iR2200/iR2800/ iR3300

SERVICE MANUAL

REVISION 0

Canon

MAR. 2001 FY8-13H8-000

 CANON iR2200/iR2800/iR3300 REV.0 MAR. 2001 PRINTED IN JAPAN (IMPRIME AU JAPON)

Application

This manual has been issued by Canon Inc. for qualified persons to learn technical theory, installation, maintenance, and repair of products. This manual covers all localities where the products are sold. For this reason, there may be information in this manual that does not apply to your locality.

Corrections

This manual may contain technical inaccuracies or typographical errors due to improvements or changes in products. When changes occur in applicable products or in the contents of this manual, Canon will release technical information as the need arises. In the event of major changes in the contents of this manual over a long or short period, Canon will issue a new edition of this manual.

The following paragraph does not apply to any countries where such provisions are inconsistent with local law.

Trademarks

The product names and company names used in this manual are the registered trademarks of the individual companies.

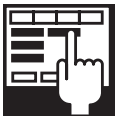
Copyright

Caution

Use of this manual should be strictly supervised to avoid disclosure of confidential information.

1 Symbols Used

This documentation uses the following symbols to indicate special information:

Symbol	Description
	Indicates an item of a non-specific nature, possibly classified as Note, Caution, or Warning.
	Indicates an item requiring care to avoid electric shocks.
	Indicates an item requiring care to avoid combustion (fire).
	Indicates an item prohibiting disassembly to avoid electric shocks or problems.
	Indicates an item requiring disconnection of the power plug from the electric outlet.
 Memo	Indicates an item intended to provide notes assisting the understanding of the topic in question.
 REF.	Indicates an item of reference assisting the understanding of the topic in question.
	Provides a description of a service mode.
	Provides a description of the nature of an error indication.
	Refers to the Copier Basics Series for a better understanding of the contents.

2 Outline of the Manual

This Service Manual contains basic information needed to service the iR2200/iR2800/iR3300 and its accessories (i.e., side paper deck, shift tray) in the field, conducted for the purpose of maintaining its product quality and a specific level of performance. A separate Service Manual is made available for each of its accessories (except for the side paper deck and shift tray); for details, refer to the appropriate manual.

This Service Manual consists of the following chapters:

1. System Unit

Chapter 1	General Description:	features, specifications, names of parts, functions, operation, system configuration, routine maintenance by the user
Chapter 2	Main Controller:	functional construction, outline of electrical circuitry, principles of operation of the image processing system, power supply
Chapter 3	Installation:	site conditions and installation procedure, relocation of the machine, installation of accessories

2. Reader Unit

Chapter 1	Basic Operation:	functional construction, outline of electrical circuitry, basic sequence of operations
Chapter 2	Original Exposure System:	principles of operation of the exposure system, timing of operation, disassembly/assembly and adjustment
Chapter 3	Image Processing System:	principles of operation of the image processing system, timing of operation, disassembly/assembly and adjustment

3. Printer Unit

Chapter 1	Introduction:	safety of the laser, image formation, auxiliary processes
Chapter 2	Sequence of Operations:	basic operations, outline of electrical circuitry, basic sequence of operations
Chapter 3	Laser Exposure System:	principles of operation of the laser exposure system, timing of operation, disassembly/assembly and adjustment
Chapter 4	Image Formation System:	principles of operation of the image formation system, timing of operation, disassembly/assembly and adjustment
Chapter 5	Pickup/Feeding System:	principles of operation of the pickup/feeding system, timing of operation, disassembly/assembly and adjustment

Chapter 6	Fixing System:	principles of operation of the fixing system, timing of operation, and disassembly/assembly and adjustment
Chapter 7	Externals and Controls:	principles of operation of the externals/controls, timing of operation, disassembly/assembly and adjustment
Chapter 8	Paper Deck-L1:	principles of operation, timing of operation, disassembly/assembly and adjustment
Chapter 9	Casstte Feeding Unit-W1:	principles of operation, timing of operation, disassembly/assembly adjustment
Chapter 10	Inner 2Way Tray-A1:	principles of operation, timing of operation, disassembly/assembly adjustment
Chapter 11	Envelope Feeder Attachment-B1:	principles of operation, timing of operation,disassembly/assembly adjustment

4. Troubleshooting

Chapter 1	Maintenance and Inspection:	table of periodically replaced parts, table of consumables/durables, scheduled servicing chart
Chapter 2	Image Adjustment Basic Procedure:	basic procedure for image adjustment
Chapter 3	Standards and Adjustments:	standards and adjustments
Chapter 4	Troubleshooting Image Faults/Malfunctions:	troubleshooting image faults/malfunctions
Chapter 5	Service Mode:	how to use service mode, list of service modes
Chapter 6	Self Diagnosis:	codes, causes of errors
Chapter 7	Upgrading:	how to upgrade
Appendix:		general timing chart, general circuit diagrams

The descriptions are updated from time to time to reflect product improvements, and major changes are communicated in the form of Service Information bulletins.

All service persons are expected to familiarize themselves with the contents of this Service Manual and Service Information bulletins and acquire a level of knowledge and skill required to promptly respond to the needs of the field.

The following rules apply throughout this Service Manual:

1. Each chapter contains sections explaining the purpose of specific functions and the relationship between electrical and mechanical systems with reference to the timing of operation.
   In the diagrams, ▮▮▮ represents the path of mechanical drive; where a signal name accompanies the symbol ⟶, the arrow indicates the direction of the electric signal.
   The expression "turn on the power" means flipping on the power switch, closing the front door, and closing the delivery unit door, which results in supplying the machine with power.
2. In the digital circuits, '1' is used to indicate that the voltage level of a given signal is "High," while '0' is used to indicate "Low." (The voltage value, however, differs from circuit to circuit.) In addition, the asterisk (*) as in "DRMD*" indicates that the DRMD signal goes on when '0'.
   In practically all cases, the internal mechanisms of a microprocessor cannot be checked in the field. Therefore, the operations of the microprocessors used in the machines are not discussed: they are explained in terms of from sensors to the input of the DC controller PCB and from the output of the DC controller PCB to the loads.

The descriptions in this Service Manual are subject to change without notice for product improvement or other purposes, and major changes will be communicated in the form of Service Information bulletins.

All service persons are expected to have a good understanding of the contents of this Service Manual and all relevant Service Information bulletins and be able to identify and isolate faults in the machine.

SYSTEM UNIT
SERVICE MANUAL

Contents

CHAPTER 1 GENERAL DESCRIPTION

CHAPTER 2 MAIN CONTROLLER

CHAPTER 3 INSTALLATION

CHAPTER 1

GENERAL DESCRIPTION

1 Specifications

1.1 Main Body

1.1.1 Type

Item	Description
Body	Desktop
Copyboard	Fixed
Light source	Xenon lamp
Lens	Lens array
Photosensitive medium	OPC drum (30-mm dia.)

T01-101-01

1.1.2 Systems

Item		Description
Reproduction		Indirect electrostatic
Charging		AC roller
Exposure		Laser
Copy density adjustment		Auto or manual
Development		Single-component toner projection
Pickup	Auto	Front cassette (2 cassettes)
		Retard method (about 500 sheets of 80 g/m^2 paper, about 550 sheets of 64 g/m^2 paper)
	Manual	Multifeeder
		Dual process method (about 50 sheets of 80 g/m^2 paper)
Transfer		Roller
Separation		Static eliminator (static separation) + curvature
Cleaning		Blade
Fixing		SURF method (plane heater and fixing film)

T01-101-02

1.1.3 Functions

Item			Description
Resolution	Reading		600dpi×600dpi
	Copying		1200dpi×600dpi
	Printer output		2400dpi×600dpi
Original type			Sheet, book 3-D object (2 kg max.)
Maximum original size			A3/279.4×431.8mm (11"×17")
Reproduction ratio			Direct (1:1), Reduce I (1:0.250), Reduce II (1:0.500), Reduce III (1:0.611), Reduce IV (1:0.707), Reduce III (1:1.414), Enlarge IV (1:2.000), Enlarge V (1:4.000), Enlarge VI (1:8.000), Zoom (1:0.250 to 8.000 ; 25% to 800% in 1% increments)
Wait time			10 sec or less (at 20°C/168°F)
First copy time			5.8 sec (book mode, cassette 1, Direct, A4/LTR, text mode)
Continuous copying			999 copies max.
Copy size			
	Cassette	A/B	A3 max., A5 (vertical feed) min.
		Inch	279.4×431.8 mm (11"×17") max., STMT (vertical feed) min.
	Manual feed	AB	A3 max., postcard (vertical feed) min.
		Inch	279.4×431.8 mm (11"×17") max., STMT (vertical feed) min.
Cassette 1/2			• Plain paper (64 to 80 g/m^2):A3, B4, A4, B5, A5R, A4R, B5R, 279.4×431.8mm (11"×17"), LGL, LTR, LTRR, STMT, STMTR • Tracing paper (SM-1):A3, B4, A4, B5, A4R, B5R • Colored paper (Canon-recommended):B4, A4, A4R
Multifeeder			• Plain paper (64 to 80 g/m^2):A3, B4, A4, B5, A5R, A4R, B5R, 279.4×431.8mm (11"×17"), LGL, LTR, LTRR, STMT, STMTR • Tracing paper (SM-1, GSN-75):A3, B4, A4, B5, A4R, B5R • Transparency (Canon-recommended):A4, A4R, LTR, LTRR • Colored paper (Canon-recommended):B4, A4, A4R • Postcard: Jpn (vertical feed), double-card, 4-sheet card • Label sheet (Canon-recommended):B4, A4, A4R, LTR, LTRR • Thick paper (90 to 128 g/m^2):A3, B4, A4, B5, A4R, B5R, LTR, LTRR • Envelope

T01-101-03

Item	Description
Single-sided copying mode	• Plain paper (64 to 80 g/m^2):A3, B4, A4, B5, A5R, A4R, B5R, A5, 279.4×431.5mm (11"×17"), LGL, LTR, LTRR, STMT, STMTR • Tracing paper (SM-1, GSN-75):A3, B4, A4, B5, A4R, B5R • Transparency (Canon-recommended)A4, A4R, LTR, LTRR • Colored paper (Canon-recommended):B4, A4, A4R • Postcard: Jpn postcard (vertical feed), double-card, 4-sheet card • Label sheet (Canon-recommended):B4, A4, A4R, LTR, LTRR • Thick paper (90 to 128 g/m^2):A3, B4, A4, B5, A4R, B5R, LTR, LTRR • Envelope
Double-sided copying mode (automatic)	• Plain paper (64 to 80 g/m^2):A3, B4, A4, B5, A5R, A4R, B5R, 279.4×431.8mm (11"×17"), LGL, LTR, LTRR, STMT, STMTR • Colored paper (Canon-recommended):B4, A4, A4R
Double-sided copying mode (multifeeder)	• Plain paper (64 to 80 g/m^2):A3, B4, A4, B5, A5R, A4R, B5R, 279.4×431.8mm (11"×17"), LGL, LTR, LTRR, STMT, STMTR • Colored paper (Canon-recommended):B4, A4, A4R • Postcard: Jpn (vertical feed), double-card, 4-sheet card • Thick paper (90 to 128 g/m^2):A3, B4, A4, B5, A4R, B5R, LTR, LTRR

T01-101-04

Item		Description
Cassette	Capacity	55 mm deep (approx.; about 500 sheets of 80 g/m^2 paper)
Hard disk		6GB
Non-image width	Leading edge	Direct, Enlarge/Reduce:4.0±1.5/-1.0mm <4.5±1.8mm>*1
	Trailing edge	Direct, Enlarge/Reduce:2.0±1.5mm <2.0±1.8mm>*1
	Left/right (1st side)	Direct, Enlarge/Reduce:2.5±1.5mm <2.5±2.0mm>*1
Auto clear		Yes (2 min standard; may be changed in 1-min increments between 0 and 9 min)
Sleep mode		Yes (2 min standard; may be changed in user mode to 10sec, 1, 2, 10, 15, 20, 30, 40, 50, 60, 90 min, 2, 3, or 4 hr)
Accessory		• DADF-H1 • Platen Cover TypeE • Document Tray-D2 • Copy Tray-F1 • Saddle Finisher-G1 • Puncher Unit-K1 (2/3holes), G1/H1 (4holes) • Finisher-J1 • Inner 2Way Tray-A1 • Paper Deck-L1 • Cassette Feeding Unit-W1 • Card Reader-C1 • Network Multi-PDL Printer Kit-C1 • Token Ring Network Interface Adapter iN-TR2

*1:The values within parentheses indicate when the DADF is used.

T01-101-05

The above specifications are subject to change for product improvement.

1.1.4 Others

Item		Description
Operating environment	Temperature range	15° to 30°C/59 to 86°F
	Humidity range	5 to 80%
	Atmospheric pressure	810.6 to 1013.3 hpa (0.8 to 1.0 atm)
Power consumption	Maximum	1350W or less
	Standby	48 W (approx.; reference only)
	Continuous	720 W (approx.; reference only)
Noise		Sound power level (Impulse mode)
	Copying	iR2200: 66 dB or less, iR3300: 71 dB or less
	Standby	iR2200: 40 dB or less, iR3300: 50 dB or less
Ozone		0.01 ppm or less avg., 0.02 ppm or less max.
Dimensions		565 (W) × 678 (D) × 1020 (H) mm 22.2 (W) ×26.7 (D) × 40.2 (H) in (With Cassette Feeding Unit-W1)
Weight		80 kg (approx.)/176.3 lb (approx.)
Consumables	Copy paper	Keep wrapped to protect against humidity.
Toner		Keep away from direct sunshine, and keep at 40°C/85% or less.

T01-101-06

Reproduction mode	Side	Paper size	copies /min (1-to-N)		
			iR2200	iR2800	iR3300
Direct	A3 (297×420mm)	A3	16	16	16
	A4 (210×297mm)	A4	22	28	33
	A5 (149×210mm)	A5	18	18	18
	B4 (257×364mm)	B4	14	14	14
	B5 (182×257mm)	B5	28	28	28
	A4R (297×210mm)	A4R	18	18	18
	B5R (257×182mm)	B5R	18	18	18
	A5R (210×149mm)	A5R	18	18	18
Reduce II (50.0%)	A3 → A5R	A5R	18	18	18
III (61.1%)	A3 → B5R	B5R	18	18	18
IV (70.7%)	B4 → B5R	B5R	18	18	18
V (81.6%)	A3 → A4R	A4R	18	18	18
	B4 → A4R	A4R	18	18	18
VI (86.5%)	B5R → A5R	A5R	18	18	18
	A4 → B5	B5	28	28	28
	A3 → B4	B4	14	14	14
Enlarge IV (200.0%)	A5R → A3	A3	16	16	16
III (141.4%)	A4R → A3	A3	16	16	16
II (122.4%)	B5R → B4	B4	14	14	14
	A4R → B4	B4	14	14	14
I (115.4%)	A5 → B5	B5	28	28	28
	B4 → A3	A3	16	16	16
	B5 → A4	A4	22	28	33

Delivery by copier, Auto paper select ON, Auto density, Non-sort, Cassette

T01-101-07

Reproduction mode	Size		(1toN) iR2200	iR2800	iR3300
Direct	279.4×431.8mm (11"×17")	279.4×431.8mm (11"×17")	16	16	16
	LTR	LTR	22	28	33
	LGL	LGL	14	14	14
	LTRR	LTRR	18	18	18
	STMTR	STMTR	18	18	18
Reduce II (50.0%)	279.4×431.8mm (11"×17") → STMTR	STMTR	18	18	18
III (64.7%)	279.4×431.8mm (11"×17") → LTRR	LTRR	18	18	18
IV (73.3%)	279.4×431.8mm (11"×17") → LGL	LGL	14	14	14
V (78.6%)	LGL → LTRR	LTRR	18	18	18
Enlarge IV (200.0%)	STMTR* → 279.4×431.8mm (11"×17")	279.4×431.8mm (11"×17")	16	16	16
III (129.4%)	LTRR → 279.4×431.8mm (11"×17")	279.4×431.8mm (11"×17")	16	16	16
II (121.4%)	LGL → 279.4×431.8mm (11"×17")	279.4×431.8mm (11"×17")	16	16	16
	Paper size	copies/min			

*STMTR cannot be used as an original.
Delivery by copier, Auto paper select ON, Auto density, Non-sort, Cassette

T01-101-08

The above specifications are subject to change for product improvement.

1.2 Side Paper Deck-L1

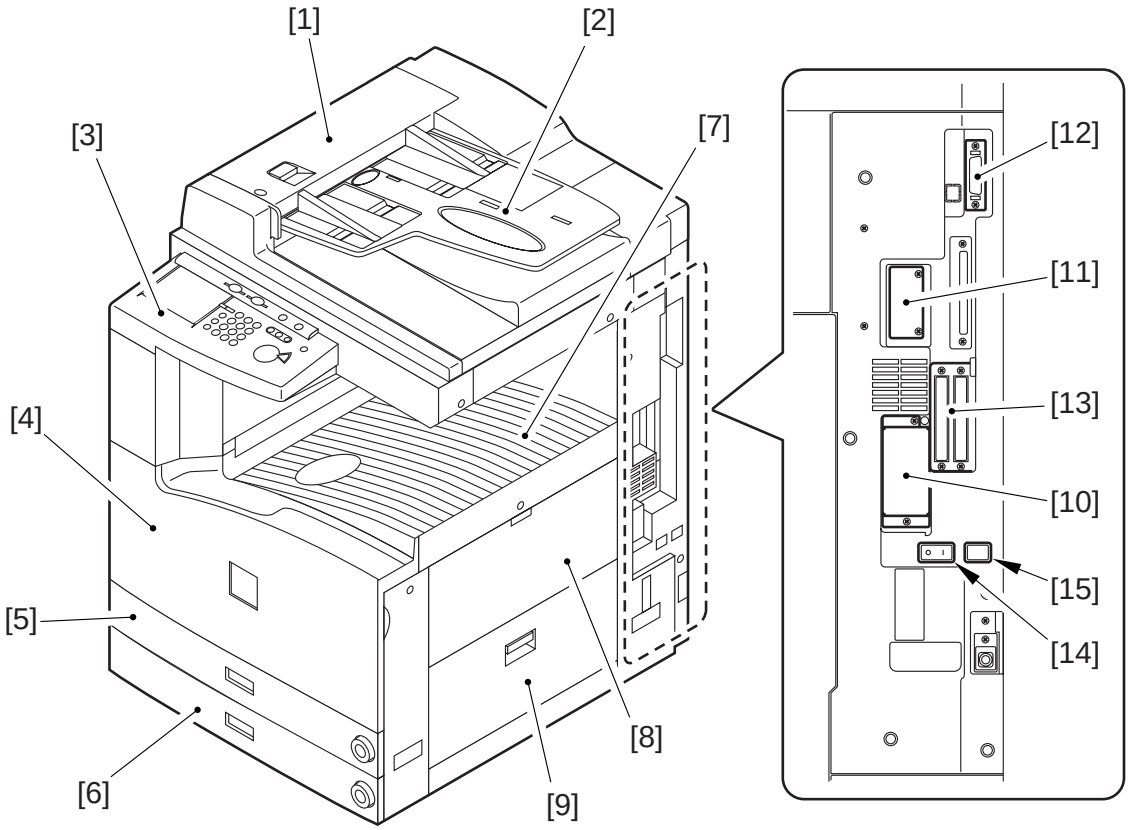
Item	Description
Pickup method	Retard
Paper accommodation	Front loading
Paper type (horizontal feed only)	Plain paper (65 to 80 g/m^2): A4, B5, LTR Colored paper (Canon-recommended): A4
Capacity	2,500 sheets (approx.; 80 g/m^2 paper)
Paper size switch	By size guide plate/in service mode
Dimensions	324 (W) × 591 (D) × 432 (H) mm 12.8 (W) × 23.3 (D) × 17.0 (H) in
Weight	30 kg (approx.)/66.1 lb (approx.)
Power supply	None (DC power supplied by accessories power supply of host machine)
Operating conditions	Same as host machine

T01-102-01

The above specifications are subject to change for product improvement.

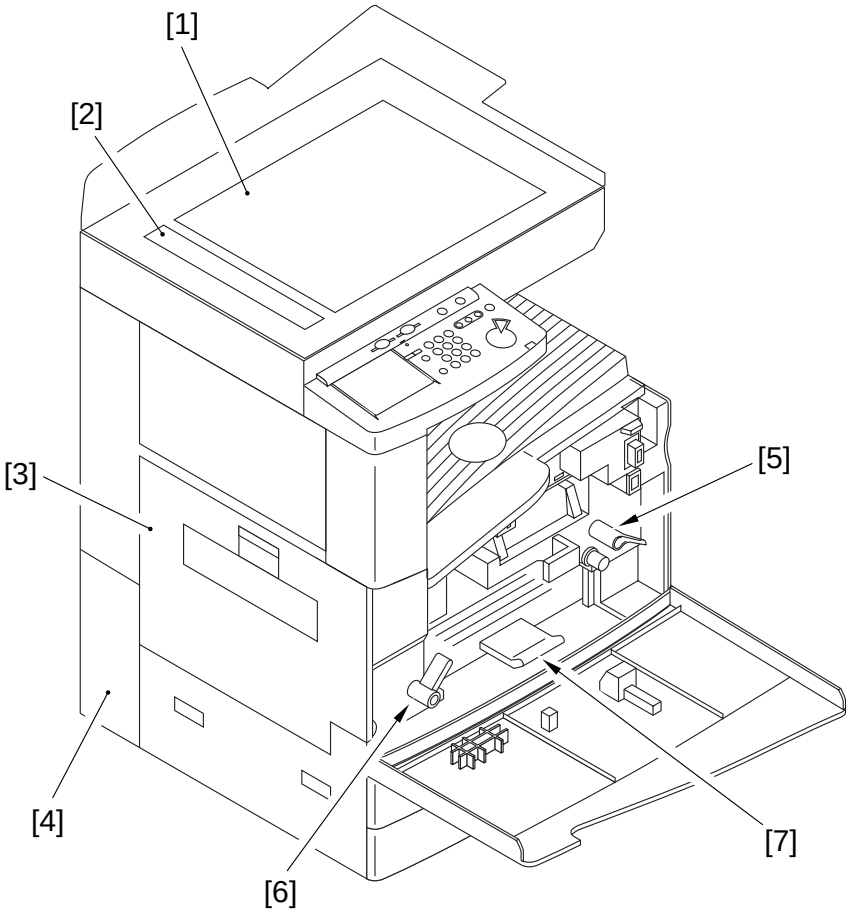
2 Names of Parts

2.1 External View



[1] ADF
[2] Original tray
[3] Control panel
[4] Front cover
[5] Cassette 1
[6] Cassette 2
[7] Delivery tray
[8] Multifeeder
[9] Right lower cover
[10] DIMM ROM replacement cover
[11] Network card slot
[12] Parallel connector
[13] Extension board slot
[14] Main power switch
[15] Cassette heater switch

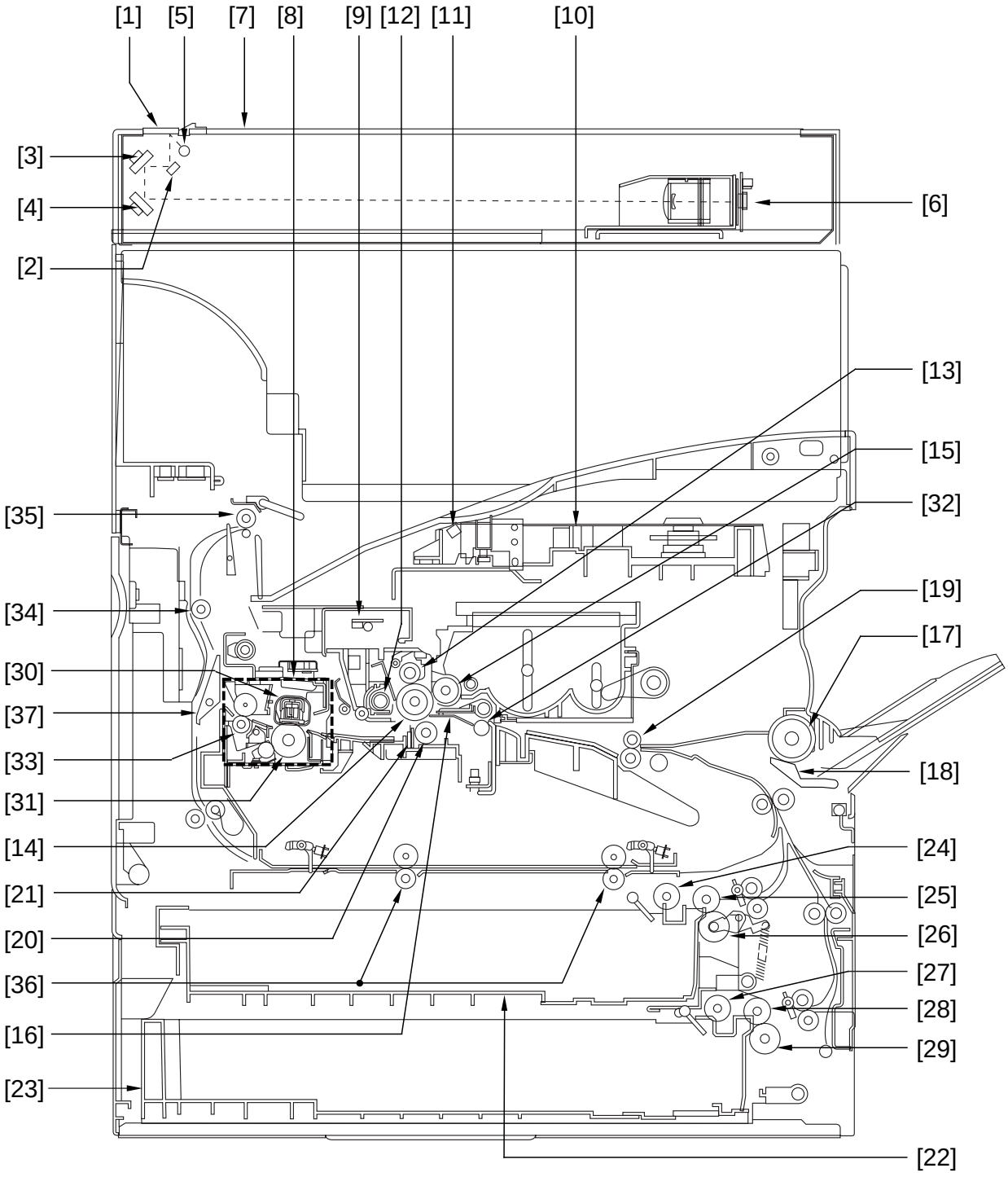
F01-201-01



[1] Copyboard glass
[2] DADF reading glass
[3] Left cover
[4] Left lower rear cover (waste toner case cover)
[5] Developing assembly releasing lever
[6] Feeding assembly releasing lever
[7] Duplex feeding assembly releasing lever

F01-201-02

2.2 Cross Section



F01-202-01

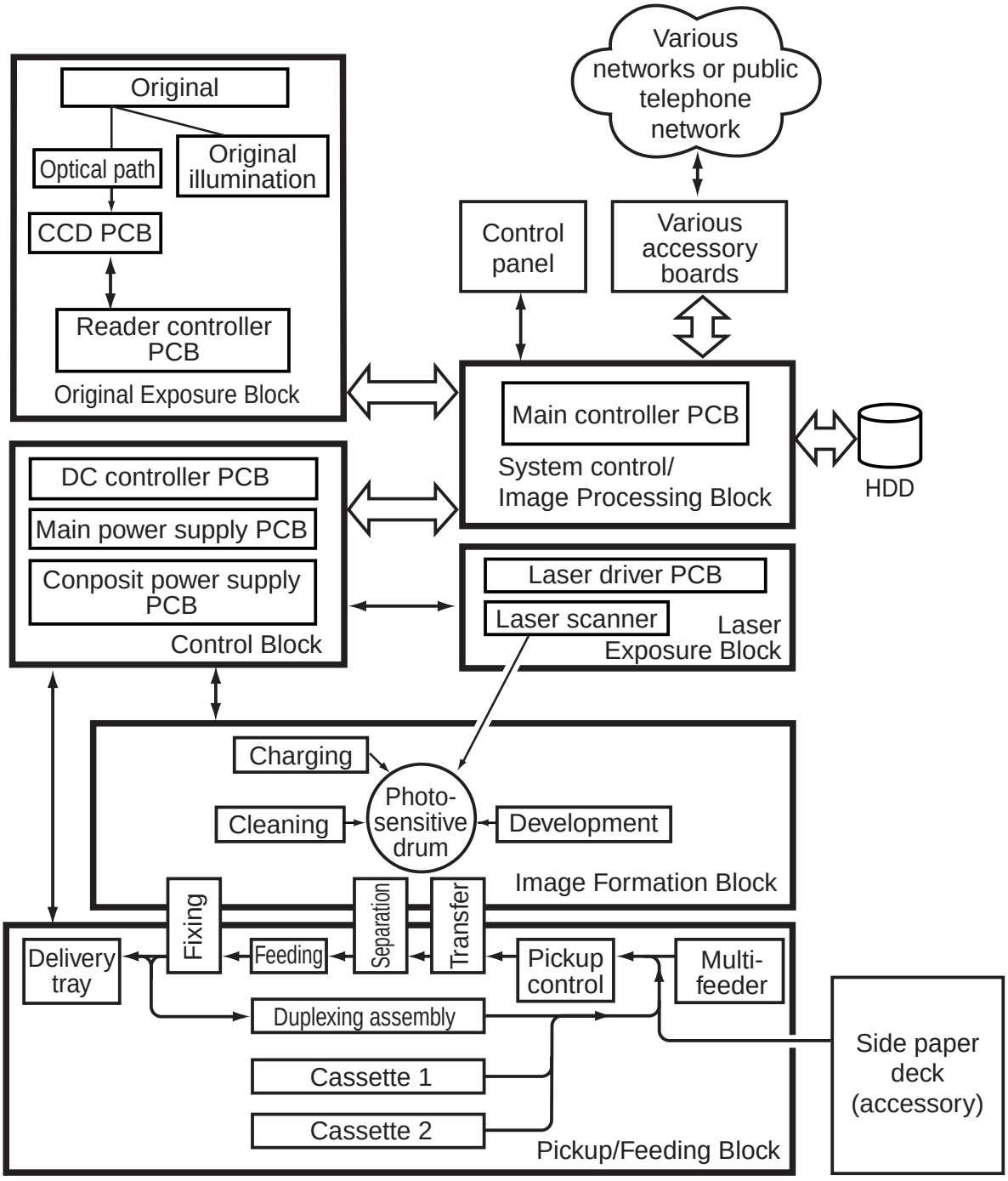
[1] DADF reading glass
[2] No. 1 mirror
[3] No. 2 mirror
[4] No. 3 mirror
[5] Scanning lamp
[6] CCD unit
[7] Copyboard glass
[8] Fixing assembly
[9] Pre-exporsure lump
[10] Laser unit
[11] Laser mirror
[12] Drum cleaner assembly
[13] Primary charging assembly
[14] Photosensitive drum
[15] Developing cylinder
[16] Transfer guide
[17] Multifeeder pickup roller
[18] Multifeeder separation pad
[19] Registration roller
[20] Transfer roller
[21] Static eliminator
[22] Cassette 1
[23] Cassette 2
[24] Cassette 1 pickup roller
[25] Cassette 1 feeding roller
[26] Cassette 1 separation roller
[27] Cassette 2 pickup roller
[28] Cassette 2 feeding roller
[29] Cassette 2 separation roller
[30] Fixing film
[31] Lower fixing roller
[32] Pre-transfer roller
[33] Fixing delivery roller
[34] Outside delivery roller
[35] Delivery roller
[36] Duplexing roller
[37] Reversing frapper

T01-202-01

3 System Configuration

3.1 Functional Construction

The machine may be broadly divided into the following six functional blocks:



F01-301-01

3.2 Outline of the Electrical Circuitry

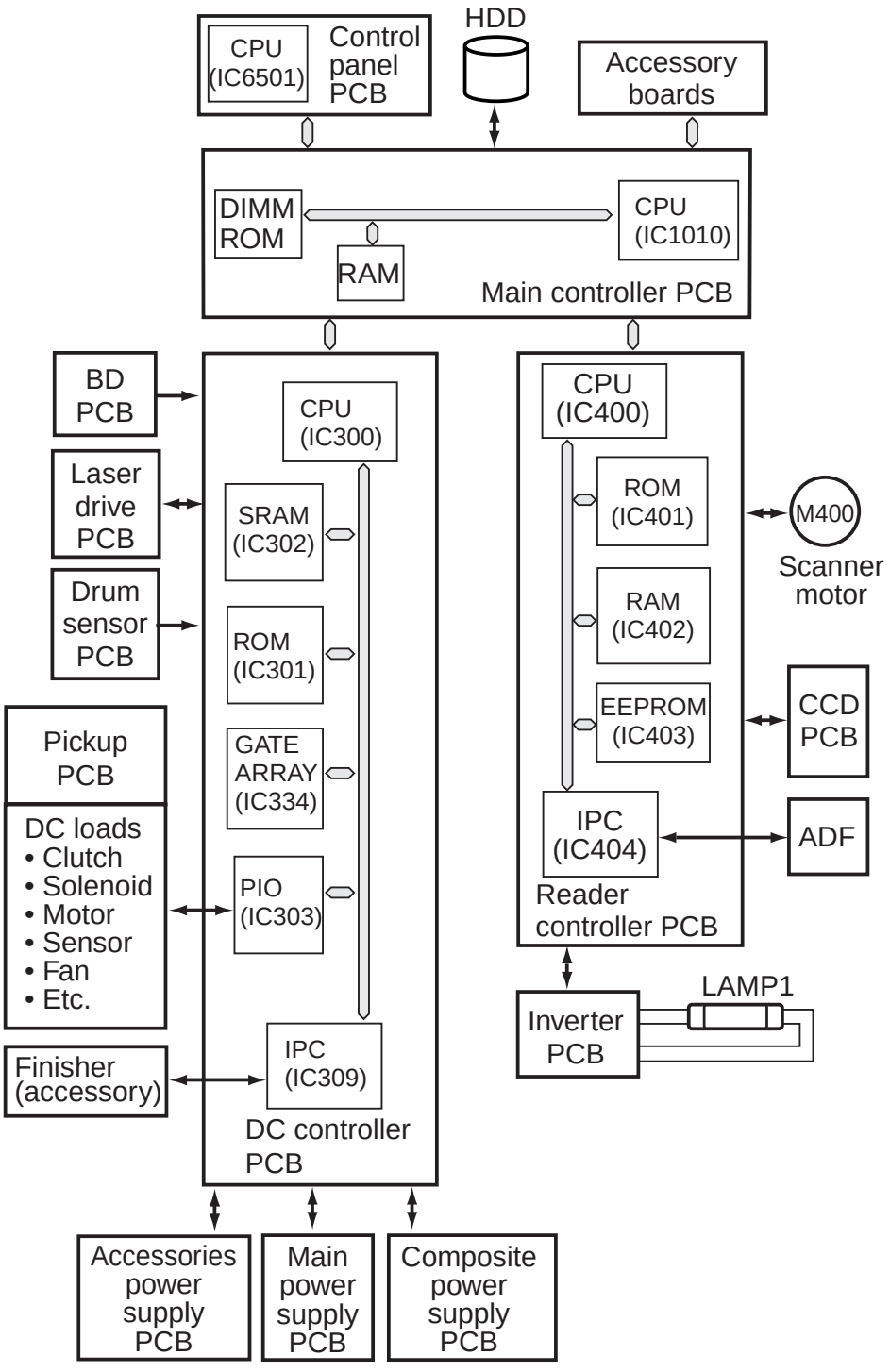
3.2.1 Construction of the Electrical Circuit

The major electrical mechanisms of the machine are controlled by the following PCBs:

[1] Man controller PCB; controls the system as a whole, processes images

[2] DC controller PCB; controls the printer unit, controls the finisher communication

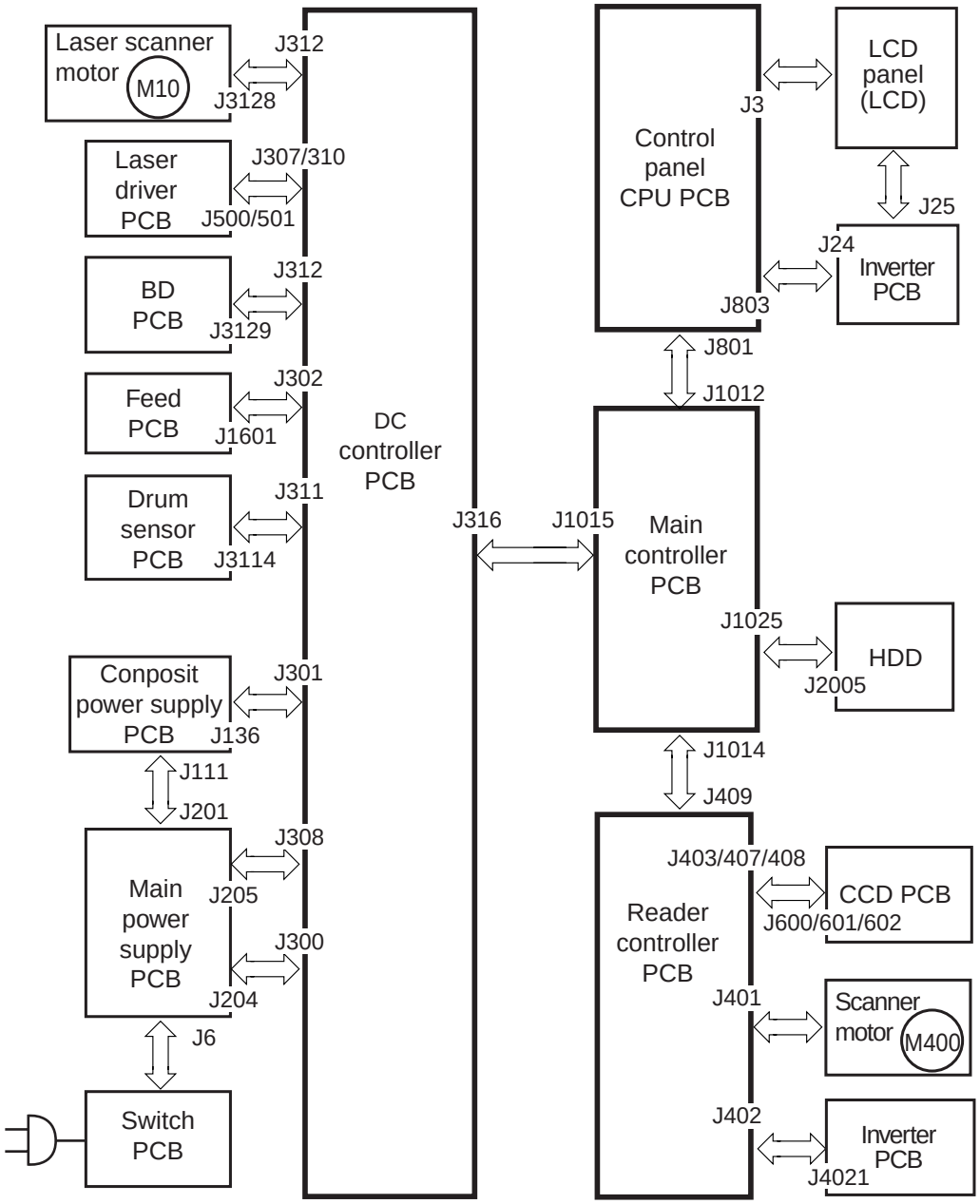
[3] Reader controller PCB; controls the reader unit, controls the DADF communication



F01-302-01

3.3 Inputs to and Outputs from the Major PCBs

3.3.1 Wiring Diagram of the Major PCBs

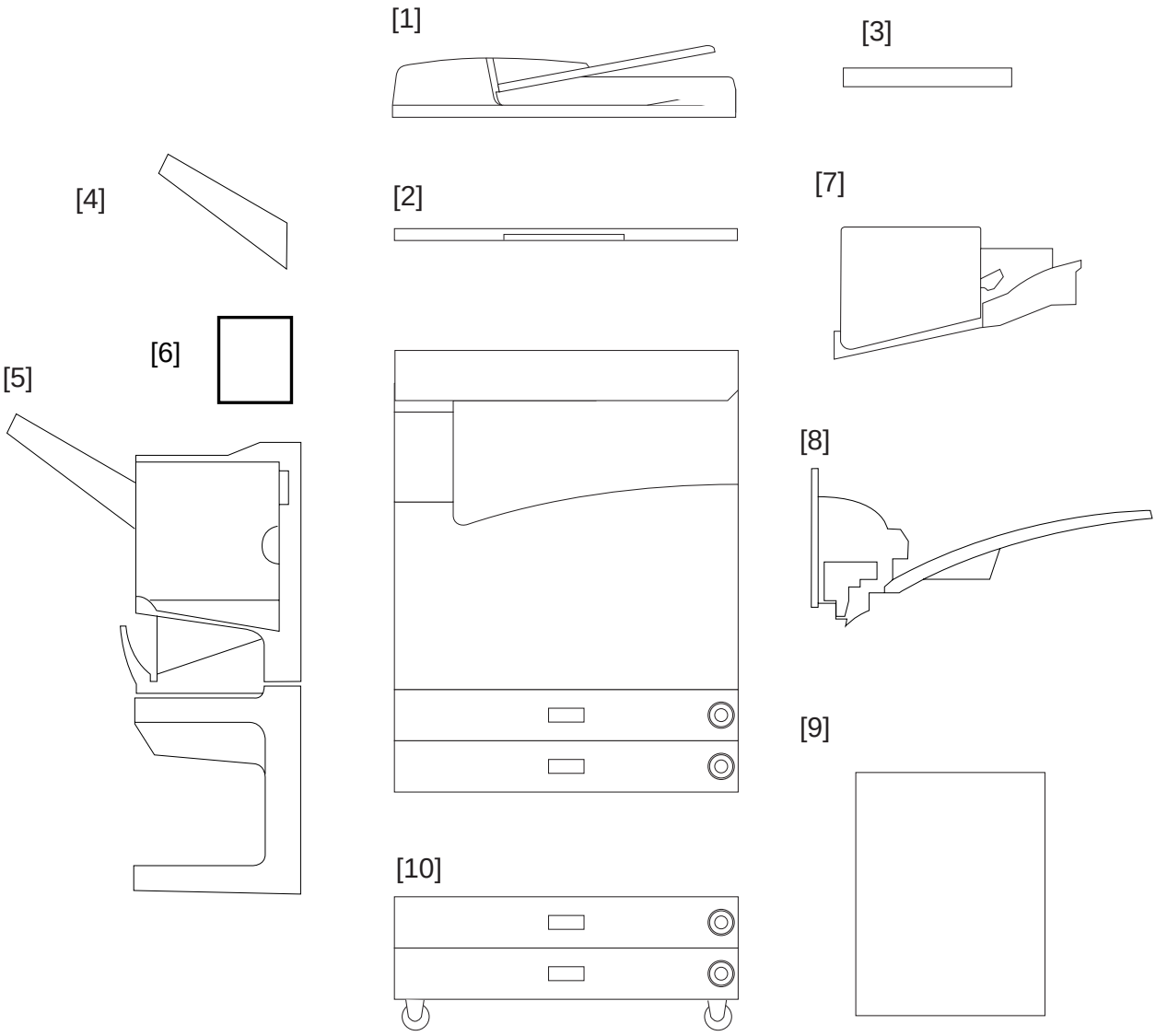


Note: The ⟺ in the diagram indicates connection between PCBs, NOT the flow of signals.

F01-303-01

3.4 Configuration with Accessories

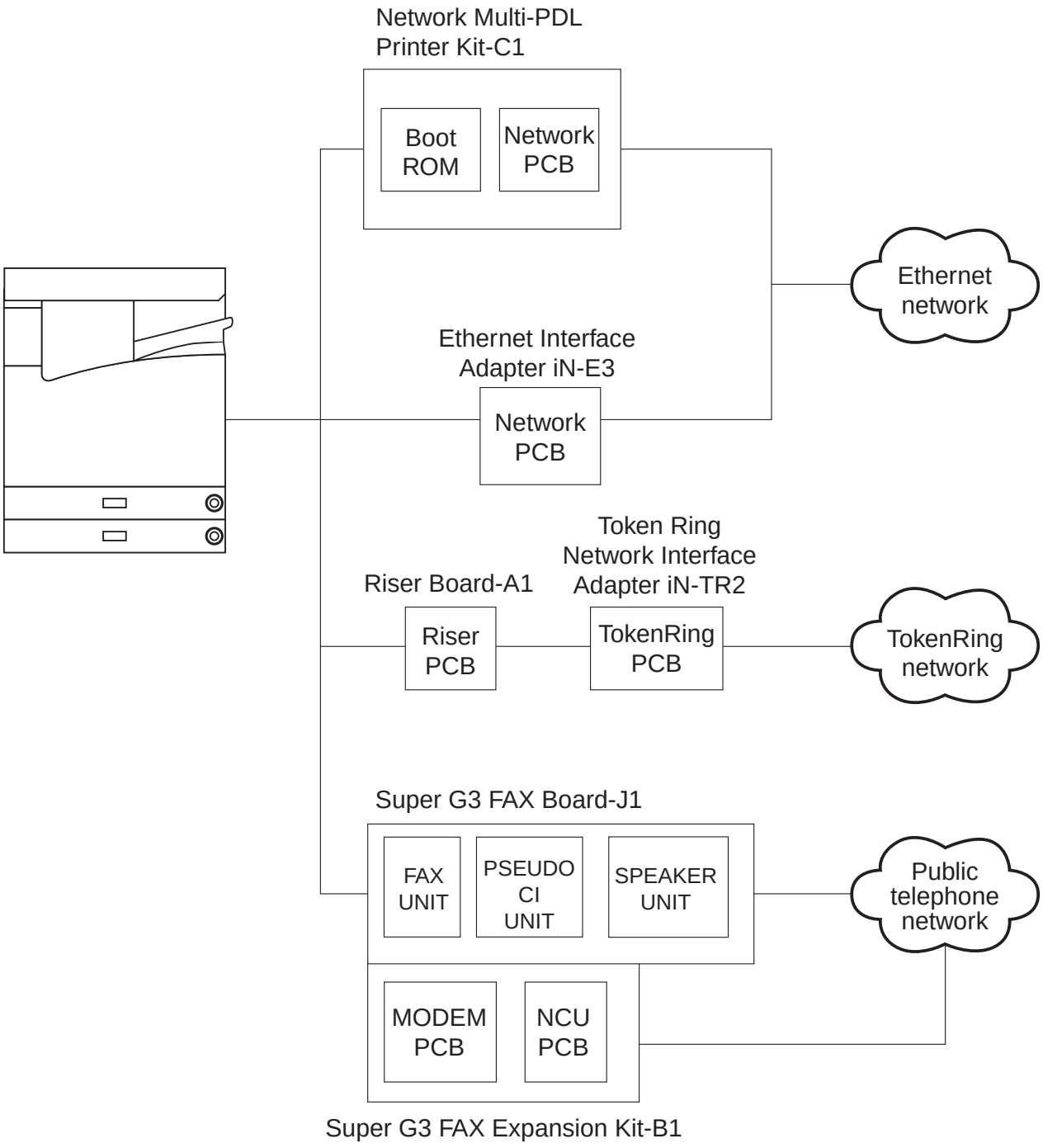
3.4.1 Accessories for Original/Paper Feeding



[1] DADF-H1
[2] Platen Cover TypeE
[3] Document Tray-D2
[4] Copy Tray-F1
[5] Saddle Finisher-G1
[6] Puncher Unit-K1/G1/H1
[7] Finisher-J1
[8] Inner 2way Tray-A1
[9] Paper Deck-L1
[10] Cassette Feeding Unit-W1

F01-304-01

3.4.2 Accessory Boards



F01-304-02

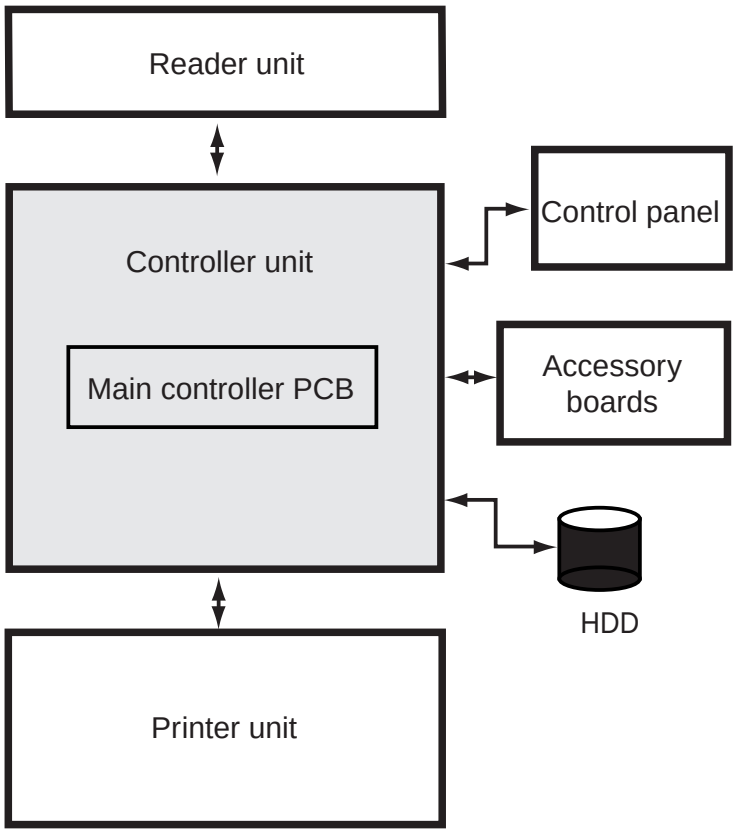
CHAPTER 2

MAIN CONTROLLER

1 Basic Construction

1.1 Functional Construction

The machine may broadly be divided in to the following functional blocks, with the controller block covering the shaded area:



F02-101-01

1.2 Outline of the Electrical Circuitry

1.2.1 Outline

The major electrical mechanisms of the controller block are controlled by the CPU on the main controller PCB. The CPU, RAM, DIMM, and the ICs and HDD around the CPU have the following functions:

1.2.2 Main Controller PCB

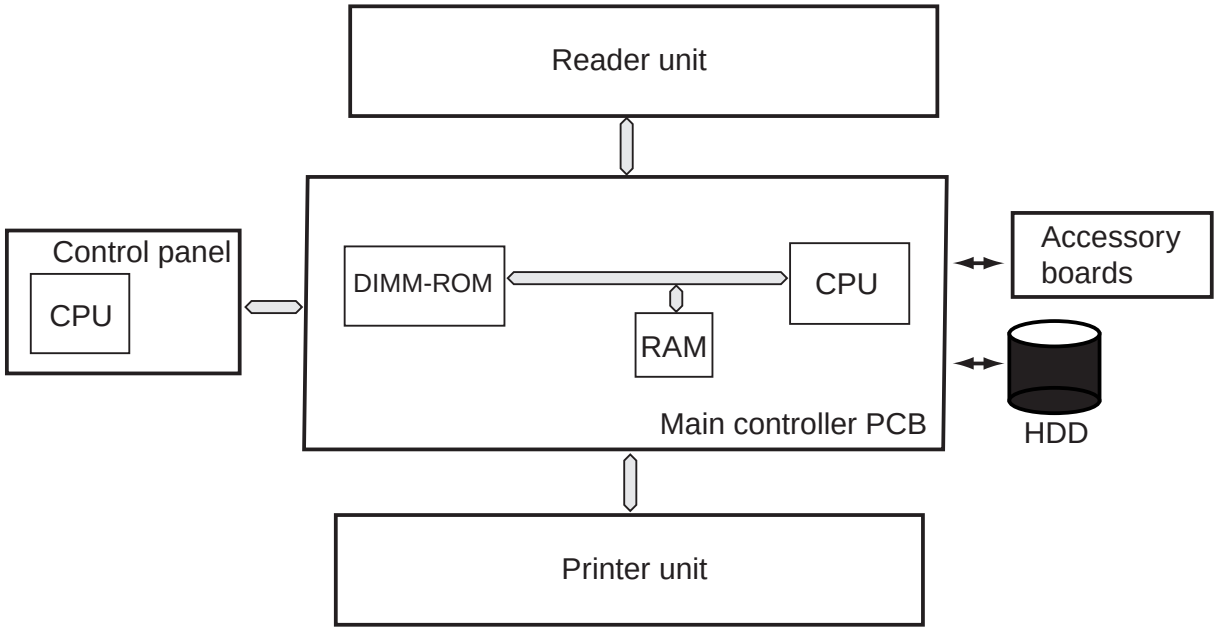
Name	Description
CPU	• Controls the processing of image data from the reader unit. • Controls the processing of image data to the printer unit. • Controls the HDD. • Controls the interface of the following: network, DMA controller, PCI, and ROM/RAM.
RAM	• Stores program data and image data temporarily.
DIMM-ROM	• Stores the system control program. • Stores the boot program.

T02-102-01

1.2.3 HDD

Item	Description
HDD	• Sores the system software. • Stores image data for the Box function.

T02-102-02


Reader unit
Control panel
CPU
DIMM-ROM
CPU
RAM
Main controller PCB
Accessory boards
HDD
Printer unit

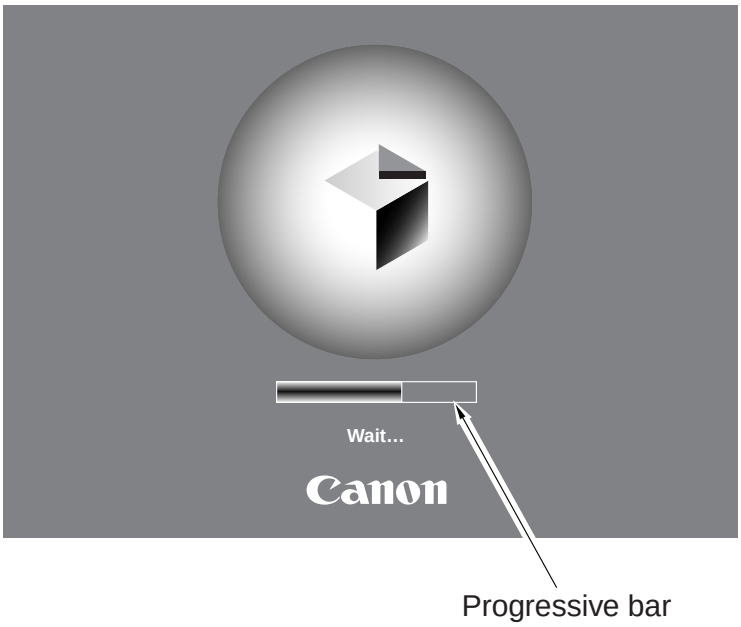
F02-102-01

1.3 Start-Up Sequence

1.3.1 Outline

The system software used to control the machine is stored on the machine's HDD. The CPU on the main controller PCB reads the system software from the HDD into the SDRAM fitted to the DIMM socket of the main controller PCB.The control panel displays the following screen while the CPU reads the system software from the HDD to the SDRAM, and the progressive bar on the screen indicates the progress of the start-up sequence.

Start-Up Screen

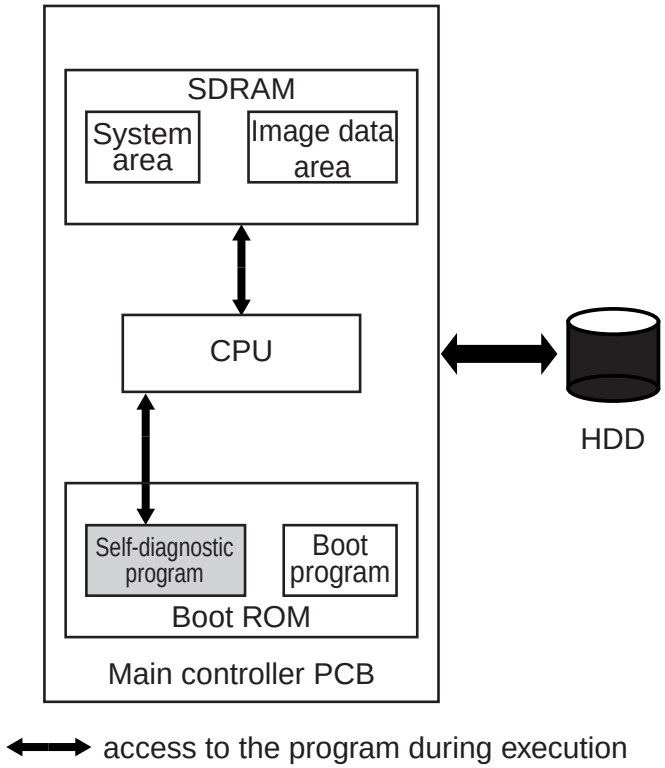


F02-103-01

1.3.2 Start-Up Sequence

When the main power switch is tuned on, the CPU on the main controller CPU executes the self-diagnostic program stored in the boot ROM.

The self-diagnostic program checks the condition of the SDRAM and the HDD; upon detection of a fault, it will indicate the fact in the control panel in the form of an error code.



F02-103-02

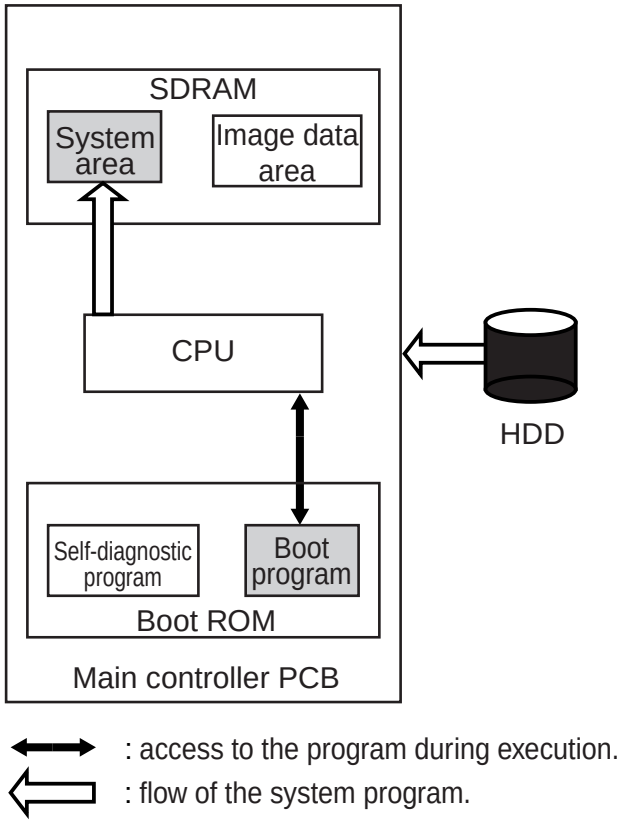
Error

E601-0000, 0001
Indicates the presence of an error in image transfer information.
E602-0001, 0002
Indicates the presence of an error in write/read operation.

When the self-diagnostic program ends normally, the boot program also stored in the boot ROM will start up. The boot program reads the system software from the HDD into the system area of the SDRAM.

When the write operation ends, the system software in the SDRAM starts up to initialize the various parts of the machine, at the end of which the control panel will indicate the normal operation screen and, at the same time, the Start key LED changes from red to green to indicate that the machine is ready to accept a job.

The machine's system software consists of multiple modules, and those modules that are needed for a specific task in question will be called into the system area of the SDRAM for use.

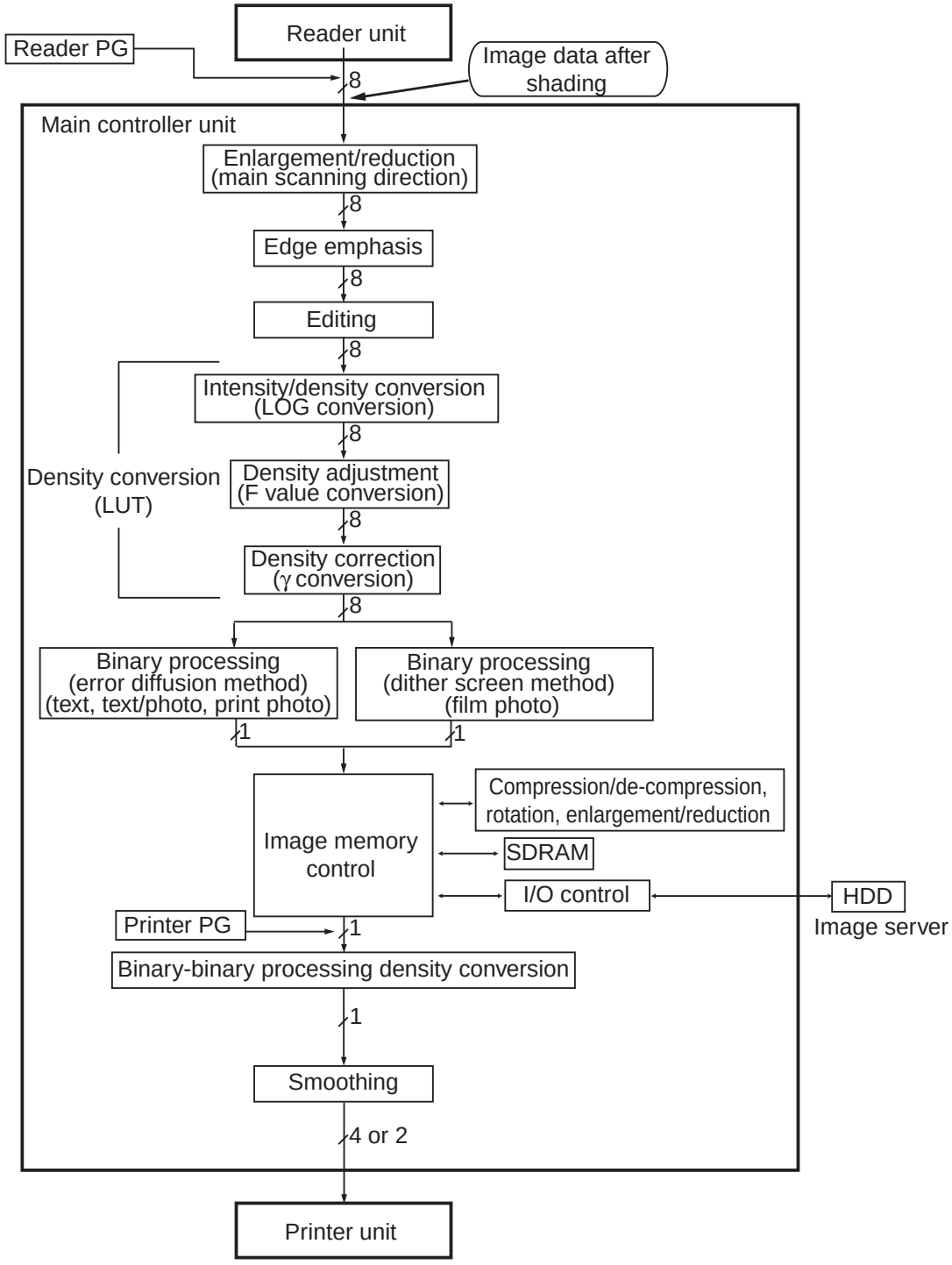


F02-103-03

2 Digital Image Processing

2.1 Outline

The machine's digital image processing and image memory are controlled by the main controller PCB. The following is a block diagram of digital image processing:



F02-201-01

2.2 Input Image Processing

The image data from the reader unit is processed for the following:

2.2.1 Image Data from the Reader Unit

The image signals from the reader unit are 8-bit, 256-gradation intensity image signals which have been subjected to shading correction.

The signals arrive from two signal lines (for even- and odd-numbered pixels).

2.2.2 Enlargement/Reduction (main scanning direction)

An image is enlarged or reduced by processing image data when writing it into or reading it from image memory.

2.2.3 Edge Emphasis

For each mode (text, text/photo, print photo, film photo), edge emphasis is executed so as to increase sharpness while suppressing moire.

2.2.4 Editing

The machine provides various editing functions: negative/positive reversal, mirror, fold.

2.2.5 Density Conversion (LUT)

In this block, the intensity image signals are converted into density image signals, and processing is executed so as to enable the best output density curve for a specific mode in question.

a. LOG Conversion

Using a LOG conversion table, intensity image signals based on reflected light are converted into density image signals based on density data.

b. Density Adjustment (F-value conversion)

The F-value table most suited to the setting of the Density key in the control panel is used to adjust the density; it, however, will not be executed in memory copy mode.

c. Density Correction (γ conversion)

The γ conversion table best suited to each specific mode (test, text/photo, print photo, film photo) is used to correct density.

2.2.6 Binary Processing (error diffusion method T-BIC)

In the error diffusion method (T-BIC), the texture is controlled to process the data for optimum printing effects; 8-bit image density signals of each mode (text, text/photo, print photo) are converted into 1-bit image density signals (binary).

2.2.7 Binary (dither screen method)

In the dither screen method, the texture is controlled to process the data for optimum printing effects; 8-bit image density signals for film photo mode are converted into 1-bit image density signals (binary).

Although expressed in binary, the resulting signals enable reproduction in 256 gradations (dither screening of 40×40 pixels).

2.3 Image Memory Control

The image data after binary processing is controlled for the following:

2.3.1 Compression/De-Compression, Rotation, and Enlargement/Reduction

The binary data generated as the result of the foregoing processes is subjected to the following: compression/de-compression (for electronic sorting), rotation, resolution conversion.

2.3.2 SDRAM

The image data subjected to image memory control is temporarily stored in SDRAM.

2.3.3 HDD

The HDD functioning as an image server is used to store image data for the Box function.

2.4 Output Image Processing

The output image data to the printer unit is subjected to the following processing:

2.4.1 Smoothing

a. When Generating Read Images

In the case of text or test/photo mode, the input image of 600×600 dpi is converted into 1200*×600 dpi by means of smoothing.

*Equivalent.

In smoothing, image data is compared against a template consisting of several combinations of pattern matrixes for replacement of selected pixels.

In addition, notch processing is also executed at the same time as a pattern unique to read image.

b. When Generating Printer (PDL) Images

The image data is subjected to the type of smoothing best suited to PDL, in which 600×600 dpi is converted into 2400*×600 dpi.

*Equivalent.

2.4.2 Binary-Binary Density Conversion (read image output only)

This processing is used as an auxiliary means for adjusting the density of images.

3 Soft Counters

The machine is equipped with soft counters that count the number of prints it has handled; the counter readings may be checked by pressing the Check key in the control panel.

The counters are controlled by the main controller PCB, and each count is incremented when any of the following sensors detects paper during copy/print operation:

When No Delivery Option Is Installed

Copy/print operation		Sensor used		Delivery slot
Single-sided		PS15	No. 1 delivery sensor	Below the inside tray
Double-sided	1st side	PS18	Duplexing unit outlet sensor	
	2nd side	PS15	No. 1 delivery sensor	Below the inside tray

When the Inner 2-Way Tray Is Used

Copy/print operation		Sensor used		Delivery slot
Single-sided		PS19S	No. 2 delivery sensor	Above the inside tray
		PS21S	No. 3 delivery sensor	Outside tray
		PS18	Duplexing unit outlet sensor	
Double-sided	1st side	PS19S	No. 2 delivery sensor	Above the inside tray
	2nd side	PS21S	No. 3 delivery sensor	Above the inside tray
	2nd side	PS21S	No. 3 delivery sensor	Outside tray

When a Finisher Is Installed

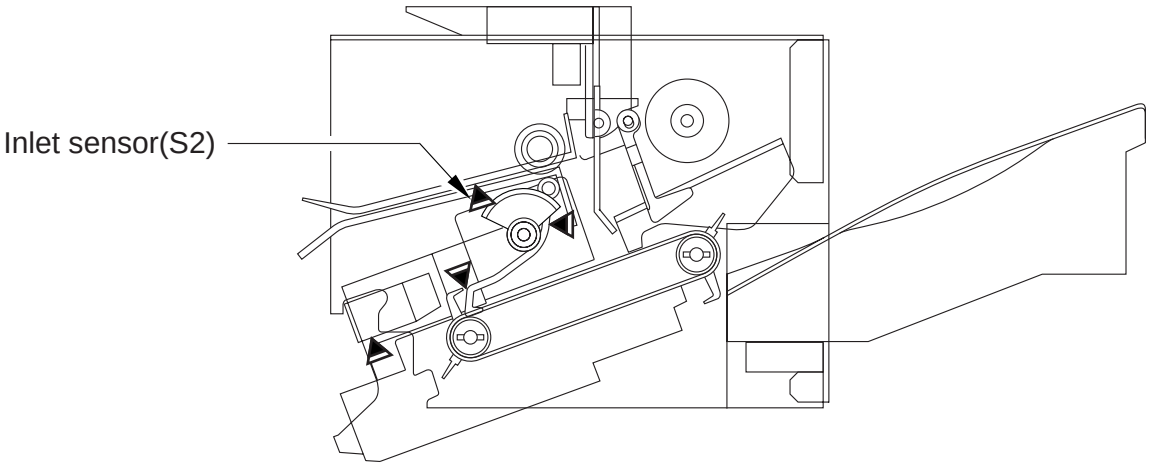
Copy/print operation		Sensor used		Delivery slot
Single-sided		S2	Inlet sensor	Finisher delivery tray
Double-sided	1st side	PS18	Double-sided outlet sensor	
	2nd side	S2	Inlet sensor	Finisher delivery tray

When Delivery Is to the Saddle finisher

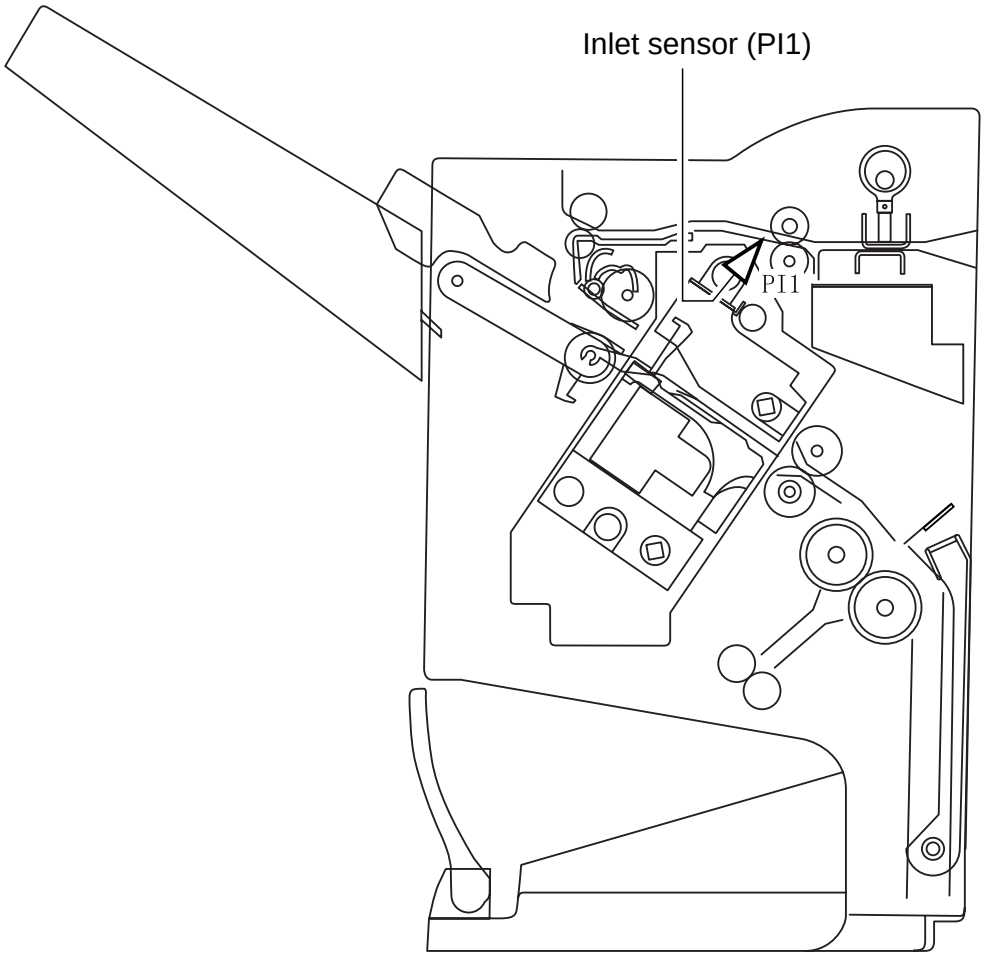
Copy/print operation		Sensor used		Delivery slot
Single-sided		PI1	Inlet sensor	Finisher delivery tray
Double-sided	1st side	PS18	Double-sided outlet sensor	
	2nd side	PI1	Inlet sensor	Finisher delivery tray

T02-301-01

The following diagrams show the locations of the sensor in the finisher and the saddle finisher:



F02-301-01



F02-301-02

The counters possess a total of 16 modes, consisting of eight modes for large-size papers and eight modes for small-size papers; the following shows the basic counter modes:

Copy/print mode	Large-size	Small-size*
Local copy	A	B
PDL print	C	D
Box print	E	F
Remote copy print	G	H
Fax receive print	I	J
Report print	K	L
Double-sided print	M	N
Scan	O	P

*At time of shipment, B4 or smaller; may be changed in service mode to count B4 as large-size.

T02-301-02

The following shows the counter configurations according to mode at time of shipment:

Counter	Description*1	Default display		Default switch *2
		100V model	120/230V model	
Counter 1	Total (A through L)	ON	ON	Fixed
Counter 2	Total large (ACEGIK)	OFF	ON	May be changed.
Counter 3	Copy 1 (ABGH)	OFF	ON	May be changed.
Counter 4	Copy 1 large (AG)	OFF	ON	May be changed.
Counter 5	Print 1 total (CDEF)	OFF	OFF	May be changed.
Counter 6	Fax total (IJ)	OFF	OFF	May be changed.

*1:The notations in the parentheses indicate the corresponding basic counter modes (T02-300-20).
*2:The counter description may be changed or enabled/disabled for display in service mode (except counter 1, whose setting cannot be cannot be changed).

T02-301-03

Error

OPTION>USER>COUNTER1
Use it to enable/disable the display of soft counter 1 in the control panel.
OPTION>USER>COUNTER2
Use it to enable/disable the display of soft counter 2 in the control panel, or to change the counter type.
OPTION>USER>COUNTER3
Use it to enable/disable the display of soft counter 3 in the control panel, or to change the counter type.
OPTION>USER>COUNTER4
Use it to enable/disable the display of soft counter 4 in the control panel, or to change the counter type.
OPTION>USER>COUNTER5
Use it to enable/disable the display of soft counter 5 in the control panel, or to change the counter type.
OPTION>USER>COUNTER6
Use it to enable or disable the display of soft counter 6 in the control panel, or to change the counter type.

4 Controlling the Power Supply

4.1 Outline

In addition to its control in response to the operation of the main power switch, the main controller PCB possesses the following control mechanisms in relation to the power supply:

- Standby mode (normal operation)
- Sleep mode 1
- Sleep mode 2

4.2 Power Supply Modes

The machine has the following modes for each of its power supply mechanisms; +3.3V all-night (3.3 VB), +3.3V non-all night (3.3 VA), +5V, and 24V:

Mode	+3.3V all night	+3.3V non-all night	+5V	+24V	LCD
Standby	Yes	Yes	Yes	Yes	Yes
Sleep mode 1	Yes	Yes	Yes	Yes	No
Sleep mode 2	Yes	No	No	No	No

T02-402-01

4.3 Standby Mode (normal operation)

In standby mode, the machine is in operation or is ready operate, and nearly all components are supplied with power; not only the main controller PCB, but also the reader unit, printer unit, and control panel are all ready for communication and control.

4.4 Sleep Mode 1

In sleep mode 1, only the LCD image desplay remains OFF.

4.4.1 Shift from Standby Mode to Sleep Mode 1

A shift from standby mode to sleep mode 1 is executed for the following:

- The power switch (soft switch) in the control panel is OFF.
- The machine remains in standby mode and a specific period of time (may be changed in user mode) has passed.

In addition, the following must be true:

- The setting of 'Function key wakeup ON/OFF' under 'Common settings' in user mode is set to 'ON'.
- The setting of 'Energy consumption in Sleep Mode' under 'Common settings' in user mode is set to 'high'.
- The setting of 'NetWare settings' under 'Network settings' in user mode is set to 'ON'.
- The setting of 'AppleTalk settings' under 'Network settings' in user mode is set to ON'.
- The setting of 'DHCP' under 'IP Address / TCP/IP settings' in user mode is set to use.
- A TokenRing board is installed.
- In the fax, timer transmission is selected.
- In the fax, an auto start job is selected.
- An extension of the fax is in use (engaged).

4.4.2 Shift from Sleep Mode 1 to Standby Mode

A shift from sleep mode 1 to standby mode is expected for the following:

- The power switch (soft switch) in the control panel is turned on.

4.5 Sleep Mode 2

In sleep mode 2, only the +3.3V all-night (3.3 VB) power supply is ON. The CPU on the main control paper remains in wait for an interrupt (keeping the program at rest) to limit the consumption of power.

4.5.1 Shift from Standby Mode to Sleep Mode 2

A shift from standby mode to sleep mode 2 is executed under the following:

- The power switch (soft switch) in the control panel is OFF.
- The machine has remained in standby mode for a specific period of time (may be changed in user mode).

4.5.2 Shift from Sleep Mode 2 to Standby Mode

A shift from sleep mode 2 to standby mode is executed for the following:

- The power switch (soft switch) in the control panel is ON.

4.5.3 Shift from Sleep Mode 2 to Sleep Mode 1

A shift from sleep mode 2 to sleep mode 1 is executed for the following:

- PDL data is received from the network or from the parallel port.

4.6 Turning Off the Power

The power is turned off when the main power switch is turned off. A shift from this state may be made only by turning on the main power switch; the shift will be automatic and to standby mode.

5 New Functions

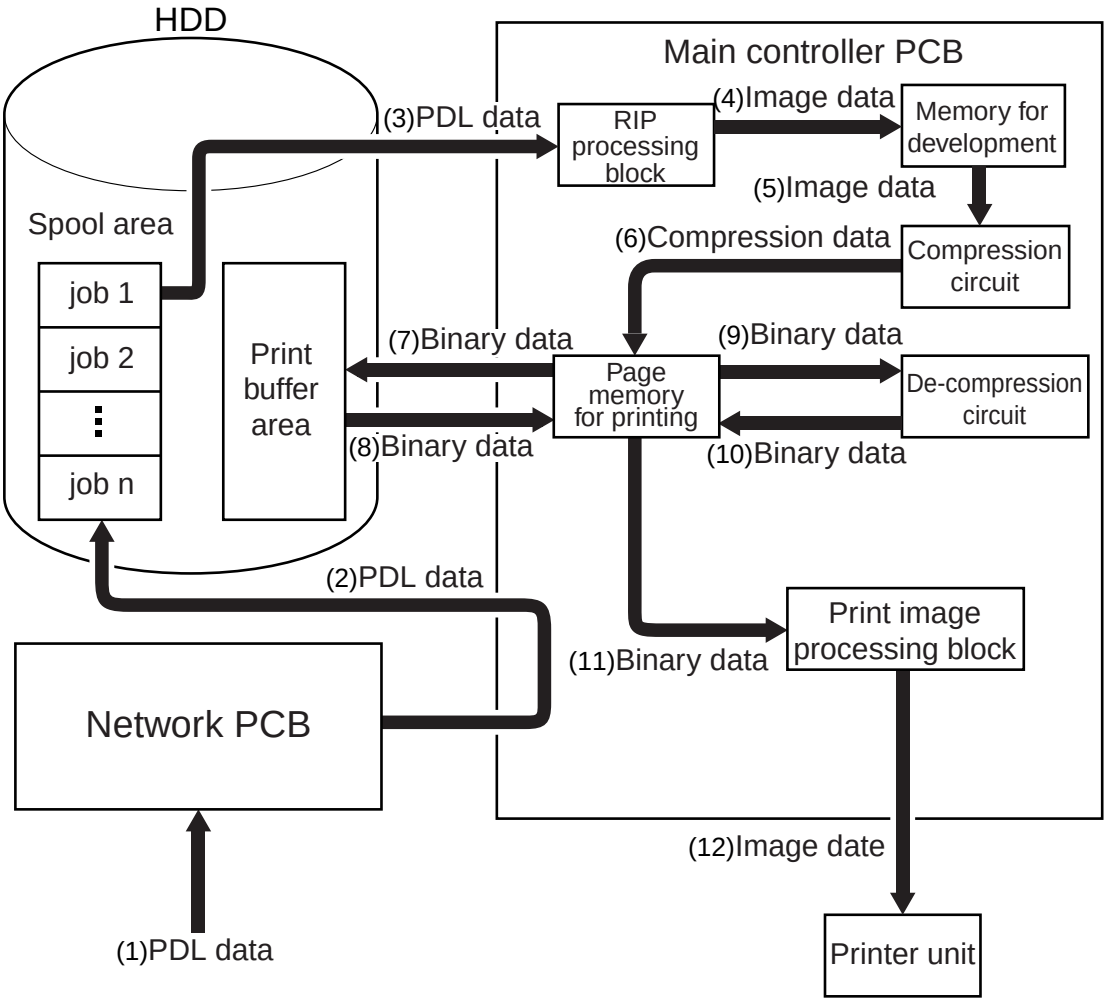
5.1 Hard Disk Spool

In hard disk spool, print data is not directly sent to memory for printing, but spooled on the HDD before printing, thus releasing the application program running on the host PC sooner than otherwise.

When this function is used, a print job from the PC is stored in the spool area of the HDD. (The spool area is as large as about 300 MB.) Once spooled, the jobs are then sent to the RIP processing block in the order they have been received.

The jobs are removed from the spool as they are printed, and as many as 100 jobs may be spooled at a time.

The following diagram shows the flow of data, from spooling on the HDD to execution:

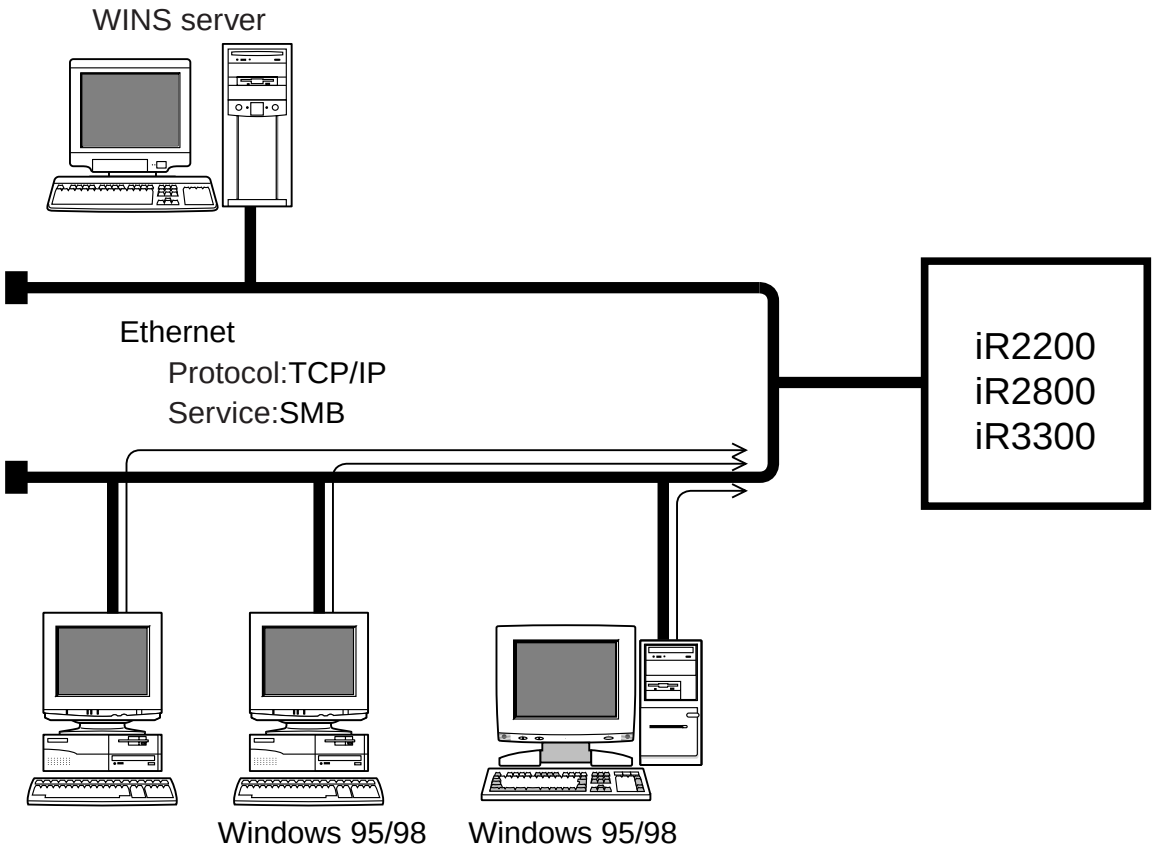


F02-501-01

5.2 SMB Printing

SMB has been developed so as to use NetBIOS, which specifies an address by means of a computer name, for use solely with a specific protocol. SMB over TCP/IP is designed for use in combination with the TCP/IP protocol, enabling the machine to print data directly from Windows 95/98/ME without going through a Windows NT/2000 sever as is in the case of LPR printing and without the need for an LPR utility. (A Windows work group may be made use of, but Windows NT/2000 cannot be called into the domain.)

On a TCP/IP network an address must be specified by means of an IP address, not the name of the computer in question, requiring conversion of a computer name into an IP address. If a WINS (Windows Internet Name Service) server exits on the network, the function may also be made use of. If it does not exist or is not used, the PC will contact all devices on the network to find out the IP address of the machine before it sends a print job to the machine.



F02-502-01

5.3 LPD Banner

When OPD printing is selected, the following job information will be printed:

LPD Banner (sample)

---

iR2200-3300 (iN-E2)

USER NAME : ts

HOST NAME : canon

JOB NAME : golfer.ps

F02-503-01

CHAPTER 3

INSTALLATION

1 Selecting the Site of Installation

Select the site of installation against the following conditions; if possible, visit the user's in advance of the delivery of the machine:

1. There must be a power outlet that may be used exclusively for the machine and rated as indicated (±10%).

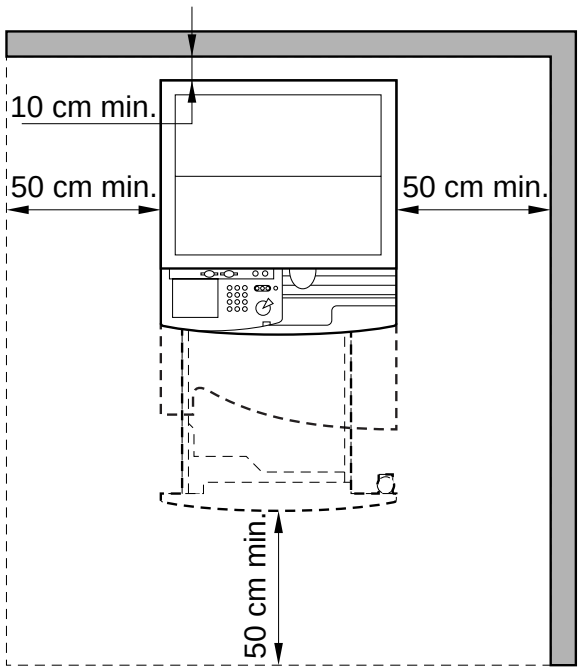
2. The temperature of the room must be between 7.5° and 30°C (59° and 86°F) and humidity, between 5% and 80%. Avoid areas near a water faucet, water boiler, humidifier, or refrigerator.

3. The site must not be near a source of fire or must not be subject to dust or ammonium gas. If the site is exposed to direct rays of the sun, provide curtains.

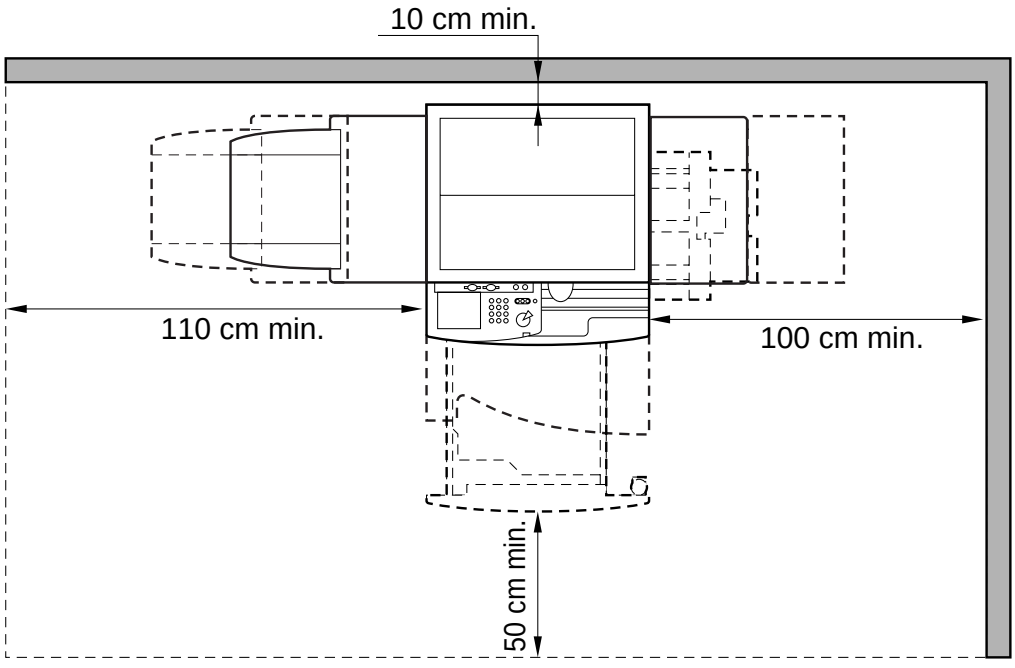
4. The level of ozone generated by the machine in operation will not affect the health of the individuals around it. Nevertheless, some may find the odor unpleasant, requiring good ventilation of the work place.

5. The floor of the site must be level so that the feet of the machine will remain in contact and the machine itself will remain level.

6. The site must be such that the machine will be at least 10 cm away from any wall, allowing adequate space for work.



F03-100-01



F03-100-02

7. The site must be well ventilated. Do not install the machine near the air inlet of the room.

2 Unpacking and Installation

2.1 Before Starting the Work

Keep the following in mind for the work:

1. If the machine is brought in from a cold to warm place, its pickup/feeding assembly can develop condensation, leading to image faults. Leave the machine alone for at least one hour, and start the work after the machine has become used to the room temperature.
   The term condensation refers to the symptom that occurs when a piece of metal is brought in from a cold to warm place, cooling the vapor in the air rapidly and turning it into droplets of water on the metal surface.
2. The machine weighs about 80 kg. Be sure to work in a group of four.

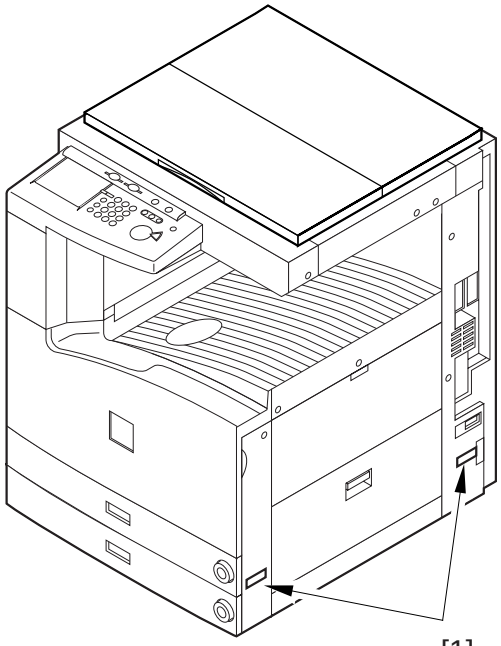
2.2 Unpacking and Removing the Fixing Materials

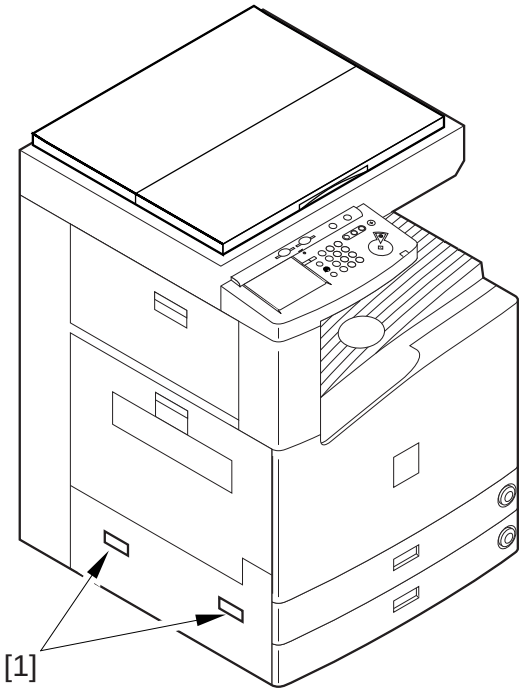
Work	Checks/remarks

1) Open the shipping box, and remove the plastic sheets.
- If you are installing the pedestal at the same time, unpack it.

2) While working in a group of four, hold the grips [1], and place it on the pedestal. (weight of body: about 80kg)

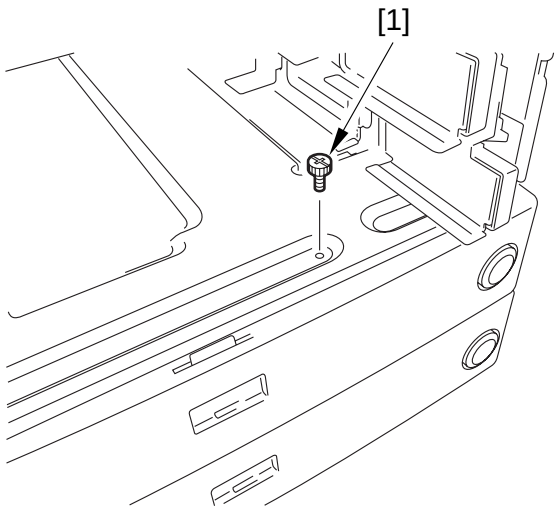
Take care so that the main power switch will not be turned on when the machine is lifted.





Work	Checks/remarks

3) Remove the packing tape of the machine.
4) Press the cassette release button, and take out each cassette to the front.
5) Connect the machine and the pedestal using a screw [1].



Other types of pedestal may also be connected using a screw.

6) Slide the cassettes into the machine.

7) Open the cardboard box that comes with the machine, and take out the components and attachments;

check to make sure that none of the following is missing:

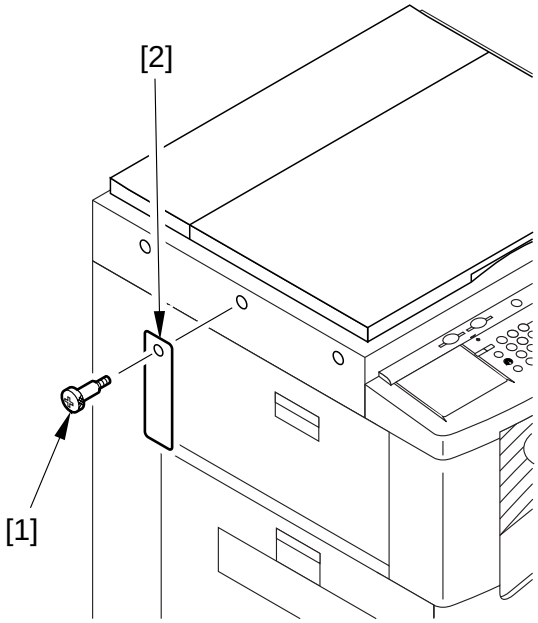
- User's Manual
- Drum unit
- Right lower cover
- Cassette size label (inside cassettes)
- Cassette size plate (inside cassette)
- Guidebook (model w/ printer function only)
- CD-ROM (model w/ printer function only)

2.3 Mounting the Scanner

Work	Checks/remarks

1) Remove the screw [1] and the tag [2] used to hold the scanner in place on the left cover of the reader unit.

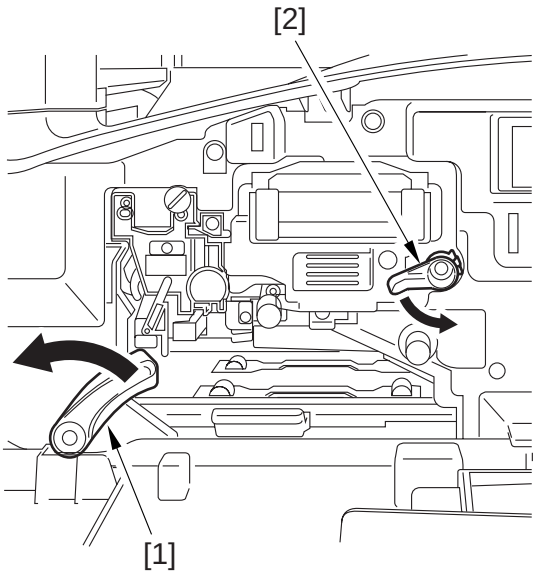
Keep the screw stored away for possible relocation of the machine.



2.4 Removing the Dummy Drum

Work	Checks/remarks

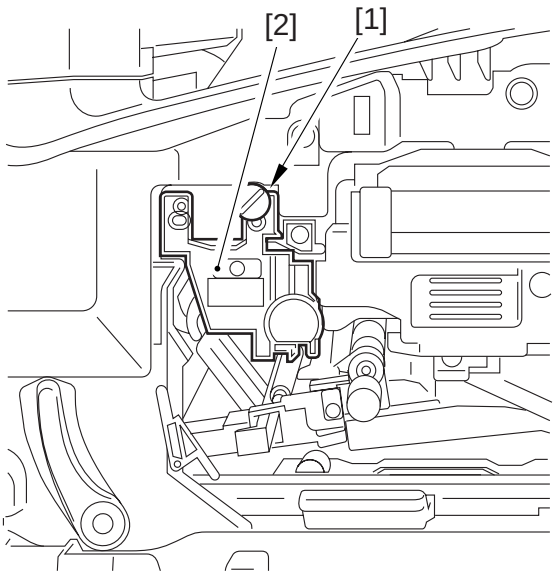
1) Open the front cover.
2) Shift down the feeder releasing lever [1] to release the feeding assembly.
3) Turn the developing assembly locking lever [2] counterclockwise to free the developing assembly.



Work	Checks/remarks

4) Remove the fixing screw [1] from the dummy drum.
- The removed fixing screw will be used when mounting the drum unit.

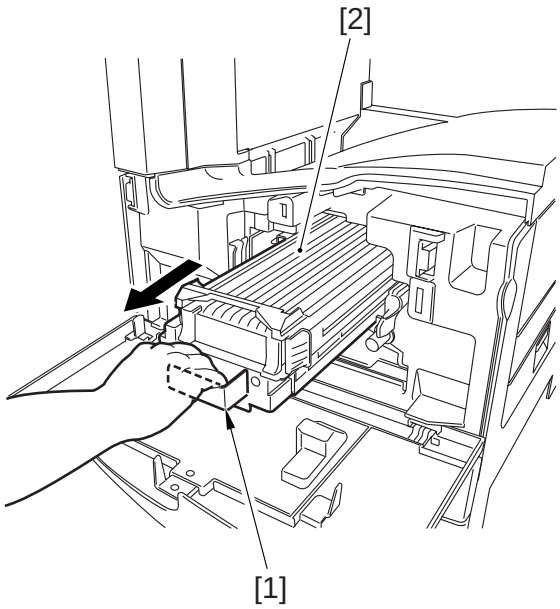
5) Pull the dummy drum [2] straight out to the font.
- The removed dummy drum will no longer be used.



2.5 Supplying the Toner

Work	Checks/remarks

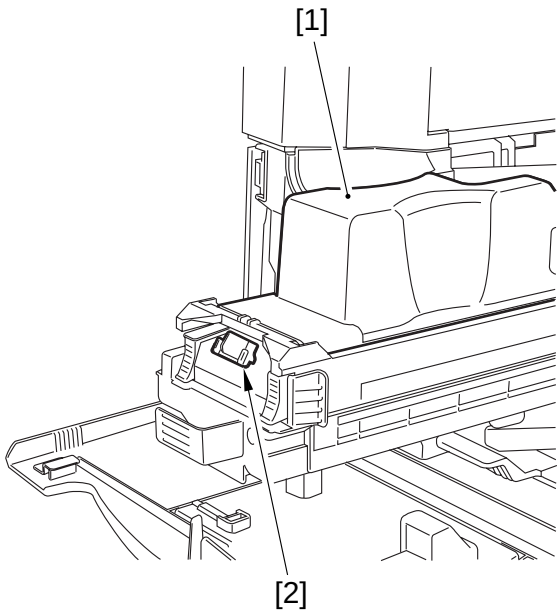
1) Holding the grip [1] of the developing assembly, pull the developing assembly [2] to the front until it stops.



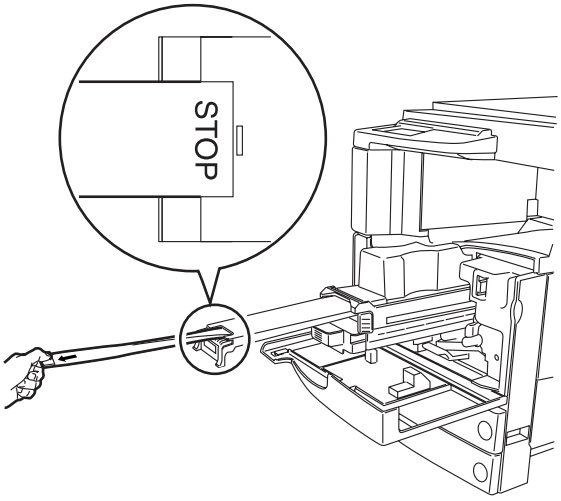
Work	Checks/remarks

2) Shake the toner cartridge [1] several items.
3) Set the toner cartridge to the developing assembly, and push it down until the opening tab [2] springs to view.

• The toner cartridge is locked to the developing assembly.



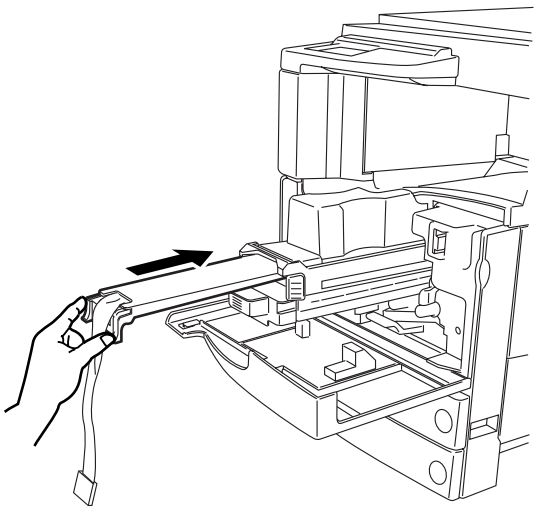
4) While lightly holding down the toner cartridge with one hand, pull the open tab to the front until it stops (where the marking STOP is found).
5) Tap lightly on the top of the toner cartridge so that all toner will drop.



Work	Checks/remarks

6) Push in the black cover of the developing assembly back to its initial position.
- The toner cartridge will become disengaged.

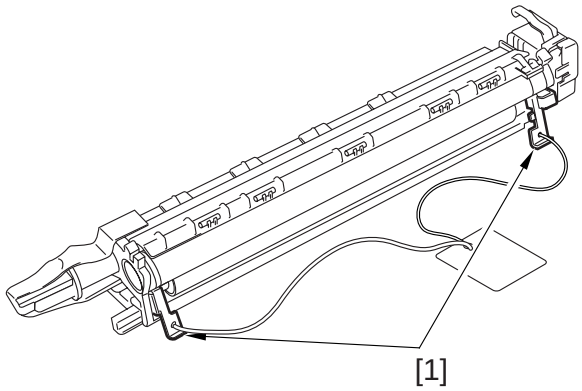
7) Remove the toner cartridge.
8) Push in the developing assembly until it butts against the rear.



2.6 Mounting the Drum Unit

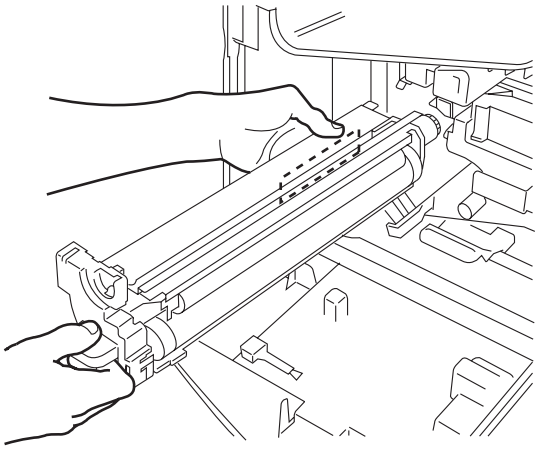
Work	Checks/remarks

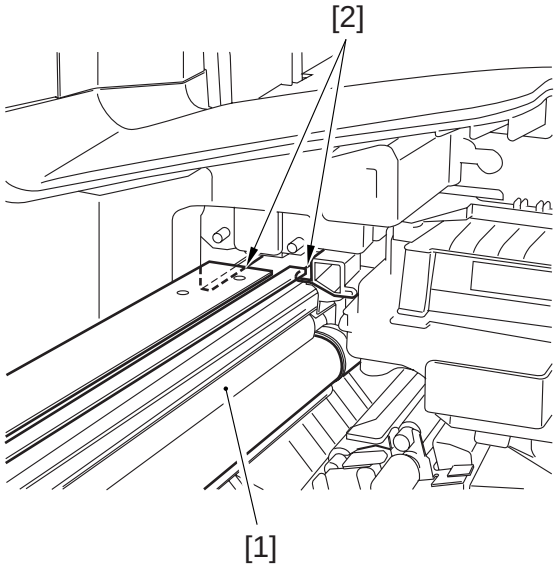
1) Unpack the drum unit, and remove the two releasing members [1] of the primary charging roller.
Remove all other packing tape and the like.



1. Do not touch the dump area of the photosensitive drum to avoid damage.
2. Take care not to expose the photosensitive drum to strong light.
3. Take care not to damage the stirrups found at the bottom of the drum unit.

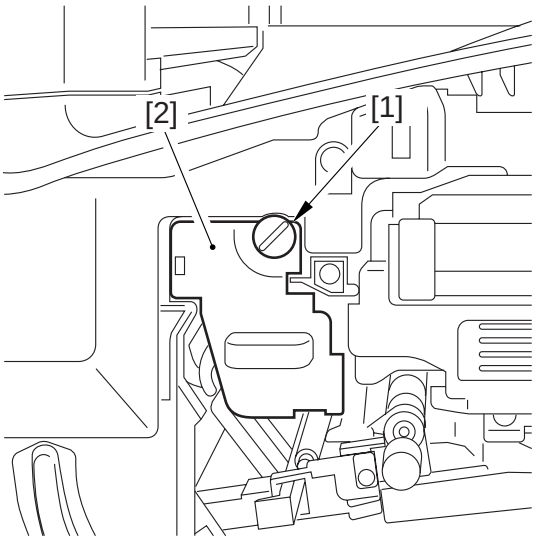
2) Check to make sure that the developing assembly is released; then, holding the drum unit [1] by its long hole, slide inside the machine along the rails [2].
At this time, take full care not to bring the developing assembly in contact with the developing cylinder, which is situated nearby.



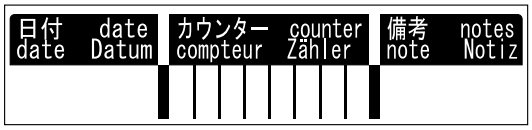


Work	Checks/remarks

3) Using the fixing screw [1] removed from the dummy drum previously, secure the dump unit [2] in place.



4) Fill out the date label, and attach it to the front cover of the drum unit.
5) Turn the developing assembly locking lever clockwise to lock the developing assembly in place.
6) Shift up the feeding releasing lever to lock the feeding assembly in place.

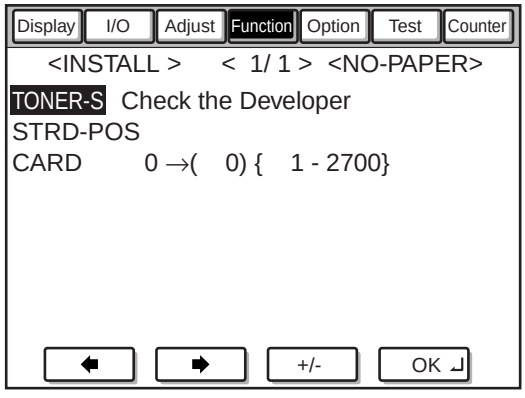


Do not turn on the main power switch while the feeding assembly remains released; otherwise, the fixing assembly will be damaged.

7) Close the front cover.

2.7 Stirring the Toner

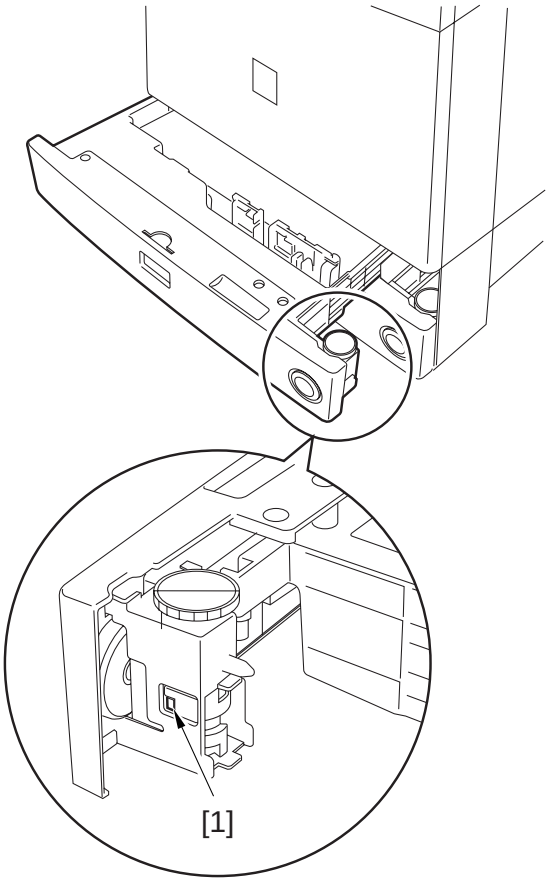
Work	Checks/remarks
1) Connect the power plug to the power outlet. 2) Turn on the main power switch. • Wait until the control panel indicates that the machine is ready for operation. 3) Start service mode. 4) Make the following selections: COPIER>FUNCTION>INSTALL>TONER-S. 5) Press the OK key. • The stirring operation will last for 240 sec (4 min), after which the operation stops automatically. 6) Press the Reset key twice to end service mode. 7) Execute 'roller clean' in user mode ('adjust/clean'), and execute transfer charging roller resistance detection control (ATVC).	The power supply must be as rated. (The voltage may be ± 10% of the rating, but it must have the rated amperage.) Press the ✳ key, '2' and '8' at the same time, and the ✳ key once again. The following message will appear: "CHECK THE DEVELOPER." In response, check to see if the developing assembly is properly locked in place. If you inadvertently stopped stirring of the toner in the middle, be sure to execute 'TONER-S' once again.



2.8 Setting the Cassette

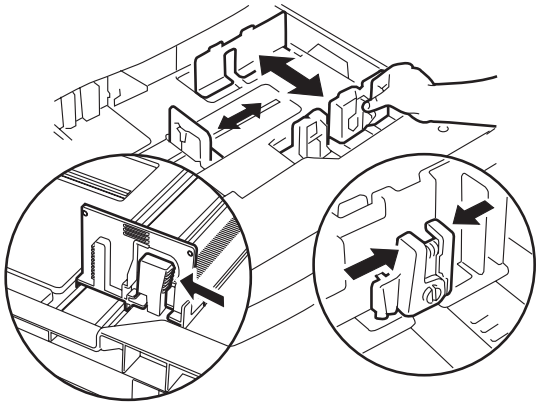
Work	Checks/remarks

1) Press the cassette releasing button, and slide out the cassette to the front.
2) Check with the user to find out the size of paper to use, and check the size setting (A/B or Inch) using the selection switch [1] of each cassette.



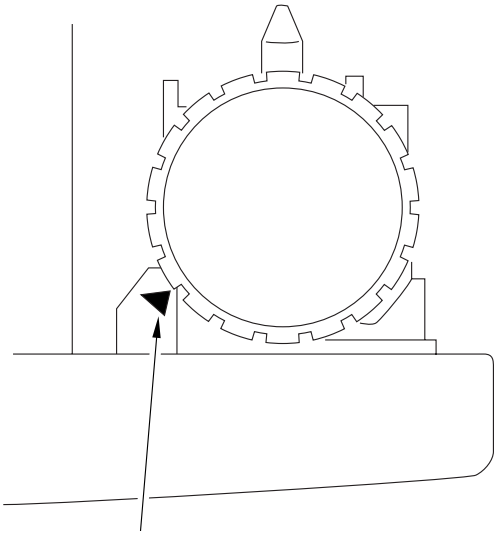
Work	Checks/remarks

3) Pick the lever of the side guide plate and the rear guide plate, and adjust it to the appropriate paper size index.



The middle cassette cannot hold A3 or 11×17 paper.

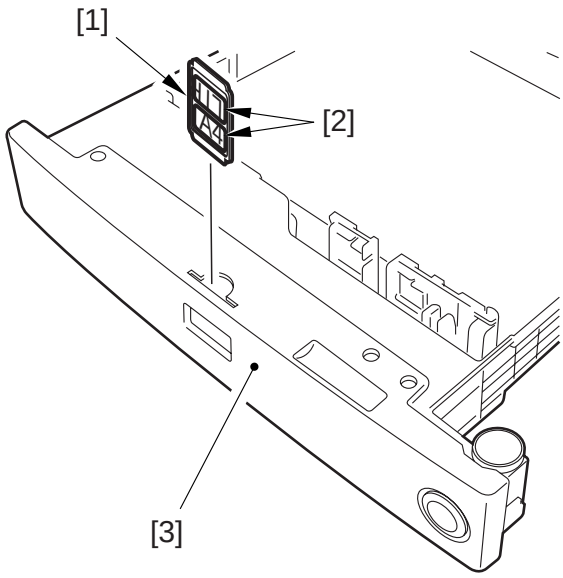
4) Set the paper size dial to suit the selected paper size.



Set the dial as indicated.

Work	Checks/remarks

5) Attach the size label [2] to the cassete size plate [1], and fit the cassette size plate to each cassette.
6) Put paper into the cassettes [3], and slide them into the machine.

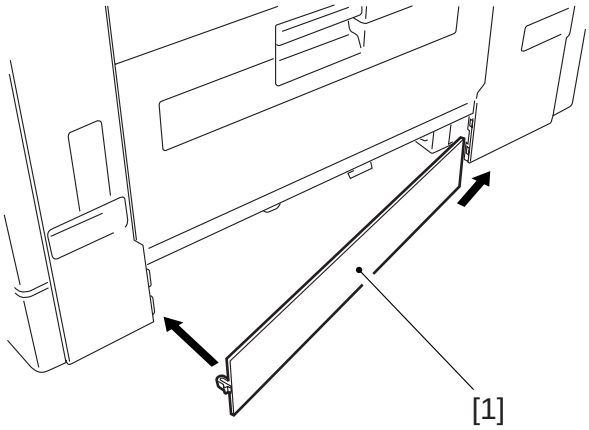


2.9 Checking the Images/Operations

Work	Checks/remarks

1) To install the machine not using the 2-cassette pedestal, mount the right lower cover [1].

1. Skip this step if the machine is installed on a 2-cassette pedestal.
2. After removing the right lower cover, check to make sure that the cover is securely in place.



2) Clean the surface of the reading glass of the copyboard.
3) Using the NA-3 Chart as the original, make a print to check the images and the operation.
4) Make user mode settings (e.g., date, time) and service mode settings (COPIER>OPTION>USER) to suit the needs of the user.

Optimum Image

- In text mode, the white background must not be foggy.
- In text/photo mode, step edge No. 10 must be barely visible. The white background must be free of fogging.
- In photo mode, the white background must be free of fogging. (The moire, if any, along the step edges and the half-tone area does not indicate a fault.)

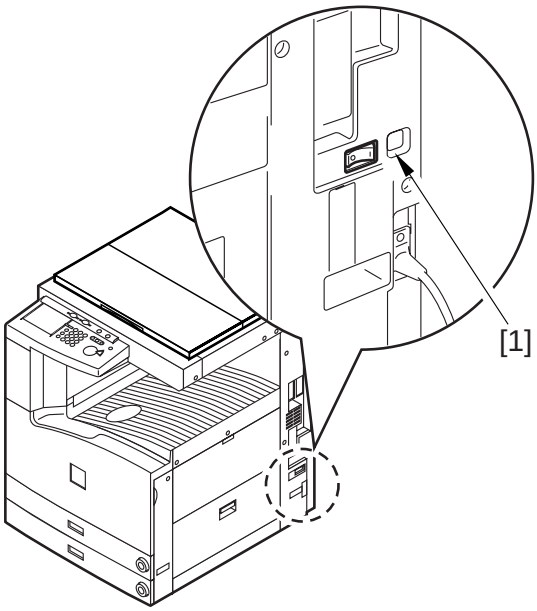
The non-image width must be as indicated: 2.5±1.5 mm.

Checking the Operations

- During copying operation, check to make sure the operations are normal.
- During double-sided copying operation, check to make sure that paper is moved normally in the duplex unit.
- For pickup operation, check to make sure that pickup from each source of paper is normal.
- There must not be abnormal operating noise.
- Make copies at each default reproduction ratio, and check to make sure that the images are normal.
- Make copies in multiple sets, and check to make sure that copies are made specified numbers.

Work	Checks/remarks

5) If necessary in view of the site environment, turn on the cassette heater switch [1].
6) Move the machine to the site of installation; if it is placed on a pedestal, secure it in place using the four adjusters.
7) Clean the area around the machine, and fill out the Service Book.



2.10 Connecting to the Network

Perform the following steps if the machine is equipped with printer functions:

1) Turn off the main power.
2) Connect the network cable to the machine, and turn on the main power.
3) Inform the user's system administrator that the machine has been installed, and ask him/her to make the network settings for the machine.

2.11 Checking the Network Connection

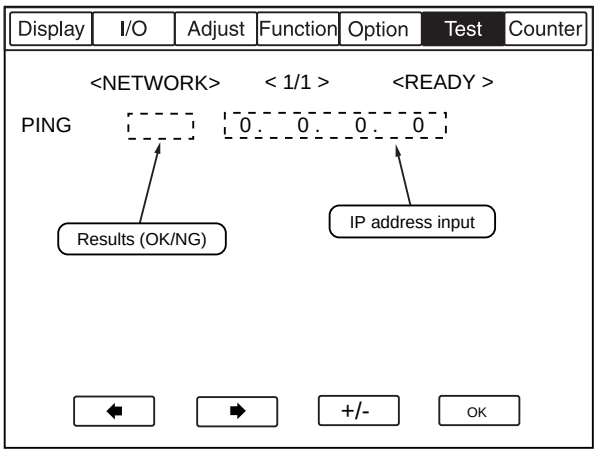
Perform the following steps if the machine is equipped with printer functions:

If the user's network environment is TCP/IP, use the PING function to make sure that the network PCB has properly been installed and the network settings have properly been made. If the user's network environment is IPX/SPX or AppleTalk, on the other hand, these checks are not needed.

2.11.1 Using the PING Function

1) Make the following selections to select PING:
   COPIER>TEST>PING>NETWORK.
2) Enter the IP address using the keypad on the control panel, and press the OK key.
3) Press the Start key.

- If PING is successful, 'OK' will be indicated: otherwise, 'NG' will be indicated.



2.11.2 Making a Check Using a Remote Host Address

The connection to the network may be checked by executing PING using a remote host address (i.e., the IP address of a PC terminal connected to and operating on the TCP/IP network to which the machine is connected).

1) Inform the user's system adminisrator that the network connection will be checked using PING.
2) Check with the user's system administrator to find out the remote host address.
3) Enter the remote host address in the PING field.

- If 'OK' is indicated, the connection to the network is correct.
- If 'NG' is indicated, the connection to the network is not correct; investigate the cause as follows:

2.12 Troubleshooting the Network

Perform the following steps if the machine is equipped with printer functions:

If the connection to the network is not made, the following can be suspected; perform the steps under 2.12.1 to correct the faults:

a. The connection between the network and the network PCB is faulty.
b. The TCP/IP settings on the machine are faulty.
c. The network PCB is faulty, or the PCB is mounted wrongly.
d. The user network is faulty.

2.12.1 Checking the Connection of the Network Cable

1) Check to find out if the network cable is correctly connected to the network PCB.

- If the connection is correct, go to 2.12.2.
- If the connection is wrong, correct it, and make a check once again using the remote host address.

2.12.2 Making a Check Using a Loop-Back Address

A loop-back address is returned before it reaches the network PCB; therefore, executing PING using it will enable a check on the TCP/IP settings made on the machine.

1) Enter the loop-back address (127.0.0.1) in the PING field.

- If 'NG' is indicated, check the TCP/IP settings of the machine once again, and execute PING once again.
- If 'OK' is indicated, go to 2.12.3.

2.12.3 Making a Check Using a Local Host Address

The local host address is the IP address of the machine, and executing PING using it will enable a check on the network PCB (it is retuned after it reaches the network PCB).

1) Enter the IP address of the machine in the PING field.

- If 'NG' is indicated, perform the following check/correction, and execute PING once again:

a. If the IP address of the machine is wrong, check the IP address settings made on the machine once again, or find out if the IP address assigned to the machine is correct or not by consulting the user's system administrator.
b. If the network has faulty connection, check the connector of the network PC for connection.
c. If the network PCB is faulty, replace the network PCB.

- If 'OK' is indicated, suspect a problem in the user's network environment; report to the user's system administrator, and ask for corrective measures.

3 Relocating the Machine

3.1 Preparing for Relocation

If the machine must be relocated by truck or other means of transportation after it has been installed, perform the following:

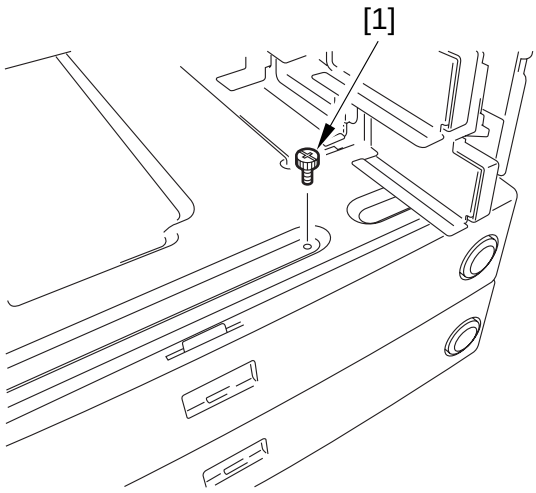
Do not lift the machine by holding its grips as when moving it over a step; otherwise, the machine will become separated from the pedestal. Be sure to lift the pedestal if the machine is connected to it.

Work	Checks/remarks
1) Remove the fixing screw, and detach the drum unit. 2) Fix the scanner in place. 3) Tape the front cover, delivery assembly, and cassette in place. 4) Place a single sheet of A3/11×17 paper on the copyboard glass, and tape the copyboard cover (ADF) in place.	

3.2 Lifting the Machine Off the Pedestal

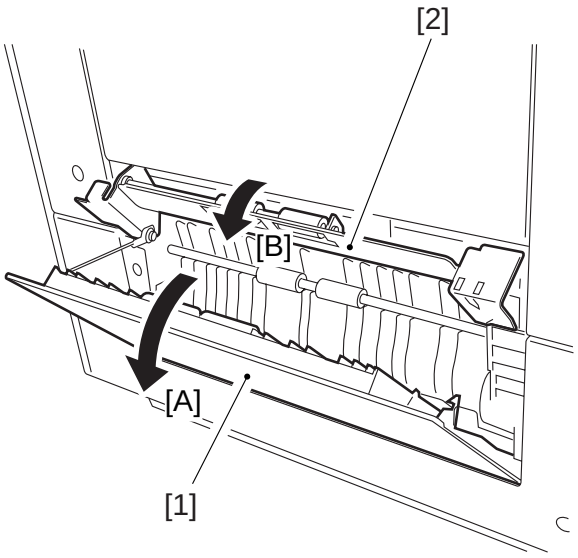
Work	Checks/remarks

1) Disconnect the lattice connector of the pedestal from the machine.
2) Slide out the two cassettes from the machine, and remove the screw [1] used to connect the machine to the pedestal.



Remove the screw likewise if the machine is installed to a different type of cassette pedestal.

3) Open the right cover [1] of the pedestal, and release the guide assembly [2] connected to the machine (i.e., shift it down to the right).
4) While working in a group of two or more, hold the grips of the machine, and lift it straight up (pay attention to the pins of the pedestal).
5) Place the machine on the floor or on a desk.

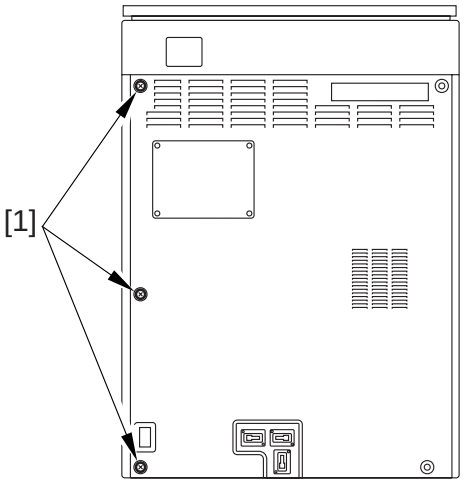


4 Installing the Card Reader-C1

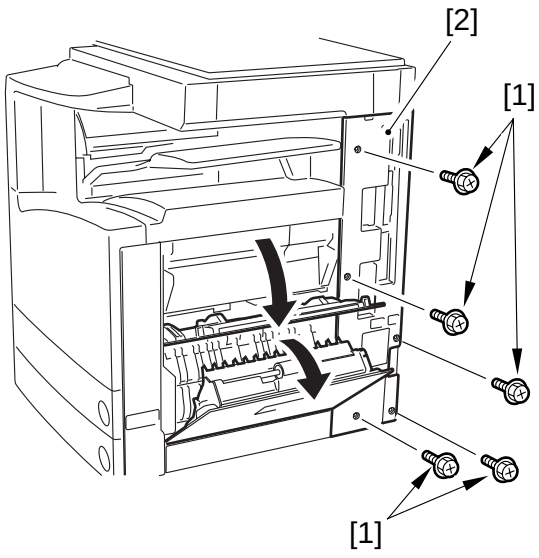
Work	Checks/remarks

1) Make the following selections in service mode:
COPIER>FUNCTION>INSTALL>CARD; then, enter the card number (1 through 2701).
- Enter the number of the card (of all the cards used by the user) that have the lowest number.
- As many as 300 cards may be used having a number higher than the one entered.

2) Turn off the main power switch.
3) To facilitate the removal of the right rear cover, remove the screws [1] from the rear cover.

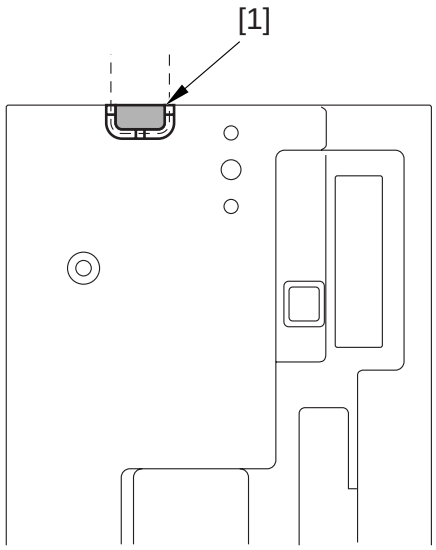


4) Open the manual feed tray and the right lower cover.
5) Remove the five screws [1] ; and, while opening the right rear cover [2] slightly, detach the right rear cover.

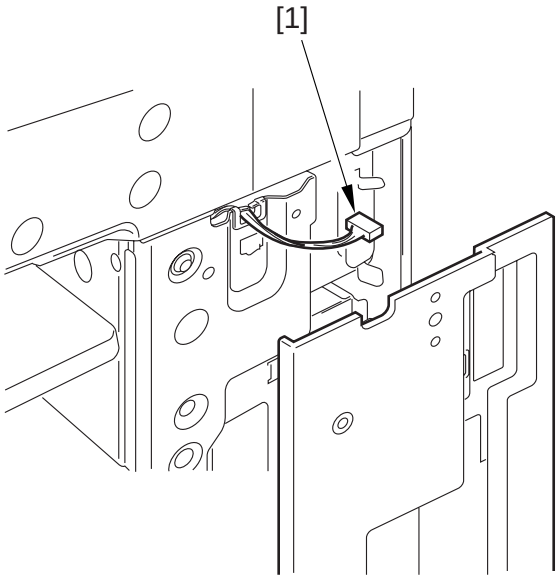


Work	Checks/remarks

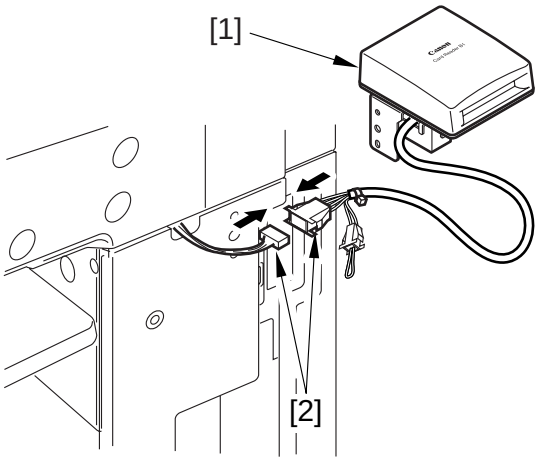
6) Cut off the face plate [1] at the top of the right rear cover with a nipper or the like.



7) Lead out the connector [1] of the card reader on the machine side, and mount the right rear cover.

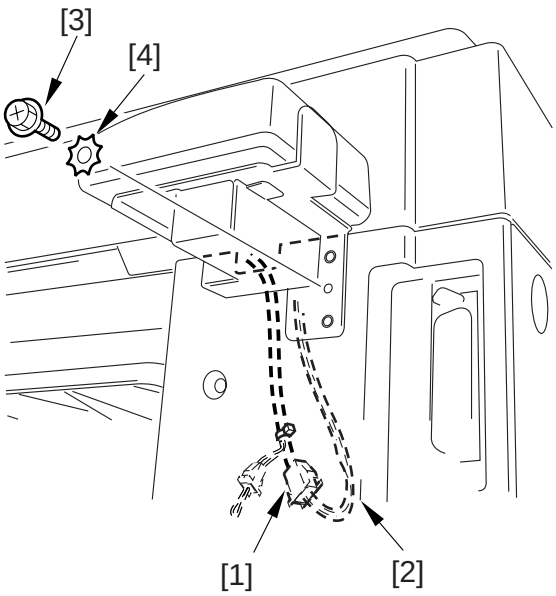


8) Connect the connector [2] on the card reader [1] side and the connector [2] on the machine side.



Work	Checks/remarks

9) While pushing in the connector [1] and the harness [2] inside the machine, fit the boss of the right rear cover into the opening in the card reader support plate; then, secure the card reader to the machine using a screw [3] and a washer [4].

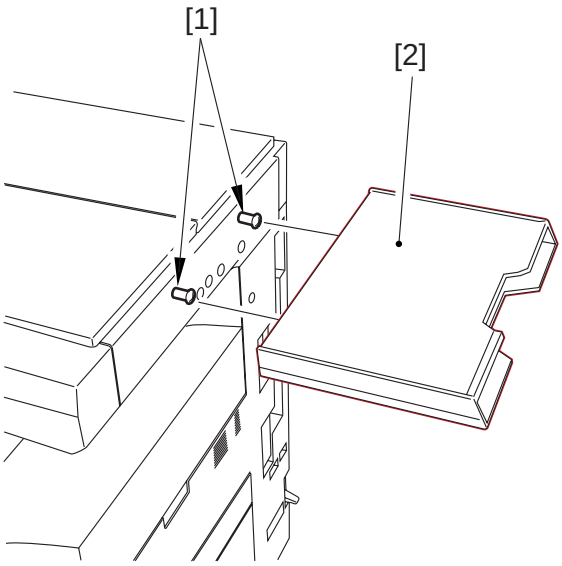


Take care not to trap the connector or the harness.

5 Installing the Document Tray-D2

Work	Checks/remarks

1) Remove the two stickers from the right top of the machine.
   Using the two stepped screws [1] (RS tightening; M4×10) that come with the machine, mount the document tray [2] to the machine.
- If the work proves to be difficult, loosen the two stepped screws, and try again.



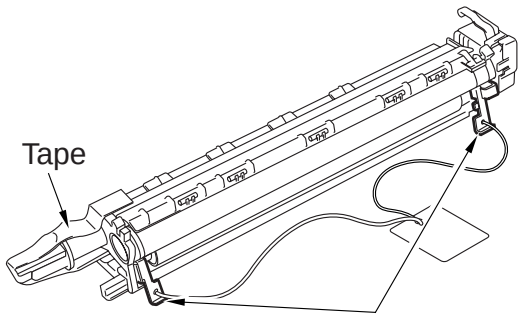
1. Be sure to use the stepped screws designed for the machine; ones for other types come together with the machine.
2. The document tray may be mounted to the left side of the machine.

6 Replacing the Drum Unit

Work	Checks/remarks

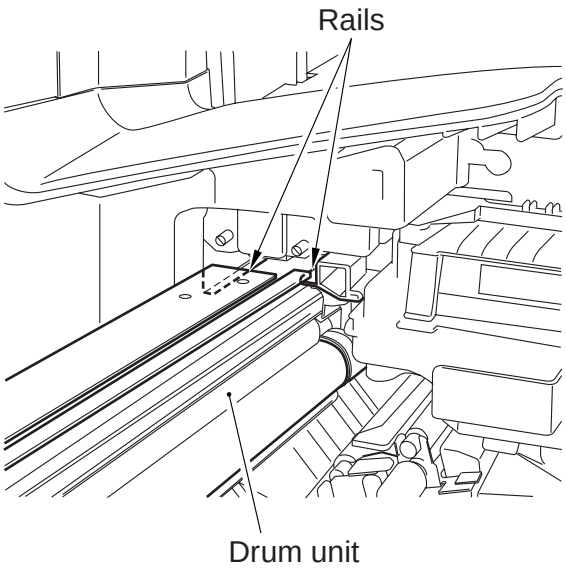
1) Turn off the main power switch; then, open the front cover.
2) Shift the feeding assembly releasing lever to free the feeding assembly.
3) Turn the developing assembly locking lever counterclockwise to free the developing assembly.
4) Remove the fixing screw from the drum unit.
   (The removed fixing screw will be used when mounting the new drum unit.)
5) Pull the drum unit straight out to the front.
6) Unpack the new drum unit, and detach the two releasing members of the primary charging roller.

1. Do not touch the drum area to avoid scratching the photosensitive drum.
2. Do not expose the photosensitive drum to strong light.
3. Take care not to damage the stirs found on the bottom of the drum unit.
4. When removing the tape from the rear end of the drum unit, keep the rear end higher than the front cover to prevent spilling waste toner.

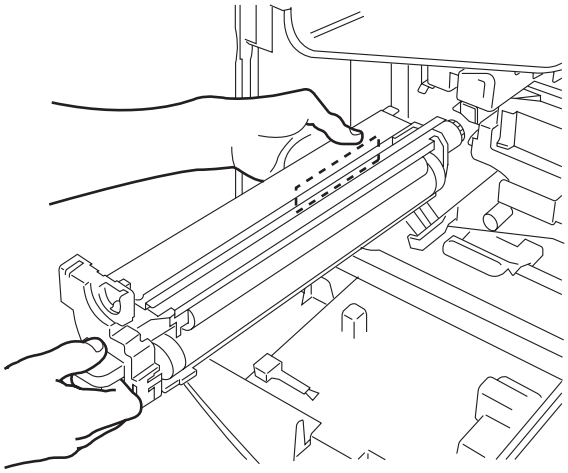


Work	Checks/remarks

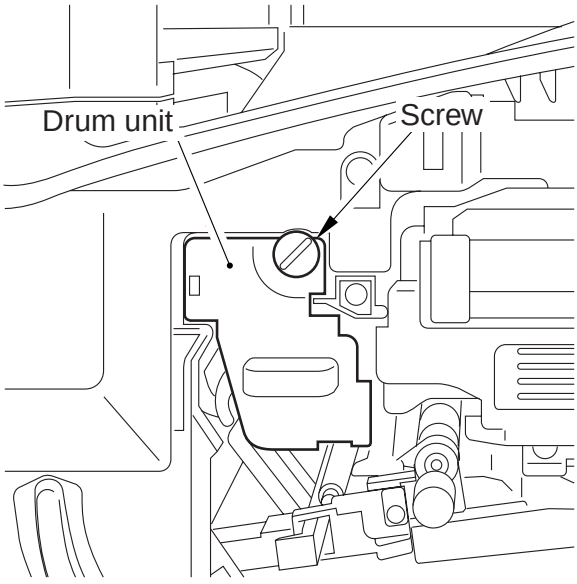
7) Check to see the developing assembly is freed; then, slide in the new drum unit along the rails in the machine slowly. At this time, take full care not to bring the developing assembly into contact with the developing cylinder, which is located very close.



To avoid damaging the stirs found on the bottom of the drum unit, hold the front cover of the drum unit with your right hand while keeping your left hand in the long hole of the left side plate of the drum unit.

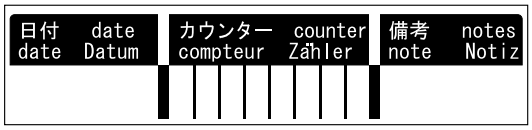


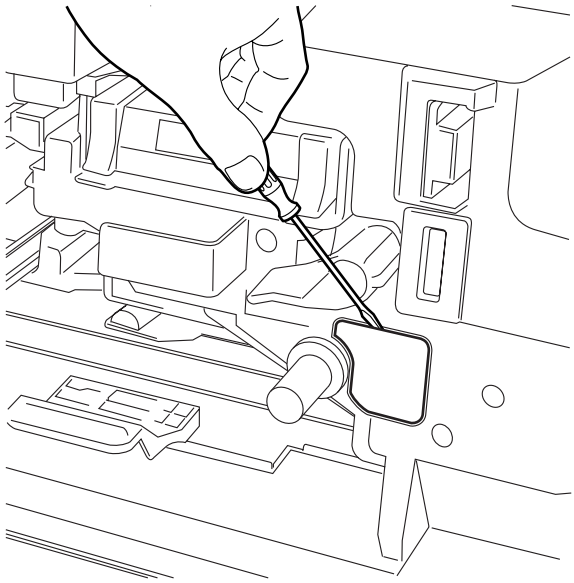
8) Secure the new drum unit in place using the fixing screw you removed in a previous step.



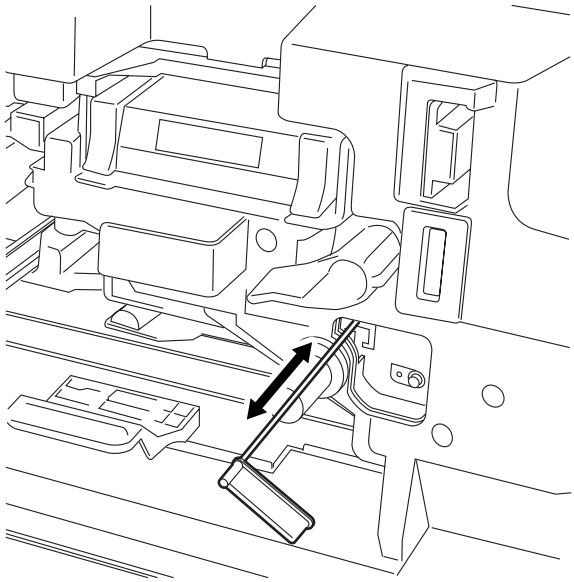
Work	Checks/remarks

9) Fill out the date label, and attach it to the front cover of the drum unit.
10) Turn the developing assembly locking lever clockwise to lock it in place.
11) Shift up the feeding assembly releasing lever to set the feeding assembly in place.
12) Remove the paper lint cleaning cover using a flat-blade screwdriver.





13) Slide out the paper lint cleaning lever, and move it back and forth.
14) Mount the paper lint cleaning cover.
15) Close the front cover.
16) Turn on the main power switch.



Work	Checks/remarks
17) Start service move. 18) Make the following selections: COPIER>FUNCTION>DPC>D-GAMMA. 19) Press the OK key. • The machine will pick up paper from cassette 2. (The paper may be of any size.) • The machine ends APVC correction by delivering a blank sheet. 20) Press the Reset key twice to end service mode. 21) Turn off the main power switch.	Press ⊛ ; '2' and '8' at the same time, and then ⊛ once again.

READER UNIT
SERVICE MANUAL

Contents

CHAPTER 1 BASIC OPERATION

CHAPTER 2 ORIGINAL EXPOSURE SYSTEM

CHAPTER 3 IMAGE PROCESSING SYSTEM

CHAPTER 1

BASIC OPERATION

1 Outline of Electrical Circuitry

1.1 Outline

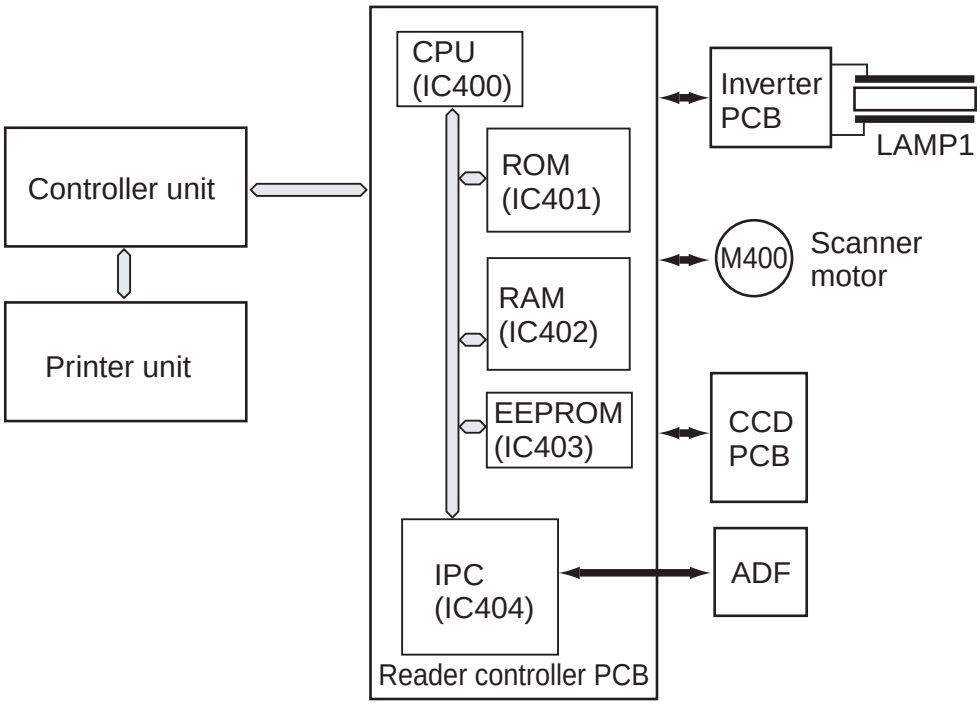
The major mechanisms of the reader unit are controlled by the CPU on the reader controller PCB.

The functions of the major ICs are as indicated in the following table.

1.2 Reader Controller PCB

Name	Description	
CPU	• Controls the sequence of scanner operations. • Controls the original size detection mechanism. • Controls the CCD. • Controls the communications with the ADF.	• Controls the scanning lamp. • Controls shading correction. • Controls service mode. • Controls the communications with the main controller.
RAM	• Stores service mode data. • Stores user mode data. • Stores control data.	
EEP-ROM	• Backs up RAM data.	
ROM	• Stores control programs.	

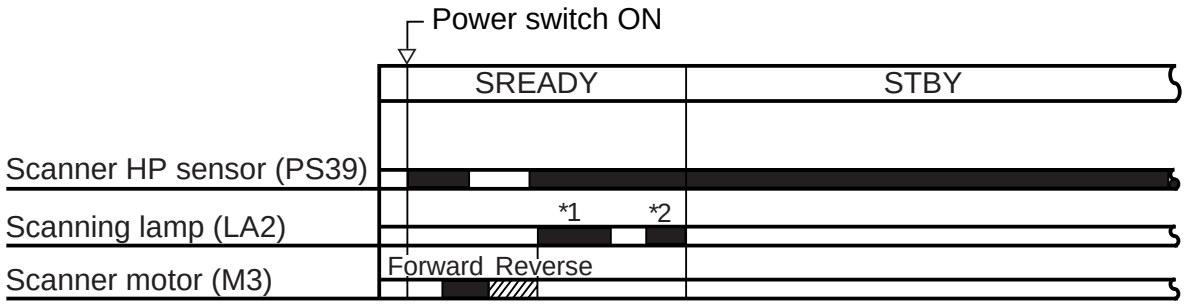
T01-102-01 List of Control Items



F01-102-01 Major PCBs

2 Basic Sequence of Operations

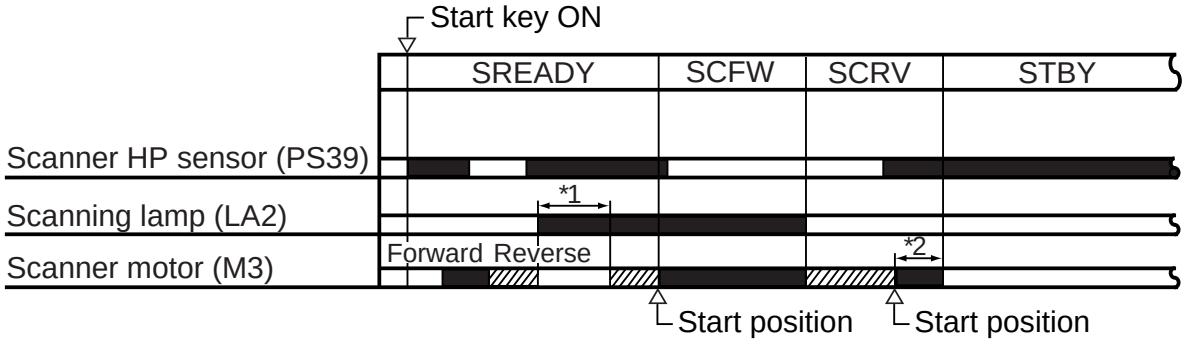
2.1 Basic Sequence of Operations at Power-On



*1: Shading adjustment (gain adjustment) is executed 1 sec after the scanning lamp turns on.
*2: Shading adjustment (CCD original size detection slash level adjustment) is executed 1 sec after the scanning lamp turns on.

F01-201-01

2.2 Basic Sequence of Operations in Book Mode



*1: Shading correction (gain adjustment and CCD original size detection slash level adjustment) is executed for every job.
*2: Executed only at the end of a scan job.

