Model: PRIPORT PEARL	**Date:** 31-Dec-98	**No: 01**
Subject: Pressure Cylinder Maintenance Cycle	**Prepared by:** H. Kokubo, Priport Service Planning Section	

Classification:

☐ Troubleshooting	☐ Part information	☐ Action required
☐ Mechanical	☐ Electrical	☒ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☐ Other ( )		

Model Name:
PEARL: Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, SVN 3350DNP

The Preventive Maintenance section in the service manual (page 5-1) shows the pressure cylinder and the paper clamper as consumable PM items. It states that the parts should be replaced every 1.2M copies or every 2 years.

In fact, they do not have to be replaced periodically, but in emergency cases only.

Correct the maintenance method for the pressure cylinder and paper clamper in your service manual as follows:

SECTION 5. PREVENTIVE MAINTENANCE

Maintanance Table

C: Clean, R: Replace, L: Lubricate, A: Adjust

Interval / Item	Time				Print Counter					EM	NOTE
	6M	1Y	2Y	3Y	300K	600K	1M	1.2M	2M		
Pressure Cylinder	C	C	C	C				C			Damp Cloth
Paper Clamper (on Pressure Cylinder)	C	C	C	C				C			Dry Cloth

Model: PRIPORT PEARL	**Date:** 31-Dec-98	**No: 02**
Subject: Master Feed Jams or Cutter Errors	**Prepared by:** H. Kokubo, Priport Service Planning Section	

Classification:

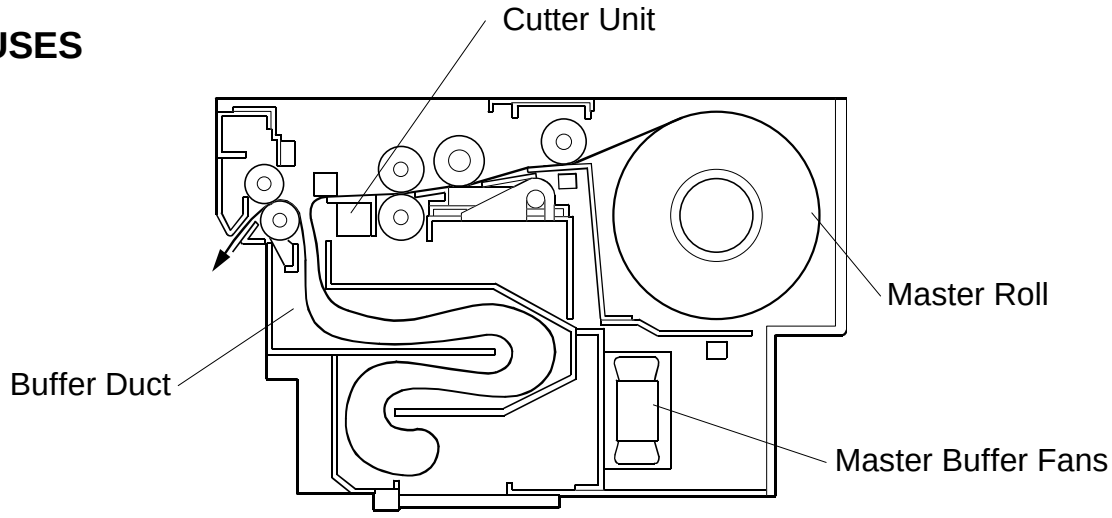
☒ Troubleshooting	☒ Part information	☐ Action required
☐ Mechanical	☐ Electrical	☐ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☐ Other ( )		

Model Name:
PEARL: Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, SVN 3350DNP

SYMPTOMS

- The master is wrapped around the rollers in the master making unit.
- The master jams during the master making process, and it does not reach the drum master clamper.
- The master wrapped around the drum is folded, and it does not cover the drum surface properly.
- The master is not cut at all. Even if the master is wrapped around the drum, the trailing edge of the master has a roughly-cut edge. This looks like a cutter unit problem.

CAUSES



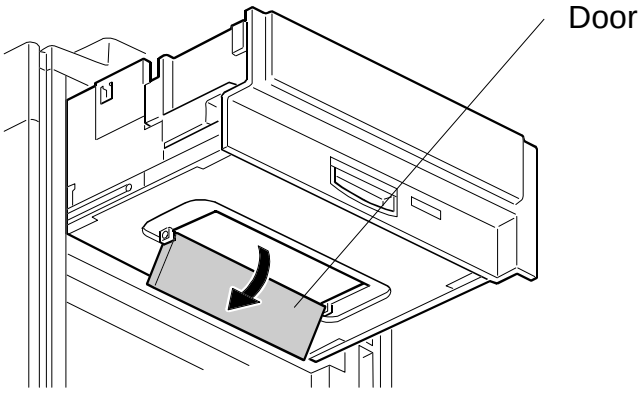
CASE 1:

Small pieces of torn master are sucked into the master buffer duct, and the suction (generated by the three buffer fans) weakens. As a result, the master is not guided properly into the buffer duct. This can occur even if a tiny piece of master gets caught in the buffer fans.

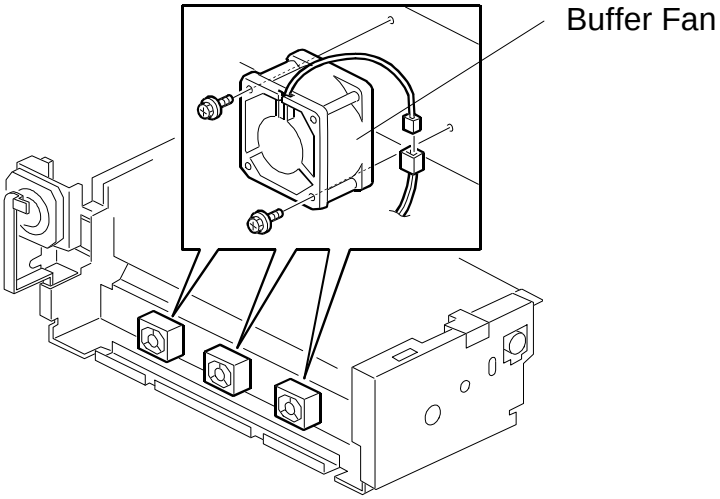
CASE 2

Due to heavy static electricity, the master is not guided into the buffer fans. This problem is especially likely when the master roll has almost run out and the diameter of the roll has become narrow.

SOLUTION 1



1. First, slide out the master making unit and check if there is no master pieces in the buffer duct by opening the small door in the bottom of the unit.



2. Remove the exterior cover of the unit, and check if any master pieces are caught in the buffer fans.

⚠CAUTION
A tiny piece of master can cause the problem. Remove the three fans by loosening the screws, and check if there are anypieces of master.

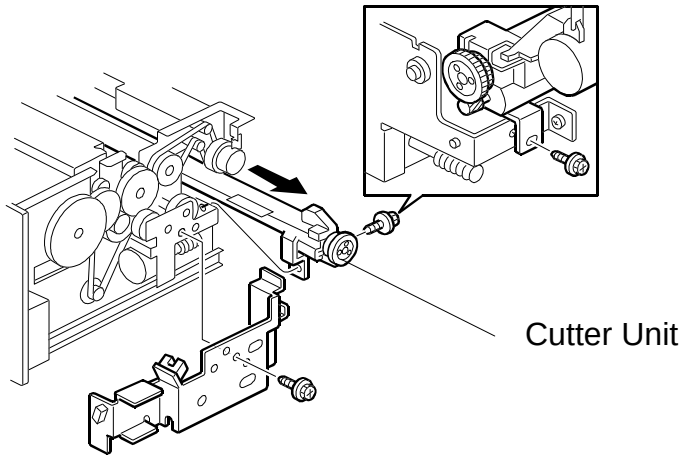
SOLUTION 2

To ensure that the master is guided into the buffer duct, the following parts have been registered as service parts.

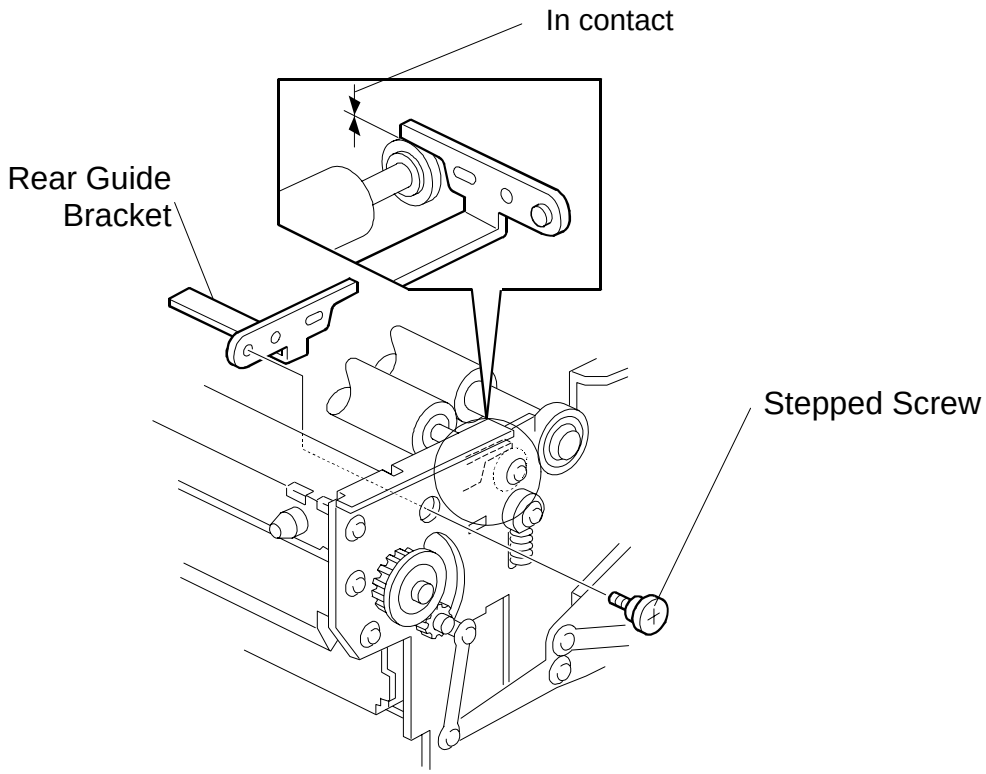
- **Anti-static Brush - 310: C229 2071**
- **Master Guide Kit: C230 2175**

NOTE: 1) We recommend that you install these two parts at the same time for the best effect.
2) The kit (#C2302175) contains the front guide bracket (#C2302176), rear guide bracket (#C2302177), and two stepped screws (2 x #C2302178).
3) These parts were implemented into production from December 1998.

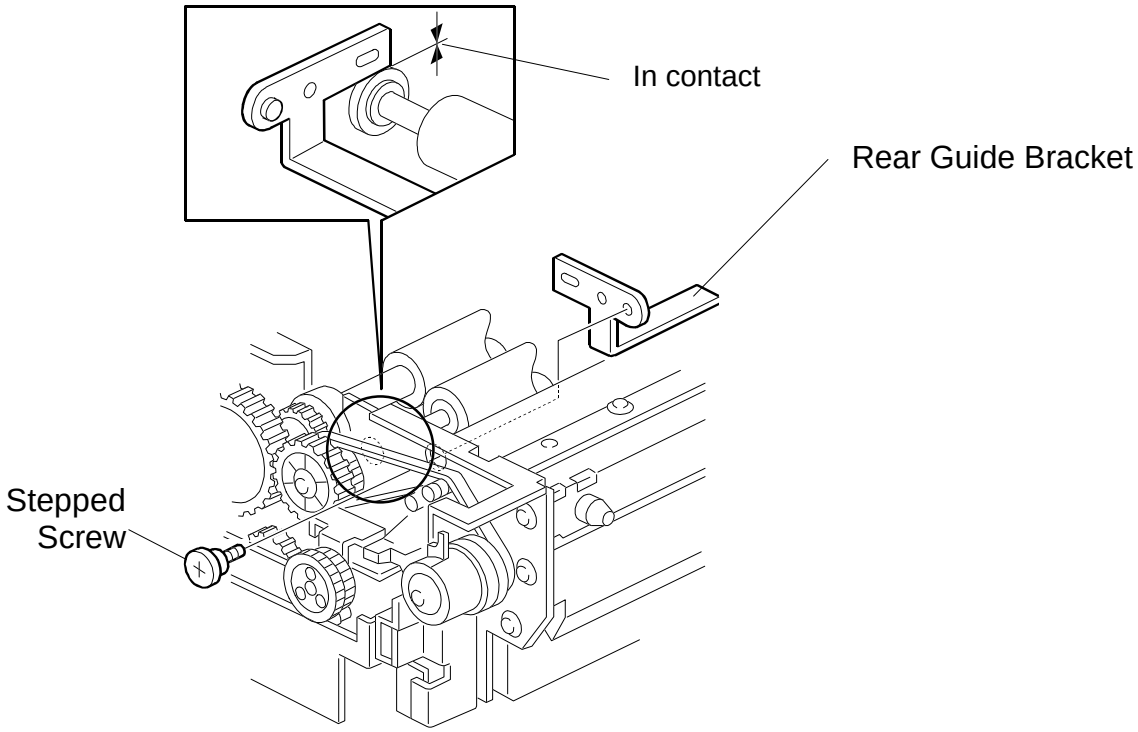
The following is the installation procedure for the parts.



1. Remove the cutter unit. (For the removal procedure, refer to the service manual.)

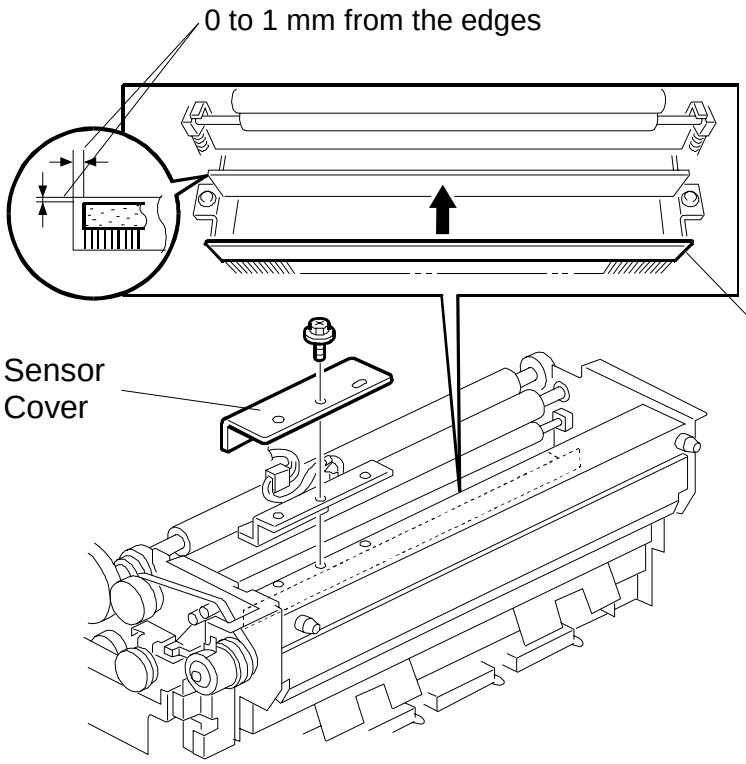


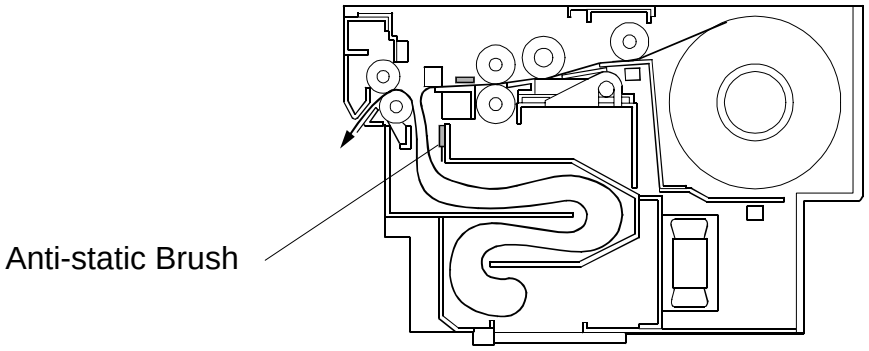
2. Install the front guide bracket (in the operation side of the unit) using the stepped screw, as shown above.



3. Install the rear guide bracket (in the non-operation side of the unit) using the stepped screw, as shown above.

CAUTION: 1) The two brackets are different. Make sure to install them in the correct positions by referring to the diagrams above.
2) Make sure that both brackets are in contact with the flanges of the ball bearings at each end of the roller. (See diagram.)





- Cross section -

4. Remove the master edge sensor cover (one screw).
5. Wipe the area where the anti-static brush is installed using a cloth dampened with alcohol.

   NOTE: This is to remove any oil or contamination.
6. Stick the anti-static brush in place as shown above.

   CAUTION: 1) Install the part by referring to the distance from the edges of the metal plate. See the upper diagram.
   2) The tips of the brush bristles must not protrude below the bottom edge of the bracket.
7. Reassemble the machine.

Model: PRIPORT PEARL	**Date:** 15-Jun-99	**No: RC229003**
Subject: Image Density Improvement - New Printing Pressure Standard -	**Prepared by:** H. Kokubo, Priport Service Planning Section	

Classification:

☒ Troubleshooting	☒ Part information	☐ Action required
☐ Mechanical	☐ Electrical	☒ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☐ Other ( )		

Model Name:
PEARL: Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, SVN 3350DNP

BACKGROUND

The copy image quality of the Pearl has been designed to achieve a better balance between higher image density on the front and less “ink set-off” on the reverse side of copies.

On the other hand, after launching the Pearl in the marketplace, we realized that there was a stronger demand for higher image density than we expected, especially in solid-fill image areas.

Increasing the image density on the front of copies is not easy for Priport machines since we must consider less “ink set-off” at the same time. We found that the image density improved using a combination of the following two methods:

- Increasing the printing pressure to 16 kgf (from 14 kgf, the current default setting).
- Optimizing the printing speed at the beginning of printing to prevent paper wrapping jams that are likely to occur when increasing the printing pressure. (A firmware update is necessary for this.)

Details describing these two methods are in the “Solution” section on the next page.

NOTE: Increasing the thermal head energy using an SP mode is the usual method for improving image density on Priport machines. (Note that this means changing the supply timing pulse width with an SP mode, **without** changing the input voltage to the thermal head. Do not change the voltage, usually adjustable by the potentiometer on the PSU, for any reason to avoid damaging the thermal head.) We studied this matter for the Pearl, however there was no significant improvement. Increasing the energy just resulted in increasing “ink set-off” on the back side.

Model: PRIPORT PEARL	Date: 15-Jun-99	No: RC229003

SOLUTION

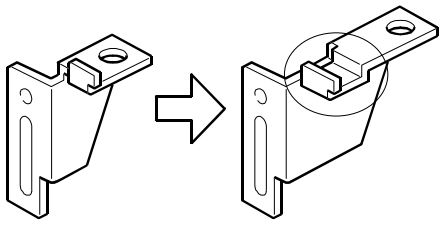
1. Increasing the printing pressure

To achieve better image quality, we have changed the factory setting for the printing pressure. From the first production runs in **May 1999**, the printing pressure has been set at 16 kgf. (Previously, it was 14 kgf.)

Even in the previously manufactured machines, the printing pressure could be increased up to 16 kgf by field technicians in the field. However, 16 kgf was the maximum value that could be set and there was no further allowance for adjustment (in a higher-pressure direction). To apply a little allowance to increase the pressure even after changing the factory setting, we also changed the two brackets which hold the printing pressure springs at the front and rear. The new bracket allows adjustment up to 17 kgf.

The new brackets were also applied from May 1999 production. The shapes of the old and new brackets differ as shown below. Therefore, you can identify whether the old or new type is installed in the machine.

- The new bracket shape -



Old New

- Details of the modification -

The part numbers for the front and rear spring brackets have been changed as follows:

Old #	New #	Description	Qty	Int	Page	Index
C229 3270	C229 3275	Front Spring Bracket	1 - 1	X/X	41	4
C229 3271	C229 3276	Rear Spring Bracket	1 - 1	X/X	41	24

* The front and rear brackets are interchangeable ONLY in sets.

Note that the adjustment standard for the printing pressure mentioned in the service manual (page 6-80) must be changed. For the adjustment procedure, see the “Printing Pressure Adjustment Procedure (with a New Standard Value)” section.

2. Firmware update

Increasing the printing pressure increases paper wrapping jams (paper wraps around the drum) compared with the old printing pressure (14 kgf). This is because the amount of ink transferred to the paper increased because of the higher printing pressure.

NOTE: This problem does not occur when normal paper (80 g/m^2 or 20 lbs) is used because normal paper has sufficient stiffness. The problem is more likely to occur when thin paper is used.

This type of jam usually occurs at the beginning of printing, when the drum rotation speed is 30 rpm (equivalent to the printing speed). The largest amount of ink is transferred to the paper at this time. While the printing speed slows, the paper tends to stick around the drum and causes a jam.

NOTE: 1) At the beginning of the printing process, the printing speed increases incrementally up to the specified printing speed. For instance, when 90 cpm (the default printing speed) is selected, the first copy is fed with 30 rpm (drum rotation speed). Then, it increases systematically to 60, 75, then 90 rpm. (Jams were not observed at speeds higher than 30 rpm.)
2) A drum rotation speed of 30 rpm is not used for a normal printing run. That speed is used only at the beginning of the printing process.

The firmware has been changed to counter this situation. The new firmware can skip the 30-rpm printing speed by using the newly added SP mode, SP2-125. (When the firmware skips the 30-rpm level, the speed starts from 60 and increases to 75 and then 90 rpm. Details are on the next page.)

The firmware modification was applied in combination with the new brackets (from May 1999 production).

- Firmware Modification Details -

Old #	New #	Description	Qty	Int	Page	Index
C229 5114	C229 5134-C	Firmware Update ROM Kit (4 ROMs as a set)	1 - 1	X/O	83	3
C229 5110	C229 5131-D	MPU Board	1 - 1	X/O	83	6

* Note that the suffix “C” version (“D” for the MPU) or newer is needed, even for new part numbers.

New SP modes
· SP2-125 ‘Drum Idling’ was added to counter the paper-wrapping jam problem when the printing pressure increases. When the pressure is adjusted to 16 kgf, this item must be set at **‘Fast’**. (See NOTE below for more details.) · SP2-016 ‘Swap start key’ was added to swap **‘the Start (master making) key function’** and **‘the Print key function’** depending on the end user’s preference. (‘No’ is the default setting.)

SP2-125 (Drum Idling)

This mode has two options: “Fast” and “Slow”. Fast is the default setting and is used with the new 16-kgf printing pressure setting.

Fast mode skips the 30-rpm drum rotation speed at the beginning of printing. Consequently, the drum rotation speed increases as shown in the table below. Slow mode does not skip the 30-rpm drum rotation speed.

Note that there are two cases depending on the temperature inside of the drum, detected by the thermistor.

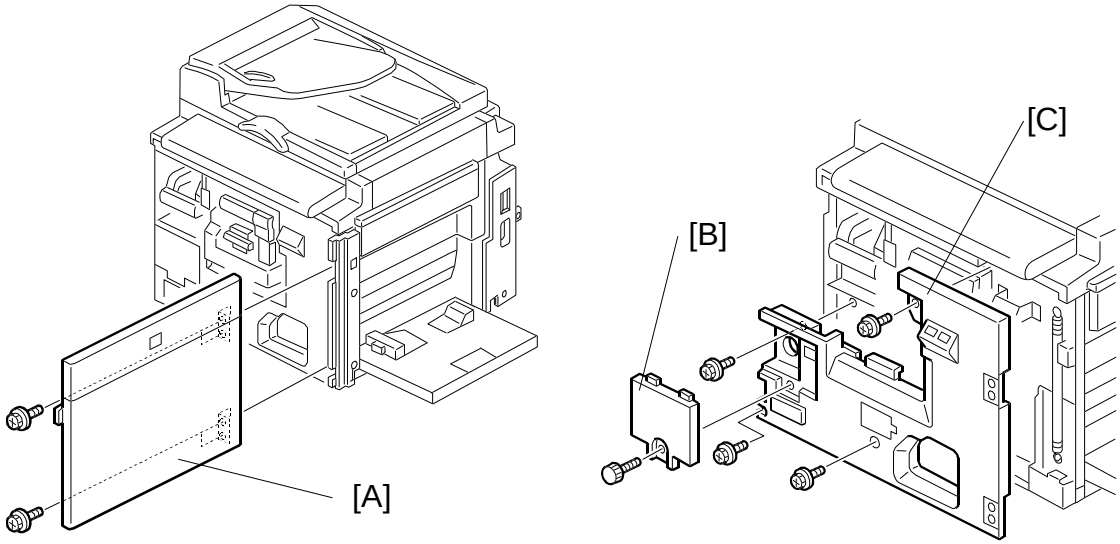
SP2-125 Setting	Drum Temperature	Trial Print	1st Print	2nd Print	3rd Print	4th Print	5th Print	6th Print	7th Print
Slow	Below 15 °C	16	16	***30***	60	75	90	105	120
	15 °C or above	16	***30***	60	75	90	105	120	120
Fast	Below 15 °C	16	16	60	75	90	105	120	120
	15 °C or above	16	60	75	90	105	120	120	120

* These figures apply to the highest printing speed (120 rpm).

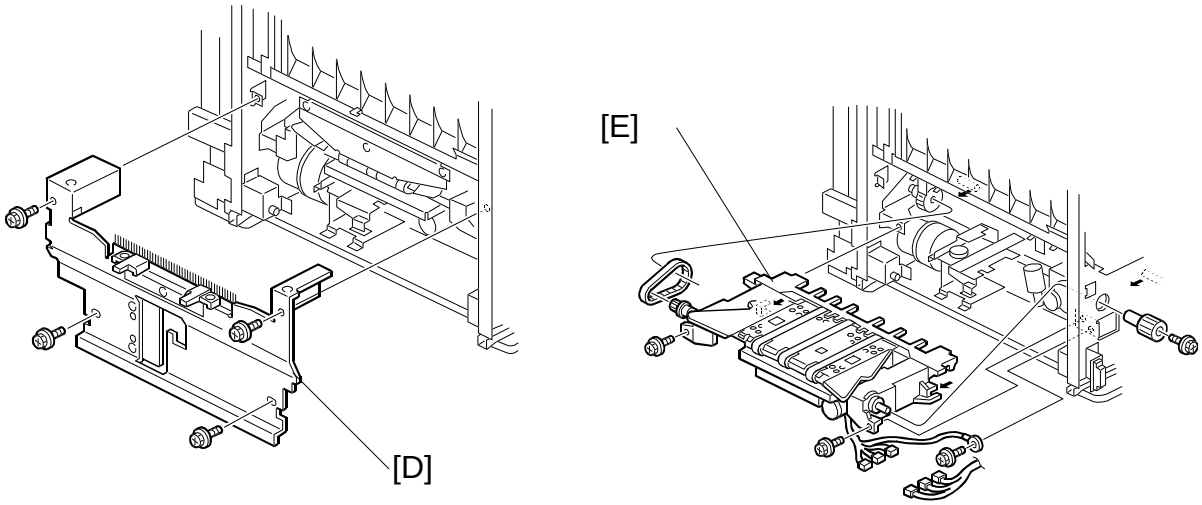
NOTE: The 16-rpm drum rotation speed remains the same. The amount of ink transferred to the paper is very low during this condition, and paper-wrapping jams do not occur.

Model: PRIPORT PEARL	Date: 15-Jun-99	No: RC229003

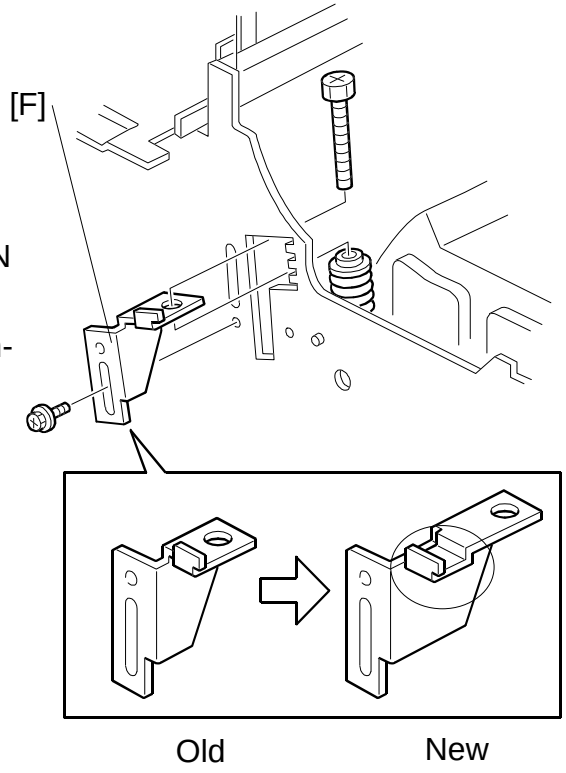
PRINTING PRESSURE ADJUSTMENT PROCEDURE (WITH A NEW STANDARD VALUE)



1. Open the front cover [A] and take out the drum unit.
2. Remove the front cover [A] (4 screws) and the inner cover [C] (5 screws and a knob cover [B]), as shown above.

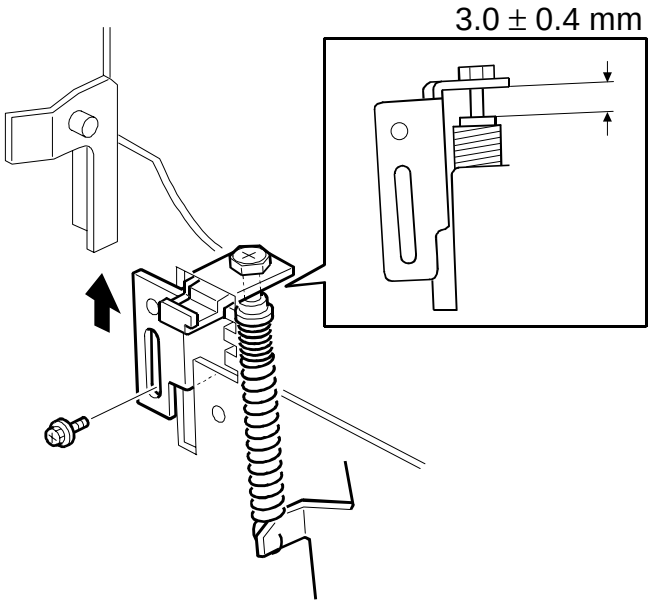


3. Remove the paper delivery cover [D] (4 screws) and the paper delivery unit [E] (2 screws, 3 connectors, ground wire, knob, belt).



4. Remove the front spring bracket [F] (1 bolt and screw), and install the new front spring bracket (P/N C2293275).
5. Similarly, replace the rear spring bracket at the non-operation side. (P/N C2293276)

NOTE: 1) Steps 4 and 5 are required only when you want to install the new brackets.
2) The printing pressure can be increased (up to 16 kgf) even without replacing the brackets.



6. At the operation side, adjust the clearance to 3.0 ± 0.4 mm by turning the bolt.
7. Repeat the same procedure on the non-operation side.

- Adjustment standards for new and old spring brackets -

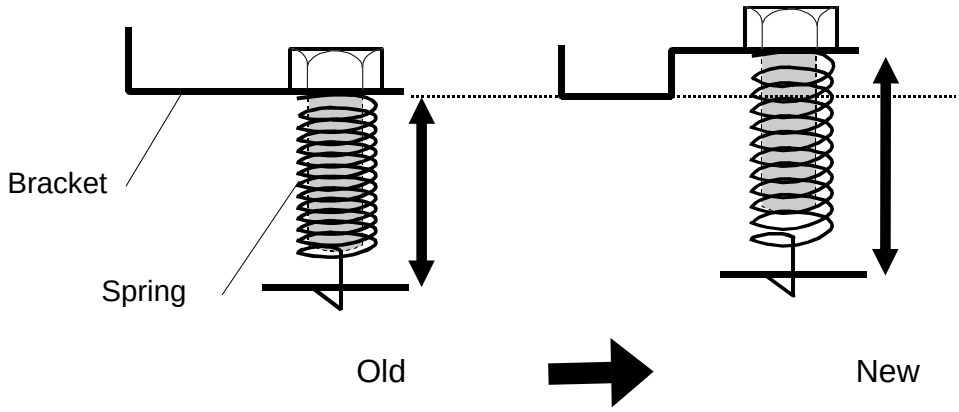
The configurations of the old and new spring brackets as well as the adjustment standard have been changed.

If you do not replace the spring brackets with the new type, set the adjustment value to 0 mm, which means to fully tighten the bolts.

Type of Bracket	***Adjustment Value***	***Applied Printing Pressure***
New Type	*3.0 mm*	*16 kgf (New default setting)*
New Type	9.5 mm	14 kgf (Old standard value)
New Type	0 mm	17 kgf (New maximum value)
Old Type	*6.6 mm*	*14 kgf (Old default setting)*
Old Type	0 mm	16 kgf (New standard value)

* Refer to Step 6 on the previous page for where to measure the standard values.

NOTE: The configuration of the old and new spring brackets has been changed as shown below. The new brackets can stretch the printing pressure spring more than before.



Model: PRIPORT PEARL	**Date:** 15-Sep-99	**No:** R-C229-**4**
Subject: Auxiliary Firmware Update Method - Flash memory card for updating firmware -	**Prepared by:** H. Kokubo, Priport Service Planning Section	

Classification:

☐ Troubleshooting	☒ Part information	☐ Action required
☐ Mechanical	☐ Electrical	☒ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☐ Other ( )		

Model Name:
PEARL: Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, SVN 3350DNP

For the Pearl, the firmware in the flash ROM on the MPU can be updated using the 4 EPROM's and ROM board, which are available as normal service parts. This method is described in the service manual (the "Load Program - Service Tables" section), and recommended as the fundamental way to update the firmware.

We have registered a special new part that is unique to the Pearl as a service part. It is a "Card Interface Board" and enables the use of a flash memory card as an auxiliary method for updating firmware.

This bulletin is to explain the firmware loading procedure using the card interface board and the flash memory card.

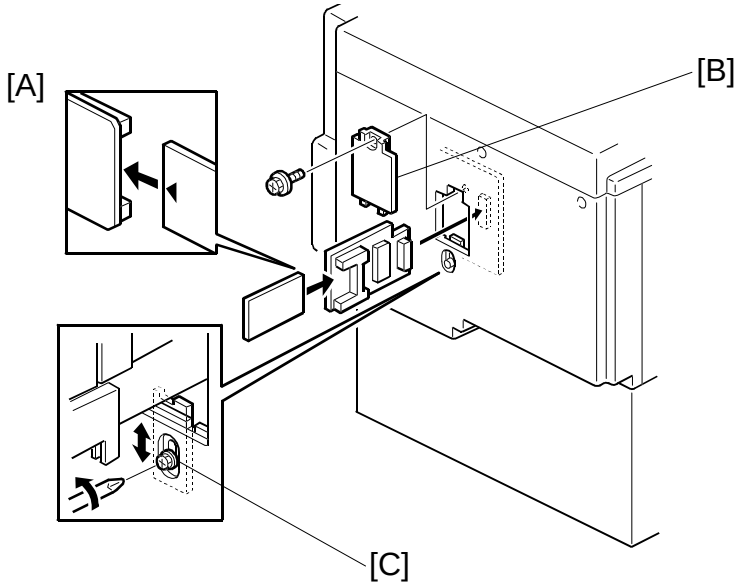
NOTE: 1) The card interface board is available as a service part. The part number is **#C229 9020**.

2) The flash memory card is available as a service part. The part number is **#A230 9352**. A variety of types of flash memory card are available on the market. However, we can only vouch for the use of the authorized flash memory card for this purpose.

3) The following items are needed to store the firmware data onto the flash memory card. They are commonly used for some of our other products. *The availability of these items depends on regional headquarters or local agency policies. Consult your appropriate agency for details.*

   a) An IBM PC-AT compatible computer with Windows 95 (version '4.00950a' or later) or 98 installed
   b) SCM SwapBox Model SBI-D2P (2 slots, front access) or SBI-C2P (2 slots, rear access), a PC card drive device
   c) SCM SwapFTL, the customized version for our products (a binary data utility software package)
   d) The Pearl's firmware data in binary format

LOAD PROGRAM (SP8-20) USING THE FLASH MEMORY CARD



1. Before downloading the new software, check the current version with SP 1-42.
2. Turn off the main switch and disconnect the power plug.
3. Set the flash memory card in the card interface board as shown above [A].
4. Remove the cover [B].
5. Plug the card interface board into the connector on the MPU.
6. Loosen the screw [C] to adjust the stand position. Then, retighten the screw.
7. Connect the power plug and turn on the main switch.
8. Access SP 8-020 and press **OK**. Press the **Enter (#)** key to start downloading (the LCD displays '**Processing**').
9. After completing the download (the LCD displays '**Completed**').
10. Leave SP mode, switch off the machine and remove the card interface board.
11. Switch on again, enter SP mode, and check the updated ROM version with SP 1-42.
12. Leave the SP mode.

REMARKS
If you have failed to download the firmware and the machine does not power on, plug the card interface board (with the flash memory card) into the MPU and turn on the main switch. The machine powers on using the firmware in the flash memory card (but not in the MPU) while the board is plugged in. Then, you can carry out the download by following steps 8 through 10.

Model: PRIPORT PEARL	**Date:** 15-Sep-99	**No:** R-C229-**05**
Subject: Firmware Revision History and Notice for Factory Setting Sheet	**Prepared by:** H. Kokubo, Priport Service Planning Section	

Classification:

☐ Troubleshooting	☒ Part information	☐ Action required
☐ Mechanical	☐ Electrical	☒ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☐ Other ( )		

Model Name:
PEARL: Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, SVN 3350DNP

This bulletin is to inform you of the firmware revision history for the Pearl.

Refer to the table below for the revision history.

NOTE: Some new SC codes, SP modes, and a new User Tool have been added. (Refer to "4. New SP mode List," "5. New User Tool list," and "6. New SC code List" in later pages.) Add necessary information to you service manual.

1. FIRMWARE REVISION HISTORY

No.	Part Numbers	Description	Month Affected
1	ROM: C229 5114-G MPU: C229 5110-E	• This is the mass-production release.	From the start of mass-production
2	ROM : C229 5114-J MPU: C229 5110-G	• Chinese has been added to SP2-11 as a displayable language on the LCD. • To make the Master Edge Sensor Adjustment easier, a function to turn on the duct entrance solenoid has been added. For details, refer to "New SP Mode List." • New SC codes have been added (SC21-00, -01, -02, -03, 22-00, -01, and 23-00). For details, refer to "New SC Code List."	August '98 production
3	ROM: C229 5114-K MPU: C229 5110-H	• The default setting for SP3-161 (Number of Master Eject Trials) has been changed from 1 to 2. This means that the machine repeats the master ejecting process once more when the first trial has not succeeded in peeling the master off the drum.	September '98 production

No.	Part Numbers	Description	Month Affected
4	ROM: C229 5114-N MPU: C229 5110-M	• SP2-20-16 'Default Ratio' has been added to select the desired magnification ratio at power on or when the Modes Clear key is pressed. The same function has also been assigned to User Tools 3-11. (For details, refer to "New SP Mode List" and "New User Tool List.") • To ensure the proper paper clamping timing, the default settings for SP6-112-4 to -8 (the registration motor on timing) have been changed. For details, refer to "New SP Mode List." • The thermal head energy is changed depending on the temperature measured by the thermistor in the drum when SP2-32 is ON. (ON is the default for the standard drum, and OFF for the optional color drums.) The threshold temperatures to switch energy have been changed as follows: ∗ Less than 25 °C (Energy of -7% at default) ⇒ Less than 18 °C ∗ Between 25 and 30 °C (-12 at default) ⇒ Between 18 and 28 °C ∗ More than 30 °C (-17% at default) ⇒ More than 28 °C • A new drum type has been added to SP2-390 (A3/DLT Drum Selection). The "B4" that is newly added is for Japanese version models only; do not select it.	December '98 production
5	*- Part Numbers Change -* ROM: C229 5114-N ⇒ C229 5134 MPU: C229 5110-N ⇒ C229 5131	• The part numbers for both the ROM and the MPU have been changed for identification purposes. The Japanese model made installing a sorter an option. SP2-4 'Sorter Select' has been added. (This function is for the Japanese model only; do not use it.) • The default setting for SP6-50 (LCD Contrast Adjustment) has been changed from 3 to 4. Consequently, the default LCD setting is brighter.	January '99 production
6	ROM: C229 5134-A MPU: C229 5131-B	• To ensure that the light from the scanner lamp is stable before scanning the white plate (behind the original scale), the scanning start timing has been delayed by 200 milliseconds.	February '99 production

No.	Part Numbers	Description	Month Affected
7	ROM: C229 5134-B MPU: C229 5131-C	• Portuguese has been added to SP2-11 as a displayable language on the LCD. For details, refer to "New SP Mode List." • SP2-15, 'Machine Destination', has been added to select the machine's version ('Other' and 'Japan'). For details, refer to "New SP Mode List." • To minimize the waiting time during drum idling, the ink supply motion prior to printing has been eliminated. To enable this, SP2-422 'Ink Auxiliary Supply' has been added to select the ink supply motion. For details, refer to "New SP Mode List." • Modified to reduce the possibility of creating small strips of master in the master-making unit, that tend to cause master feed jams. Small strips of master waste were likely to occur when an original feed jam occurred (when the optional ADF is installed). This was because the original feed was stopped and the master was cut as soon as an original jam is detected. With the new firmware, the master is wrapped around the drum then the machine stops even when an original jam occurs. • To reduce the possibility of damage to the friction pad (for paper feed), the separation pressure control has been changed so as not to be applied while the machine is not feeding the paper. • In the version C229 5114-N firmware, the threshold temperatures to switch the thermal head energy were changed. To achieve darker image density (especially in the solid-fill black areas) the thresholds have been changed again as follows: ∗ Less than 18 °C (Energy of -7% at default) ⇒ Less than 28 °C ∗ Between 18 and 28 °C (-12 at default) ⇒ Between 28 and 30 °C ∗ More than 28 °C (-17% at default) ⇒ More than 30 °C • In the Job Separation mode, the printing job is stopped when it reaches 600, which is the maximum capacity for the paper delivery table in this mode. The new firmware does not stop printing even in this condition until the job completes. The message that the paper capacity is exceeded only appears on the LCD.	March '99 production

No.	Part Numbers	Description	Month Affected
8	ROM: C229 5134-C MPU: C229 5131-D	• **This version causes problems and should not be used. Refer to version E's history for the problem.** • SP2-125 'Drum Idling' has been added to counter the paper-wrapping jam problem when the printing pressure increases. For details, refer to "New SP Mode List." • SP2-016 'Swap Start Key' has been added to swap *the Start (master making) key function* and *the Print key function* depending on the end user's preference. ('No' is the default setting.) • To ensure the proper paper clamping, the default settings for SP6-116-1 and -7 (the paper clamping timings) have been changed. For details, refer to "New SP Mode List."	April '99 production
9	ROM: C229 5134-D MPU: C229 5131-E	• **This version causes problems and should not be used. Refer to version E's history for the problem.** • SP2-20-17 'Default Eco Ink' has been added. By selecting ON in this mode, the Economy mode, which conserves ink during printing, can be set as the default at power on. • A new SC code, SC7-21, has been added. When the feed start sensor (behind the pressure cylinder) is not activated or deactivated at the proper time, this code is displayed. The machines that have firmware prior to this version will show the following symptoms when the sensor is defective: *- If the sensor remains deactivated (not interrupted by the actuator) -* Location 'B' jam (paper jam at registration) is displayed. *- Feed start sensor remains activated -* The main motor does not stop turning. • When an original is scanned with the optional ADF, the shadow at the trailing edge of the original might create a black line on copies. To prevent this, a 1-mm trailing edge is left as a blank margin. (This was already done in the platen mode.) • Chinese spelling for 'please wait' has been corrected. (This only affects the Chinese display selected with SP2-11.)	August '99 production

No.	Part Numbers	Description	Month Affected
10	ROM: C229 5134-E MPU: C229 5131-F	• In the version C and D firmware, SP2-125 'Drum Idling' was added and the drum rotation speed at the beginning of printing was changed. Due to a programming error, the following problem occurred. This error has been corrected. *- Pressure cylinder becomes dirty with ink -* If the Auto Cycle mode is selected and a print job continues following the master making process, an idle rotation of the drum is interrupted just after the trial print is made (and before starting printing). (The idle rotation does not occur when the Auto Cycle mode is not used.) During this idle rotation, the printing pressure release solenoid is energized (due to a program error) and the pressure cylinder contacts the drum. As a result, the pressure cylinder gets dirty with ink, and it is transferred to the reverse side of the following prints. The dirty ink is cleaned off during printing, however the first few prints will get dirty with ink on the reverse side. • For the U.S. version models (when SP2-10 is set at '2'), the print image position was changed (both in up-and-down and side-to-side directions) in 0.1 inch steps. This version enables it in 0.02 inch steps.	September '99 production

2. FACTORY SETTING SHEET FOR THE SP MODE DATA

The SP mode data for the following items are recorded on the factory settings sheet for each machine on the production line. The sheet is inserted behind the front cover (between the cover and the sheet for the jam removal procedures).

The factory settings sheet enables you to reset the SP mode data easier when they are cleared.

NOTE: When you replace the MPU, inputting the old SP mode data into a new MPU is usually not necessary. Use the backup RAM on the old MPU and install it on the new one. All SP mode data are restored. (See MPU and I/O Board Replacement in the service manual for details.)

SP Mode No.	Description	Factory Setting
2-010-01	Size in Metric or Inches	1
011-01	Select Language Type	1
015-01	Machine Destination	Other
125-01	Drum Idling	Fast
350-01	Ink/Master Type Det.	0
380-01	Japanese Display Type	0
390-01	A3/DLT Drum Selection	0
421-01	Type of Thermal Head	1
6-001-01	Main Scan Pos. - Platen	0 (Subject to change)
-02	Main Scan Position - DF	0 (Subject to change)
-002-01	Scan Start Pos. - Platen	0 (Subject to change)
-02	Scan Start Position - DF	0 (Subject to change)
-010-01	Master Writing Speed	0 (Subject to change)
-011-01	Scanning Speed - Platen	0 (Subject to change)
-02	Scanning Speed - DF	0 (Subject to change)
-012-01	Master Writing Length	0 (Subject to change)
-020-01	V&Thresh Master Eject SN	2.5 (Subject to change)
-02	V&Thresh DrumMaster 1 SN	2.5 (Subject to change)
-03	V&Thresh DrumMaster 2 SN	2.5 (Subject to change)
-04	V & Thresh Master End SN	0.9 (Subject to change)
-05	V & Thresh Paper Exit SN	2.5 (Subject to change)
-06	V&Thresh Master Edge SN	1.5 (Subject to change)
-114-08	Regist Delay - 120 rpm	12 (Subject to change)

SP Mode No.	Description	Factory Setting
6-116-01	Paper Clamp Timing Pulse	142 (Subject to change)
-02	Regist Timing Pulse	113 (Subject to change)
-03	Feed Stop Timing Pulse	25 (Subject to change)
-04	Regist Speed Ctl Pulse	20 (Subject to change)
-05	PaperClamp - Thick Paper	150
-06	Regist - Thick Paper	213 (Subject to change)
-07	Paper Clamp Pls - A4 Cam	142 (Subject to change)
-117-07	Regist Delay - 105 rpm	18 (Subject to change)
-08	Regist Delay - 120 rpm	12 (Subject to change)
-130-01	Drum Master Clamp Regist	0 (Subject to change)

3. CHECK SUM OF THE LATEST ROM'S

The check sums of the latest ROM's are as follows:

New Suffix (P/N)	Description	Check Sum
C229 5134-E	EPROM - U1	1F0B
	EPROM - U2	407E
	EPROM - U3	A560
	EPROM - U4	CD11

NOTE: Part #C2295134 includes 4 EPROM's as a set.

4. NEW SP MODE LIST

Basic Settings

SP No.	Display	Function	Default	Settings	User Tools
2-004	Sorter Select	Japan only	No	0:No 1:DS 2:JS	-
2-011	Select Language Type	See Note 1.	1	0 to 8	-
2-015	Machine Destination	See Note 2.	0	Other/ Japan	-
2-016	Swap Start Key	See Note 3.	No	No/Yes	-
2-020-16	Default Ratio	See Note 4.	4	0 to 8	3-11
2-020-17	Default Eco Ink	Specify default for the Economy mode.	No	No/Yes	-
2-125	Drum Idling	See Note 5.	Fast	Fast/Slow	-
2-390	A3/DLT Drum Selection	See Note 6.	A3/DTL/ B4	-	-
2-422	Ink Auxiliary Supply	See Note 7.	0	0:After 1:Before 2:No	-

Notes

1: 2-011 (Display Language)

0: Japanese, 1: English, 2: German, 3: French, 4: Italian, 5: Spanish, 6: Dutch, 7: Chinese, 8: Portuguese

Chinese and Portuguese have been added.

2: 2-015 (Machine Destination)

Always set this mode as 'Other.' If 'Japan' is selected, User Tools 1-5 that are not used for other versions are displayed.

3: 2-016 (Swap Start Key)

Enables swapping *the Start (master making) key function* and *the Print key function* depending on the end user's preference. ('No' is the default setting.)

4: 2-020-16 (Default Ratio)

U.S. version
0: 65%, 1: 74%, 2: 77%, 3: 93%, 4: 100%, 5: 121%, 6: 129%, 7: 155% 8: Auto

Other versions
0: 71%, 1: 82%, 2: 87%, 3: 93%, 4: 100%, 5: 115%, 6: 122%, 7: 141% 8: Auto

Selects a magnification ratio at power on or when the Modes Clear key is pressed. The same function has also been assigned to User Tool 3-11.

5: 2-125 (Drum Idling)

This mode has two options: “Fast” and “Slow”. Fast is the default setting and is used with the new 16-kgf printing pressure setting. (See RTB No. 3 for more details about the new printing pressure setting.)

Fast mode skips the 30-rpm drum rotation speed at the beginning of printing. Consequently, the drum rotation speed increases as shown in the table below. Slow mode does not skip the 30-rpm drum rotation speed. Note that there are two cases depending on the temperature inside of the drum, detected by the thermistor.

SP2-125 Setting	Drum Temperature	Trial Print	1st Print	2nd Print	3rd Print	4th Print	5th Print	6th Print	7th Print
Slow	Below 15 °C	16	16	***30***	60	75	90	105	120
	15 °C or above	16	***30***	60	75	90	105	120	120
Fast	Below 15 °C	16	16	60	75	90	105	120	120
	15 °C or above	16	60	75	90	105	120	120	120

* These figures apply to the highest printing speed (120-rpm).

6: 2-390 (Drum Type Selection - A3/DLT/B4)

An option for the B4 drum has been added. This option is used for the Japanese model only; do not select it.

7: 2-422 (Ink Auxiliary Supply)

This mode enables the selection of the ink supply motion. Three options can be selected from 0: After, 1: Before, and 2: No.

- '0: After' means that the ink detection and supply are done when a print job finishes.
- '1: Before' means that they are done when the Print Start key is pressed (and before starting printing).
- '2: No' means that ink is not added except during normal printing.

Note that ink is supplied regardless of this setting when the machine detects a less ink condition during printing.

To minimize the wait time for drum idling, the ink supply motion prior to starting printing has been eliminated by setting this mode to '0: After' as the default. With older firmware, when the Print Start key is pressed, the machine carries out the ink detection and (if less ink is detected) starts the ink supply motion before starting printing. (This symptom is likely only when the Auto-cycle mode, which is selected at default, is canceled by an operator. In the Auto-cycle mode, the machine enters the printing process without detecting the ink after making a master.)

User Custom Settings

SP No.	Display	Function	Default	Settings	User Tools
3-161	Num of Master Eject Trial	The default setting is changed from 1 to 2. This specifies the number of master eject attempts before an error is indicated.	2	1 to 3	-

System Adjustments

SP No.	Display	Function	Default	Settings
6-020-6	V&Thresh Master Edge SN	See Note.	1.5	0.0 to 5.0V
6-050	LCD Contrast Adjustment	The default setting is changed from 3 to 4.	4	0 to 7
6-112-4	Regist Delay - 60 rpm	The default setting is changed from 30 to 31.	31	0 to 255
6-112-5	Regist Delay - 75 rpm	The default setting is changed from 27 to 28.	28	0 to 255
6-112-6	Regist Delay - 90 rpm	The default setting is changed from 23 to 24.	24	0 to 255
6-112-7	Regist Delay - 105 rpm	The default setting is changed from 18 to 19.	19	0 to 255
6-112-8	Regist Delay - 120 rpm	The default setting is changed from 13 to 14.	14	0 to 255
6-116-1	Paper Clamp Timing Pulse	The default setting is changed from 143 to 142.	142	0 to 255
6-116-7	Paper Clamp Pls - A4 Cam	The default setting is changed from 143 to 142.	142	0 to 255

Note

6-020-6 (Volt and Threshold Adjustment for Master Edge Sensor)

To make the Master Edge Sensor Adjustment easier, a function to turn on the duct entrance solenoid has been added. After you enter SP6-20 in order to adjust the sensor's sensitivity, the solenoid can be energized by pressing the Start key (the large green key). Turning on the solenoid is necessary to obtain a fine adjustment result for the master edge sensor. See the service manual for details.

5. NEW USER TOOL LIST

User Tools Table

No.	Display	Equivalent SP No.
3-11	Ratio Priority	2-020-16

6. NEW SC CODE LIST

Code	Title	Conditions	Possible Causes
SC07-20	Feed start sensor remains on or off	When the feed start sensor (behind the pressure cylinder) is not activated or deactivated at the proper timing, this code is displayed.	• Defective I/O board • Defective sensor
SC21-00	Memory board error - memory clear error	Optional memory (editing function) error.	• Defective memory board
SC21-01	Memory board error - memory access error	Optional memory (editing function) error.	• Defective memory board
SC21-02	Memory board error - FIFO error	Optional memory (editing function) error.	• Defective memory board
SC21-03	Memory board error - video output error	Optional memory (editing function) error.	• Defective memory board
SC22-00	Memory board error - make-up memory clear start error	Optional memory (make-up function) error.	• Defective memory board
SC22-01	Memory board error - unable to complete make-up memory clear	Optional memory (make-up function) error.	• Defective memory board
SC23-00	Memory board error - print function error	Optional memory (print function) error.	• Defective memory board

Model: PRIPORT PEARL/PEARL-MC	**Date:** 31-Mar-00	**No:** R-C229-**6**
Subject: New Pearl Series Model (PEARL-MC) Information	**Prepared by:** M. Ohtsubo, Priport Service Planning Section	

Classification:

☐ Troubleshooting	☐ Part information	☐ Action required
☐ Mechanical	☐ Electrical	☐ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☒ Other (New Version Machine Infomation)		

Model Name:
PEARL/PEARL-MC: Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, SVN 3350DNP

Pearl-MC was released in March 2000 as the successor to Pearl.

