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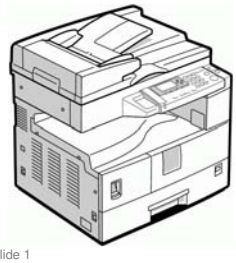
Introduction



Slide 1

Uploaded November 17th, 2009

Introduction

- **Product Concept**
  - Low cost
  - Simple operation
- **Appearance**
  - New Blue Internal Exit Tray
- **Compared to B245**
  - Faster printing speed
    - » B245: 15cpm
    - » D096: 19cpm
  - Faster warm-up
    - » B245: Less than 15 seconds
    - » D096: Less than 10 seconds
  - Languages added (for EU model)
    - » Turkish
    - » Catalan

Slide 2

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1) Product Outline

Slide 3

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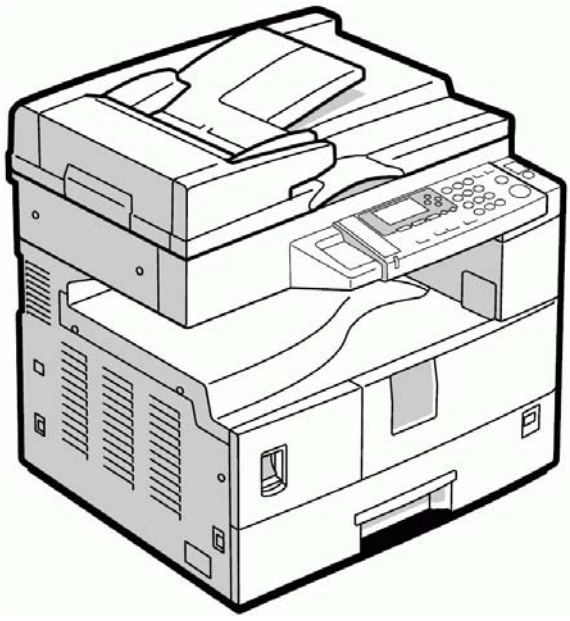

The Machine

This is the machine you will study in this training course. Note the following:

- Paper tray
- Bypass tray
  - » On right side of machine
    - – See next slide
- Operation panel
- ADF (optional)

Slide 4

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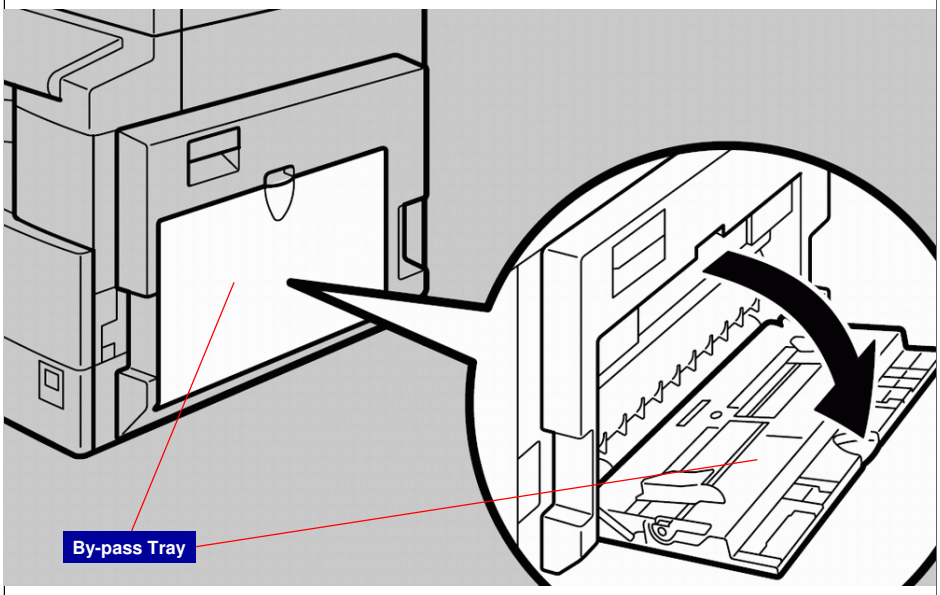
Bypass Tray



Slide 5

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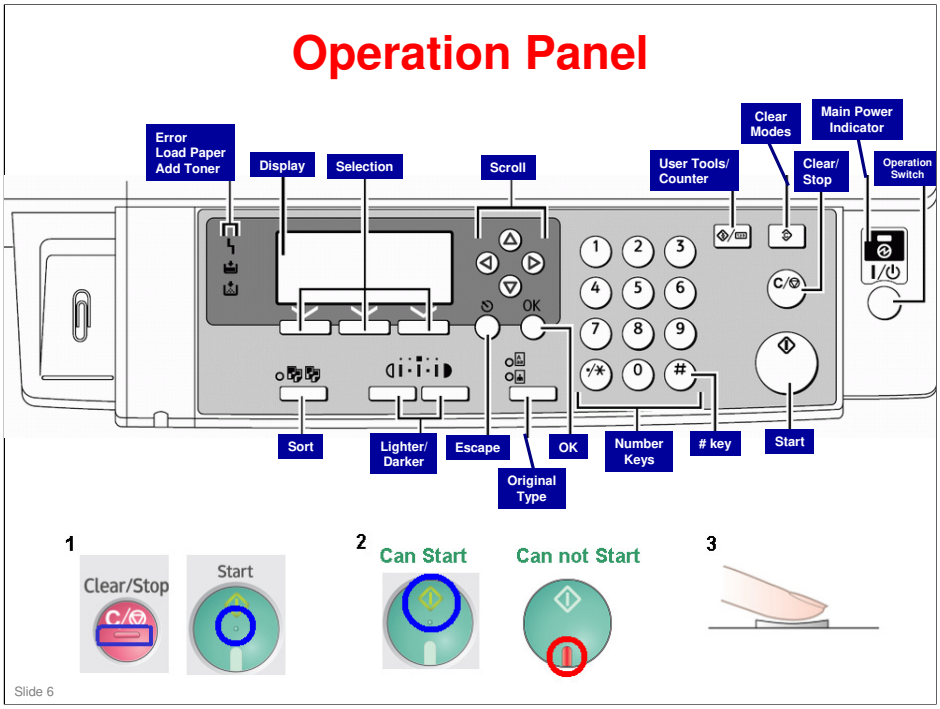
Operation Panel
Error
Load Paper
Add Toner
Display
Selection
Scroll
User Tools/
Counter
Clear
Modes
Main Power
Indicator
Clear/
Stop
Operation
Switch
Sort
Lighter/
Darker
Escape
Original
Type
OK
Number
Keys
key
Start
1
Clear/Stop
Start
2
Can Start
Can not Start
3
Slide 6

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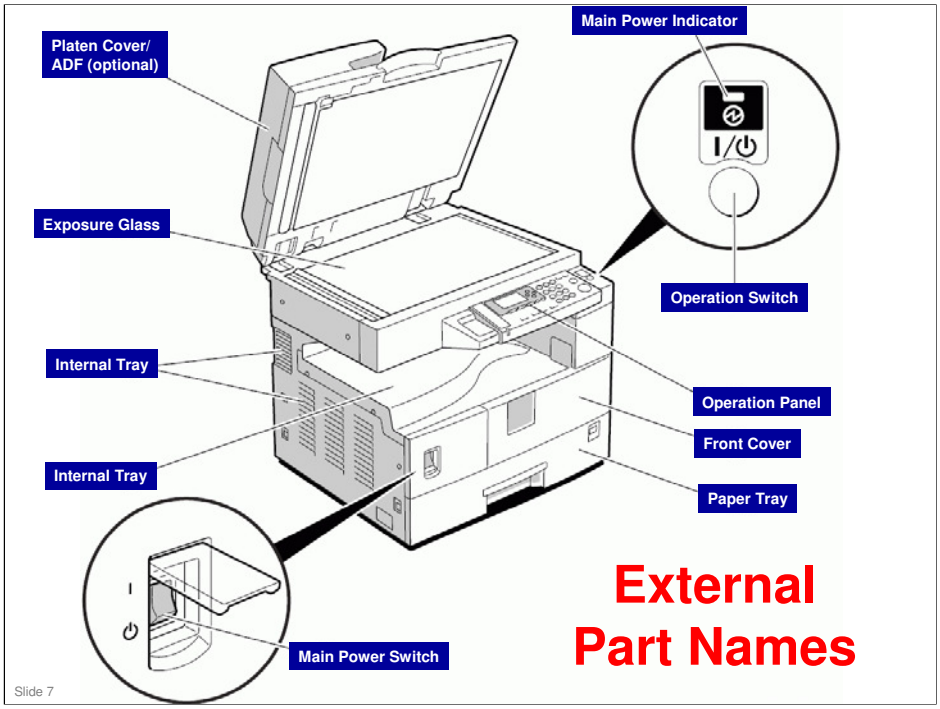

"Operation Switch" refers to the Operation Panel Power Switch.

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Optional Units

- **Platen Cover**
  - B406
    - » See following slide
- **ADF**
  - B813
    - » See following slide
- **Accessibility Handle, Type-A**
  - B272

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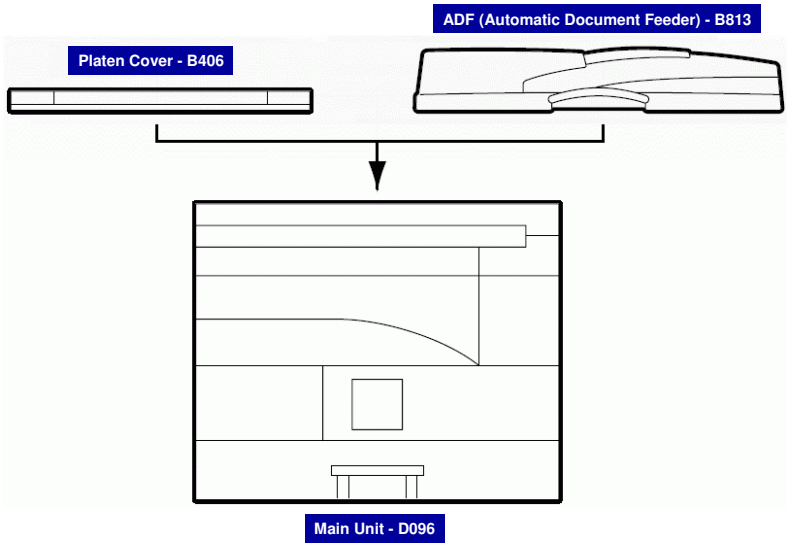
Platen Cover & ADF (Optional)



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2) Specifications

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Specifications

- **Configuration**
  - Desktop
- **Copy process**
  - Dry electrostatic transfer system
- **Zoom**
  - 50% to 200% in 1% steps
- **Power Consumption**
  - Full system
    - » Less than 1.28 kW
  - Reduced Electrical Consumption via Lower Power mode
    - » Less than 1 W.
  - See Energy Saver Modes for more details.
- **Print speed**
  - 19cpm (platen mode)
  - 18cpm (ADF)
- **Warm-up**
  - Less than 20 seconds

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3) Installation

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Install the Copier

Procedure: *Copier Installation* (see service manual)

- **Developer Initialization must be performed via SP-2214-1**
  - After installing machine & all options, and making all test copies, record value of total counter.
    - » This is very important, because this value will be used for billing with Meter Click contracts.
    - » Also, inform customer of value along with reason why counter does not start from zero.
      - – Do not set to zero.

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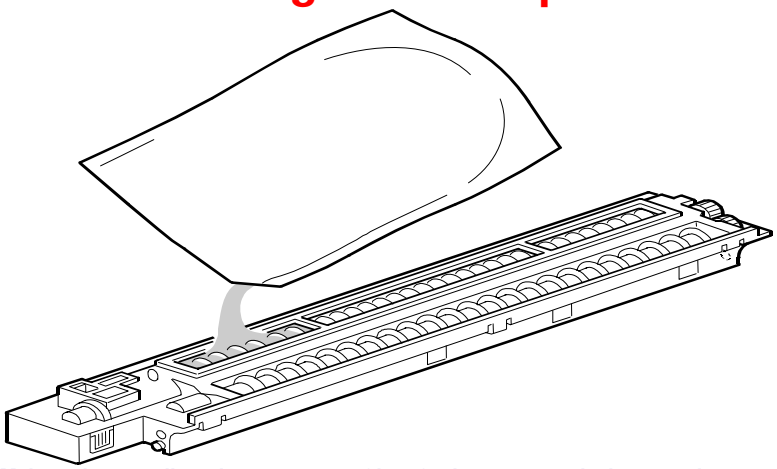
Putting in Developer



- Make only a small cut in top corner of bag for better control when pouring.
- Make sure not to spill developer on the gears.
- If you have to turn the gears to distribute developer evenly, make sure to do so very slowly and as little as possible. Otherwise developer may spill.
- After pouring in developer, initialize it with SP-2214-1.

