❒ This course will explain the differences between this machine and the Dolphin-C2.

PRODUCT OUTLINE

Introduction

Slide 2

PURPOSE OF THIS SECTION

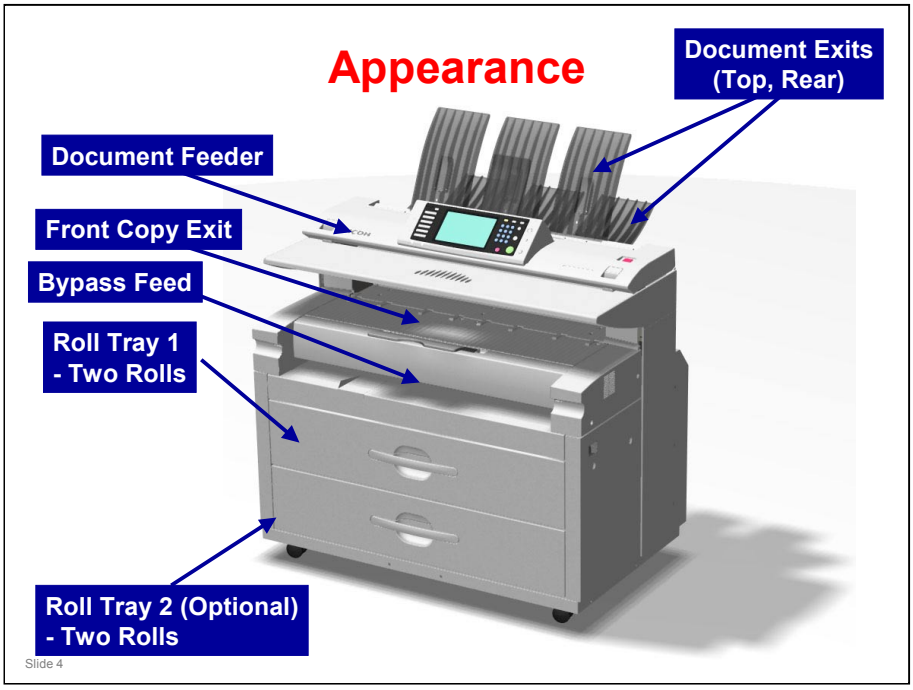
- ❒ The model will be introduced.
- ❒ The optional peripherals will be introduced.
- ❒ The product concept, sales points, and targets will be presented.

How many models?

- **D046: Beluga-C1a**
- **D049: Beluga-C1b**
- **Differences**
  - Maximum scan length
    - » D046: 15 m (590”), D049: 30 m (1180”)
  - Copy speed
    - » D046: 120mm/s, 10 cpm (A1/D LEF), 5 cpm (A0/E LEF)
    - » D049: 170mm/s, 14 cpm (A1/D LEF), 7 cpm (A0/E LEF)
  - Fusing lamps and hot roller are different

Slide 3

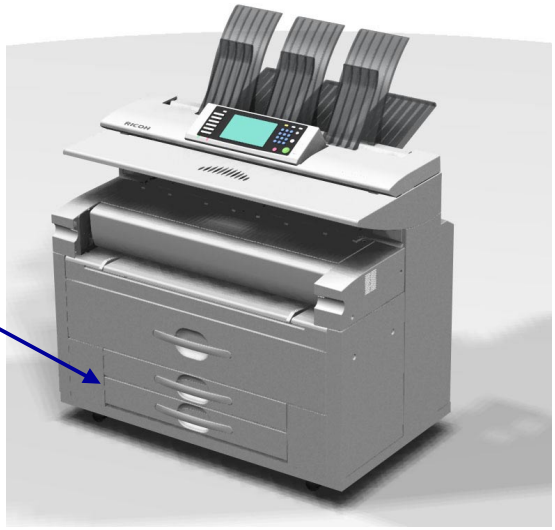
No additional notes



APPEARANCE

- This slide shows a front view of the machine.
- Document feeder: One sheet at a time.
- Document exits at top and rear
- Copy exits at front and rear (rear one not shown in the diagram).
- Bypass Tray: One sheet at a time
- Roll Tray 1: Contains two paper rolls (rolls 1 and 2)
- Roll Tray 2 (Optional): Contains two paper rolls (rolls 3 and 4).

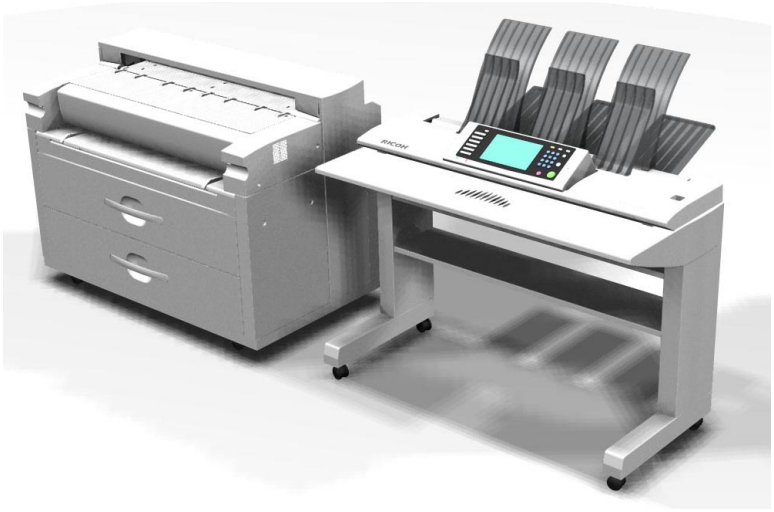
With Optional Paper Cassette



Slide 5

❒ An optional paper cassette can be installed instead of an optional roll feeder. There are two trays.

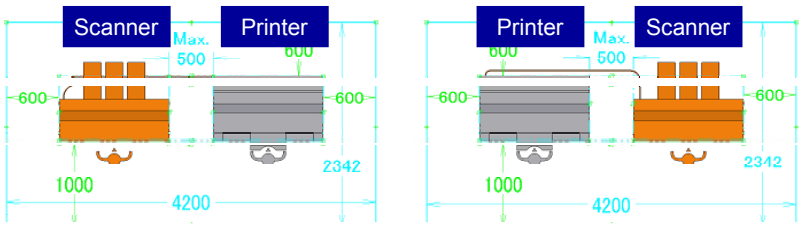
With Scanner Separation Unit (D049 only)



Slide 6

- This is for D049 only.
- The table is too high for most wheelchair users.

Scanner Separation Unit

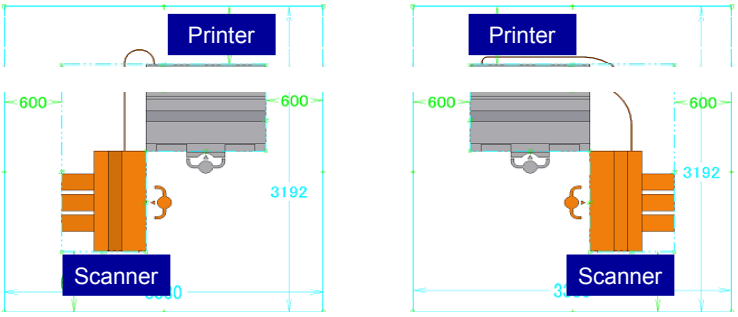


- The scanner can be moved to the left or the right of the printer.

Slide 7

No additional notes

Scanner Separation Unit

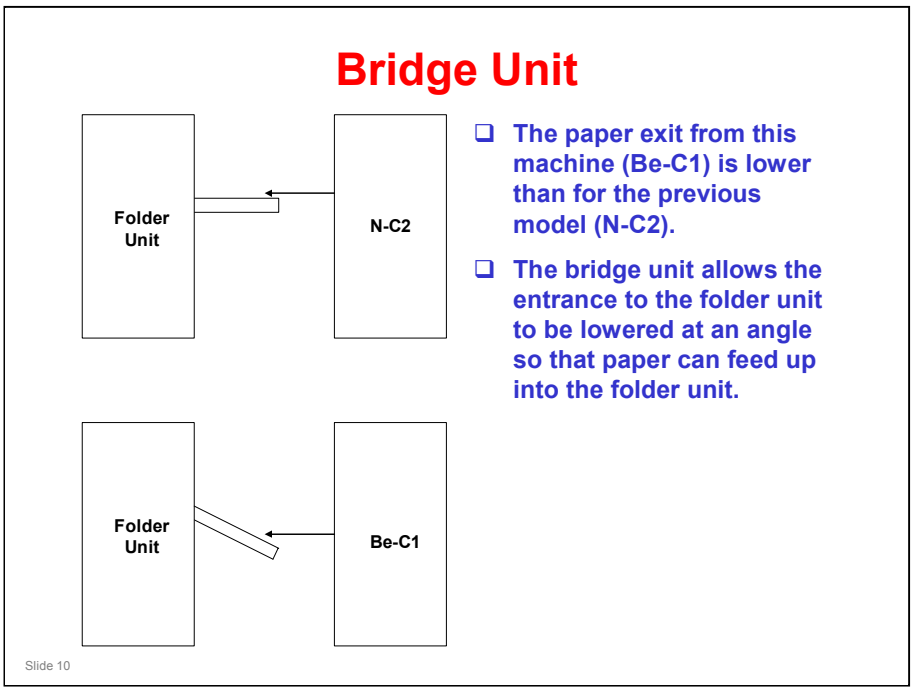


- The scanner and printer can be arranged at right-angles to each other.

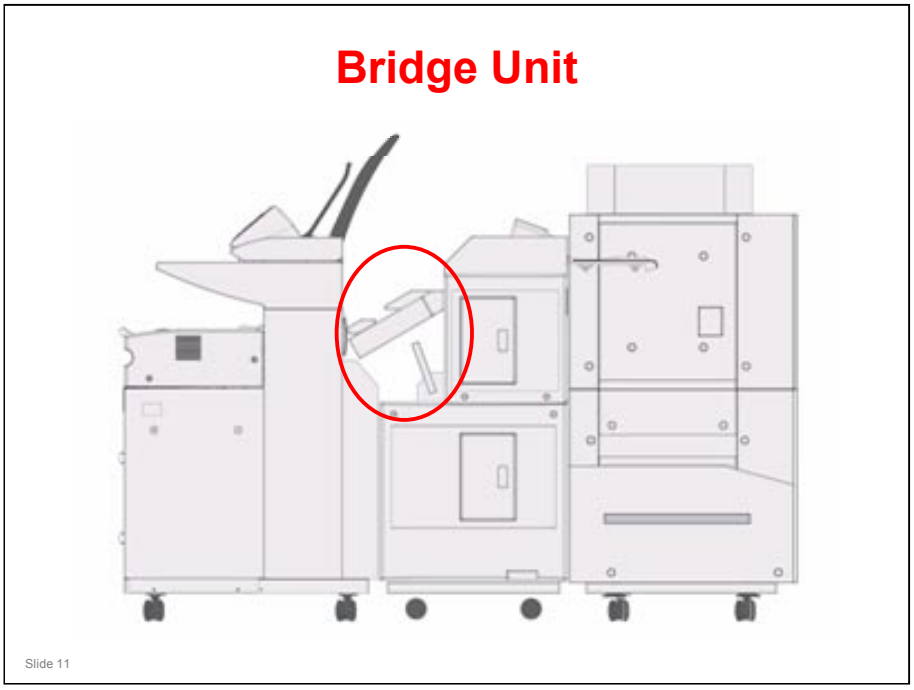
Slide 8

No additional notes

- This is the same fan folder that was used with the Neptune-C2.
- However, a bridge unit is required to install it on this new machine. See the next slide for details.

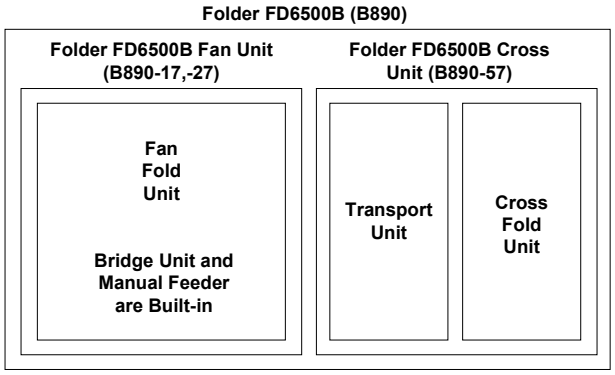


- The bridge unit must be installed with the fan folder unit on the Be-C1.
- With the optional cross folder unit (explained next), this is not necessary, because the bridge unit is built-in.



❒ Here is another view of the bridge unit (in the red circle).

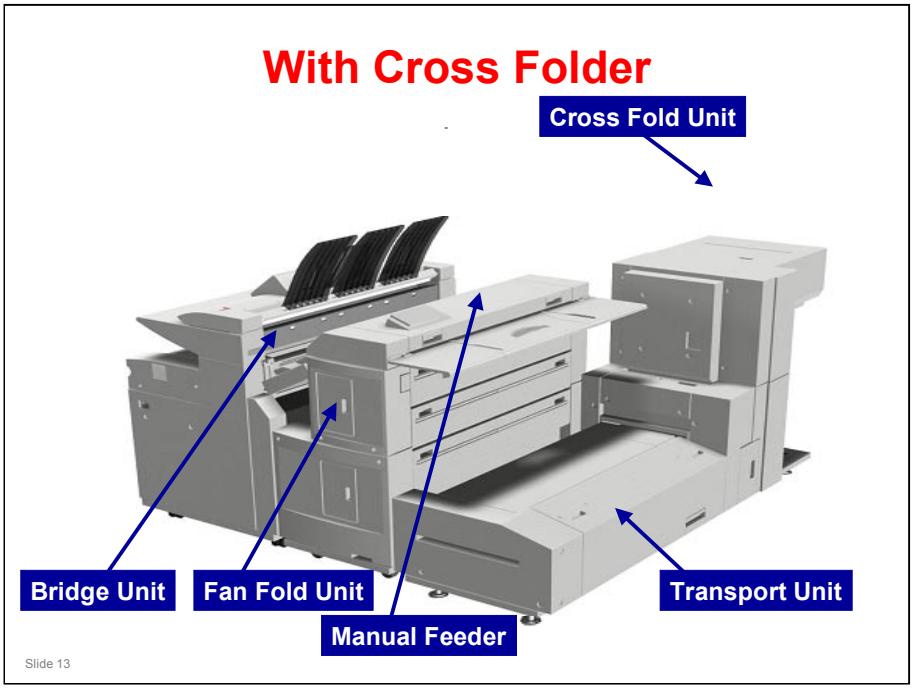
Cross Folder Unit



- **The cross folder unit (B890) consists of two main sub-units.**
  - Fan Unit (B890-17,-27) : One box, containing a fan fold unit, a bridge unit and a manual feeder unit
  - Cross Unit (B890-57) : Two boxes on one pallet (one contains a transport unit, and the other contains the cross fold unit).

Slide 12

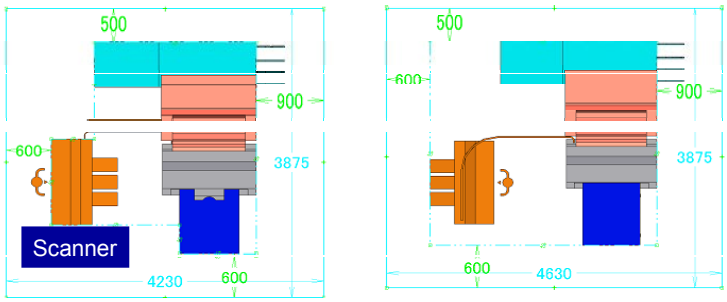
- This slide explains the composition of the new cross folder unit.
- See the next slide for a photograph.



This shows the cross folder installed on the machine.

- ❒ After leaving the fan fold unit, the transport unit feeds the paper sideways into the cross fold unit.

Cross Folder with Scanner Separation



- This shows how the cross folder unit can be installed with the scanner separation unit.

Slide 14

No additional notes

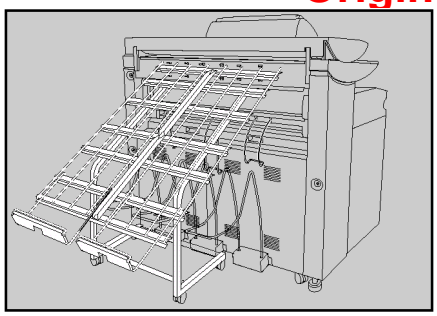
Optional Original and Copy Trays

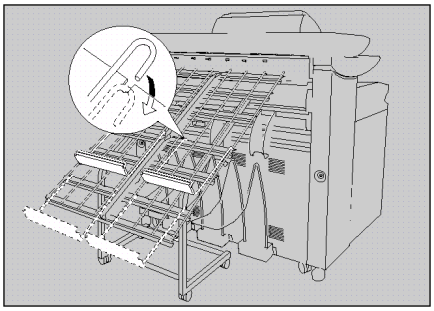
- Original Exit Tray: Same as the Dolphin-C2
- Original Hanger: Same as the Neptune-C2
- Multi Stacker Type 7140 (New)
- Rear Stacker Type 7140 (New)
- Double Stacker Type 7140 (New)

Slide 15

No additional notes

Original Tray





- This option cannot be used when the optional fan folder or cross folder is installed.

Slide 16

- This is the same option that was used with the Dolphin-C2.
- Note how this option can be used to stack originals coming out of the rear exit.
- The diagram on the right shows how to adjust the tray to match the size of the originals.

Original Hanger

- Originals can be stored in this hanger until scanning.

Slide 17

No additional notes

- This option can be attached at the front or the rear.
- If installed at the front, it is used as a copy stacker.
- If used at the rear, it can be installed as an original stacker or a copy stacker.
- This option cannot be used at the rear when any of the following are installed:
  - Folder FD 6500 A/B (B889/B890)
  - Original Exit Tray Type G (B341)
  - Rear Copy Stacker Type 7140 (D438).

Slide 18

❒ This is a new option.

Rear Stacker

- If the fan folder is installed, you can install this option to receive scanned originals.
- This option can be installed only when the Manual Feeder is installed on top of the fan folder or cross folder.

Slide 19

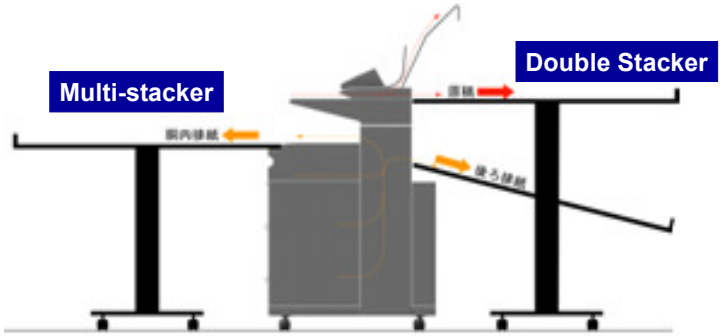
- This is another new option.

- This option can be installed at the rear.
- It stacks originals (upper stacker) and copies (lower stacker).
- This option cannot be used when the optional fan folder or cross folder is installed.

Slide 20

- This is another new option.

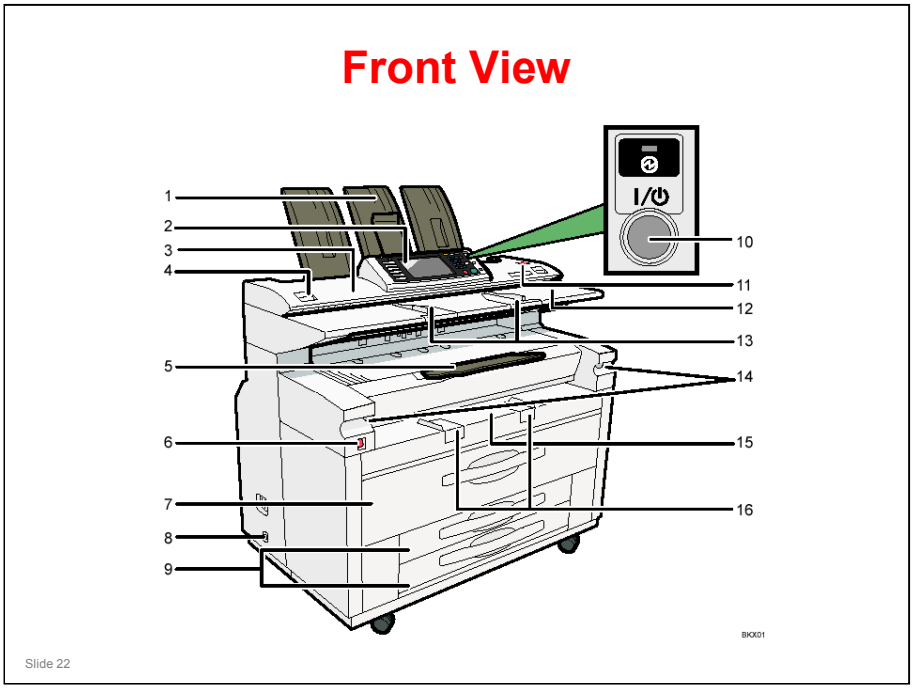
Multi-stacker and Double Stacker



- This shows the multi-stacker installed at the front, with the double stacker installed at the rear.

Slide 21

- If the folder option is installed, a stacker cannot be installed at the rear.