The model names for Pearl-MC are the same as those for Pearl because there are no specification differences between the two models.

However, a new model code " C233 " has been assigned to Pearl-MC because there are some new mechanisms and some parts are not interchangeable with #C229 Pearl.

This bulletin is to inform you of all the information unique to #C233 Pearl-MC for service.

Add the information on the following pages to the C229 service manual, to cover all the information for #C233 Pearl-MC.

TABLE OF CONTENTS

1. OVERALL INFORMATION

1.1 ESSENTIAL DIFFERENCES BETWEEN C233 AND C229 MODELS

No.	Item	Remarks
1	Thermal Head, Thermal Head Power Supply, MPU, I/O Board, PSU	Some related parts were different. Refer to the new electrical components section.
2	Energy Saver Mode	Energy saver mode lowers the energy consumption level below 10 W. When the machine enters Energy saver mode, only the LED for the clear modes key stays on. All other keys and the LCD remain at stand-by until the clear modes key is touched.
3	Operation Panel	• The sorter key was added. • The clear modes key also works for Energy saver mode.
4	Sharpen Image Mode	In User Tools 4-27, the sharpness of character images in Letter mode can be increased. Fine details become more apparent in letter mode. (As a side effect, the edges of paper pasted onto the original might appear on copy images.) "Thin Lettering" (images become sharper) or "Standard" can be selected. "Standard" is the default.
5	Drum Home Position Indicators	New LEDs were added to indicate when the drum is home position. • Green LED: Indicates the drum is in its home position. • Red LED: Indicates that drum is not in its home position.
6	JS Sorter Connection	• The new JS40 sorter can be connected. • Some new SP modes were added for JS40 Sorter. Refer to the service tables section for details.
7	Friction Pad (Paper Feed Section)	A newly designed friction pad was used. It has increased tolerance to feed poor quality (thin) paper. (The specifications for the paper type remain the same.)
8	New SP modes	Some SP modes were changed. Refer to the service tables section for details.
9	Torque Limiter	The torque limiter was added to prevent damage to the main motor (locking) when torque from the drum or pressure cylinder gets too high.
10	Feed Encoder Sensor Position	A new caution was made for the feed encoder sensor position. For details, refer to 'Feed Start Sensor and Feed Encoder' in the replacement and adjustment section.

No.	Item	Remarks
11	Paper Feed Length Adjustment	The adjustment method remains the same, however the SP mode number was changed. Refer to 'Paper Feed Length Adjustment' in the replacement and adjustment section.
12	Firmware Update Method	The firmware on the MPU can be upgraded using a flash memory card. It is not necessary to use the card interface board. Refer to 'Load Program (SP8-20)' in the service tables section.

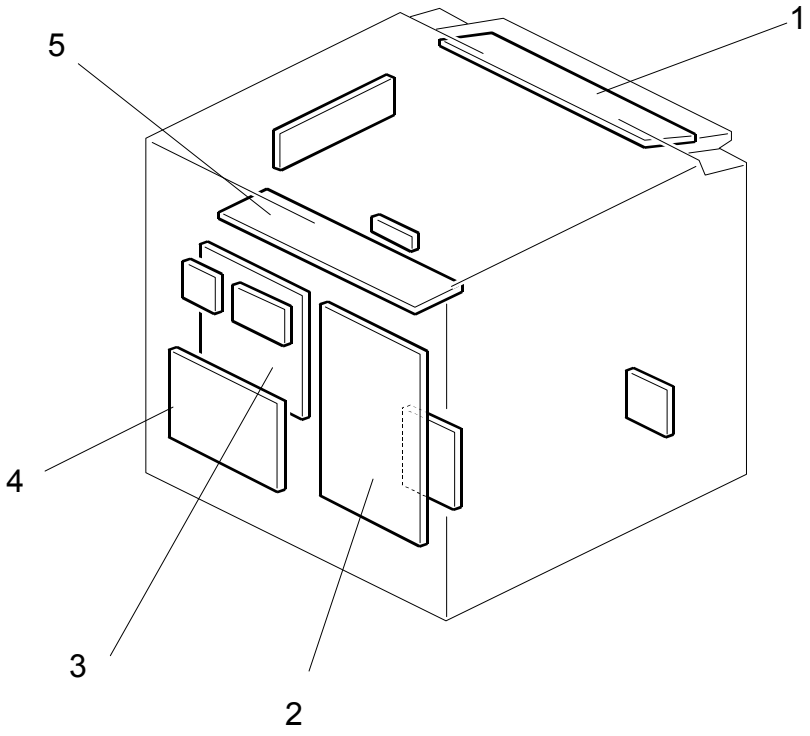
1.2 SPECIFICATIONS

The specifications are identical to the C229 model, except that the power consumption data for Energy Saver mode was added.

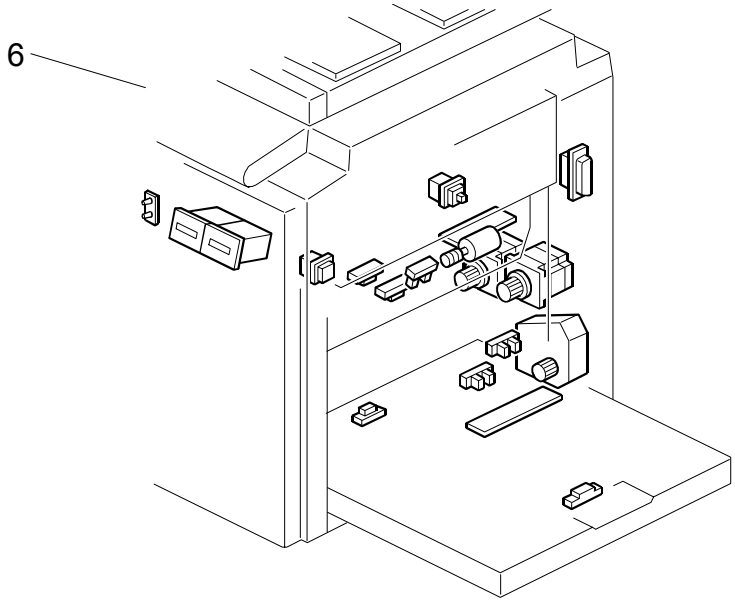
Power Consumption:	110/120 V version:	Maximum: 285 W (Same as C229 model) Energy saver mode: 10 W
	220 - 240 V version:	Maximum: 280 W (Same as C229 model) Energy saver mode: 10 W

1.3 NEW ELECTRICAL COMPONENTS

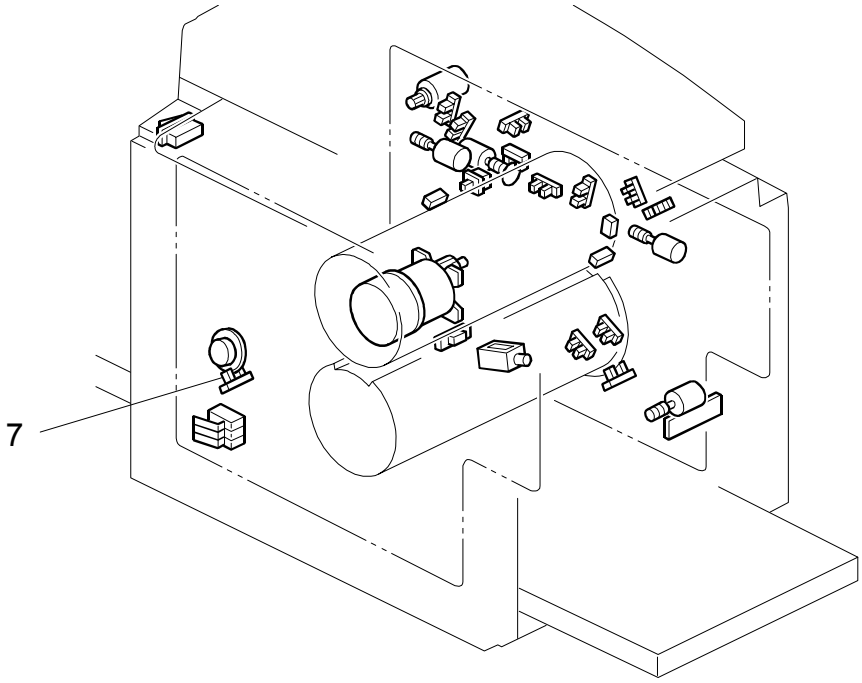
1.3.1 PRINTED CIRCUIT BOARD



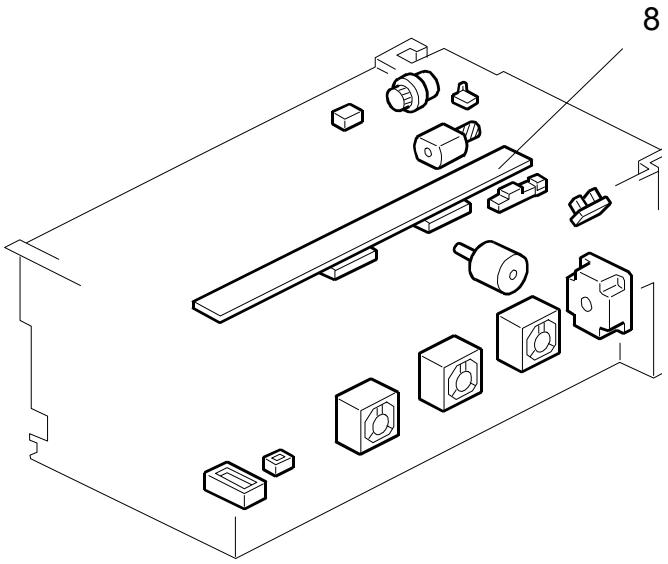
1.3.2 PAPER FEED SECTION



1.3.3 PRESSURE CYLINDER SECTION



1.3.4 MASTER MAKING UNIT



1.3.5 TABLES OF ELECTRICAL COMPONENTS

Boards

Index No.	Name	Function
1	Operation Panel Board	Controls the operation panel.
2	Power Supply Unit (PSU)	Provides dc power to the system.
3	Main Processing Unit (MPU)	Controls all machine functions both directly and through other boards.
4	I/O Board	Controls the mechanical components.
5	Thermal Head Power Supply Board	Provides dc power to the thermal head.

Sensors

Index No.	Name	Function
6	Drum Home Position Sensor	Informs when the drum is at home position to turn on the green LED.

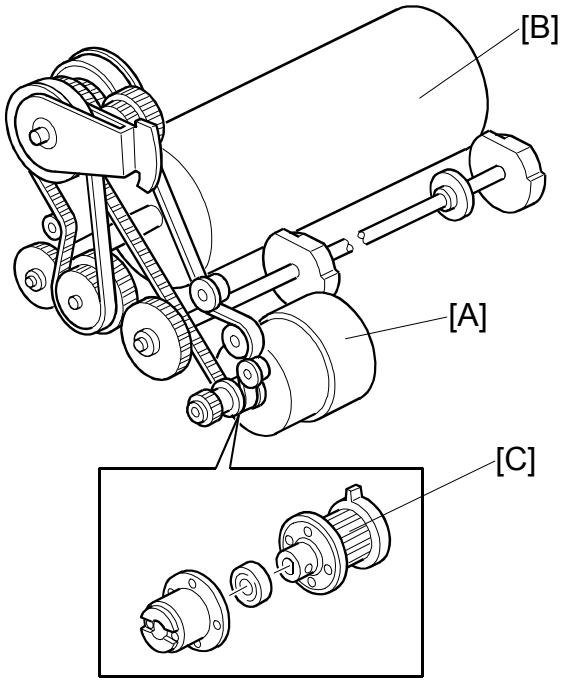
Others

Index No.	Name	Function
7	Thermal Head	Burns the image of the original onto the master.
8	Drum Home Position Indicator (LEDs)	LEDs that indicates the drum position.

2. DETAILED SECTION DESCRIPTIONS

2.1 MAIN MOTOR PROTECTION MECHANISM

The main motor [A] drives the pressure cylinder [B] and the drum. When the pressure cylinder or drum is locked, the torque limiter [C] stops drive from the main motor gear from being transmitted to these parts. This prevents the mechanism from being overloaded.



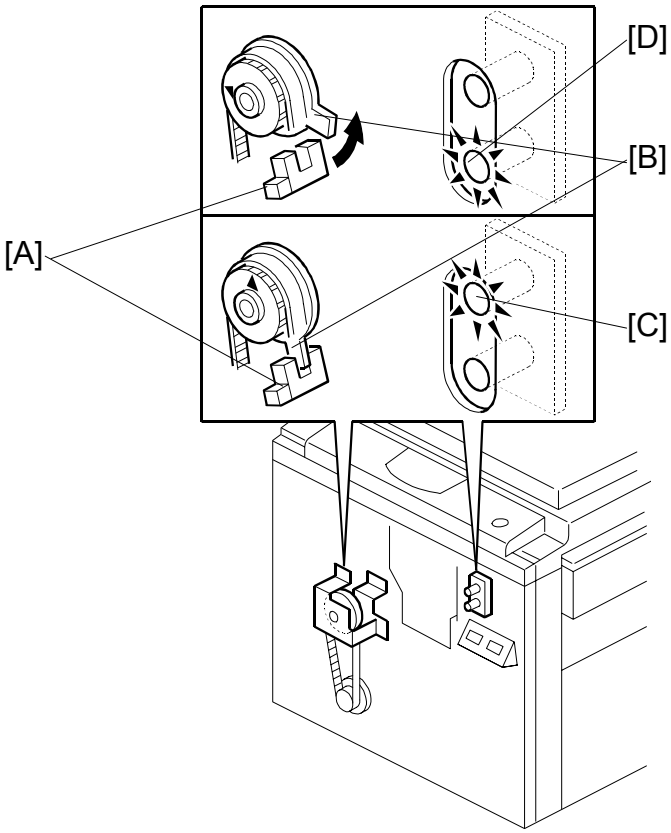
C233D010.WMF

When the mechanism is locked, the LCD indicates SC-05-00, SC05-01, or SC05-03. However, there are no damaged parts or changes in drum and pressure cylinder position.

To recover the machine, eliminate the cause of the problem then turn the main switch off/on.

CAUTION: 1) These service call codes can appear in different situations.
2) Make sure jammed paper and masters are removed before switching off/on.

2.2 DRUM HOME POSITION DETECTION



C232D020.WMF

LEDs are added to inform the operator when the drum is at the exact home position and can be pulled out. The drum home position is monitored by the drum home position sensor [A], which is newly added for the actuator disk [B] on the pressure cylinder.

Green LED [C] turns on when the drum is at the home position.

Red LED [D] warns that the drum is not at the home position.

NOTE: If the red LED lights when the machine is in standby mode, the drum is not at the home position and the front door must be closed to reset the drum position.

3. INSTALLATION

There are no differences from the C229 model in this section.

4. SERVICE TABLES

4.1 DIP SW, LED, VR, TP, AND FUSE TABLES

Fuse FU706 is added on the power supply board. There are no other differences from the C229 model in this section.

4.1.1 FUSES

Power Supply Unit

Fuse	Rated Current	Protect
FU700	10A	Power Supply Unit
FU701	5A	Main Motor Drive Board
FU702	5A	Main Motor Drive Board
FU703	5A	I/O Board
FU704	5A	Thermal Head Power Supply Board, I/O Board
FU706	**2A**	**Power Supply Unit**

4.2 SERVICE CALL CODES

New SC codes for the optional JS40 Sorter (SC 40 series) were added. For these SC's, refer to the JS40 Service Manual. There are no other differences from the C229 model in this section.

4.3 SPECIAL TOOLS

The Flash Memory Card is added as a special tool. This is used instead of the C229 model's ROM Board. There are no other differences from the C229 model in this section.

Description	Part Number	Application
Main Drive Securing Tool Kit (Drum securing tool and two positioning shafts as a set)	C229 9000	For main drive positioning
Scanner Positioning Pin Kit (4 pins as a set)	A006 9104	For scanner wire installation
Flash Memory Card	**A230 9352**	**For updating firmware**

4.4 SERVICE PROGRAM MODE

Some SP modes were changed or newly added for the C233 model. The following table shows all of the items in the service program mode.

NOTE: The marks beside the SP mode numbers in the following tables represent the following meanings:

*: A new item was added or the default setting was changed.

**: New item, but not used for the C233 model.

Main Menu Number List

1. Data Logging
2. Basic Settings
3. User Custom Settings
4. Input Test Mode
5. Output Test Mode
6. System Adjustment
7. Memory Data Clear
8. System Test

4.4.1 SERVICE PROGRAM TABLE

1. Data Logging

SP No.	Display	Function	Default	User Tools
1-001-1	Total Master Counter	Master counters 1-001-1: Total count 1-001-2: User counter 1-001-3 to 28: Counters for various copy modes	0	-
1-001-2	Resettable Master Count		0	1-2
1-001-3	M Counter ADF Mode		0	-
1-001-4	M Counter Economy Mode		0	-
1-001-5	M Counter Combine 2		0	-
1-001-6	M Counter Combine 4		0	-
1-001-7	M Counter Enl. Mode		0	-
1-001-8	M Counter Red. Mode		0	-
1-001-9	M Counter Zoom Mode		0	-
1-001-10	M Counter Dir. Mag.		0	-
* 1-001-11	M Counter Auto Mag.		0	-
1-001-12	M Counter Make-up Mode		0	-
1-001-13	M Counter Make-up Photo		0	-
1-001-14	M Counter Margin Erase		0	-
1-001-15	M Counter Online Mode		0	-
1-001-16	M Counter Online Overlay		0	-
1-001-17	M Counter Overlay Mode		0	-
1-001-18	M Counter Format Overlay		0	-
1-001-19	M Counter Memory Combine		0	-
1-001-20	M Counter Date Stamp		0	-
1-001-21	M Counter Page Number		0	-
1-001-22	M Counter Default Stamp		0	-
1-001-23	M Counter User Stamp		0	-
1-001-24	M Counter Letter Mode		0	-
1-001-25	M Counter Ltr/Pht Mode		0	-
1-001-26	M Counter Photo Mode		0	-
1-001-27	M Counter Pencil Mode		0	-
1-001-28	M Counter Tint Mode	Master counters 1-001-29 to 35: Original sizes 1-001-43 to 47: Various copy modes 1-001-38 to 42: Various types	0	-
1-001-29	M Counter A3/DLT		0	-
1-001-30	M Counter B4/LG		0	-
1-001-31	M Counter A4-L/LT-L		0	-
1-001-32	M Counter A4/LT		0	-
1-001-33	M Counter B5-L		0	-
1-001-34	M Counter B5		0	-
1-001-35	M Counter Other Sizes		0	-
1-001-36	M Counter Short Master		0	-
1-001-37	M Counter Image Rotation		0	-
1-001-38	M Counter Special		0	-
1-001-39	M Count Standard Paper		0	-
1-001-40	M Counter Thick Paper		0	-

SP No.	Display	Function	Default	User Tools
1-001-41	M Counter User 1 Paper		0	-
1-001-42	M Counter User 2 Paper		0	-
1-001-43	M Counter Same-No. Class		0	-
1-001-44	M Counter By-Class Class		0	-
1-001-45	M Counter Manual Class		0	-
1-001-46	M Counter Job Separator		0	-
1-001-47	M Counter Autocycle		0	-
** 1-001-48	M Counter Tray Auto Sel.		0	-
** 1-001-49	M Counter 3 Tray Mode		0	-
* 1-001-50	M Counter Online Sort		0	-
* 1-001-51	M Counter Sort		0	-
* 1-001-52	M Counter Class Sort		0	-
1-002-1	Total Print Counter	Print counters '-L': Lengthwise 1-002-4 to -13: Paper sizes 1-002-14 to -25: Trays V: Longedge feed Oth: Other paper sizes	0	-
1-002-2	Resettable Print Counter		0	1-2
1-002-3	P Counter Color Drum		0	-
1-002-4	P Counter Over A3/DLT		0	-
1-002-5	Print Counter A3/DLT		0	-
1-002-6	Print Counter B4/LG		0	-
1-002-7	Print Counter A4-L/LT-L		0	-
1-002-8	Print Counter A4/LT		0	-
1-002-9	Print Counter B5-L		0	-
1-002-10	Print Counter B5		0	-
1-002-11	Print Counter A6-L		0	-
1-002-12	Print Counter Under A6-L		0	-
1-002-13	P Counter Other Sizes		0	-
** 1-002-14	P Cnt. Tray1 A3 Speed1-3	These items are not used.	0	-
** 1-002-15	P Cnt. Tray1 A3 Speed4-5		0	-
** 1-002-16	P Cnt.Tray1A4B5Vspeed 1-3		0	-
** 1-002-17	P Cnt.Tray1A4B5Vspeed 4-5		0	-
** 1-002-18	P Cnt.Tray1 Oth.Speed1-3		0	-
** 1-002-19	P Cnt.Tray1 Oth.Speed4-5		0	-
** 1-002-20	P Cnt.Tray2 A3.Speed1-3		0	-
** 1-002-21	P Cnt.Tray2 A3 Speed4-5		0	-
** 1-002-22	P Cnt.Tray2 A4B5Vspeed 1-3		0	-
** 1-002-23	P Cnt.Tray2A4B5Vspeed 4-5		0	-
** 1-002-24	P Cnt.Tray2 Oth.Speed1-3		0	-
** 1-002-25	P Cnt.Tray2 Oth Speed4-5		0	-
1-003	Set Master Counter		0	-
1-004	Ejected Master Counter		0	-
1-005	Ink Pump Rotation Count		0	-
1-006	Master End Counter		0	-

SP No.	Display	Function	Default	User Tools
1-007	Ink End Counter		0	-
1-008	Master Full Counter		0	-
1-020	Original Counter ADF		0	-
1-021	Original Counter Platen		0	-
1-030-1	UC M Counter: Code 1	Master and printer counters for each user code	0	-
1-030-2	UC P Counter: Code 1		0	-
1-030-3	UC M Counter: Code 2		0	-
1-030-4	UC P Counter: Code 2		0	-
1-030-5	UC M Counter: Code 3		0	-
1-030-6	UC P Counter: Code 3		0	-
1-030-7	UC M Counter: Code 4		0	-
1-030-8	UC P Counter: Code 4		0	-
1-030-9	UC M Counter: Code 5		0	-
1-030-10	UC P Counter: Code 5		0	-
1-030-11	UC M Counter: Code 6		0	-
1-030-12	UC P Counter: Code 6		0	-
1-030-13	UC M Counter: Code 7		0	-
1-030-14	UC P Counter: Code 7		0	-
1-030-15	UC M Counter: Code 8		0	-
1-030-16	UC P Counter: Code 8		0	-
1-030-17	UC M Counter: Code 9		0	-
1-030-18	UC P Counter: Code 9		0	-
1-030-19	UC M Counter: Code10		0	-
1-030-20	UC P Counter: Code10		0	-
1-030-21	UC M Counter: Code11		0	-
1-030-22	UC P Counter: Code11		0	-
1-030-23	UC M Counter: Code12		0	-
1-030-24	UC P Counter: Code12		0	-
1-030-25	UC M Counter: Code13		0	-
1-030-26	UC P Counter: Code13		0	-
1-030-27	UC M Counter: Code14		0	-
1-030-28	UC P Counter: Code14	Master and printer counters for each user code	0	-
1-030-29	UC M Counter: Code15		0	-
1-030-30	UC P Counter: Code15		0	-
1-030-31	UC M Counter: Code16		0	-
1-030-32	UC P Counter: Code16		0	-
1-030-33	UC M Counter: Code17		0	-
1-030-34	UC P Counter: Code17		0	-
1-030-35	UC M Counter: Code18		0	-
1-030-36	UC P Counter: Code18		0	-
1-030-37	UC M Counter: Code19		0	-
1-030-38	UC P Counter: Code19		0	-
1-030-39	UC M Counter: Code20		0	-
1-030-40	UC P Counter: Code20		0	-

SP No.	Display	Function	Default	User Tools
1-031-1	UC Total Master Counter		0	-
1-031-2	UC Total Print Counter		0	-
1-040	ROM Part Number		-	-
* 1-041-1	Serial Number	Use this to view the serial numbers input with SP 3-070	0	-
** 1-041-2	Bank Serial Number	This item is not used.	0	-
** 1-041-3	PDTable Serial Number	This item is not used.	0	-
* 1-042	ROM Version		-	-
** 1-043	Feed ROM Version	This item is not used.	0	-
** 1-044-1	Bank ROM1 Version	This item is not used.	0	-
** 1-044-2	Bank ROM2 Version		0	-
** 1-045	PDTable ROM Version	This item is not used.	0	-
* 1-046	JSSorter ROM Version		0	-
1-050	Service Telephone Number	Enter data with SP3-72 at installation if required.	0	-
1-051	Last Service Call Code		0	-
1-060	Power On Time		0	-
* 1-070-1	1 - 3 Prints	Copies-per-original counters	0	-
* 1-070-2	4 - 5 Prints		0	-
1-070-3	6 - 10 Prints		0	-
1-070-4	11 - 20 Prints		0	-
1-070-5	21 - 30 Prints		0	-
1-070-6	31 - 50 Prints		0	-
1-070-7	51 - 70 Prints		0	-
1-070-8	71 - 100 Prints		0	-
1-070-9	101 - 200 Prints		0	-
1-070-10	201 - 500 Prints		0	-
1-070-11	501 - 1000 Prints		0	-
1-070-12	Over 1000 Prints		0	-
1-080	Misfeed Setting Counter	Number of times the user changed the 'Misfeed' or 'Multifeed' settings for paper feed or separation pressures	0	-
1-081	Multifeed Setting Count		0	-
1-082	Start Error Message Cnt.	Number of times an error message appeared when the Start key was pressed	0	-
** 1-090	Move Counter Back Plate	This item is not used.	0	-
** 1-091	Adjust Counter PDTable	This item is not used.	0	-
* 1-100	OpenCounter Cover On Move	Counts how often the sorter cover is open and shut	0	-
1-102-1	Jam DF Feed-in Error	Counters for various types of jams	0	-
1-102-2	Jam DF Feedout Error		0	-
1-104-1	Jam Master Set Error		0	-

SP No.	Display	Function	Default	User Tools
1-104-2	Jam Master Clamp Error		0	-
1-104-3	Jam Master Cut Error		0	-
1-106-1	Jam Master Eject ON Chk		0	-
1-106-2	Jam Pressure Plate Error		0	-
1-106-3	Jam Master Eject OFF Chk		0	-
1-107-1	Jam Regist ON Check		0	-
1-107-2	Jam Feed Timing ON Check		0	-
1-107-3	Jam Feed Timing OFF Chk		0	-
1-107-4	Jam Paper Upper Wrapping		0	-
1-107-5	Jam Paper Lower Wrapping		0	-
1-107-6	Jam Paper Exit OFF Check		0	-
1-202-1	Jam% DF Feed-in Error	Jam ratios for various types of jam	0	-
1-202-2	Jam% DF Feed-out Error		0	-
1-204-1	Jam% Master Set Error		0	-
1-204-2	Jam% Master Clamp Error		0	-
1-204-3	Jam% Master Cut Error		0	-
1-206-1	Jam% Master Eject ON Chk		0	-
1-206-2	Jam% Press Plate Error		0	-
1-206-3	Jam% M Eject OFF Check		0	-
1-207-1	Jam% Regist ON Check		0	-
1-207-2	Jam% Feed Timing ON Chk		0	-
1-207-3	Jam% Feed Timing OFF Chk		0	-
1-207-4	Jam% Paper Upper Wrap		0	-
1-207-5	Jam% Paper Lower Wrap		0	-
1-207-6	Jam% Paper Exit OFF Chk		0	-
1-300-1	Jam P0 Standard	Feed-in jams and registration roller jams for various paper sizes and • paper types '-L': Lengthwise	0	-
1-300-2	Jam P0 Thick		0	-
* 1-300-3	Jam P0 Others		0	-
* 1-301-1	Jam P1 Standard	Registration roller jams (when the paper feed timing sensor stays on) for various paper sizes and paper types • '-L': Lengthwise	0	-
* 1-301-2	Jam P1 Thick		0	-
* 1-301-3	Jam P1 Others		0	-
* 1-302-1	Jam P2 A3/B4 Standard	Upper wrap, lower wrap, and feed-out jams for various paper sizes and paper types • '-L': Lengthwise	0	-
* 1-302-2	Jam P2 A3/B4 Thick		0	-
* 1-302-3	Jam P2 A3/B4 Others		0	-
* 1-303-1	P Count A3/B4 Standard		0	-
* 1-303-2	P Count A3/B4 Thick		0	-
* 1-303-3	P Count A3/B4 Others		0	-
1-304-1	M Set Error Low Temp		0	-
1-304-2	M Set Error Normal Temp		0	-

SP No.	Display	Function	Default	User Tools
1-304-3	M Set Error High Temp		0	-
1-305-1	M Clamp Error Low Temp		0	-
1-305-2	M Clamp Error Nor. Temp		0	-
1-305-3	M Clamp Error High Temp		0	-
1-306-1	M Cut Error Low Temp	Master error counters for different temperature conditions (temperature detected by the thermistor in the drum)	0	-
1-306-2	M Cut Error Normal Temp		0	-
1-306-3	M Cut Error High Temp		0	-
1-307-1	M Eject ON Jam Low Temp		0	-
1-307-2	M Eject ON Jam Nor Temp		0	-
1-307-3	M Eject ON Jam High Temp		0	-
1-308-1	Press Plate Error Low		0	-
1-308-2	Press Plate Error Normal		0	-
1-308-3	Press Plate Error High		0	-
1-309-1	M Eject OFF Jam Low Temp		0	-
1-309-2	M Eject OFF Jam Nor Temp		0	-
1-309-3	M Eject OFF Jam High Tem		0	-
1-310-1	Tray1 MisFeed Counter A3	Feed-in jams and tray registration roller jams for various paper sizes for the	0	-
1-310-2	Tray1 MisFeed Cnt. A4B5V		0	-
1-310-3	Tray1 MisFeed Cnt. Other		0	-
** 1-311-1	Tray2 MisFeed Counter A3	These items are not used.	0	-
** 1-311-2	Tray2 MisFeed Cnt. A4B5V		0	-
** 1-311-3	Tray2 MisFeed Cnt. Other		0	-
** 1-312-1	Trans.MisFeed Counter A3		0	-
** 1-312-2	Trans.MisFeed Cnt. A4B5V		0	-
** 1-312-3	Trans.MisFeed Cnt. Other		0	-
** 1-313	Jam Counter Tandem		0	-
** 1-314-1	Jam Cnt. RegistFeed A3		0	-
** 1-314-2	Jam Cnt.RegistFeed A4B5V		0	-
** 1-314-3	Jam Cnt.RegistFeed Other		0	-
** 1-315-1	Tray1 Jam Cnt.Ent. A3		0	-
** 1-315-2	Tray1 Jam Cnt.Ent. A4B5V		0	-
** 1-315-3	Tray1 Jam Cnt.Ent. Other		0	-
** 1-316-1	Tray2 Jam Cnt.Ent. A3		0	-
** 1-316-2	Tray2 Jam Cnt.Ent. A4B5V		0	-
** 1-316-3	Tray2 Jam Cnt.Ent. Other		0	-
** 1-317-1	Tray1 Jam Cnt.MidTrns.A3		0	-
** 1-317-2	Tray1JamCntMidTrnsA4B5V		0	-
** 1-317-3	Tray1JamCnt.MidTrnsOther		0	-
** 1-318-1	Tray2 Jam Cnt.MidTrns.A3		0	-
** 1-318-2	Tray2JamCnt.MidTrnsA4B5V		0	-

SP No.	Display	Function	Default	User Tools
** 1-318-3	Tray2JamCnt.MidTrnsOther		0	-
* 1-320-1	1Master Print Cnt. 1-20	Master counters for sorter mode. For details, see the sorter service manual.	0	-
* 1-320-2	1Master Print Cnt. 21-40		0	-
* 1-320-3	1Master Print Cnt. 41-50		0	-
* 1-320-4	1Master Print Cnt. 51-80		0	-
* 1-320-5	1Master Print Cnt.81-		0	-
* 1-321-1	Master Cnt.on Sort 1-5	Job counters for sorter mode. For details, see the sorter service manual.	0	-
* 1-321-2	Master Cnt.on Sort 6-10		0	-
* 1-321-3	Master Cnt.on Sort 11-20		0	-
* 1-321-4	Master Cnt.on Sort 21-30		0	-
* 1-321-5	Master Cnt.on Sort 31-50		0	-
* 1-321-6	Master Cnt.on Sort 51-		0	-
* 1-322-1	Cnt.SortPrint over A4	Print counters for sorter mode. For details, see the sorter service manual.	0	-
* 1-322-2	Cnt.SortPrint under A4		0	-
* 1-322-3	Cnt.SortPrint Table		0	-
* 1-322-4	Cnt.SortPrint Tray1		0	-
* 1-322-5	Cnt.SortPrint Tray2		0	-
* 1-323-1	Jam Cnt. MidTrans.	Counters for various location jams. For details, see the sorter service manual.	0	-
* 1-323-2	Jam Cnt. HoriTrans.		0	-
* 1-323-3	Jam Cnt.EndTip VertTrans.		0	-
* 1-323-4	Jam Cnt.EndTip Rest.Low		0	-
* 1-323-5	Jam Cnt.EndTip Rest.Upper		0	-
** 1-400-1	Chk.Sales2-002SetKey Counter	For Japanese version only.	-	-
** 1-400-2	Chk.Sales2-003SetKeyCard		-	-
** 1-400-3	Chk.Sales2-006PCCont.Set		-	-
** 1-400-4	Chk.Sales2-007PDTable		-	-
** 1-400-5	Chk.Sales2-016SwapStart Key		-	-
** 1-400-6	Chk.Sales2-050Sharpen ImageMode		-	-
** 1-400-7	Chk.Sales2-370InkSupply PrePrt		-	-
** 1-400-8	Chk.Sales2-380JapanDisp. Type		-	-
** 1-400-9	Chk.Sales2-420Feed FrictionPadType		-	-

2. Basic Settings

SP No.	Display	Function	Default	Setting	User Tools
2-002	Set Key Counter	Also see 2-291.	No	No/Yes	-
2-003	Set Key Card	Japan only	No	No/Yes	-
2-004	Sorter Select	0:None 1:DS (Japan only) 2:JS (C592)	0	0 to 2	-
** 2-005	Disable Paper Bank	Not used.	No	Yes/No	-
2-006	PC Controller Settings	Do not adjust.	AUTO	AUTO / 10PS	1-9
** 2-007	Disable Paper Exit Tray	Not used.	No	Yes/No	-
2-010	Sizes in Metric or Inch		-	0:JPN 1:mm 2:Inch	1-6
2-011	Select Language Type	See Note 1.	-	0 to 6	-
2-015	Machine Destination	See Note 2.	0	0: Other 1: Japan	-
2-016	Swap Start Key	See Note 3.	No	Yes/No	-
2-020-1	Default Original Mode	Defaults for various user settings See Notes 4 to 13.	0	0 to 3	3-3
2-020-2	Default Tint Mode		OFF	ON/OFF	3-8
2-020-3	Default Paper Type		1	0 to 4	3-1
2-020-4	Default Master Density		1	0 to 3	3-2
2-020-5	Default Print Speed		3	1 to 5	-
2-020-6	Default Auto Cycle Mode		ON	ON/OFF	4-1
2-020-7	Def Image Position Tp/Btm		0	-15.0 to 15.0	-
2-020-8	Def Image Position Lt/Rt		0	-10.0 to 10.0	-
2-020-9	Default Photo/Lightness		1	0 to 2	3-6
2-020-10	Default Photo/Screen		0	0 to 4	3-7
2-020-11	Def On-line Paper Size		14	0 to 14	3-10
2-020-12	Default Make-up Pattern1		0	0 to 43	-
2-020-13	Default Make-up Pattern2		0	0 to 43	-
2-020-14	Default Make-up Pattern3		0	0 to 43	-
2-020-15	Default Make-up Pattern4		0	0 to 43	-
2-020-16	Default Ratio		4	0 to 8	3-11
2-020-17	Default Eco Ink		1	0 to 3	-
2-030	Panel Beeper	See Note 14.	1	0 to 2	2-5
2-031	Background Correction	See Note 15.	No	No/Yes	4-6
2-032-1	TH Egy Temp Ctl - Black	See Note 16.	ON	ON/OFF	-
2-032-2	TH Egy Temp Ctl - Color		OFF	ON/OFF	
2-040	Ink Detection	Enables/disables various sensors for test purposes.	ON	ON/OFF	-
2-041	Paper Length Detection		ON	ON/OFF	-
2-042-1	Paper Width Detection		ON	ON/OFF	4-3
2-042-2	Paper Size Indicators		OFF	ON/OFF	-

SP No.	Display	Function	Default	Setting	User Tools
2-043	Drum Master Detection		ON	ON/OFF	-
2-044	Platen Cover Set Detect		ON	ON/OFF	-
2-045	ADF Close Detection		ON	ON/OFF	-
2-046-1	Platen Orig. Size Detect		ON	ON/OFF	4-5
2-046-2	ADF Orig. Size Detect	See Note 17.	ON	ON/OFF	4-4
2-050	Sharpen Image Mode	See Note 18.	OFF	ON/OFF	4-27
2-060	Long Paper Mode	See Note 19.	OFF	ON/OFF	-
2-070	Auto Combine Originals	See Note 20.	NO	YES/NO	4-8
2-080	A3 Master 2 Count Up	See Note 21.	0	0 to 2	-
2-090	APS A5 Size Detection	See Note 22.	NO	YES/NO	-
2-100	User Code Mode		OFF	ON/OFF	1-4
2-110	Auto Quality Start		ON	ON/OFF	4-13
2-120	Exit Wing Position	See Note 23.	0	0 to 2	4-15
2-125	Drum Idling	See Note 24.	Fast	Fast/ Slow	-
** 2-140	Auto Tray Switching	Not used.	Yes	Yes/No	4-23
2-150	Auto Image Rotation	See Note 25.	Yes	Yes/No	4-20
2-170	Auto Master Save Select	OFF: A3 master always used regardless of original size.	AUTO	AUTO / OFF	4-21
2-210	Ink Master Left	Also for master roll. See Note 26.	OFF	ON/OFF	4-18
2-220	Key Card Setting	Japan only	1	0 to 3	1-5
2-230	Copy Count Display		Down	Up / Down	2-3
2-240	Class Display Select	Japan only	School	School/ Normal	
2-241	Class Entry Per Orig.		Normal	By Orig / Normal	4-2
2-250	Combine Orig. Sep. Line	See Note 27.	0	0 to 4	4-9
2-260	Auto Combine Mode Reset		No	Yes/No	4-10
2-270	Print Restart in Class	See Note 28.	2	1 to 2	4-16
2-271	Job Sep. At Class Mode		Yes	Yes/No	4-17
** 2-280	Paper Tray Priority	Not used.	0	0 to 2	4-22
** 2-281	Tray Mode Select	Not used.	0	0 to 1	4-24
** 2-282	Paper Tray Auto Select	Not used.	ON	ON/OFF	4-26
2-290	Key Operator Code		OFF	ON/OFF	6-6
2-291	Restricted Access	See Note 31.	OFF	ON/OFF	6-8
2-300	Stamp Type	See Note 32.	0	0 to 6	5-1
2-301	Default Stamp Size	See Note 33.	0	0 to 3	5-2
2-302	Default Stamp Density	See Note 34.	0	0 to 2	5-3
2-303	Default Stamp Position	See Note 35.	0	0 to 9	5-4
2-304	User Stamp Size	See Note 36.	0	0 to 3	5-5
2-305	User Stamp Density		0	0 to 2	5-6

SP No.	Display	Function	Default	Setting	User Tools
2-306	User Stamp Position		0	0 to 9	5-7
2-307	Date Stamp Type		m.d.'y	d.m.'y / m.d.'y	5-9
2-308	Date Stamp Position	See Note 37.	0	0 to 3	5-10
2-309	Page Numbering Type	See Note 38.	0	0 to 2	5-12
2-310	Default Page Position	See Note 39.	0	0 to 3	5-13
2-320	Skip Feed Mode Display		Yes	Yes/No	4-11
2-370	Ink Supply w/Trial Print	ON: Ink is supplied while a trial print is made after making a new master.	OFF	ON/OFF	-
2-380	Japanese Display Type	Do not use.	0	0 to 2	-
2-390	A3/DLT Drum Selection	See Note 40.	-	DLT/A3/ B4	-
2-400	User1 Paper Type	See Note 41.	0	0 to 5	4-19
2-401	User2 Paper Type		0	0 to 5	4-19
2-410	Auto On-line Mode	YES: The on-line mode is automatically activated when data is sent from a PC (needs the optional PC controller)	No	Yes/No	-
2-420	Feed Friction Pad Type	Do not use.	Normal	Normal / Custom	-
2-422	Ink Auxiliary Supply	See Note 42.	0	0 to 2	-
* 2-660-1	Set Jogger Mode Normal	For details, refer to the sorter service manual.	1	0 to 1	4-25
* 2-660-2	Set Jogger Mode Class		0	0 to 1	4-25
* 2-661	JS Sorter Speed Setting		OFF	ON/OFF	-
* 2-662	JS Sorter PaperVolmeLimit		No	Yes/No	-
* 2-663	JS Sorter Set Unit		Upper & lower	Upper & lower Upper Lower	-
* 2-664	Save Ink in Sorter Modes	Yes: The Ink Save mode is activated when a sorter mode is selected	OFF	ON/OFF	-

Notes

1: 2-011 (Display language)

0: Japanese, 1: English, 2: German, 3: French, 4: Italian, 5: Spanish, 6: Dutch

2: 2-015 (Machine Destination)

Always set this mode as 'Other.' If 'Japan' is selected, User Tools 1-5 that are not used for other versions are displayed.

3: 2-016 (Swap Start Key)

Enables swapping *the Start (master making) key function* and *the Print key function* depending on the end user's preference. ('No' is the default setting.)

4: 2-020-1 (Default original mode)

0: Letter, 1: Letter/Photo, 2: Photo, 3: Pencil

5: 2-020-3 (Default paper type)

0: Special, 1: Standard, 2: Thick, 3: User 1, 4: User 2

6: 2-020-4 (Default master density)

0: Pale, 1: Normal, 2: Fairly dark, 3: Dark

7: 2-020-5 (Default print speed, cpm)

1: 60, 2: 75, 3: 90, 4: 105, 5: 120

8: 2-020-9 (Default Photo/Lightness)

This is the default brightness in photo or letter/photo mode.

0: Dark, 1: Normal, 2: Light

9: 2-020-10 (Default Photo/Screen)

This is the default screen type for photo mode.

0: Standard, 1: Coarse 1, 2: Coarse 2, 3: Coarse 3, 4: Coarse 4 (coarsest)

10: 2-020-11 (Default On Line paper size)

This is the default paper size when the On Line key is pressed,

0: A3, 1: B4, 2: A4, 3: A4 lengthwise, 4: B5, 5: B5 lengthwise, 6: A5,
7: A5 lengthwise, 8: A6, 9: A6 lengthwise, 10 to 12: Not used, 13: Free, 14: Auto

Free – The master size is determined by the paper size sent from the PC.

Auto – The master size is determined by the paper size on the paper feed table. If the data from the PC is for a larger paper size, the excess data is lost.

Other settings: For example, if the setting is 0 (A3), the machine always makes an A3 master.

11: 2-020-12 to -15 (Default make-up patterns 1 to 4)

0 to 39: Preset patterns, from 1 to 40
40 to 43: User-created patterns A to D

12: 2-020-16 (Default Ratio)

U.S. version
0: 65%, 1: 74%, 2: 77%, 3: 93%, 4: 100%, 5: 121%, 6: 129%, 7: 155% 8: Auto

Other versions
0: 71%, 1: 82%, 2: 87%, 3: 93%, 4: 100%, 5: 115%, 6: 122%, 7: 141% 8: Auto

Selects a magnification ratio at power on or when the Modes Clear key is pressed. The same function has also been assigned to User Tool 3-11.

13: SP2-20-17 (Default Eco Ink)

By selecting ON in this mode, the Economy mode, which conserves ink during printing, can be set as the default at power on.

14: 2-030 (Panel beeper)

0: Disabled, 1: Enabled (except for when keys pressed), 2: Enabled fully

15: 2-031 (Background correction)

This can be used in letter/photo, photo, and tint modes to prevent the background of an original from appearing on copies. See Detailed Section Descriptions – Image Processing for more details.

16: 2-032 (Thermal head energy control with temperature)

If this is switched on, the energy supplied to the thermal head will depend on the temperature measured by the thermistor in the drum.

	Less than 18 °C	18 – 28 °C	More than 28 °C
Standard	SP 3-020-1 value (Default: -7%)	SP 3-020-1 – 5% (Default: -12%)	SP 3-020-1 – 10% (Default: -17%)
Economy	SP 3-020-2 value (Default: -25%)		

17: 2-046-2 (ADF original size detection)

Disabling ADF original size detection allows the ADF to scan originals within the following range.

Width: 105 to 297 mm
Length: 128 to 864 mm

18: 2-050 (Sharpen Image Mode)

When this SP mode is on, fine details become more apparent in letter mode. But the edges of paper pasted onto the original might appear on the print.

19: 2-060 (Long paper mode)

This disables trailing edge detection to allow long printer paper to be fed. This is not within specifications, so the machine's performance cannot be guaranteed using this mode.

20: 2-070 (Auto Combine Original mode)

This SP mode determines the use of the Combine key.

0: Normal – The Combine key accesses the Combine feature, in which two originals can be combined onto one copy

1: Automatic – The Combine key accesses the Auto Combine feature, in which the same original is printed twice or four times on the copy

This SP mode is only referred to when using the exposure glass. From the ADF, Auto Combine is always used if more than one original is placed.

The default is Normal.

21: 2-080 (Double count-up for A3 masters)

0: The counters go up by 1 only.

1: The master counter goes up by 2.

2: The master and print counters both go up by 2.

22: 2-090 (APS A5 Size Detection)

This determines how the machine behaves if the APS sensors cannot detect the original because it is too small

0: No original detected, 1: A5 assumed

Default: 0

23: 2-120 (Exit Wing Position)

This determines the position of the wings on the paper delivery table.

0: Auto (determined by the setting of SP6-100 for the currently-used paper type)

1: Always Up (regardless of SP6-100), 2: Always Down (regardless of SP6-100)

24: 2-125 (Drum Idling)

This mode has two options: “Fast” and “Slow”. Fast is the default setting and is used with the new 16-kgf printing pressure setting. (See Pearl RTB No. 3 for more details about the new printing pressure setting.)

Fast mode skips the 30-rpm drum rotation speed at the beginning of printing. Consequently, the drum rotation speed increases as shown in the table below. Slow mode does not skip the 30-rpm drum rotation speed. Note that there are two cases depending on the temperature inside of the drum, detected by the thermistor. With the ‘Slow’ setting, paper wrapping jams become more likely unless the printing pressure is reduced to 14 kgf.

SP2-125 Setting	Drum Temperature	Trial Print	1st Print	2nd Print	3rd Print	4th Print	5th Print	6th Print	7th Print
Slow	Below 15 °C	16	16	***30***	60	75	90	105	120
	15 °C or above	16	***30***	60	75	90	105	120	120
Fast	Below 15 °C	16	16	60	75	90	105	120	120
	15 °C or above	16	60	75	90	105	120	120	120

* These figures apply to the highest printing speed (120-rpm).

25: 2-150 (Auto Image Rotation)

If enabled, this feature rotates the scanned image if the original and printing paper are of the same size but different orientations.

0: Disabled, 1: Enabled

Default: Enabled

26: 2-210 (Ink Near-end Detection)

This SP mode enables and disables the display for ink and master roll near-end detection.

The machine determines how much of the master roll is remaining by subtracting the length of each master that is made.

In addition, it determines how much ink is left by counting the number of ink pump strokes that have been made.

The default is 0 (disabled). In this condition, the master and ink consumption is still monitored, but if a near-end condition occurs, it will not be displayed.

If this SP mode is changed to 1 (enabled), near-end will be displayed, but only for a few seconds when the machine has just been switched on.

27: 2-250 (Separation lines for Combine Original mode)

This can only be used with Memory Combine mode, using the optional memory board.

This determines the type of separation line printed on copies between the images of the different originals.

0: None (default), 1: Solid, 2: Broken line type A, 3: Broken line type B, 4: Crop marks

28: 2-270 (Print Restart in Class)

This determines how the machine behaves if the Job Separator feature is not used.

1: Auto Start – After printing for one class has been finished, there is a pause of a few seconds, then printing for the next class begins automatically. The short break allows the user to take the stack of prints off the delivery table.

2: Disabled (Default) – After printing for one class has been finished, the machine stops. The user must press Print to start printing for the next class.

31: 2-291 (Restricted Access)

When the key counter is installed, the technician enables the key counter with SP 2-002. However, the user can override this setting with SP 2-291 (which is also user tool 6-8).

OFF: Copies can be made even if the user has no key counter, regardless of SP 2-002.

ON: The user must have a key counter, if SP2-002 has been switched on.

The default is OFF, so to use the key counter, the user must switch 2-291 on using the equivalent user tool (6-8).

32: 2-300 (Stamp type)

This determines what the Stamping function (Stamp key) puts on the printouts.

33: 2-301 (Default stamp size)

This determines the size of the stamp.

0: Normal (about 32 x 64 mm), 1: x 2, 2: x 4, 3: x 8

34: 2-302 (Default Stamp Density)

0: Solid fill (default), 1: Fine pattern, 2: Coarse pattern

35: 2-303 (Default Stamp Position)

0: Upper left, 1: Upper middle, 2: Upper right, 3: Center left, 4: Center,
5: Center right, 6: Lower left, 7: Lower middle, 8: Lower right,
9: Everywhere (repeated)

User tool 5-4 (SP 3-120 to 128) can be used to adjust the co-ordinates of types 0 to 8.

36: 2-304 to 2-306 (User Stamp Size, Density, and Position)

These settings are the same as SP 2-301 to 2-303, except that they are for the user stamp. User stamps are stored using user tool 5-8.

User tool 5-7 (SP 3-130 to 138) can be used to adjust the co-ordinates of types 0 to 8.

37: 2-308 (Date Stamp Position)

0: Upper left (horizontal), 1: Lower right (horizontal), 2: Lower left (vertical),
3: Upper right (vertical)

38: 2-309 (Page Numbering Type)

0: P1, P2, P3, . . 1: 1/5, 2/5, 3/5, . . 2: - 1 -, - 2 -, - 3 -, . . .

39: 2-310 (Default Page Number Stamping Position)

0: Upper right (horizontal), 1: Upper left (vertical), 2: Bottom middle (horizontal), 3: Center right (vertical)

Settings 0 and 1 determine the default for the ‘P1, P2’ and ‘1/5, 2/5’ types of page numbering.

Settings 2 and 3 determine the default for the ‘- 1 -, - 2 -‘ types of page numbering.

40: 2-390 (Drum Size – A3 or DLT)

This setting changes the master making area. It also affects the available range for the default image position shift (top/bottom, SP2-020-7).

A3: -15 mm to + 15 mm
DLT: -10 mm to + 10 mm

41: 2-400, 401 (Paper types for User 1 and User 2)

The user can customize two paper types (User 1 and User 2) in addition to the three usual paper types (Normal, Thick, Special).

These SP modes give the machine a rough idea of what type of paper the user is using as types User 1 and User 2.

0: This paper type is not being used at present
1: Standard, no feed (Standard paper type, non feed likely)
2: Standard, double feed (Standard paper type, double feed likely)
3: Thick, no feed (Thick paper type, non feed likely)
4: Thick, double feed (Thick paper type, double feed likely)
5: Thick, medium (Thick paper type, with intermediate chances of double and non-feed)

42: 2-422 (Ink Auxiliary Supply)

This mode determines when ink is detected and supplied. There are three possible settings.

- '0: After': Ink detection and supply are done when a print job finishes.
- '1: Before': They are done when the Print Start key is pressed (and before starting printing).
- '2: No': Ink is not added except during normal printing.

Note that if the machine detects a low ink condition during printing, ink is supplied regardless of this setting.

To minimize the wait time for drum idling, ink supply prior to starting printing has been eliminated by setting this mode to '0: After' as the default. With older firmware, when the Print Start key is pressed, the machine carries out the ink detection and (if low ink is detected) starts to supply ink before starting printing. (This ink detection is likely only when an operator cancels the Auto-cycle mode, which is selected by default. In the Auto-cycle mode, the machine enters the printing process without detecting the ink after making a master.)

