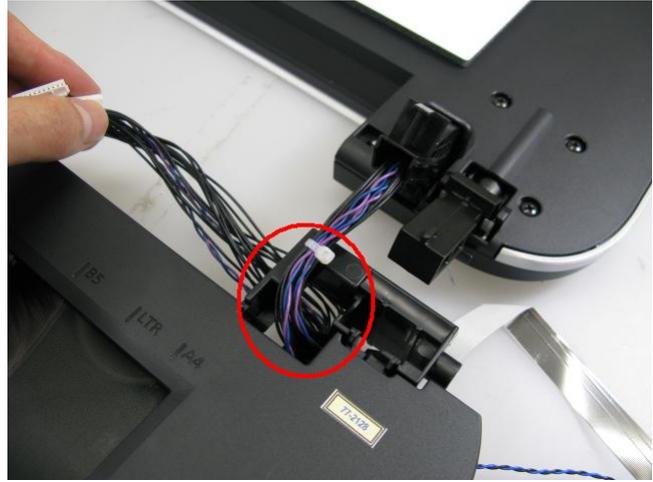


(2) Operation panel removal

1) Separate the document pressure plate from the scanner unit.

<While pushing the hinge edge inward, pull the plate upward to separate it from the scanner unit.>

<Remove the panel cable from the scanner unit. It will make it easier if the cable core is removed first.>



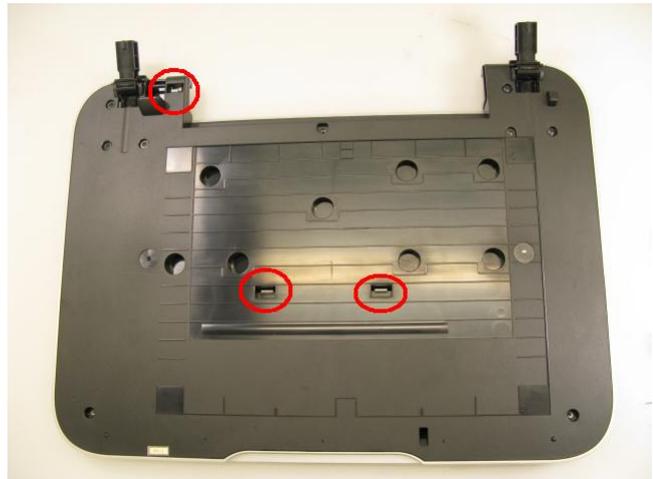
2) Remove the panel cover.

<Insert a pair of tweezers through into the hole in the bottom of the document pressure plate, and push the panel cover to release it from the plate base.>



3) Remove the top cover from the base (9 screws).

<There are 2 claws at the center of the top cover where the document pressure sheet (sponge sheet) is attached.>

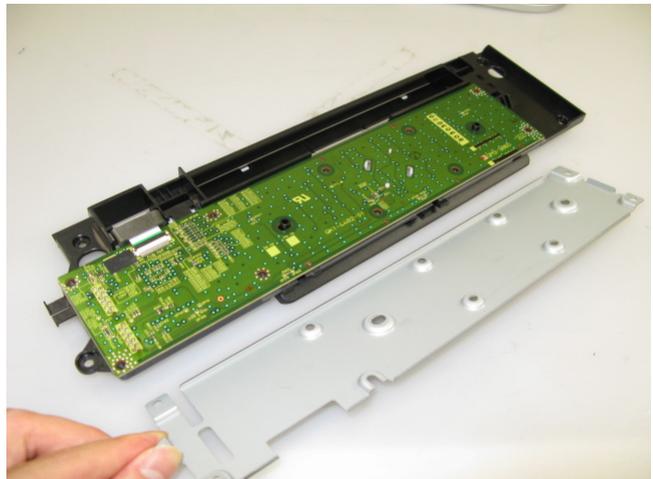
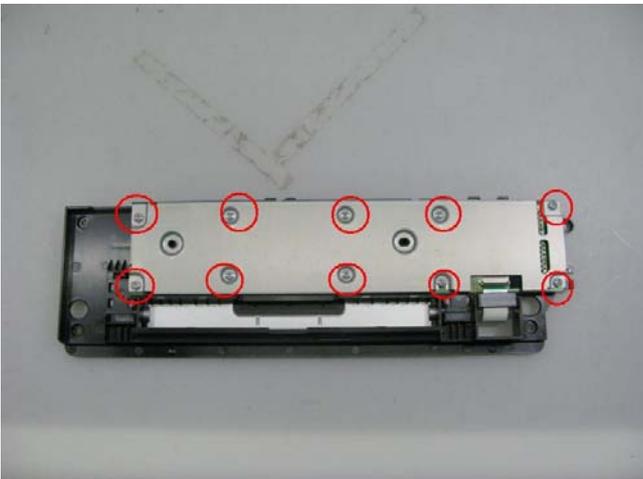


4) Remove the operation panel unit from the base (4 screws).

<For the hinge cable core position and cable layout, see the photos below. Use the longnose pliers in disengaging the hinge and in releasing the spring.>



5) Remove the panel board (10 screws).

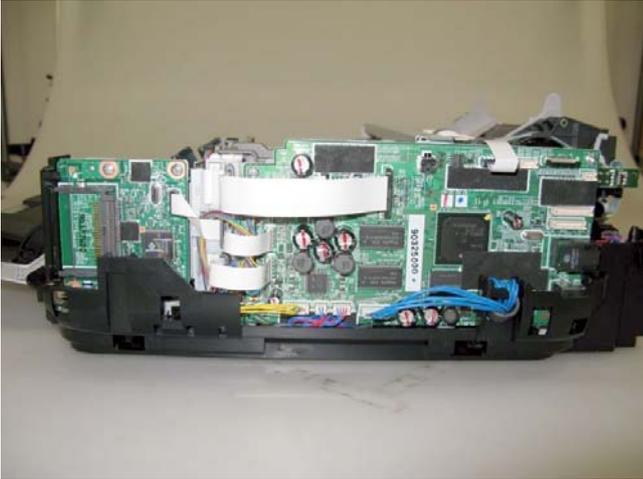


6) When replacing the Easy-Scroll Wheel, always replace the entire wheel with a new one, since grease is already applied to it.

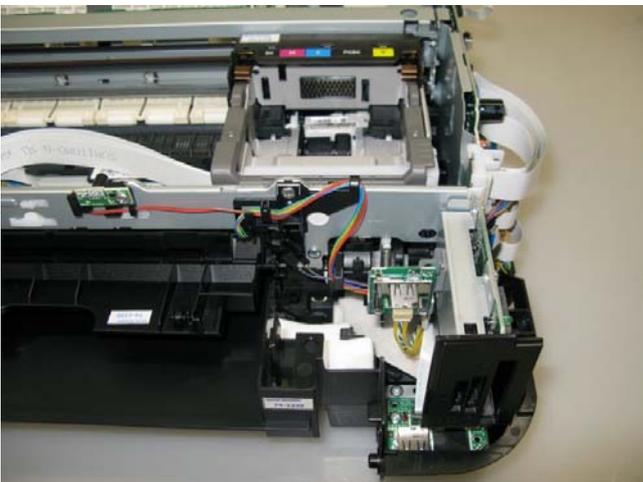


(3) Cable wiring and connection

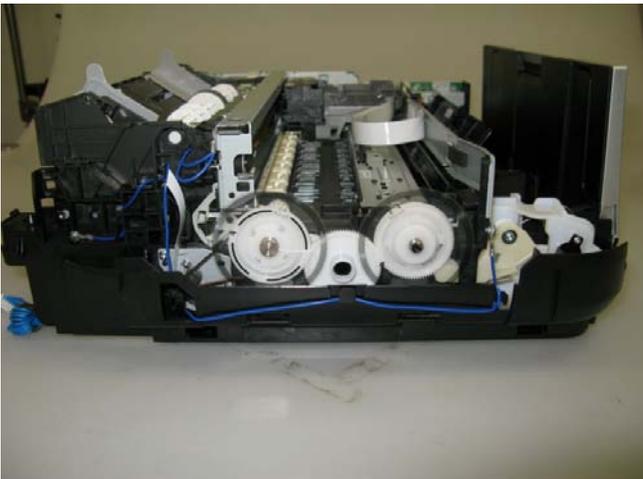
1) Wiring on the right side



2) Wiring of the ink sensor cable and the inner cover open sensor cable

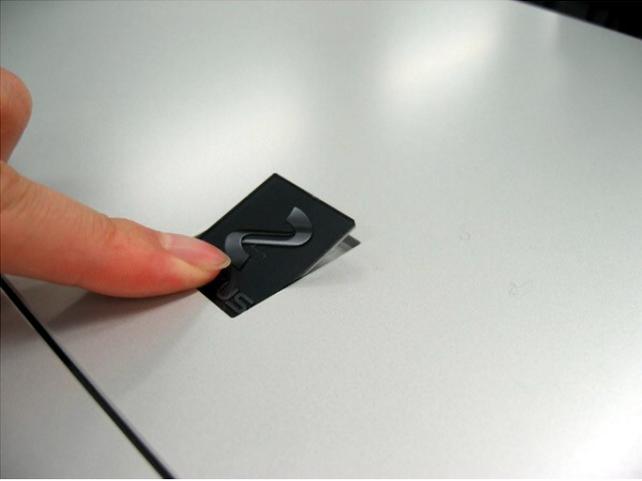


3) Wiring on the left side. Pass the ground cable through the hole to hook it on the side of the bottom case.



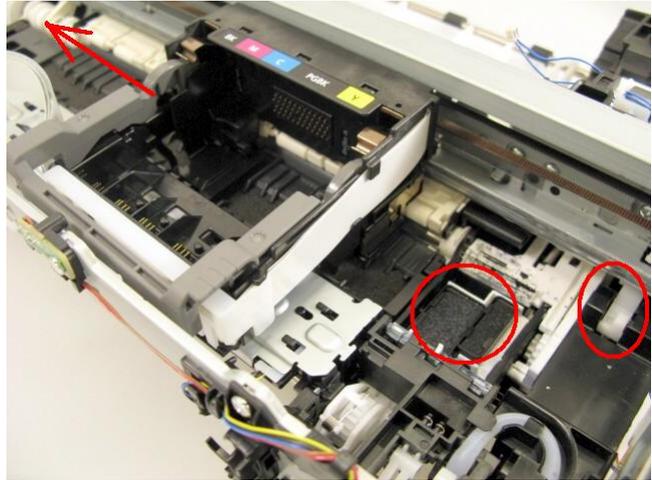
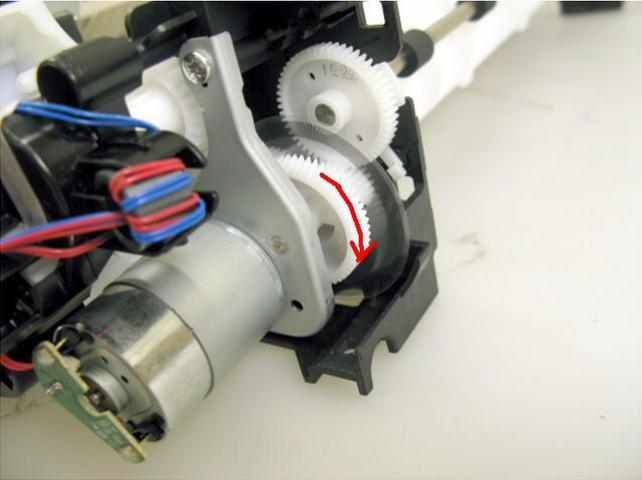
(4) Emblem removal

Push the emblem bottom to remove from the double-sided adhesive tape.



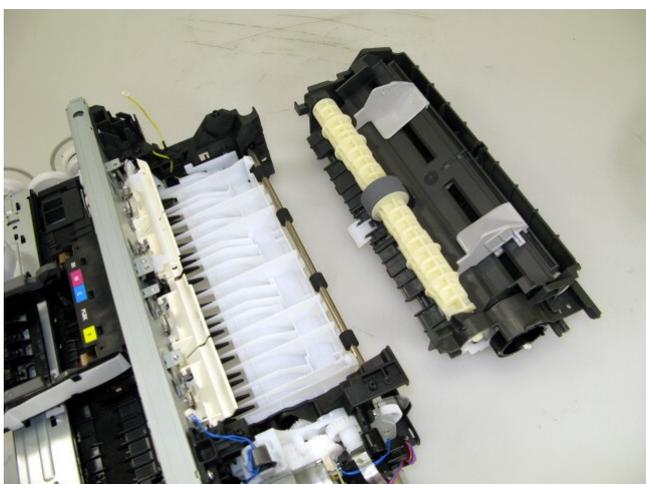
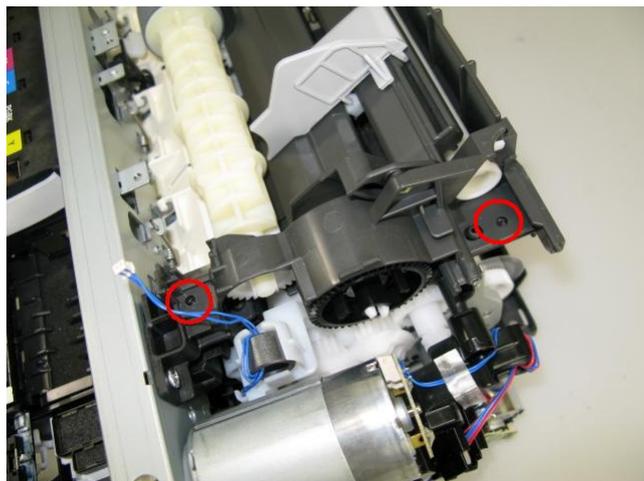
(5) Carriage unlocking

- 1) Rotate the APP motor drive gear toward the back of the machine to unlock the carriage.
Slide the carriage to the left (the opposite of the home position).



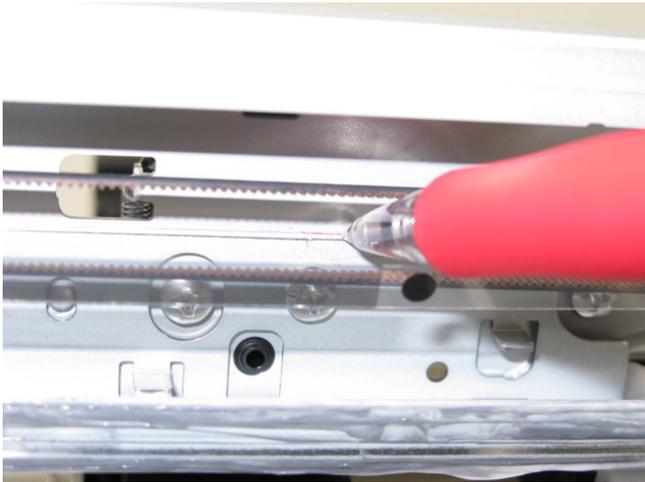
(6) ASF unit removal

- 1) Remove the PE sensor board first, then remove 1 screw from the left plate (the left side of the ASF unit), and 2 screws from the right plate (the right side of the ASF unit).

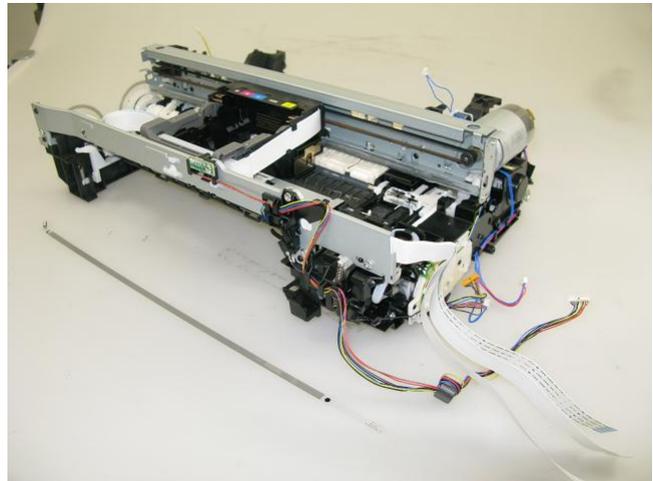
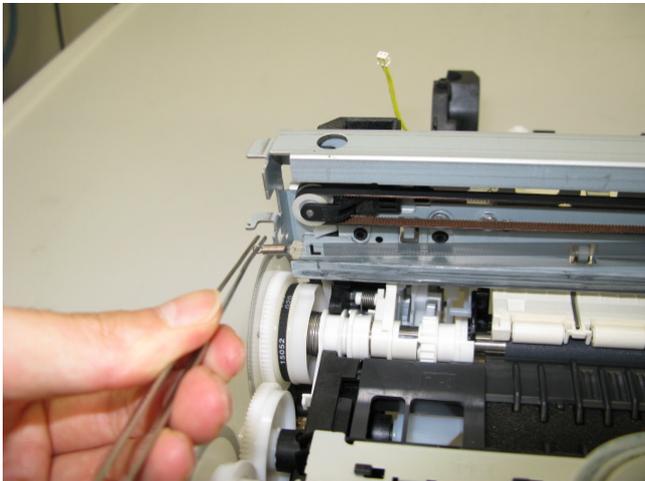


(7) Carriage unit removal

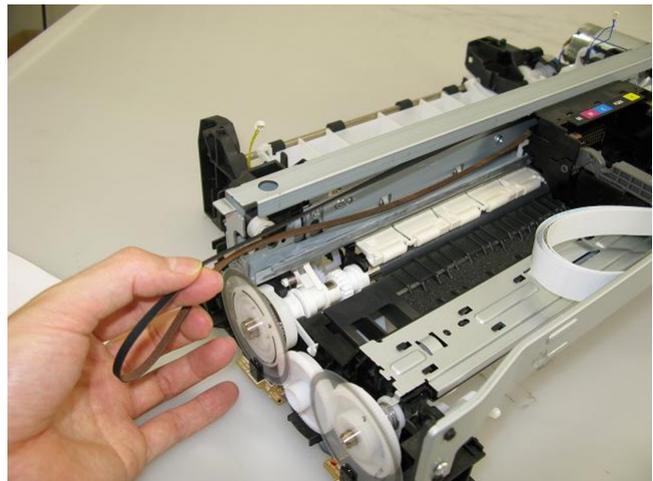
- 1) On the main chassis, mark the positions of the screws that fix the carriage rail to the main chassis (3 points for each screw: the left, right, and center).