FRONT VIEW

Operating Instructions - About the Machine – Getting Started

Copy paper sources

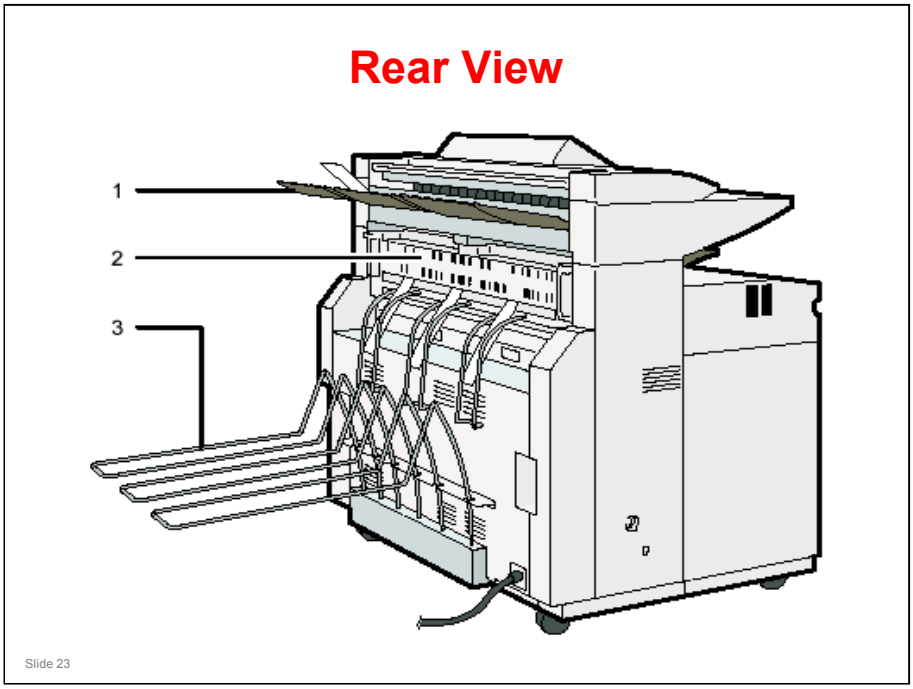
- ❒ Upper roll tray (item 7): Contains two paper rolls
- ❒ Lower tray (item 9): Contains two paper cassettes or paper rolls. This tray is an optional item.
- ❒ Bypass feed tray (item 15): Use this to make a copy on a sheet of cut paper.
  - ➢ To copy on cut paper, you must use the bypass tray or the optional cassette unit.

Copy exits

- ❒ Front exit (item 5)
  - ➢ There is another exit at the rear. It will be shown on the next slide.
  - ➢ For recommendations on which exit to use, see the Operating Instructions.

Other items

- ❒ Note the locations of the main power and operation switches (items 6 and 10).
- ❒ Note the Scanner Stop key (item 11). Use this to stop scanning if the original starts to skew. Also use it to release the original after it has been scanned.
  - ➢ Depending on a user tool setting, the scanner holds on to the trailing edge of the original after scanning, to prevent it from falling and being damaged. To release the trailing edge, press the Scanner Stop key.



REAR VIEW

Operating Instructions - About the Machine – Getting Started

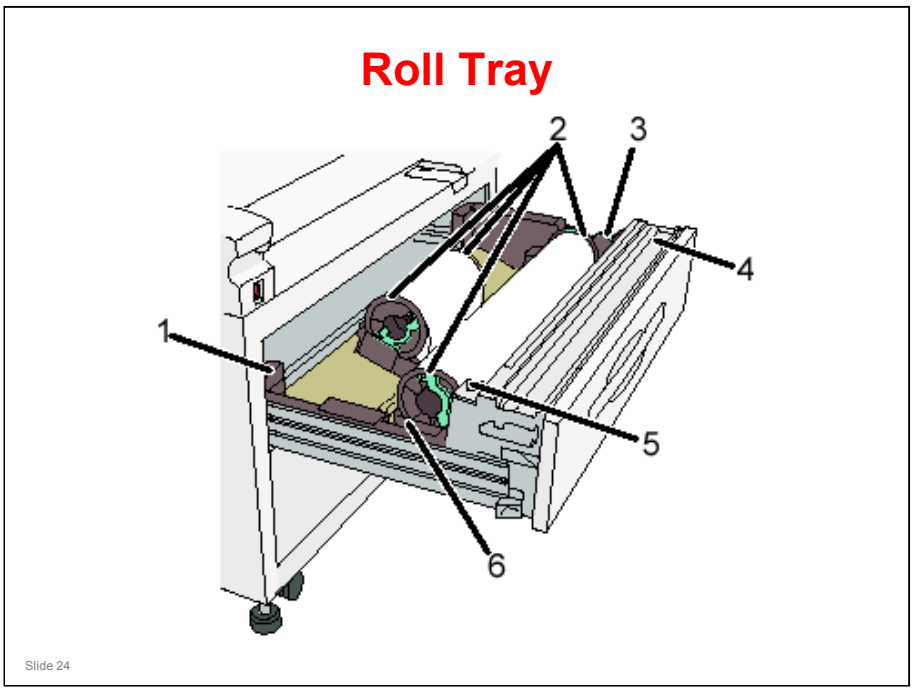
❒ Point out the following items on the diagram. Demonstrate them on the machine, because some items are not immediately clear from the drawing.

Original exit

❒ Rear exit (item 1): The original is fed out to this exit.

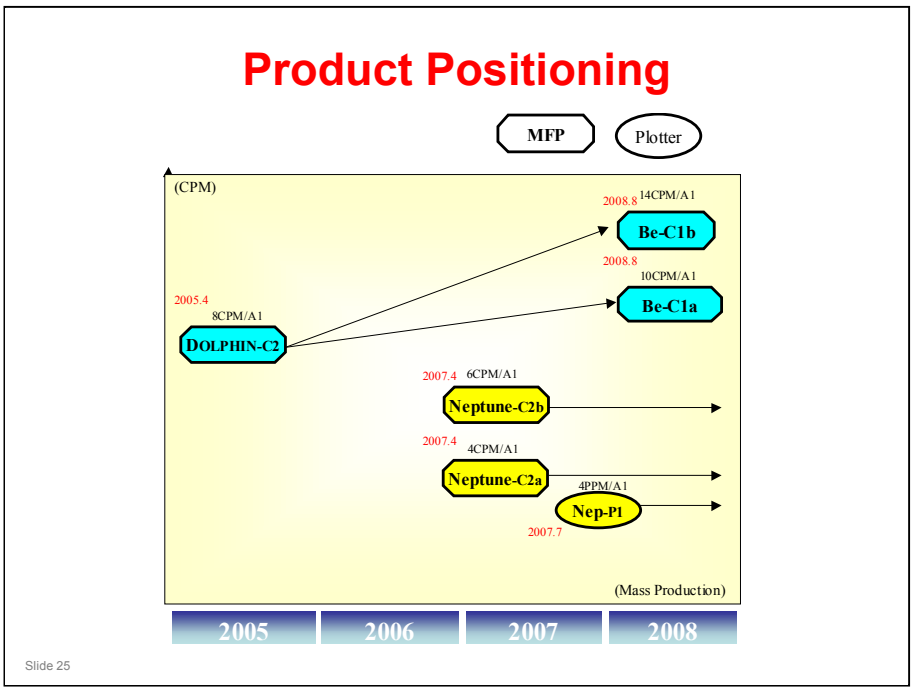
Copy exit

❒ Rear exit (item 3): The copy is fed out to this exit.



Operating Instructions - About the Machine – Getting Started

- The diagram shows the upper tray.
- 1. Anti-humidity heater switch
  - When humidity is high,paper in the paper tray may absorb moisture, which can affect copy quality. The anti-humidity heater prevents this.
  - Turn this switch on when humidity is high.
- 2. Paper holder
  - The two paper holders grip the paper roll and are mounted on the paper roll tray's roll holder.
- 3. Paper feed knob
  - Use when loading paper rolls or clearing paper jams.
- 4. Cutter knob
  - Use to manually cut paper if there are paper jams in the cutter area of the machine. Always return the cutter knob to the left or right end.
- 5. Auto feed button
  - The switch allows the user to feed the leading edge of a new roll into the machine properly. Press the key to feed paper, then release to cut the paper.
  - Use this to clear misfeeds in the paper feed area. Keep this button pressed to feed the roll paper continuously.
  - When approximately 100 mm (3.9“) of paper length is fed, release the button so that paper will be cut automatically.
- 6. Roll holder
  - Adjust this to the size of the paper roll you are using. The anti-humidity heaters are not options in this machine. The switches are off by default, to meet Energy Star requirements.



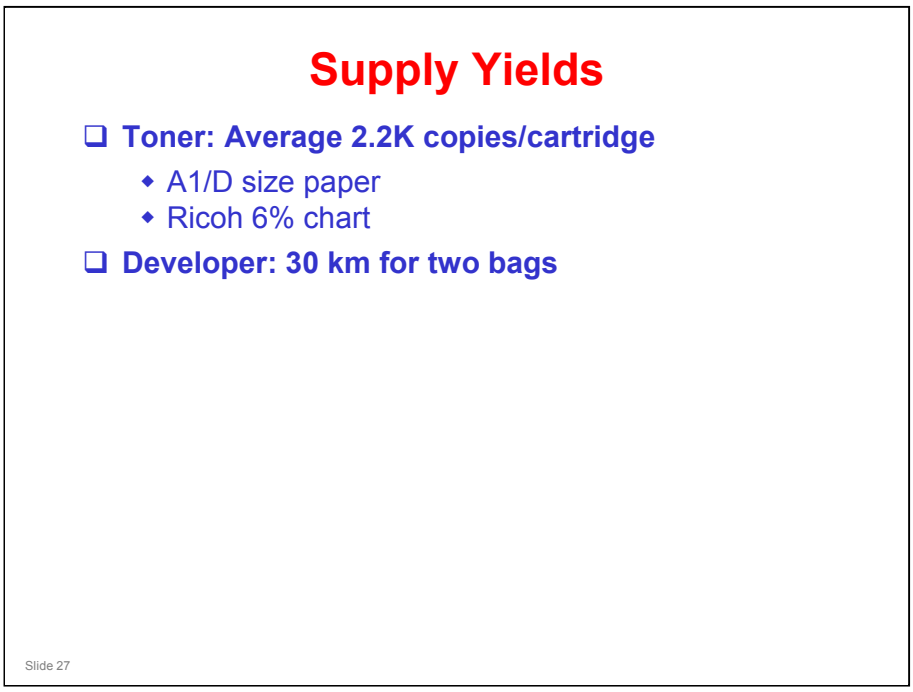
No additional notes

Sales Points

- High Speed: 10 ppm (D046) & 14 ppm (D049)
- High Resolution: 600 dpi
- Color Scanner
- Large variety of Peripherals/Flexible Layout
- Color LCD Operation Panel
- Scanner Separation Unit
- Outstanding Usability
  - Easy paper jam clearance
  - Animated user guidance on LCD
  - Easy-to-handle paper trays
  - Simplified display

Slide 26

No additional notes



Toner

- The toner cartridge capacity is 800 g.
- The toner is the same as Neptune-C2 and Dolphin-C2, but the toner cartridges are unique. The rear flange is different, so that you cannot install the wrong type of toner cartridge.

Developer

- The developer bag contains 1.0 kg. Two bags are added at installation.
- The developer is Neptune-type, not Dolphin-type.
- Developer is a PM part, so it is counted with the length counter.

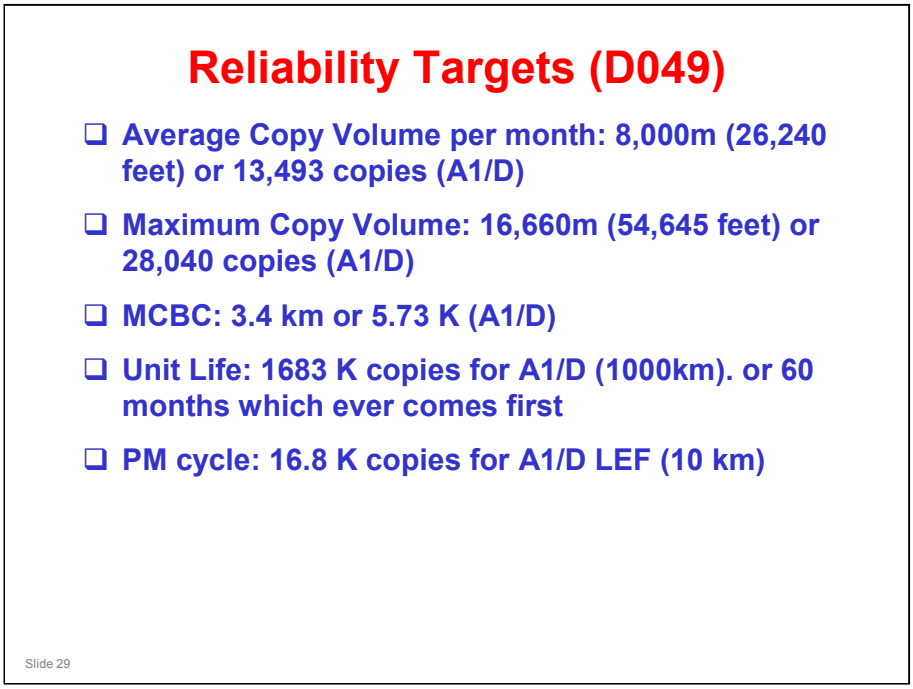
Reliability Targets (D046)

- Average Copy Volume per month: 1,500m (4,920 feet) or 2,530 copies (A1/D)
- Maximum Copy Volume: 6,500m (21,320 feet) or 10,940 copies (A1/D)
- MCBC: 3.4 km or 5.73 K (A1/D)
- Unit Life: 657K copies for A1/D (390km). or 60 months which ever comes first
- PM cycle: 16.8 K copies for A1/D LEF (10 km)

Slide 28

RELIABILITY TARGETS

- The main points are on slide.
- The targets for the D046 are basically the same as the D-C2.
- Note that the PM cycle is 10 km (length of copies made).



RELIABILITY TARGETS

- The main points are on slide.
- The targets for the D049 are very different from the D-C2. This is due to marketing requirements.
- Note that the PM cycle is 10 km (length of copies made).

No additional notes

Specifications

- **Originals: One sheet at a time**
- **Max. Original Width: 950 mm (37.4")**
- **Max. Original Image Size (W x L)**
  - D046: 914.4 x 15,000 mm, 36" x 590"
  - D049: 914.4 x 30,000 mm, 36" x 1180"
- **Min. Original Image Size (W x L): 210 x 210 mm, 8.5" x 8.5"**
- **Max. through-put width: 950 mm (37.4")**
- **Original Weight**
  - Rear Straight: 20.0 to 157 g/m² (5.32 to 41.7 lb.), 30 µm to 1.1 mm
  - Upper: 20.0 to 104.7 g/m² (5.32 to 27,9 lb.)

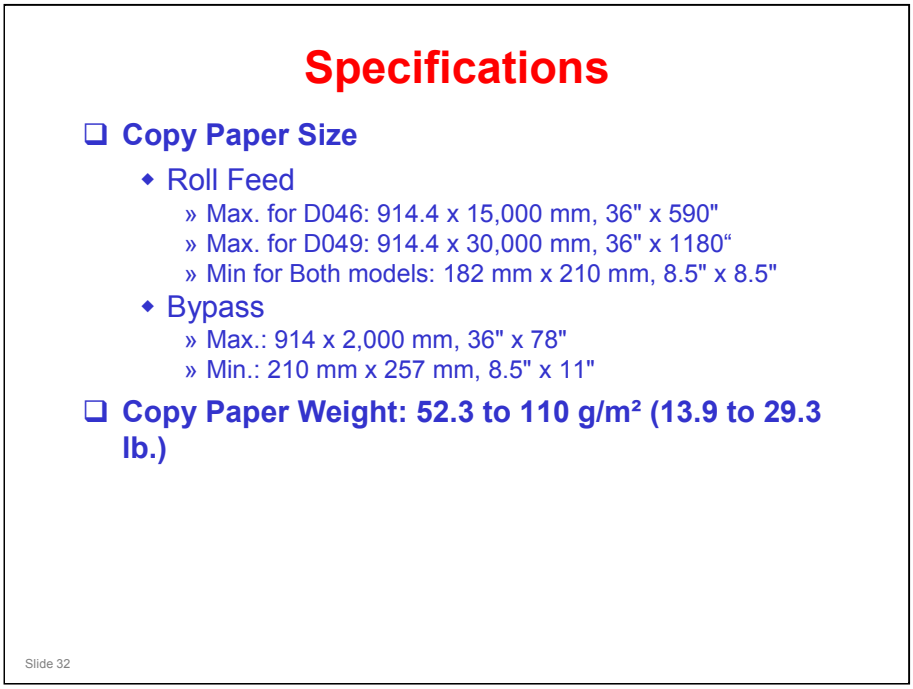
Slide 31

Originals

- Only one original can be fed at a time. There is no separation mechanism.

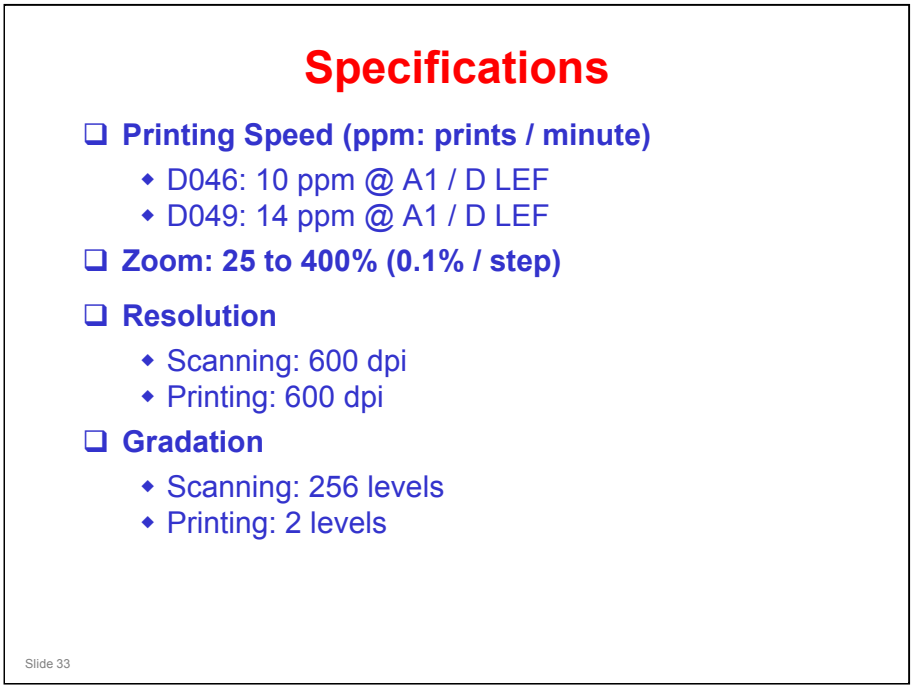
Original Weight

- Note that the rear straight feed path can be used for heavier paper than the others. This is because there are no twists and turns in the feed path.



Copy Paper Size

- Bypass feed: You cannot feed long sheets without some skew developing, so the maximum spec has been limited to 2 m.
- Maximum copy length: This is the same for all rolls.
- Minimum copy length: There are no rollers in the paper feed path up from roll 3 and 4 (roll tray 2), after the feed exit roller for the lower tray. Because of this, the minimum copy length is longer (anything shorter would get stuck between trays 1 and 2, with no rollers to push the paper up towards the registration roller.



Zoom

- Note the fine increments on the zoom.

Resolution

- Both scanner and printer are 600 dpi.

Gradation

- Scanning: The capability of the CIS is 256 gradations. However, the output from the IPU is two-bit (4 levels).
- Printing: The VDB sends the four-level data to the LED print head. However, the capability of the print head is 32 levels. The machine uses a gamma table to select 2 of these 32 levels to print the data.

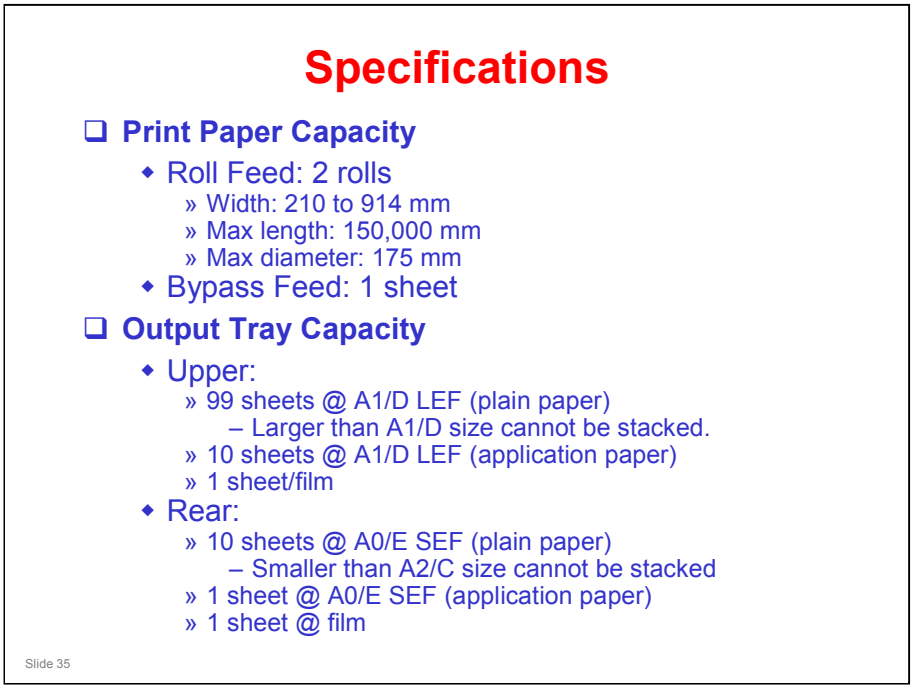
Specifications

- **Warm-up Time: Less than 120 seconds (Room temperature 23 ° C)**
- **First Print Time**
  - 1st Feed
    - » D046: 13 sec, D049: 10 sec
- **Print Number Input: Ten-key Pad, 1 to 99 (Standard sizes only)**

Slide 34

Copy Number Input

- Note that multi-copying is only available for standard copy sizes.



Copy paper capacity

- Don't use rolls with a larger diameter, or they will not turn in the holders.

Output tray capacity

- 'Application paper' means 'paper for special applications. It really means 'anything except normal plain paper'. Examples would be translucent paper and film.