3. User Custom Settings

SP No.	Display	Function	Default	Setting	User Tools
3-001	Minimum Print Quantity		0	0 to 9999%	2-1
3-002	Maximum Print Quantity		9999	0 to 9999%	2-2
3-010-1	Magnification (A3 to A4)	Allows the user to change the default reproduction ratios	71	50 to 200%	3-4
3-010-2	Magnification (B4 to A4)		82	50 to 200%	3-4
3-010-3	Magnification (A3 to B4)		87	50 to 200%	3-4
3-010-4	Magnification (Margins)		93	50 to 200%	3-4
3-010-5	Magnification (Standard)		100	50 to 200%	3-4
3-010-6	Magnification (B4 to A3)		115	50 to 200%	3-4
3-010-7	Magnification (A4 to B4)		122	50 to 200%	3-4
3-010-8	Magnification (A4 toA3)		141	50 to 200%	3-4
3-020-1	T Head Energy - Standard	Thermal head energy in standard and economy modes, as percentage of full power. Also see SP 2-032.	-7	0 to -99%	-
3-020-2	T Head Energy - Economy		-25	0 to -99%	-
3-030	Auto Reset Time	Determines how long it takes for the machine to return to the defaults.	0	0, 1 to 5	1-1
3-051	Number of Skip Feeds		2	2-9	4-11
3-060-1	MarginErase A3 MainScan	Determines the edge erase margins. For example, for A3 main scan, the width of the original is 297 mm, and the erase margin is set at 293. This means that only the central 293 mm will be scanned.	293	50-297	3-9
3-060-2	MarginErase A3 SubScan		420	50-420	3-9
3-060-3	MarginErase B4/LG-L Main		253	50-257	3-9
3-060-4	MarginErase B4/LG-L Sub		360	50-364	3-9
3-060-5	MarginErase A4/LT-L Main		206	50-216	3-9
3-060-6	MarginErase A4/LT-L Sub		293	50-297	3-9
3-060-7	MarginErase A4 MainScan		293	50-297	3-9

SP No.	Display	Function	Default	Setting	User Tools
3-060-8	MarginErase A4 SubScan	Determines the edge erase margins. For example, for A3 main scan, the width of the original is 297 mm, and the erase margin is set at 293. This means that only the central 293 mm will be scanned.	206	50-216	3-9
3-060-9	MarginErase B5-L Main		178	50-182	3-9
3-060-10	MarginErase B5-L Sub		253	50-257	3-9
3-060-11	MarginErase B5 MainScan		253	50-257	3-9
3-060-12	MarginErase B5 SubScan		178	50-182	3-9
3-060-13	MarginErase A5-L Main		144	50-148	3-9
3-060-14	MarginErase A5-L Sub		206	50-210	3-9
3-060-15	MarginErase A5 MainScan		206	50-210	3-9
3-060-16	MarginErase A5 SubScan		144	50-148	3-9
3-060-17	MarginErase Card-L Main		96	50-105	3-9
3-060-18	MarginErase Card-L Sub		144	50-148	3-9
3-060-19	MarginErase Card Main		144	50-148	3-9
3-060-20	MarginErase Card Sub		96	50-105	3-9
3-060-21	MarginErase Custom Main	This allows the user to input a custom size. SP3-060-21 and 22 specify edge erase margins for this original size.	66	50-300	3-9
3-060-22	MarginErase Custom Sub		161	50-432	3-9
3-061-1	Set Custom Size - Main		70	50-300	3-9
3-061-2	Set Custom Size - Sub		165	50-432	3-9

SP No.	Display	Function	Default	Setting	User Tools
3-070-1	Serial Number	Use these to input the serial numbers Serial number locations: Main body: Open front cover, on the left of the machine (master eject box area) Bank: Rear cover Paper delivery table: On the base Do these at installation if required. The data is used in the data printout mode in the system test. (SP3-70 and -72 can be seen in SP1-41 and -50.)	0	-	-
** 3-070-2	Bank Serial Number		0	-	-
** 3-070-3	PDTable Serial Number		0	-	-
3-071	Installation Date		0	-	-
3-072	Service Telephone Number		0	-	-
3-073	Clock		-	-	1-8
3-074	First Power On Date		-	-	-
3-090	Manual Idling Rotation	This determines the number of drum idling rotations when the user has selected Quality Start with the Quality Start key.	45	0-90	4-12
3-091-1	Auto Idling 0-4h	These determine the number of drum idling rotations in Auto Quality Start mode, depending on the length of time the machine has been unused. 3-091: 18 to 28 °C 3-092: Below 18 °C 3-093: Above 28 °C	0	0-90	4-14
3-091-2	Auto Idling 4-24h		0	0-90	4-14
3-091-3	Auto Idling 24-72h		15	0-90	4-14
3-091-4	Auto Idling 72h-Over		15	0-90	4-14
3-092-1	AutoIdling 0-4h Low Temp		0	0-90	4-14
3-092-2	Auto Idling 4-24h Low		0	0-90	4-14
3-092-3	Auto Idling 24-72h Low		45	0-90	4-14
3-092-4	Auto Idling 72h-Over Low		45	0-90	4-14
3-093-1	AutoIdling 0-4h HighTemp		0	0-90	4-14
3-093-2	Auto Idling 4-24h High		0	0-90	4-14
3-093-3	Auto Idling 24-72h High		0	0-90	4-14
3-093-4	AutoIdling 72h-Over High		15	0-90	4-14

SP No.	Display	Function	Default	Setting	User Tools
3-100 (-1 to -12)	Register Class 1-1 to 1-12	The number of students in each class. No. of grades: Up to 9 No. of classes per grade: Up to 12 No. of students per class: Program with these SP modes Defaults for each grade Classes 1 to 4: 30 Classes 5 to 12: 0	0	0-9999	3-5
3-101 (-1 to -12)	Register Class 2-1 to 2-12		0	0-9999	3-5
3-102 (-1 to -12)	Register Class 3-1 to 3-12		0	0-9999	3-5
3-103 (-1 to -12)	Register Class 4-1 to 4-12		0	0-9999	3-5
3-104 (-1 to -12)	Register Class 5-1 to 5-12		0	0-9999	3-5
3-105 (-1 to -12)	Register Class 6-1 to 6-12		0	0-9999	3-5
3-106 (-1 to -12)	Register Class 7-1 to 7-12		0	0-9999	3-5
3-107 (-1 to -12)	Register Class 8-1 to 8-12		0	0-9999	3-5
3-108 (-1 to -12)	Register Class 9-1 to 9-12		0	0-9999	3-5
3-110	Register User Code	These are for administering the user codes and the key operator code.	-	-	6-3
3-111	Change User Code		-	-	6-4
3-112	Register Key Operator		0000	0000 to 9999	6-7
3-113	Clear User Code		-	-	6-5
3-120-1	Stamp Top Rt - Side	These specify the co-ordinates of the eight possible positions for the preset stamp.	24	8 to 144	5-4
3-120-2	Stamp Top Rt - UpDown		24	8 to 104	5-4
3-121-1	Stamp Top Mdl - Side	These specify the co-ordinates of the eight possible positions for the preset stamp.	0	-72 to 72	5-4
3-121-2	Stamp Top Mdl - UpDown		24	8 to 104	5-4
3-122-1	Stamp Top Lft - Side		24	8 to 144	5-4
3-122-2	Stamp Top Lft - UpDown		24	8 to 104	5-4
3-123-1	Stamp Btm Rt - Side		24	8 to 144	5-4
3-123-2	Stamp Btm Rt - UpDown		24	8 to 104	5-4
3-124-1	Stamp Btm Mdl - Side		0	-72 to 72	5-4
3-124-2	Stamp Btm Mdl - UpDown		24	8 to 104	5-4
3-125-1	Stamp Btm Lft - Side		24	8 to 144	5-4
3-125-2	Stamp Btm Lft - UpDown		24	8 to 104	5-4
3-126-1	Stamp Rt Mdl - Side		24	8 to 144	5-4

SP No.	Display	Function	Default	Setting	User Tools
3-126-2	Stamp Rt Mdl - UpDown	These specify the co-ordinates of the eight possible positions for the preset stamp.	0	-52 to 52	5-4
3-127-1	Stamp Center - Side		0	-72 to 72	5-4
3-127-2	Stamp Center - UpDown		0	-52 to 52	5-4
3-128-1	Stamp Lft Mdl - Side		24	8 to 144	5-4
3-128-2	Stamp Lft Mdl - UpDown		0	-52 to 52	5-4
3-130-1	UserStamp Top Rt - Side	These specify the co-ordinates of the eight possible positions for the user stamp.	24	8 to 144	5-7
3-130-2	UserStamp Top Rt - UpDn		24	8 to 104	5-7
3-131-1	U Stamp Top Mdl - Side		0	-72 to 72	5-7
3-131-2	U Stamp Top Mdl - UpDown		24	8 to 104	5-7
3-132-1	U Stamp Top Lft - Side		24	8 to 144	5-7
3-132-2	U Stamp Top Lft - UpDown		24	8 to 104	5-7
3-133-1	User Stamp Btm Rt - Side		24	8 to 144	5-7
3-133-2	User Stamp Btm Rt - UpDn		24	8 to 104	5-7
3-134-1	U Stamp Btm Mdl - Side		0	-72 to 72	5-7
3-134-2	U Stamp Btm Mdl - UpDown		24	8 to 104	5-7
3-135-1	U Stamp Btm Lft - Side		24	8 to 144	5-7
3-135-2	U Stamp Btm Lft - UpDown		24	8 to 104	5-7
3-136-1	User Stamp Rt Mdl - Side	These specify the co-ordinates of the eight possible positions for the preset stamp.	24	8 to 144	5-7
3-136-2	User Stamp Rt Mdl - UpDn		0	-52 to 52	5-7
3-137-1	User Stamp Center - Side		0	-72 to 72	5-7
3-137-2	User Stamp Center - UpDn		0	-52 to 52	5-7
3-138-1	U Stamp Lft Mdl - Side		24	8 to 144	5-7
3-138-2	U Stamp Lft Mdl - UpDown		0	-52 to 52	5-7

SP No.	Display	Function	Default	Setting	User Tools
3-140-1	Date Top Lft - Side	These specify the co-ordinates of the four possible positions for the date stamp.	20	8-40	5-11
3-140-2	Date Top Lft - UpDown		8	8-40	5-11
3-141-1	Date Btm Rt - Side		20	8-40	5-11
3-141-2	Date Btm Rt - UpDown		8	8-40	5-11
3-142-1	Date Btm Lft - Side		12	8-40	5-11
3-142-2	Date Btm Lft - UpDown		20	8-40	5-11
3-143-1	Date Top Rt - Side		8	8-40	5-11
3-143-2	Date Top Rt - UpDown		20	8-40	5-11
3-150-1	Page Top Rt - Side	These specify the co-ordinates of the four possible positions for the page number stamp.	12	8-40	5-14
3-150-2	Page Top Rt - UpDown		8	8-40	5-14
3-151-1	Page Top Lft - Side		12	8-40	5-14
3-151-2	Page Top Lft - UpDown		12	8-40	5-14
3-152-1	Page Btm Mdl - Side		0	0	5-14
3-152-2	Page Btm Mdl - UpDown		8	8-40	5-14
3-153-1	Page Mdl Rt - Side		8	8-40	5-14
3-153-2	Page Mdl Rt - UpDown		0	0	5-14
3-161	Num of Master Eject Trial	This specifies the number of master eject attempts before an error is indicated.	2	1 to 3	-
* 3-400	Low Power Setting		3min	OFF/1 to 120 min	1-11
3-540	PDTable Capacity Limit	Capacity of the delivery table	1000	0 to 1000 (0: No limit)	2-7
** 3-541-1	PDTablePos. A3-L S-Plate	Not used.	0	-10 to 10 mm	3-12
** 3-541-2	PDTablePos. A3-L E-Plate		0	-10 to 10 mm	3-12
** 3-541-3	PDTablePos. B4-L S-Plate		0	-10 to 10 mm	3-12
** 3-541-4	PDTablePos. B4-L E-Plate		0	-10 to 10 mm	3-12
** 3-541-5	PDTablePos. A4-L S-Plate		0	-10 to 10 mm	3-12
** 3-541-6	PDTablePos. A4-L E-Plate		0	-10 to 10 mm	3-12
** 3-541-7	PDTablePos. A4 SidePlate		0	-10 to 10 mm	3-12

SP No.	Display	Function	Default	Setting	User Tools
** 3-541-8	PDTablePos. A4 EndPlate		0	-10 to 10 mm	3-12
** 3-541-9	PDTablePos. B5-L S-Plate		0	-10 to 10 mm	3-12
** 3-541-10	PDTablePos. B5-L E-Plate		0	-10 to 10 mm	3-12
** 3-542-1	PDTablePos. A3-L S-Plate	Not used.	0	-10 to 10 mm	3-12
** 3-542-2	PDTablePos. A3-L E-Plate		0	-10 to 10 mm	3-12
** 3-542-3	PDTablePos. B4-L S-Plate		0	-10 to 10 mm	3-12
** 3-542-4	PDTablePos. B4-L E-Plate		0	-10 to 10 mm	3-12
** 3-542-5	PDTablePos. A4-L S-Plate		0	-10 to 10 mm	3-12
** 3-542-6	PDTablePos. A4-L E-Plate		0	-10 to 10 mm	3-12
** 3-542-7	PDTablePos. A4 S-Plate		0	-10 to 10 mm	3-12
** 3-542-8	PDTablePos. A4 E-Plate		0	-10 to 10 mm	3-12
** 3-542-9	PDTablePos. B5-L S-Plate		0	-10 to 10 mm	3-12
** 3-542-10	PDTablePos. B5-L E-Plate		0	-10 to 10 mm	3-12
** 3-542-11	PDTablePos. B5 S-Plate		0	-10 to 10 mm	3-12
** 3-542-12	PDTablePos. B5 E-Plate		0	-10 to 10 mm	3-12
** 3-543-1	PDTablePos.DLT-L S-Plate	Not used.	0	-0.4 to 0.4 inch	3-12
** 3-543-2	PDTablePos.DLT-L E-Plate		0	-0.4 to 0.4 inch	3-12
** 3-543-3	PDTablePos. LG-L S-Plate		0	-0.4 to 0.4 inch	3-12
** 3-543-4	PDTablePos. LG-L E-Plate		0	-0.4 to 0.4 inch	3-12
** 3-543-5	PDTablePos. LT-L S-Plate		0	-0.4 to 0.4 inch	3-12
** 3-543-6	PDTablePos. LT-L E-Plate		0	-0.4 to 0.4 inch	3-12
** 3-543-7	PDTablePos. LT S-Plate		0	-0.4 to 0.4 inch	3-12
** 3-543-8	PDTablePos. LT E-Plate		0	-0.4 to 0.4 inch	3-12

SP No.	Display	Function	Default	Setting	User Tools
** 3-544-1	PDTablePos.DLT-L S-Plate	Not used.	0	-0.4 to 0.4 inch	3-12
** 3-544-2	PDTablePos.DLT-L E-Plate		0	-0.4 to 0.4 inch	3-12
** 3-544-3	PDTablePos. LG-L S-Plate		0	-0.4 to 0.4 inch	3-12
** 3-544-4	PDTablePos. LG-L E-Plate		0	-0.4 to 0.4 inch	3-12
** 3-544-5	PDTablePos. LT-L S-Plate		0	-0.4 to 0.4 inch	3-12
** 3-544-6	PDTablePos. LT-L E-Plate		0	-0.4 to 0.4 inch	3-12
** 3-544-7	PDTablePos. LT S-Plate		0	-0.4 to 0.4 inch	3-12
** 3-544-8	PDTablePos. LT E-Plate		0	-0.4 to 0.4 inch	3-12
* 3-660	JSSorter Bin Capacity Limit	For details, refer to the sorter service manual.	50	1 to 50 sheets	-
* 3-661-1	JSSorter Joger Int.Num Normal		2	1 to 3	-
* 3-661-2	JSSorterJoger Int.Num Class		2	1 to 3	-

4. Input Test Mode

SP No.	Display
4-020	Scanner HP Sensor
4-021-1	Original Length SN 0
4-021-2	Original Length SN 1
4-021-3	Original Width SN 2
4-021-4	Original Width SN 3
4-021-5	Original Length SN 4
4-021-6	Original Length SN 5
4-022	Platen Cover Sensor
4-040	Master Unit Set Sensor
4-041	Cutter HP Sensor
4-042	Master Set Sensor
4-043	Master End Sensor
4-044	Master Edge Sensor
4-046	Platen Release Sensor
4-060	Eject Box Set Sensor
4-061	Paper Eject Sensor
4-062	Pressure Plate HP Sensor
4-063	Pressure Plate Limit SN
4-080	Paper Table Lowering SW
4-081	Paper End Sensor
4-082	Table Lower Limit Sensor
4-083	Paper Table Height SN
4-084	Paper Registration SN
4-085	Paper Feed Timing Sensor
4-086-1	Paper Feed Pressure 0
4-086-2	Paper Feed Pressure 1
4-086-3	Paper Feed Pressure 2
4-086-4	Paper Feed Pressure 3
4-087-1	Separation Pressure 0
4-087-2	Separation Pressure 1
4-087-3	Separation Pressure 2
4-087-4	Separation Pressure 3
4-088	Paper Table Set Sensor
4-089	Paper Feed Start Sensor
4-090-1	Paper Width Detection 0
4-090-2	Paper Width Detection 1
4-090-3	Paper Width Detection 2
4-090-4	Paper Width Detection 3
4-090-5	Paper Width Detection 4
4-090-6	Paper Width Detection 5
4-091	Paper Length Sensor
* 4-092	Relay Guide Set Sensor
4-100	Paper Exit Sensor

SP No.	Display
4-101-1	Wing Upper Position SN
4-101-2	Wing Lower Position SN
* 4-120-1	1st Drum Position Sensor
* 4-120-2	2nd Drum Position Sensor
* 4-120-3	Drum Home Position Sensor
4-122-1	Drum Type Check 0
4-122-2	Drum Type Check 1
4-123	Ink Pump Sensor
4-124	Ink Cartridge Set Sensor
4-125	Ink Detection
4-126	Drum Idling Roller HP SN
4-127-1	1st Drum Master Sensor
4-127-2	2nd Drum Master Sensor
4-128	Lower Wrapping Jam SN
4-129-1	A3 Cam Sensor
4-129-2	A4 Cam Sensor
4-131	Main Motor Lock Detect
4-140	Image Shift HP Sensor
4-141	Drum Shift HP Sensor
4-142-1	Clamp Close Position SN
4-142-2	Clamper Open Position SN
4-143	P Cylinder Feed Encoder
** 4-144	Tray Feed Start Sensor
4-400	Front Door Open Detect
4-500	DF Installation Detect
4-501	DF Cover Open Sensor
4-502	DF Registration Sensor
4-503	DF Original Set Sensor
4-504-1	DF Original Width SN 1
4-504-2	DF Original Width SN 2
4-504-3	DF Original Width SN 3
4-504-4	DF Original Length SN 1
4-504-5	DF Original Length SN 2
4-505	DF Position Sensor
4-506	DF APS Start Sensor
4-520	Slider Upper Limit SN
4-521	Job Separator Paper SN
4-522	Slider Position Sensor
4-523	Slider HP Sensor
** 4-540-1	PDTable Paper End (Delivery table paper sensor)
** 4-540-2	PDTable S-Plate Position (Side plate set sensor)
** 4-540-3	PDTable S-Plate Pulse SN
** 4-540-4	PDTable S-Plate HP SN
** 4-540-5	PDTable E-Plate Position (End plate set sensor)
** 4-540-6	PDTable E-Plate Pulse SN

SP No.	Display
** 4-540-7	PDTable E-Plate HP SN
4-580	Key Card Detection
* 4-660-1	JS Sorter Lower Unit SN
* 4-660-2	JS Sorter Lower Entry SN
* 4-660-3	JS Sorter Upper Unit SN
* 4-660-4	JS Sorter Upper Entry SN
* 4-660-5	JS Sorter Midd. Transport SN
* 4-660-6	JS Sorter Horz. Transport SN
* 4-660-7	Set Non-Sort Position
* 4-660-8	Set Sort Position
* 4-660-9	Side Jogger HP for L-Unit
* 4-660-10	Side Jogger HP for U-Unit
* 4-660-11	End Jogger HP for L-Unit
* 4-660-12	End Jogger HP for U-Unit
* 4-660-13	Lead Cam Lwr Limit For L-Unit
* 4-660-14	Lead Cam Lwr Limit For U-Unit
* 4-660-15	Paper Exit Pawl SN for L-Unit
* 4-660-16	Paper Exit Pawl SN for U-Unit
* 4-660-17	Set Lower Unit F-Cover
* 4-660-18	Set Upper Unit F-Cover
* 4-660-19	Set Non-Sort Tray
* 4-660-20	Set Vert. Transport Cover
* 4-660-21	Set Horz. Transport Cover
* 4-660-22	Set Stapler Cover (Japan only)
* 4-660-23	Upper Bin for Lower Unit
* 4-660-24	Upper Bin for Upper Unit
* 4-660-25	Stapler HP
* 4-660-26	Stapler Detection SN
* 4-660-27	Stapler Cartridge SN
* 4-660-28	Paper SN for Stapler
** 4-700	1st Relay Sensor (2nd relay sensor)
** 4-701	2nd Relay Sensor (3rd relay sensor)
** 4-710-1	R-Tray1 Tray Set SN
** 4-710-2	R-Tray1 Paper End SN
** 4-710-3	R-Tray1 Paper Volume SN
** 4-710-4	R-Tray1 Paper Width SN1 (front right tray paper width sensor)
** 4-710-5	R-Tray1 Paper Width SN2 (rear right tray paper width sensor)
** 4-710-6	R-Tray1 Upper Limit SN
** 4-710-7	R-Tray1 Lower Limit SN
** 4-710-8	Set Tandem Tray (tandem tray sensor)
** 4-711-1	L-Tray1 Tray Set SN
** 4-711-2	L-Tray1 Paper End SN (left tray paper length sensor)
** 4-711-3	L-Tray1 Paper Width SN1 (front left tray paper width sensor)
** 4-711-4	L-Tray1 Paper Width SN2 (rear left tray paper width sensor)
** 4-711-5	L-Tray1 Upper Limit SN

SP No.	Display
** 4-711-6	L-Tray1 Lower Limit SN
** 4-712-1	Back-Plate HP SN
** 4-712-2	Back-Plate SN (return position sensor)
** 4-713-1	Tray2 Tray Set SN
** 4-713-2	Tray2 Paper End SN
** 4-713-3	Tray2 Paper Volume SN
** 4-713-4	Tray2 Paper Width SN1 (front tray 2 paper width sensor)
** 4-713-5	Tray2 Paper Width SN2 (rear tray 2 paper width sensor)
** 4-713-6	Tray2 Paper Length SN
** 4-713-7	Tray2 Upper Limit SN
** 4-713-8	Tray2 Lower Limit SN
** 4-714-1	Vertical Cover Set SN
** 4-714-2	2nd Tray Feed Sensor (1st relay sensor)
** 4-714-3	Tray Exit Sensor (tray registration sensor)
4-900	Key Counter Detection

5. Output Test Mode

SP No.	Display
5-001	All Indicators On
5-020	Xenon Lamp
5-021-1	Move Scanner - Scan
5-021-2	Move Scanner - Return
5-021-3	Move Scanner to HP
5-040	Master Feed Clutch
5-041	Master Vacuum Fan
5-042-1	Cutter Motor Forward
5-042-2	Cutter Motor Reverse
5-042-3	Move Cutter to HP
5-043-1	Platen Release Motor
5-043-2	Apply Platen Pressure
5-043-3	Release Platen Pressure
5-044	Master Duct Entrance Sol
5-060-1	Pressure Plate to Limit
5-060-2	Press Plate to Eject Pos
5-060-3	Pressure Plate to HP
5-061-1	M Eject Motor Forward
5-061-2	M Eject Motor Reverse
5-080-1	Paper Table Motor Up
5-080-2	Paper Table Motor Down
5-081-1	Paper Pressure Motor Up
5-081-2	Paper Press Motor Down
5-082-1	Sep. Pressure Motor Up
5-082-2	Sep. Pressure Motor Down
5-083-1	Paper Feed Motor Slowest
5-083-2	Paper Feed Motor 30 rpm
5-083-3	Paper Feed Motor 1st
5-083-4	Paper Feed Motor 2nd
5-083-5	Paper Feed Motor 3rd
5-083-6	Paper Feed Motor 4th
5-083-7	Paper Feed Motor 5th
* 5-083-8	Paper Feed Motor Revs. Slowest (Revs. = reverse rotation)
* 5-083-9	Paper Feed Motor Revs. 30 rpm
* 5-083-10	Paper Feed Motor Revs. 1st
* 5-083-11	Paper Feed Motor Revs. 2nd
* 5-083-12	Paper Feed Motor Revs. 3rd
* 5-083-13	Paper Feed Motor Revs. 4th
* 5-083-14	Paper Feed Motor Revs. 5th
5-084-1	Regist Motor Slowest
5-084-2	Regist Motor 30 rpm
5-084-3	Registration Motor 1st
5-084-4	Registration Motor 2nd

SP No.	Display
5-084-5	Registration Motor 3rd
5-084-6	Registration Motor 4th
5-084-7	Registration Motor 5th
5-084-8	Regist. Motor Revs. Slowest
* 5-084-9	Regist. Motor Revs. 30 rpm
* 5-084-10	Regist. Motor Revs. 1st
* 5-084-11	Regist. Motor Revs. 2nd
* 5-084-12	Regist. Motor Revs. 3rd
* 5-084-13	Regist. Motor Revs. 4th
* 5-084-14	Regist. Motor Revs. 5th
5-100-1	Wing Guide Motor Up
5-100-2	Wing Guide Motor Down
5-101	Air Knife Fan
5-102	Transport Vacuum Fan
5-120-1	Drum Rotation Slowest
5-120-2	Drum Rotation 1st Speed
5-120-3	Drum Rotation 2nd Speed
5-120-4	Drum Rotation 3rd Speed
5-120-5	Drum Rotation 4th Speed
5-120-6	Drum Rotation 5th Speed
5-121	Printing Pressure Sol.
5-123-1	Shift Pressure Cam to A3
5-123-2	Shift Pressure Cam to A4
5-124-1	Drum Idling Roller ON
5-124-2	Idling Roller Return
* 5-125-1	Drum Home Pos. LED GREEN
* 5-125-2	Drum Home Pos. LED RED
5-140-1	Clamper Motor - Open
5-140-2	Clamper Motor - Close
5-141-1	Image Shift Motor - □
5-141-2	Image Shift Motor - □
5-142-1	Drum Shift Motor - □
5-142-2	Drum Shift Motor - □
5-400	Print Counter Up
5-401	Master Counter Up
5-402	Thermal Head ON
5-500	DF Feed Motor
5-501	DF Feed Clutch
5-502	DF Pick-up Solenoid
5-520-1	Slider Lift Motor - Up
5-520-2	Slider Lift Motor - Down
5-521-1	Job Separator Motor Fwd.
5-521-2	Job Separator Motor Rev.
** 5-540-1	Move S-Plate-Extension
** 5-540-2	Move S-Plate-Retraction

SP No.	Display
** 5-540-3	Move E-Plate-Retraction
** 5-540-4	Move E-Plate-Extension
5-580-1	Count-up Key Card
5-580-2	Key Card Motor
* 5-660-1	Lead Cam Motor Up For L-Unit
* 5-660-2	Lead Cam Motor Down For L-Unit
* 5-660-3	Lead Cam Motor Up For U-Unit
* 5-660-4	Lead Cam Motor Down For U-Unit
* 5-660-5	Middle Transport Motor
* 5-660-6	Horiz. Transport Motor
* 5-660-7	Lower Vert. Transport Motor
* 5-660-8	Upper Vert. Transport Motor
* 5-660-9	ShiftNon/SortMotor To Sort
* 5-660-10	ShiftNon/SortMotor To Non
* 5-660-11	S-Jogger For L-Unit Forward
* 5-660-12	S-Jogger For L-Unit Reverse
* 5-660-13	S-Jogger For U-Unit Forward
* 5-660-14	S-Jogger For U-Unit Reverse
* 5-660-15	E-Jogger For L-Unit Forward
* 5-660-16	E-Jogger For L-Unit Reverse
* 5-660-17	E-Jogger For U-Unit Forward
* 5-660-18	E-Jogger For U-Unit Reverse
* 5-660-19	Stapler Motor : Forwad
* 5-660-20	Stapler Motor : Reverse
* 5-660-21	Mid. Transport Fan Motor
* 5-660-22	Horz. Transport Fan1 Motor
* 5-660-23	Horz. Transport Fan2 Motor
* 5-660-24	Vrt Trans. Fan1 Mtr For L Unit
* 5-660-25	Vrt Trans. Fan2 Mtr For L Unit
* 5-660-26	Vrt Trans. Fan1 Mtr For U Unit
* 5-660-27	Vrt Trans. Fan2 Mtr For U Unit
* 5-660-28	Wing Guide Solenoid
* 5-660-29	Non Sort Tray Lock Sol.
* 5-660-30	Paper Exit Pawl For L-Lnit
* 5-660-31	Paper Exit Pawl For U-Lnit
* 5-660-32	JS Sorter Free Rum
** 5-710-1	R-Tray1 Lift Motor : Up
** 5-710-2	R-Tray1 Lift Motor : Down
** 5-710-3	R-Tray1 UnLock Sol. (tray 1 right lock solenoid)
** 5-710-4	Tray1 Separation Pad Sol (tray 1 friction pad solenoid)
** 5-710-5	Tray1 Connection Sol.
** 5-711-1	L-Tray1 Lift Motor : Up
** 5-711-2	L-Tray1 Lift Motor : Down
** 5-711-3	L-Tray1 UnLock Sol. (tray 1 left lock solenoid)
** 5-712-1	Move TrayB-Plate-Right (move back plate drive motor-right)

SP No.	Display
** 5-712-2	Move TrayB-Plate-Left (move back plate drive motor-left)
** 5-713-1	Tray2 Lift Motor : Up
** 5-713-2	Tray2 Lift Motor : Down
** 5-713-3	Tray 2 UnLock Sol. (tray 2 lock solenoid)
** 5-713-4	Tray2 Separation Pad Sol (tray 2 friction pad solenoid)
** 5-714-1	Tray Paper Feed Motor For. (tray feed motor-forward)
** 5-714-2	Tray Paper Feed Motor Rev. (tray feed motor –reverse)
** 5-714-3	Tray Feed Motor (tray registration motor)
** 5-714-4	Tray Transport Clutch (tray 2 feed clutch)
** 5-714-5	Tray Mid. Transport Clutch (tray relay clutch)
** 5-714-6	Tray Feed Clutch (tray exit clutch)
5-900	Count-up Key Counter
* 5-901	PSU Fan Motor

6. System Adjustment

SP No.	Display	Function	Default	Settings
6-001-1	Main Scan Pos. - Platen	Side-to-side registration adjustment; see Note 1.	0	-5.0 to 5.0 mm
6-001-2	Main Scan Position - DF		0	-5.0 to 5.0 mm
6-002-1	Scan Start Pos. - Platen	Scanning start line adjustment; see Note 2.	0	-5.0 to 5.0 mm
6-002-2	Scan Start Position - DF		0	-5.0 to 5.0 mm
6-010	Master Writing Speed	See Note 3.	0	-5.0 to 5.0%
6-011-1	Scanning Speed - Platen	See Note 4.	0	-5.0 to 5.0%
6-011-2	Scanning Speed - DF		0	-5.0 to 5.0%
6-012	Master Writing Length	Do not use in the field.	0	-5.0 to 5.0 %
6-020-1	V&Thresh Master Eject SN	The use of these SP modes is explained in various parts of the Replacement and Adjustment section. (C229 service manual)	2.5	0.0 to 5.0V
6-020-2	V&Thresh DrumMaster 1 SN		2.5	0.0 to 5.0V
6-020-3	V&Thresh DrumMaster 2 SN		2.5	0.0 to 5.0V
6-020-4	V & Thresh Master End SN		0.9	0.0 to 5.0V
6-020-5	V & Thresh Paper Exit SN		2.5	0.0 to 5.0V
6-020-6	V&Thresh Master Edge SN		1.5	0.0 to 5.0V
6-032-1	SBU Auto Calibration	Refer to the Replacements and Adjustments section. (C229 service manual)	-	-
6-032-2	SBU Gain Setting	Do not adjust.	-	-
6-032-3	SBU DC Count Setting		-	-
6-032-4	SBU Reference Value		-	-
6-032-5	SBU Offset Value		-	-
6-050	LCD Contrast Adjustment	See Note 5.	6	0 to 7
6-070	Master Making Density	See Note 6.	1	0 to 2
6-082-1	MTF Filter Letter Mode	See Note 7.	0	0 to 11
6-082-2	MTF Filter Ltr/Pht Mode		5	0 to 11
6-082-3	MTF Filter Pencil Mode		6	0 to 11
6-082-4	MTF Filter Photo Mode		2	0 to 11

SP No.	Display	Function	Default	Settings
6-090-1	FeedPressure Std Special	See Note 8.	3	0 to 6
6-090-2	Freq - Special Paper		5	0 to 6
6-090-3	V Freq - Special Paper		6	0 to 6
6-091-1	FeedPressure Std Nor Ppr		3	0 to 6
6-091-2	Freq - Normal Paper		5	0 to 6
6-091-3	V Freq - Normal Paper		6	0 to 6
6-092-1	FeedPressure Std Thick		5	0 to 6
6-092-2	Freq - Thick Paper		6	0 to 6
6-092-3	V Freq - Thick Paper		6	0 to 6
6-093-1	FeedPressure Std User 1		5	0 to 6
6-093-2	Freq - User 1 Paper		6	0 to 6
6-093-3	V Freq - User 1 Paper		6	0 to 6
6-094-1	FeedPressure Std User 2		1	0 to 6
6-094-2	Freq - User 2 Paper		2	0 to 6
6-094-3	V Freq - User 2 Paper		3	0 to 6
6-095-1	SepPressure Std Special		1	0 to 6
6-095-2	Freq - Special Paper		3	0 to 6
6-095-3	V Freq - Special Paper		4	0 to 6
6-096-1	SepPressure Std Nor Ppr		3	0 to 6
6-096-2	Freq - Normal Paper		4	0 to 6
6-096-3	V Freq - Normal Paper		6	0 to 6
6-097-1	SepPressure Std Thick		2	0 to 6
6-097-2	Freq - Thick Paper		3	0 to 6
6-097-3	V Freq - Thick Paper		4	0 to 6
6-098-1	SepPressure Std User 1		4	0 to 6
6-098-2	Freq - User 1 Paper		5	0 to 6
6-098-3	V Freq - User 1 Paper		6	0 to 6
6-099-1	SepPressure Std User 2		1	0 to 6
6-099-2	Freq - User 2 Paper		2	0 to 6
6-099-3	V Freq - User 2 Paper		3	0 to 6
6-100-1	Wing Angle - Special Ppr	See Note 9.	Low	High/Low
6-100-2	Wing Angle - Normal Ppr		High	High/Low

SP No.	Display	Function	Default	Settings
6-100-3	Wing Angle - Thick Paper	See Note 9.	Low	High/Low
6-100-4	Wing Angle - User1 Paper		High	High/Low
6-100-5	Wing Angle - User2 Paper		Low	High/Low
6-101-1	Paper Clamp - Spl Paper	See Note 10.	OFF	Enable/OFF
6-101-2	Paper Clamp - Nor Paper		Enable	Enable/OFF
6-101-3	Paper Clamp - Thk Paper		OFF	Enable/OFF
6-101-4	Paper Clamp - U1 Paper		Enable	Enable/OFF
6-101-5	Paper Clamp - U2 Paper		OFF	Enable/OFF
6-110-1	PaperFeed Delay - 16 rpm	Do not adjust. (Changes the feed motor on timing after the feed start timing sensor is activated.)	200	0 to 255
6-110-2	Feed Delay - 20 rpm		200	0 to 255
6-110-3	Feed Delay - 30 rpm		200	0 to 255
6-110-4	Feed Delay - 60 rpm		219	0 to 255
6-110-5	Feed Delay - 75 rpm		147	0 to 255
6-110-6	Feed Delay - 90 rpm		100	0 to 255
6-110-7	Feed Delay - 105 rpm		53	0 to 255
6-110-8	Feed Delay - 120 rpm		26	0 to 255
6-111-1	Thick Feed Delay - 16 rpm	Do not adjust. (Changes the feed motor on timing in thick and special paper modes after the feed start timing sensor is activated.)	200	0 to 255
6-111-2	Feed Delay - 20 rpm		200	0 to 255
6-111-3	Feed Delay - 30 rpm		200	0 to 255
6-111-4	Feed Delay - 60 rpm		199	0 to 255
6-111-5	Feed Delay - 75 rpm		130	0 to 255
6-111-6	Feed Delay - 90 rpm		78	0 to 255
6-111-7	Feed Delay - 105 rpm		40	0 to 255
6-111-8	Feed Delay - 120 rpm		16	0 to 255
* 6-112-1	Regist Delay - 16 rpm	Do not adjust. (Changes the registration motor on timing after the feed start timing sensor is activated.)	34	0 to 255
* 6-112-2	Regist Delay - 20 rpm		34	0 to 255
* 6-112-3	Regist Delay - 30 rpm		34	0 to 255
* 6-112-4	Regist Delay - 60 rpm		31	0 to 255
* 6-112-5	Regist Delay - 75 rpm		28	0 to 255
* 6-112-6	Regist Delay - 90 rpm		24	0 to 255
* 6-112-7	Regist Delay - 105 rpm		19	0 to 255
* 6-112-8	Regist Delay - 120 rpm		14	0 to 255

SP No.	Display	Function	Default	Settings
6-113-1	Thick Regist Delay - 16	Do not adjust. (Changes the registration motor on timing in thick and special paper modes after the feed start timing sensor is activated.)	43	0 to 255
6-113-2	Regist Delay - 20 rpm		43	0 to 255
6-113-3	Regist Delay - 30 rpm		43	0 to 255
6-113-4	Regist Delay - 60 rpm		40	0 to 255
6-113-5	Regist Delay - 75 rpm		35	0 to 255
6-113-6	Regist Delay - 90 rpm		30	0 to 255
6-113-7	Regist Delay - 105 rpm		25	0 to 255
6-113-8	Regist Delay - 120 rpm		20	0 to 255
* 6-114-1	A4 Regist Delay - 16 rpm	Do not adjust. (Changes the registration motor on timing in the use of the A4 drum after the feed start timing sensor is activated.)	33	0 to 255
* 6-114-2	Regist Delay - 20 rpm		33	0 to 255
* 6-114-3	Regist Delay - 30 rpm		33	0 to 255
* 6-114-4	Regist Delay - 60 rpm		30	0 to 255
* 6-114-5	Regist Delay - 75 rpm		28	0 to 255
* 6-114-6	Regist Delay - 90 rpm		24	0 to 255
* 6-114-7	Regist Delay - 105 rpm		19	0 to 255
* 6-114-8	Regist Delay - 120 rpm		13	0 to 255
6-115-1	A4 Thick Regist Delay 16	Do not adjust. (Changes the registration motor on timing in thick and special paper modes in combination with the use of the A4 drum after the feed start timing sensor is activated.)	43	0 to 255
6-115-2	Regist Delay - 20 rpm		43	0 to 255
6-115-3	Regist Delay - 30 rpm		43	0 to 255
6-115-4	Regist Delay - 60 rpm		40	0 to 255
6-115-5	Regist Delay - 75 rpm		35	0 to 255
6-115-6	Regist Delay - 90 rpm		30	0 to 255
6-115-7	Regist Delay - 105 rpm		25	0 to 255
6-115-8	Regist Delay - 120 rpm		20	0 to 255
* 6-116-1	Paper Clamp Timing Pulse	See Replacements and Adjustments – Paper Feed Length Adjustment for how to use.	145	0 to 255
* 6-116-2	Paper Clamp - Thick Paper	See Replacements and Adjustments – Paper Feed Length Adjustment for how to use.	148	0 to 255
* 6-116-3	Paper Clamp Pls - A4 Cam	Do not adjust.	145	0 to 255
* 6-116-4	Feed Timing Pulse	Do not adjust.	113	0 to 255
* 6-116-5	Feed Stop Timing Pulse	See Replacements and Adjustments – Paper Feed Length Adjustment for how to use.	21	0 to 255

SP No.	Display	Function	Default	Settings
* 6-116-6	Print Position 2 Setting	Do not adjust.	103	0 to 255
* 6-116-7	Print Position 1 Setting	Do not adjust.	140	0 to 255
* 6-117-1	Skip Regist Delay 16 rpm	Do not adjust. (Changes the registration motor on timing (when using the skip feed mode) after the feed start sensor is activated.)	33	0 to 255
* 6-117-2	Skip Regist Delay - 20 rpm		33	0 to 255
* 6-117-3	Skip Regist Delay - 30 rpm		33	0 to 255
* 6-117-4	Skip Regist Delay - 60 rpm		31	0 to 255
* 6-117-5	Skip Regist Delay - 75 rpm		28	0 to 255
* 6-117-6	Skip Regist Delay - 90 rpm		24	0 to 255
* 6-117-7	Skip Regist Delay - 105 rpm		19	0 to 255
* 6-117-8	Skip Regist Delay - 120 rpm		13	0 to 255
* 6-118-1	A4 Skip Regist Delay 16 rpm	Do not adjust. (Changes the registration motor on timing in the use of the A4 drum after the feed start timing sensor is activated.)	33	0 to 255
* 6-118-2	A4 Skip Regist Delay - 20 rpm		33	0 to 255
* 6-118-3	A4 Skip Regist Delay - 30 rpm		33	0 to 255
* 6-118-4	A4 Skip Regist Delay - 60 rpm		30	0 to 255
* 6-118-5	A4 Skip Regist Delay - 75 rpm		28	0 to 255
* 6-118-6	A4 Skip Regist Delay - 90 rpm		24	0 to 255
* 6-118-7	A4 Skip Regist Delay - 105 rpm		19	0 to 255
* 6-118-8	A4 Skip Regist Delay - 120 rpm		13	0 to 255
6-130	Drum Master Clamp Regist	See Note 11.	0	-10.0 to 10.0mm
** 6-140-1	BankRegistDelay – 16rpm	Not used.	172	0 to 255
** 6-140-2	BankRegistDelay – 20rpm		200	0 to 255
** 6-140-3	BankRegistDelay – 30rpm		200	0 to 255
** 6-140-4	BankRegistDelay – 60rpm		200	0 to 255
** 6-140-5	BankRegistDelay – 75rpm		200	0 to 255
** 6-140-6	BankRegistDelay – 90rpm		128	0 to 255

SP No.	Display	Function	Default	Settings
** 6-140-7	BankRegistDelay – 105rpm	Not used.	72	0 to 255
** 6-140-8	BankREgistDelay – 120rpm		29	0 to 255
** 6-141-1	Trans.Assist.Delay-16rpm	Not used.	3	0 to 255
** 6-141-2	Trans.Assist.Delay-20rpm		3	0 to 255
** 6-141-3	Trans.Assist.Delay-30rpm		3	0 to 255
** 6-141-4	Trans.Assist.Delay-60rpm		3	0 to 255
** 6-141-5	Trans.Assist.Delay-75rpm		3	0 to 255
** 6-141-6	Trans.Assist.Delay-90rpm		3	0 to 255
** 6-141-7	Trans.Assist.Delay-105rpm		3	0 to 255
** 6-141-8	Trans.Assist.Delay-120rpm		2	0 to 255
** 6-142-1	Tray1FeedStop TimingPulse	Not used.	14	0 to 255
** 6-142-2	Tray1 Feed Speed		140	0 to 255
** 6-142-3	Tray1 Mid. Roller Speed		136	0 to 255
** 6-142-4	Tray1Mid.Roller Speed - %		90	0 to 255
** 6-142-5	Tray1Mid.Roller Speed – t		100	0 to 255
** 6-142-6	Tray1Feed StopTimingPulseA3		14	0 to 255
** 6-143-1	Tray2FeedStop TimingPulse	Not used.	14	0 to 255
** 6-143-2	Tray2 Feed Speed		140	0 to 255
** 6-143-3	Tray2 Mid. Roller Speed		136	0 to 255
** 6-143-4	Tray2Mid. Roller Speed - %		90	0 to 255
** 6-143-5	Tray2Mid.Roller Speed – t		100	0 to 255
** 6-144-1	Tray1stPrntRgstDly-16rpm	Not used.	172	0 to 255
** 6-144-2	Tray1stPrntRgstDly-20rpm		200	0 to 255
** 6-144-3	Tray1stPrntRgstDly-30rpm		200	0 to 255
** 6-144-4	Tray1stPrntRgstDly-60rpm		100	0 to 255
** 6-145-1	Bank1 RegistDelay 16rpm	Not used.	33	0 to 255

SP No.	Display	Function	Default	Settings
** 6-145-2	Bank1 RegistDelay 20rpm		33	0 to 255
** 6-145-3	Bank1 RegistDelay 30rpm		33	0 to 255
** 6-145-4	Bank1 RegistDelay 60rpm		32	0 to 255
** 6-145-5	Bank1 RegistDelay 75rpm		29	0 to 255
** 6-145-6	Bank1 RegistDelay 90rpm		25	0 to 255
** 6-145-7	Bank1 RegistDelay 105rpm		20	0 to 255
** 6-145-8	Bank1 RegistDelay 120rpm		15	0 to 255
** 6-146-1	Bank2 RegistDelay 16rpm	Not used.	33	0 to 255
** 6-146-2	Bank2 RegistDelay 20rpm		33	0 to 255
** 6-146-3	Bank2 RegistDelay 30rpm		33	0 to 255
** 6-146-4	Bank2 RegistDelay 60rpm		32	0 to 255
** 6-146-5	Bank2 RegistDelay 75rpm		29	0 to 255
** 6-146-6	Bank2 RegistDelay 90rpm		25	0 to 255
** 6-146-7	Bank2 RegistDelay 105rpm		20	0 to 255
** 6-146-8	Bank2 RegistDelay 120rpm		15	0 to 255
** 6-147-1	Bank RegistDelayA4 16rpm	Not used.	33	0 to 255
** 6-147-2	Bank RegistDelayA4 20rpm		33	0 to 255
** 6-147-3	Bank RegistDelayA4 30rpm		33	0 to 255
** 6-147-4	Bank RegistDelayA4 60rpm		31	0 to 255
** 6-147-5	Bank RegistDelayA4 75rpm		28	0 to 255
** 6-147-6	Bank RegistDelayA4 90rpm		24	0 to 255
** 6-147-7	Bank RegistDelayA4 105rpm		19	0 to 255
** 6-147-8	Bank RegistDelayA4 120rpm		13	0 to 255
** 6-148-1	Bank1 SkipRestDelay 16rpm	Not used.	33	0 to 255
** 6-148-2	Bank1 SkipRgstDelay 20rpm		33	0 to 255

SP No.	Display	Function	Default	Settings
** 6-148-3	Bank1 SkipRgstDelay 30rpm		33	0 to 255
** 6-148-4	Bank1 SkipRgstDelay 60rpm		32	0 to 255
** 6-148-5	Bank1 SkipRgstDelay 75rpm		28	0 to 255
** 6-148-6	Bank1 SkipRgstDelay 90rpm		25	0 to 255
** 6-148-7	Bank1 SkipRgstDelay 105rpm		20	0 to 255
** 6-148-8	Bank1 SkipRgstDelay 120rpm		14	0 to 255
** 6-149-1	Bank2 SkipRgstDelay 16rpm	Not used.	33	0 to 255
** 6-149-2	Bank2 SkipRgstDelay 20rpm		33	0 to 255
** 6-149-3	Bank2 SkipRgstDelay 30rpm		33	0 to 255
** 6-149-4	Bank2 SkipRgstDelay 60rpm		32	0 to 255
** 6-149-5	Bank2 SkipRgstDelay 75rpm		28	0 to 255
** 6-149-6	Bank2 SkipRgstDelay 90rpm		25	0 to 255
** 6-149-7	Bank2 SkipRgstDelay 105rpm		20	0 to 255
** 6-149-8	Bank2 SkipRgstDelay 120rpm		14	0 to 255
** 6-150-1	Bank SkipRgstDelay A4 16rpm	Not used.	33	0 to 255
** 6-150-2	Bank SkipRgstDelay A4 20rpm		33	0 to 255
** 6-150-3	Bank SkipRgstDelay A4 30rpm		33	0 to 255
** 6-150-4	Bank SkipRgstDelay A4 60rpm		31	0 to 255
** 6-150-5	Bank SkipRgstDelay A4 75rpm		28	0 to 255
** 6-150-6	Bank SkipRgstDelay A4 16rpm		24	0 to 255
** 6-150-7	Bank SkipRgstDelay A4 105rpm		19	0 to 255
** 6-150-8	Bank SkipRgstDelay A4 120rpm		13	0 to 255
** 6-151-1	Bank1 Clamp Timing Pulse	Not used.	145	0 to 255
** 6-151-2	Bank2 Clamp Timing Pulse		145	0 to 255
** 6-151-3	Bank ClampTiming Pulse A4		145	0 to 255

SP No.	Display	Function	Default	Settings
* 6-660-1	Timing Delay A3	For details, refer to the sorter service manual.	0	-10 to 10
* 6-660-2	Timing Delay B4 Sideways		0	-10 to 10
* 6-660-3	Timing Delay A4 Sideways		0	-10 to 10
* 6-660-4	Timing Delay A4 Lengthwise		0	-10 to 10
* 6-660-5	Timing Delay B5 Sideways		0	-10 to 10
* 6-660-6	Timing Delay DLT Sideways		0	-10 to 10
* 6-660-7	Timing Delay LG Sideways		0	-10 to 10
* 6-660-8	Timing Delay LT Sideways		0	-10 to 10
* 6-660-9	Timing Delay LT Lengthwise		0	-10 to 10
* 6-660-10	Timing Delay F Sideways		0	-10 to 10
* 6-660-11	Timing Delay Other Size		0	-10 to 10
* 6-661-1	Move Jogger – Sideways		0	-10 to 10
* 6-661-2	Move Jogger – Lengthwise		0	-10 to 10
* 6-662-1	JS Sorter Feed Speed 1st		0	-50 to 100
* 6-662-2	JS Sorter Feed Speed 2st		0	-50 to 100
* 6-662-3	JS Sorter Feed Speed 3st		0	-50 to 100
* 6-662-4	JS Sorter Feed Speed 4st		0	-50 to 100
* 6-662-5	JS Sorter Feed Speed 5st		0	-50 to 100

Notes

1: 6-001 (Main scan position)

Inputting a positive number moves the image away from the operation side of the machine. Use the point (**.**) key to switch between + and –.

2: 6-002 (Scan start position)

Inputting a positive number moves the image away from the leading edge of the printer paper. Use the point (**.**) key to switch between + and –.

3: 6-010 (Master writing speed)

This changes the master feed motor speed.

Inputting a positive value stretches the image on the master. Inputting a negative value shrinks it.

Normally, do not use this SP mode to adjust the vertical magnification. Use it only if the vertical magnification is not satisfactory by adjusting Scanning Speed (SP6-011).

4: 6-011 (Scanning speed)

Inputting a positive value stretches the image on the master. Inputting a negative value shrinks it.

5: 6-050 (Operation panel LCD contrast)

0: Palest, 7: Darkest

6: 6-070 (Master making density)

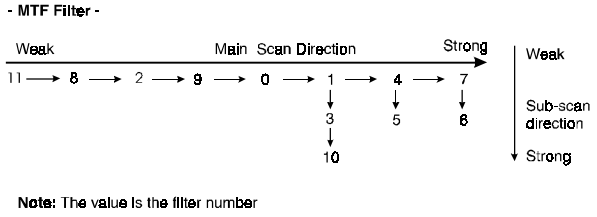
0: Pale, 1: Normal, 2: Dark

The default is 1: Normal. Changing this moves the user's image density settings up or down one notch.

7: 6-082 (MTF filters)

A stronger filter leads to a sharper image, but moiré can become more apparent.

Refer to the following diagram for the relationship between this SP mode and filter strength (the relationship is not linear). Do not use a value of 1; this is for designer's tests only.



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8: 6-90 to 99 (Paper feed and separation pressures for different paper types)

These SP modes determine the paper feed and separation pressures that are automatically applied during paper feed. The user adjusts these pressures by selecting a paper type (normal, thick, special, user 1, user 2), and then by selecting how often non-feeds and double feeds are occurring.

The user customizes the user 1 and user 2 types by selecting from 5 choices. These choices can be seen in the description for SP 2-400 and 2-401. Each of these 5 choices has a set of feed and separation pressures (refer to Detailed Section Descriptions – Paper Feed).

6-090: Special paper, feed pressure
6-091: Normal paper, feed pressure
6-092: Thick paper, feed pressure
6-093: User 1 paper, feed pressure
6-094: User 2 paper, feed pressure
6-095: Special paper, separation pressure
6-096: Normal paper, separation pressure
6-097: Thick paper, separation pressure
6-098: User 1 paper, separation pressure
6-099: User 2 paper, separation pressure

The settings for user 1 and user 2 depends on the type of paper that the user has set these up for (see SP 2-400 and 2-401).

9: 6-100 (Paper delivery table wing angle)

The machine lifts or lowers the wings depending on the paper type selected by the user (standard, special, thick, user 1, user 2).

The settings for user 1 and user 2 depends on the type of paper that the user has set these up for (see SP 2-400 and 2-401).

10: 6-101 (Paper clamping)

Whether the machine clamps the paper or not depends on the paper type selected by the user (standard, special, thick, user 1, user 2).

The settings for user 1 and user 2 depends on the type of paper that the user has set these up for (see SP 2-400 and 2-401).

11: 6-130 (Drum master clamper registration)

This determines how far after the leading edge the master is clamped.

A larger value clamps the master further away from the leading edge, and moves the image closer to the leading edge of the paper.

Do not use this SP to adjust leading edge registration. Use SP6-2 for that.

7. Memory Data Clear

SP No.	Display	User Tools
7-001	Clear Factory Settings	-
7-010	Clear Jam/Error Logging	-
7-011	Clear Resettable Counter	1-3
7-012	Clear Total Counter	-
7-020-1	Clear U-Counter: Code 1	6-2
7-020-2	Clear U-Counter: Code 2	6-2
7-020-3	Clear U-Counter: Code 3	6-2
7-020-4	Clear U-Counter: Code 4	6-2
7-020-5	Clear U-Counter: Code 5	6-2
7-020-6	Clear U-Counter: Code 6	6-2
7-020-7	Clear U-Counter: Code 7	6-2
7-020-8	Clear U-Counter: Code 8	6-2
7-020-9	Clear U-Counter: Code 9	6-2
7-020-10	Clear U-Counter: Code 10	6-2
7-020-11	Clear U-Counter: Code 11	6-2
7-020-12	Clear U-Counter: Code 12	6-2
7-020-13	Clear U-Counter: Code 13	6-2
7-020-14	Clear U-Counter: Code 14	6-2
7-020-15	Clear U-Counter: Code 15	6-2
7-020-16	Clear U-Counter: Code 16	6-2
7-020-17	Clear U-Counter: Code 17	6-2
7-020-18	Clear U-Counter: Code 18	6-2
7-020-19	Clear U-Counter: Code 19	6-2
7-020-20	Clear U-Counter: Code 20	6-2
7-021	Clear All User Counters	6-2
7-022	Clear User Code	-
7-023	Clear Key Operator Code	-
7-050	Clear User Program	-
7-051	Clear User Custom Default	-
7-052	Reset Make-up Pattern	-
7-062	Reset MTF Filter (SP6-82)	-
7-070	Reset Feed Pressure (SP6-90, 91, 92, 93, 94)	-
7-071	Reset Sep. Pressure (SP6-95, 96, 97, 98, 99)	-
7-072	Reset Wing Guide Angle (SP6-100)	-
7-073	Reset Paper Clamping Data (SP6-101)	-
7-074	Reset Feed Control Data (SP6-111, 112, 113, 114, 115, 117, 118)	-
7-075	Reset Feed Control Pulse Data (SP6-116)	-
** 7-400	Clear Change Sales Flag (Japan only)	
* 7-660	Clear JS Sorter Settings (feed control data, etc)	
** 7-700	Clear Bank Settings (feed control data, etc)	

8. System Test

SP No.	Display (Comments)
8-010-1	Scanner Free Run M
8-010-2	Magnification at FreeRun
8-011-1	ADF Free Run Mode
8-011-2	Mag. at ADF Free Run
8-020	Load Program (See "4.5.4 Load Program" section.)
* 8-020-1	Load Program
* 8-020-2	Load Program-ProgramData (factory use only)
* 8-020-3	Load Program-Font Data (factory use only)
* 8-020-4	Load Program-ExceptUStamp (factory use only)
* 8-021	UpLoad Program
8-030	APS Sensor Check Mode
8-040	TH Test Pattern Select (Patterns 0 to 9, 0: No pattern)
8-050-1	Make Master with Pattern
8-050-2	Make-up Pattern Number
8-070-1	Logging Data Printout (Needs the optional memory board)
8-070-2	User Code Counters Only (Needs the optional memory board)
8-070-3	Jam Counters Only (Needs the optional memory board)
8-070-4	SC Counters Only (Needs the optional memory board)
8-070-5	Jams/Errors Details (Needs the optional memory board)
8-071	Basic Settings Printout (Needs the optional memory board)
8-072-1	UserCustomSettings Print, excludes class mode (Needs the optional memory board)
8-072-2	Class Mode Settings (Needs the optional memory board)
8-073-1	Input Test Item Printout (Needs the optional memory board)
8-073-2	OutputTest Item Printout (Needs the optional memory board)
8-074-1	System Adjustment Print (Needs the optional memory board)
8-074-2	Paper Feed Adjustments (prints a list of SP values from 6-90 to 6-118)
* 8-074-3	Option Adjustment Print (prints a list of SP values from 6-140 to 6-151, and 6-660 to 6-662)
8-080	Not used
8-100-1	Register User Stamp A (UP Mode 5-8)
8-100-2	Register User Stamp B (UP Mode 5-8)
8-100-3	Register User Stamp C (UP Mode 5-8)
8-100-4	Register User Stamp D (UP Mode 5-8)
8-110	Register Makeup Pattern (UP Mode 5-15)

4.4.2 CLEARING THE FACTORY SETTINGS (SP7-1)

⚠CAUTION

Performing "Clear factory settings" (SP7-1) resets a part of the settings stored in the RAM to their default settings. Normally, this SP mode should not be used. This procedure is required only after replacing the RAM on the MPU or when the machine malfunctions due to a damaged RAM.