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Installation Options

- Regarding Platen Cover and ADF - only one of these options can be installed at a time.
- Platen Cover Installation (see service manual)
- ADF Installation (see service manual)

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4) Machine Overview

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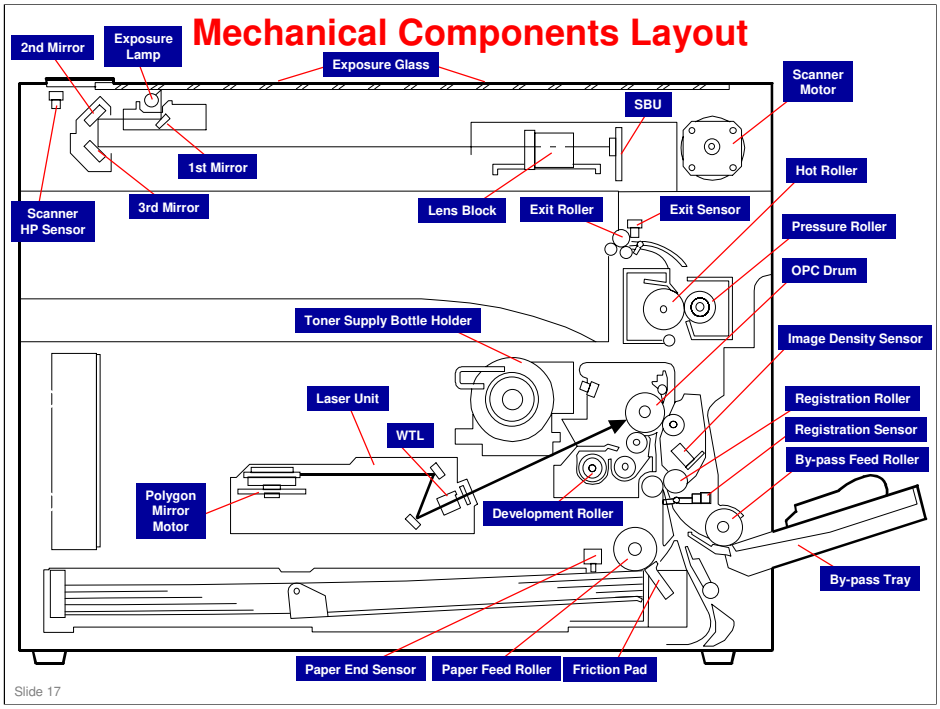
Mechanical Components Layout
2nd Mirror
Exposure Lamp
Exposure Glass
Scanner Motor
SBU
1st Mirror
Hot Roller
Scanner HP Sensor
3rd Mirror
Lens Block
Exit Roller
Exit Sensor
Pressure Roller
OPC Drum
Toner Supply Bottle Holder
Image Density Sensor
Laser Unit
Registration Roller
WTL
Registration Sensor
By-pass Feed Roller
Polygon Mirror Motor
Development Roller
By-pass Tray
Paper End Sensor
Paper Feed Roller
Friction Pad
Slide 17

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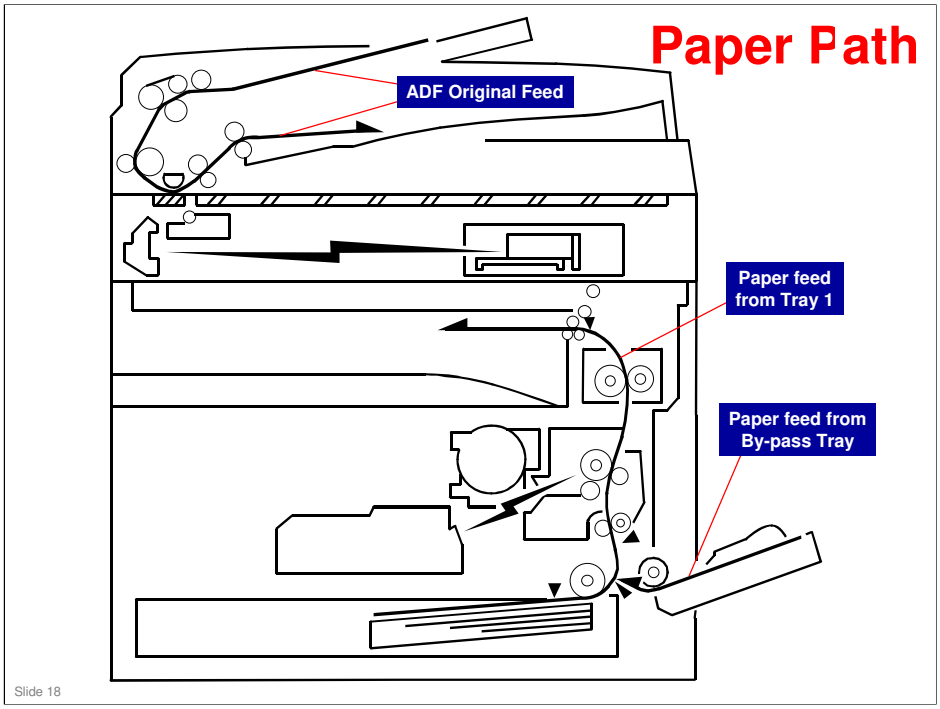
Paper Path
ADF Original Feed
Paper feed from Tray 1
Paper feed from By-pass Tray
Slide 18

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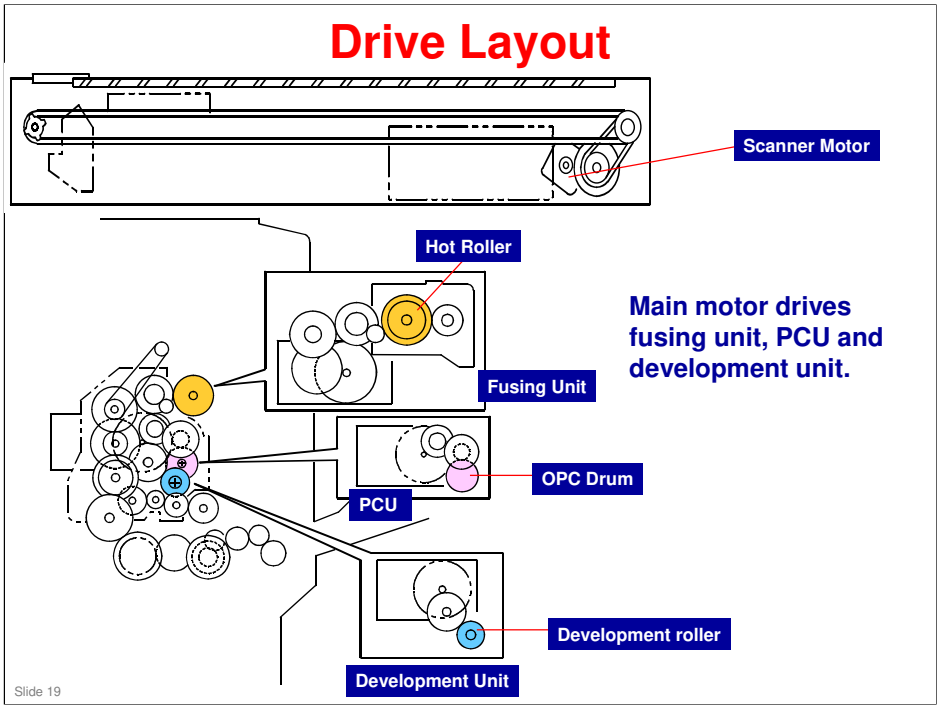
Drive Layout
Scanner Motor
Hot Roller
Main motor drives fusing unit, PCU and development unit.
Fusing Unit
OPC Drum
PCU
Development roller
Development Unit
Slide 19

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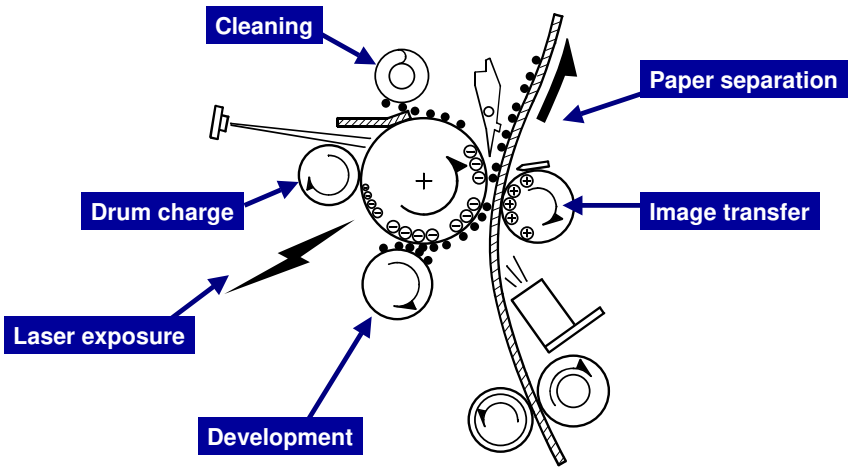
Copy Process



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5) Scanner

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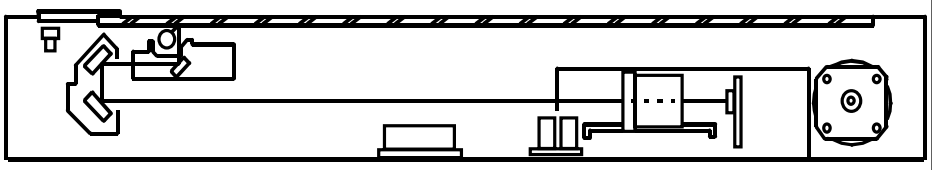
Scanner Unit



- 600 dpi CCD
- Exposure lamp: One xenon lamp
- The reflector reduces shadows on paste-up originals

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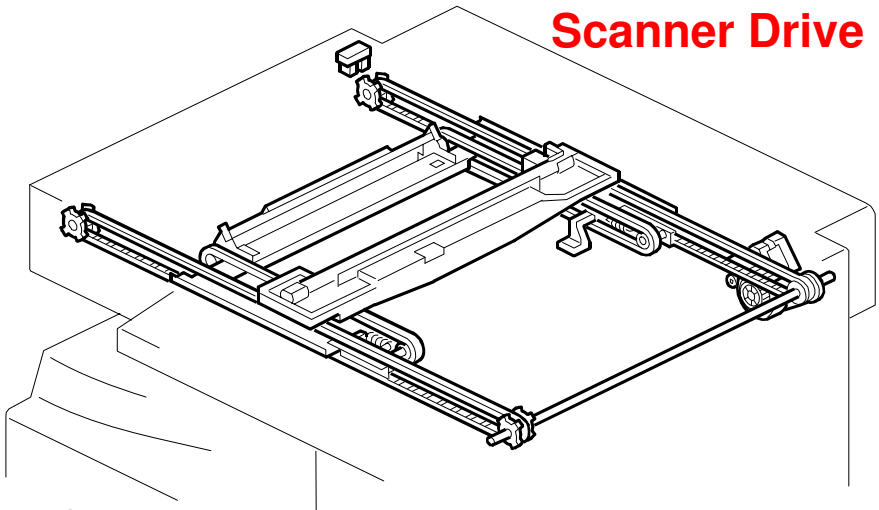
Scanner Drive



- **Scanner drive motor: Drives the scanner (100 mm/s)**
  - Timing belts are used in this model
- **In ADF mode, scanner stays at home position.**
  - Original is scanned while ADF feeds sheet through.

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SP Modes

- SP 4008: Sub scan magnification
- SP 4009: Main scan magnification
- SP 4010: Leading edge registration
- SP 4011: Side-to-side registration
- SP 4013: Scanner free run (exposure lamp off)
- SP 4305: Determines how machine interprets original size sensors for A4/LT widths.

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6) Image Processing

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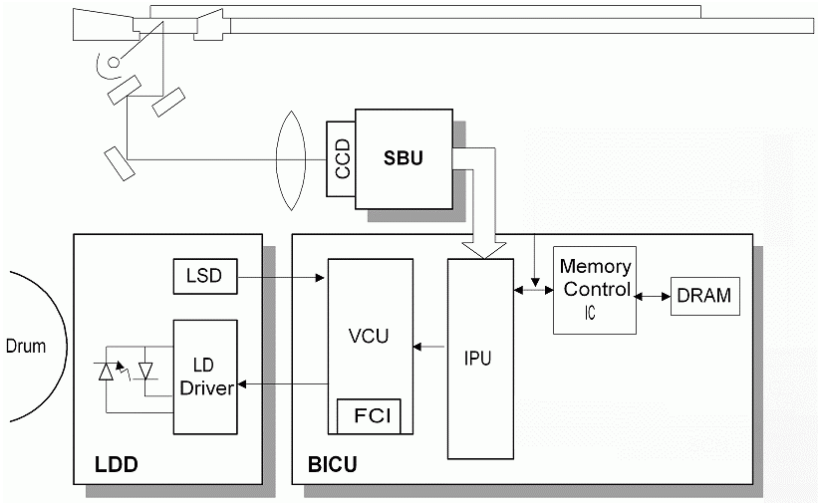
Image Processing Circuit



- **Data comes to the BICU board from two sources.**
  - Scanner and SBU

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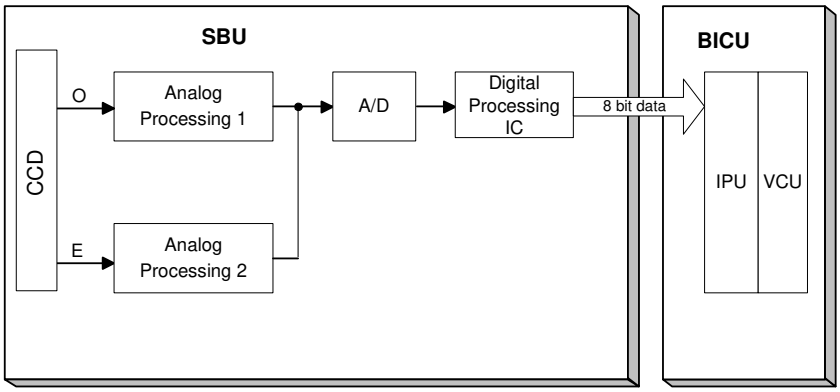
SBU Board



- **The CCD converts the light reflected from the original into an analog signal.**
  - Each CCD line has 7,400 pixels, producing a resolution of 600 dpi (23.6 lines/mm).

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Image Processing Unit

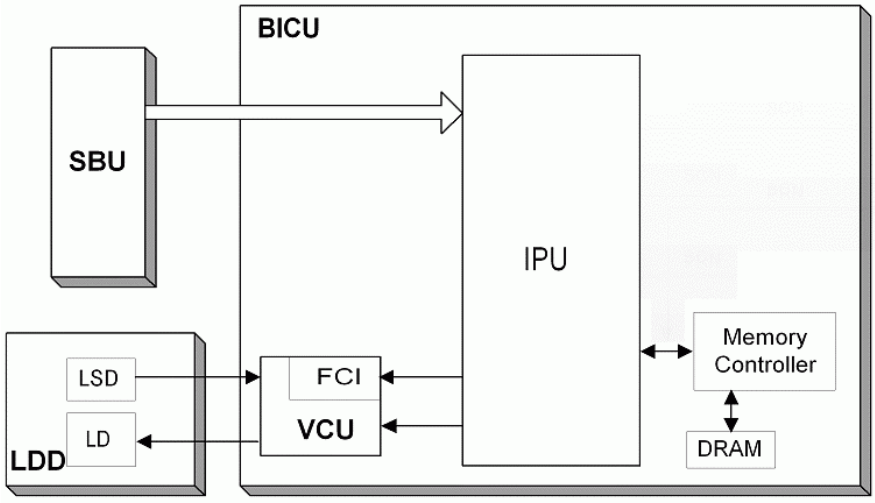

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Image Quality Adjustments - 1/3

- **Three basic original types**
  - Text
  - Photo
  - Special (can only be accessed through a user tool)
- **Ten original types in total, selectable with a user tool**
  - Text modes: 2
  - Photo modes: 3
- **Special modes: 5**

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Image Quality Adjustments - 2/3

- **The original mode key on the operation panel has two settings:**
  - Text
  - Photo
- **The default settings are:**
  - Text indicator lit: Normal Text (Text 1)
  - Photo indicator lit: Photo Priority (Photo 1)
- **To allocate an original type:**
  - Light either the Text or Photo indicator
  - Select the required original mode with User Tools - Copier Features - Adjust Original Mode

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Image Quality Adjustments - 3/3

- **SP 4922 to 4932: Image processing adjustments**
  - List: See ***SP Modes for Each Image Processing Step*** in the service manual
  - Table: See page following list of SP modes in the service manual
- **SP 4921: Selects one of the original modes; only one can be adjusted at any one time.**
  - First select a mode with SP 4921. Then adjust it with SP 4922 to 4932.