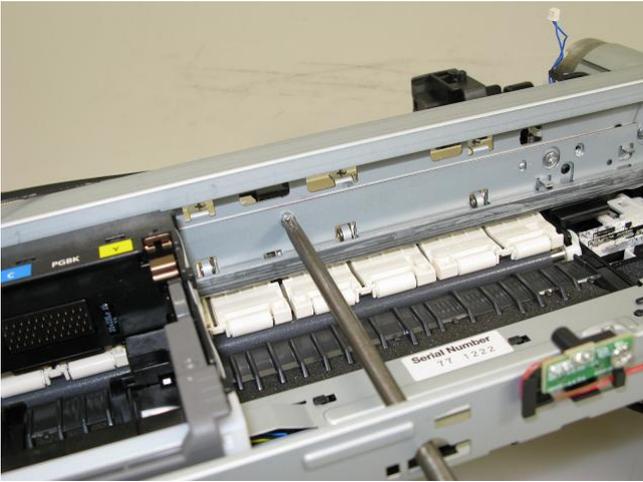
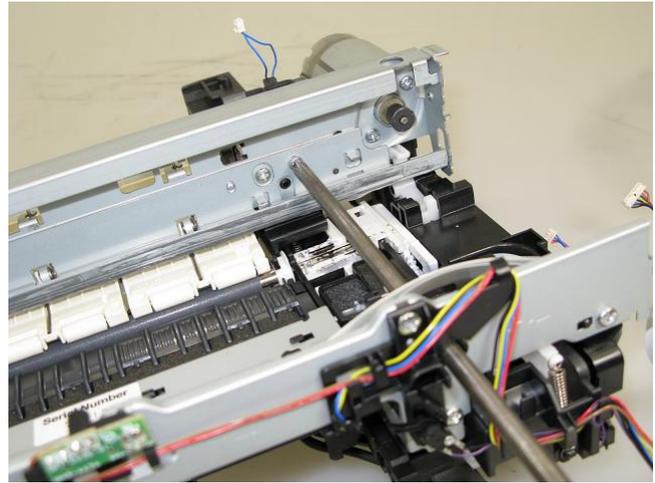
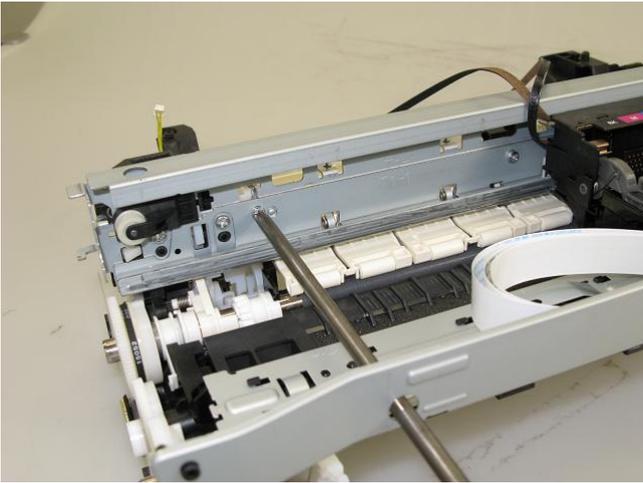
- 2) Remove the timing slit film. Be cautious to keep it free from any grease or damage.



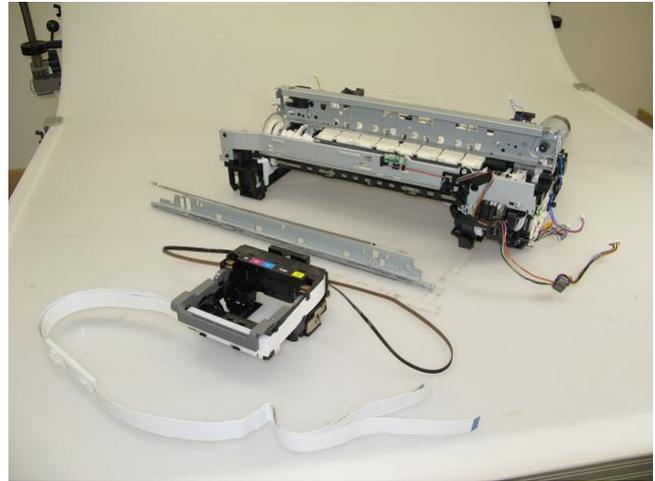
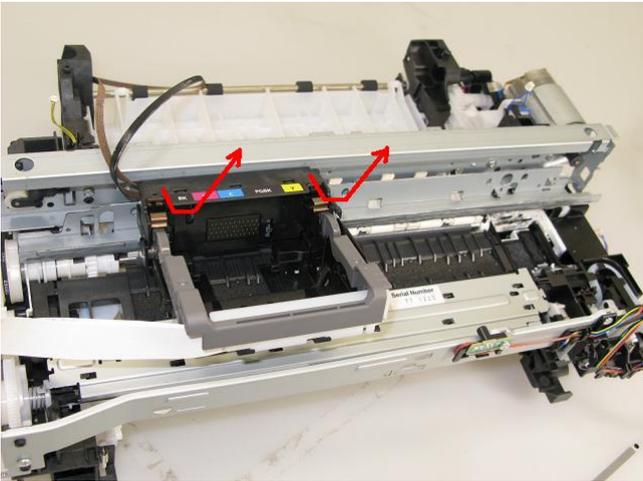
- 3) Pass the head of a flat-blade screwdriver through the hole of the main chassis, and press the carriage belt to release it from the pulley. Be cautious to keep it free from any grease.



4) Remove the carriage cable holder from the front chassis. Remove 3 screws that fix the carriage rail to the main chassis, then slowly put down the carriage rail.



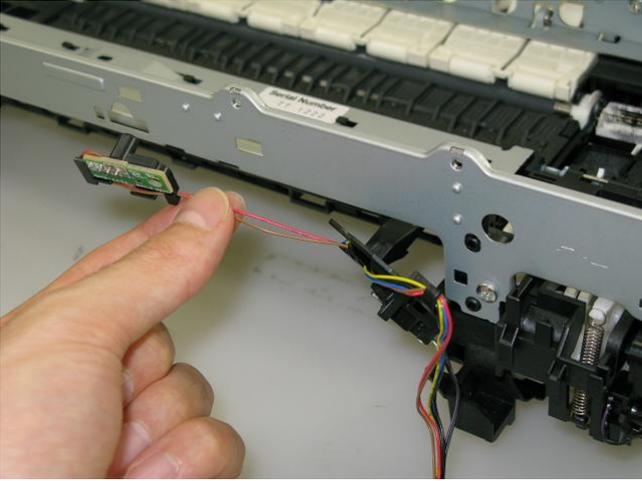
5) Remove the carriage unit. Be cautious that the grease will not attach to any parts.



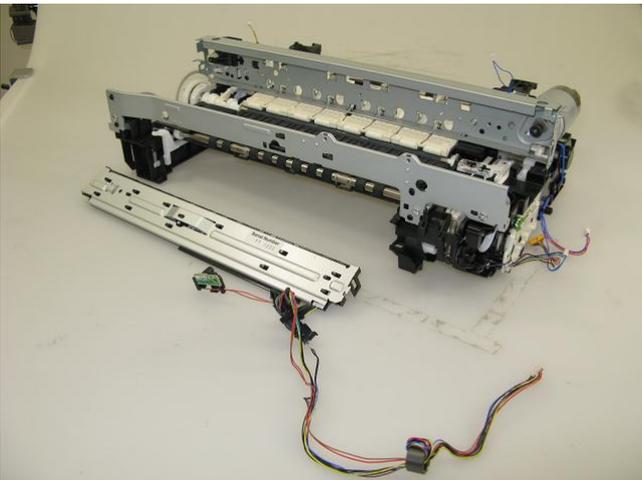
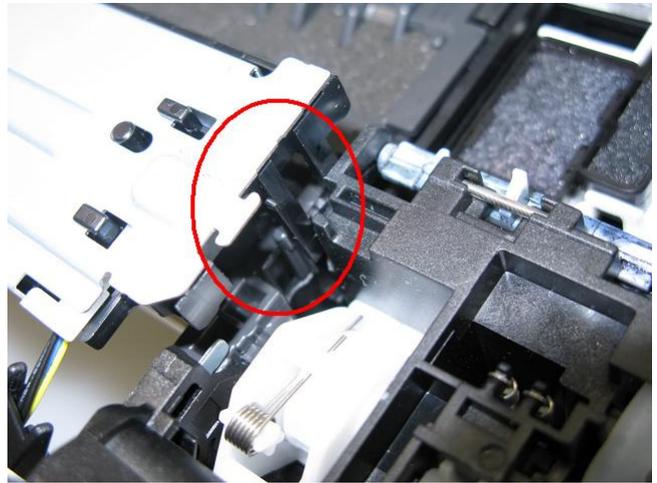
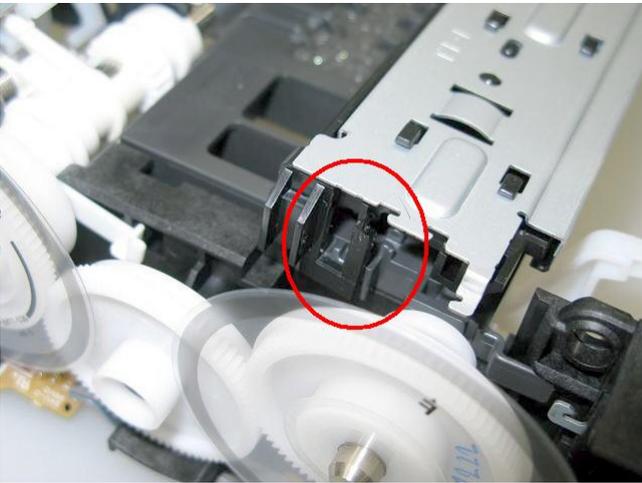
If the carriage unit is not necessary to be replaced, parts under the purge drive system unit, etc. can be replaced without removing the carriage rail. While holding a set of a) main chassis, b) carriage rail, and c) carriage unit together, just remove the screws from the left and right plates. This way, you just have to reassemble the set of units (marking of the carriage rail position to the main chassis is not necessary).

(8) Spur unit and platen unit removal

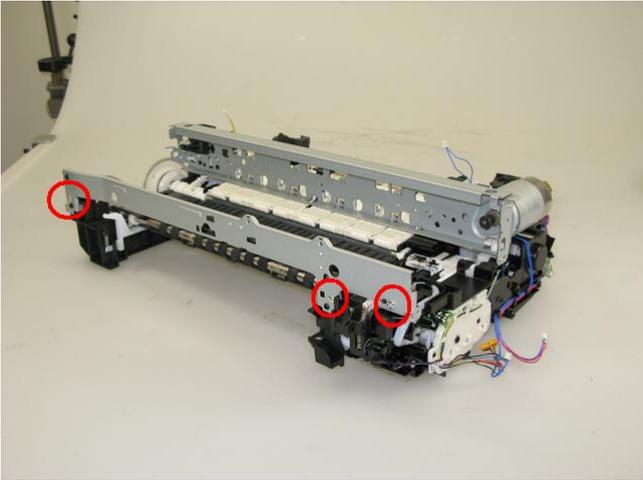
1) Remove the ink sensor and the inner cover sensor from the front chassis (1 screw each).



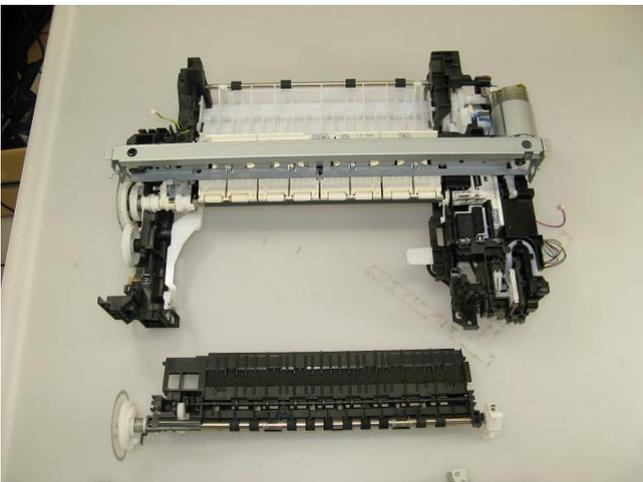
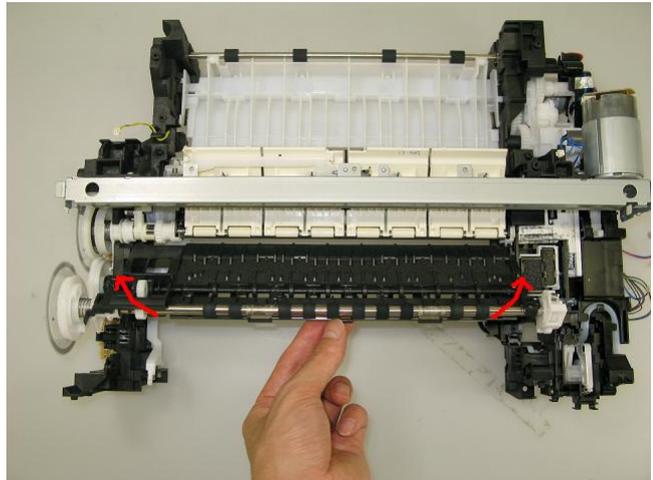
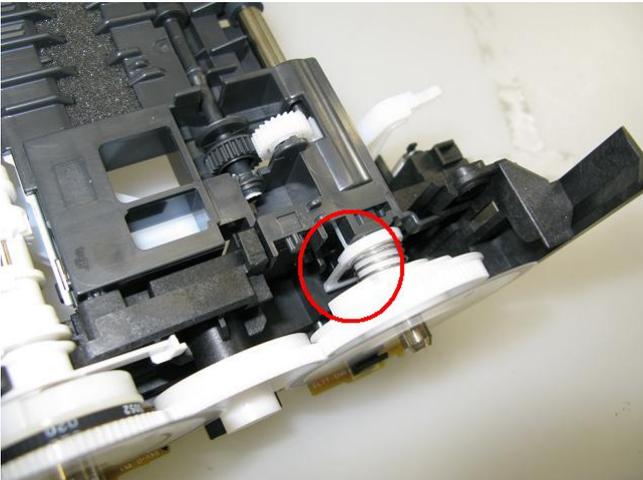
2) From the left and right sides of the spur unit, release the springs (2 on the left side, 1 on the right side). Then, slowly pull the spur unit upward to remove it from the platen unit.



3) Remove the front chassis (3 screws).

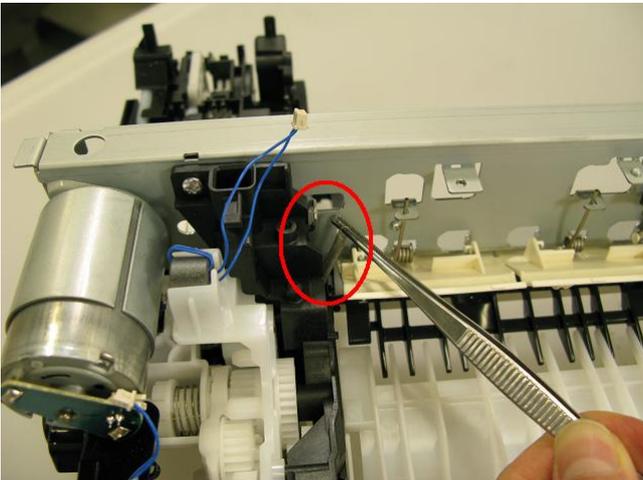
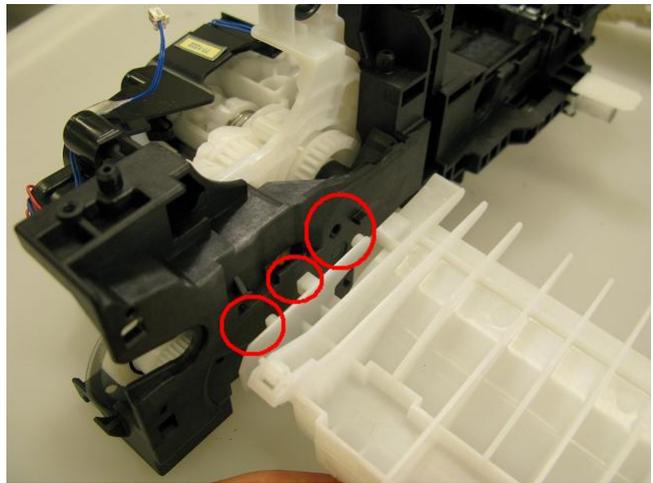
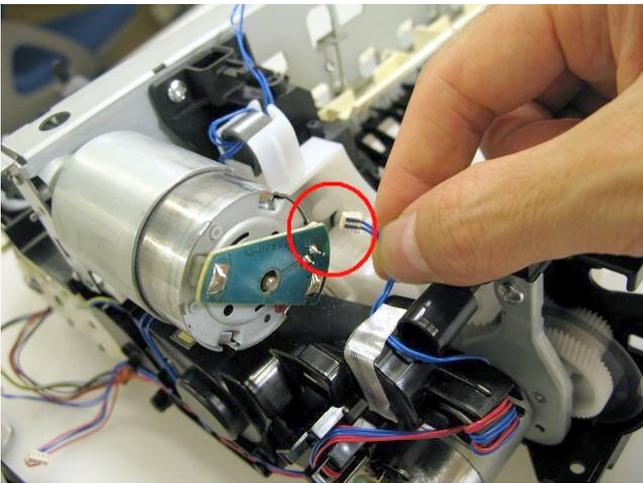
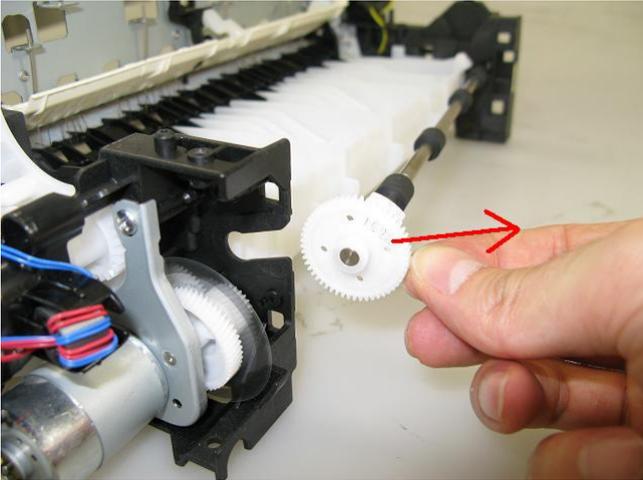


4) Unlock the paper eject roller gear. While raising the front of the platen unit, remove the platen unit from the printer unit.