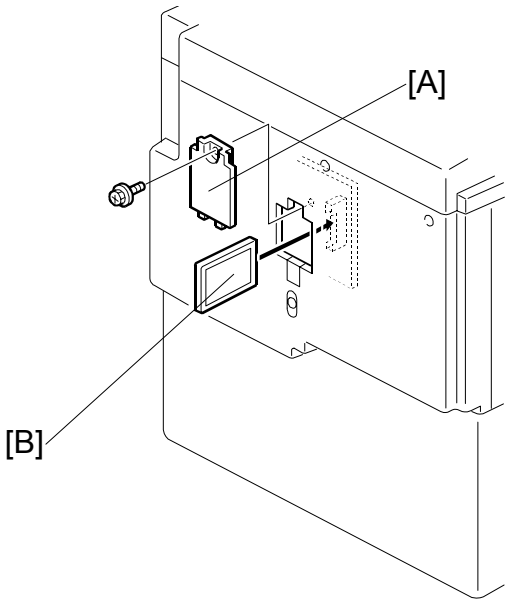
The following data is not cleared even after performing "Clear factory settings" (SP7-1).

- SP2-10: Sizes in Metric or Inch
- SP2-11: Select Language Type
- SP2-380: Japanese Display Type (Do not use.)
- SP2-390: A3/DLT Drum Selection
- SP2-421: Type of Thermal Head (Do not use.)
- SP3-70: Machine Serial Number
- SP3-73: Clock
- SP6- All : System Adjustment

1. Save the data SP mode in order to restore it later.
   NOTE: If possible, print out all system parameter lists using SP8-70, 71, 72, 73, and 74. The optional memory board is required to use the data printout function.
2. Enter SP7-1.
3. Press the Enter (#) key while holding the “0” key.
   NOTE: When the sequence is successful, “**Cleared**” is displayed.

4.4.3 LOAD PROGRAM (SP8-20)

The firmware in the flash ROM on the MPU can be upgraded using a flash memory card, as follows.



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1. Before downloading new software, check the current version with SP1-42.
2. Turn off the main switch and disconnect the power plug.
3. Remove the cover [A].
4. Plug the flash memory card [B] into the connector on the MPU.
5. Connect the power plug and turn on the main switch.
6. Access SP8-20-1 and press the **OK** key. Press the **Enter (#)** key to start downloading (the LCD displays '**Processing**').
7. After completing the download (the LCD displays '**Completed**'), leave the SP mode.
8. Turn off the main switch, then remove the flash memory card.
9. Turn on the main switch, then enter the SP mode again and check the updated ROM version with SP1-42.

4.4.4 USER TOOLS

Some items in the SP mode can be accessed with the User Tools by users. The User Tools key on the operation panel accesses these.

The following table shows all the user tools.

User Tools Table

No.	Display	Equivalent SP No.
1-1	Auto Reset Time	3-030
1-2	R. Counter Display	1-001-2, 1-002-2
1-3	Reset R. Counter	7-011
1-4	Set User Code	2-100
1-5	Key Card Setting	2-220
1-6	Sizes in Metric or Inch	2-010
1-7	Select Language Type	2-011
1-8	Time Setting	3-073
1-9	Auto On-line	2-410
1-10	Data Print	8-070-2, 8-072-2
* 1-11	Set Energy Saving	3-400
2-1	Minimum Print Quantity	3-001
2-2	Maximum Print Quantity	3-002
2-3	Copy Count Display	2-230
2-5	Panel Beeper	2-030
2-6	LCD Contrast Adjustment	6-050
** 2-7	Set Delivery Capacity	3-540
3-1	Default Paper Type	2-020-3
3-2	Default Master Density	2-020-4
3-3	Default Original Mode	2-020-1
3-4	Magnification Ratio Settings	3-010-1 to -8
3-5	Class Mode Settings	3-100
3-5	Class Entry Number Settings	3-100 to 3-108
3-6	Default Photo/Lightness	2-020-9
3-7	Default Photo/Screen	2-020-10
3-8	Default Tint Mode	2-020-2
3-9	Margin Erase Area Settings	3-060-1 to -22
3-9	Custom Margin Erase Area Settings	3-061-1 to -2
3-10	Default On-line Paper Size	2-020-11
3-11	Ratio Priority	2-020-16
** 3-12	Delivery Tray Position	3-541 to 544
4-1	Default Auto Cycle Mode	2-020-6
4-2	Class Entry Per Orig.	2-241
4-3	Paper Width Detection	2-042-1
4-4	ADF Orig. Size Detect	2-046-2
4-5	Platen Orig. Size Detect	2-046-1
4-6	Background ON/OFF	2-031

No.	Display	Equivalent SP No.
4-7	Long Paper Mode	2-060
4-8	Auto Combine Originals	2-070
4-9	Combine Orig. Sep. Line	2-250
4-10	Default Auto Cycle Mode	2-260
4-11	Skip Feed Mode Display	2-320
4-11	Number of Skip Feeds	3-051
4-12	Manual Idling Rotation	3-090
4-13	Auto Quality Start	2-110
4-14	Quality Start Mode Settings	3-091 to 3-093
4-15	Exit Wing Position	2-120
4-16	Print Restart in Class	2-270
4-17	Job Sep. At Class Mode	2-271
4-18	Ink/Master Left	2-210
4-19	User1 Paper Type	2-400
4-19	User2 Paper Type	2-401
4-20	Auto Image Rotation	2-150
4-21	Master Cut Length	2-170
4-22	Tray Priority	2-280
** 4-23	Limitless Feeding	2-140
4-24	Tray Display	2-281
4-25	Jogger Setting	2-660-1 to 2
** 4-26	Auto Paper Selection	2-282
* 4-27	Adjusting Sharpness of Letters	2-50
5-1	Stamp Type	2-300
5-2	Default Stamp Size	2-301
5-3	Default Stamp Density	2-302
5-4	Default Stamp Position	2-303
5-4	Stamp Position Adjustments	3-120 to 3-128
5-5	User Stamp Size	2-304
5-6	User Stamp Density	2-305
5-7	Default User Stamp Position	2-306
5-7	User Stamp Position Adjustments	3-130 to 3-138
5-8	Register User Custom Stamps	8-100-1 to -4
5-9	Date Stamp Type	2-307
5-10	Default Date Stamp Position	2-308
5-11	Date Stamp Position Adjustments	3-140 to 3-143
5-12	Page Numbering Type	2-309
5-13	Default Page Stamping Positions	2-310-1 to -2
5-14	Page Stamping Position Adjustments	3-150 to 3-153
5-15	Register Makeup Pattern	8-110
6-1	Master and Print Counters for Each User Code	1-030 to 1-040
6-1	Master Counter for All User Codes	1-031-1
6-1	Print Counter for All User Codes	1-031-2
6-2	Clear Counters for Each User Code	7-020-1 to -20
6-3	Register User Code	3-110

No.	Display	Equivalent SP No.
6-4	Change User Code	3-111
6-5	Clear User Code	3-113
6-6	Key Operator Code	2-290
6-7	Register Key Operator	3-112
6-8	Restricted Access	2-291

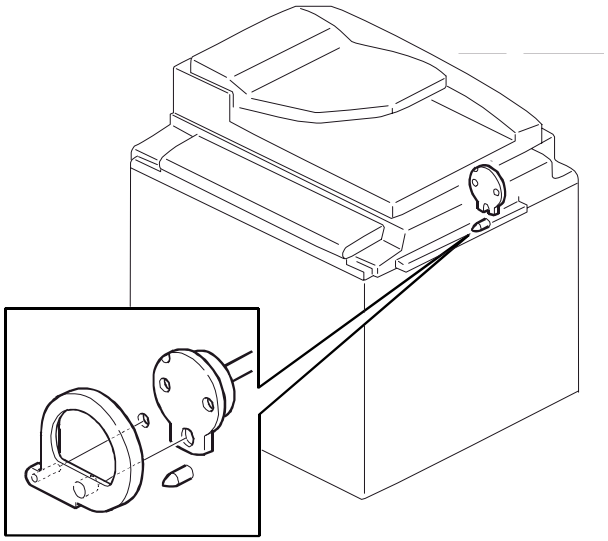
5. PREVENTIVE MAINTENANCE

There are no differences from the C229 model in this section.

6. REPLACEMENT AND ADJUSTMENT

6.1 PRINTING SECTION

6.1.1 TORQUE LIMITER



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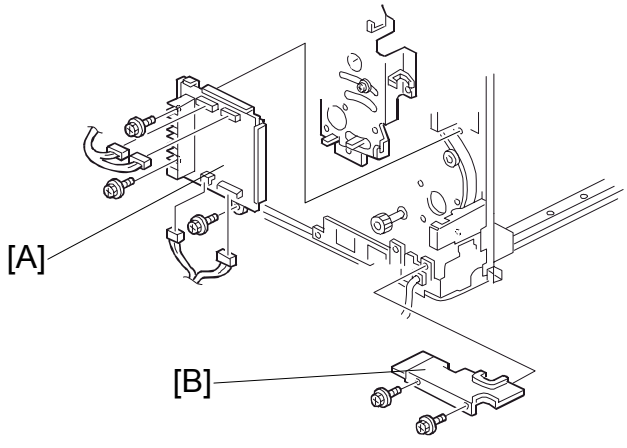
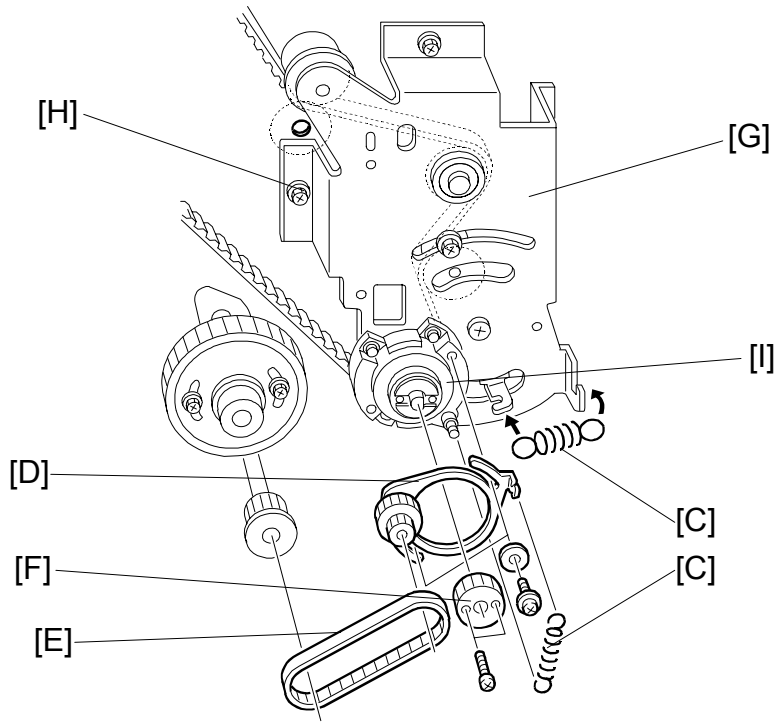
1. Turn off the main switch and remove the drum.
2. Set the drum drive-securing tool.
3. Remove the rear cover and swing out the PSU (see the C229 service manual).



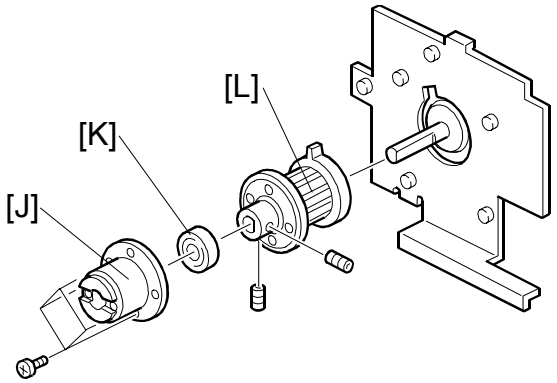
C232R503.WMF

4. Remove the main motor control board [A].
5. Remove the wire protection cover [B].



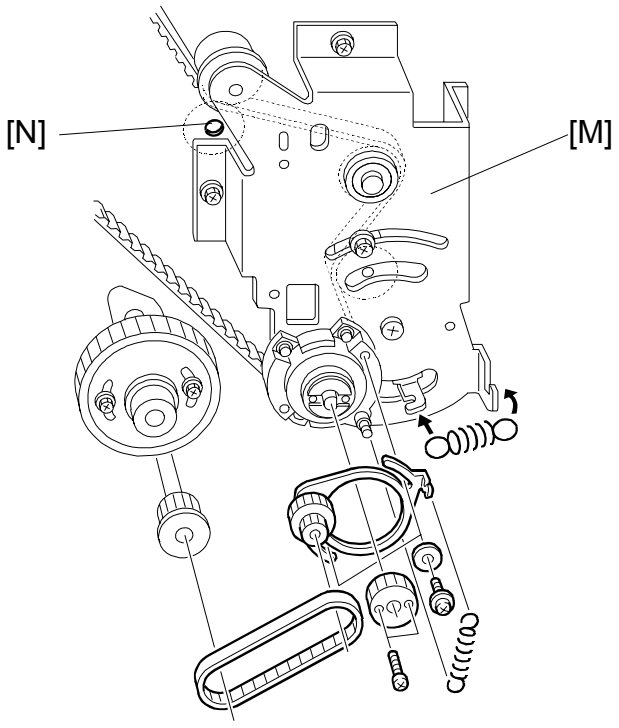
C232R506.WMF

6. Remove the 2 springs [C].
7. Remove the pulley bracket [D].
8. Remove the timing belt [E].
9. Remove the gear [F].
10. Remove the bracket [G].
    CAUTION: Screw [H] is located under the main wire harness. Take care not to damage the wire harness when removing it.
11. Remove the bearing [I] on the bracket.



C232R507.WMF

12. Remove the bracket [J] (4 screws).
13. Remove the bearing [K].
14. Remove the torque limiter [L] (2 Allen screws).



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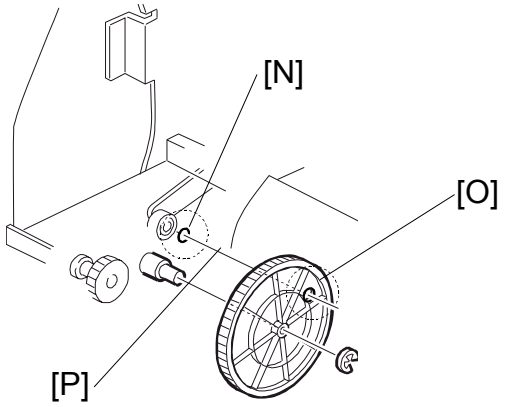
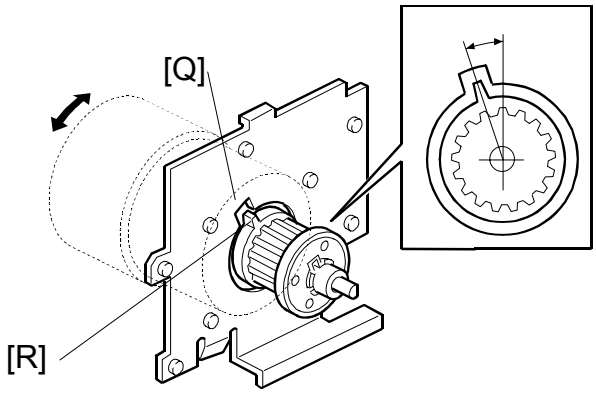


C232R508.WMF

15. Install the bracket [M]

CAUTION: Make sure that the positioning holes in the rear frame [N] and the drive gear [O] are in line [P] as shown. If the holes are in line, the paper exit pawl drive timing is OK. If they are not, make sure that the holes are in line again.

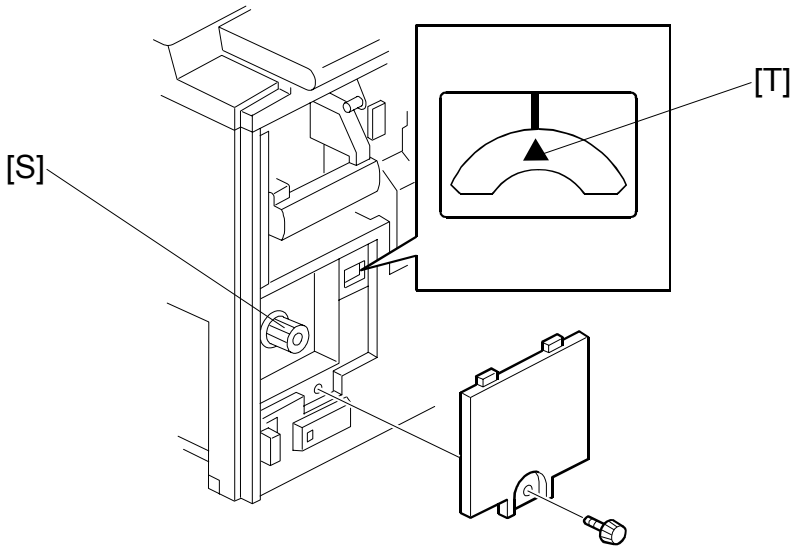
16. Install the bearing (removed in step 11) on the bracket.



C232R509.WMF

17. Align the cutout in the bracket [Q] with the pawl on the torque limiter [R] as shown.
18. Install the spring.

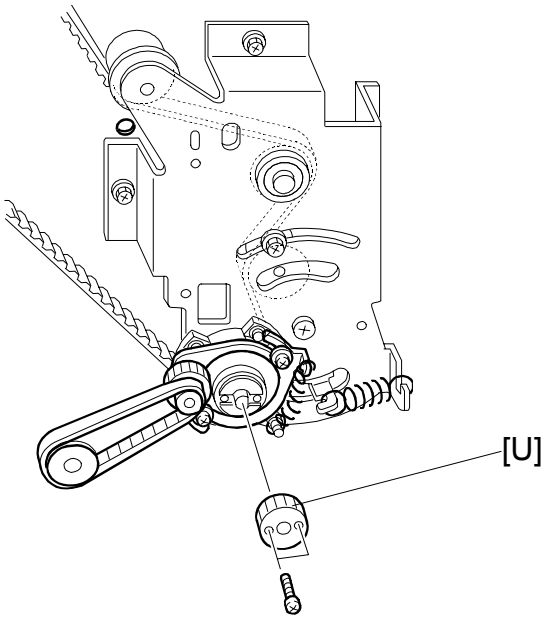
CAUTION: If the cutout and pawl are in line, the main motor drive timing is OK. If they are not, remove the spring, then make sure that the cutout and pawl are in line again.



C232R510.WMF

19. Install the timing belt and pulley bracket.

CAUTION: When you install the pulley bracket, adjust with the knob [S] until the line and arrow on the indicator disk are in line [T].



C232R504.WMF

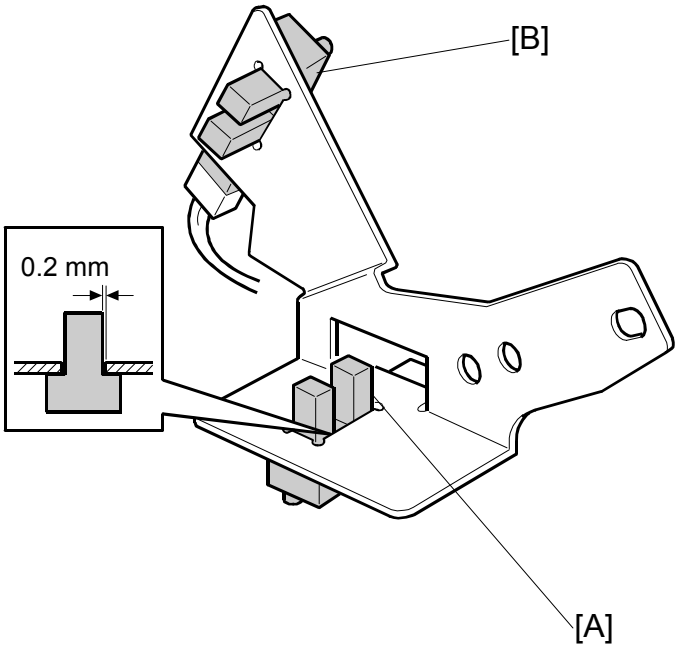
20. Install the gear [U].
21. Install the wire protection cover.
22. Install the main motor control board.
23. Install the rear cover.
24. Remove the drum drive securing tool.

6.1.2 FEED START SENSORS AND FEED ENCODER

The feed start sensor and feed encoder must be set in the correct positions to avoid paper feed trouble once they are removed. For general instructions and cautions for these sensors, refer to 6.10.2 ‘Feed Start Sensor and Feed Encoder’ in the C229 Service Manual.

In addition, the following caution must be taken as a specific procedure for the C233 model. This is necessary because the configuration of the sensors' bracket was changed.

CAUTION: Make sure that the distance between the feed encoder sensor [A] and the sensor bracket is less than 0.2 mm.



B: Paper table feed start sensor

6.2 PAPER FEED SECTION (MAIN BODY)

6.2.1 PAPER FEED LENGTH ADJUSTMENT

CAUTION: The last digits of the SP numbers for this adjustment (SP 6-116) are different from the C229 model. Please refer to the chart below and note the changes in the numbers. Also, note that the default values are different for some items.

C229 Model			C233 Model		
SP No.	**Display**	**Default**	**SP No.**	**Display**	**Default**
6-116-1	Paper Clamp Timing Pulse	143	6-116-1	Paper Clamp Timing Pulse	145
6-116-2	Regist Timing Pulse	113	6-116-4	Regist Timing Pulse (Do not adjust this item.)	113
6-116-3	Feed Stop Timing Pulse	25	6-116-5	Feed Stop Timing Pulse	21
6-116-4	Regist Speed Ctl Pulse	20	6-116-6	Print Position 2 Setting (Do not adjust this item.)	103
6-116-5	Paper Clamp – Thick Paper	150	6-116-2	Paper Clamp - Thick Paper	148
6-116-6	Regist – Thick Paper	213	6-116-7	Print Position 1 Setting (Do not adjust this item.)	140
6-116-7	Paper Clamp Pls – A4 Cam	143	6-116-3	Paper Clamp Pls - A4 Cam (Do not adjust this item.)	145

Paper Feed Motor Stop Timing Adjustment

The SP mode number and its default value used in this adjustment are different from those in the C229 model. There are no other differences from the C229 model. (The adjustment procedure remains the same, except for the SP number and default value.)

Adjustment procedure

To ensure that the paper reaches the registration roller (main body) properly. Changing the paper feed motor stop timing with SP 6-116-5 changes the paper feed length for the paper feed roller.

CAUTION: Do not change SP6-110 and 6-111 (these change the paper feed start timing)

1. Turn on the main switch, then access the SP mode.
2. Enter SP6-116-5.
3. Increase or decrease the value on the display.
   NOTE: 1) Before changing the value, check the current setting, in case you need to recover the previous setting. (Default for SP6-116-5: “21”)
   2) Changing the value by +1 increases the paper feed motor’s on-time and feeds the paper an extra 0.3 mm.
4. Leave the SP mode, then check the paper feed performance. If the problem still occurs, repeat the above steps.

Paper Clamping Timing Adjustment

The SP mode numbers and their default values used in this adjustment are different from those in the C229 model. There are no other differences from the C229 model. (The adjustment procedure remains the same, except for the SP numbers and default values.)

Adjustment procedure

To ensure that the paper reaches the paper clamper on the pressure cylinder properly. Changing the paper clamping timing with SP6-116-1 (or 6-116-2) changes the paper feed length for the paper registration roller (main body).

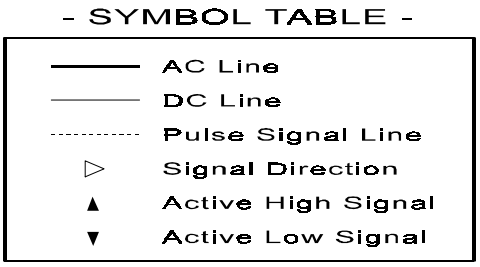
CAUTION: Do not change SP6-112 to 6-115 (these change the registration motor start timing). In addition, do not change SP6-116-3, -4, -6 or -7.

1. Turn on the main switch, then access the SP mode.
2. Enter SP6-116-1 (or 6-116-2).
   NOTE: The paper clamping timing depends on the paper type selected at the operation panel. SP6-116-1 is the adjustment for normal paper only. For thick paper, use SP6-116-2. (Note that in thick paper mode, paper clamping is not done.)
3. Increase or decrease the value on the display.
   NOTE: 1) Before changing the value, check the current setting, in case you need to recover the previous setting. (The default for SP6-116-1 is “145”, and for SP6-116-2 it is “148”.)
   2) Changing the value by +1 decreases the registration motor’s on-time and feeds the paper 0.3 mm less.
4. Leave the SP mode, then check the paper feed performance. If the problem still occurs, repeat the above steps.

7. POINT TO POINT DIAGRAM

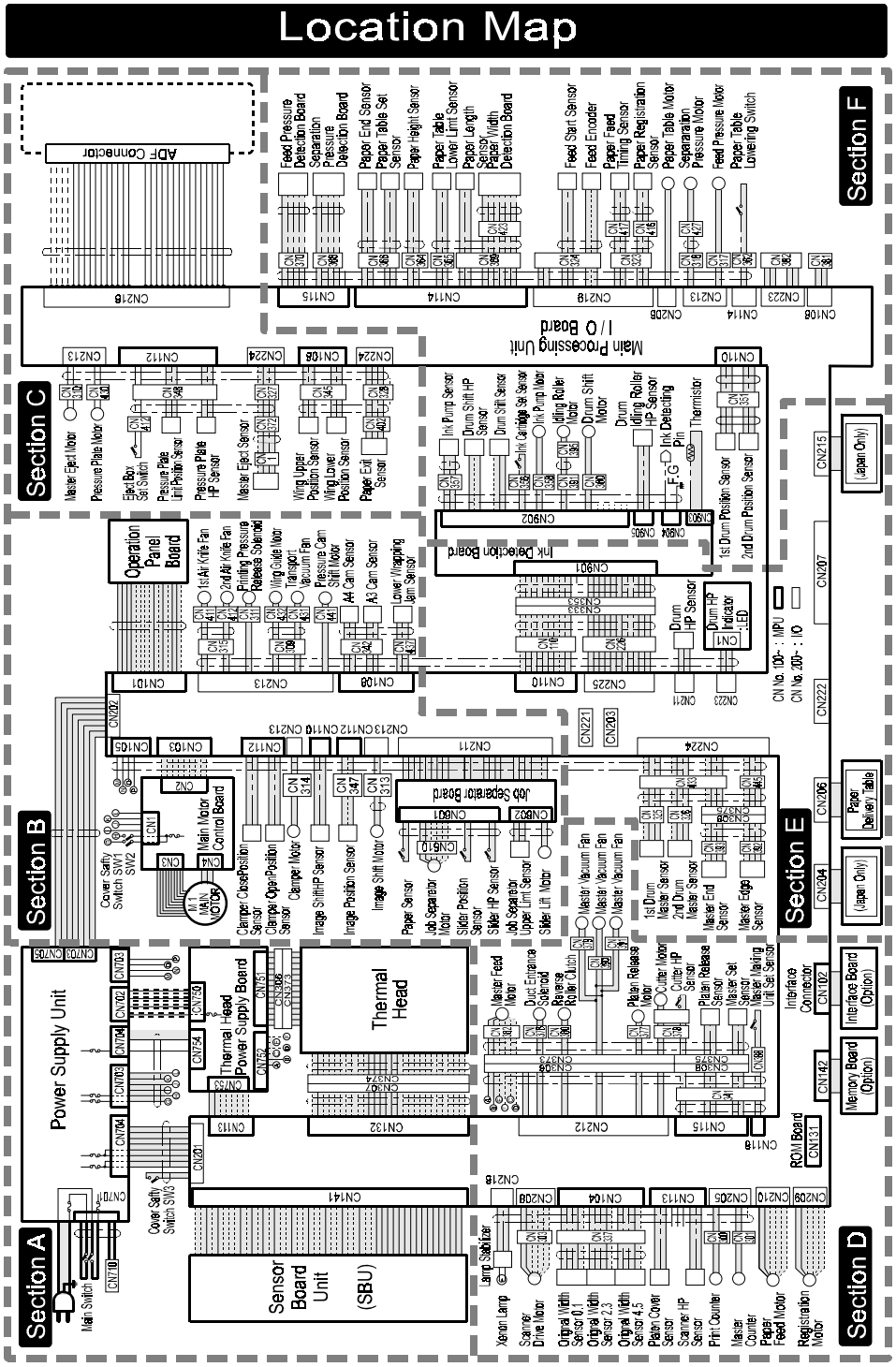
Contents

NOTE: The symbols used in the diagrams are as follows:



PP2.WMF

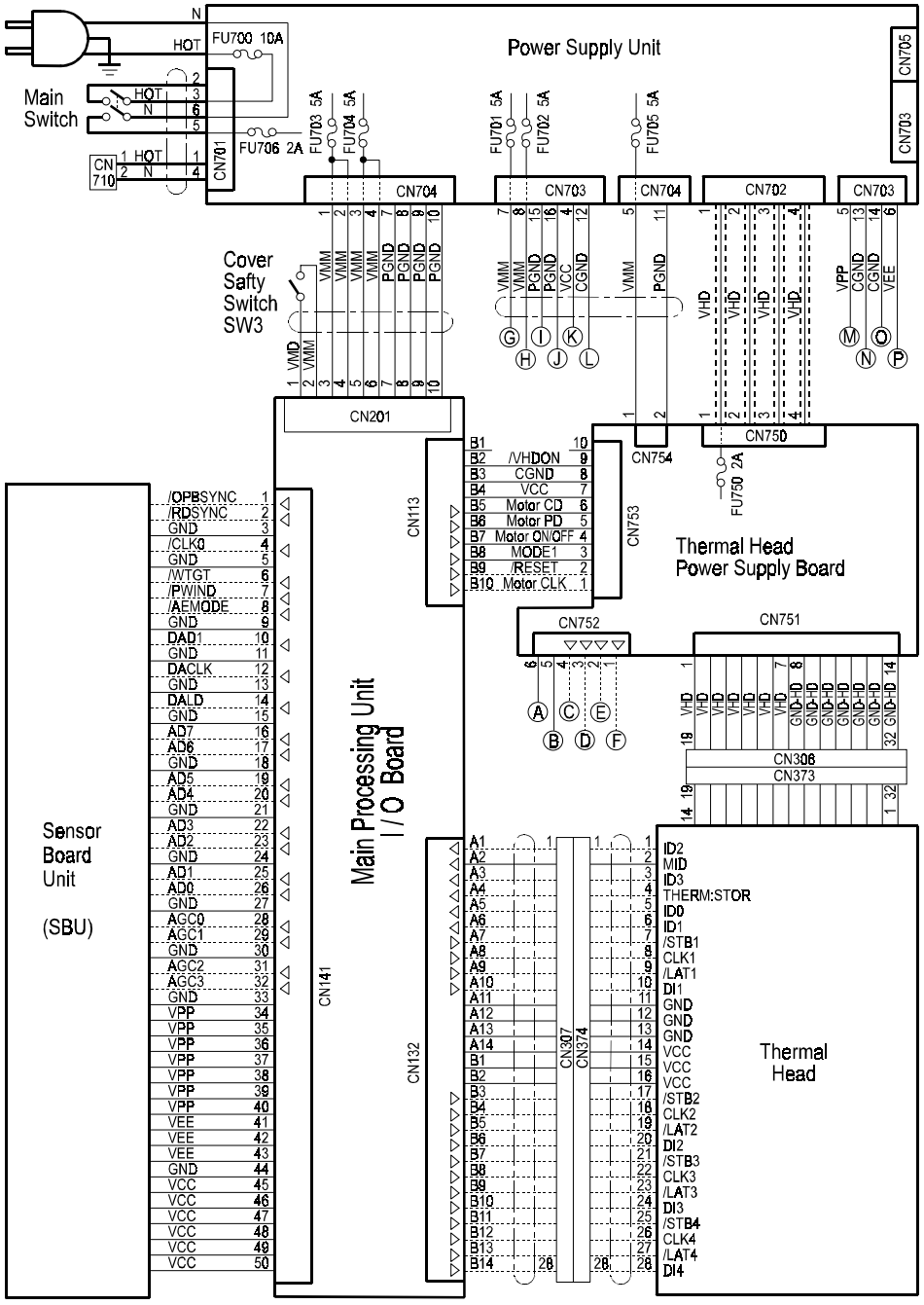
7.1 LOCATION MAP



C233S500.WMF

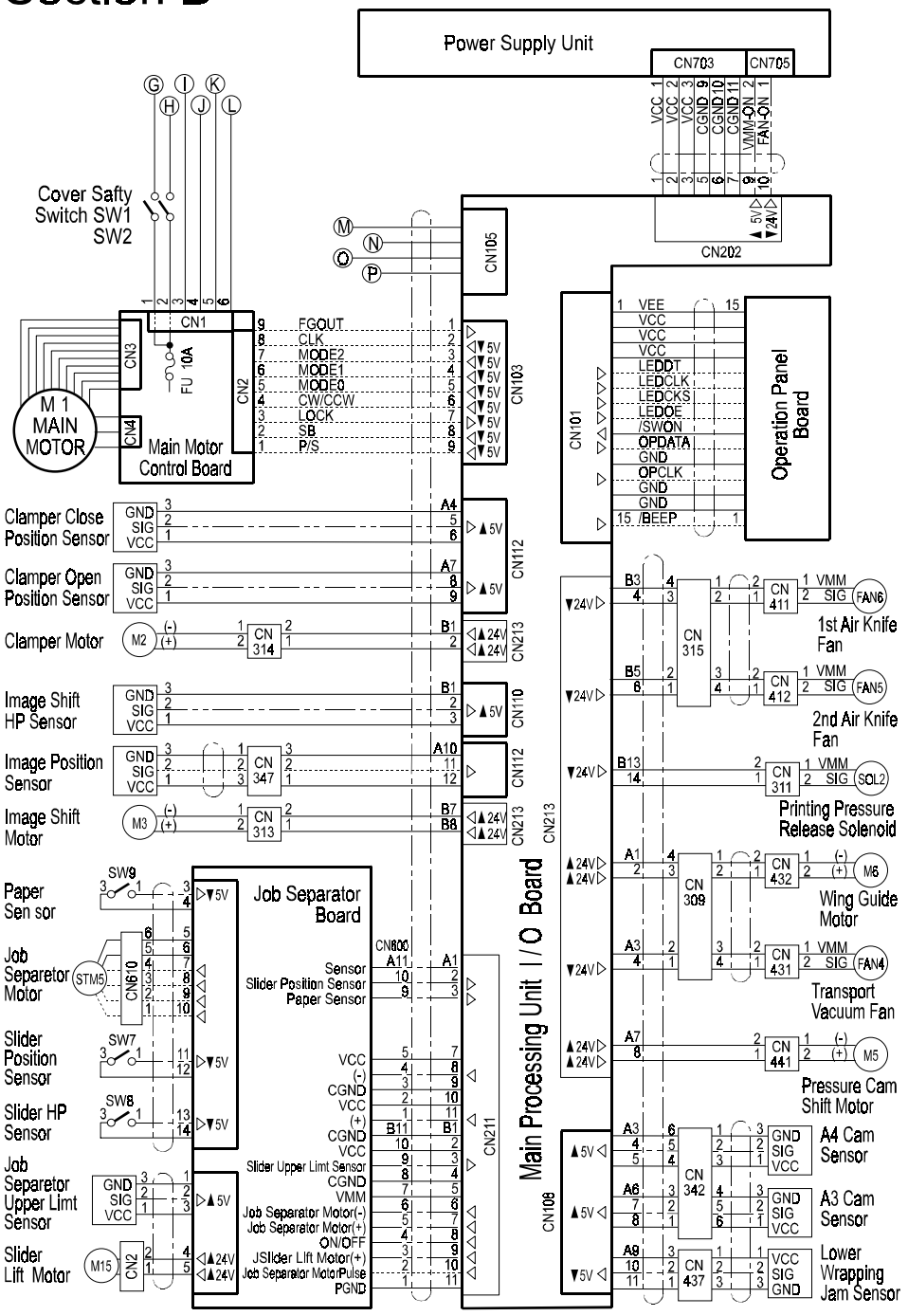
7.2 SECTION A

Section A



C233S501.WMF

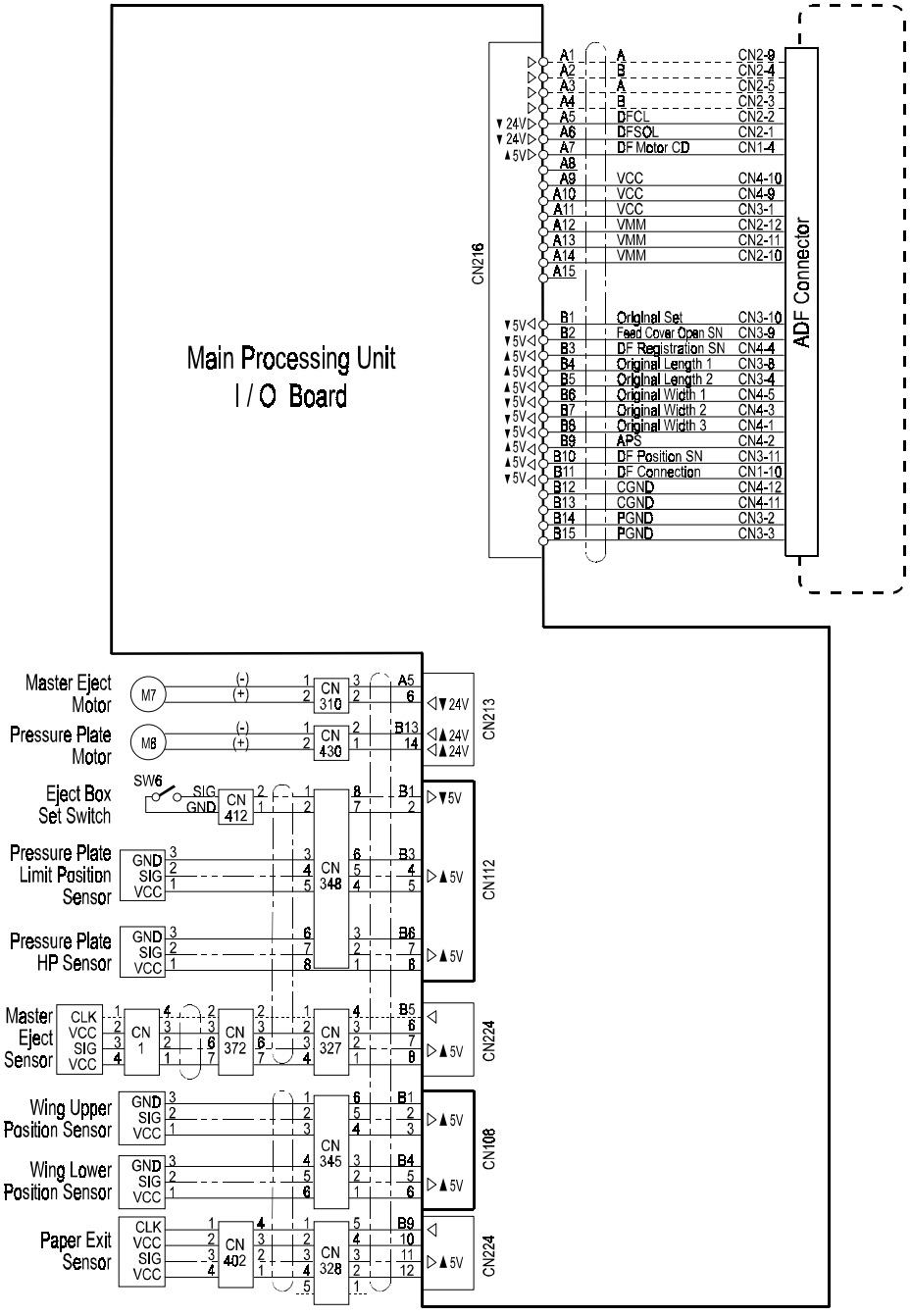
7.3 SECTION B



C233S502.WMF

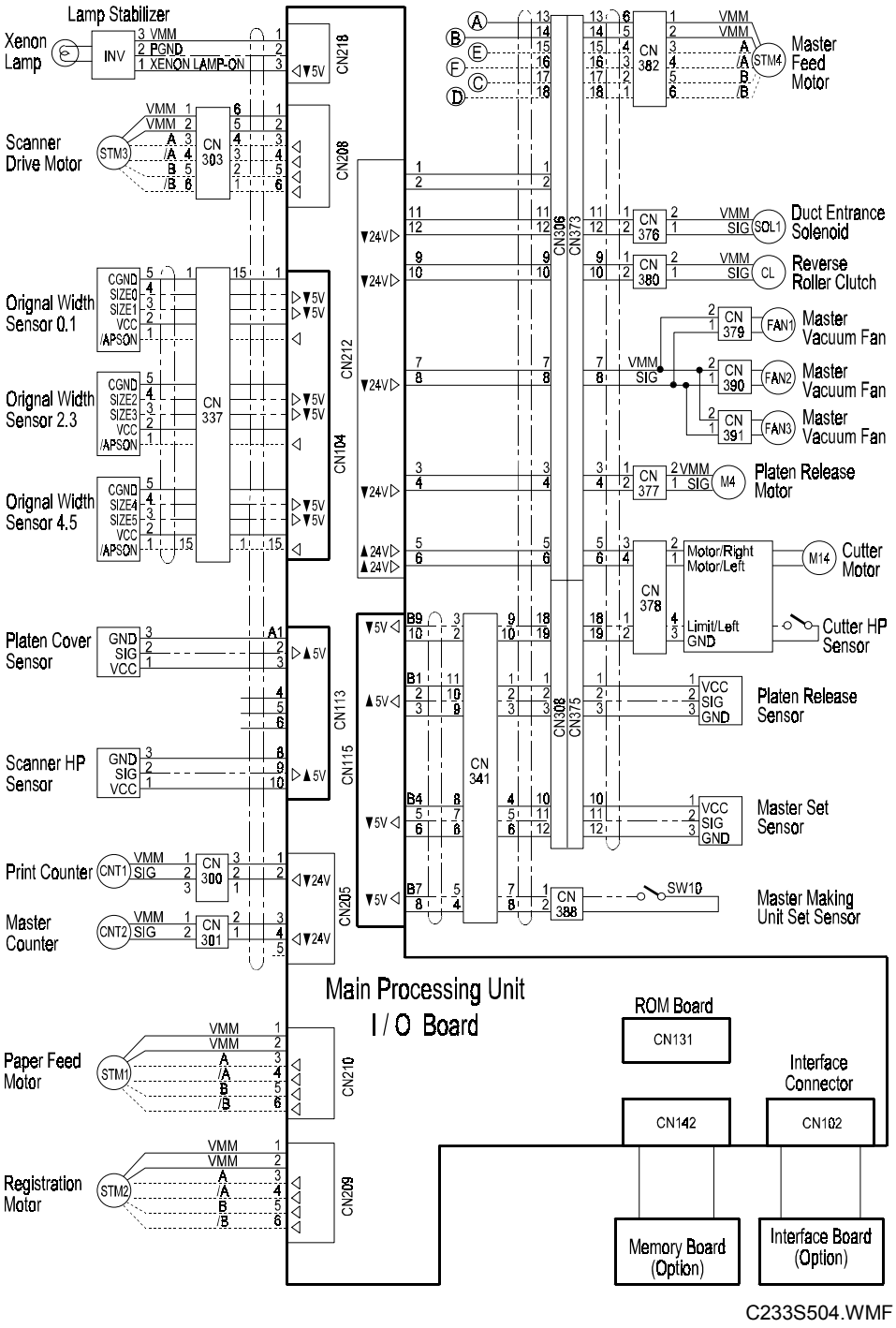
7.4 SECTION C

Section C



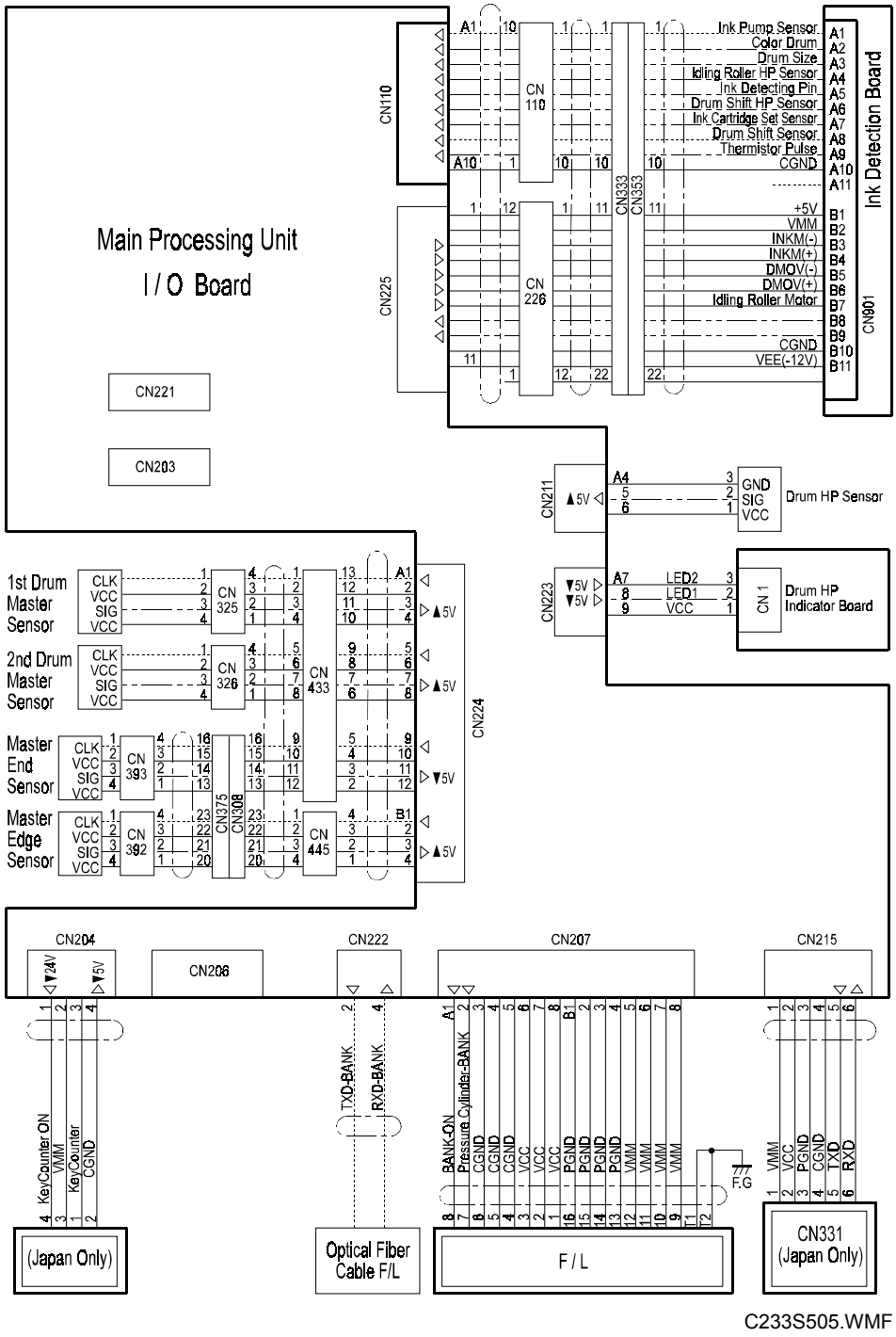
C233S503.WMF

7.5 SECTION D


Section D
Lamp Stabilizer
Xenon Lamp
INV
3 VMM
2 PGND
1 XENON LAMP-ON
CN218
Scanner Drive Motor
STM3
CN 303
CN208
Orignal Width Sensor 0.1
Orignal Width Sensor 2.3
Orignal Width Sensor 4.5
CGND
SIZE0
SIZE1
SIZE2
SIZE3
SIZE4
SIZE5
VCC
/APSON
CN 337
CN212
CN104
Platen Cover Sensor
GND
SIG
VCC
CN113
Scanner HP Sensor
CN115
Print Counter
CNT1
CN 300
Master Counter
CNT2
CN 301
CN205
Paper Feed Motor
STM1
CN210
Registration Motor
STM2
CN209
CN306
CN373
CN 382
Master Feed Motor
STM4
CN 376
Duct Entrance Solenoid
SOL1
CN 380
Reverse Roller Clutch
CL
CN 379
Master Vacuum Fan
FAN1
CN 390
FAN2
CN 391
FAN3
CN 377
Platen Release Motor
M4
CN 378
Motor/Right
Motor/Left
Limit/Left
GND
Cutter Motor
M14
Cutter HP Sensor
CN308
CN375
CN 341
Platen Release Sensor
Master Set Sensor
CN 388
SW10
Master Making Unit Set Sensor
Main Processing Unit
I / O Board
ROM Board
CN131
Interface Connector
CN142
CN102
Memory Board (Option)
Interface Board (Option)
C233S504.WMF

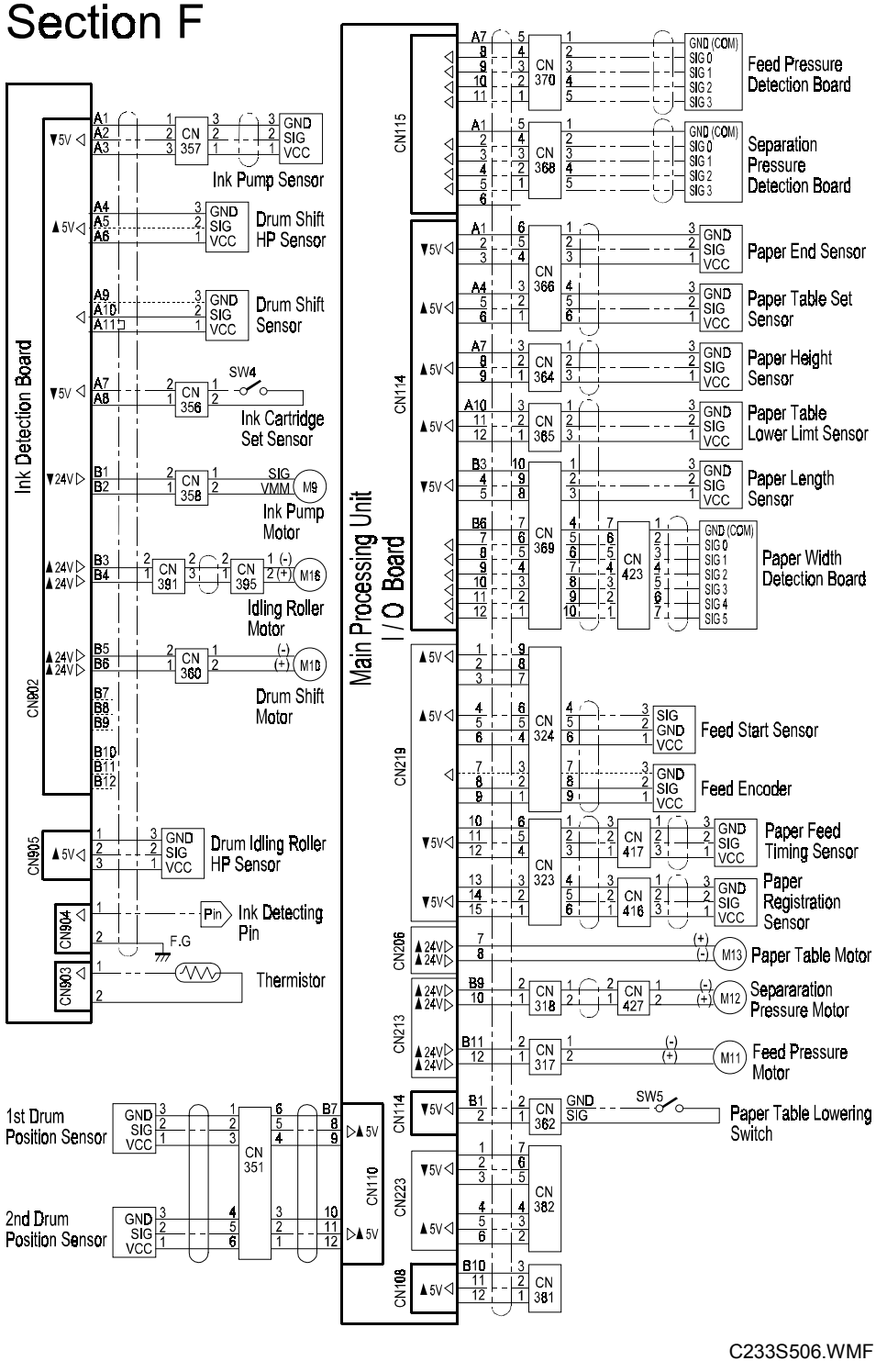
7.6 SECTION E

Section E



C233S505.WMF

7.7 SECTION F


Section F
Ink Detection Board
Main Processing Unit
I / O Board
Ink Pump Sensor
Drum Shift HP Sensor
Drum Shift Sensor
Ink Cartridge Set Sensor
Ink Pump Motor
Idling Roller Motor
Drum Shift Motor
Drum Idling Roller HP Sensor
Ink Detecting Pin
Thermistor
1st Drum Position Sensor
2nd Drum Position Sensor
Feed Pressure Detection Board
Separation Pressure Detection Board
Paper End Sensor
Paper Table Set Sensor
Paper Height Sensor
Paper Table Lower Limt Sensor
Paper Length Sensor
Paper Width Detection Board
Feed Start Sensor
Feed Encoder
Paper Feed Timing Sensor
Paper Registration Sensor
Paper Table Motor
Separararation Pressure Motor
Feed Pressure Motor
Paper Table Lowering Switch
C233S506.WMF

.Model: PRIPORT PEARL/PEARL-MC/RUBY	Date: 29-Aug-00	No: R-C229-007
Subject: Master Misfeed Error or Frequent Related SC Codes lit	Prepared by: H. Onodera, Priport Service Planning Section	

Classification:
- ☒ Troubleshooting
- ☐ Part information
- ☐ Action required
- ☐ Mechanical
- ☐ Electrical
- ☐ Service manual revision
- ☐ Paper path
- ☐ Transmit/receive
- ☐ Retrofit information
- ☐ Other ( )

Model Name:

PEARL/PEARL-MC: Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400

RUBY: Ricoh JP5800

PROBLEMS

Recently produced machines will likely have the following problems:

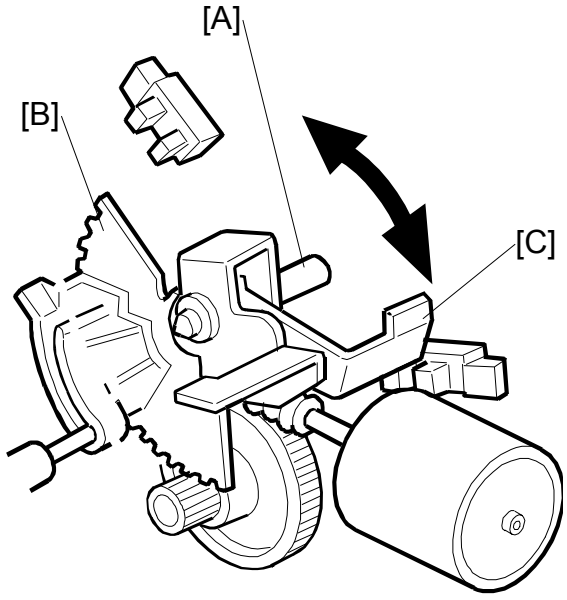
1. A master clamping error occurs during the master making process, resulting in master feed jams.
2. Service Call SC05-51 and/or SC05-52 (the status codes for the master clamper motor error) are lit.