Specifications

- **Memory Capacity:**
  - 1024 MB (Copy, Printer)
  - 2048 MB (Scanner)
- **HDD: 320 GB (shared with copy, print, scan applications)**
- **Toner Replenishment:**
  - Cartridge exchange (800 g/ cartridge)

Slide 36

No additional notes

Comparison with D-C2 (1)

- **D-C2 does not have these options:**
  - Folder, Copy Stacker, Original Hanger, Rear Stacker, Scanner Separation Unit
- **Display Panel**
  - D-C2: Monochrome LCD, Be-C1: Color Wide VGA
- **Scanner**
  - D-C2: Monochrome , Be-C1: Color
- **External Controller**
  - D-C2: Ratio, Be-C1: Ratio (Printer/Scanner)
- **Embedded Controller**
  - D-C2: Scanner, Be-C1: GW (Printer/Scanner)
- **HDD Security**
  - D-C2: No, Be-C1: Yes (Option)

Slide 37

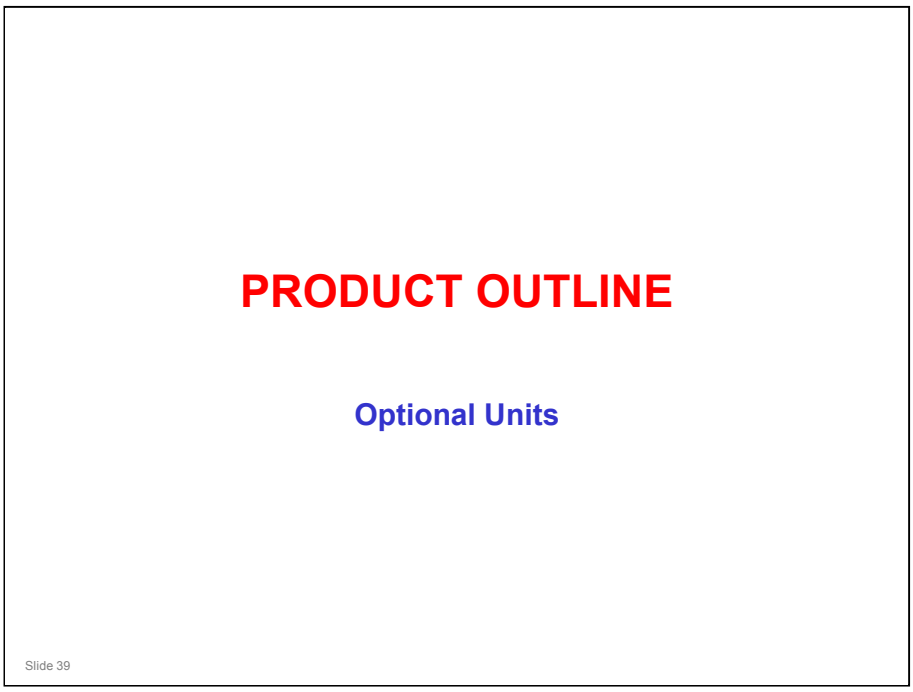
No additional notes

Comparison with D-C2 (2)

- **Memory**
  - D-C2: 1GB RAM + 40 GB HDD x 2
  - Be-C1: 1GB RAM (with optional 1GB) + 160 GB HDD x 2
- **ACV (paper size: A1/D)**
  - D-C2: 1,500m / 4,920 feet or 2,530 copies
  - Be-C1a: 1,500m / 4,920 feet or 2,530 copies
  - Be-C1b: 8,000m / 26,240 feet or 13,493 copies
- **Estimated Unit Life (paper size: A1/D)**
  - D-C2: 657K copies [390km]
  - Be-C1a: 657Kcopies [390km]
  - Be-C1b: 1683Kcopies [1000km]
- **Speed (paper size: A1/D)**
  - D-C2: 8 ppm
  - Be-C1a:10 ppm, Be-C1b:14 ppm
- **Max Length**
  - D-C2: 15m
  - Be-C1a: 15m, Be-C1b: 30m

Slide 38

No additional notes



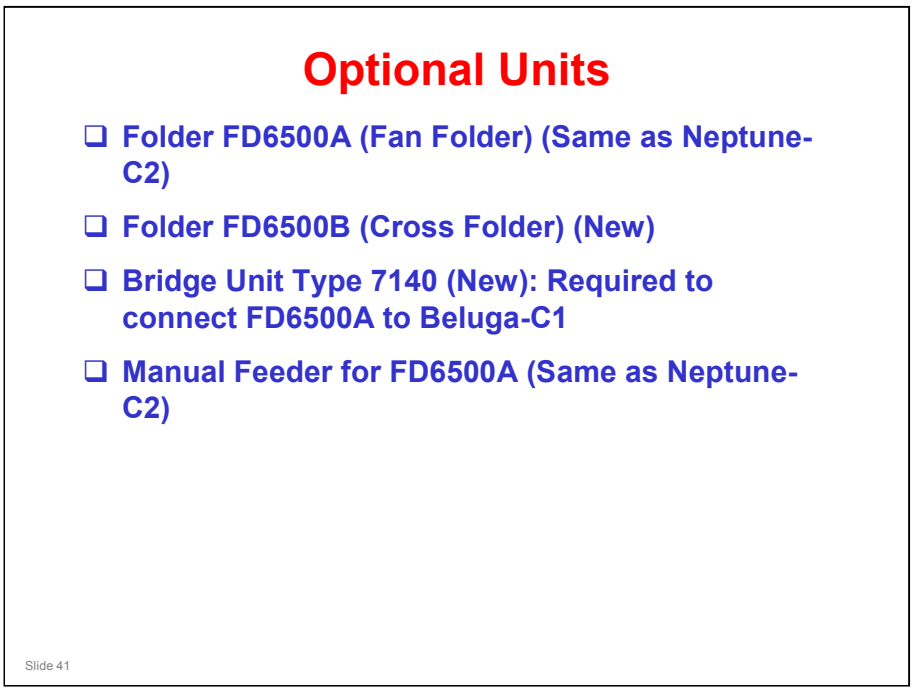
No additional notes

Optional Units

- Roll Feeder (New): Contains two paper rolls
- Paper Cassette (New): This can be installed instead of the two-roll tray
- Roll Holder Unit: Same as the Dolphin-C2
- Original Exit Tray: Same as the Dolphin-C2
- Original Hanger: Same as the Neptune-C2
- Multi Stacker Type 7140 (New)
- Rear Stacker Type 7140 (New)
- Double Stacker Type 7140 (New)
- Scanner Separation Unit Type 7140 (New)

Slide 40

No additional notes



- The bridge unit and manual feeder are built into the FD6500B.

Optional Units

- **Printer Option Type W7140 (New)**
- **Scanner Option Type W7140 (New)**
  - Memory Unit Type 7140 (New): Needed for scanner option.
- **Gigabit Ethernet Type B (Same as V-C2)**
- **IEEE802.11a/g Interface Unit Type J (Same as V-C2)**
- **IEE802.11g Interface Unit Type K (Same as V-C2)**
- **IEEE 1284 Interface Board Type A (Same as K-C2)**
- **Controller RW-7140 (Ratio Controller including scanner option): New**
  - Interface PCB Type W7140 (required for the Controller RW-7140)
  - Ratio Scanner option
  - Other Ratio controller options: PS3, CGM, DWG/DXF/DWF, VIC

Slide 42

No additional notes

Optional Units

- DataOverwriteSecurity Unit Type H (Same as V-C2)
- Browser Unit Type D (Same as V-C2)
- Java VM Card Type F (Same as V-C2)
- HDD Encryption Unit Type A (Same as V-C2)

Slide 43

No additional notes

No additional notes

Card Save (1)

- **This new feature allows you to send print data files to an SD card in the service slot (slot 2 in this machine).**
  - The data is not printed.
- **Card Save mode must be turned on with printer bit switch 1, bit 4.**
  - Card Save will remain enabled until the SD card becomes full, or until all file names have been used.
- **Files are stored on the SD card in the folder /prt/cardsave.**
  - File names are assigned sequentially from PRT00000.prn to PRT99999.prn.
  - An additional file PRT.CTL will be created. This file contains a list of all files created on the card by the card save function.
- **Card Save cannot be used with PJL Status Readback commands.**

Slide 45

No additional notes

Card Save (2)

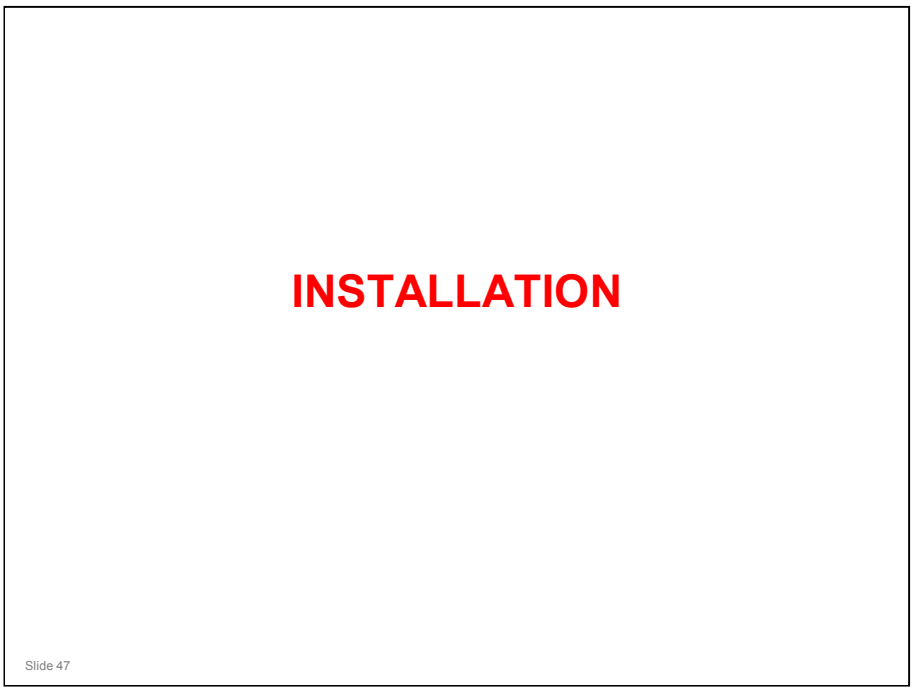
- **Previously stored files on the SD card can be overwritten or left intact.**
- **After you enable this function with the printer bit switch, the following two user tools are added to the List/Test Print tab of the Printer Features user tools menu.**
  - Card Save (Add):
    - » Appends files to the SD Card.
    - » Does not overwrite existing files.
    - » If the card becomes full or if all file names are used, an error will be displayed on the operation panel. Subsequent jobs will not be stored.
  - Card Save (New)
    - » Overwrite files in the card's /prt/cardsave directory.

Slide 46

- Study the procedure in the service manual.

Service Manual - System Maintenance Reference - Card Save Function

- Note that there is no message on the screen to indicate that a file was copied to the SD card successfully. But there are some error messages that appear if things go wrong.
- If an error occurs, press “OK”. The device will discard the job and return to the ready state.



PURPOSE OF THE SECTION

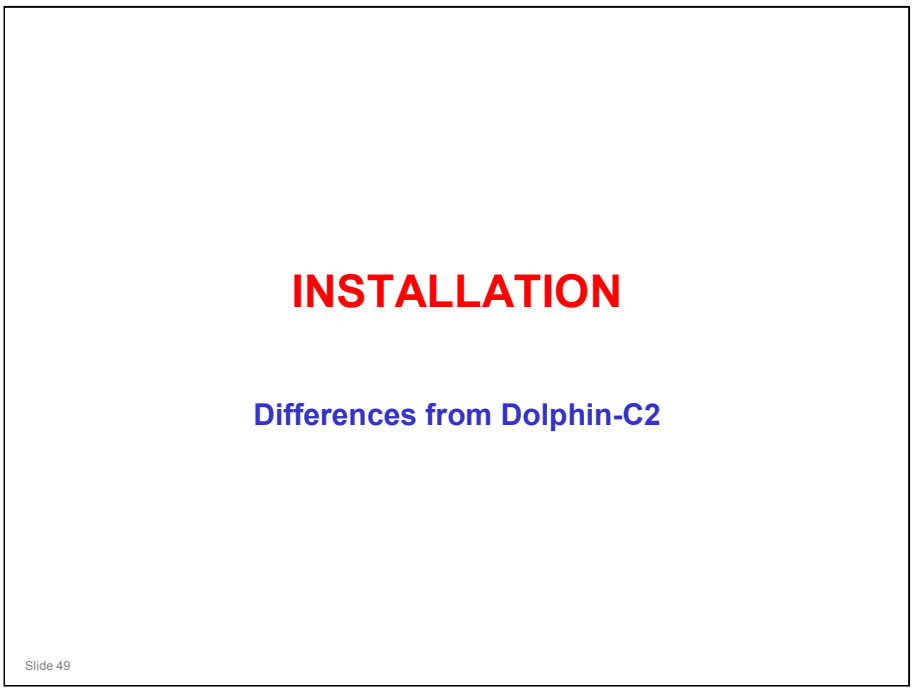
- ❒ To learn how to install the machine and the peripherals.
- ❒ To learn how to install the latest firmware.

Installation Sequence

- **The fan folder blocks access to the rear of the machine.**
- **Because of this, you must install the following options before you start to install the fan folder.**
  - Roll feeder or cassette tray (you need to remove the rear cover during installation)
  - Controller options (access to the slots is easier if the folder is not present).

Slide 48

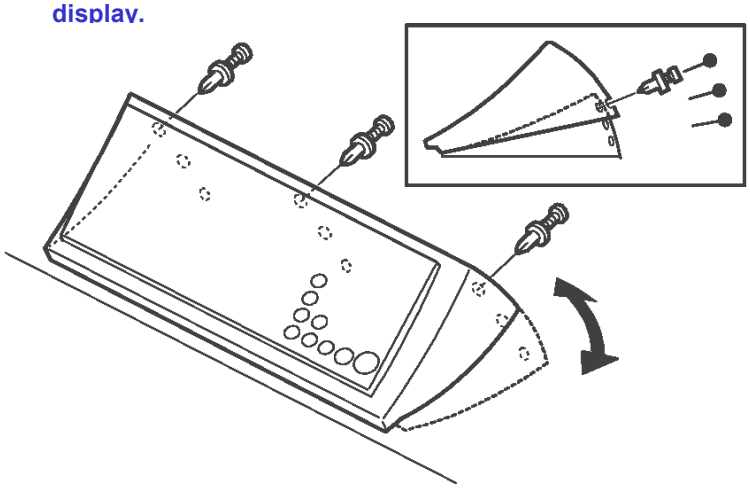
No additional notes



No additional notes

Adjusting the Operation Panel Angle

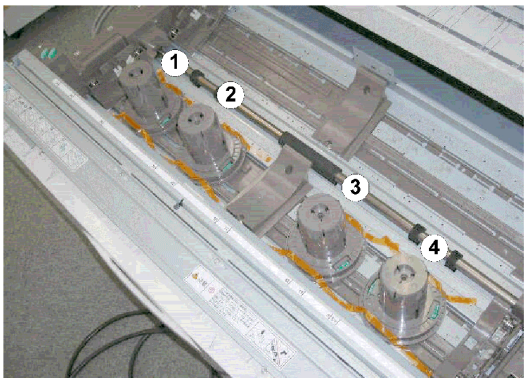
- If necessary, adjust the angle of the operation panel display.



Slide 50

- Adjust this panel to decrease reflections from lighting.
- The customer can do this adjustment.
- This is the same as in the B286 copier (Neptune-C2).

Removing the Paper Holders



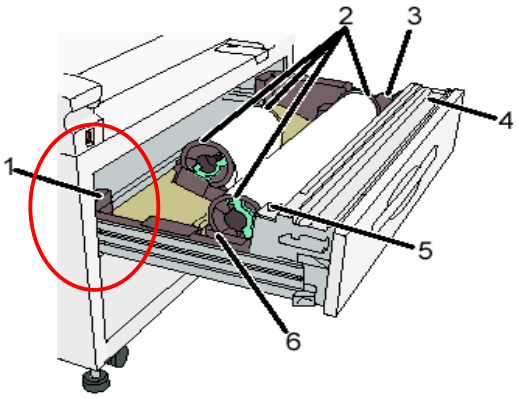
- They are attached with tape.
- They are easier to remove than previous models.

Slide 51

No additional notes

No additional notes

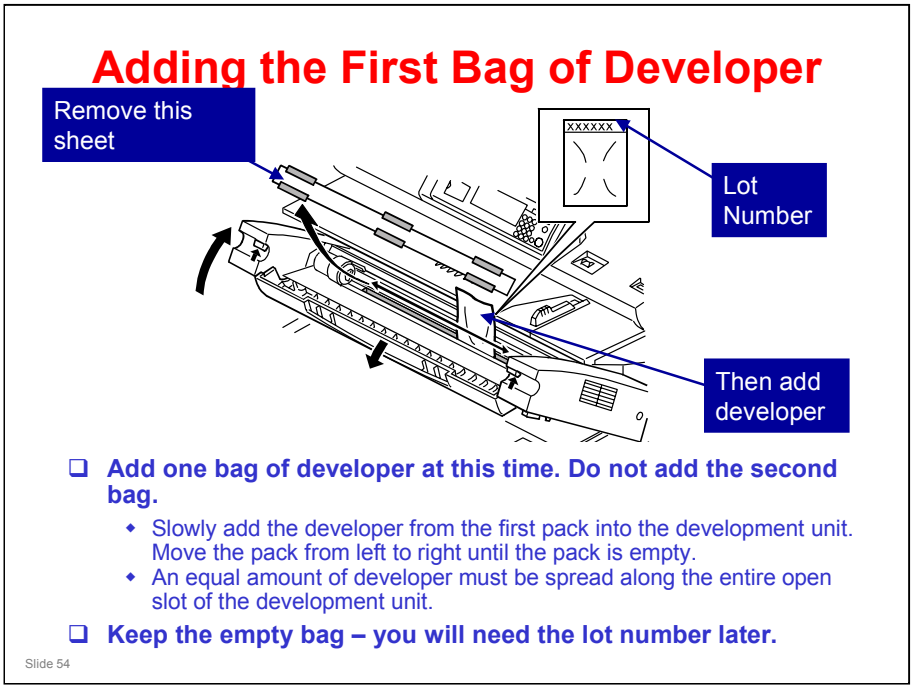
Turn off the Dehumidifier Switch



- The dehumidifier switch on the roll feeder must be off during installation.

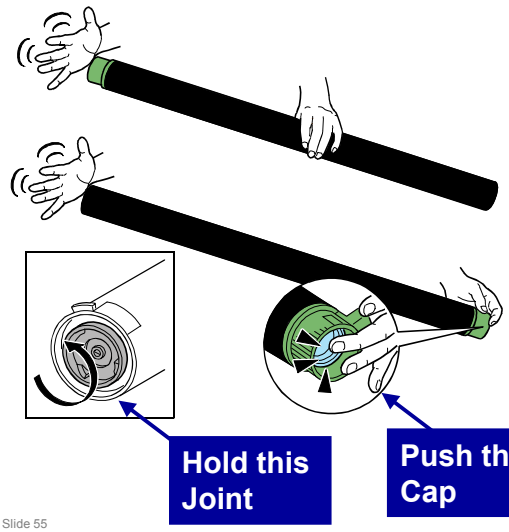
Slide 53

No additional notes



- Each bag contains 1 kg of developer.
  - The developer is the same as the Neptune-C2.
- Earlier models had a knob which must be turned to distribute developer. In this machine there is no knob. The machine distributes the developer automatically after you turn the power on for the first time. This is explained on the next slide.

Preparing the Toner Cartridge

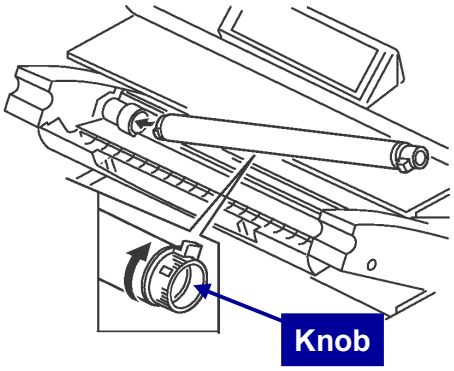


- Shake the cartridge several times and make sure that the toner is moving inside.
- Push the cartridge cap. At the same time, tap the bottom of the toner cartridge 4 or 5 times.
- Hold the cartridge horizontally and shake it quickly from side to side 4 or 5 times.
- Hold the joint of the toner cartridge with two fingers, and turn the joint. If the joint does not turn, do the procedure again.

Slide 55

- You must shake the toner cartridge to make the toner loose inside the cartridge. If not, torque in the mechanism is too high and the development unit is damaged.
- In case you forget, a slip clutch was added to the mechanism between the toner hopper and the toner supply clutch to prevent this damage.

