



RICOH UNIVERSITY

Learning ♦ Knowledge ♦ Performance



B286/B289/B125/G180 Student Workbook

Student: _____

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B286/B289 Course Outline

- Day 1
- Introductions
 - Product Outline
 - Specifications
 - System Installation Lecture
 - Operation Unit, User Tools and System Settings (lecture) Machine Familiarization and System Operation Discussion.
 - Lab 1 Machine Familiarization and System Operation
 - Lab-2 Component Identification
- Day 2
- Review Guide 1
 - Service Program Modes Lecture
 - Lab-3 SP Mode
 - *Test 1, 10 questions and graded Key Op Practical*
 - Point-to-Point Lecture
 - Lab-4 Point-to-Point
 - Scanner, and Image Processing
 - Lab-5 Scanner, Image Processing
 - Drum Unit and Exposure Lecture
 - Development, Toner Supply and Toner Density Control Lecture
- Day 3
- Review Guide 2
 - *Test 2, 10 questions*
 - Development, Toner Supply, LPH and Drum Lecture
 - Lab-6 Development, Toner Supply, LPH and Drum
 - Lab-7 Around the Drum
 - Image Transfer and Paper Separation Lecture
 - Lab-8 Image Transfer and Paper Separation

Day 4 Review Guide 3
 Paper Feed Lecture
 Lab-9 Paper Feed
 Fusing Lecture
 Lab-10 Fusing
 Practice Troubleshooting (Optional)
 Upgrading Firmware Lecture
 TSC Web Site Discussion
 Maintenance
 Troubleshooting

- *Test 3, 20 questions*

Day 5 Install The Optional Interface Unit
 Controller Options
 Upgrading Firmware Lecture
 Program Download
 Embedded Controller Overview
 G180 Printer New Features Overview
 EM All Machines to Instructor Satisfaction
 Grade Administration
 Class Dismissal

Final Grade Calculation

Quiz 1	10 Questions	20 %
Quiz 2	10 Questions	20 %
Quiz 3	20 Questions	40 %
Key Op Practical		20 %
		— 100 %

A minimum grade of 75% is required to pass any TSC Technical Training Program.

Product Code Legend

Product Code	Company			
	Gestetner	Lanier	Ricoh	Savin
B286	GWD2004	LW324	MPW2400	2404WD
B289	GWD2006	LW336	MPW3600	2406WD
B125	A045	LW310	Aficio 240W	2400WD
G180	SP W240	LP124w	SP W2470	2404WDP

Option/Accessory	Product Code B125	Product Code G180	Product Code B286/B289
Roll Feeder Type 240A/B* 1	B641/B642	B852	B851/B852
Paper Cassette Type 240* 2	B643	B853	B853
Roll Holder	B394	B394	B394
Table Type 240	B662	NA	B854
Stamp Board	B321	NA	NA
Hard Disk Type 240	B663	NA	NA
Interface PCB Type 240	B690		NA
Printer/Scanner Controller (in Server PC)	B697		NA
Interface PCB Type 3600	NA	NA	D329
Rear Stacker	NA	D312	D311

*1 B641, B851 : 1 Roll, B642, B852: 2 Rolls *2 Installed inside the B641/B642, B851/B852

Lab 1 - Machine Familiarization

1.1 Introduction

This exercise will lead you through the basic operations of the B286/B289 and acquaint you with the capabilities and components of the system.

During this exercise you will be using the following Operating Instructions manuals:

- About This Machine (ATM).
- Copy/Document Server Reference (CDSR)
- Security Reference (SR)
- Troubleshooting (TS)
- General Settings Guide (GSG)

These documents will be referred to by the abbreviations indicated above.

1.2 Options: Stop, Look and Identify

Starting on ATM page 11, locate and review the following:

Component	[√]
Paper roll tray 1	<input type="checkbox"/>
Paper roll tray 2	<input type="checkbox"/>
Table	<input type="checkbox"/>
Cut paper tray	<input type="checkbox"/>
Folding finisher (Not an available option)	<input type="checkbox"/>
Rear stacker	<input type="checkbox"/>
Original hanger	<input type="checkbox"/>

1.3 Guide To Components

Begin by locating the Operating Instructions “About This Machine” (ATM). Using the ATM Guide, page 9 and locate the following:

Front

Component	[√]	Component	[√]
Original switching lever	<input type="checkbox"/>	Operation switch	<input type="checkbox"/>
Upper output stacker	<input type="checkbox"/>	Control panel	<input type="checkbox"/>
Original stacker	<input type="checkbox"/>	{Scanner Stop} key	<input type="checkbox"/>
Original cover	<input type="checkbox"/>	Original table	<input type="checkbox"/>
Ventilation holes	<input type="checkbox"/>	Main unit front cover	<input type="checkbox"/>

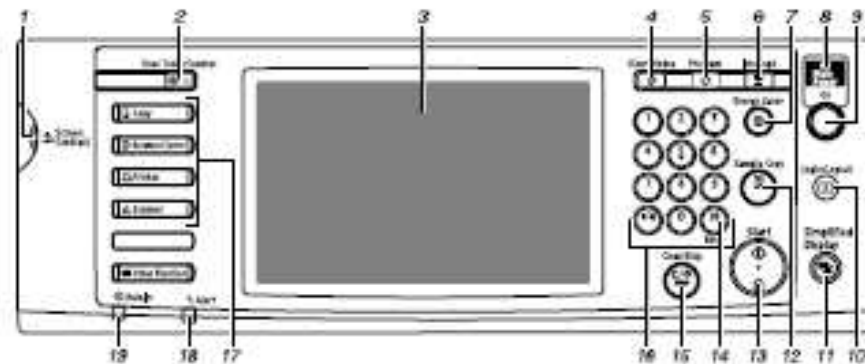
- | | | | |
|-------------------------|--------------------------|------------------------------|--------------------------|
| Main unit | <input type="checkbox"/> | Bypass tray's paper guide | <input type="checkbox"/> |
| Main unit opening lever | <input type="checkbox"/> | Lower output stacker | <input type="checkbox"/> |
| Main power switch | <input type="checkbox"/> | Lower output auxiliary guide | <input type="checkbox"/> |

Rear

- | | | | |
|--------------------------------------|--------------------------|----------------------------|--------------------------|
| Upper output guide | <input type="checkbox"/> | Original output guide | <input type="checkbox"/> |
| Original/Copy exit switching lever | <input type="checkbox"/> | Lower output exit | <input type="checkbox"/> |
| Original exit | <input type="checkbox"/> | Lower output guides | <input type="checkbox"/> |
| Anti-humidity heater switch (option) | <input type="checkbox"/> | Lower output tray (option) | <input type="checkbox"/> |
| Upper output exit | <input type="checkbox"/> | | |

1.4 Control Panel

The heart of the B286/B289 system is the Control Panel. It is similar in many respects to Touch Panel Displays used in various other models. Refer to ATM, pages 25 and 26. Examine the control panel, locate all items listed below.



- | | | | |
|---------------------------|--------------------------|--------------------------------------|--------------------------|
| 1. Screen contrast knob | <input type="checkbox"/> | 11. Simplified Display key | <input type="checkbox"/> |
| 2. User Tools/Counter key | <input type="checkbox"/> | 12. Sample Copy key | <input type="checkbox"/> |
| 3. Display panel | <input type="checkbox"/> | 13. Start} key | <input type="checkbox"/> |
| 4. Clear Modes key | <input type="checkbox"/> | 14. Enter key | <input type="checkbox"/> |
| 5. Program key | <input type="checkbox"/> | 15. Clear/Stop key | <input type="checkbox"/> |
| 6. Interrupt key | <input type="checkbox"/> | 16. Number keys | <input type="checkbox"/> |
| 7. Energy Saver key | <input type="checkbox"/> | 17. Function keys | <input type="checkbox"/> |
| 8. Main power indicator | <input type="checkbox"/> | 18. Alert indicator | <input type="checkbox"/> |
| 9. Operation switch | <input type="checkbox"/> | 19. Data In indicator (printer mode) | <input type="checkbox"/> |
| 10. Login/Logout key | <input type="checkbox"/> | | |

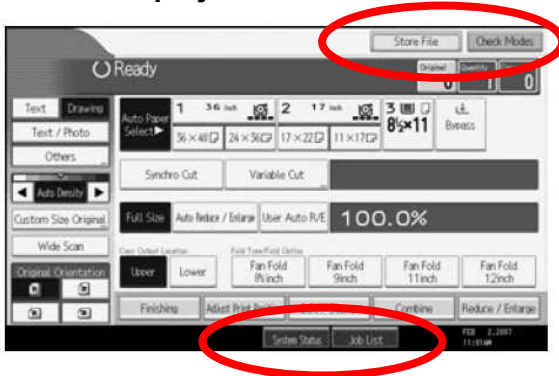
1.5 Display Panel

Referring to page 25 in the CDSR, read the material relating to the Display Panel and locate the following:

Control or Key

1. Original function, Image Density and Special Original mode.
2. Operational messages and status.
3. The number of originals, copies, and printed pages.
4. Sort mode.
5. Functions you can select. Press an item to bring up its function menu e.g. press [Reduce/Enlarge] to bring up the Reduce/Enlarge menu.
6. This indicator shows a currently selected function.

Normal Display



Simplified Display



1.6 Additional Display Panel Buttons

Four additional buttons are on the Display Panel. These are indicated, by ovals, in the image above. Press each and see what is available.

- Store Files
- Check Modes
- System Status
- Job List
- Synchro Cut

1.7 Simplified Display

When you press the Simplified Display key, the screen changes from the initial display to the simplified display. Letters and keys are displayed at a larger size, making operations easier. Press the Simplified Display key to change the display.

When the Simplified Display is selected set the following as defaults:

- Paper Select Tray 1
- Sort
- Quantity 9

What information is displayed when the Check Modes key in the upper right corner of the display panel is pressed?

1.8 User Tools

One of the unique features of this system is User Tools. With User Tools, the customer can adjust the system to meet their needs without having to call a Service Technician to do it, which means they have increased Flexibility and Productivity.

When entering User Tools, the Main Menu has three selections: System Settings, Copier / Document Server Features and Adjustment Settings for Operators. When the Print/Scanner Unit is installed, another choice (Printer/Scanner Settings) will be available. All of these functions are detailed the various pages of the General Settings Guide (GSG).

Copier / Document Server Features contains User Tools that deal only with the Copier and Document Server functions.

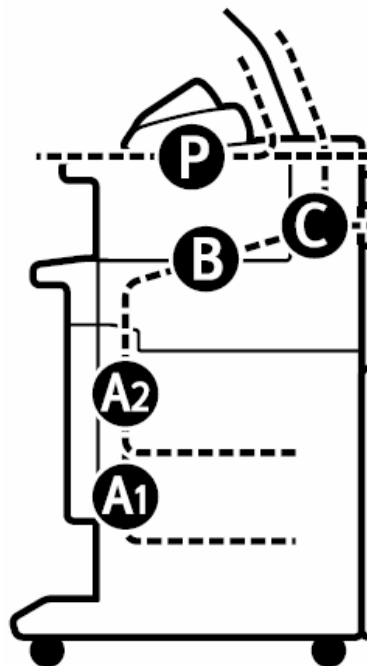
- Printer Settings will contain User Tools that only affect the Printing Function.
- Scanner Settings will contain User Tools that only affect the Scanning Function.
- System Settings contain user tools that can affect both the copying and printing functions. For example: since paper trays are used by both functions, they are found in the system settings.

• Adjustment Settings for Operators, allow skilled Users the opportunity to adjust specific Service Programs. The Service manual describes this as follows:

1.9 Misfeed Detection

Begin by locating the Operating Instructions “Troubleshooting” (TS). Using the TS Guide, page 67 - 73. Review the material on Clearing Misfeeds and locate all indicators and jam locations on your unit.

Remember, the Folder Unit is not an option available in our market.



1.10 Copying Operations

Operation Exercises

In an effort to provide the best overall support to a growing segment of our business the following exercises are designed to both instruct and challenge the student using the new B286/B289 Wide Format Copy System.

At this time locate the B286/B289 Copy/Document Server Reference (CDSR) manual.

Choosing the Original Type

The Original Type setting gives you control over the method used to make copies. Choose a type that best matches your original.

Make copies as required to demonstrate the function or procedure being reviewed. Use only the test chart supplied by your instructor. Do not attempt to copy anything smaller than 8 1/2" x 11".

Perform the procedures listed below, following the steps outlined in the Operating Instructions, page numbers are provided. As each procedure is completed, place a check [√] in the box provided.

Procedure	Manual	Page	[√]
1. Original Counter/Reset	CDSR	36	<input type="checkbox"/>
2. Job Preset	CDSR	38	<input type="checkbox"/>
3. Copying from the Paper Bypass	CDSR	43	<input type="checkbox"/>
4. Selecting Original Type Setting	CDSR	49	<input type="checkbox"/>
5. Rotate Copy	CDSR	55	<input type="checkbox"/>
6. Setting the Length of Copy Paper Cut	CDSR	56	<input type="checkbox"/>
7. Synchro Cut	CDSR	56	<input type="checkbox"/>
8. Preset Cut	CDSR	57	<input type="checkbox"/>
9. Variable Cut	CDSR	59	<input type="checkbox"/>
10. Preset Reduce / Enlarge	CDSR	60	<input type="checkbox"/>
11. Zoom	CDSR	61	<input type="checkbox"/>
12. Auto Reduce / Enlarge	CDSR	64	<input type="checkbox"/>
13. Directional Magnification	CDSR	69	<input type="checkbox"/>
14. Sort/Rotate Sort	CDSR	118	<input type="checkbox"/>

1.11 Advanced Copying Operations

In this section, perform each of the tasks using your Copy Document server Reference Guide (CDSR) for instruction.

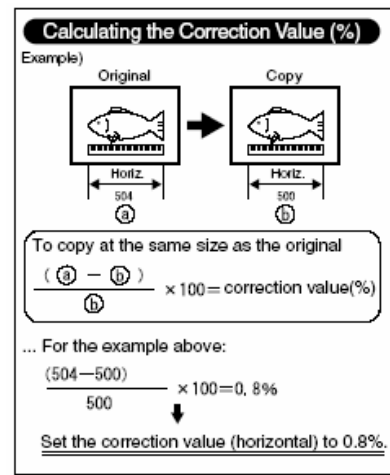
Fine Magnification (CDSR pg. 74)

For environment reasons such as humid conditions, paper may expand or shrink. This can result in a mismatch

between the size of the original and copy. This function uses the measurements of the original and the copy to calculate a ratio to produce copies that are close to the actual size.

Notes:

- Fine Magnification is used for originals that have already been scanned. If you want to apply fine magnification corrections to paper that has stretched due to the paper type or exposure to humid conditions.
- You can also make these settings in “Fine Ratio Adjustment: Copier” under System Settings. If you specified the ratio in both System Settings and this function menu, the resulting settings will be the sum of the set value.



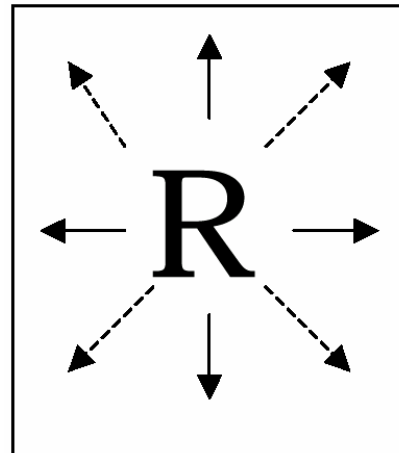
Adjust Print Position

The user can move (shift) the copy images UP, DOWN, LEFT, RIGHT to create a margin.

A user can shift the images between 0-200mm (0-7.8”) in 1mm (0.1”) steps. The default setting is 20mm (2.0”). The user can shift the image in a combination of

UP/DOWN and LEFT/RIGHT directions.

Using the test chart to create margins of at least 1.5 inches on all sides of the image.



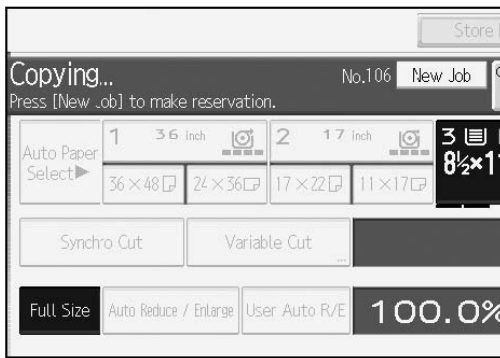
1.12 Job Preset

While a copy job is in progress, you can use this feature to set up and scan the next copy job in advance. Simply press the “New Job” key, select the feature settings, place the originals and press “Start.” When the current copy job is finished, your copy job will be started automatically.

The B286/B289 can have as eight jobs in the queue. The number of jobs that can be placed in the queue depends may also depend on the size of the job

Manual	Pages
CDSR	38

By selecting the “Job List,” CDSR page 38 it will show the jobs waiting to be printed:



1.13 Stamps

The B286/B289 gives the operator the ability to have a variety of Stamps placed on the document. These stamps can help keep track of drafts, keep documents in their proper order and maintain document security. Below are the types of stamps that can be used:

Manual	Pages
CDSR	87 - 104

Background Numbering – Can be used to keep track of confidential documents. When selected, the system will place numbers in the background of the document. A different number will be placed on each set made. When the sets are given out, each recipient will have a different numbered set. By keeping track of the number assigned to each person, any unauthorized copies can be traced back to the recipient.

Preset Stamp – One of the following eight messages can be stamped on copies with a frame around it: “COPY”, “URGENT”, “PRIORITY,” etc. The priority stamp is set in User Tools. When combined with the Magazine or Booklet function, only the first page is stamped.

User Stamp – Stores and prints a stamp input by the operator. Up to five User Stamps can be stored. Unlike previous models with this feature, the B286/B289 allows the operator to assign a name. The vertical and horizontal size of the stamp can be up to 2.4" x 1.2". The size is entered with the number keys when scanning the image to be stored. Before using this function, the operator must store an image with User Tools.