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SP Modes

- **SP 4015: Adjusts the area of the white plate used for auto shading**
- **SP 4903: ADS level**
- **SP 4904: Lower limit for ADS**
- **SP 4905: Determines how much of the image is used for ADS (the whole width or just a narrow strip)**
  - Use SP 4015 to adjust the area of the white plate that is used for auto-shading. Adjust this if there is damage to the white plate causing defective auto shading.

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7) Laser Exposure

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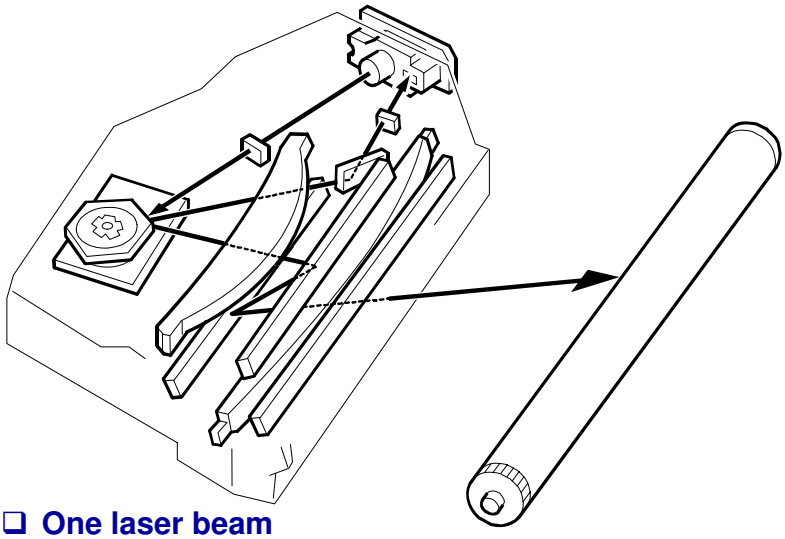
Laser Optics



- **One laser beam**
  - There is only one laser beam in this model.

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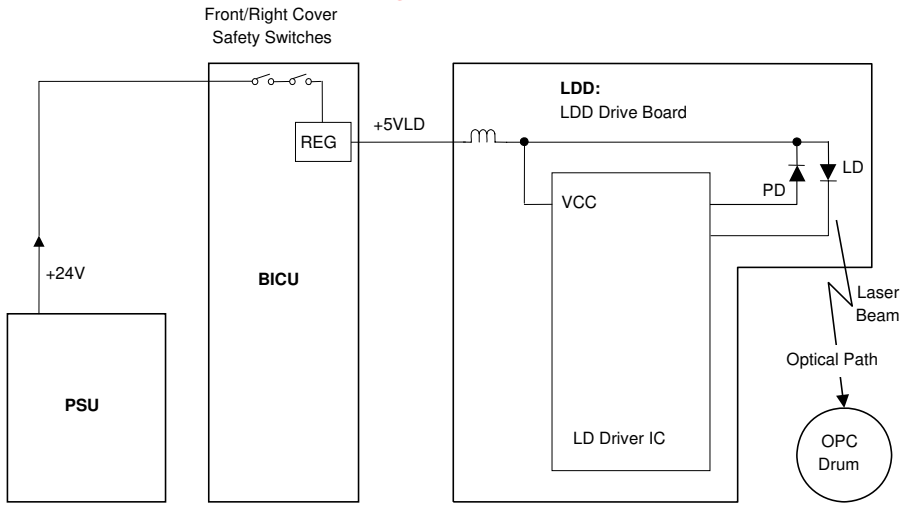
Safety Switches



- When the front or right-side cover is open, a switch cuts power to the laser diode.
- Both covers operate the same switch.

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SP Modes

- **SP 2915: Polygon mirror idling time**
- **SP 2998: Main scan magnification (printer)**
  - There is also a main scan adjustment for the scanner, which affects image processing algorithms.
    - » SP 2998 affects laser on/off frequency in main scan direction.

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8) PCU (Photo Conductor Unit)

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Overview

- **There is no new PCU detection in this machine. This is due to the PCU not being a user-replaceable part.**
  - Some of the PCU components are replaced individually at PM.
  - When a new PCU is installed, new developer must also be installed and SP 2214 must be done to reinitialize the TD sensor.

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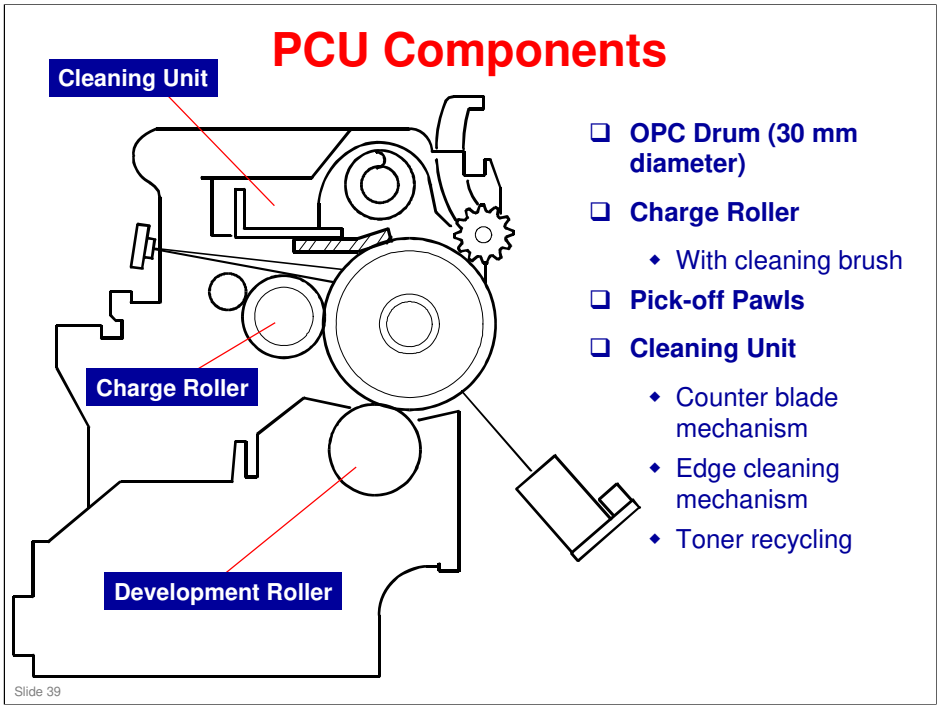

OPC – Organic Photo-Conductor

PCU Details

- **The PCU contains the following.**
  - OPC drum
  - Development unit (including development roller and TD sensor)
  - Charge roller and charge roller cleaning brush
  - Drum cleaning unit (blade, toner collection coil)
  - Pick-off pawls
- **The PCU does not contain the following.**
  - Transfer roller
  - ID sensor
  - Quenching lamp
  - Toner bottle

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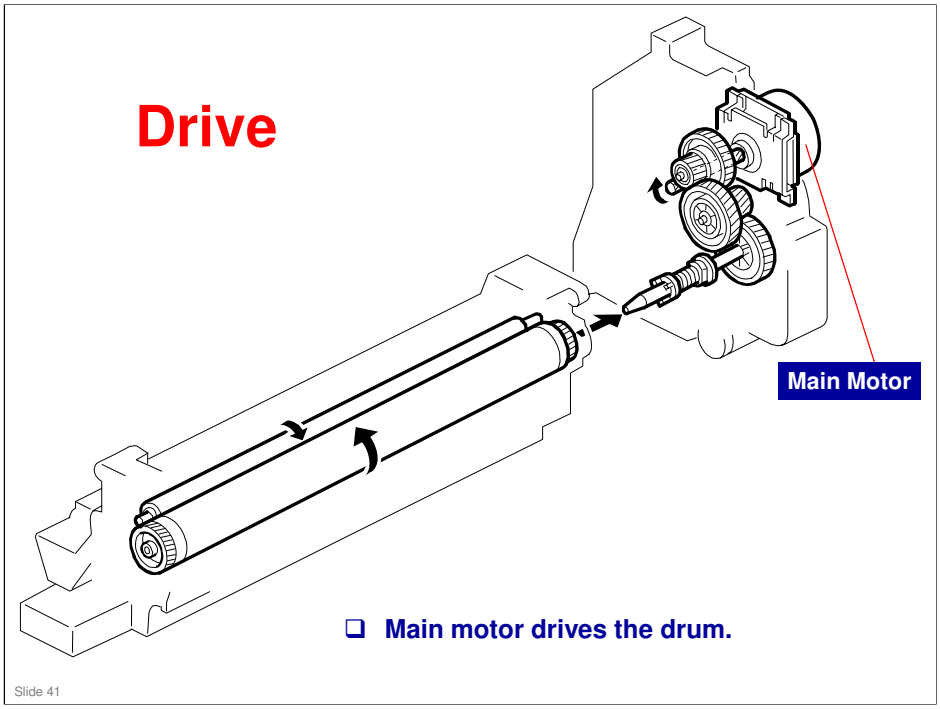
Drive
Main Motor
Main motor drives the drum.
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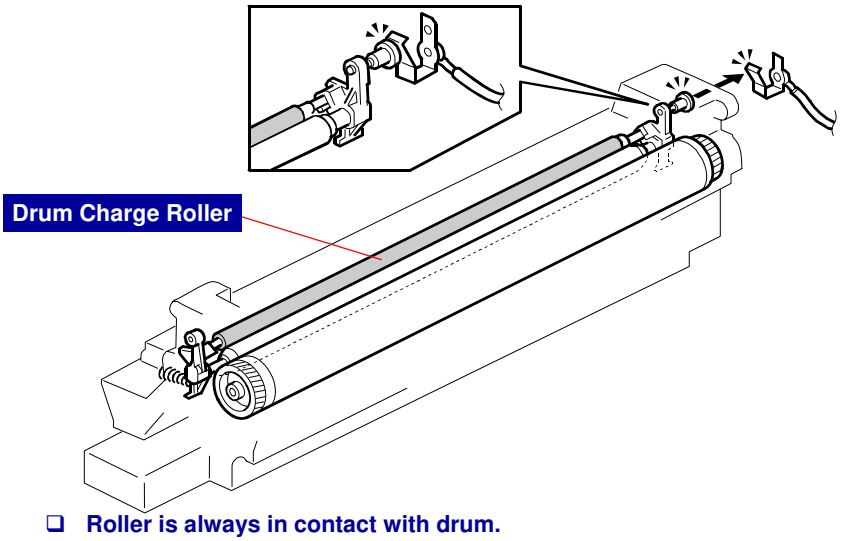
9) Process Control

Slide 42

Drum Charge Roller



- Roller is always in contact with drum.
- Drum charge roller is at -1700 V for printing.
- Drum surface voltage is - 950 V

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Charge Roller Voltage Correction

Temperature and humidity affect efficiency of voltage transfer to drum (from drum charge roller).

- Lower humidity causes a higher drum charge voltage. As a result, less toner is transferred.

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ID Sensor Pattern Production Timing

Not for every page or every print or copy job, but at the following times:

- While machine is recovering from energy saver mode, or while machine starts, BICU ignores ID-sensor signals if fusing temperature is at specified value or higher.
  - » Adjustable from 30 degrees to 90 via SP 2994)

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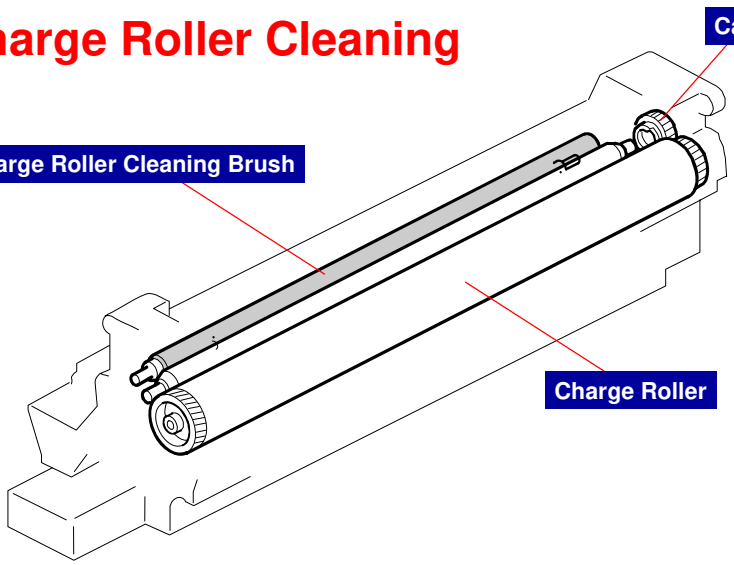
Charge Roller Cleaning



- Cleaning Brush is always in contact with drum charge roller
- A cam gear moves the charge roller from side to side to improve cleaning.
  - This waste toner is not recycled.

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SP Modes

- SP 2001: Charge roller voltage adjustment (for printing and for making an ID sensor pattern).

