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AL-C1.5 TECHNICAL TRAINING

Slide 1

BASED ON THE AL-C1 SERIES

This section explains the differences between this new model and the AL-C1 series.

There are no changes to the engine, and there are no new document/paper feed or finishing options.

Date of change	Version History	Description
09-12-2009	1.0.1	Slide 8 modified Slide 9 deleted After slide 12 (old number 13) - two new slides added

Introduction

Slide 2

No additional notes

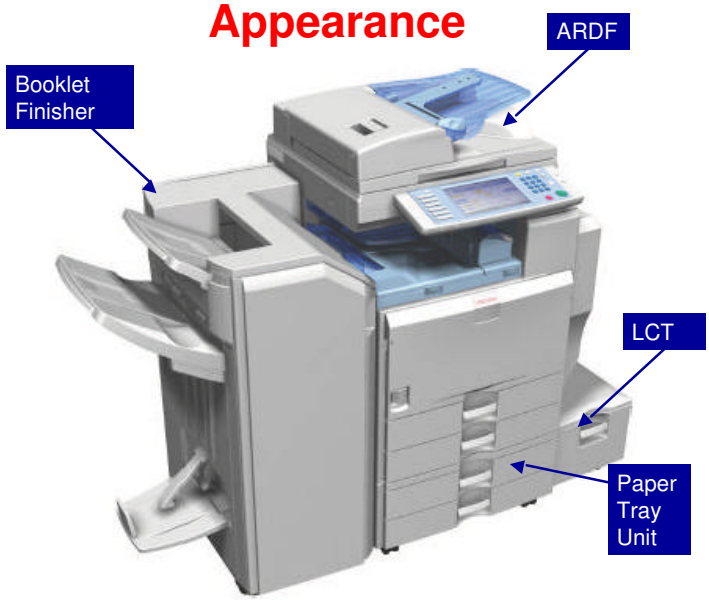
How Many Models?

- **Two models**
  - AL-C1.5b (D091): 40 cpm
  - AL-C1.5c (D092): 50 cpm
    - » No changes from AL-C1
- **All models have a color scanner and built-in printer/scanner unit**
  - There are no monochrome scanner versions.
  - The monochrome scanner versions of the AL-C1 series will still be on sale.
- **The VM card is inserted in the lower slot at the factory. The new App 2 Me feature is built into this VM card, but must be enabled at installation.**

Slide 3

- App 2 Me: More about this later.

Appearance



Slide 4

- Here is a view of the copier with some of the important options attached.
- The ARDF is an option.

Major Improvements

Slide 5

No additional notes

Improvements from the Previous Model

Printer / Scanner	Standard
VM card	Standard
App 2 Me	Standard
OS support	Standard: Win2K, XP, 2003 server, Vista, 2008 server and successor.
Printer driver	Standard: PCL5e/6 Optional: IPDS/PS3 ? RPCS is available only by customization.

Slide 6

No additional notes

Improved Document Solutions and Security

- **App 2 Me: This is a new document solutions product.**
  - Among other things, it allows you to take your preferred operation panel setup with you and use it when you operate any other copier that has this capability.
- **P2600: A hardcopy device and system security standard, sponsored by IEEE.**
  - There are four levels.
  - Ricoh is the only manufacturer of office equipment trying to obtain the highest level of P2600 security approval (suitable for military, government and other high security applications)

Slide 7

- P2600: Approval procedures were not yet complete at the time of writing.

App 2 Me

- **App 2 Me is included on the VM card.**
- **However, it must be enabled at installation.**
  - The procedure is in the field service manual for the main machine.
    - » At the end of the section for installing the main machine, see the ‘App2 Me Setting’ section.