Date Stamp – Prints the current date on the document in one of four styles:

- MM/DD/YYYY
- MM.DD.YYYY
- DD/MM/YYYY
- DD.MM.YYYY

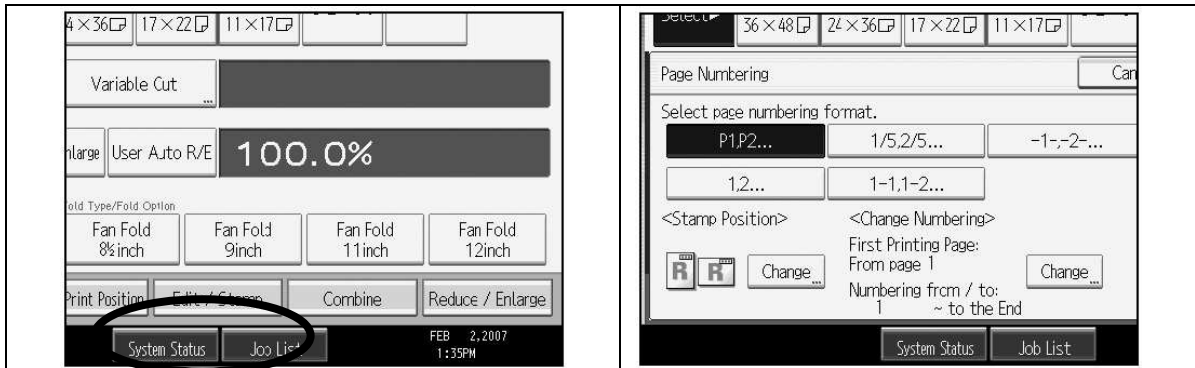
You can change the Date Stamp settings with the User Tools. The size, font and superimpose settings are linked with Page Numbering features. If you combine this feature with the magazine or Booklet feature, you cannot set the Page Numbering at a same time.

1.14 Page Numbering

Prints page numbers on the document in several numbering styles:

Manual	Pages
CDSR	99 - 104

When you set book or magazine function, you cannot set date stamp function at the same time. The size, fonts and superimpose settings are linked with Date Stamp features.

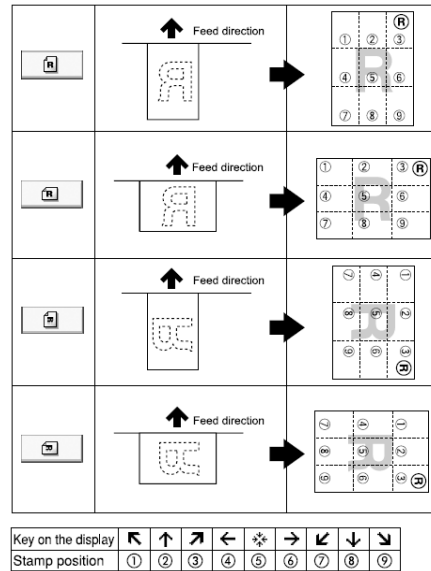


1.15 User Stamp

You can create a custom stamp from a scanned image or important text to be placed on copies.

Manual	Pages
CDSR	90 - 109

Note: Stamp position is controlled by arrows on the operation panel which may be incorrectly placing the image on the paper. Check this on your machine.

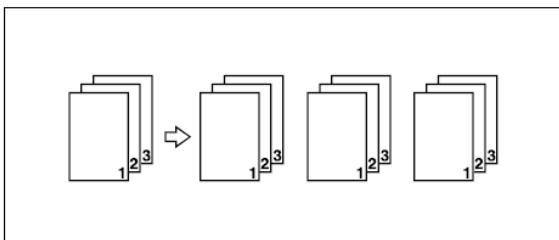


1.16 Sort/Rotate Sort 6

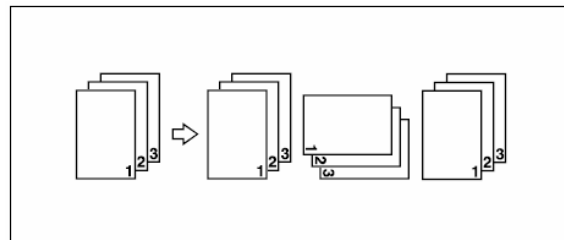
The B286/B289 can make copies and sort the sequential copies into sets. The sets can be stacked or sets can be alternately rotated.

Manual	Pages
CDSR	118

Sort



Sort/Rotate



Using the test chart make two sorted sets of 2 originals in both sort and rotate/sort mode.

1.17 Document Server

The Document Server enables you to save documents in the system's memory, then edit and print them as you want.

Manual	Pages
CDSR	131 - 125

There are three basic steps to using the Document Server:

1. Prepare the documents you want to save.
2. Save the documents. The documents are stored in the system memory.
3. Print the documents. You can print saved documents with any settings at any time.

Once documents or jobs are stored, a variety of options are available to the user. These include:

1. Each job can be assigned a name. Names can be up to 8 alphanumeric characters. The names can also be changed.
2. Jobs can be password protected with a five-digit number.
3. Printing jobs. Although the jobs are saved with features selected, the operator can change those features each time a job is printed.
4. Print only the first page of a document.
5. Two or more documents can be merged into one. It is important to note that if two jobs are merged, the individual jobs will no longer be available.
6. A file can be inserted into a job. In this mode, the file can be inserted into the document at any point in the document.
7. Documents can be deleted.
8. Documents can be moved or copied.

Important Points:

- The maximum number of files you can store is 250 in the HDD.
- Before scanning originals, ensure the date setting is correct.
- Retain the original documents after storing them.
- You can set the timer to delete the documents stored in the document server.
- Locked documents are not automatically deleted.

1.18 Document Server Benefits

On Demand Printing – Use to print any saved document as required. With the Document Server, you can print it out at any time with the necessary print settings.

Scanned File Printing – You can combine multiple scanned documents into one print set. You can combine several originals that are different in density, size and paper weight, e.g.

With the Document Server, you can save the originals individually by selecting the best settings for each original, and then edit them as a file. You can check the print result by printing a sample set before making a large print run by pressing the “Sample Copy” key. If you are not satisfied with the print result of some pages of the set, you have only to scan that part again.

1.19 Hands-on Practice

Go to the B286/B289 and perform the following:

Job # 1

Demonstrates: Stamping

Originals: see instructor for originals

Instructions: Make copies using different stamping features

In this exercise, use your knowledge of the system and the Operation Manuals as a reference.

- Make three sets with Background Numbering starting at 1.
- Make three more set with Background numbering. Use a different size and density. The numbering should start at 101.
- Make a copy with the “Draft” stamp and the date.
- Make a copy with the “Copy” stamp and the date in a different position.
- Register your business card as a User Stamp. Print a document with the User Stamp UserStamp.
- Create a 3-page document with numbered pages. Have the page numbers start at 201.
- Create a stamp with your name on it.

Job #2

Demonstrates: Document Server

Originals: see instructor for originals

Instructions: Store, Name and Print jobs using the Document Server

Storing and naming jobs:

- Press the “Document Server” key. The File List Menu appears.
- Press the “Scan Originals” key. A name will automatically be assigned (ex. Copy 0001)
- To enter your own file name, press the “File name” key.
- Enter the new file name with the alphanumeric pad on the display and press the “Ok” key.
- Enter User name
- Set the originals in the Document Feeder or on the Exposure Glass.
- Make any desired settings and press “Start.”

- When scanning is completed, the File List display appears.
- Store three additional files using the above procedure. Choose different settings for each file, two with duplex, two without. These will be needed to perform the following jobs. Be sure to give each file a name. For this exercise, they will be referred to as Files A, B, C and D.

Printing a stored document:

- Press the “Document Server” key. The File List Menu appears.
- Select Job A by touching it on the display. Press the “Print settings” key
- Enter the number of sets desired and press “Print.”

Job # 3

Demonstrates: Document Server Continued

Originals: see instructor for originals

Instructions: Print multiple jobs, Change Settings, and Delete pages

Preparation:

To View Saved Document Server Jobs

Instructions:

- Select “Document Server”.
- Select file to preview.
- Select “Preview”.
- Select “Zoom In”.
- Select “Exit”.

To Change the File Name, User Name or Password

Instructions:

- Press the “Document Server” key.
- Press the “Edit File” key.
- Press the, “Change User Name”, “Change File Name” or “Change Password” key.
- Press the “Delete All” key.
- Enter the new file name, user name or password.
- Press the “OK” key. Then press the “OK” key on the next window.

Printing and or Changing the Print Settings of Saved Documents

Instructions:

- Press the “Document Server” key.
- Select the document to be printed.
- If you need to change any of the print settings, press the “To Printing Screen” key.
- Make whatever job changes are available in this screen.
- Select “Save Print Settings”.
- Select “Yes”.

- Enter the required number of copies using the number keys.
- Press “Start”.

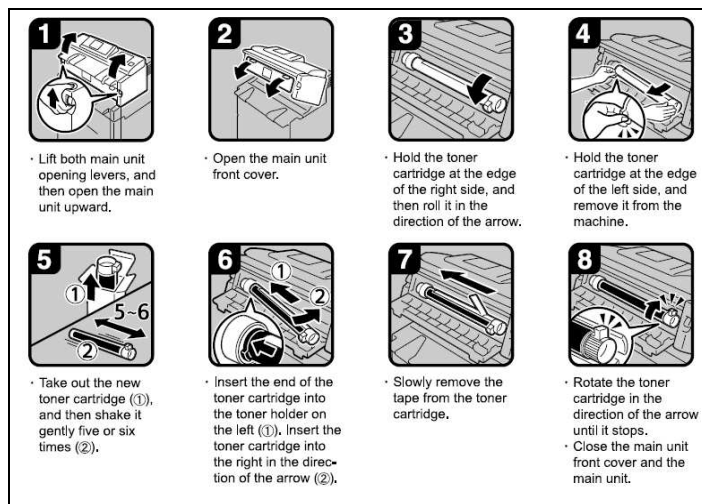
Deleting Saved Documents

Instructions:

- Press the “Document Server” key.
- Select the document to be deleted.
- Press the “Delete File” key.
- Press the “Yes” key to delete the document.

1.20 Changing the Toner Bottle

Adding toner can be one of the most feared jobs for a customer. If they have not spilled toner on themselves at some time in the past, they probably know someone who has. Therefore, it is very important that you explain the process of adding toner in a way that will not cause them to fear the process. Adding toner to this system is very easy. When the “Add Toner” indicator is displayed, it is time to change the Toner Bottle.



Important:

- When changing toner, do not turn off the operation switch or your settings will be cleared.
- Always add toner after the system instructs you to.
- Do not add used toner. This will damage the system.
- Do not touch the toner bottle during the toner adding.

Notes:

You can still make copies after the “Add Toner” indicator appears, but replace the toner early to prevent poor copy quality.

Lab 2 - Component Identification

2.1 Introduction

This exercise is designed to familiarize you with the location of various major components within the B286/B289 copier system. This is just the first of many component identification exercises.

2.2 Component Identification

Begin by removing covers as indicated in SM sections 3.1.1 thru 3.1.3. This should make it possible to see most of the components listed below. Then, using the B286/B289 Copier Electrical Component Layout (located in the pocket with the Point to Point diagram), locate each of the following components. When a component is located write its item number, from the Copier Electrical Component Layout, in the space provided

Do not remove assemblies or major components to locate a listed component. If the component is not readily visible, locate the general area of the machine and if difficulty persists ask your instructor for assistance.

Component	Item #	Component	Item #
IPU (Image Processing Unit)	_____	M7 PCB Cooling Fan Motor	_____
MCU (Main Control Unit)	_____	SW2 Exit Cover Switch	_____
Operation Panel	_____	SW3 Main Power Switch	_____
PSU (Power Supply Unit)	_____	SW5 Scanner Switch	_____
RFDB (Roll Feed Drive Board)	_____	SW1 Dehumidifier Switch	_____
SFDB (Sheet Feed Drive Board)	_____	Recycle Counter	_____
VDB (Video Drive Board)	_____	Dehumidifier 1 (Front/Right)	_____
Interface Board	_____	Dehumidifier 2 (Front/Left)	_____
M2 Cooling Fan Motor	_____	Dehumidifier 3 (Rear/Right)	_____
M3 Cutter Motor	_____	Dehumidifier 4 (Rear/Left)	_____
M6 Main Motor	_____		

Lab 3 - Service Programs

3.1 Introduction

This exercise will lead you through the B286/B289's Service Programs (Birth Certificate). You will print current machine settings and parameters and make some basic adjustments to various sections of the equipment.

3.2 Factory Data Sheet

All current equipment produced is supplied with a Factory Data Sheet. In this model the data sheet is located in a plastic pocket under the right or left side of the copy engine, between the bottom frame of the engine and the top of the roll feed unit. The side cover must be removed to access the data sheet. This document contains information regarding specific service programs which are factory set and which must be reset in the event the machine loses all memory or must be cleared to correct a serious logical problem. The information contained in the factory data sheet can only be gotten from the document originally supplied with the unit. It is very important that copies of the factory data sheet are kept with the machine and for the service record.

3.3 Service Programs

CAUTION: DO NOT CHANGE ANY SERVICE PROGRAM SETTINGS, OTHER THAN THOSE LISTED. CHANGING SERVICE PROGRAMS WHICH RELATE TO OTHER AREAS WILL MAKE IT DIFFICULT TO OPERATE ALL MACHINES IN THE SAME MANNER FOR CLASSROOM PURPOSES.

Locate the section 5 Service Tables in your service manual and review the information in section 5.1 Using the SP Mode. Then start by accessing the SP Mode Tables (section 5.7), then access and record the information related to the Service Programs listed below.

	As Adj.	Default	[√]
SP 1106 Fusing Temperature Display			<input type="checkbox"/>
> SP 1106-1, Hot Roller			<input type="checkbox"/>
> SP 1106-2, Press Roller: center	_____		<input type="checkbox"/>
> SP 1106-3, Press Roller: edge	_____		<input type="checkbox"/>
SP 2804 Corona Wire Clean Interval	_____	_____	<input type="checkbox"/>
SP 5811 Machine Number Setting	_____		<input type="checkbox"/>
SP 5849 Installation Date Display	_____		<input type="checkbox"/>
SP 5853 Stamp Function (review procedure)			<input type="checkbox"/>

	Latest	Total Counter	
SP 7001 Main Motor Oper.Time (hours)	_____	_____	<input type="checkbox"/>
SP 7401 Total SC Counter	_____	_____	<input type="checkbox"/>
SP 7403 SC History	_____	_____	<input type="checkbox"/>
• SP 7403-1	_____	_____	<input type="checkbox"/>
• SP 7403-2	_____	_____	<input type="checkbox"/>
• SP 7403-3	_____	_____	<input type="checkbox"/>
SP 7502 Total Paper Jam Count	_____	_____	<input type="checkbox"/>

	Count	
SP 8441-249 Total Sheet Count (All)	_____	<input checked="" type="checkbox"/>
SP 8442-249 Total Sheet Count (Copy)	_____	<input type="checkbox"/>
SP 8444-249 Total Sheet Count (Print)	_____	<input type="checkbox"/>
SP 8445-249 Total Sheet Count (Scanner)	_____	<input type="checkbox"/>
SP 8446-249 Total Sheet Count (Doc Serv)	_____	<input type="checkbox"/>

3.4 Service Program Data

Locate the procedure and print out the reports using the appropriate SP mode. Add the proper Service Code to the list below. **Use the small paper in the cassette unit.**

SMC Printout	SP Mode	Lot #	
ALL (Data List)	_____	_____	<input type="checkbox"/>
SP, (Mode Data List)	_____	_____	<input type="checkbox"/>
UP, User Programs	_____	_____	<input type="checkbox"/>
Logging Data	_____	_____	<input type="checkbox"/>
Developer Lot # 1	_____	_____	<input type="checkbox"/>
Developer Lot # 2	_____	_____	<input type="checkbox"/>

Review the material in the various SMC reports and compare the Service Programs report to the "Factory Data Sheet" located in a plastic pocket under the right side of the copy engine. See Appendix J for sample. The list represents the service program settings of the machine when manufactured. If a major failure occurs, it may be necessary to restore the original settings, represented by this list.

3.5 Test Patterns

You will print an IPU Test Pattern if you suspect problems with image processing (poor halftones, line widths, etc.). The IPU test pattern will check that the CIS and IPU operate correctly.

2902-1: IPU Scanning Test Pattern

Select this test pattern if you suspect there is a problem with scanning. Select one of 17 available test patterns (1-17).

2902-2: IPU Printing Test Pattern

Select this test pattern if you suspect there is a problem with image printing. Select one of 11 available test patterns (1-11). Refer to .3. Replacement and Adjustment. for more details about how to use these patterns to check these items:

- Registration line speed (Pattern #11)
- Magnification (Pattern #11)
- LPH replacement (Pattern #11)
- Pattern density (Pattern #10)

2902-3: Printing Test Pattern

Select this test pattern if you suspect there is a problem with image writing (copying an image). Select one of the 25 available test patterns (1-25).

Test Pattern Printing

The following procedure will provide information to access various test patterns and to enable test patterns printing.

1. Open the roll feeder drawer and cut off a sheet manually from a roll. (Turn the manual feed knob to feed the paper, then push the cutter from side to side to cut.) Close the roll feeder drawer.
2. Go into the Copy SP. mode.
3. Select SP2902-1, SP2902-2 or SP2902-3 and then select a test pattern (from those listed in section 5 of the service manual) then press OK.
4. Touch COPY Window. to go to the main screen.
5. On the operation panel, select one of the rolls for paper feed.
6. Put the blank sheet of paper on the original feed tray and feed it into the original feed unit. The pattern selected prints.
7. Touch SP Mode to return to the SP mode list. Then press 0: None and select OK before selecting a different set of patterns or exiting out of the SP mode.

3.6 Input Checks

Main Machine Input Check (SP5803)

1. See section 5.4 Input Check and access SP5803-1.
2. The display will now indicate SP5803-001 and the Input Check for the “1 RollTray will be displayed as a series of ones (1) and zeros (0).
3. The SP number (5803-1 to 5803-14) will access the group of switches, sensors or motors you wish to check. See sample below:
4. A bit number will indicate the individual switch or sensor you wish to check. See the example below:

Display	1	1	0	0	0	0	1	0
Bit	7	6	5	4	3	2	1	0

5. The bit readings (“0” or “1”) will be displayed. The tables in section 5.4 will detail the various settings and the state of the individual component.
6. Using the Input Check (SP5803), check the status of the following sensors or switches.

1 Roll Tray	Input	Status	
bit-7	Not used		
bit-6	Not used		
bit-5	Not used		
bit-4	Cassette Set Sensor	0: Close	1: Open
bit-3	Cutter HP switch – Left	0: At HP	1: Not at HP.
bit-2	Cutter HP switch – Right	0: At HP	1: Not at HP
bit-1	Not used		
bit-0	Upper Unit	0: Close	1: Open

7. Check the status of the various other sensor, switch or motor using the tables in section 5.4.

3.7 Output Checks

Output checks will active various components to prove their operation. The component can be seen or in some cases heard to operate. Refer to section 5.5 Output Check in the Service Manual. Using the Output Check (SP 5-804) check the following:

Component Name	Output #	[√]	Component Name	Output #	[√]
Roll Feed Motor 1 - Forward	11	<input type="checkbox"/>	Registration Clutch	34	<input type="checkbox"/>
Roll Feed Motor 1 - Reverse	12	<input type="checkbox"/>	Recycle Counter	67	<input type="checkbox"/>

Lab 4 - Point-To-Point Confirmation

4.1 Introduction

In this exercise you will trace the distribution of power throughout the machine to confirm the operation of certain components to understand the theory of operation of the machine.

