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Model M-G1a/M-G1b/M-G1L/M-G1W/R-G1 Training
Machine Codes: J017/J019/J021/J023/J018

Options: Multi-bypass Tray BY1000 (J507)
Multi-bypass Tray BY1030 (J309)
Multi-bypass Tray BY1020 (J311)
Paper Feed Unit TK1110 (J307)
Paper Feed Unit TK1110 (J308)

Photo of: J017/J019

Full Course - Based on previous GelJet Machines

Slide 1

Revised 28 January 2010

- Slide 147 deleted

Revised 19 April 2010

- 200 sheet multi-bypass tray (J309) added

Revised 30 May 2011

- M-G1W (J023) added (including new duplex unit)
- BY1020 multi-bypass tray (J311) added
- TK1140 Paper Feed Unit (J308) added

Machine codes / development names / product names

- J017 / M-G1a / GX e3300N
- J019 / M-G1b / GX e3350N
- J021 / M-G1L / GX e2600N
- J023 / M-G1W / GX e7700N
- J018 / R-G1 / GX e5550N

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J017/J019/J021/J023/J018
Service Training

1) Product Outline

M-G1a/M-G1b/M-G1L/M-G1W/R-G1

Slide 2

No additional notes.

Product Concept - 1/2

❑ Low TCO with Useful Business Specifications

- New level color
  - » Unique technology for reducing cost per-page of color printing
- High productivity
  - » 29 ppm (J017/J019/J021/J023)
  - » 30 ppm (J018)
- Fast duplex speed (J017/J019/J018)
  - » Over 80% of simplex speed (over 75% for J023)
    - – There is no duplex option for J021.
- First print speed [For more details, see service manual]
  - » J017/J019/J021
    - – Monochrome: Less than 6.0 seconds
    - – Color: Less than 7.5 seconds
  - » J023
    - – Monochrome: Less than 6.5 seconds
    - – Color: Less than 9.0 seconds
  - » J018
    - – Monochrome: Less than 4.0 seconds
    - – Color: Less than 5.0 seconds

Slide 3

TCO – Total Cost of Ownership

RPCS - Refined Printing Command Stream

PPM - Prints Per Minute

Product Concept - 2/2

- **Eco-Friendly**
  - Low power consumption
    - » 35 W or less in print mode (J017/J019/J021/J023)
    - » 38 W or less in print mode (J018)
  - New Energy Star compliant
  - BAM compliant
  - Plant-based plastic
- **Advanced Technology Improves Usability**
  - Counter function for click charge
  - Counter data obtained via @Remote
  - Multi-bypass trays supports different types of paper
  - User-friendly tilting operation panel

Slide 4

No additional notes.

Improvements (over previous model) - 1/3

- **Improved ink**
  - New ink provides improved performance in high temperature and/or low humidity environments. The better flowing inks gel quickly, with less ink clogging, which can cause poor images or trigger errors like SC999, SC990, etc.
- **Lower ink consumption**
  - Redesigned print heads, ink supply unit, head cleaning algorithm, and reversible pumps
- **Redesigned ink level detection pins prevent machine tilt-induced ink leakage**
  - Effective for up to 30 degree angle
- **Newly designed bidirectional ink pumps with independent motor for each ink color**
  - Reversible pumps create vacuum in head tanks without wasting ink.

Slide 5

No additional notes.

Improvements (over previous model) - 2/3

- **Adjustable tilting operation panel**
- **Improved paper tray unit**
  - Easy to remove and reinsert
- **New side fence locks**
  - More skew-resistant
  - Fewer jams
- **More compact**
  - Shorter depth (J017/J019/J021/J018/J023)
- **Improved Ink Collector Unit Design**
  - Access from front of machine (easy to change)
  - Sealed unit (no ink leakage when changing)
  - ID chip added (counter automatically reset when replaced)

Slide 6

Position of the tilting operation panel is made by slowly pulling it forward, and then carefully letting it back until it catches on one of two latches.

Improvements (over previous model) - 3/3

- **Improved Duplex Unit (J017/J019/J023/J018)**
  - Automatic locks (unit automatically locks into place when pushed in)
    - » This helps prevent paper jams caused by incorrectly inserted unit.
- **Improved Head Maintenance**
  - New method helps to prevent clogged nozzles
- **Carriage Unit / Ink Supply Unit**
  - Carriage Unit and Supply Unit now Replaceable
    - » Carriage Unit & Ink Supply Unit
      - – J017/J019/J021/J023
    - » Carriage Unit (alone)
      - – J018
- **New right-side Ink Sump**
  - Expected to last the lifetime of the machine
- **Easier cover removal and replacement**

Slide 7

No additional notes.

Model Differences - 1/2

- **Print Heads**
  - J017/J019/J021/J023
    - » Two print heads (YM & BC)
  - J018
    - » Four print heads (YM & BB & CC & MY)
- **Motors & Pumps**
  - J017/J019/J021/J023
    - » 4 motors and 4 pumps (reversible)
      - – Each color has its own motor & pump.
  - J018
    - » 6 motors and 6 pumps (reversible)
      - – Dual-color heads are supplied by two pumps each, one for each color.
      - – Dual-channel black and cyan heads have one motor per head (single ink tank feeds two output channels).

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Print Heads for J017/J019/J021J023

- Two dual-channel, 2-color print heads
  - Yellow & Magenta and Black & Cyan (YM & BC)

Print Heads for J018

- Two dual-channel, 2-color print heads
  - Yellow & Magenta and Magenta & Yellow (YM & MY)
- Two dual-channel, single-color print heads
  - Cyan & Cyan and Black & Black (CC & BB)

Note: All four print heads are same dual-channel type & size. Single color, dual-channel heads have single head ink tank (which feeds both channels), but otherwise are identical to dual-channel, two-color heads.

Motors & pumps for J017/J019/J021/J023

- 4 motors and 4 pumps (reversible)
  - Each color has its own motor & pump.

Motors & pumps for J018

- 6 motors and 6 pumps (reversible)
  - Dual-color heads are supplied by two pumps each, one for each color.
  - Dual-channel black and cyan heads have one motor per head (single ink tank feeds two output channels, so only one pump is necessary).

Model Differences - 2/2

- **Ink Cartridges**
  - J017/J019/J021/J023
    - » M-size only
  - J018
    - » M-size or L-size
- **Operation Panel**
  - J017/J019/J023
    - » White
  - J021
    - » Grey
  - J018
    - » White (on slightly larger panel)
- **Duplex Unit**
  - J017/J019/J018/J023
    - » Standard
  - J021
    - » Not available
- **Ink collector unit is larger in J018.**
- **The horizontal encoder film is longer in J018 due to wider print head carriage unit. It is also longer in the J023 due to greater machine width.**

Slide 9

No additional notes.

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J017/J019/J021/J023/J018
Service Training

2) Specifications

Slide 10

No additional notes.

Specifications - 1/6

- **Configuration**
  - Desktop
- **Printing Method**
  - On-demand GelJet Ink printing technology
  - Pigment-based ink
- **Power Consumption**
  - Print Mode
    - » From 35W or less to 38W or less
  - Energy Saver Mode
    - » From 2 W or less to 3.499 W or less

    (See service manual for specific model details)
- **Dimensions**
  - J017/J019/J021
    - » (W x D x H) - 420 x 485 x 259 mm (16.5 x 19.1 x 10.2 in.)
  - J023
    - » (W x D x H) - 540 x 552 x 259 mm (21.6 x 21.7 x 10.2 in.)
  - J018
    - » (W x D x H) - 509 x 485 x 263 mm (20.0 x 19.1 x 10.4 in.)

    (See service manual for sizes with options)

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No additional notes.

Specifications - 2/6

- **Weight**
  - J017/J019/J021
    - » 14 kg (30.8 lb)
  - J023
    - » 19.1 kg (42.1 lb)
  - J018
    - » 15.5 kg (34.1 lb)

  (See service manual for weights with options)
- **Number of Print Heads**
  - J017/J019/J021/J023
    - » Two dual-channel, 192-nozzle heads
  - J018
    - » Four dual-channel, 192-nozzle heads
- **Estimated Service Life**
  - J017/J019/J023
    - » 5 years, or 150,000 prints
  - J021
    - » 5 years, or 100,000 prints
  - J018
    - » 5 years, or 200,000 prints
- **Monthly Volume**
  - J017/J019
    - » 750 prints (average) / 2,500 prints (max.)
  - J021
    - » 750 prints (average) / 1,700 prints (max.)
  - J018
    - » 1,500 prints (average), 3,300 prints (max.)
  - J023
    - » 1,000 prints (average), 2,500 prints (max.)

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No additional notes.

Specifications - 3/6

- **Warm-up Time**
  - J017/J019/J021/J023
    - » Less than 35 seconds
  - J018
    - » Less than 40 seconds
- **Printer Language**
  - J017/J021/J023
    - » RPCS
  - J018/J019
    - » RPCS, PCL5c/6
- **First Print Speed (RPCS)**
  - J017/J019/J021
    - » Less than 6 seconds (mono) / Less than 7.5 seconds (color)
  - J023
    - » Less than 6.5 seconds (mono) / Less than 9 seconds (color)
  - J018
    - » Less than 4 seconds (mono) / Less than 5 seconds (color)
- **Print Speed (RPCS)**
  - J017/J019/J021/J018/J023
    - » 10.5 ppm (mono) / 9 ppm (color)
  - J017/J019/J021/J023 (Max speed utilizing catalogue sample)
    - » 29 ppm (mono) / 29 ppm (color)
  - J018 (Max speed utilizing catalogue sample)
    - » 30 ppm (mono) / 30 ppm (color)

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- For full specifications, see the service manual.

Specifications - 4/6

- **Ink Cartridges**
  - Black, Cyan, Magenta, & Yellow
    - » J017/J019/J021/J023
      - – Medium size only
    - » J018
      - – Medium size or large size
- **Four starter ink cartridges (K, C, M, & Y) are provided with each printer. Thereafter, replacement ink cartridges must be purchased separately.**
- **For full list of supported paper types, see user guide.**
  - Duplex printing is not supported for glossy paper.
  - Duplex printing is not supported by J021.

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No additional notes.

Specifications - 5/6

❑ Operating Environment

- Temperature: 10° to 32°C (50°F to 89.6°F)
- Humidity: 15% to 80% RH
- Ambient Illumination: Less than 1,500 Lux
  - » Never leave sitting in direct sunlight
- Ventilation: More than 30 m^3/hr/person in the work area
- Ambient Dust: Less than 0.10 mg/m^3
  - – Note that printing may be halted to protect the machine under conditions outside above parameters.

❑ Storage Environment

- -30 to 43°C (-54 to 109°F)
- 15% to 80% RH
- Maximum storage time: 18 months

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RH - Relative Humidity

Specifications - 6/6

- **Multi-bypass tray (J507)**
  - 100 sheets
- **Multi-bypass tray (J311)**
  - 100 sheets (For J023 only)
- **Multi-bypass tray (J309)**
  - 200 sheets
- **Paper Feed Unit (J307)**
  - 500 sheets (For J018 only)
- **Paper Feed Unit (J308)**
  - 250 sheets (For J023 only)

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- Refer to the FSM for full specifications for the peripherals.
- Detailed J309 specifications are not listed in the FSM. However, except for the paper capacity, they are the same as for the J507.

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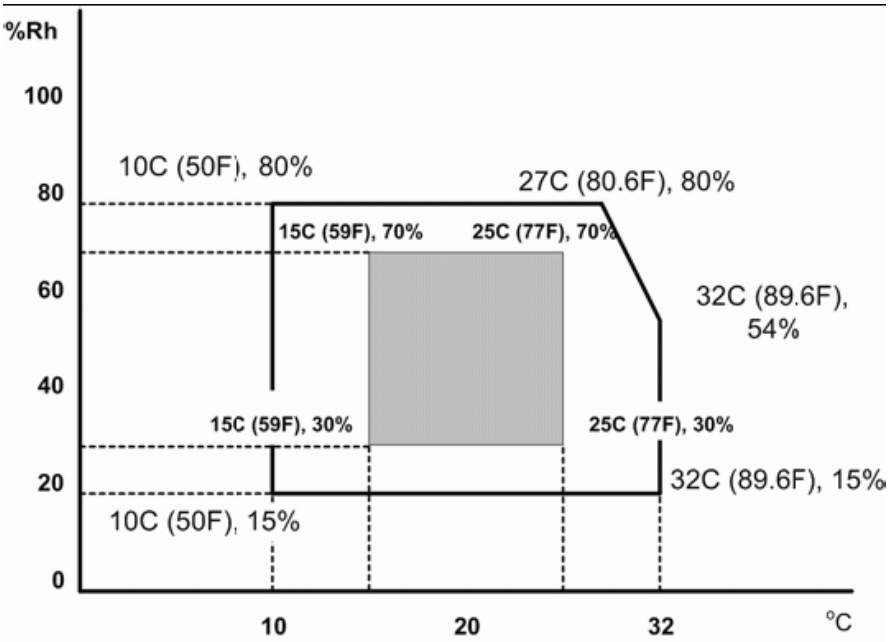
J017/J019/J021/J018/J023
Service Training

3) Installation

Slide 17

No additional notes.

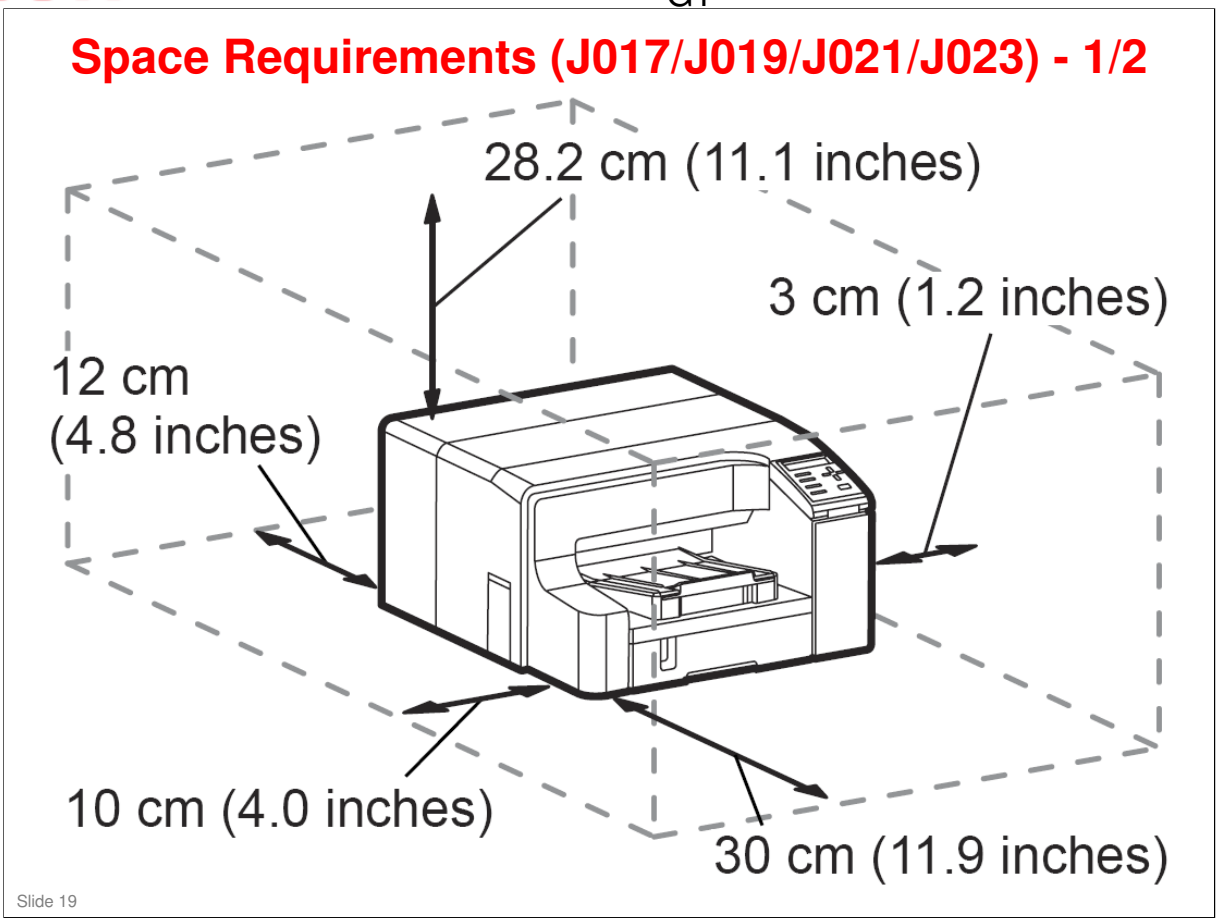
Environment



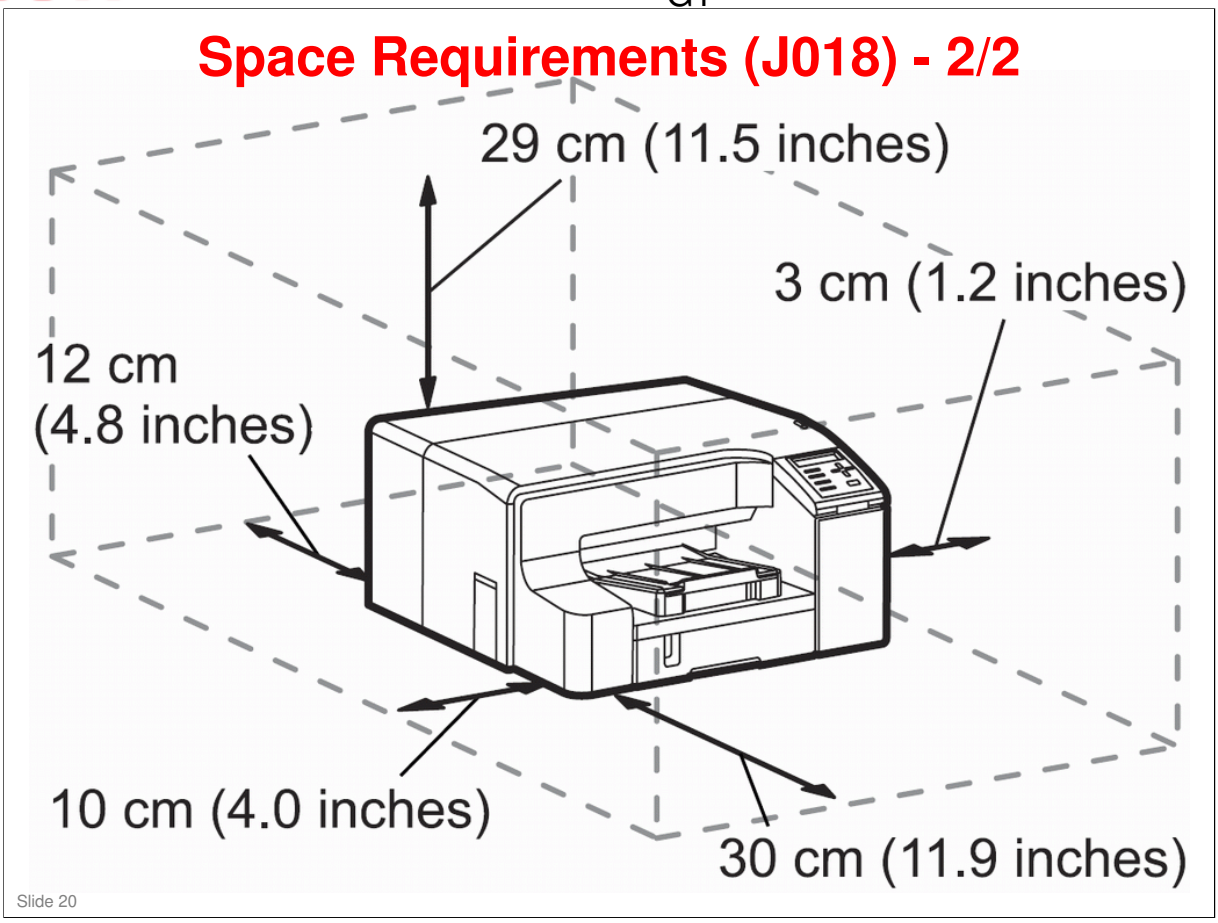
- Note optimal temperature & humidity ranges in the above chart.
- Caution: Dry (and hot) operating environments may cause higher instances of ink drying in heads.

Slide 18

No additional notes.



No additional notes.



No additional notes.

Installation-related Cautions

- **Starter cartridges are primarily for initialization purposes and must not be thought of as standard issue cartridges. Please understand that they will run out of ink in a much shorter span of time than regular replacement cartridges.**
  - Never attempt to initialize machine with used cartridges.
- **Note that it takes 7-9 minutes to fill internal ink tanks (for initial fill). Do not open any covers, touch any keys, or turn machine off until "Ready" message appears on operation panel display.**
  - If printer is turned off while ink tanks are filling, some ink wastage will result when machine resumes filling process.
  - A clicking sound might be heard while ink tanks are filling. This is normal and will stop after a few minutes.
- **Load paper in accordance with procedures outlined in the operation manual.**
- **Paper size and type is not automatically detected, so must be manually set with menu via Operation Panel.**

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Important:

-Never switch off the printer or disconnect the power cord while the tanks in the print head are being filled for the first time. If the printer is accidentally turned off while the ink tanks are filling, some ink wastage will result when the machine resumes the process.

-You might hear a clicking sound while the ink tanks are filling. This is normal and the noise will stop after a few minutes.

General Installation Procedures

- These machines and all peripherals are customer installed.
- See user guide for general installation procedures.

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No additional notes.

Firmware Updating

- **Firmware updates can be performed by customer via:**
  - USB
    - » J017/J019/J021/J018/J023
  - LAN
    - » J017/J019/J023/J018
- **New firmware can be downloaded from:**
  - Firmware Download Center
  - Ricoh Global Website

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No additional notes..

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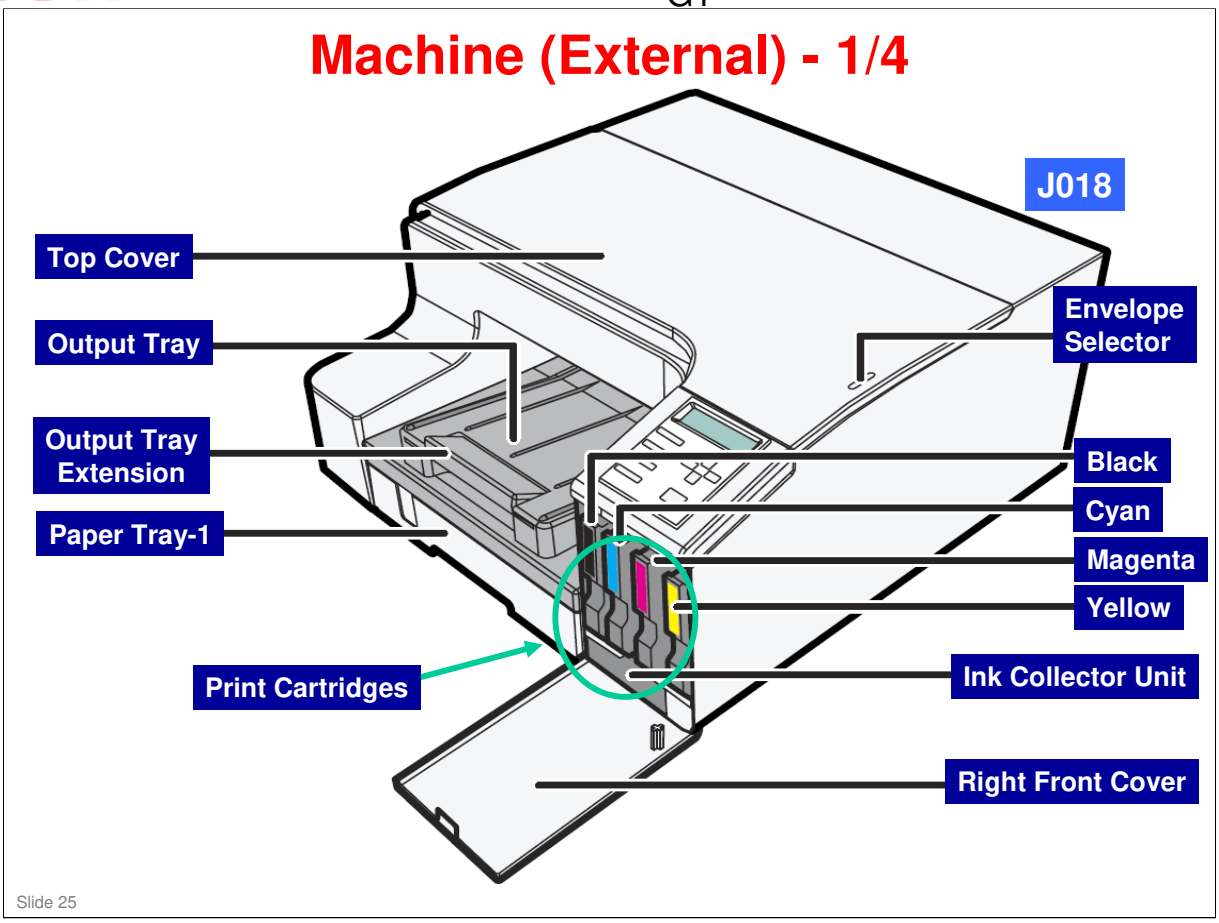
J017/J019/J021/J018/J023
Service Training

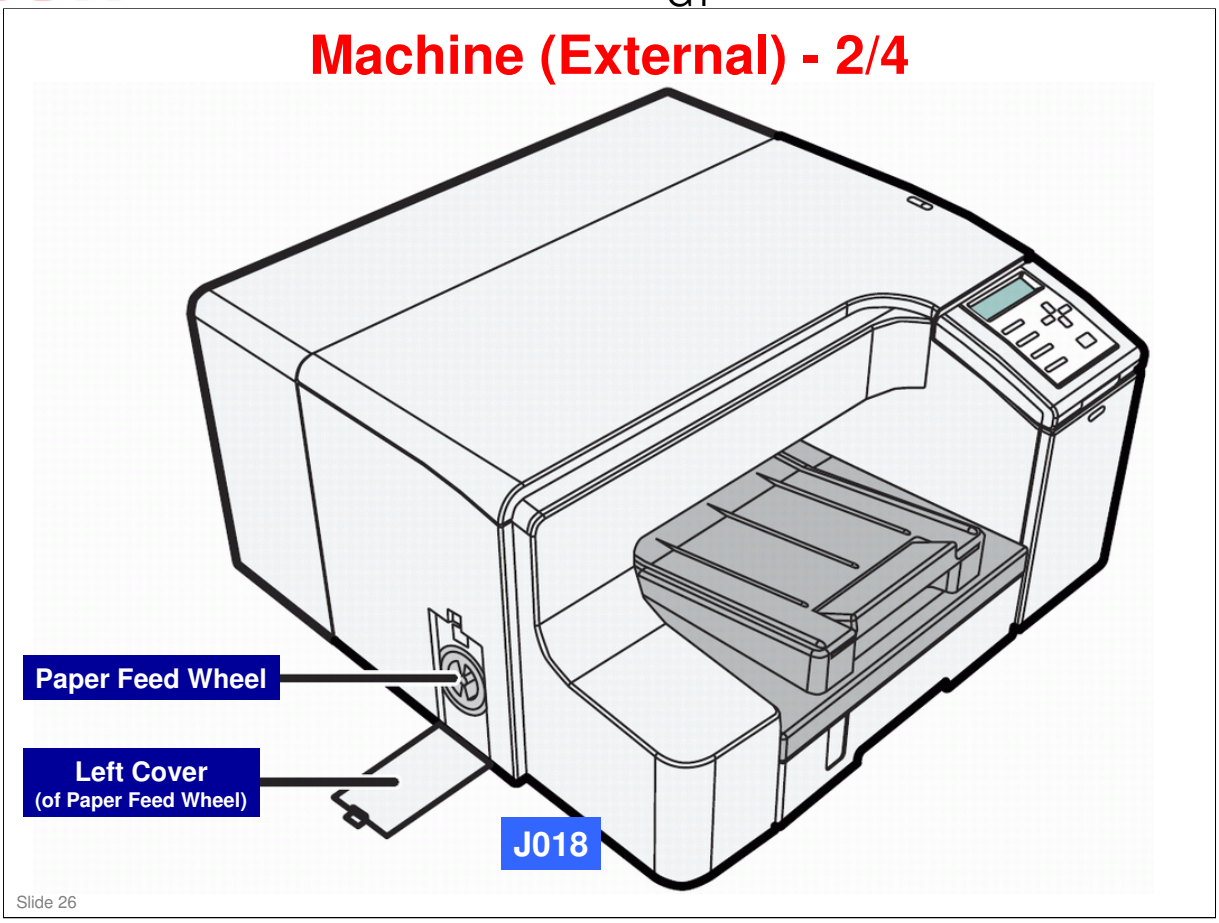
4) Machine Overview

Slide 24

No additional notes.

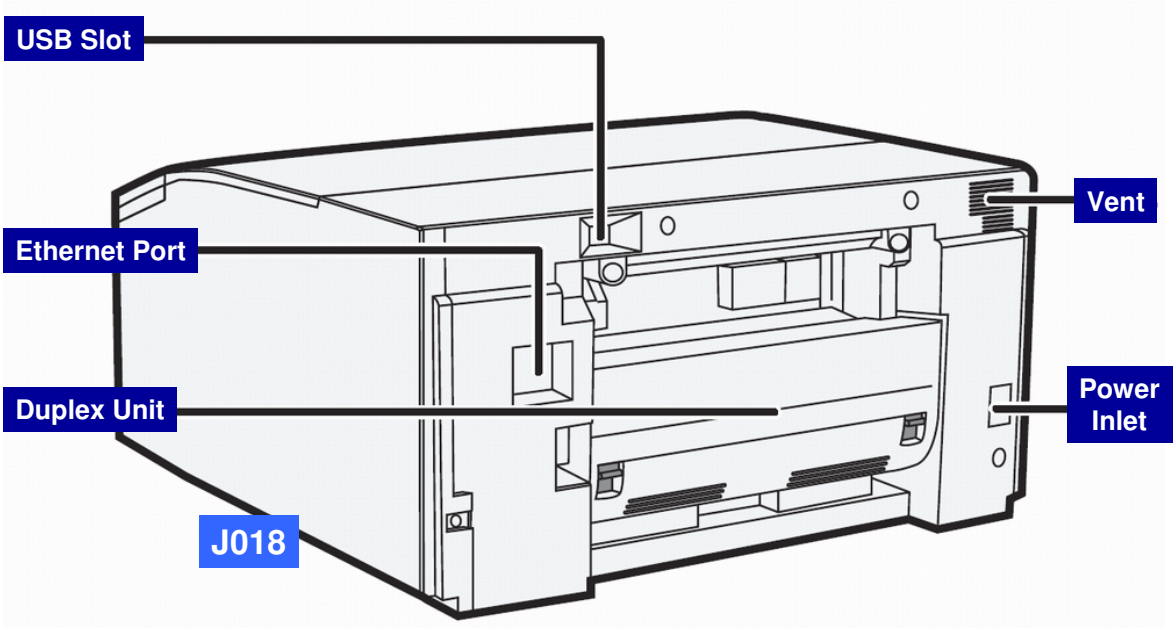


No additional notes.



No additional notes.

Machine (External) - 3/4



Appearance varies slightly depending on model.

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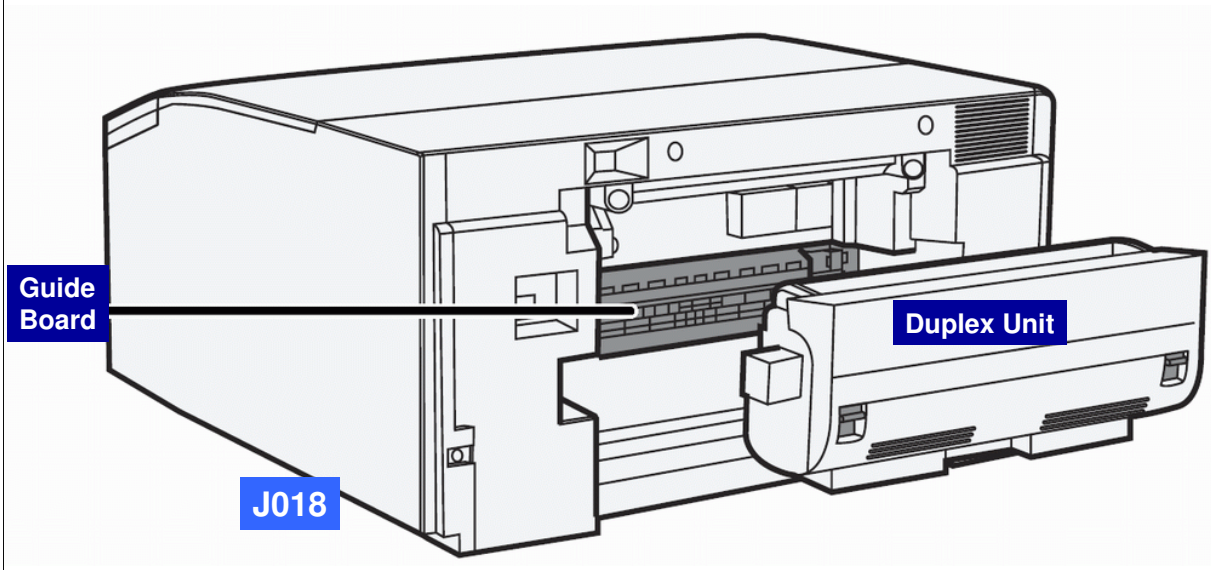
No additional notes.

Machine (External) - 4/4

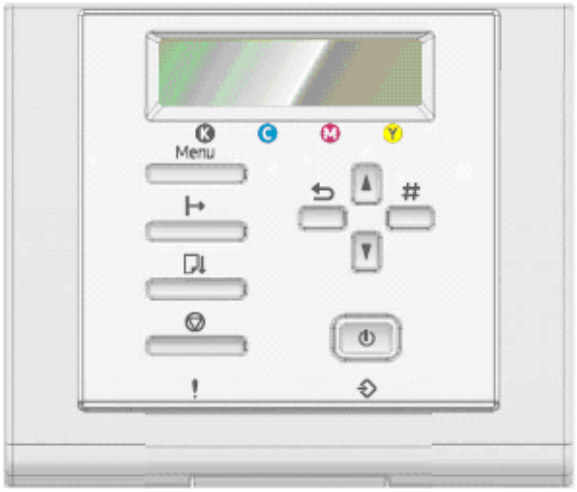


Slide 28

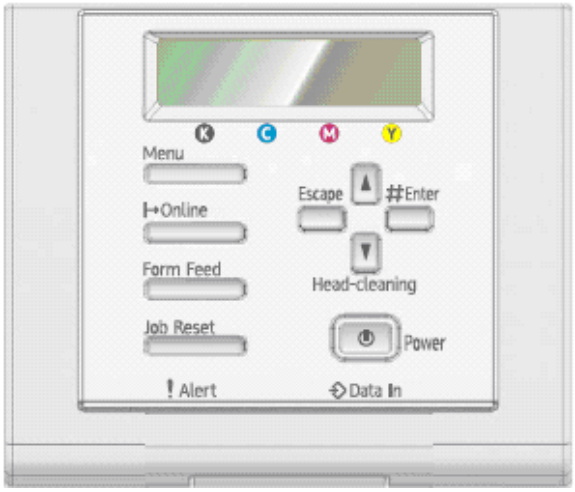
No additional notes.

Operation Panels

EU Model



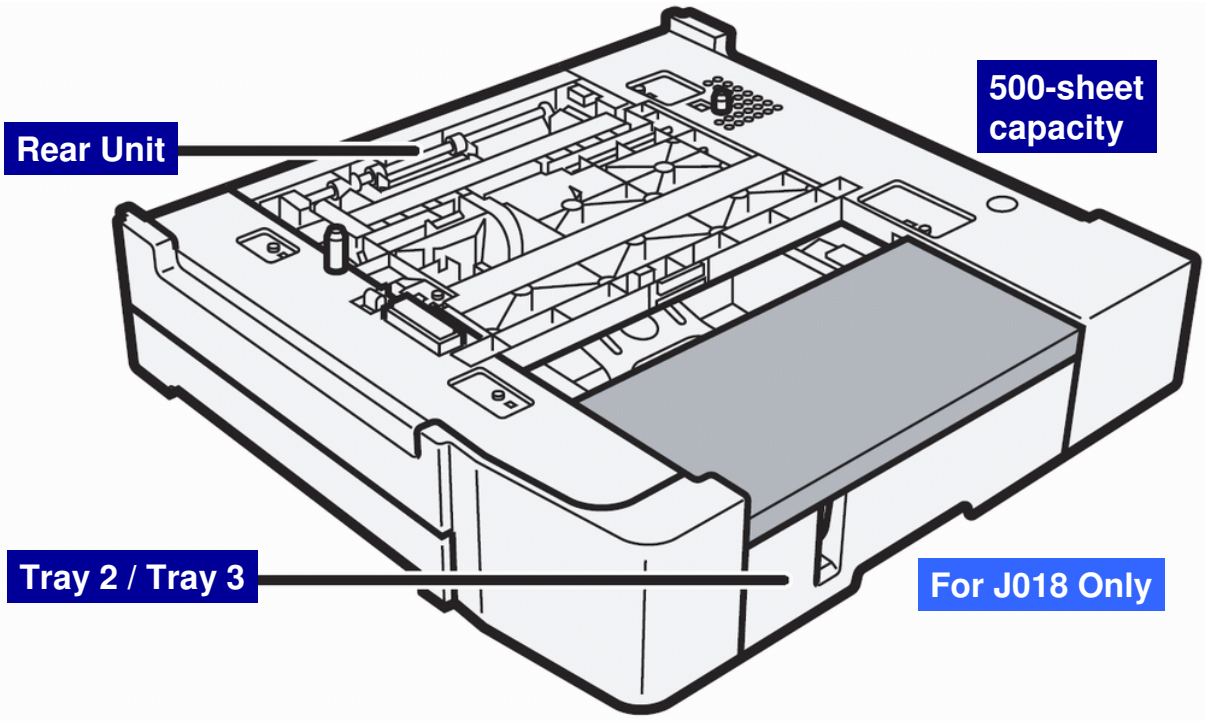
NA Model



Slide 29

No additional notes.