CAUSE

At the factory it was found that the grease applied to the sector gear shaft (in the master clamper drive unit) was insufficient. After investigating the production units, we found that this problem occurred from the December 1999 production of these machines.

If the sector gear shaft [A] wasn't greased or was insufficiently greased, the surface of the shaft [A] will gradually wear down, as the sector gear plate [B] and sensor actuator bracket [C] rotate along the shaft each time a new master is made.

If the shaft wears down (frictional wear), the sector gear plate [B] and/or sensor actuator bracket [C] will not work smoothly. This will cause the master clamper motor to lock or cause master clamping errors.



Master clamper drive unit

SOLUTION

From the July 2000 production, an inspection process has been added at the factory in order to make sure that the sector gear shaft is greased properly.

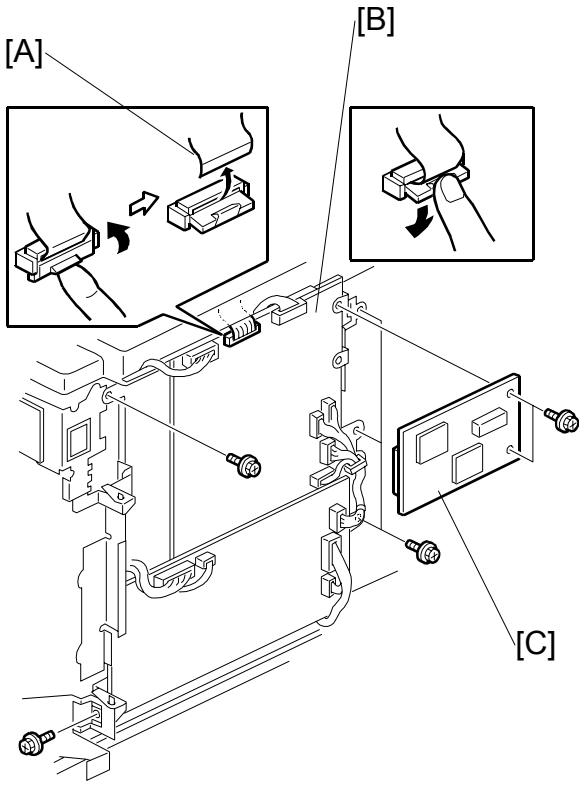
RECOMMENDED ACTION IN THE FIELD

If the machines serial number is between December 1999 and June 2000 (Serial numbers Cxxx912xxxx to Cxxx006xxxx, or ATx912xxxx to ATx006xxxx), check if the sector gear shaft is greased properly.

NOTE: Grease must be applied to where the sector gear plate and sensor actuator bracket contact the shaft surface.

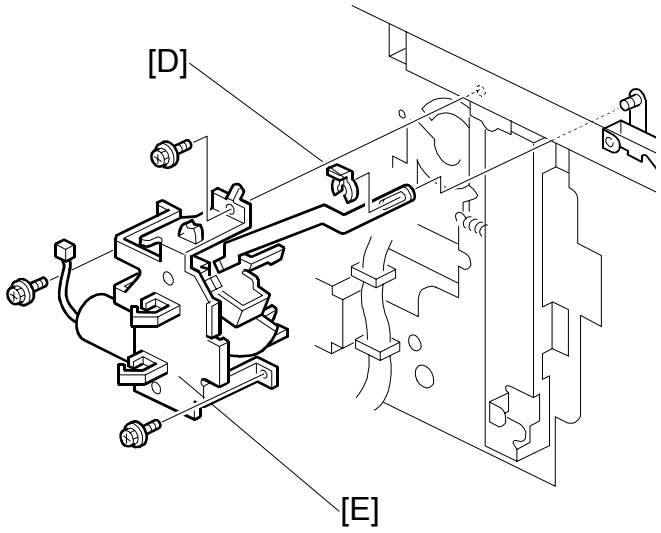
Use the following procedure to check the shaft and grease it:

Sector Gear Greasing Procedure

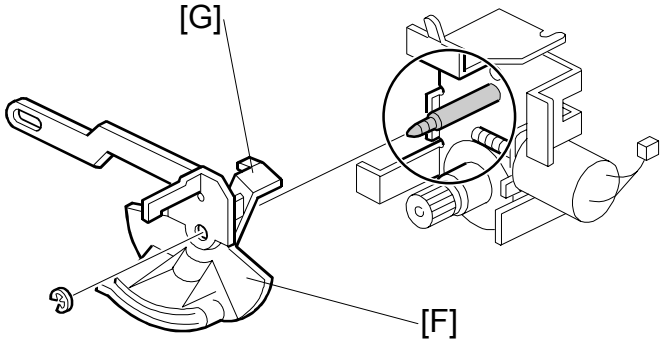


1. Turn off the main switch and disconnect the power plug.
2. Remove the rear cover.
3. Remove the flat cable [A], and open the MPU [B].
   NOTE: If the memory board [C] is installed, also remove it.
4. Remove screws and swing out the PSU (not shown).

5. Remove the clip [D].
   NOTE: Take care not to lose the clip [D].
6. Remove the clamper drive unit [E] (3 screws, 3 connectors, and 2 clamps).

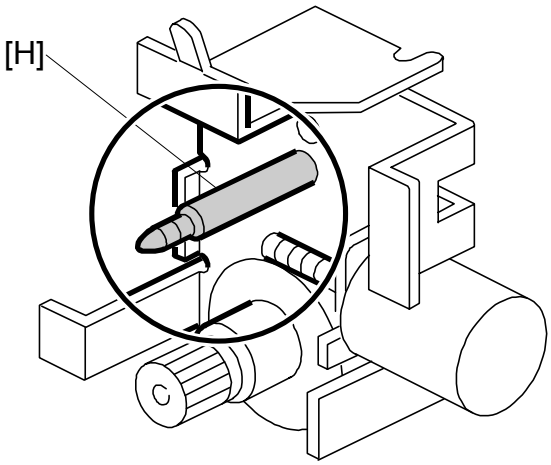


7. Remove the sector gear plate [F] and sensor actuator bracket [G] on the clamper drive unit (1 E-ring).



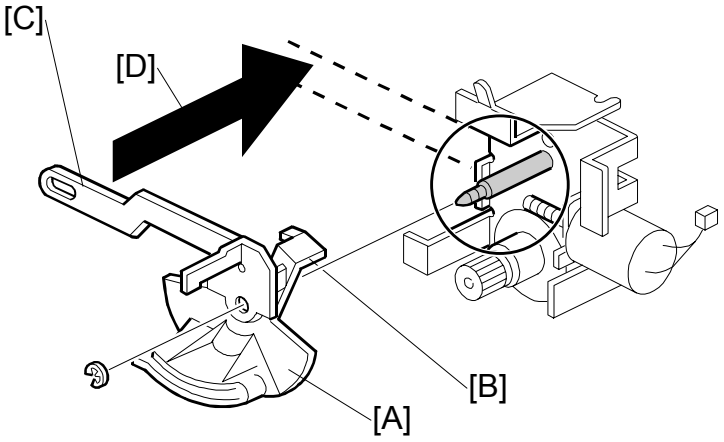
8. Grease the shaft [H] where the sector gear plate and sensor actuator bracket come in contact.

   NOTE: Make sure that grease is applied to where both the sector gear plate and sensor actuator bracket contact the shaft surface.



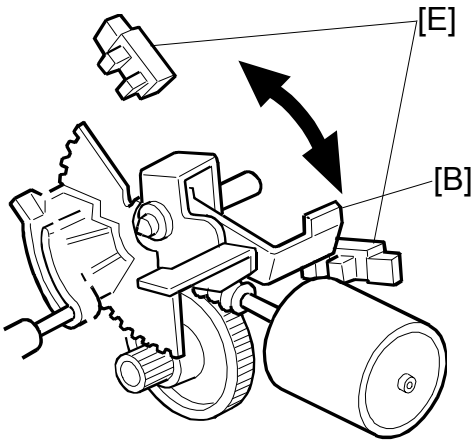
Re-installation procedure

1. Re-install the sector gear plate [A] and sensor actuator bracket [B] (1 E-ring).
   NOTE: Set the link [C] in the direction of the arrow [D].



2. Re-install the clamper drive unit (3 screws, 3 connectors, and 2 clamps).
   NOTE: Make sure that the actuator [B] travels properly between the two sensors [E].

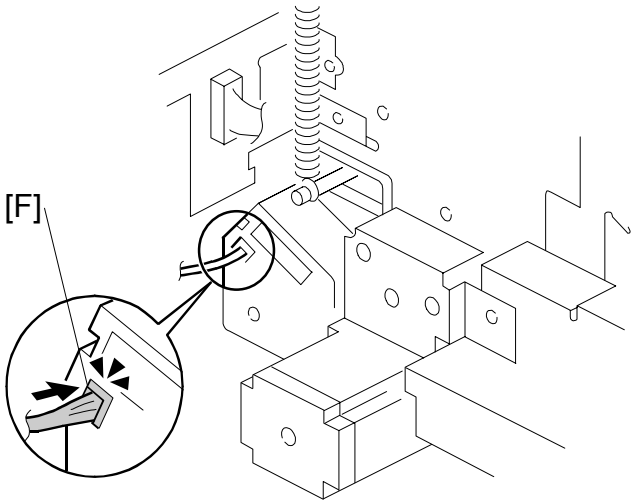
3. Secure the link [C] (see step 1) using 1 clip.



4. Close the MPU and PSU.

NOTE: The small connector going to the paper table lift motor tends to loosen after doing the above procedures. Make sure that the connector [F] is firmly in place before closing the MPU and PSU.

5. Re-install the flat cable.
6. Re-install the rear cover.



Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE	**Date:** 14-May-01	**No:** R-C229-**008**
Subject: Poor Image Quality -Sapphire Only-	**Prepared by:** A. Yoshida, Priport Service Planning Section	

Classification:

☒ Troubleshooting	☐ Part information	☐ Action required
☐ Mechanical	☐ Electrical	☐ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☐ Other ( )		

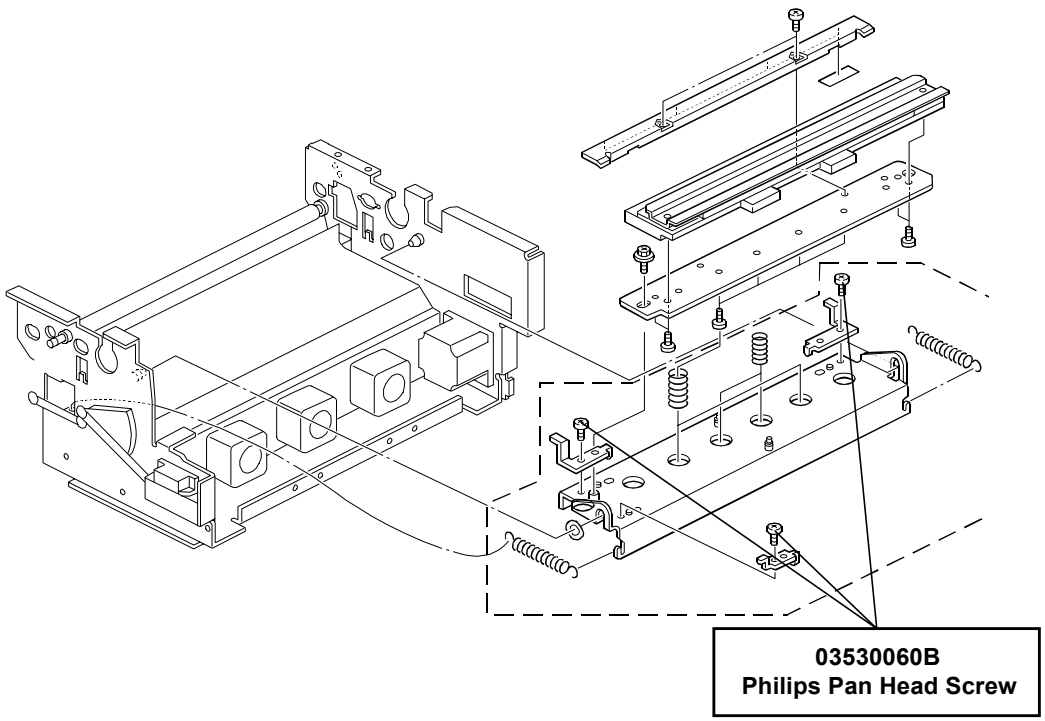
Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5800
SAPHHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630

Information for the Sapphire begins with this bulletin. Note that this issue is related to the Sapphire only.

SYMPTOM

In some machines, the shape of the 3 screws under the thermal head is different from the standard ones used in the Plotter Unit, causing solid image areas to appear light.

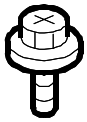


Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE	Date: 14-May-01	No: R-C229-008

CAUSE

The three screw heads were too thick, which caused them to push the thermal head slightly upward and release the pressure between the platen roller and thermal head.

Thin-headed screws (Philips pan head screw) must be used for the Sapphire.
(The Pearl, Pearl-MC and Ruby use the 04513006B tapping screw).

OK	NG
03530060B **Philips Pan Head Screw**	**04513006B** **Tapping Screw - M3X6**
	

SOLUTION

From May 2001 production, the same thin-headed screw (pan head screw) is used for all models of the Sapphire, Pearl, Pearl-MC and Ruby series. Some machines from April production also contain these screws.

RECOMMEND ACTION IN THE FIELD

If solid image areas appear light, please check the 3 screws and see if the machine serial number is between February and April 2001 (see below).

Feb – Apr ’01 production:

F0110200001 to F0110200180
F0110300001 to F0110300124
F0110400001 to F0110400106 (except F0110400017, 18, 24, 26-30, 33, 35, 38, 43, 50-59, 98, 101 and 102).

All other machines are inspected at the factory.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE	**Date:** 10-Apr-02	**No:** R-C229-**009**
Subject: SC05-60	**Prepared by:** M. Ohtsubo, Priport Service Planning Section	

Classification:

☒ Troubleshooting	☐ Part information	☐ Action required
☐ Mechanical	☐ Electrical	☐ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☐ Other ( )		

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5800
SAPHHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630

In preparation for the beginning of Garnet mass-production, please perform the firmware upgrades listed below on the Pearl, Pearl-MC and Ruby.

Without the upgrade, SC05-60 (Idling HP Sensor Remains On) will occur at power-up or during operation when the Garnet drum is installed in these 3 models. This is because a new modification has been applied to the Garnet drum to improve ink roller drive speed.

ACTION IN THE FIELD

Pearl:

P/N C2295134G (Firmware Version 2.14) or newer

Pearl-MC:

P/N C2335114H (Firmware Version 2.41) or newer

Ruby:

P/N C2325114L (Firmware Version 2.41) or newer

NOTE: The current drums for Pearl, Pearl-MC and Ruby can be used on the Garnet as is, without a firmware rewrite.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2	Date: 18-Feb-03	No: R-C229-010
Subject: Garnet firmware history	**Prepared by:** A. Yoshida, Priport Service Planning Section	

Classification:
- ☐ Troubleshooting
- ☒ Part information
- ☐ Action required
- ☐ Mechanical
- ☐ Electrical
- ☐ Service manual revision
- ☐ Paper path
- ☐ Transmit/receive
- ☐ Retrofit information
- ☐ Other ( )

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5800
SAPHHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
Garnet:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180

The information for the Garnet/SA2 begins with this bulletin. Note that this issue is related to the Garnet only.

The following is the firmware modification history of the Priport product Garnet.

FIRMWARE MODIFICATION HISTORY

No.	Part Numbers	Symptom Corrected / Changes	Month
1	Main firmware: C2395114-E MPU: C2395101-E	First mass production release.	From the start of mass-production
2	Main firmware: C2395114-F MPU: C2395101-F	LCD wording corrections. **Note:** This release applies to Italy models only.	June 2002 production
3	Main firmware: C2395114-G MPU: C2395101-G	LCD wording corrections. **Note:** This release applies to Italy models only.	October 2002 production
4	Main firmware: C2395114-H MPU: C2395101-H	Applies to the Japan model only.	January 2003 production

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2	**Date: 7-Mar-03**	**No:** R-C229-**011**
Subject: Upload Program Procedure	**Prepared by:** A. Yoshida, Priport Service Planning Section	

Classification:

☐ Troubleshooting	☐ Part information	☐ Action required
☐ Mechanical	☐ Electrical	☒ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☐ Other ( )		

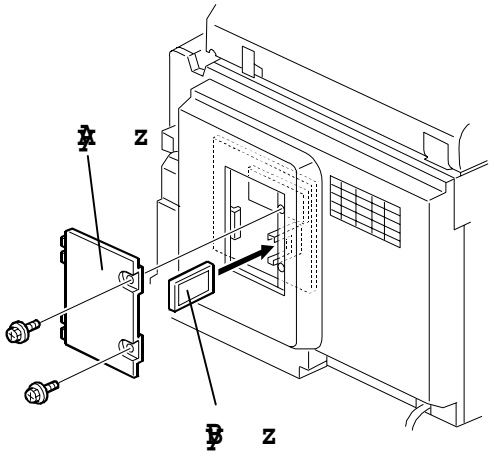
Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5800
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
Garnet:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180

Please add the following procedure to your Service Manuals, which was previously missing. Note that this issue is related to the Sapphire/Garnet/SA2 (3models) only.

UPLOAD PROGRAM (SP8-3)

Use the following procedure to upload the current firmware in the MPU to a flash memory card.



1. Turn off the main switch and disconnect the power plug.
2. Remove the cover [A].
3. Insert the flash memory card [B] into the connector on the MPU.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2	Date: 7-Mar-03	No: R-C229-011

4. Connect the power plug, then turn on the main switch while holding down the Clear Modes key.
5. Access SP8-3-1 and press OK.
6. Press the Enter (#) key to start the upload.
7. After completing the upload (LCD displays 'Completed'), exit SP mode.

NOTE: The upload takes about 1 minute to complete.

8. Turn off the main switch, then remove the flash memory card.

Reissued: 9-Oct-03

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2	**Date:** 2-May-03	**No:** R-C229-**012a**
Subject: SA2 firmware history	**Prepared by:** A. Yoshida, Priport Service Planning Section	

Classification:
☐ Troubleshooting ☒ Part information ☐ Action required
☐ Mechanical ☐ Electrical ☐ Service manual revision
☐ Paper path ☐ Transmit/receive ☐ Retrofit information
☐ Other ( )

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5800
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
Garnet:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180

Note that this issue is related to the SA2 only.

The following is the firmware modification history of the Priport product SA2. Items in ***bold italics*** have been corrected and added.

FIRMWARE MODIFICATION HISTORY

C2445114	File Name	Version	C.SUM	Production
C	C2445114C.bin	2.11	55C4	From the start of mass-production
D	C2445114D.bin	2.13	BC36	June 2002 production
E	C2445114E.bin	2.15	3AFB	October 2002 production
F	C2445114F.bin	2.19	84D0	May 2003 production

Reissued: 9-Oct-03

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2	**Date:** 2-May-03	**No:** R-C229-**012a**

Symptom Corrected / Changes	Suffix
First mass production release.	C
LCD wording corrections. **Note:** This release applies to Italy models only.	D
LCD wording corrections. **Note:** This release applies to Italy models only.	E
Modified to support EarlGrey-LT, the new optional PC controller. Also includes various changes which apply to the Japan model only.	F

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2	**Date:** 3-Sep-03	**No:** R-C229-**013**
Subject: Ink leaks	**Prepared by:** A. Yoshida, Priport Service Planning Section	

Classification:

☒ Troubleshooting	☐ Part information	☐ Action required
☐ Mechanical	☐ Electrical	☐ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☐ Other ( )		

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5800
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
Garnet:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180

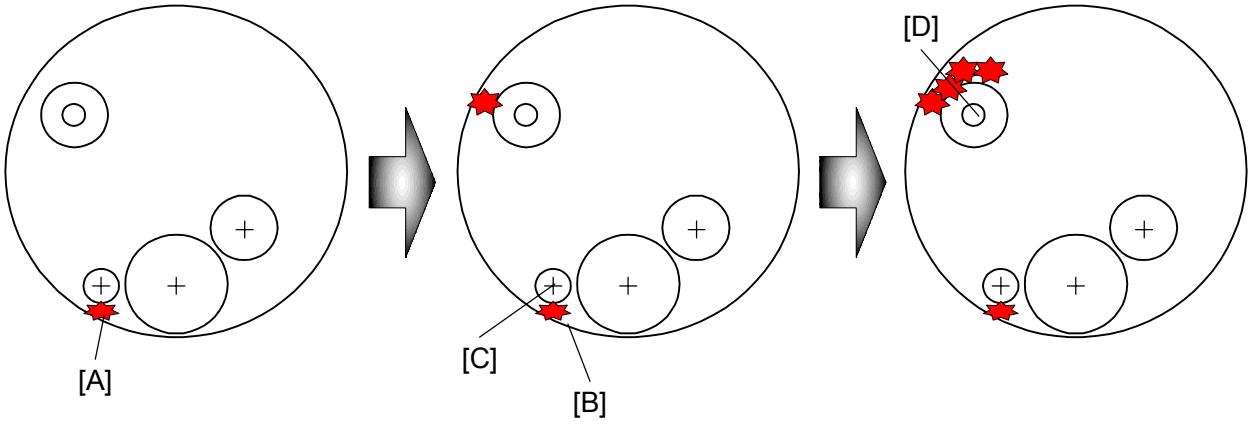
Note that this issue applies to the Sapphire, Garnet and SA2 only.

Symptom

SC05-22 (No drum shift sensor pulse), SC05-32 (Ink pump sensor remains on or off), and/or an ink leak/overflow at power-up or during operation.

Cause

Producing over 2,000 prints with the same master causes an ink buildup to occur [A] between the inner surface of the drum metal screen [B] and the drum idling roller [C], after which the buildup is transferred to the area of the ink pump motor [D].



Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2	Date: 3-Sep-03	No: R-C229-013

Solution

Production Line

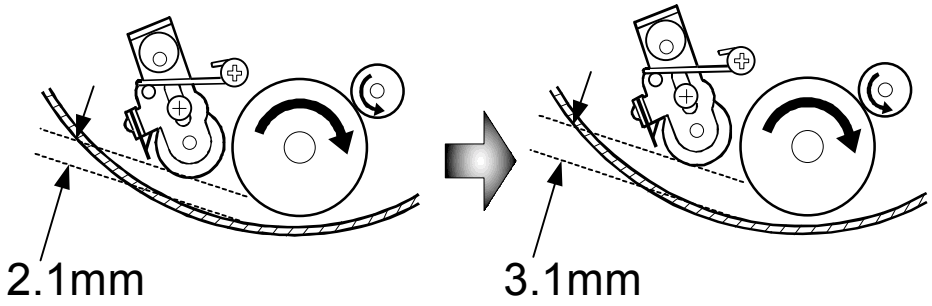
(see MB #MC235007).

1. Modification 1: Sapphire, SA2, Garnet.

The shape of the bearing holder has been changed to ensure that ink is evenly applied to the drum screen and that ink leaks do not occur.

2. Modification 2: Sapphire, SA2.

The home position of the drum idling roller has been increased to 3.1 mm from the drum screen, so that ink on the inner surface of the screen is applied evenly and ink leaks do not occur.



In the Field

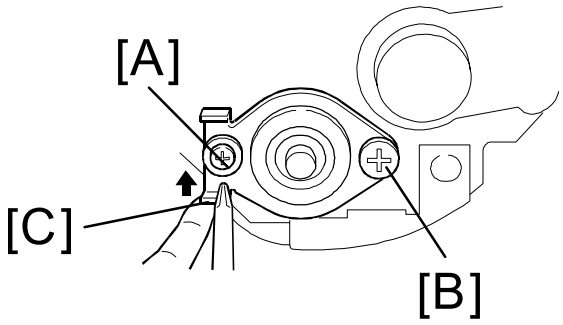
1. Please install the new parts listed in MB #MC235007 and **perform the adjustments below**.
2. Make sure customers are aware that no more than 2,000 prints should be made with the same master.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2	Date: 3-Sep-03	No: R-C229-013

ADJUSTING THE BEARING HOLDER

The following procedure applies to both the operator and non-operator sides.

1. Install the new parts, then tighten screw [B] (A2596239) and leave screw [A] (09513006Z) loose.
2. Move the lip [C] of the bearing holder up all the way as shown, then tighten screw [A].

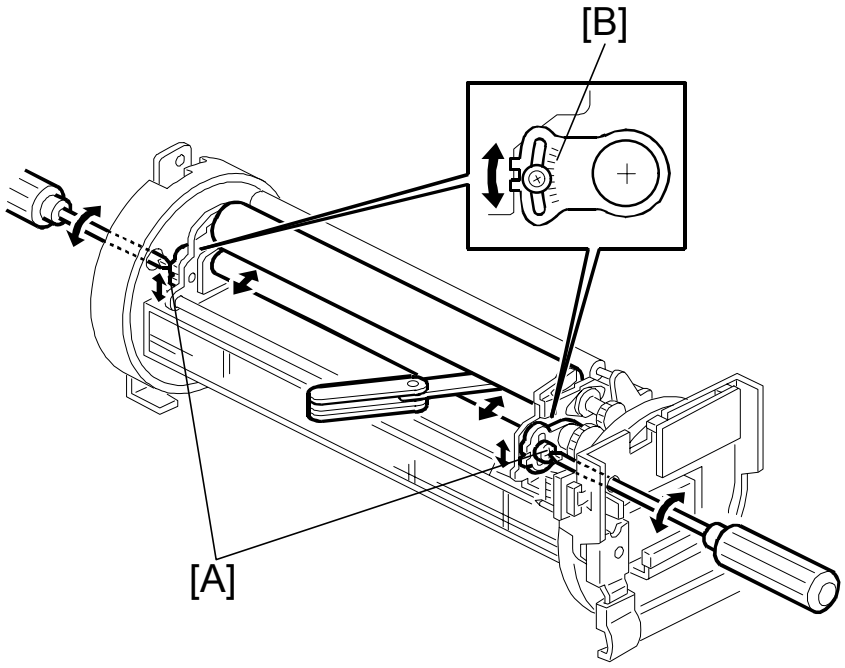


View from operator side

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2	Date: 3-Sep-03	No: R-C229-013

ADJUSTING THE INK ROLLER GAP

1. Remove the drum unit from the machine.
2. Remove the cloth and metal screens from the drum unit.
3. Wipe off the ink around the ink roller and the doctor roller.
4. Insert a 0.08 mm gauge between the doctor roller and ink roller. Then, make sure that a 0.1 mm gauge cannot pass through the gap.
   NOTE: Check the gap at the left, center, and right.
5. If the gap is not correct, loosen the screws [A] on both sides and adjust the gap by turning the eccentric bushings [B] at either side.



Reissued: 20-Nov-03
RTB Correction
The illustration has changed as shown below.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2	**Date:** 2-Oct-03	**No:** R-C229-**014a**
Subject: Paper Length Sensor	**Prepared by:** A. Yoshida, Priport Service Planning Section	

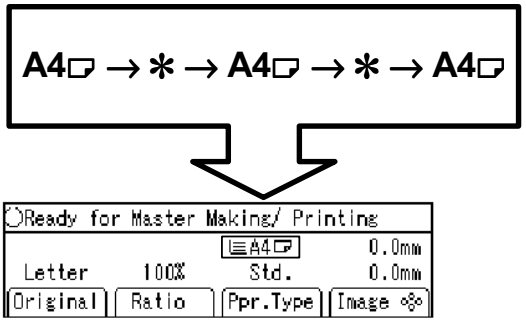
Classification:
- ☒ Troubleshooting
- ☐ Part information
- ☐ Action required
- ☐ Mechanical
- ☐ Electrical
- ☐ Service manual revision
- ☐ Paper path
- ☐ Transmit/receive
- ☐ Retrofit information
- ☐ Other ( )

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5800
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
Garnet:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180

SYMPTOM

The paper size indicator on the operation panel lights on and off during operation.



CAUSE

The light from the fluorescent lamp causes a paper length sensor misdetection.

SOLUTION

1. Check to see that the fluorescent lamp has been installed in the correct location and position/orientation.
2. Install the new paper length sensor listed in MB #MC235009 and MB #MC229013.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 9-Oct-03	**No:** R-C229-**015**
Subject: Garnet firmware history	**Prepared by:** A. Yoshida, Priport Service Planning Section	

Classification:
- ☐ Troubleshooting
- ☒ Part information
- ☐ Action required
- ☐ Mechanical
- ☐ Electrical
- ☐ Service manual revision
- ☐ Paper path
- ☐ Transmit/receive
- ☐ Retrofit information
- ☐ Other ( )

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5800
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
GARNET:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180
SA2P (China only):	Ricoh JP8510P, Gestetner 5500P

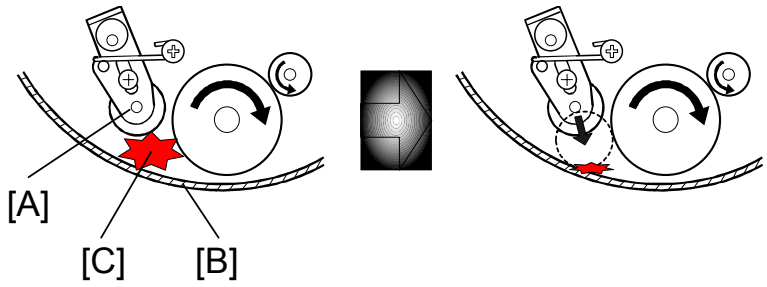
Note that this bulletin is related to the Garnet only.

The following is the firmware modification history of the Priport product Garnet.

FIRMWARE MODIFICATION HISTORY

C2395114	File Name	Version	C.SUM	Production
E	C2395114E.bin	2.10	FC5A	From the start of mass-production
F	C2395114F.bin	2.13	FCB9	June 2002 production
G	C2395114G.bin	2.15	1012	October 2002 production
H	C2395114H.bin	2.16	F830	January 2003 production
J	C2395114J.bin	2.19	07C2	May 2003 production
K	C2395114K.bin	2.21	8821	November 2003 production

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 9-Oct-03	No: R-C229-015

Symptom Corrected / Changes	Suffix
First mass production release.	E
LCD wording corrections. **Note:** This release applies to Italy models only.	F
LCD wording corrections. **Note:** This release applies to Italy models only.	G
Applies to the Japan model only.	H
Modified to support EarlGrey-LT, the new optional PC controller.	J
Operational change: The drum idling roller [A] is presses against the drum metal screen [B] once 2,500 prints have been made with the same master in order to prevent ink buildups [C] between the screen and roller. The drum idles for 5 revolutions during this time. This modification is related to RTB #RC229013. **Note:** The machine clears the counter for drum revolutions (# printouts for one master) when: ● The above operation is completed, i.e. the idling roller motor turns off ● The main switch is turned off/on ● The master making key is pressed ● The machine recovers from Energy Saver mode  	K

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 28-Oct-03	**No:** R-C229-**016**
Subject: Service manual revision - Scanner resolution	**Prepared by:** K. Yamamoto, Priport Service Planning Section	

Classification:

☐ Troubleshooting	☐ Part information	☐ Action required
☐ Mechanical	☐ Electrical	☒ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☐ Other ( )		

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5800
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
GARNET:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180
SA2P (China only):	Ricoh JP8510P, Gestetner 5500P

Please note that this bulletin pertains to the Garnet only.

Please apply the following revision at “1 Overall information - 1.2 Specifications - 1.2.2 For model #C239” (page1-2) on Service Manual of Garnet/SA2.

- Incorrect:
  Scanning (Pixel Density): 400dpi CCD

- Correct:
  Scanning (Pixel Density): 600dpi (main-scan) x 400dpi (sub-scan) CCD

Note: The main-scan resolution is 600dpi, because the CCD is 600dpi. Garnet always reduces the amount of scanned data to 400dpi since the thermal head is only for 400dpi.

Please add the above information to your Garnet/SA2 service manual.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 2-Dec-03	**No:** R-C229-**017**
Subject: New Model SA2P information (China only)	**Prepared by:** M. Ohtsubo, Priport Service Planning Section	

Classification:

☐ Troubleshooting	☐ Part information	☐ Action required
☐ Mechanical	☐ Electrical	☐ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☒ Other (New model information)		

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5800
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
GARNET:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180
SA2P (China only):	Ricoh JP8510P, Gestetner 5500P

This bulletin contains all service-related information unique to Model SA2P (C255), which is scheduled for official release in China in February 2004. Please add this information to your SA2/Garnet Service Manual.

Note: Please also see MB #M-C235-011 for a list of the components unique to the Model SA2P.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 2-Dec-03	No: R-C229-017

1. OVERALL INFORMATION

1.1 SECTIONS CONTAINING DIFFERENCES BETWEEN THE C255 AND C244

Service Manual:

Section	Item	Remarks
1	Overall information	Some items added.
2	Detailed section descriptions	*(no differences)*
3	Installation	*(no differences)*
4	Service tables	*(no differences)*
5	Preventive maintenance	*(no differences)*
6	Replacement and adjustment	*(no differences)*
7	Point to point diagrams	*(no differences)*
CLT	Printer controller unit	New documents

1.2 SPECIFICATIONS

The following are the only differences in specification between this model and the C244. All other items are the same.

No.	Item	Remarks
1	Model names	JP8510P / 5500P (C255-33)
2	Printer controller unit	Embedded Printer Controller Unit fitted as standard
3	Printer drivers	Drivers support Chinese

2. PRINTER CONTROLLER UNIT

Trademarks

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Other product names used herein are for identification purposes only and may be trademarks of their respective companies. We disclaim any and all rights involved with those marks.

Symbols

This manual uses several symbols. The meanings of these symbols are as follows:

☛	See or Refer to
	Clip ring
	E-ring
	Screw
	Connector

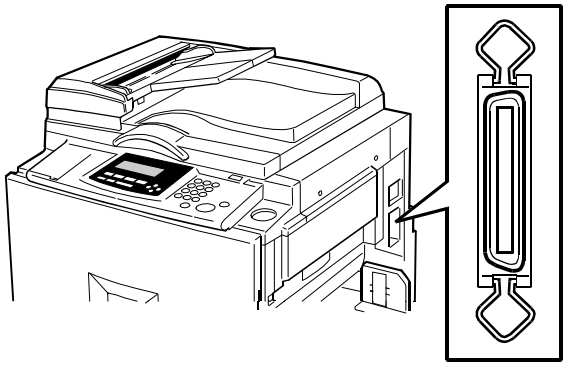
Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 2-Dec-03	No: R-C229-017

INSTALLATION

The Model SA2P is equipped with a standard printer controller unit and Video I/F board. Connect the printer controller unit to the host computer with a parallel cable. Then, install the printer driver in the host computer.

Host computer	IBM PC/AT compatible PC
Interface	IEEE1284B (Compatible, Nibble, ECP)
Operating Systems Supported	Windows 95/98/Me, Windows NT4.0, Windows 2000/XP
Printer Driver	Digital Duplicator A3 600 GDI

NOTE: The Printer drivers for Windows NT4.0 are only for Intel x86 compatible platforms. There is no Windows NT4.0 printer driver for the PowerPC, Alpha, or MIPS platforms.



Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 2-Dec-03	No: R-C229-017

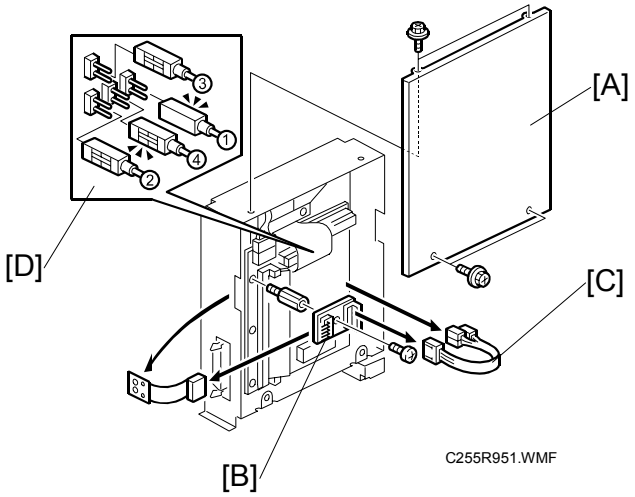
REPLACEMENT AND ADJUSTMENT

⚠CAUTION

Before removing any of the controller components, make sure to do the following:

1. **Turn off the machine main power.**
   Note: However if the "Data-in" lamp on the operation panel is blinking or lit, wait until the document or report is printed before turning the power off.
2. **After the power is off, disconnect the power cord from the outlet and the cable from the machine.**

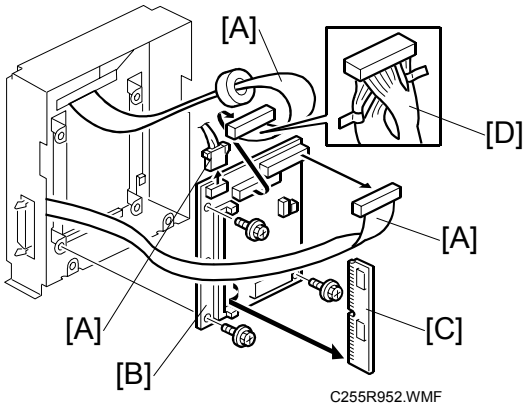
CONTROLLER BOARD MEMORY



[A]: Cover

[B]: Keypad board

NOTE: When you attach the connector [C], make sure to attach it in the correct position and orientation [D].



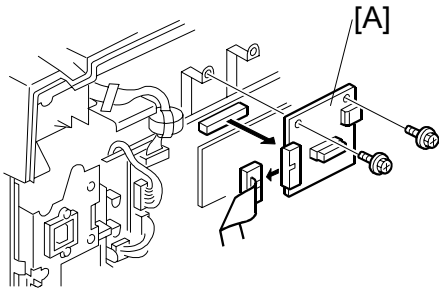
[A]: Connector

[B]: Printer controller board

[C]: SIMM module

NOTE: The twisted end of the harness [D] should be connected to the controller board.

VIDEO I/F BOARD



[A]: Video I/F Board

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 2-Dec-03	No: R-C229-017

LOAD PROGRAM

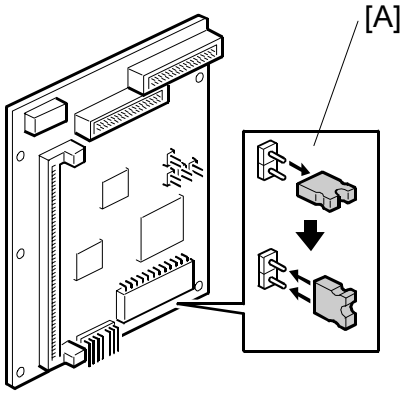
This procedure is for upgrading the system firmware for the controller.

NOTE: If the controller does not start up after a firmware update, try downloading the firmware again. If it still does not work, replace the flash ROM on the printer controller board.

⚠CAUTION

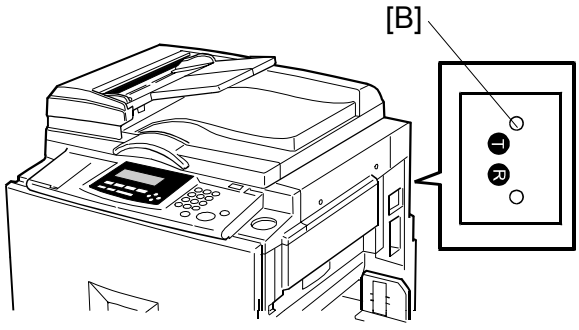
Do not turn off the machine while downloading the firmware.

1. Before downloading new firmware, print the test page and check the current version.
2. Turn off the machine.
3. Remove the rear cover and controller cover.
4. Set the jumper next to the flash ROM to the ON position [A].
5. Turn on the machine.
6. Boot up the PC and access an MS-DOS prompt or Command prompt.
7. Use the COPY command to update the flash ROM, . e.g. “copy file_name LPT1:” (where LPT1 is the connected port).

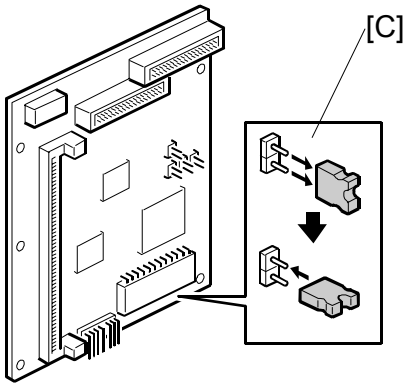


C249R957.WMF

8. While the flash ROM is updating, the left LED [B] on the control button board remains lit.



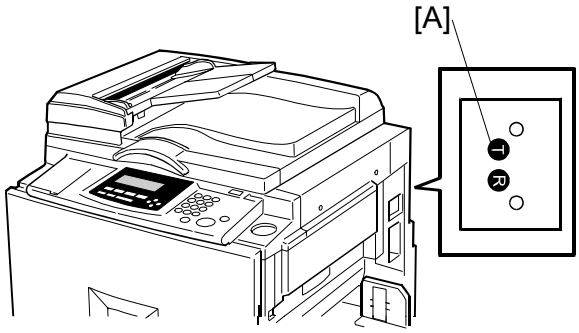
9. When the left LED flashes rapidly, the update is complete.
10. Turn off the machine.
11. Set the jumper back to the OFF position [C].
12. Turn on the machine and print out the test page using the test page button. Then check to see that the new version has been successfully installed.



C249R958.WMF

TEST PAGE

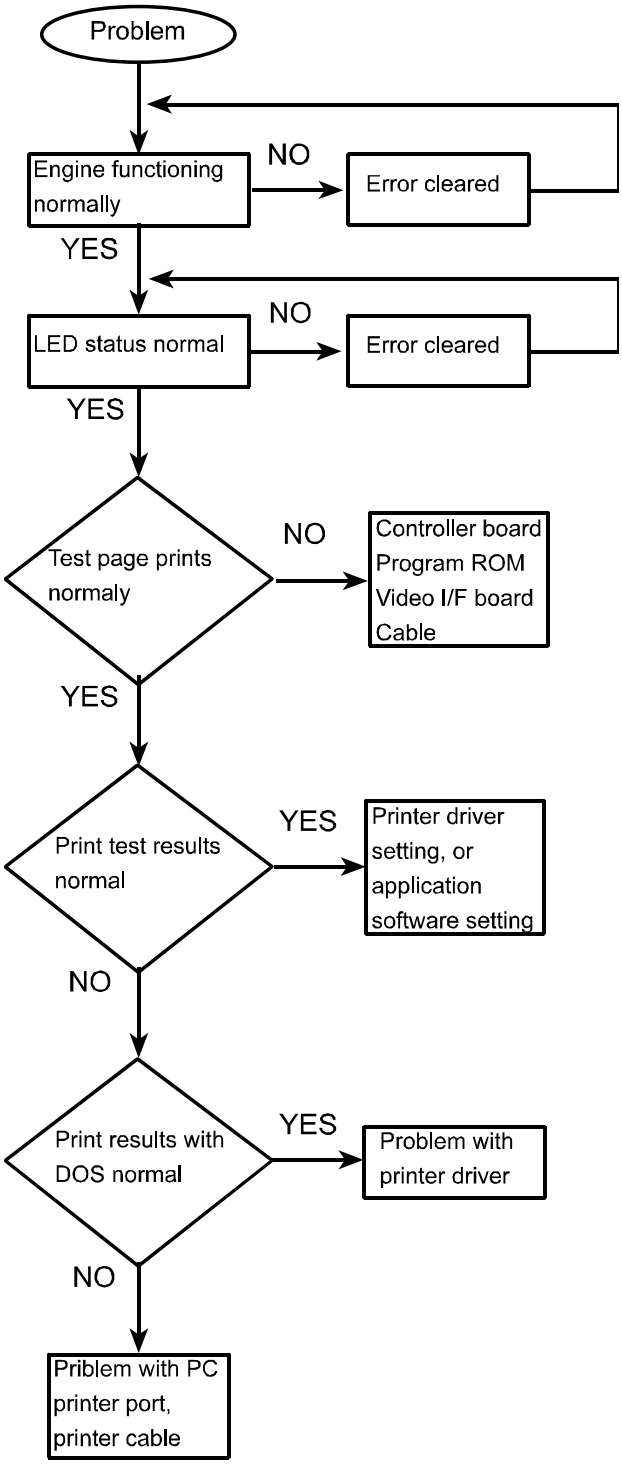
Press the test page button [A] on the keypad board. The right LED will start flashing quickly, indicating that the controller is in the process of creating the test page.



Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 2-Dec-03	No: R-C229-017

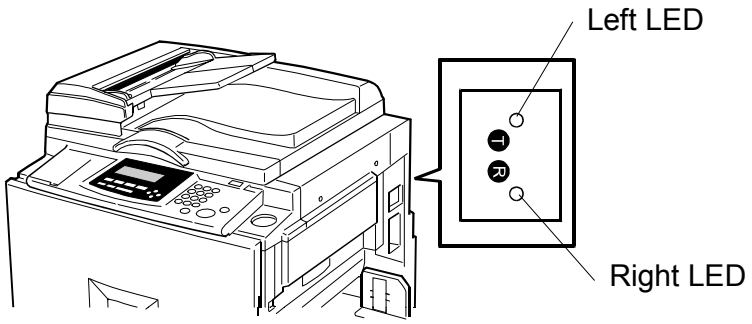
TROUBLESHOOTING

TROUBLESHOOTING FLOWCHART



Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: エラー! 参照元が見つかりません。	No: R-C229-017

LED STATUS LIGHT SEQUENCE AND CONDITIONS



Power on and activation

STATUS	DESCRIPTION	CHECK POINT
All LEDs are off	No power supply	-No AC power supplied. -AC cord not properly connected. -Power supply failure in the controller.
Right LED is on	Power on	-
Left LED is flashing	Performing self-diagnostic test before Ready condition	-
Left LED is flashing rapidly	Receiving data	-
Left LED remains on	-Transferring data -Creating a master	-
Left LED remains off	Idle	-
Left LED flashing slowly at regular intervals	Engine error	Check the message on the operation panel.

Test Page Button

STATUS	DESCRIPTION	CHECK POINT
Left LED is flashing	Receiving data	-
Left LED is on	Creating a master	-
Left LED remains on	Printing	-
Left LED flashes then remains off.	No response from the engine.	-Turn the engine Off/On. -Check if the controller is properly connected to the engine. -Check if the engine is online. -Check if the SIMM card is positioned correctly.
Left LED flashes slowly at regular intervals	Engine error	-Check the error message on the engine control panel. -Check if the controller is properly connected to the engine.

PRINTER DRIVER OPERATION

If the Windows test page does not print or does not look right, check the printer driver operation using these steps:

1. Select the Details tab in the Properties menu of the printer driver.
2. Change the port connection to “File:”.
3. Click the Apply button. Then select the General tab and click the Print Test Page button.
4. Set the file name (e.g. test.prn), then set the disk/directory location and save the file.
5. Click “YES” when the message pops up and asks whether the test page printed correctly.
6. Access an MS-DOS prompt or command prompt.
7. Check to see that the engine and controller are ready for printing. Then execute the following command at the MS-DOS prompt or command prompt. “copy /b test.prn lpt1”.

   NOTE: 1) Always input “/b” after the Copy command.
   2) The above example applies if the file name saved in Step 4 is “test.prn”.
   3) If the controller is connected to the second PC port, replace “lpt1” with “lpt2”.

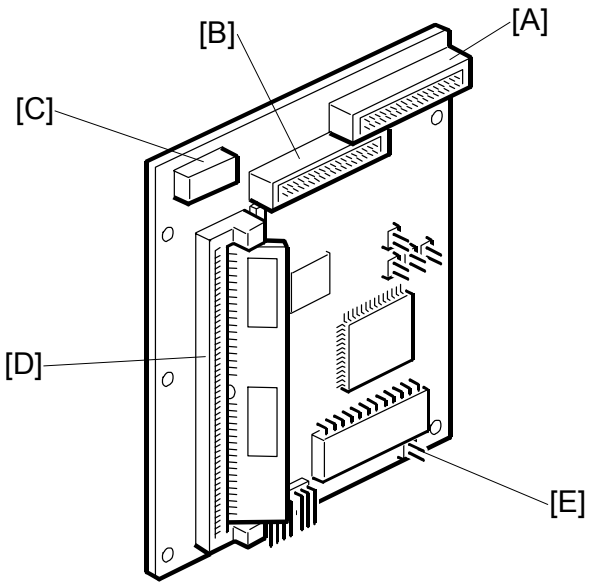
8. Input “exit,” then exit from the MS-DOS prompt or command prompt.
9. If the test page has printed correctly, change the printer driver port from “File:” back to its previous setting.

SERVICE TABLES

There are no SP modes for the printer controller unit.

DETAILED DESCRIPTIONS

OVERVIEW



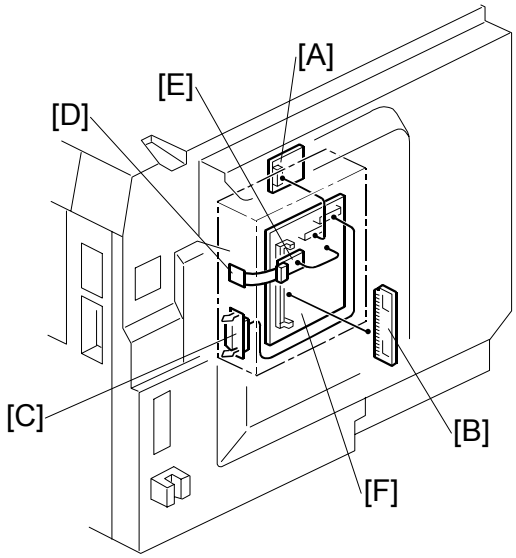
C249D950.WMF

DESCRIPTION	CONTROLLER
CPU	Analog Devices ADSP chip
RAM	16MB (SIMM)
Flash ROM	1MB EPROM

REF.	CONNECTOR		DESCRIPTION
	Name	Configuration	
A	IEEE1284 I/F	26-pin socket	To IEEE1284 Interface
B	Engine Interface	26-pin socket	To video I/F board
C	Power connector	4-pin socket	To power cable
D	SIMM Interface	72-pin SIMM	For connecting the SIMM module
E	Upgrade firmware jumper	2-pin	Upgrading controller firmware

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 2-Dec-03	No: R-C229-017

MACHINE LAYOUT



REF.	COMPONENT
A	Video Interface Board
B	SIMM Module
C	IEEE1284 Interface
D	Control Button Board
E	Keypad Board
F	Printer Controller Board

SEPECIFICATIONS

Controller Type	Embedded
Configuration	Internal embedded controller
Printer Language	GDI
Print Resolution	600dpi
Memory (RAM)	16MB (SIMM)
Resident Fonts	None
Host Interface	IEEE1284B (Compatible, Nibble, ECP)
Host PC	IBM PC/AT compatible PC
Operating Systems Supported	Windows 95/98/Me, Windows NT4.0 (*1), Windows 2000/XP
Printer Driver	Digital Duplicator A3 600 GDI

NOTE: The Printer drivers for Windows NT4.0 are only for Intel x86 compatible platforms. There is no Windows NT4.0 printer driver for the PowerPC, Alpha, or MIPS platforms.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 18-Mar-04	**No:** R-C229-**018**
Subject: Ink leak	**Prepared by:** M. Ohtsubo, Priport Service Planning Section	

Classification:

☒ Troubleshooting	☐ Part information	☐ Action required
☐ Mechanical	☐ Electrical	☐ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☐ Other ( )		

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5800
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
GARNET:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180
SA2P (China only):	Ricoh JP8510P, Gestetner 5500P

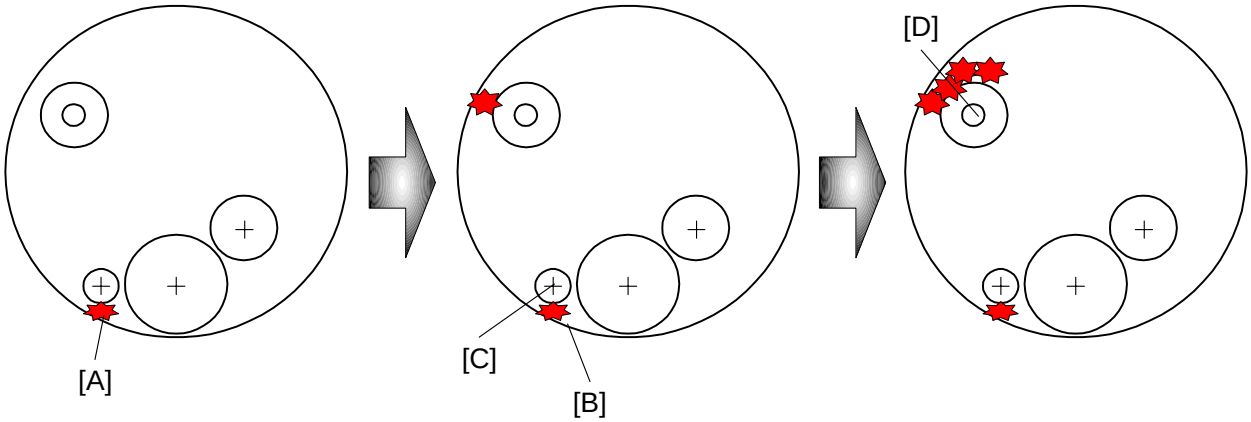
Note that this issue applies to the Pearl, Pearl-MC and Ruby only.