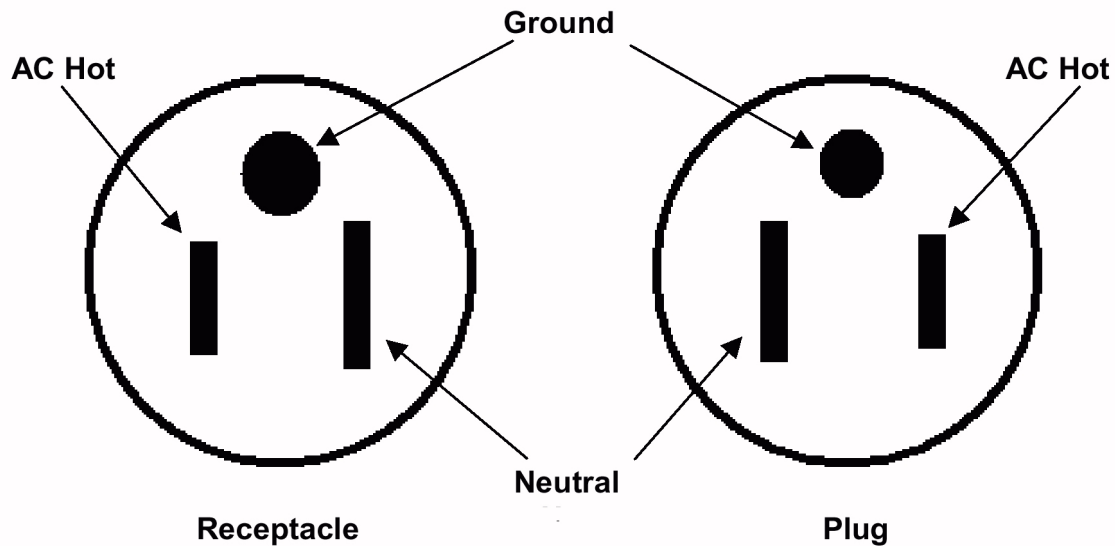
4.2 Safety First

CAUTION: All voltage checks will be done using information from your Point-To-Point diagram. No voltage checks will be performed using a meter.

Ensure that each lab partner is clear of moving parts before operating the copier during any visual checks.

4.3 AC Power Supply (120 Volts)

1. In the spaces provided indicate the AC value that will be found at each point on the NEMA 5-15R wall outlet (receptacle) and NEMA 5-15P (plug).



AC Hot to AC Neutral	_____	VAC
AC Neutral to Ground	_____	VAC
AC Hot to Ground	_____	VAC

- From the wall outlet, the AC Power passes directly into the PSU at T001 and T002 (A5). What is the voltage measured across these two points.

T001 and T002 (B1) _____

- Next, power is routed through the Main Power Switch via CN100. Measure the voltages at CN100 (B1) use frame ground as reference. At this point AC power is supplied to the PSU, and the various DC levels are distributed throughout the unit.

	Machine Off	Machine On
CN100-1	_____	_____
CN100-2	_____	_____
CN100-3	_____	_____
CN100-4	_____	_____

4.4 DC Power Distribution and Safety Circuits

Power (DC) is distributed to each board in the system from the PSU. The various motors, clutches, solenoids, sensors, and circuit boards are all powered by the PSU. These voltages are also involved in the safety circuitry, as you will see when you follow the 24V (1) INT and 24V (2) INT (C3) through the various examples. When the Upper Unit Switches SW7 and SW8 are opened, power is cut to the various electro-mechanical sections of the machine. When the operation switch is pressed the unit goes into energy saver mode.

- The MCU Board (PCB2) will be supplied with the following voltages at CN202 and CN202 (B/C4); 5V, 5VE, -12V, +12V, 24V, 24V (1) INT and 24V (2) INT. Confirm these voltages at the following points.

	Main Switch On	SW8/2 Open	SW6/7 Open	Oper. Sw. Off
CN202-2	_____	_____	_____	_____
CN202-1	_____	_____	_____	_____
CN202-3	_____	_____	_____	_____
CN202-7	_____	_____	_____	_____
CN202-5	_____	_____	_____	_____
CN201-5	_____	_____	_____	_____
CN201-1	_____	_____	_____	_____
CN201-3	_____	_____	_____	_____

- Power is distributed to the VDB board (PCB9) and the LED Print Heads (LPH1/2/3). At CN400 (D1), 5V is supplied to the VDB Board. Confirm the voltages at the following points.

	Main Switch On	SW8/2 Open	SW6/7 Open	Oper. Sw. Off
CN400-2	_____	_____	_____	_____
CN400-1	_____	_____	_____	_____

3. The SIB Board (PCB7) will be supplied with 5V at CN450 (D6),. Confirm these voltages at the following points.

	Main Switch On	SW8/2 Open	SW6/7 Open	Oper. Sw. Off
CN450-2	_____	_____	_____	_____
CN450-3	_____	_____	_____	_____

4. The drum motor, fusing motor, and main motor and the pick off solenoid, all receive power directly from the MCU board. The 24V (1/2) INT is supplied to power these motors. Confirm these voltages at the following points. **Note the 24V (1/2) INT from the upper unit switch is supplied directly to these items.**

		Main Switch On	SW7/8 Open	Oper. Sw. Off
CN208 B11 (C6)	Drum	_____	_____	_____
CN208-A15 (C6)	Fusing	_____	_____	_____
CN210-11 (C6)	Main	_____	_____	_____
CN208 A2 (C6)	Pick Off	_____	_____	_____

4.5 AC Component Control

The fusing lamps and anti-condensation heaters are the only AC components on the B286/B289, Image exposure is by CIS (Contact Image Sensor) and is powered by a DC voltage. The fusing lamps are powered directly from the PSU at CN101 (A2). The fusing lamp will turn on when relay RY001 is activated. The fusing lamp control signals, are supplied by the MCU Board. The fusing lamps turn on when the power relay trigger (CN203-5) and the fusing lamp trigger (CN203-7) are both active.. This will activate the coil in relay RY001 closing the relay contacts and supplying power to the lamp.

1. On the PSU board and the MCU board, check the voltages across the following points with the fusing lamps off and on.

		Lamp Off	Lamp On
CN101-1 to CN101-2 (A2)		_____	_____

2. On the MCU board, record the voltages at the following points with lamp off and on.

		Lamp Off	Lamp On
CN203-1 (C4)	24V (1) INT	_____	_____
CN203-5 (C4)	Power Relay Trigger	_____	_____
CN203-7 (C4)	Fusing Trigger	_____	_____

4.6 DC Component Control

Many of the DC components are controlled by the action of the safety switches, specific triggers and basic machine operation. Using the Point-To-Point analyze the circuits described below and fill in the correct voltages.

Connector	Signal	Ready	Copying
CN502-A12 (B8)	Roll Feed Clutch 1	_____	_____
CN456-5 (D7)	Original Set Sensor	_____	_____
CN203-4 (C4)	Fan Trigger	_____	_____

4.7 PSU Fuses

There are seven fuses located in the PSU. Locate each fuse in the machine and record fuse rating, then measure and record the voltage from each. Use frame ground as reference. Refer to the 4.5 Fuses Table located in the Troubleshooting section of your service manual.

Then removing each fuse, one by one, and record the condition of the machine with the individual fuse removed. Replace the fuse and proceed to the next.

Fuse	Rating	Voltage	P2P	Blown Fuse Condition
F001				No power to fusing lamp
F002				No power to dehumidifiers
F101				No power to dc lines
F301				No power to dc 24 V lines
F302				No power to dc 24 V lines
F303				No power to dc 24 V lines
CP101 *				No power to copier

* CP101 is a circuit breaker and may be reset if tripped. If resetting the circuit breaker does not restore operation the breaker may be faulty or a more serious power problem exists.

4.8 Board LEDS

The various circuit boards contain LEDs that indicate the status of the various power levels supplied to these boards. Review the information found in section 4.7 Board LEDS in your service manual. Locate as many of these LEDs as possible and confirm the status indicated on the various tables in sections 4.7.1 and 4.7.2

Board	Notes	[√]
PSU		<input type="checkbox"/>
MCU		<input type="checkbox"/>
IPU		<input type="checkbox"/>
VDB		<input type="checkbox"/>
SIB		<input type="checkbox"/>
GW Controller		<input type="checkbox"/>

Lab 5 - Scanner

5.1 Introduction

The B286/B289 wide format copier uses a CIS (Contact Image Sensor) to illuminate and scan the original image and an LPH (LED Print Head) to create the latent image on the OPC drum. The CIS unit is made up of five individual LED sensor arrays connected at four joints. Light from LEDs on the CIS unit, illuminate the original and reflect the image into lenses. The lenses direct the image to the individual CIS elements, which are part of the CIS unit. Each element of the CIS produces an analog output proportional to the light it receives from the original. The CIS unit receives its control from the SIB (Scanner Interface Board). Under control of the SIB and the MCU (Main Control Unit) the CIS passes image data on to the IPU (Image Processing Unit) where the image is stored and manipulated to conform to the copy mode (Text, Photo, etc.) selected. The type of manipulation necessary to create the selected output is determined by the mode selected by the operator (see SM 6.3.2 Original Modes).

During this lab, we will review components and adjustments related to image scanning, and image processing.

5.2 Component Identification

Locate the Electrical Component Description in the SM. See SM pocket for Electrical Component Layout. Some mechanical components are best identified using the scanner sections (3.2 and 6.2) of the Service Manual.

Locate the following components, remove items as necessary during this procedure.

Component	[√]	Component	[√]
Scanner Motor	<input type="checkbox"/>	Scanner Switch (Safety Switch)	<input type="checkbox"/>
Original Exit Sensor	<input type="checkbox"/>	Original Feed Rollers	<input type="checkbox"/>
Original Width Sensor	<input type="checkbox"/>	Upper Output Stacker	<input type="checkbox"/>
Exposure Glass	<input type="checkbox"/>	Original Exit Roller	<input type="checkbox"/>
Original Set Sensor	<input type="checkbox"/>	Contact Image Sensor	<input type="checkbox"/>
Original Registration Sensor	<input type="checkbox"/>	Platen (White) Plate	<input type="checkbox"/>
SIB (Scanner Interface Board)	<input type="checkbox"/>	Original Switching Levers (see ATM)	<input type="checkbox"/>

5.3 Replacement and Adjustment

CIS Adjustment and Removal

1. Carefully review the information in section 3.11.2 of the service manual.
2. Using this information turn on the CIS adjustment pattern and print one sample.
3. Using SP 4973 and the information on service manual page 3-78 turn on the CIS adjustment pattern and print one sample.

4. Review SP 4973 information in the SP Mode Tables, page 5-94.
5. Using SP 4972-1 (Main Scan Offset) and SP 4972-11 (Sub Scan Offset) page 3-79 print one sample from each SP mode.
6. Record the factory adjustment value of the SP Mode 4972-1 in the following table. Then change the setting to the high margin value and print a sample of the change for comparison (label the sample). Repeat the procedure for the low margin value. Reset the margin value to the factory adjustment value.
7. Repeat step 5, for the SP Mode 4972-11 margin values.

SP Mode	Default	Factory Adj.	High Margin	Low Margin
SP 4972-001	0	_____	+127	-127
SP 4972-011	0	_____	+127	-127

8. Using the information found in SM section 3.2.4 (REVIEW ONLY) the CIS unit removal procedure.
9. When you feel confident that you have become familiar with all of the components, replace the covers and test your unit for copy quality.

Scanner Adjustments

Access the SP Adjustments (SM section 3.11) listed below and record the value found as adjusted and make one copy. Next change the adjustment value to the maximum and minimum values. Record the values and make sample copies of each (use SP2902-2 pattern 11). Also record the default value, found in the Service Tables.

SP Mode	Description	As Adj.	Min.	Max.	Default
Magnification Correction For Paper Type					
SP 2916-1	Fine Mag. Horiz. (Plain Paper)	_____	_____	_____	_____
SP 2916-2	Fine Mag. Vert. (Plain Paper)	_____	_____	_____	_____
SP 4008	Scanner Sub-Scan Mag.	_____	_____	_____	_____
SP 4101	Scanner Main-Scan Mag	_____	_____	_____	_____

Scanner Free Run

Using SP4013, perform a Scanner and Printer Free Run

SP Mode	Description
SP 4013-1	Scanner Free Run - Start
SP 4013-2	Scanner Free Run - Page Interval Setting
SP 4013-3	Scanner Free Run – Original Length Setting
SP 5802	Printer Free Run

5.5 Input Checks

Main Machine Input Check (SP5803)

1. Using the Input Check (SP5-803), check the status of the following sensors or switches.

9 Door Open/Motor Lock	Input	Status		[√]
bit-1	Upper Unit SW 1 (left)			<input type="checkbox"/>
bit-0	Upper Unit SW 2 (right)			<input type="checkbox"/>

12 Original Size Sensor	Input	Status		[√]
bit-6	Original Width Sensor A1 (22")			<input type="checkbox"/>
bit-5	Original Width Sensor B2 (18")			<input type="checkbox"/>
bit-4	Original Width Sensor A2 (17")			<input type="checkbox"/>
bit-3	Original Width Sensor B3 (12")			<input type="checkbox"/>

14 Original Feed Unit	Input	Status		[√]
bit-5	Original Registration Sensor			<input type="checkbox"/>
bit-1	Scanner Switch			<input type="checkbox"/>
bit-3	Original Exit Sensor			<input type="checkbox"/>

2. Place a check in the box provided when the status of the sensor, switch or motor has been confirmed.

5.6 Output Checks

Output checks will activate various components to prove their operation. The component can be seen or in some cases heard to operate. Refer to section 5.6 Output Check in the Service Manual. Using the Output Check (SP 5804) check the following:

Component Name	Output No.	[√]
Original Feed Motor	1	<input type="checkbox"/>
CIS LED	4	<input type="checkbox"/>

Lab 6 – Development, Toner Supply, LPH and Drum

6.1 Introductions

During this section, we will investigate the Development Unit, Toner Density Detection, Toner Supply LPH, Charge Corona and Drum. Use the Service Manual and Point To Point diagram as reference to complete this exercise.

6.2 Development Removal

In order to perform the Component ID it will be necessary to remove the following components, referred to in Service Manual section 3.4.

SM Section	Component	[√]
3.4.1	Development Unit	<input type="checkbox"/>
3.4.3	Paper Set Sensor, Registration Sensor	<input type="checkbox"/>

6.3 Component ID

Locate the Electrical Component Description in the SM. See SM pocket for Electrical Component Layout. Some mechanical components are best identified using sections 3.4, or 6.6 of the Service Manual. Locate the following components and remove items as necessary during this procedure.

Component	[√]	Component	[√]
Development Filter	<input type="checkbox"/>	Toner Cartridge	<input type="checkbox"/>
Development Entrance Seal	<input type="checkbox"/>	Main Motor	<input type="checkbox"/>
Development Roller	<input type="checkbox"/>	Development Bias Connector	<input type="checkbox"/>

6.4 Drum Removal

In order to perform the Component ID it will be necessary to remove the following components, referred to in Service Manual section 3.4.and 3.5.

SM Section	Component	[√]
3.5	Drum Unit, Cleaning Blade, and ID Sensor	<input type="checkbox"/>

6.5 Drum Component ID

Locate the Electrical Component Description in the SM. See SM pocket for Electrical Component Layout. Some mechanical components are best identified using section 3.3, 3.5 or 6.4 of the Service Manual.

Component	[√]	Component	[√]
Drum Unit	<input type="checkbox"/>	Image Density Sensor	<input type="checkbox"/>

Quenching Lamp	<input type="checkbox"/>	CBG Power Pack	<input type="checkbox"/>
Cleaning Blade	<input type="checkbox"/>	Pick Off Pawls	<input type="checkbox"/>
Drum Balancers (rubber plates within drum)	See Appendix G		<input type="checkbox"/>

6.6 Charge Corona Removal

In order to perform the Charge Corona removal and Component ID, refer to Service Manual section 3.3.

IMPORTANT NOTE: To prevent drum damage follow all instructions exactly as indicated

SM Section	Component	[√]
3.3.1	Charge Corona Wire, Grid Wire, Wire Cleaner	<input type="checkbox"/>

6.7 LPH and Charge Component ID

Locate the Electrical Component Description in the SM. See SM pocket for Electrical Component Layout. Some items can be identified using, section 3.3 or 6.4 of the Service Manual. Locate the following and examine each to become familiar with the individual part and sub-assembly.

Component	[√]	Component	[√]
LPH (LED Print Head)	<input type="checkbox"/>	Drum Unit	<input type="checkbox"/>
Charge Corona Unit	<input type="checkbox"/>	Quenching Lamp (LED Array)	<input type="checkbox"/>
Charge Corona Grid Wires	<input type="checkbox"/>	Charge Power Pack	<input type="checkbox"/>

6.8 Charge Corona Re-assembly

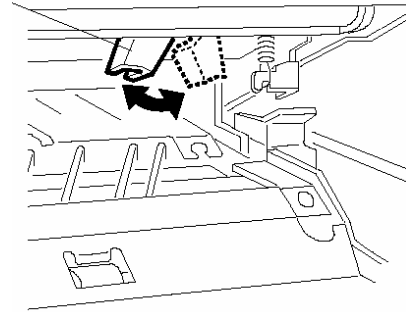
When all components have been identified reassemble your unit. Had you actually replaced a damaged LPH unit, it would have had a label on top. The label contains the basic adjustment values for the LPH joint adjustment and the LED duty values. When a unit is replaced this information must be updated in the SP modes indicated below.

Access the SP modes indicated below and record the values found in the table below.

SP Mode.	Function	Label Data	[√]
2952 001 to 007	LPH Joint Adjustment	_____	<input type="checkbox"/>
2943 001 to 006	LED Duty Adjustment	_____	<input type="checkbox"/>
2952 001 to 007	LPH Joint Adjustment	_____	<input type="checkbox"/>
2943 001 to 006	LED Duty Adjustment	_____	<input type="checkbox"/>

6.9 Drum Unit Reassembly

CAUTION. As you reassemble your unit be sure to have the cleaning blade away from the drum (lever to the left.) Move the lever to the right when the unit is reassembled.



6.10 Development Unit Reassembly

When all components have been identified reassemble and test your unit. Be very careful when replacing the development unit so that you do not damage the drum.

Be very careful when replacing these items so that you do not damage the drum.

6.11 Development Related SP Modes

The following SP Modes are directly related to the development section and should be reviewed during this exercise:

SP Mode.	Function	Setting	[√]
2201-002	Development bias adj.: ID sensor pattern (Low Duty Mode)	_____	<input type="checkbox"/>
2201-003	Development bias adj.: ID sensor pattern (High Duty Mode)	_____	<input type="checkbox"/>
2201-004	Copy Jobs, Selects Low Duty Mode or High Duty Mode	_____	<input type="checkbox"/>
2208-001	Gain: Toner Supply Capacity	_____	<input type="checkbox"/>
2208-003	Toner Supply Mode: Detect or Fixed	_____	<input type="checkbox"/>

6.12 Sensors

The copier contains an ID sensor that can be monitored while copies are made using SP modes. Monitor the following sensor using the appropriate SP Mode. To observe a change at the ID sensor, run 2 copies.