Paper Feed Unit (J307) - 1/2



- For printing on paper longer than A4/Letter size, use extension.

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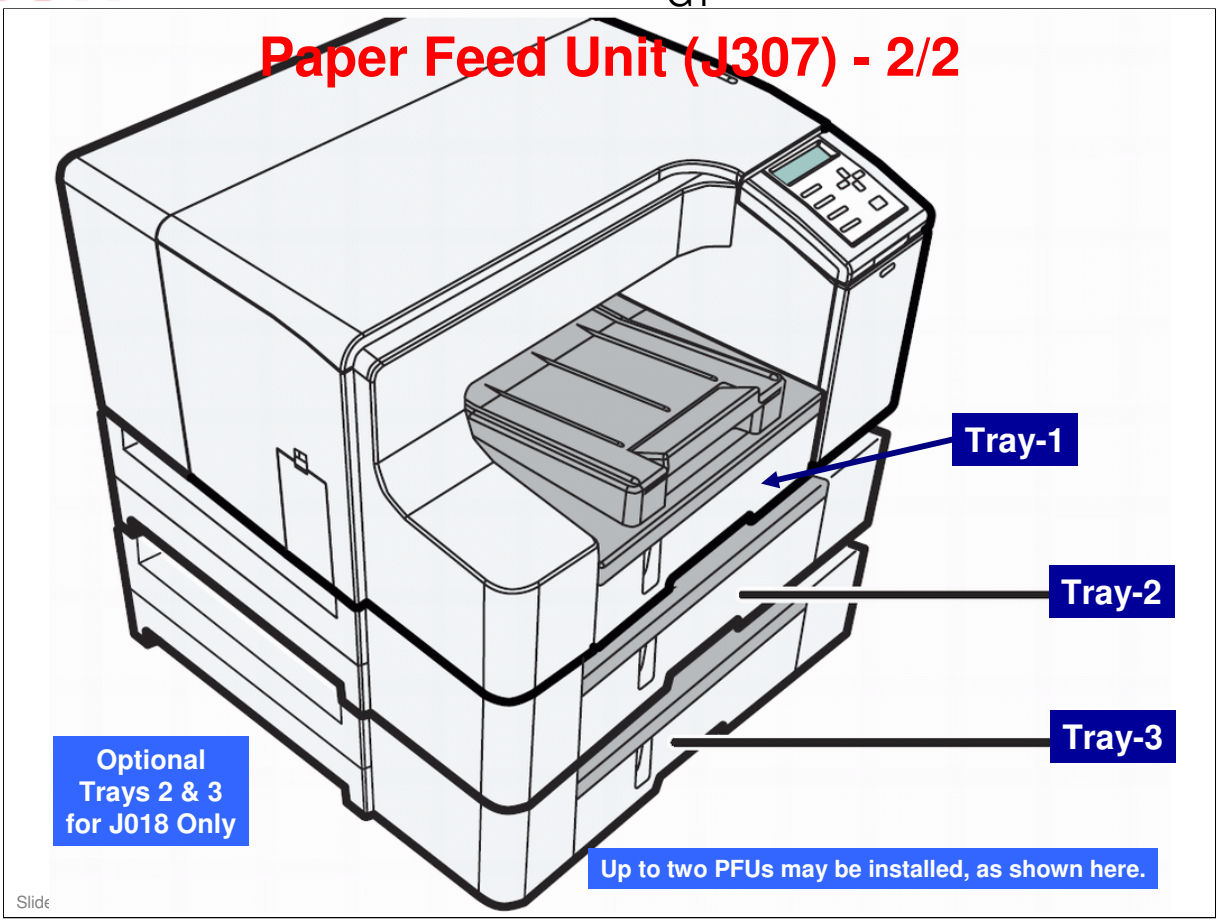
No additional notes.



No additional notes.

Paper Feed Unit TK1140 (J308) - 1/2

- PFU TK1140 is mounted on the bottom of the J023 and holds 250 sheets of paper.
- This unit is used with the J023 only.
- Two paper feed units can be installed for a total paper feed capacity of 500 sheets.

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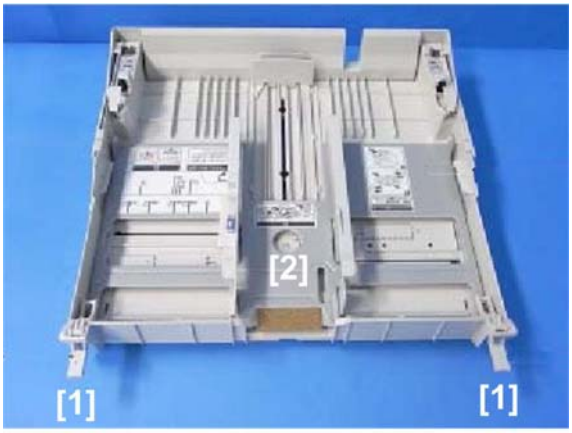
No additional notes.

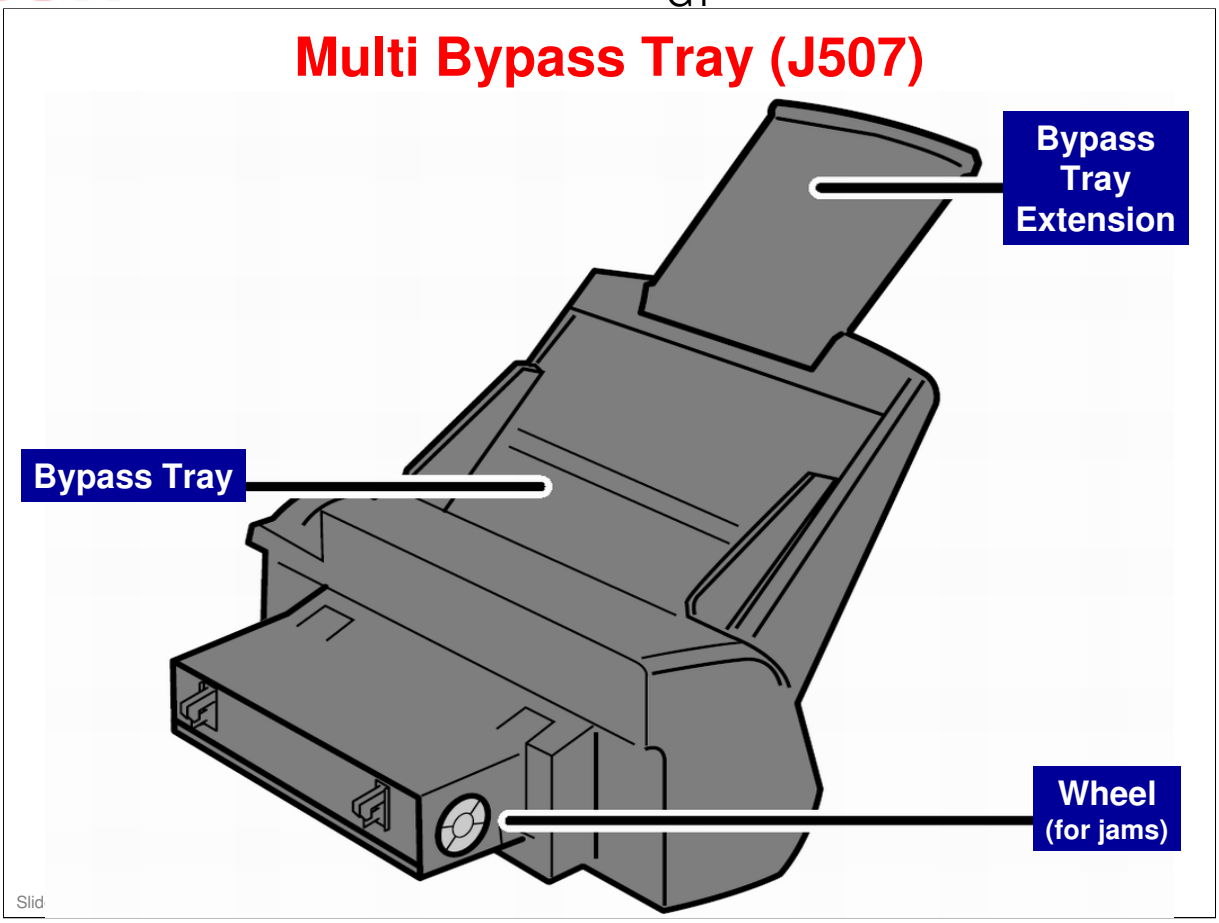
Paper Feed Unit TK1140 (J308) - 2/2

- The paper feed unit has a universal paper cassette. The two side fences and one bottom fence can be adjusted to hold and feed a variety of standard and custom paper sizes. (See table below.)
- After the paper cassette is loaded with paper and installed in the paper feed unit, the cassette arm guides [1] push up the cassette arms that raise the bottom plate [2] and paper stack to the feed position.
- Paper Sizes:
  A5 (LEF) – A3, Letter, Legal, Double letter, Executive, HLT, F, Foolscap, 8-kai, 16-kai



Slide 33

No additional notes.



Multi bypass tray J507 holds up to 100 sheets of paper.

Multi Bypass Tray (J309)

- The bypass paper tray [1] and drive unit [2] comprise the bypass tray unit.
- The drive unit [2] is mounted onto the back of the main machine.

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Multi bypass tray J309 holds up to 200 sheets of paper.

Multi Bypass Tray (J311) – 1/2

- This multi bypass tray is available as an option for the J023 only.
- Holds up to 100 sheets of paper.

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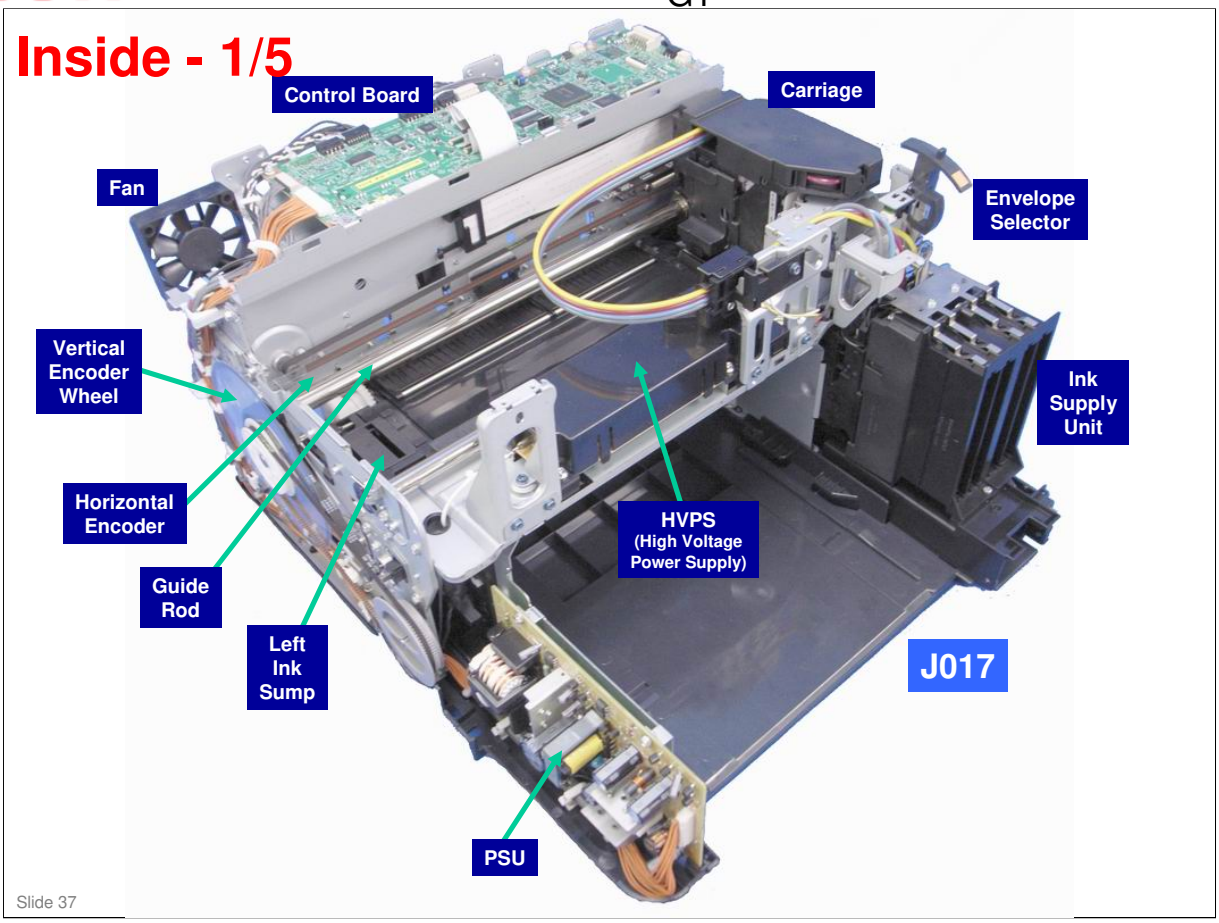
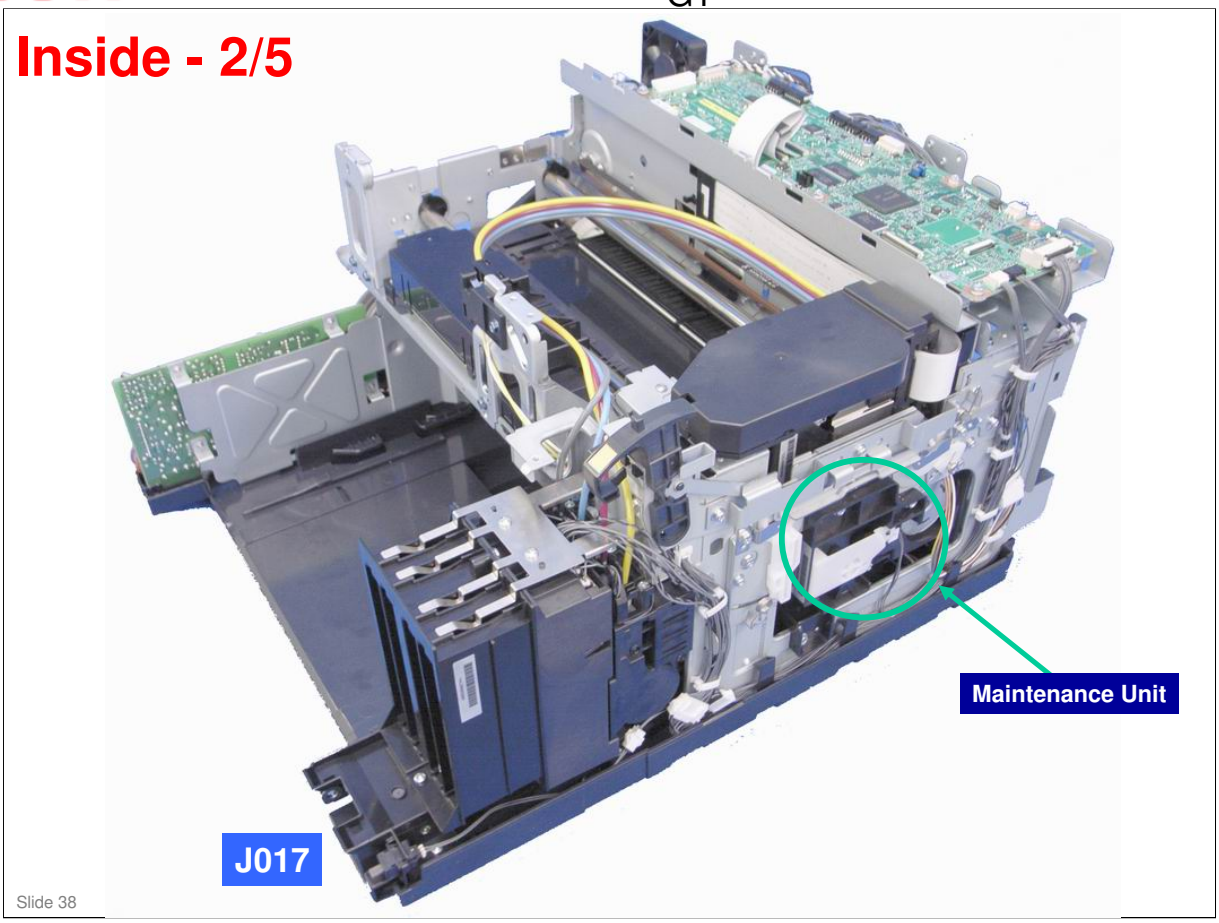
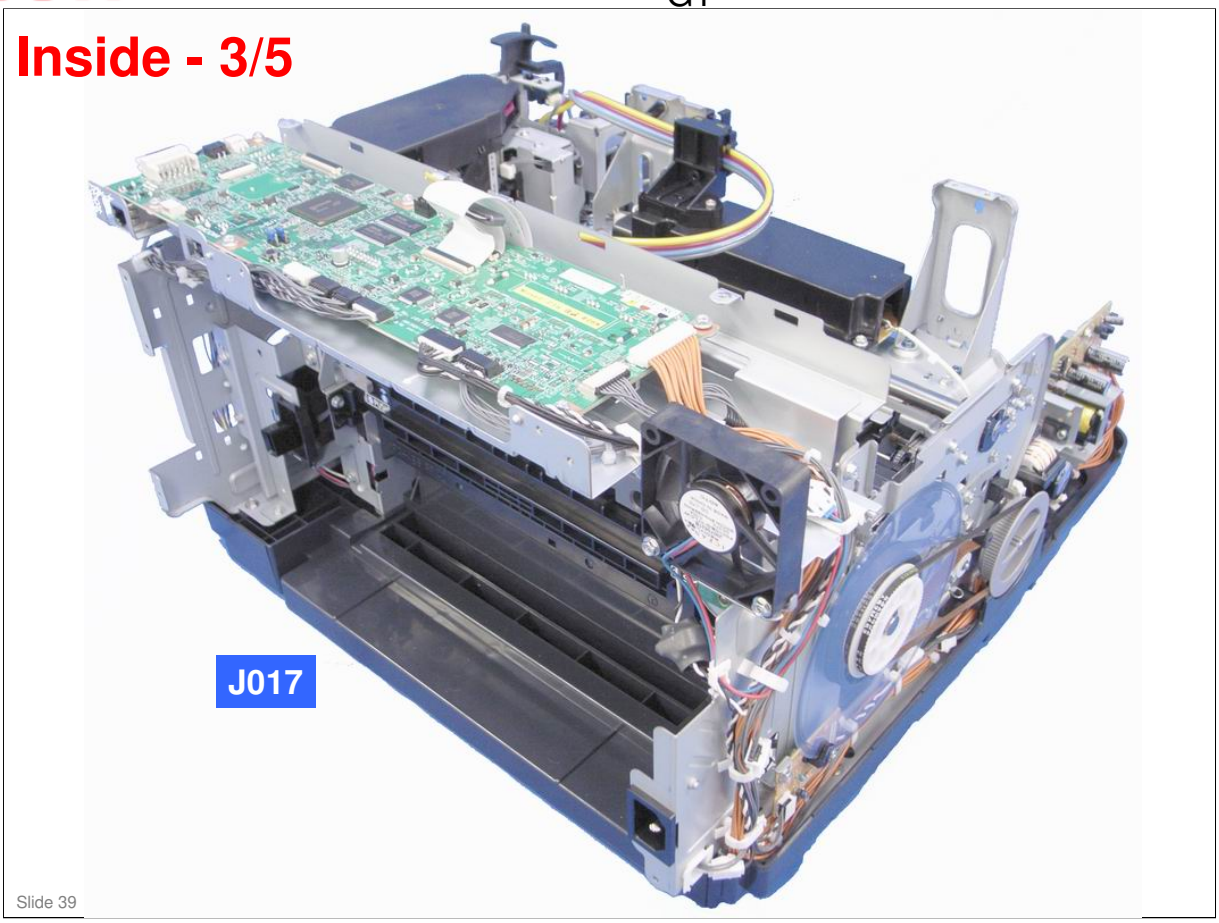
No additional notes.



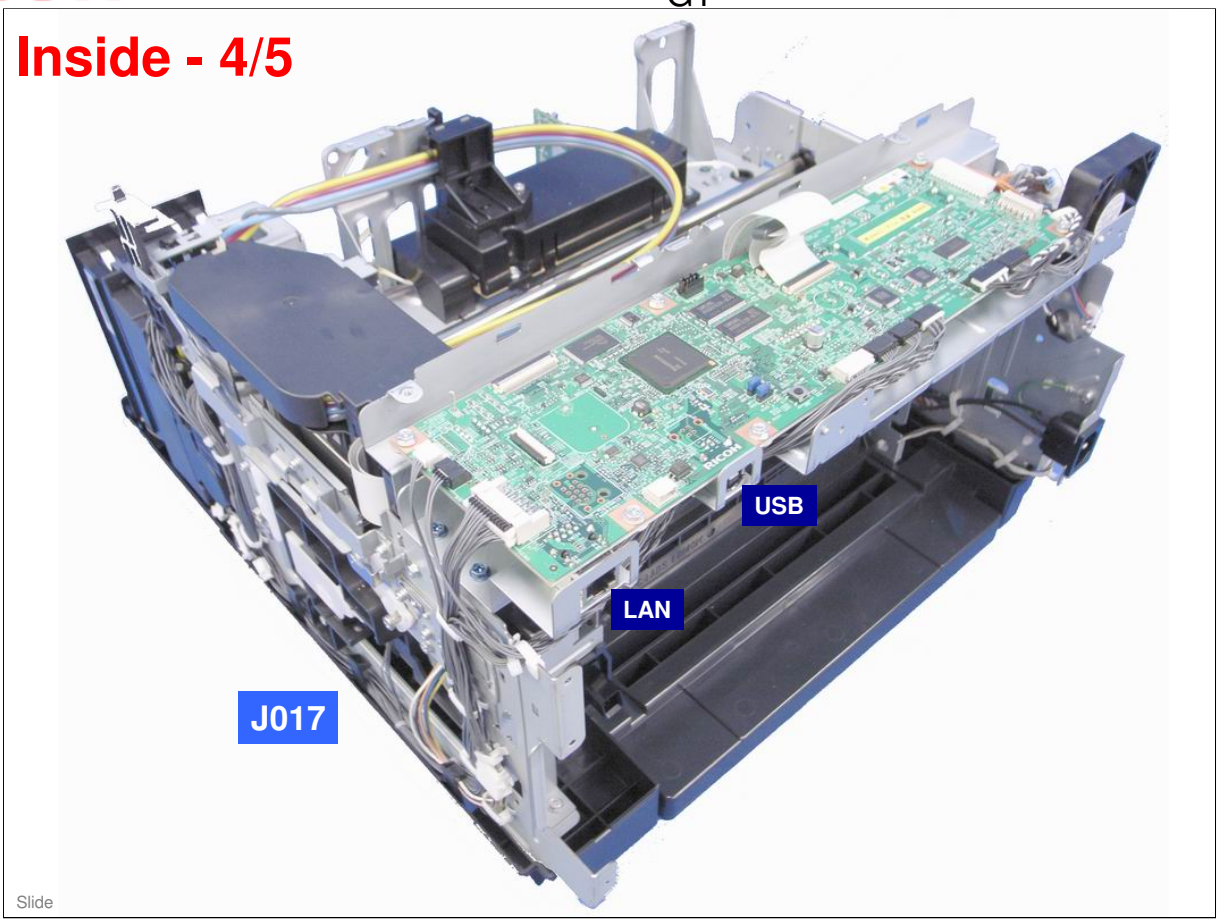
Model shown is the J017 – other models are slightly different in some places.



Model shown is the J017 – other models are slightly different in some places.

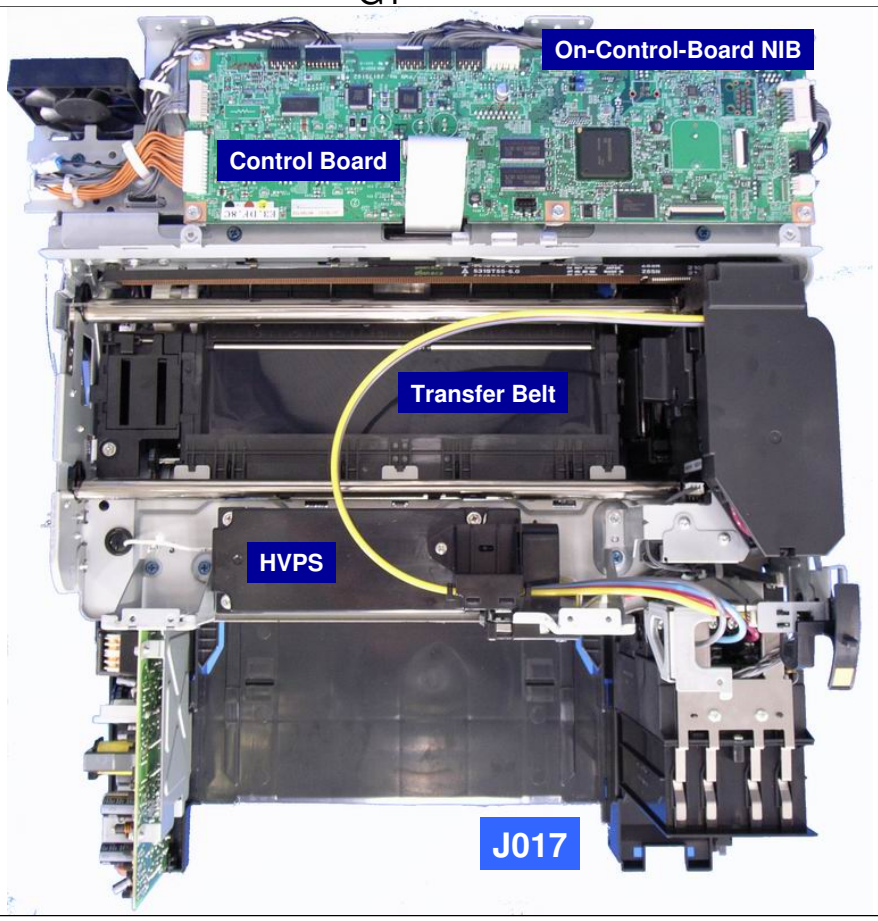


Model shown is the J017 – other models are slightly different in some places.



Model shown is the J017 – other models are slightly different in some places.

Inside - 5/5



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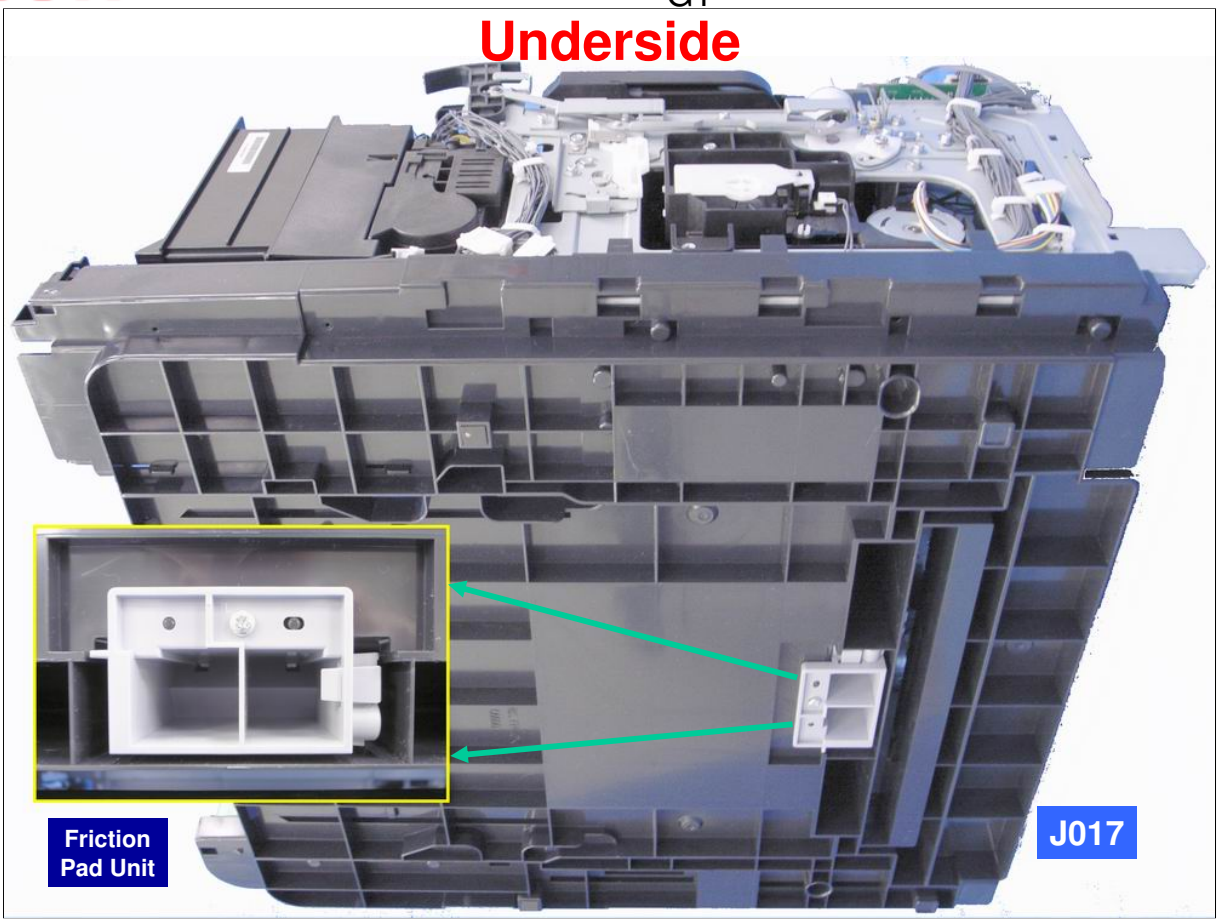
Model shown is the J017 – other models are slightly different in some places.



Model shown is the J017 – other models are slightly different in some places.

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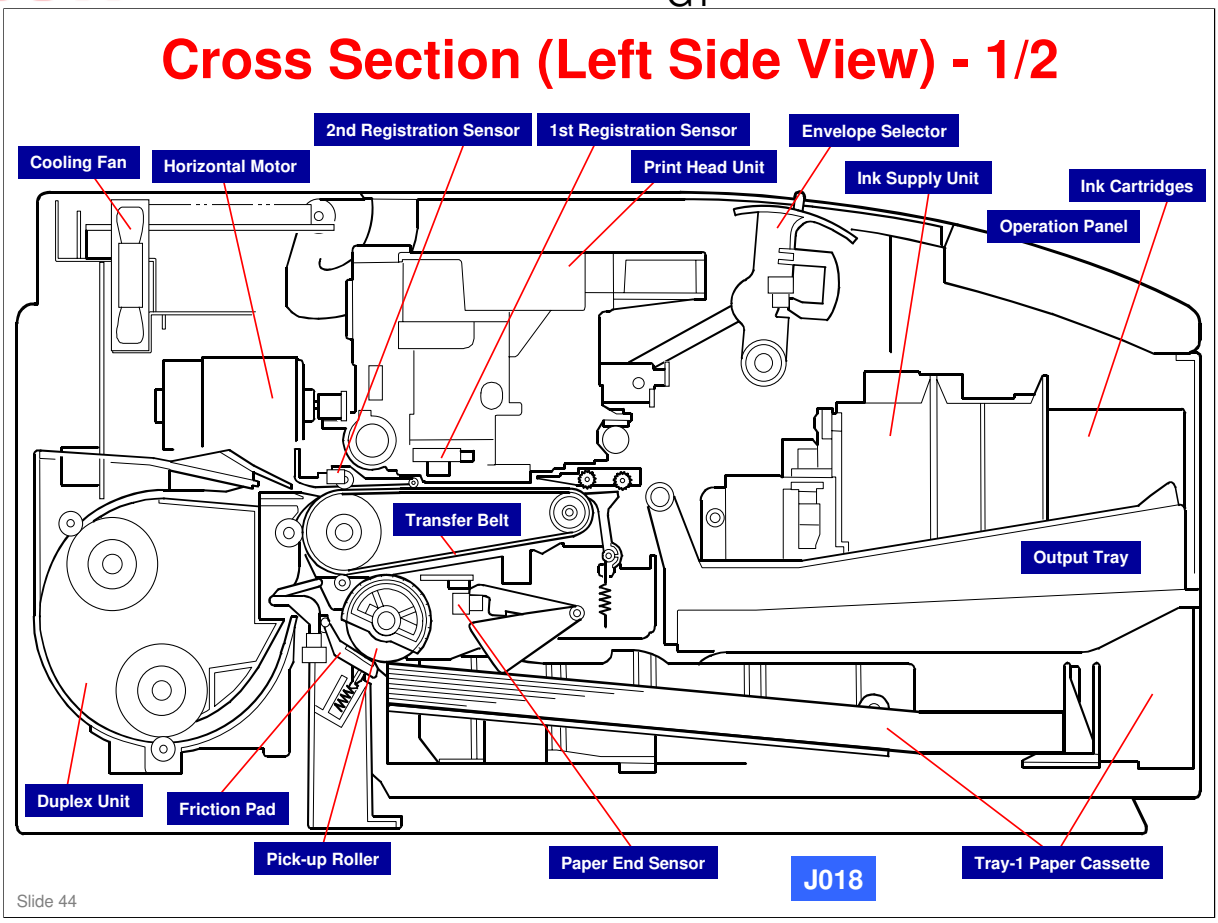
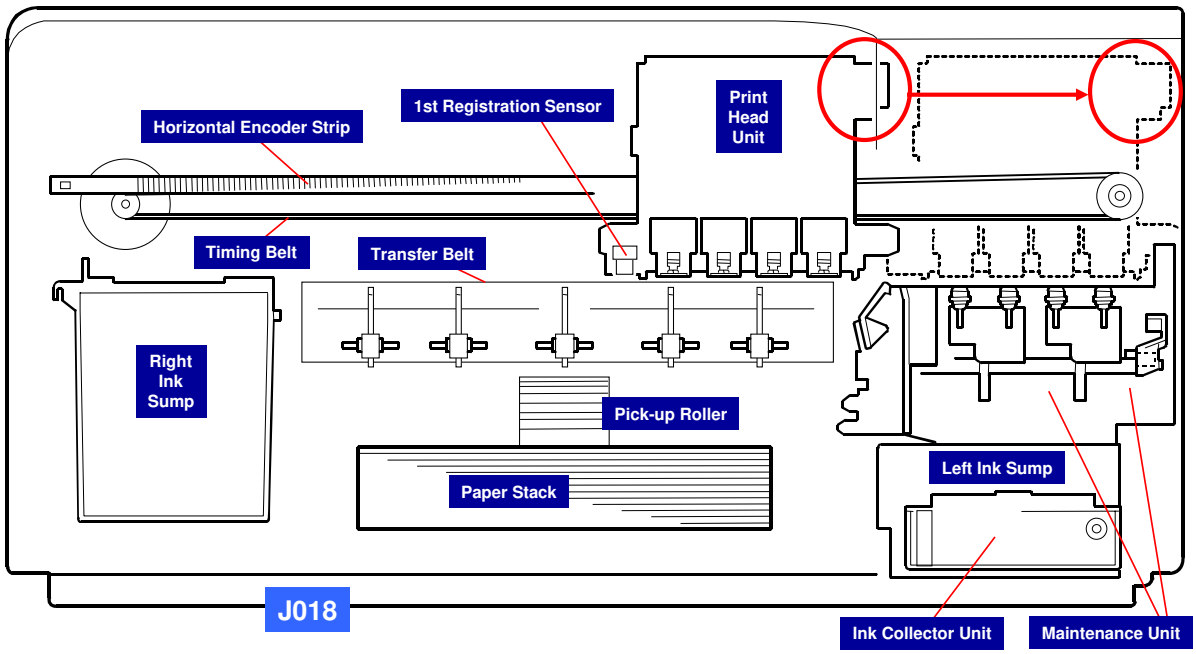


No additional notes.

Cross Section (Front View) - 2/2



- Note that Print Head Unit moves completely across picture above - from left to right and back, with resting place over Maintenance Unit, where the heads are capped to prevent them from drying out.