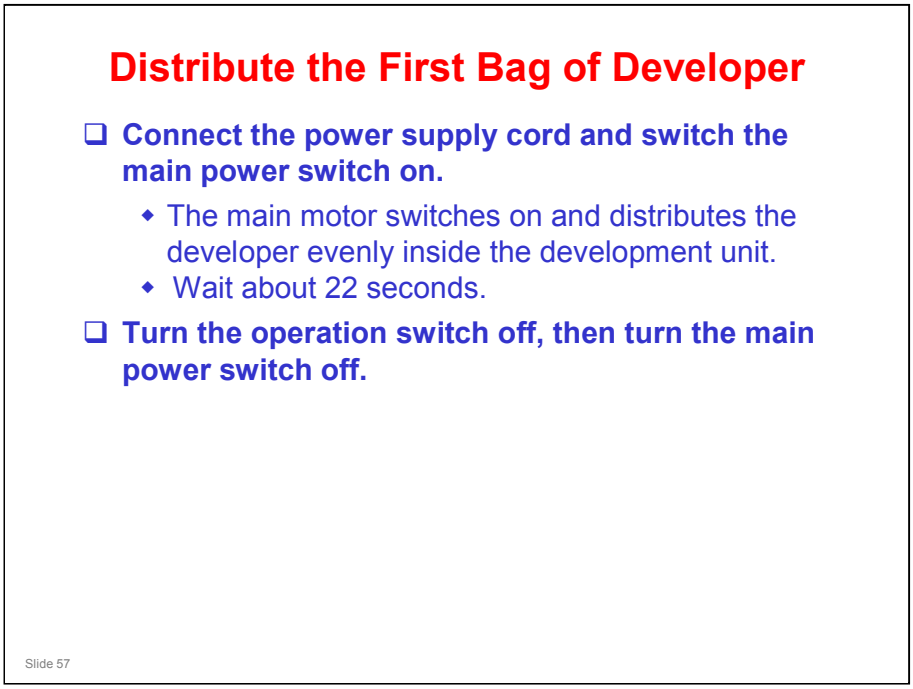
Put the Toner Cartridge in the Machine



- Rotate the knob clockwise until it stops.
- Do not peel off the green tape at this time.
- Close the toner hopper cover and the upper unit.

Slide 56

- This is a temporary installation. It is needed to continue with the developer installation procedure. The cartridge must be physically in the machine, but toner must not be added. So don't remove the tape.



- After installing the first bag, you must turn on the machine to distribute the developer evenly inside the development unit.
- If you do not do this, there is no space for you to add the second bag.
- When the machine distributes the developer, the paddle roller moves developer from the front of the unit to the inside of the development unit, and this makes room to add the second bag.

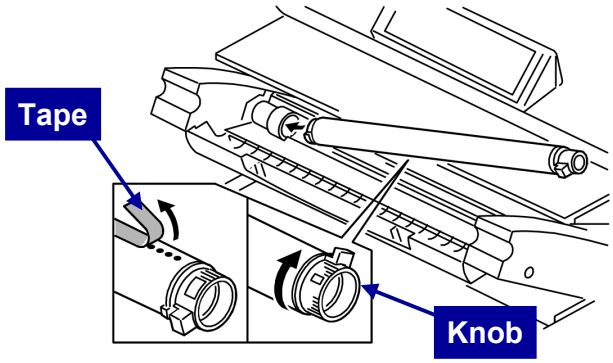
Adding the Second Bag of Developer

- Remove the toner cartridge.
- Then add the second bag of developer.

Slide 58

No additional notes

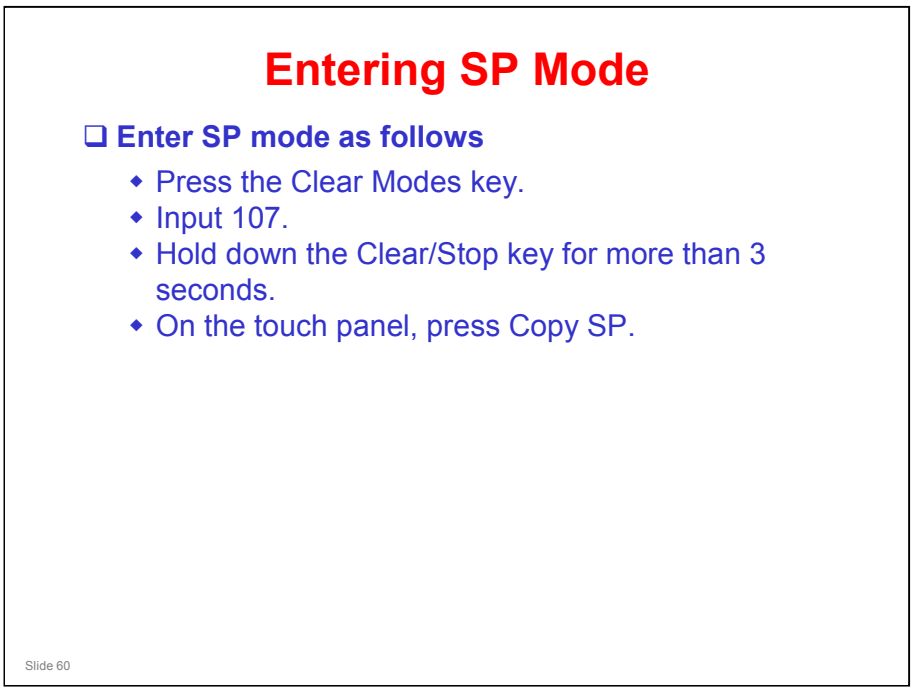
Installing the Toner Cartridge



- Peel off the green tape from right to left to expose the clear tape and toner supply holes.
- Rotate the knob clockwise until it stops.
- Close the toner hopper cover

Slide 59

- Install the toner cartridge before you input lot numbers and initialize developer.
- A decal on the left side of the machine explains how to install the toner cartridge.



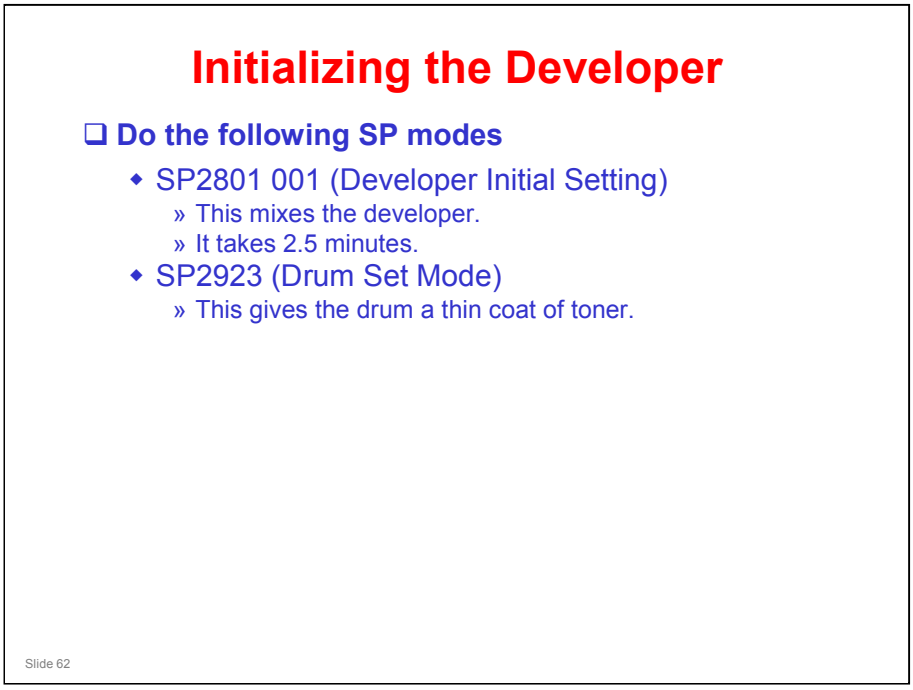
❒ The screen shows how to enter SP mode.

Inputting Developer Lot Numbers

- **Do SP2801-2 and 3 to enter the lot numbers.**
  - Use the soft keyboard on the display panel to enter the lot numbers.
  - The lot numbers are embossed on the top edge of each developer pack.
  - If the numbers are the same, enter the same number twice.
- **You must do this before you try to initialize the developer.**
  - If you try to initialize the developer first, an error message is displayed, and you must enter the lot numbers before the machine can initialize the developer.

Slide 61

No additional notes



- Then do the two SP modes listed on the slide.
- Do not attempt to make copies yet.

SP2801 (Developer Initial Setting)

- This prepares the developer for copying by agitating it for about two minutes, which brings the electrostatic charge on the developer to the correct level.

SP2923 (Drum Set Mode)

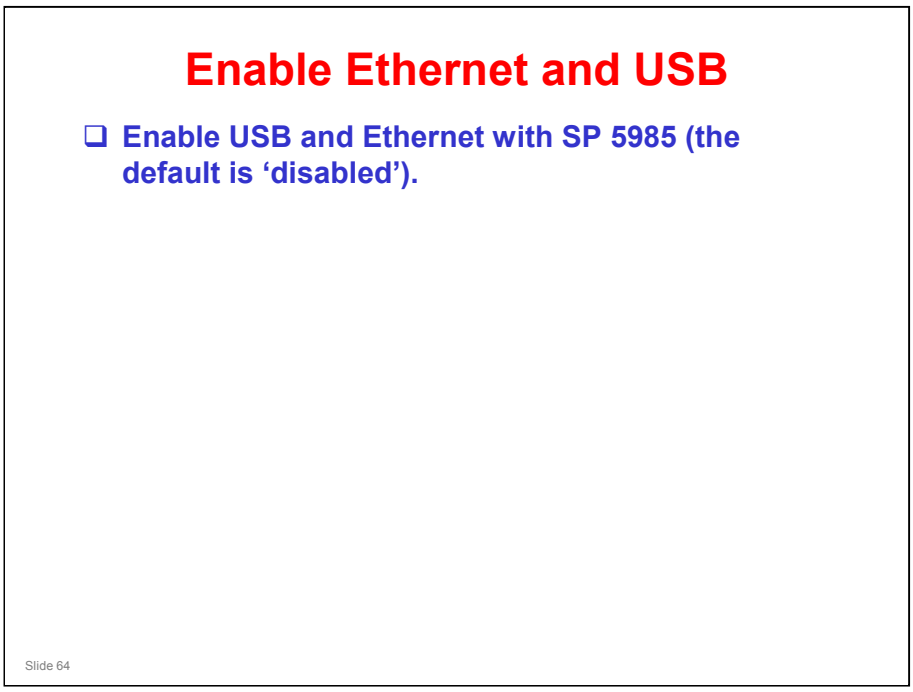
- Drum Set Mode coats the drum with toner.
  - Have a look at the drum; the end of the drum is shiny because there is no toner coating, but the rest of the drum has a coating of toner.
- This toner coating acts like setting powder, to ensure that the cleaning blade does not flip over when the drum starts to turn.
- In a counter blade system, friction between the blade and the drum can flip the blade over unless setting powder or a toner coating is added.
- At this point, the cleaning blade is still not in contact with the drum. When shipped from the factory, the blade is away from the drum.
- After drum set mode has finished, you have to move the cleaning blade against the drum, which is its normal operating position.

High/Duty/Low Duty Mode Setting

- In previous machines, the default setting is 'Low Duty Mode'.
- However, in this machine, the default setting is 'High Duty Mode'.
- We do not need to change this setting at installation.

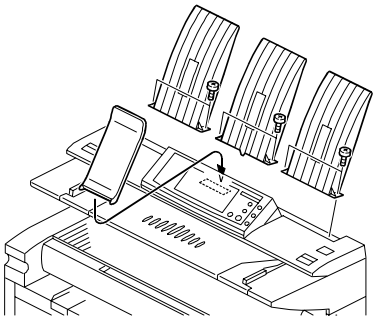
Slide 63

❒ If you change to Low Duty Mode, toner scattering will occur.



No additional notes

Original Exit Tray

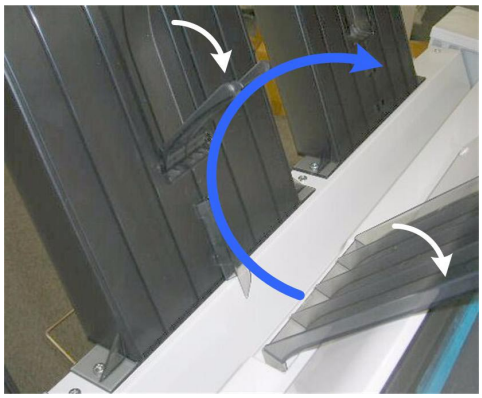


- The original exit trays can be installed either at the upper exit or the rear (straight through) exit.
- If the user wants trays at each exit, they must buy an additional set of trays.

Slide 65

No additional notes

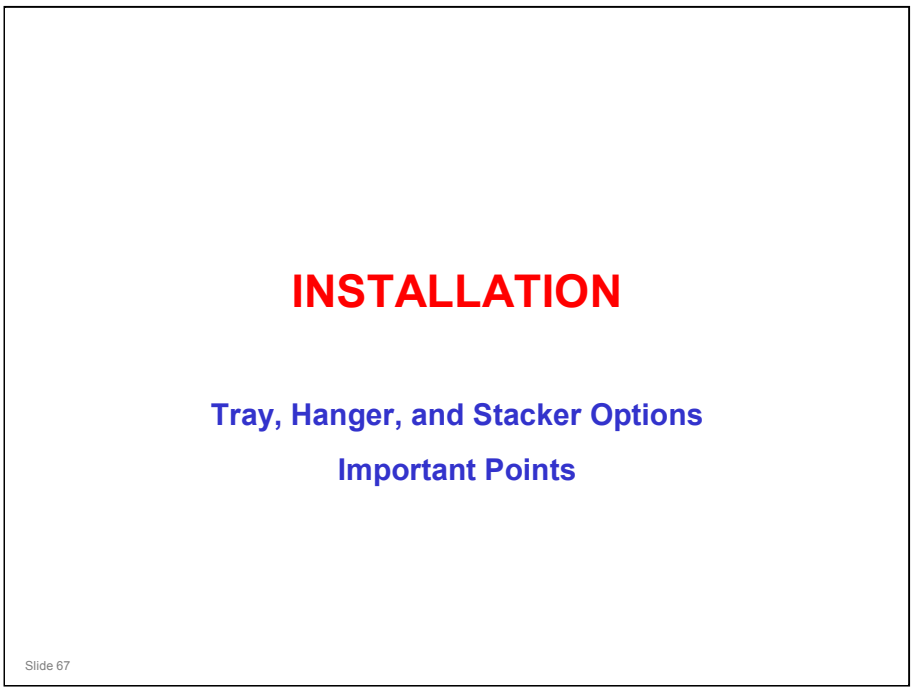
Instruct the Customer



- If using the upper original exit, before feeding large originals (larger than A0), pull the original guide plate and original guide forward.

Slide 66

- This is not important for the rear original exit.



No additional notes

Exit Table, Hanger, and Stackers

- Original Exit Table
- Original Hanger
- Multi-Copy Stacker
- Rear Stacker
- Double Stacker

- Note:
  - If you install an original tray or stacker at the rear, go into the SP mode and switch off SP4975 (Original Edge Hold). Otherwise, only one original can be fed at a time.

Slide 68

- These procedures are fairly simple. Study them in the manual.

- The installation procedure that is packed with the folder is for use with the Neptune-C2. Do not attempt to use this procedure when installing the Beluga-C1.
- The correct installation procedure for the Beluga-C1 is packed with the Bridge Unit (this covers the bridge unit and the folder unit).

Caution

- The folder unit is heavy and requires two service technicians to move it and install it safely.
- Before installing the folder unit, switch off the main machine and disconnect its power cord from the main power source.
- Do not reconnect the main machine and switch it on until after the folder installation has been completed.

Slide 70

No additional notes

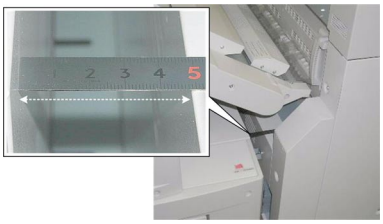
Procedure

- Prepare the bridge unit
- Attach the damper unit
- Attach the bridge unit to the folder
- Move the bridge unit position switch.
- Attach mylars and decals.
- Prepare the fan folder.
- Make the machine level.
- Connect the bridge unit and folder to the machine.
- Make the folder level.
- Test the breaker switch.
- Turn the power on.
  - The folder unit must be switched on before the main machine.
- Do the skew adjustment

Slide 71

No additional notes

Distance from Bridge Unit to Machine



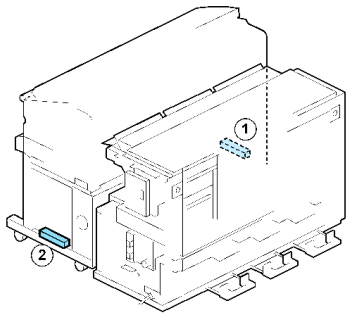
- When you dock the bridge unit/folder assembly with the machine, measure the distance at the left rear and right rear corners of the machine.
- This should be about 49.5 to 50 mm.
- The difference between the two distances must not be more than 0.5 mm.

Slide 72

No additional notes

Make the Main Machine Level

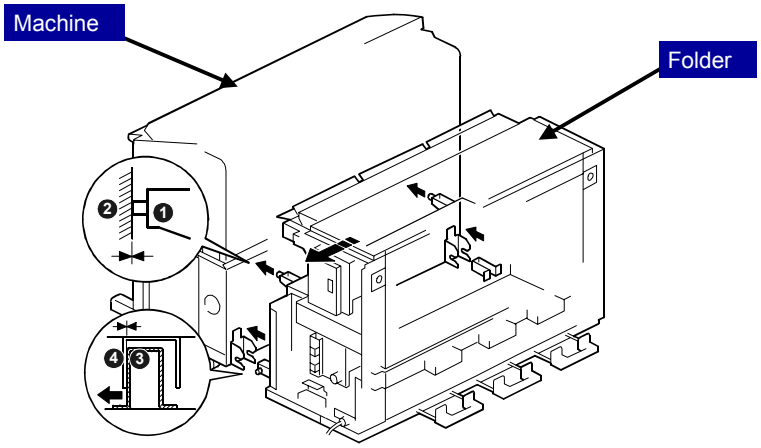
- **Make sure that the main machine is level from side to side.**
  - If you installed the copier correctly, it should be level, because that is part of the installation procedure.
- **Then make it level from front to rear as shown in the manual. Position the levels as shown in the diagram.**
  - The machine must be level from side to side before you try to do this.



Slide 73

❒ After you install the joint brackets, mylars, and positioning brackets (see the manual), then you must make sure that the machine is aligned and level. The next few slides explain this.

Connecting the Folder to the Machine - 1

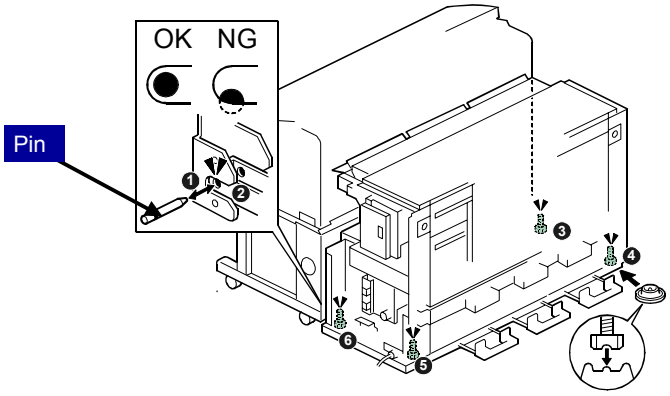


- Push the folder unit against the back of the machine.
- Align the folder with the back of the machine.
  - See the manual for details.

Slide 74

- On both sides, 1 and 2 must touch as shown in the diagram.
- At the bottom right, 3 must touch 4.

Connecting the Folder to the Machine - 2



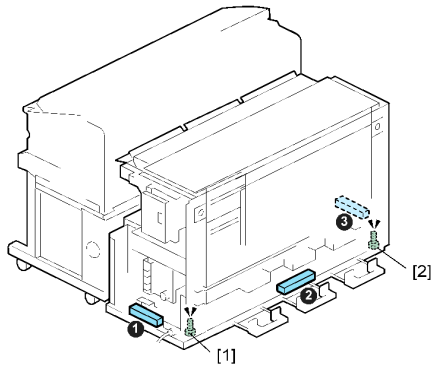
- **At each side, insert a pin through (1) and (2).**
  - The pins are in the accessories.
- **If the pins cannot go through, adjust the screws (3) to (6) on the feet.**
  - (3) and (4) must be given the same number of turns.
  - (5) and (6) must be given the same number of turns.

Slide 75

- This procedure checks the alignment.
- The screws at the base must be given the same number of turns, as shown above.
  - For example, you can give (3) and (4) two turns each, and you can give (5) and (6) three turns each.

Make the Folder Level

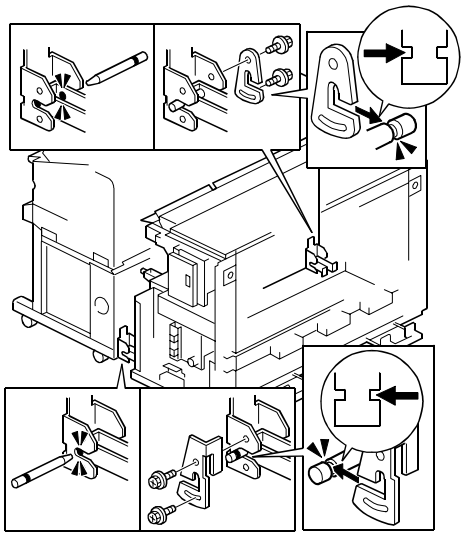
- Make sure that the folder is level. Position the levels as shown in the diagram.
- Do the leveling in the order 1, 2, 3 as shown in the diagram.
- Adjust with the nuts on the right and left legs of the folder ([1] and [2] in the diagram).



Slide 76

No additional notes

Attach the Lock Plates

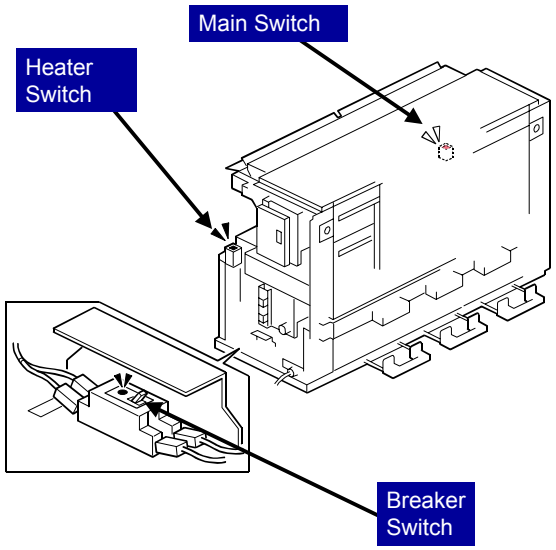


- The lock plate for the left side has a different shape to the one for the right side.