SP Mode		V _{SP}	V _{SG}
3103	ID Sensor Output Display (V _{sp} /V _{sg})	_____	_____

SP Mode Caution: Review Only, do not perform

Using SM section 1.1.5 record all SP mode information related to Main Machine Installation

2801-1	Developer Initial Setting
2923-1	Execute Cleaning Blade Replace Mode
3001	ID Sensor Initial Setting - Initialization

6.13 Input Checks

Main Machine Input Check (SP5803)

1. Using the Input Check (SP5-803), check the status of the following sensors or switches.

10 Other	Input	Status		[√]
bit-4	Toner Overflow Sensor			<input type="checkbox"/>
				<input type="checkbox"/>

2. Place a check in the box provided when the status of the sensor, switch or motor has been confirmed.

6.14 Output Checks

Using the Output Check (SP 5-804) check the following:

Component Name	Output No.	[√]	Component Name	Output No.	[√]
Main Motor	32	<input type="checkbox"/>	Toner Supply Clutch	52	<input type="checkbox"/>
Roll Feed Motor 1: Forward	11	<input type="checkbox"/>	Used Toner Motor	36	<input type="checkbox"/>

Lab 7 – Around The Drum

7.1 Introduction

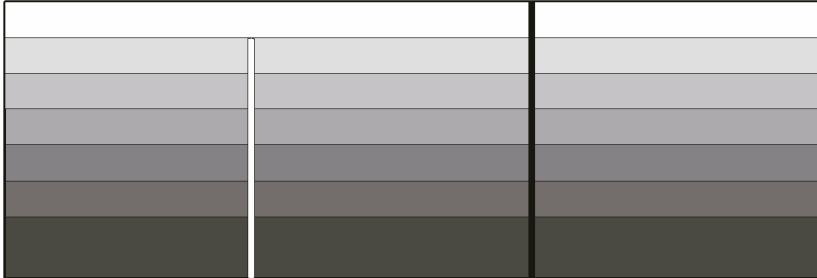
This Lab will help familiarize you with the *unique areas and adjustments* around the Drum of the B286/B289.

7.2 Service Programs

Locate, review and perform the following service programs, see section 3.11.3 and section 5. Record all adjustment information in the table below. Remember label data is only available on new replacement units.

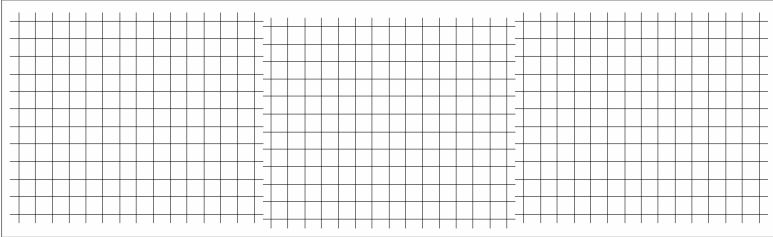
SP Mode	Description	Label Data	As Adj.	Min.	Max.
SP 2952	LPH Joint Adjustment				
SP 2952-001	• LPH 1-2 Main Scan	_____	_____	_____	_____
SP 2952-002	• LPH 2-3 Main Scan	_____	_____	_____	_____
SP 2952-011	• LPH 1-2 Sub Scan	_____	_____	_____	_____
SP 2952-012	• LPH 2-3 Sub Scan	_____	_____	_____	_____

1. Access the LPH Adjustment (see section 3.11.3) and perform only steps 6 and 7. These steps will print out and check the IPU test pattern 10, using SP2902-2. This procedure will determine whether or not an adjustment is necessary. This procedure is only necessary when you have just replace the **LPH unit** and must update the information on the label of the LPH unit.
2. Next perform SP2952-1/2 and change the information related to the LPH unit and retest the unit using SP2902-2 pattern 10. Repeat this procedure until the test pattern is abnormal then reset the unit to it's proper adjustment value. Show both copies to your instructor.


Test: 2902-2 pattern 10 Adjust: SP 2952-1/2	LPH Joint Adjustment Abnormal Pattern Main Scan Direction
	

3. Next perform SP2952-11/12 and change the information related to the LPH unit and retest the unit using SP2902-2 pattern 11. Repeat this procedure until the test pattern is

abnormal then reset the unit to its proper adjustment value. Show both copies to your instructor.

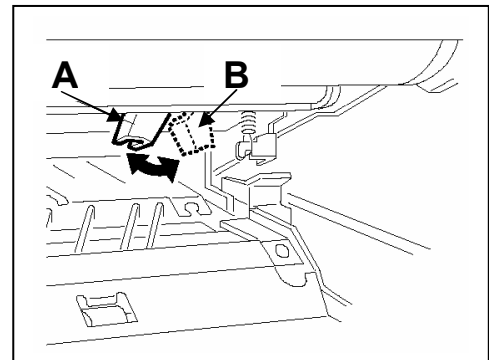
Test: 2902-2 pattern 11 Adjust: SP 2952-11/12	LPH Joint Adjustment Abnormal Pattern Sub Scan Direction
<div style="display: flex; justify-content: space-around; margin-bottom: 5px;"> [A] [B] </div> 	

- Next perform SP2952-1/2 and view the density of the three areas of the test chart. The density of all three areas should be the same. Change the information related to the LPH unit and retest the unit using SP2941-051. Repeat this procedure until the test pattern is abnormal then reset the unit to its proper adjustment value. Show both copies to your instructor.

Test: 2902-2 pattern 10 Adjust Sp 2943- 1/2/3	LPH Density Adjustment Abnormal Density Pattern
<div style="display: flex; justify-content: space-around; margin-bottom: 5px;"> LPH 1 LPH 2 LPH 3 </div> 	

- This adjustment is related to information on the label of the LPH unit.
- When you have completed this procedure you will have accomplished the same procedure as a field replacement of a new LPH print head assembly.
- Access and perform SP2923 Cleaning Blade Replace Mode. This will coat the drum with toner prior to releasing the cleaning blade lever. This precaution should be taken any time the drum is removed for service in the area or the drum is replaced.

- A. Cleaning blade released
- B. Cleaning blade against the drum



- Access and perform SP2803 Corona Wire Cleaning Start. This occurs automatically during normal machine operation, but can be initiated by service program when necessary.

Lab 8 - Image Transfer & Paper Separation

8.1 Introduction

During this section, we will investigate the Image Transfer & Paper Separation system and related electromechanical circuits. Use the Service Manual and the Point-to-Point Diagram as reference to complete this exercise.

8.2 Removal and Replacement

Refer to the SM, Replacement and Adjustment section to find replacement and adjustment data for the transfer unit and perform the following:

CAUTION: Remove the T&S unit carefully to avoid touching or scratching the OPC drum above.

Page	Procedure	[√]
3.3.4	Transfer/Separation Unit Removal	<input type="checkbox"/>
6.8	Image Transfer and Separation	<input type="checkbox"/>

8.3 Component Identification

Locate the Electrical Component Layout and Electrical Component Description in the Service Manual. Now locate the following components. As each component is located, place a check in the appropriate box.

Component	[√]	Component	[√]
Transfer Corona	<input type="checkbox"/>	Transfer-Separation power pack	<input type="checkbox"/>
Separation Corona	<input type="checkbox"/>	Paper Guide	<input type="checkbox"/>
Corona Wires and Springs	<input type="checkbox"/>	Pick-off Pawls	<input type="checkbox"/>
End Blocks and Covers	<input type="checkbox"/>	Pick-off Pawls Solenoid	<input type="checkbox"/>
T&S Corona Unit Connectors	<input type="checkbox"/>		<input type="checkbox"/>

When all components have been identified re-assemble and test your unit. Be very careful when replacing the transfer separation unit.

8.5 Service Programs

Access SP modes and record the values for the following transfer and separation adjustments. Make copies with data set to Min. and Max. values and compare these copies with those made at the "As Adj." Setting.

SP Mode	Description	As Adj.	Min.	Max.	Default
SP 2925	Transfer Corona Timing (DFU)				
SP 2925-001	On Timing	_____	_____	_____	_____
SP 2925-002	Leading Edge	_____	_____	_____	_____
SP 2925-003	Trailing Edge	_____	_____	_____	_____
SP 2403	Separation DC Voltage Setting				
SP 2403-001	Plain – Img LEdge	_____	_____	_____	_____
SP 2403-002	Plain - Outside Image	_____	_____	_____	_____
SP 2403-003	Translucent - Img LEdge	_____	_____	_____	_____
SP 2403-004	Translucent – Outside Image	_____	_____	_____	_____
SP 2403-005	Film - Img LEdge	_____	_____	_____	_____
SP 2403-006	Film – Outside Image	_____	_____	_____	_____

Lab 9 - Paper Feed

9.1 Introduction

In this exercise, you will examine the B286/B289 paper path from both paper trays and the paper cassette, through the registration rollers to the transport unit.

9.2 Removal and Replacement

Slide out the upper paper tray and remove all plastic covers.

Review the removal and replacement of all items listed below. It is not necessary to remove the items.

Section	Procedure	[√]
3.6.1	Registration Clutch & Roller	<input type="checkbox"/>
3.6.2	Roll 1 Paper Feed Clutch & Feed Roller	<input type="checkbox"/>
3.6.3	Roll 2 Paper Feed Clutch & Feed Roller	<input type="checkbox"/>
3.6.5	Roll Feed Motor	<input type="checkbox"/>
3.6.6	Cutter Motor, HP Sensors	<input type="checkbox"/>
3.6.10	Cassette Feed Motor, Cassette Open Sensor	<input type="checkbox"/>
3.6.11	Cassette Feed Clutch	<input type="checkbox"/>

9.3 Component Identification

Use the Electrical Component Layout and Component Description and your Service Manual to locate the following components. Where items are duplicated for the different paper rolls, locate the each listed item. As a component is located place a check in the box provided.

Component Name	[√]	Component Name	[√]
Paper Set Sensor	<input type="checkbox"/>	Cutter Switch (Left)	<input type="checkbox"/>
Registration Sensor	<input type="checkbox"/>	Cutter Switch (Right)	<input type="checkbox"/>
RF Sensor	<input type="checkbox"/>	Cassette Set Sensor	<input type="checkbox"/>
Roll 1 End Sensor	<input type="checkbox"/>	Paper Cassette Paper End Sensor	<input type="checkbox"/>
Roll 2 End Sensor	<input type="checkbox"/>	Cassette Feed Motor	<input type="checkbox"/>
Roll 1 End Sensor (EXP)	<input type="checkbox"/>	Cassette Relay Sensor	<input type="checkbox"/>
Roll 2 End Sensor (EXP)	<input type="checkbox"/>	Relay Sensor	<input type="checkbox"/>
Roll Feed Motor	<input type="checkbox"/>	Roll 2 Feed Clutch	<input type="checkbox"/>
Roll 1 Feed Clutch	<input type="checkbox"/>	Registration Clutch	<input type="checkbox"/>
Cutter Motor	<input type="checkbox"/>		

9.4 Service Programs

Access SP modes and record the values for the following paper feed adjustments.

SP Mode	Description	As Adj.	Min.	Max.	Default
SP 1001	Leading Edge Registration				
SP 1001-001	1 st Roll Feed	_____	_____	_____	_____
SP 1001-003	Cassette (Cut Paper Tray)	_____	_____	_____	_____
SP 1001-005	By-pass Feed	_____	_____	_____	_____
SP 1002	Side to Side Registration				
SP 1002-001	1 st Roll Feed	_____	_____	_____	_____
SP 1002-002	2 nd Roll Feed	_____	_____	_____	_____
SP 1002-003	Cassette (Cut Paper Tray)	_____	_____	_____	_____
SP 1002-005	By-pass Feed	_____	_____	_____	_____

9.5 Input Checks

Main Machine Input Check (SP5803)

1. Using the Input Check (SP5-803), check the status of the following sensors or switches.

1. Roll Tray	Input	Status		[√]
bit-4	Cassette Set Sensor			<input type="checkbox"/>
Bit-3	Cutter HP switch - Left			<input type="checkbox"/>
Bit-2	Cutter HP switch - Right			<input type="checkbox"/>

2. 1 st /2 nd Roll	Input	Status		[√]
bit-6	Roll End Sensor 2			<input type="checkbox"/>
Bit-3	Roll End Sensor 4 (Exp)			<input type="checkbox"/>
Bit-2	Roll End Sensor 2			<input type="checkbox"/>

4. Cassette Tray	Input	Status		[√]
bit-2	Cassette End Sensor			<input type="checkbox"/>
Bit-0	Cassette Jam Sensor			<input type="checkbox"/>

2. Place a check in the box provided when the status of the sensor, switch or motor has been confirmed.

9.6 Output Checks

Refer to section 5.6 Output Check in the Service Manual. Using the Output Check (SP 5-804) check the following:

Item	Description	[√]
15	1 st Roll Feed Clutch	<input type="checkbox"/>
16	2 nd Roll Feed Clutch	<input type="checkbox"/>
25	1 st Cassette Feed Clutch	<input type="checkbox"/>
31	Registration Motor	<input type="checkbox"/>
34	Registration Clutch	<input type="checkbox"/>
11	Roll Feed Motor 1 - Forward	<input type="checkbox"/>
12	Roll Feed Motor 1 - Reverse	<input type="checkbox"/>
21	Cassette Feed Motor	<input type="checkbox"/>
14	Cutter 1 (Motor or Clutch)	<input type="checkbox"/>

Lab 10 - Fusing

10.1 Introduction

In this exercise you will review the copier Fusing Systems. You will remove, replace and adjust several components in the fusing area. Use the SM and PTP as reference material.

10.2 Removal and Replacement

Refer to the SM, Replacement and Adjustment section to find specific instructions on replacement and adjustment of the fusing system components.

Section	Procedure	Function	[√]
3.7.5	Fusing Unit Removal	Remove	<input type="checkbox"/>
3.7.7	Pressure Spring Adjustment	Review	<input type="checkbox"/>
3.7.2	Hot Roller Strippers	Review	<input type="checkbox"/>
3.7.5	Pressure Roller Strippers	Review	<input type="checkbox"/>
3.7.8	Fusing Cleaning Roller	Review	<input type="checkbox"/>
3.7.9	Fusing Lamp	Review	<input type="checkbox"/>
3.7.10	Hot Roller	Review	<input type="checkbox"/>
3.7.11	Pressure Roller	Review	<input type="checkbox"/>

10.3 Component Identification

Using the Electrical Component Layout and your Service Manual, locate the following components. As a component is located place a check in the box provided.

Component Name	[√]	Component Name	[√]
Fusing lamp	<input type="checkbox"/>	Hot Roller	<input type="checkbox"/>
Hot Roller Thermistor	<input type="checkbox"/>	Hot Roller Stripper	<input type="checkbox"/>
Pressure Roller Thermistor	<input type="checkbox"/>	Pressure Roller	<input type="checkbox"/>
Hot Roller Thermostats (2)	<input type="checkbox"/>	Pressure Roller Stripper	<input type="checkbox"/>
Pressure Roller Adjustment Spring	<input type="checkbox"/>	Fusing Cleaning Roller	<input type="checkbox"/>

Re-assemble your unit and proceed to the next step.

Continued on next page

10.4 Service Programs

Access SP modes and record the values for the following fusing adjustments. **Do not change the settings.**

SP Mode	Description	As Adj.	Min.	Max.	Default
SP 1105	Fusing Temperature Adjustment				
SP 1105-001	Copy Ready Temperature	_____			
SP 1105-003	Low Power Mode		_____	_____	_____

10.5 Continuity Check

Turn off the machine, unplug the power cord, and unplug the connectors indicated at the PSU board. Next perform a continuity check across the connectors.

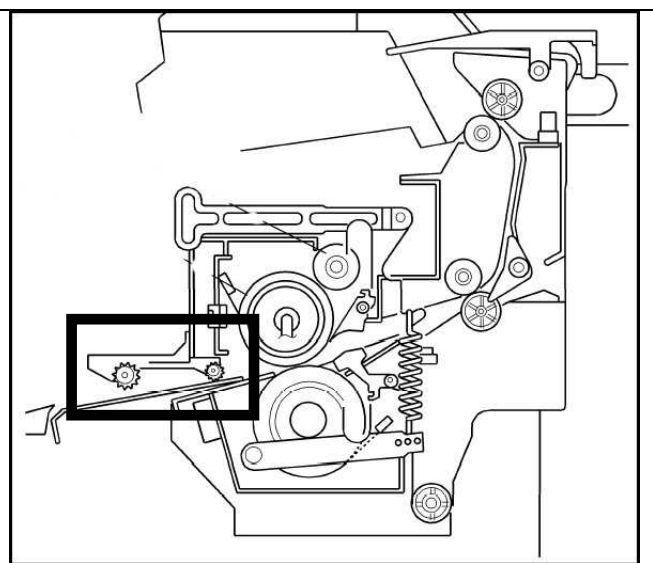
Connectors	Resistance
CN101-1 to CN101-2	_____ Ω
CN102-1 to CN102-2	_____ Ω

What does these checks confirm?

10.6 Fusing Entrance Spurs

Cleaning Spurs

1. Over time the Fusing Unit Guide Spurs will accumulate unfused toner particles. These toner particles must be removed periodically to prevent dots or lines in the sub-scan direction.
2. In SM section 1.2.1 Accessory Check locate item 1, the Flat Brush (illustration is on the following page). This tool is located in the pocket containing the Data Sheet, under the right side of the unit,
3. Using the Flat Brush, clean the Fusing Entrance Spurs at every PM or EM.



10.7 Input Checks

Main Machine Input Check (SP5803)

4. Using the Input Check (SP5-803), check the status of the following sensors or switches.

7. Paper Path Sensors	Input	Status		[√]
bit-4	Fusing Exit Sensor			<input type="checkbox"/>

9. Door Open, Motor Lock	Input	Status		[√]
bit-7	Fusing Motor			<input type="checkbox"/>

10. Other	Input	Status		[√]
bit-7	Fusing Unit Cover Switch			<input type="checkbox"/>
Bit-2	Fusing Overheat			<input type="checkbox"/>
Bit-1	Zero Cross			<input type="checkbox"/>

5. Place a check in the box provided when the status of the sensor, switch or motor has been confirmed.

10.8 Output Checks

Refer to section 5.6 Output Check in the Service Manual. Using the Output Check (SP 5-804) check the following:

Item	Description	[√]
33	Fusing/Exit Motor	<input type="checkbox"/>

Reading Assignment, Evening 1

It is each student's responsibility to read or review all listed material for the following days class. Enter a check in the appropriated box at the completion of each reading assignment.