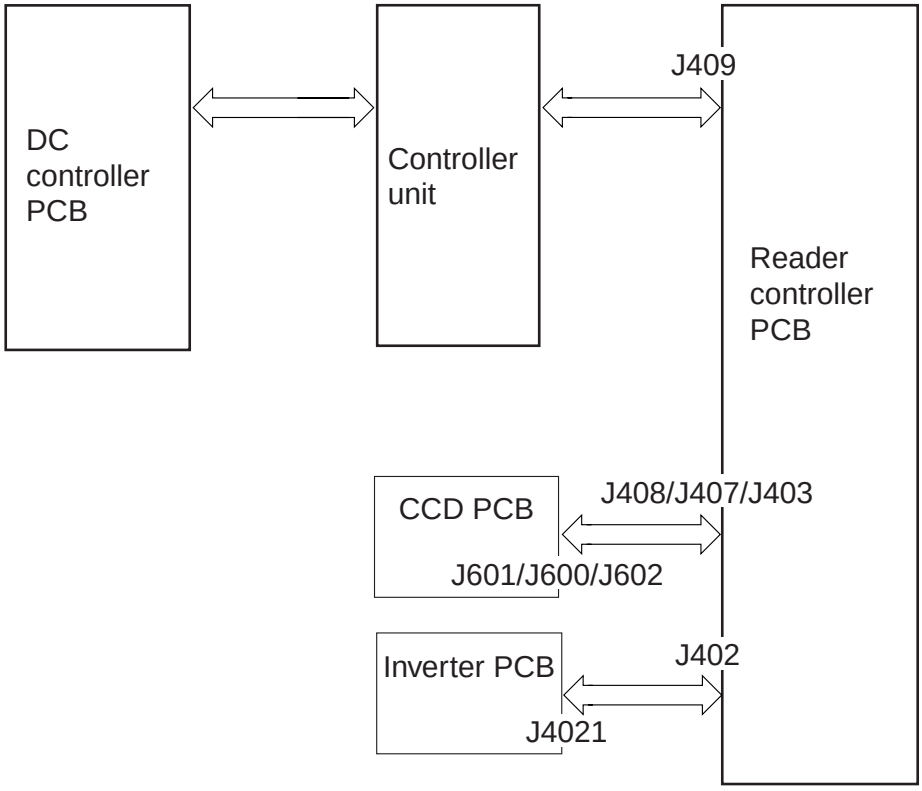
F01-202-02

Name of period	Description
SREADY(scanner ready)	From when the power switch is turned on to when shading adjustment ends. Or, from when the Start key is turned on to when the scanner reaches scanner start position.
SCFW(scanner forward)	While the scanner is moving forward to scan the original.
SCRV(scanner reverse)	While the scanner is moving in reverse.
STBY(standby)	From when shading correction ends to when the Start key is turned on or when the power switch is turned off.

T01-202-01

3 Inputs to and Outputs from the Major PCBs

3.1 Wiring of Major PCBs



F01-301-01

CHAPTER 2

ORIGINAL EXPOSURE SYSTEM

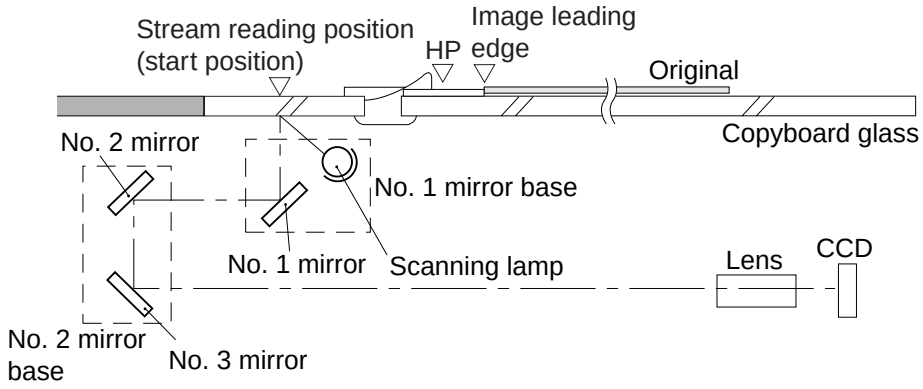
1 Outline of Operations

1.1 Outline

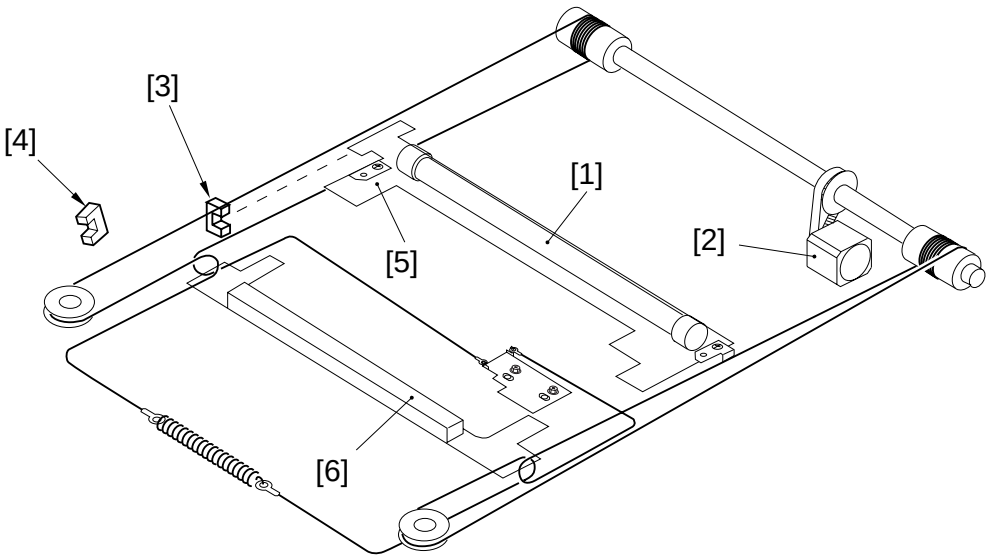
The major functions of the original exposure system are as follows:

Item	Description
Scanning lamp	Xenon lamp
Original Scanning	In book mode: by moving the scanner. With ADF in use: by stream reading while holding the No. 1 mirror base fixed in position.
Scanner position detection	By scanner HP sensor (PS400)
Reproduction ratio (zoom)	[1] Using the Copyboard: 25% to 800% • In main scanning direction, image processing is performed by the controller unit. • In sub scanning direction, the speed of the No. 1 mirror base is changed (50% or higher and lower than 400%), in addition, the image data is processed by the controller unit (lower than 50% and 400% or higher). [2] Using the ADF: 25% to 200% • In main scanning direction, the image data is processed by the controller unit. • In sub scanning direction, the speed at which the originals are moved is changed (50% or higher and lower than 200%), in addition, the image data is processed by the controller unit (lower than 50%and 200% or higher).
Scanner drive control	The No.1/No.2 mirror base is controlled by means of a stepping motor (M400).
Lens	Lens array (fixed in position)
Scanning lamp activation	[1] Turned on by an inverter circuit. [2] Monitored for errors.
Original size detection	[1] In book mode, by a reflection type sensor in sub scanning direction; by a CCD in main scanning direction. [2] With the ADF in use, by the ADF.

The major components of the original exposure system are as follows:



F02-101-01

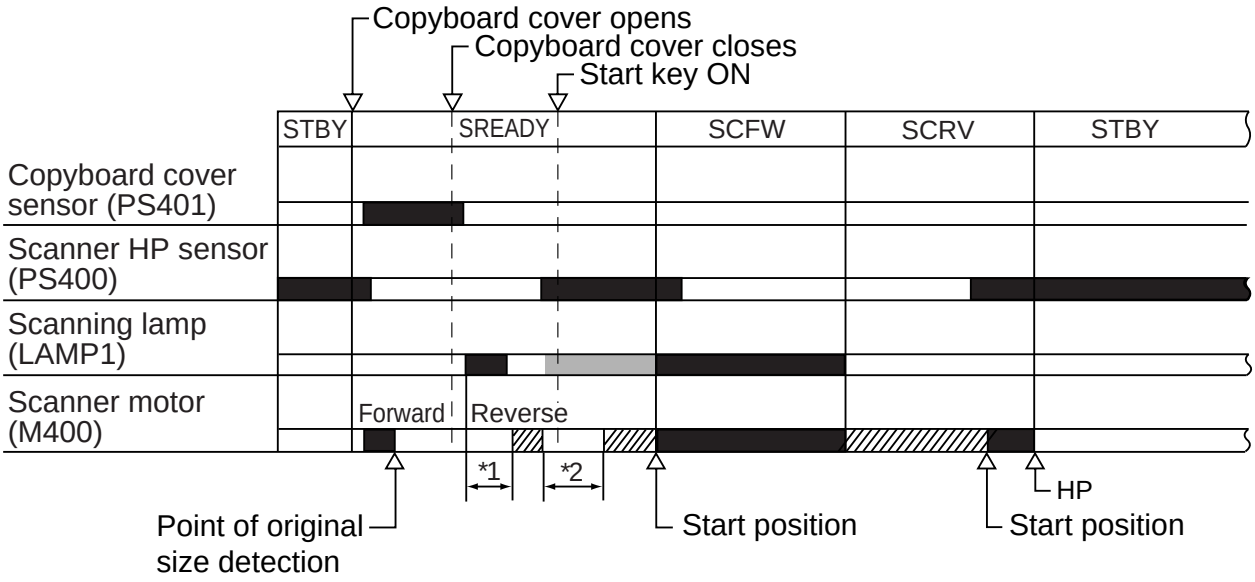


F02-101-02

Component	Notation	Description
[1] Scanning lamp	LAMP1	Xenon lamp (intensity of 40,000 lx)
[2] Scanner motor	M400	2-phase stepping motor (under pulse control)
[3] Scanner HP sensor	PS400	Photointerrupter (detects scanner home position)
[4] Copyboard cover sensor	PS401	Photointerrupter (detects the state (open/closed) of copyboard cover)
[5] No.1 mirror base	-	No. 1 mirror
[6] No.2 mirror base		No. 2/No. 3 mirror

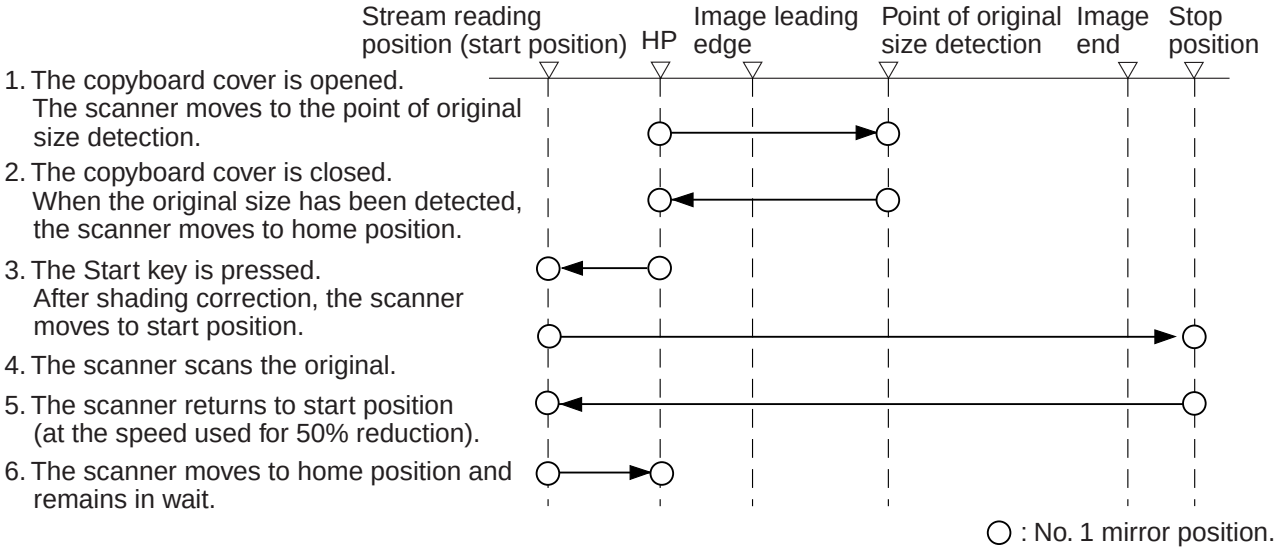
1.2 Sequence of Operations (original exposure)

1.2.1 Book Mode, 1 Original, Copyboard Closed



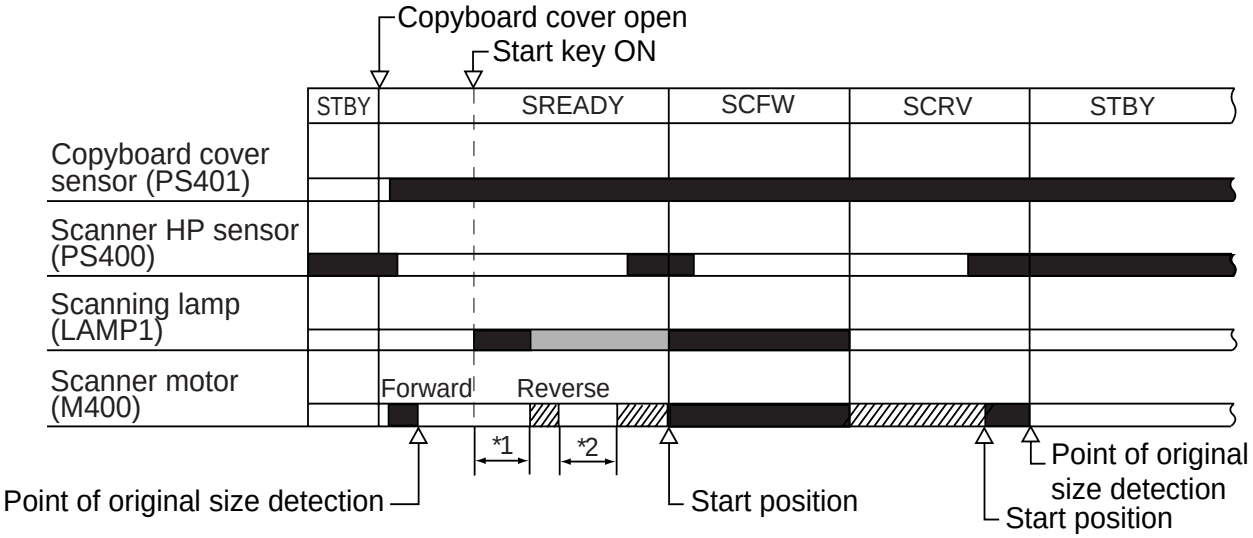
*1: original size detection.*2: shading correction.

F02-102-01



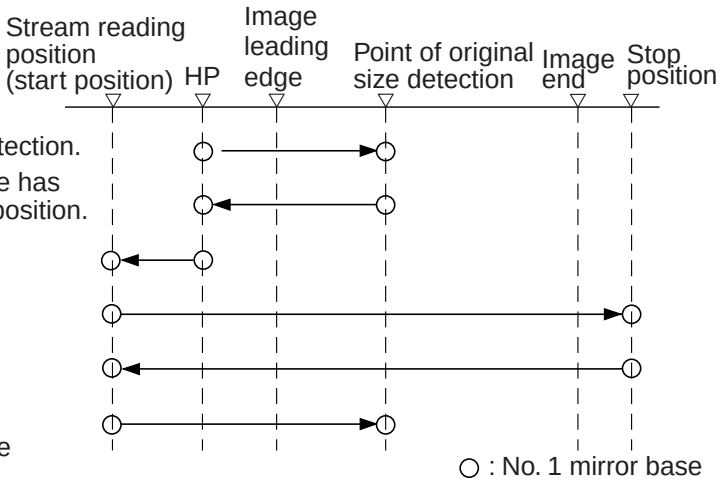
F02-102-02

1.2.2 Book Mode, 1 Original, Copyboard Cover Open



*1: original size detection.*2: shading correction.

F02-102-03



1. The copyboard cover is opened.
   The scanner moves to the point of original detection.
2. The Start key is pressed. After the original size has been detected, the scanner moves to home position.
3. After shading correction in home position, the scanner moves to start position.
4. The scanner scans the original.
5. The scanner returns to start position (at the speed used for 50% reduction).
6. The scanner moves to the point of original size detection.

F02-102-04

1.3 Enlargement/Reduction (zoom)

[1] When the copyboard cover is used, the ratio may be between 25% and 800% and the speed of the scanner is controlled.
[2] When the ADF is used, the ratio may be between 25% and 400% and the speed of moving the originals is controlled.

1.3.1 Changing the Reproduction Ratio in Main Scanning Direction

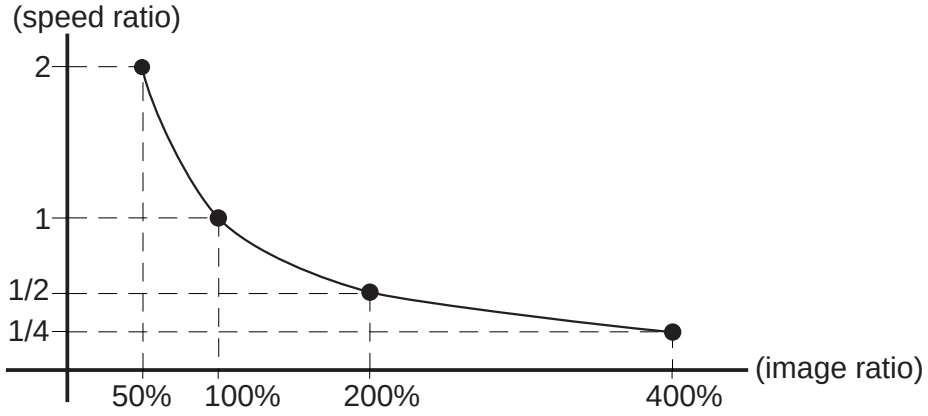
For main scanning direction, the original is read at 100% (for both copyboard and ADF); the size is changed by processing data in the main controller unit.

[1] To reduce, data units are skipped when writing image data to the line memory.
[2] To enlarge, data units are read multiple times when reading image data from the line memory.

1.3.2 Changing the Reproduction Ratio in Sub Scanning Direction

For sub scanning direction, the speed of the scanner/movement of the original is changed. However, for a reduction between 25% and 49% and enlargement between 401% and 800%, data processing in the main controller assembly is also used in combination.

[1] For enlargement, the speed of the mirror/original is reduced from that used in Direct: e.g., at 200%, the speed is 1/2 of the speed used in Direct.
[2] For reduction between 50% and 99%, the speed of the mirror/original is increased; e.g., at 50%, the speed is twice as high as that used in Direct.



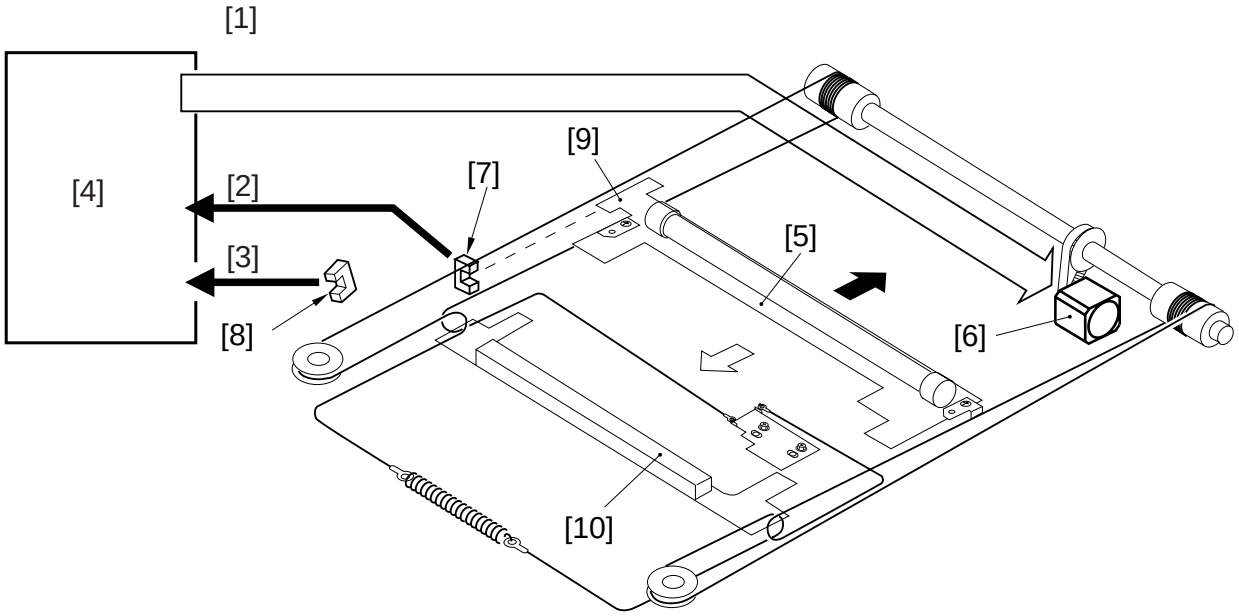
F02-103-01

[3] To reduce to between 25% and 49%, the image data read at 50% and 98% is subjected to skipping (1/2) in the main controller unit.
[4] For an enlargement between 401% and 800%, image data read at 200% to 400% is sub-jected to repeating (doubling) in the main controller assembly.

2 Scanner Drive System

2.1 Outline

The following parts are associated with the scanner drive system.



F02-201-01

[1] Scanner Motor (M3) Control Signal
Used to turn on/off the motor and to control its direction and speed of rotation.

[2] Scanner HP Sensor (PS39) Detection Signal
Used to make sure that the No. 1 mirror base is at home position.

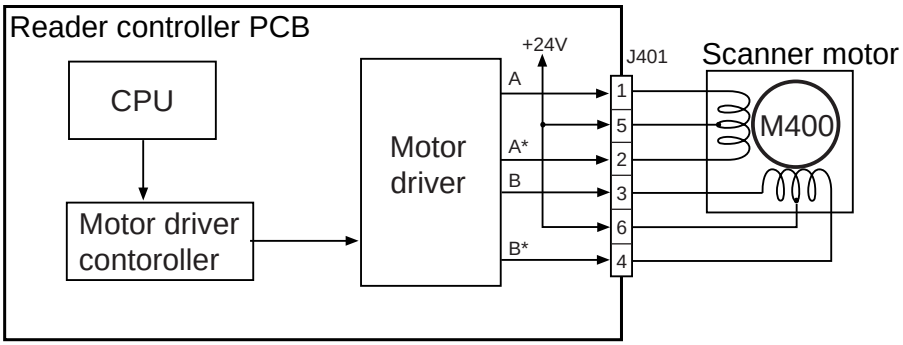
[3] Copyboard Cover Sensor (PS40) Detection Signal
Used to detect the state (open or close) of the copyboard cover.

[4] Reader controller PCB
[5] No.1 mirror base
[6] Scanner motor
[7] Scanner HP sensor
[8] Copyboard cover sensor
[9] Light-blocking plate
[10] No.2 mirror base

2.2 Controlling the Scanner Motor

The system used to control the scanner motor is constructed as follows:

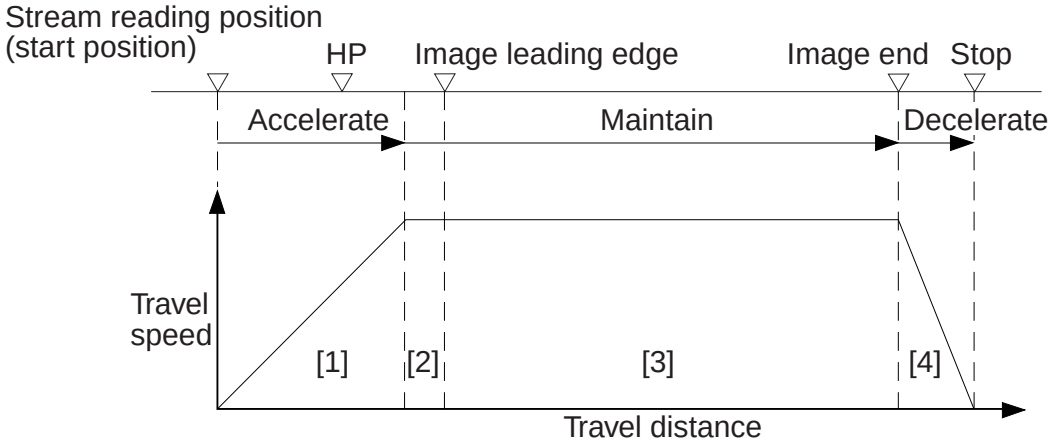
The motor driver turns on/off the scanner motor and controls its direction and speed of rotation in keeping with the signals from the CPU and motor driver controller.



F02-202-01

2.2.1 Controlling the Motor When Scanning an Image

When scanning an image, the motor is controlled as follows, thereby controlling the movement of the No. 1 mirror base unit:



[1] Acceleration. Used to accelerate until the speed most appropriate to the read ratio is attained.

[2] Approach run. Used to ensure that speed stabilizes.

[3] Image read. Used to read the image at a specific speed suited to the read ratio.

[4] Deceleration. Used to enable the scanner to speed down and stop promptly, starting at the end of the image.

F02-202-02

2.2.2 Reversing the Scanner After Scanning in Main Reading Direction

When the image has been scanned, the No. 1 mirror base is moved in reverse to home position at the speed used for 50% reduction, regardless of the ratio being used.

Error

E202 (HP detection error)

[1] The No. 1 mirror base does not reach the HP sensor within a specific period of time.

[2] The HP sensor identifies the presence of the No. 1 mirror base when the No. 1 mirror base should have been moved away.

E204 (image leading edge detection error)

[1] The ADF does not generate the image leading edge signal in stream reading mode.

COPIER>ADJUST>ADJ-XY>ADJ-X (scanner image leading edge adjustment)

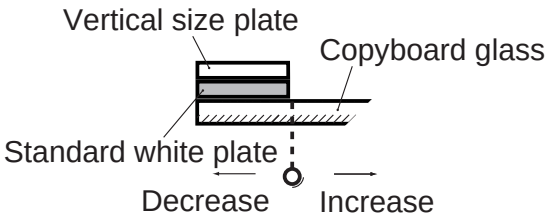
Enter an appropriate value to adjust the image leading edge position.

Range: 250 through 290 (a change of '1' causes a shift of 0.1 mm)

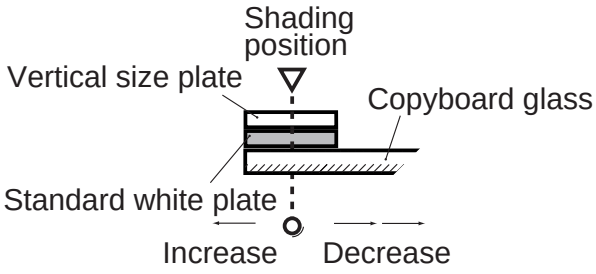
COPIER>FUNCTION>CCD>SHDG-POS (shading position adjustment)

- Execute this mode if a white line still appears after executing COPIER>FUNCTION>CCD>SH-PS-ST or after cleaning the scanner mechanisms.
- After entering a setting and executing COPIER>FUNCTION>CCD>SH-PS-ST, check to make sure that 'OK' is indicted. Thereafter, make a test print to be user that no white line is found in its halftone area.

Range: 240 to 320 (a multiple of 8 causes a shift of about 0.17 mm)



F02-202-03



F02-202-04

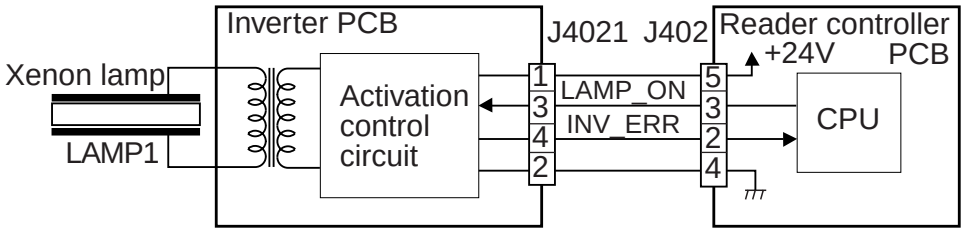
3 Controlling the Scanning Lamp (LA2)

3.1 Outline

The system used to control the scanning lamp is constructed as follows and the items of control include the following:

[1] Turning on and off the scanning lamp.

[2] Monitoring the scanning lamp for errors.



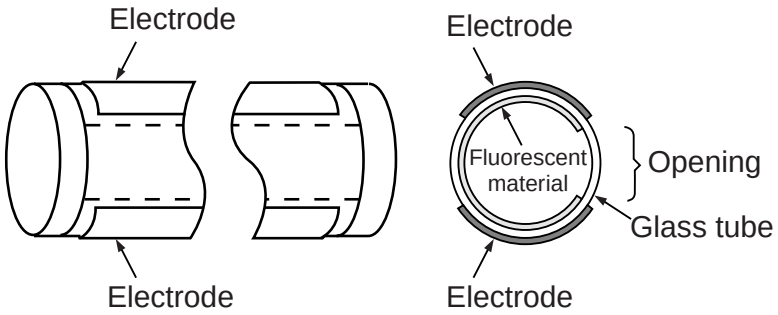
F02-301-01

3.2 Scanning Lamp

The machine's scanning lamp is a xenon lamp of a non-electrode discharge type, in which xenon gas is sealed in a tube.

On the outside of the glass tube, two electrodes are arranged parallel to the tube axis, and the inner side of the glass tube is coated with fluorescent material.

The internal gas discharges and, as a result, the fluorescent material glows when a high-frequency voltage is applied across the electrodes.



F02-302-01

3.3 Turning On/Off the Lamp

The scanning lamp is turned on/off in response to the drive signal (LAMP_ON) from the CPU on the reader controller PCB. When the signal is generated, the inverter generates a high-frequency voltage using the drive voltage (+24 V) supplied by the reader controller PCB to turn on the xenon tube.

3.4 Detecting an Error

The reader controller circuit generates the error signal (INV_ERR) in response to an error (e.g., output open, short circuit, leak) in the inverter circuit. A fault in the lamp (low intensity, activation failure) will be identified as an activation error caused by lack of intensity during initial activation (e.g., at time of shading correction).

E220
It is used to indicate a fault in the inverter PCB.
E225
It is used to indicate a fault in the scanning lamp (xenon tube).

4 Detecting the Size of Originals

4.1 Outline

The machine automatically identifies the size of originals based on the combination of intensities measured by reflection type sensors and CCD at specific points.

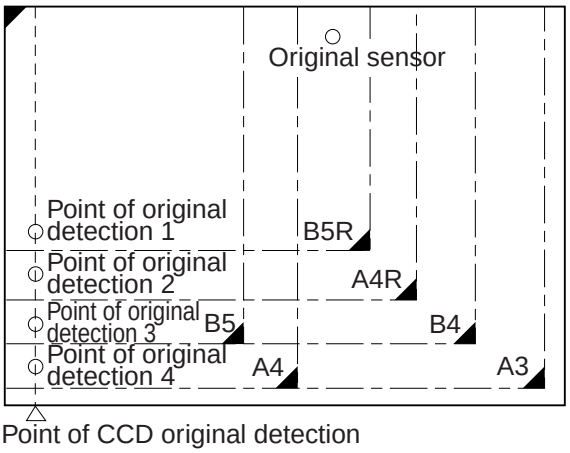
- For main scanning direction, the CCD is used to take measurements (if AB, 4 points; if Inch, 2 points).
- For sub scanning direction, a reflection type photosensor is used (1 point).

4.2 Points of Detection

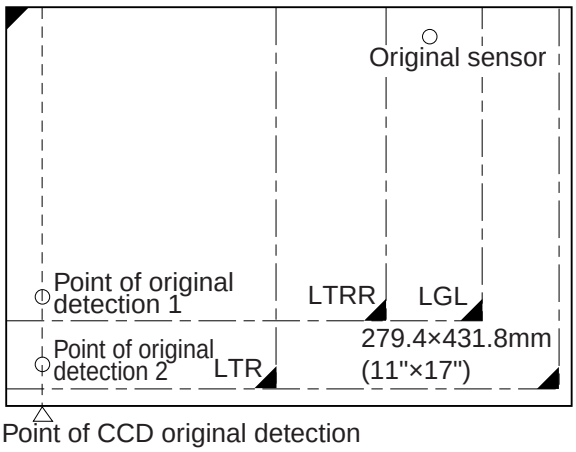
For main scanning direction, the No. 1 mirror base is moved to the following points in relation to the position of the original to measure the intensity at each point.

For sub scanning direction, on the other hand, measurements are taken while holding the sensor in place at a specific point.

AB-Configuration



Inch-Configuration



F02-402-01

4.3 Outline of Detection

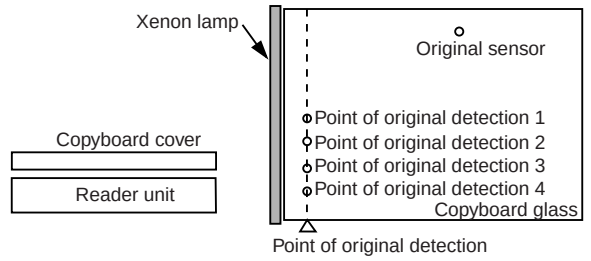
The machine identifies the size of originals in the following two steps:

[1] Detecting External Light (main scanning direction only)
While keeping the scanning lamp off, the CCD level at each point of detection in main scanning direction is measured. A point at which external light is detected will be identified as indicating the absence of an original, enabling the identification of the width of an original.

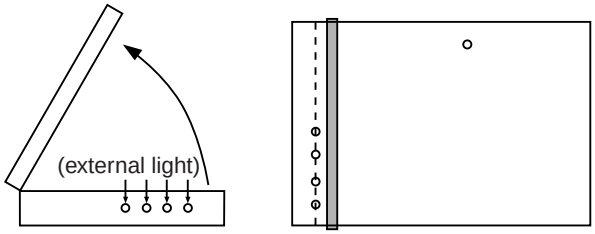
[2] Detecting the Sensor Output Level
The scanning lamp is turned on, and the CCD level at each point of detection in main scanning direction is measured. In addition, the reflection type photosensor in sub scanning direction is turned on to measure the sensor output.
The combination of these output measurements is used to identify the size of the original. For specific movements, see the pages that follow.

4.4 Outline of Detection Operation

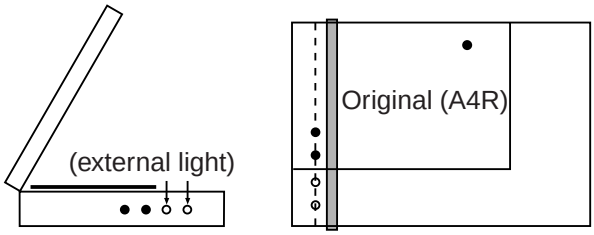
4.4.1 Book Mode, 1 Original, Copyboard Cover Open



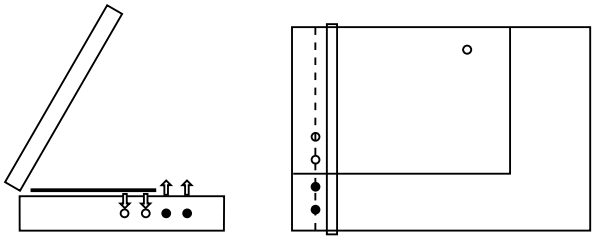
[1] The scanner remains in wait.
No. 1 mirror base: at HP
Xenon lamp: off
Original sensor: disabled



[2] The copyboard is opened.
Detection starts of external light in main scanning direction.
No. 1 mirror base: to point of original detection
Xenon lamp: off
Original sensor: disabled



[3] An original is placed.
The width of the original is identified in relation to the presence/absence of external light; here, the absence of an original is identified at points in question, eliminating B5, B4, A4, and A3.



[4] The Start key is pressed.
In response, original detection is started.
For main scanning direction, the xenon lamp is turned on to check for reflected light by the CCD (4 points).
For sub scanning direction, the original sensor starts detection.
The absence of external light is identified as indicating the absence of an original.
The machine will identify the size of an original based on the combination of the results (T02-404-01)

F02-404-01

AB-Configuration

Originals size	Point of CCD detection 1	2	3	4	Original sensor
A3	○	○	○	○	○
B4	○	○	○	●	○
A4R	○	○	●	●	○
A4	○	○	○	○	●
B5	○	○	○	●	●
B5R	○	●	●	●	○
None	●	●	●	●	●

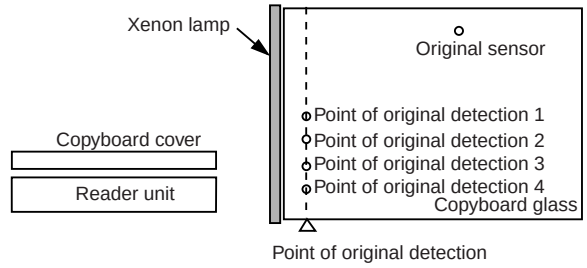
Inch-Configuration

Originals size	Point of CCD detection 1	2	Originals sensor
11"×17"	○	○	○
LGL	○	●	○
LTRR	○	●	●
LTR	○	○	●
None	●	●	●

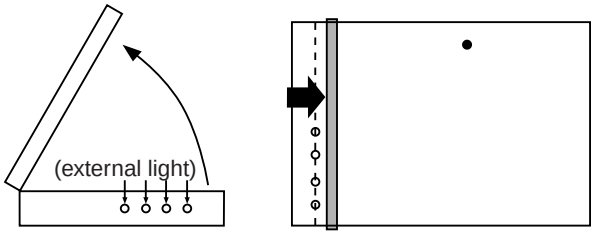
○: reflection present ● : reflection absent

T02-404-01

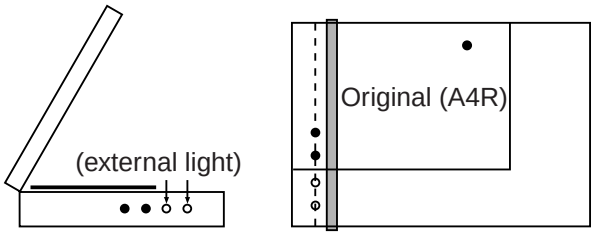
4.4.2 Book Mode, 1 Original, Copyboard Cover Close



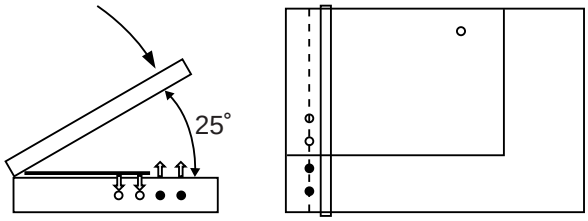
[1] The scanner remains in wait.
No. 1 mirror base: HP
Xenon lamp: off
Original sensor: disabled



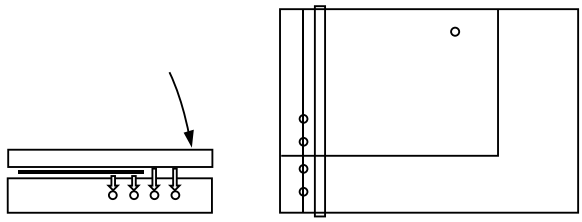
[2] The copyboard cover is opened.
Detection starts of external light in main scanning direction.
No. 1 mirror base: to point of original detection
Xenon lamp: off
Original sensor: disabled



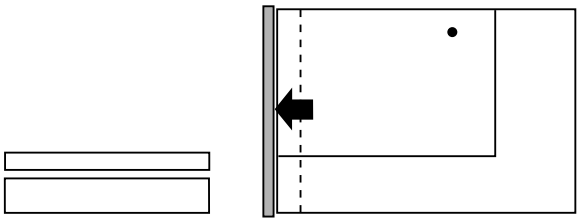
[3] An original is set.
The width of an original is identified in terms of the presence or absence of external light; here, the external light is blocked and the absence of an original is identified, excluding B5, B4, A4, and A3.



[4] The copyboard cover is closed.
When the copyboard cover is brought down to 25°, the Copyboard cover sensor detects the "closed" state, and original size detection starts.
For main scanning direction, the xenon lamp is turned on, and the CCD checks for reflected light (4 points).
For sub scanning direction, the original sensor starts detection.



[5] The copyboard cover is fully closed.
The changes in the output level of each sensor are monitored until the copyboard cover is fully closed. The absence of a change is identified as indicating the absence of paper, and the size of the original is identified based on the combination of changes in level at five points (T02-404-02).



[6] The scanner remains in wait (for a press on the Start key).
The No. 1 mirror base moves to home position, and the scanner waits for a press on the Start key (wait state).

F02-404-02

AB-Configuration

Originals size	Point of CCD detection 1	2	3	4	Original sensor
A3	○	○	○	○	○
B4	○	○	○	●	○
A4R	○	○	●	●	○
A4	○	○	○	○	●
B5	○	○	○	●	●
B5R	○	●	●	●	○
None	●	●	●	●	●

Inch-Configuration

Originals size	Point of CCD detection 1	2	Original sensor
11"* 17"	○	○	○
LGL	○	●	○
LTRR	○	●	●
LTR	○	○	●
None	●	●	●

○: Changes ●: Does not changes

T02-404-02

5 Disassembly and Assembly

The discussions that follow cover the machine's mechanical characteristics and how to disassemble/assemble the machine. Keep the following in mind whenever you work with the machine:

1. ⚠The power plug must remain disconnected for safety when disassembling/assembling the machine.

2. Unless otherwise noted, the machine may be assembled by reversing the steps used to disassemble it.

3. The screws must be identified by type (length, diameter) and location.

4. The mounting screws used for the grounding wire and the varistors come with a washer, which must not be left out when assembling the machine.

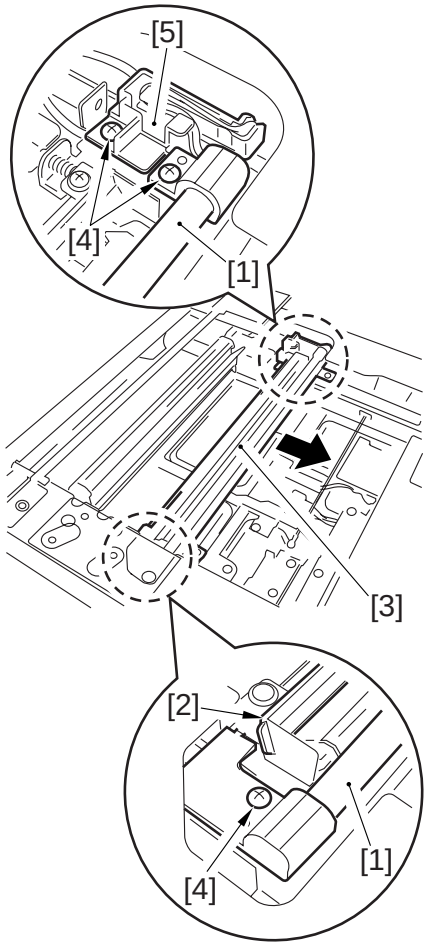
5. As a rule, the machine must not be operated with any of its parts removed.

5.1 Exposure Lamp

5.1.1 Removing the Exposure Lamp

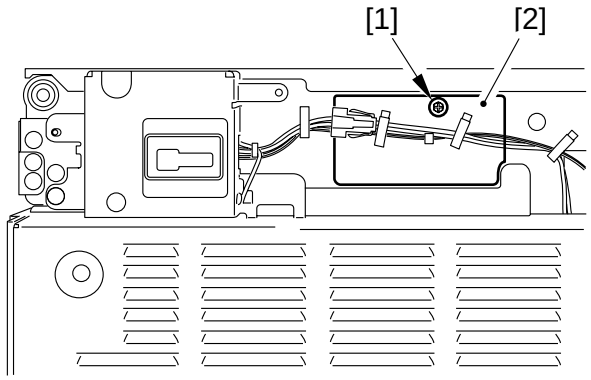
- Do not start to work if the lamp is hot.
- Do not leave fingerprints on the surface of the lamp.
- Do not subject the lamp to impact.
- Do not touch the light window of the lamp without a means of protection.
- Do not impose force on the lamp.
- If the surface of the lamp is soiled, dry wipe it.

1) Remove the copyboard glass. (p. 3-11R)
2) Remove the reader front cover (2 screws) and the reader rear cover (5 screws).
3) While taking care not to hold the scanning lamp [1] and the reflecting shade [2], move the No. 1 mirror base [3] as far as the cut-off in the frame.
4) Remove the three screws [4] from the No. 1 mirror base, and detach the scanning lamp [1] together with the cable fixing plate [5].



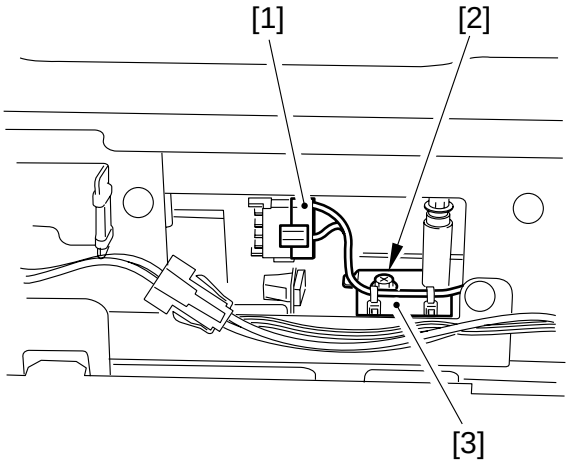
F02-501-01

5) Remove the screw [1], and detach the connector cover [2] found at the rear.



F02-501-02

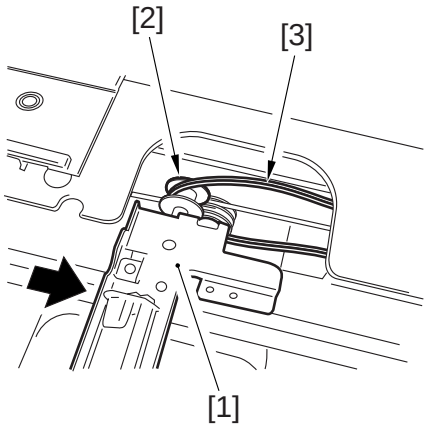
6) Disconnect the connector [1].
7) Remove the screw [2], and detach the cable fixing plate [3].



F02-501-03

8) Push the No. 1 mirror base, and move the No. 2 mirror base [1] as far as the cut-off in the frame; then, free the cable [3] from the pulley [2].

When mounting the lamp, take care not to twist the cable [3].



F02-501-04

5.1.2 After Replacing the Scanning Lamp

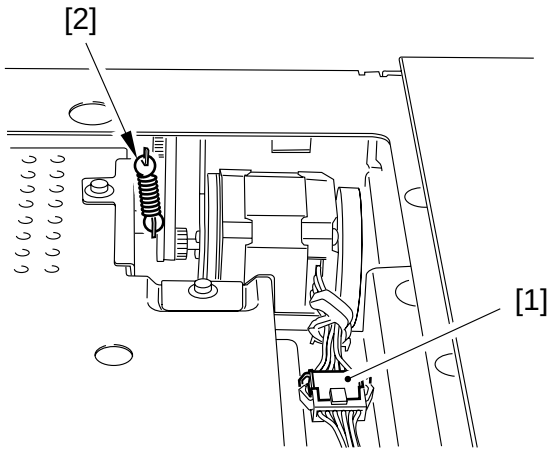
Execute 'CCD auto adjust' in service mode, and record the updated CCD adjustment data on the service label.

1.COPIER>FUNCTION>
CCD>CCD-ADJ
CCD Auto Adjust
2. All items under
COPIER>ADJUST>CCD.
CCD Adjustment Data

5.2 Scanner Drive Assembly

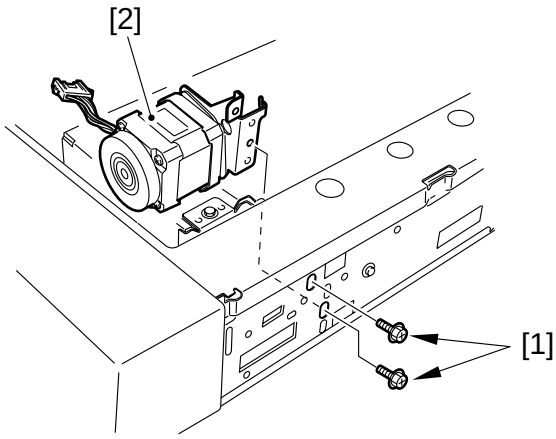
5.2.1 Removing the Scanner Motor

1) Remove the copyboard glass. (p. 3-11R)
2) Disconnect the connector [1].
3) Remove the spring [2].



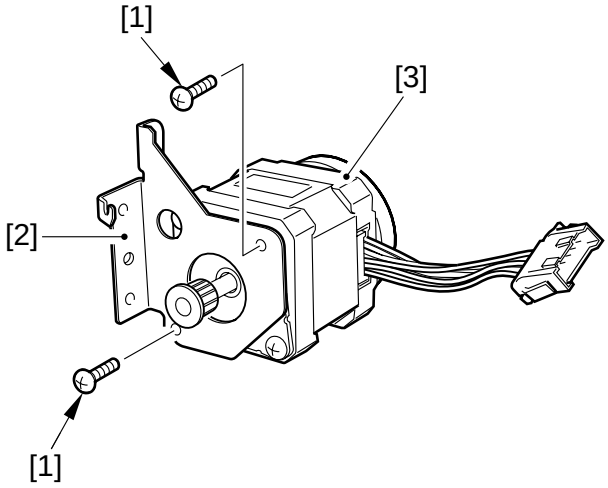
F02-502-01

4) Remove the two screws [1].
5) Detach the belt, and remove the motor unit [2].



F02-502-02

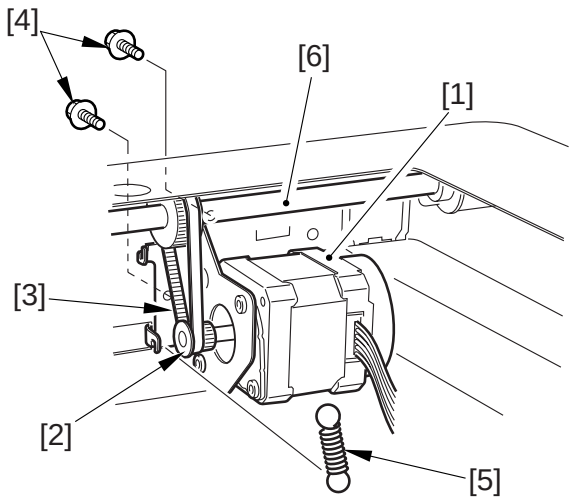
6) Remove the two screws [1], and detach the scanner motor [3] from the motor mounting plate [2].



F02-502-03

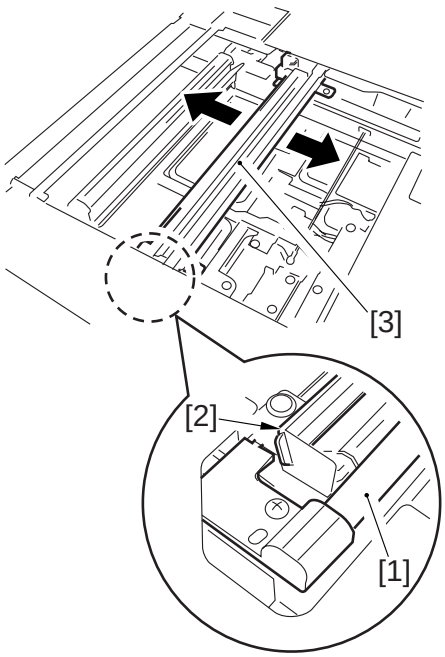
5.2.2 Mounting the Motor Unit

1) Engage the pulley [2] of the motor unit [1] with the belt [3].
2) Using two screws [4], mount the motor unit [1] temporarily.
3) Fit the spring [5] to apply tension to the belt [3].
4) Check to make sure that the belt [3] is vertical.



F02-502-04

5) While taking care not to hold the scanning lamp [1] or the reflecting shade [2], move the No. 1 mirror base [3] back and forth two to three times to make a check once again.



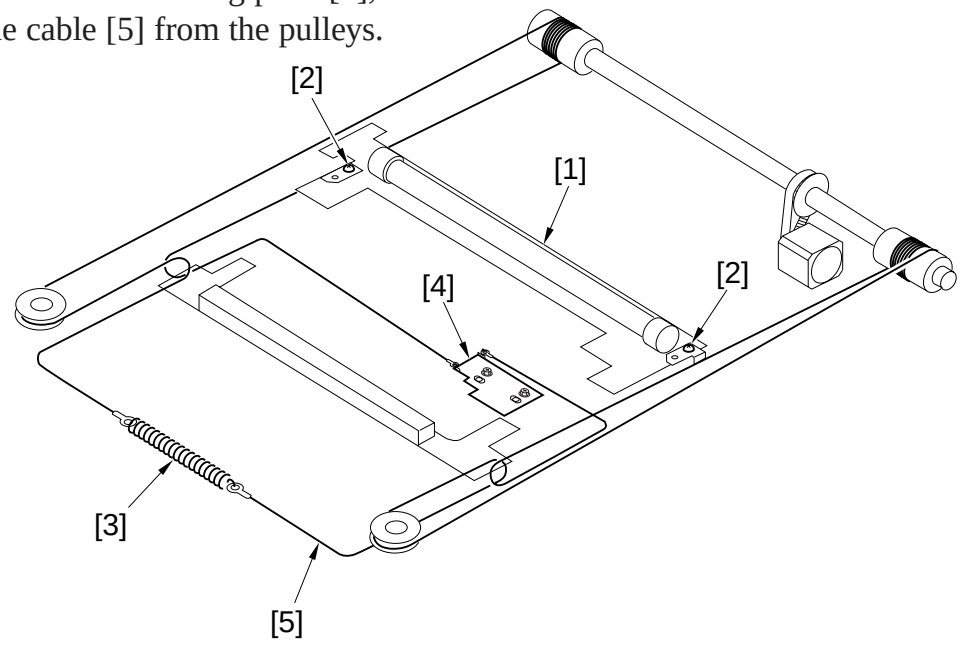
F02-502-05

6) Tighten the two screws to secure the motor unit in place.

5.2.3 Removing the Scanner Drive Cable

When replacing the cable, be sure to obtain the following:
- Mirror positioning tool (FY9-3009)

1) Remove the reader upper frame. (p. 3-14R)
2) Remove the two cable fixing screws [2] of the No. 1 mirror base [1].
3) Remove the spring [3] used to secure the cable in place.
4) Remove the cable fixing plate [4], and free the cable [5] from the pulleys.

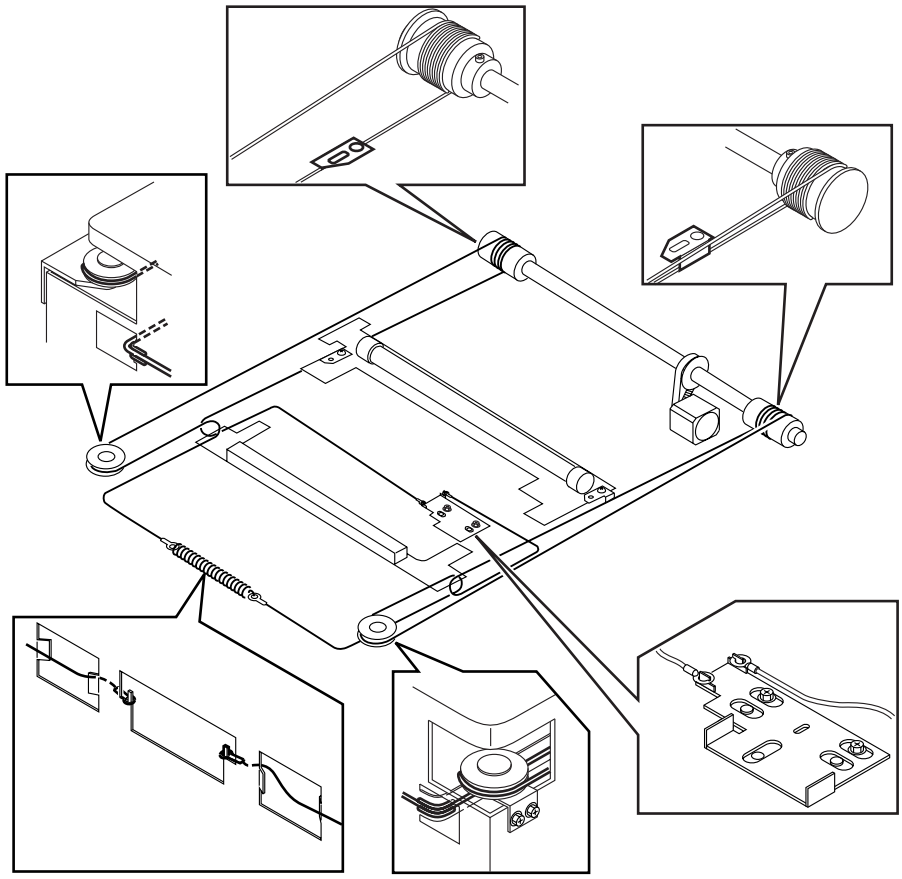


F02-502-06

5.2.4 Routing the Scanner Drive Cable

Route the scanner cable as follows to the pulleys and the hook mirror base:

1) Loosen the screw on the cable fixing plate.
2) Put the ball of the cable into the hole in the drive pulley, and wind the cable firmly so that it will not turn idly (4 runs inside, 5 runs outside); then, tape it in place. At this time, check to make sure that the cable fixing is on the inside.
3) Engage the cable with each pulley, and temporarily fix one of its ends to the cable fixing plate and the other to the hook on the reader frame.
4) Temporarily secure the cable fixing in place to the No. 1 mirror base. (Do not tighten the screw fully.)
5) Fit the reader upper frame.
6) Adjust the position of the No. 1 and No. 2 mirror bases.

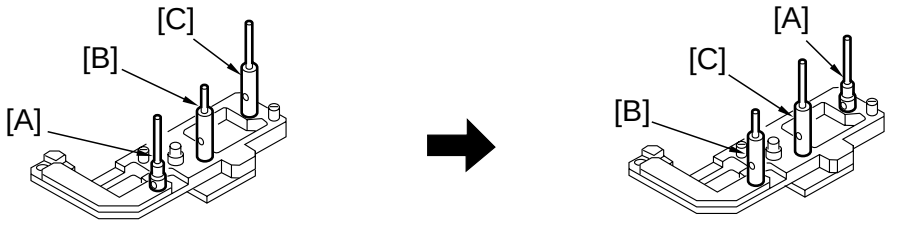


F02-502-07

5.2.5 Adjusting the Position of the No. 1/No. 2 Mirror Base

1) Set the pins of the mirror positioning tool as indicated:

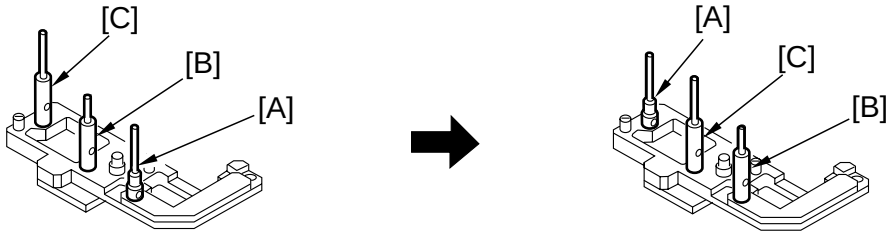
- For the Front (F marking)



(initial; FY9-3009) (set for the machine)

F02-502-08

- For the Rear (R marking)

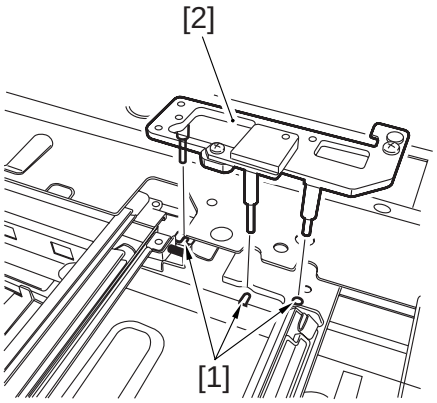


(initial; FY9-3009) (set for the machine)

F02-502-09

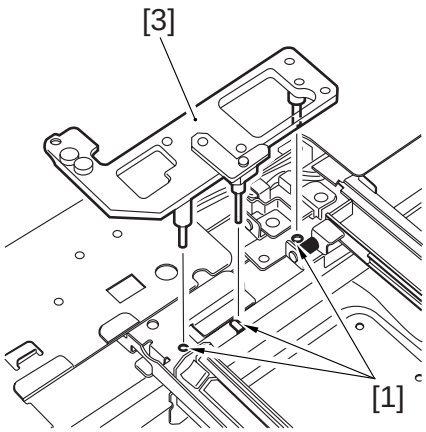
2) Fit the pins of the mirror positioning tool (front [2], rear [3]) into the holes [1] of the rail and the No. 1/No. 2 mirror base. The No. 2 mirror base is adjusted in keeping with the back-and-froth movement of the cable fixing plate.

Front Side (F marking)



F02-502-10

Rear Side (R marking)



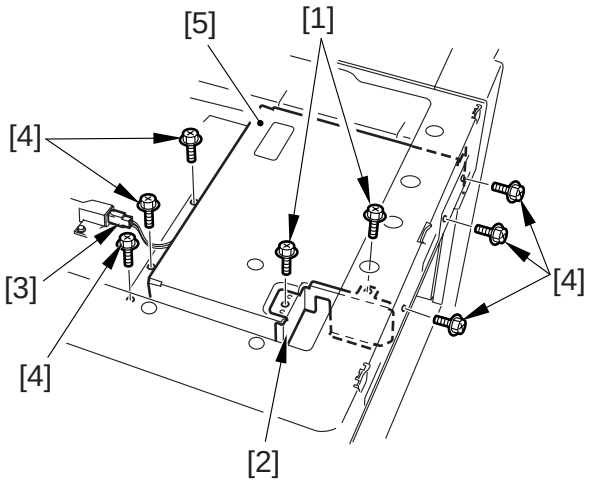
F02-502-11

3) Fix the end of the cable (which is temporarily secured on the hook of the reader frame) in place using the spring.
4) Fully tighten the screw on the cable fixing plate.
5) Fully tighten the screw on the cable fixing so that it is secured on the No. 1 mirror base.
6) Detach the mirror positioning tool (2 pc.).

5.3 Sensors

5.3.1 Removing the Original Detection Unit

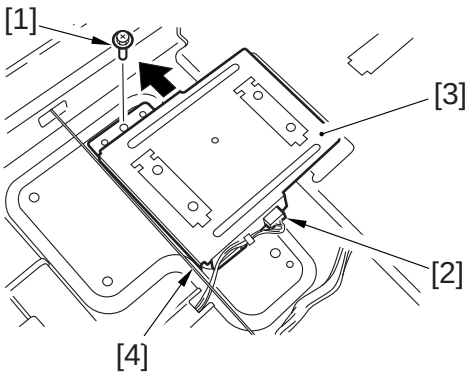
1) Remove the copyboard glass. (p. 3-11R)
2) Remove the two screws [1], and detach the motor shield plate [2].
3) Disconnect the connector [3].
4) Remove the six screws [4], and detach the CCD shield plate [5].



F02-503-01

5) Remove the screw [1], and disconnect the connector [2].
6) Shift the original detection unit [3] to the rear to detach.

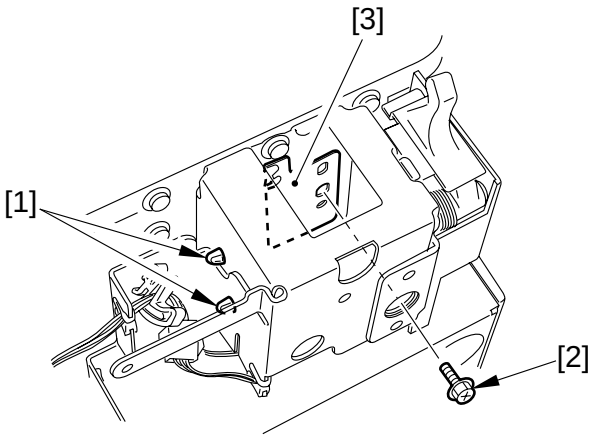
When removing it, be sure to take full care not to damage the cable [5].



F02-503-02

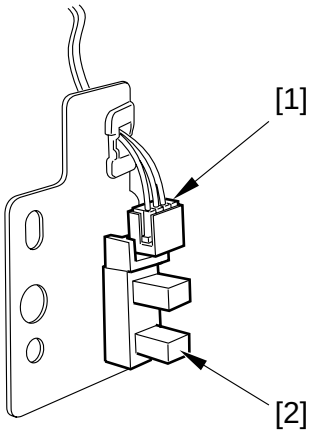
5.3.2 Removing the HP Sensor

1) Remove the reader rear cover (5 screws).
2) Remove the left support cover.
3) Remove the two harness bands [1].
4) Remove the screw [1], and detach the sensor mounting plate [2].



F02-503-03

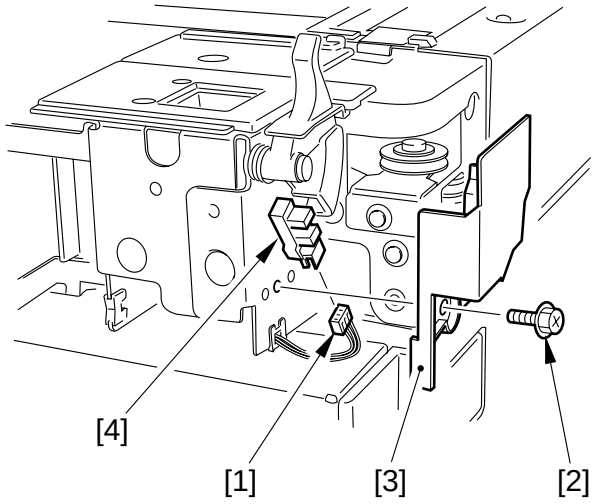
4) Disconnect the connector [1], and detach the HP sensor [2] from the sensor mounting plate.



F02-503-04

5.3.3 Removing the Original Cover Sensor

1) Remove the reader rear cover (5 screws).
2) Disconnect the connector [1].
3) Remove the screw [2], and detach the copyboard sensor cover [3].
4) Remove the copyboard cover sensor [4].

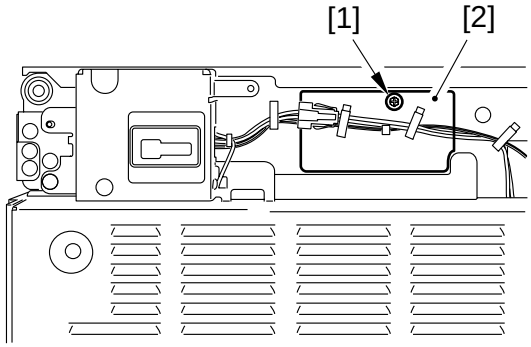


F02-503-05

5.4 PCBs

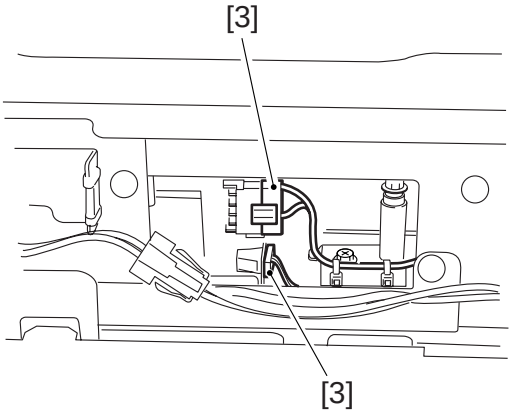
5.4.1 Removing the Inverter PCB

1) Remove the reader rear cover (5 screws).
2) Remove the screw [1], and detach the connector cover [2] found at the rear.



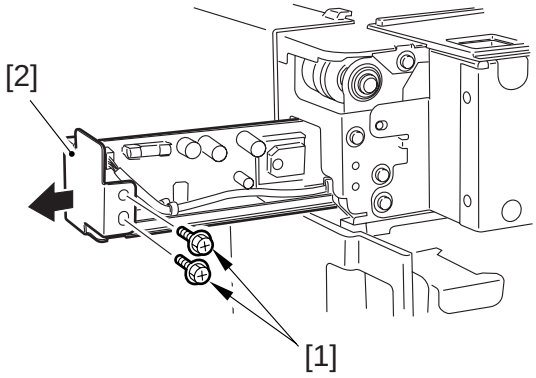
F02-504-01

3) Disconnect the two connectors [3].



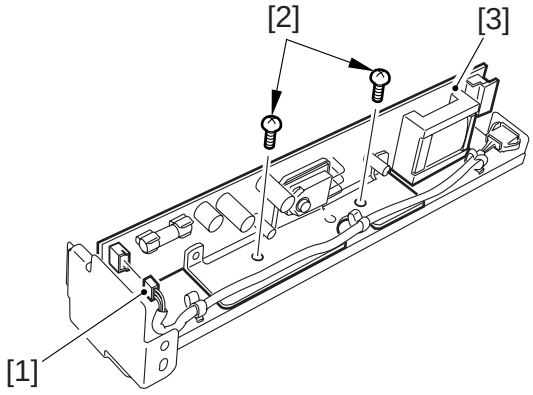
F02-504-02

4) Remove the two screws [1], and slide out the inverter unit [2].



F02-504-03

5) Disconnect the connector [1].
6) Remove the two screws [2], and slide out the inverter PCB [3].



F02-504-04

CHAPTER 3

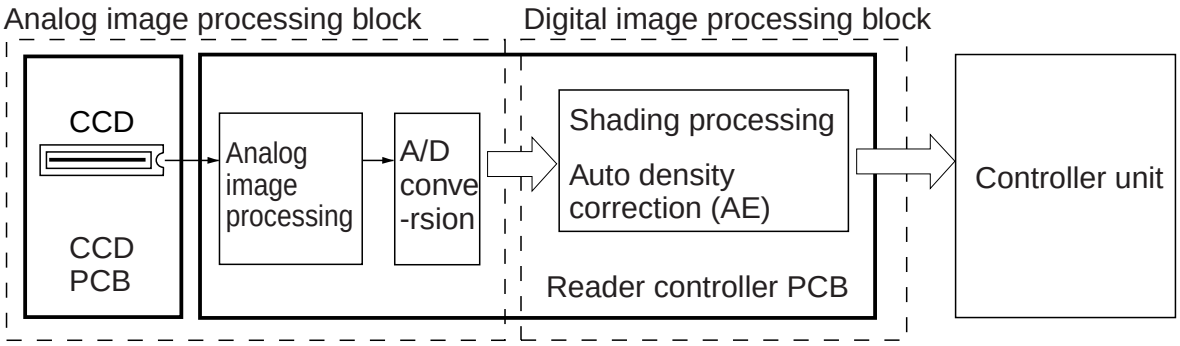
IMAGE PROCESSING SYSTEM

1 Outline

The major functions of the image processing system are as follows:

[1] CCD (image sensor)
Number of lines: 1
Number of pixels: 7450
Size of pixel: 4.7 × 4.7 µm
[2] Shading Correction
Shading adjustment: executed in service mode
Shading correction: executed for each copy
[3] Auto Density Adjustment (AE)
Executed for each line in main scanning direction.

The image processing system consists of the following functional blocks:



F03-100-01

Each of the PCBs used in the image processing system has the following functions:

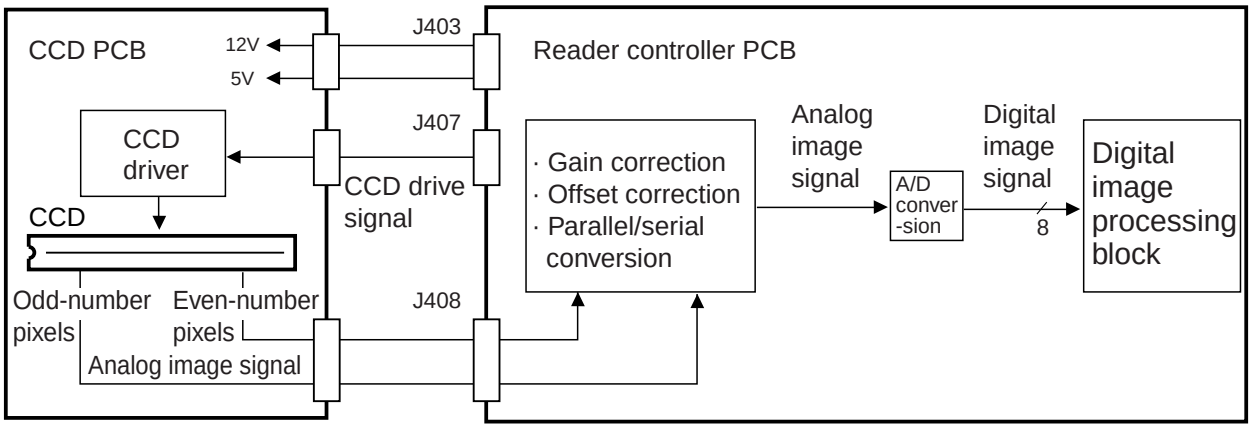
[1] CCD/AP PCB. Drives the CCD, performs analog image processing, performs A/D conversion.
[2] Reader controller PCB. Performs shading correction, performs auto density adjustment (AE).

2 Analog Image Processing

2.1 Outline

Analog image processing is performed by the CCD PCB and the reader controller PCB, which has the following major functions:

[1] Drives the CCD.
[2] Corrects the gain in the CCD output, corrects offset.
[3] Performs parallel/serial conversion of CCD output.
[4] Performs A/D conversion of CCD output.

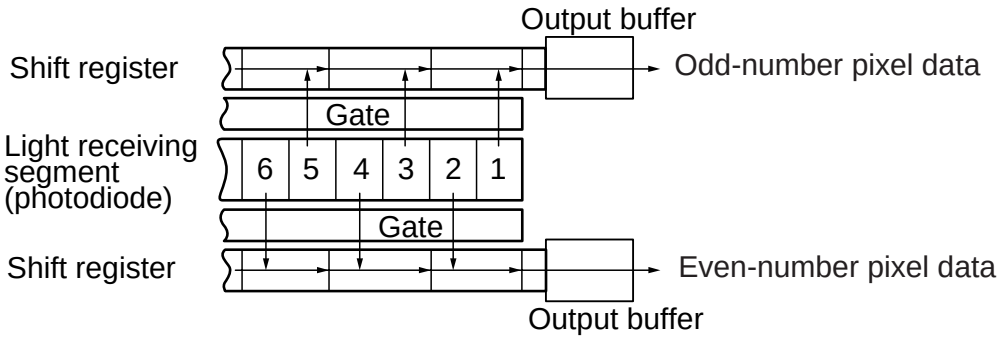


F03-201-01

2.2 Driving the CCD

The machine's CCD sensor is a single-line linear image sensor, and is composed of 7450 pixel photo cells.

The signals subjected to phtoconversion in the light-receiving segment are sent out in two types of analog signals: even-number (EVEN) pixels and odd-number (ODD) pixels.



F03-202-01 CCD Block Diagram

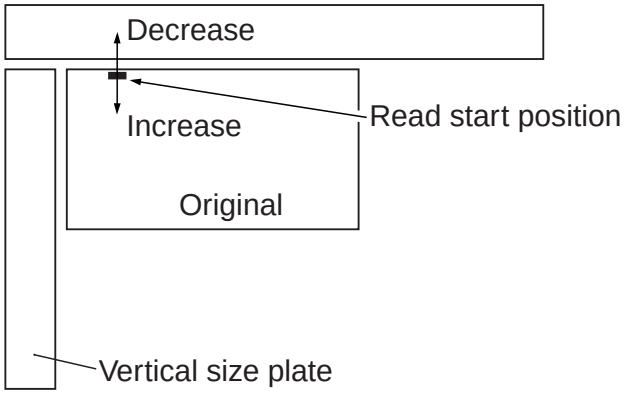
2.3 Gain Correction and Offset Correction of the CCD Output

To correct discrepancies in the efficiency of photoconversion among pixels, the analog video signals from the CCD are corrected: in gain correction, the rates of amplification are standardized; in offset correction, on the other hand, the output voltage in the absence of incoming light is set to a specific level.

2.4 A/D Conversion of the CCD Output

The analog video signals of odd-number and even-number pixels after correction are converted into 8-bit digital signals that correspond to specific pixel voltage levels by the A/D converter.

COPIER/ADJUST>ADJ-XY>ADJ-Y (CCD read start position adjustment)
It is used to adjust the parameter used determining the read start position in main scanning direction.
Range: 0 to 400
(A change by '1' results in a shift of 0.1 mm.)



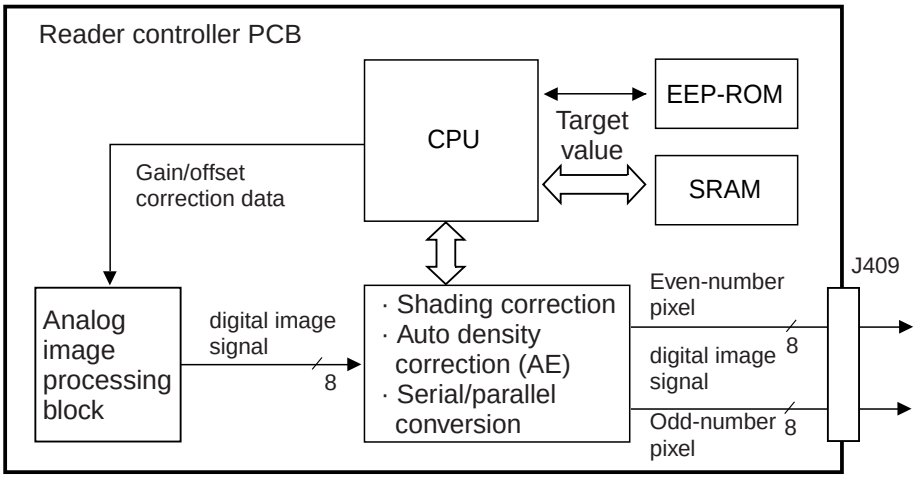
F03-205-01

3 Digital Image Processing

3.1 Outline

Digital image processing is performed by the reader controller PCB, which has the following major functions:

[1] Shading correction
[2] Auto density adjustment (AE)



F03-301-01

3.2 Shading Correction

3.2.1 Outline

The output of the CCD will not necessarily be uniform because of the following factors even if the density of the original in question is perfectly uniform:

1) The level of sensitivity of a CCD pixel differs from that of another.
2) The level of penetration of light differs between the center and the periphery of a lens.
3) The intensity of the scanning lamp differs between the middle and the ends of the lamp.
4) The scanning lamp is subject to deterioration.

Shading correction is executed to correct discrepancies in the output of the CCD, and it may be of either of the following two: shading adjustment used to determine a target level in service mode and shading correction executed when scanning each original.

To make up for the fluctuations in the intensity of light occurring at short intervals, edge area gain correction is also executed.

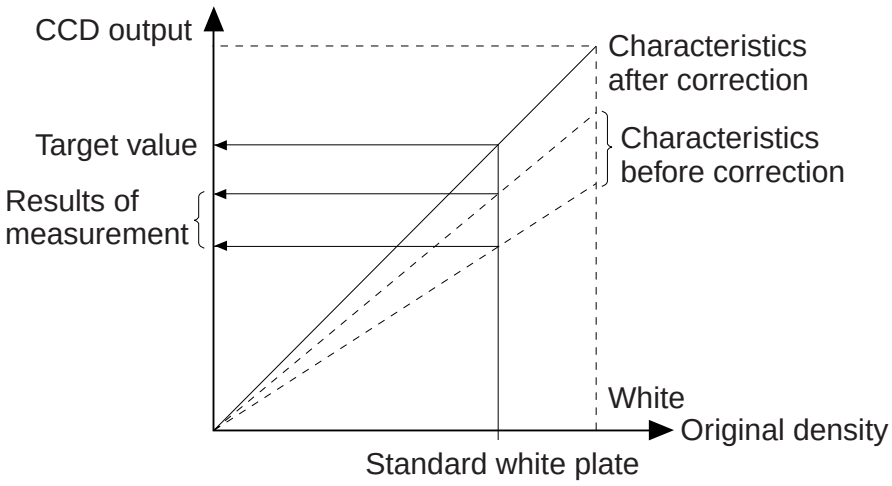
3.2.2 Shading Adjustment

In this adjustment, the density of white paper and that of the standard white plate are measured, and the results are stored in memory.

The data is computed for use as the target level during shading correction. The adjustment is designed for service mode and is used upon installation of the machine, after replacement of the scanning lamp, or when correcting changes in the intensity of the scanning lamp occurring over time.

3.2.3 Shading Correction

This correction is executed each time an original is scanned. The density of the standard white plate is measured and the result is compared against the target value stored in the shading correction circuit. The difference is used as the shading correction value, which will be used to correct the variation in CCD pixels, thereby ensuring a specific level of image density.

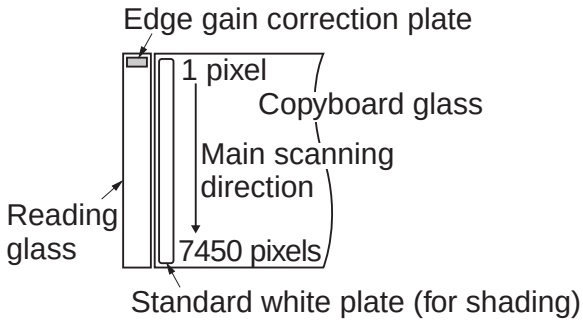


F03-302-01

3.2.4 Edge Gain Correction (ADF in use)

In stream reading with the ADF in use, the No. 1 mirror base is fixed in position. To check for changes in the intensity of the scanning lamp, the edge gain correction plate (gray; mounted at the edge of read position) is read, and a gain that enables the attainment of a specific intensity is computed.

The result is used to correct the data which otherwise would be affected by changes in the intensity of light.



F03-302-02

3.3 Auto Density Adjustment (AE)

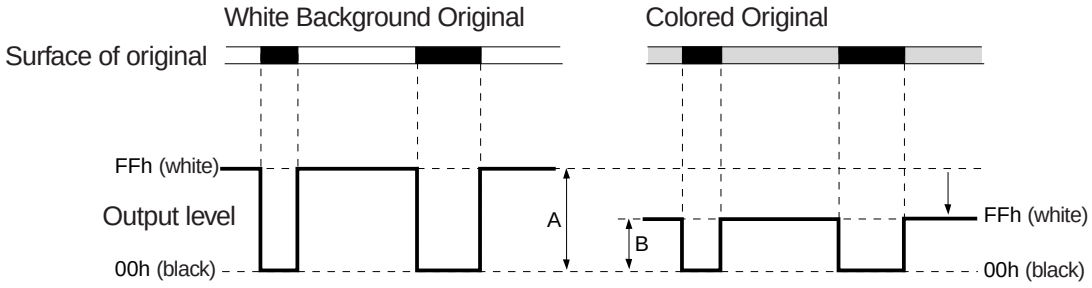
3.3.1 Outline

As in the case of a newspaper, some originals have a dark background. Auto density correction is executed to reproduce the information (text, graphics) of such originals by removing the background.

This adjustment is enabled in density auto mode or when text mode is selected and data is processed by the ABC circuit.

3.3.2 ABC Circuit

A colored background is identified as being white by changing the height of the dynamic range according to the chromatic level of the background as shown in the following figure for the CCD output level (8-it) of digital image signals (A/D converted).



A : dynamic range of white-background original.
B : dynamic range of colored-background original.

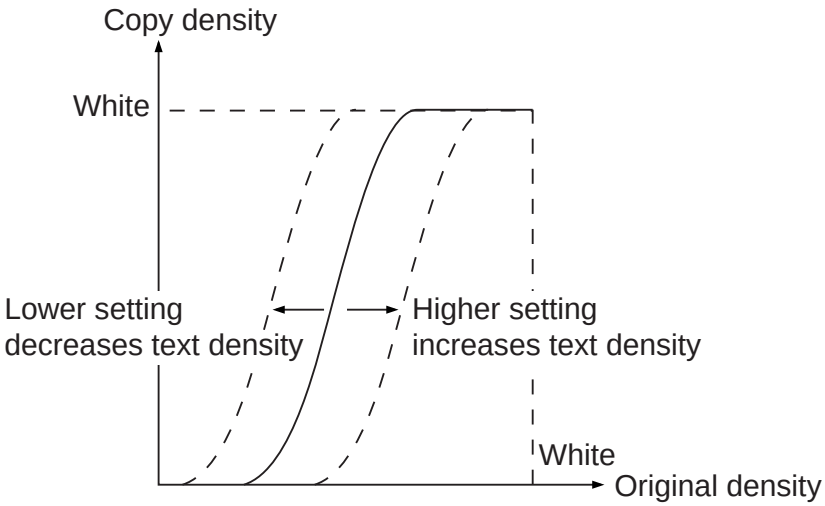
F03-303-01

3.4 Related Service Mode

COPIER>FUNCTION>CCD>CCD-ADJ (shading auto adjustment)
Execute the mode after replacing the CCD unit, scanning lamp, reader controller PCB, or standard white plate.

COPIER>ADJUST>CCD>PPR (density data of standard white paper)
COPIER>ADJUST>CCD>PLT (density data of standard white plate)
COPIER>AJDUST>CCD>GAIN-E/O (gain adjustment input of CCD output)
COPIER>ADJUST>CCD>OFST-E/O (offset adjustment input of CCD output)
COPIER>ADJUST>CCD>SH_RATIO (white level ratio data of standard white plate and standard white paper during shading correction)
If a faulty image is generated after executing shading auto adjustment, enter the parameter values indicated on the service label.

COPIER>ADJUST>AE>AE-TBL (text density adjustment for real-time AE mode)
Use it to change the parameter for adjustment of the density correction curve (for real-time AE mode; 10 steps).
Range: 0 to 9 (default: 4)



F03-304-01

4 Disassembly and Assembly

The discussions that follow cover the machine's mechanical characteristics and how to disassemble/assemble the machine. Keep the following in mind whenever you work with the machine:

1. ⚠The power plug must remain disconnected for safety when disassembling/assembling the machine.

2. Unless otherwise noted, the machine may be assembled by reversing the steps used to disassemble it.

3. The screws must be identified by type (length, diameter) and location.

4. The mounting screws used for the grounding wire and the varistors come with a washer, which must not be left out when assembling the machine.

5. As a rule, the machine must not be operated with any of its parts removed.

4.1 External Covers

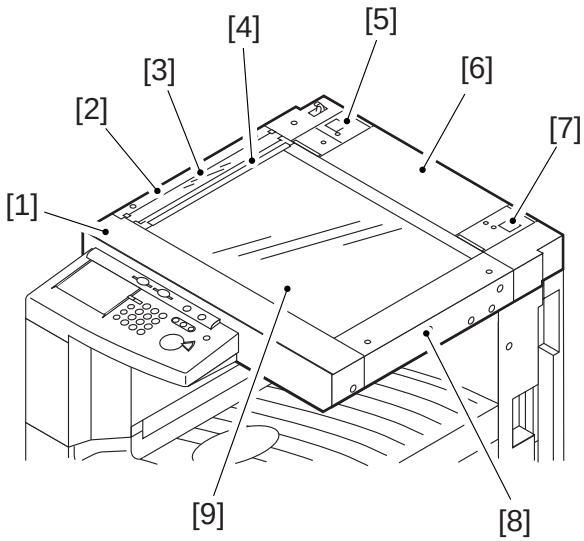
4.1.1 External Covers

Remove the covers as follows when cleaning, checking, or repairing the inside of the machine:

REF.

Those covers that can be detached by merely removing the mounting screws are left out of the discussions.

[1] Reader front cover (2 screws)
[2] Reader left cover (2 screws)
[3] Reading glass
[4] Guide base (3 screws)
[5] Left support cover
[6] Reader rear cover (5 screws)
[7] Right support cover
[8] Reader right cover (2 screws)
[9] Copyboard glass

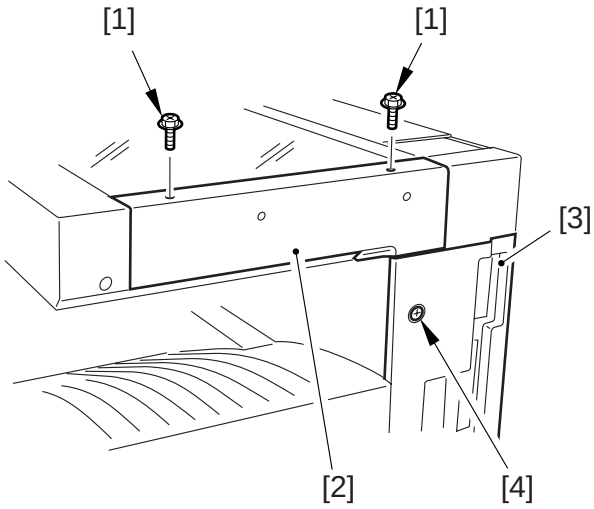


F03-401-01

4.1.2 Removing the Reader Right Cover

1) Remove the two screws [1], and detach the reader right cover [2].

When mounting the reader right cover [2], loosen the top screw [4] of the right rear cover [3] first.

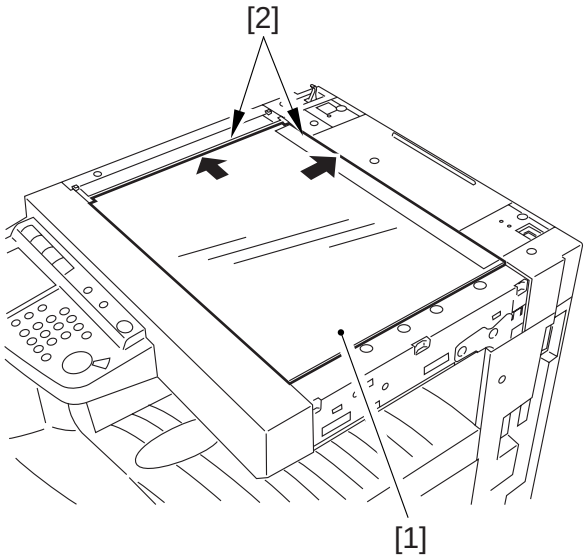


F03-401-02

4.1.3 Removing the Copyboard Glass

1) Remove the reader right cover. (See item 4.1.2.)
2) Remove the copyboard glass [1].

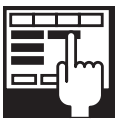
- When mounting, butt the copyboard glass [1] against the vertical/horizontal size plate [2]. If not done properly, the shadow of the size plate will appear on images made in enlargement mode. (After mounting, make an 800% enlargement copy to check.)



F03-401-03

4.1.4 After Mounting the Copyboard Glass

Execute 'optimum position auto adjustment on standard white plate' in service mode.

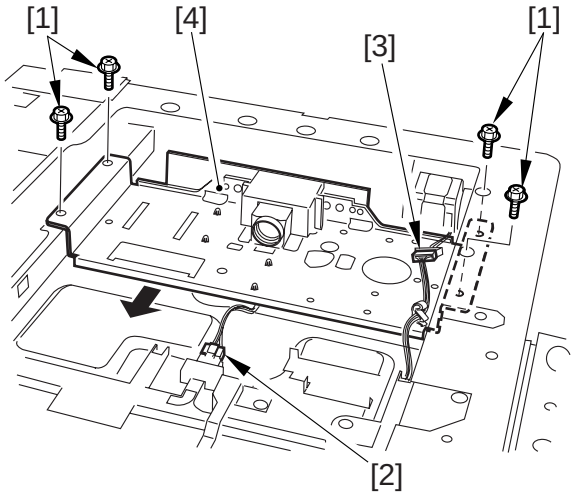


COPIER>FUNCTION>CCD>SH-PS-ST
Use it to execute optimum position auto adjustment for the standard white plate.

4.2 CCDs

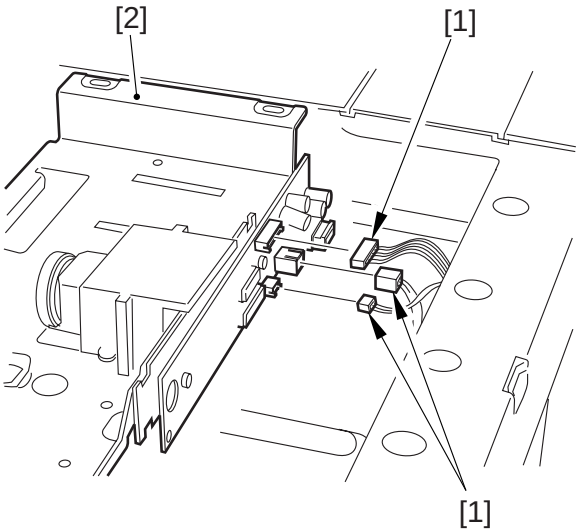
4.2.1 Removing the CCD Unit

1) Remove the original detection unit. (p. 2-24R)
2) Remove the four screws [1], and disconnect the connector [2].
3) Disconnect the connector [3] of the scanner motor, and detach the harness.
4) Shift the CCD unit [4] to the left.



F03-402-01

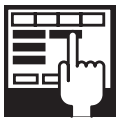
5) Disconnect the three connectors [1], and detach the CCD unit [2].



F03-402-02

4.2.2 Points to Note When Replacing the CCD Unit

Execute 'CCD auto adjustment' and 'edge gain correction position auto adjustment' in service mode; then, record the updated CCD adjustment data on the service label.

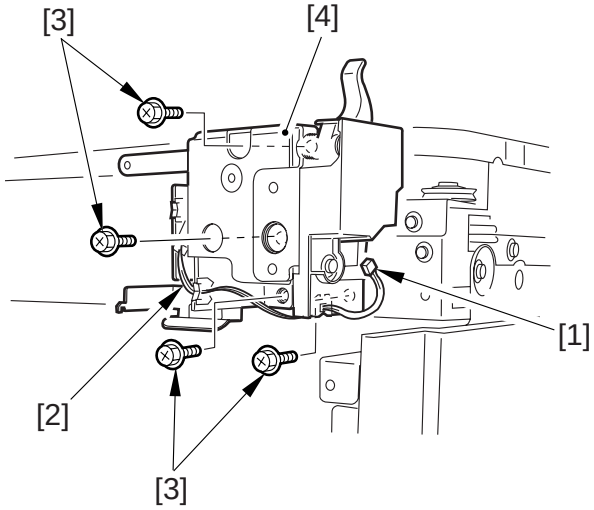


1) COPIER>FUNCTION>
   CCD>CCD-ADJ
   CCD Auto Adjustment
2) COPIER>FUNCTION>
   CCD>EGGN-POS
   Edge Gain Correction Auto Adjustment
3) all items under
   COPIER>ADJUST>CCD
   CCD Adjustment Data

4.3 Frames

4.3.1 Removing the Left ADF Base Unit

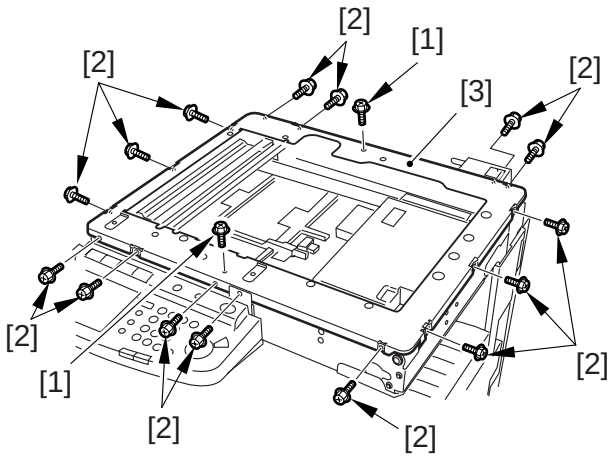
1) Remove the reader rear cover (5 screws) and the left support cover.
2) Remove the rear cover (7 screws) of the printer unit. (See the descriptions for the printer unit.)
3) Disconnect the connector [1], and detach the harness [2].
4) Remove the four screws [3], and detach the left ADF base unit [4].



F03-403-01

4.3.2 Removing the Reader Upper Frame

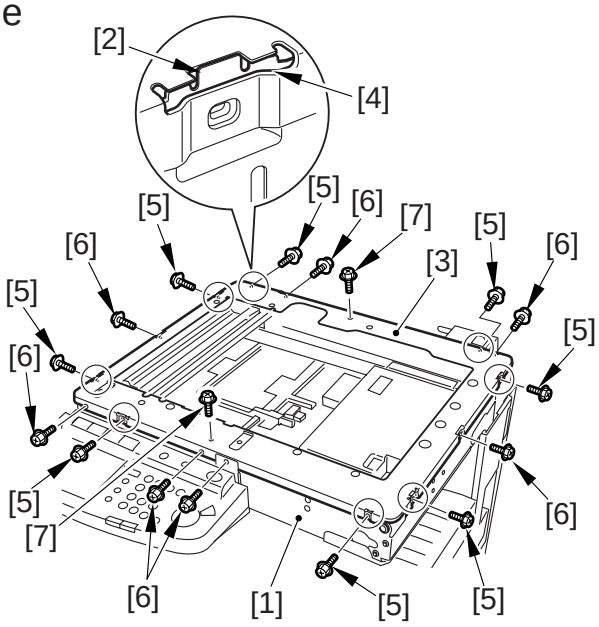
1) Remove the left ADF base unit. (See item 4.3.1.)
2) Remove the two screws [1] from the top face.
3) Remove the 15 screws [2] from the side face.
4) Remove the reader upper frame [3].



F03-403-02

4.3.3 Mounting the Reader Upper Frame

1) Fit the eight claws [2] of the reader frame [1] (circled) into the cut-offs [4] in the reader upper frame [3]; take care so that the engagement is secure.
2) Fit the eight screws [5] of the claw assembly first.
3) Fit the seven screws [6] of the side.
4) Lastly, fit the two screws [7] on the top face.



F03-403-03

4.4 PCBs

4.4.1 Removing the Reader Controller PCB

See the descriptions for the printer unit.

4.4.2 When Replacing the Reader Controller PCB

See “Troubleshooting”>Chapter 4 “Troubleshooting Image Faults/Malfunctions” >6.7 “Variable Resistors (VR), Light-Emitting Diodes, and Check Pins by PCB”

PRINTER UNIT
SERVICE MANUAL

Contents

CHAPTER 1 INTRODUCTION

CHAPTER 2 SEQUENCE OF OPERATIONS

CHAPTER 3 LASER EXPOSURE SYSTEM

CHAPTER 4 IMAGE FORMATION SYSTEM

CHAPTER 5 PICKUP/FEEDING SYSTEM

CHAPTER 6 FIXING SYSTEM

CHAPTER 7 EXTERNALS AND CONTROLS

CHAPTER 8 PAPER DECK-L1

CHAPTER 9 CASSETTE FEEDING UNIT-W1

CHAPTER 10 INNER 2WAY TRAY-A1

CHAPTER 11 ENVELOPE FEEDER ATTACHMENT-B1

CHAPTER 1

INTRODUCTION

1 Safety

1.1 Safety of Laser Light

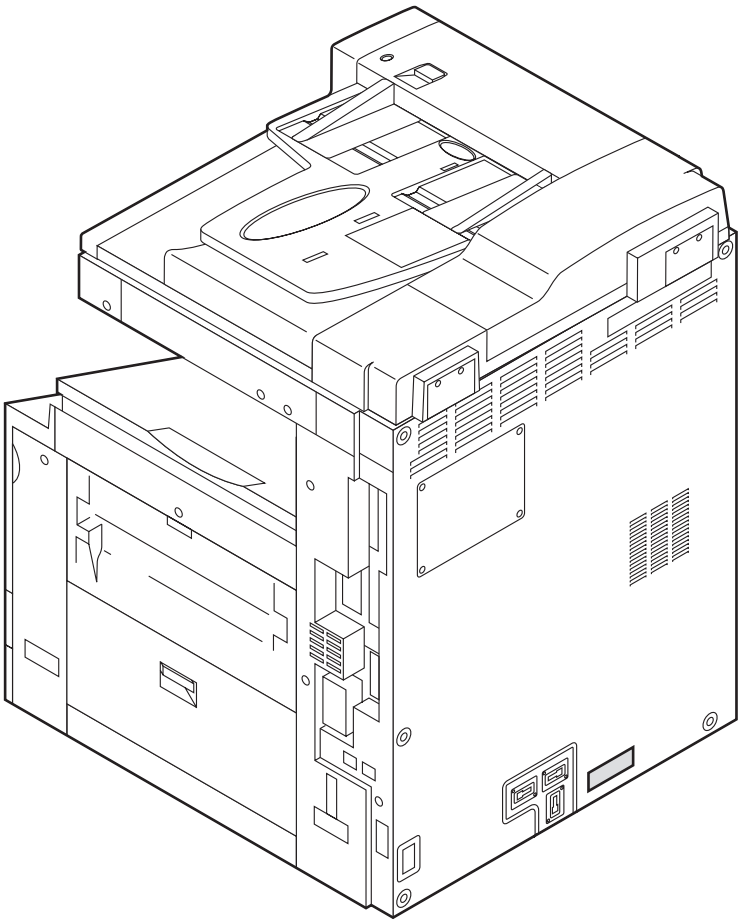
Laser light can prove to be harmful to the human body. The machine's laser system, however, is sealed inside a protective housing and external covers to prevent leakage of laser light to its outside, ensuring the safety of the user as long as the machine is used for its intended functions.

1.2 CDRH Ordinances

The Center for Devices and Radiological Health (CDRH) of the US Food and Drug Administration put into force ordinances related to laser products on August 2, 1976.

These ordinances apply to laser products manufactured on and after August 1, 1976, and sale of laser products is prohibited within the US unless they bear a certificate of compliance.

The following is the label that indicates compliance with the CDRH ordinances, and it must be found on all laser products sold in the US.



F01-102-01 CDRH Label

The description may vary from model to model.

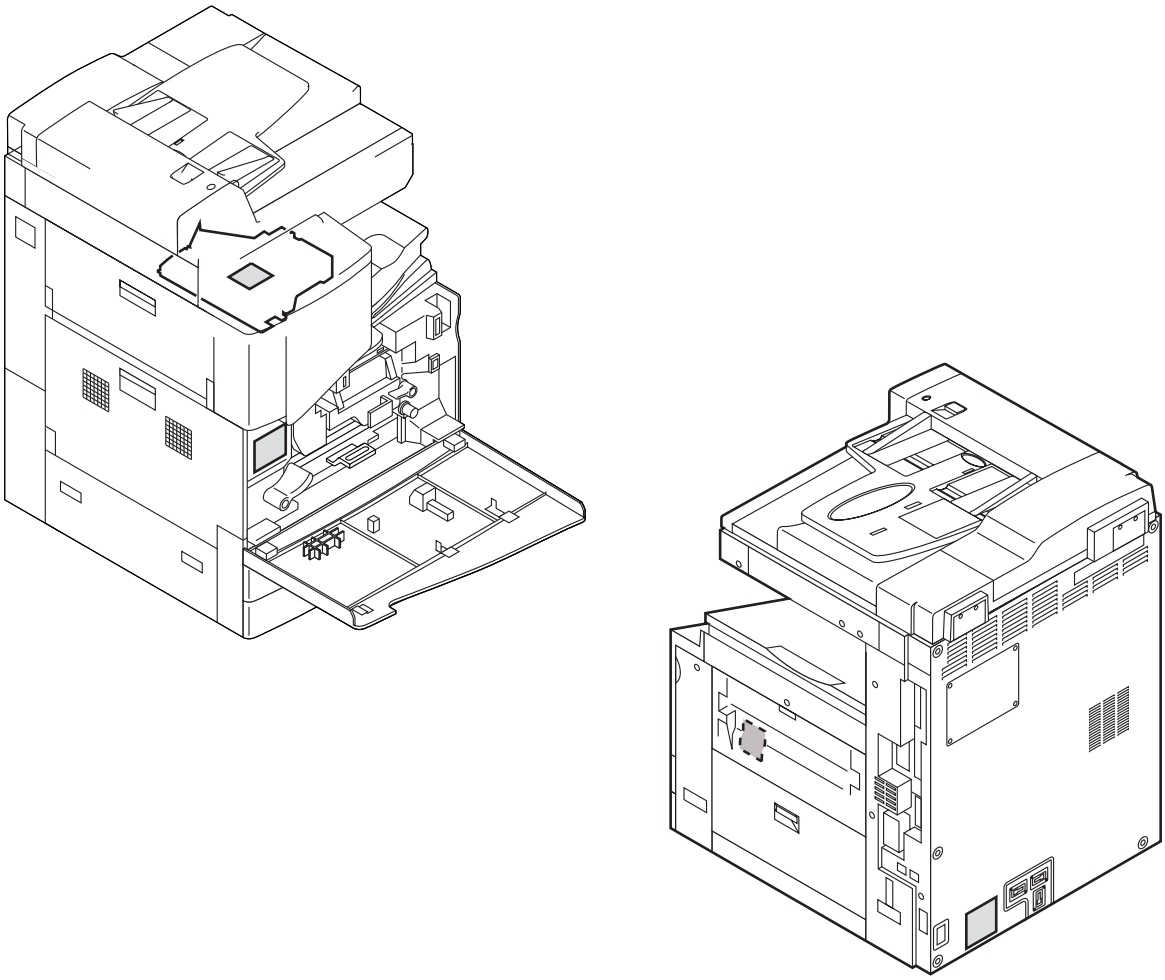
1.3 Handling the Laser System

You must take extra care when servicing the area around the machine's laser system, as by not bringing a high-reflectance screwdriver into the laser path.

Take such precautions as removing the watch and rings before starting the work (to prevent reflection of laser light to the eye).

The machine's laser light is red, and covers that can reflect laser light are identified by the following label. Take full care whenever servicing areas of the machine behind these covers.

This label is attached to all covers inside the machine where hazards from laser light exist.



F01-103-01 Laser Warning Label

1.4 Safety of Toner

The machine's toner is a non-toxic product consisting of plastic, iron, and small amounts of dyes.

If your skin or clothes have come into contact with toner, try removing as much of it as possible with dry paper tissues, and wash off with water. (Do not use warm water, as it would turn the toner jelly-like and become fused with the fibers of the fabric.)

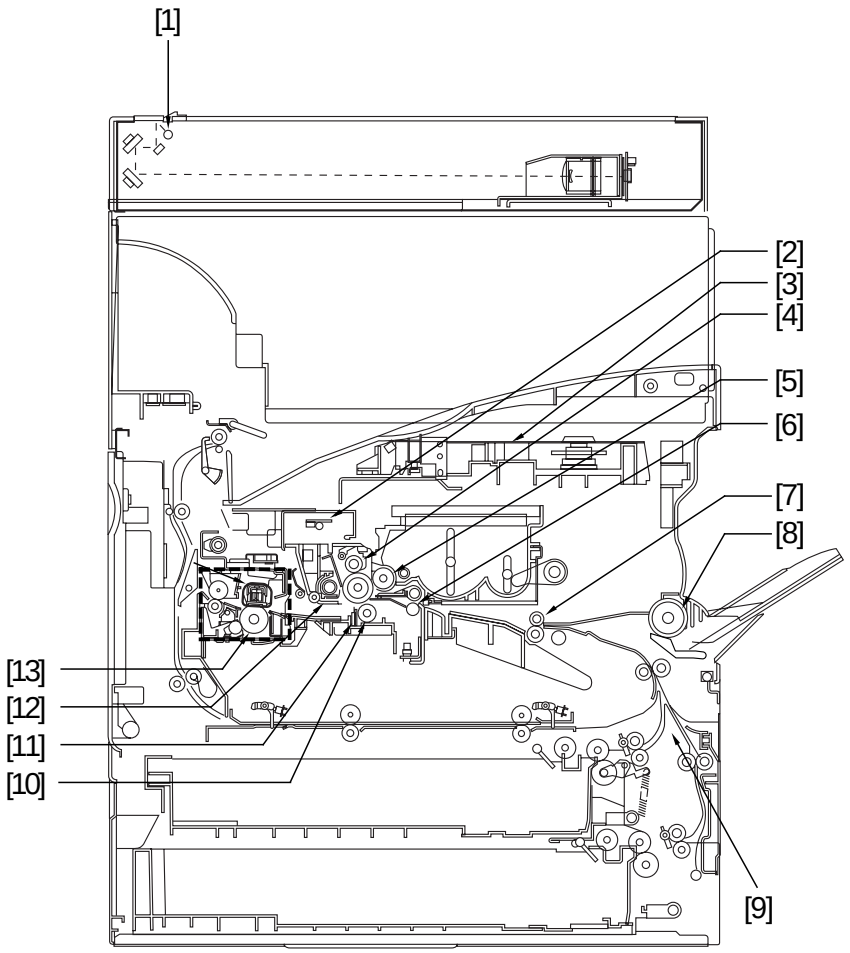
In addition, avoid bringing toner into contact with plastic material, as it tends to dissolve easily.

Do not throw toner into fire to avoid explosion.

2 Image Formation System

2.1 Outline

The machine uses an indirect-electro photographic method, and has the following construction:



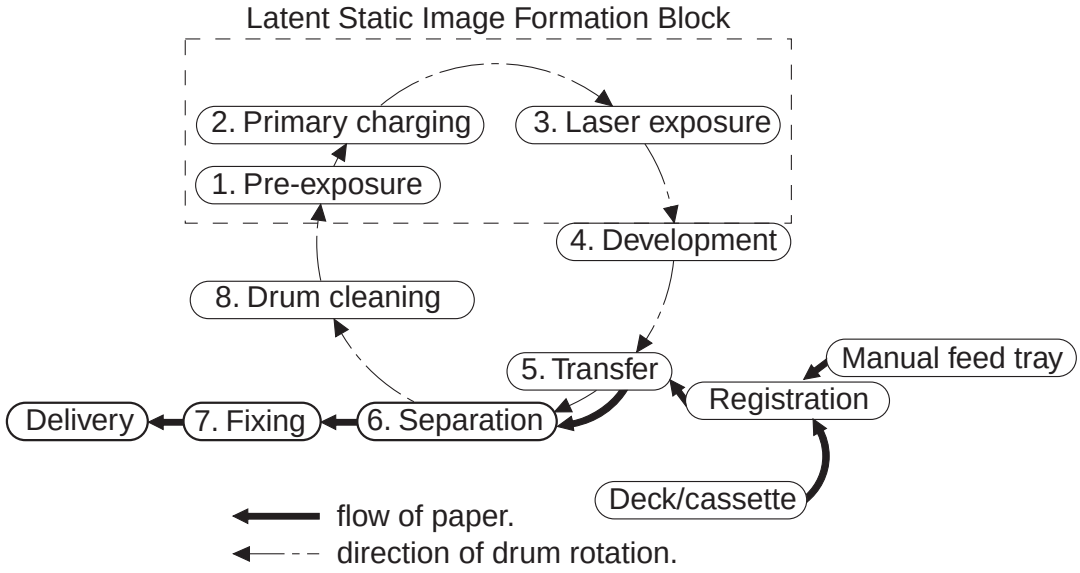
F01-201-01 Construction of the Machine

[1] Scanning lamp
[2] Pre-exposure lamp
[3] Laser scanner unit
[4] Primary charging roller
[5] Developing cylinder
[6] Pre-transfer roller
[7] Registration roller
[8] Pickup (manual feed tray)
[9] Pickup (deck/cassette)
[10] Transfer roller
[11] Static eliminator
[12] Cleaner assembly (drum unit)
[13] Fixing assembly

The machine's image formation process consists of the following eight steps:

Step 1 Pre-exposure
Step 2 Primary charging (positive DC)
Step 3 Laser exposure*
Step 4 Development (AC + positive DC)
Step 5 Transfer (negative DC)
Step 6 Separation (AC + positive DC)
Step 7 Fixing
Step 8 Drum cleaning

*Deposits toner on the VD; the laser is also used for blank exposure.



F01-201-02

CHAPTER 2

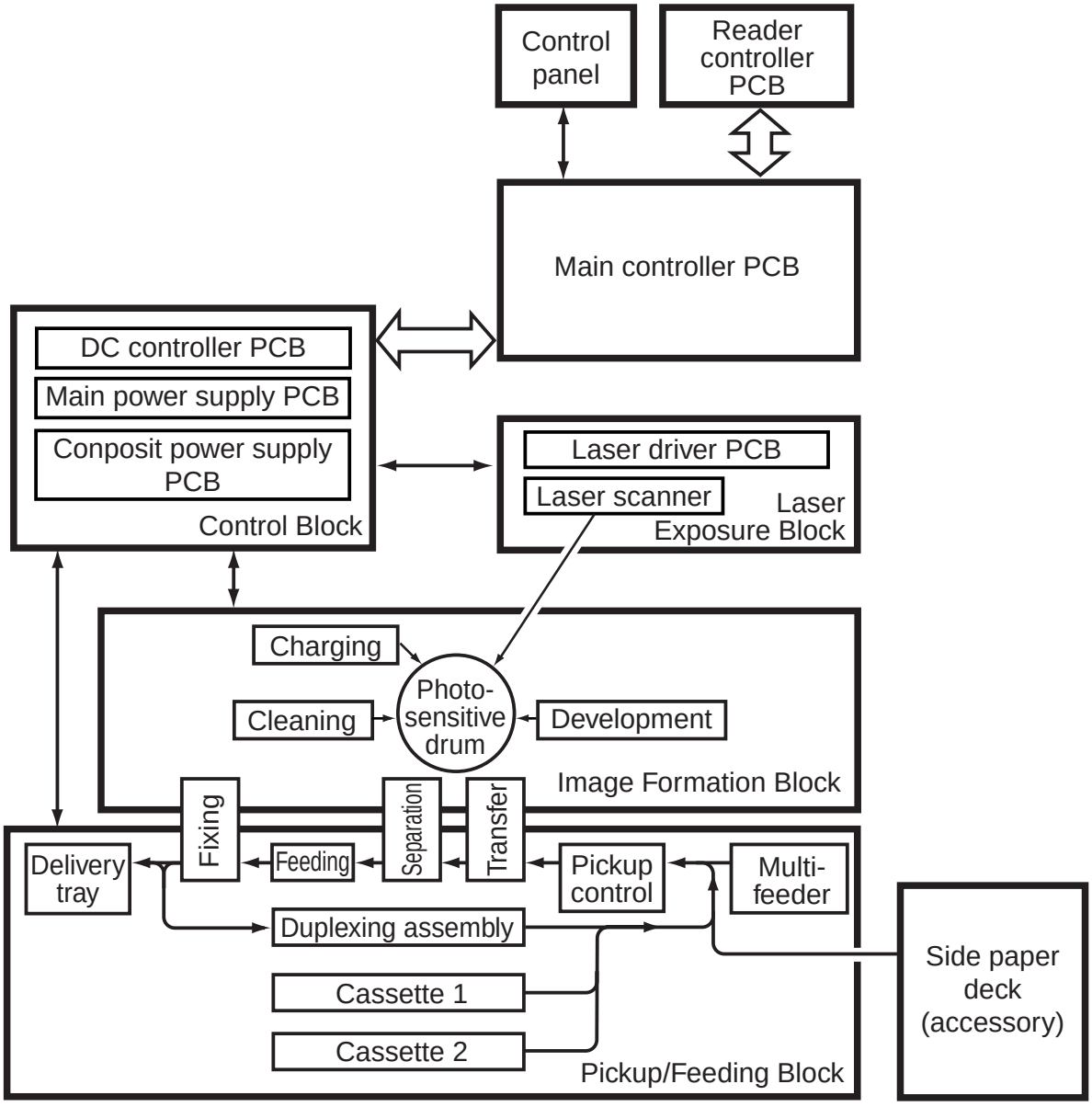
SEQUENCE OF OPERATIONS

1 Basic Operations

1.1 Functional Construction

The printer unit can broadly be divided into the following four functional blocks (shaded):

- Control system
- Laser exposure system
- Image formation system
- Pickup/feed system



F02-101-01

1.2 Outline for the Electrical Circuitry

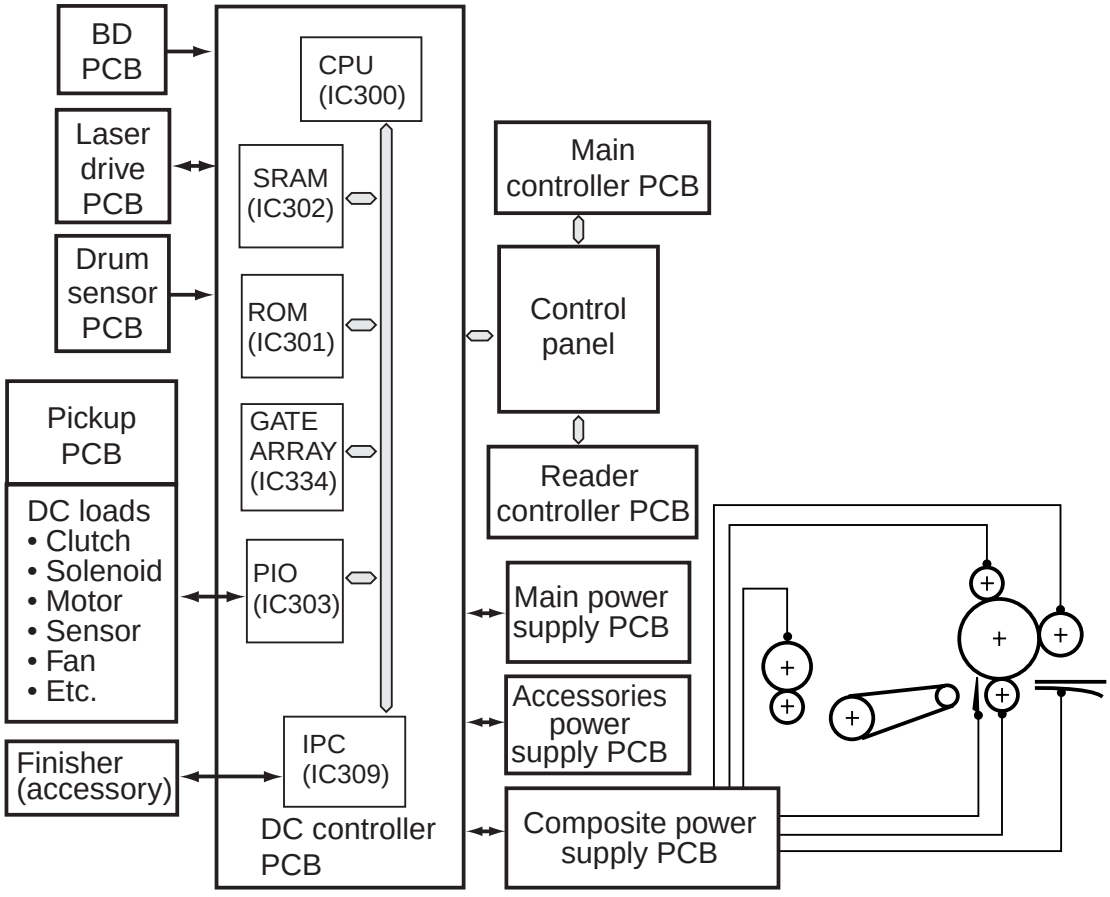
1.2.1 Outline

The major electrical mechanisms of the printer unit are controlled by the CPU on the DC controller PCB. The functions of the major elements are as follows:

1.2.2 DC Controller PCB

Name	Description
CPU	• Controls jobs, Controls operational state, Controls fixing temperature, Controls high voltage. • Controls toner supply, Controls paper feed, Controls print sequence, Controls output • Controls motors, Controls accessories • Controls communication with the controller block, Controls service mode
RAM	• Stores service mode data • Stores user mode data • Stores control data
DIMM ROM	• Flash memory for storage of the control programs
ROM	• Mask ROM for control programs (for figure support)

T02-102-01 Control Functions

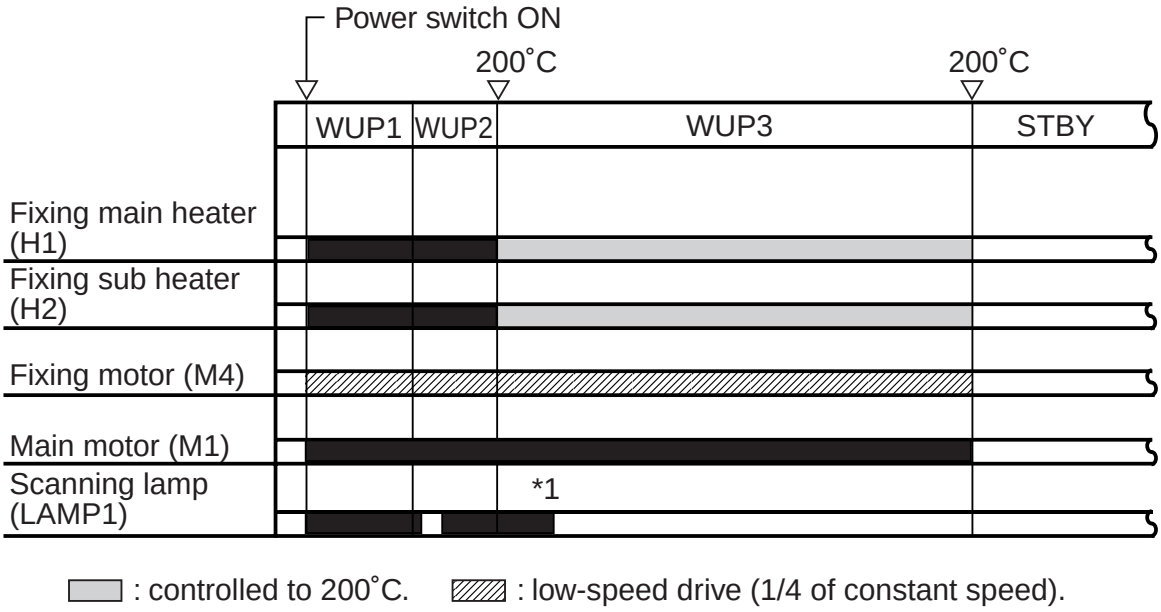


F02-102-01

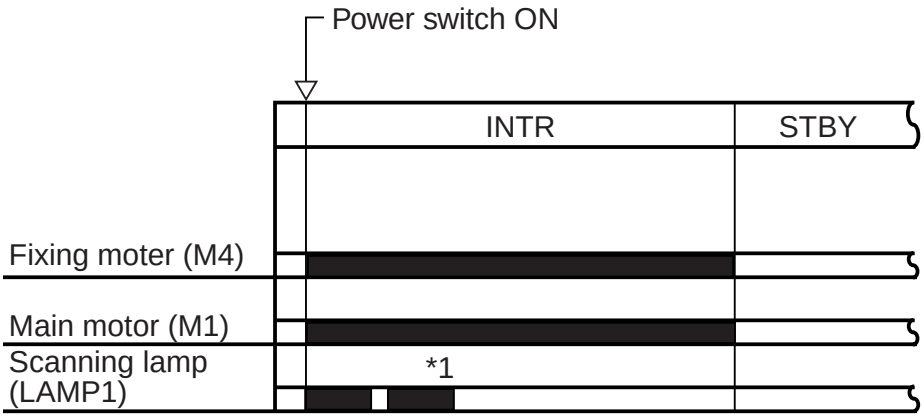
1.3 Basic Sequence of Operations

1.3.1 Basic Sequence of Operations at Power-On

- If the reading of the main thermistor (TH1) is less than 100°C



- If the reading of the main thermistor (TH1) is 100°C or more.



*1: The scanning lamp goes OFF at the end of shading.

T02-103-01

Interval	Description
WUP1 (warm-up 1)	Supplies power to the heater at 65% for a specific period of time (400 msec).
WUP2 (warm-up 2)	Controls by switching with in the range between 65% and 100% every 300 msec until the reading is 200°C. (The rate is determined in relation to the increase in temperature for each specific period of time.)
WUP3 (warm-up 3)	Executes temperature adjustment to 200°C for a specific period of time (10 sec).
INTR (jam check)	Makes a power-on jam check when the power is turned on.
STBY (standby)	Keeps the machine at rest from when WUP3 ends to the Start key is pressed or until the power switch is turned off.

T02-103-01

1.4 Controlling the Main Motor (M2)

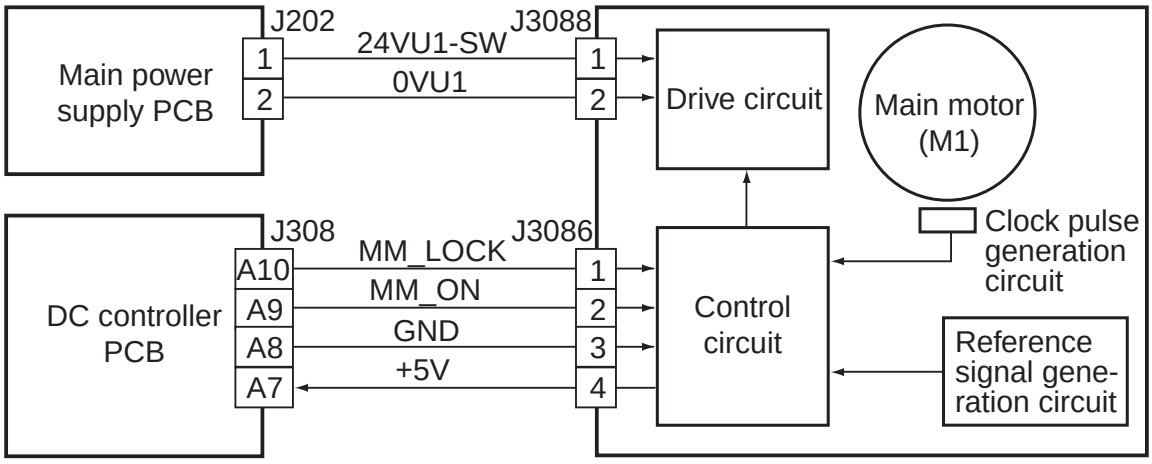
1.4.1 Outline

The functions of the main motor control circuit are as shown in T02-104-01; for a block diagram of the circuit, see F02-104-01.

Item	Description
Power supply	24 V from the DC power supply PCB.
Drive signal	Signal (MM_ON) from the DC controller PCB.
Operation/drive assembly	Waste toner feed screw
	Cleaner assembly
	Registration roller
	Manual pickup assembly
	Left deck feeding roller 2
	Developing unit
Control	ON/OFF control
	Constant speed control
Error detection	'E010' (error code)

T02-104-01

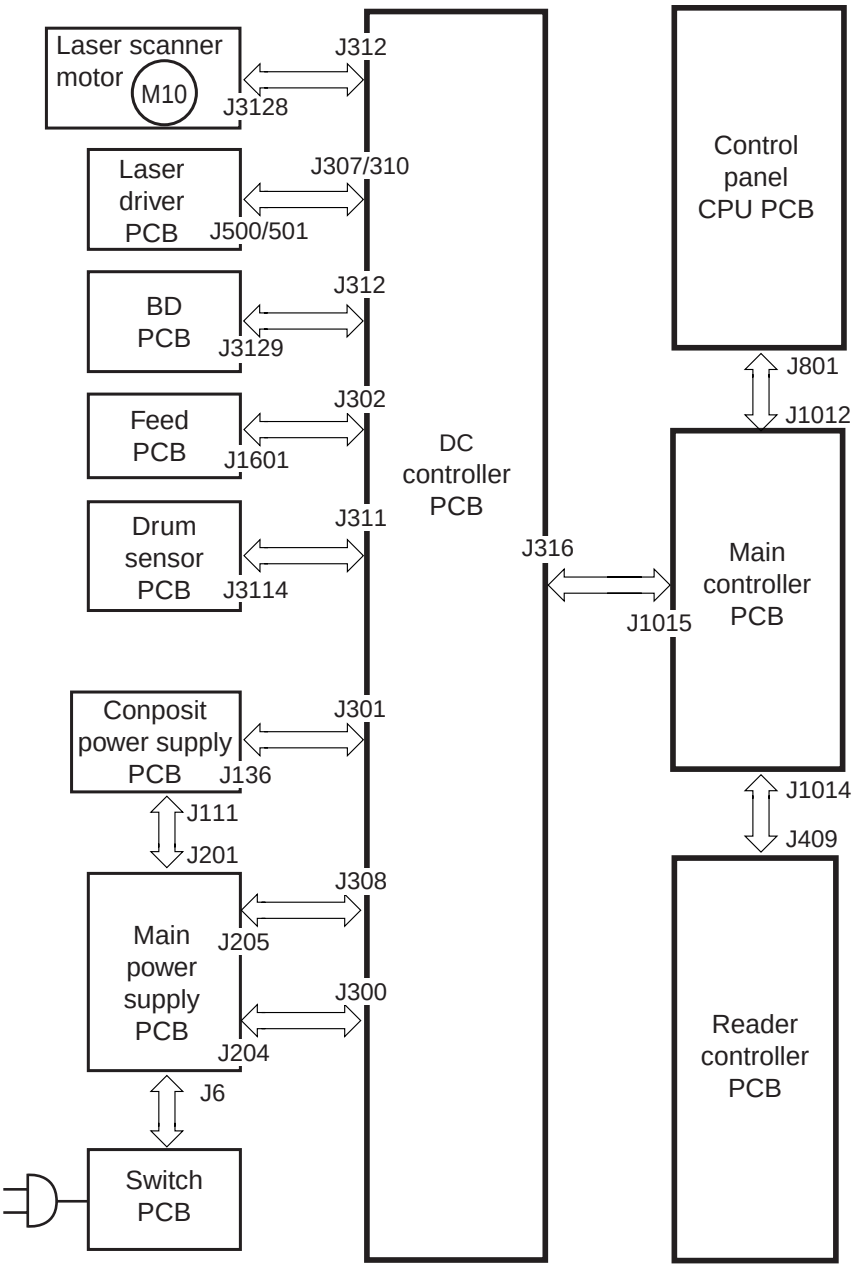
[1] When the main motor drive signal (MM_ON) goes '1', the main motor starts to rotate.
[2] When the main motor starts to rotate, the clock pulse signal (MM_LOCK=1) is generated. If the DC controller PCB detects a fault in the clock pulse signal, the machine will indicate 'E010' in its control panel.



F02-104-01 Control Circuit Block Diagram

1.5 Inputs to and Outputs from the Major PCBs

1.5.1 Wiring Diagram of the Major PCBs



F02-105-01

CHAPTER 3

LASER EXPOSURE SYSTEM

1 Outline of Operations

1.1 Outline

Part 2>Chapter 4>1.1 “Outline of Laser Exposure System”

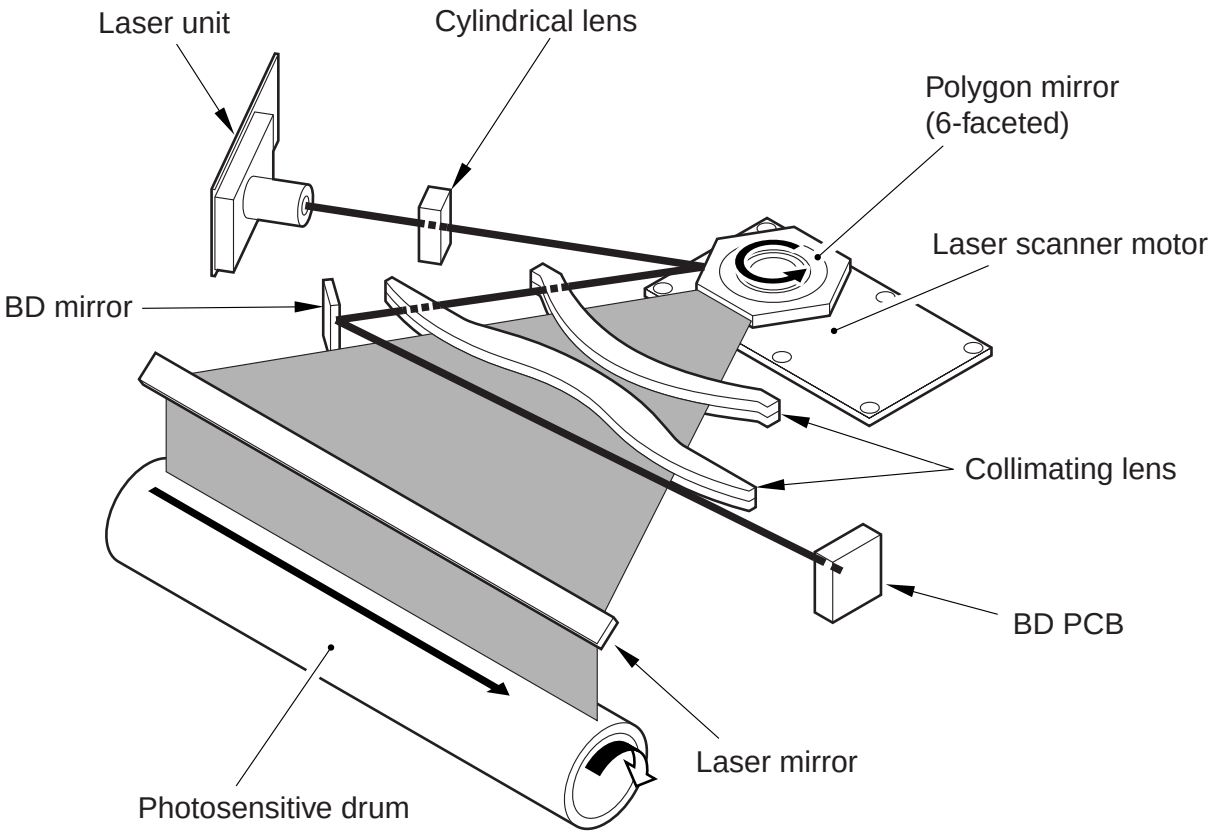
The reader controller PCB serves to read image signals from the CCD and send image signals to the main controller assembly. The video signals from the main controller assembly are converted by the DC controller PCB into laser drive signals, and are turned into laser intensity signals to suit signal levels by the laser driver PCB.

The laser intensity signals are used to cause the laser unit to generate a laser beam, which is directed to the photosensitive drum for the formation of latent static images.

Item	Description
Laser intensity control	Laser power auto control (APC control)
Laser scanning	By semiconductor laser
Synchronization control	Main scanning direction: control by BD signal Sub scanning direction: control by image leading edge signal
Laser scanner motor control	Constant speed rotation control

T03-101-01

F03-101-01 shows the major components for the laser exposure system; the machine's laser scanning is performed by means of a 6-facet polygon mirror and a single-beam laser unit:

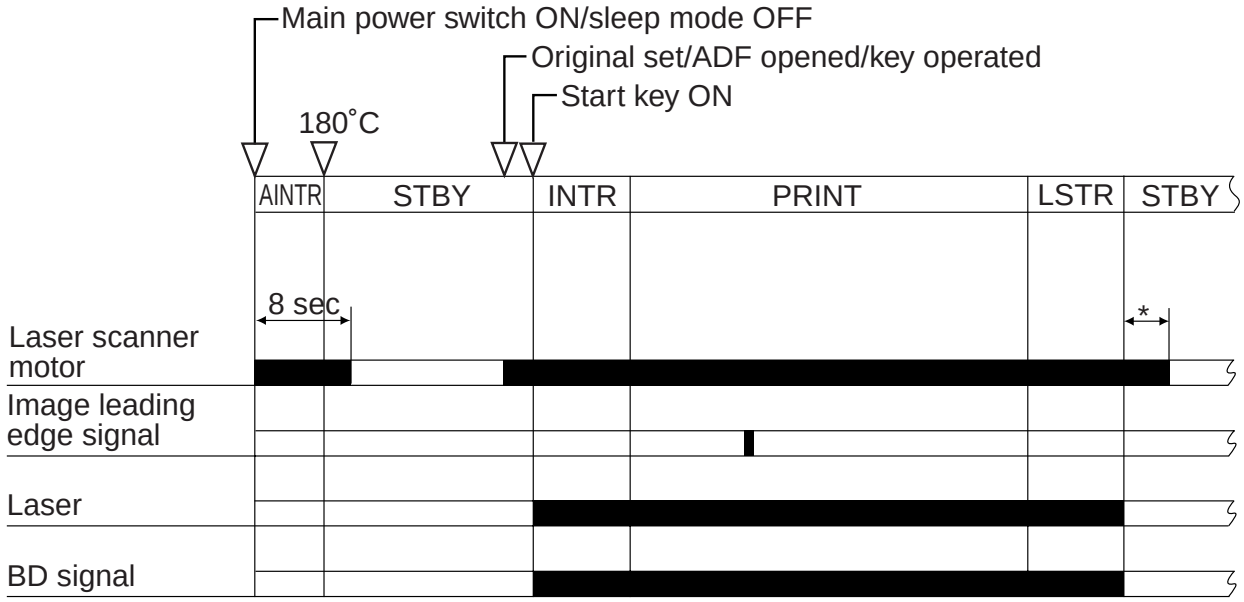


F03-101-01

Component	Description
Laser semiconductor	Infrared laser light (785 nm), single-beam
Laser scanner motor (M10)	DC brush-less motor, constant speed control
Polygon mirror	6-faceted
BD mirror/BD PCB	Laser beam detection
Laser driver PCB	Laser activation control
DC controller PCB	Laser scanner motor rotation control

T03-101-02

1.2 Sequence of Operations (laser exposure system)



*: If silent mode (in user mode) is selected, the motor stops after a specific period of time.

F03-102-01

2 Generating Sync Signals

2.1 Outline

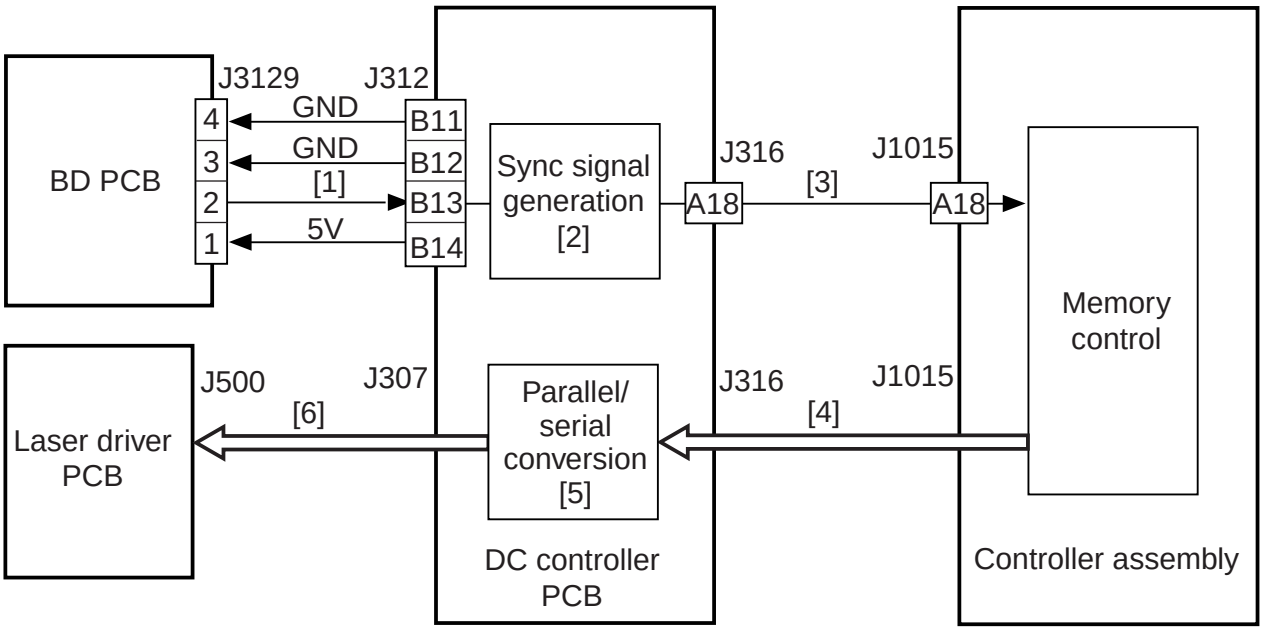
Part 2>Chapter 4>2 “Generating the BD Signal”

The BD signal used to synchronize the video signals in laser scanning direction is generated by the BD PCB with reference to the laser beam reflected by the BD mirror mounted in the path of the laser beam.

The edge of paper re-picked in double-sided mode is detected by the horizontal registration sensor to measure the displacement to the rear/front. Based on the measurement, the timing of laser activation is changed with reference to the BD signal so that the image will be placed at a specific position on the paper without fail.

2.2 Flow of Sync signals

[1] The BD signal goes '0' when laser light is detected.
[2] The phase is matched with the phase of the printer, and a sync signal is generated.
[3] Based on the printer sync signal, image data is read from the image memory.
[4] Video signal
[5] The 2-pixel parallel signal is converted into a single-pixel serial signal.
[6] The laser drive signal is used to drive the laser unit to suit the video signal.



F03-202-01

Error

E100

Indicates that the BD signal cannot be detected within a specific period of time after the laser has been turned on.

3 Laser Driver Circuit

3.1 Controlling the Laser Unit

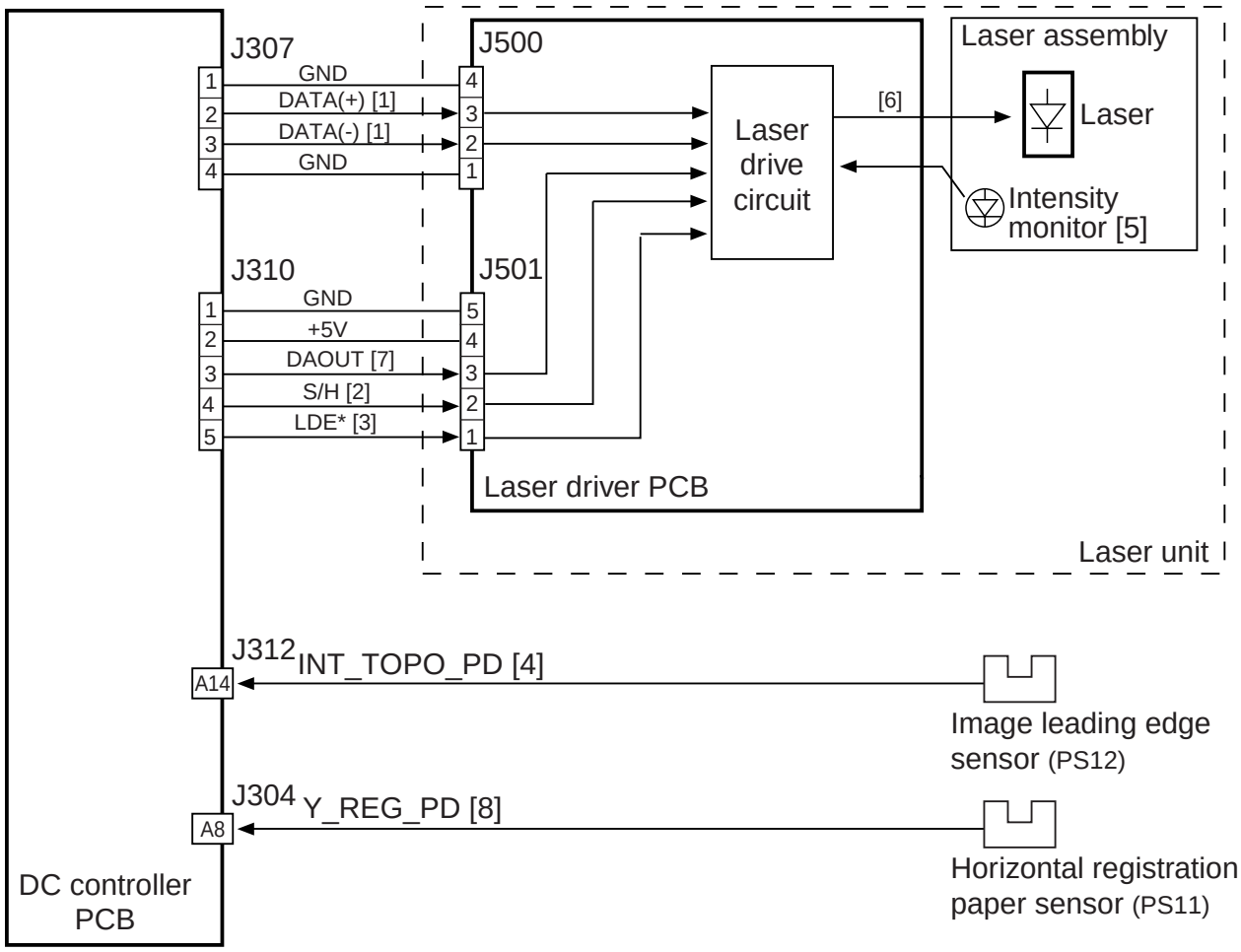
The laser driver circuit is used to drive the semiconductor laser according to the laser drive signal from the DC controller PCB.

The laser driver circuit performs the following:

1. Turning on/off the laser.
2. Controlling the light intensity of the laser (APC control).

The signals have the following meanings and functions:

[1] Laser drive signal; used to drive the semiconductor laser.
[2] Sample laser activation signal; used to turn on the laser for intensity sampling (the result is used for activation for imaging).
[3] Laser enable signal; goes '0' when the laser is ready after the Start key is pressed.
[4] Image leading edge signal; used to start laser writing when paper reaches the image leading edge sensor (PS12) mounted in front of the photosensitive drum.
[5] Used to monitor the laser intensity when the laser is turned on for sampling, and feeds back the level appropriate to the intensity to the laser driver circuit.
[6] Used to control the output so that the feedback level and the reference level from the DC controller will be identical.
[7] Laser intensity reference signal; used as the laser activation reference level determined by the DC controller.
[8] Horizontal registration paper detection signal; used to adjust the image position by changing the timing of laser activation with reference to the result of detection of the edge of paper re-picked in double-sided mode by the horizontal registration sensor (PS11).



F03-301-01

REF.

The laser power of the laser unit is adjusted at the factory, and it must not be adjusted in the field.

ADJUST>LASER>PVE-OFST
Use it to adjust the position of laser illumination.
ADJUST>LASER>LA-OFF
Use it to adjust the timing of laser trailing edge de-activation for non-default size papers.

4 Controlling the Laser Scanner Motor

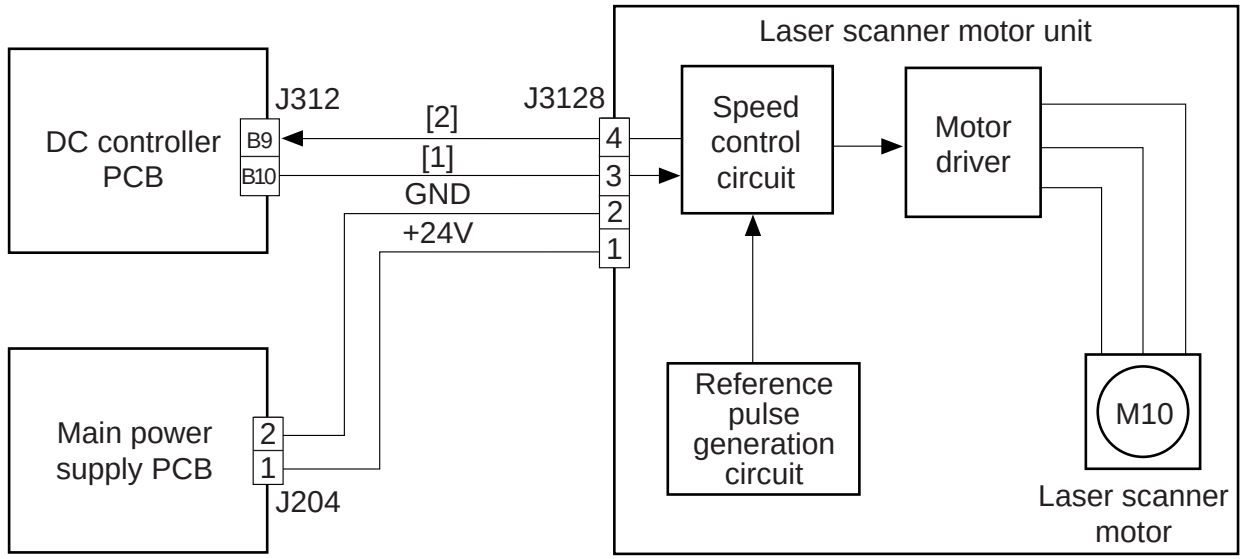
4.1 Outline

Part 2> Chapter 4> 4.1 “Outline”

The following items are related to laser scanner motor control:

[1] Laser scanner motor drive signal; when ‘1’, the laser scanner motor goes ON (turning on/off the motor).

[2] Laser scanner motor ready signal; when ‘0’, the laser scanner motor rotates at a specific speed.



F03-401-01

Error

E110

Indicates the presence of an error in the laser scanner motor.

5 Disassembly and Assembly

The discussions that follow cover the machine's mechanical characteristics and how to disassemble/assemble the machine. Keep the following in mind whenever you work with the machine:

1. ⚠The power plug must remain disconnected for safety when disassembling/assembling the machine.

2. Unless otherwise noted, the machine may be assembled by reversing the steps used to disassemble it.

3. The screws must be identified by type (length, diameter) and location.

4. The mounting screws used for the grounding wire and the varistors come with a washer, which must not be left out when assembling the machine.

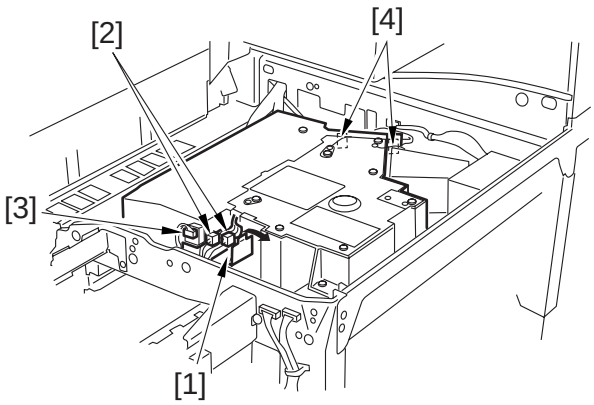
5. As a rule, the machine must not be operated with any of its parts removed.

