i550 / i850 / i950
Service Manual
Revision 0

Canon

QY8-1385-000

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, maintenance, and repair of products. This manual covers information applicable in all localities where this product is sold. For this reason, this manual may contain information that is not applicable to your locality.

Revision

This manual could include technical inaccuracies or typographical errors due to improvements or changes made to this product. When changes are made to the contents of this manual, Canon will release technical information as the need arises. When substantial changes are made to the contents of this manual over a long or short period, Canon will issue a revised edition of this manual.

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I. Manual Outline

This manual is divided into the following three parts to provide information necessary to service the i550, i850, and i950.

Part 1: Maintenance
This part describes information necessary for troubleshooting the i550, i850, and i950.

Part 2: Technical Reference
This part provides description of new technologies, etc., used in the i550, i850, and i950.

Part 3: Appendix
This part contains block diagrams, pin layouts, and product specification lists.

Reference

This manual does not provide sufficient information for disassembly and assembly.
Refer to the figures in the separate parts catalogue.

II. Table of Contents

Part 1
Maintenance

1. Periodic Replacement/Periodic Inspection/Life

<Periodic replacement>

Level	Periodic replacement
User	None
Service personnel	None

<Periodic inspection>

Level	Periodic inspection
User	None
Service personnel	None

<Life>

(1) Paper feed count:
- Main body -
<i550 / i850>
30,000 sheets (monochrome, 1,500 character standard text pattern printing)
10,000 sheets (printing each color at 7.5% duty)
<i950>
10,000 sheets (Pattern printing each color at 7.5% duty)
(2) 5 years

The life of this product is (1) or (2) above, which ever comes first.

- Print head life -
<i550 / i850>
30,000 sheets: monochrome printing (1,500 character standard text pattern printing)
10,000 sheets: color printing (pattern printing each color at 7.5% duty)
<i950>
9,000 sheets: Pattern printing each color at 7.5% duty (BK, Y, M, C) : 5,000 sheets
1,500 character standard pattern printing (BK) : 2,000 sheets
Photo image (6 colors) : 2,000 sheets

<Serial number location>

Carriage ribbon cable holder (visible when access cover is opened)

2. Troubleshooting List by Error/Symptom

Table 1-1 Operator Call Errors

Error codes are displayed on the monitor of the connected computer.

Start the status monitor on the host computer in order to display the error codes.

Orange Flash (Error Code)	Error description	Action	Assembly/disassembly precautions	Adjustment
2 (1000)	No paper error	Set paper and press the Resume key		
3 (1300)	Paper jam error	Remove paper and press the Resume key	- Be careful that spurs do not come off when removing paper	
4 (1601,1611, 1612,1613 1634*1,1635*1)	No ink error	Replace and set ink tank(s)	- Be careful of ink stains	
6 (1401)	No cartridge error	Install head or replace head/logic board/carriage	- Be careful of ink stains - Be careful of electrostatic damage	- Set waste ink counter (see 3.2.1)*1 - Set destination (see 3.3.2)
7 (1403,1405 1485*1)	Cartridge error	Replace head/carriage/logic board	- Be careful of ink stains - Be careful of electrostatic damage	- Set waste ink counter (see 3.2.1)*1 - Set destination (see 3.3.2)
8 (1700)	Waste ink full warning	Replace waste ink absorber	- Be careful of ink stains - Be careful of electrostatic damage	- Clear EEPROM (see 3.2.2)

*1: i950 only

Table 1-2 Service Call Errors

Error messages are displayed on the monitor of the connected computer.

Start the status monitor on the host computer in order to display the error messages.