Read the following information:

Manual	Section	Topic	Pages	[√]
B286/B289 Service Manual	7	Specifications	7-1 to 7-8	<input type="checkbox"/>
	6	Machine Overview	6-1 to 6-7	<input type="checkbox"/>
	6	Scanner	6-8 to 6-14	<input type="checkbox"/>
	6	Image Processing	6-15 to 6-22	<input type="checkbox"/>
	6	Around the Drum	6-23 to 6-30	<input type="checkbox"/>
	6	Image Writing	6-31	<input type="checkbox"/>
	6	Development	6-32 to 6-43	<input type="checkbox"/>

Review the following information

Manual	Section	Topic	Pages	[√]
B286/B289 Service Manual	1	Installation	1-1 to 1-80	<input type="checkbox"/>
	5.1	Using the SP Mode	5-1 to 5-2	<input type="checkbox"/>
	5.2	Firmware Update	5-3 to 5-5	<input type="checkbox"/>
	5.3	User Tools	5-6 to 5-12	<input type="checkbox"/>
	5.4	Input Checks	5-13 to 5-18	<input type="checkbox"/>
	5.5	Output Checks	5-19 to 5-20	<input type="checkbox"/>
	5.6	SP Mode Tables	5-21 to end	<input type="checkbox"/>
Copy Reference Manual	All		All	<input type="checkbox"/>
General Settings Manual	All		All	<input type="checkbox"/>

Review Guide 1

1. After installing a new hard disk, the B286/B289 stamp data must be copied to the hard disks. How is this done?
 - a) SP mode
 - b) User Tools
 - c) Copied back from memory cards
 - d) It is not necessary. The data is located on the stamp board.

2. The position of the _____ on the rear top edge of the machine controls the exit path of the copy.

3. When you look at the copy to identify the areas scanned by each section of the CIS unit, how are the sections numbered?

4. What drum related procedure must be done before moving the machine to a new location?
 - a) Release the drum cleaning blade from the drum (move the lever to the left)
 - b) Release the drum cleaning blade from the drum (move the lever to the right)
 - c) Purge the toner supply mechanism
 - d) Remove the used toner bottle

5. To verify the operation of the CIS and the IPU, print a copy of the "VDB" image data path test pattern.
 - a) True
 - b) False

6. Identify the SP mode used to display the most recent values of Vsg and Vsp stored in the NVRAM.

7. When does the machine identify the "Toner End" condition?

8. How often does the machine make an ID sensor pattern to control toner supply?

- a) After printing each page
- b) Immediately after switching the power on
- c) Every 600 m (even in the middle of a job)
- d) At the end of each job

9. When firmware update is required the SD card containing the new firmware is inserted in _____ at the rear of the unit

- a) Slot 1
- b) Slot 2
- c) Slot 3
- d) Slot 4

10. The CIS unit is made up of four sections with three joints, which are adjustable for best image reproduction.

- a) True
- b) False

Reading Assignment, Evening 2

It is each student's responsibility to read or review all listed material for the following days class. Enter a check in the appropriated box at the completion of each reading assignment.

Read the following information:

Manual	Section	Topic	Pages	[√]
B286/B289 Service Manual	6	Paper Feed and Registration	6-45 to 6-63	<input type="checkbox"/>
	6	Image Transfer and Separation	6-64 to 6-65	<input type="checkbox"/>
	6	Fusing Unit	6-66 to 6-82	<input type="checkbox"/>
	6	Paper Exit	6-83 to 6-86	<input type="checkbox"/>

Review the following information

Manual	Section	Topic	Pages	[√]
B286/B289 Service Manual	6	Electrical Components	6-87 to 6-104	<input type="checkbox"/>

Review Guide 2

1. Identify the component used for image transfer.
 - a) Transfer roller
 - b) Transfer corona unit
 - c) Transfer Belt
 - d) All of the above

2. The scanner free run test allows the technician to adjust the _____.
 - a) brightness of the CIS lamps
 - b) position of the CIS.
 - c) page interval setting
 - d) None of the above

3. Vertical white lines on the copy can be caused by _____.
 - a) Dirty exposure glass
 - b) Dirt or scratches on the white plate above the CIS
 - c) Defective CIS
 - d) All of the above

4. If the user installs a different paper type in a roll feeder, the user must change a user tool setting to identify the new paper type, If not, fusing may not be correct when printing from that roll.
 - a) True
 - b) False

5. The users cannot change the paper sizes in each paper source without help from a technician.
- a) True
 - b) False
6. The paper cassette fits inside the roll feeder and is driven by the roll feed motor.
- a) True
 - b) False
7. Identify the paper source(s) that do not pass through the RF exit roller and the RF exit sensor as it travels towards the OPC drum.

8. During manual paper feed, what occurs after the registration sensor detects the lead edge of the sheet?

9. Identify the pre-feed position of both paper roll 1 and paper roll 2.

10. Identify the sensor used to detect cassette paper feed jams.

11. During roll paper feed, the machine does not stop to cut the paper. How does the machine cut the roll paper?

12. Fusing pressure is automatically adjusted for paper type by two motors in the fusing unit.

- a) True
- b) False

13. After completing the scheduled PM, you must reset the PM counter with an SP mode. The machine does not automatically reset the counter.

- a) True
- b) False

Reading Assignment, Evening 3

It is each student's responsibility to read or review all listed material for the following days class. Enter a check in the appropriated box at the completion of each reading assignment.

Read the following information:

Manual	Section	Topic	Pages	[√]
B286/B289 Service Manual	2	Preventive Maintenance	2-1 to 2-8	<input type="checkbox"/>
	4.1	Service Call Conditions	4-1	<input type="checkbox"/>
	4.2	SC Code Descriptions	4-3 to 4-27	<input type="checkbox"/>
	4.3	Jam Code Tables	4-28 to 4-35	<input type="checkbox"/>
	4.4	Cover Open	4-36	<input type="checkbox"/>
	4.5	Fuse Table	4-37	<input type="checkbox"/>

Review the following information

Manual	Section	Topic	Pages	[√]
B286/B289 Service Manual	4.6	Image Data Processing Flow Chart	4-38 to 4-44	<input type="checkbox"/>
	4.7	Board LEDs	4-45 to 4-50	<input type="checkbox"/>

Review Guide 3

1. At power on, the charge corona wire is cleaned automatically when _____ had occurred.
 - a) At the end of each job
 - b) 600 m of paper had been fed since the last wire cleaning
 - c) Hot roller temp. less than 50 degrees C.
 - d) B, and C

 2. The maximum printing width of the print head is _____.
-
3. The rotation of the toner agitator shaft is controlled by the _____.
 - a) development motor
 - b) timing belt
 - c) toner supply clutch
 - d) None of the above

 4. Which of these factors is used to control the toner density and toner end detection?
 - a) TD sensor
 - b) ID sensor output
 - c) Image pixel count
 - d) All of the above

 5. As soon as the machine detects a “toner end” condition, what will occur?
 - a) The machine will allow 1 additional page to be printed, then the machine will stop printing.
 - b) The machine will stop immediately and no additional pages can be printed.
 - c) The machine will allow 25 additional pages to be printed, then the machine will stop printing.
 - d) The machine will allow 25 additional feet to be printed, then the machine will stop printing.

6. Identify the component(s) used by the machine to detect a toner near-end condition?
- a) Toner near-end sensor
 - b) Toner Density (TD) sensor
 - c) Image Density (ID) sensor
 - d) A and B only
7. The machine uses the following SP settings to compare the Vsp/Vsg ratio to determine the toner end/near end condition of the toner cartridge.
- a) SP 2907 001 & 003
 - b) SP 2917 001 & 003
 - c) SP 2927 001 & 003
 - d) SP 2937 001 & 003
8. In the B286/B289, the separation pick off pawls are in contact with the drum at all times.
- a) True
 - b) False
9. If a sheet of paper is in the manual feed table at power on, the machine will display a jam at location.
- a) A
 - b) B
 - c) C
 - d) D
10. The ____ level SC condition is recorded internally and is not displayed in the operation panel.
- a) A
 - b) B
 - c) C
 - d) D

Congratulations! You have completed the B286/B289 Service Training. Please take a minute to consider the following:



The most important thing I have learned in this class is...

Appendix A - Firmware Program Download

Introduction

The memory card system will be used on all future copier and fax products. The card will allow the technician to easily transfer a copy of the new copier and fax firmware from a computer to the machine and the reverse, from the machine to the computer. In addition, the card can be used to copy the firmware from one machine to another machine.

The program may be loaded into a desktop or laptop computer. If a desktop computer is used, the technician must first install the Swap Box Adapter into computer. The Swap Box adapter allows the technician the ability to insert the PCMCIA card into the computer. The hardware and software requirements for downloading firmware to a desktop PC are shown below.

Desktop PC Requirements

- IBM PC-AT compatible computer
- ISA Plug-and-Play BIOS
- 1 empty 16-bit ISA bus slot
- 1 empty 3.5" drive bay (for front access card drive)
- Windows 95
- At least 2MB free HDD space
- SCM SwapBox Family PC Card Drive
- SCM SwapFTL version 1.34R with one software license

PLUS: Memory Card Explorer for Ricoh software, plus license.

If a laptop computer is used, the technician will simply load the application program. It will also be necessary to order the memory card and application program because the laptop contains the PCMCIA slot. The hardware and software requirements for downloading firmware to a desktop PC are shown below.

Portable PC Requirements

- IBM PC-AT compatible computer
- At least 1 PCMCIA slot
- Intel 82365SL compatible PC card controller
- Windows 95
- At least 2MB free HDD space
- SCM SwapFTL version 1.34R with one software license

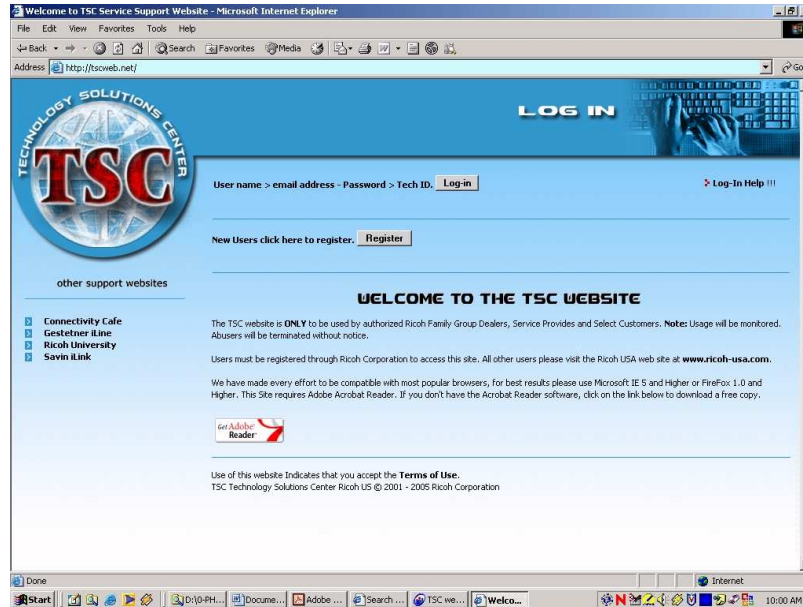
PLUS: Memory Card Explorer for Ricoh software, plus license.

The application software will be pre-loaded on the computer but the actual procedure will be listed below.

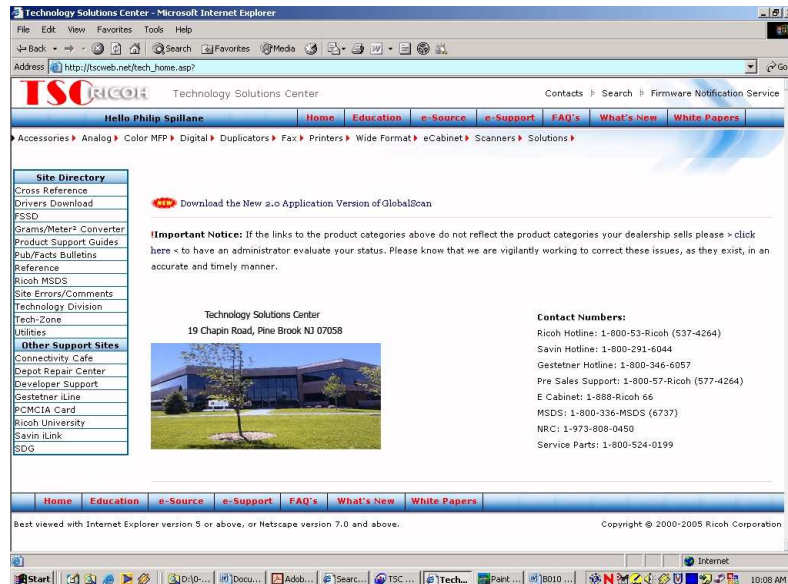
Downloading New Firmware from the TSC Web Site

TSC Website Access Procedure.

The latest firmware is available from the TSC Technology Solutions Center Web site. See the site at the following web address: www.tscweb.net



Once registered and logged in the choices available will enable Service Professionals to access information to update and maintain all current product lines.



Appendix B - Writing Firmware to the Flash Memory Card

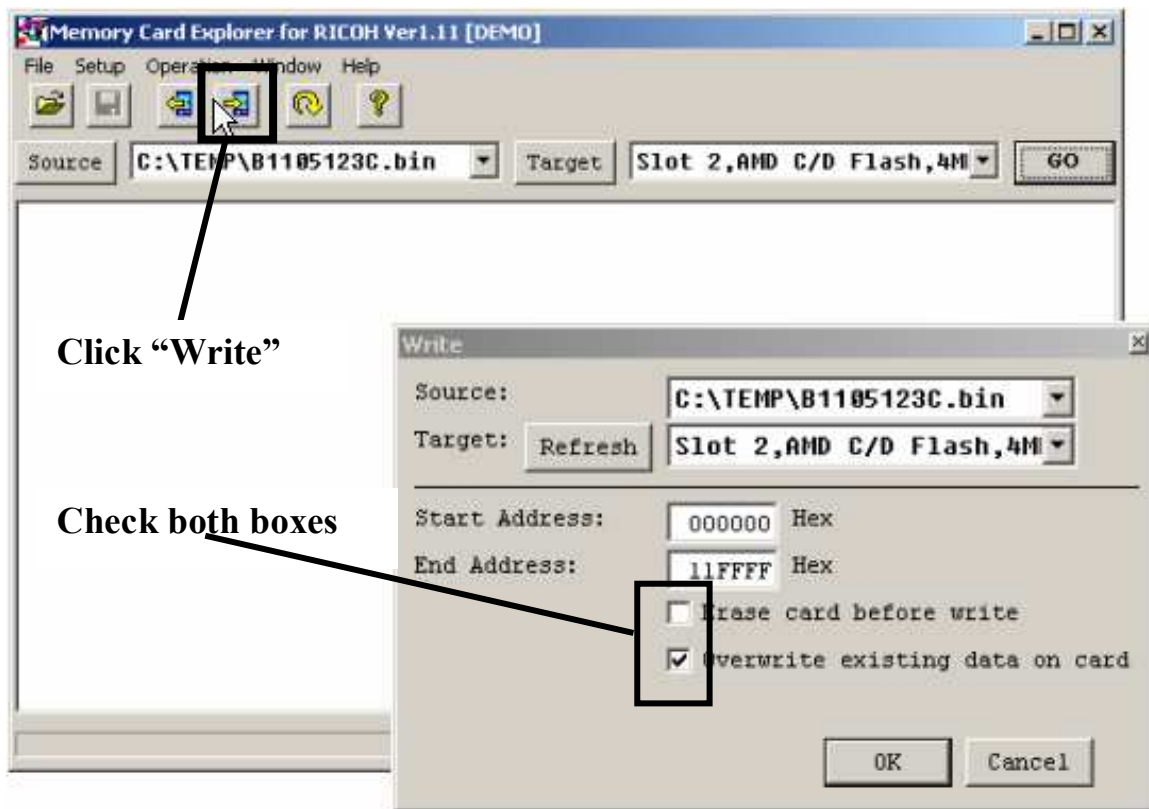
Introduction

The memory card (PCMCIA) system is used on many older-model Ricoh products to transfer a copy of new firmware from a computer to the machine and the reverse, from the machine to the computer. In addition, the card is used to copy the firmware from one machine to another machine. *(Most models launched in 2004 and on use the SD Card system for service and other activities. See Appendix C in this workbook for information on the SD Card system.)*

The Memory Card Explorer for Ricoh (MCERICOH) utility is used to transfer data onto a PCMCIA card. The MCERICOH can read and write binary data between an AMD C&D series compatible PCMCIA flash memory cards and data files.

After firmware is downloaded from the TSC web site and unzipped, click on the “Write” icon.

Next check both the “Erase Card...” and the “Overwrite...” boxes below. Then Click OK. When finished, confirm that the check sums match.



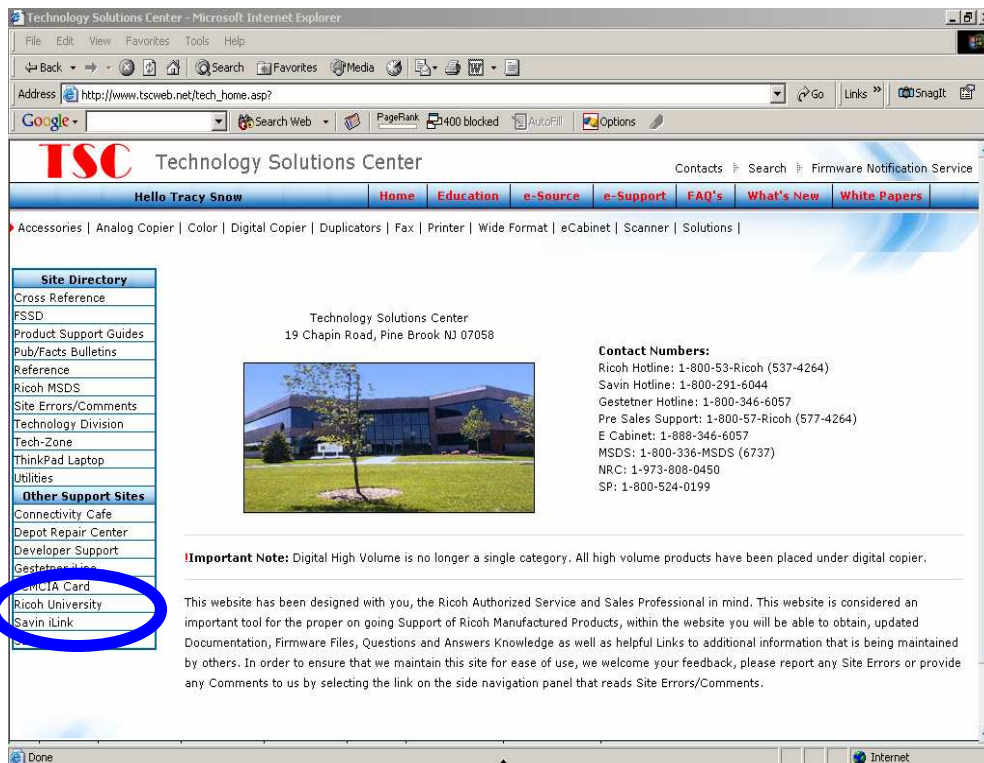
The system requirements are as follows:

Operating Systems	Windows 95 (SP1 or later) Windows 98 Windows Me (Millennium Edition) Windows NT 4.0 Workstation (SP4 or later) Windows 2000 Professional
PCMCIA Hardware	Intel 865 Compatible PCIC controller
Display Resolution	SVGA (800 x 600, 256 colors) or higher
Others	A 3rd party PC Card management software must not be used.