6. ⚠Leakage of laser light must be avoided, as it can adversely affect the human body. Do not disassemble parts not discussed herein or remove any paint-locked screws.

5.1 Laser Scanner Assembly

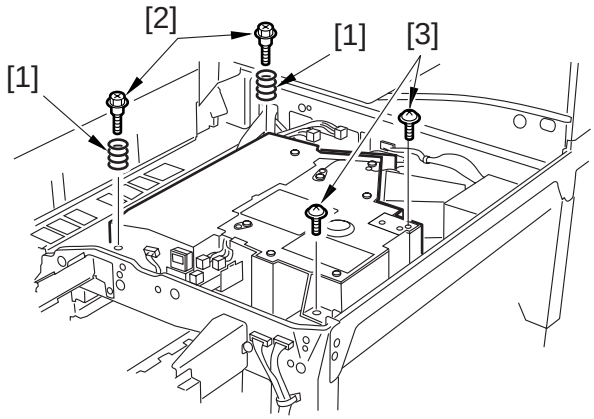
5.1.1 Removing the Laser Unit

1) Remove the delivery tray. (p. 7-13P)
2) Open the harness guide [1], and disconnect the two connectors [2].
3) Disconnect the connector [3] of the BD PCB and the two connectors [4] of the laser PCB.



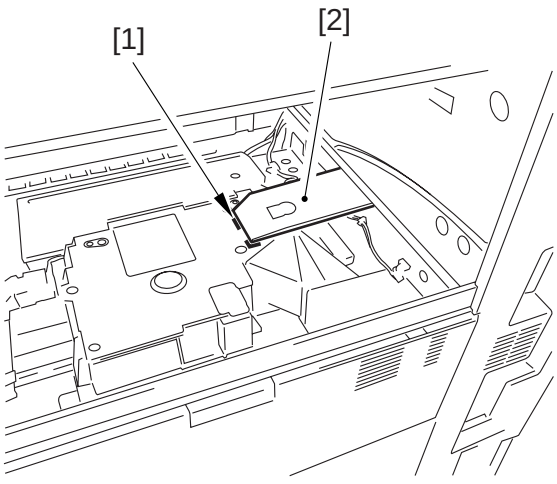
F03-501-01

4) Remove the two springs [1] and two stepped screws [2] from the left, and remove the two screws equipped with a washer from the right; then, detach the laser unit.



F03-501-02

When mounting the Finisher-J1, attach the protective sheet [2] by aligning it against the press line [1] of the laser unit.



F03-501-03

CHAPTER 4

IMAGE FORMATION SYSTEM

1 Outline of Processes

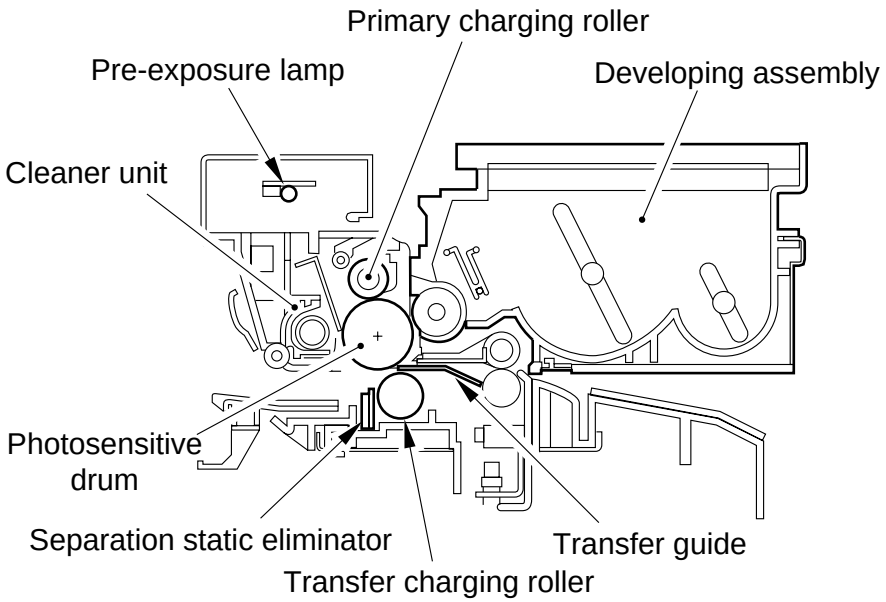
1.1 Outline

T04-101-01 shows the functions of and the methods used in the image formation system:

Item	Description
Photosensitive drum	OPC (30-mm dia.)
drum cleaning	cleaning blade
Developing assembly	Developing cylinder (20-mm dia.) Development method:dry, 1-component, toner projection Toner:magnetic, negative
Pre-exposure (LAMP2)	Fuse lamp (8 pc.) ON/OFF control (activated in sync with main motor)
Drum sensor (U701)	Primary charging roller DC bias corrected to temperature around photosensitive drum
Environment sensor (S3)	Primary charging roller AC bias corrected to suit humidity reading
Primary charging roller auto cleaning	Pad push-on type
Primary charging roller bias control	DC constant voltage control (-500 to -850 V) AC constant current control (2000 to 2300 µA; about 1800 Hz)
Developing bias control	DC constant voltage control (0 to -650 V) AC constant voltage control (810 Vp-p; about 1800 Hz)
Transfer charging roller bias control	Transfer bias:DC constant current control (switching among +15 µA, +10 µA, +7 µA) + DC constant voltage control (up to 7 kVmax) Cleaning bias: DC constant voltage control (-2.6 kV)
Transfer guide bias control	DC constant voltage (-600 v)
Separation static eliminating bias control	DC constant voltage (switching between -2.3 KV and -3.0 KV)

T04-101-01

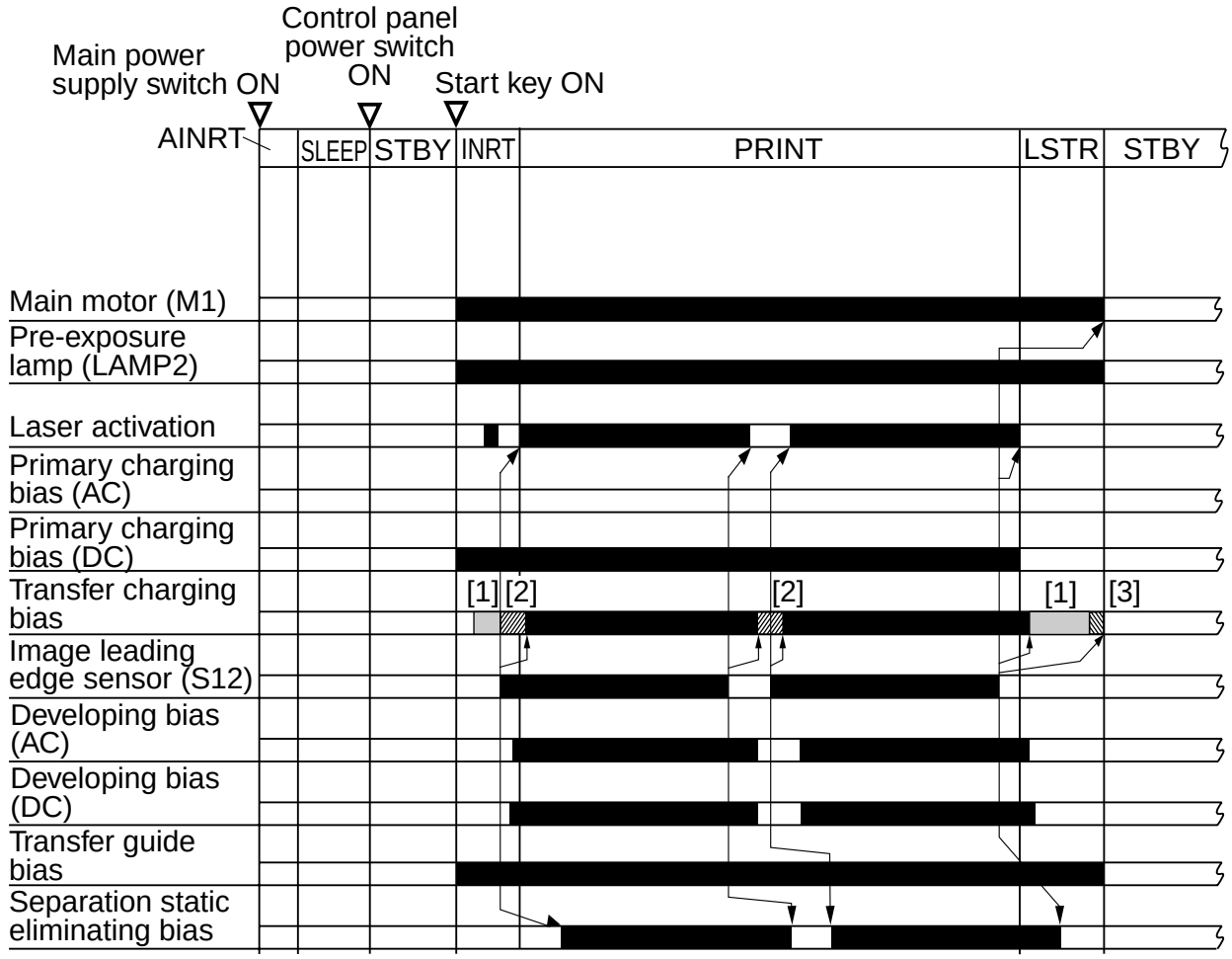
F04-101-01 shows the major components of the image formation system:



F04-101-01

1.2 Basic Sequence of Operations (image formation system)

- 1 Original, 2 Prints



[1] transfer charging cleaning bias
[2] transfer sheet-to-sheet interval bias
[3] transfer charging reference bias(each 1000sheets, cumulative)

F04-102-01

2 Controlling the Primary Charging Roller Bias

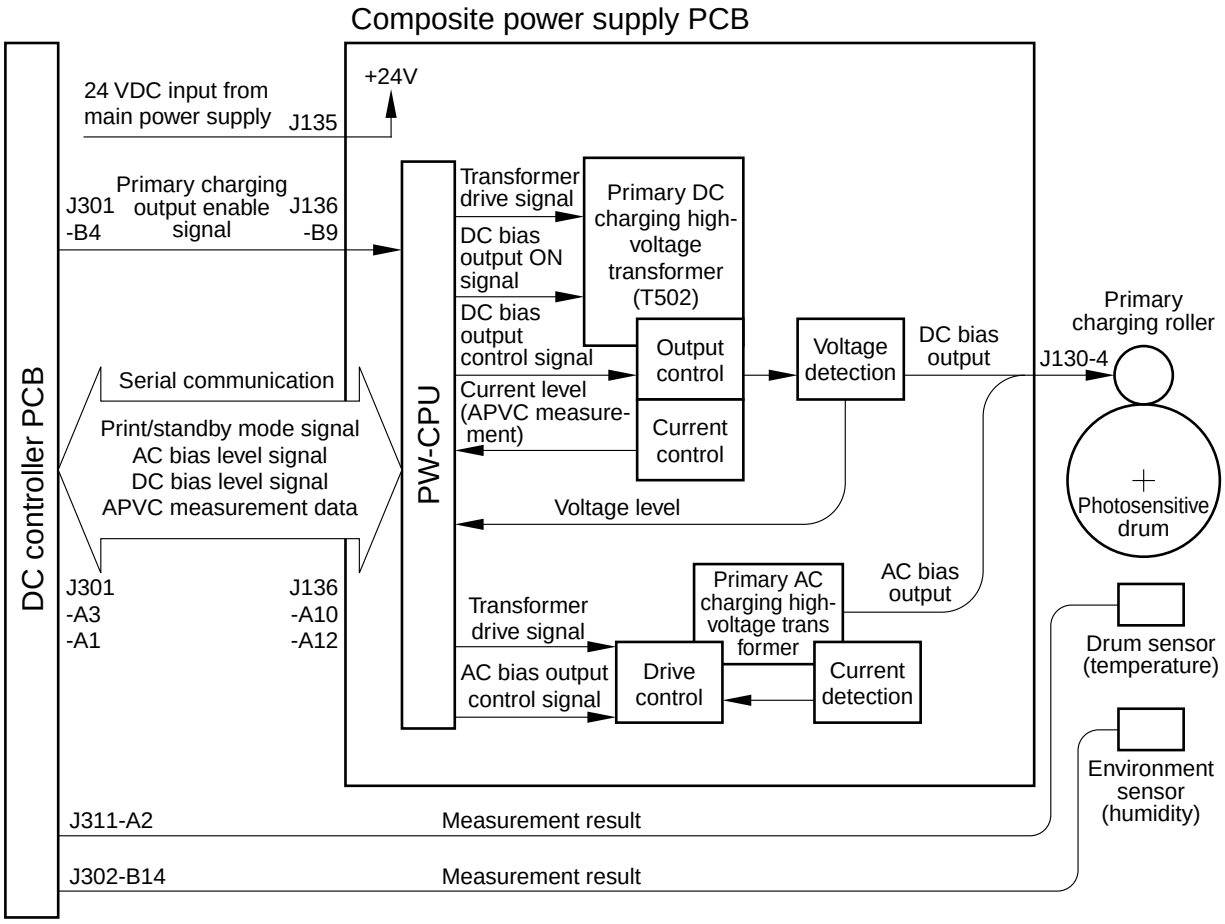
2.1 Outline

Part 2>Chapter 5>4.4 “Controlling the Primary Charging Roller Bias”

The machine’s primary charging is a direct charging method that uses a charging roller. In addition to a DC bias, the charging roller is subjected to an AC bias to ensure stable charging.

The following items relate to the control of primary charging:

[1] Turning on/off the bias.
[2] Controlling the DC bias to a specific level of voltage.
[3] Controlling the AC bias to a specific level of current.
[4] Controlling the photosensitive drum resistance detection mechanism (APVC control).
[5] Controlling the AC bias based on the readings of the environment sensor (humidity) and the soft counters.
[6] Controlling the DC bias based on the reading of the drum sensor (temperature).



F04-201-01

Memo

The primary charging output enable signal is used as the AC pulse ON signal when the developing bias is being controlled.

2.2 Turning On/Off the Bias

The primary charging roller bias is turned on/off as follows:

2.2.1 DC Bias

[1] When the primary charging output enable signal from the DC controller PCB goes '0', the DC bias output control signal (pulse signal) is generated.
[2] The DC bias is sent to the primary charging roller.

2.2.2 AC Bias

[1] When the primary charging output enable signal from the DC controller PCB goes '0', the AC bias output control signal is generated.
[2] The AC bias is generated to the primary charging roller.

2.3 Controlling the Current Voltage/Current to a Specific Level

The output level of the DC/AC bias applied to the primary charging roller is controlled by the DC/AC bias output control signal from the PW-CPU.

2.3.1 Controlling the DC Bias to a Specific Level

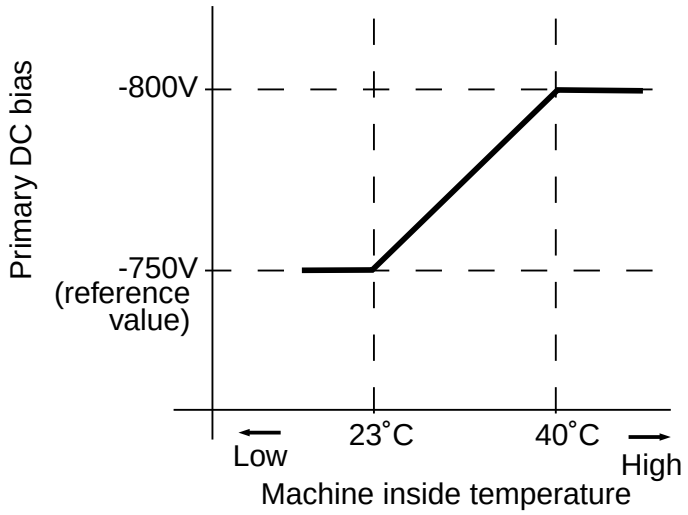
[1] The output voltage level of the DC bias is fed back to the PW-CPU, and the DC bias output control signal is varied as needed to suit the level when driving the transformer.
[2] The DC bias is made to assume a specific voltage level.

2.3.2 Controlling the AC Bias to a Specific Current Level

[1] The output current level of the AC bias is communicated to the drive control circuit and is compared against the reference current level; the result is used to vary the AC bias output control signal as needed to drive the transformer.
[2] The AC bias is made to assume a specific current level.

2.4 Temperature Correction of the DC Bias

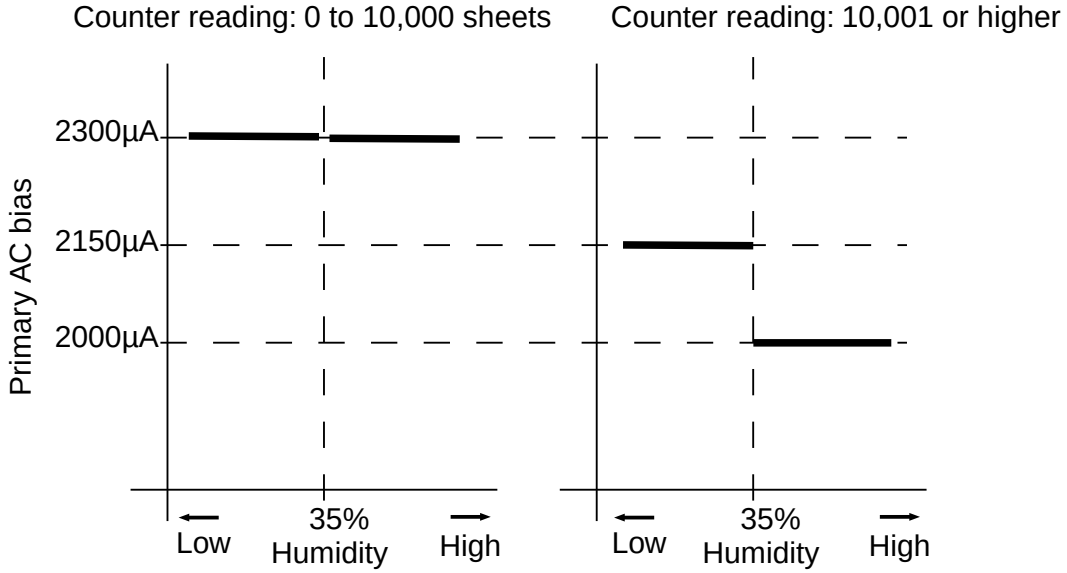
When the temperature inside the machine increases, the resistance of the photosensitive drum will decrease, thereby lowering the charging characteristics. To ensure a stable potential level, the drum sensor (U701) mounted to the rear side plate is used to check the temperature inside the machine; when the temperature increases, the absolute value of the DC bias level is increased.



F04-204-01

2.5 Humidity Correction of the AC Bias

The current level of the AC bias needs to be kept on the higher side to prevent uneven charging because of a lower changing efficiency occurring in a low-humidity environment. The AC bias, therefore, is varied as shown in F04-205-01 to suit the readings of the environment sensor (humidity). When the resistance of the drum surface decreases because of advancing wear, the current level is decreased to facilitate the flow of current.



F04-205-01

2.6 Controlling the Detection of the Photosensitive Drum Resistance (APVC control)

The primary charging efficiency changes because of changes in the site environment (temperature, humidity), deterioration of the charging roller, and wear of the photosensitive drum. A reference voltage is applied to the charging roller at time of last rotation every 500 prints (cumulative) or when the following service mode is executed: COPIER>FUNCTION>DPC>D-GAMMA, and the level of output current at the time is measured and corrected.

[1] When the main power switch is turned on, the reference voltage is applied to the charging roller, and the output is measured as the current level for use as feedback to the PW-CPU.

[2] The photosensitive drum is charged (primary charging) using the voltage level determined by the PW-CPU.

If you have replaced the drum unit with a new one, be sure to execute the following service mode: COPIER>FUNCTION>DPC>D-GAMMA.

Error

E064

Indicates the presence of a high-voltage (primary charging, transfer charging, developing) output fault.

COPIER>DISPLAY>HV-STS>PRIMARY
Use it to indicate the current level of primary charging.
COPIER>ADJUST>HV-PRI>P-DC
Use it to enter the adjustment value of the primary charging DC component for the image area.
COPIER>ADJUST>HV-PRI>P-AC
Use it to enter the adjustment value of the primary charging AC component for the image area.
COPIER>ADJUST>HV-PRI>AGS-GAIN
Use it to enter the gain adjustment value of the application voltage level correction for the primary charging bias.
COPIER>ADJUST>HV-PRI>AGS-OFST
Use it to enter the offset adjustment value of the application voltage level correction for the primary charging bias.
COPIER>ADJUST>HV-PRI>OFST1-DC
Use it to enter the adjustment value of offset 1 for the primary charging DC component.
COPIER>ADJUST>HV-PRI>OFST1-AC
Use it to enter the adjustment value of offset 1 for the primary charging AC component.
COPIER>ADJUST>HV-PRI>P-AC2
Use it to enter the adjustment value of primary charging AC component 2 of the image area.
COPIER>ADJUST>HV-PRI>P-AC3
Use it to enter the adjustment value of primary charging AC component for the image area.
COPIER>FUNCTION>DPC>D-GAMMA
Use it to force photosensitive drum resistance measurement control (APVC).

3 Controlling the Transfer Charging Roller Bias

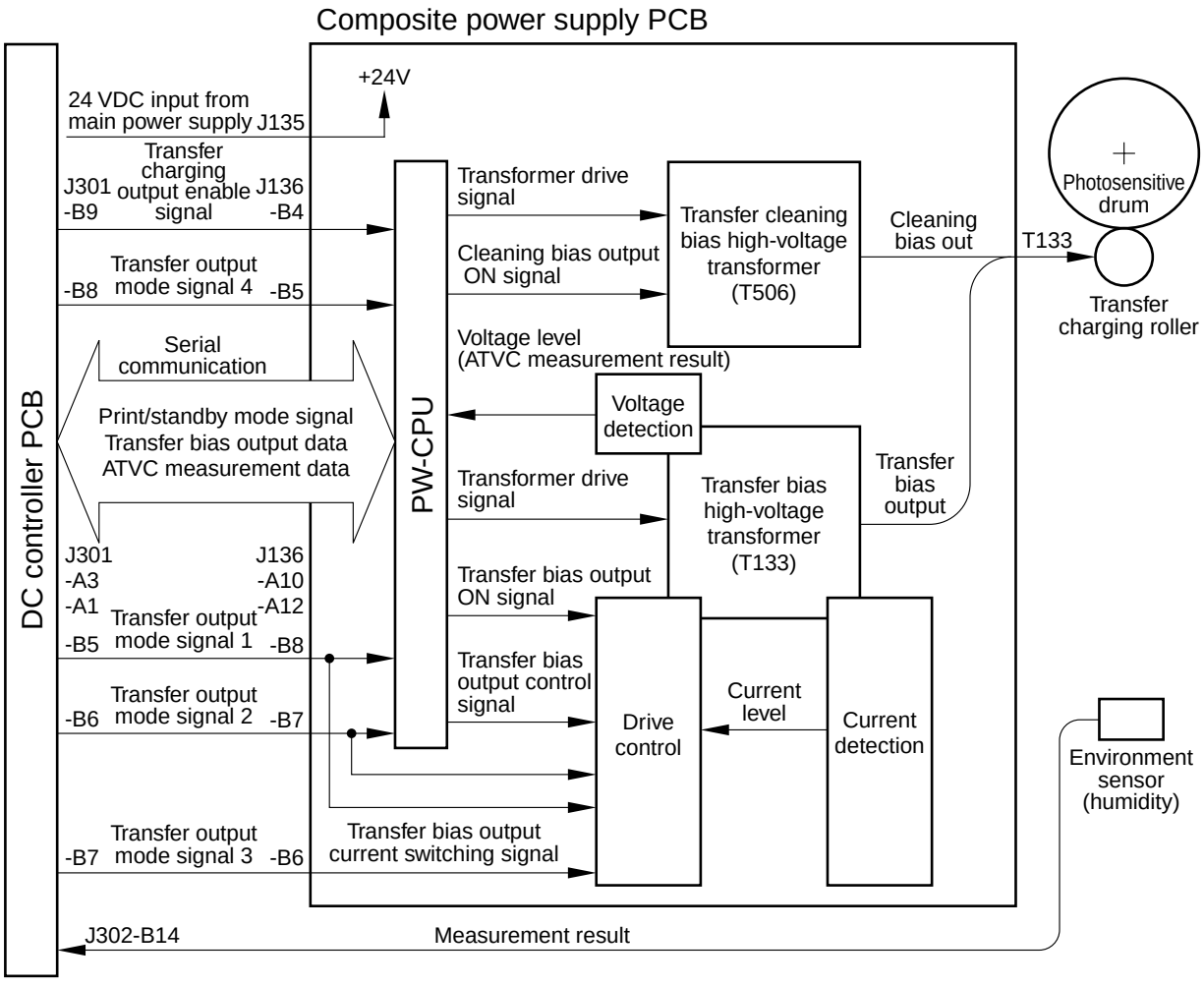
3.1 Outline

Part 2>Chapter 5>7.8.3 “Controlling the Transfer Roller Charging”

The machine’s transfer charging is a direct charging method that uses a transfer charging roller. A DC bias is applied to the transfer charging roller.

The following relate to the transfer charging system:

[1] Turning on/off the bias.
[2] Controlling the DC bias to a specific voltage/current level.
[3] Controlling the detection of transfer charging roller resistance (ATVC control)
[4] Controlling the output by operation mode
[5] Controlling the output by the environment sensor (humidity)



F04-301-01

3.2 Turning On/Off the Bias

The transfer charging roller bias is turned on/off as follows:

[1] When the transfer charging output enable signal from the DC controller PCB goes '0', the transfer bias output signal (serial communication) is generated.

[2] The transfer bias output control signal (pulse) is generated, and the DC bias is sent to the transfer charging roller.

3.3 Controlling the Detection of the Transfer Charging Roller Resistance (ATVC control)

The transfer charging efficiency changes because of changes in humidity and deterioration in the transfer charging roller. The reference current is applied to the transfer charging roller during initial multiple rotation after the main power switch is turned on, and the resulting output voltage is measured for correction.

[1] The reference current is applied to the transfer charging roller, and the output is checked as a voltage level for use as feedback to the PW-CPU.

[2] The transfer charging mechanism operate using the voltage level determined by the PW-CPU.

If you have replaced the transfer charging roller with a new one, be sure to execute 'clean roller' in user mode ('adjust/clean').

3.4 Controlling the Output by Operating Mode

3.4.1 Types of Modes

The transfer charging output may be any of the following output modes, and the output is varied to suit each mode. The switch-over among these is based on the combination of transfer output mode signals from the DC controller PCB.

a. Image Transfer Bias

This bias is used to transfer toner from the photosensitive drum to paper, and is a positive voltage.

b. Cleaning Bias

This bias is used to return toner sticking to the transfer charging roller to the photosensitive drum, and applies a negative voltage.

- During initial rotation after the Start key is pressed
- During last rotation
- During initial rotation after jam removal or error resetting
- During execution of roller cleaning in user mode (‘adjust/clean’; in this case, the primary charging roller is also cleaned)

c. Reference Bias

It is an application voltage used for the transfer charging roller resistance detection control (ATVC control) mechanism. For every 1,000 prints (cumulative) or when 'roller clean' is executed in user mode ('adjust/clean'), the voltage is applied at time of last rotation.

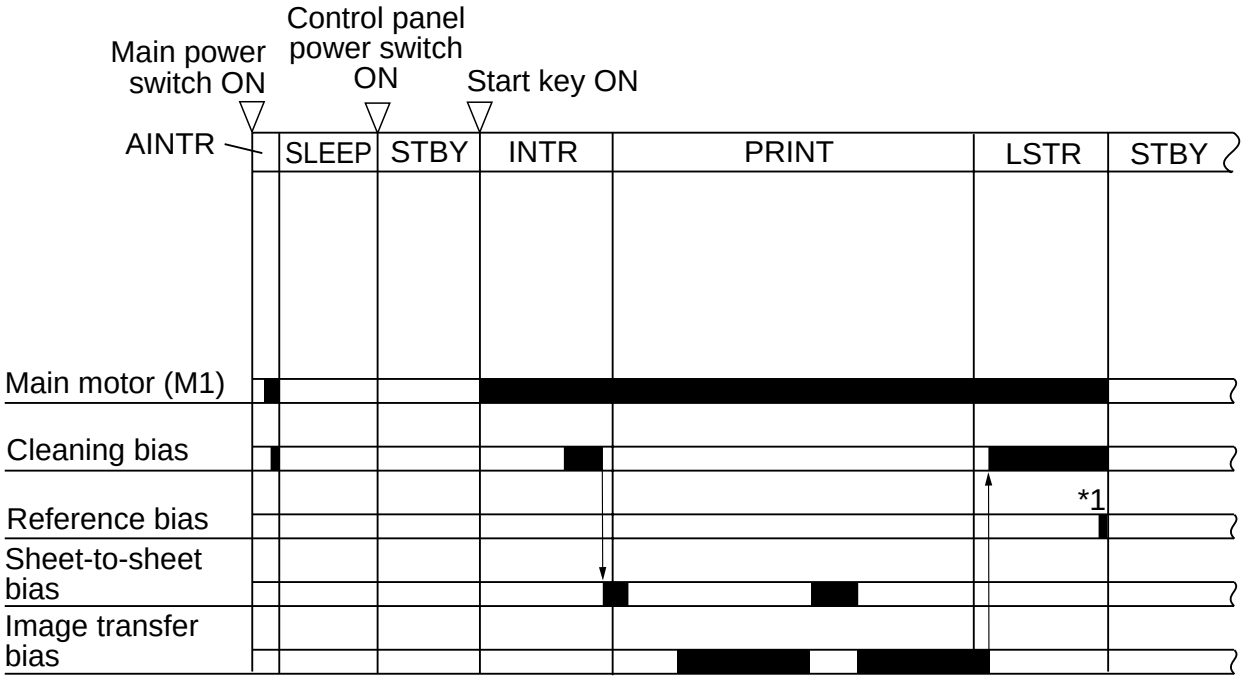
d. Sheet-to-Sheet Interval Bias

This bias is used in a non-image area (between sheets) in continuous print mode; the bias level is reduced to prevent adhesion of toner to the transfer charging roller.

Error

E064

Indicates the presence of a high-voltage (primary charging, transfer charging, development) output fault.



*1: Applied every 1,000 prints (cumulative) at time of last rotation.

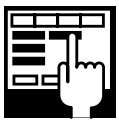
F04-304-01

3.4.2 Turning On/Off the Cleaning Bias

When the cleaning bias output ON signal (composite power supply PCB) goes '1', the output of the transfer cleaning bias transformer is applied to the transfer charging roller.

3.5 Controlling the Output

The output of the DC bias applied to the transfer charging roller is controlled as follows: The optimum transfer charging roller bias differs depending on paper size and site environment; as such, the DC controller is designed to automatically control the output level to suit the paper size and the site environment in question.



COPIER>DISPLAY>HV-STS>TR
Use it to display the level of current for transfer charging.
COPIER>DISPLAY>HV-STS>TR-V
Use it to indicate the voltage level of the transfer charging roller resistance detection.
COPIER>ADJUST>HV-TR>TR-N1
Use it to enter the output adjustment value for transfer charging (plain paper; single-sided print or 1st side of double-sided print).
COPIER>ADJUST>HV-TR>TR-N2
Use it to enter the output adjustment value for transfer charging (plain paper; 2nd side of double-sided print)
COPIER>ADJUST>HV-TR>TR-OFST
Use it to enter the offset output adjustment value for transfer charging roller resistance detection.
COPIER>ADJUST>HV-TR>TR-SPP
Use it to enter the output adjustment value for transfer charging (special paper; single-sided print and double-sided print)
COPIER>OPTION>BODY>TRANS-SW
Use it to set the transfer charging roller bias output control method for large-size paper.

4 Controlling the Separation Static Eliminator Bias

4.1 Outline

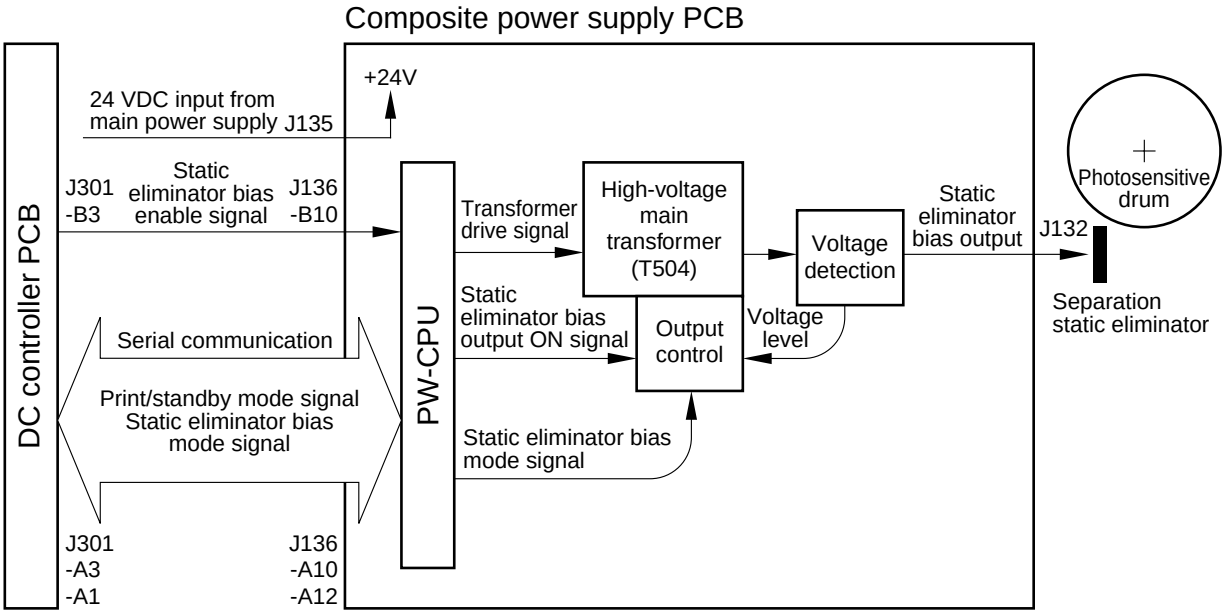
Part 2>Chapter 5>8.3 “Static Eliminator Separation Method”

The machine uses a static eliminator for separation. A DC bias is applied to the static eliminator; the following are items of control:

[1] Turning on/off the bias

[2] Controlling the bias to a specific voltage level

[3] Controlling the output to suit paper type and reading by the environment sensor (humidity)



F04-401-01

4.2 Turning On/Off the Bias

The separation static eliminator bias is turned on/off as follows:

[1] When the static eliminator bias enable signal from the DC controller PCB goes '0', the static eliminator bias output ON signal is generated.

[2] A DC bias is sent to the separation static eliminator.

4.3 Controlling the Bias to a Specific Voltage Level

The bias output is fed back to the output control circuit, thereby ensuring a specific level of voltage.

4.4 Controlling the Output by Paper Type and Environment Sensor (humidity)

In a low-humidity environment, separation can fail when thin paper is used or when the second side of a double-sided sheet is hadled. To ensure good separation, the voltage applied is increased between -2.3 and -3.0 KV with reference to the type of paper and the reading of the environment sensor (humidity).

The selection of an application voltage is done in response to the static eliminator bias mode signal (serial communication) from the DC controller PCB.

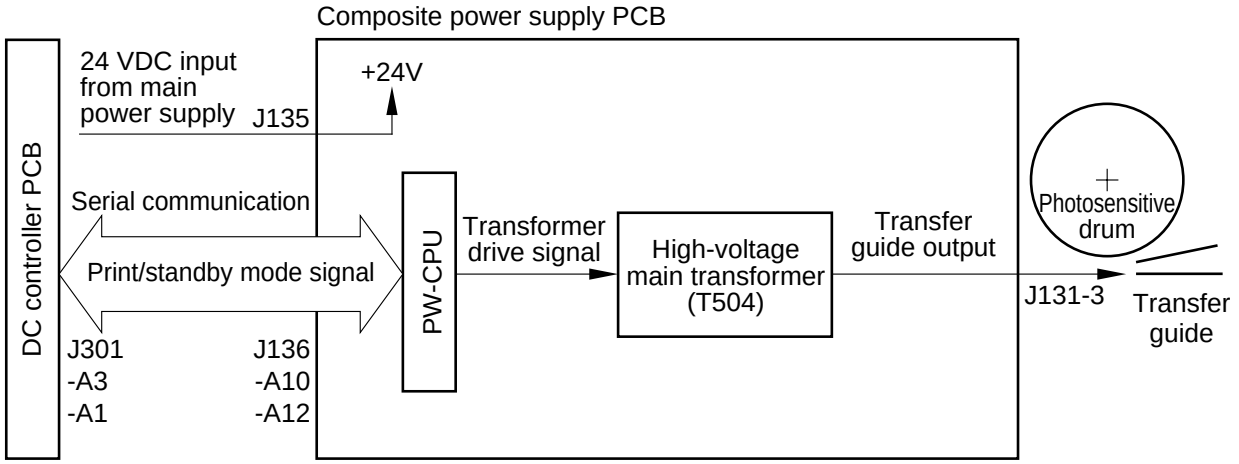
5 Controlling the Transfer Guide Bias

5.1 Transfer Guide Bias

Part 2>Chapter 5>7.2 “Transfer Guide Type”

The transfer guide bias is used to prevent adhesion of toner to the transfer guide, and is a negative component (-600 VDC), which is of the same polarity as the toner.

The transfer guide bias is continuously applied as long as printing is under way.



F04-501-01

6 Primary Charging Roller Cleaning Mechanism

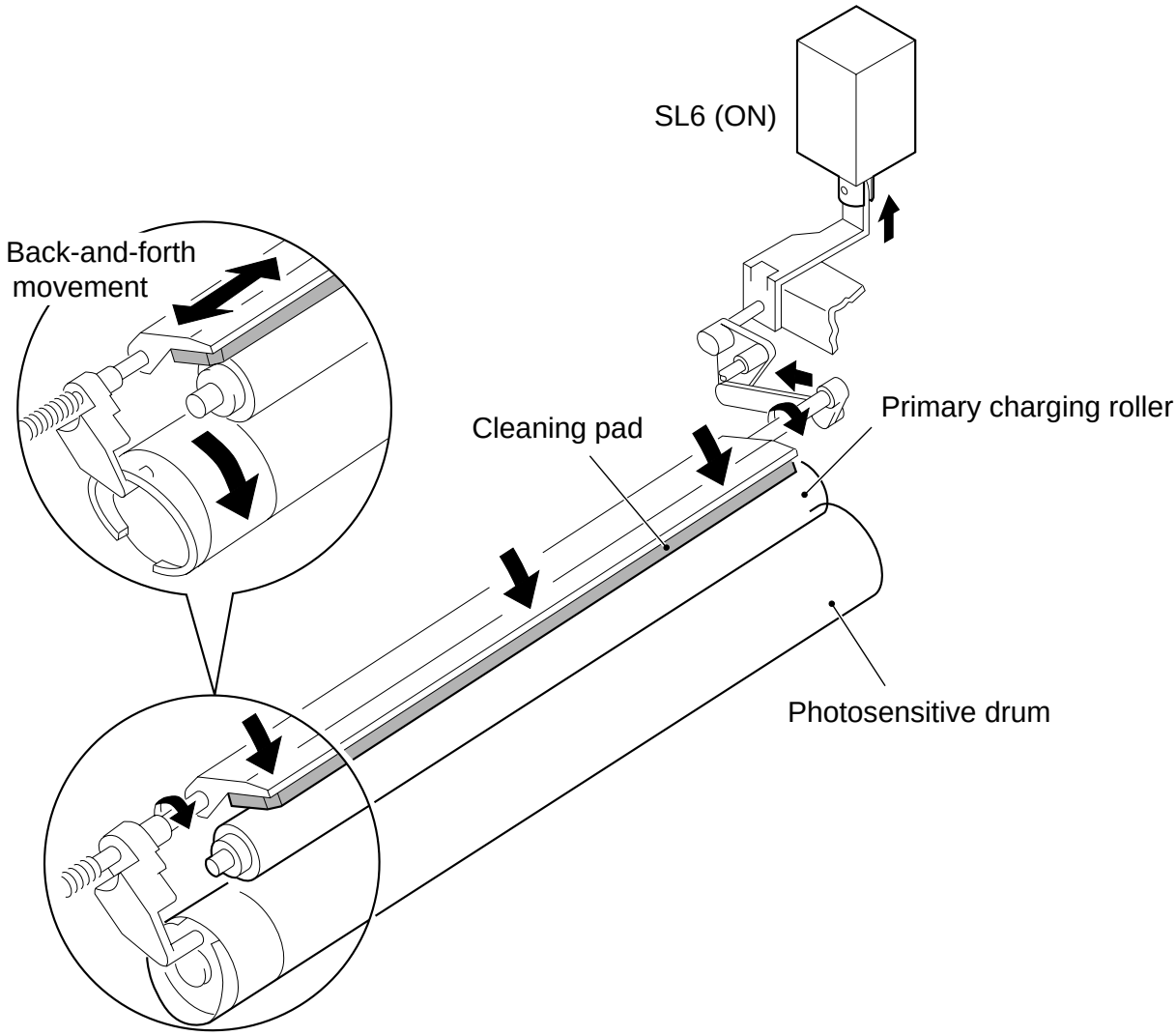
6.1 Outline

Part 2>Chapter 5>10.1.5 “Cleaning the Primary Charging Roller ”

The machine’s primary charging roller is cleaned by turning on the primary charging roller cleaning solenoid (SL6) while the primary charging roller is rotating, thereby butting the cleaning pad against the primary charging roller. At the same time, the cleaning pad is moved back and forth in the axial direction of the primary charging roller.

Cleaning is executed under the following conditions:

- During last rotation after the cumulative count reaches 500 sheets
- During execution of roller cleaning in user mode (‘adjust/clean’; in this case, the cleaning bias is applied to the transfer charging roller pad for cleaning)



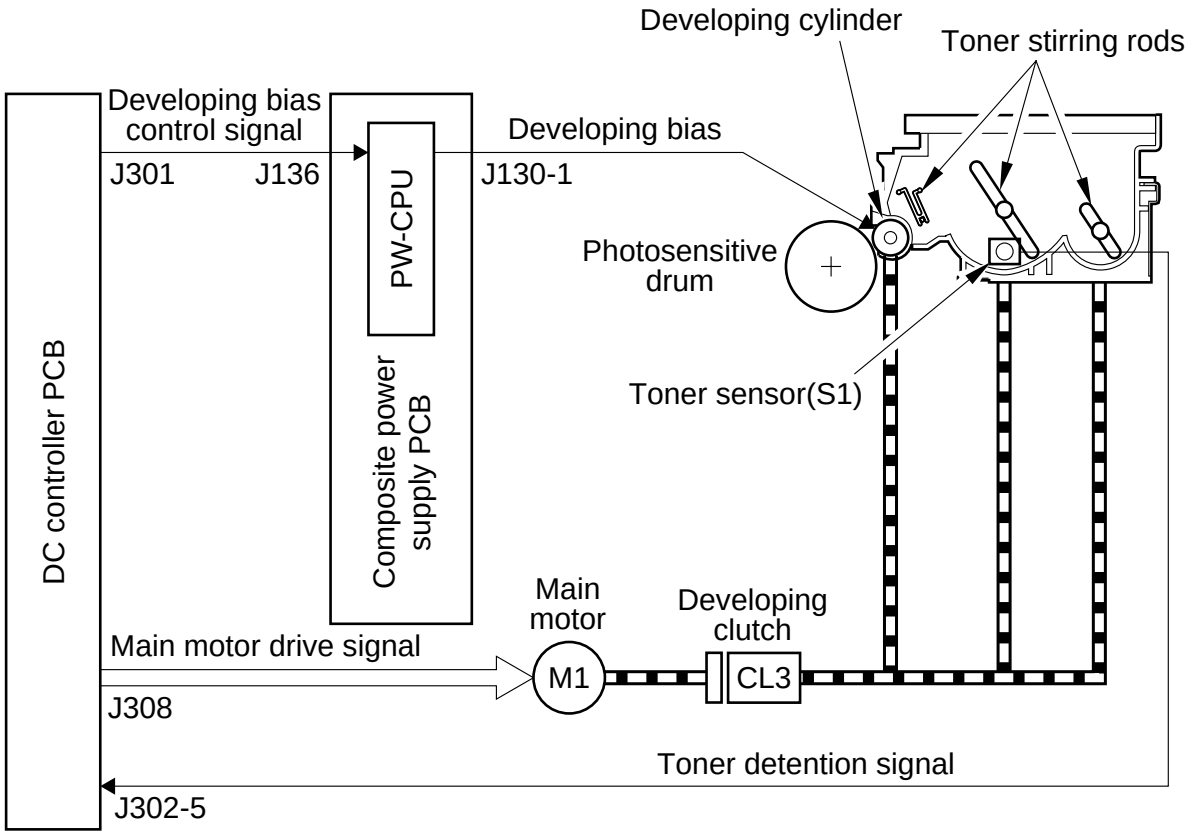
F04-601-01

7 Developing Assembly

7.1 Outline

The developing assembly consists of the developing cylinder, toner sensor (S1), and toner stirring rod; its is locked manually together with the developing rail using the locking lever.

The developing cylinder and the toner stirring rod are rotated by the drive of the main motor (M1) transmitted by way of the developing clutch (CL3).



F04-701-01

7.2 Controlling the Developing Bias

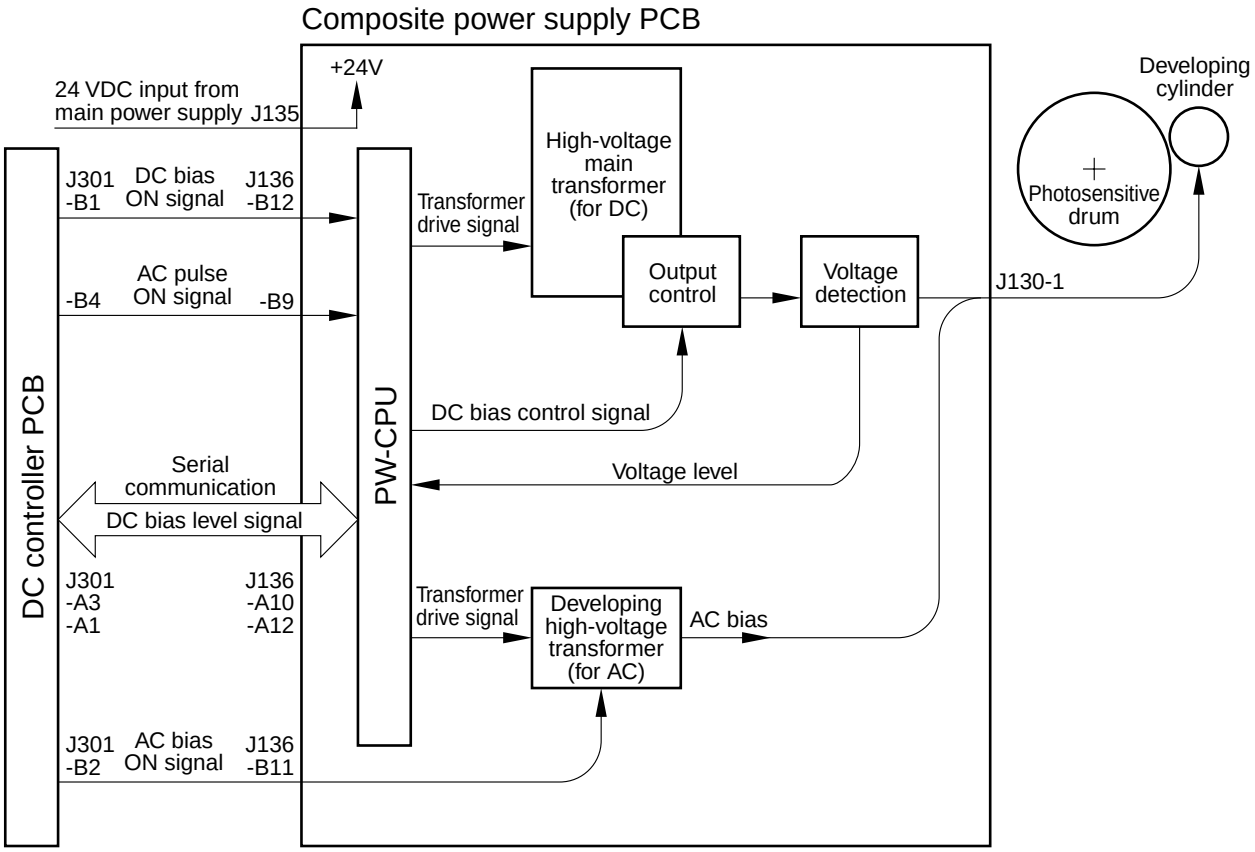
7.2.1 Outline

Both DC bias and AC bias are applied to the developing cylinder. The output is controlled by the composite power supply PCB based on the control signal from the DC controller PCB.

The following relate to the developing bias control system:

[1] Controlling the DC developing bias to a specific voltage level

[2] Controlling the AC developing bias to a specific voltage level



F04-702-01

Memo

The AC pulse ON signal is used as the primary charging output enable signal when controlling primary charging.

7.2.2 Controlling the DC Developing Bias

[1] When the DC bias ON signal from the DC controller PCB goes '0', the bias control signals (pulse signals) are generated by the PW-CPU of the high-vole power supply PCB.
[2] The DC bias from the high-voltage main transformer is applied to the developing cylinder.
[3] The output voltage level of the DC bias is fed back to the PW-CPU.
[4] The pulse width of the DC control signal is varied to suit the return voltage, thereby maintaining the DC bias to a specific level.

7.2.3 Controlling the AC Developing Bias

[1] When the AC bias ON signal and the AC pulse ON signal from the DC controller PCB goes '0', the AC transformer is driven.
[2] An AC bias is added to the DC bias and applied to the developing cylinder.

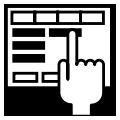
7.2.4 Controlling the Level of the DC Developing Bias

the level of the DC developing bias is varied between image area and non-image area to prevent stray toner inside the machine.

In memory copy mode, the laser is driven based on binary image data which lacks density information, not enabling adjustment using a density correction curve for the density of the image being generated. To make up for the lack, the DC developing bias is varied for density adjustment.

E064

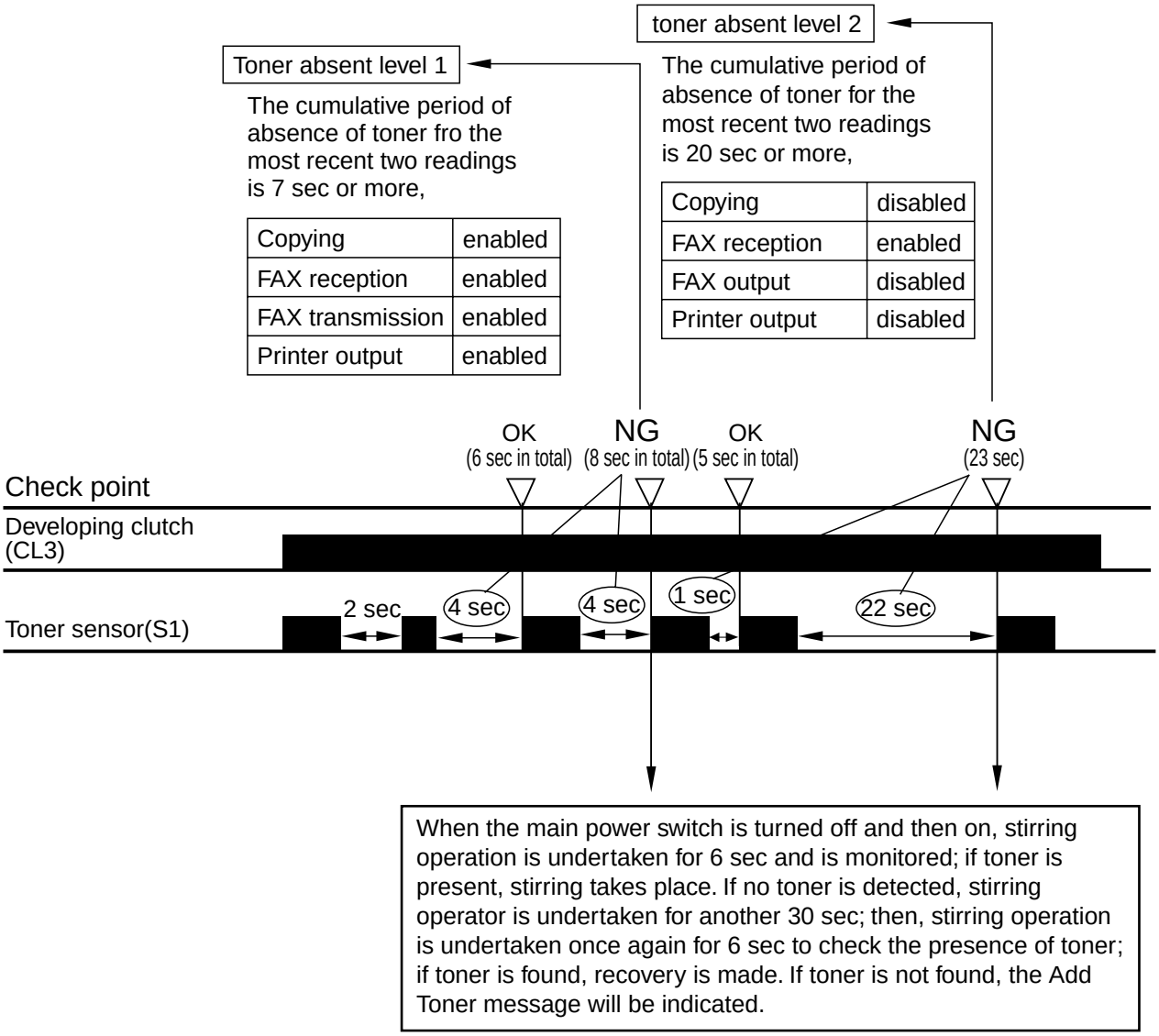
Indicates the presence of a high-voltage (primary charging, transfer charging, development) output fault.



COPIER>ADJUST>DEVELOP>DE-DC
Use it to enter the adjustment value of the developing bias DC component for the image area.
COPIER>ADJUST>DEVELOP>DE-OFST
Use it to enter the offset value for the developing bias DC component.

7.3 Detecting the Level of Toner

A toner sensor (S1) of a piezoelectric oscillation type is mounted inside the developing assembly for detection of the level of toner. The DC-CPU on the DC controller PCB reads the output of the toner sensor as long as the developing clutch (CL3) remains on; it keeps track of the '0' state of the toner sensor (most recent two readings), and indicates the Add Toner message as needed.



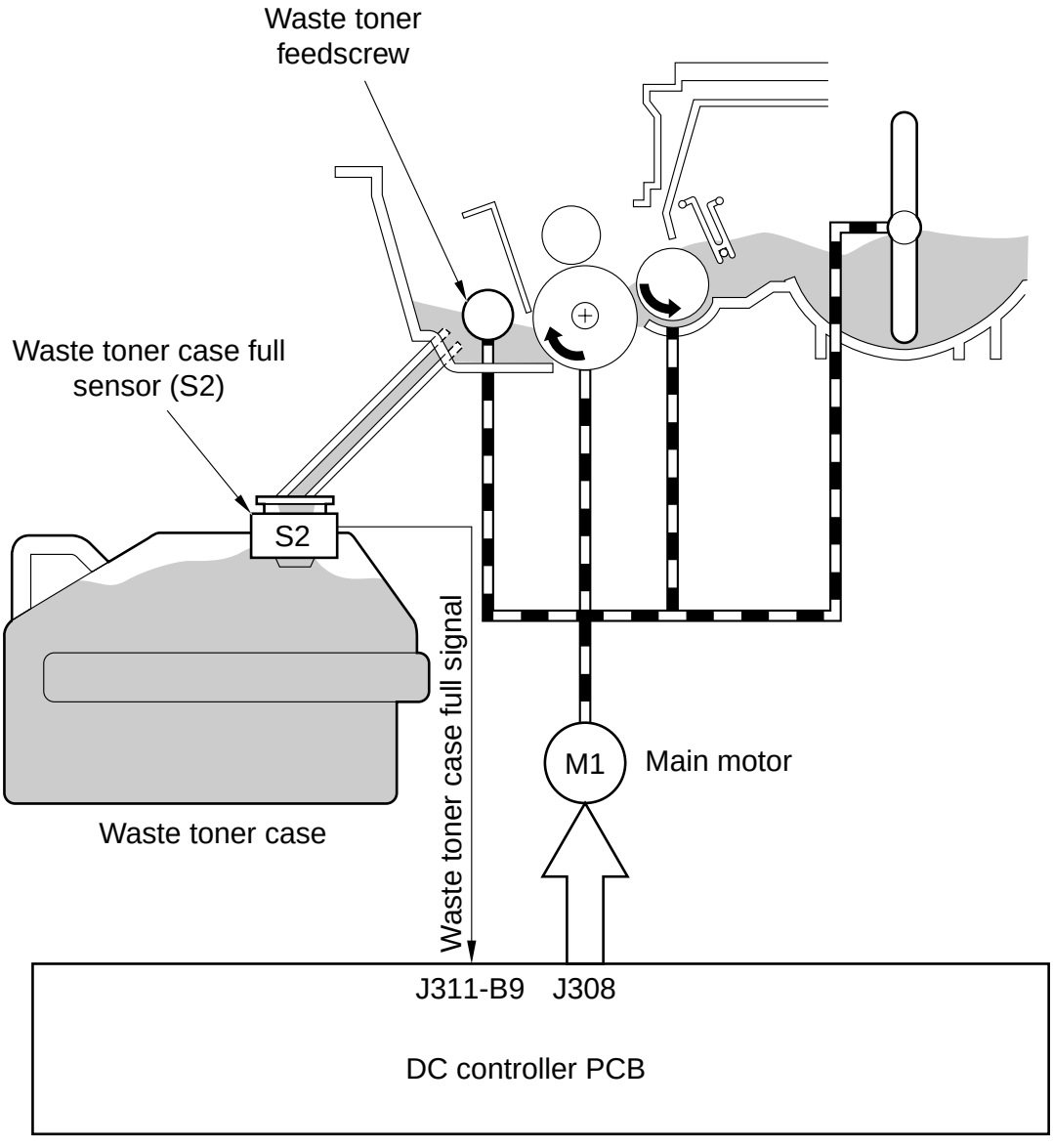
F04-703-01

8 Drum Cleaner

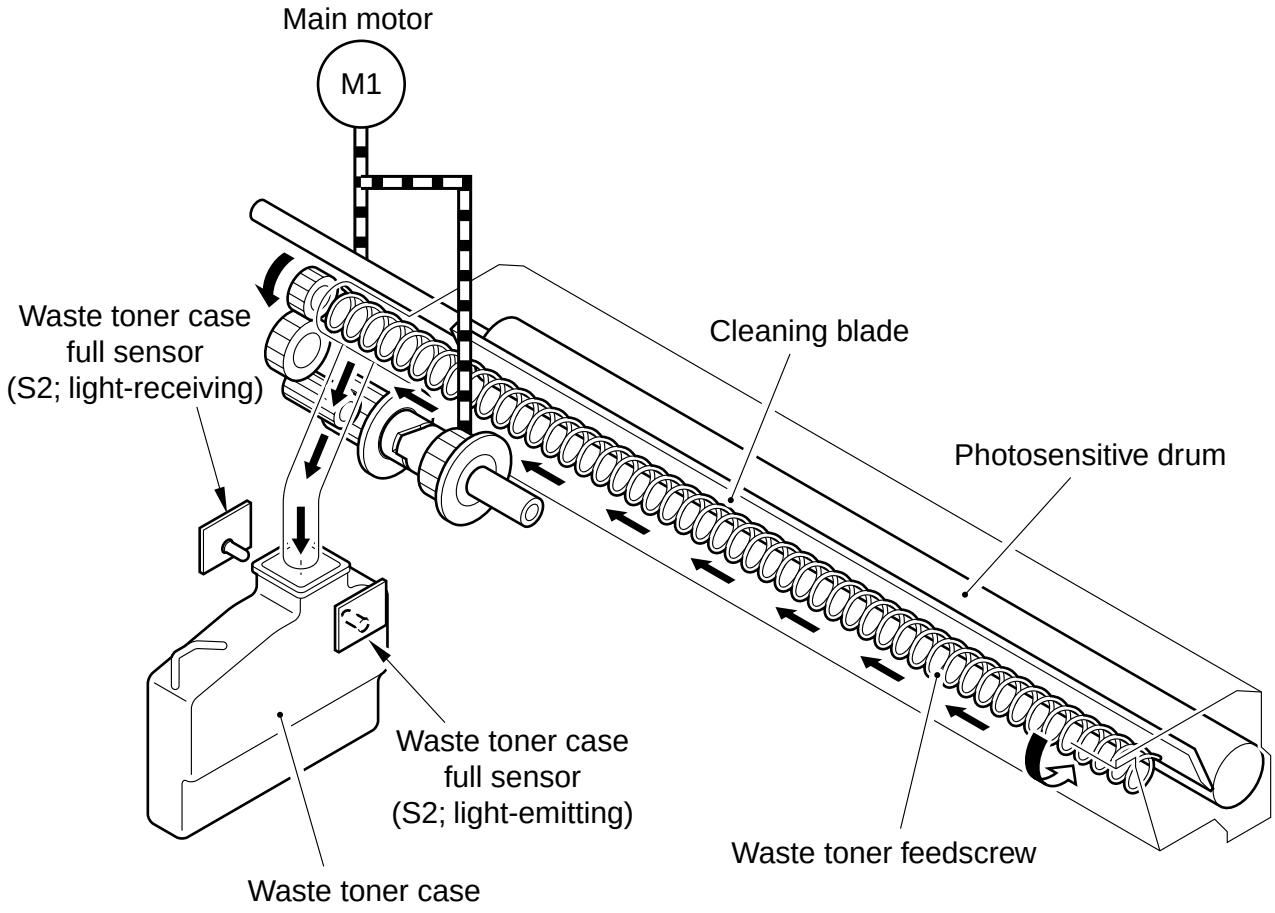
8.1 Outline

The drum cleaner assembly is rotated by the drive of the main motor (M1) transmitted through drive gears; the waste toner is colleted by the cleaning blade, and is sent to the waste toner case using the waste toner feedscrew.

The amount of waste toner inside the waste toner case is monitored by the waste toner case full sensor (S2); when the amount exceeds a specific level, the Waste Toner Full message will be indicated on the control panel.



F04-801-01


Main motor
M1
Waste toner case full sensor (S2; light-receiving)
Cleaning blade
Photosensitive drum
Waste toner case full sensor (S2; light-emitting)
Waste toner feedscrew
Waste toner case

F04-801-02

8.2 Monitoring the Waste Toner Case

The machine checks the waste toner case in reference to two levels.

The amount of waste toner inside the waste toner case is monitored by the waste toner case full sensor (S2); the sensor is a pair of photosensors (light-emitting unit piece and light-receiving piece). The machine will assume that the waste toner case has become full when waste toner blocks the light between the two photosensors.

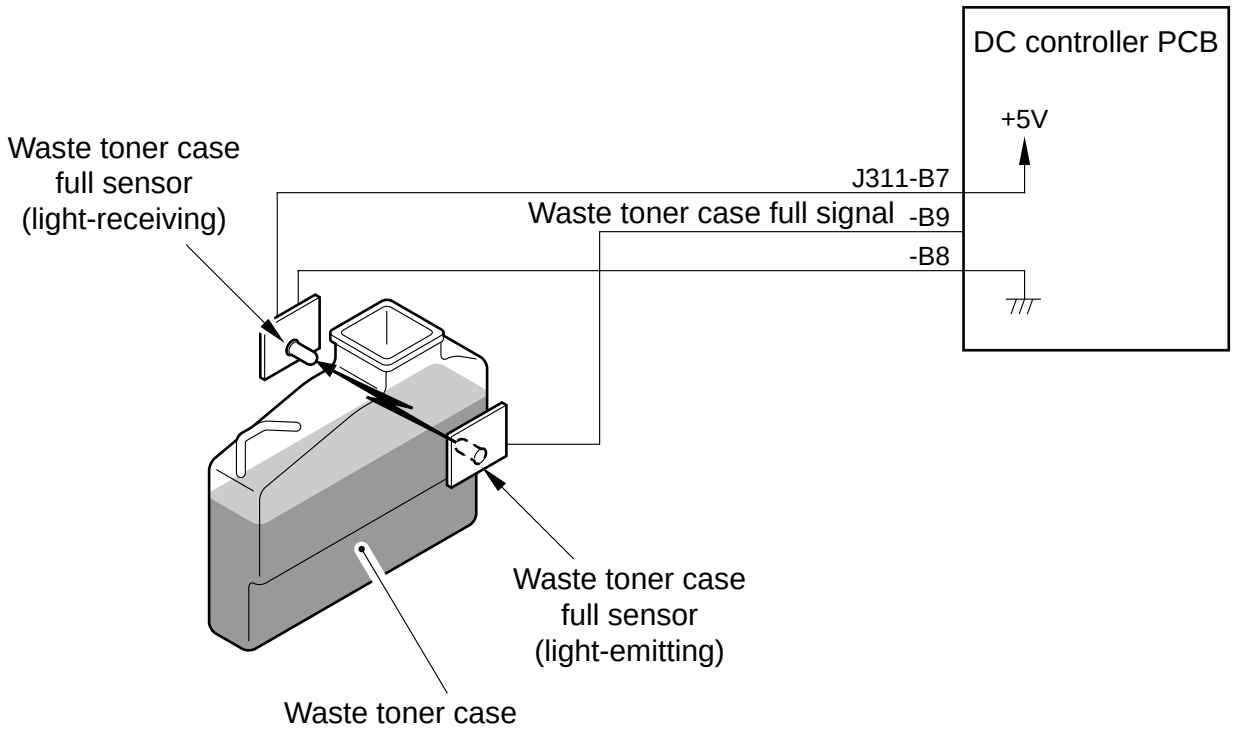
The DC controller PCB checks the waste toner case full sensor when the power is tuned on and at time of delivery; it will assume a “waste toner full warning” after making a total of 100 prints after the waste toner case has become full, thereby indicating the Waste Toner Case Full message on the control panel.

After the message Waste Toner Case Full is displayed in the control panel, the machine will indicate 'E019' in its control panel if the case remains full upon generating about 2000 prints (cumulative).

If the waste toner case is not set, the light-blocking plate will block the light between the photosensors, causing the Waste Toner Case Full message to appear.

Memo

The light between the photosensors is not visible to the eye.



F04-802-01

Error

E019

Indicates that the waste toner case is full.

Memo

The waste toner case can hold waste toner equivalent of about 200,000 prints.

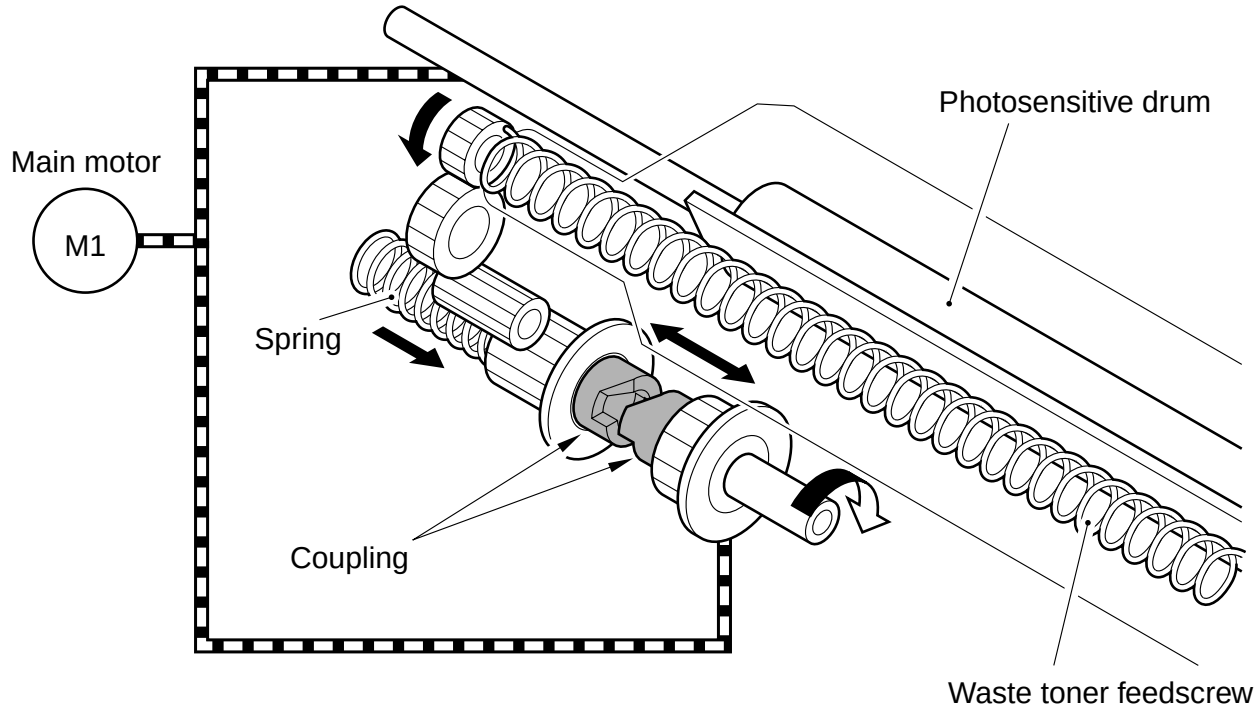
8.3 Locking of the Waste Toner Feedscrew

The waste toner feedscrew is rotated by the drive of the main motor transmitted by the coupling built into the main motor drive assembly. The coupling is butted against the gear used to rotate the screw by the work of a spring.

If the drum cleaning assembly is clogged with waste toner, the coupling will start to move back and forth in the axial direction, causing a clicking sound.

Memo

The machine is not equipped with a sensor to detect the locking of the waste toner feedscrew.



F04-803-01

9 Disassembly and Assembly

The discussions that follow cover the machine's mechanical characteristics and how to disassemble/assemble the machine. Keep the following in mind whenever you work with the machine:

1. ⚠The power plug must remain disconnected for safety when disassembling/assembling the machine.

2. Unless otherwise noted, the machine may be assembled by reversing the steps used to disassemble it.

3. The screws must be identified by type (length, diameter) and location.

4. The mounting screws used for the grounding wire and the varistors come with a washer, which must not be left out when assembling the machine.

5. As a rule, the machine must not be operated with any of its parts removed.

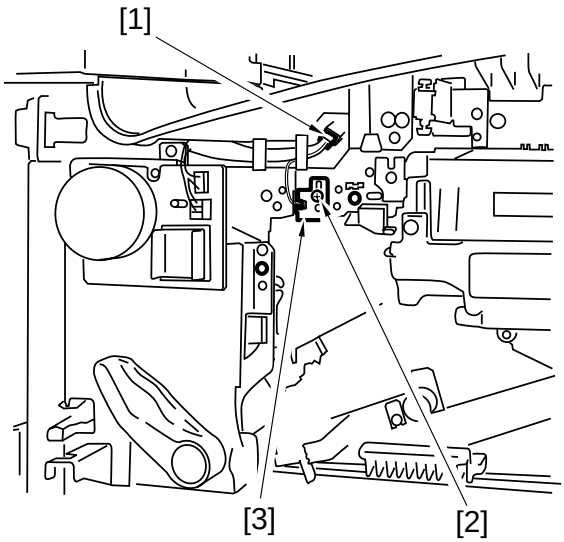
6. The door switch or the main power switch must be turned off whenever the duplex unit or the fixing/feeding unit must be slid out.

7. ⚠The toner must not be disposed of into fire to avid explosion.

9.1 Pre-Exposure Lamp Unit

9.1.1 Removing the Pre-Exposure Lamp Unit

1) Remove the drum unit. (p. 4-28P)
-2) Remove the inside cover. (p. 7-14P)
3) Disconnect the connector [1], and remove the screw [2].
4) Remove the pre-exposure lamp unit [3].

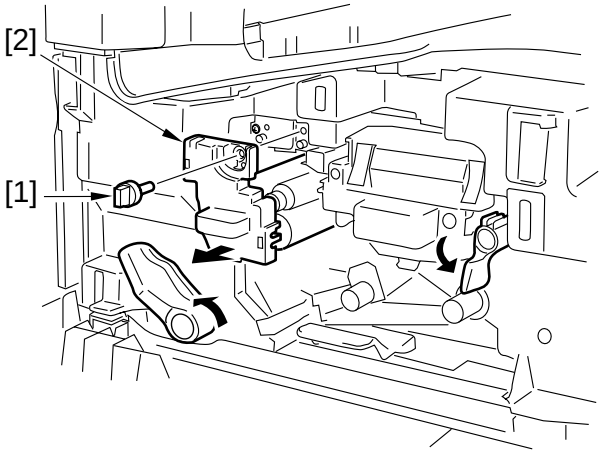


F04-901-01

9.2 Photosensitive Drum

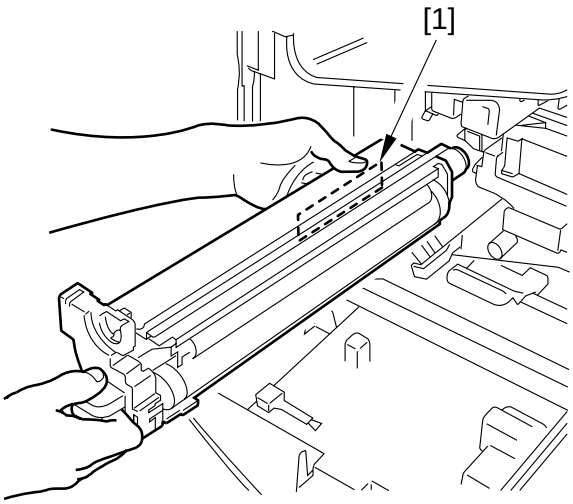
9.2.1 Removing the Drum Unit

1) Open the front cover.
2) Release the feeding assembly.
3) Release the developing assembly.
4) Remove the fixing screw [1].
5) Slide the drum unit [2] slowly out to the front.



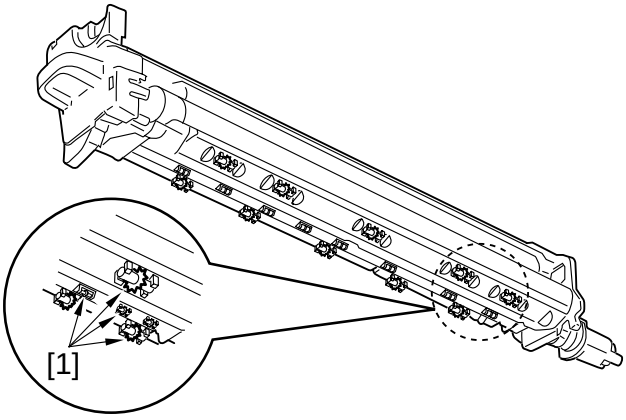
F04-902-01

When removing the photosensitive drum, hold it by its long hole [1], and take care not to soil it.
The photosensitive drum is highly susceptible to light. Once outside the machine, be sure to protect it against light.



F04-902-02

As many as 19 spurs [1] (4 type) are attached to the bottom of the drum unit. Take care when deciding where and how to place the drum unit after taking it out of the machine.



F04-902-03

9.2.2 Cleaning the Photosensitive Drum

If the surface of the photosensitive drum is soiled, wipe it with a flannel cloth coated with toner. (Do not use paper, lint-free or otherwise.)

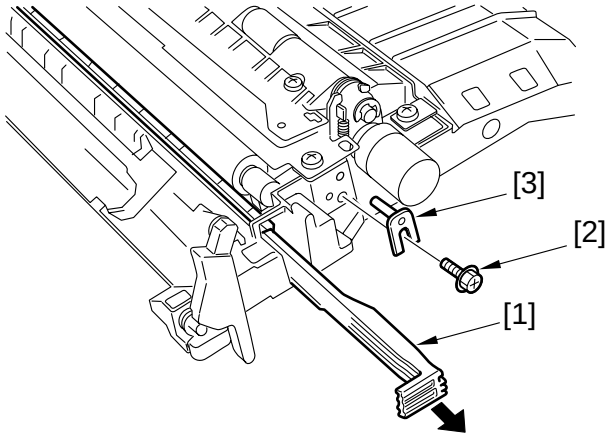
Do not dry wipe it nor use solvent. Further, never use drum cleaning powder.

9.3 Transfer Charging Roller

9.3.1 Removing the Transfer Charging Roller

Do not touch the surface of the transfer charging roller; otherwise, faulty images can occur.

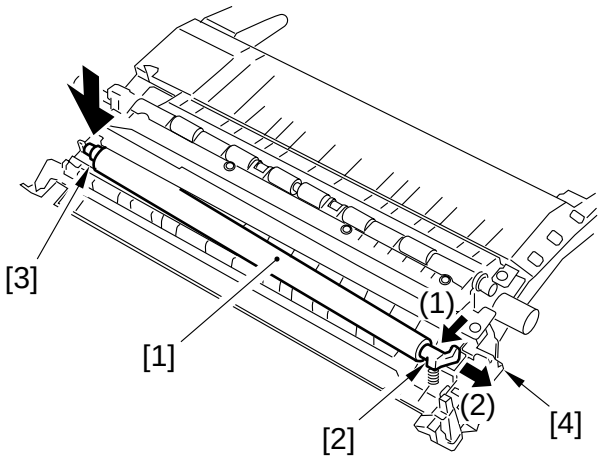
1) Remove the feeding assembly. (p. 5-49P)
2) Pull out the static eliminator [1].
3) Remove the screw [2], and detach the hinge pin [3].



F04-903-01

4) Shift the pre-transfer arm [2] (equipped with a spring) together with the transfer charging roller [1] to the left, and detach it to the front.
5) While holding down the post-transfer arm [3] from above, remove the transfer charging roller [1] to the front.

When mounting it, be sure to fit the bottom of the spring of the pre-transfer arm into the seat (dent) in the feeder frame [4].

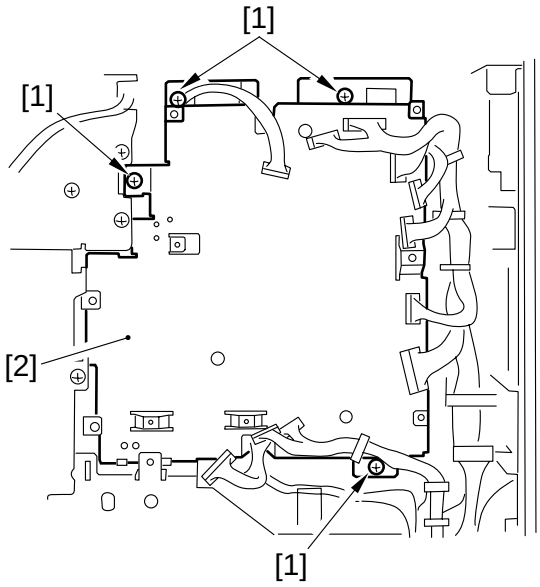


F04-903-02

9.4 Charging Roller Solenoid

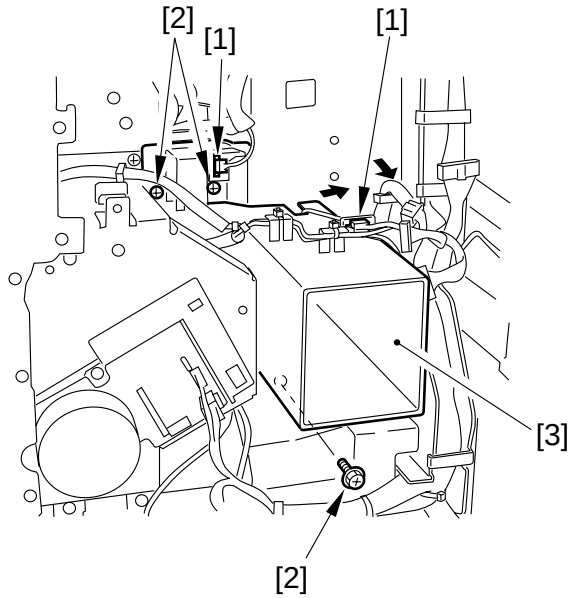
9.4.1 Removing the Charging Roller Solenoid (SL6)

1) Remove the photosensitive drum unit. (p. 4-28P)
2) Open the rear cover. (7 screws)
3) Remove the DC controller PCB. (p. 7-17P)
4) Remove the four screws [1], and detach the DC controller base [2].



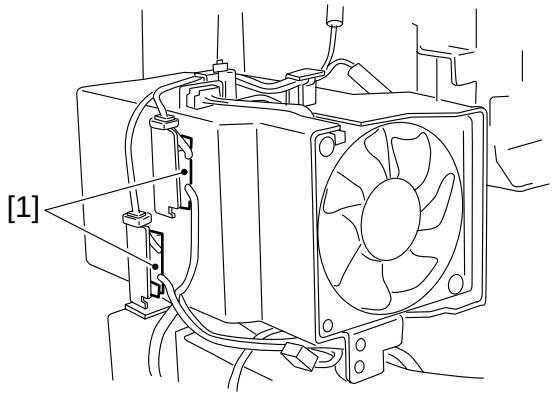
F04-904-01

5) Disconnect the two connectors [1] of the harness.
6) Remove the three screws [2], and shift the duct unit [3] to the side, and slide it out to the front.



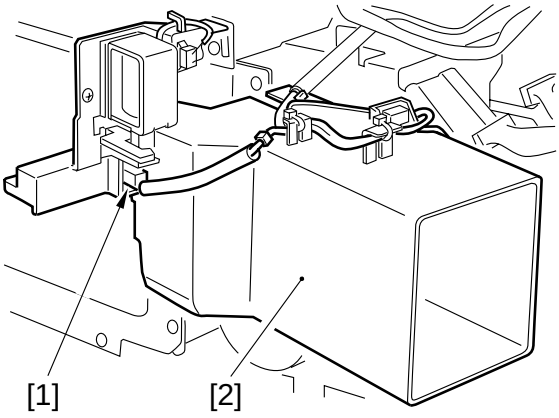
F04-904-02

7) Free the claw, and detach the two relay PCBs [1].



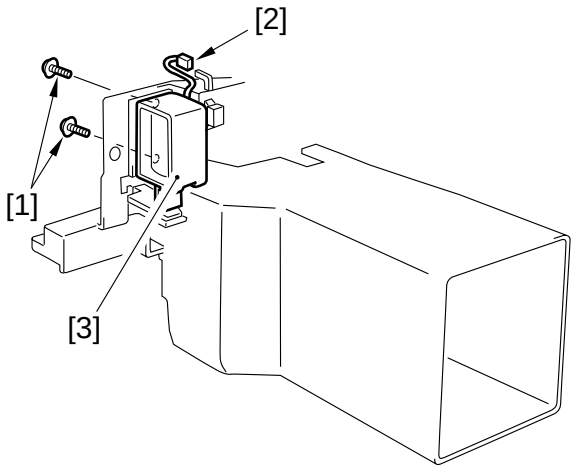
F04-904-03

8) Remove the faston [1] of the harness, and detach the duct unit [2].



F04-904-04

9) Remove the two screws [1], and disconnect the connector [2]; then, detach the charging roller solenoid [3].



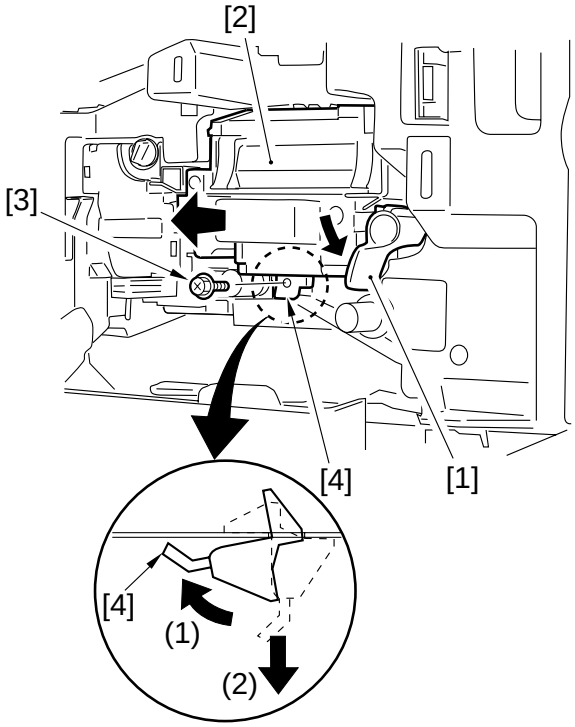
F04-904-05

9.5 Developing Assembly

When disassembling/assembling the developing assembly, keep the following in mind:
1. When holding the developing assembly, do not touch or push the developing cylinder.
2. After mounting the developing assembly, be sure to fit the developing assembly stopper.
3. The blade and the blade base of the blade base unit are adjusted to a high accuracy at the factory. Do not disassemble the unit.

9.5.1 Removing the Developing Assembly

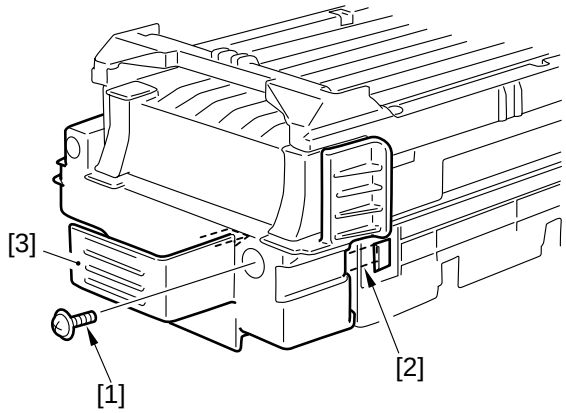
1) Open the front cover.
2) Shift down the developing assembly releasing lever [1] to free the developing assembly [2].
3) Remove the screw [3], and lift the bottom of the developing assembly stopper [4] to the front, and detach it to the bottom.
4) Holding the grip on the developing assembly, place your other hand on the bottom of the developing assembly; then, slide it out to the front.



F04-905-01

9.5.2 Removing the Grip Assembly

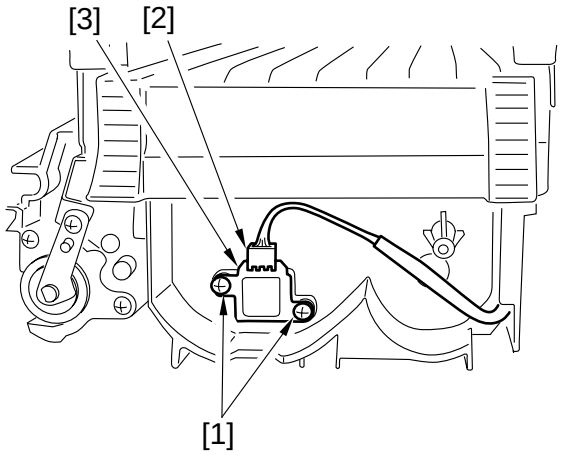
1) Remove the developing assembly. (p. 4-33P)
2) Remove the screw [1] and free the three claws [2]; then, detach the grip assembly [3].



F04-905-02

9.5.3 Removing the Toner Sensor

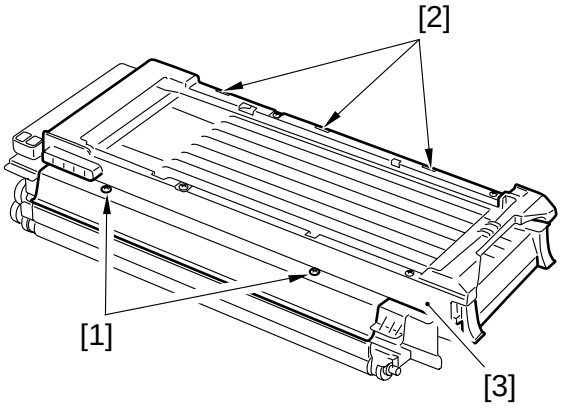
1) Remove the grip assembly. (item 9.5.2)
2) Remove the two screws [1], and disconnect the connector [2].
3) Remove the toner sensor [3].



F04-905-03

9.5.4 Removing the Developing Assembly Upper Cover

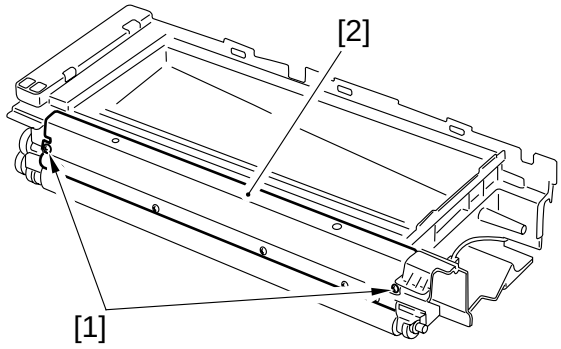
1) Remove the grip assembly. (item 9.5.2)
2) Remove the two screws [1], and free the three claws [2].
3) Remove the developing assembly upper cover [3].



F04-905-04

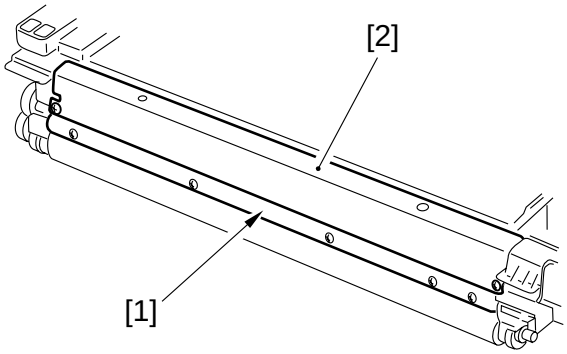
9.5.5 Removing the Blade Base Unit

1) Remove the developing assembly upper cover. (p. 4-34P)
2) Remove the two screws [1], and detach the blade base unit [2].



F04-905-05

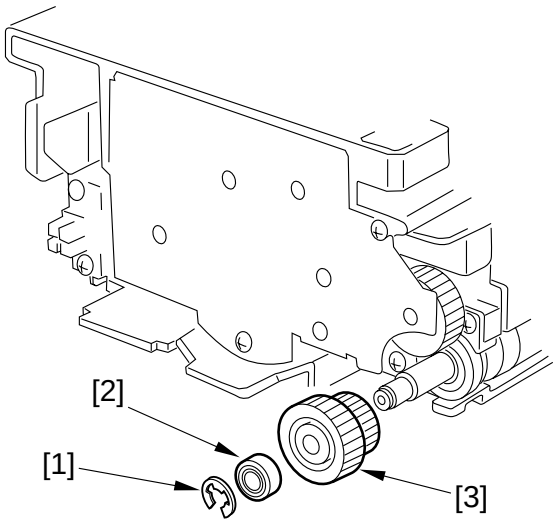
The blade [1] and the blade base [2] of the blade base unit are adjusted to a high accuracy at the factory. Do not disassemble the unit.



F04-905-06

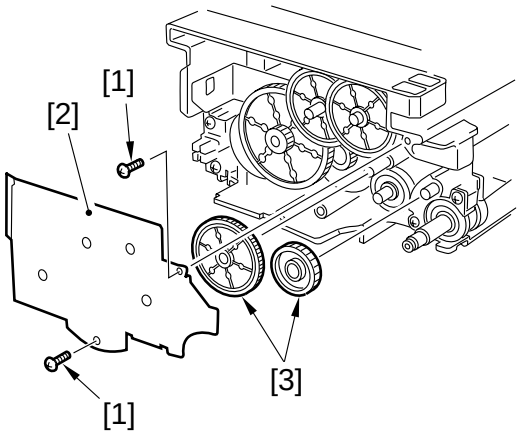
9.5.6 Removing the Developing Cylinder

1) Remove the developing assembly upper cover. (p. 4-34P)
2) Remove the E-ring [1], bearing [2], and gear [3].



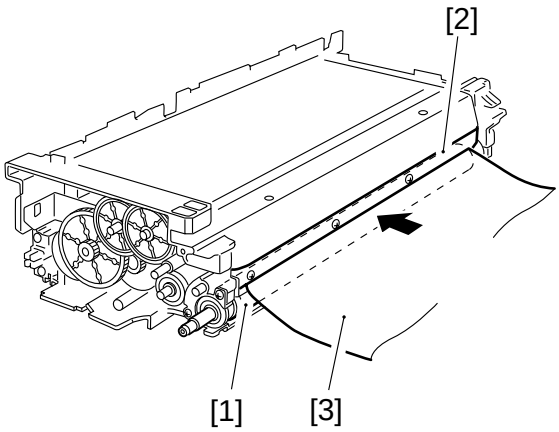
F04-905-07

3) Remove the two screws [1] and the gear cover [2].
4) Remove the two gears [3].



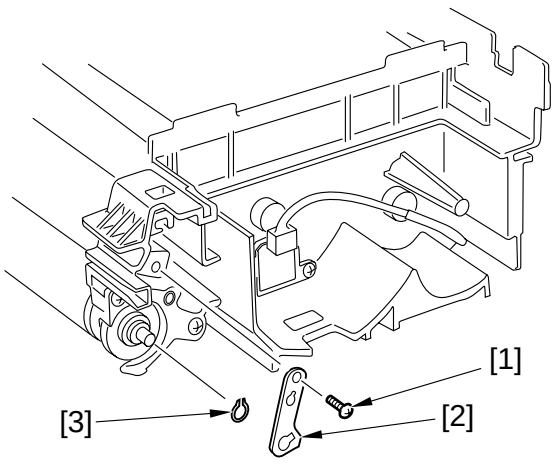
F04-905-08

5) Put copy paper [3] between the developing cylinder [1] and the blade [2].



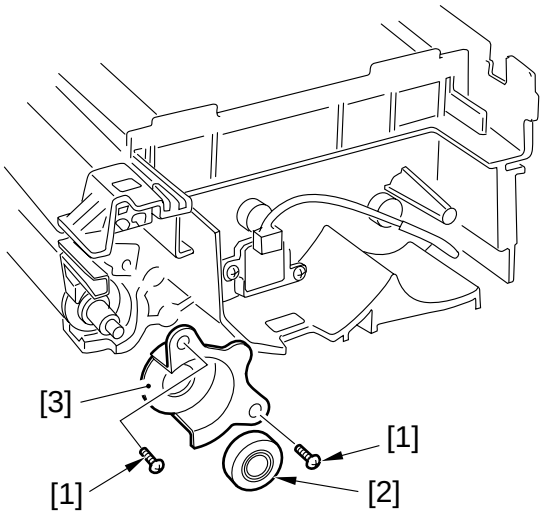
F04-905-09

6) Remove the screw [1], and remove the grounding plate [2].
7) Remove the grip ring [3].



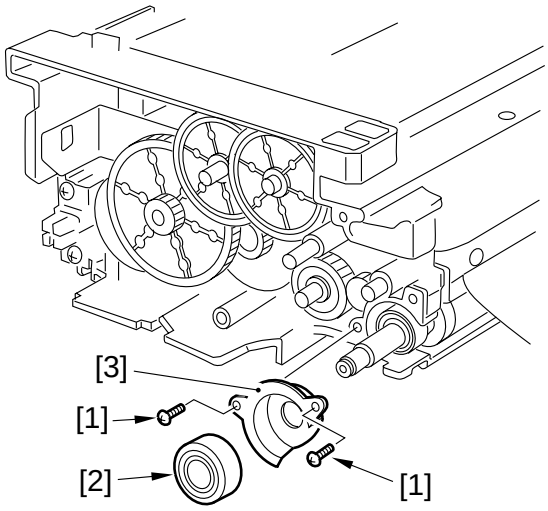
F04-905-10

8) Remove the two screws [1], and detach the support roller [2] and the front sleeve holder [3].



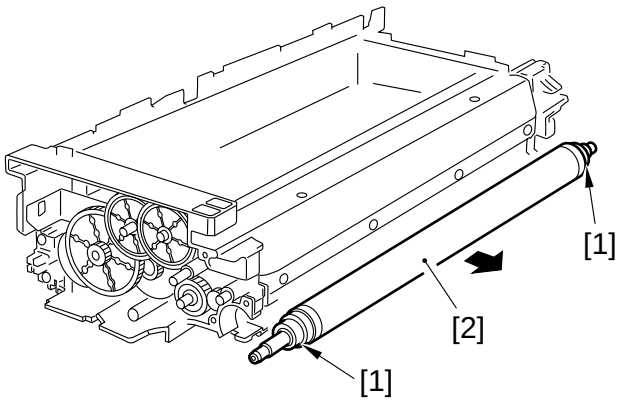
F04-905-11

9) Remove the two screws [1], and detach the support roller [2] and the sleeve holder [3].



F04-905-12

10) Remove the developing cylinder [2] together with the two bearings [1].

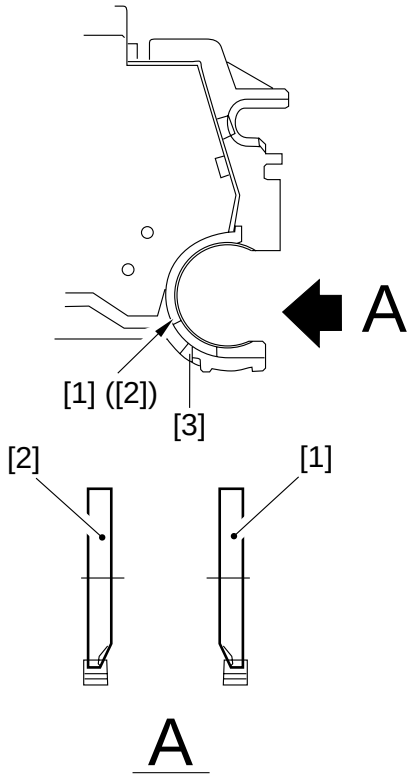


F04-905-13

9.5.7 Positioning the Developing Assembly Magnetic Seal

1) The front magnetic seal [1] and the rear magnetic seal [2] must be butted against the opening [3] (stop reference) when they are mounted.

Check to make sure that the magnetic seal is in firm contact with the casing.

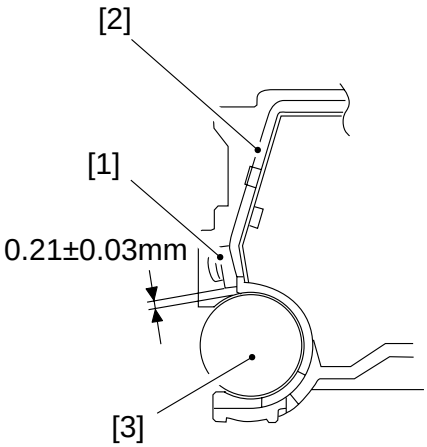


F04-905-14

9.5.8 Mounting the Developing Assembly Blade

The blade [1] and the blade base [2] of the blade base unit are adjusted to a high accuracy at the factory. Do not disassemble the unit.

If you happen to have removed the blade, adjust its position so that the gap between the blade and the developing cylinder [3] is 0.21 ± 0.03 mm using a gap gauge (CK-0057-000).



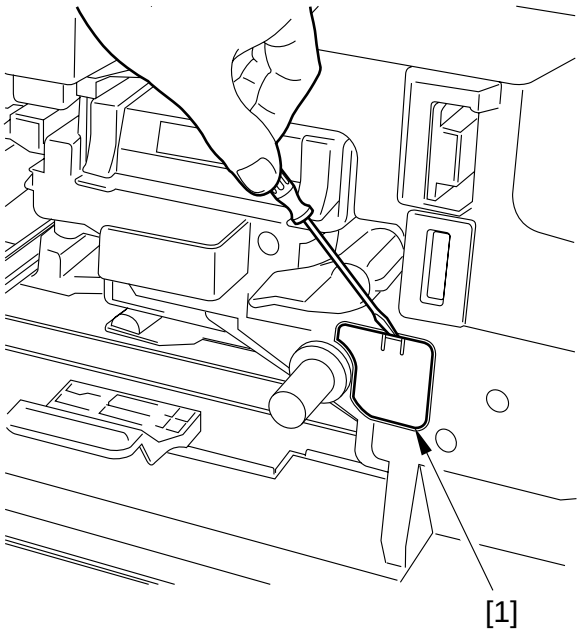
F04-905-15

The surface of the developing cylinder is highly susceptible to scratches. Be sure to fit the gap gauge on ends of the developing cylinder.

9.6 Removing the Paper Lint

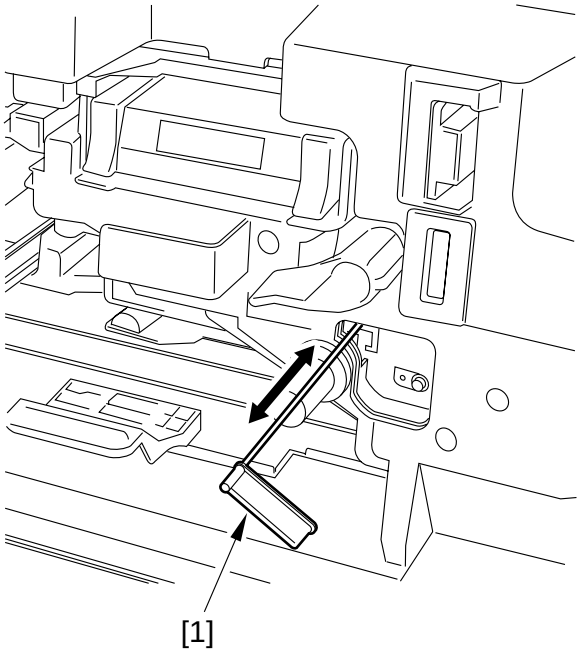
9.6.1 Removing the Paper Lint

1) Open the front cover.
2) Remove the paper lint cleaning cover [1] by inserting a flat-blade screwdriver.



F04-906-01

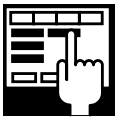
3) Slide out the paper lint cleaning lever [1], and move it back and forth.



F04-906-02

9.6.2 When Removing the Paper Lint

Execute APVC correction in service mode. (p. 5-67T)

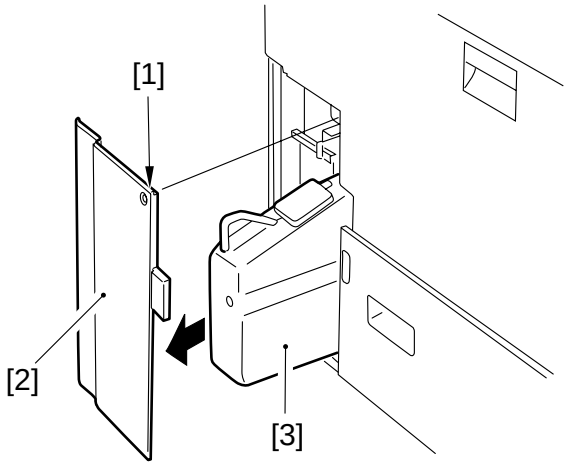


APVC correction
COPIER>FUNCTION>DPC>
D-GAMMA

9.7 Waste Toner Case

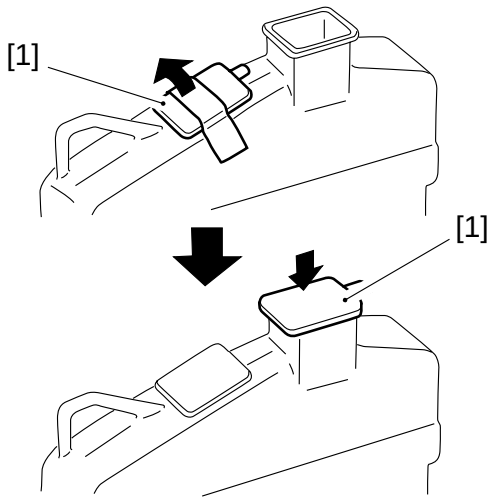
9.7.1 Replacing the Waste Toner Case

1) Remove the screw [1], and detach the waste toner case cover [2].
2) Take out the waste toner case [3].



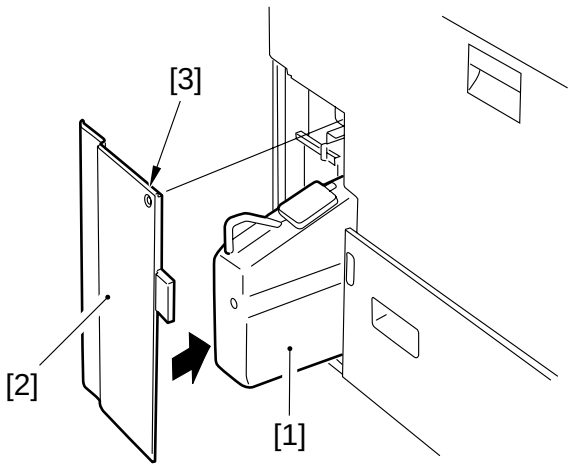
F04-907-01

3) Remove the case cap [1] taped to the waste toner case; then, put the cap to the case.



F04-907-02

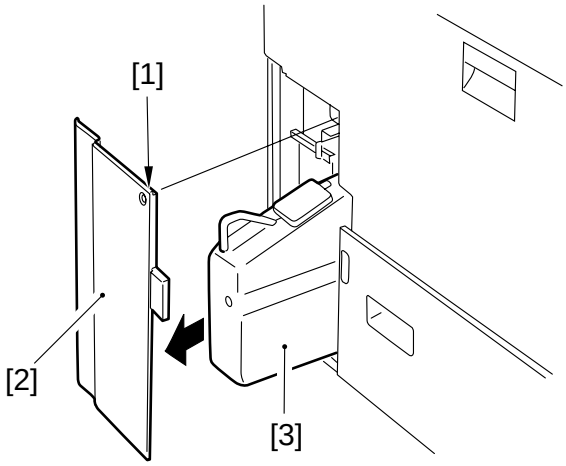
4) Fit the new waste toner case [1], and mount the waste toner case cover [2] with a screw [3].



F04-907-03

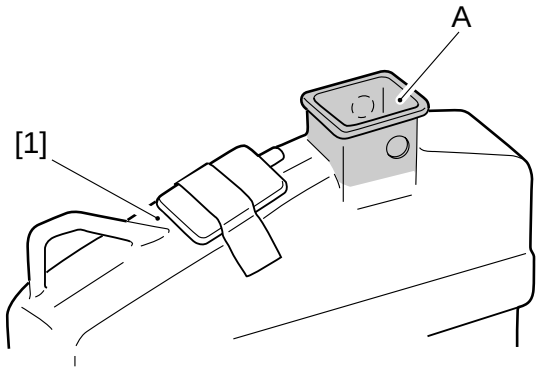
9.7.2 Cleaning the Waste Toner Case

1) Remove the screw [1], and detach the waste toner case cover [2].
2) Take out the waste toner case [3].



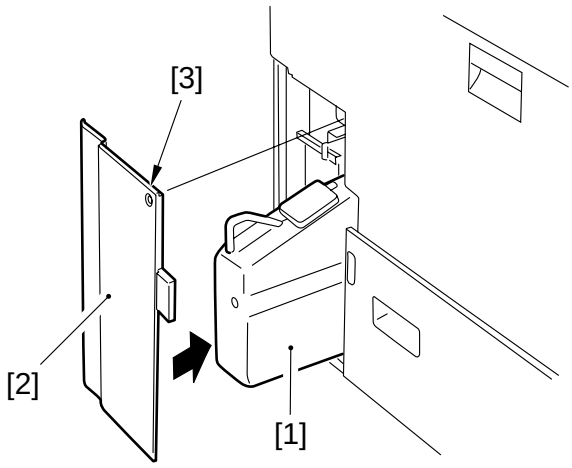
F04-907-04

3) Dispose of the waste toner collecting inside the waste toner case.
4) Clean both inside and the outside of the waste toner case [1] (area A, indicated by shading) with alcohol.
   In particular, take care not to leave any dirt on the inside and the outside of the area around the round recess.



F04-907-05

5) Fit the waste toner case [1] back in the machine, and mount the waste toner case cover [2] with a screw [3].



F04-907-06

CHAPTER 5

PICK-UP/FEEDING SYSTEM

1 Outline

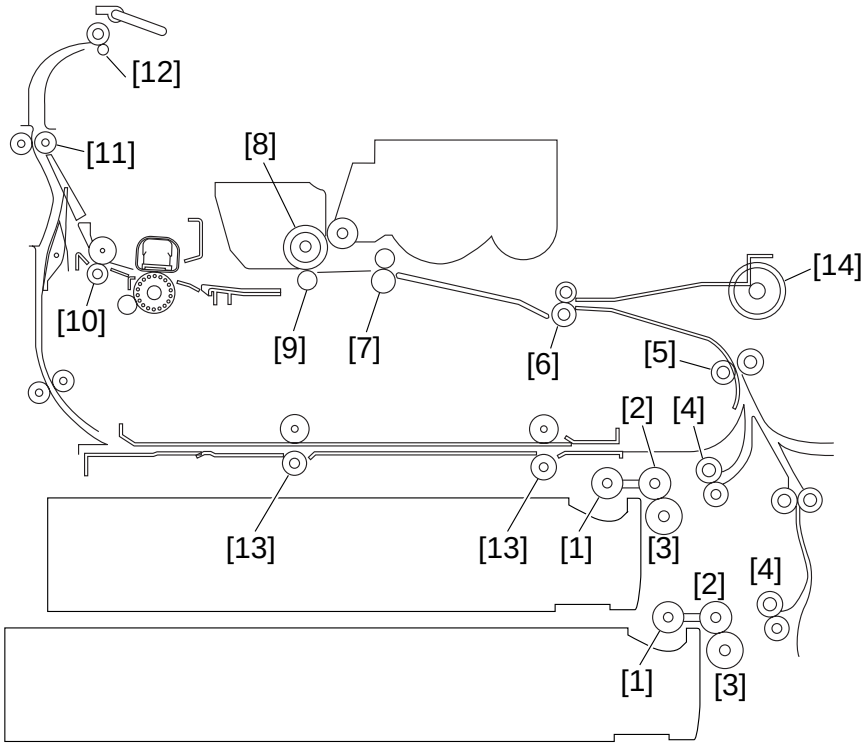
1.1 Specifications and Construction

T05-101-01 shows the major functions and the construction of the pickup/feeding system:

Item	Description
Paper feed reference	Center
Paper stack	Cassette (1, 2): 500 sheets each (80 g/m^2)
	Multifeeder: 50 sheets (80 g/m^2)
Paper size switching	Cassette (1, 2): by user
	Multifeeder:by user
Duplex copying	Through path
Related user mode	Cassette auto selection (enabled/disabled)
	Paper icon
Related mechanical adjustments	Cassette horizontal registration adjustment
	Multifeeder horizontal adjustment

T05-101-01

1.2 Arrangement of Rollers

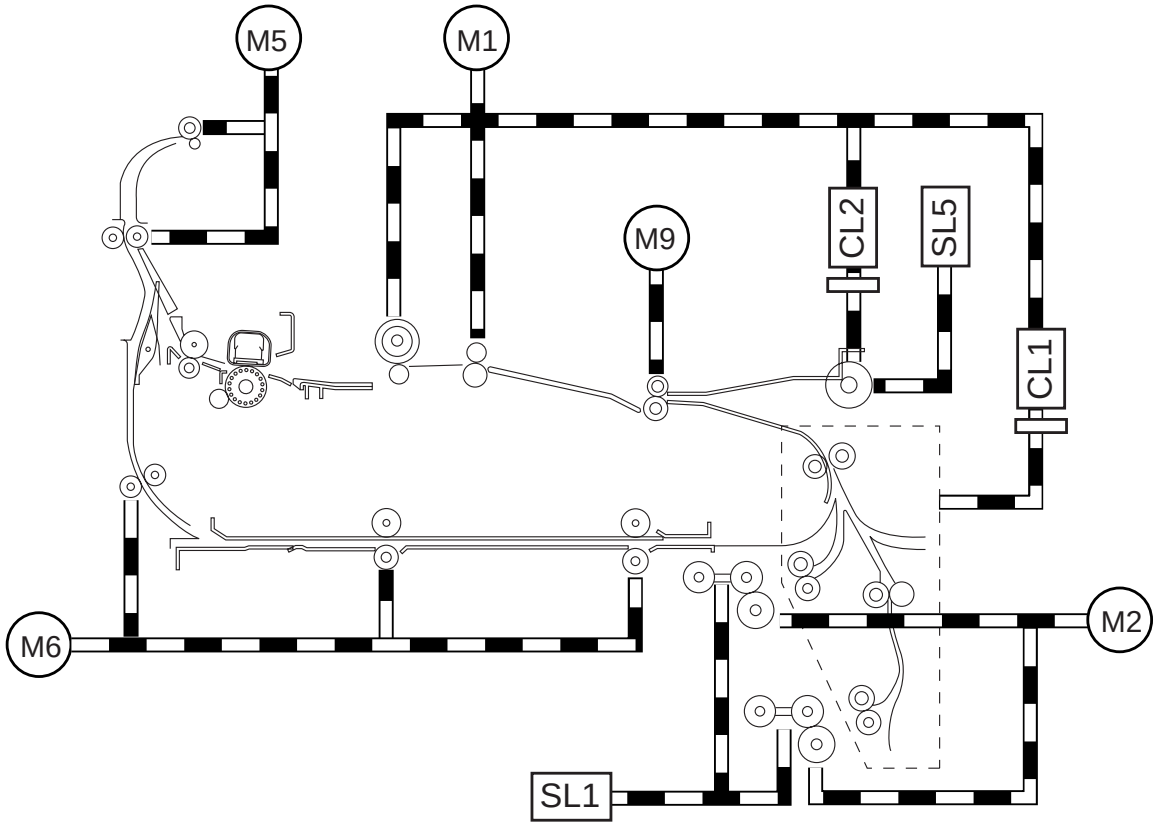


F05-101-01

The following rollers are mainly used to move paper:

Ref.	Name
[1]	Pickup roller
[2]	Feeding roller
[3]	Separation roller
[4]	pull-out roller
[5]	Pre-registration roller
[6]	Registration roller
[7]	Pre-transfer roller
[8]	Photosensitive drum
[9]	Transfer charging roller
[10]	Fixing delivery roller
[11]	Delivery vertical path roller
[12]	Delivery roller
[13]	Duplex roller
[14]	Multifeeder pickup roller

1.3 Arrangement of Motors, Clutches, and Solenoids

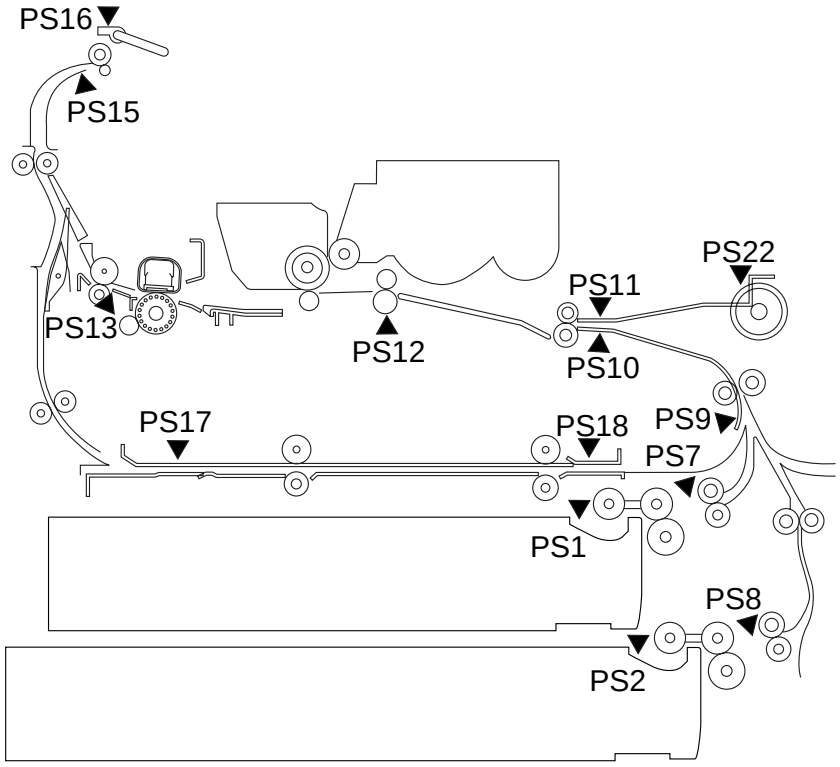


F05-102-01

The following motors, clutches, and solenoids are used to move paper:

Notation	Name
M1	Main motor
M2	Pickup motor
M5	Delivery motor
M6	Duplex motor
M9	Registration motor
CL1	Vertical path clutch
CL2	Multifeeder clutch
SL1	Pickup DOWN solenoid
SL5	Multifeeder rely releasing solenoid

1.4 Arrangement of Sensors



F05-103-01

The following sensors are used to monitor the movement of paper:

Notation	Name	Delay jam	Stationary jam	Power-on stationary jam
PS1	Cassette 1 paper sensor	No	No	No
PS2	Cassette 2 paper sensor	No	No	No
PS7	Cassette 1 retry paper sensor	Yes	No	No
PS8	Cassette 2 retry paper sensor	Yes	No	No
PS9	Pre-registration paper sensor	Yes	No	No
PS10	Registration paper sensor	Yes	Yes	No
PS11	Horizontal registration paper sensor	No	No	No
PS12	Image leading edge paper sensor	Yes	No	No
PS13	fixing feeding sensor	Yes	Yes	No
PS15	No. 1 delivery paper sensor	Yes	Yes	No
PS16	No. 1 delivery full sensor	No	No	No
PS17	Duplex inlet paper sensor	Yes	No	No
PS18	Duplex outlet paper sensor	Yes	No	No
PS22	Multifeeder paper sensor	No	No	No

T05-102-01

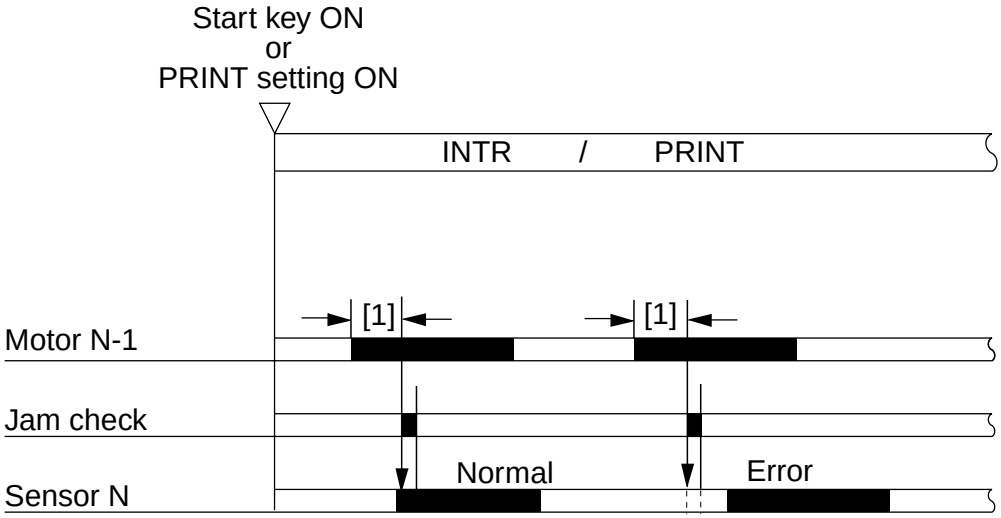
2 Detecting Jams

2.1 Sequence of Operations (jam detection)

2.1.1 Delay Jam

a. Cassette Pickup Assembly (cassette 1, 2)

The leading edge of paper does not reach the sensor within a specific period of time after the motor has gone ON.



F05-201-01

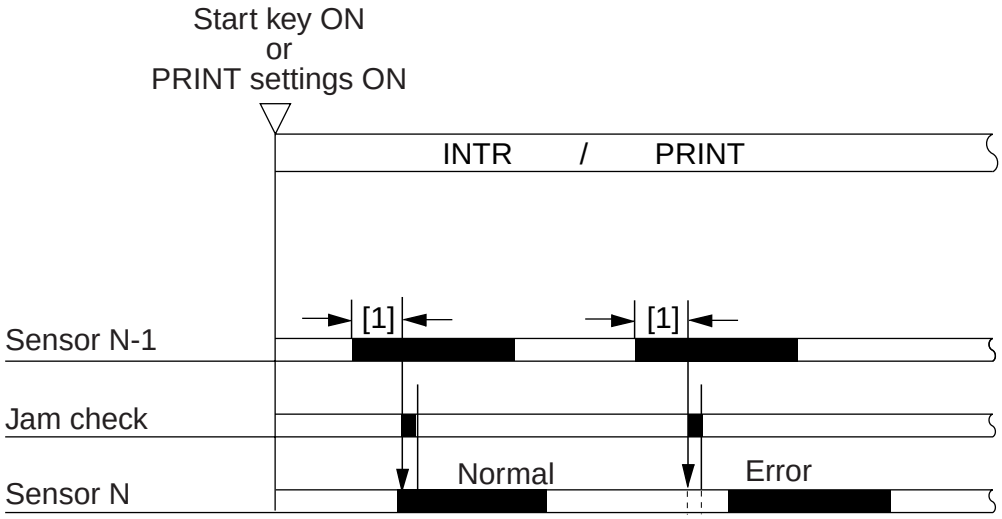
Pickup assembly	Motor	Sensor
Cassette 1	Pickup motor (M2)	Cassette 1 retry sensor (PS7)
Cassette 2	Pickup motor (M2)	Cassette 2 retry sensor (PS8)

T05-201-01

b. Other Delay Jams

Other than pickup sensor delay jams, jams are found by other sensors at the following timing of detection.

The period of time for travel between sensor N-1 and delay jam sensor N are monitored with reference to the clock pulses from the main motor; a delay jam will be identified if the leading edge of paper does not reach the delay jam sensor N in question within a specific period of time after the sensor N-1 goes ON.



[1]:specific feed period.

F05-201-02

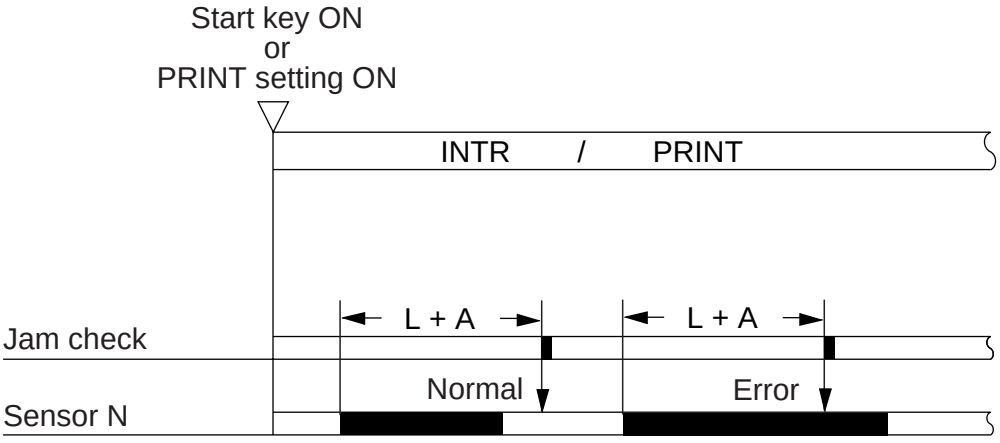
Notation	Name	Delay jam
PS9	Pre-registration paper sensor	Yes
PS10	Registration paper sensor	Yes
PS12	Image leading edge sensor	Yes
PS13	Fixing feeding sensor	Yes
PS15	No. 1 delivery paper sensor	Yes
PS17	Duplex inlet paper sensor	Yes
PS18	Duplex outlet paper sensor	Yes
PS22	Multifeeder paper	No

T05-201-02

2.1.2 Stationary Jam

a. Common Stationary Jam

Registration paper sensor (PS10), Fixing feeding sensor (PS13), No. 1 delivery paper sensor (PS15)



(L: paper length; A: specific feed distance)

F05-201-03

b. Power-On Stationary Jam

A stationary jam at power on is identified based on the presence/absence of paper over a specific sensor about 1 sec after the control panel power switch is turned on.

2.1.3 Jam History

The host machine maintains a history of jams that occur inside it, and the history may be checked in service mode.

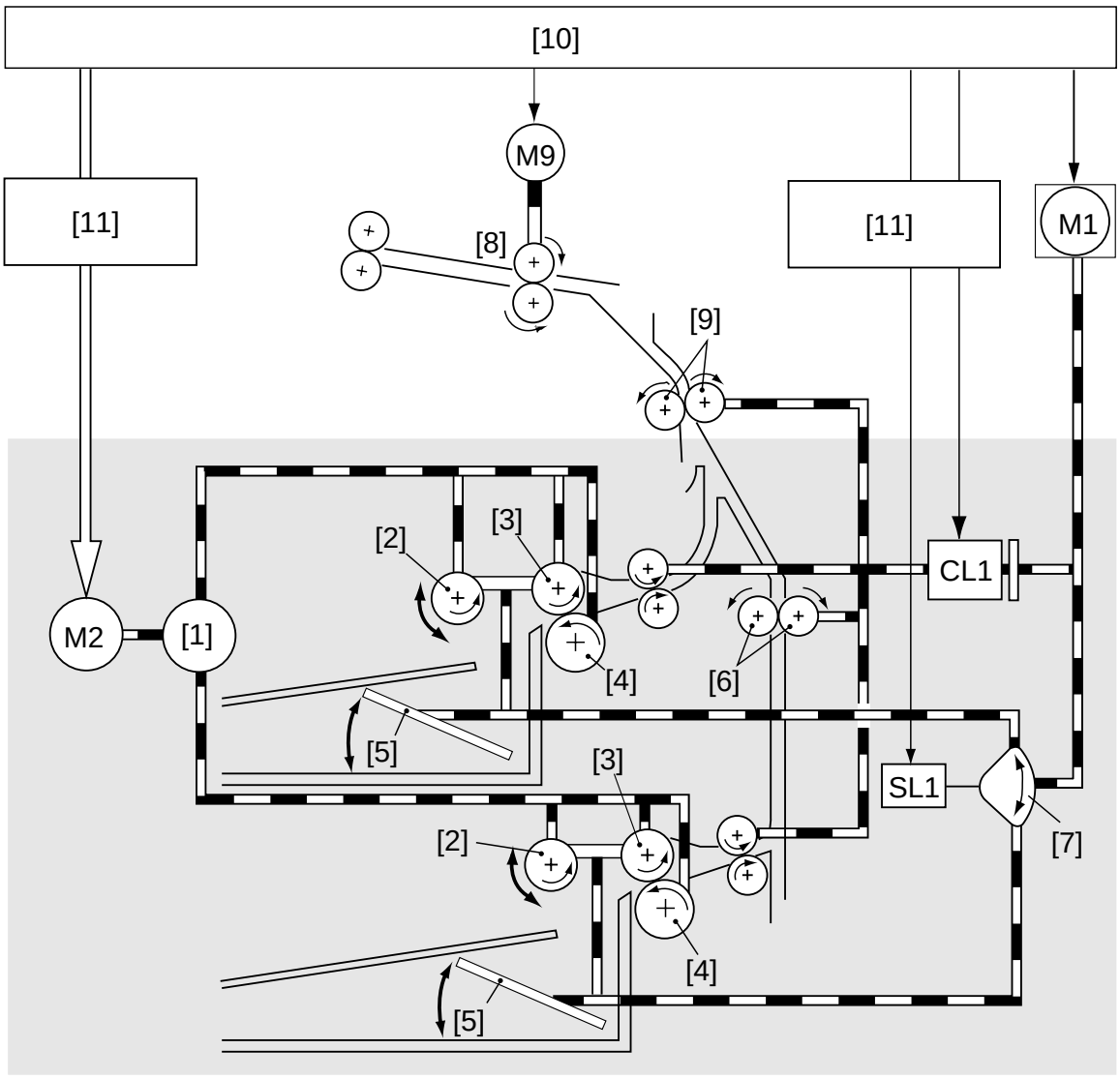
COPIER>DIPLAY>JAM
Use it to indicate jam data.
COPIER>FUNCTION>JAM-HIST
Use it to clear the jam history.

The following are retained in response to a jam, and brought back to use after the jam has been removed.

- Remaining number of copies to make
- Selected copying mode

3 Pickup Assembly

3.1 Pickup Control System



F05-301-01

Notation	Name
[1]	Gear
[2]	Pickup roller
[3]	Feeding roller
[4]	Separation roller
[5]	Lifter
[6]	Vertical path roller
[7]	Cam
[8]	Registration roller

Notation	Name
[9]	Pre-registration roller
[10]	DC controller PCB
[11]	Cassette pickup PCB
M1	Main motor
M2	Pickup motor
M5	Registration motor
CL1	Vertical path clutch
SL1	Pickup DOWN solenoid

3.2 Outline

The paper inside the cassette is held up by the lifter, and remains in contact with the pickup roller when pickup takes place:

(1) The pickup motor (M2) is used to drive the pickup roller. The pickup roller is moved down in relation to the feeding roller, and is brought into contact with paper only when pickup takes place.

(2) The pickup roller is moved down when the cam released by the DOWN solenoid (SL1) rotates by the drive of the main motor (M1).

The feeding roller and the separation roller serve to make sure that only one sheet of paper from the pickup roller is sent to the feeding path; the No. 2 registration roller and the vertical path roller then forwards the paper as far as the registration roller.

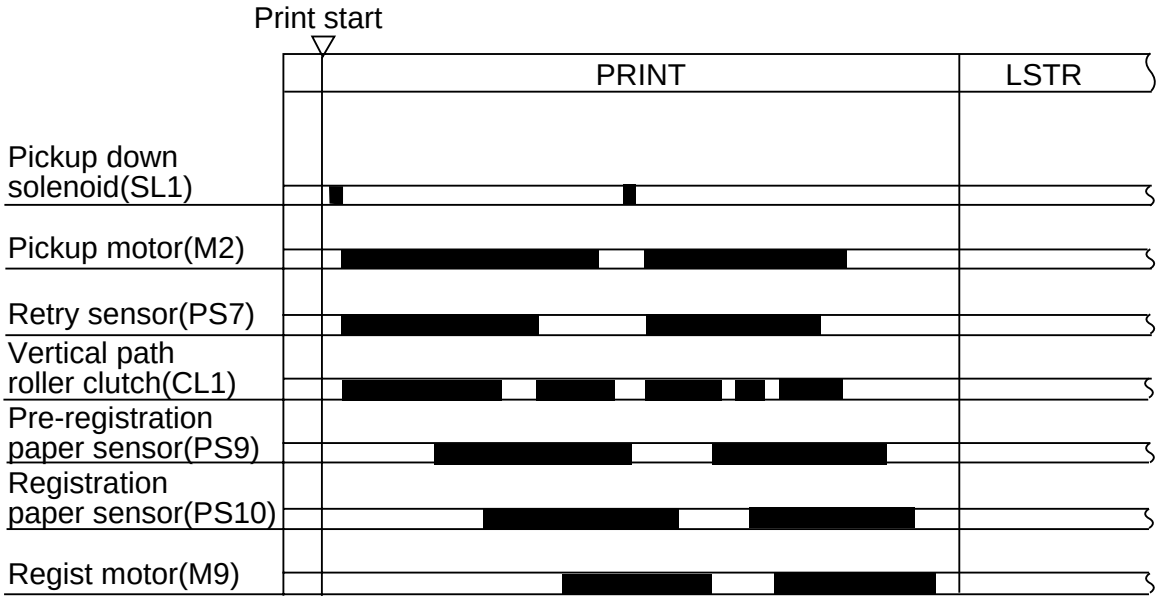
The drive for the vertical path roller and the No. 2 registration roller is provided by the pickup motor (M2) through the vertical path clutch (CL1).

The registration roller is driven by the registration motor (M9).

3.3 Sequence of Operations (pickup)

a. Cassette 1

- A4, 2 Copies, Continuous



F05-303-01

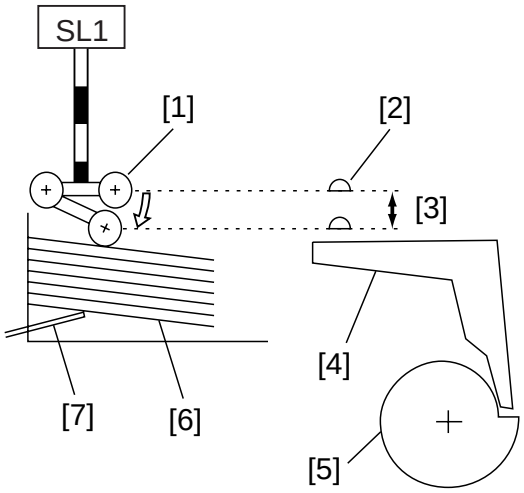
3.4 Operation of the Cassette Lifter

The lifter is operated as necessary in the course of printing to maintain the stack of sheets to a specific height.

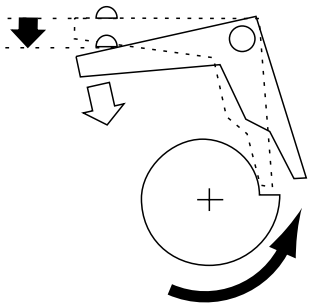
3.4.1 Operation of the Lifter During Printing

The lifter is controlled by the movement of the pickup roller shaft. When the pickup roller shaft pushes the lifter trigger lever, the cam is released, and the lifter starts to move up until the lifter trigger lever stops the cam.

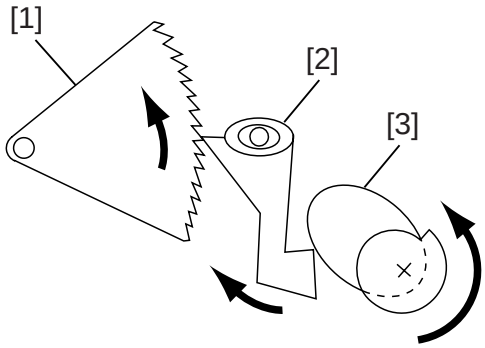
1) Each time the pickup roller DOWN solenoid (SL1) goes ON, the pickup roller shaft [2] moves down to initiate pickup operation.
2) When the sheets [6] decrease and, as a result, the descent distance [3] of the pickup roller increases, the pickup roller shift pushes down the lifter trigger lever [4].



3) When the lever is pushed down, the cam [5] is released, causing it to rotate.



4) The rotation of the cam turns the eccentric cam [3] mounted to the same shaft. The eccentric cam operates the lifter UP lever [2] to move up the lifter gear [1].
5) The lifter moves up and, as a result, the paper stack moves up; when the pickup roller shaft reaches a specific height, the lifter trigger lever is drawn back by the work of a spring, thereby stopping the cam.



F05-304-01

The foregoing series of operation is repeated to maintain the height of the paper stack to a specific level. The cassette pickup operation ends when paper runs out and the cassette paper sensor detects the absence of paper.

3.4.2 Releasing the Lifter

The lifter is released mechanically when the cassette is slid out. When the machine is in standby state, the lifter gear is held in place by the lifter gear retaining lever. When the cassette is slid out, the lifter gear retaining lever is freed, thereby allowing the lifter to move down.

If the main power is cut while the lifter is moving up, the lifter is held up with the claw used to move up the lifter remaining in contact with the lifter gear; the lifter will not be fully released in this condition, and damage can occur if the cassette is forced out. Be sure to turn off and then on the main power so that the machine will be in standby state whenever the cassette must be slid out.

3.5 Cassette Pickup Operation

3.5.1 Rotating the Pickup Roller

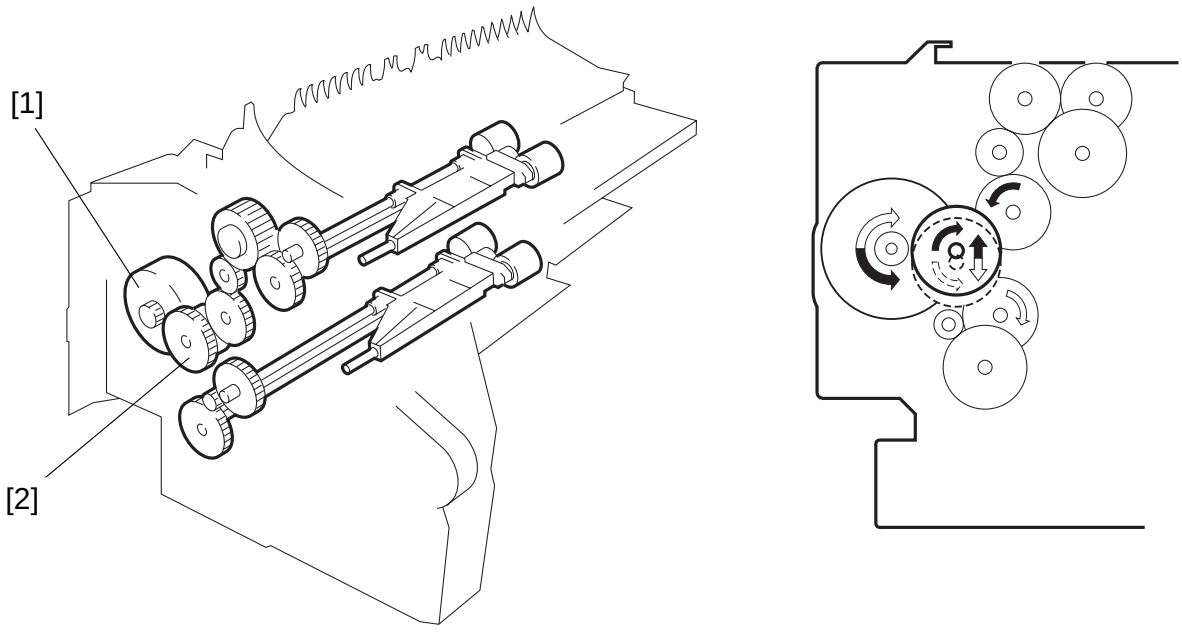
The drive used to rotate the pickup roller is transmitted through gears. The cassette motor rotates clockwise and counterclockwise to initiate pickup operation of the cassette 1/2.

3.5.2 Switching the Pickup Roller Drive

When the pickup roller rotates clockwise, the gear 1 moves up to drive the pickup roller of the upper cassette holder; when the motor rotates counterclockwise, on the other hand, the gear 1 moves down to drive the pickup roller of the lower cassette holder. The figure below shows how the drive of the pickup roller is controlled.

3.5.3 Pickup Roller Shaft Reference

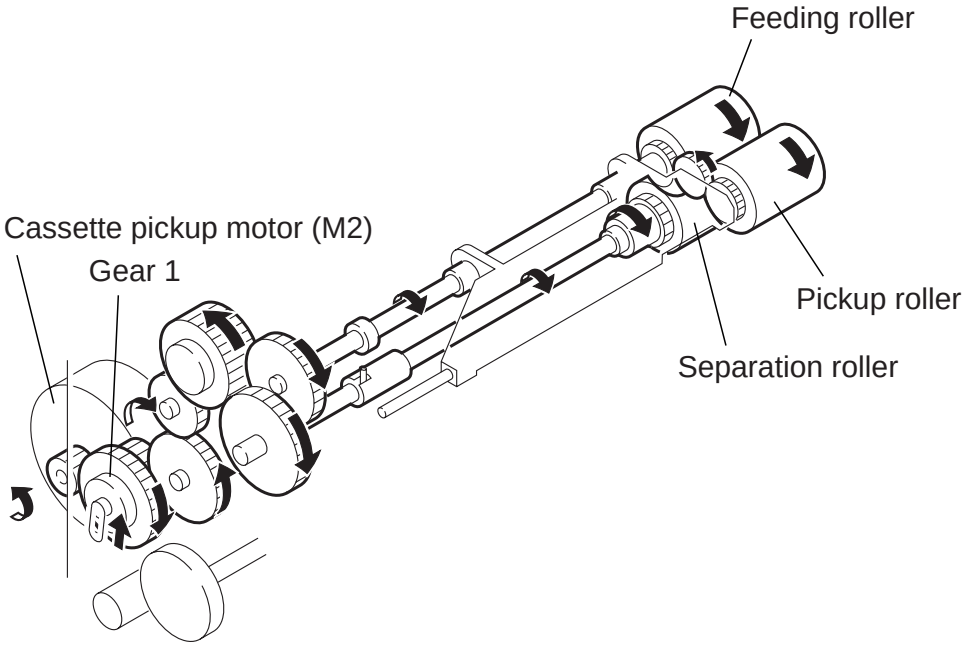
The up and down movement of the pickup roller when the cassette is set in the machine is driven with reference to the position of the pickup roller shaft.



[1] Pickup motor (M2)
[2] Gear 1

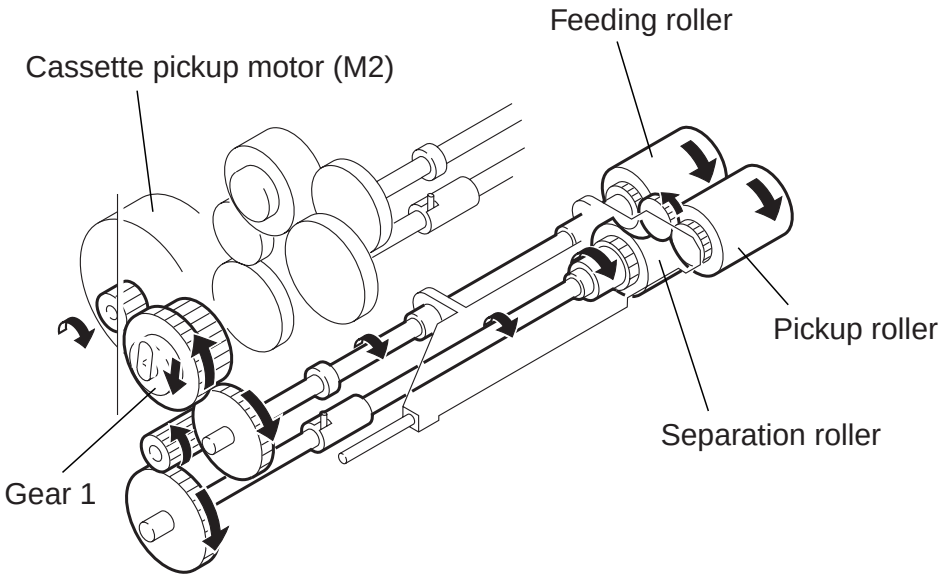
F05-305-01

Pickup Drive for the Upper Cassette Holder (pickup motor in CW rotation)



F05-305-02

Pickup Drive for the Lower Cassette Holder (pickup motor CCW rotation)



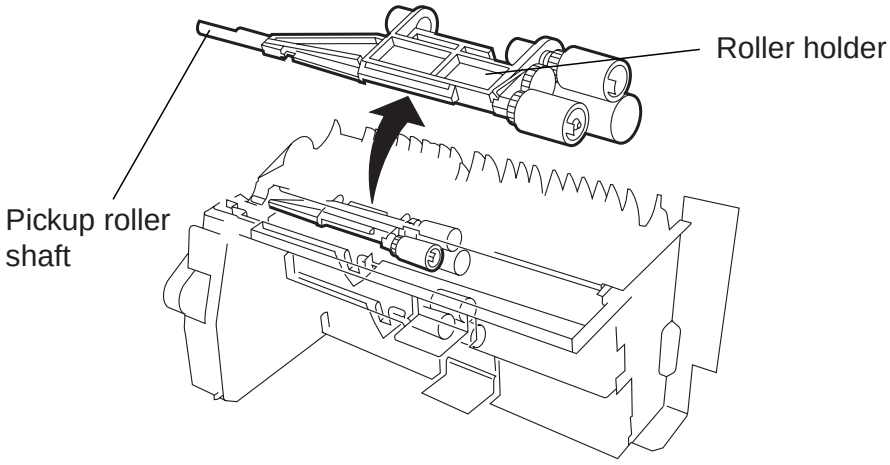
F05-305-03

3.6 Moving Up/Down the Pickup Roller

The pickup roller and the feeding roller are supported by a roller holder, and the pickup roller is moved up and down in relation to the feeding roller. In standby state, the pickup roller is at the uppermost position; during pickup operation, on the other hand, it moves down to reach the paper surface. It operates as follows to pick up a single sheet of paper:

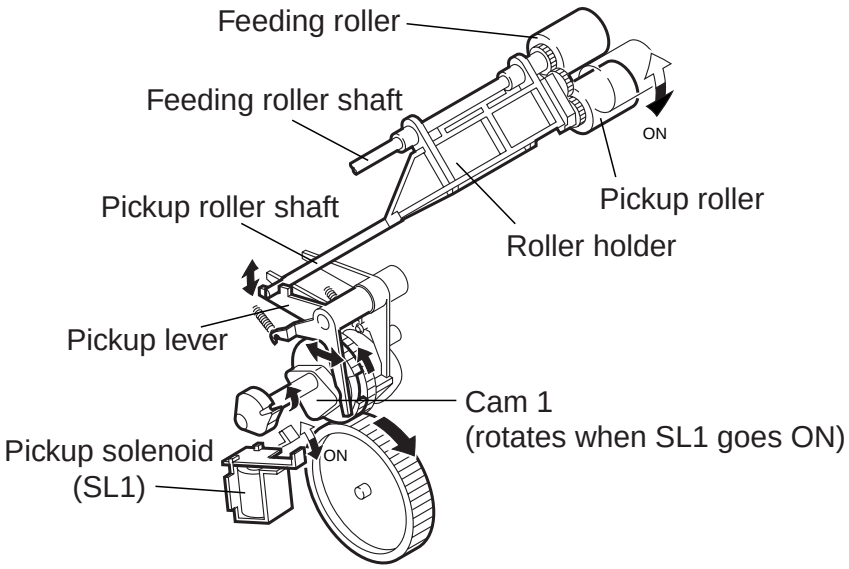
1) When the pickup solenoid (SL1) goes ON, the drive of the main motor (M1) causes the cam 1 to rotate.
2) The rotation of the cam 1 causes the pickup lever to swing.
3) The swing of the lever causes the pickup roller to move down to come into contact with the paper, and the pickup motor (M2) starts pickup operation.
4) The rotation of the cam 1 moves up the pickup roller shaft.

Arrangement of the Pickup Roller



F05-306-01

Up/Down Movement of the Pickup Roller Shaft



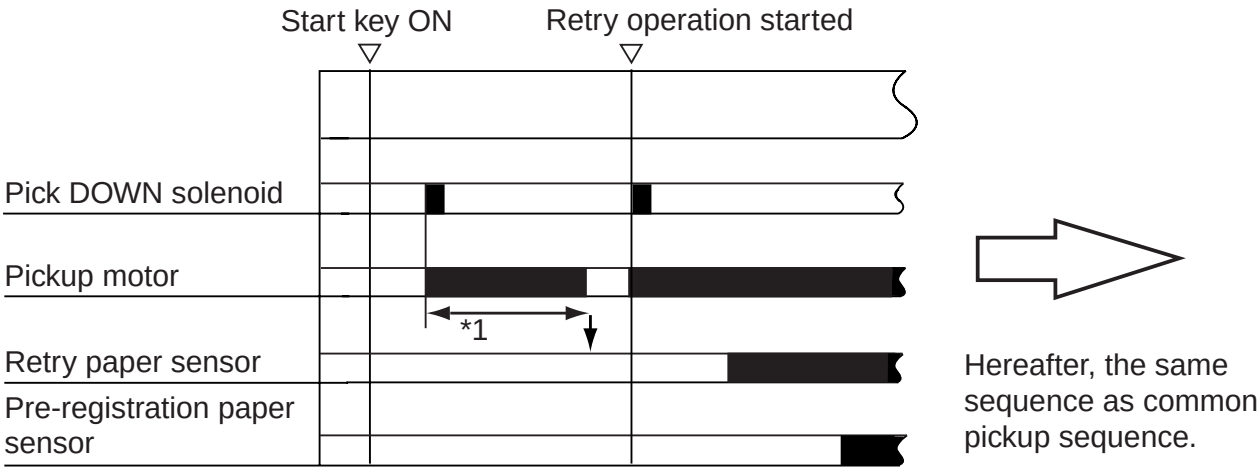
F05-306-02

3.7 Pickup Retry Operation

When a delay is detected by a pickup sensor because of wear on the pick roller, pickup retry operation is executed. If a delay is still detected after a retry, the control panel indicates the Jam message.

3.7.1 Conditions for Detecting a Delay

Paper does not reach the retry sensor when it has been moved over a specific distance after the pickup DOWN solenoid (SL1) has gone ON.