Slide 8

No additional notes

Options

Slide 9

No additional notes

Options

- **Same as the AL-C1 series, except for the following:**
  - No optional hard disk (built-in for all models)
  - No optional memory (256 MB memory built-in for all models)
  - No optional printer/scanner units (built-in for all models)
  - No optional VM card (shipped with the machine in the lower SD card slot for all models)
  - New fax option (to meet the P2600 requirements): Fax Option Type 5001 (D509)

Slide 10

No additional notes

SD Card Slots – Slot 1

- **Slot 1 (upper slot)**
  - Empty when shipped
  - Use for the following options
    - » Data Overwrite Security Unit
    - » PostScript
    - » IPDS
  - If you want to install more than one of these, copy them onto one SD card.
  - You cannot copy the PostScript card. However, you can copy the other SD cards to the PostScript card.

Slide 11

No additional notes

SD Card Slots – Slot 2

- **Slot 2 (lower slot)**
  - Contains the VM card (with App 2 Me) when shipped.
  - Use this slot for service procedures, such as firmware update and NVRAM backup.
  - Also use this slot to install the following SD card options.
    - » HDD encryption unit
    - » Browser unit
  - When installing the above, remove the VM card, do the installation procedure (see the service manual), then put the VM card back in.
    - » During the installation procedure, the HDD encryption or browser software is copied to the hard disk inside the machine.

Slide 12

No additional notes

Lower Slot – Important Note (1)

- **VM card applications such as App 2 Me must be halted if you need to remove the VM card.**
  - Normally, you need to remove the VM card at these times:
    - » To update the firmware
    - » To back up the NVRAM
    - » To install the browser unit or the HDD encryption unit.
    - » To update the App 2 Me application firmware
- **To halt the VM card applications, do the following steps:**
  - 1. Push the “User/Tools” key.
    - » If an administrator setting is registered for the machine, step 2 and 3 are required. Otherwise, skip to step 4.
  - 2.Push the “Login/Logout” key.
  - 3.Login with the administrator user name and password.
  - 4.Touch “Extended Feature Settings” twice on the LCD.
  - 5. Touch each application until the status changes to “Stop”.
    - » It is necessary to stop each application that is running before you remove the VM card.
  - 6. Turn off the machine. And then remove the VM Card.

Slide 13

- You have to remove the VM card to execute a service procedure, such as those listed on the slide.
- After the firmware update, or whatever, then you have to enable App 2 Me and the other extended features again. To do this, see the next slide:

Lower Slot – Important Note (2)

- **After the firmware update, NVRAM backup, etc, then you have to enable App 2 Me and the other extended features again. To do this:**
  - 1. Put the VM card in its slot.
  - 2. Turn the main power on.
  - 3. Press the "User Tools“ key on the operation panel.
    - » If an administrator setting is registered for the machine, steps 4 and 5 are required. Otherwise, skip to step 6.
  - 4. Push the “Login/Logout” key.
  - 5. Login with the administrator user name and password.
  - 6. Touch the "Extended Feature Settings“ button twice.
  - 7. Touch the each application that you use. The status will change to ‘On’.
  - 8. Touch the "Exit“ button.
  - 9. Exit the "User Tools/Counter“ settings.

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No additional notes

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Environmental Conservation

Technology for Environmental Conservation

Energy Saving

Paper Saving

Slide 15

- This section explains the technology used in this machine for environmental conservation, and the default settings of related functions.

Technology for Environmental Conservation

? : New or modified function
? : Has this function
Blank: Does not have this function

Environmental Technology/Feature	Description	New model AI-C1.5	Previous model AI-C1
1. QSU	- Reduction of warm-up time (Energy saving) - Reduction of CO2 emissions	?	?
2. Hybrid QSU	- Reduction of warm-up time (Energy saving) - Reduction of CO2 emissions		
3. IH QSU	- Reduction of warm-up time (Energy saving) - Reduction of CO2 emissions		
4. Paper-saving features	Allows documentation to be managed digitally, cutting down on paper consumption. Improves machine productivity when printing out duplex (double-sided) images.	?	?
5. High-speed duplex copying	Improves machine productivity when printing out duplex (double-sided) images.	?	?
6. Ozone reduction design	- Low ozone emissions	?	?
7. PxP (polymerized) toner	- Energy saving - Conservation of materials/resources (reduced toner consumption)		
8. Noise reduction design	- Low noise	?	?
9. Minimization of harmful substances	- Minimization of harmful substances	?	?
10. Environmentally-friendly toner bottle	- Conservation of materials/resources	?	?
11. Toner recycling	- Conservation of materials/resources	?	?
12. Recycle-friendly design	- Conservation of materials/resources	?	?