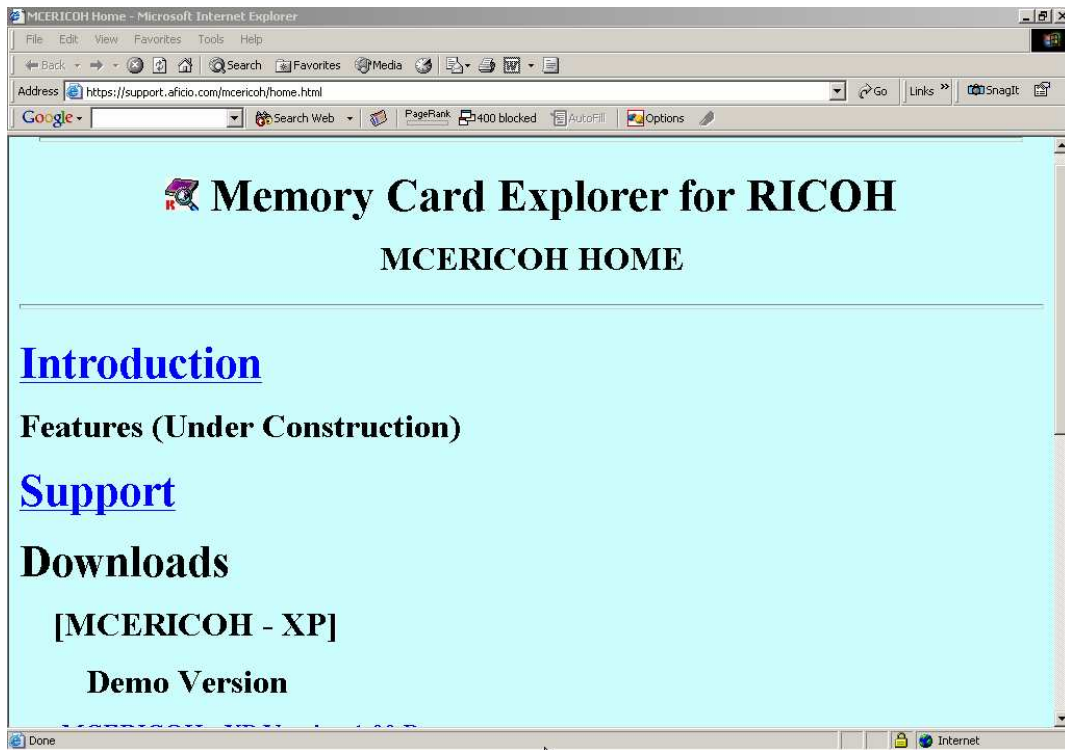
Information on using the MCERICOH utility, and a 30-day demo, can be found on the Technology Solutions Center website (<http://www.tscweb.net/>).

(If you are not already registered on the TSC website, you must do so in order to access this information.)

Below is a snapshot of the TSC homepage. On the lower right, you can see the link for “PCMCIA Card Programming.”



When you click on the link for “PCMCIA Card” link, you will see the screen below. From this screen, you can download the MCERICOH User Guide, and a 30-day demo of the utility. (Publications Bulletin 050, which describes the most recent MCERICOH utility release, can be found in the “Bulletins” area of the TSC website.)



Appendix C – Additional Notes

Development Systems Variations

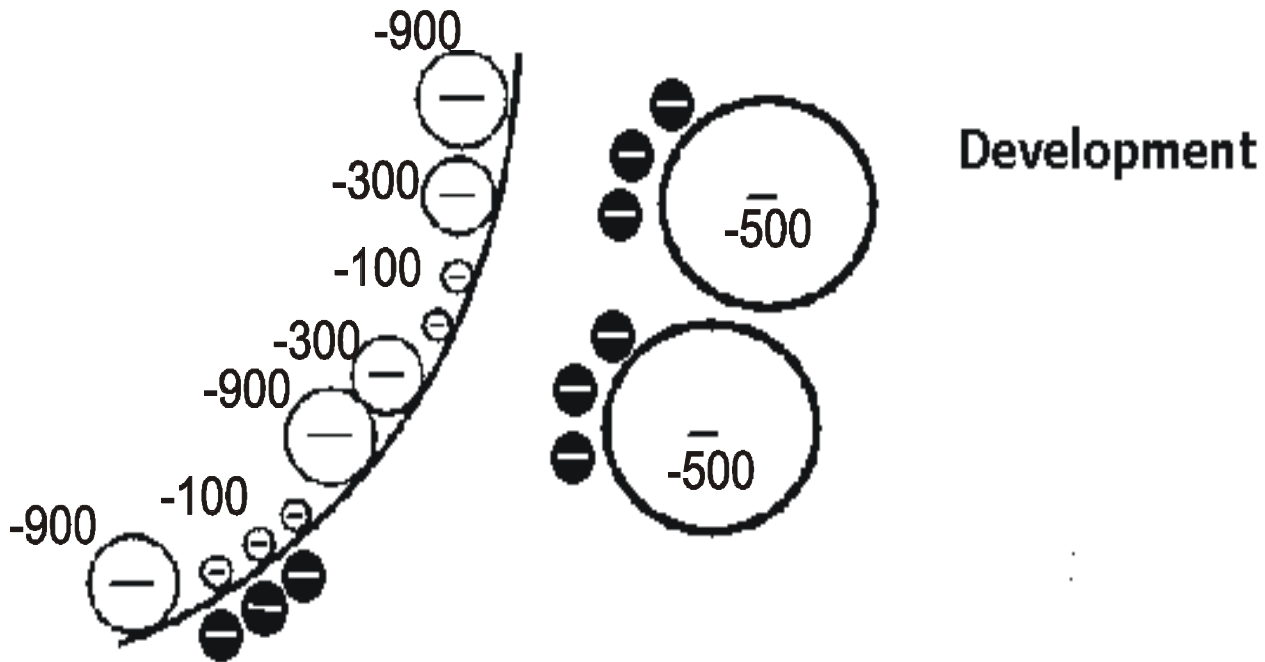
The following chart represents the various development processes used in past and present copier products. The chart can be used to determine the polarity of the charge related to the charge corona, the toner and the carrier beads in a specific system

	Positive / Negative (Analog)		Negative / Negative (Digital)
Type of Exposure System	Reflected Image Exposure System (Mirrors)		Laser Diode or LPH (LED Print Head) Exposure System (Write to Black)
Photoconductor	Selenium	OPC	OPC
Charge Corona	Positive	Negative	Negative
Toner Charge	Negative	Positive	Negative
Carrier Charge	Positive	Negative	Positive
Dev Bias Charge	Positive	Negative	Negative

Copy Problems:

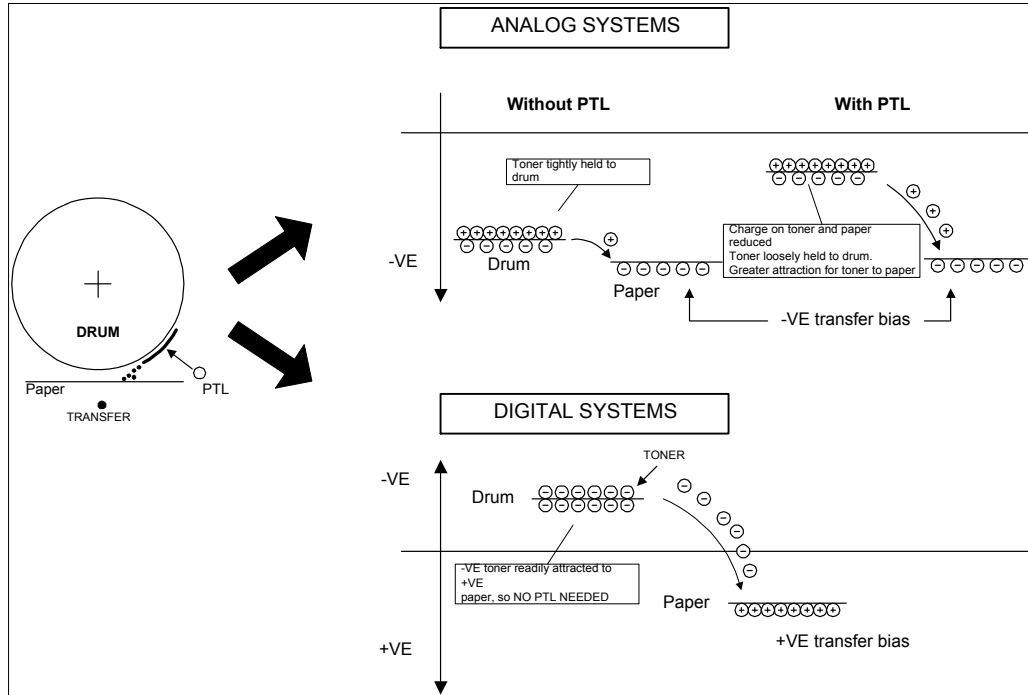
1.	No Drum Charge	White (blank) Copy	Solid Black Copy
2.	Low Drum Charge	Low Image Density	Dirty Background
3.	High Development Bias	Low Image Density	Dirty Background
4.	Low Development Bias	Dirty Background	Low Image Density
5.	Dirty Toner Shield Glass	Black Stripes	White Stripes

Write to Black Development System



Digital: Write to Black
Negative toner pushed from negative development rollers to least negative areas of drum.

Pre-Transfer lamp – why is there none?



Machines that use positive toner

- In machines that use +ve toner, a pre-transfer lamp (PTL) helps toner transfer to the paper from the drum by illuminating the drum.
- This reduces the -ve charge on the drum. Consequently, there is a reduction in the attraction between the toner and drum.
- It also makes the toner more likely to go to the paper, which now has a greater -ve charge.
- However, because the toner is looser now, toner may fall off the drum before it reaches the transfer area. For this reason, PTLs are only in machines with a relatively fast copy cycle.
 - Some machines of this type have no PTL. In such cases, a higher transfer bias voltage is used.

Machines that use negative toner

- There is no PTL in machines with -ve toner. |
- In this type of machine, toner is developed on areas of the drum that are exposed to light, so using a PTL would make the toner adhere to the drum more strongly.
- In addition, with -ve toner on a -ve drum, the attraction between the two is not very large, so the toner will be relatively loose anyway. The -ve toner will readily be attracted to the paper, which receives a +ve charge from the transfer bias roller.

Appendix D - Paper

Types of Paper

There are many types of paper used in copiers today. The thickness or heaviness of paper is referred to as its weight? Some types and weights of paper work better in copiers than others.

In this section we will examine:

1. Different types of paper frequently used in photo copiers
2. Their specialized uses and how their weights are measured
3. Recycled paper
4. American and metric paper sizes

Here is a brief description of some types of paper you may encounter:

BOND PAPER, the most common paper used in copiers, includes:

5. Xerographic paper is manufactured specifically to work in copiers. It has a smooth surface that allows for reliable paper feed, good solid area fill and complete fusing. There is a minimum of paper dust and fuser contamination. Copier specifications are written based on 20-lb. xerographic paper.
6. Laser paper is similar to xerographic, but is even smoother so that originals created on a laser printer have better quality.
7. DP (Dual-Purpose) paper is a cross between xerographic paper and book paper (see below) and is designed to run well in both.

BOOK PAPER, also known as offset or text paper, is designed to work well on offset presses and digital duplicators.

8. More porous surface allows for better absorption of liquid ink.
9. Runs in copiers, however solid area fill and fusing may not be as good.

INDEX or CARD STOCK is a heavier paper generally used for covers and dividers.

10. Solid area fill is usually good due to the smooth surface.
11. Can cause feeding and fusing problems in some copiers.
12. The feed system must be in excellent condition to feed the stiffer paper, and its heavier weight takes more heat in the fusing area to completely fuse the image to the paper.

COVER STOCK, similar to card stock but is available in coated or uncoated varieties. It has a more finished or glossy appearance but does not run well in copiers because its slick surface makes it difficult to transport the paper reliably.

How Paper Weight Is Determined

Paper weight is determined by weighing 500 full sheets of paper.

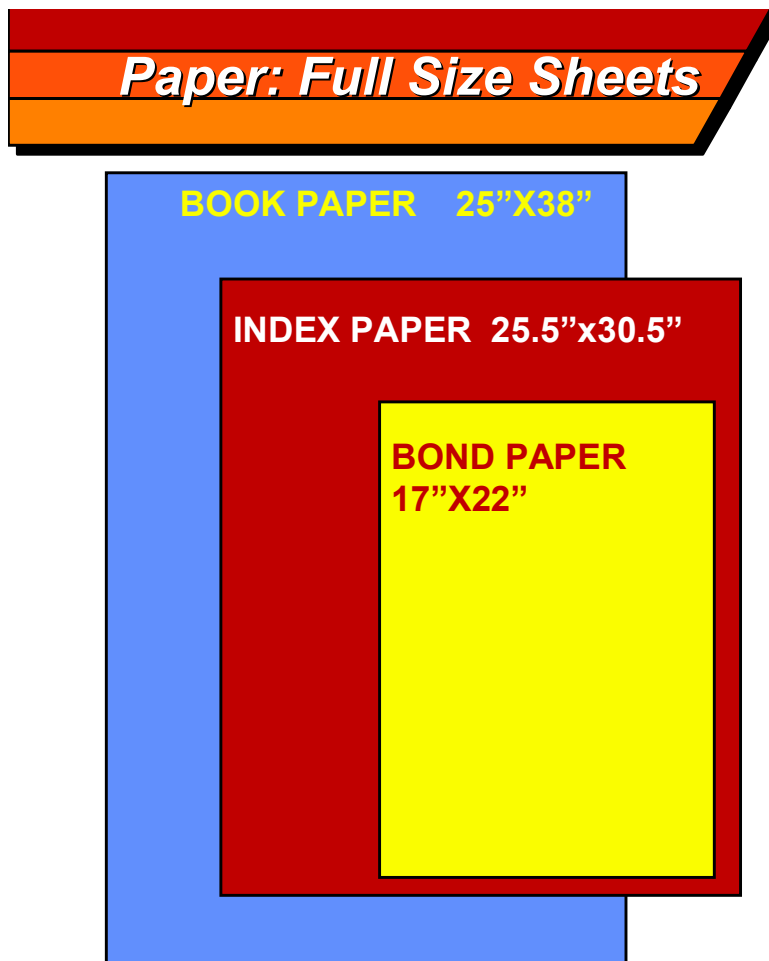
The size of a full sheet of paper is different for the different types of paper.

A full sheet of Bond paper is 17X22 inches (the equivalent of four sheets of letter size paper). Four reams of 20-lb. letter-size bond paper should weigh 20 pounds.

A full sheet of Book paper is larger, 25x38 inches. Therefore, 500 full sheets of Book paper that is the equivalent weight of 20 lb. Bond paper, will weigh more (50 lb.).

The chart shows that 20 lb. Bond paper is on the same line as 50 lb. Book paper. That means the equivalent weight of the paper is the same and they would be about the same thickness.

Copier specifications for paper weights are written in Bond weights. If a copier can run 14 to 42 lb. Bond paper, and you know the equivalent weights of Book paper, you can determine that it will accept from 40 to 100 lb. Book paper.



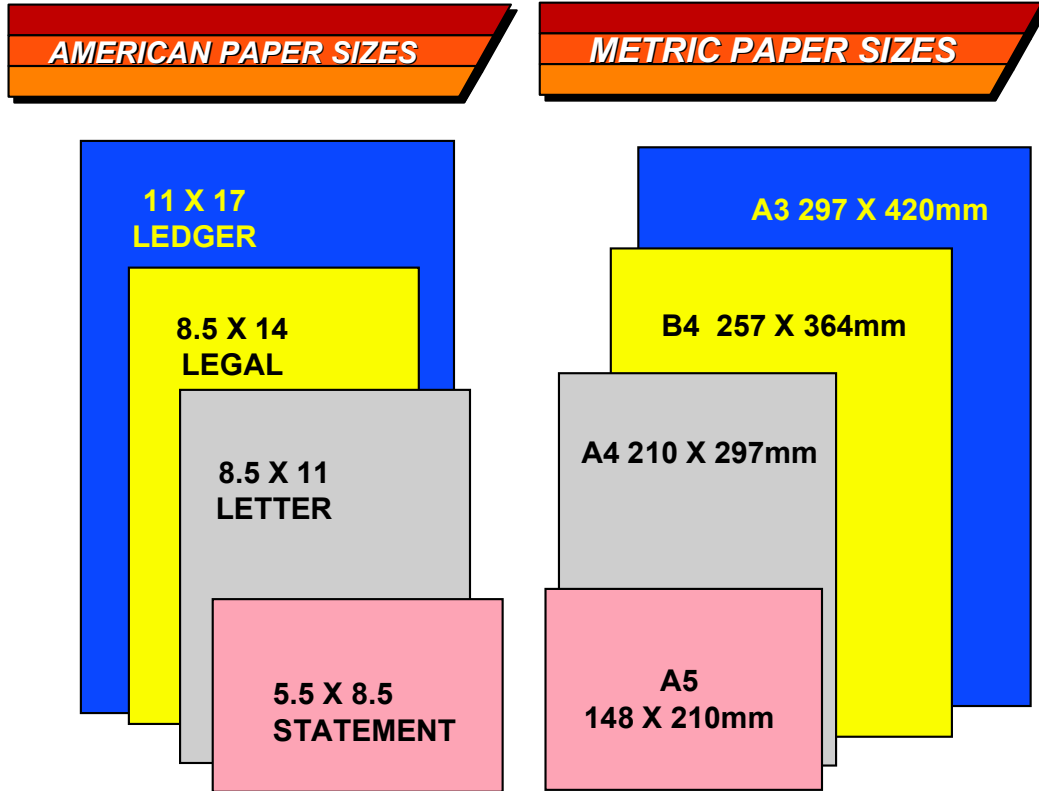
Paper Weight Conversion Chart

PAPER TYPES	BOOK (Offset) (25x38)		BOND (17x22)		INDEX (Card Stock) (25x38)		COVER (20x26)		BRISTOL (22.5x28.5)	
	Lb.	Gr./M ²	Lb.	Gr./M ²	Lb.	Gr./M ²	Lb.	Gr./M ²	Lb.	Gr./M ²
BOOK (Gr. x 0.676) (Lb./ 0.676)	30	44	12		25		16		20	
	40	59	16		33		22		27	
	45	67	18		37		25		30	
	50	74	20		41		27		34	
	55	81	22		45		30		37	
	60	89	24		49		33		41	
	65	96	26		53		36		44	
	70	104	28		57		38		47	
	75	111	30		61		41		51	
	80	118	32		65		44		54	
	90	133	36		74		49		61	
	100	148	39		82		55		68	
120	178	47		98		66		81		
BOND (Gr. x 0.266) Lb./0.266)	33		13	49	27		18		22	
	41		16	60	33		22		27	
	51		20	75	42		28		34	
	61		24	90	50		33		41	
	71		28	105	58		39		48	
	81		32	120	67		45		55	
	91		36	135	75		50		62	
	102		40	150	83		56		69	
INDEX (Gr. x 0.553) Lb. / 0.553)	110		43		90	163	60		74	
	134		53		110	199	74		91	
	171		67		140	253	94		115	
	208		82		170	307	114		140	
COVER (Gr. x 0.370) (Lb./ 0.370)	91		36		75		50	135	62	
	100		40		82		55	149	68	
	110		43		90		60	162	74	
	119		47		97		65	176	80	
	146		58		120		80	216	99	
	164		65		135		90	243	111	
	183		72		150		100	270	123	
	238		94		194		130	352	160	
BRISTOL (Gr. x 0.456) (Lb./ 0.456)	84		33		69		46		57	125
	99		39		81		54		67	147
	114		45		93		62		77	169
	119		47		97		65		80	175
	148		58		121		81		100	219
	178		70		146		97		120	263