Cyclical flash (Error Code)	Error description	Action	Assembly/disassembly precautions	Adjustment
2 (5100)	CR error	Replace code strip/carriage unit/logic board	- Be careful of electrostatic damage - Do not loosen or remove red screws - There must be no grease on code strip	- Apply grease (see 3.2.3) - Set waste ink counter (see 3.2.1)*2 - Set destination (see 3.3.2)
3 (6000)	LF error	Replace code wheel/LF encoder unit/logic board	- Be careful of electrostatic damage - Do not loosen or remove red screws - There must be no grease on code strip	- Apply grease (see 3.2.3) - Set waste ink counter (see 3.2.1)*2 - Set destination (see 3.3.2)
4 (5C00)	Recovery system error	Replace purge unit/logic board	- Be careful of ink stains - Be careful of electrostatic damage	- Set waste ink counter (see 3.2.1)*2 - Set destination (see 3.3.2)
6 (5400)	Internal temperature error *1	Replace logic board	- Be careful of electrostatic damage	- Set waste ink counter (see 3.2.1)*2 - Set destination (see 3.3.2)
7 (5B00)	Waste ink full error	Replace waste ink absorber/logic board	- Be careful of ink stains - Be careful of electrostatic damage - Do not loosen or remove red screws	- Clear EEPROM (see 3.2.2) - Set waste ink counter (see 3.2.1)*2 - Set destination (see 3.3.2)
8 (5200)	Head overheating error	Replace head/logic board	- Be careful of ink stains - Be careful of electrostatic damage	- Set waste ink counter (see 3.2.1)*2 - Set destination (see 3.3.2)
9 (6800)	EEPROM error	Replace logic board	- Be careful of electrostatic damage	- Set waste ink counter (see 3.2.1)*2 - Set destination (see 3.3.2)
10 (6100)	ROM error *2	Replace logic board	- Be careful of electrostatic damage	- Set waste ink counter (see 3.2.1)*2 - Set destination (see 3.3.2)
11 (6300)	RAM error *2	Replace logic board	- Be careful of electrostatic damage	- Set waste ink counter (see 3.2.1)*2 - Set destination (see 3.3.2)
13	Other hardware error *2	Replace head/logic board	- Be careful of ink stains - Be careful of electrostatic damage	- Set waste ink counter (see 3.2.1)*2 - Set destination (see 3.3.2)
LED ON*1 (6800)	RAM error	Replace logic board	- Be careful of electrostatic damage	- Set waste ink counter (see 3.2.1)*2 - Set destination (see 3.3.2)

*1: i550/i850 only *2: i950 only

Table 1-3 Troubleshooting by Symptom

	Symptom	Action	Assembly/disassembly precautions	Adjustment
Operation error	Does not power on Power goes off immediately after power on	Replace AC adapter/logic board	- Be careful of electrostatic damage	- Set waste ink counter (see 3.2.1)*[1] - Set destination (see 3.3.2)
	Head not recognized Does not return to home position	Remove/install print head or replace print head/carriage unit	- Be careful of ink stains - Do not loosen or remove red screws - There must be no grease on code strip	
	Abnormal noise	Remove debris/correct loose parts		
	Printing stops before completing	Replace logic board	- Be careful of electrostatic damage	- Set waste ink counter (see 3.2.1)*[1] - Set destination (see 3.3.2)
Feed error	Multiple sheets are fed together	Replace ASF		
	Paper does not feed	Remove debris/replace ASF	- Be careful that spurs do not come off	
	Paper skews	Remove debris/adjust paper guide position		
Print result error	Does not print at all/no color	Replace print head/ink tank/logic board/purge unit	- Be careful of ink stains - Be careful of electrostatic damage	- Set waste ink counter (see 3.2.1)*[1] - Set destination (see 3.3.2)
	Scratches or white streaks appear even after cleaning Lines not in data printed	Remove/install print head or replace print head/ink tank/purge unit/carriage unit	- Be careful of ink stains - Do not loosen or remove red screws - There must be no grease on code strip	
	Paper is soiled	Pass few sheets of paper/clean paper path with cloth or replace platen absorber/ purge unit	- Be careful of ink stains	
	Spur tracks appear	Replace platen unit	- Be careful not to bend spur tips	
	Missing lines	Replace ink tank/head	- Be careful of ink stains	
	Bad coloring	Replace print head	- Be careful of ink stains	
	Printing overlapped	Replace platen unit		
	Black ink not ejected	Refresh print head/replace print head	- Be careful of ink stains	
	Figures/characters stretched	Clean grease on code strip or replace carriage unit	- Do not loosen or remove red screws - There must be no grease on code strip	

*[1]: i950 only

3. Repair Details

3.1 Precautions

3.1.1 Precautions regarding ink stains

Be careful not to touch the ink path and stain the printer, work bench, hand, or clothes with ink during repair.

3.1.2 Precautions when releasing the carriage lock

The carriage locks at the capping position when the power is turned off normally, with the cartridge installed in the carriage.
If the printer does not operate normally, manually release the carriage lock as necessary.
Turn the gear in the figure in the direction of the arrow to release the carriage lock.