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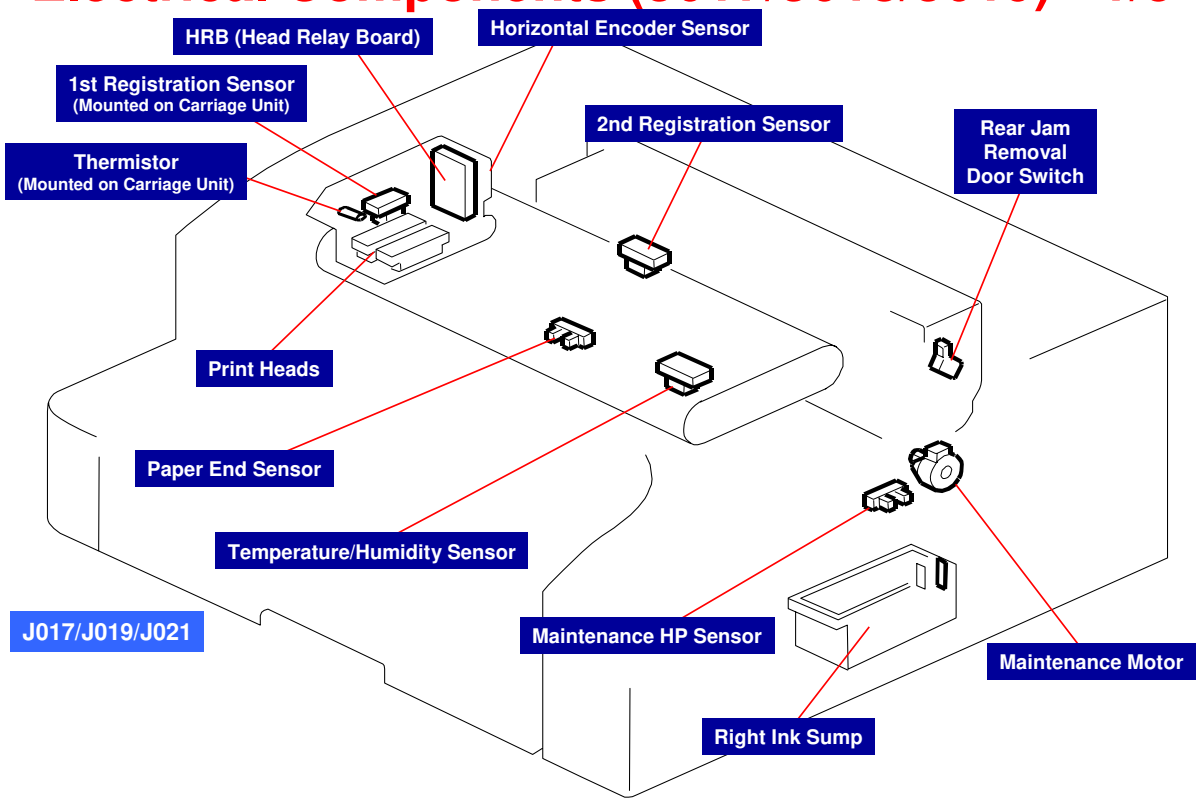
Electrical Components (J017/J018/J019) - 1/5



Slide 46

For more details of component part names and their functions, see the service manual.

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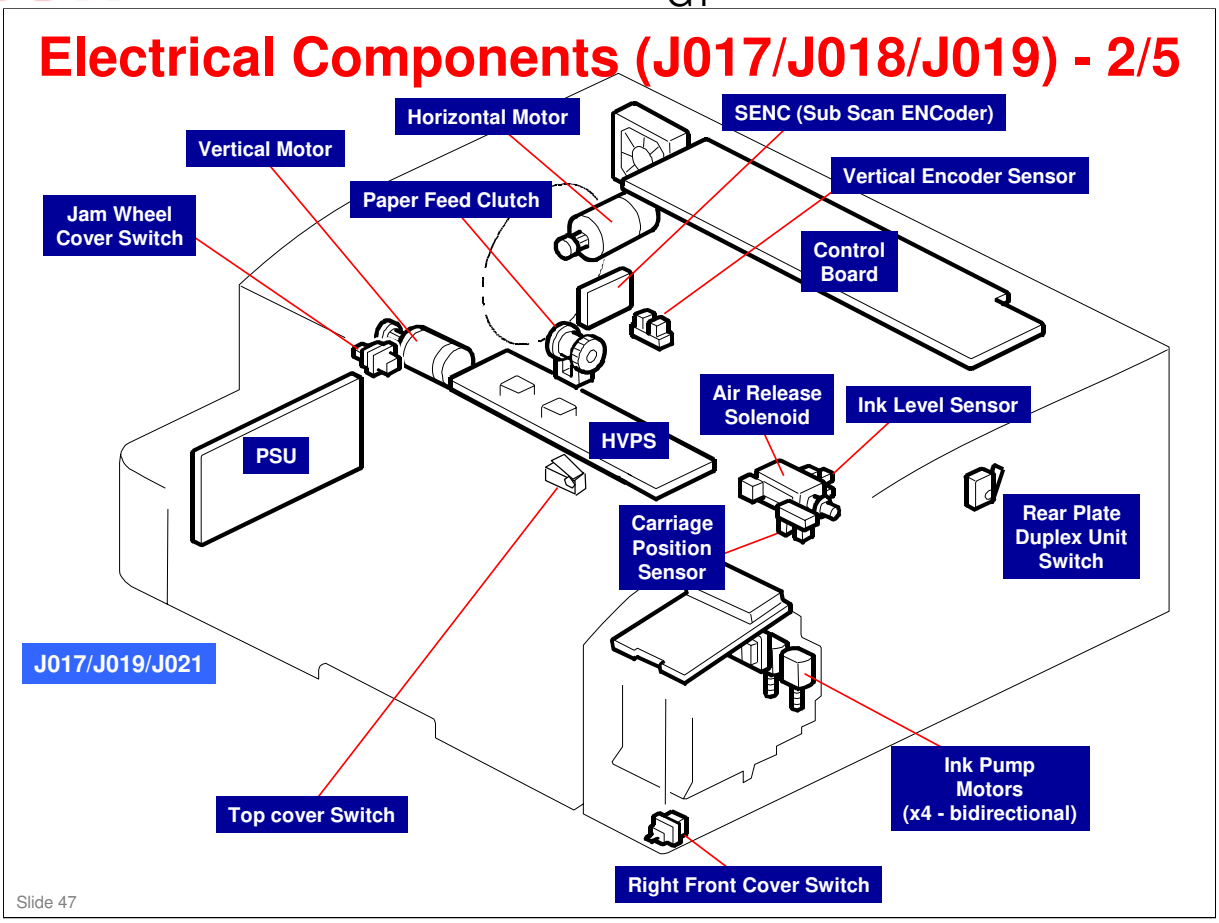
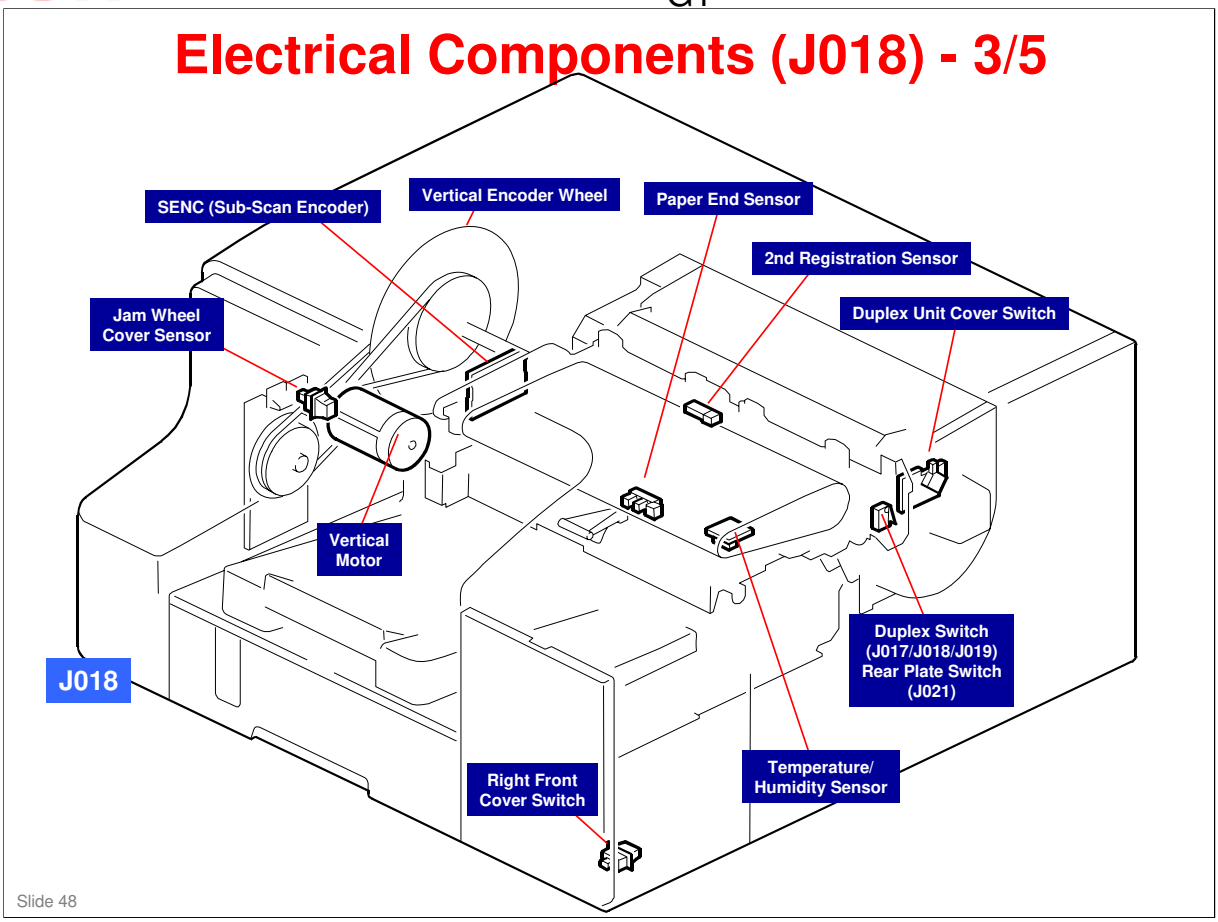


For more details of component part names and their functions, see service manual.

Note: The Carriage Position Sensor looks as though it is connected to the Ink Level Sensor/Air Release Solenoid unit, but this is not the case. The Ink Level Sensor/Air Release Solenuser

Electrical Components (J018) - 3/5



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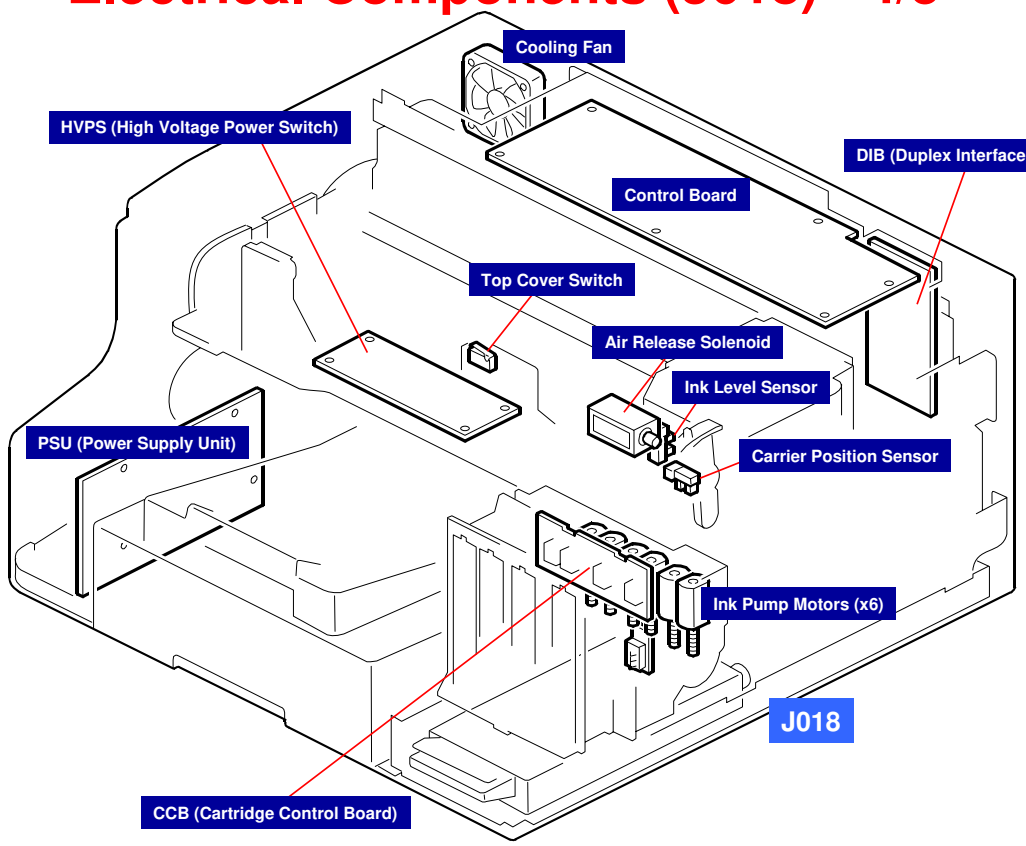
Electrical Components (J018) - 4/5



Slide 49

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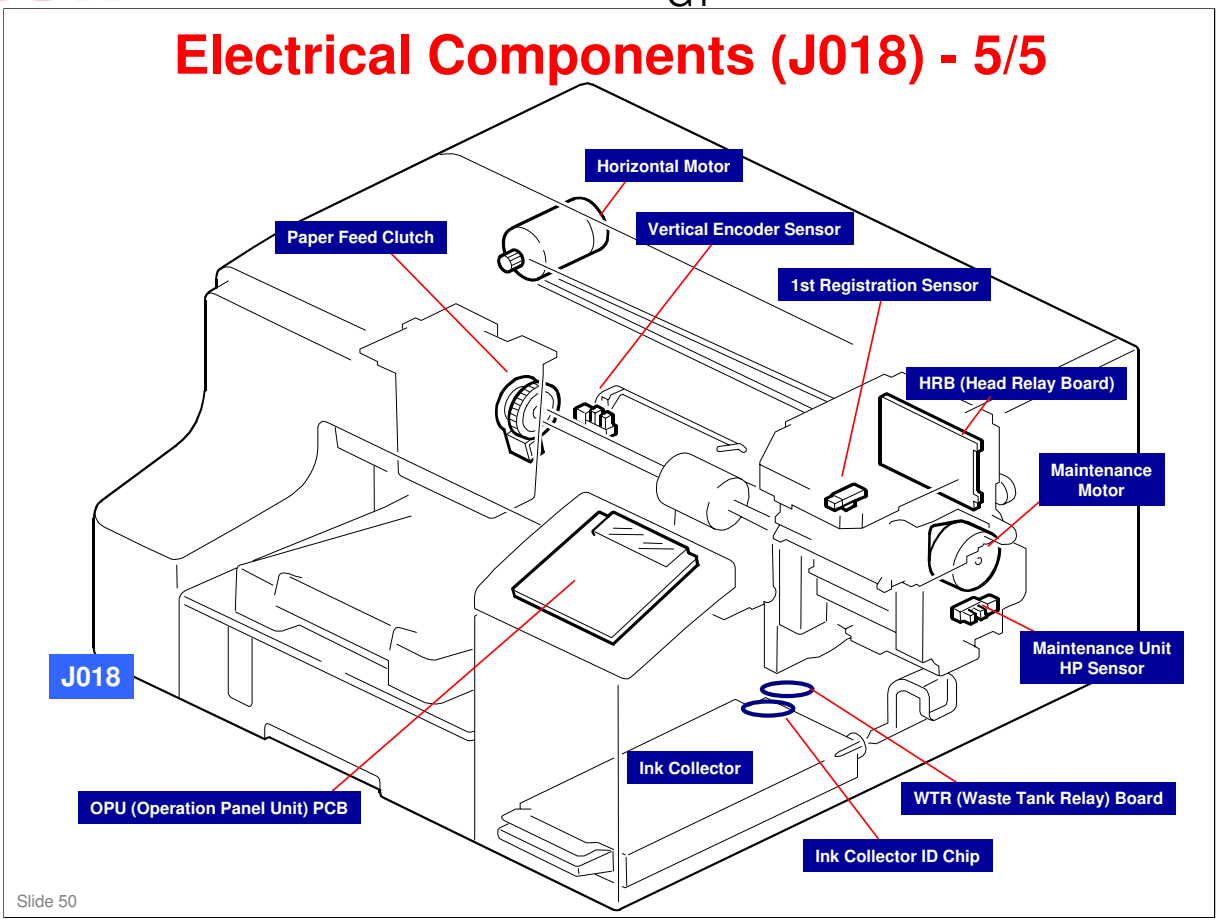
Electrical Components (J018) - 5/5



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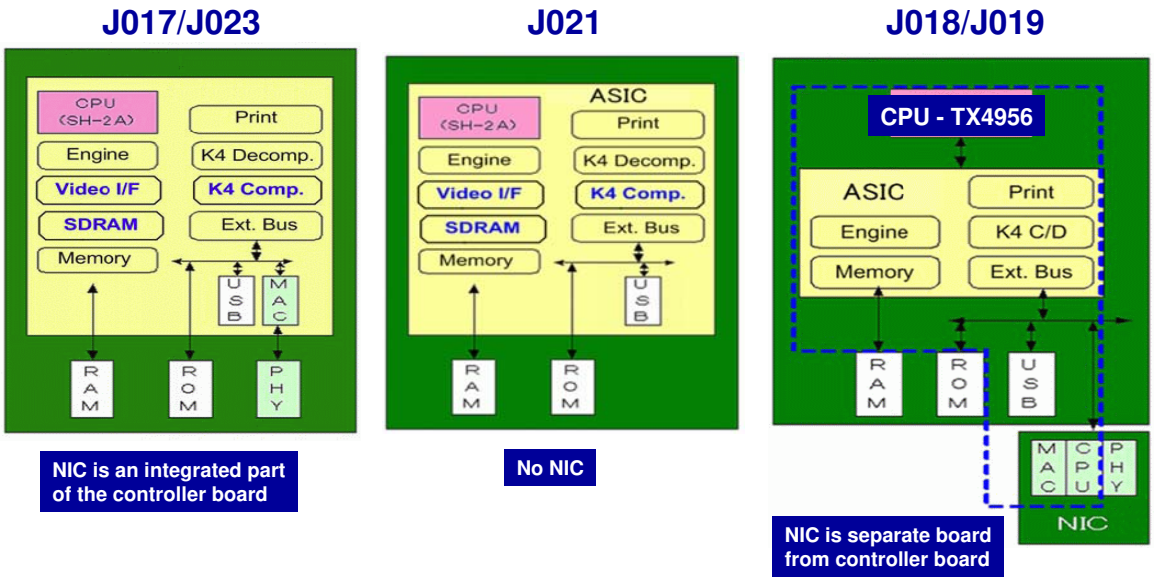
Controllers



- **RTC - (Real Time Clock)**
  - **Beginning with these models, new clock is embedded in controller board.**
    - » **This helps to optimize automatic maintenance procedures.**

Slide 51

- The J017/J023 controller has the NIC mounted on the CTL board. This controller is not PCL compatible.
- The J021 has the same CTL board but it does not have a NIC. The MAC remains but it has no function. Like the J017 it is not PCL compatible.
- The J018 and J019 controllers do not have the NIC mounted on the CTL board. The NIC is a separate board connected to the CTL board. This controller supports PCL in both models.

RICOH

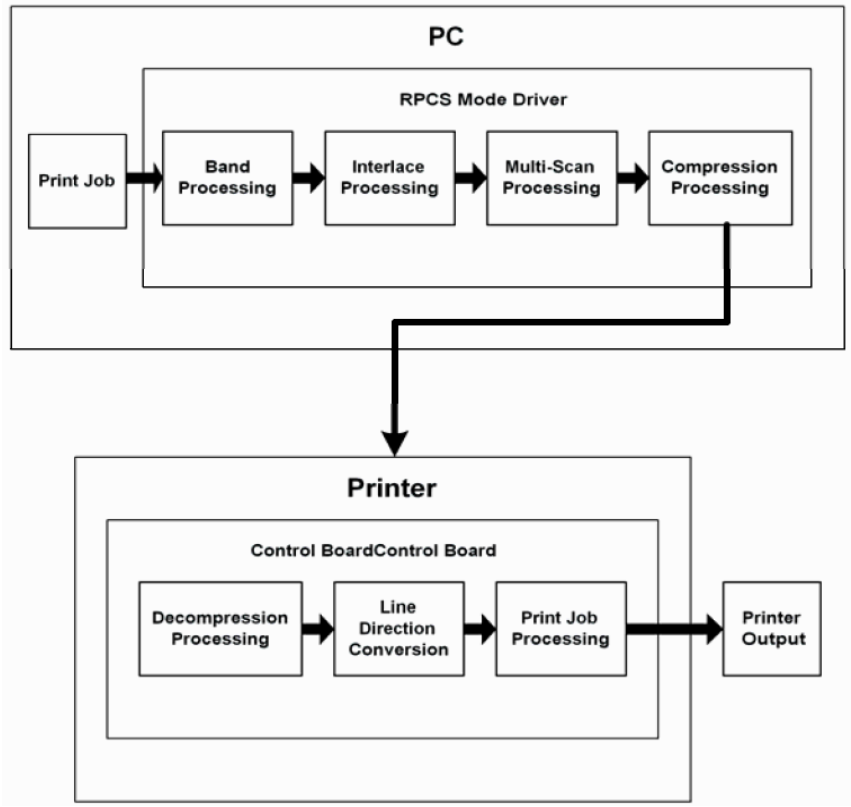
J017/J019/J021/J018/J023
Service Training

5) Image Processing

Slide 52

No additional notes.

Image Processing



Slide 53

No additional notes.

RICOH

J017/J019/J021/J018/J023
Service Training

6) Print Heads

Slide 54

No additional notes.

Print Heads - 1/2

- ❑ Ink level monitored electrically via sensor pins in head tank.
- ❑ Ink level monitored mechanically via arms attached to bellows in head tank.
- ❑ To maintain proper pressure and ink level in print head tank, air release valves adjust tank air pressure level as needed.
- ❑ Ink level is controlled by a combination of input from electrical sensor pins (detecting excess air / lack of ink) and mechanical feeler arms attached to tank bellows.
- ❑ Redesigned (electrical) ink level detection pins reduce detection errors brought about by machine tilting.

Redesigned

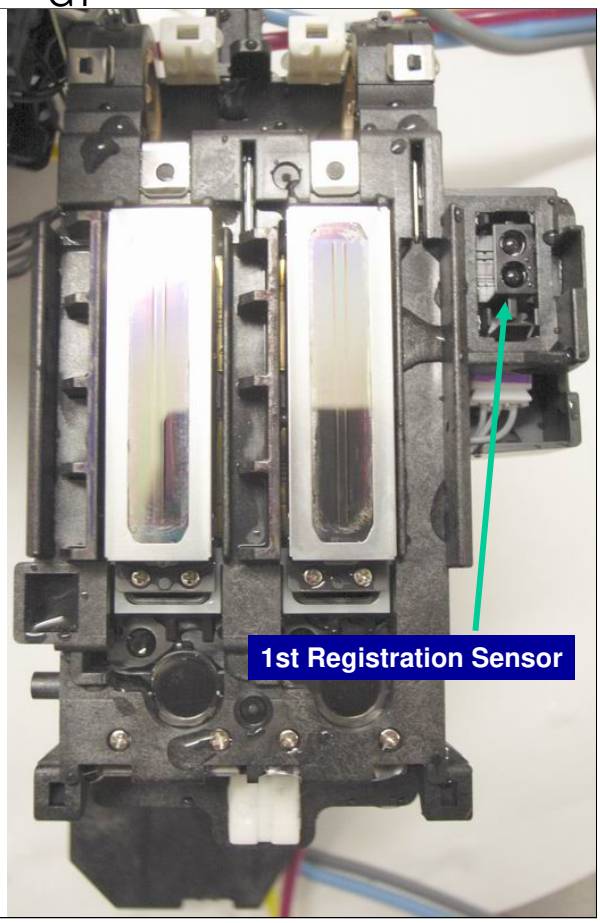
- Air Release Valves have been redesigned (see next slide) with filter to block dust from entering.
- Sensor pins have been redesigned to increase accuracy under tilted conditions.

Slide 55

No additional notes.

Print Heads - 2/2

- Wide print heads (32.3 mm (1.27") enable faster printing due to large area printed with each pass of the heads.
- There are four print heads, each with two rows for ink output.
- Note: J018 has four heads. Photo at right is from the two-head J017/J019 version.



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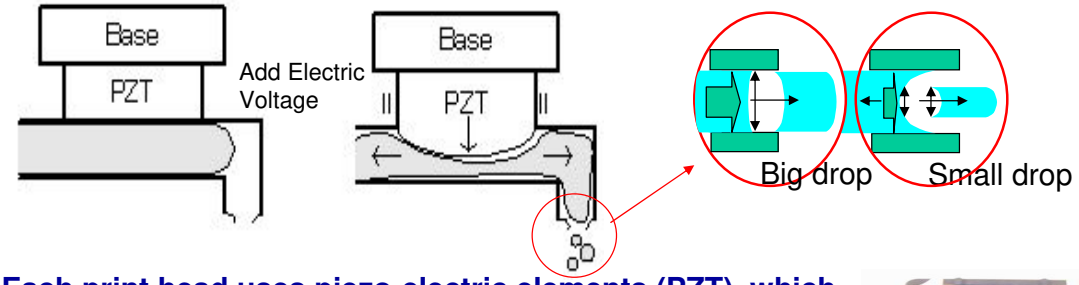
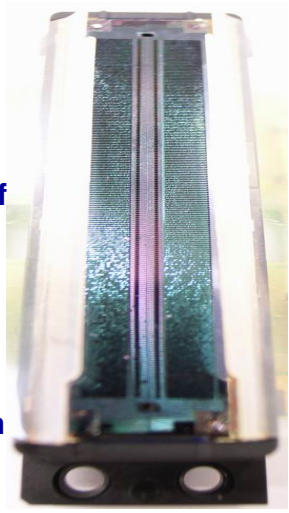
No additional notes.

Nozzles - 1/2



- Each print head uses piezo-electric elements (PZT), which force ink from ink reservoirs, out of ink nozzles, and then onto paper.
  - This is done with pressure. At prescribed time, electric charge is applied to PZT, making PZT expand.
  - Expansion of PZT puts pressure on ink, forcing it out of ejection port.
  - This is a unique design that has several technical advantages over bubble-jet printers, such as faster printing speeds and more durable ink.
  - By reshaping Piezo elements using electronic signals, various ink drop sizes can be made.
  - Piezo system supports two-bit / multi-bit controller with only one nozzle.
  - Piezo elements are expensive.



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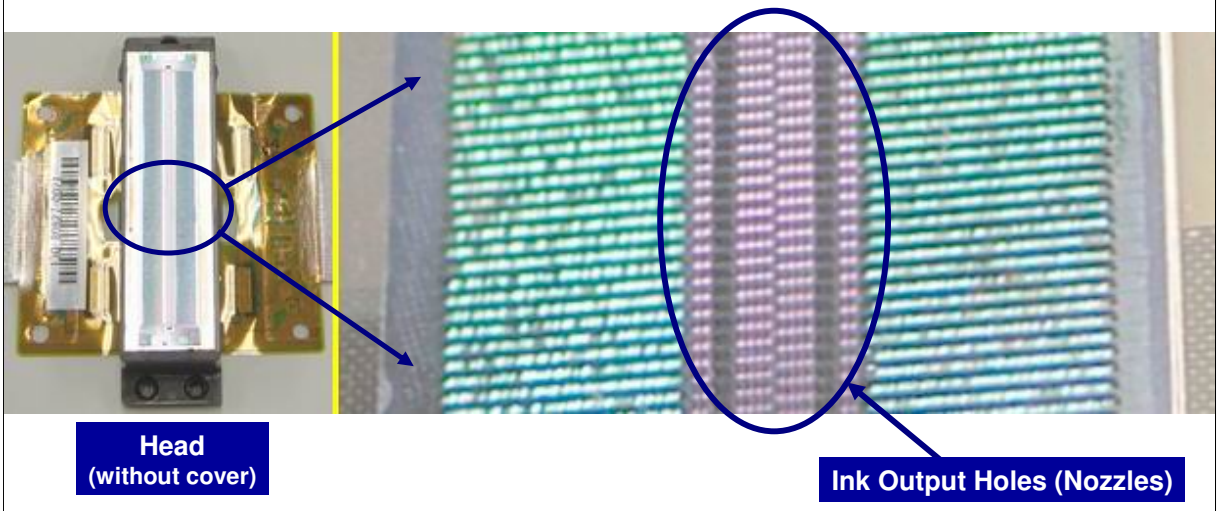
Note: View above is of head with it's surface cover removed.

Nozzles - 2/2



- Under magnification (right - with head cover removed), staggered alignment of ink output holes can be seen.

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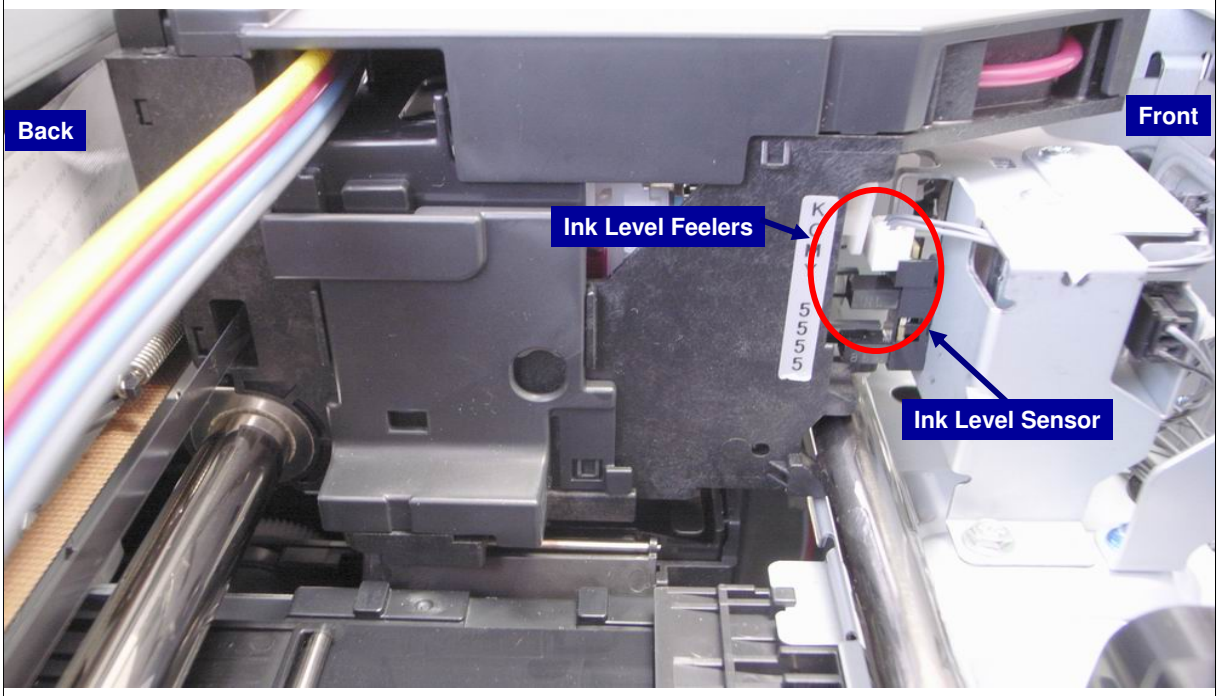
No additional notes.

Ink Level Feelers - 1/2

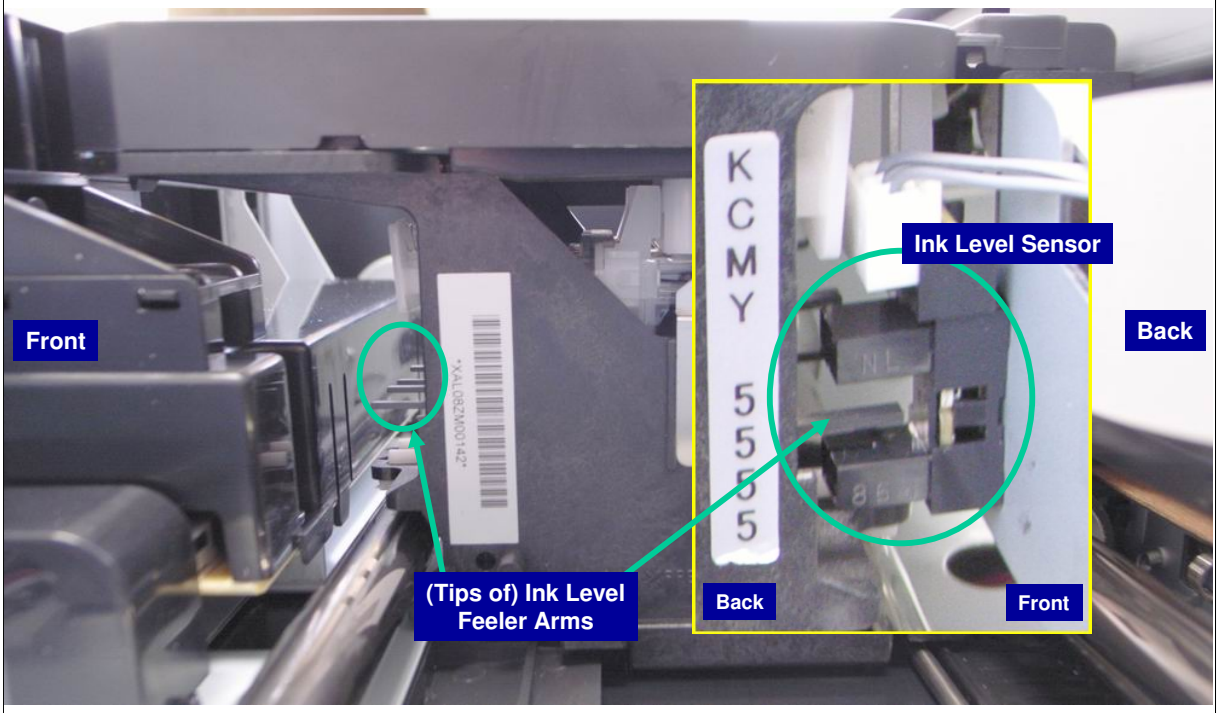


- Each print head tank feeler arm passes through ink level sensor as carriage passes.
- Near End indicated by software count of number of prints, head-cleaning actions, etc.
- Ink detection system (mechanical and electrical) detects empty cartridges.

Slide 59

No additional notes.

Ink Level Feelers - 2/2

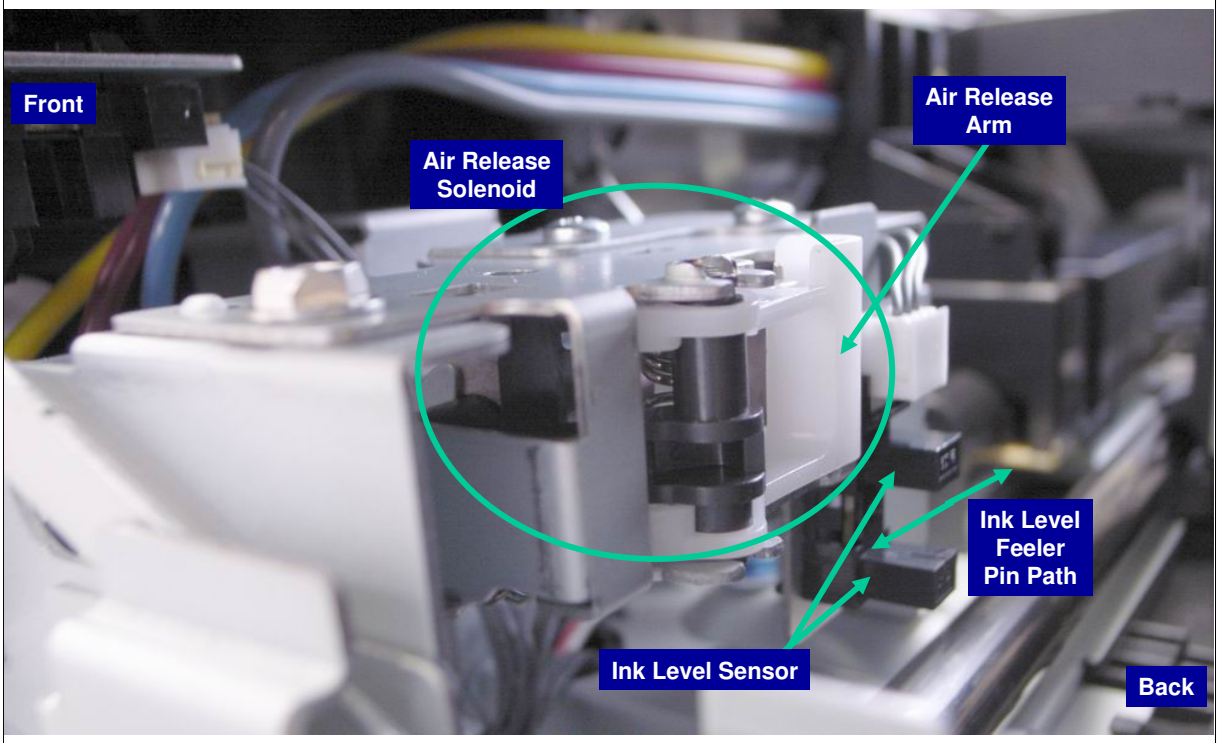


- When refilling tanks after air purge, preset amount of ink is first pumped into head tanks, and then Carriage Unit moves so Ink Level Sensor can detect arm positions.
- When arm positions indicate that ink has not risen in head tanks, empty condition is detected.

Slide 60

No additional notes.

Air Release Solenoid



- Air release arm pushes the air release valves (both channels of two-channel heads opened together) when performing Air Purge Filling.

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No additional notes.