Slide 16

- This slide explains what technologies are used for conserving the environment in this product.

Brief Descriptions of the Technologies

- **1. QSU (Quick Start-up)**
  - This technology reduces both the amount of energy consumed while in Standby mode (the Ready condition) is reduced, as well as the time it takes for the machine to warm up to the Read condition.
  - This is made possible through the utilization of dual fusing lamp heating, low fusing point toner, a pressure roller with a "sponge" surface layer, and a thin surface layer hot roller.
- **2. Hybrid QSU**
  - This technology adds a capacitor to conventional QSU Technology, which allows the benefits of reduced energy consumption and reduced warm-up time described above to be extended to high-speed machines.

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No additional notes

Brief Descriptions of the Technologies

- **3. IH QSU**
  - This technology incorporates IH (Inductance Heating) technology into conventional QSU technology, which allows the benefits of reduced energy consumption and reduced warm-up time to be extended to color machines.
- **4. Paper-saving features**
  - 1) The duplex (double-sided) and Combine features reduce paper consumption.
    2) The Document Server and other electronic document management features reduce paper consumption by offering an electronic method for storing and managing important documents.

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No additional notes

Brief Descriptions of the Technologies

- **5. High-speed duplex copying**
  - 1) Enables high-speed duplex printing through the utilization of the Duplex Interleaf and high-speed Inverter Transport features.
  - 2) Enables quick printing of duplex jobs through the use of Duplex Scanning.
- **6. Ozone reduction design**
  - Greatly reduces the machine's ozone emissions to near-zero levels by utilizing:
    1) A charge roller/belt instead of a corona wire
    2) An image transfer roller/belt instead of a corona wire-based transfer system

Slide 19

No additional notes

Brief Descriptions of the Technologies

7. PxP (polymerized) toner

- "PxP toner" is a fine-particle, polyester resin based toner, manufactured using a Ricoh-original polymerization method instead of the conventional pulverization method.
- This allows the toner to fuse at a lower temperature, which reduces the impact on the environment and contributes to achieving even higher image quality than before.
- PxP toner also has other benefits, including a reduction in the amount of toner needed to develop the image, as well as an approximate 35% reduction in CO_2 emissions during the toner manufacturing process.

Slide 20

No additional notes

Brief Descriptions of the Technologies

- **8. Noise reduction design**
  - 1) The machine and its components are designed to minimize the overall noise generated by the machine. As a result, all noise levels conform to the local laws and regulations as well as user requirements in each market in which the products are sold.
  - 2) Reduces the noise generated by the polygon mirror motor.
- **9. Minimization of harmful substances**
  - 1) Products sold in the EU conform to the RoHS Directive.
  - 2) Products sold in China conform to China's version of the RoHS Directive.
  - 3) In addition, Ricoh imposes strict internal standards for limiting the presence of harmful substances.

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No additional notes

Brief Descriptions of the Technologies

- **10. Environmentally-friendly toner bottle**
  - A changeover from PS/PP/HDP to PET plastics allows approximately 40 percent by weight of the toner bottle to be recycled, and also reduces CO_2 emissions that occur during the toner bottle manufacturing process.
- **11. Toner recycling**
  - Enables effective use of resources by recycling (reusing) the toner left over on the drum surface after image transfer.
- **12. Recycle-friendly design**
  - To maximize the recycling ratio of machine and component materials, as well as the ease of performing the recycling in the field, machine sections and components are designed so that the recyclable parts can be separated out easily.
  - In addition, components are designed so that they can be reused for as long as possible after the machine has reached its operational lifetime.