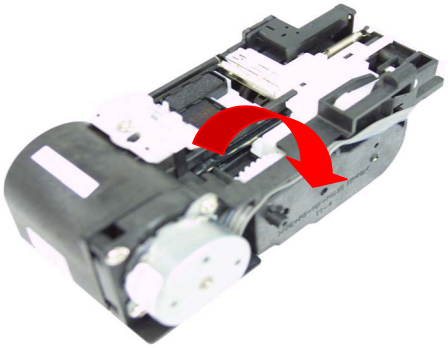


Figure 1-1 Releasing Carriage Lock

3.1.3 Precautions when removing/installing tap screws

Tap screws are used to secure the printer unit and the base. When a tap screw is removed, mold scrap may adhere to the screw threads, which can damage the mold-side threads when the tap-screw is re-fastened. Therefore, remove the mold scraps adhered to the screw or use a new screw when re-installing.

3.1.4 Code strip handling precautions

1) Do not apply grease to the code strip.
   If grease contacts the code strip, the code strip slits may become unreadable, causing errors.
   If grease contacts the code strip, wipe off thoroughly with alcohol.
2) Do not bend or scratch the code strip.
   Replace the code strip if it is scratched, or bent until it is white.
3) Extend the leaf spring when attaching or removing the code strip.
   The code strip is held taut and secured by the leaf spring.
   Note that if the spring is stretched too far in the direction of the arrow, it will not properly re-secure the code strip.
   Be careful not to pull too hard on the code strip when installing or removing it.

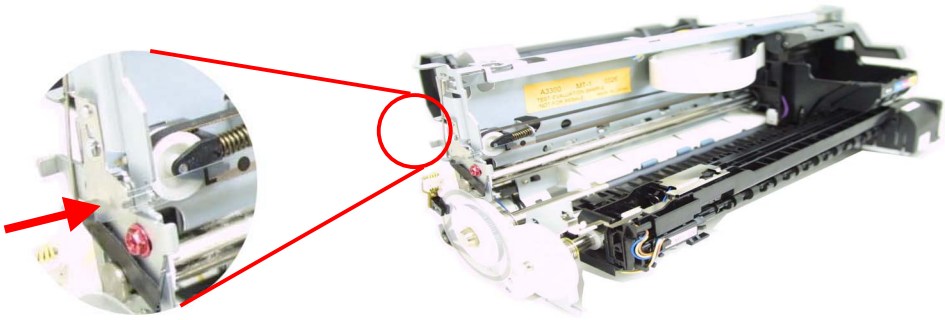


Figure 1-2 Code Strip

3.1.5 Do not loosen or remove red screws

Do not loosen or remove the red screws below because they cannot be adjusted in the field.
(a) Head gap adjustment red screw x 2 (one on each side)
(b) Paper feed motor anchor screw x 2

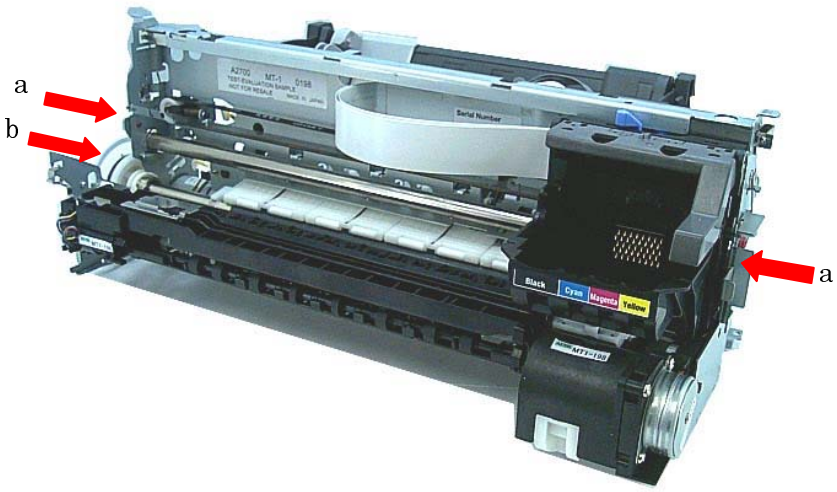


Figure 1-3 Do Not Loosen or Remove Red Screws

3.1.6 Logic board removal precautions

The Logic Board can be damaged due to short circuiting during removal.
When removing the Logic Board, unplug the power cord and allow the unit to sit for approximately 1 minute to discharge the capacitor.

3.2 Adjustments

3.2.1 Waste ink counter setting

(1) When replacing the logic board, replace the waste ink absorber, depending on the value of the waste ink counter.
Use the following table as a guide to replacement.

Table 1-4 Waste Ink Absorber Replacement Timing and Waste Ink Counter Setting

Waste ink counter setting	i550 / i850 / i950
0 - 7	Clear waste ink counter
7 - 100	Clear waste ink counter and replace waste ink absorber

Print the EEPROM information in service mode to check the waste ink count.