Slide 77

No additional notes

Checking the Switches



- Connect the power cable of the folder unit to a power source.
- Make sure that the main power switch and heater switch are OFF.
- Test the circuit breaker as shown in the manual.
- Disconnect the power cable of the folder unit from the power source.

Slide 78

No additional notes

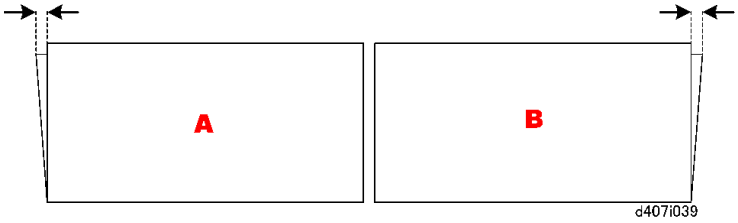
Turning on the Power

- **The folder unit must be switched on before the main machine.**
  - The folder unit must be switched on first, so that the main machine will recognize the folder unit after the main machine is powered on and starts its initialization procedure.

Slide 79

No additional notes

Skew Adjustment (1)

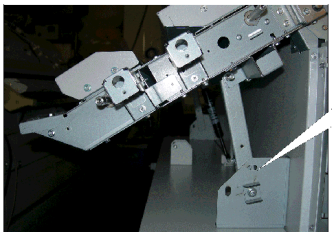


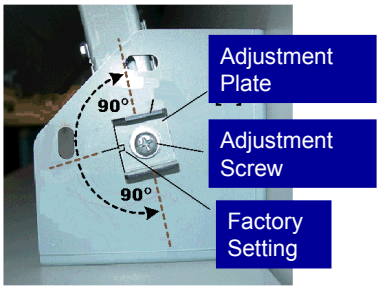
- **Do a folding test run with at least 10 sheets of A1 LEF paper.**
- **If there is skew, the bridge unit is not level, and the paper is slipping to one side.**
  - If the skew is like A, the right side is too low.
  - If the skew is like B, the right side is too high.

Slide 80

- In this diagram, the view is from above as the paper is fed from the folder unit, while you are standing at the operation panel side of the machine.

Skew Adjustment (2)





- If the right side is too low, lift the right side of the bridge unit.
- To do this, turn the adjustment plate clockwise.
- Loosen the screw and turn the plate the correct angle.
- See the service manual for how to find the correct angle.

Slide 81

- Each degree of rotation adjusts for 0.0166 mm. If the amount of skew is 0.8 mm, the plate should be rotated right approximately 50 degrees (0.8/0.0166 = 48.2)
- There is a similar adjustment plate on the left side of the machine, but to make the procedure in the manual more simple, we specify that the adjustment should only be made on the right side.

No additional notes

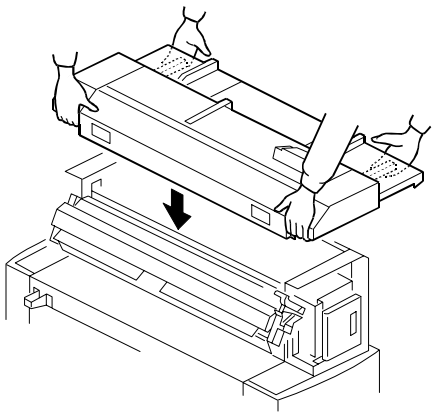
Caution

- The Manual Feeder weighs 31 kg (68.2 lb.) and requires two service technicians to move it and install without bending or warping its shape.
- Before installing the manual feeder: 1) Switch off the main machine and folder unit, 2) Disconnect both the main machine and folder unit from the power source.
- Do not reconnect the main machine and switch it on until after the manual feeder has been installed.

Slide 83

No additional notes

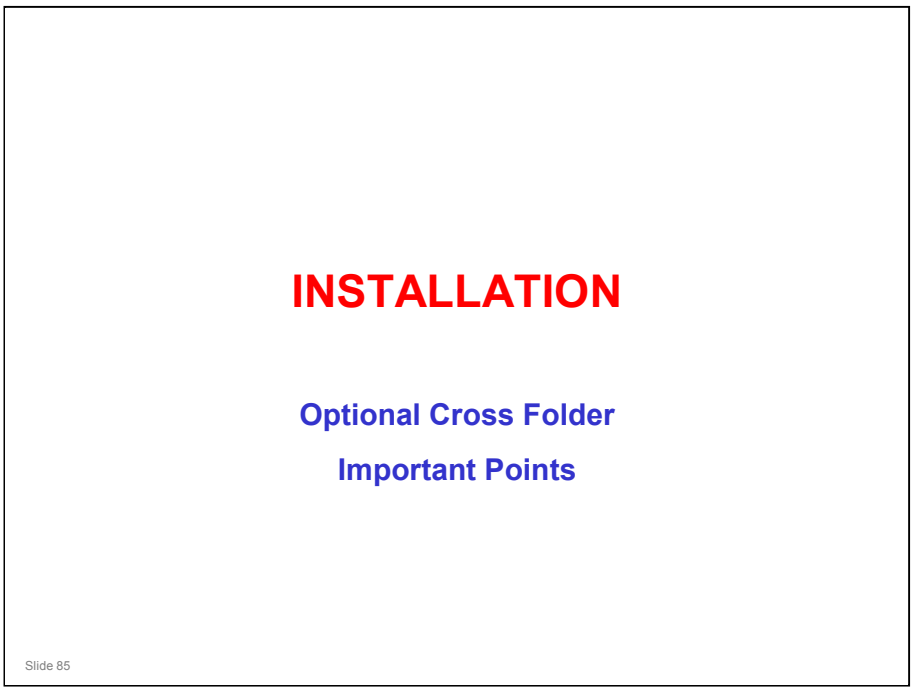
Lifting the Manual Feeder



- Lift the unit with a hand at each corner, or it will be damaged.

Slide 84

No additional notes



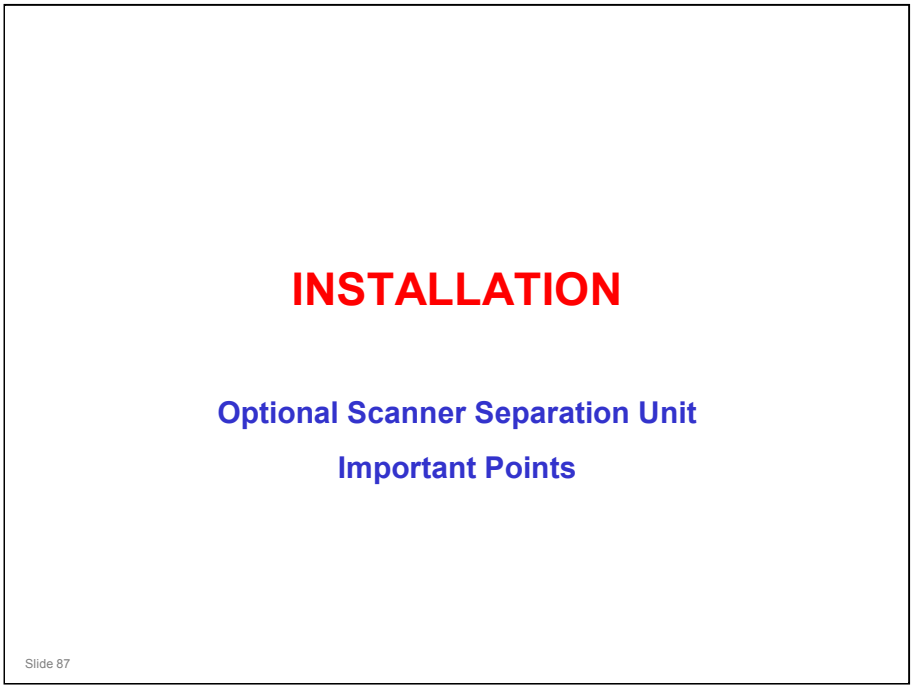
No additional notes

Levelling the Machine

- **When installing the fan fold unit, do the same levelling procedure as for the fan folder unit.**
- **For the transport unit and cross folder unit, levelling is not so important.**
  - Just check by eye, to make sure that the base of the transport unit, fan fold unit, and cross folder unit are about on the same level.
  - There is no need to use a level.

Slide 86

No additional notes



❒ This procedure requires at least two technicians.

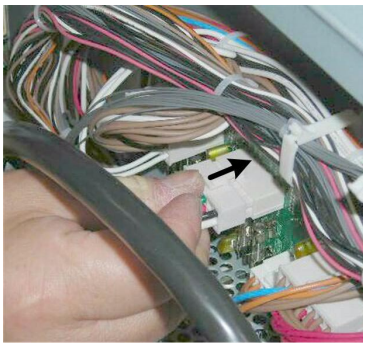
Overview

- Can only be installed on the D049.
- The scanner is removed from the machine and placed on the table (the table must be assembled).
- A cover is installed on top of the machine to replace the removed scanner unit.
- Procedure
  - Assemble the table.
  - Install the scanner unit.
  - Make sure that the table is level.

Slide 88

- This is an overview of the procedure.
- The procedure is fairly simple.

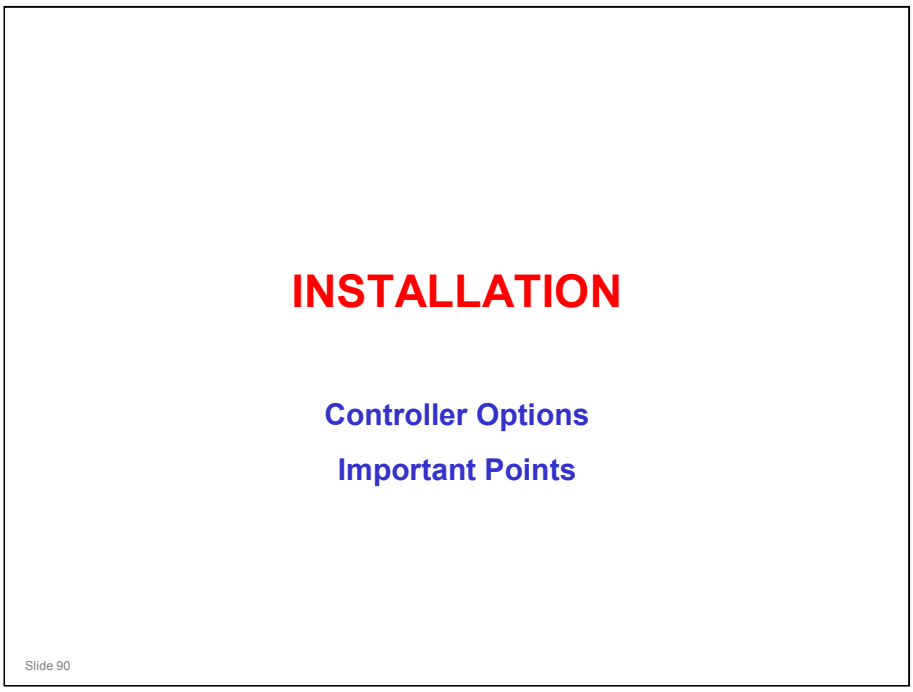
Safety Notice



- **Make sure that you connect this connector to the PSU, which is attached to the 24V power supply harness.**
  - This is a black DP1 cable that meets electrical standards (UL, etc.).

Slide 89

No additional notes



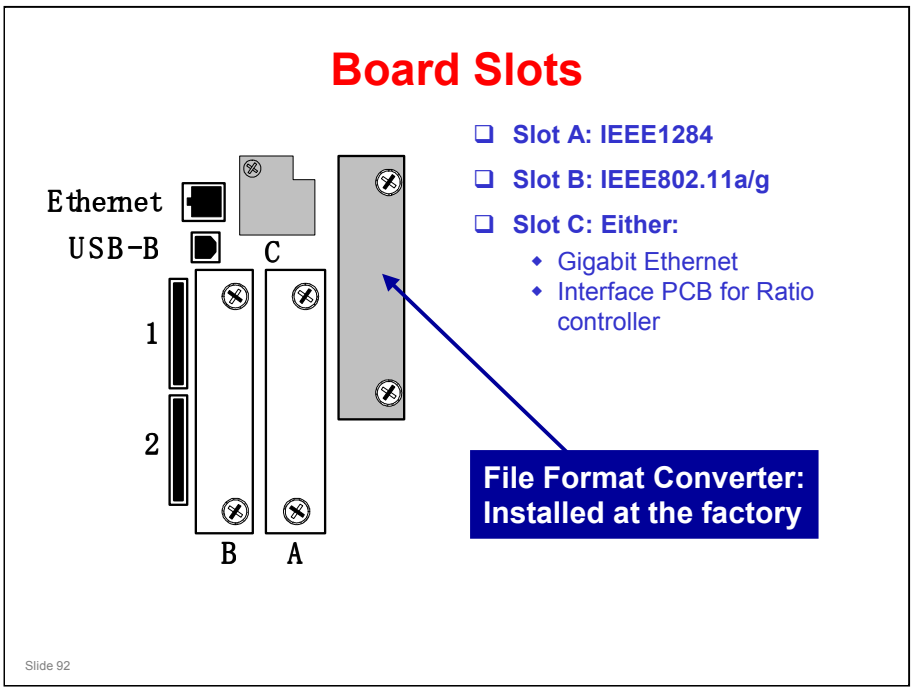
❒ We will not do the Ratio controller installation in this course.

Overview

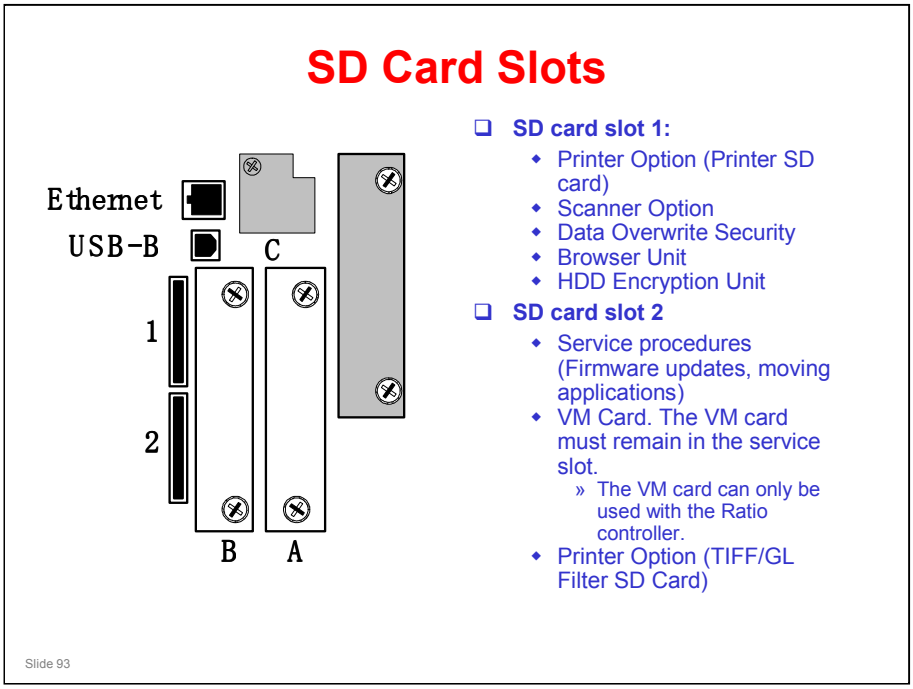
- **In this section, we will install these parts:**
  - Printer option
  - Scanner option
  - GW scanner controller
  - IEEE1284 board
  - IEEE802.11a/g board
  - HDD encryption unit
  - DOS (Data Overwrite Security) unit type H
  - Gigabit Ethernet
  - Browser unit
  - VM card

Slide 91

No additional notes



- USB B: Built-in for connection of USB devices.
  - NOTE: USB is built-in, but it must be enabled with SP5985.
- Ethernet: Standard LAN connection point for network; must be enabled with SP5985.
- The gigabit Ethernet slot is also used for the Ratio controller (RW-7140). The installation kit will have a 5m cable.

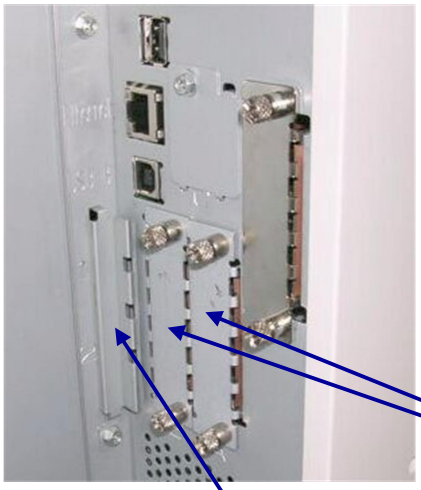


- Applications can be moved to the card in slot 1.
- TIFF/GL Filter for the Printer Option (D320): Due to copyright restrictions, this option cannot be moved to another SD card. Also, you cannot move applications to the TIFF/GL card.
- There is no special location inside the machine to keep SD cards that have been copied.

What is the purpose of the TIFF/GL card?

- In Web Image Monitor on your PC, you can select TIFF or HPGL files on the screen, and print them. It is not necessary to open an application and print with a printer driver.

Card Slot Covers



- Remove these covers to use the slots.

Board Slot Covers

SD Card Slot Cover

Slide 94

No additional notes

Installing the Printer and Scanner Options

- **The printer and scanner options on SD cards are GW options.**
- **The printer option consists of two SD cards: Printer SD card, TIFF/GL Filter**
  - Both of these must be installed in SD card slots. You cannot move the TIFF/GL module to the printer SD card (copyright restriction).
- **Make sure that Ethernet and USB are enabled (SP 5985).**
- **If you want to install the scanner and the printer option, you must combine the applications onto one SD card and insert it in Slot 1.**
- **The Memory Unit D444 is required for the scanner option.**

Slide 95

- To install the memory option, you must take the controller box cover off. This is a bit troublesome, so, if you take this cover off for another reason (for example to install the Gigabit Ethernet or Interface PCB for the Ratio controller), take this opportunity to install the memory option.

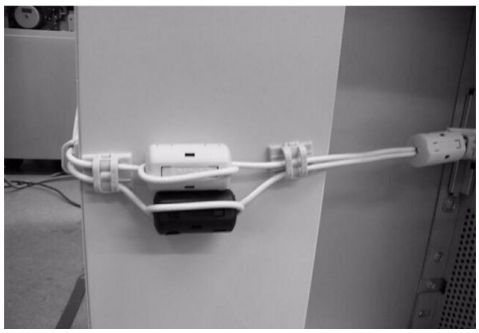
Installing the Ratio Controller Options

- **You cannot install both the GW printer option and the Ratio printer controller.**
  - However, you can install the GW scanner option with the Ratio controller and Ratio scanner option.
- **If the GW printer option has been moved to the scanner SD card, be sure to remove the printer option from the SD card.**
- **If you install the Ratio scanner option, you must also install the optional Memory Unit (D444).**

Slide 96

No additional notes

IEEE802.11 Options – Antenna Cables (1)

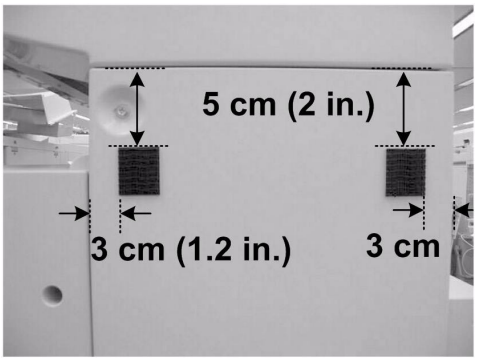


- **Separate the antenna cables so that they are not tangled.**
- **When you clamp the cables, the white ferrite core must be above and the black ferrite core must be below.**
- **Attach the clamps to the rear panel of the right rear cover.**
  - The clamps must be at the same height, so that the cables are straight and level with the board connection to the controller board.

Slide 97

No additional notes

IEEE802.11 Options – Antenna Cables (2)

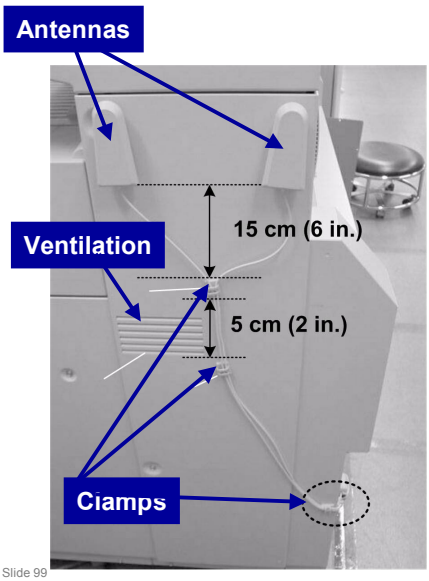


- Attach the black Velcro pads to the right panel of the right rear cover.

Slide 98

No additional notes

IEEE802.11 Options – Antenna Cables (3)



Slide 99

- **Attach the antenna that has the black core on its cable to the front pad.**
- **Attach the antenna that has the white core on its cable to the rear pad.**
  - The antenna with the black core transmits and receives. It must be installed at the front.
  - The antenna with the white core only receives. It must be installed at the rear.
- **Clamp the cables at 15 cm and 5 cm intervals as shown here.**
- **Make sure that the cables are not over the ventilation port.**
- **Make sure that the cables are not crossed.**

No additional notes

Data Overwrite Security Unit

- **Must be type H**
  - Make sure that you have a type H unit.
  - Before you can install this unit, the customer must store some names and passwords related to authentication.
  - Check the box to make sure that the VOID marks are not visible on the packing tape.
  - Enable the unit with SP 5878 001.
    - » If you have installed the wrong type by mistake, you will see 'Failed' on the display when you do this SP. Do the installation procedure again with the correct type of DOS unit.
    - » You do not have to replace the NVRAM
  - Follow the procedure in the service manual carefully, or the installation will fail.