SYMPTOM

- SC05-22 (no drum shift sensor pulse)
- SC05-32 (ink pump sensor remains on)
- SC05-33 (ink pump sensor remains off), and/or
- An ink leak/overflow at power-up or during operation

CAUSE

Producing over 2,000 prints with the same master causes an ink buildup [A] to occur between the inner surface of the drum metal screen [B] and the drum idling roller [C], after which the buildup is transferred to the area of the ink pump motor [D].



Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 18-Mar-04	No: R-C229-018

SOLUTION

The shape of the bearing holder has been changed to ensure that ink is evenly applied to the drum screen and ink leaks do not occur.

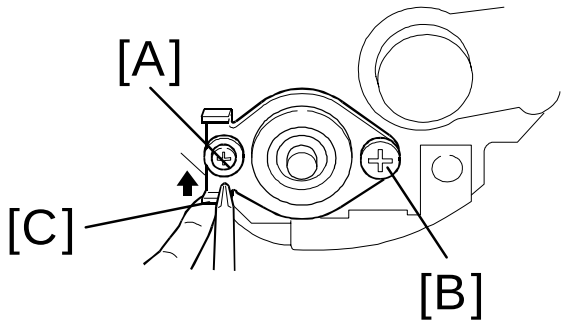
In the Field

1. Please install the new parts listed in MB #MC229016 and **perform the adjustments below**.
2. Make sure customers are aware that no more than 2,000 prints should be made with the same master.

Adjusting the Bearing Holder

The following procedure applies to both the operator and non-operator sides.

1. Remove the drum unit from the machine.
2. Remove the cloth and metal screens from the drum unit.
3. Wipe off the ink around the ink roller and the doctor roller.
4. Install the new parts, then tighten screw [B] (A2596239) and leave screw [A] (09513006Z) loose.
5. Move the lip [C] of the bearing holder up all the way as shown, then tighten screw [A].



View from operator side

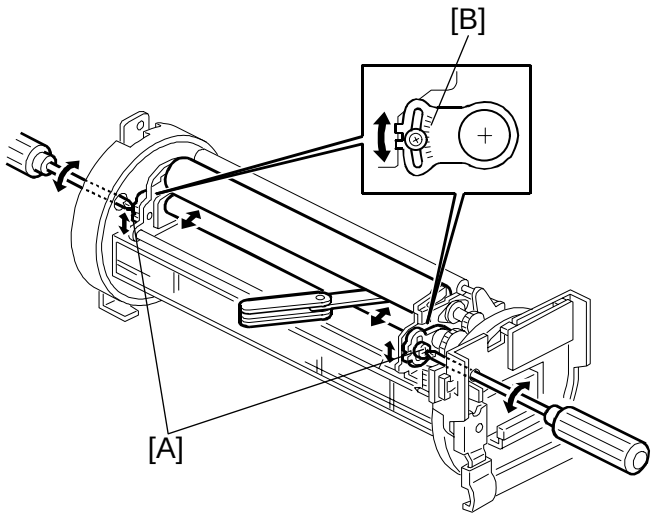
Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 18-Mar-04	No: R-C229-018

Adjusting the Ink Roller Gap

6. Insert a 0.08 mm gauge between the doctor roller and the ink roller. Then, make sure that a 0.1 mm gauge cannot pass through the gap.

   NOTE: Check the gap at the left, center, and right.

7. If the gap is not correct, loosen the screws [A] on both sides and adjust the gap by turning the eccentric bushings [B] at either side.



Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 20-May-04	**No:** R-C229-**019**
Subject: Troubleshooting for SC05-51 (Clamper motor lock)	**Prepared by:** K. Yamamoto, Priport Service Planning Section	

Classification:

☒ Troubleshooting	☐ Part information	☐ Action required
☐ Mechanical	☐ Electrical	☐ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☐ Other ( )		

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5800
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
GARNET:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180
SA2P (China only):	Ricoh JP8510P, Gestetner 5500P

Symptom

SC05-51 occurs while the master is being ejected.

Cause

The eject clamper open arm (P/N C2294001) inhibits the rotation of the arm shaft [E], causing a groove scratch to form on the shaft (see the illustration on the next page).

Solution

Install the eject clamper open arm ass'y. (P/N C2299018), which has been newly registered as a dedicated service part for this issue.

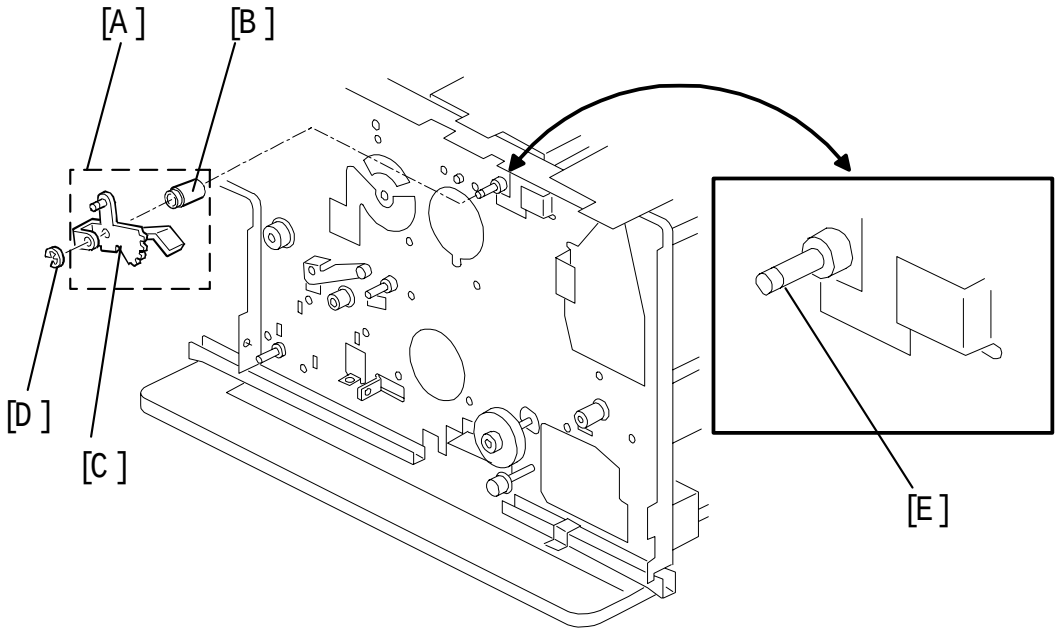
Note: See the installation procedure and illustration on the next page.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 20-May-04	No: R-C229-019

Installation procedure for the eject clamper open arm ass'y (P/N C2299018)

1. Remove the eject clamper open arm (P/N C2294001).
2. Using a metal file, smooth down the scratched area on the surface of the shaft [E], removing any jagged edges.
3. Apply grease (P/N 52039502) to the shaft [E].
4. Attach the collar [B].
5. Attach the new eject clamper open arm [C].
6. Attach the e-ring [D].

NOTE: The service part **(**P/N C2299018) [A] includes both [B] and [C].



Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 26-Jul-04	**No:** R-C229-**020**
Subject: Color change for part of a drum	**Prepared by:** K. Yamamoto, Priport Service Planning Section	

Classification:

☐ Troubleshooting	☐ Part information	☐ Action required
☐ Mechanical	☐ Electrical	☐ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☒ Other (Just Information)		

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5800
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
GARNET:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180
SA2P (China only):	Ricoh JP8510P, Gestetner 5500P

The following applies only to the Garnet, SA2 and SA2P.

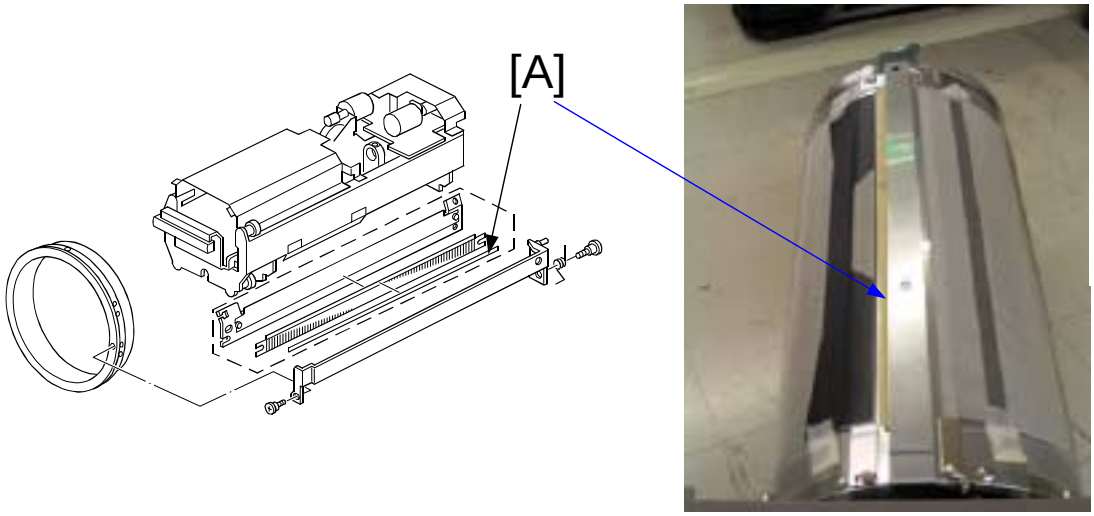
The color of the sandpaper [A] on the clamper base was changed back to similar to its original color from August 2004.

Reason: From May 2004 machine production (April color drum production), the color of the sandpaper was changed to yellow because of a vendor change. This was confusing to some technicians and customers, so the sandpaper was changed back to similar to its original color.

Change applied from: August 2004 (color drum production and machine production).

Important notes: See the next page.

NOTE: <u>This color change has no effect on machine operation.</u>



Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 26-Jul-04	No: R-C229-020

Important Note for Installation:

- Do not peel off the yellow sandpaper from the cloth screen.
- Advise customers not to peel off the sandpaper.

If the sandpaper is peeled off by mistake, replace the clamper base.

Clamper base:

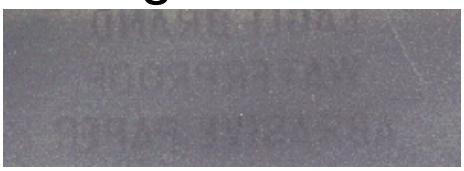
SA2 and SA2P: (P/N C2362591)

Garnet: (P/N C2292675)

Note: 1. The sandpaper on the clamper base is not available as a service part.

2. If the sandpaper is peeled off, image shifting may occur. This is because without the sandpaper, there is not enough pressure between the clamper and master.

Original Color



New Color

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 26-Jul-04	No: R-C229-020

Machine S/N

The following machines contain the yellow sandpaper:

Garnet:

Machine Number	Serial Number	Number
May		
C239-11	F2340500001 to F2340500004	4
C239-22	F2340500052 to F2340500109	58
C239-27	F2340500036 to F2340500051	16
C239-52	F2340500005 to F2340500035	31
June		
C239- 1 1	F2340600001 to F2340600004	4
	F2340600238 to F2340600247	10
C239-22	F2340600130 to F2340600237	108
C239-27	F2340600054 to F2340600129	76
C239-52	F2340600005 to F2340600053	49
	F2340600248 to F2340600289	42
July		
C239-22	F2340700001	1

SA2:

Machine Number	Serial Number	Number
May		
C244-22	F1840500001 to F1840500026	26
C244-27	F1840500027 to F1840500093	67
C244-52	F1840500094 to F1840500130	37
June		
C244-22	F1840600001 to F1840600010	10
C244-27	F1840600011 to F1840600031	21
	F1840600039 to F1840600066	28
C244-52	F1840600032 to F1840600038	7
	F1840600067 to F1840600097	31

SA2P:

Machine Number	Serial Number	Number
May		
C255-33	F4340500001 to F4340500002	2

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 26-Jul-04	No: R-C229-020

Color Drum S/N

The following color drums contain the yellow sandpaper:

Color Drum Type 50 (L)

Machine Number	Serial Number	Number
May		
C577-09	C3584050001 to C3584050045	45
June		
C577-09	C3584060001 to C3584060128	128
July		
C577-09	C3584070001 to C3584070042	42

Color Drum Type 55 (L)

Machine Number	Serial Number	Number
June		
C577-59	F2140600001 to F2140600012	12
July		
C577-59	F2140700001 to F2140700002	2

Color Drum Type 40 (S)

Machine Number	Serial Number	Number
May		
C587-09	C3594050001 to C3594050011	11
June		
C587-09	C3594060001 to C3594060008	8
July		
C587-09	C3594070001 to C3594070010	10

Color Drum Type 55 (S)

Machine Number	Serial Number	Number
April		
C587-59	F2240400001 to F2240400008	8

Color Drum Type 80 (L)

Machine Number	Serial Number	Number
April		
C602-59	F0340400001 to F0340400111	111
May		
C602-59	F0340500001 to F0340500092	92
June		
C602-59	F0340600001 to F0340600080	80
July		
C602-59	F0340700001 to F0340700154	154

Color Drum Type 80 (S)

Machine Number	Serial Number	Number
April		
C605-59	F0440400001 to F0440400027	27
May		
C605-59	F0440500001 to F0440500010	10
June		
C605-59	F0440600001 to F0440600004	4
July		
C605-59	F0440700001 to F0440700003	3

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 1-Sep-04	**No:** R-C229-**021**
Subject: Master Duct Sensor Misdetection	**Prepared by:** A. Yoshida, Priport Service Planning Section	

Classification:
- ☒ Troubleshooting
- ☐ Part information
- ☐ Action required
- ☐ Mechanical
- ☐ Electrical
- ☐ Service manual revision
- ☐ Paper path
- ☐ Transmit/receive
- ☐ Retrofit information
- ☐ Other ( )

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5800
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
GARNET:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180
SA2P (China only):	Ricoh JP8510P, Gestetner 5500P

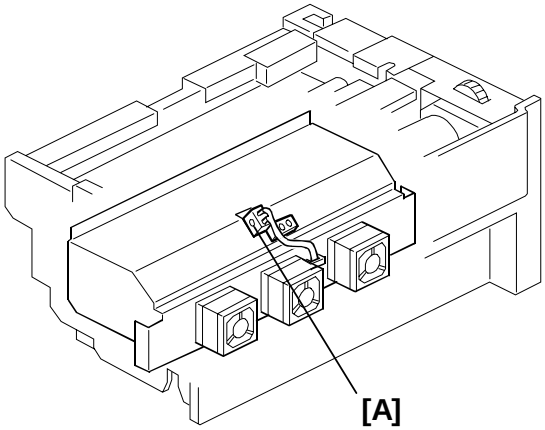
Note: This issue applies to the Garnet, SA2 and SA2P.

Symptom

Misdetection of a master misfeed (D-jam).

Cause

The master duct sensor [A] is too sensitive.



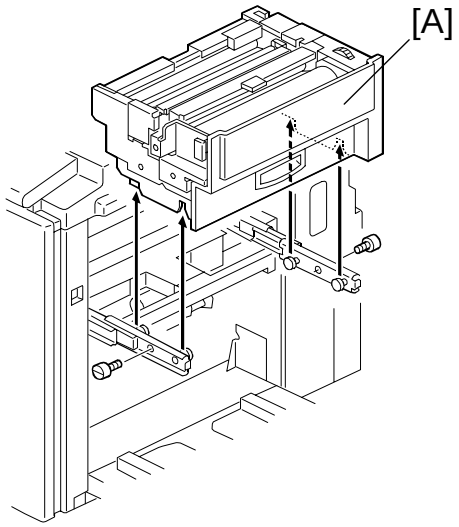
Solution

Install the new master duct sensor bracket listed in MB #MC235018.
P/N: C2442100.

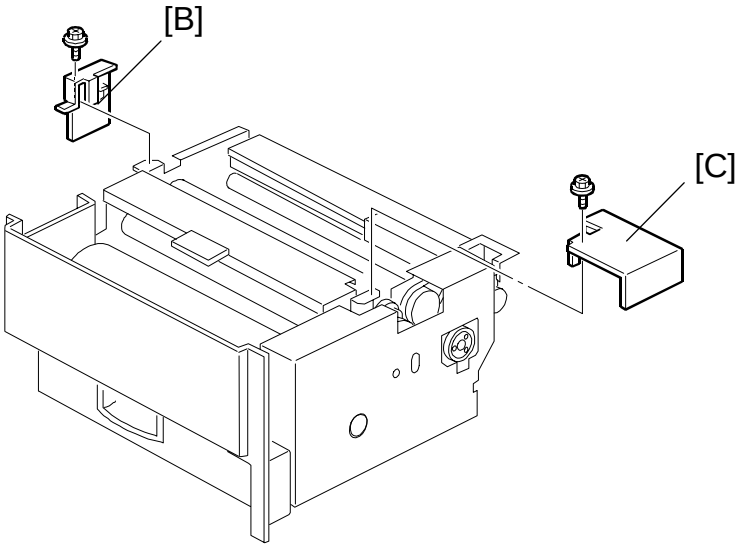
Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 1-Sep-04	No: R-C229-021

Replacement Procedure for the Master Duct Sensor Bracket

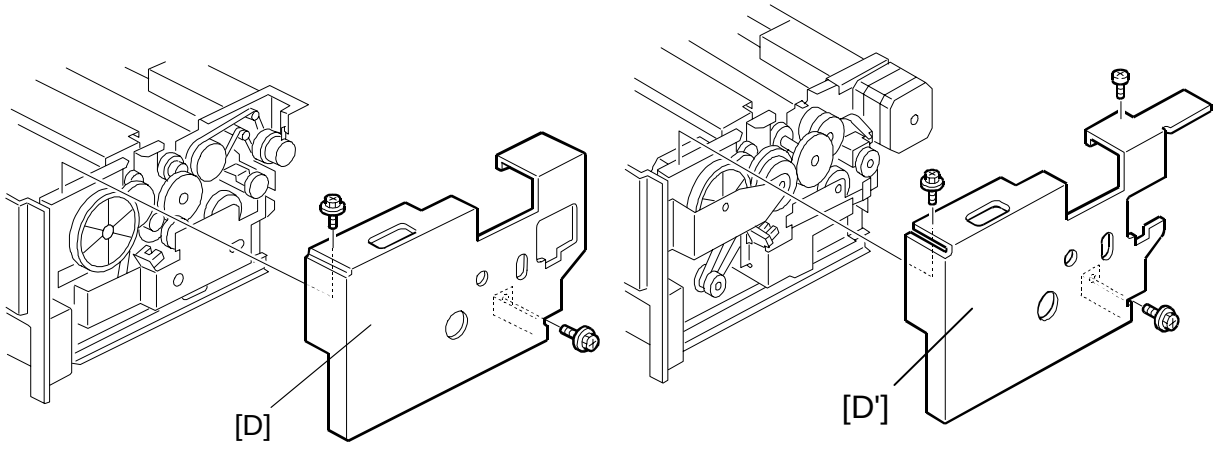
1. Turn off the main switch and disconnect the power plug.
2. Side out the master making unit [A] and remove it (☞ x 2).



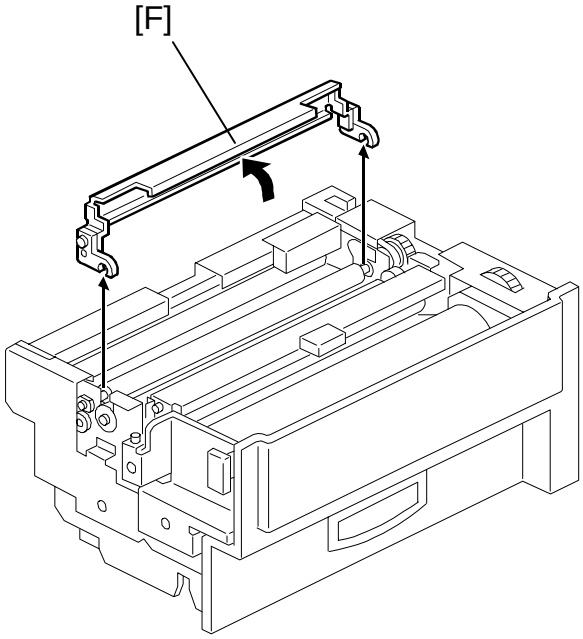
3. Remove the front bracket [B] (☞ x 1).
4. Remove the rear bracket [C] (☞ x 1).



5. Remove the rear cover.
   - **Model #C239**: [D] (🔩 x 2)
   - **Model #C244/255**: [D'] (🔩 x 3)

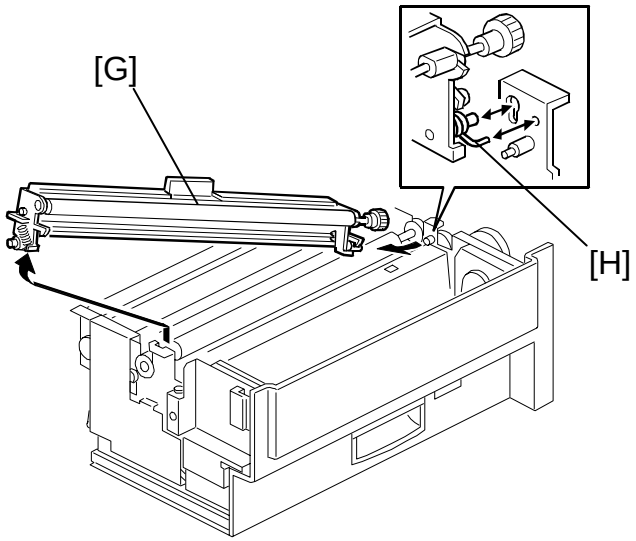


6. Remove the master stopper bracket [F].

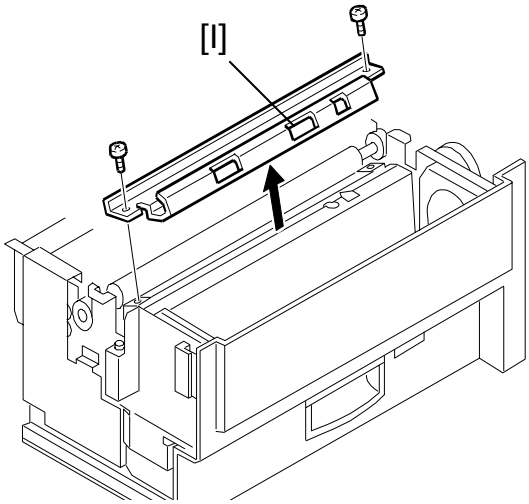


7. Remove the master set roller unit [G].

Note: After you finish this replacement procedure, refer to the diagram below to reattach the non-operator side spring [H].

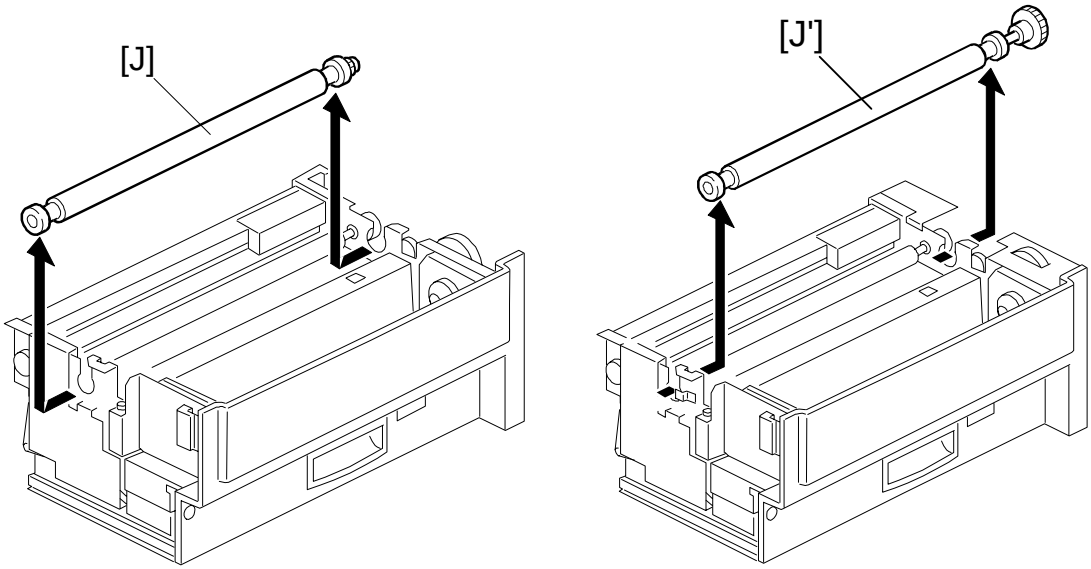


8. Remove the master upper guide plate [I] (🔩 x 2).

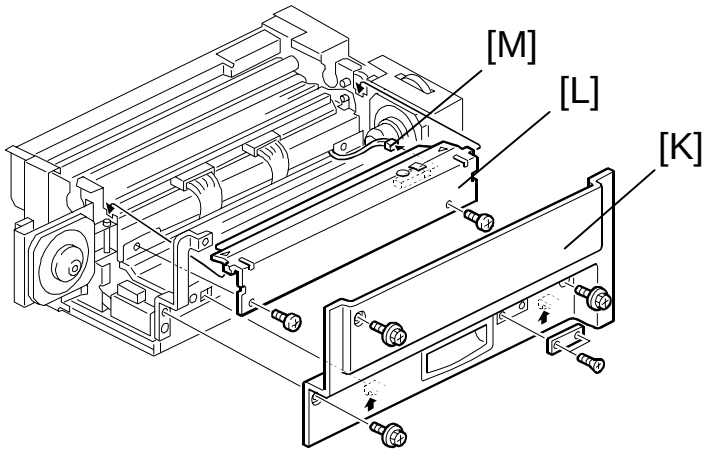


9. Remove the platen roller.
   - **Model #C239**: [J]
     Slide it to the operator side.

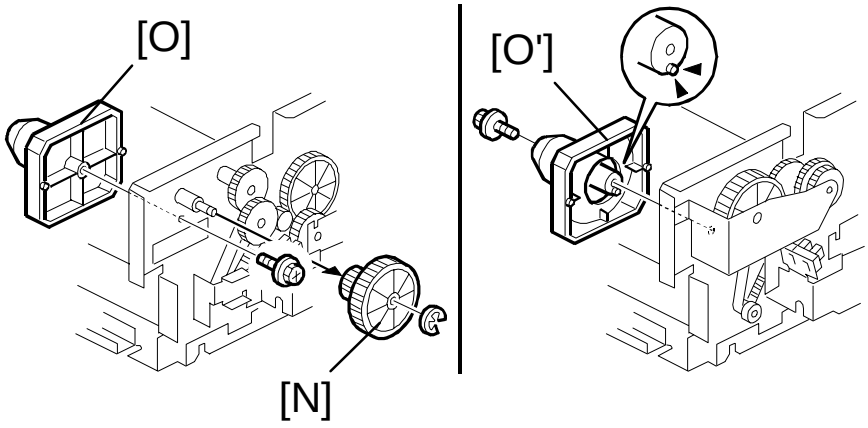
   - **Model #C244/255**: [J']
     Slide it to the non-operator side.



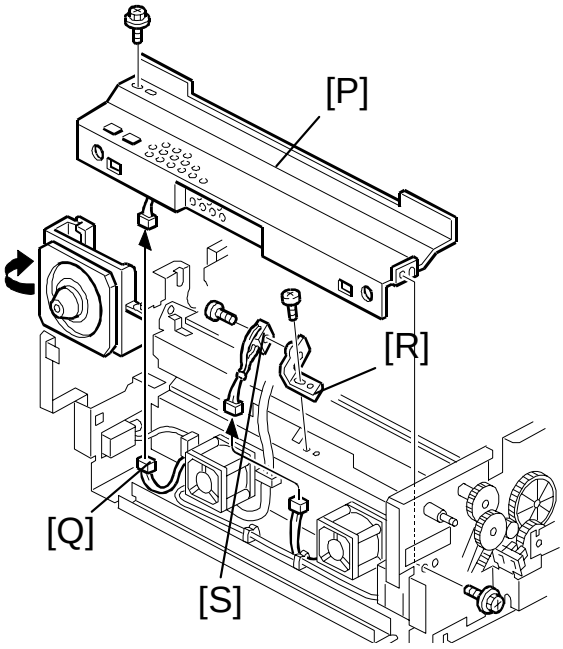
10. Remove the right cover [K] for the master-making unit (x 5).
11. Disconnect the connector [M] from the thermal head cover [L].
    Note: This harness connects the thermal head cover and master set sensor.
12. Remove the thermal head cover [L] (x 2, x 1).



12. Remove the following parts:
    - **Model #C239**: Master roll pulley [N] (C x 1), Rear flange [O] (x 1).
    - **Model #C244/255**: Rear flange [O'] (x 1).



13. Disconnect the connector [Q] from the lower master cover [P].
    Note: This harness connects the lower master cover and master end sensor.
14. Remove the lower master cover [P] (x 2, x 1).
15. Remove the master duct sensor bracket [R] (x 1).
16. Remove the master duct sensor [S] from the master duct sensor bracket (x 1).
17. Attach the sensor to the new master duct sensor bracket (P/N: C2442100).



Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 9-Sep-04	**No:** R-C229-**022**
Subject: Pearl firmware history	**Prepared by:** M. Kanomata, Priport Service Planning Section	

Classification:
☐ Troubleshooting ☐ Part information ☐ Action required
☐ Mechanical ☐ Electrical ☐ Service manual revision
☐ Paper path ☐ Transmit/receive ☐ Retrofit information
☒ Other ( )

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5600
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
GARNET:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180
SA2P (China only):	Ricoh JP8510P, Gestetner 5500P

Note that bulletin is related to the Pearl only.

The bulletin is to inform you of the firmware modification history of the Pearl.
New items appear in ***bold italics.***

● Firmware Modification History

Pearl

C2295114	File Name	Version	C.SUM	Production
G	C2295114G.bin	1.21	AFFA	From the first mass production
J	C2295114J.bin	1.31	0629	August 1998 production
K	C2295114K.bin	1.32	8819	September 1998 production
N	C2295114N.bin	1.4	CBFA	December 1998 production

NOTE: Part numbers change (C2295114N – C2295134)
File name suffixes H, I, L and M have been skipped.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 9-Sep-04	**No:** R-C229-**022**

Symptom Corrected	Suffix
Mass production begins.	G
1. Chinese was added to SP2-11 as a display language. 2. To make the Master Edge Sensor Adjustment easier, a function to turn on the duct entrance solenoid has been added. For details, refer to “New SP Mode List.” 3. New SC codes have been added (SC21-00, -01, -02, -03, 22-00, -01, and 23-00). For details, refer to “New SC Code List.” **Note: See RTB#RC22905 for details.**	J
The default setting for SP3-161 (Number of Master Eject Trials) has been changed from 1 to 2. This means that the machine repeats the master ejecting process once more when the first trial has not succeeded in peeling off the master from the drum. **Note: See RTB#RC22905 for details.**	K
1. SP2-20-16 ‘Default Ratio’ has been added to select a desired magnification ratio at power on or when the Modes Clear key is pressed. The same function has also been assigned to User Tools 3-11. (For details, refer to “New SP Mode List” and “New User Tool List.”) 2. To ensure the proper paper clamping timing, the default settings for SP6-112-4 to -8 (the registration motor on timing) have been changed. For details, refer to “New SP Mode List.” 3. The thermal head energy is changed depending on the temperature measured by the thermistor in the drum when SP2-32 is ON. (ON is the default for the standard drum, and OFF for the optional color drums.) The threshold temperatures to switch energy have been changed as follows: ∗ Less than 25 °C (Energy of -7% at default) ⇒ Less than 18 °C ∗ Between 25 and 30 °C (-12 at default) ⇒ Between 18 and 28 °C ∗ More than 30 °C (-17% at default) ⇒ More than 28 °C 4. A new drum type has been added to SP2-390 (A3/DLT Drum Selection). The “B4” that is newly added is for Japanese version models only; do not select it. **Note: See RTB#RC22905 for details.**	N

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 9-Sep-04	**No:** R-C229-**022**

Pearl

C2295134	File Name	Version	C.SUM	Production
No-suffix	C2295134.bin	1.8	5B6F	January 1999 production
A	C2295134A.bin	1.8a	54C4	February 1999 production
B	C2295134B.bin	1.81	9F94	March 1999 production
C	C2295134C.bin	1.82	A407	April 1999 production
D	C2295134D.bin	1.83	0AC7	August 1999 production
E	C2295134E.bin	1.9	D1FA	September 1999 production
F	***C2295134F.bin***	***2.0***	***3410***	***November 1999 production***
G	***C2295134G.bin***	***2.1***	***76AB***	***February 2000 production***
G	***C2295134G.bin***	***2.15***	***FF41***	***(Web release only; Product already discontinued).***

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 9-Sep-04	No: R-C229-022

Symptom Corrected	Suffix
1. The part numbers for both the ROM and the MPU have been changed for identification purposes. The Japanese model made installing a sorter an option. SP2-4 'Sorter Select' has been added. (This function is for the Japanese model only; do not use it.) 2. The default setting for SP6-50 (LCD Contrast Adjustment) has been changed from 3 to 4. Consequently, the default LCD setting is brighter. **Note: See RTB#RC22905 for details.**	No-suffix
To ensure that the light from the scanner lamp is stable before scanning the white plate (behind the original scale), the scanning start timing has been delayed by 200 milliseconds. **Note: See RTB#RC22905 for details.**	A
1. Portuguese has been added in SP2-11, as a displayable language on the LCD. For details, refer to "New SP Mode List." 2. SP2-15, 'Machine Destination', has been added to select the machine's version ('Other' and 'Japan'). For details, refer to "New SP Mode List." 3. To minimize the waiting time during drum idling, the ink supply motion prior to printing has been eliminated. To enable this, SP2-422 'Ink Auxiliary Supply' has been added to select the ink supply motion. For details, refer to "New SP Mode List." 4. Modified to reduce the possibility of creating small strips of the master in the master-making unit, that tend to cause master feed jams. Small strips of master waste were likely to occur when an original feed jam occurred (when the optional ADF is installed). This was because the original feed was stopped and the master was cut as soon as an original jam is detected. With the new firmware, the master is wrapped around the drum then the machine stops even when an original jam occurs. 5. To reduce the possibility of damage to the friction pad (for the paper feed), the separation pressure control has been changed so as not to be applied while the machine is not feeding the paper. 6. In the version C229 5114-N firmware, the threshold temperatures to switch the thermal head energy were changed. To achieve darker image density (especially in the solid-fill black areas) the thresholds have been changed again as follows: ∗ Less than 18 °C (Energy of -7% at default) ⇒ Less than 28 °C ∗ Between 18 and 28 °C (-12 at default) ⇒ Between 28 and 30 °C ∗ More than 28 °C (-17% at default) ⇒ More than 30 °C 7. In the Job Separation mode, the printing job is stopped when it reaches 600, which is the maximum capacity for the paper delivery table in this mode. The new firmware does not stop printing even in this condition until the job completes. The message that notices the paper capacity exceeded is only displayed on the LCD. **Note: See RTB#RC22905 for details.**	B

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 9-Sep-04	**No:** R-C229-**022**

Symptom Corrected	Suffix
1. This version causes problems and should not be used. Refer to version E's history for the problem. 2. SP2-125 'Drum Idling' has been added to counter the paper-wrapping jam problem when the printing pressure increases. For details, refer to "New SP Mode List." 3. SP2-016 'Swap Start Key' has been added to swap *the Start (master making) key function* and *the Print key function* depending on the end user's preference. ('No' is the default setting.) 4. To ensure the proper paper clamping, the default settings for SP6-116-1 and -7 (the paper clamping timings) have been changed. For details, refer to "New SP Mode List." **Note: See RTB#RC22905 for details.**	C
1. This version causes problems and should not be used. Refer to version E's history for the problem. 2. SP2-20-17 'Default Eco Ink' has been added. By selecting ON in this mode, the Economy mode, which conserves ink during printing, can be set as the default at power on. 3. A new SC code, SC7-21, has been added. When the feed start sensor (behind the pressure cylinder) is not activated or deactivated at the proper time, this code is displayed. The machines that equip the firmware prior to this version will show the following symptoms when the sensor is defective: *- If the sensor remains deactivated (not interrupted by the actuator) -* Location 'B' jam (the paper jam at the registration) is displayed. *- Feed start sensor remains activated -* The main motor does not stop turning. 4. When an original is scanned with the optional ADF, the shadow at the trailing edge of the original might create a black line on copies. To prevent this, a 1-mm trailing edge is left as a blank margin. (This was already done in the platen mode.) 5. Chinese spelling for 'please wait' has been corrected. (This only affects the Chinese display selected in SP2-11.) **Note: See RTB#RC22905 for details.**	D
1. In the version C firmware, SP2-125 'Drum Idling' was added and the drum rotation speed at the beginning of printing was changed. Due to a programming error, the following problem occurred. This error has been corrected. *- Pressure cylinder becomes dirty with ink -* If the Auto Cycle mode is selected and a print job continues following the master making process, an idle rotation of the drum is interrupted just after the trial print is made (and before start printing). (The idle rotation does not occur when the Auto Cycle mode is not used.) During this idle rotation, the printing pressure release solenoid is energized (due to a program error) and the pressure cylinder contacts the drum. As a result, the pressure cylinder gets dirty with ink, and it is transferred to the reverse side of next prints. The dirty ink is cleaned during printing, however the first several prints will get dirty with ink on the reverse side. 2. For the U.S. version models (when SP2-10 is set at '2'), the print image position was changed (both in up-and-down and side-to-side directions) in 0.1 inch steps. This version enables it in 0.02 inch steps. **Note: See RTB#RC22905 for details.**	E

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 9-Sep-04	No: R-C229-022

Symptom Corrected / Other Changes	Suffix
Image is shifted when printing out the SP8-70 log data.	***F***
1. New SP mode added: SP8-020-2 (DFU). ***Note: This SP mode is for factory use only, so please do not change the setting.*** ***2. New SP mode added: SP2-050.*** ***Note: The purpose of this SP mode is to program basic information for the Sharpened Image Mode (user mode).*** ***3. Job Separation does not work after the operator clears LCD error messages ("Tray has reached sheet limit" and "Wrong paper size").*** ***4. If the user has already programmed the Key Operator Code, the machine will ask them to enter this code when they access the Set User Code screen.***	***G (Ver2.1)***
1. When the following two conditions occur at the same time, the LCD will display the message for #1 only: ***1) Master feed unit is not set properly*** ***2) Ink is low and needs to be added*** ***2. Smudges on printing paper when using "Combine" with 2 or 4 originals.*** ***Note: Software changed so that the machine changes the master after scanning all of the originals.*** ***3. Ink overflow.*** ***Note: Ink supply timing was changed.*** ***4. When the machine receives data from an outside source, it wraps an A3 master around the A4 drum.*** ***5. New SP modes added:*** ***- SP6-132-1 (A3 drum)*** ***- SP6-132-2 (DLT drum)*** ***- SP6-132-3 (A4 drum)*** • ***Note:*** ***- With these SP modes, you can make small adjustments to the paper size.*** ***- Adjustment range: -5 to 5 (Unit: 1 mm)*** ***- Side adjustment (-): decreases the master making length*** ***- Side adjustment (+): increases the master making length*** ***Other changes*** ***6. Software changed so that the Garnet drum can be used on the Pearl.*** ***Important: When you use the Garnet drum on this machine, make sure to update to version G or newer. If you do not, SC05-60 will occur at power up or during operation (Idling HP sensor Remains On).*** ***Note: This is because the Garnet drum was changed to improve ink roller drive speed.***	***G (Ver2.15)***

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 9-Sep-04	**No:** R-C229-**023**
Subject: Pearl-MC firmware history	**Prepared by:** M. Kanomata, Priport Service Planning Section	

Classification:
- ☐ Troubleshooting
- ☐ Part information
- ☐ Action required
- ☐ Mechanical
- ☐ Electrical
- ☐ Service manual revision
- ☐ Paper path
- ☐ Transmit/receive
- ☐ Retrofit information
- ☒ Other ( )

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5600
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
GARNET:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180
SA2P (China only):	Ricoh JP8510P, Gestetner 5500P

Note that bulletin is related to the Pearl-MC only.
The bulletin is to inform you of the firmware modification history of the Pearl-MC.

● Firmware Modification History

Pearl-MC

C2335114	File Name	Version	C.SUM	Production
B	***C2335114B.bin***	***1.7***	***6468***	***From the start of mass-production***
C	***C2335114C.bin***	***1.8***	***DE71***	***April 2000 production***
D	***C2335114D.bin***	***1.9***	***DE62***	***May 2000 production***
E	***C2335114E.bin***	***2.0***	***EAC9***	***September 2000 production***
F	***C2335114F.bin***	***2.1***	***9157***	***October 2000 production***
G	***C2335114G.bin***	***2.3***	***54F0***	***February 2001 production***
H	***C2335114H.bin***	***2.41***	***5316***	***August 2001 production***
J	***C2335114J.bin***	***2.5***	***453D***	***December 2001 production***
K	***C2335114K.bin***	***2.6***	***1FCF***	***June 2002 production***
L	***C2335114L.bin***	***2.7***	***FF22***	***January 2003 production***
M	***C2335114M.bin***	***2.8***	***FF56***	***August 2003 production***
N	***C2335114N.bin***	***2.9***	***75C5***	***December 2003 production***

NOTE: File name suffix I has been skipped.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 9-Sep-04	No: R-C229-023

Symptom Corrected / Other Changes	Suffix
First mass production release.	***B***
Other Changes: ***1. Alert messages added for Chinese and Portuguese.*** ***2. If the user has already programmed the Key Operator Code, the machine will ask them to enter this code when they access the Set User Code screen.***	***C***
1. Wording corrections (English, Portuguese). ***2. Log data correction for the J-Sorter.*** ***3. When the following two conditions occur at the same time, the LCD will display the message for #1 only:*** ***1) Master feed unit is not set properly*** ***2) Ink is low and needs to be added***	***D***
Smudges on printer paper when using "Combine" with 2 or 4 originals. ***Note: Software changed so that the machine changes the master after scanning all of the originals.***	***E***
The software control for the scanner drive motor was changed to further decrease the load on the motor.	***F***
Other Changes: ***1. Added new SP mode: SP3-541-11 (PD Table Pos. B5, S-Plate).*** ***Note: This is not used on the Pearl-MC.*** ***2. Optimized master eject timing to improve the performance of the master clamp.*** ***3. Optimized the paper separation pressure and timing of paper feed pressure.***	***G***
1. Ink overflow. ***Note: Ink supply timing was changed.*** ***Other changes:*** ***2. Software changed so that the Garnet drum can be used on the Pearl.*** ***Important: When you use the Garnet drum on this machine, make sure to update to version G or newer. If you do not, SC05-60 will occur at power up or during operation (Idling HP sensor Remains On).*** ***Note: This is because the Garnet drum was changed to improve ink roller drive speed.***	***H***

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 9-Sep-04	No: R-C229-023

Symptom Corrected	Suffix
Other changes: ***1. Changed the detection conditions for SC06-00 (Pressure plate does not move from HP to master eject ready position).*** ***New SC detection times (A3 size):*** ***- 8 or more masters in the eject box: 4 seconds*** ***- Less than 8 masters in the eject box: 5 seconds.*** ***2.Changed the software to stop unnecessary occurrences of SC03-00 (thermal head ID error):*** ***New: This SC will not occur when the power is turned OFF by mistake during the master-making process (and then power is turned back ON).***	***J***
1. When the machine receives data from an outside source, it wraps an A3 master around the A4 drum. ***Other changes:*** ***2. New SP modes added:*** ***- SP6-132-1 (A3 drum)*** ***- SP6-132-2 (DLT drum)*** ***- SP6-132-3 (A4 drum)*** ● ***Note:*** ***- With these SP modes, you can make small adjustments to the paper size.*** ***- Adjustment range: -5 to 5 (Unit: 1 mm)*** ***- Side adjustment (-): decreases the master making length*** ***- Side adjustment (+): increases the master making length***	***K***
(Minor changes applied for the Japan model).	***L***
Wording corrections: Chinese, Italy, German, and Portuguese.	***M***
(Minor changes applied for the Japan model).	***N***

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 21-Sep-04	**No:** R-C229-**024**
Subject: SC07-20, SC07-21	**Prepared by:** A. Yoshida, Priport Service Planning Section	

Classification:
- ☒ Troubleshooting
- ☐ Part information
- ☐ Action required
- ☐ Mechanical
- ☐ Electrical
- ☐ Service manual revision
- ☐ Paper path
- ☐ Transmit/receive
- ☐ Retrofit information
- ☐ Other ( )

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5800
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
GARNET:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180
SA2P (China only):	Ricoh JP8510P, Gestetner 5500P

Note: This issue applies to the Sapphire, Garnet, SA2 and SA2P only.

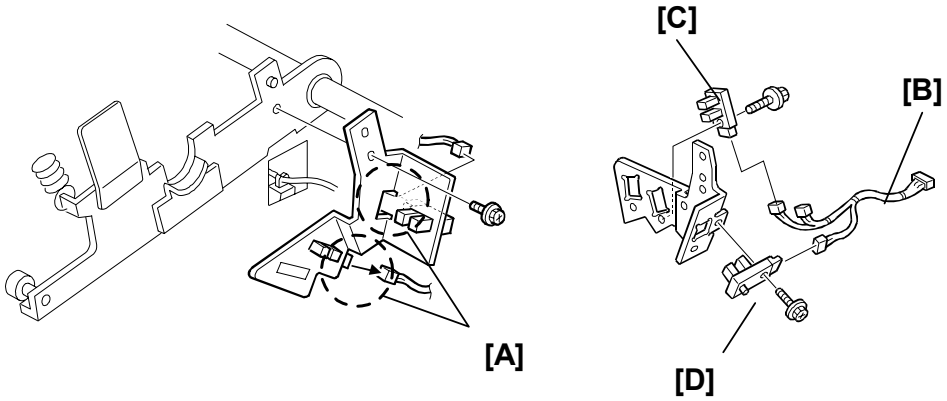
SYMPTOM

The following occur during machine operation:

1) SC07-20 (feed encoder error)
2) SC07-21 (paper table feed start sensor error)
3) Paper length sensor misdetection

CAUSE

1) SC07-20 or sensor misdetection: Light from the fluorescent lamp.
2) SC07-20 or SC07-21: Poor connection [A] between the feed encoder cable and the feed start sensor [C] or feed encoder sensor [D].



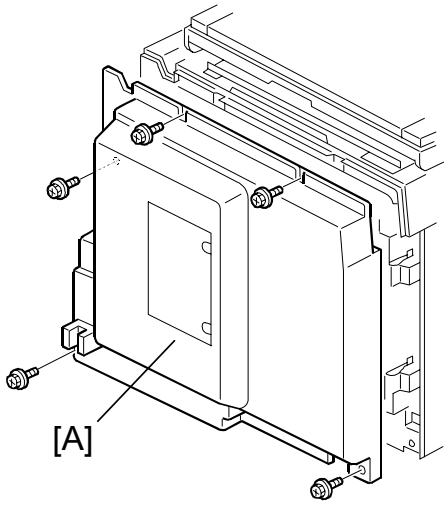
Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 21-Sep-04	No: R-C229-024

SOLUTION

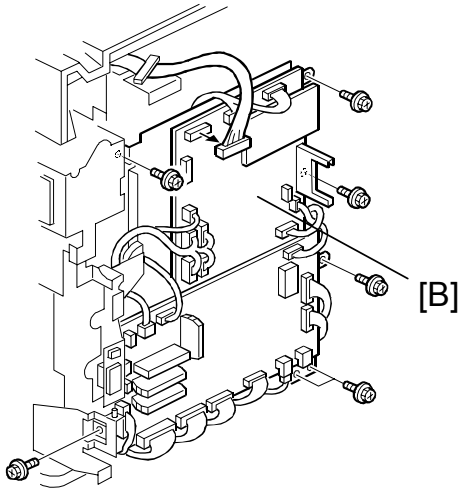
1. Make sure that the fluorescent lamp was installed in the correct location and orientation.
2. Install the new paper length sensor listed in MB #MC235009.
3. Install the new feed encoder harness, feed start sensor and feed encoder sensor listed in MB #MC235019.

Replacement Procedure for the Feed Encoder Harness, Feed Start Sensor and Feed Encoder Sensor

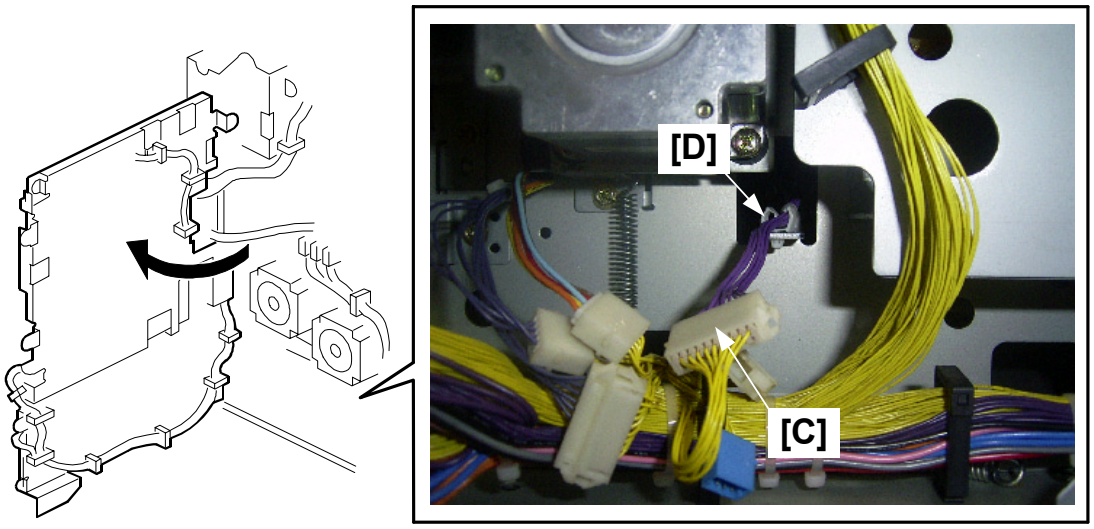
1. Turn off the main power switch.
2. Disconnect the power plug.
3. Remove the rear cover [A] (x 6).



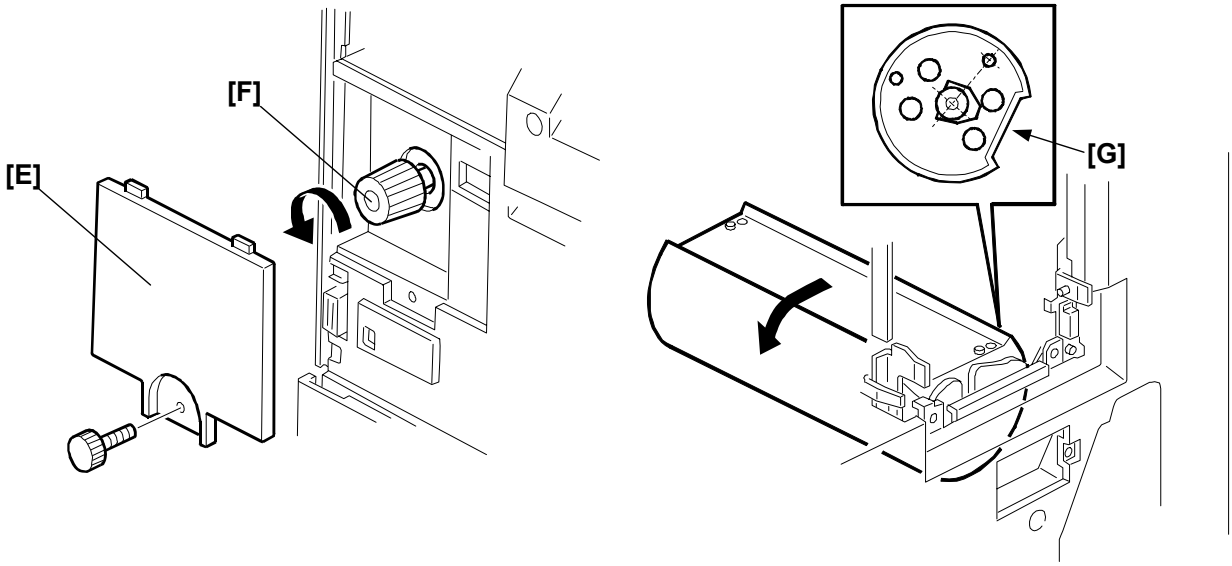
4. From the rear of the machine, swing out the MPU [B] (x 1, x 8).