(2) PIXUS 950i waste ink counter clearing method
After selecting the waste ink counter setting via the service mode function (for details, refer to 3.3.2), press the Power button. Then, without pressing the Resume button, press the Power button once again.

3.2.2 Resetting EEPROM

When the EEPROM is reset, the entire contents of the EEPROM is cleared (excluding the following items).
<i550 / i850>
- USB-S/N
- Waste ink counter

<i950>
- USB-S/N

3.2.3 Applying grease (oil)

After disassembly/assembly, apply special tool grease at the locations shown below.
Apply a thin layer of grease using a flat brush.

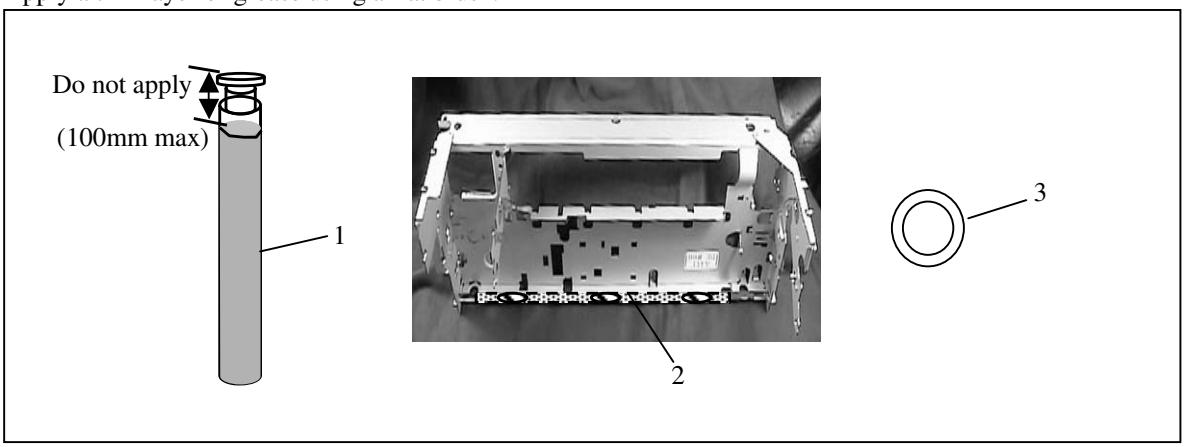


Figure 1-4 Applying Grease

i550 / i850

Location	Grease/Oil name	Amount
1. Carriage shaft circumference	Floil KG107A	200 - 400mg
2. CR slider, selector lever sliding surface	Floil KG107A	27.5±7.5 mg

i950

Location	Grease/Oil name	Amount
1. Carriage shaft circumference	EU-1	80±30 mg
2. CR slider, selector lever sliding surface	Floil KG107A	27.5±7.5 mg
3. Carriage oil pad*[1]	EU-1	100±10 mg

3.3 Settings

3.3.1 Standalone printer operation

This printer has an offline mode which allows the printer operation without connection to a computer.
With the printer powered ON, press and hold the Resume button until the green indicator flashes the specified number of times to start each operation, and then release the Resume button to execute the function.

LED flash	Operation	Remark
1	Cleaning	
2	Nozzle check pattern print	Set A4 size or larger paper and print
3	Roller cleaning	Clean without paper and then clean with paper (A4 or larger) set

3.3.2 Service mode functions

This printer has a Service mode to set service only settings and output test prints. The Service mode can be entered using the control panel.
<Service mode operation list>

1) With the printer power OFF, while pressing the Resume button, press the Power button. (Do not release the power button.)
2) While pressing the Power button, release the Resume button, press the Resume button again twice, and then release the Resume button and Power button.
3) The green indicator flashes during initialization.
   When the indicator stops flashing and remains on, press the Resume button the specified number of times to select the function.
   (The indicator toggles between orange and green each time the Resume button is pressed.)
4) After selecting the function, press the Power button, and the green indicator will light, and the function will be executed.