Slide 100

- VOID marks: If these are visible, it is possible that the box has been tampered with, and security could be compromised.

Browser Unit

- During the installation procedure, you must put an SD card with the browser unit firmware into slot 2.
- The machine copies firmware from the SD card to the hard disk during the installation procedure.
- You must remove the SD card from slot 2 after you install the browser unit.

Slide 101

No additional notes

VM Card

- **The VM card must stay in slot 2.**
- **Is this a problem when using the printer option?**
  - No. The VM card can only be used with the Ratio controller.

Slide 102

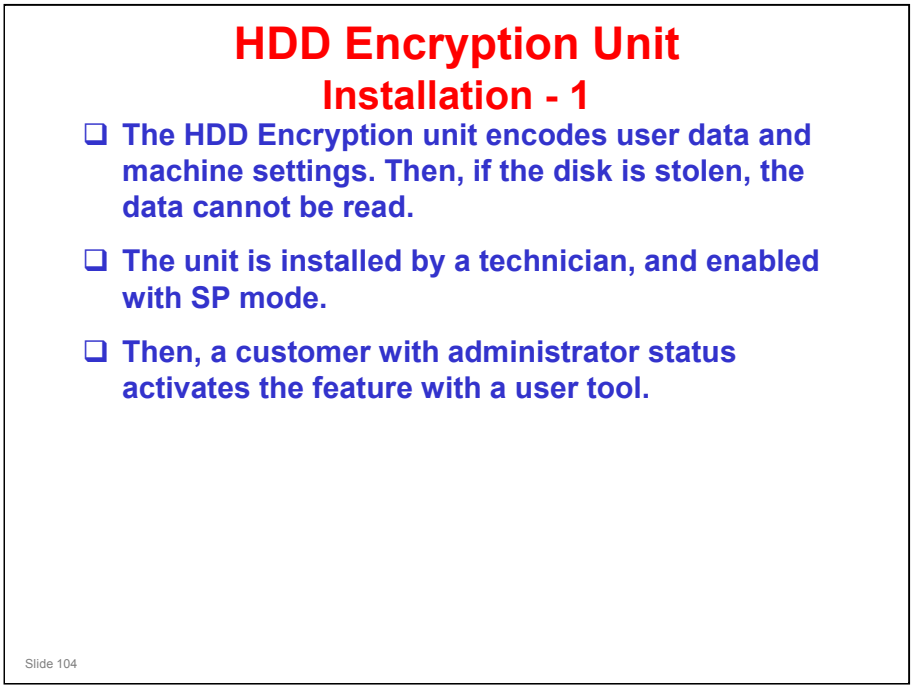
No additional notes

HDD Encryption Unit

- **HDD Encryption Unit**
  - Before you can install this unit, the customer must store some names and passwords related to authentication.
  - Check the box to make sure that the VOID marks are not visible on the packing tape.
  - Enable the unit with SP 5878 002.
  - Remove the SD card from slot 2 after installation.

Slide 103

No additional notes



- Details of procedures for customers are in the Security Reference Operation Manual, in the following section.
  - 3. Ensuring Information Security, Encrypting Data on the Hard Disk

HDD Encryption Unit
Installation - 2

- **The machine then creates an encryption key automatically. It stores this encryption key in three locations.**
  - A memory chip on the controller board (this is where the original of the encryption key is held)
  - The NVRAM on the controller board (this is a copy)
  - The hard disk, if installed (this is also a copy)
- **If the encryption key in these three locations is not the same, the encryption unit will not work.**
- **The user also prints out this encryption key, in accordance with the procedures in the operation manual.**
  - The user keeps this printout in a safe place, and does not show it to the technician.
  - This encryption key will be needed if the controller board is replaced.

Slide 105

- The memory chip on the controller board is sometimes called the “USB Flash memory”.

HDD Encryption Unit
Installation - 3

- **If there is data already on the hard disk at the time that the HDD encryption unit is being installed, what happens to this data?**
- **It depends on the setting that is chosen by the user after installation, when the user enables the HDD encryption unit.**
- **There are three settings:**
  - File System Data Only: User authentication data, stored document data, and temporary data on the hard disk are all deleted. Machine settings, user tool settings, network settings, security log data and address book data already on the disk are encrypted
  - Format All Data: All data is deleted except for machine settings and network settings, and these are encrypted.
  - All Data: All existing data on the disk is encrypted. Nothing is deleted
- **After enabling the HDD encryption unit, all data is encrypted.**

Slide 106

No additional notes

HDD Encryption Unit

What is encrypted during operation?

- **The following data is encrypted:**
  - Network interface setting data
  - Machine settings
  - User mode settings
  - Address book data
  - Security log data
  - User authentication data
  - Stored document data
  - Temporary data on the hard disk

Slide 107

No additional notes

HDD Encryption Unit

After Replacing the Controller - 1

- **After the controller is replaced, one of the following must be done:**
  - The existing encryption key must be restored to the memory chip on the new controller board: This is done by the technician, with help from the customer
  - A new encryption key must be stored: This is done by the customer
- **The encryption key cannot be copied back from the two copies (NVRAM, HDD).**

Slide 108

No additional notes

HDD Encryption Unit
After Replacing the Controller - 2

- **Restoring the existing encryption key:**
  - You must first store this encryption key in a text file on a blank SD card.
  - The customer must input the encryption key that was printed after installation.
- **How to store the encryption key on the SD card, and restore it to the new controller board: Service manual, Installation, HDD Encryption Unit, Recovery from a Device Problem**
- **If the user has forgotten the encryption key, the NVRAM must be cleared in addition to this: See the service manual, same location as above**

Slide 109

Service manual, Installation, HDD Encryption Unit, Recovery from a Device Problem

- The service manual contains two procedures for restoring the encryption key.
  - The first one assumes that the original encryption key has not been lost.
  - The second one is for use when the user has forgotten the encryption key and lost the printout that was made by the machine.
- The operation manual does not refer to these procedures. Instead, the user is instructed to 'update the encryption key', which actually means 'make a new one'.

HDD Encryption Unit
After Replacing the Controller - 3

- **Storing a new encryption key:**
  - This procedure is in the operating instructions.
    - » Security Reference, 3. Ensuring Information Security, Encrypting Data on the Hard Disk, Updating the Encryption Key

Slide 110

No additional notes

HDD Encryption Unit

After Replacing the HDD or NVRAM

- **If the HDD (hard disk drive) must be replaced, a new encryption key must be stored.**
  - This procedure is for the user to do. It is not in the service manual. We studies this on the previous slide.
  - It is theoretically possible to copy the existing encryption key from the controller board, but there is no information about how to do this.
- **If the NVRAM is defective, then the HDD encryption unit cannot be recovered, even if the controller is OK.**
  - The user must obtain a new HDD encryption unit.

Slide 111

- The operation manual explains how to make a new encryption key, as explained on the previous slide.

❒ There is a new procedure, for the cross folder unit firmware.

Update Procedures - Copier

- **Use SD cards for this machine.**
- **All the firmware can fit on one SD card.**
  - Make a 'romdata' folder on the SD card, and store the firmware here.
- **Put the SD card with the new firmware in SD card slot 2.**
- **Follow the procedure in the service manual.**
  - Select the modules that you want to update.
  - You cannot update operation panel firmware at the same time as controller firmware.
- **Do not switch off the machine power during a firmware update.**

Slide 113

Service manual, System Maintenance Reference, Firmware Update

- SP 7801: This shows the firmware versions.
- If the update procedure fails, you must replace the controller board.

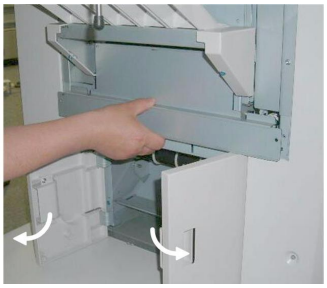
Update Procedures – TIFF/GL2

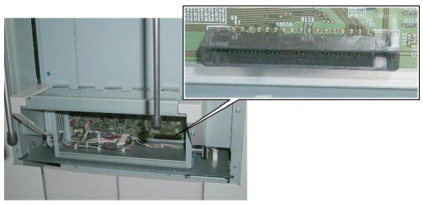
- Turn OFF the main power switch.
- Remove the SD card containing the TIFF/GL from Slot 2.
- Delete the folder "sdk" from the SD card.
- Extract the firmware to the SD card.
- The contents of the SD card should as follows:
  - sdk folder
  - Two files
- Insert the SD card into Slot 2.
- Turn ON the main power switch.

Slide 114

- Not in the manual – will be informed later by RTB.

Update Procedures – Cross Folder





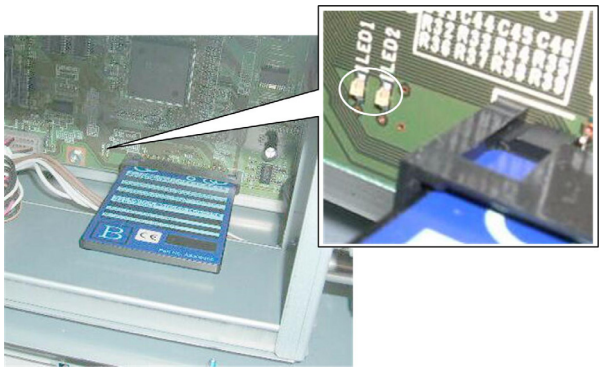
- **Two IC cards are needed**
  - One card is for fan folder firmware
  - One card is for cross folder firmware
- **Do not store both firmware modules on the same IC card.**
- **The IC cards go in different places.**
- **You can update both firmware modules at the same time, or separately.**

Slide 115

Folder service manual, Replacement and Adjustment, MCU and Firmware

- The next few slides show how to access the location for inserting the IC card for the cross folder firmware.
- The IC card for the fan folder firmware goes in the same location as the stand-alone fan folder.
- The fan folder firmware for the cross folder is the same as the firmware for the stand-alone fan folder.

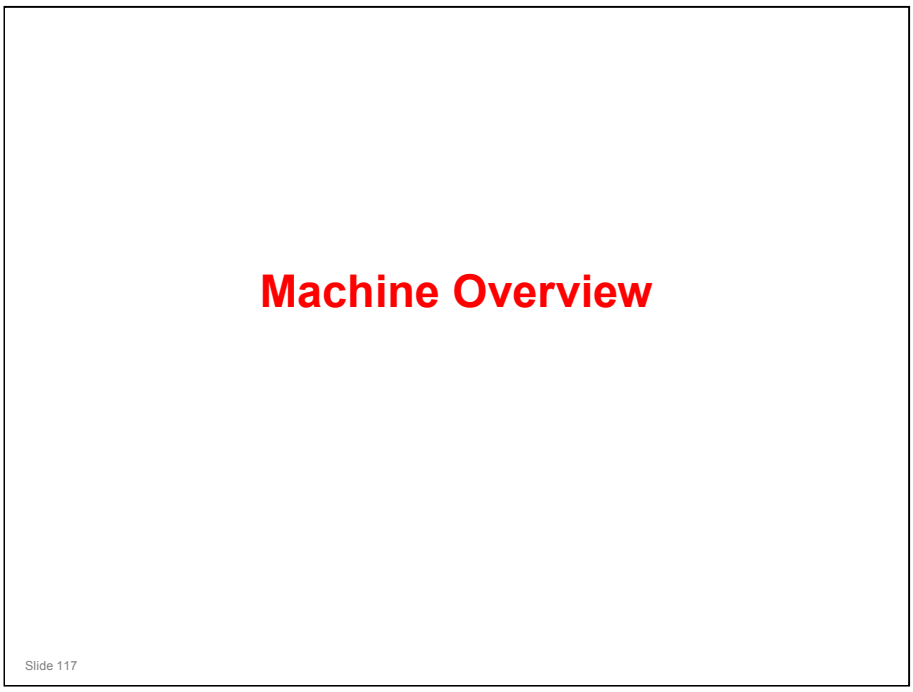
Update Procedures – Cross Folder



- These LEDs show the progress of the firmware download, as explained in the service manual.

Slide 116

No additional notes



PURPOSE OF THE SECTION

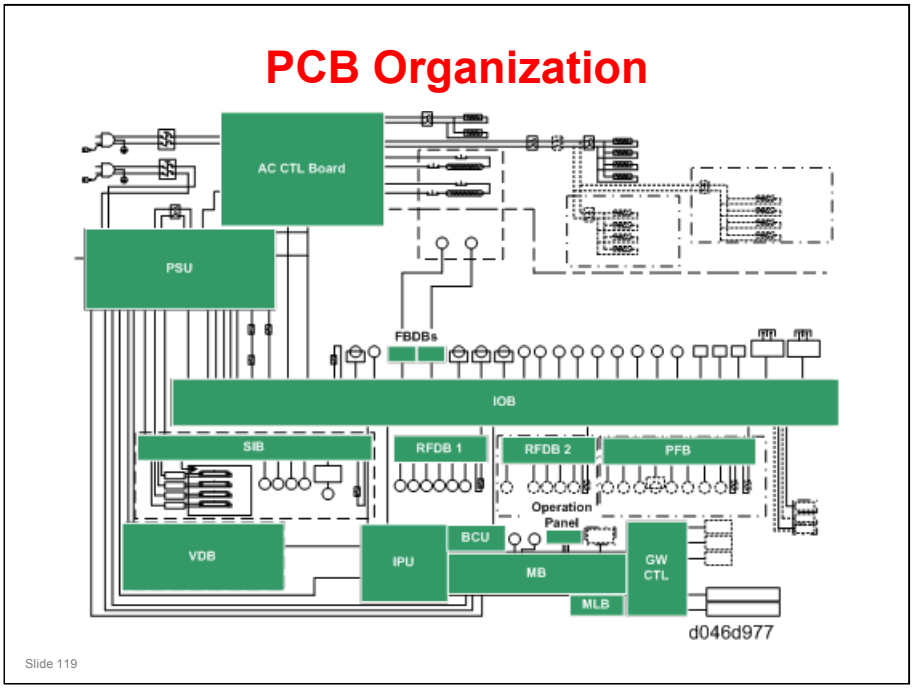
- ❒ The components will be discussed briefly.
- ❒ The machine's organization and overall PCB structure will also be covered.

Based on the Dolphin-C2

- **The mechanisms and PCB organization are mostly similar to the Dolphin-C2.**
  - However, the following are similar to the Neptune-C2.
    - » Charge corona wire cleaner
    - » Development and Toner Supply
    - » The developer is Neptune-type, not Dolphin-type
- **Image Position, Magnification, Margin Adjustments**
  - These have been modified.
  - See the field service manual for details (Replacement and Adjustment, Important Adjustments)

Slide 118

No additional notes

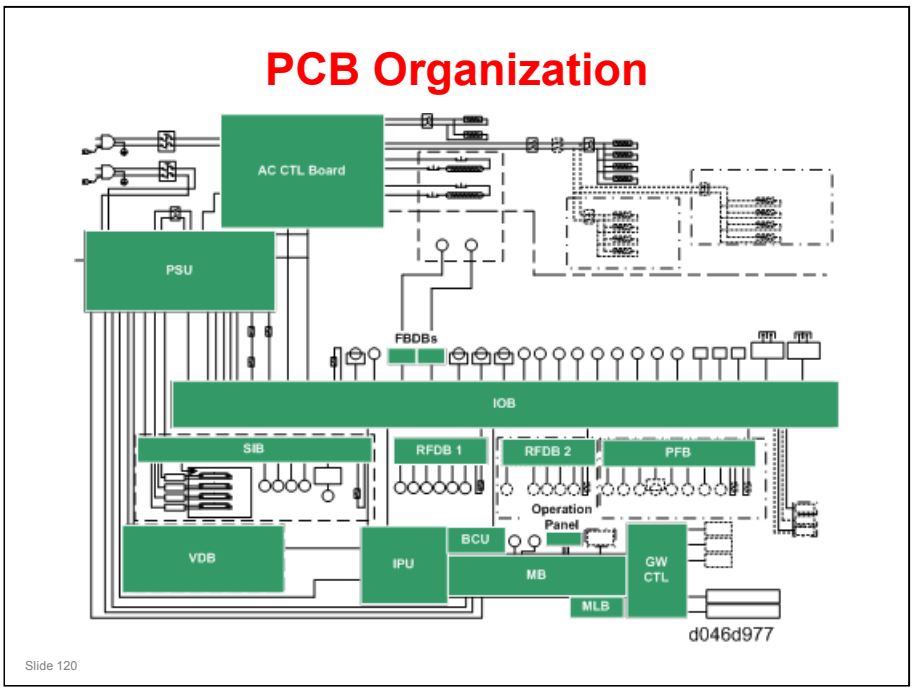


PCB ORGANIZATION

- GW controller architecture allows a basic 600-dpi copier to be upgraded to a full multifunctional product, including printing, Internet, scanning, scan-to-email, and scan-to-folder with Scan Router.

Boards

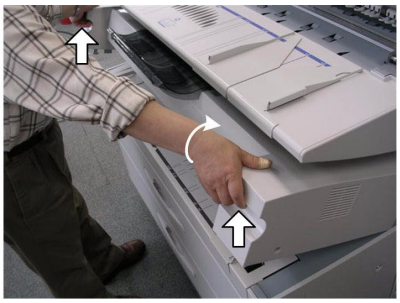
- The BCU controls the machine.
- The IPU controls the image processing.
- The IOB controls the mechanical components. It also performs process control, transfers serial data between the machine and peripherals, and controls the fusing unit.
- The PSU (Power Supply Unit) supplies direct current for every electrical component in the machine, and controls alternating current input to the fusing lamps and anti-condensation heaters.
- File Format Converter (MLB): The file format converter (also called the "Media Link Board" or "MLB") allows you to download copy and print data through via network with Desk Top Binder.
- CIS: A contact image sensor is used instead of a CCD. The main scan width is A0. The resolution is 600 dpi.
- LPH: This is the LED print head. It consists of three A3-width LED heads, to write a main scan width of A0. The resolution is 600 dpi.
- VDB: This drives the LED print head.
- RFDB: These control the roll tray units, one for each tray (upper/lower).
- FPDB: These control the fusing pressure motors. As stated earlier, the fusing unit adjusts fusing pressure automatically. It uses two motors, which are each controlled by one of these boards.



Boards, continued

- AC CTL Board: This is the connection point for the main power supply. It controls the power supply to the PSU, fusing lamps, and all heaters.
- HVPS: Two power packs (High Voltage Power Supply). The CGB power pack provides is the power supply for the charge, grid, bias applied to the drum. The T&S power pack is the power supply for image transfer to paper and paper separation from the drum.
- SIB. The Scanner Interface Board controls the scanner, and serves as the signal I/F board between the IOB and IPU.
- PFB. The Paper Feed Board inside the optional Paper Cassette (D395) controls the components in the paper cassette (sensors, clutches, and motors).

Opening and Closing the Machine

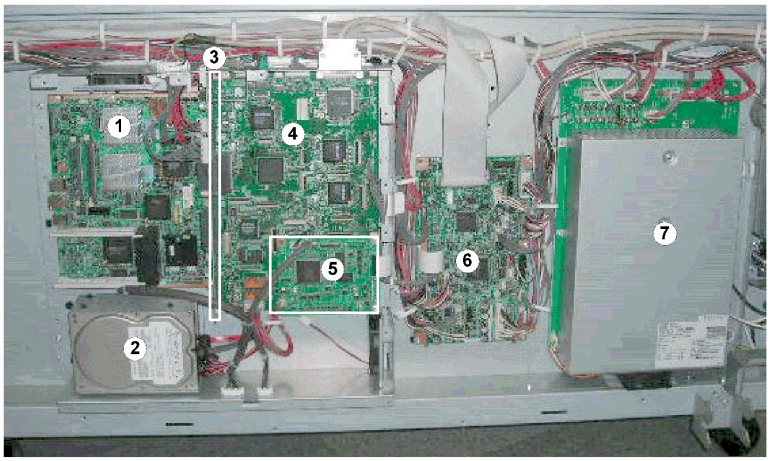


- To avoid bending the catch and release mechanisms, always release and raise the right and left sides together.

Slide 121

No additional notes

Rear of the Machine



Slide 122

With the controller box cover removed, you can see:

- ❒ 1. Controller board
- ❒ 2. HDD unit
- ❒ 3. Motherboard (MB)
- ❒ 4. IPU
- ❒ 5. BCU
- ❒ 6. IOB
- ❒ 7. PSU
- ❒ The AC board is separate.

Why are the PSU and AC board not combined into one power supply unit?

- ❒ The PSU circuit board is used with another model. If the same board can be used for more than one model, this reduces development costs.
- ❒ However, the AC board contains parts specifically required for this machine.

Controller Replacement

- **You must remove the NVRAM from the old board and install it on the new board.**
  - There are no NVRAMs on other boards.
- **If you will change the NVRAM, upload the contents to an SD card if possible.**
- **Make sure that the DIP switches on the new board are the same as on the old board.**
- **If there is an HDD encryption unit installed, restore the encryption key.**
  - Service manual, Installation, HDD Encryption Unit, Recovery from a Device Problem

Slide 123

No additional notes

Hard Disk Unit

- **This is a two-disk unit. All disks must be replaced at the same time. Do not try to replace one disk only.**
- **Before you install a new unit:**
  - Do SP 5846 051 to copy the address book from the hard disk to an SD card (put the SD card in slot 1).
- **A decal shows you how to connect up the new hard disk unit.**
- **After you install a new unit:**
  - Do SP5853 001 to download the fixed stamps from the ROM to the HDD.
  - Switch the machine off and on to enable the fixed stamps for use.
  - Do SP 5846 052 to download the address book from the SD card to the hard disk (put the SD card in slot 1).

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- Study this procedure.
- Obey all warnings and cautions in the manual.