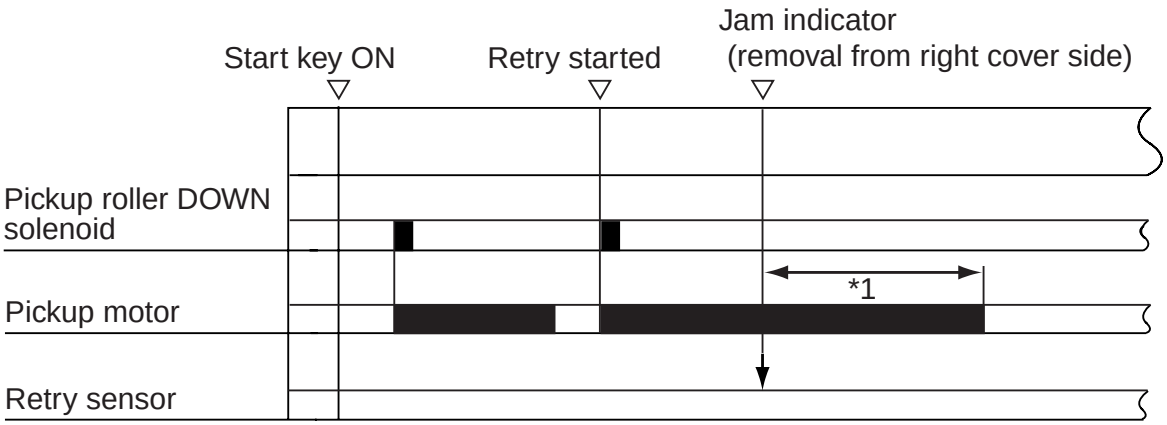
*1:retry operation is executed if paper does not arrive after moving it over 'distance to the retry sensor + 100 mm'.

F05-307-01 Retry Operation

3.7.2 Paper Retraction

If a delay is detected once again after a retry and the jam must be removed, the paper can become torn if an attempt is made form the cassette side. To enable removal from the right cover side, the following operation takes plate:

1) After detecting the jam, the retracting roller is driven for a period equivalent to a distance over which paper may be moved 10 cm. The paper will be moved to a point where it is in view when the right cover is opened.
2) The control panel indicates an instruction to the effect that the jam may be removed from the right cover side.
3) The right cover may be opened to remove the jam. If the jam is not in view when the right cover is opened, it may be removed from the cassette side.



*1:paper moved by the retracting roller for a equivalent of a distance over which paper may be moved 10 cm.

F05-307-02

3.8 Operation Other Than Cassette Pickup (standby)

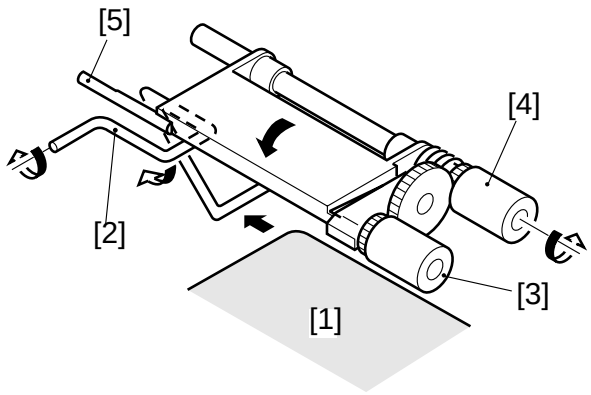
When the cassette is slid into or out of the machine, the following takes place:

3.8.1 Moving Up the Lifter/Moving Down the Pickup Roller Shaft (cassette slid in)

1) Moving Down the Pickup Roller Shaft

With the power on, when the cassette is slid into the machine, the pickup roller moves down until it comes into contact with the paper surface as follows:

- The cassette rear end pushes in the lever 1 of the pickup unit.
- When the cassette size detection mechanism goes ON, the main motor (M1) and the pickup solenoid (SL1) go ON to swing the pickup lever.



[1] Cassette
[2] Lever 1
[3] Pickup roller
[4] Feeding roller
[5] Pickup roller shaft

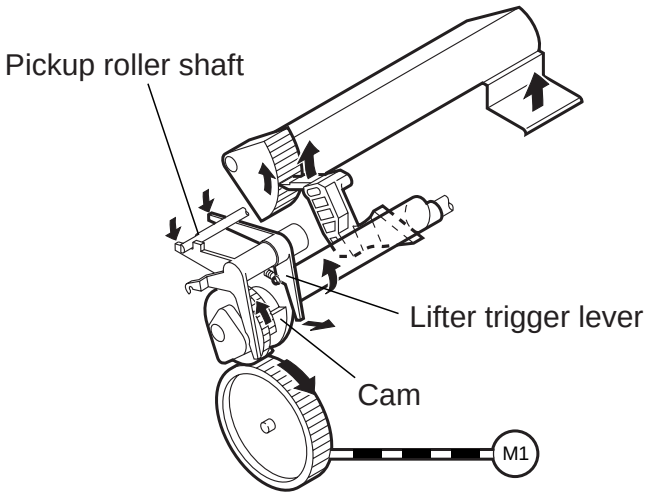
F05-308-01

2) Moving Up the Lifter

When the main power is turned on with the cassette set in the machine or the cassette is slid in while the machine is in standby state, the pickup roller shaft moves down to push down the lifter trigger lever.

The cam is released when the pickup roller shaft pushes one side of the lifter trigger lever, and the drive from the main motor (M1) move sup the lifter.

When the pickup roller remaining in contact with the paper surface moves up to a specific height, the movement of the levers cause the pickup roller shaft to return to the uppermost position to end the upward movement of the lifter.



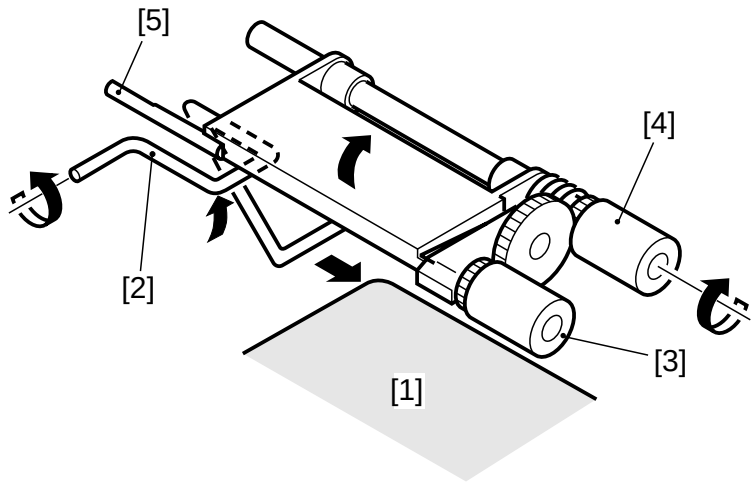
F05-308-02

3.8.2 Moving Up the Pickup Roller Shaft and Releasing the Separation Roller Pressure (cassette slid out)

When the cassette is slid out of the machine, the pickup roller shaft is mechanically moved up and the separation roller pressure is also released.

1) Moving Up the Pickup Roller Shaft and Releasing the Separation Roller Pressure

When the cassette is slid out, the lever 1 rotates by the work of a spring. When the lever 1 rotates, the pickup roller shaft moves so that the pickup roller and the cassette will not interfere with each other.

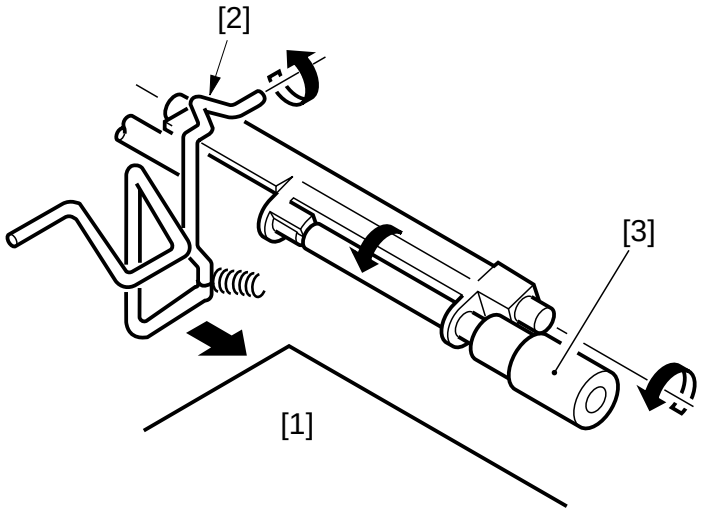


[1] Cassette
[2] Lever 1
[3] Pickup roller
[4] Feeding roller
[5] Pickup roller shaft

F05-308-03

2) Releasing the Separation Roller Pressure

The lever 1 is provided with a protrusion used to push down the separation roller assembly. When the cassette is slid out, the lever 1 rotates causing the separation roller to move down, thereby removing the pressure between the separation roller and the feeding roller.



[1] Cassette
[2] Protrusion of lever 1
[3] Separation roller

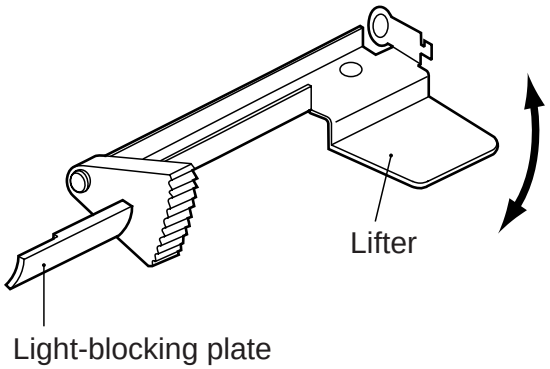
F05-308-04

b. Releasing the Lifter

The lifter is released when the cassette is slid out while the machine is in standby state.

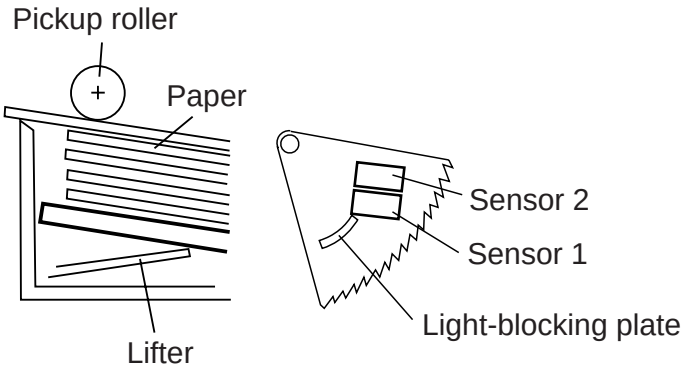
3.9 Detecting the Level of Paper

The level of paper inside the cassette is detected by the light-blocking plate of the lifter gear and a sensor in relation to the distance over which the lifter moves up. When paper starts to run out, the lifter gradually moves up; when paper fully runs out, the cassette paper sensor (Q1604 for cassette 1) identifies the condition as indicating the absence of paper.

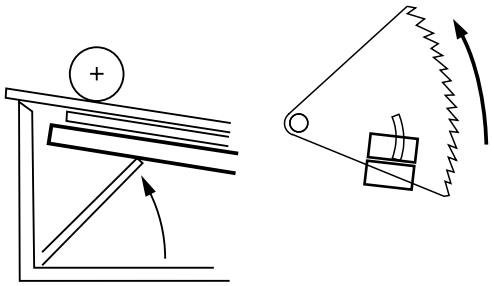


F05-309-01

If the cassette is full of paper



If the cassette is empty of paper



Note: The diagram is a view from the rear of the copying machine.

F05-309-02 Detecting the Level of Paper in the Cassette (upper cassette holder)

The amount of paper inside the cassette is indicated on the control panel in terms of four levels (including the absence of paper).

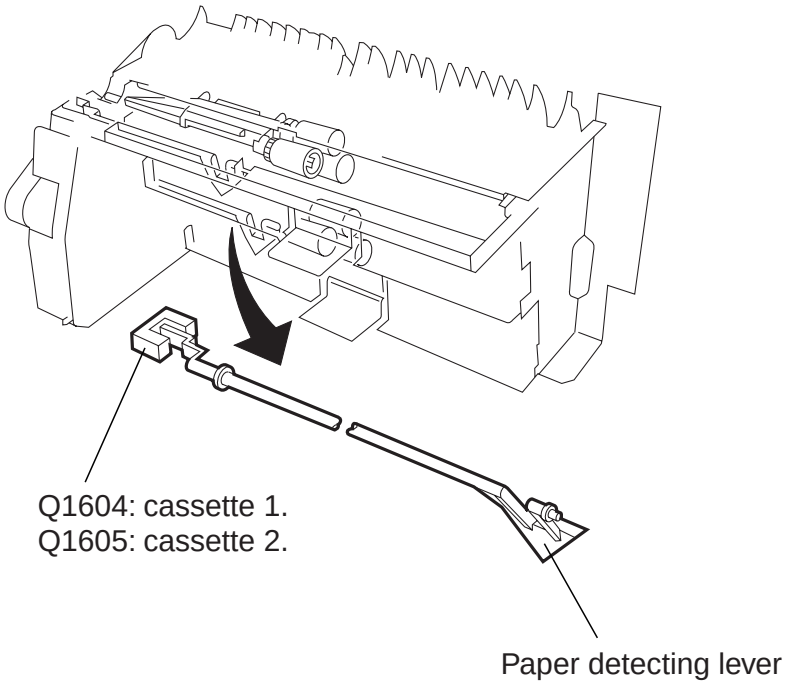
	Indication	Level	Sensor 1	Sensor 2
	3 bars	100% to about 50% of capacity	0	0
	2 bars	50% to about 10% of capacity	1	0
	1 bar	about 10% or less of capacity	1	1
	no bar	No paper	-	-

0: light-blocking plate over the sensor.
1: light-blocking plate not over the sensor.

T05-309-01

3.10 Detecting the Presence/Absence of Paper Inside the Cassette

When the cassette runs out of paper, the paper detecting lever falls through the detecting hole of the cassette, causing the light-blocking plate linked to the lever to block the light of the photointerrupter (Q1604 for cassette 1; Q1605 for cassette 2).



F05-310-01

4 Identifying the Size of Paper

The size of paper inside the cassette may be set using the dial on the cassette. The AB-setting and the Inch-setting are switched over using the switch found next to the dial.

4.1 Identifying the Size

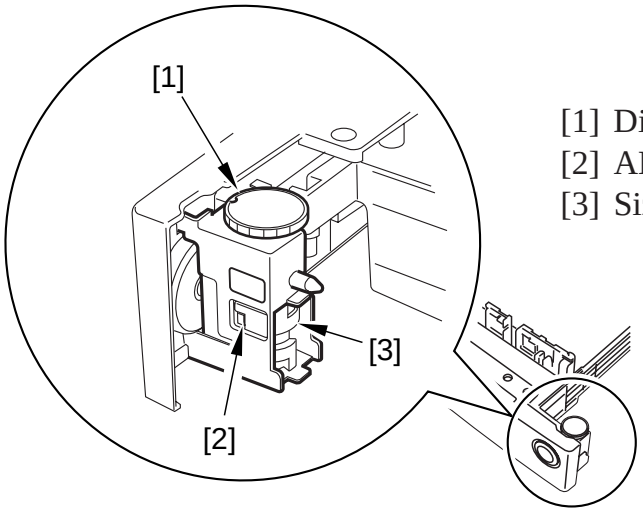
The dial on the cassette may be set to any of 16 stops.

When the dial is set to an appropriate paper size and the cassette is slid into the machine, the four cassette size detecting switches recognize the size of the paper based on the resulting combination of indentations and protrusions of the size detecting cam.

4.2 AB-/Inch-Setting Switch

The AB-setting and the Inch-setting is switched over using the switch found next to the dial.

When the cassette is slid into the machine, the cassette side detecting switch recognizes the paper configuration (AB or Inch)

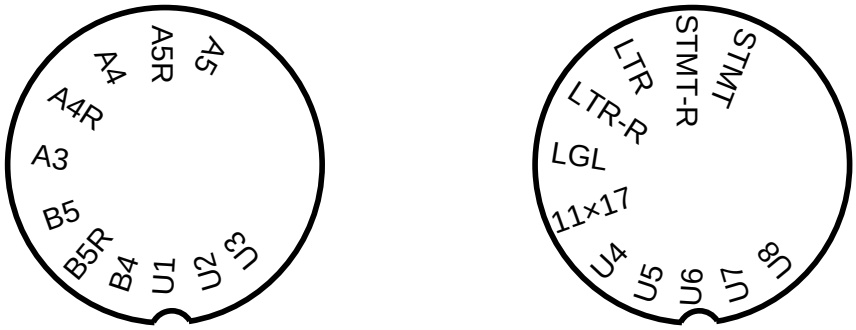


[1] Dial
[2] AB-/Inch-setting switch
[3] Size detecting cam

F05-402-01

4.3 Paper Size

The width and the length of paper are identified by the dial mounted to the cassette is set. The following diagram shows the rotary label attached to the dial, and the following table shows the paper sizes that are recognized by the machine:



A/B-setting rotary label Inch-setting rotary label

F05-403-01 Rotary Label

Note 1: U Cassette

The following are special types of paper:

U1: FOOLSCAP/OFFICIO/A-OFFICIO/E-OFFICIO/B-OFFICIO/A-LGL

U2: FOLIO U3: A-FLS U4: G-LTR U5: G-LTR(R)

U6: G-LGL U7: X-LGL U8: K-LGL(R)

4.4 Paper Size List

(AB-setting)	Combination of states of cassette size detection switches					Main scanning	Sub scanning
Cassette name	SW1	SW2	SW3	SW4	SW5	direction (mm)	direction(mm)
No cassette	OFF	OFF	OFF	OFF	OFF	-	-
A5	OFF	ON	ON	OFF	ON	210	148
A5R	OFF	ON	ON	ON	ON	148	210
A4	OFF	ON	ON	ON	OFF	297	210
A4R	OFF	ON	OFF	ON	OFF	210	297
A3	OFF	ON	OFF	ON	ON	297	420
B5	OFF	ON	OFF	OFF	ON	257	182
B5R	OFF	ON	OFF	OFF	OFF	182	257
B4	OFF	ON	ON	OFF	OFF	257	364
U1 (FLSO)	OFF	OFF	ON	OFF	OFF	216	330
U1 (OFICIO)	OFF	OFF	ON	OFF	OFF	216	317
U1 (A-OFI)	OFF	OFF	ON	OFF	OFF	220	340
U1 (E-OFI)	OFF	OFF	ON	OFF	OFF	220	320
U1 (B-OFI)	OFF	OFF	ON	OFF	OFF	216	355
U1 (A-LGL)	OFF	OFF	ON	OFF	OFF	220	340
U2 (FOLIO)	OFF	OFF	ON	OFF	ON	210	330
U3 (A-FLS)	OFF	OFF	ON	ON	ON	206	337

(Inch-setting)	Combination of states of cassette size detection switches					Main scanning	Sub scanning
Cassette name	SW1	SW2	SW3	SW4	SW5	direction (mm)	direction(mm)
No cassette	OFF	OFF	OFF	OFF	OFF	-	-
STMT	ON	ON	ON	OFF	ON	216	140
STMTR	ON	ON	ON	ON	ON	140	216
LTR	ON	ON	ON	ON	OFF	279	216
(A-LTR)	ON	ON	ON	ON	OFF	280	220
LTRR	ON	ON	OFF	ON	OFF	216	279
(A-LTRR)	ON	ON	OFF	ON	OFF	220	280
LGL	ON	ON	OFF	ON	ON	216	356
11×17	ON	ON	OFF	OFF	ON	279	432
U4	ON	ON	OFF	OFF	OFF	267	203
U5	ON	ON	ON	OFF	OFF	203	267
U6	ON	OFF	ON	OFF	OFF	203	330
U7	ON	OFF	ON	OFF	ON	268	190
U8	ON	OFF	ON	ON	ON	190	206

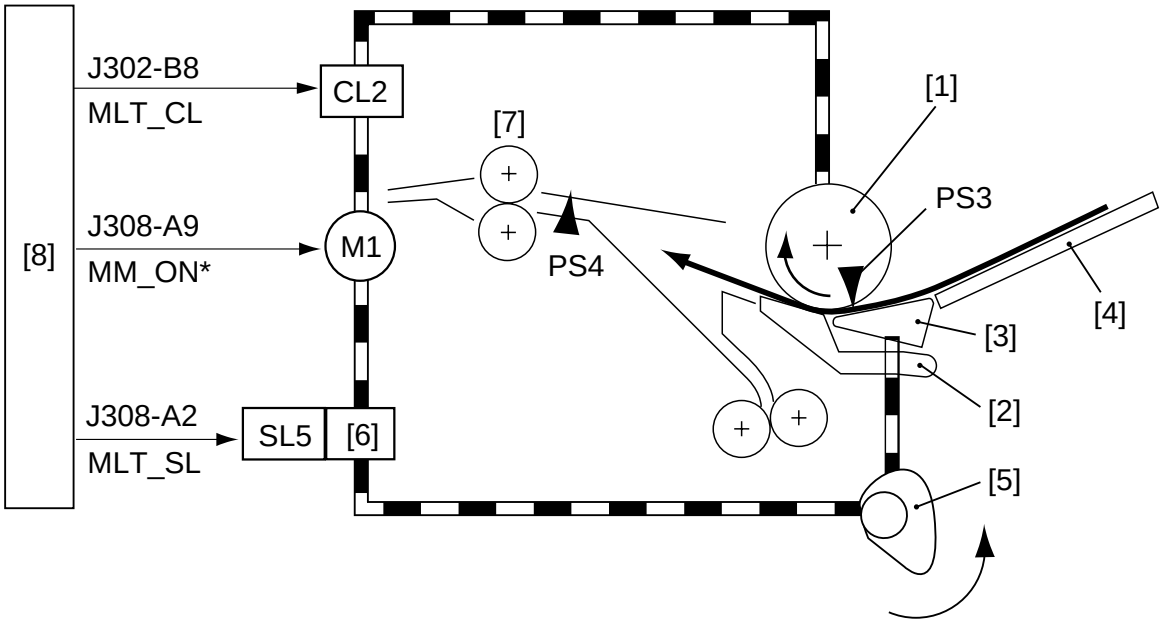
T05-403-01 List of Paper Sizes

5 Multifeeder

5.1 Outline

When the paper guide plate moves up, the paper on the multifeeder tray is butted against the pickup roller, and the pickup roller and the separation pad make sure that only one sheet of paper is picked up and fed into the machine.

1) The paper guide plate is operated by the drive of the main motor (M1) transmitted by the paper guide solenoid (SL5).
2) The pickup roller is operated by the drive of the main motor (M1) transmitted by the multifeeder clutch (CL2).



F05-501-01

Ref.	Name
[1]	Multifeeder pickup roller
[2]	Separation pad
[3]	Paper guide plate
[4]	Multifeeder tray
[5]	Drive cam
[6]	Spring cutch

Ref.	Name
[7]	Registration roller
[8]	DC controller PCB
M1	Main motor
CL2	Multifeeder clutch
SL5	Multifeeder holding plate releasing solenoid

5.2 Identifying the Size of Paper in the Multifeeder

5.2.1 Detecting the Width of Paper

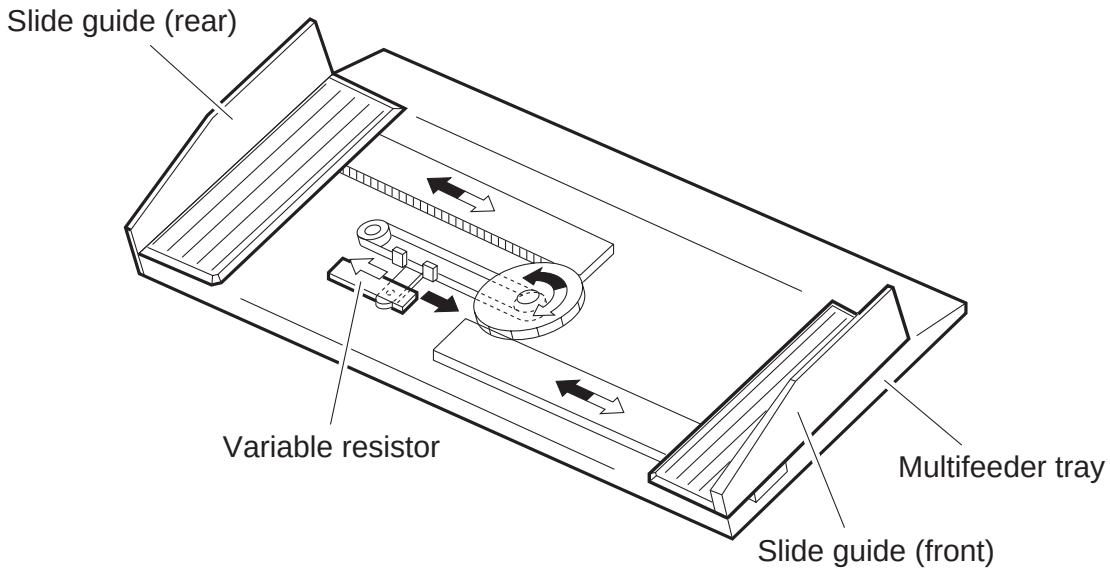
The width of paper is detected by a variable resistor operating in conjunction with the movement of the slide guide. The slide guide is set when the user adjusts the multifeeder tray to suit the paper placed on it.

5.2.2 Rear/Front Registration

The rear/front registration of the multifeeder may be adjusted by turning the screw on the slide guide.

5.2.3 Identifying the Length of Paper

The length of paper is detected with reference to the period of time during which the pre-registration paper sensor (PS10) remains ON while copies are being made. The maximum size of paper is 432 × 279 mm (11×17).



F05-602-01

COPIER>ADJUST>CST-ADJ>MF-A4R
Use it to adjust the paper width basic value of A4R paper for the manual feed tray.
COPIER>ADJUST>CSRT-ADJ>MF-A6R
Use it to adjust the paper width basic value of A6R for the manual feed tray.
COPIER>ADJUST>CST-ADJ>MF-A4
Use it to adjust the paper width basic value of A4 paper for the manual feed tray.

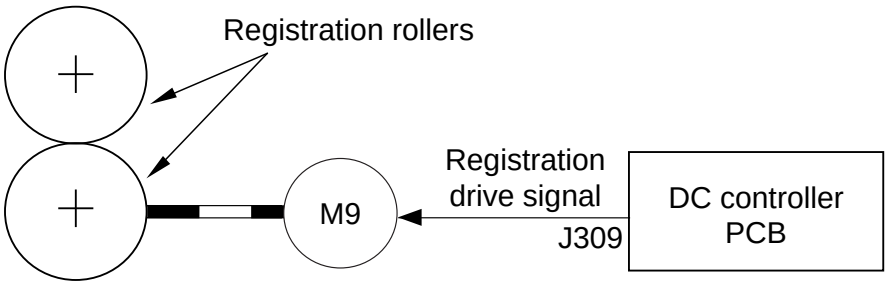
6 Controlling the Registration Roller

6.1 Outline

The registration roller is driven by the registration motor (M9) so that the paper and the image on the photosensitive drum will match at a specific point.

The timing at which the registration roller rotates may be adjusted in service mode (ADJUST>FEED-ADJ>REGIST).

6.2 Control System



F05-602-01

COPIER>ADJUST>FEED-ADJ>REGIST
Use it to adjust the timing at which the registration roller is started.

7 Double-Sided Printing

7.1 Through-Path Operation

In this sequence of operations, paper after fixing is fed to the delivery assembly and then to the duplex feeding assembly using the reversing flapper. the machine re-arranges the order of images in its memory for printing.

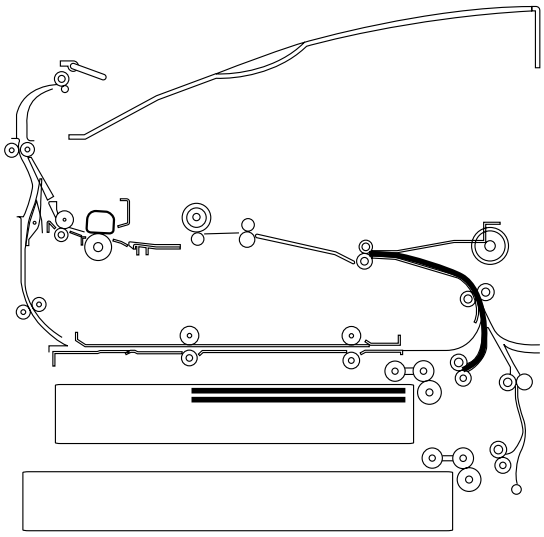
As many as two sheets may exist at a time between the registration sensor and the duplex paper sensor.

COPIER>ADJUST>FEED-ADJ>ADJ-REFE
Use it to adjust the image write start position in main scanning direction for re-pickup. (-100 to 100 mm)

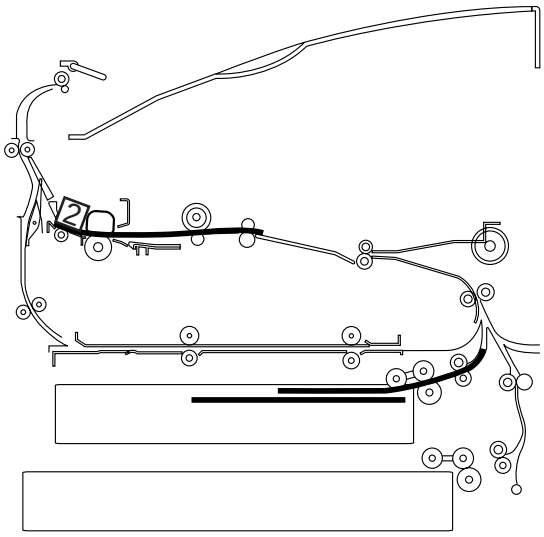
7.2 Outline of Operations

For instance, through-path operations take place as follows when one set of double-sided prints are made of six originals:

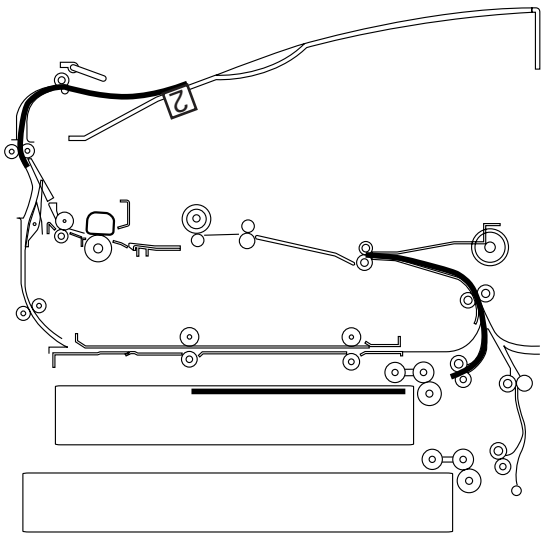
1) The 1st sheet is picked up from the cassette.



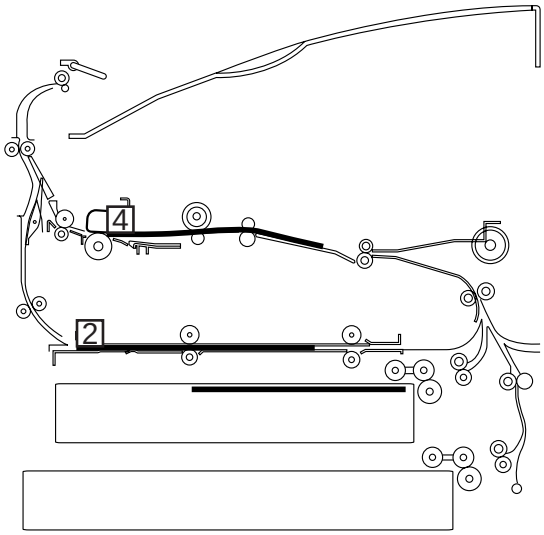
2) The 2nd side is printed on the 1st sheet.



3) The 1st sheet is switched back in the delivery assembly, and is then sent to the duplex feeding assembly.

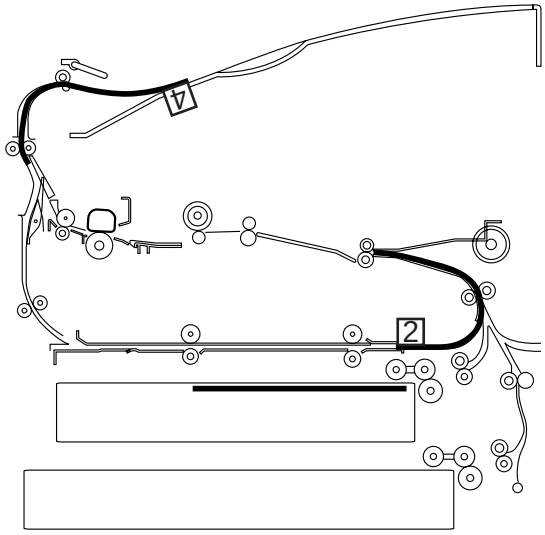


4) The 2nd sheet is picked up, and the 4th side is printed.

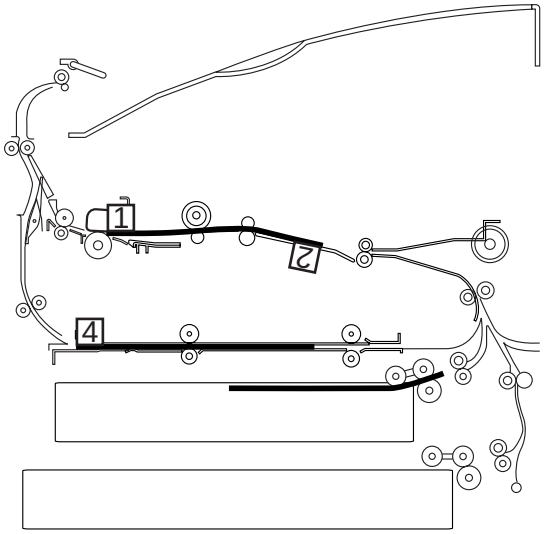


F05-703-01

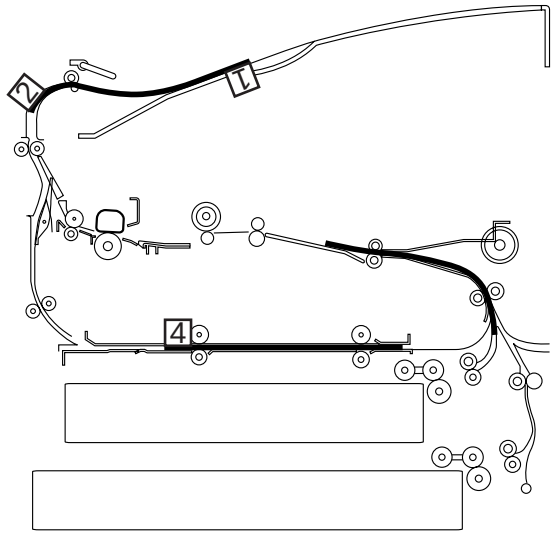
5) The 2nd sheet is switched back in the delivery assembly, and is then sent to the duplex feeding assembly.



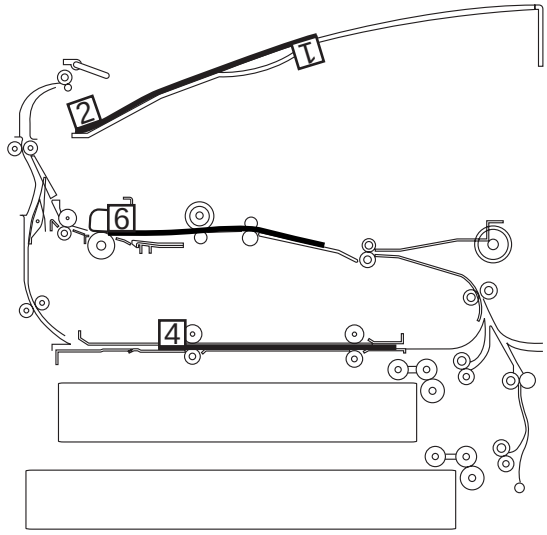
6) The 1st side is printed on the back of the 1st sheet.



7) The 1st sheet is delivered.The 2nd sheet is in the duplex feeding assembly.



8) The 3rd sheet is picked up, and the 6th side is printed. After this operation, a series of processes are repeated.



F05-703-02

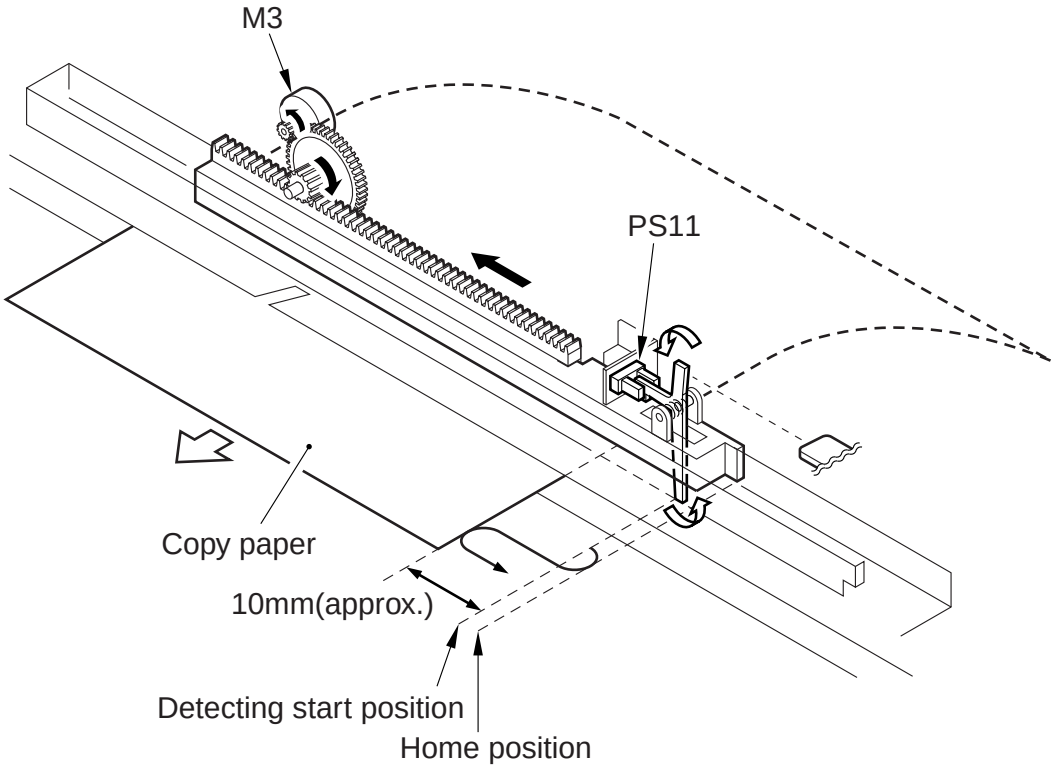
7.3 Detecting the Horizontal Registration Position

7.3.1 Outline

- In duplex printing, paper coming from the duplex feeding assembly is checked for horizontal registration, and the detected displacement in rear/front direction is made up for by adjusting the point of laser exposure.

Paper position:	by duplex horizontal registration sensor (PS11)
Timing of detection:	after duplex paper sensor (PS10) goes ON
Drive:	by duplex horizontal registration motor (M3)
Position:	by pulse from duplex horizontal registration motor (1 pulse = about 0.16 mm)
Related service mode:	COPIER>ADJUST>FEED-ADJ>ADJ-REFE
Related error code:	E051 (home position not detected within specific time)

T05-703-01



F05-703-01

7.3.2 Operation

1) Timing of Detecting Home Position

When the main power switch is turned on, During jam recovery, When the front cover is closed

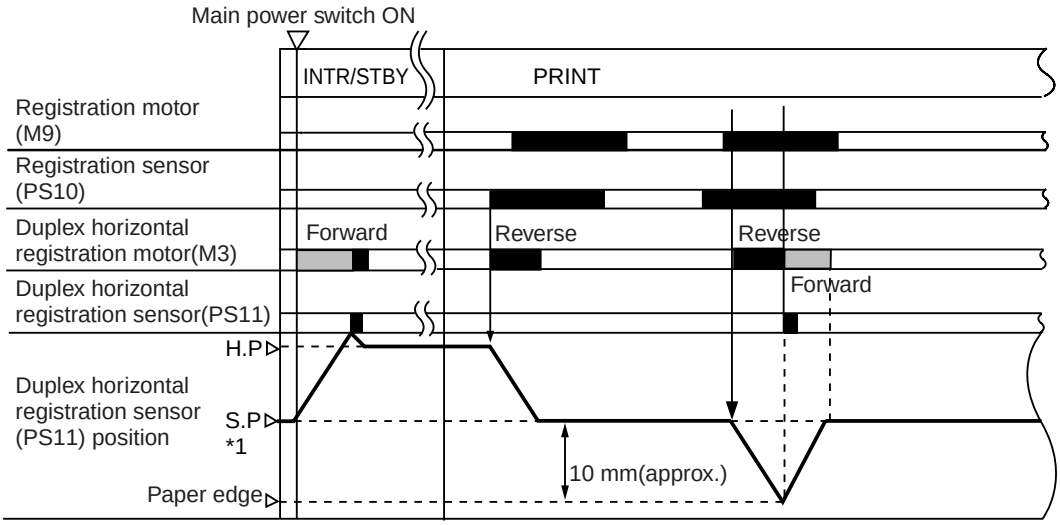
2) Start Position

The detection start position is set at a point about 10 mm from the edge of paper whose movement is ideal with reference to the data on the paper width collected from the slide guide on the manual feed tray and the cassette size when the registration sensor goes ON.

3) Detectiong operation

When paper fed to the duplex feeding assembly reaches the registration roller, the horizontal registration motor (M3) goes ON, and the duplex horizontal registration sensor (PS11) starts paper edge detection. The detection takes place for each time a double-sided print is made.

The detection of paper position is done with reference to the start position, and the displacement from the actual paper position is identified with reference to the drive pulses from the motor (1 pulse = about 0.16 mm).



*1: the position of the edge of paper differs depending on the size of paper, hence different SP.

HP: start position of the duplex horizontal sensor.

SP: detection start position of the duplex horizontal registration sensor.

F05-703-02

8 Controlling the Pickup Assembly Motor

8.1 Pickup Assembly Motor

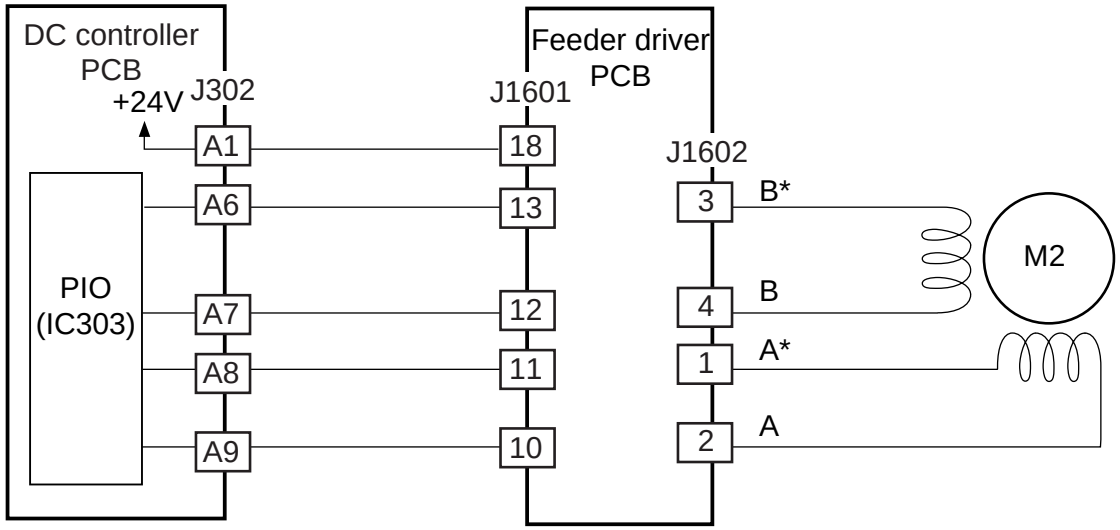
The pickup assembly motor system consists of six stepping motors of 2-phase magnetic excitation type.

Each motor is supplied with power by the motor driver PCB, and is turned on/off and rotated clockwise or counterclockwise by pulse signals from the DC controller PCB.

T05-801-01 shows the motors used in the pickup assembly and F05-801-01 shows a block diagram of the control circuit for the cassette 1/2 pickup motor:

Location	Motor name	Notation	Error detection
Pickup system	Cassette 1/2 pickup motor	(M2)	Jam occurred
Vertical path system	Duplex motor	(M6)	Jam occurred
Duplex system	Duplex registration motor	(M3)	E051
Others	Registration moter	(M9)	Jam occurred
	Delivery moter	(M5)	Jam occurred

T05-801-01



F05-801-01

9 Disassembly and Assembly

The discussions that follow cover the machine's mechanical characteristics and how to disassemble/assemble the machine. Keep the following in mind whenever you work with the machine:

1. ⚠The power plug must remain disconnected for safety when disassembling/assembling the machine.

2. Unless otherwise noted, the machine may be assembled by reversing the steps used to disassemble it.

3. The screws must be identified by type (length, diameter) and location.

4. The mounting screws used for the grounding wire and the varistors come with a washer, which must not be left out when assembling the machine.

5. As a rule, the machine must not be operated with any of its parts removed.

6. The door switch or the main power switch must be turned off whenever the duplex unit or the fixing/feeding unit must be slid out.

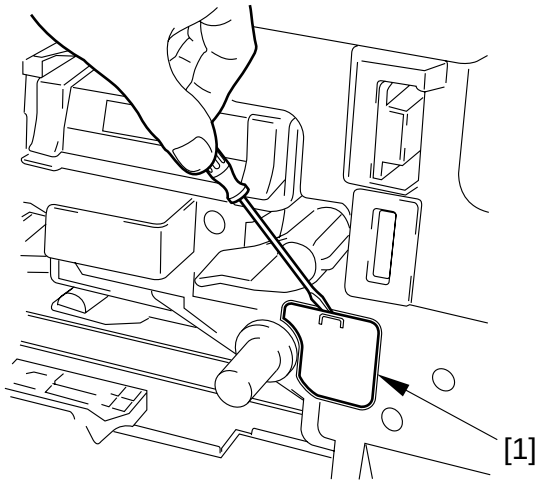
7. ⚠The toner must not be disposed of into fire to avid explosion.

8. Do not operate the machine without locking the feeding assembly in place to avoid damage.

9.1 Pickup Assembly

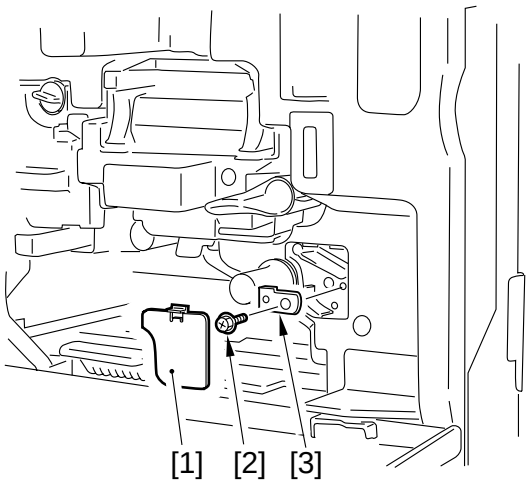
9.1.1 Removing the Pickup Assembly

1) Remove the cassette 1/2.
2) Remove the multifeeder tray. (p. 5-42P)
3) Remove the pickup cover. (p. 5-43P)
4) Remove the right lower cover.
5) Fit a flat-bladed screwdriver, and remove the paper lint cleaning cover [1].



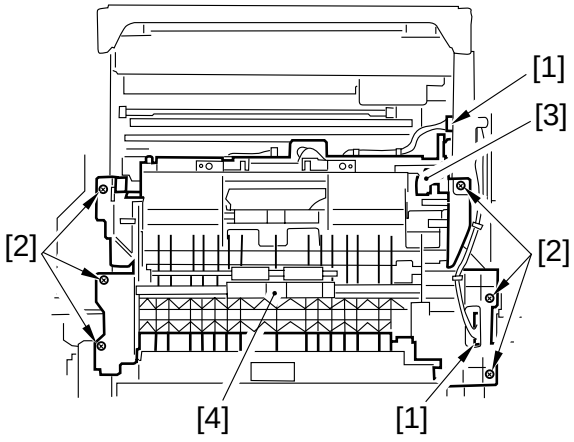
F05-901-01

6) Remove the screw [2], and detach the positioning pin [3].



F05-901-02

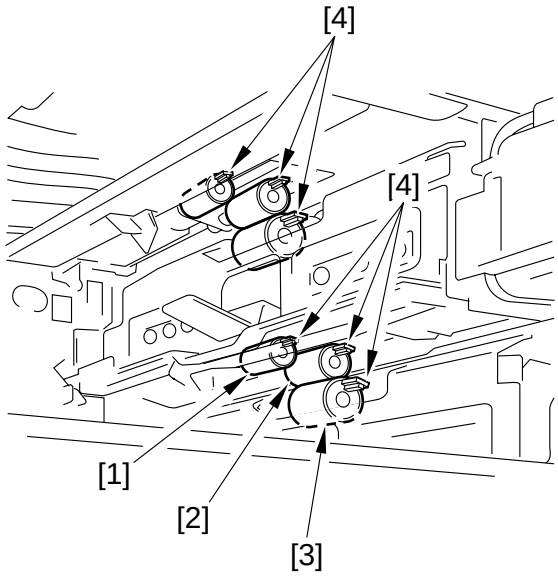
7) Disconnect the two connectors [1].
8) Remove the seven screws [2], and remove the screw [3] from the right rear; then, detach the pickup assembly [4].



F05-901-03

9.1.2 Removing the Pickup/Feeding/Separation Rollers

1) Remove the cassette 1/2.
2) Pick the tab [4] of each, and detach the pickup roller [1], feeding roller [2], and separation roller [3] in the axial direction.



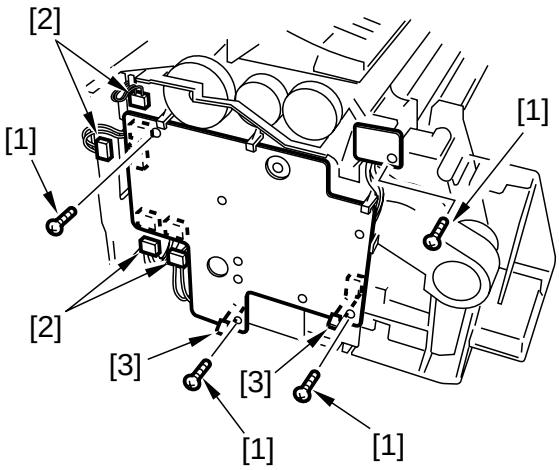
F05-901-04

When removing the roller, take care not to soil it with the grease used on the rail assembly.

When mounting the roller, be sure to fit it until a click is heard.

9.1.3 Removing the Pickup Solenoid

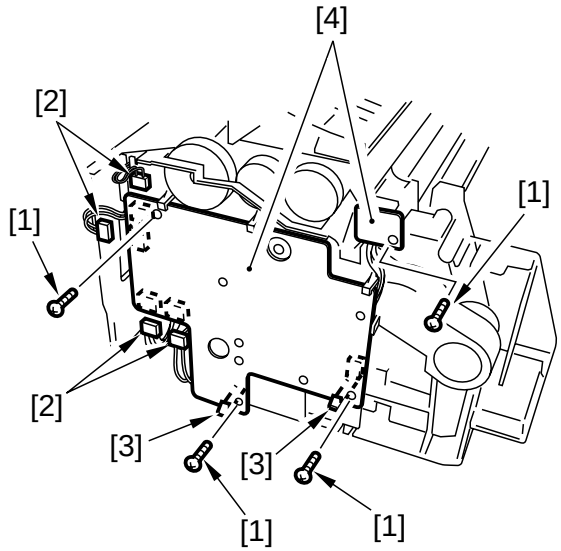
1) Remove the pickup assembly. (p. 5-37P)
2) Disconnect the connector [1].
3) Remove the screw [2], and detach pickup solenoid [3].



F05-901-05

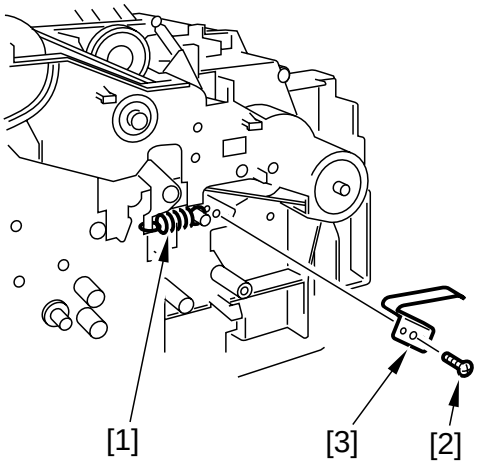
9.1.4 Removing the Frame Lid

1) Remove the pickup solenoid. (p. 5-38P)
2) Remove the four screws [1], and disconnect the four connectors [2].
3) While spreading the two claws [3], detach the pickup PCB [4].



F05-901-06

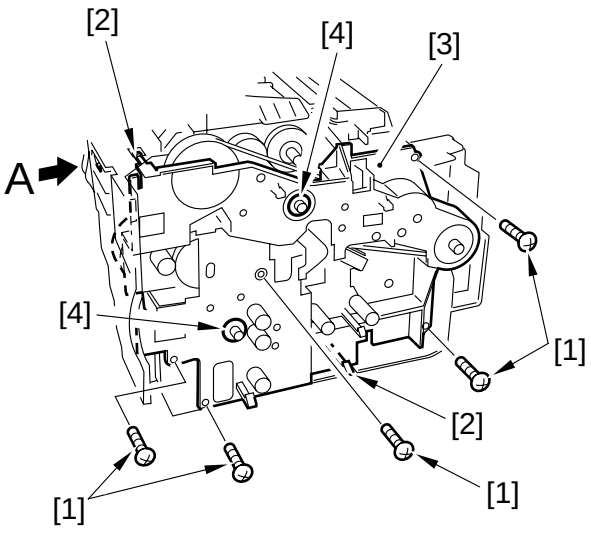
4) Remove the coil spring [1].
5) Remove the screw [2], and detach the leaf spring [3].



F05-901-07

6) Remove the five screws [1]; then, while freeing the two claws [2], detach the frame lid [3].

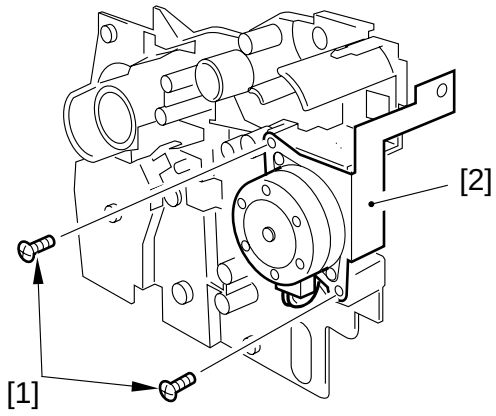
When mounting, detach the two bushings [4] from the frame lid [3]; fix the frame lid using the claw [2]; mount back the bushings; then, check to see if the harness is routed correctly by looking through the opening in area A.



F05-901-08

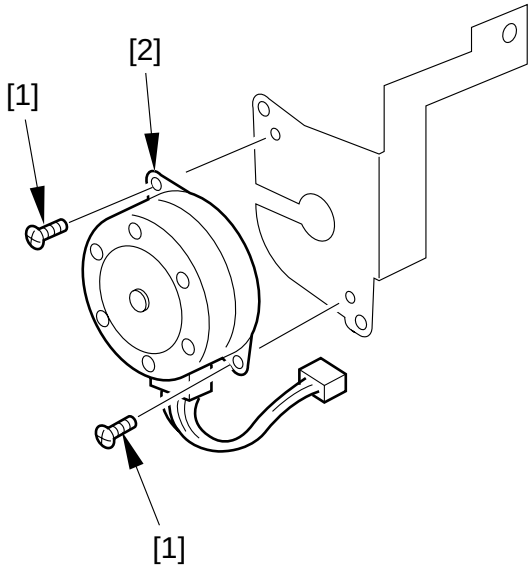
9.1.5 Removing the Pickup Motor

1) Remove the frame lid. (p.5-39P)
2) Remove the two screws [1], and detach the pickup unit [2].



F05-901-09

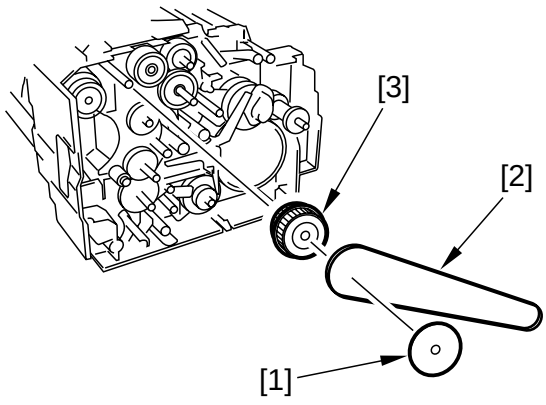
3) Remove the two screws [1], and detach the pickup motor [2].



F05-901-10

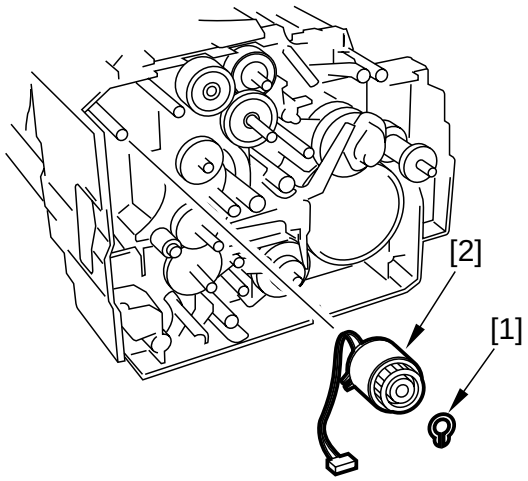
9.1.6 Remove the Vertical Path Cultch

1) Remove the frame lid. (p. 5-39P)
2) Remove the flange [1], belt [2], and gear [3].



F05-901-11

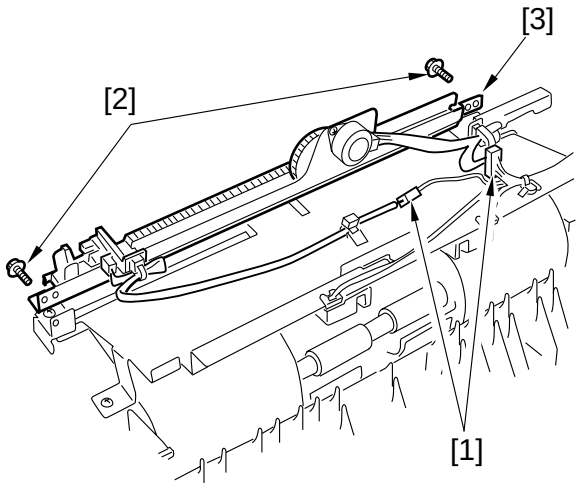
3) Remove the grip ring [1], and detach the vertical path clutch [2].



F05-901-12

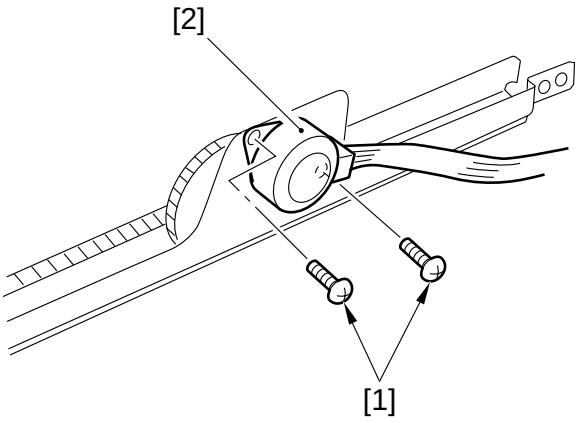
9.1.7 Removing the Horizontal Registration Sensor Shift Motor

1) Remove the pickup assembly. (p. 5-37P)
2) Disconnect the two connectors [1].
3) Remove the two screws [2], and detach the horizontal registration unit. [3].



F05-901-13

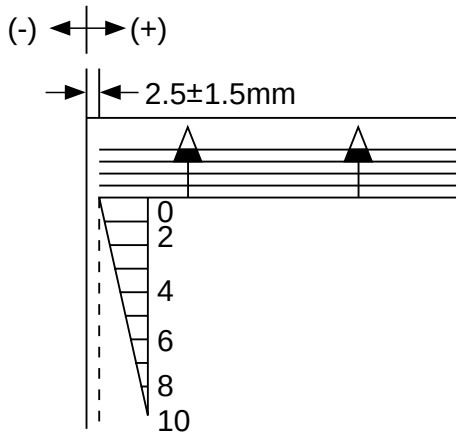
4) Remove the two screws [1], and detach the horizontal registration sensor shift motor [2].



F05-901-14

9.1.8 Checking the Image Rear Front Position

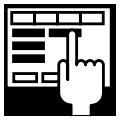
Make copies in Direct, and check to make sure that the margin along the image front is 2.5 ± 1.5 mm for all sheets from all sources of paper. Otherwise, adjust the registration. (See item 9.1.9.)



F05-901-15

9.1.9 Adjusting the Cassette Rear Front Registration

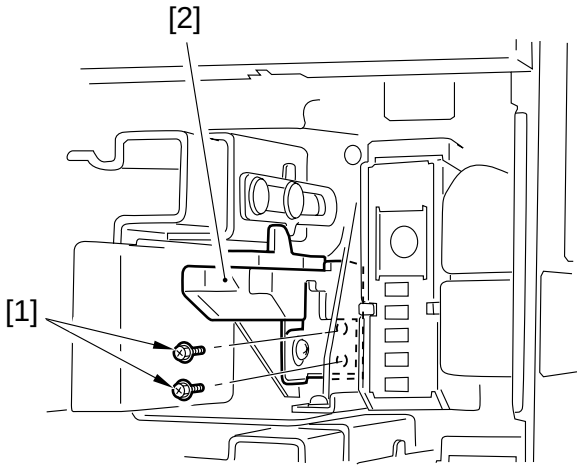
Execute 'image read start position adjustment' in service mode.



COPIER>FUNCTION>C1-ADJ-Y/C2-ADJ-Y/C3-ADJ-Y/C4-ADJ-Y
Use it to adjust the image read start position.

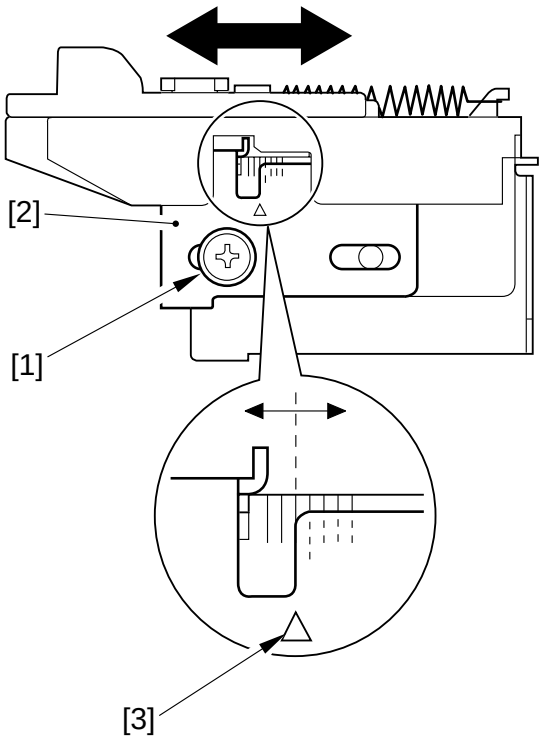
If correction in service mode fails, make the following adjustments.

1) Remove the cassette.
2) Remove the two screws [1], and detach the horizontal registration base assembly [2].



F05-901-16

3) Loosen the screw [1], and adjust the horizontal registration plate [2].
When making adjustments, try to match the arrow [3] against the index (each graduation being about 1 mm).

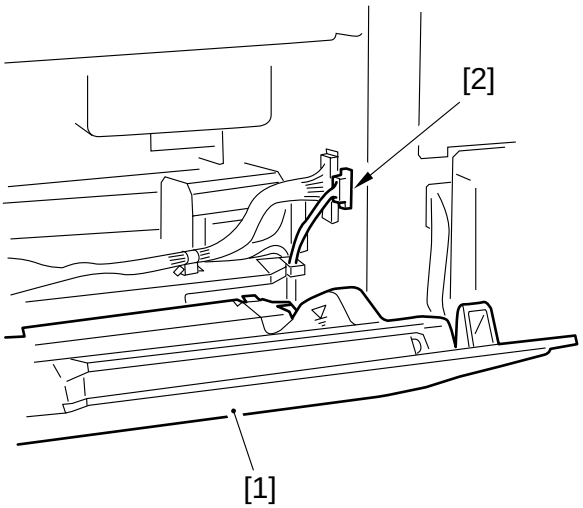


F05-901-17

9.2 Multifeeder Tray Assembly

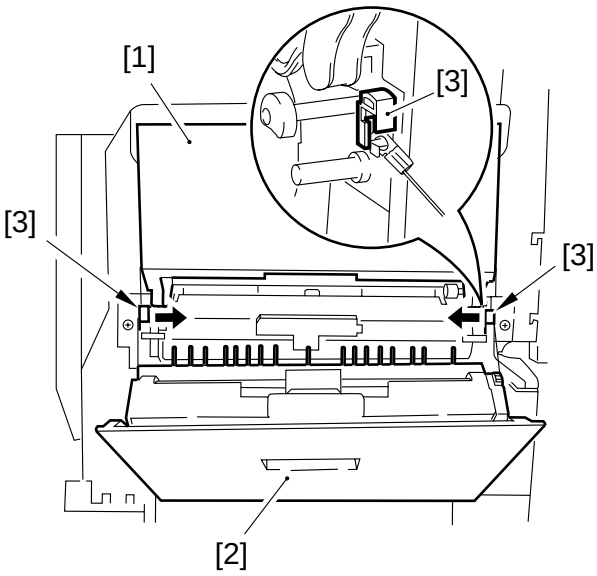
9.2.1 Removing the Multifeeder Tray Assembly

1) Open the multifeeder tray [1], and remove the following: delivery tray (2 screws), right front cover (2 screws), right rear cover (5 screws), right inside cover (2 screws).
2) Disconnect the connector [2].



F05-902-01

3) Close the multifeeder tray [1], and open the pickup cover [2]; then, detach the member [3] on the left and the right. (At this time, the multifeeder tray is not locked in place; work while supporting it with your hand.)

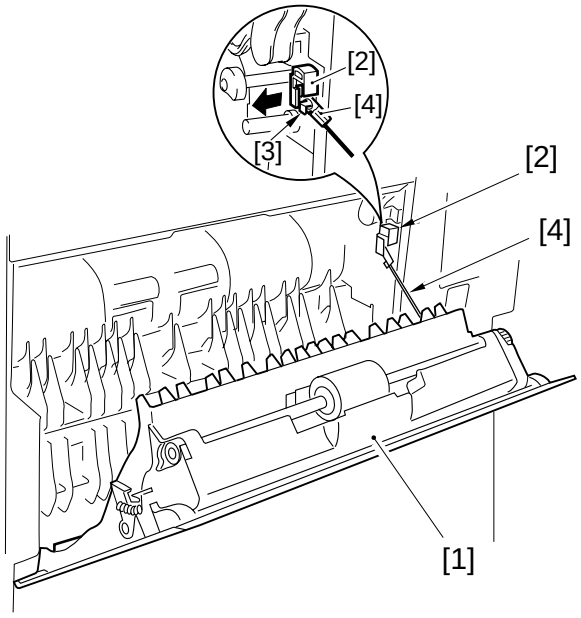


F05-902-02

4) Open the multifeeder tray once again, and detach it to the right.

9.2.2 Removing the Pickup Cover

1) Open the pickup cover [1].
2) Remove the member [2] from the rear.
3) Free the cable [4] from the hook [3].
4) Remove the pickup cover [1].

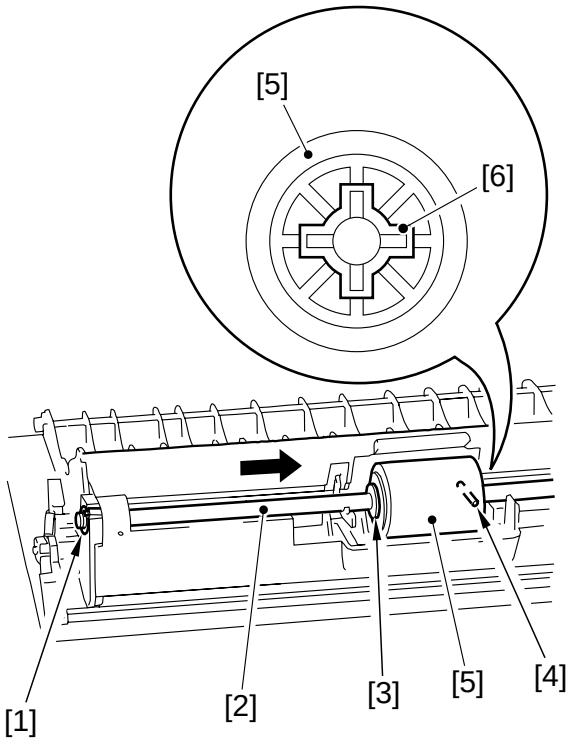


F05-902-03

9.2.3 Removing the Multifeeder Tray Pickup Roller

1) Remove the pickup cover. (See item 9.2.2.)
2) Remove the snap-on bushing [1].
3) While taking care not to deform the grounding plate at the rear of the roller shaft [2], shift the roller shaft [2] in the direction of the arrow.
4) Remove the stop ring [3], and detach the multifeeder tray pickup roller [5] while taking care not to drop the parallel pin [4] at the rear.

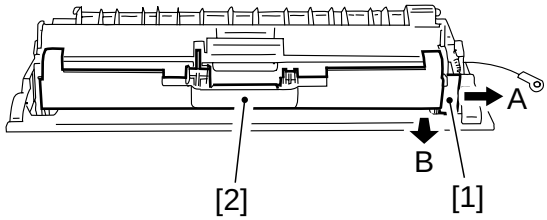
When mounting, be sure that the pin notch (cross-shaped) in the collar [6] of the multifeeder tray pickup roller [5] is toward the rear.



F05-902-04

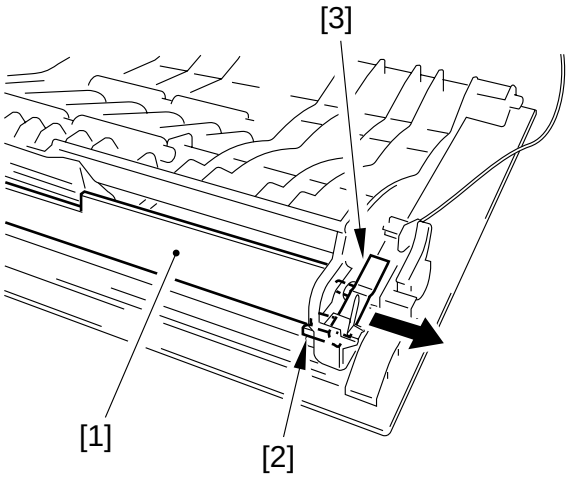
9.2.4 Removing the Separation Pad

1) Remove the multifeeder tray pickup roller. (p. 5-45P)
2) While butting the end [1] of the pickup cover in the direction of A, pull the rear of the separation pad over [2] in the direction of B to detach.



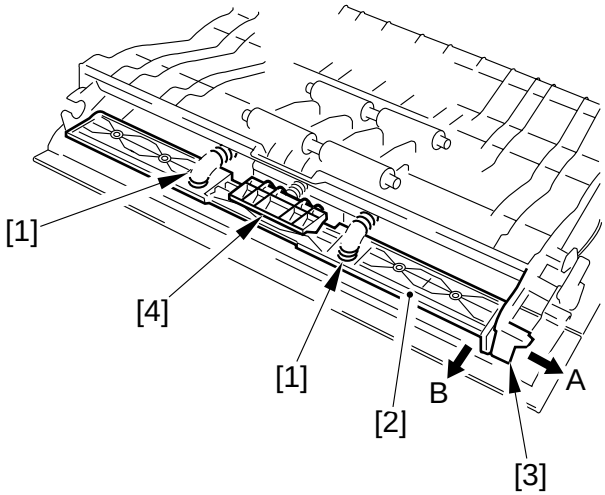
F05-902-05

3) While holding down the multifeeder intermediate retaining plate [1] so that it will not open, remove the lever claw assembly [2] and detach the lever [3].



F05-902-06

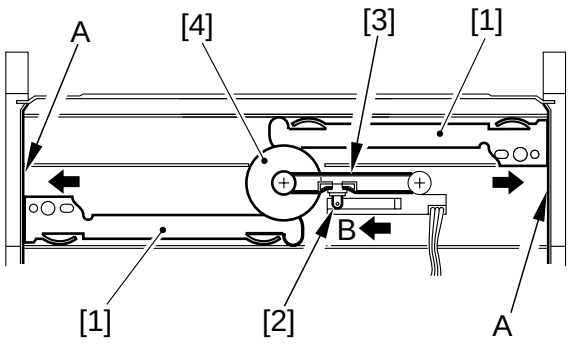
4) Open the multifeeder intermediate retaining plate [2] so that the two springs [1] will not spring out.
5) Remove the two springs [1].
6) While pushing the end [3] of the pickup cover in the direction of A, pull the multifeeder intermediate retaining plate [2] in the direction of B to detach.
7) Remove the separation pad [4].



F05-902-07

9.2.5 Attaching the Timing Belt of the Multifeeder Tray

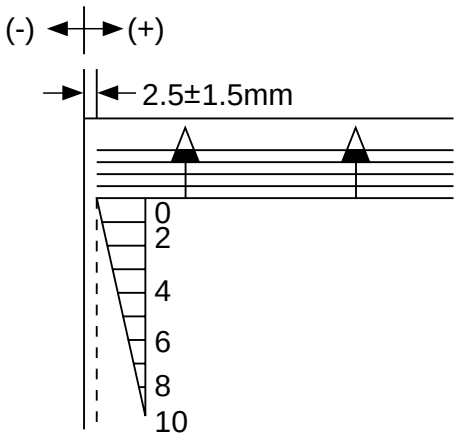
1) Butt the two rack plates [1] of the multifeeder tray against both ends (area A).
2) Move the slide volume [2] in the direction of B, and attach the timing belt [3] to the pulley [4].



F05-902-08

9.2.6 Checking the Image Rear Front Position

Make copies (from the Multifeeder Tray) in Direct, and check to make sure that the margin along the image front is 2.5 ± 1.5 mm. Otherwise, adjust the registration. (See item 9.2.7)



F05-902-09

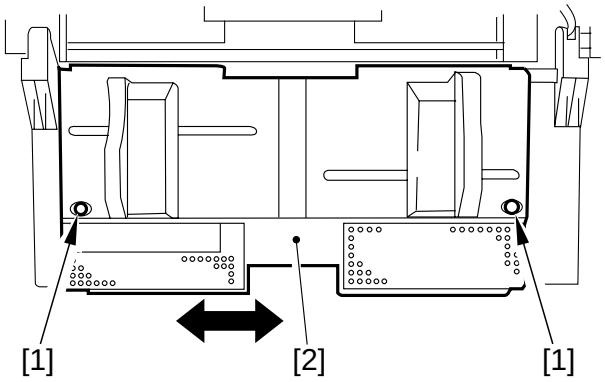
9.2.7 Adjusting the Registration for the Multifeeder Rear Front

Execute ‘image read start position adjustment’ in service mode.

COPIER>FUNCTION>MF-ADJ-Y
Use it to adjust the image read start position.

If correction in service mode fails, make the following adjustments.

1) Open the multifeeder tray.
2) Loosen the two screws [1], and move the side guide plate unit [2] back and forth to adjust.

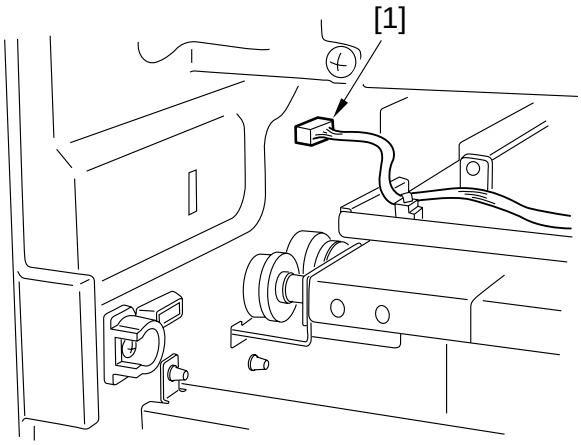


F05-902-10

9.3 Feeding Assembly

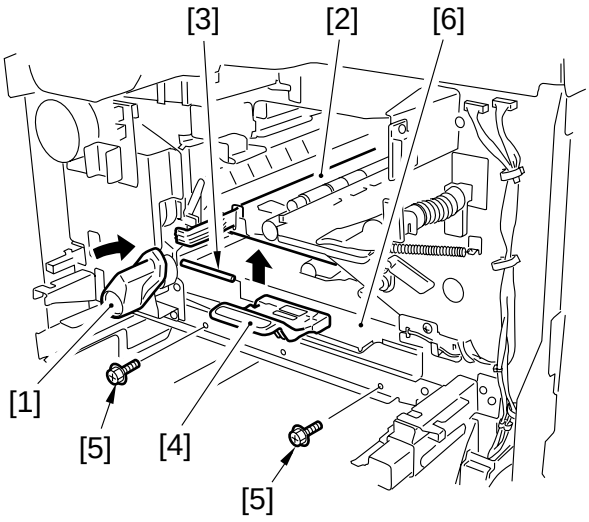
9.3.1 Removing the Feeding Assembly

1) Remove the cassette 1/2.
2) Remove the pickup assembly. (p. 5-37P)
3) Remove the delivery cover. (p. 6-12P)
4) Disconnect the concoctor [1] of the lower feeding assembly from the left.



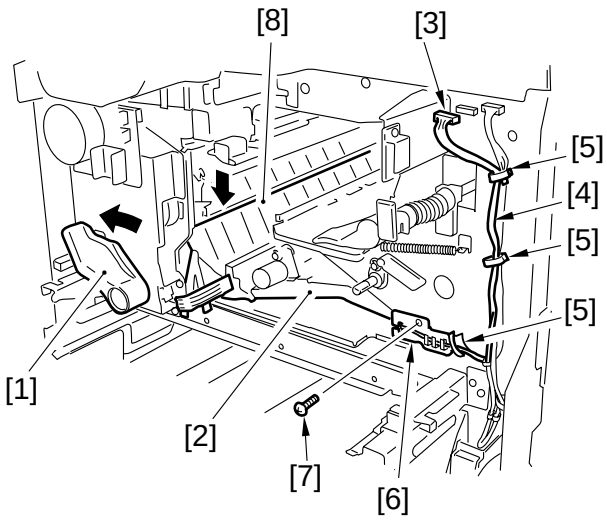
F05-903-01

5) Remove the inside cover. (p. 7-14P)
6) Mount the feeding locking lever [1] temporarily, and lock the feeding assembly [2] in place.
7) Remove the pin [3], and detach the duplex grip [4].
8) Remove the two screws [5], and detach the lower feeding assembly [6] from below.



F05-903-02

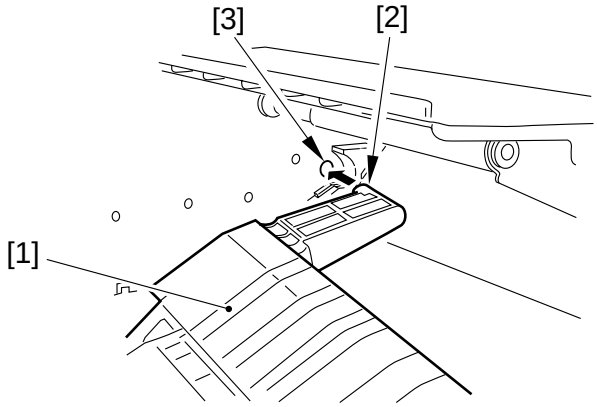
9) Turn the feeding locking lever [1] to release the feeding assembly [2].
10) Disconnect the connector [3], and detach the sensor cable [4] from the three wire saddles [5] and the hinge [6].
11) Remove the screw [7], and detach the hinge pin [6].
12) While taking care not to trip them on the flapper [8] and the like, detach the feeding assembly [2] to the front.



F05-903-03

9.3.2 Mounting the Feeding Assembly

1) Fit the hinge [2] of the feeding assembly in the hinge hole [3] in the frame (rear) of the host machine.



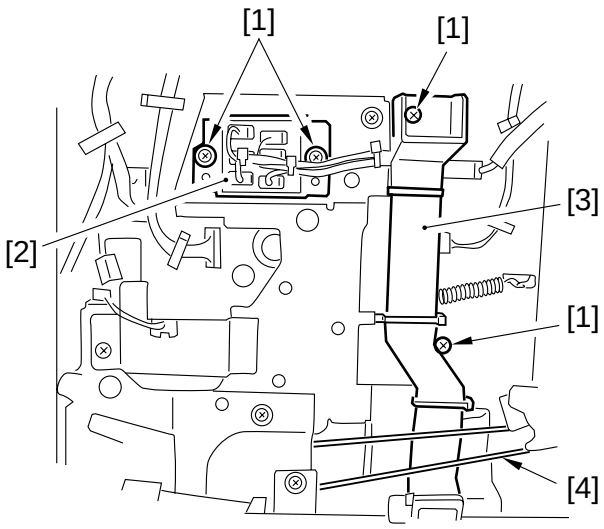
F05-903-04

9.4 Registration Roller Assembly

9.4.1 Removing the Registration Roller

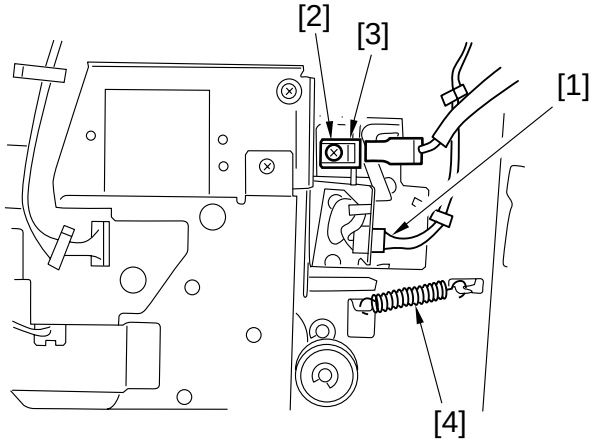
1) Remove the front inside cover (6 screws).
2) Remove the controller box unit. (p. 7-19P)
3) Remove the two screws [1] each (front, rear), and detach the front cover switch [2] and the harness guide [3].

Take care not to damage the belt [4].



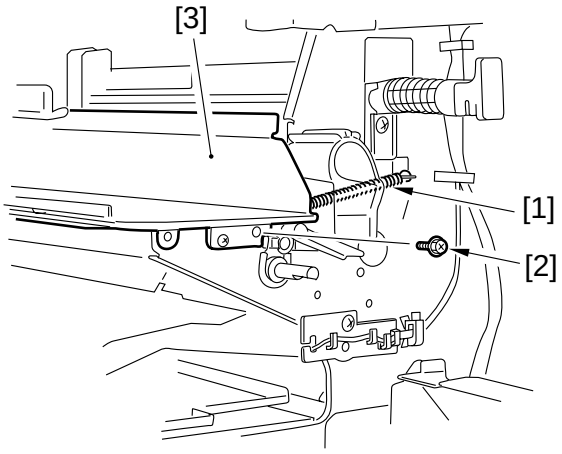
F05-904-01

4) Disconnect the connector [1].
5) Remove the screws [2], and detach the terminal [3].
6) Remove the spring [4].



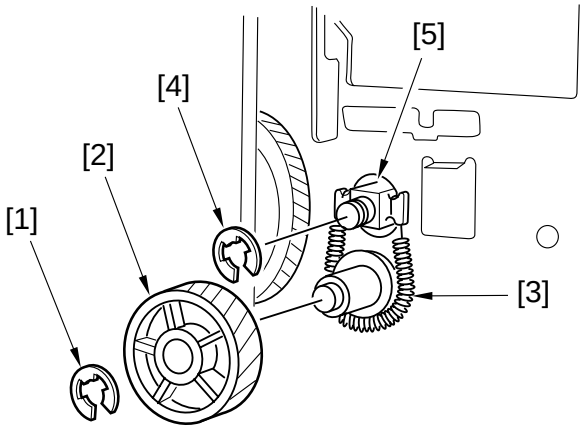
F05-904-02

7) Remove the spring [1] from the front.
8) Remove the stepped screw [2], and detach the developing assembly base [3].



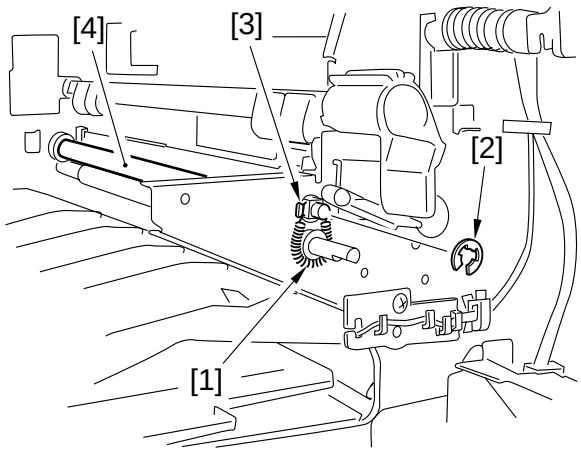
F05-904-03

9) Remove the E-ring [1] at the rear, and detach the gear [2]
10) Remove the spring [3].
11) Remove the E-ring [4], and detach the bushing.



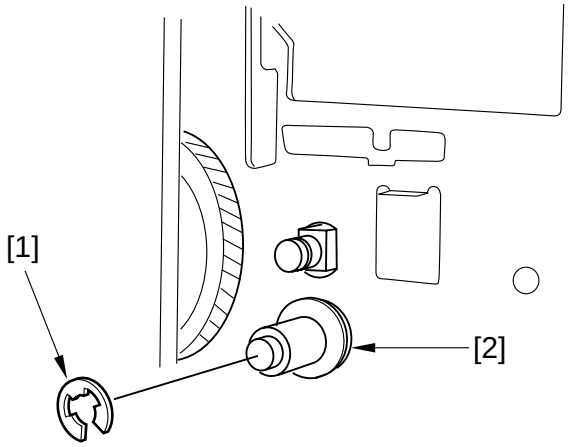
F05-904-04

12) Remove the spring [1] at the front.
13) Remove the E-ring [2], and detach the bushing [3].
14) Remove the upper registration roller [4].



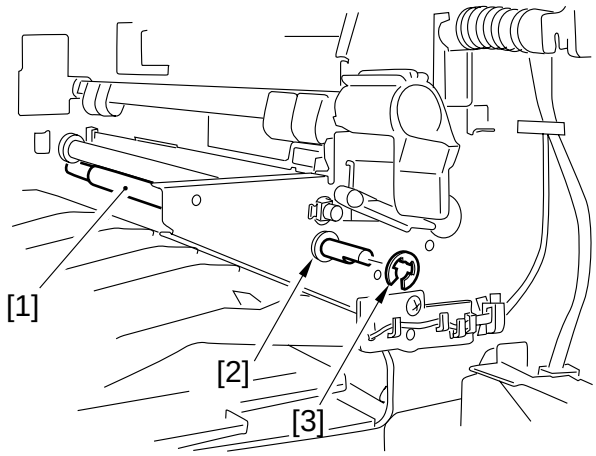
F05-904-05

15) Remove the E-ring [1] at the rear, and detach the busing [2].



F05-904-06

16) Remove the E-ring [1] at the front, and detach the bushing [2].
17) Remove the lower registration roller [3].



F05-904-07

CHAPTER 6

FIXING SYSTEM

1 Outline of Operations

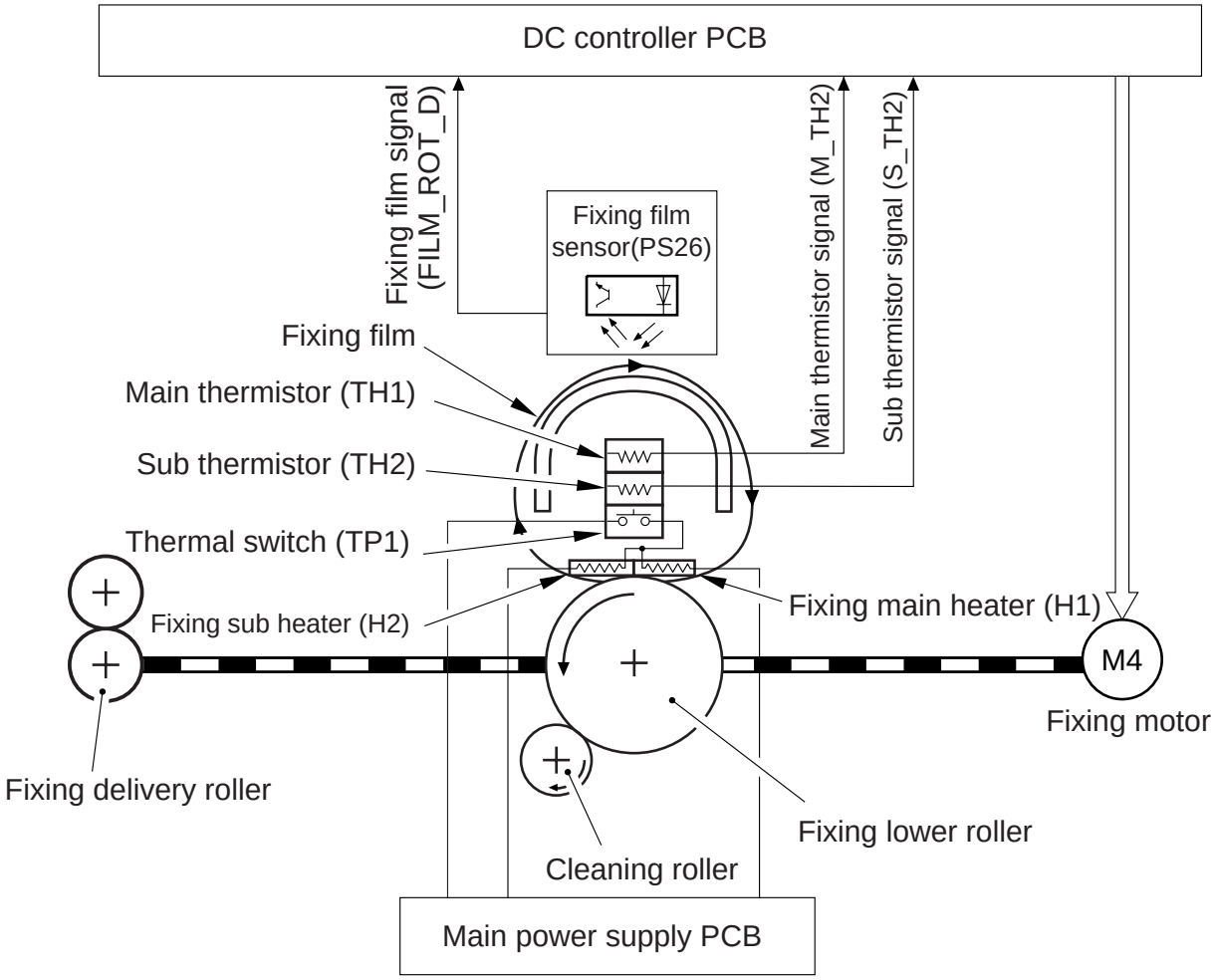
1.1 Outline

The fixing system has the following major functions:

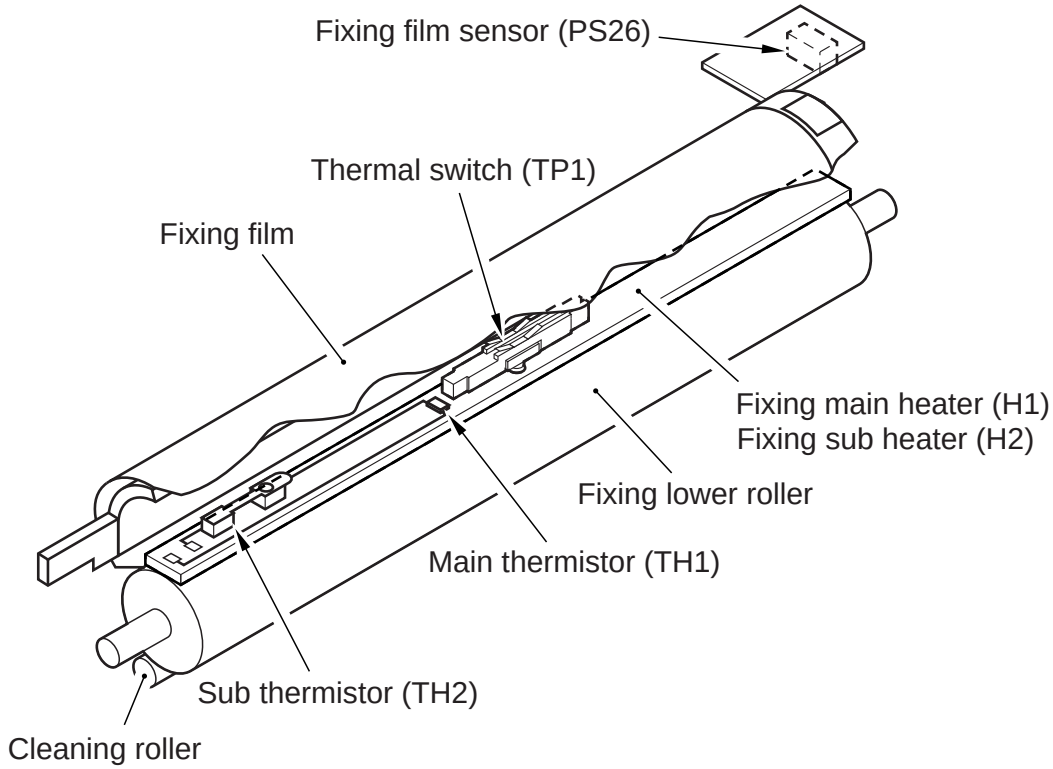
Item	Description
Method of fixing	SURF method
Fixing heater	Main heater: flat
	Sub heater: flat (integrated to main heater)
Control temperature	Varies according to selected mode
Temperature detection	[1] Main thermistor (temperature control, error detection)
	[2] Sub thermistor (error detection)
	[3] Thermal switch (error detection)
Fixing temperature control	[1] Power-on sequence
	[2] Country-specific sequence
	[3] Site temperature-specific sequence
Method of cleaning	Cleaning roller
Error detection	[1] Temperature error detection by thermistor
	[2] Overheating detection by thermal switch
Fixing film	Equipped with rotation detection mechanism

T06-101-01

The following diagram shows the major components of the fixing system:



F06-101-01



F06-101-02

Item	Notation	Description
Fixing lower roller		Pressure roller
Fixing motor	M4	24VDC
Main/sub heater	H1, H2	230V model: 637 W
		120V model: 607 W
		100V model: 621 W
Main thermistor	TH1	Temperature control, error detection
Sub thermistor	TH2	Error detection
Thermal switch	TP1	Operating temperature: 250 ± 7°C
Fixing film sensor	PS26	Rotation detection; reflection type sensor

T06-101-02

2 Fixing Drive System

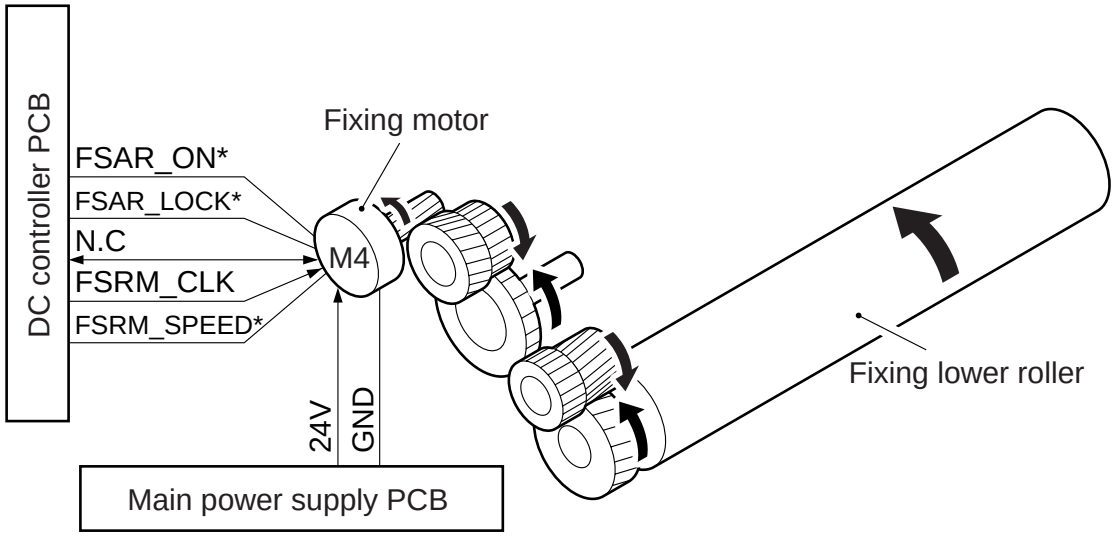
2.1 Outline

The fixing drive system involves the following control mechanisms:

1. Fixing roller drive control
2. Fixing film rotation speed detection/control

2.2 Controlling the Fixing Roller Drive

F06-202-01 shows the construction of the control system used for the fixing roller drive:



The following signals are used:

[1] Fixing motor drive signal (FSAR_ON):
when '1', the motor goes ON.

[2] Fixing motor drive lock signal (FSAR_CLK):
when the rotation of the fixing motor reaches a specific speed, '0'.

[3] Fixing motor low-speed drive signal (FSAR_SPEED):
when the rotation of the fixing motor is controlled to 1/4, '1'.

F06-202-01

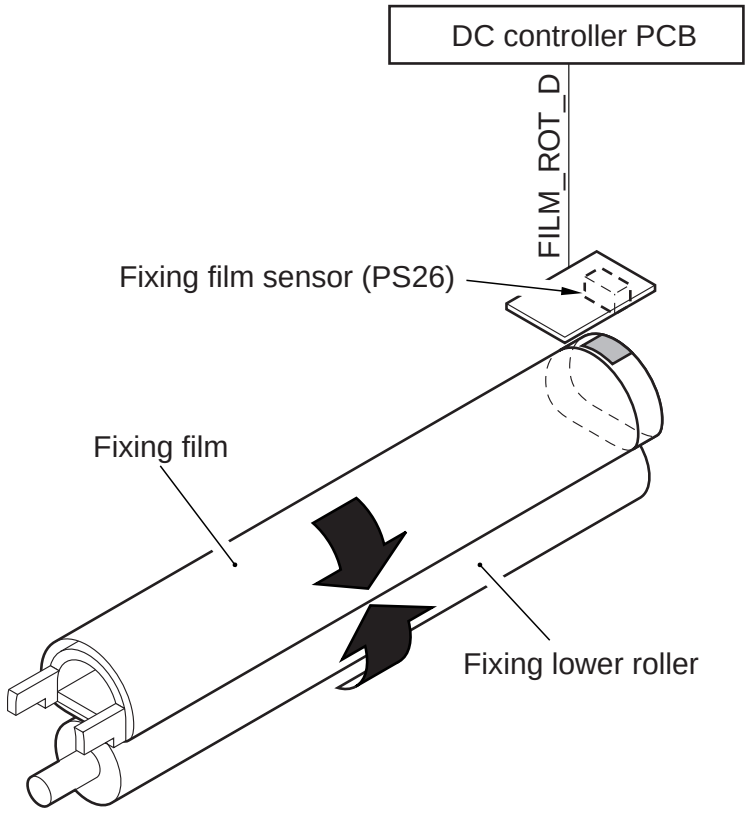
Error

E014 (fixing motor speed error)

Indicates that the drive lock signal cannot be detected with 1.3 sec after the fixing motor drive signal (M4) is generated.

2.3 Controlling the Fixing Film Speed

F06-202-02 shows the construction of the control system used for the fixing film speed; the speed of rotation is controlled according to the changes in the output of the fixing film sensor (PS26).



The following signal is used:

[1] Film rotation detection signal (FSAR_ROT_D): when the fixing film is rotating, alternately '1' and '0'.

F06-202-02

E007 (fixing film rotation error)

Indicates that the film rotation detection signal cannot be detected for 6 sec or more when the reading of the main thermistor is 100°C or higher and, in addition, the fixing motor is rotating.

COPIER>ADJUST>FIXING>FX-FL-SP
COPIER>ADJUST>FIXING>FX-FL-TH

Use it to adjust the rotation speed of the fixing film. Blurry images caused by a fault in the fixing assembly can at times be corrected. (Blurry images can occur 400-some millimeters of the trailing edge.) This mode may also be used to adjust the reproduction ratio in feed direction.

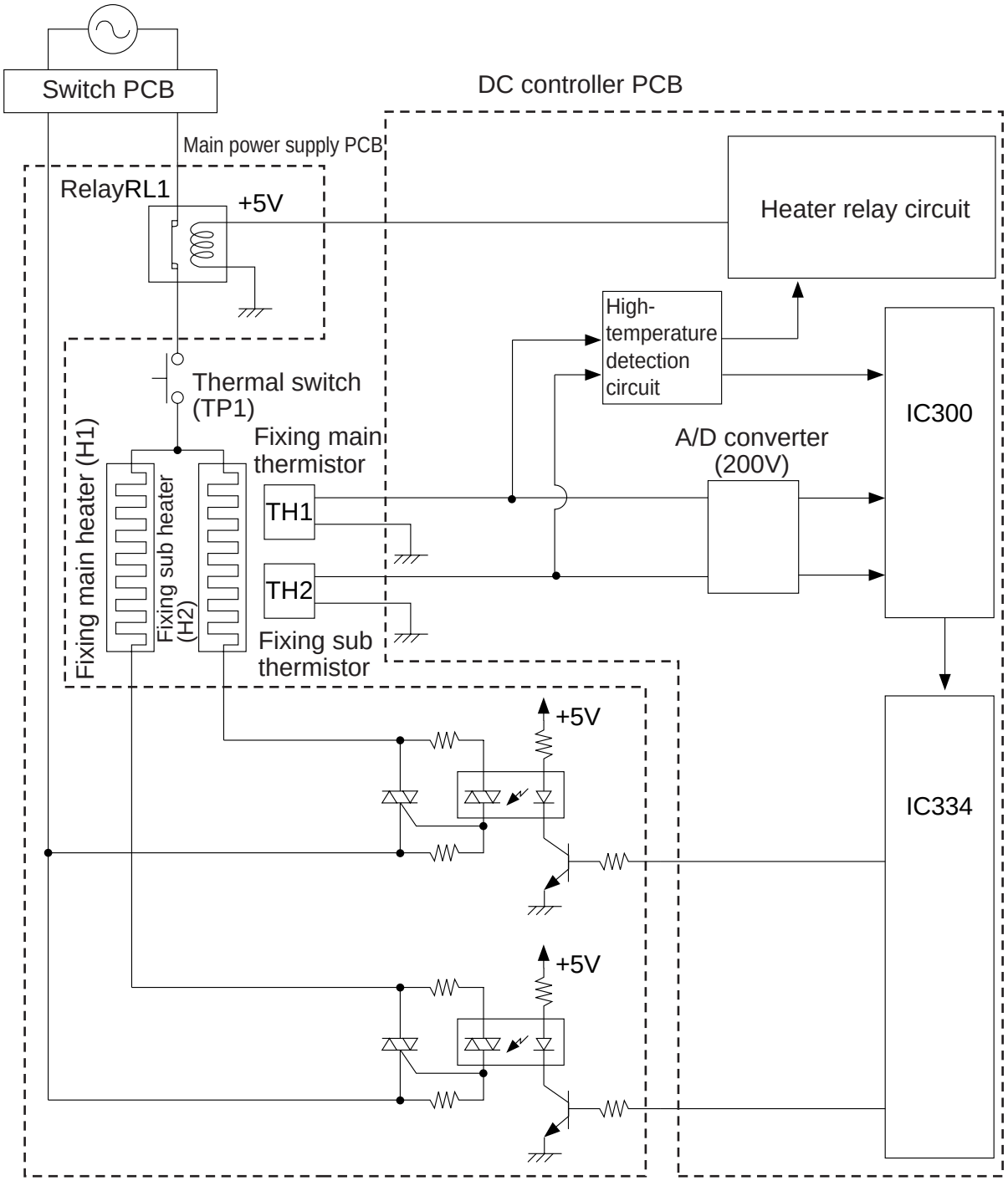
3 Controlling the Fixing Temperature

3.1 Outline

The fixing temperature is controlled for the following:

[1] Fixing heater temperature

[2] Thermistor error detection



F06-301-01

3.2 Temperature Control

The machine's fixing temperature is controlled using the following means:

State	Item	Description
Normal	[1] Power-on sequence	Used with pre-heating control if the reading of the main thermistor (TH1) is 100°C or lower during recovery from sleep mode/power-on/controll panel input/document detection.
	[2] Start-up sequence	Used at time of starting copying operation.
	[3] Normal temperature control sequence	Used to set a temperature to suit the selected paper type/size according to the thermal condition of the fixing assembly.
	[4] Sheet-to-sheet control sequence	Used to lower the fixing temperature between sheets fed continuously.
	[5] Edge overheating sequence	Used to prevent overheating on the ends of the heater otherwise caused by continuously fed small-size sheets. (The operation will slow down.)
Service mode Upon selection	[7] Fixing temperature switch-over COPIER>OPTION>BODY> FIX-TEMP	The target temperature for fixing control is switched. 1: -10°C 2: -6°C 3: -3°C 4: +3°C 5: +6°C 6: +10°C 7: +15°C

T06-302-01

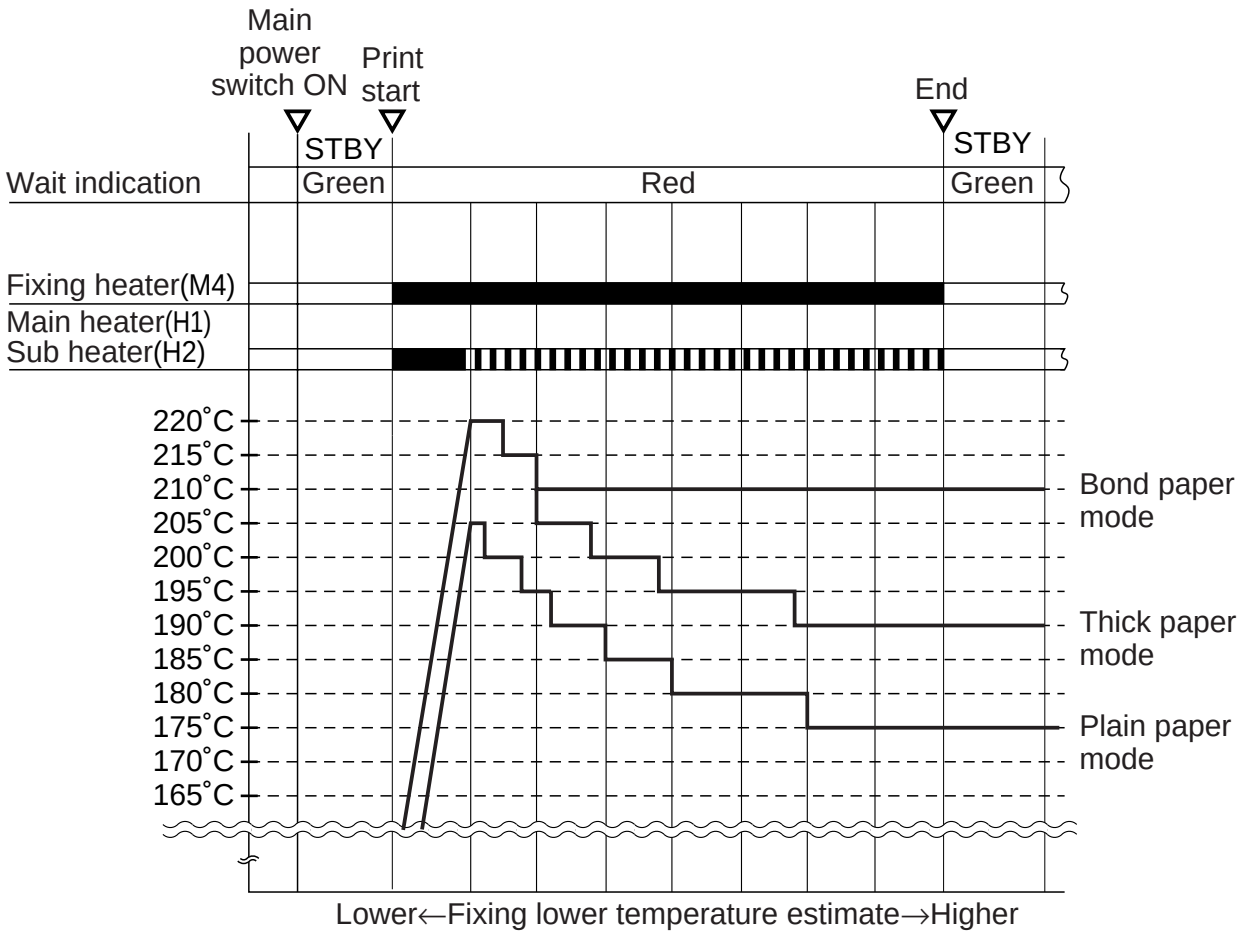
3.2.1 Fixing Temperature Control

The machine is equipped with the following modes to suit the type of paper used: plain paper, thick paper, bond paper, and envelope/postcard (each with a specific control table).

A start point of temperature control on the control table is determined based on the temperature of the fixing lower roller considered against the following factors:

a. Reading of main thermistor (TH1)
b. History of jobs (intervals, quantity)

F06-302-01 shows a sample control table:



F06-302-01

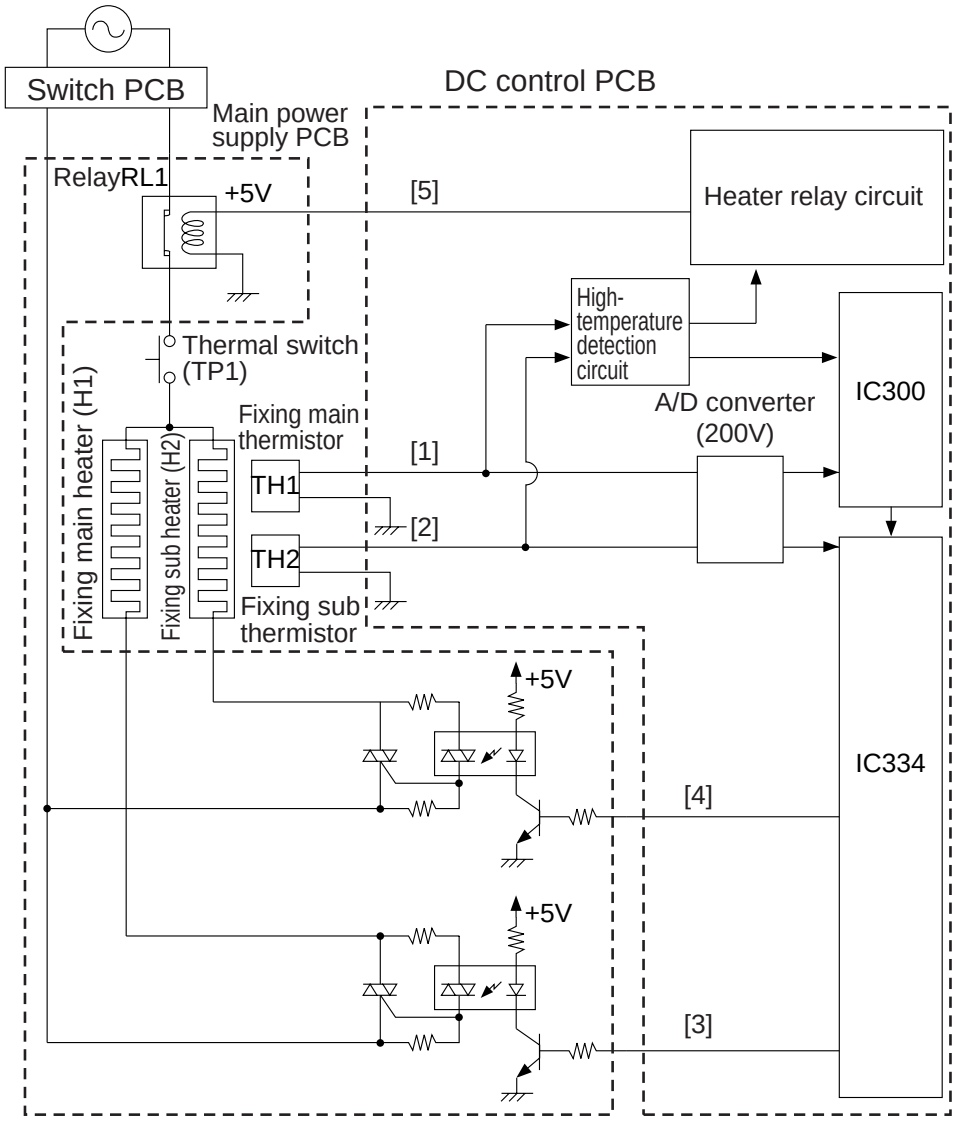
3.3 Detecting Errors

The machine checks for the following in relation to its fixing temperature control mechanism:

1. Temperature control error by main thermistor (TH1)
2. Temperature control error by sub thermistor (TH2)

The following signals are used in association with errors:

[1] Fixing temperature detection signal 1 (M_TH2): voltage output according to the reading of the main thermistor.
[2] Fixing temperature detection signal 2 (S_TH2): voltage according to the reading of the sub thermistor.
[3] Main heater drive signal: when '1', the main heater goes ON.
[4] Sub heater drive signal: when '2', the sub heater goes ON.
[5] Relay drive signal (RLY_1): when '1', the relay (RL1) on the main power supply PCB goes ON.



F06-303-01

Error

E000
The main thermistor (TH1) has poor contact or an open circuit. The thermal switch (TP1) has an open circuit. The main /sub heater has an open circuit. The main power supply PCB is faulty. The DC control PCB is faulty. The door switch is faulty.
E001
The main thermistor (TH1) has a short circuit. The sub thermistor (TH2) has a short circuit. The main power supply PCB is faulty. The DC controller PCB is faulty?
E002
The main thermistor (TH1) has poor contact or an open circuit. The thermal switch has an open circuit (TP1). The fixing heater has an open circuit. The AC driver PCB is faulty. The DC controller PCB is faulty. The door switch is faulty.
E003
The main thermistor (TH1) has poor contact or an open circuit. The thermal switch has an open circuit (TP1). The fixing heater has an open circuit. The main power supply PCB is faulty. The DC controller PCB is faulty. The door switch is faulty.
E007
The fixing motor (M4) is faulty. The fixing film sensor (P26) is faulty.

If a code from E000 through E003 is indicated, the indication will not be reset even when the main power switch is turned off and then on, requiring clearing of the error in service mode
(COPIER>FUNCTION>CLEAR>ERR).
If E001 or E003 is detected within 3sec after the front cover switch is identified as being open/closed, however, the error indication will be reset when the main power switch is turned off and then on. This is to prevent the user from placing a service call in response to an error detected while the switch operation is not stable (as occurring immediately after the switch is turned on/off).

4 Disassembly and Assembly

The discussions that follow cover the machine's mechanical characteristics and how to disassemble/assemble the machine. Keep the following in mind whenever you work with the machine:

1. ⚠The power plug must remain disconnected for safety when disassembling/assembling the machine.

2. Unless otherwise noted, the machine may be assembled by reversing the steps used to disassemble it.

3. The screws must be identified by type (length, diameter) and location.

4. The mounting screws used for the grounding wire and the varistors come with a washer, which must not be left out when assembling the machine.

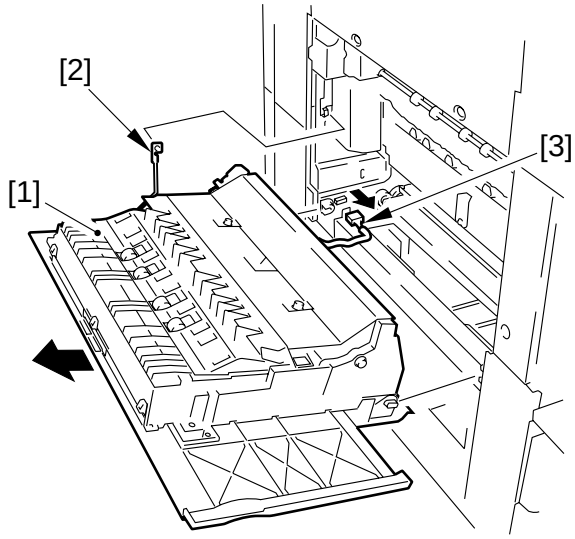
5. As a rule, the machine must not be operated with any of its parts removed.

6. ⚠The door switch or the main power switch must be turned off whenever the duplex unit or the fixing/feeding unit must be slid out.

4.1 Fixing Assembly

4.1.1 Removing the Delivery Cover

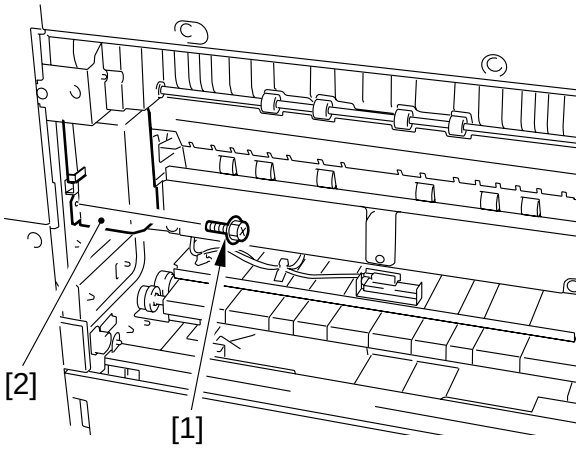
1) Open the delivery cover [1].
2) Remove the cable [2].
3) Shift farther down the delivery cover [1], and disconnect the connector [3]; then, detach the delivery cover.



F06-401-01

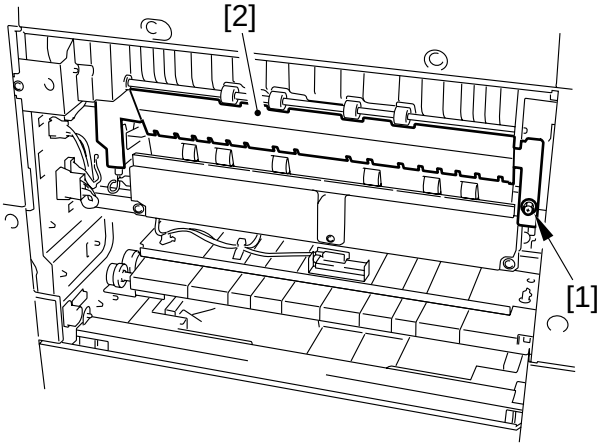
4.1.2 Removing the Riser Guide

1) Remove the delivery cover. (See item 4.1.1.)
2) Remove the screw [1], and detach the connector cover [2].



F06-401-02

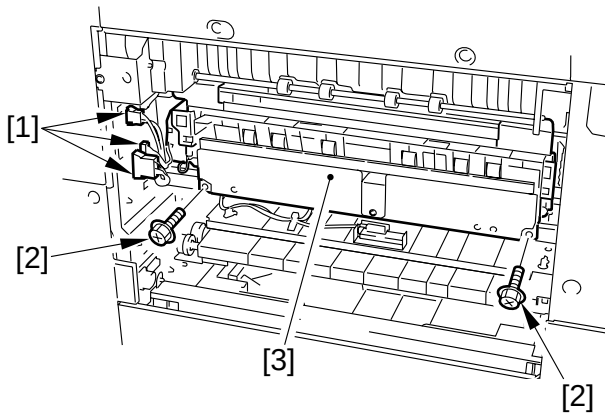
3) Remove the screw [1], and detach the riser guide [2].



F06-401-03

4.1.3 Removing the Fixing Assembly

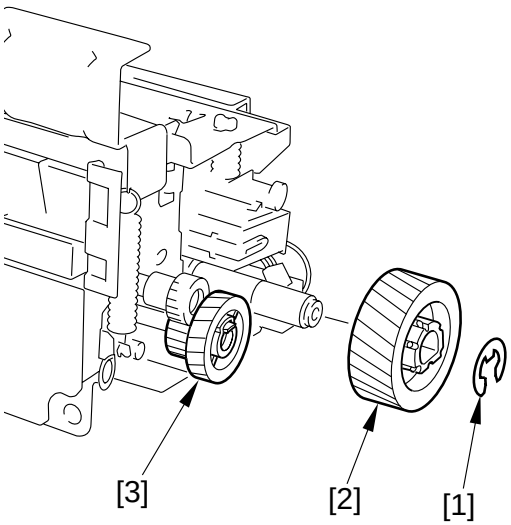
1) Remove the riser guide. (p. 6-12P)
2) Check to see if the feeding assembly is locked in position.
3) Disconnect the three connectors [1].
4) Remove the two screws [2], and detach the fixing assembly [3].



F06-401-04

4.1.4 Removing the Fixing Stepped Gear

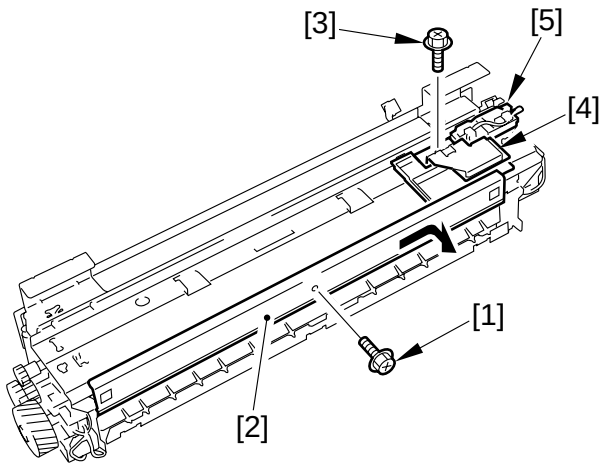
1) Remove the fixing assembly. (See item 4.1.3.)
2) Remove the E-ring [1], and detach the gear [2].
3) Free the claw, and detach the fixing stepped gear [3].



F06-401-05

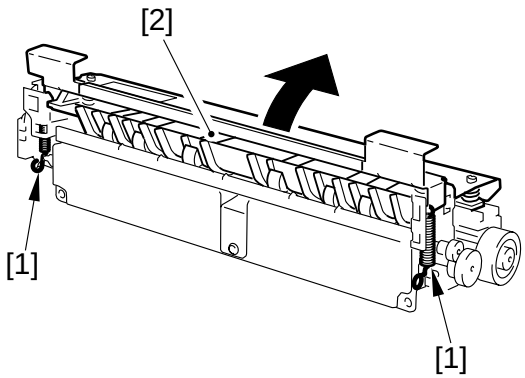
4.1.5 Removing the Fixing Film Unit

1) Remove the fixing assembly. (See item 4.1.3.)
2) Remove the screw [1], and slide the inlet upper guide [2] to the rear to remove.
3) Remove the screw [3], and detach the sensor unit [4] and the sensor unit guide [5].



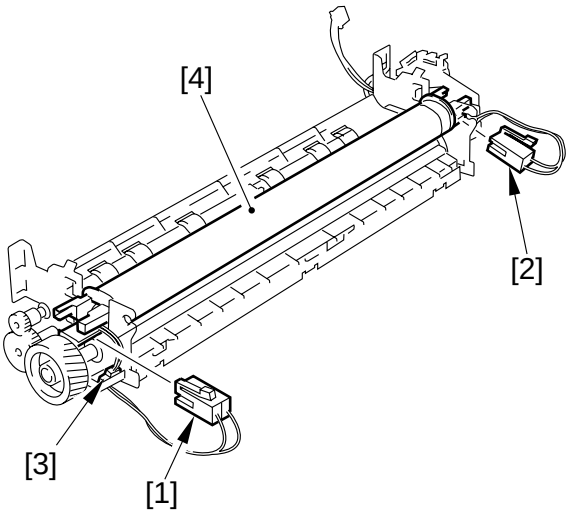
F06-401-06

4) Remove the two springs [1], and open the front of the fixing assembly top [2] to detach.



F06-401-07

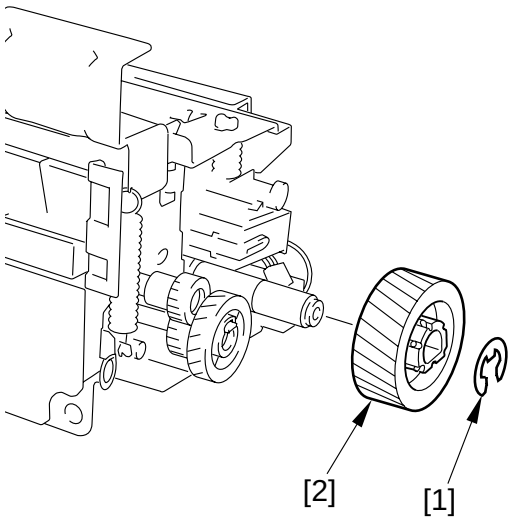
5) Disconnect that front connector [1] (brown) and the rear connector [2] (black).
6) Disconnect the connector [3], and remove the fixing film unit [4].



F06-401-08

4.1.6 Removing the Roller Bushing, Conducting Rubber, and Fixing Roller

1) Remove the fixing assembly. (p. 6-13P)
2) Remove the E-ring [1], and detach the gear [2].

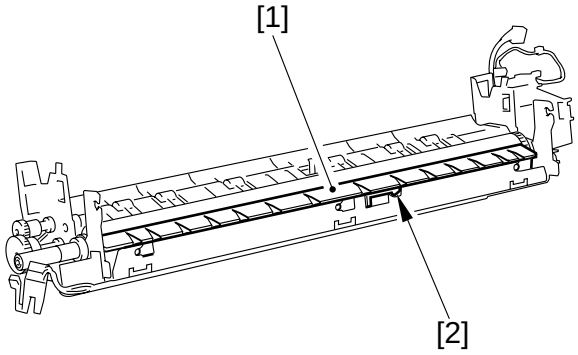


F06-401-09

3) Remove the fixing film unit. (p. 6-13P)

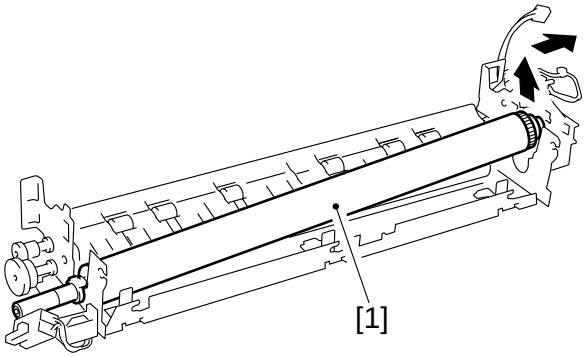
4) Free the claw [2] of the inlet lower guide [1], and slide it to the rear to remove.

Take care not to damage the fixing roller. When mounting, avoid pushing it against the fixing roller.



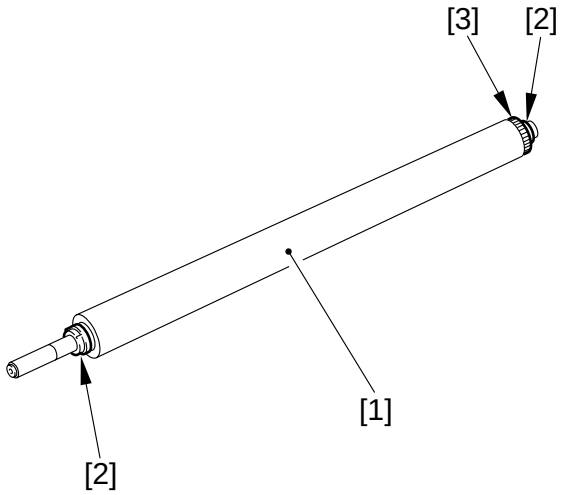
F06-401-10

5) Lift the rear of the fixing roller assembly [1], and slide it to the rear to remove.



F06-401-11

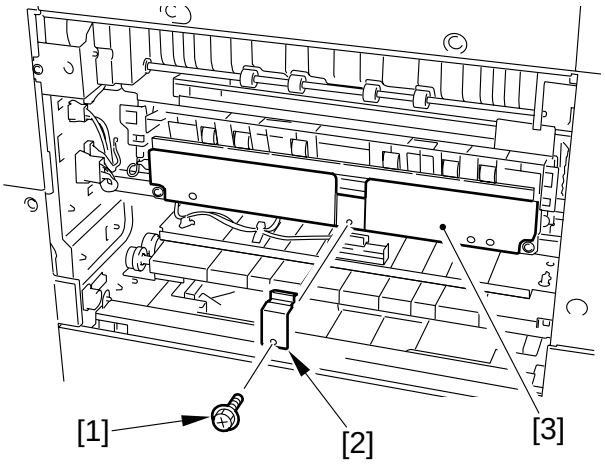
6) Detach the two roller bushings [2] from the fixing roller [1].
7) Remove the conducting rubber [3].



F06-401-12

4.1.7 Removing the Cleaning Roller Unit

1) Remove the screw [1], and detach the outlet guide support plate [2].
2) Remove the cleaning roller unit [3].

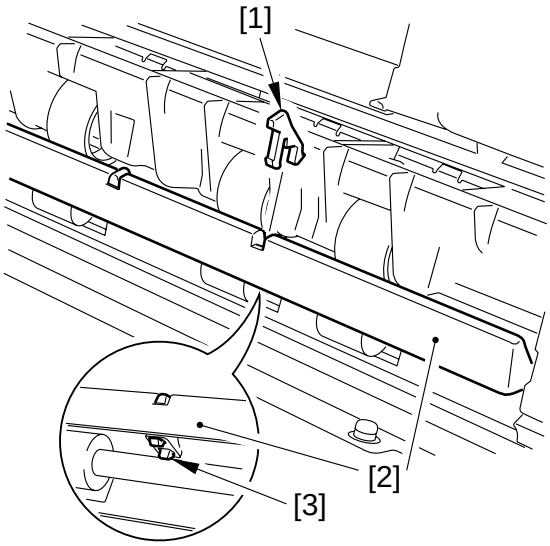


F06-401-13

4.1.8 Removing the Lower Guide Ribs

1) Remove the fixing assembly. (p. 6-13P)
2) Remove the cleaning roller unit. (See item 4.1.7.)
3) Push the claw [3] of the five lower guide ribs [1] from the bottom of the lower guide [2] to free and detach.

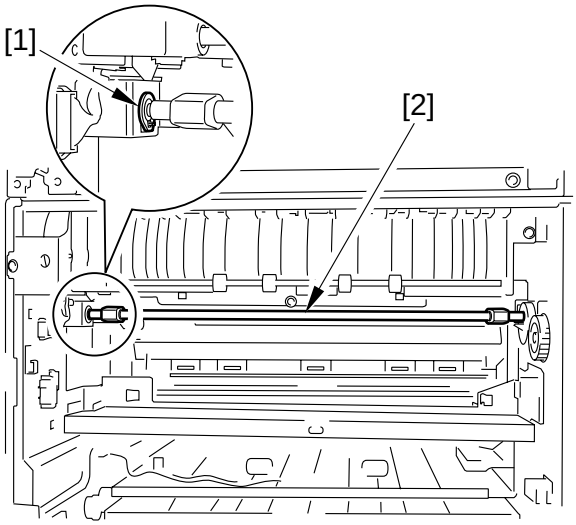
After mounting it, look from below to make sure that the claw [3] is positioned correctly.



F06-401-14

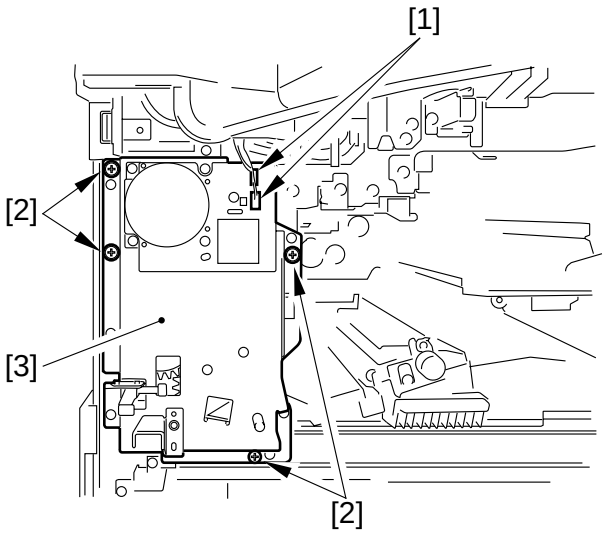
4.1.9 Removing the Fixing Drive Unit

1) Remove the fixing assembly. (p. 6-13P)
2) Check to see that the feeding assembly is locked in place.
3) Free the claw of the bushing [1], and slide it to the front.
4) Remove the locking cam unit [2].



F06-401-15

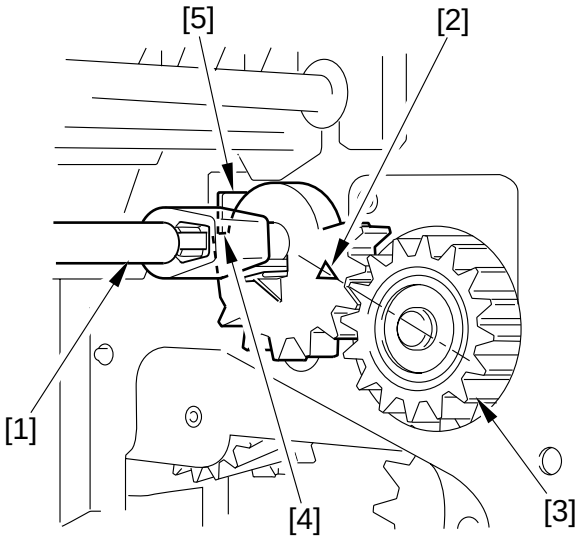
5) Remove the inside cover. (p. 7-14P)
6) Check to see if the feeding assembly is released.
7) Disconnect the two connectors [1].
8) Remove the four screws [2], and detach the fixing drive unit [3].



F06-401-16

4.1.10 Mounting the Locking Cam Unit

1) Check to see if the feeding assembly is locked in place.
2) Match the arrow of the gear of the locking cam unit [1] against the middle of the gear [3] of the fixing drive unit (e.i., where the rear [4] of the gear of the locking cam unit is in contact with the cut-up [5] of the frame).



F06-401-17

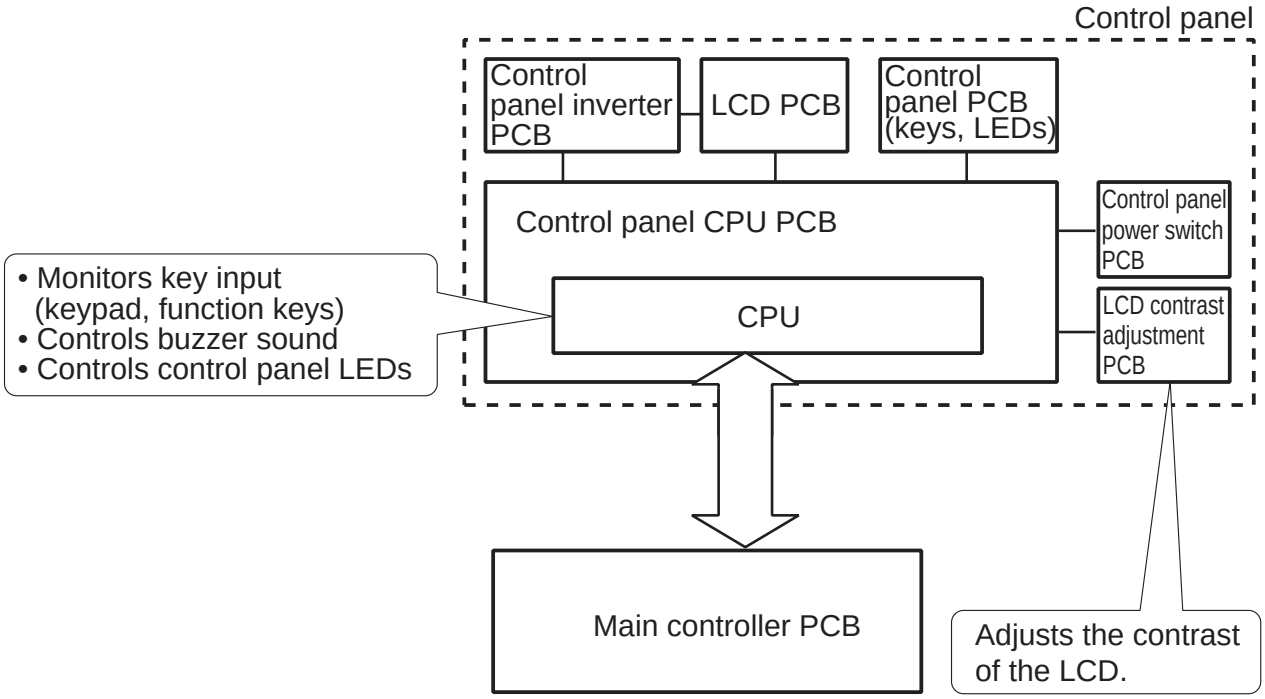
CHAPTER 7

EXTERNALS AND CONTROLS

1 Control Panel

1.1 Outline

The machine's control panel consists of the following PCBs and a touch panel (LCD) with a resolution of 320 × 240 dots.



F07-101-01

COPIER>FUNCTION>PANEL>LCD-CHK
Use it to check the LCD for missing dots.
COPIER>FUNCTION>PANEL>LED-CHK
Use it to start a check on the activation of the LEDs in the control panel.
COPIER>FUNCTION>PANEL>LED-OFF
Use it to end a check on the activation of the LEDs in the control panel.
COPIER>FUNCTION>PANEL>KEY-CHK
Use it to start a check on key inputs.
COPIER>FUNCTION>PANEL>TOUCHCHK
Use it to check the coordinates on the touch panel.

2 Fans

2.1 Arrangement, Functions, and Error Codes

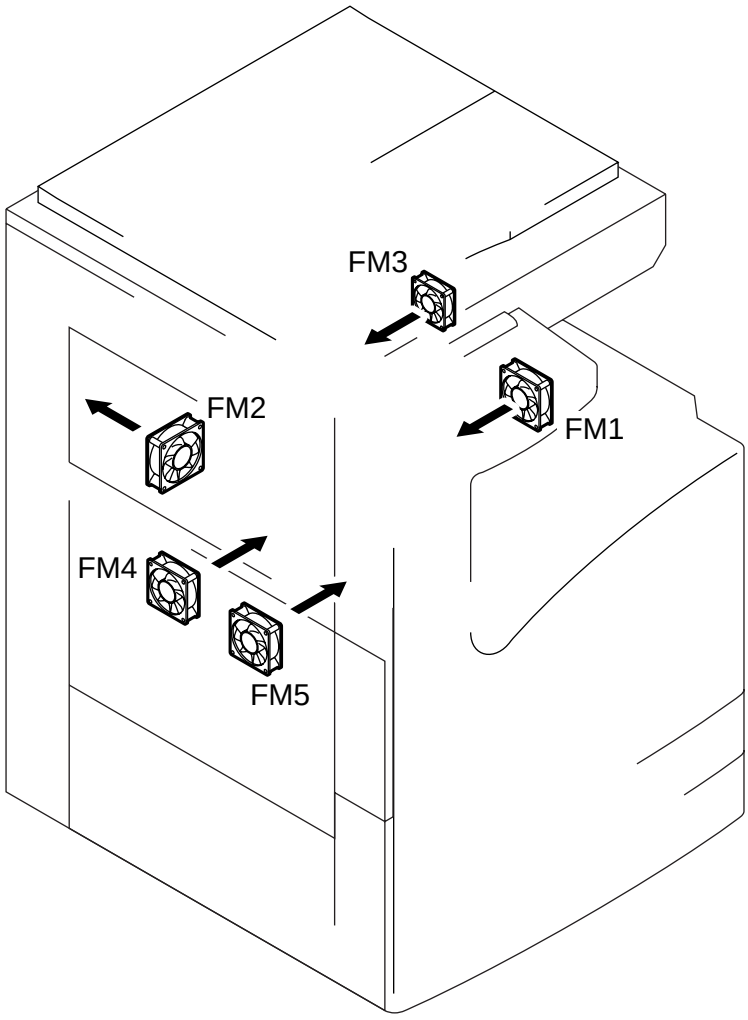
The names and functions of and the error codes associated with the machine's fans are as follows:

Notation	Name	Function	2-speed control (voltage)	Error code
FM1	Developing assembly fan	Cools the developing assembly, Cools the laser scanner	Yes (24/12 V)	E805-0001
FM2	Fixing fan	Cools the fixing assembly, Cools the drum unit	Yes (24/12 V)	E805-0002
FM3	Electric unit fan	Cools the electric unit	Yes (24/12 V)	E805-0003
FM4	Curl reducing fan 1	Prevents curling of paper	No (24 V)	E805-0004
FM5	Curl reducing fan 2	Prevents curling of paper	No (24 V)	E805-0005

The curl reducing fans 1 and 2 are enabled or disabled in service mode:
COPIER>OPTION>BODY>DECRL-FN>

T07-201-01

The arrangement of the fans and the directions of current are as follows:

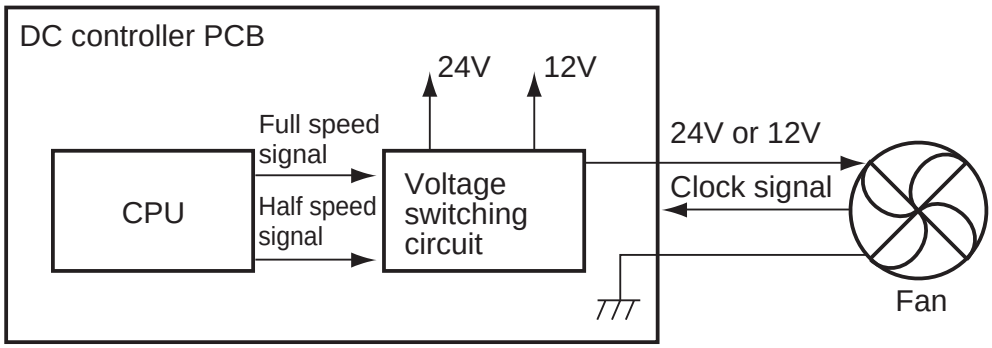


F07-201-01

2.2 Operation

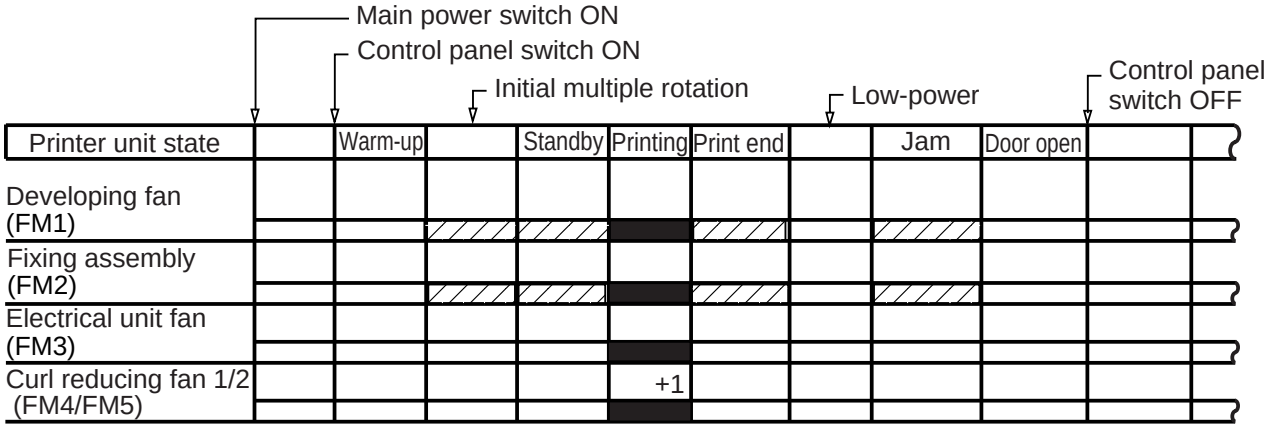
2.2.1 2-Speed Control

Some of the machine's fans are controlled for two speeds (F07-202-01); the voltage switching PCB of each fan changes its output voltage to switch between speeds.



F07-202-01

2.2.2 Sequence of Operations



: full speed.
: half speed or at rest; if the polygon mirror motor (M10) is ON, half speed; if OFF, at rest.

*1: Rotates for 30 sec after the leading edge sensor goes ON during printing; if the sensor goes ON for a second time during the 30-sec period, rotates for another 30 sec.

F07-202-02

3 Power Supply

3.1 Power Supply

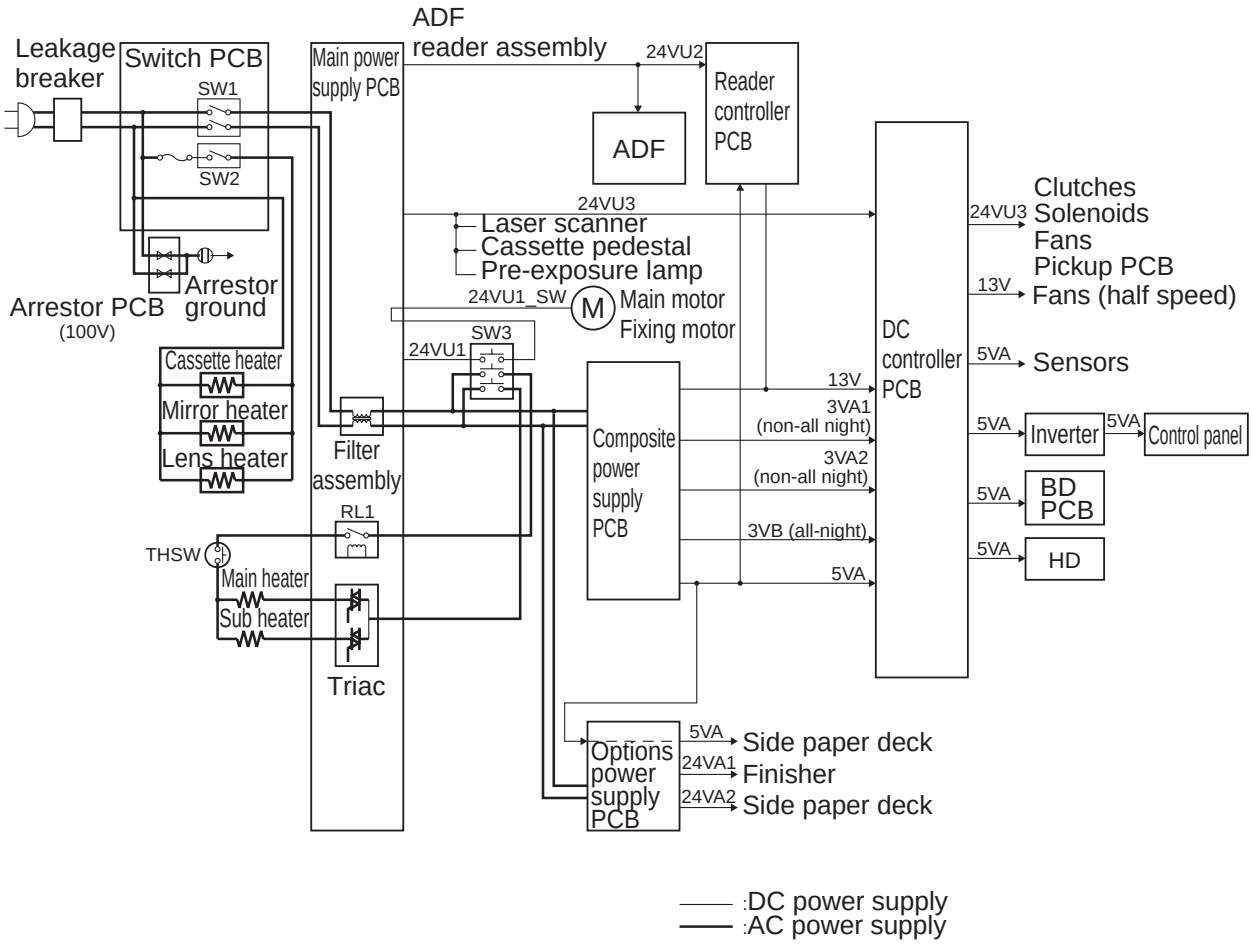
3.1.1 Outline

The machine's power supply is controlled by the DC power supply PCB; the PCBs and associated components are shown in T07-301-01, and the distribution of power is shown in F07-301-01.