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10) Toner Supply

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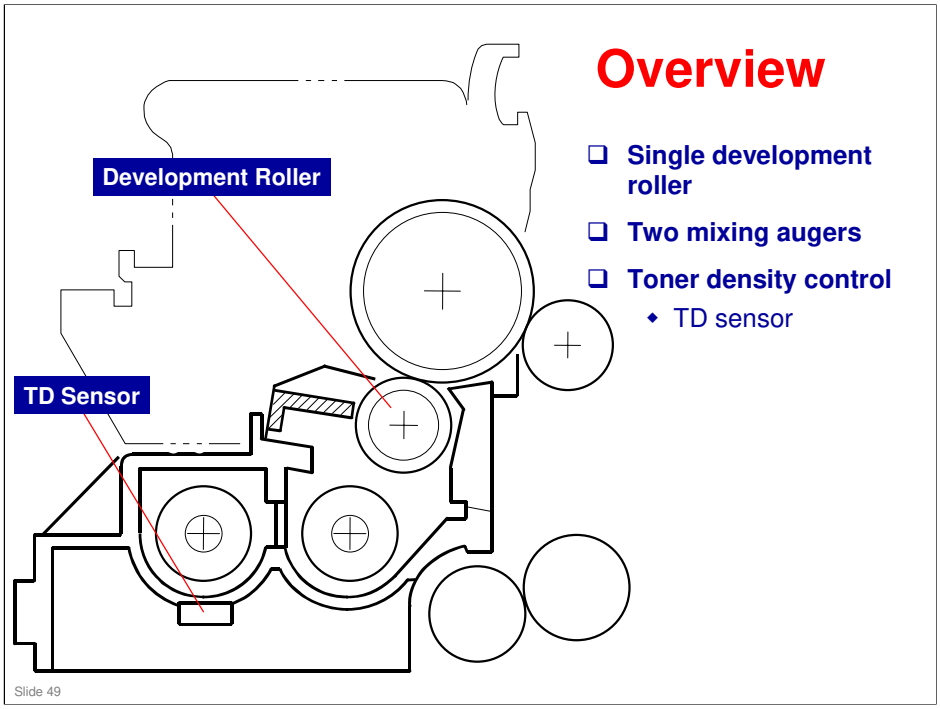
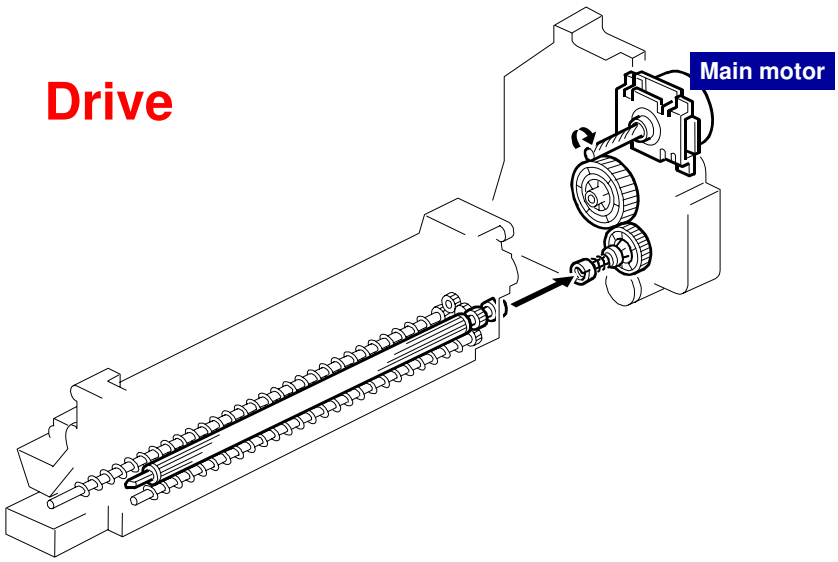

Overview
Development Roller
TD Sensor
Single development roller
Two mixing augers
Toner density control
TD sensor
Slide 49

.

Drive



- **Main motor: Drives development mechanism, via development drive shaft.**
- **Development drive shaft: Engages when PCU is pushed in.**
  - Development roller turns whenever main motor is on.
- **No development clutch.**

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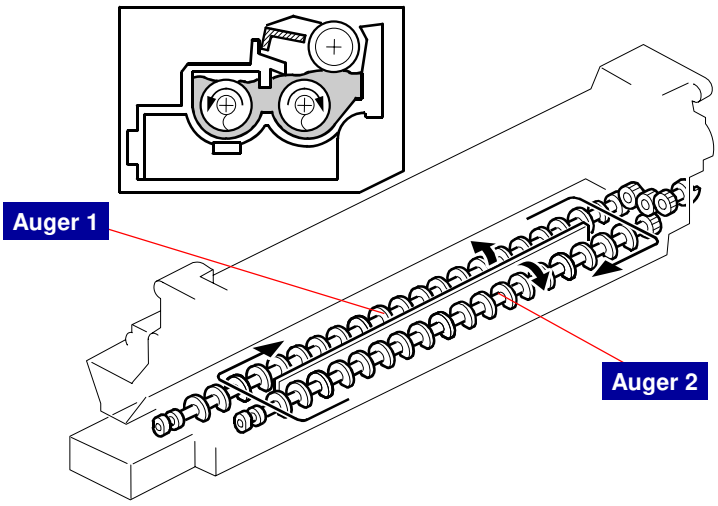
Developer Mixing



- Two mixing augers keep developer mixed.
- Auger 2 moves excess toner from development roller towards front.
- Auger 1 moves this excess toner, mixed with new toner, to rear and back to development roller.

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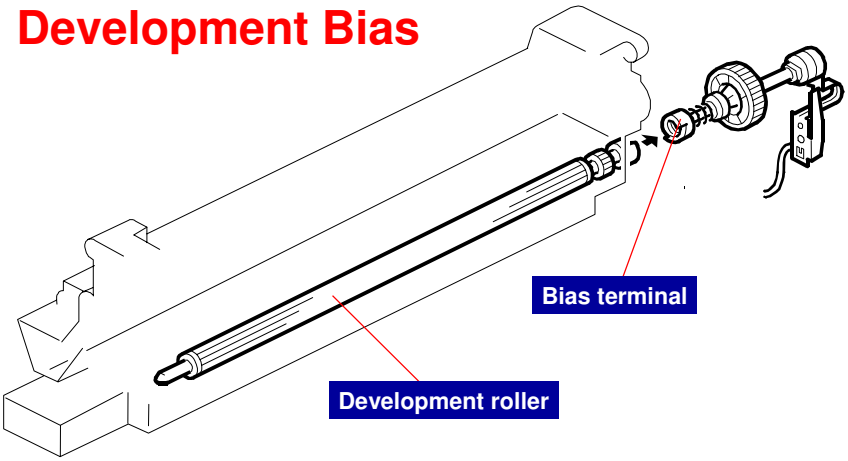
Development Bias



- White areas: High negative charge (-950V)
- Black areas: Discharged by the laser (about -150V)
- Development bias (-650V): Forces the negatively-charged toner onto the discharged areas of the drum.
  - Applied to development roller shaft through drive shaft.

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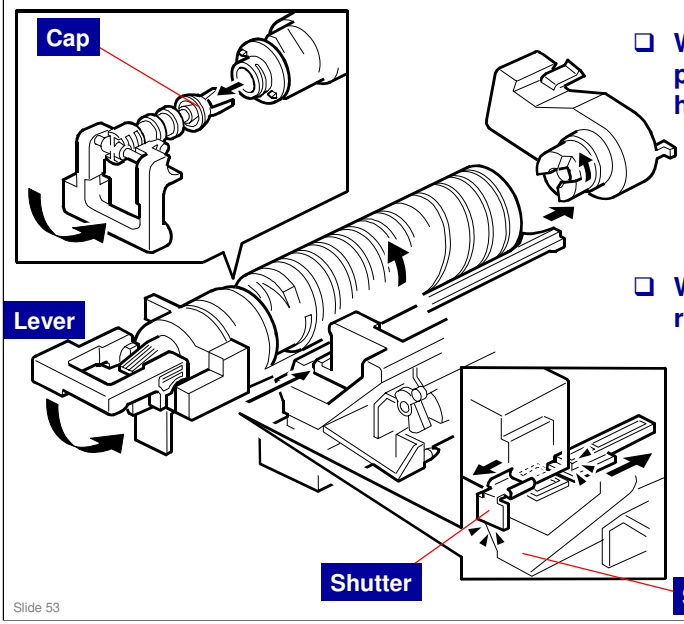
Toner Bottle Replenishment



- **When bottle is placed in bottle holder:**
  - Shutter moves against side of PCU, and it opens.
- **When lever is returned**
  - Cap is pulled away so that toner can come out.

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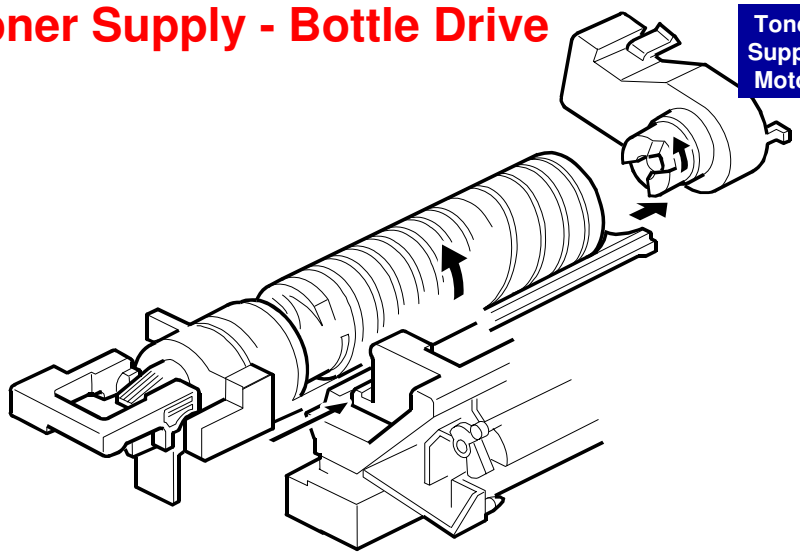
Toner Supply - Bottle Drive



- **Toner supply motor turns the bottle**
  - To supply fresh toner to development unit, toner supply motor turns on.
  - Spiral grooves help toner to move towards bottle exit.

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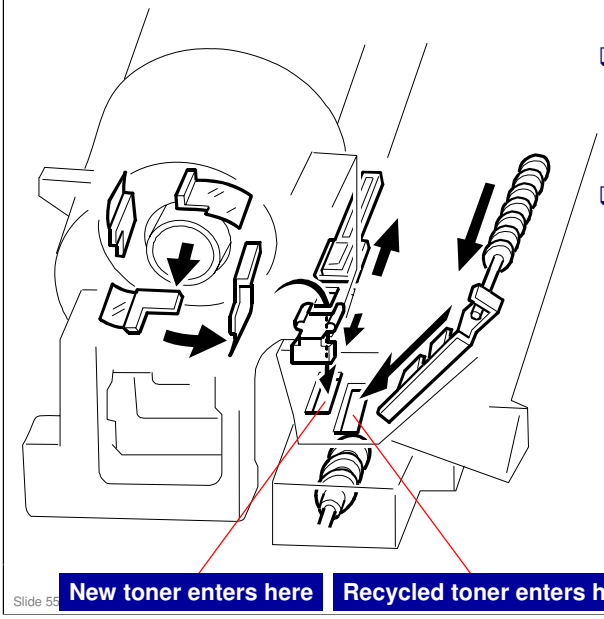
Toner Supply - Input to Development Unit



- Mylar tabs in bottle unit push toner towards development unit entrance.
- Recycled toner from drum also arrives at this entrance.

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Toner Supply Control

- **Controlled by TD and ID sensors.**
- **Four modes**
  - Normally use ‘sensor control 1’.
  - Use ‘fixed control 2’ temporarily if TD sensor needs replacing but no spare is available.
  - Do not use the other two.
  - Use SP 2921 to change mode.

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Abnormal Sensor Conditions - 1/2

- **ID sensor**
  - If ID sensor output is out of spec, machine disregards output from sensor, and uses a Vref of 2.5 V.
  - After replacing ID sensor, reset error counter with SP 7-992.

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Abnormal Sensor Conditions - 2/2

- **TD sensor**
  - If TD sensor output is out of spec, machine changes to fixed supply mode 2.
    - » Toner supply motor on always for 200 ms per page
  - Copying continues until a TD sensor error is detected 10 consecutive times.
  - Then SC 390 is generated and machine cannot be used.

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Toner Near-end/End Detection

- No near-end or end sensors
- Toner near-end/end are determined by TD sensor output (current and reference voltages).
- If near-end is detected, toner is added for a short period (adjustable with SP 2 923).
- If the toner level does not recover, toner end is after 50 more copies (the number of copies is adjustable with SP 2 213).
- There is no toner end or near-end detection if the machine is in fixed control 2 mode.

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Toner Near-end/End Detection - Details

- **If Vt level 6 is detected 5 consecutive times, near-end is detected.**
- **Toner is added after the copy job:**
  - If supply recovers to Vt level 5, near-end is cancelled.
  - Otherwise, toner end occurs after 50 copies
  - If Vt level 7 is detected 3 consecutive times, toner end is detected immediately.
- **Recovery after adding new toner**
  - The machine must recover to Vt level 5 after a new bottle has been added

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SP Modes - Development

- SP 2201: Development bias (printing, ID sensor pattern creation)
- SP 2802: Forced developer agitation

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SP Modes - Toner Supply

- SP 2221: ID sensor error display (Vsg, Vsp, Vt, etc if an ID sensor error occurred)
- SP 2908: Forced toner supply
- SP 2921: Toner supply mode (sensor control, fixed control)
- SP 2922: Toner supply motor on time (sensor control mode)
- SP 2925: Toner supply motor on time
- SP 2926: Adjusts Vts (target for TD sensor initialization
- Sp 2927: Use of the ID sensor, enable/disable

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SP Modes - Toner Near-end/End

- **SP 2213: Number of copies between near-end and end (20 or 50 - default: 50)**
- **SP 2923: Toner supply motor on time during recovery from end/near-end**
- **SP 2928: Clears the toner end condition**
  - Normally, do not use this, for the reasons explained in the SP table.