Print Head Mechanical Feeler Position Calibration

- **Mechanical arms ("feelers" - attached to bellows on each print head - one arm per color) are calibrated at first filling for full position.**
- **Periodically, these feeler positions need to be recalibrated.**
- **At these times (Air Purge, Ink Filling):**
  - Ink and air are purged from head tanks
  - Air release valve is opened during filling until prescribed time
  - Air release valve closes
  - Ink pump motors run in reverse (momentarily) to create vacuum in head tank
  - Optimal arm position is set.
    - » J017/J019/J021/J023 - Note that this operation is performed two times each occurrence, not four times, as each pair of channels per dual-channel head (for the two heads) is done together.
    - » J018 - Note that this operation is performed four times each occurrence, not eight times, as each pair of tanks per dual-channel head (for the four heads) is done together.

Slide 62

No additional notes.

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J017/J019/J021/J018/J023
Service Training

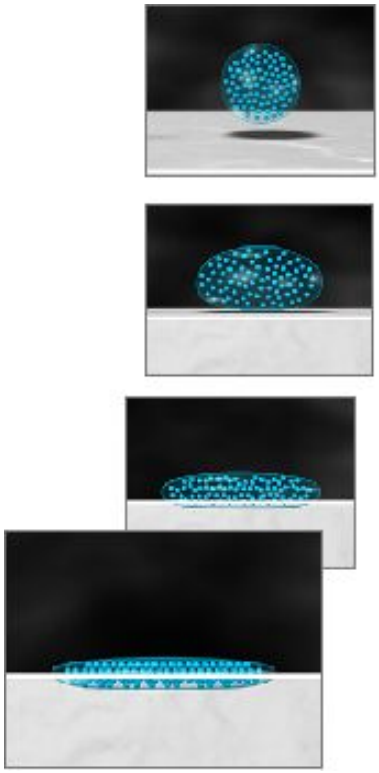
7) Ink Supply

Slide 63

No additional notes.

GelJet Technology

- **Advanced Gel technology provides high color image quality on plain paper at fast printing speeds.**
- **Viscous Ink**
  - Penetration
    - » Dries quickly
    - » Supports high speed printing
    - » No stain on back of print-out
    - » Enables high speed duplex printing
  - Viscosity
    - » Prevents blurs on plain paper
    - » Low penetration of paper, enabling clean duplex printing
  - Durable print-image
    - » Waterproof
    - » Strong fade resistance



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No additional notes.

Photo & Text Ink Density

Condition: Note that density of both images and text is reduced by around 20% when printing in duplex.

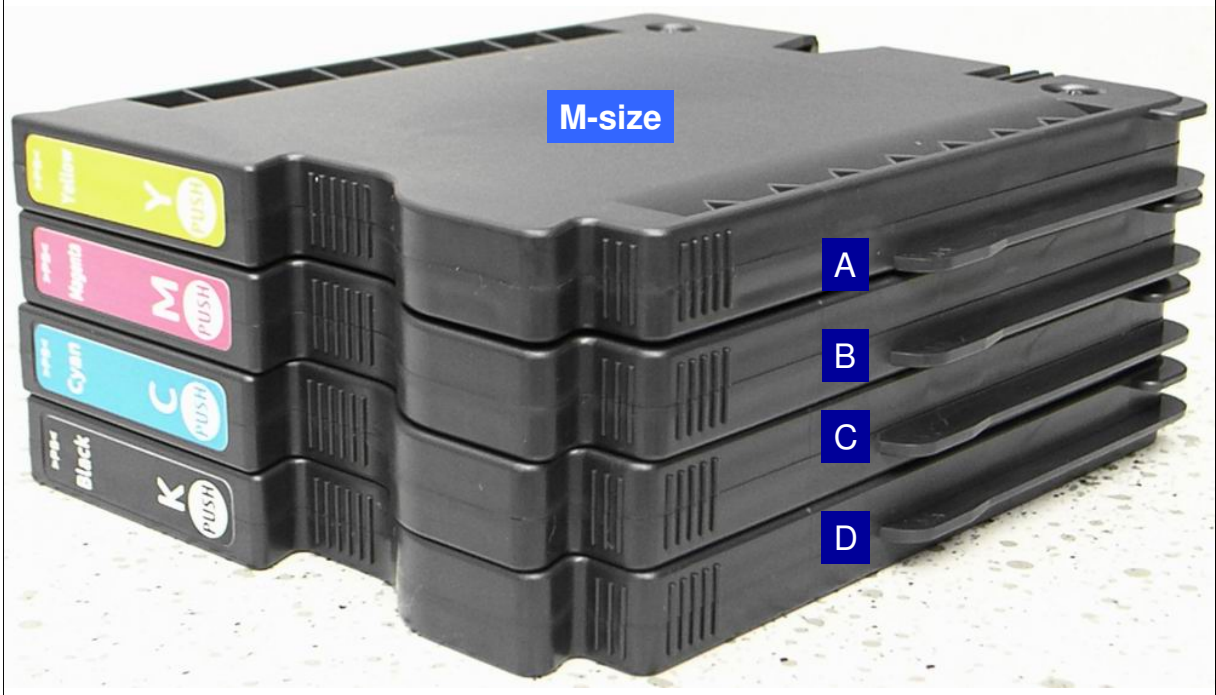
Reason: GelJet ink is more viscous than typical ink-jet ink, but still seeps into paper more than laser printers' toner, and ink density reduction results in better looking duplex prints.

Solution: If users would like higher density photos (density reduction is more noticeable with photos than with text), they will achieve better results printing single sided pages.

Slide 65

No additional notes.

Ink Cartridges - 1/3



❑ Notice how the four cartridges have different shapes (see A-D above) - ensuring that each color cartridge will only fit into the correct slot.

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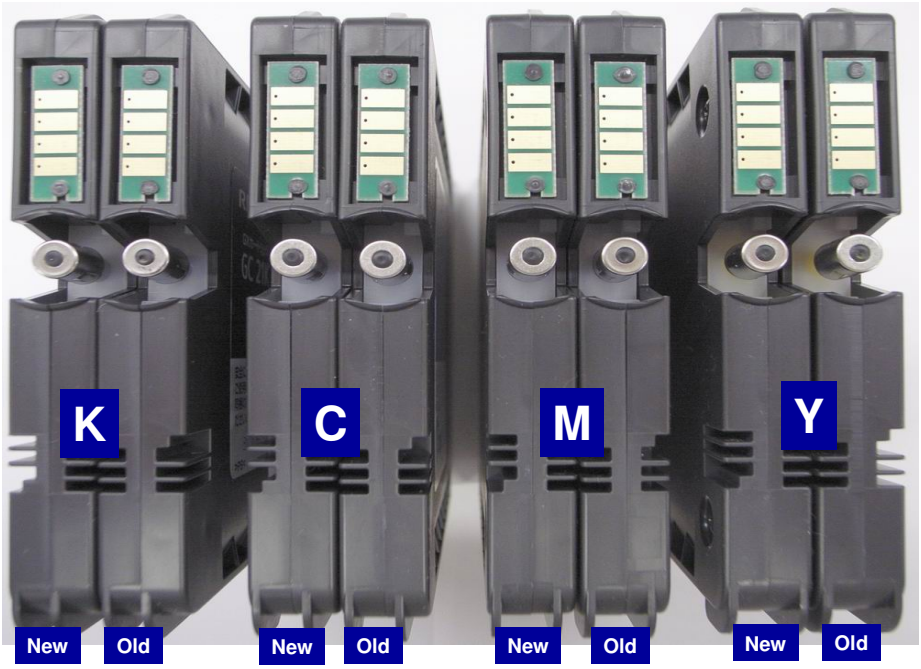
Machines come with four starter print cartridges for installation (note that these contain a limited quantity of ink compared to replacement cartridges).

Ink Cartridges - 2/3



Different mechanical keys at end of new type cartridges safeguard against using wrong generation cartridges in machine.

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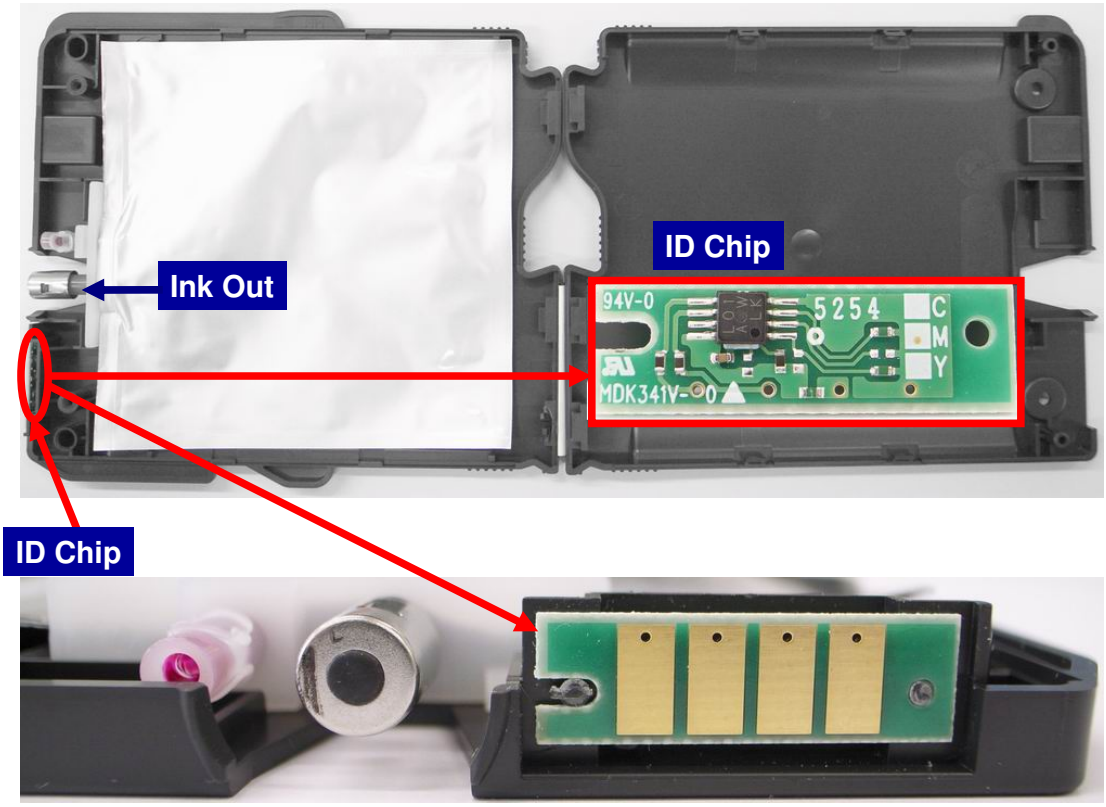
No additional notes.

Ink Cartridges - 3/3



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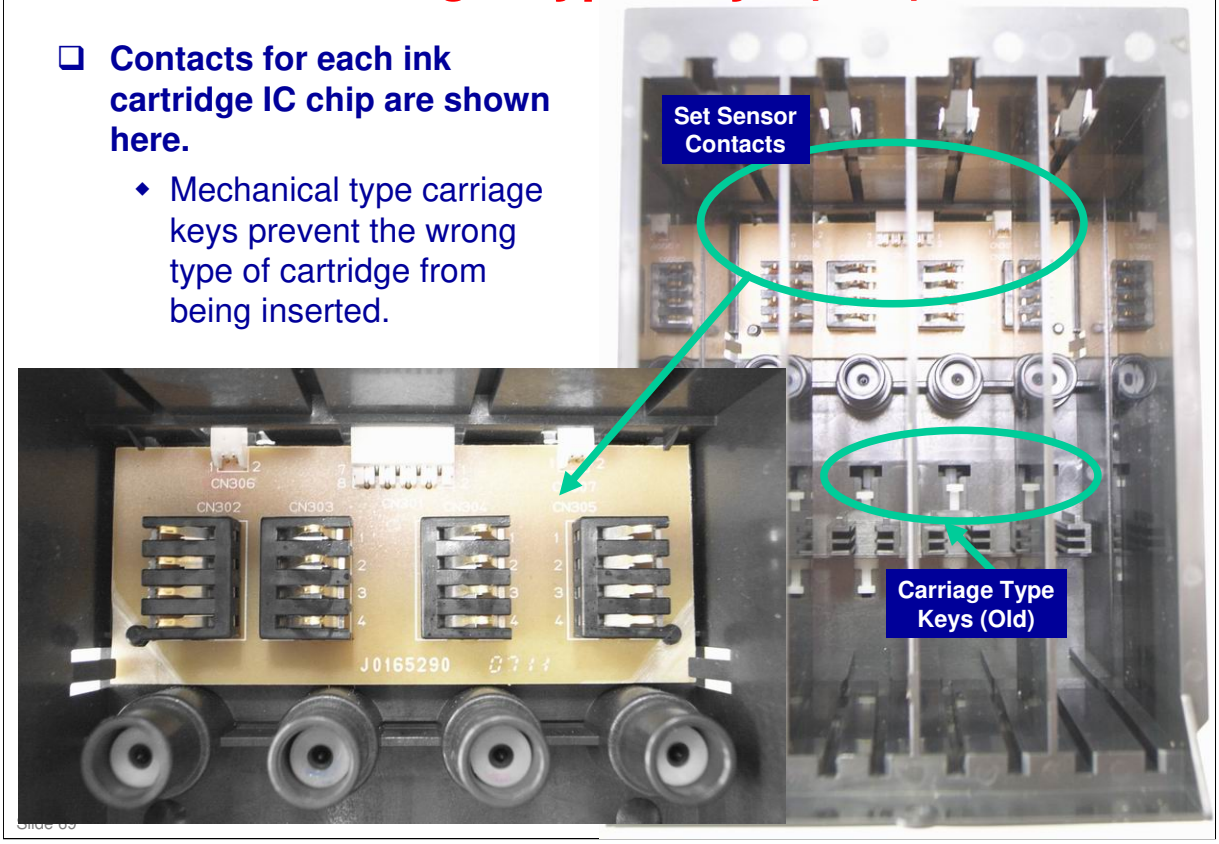
No additional notes.

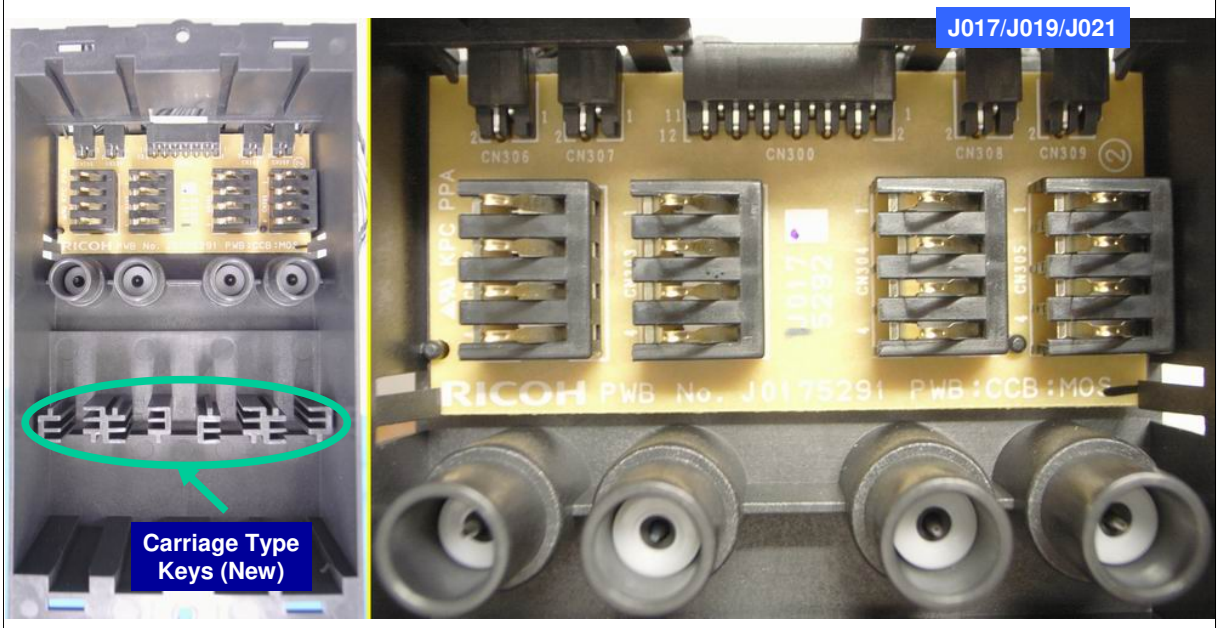
Ink Cartridge-Type Keys (Old) - 1/2

- **Contacts for each ink cartridge IC chip are shown here.**
  - Mechanical type carriage keys prevent the wrong type of cartridge from being inserted.



Note: These photos are from previous machine. Note that the mechanical keys are of a different shape from the new machine.

Ink Cartridge-Type Keys (New) - 2/2



- New shape Carriage-type Keys prevent older style cartridges from being used (and new type cartridges from being used in older machines).

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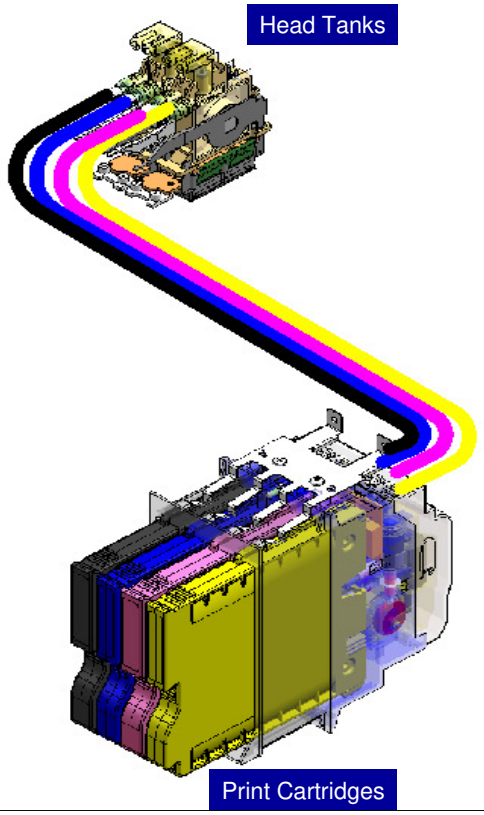
No additional notes.

Dual-Tank System

- **Dual ink tank system enables**
  - Changing print cartridges without changing heads
  - Print cartridge replacement without running the head(s) out of ink.



No additional notes.

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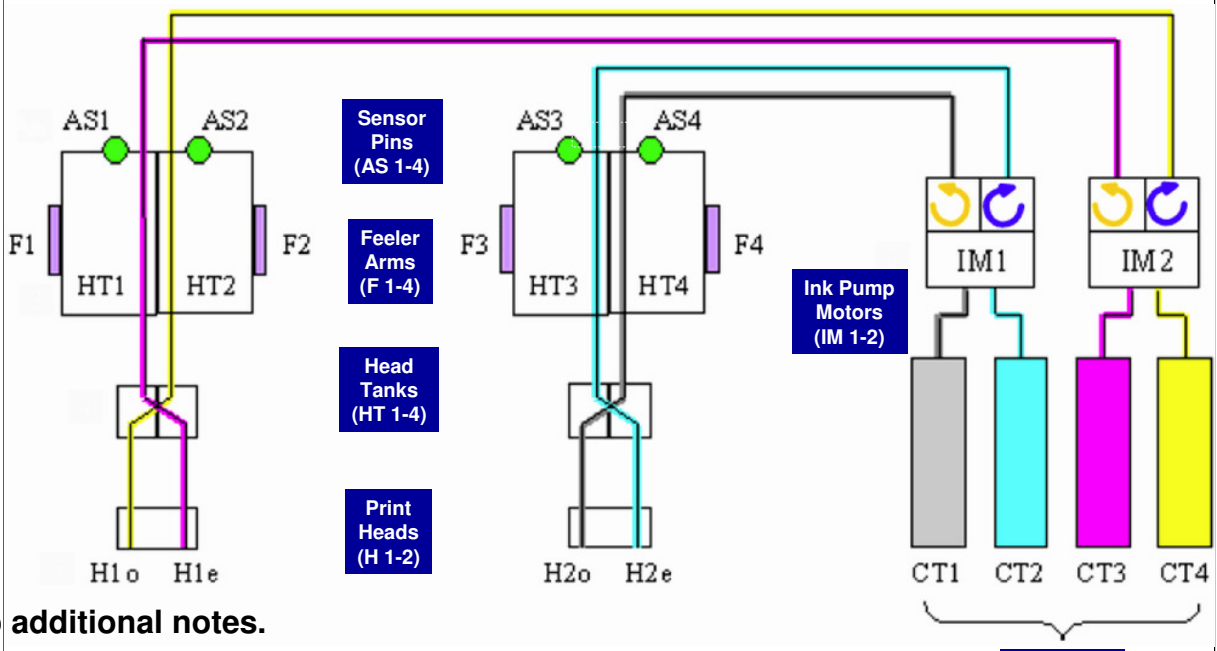
Ink Flow (Two Head - Old) - 1/4



No additional notes.

- **Two-motor, four-pump design.**
  - Used in two-head models prior to J017/J019/J021/J023

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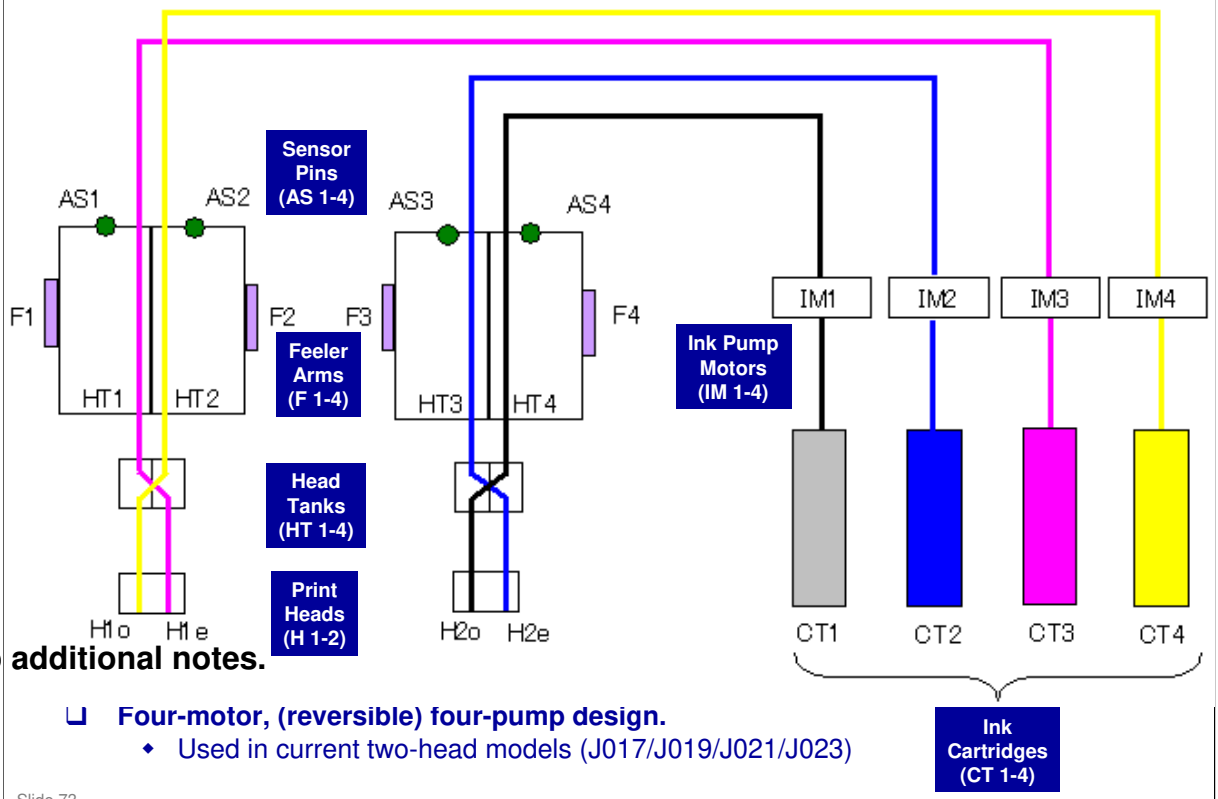
Ink Flow (Two Head - New) - 2/4



No additional notes.

- **Four-motor, (reversible) four-pump design.**
  - Used in current two-head models (J017/J019/J021/J023)

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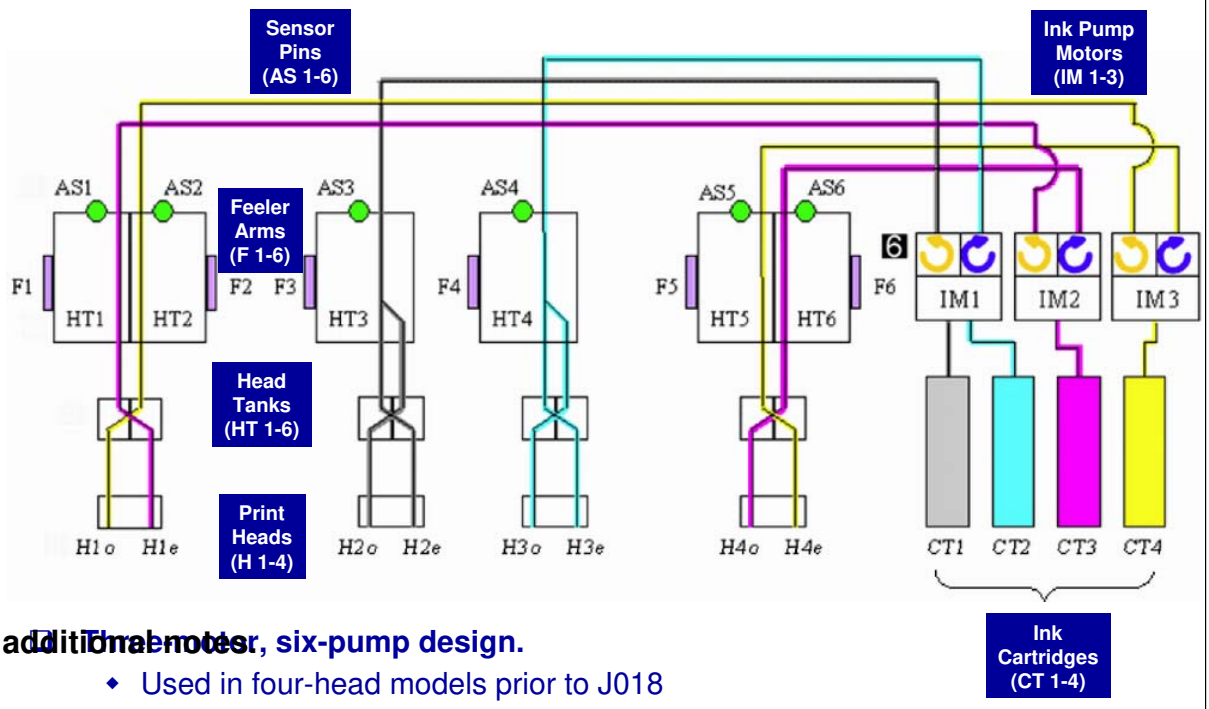
Ink Flow (Four Head - Old) - 3/4



No additional notes.

- Three-motor, six-pump design.
  - Used in four-head models prior to J018
- **Colors can be laid down in the same order in both directions, assisting quality color output.**

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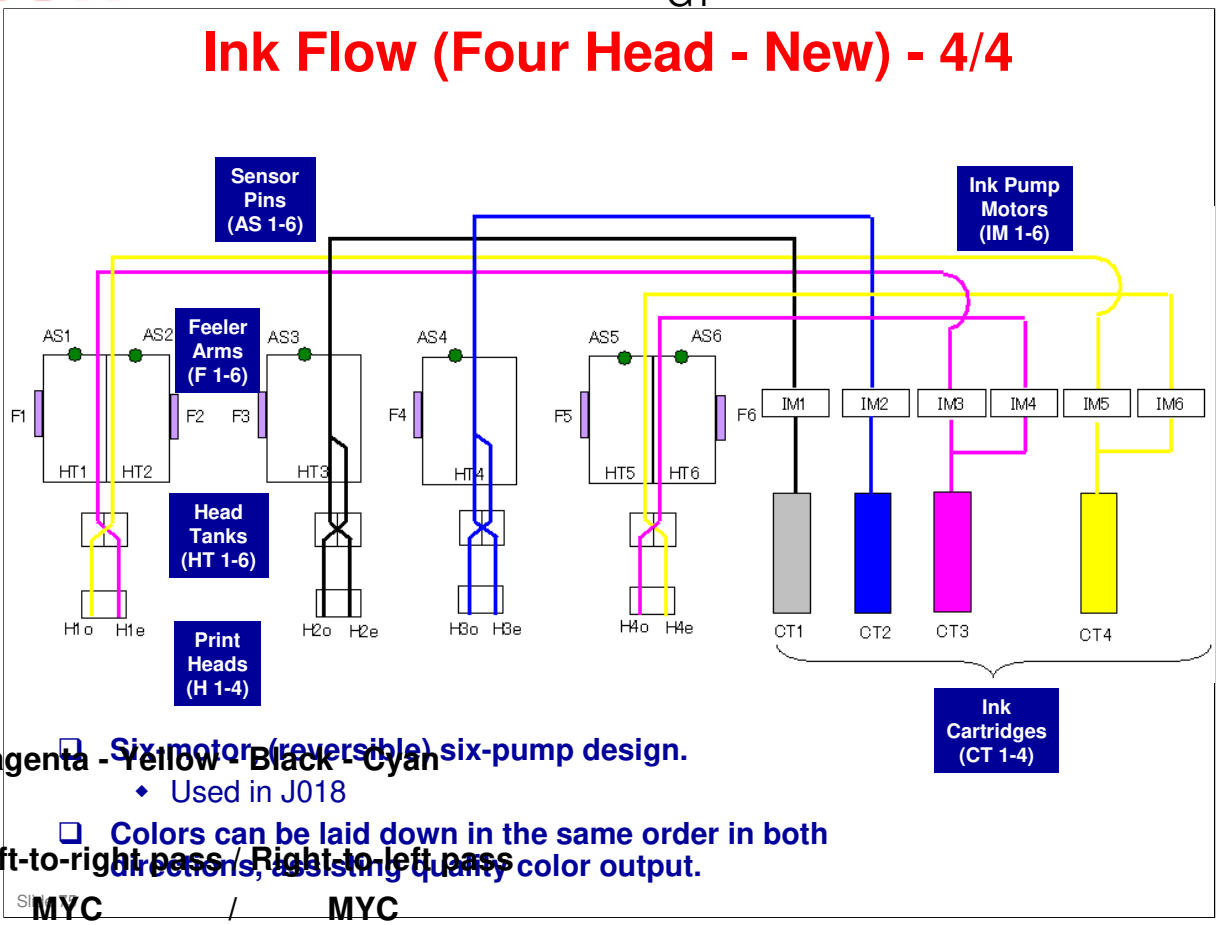
Ink Flow (Four Head - New) - 4/4



- Six-motor (reversible) six-pump design.
  - Used in J018
- Colors can be laid down in the same order in both directions, assisting quality color output.

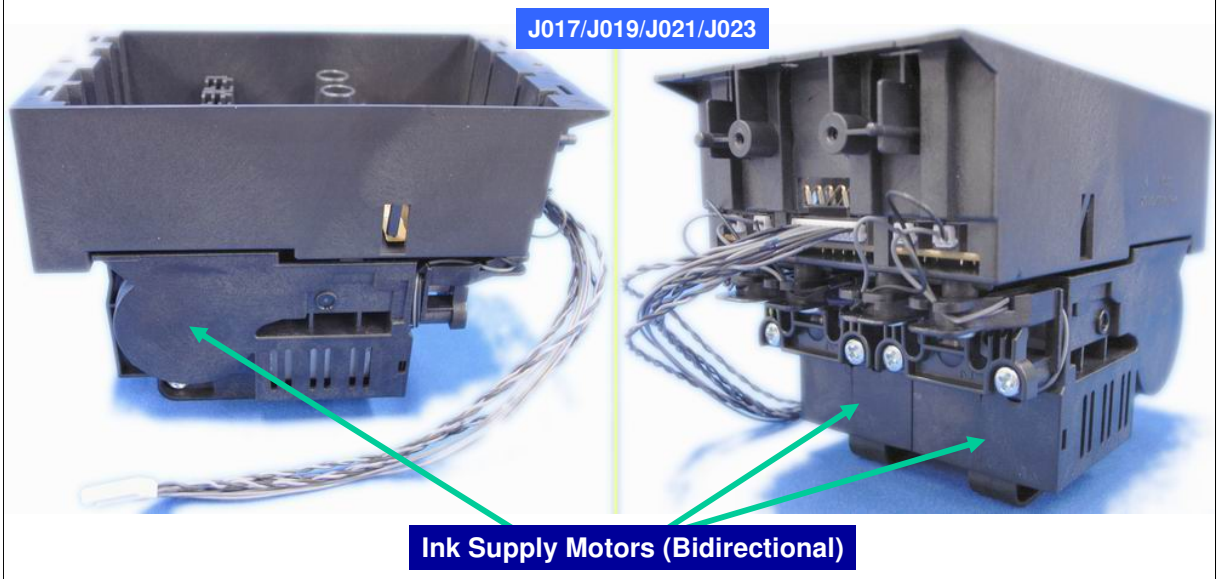
Magenta - Yellow - Black - Cyan

Left-to-right pass / Right-to-left pass

MYC	**/**	**MYC**	
MCY	**/**	**MCY**	
YCM	**/**	**YCM**	
YM	**/**	**YM**	**(Not possible to lay down ink as YMC in one pass.)**
CYM	**/**	**CYM**	
CM	**/**	**CM**	**(Not possible to lay down ink as CMY in one pass.)**

Colors can be laid down in the same order in both directions, assisting quality color output, but there are some color combinations that can not be laid down in one pass.

Ink Supply Unit - 1/2



- Notice ink supply motors attached to back of Ink Supply Unit.

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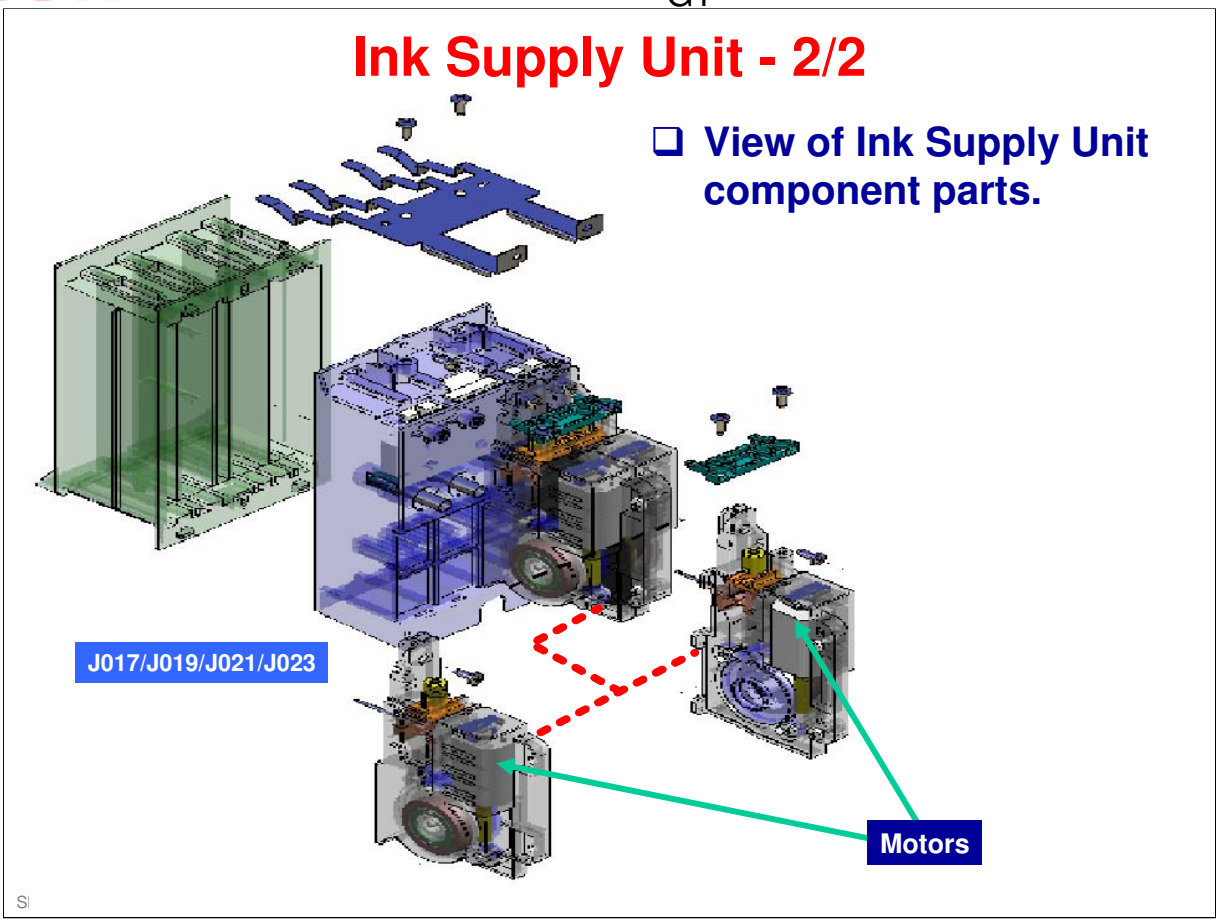
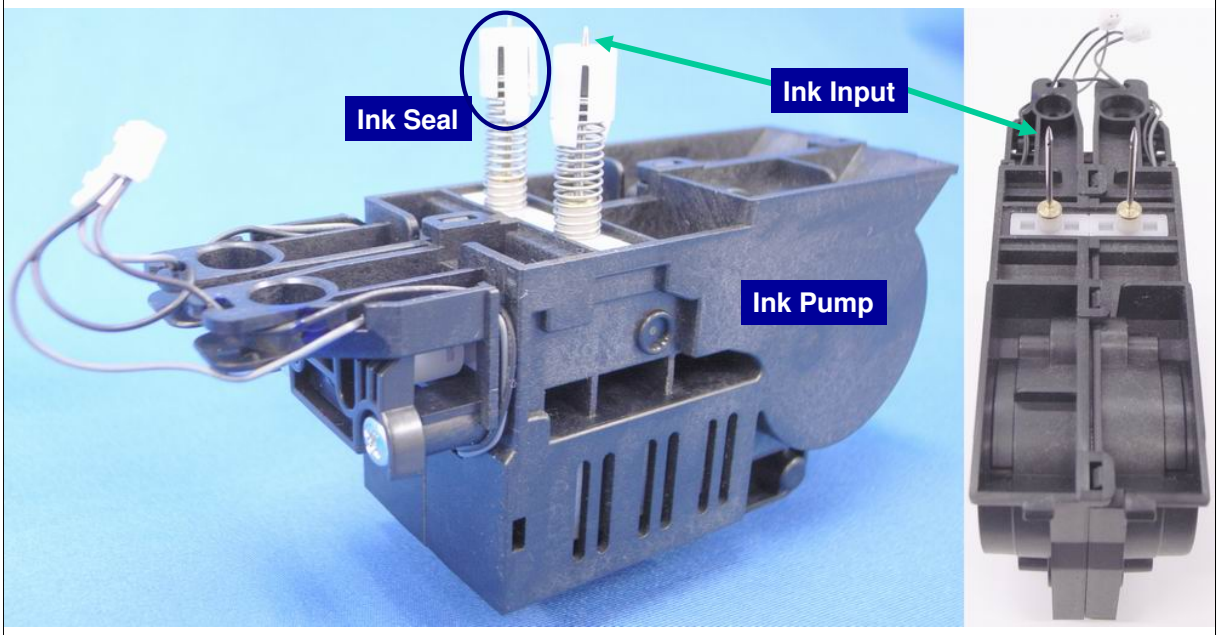
No additional notes.