Name	Description
Main power supply PCB	• Generates DC power from AC power • Protects against overcurrent
Composite power supply PCB	• Generates high voltage
Options PCB	• Supplies power to side paper deck, finisher
Switch PCB (SW1/SW2)	• Turns on/off main power supply PCB (SW1), Turns on/off cassette heater, mirror heater, lens heater (SW2)
Door switch (SW3)	• Detects state of door (open/closed), Cuts AC power to fixing heater, Cuts 24V power to main motor, fixing motor, composite power supply PCB
Thermistor power supply PCB (200 V)	• Supplies power to thermsitor
Leakage breaker	• Cuts power in response to error

T07-301-01

The machine distributes power as follows:



F07-301-01

3.1.2 Power Outputs

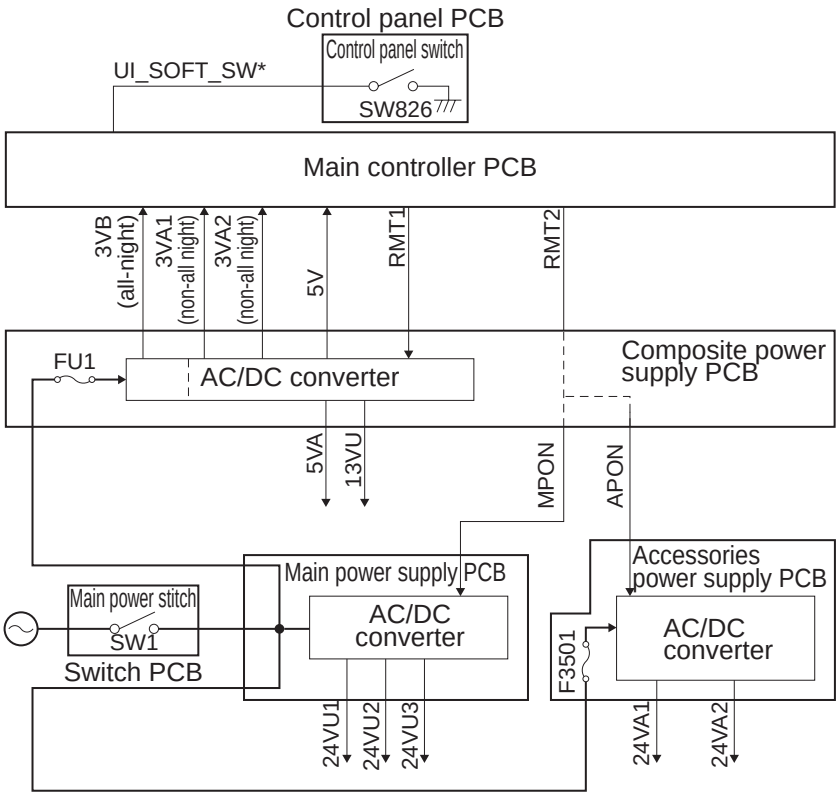
The machine's power outputs are controlled by the main power switch (SW1) and the control panel power switch (SW826), or signals from the printer board.

The following table shows the state of power supply from each power supply PCB in relation to combinations of the states of the main power switch and the control panel power switch and the signals from the printer board:

Main power switch (SW1)	Control panel power switch (SW826) or Signals form printer/fax board	Power output from main power supply PCB	Power output from composite power supply PCB	Power output from accessories power supply PCB
OFF*1	OFF	No	No	No
ON	OFF	No	3VB	No
ON	ON	All	All	All

T07-301-02

*1: If the environment switch (SW2) is ON, the cassette heater, mirror heater, and lens heater are supplied with power.



F07-301-02

3.2 Rated Outputs of the Main Power Supply PCB

Output	24VU1	24VU1-SW	24VU2	24VU3
Connector No.	J200-1 J203-1	J202-1 J202-3 J202-5 J200-3*1	J203-2	J204-1 J204-3 J204-7 J204-8 J204-9 J206-2
Output voltage tolerance		± 5 %*2		
Rated output voltage		24V		
Rated output current		9.0A		
Overcurrent protection activation setting		5.5 to 8.0A		

*1: input.

*2: +7% or -5%, depending on output current.

T07-302-01

3.3 Rated Output of the Composite Power Supply PCB

Output	3VA1 (non-all night)	3VA2 (non-all night)	3VB (all-night)	5V	13VU
Connector No.	J121-4 J121-5 J122-3 J122-4	J121-1 J121-2 J121-3	J121-11 J121-12 J121-13	J122-1 J122-2 J124-9 J124-10	J126-2 J126-3 J126-5 J126-7
Output voltage tolerance	+2%, -4%		± 2%	+3%, -4%	-
Rated output voltage	3.4V		3.4V	5.1V	12.5 to 17.0V
Rated output curren	3.4V		1.9A	4.7A	0.11A
Overcurrent protection activation setting.	5.0 to 8.0A		5.0 to 8.0A	5.0 to 8.0A	1.0 to 8.0A

T07-303-01

Note: The above assumes that the AC input is between 85 and 135 V for the 100/120V model, and between 187 and 264 V for the 230V model.

3.4 Rated Outputs of the Accessories Power Supply PCB

Output	24VA1	24VA2
Connector No.	J703-2	J702-1
	J704-6	J702-4
Output voltage tolerance	+7%, -5%	
Rated output voltage	24V	
Rated output current	5.5A	
Overcurrent protection activation setting	5.5 to 8.0A	

T07-304-01

Note: The above assumes that the AC input is between 85 and 135 V for the 100/120V model, and between 187 and 264 V for the 230V model.

3.5 Protective Functions

The machine's each power supply PCB is equipped with an overcurrent protection circuit designed to cut off the output of each power supply when they go ON.

While the signals RMT1 and RMT2 from the main controller PCB are used to turn on the output of each power supply PCB, if 3VB stops from the composite power supply PCB because of a fault in the high-violate output or melting of the fuse, all outputs of power will be cut.

4 Others

4.1 Silent Mode

In silent mode, the drive of the laser scanner motor during standby is stopped for a specific period of time* after the start of standby to reduce the machine's operating noise.

*The length may be changed in user mode.

5 Disassembly and Assembly

The discussions that follow cover the machine's mechanical characteristics and how to disassemble/assemble the machine. Keep the following in mind whenever you work with the machine:

1. ⚠The power plug must remain disconnected for safety when disassembling/assembling the machine.

2. Unless otherwise noted, the machine may be assembled by reversing the steps used to disassemble it.

3. The screws must be identified by type (length, diameter) and location.

4. The mounting screws used for the grounding wire and the varistors come with a washer, which must not be left out when assembling the machine.

5. As a rule, the machine must not be operated with any of its parts removed.

6. The door switch or the main power switch must be turned off whenever the duplex unit or the fixing/feeding unit must be slid out.

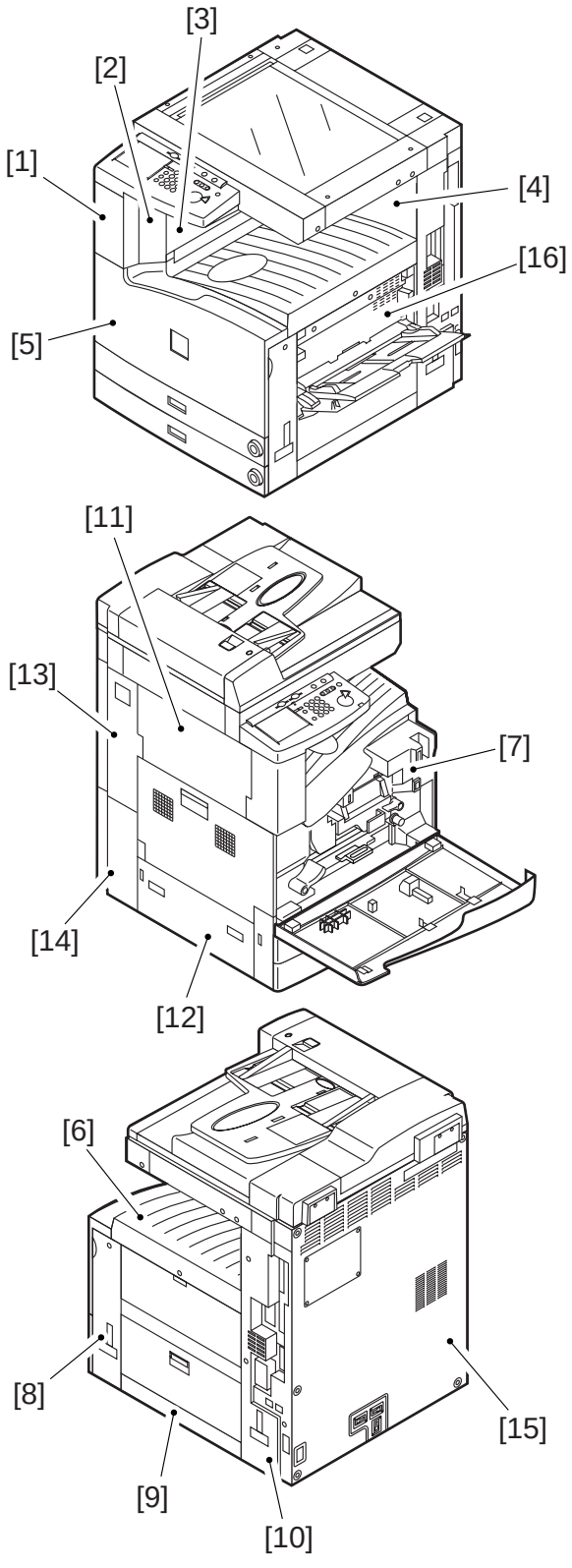
5.1 External Covers

Remove the covers as needed when cleaning, checking, or repairing the inside of the machine.

REF.

Those covers that can be detached by mere removal of mounting screws are left out of the discussions. Unless otherwise noted, the number in parentheses indicates the number of mounting screws used.

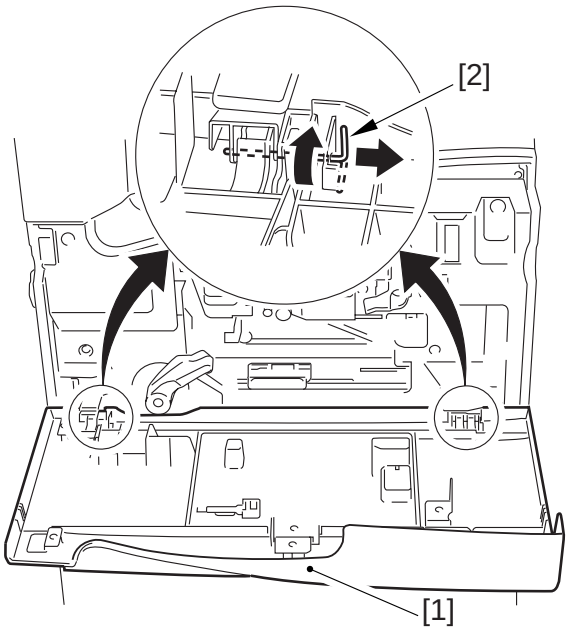
[1] Support cover (1 screw)
[2] Support the right cover (1 screw)
[3] Left rear cover
[4] Rear cover (4 screws)
[5] Front cover (2 L-shaped pins)
[6] Delivery tray (2 screws)
[7] Inside cover (6 screws)
[8] Right front cover (2 screws)
[9] Right lower cover (not in Cassette Feeding Unit-W1)
[10] Right rear cover (5 screws)
[11] Left upper cover (2; not in Finisher-J1 or Inner 2Way Tray-A1)
[12] Left lower cover (1 screw)
[13] Left rear cover (1 screw)
[14] Waste toner case cover (1 screw)
[15] Rear cover (7 screws)
[16] Right inside cover (7 screws)



F07-501-01

5.1.1 Removing the Front Cover

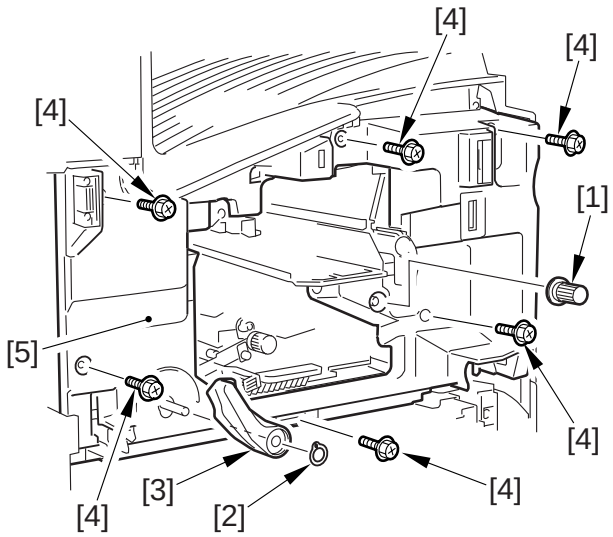
1) Open the front cover [1], and shift up the L-shaped pin [2] with your finger.
2) Shift the L-shaped pin [2] to the right to detach the front cover [1].



F07-501-02

5.1.2 Removing the Inside Cover

1) Remove the front cover. (See item 5.1.1.)
2) Remove the drum unit. (p. 4-28P)
3) Remove the developing assembly. (p. 4-33P)
4) Remove the cassette 1 (topmost cassette).
5) Remove the registration roller knob [1].
6) Remove the grip ring [2], and detach the feeding lever [3].
7) Remove the six screws [4], and detach the inside cover [5].

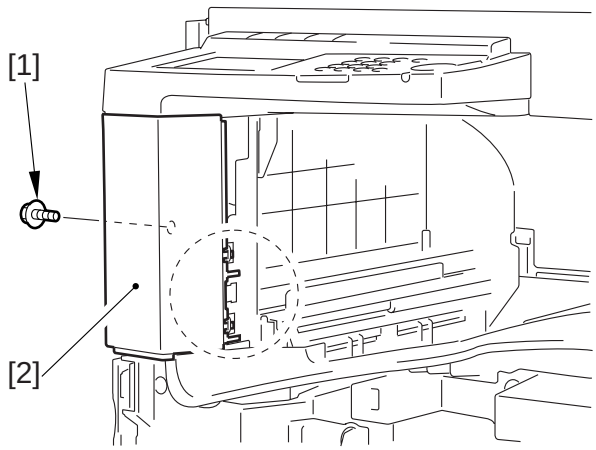


F07-501-03

5.1.3 Removing the Support Cover

1) Remove the support cover. (1 screw)
2) Remove the left rear cover.
3) Open the front cover.
4) Remove the screw [1], and detach the support cover [2].

Take care not to break the claw (circled) behind the support cover.

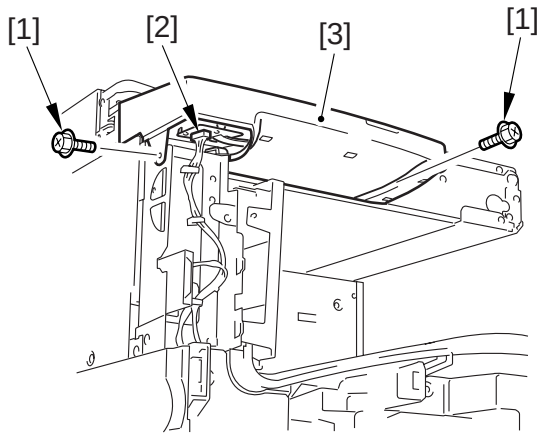


F07-501-04

5.2 Control Panel

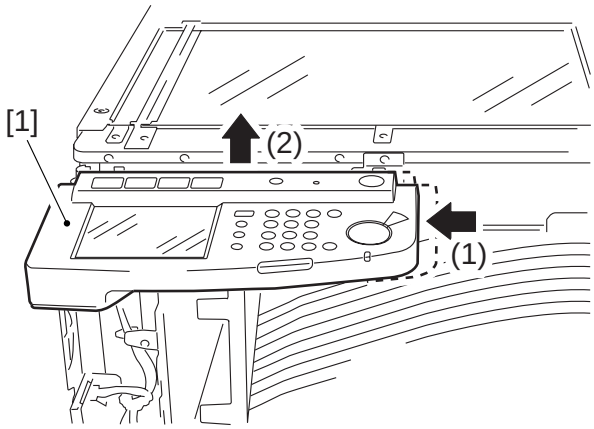
5.2.1 Removing the Control Panel

1) Remove the support cover. (p. 7-15P)
2) Remove the reader front cover. (2 screws) (See the descriptions on the reader unit.)
3) Remove the two screws [1], and disconnect the connector [2].



F07-502-01

4) Shift the control panel [1] to the left, and lift it to detach.

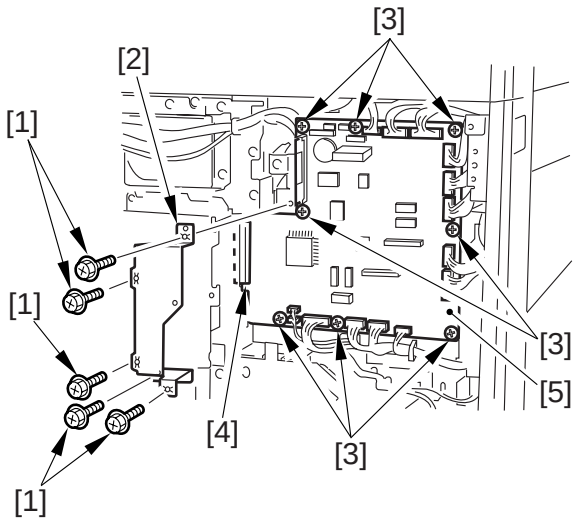


F07-502-02

5.3 PCBs

5.3.1 Removing the DC Controller PCB

1) Remove the rear cover. (7 screws)
2) Remove the five screws [1], and detach the connector guard plate [2].
3) Disconnect all the connectors of the harness.
4) Remove the eight screws [3].
5) Disconnect the connector [4] to the main controller, and detach the DC controller PCB [5].



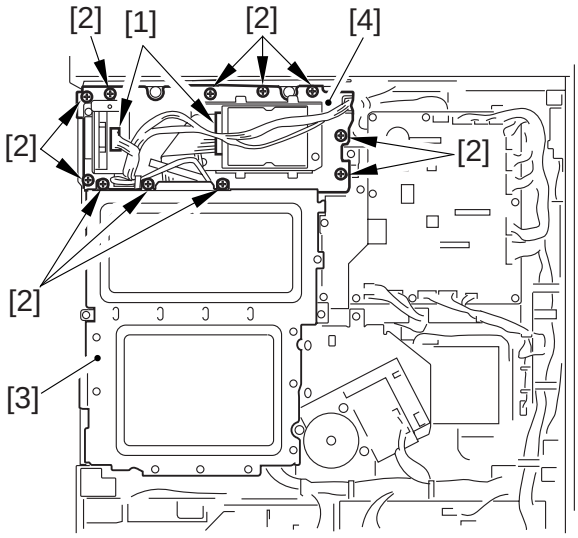
F07-503-01

5.3.2 Points to Note When Replacing the DC Controller PCB

"Troubleshooting">Chapter 4 "Troubleshooting Image Faults/Malfunctions" >6.7 "Variable Resistors (VR), Light-Emitting Diodes, and Check Pins by PCB"

5.3.3 Removing the Controller Cover

1) Remove the rear cover. (7 screws)
2) Remove the 12 screws [1] (if the HDD unit [2] has been removed, 9 screws); then, detach the controller cover [3].

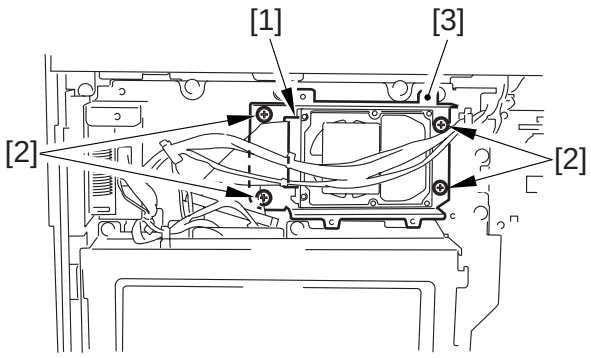


F07-503-02

5.3.4 Removing the HDD

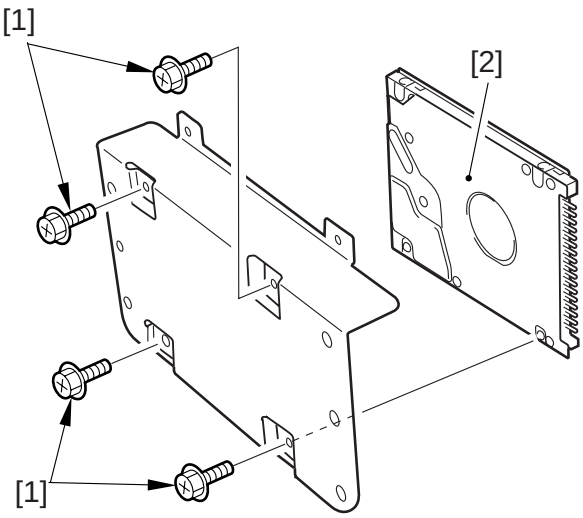
When removing the HDD, take full care against static charges. Also, do not subject the HDD to impact.

1) Remove the rear cover. (7 screws)
2) Disconnect the connector [1].
3) Remove the four screws [2], and detach the HDD support base [3].



F07-503-03

4) Remove the four screws [1], and detach the HDD [2].

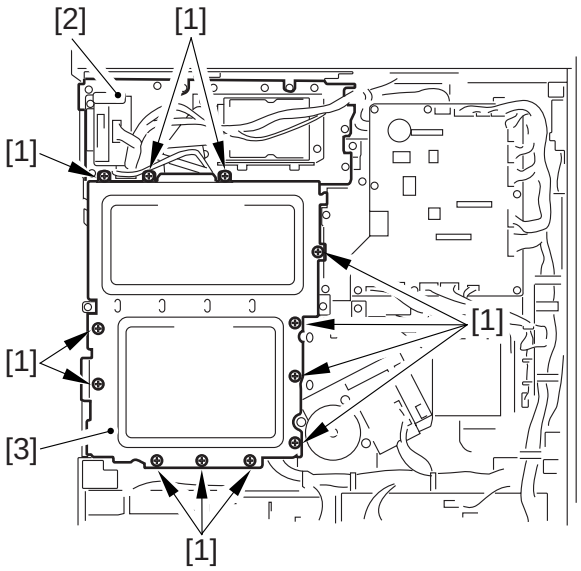


F07-503-04

5.3.5 Removing the HDD Unit

When removing the HDD unit, take full care against static electricity. Do not subject the HDD unit to impact.

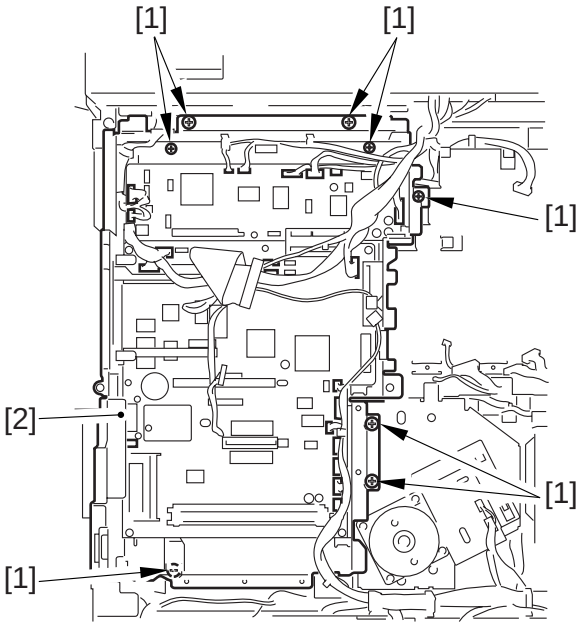
1) Remove the rear cover. (7 screws)
2) Remove the rear right cover. (5 screws)
3) Disconnect the two connectors [1].
4) Remove the eight screws (if the controller cover [3] has been removed, 5 screws); then, detach the HDD unit [2].



F07-503-05

5.3.6 Removing the Controller Box Unit

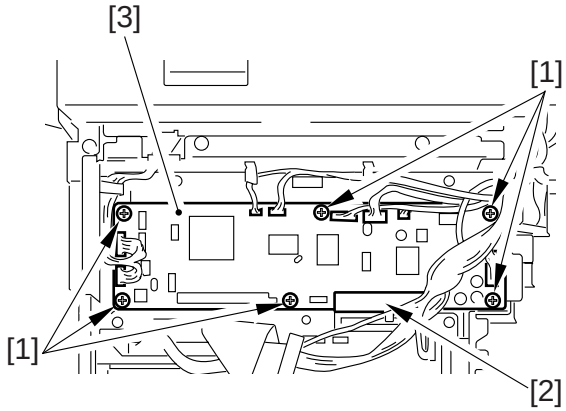
1) Remove the rear cover. (7 screws)
2) Remove the DC controller PCB. (p. 7-17P)
3) Remove the HDD unit. (See item 5.3.5)
4) Disconnect all the connectors of the harness.
5) Remove the eight screws [1], and detach the controller box unit [2].



F07-503-06

5.3.7 Removing the Reader Controller PCB

1) Remove the rear cover. (7 screws)
2) Remove the HDD unit. (p. 7-19P)
3) Disconnect all the connectors of the harness.
4) Remove the six screws [1].
5) Disconnect the connector [2] to the main controller, and detach the reader controller PCB [3].



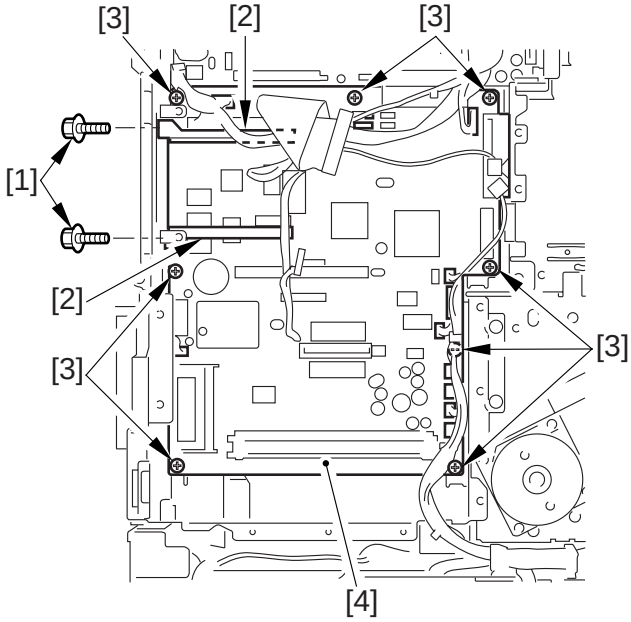
F07-503-07

5.3.8 When Replacing the Reader Controller PCB

"Troubleshooting">Chapter 4 "Troubleshooting Image Faults/Malfunctions" >6.7 "Variable Resistors (VR), Light-Emitting Diodes, and Check Pins by PCB"

5.3.9 Removing the Main Controller PCB

1) Remove the rear cover. (7 screws)
2) Remove the right rear cover. (5 screws)
3) Remove the DC controller PCB. (p. 7-17P)
4) Remove the reader controller PCB. (See item 5.3.7.)
5) Disconnect all the connectors of the harness.
6) Remove the screw [1] (1 each), and detach the two PCB guides [2].
7) Remove the eight screws [3], and detach the main controller PCB [4].



F07-503-08

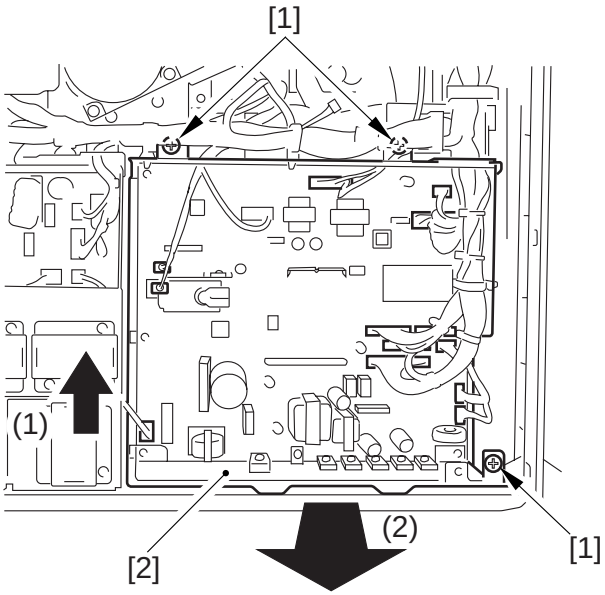
5.3.10 When Replacing the Main Controller PCB

"Troubleshooting">Chapter 4 "Troubleshooting Image Faults/Malfunctions" >6.7 "Variable Resistors (VR), Light-Emitting Diodes, and Check Pins by PCB"

5.3.11 Removing the Composite Power Supply

1) Remove the rear cover. (7 screws)
2) Disconnect all the connectors.
3) Remove the three screws [1]; then, lift the composite power supply [2] about 5 mm, and detach it to the front.

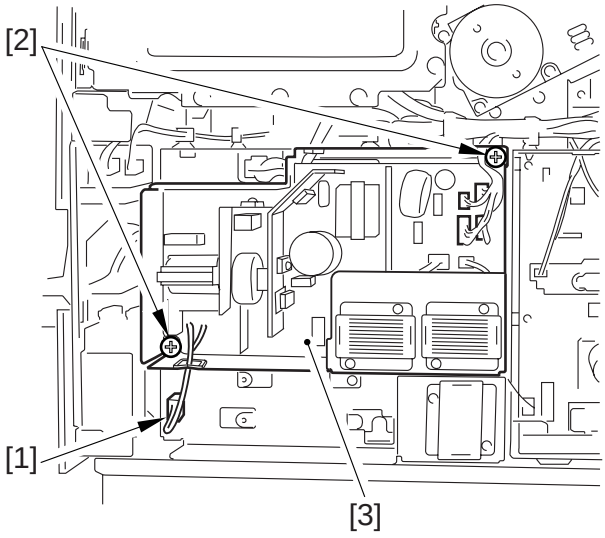
If you have replaced the composite power supply, be sure to enter the settings indicated on the service label in service mode:
COPIER>ADJUST>DEVELOP>DE-DC.



F07-503-09

5.3.12 Removing the Accessories Power Supply

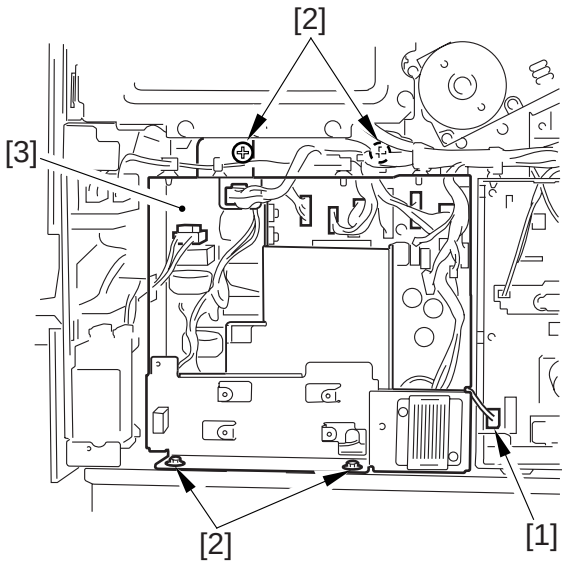
1) Remove the rear cover. (7 screws)
2) Disconnect all the connectors of the harness.
3) Disconnect the connector [1] to the main power supply.
4) Remove the two screws [2], and detach the accessories power supply [3].



F07-503-10

5.3.13 Removing the Main Power Supply

1) Remove the accessories power supply. (See item 5.3.12.)
2) Disconnect all the connectors.
3) Disconnect the connector [1] to the composite power supply.
4) Remove the four screws [2], and detach the main power supply [3].



F07-503-11

CHAPTER 8

PAPER DECK-L1

1.1 Pickup

1.1.1 Outline

The paper deck (hereafter, “deck”) is capable of accommodating as many as 2500 sheets (A4/LTR, B5; 80 g/m2 paper) at a time, and is designed to operate in response to control signals from the DC controller of its host machine.

The lifter of the deck is driven by the deck lifter motor (M2D), and paper is picked up and moved by the drive of the deck main motor (M1D).

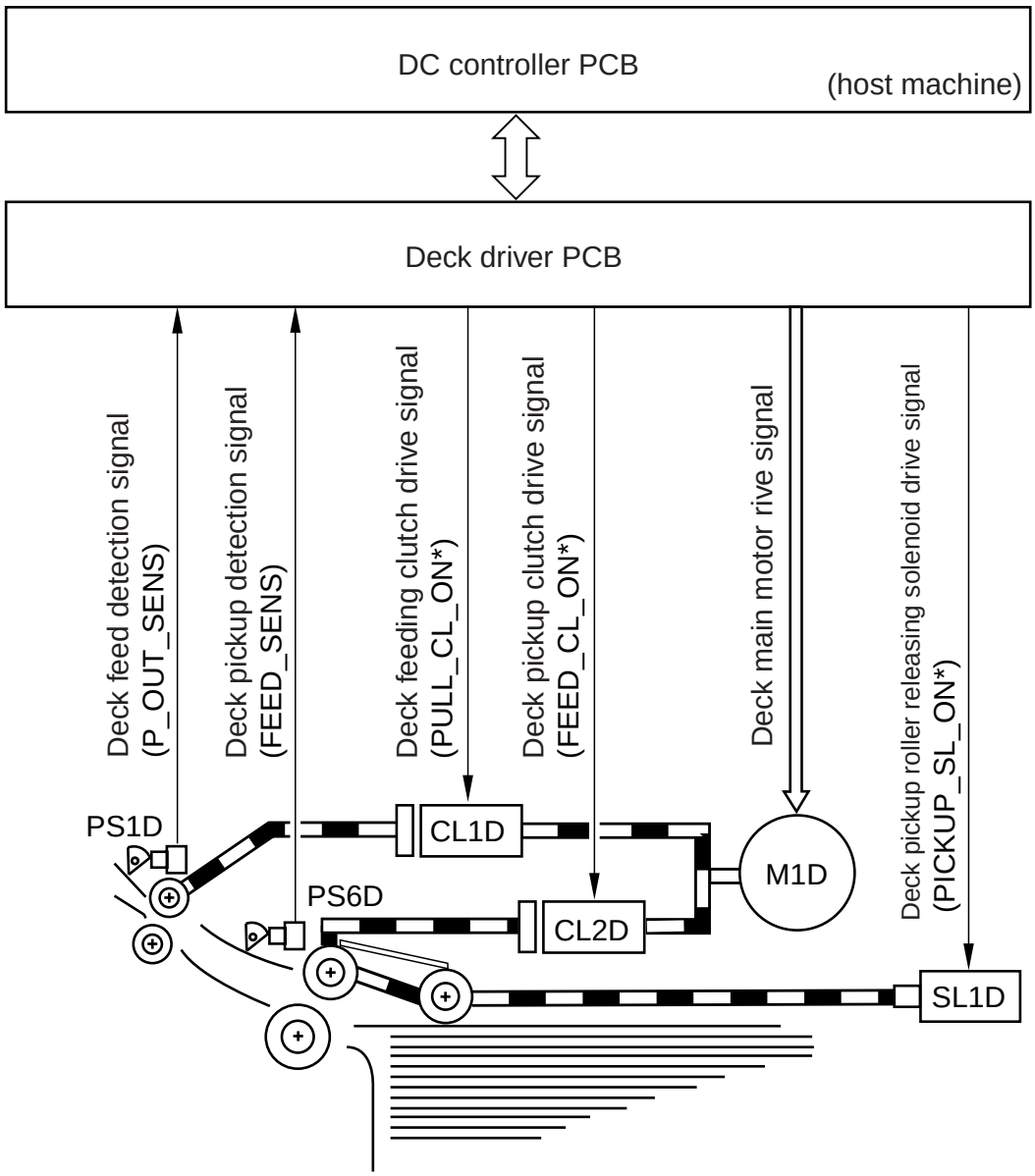
1.1.2 Pickup Operation

The paper placed inside the deck is held up by the lifter, and is kept in a specific pickup position.

When the Start key is pressed and the deck pickup clutch (CL2D) goes ON, the drive of the deck main motor (M1D) rotates the pickup roller to pick up paper; at this time, the pickup/feeding roller and the separation roller serve to make sure that only one sheet of paper is moved forward. When the deck pickup sensor (PS1D) detects paper thereafter, the deck pickup roller releasing solenoid (SL1D) goes ON so that the pickup roller leaves the stack of paper.

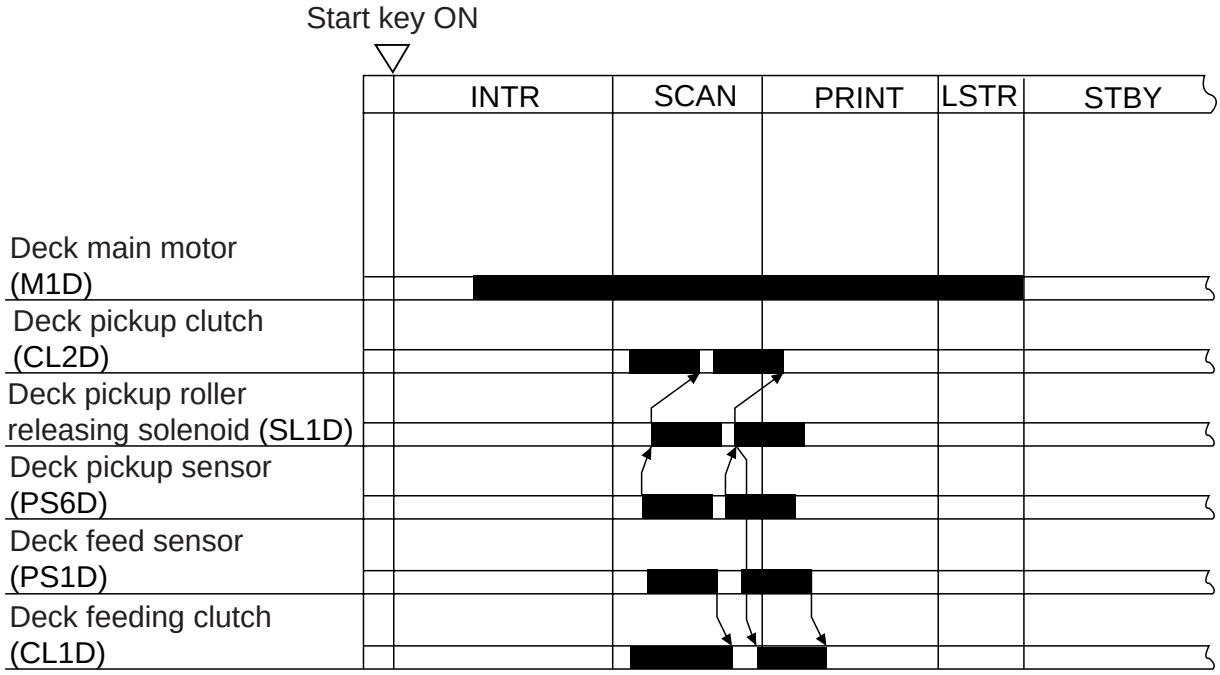
The deck feeding roller starts to rotate when the deck feeding clutch (CL1D) goes ON. The picked paper is moved to the registration roller of the host machine, and is made to arch for removal of the slack.

The registration roller is controlled so that the leading edge of paper will match the image on the photosensitive drum.



F08-101-01

1.1.3 Sequence of Pickup Operations (deck)

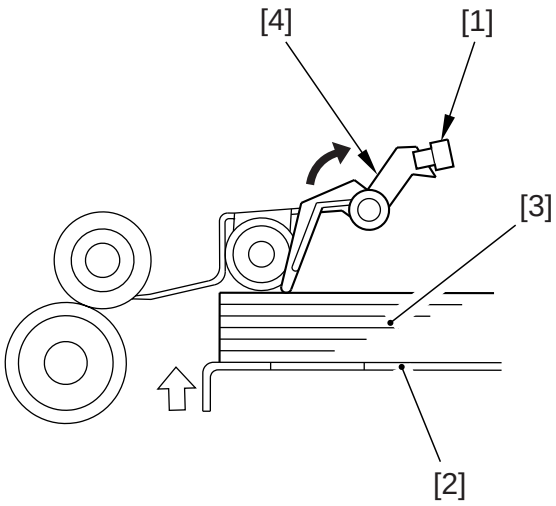


F08-101-02

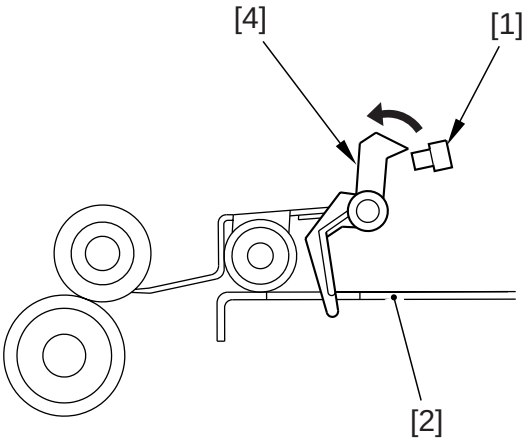
1.2 Detecting Paper in the Deck

1.2.1 Detecting the Presence/Absence of Paper

The presence/absence of paper inside the deck is detected by the deck paper absence sensor [1] (PS2D). When the paper [3] placed on the lifter [2] runs out and, as a result, the paper detecting lever [4] of the pickup roller assembly leaves the deck paper absent sensor, the control panel of the host machine will indicate the absence of paper.



F08-102-01



F08-102-02

1.2.2 Switching the Deck Paper Size

If you have to change the paper size of the deck at time of installation or to comply with a request of the user, adjust the guide plate inside the deck to suit the new paper size and enter the new paper size in service mode (OPTION>ACC-DK-P).

1.2.3 Detecting the Level of Paper in the Deck

The deck uses the deck paper supply position sensor (PS8D), deck paper level sensor (PS7D), and deck paper absent sensor (PS2D) to find out how much paper remains inside its compartment and to indicate an approximate level in the control panel of the host machine as shown in the following table (indicating combinations of paper levels and sensor states):

Paper level	PS2D	PS8D	PS7D	Indication in control panel
100% to about 50%	1	1	1	
about 50% to about 10%	1	1	0	
10%	1	0	0	
No paper	0	0	0	

1: light-blocking plate over the sensor.
0: light-blocking plate not over the sensor.

T08-102-01

1.3 Deck Lifter

1.3.1 Detecting the Presence/Absence of Paper

The lifter of the deck is connected to a reel by means of a cable, and is driven by the deck lifter motor (M2D), whose direction of rotation changes the direction (up/down) of the movement of the lifter.

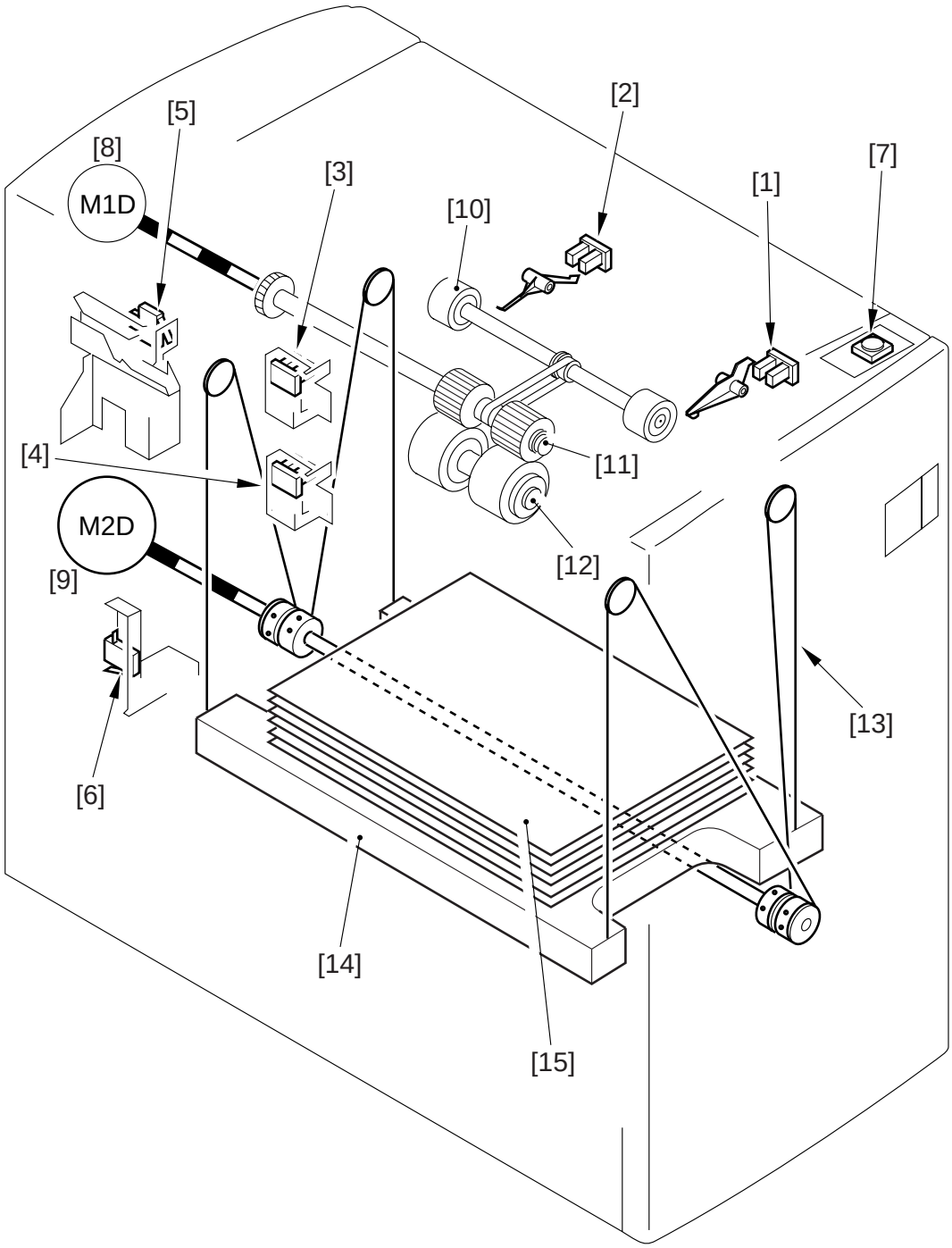
When the compartment is slid inside the deck, the deck open detecting switch (SW1D) is pushed; the deck then starts to move up when the deck open sensor (PS9D) detects the light-blocking plate. It will stop to move up when the deck lifter position sensor (PS4D) detects the top face of the stack of paper placed on it.

If, for some reason, the lifter fails to stop moving up after the sensor lever blocks the deck lifter position sensor, the deck lifter upper limit sensor (PS3D) will go ON to stop it and thereby to prevent image.

When the deck open switch (SW100D) is pushed, on the other hand, the lifter starts to move down, and continues to move down until it leaves the sensor lever of the deck paper supply position sensor (PS8D; falling edge of the sensor output).

When supplied, the paper pushes the lever of the deck paper supply position sensors, and the lifter will move farther down until the stack of paper leaves the sensor lever.

Each time paper is supplied, the lifter repeats its descent movement until the deck lifter lower limit detecting switch (SW2D) is pushed (point of maximum paper supply).



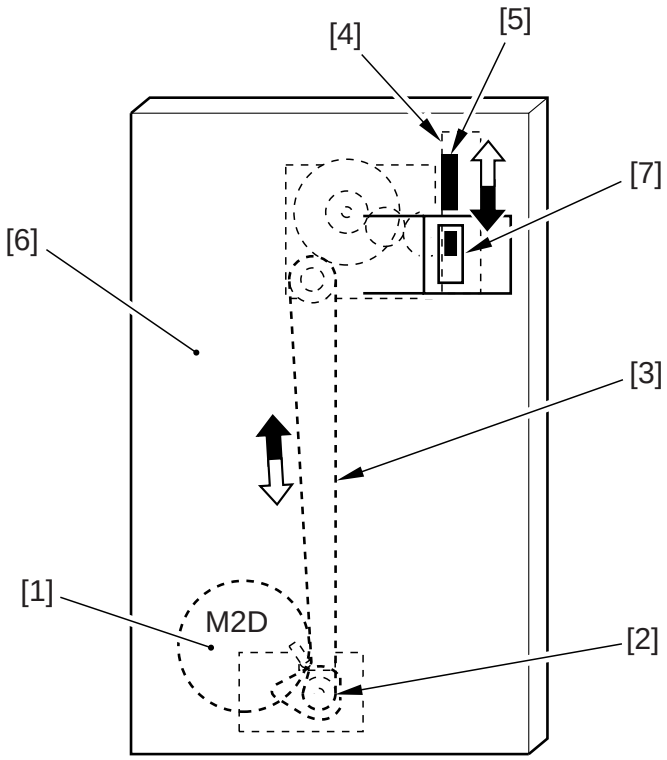
F08-103-01

[1] Deck lifter upper limit sensor
[2] Deck lifter position sensor
[3] Deck paper supply position sensor
[4] Deck paper level sensor
[5] Deck open detecting switch
[6] Deck lifter lower limit detecting switch
[7] Deck open switch
[8] Deck main motor
[9] Deck lifter motor
[10] Pickup roller
[11] Feeding roller
[12] Separation roller
[13] Deck lifter cable
[14] Lifter
[15] Copy paper

1.3.2 Indicating the Level of Paper (deck front cover)

The drive of the deck lifter motor [1] (M2D) is received by a coupling [2], and is forwarded to the rack [4] by way of the drive belt [3]. The rack is equipped with a black belt [4] designed to move inside the window [7] in the deck front cover [6] in keeping with the movement of the rack.

When the paper starts to run out and the lifter moves up to the pickup position as a result, the area of the black belt in the window accordingly increases (while the white area decreases), indicating the increasing level of paper.



F08-103-02

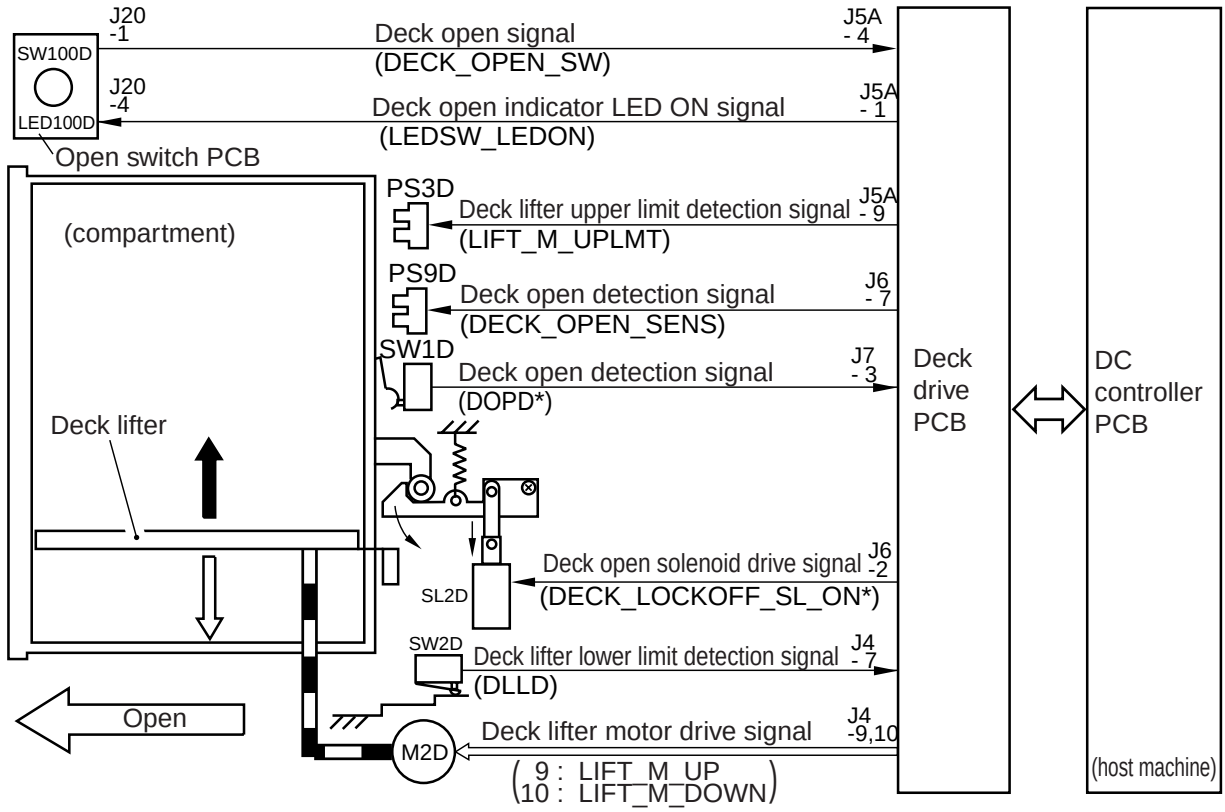
1.4 Opening/Closing of the Compartment

1.4.1 Opening/Closing of the Compartment

When the deck open switch (SW100D) is pushed, the deck open solenoid (SL2D) goes ON, and the compartment is released; as a result, the compartment is pushed several centimeters forward. At the same time, the deck lifter motor (M2D) starts to rotate, and the lifter inside the compartment moves down.

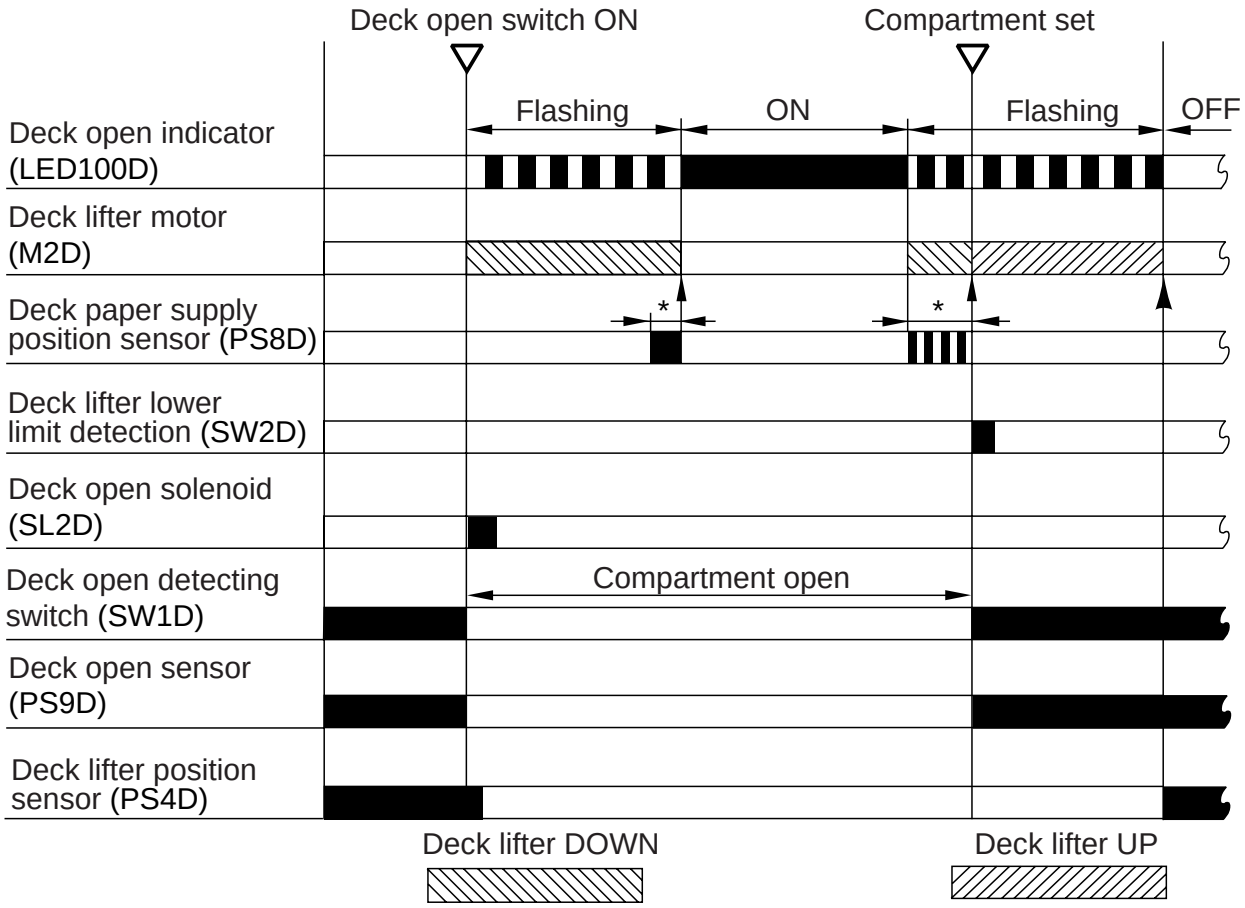
When the compartment is pushed inside the deck by hand, the deck open sensor (PS9D) will detect the light-blocking plate of the compartment, and the lifter will move up to the pickup position.

When the deck lifter motor starts to rotate, the deck open indicator (LED100D) on the open switch PCB will go ON or start to flash.



F08-104-01

1.4.2 Sequence of Operations (opening/closing of the compartment)



* : varies depending on the amount of paper.

F08-104-02

1.5 Controlling the Deck Motor

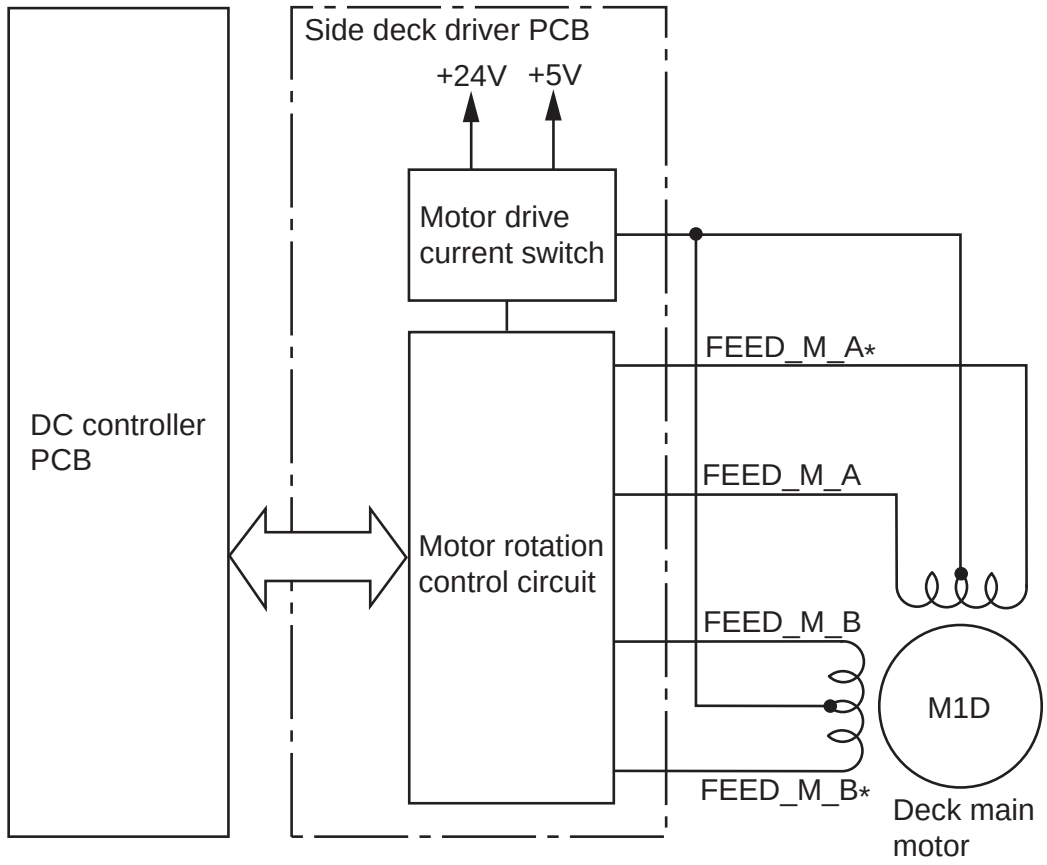
1.5.1 Controlling the Deck Main Motor (M1D)

The deck main motor (M1D) is a stepping motor, and is controlled by the DC controller of the host machine. The following figure shows the circuit used to drive the deck main motor, and the circuit has the following function:

[1] Turning on/off the deck main motor

a. Turning On/Off the Motor

The outputs FEED_M_A, FEED_M_A*, FEED_M_B, and FEED_M_B* are controlled using serial signals from the host machine to turn on/off the deck main motor and switch its speed of rotation.



F08-105-01

1.5.2 Controlling the Deck Lifter Motor (M2D)

The deck lifter motor control circuit is found on the side deck driver PCB. F08-105-02 is a block diagram of the PCB.

The combination circuit found in the figure consists of various logic circuits, and a specific combination is used to rotate the deck lifter motor clockwise or counterclockwise: output signals from sensors and deck lifter motor drive command and deck lifter ascent command from the DC controller of the host machine.

If the deck lifter position sensor (PS4D) does not detect the lifter within a specific period of time in spite of the presence of the deck lifter UP signal, an alarm (code: 05) will be indicated in service mode: DISPLAY>ALARM1>BODY.

[1] Conditions for Moving Up the Lifter

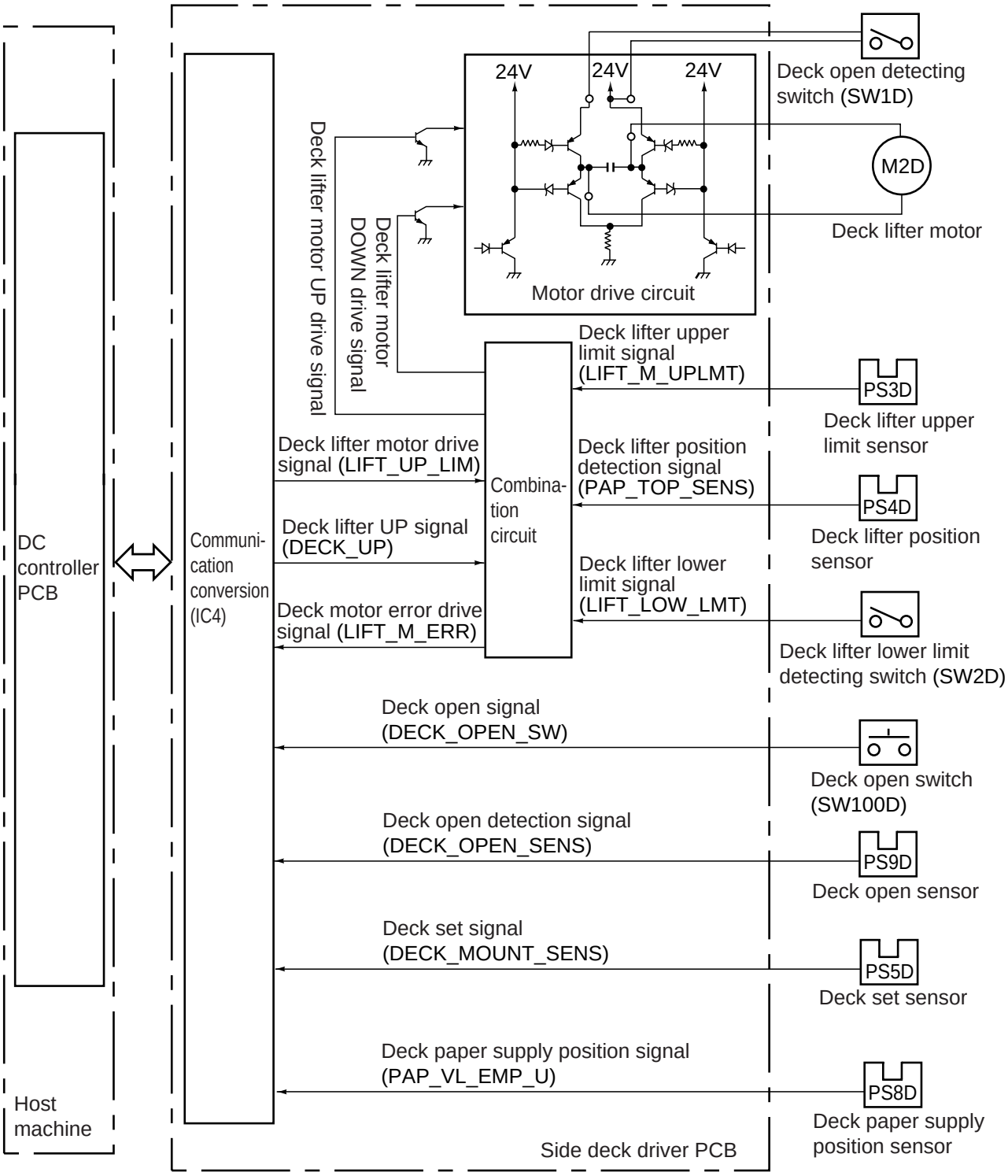
- The deck is connected to its host machine. → The deck set signal (DECK_MOUNT_SENS) is '1'.
- The compartment is closed. → The deck open detection signal (DECK_OPEN_SENS) is '1'.
- The compartment is closed. → The deck open detecting switch (DECK_OPEN_SW) is ON.
- The deck upper limit detection signal (LIFT_M_DOWN) is '0'.
- The deck lifter UP signal (LIFT_M_UP) is '0'.

The above conditions will move up the lifter.

[2] Conditions for Moving Down the Lifter

- The compartment is open. The deck open detection signal (DECK_OPEN_SNS) is '0'.
- The deck lifter lower limit detection signal (LIFT_LOW_LIMIT) is '0' and, in addition, the deck lifter position detection signal (PAP_TOP_SENS) is '0'.
- The deck lifter motor DOWN signal (LIFT_M_DOWN) is '0'.
- The deck lifter UP signal (LIFT_M_UP) is '1'.

The above conditions move down the lifter.



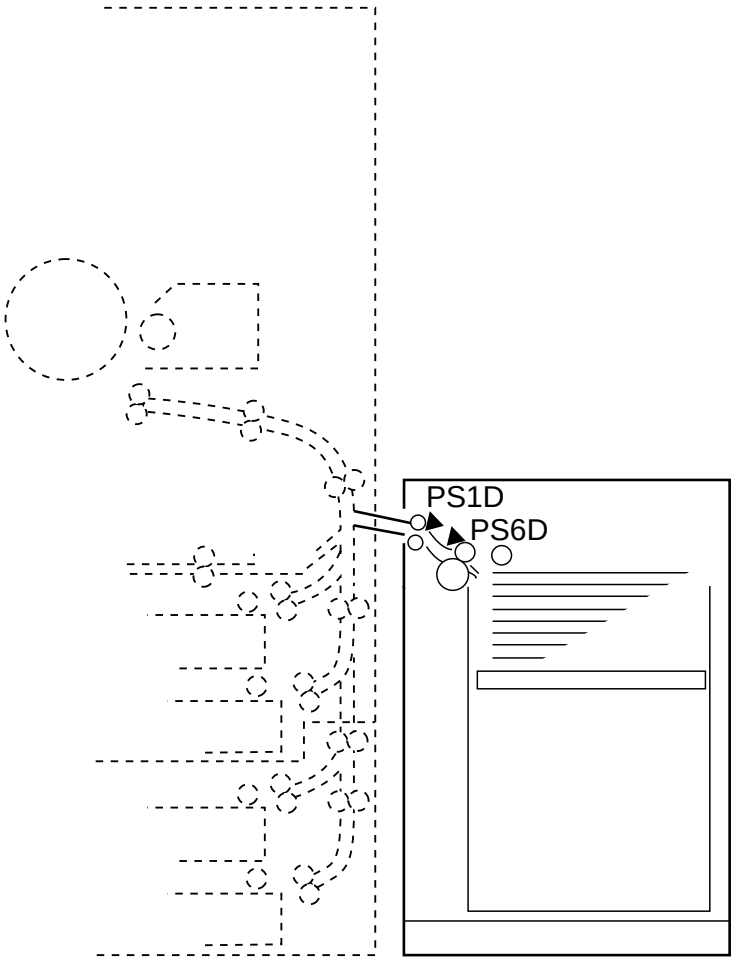
Note: The communication conversion IC (IC4) is used to convert between serial signals and parallel signals.

F08-105-02

2 Detecting Jams

2.1 Outline

The paper deck is equipped with two sensors (F08-201-01) to monitor the movement of paper. A jam is identified in relation to the signals from the sensors at such times as programmed in the DC controller of the host machine. When the DC controller of the host machine identifies a jam, the machine will deliver the sheets that are ahead of the jam, and will stop the operation; thereafter, the host machine will indicate instructions for jam removal in its control panel.



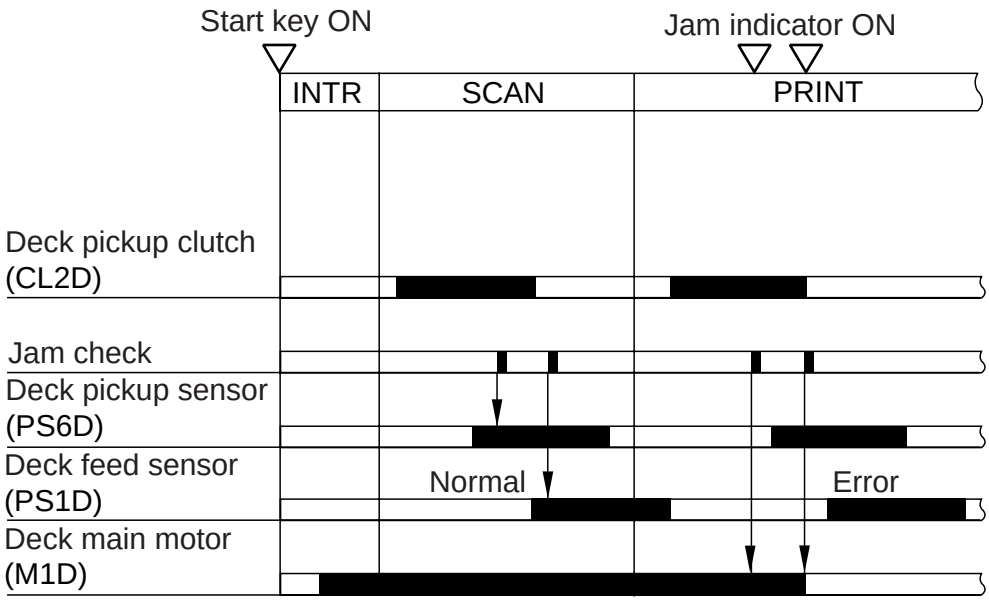
F08-201-01

Notation	Name	Function
PS1D	Deck feed sensor	Detection of delay jam
PS6D	Deck pickup sensor	Detection of delay jam

T08-201-01

The DC controller of the host machine will identify a jam in response to the following condition:

1. Paper exits over the deck feed sensor (PS6D) while the machine is in wait-up state or standby state when the power switch of the host machine is turned on.
2. Deck Pickup/Vertical Path Delay Jam



F08-201-02

3 Disassembly and Assembly

The discussions that follow cover the machine's mechanical characteristics and how to disassemble/assemble the machine. Keep the following in mind whenever you work with the machine:

1. ⚠The power plug must remain disconnected for safety when disassembling/assembling the machine.

2. Unless otherwise noted, the machine may be assembled by reversing the steps used to disassemble it.

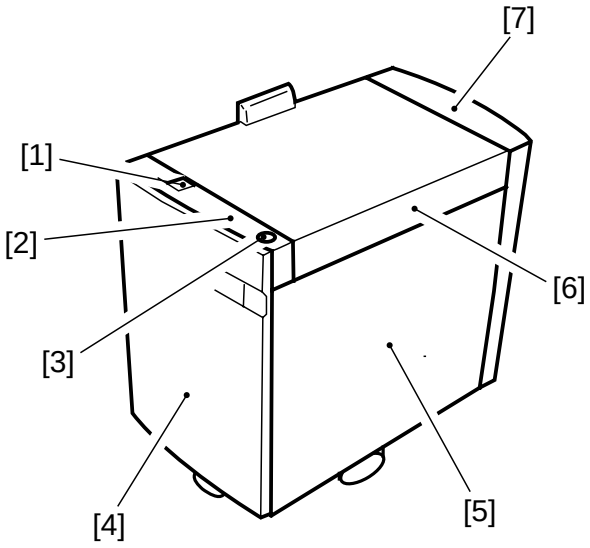
3. The screws must be identified by type (length, diameter) and location.

4. The mounting screws used for the grounding wire and the varistors come with a washer, which must not be left out when assembling the machine.

5. As a rule, the machine must not be operated with any of its parts removed.

3.1 External Covers

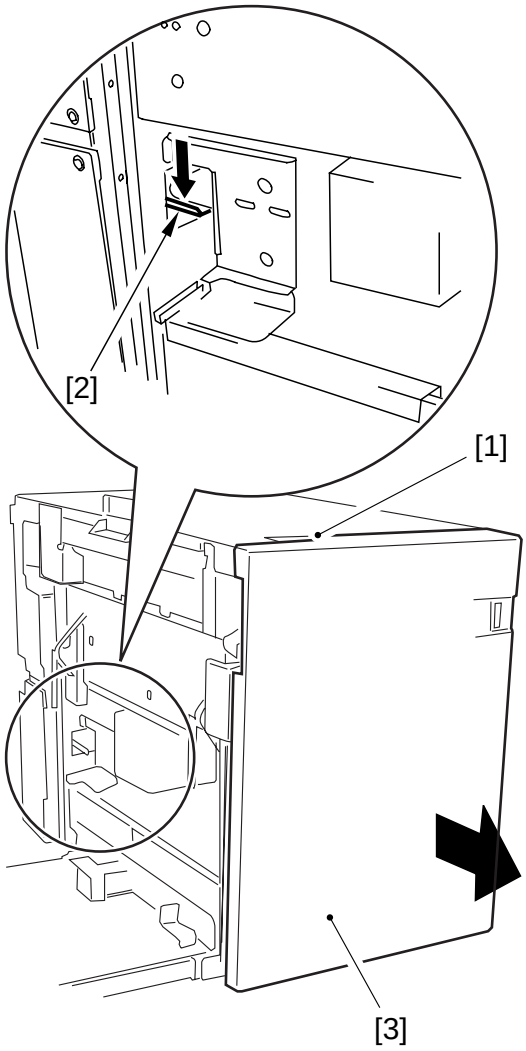
[1] Deck releasing grip
[2] Front upper cover
[3] Compartment open/closed switch
[4] Front cover
[5] Right cover
[6] Upper cover
[7] Rear cover



F08-301-01

3.1.1 Sliding Out the Compartment

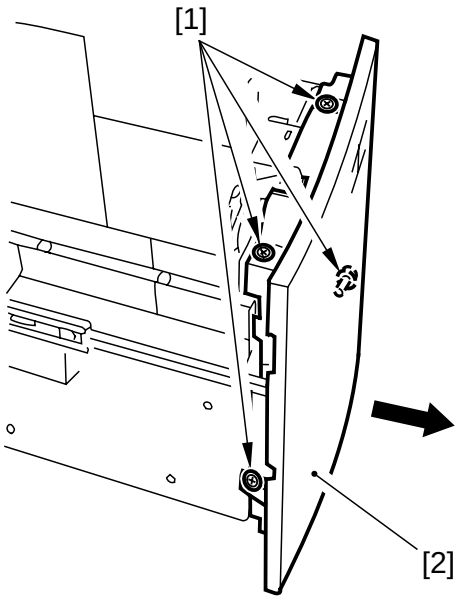
1) Push the deck releasing grip [1] to release the deck from its host machine; then, push down the latch plate [2] at the left rear to open the compartment [3].



F08-301-02

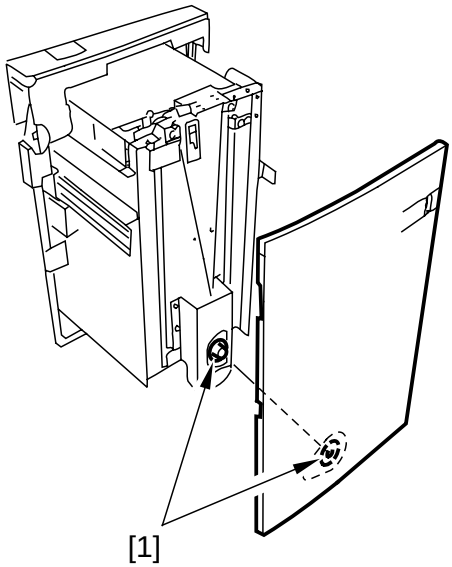
3.1.2 Removing the Front Cover

1) Sliding out the compartment. (p. 8-17P)
2) Loosen the four screws [1], and shift the front cover [2] to detach it to the front.



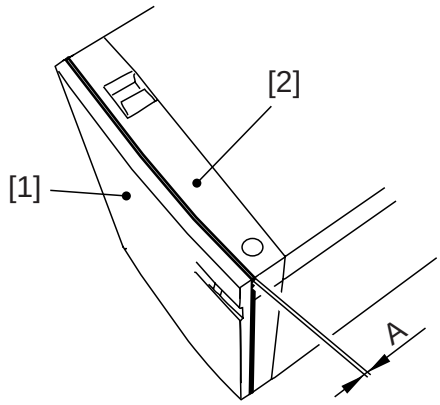
F08-301-03

When mounting the front cover, be sure to match it against the coupling [1] of the paper level indicator.



F08-301-04

Be sure to mount the front cover so that gap A between the front cover [1] and the front upper cover [2] is 3 ±1 mm.

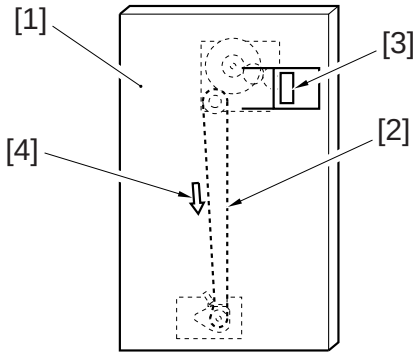


F08-301-05

If you operate the deck without matching the position of the paper level indicator and the deck lifter, the drive mechanism of the paper level indicator can become damaged. If you have moved the paper level indicator drive belt behind the front cover or the deck lifter, be sure to perform the following two tasks:

Adjusting the Paper Level Indicator

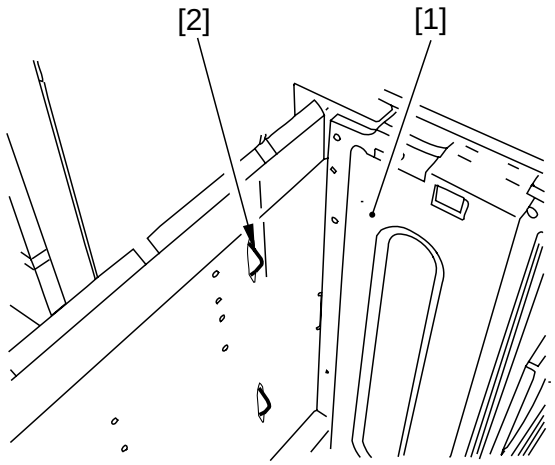
1) Move the drive belt [2] of the paper level indicator behind the front cover [1] by hand so that the white area inside the window [3] increases, i.e., in the direction for the arrow [4]; move it until a little resistance is felt.



F08-301-06-A

Moving the Deck Lifter

1) Sliding out the compartment. (p. 8-17P)
2) If paper is found, remove all of it.
3) Connect the power plug, and turn on the power switch of the host machine.
4) Push the flag [2] of the paper supply position sensor found inside the compartment so that the deck lifter will move down. (The deck lifter will stop where you release the sensor flag.)

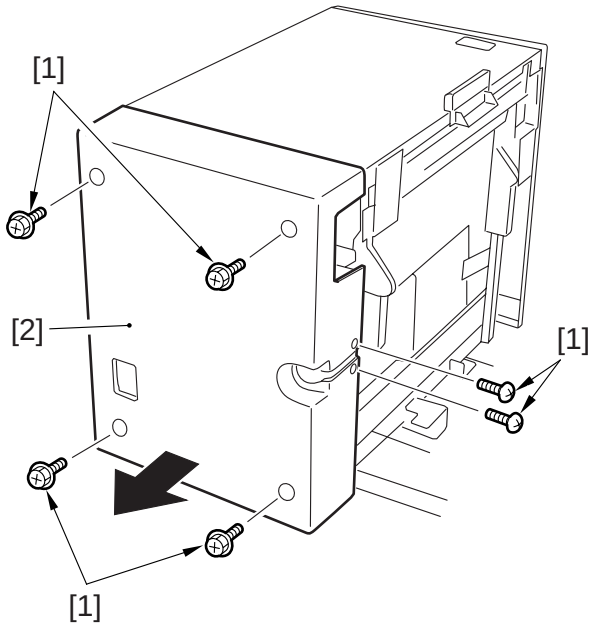


F08-301-06-B

5) Disconnect the power plug.

3.1.3 Removing the Rear Cover

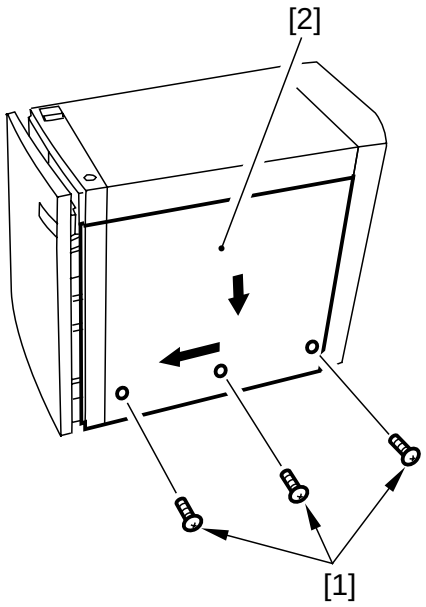
1) Release the deck from its host machine; then, remove the six crews [1], and detach the rear cover [2].



F08-301-07

3.1.4 Removing the Right Cover

1) Sliding out the compartment. (p. 8-17P)
2) Remove the three screws [1], and shift the right cover [2] down, and then detach it to the front.

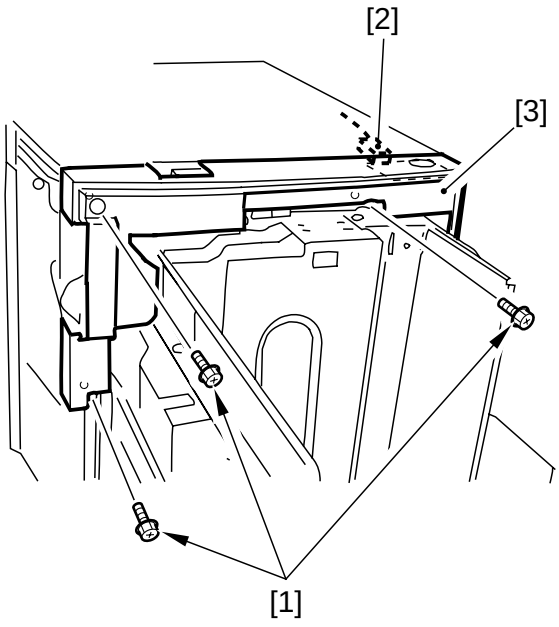


F08-301-08

3.1.5 Removing the Front Upper Cover

1) Sliding out the compartment. (p. 8-17P)
2) Remove the three screws [1], and disconnect the connector [2]; then, detach the front upper cover [3].

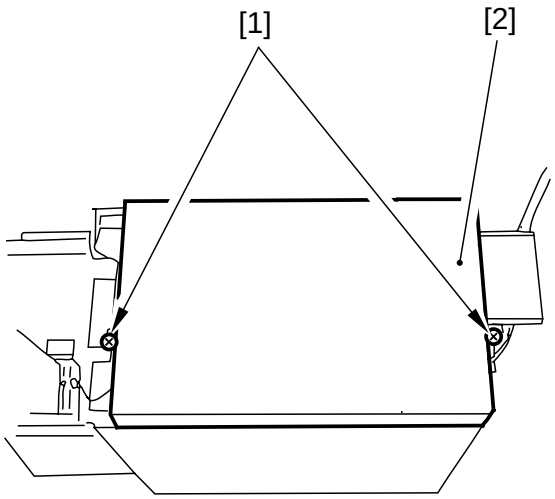
When mounting the front upper cover, take care not to trap the harness on the open switch PCB or to forget connecting the connectors.



F08-301-10

3.1.6 Removing the Upper Cover

1) Remove the rear cover. (p. 8-20P)
2) Sliding out the compartment. (p. 8-17P)
3) Remove the front upper cover. (p. 8-21P)
4) Remove the two screws [1], and detach the upper cover [2].

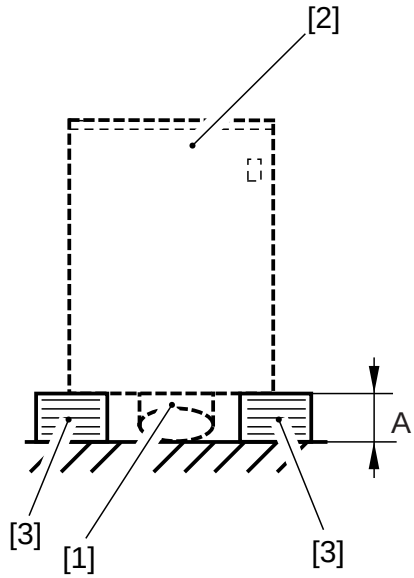


F08-301-11

3.2 Paper Deck Body

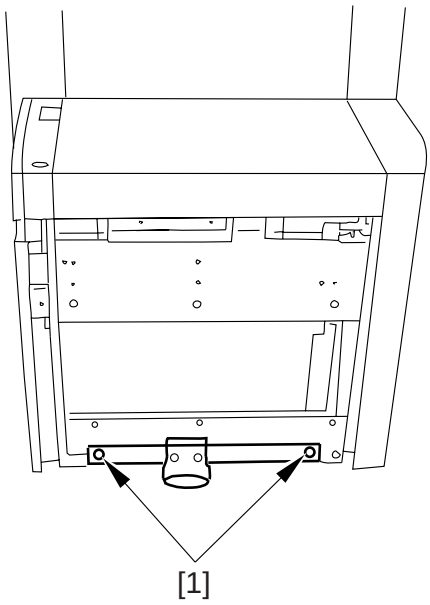
3.2.1 Removing the Deck from the Host Machine

1) To prevent deformation of the roller support plate [1], lay copy paper [3] (A: about 8 cm) or the like on the floor on which to place the deck [2].



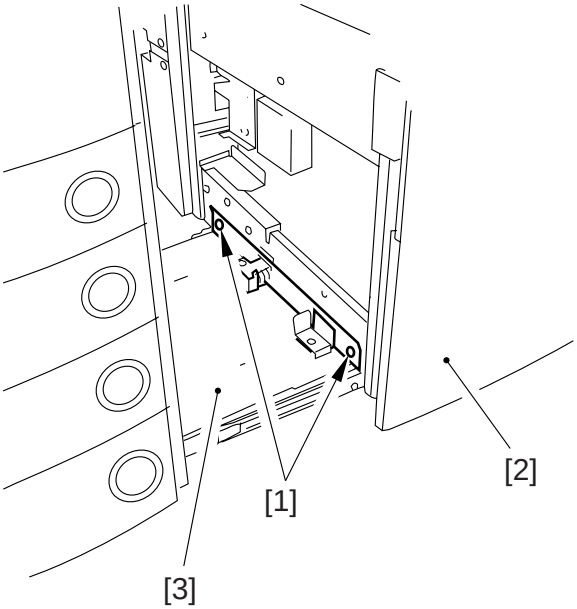
F08-302-01

2) Remove the right cover. (p. 8-21P)
3) Remove the two screws [1] from the right side.



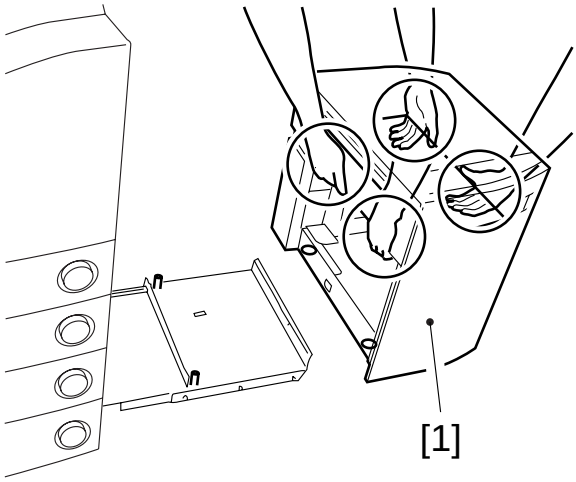
F08-302-02-A

4) Remove the two screws [1] on the left, and detach the deck [2] from the deck base [3].



F08-302-02-B

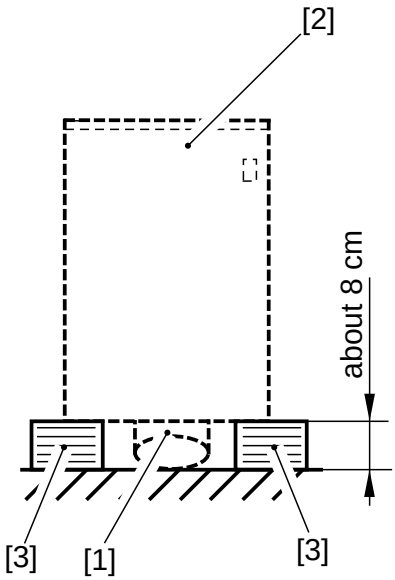
5) Holding the deck [1] by the areas indicated, move and place the deck on the block of paper prepared previously (p. 8-23P).



F08-302-03

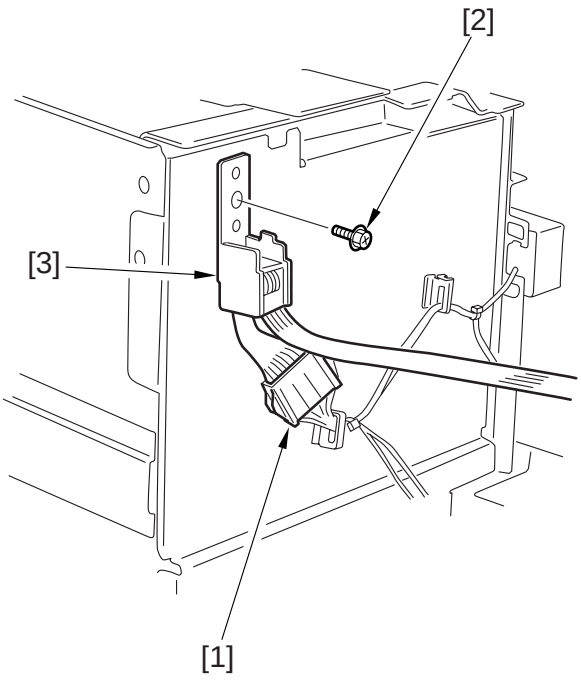
3.2.2 Removing the Compartment

1) To prevent deformation of the roller support plate [1], lay copy paper [3] (A: about 8 cm) or the like on the floor on which to place the deck [2].



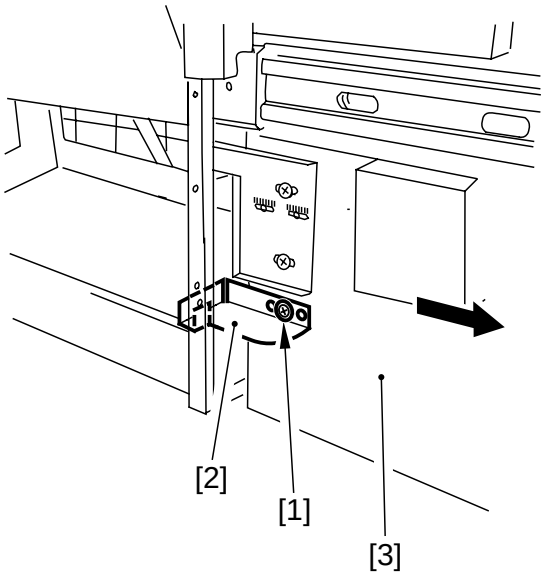
F08-302-04

2) Sliding out the compartment. (p. 8-17P)
3) Remove the right cover. (p. 8-21P)
4) Disconnect the connector [1] at the rear of the compartment, and remove the screw [2]; then, detach the harness unit [3].



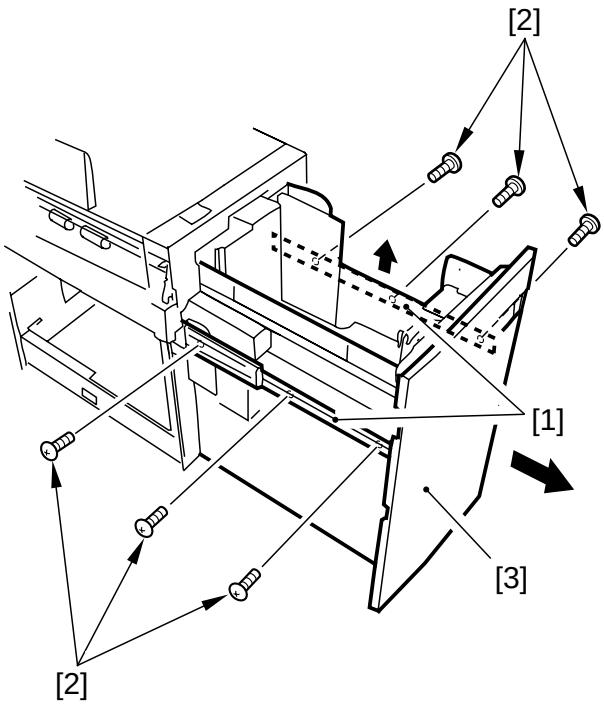
F08-302-05

5) Remove the screw [1] at the left of the deck, and remove the stopper plate [2]; then, slide out the compartment [2] to the front.



F08-302-06

6) Remove the three screws [2] each from the left and the right of the compartment rail [1]; then, lift the compartment [3] about 1 cm, and remove it to the front.
7) Place the compartment [3] on the block of copy paper prepared previously. (p. 8-25P)

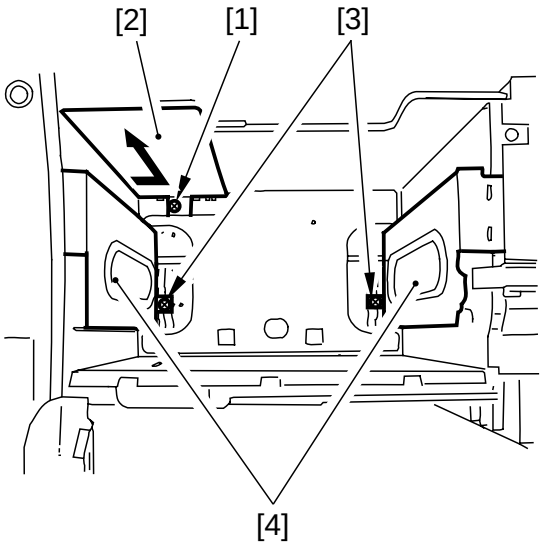


F08-302-07

3.2.3 Changing the Deck Paper Size

If the deck paper size must be changed to suit the needs of the user, perform the following:

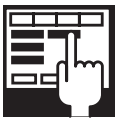
1) Remove the front cover. (p. 8-18P)
2) If the lifter is up, move it to its lower limit. (p. 8-20P)
3) Remove the screw [1], and mount the paper trailing edge guide plate [2] to suit the new paper size. (Do not mount it, however, if the new size is LTR.)
4) Remove the screw [3] (1 each), and mount the left and right guide plates [4] to suit the new paper size.



F08-302-08

3.2.4 After Changing the Deck Paper Size

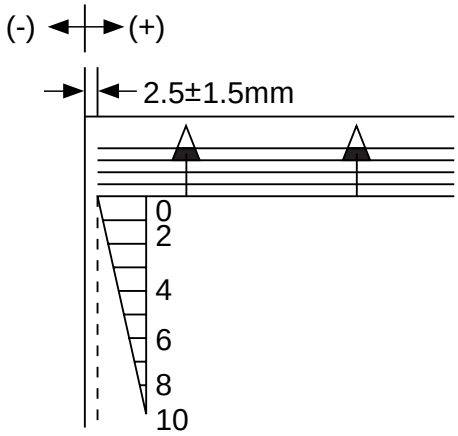
Execute 'machine settings selection' in service mode, and make settings to suit the selected paper size.



COPIER>OPTION>ACC>DK-P
Machine Settings

3.2.5 Checking the Image Rear Front Position

Make copies from the Paper Deck in Direct, and check to make sure that the margin along the image front is 2.5 ± 1.5 mm. Otherwise, adjust the registration. (See item 3.2.6.)



F08-302-09

3.2.6 Adjusting the Cassette Rear Front Registration

Execute 'image read start position adjustment' in service mode.

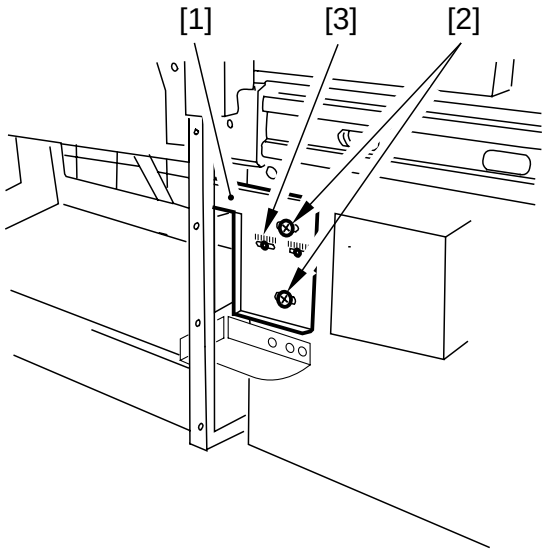
COPIER>FUNCTION>DK-ADJ-Y
Use it to adjust the image read start position.

If correction in service mode fails, make the following adjustments.

3.2.7 Adjusting the Registration for the Deck

If you must adjust the left/right registration (standard: 0 ±1.5 mm), perform the following:

1) Sliding out the compartment. (p. 8-17P)
2) Using the two screws [2], change the position of the latch plate [1] of the deck open solenoid (SL2D) found at the left rear. (At this time, use the index [3] on the latch plate as a reference.)



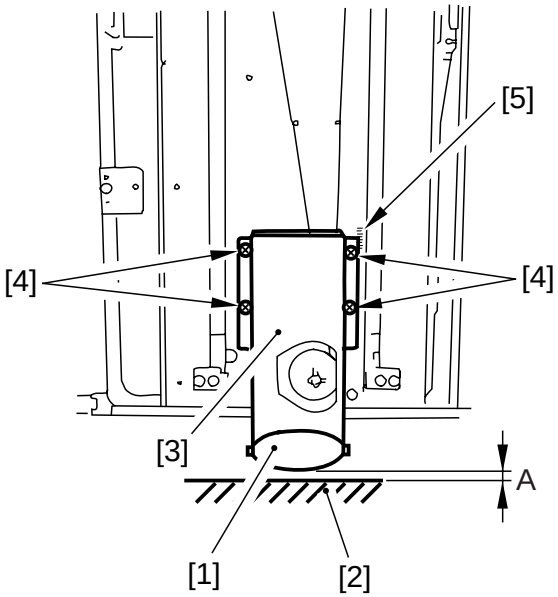
F08-302-10

3) Close the compartment, and check to make sure that the gap of the front cover is 3 ±1 mm.
4) If the gap is not 3 ±1 mm, adjust the front cover. (p. 8-19P)

3.2.8 Adjusting the Position of the Support Member

If the compartment cannot be opened/closed smoothly and the position of the support roller must be adjusted, perform the following:

1) Remove the front cover. (p. 8-18P)
2) Using the four screws [4] of the roller support plate [3], make adjustments so that the support roller [1] and the floor [2] is about 3 mm when the compartment is fully slid out. (At this time, use the scale [5] on the front side plate as a reference.)



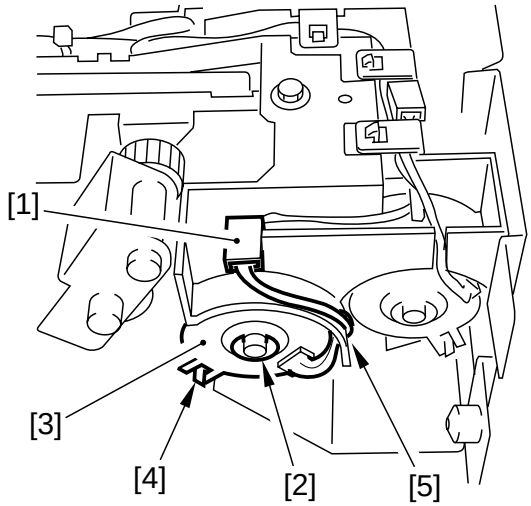
F08-302-11

3.3 Drive System

3.3.1 Removing the Deck Pickup Clutch (CL2D)

1) Remove the deck pickup unit. (p. 8-37P)
2) Disconnect the connector [1], and remove the E-ring [2]; then, detach the deck pickup clutch [3].

When mounting the deck pickup clutch, be sure to fit the clutch with the rotation stop [4]. In addition, be sure to hook the harness along the U-groove [5] of the guide.

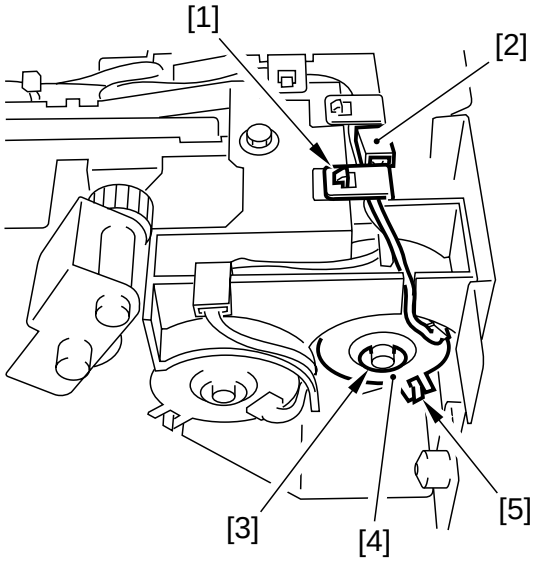


F08-303-01-A

3.3.2 Removing the Deck Feeding Clutch (CL1D)

1) Remove the deck pickup unit. (p. 8-37P)
2) Remove the harness retainer [1], disconnect the connector [2], and remove the E-ring [3]; then, detach the deck feeding clutch [4].

When mounting the deck feeding clutch, be sure to fit the clutch in the rotation stop [5].

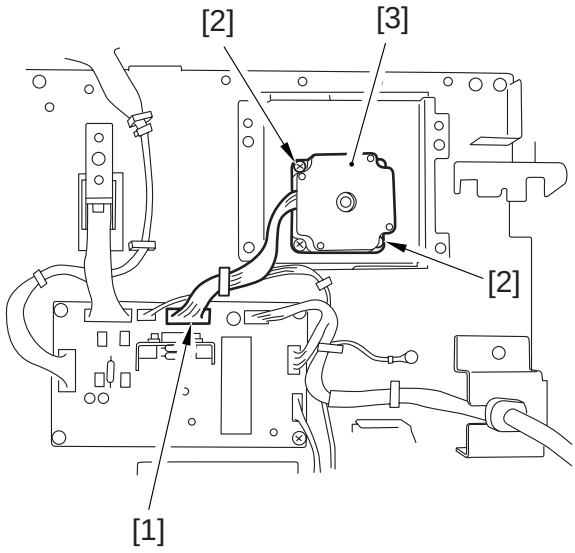


F08-303-01-B

3.3.3 Removing the Deck Main Motor (M1D)

1) Remove the rear cover. (p. 8-20P)
2) Disconnect the connector [1], and remove the two screws [2] : then, detach the deck main motor [3].

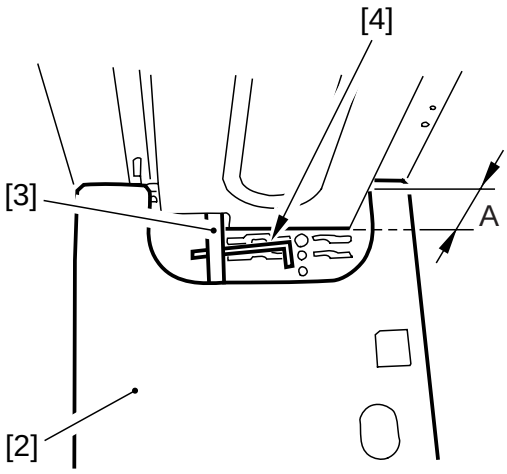
At this time, take care not to damage the gear at the tip of the motor spindle.



F08-303-02

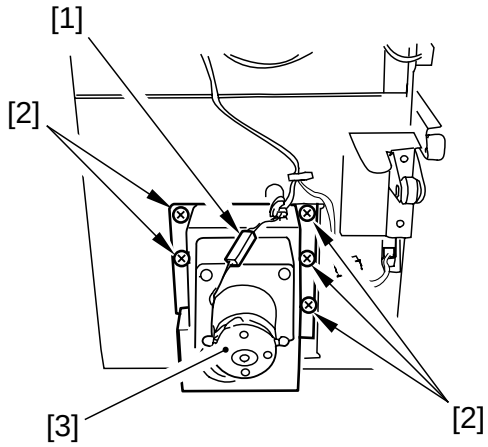
3.3.4 Removing the Deck Lifter Motor (M2D)

1) Sliding out the compartment. (p. 8-17P)
2) If the lifter is up, move it so that it is about 7 cm from the base plate of the compartment. (p. 8-20P)
3) Fit a hex wrench [2] into the opening in the lifter drive shaft [1] to fix the lifter drive shaft [3] in place (against rotation).



F08-303-03

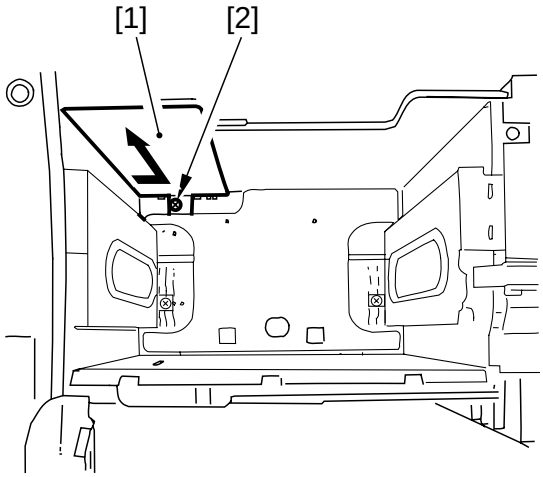
4) Remove the compartment. (p. 8-25P)
5) Disconnect the connector [1], and remove the five screws [2]; then, detach the deck lifter motor unit [3].



F08-303-04

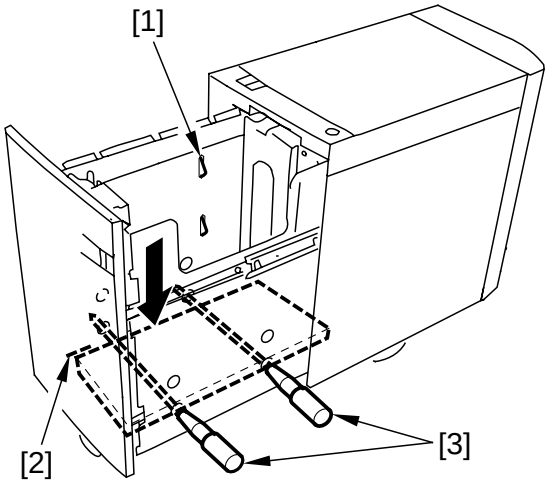
3.3.5 Removing the Lifter Cable (deck front)

1) Sliding out the compartment. (p. 8-17P)
2) If paper is found, remove all of it.
3) Remove the screw [2], and detach the paper trailing edge guide plate [1] from inside the compartment. (The paper trailing edge guide plate is not used if the paper size is LTR.)



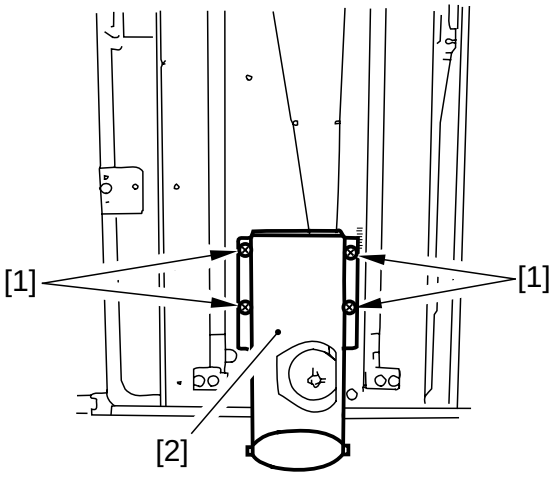
F08-303-05a

4) Push the sensor flag [1] of the paper supply position sensor so the left/right hole in the compartment side plate and the left/right hole in the deck lifter will match. (p. 8-20P)
   (At this time, try to mach the top face of the lifter against the marking [2] on the left side plate of the compartment to facilitate the work.)
5) Fit two long screwdrivers [3] through to keep the lifter in position.



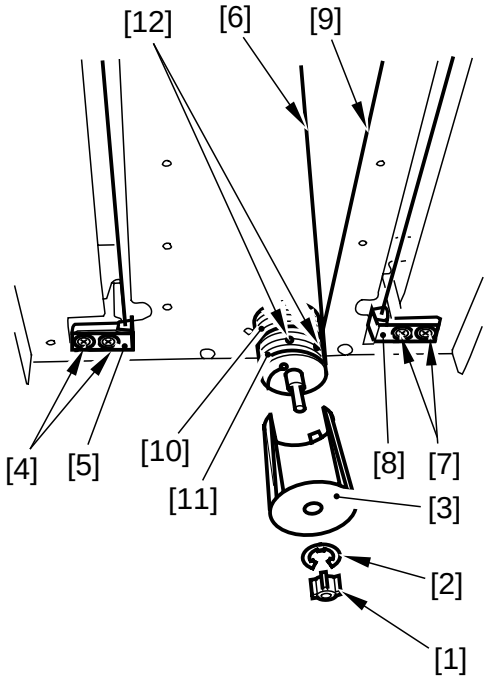
F08-303-05b

6) Remove the front cover of the deck. (p. 8-18P)
7) Remove the four screws [1], and detach the roller support plate [2].



F08-303-06

8) Remove the coupling shaft [1] and the E-ring [2]; then, detach the pulley cover [3].
9) Remove the two screws [4], and detach the cable fixing plate [5] on the left; then, detach the lifter cable [6] on the outside.
10) Remove the two screws [7] and the cable fixing plate [8] on the right side; then, detach the lifter cable [9] from the inside.
11) To remove the lifter cable from the pulley [10] on the inside, remove the two set screws [12] of the pulley [11] on the outside, and detach the pulley on the outside.

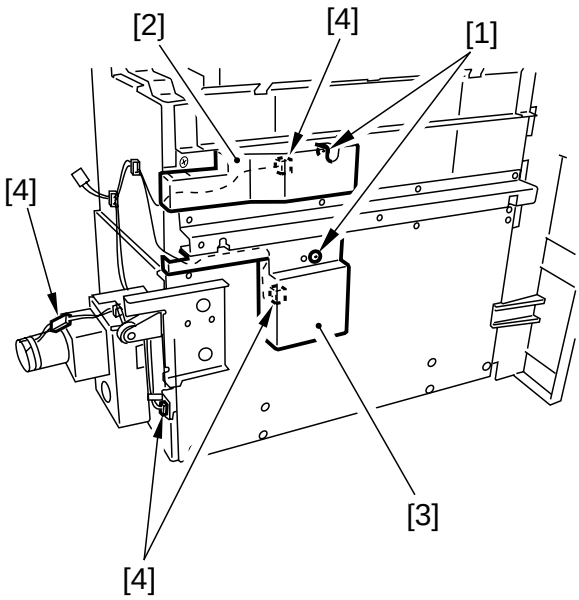


F08-303-07

3.3.6 Removing the Lifter Cable (deck rear)

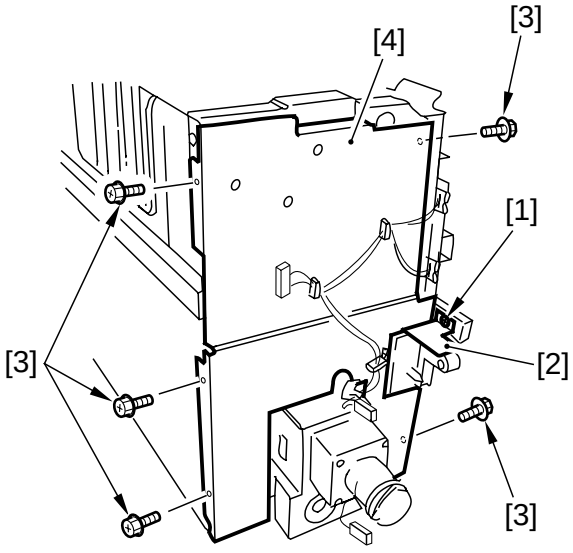
- Perform steps 1) through 3) under 3.3.5 “Removing the Lifter Cable (deck front).” (p. 8-32P)

4) Remove the compartment. (p. 8-25P)
5) Remove the screw [1] (1 each), and detach the sensor covers, upper [2] and lower [3].
6) Disconnect the four connectors [4].



F08-303-08

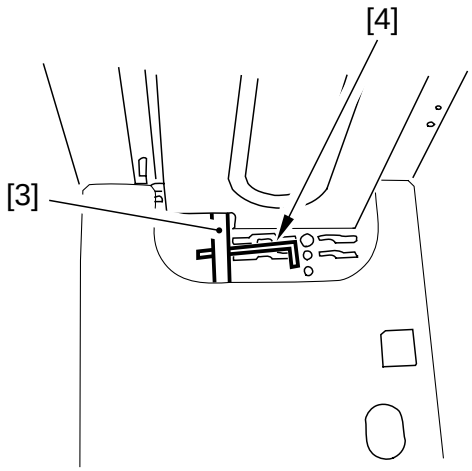
7) Remove the screw [1], and detach the sensor plate [2].
8) Remove the five screws [3], and detach the plate [4].



F08-303-09

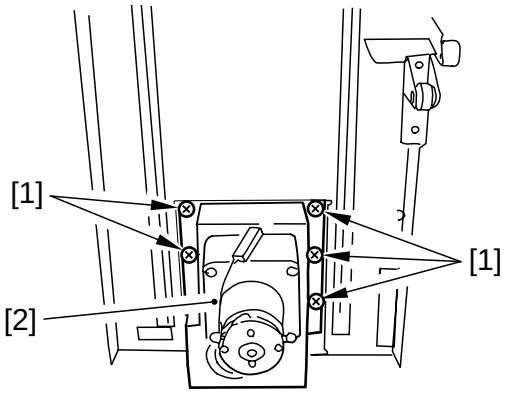
9) Fit a wrench [2] into the home of the lifter drive shaft [1] to fix it in place (against rotation).

If you fail to fix the lifter drive shaft in place, the lifter cable will become slack when the lifter motor unit is removed.



F08-303-10

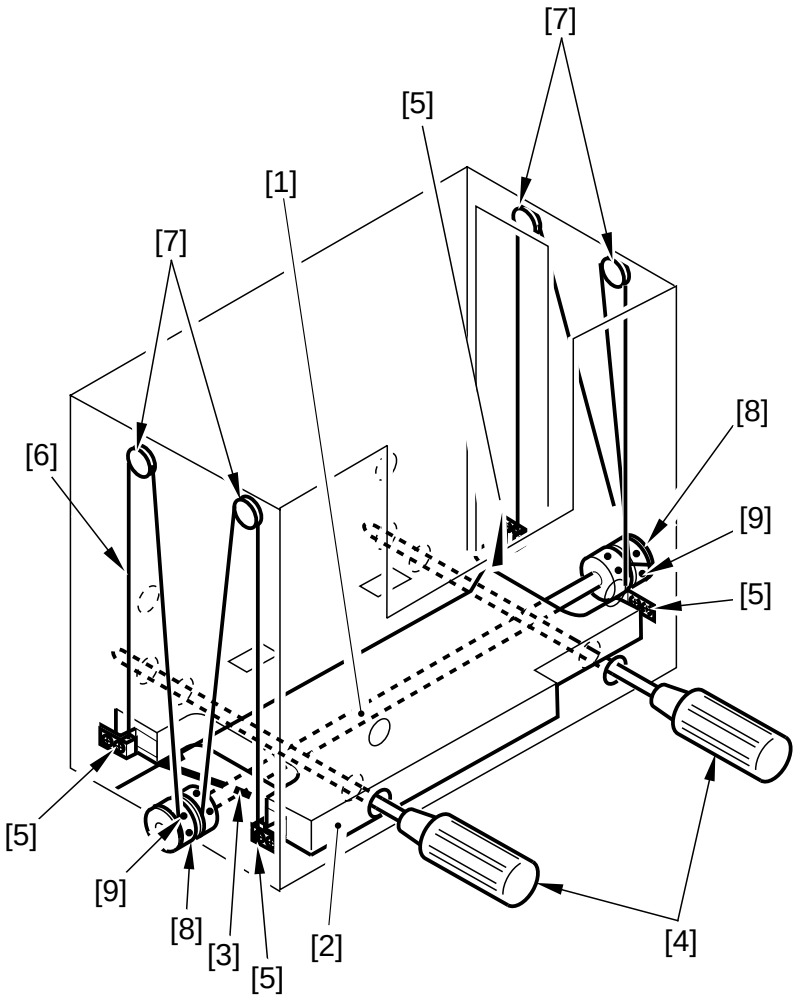
10) Remove the five screws [1], and detach the lifter motor unit [2].



F08-303-11

3.3.7 Routing the Lifter Cable

1) Check to make sure that the lifter drive shaft [1] and the lifter [2] are kept in place by means of a hex wrench [3] and two long screwdrivers [4].
2) Fix the four cable fixing plates [5] in place to the lifter using two screws each.
3) Hook the lifter cable [6] on the four pulleys [7].
4) Hook the ball of the lifter cable on the two pulleys [8] at the front/rear of the lifter drive shaft; then, wind it along the groove of the pulley about 1.5 turns. At this time, be sure to keep the lifter cable taut so that the long screwdrivers used to keep the lifter in position will move up and stop.
5) In this condition, secure the two pulleys [5] in place to the lifter drive shaft using a set screw [9] (1 each).
6) Mount the pulleys [8] to the lifter drive shaft; then, measure the distance from the base plate of the compartment to the top face of the lifter, making sure that the lifter is level.

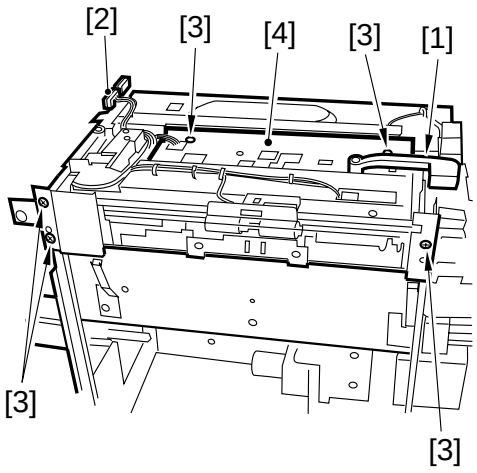


F08-303-12

3.4 Feeding Mechanism

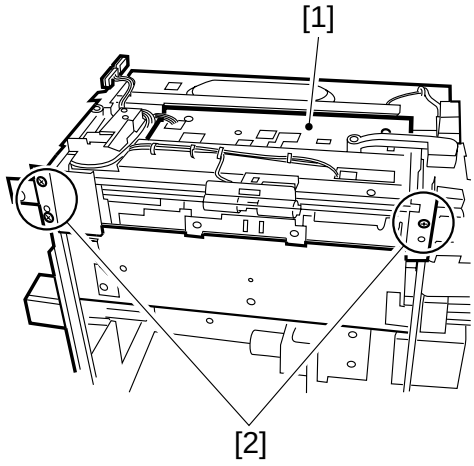
3.4.1 Removing the Deck Pickup Unit

1) Remove the upper cover. (p. 8-22P)
2) Remove the deck releasing grip [1].
3) Disconnect the two connectors [2], and remove the five screws [3]; then, detach the deck pickup unit [4].



F08-304-01

When mounting the deck pickup unit [1], be sure to fit and tighten the three screws [2] indicated in the figure in advance.

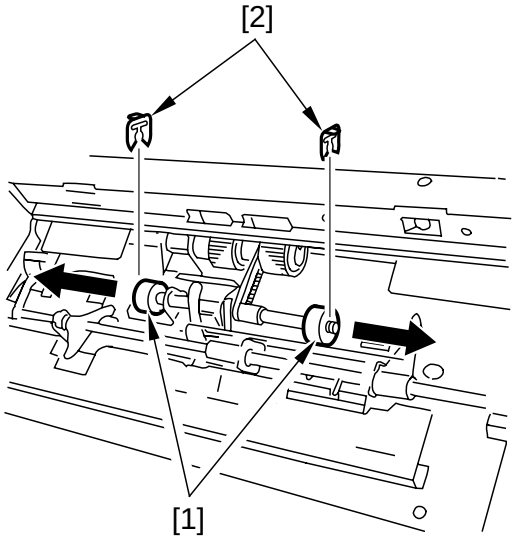


F08-304-02

3.4.2 Removing the Deck Pickup Roller

1) Remove the deck pickup unit. (item 3.4.1)
2) Turn over the deck pickup unit, and remove the resin ring [1] (1 each); then, detach the two deck pickup rollers [2].

The deck pickup roller has a specific orientation (direction of rotation). Pay attention to it when mounting it.

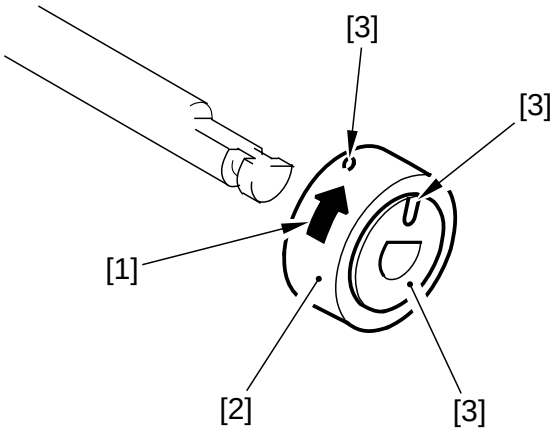


F08-304-03

3.4.3 Mounting the Deck Pickup Roller

Body Front (collar: silver-colored)

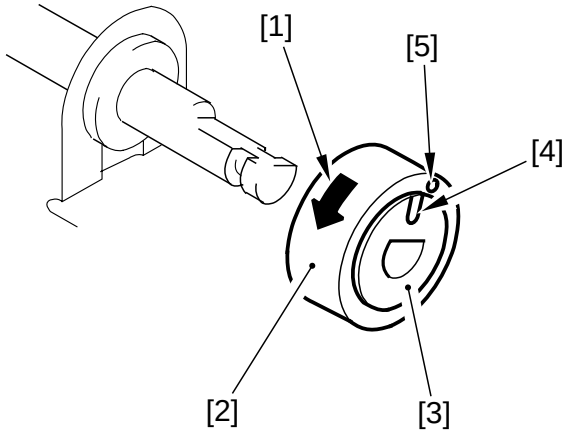
When mounting the deck pickup roller [2] to the front of the machine, be sure that the marking [4] on the collar [3] is toward the front of the machine and the marking [5] on the side of the roller is toward the rear of the machine.



F08-304-04

Body Rear (collar: gold-colored)

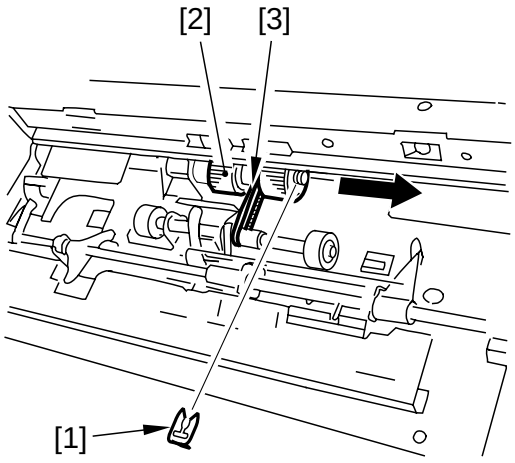
When mounting the deck pickup roller [2] to the rear of the machine, be sure that the marking [4] on the collar [3] and the marking [5] on the side of the roller are toward the rear of the machine.



F08-304-05

3.4.4 Removing the Deck Pickup/Feeding Roller

1) Remove the deck pickup unit. (p. 8-37P)
2) Turn over the deck pickup unit.
3) Remove the resin ring [1], and detach the deck pickup/feeding roller [2] and the drive belt [3] to the front.

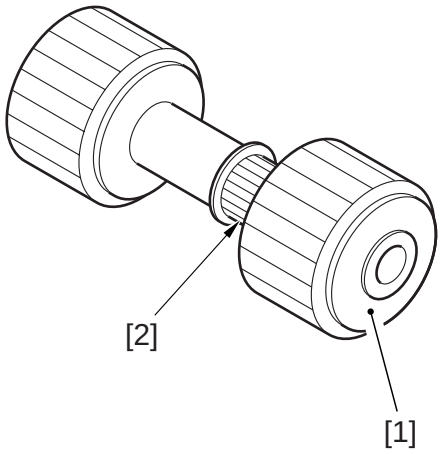


F08-304-06

3.4.5 Orientation of the Deck Pickup/Feeding Roller

When mounting the deck pickup/feeding roller [1], be sure that the belt pulley [2] is toward the front of the machine.

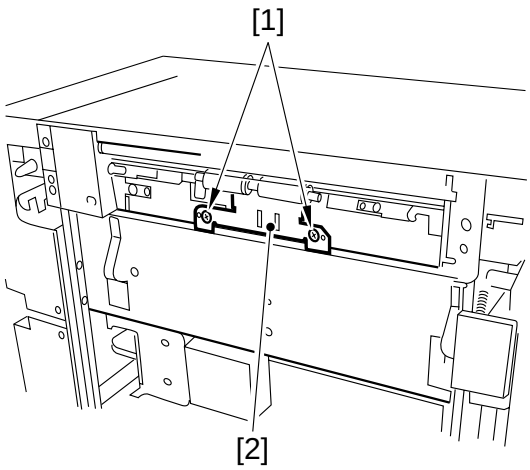
The pickup/feeding roller rubber, on the other hand, may be attached to the pickup/feeding roller shaft in either orientation.



F08-304-07

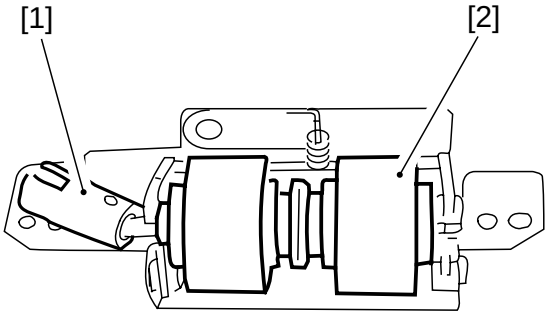
3.4.6 Removing the Deck Separation Roller

1) Release the deck from its host machine; then, remove the two screws [1], and detach the separation roller support plate [2].



F08-304-08

2) Remove the joint [1], and detach the deck separation roller [2].



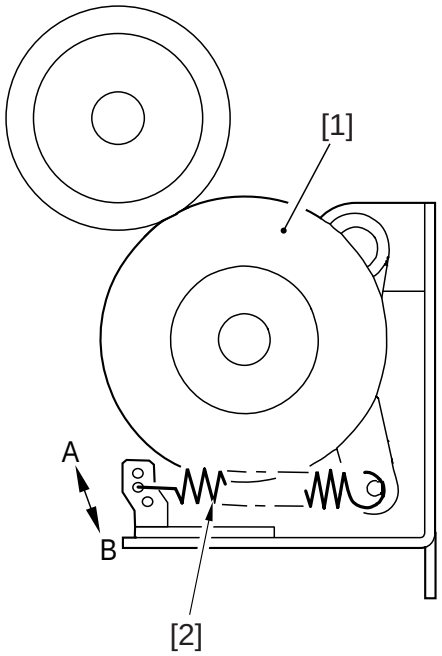
F08-304-09

The urethane sponge used on the deck separation roller is pink upon foaming, and changes over time to orange and then yellow, accelerating the rate of change if exposed to light.
This is a general characteristic of urethane sponge, and does not affect its performance. (The part is not offered in different colors.)

3.4.7 Adjusting the Deck Separation Roller Pressure

If double feeding or pickup failure occurs when the deck is used as the source of paper, move the position of the pressure spring [2] of the deck separation roller [1].

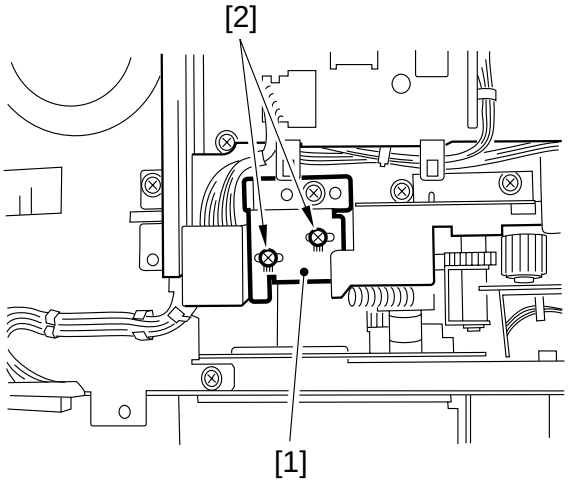
- If pickup failure occurs, move the spring in the direction of arrow A.
- If double feeding occurs, move the spring in the direction of arrow B.



F08-304-10

3.4.8 Position of the Deck Pickup Roller Releasing Solenoid (SL1D)

Before detaching the deck pickup roller releasing solenoid [1] from the support plate, keep note of the position of the solenoid with reference to the two fixing screws [2] on the solenoid. Or, mark the position of the solenoid on the support plate with a scribe to indicate the position. The solenoid must always be positioned in its initial location.

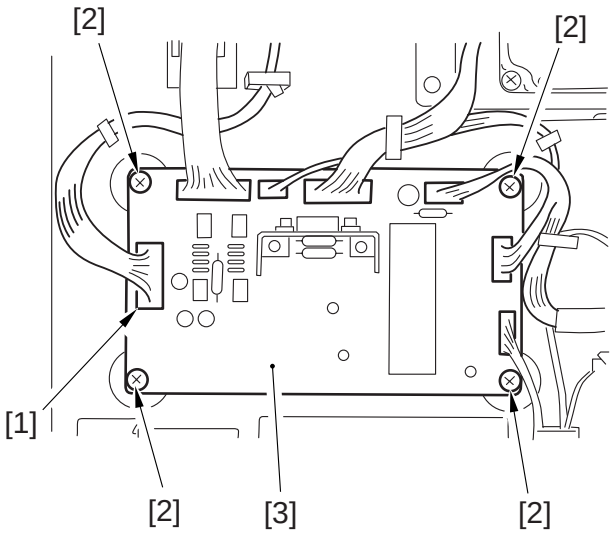


F08-304-11

3.5 Electrical Mechanisms

3.5.1 Removing the Deck Drive PCB

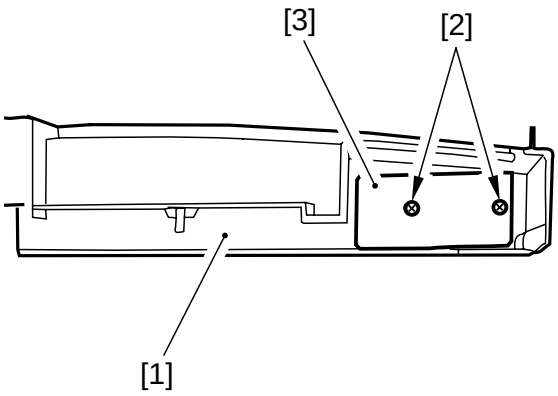
1) Remove the rear cover. (p. 8-20P)
2) Disconnect the seven connectors [1], and remove the four screws [2]; then, detach the deck driver PCB [3].



F08-305-01

3.5.2 Removing the Open Switch PCB

1) Remove the front upper cover. (p. 8-21P)
2) Remove the two screws [2] from behind the front upper cover [1], and detach the open switch PCB [3].



F08-305-02

CHAPTER 9

CASSETTE FEEDING UNIT-W1

1 Outline

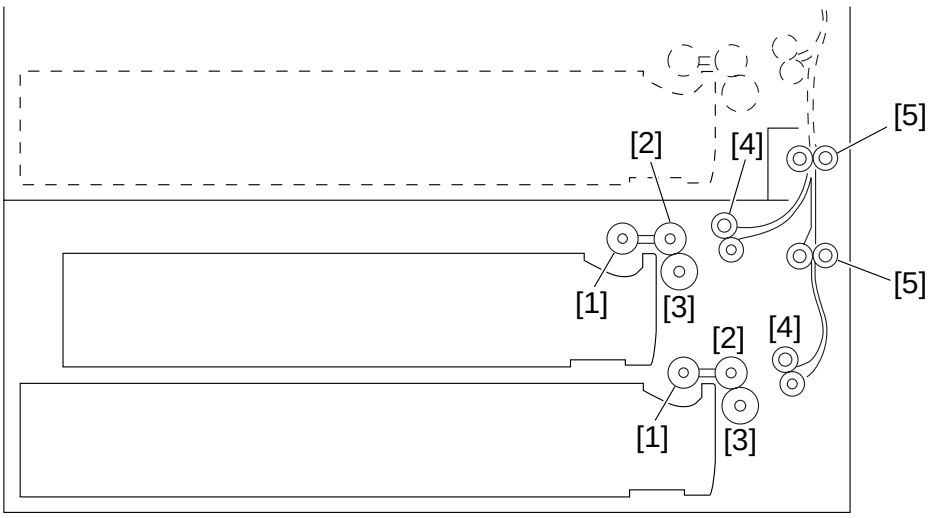
1.1 Specifications and Construction

T09-101-01 shows the major functions and the construction of the Cassette Feeding unit-W1:

Item	Description	Remarks
Storage of paper	Front loading	
Method of pickup	Retard	
Cassette	2 (cassettes 3, 4)	The cassette 3 (4) is in common with the cassette 1 (2) of the host machine.
Switching of size	By user	
Type of paper	Plain paper, recycled paper (64 to 90 g/m^2)	
Size of paper	A5/STMT to A3/11 × 17 (279mm × 432mm)	For the cassette 3, A5/STMT to B4 (LGL) max.
Size of source	500 × 2 = 1000 sheets (of 80 g/m^2 paper; if 64 g/m^2, 550 × 2)	
Control panel	No (keys on host machine used)	
Display	No (keys on host machine used)	
Environmental considerations	No	A cassette heater (accessory) may be fitted.
Power supply	No (24 VDC/5 V supplied by main power supply of host machine)	
Dimensions	565 (W) × 678 (D) × 248 (H) mm / 22.2 (W) × 26.7 (D) × 9.76 (H) inches	
Weight	28 kg / 61.7 lb	
Operating noise	3 dB or less + that of host machine	

T09-101-01

1.2 Arrangement of Rollers

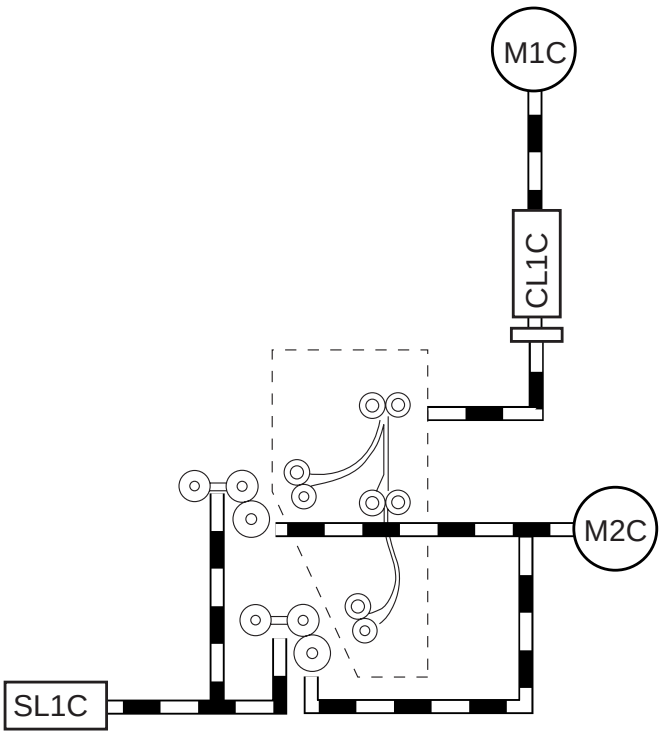


F09-102-01

The following rollers are used to move paper inside the machine:

Notation	Name
[1]	Pickup roller
[2]	Feeding roller
[3]	Separation roller
[4]	Pull-off roller
[5]	Vertical path roller

1.3 Arrangement of Motors, Clutches, and Solenoids

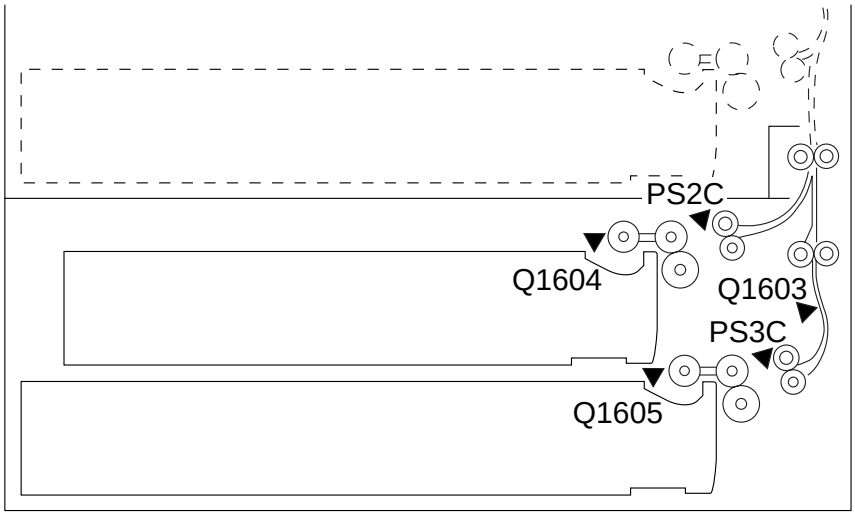


F09-103-01

The following motors, clutch, and solenoid are used to move paper inside the machine:

Notation	Name
M1C	Pedestal main motor
M2C	Cassette pickup motor
CL1C	Vertical path roller clutch
SL1C	Pickup roller descent solenoid

1.4 Arrangement of Sensors



F09-104-01

The following sensors are used to monitor the movement of paper:

Notation	Name	Delay jam	Stationary jam at power-on	Stationary jam
Q1604	Cassette 3 paper sensor	No	No	No
Q1605	Cassette 4 paper sensor	No	No	No
PS2C	Cassette 3 re-try paper sensor	Yes	No	No
PS3C	Cassette 4 re-try paper sensor	Yes	No	No
Q1603	Vertical path paper sensor	Yes	No	No

2 Detecting Jams

2.1 Sequence of Jam Detection

2.1.1 Delay Jams

See the descriptions under “Pickup/Feeding System” in Chapter 5.

2.1.2 Stationary Jams

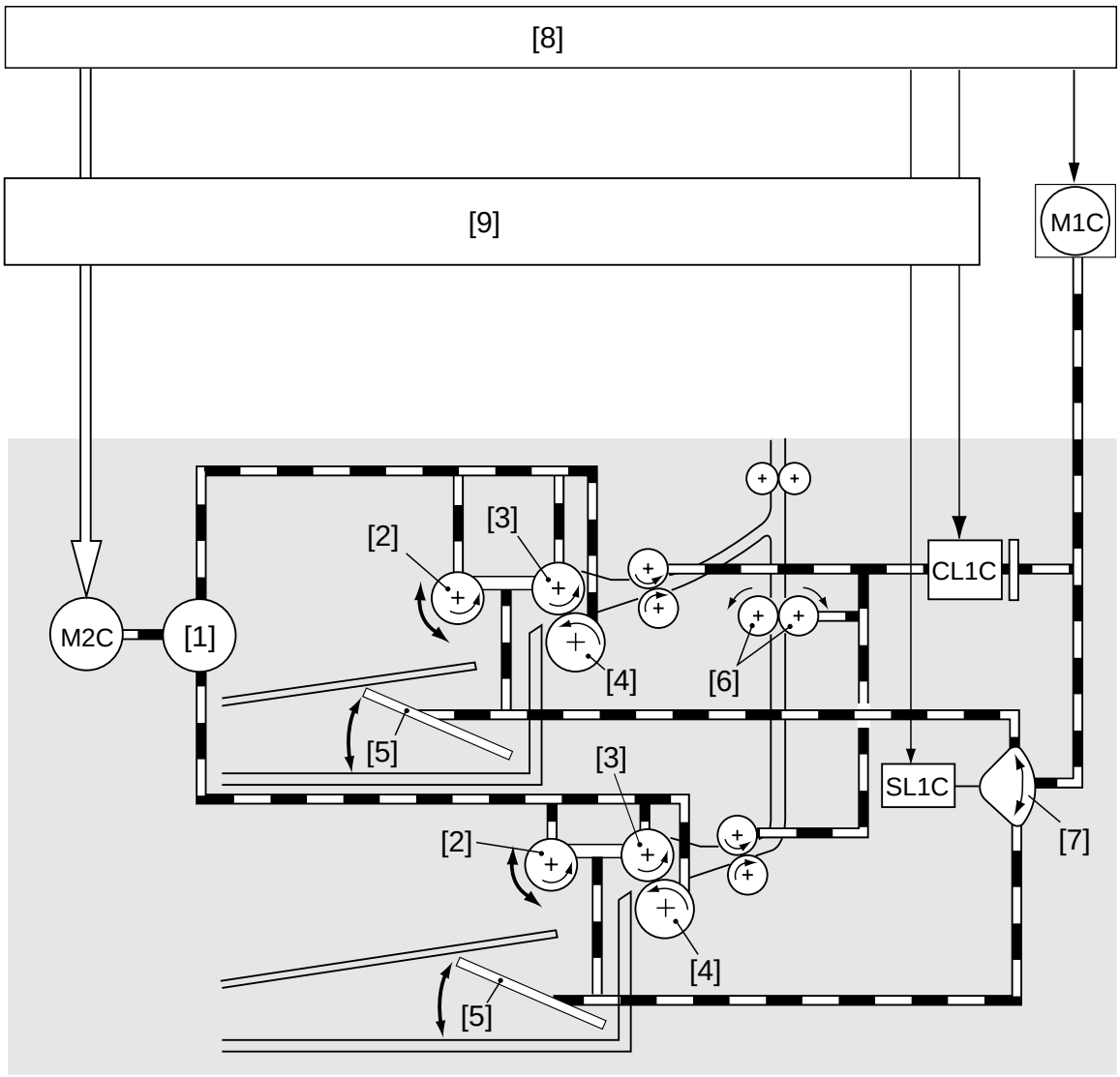
See the descriptions under “Pickup/Feeding System” in Chapter 5.

2.1.3 Jam History

See the descriptions under “Pickup/Feeding System” in Chapter 5.

3 Pickup Assembly

3.1 Pickup Control System



F09-301-01

Notation	Name	Notation	Name
[1]	Gear	[8]	Pedestal controller PCB
[2]	Pickup roller	[9]	Cassette pickup PCB
[3]	Feeding roller	M1C	Main motor
[4]	Separation roller	M2C	Pickup motor
[5]	Lifter	CL1C	Vertical path clutch
[6]	Vertical path roller	SL1C	Pickup descent solenoid
[7]	Cam		

3.2 Outline

See the descriptions under “Pickup/Feeding System” in Chapter 5.

3.3 Sequence of Operations (pickup)

See the descriptions under “Pickup/Feeding System” in Chapter 5.

3.4 Operation of the Cassette Lifter

See the descriptions under “Pickup/Feeding System” in Chapter 5.

3.5 Cassette Pickup Operation

See the descriptions under “Pickup/Feeding System” in Chapter 5.

3.6 Moving Up/Down the Pickup Roller

See the descriptions under “Pickup/Feeding System” in Chapter 5.

3.7 Detecting the Presence/Absence of Paper Inside the Cassette

See the descriptions under “Pickup/Feeding System” in Chapter 5.

3.8 Pickup ReTry Operation

See the descriptions under “Pickup/Feeding System” in Chapter 5.

3.9 Operation Other Than Cassette Pickup (standby)

See the descriptions under “Pickup/Feeding System” in Chapter 5.

3.10 Detecting the Level of Paper

See the descriptions under “Pickup/Feeding System” in Chapter 5.

4 Identifying the Size of Paper

4.1 Identifying the Size

See the descriptions under “Pickup/Feeding System” in Chapter 5.

4.2 AB/Inch-Setting Switch

See the descriptions under “Pickup/Feeding System” in Chapter 5.

4.3 Paper Size

See the descriptions under “Pickup/Feeding System” in Chapter 5.

5 Disassembly and Assembly

The discussions that follow cover the machine's mechanical characteristics and how to disassemble/assemble the machine. Keep the following in mind whenever you work with the machine:

1. ⚠The power plug must remain disconnected for safety when disassembling/assembling the machine.

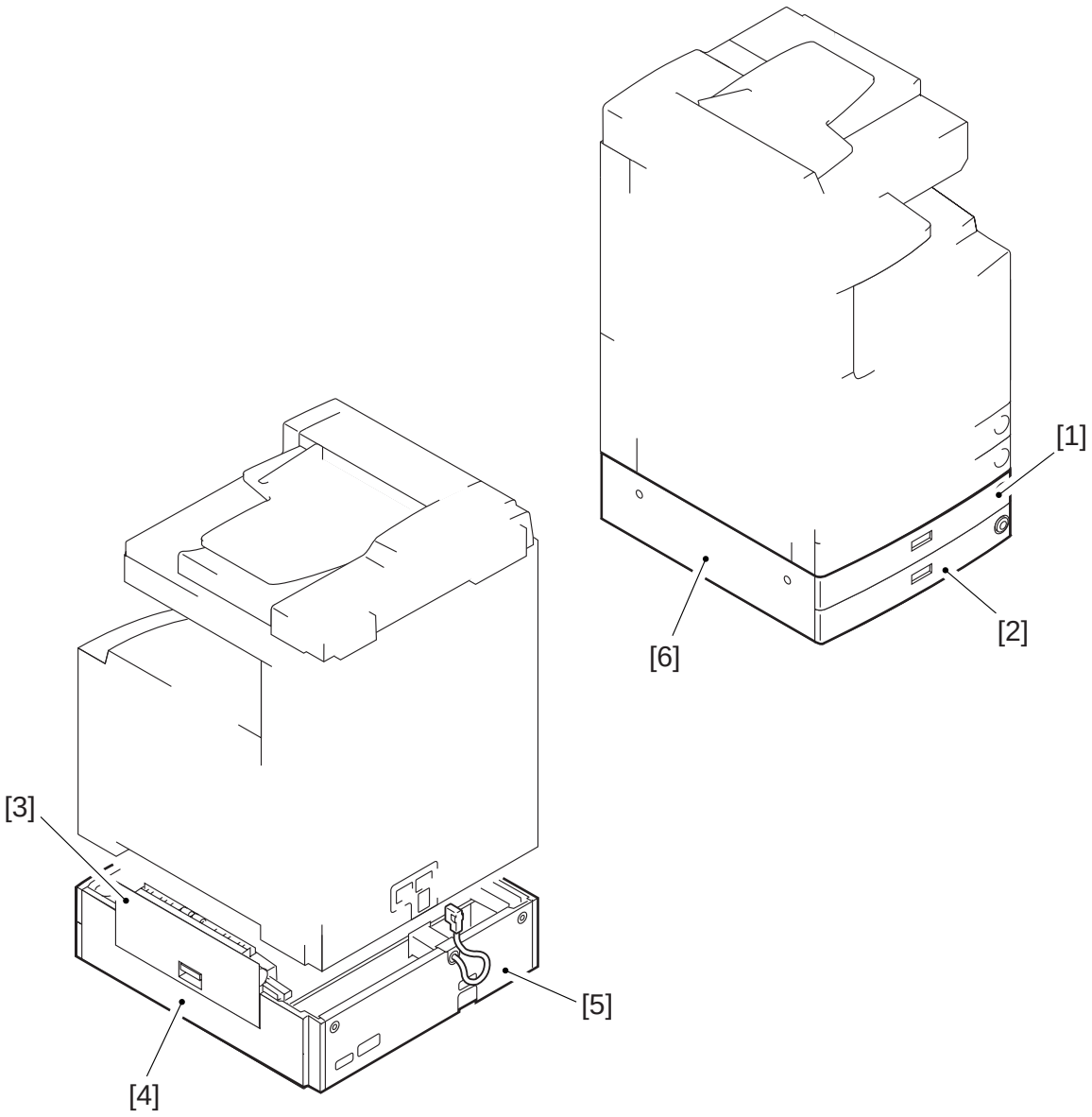
2. Unless otherwise noted, the machine may be assembled by reversing the steps used to disassemble it.