<i550/i850 Service Mode>

Count	LED	Function	Remark
0	Green	Power off	When there is no head, the carriage returns to the home position and locks
1	Orange	Service test print	
2	Green	EEPROM information print	
3	Orange	EEPROM initialization	Destination is set to overseas during EEPROM initialization
4	Green	Clear waste ink counter	Clear waste ink counter
5	Orange	Destination setting	After selecting a function press the Resume button (1: Overseas, 2: Domestic)
6	Green	Head refreshing	Clean both BK/CL ink
7	Orange		Not used for service
8	Green		Not used for service
9	Orange		Not used for service
10	Green	Return to selection menu	

<i950 Service Mode>

Count	LED	Function	Remark
0	Green	Power off	When there is no head, the carriage returns to the home position and locks
1	Orange	Service test print	
2	Green	EEPROM information print	
3	Orange	EEPROM initialization	Destination becomes overseas during EEPROM initialization
4	Green	Waste ink counter setting	Clear waste ink counter (see 3.2.1 Waste ink counter setting)
5	Orange	Destination setting	After selecting a function press the Resume button (0: Domestic, 1: Overseas)
6	Green	Default registration adjustment pattern	Not used for service
7	Orange	Default registration adjustment setting	Not used for service
8	Green	Roller cleaning	ASF paper feed roller cleaning (rotate ASF 10 times)
9	Orange		Not used for service
10	Green		Not used for service
11	Orange		Not used for service
12	Green	LF check pattern	Not used for service
13	Orange	Return to selection menu	

(Press the Power button to cancel during printing)

3.3.3 Test print sample

(1) i550

Test print sample

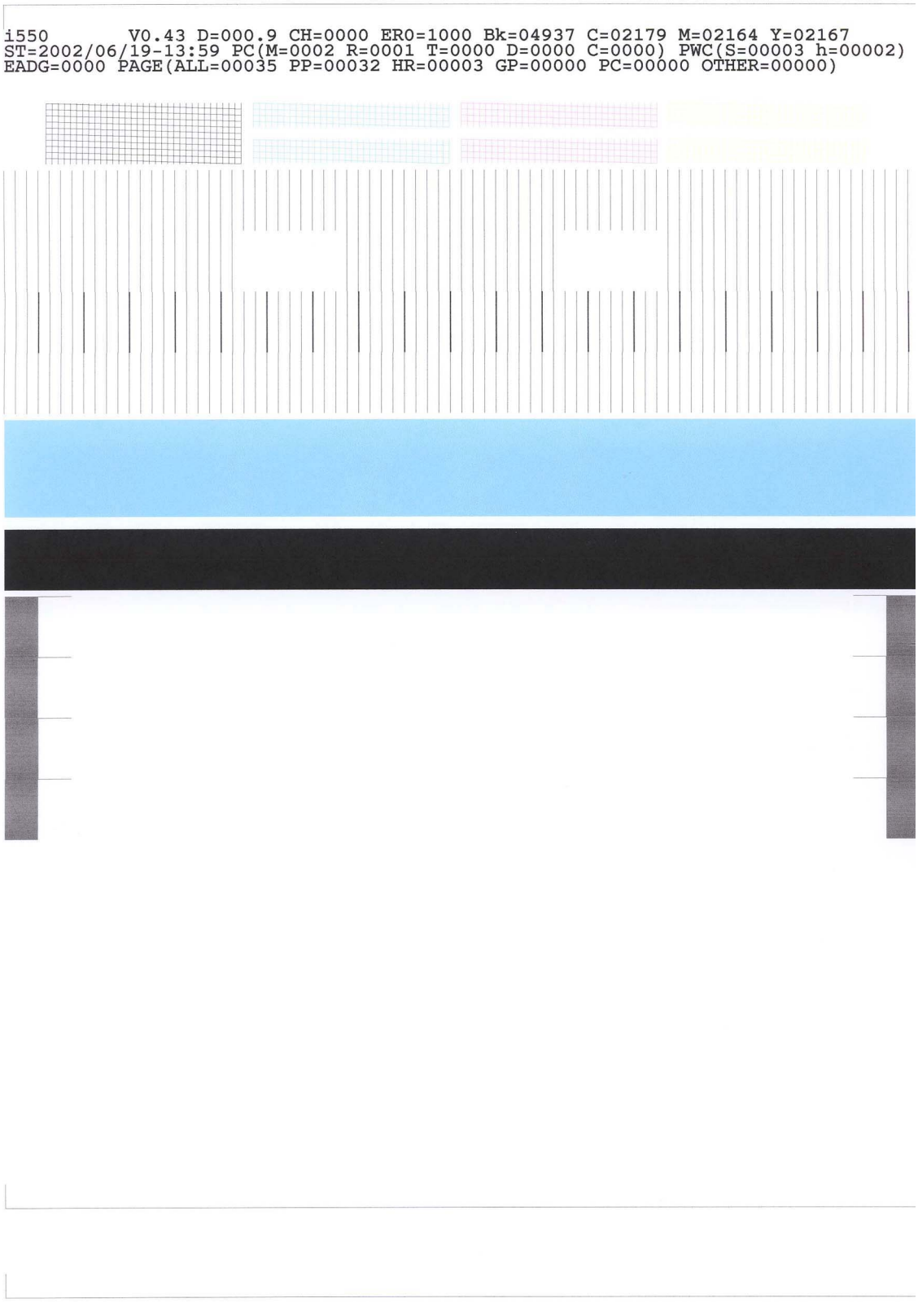


Figure 1-5 Service Test Print Sample (i550)