Hard Disk Unit (1)

- **Do not take an old hard disk unit away from the customer, unless the customer gives you permission to do this.**
  - The disk contains the customer's data. The customer should dispose of the defective disks, to prevent security problems.
- **The customer will lose some data if a new hard disk unit is installed. Tell the customer about this.**
  - Document server documents
  - Custom-made stamps
  - Document server address book

Slide 125

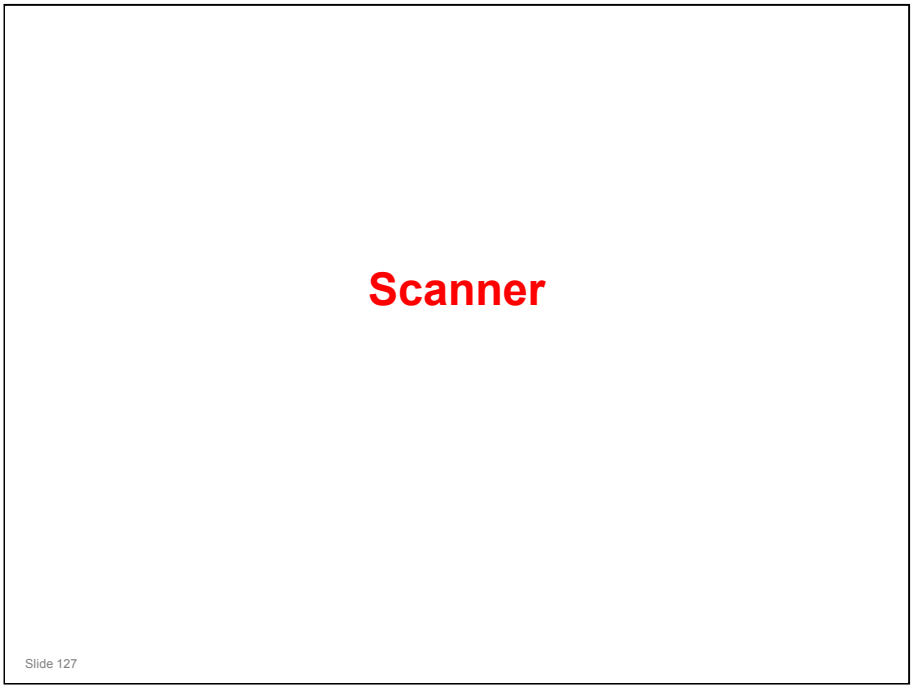
No additional notes

Hard Disk Unit (2)

- **If the customer uses the DOS unit option, this option must be set up again after a new hard disk is installed.**
- **If the HDD encryption unit is installed, the user must copy the encryption key from the controller to the new hard disk.**
  - This is not a service procedure, so it is not in the service manual.
- **Any SDK applications must be installed again.**
  - It is not necessary to install the VM card option again.
- **If the customer is using the optional Browser Unit, this option must be installed again. You must use the same SD card as when the browser unit was installed first.**

Slide 126

- The browser unit SD card is linked to its machine (the machine serial number is registered on the SD card). So a card that has already been installed on one machine cannot be used on another.



PURPOSE OF THE SECTION

- The scanner is similar to the Dolphin-C2. This section explains the differences.

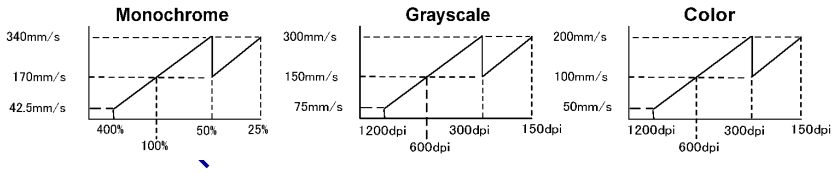
Differences

- **The machine uses a CIS that can scan in color.**
- **The CIS is below the original feed path.**
  - In the Dolphin-C2, it is above the original feed path.
  - The CIS is divided into 16 blocks. In the Dolphin-C2, it is 8 blocks.
- **The CIS is one unit, not broken up into several pieces.**
- **Original exit: the default is the rear exit (N-C2: upper exit)**
  - There is no roll-up document catcher in the Be-C1.
- **The white platen roller (used for auto shading) is replaced with a white plate.**
- **Magnification Adjustment: The machine automatically adjusts the magnification based on paper type.**

Slide 128

No additional notes

Original Feed Speed

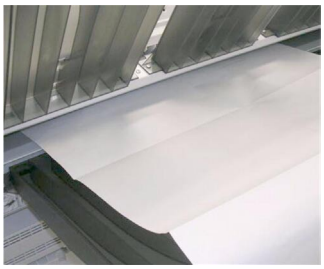


- **To ensure accurate scanning, the scanning speed is adjusted for the reproduction ratio and for resolution.**
  - Enlarged images are scanned slower; reduced images are scanner faster.
  - Higher resolution images are scanned slower; lower resolution images are scanned faster.

Slide 129

No additional notes

Original Edge Hold



- If an original fed out of the rear exit is longer than 450 mm (18"), the rollers will stop and hold the trailing edge. The operator must pull the original out and remove it from the tray.
- If the original is shorter than 450 mm, the rollers feed the original out to the rear original exit tray.
- This feature prevents long originals from falling off the rear exit tray.

Slide 130

- This feature can be switched off and on with SP4975. The default setting is on (the rollers do not release the trailing edges of originals longer than 450 mm).
  - This SP must be turned off if a rear original stacker is used. Otherwise, only one original can be fed at a time.
- The machine does not hold the trailing edge of copies.

Magnification Adjustment

- **The magnification ratio is adjusted automatically to compensate for stretching or shrinking of various paper types as they go through the copier engine.**
- **The image is magnified according to the settings done with either the SP or User Tools mode for each type of paper.**
- **After a paper source has been replenished with a different type of paper, the paper size and paper type must be entered with the User Tools.**
- **The default settings for the magnification adjustment can be adjusted with SP2916.**
  - For details about how to do this: Service Manual, Replacement and Adjustment, Important Adjustments, Image Position/Magnification/Margin Adjustments, Printer Magnification Adjustment

Slide 131

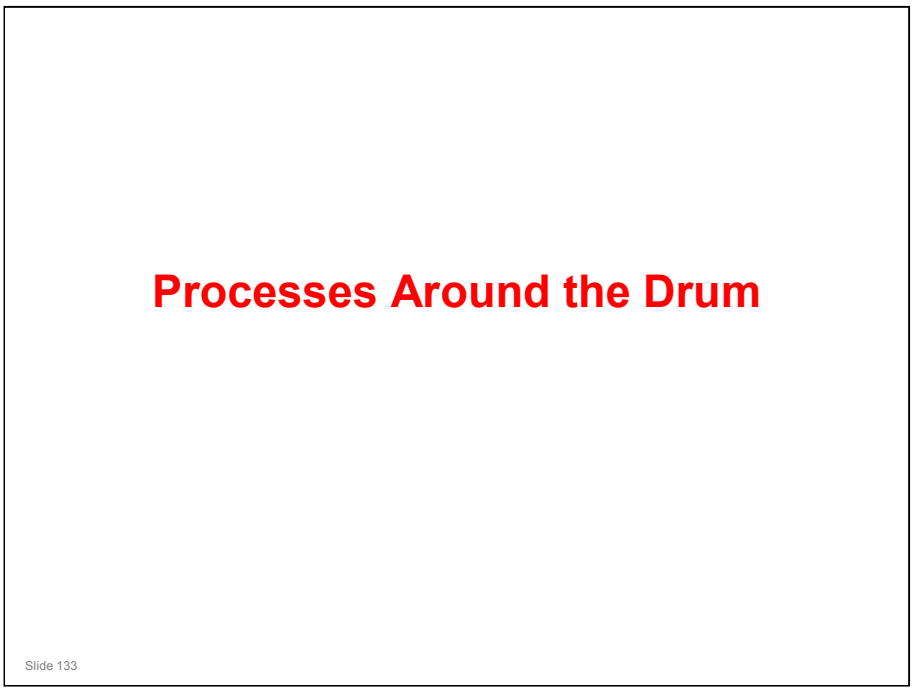
- This is a new feature. The scanner motor drive speed is adjusted to correct the magnification.

Removal and Adjustment

- **The CIS and its two lamp regulators must be replaced as a set.**
  - Make sure that you connect the Xenon lamp regulators correctly, as shown in the manual.
  - The lamp regulator boards and the cables are marked from 1 to 4. Match them up correctly.
- **There is no need to do white level adjustment after replacing the CIS.**
- **There is no language EPROM behind the operation panel.**

Slide 132

- The white plate is very flat, with a very even white color. Because of this, it is not necessary to do the white level adjustment.
  - The adjustment has been removed from the service manual.



PURPOSE OF THE SECTION

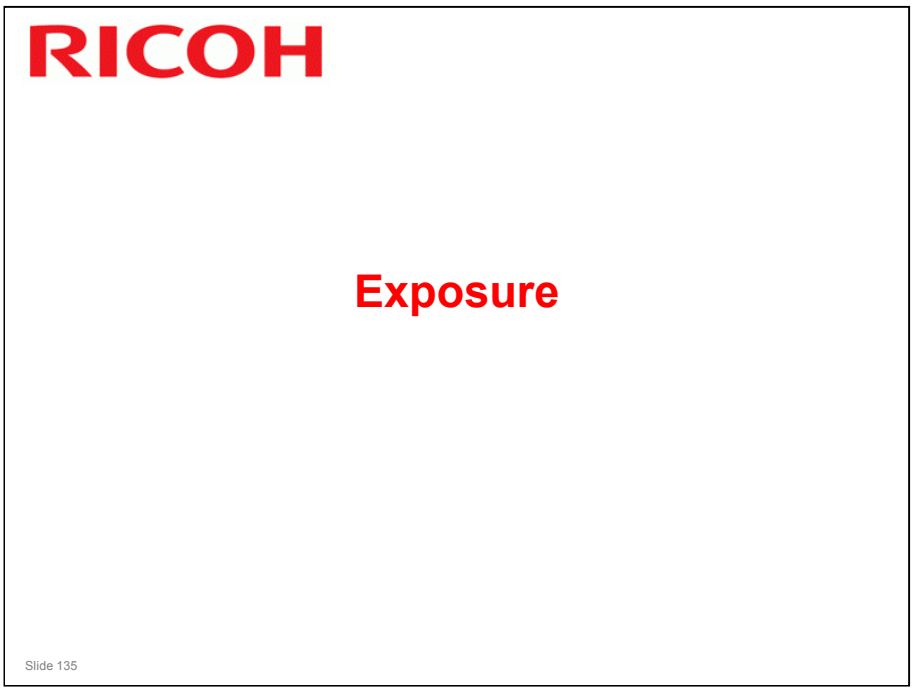
- This section will describe drum drive, the charge corona unit, drum cleaning, and quenching.

Differences

- **Corona wire cleaning: This is similar to the Neptune-C2**
- **The toner overflow sensor is a different type. In this model, it is a photointerrupter.**
- **Corona wire replacement: Must replace the entire charge corona unit. Wire replacement is not possible.**
- **Important note for emptying the used toner bottle:**
  - After emptying the used toner bottle, you must clean the area inside the bottle where the used toner overflow sensor is located.

Slide 134

No additional notes



PURPOSE OF THIS SECTION

- ❒ The latent image writing mechanism is basically the same as the Dolphin-C2.

LPH Cooling Fans

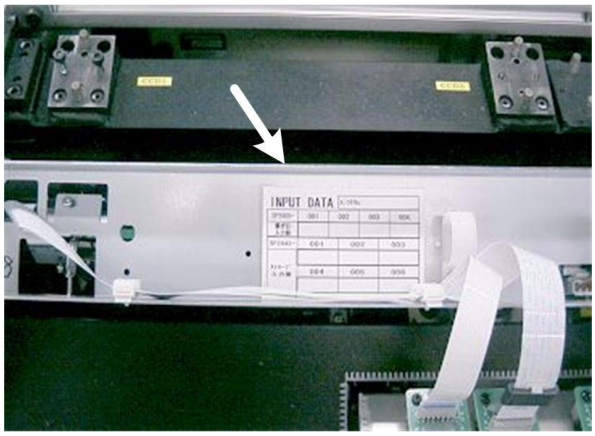
- **There is a fan at each end of the LPH unit.**
- **The fans pull air into the LPH unit to cool the machine.**
  - Heat expansion could distort the images.
- **Both fans switch on when the main motor and fusing/exit motor switch on, and they switch off when these motors switch off.**
- **SP2940 controls operation of these two fans.**
  - 0: On when motors on (default)
  - 1: Always off
  - 2: On at same time as fusing lamps

Slide 136

No additional notes

LPH Replacement and Adjustment

- There are no ROMs to replace.
- The decal on the LPH is different.



Slide 137

- The SPs to make the test patterns are different from the previous models.
  - Use SP 4417, pattern number 19
- See the procedure in the manual.

Replacement and Adjustment, Important Adjustments, LPH Adjustment with SP Codes

- This decal is only on the spare parts, not on the original part installed at the factory. See the factory setting sheet for the original factory settings.
- Before re-installing the right copy tray, read the LPH settings from the labels attached to the LPH.
  - Look for 4 labels, probably on the underside of the unit. See the manual for an example

PURPOSE OF THIS SECTION

- ❒ The mechanism is similar to the Neptune-C2. Toner supply control, near-end and end detection are also similar to Neptune-C2.
  - ➢ There is no TD sensor.

How to Use the Low/High Duty Setting?

- The default setting is high duty mode.
- In low duty mode, if the copy volume is more than 2,500 m/month or 200 m/day, toner scattering can occur.
- In high duty mode, if the copy volume is low, image density in solid areas can be slightly too low (but within specifications).
- So do not change this setting.

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- This machine has a higher estimated ACV than the Dolphin, so the default setting was changed from low duty mode to high duty mode.
- It is thought that it will not be necessary to change this setting in the field for this machine.

Toner Supply

- **The machine controls the supply of toner to the development unit by switching the toner supply clutch on/off.**
- **For copies shorter than 1250 mm (49.2 in.): Detect Supply mode is used (this uses readings from the ID sensor).**
- **For copies longer than 1250 mm (49.2 in.): The machine automatically enters the "Long Print" mode.**
  - In Long Print mode, the machine uses Fixed Toner supply mode (the readings of the ID sensor are ignored)
  - There are two types
    - » Drawing: Fixed supply of 3% (adjustable with SP 2208-5)
    - » Graphic: Fixed supply of 6% (adjustable with SP 2208-6)
    - » The default is 'Drawing' (change with SP 2208-7)

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- Fixed supply of 3%: Every page, the machine adds the same amount of toner that would be needed to print a page that has 3% toner coverage.

Replacement and Adjustment

- **Developer**
  - You need one unopened toner cartridge to do this procedure (or, you can tape up the existing cartridge, so that toner cannot get out).
  - The installation procedure for new developer is similar to the steps in the machine installation procedure for installing developer and toner.
    - » Set a new toner cartridge after you add the first bag of developer (do not remove the tape).
    - » Then turn the power on to distribute the first bag. (This takes about 22 seconds).
    - » Turn the operation switch off, then turn the main power switch off.
    - » Then remove the toner cartridge and add the second bag.
    - » Then install a toner cartridge and remove the tape (you can use the old toner cartridge if toner is remaining).
    - » Input lot numbers and initialize the developer.

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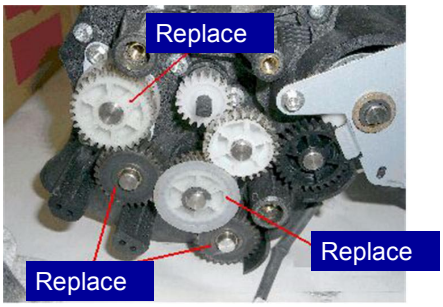
❒ The developer replacement procedure is different from the N-C2.

Development Unit Gear Replacement



- These gears on the development unit must be checked every 200 km (656 K ft.) of paper feed, and replaced if necessary.

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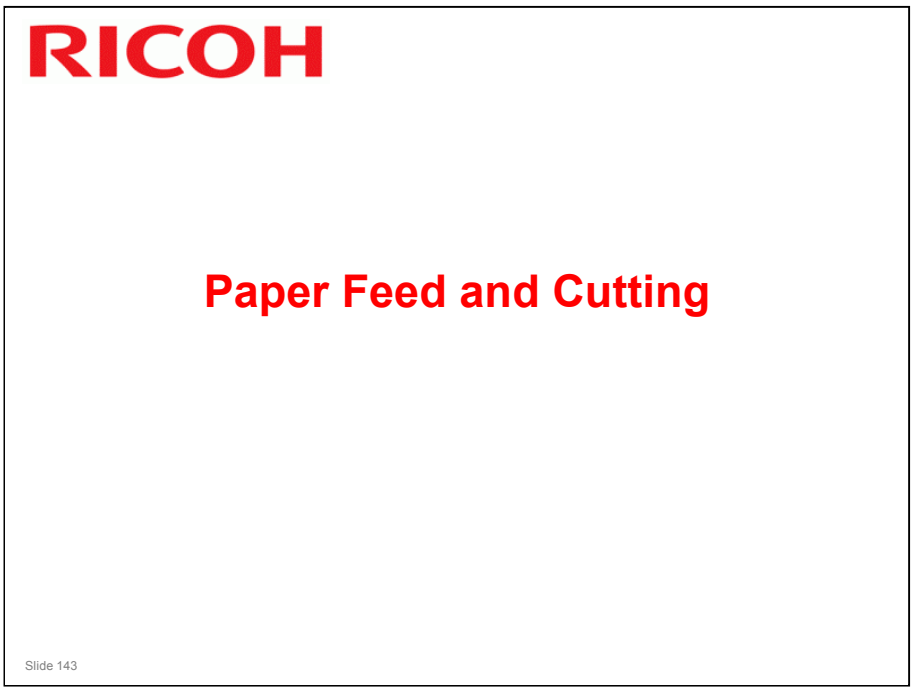
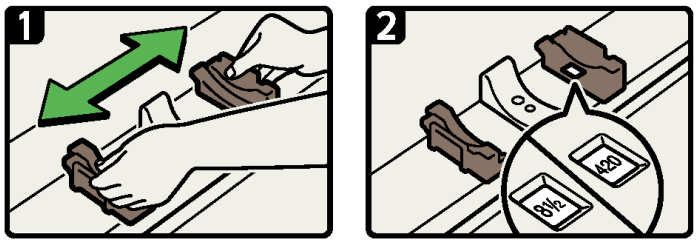
No additional notes



PURPOSE OF THIS SECTION

- ❒ The paper feed mechanism is basically the same as the Dolphin-C2.

Paper Roll Holder



- The holders work a bit differently from previous models.
- They cannot be taken out.
- Instead, they slide across the width of the tray, in a similar manner to paper width guides in a paper cassette.

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- A roll holder fits into the end of each roll.
- The roll holders can be easily moved to a different place to change the paper size.
- There are no paper size sensors attached to this mechanism.

Roll Paper Home Positioning

- **At the end of each job, the feed roller reverses to pull the leading edge of the roll paper to its home position.**
- **This ensures that the common paper path is open for paper feed from any source selected for the next job.**
- **This is done at the following times:**
  - Within 0.5 sec. after the last sheet feeds, if there are no more feed instructions
  - Immediately after the power is turned on
- **The machine monitors the leading edge using the sensors, to determine the correct place to stop the reverse feed.**
  - Each roll has a fixed home position for the leading edge.

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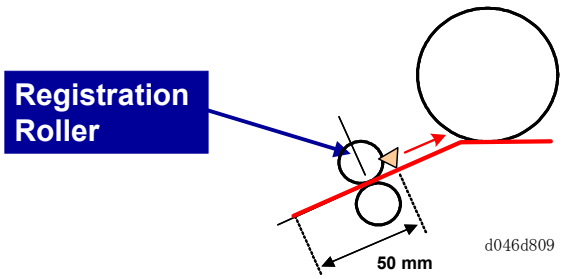
No additional notes

Registration Motor Timing Adjustment



- The fusing roller turns a bit faster than the registration roller, to pull the paper tight. This prevents wrinkling and skew.
- However, the tension can cause image jitter when the trailing edge of the paper leaves the registration roller.
- To prevent this, just before the paper leaves the registration roller, the speed of the registration roller is increased slightly.

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- When the trailing edge of the paper is 50 mm before the registration sensor, the speed of the registration roller is increased 2%.
  - The speed does not reach the speed of the fusing rollers.
- Jitter: A type of image distortion caused by toner particles being shaken from their original position on the paper.

What Happens when Roll End is Detected

- **If the roll has a black core**
  - When a roll end sensor signals roll end after the trailing edge of the white paper separates from the black core:
    - » If less than 210 mm (about 8 in.) has fed past the cutting sensor, the paper roll reverses and takes up 200 mm of paper. The paper does not exit the machine.
    - » If more than 210 mm has fed past the cutting sensor, paper feed stops the cutter cuts the paper, the paper roll reverses and takes up the paper. There is no slack in the paper, so the paper is cut diagonally. This is no problem for plain paper and translucent paper, but with film the machine will signal a jam.

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No additional notes

What Happens when Roll End is Detected

- **If the roll has a white core**
  - The roll end sensor cannot detect roll end when the trailing edge of the roll separates from the white core (there is no color change for the roll end sensor to detect).
  - However, when the paper end sensor detects the trailing edge of the paper:
    - » If less than 210 mm (about 8 in.) has fed past the cutting sensor, the roll reverses and takes up 200 mm of paper. The paper does not exit the machine.
    - » If more than 210 mm has fed past the cutting sensor, the paper is allowed to feed out of the machine without cutting.