No additional notes.

Ink Pumps - 1/4



❑ Ink pumps for new machine have been completely redesigned. (Rubber seal in cap on end of spring prevents ink from leaking down outside of needle.)

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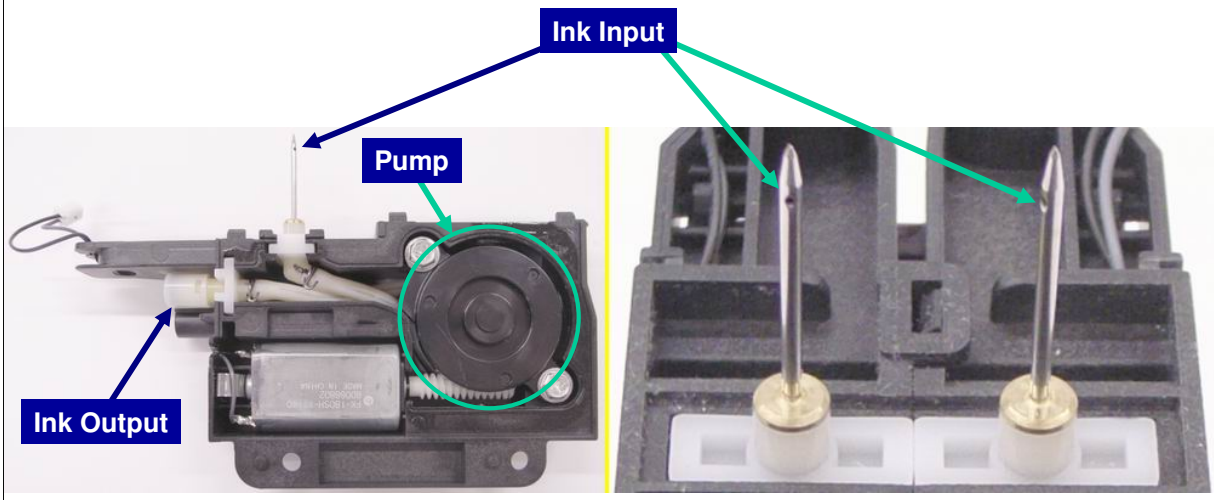
No additional notes.

Ink Pumps - 2/4



❑ New design (reversible) pumps have one motor per pump, with each color having its own motor & pump (example above).

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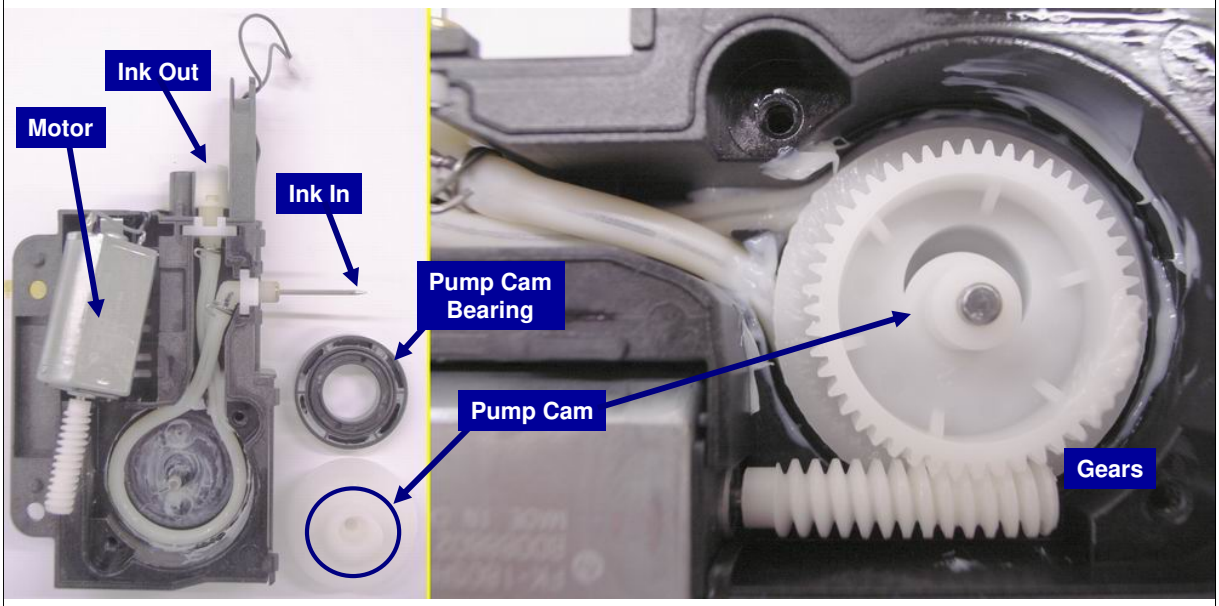
No additional notes.

Ink Pumps - 3/4



- Ink pumps for new machine have been completely redesigned. Each ink color now has its own motor (whereas one motor powered two pumps before).
- Ink is pumped as the off-center cam rotates - squeezing ink through the tube wrapped around the cam.
- New design is bidirectional, enabling head tank vacuum creation when run in reverse. (Previous design ejected ink from heads for vacuum creation.)

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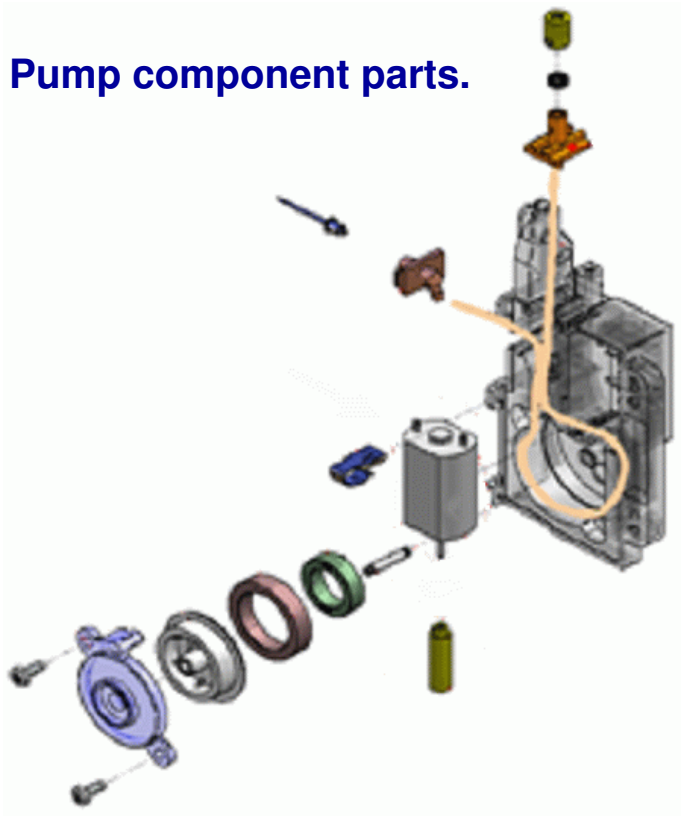
Note: Creating a vacuum in the head tanks by running the pumps in reverse not only saves ink, but also improves maintenance unit lifespan, as there is less ink build-up..

Ink Pumps - 4/4

❑ View of Ink Pump component parts.



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No additional notes.

Ink Filling

There are three basic ink supply operations.

- **Initial Filling**
  - Ink supply sequence performed every time printer is switched on
- **Normal Filling**
  - Machine monitors level of ink in each ink tank during printer operation and replenishes ink supply when ink level drops below prescribed level.
- **Air Purge Filling**
  - Under certain conditions, ink and air are purged from print head ink tank(s), which is/are then refilled.

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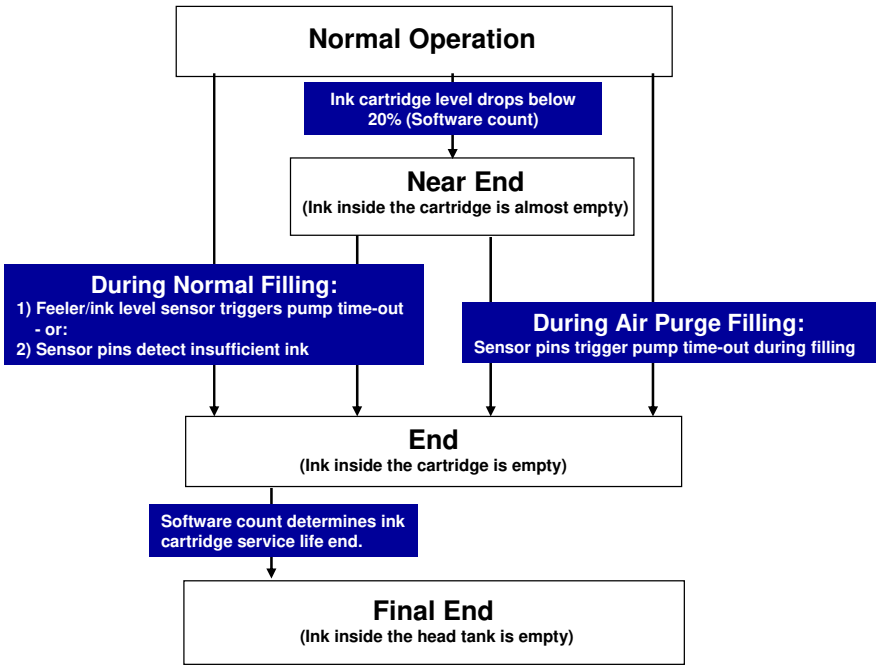
No additional notes.

Ink Near End & Ink End Detection Processes



- Ink Near End is triggered when ink cartridges run low
- Ink End occurs when ink cartridges run completely out of ink.

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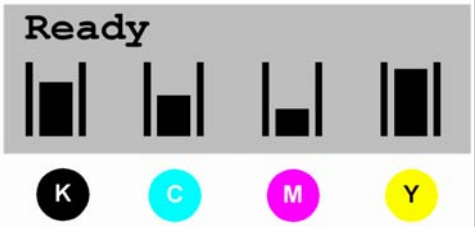
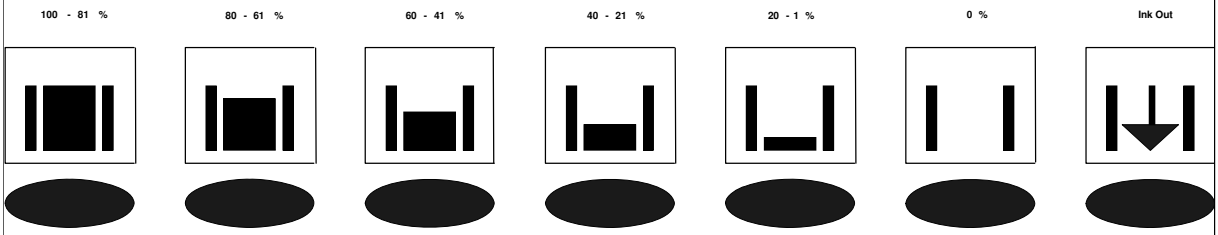
"Pump time-out" refers to the pump running, but the ink in the head tanks not filling up, so it is assumed that the ink cartridge is dry and the pump is turned off.

Operation Panel Ink Low/Ink End Indicator

- Printer shows 7-level display that keeps operator informed about status of ink levels in tanks. Example below for Black (K) shows progression in display from full on left to empty on right.





- At 100%, ink cartridge is between 81% and 100% full.
- 0% display is cartridge near-end alert. Printing is still possible until ink in print head is gone.
- Arrow display is ink end alert. Printer cannot be used until ink cartridge has been replaced.

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No additional notes.

Ink Supply SP Codes

- **Display Count: Ink Cartridge Replacements**
  - 7300 CART CHG CNT:K K (Black)
  - 7301 CART CHG CNT:C C (Cyan)
  - 7302 CART CHG CNT:M M (Magenta)
  - 7303 CART CHG CNT:Y Y (Yellow)
- **Use the above SP codes to display number of times (each) carriage has been replaced.**

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No additional notes.

RICOH

J017/J019/J021/J018/J023
Service Training

8) Print Head Maintenance

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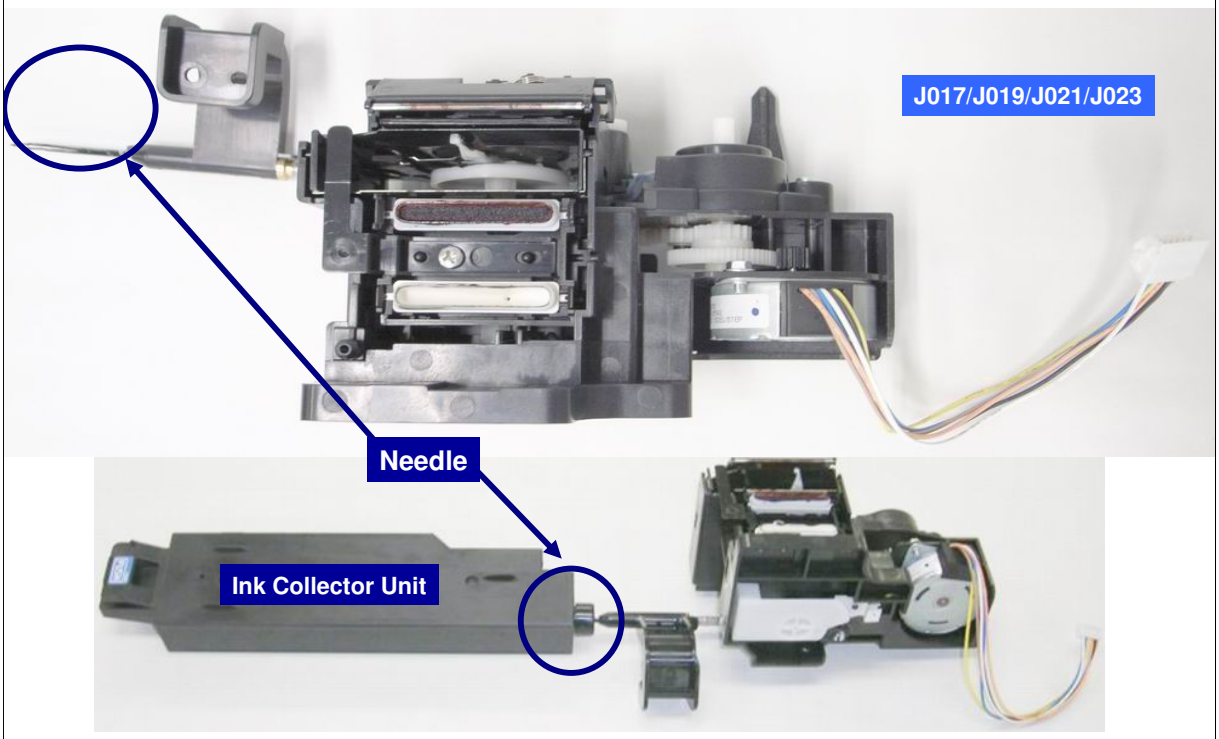
No additional notes.

Maintenance Unit - 1/6



- Needle plugs into (sealed) Ink Collector Unit (newly designed since last model).

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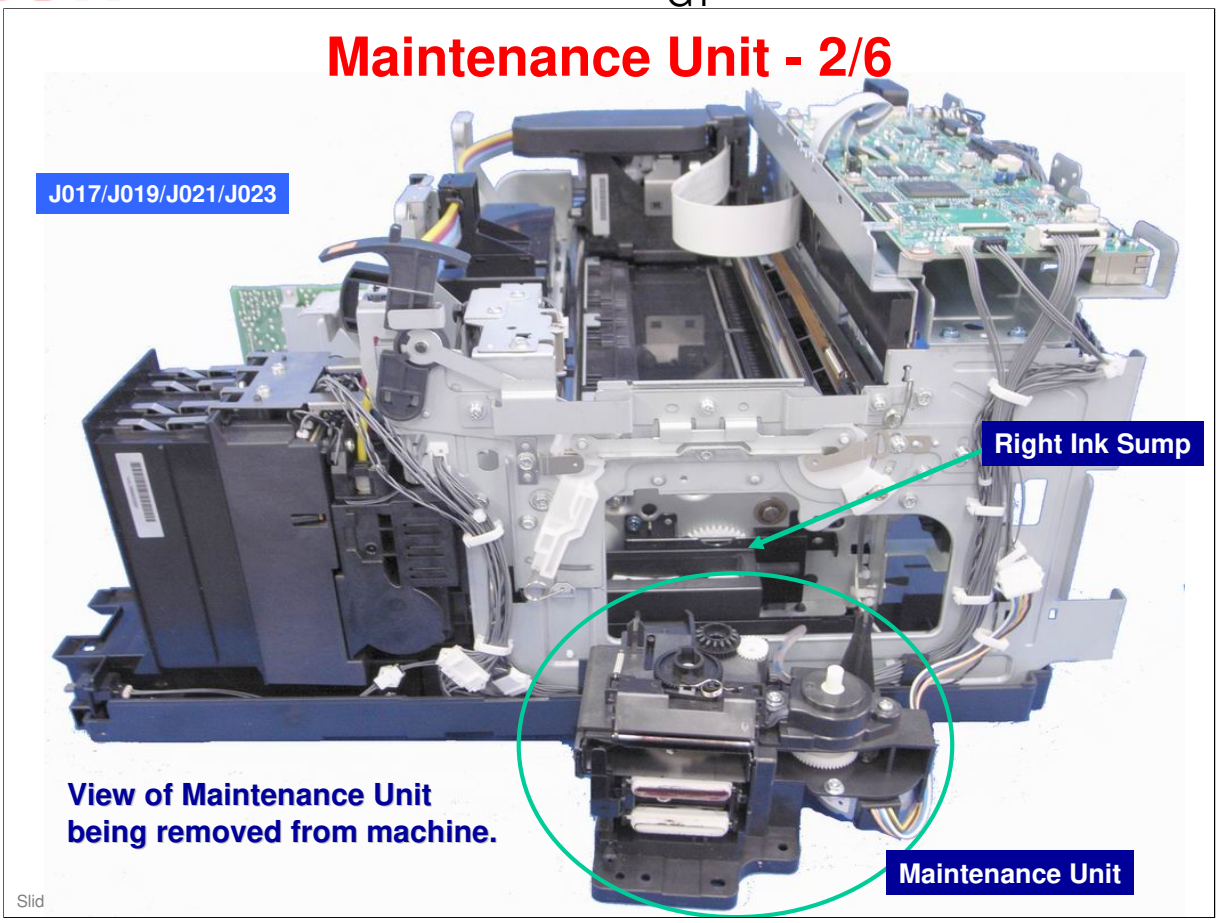
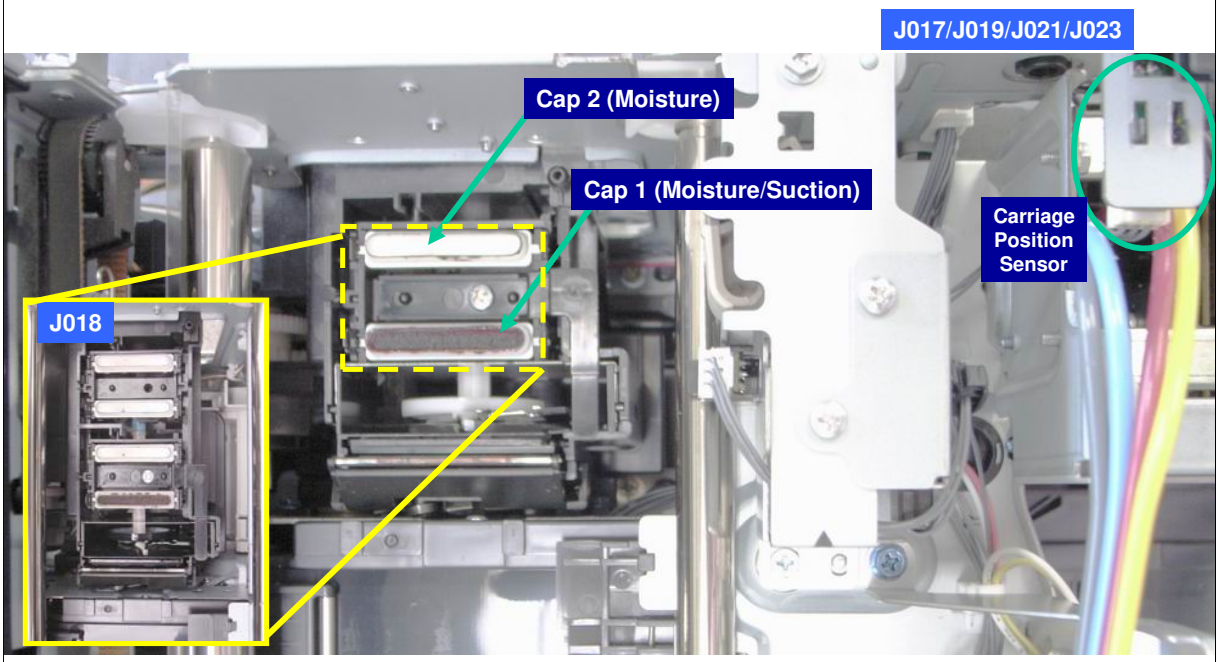
Maintenance unit above is from the J017/J019/J021/J023 models – the J018 model is slightly different.



Maintenance unit above is from the J017/J019 model – the J018 model is slightly different.

Maintenance Unit - 3/6



- Maintenance unit keeps surface of print heads from drying out when they are not being used, and cleans print heads with suction during print head cleaning.
- Caps 1 and 2 cover print heads when carriage is at home position on right side of printer.
- J018 has 4 moisture caps
- New machine version has larger opening (among other differences).

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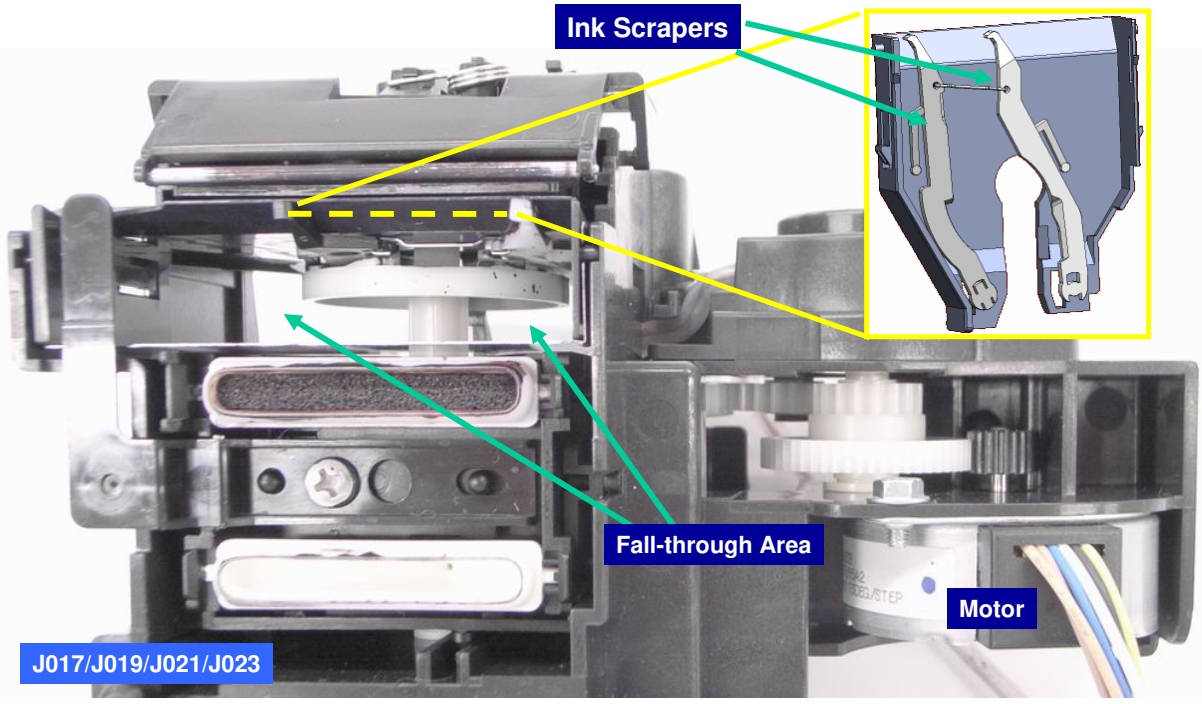
More on the Maintenance Unit

- The print heads are cleaned automatically at prescribed intervals.
- Look in the Service Manual for more details on motor operation.

Maintenance unit above is from the J017/J019 model – the J018 model is slightly different.

Maintenance Unit - 4/6



- Maintenance Unit scrapers scrape excess ink off sides of exit area (directly over the Right Ink Sump). Over time, dried ink can build up in this area.
- Dual-scrapers move back and forth together, wiping ink off.

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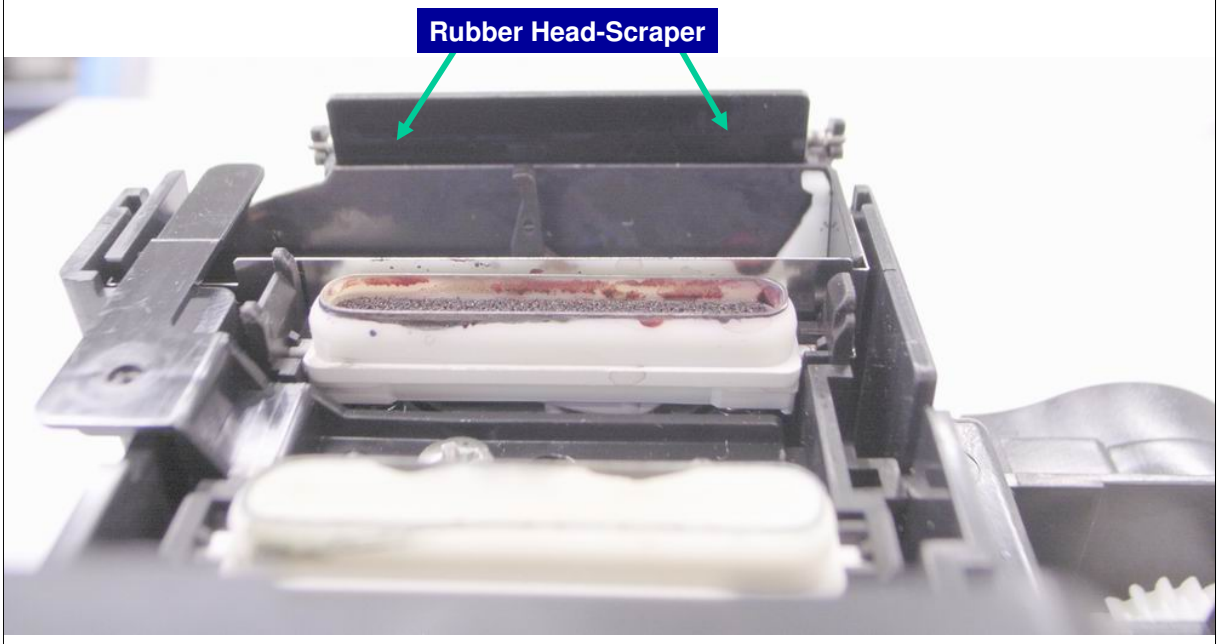
Maintenance unit above is from the J017/J019/J021/J023 models – the J018 model is slightly different.

Maintenance Unit - 5/6

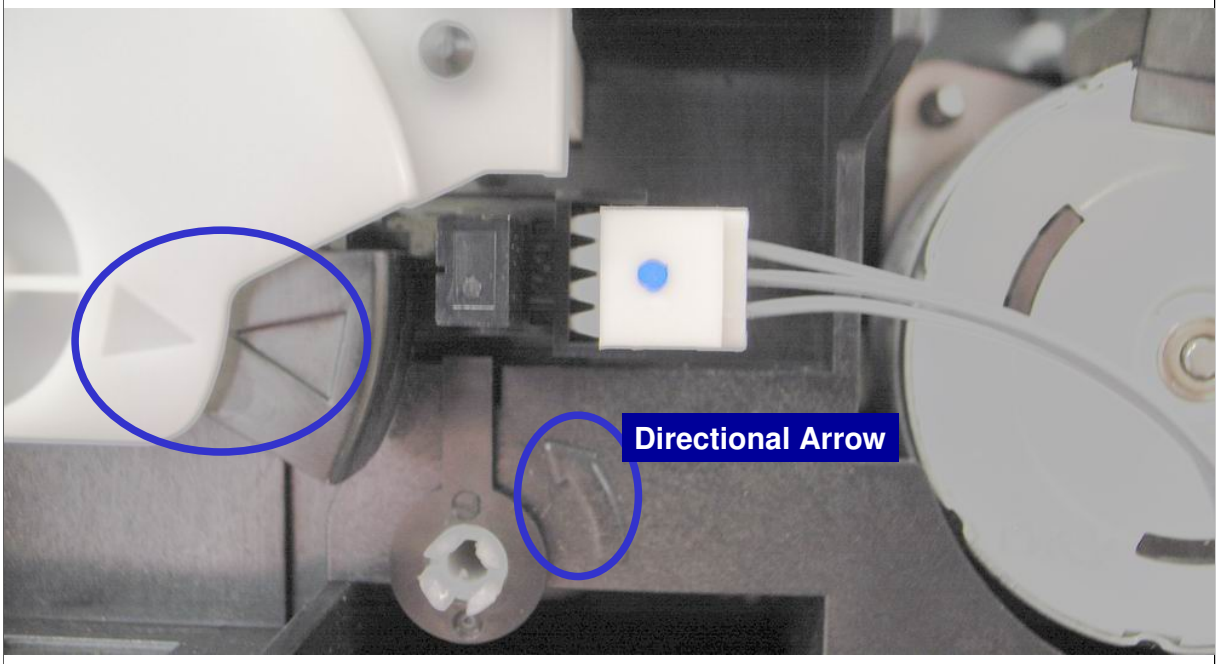


- **Rubber Head Scraper of Maintenance Unit periodically rises up and scrapes excess ink off print heads.**

Slide 91

Maintenance unit above is from the J017/J019 models – the J018 model is slightly different.

Maintenance Unit - 6/6



- **Before moving carriage unit, align triangles as shown in above image to ensure Maintenance Unit parts are all retracted. (Note directional arrow indicating correct direction (counter-clockwise) to turn screwdriver.)**
  - Never turn this in the wrong (clockwise) direction.

Slide 92

No additional notes.

Ink Collector Unit - 1/2

- Used ink is pumped into (sealed) Ink Collector Unit.
- Usage Monitor IC Chip monitors calculated amount of used ink in Ink Collector Unit.
- Note: Ink Collector Unit shown above is for J017/J019/J021/J023 machines. J018 machine has the same type and shape of unit, but larger.

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Note that the previous model Ink Collector Unit had a large opening for ink to fall into. New model is sealed – ink is pumped in.

Ink Collector Unit - 2/2

- **Display Software Count: Near End for Ink Collector Unit**
  - 7200 WASTE CNT:R:NEAR Ink Collector Unit
    - » Use this SP to display current software count for flushing tank(s).
    - » Note: Near-end threshold is 413 ml.

- **Display Count: Tank Full: Ink Collector Unit**
  - 7201 WASTE CNT:R:FULL Ink Collector Unit
    - » Use this SP to display current count for number of times status of Ink Collector unit has changed from near-full to full.
    - » Note: Full threshold is 3 ml.

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No additional notes.

Right Ink Sump - 1/3

- **The Right Ink Sump is new to this machine.**
- **Normally, this ink sump does not need to be removed, and should last for lifetime of machine.**
  - Over long periods of inactivity, thickened ink is ejected into this sump as part of head-cleaning process.

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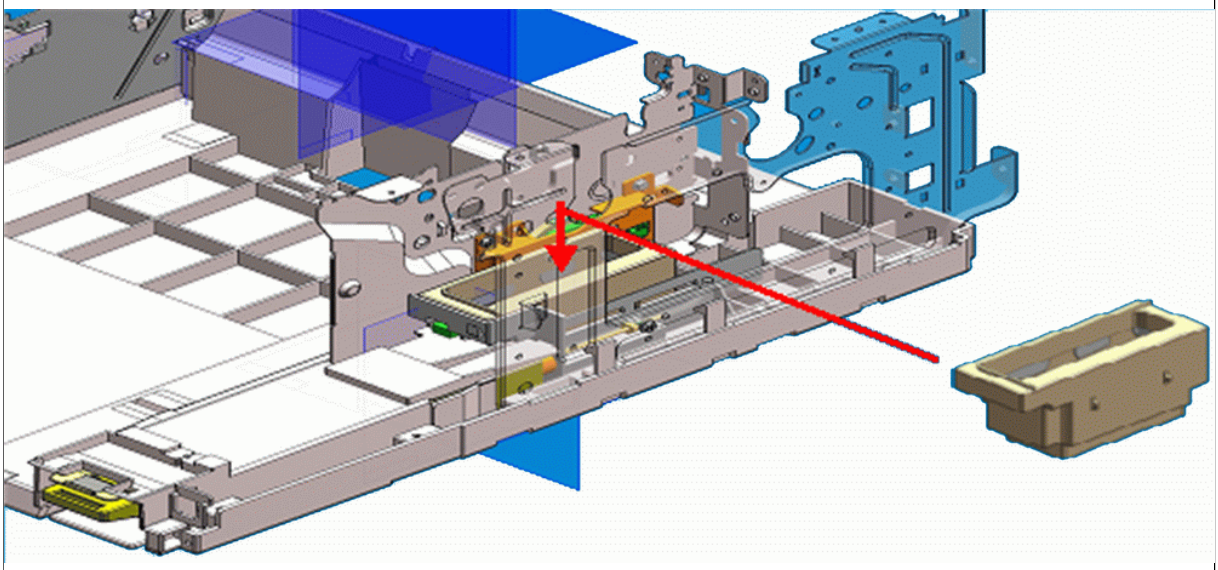
No additional notes.

Right Ink Sump - 2/3



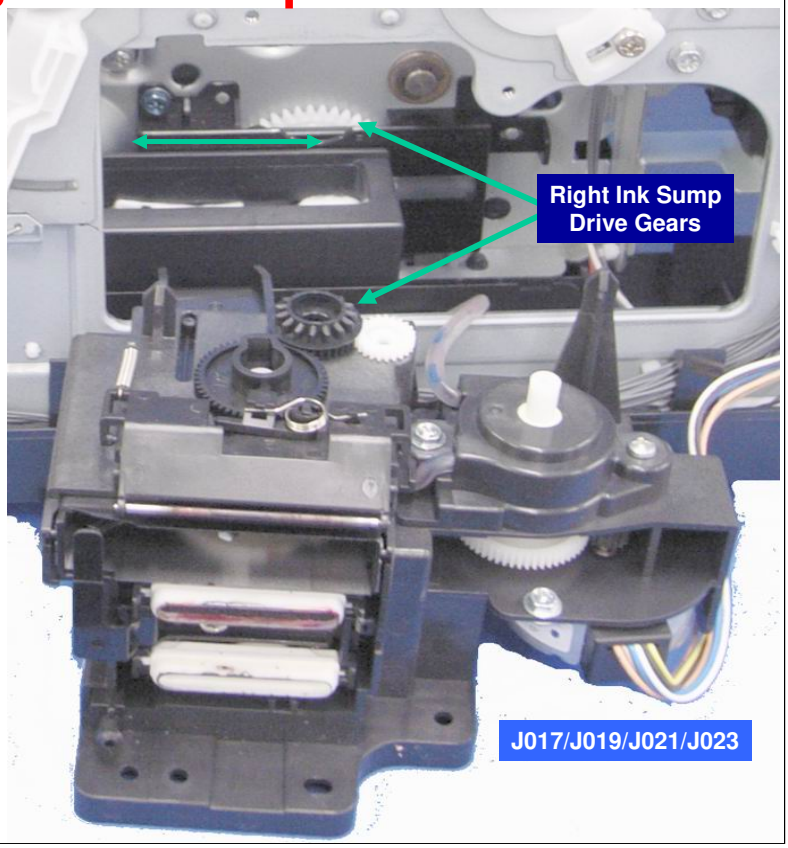
- **The Right Ink Sump moves back and forth - enabling even distribution of ink within the sump.**
  - Left Ink Sump is stationary

Slide 96

No additional notes.