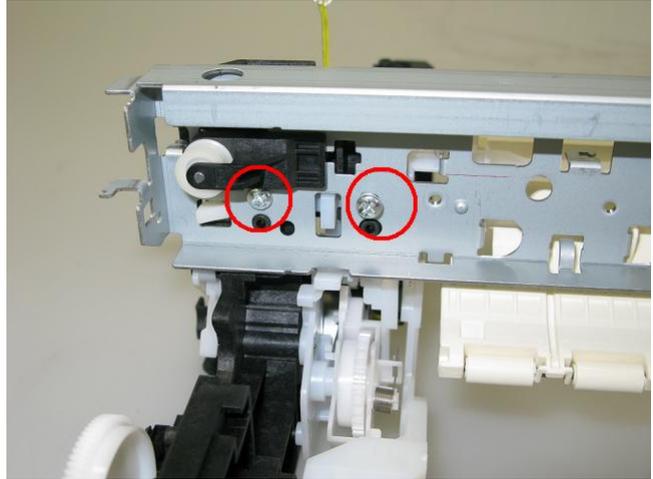
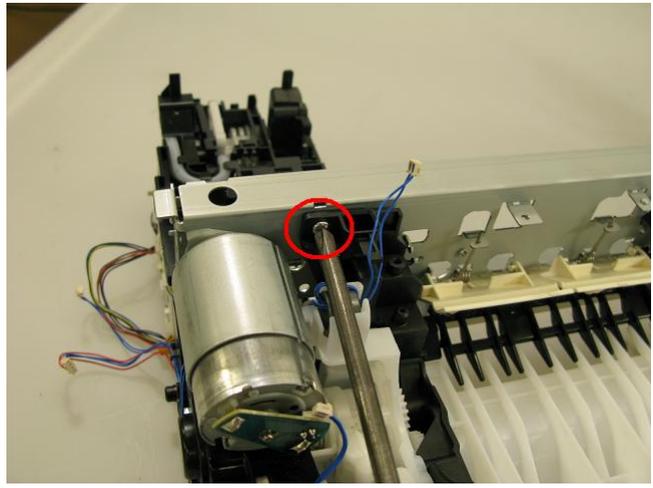
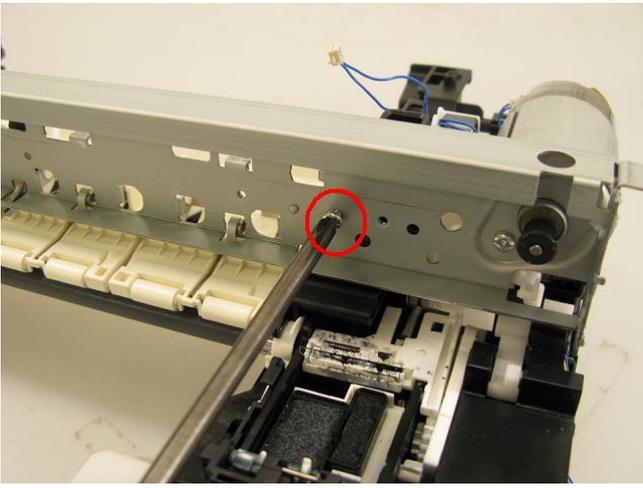


(9) Purge drive system unit (right plate) and switch system unit (left plate) removal

- 1) Release the springs of the carriage motor cable, duplex printing paper feed roller, cassette feed roller, cassette feed guide, and paper guide unit (both sides). (See the Parts Catalog for details.)

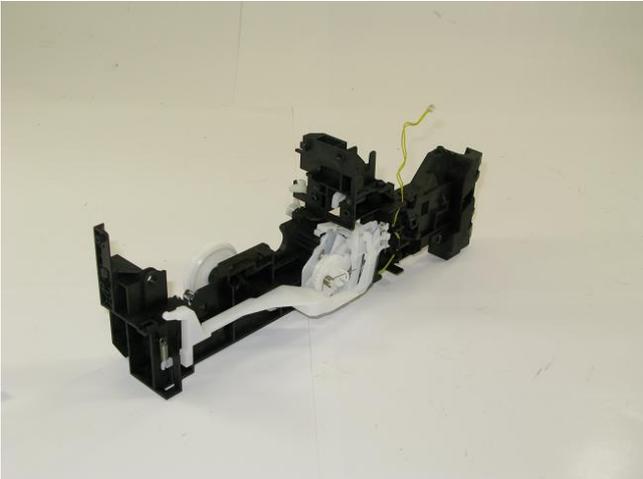


- 2) Remove the springs (left and right) from the pressure roller unit.
- 3) Remove the screws that fix the units to the main chassis (2 on the right, 3 on the left).

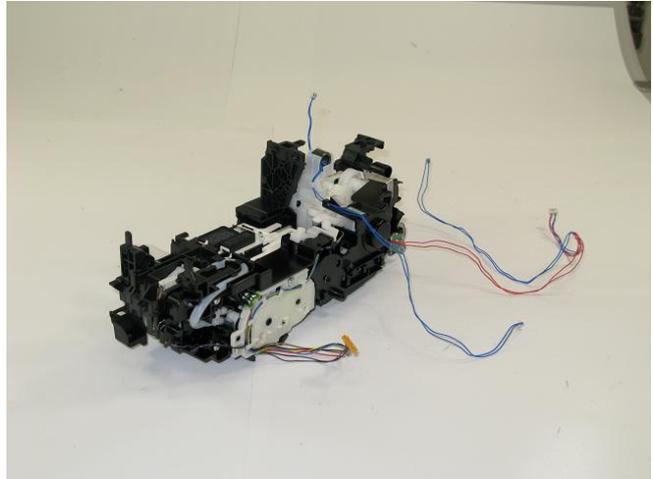


4) Separate the main chassis from the switch system unit and the purge drive system unit.

Switch system unit:



Purge drive system unit:



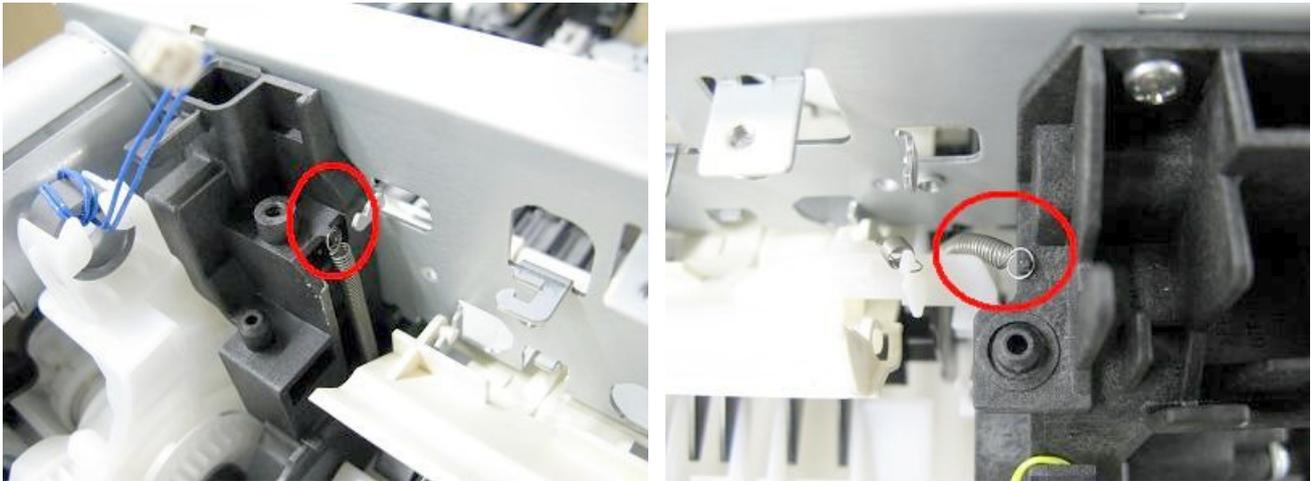
(10) Engine unit reassembly

After repair, reassemble each unit of the printer engine on the bottom case in the procedures listed below.

Depending on the replaced unit, some steps can be omitted. For specific part names and locations, refer to the Parts Catalog.

- 1) Install the switch system unit in the bottom case, and fasten the screws.
- 2) Attach the duplex print paper feed roller unit to the purge drive system unit, and fix them to the bottom case with the screws.
- 3) Attach the cassette feed guide.
- 4) Install the cassette feed roller unit.
- 5) Install the paper feed roller unit and attach the paper feed belt.
- 6) Attach the paper guide unit to the paper feed roller, and attach the springs to each side of the guide unit. (Hook the other end of each spring on the protrusion of the right and left plates respectively.)
- 7) Install the platen unit and the spur unit.
- 8) Connect the springs on each side of the spur holder to the switch system unit and the purge drive system unit respectively.
- 9) Attach the inner cover and the release arm.
- 10) Fix the pressure roller unit to the main chassis (screw it to the right and left plates).
- 11) Attach the carriage unit and the carriage rail to align with the marks on the main chassis.
- 12) Hook the torsion springs of the pressure roller unit to the main chassis, then the springs kept at the right and left plates in step 6) to the main chassis.

<Spring location>

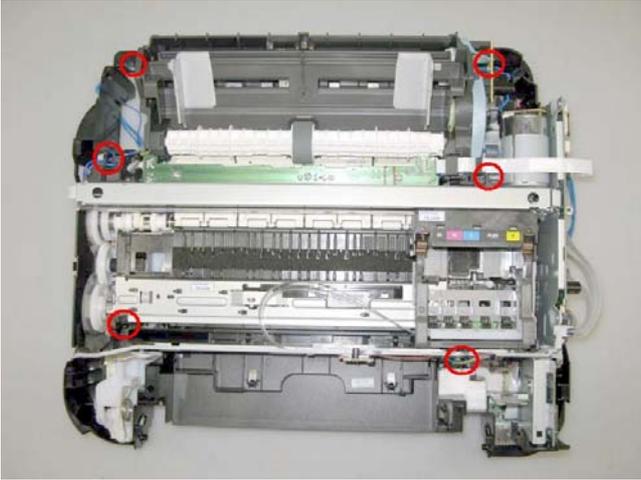


- 13) While being cautious not to damage the carriage FFC, install the front chassis and the ground chassis.
- 14) Attach the ink sensor board to the front chassis.
- 15) Install the ASF unit and attach the PE sensor board.
- 16) Install the main PCB chassis.
- 17) Arrange each harness.
- 18) Attach the carriage encoder.
- 19) Install the logic board.

(11) Ink absorber replacement

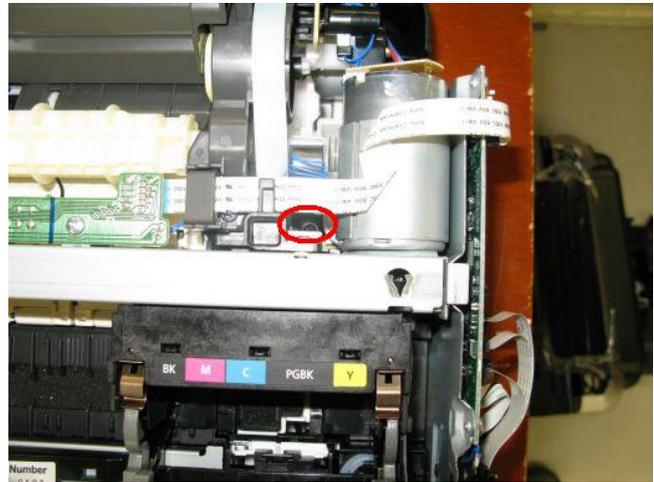
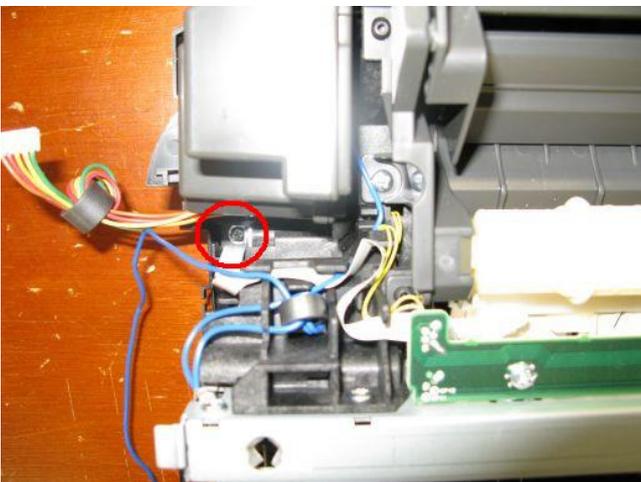
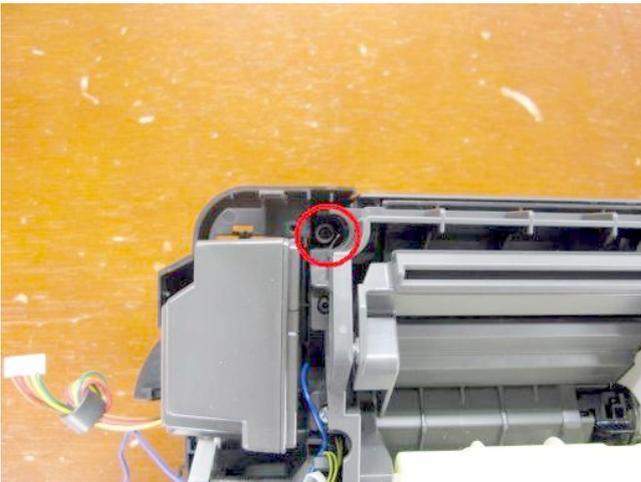
If the ink absorber alone needs to be replaced (because the ink absorber becomes full, etc.) and no other engine parts are replaced, the ink absorber can be replaced only by separating the print unit from the bottom case. It is not necessary to disassemble the whole engine unit.

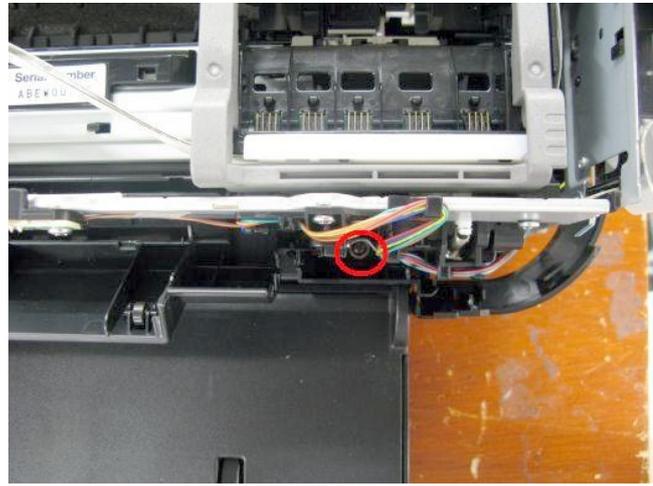
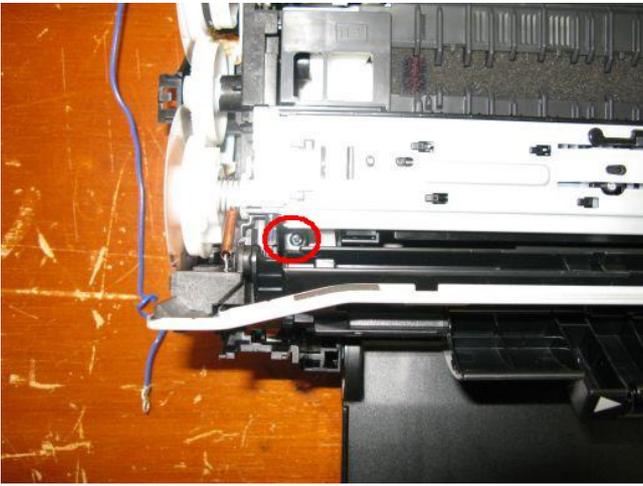
- 1) Disconnect the DC harness from the logic board (right side of the machine).
- 2) Disconnect the ground cable from the front chassis (left side of the machine).
- 3) Remove a total of 6 screws that fix the switch system unit to the bottom case, and the purge drive system unit to the bottom case.



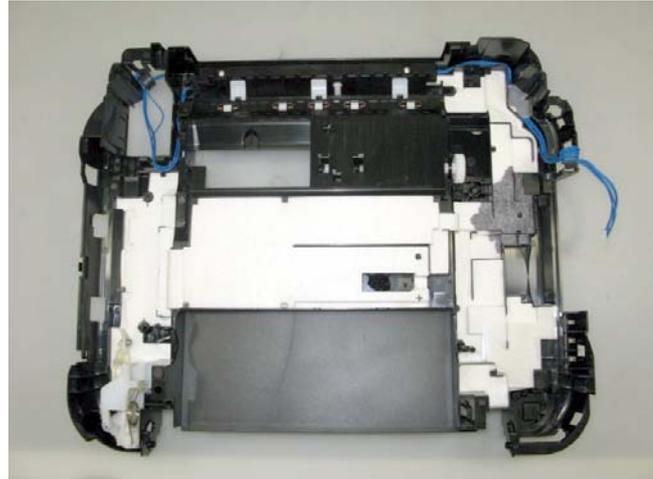
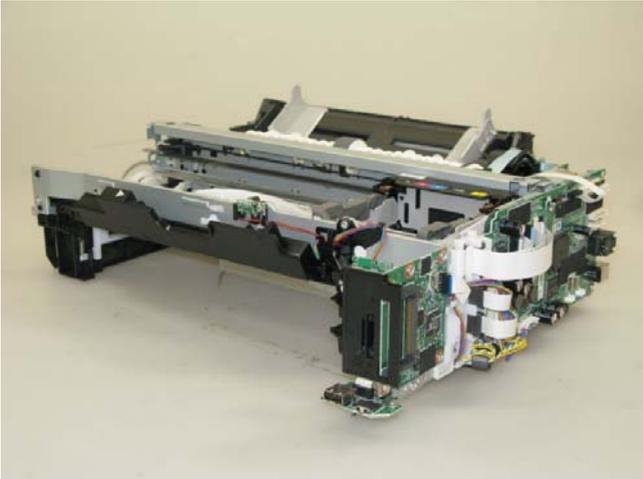
Specific screw location:

Photo of the iP4600 (same engine as the MP640 / MP648):





4) Slowly lift the print unit to separate it from the bottom case.



5) Remove the paper separation slope, since a portion of the ink absorber lies under it.

6) Replace the ink absorber.

Confirm that the replaced new ink absorber completely fits in place and is not lifted or dislocated.

7) While being cautious of the ink tube and each harness location, return the print unit to the bottom case, and fasten the screws (removed in step 2).

8) Properly arrange and connect the harnesses, install the scanner unit, and attach the document pressure plate unit and external housing.



After replacement of the ink absorber, reset the ink absorber counter (or set the appropriate counter value) in the service mode.

For details, see [4-2. Service Mode](#).

◀<3-2. Part Replacement Procedures>▶ ▲

4. ADJUSTMENT / SETTINGS

4-1. User Mode

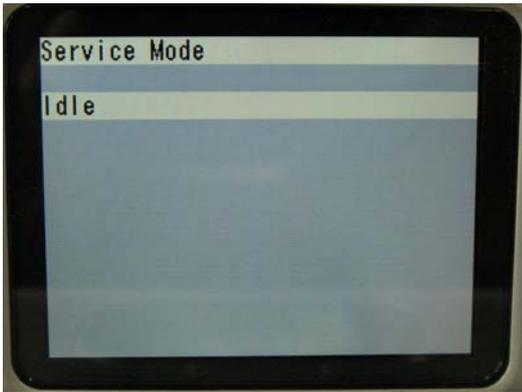
Function	Procedures	Remarks
Nozzle check pattern printing	Perform via the machine operation panel, or from the MP driver Maintenance tab.	Set a sheet of plain paper (A4 or Letter) in the cassette, or the rear tray if selected.
Print head manual cleaning	<ul style="list-style-type: none"> - Cleaning both 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. 	Unclogging of the print head nozzles, and maintenance to keep the print head conditions good. If there is a missing portion or white streaks in the nozzle check pattern printout, perform this cleaning.
Print head deep cleaning	Perform via the machine operation panel, or from the MP driver Maintenance tab.	If print head manual cleaning is not effective, perform this cleaning. Since the deep cleaning consumes more ink than regular cleaning, it is recommended to perform deep cleaning only when necessary.
Automatic print head alignment	Perform via the machine operation panel, or from the MP driver Maintenance tab.	Set a sheet of Matte Photo Paper MP-101 (A4) in the rear tray. If the automatic print head alignment is not effective, perform manual print head alignment.
Manual print head alignment	Perform via the machine operation panel, or from the MP driver Maintenance tab.	Set 3 sheets of plain paper (A4 or Letter) in the cassette, or the rear tray if selected.
Print head alignment value printing	Perform via the machine operation panel, or from the MP driver Maintenance tab.	Confirmation of the current print head alignment values.
Paper feed roller cleaning	Perform via the machine operation panel, or from the MP driver Maintenance tab.	The paper feed rollers of the selected paper source (the rear tray or the cassette) rotate while being pushed to the paper lifting plate. Since the rollers will wear out in this cleaning, it is recommended that you perform this only when necessary.
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. (No paper feeding from the cassette)

4-2. Service Mode

(1) Service mode operation procedures

Use the Service Tool on the connected computer.