5. Disconnect the connector [C] from the rear of the machine (1 clamp [D]).

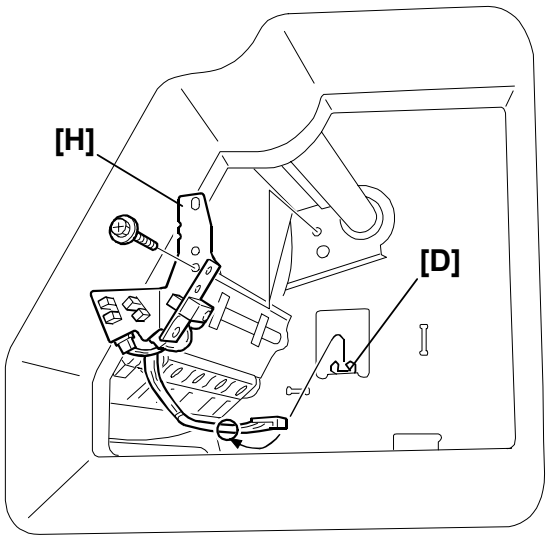


6. Remove the knob cover [E].
7. Turn the knob [F] until the flat part of the cylinder [G] is in the position shown.

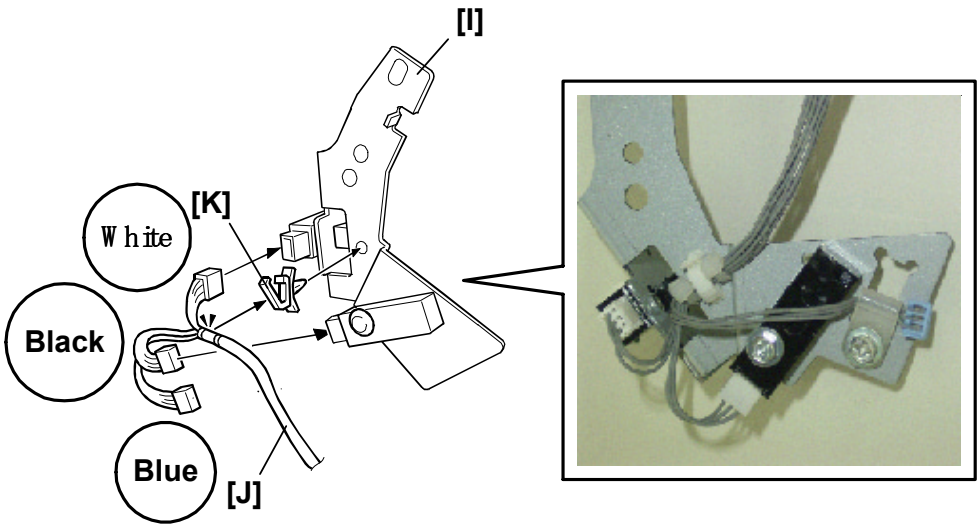


Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 21-Sep-04	No: R-C229-024

8. Remove the feed encoder bracket [H] (🔩 x 1).

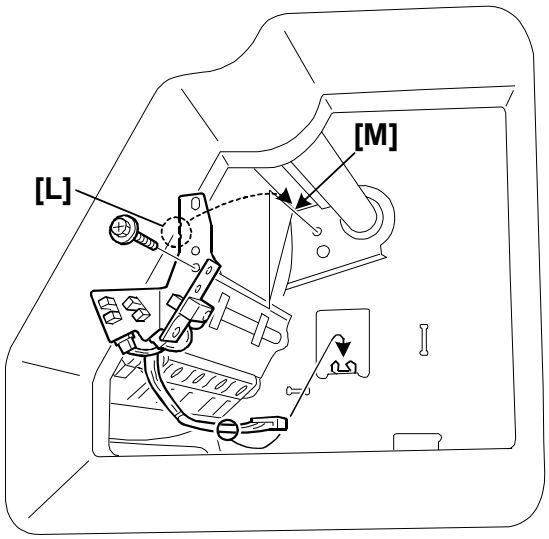


9. Install the new paper feed control assembly [I], the feed encoder harness [J] and the clamp [K].



Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 21-Sep-04	No: R-C229-**024**

Important: When you install the feed control assembly [I], make sure to put the hook on the new feed encoder bracket [L] in the correct place on the mainframe [M].



Reissued: 25-Oct-04
RTB Correction

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 9-Sep-04	**No:** R-C229-**022a**
Subject: Pearl firmware history	**Prepared by:** M. Kanomata, Priport Service Planning Section	

Classification:
☐ Troubleshooting ☐ Part information ☐ Action required
☐ Mechanical ☐ Electrical ☐ Service manual revision
☐ Paper path ☐ Transmit/receive ☐ Retrofit information
☒ Other ( )

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5600
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
GARNET:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180
SA2P (China only):	Ricoh JP8510P, Gestetner 5500P

Note that this bulletin is related to the Pearl only.

The bulletin is to inform you of the firmware modification history of the PEARL.
The items in *bold italics* have been corrected or added.

● Firmware Modification History

Pearl

C2295114	File Name	Version	C.SUM	Production
G	C2295114G.bin	1.21	AFFA	From the first mass production
J	C2295114J.bin	1.31	0629	August 1998 production
K	C2295114K.bin	1.32	8819	September 1998 production
N	C2295114N.bin	1.4	CBFA	December 1998 production

NOTE: Part numbers change (C2295114N – C2295134)
File name suffixes H, I, L and M have been skipped.

Reissued: 25-Oct-04

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 9-Sep-04	**No:** R-C229-**022a**

Symptom Corrected	Suffix
Mass production begins.	G
1. Chinese was added to SP2-11 as a display language. 2. To make the Master Edge Sensor Adjustment easier, a function to turn on the duct entrance solenoid has been added. For details, refer to “New SP Mode List.” 3. New SC codes have been added (SC21-00, -01, -02, -03, 22-00, -01, and 23-00). For details, refer to “New SC Code List.” Note: See RTB#RC22905 for details.	J
The default setting for SP3-161 (Number of Master Eject Trials) has been changed from 1 to 2. This means that the machine repeats the master ejecting process once more when the first trial has not succeeded in peeling off the master from the drum. Note: See RTB#RC22905 for details.	K
1. SP2-20-16 ‘Default Ratio’ has been added to select a desired magnification ratio at power on or when the Modes Clear key is pressed. The same function has also been assigned to User Tools 3-11. (For details, refer to “New SP Mode List” and “New User Tool List.”) 2. To ensure the proper paper clamping timing, the default settings for SP6-112-4 to -8 (the registration motor on timing) have been changed. For details, refer to “New SP Mode List.” 3. The thermal head energy is changed depending on the temperature measured by the thermistor in the drum when SP2-32 is ON. (ON is the default for the standard drum, and OFF for the optional color drums.) The threshold temperatures to switch energy have been changed as follows: ∗ Less than 25 °C (Energy of -7% at default) ⇒ Less than 18 °C ∗ Between 25 and 30 °C (-12 at default) ⇒ Between 18 and 28 °C ∗ More than 30 °C (-17% at default) ⇒ More than 28 °C 4. A new drum type has been added to SP2-390 (A3/DLT Drum Selection). The “B4” that is newly added is for Japanese version models only; do not select it. Note: See RTB#RC22905 for details.	N

Reissued: 25-Oct-04

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 9-Sep-04	**No:** R-C229-**022a**

Pearl

C2295134	File Name	Version	C.SUM	Production
No-suffix	C2295134.bin	1.8	5B6F	January 1999 production
A	C2295134A.bin	1.8a	54C4	February 1999 production
B	C2295134B.bin	1.81	9F94	March 1999 production
C	C2295134C.bin	1.82	A407	April 1999 production
D	C2295134D.bin	1.83	0AC7	August 1999 production
E	C2295134E.bin	1.9	D1FA	September 1999 production
F	C2295134F.bin	2.0	3410	November 1999 production
G	C2295134G.bin	2.1	76AB	February 2000 production
G	C2295134G.bin	2.15	FF41	(Web release only; Product already discontinued).

Reissued: 25-Oct-04

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 9-Sep-04	**No:** R-C229-**022a**

Symptom Corrected	Suffix
1. The part numbers for both the ROM and the MPU have been changed for identification purposes. The Japanese model made installing a sorter an option. SP2-4 'Sorter Select' has been added. (This function is for the Japanese model only; do not use it.) 2. The default setting for SP6-50 (LCD Contrast Adjustment) has been changed from 3 to 4. Consequently, the default LCD setting is brighter. Note: See RTB#RC22905 for details.	No-suffix
To ensure that the light from the scanner lamp is stable before scanning the white plate (behind the original scale), the scanning start timing has been delayed by 200 milliseconds. Note: See RTB#RC22905 for details.	A
1. Portuguese has been added in SP2-11, as a displayable language on the LCD. For details, refer to "New SP Mode List." 2. SP2-15, 'Machine Destination', has been added to select the machine's version ('Other' and 'Japan'). For details, refer to "New SP Mode List." 3. To minimize the waiting time during drum idling, the ink supply motion prior to printing has been eliminated. To enable this, SP2-422 'Ink Auxiliary Supply' has been added to select the ink supply motion. For details, refer to "New SP Mode List." 4. Modified to reduce the possibility of creating small strips of the master in the master-making unit, that tend to cause master feed jams. Small strips of master waste were likely to occur when an original feed jam occurred (when the optional ADF is installed). This was because the original feed was stopped and the master was cut as soon as an original jam is detected. With the new firmware, the master is wrapped around the drum then the machine stops even when an original jam occurs. 5. To reduce the possibility of damage to the friction pad (for the paper feed), the separation pressure control has been changed so as not to be applied while the machine is not feeding the paper. 6. In the version C229 5114-N firmware, the threshold temperatures to switch the thermal head energy were changed. To achieve darker image density (especially in the solid-fill black areas) the thresholds have been changed again as follows: ∗ Less than 18 °C (Energy of -7% at default) ⇒ Less than 28 °C ∗ Between 18 and 28 °C (-12 at default) ⇒ Between 28 and 30 °C ∗ More than 28 °C (-17% at default) ⇒ More than 30 °C 7. In the Job Separation mode, the printing job is stopped when it reaches 600, which is the maximum capacity for the paper delivery table in this mode. The new firmware does not stop printing even in this condition until the job completes. The message that notices the paper capacity exceeded is only displayed on the LCD. Note: See RTB#RC22905 for details.	B

Reissued: 25-Oct-04

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 9-Sep-04	**No:** R-C229-**022a**

Symptom Corrected	Suffix
1. This version causes problems and should not be used. Refer to version E's history for the problem. 2. SP2-125 'Drum Idling' has been added to counter the paper-wrapping jam problem when the printing pressure increases. For details, refer to "New SP Mode List." 3. SP2-016 'Swap Start Key' has been added to swap *the Start (master making) key function* and *the Print key function* depending on the end user's preference. ('No' is the default setting.) 4. To ensure the proper paper clamping, the default settings for SP6-116-1 and -7 (the paper clamping timings) have been changed. For details, refer to "New SP Mode List." Note: See RTB#RC22905 for details.	C
1. This version causes problems and should not be used. Refer to version E's history for the problem. 2. SP2-20-17 'Default Eco Ink' has been added. By selecting ON in this mode, the Economy mode, which conserves ink during printing, can be set as the default at power on. 3. A new SC code, SC7-21, has been added. When the feed start sensor (behind the pressure cylinder) is not activated or deactivated at the proper time, this code is displayed. The machines that equip the firmware prior to this version will show the following symptoms when the sensor is defective: *- If the sensor remains deactivated (not interrupted by the actuator) -* Location 'B' jam (the paper jam at the registration) is displayed. *- Feed start sensor remains activated -* The main motor does not stop turning. 4. When an original is scanned with the optional ADF, the shadow at the trailing edge of the original might create a black line on copies. To prevent this, a 1-mm trailing edge is left as a blank margin. (This was already done in the platen mode.) 5. Chinese spelling for 'please wait' has been corrected. (This only affects the Chinese display selected in SP2-11.) Note: See RTB#RC22905 for details.	D
1. In the version C firmware, SP2-125 'Drum Idling' was added and the drum rotation speed at the beginning of printing was changed. Due to a programming error, the following problem occurred. This error has been corrected. *- Pressure cylinder becomes dirty with ink -* If the Auto Cycle mode is selected and a print job continues following the master making process, an idle rotation of the drum is interrupted just after the trial print is made (and before start printing). (The idle rotation does not occur when the Auto Cycle mode is not used.) During this idle rotation, the printing pressure release solenoid is energized (due to a program error) and the pressure cylinder contacts the drum. As a result, the pressure cylinder gets dirty with ink, and it is transferred to the reverse side of next prints. The dirty ink is cleaned during printing, however the first several prints will get dirty with ink on the reverse side. 2. For the U.S. version models (when SP2-10 is set at '2'), the print image position was changed (both in up-and-down and side-to-side directions) in 0.1 inch steps. This version enables it in 0.02 inch steps. Note: See RTB#RC22905 for details.	E

Reissued: 25-Oct-04

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 9-Sep-04	**No:** R-C229-**022a**

<table>
<tr><th>Symptom Corrected / Other Changes</th><th>Suffix</th></tr>
<tr><td>Image is shifted when printing out the Sp8-70 logging data.</td><td>F</td></tr>
<tr><td>1. New SP mode added: SP8-020-2 (DFU).
<table>
<tr><th>SP No.</th><th>Display (Contents)</th></tr>
<tr><td>8-020-2</td><td>Load Program - Program Data (factory use only)</td></tr>
</table>
<u>IMPORTANT</u>: This SP mode is for <u>factory use only</u>, so please do not change the setting.
2. New SP mode added: SP2-050.
<table>
<tr><th>SP No.</th><th>Display</th><th>Function</th><th>Default</th><th>Setting</th></tr>
<tr><td>2-050</td><td>Sharpen Image Mode</td><td>See Note</td><td>OFF</td><td>ON/OFF</td></tr>
</table>
Note: The purpose of this SP mode is to enable or disable Sharpened Image Mode (a user mode).
3. Job Separation does not work after the operator clears LCD error messages (“Tray has reached sheet limit” and “Wrong paper size”).
4. If the user has already programmed the Key Operator Code, the machine will ask them to enter this code when they access the Set User Code screen.</td><td>G
(Ver2.1)</td></tr>
</table>

Reissued: 25-Oct-04

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 9-Sep-04	**No:** R-C229-**022a**

Symptom Corrected / Other Changes

1. When the following two conditions occur at the same time, the LCD will display the message for #1 only:
   1) Master feed unit is not set properly
   2) Ink is low and needs to be added
2. Smudges on printing paper when using “Combine” with 2 or 4 originals.
   Note: Software changed so that the machine changes the master after scanning all of the originals.
3. Ink overflow.
   Note: Ink supply timing was changed.
4. When the machine receives data from an outside source, it wraps an A3 master around the A4 drum.
5. New Sp modes added:
   - SP6-132-1 (A3 drum)
   - SP6-132-2 (DLT drum)
   - SP6-132-3 (A4 drum)

SP No.	*Display*	*Function*	*Default*	*Setting*
6-132-1	***Drum Master Length A3 Drum***	***See Note***	***0***	***-5 to 5***
6-132-2	***Drum Master Length DLT Drum***	***See Note***	***0***	***-5 to 5***
6-132-3	***Drum Master Length A4 Drum***	***See Note***	***0***	***-5 to 5***

Note:
- With these SP modes, you can make small adjustments to the paper size.
- Adjustment range: -5 to 5 (1 step = 1mm)
- Side adjustment (-): decreases the master making length
- Side adjustment (+): increases the master making length

Other changes:

6. Software changed so that the Garnet drum can be used on the Pearl.
   Important: When you use the Garnet drum on this machine, make sure to update to version G or newer. If you do not, SC05-60 will occur at power up or during operation (Idling HP sensor Remains On).
   Note: This is because the Garnet drum was changed to improve ink roller drive speed.

Suffix

G
(Ver2.15)

Reissued: 25-Oct-04
RTB Correction

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 9-Sep-04	**No:** R-C229-**023a**
Subject: Pearl-MC firmware history	**Prepared by:** M. Kanomata, Priport Service Planning Section	

Classification:
☐ Troubleshooting ☐ Part information ☐ Action required
☐ Mechanical ☐ Electrical ☐ Service manual revision
☐ Paper path ☐ Transmit/receive ☐ Retrofit information
☒ Other ( )

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5600
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
GARNET:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180
SA2P (China only):	Ricoh JP8510P, Gestetner 5500P

Note that this bulletin is related to the Pearl-MC only.
The bulletin is to inform you of the firmware modification history of the PEARL-MC.
The items in *bold italics* have been corrected or added.

● Firmware Modification History

Pearl-MC

C2335114	File Name	Version	C.SUM	Production
B	C2335114B.bin	1.7	6468	From the start of mass-production
C	C2335114C.bin	1.8	DE71	April 2000 production
D	C2335114D.bin	1.9	DE62	May 2000 production
E	C2335114E.bin	2.0	EAC9	September 2000 production
F	C2335114F.bin	2.1	9157	October 2000 production
G	C2335114G.bin	2.3	54F0	February 2001 production
H	C2335114H.bin	2.41	5316	August 2001 production
J	C2335114J.bin	2.5	453D	December 2001 production
K	C2335114K.bin	2.6	1FCF	June 2002 production
L	C2335114L.bin	2.7	FF22	January 2003 production
M	C2335114M.bin	2.8	FF56	August 2003 production
N	C2335114N.bin	2.9	75C5	December 2003 production

NOTE: File name suffixes I has been skipped.

Reissued: 25-Oct-04

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 9-Sep-04	**No:** R-C229-**023a**

<table>
<tr><th>Symptom Corrected / Other Changes</th><th>Suffix</th></tr>
<tr><td>First mass production release.</td><td>B</td></tr>
<tr><td>Other Changes:
1. Alert messages added for Chinese and Portuguese.
2. If the user has already programmed the Key Operator Code, the machine will ask them to enter this code when they access the Set User Code screen.</td><td>C</td></tr>
<tr><td>1. Wording corrections (English, Portuguese).
2. Logging data correction for J-Sorter.
3. When the following two conditions occur at the same time, the LCD will display the message for #1 only:
1) Master feed unit is not set properly
2) Ink is low and needs to be added</td><td>D</td></tr>
<tr><td>Smudges on printing paper when using “Combine” with 2 or 4 originals.
Note: Software changed so that the machine changes the master after scanning all of the originals.</td><td>E</td></tr>
<tr><td>The software control for the scanner drive motor was changed to further decrease the load on the motor.</td><td>F</td></tr>
<tr><td>Other Changes:
1. Added new SP mode: SP3-541-11 (PD Table Pos. B5, S-Plate).
<table>
<tr><th>SPNo.</th><th>Display</th><th>Function</th><th>Default</th><th>Setting</th></tr>
<tr><td>3-541-11</td><td>PDTablePos. B5 S-Plate</td><td>See Note</td><td>0</td><td>-10 to 10</td></tr>
</table>
Note: This is not used on the Pearl-MC.
2. Optimized master eject timing to improve the performance of the master clamp.
3. Optimized the paper separation pressure and timing of paper feed pressure.</td><td>G</td></tr>
<tr><td>1. Ink overflow.
Note: Ink supply timing was changed.

Other changes:
2. Software changed so that the Garnet drum can be used on the Pearl.
Important: When you use the Garnet drum on this machine, make sure to update to version G or newer. If you do not, SC05-60 will occur at power up or during operation (Idling HP sensor Remains On).
Note: This is because the Garnet drum was changed to improve ink roller drive speed.</td><td>H</td></tr>
</table>

Reissued: 25-Oct-04

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 9-Sep-04	**No:** R-C229-**023a**

<table>
<tr><th>Symptom Corrected</th><th>Suffix</th></tr>
<tr><td>Other changes:
1. Changed the detection conditions for SC06-00 (Pressure plate does not move from HP to master eject ready position).
New SC detection times (A3 size):
- 8 or more masters in the eject box: 4 seconds
- Less than 8 masters in the eject box: 5 seconds.

2.Changed the software to stop unnecessary occurrences of SC03-00 (thermal head ID error):
New: This SC will not occur when the power is turned OFF by mistake during the master-making process (and then power is turned back ON).</td><td>J</td></tr>
<tr><td>1. When the machine receives data from an outside source, it wraps an A3 master around the A4 drum.

Other changes:
2. New Sp modes added:
- SP6-132-1 (A3 drum)
- SP6-132-2 (DLT drum)
- SP6-132-3 (A4 drum)
<table>
<tr><th>SP No.</th><th>Display</th><th>Function</th><th>Default</th><th>Setting</th></tr>
<tr><td>6-132-1</td><td>Drum Master Length A3 Drum</td><td>See Note</td><td>0</td><td>-5 to 5</td></tr>
<tr><td>6-132-2</td><td>Drum Master Length DLT Drum</td><td>See Note</td><td>0</td><td>-5 to 5</td></tr>
<tr><td>6-132-3</td><td>Drum Master Length A4 Drum</td><td>See Note</td><td>0</td><td>-5 to 5</td></tr>
</table>
Note:
- With these SP modes, you can make small adjustments to the paper size.
- Adjustment range: -5 to 5 (1 step = 1mm)
- Side adjustment (-): decreases the master making length
- Side adjustment (+): increases the master making length</td><td>K</td></tr>
<tr><td>(Minor changes applied for the Japan model).</td><td>L</td></tr>
<tr><td>Wording corrections: Chinese, Italy, German, and Portuguese.</td><td>M</td></tr>
<tr><td>(Minor changes applied for the Japan model).</td><td>N</td></tr>
</table>

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 15-Nov-04	**No:** R-C229-**025**
Subject: JS40-Sorter Installation Procedure	**Prepared by:** A. Yoshida, Priport Service Planning Section	

Classification:

☐ Troubleshooting	☐ Part information	☐ Action required
☐ Mechanical	☐ Electrical	☒ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☐ Other ( )		

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5800
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
GARNET:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180
SA2P (China only):	Ricoh JP8510P, Gestetner 5500P

Note: This bulletin is for the optional JS40-Sorter.

Several places in the Installation Procedure have been revised, so please replace the entire procedure with the one in this bulletin.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 15-Nov-04	No: R-C229-025

INSTALLATION PROCEDURE

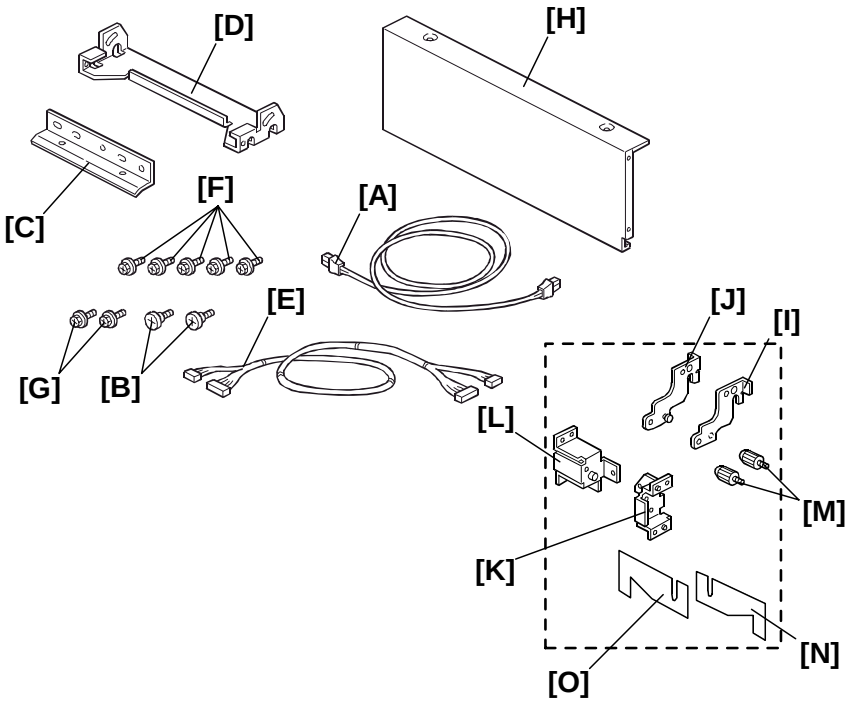
ACCESSORY CHECK

Make sure that you have all the accessories listed below:

Optical fiber cable [A] 1

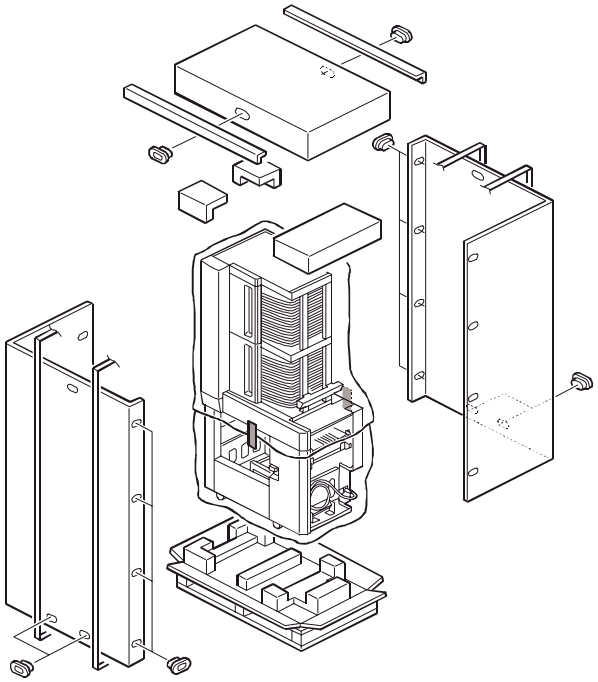
(Product of Tohoku Ricoh Co., Ltd., P/N: AW030028)

Stepped screw [B] (To install the upper joint bracket) 2
Lower joint bracket [C].....1
Upper joint bracket [D].....1
Job separator relay harness [E].....1
M4x8 screw [F] (To install the lower joint bracket).....2
M4x8 screw [F] (To join copier machine and sorter).....3
M4x8 screw [G] (To install the front lower cover) 2
Front lower cover [H] 1
Front arm [I] (For models #C235, #C239, #C244) 1
Rear arm [J] (For models #C235, #C239, #C244).....1
Front bracket [K] (For models #C235, #C239, #C244) 1
Rear bracket [L] (For models #C235, #C239, #C244) 1
Knob screw [M] (For models #C235, #C239, #C244).....2
Front exit guide [N] (For models #C235, #C239, #C244) 1
Rear exit guide [O] (For models #C235, #C239, #C244).....1



Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 15-Nov-04	No: R-C229-025

INSTALLATION PROCEDURE

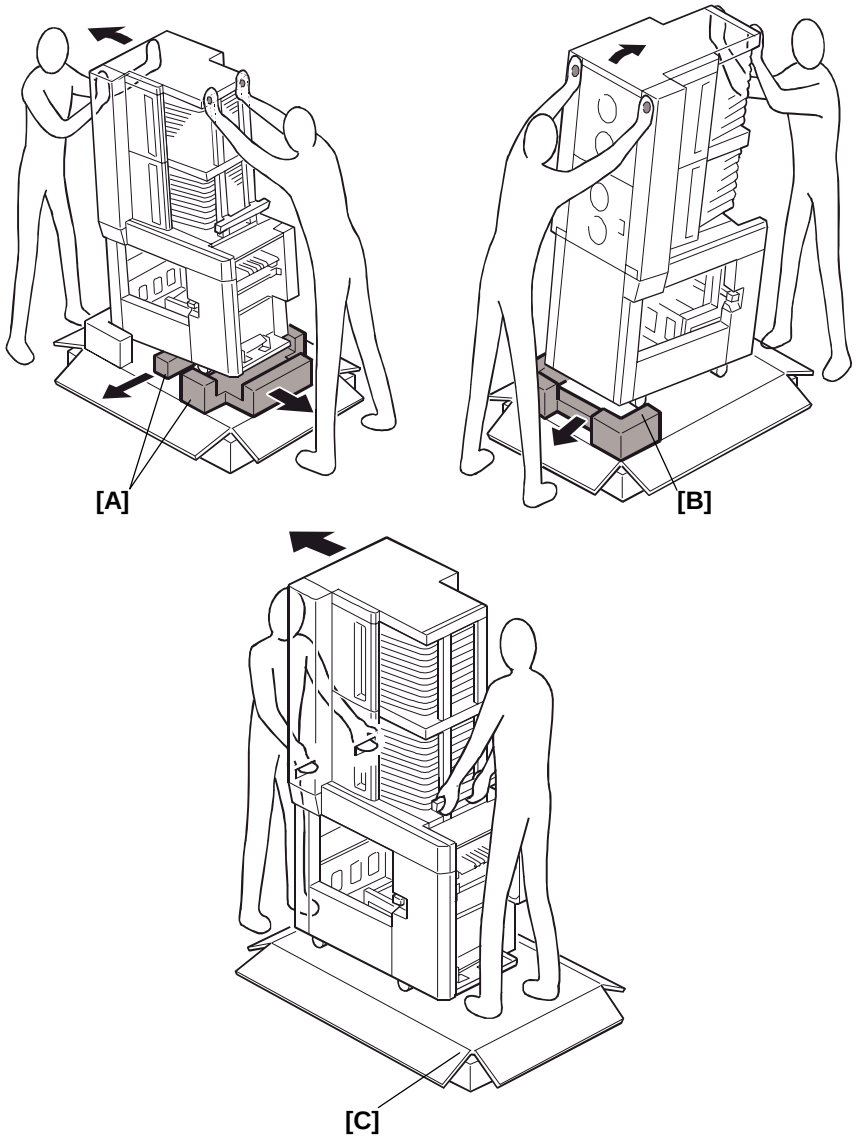


Unpacking

Opening the box

1. Open the box.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 15-Nov-04	No: R-C229-025



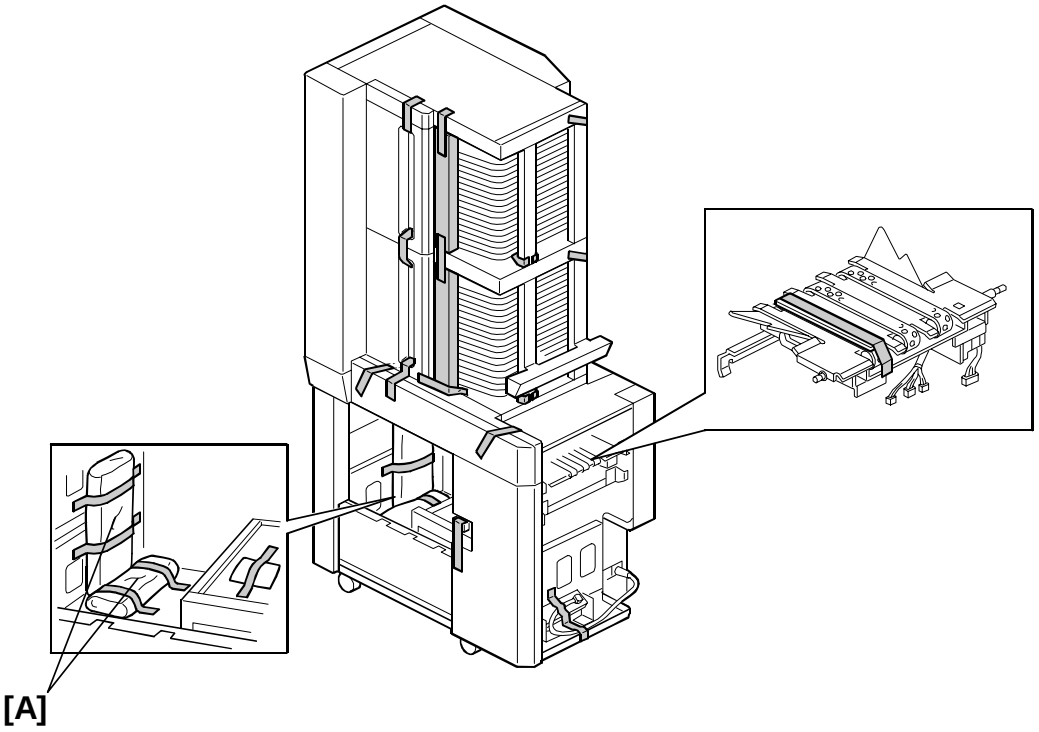
Lifting the machine off the base

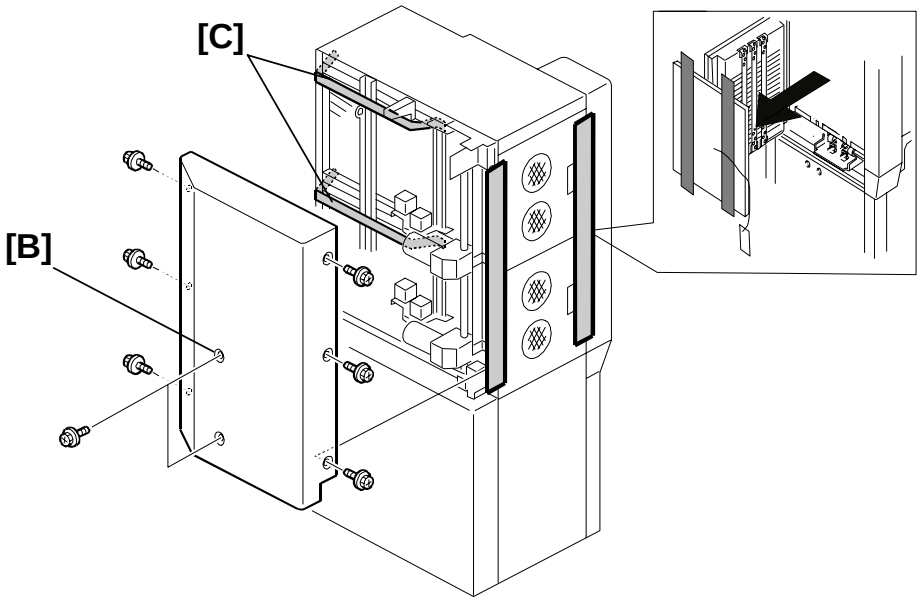
2. Tilt the sorter to the left and remove the two Styrofoam pads [A] in the middle and at the right corner.
3. Tilt the sorter to the right and remove the last Styrofoam pad [B].
4. Slide the sorter off the base [C].

⚠CAUTION

When you slide the sorter off the base, be very careful not to tip it too far to one side.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 15-Nov-04	No: R-C229-025





5. Make sure that both accessory bags [A] are present.
6. Remove the tape that secures the cover and units.
7. Remove the rear cover [B].
8. Remove the tape [C].

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 15-Nov-04	No: R-C229-025

SP Mode Settings

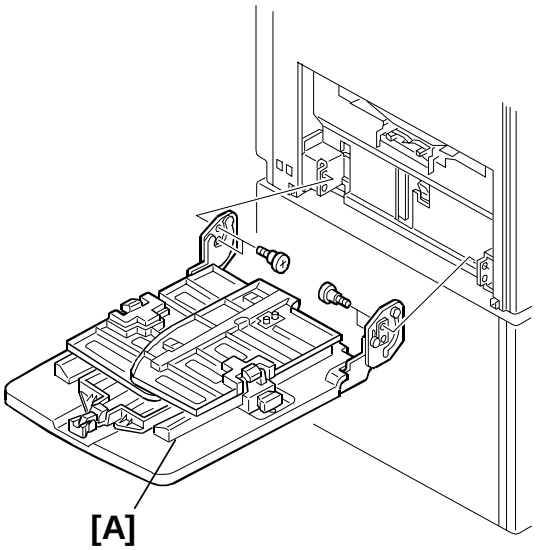
1. Insert the plug in the wall outlet firmly.
2. Turn on the main switch.
3. Access SP2-4 (Sorter select mode) and set it to “2” (C232, C233 models).
4. Access SP3-2-6 (Set Sorter) and set it to “Yes”, then set the Wing Guide Angle to “2: Down” (C235, C239, C244 models).
5. Turn the main switch off.

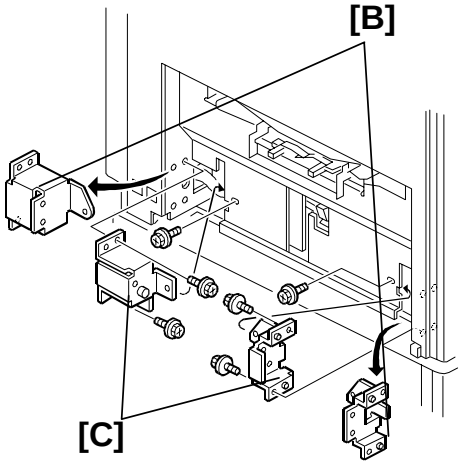
Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 15-Nov-04	No: R-C229-025

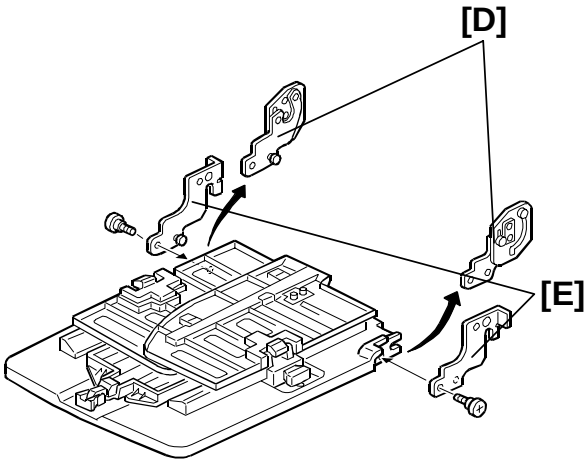
Paper Delivery Table Installation

For models #C235, #C239, #C244

1. Turn off the main switch of the duplicator.
2. Unplug the power cords for the sorter and duplicator.
3. Remove the paper delivery table [A] from the mainframe (2 screws).
4. Remove the front and rear brackets [B].
5. Attach the new front and rear brackets [C] (packed in the accessory bag).
6. Remove the front and rear arms [D].
7. Attach the new front and rear arms [E] (packed in the accessory bag).



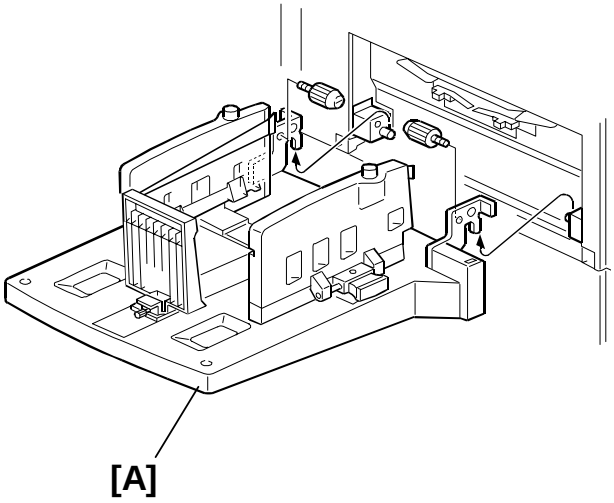




Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 15-Nov-04	No: R-C229-025

For models #C232, #C233

1. Turn off the main switch of the duplicator.
2. Unplug the power cords for the sorter and duplicator.
3. Remove the paper delivery table [A] from the mainframe (2 screws).
   NOTE: C232 only: Remove the table cord.



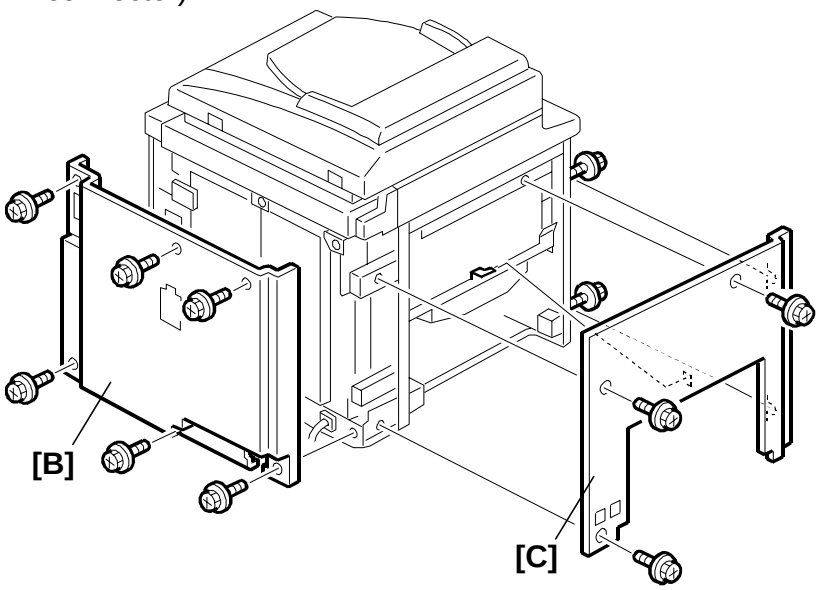
Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 15-Nov-04	No: R-C229-025

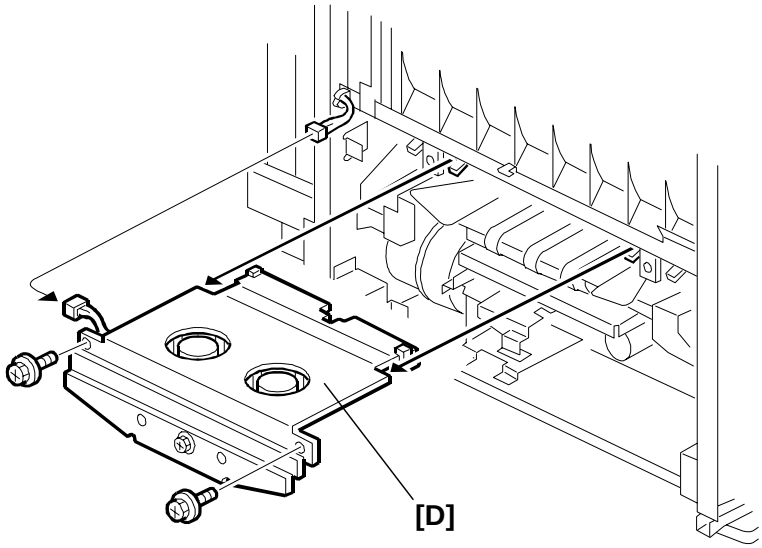
Mainframe Preparation

Important: Keep the parts that you remove in Steps 3-8 below. Later, you will use these parts to install the sorter.

1. Turn off the main switch of the duplicator.
2. Unplug the power cords for the sorter and duplicator.
3. Remove the following parts from the mainframe:

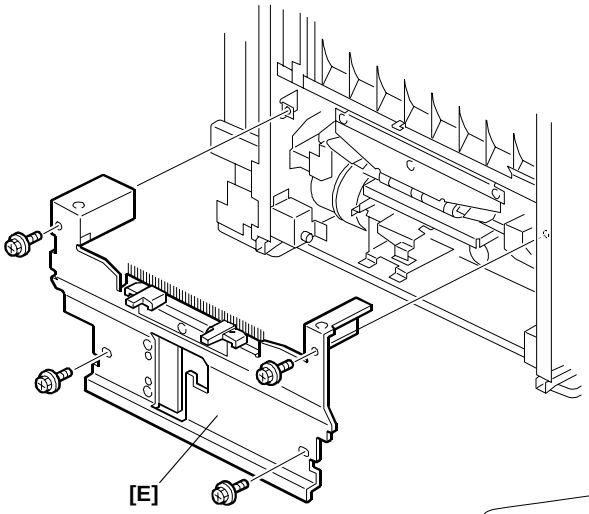
   Rear cover [B] (6 screws), left cover [C] (5 screws), air knife unit [D] (2 screws, 1 connector).

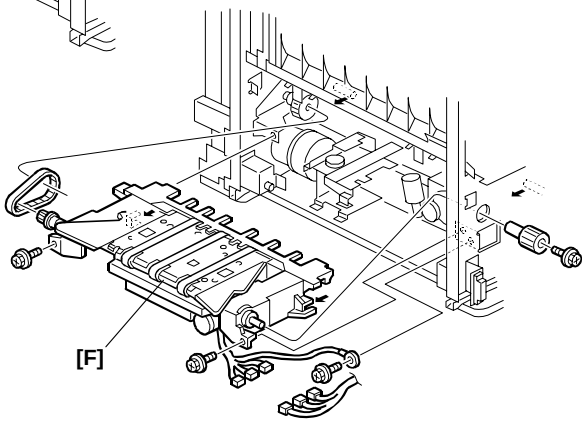




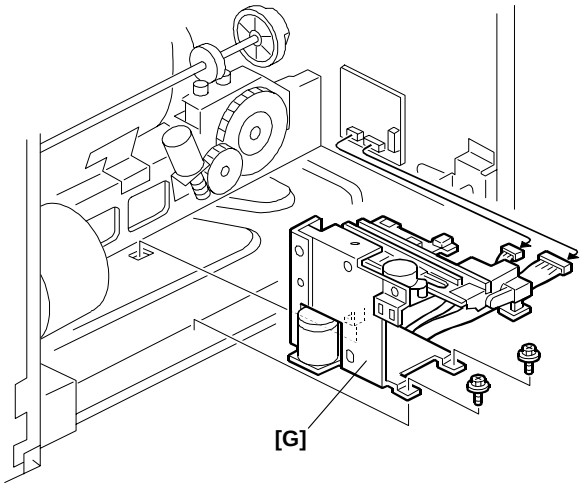
Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 15-Nov-04	No: R-C229-025

4. Remove the paper delivery cover [E] (4 screws).
5. Remove the paper delivery unit [F] (2 screws, 3 connectors, ground wire, knob, belt).
6. Remove the job separator unit [G] (2 screws, 2 connectors).

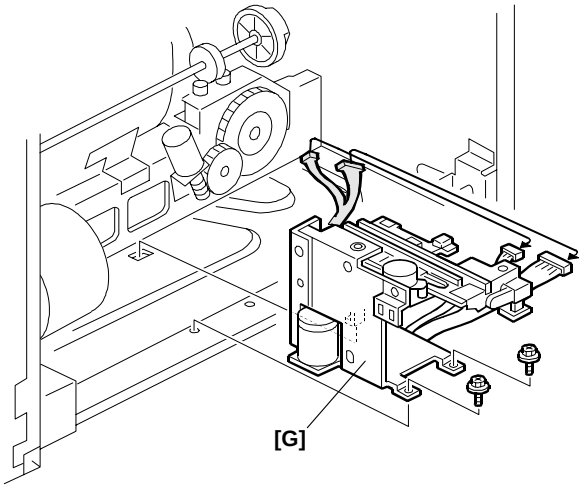




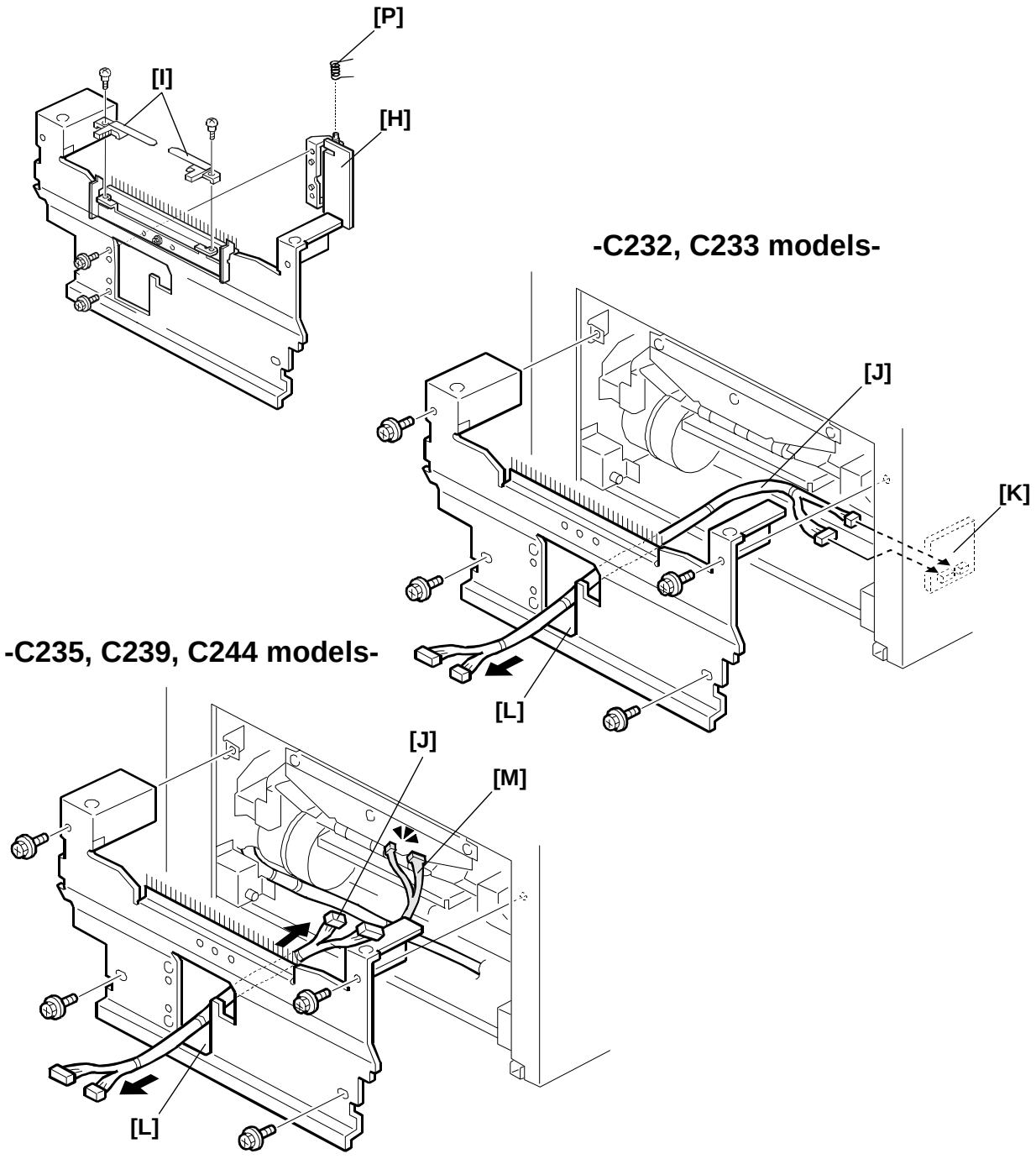
-C232, C233 models-



-C235, C239, C244 models-



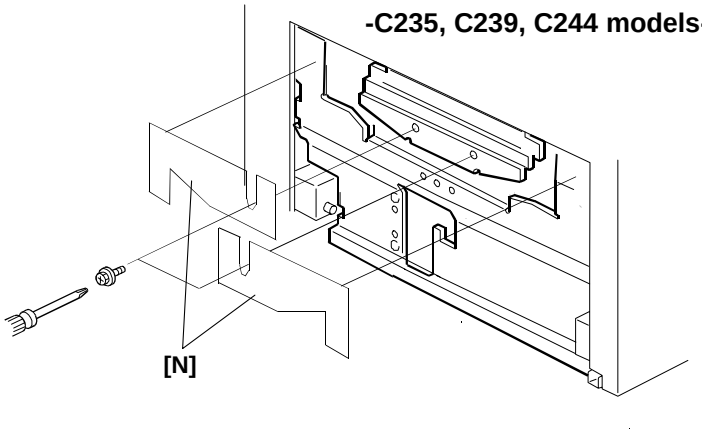
Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 15-Nov-04	No: R-C229-025



7. Remove the job separator door [H] (2 screws, 1 spring).
   Important: Make sure to keep the spring [P].
8. Remove the trailing edge guides [I] from the paper delivery cover (2 stepped screws).

9. Connect the job separator relay harness [J] (packed in the accessory bag) to the job separator board [K] (C232, C233 models).
10. Connect the job separator relay harness [J] (packed in the accessory bag) to the job separator harness [M] (C235, C239, C244 models).
11. Re-install the left cover and the air knife unit (removed in Step 3).
12. Re-install the paper delivery unit (removed in Step 5).
13. Re-install the paper delivery cover (removed in Step 4).
    Important: Make sure to lead the job separator relay harness [J] through the cutout [L] in the paper delivery cover.