Right Ink Sump - 3/3

- Gear driven by Maintenance Unit motor drives gear which converts rotational movement to side-to-side motion.



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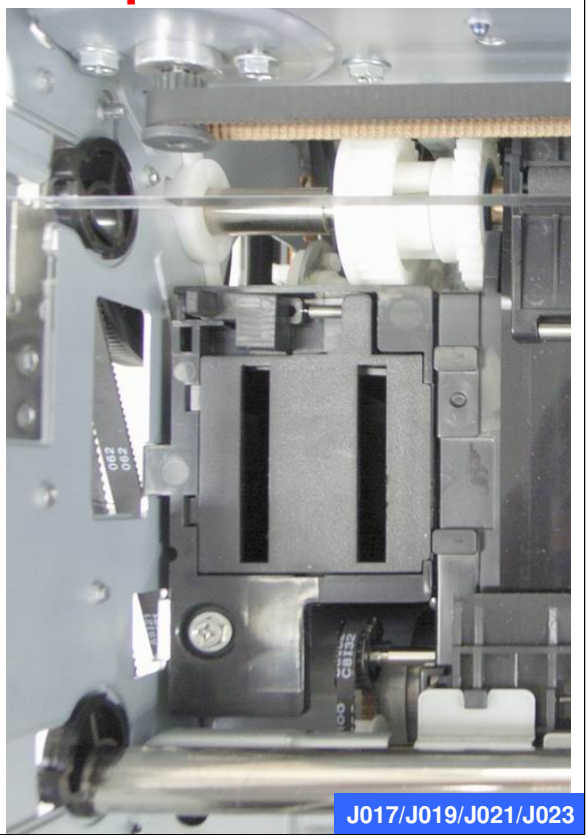
No additional notes.

Left Ink Sump

- **SP Code for Left Ink Sump**
  - Display Count: Tank Full: Ink Collector Unit
  - SP-7202 WASTE CNT:L:FULL Left Ink Collector Unit
- **During printing, it is sometimes necessary to eject ink into this sump.**



J017/J019/J021/J023

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"Sump" was referred to as "collector unit" in the previous machine.

Manual Maintenance

❑ User Maintenance

- Cleaning
- Flushing
  - » The term "flushing" for this machine has the same meaning as "drive cleaning" in previous machines.
- See user guide for details

Slide 99

No additional notes.

Automatic maintenance

- **Before Printing (whenever heads are uncapped)**
  - Small amount of ink ejected
    - » Ensuring smooth surface of ink in nozzle holes
- **After Idle Time**
  - Small amount of ink ejected (after 10 hours)
    - » Ensuring smooth surface of ink in nozzle holes
  - Head cleaning (after one week)
  - Ink purge（after one month）
- **While Printing (periodically)**
  - Small amount of ink ejected
    - » Ensuring smooth surface of ink in nozzle holes
- **After Printing (and before capping)**
  - Small amount of ink ejected
    - » Ensuring smooth surface of ink in nozzle holes
- **Air Purge Filling (when air is detected)**
  - See following slide.

Slide 100

No additional notes.

Air Purge Filling

- **What is Air Purge Filling?**
  - In order to eject the ink properly from the print head, it is necessary to maintain negative pressure (with respect to the surrounding air) inside the head tank. If negative pressure is lost, the ink can leak out from the nozzle and adversely affect the image quality. If this occurs, the negative pressure must be re-established. This process is known as “Air Purge Filling”. The full process from purging to reestablishing negative pressure is now know by two terms, depending on how negative pressure is reestablished.
- **Maintenance Unit Air Purge Filling**
  - Resets the pressure inside the tank by releasing the air release valve
  - Refills the head tanks
  - Closes the air release valve
  - Memorizes the full head-tank position by calibrating the feeler arm
  - Reestablishes negative pressure by vacuuming a small amount of ink from the heads with the maintenance unit
- **Ink Supply Unit Air Purge Filling** ⇨
  - •Newly added from J017/J018/J019/J021/J023
  - •Does not consume ink!
  - Resets the pressure inside the tank by releasing the air release valve
  - Refills the head tanks
  - Closes the air release valve
  - Memorizes the full head-tank position by calibrating the feeler arm(s)
  - Reestablishes negative pressure by running the ink supply unit's ink pumps in reverse

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No additional notes.

Maintenance Mode Sequence

Maintenance Modes	Maintenance Mode Sequence					
	Initial filling	Flushing	Ink purge	Air Purge Filling	Cleaning	Normal filling
Start	Draw Ink	Piezo element activation with suction				
Sequence ↕	Air bubble suction Negative pressure restoration		Ink purge	Negative pressure restoration		
End	Ink filling, Ink suction, Wiping , Ink ejection					Ink filling
	Maintenance Priority: High ← → Low					
Power ON	O		O	O		O
Standby		O	O	O	O	O
Before Print Start			O	O	O	
Between Sheets			O	O	O	O
Before Capping			O	O	O	O

❑ The above chart details ink supply and air purging sequences.

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No additional notes.

Cleaning Count SP Codes

- **Display User Cleaning Count**
  - 7100 USER CL CNT:H1 Print Head 1
  - 7101 USER CL CNT:H2 Print Head 2
  - 7102 USER CL CNT:H3 Print Head 3 (For J018 only)
  - 7103 USER CL CNT:H4 Print Head 4 (For J018 only)
  - Use this SP to display total number of print head cleanings executed from printer driver and from printer operation panel.
- **Display User Flushing Count**
  - 7104 USER RF CNT:H1 Print Head 1
  - 7105 USER RF CNT:H2 Print Head 2
  - 7106 USER RF CNT:H3 Print Head 3 (For J018 only)
  - 7107 USER RF CNT:H4 Print Head 4 (For J018 only)
  - Use this SP to display total number of print head flushings executed from printer driver and from printer operation panel.

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No additional notes.

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J017/J019/J021/J023/J018
Service Training

9) Carriage Drive

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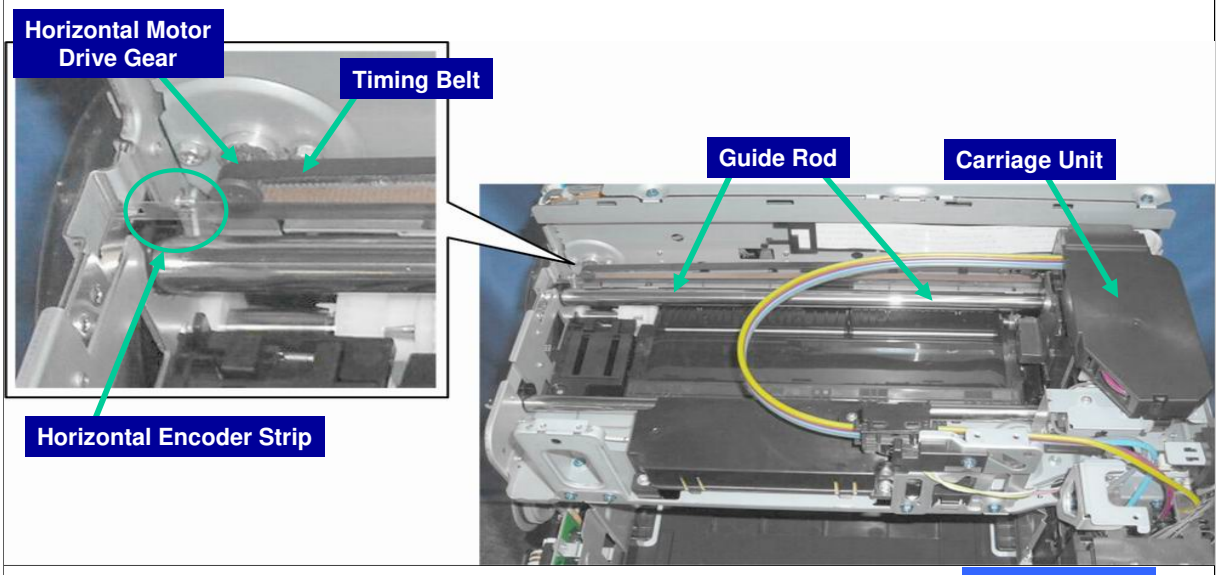
No additional notes.

Carriage Drive - 1/3



J017/J019/J021

- Horizontal Motor drives the Timing Belt, which is connected to the Carriage Unit.
- Horizontal Encoder Strip (parallel with Timing Belt) is read by a sensor, which keeps track of Carriage Unit position.

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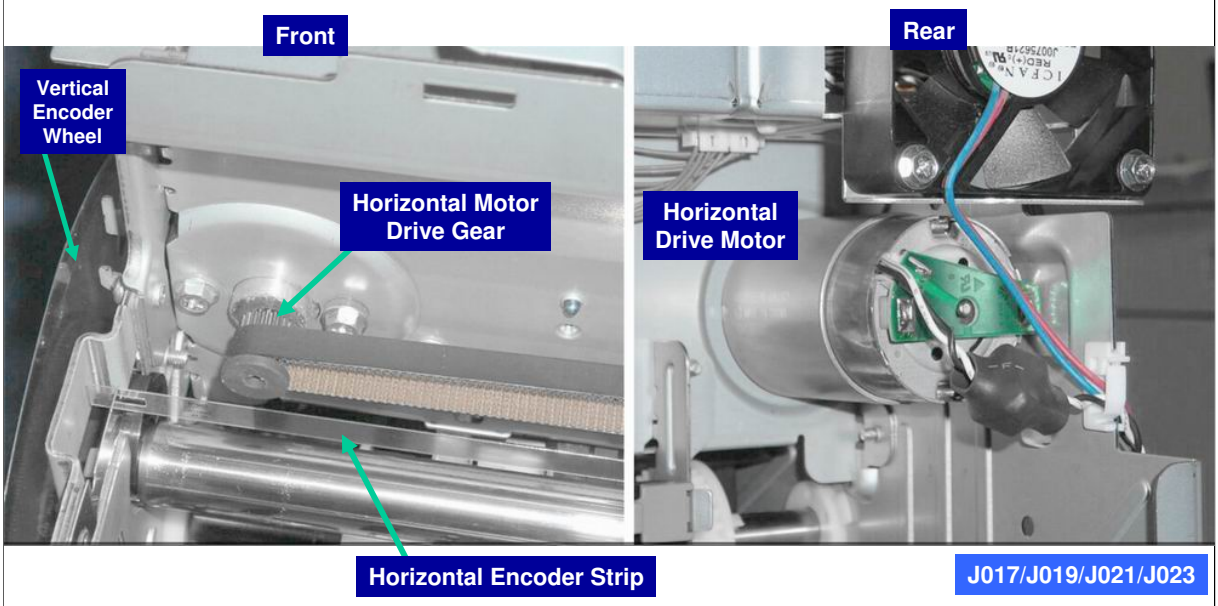
- The J023 is basically the same as shown above. However, the width is greater.

Carriage Drive - 2/3



- Periodically clean both Horizontal Encoder Strip and Vertical Encoder Wheel with soft cloth.

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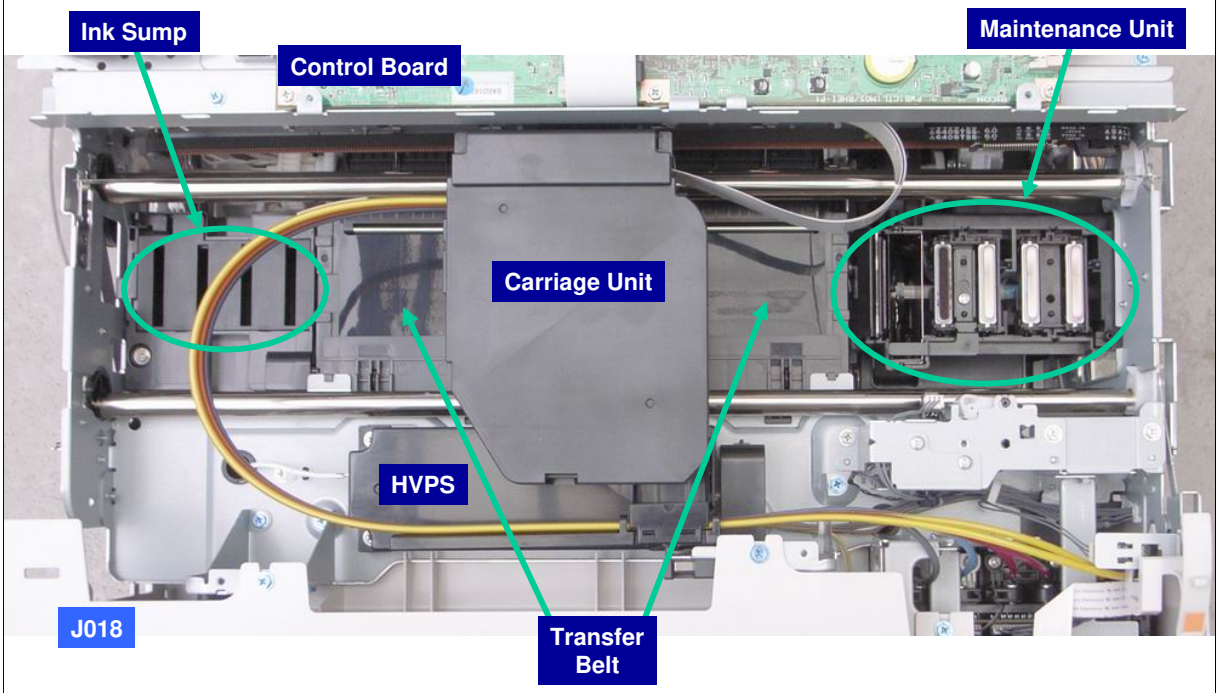
The Vertical Encoder Wheel is also known as the "Sub-scan Encoder Wheel".

Carriage Drive - 3/3



- Notice that J018 machine is wider to accommodate the extra width of the Carriage Unit, Maintenance Unit, and Left Ink Sump.

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HVPS – High Voltage Power Supply

Registration Sensors - 1/3

- 1st registration sensor detects leading edge of every sheet, and also detects width of paper when carriage and sensor pass horizontally over vertical edge of paper as it feeds.

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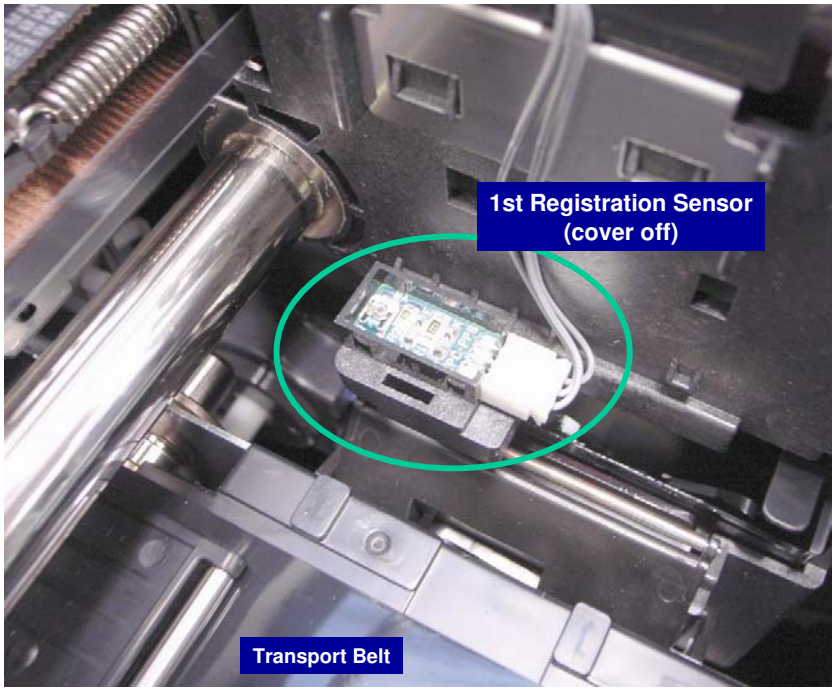
No additional notes.

Registration Sensors - 2/3

- Cover over 1st Registration Sensor is easily removed.



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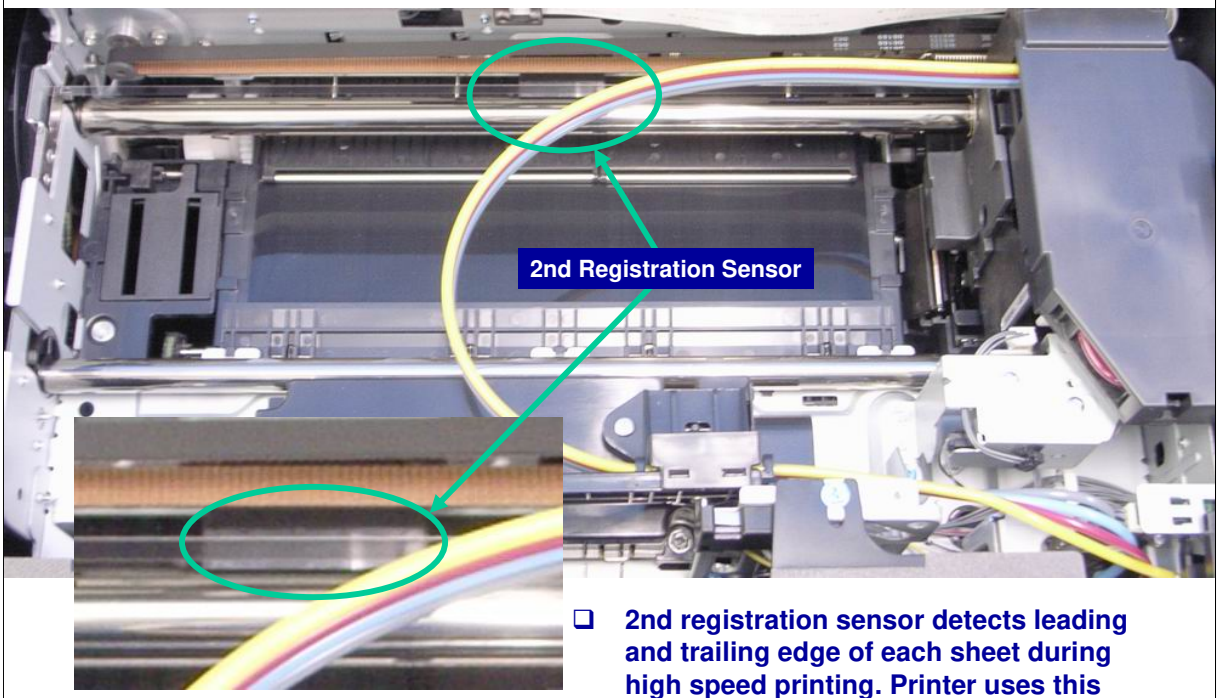
No additional notes.

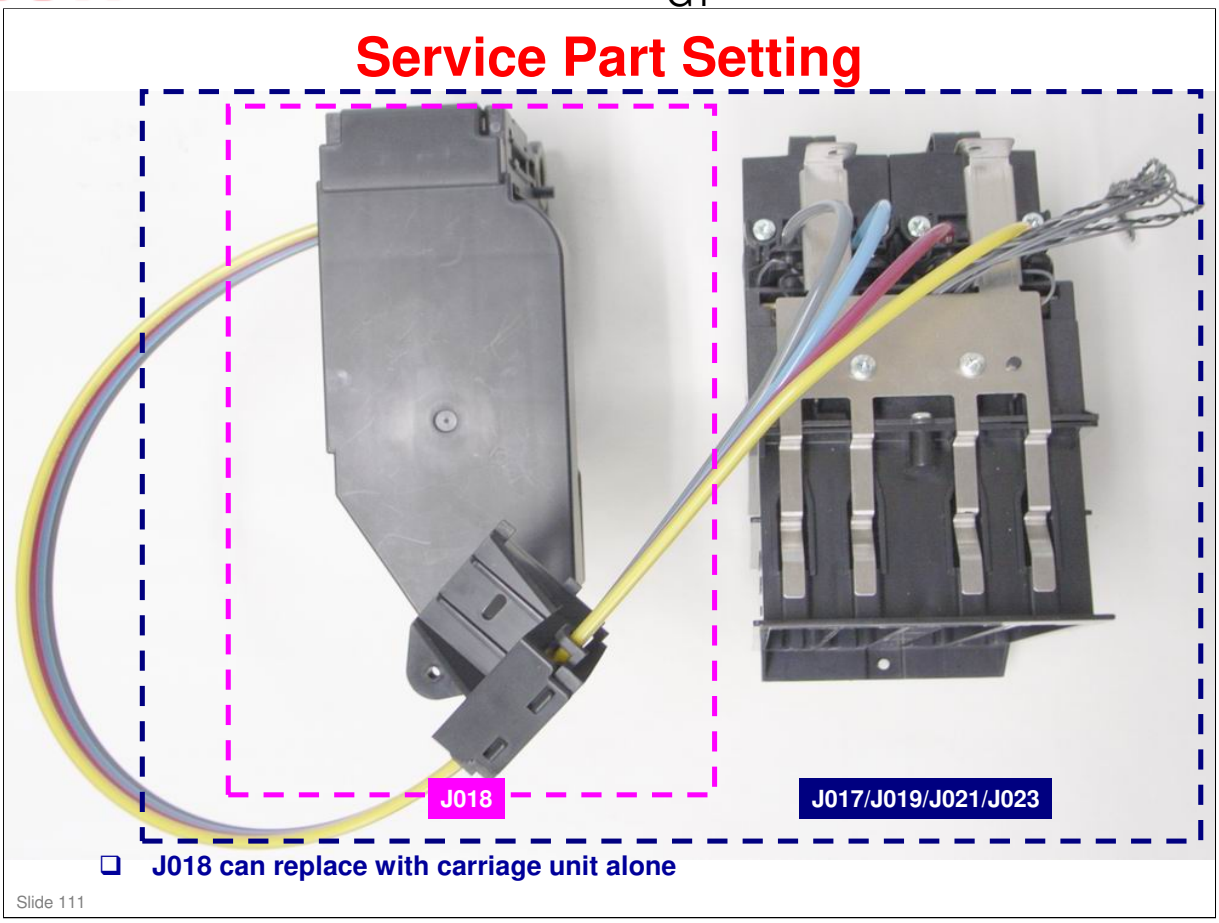
Registration Sensors - 3/3



- 2nd registration sensor detects leading and trailing edge of each sheet during high speed printing. Printer uses this information for print control timing.

Slide 110

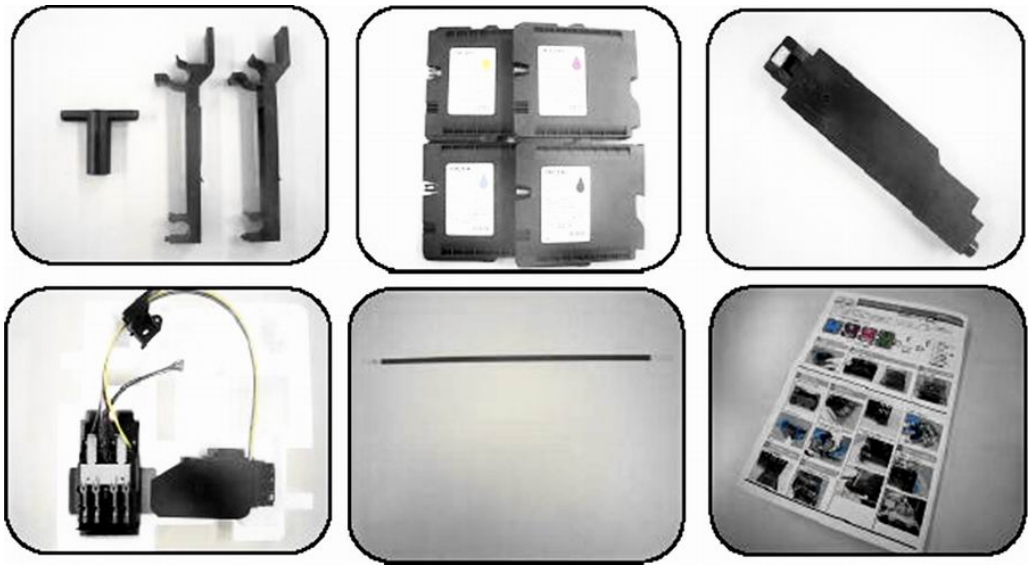
No additional notes.



No additional notes.

Carriage Unit Replacement Kit - 1/2

J017/J019/J021/J023



- **The above items are included in the Carriage Replacement Kit for the J017/J019/J021/J023.**
  - For full details, see the service manual.
  - The service part number is different for the kit for the J023. (Ink tube is longer)

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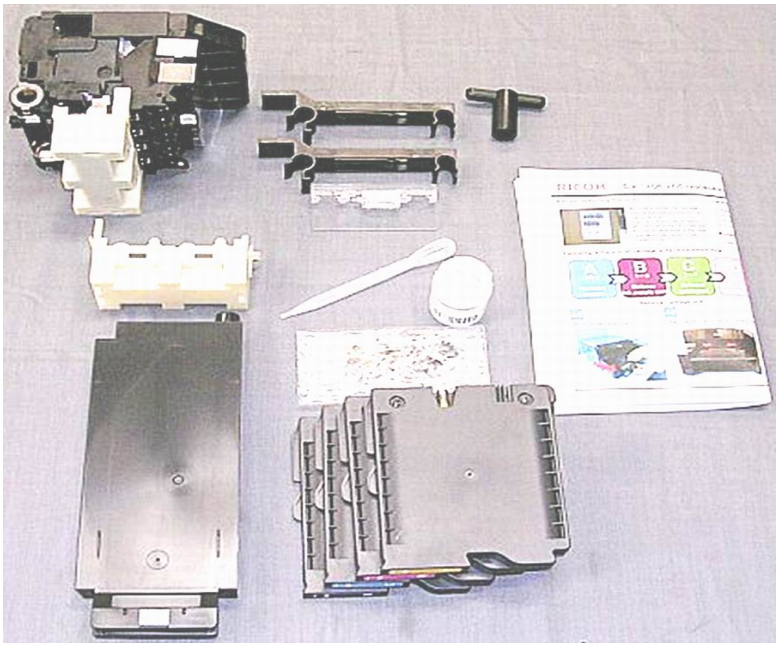
Note: Whenever performing a Carriage Unit Replacement operation, be sure to set the paper thickness selection switch to the envelope (thick) position. This helps protect the paper transport belt from being damaged.

Carriage Unit Replacement Kit - 2/2

J018



- **The above items are included in the Carriage Replacement Kit for the J018.**
  - For full details, see the service manual.

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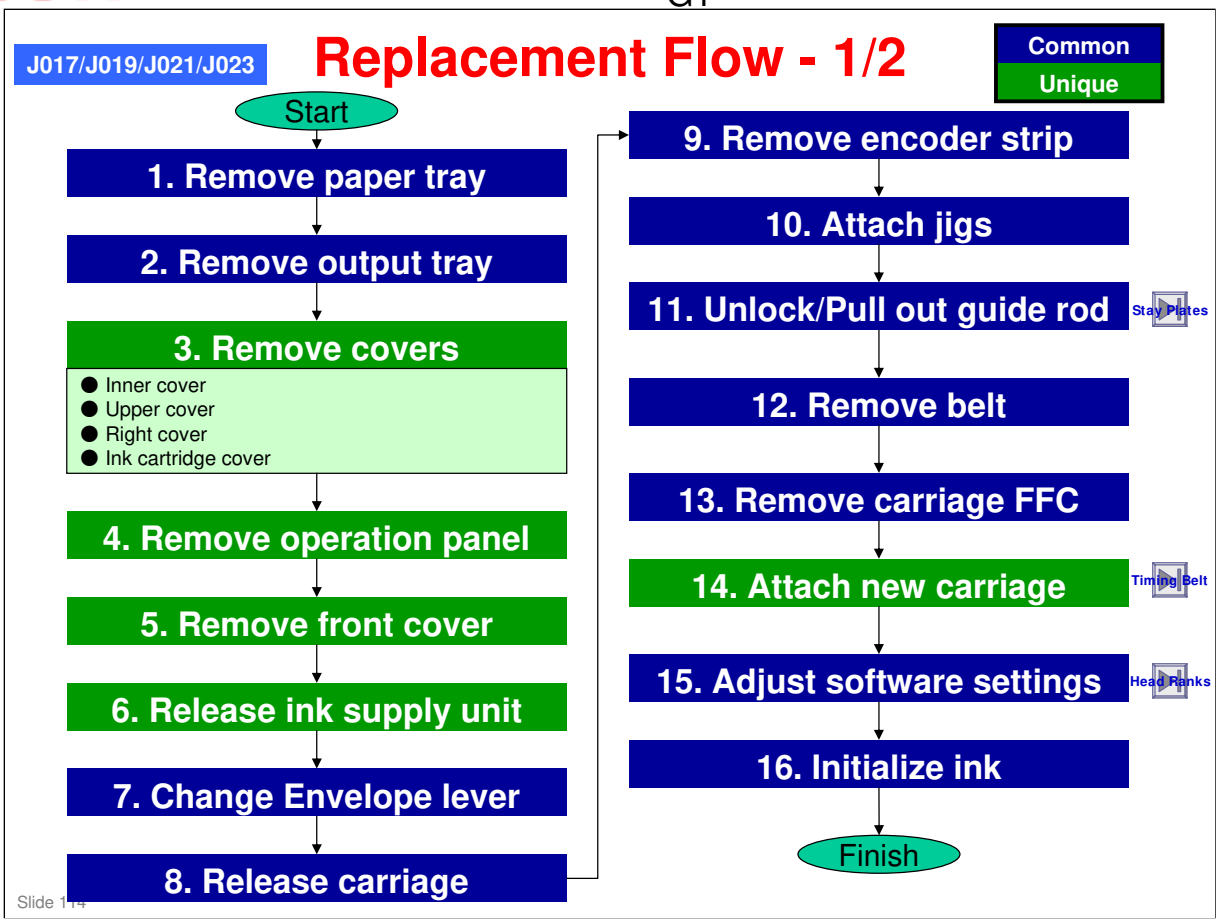
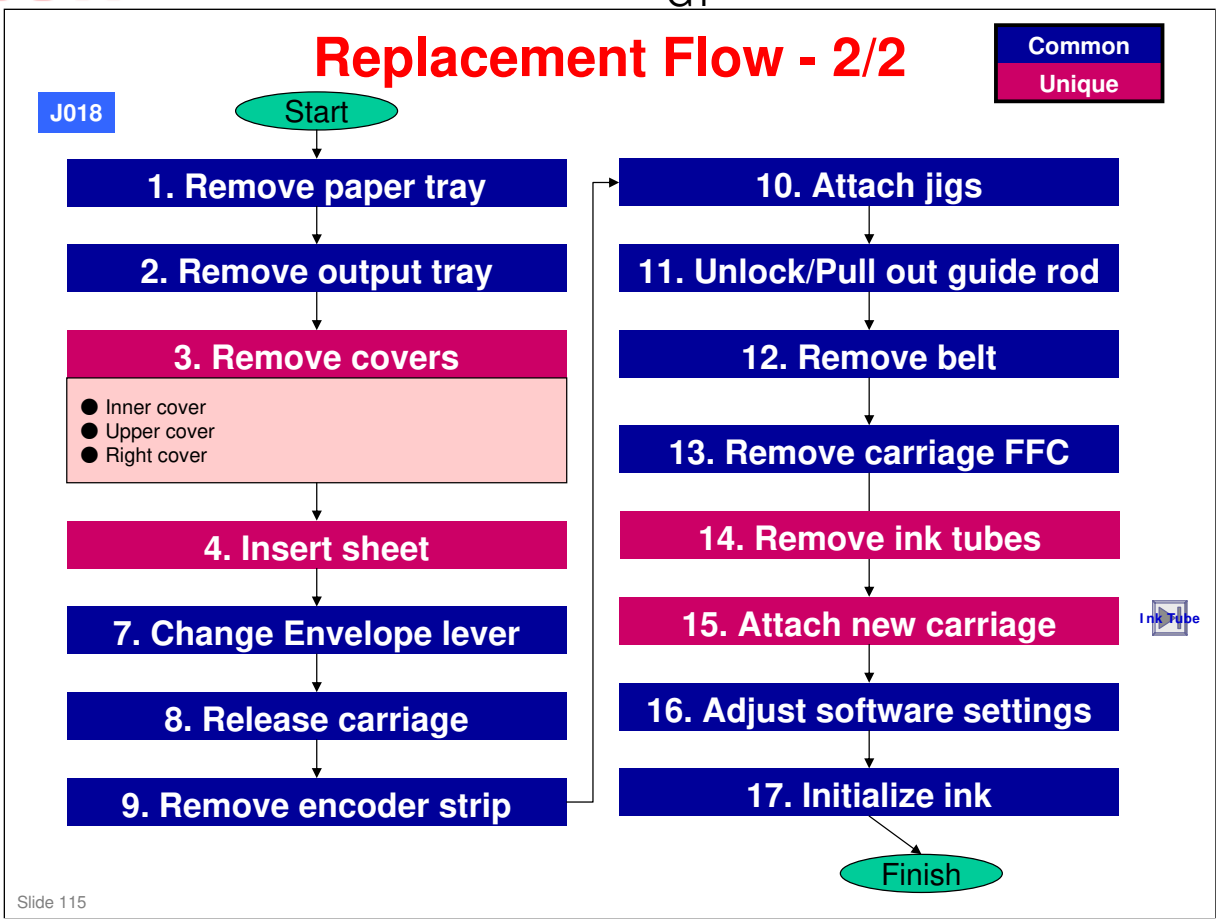
No additional notes.



No additional notes.



No additional notes.

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J017/J019
Service Training

10) Paper Feed

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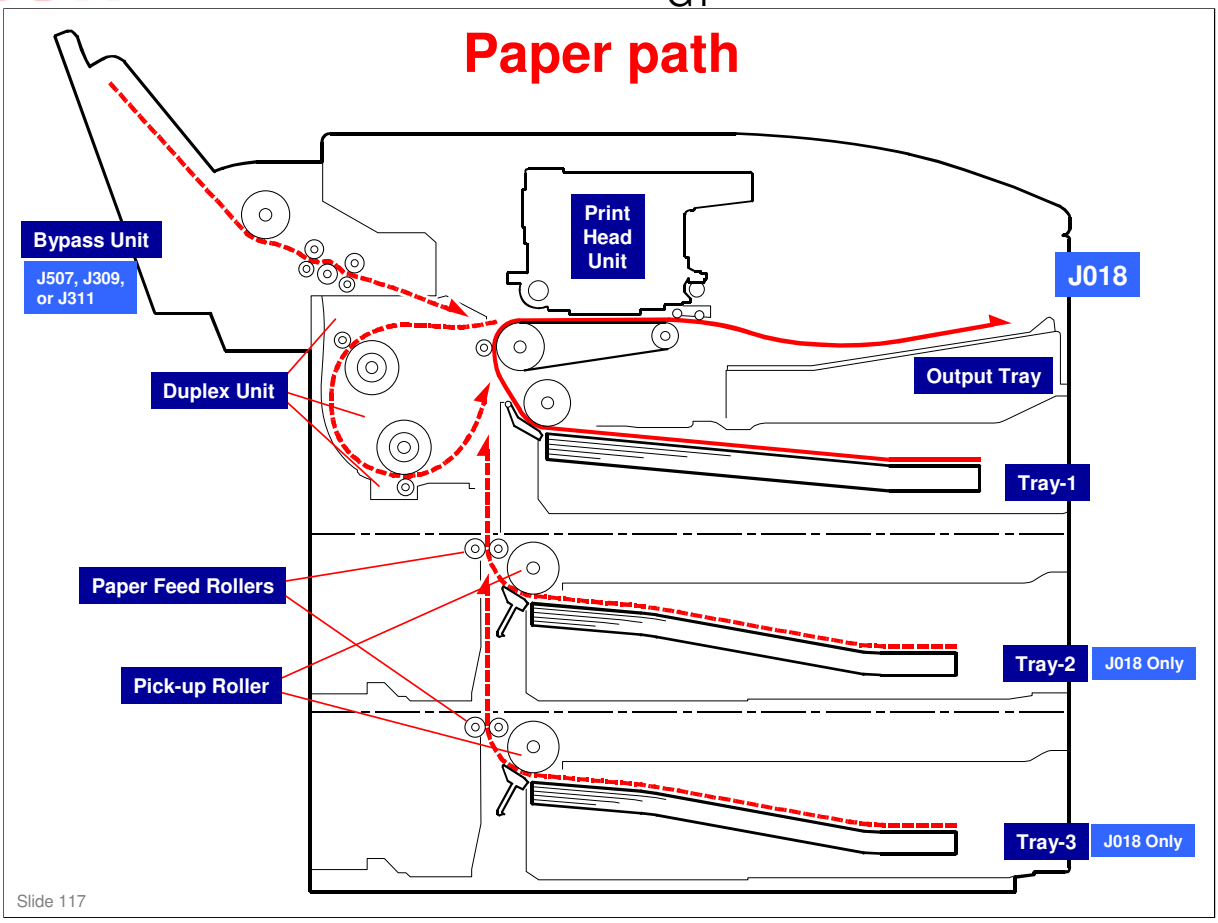
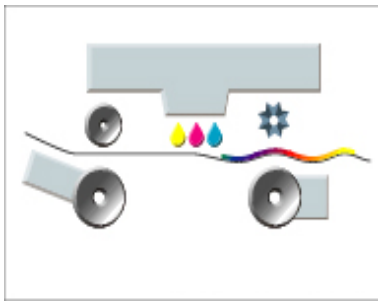
No additional notes.