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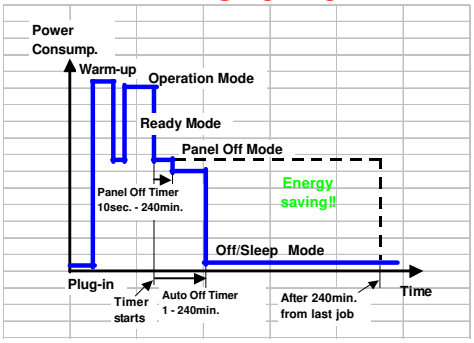
No additional notes

2. Energy Saving

2.1 Overview – 1



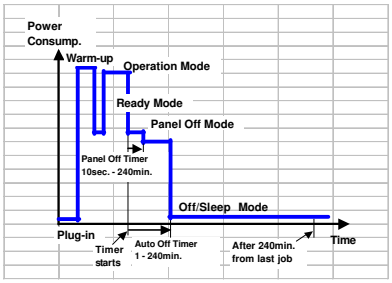
Energy Saver Modes	Description
Energy Saver Mode (Panel Off)	The machine is still in the Copy Ready condition. Panel off and lower the fusing temperature.
Sleep Mode	When a printer/scanner or fax unit is installed: No power is supplied to the printing engine, and almost none to the controller.

Slide 23

- When the machine is not being used, the machine enters energy saver mode to reduce the power consumption by turning off the LCD of the operation panel and lowering the fusing temperature.
- The area shaded green in this diagram represents the amount of energy that is saved when the timers are at the default settings. If the timers are changed, then the energy saved will be different. For example, if the timers are all set to 240 minutes, the green area will disappear, and no energy is saved before 240 minutes expires.

- In this model, there is no Off Mode, because a printer/scanner unit is built in. Sleep mode is used instead. Also, there is no Low Power Mode.

2. Energy Saving
2.2 Overview – 2 (System Settings)



1) Timer settings and recovery time (System settings => Timer setting)

Mode	Timer	Defult	Setting range	Recovery time
Panel off Mode	Panel Off Timer	60 sec.	10 sec to 240 min.	3 sec.
Off/Sleep Mode	Auto Off Timer	1 min.	1 to 240 min.	10 sec.

Specified values for timers	Panel Off	Auto Off
Panel Off > Auto Off	Can start	Can start
Panel Off = Auto Off	Cannot start	Can start
Panel Off < Auto Off	Cannot start	Can start

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- The user can set these timers with User Tools
  MFP/ Priport: User Tools > System settings > Timer Setting
  Printer : User Tools > System settings > Energy Saver Timer
- Normally, Panel Off timer < Energy Saver timer < Auto Off timer.
- But, for example, if Auto Off timer < or = Panel Off timer and Energy Saver timer, the machine goes immediately to Off mode when the Auto Off timer expires. It skips the Panel Off and Energy Saver modes.
- Example
  - Panel off: 1 minute
  - Low power: 15 minutes
  - Auto Off: 1 minute
  - The machine goes to Off mode after 1 minute. Panel Off and Low Power modes are not used.
- We recommend that the default settings should be kept.
  - If the customer requests that these settings should be changed, please explain that their energy costs could increase, and that they should consider the effects on the environment of extra energy use.
  - If it is necessary to change the settings, please try to make sure that the Auto Off timer is not too long. Try with a shorter setting first, such as 30 minutes, then go to a longer one (such as 60 minutes) if the customer is not satisfied.
  - If the timers are all set to the maximum value, the machine will not begin saving energy until 240 minutes has expired after the last job. This means that after the customer has finished using the machine for the day, energy will be consumed that could otherwise be saved.
  - If you change the settings, the energy consumed can be measured using SP8941, as explained later in this presentation.

2. Energy Saving
2.2 Energy Saver Mode: Condition of LEDs

❑ Condition of LEDs on the operation panel

Mode	Operation Switch LED	Energy Saver LED	Main Power LED
Panel off Mode	On	On	On
Off/Sleep Mode	Off	Off	On

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No additional notes

2. Energy Saving

2.2 Energy Saver Mode: Panel Off Mode – 1

- **The machine enters panel off mode when one of the following is done.**
  - The panel off timer runs out after the last job.
    - » The panel off timer is controlled by User Tools: Timer settings.
  - The Energy Saver key is held down for a second.
- **The machine is still in the stand-by (ready) condition, but turns off the LCD of the operation panel.**
- **The machine recovers to the ready condition if one of the following occurs:**
  - The Energy Saver key is pressed
  - An original is placed in the ADF
  - The ADF is lifted
  - The user touches the operation panel
  - The front door is opened or closed

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- In some MFP models, when it takes 1 minute to return from Off/Sleep mode, there may be no Panel Off Mode
- Also, there is no Panel Off Mode in printers.