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11) Drum Cleaning & Toner Recycling

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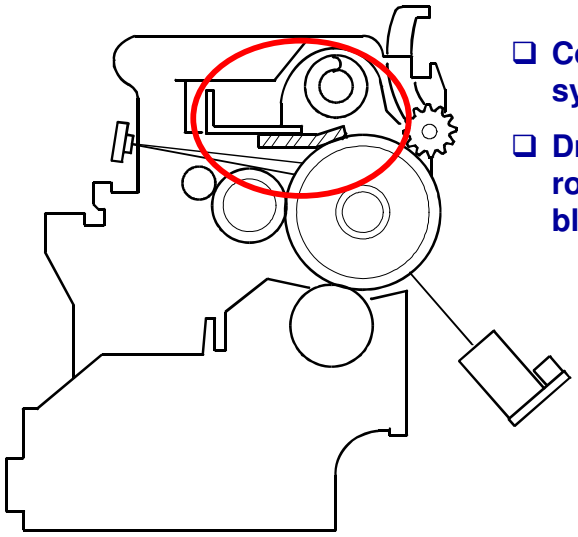
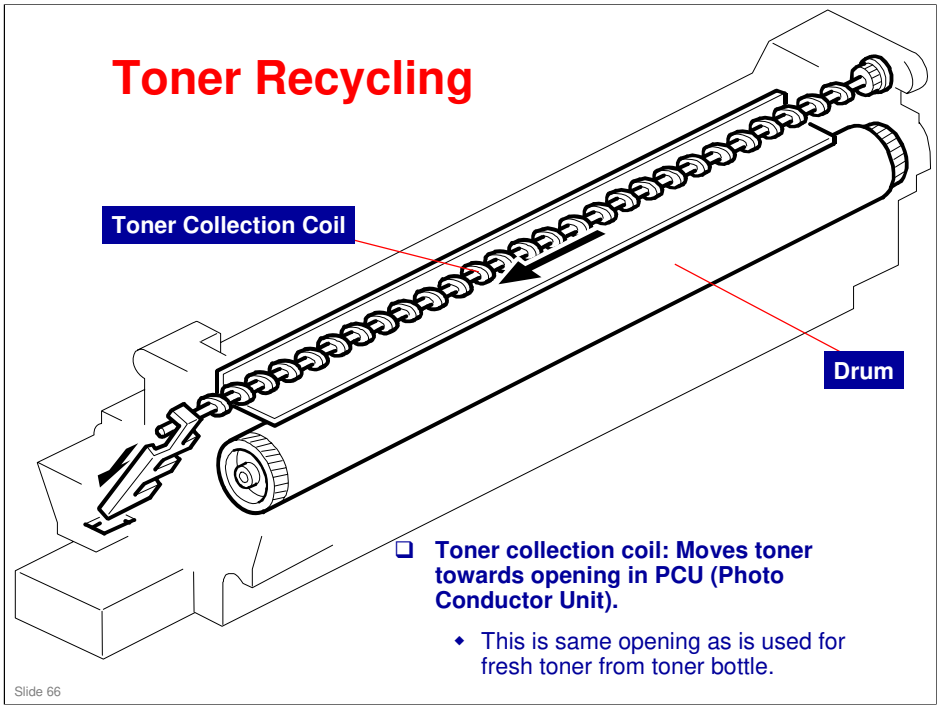
Drum Cleaning



- Counter blade system, no brush
- Drum reverse rotation to clean blade's edge

Slide 65

.


Toner Recycling
Toner Collection Coil
Drum
Toner collection coil: Moves toner towards opening in PCU (Photo Conductor Unit).
This is same opening as is used for fresh toner from toner bottle.
Slide 66

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12) Transfer and Separation

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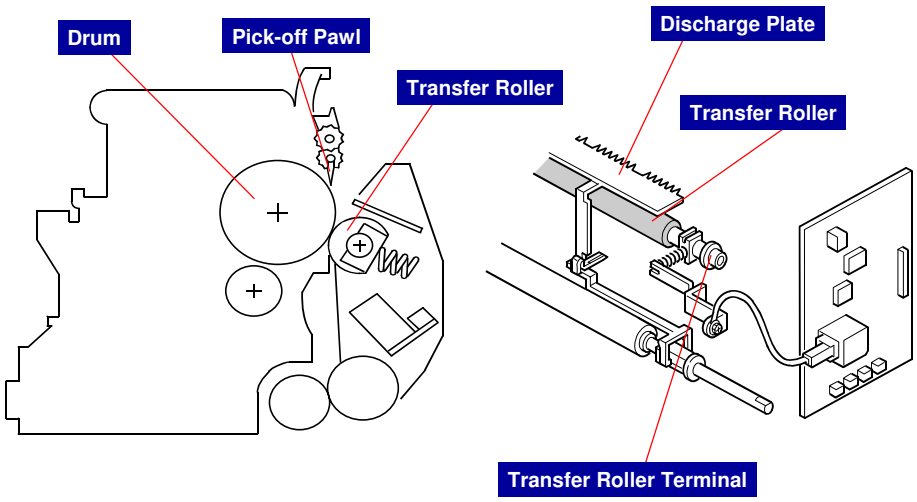
.

Overview



- Transfer roller is always in contact with drum.
- Drum curvature, pick-off pawl, and discharge plate separate paper from drum.

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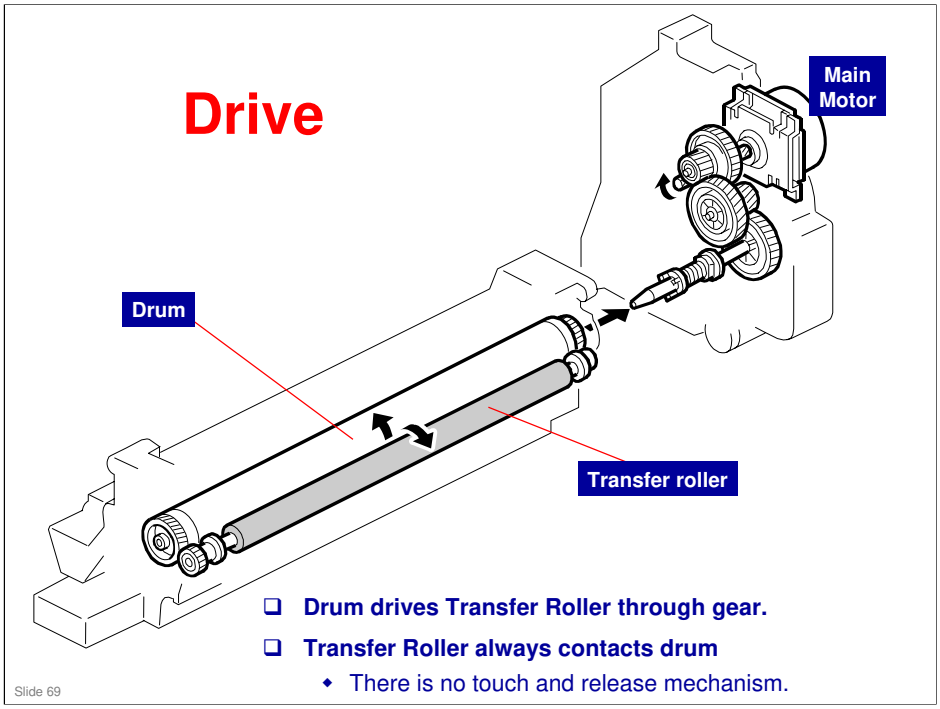
Drive
Main Motor
Drum
Transfer roller
Drum drives Transfer Roller through gear.
Transfer Roller always contacts drum
There is no touch and release mechanism.
Slide 69

.

Transfer Current

- **First, a low current (10 μA) is supplied at leading edge (before print area).**
  - Prevents positively charged toner remaining on drum from transferring to roller.
- **Then high current is supplied (amount depends on paper size and type).**
  - This transfers toner to paper.
- **Finally, at trailing edge, either:**
  - Multi-copy mode, between pages
    - » Low current is applied again.
  - Final page
    - » Transfer current is switched off.

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Transfer Roller Cleaning

- **Negative cleaning current is applied, followed by positive current.**
  - Negatively and positively charged toner particles are both transferred back to drum.
  - Current for negative-charge phase can be adjusted with SP 2301-4.
- **Three conditions for entering cleaning mode:**
  - Before starting a job
    - » Default: Cleaning is not done before each job.
      - – Change with SP 2996 if required
  - Just after turning on power.
  - After a copy paper jam has been removed.

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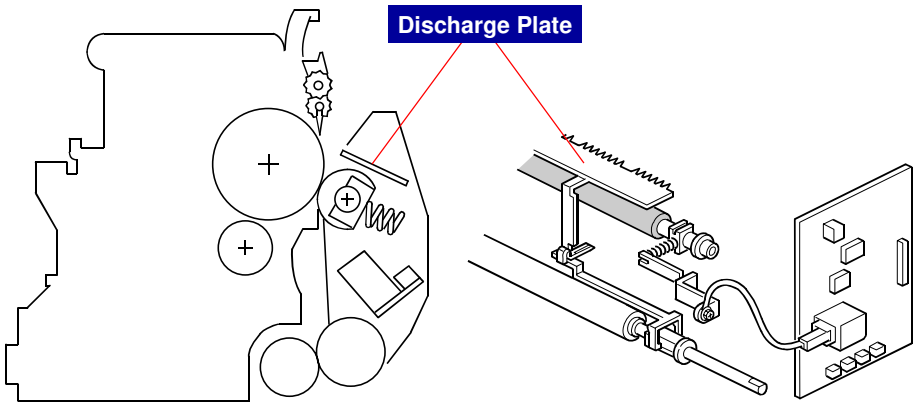
Separation



- **Drum curvature and Discharge Plate separate paper from drum.**
  - There is no adjustment for discharge voltage in this machine, because discharge plate is grounded.

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SP Modes

- **SP 2301: Transfer current**
  - SP 2301 1: Paper tray
    - » 'Normal' paper
  - SP 2301-2: By-pass tray
    - » For special/thick paper
  - SP 2301-4: During transfer roller cleaning
- **SP 2906: Image writing position shift**
- **SP 2996: Transfer roller cleaning before each job, on/off**

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13) Paper Feed

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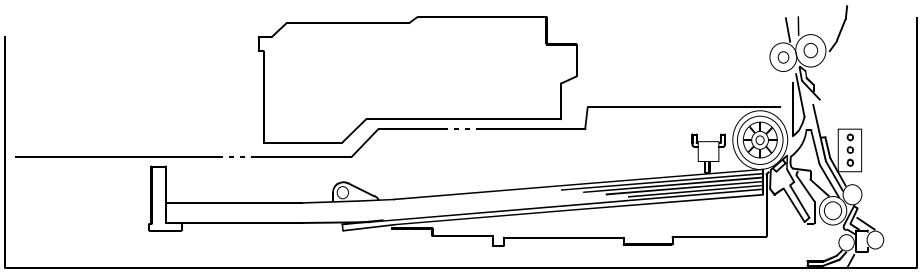
Overview



- **Built-in paper trays: 250 sheets each**
  - Friction pad and feed roller system
- **By-pass tray: Up to 100 sheets**

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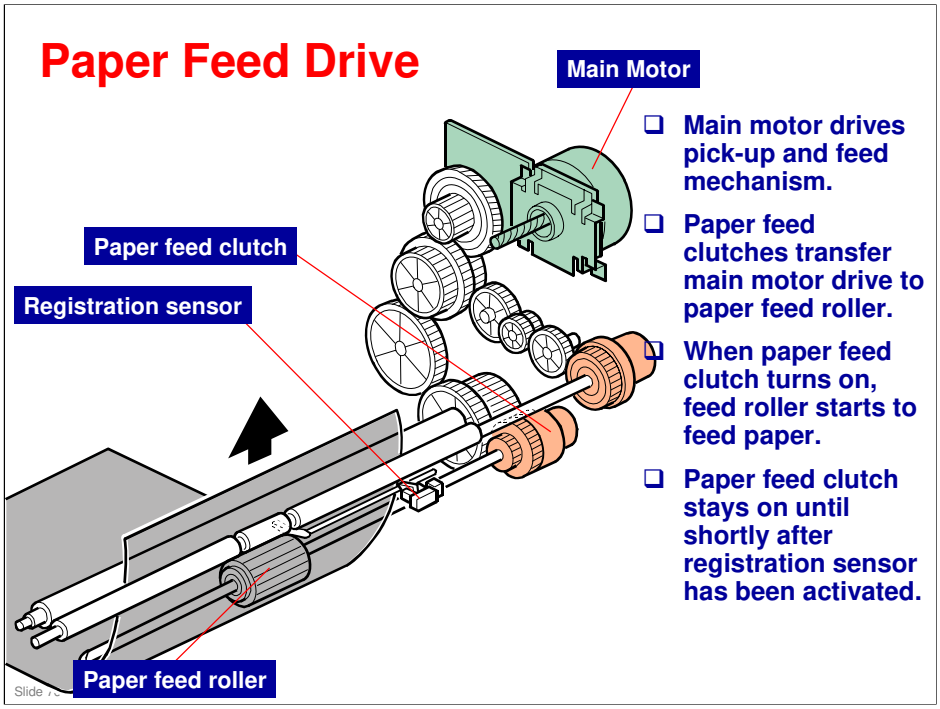
Paper Feed Drive
Main Motor
Paper feed clutch
Registration sensor
Paper feed roller
❑ Main motor drives pick-up and feed mechanism.
❑ Paper feed clutches transfer main motor drive to paper feed roller.
❑ When paper feed clutch turns on, feed roller starts to feed paper.
❑ Paper feed clutch stays on until shortly after registration sensor has been activated.

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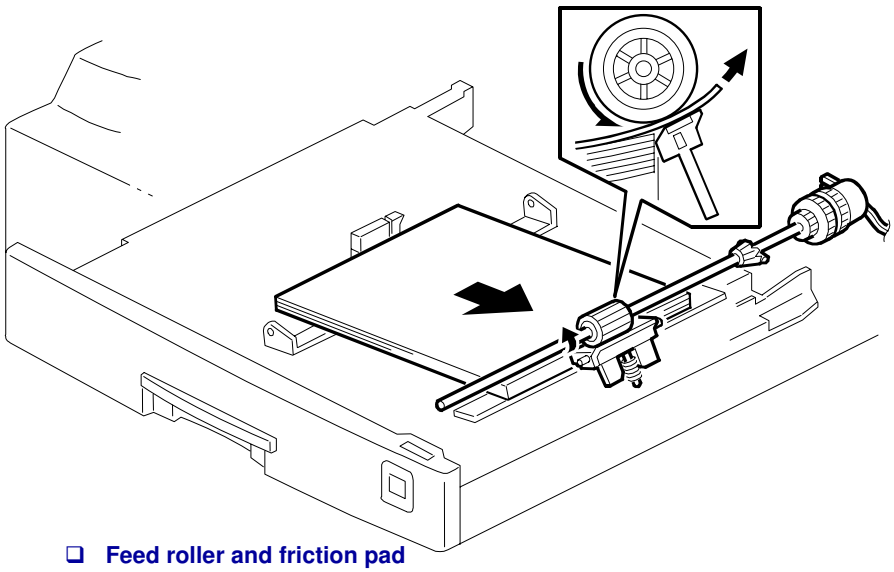
Feed and Separation



- Feed roller and friction pad
- Pressure from friction pad not adjustable.