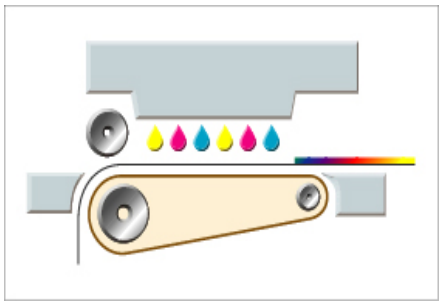


No additional notes.

Transport Belt

Roller feeding system (Competitors)	Belt Transfer system





- **Highly accurate print images**
  - J017/J019/J018/J023 (simplex & duplex)
  - J021 (simplex only)
- **Laser-like printable area (with bottom margin 4.2 mm)**

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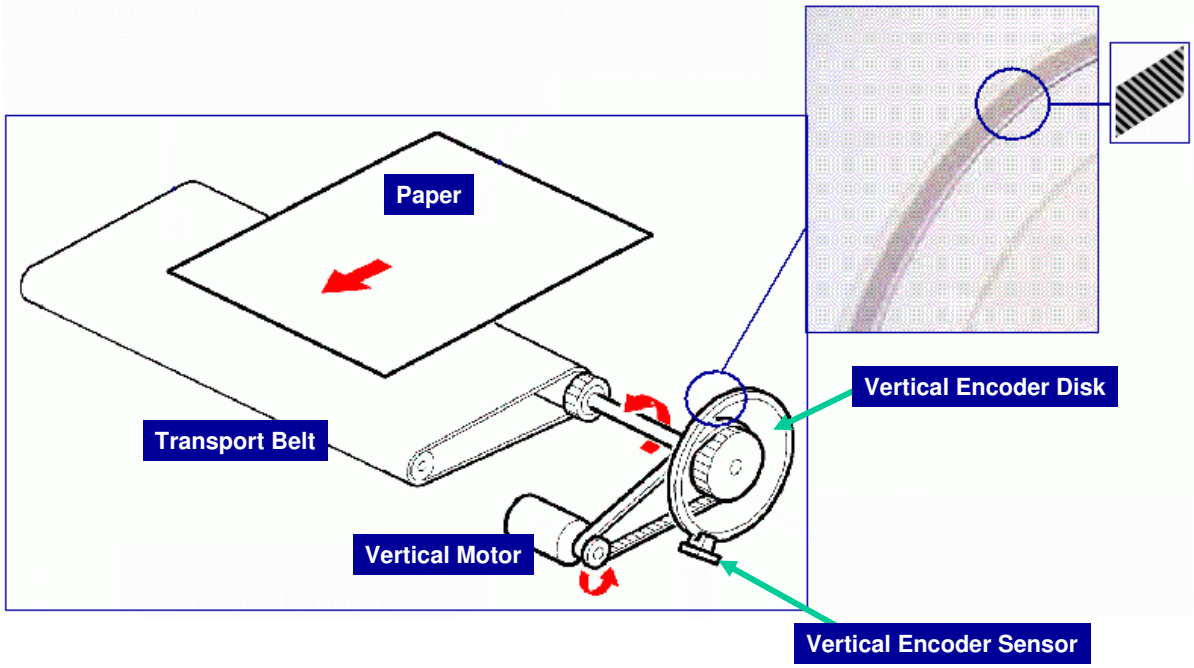
No additional notes.

Vertical Timing - 1/2



- Machine is able to accurately gauge position of paper on Transport Belt by reading markings on Vertical Encoder, which is connected to transport belt as shown in above diagram.

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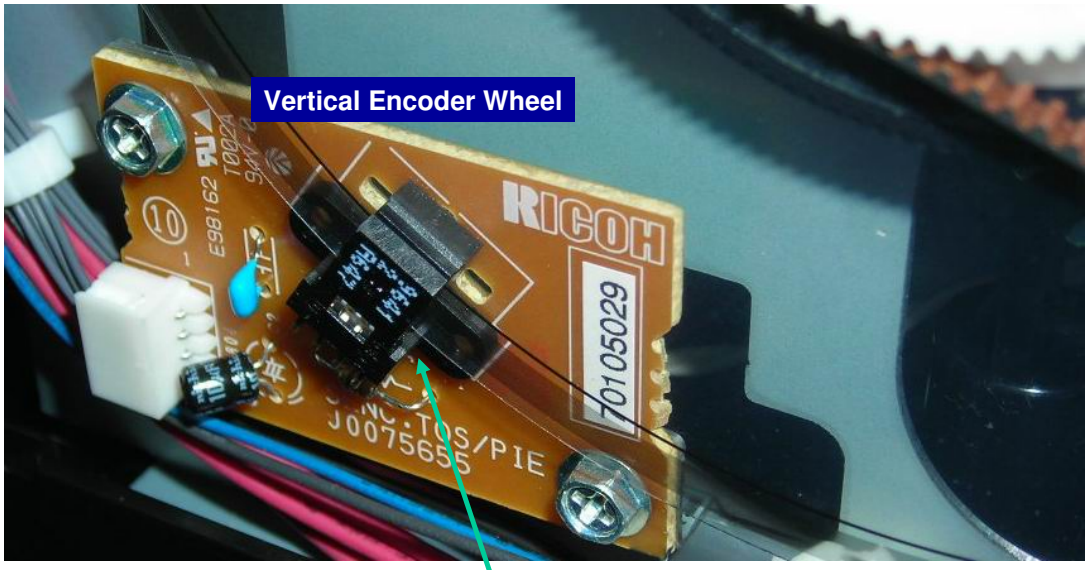
No additional notes.

Vertical Timing - 2/2



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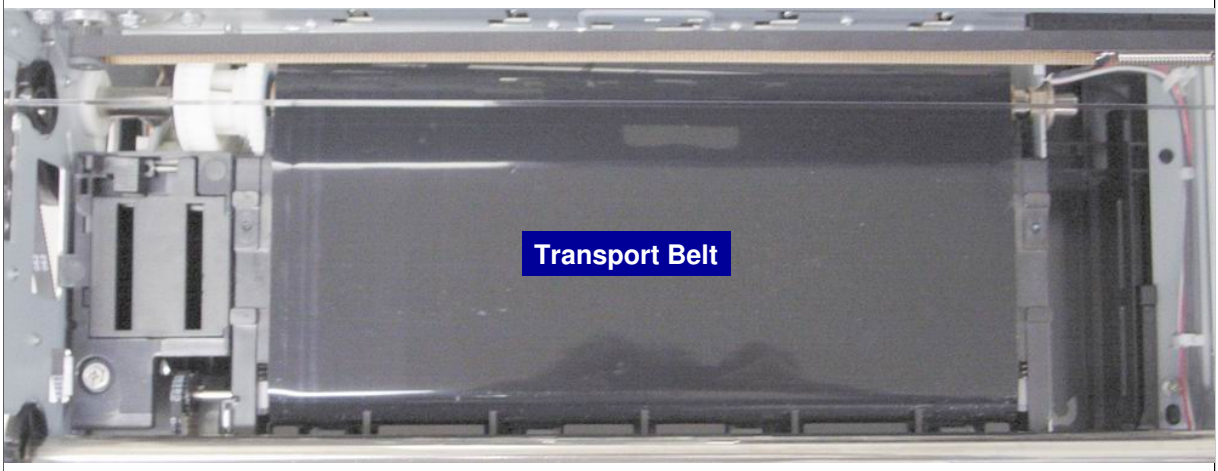
No additional notes.

Belt Transport System - 1/2



- **This machine uses a Belt Transport System (BTS) to move paper.**
- **HVPS (High Voltage Power Supply) charges the roller below the transport belt.**
- **Charge Roller then applies charge to Transfer Belt**
  - Static charge holds paper in place
- **Temperature/humidity sensor below transport belt monitors temperature and humidity.**

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J017/J019/J021/J023

Transport belt enables:

- Highly accurate print images (simplex & duplex printing)
- Laser-like printable area (with bottom margin 4.2 mm)

Belt Transport System - 2/2

- **Belt charge control operates within following ranges:**
  - Temperature - 0˚C to 35˚C (32˚F to 95˚F) - Adjusted in 2.5˚C/4.5˚F steps
  - Humidity - 0% to 100% - Adjusted in 10% steps
- **Feedback from temperature/humidity sensor is used to charge width applied to transport belt below print heads.**
- **Electrical field is reduced to smallest size still providing proper charge to keep paper on belt (for even printing over full surface of paper).**

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No additional notes.

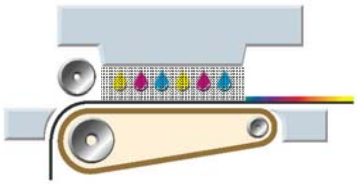
Useful Bit Switch Settings

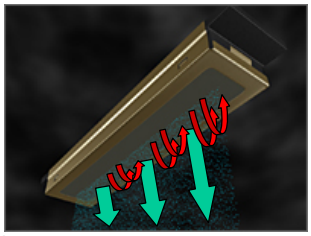
❑ **While printing, heads generate a slight amount of ink mist as byproduct of printing process.**

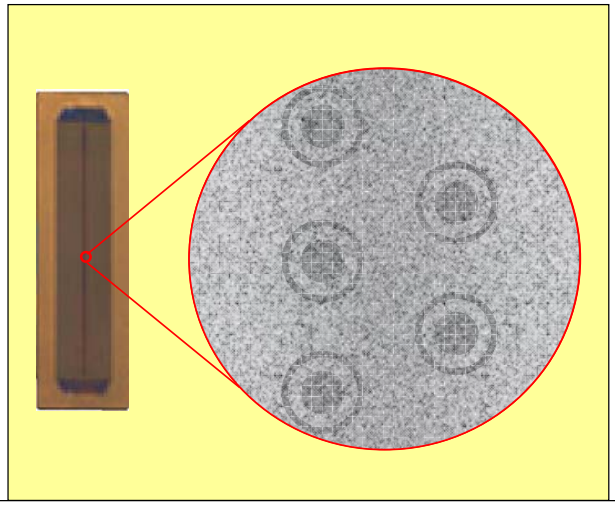
This mist adheres to head surface due to static charge effect on feeding belt (which varies depending on type of paper used).

As adhered mist dries on head(s), nozzles can become clogged.

To counter this effect by changing static charge, change BitSW 8-6 to value "1"







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No additional notes.

Charge Leak Detection

- **The printer checks for charge leaks at following times:**
  - Immediately after machine is turned on.
  - When receiving leak detection signal from HVPS (High Voltage Power Supply) during printer operation.
- **When charge leak is detected:**
  - Voltage supply from HVPS is interrupted immediately.
  - Printer stops current job in progress.
  - Carriage goes back to home position
  - Print heads are capped (printing not possible)
- **To restore printer to normal operation**
  - Remove cause of leak
  - Turn machine off, and then on again.

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No additional notes.

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J017/J019/J021/J023/J018
Service Training

11) Duplex Unit

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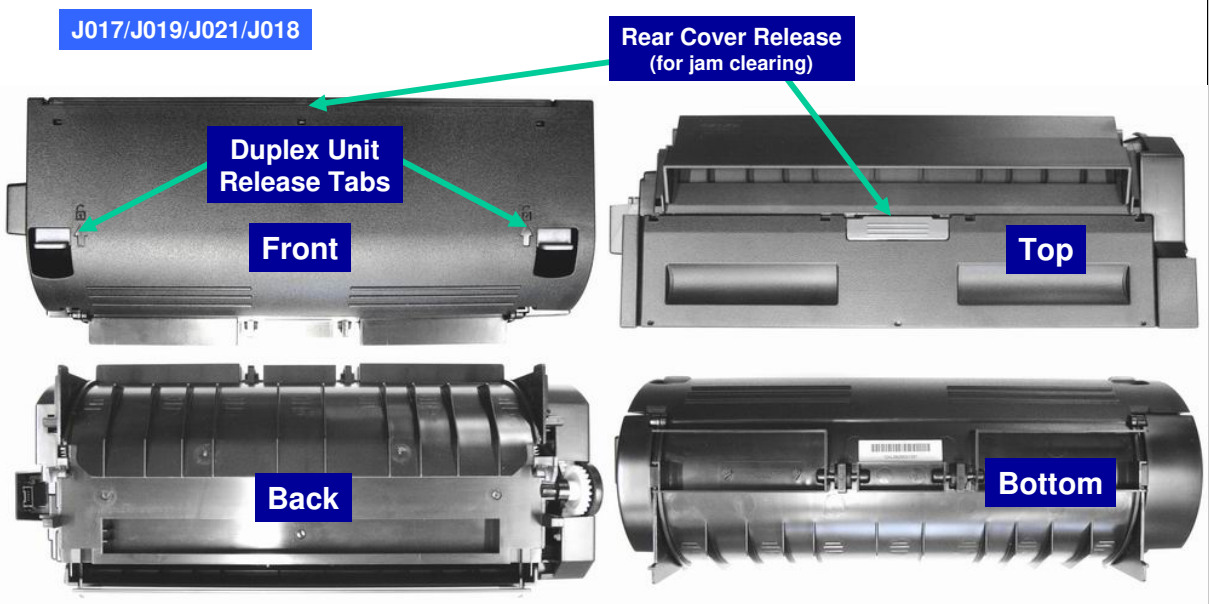
No additional notes.

Duplex Unit - 1/2



- **All four sides of Duplex Unit (standard)**
  - Note that Front/Back/Top/Bottom labels are from point-of-view of looking at rear of machine.
  - Rear cover can be opened while Duplex Unit is attached to machine.

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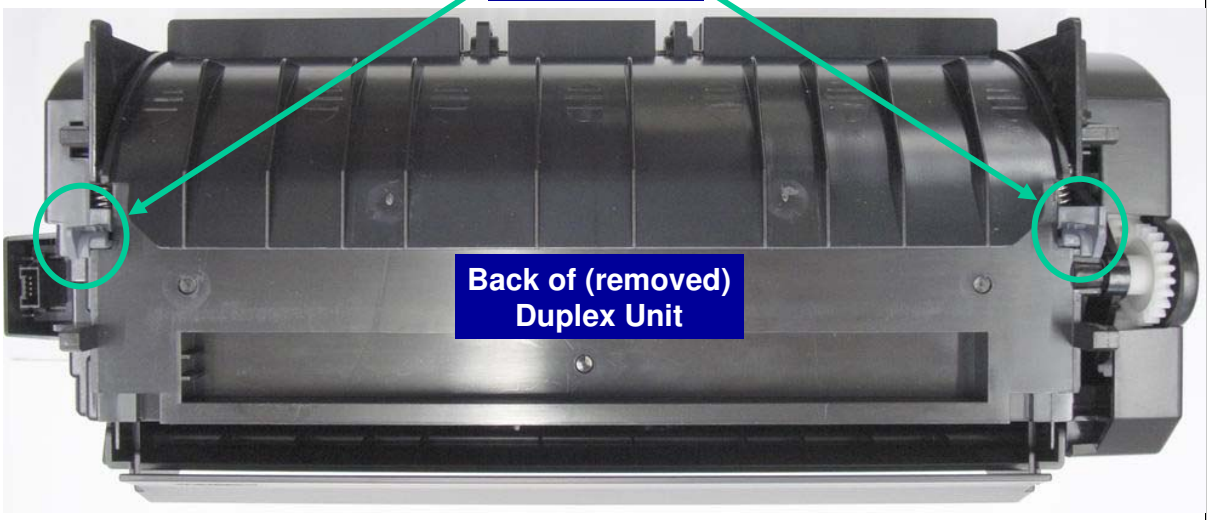
No additional notes.

Duplex Unit - 2/2

J017/J019/J021/J018



- Duplex Unit snaps into place (via spring-loaded hooks) without having to manually set the hooks.

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No additional notes.

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J017/J019/J021/J023/J018
Service Training

12) Peripheral Devices

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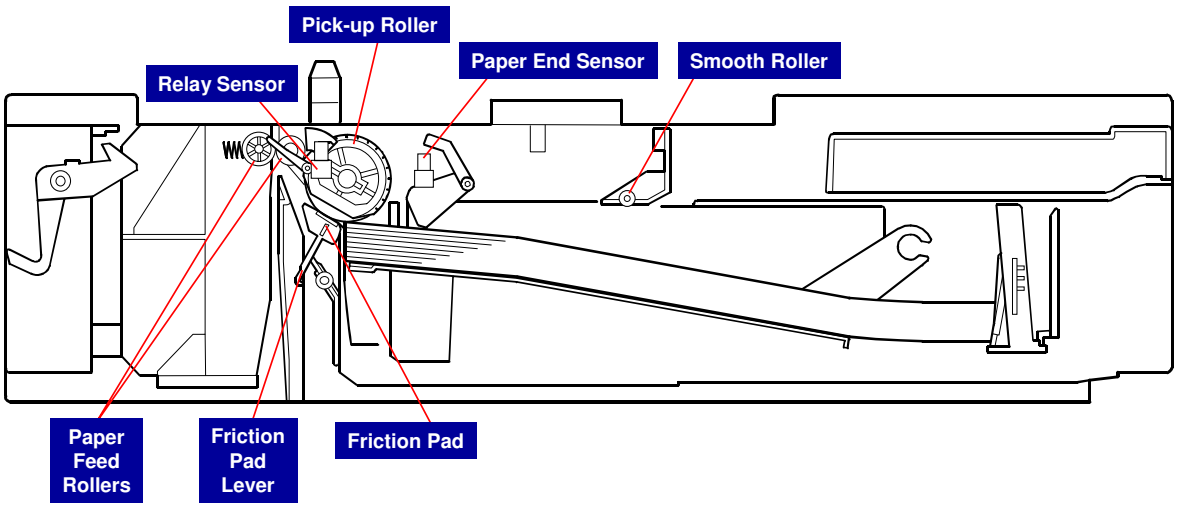
No additional notes.

Paper Tray Unit - Cross Section (Left Side)



- For Paper Tray Unit details, see following slides.

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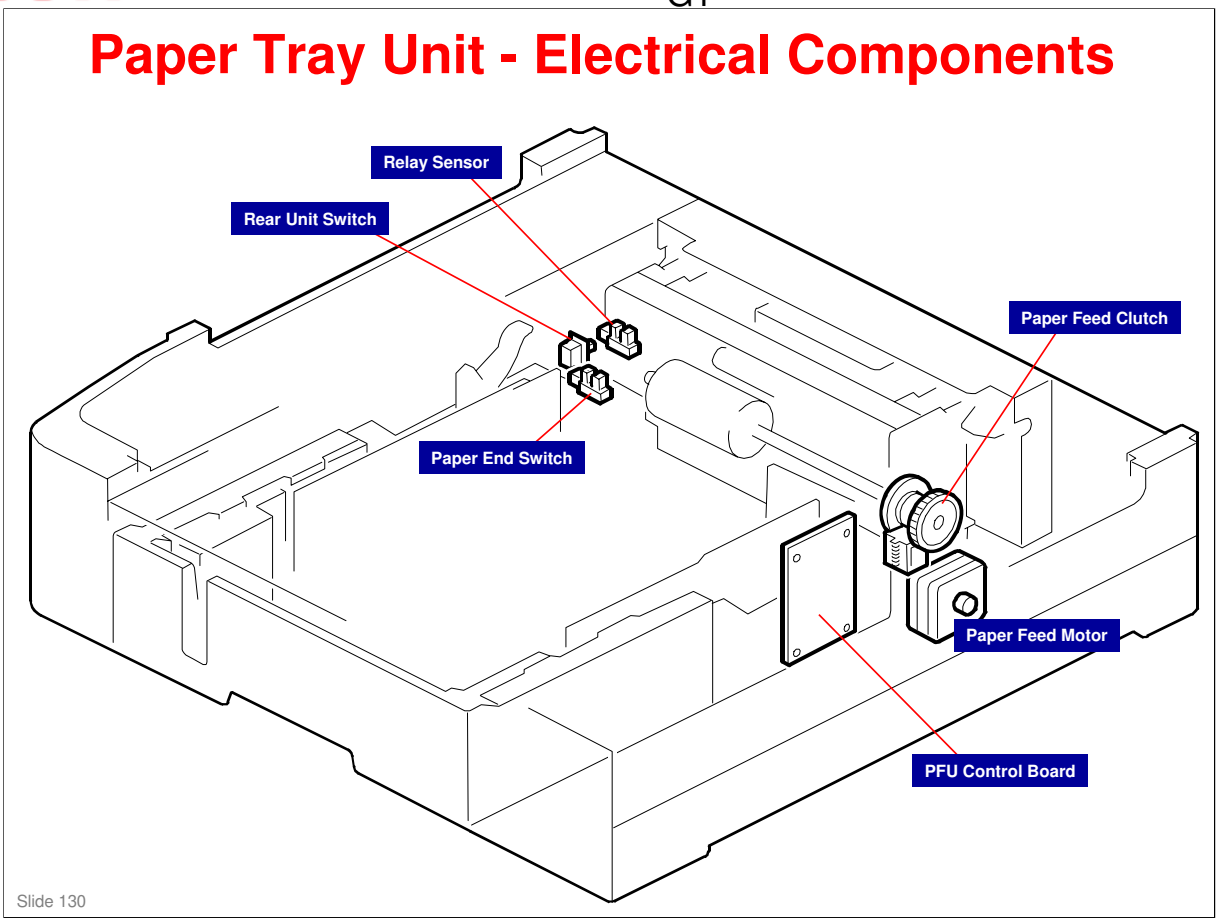
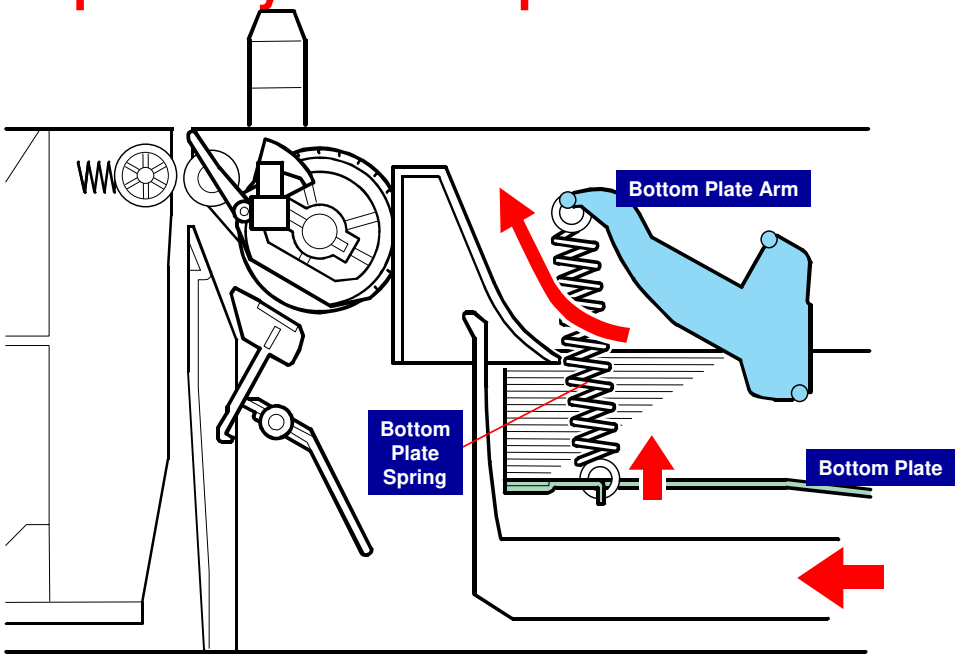
No additional notes.

Paper Tray Unit - Electrical Components



No additional notes.

Paper Tray Unit - Paper Feed - 1/4



- When paper cassette is inserted, pegs on bottom plate arms slide up over runners on both sides of frame, raising bottom plate and paper stack.
- The Bottom Plate Spring expands and applies tension on the Bottom Plate, raising the paper stack.

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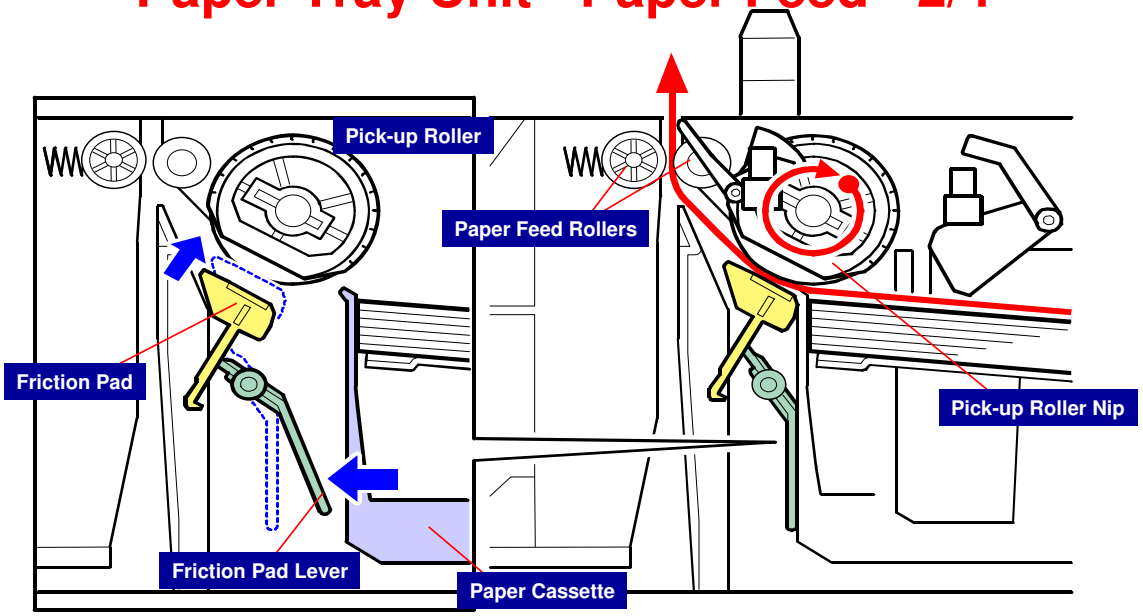
No additional notes.

Paper Tray Unit - Paper Feed - 2/4



- Removing paper tray reduces pressure on friction pad, enabling easier jam clearing.
- As paper cassette slides in, front of cassette pushes in friction pad lever, raising friction pad to level of paper stack. When pick-up roller rotates, it pulls sheet over friction pad. If more than one sheet is picked up, the friction pad will catch the lower sheet and prevent it from feeding. (This mechanism prevents double feeds.)
- The pick-up roller feeds sheet to nip of feed rollers. Paper feed clutch disengages pick-up roller and stops its rotation. Feed rollers continue to feed sheet out of tray and into vertical feed path.

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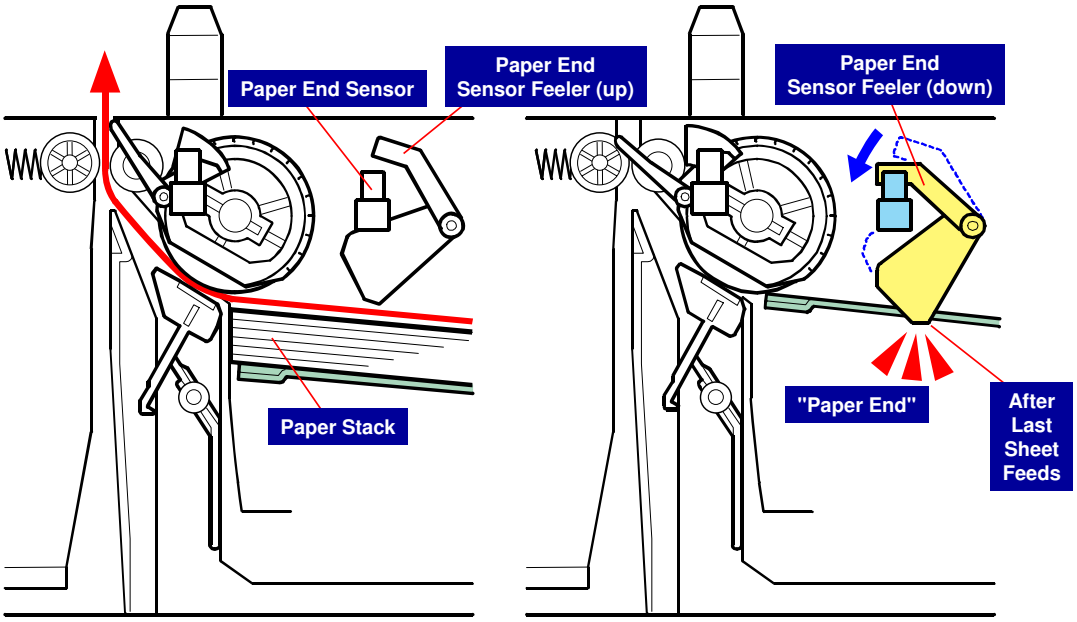
No additional notes.

Paper Tray Unit - Paper Feed - 3/4



- After last sheet of paper feeds, weighted bottom of actuator drops into slot in bottom tray, pulling top of actuator into paper end sensor gap. When actuator enters sensor gap, this signals "Paper End" and machine will display a paper end alert on the printer Operation Panel.

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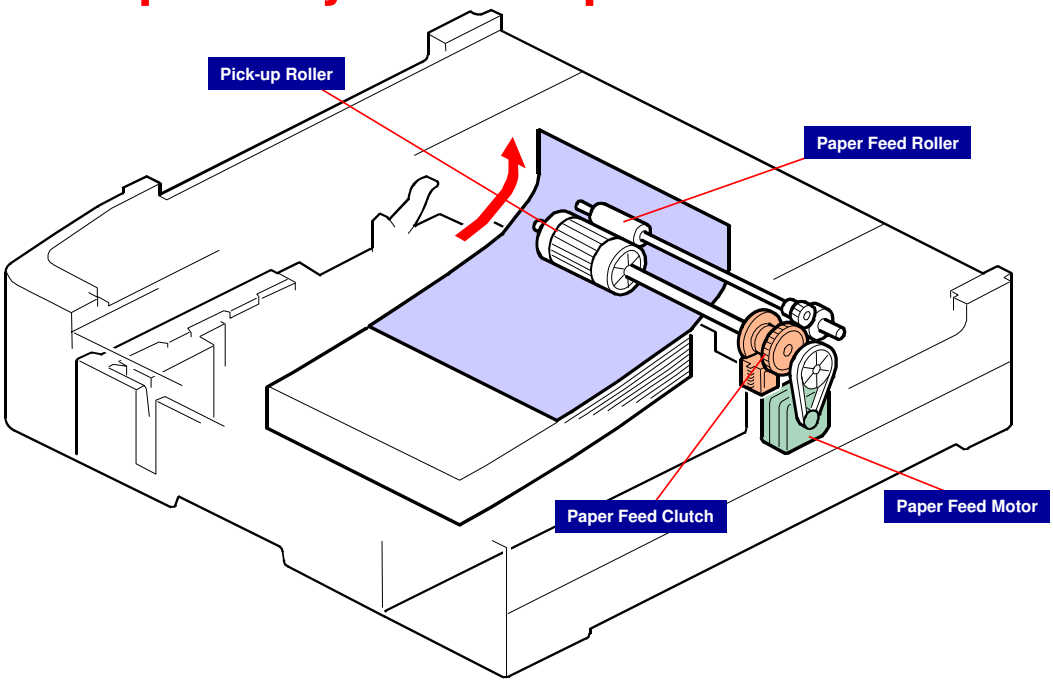
No additional notes.

Paper Tray Unit - Paper Feed - 4/4



- Paper feed motor drives pick-up roller and paper feed roller.
- Magnetic Paper Feed Clutch activates to rotate pick-up roller to feed each sheet to Paper Feed Rollers.

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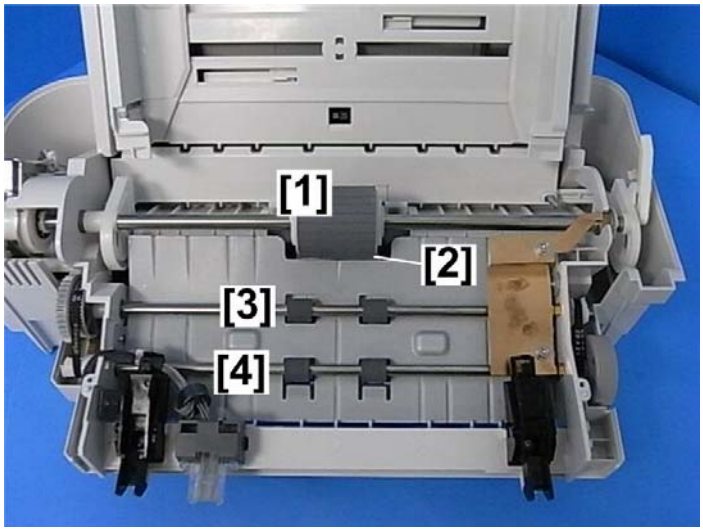
No additional notes.

Bypass Tray 1 – Paper Feed

- **The wide surface of the large pickup roller [1] pulls the paper from the tray.**
- **The friction pad [2] below the paper and pickup roller provides enough resistance to ensure that only one sheet of paper feeds.**
- **The 1st feed roller [3] and 2nd feed roller [4] feed the paper to the main machine.**



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- The J507, J309, J311 are much the same; so, the next five slides (including this one) apply to all bypass trays except where noted.
- The only differences are:
  - The paper capacity is 100 sheets for the J507 and J311.
  - The paper capacity is 200 sheets for the J309.
  - The J309/J311 have a de-curler roller and the J507 does not.

Bypass Tray 2 – Important Parts
Cross Section View

[1] Paper tray

[2] Side fence

[3] Pickup roller

[4] 1st feed roller

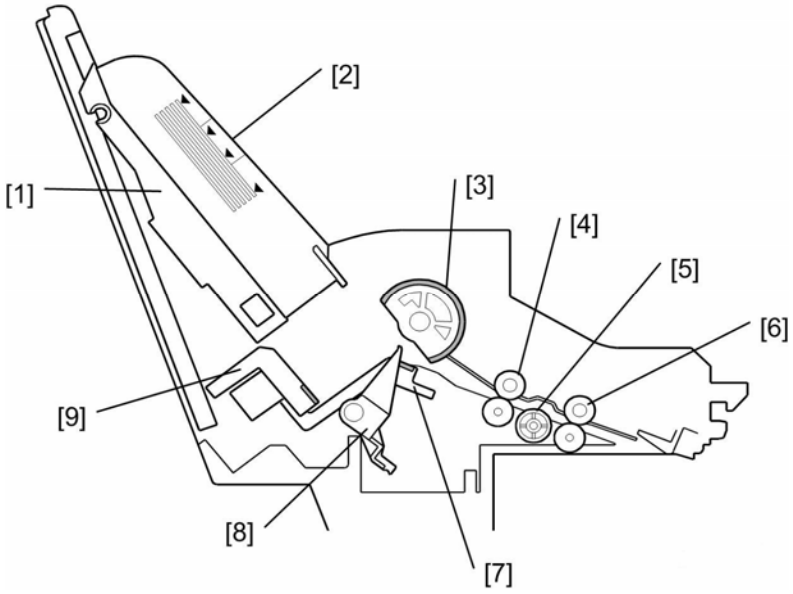
[5] De-curl roller (J309, J311)

[6] 2nd feed roller

[7] Friction pad

[8] Stopper

[9] Bottom plate



Slide 136

- Main parts viewed in cross section.