3. The screws must be identified by type (length, diameter) and location.

4. The mounting screws used for the grounding wire and the varistors come with a washer, which must not be left out when assembling the machine.

5. ⚠As a rule, the machine must not be operated with any of its parts removed.

5.1 External Covers

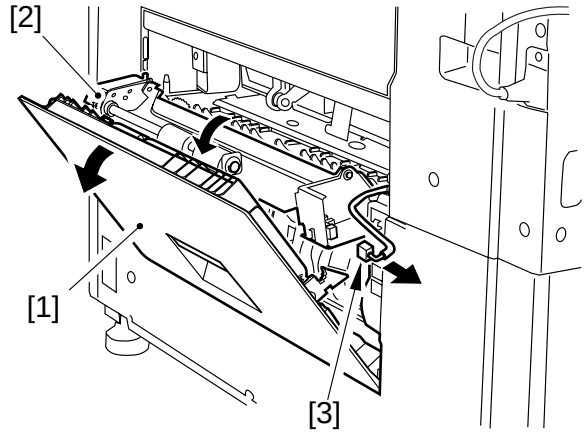


F09-501-01

[1] Cassette 3
[2] Cassette 3
[3] Pickup cover
[4] Right cover (2 screws)
[5] Rear cover (2 screws)
[6] Left cover

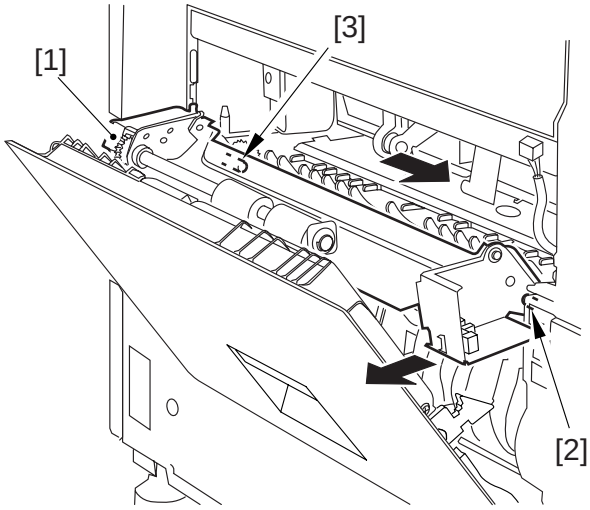
5.1.1 Removing the Pickup Cover

1) Open the pickup cover [1].
2) Open the vertical path assembly [2], and disconnect the connector [3].



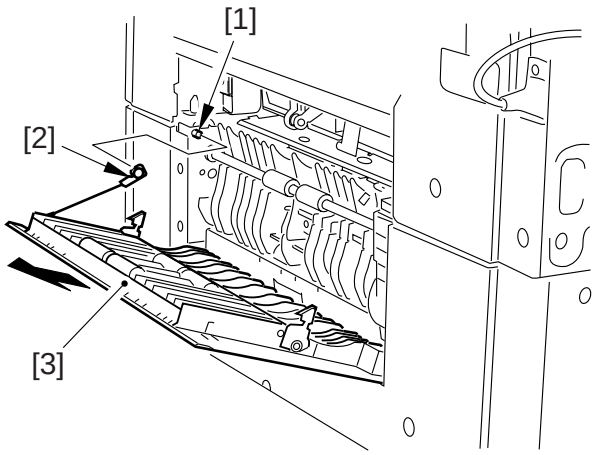
F09-501-02

3) With the vertical path assembly [1] open, shift the rear support shaft [2] to the right and the front support shaft [3] to the rear to detach the vertical path assembly.



F09-501-03

4) Remove the cable [2] from the front support shaft [1].
5) Shift down the pickup cover [3], and detach it to the right.

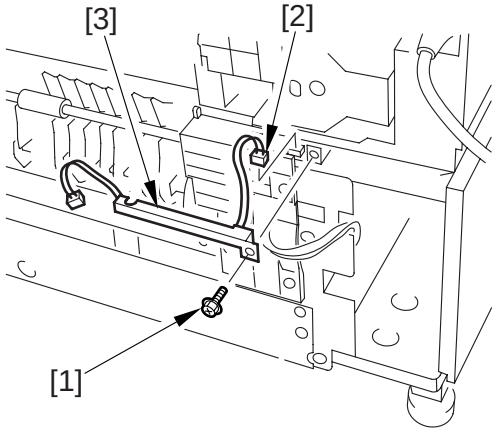


F09-501-04

5.2 Pickup Assembly

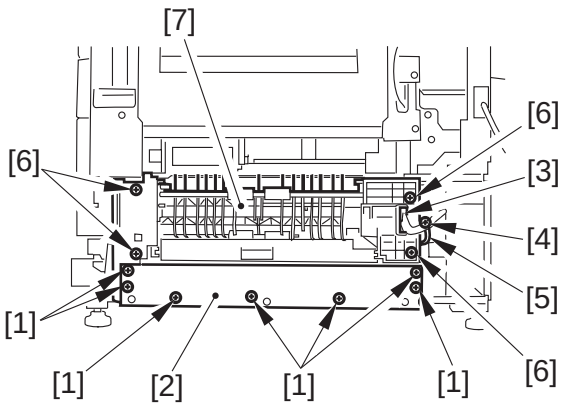
5.2.1 Removing the Pickup Assembly

1) Remove the cassette 3/4.
2) Remove the pickup cover. (p. 9-11P)
3) Remove the rear cover of the host machine. (7 screws; p. 7-13P)
4) Remove the right rear cover of the host machine. (5 screws; p. 7-13P)
5) Remove the right cover. (2 screws)
6) Remove the screw [1], and disconnect the connector [2]; then, detach the harness unit.



F09-502-01

7) Remove the seven screws [1], and detach the right support plate [2].
8) Disconnect the connector [3].
9) Remove the screw [4], and detach the grounding wire [5].
10) Remove the four screws [6], and detach the pickup unit [7].



F09-502-02

5.2.2 Removing the Pickup/Feeding/Separation Roller

See “Pickup/Feeding System” in Chapter 5-9.1.2.

5.2.3 Removing the Pickup Soleroid

See “Pickup/Feeding System” in Chapter 5-9.1.3.

5.2.4 Removing the Frame Lid

See “Pickup/Feeding System” in Chapter 5-9.1.4.

5.2.5 Removing the Pickup Motor

See “Pickup/Feeding System” in Chapter 5-9.1.5.

5.2.6 Removing the Vertical Path Clutch

See “Pickup/Feeding System” in Chapter 5-9.1.6.

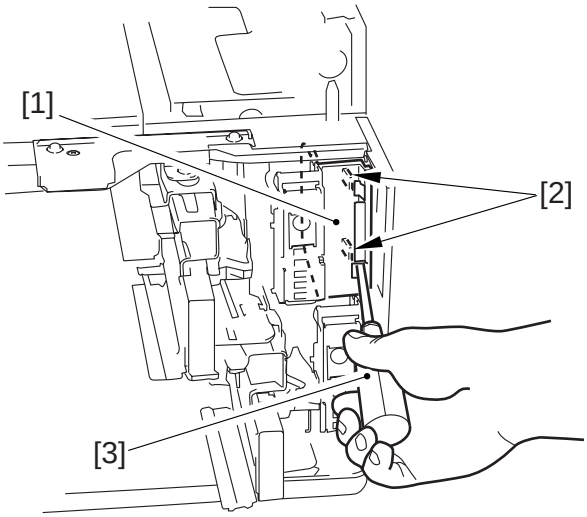
5.2.7 Adjusting the Registration for the Cassette Rear Front

See “Pickup/Feeding System” in Chapter 5-9.1.8.

5.3 PCBs

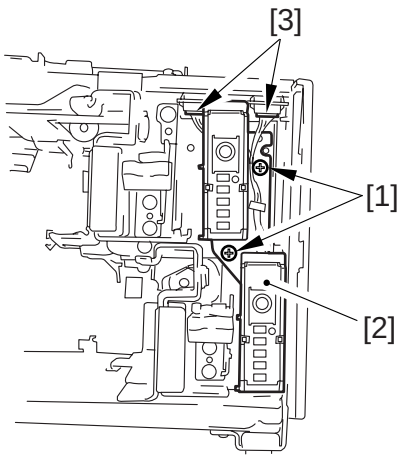
5.3.1 Removing the Cassette Size Detection Unit

1) Remove the cassette 3/4.
2) Fit a flat-blade screwdriver [2] into the opening in the inner cover [1], and free the two claws [3] to detach.



F09-503-01

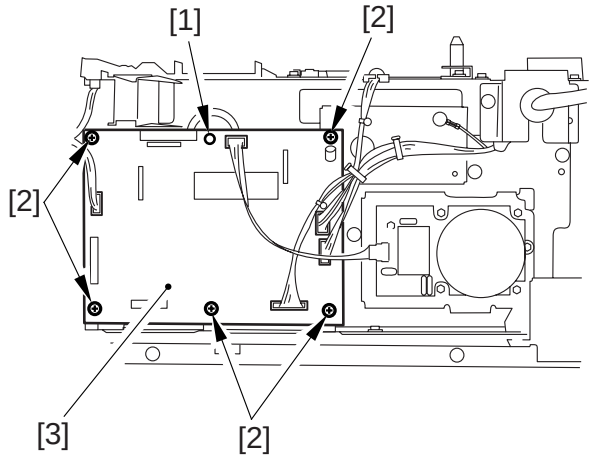
3) Remove the two screws [1], and slide the cassette size detection unit [2] to the front to detach.
4) Disconnect the two connectors [3].
5) Remove the cassette size detection unit.



F09-503-02

5.3.2 Removing the Pedestal Controller PCB

1) Disconnect the lattice connector from the host machine.
2) Remove the rear over. (2 screws)
3) Disconnect all the connectors.
4) Release the locking support [1].
5) Remove the five screws [2], and detach the pedestal controller PCB [3].



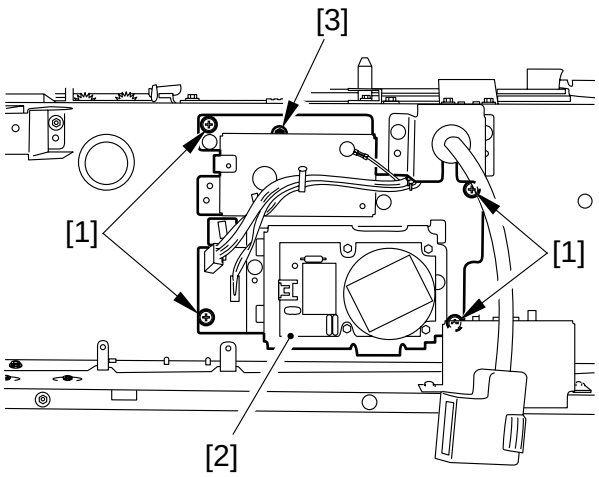
F09-503-03

5.4 Drive Mechanisms

5.4.1 Removing the Main Motor Drive Unit

1) Disconnect the lattice connector from the host machine.
2) Remove the pickup assembly. (p. 9-12P)
3) Remove the rear cover. (2 screws)
4) Remove the pedestal controller PCB. (p. 9-15P)
5) Remove the four screws [1], and detach the main motor drive unit [2].

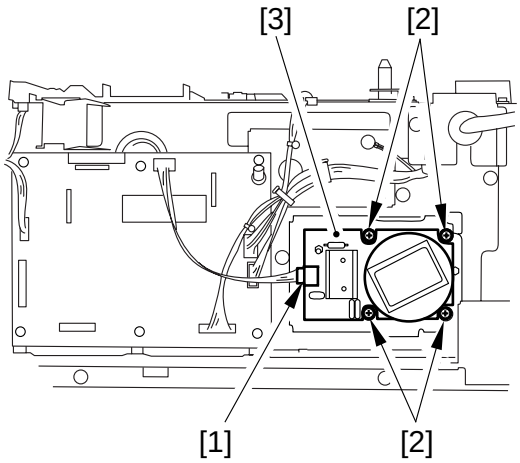
Do not remove the screw [3] paint-locked in place.



F09-504-01

5.4.2 Removing the Pedestal Main Motor

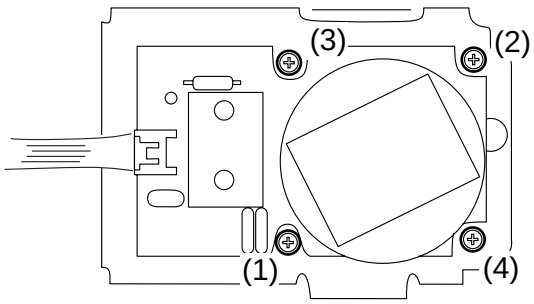
1) Disconnect the lattice connector from the host machine.
2) Remove the rear cover. (2 screws)
3) Disconnect the connector [1].
4) Remove the four screws [2], and detach the pedestal main motor [3].



F09-504-02

5.4.3 Mounting the Pedestal Main Motor

1) When mounting the pedestal main motor, be sure to tighten the screws in the order indicated in the figure: (1) through (4).



F09-504-03

CHAPTER 10

INNER 2 WAY TRAY-A1

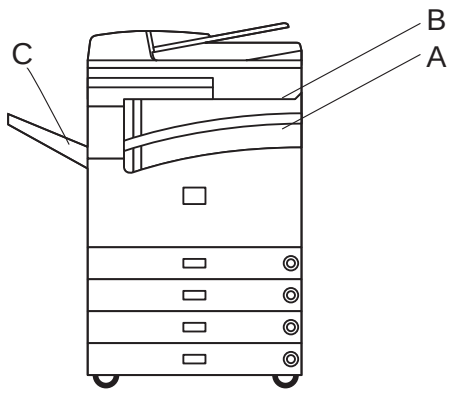
1 Specifications

1.1 Type

Item	Description
Number of bins	3 in total
	1 bin (No. 2 delivery slot)
	Delivery tray inside host machine
	External (No. 3 delivery slot; option)
Method of stacking	Face-down
Type of paper	Plain paper, recycled paper (between 64 g/m^2 and 90 g/m^2)
Size of paper	A3/279.4×431.8mm (11"×17") to A5/STMT
Number of sheets (No. 2 delivery slot)	250 sheets (A4, B5, LTR); 100 sheets (other sizes)
Number of sheets (No. 3 delivery slot)	100 sheets (A4, B5, LTR); 50 sheets (other sizes)
Environmental considerations	None in particular
Power supply	None
Dimensions	149×420×254mm/5.87 in.×16.5 in.×10 in. (W×D×H)
Weight	3.5kg/7.7 lb

T10-101-01

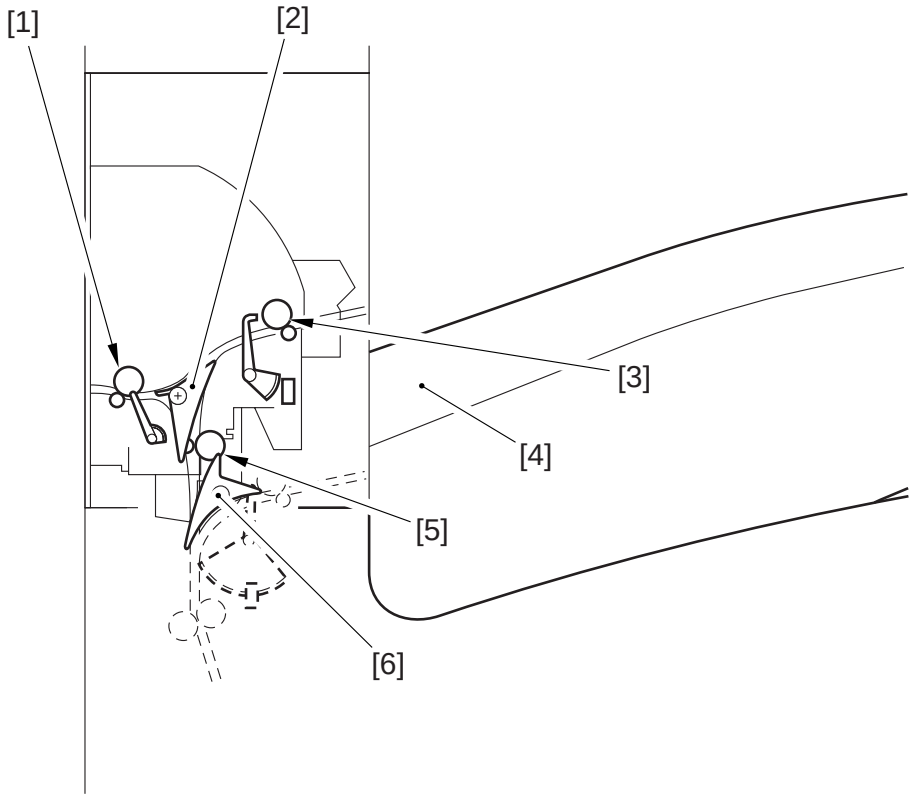
Tray names
Without the Saddle Finisher-G1



F10-101-01

A: No 1 delivery slot (host machine)
B: No. 2 delivery slot
C: No. 3 delivery slot (Copy Tray-F1/ Saddle Finisher-G1)

1.2 Cross Section

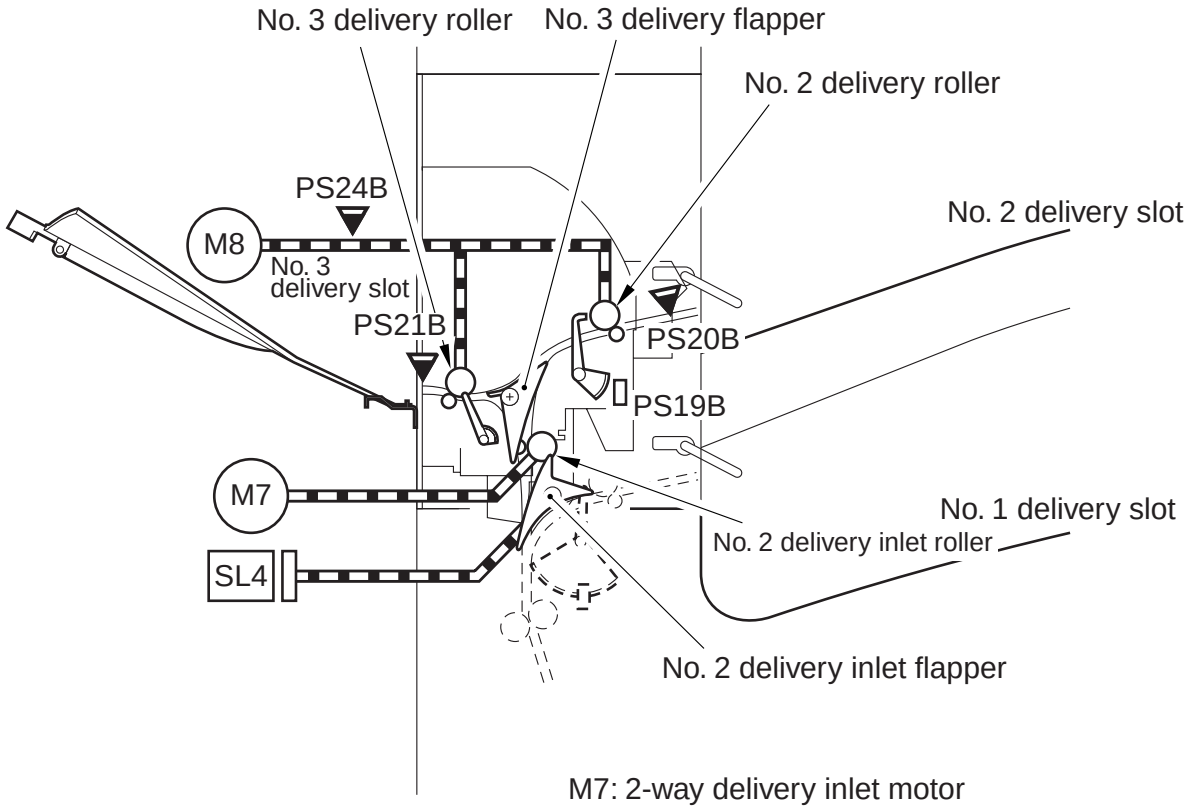


F10-102-01

[1] No. 3 delivery roller
[2] No. 3 delivery flapper
[3] No. 2 delivery roller
[4] Tray B
[5] No. 2 delivery inlet roller
[6] No. 2 deliver inlet flapper

2 Outline

2.1 Arrangement of Rollers and Sensors



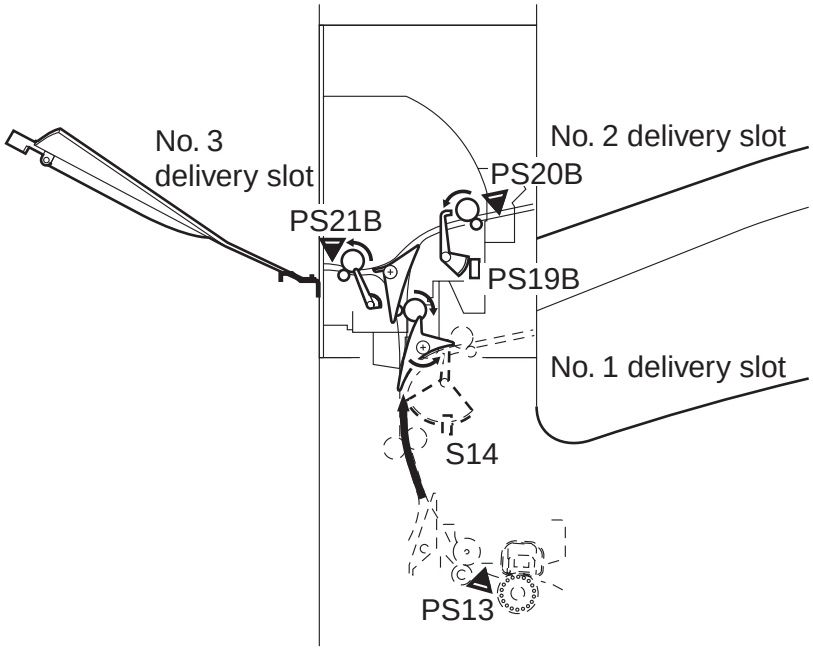
M7: 2-way delivery inlet motor
M8: 2-way delivery outlet motor
SL4: 2-way delivery solenoid
PS19B: No. 2 delivery sensor
PS20B: No. 2 delivery full sensor
PS21B: No. 3 delivery sensor
PS4B: 2-way delivery open/closed sensor

F10-201-01

2.2 Delivery to the No. 2 Delivery Slot

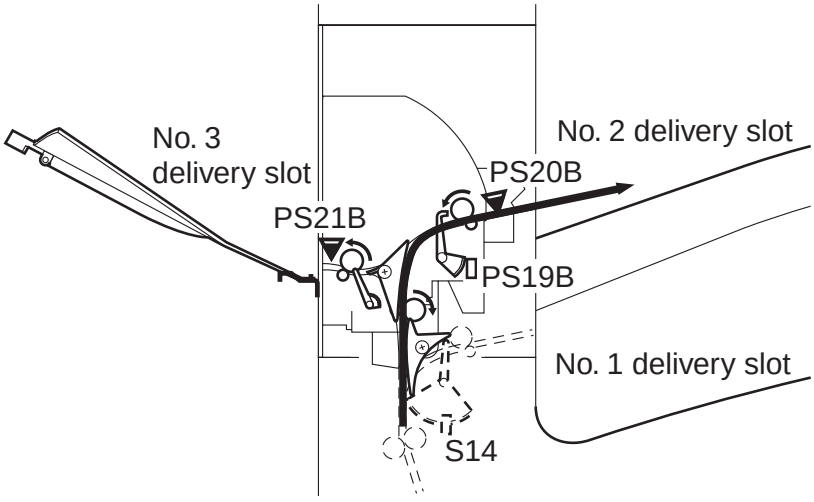
Sheets are sent to the No. 2 delivery slot as follows:

1) A sheet arrives from the host machine's delivery assembly. A specific period of time after the leading edge of the sheet reaches the fixing/feeding sensor (PS13), the 2-way delivery inlet motor (M7) and the 2-way delivery outlet motor (M8) start to rotate.



F10-202-01

2) The 2-way delivery solenoid goes on, and the paper switches to the No. 2 delivery slot. Then, the 2-way delivery inlet motor and the 2-way delivery outlet motor continue to rotate to send the sheet to the No. 2 delivery slot.
When the trailing edge of the sheet leaves the No. 2 delivery sensor (PS19B), the 2-way delivery inlet motor and the 2-way delivery outlet motor stop to rotate.

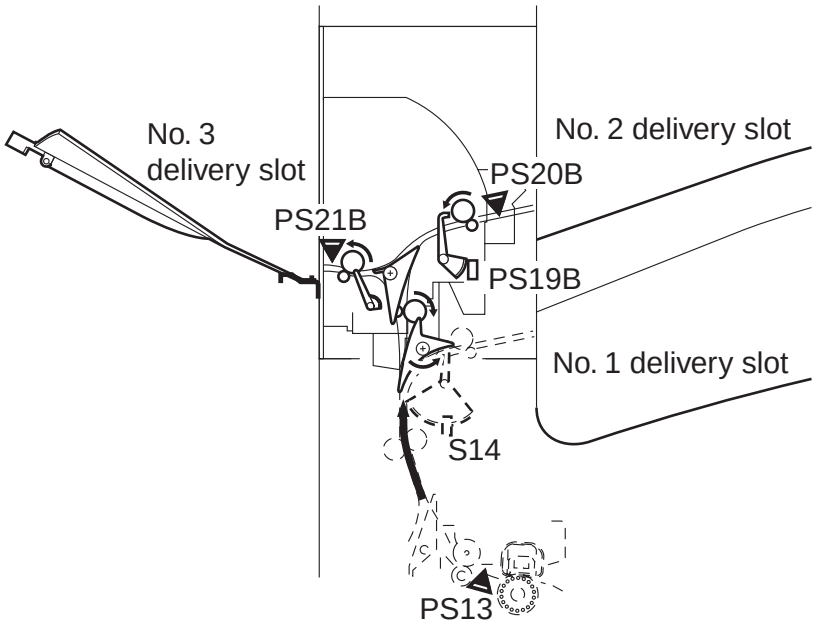


F10-202-02

2.3 Delivery to the No. 3 Delivery Slot

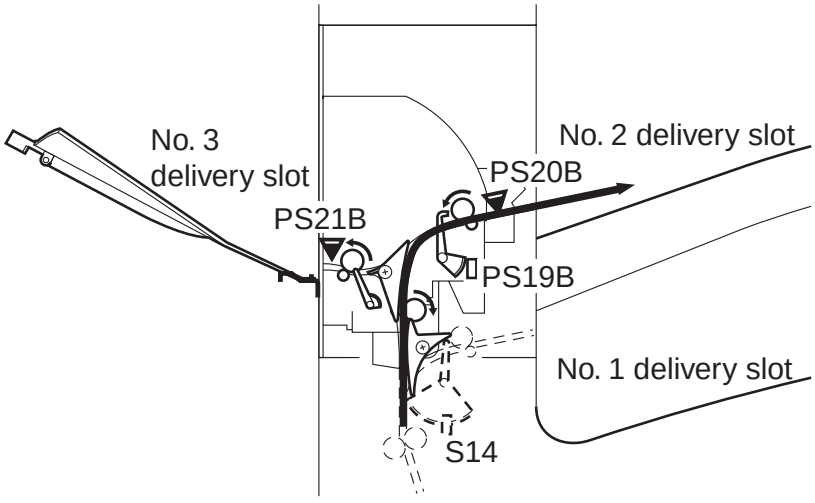
Sheets are sent to the No. 3 delivery slot as follows:

1) A sheet arrives from the host machine's delivery assembly. A specific period of time after the leading edge of the sheet reaches the fixing/delivery paper sensor (PS13), the 2-way delivery inlet motor (M7) and the 2-way delivery outlet motor (M8) start to rotate.



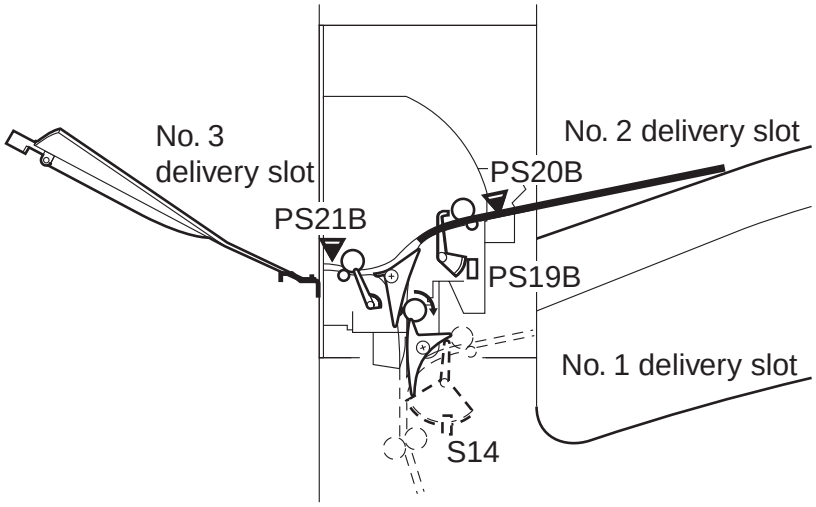
F10-203-01

2) The 2-way delivery solenoid goes on, and the feeding path switches to the No. 2 delivery lot.



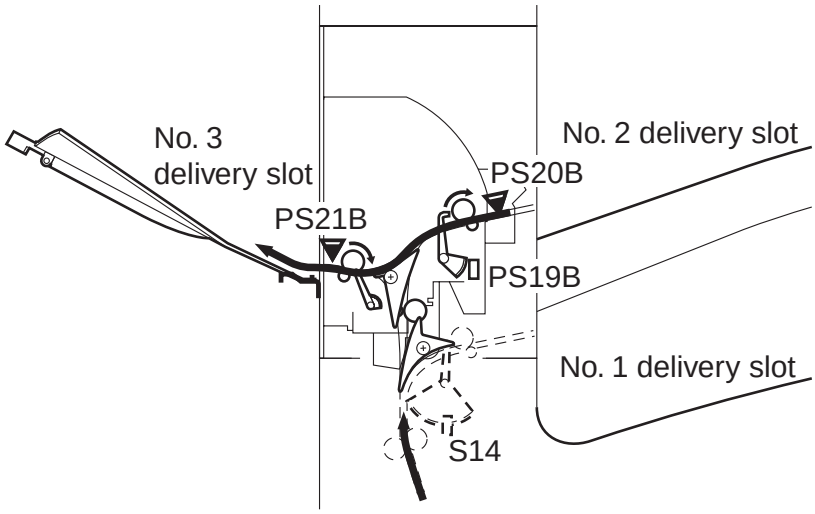
F10-203-02

3) When the trailing edge of the sheet reaches a specific point in front of the No. 2 delivery roller, the 2-way delivery outlet motor stops to rotate.



F10-203-03

4) A specific period of time after it stops to rotate, the 2-way delivery outlet motor starts to rotate in reverse, thereby sending the sheet to the No. 3 delivery slot.

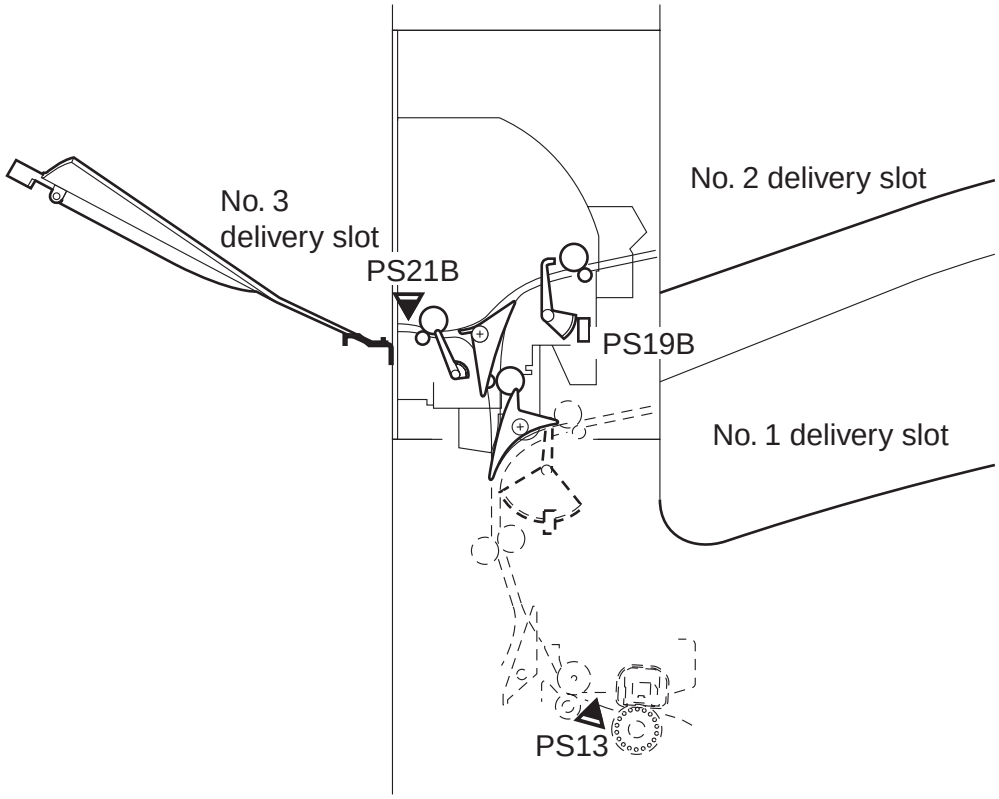


F10-203-04

2.4 Detecting Jams

2.4.1 Arrangement of Sensors

The following shows the sensor used to detect jams in the Inner 2-Way-A1.



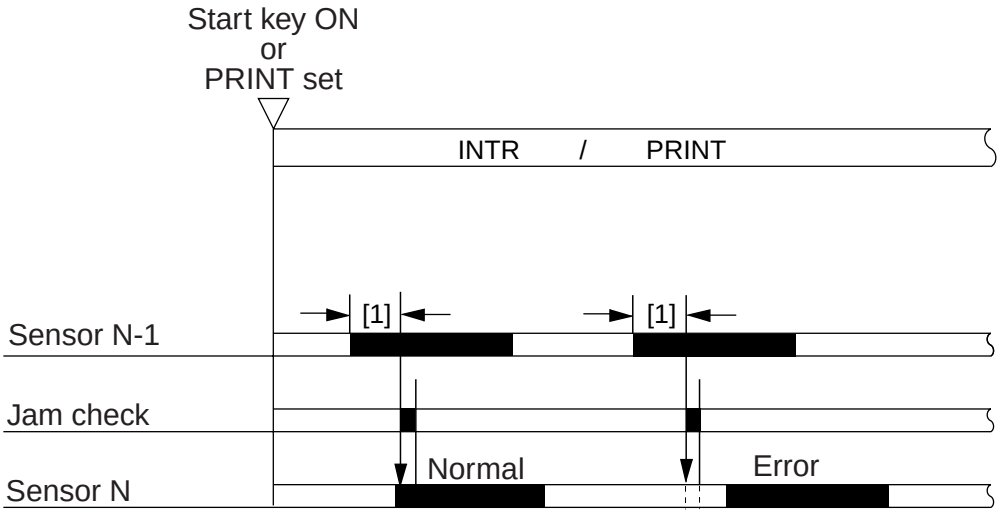
PS19B: No. 2 delivery sensor
PS21B: No. 3 delivery sensor
PS24B: 2-way delivery open/closed sensor

PS13: fixing/feeding sensor (host machine)

F10-204-01

2.4.2 Delay Jam

The time it takes for a sheet to move from the sensor N-1 to the delay jam sensor N is monitored with reference to the clock pulses from the main motor. A delay jam is identified if the leading edge of a sheet does not reach the delay jam sensor within a specific period of time after the senor N-1 goes ON.



[1]: specific feeding time

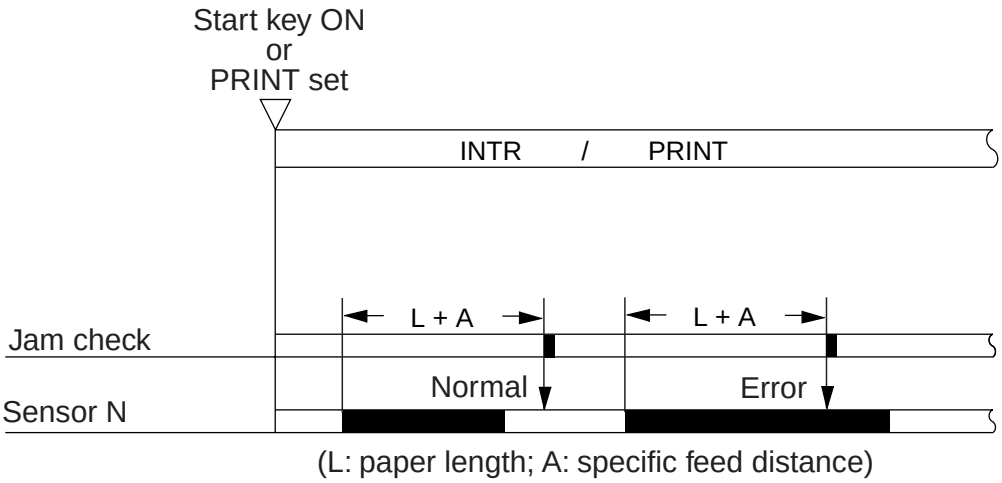
F10-204-02

Notation	Name	Delay jam
PS13	Fixing/feeding sensor (host machine)	(yes)
PS119B	No. 2 delivery sensor	Yes
PS20B	No. 3 delivery sensor	Yes

2.4.3 Stationary Jam

A stationary jam will be identified if a specific sensor remains ON for a specific period of time.

Notation	Name	Stationary jam
PS19B	No. 2 delivery sensor	Yes
PS20B	No. 3 delivery sensor	Yes



F10-204-03

2.4.4 Stationary Jam at Power-On

A stationary jam at power-on is identified in reference to the presence/absence of paper over a specific period of time cover a specific sensor when the control panel power switch is turned on.

2.4.5 Door Open Jam

A door open jam will be identified if the 2-way delivery open/closed sensor (PS24B) identifies the state of the door as being open.

3 Disassembly and Assembly

The discussions that follow cover the machine's mechanical characteristics and how to disassemble/assemble the machine. Keep the following in mind whenever you work with the machine:

1. ⚠The power plug must remain disconnected for safety when disassembling/assembling the machine.

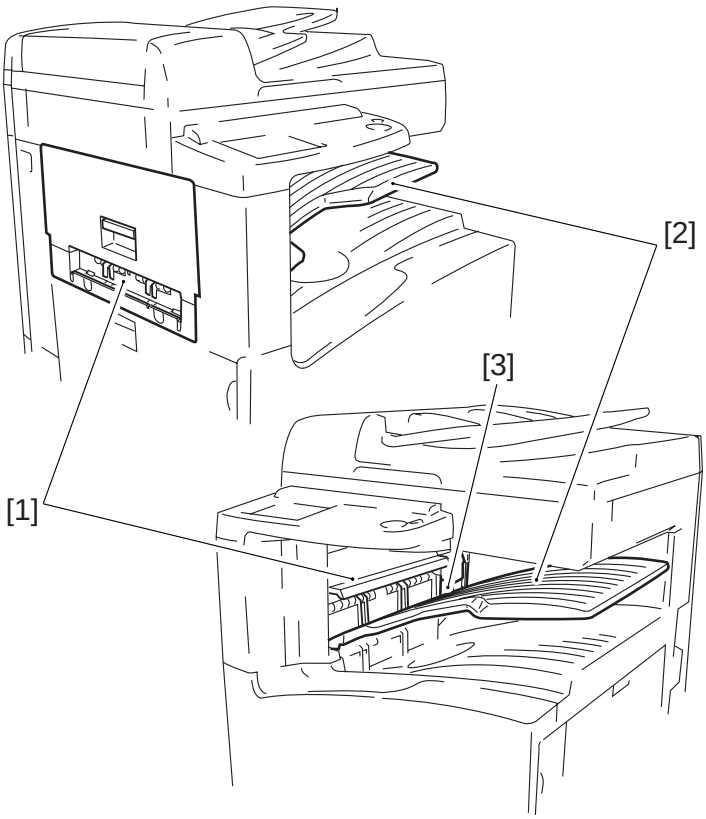
2. Unless otherwise noted, the machine may be assembled by reversing the steps used to disassemble it.

3. The screws must be identified by type (length, diameter) and location.

4. The mounting screws used for the grounding wire and the varistors come with a washer, which must not be left out when assembling the machine.

5. As a rule, the machine must not be operated with any of its parts removed.

3.1 External Covers

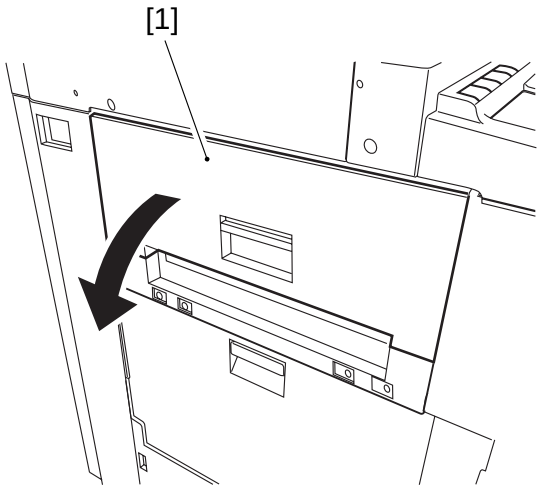


F10-301-01

[1] Inner 2-way delivery unit (2 screws)
[2] Inside delivery tray
[3] Connector cover (1 screw)

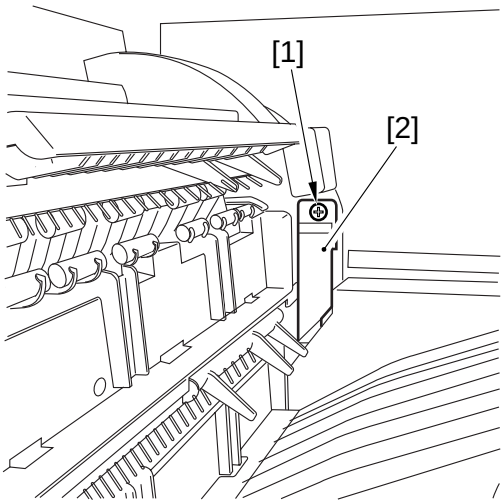
3.1.1 Removing the Inner 2-Way Delivery Unit

1) Remove the inside delivery tray.
2) Open the inner 2-way delivery unit [1].



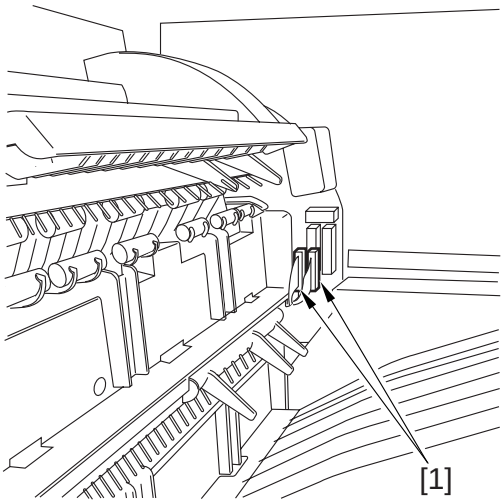
F10-301-02

3) Remove the screw [1], and detach the connector cover [2].



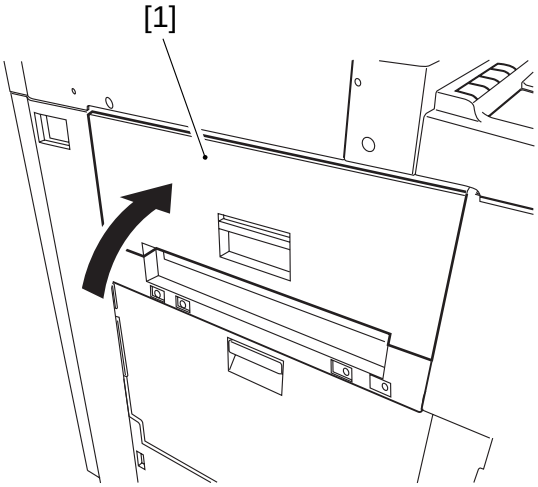
F10-201-03

4) Disconnect the two connectors [1].



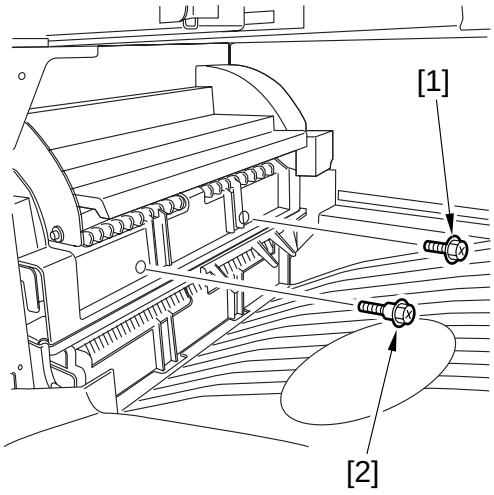
F10-201-04

5) Close the inner 2-way delivery unit [1].



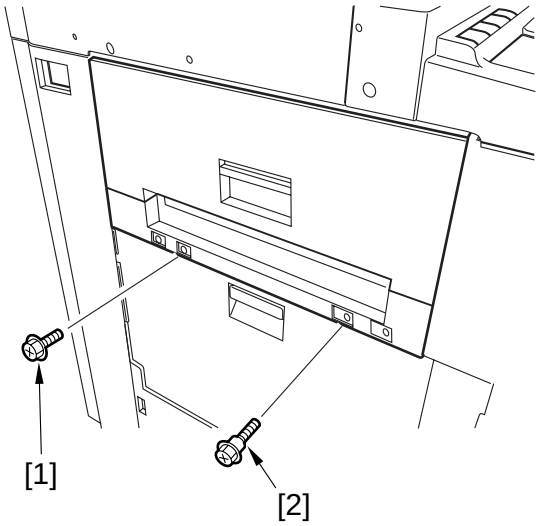
F10-201-05

6) Remove the screw [1] and the stepped screw [2] from inside.



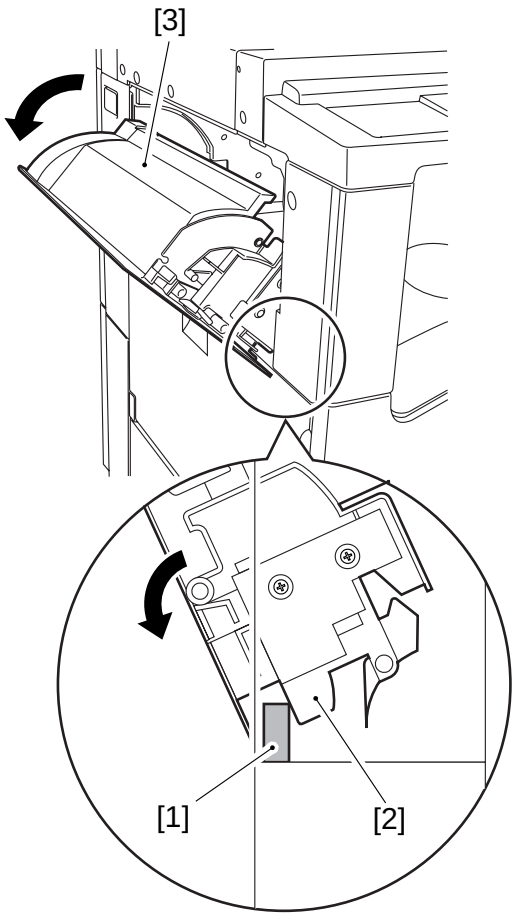
F10-201-06

7) Remove the screw [1] and the stepped screw [2] from outside.



F10-201-07

8) Remove the rib [2] from the stay [1] of the host machine, and remove the inner 2-way delivery unit [3].



F10-201-08

CHAPTER 11

ENVELOPE FEEDER ATTACHMENT-B1

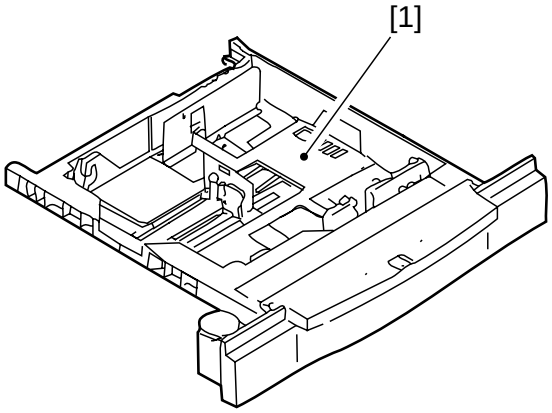
1 Envelope Feeder Attachment-B1

1.1 Outline

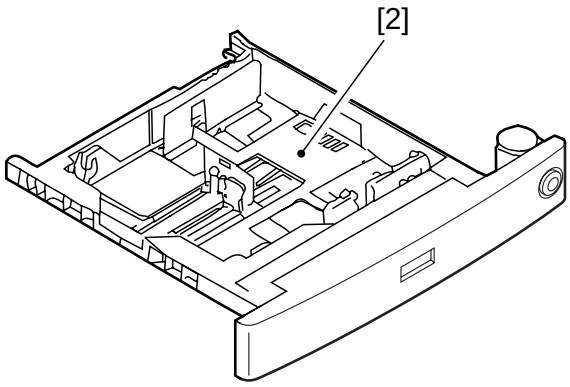
The Envelope Feeder Attachment-B1 (hereafter, envelope feeder) is designed to be installed to the cassette 1 of the host machine for feeding of envelopes; its pickup mechanisms are in common with those of the cassette 1.

1.1.1 Host Machine

The cassette 1 for which the envelope feeder is designed may be either of the following two:



F11-101-01

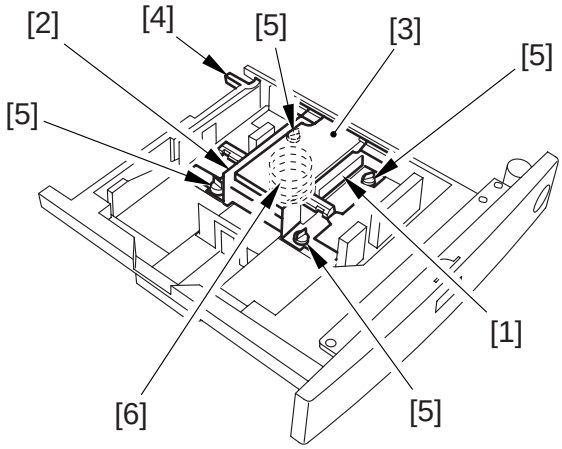


F11-101-02

[1] GP Cassette-N1
[2] FL Cassette-V1

1.1.2 Names of Parts

[1] Side guide plate (front)
[2] Side guide plate (rear)
[3] Lifter
[4] Lifter stop
[5] Mounting screw (4 pc.)
[6] Spring (2 pc. including attachment)



F11-101-03

1.2 Specifications

1.2.1 Envelope Cassette

Item	Description	Remarks
Method of pickup	Front loading	
Reference of paper movement	Center	
Switching of size	In user mode	By user.
	By cassette side plate	By user.
	By spring (to suit envelope size)	By service person.
Size of stack	As determined by envelope specifications	T11-102-02
Maximum number of envelopes	10 to 6CPM	The stack must not exceed the label index (with envelope YOUKEI 4 in use; decrease in speed occurring in continuous feed).
Control panel/display	No	Uses that of the host machine.
Power supply	No	
Dimensions	565(W)×523(D)×95(H)mm / 22.2(W)×20.6(D)×3.74(W)inches	
Weight	3.4 kg / 7.5 lb	
Operating environment	As determined by host machine	

T11-102-01

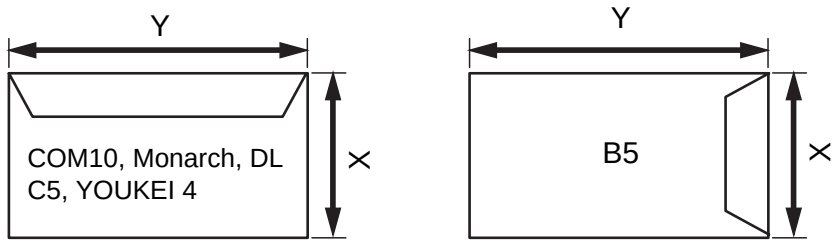
1.2.2 Envelopes

The envelope feeder is designed to accommodate envelopes of the following specifications:

Type	Shorter side (X) × longer side (Y)	Recommendation
COM10	104.7 × 241.3 (mm)	Mailwell No.553
Monarch	98.4 × 190.5 (mm)	Mailwell No.582
DL	110 × 220 (mm)	Mailwell Schneidersohne No.11345
C5	162 × 229 (mm)	Schneidersohne Kuvert No.17204
B5	176 × 250 (mm)	Schneidersohne Kuvert No.15269
YOUKEI 4	105 × 235 (mm)	Y-401

T11-102-02

Configuration of Envelopes



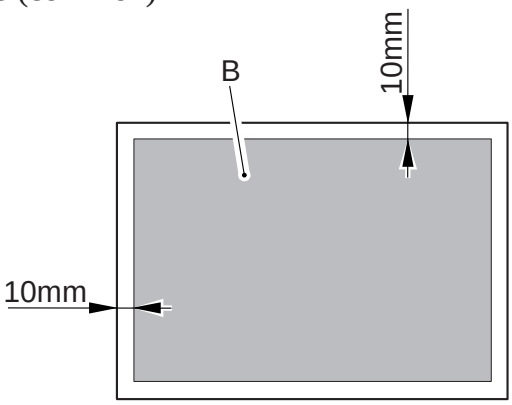
F11-102-01

1.2.3 Guaranteed Image Area

The guaranteed image area is 10 mm or more from each edge of the envelope; if triple-layered because of the flap, within 5 mm or more.

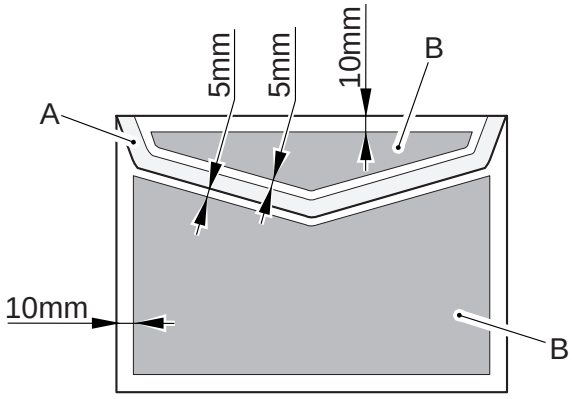
The figures show the guarantee image area (area B); they assume that the triple-layered area because of the flap is limited to area A:

- Face of the Envelope (common)



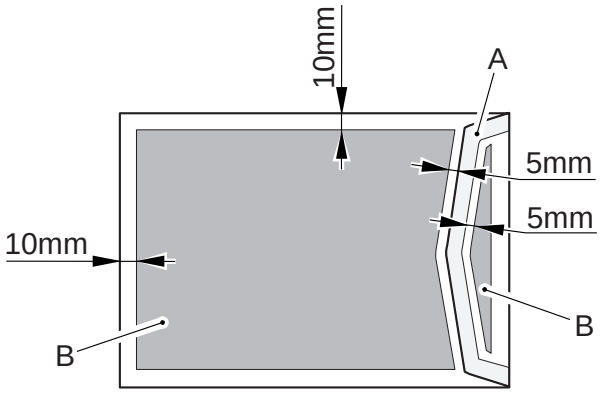
F11-102-02

- Back of the Envelope (COM10, Monarch, D, C5, YOUKEI 4)



F11-102-03

- Back of the Envelope (B5)



F11-102-04

1.3 Pickup

1.3.1 Pickup Operations

In place of the cassette lifter operation of the host machine, the envelope cassette uses the force of a spring to keep the stack at a specific level; other operations are as in the pickup/feeding operations of the host machine.

2 Detecting Jams

2.1 Outline

There are no specific types of jams that are unique to the envelope feeder, and jams are detected as by the jam detection mechanism of the host machine.

3 Error Codes

3.1 Outline

There are no specific types of jams unique to the envelope cassette, and error codes are issued as by the error detection mechanism of the host machine.

4 Service Mode

4.1 Making Selections

*5*OPTION ENV_SW

1: enable
2: disable (the key 'select envelope cassette' offered as part of common settings in user mode will be dimmed)

5 Making Adjustments

5.1 Outline

If you want to use envelopes with a different configuration in the envelope feeder, you need to replace the spring to suit the new envelope.

The spring may be painted either green or red; one is already fitted, and the other is expected to be stored by the user near the host machine.

Be sure to check that the correct spring is fitted whenever you want to switch to envelopes of a different configuration.

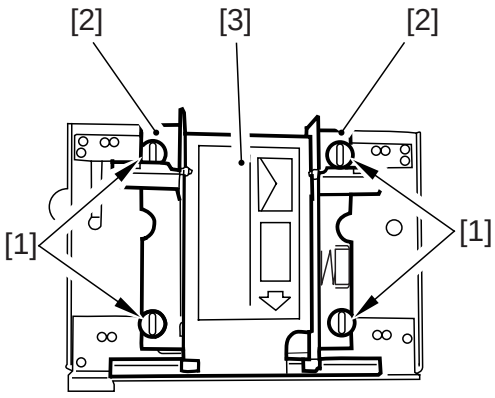
5.1.1 Envelopes and Type of Spring

- Use the green-painted spring for COM10, Monarch, DL, and YOUKEI 4.
- Use the red-painted spring for C5 and B5.

5.2 Replacing the Spring

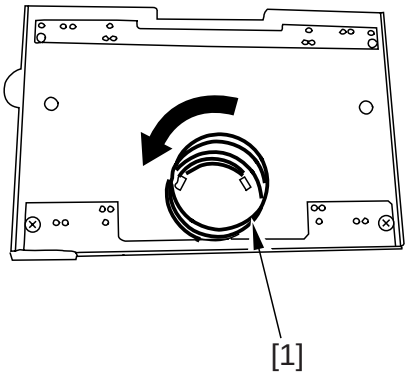
5.2.1 Replacing the Spring

1) Remove the two mounting screws [1] each, and detach the side guide plate [2] (front, rear) and the lifter [3].



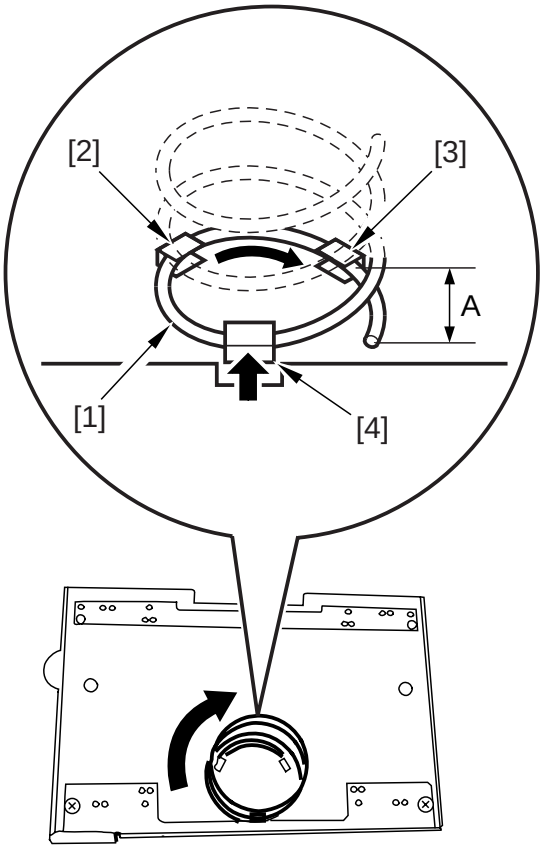
F11-502-01

2) Holding the bottom (1st, 2nd loops) of the spring [1], turn it clockwise to free it from the envelope feeder.



F11-502-02

3) Thread the edge of the spring [1] that comes as an attachment so as to fit it through the catch 1 [2] and then the catch 2 [3].
4) Holding the bottom (1st and 2nd loops) of the spring, fit it through the catch 3 [4]; then, thread it until distance A is about 15 mm from the catch 2 [3].
   At this time, check to make sure that the spring is firmly on the bottom plate.

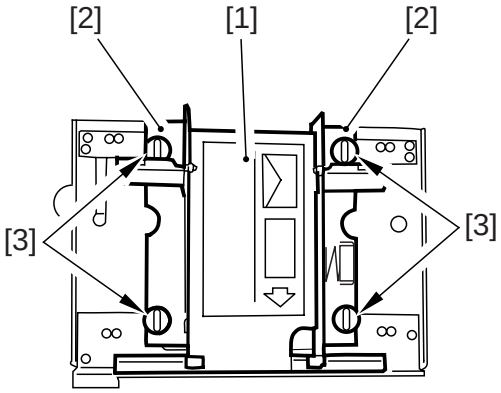


F11-502-03

5.3 Changing the Size

5.3.1 Changing the Size

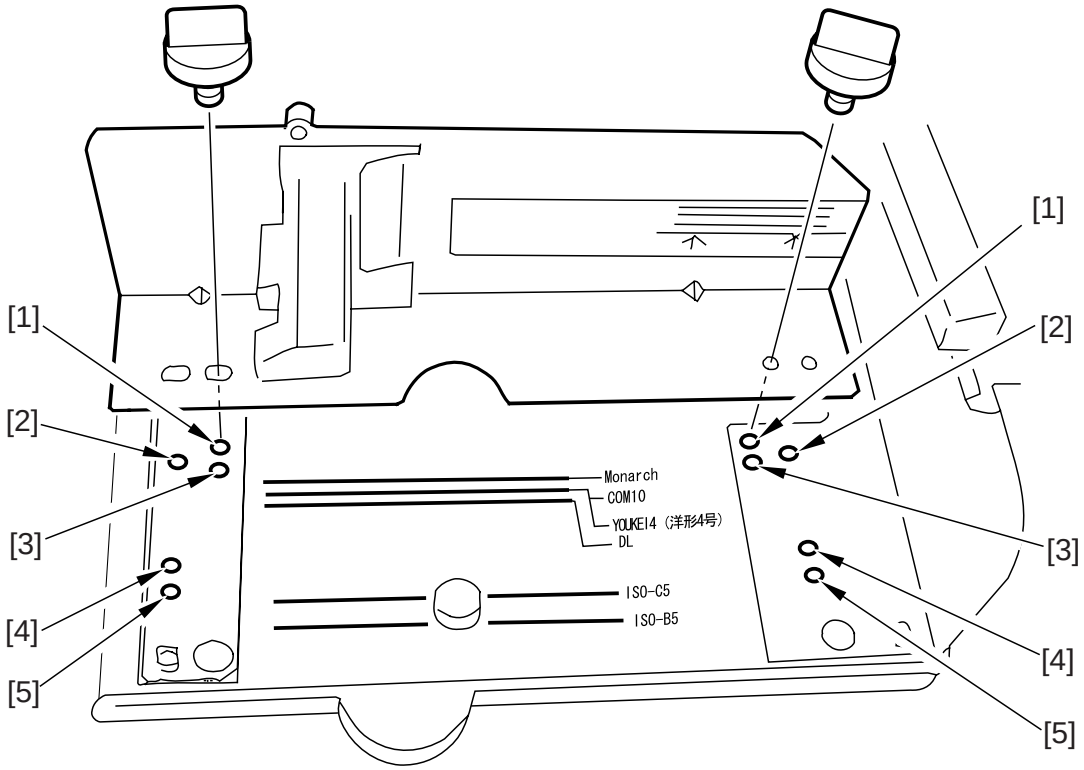
1) Match the lifter [1] and the side guide plate [2] against the size positioning line of the envelope feeder in relation to the edges of the side guide plate; then, secure them in place by using two mounting screws [3] each.



F11-503-01

Take care so that the side guide plate will not extend beyond the envelope feeder (as by choosing the wrong mounting hole). See the next page for the correct mounting hole.

Mounting Hole by Side Guide Plate (front)
(The side guide rear is symmetrically opposite.)



F11-503-02

[1] Monarch
[2] COM10, YOUKEI 4
[3] DL
[4] ISO-C5
[5] ISO-B5

2) Register the specifications of the envelope using 'register envelope' offered as part of common settings.

3) Check to make sure that envelopes are fed correctly.

TROUBLESHOOTING
SERVICE MANUAL

Contents

CHAPTER 1 MAINTENANCE AND INSPECTION

CHAPTER 2 IMAGE ADJUSTMENT BASIC PROCEDURE

CHAPTER 3 STANDARDS AND ADJUSTMENTS

CHAPTER 4 TROUBLESHOOTING IMAGE FAULTS/ MALFUNCTIONS

CHAPTER 5 SURVICE MODE

CHAPTER 6 SELF DIAGNOSIS

CHAPTER 7 UPGRADING

APPENDIX

CHAPTER 1

MAINTENANCE AND INSPECTION

1 Periodically Replaced Parts

Some of the parts used in the machine must be replaced on a periodical basis to ensure a specific level of product performance; be sure to replace them as indicated, as they will affect the machine functions appreciably once they fail.

If possible, plan the replacement to coincide with a scheduled visit to the user's.

The estimates are subject to change depending on the conditions of the site of installation or how the machine is used.

1.1 Reader Unit

The reader unit does not have parts that require periodical replacement.

1.2 Printer Unit

The printer unit does not have parts that require periodical replacement.

1.3 Side Paper Deck

The side paper deck does not have parts that require periodical replacement.

1.4 Cassette Feeding unit

The cassette feeding unit does not have parts that require periodical replacement.

1.5 Inner 2-Way Tray

The inner 2-way tray does not have parts that require periodical replacement.

2 Consumables and Durables

Some parts of the machine may require replacement over the period of product warranty because of wear or damage. Replace them as needed.

2.1 Checking the Time of Replacement

Use service mode to find out when to replace a specific part: COPIER>COUNTER>DRBL-2.

2.2 Reader Unit

The reader unit does not have parts designated as a durable.

2.3 Printer Unit

As of March 2001

No.	Part name	Part No.	Q'ty	Life (prints)	Remarks
1	Transfer roller	FF6-0104	1	240,000	
2	Transfer static eliminator	FF5-7246	1	240,000	
3	Developing cylinder	FG6-5714	1	480,000	
4	Fixing cleaning roller	FG6-5709	1	150,000	
5	Pre-exposure lamp	FG5-6297	1	240,000	
6	Pickup roller	FF5-4552-020	2	120,000	Actual prints made
7	Feeding roller	FF5-4552-020	2	120,000	Actual prints made
8	Separation roller	FF5-4634-020	2	120,000	Actual prints made
9	Pickup roller (multifeeder)	FB1-8581	1	240,000	Actual prints made
10	Separation pad (multifeeder)	FE5-4132	1	240,000	Actual prints made
11	Fixing film unit (100V)	FG6-5712	1	150,000	
12	Fixing film unit (115V)	FG6-6039	1	150,000	
13	Fixing film unit (230V)	FG6-6041	1	150,000	

T01-203-01

2.4 Side Paper Deck

As of March 2001

No.	Part name	Part No.	Q'ty	Life (prints)	Remarks
1	Pickup roller (front)	FF5-7830	1	240,000	Actual prints made
2	Pickup roller (rear)	FF5-7829	1	240,000	Actual prints made
3	Feeding roller	FF5-7541	1	240,000	Actual prints made
4	Separation roller	FB2-7777-020	1	240,000	Actual prints made

T01-203-03

2.5 Cassette Feeding Unit

As of March 2001

No.	Part name	Part No.	Q'ty	Life (prints)	Remarks
1	Pickup roller	FF5-4552-020	2	120,000	Actual prints
2	Feeding roller	FF5-4552-020	2	120,000	Actual prints
3	Separation roller	FF5-4634-020	2	120,000	Actual prints

2.6 Inner 2-Way Tray-A1

The inner 2-way tray-A1 does not have parts that are designated as a durable.

3 Periodical Servicing Procedure

1. As a rule, provide periodical servicing every 120,000 prints.
2. Before setting out on a scheduled visit, check the Service Book, and take any parts that may require replacement.

As of June 2001

Work Procedure

1. Report to the person in charge, and check the general condition.
2. Record the counter reading, and check the faulty prints.
3. Make test prints, and check them for the following: (1) image density, (2) white background for soiling, (3) characters for clarity, (4) margin, (5) fixing, registration, and back for soiling.

   The margin must meet the following standards:

Leading edge:	2.5 ± 1.5 mm	
Left edge:	2.5 ± 1.5 mm	
Right edge:	0.5 mm or more	
Trailing edge:	2.5 +1.1, -1.7 mm (smaller than B4)	<2.5 ± 2.0 mm>
	3.5 +0.6, -2.8 mm (B4 or larger)	<3.5 ± 2.0 mm>
	5.5 +1.5, -5.0 mm (free size)	
		< >: with DADF-H1

4. Optical Unit

   Clean the following using a blower brush to clean; if the dirt is excessive, use alcohol:

   (1) No. 1/2/3 mirror, (2) original illuminating reflecting plate, (3) lens, (4) original size sensor.
5. Scanner Drive System

   (1) Scanner cable; check the tension, and adjust as necessary. Inspect and adjust the scanner cable only when the machine has made the first 250,000 prints.

   (2) Scanner rail; clean the slide area, and apply silicone oil (FY9-6011).

6. Feeding System
   Clean the following: (1) feeding assembly base, (2) fixing inlet guide (upper, lower), (3) transfer guide, (4) pre-registration assembly (paper lint).
7. Image Formation System
   Clean the following: developing member, (2) developing assembly bottom.
8. Optical Unit
   Clean the following with a special tool: (1) bending mirror.
9. Image Formation System
   Inspect and, as necessary, remove the waste toner and then clean the waste toner case; or, replace the waste toner case if any:

1. Be sure to dispose of the water toner according to the standards imposed by the government concerned.
2. Do not dispose of waste toner into fire (to avoid explosion).

10. Make test copies.
11. Make sample copies.
12. Check the operation of the leakage breaker.
    While the power switch is ON, press the test switch of the leakage breaker to make sure that it operates normally (i.e., the lever goes OFF to cut the power).
    If the leakage breaker fails to operate normally, replace it and make a check once again.
    To reset,
    After making a check, turn off the main power switch (the lever should go ON), and then turn on the main power switch.
13. Put the sample copies into order, and clean up the area around the machine.
14. Fill out the Service Book, and report to the person in charge; put a description of the check made on the operation of the leakage breaker in the Service Book.

4 Scheduled Servicing Chart

Do not use solvents or oils not indicated herein.

4.1 Reader Unit

△: Clean ●: Replace ×: Lubricate □: Adjust ◎: Inspect

Unit	Part	Maintenance intervals		Remarks
		Upon installation	every 120,000	
Scanner	Scanner cable		◎	
Optical unit	Scanner rail		△ ×	Silicone oil (S20; FY9-6011)
	Copyboard glass		△	
	No. 1 through No. 3 mirror		△	
	Original illumination reflecting plate		△	
	Original size sensor		△	
	Lens		△	

T01-401-01

4.2 Printer Unit

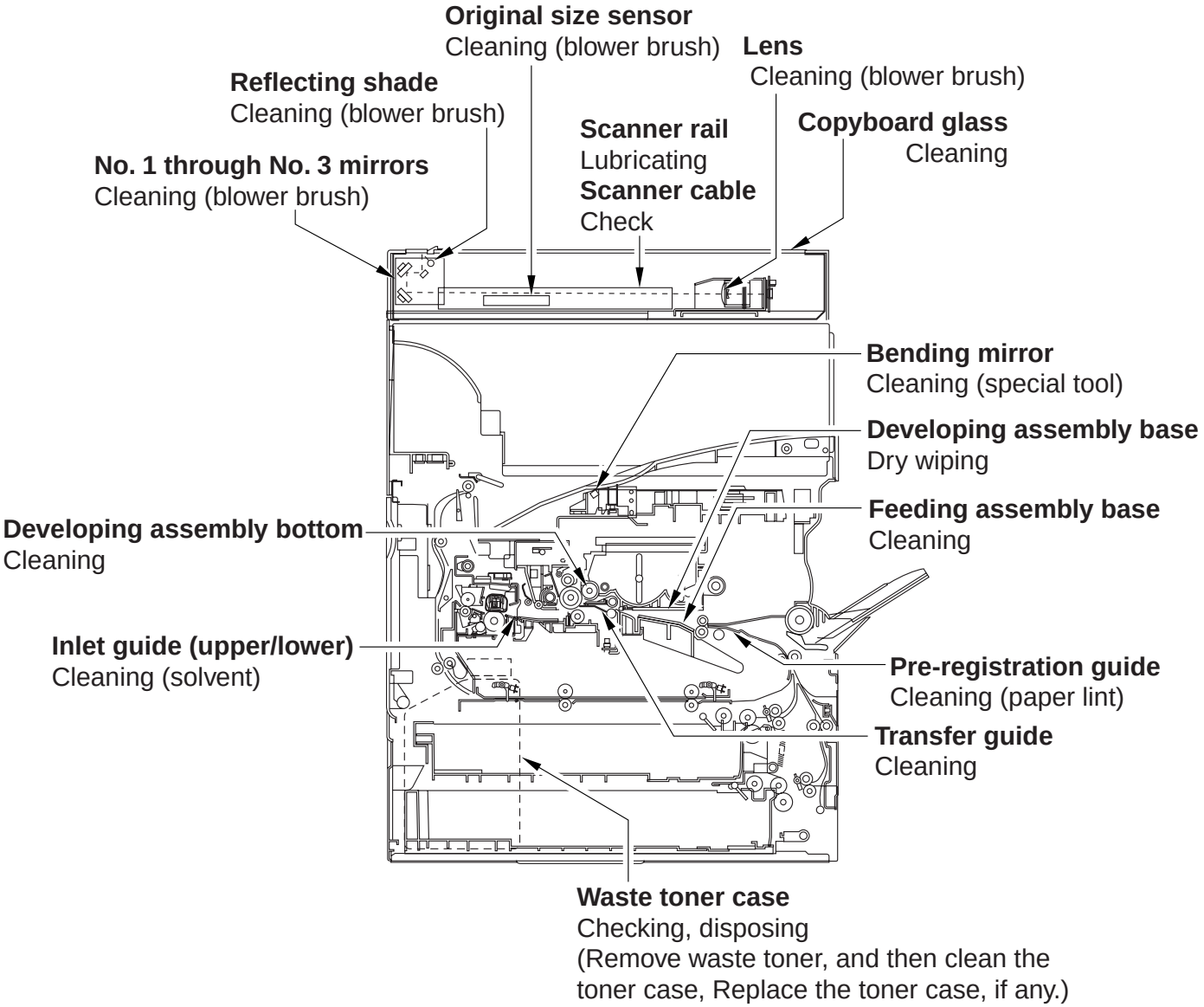
△: Clean ●: Replace ×: Lubricate □: Adjust ◎: Inspect

Unit	Part	Maintenance intervals			Remarks
		Upon installation	every 120,000	Upon replacement of drum cartridge	
Laser optical unit	Folding mirror		△		Use special tool.
Pickup/ feeding assembly	Feeding assembly base		△		
	Fixing inlet guide, upper/lower		△		
	Pre-registration (paper lint)			△	
	Transfer guide		△		
Developing assembly	Developing member		△		
	Base (developing assembly)		△		
Waste toner collection assembly	Waste toner case		◎		Inspect/remove. (Remove waste toner, and then clean the toner case. Replase the toner case, if any.)

5 Points to Note for Scheduled Servicing

Unless otherwise indicated, use lint-free paper and alcohol.

- If you used solvent, check to make sure that the solvent has dried before mounting the component back into the machine.
- Unless otherwise specified, do not use a moist cloth for cleaning.
- Provide scheduled servicing at the specified intervals.



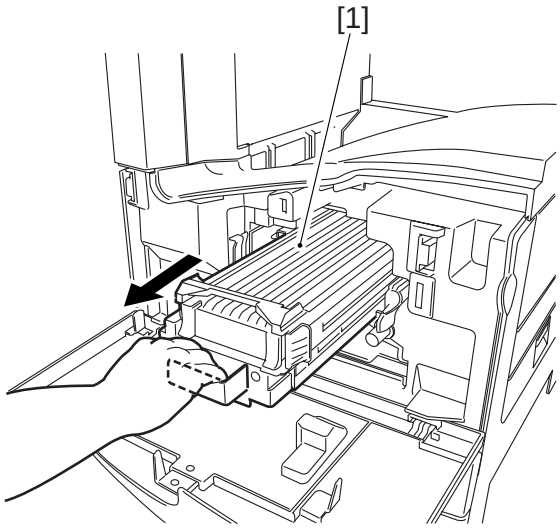
F01-500-01

6 Cleaning the Bottom of the Developing Assembly

If the bottom of the developing assembly is not cleaned thoroughly, the residual toner can soil the back and the leading edge or left/right edges of prints. If soiling is noted, clean also the transfer guide and the static eliminator at the same time as the bottom of the developing assembly.

6.1 Cleaning the Bottom of the Developing Assembly

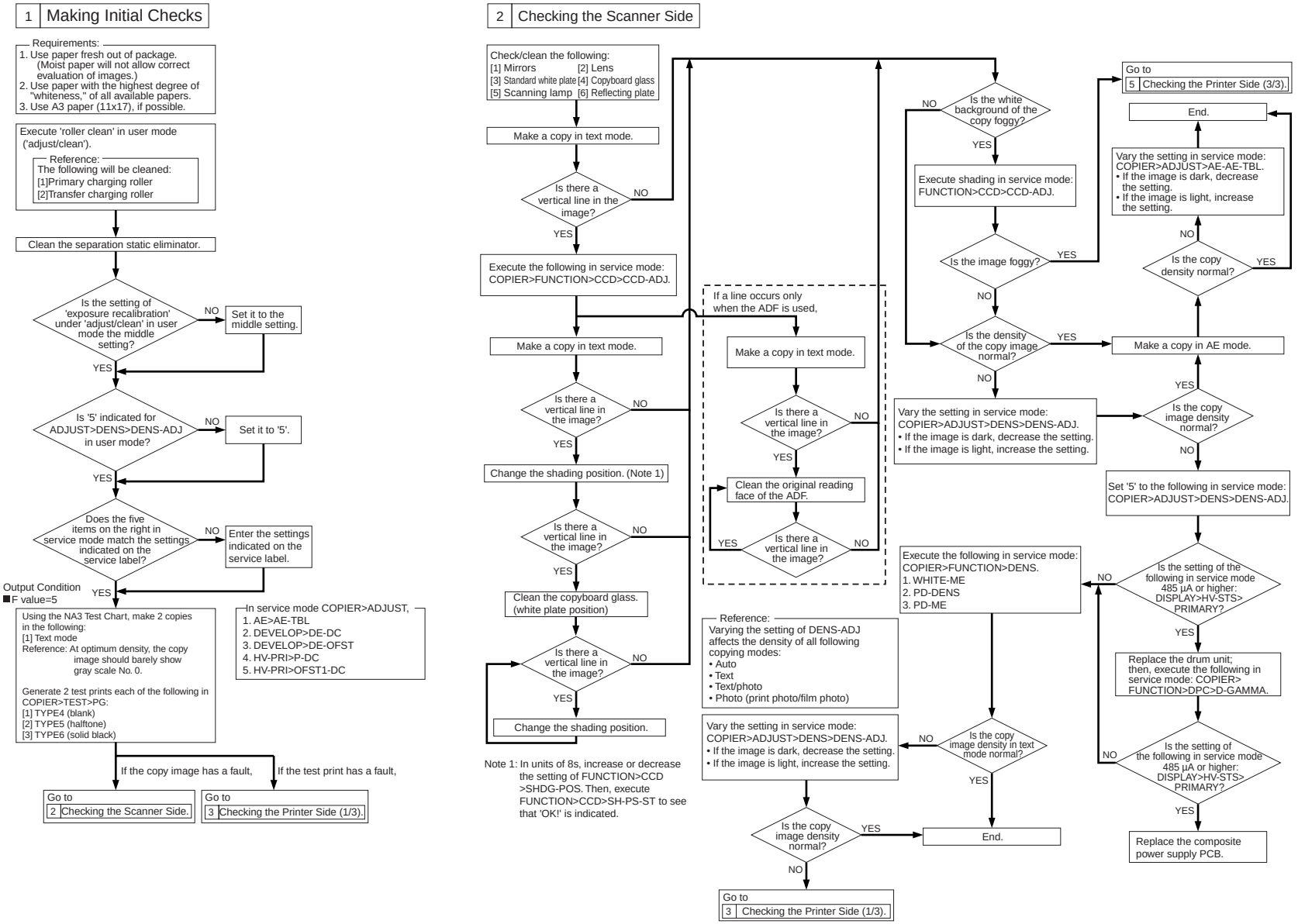
1) Open the front door.
2) Slide out the developing assembly [1].
3) Dry wipe the bottom of the developing assembly.
4) Slide in the developing assembly.
5) Close the front door.

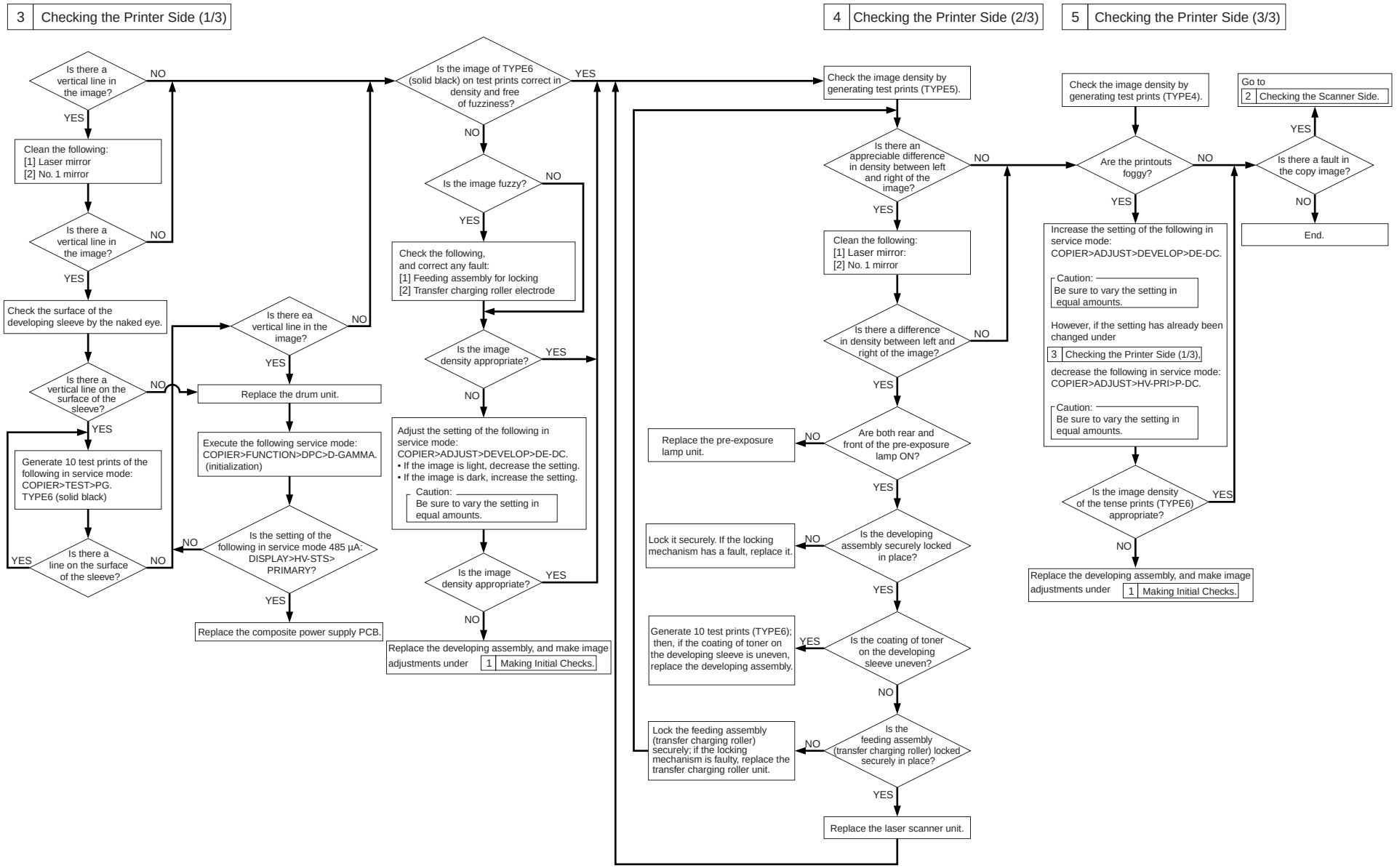


F01-601-01

CHAPTER 2

IMAGE ADJUSTMENT BASIC PROCEDURE


1 Making Initial Checks
Requirements:
1. Use paper fresh out of package. (Moist paper will not allow correct evaluation of images.)
2. Use paper with the highest degree of "whiteness," of all available papers.
3. Use A3 paper (11x17), if possible.
Execute 'roller clean' in user mode ('adjust/clean').
Reference:
The following will be cleaned:
[1]Primary charging roller
[2]Transfer charging roller
Clean the separation static eliminator.
Is the setting of 'exposure recalibration' under 'adjust/clean' in user mode the middle setting?
NO
Set it to the middle setting.
YES
Is '5' indicated for ADJUST>DENS>DENS-ADJ in user mode?
NO
Set it to '5'.
YES
Does the five items on the right in service mode match the settings indicated on the service label?
NO
Enter the settings indicated on the service label.
YES
Output Condition
■F value=5
Using the NA3 Test Chart, make 2 copies in the following:
[1] Text mode
Reference: At optimum density, the copy image should barely show gray scale No. 0.
Generate 2 test prints each of the following in COPIER>TEST>PG:
[1] TYPE4 (blank)
[2] TYPE5 (halftone)
[3] TYPE6 (solid black)
In service mode COPIER>ADJUST,
1. AE>AE-TBL
2. DEVELOP>DE-DC
3. DEVELOP>DE-OFST
4. HV-PRI>P-DC
5. HV-PRI>OFST1-DC
If the copy image has a fault,
If the test print has a fault,
Go to
2 Checking the Scanner Side.
Go to
3 Checking the Printer Side (1/3).
2 Checking the Scanner Side
Check/clean the following:
[1] Mirrors
[2] Lens
[3] Standard white plate
[4] Copyboard glass
[5] Scanning lamp
[6] Reflecting plate
Make a copy in text mode.
Is there a vertical line in the image?
NO
YES
Execute the following in service mode: COPIER>FUNCTION>CCD>CCD-ADJ.
Make a copy in text mode.
Is there a vertical line in the image?
NO
YES
Change the shading position. (Note 1)
Is there a vertical line in the image?
NO
YES
Clean the copyboard glass. (white plate position)
Is there a vertical line in the image?
NO
YES
Change the shading position.
If a line occurs only when the ADF is used,
Make a copy in text mode.
Is there a vertical line in the image?
NO
YES
Clean the original reading face of the ADF.
Is there a vertical line in the image?
YES
NO
Note 1: In units of 8s, increase or decrease the setting of FUNCTION>CCD >SHDG-POS. Then, execute FUNCTION>CCD>SH-PS-ST to see that 'OK!' is indicated.
Is the white background of the copy foggy?
NO
YES
Execute shading in service mode: FUNCTION>CCD>CCD-ADJ.
Is the image foggy?
YES
NO
Is the density of the copy image normal?
YES
NO
Vary the setting in service mode: COPIER>ADJUST>DENS>DENS-ADJ.
• If the image is dark, decrease the setting.
• If the image is light, increase the setting.
Go to
5 Checking the Printer Side (3/3).
End.
Vary the setting in service mode: COPIER>ADJUST>AE-AE-TBL.
• If the image is dark, decrease the setting.
• If the image is light, increase the setting.
Is the copy density normal?
NO
YES
Make a copy in AE mode.
Is the copy image density normal?
YES
NO
Set '5' to the following in service mode: COPIER>ADJUST>DENS>DENS-ADJ.
Is the setting of the following in service mode 485 µA or higher: DISPLAY>HV-STS> PRIMARY?
NO
YES
Replace the drum unit; then, execute the following in service mode: COPIER> FUNCTION>DPC>D-GAMMA.
Is the setting of the following in service mode 485 µA or higher: DISPLAY>HV-STS> PRIMARY?
NO
YES
Replace the composite power supply PCB.
Execute the following in service mode: COPIER>FUNCTION>DENS.
1. WHITE-ME
2. PD-DENS
3. PD-ME
Reference:
Varying the setting of DENS-ADJ affects the density of all following copying modes:
• Auto
• Text
• Text/photo
• Photo (print photo/film photo)
Vary the setting in service mode: COPIER>ADJUST>DENS>DENS-ADJ.
• If the image is dark, decrease the setting.
• If the image is light, increase the setting.
Is the copy image density in text mode normal?
NO
YES
Is the copy image density normal?
YES
NO
End.
Go to
3 Checking the Printer Side (1/3).



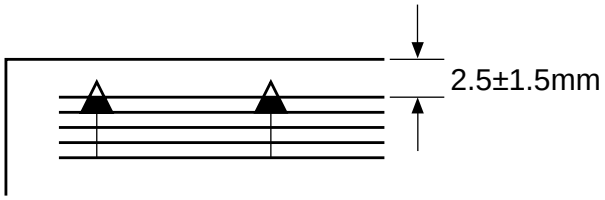
CHAPTER 3

STANDARDS AND ADJUSTMENTS

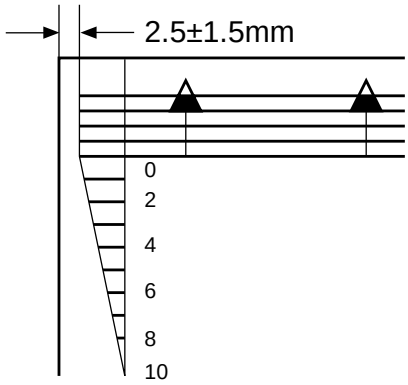
1 Image Adjustments

1.1 Standards of Image Position

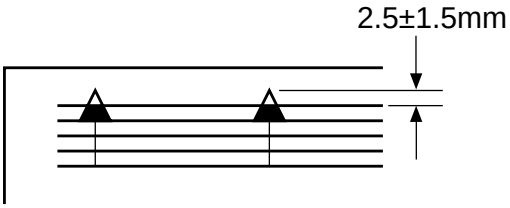
The image margin/non-image width of a print made in Direct must be as follows:



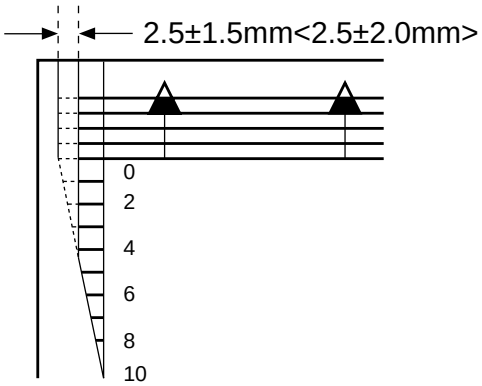
F03-101-01 Image Leading Edge Margin



F03-101-02 Left/Right Image Margin



F03-101-03 Leading Edge Non-Image Width



F03-101-04 Left Non-Image Width
< >: with DADF-H1

1.2 Checking the Image Position

Make prints using the following as the source of paper (10 prints each), and check to see that the image margin and the non-image width are as indicated:

- Each cassette
- Manual feed tray
- Duplex feeding unit
- Side paper deck

If not as indicated, adjust the image position in the following order:

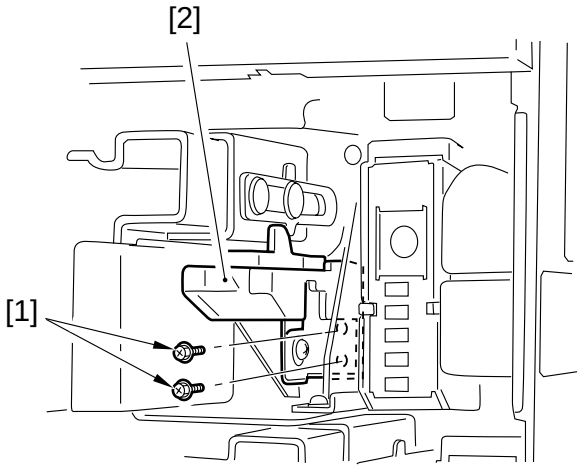
1. Adjusting the left/right image margin (registration)
2. Adjusting the image leading edge margin (registration)
3. Adjusting the left/right non-image width (CCD read start position)
4. Leading edge non-image width (scanner image leading edge position)

1.3 Adjusting Left/Right lamge Margin

1.3.1 Adjusting the Registration for the Cassette Rear Front

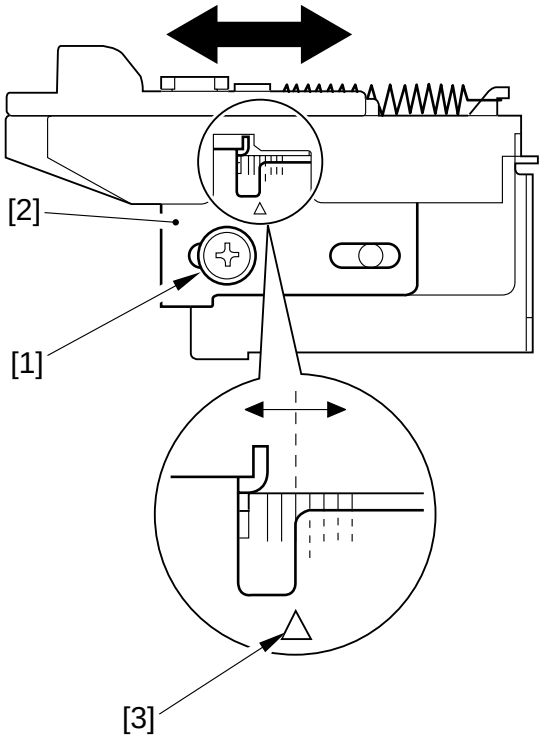
Try the following service mode first; if not corrected, perform the adjustments that follow: FUNCTION>CI-ADJ-Y/C2-ADJ-Y/C3-ADJ-Y/C4-ADJ-Y

1) Remove the cassette.
2) Remove the two screws [1], and detach the horizontal registration base assembly [2].



F03-103-01

3) Loosen the screw [1], and adjust the horizontal registration plate [2].
When making adjustments, try to match the arrow [3] against the index (each graduation being about 1 mm).

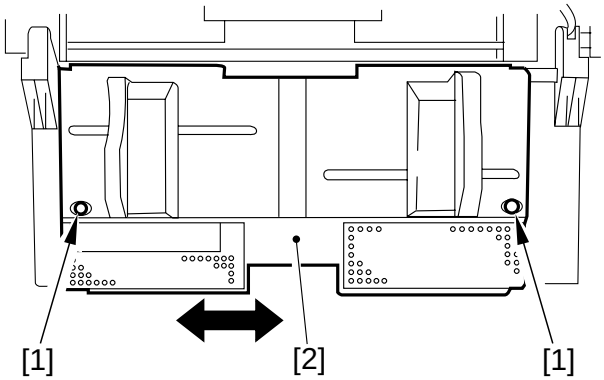


F03-103-02

1.3.2 Adjusting the Registration for the Multifeeder Rear Front

Try the following service mode first; if not corrected, perform the adjustments that follow: COPIER>FUNCTION>MF-ADJ

1) Open the multifeeder tray.
2) Loosen the two screws [1], and move the side guide plate unit [2] back and forth to adjust.

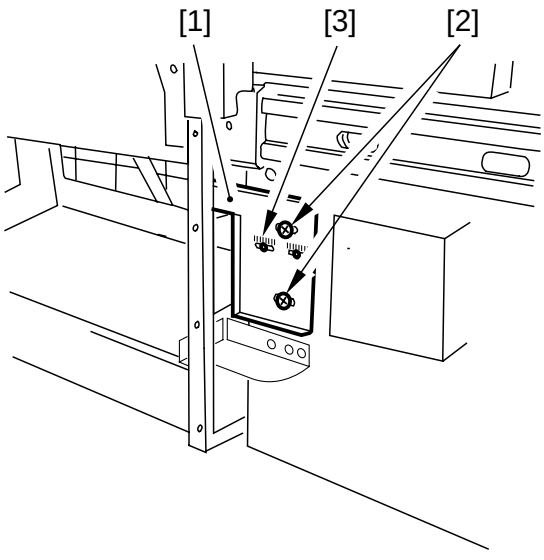


F03-103-03

1.3.3 Adjusting the Registration for the Deck

Try the following service mode first; if not corrected, perform the adjustments that follow: COPIER>FUNCTION>DK-ADJ-Y

1) Slide out the compartment.
2) Using the two screws [2], change the position of the latch plate [1] of the deck open solenoid (SL2D) found at the left rear. (At this time, use the index [3] on the latch plate as a reference.)



F03-103-04

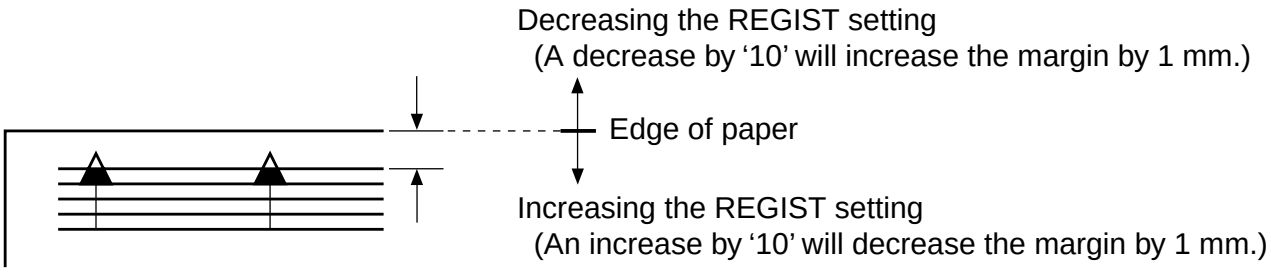
3) Close the compartment, and check to make sure that the gap of the front cover is 3 ±1 mm.
4) If the gap is not 3 ±1 mm, adjust the front cover.

1.3.4 Duplex Feeding Unit

1) Adjust the image margin as indicated using service mode: COPIER>ADJUST>Feed-ADJ>ADJ-REFE.

1.4 Adjusting the Image Leading Edge Margin

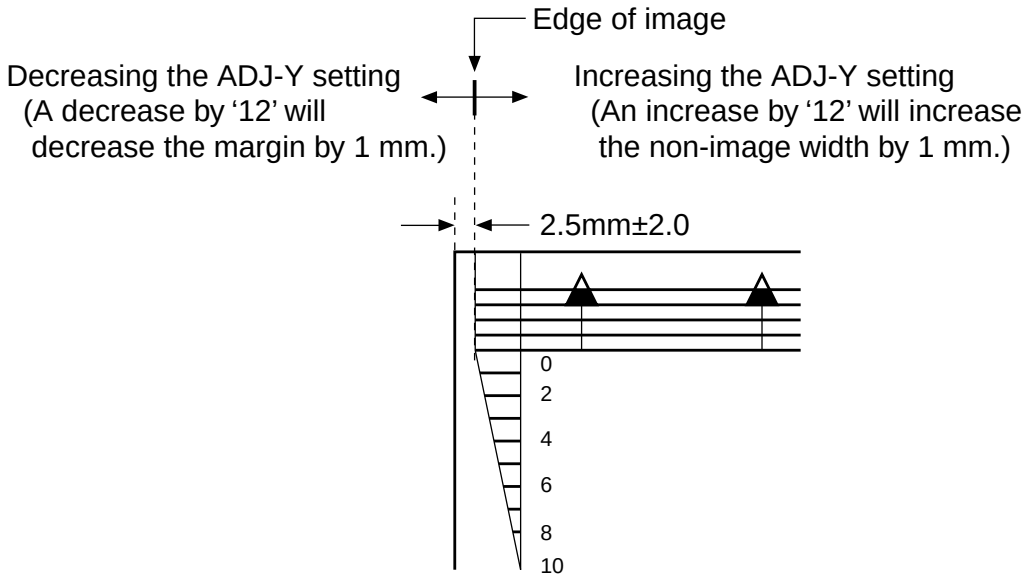
1) Adjust the image margin in service mode so that it is as indicated: COPIER>ADJUST>Feed-ADJ>REGIST.



F03-104-01

1.5 Adjusting the Left/Right Non-Image Width

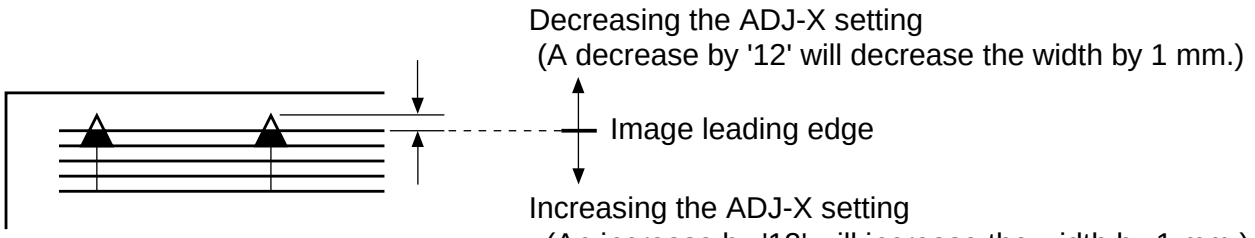
1) Adjust the non-image width in service mode so that it is as indicated: COPIER>ADJUST>ADJ-XY>ADJ-Y.



F03-105-01

1.6 Adjusting the Leading Edge Non-Image Width

1) Adjust the non-image width in service mode so that it is as indicated: COPIER>ADJUST>ADJ-XY>ADJ-X.

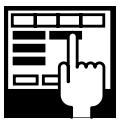


F03-106-01

2 Scanning System

2.1 After Replacing the Scanning Lamp

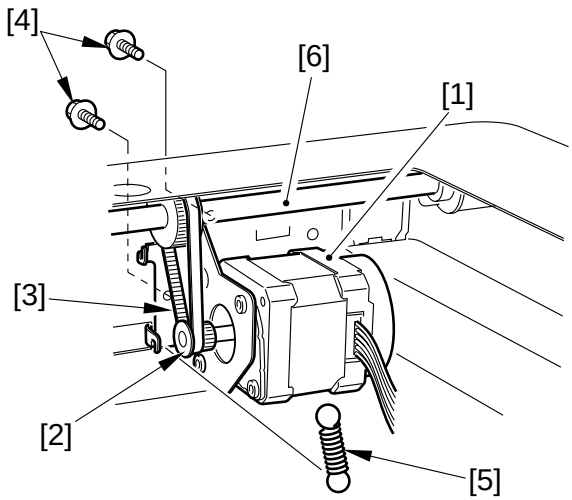
Execute 'CCD auto adjust' in service mode, and record the updated CCD adjustment data on the service label.



1. CCD Auto Adjust
   COPIER>FUNCTION>CCD>
   CCD-ADJ
2. CCD Adjustment Data
   All items under
   COPIER>ADJUST>CCD.

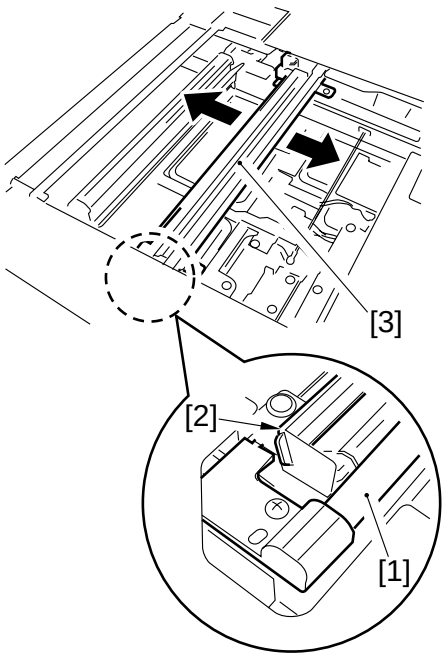
2.2 Mounting the Motor Unit

1) Engage the pulley [2] of the motor unit [1] with the belt [3].
2) Using two screws [4], mount the motor unit [1] temporarily.
3) Fit the spring [5] to apply tension to the belt [3].
4) Check to make sure that the belt [3] is vertical.



F03-202-01

5) While taking care not to hold the scanning lamp [1] or the reflecting shade [2], move the No. 1 mirror base [3] back and forth two to three times to make a check once again.



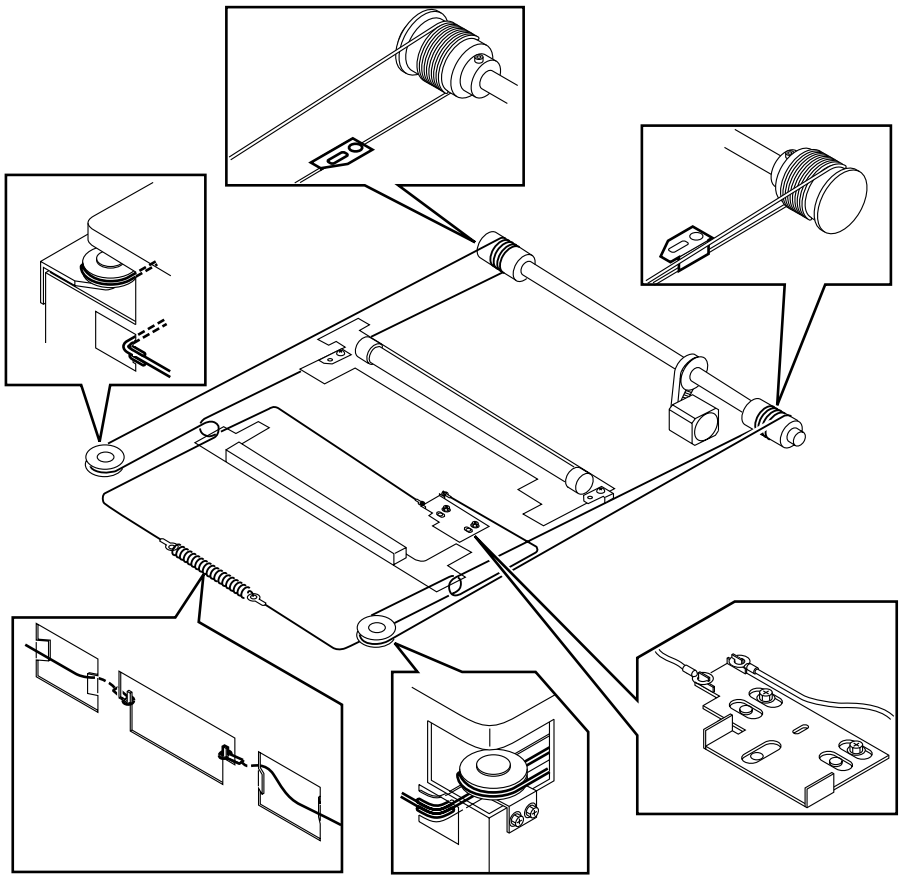
F03-202-02

6) Tighten the two screws to secure the motor unit in place.

2.3 Routing the Scanner Drive Cable

Route the scanner cable as follows to the pulleys and the hook mirror base:

1) Loosen the screw on the cable fixing plate.
2) Put the ball of the cable into the hole in the drive pulley, and wind the cable firmly so that it will not turn idly (4 runs inside, 5 runs outside); then, tape it in place. At this time, check to make sure that the cable fixing is on the inside.
3) Engage the cable with each pulley, and temporarily fix one of its ends to the cable fixing plate and the other to the hook on the reader frame.
4) Temporarily secure the cable fixing in place to the No. 1 mirror base. (Do not tighten the screw fully.)
5) Fit the reader upper frame.
6) Adjust the position of the No. 1 and No. 2 mirror bases.

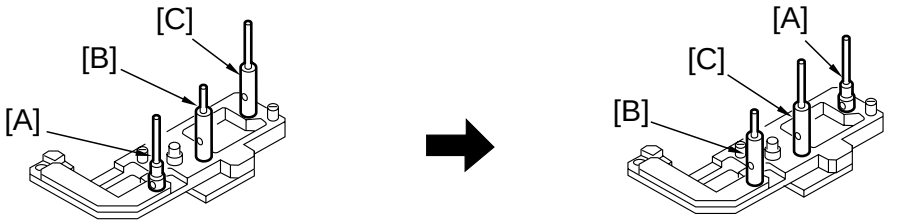


F02-203-01

2.4 Adjusting the Position of the No. 1/No. 2 Mirror Base

1) Set the pins of the mirror positioning tool as indicated:

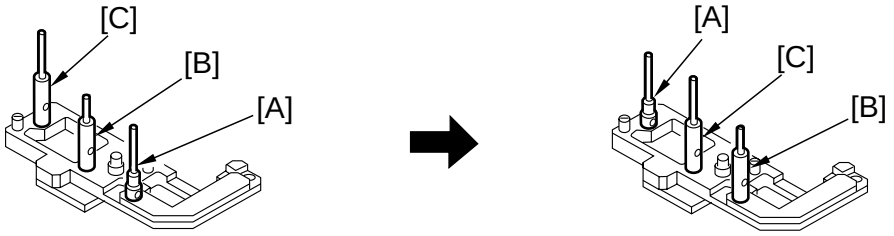
- For the Front (F marking)



(initial; FY9-3009) (set for the machine)

F03-204-01

- For the Rear (R marking)

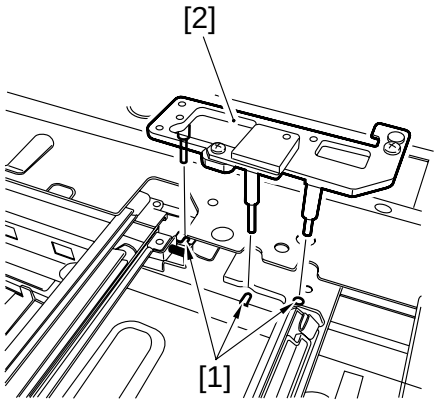


(initial; FY9-3009) (set for the machine)

F03-204-02

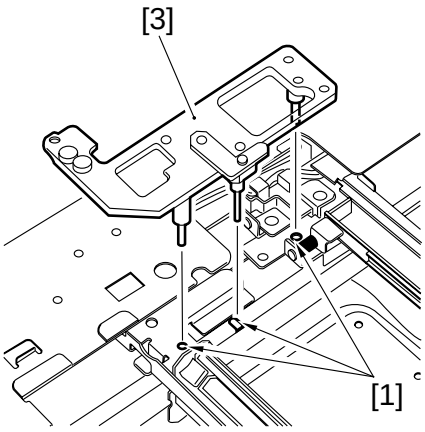
2) Fit the pins of the mirror positioning tool (front [2], rear [3]) into the holes [1] of the rail and the No. 1/No. 2 mirror base. The No. 2 mirror base is adjusted in keeping with the back-and-froth movement of the cable fixing plate.

Front Side (F marking)



F03-204-03

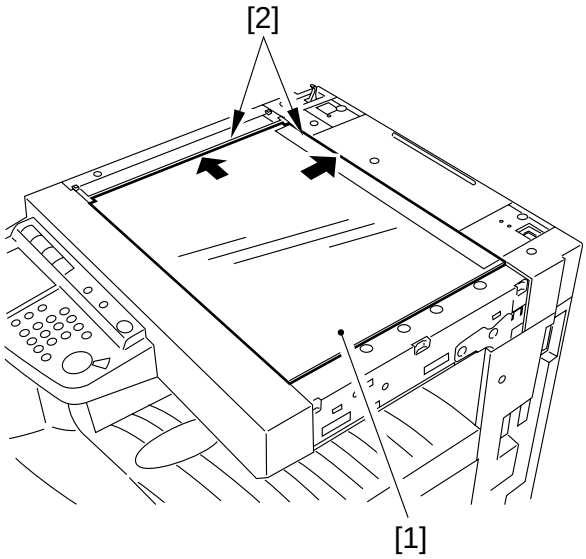
Rear Side (R marking)



F03-204-04

3) Fix the end of the cable (which is temporarily secured on the hook of the reader frame) in place using the spring.
4) Fully tighten the screw on the cable fixing plate.
5) Fully tighten the screw on the cable fixing so that it is secured on the No. 1 mirror base.
6) Detach the mirror positioning tool (2 pc.).

2.5 Mounting the Copyboard Glass

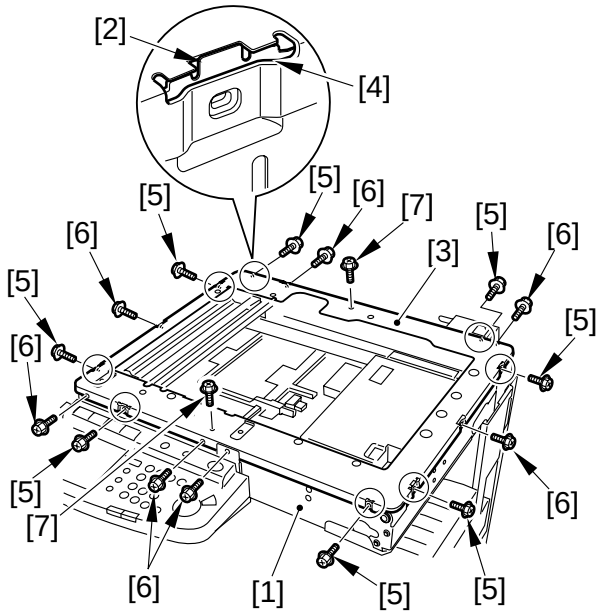


F03-205-01

- When mounting the copyboard glass, butt the copyboard glass [1] against the vertical/horizontal size plate [2]. If not done properly, the shadow of the size plate will appear on images made in enlargement mode. (After mounting, make an 800% enlargement copy to check.)
- Thereafter, execute optimum position auto adjustment for the standard white plate to ensure correct shading correction: COPIER>FUNCTION>CCD>SH-PS-ST.

2.6 Mounting the Reader Upper Frame

1) Fit the eight claws [2] of the reader frame [1] (circled) into the cut-offs [4] in the reader upper frame [3]; take care so that the engagement is secure.
2) Fit the eight screws [5] of the claw assembly first.
3) Fit the seven screws [6] of the side.
4) Lastly, fit the two screws [7] on the top face.



F03-206-01

2.7 Points to Note When Replacing the CCD Unit

Execute ‘CCD auto adjustment’ and ‘edge gain correction position auto adjustment’ in service mode; then, record the updated CCD adjustment data on the service label.

1) CCD Auto Adjustment
   COPIER>FUNCTION>CCD>CCD-ADJ
2) Edge Gain Correction Auto Adjustment
   COPIER>FUNCTION>CCD>EGGN-POS
3) CCD Adjustment Data
   all items under
   COPIER>ADJUST>CCD

2.8 When Replacing the Reader Controller PCB

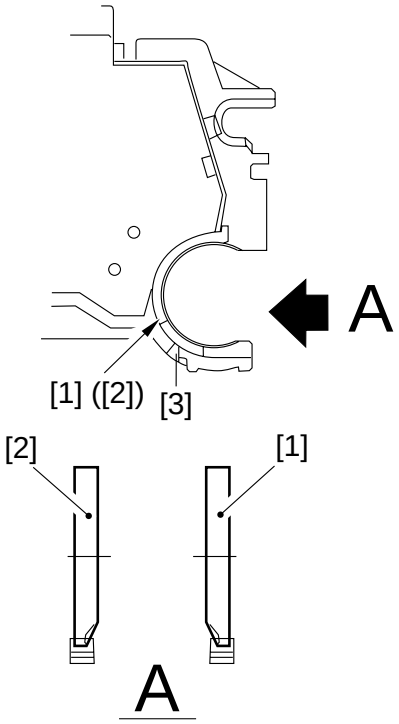
See “Troubleshooting” > Chapter 3 “Standards and Adjustment” > 7. “Electrical Components”

3 Image Formation System

3.1 Positioning the Developing Assembly Magnetic Seal

1) The front magnetic seal [1] and the rear magnetic seal [2] must be butted against the opening [3] (stop reference) when they are mounted.

Check to make sure that the magnetic seal is in firm contact with the casing.



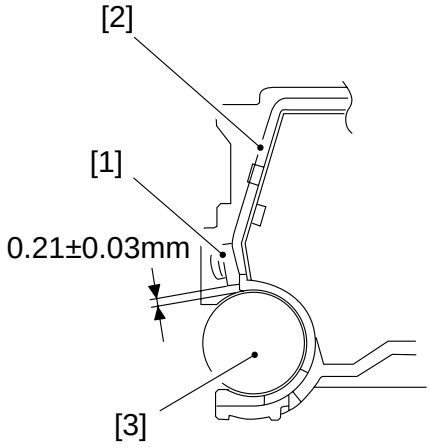
F03-301-01

3.2 Mounting the Developing Assembly Blade

The blade [1] and the blade base [2] of the blade base unit are adjusted to a high accuracy at the factory. Do not disassemble the unit.

If you happen to have removed the blade, adjust its position so that the gap between the blade and the developing cylinder [3] is 0.21 ± 0.03 mm using a gap gauge (CK-0057-000).

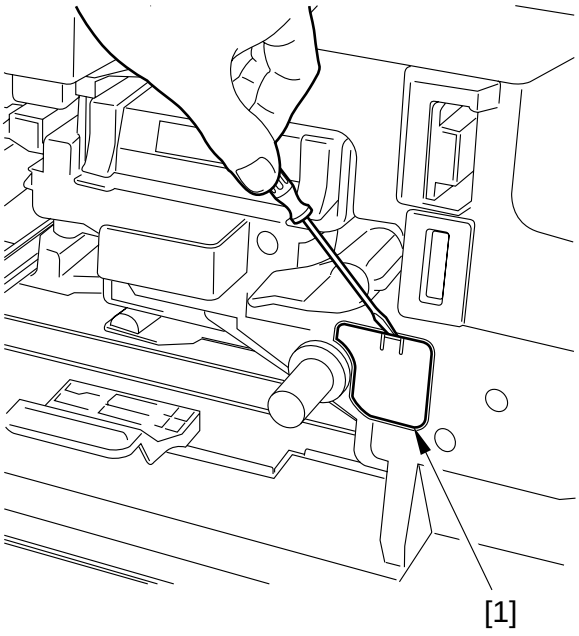
The surface of the developing cylinder is highly susceptible to scratches. Be sure to fit the gap gauge on ends of the developing cylinder.



F03-302-01

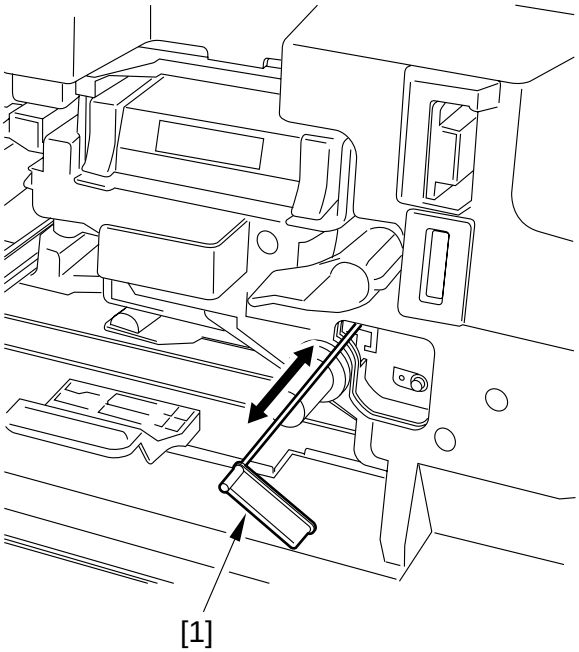
3.3 Removing the Paper Lint

1) Open the front cover.
2) Remove the paper lint cleaning cover [1] by inserting a flat-blade screwdriver.



F03-303-01

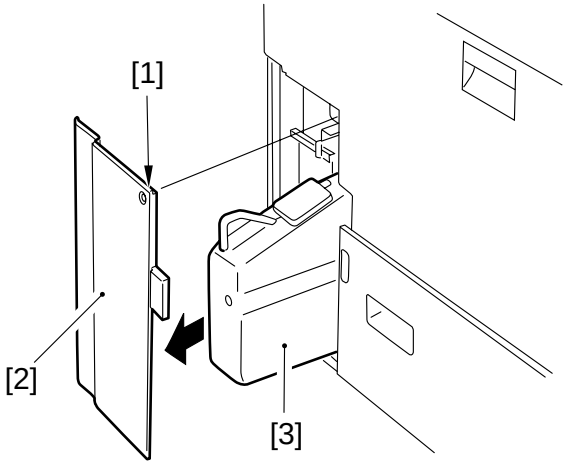
3) Slide out the paper lint cleaning lever [1], and move it back and forth.



F03-303-02

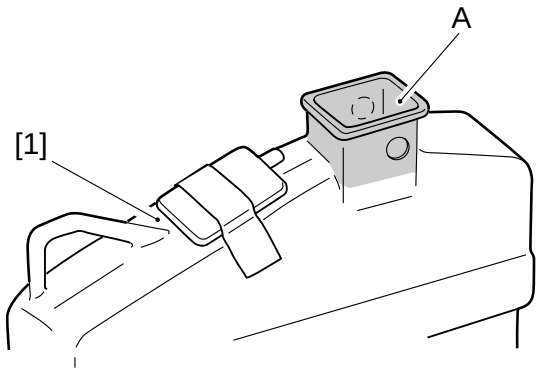
3.4 Cleaning the Waste Toner Case

1) Remove the screw [1], and detach the waste toner case cover [2].
2) Take out the waste toner case [3].



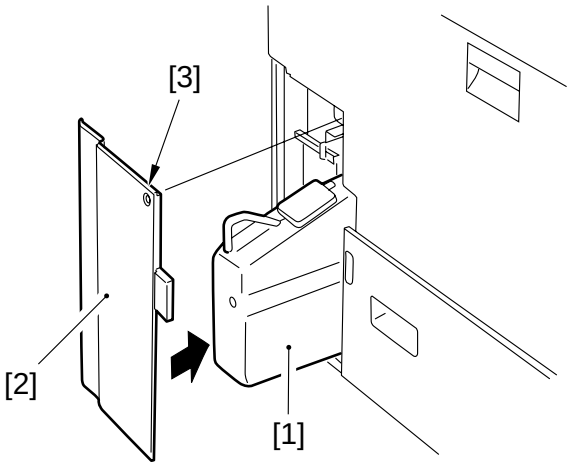
F03-304-01

3) Dispose of the waste toner collecting inside the waste toner case.
4) Clean both inside and the outside of the waste toner case [1] (area A, indicated by shading) with alcohol.



F03-304-02

5) Fit the waste toner case [1] back in the machine, and mount the waste toner case cover [2] with a screw [3].

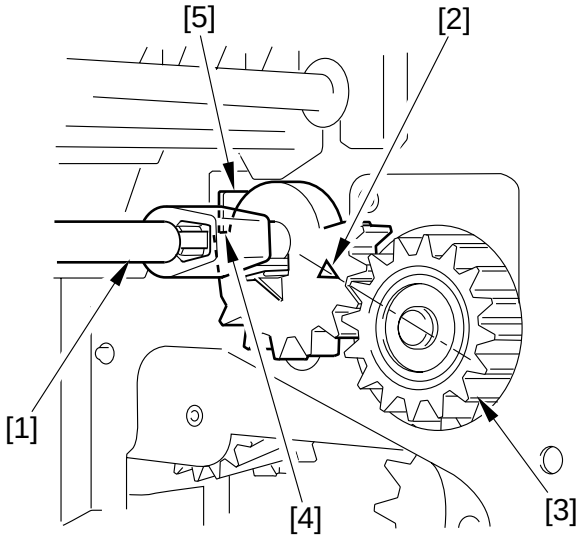


F03-304-03

4 Fixing System

4.1 Mounting the Locking Cam Unit

1) Check to see if the feeding assembly is locked in place.
2) Match the arrow of the gear of the locking cam unit [1] against the middle of the gear [3] of the fixing drive unit (e.i., where the rear [4] of the gear of the locking cam unit is in contact with the cut-up [5] of the frame).

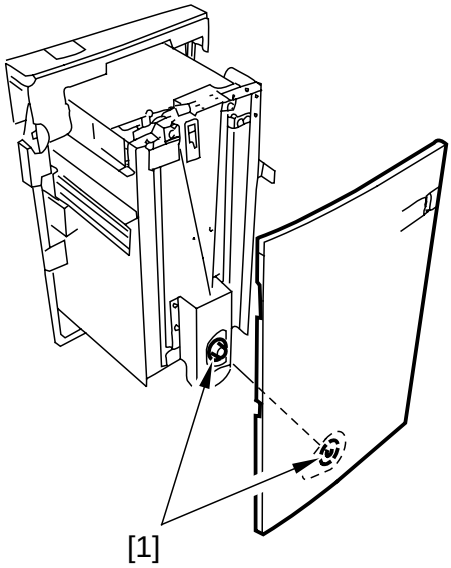


F03-401-01

5 Paper Deck

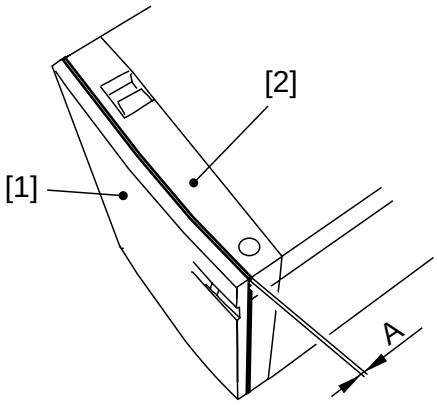
5.1 Mounting the Front Cover

1) When mounting the front cover, be sure to match it against the coupling [1] of the paper level indicator.



F03-501-01

2) Be sure to mount the front cover so that gap A between the front cover [1] and the front upper cover [2] is 3 ±1 mm.

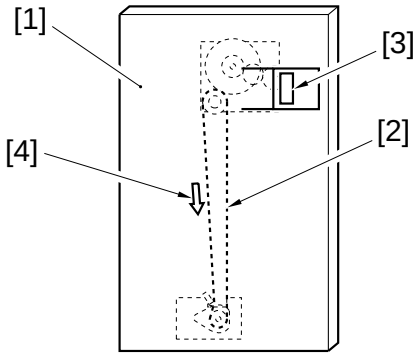


F03-501-02

If you operate the deck without matching the position of the paper level indicator and the deck lifter, the drive mechanism of the paper level indicator can become damaged. If you have moved the paper level indicator drive belt behind the front cover or the deck lifter, be sure to perform the following two tasks:

5.2 Adjusting the Paper Level Indicator

1) Move the drive belt [2] of the paper level indicator behind the front cover [1] by hand so that the white area inside the window [3] increases, i.e., in the direction for the arrow [4]; move it until a little resistance is felt.

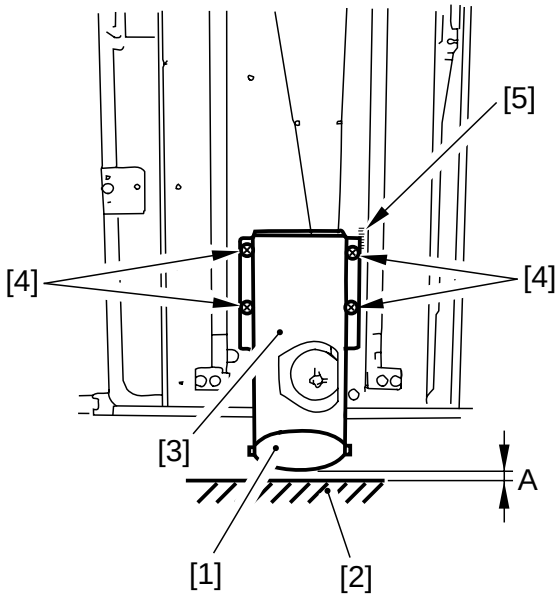


F03-502-01

5.3 Adjusting the Position of the Support Member

If the compartment cannot be opened/closed smoothly and the position of the support roller must be adjusted, perform the following:

1) Remove the front cover.
2) Using the four screws [4] of the roller support plate [3], make adjustments so that the support roller [1] and the floor [2] is about 3 mm when the compartment is fully slid out. (At this time, use the scale [5] on the front side plate as a reference.)

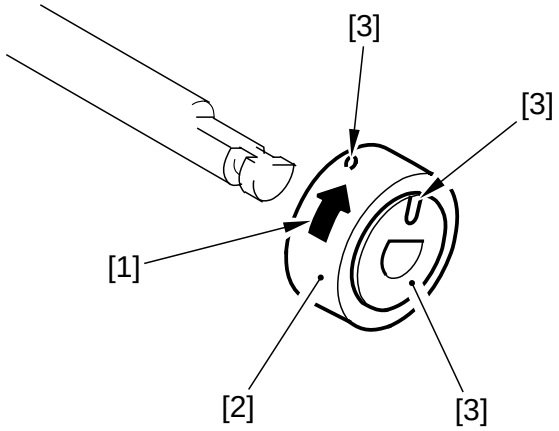


F03-503-01

5.4 Mounting the Deck Pickup Roller

Body Front (collar: silver-colored)

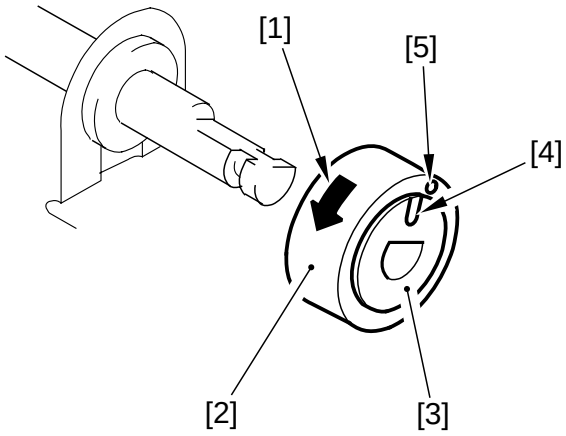
When mounting the deck pickup roller [2] to the front of the machine, be sure that the marking [4] on the collar [3] is toward the front of the machine and the marking [5] on the side of the roller is toward the rear of the machine.



F03-504-01

Body Rear (collar: gold-colored)

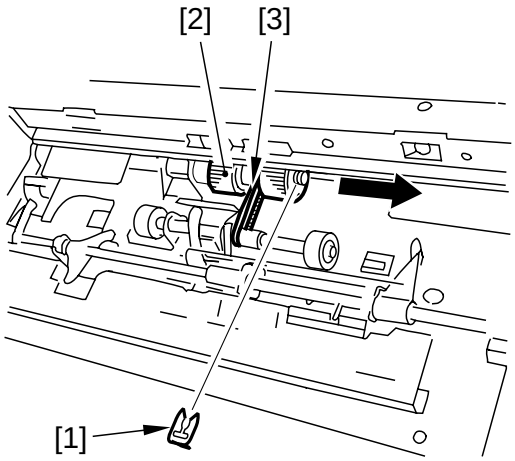
When mounting the deck pickup roller [2] to the rear of the machine, be sure that the marking [4] on the collar [3] and the marking [5] on the side of the roller are toward the rear of the machine.



F03-504-02

5.5 Removing the Deck Pickup/Feeding Roller

1) Remove the deck pickup unit. (p. 8-36P)
2) Turn over the deck pickup unit.
3) Remove the resin ring [1], and detach the deck pickup/feeding roller [2] and the drive belt [3] to the front.

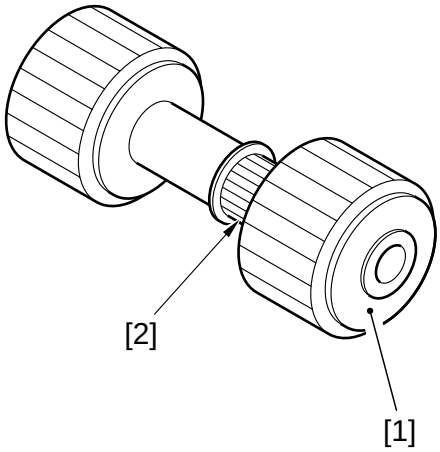


F03-505-01

5.6 Orientation of the Deck Pickup/Feeding Roller

When mounting the deck pickup/feeding roller [1], be sure that the belt pulley [2] is toward the front of the machine.

The pickup/feeding roller rubber, on the other hand, may be attached to the pickup/feeding roller shaft in either orientation.

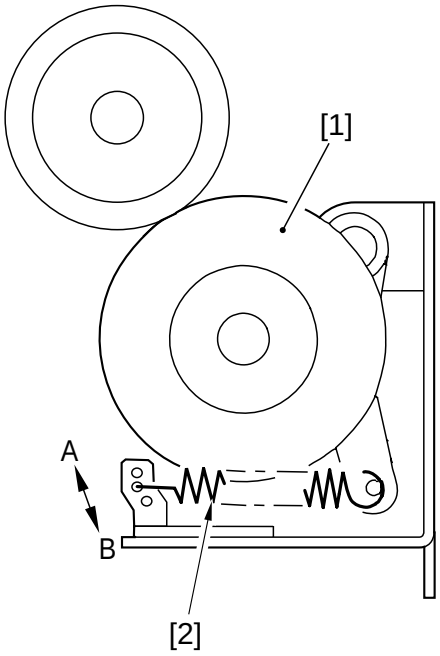


F03-506-01

5.7 Adjusting the Deck Separation Roller Pressure

If double feeding or pickup failure occurs when the deck is used as the source of paper, move the position of the pressure spring [2] of the deck separation roller [1].

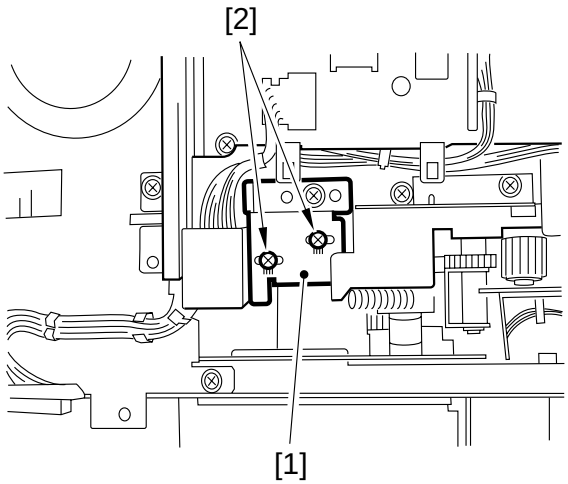
- If pickup failure occurs, move the spring in the direction of arrow A.
- If double feeding occurs, move the spring in the direction of arrow B.



F03-507-01

5.8 Position of the Deck Pickup Roller Releasing Solenoid (SL1D)

Before detaching the deck pickup roller releasing solenoid [1] from the support plate, keep note of the position of the solenoid with reference to the two fixing screws [2] on the solenoid. Or, mark the position of the solenoid on the support plate with a scribe to indicate the position. The solenoid must always be positioned in its initial location.



F03-508-01

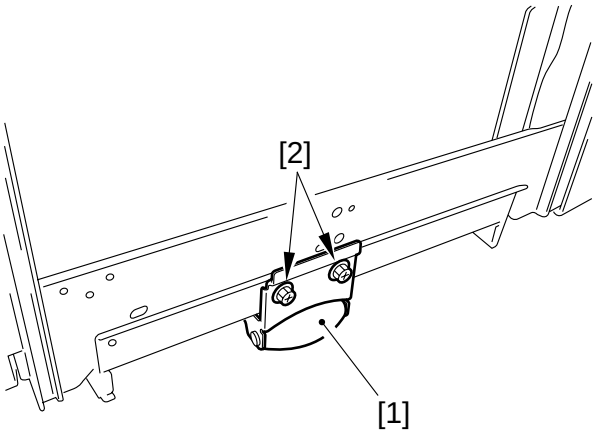
5.9 Adjusting the Height of the Side Member

5.9.1 Before Making Adjustments

1) Disconnect the machine from its host machine, and then connect it once gain, thereby finding out whether the impact of connection causes the host machine to slide over or the machine to wobble. If any such problem is noted, adjust the height of the side member as follows; otherwise, these steps need not be performed:

5.9.2 Making Adjustments

1) Connect the machine to the host machine.
2) Take out the paper from the deck.
3) Remove the right cover of the machine.
4) Loosen the two fixing screws [2] of the side member [1].
5) With the side member in contact with the floor, tighten the fixing screws. At this time, refer to the index so that the left and right screws match against the same index.



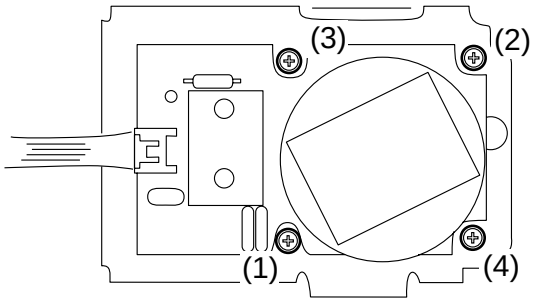
F03-509-01

6) Disconnect the machine from the host machine, and then connect it once again. If it can be done without extra force, mount the right cover for the machine, and put the paper back into the deck. If extra force is needed, go to the next step.
7) Check the index of the side member.
8) Loosen the fixing screws of the side member.
9) While referring to the index, raise the side member 1 mm, and then tighten the fixing screws.
10) Mount the right cover, and then put the paper back into the deck.

6 Cassette Feeding Unit-W1

6.1 Mounting the Pedestal Main Motor

1) When mounting the pedestal main motor, be sure to tighten the screws in the order indicated in the figure: (1) through (4).



F03-601-01

7 Envelope Feeder Attachment

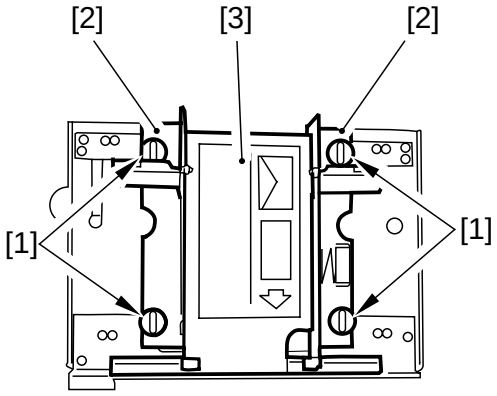
7.1 Envelopes and Type of Spring

- Use the green-painted spring for COM10, Monarch, DL, and YOUKEI 4.
- Use the red-painted spring for C5 and B5.

7.2 Replacing the Spring

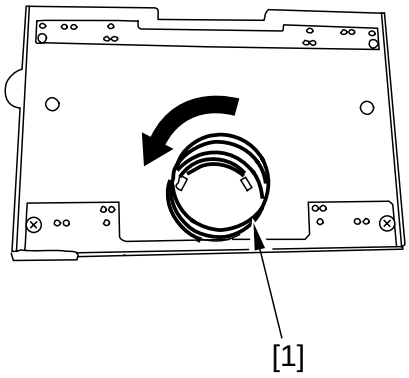
7.2.1 Replacing the Spring

1) Remove the two mounting screws [1] each, and detach the side guide plate [2] (front, rear) and the lifter [3].



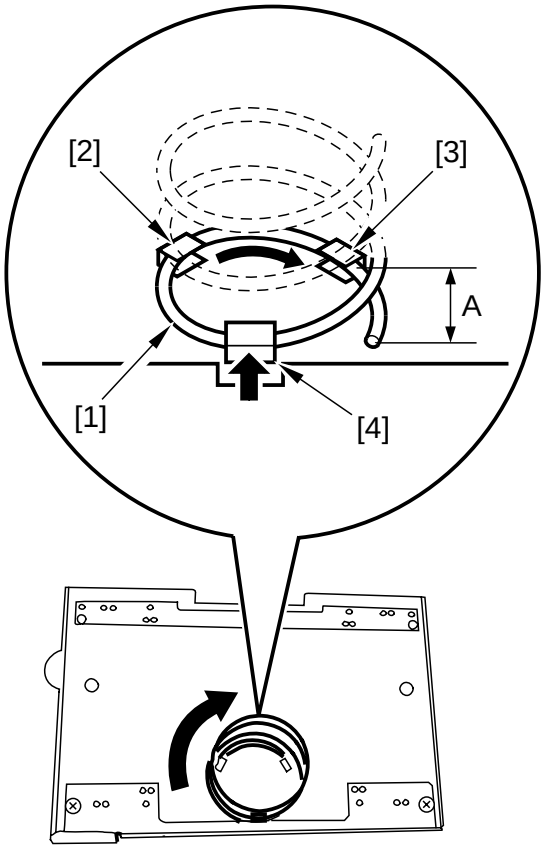
F03-702-01

2) Holding the bottom (1st, 2nd loops) of the spring [1], turn it clockwise to free it from the envelope feeder.



F03-702-02

3) Thread the edge of the spring [1] that comes as an attachment so as to fit it through the catch 1 [2] and then the catch 2 [3].
4) Holding the bottom (1st and 2nd loops) of the spring, fit it through the catch 3 [4]; then, thread it until distance A is about 15 mm from the catch 2 [3].
At this time, check to make sure that the spring is firmly on the bottom plate.

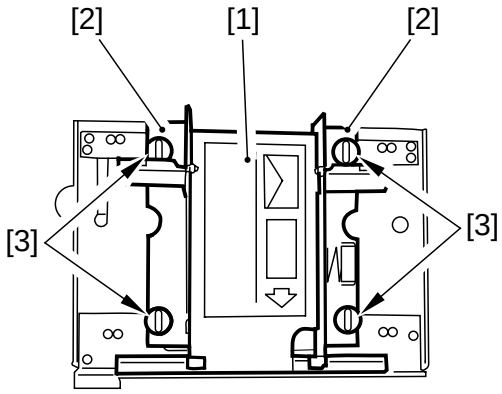


F03-702-03

7.3 Changing the Size

7.3.1 Changing the Size

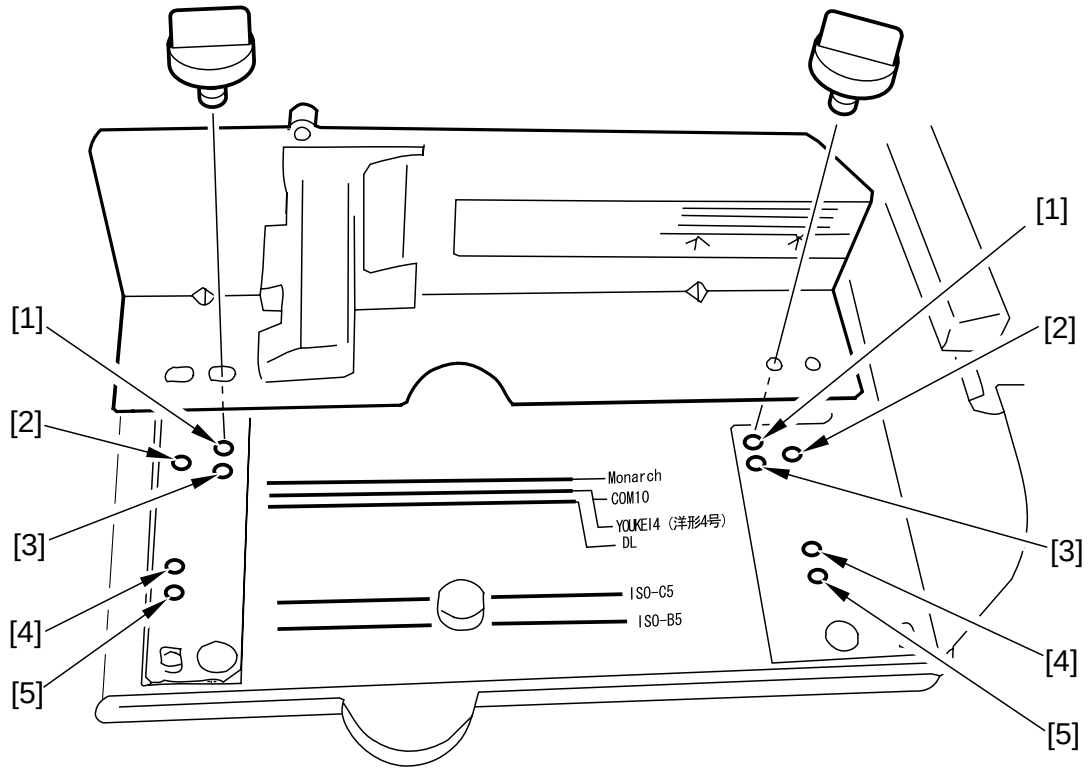
1) Match the lifter [1] and the side guide plate [2] against the size positioning line of the envelope feeder in relation to the edges of the side guide plate; then, secure them in place by using two mounting screws [3] each.



F03-703-01

Take care so that the side guide plate will not extend beyond the envelope feeder (as by choosing the wrong mounting hole). See the next page for the correct mounting hole.

Mounting Hole by Side Guide Plate (front)
(The side guide rear is symmetrically opposite.)



F03-703-02

[1] Monarch
[2] COM10, YOUKEI 4
[3] DL
[4] ISO-C5
[5] ISO-B5

2) Register the specifications of the envelope using 'register envelope' offered as part of common settings.
3) Check to make sure that envelopes are fed correctly.

CHAPTER 4

TROUBLESHOOTING IMAGE FAULTS/ MALFUNCTIONS

1 Making Initial Checks

1.1 Checking the Site of Installation

1. There must be a source of power rated as indicated (rated voltage ± 10%). The source must be exclusively of the machine, and the power plug must remain connected throughout the night.
2. The machine must not be in a high-temperature/-humidity area (near a water faucet, water boiler, humidifier), must not be cold or subject to dust. There must not be a source of fire nearby.
3. The machine must not be subjected to ammonium gas.
4. The machine must not be subjected to the direct rays of the sun; as necessary, curtains must be provided.
5. The room must be well ventilated.
6. The floor must be flat to keep the machine level.
7. The source of power must provide power night and day.

Check the sight against the above requirements.

1.2 Checking the Originals

Check to find out if the symptom is caused by the originals used or by the machine:

1. The copy density is optimum if set to index 5 ± 1.
2. Originals with a reddish tone tend to prevent reproduction of good contrast.
3. Originals of specific densities can produce copies that can be mistaken as faulty.


Memo

- An original with a reddish tint can produce copies with poor contrast.
- Diazo copies used as originals or originals with a high degree of transparency can produce copies that can be mistaken as “light copies.”
- Originals prepared in pencil or with a greenish tint can produce copies that can be mistaken as “light copies.”

1.3 Checking the ADF Platen, Copyboard cover, and Copyboard glass (standard white plate)

If the ADF platen, copyboard cover, or copyboard glass is soiled, clean it with a solution of mild detergent; if scratched, replace it.

1.4 Charging Roller and Static Eliminator

1. Check the transfer charging roller and the separation static eliminator for dirt and a fault (damage).
2. Check to make sure that the transfer charging roller and the separation static eliminator are correctly mounted.

1.5 Checking the Developing Assembly

1. Check to make sure that the members on both ends of the drum are in contact. Otherwise, light images can result.
2. Check to see the surface of the developing cylinder is coated with an even layer of toner. Otherwise, light images or uneven density can result.

1.6 Checking the Paper

1. Check to see if the paper used is of a recommended type. Advise the user that paper not of a recommended type may fail to bring about expected results.
2. Check to see if the paper is moist. Moist paper can adversely affect transfer, causing poor images or separation faults (leading to jams and wrinkles). Advise the user on the correct method of storing paper.