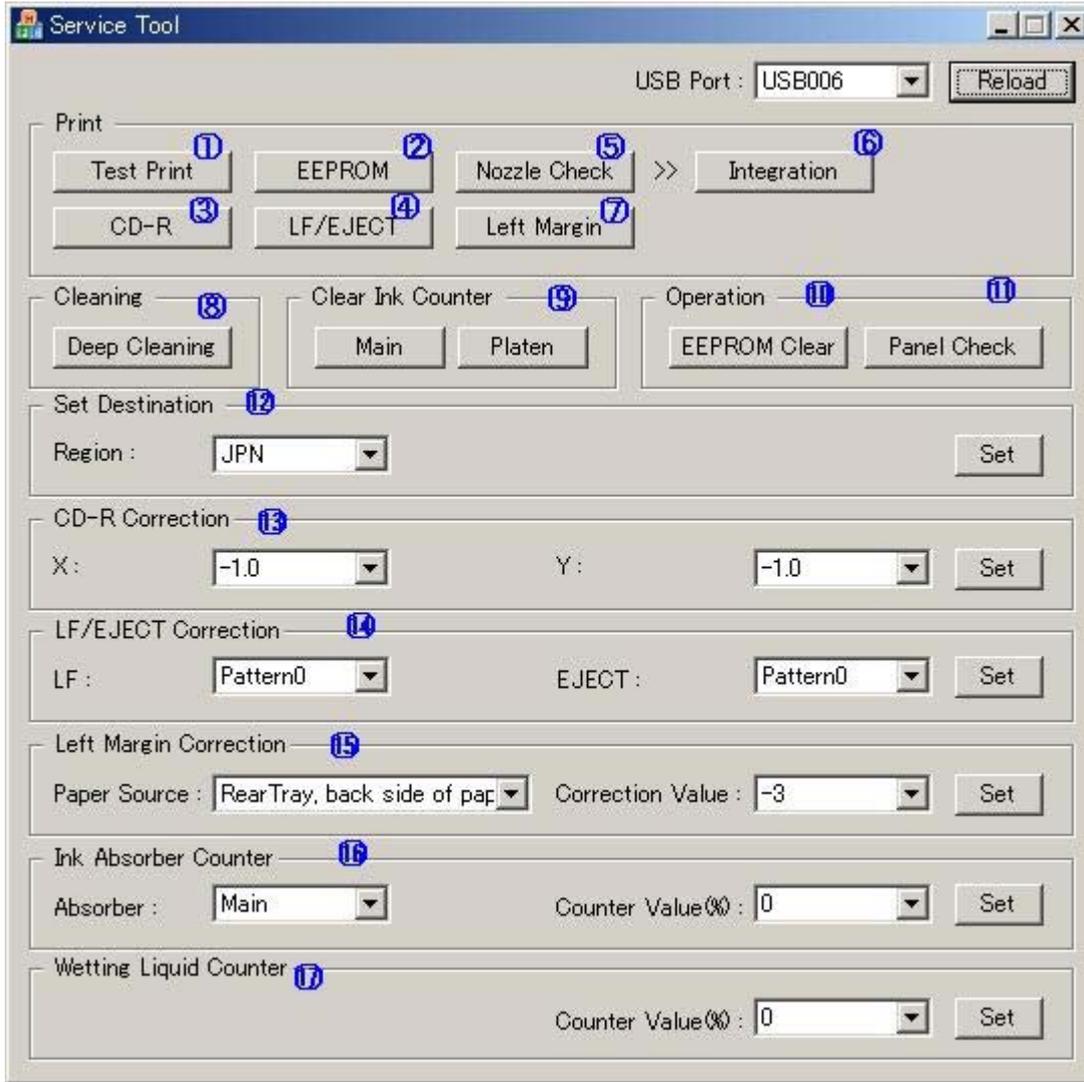
- 1) Start the machine in the service mode.
 - i. With the machine power turned off, while pressing the Stop button, press and hold the ON button. (DO NOT release the buttons.)
 - ii. When the Power LED lights in green, while holding the ON button, release the Stop button. (DO NOT release the ON button.)
 - iii. While holding the ON button, press the Stop button 2 times, and then release both the ON and Stop buttons. (Each time the Stop button is pressed, the Alarm and Power LEDs light alternately, Alarm in orange and Power in green, starting with Alarm LED.)
 - iv. When the Power LED lights in green and the machine displays "Service Mode Idle," the machine is ready for the service mode operation.



- 2) Start the Service Tool on the connected computer.
 - i. When a button is clicked in the Service Tool dialog box, that function is performed. During operation of the selected function, all the Service Tool buttons are dimmed and inactive.
 - ii. When the operation is completed, "A function was finished." is displayed, and another function can be selected.
 - iii. If a non-supported function is selected, "Error!" is displayed. Click **OK** in the error message dialog box to exit the error.

(2) Service Tool functions

Service Tool screen: Version 1.05



No.	Name	Function	Remarks
(1)	Test Print	Service test print	<p>Paper (2 sheets) will feed from the rear tray.</p> <p>Service test print items:</p> <ul style="list-style-type: none"> - Model name - ROM version - USB serial number - EEPROM information - Process inspection information - Barcode (model name + destination + machine serial number) - Ink system function check result - CD / DVD sensor check result (printed on the second sheet)
(2)	EEPROM	EEPROM information print	<p>The dialog box opens to select the paper source. Select Rear tray or Cassette, and click OK.</p> <p>EEPROM information print items:</p> <ul style="list-style-type: none"> - Model name - ROM version - Ink absorber counter value (ink amount in the ink absorber) - Print information - Error information, etc.
(3)	CD-R	CD-R check pattern print	For refurbishment use. Not used in servicing.

(4)	LF / Eject	LF / Eject correction pattern print	Perform LF / Eject correction only when streaks or uneven printing occurs after the repair. See " LF / Eject Correction " below.
(5)	Nozzle check	Nozzle check pattern print	The dialog box opens to select the paper source. Select Rear tray or Cassette , and click OK .
(6)	Integration	Successive print of (1) service test pattern, (2) EEPROM information, and (5) nozzle check pattern	Paper will feed from the rear tray.
(7)	Left Margin	Left margin pattern print	Not used.
(8)	Deep Cleaning	Print head deep cleaning	Cleaning of both Black and Color at the same time
(9)	Main	Main ink absorber counter resetting	Set a sheet of A4 or Letter sized plain paper. After the ink absorber counter is reset, the counter value is printed automatically.
	Platen	Platen ink absorber counter resetting	Not used.
(10)	EEPROM Clear	EEPROM initialization	The following items are NOT initialized, and the shipment arrival flag is not on: - USB serial number - Destination settings - Record of ink absorber counter resetting and setting - Record of repair at the production site - CD / DVD print position correction value - LF / Eject correction values - Left margin correction value - Production site E-MIP correction value and enabling of it - Endurance correction value and enabling of it - Record of disabling the function to detect the remaining ink amount - Ink absorber counter value (ink amount in the ink absorber)
(11)	Panel Check	Button and LCD test	See " Button and LCD Test " below.
(12)	Set Destination	Destination settings	Select the destination, and click Set . ASA, AUS, BRA, CHN, CND, EUR, JPN, KOR, LTN, TWN, USA
(13)	CD-R Correction	CD / DVD print position correction (X and Y direction)	To be used with (3) CD-R check pattern print, mainly in refurbishment operation. The reference center in the X direction and in the Y direction can be adjusted respectively. (Adjustable range between -1.0 mm to +1.0 mm, in 0.1 mm increment)
(14)	LF / EJECT Correction	LF / Eject correction value setting	Set the correction value according to the result of (4) LF / Eject correction pattern print. See " LF / Eject Correction " below.
(15)	Left Margin Correction	Left margin correction value setting	Not used.
(16)	Ink Absorber Counter	Ink absorber counter setting	See " Ink Absorber Counter Setting " below.
(17)	Wetting Liquid Counter	Wetting liquid counter setting	Not used.

(3) LF / Eject correction

After replacement of the feed roller, platen unit, LF / Eject encoder, carriage encoder film, or logic board in repair servicing or in refurbishment operation, perform the adjustment to maintain the optimal print image quality.

If the print quality is considered unaffected by replacement of those parts, it is not necessary to perform LF / Eject correction.

1) Print the LF / Eject correction pattern.

Click **LF/EJECT** of the Service Tool on the connected computer, select the paper source and the paper type, and print the pattern. 5 sheets of A4 paper will be used for the pattern printing.

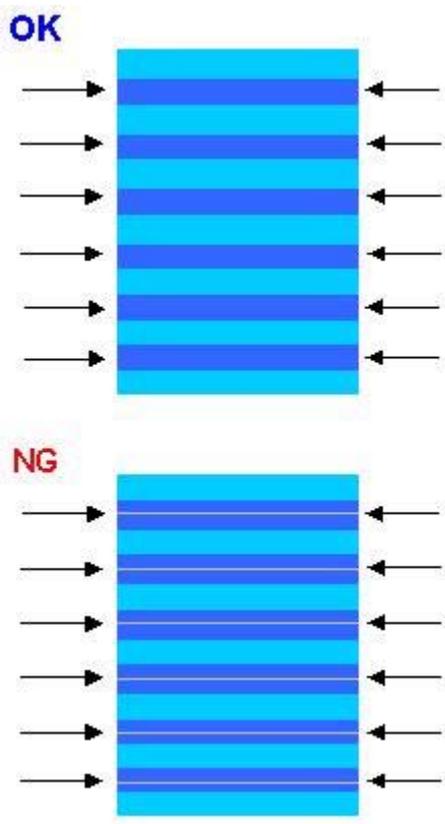
- Paper source: Select either **Rear tray** or **Cassette**.

- Media type: Select one from **HR-101**, **GF-500/Office Planner**, **HP Bright White**, and **Canon Extra/STEINBEIS**.

2) When printing is finished, "A function was finished" is displayed on the computer, and the machine returns to be ready for selection of another function.

3) In the printout, determine the Pattern No. in which streaks or lines are the least noticeable for the LF check pattern and the Eject check pattern respectively.

(LF Pattern No. 0 to 4, Eject Pattern No. 0 to 4)



4) Select and set the correction values.

In the **LF/EJECT Correction** section of the Service Tool, select the Pattern No. (from 0 to 4) determined in step 3) for **LF** and **EJECT** respectively, and click **Set**.

5) The selected LF and Eject correction values are written to the EEPROM, making the E-MIP correction value (which was set at shipment from the production site) invalid.

Note: At the production site, the E-MIP correction, which is equivalent to the LF / Eject correction, is performed using the special tool, and the E-MIP correction value is written to the EEPROM as the valid data.

When LF / Eject correction is performed, the LF / Eject correction values become valid instead of the E-MIP correction value (thus, in the initial EEPROM information print, "LF = *" and "EJ = *" are printed, but the selected values are printed after the LF / Eject correction).

(4) Button and LCD test

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

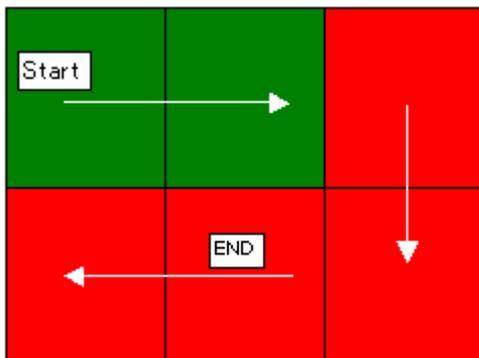
- 1) Click **Panel Check** of the Service Tool on the connected computer. The machine LCD turns blue, waiting for a button to be pressed.
- 2) Press each button of the operation panel, to see if every button functions properly.
- 3) The LCD is divided into 16 segments, representing each button. The color of a segment corresponding to the pressed button changes to red. If 2 or more buttons are pressed at the same time, only one of them is considered to be pressed, and the other buttons are ignored.

1	2	3	4
12	13	14	5
11	16	15	6
10	9	8	7

- | | |
|------------------------|---------------------------|
| 1. ON button | 10. Stop button |
| 2. Back button | 11. NAVI button |
| 3. OK button | 12. HOME button |
| 4. Up cursor button | 13. Left function button |
| 5. Down cursor button | 14. Right function button |
| 6. Left cursor button | 15. + button |
| 7. Right cursor button | 16. - button |
| 8. Black button | |
| 9. Color button | |

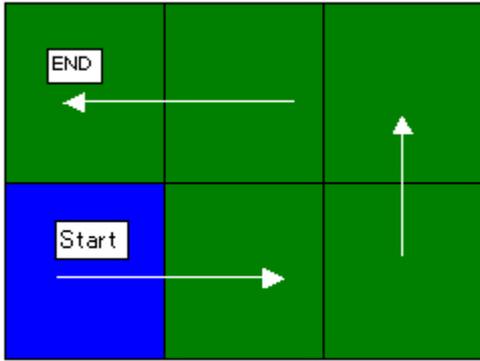
4) Easy-Scroll Wheel check

- 4-1) Rotate the Easy-Scroll Wheel clockwise step by step. The LCD is divided into 6 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 (6 steps), the color of segment(s) corresponding to the extra number of steps returns to red, starting with the "Start" segment in the figure below.

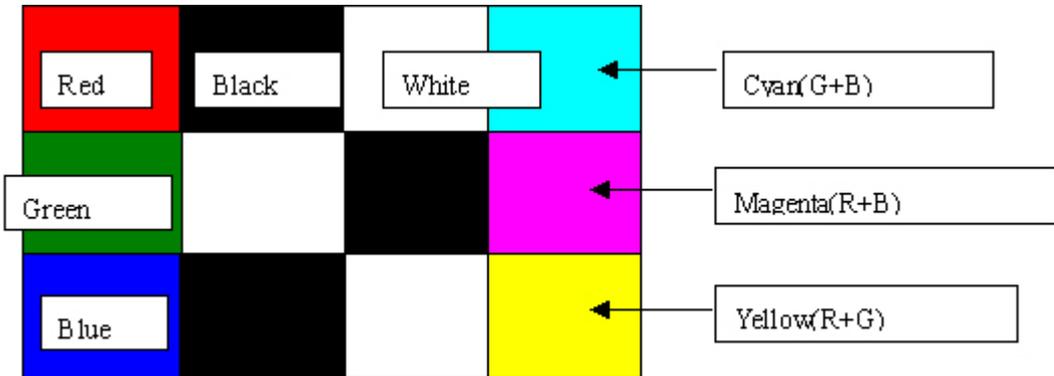


- 4-2) When the Easy-Scroll Wheel is rotated clockwise 1 round (6 steps), press the OK button.

4-3) Rotate the Easy-Scroll Wheel counterclockwise step by step. The LCD is divided into 6 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 (6 steps), the color of segment(s) corresponding to the extra number of steps returns to green, starting with the "Start" segment in the figure below.

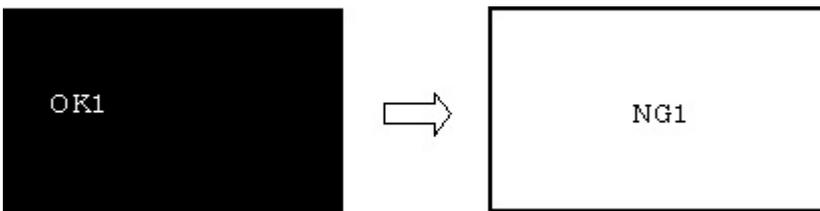


4-4) When the Easy-Scroll Wheel is rotated counterclockwise 1 round (6 steps, and all the segments are in blue), press the OK button. The color pattern is displayed on the LCD. If there is any segment that is not in blue when the OK button is pressed, the display remains unchanged.

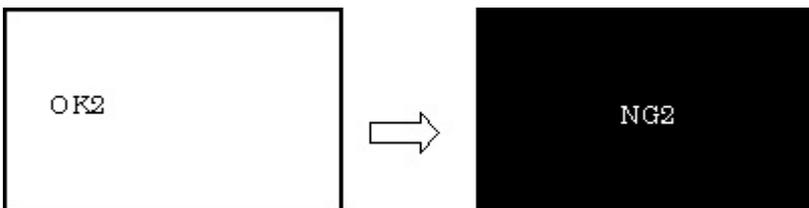


5) Transparent pattern display check

5-1) 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." Wait for approx. 2 seconds.



5-2) 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."



5-3) Press the OK button. The machine returns to be ready for selection of another function ("Service Mode Idle" is displayed on the LCD).

(5) 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) After replacement of the logic board, the ink absorber counter value should be set in the service mode using the Service Tool. In the **Ink Absorber Counter** section of the Service Tool, select **Main** from the **Absorber** pull-down menu. From the **Counter Value(%)** pull-down menu, select the value (in 10% increments) which is the closest to the actual counter value confirmed before replacement of the logic board, and click **Set**.
- 3) Print EEPROM information to confirm that the value is properly set to the EEPROM.

(6) DVD / CD print position correction

Set the DVD / CD print position value to a new EEPROM after the logic board is replaced in servicing.

This function can be also used in solving user complaints in the field, however, use of the application software is recommended for solution of user complaints.