Paper Sizes

In the United States, we have been using different paper sizes than the rest of the world. That puts paper sizes into two main categories:

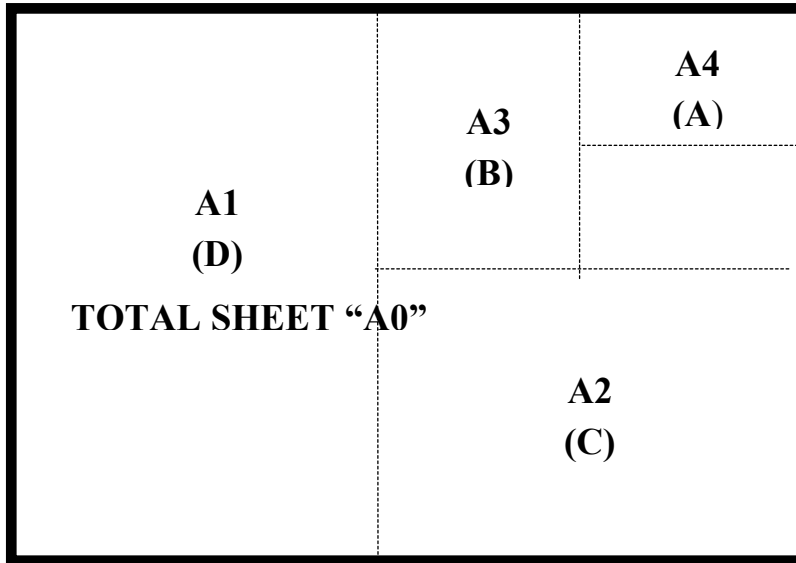
1. American paper, measured in inches
2. Metric paper, measured in millimeters.



Common American Sizes		Common Metric Sizes	
Double Letter or Ledger	11" x 17"	A3	297mm x 420mm 11.7" x 16.6"
Legal Size	8.5" x 14"	B4	257 mm x 364 mm 10.1" x 14.3"
Letter Size	8.5" x 11"	A4	210 mm x 297 mm 8.3" x 11.7"
Statement or Half-letter	5.5" x 8.5"	A5	148 mm x 210 mm 5.8" x 8.3"

As you can see, A4 paper is very close in size to letter size paper. For this reason, it is sometimes referred to as "European Letter."

STANDARD SIZE DRAFTING SHEETS



STANDARD DRAWING SIZE (Metric)

ISO (International Standards Organization) (DIN)

SIZE	INCHES	MILLIMETERS
AO (E)	33.11 X 46.81	841 X 1189
A1 (D)	23.39 X 33.11	594 X 841
A2 (C)	16.54 X 23.39	420 X 594
A3 (B)	11.69 X 16.54	297 X 420
A4 (A)	8.27 X 11.69	210 X 297

AMERICAN STANDARD (Engineering)

ANSI (American National Standards Institute)

SIZE	INCHES	MILLIMETERS
E	34 X 44	863.6 X 1117.8
D	22 X 34	558.8 X 863.8
C	17 X 22	431.8 X 558.8
B	11 X 17	279.4 X 431.8
A	8.5 X 11	215.9 X 279.4

ARCHITECTURAL

E	36 X 48	914.4 X 1219.2
D	24 X 36	609.6 X 914.4
C	18 X 24	457.2 X 609.6
B	12 X 18	304.8 X 457.2
A	9 X 12	225.6 X 304.8

Appendix E - Comparison of Major Specifications

Prod Code	B188	B125	B286	B289
Configuration	Console	Desk Top	Desk Top	
PM Cycle (A1/D) Feet	32.8K	32.8K	18K	
Max Original Size	36" X 590"	36" X 142"	36" X 590	
Original Length	6m/236"	3.6m/142"		
Original Setting	Face-up	Face-down	Face-down	
Synchronized Cut	Yes, only with Roll Feeders 1 and 2	Yes, only with Roll Feeders 1 and 2	Yes, only with Roll Feeders 1 and 2	
Process Speed	--	--	--	--
Copy Speed (A1/D)	8 cpm	4 cpm	4 cpm	6 cpm
Warm-up Time (A1/D Sideways)	Within 2 min. (120 sec.)	Within 2 min. (120 sec.)	Within 2 min. (120 sec.)	
1st Copy Time (A1/D Sideways)	15.5 sec.	22 sec.	18 sec	
Multiple Copy	1 to 99	1 to 20	1 to 99	
Paper Feed (Standard)	Manual Bypass	1 to 99		
Options	2nd Roll Tray Hard Disk Drive x 2 Stamp Board Original Tray Roll Holder Print Controller Interface Board	Interface Board Stamp Board Hard Disk Drive Table Roll Feeder Paper Cassette Roll Holder Print/Scan Controller	Roll Feeder, Paper Cassette, Table, Original Hanger, Rear Stacker, Interface PCB, Printer Option, Scanner Option, VM Card, Print Controller RW3600, Roll Holder, Data Overwrite Security Unit, IEEE802.11b Interface Unit, USB Host Interface Unit, Gigabit Ethernet Board	
Dimensions (W x D x H) Copier Only	49" x 29" x 47"	43" x 25" x 23" without table	43" x 25" x 23" without table	

Weight Copier Only	496 lbs 225 kg	231 lbs 105 kg	235.9 lb 107kg	
Image Quality (Resolution)	Scan/Print: 600dpi	Scan/Print: 600dpi	Scan/Print: 600dpi	
Enlarge/Reduce	Yes	Yes	Yes	
Printer Expansion	Yes	Yes	Yes	
Photoconductor	OPC	OPC	OPC	
Drum Charge	Corona Wire, Grid	Corona Wire, Grid	Corona Wire, Grid	

* Copy Speed 1 - 1

** Copy Speed 1 - 10

Appendix F - Achieving The Ready Condition

DEFINE THE READY STATE.

When the typical copier or multifunction product is in the ready state the following conditions will be met:

- Main Switch is turned on
- Operation Switch is turned on
- The fusing temperature reaches the desired temperature for that particular unit (measured in Celsius)
- Paper is in at least one tray
- The operation panel says ready.

DEFINE THE READY HIGH CONDITION

The ready high condition is defined by the symbol ▼. At the ready high state the voltage designated next to the symbol is the voltage (generally 5, 12 or 24 volts) that you should read in the ready state.

DEFINE THE READY LOW CONDITION

The ready low condition is defined by the symbol ▲. At the ready state the measured (expected) should be a low voltage (0.7V).

WHAT IS THE SOURCE VOLTAGE?

The source voltage is the voltage that powers the various devices in a system and does not change status (normal operating conditions). This voltage is what is required for the device to operate. It is usually shown with brackets [5 vdc], [24 vdc], [38 vdc], or parenthesis (120 AC).

Lets take a look at a few scenarios. ▼24v

Ready Condition	Active state	Condition status
24 vdc	Low	Good electrically
24 vdc	Low	Mechanical problem possible, slipping clutch etc.
24 vdc	24 vdc	No electrical activation. Replace pcb (no trigger)
0 vdc	Low	No source

- No source (blown fuse, power supply bad)
- Open circuit or damaged harness
- Open component
- bad board

You should utilize the “Input/Output Modes,” whenever possible to assist in troubleshooting, Input mode for sensors and switches, Output mode for motors, solenoids, and clutches.

Input/Output modes will assist you in isolating the potential area (component) causing the problem. Once you have identified this area you should use your point-to-point diagram to correctly isolate the cause of the problem.

Appendix G - Drum Balancers (rubber plates within drum)

Within the OPC drum of the digital wide format copier are two rubber plates, one at each end. These plates are drum balancers that reduce the noise caused by inertia when the drum starts and stops.

When installing a new drum, remove both rubber plates from the inside of the old drum and install them in the new drum. Similar models have the same part used within their OPC drum.



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B010 - 016

10/13/2004

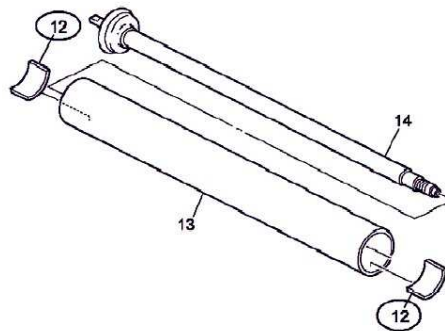
APPLICABLE MODEL:

- GESTETNER - A070**
- LANIER - LW410**
- RICOH - AFICIO 470W**
- SAVIN - 4700WD**

SUBJECT: OPC DRUM BALANCER

GENERAL:

The part number and description for the OPC Drum Balancer has changed to parts standardization with the B125. The following part update is being issued for all B010 Parts Catalogs. Please update your parts catalog with the following information.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
B0102252	B1252472	OPC Drum Balancer	2	0	51	12
		Balancer: OPC Drum				

UNITS AFFECTED:

The serial number cut-in information was not available at time of this publication.

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

Appendix H - SD Card Technical Service Guide

SD CARD TECHNICAL SERVICE GUIDE

Contents

1. Introduction
2. Service Concepts
3. Service Information
4. System
5. Special Tools
6. System Requirements

1. Introduction

1-1 OBJECTIVE

Although flash memory cards have been used on our products for service activities in the field, some products require several flash memory cards to update all types of firmware. To save time and servicing costs for firmware and data uploading and downloading, newer products will start using SD cards as the new memory media.

1-2 INTRODUCTION OF THE SD CARD

The B070/B071 is the first product released that uses an SD card instead of a ROM DIMM. The SD card will be used on most future products. Each product will describe whether or not the SD card is used.

2. Service Concepts

The following benefits for service activities can be expected with the SD card:

- Maximizing service efficiency, minimizing servicing time and data back-up. SD cards have enough memory to store all types of firmware and/or data, saving servicing costs and time.
- Unlike flash memory cards, the swap box and/or PC application software tools are not required. Firmware can be easily stored, copied, or deleted using Windows Explorer.

3. Service Information

3-1 TRAINING

There is no training course planned for the SD card itself. This new service tool will be introduced during the product-training course.

3-2 FIELD INFORMATION

When reporting a field issue (FPR), the print data and/or debug log data captured by the SD card should be included with the report depending on the type of problem, as it is very useful for analyzing the problem and developing a solution. Please see Section 4-3 below for a detailed description of the functions for the SD card.

The debug log data and/or print file data attached to the report can be sent to the Engineers and used for the following types of problem analyses. Please refer to the Service Manual for the detailed procedures on how to retrieve this information from the machine.

Data	Problem Type
Debug log	<ul style="list-style-type: none"> • Problems with unknown causes (SC code, paper jam, other abnormal machine operation). • Problems that occur intermittently.
Print data (captured file)	<ul style="list-style-type: none"> • Font problems • Image data missing • Image problems which cannot be duplicated when printing test patterns from the printer.

4. System Overview

4-1 SD CARD TYPE

There are two types of SD cards: The service SD card, and the application SD card.

	SD Card Type	Description
1	Application	<ul style="list-style-type: none"> • The cards are provided as an option for expanding features, depending on the model. • The card contains an ID encryption to protect against illegal duplication. • The cards are provided with an application firmware already included, and have varying memory capacities depending on the content.
2	Service	<ul style="list-style-type: none"> • The cards are registered as service parts and can contain firmware for multiple products. • The cards contain no encryption; therefore, firmware or data in the card can be duplicated. • The memory capacity is 64MB.

4-2 SD CARD ADAPTERS

All models that support the SD card, contain SD card slot(s) for direct uploading and downloading of firmware and other data (see below) between the card and machine. When transferring firmware and data between the card and PC, an adapter is required (PCMCIA adapter or USB reader/writer).

For the specifications of the PCMCIA adapter and USB reader/writer, please refer to section 7 below “System Requirements”.

4-3 FEATURES OF THE SERVICE SD CARD

The following are the features for the Service SD card as of the time this document was issued.

Please refer to the Service Manual for the detailed procedures on how to update the firmware or retrieve the data from the machine.

	Feature	Description	Remarks
1	Firmware update	<ul style="list-style-type: none"> Firmware upgrade or downgrade. Firmware for any supported product can be stored in the card. The machine automatically scans the content of the card and is able to recognize what model the firmware is for. The machine will only download firmware for the same model (itself). 	<p>Please refer to section 4-4 below for guidelines on how to store the firmware and data in the SD card.</p> <p>The firmware cannot be uploaded from the machine to the SD card.</p>
2	Data upload and download	<p>The following data can be transferred between the NVRAM and SD card:</p> <ul style="list-style-type: none"> SP data (ex. factory settings) Logging Data User settings (e.g. network, Fax and mail addresses). 	Transferable data can vary from product to product. Please refer to the Service Manual for each model for details.
3.	Debug log	<p>The machine operation log can be captured when a problem (e.g. SC codes, paper jams) occurs. This data is very useful in determining the cause of a problem.</p> <p>New SP modes have been added to capture the debug log data to the HDD or SD card.</p>	
4.	Card Save	Print data (files) can be stored directly to the SD card without printing out.	
5.	Boot-up from SD card	<p>In cases where the flash ROM boot program has been damaged or corrupted, the SD card can be used to boot up the machine and download its firmware with boot program. This will only be effective when the problem is not hardware-related.</p> <p>Only SD cards that have been <u> specially formatted for machine booting </u> can be used for this purpose.</p>	We will be providing a special tool (utility) to format the SD card for booting, since there is none available in the field. The schedule of releasing this tool is not fixed.

4-4 STORING FIRMWARE AND DATA IN THE SD CARD

(1) Firmware (folder name: romdata):

When the SD card is inserted into the machine slot for firmware update, the machine automatically scans the firmware in the “romdata” folder and checks the firmware headers, which indicate the model. If the model is the same as the machine, the transfer is authorized.

NOTE: The firmware should always be in the “romdata” folder. If not, the machine cannot find the firmware.

Therefore folder arrangement is not critical for firmware downloads, since this process is automatic, however creating separate folders under “romdata” for each model will make it easier to delete files later on. An easy to remember method would be to name these folders after the 4-digit product code for each model, e.g. B070, then store the firmware here.

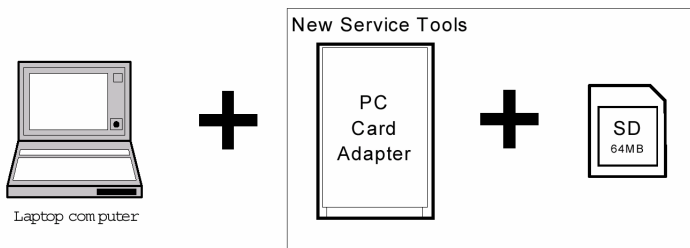
For example:

Folder	Folder	Firmware File	Note
Romdata (*1)			Case (*1): If the SD card is blank, copy the entire “romdata” folder onto the SD card.
	B070 (*2)		Case (*2): If the card already contains the “romdata” folder, copy the B070 folder onto the card.
		B0701111.fwu (*3)	Case (*3): If the card already contains the folders up to “B070”, simply copy the necessary firmware files into this folder.

Adapters: When transferring firmware or data between the SD card and PC, one of the following adaptors is necessary, both of which have been registered as service parts (see below).

PCMCIA Adapter

Required environment: Windows 9x or later



USB Reader/Writer

Required environment: Windows 98 or later



Note: The USB Reader/Writer works on Windows XP, Windows 2000 and Windows Me without an additional driver. A specific driver is required on Windows 98. Please download the USB driver setup application, (http://tsc.ricohcorp.com/protected/utility/Win98_USB_SD_Mem_Driver.exe) when using USB Reader/Writer on Windows 98.

5. Special Tools

The following special tools have been registered as service parts to support products in the field that use SD cards. However when using SD cards, adapters or reader/writers procured as supply goods locally, please be sure to use tools produced by the same manufacturers listed below. This is because products from these vendors were used for the official product evaluations.

Item	Part Number	Description	Q'ty	Manufacturer
1	B6455010	SD Card Kit	1	Toshiba/ Panasonic*
2	B6456700	PCMCIA Card Adapter	1	Panasonic
3	B6456800	USB Reader/Writer	1	Panasonic

“*”: Service SD cards supplied from Ricoh are produced by Toshiba, and application SD cards by Panasonic (standard/option).

The SD Card Kit (#B6455010) contains the following parts:

- SD Card
- SD Card Plastic Case
- Label (see Note)

NOTE: The kit contains a blank label for the SD card for writing down the card's contents. Please make sure that the label is affixed in the correct position on the card, as this is essential to ensure that the card fits into the card slot and adaptors properly. Please also be sure to completely remove the old label whenever affixing a new one.

6. System Requirements

6-1 SD CARD

Please read over the important notes described below regarding the handling of the SD card. If these points are not followed carefully, it may cause the card to be damaged or data to be lost.

Important Notes:

- Do not directly touch the card contacts or bring them into contact with a metallic substance.
- Do not bend, drop or apply any force or shock to the card.
- Keep the card dry at all times, avoiding high-humidity environments and making sure condensation does not form on the card. The environmental requirements for operation and storage are as follows:

	During operation:	Storage:
Temperature	0 to 55°C	-20 to 65°C
Humidity	20 to 85%RH	5 to 85%RH

- Do not remove the card or turn the power off while reading or writing data.
- All SD cards come preformatted. However if reformatting the card later on for some purpose, always be sure to confirm the contents of the card before doing so, as all data will be lost when the card is reformatted.
- Do not attempt to duplicate or reformat the application SD card.