(1) i850

Test print sample

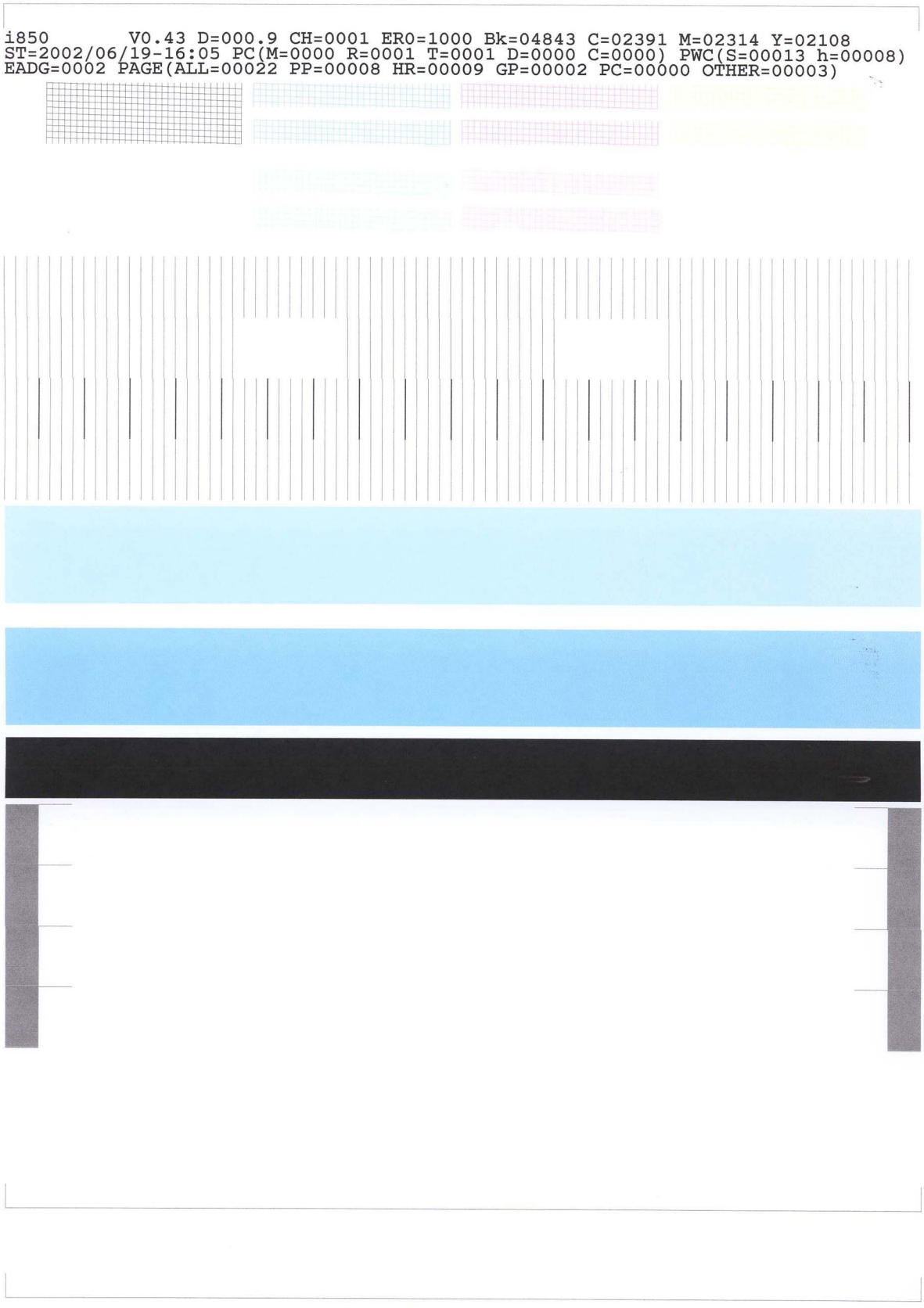


Figure 1-6 Service Test Print Sample (i850)

(1) i950

Test print sample

Figure 1-7 Service Test Print Sample (i950)

3.3.4 Printing EEPROM information

EEPROM print prints the content of the printer internal EEPROM and the EEPROM in the print head.