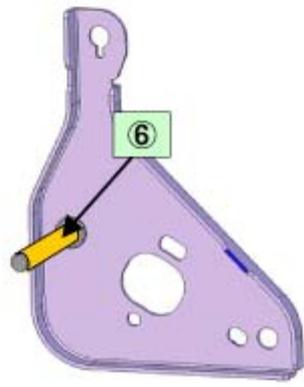
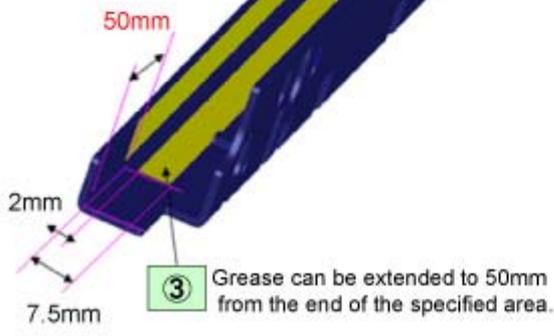
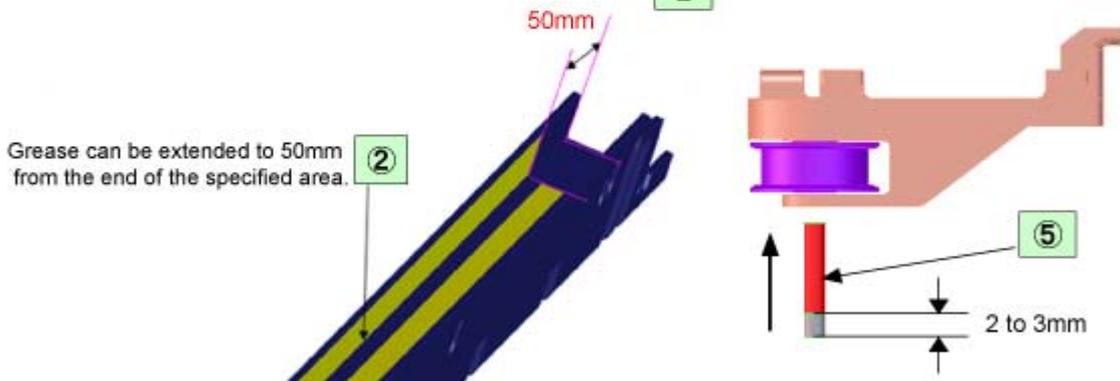
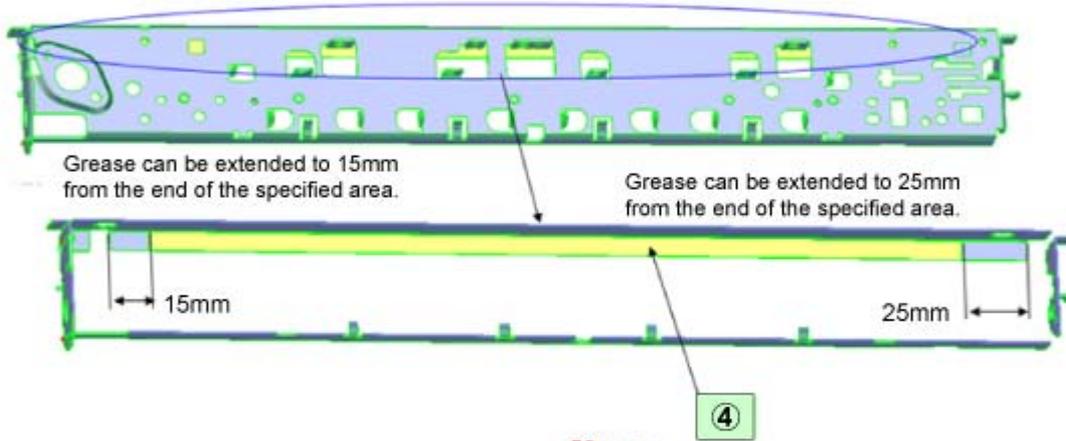
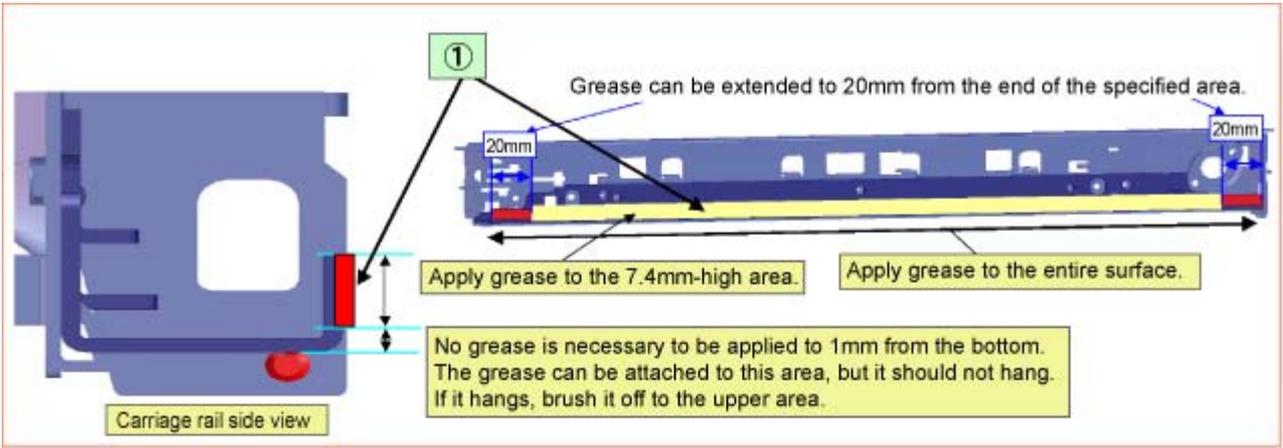
- 1) Before replacement of the logic board, check the DVD / CD print position value in EEPROM information print.
- 2) After replacement of the logic board, set the DVD / CD print position value in the service mode using the Service Tool, **CD-R Correction** section.
- 3) If the DVD / CD print position value from the original logic board is not available due to the logic board failure, etc., print the CD-R check pattern and confirm that the intersection of the X axis and Y axis is at the center of a DVD / CD.

◀ <4-1. User Mode & 4-2. Service Mode> ▶ ▲

4-3. Grease Application

No	Part name	Where to apply grease / oil	Drawing No.	Grease	Grease amount (mg)	Number of drops x location
1	Carriage rail	The surface where the carriage unit slides	(1)	Floil KG107A	230 to 290	---
2	Carriage rail	The surface where the carriage unit slides	(2)	Floil KG107A	180 to 220	---
3	Carriage rail	The surface where the carriage unit slides	(3)	Floil KG107A	180 to 220	---
4	Main chassis	The surface where the carriage unit slides	(4)	Floil KG107A	230 to 290	---
5	Parallel pin	The pin surface which contacts the idler pulley hole	(5)	Floil KG107A	9 to 18	1 x 1
6	APP code wheel gear shaft	APP code wheel gear sliding portion (the entire surface)	(6)	Floil KG107A	9 to 18	1 x 1

1 drop = 9 to 18 mg



4-4. Special Notes on Servicing

(1) For smeared printing, uneven printing, or non-ejection of ink

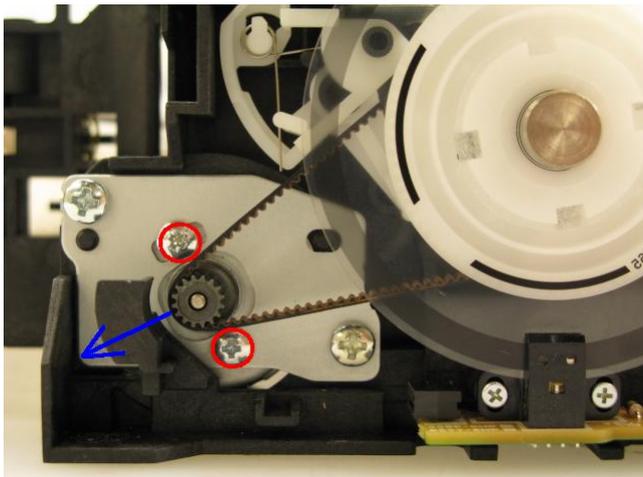
When smeared printing, uneven printing, or non-ejection of ink occurs, print the nozzle check pattern to determine whether the print head is faulty or not.

< Procedures >

- 0) Using the tool print head, confirm that the test printer (to be used to examine the print head in question) operates properly, then install the print head in question in that test printer.
- 1) Print the nozzle check pattern (in the user mode or in the service mode).
- 2) If there is a missing portion in the printed pattern, perform the print head cleaning (2 times at the maximum), and print the nozzle check pattern again.
- 3) If the problem persists even after the print head cleaning is performed 2 times, perform the print head deep cleaning, then print the nozzle check pattern again.
- 4) If the problem is still not resolved, i) turn off the machine and leave it for 24 hours or longer, ii) perform the print head cleaning, and iii) print the nozzle check pattern again.
- 5) If the problem still persists after steps 1) to 4), the print head may be faulty. Replace the print head.

(2) 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.

(3) Carriage unit replacement

To replace the carriage, the carriage rail must be removed from the main chassis (by removing the screws).

Before removing the screws, put a mark on the main chassis to indicate the carriage rail position.

After replacing the carriage, return the carriage rail to the original position while aligning the rail to the mark on the chassis.

(4) Document pressure sheet (sponge sheet) replacement



- 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 at the scanning reference point on the platen glass (back left where the red lines cross in the photo above).
- 2) Slowly close the document pressure plate while maintaining the hinge position. The document pressure sheet will attach to the plate frame.
- 3) 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.
 - No shades or streaks in monochrome test printing without a document on the platen glass.

(5) 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. (The value can be set in 10% increments.)

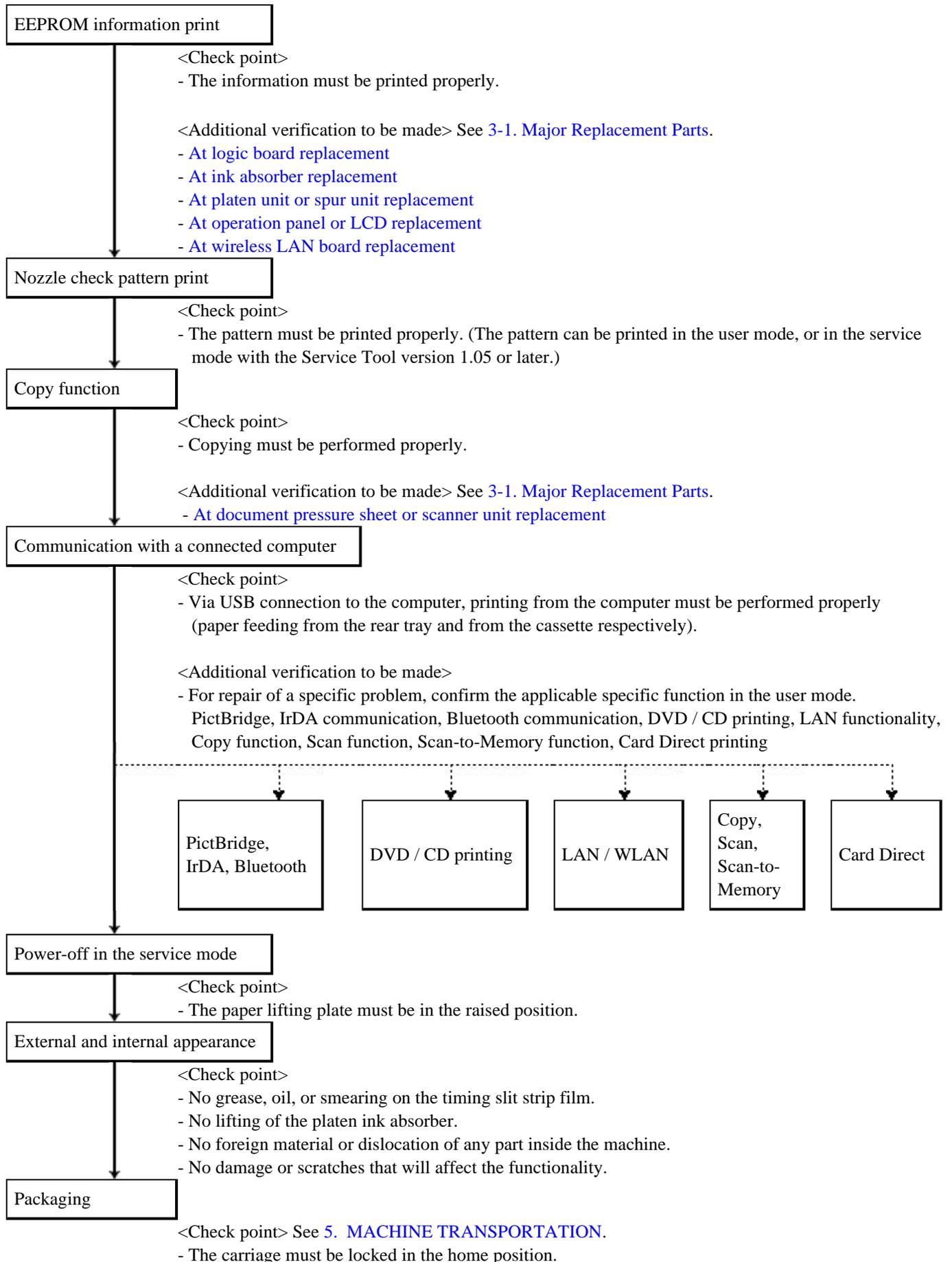
In addition, according to the ink absorber counter value, replace the ink absorber (ink absorber kit). When the ink absorber is replaced, reset the applicable ink absorber counter (to 0%). See [4-2. Service Mode](#), for details.

◀ <4-3. Grease Application & 4-4. Special Notes on Servicing> ▶ ▲

4-5. Verification After Repair

(1) Standard inspection flow

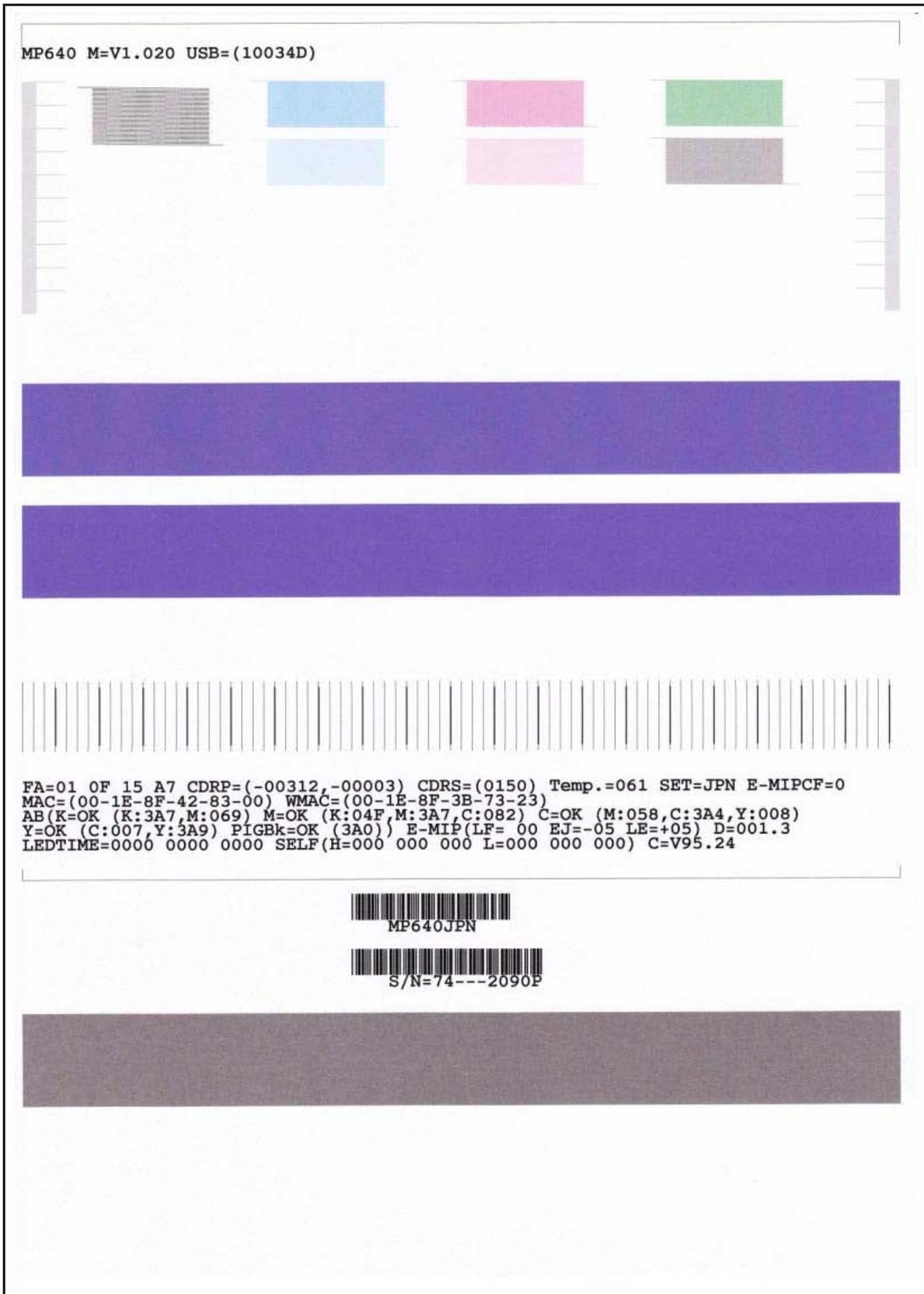
In each step below, confirm that printing is performed properly and the machine operates properly without any strange noise.



(2) Service test print

<Service test print sample>

- First page:

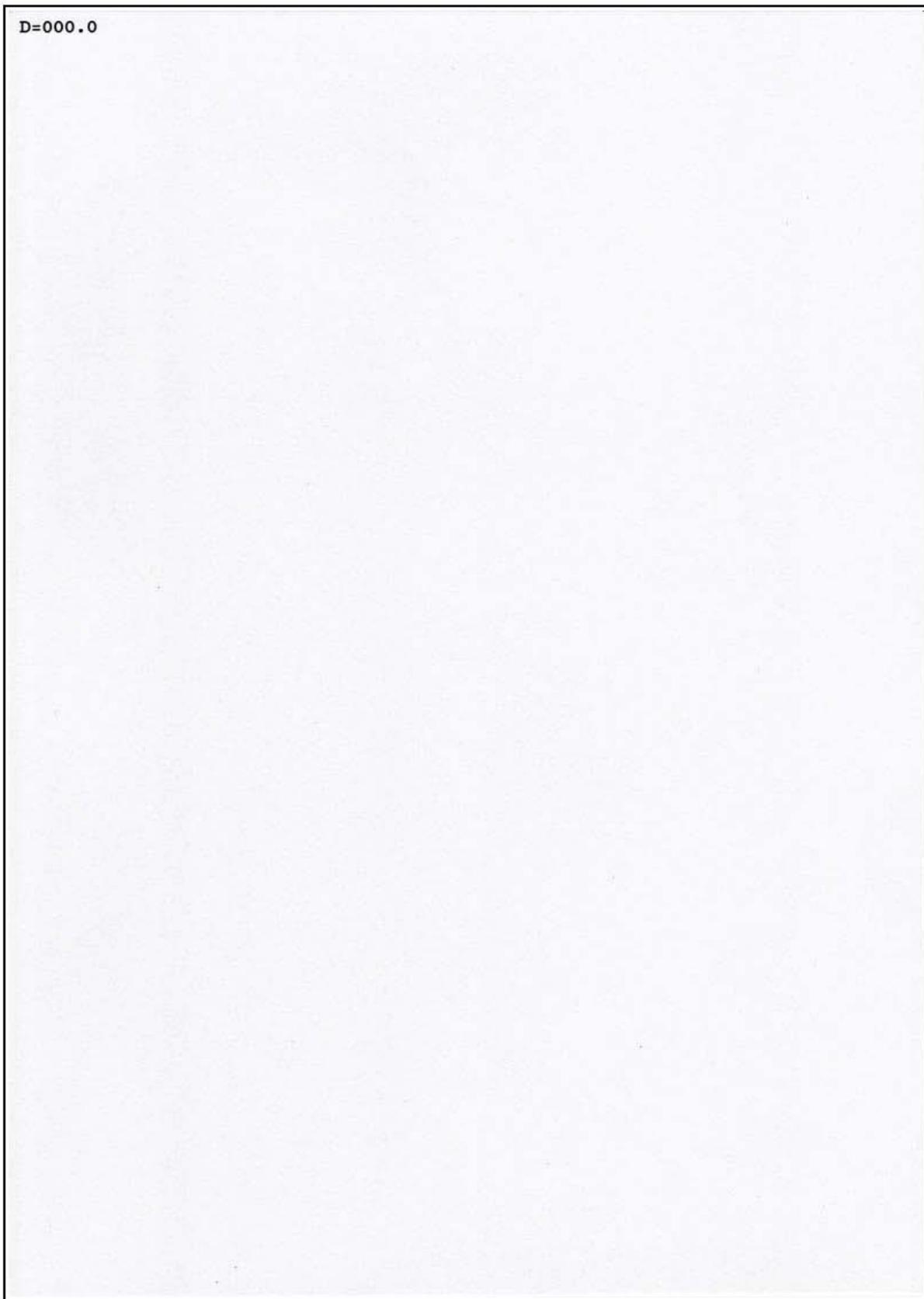


- Second page:

CDR SENSOR=OK

(3) Ink absorber counter value print

<Print sample>



◀ <4-5. Verification After Repair> ▶ ▲

5. MACHINE TRANSPORTATION

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

- 1) In the service mode, press the ON 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.