1.7 Checking the Periodically Replaced Parts

Check with the scheduled servicing chart and the table of periodically replaced parts. Replace parts that have reached the ends of their lives.

1.8 Image Adjustment Basic Procedure

If the copies have uneven density (difference between front and rear), light images, or foggy background, try the Image Adjustment Basic Procedure first to see if the problem is corrected.

1.9 Others

In winter, bringing a machine from a cold to warm place can cause condensation inside the machine, causing various problems.


Memo

1. Condensation in the optical system (glass, mirror, lens) can cause dark images.
2. Condensation in the charging system can cause leakage.
3. Condensation on the pickup/feeding guide can cause feeding faults.
   If condensation is noted, dry wipe the part, or leave the machine powered and alone for 60 min.

Blank Page

2 Samples of Image Faults

3 Troubleshooting Image Faults

3.1 The copy is too light (halftone area only).

	1) Perform the Image Adjustment Basic Procedure. Is the problem corrected? Check to make sure that the placement of the pattern print when the following is executed in service mode is correct: FUNCTION>DENS>PD-ME. YES: End.
AE adjustment	2) Make copies in AE mode. Is the text too light? YES: Execute AE adjustment: Decrease the setting of the following in service mode: COPIER>ADJUST>AE>AE-TBL.
Developing assembly	3) Are the block members of the developing assembly in contact with the photosensitive drum? NO: Check the developing assembly locking lever. Check the surface of the developing assembly block members for foreign matter (toner).
Developing assembly	4) Is the coating on the developing cylinder even? NO: Check the developing assembly.
Scanner, Photosensitive drum	5) Clean the mirrors and lenses. Is the problem corrected? YES: End. NO: Replace the drum unit.

3.2 The copy is too light (including solid black).

1) Perform the Image Adjustment Basic Procedure. Is the problem corrected?
Check to make sure that the placement of the pattern print when the following is executed in service mode is correct: FUNCTION>DENS>PD-ME.
YES: End.

2) Turn off the main power switch in the middle of copying operation, and open the front cover. Is the toner image on the photopositive drum before transfer more or less normal?
NO: Go to step 7.

Feeding unit (Transfer charging roller)

3) Is the feeding unit locked in place correctly?
NO: Check the transfer charging roller pressure spring.

4) Is there electrical leakage around the electrode of the feeding unit?
YES: Check the electrode of the feeding unit.

5) Is there dirt, cracking, or scratching on the transfer charging roller?
YES: Replace the transfer charging roller.

6) Are the position and the condition of the transfer charging roller locking spring normal?
NO: Correct the position of the spring, or replace the spring.

Paper (transfer faulty)

7) Try paper fresh out of package. Is the problem corrected?
YES:

- The paper may be moist. Advise the user on the correct method of storing paper.
- Advise the user that the use of paper not of a recommended type may fail to produce poor images.

Transfer guide, High-voltage cord, Composite power supply PCB, DC controller PCB

(transfer faulty)

8) Is there foreign matter in the transfer guide assembly or the transfer charging roller assembly, and is leakage noted?

YES: Remove the foreign matter.

NO:

1. Check the high-voltage cord for electrical continuity. (The resistance of the transfer high-voltage cord is about 10 kΩ.)
2. Check the composite power supply PCB and the DC controller PCB.

Developing assembly

9) Is the developing assembly fitted securely? (Check to see if the developing block members are in firm contact with the photosensitive drum.)

NO: Fit the developing assembly correctly.

Toner level detection assembly (development fault)

10)Is there toner inside the developing assembly?

NO:

- Check the toner sensor.
- Check the connectors and the harnesses for electrical continuity.

Drum unit, Reader controller PCB, Main controller PCB

11)Try replacing the drum unit. Is the problem corrected/

YES: End.

NO: Real the reader controller PCB and the main controller PCB.

- The resistance of the high-voltage cord for primary charging is about 10 kΩ
- The resistance of the high-voltage cord (white) is about 10 kΩ
- The resistance of the cord for the transfer guide is about 10 kΩ

3.3 The copy is too light (entire face, considerable).

1) Perform the Image adjustment Basic Procedure. Is the problem corrected?
Check to make user that the placement of the pattern print when executing the folding is correct: FUNCTION>DENS>PD-ME.
YES: End.

AE adjustment

2) Turn off the main power switch in the middle of copying operation, and open the front cover. At this time, is the toner image on the surface of the photosensitive drum before transfer more or less normal?
NO: Go to step 5.

Developing assembly

3) Are the developing members in firm contract with the drum?
NO: Check the developing assembly locking lever. Check the surface of the developing members for foreign matter (toner).

Developing clutch

4) Is the developing cylinder rotating?
NO: Check the developing clutch (for a lose hex screw).

Feeding unit (tranfer charging roller)

5) Is the feeding unit locked in place correctly?
Is the transfer roller in contact with the photosensitive drum whet the feeding unit is locked in place?
NO:
- Check the transfer charging roller pressure spring.
- Check the feeding locking assembly.

6) Is there leakage in the electrode assembly of the feeding unit?
YES: Check the electrode assembly of the feeding unit.

High-voltage cord, Feeding unit (Transfer charging roller)

7) Is the feed electric continuity from the composite power supply PCB to the electrode assembly of the feeding unit? (The resistance of the high-voltage cord of the transfer charging roller is about 10 kΩ.)
NO:
- Replace the high-voltage cord.
- Check the feeding unit.

Composite power supply PCB, DC controller PCB

8) Is there electrical continuity from the composite power supply PCB to the feeding unit? (The resistance of the high-voltage cord of the transfer charging roller is about 10 kΩ.)
YES: Check the composite power supply PCB and the DC controller PCB.

Transfer guide

9) Is there foreign matter in the transfer guide assembly or the transfer charging roller assembly, and is there electrical leakage?

YES: Remove the foreign matter.

Paper

10)Is there foreign matter in the transfer guide assembly or the transfer charging roller, and is there leakage?

NO: Try fresh paper or paper of a different type.

Development (fault)

11)Is the developing assembly in firm contact with the photosensitive drum? (Check to see that the developing block members are in firm contact with the photosensitive drum.)

NO: Fit the developing assembly once again.

YES:

- Check the developing assembly.
- Check the developing bias.

3.4 The copy has uneven density (darker at front).
3.5 The copy has uneven density (lighter at front).

Developing assembly

1) Are the developing block members of the developing assembly in firm contact with the developing assembly?

NO: Check the developing assembly locking unit.

Scanner

2) Clean the scanning lamp, reflecting plate, mirrors, and lenses. Is the problem corrected?

YES: End.

Pre-exposure lamp

3) Is the pre-exposure lamp ON during copying operation?

NO:

1. Replace the pre-exposure lamp unit.
2. Replace the DC controller PCB.

Developing assembly

4) Is the coating of toner on the developing cylinder even?

NO:

1. Clean the tip of the blade of the developing assembly. (dry wiping)
2. Clean the surface of the developing cylinder.
3. Check the toner inside the developing assembly for uneven deposit.

5) Try the following modes. Is the problem corrected?

• APVC adjustment once gain in service mode: FUNCTION>DPC>D-GAMMA.

• ATVC adjustment once again in user mode: ‘roller clean’ under ‘adjust/clean’.

YES: End.

Drum cartridge, Shading

6) Is there an uneven image in the halftone area of PG?

YES: Replace the drum unit.

NO: Execute shading adjustment (i.e., FUNCTION>CCD>CCD-ADJ).

3.6 The copy is foggy (entire face).

Scanner

1) Clean the scanning lamp, reflecting plate, mirrors, and lenses. Is the problem corrected?
YES: End.

2) Perform the Image Adjustment Basic Procedure. Is the problem corrected?
YES: End.

3) Select the following in service mode, and press the OK key: COPIER>FUNCTION>DPC>D-GAMAM. Is the problem corrected?
NO: Replace the drum unit. However, be sure to take appropriate measures, as a fault in the following is suspected: main controller PCB, DC controller PCB, composite power supply PCB.

Developing assembly

4) Is the developing cylinder insulated from the GND of the machine? (Turn off the main power switch, and disconnect the connector J130 of the composite power supply PCB; then, check the length between J130-1 and the metal plate of the host machine for electrical continuity.)
NO: Check the area around the developing cylinder and the development connectors.

High-voltage system

5) Is PG solid white foggy?
YES: Check the high-voltage system.

Service mode

6) Adjust the setting of the following up to +30 of the factory value: ADJUST>DEVELOP>DE-OFST. Is the problem corrected?
YES: End.

Developing bias, DC controller PCB

7) Try replacing the composite power supply. Is the problem corrected?
YES: End.
NO: Replace the DC controller PCB.

3.7 The copy is foggy (vertical).
3.8 The copy has a black line (vertical, fuzzy, thick).

Primary charging roller

1) Clean the charging roller in user mode. Is the problem corrected?
   YES: End.

Scanner

2) Clean the mirrors and lenses. Is the problem corrected?
   YES: End.

Developing assembly

3) Is the coating of toner on the developing cylinder even?
   NO:
   1. Check the edge of the blade of the developing assembly.
   2. Dry wipe the surface of the developing cylinder.

Photosensitive drum, External light

4) Is there a scratch in the peripheral direction on the surface of the photosensitive drum?
   YES: Replace the drum unit.
   NO: Check to see if the photosensitive drum is subjected to light from outside.

3.9 The copy has a black line (vertical, fine).

Exposure system

1) Generate a halftone test print in service mode. Enter '5' to COPIER>PG>TYPE. Does the output image have a black line?

NO: Suspect a fault in the exposure system. Clean it.

Primary charging roller

2) Clean the primary charging roller. Is the problem corrected?

YES: End.

Photosensitive drum

3) Is there a scratch or a black line in the peripheral direction of the surface of the photosensitive drum?

• Be sure to wipe the black line on the surface of the photosensitive drum with a cloth coated with toner, and make sure that the black line disappears.

NO: Replace the drum unit.

• If there is a scratch, be sure to identify the cause.

Fixing assembly

4) Is there a scratch it the peripheral direction of the fixing roller?

YES: Replace the fixing roller.

NO: Check the fixing inlet assembly for dirt.

3.10 The copy has a white spot (vertical).
3.11 The copy has a white line (vertical).

Exposure system

1) Generate a halftone test print in service mode. Enter '4' to the following: COPIER>PG>TYPE. Does the output image have a white line/spot?

NO: Go to step 7.

dirt (lint)

2) Is there dirt (lint) in the drum unit or around the laser optical path of the developing assembly?

YES: Remove the dirt (lint).

Transfer charging roller, Separation static eliminator

3) Is the transfer charging roller or the separation static eliminator soiled or coated with foreign matter?

YES: Clean the transfer charging roller or the separation static eliminator. If the problem is still not corrected, replace the transfer charging roller or the separation static eliminator.

Developing assembly

4) Is the coating of toner on the developing cylinder even?

NO: Check the edge of the developing assembly. If the developing assembly is without toner, see the descriptions under "The Add Toner message fails to go ON."

Fixing film

5) Is there a scratch in the peripheral direction of the fixing film?

YES: Replace the fixing film unit

Fixing assembly inlet

6) Is there dirt or foreign matter on the fixing assembly inlet?

YES: Clean the inlet.

Photosensitive drum

7) Is there a scratch in the peripheral direction of the photosensitive drum?

YES: Replace the drum unit.

- Be sure to identify the cause of the scratch.

Exposure system, Standard white plate

8) Clean the copyboard glass (stander white plate) and the mirrors. Is the problem corrected?

YES: End.

NO: Change the setting in the following service mode to change the point of shading measurement: FUNCTION>SHDG-POS. If the problem is not corrected after several attempts, replace the copyboard glass.

3.12 The copy has a white spot (horizontal).

Exposure system

1) Generate a halftone test print in service mode. Enter '4' to the following: COPIER>PG>TYPE. Does the output image have a white spot?

NO: Go to step 4.

Developing assembly

2) Does the problem occur at intervals of about 35 mm?

YES:

- Clean the developing block members.
- Dry wipe the surface of the developing cylinder.
- If a scratch is found on the surface of the developing cylinder, replace the developing cylinder.

Drum unit

3) Does the problem occur at intervals of about 94 mm?

YES:

- Clean the drum.
- If a scratch is found on the drum, replace the drum unit.

Paper

4) Try paper fresh out of package.

YES: The paper may be moist. Advise the user on the correct method of storing paper.

Transfer charging roller, Developing bias

5) Is there a white spot on the photosensitive drum during copying operation?

NO: Check the transfer charging roller for leakage.

YES: Check the developing bias.

3.13 The back of the copy is soiled/Soiled edge.

Exposure system

1) Turn off the main power switch while paper is moving in the feeding assembly. At this time, is the back of the paper soiled?

NO: Go to step 5.

Transfer guide assembly

2) Does the back of paper soiled after replacing the drum that caused a black line or the like?

YES: Clean the transfer guide.

Transfer guide bias, Transfer guide

3) During copying, is the voltage between the transfer guide (+) and the machine side plate (-) about -50 to -650V?

NO:

- Check the transfer guide bias connector.
- Clean the transfer guide.
- Clean the bottom of the developing assembly.

Developing assembly, Registration roller, Drum cleaner

4) Does the problem occur at intervals of about 50 mm?

YES:

- Clean the registration roller.
- Clean the transfer guide.
- Check the developing assembly for leakage of toner.
- Clean the bottom of the developing assembly.

NO:

- Clean the feeding assembly.
- Clean the transfer guide.
- Check the drum cleaner assembly fro leakage of waste toner.

Transfer charging roller

5) Execute cleaning of the roller in user mode. Is the problem corrected?

YES: End.

Fixing assembly

6) Execute fixing cleaning mode in the following service mode: COPIER>OPTION>BODY>FIX-CLN.
Is the problem corrected?

NO: Replace the fixing cleaning roller.

YES: End.

3.14 The copy has a fixing fault.

1) Does the problem occur when the machine is first turned on (as in the morning)?
NO: Go to step 3.

2) Is the paper thick or the like, which has poor fixing quality?
YES: Select 'thick paper', and try feeding paper from the multifeeder.

Fixing film

3) Is the problem vertical?
YES: If a scratch is found on the fixing film, replace the film unit.

Fixing heater

4) Does the heater operate?
NO: See "The fixing heater fails to operate."

Fixing lower roller pressure

5) Is the lower roller pressure (nip width) as indicated?
NO: Replace the fixing assembly.

Thermistor

6) Does the indication in the following service mode increase: COPIER>DISPLAY>ANALOG>FIX-C?
NO: Replace the film unit.

Paper

7) Is the paper of a recommended type?
NO: Try paper of a recommended type. If the result is good, advise the user to use paper of a recommended type.

Service mode

8) Set priority on fixing in the following service mode: COPIER>OPTION>BODY>FIX-TEMP. Is the problem corrected?
YES: End.

3.15 The copy has a displaced leading edge.
3.16 The copy has a displaced leading edge (large margin).
3.17 The copy has a displaced margin (no margin).

1) Is an ADF used?
YES: Correct the displacement by referring to the Service Manual of the ADF.

Original

2) Is the original placed correctly?
NO: Place the original correctly.

Pickup roller, Feeding roller, Separation roller

3) Has the pickup, feeding, or separation roller of the cassette in question reached the end of its life?
YES: Check the roller; if worn, replace it.

REGIST

4) Execute the following in service mode: ADJUST>FEED-ADJ>REGIST. Is the problem corrected? (Note 1)
YES: End.

Registration roller, Pickup/Feeding guide

5) Does the problem occur only in double-sided mode?
YES: Check the rollers of the duplex feeding assembly.
NO: Check and clean the following:
- Registration rollers
- Pickup/feeding guide

Note 1:
Making Adjustments
- Generate a PG test pattern ([6] ; solid bal).
- Make adjustments so that the leading edge margin is 2.5 ± 1.5 mm. A higher setting will decrease the margin.

3.18 The copy is blurred.

Scanner drive cable

1) Is the cable wound on the wire pulley twisted or twined when the scanner is moving? Is there e foreign matter in the mirror pulley assembly?

YES:

- Route the cable correctly.
- Replace the cable.
- Remove the foreign matter.

Scanner rail

2) Move the No. 1 mirror base slowly by hand. Does it move smoothly?

NO: Clean the surface of the scanner rail with alcohol; thereafter, apply a small amount of silicone oil.

Drum drive assembly, Photosensitive drum

3) Does the problem occur at intervals of about 94 mm?

YES:

- Check the drum drive assembly.
- Check the drum ends (where developing block members remain in contact) for a scratch or foreign matter.

Developing gear, Drum drive assembly, Drum unit

4) Does the problem occur at intervals of about 35 mm?

YES: Check the developing assembly.

NO:

- Check the drum drive assembly.
- Replace the drum unit.

3.19 The copy is foggy (horizontal).

1) Does the problem occur at the same position on all copies made in Direct.
YES: Go to step 5.

Scanning lamp

2) Does the scanning lamp flicker while the scanner is moving forward?
YES: Check the scanning lamp and the inverter PCB.

Drum unit

3) Does the problem occur at intervals of 94 mm?
YES: Replace the drum unit.

Wiring

4) Is the wiring between the scanning lamp, the inverter PCB and the reader assembly?
NO: Correct the wiring.

Developing assembly

5) Is the coating of toner on the developing cylinder normal?
NO: Check the developing bias.

Scanner, Feeding system

6) Make reduced copies (about 50% to 60%), and compare them against copies made in Direct. Is the position of the problem different?
YES: Check the scanner.
NO: Check the feeding assembly.

3.20 The copy has inadequate sharpness.

Copyboard glass

1) Is there oil or the like on the copyboard glass? Is there foreign matter on the copyboard glass stay?

YES: Clean the copyboard glass.

Scanner

2) Clean the scanning lamp, reflecting plate, mirrors, and lenses. Is the problem corrected?

YES: End.

Mirror (position)

3) Is the horizontal reproduction ratio in Direct as indicated?

NO: Adjust the position of the No. 1 mirror an the No. 2 mirror.

Developing bias

4) Are the connection and the electrical continuity of the high-voltage for the developing bias normal? (The resistance of the cable for the developing bias and the resistance between the terminal of the composite power supply PCB and the terminal on the developing assembly is about 10 kΩ.)

NO: Check the connection; and replace the cable. If the problem is still not corrected,

1. Replace the composite power supply PCB
2. Replace the DC controller PCB.

Drum unit, Transfer charging system

5) Try replacing the drum unit. Is the problem corrected?

YES: End.

NO: Check the transfer charging system.

3.21 The copy is completely blank.

Developing assembly

1) Is the developing assembly locked to the photosensitive drum during copying?

NO: Check the locking mechanism of the developing assembly.

Developing assembly drive mechanism

2) Is the developing cylinder rotating during copying?

NO: Check the drive mechanism of the developing assembly.

3) Is the image of the test print (PG>TYPE; 1 through 8) normal?

YES: Go to step 10.

Transfer charging roller

4) Is the transfer charging roller mounted properly?

NO: Check the mounting condition.

5) Is leakage noted on the transfer charging roller?

YES: Check the transfer charging roller.

Transfer high-voltage cord

6) Is the connection of the transfer high-voltage cord normal? Is there electrical continuity in the transfer high-voltage cord? (The resistance of the transfer high-voltage cord is about 10 kΩ.)

NO:

- Connect the cord properly.
- Replace the transfer high-voltage cord.

DC controller PCB

7) Try replacing the DC controller PCB. Is the problem corrected?

YES: End.

Composite power supply PCB

8) Try replacing the composite power supply PCB. Is the problem corrected?

YES: End.

Power supply (to CCD PCB)

9) Is about 12 VDC present on J602-1 of the CCD PCB? Is about 5 VDC present on J602-4?

NO: Check the wiring; if normal, replace the reader controller PCB.

Wiring

10)Is the wiring between the CCD PCB and the reader controller PCB normal?

NO: Correct the wiring.

Laser scanner unit, Drum unit

11)Try replacing the drum unit. Is the problem corrected?

NO: Check the laser shutter mechanism; if normal, replace the laser scanner unit.

YES: End.

3.22 The copy is completely black.

Scanning lamp

1) Is the scanning lamp ON during copying operation?
NO: See “The scanning lamp fails to go ON.”

Margin

2) Is there a margin on copies made in normal mode?
YES: Go to step 6.
NO: Go to step 3.

Drum unit

3) Is the drum unit fitted correctly? (Is it fully pushed inside?)
NO: Mount it correctly.

Primary charging roller

4) Are the contact of the connectors, connection of the harness, and electrical continuity from J130-7 of the composite power supply PCB to the primary charring roller normal? (The resistance of the high-voltage cord for primary charging is 10 kΩ.)
NO: Correct the fault.

Mirror (position)

5) Generate test prints (PG>TYPE; 1 through 8). At this time, is the image on the photosensitive drum normal?
NO: Go to step 7.

DC controller PCB, Composite power supply PCB

6) Is the output of J301-B4 (+) on the DC controller PCB 0 V during copying operation?
NO: Replace the DC controller PCB.
YES: Replace the composite power supply PCB.

Reader controller PCB, CCD unit

7) Try replacing the CCD unit. Is the problem corrected?
NO: Replace the reader controller PCB.
YES: End.

3.23 The copy has a block/white dot after replacement of the drum unit.

1) Execute the following in service mode: FUNCTION>DPC>D-GAMMA. Then, make copies of the NA-3 Chart. Is the copy image normal?
YES: End.

Drum unit

2) Set the following to '1': OPTION>BODY>PRIAC-SW. Then, make copies of the NA-3 Chart. Is the copy image normal?
YES: End.
NO: Replace the drum unit.

3.24 The copy has a black line (stream reading).

Reading glass, Dirt

1) Does the problem occur on the same position on all copies?
YES: Check the reading glass for dirt and a scratch.
NO: Paper lint (droppings) can be suspected. Clean the ADF roller, original path, and reading glass.

4 Troubleshooting Malfunctions

4.1 Power Supply System

4.1.1 The AC power is absent.

1. Initial checks

[1] Is the power plug connected to the power outlet?
[2] Is the rated AC voltage present at the power outlet?
[3] Has the leakage breaker gone ON?

2. Switch PCB, Wiring, Connector

Is the resistance 0 Ω when the switch is turned on and ∞Ω when it is turned off?

NO: Replace the switch PCB.

YES: Check the AC power line (power cord, leakage breaker, switch PCB, main power supply PCB (J6)) for poor wiring (i.e., electrical continuity); check the connectors for poor contact.

4.1.2 The DC power is absent.

1. AC power supply

Is the rated AC voltage present at the connector J6 (between 1 and 3) of the main controller PCB and at the connector J100 (between 1 and 3) of the composite power supply PCB?

NO: See “The AC power is absent.”

2. Fuse (F1)

Is the fuse on the composite power supply PCB blown ?

YES: Remove the cause of the fuse, and replace the fuse.

3. Main power supply PCB, Composite power supply PCB

Is the output voltage of each power supply PCB normal?

a. Main Power Supply PCB

Connector	Output voltage
J202-1, 3, 5	24VU1-SW
J203-2	24VU2
J204-1, 3, 7, 8, 9	24VU3
J206-2	24VU3
J206-3	5V

b. Composite Power Supply

Connector	Output voltage
J120-1, 4	5V
J121-1, 2, 3	3VA2
J121-4, 5	3VA1
J121-11,12,13	3VB
J122-1, 2	5V
J124-3, 4	3VA1
J124-6	3VB
J124-9, 10	5V
J126-2, 3, 5, 7	13V

YES: Check the wiring from each power supply PCB to each load.

NO: Replace the faulty power supply PCB.

4.2 Printer Unit

4.2.1 Pickup fails.

1. General condition

Slide out and then in the cassette. Is the sound of the lifter fall heard?

NO: See “The lifter fails to move up.”

2. Sensor

In service mode (COPIER>DISPLAY>JAM) find the sensor that detected the jam. Is the sensor lever and the sensor itself normal?

NO: Replace the sensor lever or the sensor.

3. Releasing lever (for pickup/separation roller)

Push in the releasing lever toward the rear. Is the pickup roller released? Do the feeding roller and the separation roller come into firm contact?

NO: The releasing lever (spring) is displaced or deformed. Correct or replace it.

4. Pickup/feeding/separation roller

Execute pickup operation. Does the roller rotate?

YES: The movement of paper is faulty because of wear on the pickup/feeding/separate roller. Replace the roller.

5. Pickup drive assembly

Is there damage/foreign matter on the gear of the pickup roller drive assembly?

YES: Replace the gear. Remove the foreign matter.

6. Pickup motor (M2)

Execute the following in service mode: code 3 of COPIER>FUNCTION>PART-CHK>MTR; i.e., MTR-ON. Is the motor control signal present at J1602 of the pickup PCB? (J1602-1: A*, J1602-2: A, J1602-3: B*, J1602-4: B)

YES: Replace the pickup motor.

7. Pickup PCB, DC controller PCB

Execute the following in service mode: code 3 of COPIER>FUNCTION>PART-CHK>MTR; i.e., MTR-ON. Is the motor control signal present at J302A of the DC controller PCB? (J302A-1: 24 V, J302A-3: GND, J302A-6: IN1, J302A-7: IN2, J302A-8: IN3, J302A-8: IN4)

YES: Replace the pickup PCB.

NO: Replace the DC controller PCB.

4.2.2 The lifter fails to move up (pickup from the cassette).

1. Releasing lever (for pickup roller)

Push in the releasing lever toward the rear. Does the descent movement of the pickup roller stop?

NO: The releasing lever (spring) is displaced or deformed. Correct or replace it.

2. Lifter gear retaining lever lock

When the cassette is slid in, is the lock of the lifter gear retaining level released?

NO: Correct the locking mechanism of the lifter gear retaining lever or replace it.

3. Lifter gear, Lifter gear retaining lever, Lifter ascent lever

Is any of the gear faulty (damaged)?

YES: Replace it.

4. Lifter drive assembly

Is the gear of the lifter drive assembly damaged or subject to foreign matter. Is the drive belt faulty?

YES: Replace the gear/belt. Remove the foreign matter.

5. Pickup roller descent solenoid (SL1C)

Execute the following in service mode: code 6 of COPIER>FUNCTION>PART-CHK>SL; i.e., SL-ON. Is the solenoid drive voltage present at J1604 of the pickup PCB? (J1604-4: 24 V, J1604-1: PICKUPSL*)

YES: The pickup roller solenoid is faulty. Replace it.

6. Pickup PCB, DC controller PCB

Execute the following in service mode: code 6 of COPIER>FUNCTION>PART>CHK>SL; i.e., SL-ON. Is the solenoid control signal present at J302A-5 of the DC controller PCB? (J302A-5: FDOWN_SL*)

YES: Replace the pickup PCB.

NO: Replace the DC controller PCB.

4.2.3 The vertical path roller fails to rotate.

1. Main motor

Is 'E010' (faulty main motor) indicated?

YES: See the descriptions on E010 in Chapter 6 "Self Diagnosis."

2. Vertical path clutch (CL1)

Execute the following in service mode: code 1 of COPIER>FUNCTION>PART-CHK>CL, i.e., CL-ON. Is the clutch drive signal present at J1603 of the pickup PCB? (J1603-4: 24 V, J1603-1: VPATHCL*)

YES: The vertical path clutch is faulty. Replace the clutch.

3. Pickup PCB, DC controller PCB

Execute the following in service mode: code 1 of COPIER>FUNCTION>PART-CHK>CL; i.e., CL-ON. Is the clutch control signal present at J302A-4 of the DC controller PCB?

YES: Replace the pickup PCB.

NO: Replace the DC controller PCB.

4.2.4 The registration roller fails to rotate.

1. Registration paper sensor (PS10)

When paper is placed over the sensor, does bit 3 change from '0' to '1'? (service mode: COPIER>I/O>DC-CON>IO-P015)?

NO: The registration paper sensor is faulty. Replace the sensor.

2. Registration MOTOR (M9)

Execute the following in service mode: code 9 of COPIER>FUNCTION>PART-CHK>MTR. Is the motor drive signal present at J309 of the DC controller PCB? (J309-1: REG_A, J309-2: REG_A*, J309-3: 24 VU, J309-4: 24 VU, J309-5: REG_B, J309-6: REG_B*)

YES: The registration motor is faulty. Replace the motor.

NO: The DC controller PCB is faulty. Replace the PCB.

4.2.5 Pickup from the multifeeder tray fails (i.e., the pickup roller fails to rotate).

1. Main motor

Is 'E010' (faulty main motor) indicated?

YES: See the description on 'E010' in Chapter 6 "Self Diagnosis."

2. Multifeeder paper sensor (PS22)

Place paper in the multifeeder. Does bit 5 change from '0 to '1'? (service move COPIER>I/O>DC-CON>IO-PO16)

NO: Check the wiring and the link; if normal, replace the sensor.

3. Multifeeder clutch (CL2), DC controller PCB

Execute the following in service mode: code 2 of COPIER>FUNCTION>PATH-CHK>CL; i.e., CL-ON. Is the clutch drive signal present between J302B-7 and -8 of the DC controller PCB? (J302B-7: 24 V, J302B-8: MLT_CL)

YES: Check the wiring; if normal, replace the clutch.

NO: Replace the DC controller PCB.

4.2.6 Pickup from the multifeeder tray fails (i.e., the multifeeder holding plate fails to move up).

1. Main motor

Is 'E010' (faulty main motor) indicated?

YES: See the description on 'E010' in Chapter 6 "Self Diagnosis."

2. Multifeeder holding plate releasing solenoid (SL5)

Execute the following in service mode: code 4 of COPIER>FUNCTION>PART-CHK>SL; i.e., SL-ON. Is the solenoid drive signal present between J308A-1 and -2 on the DC controller PCB? (J308A-2: 24 V, J308A-1: MLT_SL)

YES: Check the wiring and the link; if normal, replace the solenoid.

NO: Replace the DC controller PCB.

4.2.7 The photosensitive drum fails to rotate.

1. Main motor

Is 'E010' (faulty main motor) indicated?

YES: See the description on 'E010' in Chapter 6 "Self Diagnosis."

2. Drum unit, Drum drive unit

Remove and then mount bak the drum unit. Is the problem corrected?

YES: Yes.

NO: Check the drum unit and the drive assembly of the drum drive unit. If a fault is discovered, correct the fault or replace the unit.

4.2.8 The pre-exposure lamp fails to go ON.

1. Pre-exposure lamp (LAMP2), DC controller PCB

Execute the following in service mode: COPIER>FUNCTION>MISC-P>PRE-EXP. Is the activation control signal present at J312B of the DC controller PCB? (J312B-6: 24 V, J312B-7: PREEXPOSE)

YES: Check the wiring from the DC controller PCB to the pre-exposure lamp; if normal, replace the pre-exposure lamp.

NO: Replace the DC controller PCB.

4.3 Reader Unit

4.3.1 The No. 1 mirror base fails to move.

1. Initial check

Is the scanner motor driven?

YES: Go to step 2.

NO: Go to step 4.

2. Cable (displacement, broken), Drive belt (displaced, broken)

Is the scanner drive cable or the drive belt normal?

NO: Replace or correct the cable of the drive belt.

3. Scanner path (foreign matter)

Move the scanner by hand. Does it move smoothly?

NO: Remove the dirt/foreign matter from the scanner rail. Remove any object that comes into contact with the scanner. Use alcohol for cleaning; thereafter, apply a small amount of silicone oil (FY9-6010).

If the inverter PCB is not positioned correctly, it can come into contact with the scanner.

4. Wiring, Connector

Is the connection of the wiring and connectors from J401 of the reader controller PCB to the scanner motor correct?

NO: Correct the wiring, and connect the connectors securely.

5. Scanner motor (M400), Reader controller PCB

Is the drive signal present at J401 of the reader controller PCB? (J401-5/6: +24 V, J401-1/2/3/4: drive pulse)

YES: Replace the scanner motor.

NO: Replace the reader controller PCB.

4.3.2 The scanning lamp fails to go ON.

1. Wiring, Connector

Is the connection of the wiring and the connectors between the inverter PCB (J4061) and the lamp correct?

NO: Correct the wring, and connect the connectors securely.

2. Inverter PCB

Is 'E220' indicated?

YES: Replace the inverter PCB.

3. Scanning lamp, Reader controller PCB

Execute the following in service mode: COPIER>FUNCTION>MISC-R>SCANLAMP. Is the activation control signal present at J402 of the reader controller PCB? (J402-2: LMP_ON, J402-3: GND, J402-4: +24 VU)

YES: The scanning lamp is faulty. Replace the lamp.

NO: The reader controller PCB is faulty. Replace the PCB.

4.4 Message Indication

4.4.1 The “Add Toner” message fails to go OFF.

1. Toner sensor (S1), DC controller PCB

After toner supply, is ‘0’ (absence of toner) indicated in the following service mode: bit 0 of COPIER>I/O>DC-CON>P008?

YES: The toner sensor is faulty. Replace the sensor.

NO: Check the wiring; if normal, replace the DC controller PCB.

4.4.2 The “Control Card Set” message fails to go OFF (when no card reader is installed).

1. Shorting connector

When the main controller is replaced, the shorting connector must be removed from the old PCB and mounted to the new PCB. Is the shorting connector fitted to the connector J1060 of the main control card?

NO: Fit the shorting connector.

YES: The main controller PCB is faulty. Replace the PCB.

4.4.3 The “Add Paper” message fails to go OFF.

1. Cassette pickup assembly

Is the lifter mechanism of the cassette normal?

NO: See “The lifter fails to move up (pickup from cassette).”

2. Cassette 1/2 paper sensor detecting lever

Are the shape, mounting, and operation of the paper sensor lever normal?

NO: Correct or replace the sensor.

3. Pickup PCB, DC controller PCB

When paper is placed in the cassette, is the paper detection signal present at J302A of the DC controller PCB? (cassette 1: J302-A10 (from 0 to 5 V), cassette 2: J302-A11 (from 0 to 5 V))

NO: The paper sensor or the pickup PCB is faulty. Replace the PCB.

YES: The DC controller PCB is faulty. Replace the PCB.

4.4.4 The “Close the Front Cover” message fails to go OFF.

1. Connectors

Is the wiring between the PCBs secure?
[1] between composite power supply PCB (J136A) and DC controller PCB (J301A)
(24V detection signal: between J136A-3 and J301A-10)
[2] between composite power supply PCB (J135) and main power supply PCB (J202)
(J135-1: 24VU1-SW, J135-2: 0VU1, J202-5: 24VU1-SW, J202-6: 0VU1)

NO: Make the wiring secure.

2. Front cover switch

Is there electrical continuity in the front cover switch when the front cover is closed?
(check the interval between J200-1 and J200-3 on the main power supply PCB for electrical continuity.)

NO: Replace the front cover switch.

3. Main power supply PCB

Is 24 V supplied by the main power supply PCB to the composite power supply PCB?

- Main power supply PCB (J202-5: 24VU1-SW, J202-6: 0VU1)
- Composite power supply PCB (J135-1: 24VU1-SW, J135-2: 0VU1)

NO: Replace the main power supply PCB.

4. Composite power supply PCB, DC controller PCB

When 24 V is supplied by the main power supply PCB to the composite power supply, is the front cover detection signal (FDOOR_OPN) sent by the composite power supply PCB to the DC controller PCB?

- Composite power supply PCB (J136A-3)
- DC controller PCB (J301A-10)

YES: Replace the DC controller PCB.
NO: Replace the composite power supply PCB.

4.5 Paper Deck

4.5.1 Pickup fails.

1. Right upper cover, Right lower cover

Are the right upper cover and the right lower cover closed securely?

NO: Close the covers.

2. Lifter

When the compartment is slid out from the deck, does the lifter move down? Further, when the compartment is slid into the deck, does the lifter move up?

NO: See “The deck lifter fails to move up.”

3. Deck pickup roller

Does the deck pickup roller rotate?

YES: If the roller is soiled, clean it with alcohol. If it is deformed because of wear, replace it.

4. Belt (displacement)

Is the belt used to transmit drive to the deck pickup roller fitted correctly?

NO: Fit the belt correctly.

5. Gear

Is the drive from the deck main motor transmitted to the pickup assembly?

NO: Check the drive assembly.

6. Deck pickup clutch (CL2), Deck drive PCB

Measure the voltage of the connector (J5B) on the deck driver PCB. When the Start key is pressed, is the clutch drive signal generated? (J5-B3: FEED_CL_ON*, J5-B4: 24 V)

YES: Check the wiring; if normal, replace the clutch.

NO: Replace the deck driver PCB.

4.5.2 The deck lifter fails to move up.

1. Deck body

Is the deck body mounted correctly?

NO: Mount the deck body correctly.

2. Lifter cable

Is the lifter cable fitted correctly?

NO: Fit the cable correctly.

3. Spring, Lever

Push up the deck pickup roller releasing lever with your finger. Does the pickup roller move down?

NO: Remove the pickup assembly, and check the spring and the lever.

4. Deck lifter motor (M2D)

Does the deck lifter motor rotate?

YES: Go to step 6.

5. Deck open detecting switch (SW1D), Deck drive PCB

Does the voltage between J7-1 (+ : 24V OUT) and J7-3 (GND : 24V IN) of the deck driver PCB change from about 0 to 24 V?

YES: Check the wiring to the switch; if normal, replace the switch.

NO: Replace the deck driver PCB.

6. Deck lifter lower limit detecting switch (SW2D), deck driver PCB

Does the voltage between J4-7 (+ : LIFT_LOW_LMT) and J4-8 (GND) of the deck driver PCB change from about 0 to 5 V?

YES: Check the lever and the wiring; if normal, replaced the switch.

NO: Replace the deck driver PCB.

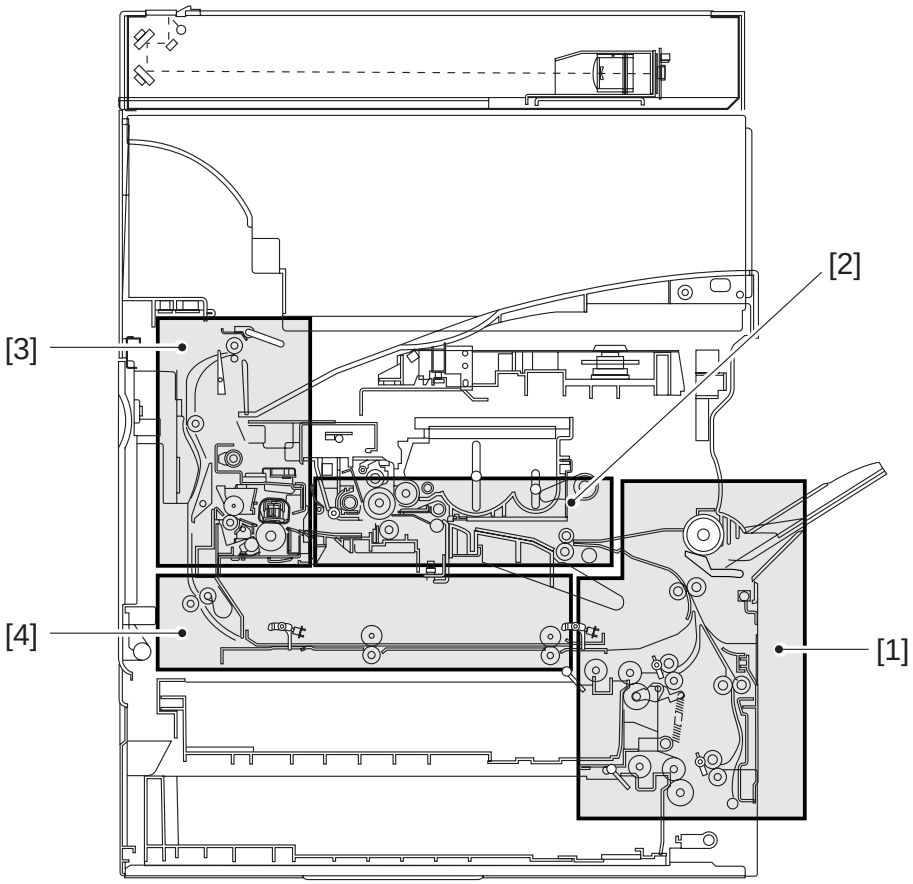
5 Troubleshooting Feeding Faults

5.1 Paper Jams

The jams that can occur inside the machine are grouped according to location:

[1] Pickup assembly
[2] Separation/feeding assembly
[3] Fixing/delivery assembly, duplex reversing assembly
[4] Duplex/feeding assembly

The descriptions that follow are also grouped according to the locations of jams; the location and the nature of a specific jam may be checked in the machine's service mode (COPIER>DISPLAY>JAM).



F04-501-01

5.1.1 Pickup Assembly

1. General condition

Do the pickup roller and the feeding roller of the selected cassette, manual feeder tray, and deck rotate during printing?

NO: See the descriptions for each (i.e., “fails to operate”).

2. Cassette

Is the cassette fitted correctly? Is the dial set correctly?

NO: Correct the cassette and the dial.

3. Cassette

Try a different cassette. Is the problem corrected?

YES: Check the faulty cassette.

4. Paper (moist)

Is the paper curled or wavy or in any way different?

YES: Replace the paper. Advise the user on the correct method of storing paper.

5. Paper (non-recommended)

Try paper of a recommended type. Is the problem corrected?

YES: Advise the user to use recommended paper.

6. Paper guide plate

Is the paper guide plate deformed? Or, is there a piece of paper on it?

YES: Correct the deformation, and remove any piece of paper.

7. Main motor (M1), Vertical path clutch (CL1)

Does the main motor rotate?

YES: Check the roller and the vertical path clutch of the vertical path assembly.

NO: Replace the main motor.

5.1.2 Separation/Feeding Assembly

1. Paper

Try paper of a recommended type. Is the problem corrected?

YES: Advise the user to use recommended paper.

2. Separation static eliminator

Is the separation static eliminator fully inserted?

NO: Insert it fully.

3. Pre-registration paper sensor lever, Registration paper sensor lever

Does the sensor lever in question move smoothly?

NO: Corrected it so that the lever moves correctly.

4. Pr-registration paper sensor (PS9), Registration paper sensor (PS10)

Find out the sensor detecting the jam in service mode (COPIER>DISPLAY>JAM). Is there paper over the sensor?

NO: Check the wiring; if normal, replace the sensor.

5. Registration roller, Feeding unit (transfer charging roller)

Does the registration roller rotate?

NO: Check the registration motor (M9).

YES: Check to make sure that the feeder unit is securely locked in place; if a fault is found, check the transfer charging roller assembly or the feeder locking assembly.

5.1.3 Fixing/Delivery Assembly, Duplex Reversing Assembly

1. Fixing film

Is the fixing film deformed, damaged, or subjected to foreign matter?

YES:

1. For deformation or foreign matter, replace the film unit.
2. Remove foreign matter.

2. Fixing inlet guide plate

Is the fixing inlet guide plate soiled with toner or the like?

YES: Clean the guide.

3. Fixing/ feed sensor lever, No. 1 delivery paper sensor lever

Does the lever of the sensor in question move smoothly?

NO: Correct the lever so that it moves smoothly.

4. Fixing/feed sensor (PS13), No. 1 delivery sensor (PS15)

Find the sensor that detected the jam in service mode (COPIER>DISPLAY>JAM). Is there paper over the sensor?

NO: Check the wiring; if normal, replace the sensor.

5. Delivery flapper (movement)

Doe the delivery flapper move smoothly? Further, does it move back to its initial position by the work of the spring?

NO: Correct the mechanism so that the delivery flapper moves smoothly.

6. Delivery flapper

Is the delivery flapper deformed or scratched ?

YES: Replace the flapper.

NO: Check the leading edge of the paper to see if there is a margin.

5.1.4 Duplex Feeding Assembly

1. Paper guide plate

Is there foreign matter around the paper guide? Or, is it deformed?

YES: Remove the foreign matter, and correct the deformation.

2. Duplex inlet paper sensor lever, Duplex output paper sensor lever

Does the lever of the sensor in question move smoothly?

NO: Correct the mechanisms so that the lever moves smoothly.

3. Duplex inlet paper sensor (PS17), Duplex outlet paper sensor (PS18)

Find the sensor that detected the jam in service mode: COPIER>DISPLAY>JAM). Is the paper over the sensor?

NO: Check the wiring; if normal, replace the sensor.

4. Duplex motor (M6), roller (duplex assembly)

Select '4' in the following service mode: COPIER>FUNCTION>PART-CHK. When the OK key is pressed, does the duplex motor rotate?

YES: Check the roller of the duplex assembly.

NO: Check the wiring; if normal, replace the motor.

5.2 Faulty Feeding

5.2.1 Double Feeding

1. Pickup/feeding/separation roller releasing lever, Separation roller

When the releasing lever is pushed in toward the rear, is the pickup roller released? Further, do the feeding roller and the separation roller come into firm contact?

NO: The releasing lever (spring) is displaced or deformed. Correct or replace it.

YES: Check the separation roller for deformation and wear. If a fault is found, replace the separation roller.

5.2.2 Wrinkles

1. Pickup assembly

Turn off the power supply while paper is moving through the feeding assembly. At this time, is the paper wrinkled? Or, is it moving askew?

YES:

[1] Check the pickup assembly.

[2] Check the guide in front of the registration roller.

[3] Check the registration roller.

2. Paper (moist)

Try new paper. Is the problem corrected?

YES: The paper may be moist. Advise the user on the correct method of storing paper.

3. Paper (non-recommended type)

Try paper of a recommended type. Is the problem corrected?

YES: Advise the user to use paper of a recommended type.

4. Paper guide, fixing inlet drive solenoid (SL1)

Is the paper guide coated with toner or foreign matter?

YES: Clean the paper guide with solvent.

5. Fixing assembly, delivery feeding assembly

Is the fixing film, fixing lower roller, or cleaning roller faulty?

YES: Clean or replace it.

NO: Check the delivery feeding assembly for a fault.

6 Outline of Electrical Components

6.1 Introduction

The electrical components of the machine and its accessories are arranged as shown herein, and they possess the functions discussed; the notations and the I/O addresses used are based on those in the general circuit diagrams, enabling reference to the general circuit diagrams for wiring and signal descriptions. (For the general circuit diagrams, see the Appendix.)

6.1.1 Guide to the List

The following notations are used to indicate the targets of connections:

DC-CON:	DC controller PCB
R-CON:	reader controller PCB
MN-CON:	main controller PCB
FEED:	pickup circuit PCB
MPWS:	main power supply PCB
DECK-CON:	side deck driver PCB
DECK-FEED:	2-Cassette Pedestal Pickup PCB
FAX-CON:	G3 FAX control PCB

6.1.2 Checking the Photointerrupters

The photointerrupters are checked in service mode; go through the tables attached to the lists of electrical components to find out the state* of a specific sensor, which may be any of the following:

a. Paper Sensor

Move the sensor lever by hand to simulate the presence of paper; then, check the Service Mode screen.

If it is difficult to check the Service Mode screen while moving the sensor lever, put paper over the point of detection, and then check the Service Mode screen.

b. Open/Closed Sensor

Check the Service Mode screen while opening/closing the cover/unit in question.

c. Position Sensor, Presence/Absence Sensor

Move the unit in question by hand. Try removing and then mounting it. If the I/O level changes in response to operation, the sensor may be assumed to be normal.

To check a photointerrupter found inside a unit which is detached in conjunction with a drawer connector, be sure to check the Service Mode while the unit in question is set.

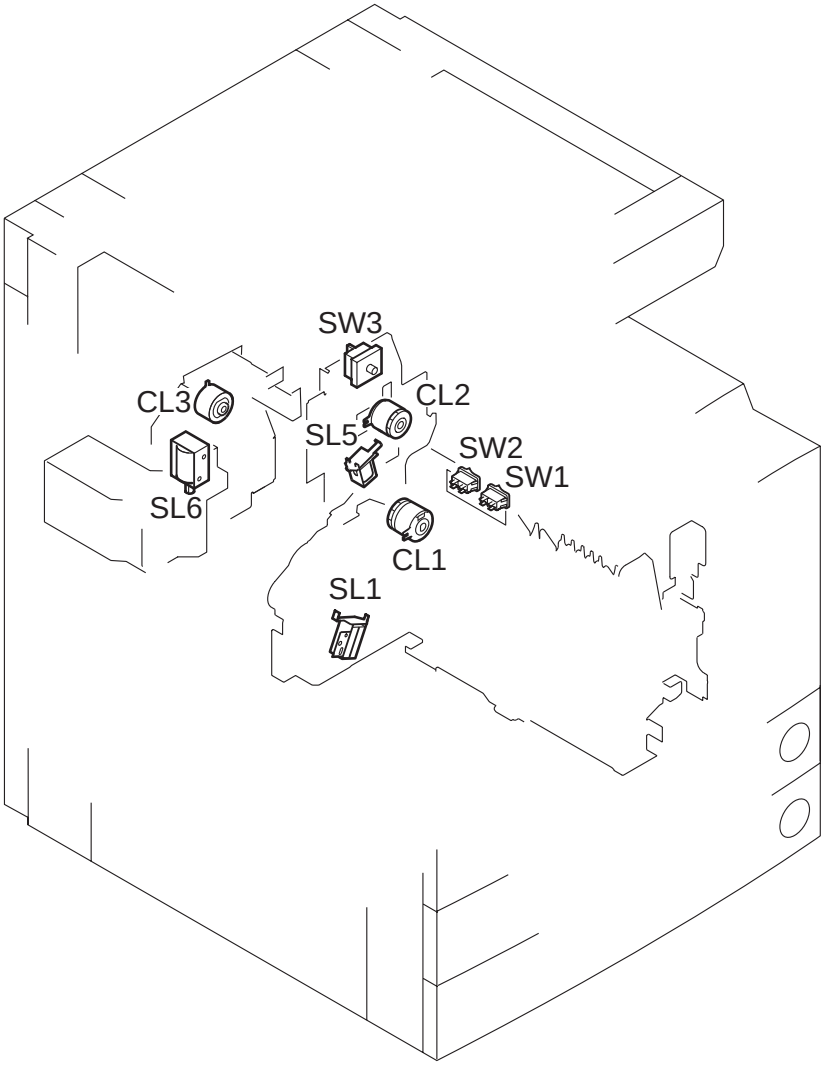
*The state of a sensor refers to any of the following:

- For a paper sensor, the presence or the absence of paper.
- For an open/closed sensor, the state in which the cover/unit is closed.
- For a home position sensor or a set sensor, the item in question is in home position or set in place.

6.2 E201 (reader unit/printer unit)

6.2.1 Clutches

6.2.2 Solenoids, Switches



F04-602-01

6.2.1 Clutches

- Reader Unit

  The reader unit does not have nay clutch.

- Printer Unit

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
CL1 (DC-CON) Vertical path clutch	A3-20-N	P001-5 0: ON, 1: OFF	
CL2 (DC-CON) Multifeeder clutch	A3-18-N	P001-6 0: ON, 1: OFF	
CL3 (DC-CON) Developing clutch	A3-20-J	P001-7 0: ON, 1: OFF	

6.2.2 Solenoids, Switches

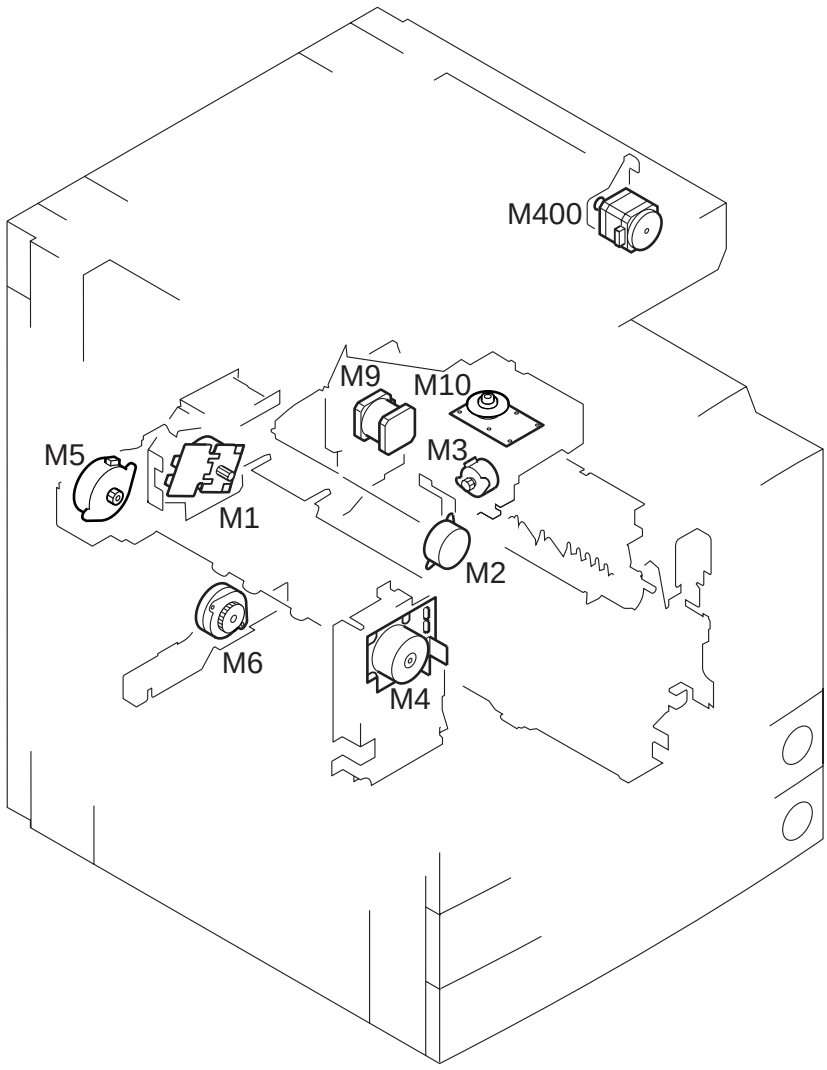
- Reader Unit

  The reader unit does not have any solenoid or switch.

- Printer Unit

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
SL1 (DC-CON) Pickup DOWN solenoid	A3-20-N	P002-0 1: ON, 0: OFF	
SL5 (DC-CON) Multifeeder holding plate releasing solenoid	A3-20-J	P002-3 1: ON, 0: OFF	
SL6 (DC-CON) Charging roller solenoid	A3-20-J	P002-4 1: ON, 0: OFF	
SW1 (MPWS) Main power switch	A3-12-B		
SW2 (MPWS) Environment heater switch	A3-12-B		
SW3 (MPWS) Front cover switch	A3-14-B	P008-7 0: open, 1: closed	

6.2.3 Motors (1/2)



F04-602-02

6.2.3 Motors (1/2)

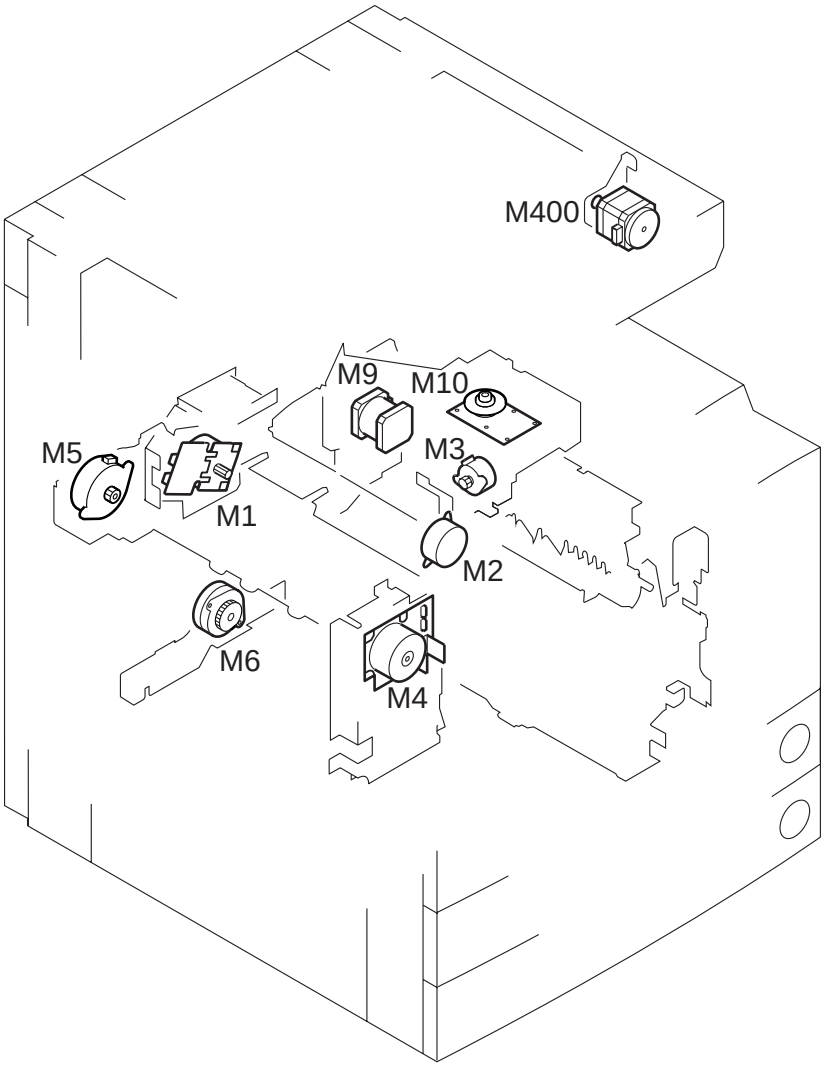
- Reader Unit

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
M400 (R-CON) Scanner motor	A3-18-G	IO-P01-0	Clock signal
		IO-P01-1 0: CW	
		IO-P01-2 0: drive enabled	
		IO-P01-4 1→0: return to origin	
		IO-P01-5, 6	Default
		IO-P04-6	Analog
		IO-P06-0 0: new current mode	

- Printer Unit (1/2)

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
M1 (DC-CON) Main motor	A3-20-I	P001-0 0: ON, 1: OFF	
		P008-3 0: lock	
M2 (FEED) Pickup motor	A3-20-N	P003-0 to 3	
M3 (DC-CON) Horizontal registration sensor shift motor	A3-17-N	P003-4 to 7	
M4 (DC-CON) Fixing motor	A3-15-J	P001-3 0: ON, 1: OFF	
		P001-4 1: ON, 0: OFF	
		P008-5 0: lock	
M5 (DC-CON) Delivery motor	A3-9-N	P010-0 to 8	

6.2.3 Motors (2/2)



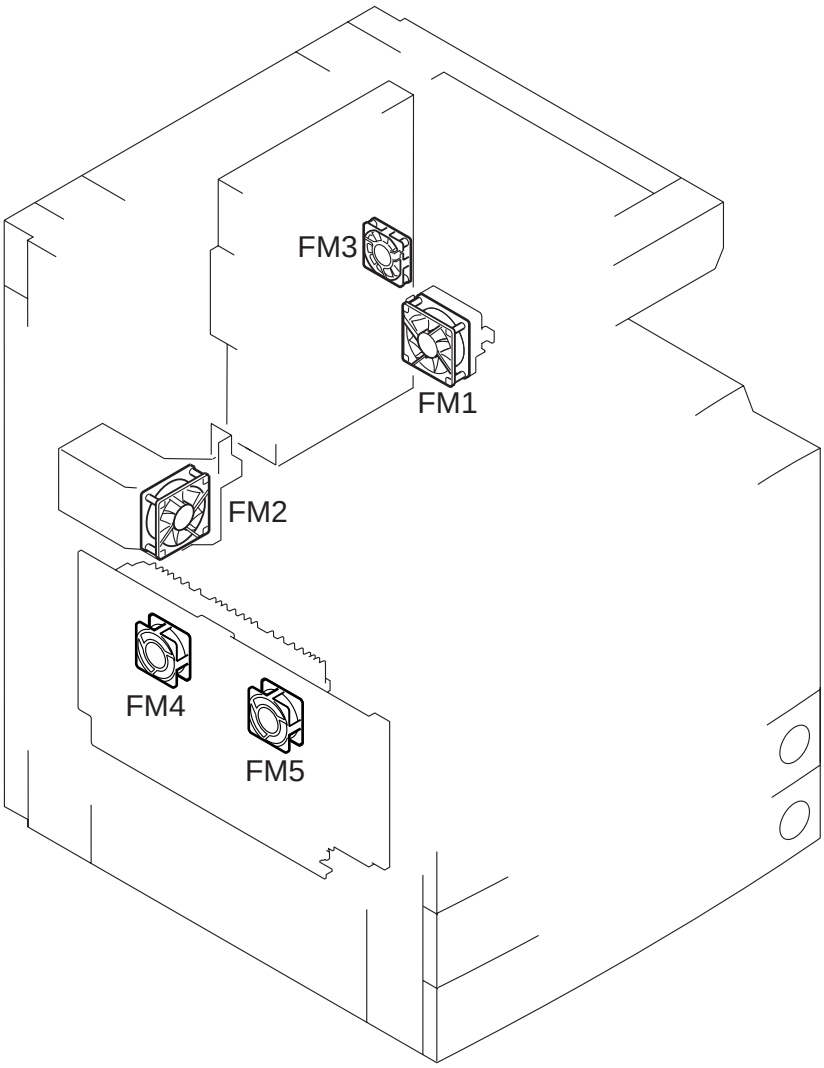
F04-602-02

6.2.3 Motors (2/2)

- Printer Unit (2/2)

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
M6 (DC-CON) Duplex motor	A3-8-N	P005-0 to 7	
M9 (DC-CON) Registration motor	A3-14-M	P002-5 1: OFF, 0: ON P020-6, 7	
M10 (DC-CON) Laser scanner motor	A3-14-J	P001-2 0: lock P008-3 0: lock	

6.2.4 Fans



F04-602-03

6.2.4 Fans

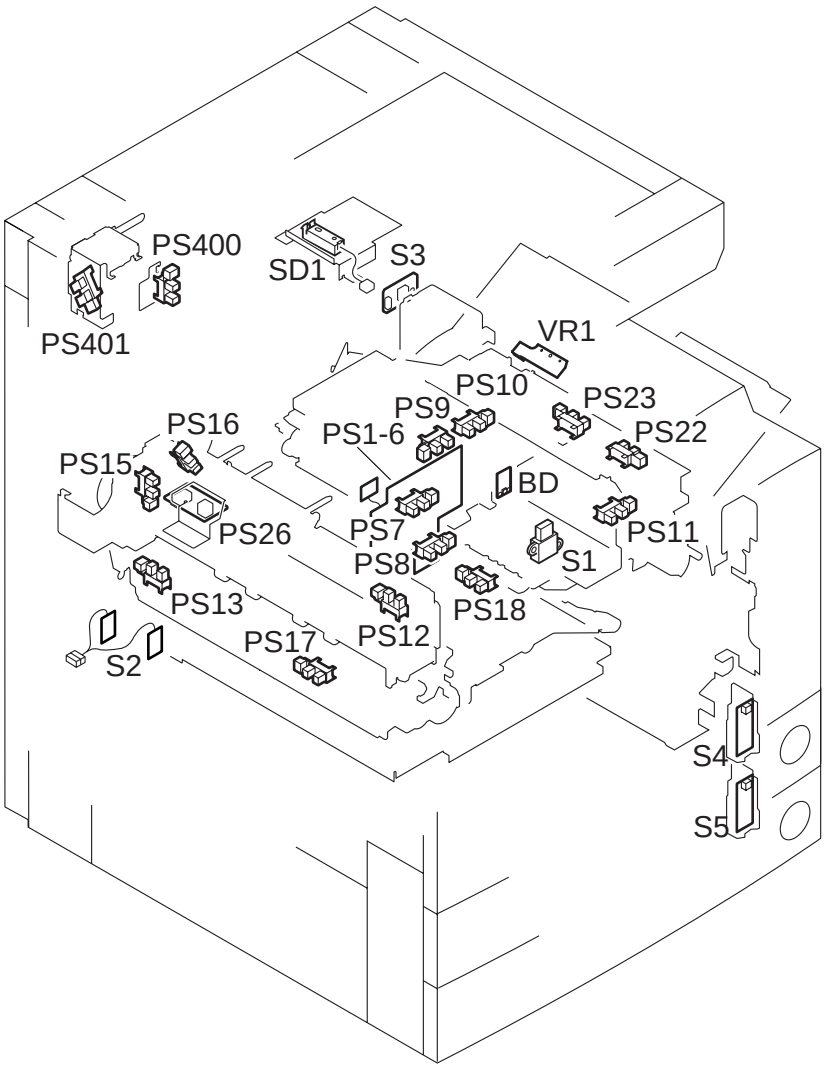
- Reader Unit

The reader unit does not have any fan.

- Printer Unit

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
FM1 (DC-CON) Developing fan	A3-18-N	P004-0, 2 1: ON, 0: OFF	
		P009-4 0: ON	
FM2 (DC-CON) Fixing fan	A3-18-J	P004-1, 3 1: ON, 0: OFF	
		P009-5 0: ON	
FM3 (MN-CON) Electrical unit fan	A3-2-H		
FM4 (DC-CON) Curl reducing fan 1	A3-7-I	P005-6 1: ON, 0: OFF	
		P009-6 0: ON	
FM5 (DC-CON) Curl reducing fan 2	A3-7-I	P005-7 1: ON, 0: OFF	
		P009-7 0: ON	

6.2.5 Sensors (1/3)



F04-602-04

6.2.5 Sensors (1/3)

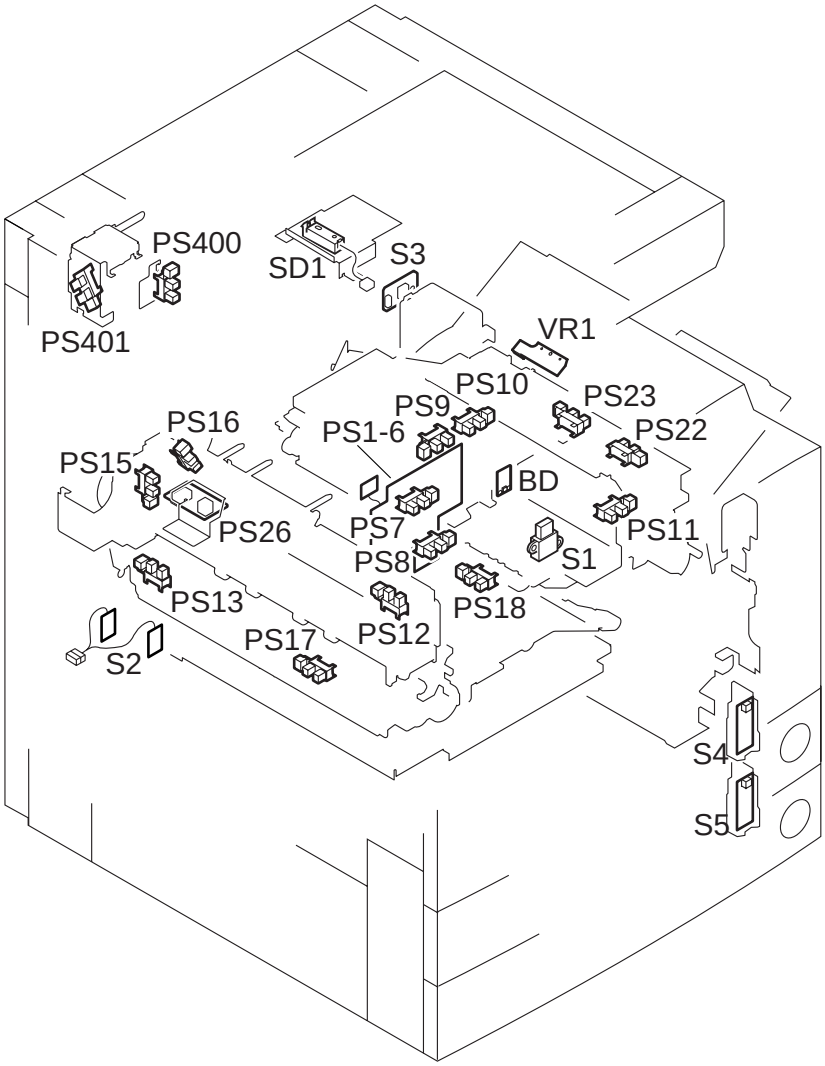
- Reader Unit

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
PS400 (R-CON) Scanner home position sensor	A3-18-H	IO-P06-4 1: HP	
PS401 (R-CON) Copyboard cover sensor	A3-17-H	IO-P06-6 0: open, 1: closed	(copyboard/ADF)
SD1 (R-CON) Original sensor	A3-19-H	IO-P03-5 0: present, 1: absent	(paper)
		IO-P04-4 0: ON, 1: OFF	

- Printer Unit (1/3)

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
BD (DC-CON) BD sensor	A3-13-K		
PS1 (DC-CON) Cassette 1 paper sensor	A3-19-N	P013-5 0: present, 1: absent	(paper)
PS2 (DC-CON) Cassette 2 paper sensor	A3-19-M	P014-5 0: present, 1: absent	(paper)
PS3 (DC-CON) Cassette 1 paper level sensor 1	A3-20-M	P013-6	(paper) 25% (bit6=0; bit7=1) 50% (bit6=1; bit7=1) 100% (bit6=0; bit7=0)
PS4 (DC-CON) Cassette 1 paper level sensor 2	A3-20-M	P013-7	
PS5 (DC-CON) Cassette 2 paper level sensor 1	A3-20-M	P014-6	(paper) 25% (bit6=0; bit7=1) 50% (bit6=1; bit7=1) 100% (bit6=0; bit7=0)
PS6 (DC-CON) Cassette 2 paper level sensor 2	A3-20-M	P014-7	
PS7 (DC-CON) Cassette 1 re-try paper sensor	A3-20-M	P015-0 1: present, 0: absent	(paper)

6.2.5 Sensors (2/3)



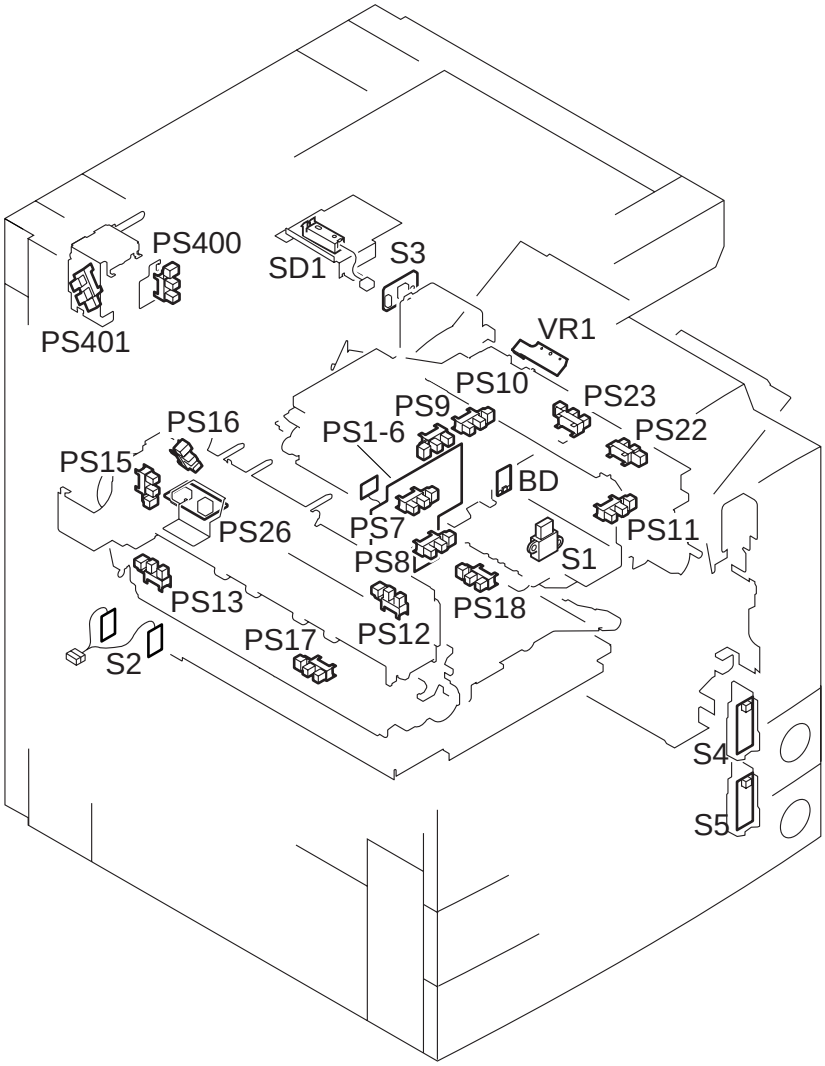
F04-602-04

6.2.5 Sensors (2/3)

- Printer Unit (2/3)

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
PS8 (DC-CON) Cassette 2 re-try paper sensor	A3-20-M	P015-1 1: present, 0: absent	(paper)
PS9 (DC-CON) Pre-registration paper sensor	A3-16-N	P015-2 1: present, 0: absent	(paper)
PS10 (DC-CON) Registration paper sensor	A3-16-N	P015-3 1: present, 0: absent	(paper)
PS11 (DC-CON) Horizontal registration paper sensor	A3-16-N	P015-4 0: present,1: absent	(paper)
PS12 (DC-CON) Image leading edge sensor	A3-16-I	P025-7 1: present, 0: absent	(paper)
PS13 (DC-CON) Fixing/feeding sensor	A3-8-J	P015-5 0: present,1: absent	(paper)
PS15 (DC-CON) No. 1 delivery sensor	A3-8-N	P015-6 1: present, 0: absent	(paper)
PS16 (DC-CON) No. 1 delivery full sensor	A3-9-N	P015-7 1: present, 0: absent	(paper)
PS17 (DC-CON) Duplex unit inlet paper sensor	A3-7-N	P016-0 0: present,1: absent	(paper)
PS18 (DC-CON) Duplex unit outlet paper sensor	A3-7-N	P016-1 0: present,1: absent	(paper)
PS22 (DC-CON) Multifeeder paper sensor	A3-15-N	P016-5 0: present,1: absent	(paper)
PS23 (DC-CON) Right cover open/closed sensor	A3-15-N	P016-6 1: open, 0: closed	
PS26 (DC-CON) Fixing film sensor	A3-8-J	P021-0	
S1 (DC-CON) Toner sensor	A3-18-N	P008-0 1: present, 0: absent	(toner)
S2 (DC-CON) Waste toner case full sensor	A3-6-I	P008-2 1: full	(waste toner)
S3 (DC-CON) Environment sensor	A3-17-N	P023-4, P33 A/D	(humidity)
		P023-5, P34 A/D	(room temperature)

6.2.5 Sensors (3/3)

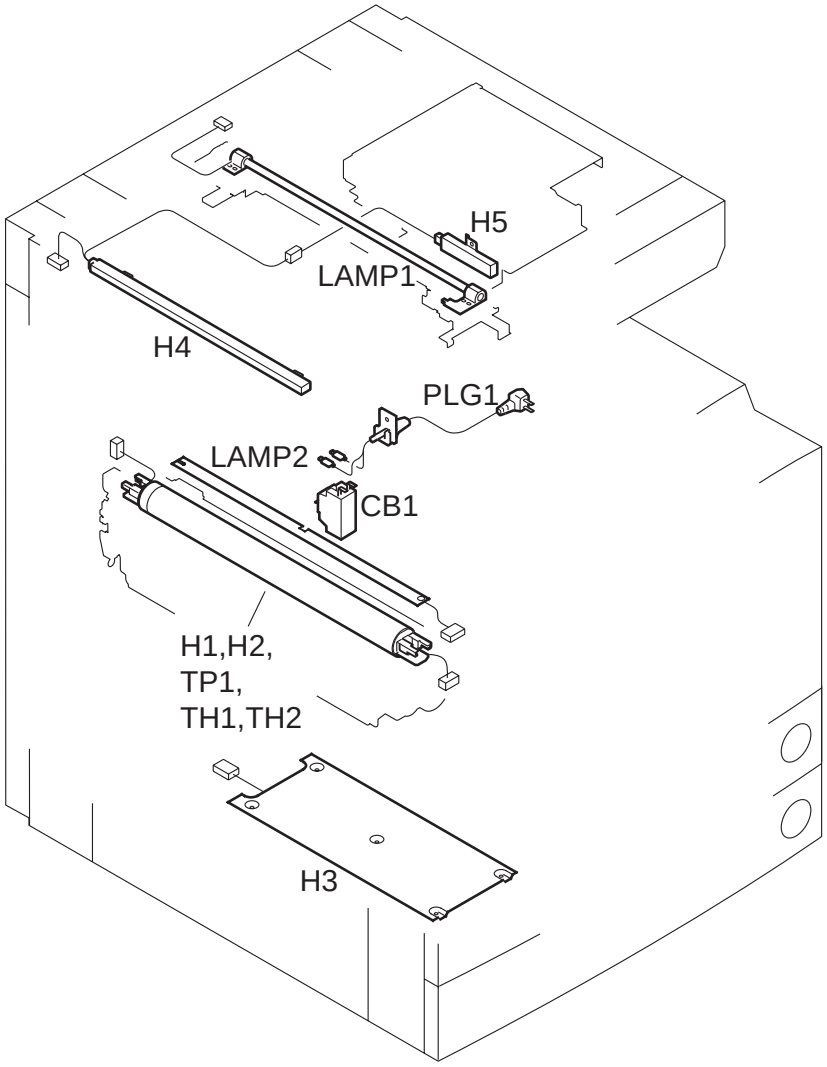


F04-602-04

6.2.5 Sensors (3/3)

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
S4 (DC-CON) Cassette 1 size sensor	A3-17-J	P013-0 to 4	
S5 (DC-CON) Cassette 2 size sensor	A3-16-J	P014-0 to 4	
VR1 (DC-CON) Multifeeder paper width sensor	A3-18-M	P023-2, P31 A/D	

6.2.6 Lamps, Heaters, and Others



F04-602-05

6.2.6 Lamps, Heaters, and Others

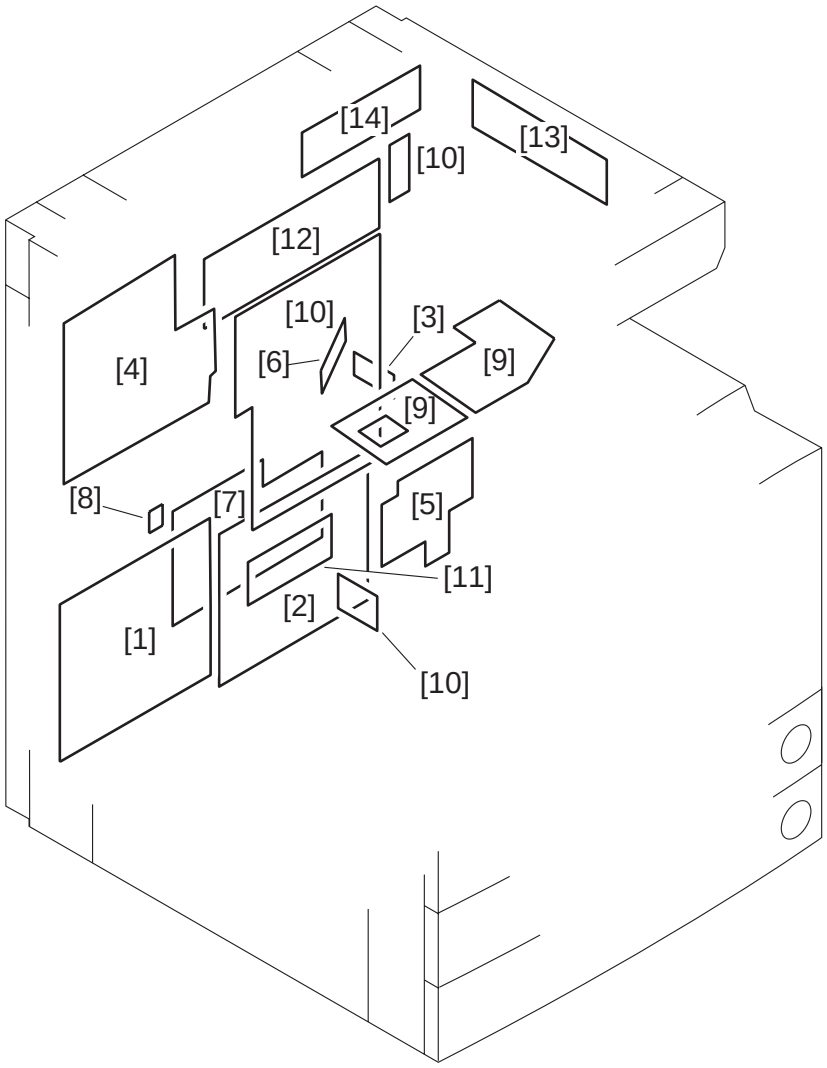
- Reader Unit

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
H4 (MPWS) Mirror heater	A3-9-A		Standard with 100V model (accessory for 200V model)
H5 (MPWS) Lens heater	A3-9-A		Standard with 100V model (accessory for 200V model)
LAMP1 (R-CON) Scanning lanp	A3-17-H		

- Printer Unit

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
CB1 (MPWS) Leakage breaker	A3-14-A		
H1 (MPWS) Fixing main heater	A3-9-C		
H2 (MPWS) Fixing sub heater	A3-9-B		
H3 (MPWS) Cassette heater	A3-9-B		(accessory)
LAMP2 (DC-CON) Pre-exposure lamp	A3-14-J	P001-1 1: ON, 0: OFF	
PLG1 (DC-CON) Power supply cord	A3-14-A		
TH1 (MPWS) Main thermistor	A3-12-J	P023-0, P29 A/D	
TH2 (DC-CON) Sub thermistor	A3-12-J	P023-1, P30 A/D	
TP1 (DC-CON) Thermal switch	A3-9-B		

6.2.7 PCBs



F04-602-06

6.2.7 PCBs

- Reader Unit

Ref. Name	Description	Remarks
[12] Reader controller PCB	Controls the reader unit/ADF.	
[13] CCD PCB	Drives the CCD.	
[14] Inverter PCB	Controls the scanning lamp.	

- Printer Unit

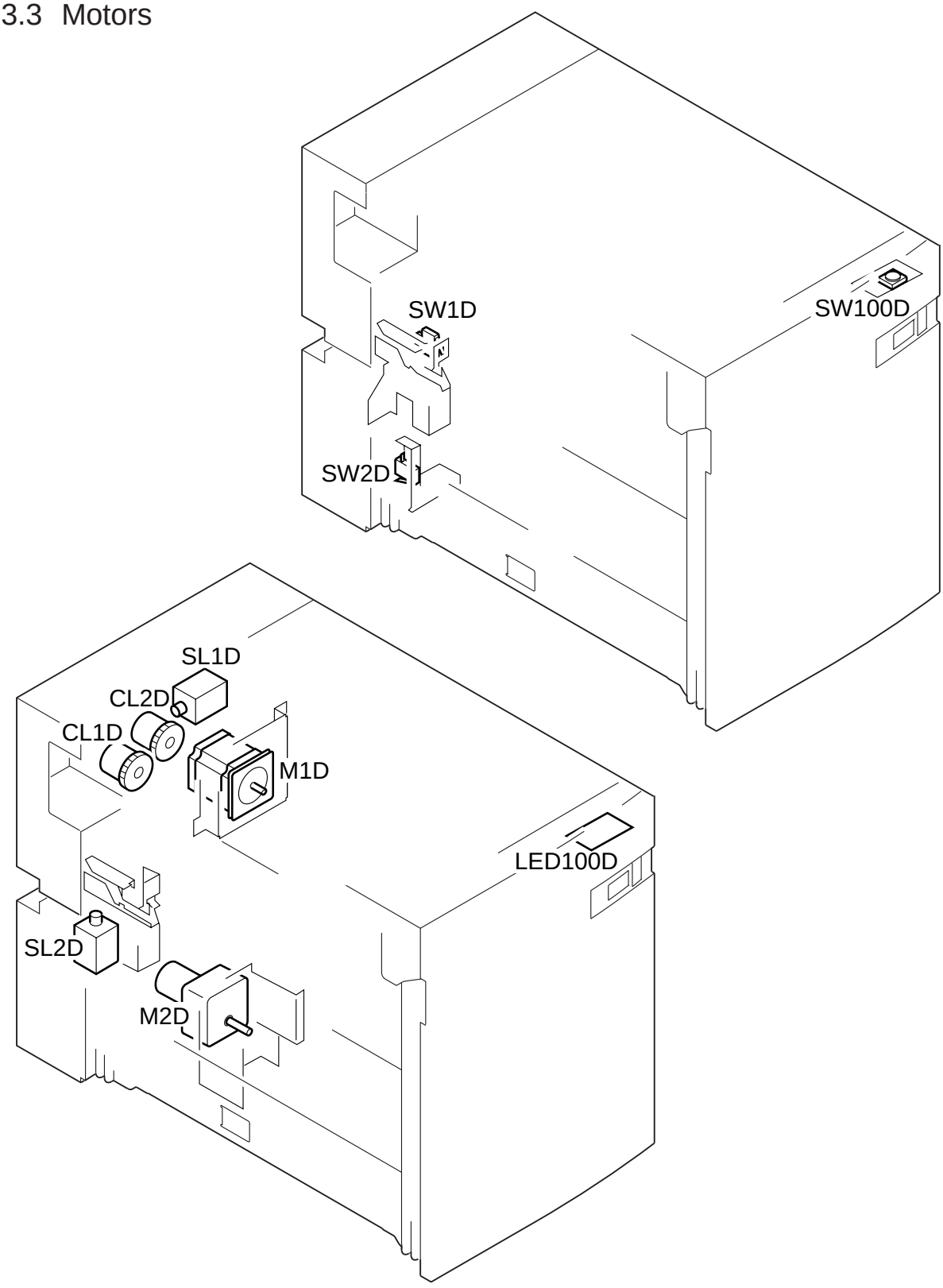
Ref. Name	Description	Remarks
[1] Composite power supply PCB	Controls the generation of high voltage.	
[2] Main power supply PCB	Controls the supply of DC . power	
[3] Switch PCB	Controls the main power switch/heater.	
[4] DC controller PCB	Controls the printer unit.	
[5] Pickup PCB	Controls the pickup assembly.	
[6] Laser driver PCB	Controls laser drive.	
[7] Accessories power supply PCB	Controls the supply of power to the finisher/paper deck.	
[8] Drum sensor PCB	Detects temperature of the drum.	
[9] Control panel PCB	Controls keys and LEDs.	
[10] Main controller PCB	Controls digital image processing/system.	Includes counter PCB, soft IDPCB, Centronics PCB.
[11] Thermistor separation power supply PCB	Controls the DC-DC converter.	200V model only.

6.3 Side Paper Deck-L1

6.3.1 Clutches

6.3.2 Solenoids, and Switches

6.3.3 Motors



F04-603-01

6.3.1 Clutches

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
CL1D (DECK-CON) Deck feeding clutch	A5-9-A	0: ON, 1: OFF	
CL2D (DECK-CON) Deck pickup clutch	A5-8-A	0: ON, 1: OFF	

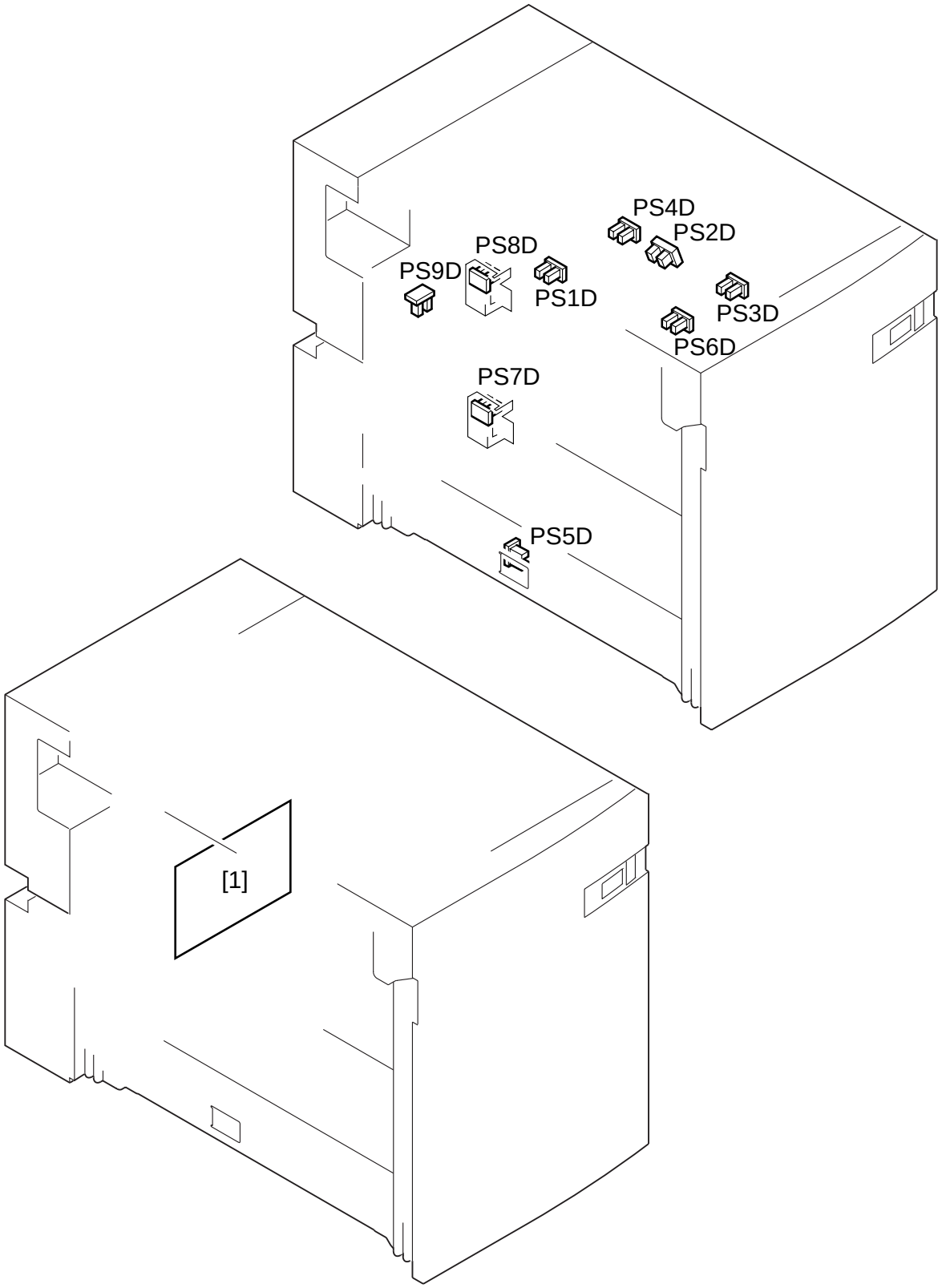
6.3.2 Solenoids and Switches

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
SL1D (DECK-CON) Deck pickup roller releasing solenoid	A5-10-A	0: ON, 1: OFF	
SL2D (DECK-CON) Deck open solenoid	A5-4-B	0: ON, 1: OFF	
SW1D (DECK-CON) Deck open detecting switch	A5-3-H		
SW2D (DECK-CON) Deck lifter lower limit detecting switch	A5-5-B		
SW100D (DECK-CON) Deck open switch	A5-13-A		
LED100D (DECK-CON) Deck open indication	A5-13-A		

6.3.3 Motors

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
M1D (DECK-CON) Deck main motor	A5-5-H		
M2D (DECK-CON) Deck lifter motor	A5-5-B		

6.3.4 Sensors
6.3.5 PCBs



F04-603-02

6.3.4 Sensors

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
PS1D (DECK-CON) Deck pickup sensor	A5-8-A		
PS2D (DECK-CON) Deck paper absent sensor	A5-12-A		
PS3D (DECK-CON) Deck lifter upper limit sensor	A5-11-A		
PS4D (DECK-CON) Deck lifter position sensor	A5-11-A		
PS5D (DECK-CON) Deck set sensor	A5-3-C		
PS6D (DECK-CON) Deck feed sensor	A5-10-A		
PS7D (DECK-CON) Deck paper level sensor	A5-6-C		
PS8D (DECK-CON) Deck paper supply position sensor	A5-7-C		
PS9D (DECK-CON) Deck open sensor	A5-3-C		

6.3.5 PCBs

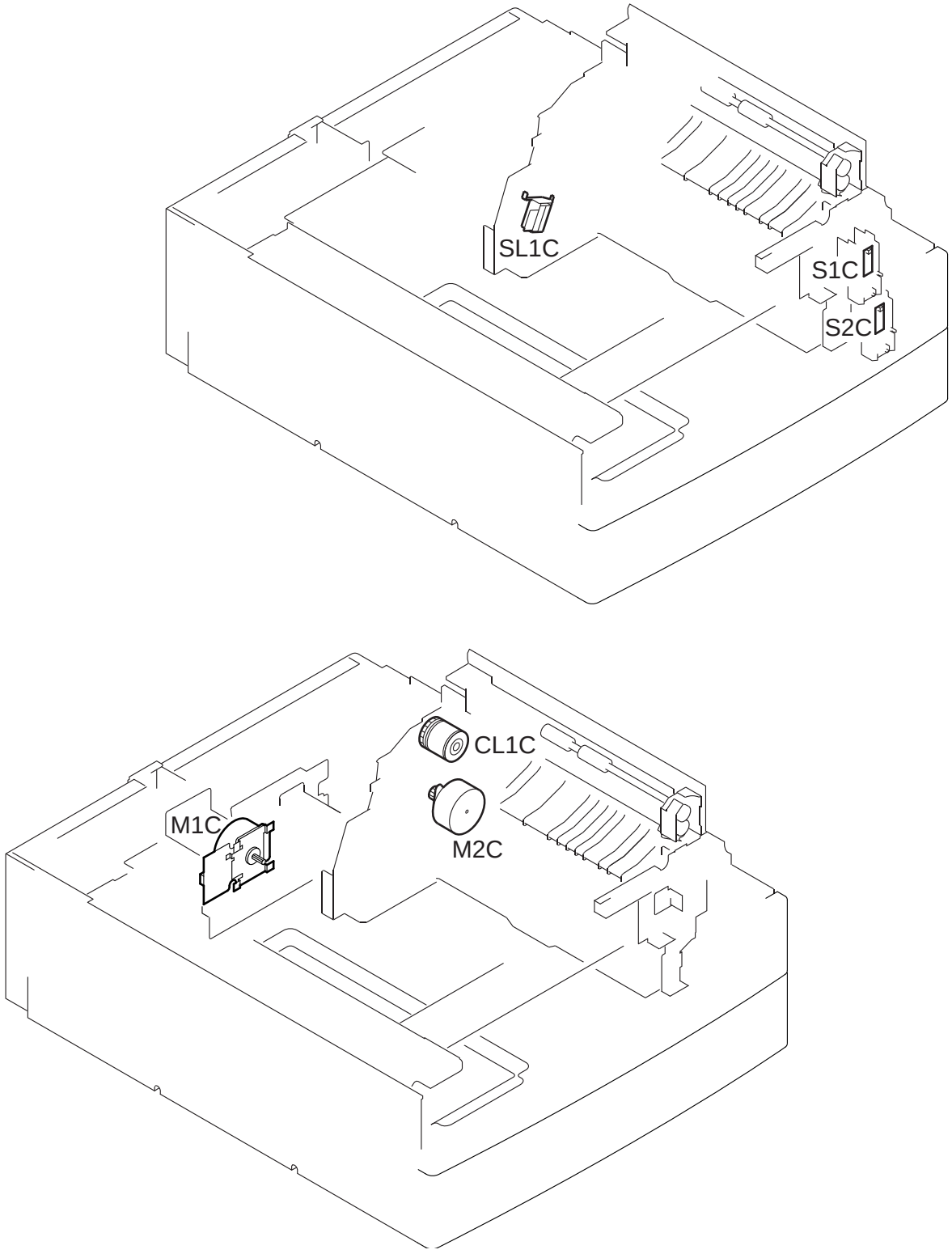
Ref. Name	Description	Remarks
[1] Side deck driver PCB		

6.4 2-Cassette Feeding Unit-W1

6.4.1 Clutches

6.4.2 Solenoids and Switches

6.4.3 Motors



F04-604-01

6.4.1 Clutches

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
CL1C (PEDE-FEED) Vertical path roller clutch	A6-11-F	0: ON, 1: OFF	

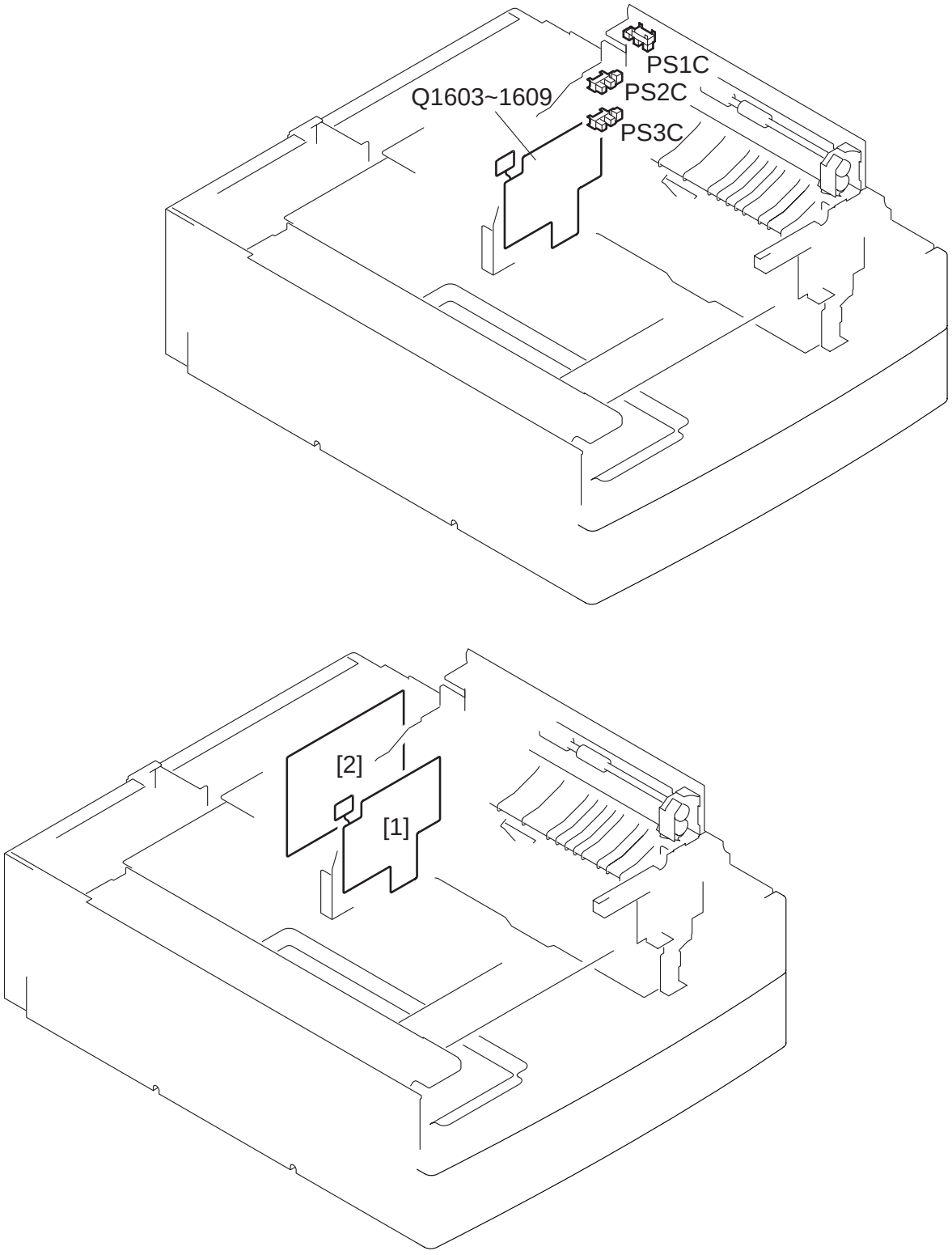
6.4.2 Solenoids and Switches

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
SL1C (PEDE-FEED) Pickup roller DOWN solenoid	A6-11-F	0: ON, 1: OFF	
S1C (PEDE-CON) Cassette 3 size detecting switch	A6-7-A		
S2C (PEDE-CON) Cassette 4 size detecting switch	A6-6-A		

6.4.3 Motors

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
M1C (PEDE-CON) Pedestal main motor	A6-2-E		
M2C (PEDE-FEED) Cassette pickup motor	A6-11-G		

6.4.4 Sensors
6.4.5 PCBs



F04-604-02

6.4.4 Sensors

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
PS1C (PEDE-CON) Right cover open/closed sensor	A6-6-H		
PS2C (PEDE-FEED) Cassette 3 re-try paper sensor	A6-11-D		
PS3C (PEDE-FEED) Cassette 4 re-try paper sensor	A6-11-C		
Q1603 (PEDE-CON) Vertical path paper sensor	A6-9-E		
Q1604 (PEDE-FEED) Cassette 3 paper sensor	A6-12-E		
Q1605 (PEDE-CON) Cassette 4 paper sensor	A6-9-E		
Q1606 (PEDE-CON) Cassette 3 paper level sensor 0	A6-9-E		
Q1607 (PEDE-CON) Cassette 3 paper level sensor 1	A6-9-E		
Q1608 (PEDE-CON) Cassette 4 paper level sensor 0	A6-9-E		
Q1609 (PEDE-CON) Cassette 4 paper level sensor 1	A6-9-E		

6.4.5 PCBs

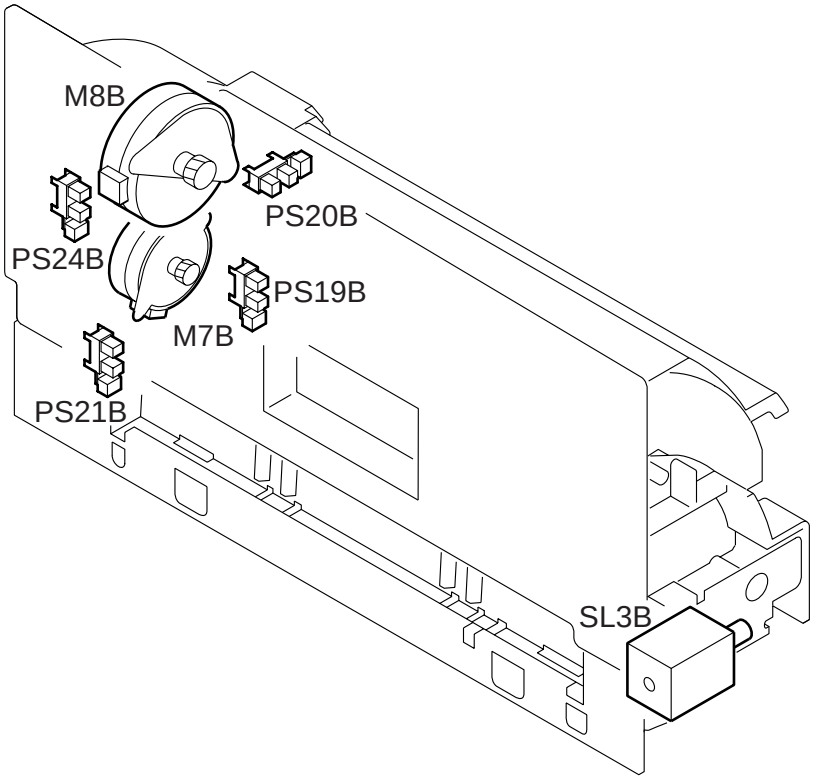
Ref. Name	Description	Remarks
[1] 2-cassette pedestal pickup PCB	Controls the pickup assembly.	
[2] Pedestal controller PCB	Controls the paper deck.	

6.5 Inner 2-Way Tray-A1

6.5.1 Solenoids

6.5.2 Motors

6.5.3 Sensor



F04-605-01

6.5.1 Solenoids

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
SL3B (DC-CON) 2-way delivery solenoid	A7-2-K	0: ON, 1: OFF	

6.5.2 motors

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
M7B (DC-CON) 2-way delivery inlet motor	A7-10-H	P011-0 to 7	
M8B (DC-CON) 2-way deliver outlet motorr	A7-6-H	P004-4 to 8	
		P006-7 1: 70%, 0: 100%	

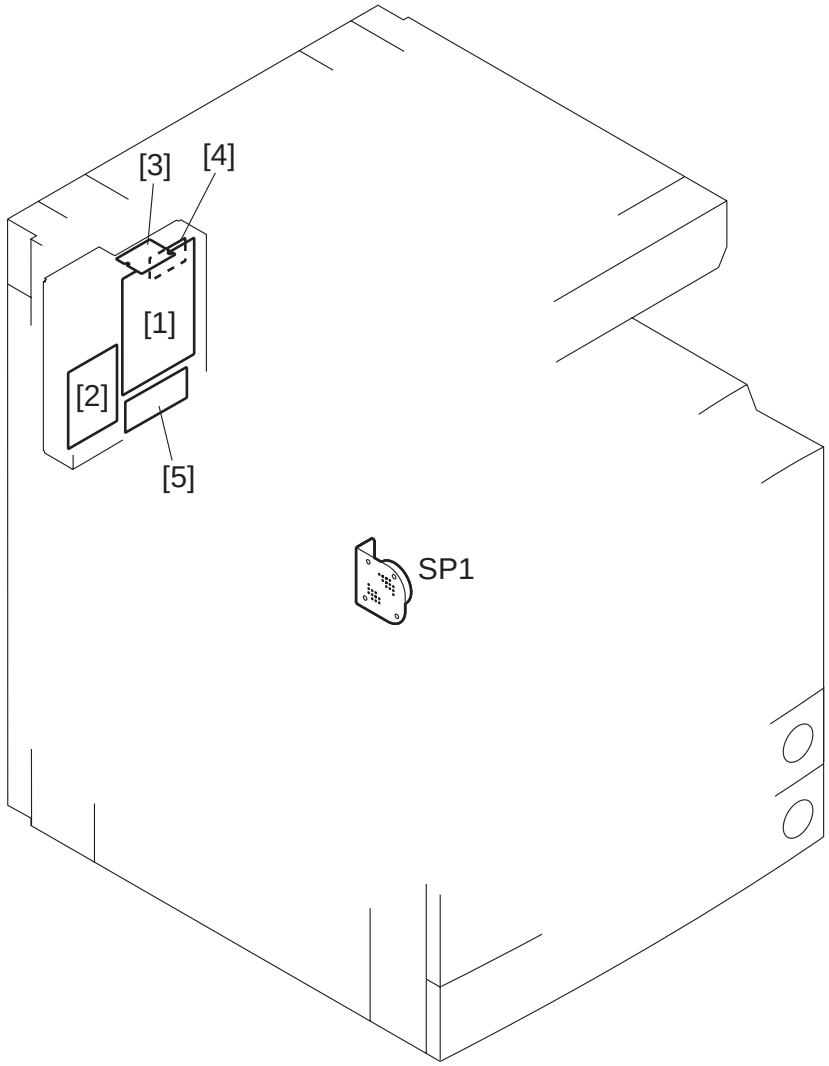
6.5.3 Sensors

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
PS19B (DC-CON) No. 2 delivery sensor	A7-3-G	P016-2 1: present, 0: absent	(paper)
PS20B (DC-CON) No. 2 delivery full sensor	A7-8-G	P016-3 1: present, 0: absent	(paper)
PS21B (DC-CON) No. 3 delivery sensor	A7-8-G	P016-4 1: present, 0: absent	(paper)
PS24B (DC-CON) 2-way delivery open/closed sensor	A7-4-G	P016-7 1: open, 0: closed	

6.6 Super G3 FAX Board-J1

6.6.1 Others

6.6.2 PCBs



F04-606-01

6.6.1 Others

Electrical signal (target) Name	Reference to general circuit diagram	I/O address I/O indication	Remarks
SP1 (FAX-CON) Speaker	A3-1-E		

6.6.2 PCBs

Ref. Name	Description	Remarks
[1] G3 FAX control PCB	Controls the fax system.	
[2] NCU PCB	Serves as an interface between telephone line and fax system.	100V and 120V models use different interfaces.
[3] G3 modular PCB	Connects a modular cable.	100V and 120V models use different interfaces.
[4] DIMM	Stores firmware for the fax system.	16M bit
[5] Pseudo CI PCB	Generates a pseudo CI signal.	100V
[6] Off-hook detection PCB	Detects off-hook state of the telephone	120V

6.7 Variable Resistors (VR), Light-Emitting Diodes, and Check Pins by PCB

Of the variable resistors, light-emitting diodes, and switches used in the machine, those needed for service work in the field are discussed:

1. Some LEDs emit dim light when they are off because of leakage current; this is a normal condition, and must be kept in mind.
2. VRs that may be used in the field:

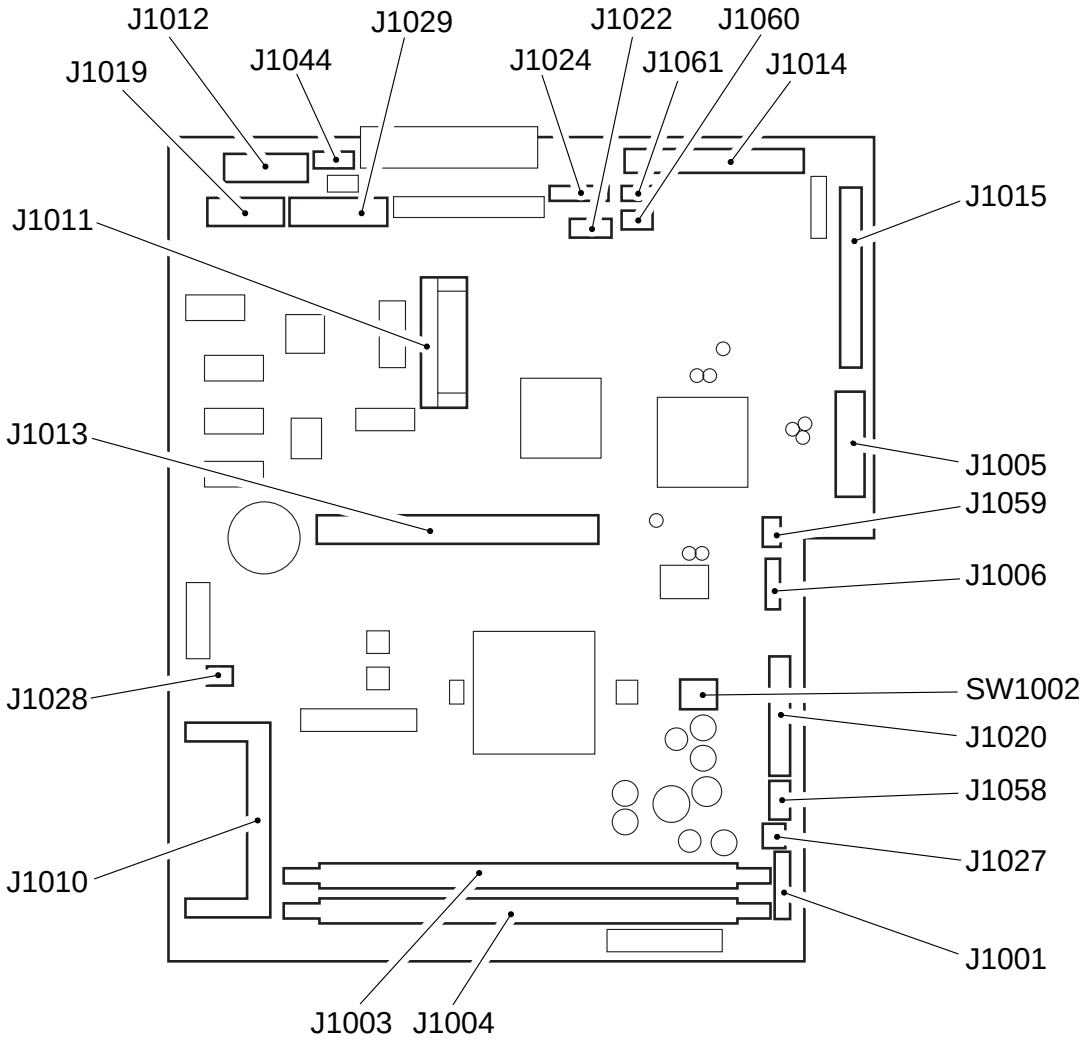
   

   VRs that must not be used in the field:

Do not touch those VRs and check pins not discussed herein; they are for exclusive use in the factory, and require high accuracy and special instruments.

6.7.1 Main Controller PCB



F04-607-01

The DIP switch (SW1002) is designed for adjustments at the factory, and is not normally used in the field.

<When Replacing the PCB>

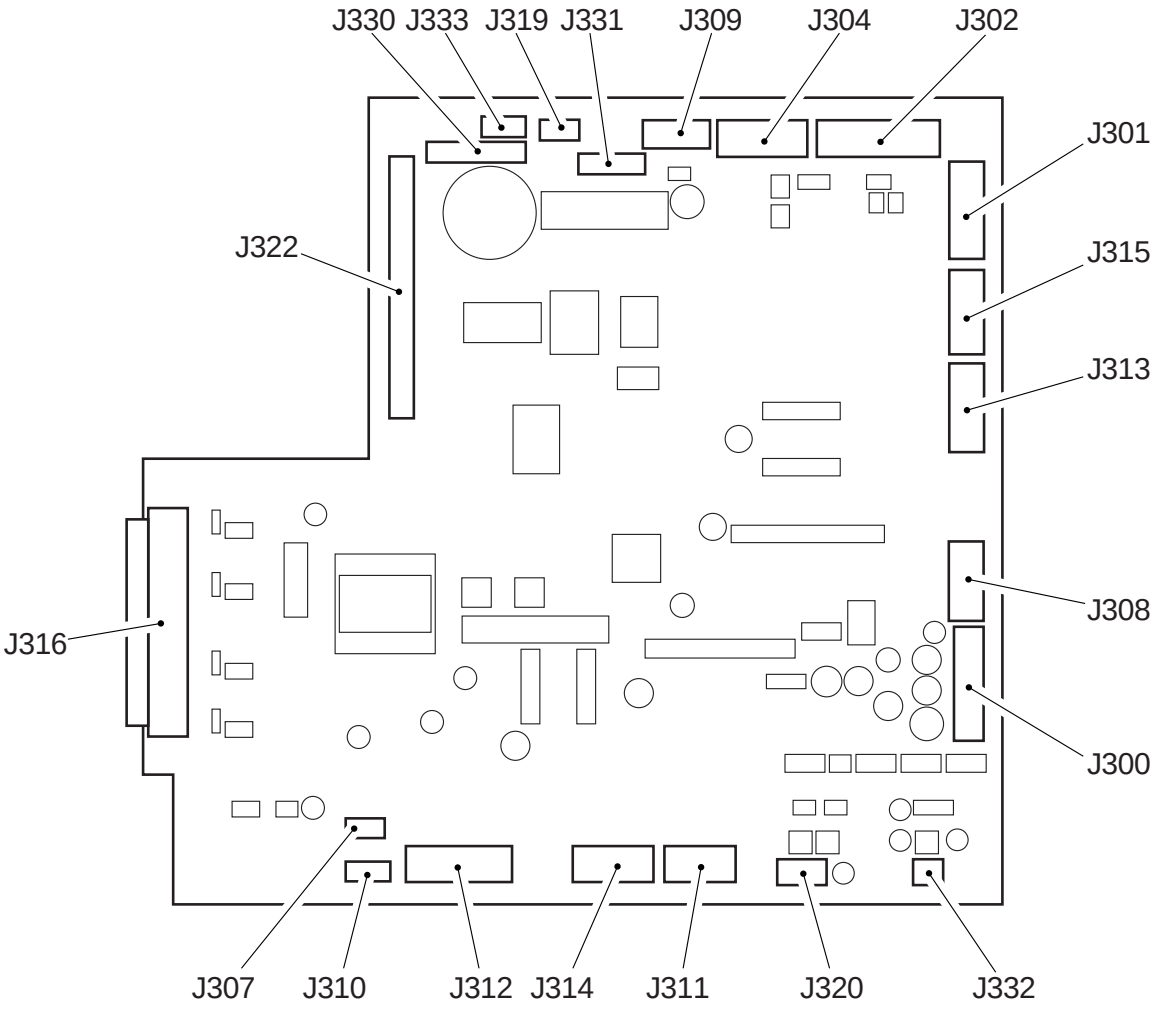
a. Transfer the following from the old to new PCB:

- shorting connector of J1060
- BOOT ROM of J1010
- SDRAM
- counter memory PCB

b. Protect the back-up data as follows:

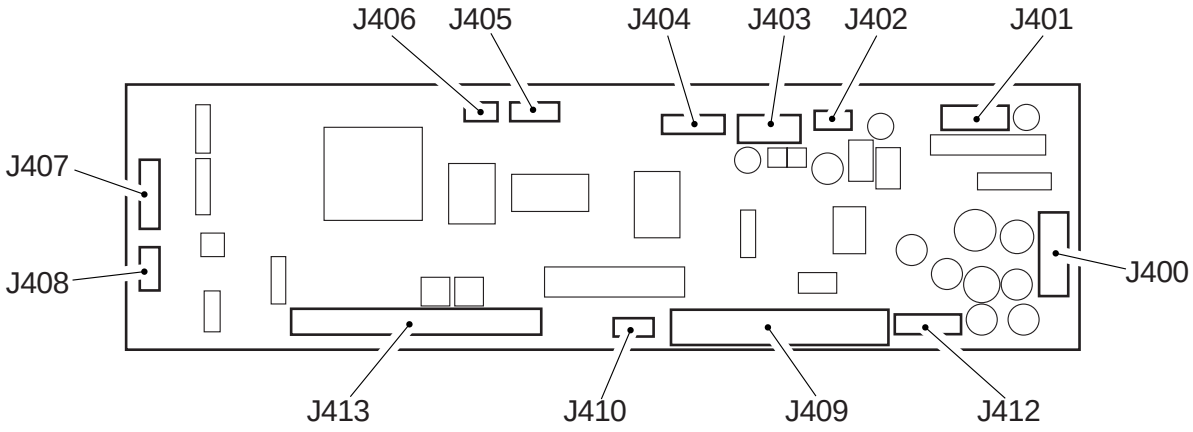
1) Back up all data using the Service Support Tool.
2) Replace the main controller.
3) While holding down the keys '2' and '8' of the control panel, turn on the main power (to start download mode). You will not be able to perform the following if you start up in the usual way, since the Box text file data and control data on the hard disk will be initialized.
4) Download all data using the Service Support Tool.

6.7.2 DC Controller PCB



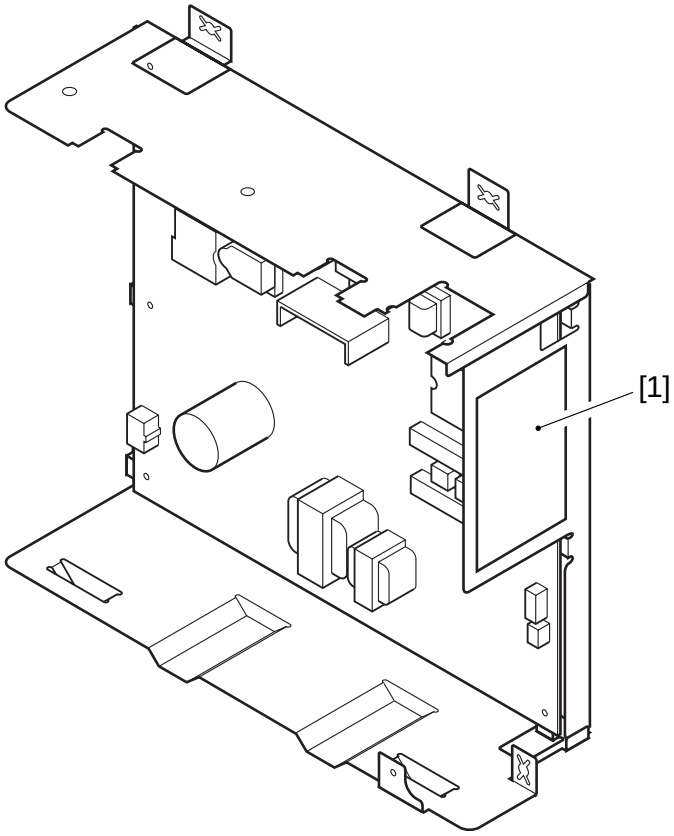
F04-607-02

6.7.3 Reader Controller PCB



F04-607-03

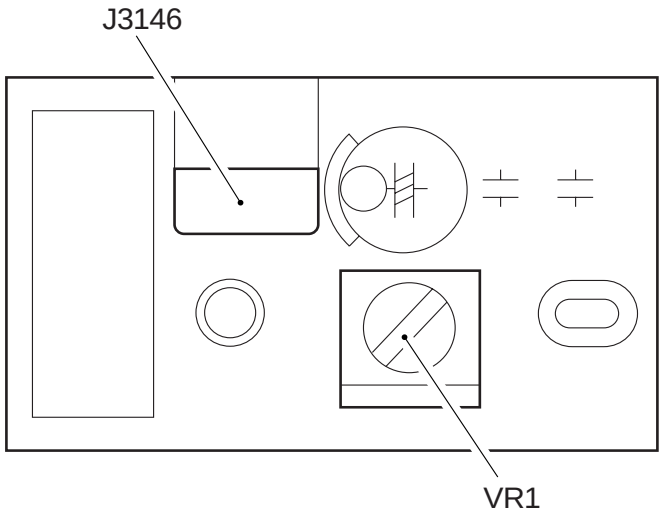
6.7.4 Composite Power Supply PCB



When replacing the PCB, be sure to enter the settings indicated on the service label [1] in service mode.

F04-607-04

6.7.5 Fixing Film Sensor PCB



F04-607-05

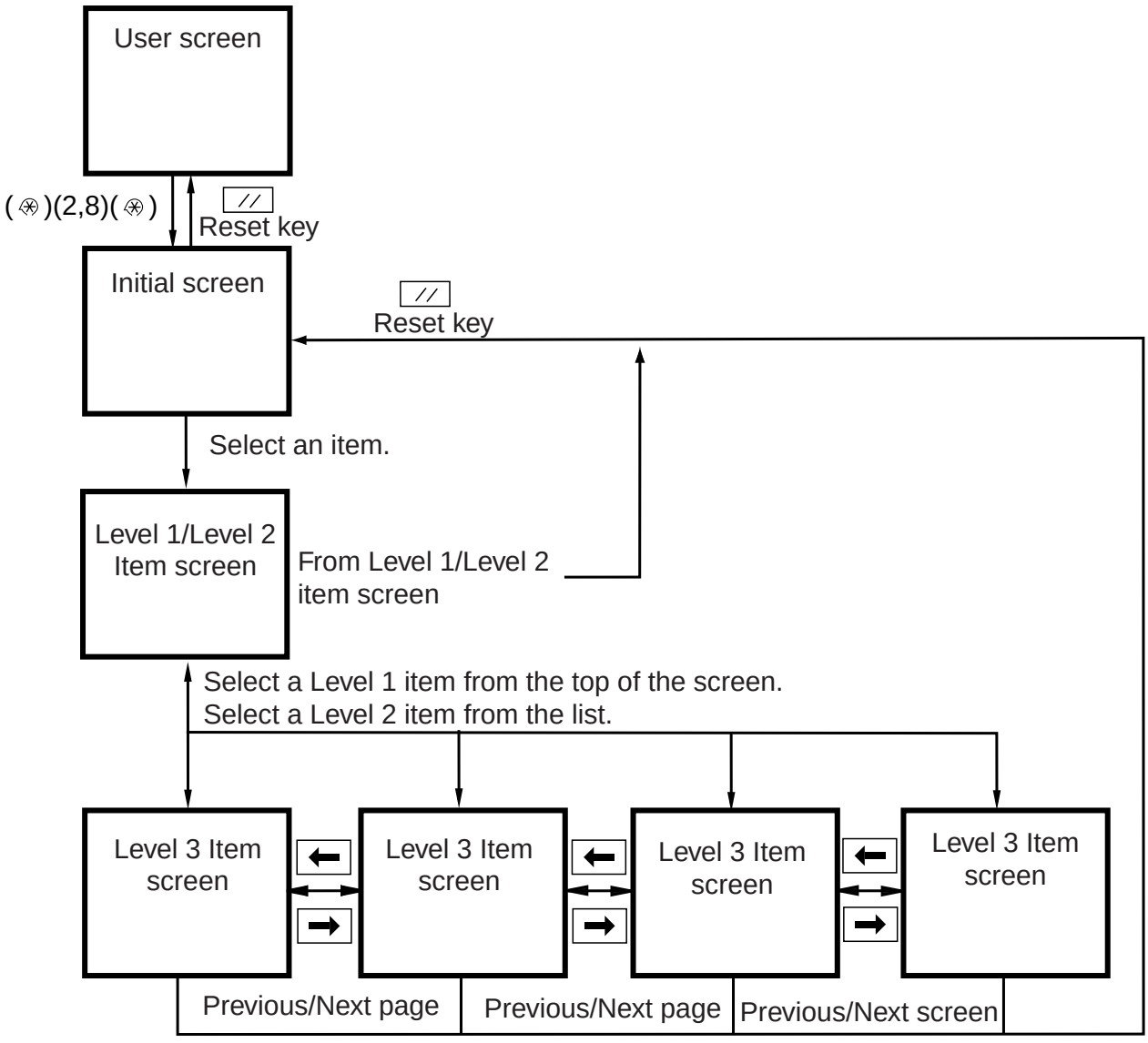
CHAPTER 5

SERVICE MODE

1 Outline of Service Mode

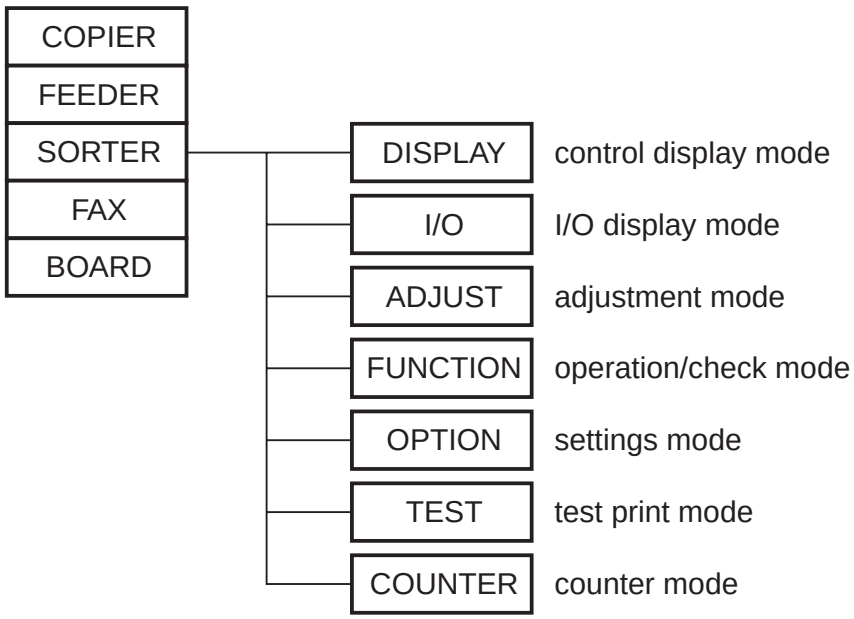
1.1 Outline

The service mode screens are organized in three levels: Initial screen, Level 1/Level 2 Item screen, Level 3 Item screen.



F05-101-01

The machines' service mode consists of the following seven types:

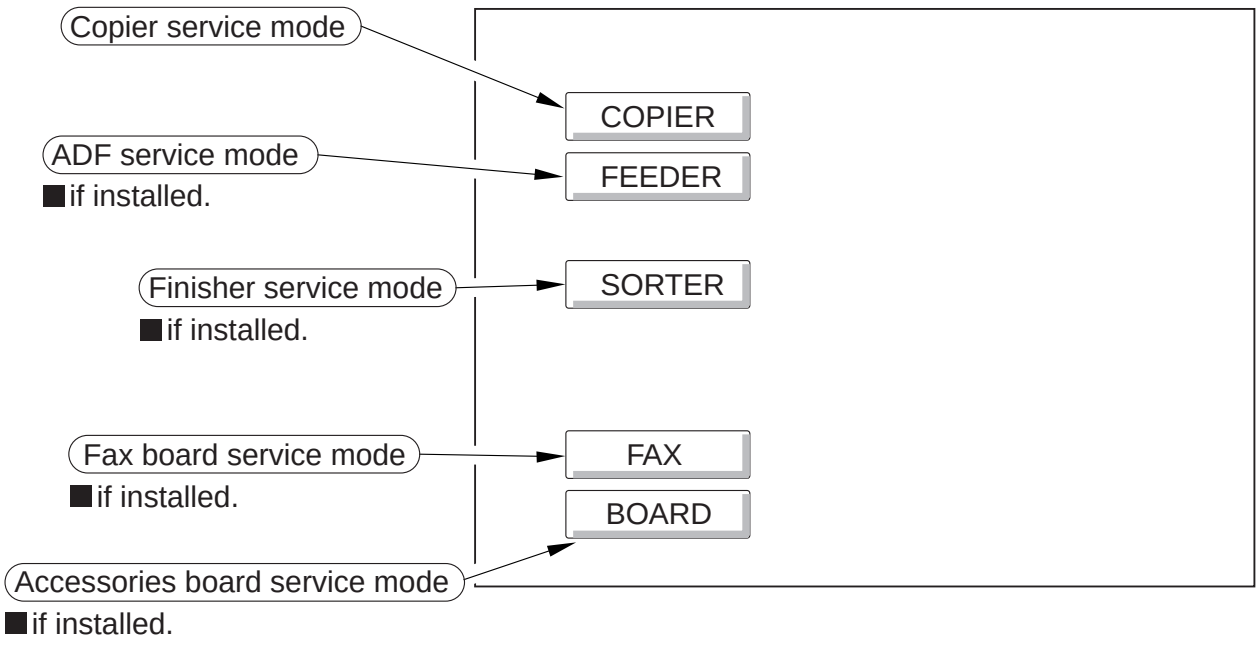


F05-101-02

1.2 Starting Service Mode and Making Selections

1) Press the User Mode key ' ' .
2) Press '2' and '8' on the keypad at the same time.
3) Press the User Mode key ' ' on the control panel.

In response, the following Initial screen will appear:



F05-102-01

1.3 Ending Service Mode

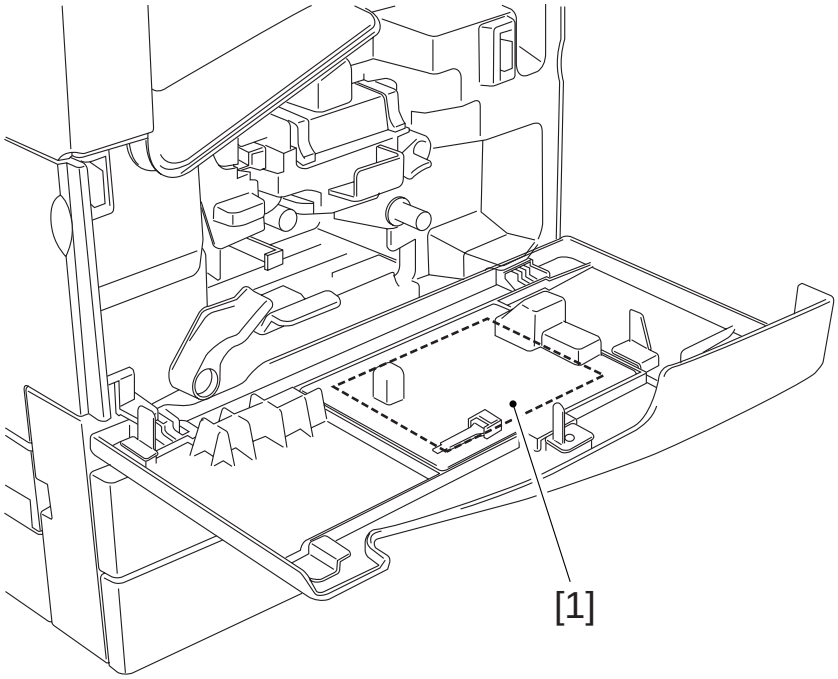
- Press the Reset key once to return to the Service Mode Initial screen (F05-101-03).
- Press the Reset key twice to end service mode and return to the User screen (standard).

If you have used service mode (ADJUST, FUNCTION, OPTION), be sure to turn off and then on the main power switch after ending service mode.

1.4 Backing Up Service Mode

At the factory, each machine is adjusted, and its adjustment settings are recorded on the service label [1] (inside the service book case behind the front cover).

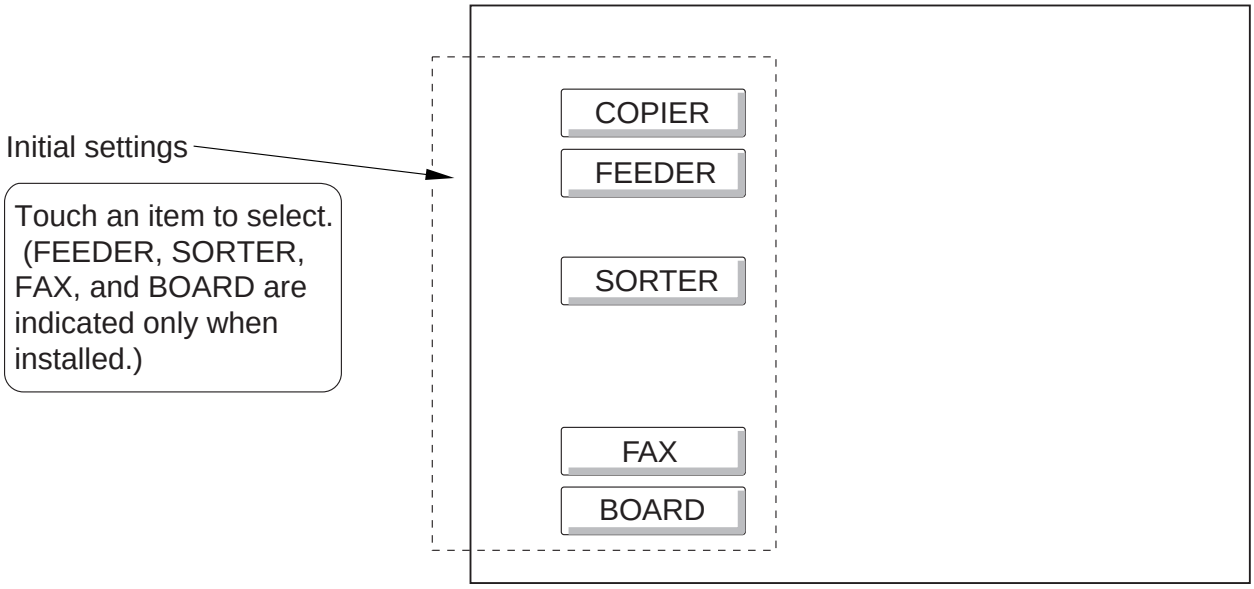
If you have cleared the RAM and replaed the PCB, the settings under ADJUST and OPTION will all return to the factory settings. Be sure to enter the settings indicated on the service label. You can print out the settings stored in the machine in service mode: COPIER>FUNCTION>MISC-P>P-PRINT. In addition, you can obtain a new service label using service mode: COPIER>FUNCTION>MISC-P>LBL-PRINT.



F05-104-01

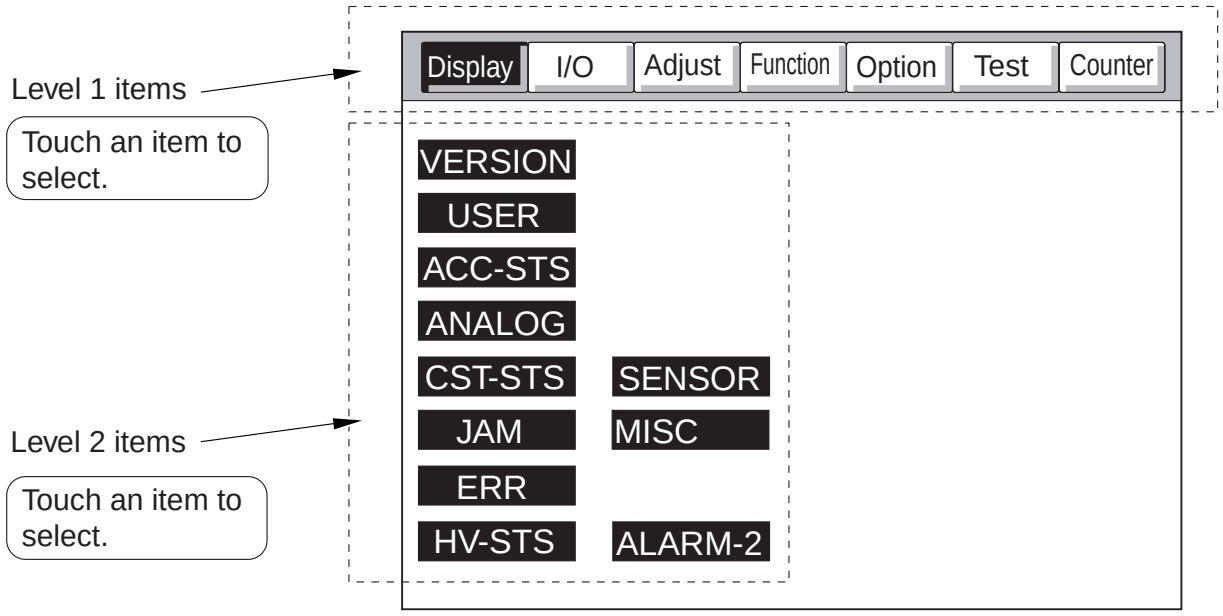
1.5 Using Service Mode

1.5.1 Initial Screen



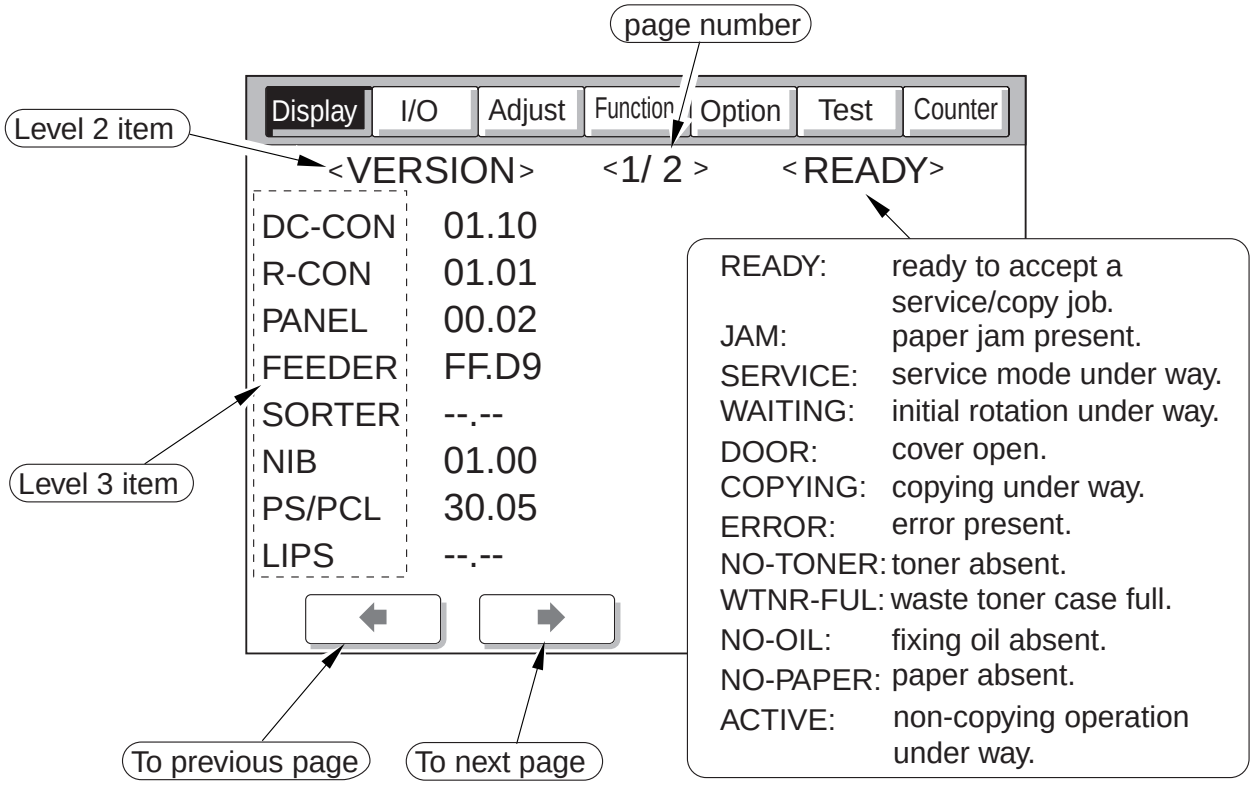
F05-105-01

1.5.2 Level 1/Level 2 Item Screen

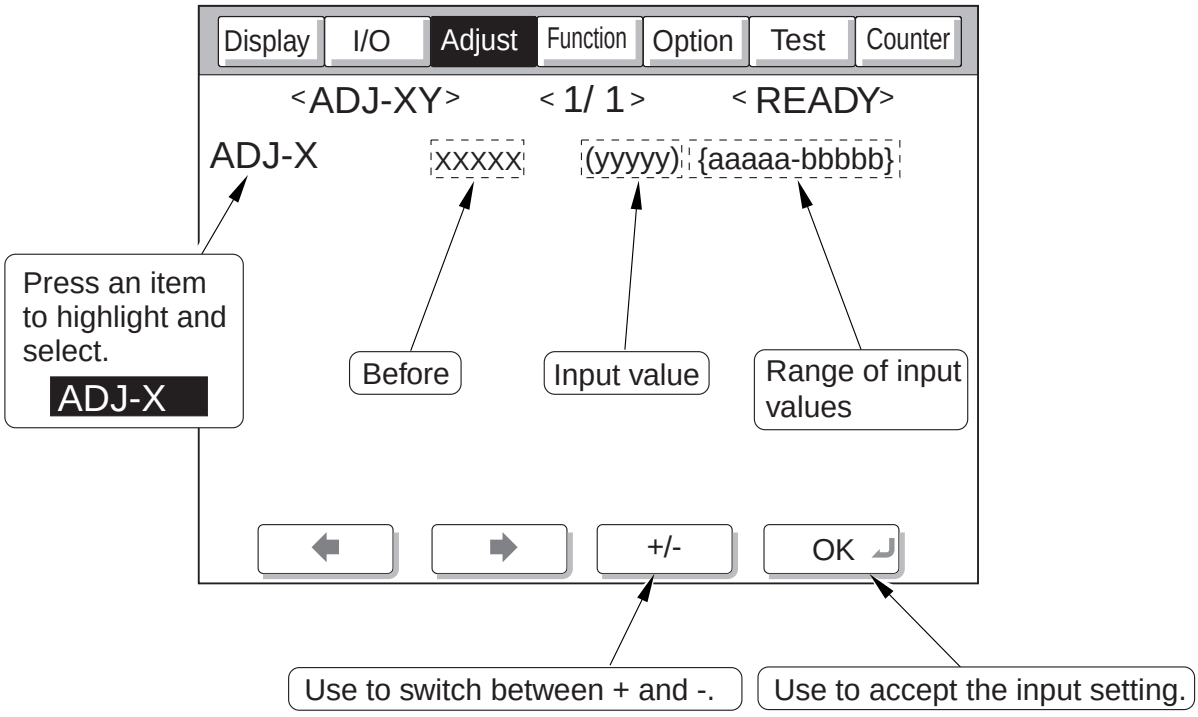


F05-105-02

1.5.3 Level 3 Item Screen



F05-105-03



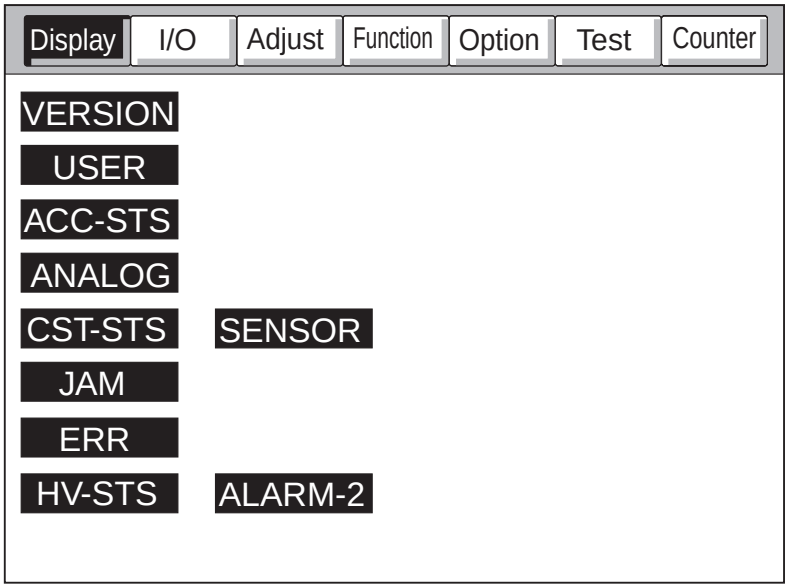
Stop key: use to stop various operations.
Clear key: use to clear the selected setting.
Start key: use to make a copy with ending service mode.

F05-105-04

2 DISPLAY Control Display Mode

2.1 COPIER

The following screen will appear in response to COPIER>DISPLAY; the respective item follows:



F05-201-01

<VERSION>

Indicates the version of the machine and the version f the ROM on the accessories PCB.
Indication: <xx,yy>
Where, xx: version number, yy: R&D control number

DC-CON	Indicates the version of the ROM on the DC controller PCB.
R-CON	Indicates the version of the ROM on the reader controller PCB.
PANEL	Indicates the version of the or on the control panel CPU PCB.
FEEDER	Indicates the version of the ROM on the ADF controller PCB.
SORTER	Indicates the version of the ROM on the finisher controller PCB.
NIB	Indicates the version of the network software.
PS/PCL	Indicates the version of the printer board (PS/PCL).
LIPS	Indicates the version of the printer board (LIPS).
MN-CONT	Indicates the version of the software of the main controller PCB.
BOOT-ROM	Indicates the version of the BOOT ROM of the main controller. Indication: for copier model, xx.yyC; for PSPCL model; xx.yyP; for PCL model, xx.yyL
DIAG-DVC	Indicates the version for the remote diagnostic device.
RUI	Indicates the version of the RUI.

PUNCH	Indicates the version of the software of the punch unit.
LANG-EN	Indicates the version of the English file.
LANG-FR	Indicates the version of the French file.
LANG-DE	Indicates the version of the German file.
LANG-IT	Indicates the version of the Italian file.
LANG-JP	Indicates the version of the Japanese file.
LANG-CS	Indicates the version of the Czech file.
LANG-DA	Indicates the version of the Danish file.
LANG-EL	Indicates the version of the Greek file.
LANG-ES	Indicates the version of the Spanish file.
LANG-ET	Indicates the version of the Estonian file.
LANG-FI	Indicates the version of the Finnish file.
LANG-HU	Indicates the version of the Hungarian file.
LANG-KO	Indicates the version of the Koran file.
LANG-NL	Indicates the version of the Dutch file.

LANG-NO	Indicates the version of the Norwegian file.
LANG-PL	Indicates the version of the Polish file.
LANG-PT	Indicates the version of the Portuguese file.
LANG-RU	Indicates the version of the Russian file.
LANG-SL	Indicates the version of the Slovenian file.
LANG-SV	Indicates the version of the Swedish file.
LANG-TW	Indicates the version of the Chinese file (traditional).
LANG-ZH	Indicates the version of the Chinese file (simplified).

COPIER>DISPLAY>USER

<USER>

Indicates items related to the User screen and the user.

LANGUAGE	Indicates the language/paper size configuration used. Indication <LANGUAGE xxyy.zz.aa> Where, xx (higher 2 characters): country code (See JIS.) yy (lower 2 chargers): language code (See ISO639.) zz: destination code (00: Canon, 01: OEM, 02: common (all)) aa: paper size configuration code (00: AB, 01: Inch, 02: A, 03: all sizes)
MODEL	Indicates the model (0: iR2200, 1: iR2800, 2: iR3300).

COPIER>DISPLAY>ACC-STS

<ACC-STS>

Indicates the connection of accessories.