The resulting output can be used to check the printer settings and data.

<i550 / i850>

[Print Example]
i550 V0.01 D=000.0 Page=00000 CH=00000 Bk(00) Cl(+2)
Head TempBK=18.5 Head TempC=17.5 Env Temp=30.0 FF(3F 3F 3F)
PC(M=0000 R=0000 T=0000 D=0000 C=0000) Bk=00000 C=00000 M=00000 Y=00000
WP=0000 IC(BK=0 C=0 M=1 Y=0) CT(BK=00000 Y=00000 M=00000 C=00000)
USB=(BCDEFG) ER(TIME=2002/00/00-00:00 ER0=1000 ER1=5100 ER2=5200 ER3=1000)
UR(C=000 BK=000 BK-C=+02 Y=000 M=000 G=+01 H=-01) CDR=(-00005,-000029) *[1]
ST=2002/00/00-00:00 PWC(S=00000 h=00000) CN(USB=1 1284=0) EDGE=00000
PAGE(ALL=00000 PP=00000 HR=00000 GP=00000 MP=00000 SP=00000 PC=00000 OTHER=00000)

[Print Item Name]
1: Model 2: ROM version 3: Waste ink capacity 4: Print count 5: Head installation count 6: Bidirectional registration (black, color) 7: Head temperature (black, color) 8: Internal temperature 9: Process inspection information 10: Recovery operation count (MRTDC) 11: Dot count (Bk, C, M, Y) 12: Wipe count 13: Ink (Yes=0, No=1) 14: Ink removal/installation count (Bk, Y, M, C) 15: USB serial (6 characters) 16: Operator call/service call log (time, log 0.1.2.3) 17: User registration adjustment value: odd⇔even (C⇔C, Bk⇔Bk, Bk⇔C, Y⇔Y, M⇔Ye, G, H) 18: CDR compensation*[1] 19: Installed date 20: Power on count (hard/soft) 21: Connection I/F (USB1284) 22: Borderless printing count 23: Paper pass count (all, plain paper, high resolution paper, glossy photo paper, matte photo paper, photo paper plus glossy, post card, others)

*[1] Not used because it is for PIXUS 850i Japanese model only

<i950>

[Print Example]
i950 V0.01 S/N(000000) BK(-1) D=000.00% FA=3F 3F 3F CDR(000,000) *[1]
CH=0000 CT(C=0000 CL=0000 K=0000 Y=0000 ML=0000 M=0000
Page=0000 ED(00000/00000/00000) OE(00000/00000) CD=00000*[1]
SV(0000/0000) OP(0000/0000/0000)
UR(Ce=+01 Co=-01 CLe=+01 CLo=+01 Ke=+01 Ko=+01 Ye=+01 Yo=+01)
(MLe=+10 MLo=+10 Me=+10 Mo=+10)
DIR((C=000 LC=000 K=000 Y=000 ML=000 M=000)
PT=2002/06/11-10:30 ST=2002/06/11 LP=2002/06/11 PD=0 IF=0 0 AP=000
DC(C=000 CL=000 K=000 Y=000 ML=000 M=000)
PC(5D=00000 DC=00000 MN=00000 20D=000 RF=000 SH=000) OT=000

[Print Item Name]
1: Model 2: ROM version 3: Serial no. 4: Bidirectional registration 5: Waste ink capacity 6: Process inspection information 7: CDR compensation*[1] 8: Head installation count 9: Ink removal/installation count (C, CL, K, Y, ML, M) 10: Total paper pass count 11: Paper pass count (normal/special/post card) 12: No border paper pass count (post card/other) 13: CDR paper pass count*[1] 14: Service call log (log 0.1) 15: Operator call log (log 0.1.2) 16: User registration adjustment value (Ce, Co, Cle, Clo, Ke, Ko, Ye, Yo)
17: User registration adjustment value (Mle, MLo, Me, Mo) 18: Bidirectional registration (C, LC, K, Y, ML, M)
19: Last suction time 20: Installed time 21: Last suction date 22: Page delay 23: USB connection log (1.1/2.0) 24: Auto power on 25: Dot count (C, CL, K, Y, ML, M) 26: Suction count (5 day timer/dot count/manual/20 day timer/refresh/shipment suction/cap open)

*[1] Not used - reserved for PIXUS 950i Japanese model only

3.4 Verification

(1) Print the nozzle check pattern when replacing the print head, sheet feeder unit, purge unit, or carriage unit.

(2) Check the connection with PC and print the nozzle check pattern when replacing the PCB.

4. Printer Transportation Method

This section describes the procedures for transporting the printer (for example, when returning after repair).