See Caution 1 below.

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

See Caution 2 below.



-
- (1) 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.
 - (2) Securely lock the carriage in the home position, to prevent the carriage from moving and applying stress to the carriage flexible cable, or causing ink leakage, during transportation. Make sure that the carriage is locked in place at power-off.
-



- 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).

MP640 / MP648

Technical Reference



This manual provides technical information necessary for servicing the applicable product. Since the manual contains confidential information, limit the use of this manual within the sales companies.

Information on maintenance and disassembly / reassembly procedures of the applicable product is given in the separate Service Manual and Parts Catalog. Please refer to them when necessary.

QY8-2325-000
Rev. 00

September 2009
Canon Inc.

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1. SERVICE MODE

For details of each service mode, refer to the "MP640 / MP648 Service Manual."

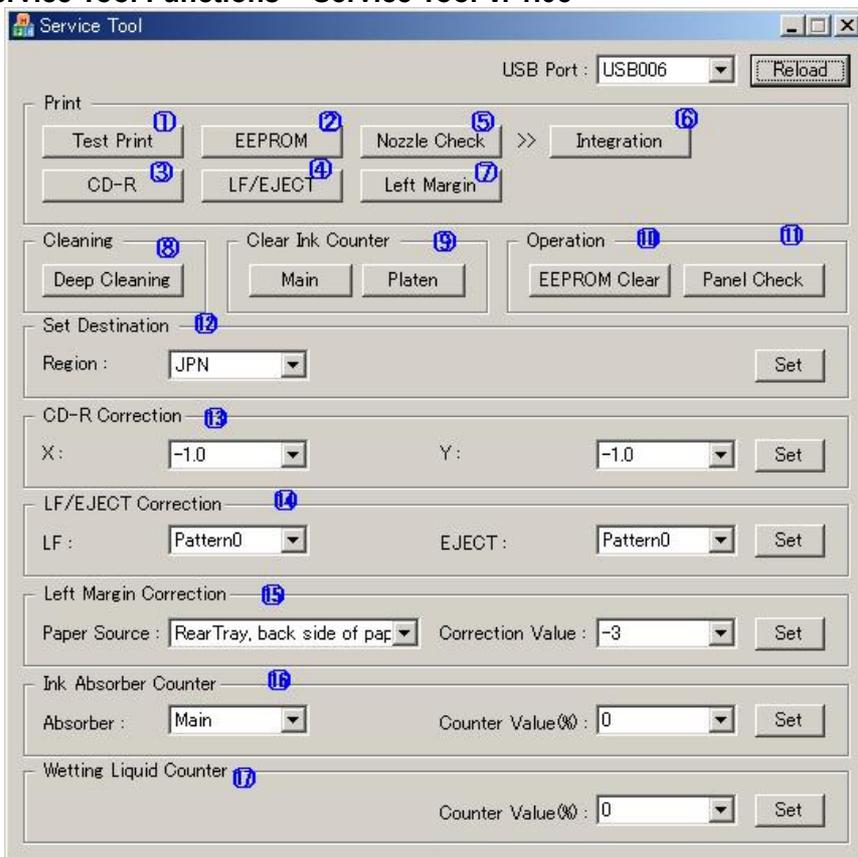
< Service Mode Operation Procedures >

Use the Service Tool on the connected computer.

- 1) Start the printer in the service mode.
 - i. With the printer power turned off, while pressing the Stop button, press and hold the ON button. (DO NOT release the buttons).
 - ii. When the Power LED lights in green, while holding the ON button, release the Stop button. (DO NOT release the ON button.)
 - iii. While holding the ON button, press the Stop button 2 times, and then release both the ON and Stop buttons. (Each time the Stop button is pressed, the Alarm and Power LEDs light alternately, Alarm in orange and Power in green, starting with Alarm LED.)
 - iv. When the Power LED lights in green, the printer is ready for the service mode operation.

- 2) Start the Service Tool on the connected computer, and click the button for a desired function.
 - During operation of the selected function, all the buttons of the Service Tool are dimmed and inactive.
 - When the operation is completed, "A function was finished." is displayed, and another function can be selected.
 - If a non-supported function is selected, "Error!" is displayed. Click **OK** in the error message dialog box to exit the error.

< Service Tool Functions > Service Tool V. 1.05



No.	Name	Function	Remarks
(1)	Test Print	Service test print	Paper (2 sheets) will feed from the rear tray. Service test print items: <ul style="list-style-type: none"> - Model name - ROM version - Ink absorber counter value (ink amount in the ink absorber) - USB serial number - Destination - EEPROM information - Process inspection information - Barcode (model name + destination + printer serial number) - Ink system function check result - CD / DVD sensor check result (printed on the second sheet)
(2)	EEPROM	EEPROM information print	The dialog box opens to select the paper source. Select Rear tray or Cassette , and click OK . EEPROM information print items: <ul style="list-style-type: none"> - Model name - ROM version - Ink absorber counter value (ink amount in the ink absorber) - Print information - Error information, etc.
(3)	CD-R	CD-R check pattern print	For refurbishment use. Not used in servicing.
(4)	LF / EJECT	LF / Eject correction pattern print	Perform LF / Eject correction only when streaks or uneven printing occurs after the repair. See the "MP640 / MP648 Service Manual" for details.
(5)	Nozzle Check	Nozzle check pattern print	The dialog box opens to select the paper source. Select Rear tray or Cassette , and click OK .
(6)	Integration	Successive print of (1) service test pattern, (2) EEPROM information, and (5) nozzle check pattern	Paper will feed from the rear tray.
(7)	Left Margin	Left margin pattern print	Not used.
(8)	Deep Cleaning	Print head deep cleaning	Cleaning of both Black and Color at the same time.
(9)	Main	Main ink absorber counter resetting	Set a sheet of A4 or Letter sized plain paper. After the ink absorber counter is reset, the counter value is printed automatically.
	Platen	Platen ink absorber counter resetting	Not used.

No.	Name	Function	Remarks
(10)	EEPROM Clear	EEPROM initialization	The following items are NOT initialized, and the shipment arrival flag is not on: <ul style="list-style-type: none"> - Destination settings - Ink absorber counter value (ink amount in the ink absorber) - USB serial number - LF / Eject correction values - Record of ink absorber counter resetting and setting - Record of repair at the production site - CD / DVD print position correction value - Left margin correction value - Production site E-MIP correction value and enabling of it - Endurance correction value and enabling of it - Record of disabling the function to detect the remaining ink amount
(11)	Panel Check	Button and LCD test	See the "MP640 / MP648 Service Manual" for details.
(12)	Set Destination	Destination settings	Select the destination, and click Set . ASA, AUS, BRA, CHN, CND, EUR, JPN, KOR, LTN, TWN, USA
(13)	CD-R Correction	CD / DVD print position correction (X and Y direction)	To be used with (3) CD-R check pattern print, mainly in refurbishment operation. The reference center in the X direction and in the Y direction can be adjusted respectively (adjustable range between -1.0 mm to +1.0 mm, in 0.1 mm increment).
(14)	LF / EJECT Correction	LF / Eject correction value setting	Set the correction value according to the result of (4) LF / Eject correction pattern print. See the "MP640 / MP648 Service Manual" for details.
(15)	Left Margin Correction	Left margin correction value setting	Not used.
(16)	Ink Absorber Counter	Ink absorber counter setting	See the "MP640 / MP648 Service Manual" for details.
(17)	Wetting Liquid Counter	Wetting liquid counter setting	Not used.

< Service Test Print >

1) EEPROM information contents

On the service test print (sample below), confirm the EEPROM information.

- First page, top area:

MP640:	Model name
M=V x.xx:	ROM version
USB=(xxxxxx):	USB serial number

- First page, lower half:

Upper barcode:	Model name and destination
Lower barcode:	Printer serial number

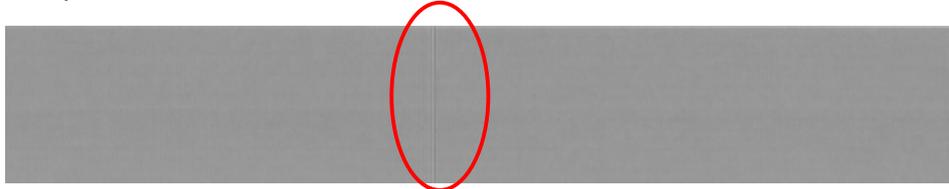
- Second page, top area: CDR SENSOR=OK: Confirm it reads "OK".

2) Print check items

On the service test print (sample below), confirm the following items:

- Check 1: Top of form accuracy, skewed paper feeding, left margin, and carriage (outermost) accuracy
- Check 2: EEPROM information
- Check 3: Improper mixture of colors (Ink must be ejected from all nozzles.)
- Check 4: Paper feed accuracy (There must be no streaks or unevenness.)
- Check 5: Uneven density (There must be no streaks or unevenness.)
- Check 6: Straight line accuracy (There must be no remarkable dot mis-alignment on a line.)
- Check 7: Process inspection information
- Check 8: Overall magnification, parallelism
- Check 9: Barcode (There must be no missing portions, faint printing, or blurred printing.)
- Check 10: No grease attached to the encoder film (There must be no vertical lines.)

Sample of the vertical line:



- Check 11: CD / DVD sensor and automatic print head alignment sensor correction result (It should read OK.)

3) Service test sample

First page:

Check 2

MP640 M=V1.020 USB=(10034D)

Check 1

Check 3

Check 4

Check 4

Check 5

Check 6

Check 7

Check 8

Check 9

Check 10

Second page:

Check 11

CDR SENSOR=OK

< EEPROM Information Print >

1) Printed items

- Model name (destination)
- ROM version
- Installation date & time (ST = Set Time)
- Last printing time without any errors (LPT = Last Print Time)
- Ink amount in the main ink absorber (% , D = Drain sheet)
- Operator call/service call error record (the last 10 errors, ER0 = the last error, ER1 = the one before the last,, ER9 = the 9th before the last)
If the same errors occur successively, only the latest one is recorded.
- Purging count (PC = Purge Count, M = Manual cleaning, R = deep cleaning, T = cleaning by Timer, D = cleaning by Dot count, C = cleaning at ink tank or print head replacement, I = faulty termination)
- Record of resetting (CF = Clear Flag, D = ink absorber counter, E = EEPROM initialization)
Flag definition: 0 = no record (not performed), 1 = performed
- Language setting (LG)
- Total print pages (TPAGE, TTL = total, COPY = copy)^{*1}
- Cleaning time (CLT = Cleaning Time)
- Print head replacement count (CH = Change Head)
- Replacement count of an ink tank (CT = Change Tank, PBK = Photo Black, BK = Pigment Black, Y = Yellow, M = Magenta, C = Cyan)
- Ink status (IS = Ink Status)
Flag definition: 0 = High, 1 = Middle, 2 = Low, 3 = Empty
- Power-on count (soft, P_ON = Power On)
- Automatic print head alignment by user (A_REG)
- Manual print head alignment by user (M_REG)
- Longest period (number of days) where printing stops (MSD = Max Stop Date)
- Connected I/F (USB2, IF = Interface)
- Rear tray (ASF) feed pages (ASF PAGE, All = total, PP = plain paper, Photo = Glossy Photo Paper & Photo Paper Plus Glossy II & Photo Paper Plus Semi-gloss & Photo Paper Pro II & Photo Paper Pro Platinum, PC = postcard, EV = envelope)
- Cassette feed pages (FR PAGE, All = total)
- Auto duplex print pages (BPPAGE = Both Print Page, ALL = total, PC = postcard)
- Camera Direct print pages (DCDP = Digital Camera Direct Page, All = total)
- Borderless print pages (EDGE, total)
- L size & 4x6 & KG size print pages (L & 4x6 & KG, total)^{*2}
- Number of CDs and DVDs printed (CDR, total)
- CD / DVD print position correction value (CDRP)
- CD / DVD sensor correction value (CDRS)
- Service-use LF correction value (LF)
If an asterisk (*) is printed, LF correction in the service mode has not been performed.
- Service-use eject correction value (EJ)
If an asterisk (*) is printed, Eject correction in the service mode has not been performed.
- Disabling of the remaining ink amount detection function (INK_OFF, PBK = Photo Black, BK = Pigment Black, Y = Yellow, M = Magenta, C = Cyan)
- Black print head temperature (HEAD TempBK)
- Color print head temperature (HEAD TempCL)
- Card Direct print pages (CDDP = Card Direct Print, ALL = total)



- Total scan count (SC, total, PC = scanning from a computer, COPY = scanning at copying)
- Wireless LAN MAC address
- Wired LAN MAC address
- Number of pages printed via LAN connection (total, wired LAN connection, wireless LAN connection)

*1: TTL = Total of the number of pages printed from the rear tray and the number of pages printed from the cassette

COPY = Total of the following copies:

Monochrome copy pages from the rear tray

Monochrome copy pages from the cassette

Color copy pages of plain paper from the rear tray

Color copy pages of other papers from the rear tray

Color copy pages of plain paper from the cassette

Color copy pages of other papers from the cassette

Number of CDs and DVDs copied in color

*2: Total number of print pages of L size paper, 4"x6" paper, and KG size paper

2) EEPROM information print sample

```
MP640 JPN V1.030 ST=2009/07/21-15:48 LPT=2009/09/01-15:58
D=002.8
ER(ER0=1003 ER1=1660 ER2=1401 ER3=1003 ER4=6000
ER5=1660 ER6=1000 ER7=1003 ER8=1851 ER9=1850)
PC(M=000 R=000 T=011 D=000 C=005 I=005)
CF(D=1 E=0)
LG=01 Japanese
TPAGE(TTL=00424 COPY=00001)
CLTO=2009/09/01-10:46 CLT1=2009/08/25-16:06
CH=003
CT(PBK=001 BK=002 Y=002 M=002 C=002)
IL(PBK=0 BK=0 Y=0 M=0 C=0)
P_ON(S=00070)
A_REG=1
M_REG=0
MSD(009)
IF(USB2=1)
ASF PAGE(All=00007 PP=00003 Photo=00004 PC=00000 EV=00000)
FR PAGE(All=00417)
BPPAGE(All=000035 PC=00000)
DCDP(All=00000)
EDGE=00000
L+4x6+KG=00000
CDR=00000
CDRP=(-0118, -0001)
CDRS=(0153)
LF=1 EJ=1
INK_OFF(PBK=0 BK=0 Y=0 M=0 C=0)
Head TempBK=36.0
Head TempCL=34.5
CDDP(All=00001)
SC(TTL=00021 PC=00016 COPY=00005)
WL-LAN=(MAC:00:1E:8F:3B:73:23)
WD-LAN=(MAC:00:1E:8F:42:83:00)
LP(TTL=00001 WL=00000 WD=00001)

- EEPROM Information <Hex.> -
Address +0 +2 +4 +6 +8 +A +C +E +10 +12 +14 +16 +18 +1A +1C +1E +20 +22 +24 +26 +28 +2A +2C +2E
00000000 FFFF 15A7 010F 0000 0000 FFF2 01B2 0000 0000 0000 0000 0000 0000 0000 97FC 0106 0CA3 FFFF FFFF FFFF FFFF FFFF
00000030 FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF 97FC 0106 0CA3 FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF
00000060 0CF3 0310 114D 1800 428F 0083 0899 FFFA FFFF 0000 0A02 0000 03FF 0000 F900 0005 0001 253E 0004 1402 0307 FFFF FFFF
00000090 FFFD 0201 0905 130A 1A18 1619 030E EAF5 E0E2 FFF5 00F5 FFF6 00F7 3437 2D2D 322D 3930 0030 FFFF FFFF FFFF FFFF
000000C0 0CF3 0310 114D 1800 428F 0083 0899 FFFA FFFF 0000 0A02 0000 03FF 0000 F900 0005 0001 253E 0004 1402 0307 FFFF FFFF
000000F0 FFFF 0201 0905 130A 1A18 1619 030E EAF5 E0E2 FFF5 00F5 FFF6 00F7 3437 2D2D 322D 3930 0030 FFFF FFFF FFFF FFFF
00001120 3AAE 6AF2 0002 0003 FFFF FFFF
00001150 FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF 0CDA 0028 0013 0040 0002 7C01 045E 77E2 0000 0000 0000 0000 0000 0000 0004
00001180 0006 0006 0008 0008 0000 0140 1018 1148 0246 013F DC28 013E 00B4 0244 0007 0001 0037 00A4 8100 0000 0000 0000 0000
00001190 03F5 03F5 01D6 03FF FFFF FFFF
000011E0 0CDA 0028 0013 0040 0002 7C01 045E 77E2 0000 0000 0000 0000 001E 0000 0000 0000 0004 0006 0006 000E 0008 0000 0140 1018 1148
00002110 0246 013F DC26 013E 00B4 0244 0007 0001 0037 00A4 8100 0000 0000 0000 03F5 03E4 03F5 03F5 01D6 03FF FFFF FFFF FFFF
00002140 FFFF FFFF
00002170 5948 0048 03EF 0007 09C7 1385 076E 0000 0031 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
00002200 3030 3030 0004 29A3 0020 0092 81A3 0001 3486 0002 0886 4800 0002 0000 1010 0886 29A3 0092 29A3 0092 0C10 000A 0008 0119
00002230 0000 0000 0010 0000 FFFF FFFF
00002260 0046 0038 0078 0088 0005 0067 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
00002290 0201 0202 0002 0000 0000 0008 00C7 0003 0001 0003 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
00002320 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
00002350 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
00002380 0010 0005 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
000023F0 0000 0000 0000 0000 0010 0000 0000 FFFF

- IDEEPROM Information <Hex.> -
Address +0 +2 +4 +6 +8 +A +C +E +10 +12 +14 +16 +18 +1A +1C +1E +20 +22 +24 +26 +28 +2A +2C +2E
00000000 0022 0102 0CA4 8100 0121 7C17 2108 0A09 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
00000030 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
00000060 FFFF FFFF
00000090 3000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
000000C0 FFFF FFFF
000000F0 FFFF FFFF FFFF FFFF 0000 0000 0000 0000
```

2. CLEANING MODE AND AMOUNT OF INK PURGED

< Cleaning >

To prevent printing problems due to bubbles, dust, or ink clogging, print head cleaning is performed before the start of printing (when the cleaning flag is on), except in the following cases:

- Cleaning on arrival: Performed when the scanning unit (cover) is closed.
- Manual cleaning / deep cleaning: Performed manually.