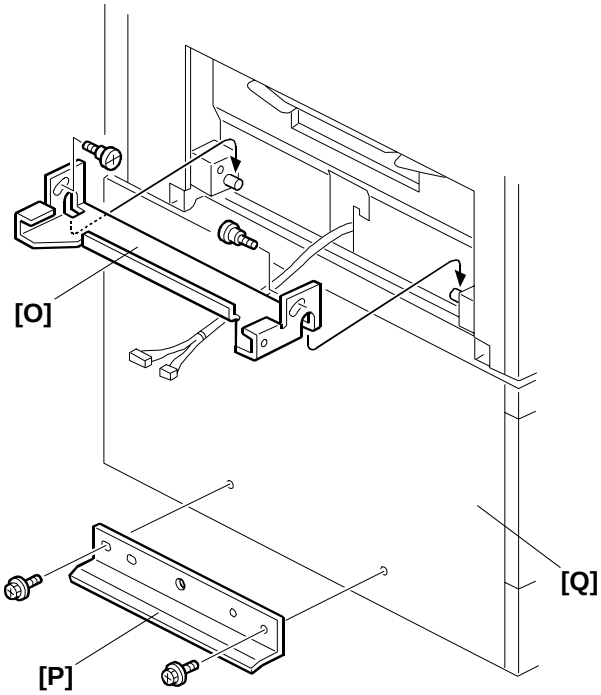
-C235, C239, C244 models-



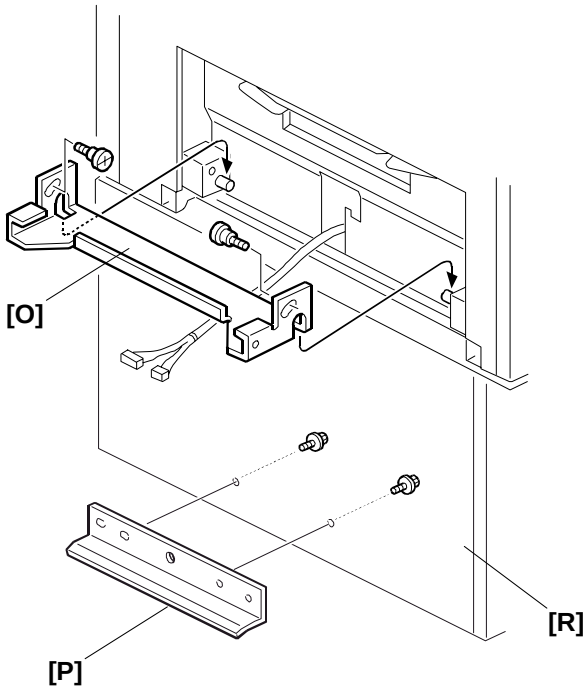
14. Install the exit guide [N] (2 screws). (C235, C239, C244 models)

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 15-Nov-04	No: R-C229-025

-C232 model-



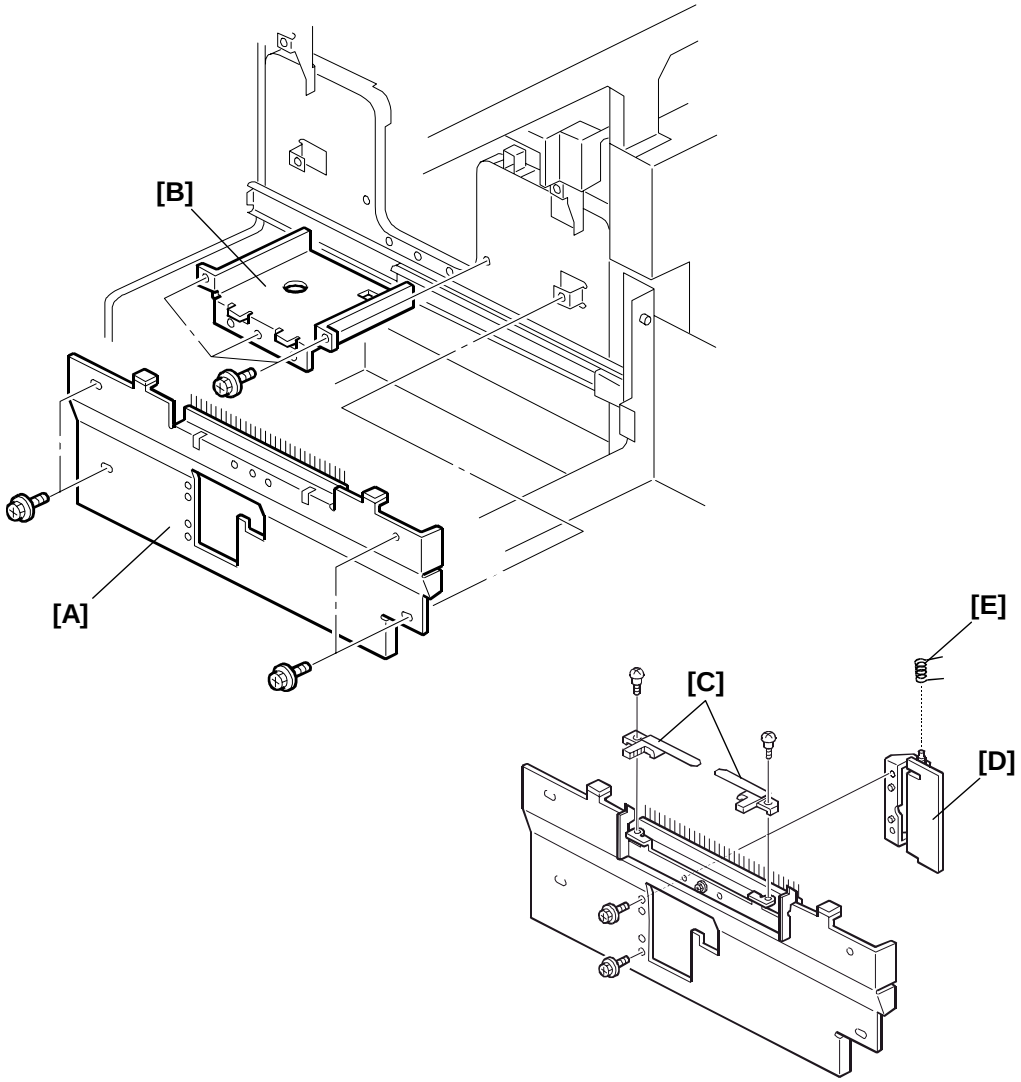
-C233, C235, C239, C244 models-



15. Install the upper joint bracket [O] (2 stepped screws, packed in the accessory bag).
16. Install the lower joint bracket [P] (2 screws, packed in the accessory bag).

Important: 1) For the C232: Tighten the screws from the outside of the paper bank [Q].
2) For the C233, C235, C239, C244: Tighten the screws from the inside of the table [R].

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 15-Nov-04	No: R-C229-**025**



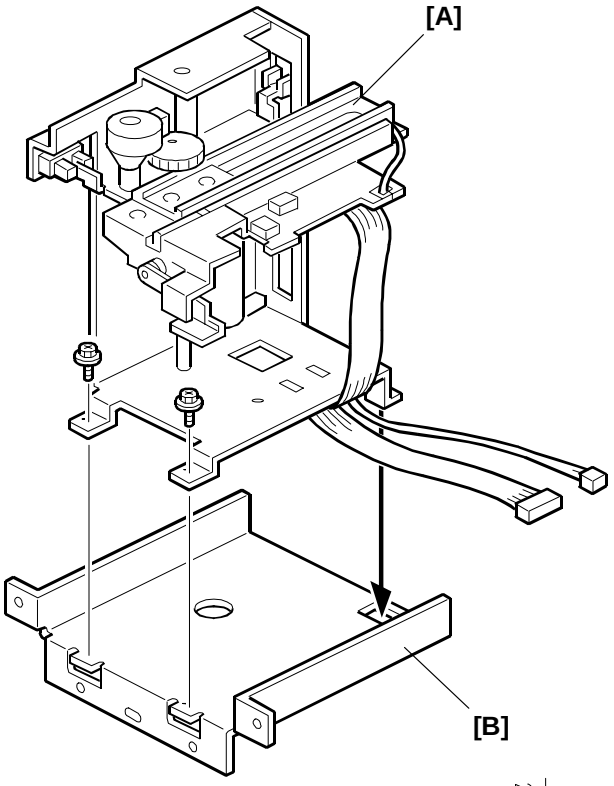
Preparation for Sorter Installation

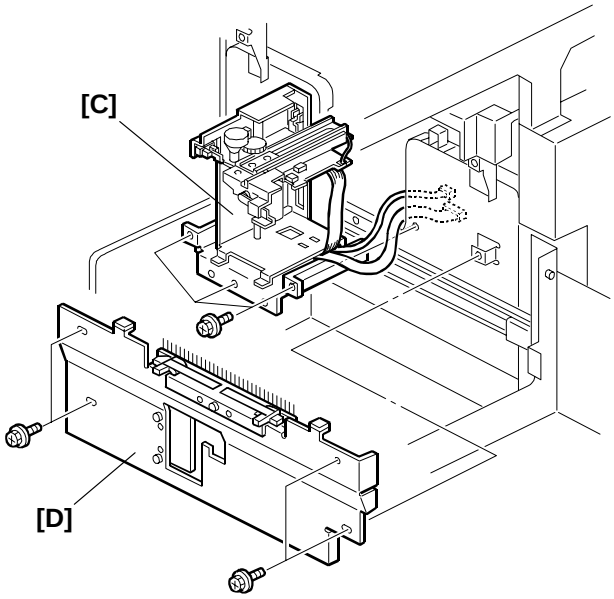
1. Slide out the delivery table base.
2. Remove the sorter delivery cover [A].
3. Remove the job separator base [B].

Important: For Steps 4 and 5, use the guide, door and screws that you removed in Steps 7 and 8 of the Mainframe Preparation procedure.

4. Attach the trailing edge guides [C] to the sorter delivery cover [A].
5. Attach the job separator door [D] to the sorter delivery cover [A].
   Important: Make sure to attach the spring [E].

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 15-Nov-04	No: R-C229-025

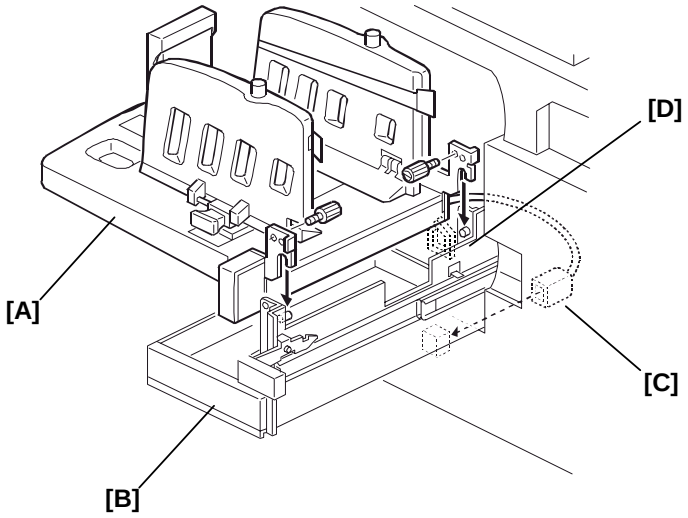




Important: For Step 6, use the job separator unit and screws that you removed in Step 6 of the Mainframe Preparation procedure.

6. Attach the job separator unit [A] to the job separator base [B].
7. Reinstall the job separator base/unit assembly [C].
8. Reinstall the sorter delivery cover [D].

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 15-Nov-04	No: R-C229-025

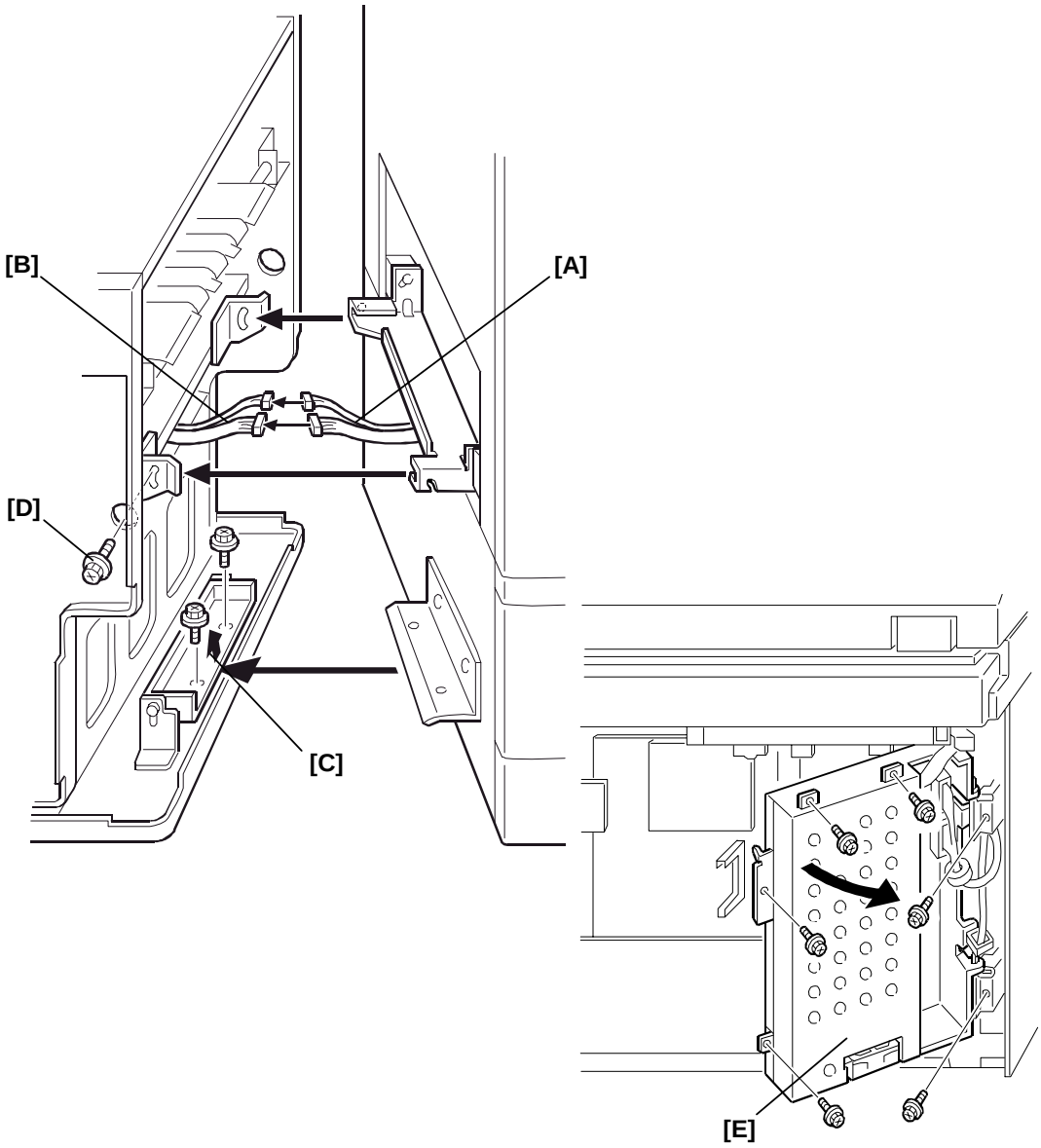


9. Reattach the paper delivery table [A] to the base [B] (2 screws).
   Note: This paper delivery table was removed in Step 3 of the Paper Delivery Table Installation procedure.
   Important: For the C235, C239, C244: Use the screws packed in the accessory bag.

10. **For the C232 only:**
    Connect the table cord [C].
    Important: Put the cord [C] inside the clamp [D].

11. Slide the base [B] into the machine.

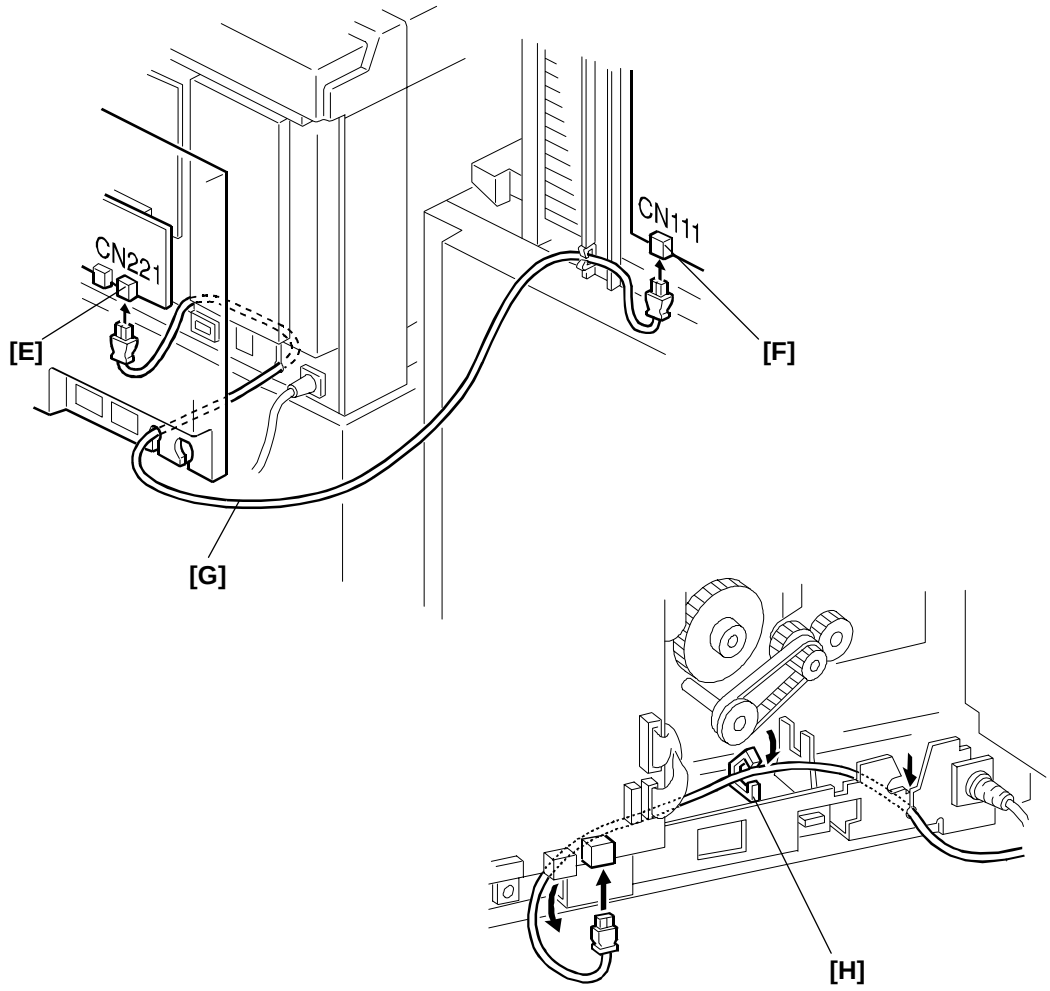
Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 15-Nov-04	No: R-C229-025



Connecting the sorter to the machine

1. Remove the front right cover (3 screws).
2. Connect the job separator relay harness [A] and the job separator harness [B].
3. Connect the sorter to the mainframe with the lower joint bracket [C] (2 screws) and the upper joint bracket [D] (1 screw).
4. Remove the sorter rear cover.
5. Open the power supply unit [E] (6 screws).

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 15-Nov-04	No: R-C229-025



6. Connect the optical fiber cable [G] (packed in the accessory bag) to CN221 [E] on the I/O board and CN111 [F] on the sorter main board.

Important: 1) Make sure to lead the cable [G] as shown above.
2) Put the cable [G] in the clamp [H].

7. Reinstall the power supply unit.
8. Reattach the two rear covers.
9. Reattach the front right cover.
10. Attach the front lower cover (packed in the accessory bag).
11. Lock the casters of the sorter.
12. Insert the power plug in the wall outlet firmly.
13. Turn the main switch on.
14. Push the sort key.
15. Make some test prints to make sure the machine is working normally.

Reissued: 21-Dec-04
RTB Correction
The items in bold italics have been corrected or added.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2	**Date:** 2-May-03	**No:** R-C229-**012b**
Subject: SA2 firmware history	**Prepared by:** A. Yoshida, Priport Service Planning Section	

Classification:
☐ Troubleshooting ☒ Part information ☐ Action required
☐ Mechanical ☐ Electrical ☐ Service manual revision
☐ Paper path ☐ Transmit/receive ☐ Retrofit information
☐ Other ( )

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5600
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
Garnet:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180

Note that this issue is related to the SA2 only.

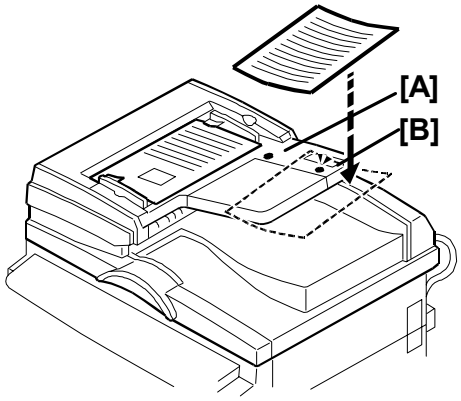
The following is the firmware modification history of the Priport product SA2. Items in ***bold italics*** have been corrected and added.

FIRMWARE MODIFICATION HISTORY

C2445114	File Name	Version	C.SUM	Production
C	C2445114C.bin	2.11	55C4	From the start of mass-production
D	C2445114D.bin	2.13	BC36	June 2002 production
E	C2445114E.bin	2.15	3AFB	October 2002 production
F	C2445114F.bin	2.19	84D0	May 2003 production
G	***C2445114G.bin***	***2.23***	***389D***	***November 2003 production***
H	***C2445114H.bin***	***2.24***	***7A30***	***November 2004 production***

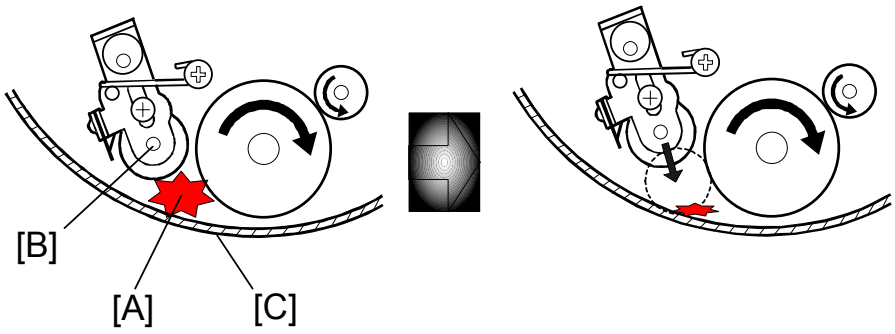
Reissued: 21-Dec-04

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2	**Date:** 2-May-03	**No:** R-C229-**012b**

Symptom Corrected / Changes	Suffix
First mass production release.	C
LCD wording corrections. **Note:** This release applies to Italy models only.	D
LCD wording corrections. **Note:** This release applies to Italy models only.	E
(applies to the Japan model only). Modified to support EarlGrey-LT, the new optional PC controller.	F
(applies to the Japan model only).	***G***
1. Image shifting due to incorrect ADF paper loading: ***Firmware modified so that if the ADF detects a defined paper size with the left (innermost) paper length sensor [A], or neither of the sensors, it will not switch over to an "undefined size" if something is placed on top of the right (outermost) length sensor [B].*** ***Example: The machine will not switch to "undefined size" if a sheet is placed on the right length sensor after it has detected an A4 LEF sheet.***  	***H***

Reissued: 21-Dec-04

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2	**Date:** 2-May-03	**No:** R-C229-**012b**

Symptom Corrected / Changes	Suffix
2. The drum does not stop if SC05-00 or SC07-21 occurs during printing. ***Note: SC05-00: Main Motor Lock, SC07-21: Paper Table Feed Start Sensor Error.*** ***3. New SP mode added: SP2-006-20 (Drum Idling Motion).*** ***Reason: To ensure that ink does not build up [A] between the metal screen and the roller. This can occur when the customer uses the same master for over 2,000 prints.*** ***Note:*** ● ***When this SP is "ON," the drum idling roller [B] is pressed against the metal screen [C] and the drum idles for 4 revolutions.*** ● ***Timing:*** ***1) When the machine finishes a printing job*** ***2) If the paper in the paper tray runs out during a printing job.*** ***See RTB #RC229013 for details.*** 	***H***

Reissued: 21-Dec-04
RTB Correction
The items in bold italics have been corrected or added.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 9-Oct-03	**No:** R-C229-**015a**
Subject: Garnet firmware history	**Prepared by:** A. Yoshida, Priport Service Planning Section	

Classification:
☐ Troubleshooting ☒ Part information ☐ Action required
☐ Mechanical ☐ Electrical ☐ Service manual revision
☐ Paper path ☐ Transmit/receive ☐ Retrofit information
☐ Other ( )

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5600
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
GARNET:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180
SA2P (China only):	Ricoh JP8510P, Gestetner 5500P

Note that this bulletin is related to the Garnet only.

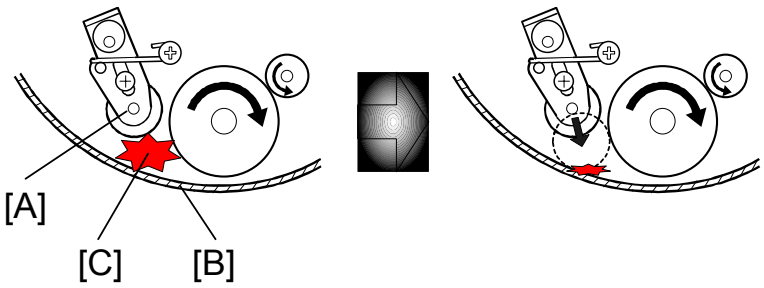
The following is the firmware modification history of the Priport product Garnet. Items in ***bold italics*** have been corrected and added.

FIRMWARE MODIFICATION HISTORY

C2395114	File Name	Version	C.SUM	Production
E	C2395114E.bin	2.10	FC5A	From the start of mass-production
F	C2395114F.bin	2.13	FCB9	June 2002 production
G	C2395114G.bin	2.15	1012	October 2002 production
H	C2395114H.bin	2.16	F830	January 2003 production
J	C2395114J.bin	2.19	07C2	May 2003 production
K	C2395114K.bin	2.21	8821	November 2003 production
L	***C2395114L.bin***	***2.23***	***2AAC***	***November 2003 production***
M	***C2395114M.bin***	***2.24***	***04EB***	***November 2004 production***

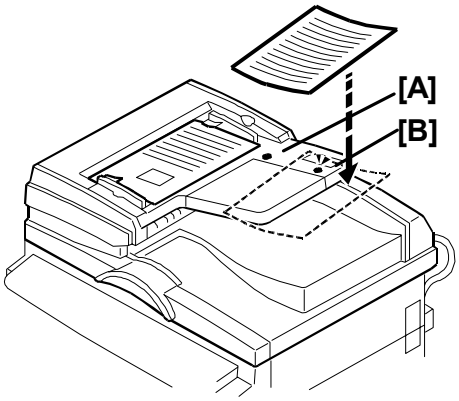
Reissued: 21-Dec-04

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 9-Oct-03	**No:** R-C229-**015a**

Symptom Corrected / Changes	Suffix
First mass production release.	E
LCD wording corrections. **Note:** This release applies to Italy models only.	F
LCD wording corrections. **Note:** This release applies to Italy models only.	G
(applies to Japan model only).	H
Modified to support EarlGrey-LT, the new optional PC controller.	J
Operational change: The drum idling roller [A] is presses against the drum metal screen [B] once 2,500 prints have been made with the same master in order to prevent ink buildups [C] between the screen and roller. The drum idles for 5 revolutions during this time. This modification is related to RTB #RC229013. **Note:** The machine clears the counter for drum revolutions (# printouts for one master) when: ● The above operation is completed, i.e. the idling roller motor turns off ● The main switch is turned off/on ● The master making key is pressed ● The machine recovers from Energy Saver mode  	K
(applies to Japan model only).	***L***

Reissued: 21-Dec-04

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 9-Oct-03	**No:** R-C229-**015a**

Symptom Corrected / Changes	Suffix
1. Image shifting due to incorrect ADF paper loading: ***Firmware modified so that if the ADF detects a defined paper size with the left (innermost) paper length sensor [A], or neither of the sensors, it will not switch over to an "undefined size" if something is placed on top of the right (outermost) length sensor [B].*** ***Example: The machine will not switch to "undefined size" if a sheet is placed on the right length sensor after it has detected an A4 LEF sheet.***  ***2. The drum does not stop if SC05-00 or SC07-21 occurs during printing.*** ***Note: SC05-00: Main Motor Lock, SC07-21: Paper Table Feed Start Sensor Error.***	***M***

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 22-Dec-04	**No:** R-C229-**026**
Subject: Flexible Cable at Scanner	**Prepared by:** K. Yamamoto, Priport Service Planning Section	

Classification:

☒ Troubleshooting	☐ Part information	☒ Action required
☐ Mechanical	☒ Electrical	☐ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☐ Other ( )		

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5800
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
GARNET:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180
SA2P (China only):	Ricoh JP8510P, Gestetner 5500P

Note: This RTB is only for the SAPPHIRE, GARNET, SA2 and SA2P.

SYMPTOM

The xenon lamp does not turn on, and in some cases, a short circuit occurs at the flexible cable [D].

Note:

- The same scanner is used on some MFP models, but this symptom only occurs on the Sapphire, Garnet, SA2 or SA2P (see S/N list on last page).
- This is a very rare symptom.

CAUSE

Wire [A] (left side of connector) and wire [B] (right side of connector) for the xenon lamp cable were led incorrectly at the factory, and they rub against the flexible cable.

Correct (Fig. 1): Wire [A] is led under wire [B], and they are not touching the flexible cable.

Incorrect (Fig. 2): Wire [B] is led under wire [A], and one of them is touching the flexible cable.

Fig. 1: Correct

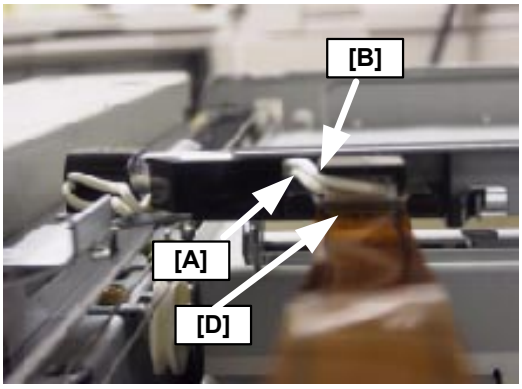
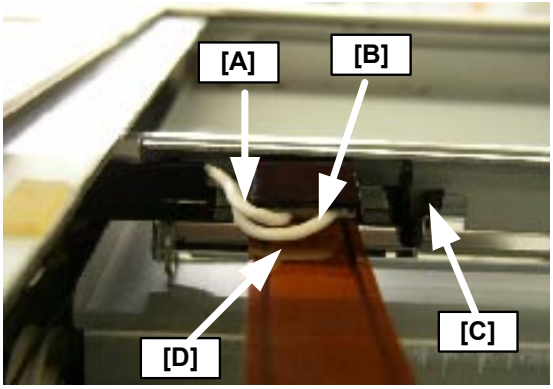


Fig. 2: Incorrect



Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 22-Dec-04	No: R-C229-026

SOLUTION

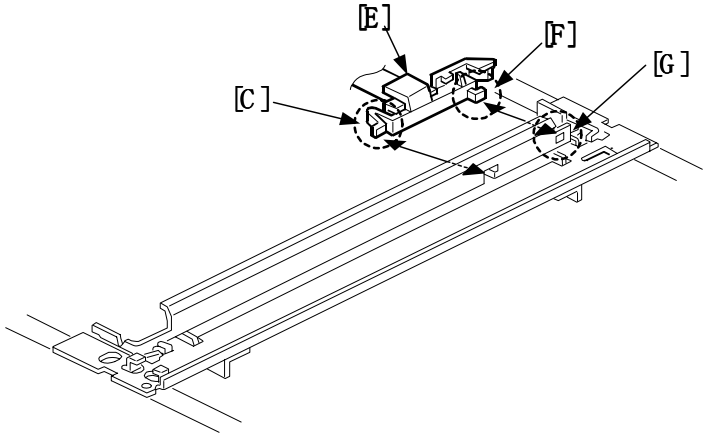
Production

More checks were added to the factory assembly procedure.

In the Field

For machines made before the S/N below, do this procedure at the next service visit:

1. Do SP5-1-2 (Move Scanner-Scan).
   Note: While you press "Start," the xenon lamp will move until you release "Start". Move the xenon lamp to the middle of the scanner.
2. Check the position of wire [A] and wire [B] for the flexible cable.
   - If the wires are like in "Fig. 1: Correct," stop this procedure. There is no problem.
   - If the wires are like "Fig. 2: Incorrect", go to step 3.
3. Turn off the main switch.
4. Remove the exposure glass.
5. Check the flexible cable [D].
   - If you see any damage to the outside of the flexible cable, replace it.
6. Push the pick [C] to the left to the remove the Harness Guide [E] for the flexible cable.
7. Put wire [A] and wire [B] in the same position as "Figure 1: Correct."
   - Make sure wire [**B**] is **over** wire [**A**].
   - Make sure wire [A] and wire [B] are not too loose.
8. Re-attach the Harness Guide [E].
   - Put the left part of the pick [F] into the square hole [G], and then re-attach the pick [C].



9. Make sure that wire [A] and wire [B] are not touching the flexible cable, and that the harness guide is secured firmly.
10. Re-attach the exposure glass.
11. Turn the machine power on.
    - Watch the xenon lamp when it moves to the home position. Make sure that wire [A] and wire [B] are not touching the flexible cable and do not rub against other places.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 22-Dec-04	No: R-C229-026

SERIAL NUMBERS FOR MACHINES FOR FIELD ACTION

Do the “Action in the Field” at the next service visit for the following machines:

Model Name	Destination	Code	Serial Number
Standard SD630	USA, Canada	C235-11	All machines
Ricoh JP8000	USA, Canada	C235-17	All machines
Ges 5490, Rex 1395, Nsa CP490	Europe, etc.	C235-22	All machines
Ricoh JP8000	Europe, etc.	C235-27	All machines
Ges 5490, Savin 3450DNP	USA, Canada	C235-51	All machines
Standard SD450	USA, Canada	C239-11	Up to F2330700034
Ges 5450+, Rex 1560+, Nsa CP450+	Europe, etc.	C239-22	Up to F2330500127
Ricoh JP5500	Europe, etc.	C239-27	Up to F2330700070
Ricoh JP5500, Ges 5455, Savin 3360DNP, Lanier LDD150	USA, Canada	C239-52	Up to F2330700109
Standard SD650	USA, Canada	C244-11	Up to F1830700007
Ges 5490+, Rex 1395+, Nsa CP490+	Europe, etc.	C244-22	Up to F1830600026
Ricoh JP8500	Europe, etc.	C244-27	Up to F1830700012
Ricoh JP8500, Ges 5499, Savin 3460DNP, Lanier LDD180	USA, Canada	C244-52	Up to F1830600117
Ricoh JP8510P, Ges 5500P	China	C255-33	*(N/A)*

Technical Bulletin

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 18-Feb-05	**No:** R-C229-**027**
Subject: Part of image is missing	**Prepared by:** K. Yamamoto, Priport Service Planning Section	

Classification:

☒ Troubleshooting	☐ Part information	☐ Action required
☐ Mechanical	☐ Electrical	☐ Service manual revision
☐ Paper path	☐ Transmit/receive	☐ Retrofit information
☐ Other ( )		

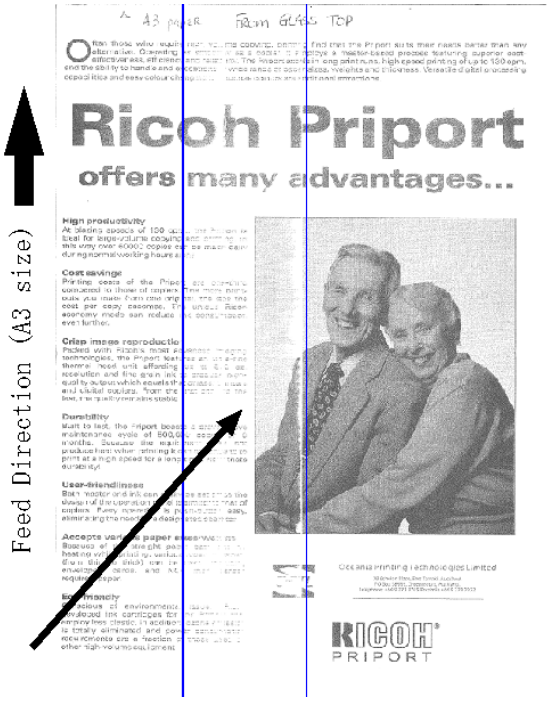
Model Name:

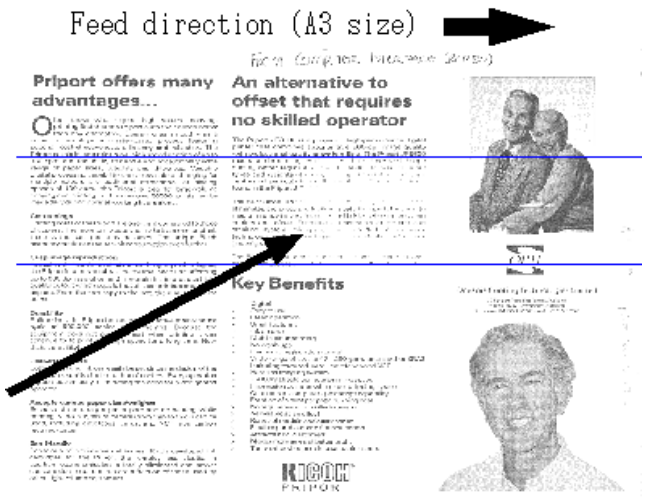
PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5800
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
GARNET:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180
SA2P (China only):	Ricoh JP8510P, Gestetner 5500P

NOTE: This RTB is for the SA2 and SA2P only.

Symptom

An area of the image (73mm wide) has low image density or white banding.





Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 18-Feb-05	No: R-C229-027

CAUSE

- Poor electrical contact between the master making unit and the mainframe, or
- Poor electrical contact between the thermal harness connectors and the thermal head.

SOLUTION

Action in the Field

Note: See the procedures on the following pages.

If the symptom is reported from the field, do **all** of the following for the **Potentially Affected Units** listed on the last page.

1) Clean the contact point between the plotter relay harness and plotter harness assembly.
   Note: Sometimes dust gets on the contact point between the master making unit and the mainframe.

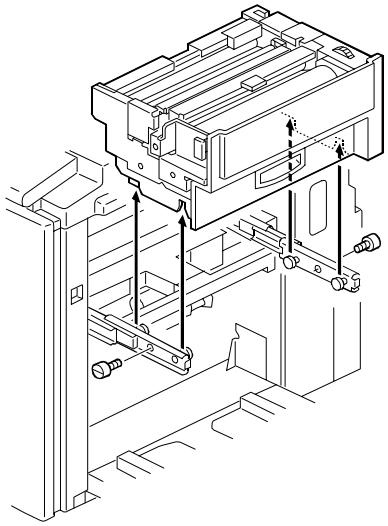
2) Increase the slack in the thermal head harnesses.
   Note: Sometimes the harnesses are pulled out of the connectors when the thermal head moves up. (The thermal head moves up to press the platen roller).

3) Install the connector spring mentioned in MB #MC235015 (**P/N C2442267**).
   Note: The pressure of this spring was increased to make sure the master making unit stays fixed in place.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 18-Feb-05	No: R-C229-027

PROCEDURES

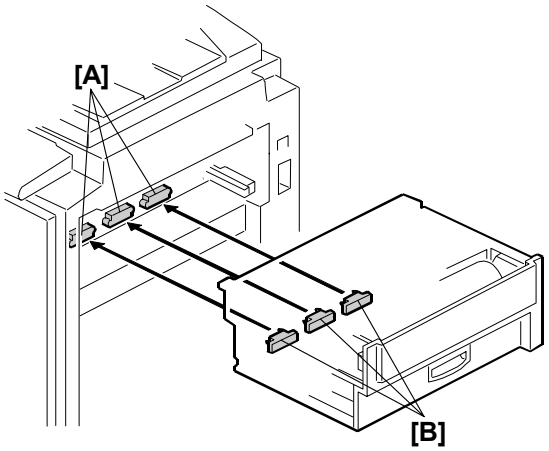
1) Clean the contact point between the plotter relay harness and plotter harness assembly.
   1. Turn off the main switch and disconnect the power plug.
   2. Remove the master roll.
   3. Remove the master making unit (x 2).

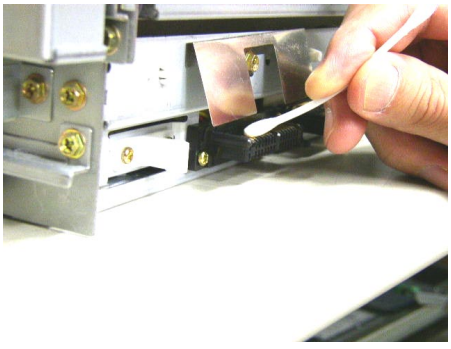


   4. Clean all of the pins for the plotter relay harness (P/N: C2395210) [A] and plotter harness assembly (P/N: C2445248) [B] using isopropyl alcohol.

Important:

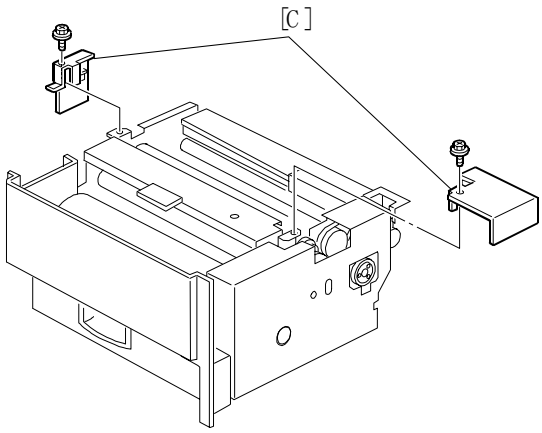
- Use swabs to clean the pins (recommended: P/N C2449003; Swabs 10pcs).
- Make sure to put enough alcohol on the swabs.
- Change the swab often.
- Make sure to clean off all of the dust on the pins.



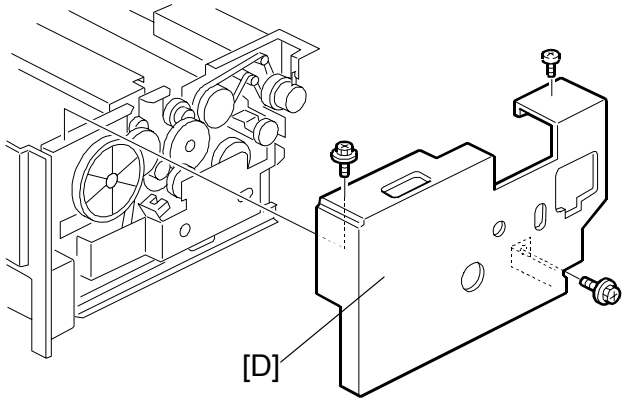


2) Increase the slack in the thermal head harnesses

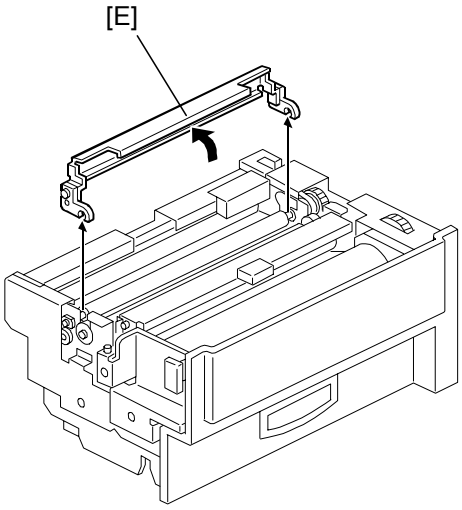
5. Remove the front bracket and rear bracket [C] (🔩 x 2).



6. Remove the rear cover [D] (🔩 x 3).

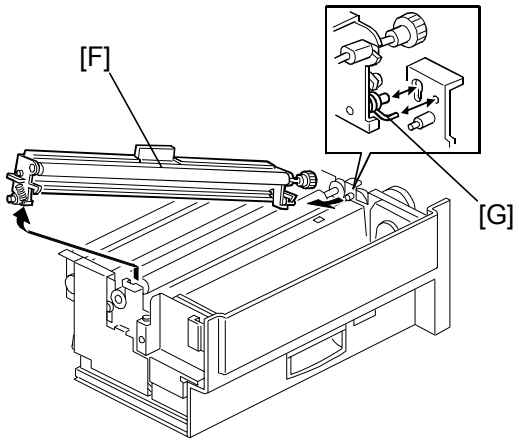


7. Remove the master stopper bracket [E].

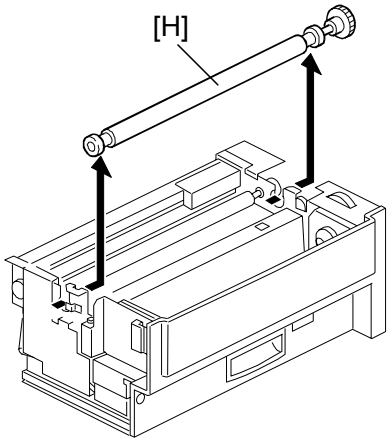


8. Remove the master set roller unit [F].

Important: When you reattach the unit at the end of this procedure, refer to this diagram to attach the non-operator side spring [G].

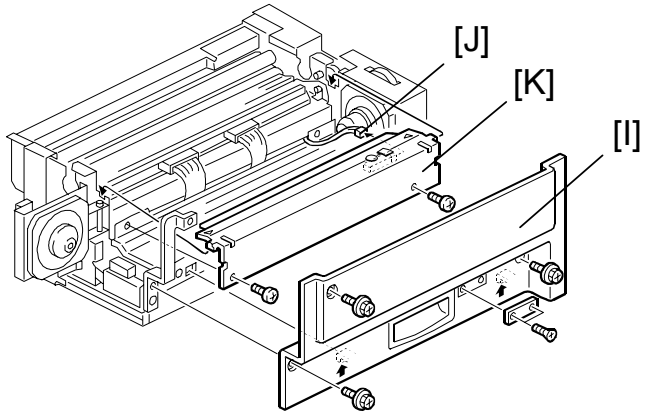


9. Slide the platen roller [H] to the non-operator side, and then remove it.

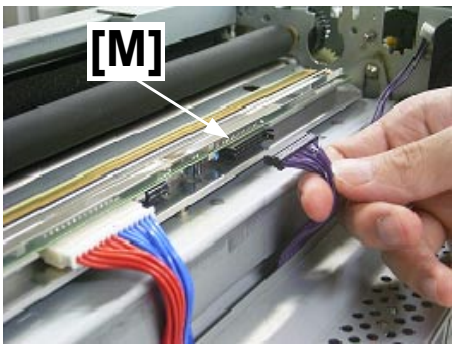


10. Remove the right cover [I] for the master-making unit (x 5).
11. Remove the thermal head cover [K] (disconnect the connector [J]) (x 2, x 1).

Note: This harness connects the thermal head cover and master set sensor.



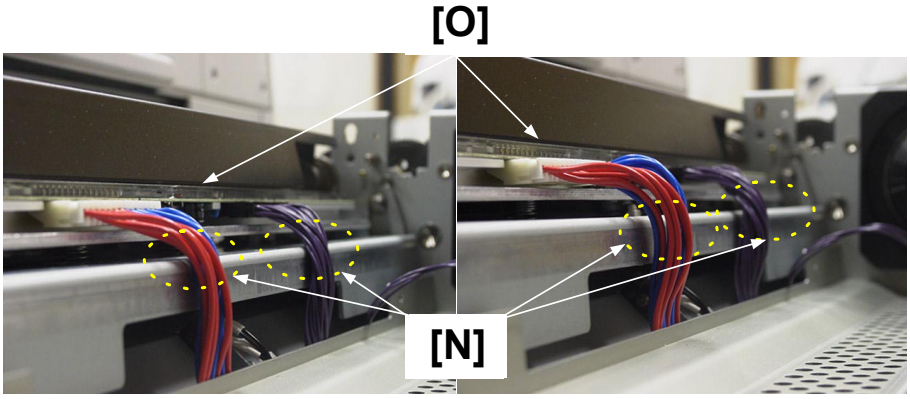
12. Disconnect the two harnesses ([L], [M]) from the thermal head.



13. Pull the two harnesses very carefully and increase the slack [N].

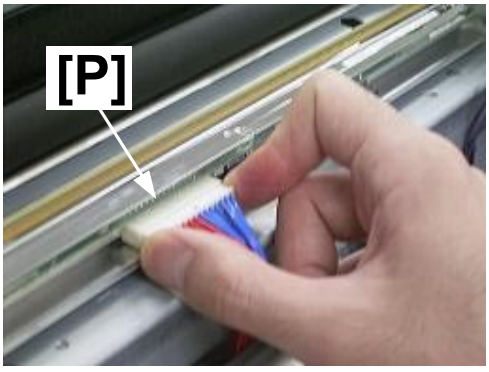
Important: See the photo on the right ("OK") for the target amount of slack.

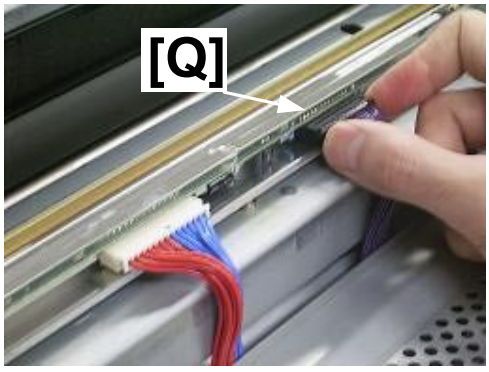
Note: This ensures that the harnesses are not pulled tightly when thermal head [O] moves up.



14. Reconnect the two harnesses ([P], [Q]).

Important: Make sure to insert the connectors firmly.



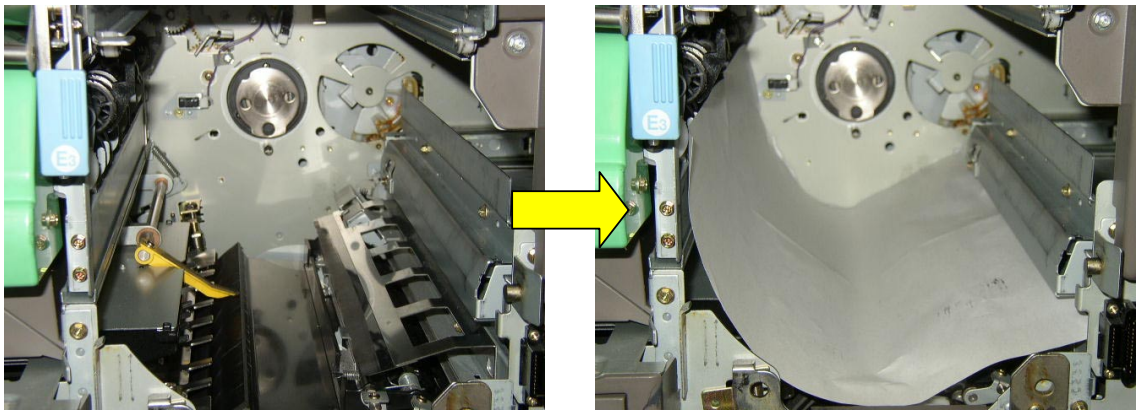


15. Reattach the parts that you removed in Steps 5 to 11.

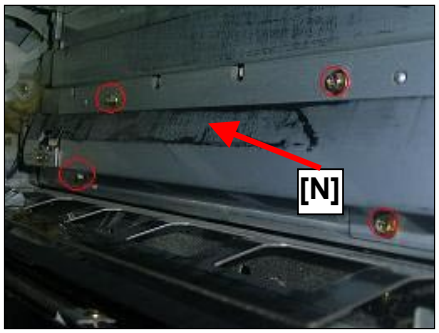
Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 18-Feb-05	No: R-C229-027

3) Install the connector spring

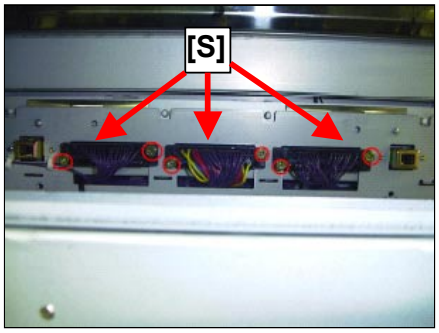
16. Remove the drum.
17. Put a sheet of paper over the lower part of the drum cavity (see the photo on the right).



18. Disconnect the connector for the 2nd drum master sensor, and then remove the sensor stay [N] and sensor **together** (x 4, x 1).



19. Remove the 3 connectors [S] (x 6, spring x 6).



20. Remove the springs from the 6 stepped screws.
21. Spray a plastic-safe oil on the screws.

Important:

- The recommended oil type is: P/N A2579100.
- Make sure to do Steps 19 and 20 before you spray the oil on the screws. If you spray the oil while the screws are inside the machine, this can cause poor electrical contact.

22. Install the new connector spring mentioned in MB #MC235015 (**P/N C2442267**).
23. Reattach the parts that you removed in Steps 16 to 22.
24. Reattach the master making unit (x 2).
25. Slide the master making unit out.
26. Push the master making unit in, and make sure the unit connectors connect with the mainframe connectors properly.
27. Print out a vertical TH Test Pattern from SP8-005-1 (“1. Vertical”).
28. Check the image quality.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 18-Feb-05	No: R-C229-027

Serial Numbers of Potentially Affected Units

Model Name	Destination	Code	Serial Number
Standard SD650	USA, Canada	C244-11	Up to F1830600010
Ges 5490+, Rex 1395+, Nsa CP490+	Europe, etc.	C244-22	Up to F1840600010
Ricoh JP8500	Europe, etc.	C244-27	Up to F1840600066
Ricoh JP8500, Ges 5499, Savin 3460DNP, Lanier LDD180	USA, Canada	C244-52	Up to F1840600097
Ricoh JP8510P, Ges 5500P	China	C255-33	Up to F4340500002

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	**Date:** 19-Apr-05	**No:** R-C229-**028**
Subject: ink leakage from drum by using TC-II	**Prepared by:** K. Yamamoto, Priport Service Planning Section	

Classification:
- ☒ Troubleshooting
- ☐ Part information
- ☐ Action required
- ☐ Mechanical
- ☐ Electrical
- ☐ Service manual revision
- ☐ Paper path
- ☐ Transmit/receive
- ☐ Retrofit information
- ☐ Other ( )

Model Name:

PEARL/PEARL-MC:	Ricoh JP5000, Gestetner 5450, RexRotary 1560, nashuatec CP450, Savin 3350DNP, Standard SD400
RUBY:	Ricoh JP5800
SAPPHIRE:	Ricoh JP8000, Gestetner 5490, RexRotary 1395, nashuatec CP490, Savin 3450DNP, Standard SD630
GARNET:	Ricoh JP5500, Gestetner 5450+/5455, RexRotary1560+, nashuatec CP450+, Savin 3360DNP, Standard SD450, Lanier LDD150
SA2:	Ricoh JP8500, Gestetner 5490+/5499, RexRotary1395+, nashuatec CP490+, Savin 3460DNP, Standard SD650, Lanier LDD180
SA2P (China only):	Ricoh JP8510P, Gestetner 5500P

This RTB is for the Garnet, SA2, and SA2P only.

SYMPTOM

Ink leaks from the drum flange with the TC-II option under the following conditions:

1) The user mainly prints images with a coverage of 3% or less of the master size, OR
2) The user keeps the drum in storage for a long time

CAUSE

The water in the ink evaporates, which increases the fluidity of the ink. This makes it easier for the ink to leak out of the drum.

1. When the user mainly prints images with a coverage of 3% or less of the master size:
   - The unused ink builds up on the metal screen. The ink is moved during drum-turning, which makes it easy for the water to evaporate.

     Note: The TC-II uses a press roller system, which has a higher printing pressure than a dual-cylinder system. This makes it easier for the water to evaporate.

2. When the customer keeps the drum in storage for a long time:
   - The water in the ink evaporates when the drum is not used for a long time. The water evaporates even faster when the drum is not put in the drum case.

Model: PRIPORT PEARL/PEARL-MC/RUBY/SAPPHIRE/GARNET/SA2/SA2P	Date: 19-Apr-05	No: R-C229-028

SOLUTION

Do the following procedures under these conditions:

- Every 30K, **if** the customer prints mainly images with a coverage of 3% or less of the master size.
- Whenever a new drum is installed after the customer keeps it in storage for a long time.

Procedure for Service Engineers:

1) Access SP 8-5-2.
2) Print out 10 sheets of Pattern #20.
   Conditions:
   - Letter Mode
   - Thick, A3 /DLT paper
   - Black ink only

   Important: Make sure the condition of the ink is normal.
3) Give the **10th copy** to the customer. They will use this as the original for their procedure below.

Procedure for Customers:

1) Print out 200 sheets with the original that the service representative gives you.
Conditions:
   - Printing speed #3
   - A3 /DLT paper (55kg)

Note: This will improve the condition of the ink inside the drum and solve the problem.

2) Repeat step 1 under the following conditions:

- Every 30K, if you print mainly images with a coverage of 3% or less of master size.
- Whenever a new drum is installed after you keep this drum in storage for a long time