2. Energy Saving

2.2 Energy Saver Mode: Sleep Mode – 1

- **Sleep mode is used instead of auto off mode when a printer/scanner or fax unit is installed.**
- **The machine enters sleep mode when one of the following is done.**
  - The auto off timer runs out after the last job.
  - The operation switch is pressed to turn the power off.
- **When the machine enters sleep mode, no power is supplied to the printing engine, and almost none to the controller.**
- **Recovery time**
  - Model AI-C1.5b: Less than 10 seconds
  - Model AI-C1.5c: Less than 15 seconds

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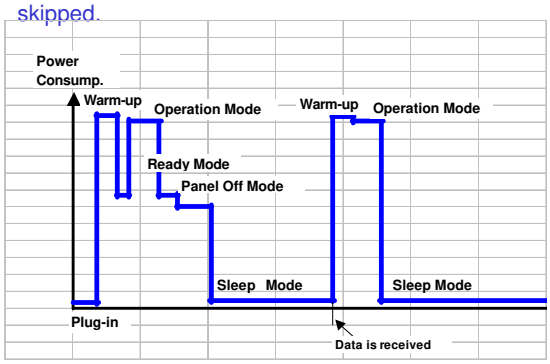
No additional notes

2. Energy Saving

2.2 Energy Saver Mode: Sleep Mode – 2

- **The machine recovers to the ready condition:**
  - **If data is received**
    - » After warm-up, the job starts, but the operation panel stays dark.
    - » Then, after the job is completed, the machine returns to sleep mode immediately. Panel Off and Low Power modes are skipped.



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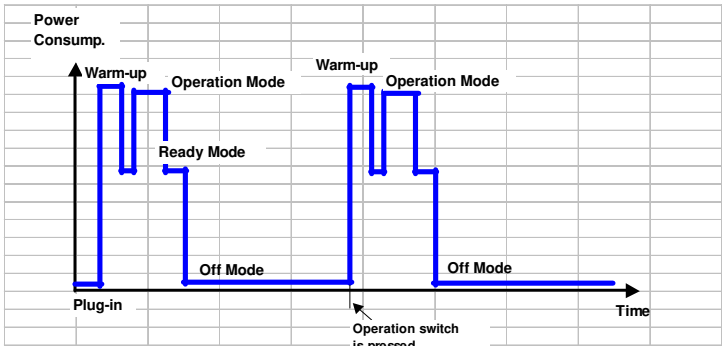
No additional notes

2. Energy Saving
2.2 Energy Saver Mode: Sleep Mode – 3

- **The machine recovers to the ready condition:**
  - **If the operation switch is pressed**
    - » The operation panel lights. When warm-up is finished, the machine goes to the ready condition.
    - » Then, after the job is completed, the machine returns to sleep mode when the auto off timer runs out or the operation switch is pressed.
    - » This is the same as Off mode.



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❒ This timing chart shows what happens if the data is received while the machine in sleep mode.

2. Energy Saving

2.3 Energy Save Effectiveness – 1

- **With the data from SP 8941:Machine Status, and the power consumption values from the specifications, we can estimate the amount of energy that is used by the machine.**
  - 8941-001: Operating mode
  - 8941-002: Standby mode
  - 8941-003: Panel off mode
  - 8941-005: Off/sleep mode
- **This should only be used as a reference value, because the power consumption specifications are measured in a controlled environment with a constant power supply.**
- **To get an exact measurement at the customers site, a watt meter must be used to measure the actual energy consumed.**

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No additional notes

2. Energy Saving

2.3 Energy Save Effectiveness – 2

(1) At the start of the measurement period, read the values of SP 8941:001-005 (Machine Status).