Other:

- The power should always be OFF before the card is inserted in or removed from the machine (see Service Manual for details).
- The SD card should always be kept in the plastic case to protect it from any damage.
- No labels should be affixed to the card except for the ones packaged together with the card. This label must be affixed in the correct position, and must always be removed when attaching a new label (should not be stacked).
- If writing on the label, always do so before affixing it to the card.
- Before inserting either the service or application SD card, always make sure that the card switch is unlocked, as using them in the locked condition will cause an error.
- Since the application SD card is formatted in a different way from the service SD card, the application card cannot be used as a service tool.

6-2 PCMCIA CARD ADAPTOR / USB READER WRITER

	PCMCIA Card Adapter	USB Reader Writer
Manufacturer	Panasonic	
Product Code	BN-SDAA BN-SDAA2	BN-SDCA BM-SDCE2
PC	IBM PC-AT compatible computer	
Host Interface	PCMCIA slot	USB port
OS	Win98 SE or later	
Dimensions	85.6x54x5mm	92x56x15mm

NOTE: Swap Box for the flash memory (IC) card cannot be used for uploading the firmware to the SD card.

Appendix I - System Firmware Read Me File

Readme file for B070/B071 System Firmware

Gestetner: 9002/10512
 Lanier: LD090/LD0105
 Ricoh Aficio: 2090/2105
 Savin: 4090/40105

B0705734	Version	C.SUM	Production
-	V1.02.1	-	1st Mass Prod.
A	V1.04.2	8C1D	February Prod 03'
B	V1.04.4	180D	March Prod 03'

Symptom Corrected	Suffix
1. SC672 (controller start-up error). 2. NetWare printing error: Machine will not accept print jobs after a certain amount have been sent via NetWare. 3. Words missing (French/Spanish): Some words not displayed in French (missing from wording lists). 4. Printing speed with Standard TCP/IP Port is too slow. <u>IMPORTANT: To ensure the above symptom does not occur, it is also necessary to update to the following versions:</u> <ul style="list-style-type: none"> ● BIOS: B0705742D: K02EL000 ● NIC: B0705735B: V.4.03 ● LCDC: B0705371B (NA): V.2.07 	B

Appendix J - Factory Data Sheet (Sample)

```

Time:          200705231645113;
Serial No:     M33       N3370500128;
ID2:          M33       70500128;
Elec. Counter:          0;
Plug&Play:RICOH           Aficio MP W3600(1);
ROM version:   B2865881D;
SOFT version:  1.01.2;
  
```

System Management Report

SPNo.	NAME	Def	Val	SPNo.	NAME	Def	Val
1301-01	LeadingEdge Reg 1st	0	38	2943-01	LED Duty Adj LPH1	120	95
-02	2nd	0	38	-02	LPH2	120	135
-03	Cass	0	38	-03	LPH3	120	120
-05	Bypa	0	38	2952-01	Joint Adj LPH1-2:Ma	500	452
1302-05	SideToSide Reg Bypas	0	-14	-02	LPH2-3:Ma	500	585
2301-01	ChargeCoro Adj Total	1220	1200	-11	LPH1-2:Sub	412	414
-02	Image	825	812	-12	LPH2-3:Sub	16	19
-03	ID Se	690	674	3001-01	IDSensor Initial PWM	200	201
2201-01	Develop.. Bias Image	650	680	4008-01	Scanner SubScan	0	0
-02	ID:Lo	329	343	4010-01	Scanner SubScan Lead	0	-17
-03	ID:Hi	453	463	4011-01	Scanner MainScan Reg	0	15
2301-01	TransferCur Pl:Img:L	60	80	4101-01	Scanner MainScan Mag	0	0
-02	Pl:Img:A	60	80	4705-01	CIS Adj Flag Display	0	1
-03	Pl:Img:T	60	80	4961-01	Org Adj Synchro 210	0	-6
-05	Tr:Img:L	60	80	-02	1000	0	82
-06	Tr:Img:A	60	80	4965-01	Orginal Speed:Leadin	-2	-4
-07	Tr:Img:T	60	80	4972-01	CIS Joint Adj Ma:1-2	0	9
-09	Fi:Img:L	80	107	-02	Ma:2-3	0	-3
-10	Fi:Img:A	80	107	-03	Ma:3-4	0	-7
-11	Fi:Img:T	80	107	-04	Ma:4-5	0	-3
2402-01	SeparationACCur Roll	280	273	-11	Su:1-2	0	-3
-02	Cut	280	273	-12	Su:2-3	0	12
2403-01	Sepa.. DCCur Roll:Pl	250	297	-13	Su:3-4	0	1
-03	Roll:Tr	250	297	-14	Su:4-5	0	-9
-05	Roll:Fi	250	297	5985-01	DeviceSetting NIC	0	0
-11	Bypa:Pl	250	297	-02	USB	0	0
-13	Bypa:Tr	250	297	-15	Bypa:Fi	250	297
-17	Cass:Im	250	297				
2916-01	Fine Mag.. Pl:Model-	0	1				
-02	Pl:Model-	0	1				
-03	Tr:Model-	0	7				
-04	Tr:Model-	0	1				
-05	Fi:Model-	0	0				
-06	Fi:Model-	0	-1				
-07	Re:Model-	0	1				
-08	Re:Model-	0	1				
-09	Pl:Mode5	0	2				
-10	Pl:Mode5	0	-7				
-11	Tr:Mode5	0	2				
-12	Tr:Mode5	0	-5				
-13	Fi:Mode5	0	2				
-14	Fi:Mode5	0	1				
-15	Re:Mode5	0	2				
-16	Re:Mode5	0	-7				

Appendix K - Print Drivers

Downloading the Driver:

- Go to download site (i.e.: www.rioh-usa.com)
 - ↳ Select "Software downloads"
 - ↳ Select Model Number
 - ↳ Select Operating System
 - ↳ Select Driver
 - ↳ Select "Save" and send to appropriate folder*
- Repeat for any other Drivers/software then close Explorer

*A good idea for now is to create a Folder on the Windows desktop:

- Right click on the desktop
 - ↳ Select "New"
 - ↳ Select "Folder"
 - ↳ Name the New Folder "Drivers"

Unpacking the Driver:

- Go to the Drivers folder
 - ↳ Double-click on the downloaded driver
 - ↳ Direct the unzip utility to unpack the driver in the appropriate folder**
- The driver is now ready to be installed.

Installing the Print Driver:

- Go to "Start/Settings/Printers"
 - ↳ Select the "Add Printers" icon
 - ↳ Click "Next" and select "Local Printer" and "Next"
 - ↳ Select "Have Disk"
 - ↳ "Browse" to the Printer Driver Unzipped above (Example: C:/Windows/Desktop/Driver/Disk 1) until "oemsetup" or ".inf" File is high-lighted
 - ↳ Click "OK", then click "OK" again, verify the correct driver is indicated and click Next
 - ↳ Choose Port then click Next
 - ↳ "Print Test Page" Yes/No then click "Next ". Note: When prompted to verify, always answer "Yes"!

- **The Driver is installed and ready to set the Accessories!**

**When unzipping the drivers they can be directed to the current file with the DOS shortcut ".", unless they require an electronic signature, then use the "Browse" feature to place the unzipped files where required

Appendix L - Network Twain Scanning Drivers:

Downloading the Driver:

- Go to the download site (i.e.: www.ricoh-usa.com)
 - ↳ Select "Software downloads"
 - ↳ Select Model Number
 - ↳ Select Operating System r
 - ↳ Select Drive
 - ↳ Select "Save" and send to appropriate folder (just like printer drivers)

Unpacking the Driver:

- Go to the Drivers folder
 - ↳ Double-click on the downloaded driver
 - ↳ The Install Shield Wizard will now install the Network Twain Driver
 - ↳ Accept all defaults.

The Network Twain 32 Driver is now ready to use!

Using the Network Twain Scanning Driver:

- Example: Open Photoshop 5.0
 - ↳ Click on "File" and click on "Import"
 - ↳ Click on "Select Twain 32 Source"
 - ↳ Select the Scanner just installed
 - Click on "File" and click on "Import"
 - ↳ Click on "Twain32"
 - ↳ Preview, adjust and scan your

Appendix M - NIC to NIB via Crossover Cable:

There are several reasons why one might want to connect a laptop back to back (NIC to NIB) with the MFP controller

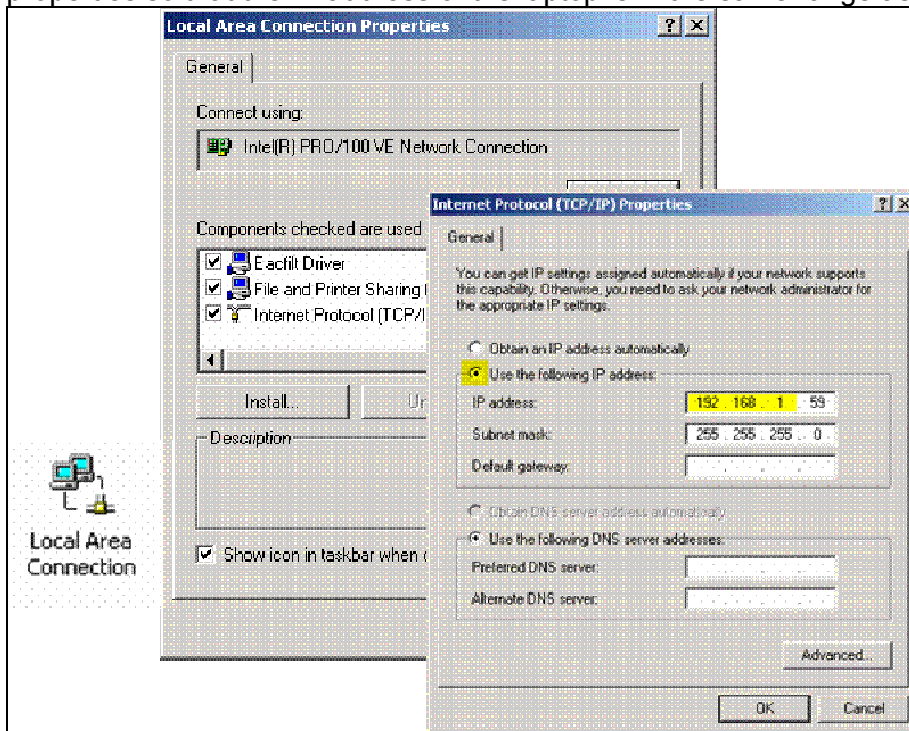
- Isolate the Ricoh device from the LAN for troubleshooting purposes
- To configure device (access to a customer PC isn't always available)
- For quick access to the device for the purpose of scanning a document or printing

Alternatives include a small hub or switch, or a network card, which has auto-crossover capabilities

NIC to NIB: Laptop Configuration

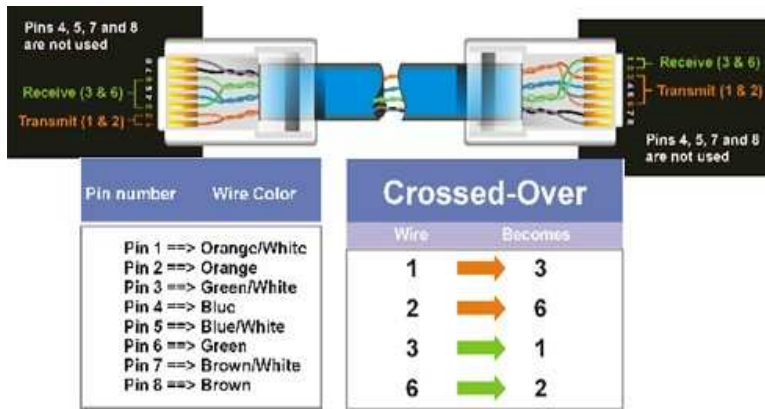
Your laptop must be configured for NIC to NIB (crossover) connection and communication. The IP address of the laptop and machine NIB must have the same network address, but different host address.

After accessing the “Local Area Connection Properties” change the Internet Protocol (TCP/IP) properties so that the IP address of the laptop is in the same range as the machine NIB.



Crossover Cable

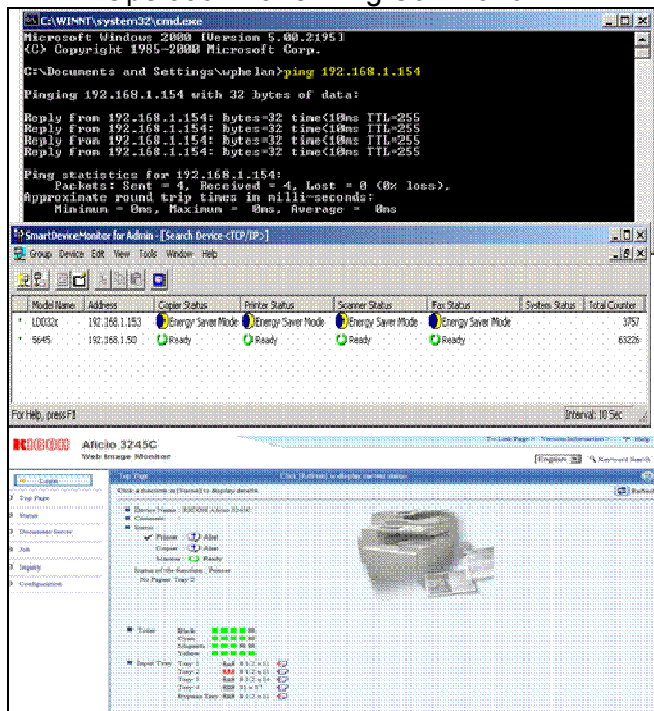
A crossover cable allows NIC to NIB communication without a network hub



Testing the NIC to NIB Connection

Some methods that can be used to test your connection:

- Command Prompt
- SDM/Admin
- WIM
- Operation Panel Ping Command



Appendix N: Printing Technologies Instructor-Led Course

Connecting a multifunctional product to a customer's network to use as a network printer has become a standard function for service professionals. Are you confident that you or your service

professionals are prepared to perform this essential service? The Printing Technologies Instructor-Led Training will prepare service professionals with the skills to set up print devices and demonstrate their use to customers.

Training Locations: [Eastern, Southern and Western Training Centers](#)

Length Of Courses: 5 days

Tuition N/A
Fee:

Target Audience: Service Professionals seeking information on how to connect and configure network print devices, including multifunction products. Attendees should have practical experience networking multifunction products.

Prerequisites: **Recommended:** Participants should have experience using Microsoft Windows 2000 and/or XP Pro, and should be certified or preparing for the [A+](#) or [Network+ certification](#). Service Professionals should have certification on a least one MFP series mainframe.

Pre-Training: None.

Course Overview (proposed):

This course will demonstrate connecting print devices to customer networks, and establish proficiency in working with Microsoft, Novell and Macintosh OS X printing environments. Students will also gain proficiency in various printing configuration tools such as SmartDeviceMonitor for Admin, Web Image Monitor and the MFP Operation Panel. Basic troubleshooting techniques will be demonstrated to ensure that students have all the skills necessary to succeed in the field.

- | | |
|--|---|
| <ul style="list-style-type: none"> • Basic Local Area Networking: <ul style="list-style-type: none"> • Physical Topology • Logical Topology • Media • MAC Address • Network Hardware • Protocols • DHCP • DNS • IPCONFIG/PING/TRACERT • NIC lights • Printer Languages <ul style="list-style-type: none"> • PCL • RPCS • PS • LANfax • Printer Ports <ul style="list-style-type: none"> • Parallel • USB • BlueTooth • | <ul style="list-style-type: none"> • Printer Drivers <ul style="list-style-type: none"> • PCL/RPCS/PS/LanFax • Download & Installation • Configuration of accessories • Parallel Printing w/LPT1 • Port Redirectors <ul style="list-style-type: none"> • LPR • Standard TCP/IP • SmartDeviceMonitor for Client • IPP • Port Creation & Deletion Configuration Methods <ul style="list-style-type: none"> • Operation Panel • Crossover cable connection • Web Image Monitor • SmartDeviceMonitor for Admin • Novell Printing • Macintosh OS X • Wireless <ul style="list-style-type: none"> • Device Configuration |
|--|---|

Appendix O: Scanning Technologies Instructor-Led Course

Scanning Solutions are a growing part of the Ricoh Family Group Companies' solution oriented product offerings. Our multifunction products offer a wide variety of embedded scanning solutions available to customers out of the box. The Scanning Technologies Instructor-Led Training will prepare service professionals and sales engineers with the skills to set up these solutions and demonstrate their use to customers.

Training Locations: [Eastern, Southern and Western Training Centers, Chicago, Dallas, Detroit, Orlando, Portland, Rockville, San Ramon, Swedesboro and Windsor Regional Training Centers](#)

Length of Course: 4 days **Tuition N/A**
Fee:

Target Audience: Service Professionals and Sales Engineers seeking information on how to configure and implement our embedded scanning solutions. Attendees should have practical experience networking multifunction products.

Prerequisites: **Recommended:** Participants should have experience using Microsoft Windows 2000 and/or XP Pro, and should be certified or preparing for [Network+ certification](#). Service Professionals should have certification on a least one MFP series mainframe.

Pre-Training: None.

Course Overview:

This course will describe the applications and requirement for scanning, demonstrate connecting scanning devices to customer networks, and establish proficiency in working with Microsoft, Novell and Macintosh OS X scanning environments. Students will also gain proficiency in various scanning configuration tools such as SmartDeviceMonitor for Admin, Web Image Monitor and the MFP Operation Panel. Basic troubleshooting techniques will be demonstrated to ensure that students have all the skills necessary to succeed in the field.

- | | |
|---|---|
| <ul style="list-style-type: none"> • Imaging Applications: <ul style="list-style-type: none"> • Business Processes • Audit & Compliance (SOX< GLBA, HIPAA) • Risk Management (Disaster Recovery) • Document Management and Distribution (Document Life Cycle) • OCR/OMR/Barcode applications • Bates Stamping • Configuration Considerations <ul style="list-style-type: none"> • File Types • Resolutions • Compression Schemes • Grayscale and Color Implications • Other Document Properties (Document Preparation, Odd Originals, etc.) • Components of a Typical Imaging System <ul style="list-style-type: none"> • Scanning Device • Image Processor • Document Indexer • Database • Search Engine • Repository/Backup Devices | <ul style="list-style-type: none"> • Mapping the Scanning Process <ul style="list-style-type: none"> • Scanning Technologies <ul style="list-style-type: none"> • Scan-To ("Push Scanning") • TWAIN ("Pull Scanning") • Scanner Hardware Interfaces <ul style="list-style-type: none"> • IP-Network • SCSI • USB • Administration/Configuration Methods <ul style="list-style-type: none"> • Operation Panel • Crossover cable connection • Web Image Monitor • SmartDeviceMonitor for Admin • RFG Solutions <ul style="list-style-type: none"> • Scan to (Folder/eMail/URL/FTP/NCP) • Scanning on Macintosh OS X • Scan to Document Server • Fax to eMail • Fax Forwarding • DocumentMall |
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