Bypass Tray 3 – Important Parts: 3D View

[1] Bypass feed clutch

[2] Cam

[3] Pickup roller

[4] Bypass paper end sensor

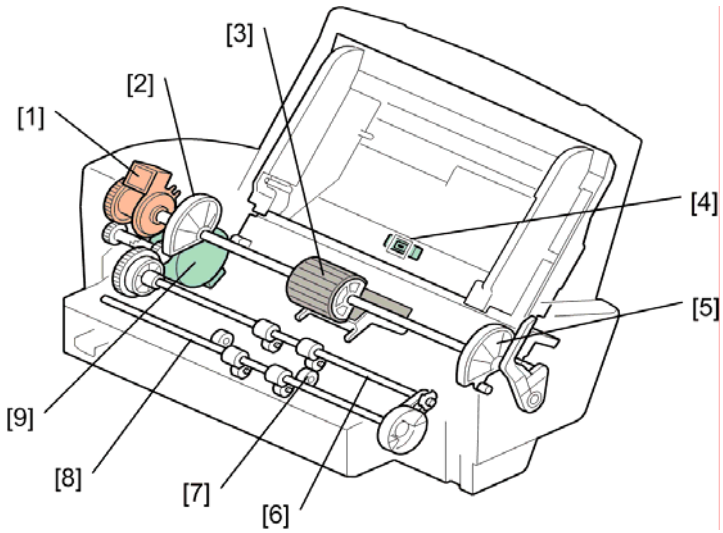
[5] Cam

[6] 1st feed roller

[7] De-curl roller (J309, J311)

[8] 2nd feed roller

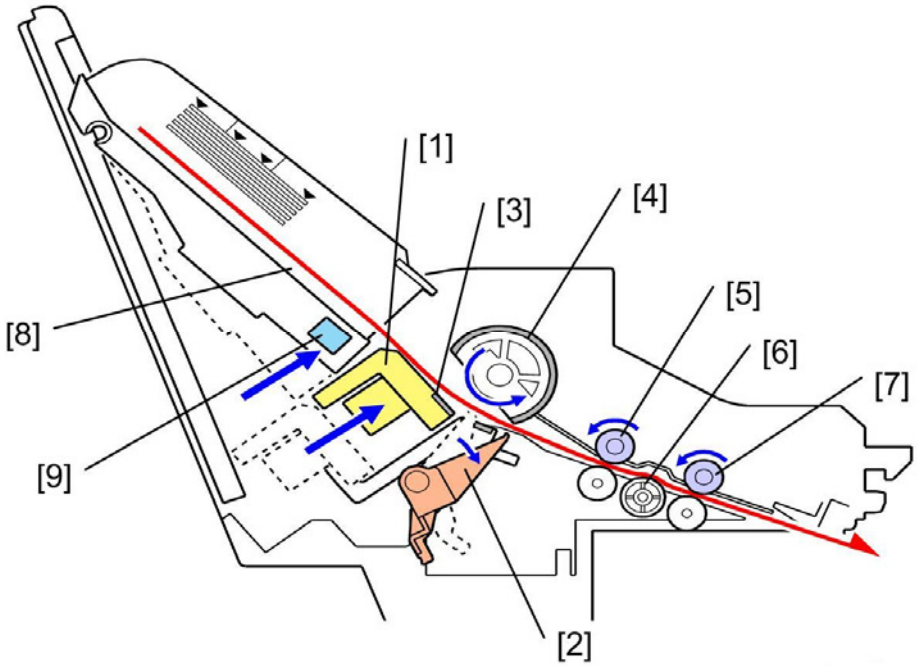
[9] Bypass feed motor



Slide 137

- The bypass feed motor operates the pickup roller, 1st feed roller, and 2nd feed roller.

Bypass Tray 4 – Paper Transport



❑ **Refer to the notes below for details.**

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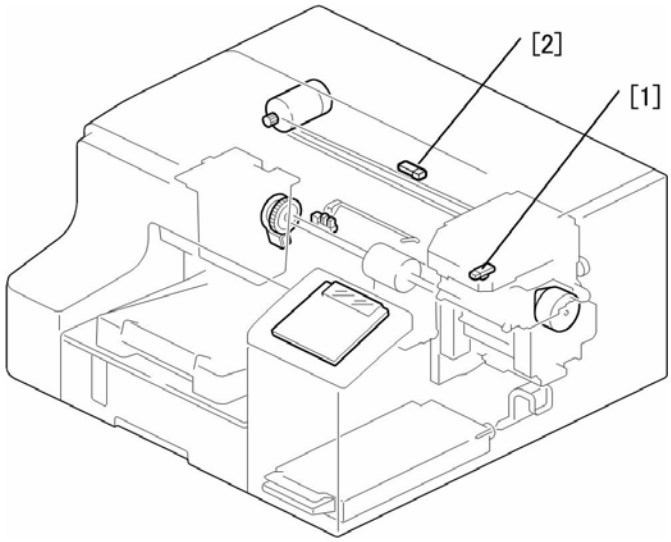
When a print job starts:

- ❑ The bypass feed motor and feed clutch switch on and start to rotate the shaft of the pickup roller. (The bypass feed motor drives all the rollers.)
- ❑ The large cams on both ends of the pickup roller raise the bottom plate [1] and release the stopper [2] to open the paper feed path.
- ❑ The rubber friction pad [3] on the bottom plate below the pickup roller [4] provides enough resistance from below to prevent double-feeding from the tray.
- ❑ The soft rubber surface of the rotating pickup roller pulls one sheet of paper from the tray and sends it to the 1st feed roller [5].
- ❑ J309 only:
  - ➢ The 1st feed roller sends the paper to the de-curl roller [6].
  - ➢ The de-curl roller is raised slightly higher than the other rollers so it presses against the direction of any curling caused by the pickup roller and 1st feed roller. This removes flattens the paper and reduces curling.
- ❑ Once the pickup roller completes its arc of rotation for one sheet, the pawl of the paper feed clutch locks the pickup roller and then releases it when the next sheet feeds.
- ❑ The 2nd feed roller [7] feeds the paper to the machine for printing.
- ❑ This cycle repeats for each sheet of paper fed to the printer.
- ❑ When the last sheet of paper feeds from the bypass paper tray [8], the bypass paper end sensor [9] (a photo-sensor) detects paper out and signals the main machine that the tray is empty.
- ❑ The machine stops printing and re-starts after more paper is loaded in the bypass tray.

Bypass Tray 5 – Paper Detection



- **When a sheet of paper enters the main machine from the bypass tray:**
  - Only the 1st registration sensor [1] on the left side of the print head detects the leading edge of each sheet as it enters the printer.
  - The leading edge of the paper is ignored by the 2nd registration sensor [2] which has no function in detecting paper from the bypass tray.

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No additional notes.

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Service Training

13) Maintenance

Slide 140

No additional notes.

Print Head Cleaning and Adjustment

- **Print Head Cleaning and Adjustment**
  - Preparing for Test Printing
  - Nozzle Check
  - Nozzle Check Pattern
  - Nozzle Coverage Check Pattern ([Ctrl]+[Shift]+[3])
  - Color Demo Print
  - Print Head Cleaning
  - Print Head Flushing
  - Adjust Paper Feed
  - Head Position
  - Registration
- **For more details, see the service manual.**

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No additional notes.

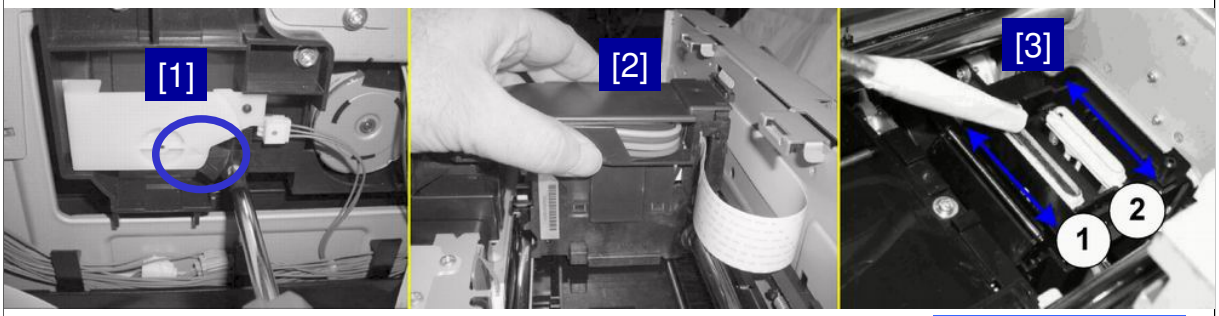
Cleaning

- **Most Frequently Necessary:**
  - Maintenance Unit Cleaning
  - Transport Belt Cleaning
  - Horizontal Encoder Strip Cleaning
- **Other Items to Clean:**
  - Feed Roller Cleaning
  - Friction Pad Cleaning
  - Vertical Encoder Wheel Cleaning
- **For more details, see the service manual.**

Slide 142

No additional notes.

Maintenance Unit Cleaning



J017/J019/J021/J023

- **After removing right cover, use plus-screwdriver to align triangles [1].**
  - Turn counter-clockwise
- **Push envelope selector to envelope position (rear position).**
- **Push carriage to center [2].**
- **Wrap tip of screwdriver or similar tool with piece of finely woven damp cloth.**
- **Use wrapped tip of screwdriver to clean inside and around right air vent and suction cap [3].**
- **Procedures for J018 are the same, but there are four head caps.**

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The damp cloth prevents scratching the suction cup. A scratched suction cup could cause poor print quality. Never use tissue, cotton, or any other type of material to wrap the tip of the screwdriver. Such material can contaminate the maintenance unit with loose fibers.

Clean the vent and cap carefully to avoid:

- Damaging the fragile lip of the suction cap.

Do not insert the tip of the screwdriver down into either the right air vent or suction cap.

Transport Belt Cleaning

❑ Rotate jam feed wheel enough to (progressively) expose all sections of transport belt (when cleaning).

Slide 1

No additional notes.

Horizontal Encoder Strip Cleaning

- **Clean horizontal encoder strip if following conditions occur:**
  - Vertical white lines on printed image
  - Double image
  - Broken vertical lines
- **Cleaning Procedure**
  - **Dampen small piece of clean linen cloth with a little alcohol.**
    - » Never use cotton, tissue, or any type of material that leaves fibers.
  - **Gently wipe horizontal encoder strip in one direction only.**
    - » Never apply excessive tension to horizontal encoder strip when cleaning it.
  - Push carriage unit to other side by hand
  - Repeat procedure to clean other side of encoder strip
  - Place carriage at its full right position
  - Turn on the machine
  - Confirm that machine is in standby mode and ready to operate.

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No additional notes.

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Service Training

14) Troubleshooting

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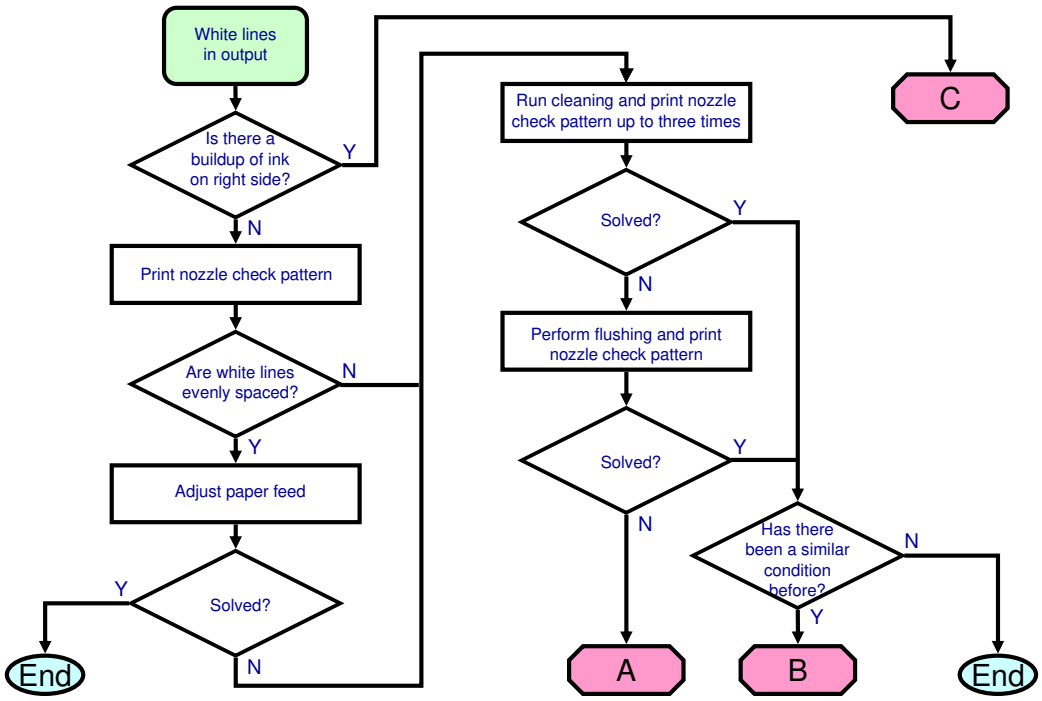
No additional notes.

Image Problem Procedural Checklist - 1/3



- **Familiarize yourself with the guidelines on this and the following two slides.**

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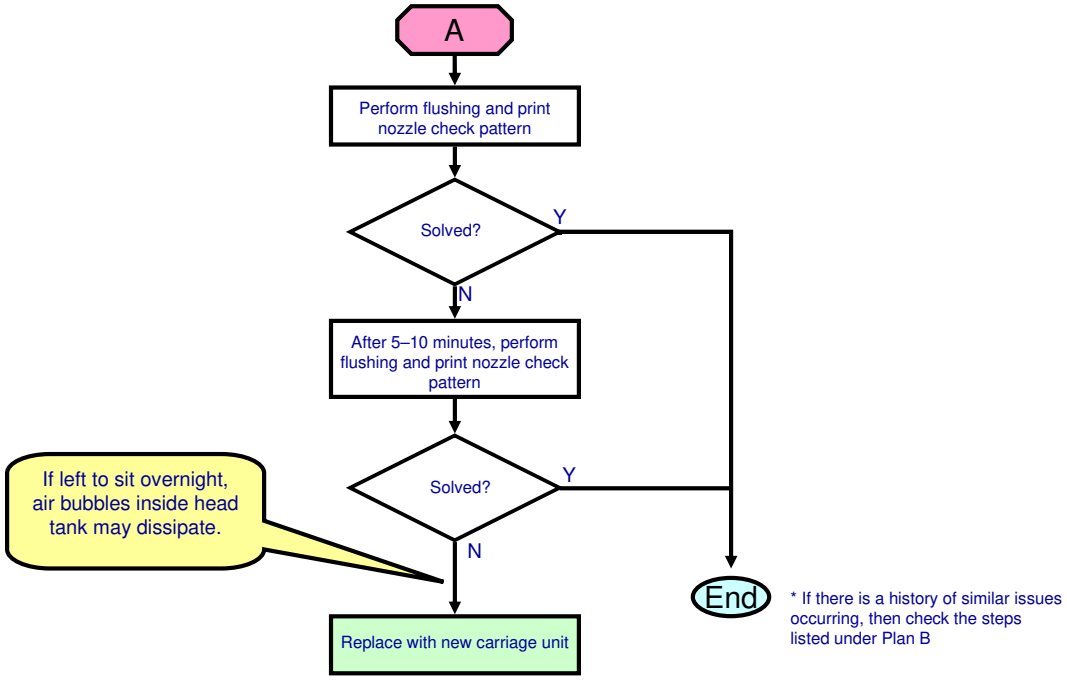
No additional notes.

Image Problem Procedural Checklist - 2/3



- **Familiarize yourself with the guidelines on this, and preceding & following slides.**

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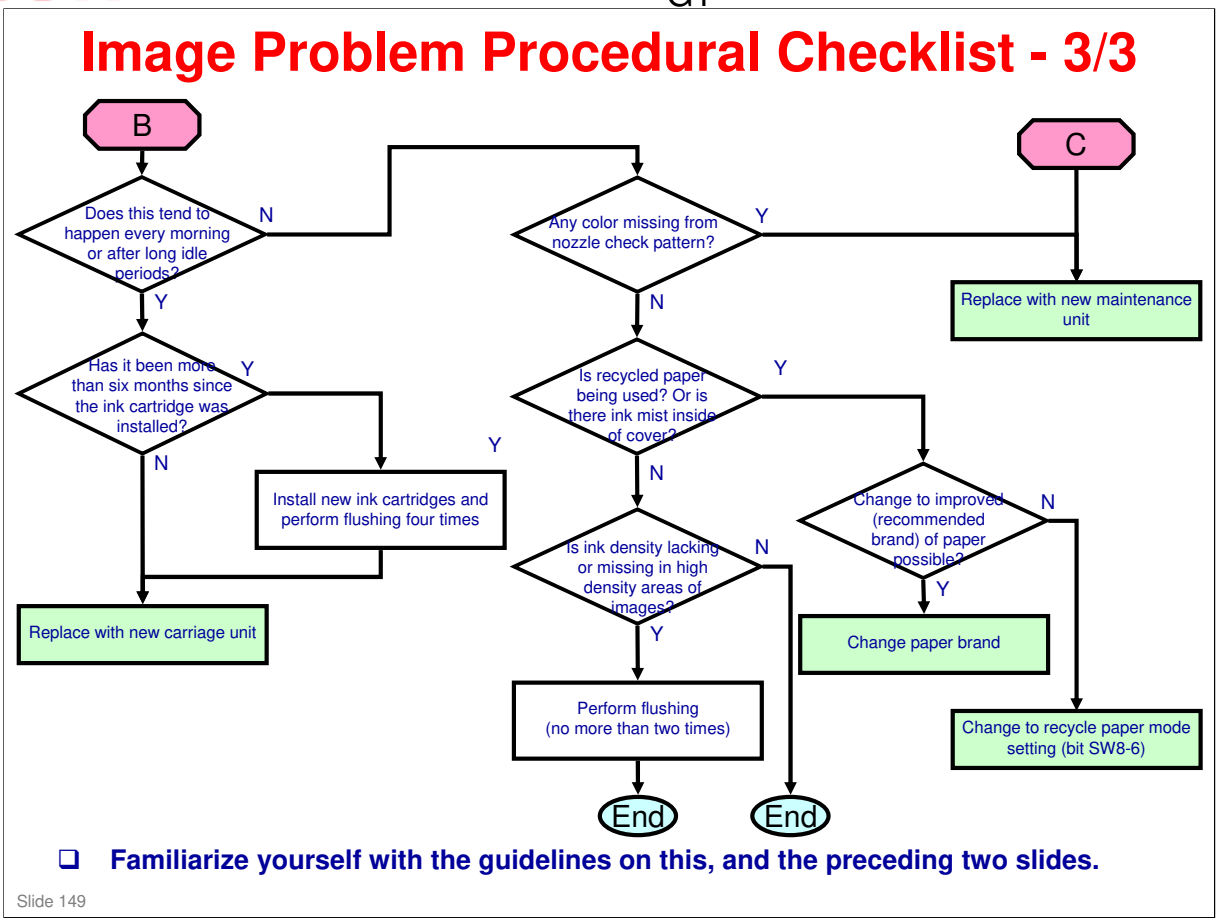
No additional notes.



No additional notes.

Recommended Reference Material

- **For a thorough understanding of the machine and best trouble-shooting procedures, spend some time studying:**
  - Service Manual
  - User guide
  - FAQ in Global Web Site

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No additional notes.

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15) Service Remarks

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No additional notes.

Non-replaceable Parts

- **In this latest version of the GelJet printer, the Carriage Unit can be changed.**
  - J017/J019/J021/J023 - Carriage Unit & Ink Supply Unit as pair.
  - J018 - Carriage Unit only (without changing the Ink Supply Unit).
    - » At future date, all machines will have J018-type Carriage Unit
- **The following parts, however, are considered irreplaceable. If a defect with one of the following parts occurs, the entire machine must be replaced.**
  - Transport Belt
  - Charge Roller
  - Temperature/Humidity Sensor
  - Paper End Sensor
  - Paper Feed Roller
  - NV-RAM chip
  - Ink Supply Unit
    - » J018 only

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No additional notes.

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16) Appendix

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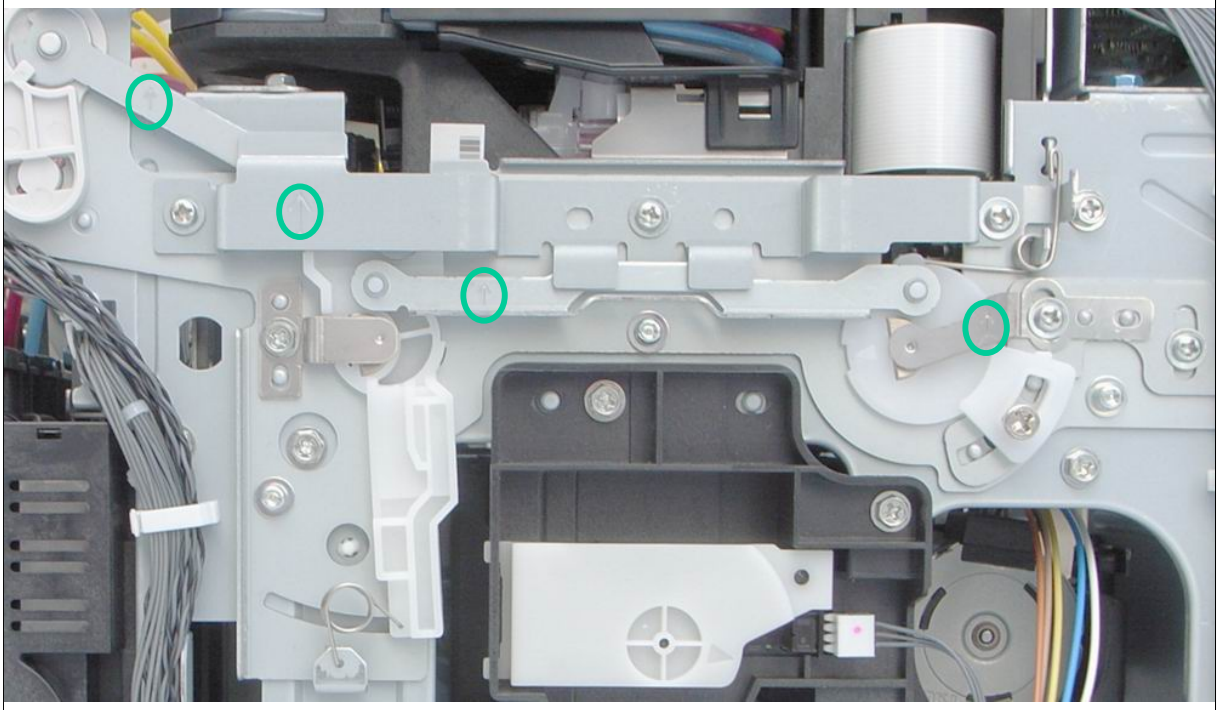
No additional notes.

Stay Plates



- Arrows stamped into sides of parts (circled above) indicate correct side and orientation of parts.
- Note: Some older machines do not have the arrows, in which case extra caution is necessary to ensure correct assembly.

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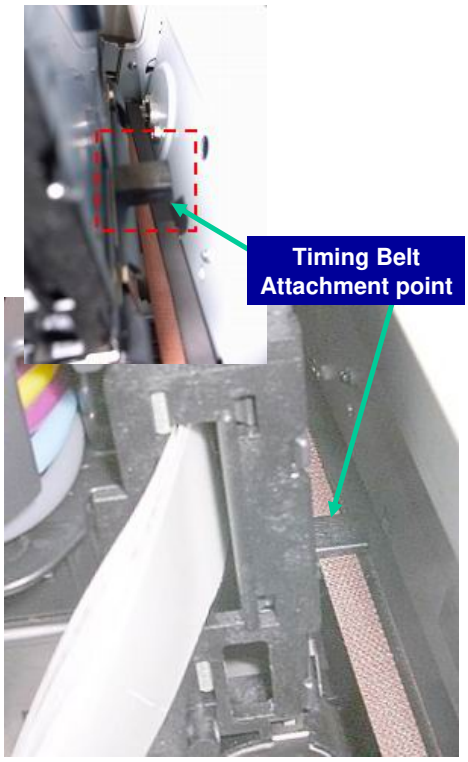
Back to Replacement Flow

No additional notes.

Timing Belt Attachment



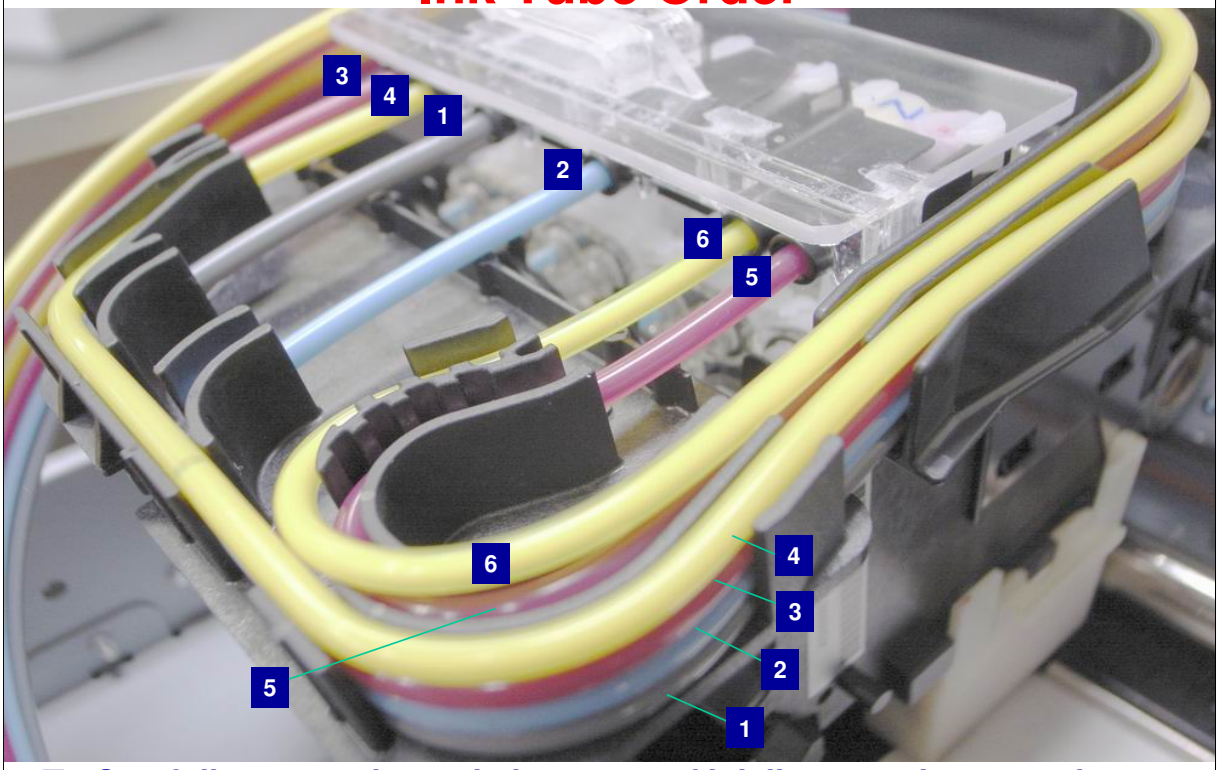
- **Caution: When installing new Ink Carriage Unit, the timing belt must be properly attached.**
  - For details, see the service manual.

Slide 155

Back to Replacement Flow

No additional notes.

Ink Tube Order



- Carefully note order and placement of ink lines, as they must be placed exactly in the order shown above.

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Back to Replacement Flow

Note: Be certain that there is no pressure on the connections when installing a new Ink Carriage Unit – if there is, the ink lines could become detatched.

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17) Energy Saving

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No additional notes.

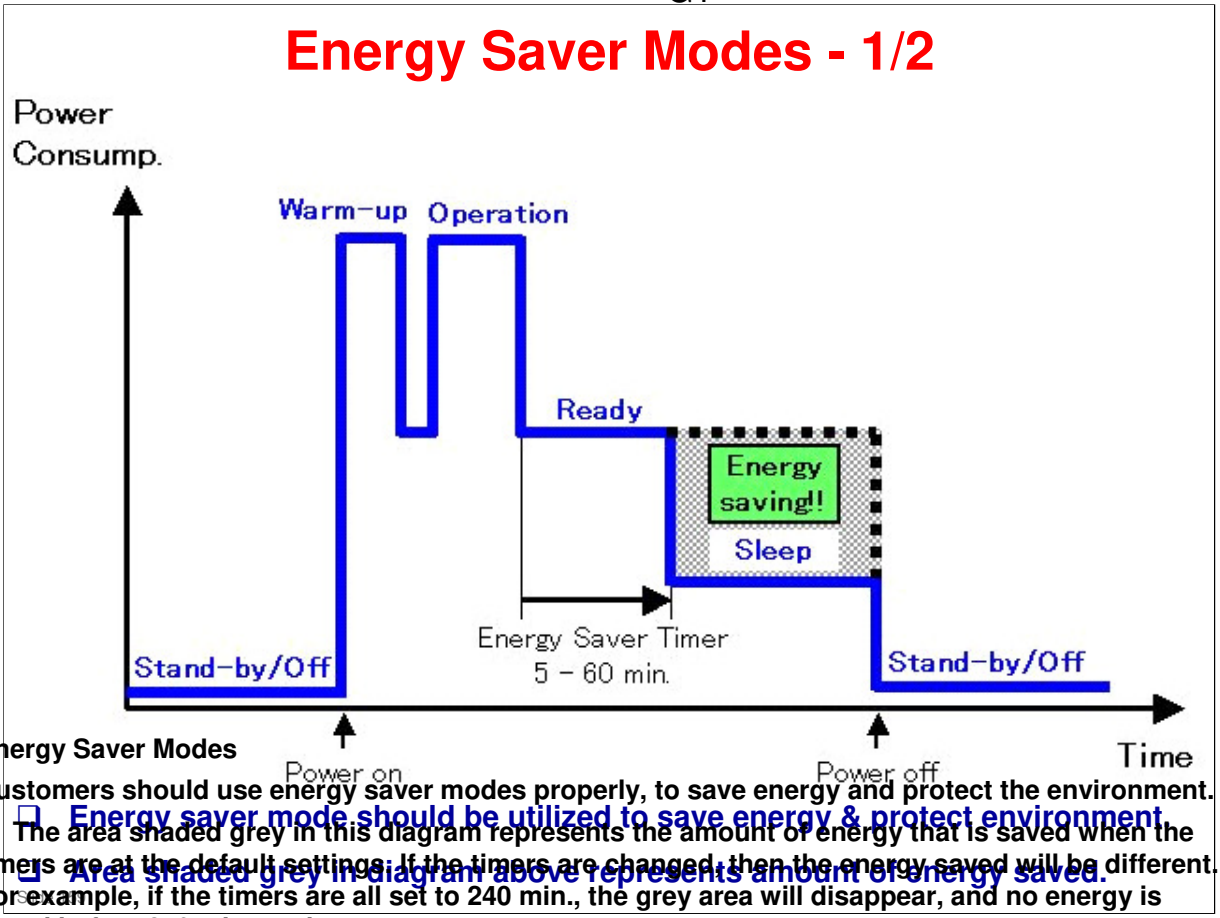
Promote Use of Energy Saving Features

- **Energy Saver Mode**
  - Proper use of energy saver modes saves energy and is environmentally friendly.
- **Duplex Settings**
  - Use of Duplex settings reduces amount of paper used, which results in less energy consumption for paper production.

Slide 158

No additional notes.

Energy Saver Modes - 1/2



Energy Saver Modes

Customers should use energy saver modes properly, to save energy and protect the environment.

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

The area shaded grey in this diagram represents the amount of energy that is saved when the timers are at the default settings. If the timers are changed, then the energy saved will be different. For example, if the timers are all set to 240 min., the grey area will disappear, and no energy is saved before 240 min. expires.

Timer Settings

The user can set these timers with User Tools (Menu > Admin Settings > Power Saver > Energy Saver Mode1 or Mode2)

- Energy Saver Mode1 (30 sec.): This can be only turned on or off.

- Energy Saver Mode2 (1 to 240 min.): This can be turned on or off and timer setting is adjustable (default: 1min.).

Return to Stand-by Mode

Energy Saver Mode1

- Recovery time: 10 sec.

Energy Saver Mode2

- Recovery time: 23 sec.

Recommendation

We recommend that the default settings should be kept.

- If the customer requests that these settings should be changed, please explain that their energy costs could increase, and that they should consider the effects on the environment of extra energy use.

- If it is necessary to change the settings, please try to make sure that the Energy Saver Mode2 Timer is not too long. Try with a shorter setting first, such as 30 min., then go to a longer one (such as 60 min.) if the customer is not satisfied.

- If the timers are all set to the maximum value, the machine will not begin saving energy until 240 minutes has expired after the last job. This means that after the customer has finished using the machine for the day, energy will be consumed that could otherwise be saved.

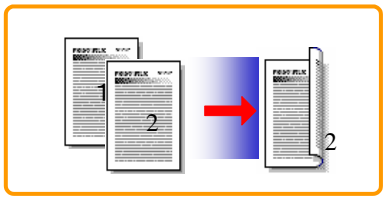
Energy Saver Modes - 2/2

- **Timer Settings - User can set Energy Saver timer via:**
  - [Menu]> [up] or [down] "System"> [Enter].
  - [up] or [down]> "Energy Saver"> [Enter].
    - » Default is 5 minutes.
    - » Setting can be changed within a range of 5 to 60 minutes.
    - » After selected time has elapsed, machine will enter Sleep Mode.
- **Return to Standby Mode**
  - Machine returns to standby mode from energy saver mode after 2 seconds (for all four models).
- **Recommendation**
  - We recommend that default settings be used.
  - If customer requests settings change, please explain:
    - » Energy costs could increase
    - » The environment could be impacted.

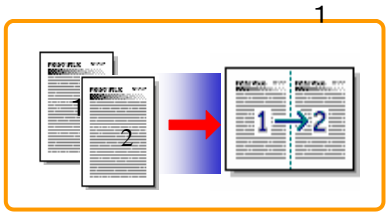
Slide 160

No additional notes.

Paper Saving - 2/2



- **Duplexing and combine functions reduce amount of paper used.**
  - Less energy overall is used for paper production, which helps the environment.
- **Duplex:**
  - Reduce paper volume by 50%!

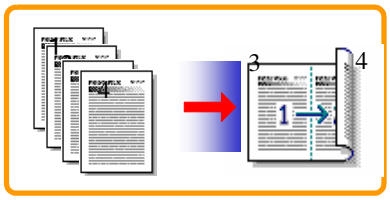


- **Combine mode:**
  - Reduce paper volume by 50%!

Slide 161

No additional notes.

Paper Saving - 2/2

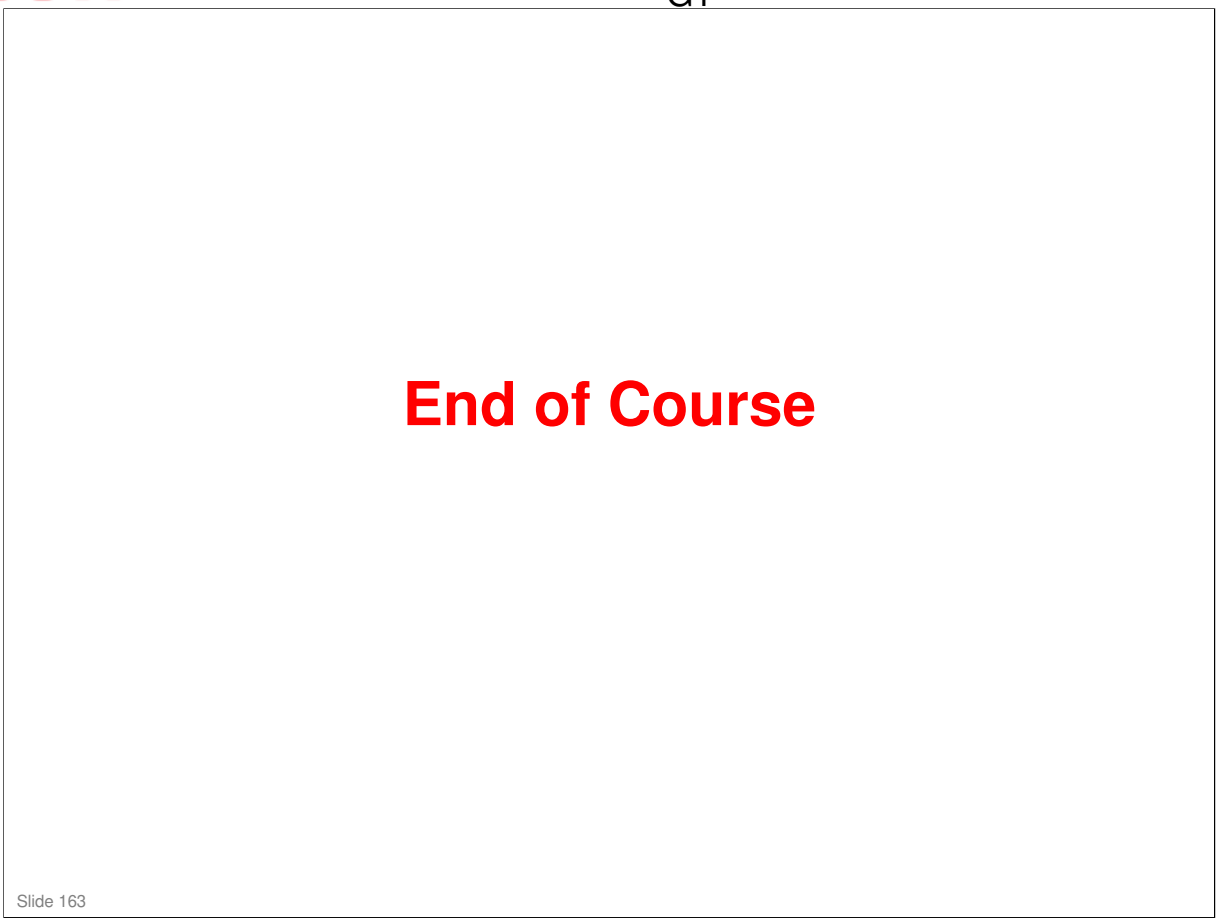


- **Duplex + Combine:**
- **Using both features together can further reduce paper volume by 3/4!**

- **To check paper consumption, view total counter and duplex counter.**
  - For one duplex page, total counter goes up by 2.
  - For a duplex job of a three-page original, total counter goes up by 3.
- **Duplex counter counts pages with images on both sides.**
  - For one duplex page, duplex counter goes up by 1.
  - For a duplex job of a three-page original, duplex counter will only increase by 1, even though two sheets are used.
- **Recommendation**
  - Please explain these features to customers so they can reduce their paper usage.

Slide 162

No additional notes.



No additional notes.