< Cleaning mode list (user operable cleaning) >

Black: Pigment-based black

Color: Dye-based black, cyan, magenta, yellow

Condition	Details	Amount of ink used (g) (in the normal temperature/humidity environment)	Est. required time (sec.) (with the top cover closed)
On arrival of the printer (All in sequence for the 1st cleaning, Black only for the 2nd cleaning)	First and second cleaning after shipped from the plant*1.	0.53 (Black) 1.55 (Color)	350: 1st cleaning (All in sequence) 40: 2nd cleaning (Black only)
At print head replacement (All in sequence)	When the print head is removed and another print head (with a different serial number) is installed*2.	0.53 (Black) 1.55 (Color)	350
At ink tank replacement (Black / Color / All at the same time)	When an ink tank is replaced (without the print head removal or re-installation)	0.30 (Black) 1.55 (Color)	160 (All at the same time) 60 (Black) 170 (Color)
Manual cleaning (Black / Color / All at the same time)	- Via the operation panel (All at the same time only) - Via the MP driver (Selectable from Black, Color, or All at the same time)	0.22 (Black) 0.20 (Color)	160 (All at the same time) 80 (Black) 90 (Color)
Deep cleaning (Black / Color / All at the same time)	- Via the operation panel (All at the same time only) - Via the MP driver (Selectable from Black, Color, or All at the same time)	1.62 (Black) 1.55 (Color)	180 (All at the same time) 90 (Black) 180 (Color)

*1: The counter for the on-arrival cleaning is checked at opening and closing of the top cover (the first opening and closing only), before start of printing, at dot-count cleaning (at paper ejection), and at manual cleaning, and the on-arrival cleaning is performed according to the counter value. After each on-arrival cleaning, the counter value is reduced by 1.

- When the counter value is 2 or 1: On-arrival cleaning is performed.
- When the counter value is 0: On-arrival cleaning is not performed.

*2: When the print head is replaced with another one, the cleaning status is reset to the one at shipment, and the cleaning equivalent to the 1st on-arrival cleaning is performed.

3. FAQ (Problems Specific to the MP640 / MP648 and Corrective Actions)

No.	*	Function	Phenomenon	Condition	Cause	Corrective action	Possible call or complaint
1	A	Operation	Forcible ejection of the CD-R tray	If a user inserts the CD-R tray before prompted to do so, the tray is automatically ejected.	For CD / DVD printing, the carriage is set to the raised position. Since that mechanism is on the left side of the printer, the carriage moves from the right (home position) to the left first. To prevent the carriage from contacting the CD-R tray in that operation, the tray is ejected.	The following message is displayed at the beginning of CD / DVD printing: "Preparing for printable disc printing. Please wait without inserting the CD-R tray. If you insert the CD-R tray into the inner cover before the printer is ready, the tray may be ejected."	- The CD-R tray is ejected.
2	B	Print results	Smearing on the print side of paper	Paper feeding from the rear tray	On the protrusion(s) of the pick-up roller, ink mist accumulates after a high volume of printing, smearing paper.	Clean the roller shaft protrusions one by one using a cotton swab while performing Roller cleaning and the rollers are rotating. Be careful so that the cotton swab will not be pulled in by the roller. ^{*1}	- The print side of paper gets smeared.
3	B	Print results	Smearing on the back side of paper	Paper feeding from the rear tray or from the cassette	Ink mist attached to the platen rib(s) transfers to the back side of paper.	- Perform Bottom plate cleaning. ^{*2} i. Fold an A4 or Letter-sized paper crosswise in half. ii. Open the paper, and set it in the rear tray with the folding ridge facing down. - If Bottom plate cleaning is not effective, clean platen ribs using a moistened cotton swab. DO NOT contact the platen ink absorber.	- Paper gets smeared. - The back side of paper gets smeared.
4	B	Paper feeding	- Simultaneous feeding of multiple sheets of paper from the cassette - No paper feeding from the cassette.	Paper feeding from the cassette	Due to paper debris or dust attached to the pad of the cassette, the pick up friction to separate each paper changes, causing paper feeding of multiple sheets at the same time or no paper feeding.	Using a moistened cotton swab, clean the pad of the cassette. ^{*3}	- Multiple sheets of paper feed at the same time. - Paper does not feed.
5	B	Paper feeding	Paper jam	Paper feeding from the rear tray or from the cassette	Due to paper debris or dust attached to inner side of the rear cover, paper jams at this point.	Using a cotton swab, clean the inner side of the rear cover. ^{*4}	- Paper jams.

No.	*	Function	Phenomenon	Condition	Cause	Corrective action	Possible call or complaint
6	C	Print results	Scratches on specialty paper (Photo Paper Pro Platinum PT-101)	<ul style="list-style-type: none"> - Photo Paper Pro Platinum PT-101 - Paper feeding from the rear tray 	The pinch roller leaves a mark on the paper (Photo Paper Pro Platinum PT-101).	Modification to paper is under examination.	- Paper is scratched.
7	B	Scanning	Stain on a scanned image	<ul style="list-style-type: none"> - Glossy document (e.g. Photo printed on a glossy paper) - High humidity environment 	When a glossy document is strongly pressed against the platen glass, the document sticks to the glass, causing a stain-like spot on the scanned image.	<ul style="list-style-type: none"> - Do not press the document too strongly against the platen glass. - Clean the platen glass (eliminate any moisture). 	- A stain appears on the scanned or copied image.
8	B	CD / DVD label copying	Incorrect copy positioning	<ul style="list-style-type: none"> - A user-specified area is too large (full image from the outer to the inner diameters of the original CD / DVD). - A large quantity of CD / DVD printing - The original CD / DVD is not properly recognized. - The sponge sheet (document pressure plate sheet) is not clean. - The platen glass is not clean. 	<ul style="list-style-type: none"> - Due to normal wear-out of the parts over time, print position accuracy decreases. - Copy position can vary (between 1 to 2 mm) due to allowance of scanning of the document position and allowance of the print position. - Depending on the original CD / DVD condition or image to be copied, the edge of the original CD / DVD cannot be detected. - Since the sponge sheet (document pressure plate sheet) or the platen glass is not clean, the edge of the original CD / DVD cannot be detected. 	<ul style="list-style-type: none"> - Via the operation panel, adjust the CD / DVD print position. - Leave a margin in the outer and inner diameter. - Clean the sponge sheet (document pressure plate sheet). - Clean the platen glass. <p>Service:</p> <ul style="list-style-type: none"> - Clean the inside of the printer (inner cover, platen, paper feeding mechanism, etc.). - Replace the CD-R tray. - Replace the inner cover. 	- Print position is not correct in CD / DVD label copying.

* Occurrence level:

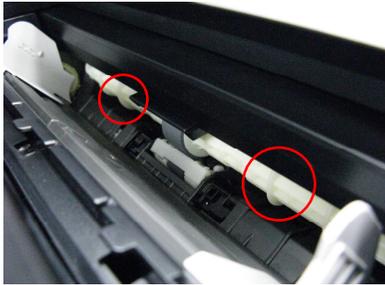
A: The symptom is likely to occur frequently. (Caution required)

B: The symptom may occur under certain conditions, but likeliness is assumed very low in practical usage.

C: The symptom is unlikely to be recognized by the user, and no practical issues are assumed.

*1: Paper feed roller cleaning:

Via the operation panel or in the MP driver, perform Roller cleaning. While the rollers are rotating, using a cotton swab, touch and clean each protrusion of the pick-up roller shaft.



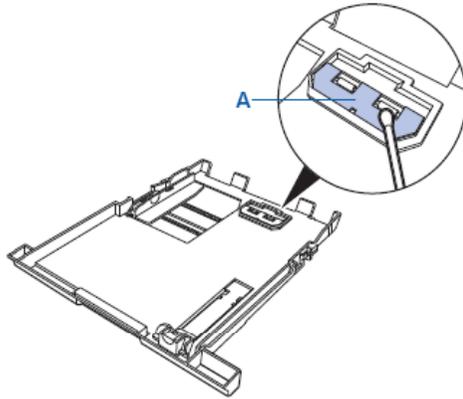
*2: Bottom plate cleaning:

Fold a sheet of A4 or Letter-sized paper crosswise in half. Open the paper, and set it in the rear tray with the folded ridge facing down ((A) in the illustration). Then, via the operation panel or in the MP driver, perform Bottom plate cleaning.



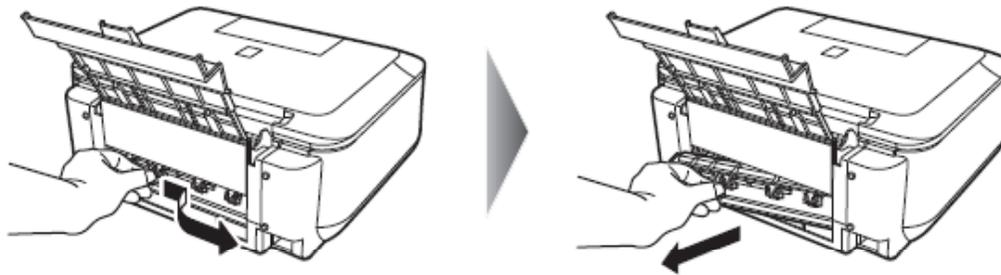
*3: Cassette pad cleaning:

Remove all the paper from the cassette, and clean the pad (<A> in the illustration) using a moistened cotton swab.



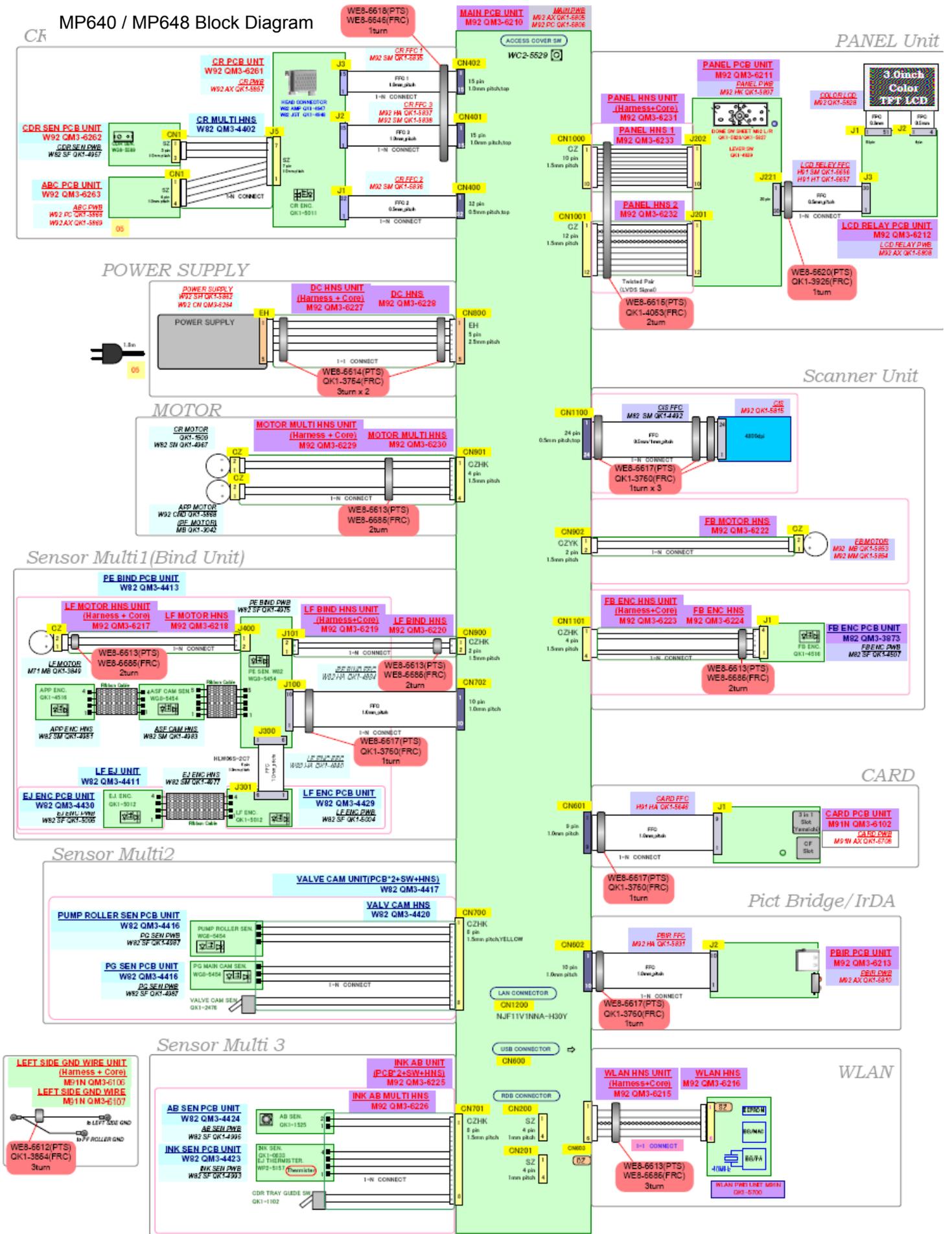
*4: Rear cover cleaning:

Using a cotton swab, clean paper debris and dust from the rear cover.



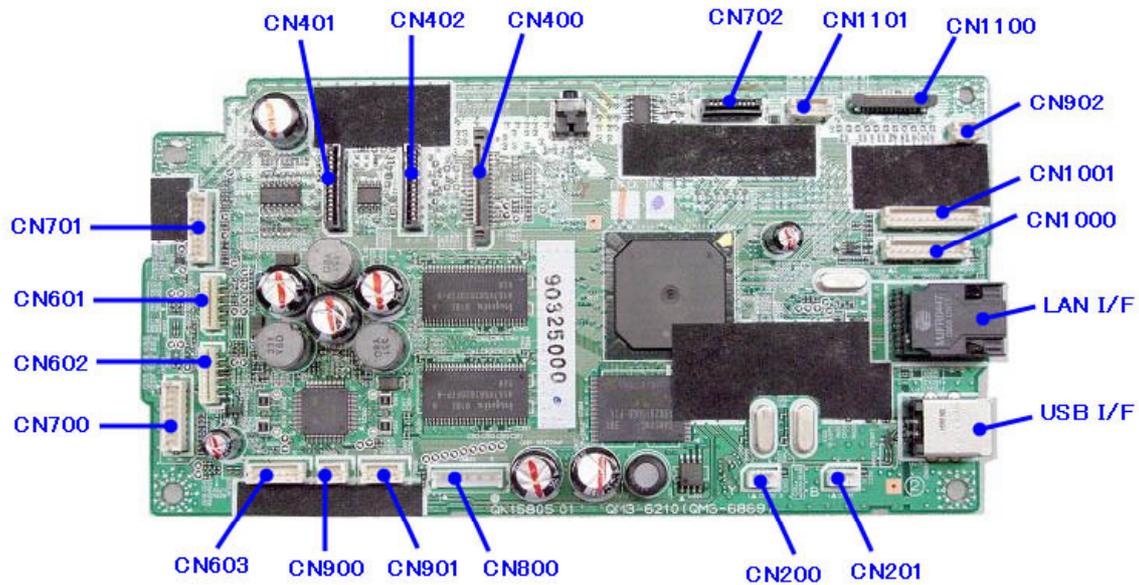
4. BLOCK DIAGRAM

MP640 / MP648 Block Diagram



5. CONNECTOR LOCATION AND PIN LAYOUT

< Logic Board >



CN200 / CN201 (RDB)

Not used (no connectors).

CN400 (Print Head 1/3 [Carriage Unit])

No.	Signal name	Function	Input / Output
1	VSS	Ground	-
2	AB_PWR	AB power supply	-
3	AB_DATA	AB data signal	BUS
4	AB_PWR	AB power supply	-
5	AB_CLK	AB clock signal	BUS
6	HENB0_BK	Head heat enable signal 0 (BK)	OUT
7	H_D3	Head data (PBK2)	OUT
8	VSS	Ground	-
9	H_CLK	Head heat clock	OUT
10	VSS	Ground	-
11	H_D5	Head data (SC1)	OUT
12	H_D4	Head data (C1)	OUT
13	H_D2	Head data (PBK1)	OUT
14	H_D6	Head data (M2)	OUT
15	H_ENB3_SCOL	Head heat enable signal 3 (SCol)	OUT
16	H_EEPROM_SK	Head EEPROM serial clock signal	OUT
17	H_ENB2_COL	Head heat enable signal 2 (Col-2)	OUT
18	H_EEPROM_CS	Head EEPROM chip select signal	OUT
19	H_ENB1_COL	Head heat enable signal 1 (Col-1)	OUT

20	H_LATCH	Head data latch signal	OUT
21	H_ENB4_MCOL	Head heat enable signal 4 (MCol)	OUT
22	H_EEPROM_DIO	Head EEPROM data signal	OUT
23	H_D7	Head data (SM2)	OUT
24	H_D8	Head data (Y1)	OUT
25	H_D12	Head data (SC2)	OUT
26	H_D10	Head data (SM1)	OUT
27	H_D11	Head data (M1)	OUT
28	H_D13	Head data (C2)	OUT
29	H_D1	Head data (BK2)	OUT
30	H_D9	Head data (Y2)	OUT
31	H_D0	Head data (BK1)	OUT
32	VSS	Logic ground	-

CN401 (Print Head 2/3 [Carriage Unit])

No.	Signal name	Function	Input / Output
1	DIA1	Diode sensor anode 1	IN
2	DIA0	Diode sensor anode 0	IN
3	VSS	Logic ground	-
4	A_GND_H	Head ground	-
5	A_HV_24V	Head drive power supply 24V	OUT
6	A_GND_H	Head ground	-
7	A_HV_24V	Head drive power supply 24V	OUT
8	A_GND_H	Head ground	-
9	A_HV_24V	Head drive power supply 24V	OUT
10	VSEN_3.3V	Head logic drive power supply 3.3V	OUT
11	HVDD_3.3V	Head logic drive power supply 3.3V	OUT
12	CR_ENCA	CR encoder phase A	IN
13	HVDD_3.3V	Head logic drive power supply 3.3V	OUT
14	CR_ENCB	CR encoder phase B	-
15	VSS	Logic ground	-

CN402 (Print Head 3/3 [Carriage Unit])

No.	Signal name	Function	Input / Output
1	B_GND_H	Head ground	-
2	B_VH2_24V	Head drive power supply 24V	OUT
3	B_GND_H	Head ground	-
4	B_VH2_24V	Head drive power supply 24V	OUT
5	B_GND_H	Head ground	-
6	B_VH2_24V	Head drive power supply 24V	OUT
7	B_GND_H	Head ground	-
8	B_VH2_24V	Head drive power supply 24V	OUT

9	B_VH1_24V	Head drive power supply 24V	OUT
10	B_VH1_24V	Head drive power supply 24V	OUT
11	B_GND_H	Head ground	-
12	B_VH1_24V	Head drive power supply 24V	OUT
13	VSEN_CDRS	Power supply for CDR sensor 5.0V	OUT
14	SNS_CDR_P	CDR position sensor signal	IN
15	VHT	Head drive power supply 24V	OUT

CN601 (Memory Card)

No.	Signal name	Function	Input / Output
1	Card_RSTX	Reset to card	OUT
2	+5.0V	Power supply 5.0V	OUT
3	D-	USB: D- signal	BUS
4	D+	USB: D+ signal	BUS
5	GND	GND	-
6	Card_DETECT	Card detect INT from card	IN
7	GND	GND	-
8	Card_INT	INT from card	IN
9	+3.3V	Power supply 3.3V	OUT

CN602 (PictBridge & IrDA)