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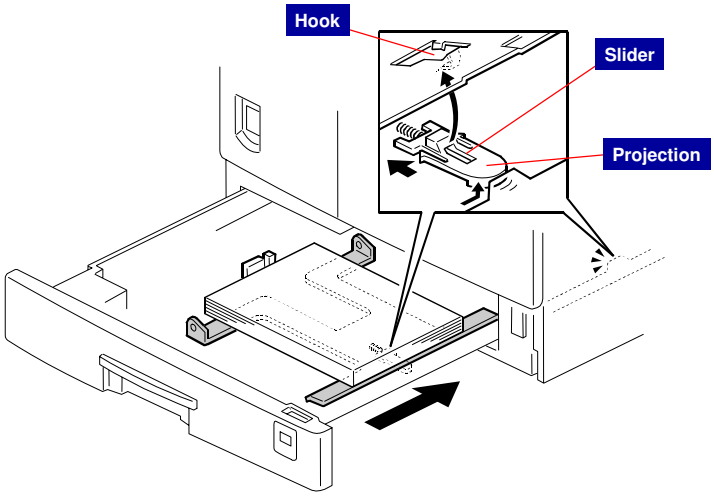
Tray Lift



- **When the tray is closed, projection on copier frame pushes slider off bottom plate hook.**
  - Slider is on bottom part of tray.
- **After slider comes off, compressed springs lift bottom plate.**

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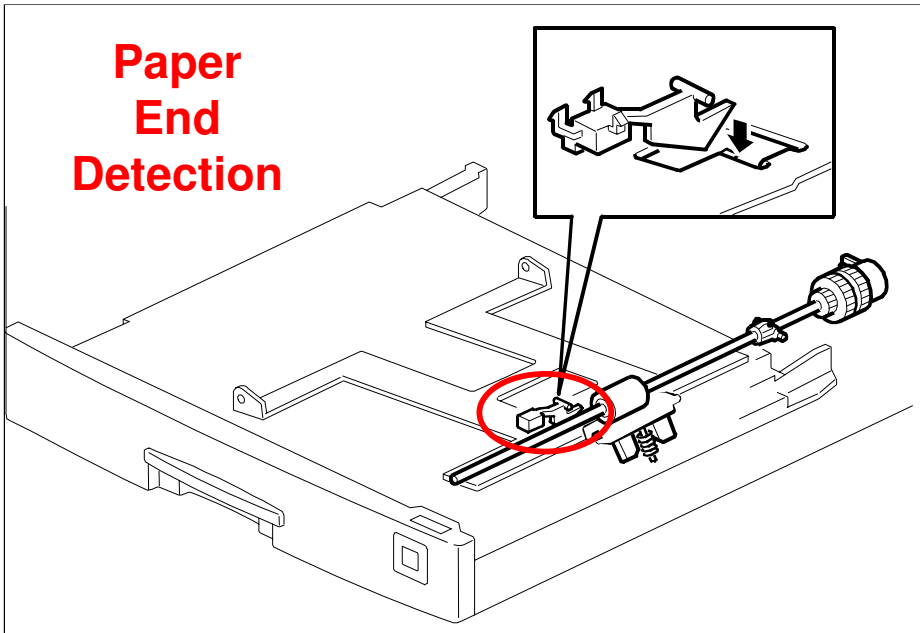
Paper End Detection



- Paper end sensor feeler falls through slot in bottom plate when there is no paper.

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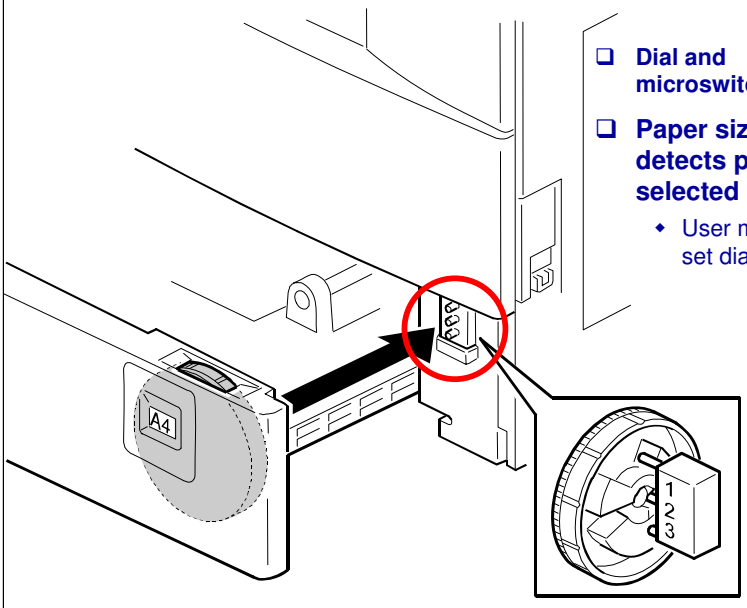
Paper Size Detection - Paper Tray



- **Dial and microswitch mechanism.**
- **Paper size sensor detects position of dial selected by user**
  - User must set dial to correct size.

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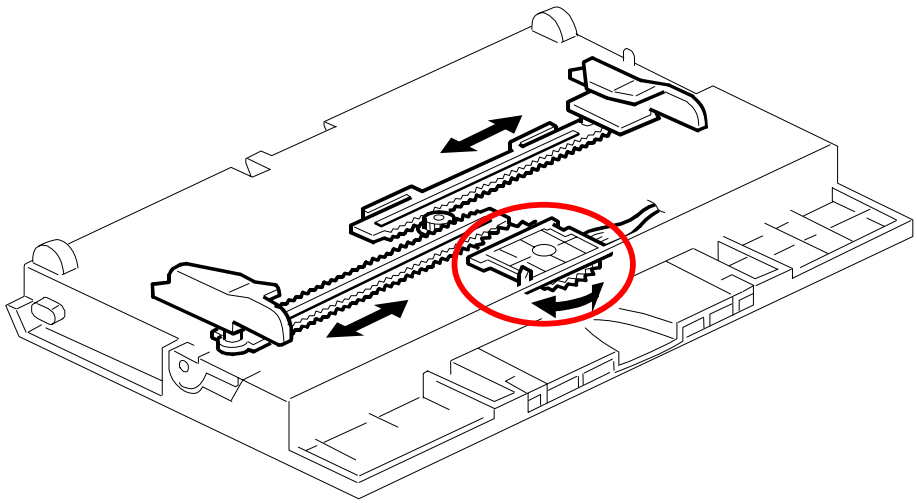
Paper Size Detection - By-pass Tray



- Bypass paper size switch monitors paper width.
- Side fences turn a gear wheel that contains sensor terminals.

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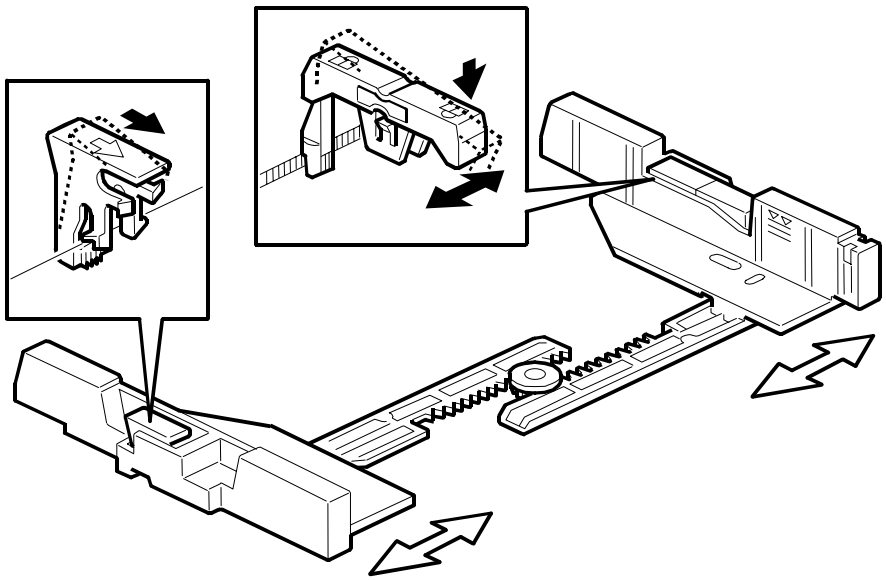
Side Fences



- Side fences have stoppers to prevent them from bending when a full tray is pushed in too strongly

Slide 82

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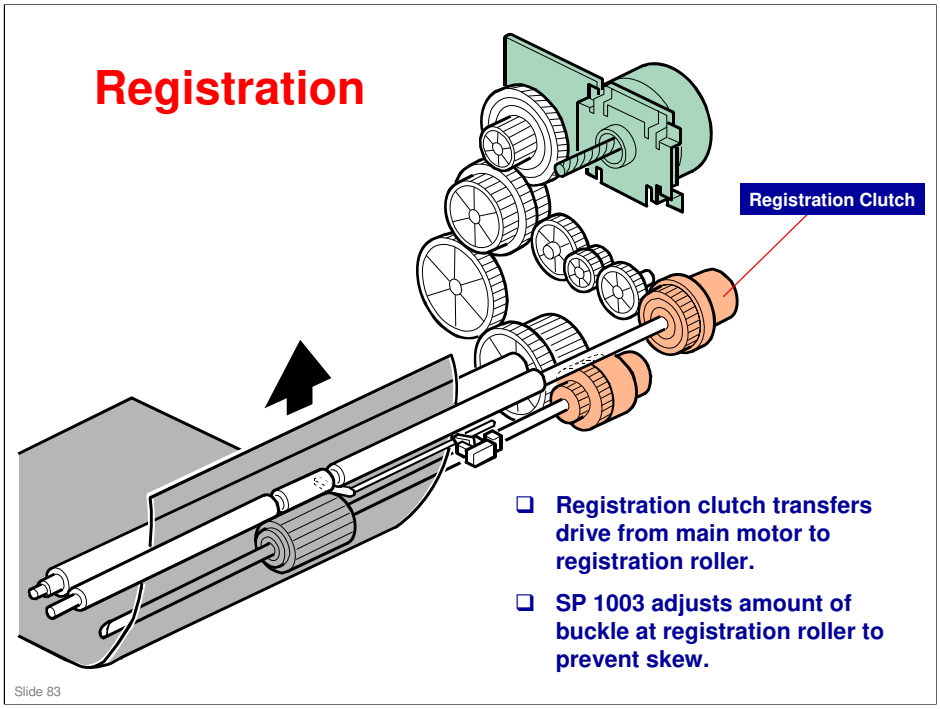
Registration
Registration Clutch
Registration clutch transfers drive from main motor to registration roller.
SP 1003 adjusts amount of buckle at registration roller to prevent skew.
Slide 83

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SP Modes

- **SP 1001**
  - Leading edge registration
- **SP 1002**
  - Side-to-side registration
    - » SP 4010 – 11
      - – Scanner registration
    - » SP 6006
      - – ADF registration
- **SP 1003**
  - Paper feed timing.
    - » Adjusts buckle at registration roller to prevent skew.

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14) Fusing

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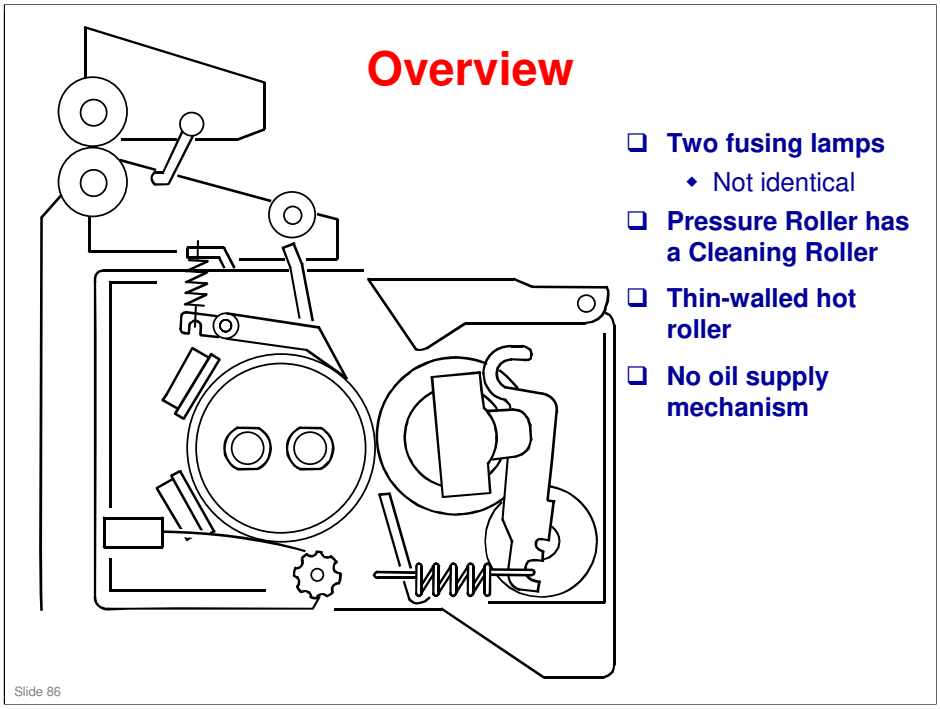
Overview
Two fusing lamps
Not identical
Pressure Roller has a Cleaning Roller
Thin-walled hot roller
No oil supply mechanism
Slide 86

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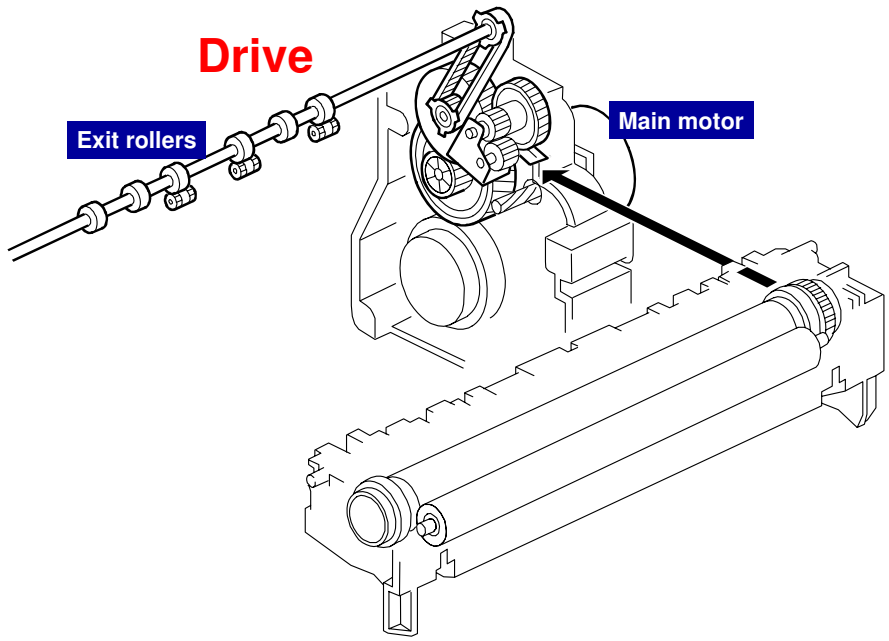

- Fusing unit is driven by main motor through gears.
- Paper exit rollers are driven by main motor through a timing belt.