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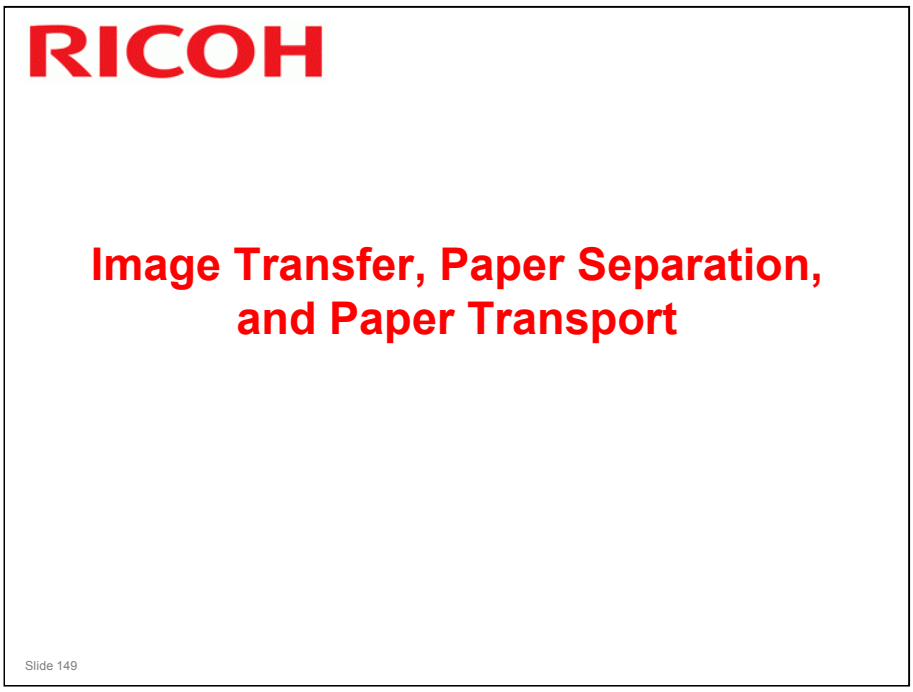
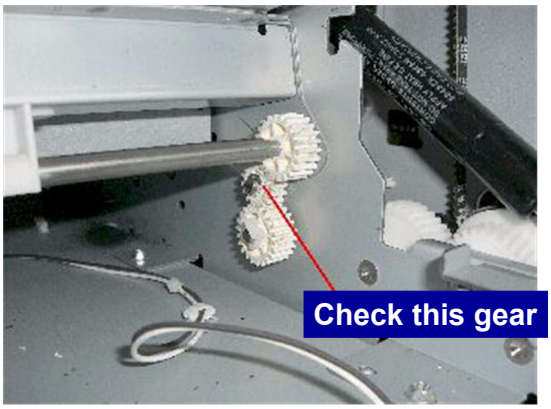
No additional notes



PURPOSE OF THIS SECTION

- ❒ The transfer mechanism is the same as the Dolphin-C2.

Gear Replacement



- Check this gear every 200 Km (656 K ft.) of paper feed and replace it if necessary.

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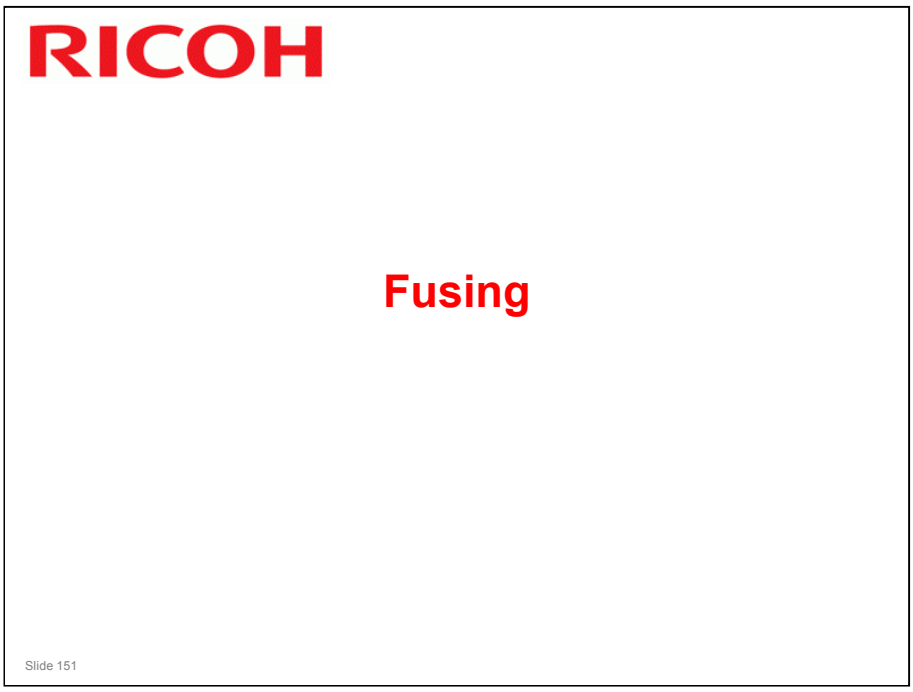
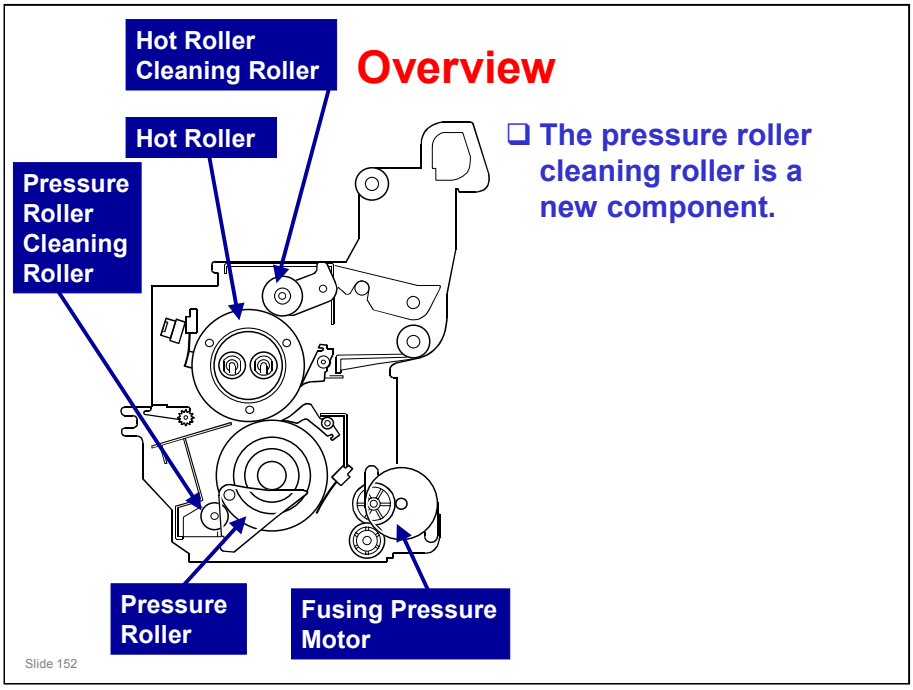
No additional notes

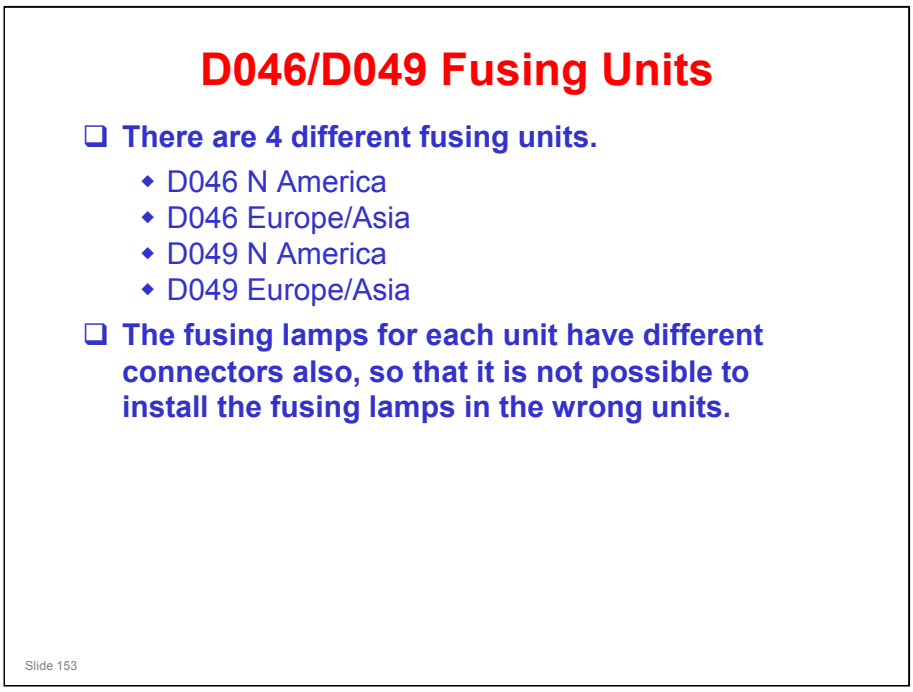


PURPOSE OF THIS SECTION

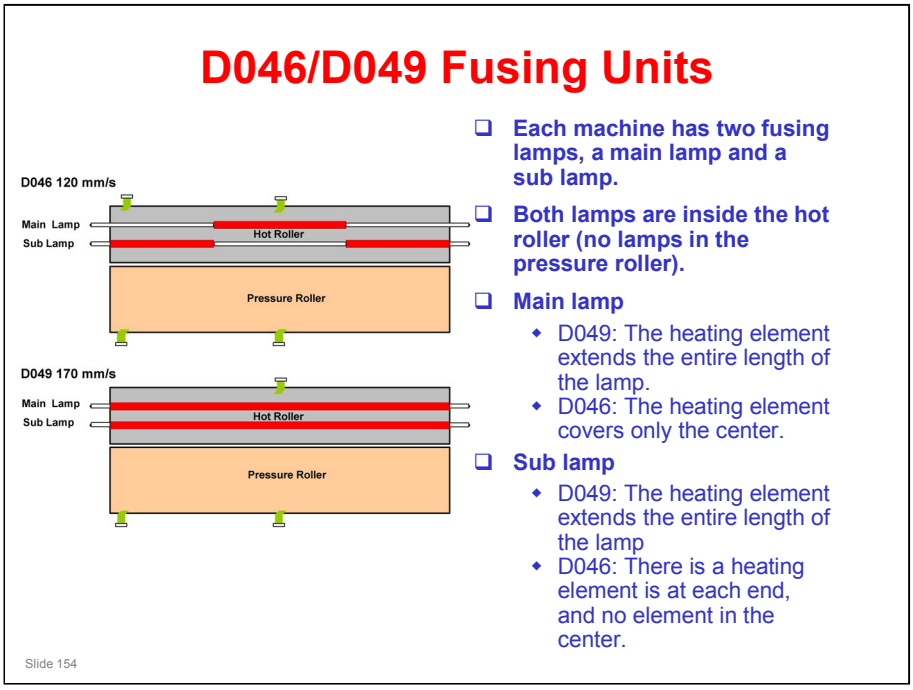
- ❒ The fusing mechanism is based on the Dolphin-C2.



No additional notes



No additional units



- The wattages of the lamps are different for each model also.
  - The connectors for the lamps are different, so it is not possible to install the lamp for the wrong machine.
- D049 hot roller
  - The roller contains three pipes with liquid in them. The liquid circulates when the fusing lamps turn on. This makes sure that the temperature is even all across the lamp (there are small differences in temperature in different places across the lamp due to the coils in the elements – the fluid in the pipes removes these differences).

Temperature Control

- **The D046 has four thermistors but the D049 has only three.**
  - Hot roller (center, end)
  - Pressure roller (center, end)
  - D049: No thermistor at the end of the hot roller
- **There is no thermistor to detect the room temperature.**
  - To estimate the conditions inside the room, the machine measures how long is needed to reach 140 °C after the start of warm-up.
  - If it takes more than 2 minutes, the environment is detected to be a 'low-temperature' environment.

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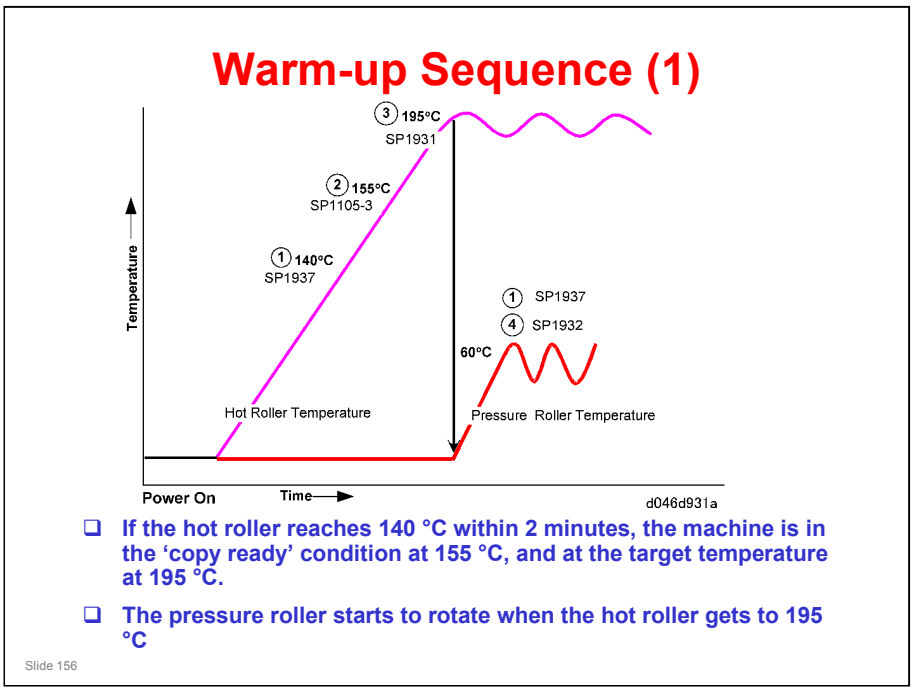
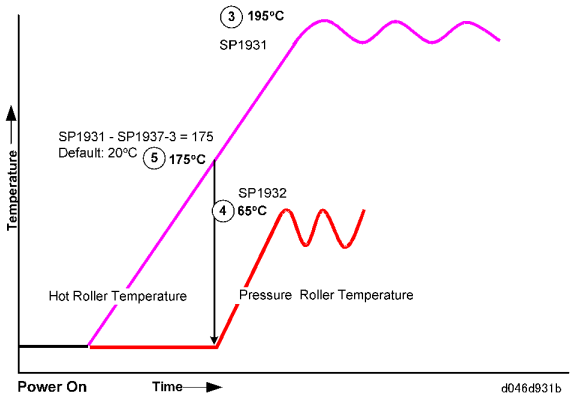
Other differences between the D046 and D049

- Hot Roller
  - D046: Diameter: 60 mm, thickness: 1.6 mm
  - D049: Diameter: 60 mm, thickness: 2.1 mm; contains a heat pipe roller
- Pressure Roller
  - Diameter: 65 mm, thickness: 85 mm (same for both models)
- Pressure Motors
  - Automatic pressure adjustment for both.



- This is for plain paper mode 3, which is the default condition.
- For other paper type settings, the copy ready temperature is the same as the target temperature.

Warm-up Sequence (2)



- If the hot roller cannot reach 140 °C within 2 minutes, the pressure roller starts to rotate when the hot roller gets to 175 °C.
- The target temperature at 195 °C.

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- This is also for plain paper mode 3.

Temperature Control During Copying

- **The machine maintains the correct fusing temperature with two functions: Pressure Feedback Control and CPM Down.**
- **Feedback Control**
  - The machine uses readings from the pressure roller thermistors (center and ends). If the temperature gets too low, the fusing unit idles to get the roller to the correct temperature.
- **CPM Down**
  - If feedback control cannot maintain the correct fusing temperature, CPM down takes over.
  - CPM down adjusts the paper feed timing to create a wider interval between sheets of paper in the paper feed path.
  - A wider gap between sheets allows the hot roller more time with no paper between the rollers, so the hot roller can transfer more heat to the pressure roller.
  - The machine uses the difference between the pressure roller temperatures at the end and the center to control CPM down. Readings from the hot roller thermistors are not used.

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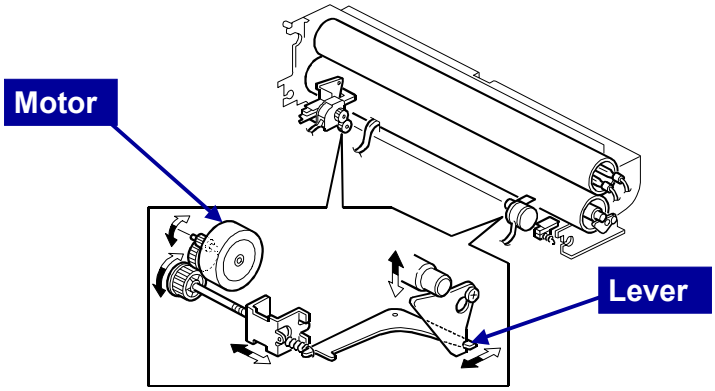
No additional notes

Pressure Control Mechanism



- Fusing pressure motors: Adjust the pressure between the hot and pressure rollers for each sheet of paper.
- The amount of the adjustment depends on:
  - Machine type (D046/D049), Paper type, Hot roller temperature
- If a jam occurs, the pressure is released automatically, so the user can remove the paper.

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- Each motor pulls a spring, which moves a lever that applies upward pressure on the end of the pressure roller shaft.
- The pressure roller is hollow, so the shaft does not affect the pressure at the ends of the pressure roller. Bushings at the centre of the shaft push upwards, and this applies the upward pressure between the hot roller and pressure roller.
- Details of the process for D046 are different from D049.
- The release position for removing jams is not the same as the home position.
  - The output tests (SP 5804) have two different settings: For the home position and for the jam release position

Fusing Motor Speed Adjustment

- **During paper feed, the speed of the fusing roller increases slightly, so that the fusing roller rotates faster than the registration roller.**
  - This pulls the paper tight to keep it straight.
  - The tension on the paper could cause the paper to snap out of the nip of the registration roller and cause "jitter" in the image if the speed is not corrected before the paper leaves the registration roller.
  - This line speed adjustment is done only for paper sizes narrower than 297 mm.
- **When the trailing edge of the paper is 50 mm before the nip of the registration roller, the fusing motor slows by -5%.**
  - This can be adjusted with SP1918.

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- Also, at about the same time, the registration motor speeds up slightly, as described earlier.
- The speed control adjustment is not done for paper shorter than 250 mm (9.8 in.)
- Fusing starts after the line speed has been slowed and the trailing edge has left the registration roller.
- The speed control setting of SP1918 is not done and the speed is increased after the trailing edge clears.

Replacement and Adjustment

- **There is no adjustment for the pressure springs after the hot roller or pressure roller is replaced.**
  - In previous models, there is a long screw-hole that can be used for adjustment.
  - In this model, the screw-hole is a normal type that does not allow adjustment.
- **Fusing Lamps**
  - The fusing lamps are designed so that it is not possible to install the lamps in the wrong model.
- **Hot Roller**
  - It is possible to install the roller in the wrong model. The roller for the D049 is heavier.

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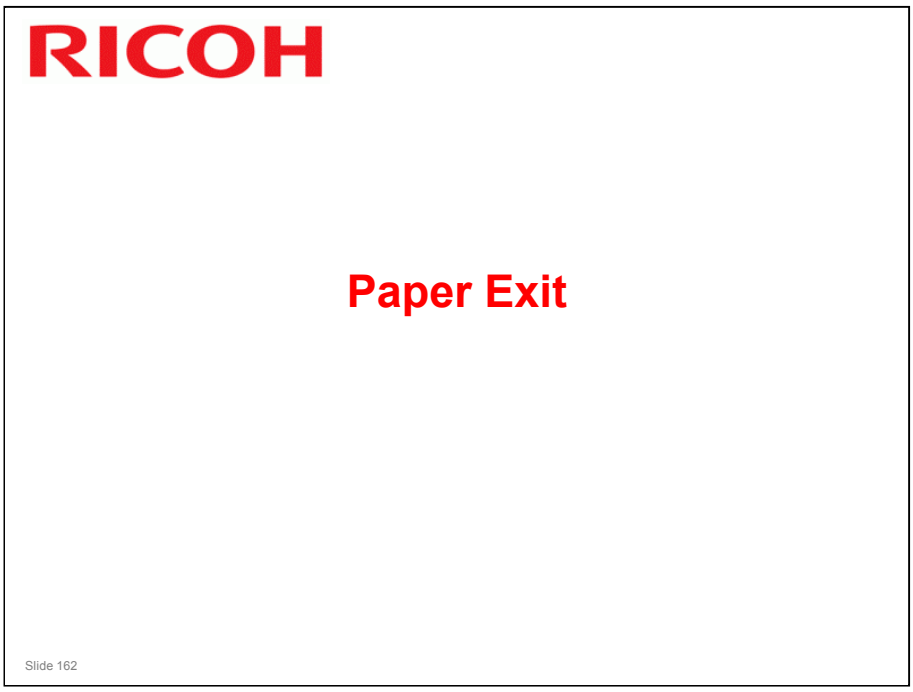
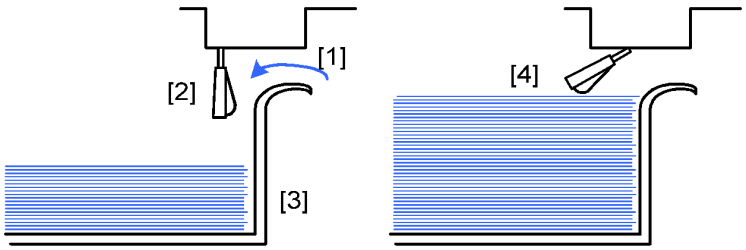
No additional notes



PURPOSE OF THIS SECTION

- ❒ The mechanism is based on the Dolphin-C2.

Front Copy Tray Full



- Paper [1] goes past the tray full sensor actuator [2] into the front copy tray [3].
- If the tray is full [4] (capacity 100 sheets), the top of the stack pushes the actuator out of the sensor.

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No additional notes