No.	Signal name	Function	Input / Output
1	GND	GND	-
2	VBUS	VBUS power supply 5.5V	OUT
3	D-	USB: D- signal	BUS
4	D+	USB: D+ signal	BUS
5	GND	GND	-
6	IR_TXD	IrDA transmission data	OUT
7	IR_RXD	IrDA receive data	IN
8	+3.3V	IrDA power supply 3.3V	OUT
9	IR_MODE	IR mode	OUT
10	GND	GND	-

CN603 (WLAN I/F)

No.	Signal name	Function	Input / Output
1	F-GND	GND	-
2	VBUS	NIC_VDD	OUT
3	D-	USB: D- signal	BUS
4	D+	USB: D+ signal	BUS
5	PPON WLAN	Power control WLAN	OUT
6	S-GND	GND	-

CN700 (Valve Cam / Purge Main / Pump Roller Sensor Multi)

No.	Signal name	Function	Input / Output
1	SNS_PUNP_R	Pump roller sensor	IN
2	GND	GND	-
3	VSEN 3.3V	Power supply for sensor 3.3V	OUT
4	SNS_MAIN_CAM	Main cam sensor	IN
5	GND	GND	-
6	VSEN 3.3V	Power supply for sensor 3.3V	OUT
7	SNS_VALVE_CAM	Valve cam sensor	IN
8	GND	GND	-

CN701 (Inner Cover Sensor / Ink Sensor / AB Sensor Multi)

No.	Signal name	Function	Input / Output
1	VSEN_3.3V	Power supply for sensor 3.3V	OUT
2	SNS_AB	AB sensor	IN
3	THERMO_LF	Temperature sensor signal	OUT
4	SNS_INK	Ink sensor	IN
5	GND	GND	-
6	VSEN_CDRS	Power supply for CDR sensor 5.5V	IN
7	SNS_CDR_G	Inner cover sensor	IN
8	GND	GND	-

CN702 (PE Bind Connector [ASF Cam / PE Sensor / LF Encoder / EJ Encoder])

No.	Signal name	Function	Input / Output
1	EJ_ENC_B	Eject encoder sensor phase B	IN
2	EJ_ENC_A	Eject encoder sensor phase A	IN
3	VSEN_3.3V	Power supply for sensor 3.3V	OUT
4	LF_ENC_B	Line feed encoder phase B	IN
5	APP_ENC_B	APP encoder phase B	IN
6	LF_ENC_A	Line feed encoder phase A	IN
7	APP_ENC_A	APP encoder phase A	IN
8	SNS_PE	Paper end sensor	IN
9	SNS_ASF_CAM	ASF cam sensor	IN
10	GND	GND	-

CN800 (Power Connector)

No.	Signal name	Function	Input / Output
1	PW_CONT	Power supply control signal	OUT
2	H_GND	Head GND	-
3	VH	Head power supply 24V	IN
4	M_GND	Motor GND	-
5	VM	Motor power supply 32V	IN

CN900 (LF Motor)

No.	Signal name	Function	Input / Output
1	LF_M	LF motor -	OUT
2	LF_MN	LF motor +	OUT

CN901 (Carriage Motor & APP Motor Multi)

No.	Signal name	Function	Input / Output
1	CR_MN	CR motor +	OUT
2	CR_M	CR motor -	OUT
3	AP_MN	APP motor +	OUT
4	AP_M	APP motor -	OUT

CN902 (Scanner [FB] Motor)

No.	Signal name	Function	Input / Output
1	FB_MN	Scanner motor +	OUT
2	FB_M	Scanner motor -	OUT

CN1000 (Operation Panel / LCD 2/2)

No.	Signal name	Function	Input / Output
1	GND	GND	-
2	POWER_SW	Power button	IN
3	STOP_RESET SW	Stop button	IN
4	POWER_LED	Power LED	OUT
5	ERROR_LED	Alarm LED	OUT
6	GND	GND	-
7	M_TXD	UA0_TXD	IN
8	M_RXD	UA0_RXD	OUT
9	GND	GND	-
10	3.3V Back Light	Backlight power supply 3.3V	OUT

CN1001 (Operation Panel / LCD 1/2)

No.	Signal name	Function	Input / Output
1	+5.5V	Power supply for WIFI LED 5.5V	OUT
2	GND	GND	-
3	PANEL_LVDS_DATA_P	PANEL_LVDS_DATA_P	BUS
4	PANEL_LVDS_DATA_M	PANEL_LVDS_DATA_M	BUS
5	GND	GND	-
6	PANEL_LVDS_CLK_P	PANEL_LVDS_CLK_P	BUS
7	PANEL_LVDS_CLK_M	PANEL_LVDS_CLK_M	BUS
8	GND	GND	-
9	PANEL_RSTX	RESET to panel	OUT
10	PO_TXD	UA1_RXD	OUT
11	PO_RXD	UA1_TXD	IN
12	PANEL_3.3V	Panel power supply 3.3V	OUT

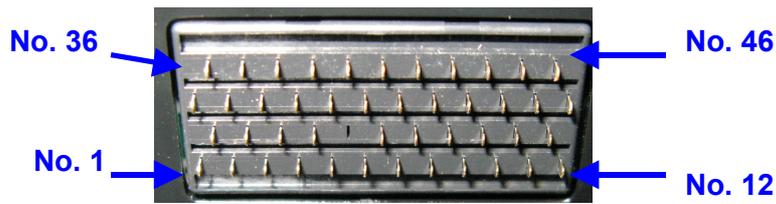
CN1100 (Scanner CIS I/F Connector)

No.	Signal name	Function	Input / Output
1	GND	Power return (GND)	-
2	MF_PW_SAVE2	Power down	IN
3	5.5V	VCC power 5.5V	-
4	5.5V	VLED anode common 5.5V	-
5	LED_B	LED cathode Blue	-
6	LED_G	LED cathode Green	-
7	LED_R	LED cathode Red	-
8	AF_SDIO	AFE serial I/F	IN
9	AF_SCK	AFE serial I/F	IN
10	AF_SENB	AFE serial I/F	IN
11	GND	Power return (GND)	-
12	AFE_MCLK	Master clock	IN
13	GND	Power return (GND)	-
14	AFE_HD	Line start pulse (Low Active)	IN
15	GND	Power return (GND)	-
16	LVDS_DATA_0P	Video data output 1 (LVDS+)	OUT
17	LVDS_DATA_0M	Video data output 1 (LVDS-)	OUT
18	GND	Power return (GND)	-
19	LVDS_DATA_1P	Video data output 2 (LVDS+)	OUT
20	LVDS_DATA_1M	Video data output 2 (LVDS-)	OUT
21	GND	Power return (GND)	-
22	LVDS_CLK_P	CKM video data sync clock (LVDS+)	OUT
23	LVDS_CLK_M	CKM video data sync clock (LVDS-)	OUT
24	GND	Power return (GND)	-

CN1101 (Scanner Motor [FB] Encoder Connector)

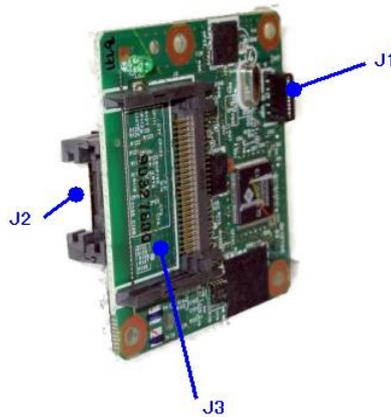
No.	Signal name	Function	Input / Output
1	FB_ENC_A	Scanner motor encoder sensor phase A	IN
2	FB_ENC_B	Scanner motor encoder sensor phase B	IN
3	VSEN_3.3V	3.3V	OUT
4	GND	GND	-

< Carriage Head Contact Pin >



No.	Signal name	Function	Input / Output
1,2,3,4,5	B_GNDH	Head ground	-
6,7	VSS	Logic ground	-
8	B_DATA_E_MS	E-line MS heater serial data	OUT
9	B_DATA_F_L	F-line L heater serial data	OUT
10	B_DIA	Diode sensor anode	-
11,12	A_GNDH	Head ground	-
13	B_DATA_B_MS	B-line MS heater serial data	OUT
14	B_DATA_A_EV	A-line EV heater serial data	OUT
15	B_DATA_C_L	C-line L heater serial data	OUT
16	B_HE1	Heater L heat enable	OUT
17	NC	No connection	-
18	CLK	Clock for serial data	OUT
19	B_DATA_D_EV	D-line EV heater serial data	OUT
20	B_DATA_F_MS	F-line MS heater serial data	OUT
21	B_DATA_E_L	E-line L heater serial data	OUT
22	A_DATA_OD (K2)	OD heater serial data	OUT
23	A_DATA_EV (K1)	EV heater serial data	OUT
24	B_DATA_C_MS	C-line MS heater serial data	OUT
25	B_DATA_A_OD	A-line OD heater serial data	OUT
26	B_DATA_B_L	B-line L heater serial data	OUT
27	B_HE3	Heater S heat enable	OUT
28	B_HE2	Heater L heat enable	OUT
29	E_SK	Head EEPROM SK signal	OUT
30	LT	Latch enable	OUT
31	E_DO	Head EEPROM DO signal	IN
32	A_HE	Heat enable	OUT
33	VDD	Power supply for Logic board	-
34	A_DIA	Diode sensor anode	-
35	B_DATA_D_OD	D-line OD heater serial data	OUT
36,37	B_VH_L	Power supply for L heater	-
38,39	B_VH_MS	Power supply for MS heater	-
40	VHT	Power supply for heater drive	-
41	E_CS	Head EEPROM CS signal	OUT
42	E_DI	Head EEPROM EI signal	OUT
43	B_HE4	Heater M heat enable	OUT
44	VDD	Power supply for logic board	-
45,46	A_VH	Power supply for heater	-

< Memory Card Board >



J1 (To Logic Board CN601)

No.	Signal name	Function	Input / Output
1	3.3V	Power supply	IN
2	INTX	Interrupt signal	OUT
3	GND	GND	-
4	Card_DETECT	Card detect INT from card	OUT
5	GND	GND	-
5	D+	D+ signal	BUS
6	D-	D- signal	BUS
7	5.0V	Power supply	IN
9	RESETX	Reset signal	IN

J2 (4 in 1 [SD / MMC / MS / MS DUO])

No.	Signal name	Function	Input / Output
1	MS_GND	MS GND	-
2	MS_VCC	Power supply for MS	IN
3	MS_SCLK	MS system clock	IN
4	MS_DATA3	MS data bus	BUS
5	MS_INSX	MS Insert	IN
6	MS_DATA2	MS data bus	BUS
7	MS_SDIO / MS_DATA0	MS data bus	BUS
8	MS_DATA1	MS data bus	BUS
9	MS_BS	MS bus state	IN
10	MS_GND	GND	-
11	SD_CDX	SD card detect	OUT
12	SD_WPSW	GND	-
13	Frame GND	GND	-
14	SD_DATA2	SD data bus	BUS
15	SD_CD / SD_DATA3	SD data bus	BUS
16	SD_CMD	SD command	BUS
17	SD_GND	SD GND	-
18	SD_VDD	+3.3V SD / MS	OUT
19	SD_CLK	SD clock	IN
20	SD_GND	SD GND	-
21	SD_DATA0	SD data bus	BUS

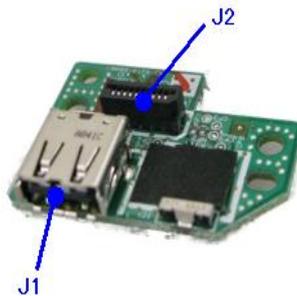
22	SD_DATA1	SD data bus	BUS
23	SD_WPSW / CD GND	SD write protect	IN

J3 (Compact Flash)

No.	Signal name	Function	Input / Output
1	GND	GND	-
2	CF_D3	CF 16-bit data bus 3	BUS
3	CF_D4	CF 16-bit data bus 4	BUS
4	CF_D5	CF 16-bit data bus 5	BUS
5	CF_D6	CF 16-bit data bus 6	BUS
6	CF_D7	CF 16-bit data bus 7	BUS
7	CF_CS0X	CF chip select	OUT
8	GND (CF_A10)	GND	-
9	GND (CF_ATASELX)	GND	-
10	GND (CF_A9)	GND	-
11	GND (CF_A8)	GND	-
12	GND (CF_A7)	GND	-
13	VCC	Power supply for CF	OUT
14	GND (CF_A6)	GND	-
15	GND (CF_A5)	GND	-
16	GND (CF_A4)	GND	-
17	GND (CF_A3)	GND	-
18	CF_A2	CF 24-bit address bus	BUS
19	CF_A1	CF 24-bit address bus	BUS
20	CF_A0	CF 24-bit address bus	BUS
21	CF_D0	CF 16-bit data bus 0	BUS
22	CF_D1	CF 16-bit data bus 1	BUS
23	CF_D2	CF 16-bit data bus 2	BUS
24	CF_IOCS16X	CF chip select / 16-bit in-out	BUS
25	CF_CD2X	CF card detect	OUT
26	CF_CD1X	CF card detect	OUT
27	CF_D11	CF 16-bit data bus 11	BUS
28	CF_D12	CF 16-bit data bus 12	BUS
29	CF_D13	CF 16-bit data bus 13	BUS
30	CF_D14	CF 16-bit data bus 14	BUS
31	CF_D15	CF 16-bit data bus 15	BUS
32	CF_CS1X	CF chip select	OUT
33	CF_VS1X	CF power voltage sense	IN
34	CF_IORDX	CF read strobe in-out	BUS
35	CF_IOWRX	CF write enable in-out	BUS
36	VCC (CF_WEX)	Power supply for CF	IN
37	CF_INTRQ	CF interrupt	IN
38	VCC	Power supply for CF	OUT
39	GND (CF_CSELX)	GND	-
40	CF_VS2X	CF power voltage sense	IN
41	CF_RESETX	CF reset	IN
42	CF_IORDY	CF ready in-out	BUS
43	CF_INPARKX	CF card response	IN
44	VCC (CF_REGX)	Power supply for CF	OUT

45	CF_DASPX	Not used	-
46	CF_PDIAGX	Not used	-
47	CF_D8	CF 16-bit data bus 8	BUS
48	CF_D9	CF 16-bit data bus 9	BUS
49	CF_D10	CF 16-bit data bus 10	BUS
50	GND	GND	-
51	FGND	GND	-
52	FGND	GND	-

< IrDA / PictBridge Board >



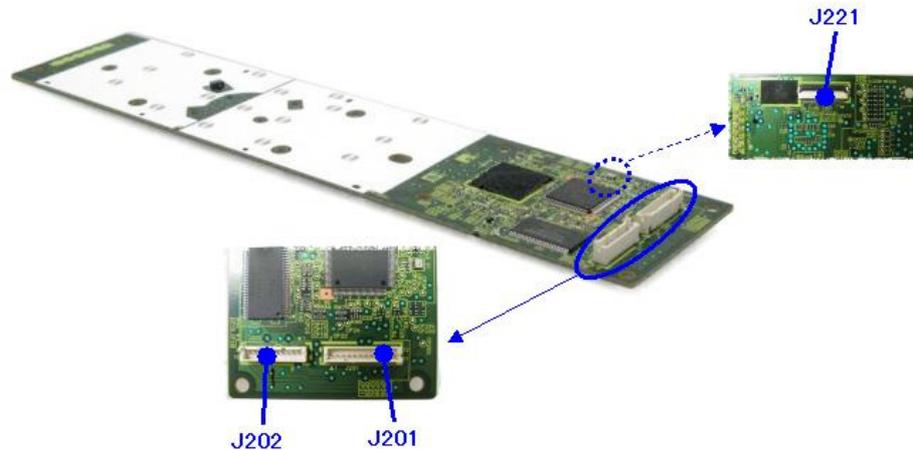
J1 (USB A Connector)

No.	Signal name	Function	Input / Output
1	PICT_VBUS	Power supply for PictBridge	OUT
2	PICT_D-	D- signal	BUS
3	PICT_D+	D+ signal	BUS
4	PICT_GND	GND	-
5	PICT_FG	GND	-
6	PICT_FG	GND	-

J2 (To Logic Board CN602)

No.	Signal name	Function	Input / Output
1	GND	GND	-
2	IR_MODE	IR mode	IN
3	+3.3V	IrDA power supply 3.3V	IN
4	IR_RXD	IrDA receive data	OUT
5	IR_TXD	IrDA transmission data	IN
6	GND	GND	-
7	D+	USB: D+ signal	BUS
8	D-	USB: D- signal	BUS
9	VBUS	VBUS power supply 5.5V	IN
10	GND	GND	-

< Operation Panel Board >



J201 (To Logic Board CN1001)

No.	Signal name	Function	Input / Output
1	5.5V	Power supply for WIFI LED 5.5V	IN
2	GND	GND	-
3	LVDS_DATA_P	PANEL LVDS_DATA_P	BUS
4	LVDS_DATA_N	PANEL_LVDS_DATA_N	BUS
5	GND	GND	-
6	LVDS_CLK_P	PANEL_LVDS_CLK_P	BUS
7	LVDS_CLK_N	PANEL_LVDS_CLK_N	BUS
8	GND	GND	-
9	PANEL_RSTX	Reset to panel	IN
10	TXD0	A/E_PO_RXD	IN
11	RXD0	A/E_PO_TXD	OUT
12	3.3V	Panel 3.3V	IN

J202 (To Logic Board CN1000)

No.	Signal name	Function	Input / Output
1	3.3V	3.3V	IN
2	GND	GND	-
3	M_RXD	A/E_M_TXD	OUT
4	M_TXD	A/E_M_RXD	OUT
5	GND	GND	-
6	STOP_SW	Stop button	OUT
7	ERROR_LED	Alarm LED	IN
8	POWER_LED	Power LED	IN
9	POW_SW	Power button	OUT
10	GND	GND	-

J221 (LCD Relay I/F)

No.	Signal name	Function	Input / Output
1	GND	GND	-
2	DIN0	Display data	BUS
3	DIN1	Display data	BUS
4	GND	GND	-
5	DIN2	Display data	BUS

6	DIN3	Display data	BUS
7	GND	GND	-
8	DIN4	Display data	BUS
9	DIN5	Display data	BUS
10	GND	GND	-
11	DIN6	Display data	BUS
12	DIN7	Display data	BUS
13	GND	GND	-
14	DCLK	Clock signal	BUS
15 to 16	GND	GND	-
17	VSYNC	Vertical sync input signal	BUS
18	HSYNC	Horizontal sync input signal	BUS
19	SCL	Clock for serial communication	BUS
20	SDI	Data for serial communication	BUS
21	CS	Chip select for serial communication	BUS
22	GND	GND	-
23	PWM0	Operation panel PCB (ASIC pulse width modulation)	IN
24	GND	GND	-
25 to 26	3.3V	Power supply for logic 3.3V	OUT
27	GND	GND	-
28	LCDBL_LED_AN	Anode for LCD BL	BUS
29	LCDBL_LED_CA	Cathode for LCD BL	BUS
30	GND	GND	-

< Wireless LAN Board >



Connector on WLAN Board (To Logic Board CN603)

No.	Signal name	Function	Input / Output
1	S-GND	GND	-
2	PPON WLAN	Power control WLAN	IN
3	D+	USB: D+ signal	BUS
4	D-	USB: D- signal	BUS
5	VBUS	NIC_VDD	IN
6	F-GND	GND	-