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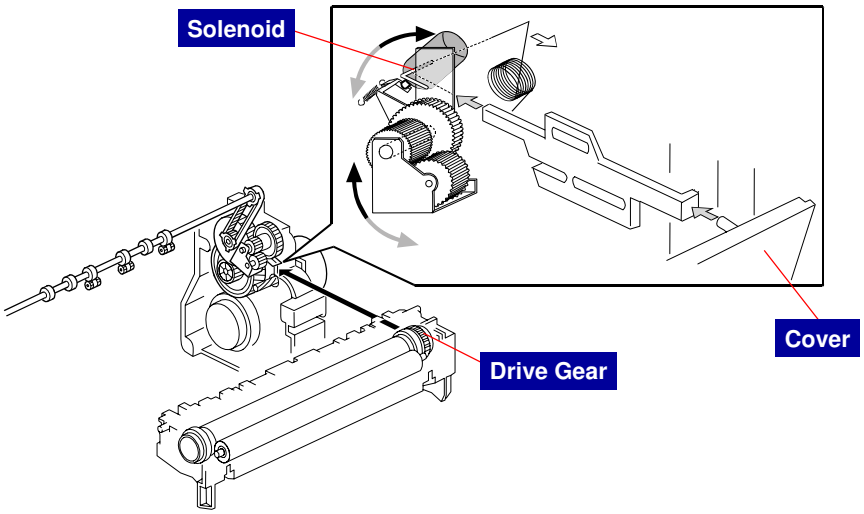
Automatic Pressure Release



- Fusing unit drive gear disengages when cover is open for easier jam removal
- Fusing drive release solenoid cuts drive to fusing unit during warm-up.

Slide 88

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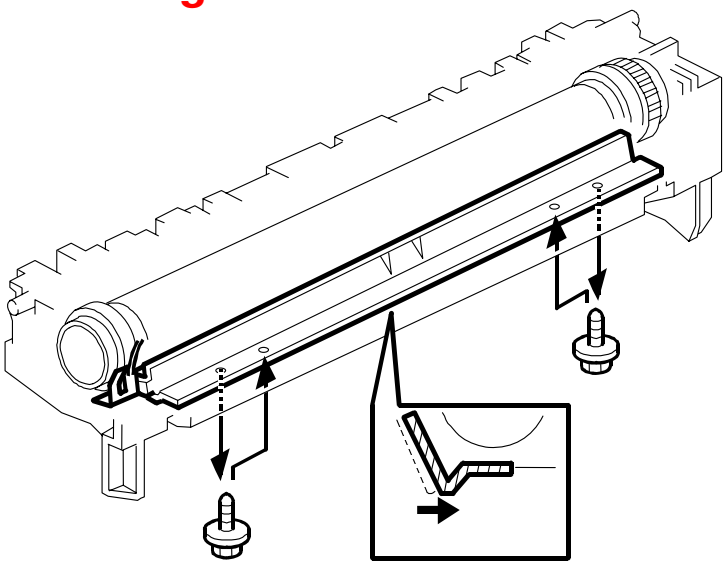
Fusing Entrance Guide Shaft



- If paper creases in fusing unit, move guide to right.

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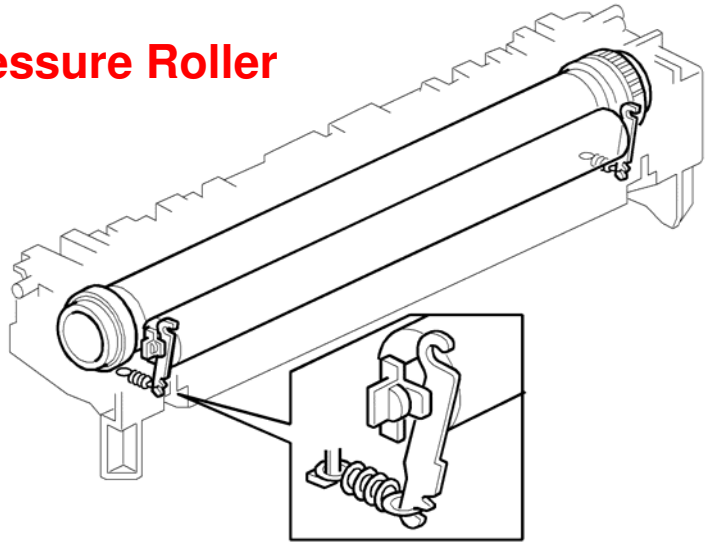
Pressure Roller



- **The springs apply pressure between hot roller and pressure roller.**
- **The springs can be moved.**
  - Default position is at end.

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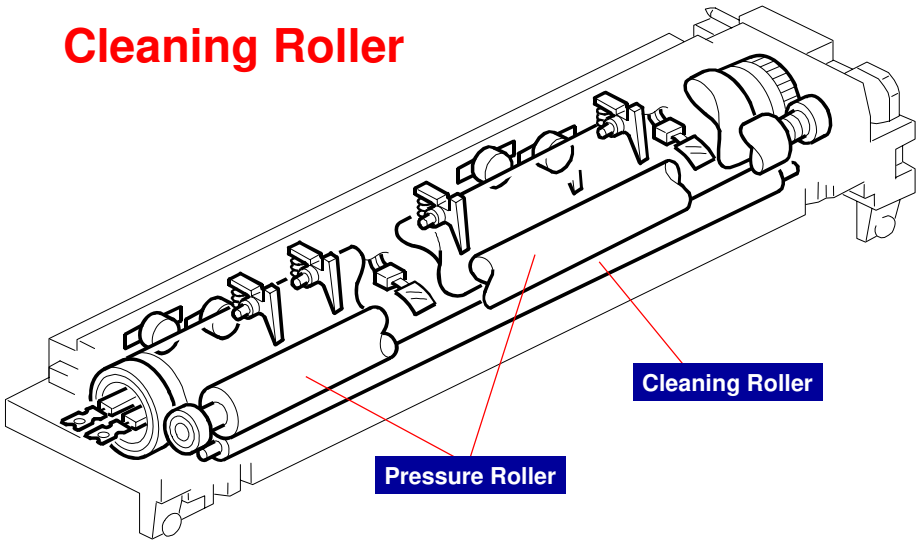
Cleaning Roller



- **Cleaning Roller is always in contact with Pressure Roller.**
  - This removes toner and paper dust.

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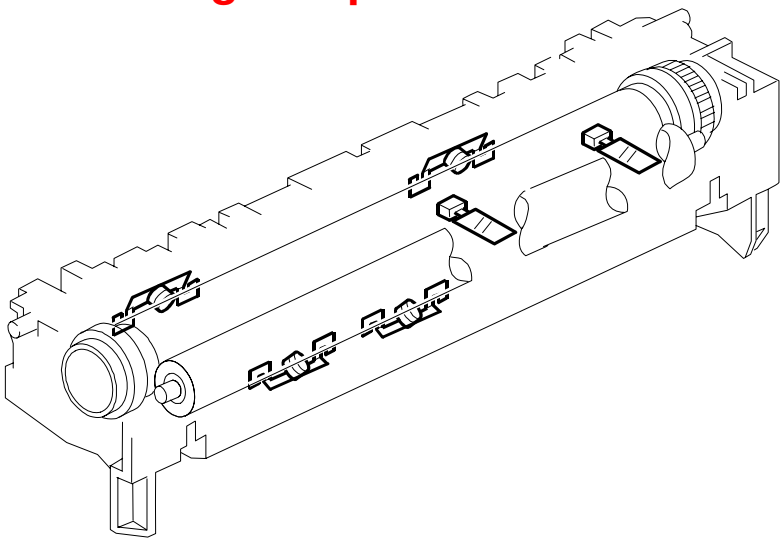
Fusing Temperature Control



- Machine checks thermistors once every 1.5 seconds.
- Machine compares current and previous readings, and the target, and then decides how long to keep lamp on during next second.

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Fusing Lamp Power Supply

- **Soft Start: Full power is applied to the fusing lamp gradually, not all at once**
  - Machine gradually allows more power to fusing lamp over a number of zero-cross cycles of ac supply.

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Room Lighting Affects

- **Caused by starting and stopping fusing lamp power every second**
  - SP 1108: Reduce flicker by inputting a larger value
  - BICU may be unable to detect fusing lamp errors if the cycle is more than 2 seconds.

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Poor Fusing on the First Few Copies

- If the room is cold, the hot roller may not stay hot for very long after reaching the print ready temperature.
- To solve this problem, set SP 1103 to 'on'.

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Offset when Making Many Copies on Narrow Paper

- **Target fusing temperature lowered by 10°C**
  - If the smallest copy paper width detected during a 40-second interval is less than 220 mm.
- **Target fusing temperature lowered by another 5°C**
  - If, during the next 80 seconds, the smallest width detected is again less than 220 mm.

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Reduced Copy Speed - Narrow Paper

- **To ensure that images are properly fused onto paper 220 mm or less in width, machine automatically reduces copy speed under following conditions:**
  - After 180 seconds of continuous copying.
  - When Thick or Special paper mode is used.
  - When paper is fed from the by-pass tray.

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Overheat Protection

- **This machine has three features to protect itself from overheating.**
  - The first feature normally protects the hardware.
  - The second feature works as the failsafe feature for the first feature.
  - The third feature works as the failsafe feature for the second feature.

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SP Modes

- SP 1103: Fusing idling on/off
- SP 1105: Fusing unit temperatures
- SP 1106: Displays the current fusing unit temperature
- SP 1107: Soft start adjustment
- SP 1108: Fusing temperature control cycle (1, 1.5, or 2 seconds)
- SP 1109: Nip band width adjustment
- SP 1902: Displays the mains ac frequency to the fusing lamp

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15) Paper Exit

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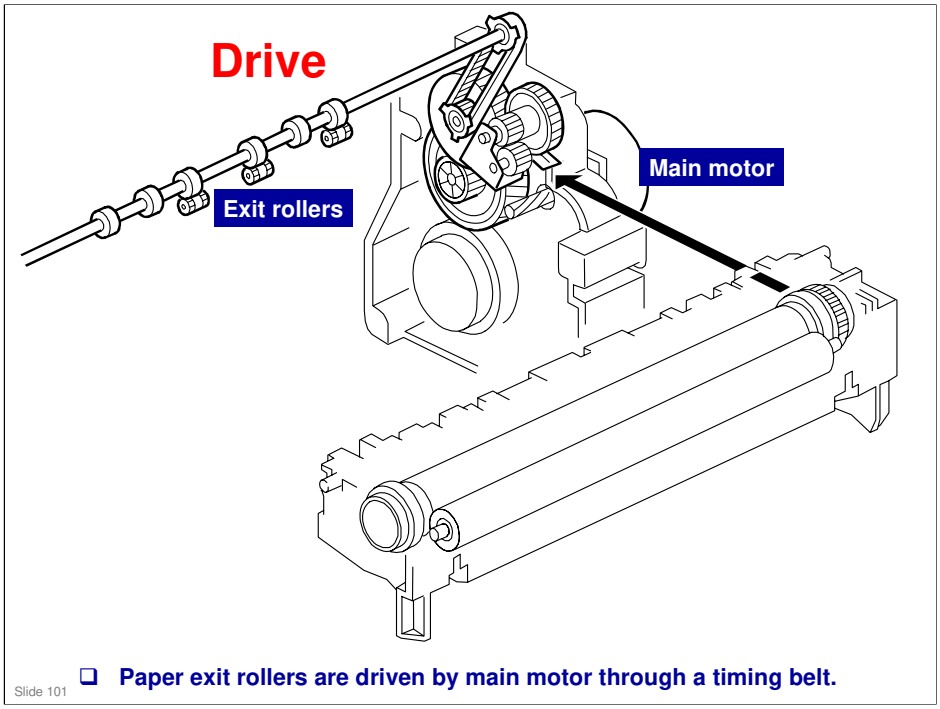

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❑ Paper exit rollers are driven by main motor through a timing belt.

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16) Peripheral Devices

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Overview

- Feeds originals past the DF exposure glass while scanning
- No inverter unit
- The DF exposure glass is a narrow glass to the left of the exposure glass.
- The ADF does not use the main exposure glass, unless the user selects book mode and places the originals on the glass (in which case, the ADF mechanism isn't used - just the cover).

See the service manual for more details.

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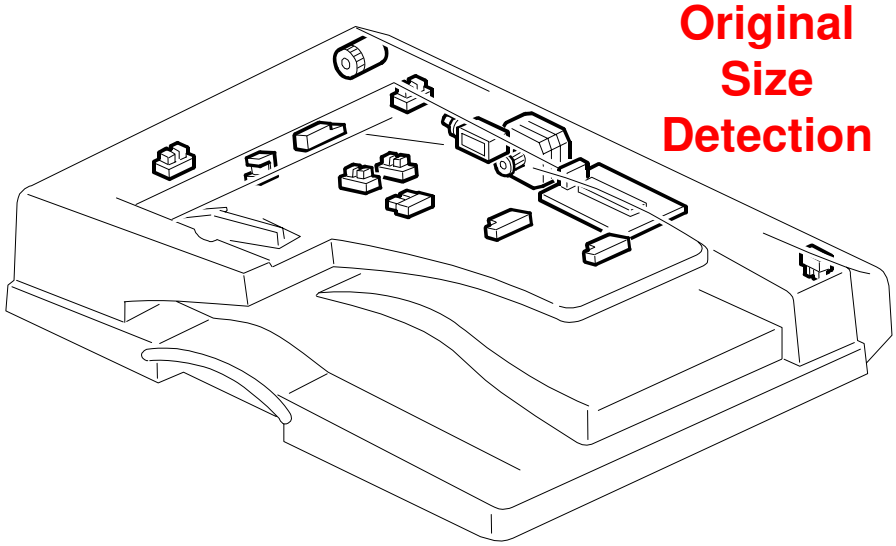
Original Size Detection



- **Two width sensors, and two length sensors.**
  - All sensors are reflective photosensors.