(2) At the end of the measurement period,read the values of SP 8941:001-005 (Machine Status).

(3) Find the amount of time spent in each mode. (Subtract the earlier measurement from the later measurement and convert the result to hour.)

(4) Power consumption figures for each model are acquired from “Publication System of MSDS_&_PEI (PRODUCT ENVIRONMENT INFORMATION)” database.
Example:

Mode/condition	Power consumption:
Operating mode	1081.8W
Ready mode / Energy Save	214W
Off/Sleep mode	7W

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2. Energy Saving

2.3 Energy Save Effectiveness – 3

(5) Multiply this by the power consumption spec for each mode and convert the result to kWh (kilowatt hours)

(6) This is a simulated value for power consumed.

Example calculations:

Mode /condition	SP8941: Machine Status	Time at Start (min.) ?	Time at End (min) ?	Running time (hour) (? - ?)/60= ?	Power Consumption Spec.(W) ?	Power consumption .(KWH) (? x?)/1000= ?
Operating	001: Operating Time	21089	21386	5.0	1081.8	5.35
Stand by (Ready)	002: Standby Time	306163	308046	31.4	214.0	6.72
Energy save	003 Energy Save Time	71386	75111	62.1	214.0	13.29
Off/Sleep	005: Off mode Time	508776	520377	193.4	7.0	1.35
Total?						26.71

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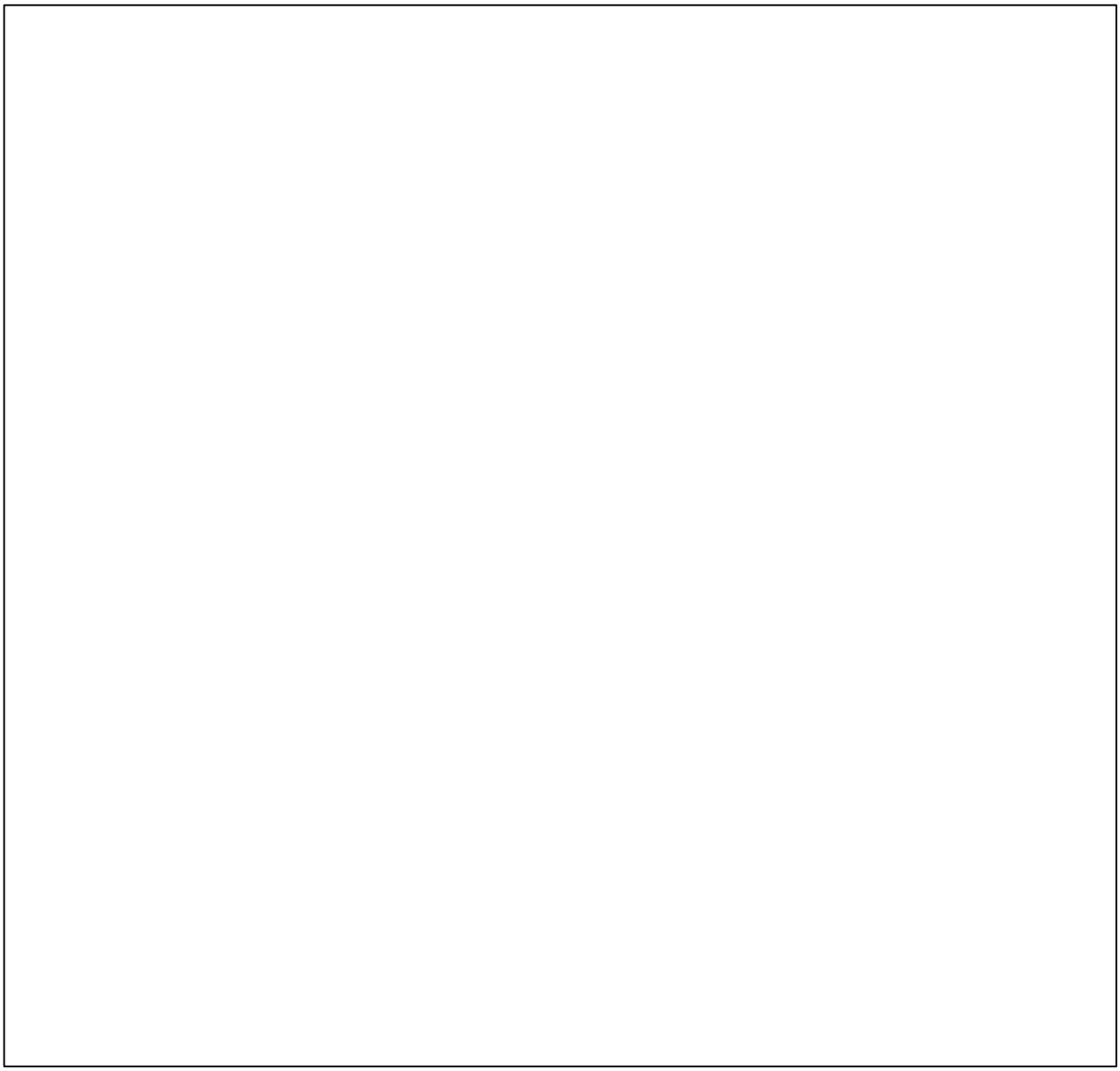
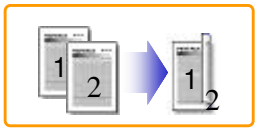
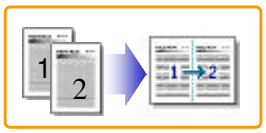