(1) Keep the print head in the carriage.

(2) Turn off the power and ensure that it is properly capped at home position.

If the print head is left alone by itself, the ink may solidify.
Therefore, keep the print head (with ink tank) in the carriage even when transporting.
Also, secure the carriage at home position to prevent it from moving and applying stress to the encoder film during transportation.

If the print head must be transported by itself, perform the following:

1. Install ink tanks for each color. (to prevent nozzles from drying)
2. Install the orange protective cap on the print head.
   (to prevent damage to the print head due to shock etc.)

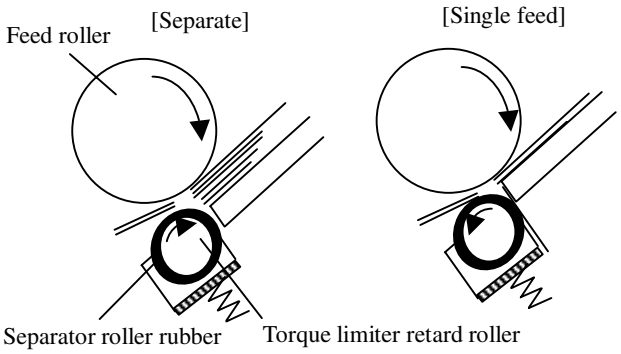
Part 2
Technical Reference

1. New Technologies

ASF features

- Retard separation method
- Stacking limit: 150 sheets (SK paper)
- Stacking height: 13mm
- Paper feed roller diameter: ϕ20 round roller (through axis type)
- Separation roller diameter: ϕ14
- Separation roller retracts after paper feed
- Return claw structure
- Reduced noise
- Reduced paper curl
- Reduced double feed

Torque limiter retard roller method



NOTE

- May skew easily, as the pickup roller is only on one side.
- The sheet feeder unit pressure plate is easily deformed during storage because the pressure plate spring is only on one side.
- Separation roller rubber wears easily.

2. Cleaning Mode and Suction Amount

Print head cleaning is performed effectively and efficiently depending on conditions in order to prevent print errors caused by bubble, dust, or ink clogging.

Cleaning is performed before starting to print except at the following timing:

- Dot count suction: Performed after paper ejection
- Manual cleaning/refreshing: Performed during operation
- Unit delivery: Performed when access cover is closed

Table 2-1 Cleaning Mode List (i550/i850)

Condition	Details	Suction amount BK/CL (g)
Manual cleaning	Panel operation and printer driver operation	0.14/0.36
Refreshing	Printer driver operation	1.58/0.72
Timer suction	If 24 to 336 hours have elapsed since previous suction (BK). If 120 to 336 hours have elapsed since previous suction.	0.14/0.36
Long timer suction I	If 336 hours or more have elapsed since previous suction.	0.45/0.72
Long timer suction II	If 1080 hours or more have elapsed since previous suction.	0.78/0.72
Long timer suction III	If 2160 hours or more have elapsed since previous suction.	1.58/0.72
Long timer suction IV	If 4320 hours or more have elapsed since previous suction.	1.58/0.72
Dot count suction	When prescribed dot count since the last suction is reached	0.14/0.36
When replacing print head	When print head is removed/installed	0.45/1.08
When replacing ink tank	Ink sensor detects that ink is present in the ink tank →That is the state changed from no ink in the ink tank	1.58/0.72
At delivery or during first head position adjustment	Suction when head is first installed after factory shipment	0.45/1.08
Uncapped when Soft ON	When capping was not performed properly during last power off	0.30/0.72

Table 2-2 Cleaning Mode List (i950)

Condition	Details	Suction amount BK/CL (g)
Manual cleaning	Panel operation and printer driver operation	0.89
Refreshing	Printer driver operation	2.68
120 hour timer suction	If 120 to 480 hours have elapsed since previous suction.	0.89
480 hour timer suction	If 480 hours or more have elapsed since previous suction.	1.34
Dot count suction	When prescribed dot count since the last suction is reached	1.1
When replacing print head	When print head is removed/installed	2.68
When replacing ink tank	Ink sensor detects that ink is present in the ink tank →That is the state changed from no ink in the ink tank	1.34
At delivery	Suction when head is first installed after factory shipment	2.68
Uncapped when Soft ON	When capping was not performed properly during last power off	2.68
After hardware power ON (If time is not checked)	Standalone test print etc.	1.34
Cap open (When cap has been open for 30 minutes or more)	When uncapped for more than 30 minutes during printing or in standby	0.89

*[1] Suction amount is the total for 6 colors