See *Supported Paper Sizes* under *Specifications* in service manual.

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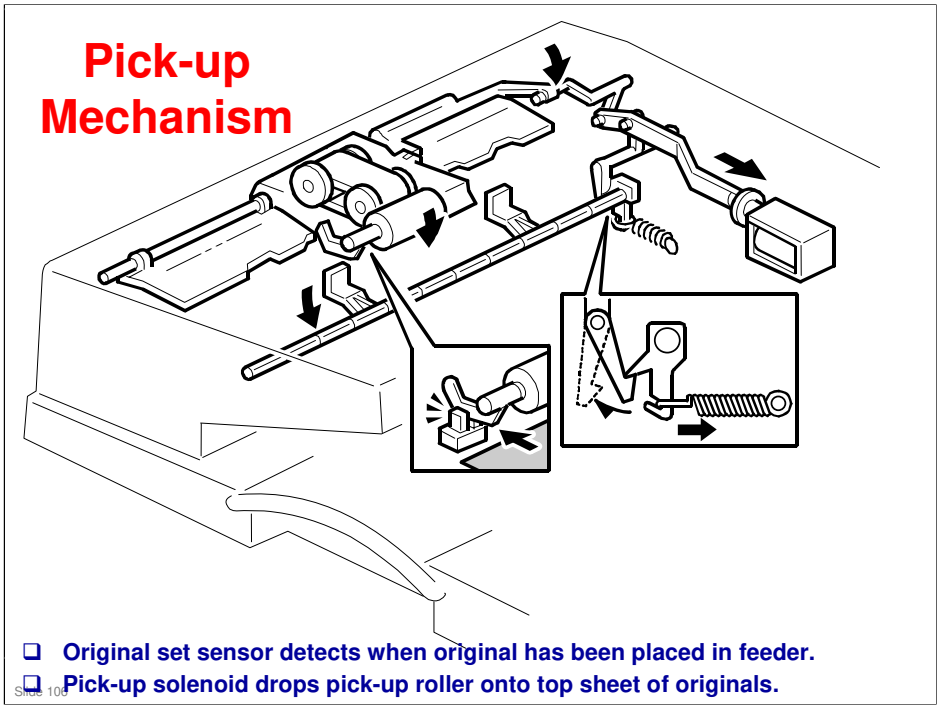
Pick-up
Mechanism
❑ Original set sensor detects when original has been placed in feeder.
❑ Pick-up solenoid drops pick-up roller onto top sheet of originals.
Slide 106

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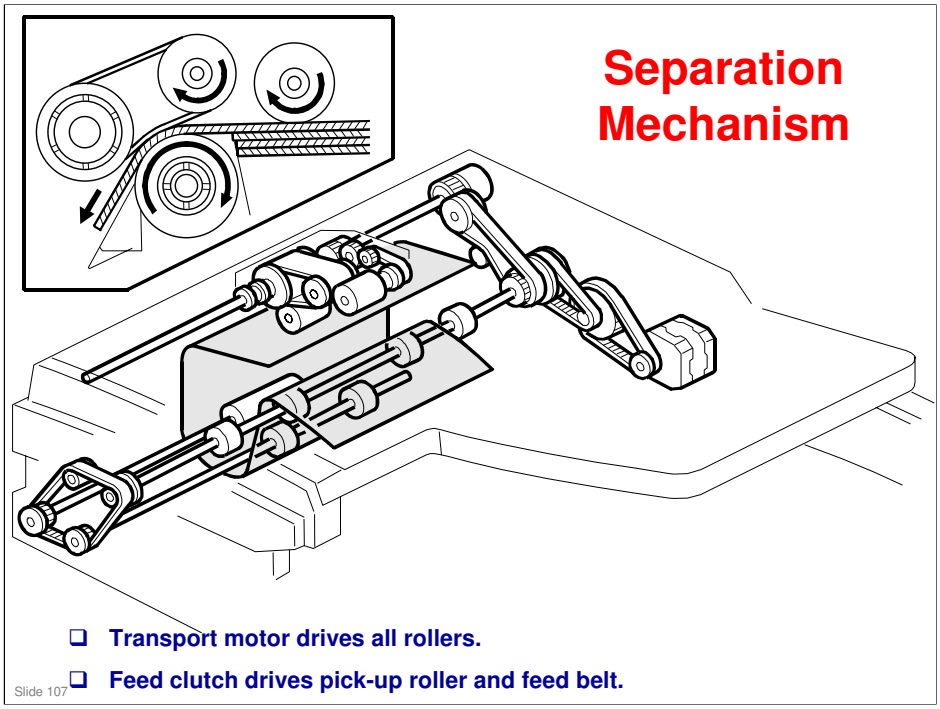
Separation Mechanism
Transport motor drives all rollers.
Feed clutch drives pick-up roller and feed belt.
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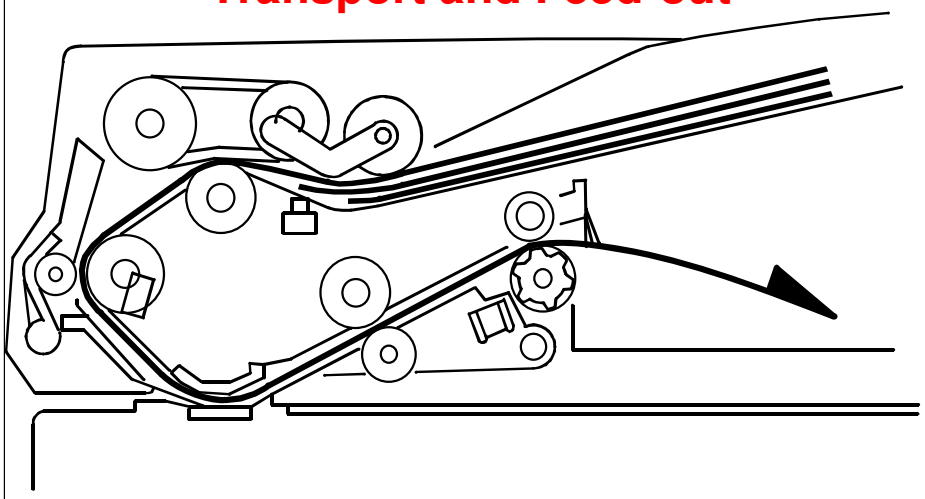
Transport and Feed-out



- Transport motor feeds original through scanner.
- Motor speed depends on reproduction ratio.

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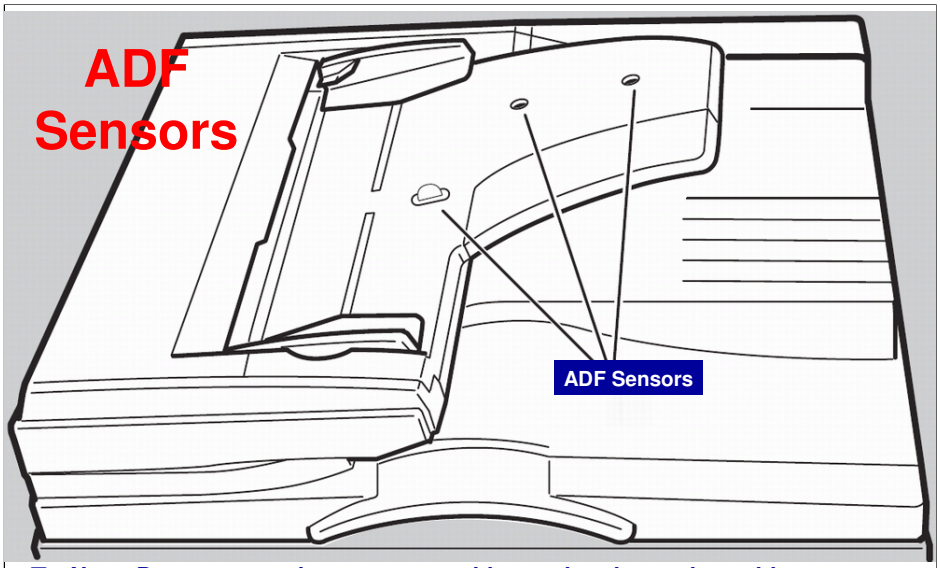
ADF Sensors



- **Note: Do not cover above sensors with your hands, or place objects on them. Doing so could cause:**
  - Paper size to be detected incorrectly
  - Paper misfeed error message to appear.

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SP Modes

- SP 6006: Registration
- SP 6009: ADF free run
- SP 6901: APS sensor display for the ADF

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17) Maintenance

Slide 111

Service PM

- **The machine has PM intervals of 60 K, and 120 K.**
- **Reset the PM counter after finishing PM SP 7804 1.**

  See ***How to Reset the PM Counter*** in the service manual.
- **SP Modes**
  - SP 5501 1: PM alarm (0: No alarm)
  - SP 7803: Current PM counter status

See *PM Tables* in the *Preventive Maintenance* section of the service manual.

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18) Troubleshooting

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Memory All Clear

- **Before memory all clear, either:**
  - SP 5990: Print lists of settings (SMC lists)
  - SP 5824: Upload NV-RAM contents
    - » From NV-RAM to Flash Memory
  - SP 5825: Download Flash Memory contents
    - » From Flash Memory to NV-RAM
- **Memory All Clear**
  - SP 5801

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Self Diagnostics

- This is a start-up self-diagnostics procedure, automatically done just after power has been switched on.
- SP 7832: Result of diagnostics

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Printing SMC Reports

- SP 5990 - Engine

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SP Modes - Symptom Troubleshooting - 1/3

- **SP 1103: Fusing idling enable/disable**
  - Enable if fusing on the first two copies is incomplete
- **SP 1108: Fusing temperature control cycle**
  - Increase if the user complains about flickering room lights. However, fusing lamp errors may not be detected.
- **SP 1903: Re-energizes the feed clutch**
  - Increase the value if jams occur when feed restarts after registration]
- **SP 2213: Number of copies after near-end**
  - If the user makes a lot of copies with a high proportion of black, reduce this setting.
  - Also you can try increasing the value of SP 2922 and/or SP 2925

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SP Modes - Symptom Troubleshooting - 2/3

- **SP 2301: Transfer current**
  - SP 2301 1-2: Increase if thicker paper than normal is used in the paper trays
  - SP 2301 4: Increase if there is dirty background on the rear side
    - » SP 2996: Enable this if there is dirty background on the reverse side of the first copy of a job. The transfer roller will be cleaned before each job. The job will take slightly longer.
- **SP 2802: Developer mixing**
  - Use this to prevent dirty background when the machine has not been used for a long time.

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SP Modes - Symptom Troubleshooting - 3/3

- **SP 2906: 'Tailing' correction**
  - Adjust this if there are ghosts of thin vertical lines further down page from where vertical lines on image stop.
- **SP 6910: ADF shading interval**
  - Reduce setting if white level is drifting during copy jobs using ADF.

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SP Modes - Tests

- SP 1007: By-pass paper size sensor output display
- SP 4902: Exposure lamp on
- SP 5001: Operation panel indicators on
- SP 5803: Input tests
- SP 5804: Output tests
- SP 6901: APS sensor output test (ADF)

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SP Modes - Free Runs

- SP 4013: Scanner (with lamp on)
- SP 5802: Scanner and printer
- SP 5901: Printer
- SP 6009: ADF

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19) Environmental Conservation

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Promote Use of Energy Saving Features

- **Energy Saver Mode**
  - Proper use of energy saver modes saves energy and is environmentally friendly.

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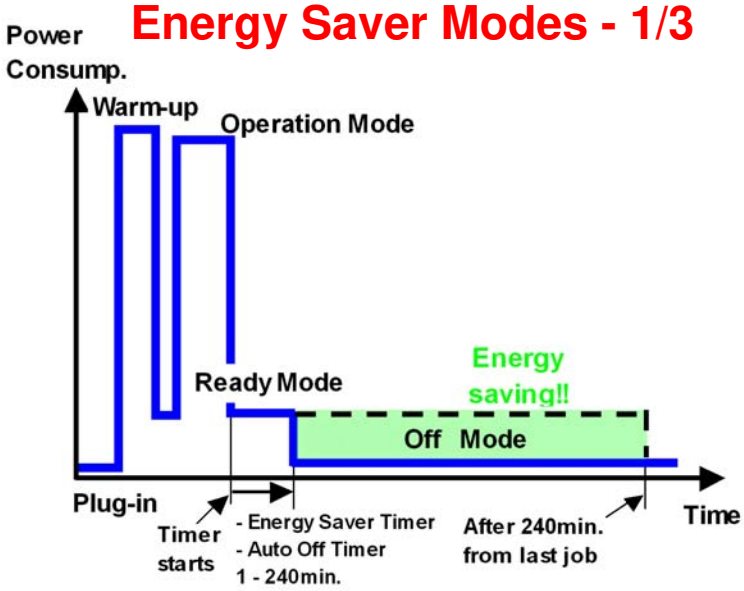
Energy Saver Modes - 1/3



- Energy saver mode should be utilized to save energy & protect environment.
- Area shaded grey in diagram above represents amount of energy saved.

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Energy Saver Modes - 2/3

- **User can set these timers with User Tools**
  - System settings > Timer setting
- **Energy saver timer (1–240 min)**
  - Energy Saver Mode
    - » Default setting: 1minute
- **Auto off timer (1–240 min)**
  - Off Mode
    - » Default setting: 1 minute
- **Example**
  - Energy saver timer: 1 min.
  - Auto Off: 1 min.
  - The machine goes to Off mode after 1 minute.
    - » Energy Saver mode is not used.

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Energy Saver Modes - 3/3

Recommendation

- We recommend that default settings be used.
- If customer requests settings change, please explain:
  - » Energy costs could increase
  - » The environment could be impacted.

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Energy Save Effectiveness - 1/3

- **With SP 8941: Machine Status data and power consumption values from the specifications, amount of energy used by machine can be estimated.**
  - 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 power consumption specifications are measured in a controlled environment with a constant power supply.**
- **To get an exact measurement at customers site, a watt meter must be used to measure actual energy consumed.**

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No additional notes

Energy Save Effectiveness - 2/3

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

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

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

(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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No additional notes

Energy Save Effectiveness - 3/3

(5) Multiply this by power consumption spec for each mode and convert 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.) ①	Time at End (min) ②	Running time (hour) (②−①)/60=③	Power Consumption Spec.(W) ④	Power consumption .(KWH) (③x④)/1000=⑤
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
Total⑥						26.71

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No additional notes

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