3. Paper Saving
3.1 Measuring the Paper Consumed – 1

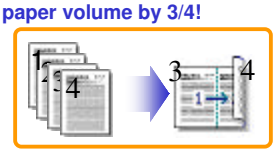
1. Duplex: Reduce paper volume in half!



2. Combine: Reduce paper volume in half!



3. Duplex + Combine: Using both features together can further reduce paper volume by 3/4!



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No additional notes

3. Paper Saving
3.1 Measuring the Paper Consumed – 2

- **To check the paper consumption, look at the total counter and the duplex counter.**
  - Total counter : SP 8581 001
  - Single-sided with duplex mode : SP 8421 001
  - Double-sided with duplex mode : SP 8421 002
  - Book with with duplex mode : SP 8421 003
  - Single-sided with combine mode : SP 8421 004
  - Duplex with combine mode : SP 8421 005
- **The total counter counts all pages printed.**
- **The duplex and combine counter counts all pages printed with duplex and combine mode.**

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No additional notes

3. Paper Saving
3.1 Measuring the Paper Consumed – 3

- **How to calculate the paper reduction ratio, when compared with Single-sided copying, with no 2-in-1 combine mode**
- **Paper reduction ratio (%) = Number of sheets reduced: A/Number of printed original images: B x 100**
  - Number of sheets reduced: A
    = Output pages in duplex mode/2+ Number of pages in Single-sided with combine mode + Number of pages in Duplex with combine mode x 3/2
    A = (②+③+④)/2 + ⑤+⑥ x 3/2
  - Number of printed original images: B
    = Total counter+ Number of pages in Single-sided with combine mode + Number of pages in Duplex with combine mode
    B = ①+⑤+⑥

① Total counter	**: SP 8581 001 (pages)**
② Single-sided with duplex mode	**: SP 8421 001 (pages)**
③ Double-sided with duplex mode	**: SP 8421 002 (pages)**
④ Book with with duplex mode	**: SP 8421 003 (pages)**
⑤ Single-sided with combine mode	**: SP 8421 004 (pages)**
⑥ Duplex with combine mode	**: SP 8421 005 (pages)**

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In the above formula:

- Sheet: A sheet of paper
- Page: A side of a sheet of paper. In duplex mode, one sheet is two pages
  - Output page: One side of a sheet of output paper
- Original Image: An image of one original page (or, an image of one side of a two-sided original)
  - For one sheet of output paper in two-in-one copying, four original pages are copied onto two output pages.