FEEDER	Indicates the connection of an ADF. (0: absent, 1: present)
SORTER	Indicates the connection of a finisher and a puncher nit. Indication: XY Where, X=0: absent, 1: finisher, 2: saddle finisher Y=0: puncher unit absent; 1: 2-hole, 2: 2-/3-hole, 3: 4-hole (FRN), 4: 4-hole (SWDN)
DECK	Indicates the connection of a paper deck (option). (0: absent, 1: present)
CARD	Indicates the connection of a card reader (option). (0: absent, 1: present)
DATA-CON	Indicates the connection of a remote diagnostic device. (0: absent, 1: copy data controller, 2: NE controller)

COPIER>DISPLAY>ACC-STS

RAM	Indicates the size of memory mounted to the main controller. (64 MB, 128 MB)
NIB	Indicates the connection of a network board. (0: absent, 1: Ethernet board, 2: TokenRing, 3: both)
LIPS-RAM	Indicates the size of memory mounted on the LIPS board. (xx MB)
LIPS	Indicates the connection of a LIPS board. (0: absent, 1: present)
PS/PCL	Indicates the connection of a PS/PCL board. (0: absent, 1: PS/PCL, 2: PS kanji)
NETWARE	Indicates the installation of netware firmware. (0: absent, 1: installed)

COPIER>DISPLAY>ANALOG

<ANALOG>

Indicates the readings of analog sensors.

TEMP	Indicates the machine inside temperature. (environment sensor; in °C)
HUM	Indicates the machine inside humidity. (environment sensor; in % RH)
ABS-HUM	Indicates the machine inside humidity absolute value. (sensor: in g)
DR-TEMP	Indicates the temperature around the photosensitive drum. (drum sensor; in °C)
FIX-C	Indicates the temperature of the fixing heater. (main thermistor; in °C)
FIX-E	Indicates the temperature of the edge of the fixing heater. (sub thermistor; in °C)

<CST-STS>

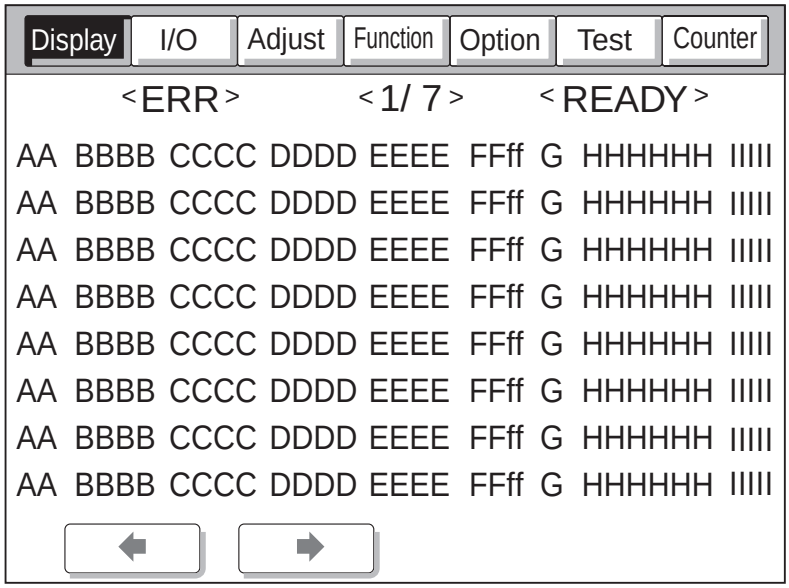
Indicates the size of paper in the cassettes and the manual feeder.

WIDTH-MF	Indicates the width of paper in terms of paper size (manual feed).

COPIER>DISPLAY>JAM

<JAM>

Indicates jam data.



F05-201-02

COPIER>DISPLAY>JAM

Item	Description	Remarks
AA	Indicates the order of jams (the higher the number, the older the jam).	1 to 50 (50 max.)
BBBB	Indicates the date of occurrence.	Month, day (2 characters each)
CCCC	Indicates the time of occurrence.	24-hr notation
DDDD	Indicates the time of recovery.	24-hr notation
E	Indicates the location of occurrence.	0: copier 1: feeder 2: finisher
EFff	Indicates a jam code.	FF: type of jam (T05-201-01) ff: jam sensor (T05-201-02) For the feeder, see T05-201-04; for the finisher, see T05-201-05, -06.
G	Indicates the source of paper.	See T05-201-03.
HHHHHH	Indicates the soft counter of the source of paper.	
IIIII	Indicates paper size.	

FF: Types of Jams

Code	Type
00xx	none
01xx	delay jam
02xx	stationary jam
0Axx	power-on stationary jam
0Bxx	cover open jam
9003	logic jam (*1)
9011	logic jam (*2)
10xx	finisher jam

*1: standby jam from the Finisher-J1.

*2: image request absent jam.

T05-201-01

ff: Jam Sensors

Code	Sensor
xx01	registration paper sensor (PS10)
xx02	multifeeder paper sensor (PS22)
xx03	pre-registration paper sensor (PS9)
xx04	vertical path paper sensor (Q1603)
xx05	cassette 1 re-try sensor (PS7)
xx06	cassette 2 re-try sensor (PS8)
xx07	cassette 3 re-try sensor (PS2C)
xx08	cassette 4 re-try sensor (PS3C)
xx09	deck pickup sensor (PS1D)
xx0A	deck feed sensor (PS6D)
xx11	image leading edge sensor (PS12)
xx12	fixing/feed sensor (PS13)
xx13	No. 1 delivery sensor (PS15)
xx14	No. 2 delivery sensor (PS19B)/ relay delivery sensor (PS19Z)
xx15	No. 3 delivery sensor (PS21B)
xx21	duplex inlet paper sensor (PS17)
xx22	duplex output paper sensor (PS18)
xx33	front cover switch (SW3)
xx34	right cover open/closed sensor (PS23)
xx35	2-way delivery open/closed sensor (PS24B)/ relay delivery open/closed sensor (PS24Z)
xx36	right cover open/closed sensor (PS1C)
xx37	deck set sensor (PS5D)
xx39	finisher front cover sensor (S1)

T05-201-02

G: Source of Paper

Code	Source
1	cassette 1
2	cassette 2
3	cassette 3
4	cassette 4
5	not used
6	not used
7	paper deck
8	manual feed tray
9	duplex unit

T05-201-03

FFff: Sensor/Type (jams in feeder)

Code	Sensor/type	Sensor used
0001	registration sensor delay	PI6
0002	registration sensor stationary	PI6
0003	read sensor delay	PI6, PI7
0004	read sensor stationary	PI7
0005	delivery sensor delay	PI7, PI8
0006	delivery sensor stationary	PI8
0007	ADF open	PI1
0008	user ADF open	PI1
0009	ADF cover open	PI9
000A	user cover open	PI9
000B	initial stationary	PI6, PI7, PI8
000C	pickup fault	-

T05-201-04

FFff: Sensor/Type (jams in Saddle Finisher-G1)

Code	Sensor/type	Sensor used
1006	stapler staple jam	PI19
1007	power-on jam	PI1, PI10
1008	cover open jam	PI22, PI23, MS2
1011	inlet sensor delay	PI1
1012	folding potion sensor delay	PI10
1021	inlet sensor stationary	PI1
1022	folding position sensor stationary	PI10

T05-201-05

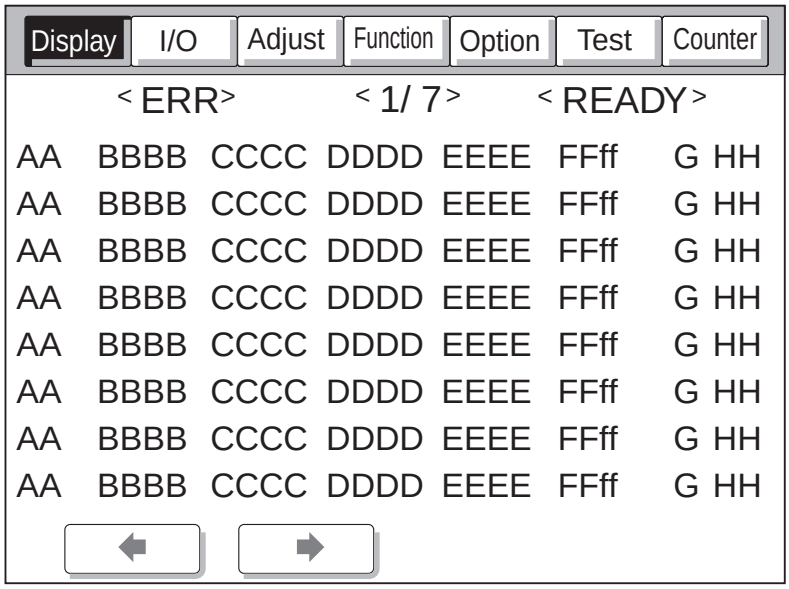
FFff: Sensor/Type (jams in Finisher-J1)

Code	Sensor/type	Sensor used
0003	inlet sensor delay	S2
0004	inlet sensor stationary	S2
0006	stapler staple jam	S17
0007	power-on jam	S2
0081	stack delivery	S8
0082	stack return	S3
0114	relay delivery sensor delay	PS19Z
0214	relay delivery sensor stationary	PS19Z
0B35	relay delivery cover open jam	PS24Z
0B39	front cover open jam	S1

T05-201-06

<ERR>

Indicate error data.



F05-201-03

Item	Description	Remarks
AA	Indicates the order of errors (the higher the number, the older the error).	1 to 50 (50 max.)
BBBB	Indicates the date of occurrence.	Month, day (2 characters each)
CCCC	Indicates the time of occurrence.	24-hr notation
DDDD	Indicates the time of recovery.	24-hr notation.
EEEE	Indicates an error code.	See Chapter 6 “Self Diagnosis.”
EFff	Indicate a detail code.	If none, ‘0000’.
G	Indicates the location of occurrence.	0: copier/main controller 1: feeder 2: finisher 3: CFF 4: reader 5: printer 6: PDL 7: fax
HH	not used	

COPIER>DISPLAY>HV-STS

<HV-STS>

Indicates the measurements taken of voltage/current.

PRIMARY	Indicates the level of current of primary charging in relation to photosensitive drum resistance detection control (APVC). Unit: µA Reference: • If 353 µA or less, the drum unit can well be used. • 353<485 µA or less, the drum unit may be used without a problem. • 485 µA or more, the drum unit should be replaced.
TR	Indicates the mode selected for the level of current of transfer charging. 0: transfer constant voltage mode, 1: transfer constant voltage mode (mid), 2: transfer constant voltage mode (max.), 3: transfer constant voltage mode (min.)
BIAS	Indicates the developing bias DC level (in V)
TR-V	Indicates the voltage level in relation to transfer charging roller resistance detection control (ATVC). (in V) Reference: 1500 to 6000V: the transfer charging system is normal. 6001V or more: the transfer charging roller may have a locking fault. 1499V or less: leakage and a transfer charging roller fault are possibilities.

COPIER>DISPLAY>SENSOR

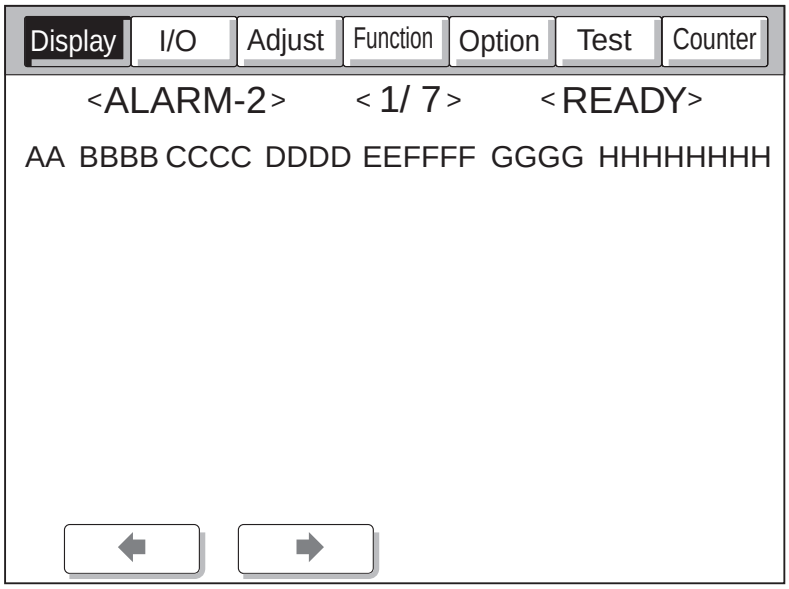
<SENSOR>

Indicates the condition of sensors.

DOC-SZ	Indicates the size of the original detected by the original size sensor.

<ALARM-2>

Indicates alarm data.



F05-201-04

Item	Description	Remarks
AA	Indicates the order of alarms (the higher the number, the older the alarm).	1 to 50
BBBB	Indicates the date of occurrence.	Month/day (2 characters each)
CCCC	Indicates the time of occurrence.	Hour/minute (24-hr notation)
DDDD	Indicates the time of return.	Hour/minute (24-hr notation)
EEFFFF	Indicates the total counter reading at time of occurrence.	See the table below.
GGGG	Indicates the detail code.	R&D control code.
HHHHHHHH	Indicates the total counter of occurrence.	

COPIER>DISPLAY>ALAM-2

EE (location code)	EE (location)	FFFF (description)
02	scanner in reader unit	0002: Indicate of dirt on reading glass in stream reading mode (small-size)
04	pickup/feed system	0008: paper deck lifter fault 0011: cassette 1 re-try alarm 0012: cassette 2 re-try alarm 0013: cassette 3 re-try alarm 0014: cassette 4 re-try alarm 0018: paper deck re-try alarm
61	stapler system of sorter/finisher	0001: staple absent
62	saddle stitcher system	0001: stitch staple absent
65	puncher system of sorter/finisher	0001: punch waste case full

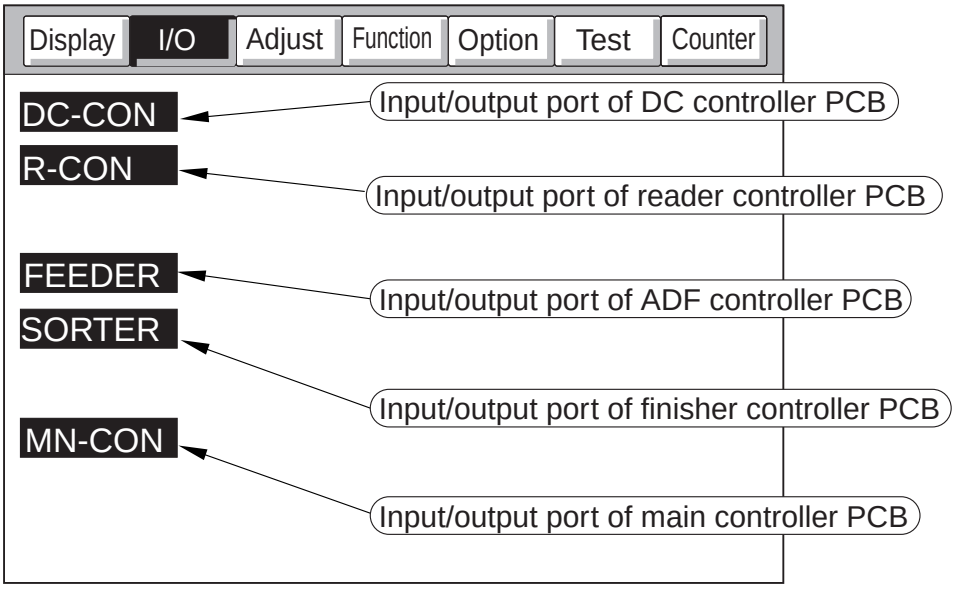
FEEDER>DISPLAY

2.2 FEEDER

FEEDSIZE	Indicates the size of the original detected by the ADF.

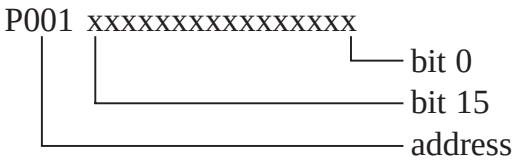
3 I/O, I/O Display mode

The fowling screen will appear in response to COPIER>I/O; discussions on items follow:



F05-301-01

<Guide to the screen>



3.1 DC-CON

Indicates the input/output ports of the DC controller PCBs.

<DC-CON (1/7)>

Address	bit	Notation	Description	Remarks
P001	0	M1	main motor drive signal	0: ON
	1	LAMP2	pre-exposure lamp ON signal	1: ON
	2	M10	laser scanner motor dive signal	0: ON
	3	M4	fixing motor dive signal	0: ON
	4	M4	fixing motor low-speed drive signal	1: ON
	5	CL1	vertical path clutch drive signal	1: ON
	6	CL2	multifeeder clutch drive signal	1: ON
	7	CL3	developing assembly clutch drive signal	1: ON
P002	0	SL1	pickup DOWN solenoid drive signal	1: ON
	1	SL3Z	relay delivery solenoid drive signal	1: ON
	2		not used	
	3	SL5	multifeeder holding plate releasing solenoid drive signal	1: ON
	4	SL6	charging roller solenoid drive signal	1: ON
	5	M9	registration motor drive OFF signal	1: off, 0: excited
	6		not used	
	7		not used	
P003	0	M2	pickup motor drive signal 1	-
	1	M2	pickup motor drive signal 2	-
	2	M2	pickup motor drive signal 3	-
	3	M2	pickup motor drive signal 4	-
	4	M3	horizontal registration sensor shift motor pulse signal A	-
	5	M3	horizontal registration sensor shift motor pulse signal A*	-
	6	M3	horizontal registration sensor shift motor pulse signal B	-
	7	M3	horizontal registration sensor shift motor pulse signal B*	-
P004	0	FM1	developing fan (full speed) signal	1: ON
	1	FM2	fixing fan (full speed) signal	1: ON
	2	FM1	developing fan (half speed) signal	1: ON
	3	FM2	fixing fan (half speed signal)	1: ON
	4	M8B	2-way delivery outlet motor pulse signal IN1	Inner 2-Way Tray-A1
		M7Z	relay delivery output motor pulse signal IN1	relay delivery assembly
	5	M8B	2-way delivery output motor pulse signal IN2	Inner 2-Way Tray-A1
		M7Z	relay delivery outlet motor pulse signal IN2	relay delivery assembly
	6	M8B	2-way delivery outlet motor pulse signal IN3	Inner 2-Way Tray-A1
		M7Z	relay delivery outlet motor pulse signal IN3	relay delivery assembly
	7	M8B	2-way delivery outlet motor pulse signal IN4	Inner 2-way tray-A1
		M7Z	relay delivery outlet motor pulse signal IN4	relay delivery assembly

<DC-CON (2/7)>

Address	bit	Notation	Description	Remarks
P005	0	M6	duplex motor pulse signal IN1	-
	1	M6	duplex motor pulse signal IN2	-
	2	M6	duplex motor pulse signal IN3	-
	3	M6	duplex motor pulse signal IN4	-
	4	M6	duplex motor drive signal I0	-
	5	M6	duplex motor drive signal I1	-
	6	FM4	curl reducing fan 1 drive signal	1: ON
	7	FM5	curl reducing fan 2 drive signal	1: ON
P006	0		primary DC charging motor signal	1: ON
	1		primary charging ON signal	1: ON
	2		static eliminator ON signal	1: ON
	3		developing AC bias ON signal	1: ON
	4		developing DC bias ON signal	1: ON
	5		fixing bias ON signal	1: ON
	6		heater relay ON signal	1: ON
	7	M8B	2-way delivery outlet motor pulse signal I0	1: 70%, 0: 100%
P007	0		transfer mode signal 0	1: ON
	1		transfer mode signal 1	1: ON
	2		transfer mode signal 2	1: ON
	3		transfer mode signal 3	1: ON
	4		transfer ON signal	1: ON
	5		scanner output signal 4	-
	6		scanner output signal 5	-
	7		not used	
P008	0	S1	toner level detection signal	1: toner present
	1		not use	
	2	S2	waste toner case full detection signal	1: full
	3	M1	main motor lock detection signal	0: locked
	4	M10	laser scanner motor lock detection signal	0: locked
	5	M4	fixing motor lock detection signal	0: locked
	6		24V detection signal	0: detected
	7	SW3	front over open/close sensor signal	1: closed
P009	0		factory mode signal 0	-
	1		factory mode signal 1	-
	2		factory mode signal 2	-
	3		factory mode signal 3	-
	4	FM1	developing fan rotation detection signal	0: in rotation
	5	FM2	fixing fan rotation detection signal	0: in rotation
	6	FM4	curl reducing fan 1 rotation detection signal	0: in rotation
	7	FM5	curl reducing fan 2 rotation detection signal	0: in rotation

<DC-CON (3/7)>

Address	bit	Notation	Description	Remarks
P010	0	M5	delivery motor pulse signal A_D0	-
	1	M5	delivery motor pulse signal A_D1	-
	2	M5	delivery motor pulse signal A_D2	-
	3	M5	delivery motor pulse signal A_PHASE	-
	4	M5	delivery motor pulse signal B_D0	-
	5	M5	delivery motor pulse signal B_D1	-
	6	M5	delivery motor pulse signal B_D2	-
	7	M5	delivery motor pulse signal B_PHASE	-
	8	M5	delivery motor pulse signal I0	-
	9		not used	
	10		not used	
	11		not used	
	12		not used	
	13		not used	
	14		not used	
	15		not used	
P011	0	M7B	2-way delivery inlet motor pulse signal A_D0	-
	1	M7B	2-way delivery inlet motor pulse signal A_D1	-
	2	M7B	2-way delivery inlet motor pulse signal A_D2	-
	3	M7B	2-way delivery inlet motor pulse signal A_PHASE	-
	4	M7B	2-way delivery inlet motor pulse signal A_D0	-
	5	M7B	2-way delivery inlet motor pulse signal A_D1	-
	6	M7B	2-way delivery inlet motor pulse signal A_D2	-
	7	M7B	2-way delivery inlet motor pulse signal lA_PHASE	-
	8	M7B	2-way delivery inlet motor pulse signal I0	-
	9		not used	
	10		not used	
	11		not used	
	12		not used	
	13		not used	
	14		not used	
	15		not used	
P012	0		laser output enable signal	0: enabled
	1		printer output prepare signal	-
	2		transmission ready signal	-
	3		scanner start signal	-
	4		optional output signal 0	-
	5		optional output signal 1	-
	6		optional output signal 2	-
	7		optional output signal 3	-

<DC-CON (4/7)>

Address	bit	Notation	Description	Remarks
P013	0	S4	cassette 1 cassette size detection signal bit 0	-
	1	S4	cassette 1 cassette size detection signal bit 1	-
	2	S4	cassette 1 cassette size detection signal bit 2	-
	3	S4	cassette 1 cassette size detection signal bit 3	-
	4	S4	cassette 1 cassette size detection signal bit 4	-
	5	PS1	cassette 1 paper detection signal	1: paper absent
	6	PS3	cassette 1 paper level detection signal bit 0	25% (bit6=0:bit7=1)
	7	PS4	cassette 1 paper level detection signal bit 1	50% (bit6=1:bit7=1) 100% (bit7=0)
P014	0	S5	cassette 2 cassette size detection signal bit 0	-
	1	S5	cassette 2 cassette size detection signal bit 1	-
	2	S5	cassette 2 cassette size detection signal bit 2	-
	3	S5	cassette 2 cassette size detection signal bit 3	-
	4	S5	cassette 2 cassette size detection signal bit 4	-
	5	PS2	cassette 2 paper detection signal	1: paper absent
	6	PS5	cassette 2 paper level detection signal bit 0	25% (bit6=0:bit7=1)
	7	PS6	cassette 2 paper level detection signal bit 1	50% (bit6=1:bit7=1) 100% (bit7=0)
P015	0	PS7	cassette 1 re-tray paper detection signal	1: paper present
	1	PS8	cassette 2 re-tray paper detection signal	1: paper present
	2	PS9	pre-registration paper detection signal	1: paper present
	3	PS10	registration paper detection signal	1: paper present
	4	PS11	horizontal registration paper detection signal	1: paper absent
	5	PS13	fixing/feeding detection signal	1: paper absent
	6	PS15	No. 1 delivery detection signal	1: paper present
	7	PS16	No. 1 delivery full detection signal	1: paper present
P016	0	PS17	duplex inlet paper detection signal	1: paper absent
	1	PS18	duplex outlet power detection signal	1: paper absent
	2	PS19B	No. 2 delivery detection signal	1: paper present
	3	PS20B	No. 2 delivery full detection signal	1: paper present
	4	PS21B	No. 3 delivery detection signal	1: paper present
	5	PS22	multifeeder paper detection signal	1: paper absent
	6	PS23	right cover open/closed detection signal	1: open
	7	PS24B	2-way delivery open/closed detection signal	1: open
P017	0		optional input signal 0	-
	1		optional input signal 1	-
	2		optional input signal 2	-
	3		optional input signal 3	-
	4		optional input signal 4	-
	5		not used	
	6		not used	
	7		not used	

<DC-CON (5/7)>

Address	bit	Notation	Description	Remarks
P018	0		print start signal	-
	1		transmission request signal	-
	2		controller power supply inlet ready signal	-
	3		printer power supply inlet signal	-
	4		not used	
	5		not used	
	6		not used	
	7		not used	
P019	0		BD cycle error signal	1: present
	1		phsync cycle error signal	1: present
	2		sub scanning select line interrupt signal	-
	3		image end signal	-
	4		not used	
	5		not used	
	6		not used	
	7		not used	
P020	0		zero-cross signal	-
	1		heater trigger 1 signal	0: ON
	2		heater trigger 2 signal	0: ON
	3		heater error OFF signal	0: error
	4		not used	
	5		not used	
	6	M9	registration motor phase A pulse signal	-
	7	M9	registration motor phase B pulse signal	-
P021	0	PS26	fixing film rotation detection signal	-
	1		not used	
	2		not used	
	3		not used	
	4		not used	
	5		not used	
	6		finisher detection signal	inner 2-way tray absent: bit 6=1
	7		saddle finisher detection signal	finisher: bit6=0, bit 7=1 saddle finisher: bit 6=0, bit 7=0

<DC-CON (6/7)>

Address	bit	Notation	Description	Remarks
P022	0		controller communication signal	-
	1		power supply communication signal	-
	2		controller communication signal	-
	3		power supply communication signal	-
	4		not used	
	5		power supply communication signal	-
	6		not used	
	7		not used	
P23	0	TH1	main thermistor ON signal	A/D
	1	TH2	sub thermistor ON signal	A/D
	2	VR1	multifeeder paper width detection signal	A/D
	3		drum thermistor ON signal	A/D
	4	S3	humidity detection signal	A/D
	5	S3	room temperature detection signal	A/D
	6		AC monitor signal	A/D 200V model only
	7		not used	
P024	0		RS232C detection signal for debug	-
	1		RS233C detection signal for debug	-
	2		not used	
	3		power supply communication signal	-
	4		not used	
	5		not used	
	6		not used	
	7		not used	
P025	0		not used	
	1		ADC reception data signal	-
	2		ADC serial clock signal	-
	3		ADC transmission data signal	-
	4		error interrupt signal	-
	5		DDI interrupt signal	-
	6		power supply communication signal	-
	7	PS12	image leading edge sensor detection signal	1: paper present
P026	0		not used	
	1		not used	
	2		not used	
	3		not used	
	4		not used	
	5		not used	
	6		not used	
	7		not used	

<DC-CON (7/7)>

Address	bit	Notation	Description	Remarks
P027	0		100/200V detection signal	1: 100V, 0: 200V
	1		not used	
	2		ADC chip select signal	-
	3		not used	
	4		not used	
	5		not used	
	6		not used	
	7		used as Φ terminal	-
P028	0		CPU check LED On signal	-
	1		not used	
	2		not used	
	3		not used	
	4		not used	
	5		not used	
	6		not used	
	7		not used	
P29		TH1	main thermistor ON signal	A/D hexadecimal notation
P30		TH2	sub thermistor ON signal	A/D hexadecimal notation
P31		VR1	multifeeder paper width detection signal	A/D hexadecimal notation
P32			drum thermistor ON signal	A/D hexadecimal notation
P33		S3	humidity detention signal	A/D hexadecimal notation
P34		S3	room temperature detection signal	A/D hexadecimal notation
P35			AC monitor signal	A/D hexadecimal notation

3.2 R-CON

Indicates the input/output ports of the reader controller PCB.

<R-CON (1/3)>

Address	bit	Notation	Description	Remarks
IO-P01	0	M400	scanner motor clock signal	clock signal
	1	M400	scanner rotation direction signal	0: cw
	2	M400	scanner motor drier drive enable signal	0: drive enabled
	3		not used	
	4	M400	scanner motor excitation original return signal/ motor driver controller reset signal	1→0: return to original
	5	M400	scanner motor excitation mode set signal	default
	6	M400	scanner motor excitation mode set signal	default
	7		not used	
IO-P02	0		EEPROM several clock signal	clock signal
	1		EEPROM chip select signal	1: output
	2		EEPROM read serial data signal	data
	3		EEPROM write serial data signal	data
	4		scanner reception ready signal (DDI)	0: ready to receive
	5		scanner power supply ready signal (DDI)	0: ready
	6		not used	
	7		+12V ON/OFF control signal for CCD	1: ON
IO-P03	0		serial transmission signal for DDI	data
	1		serial transmission signal for RS-232C	data
	2		serial reception signal for DDI	data
	3		serial transmission signal for RS-232C	data
	4		CCD drive signal output control signal	1: ON
	5	SD1	original sensor drive control signal	0: ON
	6		not used	
	7		not used	
IO-P04	0		not used	
	1		not used	
	2		not used	
	3		not used	
	4	SD1	original sensor signal	0: ON
	5		not used	
	6	M400	scanner drive current set signal	analog signal
	7		not used	

<R-CON (2/3)>

Address	bit	Notation	Description	Remarks
IO-P05	0		printer start signal (DDI)	0: ON
	1		analog processor data signal	data
	2		analog processor clock signal	clock signal
	3		analog processor load signal	data
	4		not used	
	5		not used	
	6		not used	
	7		not used	
IO-P06	0	M400	motor drive current mode signal	0: new current mode
	1		PCB check mode signal	0: check mode
	2	FL1N	original exposure lamp ON/OFF control signal	1: ON
	3	FL1N	original exposure lamp inverter error signal	1: error
	4	PS400	scanner home position signal	1: HP
	5		image leading edge signal (ADF)	1: ADF image leading edge interrupt
	6	PS401	copyboard cover open/closed detection signal	1: copyboard cover closed
	7		not used	
IO-P07	0		not used	
	1		not used	
	2		not used	
	3		not used	
	4		not used	
	5		IP-Lifter/IP-STD ID signal	1: Lifter model
	6		+24V monitor (L: +24V live) signal	0: 24V ON
	7		+3.3V voltage drop detection signal	1: detected
IO-P08	0		general port (0) for DDI: reader → controller	not used
	1		general port (1) for DDI: reader → controller	not used
	2		general port (2) for DDI: reader → controller	not used
	3		not used	
	4		not used	
	5		not used	
	6		not used	
	7		not used	
IO-P09	0		ON LED (not used)	
	1		not used	
	2		not used	
	3		not used	
	4		not used	
	5		not used	
	6		not used	
	7		not used	

<R-CON (3/3)>

Address	bit	Notation	Description	Remarks
IO-P10	0-7		not used	
IO-P11	0-7		not used	
IO-P12	0-7		not used	
IO-P13	0		general port (0) for DDI: controller → reader	1*
	1		general port (1) for DDI: controller → reader	not used
	2		general port (2) for DDI: controller → reader	not used
	3		controller power supply ready signal (DDI)	0: ready
	4		controller reception enable signal (DDI)	0: ready to receive
	5		no used	
	6		not used	
	7		not used	

*1: If the port is '0' when 24V is supplied, the initial rotation is omitted (to prevent turning on the reader in response to a PING command while the machine is in sleep mode); if '1', the initial operation is executed.

3.3 MN-CON

Indicates the input/output ports for the main controller PCB.

<MN-CON (1/2)>

Address	bit	Notation	Description	Remarks
P001	7	GPDATA	not used (fixed; 1)	
	6		not used (fixed; 1)	
	5		LED1008	for check on operation
	4		fan ON	cooling fan control
	3		PCI power save control	1: normal operation
	2		watchdog timer clear	
	1		PWR2	1: normal operation
	0		PWR1	1: normal operation
P002	3	SPI	SPRTST signal (printer start-up signal)	0: reader image start
	2		input for DDI-S general	not used
	1		input for DDI-S general	not used
	0		input for DDI-S general	not used
P003	3	PPI	PSCNST signal (scanner start-up signal)	0: reader start
	2		input for DDI-P general	not used
	1		input for DDI-P general	not used
	0		input for DDI-P general	not used
P004	3	SPO	SSCNST signal	not used
	2		3.3V non-all night power OFF signal	0: normal (ON), 1=5W (OFF) sleep mode
	1		output for DDI-S general	not used
	0		output for DDI-S general	not used
P005	3	PPO	PPRTST signal	0: printer image start
	2		output for DDI-P general	not used
	1		output for DDI-P general	not used
	0		output for DDI-P general	not used
P006	7	GPI	HD connection detection	1: HD present
	6		serial EEPROM D0	access port for EEPORM
	5		operation enable (coin robot)	1: enabled
	4		operation enable (CC-IV)	1: enabled
	3		serial ROM connection detection	1: connected
	2		flash RPOM R/B#	0: Busy, 1: Ready
	1		parallel EEPROM R/B#	for factory
	0		battery alarm	0: Normal, 1: Error

COPIER>I/O>MN-COM

<MN-CON (2/2)>

Address	bit	Notation	Description	Remarks
P007	15	GPO	fax SSB forced reset	0: Reset, 1: Normal
	14		parallel EEPROM write protect	for factory
	13		not used	
	12		LCD back-light control signal	1: ON
	11		coin robot delivery count	1: count
	10		coin robot pickup count	1: count
	9		delivery count	1: count
	8		pickup count	1: count
	7		serial EEPROM DIN	for factory
	6		serial EPROM SCK	for factory
	5		serial EEPROM CS	for factory
	4		PCI (PDL) soft reset	0: LIPS board forced reset
	3		not used	
	2		SP0 (2)	output (2) for DDI-S general
	1		not used	
	0		battery charge control	0: Enable, 1: Disable
P008	7	IPC-PA	not used	
	6		not used	
	5		battery board detect	0: present
	4		BW UI detect	0: B/W UI present
	3		color UI detect	0: color UI present
	2		FOPTI0N2	for fax SSB ID
	1		FOPTI0N1	for fax SSB ID
	0		FOPTI0N0	for fax SSB ID
P009	7-0	IPC-PB	not used	0: fixed
P010	7-0	IPC-PO	not used	0: fixed

3.4 FEEDER

Indicates the input/output ports of the ADF controller PCB.

<FEEDER (1/2)>

Address	bit	Notation	Description	Remarks
IO-P01	0		not used	
(output)	1		not used	
	2		not used	
	3		not used	
	4		not used	
	5	LED	original detection LED ON signal	0: ON
	6	SL1	locking solenoid drive signal	0: ON
	7	SL2	stamp solenoid drive signal	0: ON
IO-P02	0	PI8	delivery reversal sensor signal	1: paper present
(input)	1	PI7	read sensor signal	1: paper present
	2	PI6	registration sensor signal	1: paper present
	3	PI1	ADF open/closed sensor signal	1: open
	4	M1	pickup motor phase A output	-
	5	M1	pickup motor phase A* signal	-
	6	M1	pickup motor phase B output	-
	7	M1	pickup motor phase B* output	-
IO-P03	0		not used	
(input)	1		not used	
	2		image leading edge signal	-
	3		not used	
	4		not used	
	5		not used	
	6		not used	
	7		not used	
IO-P04	0		EEPROM data input	-
	1		EEPROM data output	-
	2		EEPROM clock	-
	3		EEPROM chip select	-
	4	PI10	original set sensor signal	1: paper present
	5	PI9	cover open/close sensor signal	0: open
	6	M2	feed motor clock signal	
	7	M1	pickup motor clock signal	

<FEEDER (2/2)>

Address	bit	Notation	Description	Remarks
IO-P05	0	VR1	original width volume	-
(input)	1	PI5	last original sensor signal	-
	2	PI4	tray sensor 2	-
	3	PI3	tray sensor 1	-
	4	PI2	A4R/LTR ID sensor	-
	5		push switch	-
	6	M2	feed motor V ref	-
	7	M1	pickup motor V ref	-
IO-P06	0	M2	feed motor phase A output	-
(output)	1	M2	feed motor phase A* output	-
	2	M2	feed motor phase B output	-
	3	M2	feed motor phase B* output	-
	4		not used	
	5		not used	
	6	PI7	read sensor signal	1: paper prevent
	7		not used	
IO-P07	0-7		not used	
IO-P08	0-7		not used	
IO-P09	0	LED4	LED ON signal 4	-
(output)	1	LED3	LED ON signal 3	-
	2	LED2	LED ON signal 2	-
	3	LED1	LED ON signal 1	-
	4		not used	
	5		not used	
	6		not used	
	7		not used	
IO-P10	0	DIPSW8	mode set DIP switch 8	-
(input)	1	DIPSW7	mode set DIP switch 7	-
	2	DIPSW6	mode set DIP switch 6	-
	3	DIPSW5	mode set DIP switch 5	-
	4	DIPSW4	mode set DIP switch 4	-
	5	DIPSW3	mode set DIP switch 3	-
	6	DIPSW2	mode set DIP switch 2	-
	7	DIPSW1	mode set DIP switch 1	-
IO-P11	0-7		not used	
AD-P01		VR1	original width volume	(analog port)
AD-P02		M2	feed motor current level	(analog port)
AD-P03		M1	pickup motor current level	(analog port)

3.5 SORTER

Indicates the input/output ports for the finisher controller PCB.

<SORTER (1/8)>

3.5.1 Finisher-J1

Address	bit	Notation	Description	Remarks
IO-P001	0		not used	
(input)	1		not used	
	2	S10	stack tray paper height sensor signal	1: upper limit
	3	S1	fisher front cover sensor signal	1: closed
	4	S11	stack tray paper sensor signal	1: paper present
	5	S12	stack tray lower limit sensor signal	1: lower limit
	6	S13	stack tray upper limit sensor signal	1: upper limit
	7	S3	return roller home position sensor signal	1: HP
IO-P002	0	S11	stack tray paper sensor signal	1: HP
(input)	1		IPC chip select	1: selected
	2	S2	input sensor signal	1: paper present
	3	S4	stack retaining lever home position sensor signal	0: HP
	4-7		not used	
IO-P003	0	S7	rear alignment home position sensor signal	1: HP
(input)	1	S6	front alignment home position sensor signal	1: HP
	2	S8	stack delivery lever home position sensor signal	0: HP
	3	S5	intermediate handling tray paper sensor signal	1: paper present
	4	S14	staple cartridge sensor signal	0: detected
	5	S15	staple absent sensor	0: detected
	6	S16	stapling home position sensor signal	0: detected
	7	S17	stapler edging sensor signal	0: detected
IO-P004	0		delivery motor clock sensor signal	-
(input)	1	S9	stack tray up/down clock sensor signal	-
	2-7		not used	
IO-P005	0	M5	stack tray ascent/decent motor CW signal	1: up ON
(output)	1		not used	
	2	M5	stack try ascent/descent motor CCW signal	1: down ON
	3-4		not used	
	5	M1	delivery motor current switch 2	(T05-301-01)
	6-7		not used	

<SORTER (2/8)>

Address	bit	Notation	Description	Remarks
I/O-P006	0	M3/M4	alignment motor pulse INA	-
(input)	1	M3/M4	alignment motor pulse INB	-
	2	M4	rear alignment motor enable signal	1: enable
	3	M3	front alignment motor enable signal	1: enable
	4	M2	stack delivery motor pulse INA	-
	5	M2	stack delivery motor pulse INB	-
	6	M6	stapler motor CW2 signal	0: CW ON
	7	M6	stapler motor CCW2 signal	0: CCW ON
I/O-P007	0	M6	stapler motor CW signal	0: CW ON
(input)	1	M6	stapler motor CCW signal	0: CCW ON
	2	M5	stack tray ascent/descent motor CW2 signal	1: up ON
	3	M5	stack tray ascent/descent motor CCW2 signal	1: down ON
	4	M1	delivery motor pulse INA	-
	5	M1	delivery motor pulse INB	-
	6		not used	
	7	M1	delivery motor OFF signal	1: current ON
I/O-P008	0	SW1	push switch signal	0: ON
(input)	1-6		not used	
	7		24VP detection signal	0: power ON
I/O-P009	0-7		not used	
I/O-P010	0	DSW1-0	mode set DIP switch 0	0: ON
(input)	1	DSW1-1	mode set DIP switch 1	0: ON
	2	DSW1-2	mode set DIP switch 2	0: ON
	3	DSW1-3	mode set DIP switch 3	0: ON
	4	DSW1-4	mode set DIP switch 4	0: ON
	5	DSW1-5	mode set DIP switch 5	0: ON
	6	DSW1-6	mode set DIP switch 6	0: ON
	7	DSW1-7	mode set DIP switch 7	0: ON
I/O-P011	0	LED1	LED ON signal 1	0: ON
(input)	1	LED2	LED ON signal 2	0: ON
	2	LED3	LED ON signal 3	0: ON
	3	M1	delivery motor current switch 1 signal	(T05-301-01)
	4	M2	stack delivery motor current switch 1 signal	0: current high
	5	M2	stack delivery motor current switch 2 signal	0: current medium
	6	M4	rear alignment motor current switch signal	0: current high
	7	M3	front alignment motor current switch signal	0: current high

<SORTER (3/8)>

Address	bit	Notation	Description	Remarks
IO-P012	0-7		not used	
IO-P013	0-7		not used	
IO-P014	0-7		not used	
IO-P015	0-7		not used	
IO-P016	0-7		not used	
IO-P017	0-7		not used	
IO-P018	0-7		not used	
IO-P019	0-7		not used	
IO-P020	0-7		not used	
IO-P021	0-7		not used	
IO-P022	0-7		not used	
IO-P023	0-7		not used	
IO-P024	0-7		not used	
IO-P025	0-7		not used	
IO-P026	0-7		not used	
IO-P027	0-7		not used	
IO-P028	0-7		not used	
IO-P029	0-7		not used	
IO-P030	0-7		not used	
IO-P031	0-7		not used	
IO-P032	0-7		not used	
IO-P033	0-7		not used	
IO-P034	0-7		not used	
IO-P035	0-7		not used	
IO-P036	0-7		not used	
IO-P037	0-7		not used	
IO-P038	0-7		not used	

<SORTER (4/8)>

3.5.2 Saddle Finisher-G1

Address	bit	Notation	Description	Remarks
P001	0	M4	front aligning plate motor phase A output	0: ON
(output)	1	M4	front aligning plate motor phase B output	0: ON
	2	M8	slide moor phase A output	0: ON
	3	M8	slide motor phase B output	0: ON
	4	M3	delivery motor phase A output	0: ON
	5	M3	delivery motor phase A* output	1: ON
	6	M3	delivery motor phase B output	0: ON
	7	M3	delivery motor phase B* output	1: ON
P002	0	M2	paddle motor phase A output	0: ON
(output)	1	M2	paddle motor phase A* output	1: ON
	2	M2	paddle motor phase B output	0: ON
	3	M2	paddle motor phase B* output	1: ON
	4	M6	shift motor UP drive output	-
	5	M6	shift motor DOWN drive output	-
	6	M7	bind motor PWM output	0: ON
	7	M7	bind motor clock sensor input	0: ON
P003	0		puncher unit transmission signal (output)	
	1		commercial device TXD (output)	
	2		puncher unit reception signal (input)	
	3		commercial device RXD (input)	
	4	PI24	full stack sensor (full detection)	1: FULL
	5	CL1	bind clutch	1: ON
	6-7		not used	
P004	0		not used	
(input)	1		push switch 1, 2	-
	2		DIP switch 7, 8	-
	3		DIP switch 5, 6	-
	4		DIP switch 3, 4	-
	5		DIP switch 1, 2	-
	6	PI10	fold position sensor light emission (output)	-
	7	PI10	fold position sensor (analog)	-
P005	0		EEPROM chip select	1: selected
(output)	1		EEPROM/DA clock output (used in common)	-
	2		EEPROM/DA data output (used in common)	-
	3		DA load signal output (used in common)	1: load
	4-7		not used	

<SORTER (5/8)>

Address	bit	Notation	Description	Remarks
P006	0	PI21	cartridge sensor signal	1: ready
(input)	1	PI20	staple sensor signal	1: staple ascent
	2	M5	rear alignment motor phase A (output)	0: ON
	3	M5	rear alignment motor phase B (output)	0: ON
	4	PI19	stapler drive home position sensor signal	0: HP
	5	PI18	slide home position sensors signal	0: HP
	6	PI7	delivery belt home position sensor signal	1: HP
	7		commercial device REQ	
P007	0-4		not used	
(input)	5	PI10	fold position sensor signal	1: paper present
	6	PI17	shift motor clock sensor signal	
	7	PI1P	punch home position sensor	0: HP
P008	0	M1	feed motor phase A output	0: ON
(output)	1	M1	feed motor phase A* output	1: ON
	2	M1	feed motor phase B output	0: ON
	3	M1	feed motor phase B* output	1: ON
	4	M8/4, 5	slide/aligning plate motor current cut	-
	5		not used	
	6		not used	
	7	PI8	tray paper sensor (input)	1: paper present
P009	0	M7	bind motor (CW)	-
(output)	1	M7	bind motor (CCW)	-
	2	M6	shift motor enable signal	-
	3-7		not used	
P010	0	PI9	paper sensor (input)	1: paper detected
(input)	1	PI4	front aligning plate home position sensor signal	0: HP
	2		EEPROM data input	-
	3-7		not used	
P011	0	PI16	shift lower limit sensor signal	1: limit
(input)	1	PI15	shift upper limit sensor signal	1: limit
	2		power supply monitor signal	0: power ON
	3	PI6	handling tray paper sensor signal	1: paper present
	4		push switch 3 signal	0: ON
	5	MS3	stapler safety detecting switch signal	1: open
	6	MS1	front cover open detecting switch signal	1: open
	7	MS2	joint open detecting switch signal	1: open

<SORTER (6/8)>

Address	bit	Notation	Description	Remarks
P012	0	PI23	upper cover open sensor signal	1: open
(input)	1	PI22	front cover open sensor signal	1: open
	2	PI5	rear aligning plate home position sensor signal	0: HP
	3	PI3	stack roller home position sensor signal	0: HP
	4	PI2	paddle home position sensor signal	0: HP
	5	PI1	inlet paper sensor signal	0: paper present
	6	PI11	fold home position sensor signal	1: HP
	7		stapler connection signal	1: connected
P013	0	PI12	fold roller home position sensor signal	0: HP
(output)	1		punch connection signal	0: connected
	2	PI13	bid tray paper sensor signal (input)	1: paper present
	3		power save switch signal	1: power save mode
	4	LED1	LED ON signal 1	0: ON
	5	LED2	LED ON signal 2	0: ON
	6	LED3	LED ON signal 3	0: ON
	7		commercial device ACK	1: paper present
P014	0		DPISW1 bit 1 signal	0: ON
(input)	1		DPISW1 bit 2 signal	0: ON
	2		DPISW1 bit 3 signal	0: ON
	3		DPISW1 bit 4 signal	0: ON
	4		DPISW1 bit 5 signal	0: ON
	5		DPISW1 bit 6 signal	0: ON
	6		DPISW1 bit 7 signal	0: ON
	7		DPISW1 bit 8 signal	0: ON
P015	0		PUSHSW1 signal	0: ON
(input)	1		PUSHSW2 signal	0: ON
	2		PUSHSW3 signal	0: ON
	3-7		not used	
P023		PI10	fold position sensor	(analog port)
P024			not used	(analog port)
P025			push switch 1, 2	(analog port)
P026			DIP switch 7, 8	(analog port)
P027			DIP switch 5, 6	(analog port)
P028			DIP switch 3, 4	(analog port)
P029			DIP switch 1, 2	(analog port)
P030		PI10	fold position sensor (light emission; output)	(analog port)

<SORTER (7/8)>

3.5.3 Puncher Unit (Saddle Finisher-G1)

Address	bit	Notation	Description	Remarks
P016	0		ladder circuit bit 1	-
(output)	1		ladder circuit bit 2	-
	2		ladder circuit bit 3	-
	3		ladder circuit bit 4	-
	4		ladder circuit bit 5	-
	5		ladder circuit bit 6	-
	6		ladder circuit bit 7	-
	7		ladder circuit bit 8	-
P017	0	PI1P	punch home position sensor signal	0: HP
(input)	1	PI2P	horizontal registration home position signal	1: HP
	2, 3		not used	
	4		DIPSW1001 bit 1 signal	0: ON
	5		DIPSW1001 bit 2 signal	0: ON
	6		DIPSW1001 bit 3 signal	0: ON
	7		DIPSW1001 bit 4 signal	0: ON
P018	0	PSW1	push SW1 signal	0: ON
(input)	1	PSW2	push SW2 signal	0: ON
	2, 3		not used	
	4		power detection signal	0: power OFF
	5	LED1	LED ON signal 1 (output)	-
	6	LED2	LEE ON signal 2 (output)	-
	7	LED3	LED ON signal 3 (output)	-
P019	0		horizontal registration sensor light intensity adjustment signal	level UP: intensity increased
(output)	1		registration sensor light intensity adjusted signal	level UP: intensity increased
	2, 3		not used	
	4		EEPROM DO (input)	-
	5		EEPROM DI	-
	6		EEPROM CLK	-
	7		EEPROM CS	-
P020	0, 1		not used	
(input)	2		registration interrupt horizontal registration signal	H: blocked
	3		REQ	-
	4		HFS communication RXD	-
	5		HFS communication TXD (output)	-
	6		not used	
	7		ACK (output)	

<SORTER (8/8)>

Address	bit	Notation	Description	Remarks
P021	0	M2P	horizontal registration motor current set	-
(output)	1	M2P	horizontal registration motor current set	-
	2	M2P	horizontal registration motor phase B output	-
	3	M2P	horizontal registration motor phase A output	-
	4	M1P	punch motor REV	-
	5	M1P	punch motor FWD	-
	6	M1P	punch motor PWM	-
	7	M1P	punch motor encoder (input)	0: blocked
P022	0, 1		not used	
(input)	2		dust sensor	1: full
	3		registration sensor 5 horizontal registration	-
	4		registration sensor 4 B5R	-
	5		registration sensor 3 A4R	-
	6		registration sensor 2 B4	-
	7		registration sensor 1 A4	-
P031			dust sensor signal	1: full (analog port)
P032			registration sensor 5 horizontal registration	(analog port)
P033			registration sensor 4 B5R	(analog port)
P034			registration sensor 3 A4R	(analog port)
P035			registration sensor 2 B4	(analog port)
P036			registration sensor 1 A4	(analog port)
P037			horizontal registration sensor light intensity adjustment	level UP: intensity increased
P038			registration sensor light intensity adjustment	level UP: intensity increased

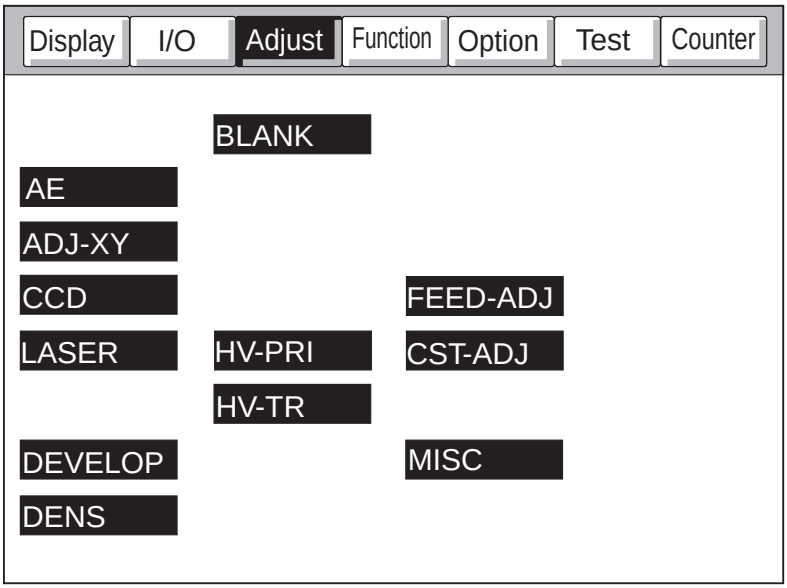
delivery motor current switch 1 (P011-3)	delivery motor current switch 2 (P005-5)	Current (A)
1	1	0.1
0	1	0.3
0	0	0.5

T05-301-01

4 ADJUST Adjustment Mode

4.1 COPIER

The following screen will appear in response to COPIER>ADJUST:



F05-401-01

<AE>

Use it to execute AE adjustment.

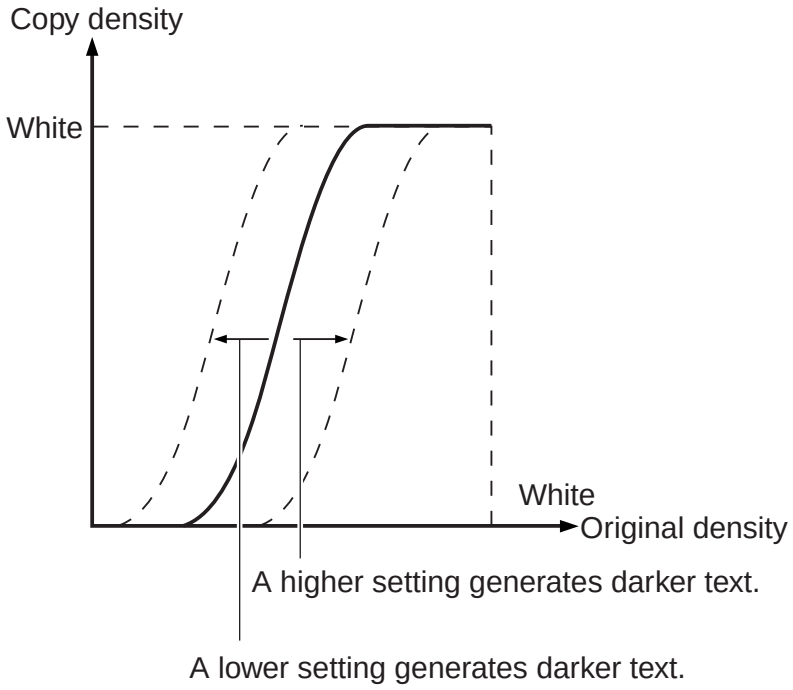
If you have cleared the RAM on the reader controller PCB, enter the settings indicated on the service label.

AE-TBL

Use it to adjust the density of text for image density adjustment.

Range of adjustment

1 to 9; default: 5



F05-401-02

<ADJ-XY>

Use it to adjust the image read start position.

If you have cleared the RAM on the reader controller PCB and replaced the PCB, use it to enter the settings indicated on the service label.

ADJ-X

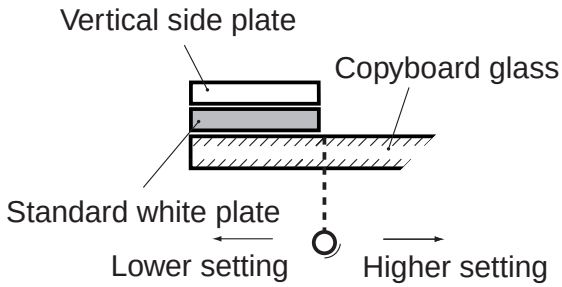
Use it to adjust the scanner image leading edge (x direction).

Range of adjustment

250 to 290 (‘1’ being 0.1mm)

Caution

Be sure to execute it before adjusting the margin.
Do not use this mode to create a margin.



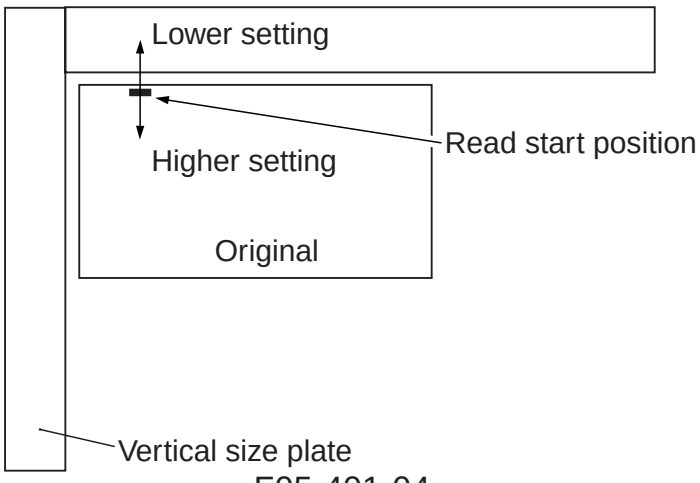
F05-401-03

ADJ-Y

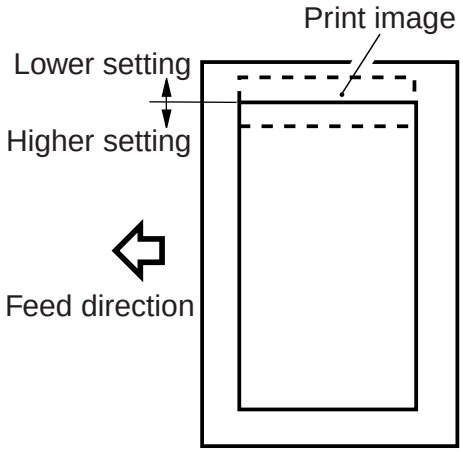
Use it to adjust the CCD read start position (X direction).

Range of adjustment

100 to 400 (‘1’ being 0.1 mm)



F05-401-04

ADJ-S	
	Use it to adjust the scanner home position.
Range of adjustment	**16 to 128**
Caution	Do not use this mode; it is for factory use only.
ADJ-Y-DF	
	Use it to adjust the read start position in main scanning direction when the ADF is in use (ADF horizontal registration adjustment).
Range of adjustment	**100 to 400 (‘1’ being 0.1 mm)**
	 F05-401-06
STRD-POS	
	Use it to adjust the CCD read position for stream reading.
Range of adjustment	**0 to 60 (‘1’ being 0.1 mm)**

COPIER>ADJUST>CCD

<CCD>

Use it to make CCD/shading-related adjustments.

If faulty images are generated after the execution of COPIER>FUNCTION>CCD>CCD-ADJ, enter the settings indicated on the service label.

SH-TRGT	Use it to enter the white level target value for shading correction.
SH-PATIO	Use it to enter the data on the white level ratio (the standard white plate and the standard white paper) for shading correction.
EGGN-ST	Use it to enter the adjustment value for the edge gain correction start position of the CCD.
EGGN-END	Use it to enter the adjustment value for the end gain correction end position of the CCD.

COPIER>ADJUST>LASER

<LASER>

Use it to adjust the laser output.

If you have cleared the RAM on the DC controller PCB and replaced the PCB, enter the settings indicated on the service label.

PVE-OFST	Use it to adjust the point of laser exposure.
Range of adjustment	**-600 to +600 (a change of '23' causes a shift of about 1 mm; a higher setting shifts the image toward the rear in main scanning direction)**
LA-OFF	Use it to adjust the laser trailing edge OFF timing when non-default paper is used.
Range of adjustment	**0 to 600 (a higher setting increases the time interval up to de-activation)**
POWER	Use it to adjust the laser paper for non-potential control mode.
Range of adjustment	**0 to 255**

<DEVELOP>

Use it to adjust the developing bias output.

DE-DC	
	Use it to enter the adjustment value for the DC component of the developing bias within the image area.
Range of adjustment	**0 to 255 (a higher setting generates lighter images)**
Caution	If you have replaced the DC controller PCB, be sure to enter the settings indicated on the service label.
DE-OFST	
	Use it to enter the offset value for the DC component of the developing bias.
Range of adjustment	**0 to 255 (a higher setting generates lighter images)**
Caution	• be sure to keep the setting between +30 and -30. • If you have replaced the composite power supply PCB, be sure to enter the settings indicated on the label attached to the new PCB (case).

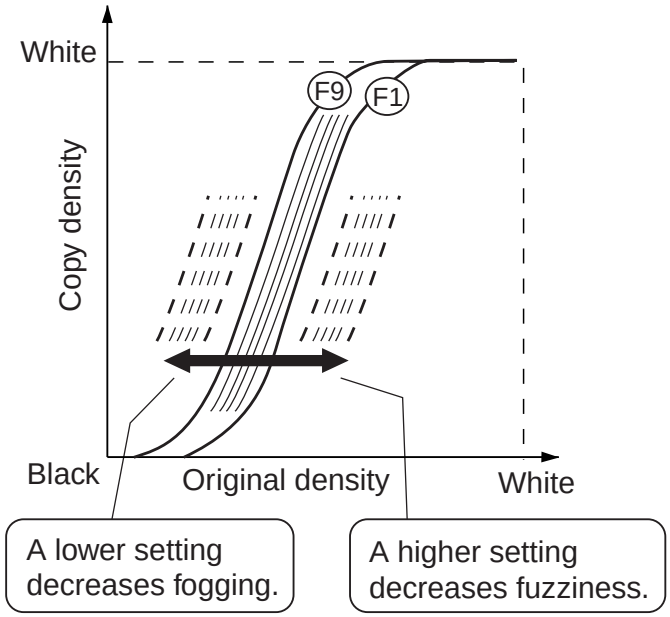
COPIER>ADJUST>DENS

<DENS>

Use it to fine-adjust the copy density auto correction mechanism.

If you have cleared the RAM on the DC controller PCB and replaced the PCB, be sure to enter the settings indicated on the service label.

DENS-ADJ	
	Use it to correct the density of images (copier/printer). Use it to correct the F-value table if the image is foggy or the high-density area is fuzzy.
Range of adjustment	**1 to 9; default: 5**



F05-401-07

COPIER>ADJUST>BLANK

<BLANK>

Use it to adjust the non-image width.

If you have cleared the RAM on the DC controller PCB and replaced the PCB, be sure to enter the settings indicated on the service label.

BLANK-T	
	Use it to enter the leading edge non-image width.
Range of adjustment	**-100 to +100**
BLANK-B	
	Use it to enter the trailing edge non-image width.
Range of adjustment	**-100 to +100**

<HV-PRI>

Use it to adjust the output of the primary charging assembly.

If you have cleared the RAM on the DC controller PCB and replaced the PCB, be sure to enter the setting indicated on the service label.

P-DC	
	Use it to enter the adjustment value for the primary charging DC component of the image area.
Range of adjustment	**0 to 255**
Caution	
P-AC	
	Use it to enter the adjustment value for the primary charging AC component of the image area.
Range of adjustment	**0 to 255**
AGS-GAIN	
	Use it to adjust the gain adjustment value for the photosensitive drum resistance detection control (APVC) mechanism.
Caution	If you have replaced the composite power supply PCB, be sure to enter the settings indicated on the label attached to the new PCB (case).
Range of adjustment	**0 to 255**
AGS-OFST	
	Use it to enter the offset adjustment value for the photosensitive drum resistance detection control (APVC) mechanism.
Caution	If you have replaced the composite power supply PCB, be sure to enter the settings indicated on the label attached to the new PCB (case).
Range of adjustment	**0 to 255**

OFST1-DC	
	Use it to enter the adjustment value for the primary charging DC offset 1.
Caution	If you have replaced the composite power supply PCB, be sure to enter the settings indicated on the label attached to the new PCB (case).
Range of adjustment	**0 to 255 (a lower setting generates lighter images)**
OFST1-AC	
	Use it to enter the adjustment value for the primary charging AC offset 1.
Caution	If you have replaced the composite power supply PCB, be sure to enter the settings indicated on the label attached to the new PCB (case).
Range of adjustment	**0 to 255**
P-AC2	
	Use it to enter the adjustment value for the primary charging AC component 2 for the image area.
Range of adjustment	**0 to 255**
P-AC3	
	Use it to enter the adjustment value for the primary charging AC component 3 for the image area.
Range of adjustment	**0 to 255**

<HV-TR>

User it to adjust the output for transfer charging/pre-transfer.

If you have cleared the RAM on the DC controller PCB and replaced the PCB, be sure to enter the settings indicated on the service label.

TR-N1	Use it to enter the output adjustment value for the transfer charging current (for plain paper, printing on one side or the 1st side of a double-sided print).
Range of adjustment	**0 to 10**
TR-N2	Use it to enter the output adjustment value for the transfer bias (for plain paper, the 2nd side of a double-sided print).
Range of adjustment	**0 to 10**
TR-OFST	Use it to enter the output adjustment offset value for transfer charging current.
Range of adjustment	**0 to 255**
TR-SPP	Use it to enter the output adjustment bias value of thick paper transfer (for thick paper, printing on one side or printing on the 1st/2nd side of a double-sided print). • A higher setting causes stronger effects.
Range of adjustment	**0 to 10**

COPIER>ADJUST>FEED-ADJ

<FEED-ADJ>

Use it to make feeder-related adjustments.

If you have cleared the RAM on the DC controller PCB and replaced the PCB, be sure to enter the settings indicated on the service label.

REGIST	Use it to adjust the timing at which the registration roller clutch goes ON. • A higher setting delays the timing at which the registration roller clutch goes ON, thereby decreasing the leading edge margin.
Range of adjustment	**-600 to +600 (in mm)**
ADJ-REFE	Use it to adjust the horizontal registration for re-pickup. • If the image is displaced to the front, increase the setting.
Range of adjustment	**-50 to +50 (in mm)**
ARCH	Use it to adjust the degree of arching on the registration roller. • Use it to fine-adjust the degree of arching paper is caused to make against the registration roller.
Range of adjustment	**-100 to +200 (in 0.1 mm); default: 80**

COPIER>ADJUST>CST-ADJ

<CST-ADJ>

Use it to make cassette/manual feeder-related adjustments.

If you have cleared the RAM on the DC controller PCB and replaced the PCB, be user to enter the settings indicated on the service label. If you have replaced the paper width detecting VR or want to enter settings newly, be sure to execute FUNCTION>CST in service mode.

MF-A4R	Use it to enter the paper width basic value for the multifeeder tray (A4R).
Range of adjustment	**0 to 1024**
MF-A6R	Use it to enter the paper width basic value for the multifeeder tray (A6R).
Range of adjustment	**0 to 1024**

COPIER>ADJUST>CST-ADJ

MF-A4	
	Use it to enter the paper width basic value for the multifeeder tray (A4).
Range of adjustment	**0 to 1024**

COPIER>ADJUST>FIXING

<FIXING>

Use it to make fixing-relating adjustments.

If you have cleared the RAM on the DC controller PCB and replaced the PCB, be sure to enter the settings indicated on the service label.

FX-FL-TH	
	Use it to enter the fine-adjusted value for the fixing film speed for thick paper. • Use it to make fine-adjustments in relation to the target control speed of the fixing film when thick paper is selected.
Range of adjustment	**-3 to +3 (in msec; default: 0)**

FX-FL-SP	
	Use it to enter the fine adjustment value for the fixing film when plain paper is selected. • Use it to fine-adjust the target control speed for the fixing film when plain paper is selected.
Range of adjustment	**-3 to +3 (in msec; default: 0)**

<MISC>

Use it to make other adjustments.

If you have cleared the RAM on the DC controller PCB and replaced the PCB, be sure to enter the settings indicated on the service label.

C1-ADJ-Y	Use it to enter the cassette 1 horizontal registration adjustment value. • Enter a value in relation to the registered value for the laser write start position for paper picked up from the cassette 1.
Range of adjustment	**-32 to + 32 (in steps; '1' step being 0.16 mm)**
C2-ADJ-Y	Use it to enter the cassette 2 horizontal registration adjustment value. • Enter a value in relation to the registered value for the laser write start position for paper picked up from the cassette 2.
Range of adjustment	**-32 to +32 (in steps; '1' step being 0.16mm)**
C3-ADJ-Y	Use it to enter the cassette 3 horizontal registration adjustment value. • Enter a value in relation to the registered value for the laser write start position for paper picked up from the cassette 3.
Range of adjustment	**-32 to +32 (in steps; '1' step being 0.16mm)**
C4-ADJ-Y	Use it to enter the cassette 4 horizontal registration adjustment value. • Enter a value in relation to the registered value for the laser write start position for paper picked up from the cassette 4.
Range of adjustment	**-32 to +32 (in steps; '1' step being 0.16mm)**
MF-ADJ-Y	Use it to enter the horizontal registration adjustment value for the multifeeder. • Use it to enter a laser write start position value in relation to the registered value for paper picked up from the multifeeder tray.
Range of adjustment	**-32 to +32 (in steps; '1' step being 0.16mm)**

DK-ADJ-Y	Use it to enter the horizontal registration adjustment value for the paper deck. • Use it to enter a laser write position value in relation to the registered value for paper picked up from the paper deck. **Range of adjustment**: **-32 to +32 (in steps; 1 step being 0.16 mm)**
FRAME-X	Use it to enter a zoom fine-adjustment value (sub scanning direction). • Use it to enter an extra length of the image in sub scanning direction in relation to the registered value. **Range of adjustment**: **-50 to +50 (-1% to +1%)**
FRAME-Y	Use it to enter the zoom fine-adjustment value (main scanning direction). • Use it to enter an extra length for the image in main scanning direction in relation to the register value. **Range of adjustment**: **-50 to +50 (-1% to +1%)**
IMG-DLY	Use it to enter a fine-adjustment value (sub scanning direction) for image delay. • Use it to make fine adjustments for the length of image delay in sub scanning direction when sending image data from the main controller PCB to the DC controller PCB. **Range of adjustment**: **-20 to +20 (in 0.1 mm)**

4.2 FEEDER

DOCST

Use it to adjust the original leading edge registration when the ADF is used.

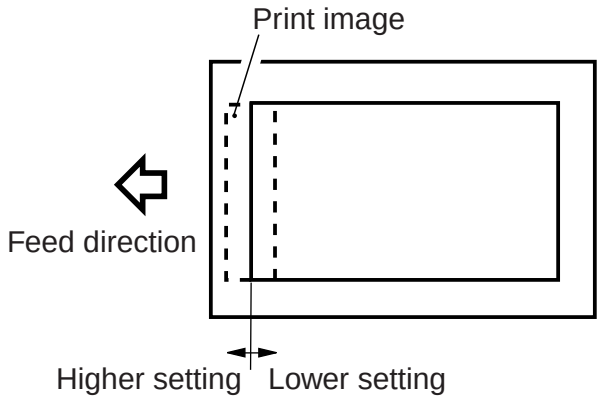
- A higher setting decreases the leading edge margin.
- The data is stored on the ADF controller PCB.

Range of adjustment

-10 to +10 (in 0.5 mm)

Using the Mode

1) Make a print of the Test Chart, and check the position of the image.
2) Select the item, and change the setting to adjust.
3) Press the OK key.
4) Make a print of the Test Chart once again, and check to make sure that the image position is as indicated.



F05-402-01

LA-SPEED

Use it to adjust the original feed speed in stream reading mode with the ADF in use.

- A higher setting increases the speed.
- The data is stored on the ADF controller PCB.

Range of adjustment

-30 to +30 (in 0.1%)

4.3 SORTER

PNCH-HLE

Use it to adjust the punch hole position (paper feed direction) when the puncher unit is in use.

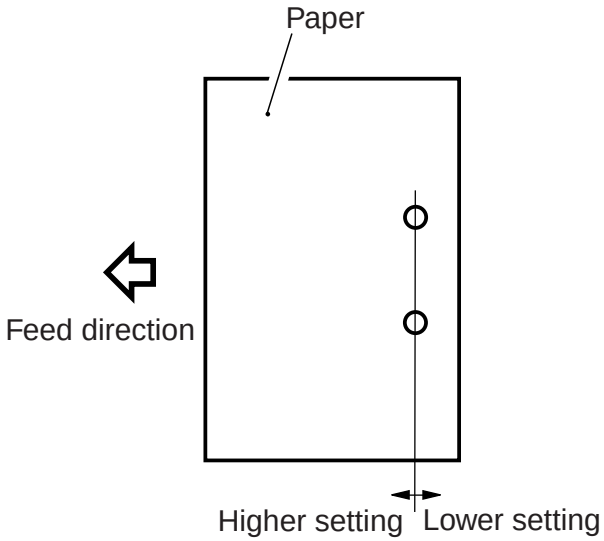
• A higher setting shifts the punch hole toward the leading edge of paper (middle of paper).

Range of adjustment

-3 to +3 (in mm)

Using the Mode

1) Make a print of the Test Chart, and check the position of the hole.
2) Select the item, and change the setting to adjust.
3) Press the OK key.
4) Make a print of the Test Chart once again, and check to make sure that the hole position is as indicated.



F05-403-01

PNCH-Y

Use it to adjust the punch hole position (front/rear of paper) when the puncher unit is in use.

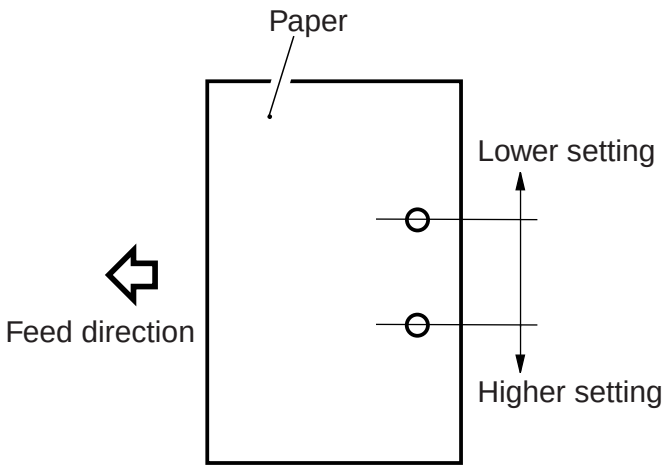
- A higher setting shifts the punch hole toward the front of paper.

Range of adjustment

-5 to +5 (in mm)

Using the Mode

1) Make a print of the Test Chart, and check the position of the hole.
2) Select the item, and change the setting to adjust.
3) Press the OK key.
4) Make a print of the Test Chart once again, and check to make sure that the hole position is as indicated.

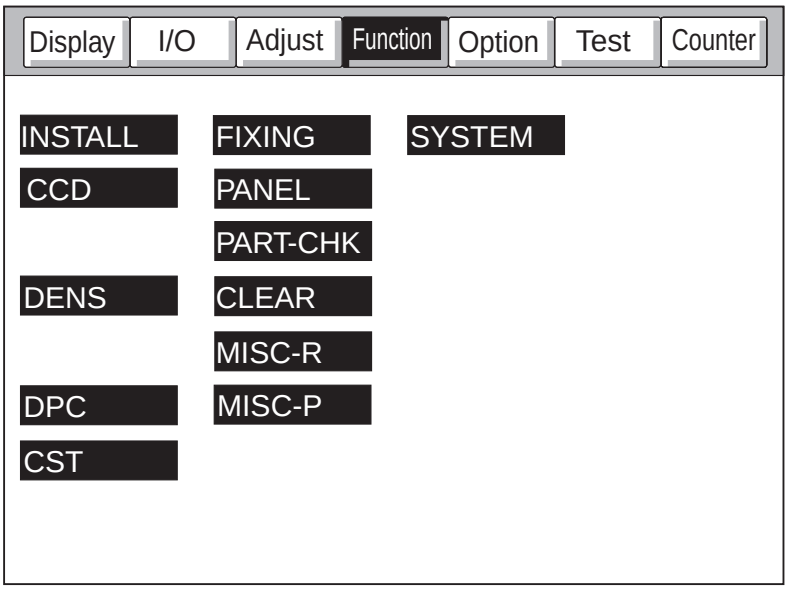


F05-403-02

5 FUNCTION Operation/Inspection Mode

5.1 COPIER

The following screen will appear in response to COPIER>FUNCTION; lists of items follow:



F05-501-01

<INSTALL>

Use it as part of installation work.

TONER-S	Use it to stir the toner inside the developing assembly.
Caution	• Check to make sure that the developing assembly is securely mounted before pressing the OK key. • Do not execute any operation. (The Stop key may be pressed.)
	Using the Mode 1) Select <TONER-S> to highlight; then, press the OK key. 2) The machine stirs toner (about 4 min), during which time a count-down is indicated to the right of <TONER-S> from 240 to 0. 3) The machine automatically stops after stirring toner.
STRD-POS	Use it to execute automatic adjustment of the CCD read position in stream mode.
Caution	• Execute this mode when installing the ADF or if you have removed and then installed the ADF once again.
	Using the Mode 1) Select <STRD-POS> to highlight; then, press the OK key. • The machine executes automatic adjustment. 2) The machine stops operation automatically after adjustment. 3) The settings under COPIER>ADJUST>ADJ-XY>STRD-POS is updated. Record the new settings to the service label.
CARD	Use it when installing the card reader. Using the Mode Enter the number of the card to use. 1 to 2701 (default: 1; as many as 300 cards may be used starting with the entered number) Use it to initialize card control information: • initializing the card names (group ID; starting with the entered number). • initializing ID numbers for cards.

<CCD>

Use it to execute CCD/shading-related automatic adjustment.

CCD-ADJ

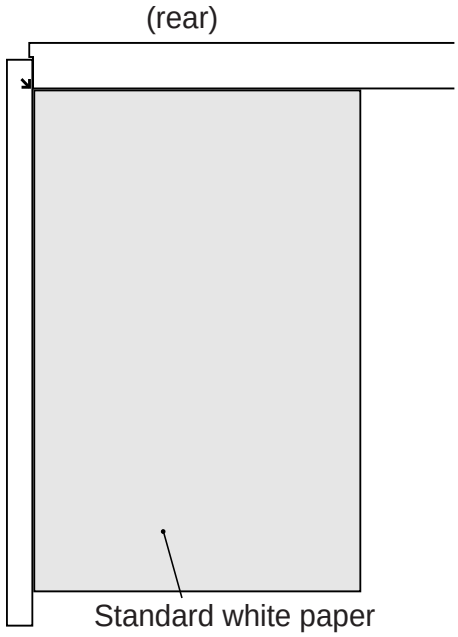
Use it to execute automatic adjustment of the CCD.

Caution

- Execute the mode if you have replaced any of the following: CCD unit, scanning lamp, inverter PCB, copyboard glass (standard white plate).
- Use the whitest of all papers used by the user (excluding color print paper).

Using the Mode

1) Place ten or more sheets of standard white paper on the copyboard glass.
2) Select <CCD-ADJ> to highlight, and press the OK key.
3) The machine executes automatic adjustment (about 15 sec), during which time <SERVICE> appears in the upper right of the screen.
4) During the operation, the scanning lamp will go ON; at the end of the automatic adjustment, the screen will indicate <OK!>.
5) All items under COPIER>ADJUST>CCD are updated. Record the new settings on the service label.



F05-501-02

SHDG-POS

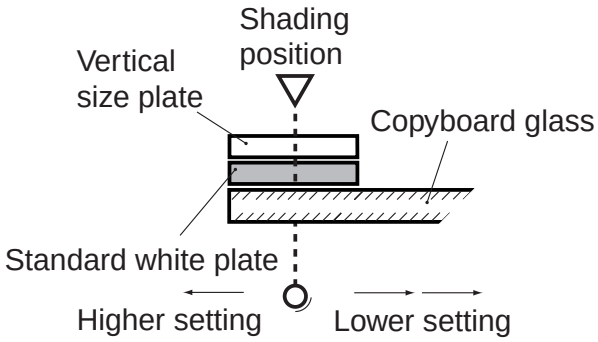
Use it to enter data for changing the position of measurement on the standard white plate used for shading correction.

Range of adjustment

240 to 320 (a multiple of 8 causes a shift of about 0.17 mm)

Caution

- Execute this mode if a white line still appears after executing COPIER>FUNCTION>CCD>SH-PS-ST or after cleaning the scanner mechanisms.
- After entering a setting and executing COPIER>FUNCTION>CCD>SH-PS-ST, check to make sure that 'OK' is indicted. Thereafter, make a test print to be user that no white line is found in its halftone area.



F05-501-03

SH-PS-ST	
	Use it to execute optimum position auto adjustment for the standard white plate for shading correction.
Caution	• You must execute COPIER>FUNCTION>CCD>CCD-ADJ before executing this move. • Execute this mode if you have replaced the copyboard glass (standard white plate) or a white line is noted in halftone areas. Using the Mode 1) Clean the back of the copyboard glass. 2) Open the ADF (copyboard cover). 3) Select <SH-PS-ST> to highlight, and press the OK key. 4) The machine executes automatic adjustment (about 10 sec). 5) When done, the machine stops automatically indicating the result (OK/NG). • If 'NG' is indicated, perform the following, and execute the mode once again: a. Is the ADF (copyboard cover) open? b Is the copyboard glass mounted correctly? c. Is the standard white plate (attached to the copyboard glass) normal? d. Does the scanning lamp go ON? 6) The items under COPIER>ADJUST>ADJ-XY and ADJ-S are updated. Record the new settings on the service label.

EGGN-POS

Use it to execute automatic adjustment of the edge gain correction for the CCD. (The edge gain correction of the CCD is effective only when the ADF is in use.)

Caution

- If you have replaced the CCD unit, be sure to execute the following first: COPIER>FUNCTION>CCD>CCD-ADJ.
- Execute this mode if you have replaced any of the following: CCD unit, No. 1 mirror base, No. 2 mirror base.

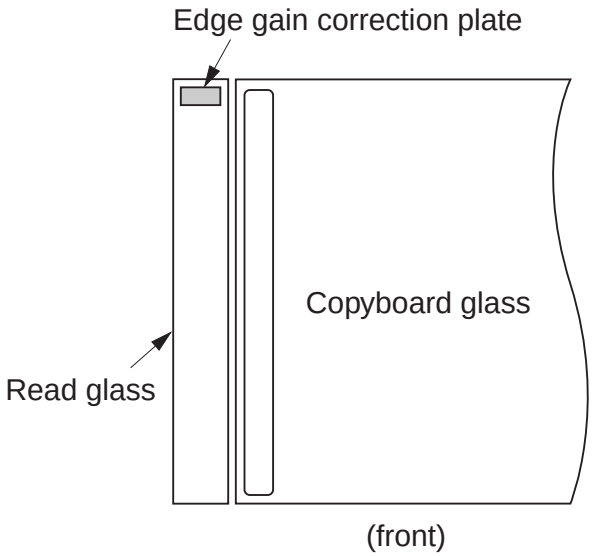
Using the Mode

1) Open the ADF (copyboard cover).
2) Select <EGGN-POS> to highlight, and press the OK key.
3) The machine executes automatic adjustment (about 1 sec).
4) When done, the machine stops automatically, and indicates the result (OK/NG).

- If 'NG' is indicated, perform the following, and execute this mode once again:

a. Is the ADF (copyboard cover) open?
b. Is the read glass mounted correctly?
c. Is the edge gain correction plate (attached to the read glass) normal?
d. Does the scanning lamp go ON?

5) The items under COPIER>ADJUST>CCD>EGGN-ST and EGGN-END are updated. Record the new settings on the service label.



F05-501-04

<DENS>

Use it to execute automatic density adjustment.

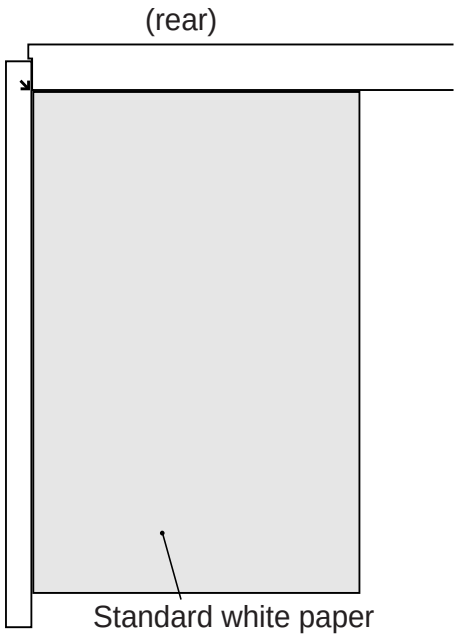
Execute this mode after shading correction, and be sure to execute all of the following in sequence: WHITE-ME, PD-DENS, PD-ME.

WHITE-ME

Use it to execute automatic density correction of the white level.

Using the Mode

1) Place standard white paper (10 sheets or more; of papers commonly used by the user) on the copyboard glass.
2) Select <WHITE-ME> to highlight, and press the OK key.
3) The scanning lamp makes a single scan, and the machine ends operation.



F05-501-05

PD-DENS

Use it to generate a print pattern for density auto adjustment for text mode.

Caution

- The machine uses the PD method for binary processing in text mode; be sure to use this mode as automatic density adjustment.

Using the Mode

1) Select <PD-DENS> to highlight, and press the OK key.
2) See that the machine uses cassette 2 as the source of paper and generate a 17-gradation print pattern. The print pattern will be used when executing <PD-ME>.

PD-ME

Use it to execute automatic density correction for text mode (to read PD-DENS output).

Using the Mode

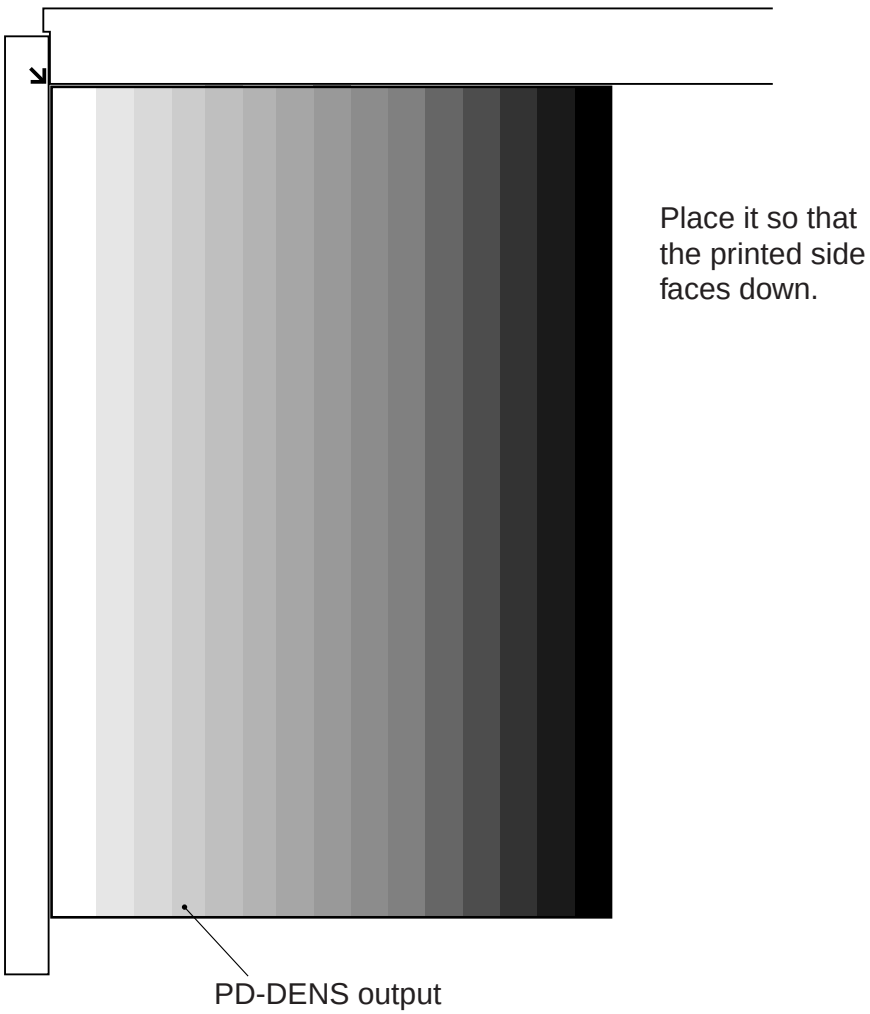
1) While keeping the following in mind, place the PD-DENS output on the copyboard glass as indicated:

- The printed side must face down.
- The whiter side (lighter; of the 17 gradations) must face the vertical size plate.
- The output must be placed in relation to the index in the left rear of the copyboard glass.

2) Select <PD-ME> to highlight, and press the OK key.

3) The scanning lamp goes ON and OFF 13 times, making as many scans automatically.

- If 'OK' is indicated, end the work.
- If 'NG' is indicated, discussed under "Standards and Adjustments" in Chapter 3.



F05-501-06

COPIER>FUNCTION>DPC

<DPC>

Use it to execute potential-related operations.

D-GAMMA	
	Use it to execute photosensitive drum resistance measurement control (APVC).
Caution	Use this mode only for the following; do not rely on this mode unless necessary: • When making adjustments after replacing the drum unit. • When isolating the cause when copy density automatic adjustment (PD-ME) ends in NG. • When obtaining an idea of the life of the drum. Using the Mode 1) Select the item, and press the OK key. 2) The machine generates a blank copy and ends automatically. 3) See that the machine indicates the result of measurement under DISPLAY>HV-STS>PRIMARY.

COPIER>FUNCTION>CST

<CST>

Use it to execute size automatic adjustment for the multifeeder.

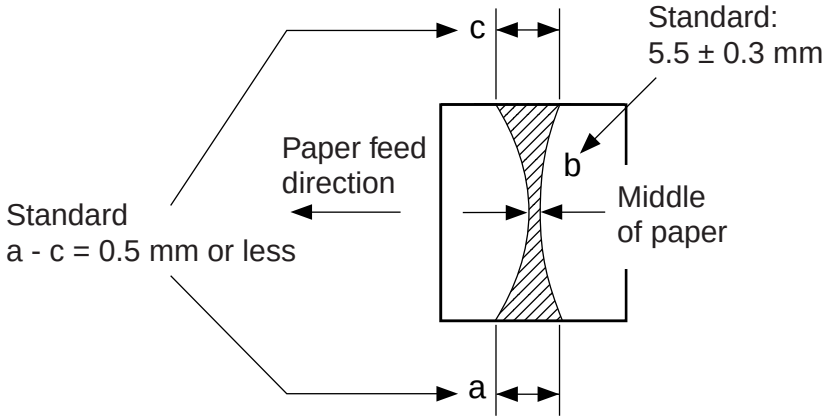
MF-A4R MF-A6R MF-A4	
	Use it to adjust the paper width basic value for the multifeeder. A4R: width: 210 mm, A6R width: 105 mm, A4 width: 297 mm
Caution	To make fine-adjustments after entering the basic value, use ADJUST>CST-ADJ>MF-A4R, MF-A6R, MF-A4. Using the Mode 1) Place A4R paper in the multifeeder, and adjust the side guide to A4R. 2) Select <MF-A4R> to highlight, and press the OK key. • The machine executes automatic adjustment and stores the value. 3) Likewise, perform steps 1. and 2. for A6R and A4.

<FIXING>

Use it to execute fixing assembly-related automatic adjustments.

NIP-CHK

Use it to obtain output for automatic measurement of the fixing nip width.
Using the Mode
1) Make a solid black print in A4/LTR.
2) Make about 20 A4/LTR prints of the Test Sheet.
3) Place the A4/LTR solid black output obtained in step 1. in the manual feed tray with the printed side facing down.
4) Select <NIP-CHK>, and press the OK key.
• After pickup, the paper will stop between the fixing rollers and then delivered in about 20 sec.
5) Measure the width indicated in the diagram.



F05-501-07

Caution: a and b are points 10 mm from both ends of the paper.

<PANEL>

Use it to check the control panel.

LCD-CHK	Use it to check the touch panel for missing dots. Using the Mode 1) Select <LCD-CHK> to highlight, and press the OK key. The entire face of the touch panel will go ON and remain white for several seconds and then blue for several seconds. 2) Press the Stop key to end the operation.
LED-CHK	Use it to check the LEDs of the control panel for activation. Using the Mode 1) Select <LED-CHK> to highlight, and press the OK key so that the LEDs will go ON in sequence. 2) Select <LED-OFF> to end the operation.
LED-OFF	Use it to end a check on the LEDs of the control panel. Using the Mode 1) Select <LED-OFF> to end the operation.
KEY-CHK	Use it to check the key inputs. Using the Mode 1) Select <KEY-CHK> so that the numbers/names of the input keys will appear. 2) Press a key to check. If normal, its corresponding notation will appear on the touch panel. (T05-501-01) 3) Select <KEY-CHK> once again to end the key input check.
TOUCHCHK Caution	Use it to adjust the coordinates on the touch panel. • Use it to match points (presses) on the touch panel and the LCD coordinates. • Execute this mode if you have replaced the LCD. Using the Mode 1) Select <TOUCHCHK> to highlight, and press the OK key. 2) Press the nine +'s that paper on the touch panel in sequence. 3) The machine ends operation when all nine +'s been pressed.

COPIER>FUNCTION>PANEL

Input Keys/Indications

Key name	Indication on screen	Key name	Indication on screen
Counter Check	BILL	ID	ID
Copy	COPY	Additional Functions	USER
Fax	FAX	Start	START
Mail Box	PB	Stop	STOP
Scan	OTHER	Reset	RESET
O to 9, #, *	O to 9, #, *	Interrupt	INTERRUPT
Clear (C)	CLEAR	Guide	?

T05-501-01

COPIER>FUNCTION>PART-CHK

<PART-CHK>

Use it to check the operation of a specific load.

CL	Use it to select a clutch whose operation you want to check. Using the Mode 1) Select the item. 2) Enter the code (T05-501-02) of the clutch using the keypad. 3) Press the OK key.
CL-ON	Use it to check the operation of the clutch. Using the Mode 1) Select the item, and press the OK key. • ON → OFF for 10 sec → ON → OFF for 10 sec → ON → OFF
MTR	Use it to select a motor whose operation you want to check. Using the Mode 1) Select the item. 2) Enter the code (T05-501-03) of the motor using the keypad. 3) Press the OK key.

MTR-ON	Use it to check the motor. Using the Mode 1) Select the item, and press the OK key. • ON for 20 sec → OFF • For the duplex horizontal registration motor, ON for 10 sec → OFF
SL	Use it to select a solenoid whose operation you want to check. Using the Mode 1) Select the item. 2) Enter the code (T05-501-04) of the solenoid using the keypad. 3) Press the OK key.
SL-ON	Use this mode to check the operation of a solenoid. Using the Mode 1) Select the item and press the OK key. • ON → OFF for 5 sec → ON → OFF for 5 sec → ON → OFF

Codes and Clutches

Code	Name
1	Vertical path clutch (CL1)
2	Multifeeder pickup clutch (CL2)
3	Developing clutch (CL3)
4	Vertical path roller clutch (CL1C)
5	Deck feeding clutch (CL1D)
6	Deck pickup clutch (CL2D)

T05-501-02

Codes and Motors

Code	Name	Code	Name
1	Main motor (M1)	8	Horizontal registration sensor shift motor (M3)
2	Fixing motor (M4)	9	Registration motor (M9)
3	Pickup motor (M2)	10	Laser scanner motor (M10)
4	Duplex motor (M6)	11	Pedestal main motor (M1C)
5	Delivery motor (M5)	12	Cassette pickup motor (M2C)
6	2-way delivery outlet motor (M8B)/ Relay delivery motor (M7Z)	13	Deck main motor (M1D)
7	2-way delivery inlet motor (M7B)	14	Deck lifter motor (M2D)

T05-501-03

Codes and Solenoids

Code	Name	Code	Name
1	Pickup DOWN solenoid (SL1)	5	---
2	2-way delivery solenoid (SL3B)/ Relay delivery solenoid (SL3Z)	6	Pickup roller DOWN solenoid (SL1C)
3	Charging roller solenoid (SL6)	7	Deck pickup roller releasing solenoid (SL1D)
4	Multifeeder holding plate releasing solenoid (SL5)	8	Deck open solenoid (SL2D)

T05-501-04

<CLEAR>

Use it to clear the RAM, jam history, or error code history.

The effect does not take place unless the main power switch has been turned off and then on.

ERR	Use this mode to clear an error code: E000, E001, E002, E003, E004, E032, E717. Using the Mode 1) Select <ERR> to highlight, and press the OK key. 2) Turn off and then on the main power switch.
DC-CON	Use it to clear the RAM on the DC controller PCB. Using the Mode 1) Select <DC-CON> to highlight, and press the OK key. 2) Turn off and then on the main power switch.
R-CON	Use it to clear the RAM on the reader controller PCB. Using the Mode 1) Select <R-CON> to highlight, and press the OK key. 2) Turn off and then on the main power switch.
SERVICE	Use it to clear the backup data for the service mode (COPIER>OPTION). Using the Mode 1) Select <SERVICE> to highlight, and press the OK key. 2) Turn off and then on the main power switch.
JAM-HIST	Use it to clear the jam history. Using the Mode 1) Select <JAM-HSIT> to highlight, and press the OK key. 2) Turn off and then on the main power switch.
ERR-HIST	Use it to clear the error code history. Using the Mode 1) Select <ERR-HITS> to highlight, and press the OK key. 2) Turn off and then on the main power switch.
E345-CLR	---

E355-CLR	---
PWD-CLR	Use it to clear the password of the system administrator in user mode. Using the Mode 1) Select <PWD-CLR> to highlight, and press the OK key. 2) Turn off and then on the main power switch.
ADRS-BK	Use it to clear the address book data. Using the Mode 1) Select <ADRS-BK> to highlight, and press the OK key. 2) Turn off and then on the main power switch.
CNT-MCON	Use it to clear the counters for servicing on the main controller PCB. Using the Mode 1) Select <CNT-MCON> to highlight, and press the OK key. 2) Turn off and then on the main power switch.
CNT-DCON	Use it to clear the counter for servicing on the DC controller PCB. Using the Mode 1) Select <CNT-DCON> to highlight, and press the OK key. 2) Turn off and then on the main power switch.
MMI	Use it to clear the backup data for the user mode settings (specifications, ID mode, group ID, mode memory, etc.). Using the Mode 1) Select <MMI> to highlight, and press the OK key 2) Turn off and then on the main power switch.
CARD	Use it to clear the card (group) ID-related data. Using the Mode 1) Select <CARD> to highlight, and press the OK key. 2) Turn off and then on the main power switch.
ALARM	Use it to clear the alarm log. Using the Mode 1) Select <ALARM> to highlight, and press the OK key. 2) Turn off and then on the main power switch.

<MISC-R>

Checking reader unit-related operations.

SCANLAMP	Use it to check the scanning lamp for activation. Using the Mode 1) Select <SCANLAMP> to highlight, and press the OK key. 2) The scanning lamp goes ON. 3) Press the Stop key to turn off the lamp.

<MISC-P>

Use it to check the operation of the printer unit.

P-PRINT

Use it to print out the contents of service mode (ADJUST, OPTION, COUNTER).

Caution
- It may take several dozens of seconds to print out the list.

Using the Mode

1) Select <P-PRINT> to highlight, and press the OK key.
2) The machine will deliver a total of three lists face down.

Source of Paper
- If a specific paper is selected on the basic screen, the corresponding source will be used.
- If auto paper selection is used, the topmost cassette will be used as the source of paper.

KEY-HIST

Use it to print out the history of key inputs made from the control panel.

Using the Mode

1) Select <KEY-HITS> to highlight, and press the OK key.
- The machine generates a key input history.

AA:AA BBBB CCCC xxxxxxxx

AA	time at which the key is pressed	
BB	if number:	soft key number
	HARD:	hard key
	SOFT:	soft key
	ONET:	one touch key
CC key type	RESET:	reset key
	START:	start key
	GUIDE:	guide key
	USER MODE:	additional function key
	FNC_COPY:	‘copy’ key within extended keys
	FNC_FAX:	‘fax’ key within extended keys
	POWER_MIMI:	control panel power key
xxxxxxxx	function value	

HIST-PRT	Use it to print out the jam history and the error history stored for service mode. Using the Mode 1) Select the item, and press the OK key. 2) The machine prints put the jam history and the error history.
USER-PRT	Use it to print out the user mode settings from service mode. Using the Mode 1) Select the item, and press the OK key. 2) The machine prints out a list of user mode settings.
C1-ADJ-Y	Use it to execute cassette 1 horizontal registration automatic adjustment. Using the Mode 1) Select the item, and press the OK key. 2) The machine prints a halftone PG image on paper from cassette 1. (At the same time, the horizontal registration sensor measures the displacement, and stores the result as back-up data.)
C2-ADJ-Y	Use into to execute cassette 2 horizontal registration automatic adjustment. Using the Mode 1) Select the item, and press the OK key. 2) The machine prints a halftone PG image on paper from cassette 2. (At the same time, the horizontal registration sensor measures the displacement, and stores the result as back-up data.)
C3-ADJ-Y	Use it to execute cassette 3 horizontal registration automatic adjustment. Using the Mode 1) Select the item, an press the OK key. 2) The machine prints a halftone PG image on paper from cassette 3. (At the same , time, the horizontal registratoin sensor measures the displacement, and stores the result as back-up data.)
C4-ADJ-Y	Use it to execute cassette 4 horizontal registration automatic adjustment. Using the Mode 1) Select the item, and press the OK key. 2) The machine prints a halftone PG image on paper from cassette 4. (At the same time, the horizontal registratoin sensor measures the displacement, and stores the result as back-up data.)

MF-ADJ-Y	Use it to execute multifeeder horizontal registration automatic adjustment. Using the Mode 1) Select the item, and press the OK key. 2) The machine prints a halftone PG image on paper from the multifeeder tray. (At the same time, the horizontal registration sensor measures the displacement, and stores the result as back-up data.)
DK-ADJ-Y	Use it to execute paper deck horizontal registration automatic adjustment. Using the Mode 1) Select the item, and press the OK key. 2) The machine prints a halftone PG image on paper from the paper deck. (At the same time, the horizontal registration sensor measures the displacement, and stores the result as back-up data.)
LBL-PRNT	Use it to print out a service label. Using the Mode 1) Put paper in the manual feed tray. 2) Select the item, and press the OK key. 3) The machine prints out a service label. • The label also indicates the settings of ADJUST and OPTION.
PRE-EXP	Use it to check the pre-exposure lamp for activation. Using the Mode 1) Select the item, and press the OK key. 2) The pre-exposure lamp goes ON and remains ON for several seconds, and goes OFF automatically.

<SYSTEM>

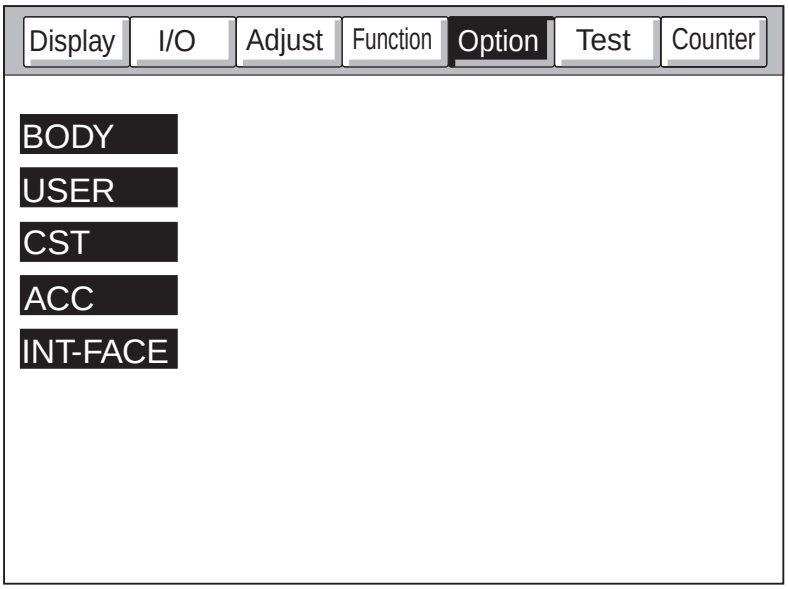
Use it to check system-related operations.

DOWNLOAD Caution	Use it to switch to system program download mode. • Use it to download the system program. Using the Mode 1) Turn off the machine and the PC. 2) Disconnect the network cable from the machine. 3) Connect the machine and the PC with a bi-Centronics cable. 4) Turn on the PC. 5) Turn on the machine. 6) Select <DOWNLOAD> to highlight, and press the OK key. 7) Use the Service Support Tool to download the data. 8) When done, turn off and then on the main power switch.
CHK-TYPE	Use it to select a partition number for HD-CHECK. Using the Mode 1) Selects the item. 2) Selects a partition number using the keypad (0: check and recover entire HDD for faulty sectors, 1: image storage area, 2: general file storage area, 3: PDL-related file storage area, 4: firmware storage area). • A general file refers to the following: user settings data, log data, PDL spool data, image data. 3) Press the OK key.
HD-CHECK	Use it to execute a check and recovery of the partition selection using CHK-TYPE. Using the Mode 1) Select the item. 2) Press the OK key. 3) The machine indicates the result (1: OK, 2: NG (hardware), 3: NG (software); recovery sensor/alternate sector).
HD-CLEAR Caution	Use it to initialize the partition selected using CHK-TYPE. • If ‘0’ or ‘4’ is selected, the executing will be invalid. • If’ ‘1’ is selected, the image control data stored in the SRAM area or the general file storage area will also be initialized. Using the Mode 1) Select the item. 2) Press the OK key.

6 OPTION Machine Settings Mode

6.1 COPIER

The following screen will appear in response to COPIER>OPTION; lists of items will follow:



F05-601-01

BODY

Use it to make machine-related settings.

MODEL-SZ	Use it to select the mode of indication by destination and of the ADF original size detection.
Settings	**0: AB (6R5E), 1: INCH (5R4E), 2: A (3R3E), 3: AB/INCH (6R5E)**
FIX-CLN	Use it to set fixing cleaning mode: • During last rotation after the end of printing, the fixing assembly is rotated idly at 1/4 the fixing speed.
Settings	**0: no cleaning (default)** **1: once per 500 sheets; temperature control at 225 °C , idle rotation for 60 sec** **2: once per 200 sheets; temperature control at 225 °C , idle rotation for 60 sec** **3: once per 100 sheets; temperature control at 225 °C , idle rotation for 60 sec** **4: not used** **5: not used**
FIX-TEMP	Use it to select a fixing control temperature.
Settings	**0: disable (default)** **1: place priority on productivity; keep control temperature constant: -10 °C** **2: keep control temperature constant: -6 °C** **3: keep control temperature constant: -3 °C** **4: place priority on fixing; keep control temperature constant: +3 °C** **5: keep control temperature constant: +6 °C** **6: keep control temperature constant: +10 °C** **7: keep control temperature constant: +15 °C**
HUM-SW	Use it to enable or disable the environment sensor.
Settings	**0: auto control by environment sensor** **1: fixed mode (for high humidity)** **2: fixed mode (for normal humidity)** **3: fixed mode (for low humidity)** **(In 1, 2, or 3, the move of control does not depend on the environment sensor.)**

SCANSLCT	
	Use it to enable or disable the original size detection mechanism for the ADF. • When enabled, the scan size is determined in relation to the original size.
Settings	**0: off (default), 1: on**
TRANS-SW	
	Use it to set the transfer charging bias output control method for large-size paper.
Settings	**0: normal (auto mode), 1: constant voltage control (manual mode)**
Caution	When manual mode is selected, make fine settings in ADJUST>HV-TR>TR-N1.
PRIAC-SW	
	If an image fault occurs as a result of faulty charging of the drum unit, change the level of primary charging current to correct the fault. It is effective if a sandy image (white dots in solid areas) occurs between the installation of the drum unit to printing of 2000 sheets.
Settings	**0: no increase in charging current (default), 1: increase in charging current**
Caution	The setting of this mode is cleared (1 → 0) for the following: • When APVC is executed after installing a new drum unit. • When COPIER>FUNCTION>D-GAMMA is executed in service mode. • When the setting is changed in this service mode.
SENS-CNF	
	Use it to set the arrangement of the original sensors.
Settings	**0: AB-configuration (default, 1: Inch-configuration, 2: A-configuration)**
Caution	If you have changed the arrangement of the original sensors, select the appropriate setting to suit the new arrangement.

CONFIG	
	Use it to select any of the multiple pieces of firmware stored on the hard disk to suit the selected destination and paper size:
Settings	**XXYYZZAA** XX: country (JP), YY: language (ja), ZZ (00): destination, AA (00): paper configuration The method of indication COPIER>DISPLAY>USER>LANGUAGE. The selections in parentheses are default selections; for the country and the languages, names are given. Using the Mode 1) Select <CONFIG>. 2) Select the item to change (to highlight), and press the +/- key. 3) Each press on the +/- key move the selection to the next item. 4) When the desired item is indicated, press the OK key. 5) Turn off and then on the main power switch.
SHARP	
	Use it to change the level of sharpness of soft the image. • A higher setting makes the image sharper.
Settings	**1 to 5 (default: 3)**
COTDPC-D	
	for factory.
Settings	**0 to 3 (default: 0)**
DF-BLINE	
	Use it to enable or disable black line reduction mode (disabling edge emphasis) for stream reading.
Caution	When enabled, the black lines will be less conspicuous but the edges of the images will be less crisp.
Settings	**0: disable (default)** **1: enable**
FIX-SMR	
	Use it to set the fixing trail removal mode in a high humidity environment.
Caution	When '1' is set, the following will occur: • The laser intensity will be reduced by 50 V. • The fixing film control speed is changed from 539 to 535 m/sec. • The fixing/feeding speed is reduced: B4: from 14 → 10 ppm B5R: from 28 → 15 ppm LGL: from 14 → 10 ppm A4R,etc.: from 18 → 10 ppm
Settings	**0: disable (default)** **1: enable**

COPIER>OPTION>BODY

DECRL-FN	
	Use it to enable or disable delivery curl reducing fan.
Settings	**0: disable (default)** **1: enable**
Caution	When '1' is selected, the curl reducing fan is rotated for 30 sec after the image leading edge sensor goes ON.
TR-CLN	
	Use it to enable or disable transfer charging roller cleaning enhancement mode.
Settings	**0: disable (default)** **1: enable**
Caution	Make sure that the transfer output between sheets for single-sided printing is set to cleaning bias output.
FAN-EXTN	
	Use it to enable or disable the fan extension mode at the end of a job.
Settings	**0: disable (default)** **1: enable**
Caution	Use it to drive all fans for 5 min after the end of a print job received in sleep mode.

COPIER>OPTION>USER

USER

Making user-related settings

COPY-LIM	
	Use it to change the upper limit imposed on the number of copies.
Settings	**1 to 999 copies (default: 999)**
SLEEP	
	Use it to enable or disable sleep mode.
Settings	**0: enable (default), 1: disable**
SIZE-DET	
	Use it to enable or disable the original size detection function.
Settings	**0: enable (default), 1: disable**
Caution	After making a selection, be user to turn off and then on the main power switch.
COUNTER1	
	Use it to indicate the type of software counter 1 of the control panel.
Caution	The type of soft counter 1 cannot be changed.
Settings	**101: total 1 (default: fixed to 101) (T05-601-01)**

COUNTER2	
	Use it to change the type of soft counter 2 of the control panel to suit the needs of the user.
Settings	**000 to 804 (T05-601-01); default: 000 (100V model), 103 (120/230V model)**
COUNTER3	
	Use it to change the type of soft counter 3 in the control panel to suit the needs of the user.
Settings	**000 to 804 (T05-601-01); default: 000 (100V model), 201 (120/230V model)**
COUNTER4	
	Use it to change the type of soft counter 4 of the control panel to suit the needs of the user.
Settings	**000 to 804 (T05-601-01); default: 000 (100V model), 203 (120/230V model)**
COUNTER5	
	Use it to change the type of soft counter 5 of the control panel to suit the needs of the user.
Settings	**000 to 804 (T05-601-01); default: 000**
COUNTER6	
	Use it to change the type of soft counter 6 of the control panel to suit the needs of the user.
Settings	**000 to 804 (T05-601-01); default: 000**
DATE-DSP	
	Use it to change the notation of date.
Caution	In the 120V model, the default is '1'.
Settings	**0: YY MM/DD (default), 1: DD/MM YY, 2: MM/DD/YY**
MB-CCV	
	Use it to impose restrictions on the Box function for the Control Card IV (CC-IV).
Settings	**0: enable operation and do not use remote charge regardless of presence/absence of card** **1: enable operation regardless of presence/absence of card; enable print job, but disable print with card (if card is present, enable printing and charge); default** **2: disable operation for remote; disable print job from remote**
B4-L-CNT	
	Use it to specify whether B4 paper is counted as large-size or small-size for soft counters 1 through 6.
Settings	**0: small size (default), 1: large size**

TRY-STP	
	Use it to impose a limit to the number of sheets for stapling in the finisher and to suspend printing if sizes are mixed.
Caution	If '1' is set, occurrence of jams and alignment will be outside the consideration.
Settings	**0: normal mode (suspend printing if limit to number/mixed sizes is detected); default** **1: suspend when height sensor goes ON (paper full)**
MF-LG-ST	
	Use it to indicate the Extra Length key for paper up to 630 mm long (multifeeder, free; the ADF will also accommodate paper up to 630 mm long).
Settings	**0: normal mode (default), 1: extra length mode (key indicated)**
SPECK-DP	
	Use it to enable or disable a warning for the result of dust detection in stream reading mode.
Settings	**0: disable indication (default), 1: enable indication**
CNT-DISP	
	Use it to enable or disable the indication of the serial number in response to a press on the Counter Check key.
Settings	**0: enable (default), 1: disable**
PH-D-SEL	
	Use it to select the number of lines for printing in photo mode.
Settings	**0: 141 lines (default), 1: 134 lines**
COPY-JOB	
	Use it to enable or disable the use of a copy job auto start when the coin robot/ card reader is used.
Settings	**0: enable copy job auto start (default)** **1: disable copy job auto start**
OP-SZ-DT	
	Use it to enable or disable original size detection in book mode.
Settings	**0: disable (original size entered from control panel; default)** **1: enable (original size detected automatically)**
NW-SCAN	
	Use it to enable or disable the network scan function.
Settings	**0: disable (default), 1: enable**

Soft Counter Specifications

The soft counters are classified a follows in terms of input numbers:

100s:	total	500s:	scan
200s:	copy	600s:	box
300s:	print	700s:	received file print
400s:	copy + print	800s:	report pint

Guide to the Table

- ○: counter used in the machine
- 4C: full color
- mono:mono color (Y, M, C/R, G, B/sepia)
- Bk: black mono
- L: large size (larger than B4)
- S: small size (B4 or smaller)
- 1/2: count of large-size sheets; B4 or larger may be counted as large-size paper in service mode: COPIER>OPTION>USER>B4-L-CNT.

Yes/No	No.	Counter	Yes/No	No.	Counter
○	000	no indication	○	205	copy A (total 1)
○	101	total 1	○	206	copy A (total 2)
○	102	total 2	○	207	copy A (L)
○	103	total (L)	○	208	copy A (S)
○	104	total (S)	○	209	local copy (total 1)
	105	total (4C1)	○	210	local copy (total 2)
	106	total (4C2)	○	211	local copy (L)
	107	total (mono)	○	212	local copy (S)
	108	total (Bk1)	○	213	remote copy (total 1)
	109	total (Bk2)	○	214	remote copy (total 2)
	110	total (mono/L)	○	215	remote copy (L)
	111	total (mono/S)	○	216	remote copy (S)
	112	total (Bk/L)		217	copy (4C1)
	113	total (Bk/S)		218	copy (4C2)
○	114	total (4C + mono + Bk/double-sided) total 1 (double-sided)		219	copy (mono 1)
				220	copy (mono 2)
				221	copy (Bk 1)
○	115	total 2 (double-sided)		222	copy (Bk 2)
○	116	L (double-sided)		223	copy (4C/L)
○	117	S (double-sided)		224	copy (4C/S)
○	201	copy (total 1)		225	copy (mono/L)
○	202	copy (total 2)		226	copy (mono/S)
○	203	copy (L)		227	copy (Bk/L)
○	204	copy (S)		228	copy (Bk/S)

T05-601-01a

COPIER>OPTION>USER

Yes/No	No.	Counter	Yes/No	No.	Counter
	229	copy (4C + mono/L)		325	print (4C/L/double-sided)
	230	copy (4C + mono/S)			
	231	copy (4C + mono/2)		326	print (4C/S/double-sided)
	232	copy (4C + mono/1)			
	233	copy (4C/L/double-sided)		327	print (mono/L/ double-sided)
	234	copy (4C/S/double-sided)		328	print (mono/S/ double-sided)
	235	copy (mono /L/ double-sided)		329	print (Bk/L/double-died)
	236	copy (mono/S/ double-sided)		330	print (Bk/S/double-sided)
	237	copy (Bk/L/double-sided)	○	331	PDL print (total 1)
			○	332	PDL print (total 2)
	238	copy (Bk/S/double-sided)	○	333	PDL print (L)
			○	334	PDL print (S)
○	301	print (total 1)		401	copy + print (4C/L)
○	302	print (total 2)		402	copy + print (4C/S)
○	303	print (L)		403	copy + print (Bk/L)
○	304	print (S)		404	copy + print (Bk/S)
○	305	print A (total 1)		405	copy + print (Bk 2)
○	306	print A (total 2)		406	copy + print (Bk 1)
○	307	print A (L)		407	copy + print (4C + mono/L)
○	308	print A (S)			
	309	print (4C1)		408	copy + print (4C + mono/S)
	310	print (4C2)			
	311	print (mono 2)		409	copy + print (4C + mono/2)
	313	print (Bk 1)			
	314	print (Bk 2)		411	copy + print (L)
	315	print (4C/L)		412	copy + print (S)
	316	print (4C/S)		413	copy + print (2)
	317	print (mono/L)		414	copy + print (1)
	318	print (mono/S)	○	501	scan (total 1) copy san (total/4)
	319	print (Bk/L)			
	320	print (Bk/S)	○	502	scan (total 2)
	321	print (4C + mono/L)	○	503	scan (L) copy scan (L/4)
	322	print (4C + mono/S)			
	323	print (4C + mono/2)	○	504	scan (S) copy scan (S/4)
	324	print (4C + mono/1)			

T05-601-01b

COPIER>OPTION>USER

Yes/No	No.	Counter	Yes/No	No.	Counter
	505	Bk scan (total 1)	○	601	box print (total 1)
		copy scan (Bk)	○	602	box print (total 2)
	506	Bk scan (total 2)	○	603	box print (L)
	507	Bk scan (L)	○	604	box print (S)
		copy scan (Bk/L)	○	701	received file print (total 1)
	508	Bk scan (S)			
		copy scan (Bk/S)	○	702	received file print (total 2)
	509	color scan (total 1)			
		copy scan (4C)	○	703	received file print (L)
	510	color scan (total 2)	○	704	receiced file print (S)
	511	color scan (L)	○	801	report print (total 1)
		copy scan (4C/L)	○	802	report print (total 2)
	512	color scan (S)	○	803	report print (L)
		copy scan (4C/S)	○	804	report print (S)
	513	copy scan (L)			
	514	copy scan (S)			
	515	copy scan (total)			

T05-601-01c

CST

Use it to make cassette-related settings.
Be sure to turn off and then on the power after making the settings.

U1-NAME U2-NAME U3-NAME U4-NAME U5-NAME U6-NAME U7-NAME U8-NAME	
	Use it to enable or disable the indication of the name of paper detected (size groups from U1 through U8).
Settings	**0: disable (default; if the paper size dial on the cassette is set to U1 through U8, the touch panel will indicate 'U1' through 'U8')** **1: enable (if the paper size dial on the cassette is set to U1 through U8, the names selected in CST-U1 through -U8 is indicate on the touch panel)**
CST-U1	
	Use it to select the name of paper used for paper size group U1. Select a number from T05-601-02 (codes and paper names).
Caution	This mode is designed for entering a number, and such notations as 'FLSC' or 'OFI' will not be indicated in service mode.
Settings	**U1: 24, 26, 27, 28, 33, 36, 37**
CST-U2 CST-U3 CST-U4 CST-U5 CST-U6 CST-U7 CST-U8	
	Select a number from T05-601-02; codes and paper names for the name of paper (notation) to be used for paper size groups U2 through U8.
Caution	However, U2 through U8 size cassettes are designed for specific paper sizes.
Settings	**U2: 35, U3: 25, U4: 31, U5: 32, U6: 34, U7: 22, 29, U8: 23, 30**

ENV1	
	Use it to register envelope cassette ENV1.
Settings	**21: COM10, 22: ISO-B5, 23: Monarch, 24: ISO-C5, 25: DL, 26: No. 4**
ENV2	
	Use it to register envelope cassette ENV2.
Settings	**21: COM10, 22: ISO-B5, 23: Monarch, 24: ISO-C5, 25: DL, 26: No. 4**

Codes and Paper Names

Code	Notation	Name	Code	Notation	Name
01	A1	A1	21	LGL	LEGAL
02	A2	A2	22	K-LGL	Koran Government
03	A3R	A3R	23	K-LGLR	Korean Government R
04	A3	A3	24	FLSC	FOOLSCAP
05	A4R	A4R	25	A-FLS	Australian FOOLSCAP
06	A4	A4	26	OFI	OFFICIO
07	A5	A5	27	E-OFI	Ecuadorian OFFICIO
08	A5R	A5R	28	B-OFI	Bolivian OFFICIO
09	B1	B1	29	A-LTR	Argentine LETTER
10	B2	B2	30	A-LTRR	Argentine LETTERR
11	B3	B3	31	G-LTR	Government LETTER
12	B4R	B4R	32	G-LTRR	Government LETTERR
13	B4	B4	33	A-LGL	Argentine LEGAL
14	B5R	B5R	34	G-LGL	Government LEGAL
15	B5	B5	35	FOLI	FOLIO
16	11 × 17	11 × 17	36	A-OFI	Argentine OFFICIO
17	LTRR	LETTERR	37	M-OFI	Mexican OFFICIO
18	LTR	LETTER	38		
19	STMT	STATEMENT	39		
20	STMTR	STATEMENTR	40	ALL	

T05-601-02

COPIER>OPTION>ACC

ACC

Use it to make accessory-related selections.

COIN	
	Use it to enable or disable the indication of the coin vendor. • Use it to change the indication for the control card in the control panel for the coin vendor.
Settings	**0: disable (default), 1: enable for coin vendor**
DK-P	
	Use it to select a paper size for use in the paper deck.
Caution	After making a selection, be sure to turn off and then on the main power switch.
Settings	**0: A4 (default), 1: B5, 2: LTR, 3: A-LTR**

COPIER>OPTION>INT-FACE

INT-FACE

Use it to set conditions for connection to an dextral controller.

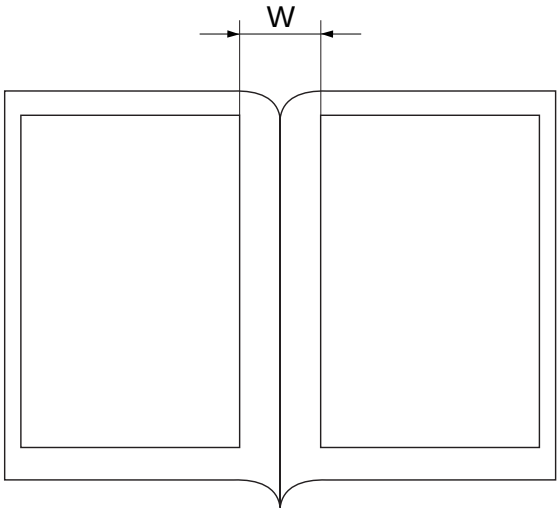
IMG-CONT	
	Use it to set the detection of connection of an external controller. • Set it so that the connection of an external controller is indicated. • Use it to change the User Mode screen. • Use it to change the network settings.
Settings	**0: absent (default), 1: external controller present**

6.2 FEEDER

SIZE-SW	
	Use it to enable or disable detection of mixed original sizes (AB and Inch sizes).
Settings	**0: disable (default), 1: enable**

6.3 SORTER

BLNK-SW	
	Use it to set the margin width (W) for both sides of a fold when a saddle stitcher is used.
Settings	**0: normal width (5 mm), 1: large width (10 mm; default)**



F05-603-01

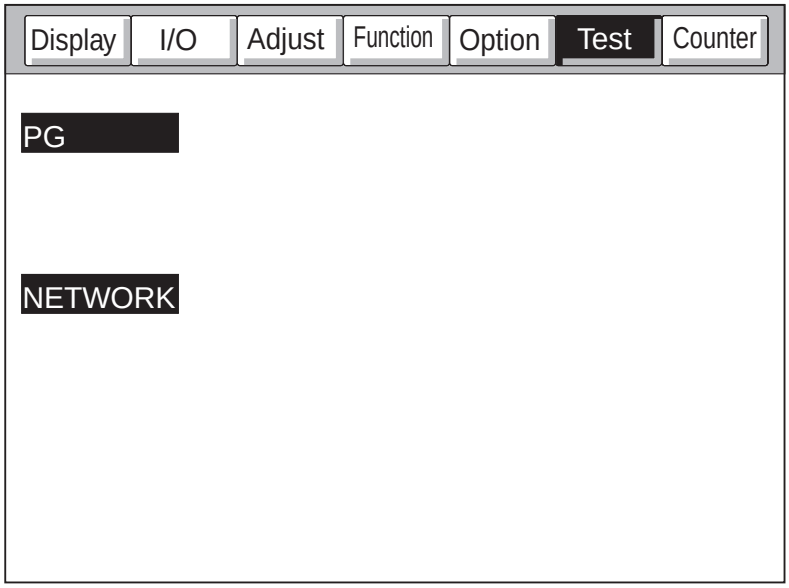
MD-SPRTN	
	Use it to set the retraction movement in response to a finisher error (excluding a delivery motor error).
Caution	After making a selection, be sure to turn off and then on the main power switch.
Settings	**0: disable retraction movement (default), 1: enable detraction movement**

6.4 BOARD

MENUE-1	
	Use it to indicate level 1 of the printer settings menu.
Settings	**0: do not indicate (default), 1: indicate**
MENUE-2	
	Use it to indicate level 2 of the printer settings menu.
Settings	**0: do not indicate (default), 1: indicate**
MENUE-3	
	Use it to indicate level 3 of the printer settings menu.
Settings	**0: do not indicate (default), 1: indicate**
MENUE-4	
	Use it to indicate level 4 of the printer settings menu.
Settings	**0: do not indicate (default), 1: indicate**
PCI1-OFF	
	Use it to enable or disable the function of slot 1 as when the board in slot 1 of PCI is out of order.
Settings	**0: normal (default), 1: disable (not to use board function)**
PCI2-OFF	
	Use it to enable or disable the function of slot 2 as when the board in slot 2 of PCI is out of order.
Settings	**0: normal (default), 1; disable (not to use board function)**
PCI3-OFF	
	Use it to enable or disable the function of slot 3 when the board in slot 3 of PCI is out of order.
Settings	**0: normal (default), 1: disable (not to use board function)**

7 TEST Test Print Mode

The following screen will appear in response to COPIER>TEST; lists of items will follow:



F05-701-01

PG

Use it to select the type of test print and generate it.

TYPE	
	Enter the number or the type of test print you want, and press the OK key to generate it.
Caution	Be sure to return it to '00' after printing the test print.
Settings	**00: normal print, 01 through 08: as in T05-701-01**
TXPH	
	Use it to switch between print modes for test printing (PG>TYPE).
Settings	**0: text mode, 1: photo mode**
PG-PICK	
	Use it to select the source of paper when generating a test print.
Settings	**1: cassette 1 (default), 2: cassett 2, 3: cassette 3, 4: cassette 4, 5: through 6: not used, 7: paper deck, 8: multifeeder tray**

Type Input Numbers and Test Prints

Input No.	Description	Input No.	Description
00	image from CCD (normal print)	04	blank
01	grid	05	halftone
02	17 gradations (w/ image correction)	06	solid black
03	17 gradations (w/o image correction)	07	vertical straight lines
		08	horizontal straight lines
		-	-

T05-701-01

NETWORK

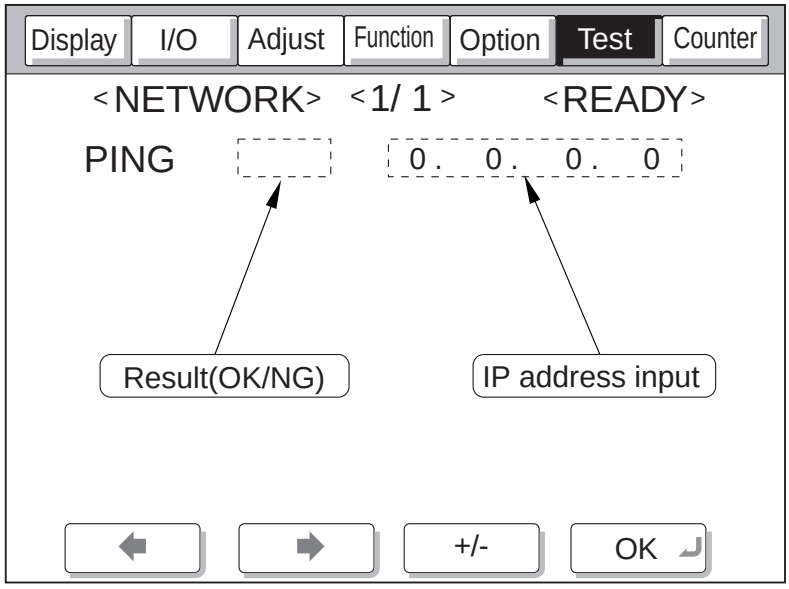
Use it to check the network-related items for connection.

PING

Use it to check the connection between machine and the network (TCP/IP only).

Caution

Use this mode when checking the connection to the network at time of installation or when the connection to the network is faulty.



F05-701-02

Using the Mode

1) Turn off the main power switch.
2) Connect the network cable to the machine, and turn on the main power switch.
3) Inform the user's system administrator that the machine has been installed, and ask him/her to set up the network.
4) Inform the system administrator that the network connection will be checked, and obtain the remote host address (IP address of the PC on the user's network) for sending a PING.
5) Make the following selections: COPIER>TEST>NETWORK>PING. Then, enter the IP address obtained in step 4) using the keypad; and press the OK key.

- If the connection to the network is correct, 'OK' will be indicated. (End the work.)
- If 'NG' is indicated, check the connection for the network cable; if normal, go to step 6). If a fault is found, connect the cable correctly, and go to step 5).

6) Make the following selections : COPIER>TEST>NETWORK>PING. Then, enter the loop-back address* (127.0.0.1), and press the OK key and then the Start key.

- If 'NG' is indicated, suspect a fault in the TCP/IP settings of the machine. Go back to step 3), and check the settings once again.
- If 'OK' is indicated, the TCP/IP setting may be assumed to be free of a problem. However, the connection of the network interface board (NIC) or the board itself may have a fault. Go to step 7).

*The loop-back address is returned in front of the NIC and, therefore, it enables a check on the TCP/IP settings of the machine.

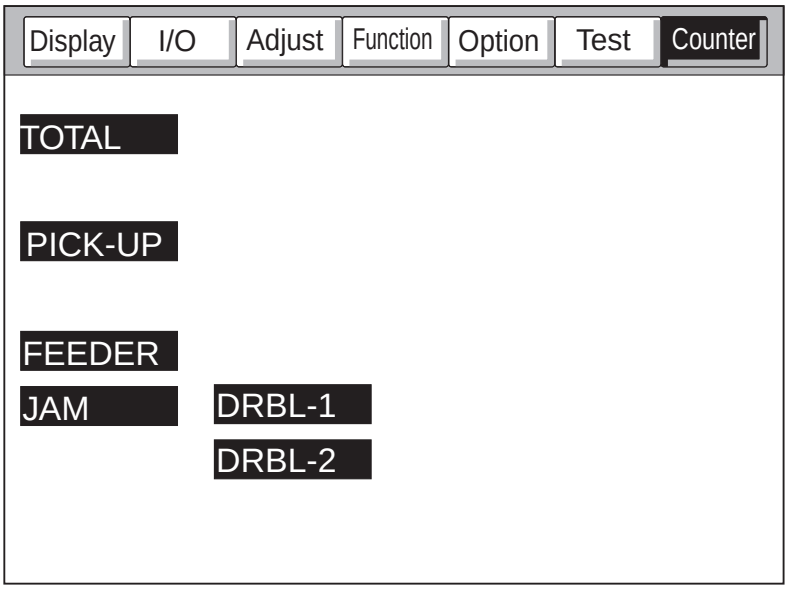
7) Make the following selections in service mode:
COPIER>TEST>NETWORK>PING. Then, press the OK key.

- If 'NG' is indicated, suspect a fault in the connection of the NIC or in the NIC itself. Check the connection of the NIC or replace it.
- If 'OK is indicated, the network setting of the machine and the NIC may be assumed to be free of a fault.

In this case, the user's network may have a problem. Report to the system administrator for corrective action.

8 COUNTER Counter Mode

The following screen will appear in response to COPIER>COUNTER; lists of items will follow:



F05-801-01

Clearing the Counter Readings

1) Select the item to clear (highlight).
2) Press the Clear key of the control panel.

- The counter will be cleared, and it will read '00000000'.

Dividing Papers Between Small-Size and Large-Size

Large-size (L): lager than A4/LTR
Small-size (S): A4/LTR or smaller

Guide to the Counters for Periodically Replaced Parts and Durables

The machine is equipped with counters for periodically replaced parts and durables (DRBL-1/DRBL-2) so as to provide an idea of when to replace the parts.

A small-size sheet increments the counter reading by '1', while a large-size sheet increments the count by '2'.

EX.

TR-ROOL / 00000201 / 00240000 / 0% !! 000082

[1] [2] [3] [4] [5] [6]

[1] indicates the name of the part; in the case of the example, the transfer charging roller.
[2] indicates the counter reading (actual number of sheets; be sure to clear the reading after replacing the part).
[3] indicates the limit (number of sheets before replacement); to change, select the item, and enter a number using the keypad, and then press the OK key.
[4] indicates the relationship between the counter reading and the limit.
[5] indicates a single exclamation mark (!) for a ratio between 90% and 100%, two marks for 100% and higher; in the case of the example, no indication is made.
[6] indicates the number of days to the estimated time of replacement; the example shows 82 days.

List of COUNTER Items

Level 1: COUNETR	Mode description
Level 2: TOTAL	
Level 3: SERVICE1	total counter 1 for service
SERVICE2	total counter 2 for service
COPY	copy counter
PDL-PRT	PDL print counter
FAX-PRT	fax received file print counter
RMT-PRT	remote copy/print counter
BOX-PRT	Box print counter
RPT-PRT	repro print counter
2-SIDE	double-sided print counter
SCAN	scan counter

COPIER>COUNTER>PICK-UP

Level 2: PICK-UP		
	Level 3: C1	cassette 1 pickup counter
	C2	cassette 2 pickup counter
	C3	cassette 3 pickup counter
	C4	cassette 4 pickup counter
	MF	multifeeder tray pickup counter
	DK	paper deck pickup counter
	2-SIDE	double-sided 2nd side pickup counter

COPIER>COUNTER>FEEDER

Level 2: FEEDER		
	Level 3: FEED	feeder(ADF) pickup total counter

COPIER>COUNTER>JAM

Level 2: JAM		
	Level 3: TOTAL	machine total jam counter
	FEEDER	feeder (ADF) jam counter
	SORTER	sorter (finisher) jam counter
	2-SIDE	duplex unit jam counter
	MF	multifeeder tray jam counter
	C1	cassette 1 jam counter
	C2	cassette 2 jam counter
	C3	cassette 3 jam counter
	C4	cassette 4 jam counter
	DK	paper deck jam counter

COPIER>COUNTER>DRBL-1

Level 2: DRBL-1

Level 3: PRE-LMP	pre-exposure lamp counter
TR-ROLL	transfer charging roller counter
SP-SC-EL	separation static eliminator paper passage counter
DVG-CYL	developing cylinder counter
C1-PU-RL	cassette 1 pickup roller counter
C1-SP-RL	cassette 1 separation roller counter
C1-FD-RL	cassette 1 feeding roller counter
C2-PU-RL	cassette 2 pickup roller counter
C2-SP-RL	cassette 2 separation roller counter
C2-FD-RL	cassette 2 feeding roller counter
C3-PU-RL	cassette 3 pickup roller counter
C3-SP-RL	cassette 3 separation roller counter
C3-FD-RL	cassette 3 feeding roller counter
C4-PU-RL	cassette 4 pickup roller counter
C4-SP-RL	cassette 4 separation roller counter
C4-FD-RL	cassette 4 feeding roller counter
M-PU-RL	multifeeder pickup counter
M-SP-PD	multifeeder separation pad counter
FX-LW-RL	fixing lower roller counter
FX-UNIT	fixing unit count
FX-FILM	fixing film counter
FX-CL-RL	fixing cleaning roller counter

COPIER>COUNTER>DRBL-2

Level 2: DRBL-2

Level 3: DF-PU-RL	ADF pickup roller counter
DF-SP-RL	ADF separation plate counter
DF-SP-RD	ADF separation pad counter
DF-FD-RL	ADF feeding roller counter
LNT-TAPE	ADF dust collecting tape counter
PD-PU-PL	paper deck pickup roller counter
PD-SP-RL	paper deck separation roller counter
PD-FD-RL	paper deck feeding roller counter
FIN-STPR	stapler counter
SDL-STPL	saddle stapler counter
PUNCH	punch counter

CHAPTER 6

SELF DIAGNOSIS

1 Self Diagnosis

The machine is equipped with a mechanism that checks the condition of the machine (especially sensor outputs) and indicates an error code in the control panel upon detection of a fault.

The following tables show the codes used, timing of detection, and possible causes; a 4-digit code is a detail code, and may be checked in service mode (COPIER>DISPLAY>JAM/ERR).

Code	Description
[Copier]	
E000	Heater temperature fault (fails to increase)
E001	Overheating detection error
E002	Heater temperature error (fails to reach specific level; inadequate increase)
E003	Heater temperature error (abnormal drop; low-temperature detection)
E007	Fixing film rotation error
E010	Main motor rotation error
E014	Fixing motor rotation error
E019	Waste toner case full, sensor error
E032	DA unit communication error
E051	Horizontal registration HP detention error
E064	Power supply voltage error (high-voltage error)
E100	Laser BD error
E110	Polygon motor rotation error
E202	No. 1 mirror base HP detecting error
E204	ADF image leading edge signal detection fault (absent)
E220	Lamp ON error
E225	Standard white plate/edge white plate read error
E240	Mcon-Dcon communication error
E243	Mcon-control panel communication error
E248	Backup (EEPROM) error
E261	Zero-cross signal error
E302	Shading error
E315	Image data processing error
E601	Image transfer error
E602	Hard disk error
E604	Image memory fault
E605	Image memory battery fault
E606	HDD error
E674	Fax board error
E677	PDL board mounting error
E710	IPC initialization error (Rcon)
E711	IPC register error (ctrl)
E712	Communication error (with ADF)
E713	Communication error (with sorter finisher)
E716	Communication error (with pedestal)
E717	Communication error (with ASSIST)
E719	Card reader, coin vendor communication error
E732	Reader communication error
E733	Printer communication error
E737	SDRAM error
E740	Ethernet board error
E741	PCI bus error
E742	RIP1 board error
E743	Mcon-Rcon communication error (Rcon detection)
E803	MPWS power supply voltage error (low voltage error)
E805	Fan rotation error
E901	Pedestal main motor rotation error
[ADF]	
E420	Back-up data read error
E421	Back-up data write error
E422	IPC error
[Saddle Finisher-G1]	
E501	Communication error (Punch unit)
E505	Back-up RAM
E510	Feed motor
E514	Delivery motor
E530	Width plate shift motor
E531	Stapler motor
E532	Stapler slide motor
E537	Alignment motor
E540	Tray ascent/descent motor
E577	Paddle motor
E590	Puncher motor
E592	Puncher sensor error
E593	Puncher shift motor
E5F1	Saddle folder motor
[Finisher-J1]	
E500	Communication error
E514	Stack handling motor
E530	Rear alignment motor
E531	Stapler motor
E537	Front alignment motor
E577	Delivery motor
E580	Delivery tray ascent/descent motor
E585	Stack handling error

1.1 Detail Codes (copier)

E000

0000 The reading of the main thermistor does not reach 30°C 1 sec after the main power switch is turned on. Or, it does not reach 70°C 2 sec thereafter.

Main cause The fixing film unit is faulty. The main thermistor has an open circuit. The fixing heater has an open circuit. The main power supply PCB is faulty. The DC controller PCB is faulty.

Caution To reset the error, execute the following in service mode: COPIER>FUNCTION>CLEAR>ERR.

Action

1. Connector

Is the connector of the fixing assembly connected?

a. main power supply PCB (J8) <-> relay connector <-> heater
b. DC controller PCB (J320) <-> relay connector <-> thermistor

NO: Connect the connector.

2. Fixing film unit (thermistor)

Check the interval between pin 1 and pin 2 and between pin 3 and pin 4 of the connectosr (4-pin) of the thermistor for electrical continuity. Is it ∞Ω (open)?

YES: The heater has an open circuit, or the thermal switch is open. Replace the fixing film unit.

4. Main power supply PCB, DC controller PCB

Press the Start key. Is the drive voltage of the heater supplied by the connector J8 of the main power supply PCB?

Main heater: between J8-1 (FSR1) and J8-5 (FSR COM)

Sub heater: between J8-3 (FSR2) and J8-5 (FSR COM)

YES: The heater drive power supply is faulty. Replace the main power supply PCB.

NO: The thermistor control mechanism is faulty. Replace the DC controller PCB.

E001

0000	The main thermistor detects 250°C or higher.
0001	The main thermistor or the sub thermistor detects overheating (hardware circuit detection).
0002	The sub thermistor detects about 295°C or higher.
Main cause	The fixing film unit is faulty (i.e., the thermistor has a short circuit). The main power supply PCB is faulty. The DC controller PCB is faulty.
Caution	To clear the error, execute the following in service move: COPIER>FUNCTION>CLEAR>ERR.

Action

1. Fixing film unit

Check the interval between pin 1 and pin 2 and between pin 3 and pin 4 of the connectors (4-pin) of the thermistor for electrical continuity. Is it 0 Ω (short circuit)?

YES: The thermistor has a short circuit. Replace the fixing film unit.

If the thermistor has a short circuit, the indication in service mode (COPIER>DISPLAY>ANALOG) will be as follows from the start: FIX-C=250°C for the main thermistor; FIX-E=310°C for the sub thermistor.

2. Main power supply PCB, DC controller PCB

Try replacing the main power supply PCB. Is the problem corrected?

YES: End.

NO: Replace the DC controller PCB.

E002

0000	The temperature of the fixing film is as follows: 1. has exceeded 100°C, but does not reach 115°C within 1 sec thereafter. 2. has exceeded 140°C, but does not reach 150°C within 1 sec thereafter. 3. has exceeded 160°C, but does not reach 165°C within 1 sec thereafter.
Main cause	The fixing film unit is faulty (i.e., the main thermistor TH1 has poor contact, or the fixing heater is faulty). The main power supply PCB is faulty. The DC controller PCB is faulty.
Caution	To clear the error, execute the following in service mode: COPIER>FUNCTION>FCLEAR>ERR.
Action	See the description for E003.

E003

0000	The main thermistor reading is lower than 140°C when paper is moved.
Main cause	The fixing film unit is faulty (i.e., the main thermistor (TH1) has poor contact or has an open circuit; or, the fixing heater is faulty). The main power supply PCB is faulty. The DC controller PCB is faulty.
Caution	To clear the error, execute the following in service mode: COPIER>FUNCTION>CLEAR>ERR.

Action

1. State

Turn on the power switch, and clear E002/E003. Thereafter, turn off and then on the power switch. Does the fixing heater operate?

NO: See “The fixing heater fails to operate.”

2. Wiring

Is the wiring from the DC controller PCB to the fixing film unit normal?

NO: Correct the wiring.

3. Fixing film unit, DC controller PCB

Try replacing the fixing film unit. Is the problem corrected?

YES: End.

NO: Replace the DC controller PCB.

E007

0000	An error in the rotation of the fixing film is detected. The reading of the main thermistor is 100°C or higher and, in addition, the fixing film sensor does not detect the rotation of the film for 6 sec or more while the fixing motor is driven.
Main cause	The fixing film sensor (PS45) is faulty. The DC controller PCB is faulty.
Caution	To clear the error, execute the following in service mode: COPIER>FUNCTION>CLEAR>ERR.

Action

1. Wiring

Are the wring and the connectors connected securely?
DC controller PCB (J311) <-> relay connector <-> fixing film sensor
NO: Connect the wiring and the connectors.

2. Fixing film sensor

Check the fixing film rotation signal.When the fixing motor is rotating, is the film rotation detection signal sent by the fixing film sensor to the concoctor J311 of the DC controller PCB?
Film rotation detection signal: 5V pulse signal between J311-A9 (FILM_ROT_D) and J311-A8 (GND); at intervals of 100 msec ON and 440 msec OFF
NO: If the fixing film is normal, replace the sensor.

3. Fixing film unit, DC controller PCB

Is there a fault in the fixing film edge rotation detection mechanism?
YES: Replace the fixing film unit.
NO: Replace the DC controller PCB.

E010

0000 After the main motor drive signal is generated, the clock signal does to arrive within 1.3 sec.

Main cause The main motor (M2) is faulty. the DC controller PCB is faulty.

Action

1. Connector

Is the connector of the main motor connected?

NO: Connect the connector.

2. Main power supply PCB

Is the drive voltage (24 V) of the main motor supplied by the main power supply PCB?

Main power supply PCB: between J202-1 (24VU1-SW) and J202-2 (OVU1)

NO: Replace the main power supply PCB.

3. Main controller (M2), DC controller PCB

Press the Start key. Is the lock signal of the main motor present at the connector J308 on the DC controller PCB?

Lock signal: J318-A10 (MM_LOCK)

YES: Replace the main motor.

NO: Check the wiring; if normal, replace the DC controller PCB.

E014

000 After the fixing motor drive signal is generated, the clock signal does not arrive within 1.3 sec.

Main cause The fixing motor (M19) is faulty. The DC controller PCB is faulty.

Action

1. Connector

Is the connector of the fixing motor connected?

NO: Connect the connector.

2. Main power supply PCB

Is the drive voltage (24 V) of the fixing motor supplied by the main power supply PCB?

Main power supply PCB: between J202-3 (24VU1-S) and J202-4 (OVU1)

NO: Replace the main power supply PCB.

3. Fixing motor (M19), DC controller PCB

Press the Start key. Is the lock signal of the fixing motor present at the connector (J312) on the DC controller PCB?

Lock signal: J312-B4 (FSRM_LOCK*)

the DC controller PCB change from 0 to about 5 V?

YES: Replace the fixing motor.

NO: Replace the DC controller PCB.

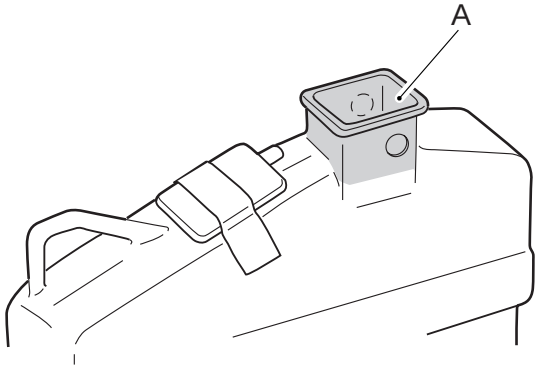
E019

0000	The waste toner case is full of waste toner.
Main cause	The waste toner case is full. The waste toner case full detection mechanism is soiled. The waste toner sensor is faulty. The DC controller PCB is faulty.
Caution	To clear the error, dispose of the waste toner, and turn off and then on the main power switch.
Action	If the error is still indicated after disposing of the waste toner, perform the following:

1. Waste toner case full detection mechanism

Remove the waste toner case, and turn off and then on the main power switch. Is 'E019' absent?

YES: The waste toner case full detection assembly is soiled with toner. Clean both inside and outside of area A of the waste toner case with alcohol. Make sure that no dirt remains inside and outside the area around the round recess.



2. Waste toner full sensor, DC Controller PCB

Try replacing the waste toner case full sensor. Is the problem corrected?

YES: End.

NO: Replace the DC controller PCB.

E032

0001 The DA unit connection is disconnected (after connection).

Main cause The DA unit is faulty. The main controller PCB is faulty.

Action

1. Connector

Is the DA unit connected securely?

NO: Connect it securely.

2. DA controller, Main controller PCB

Try replacing the DA unit. Is the problem corrected?

YES: End.

NO: Replace the main controller PCB.

E051

0000 At start-up, home position is not detected when the horizontal registration assembly is moved 100 mm in the direction of home position.

Main cause The horizontal home position sensor is faulty. The horizontal registration motor is faulty. The DC controller PCB is faulty.

Action

1. Connector

Are the connectors of the horizontal registration home position sensor and the horizontal registration motor connected?

a. DC controller PCB (J304) <-> relay connector <-> horizontal registration home position sensor

b. DC controller PCB (J304) <-> relay connector <-> horizontal registration motor

NO: Connect the connectors.

2. Sensor lever (damage and interference), Sensor

Is abnormal noise heard from the horizontal registration assembly in keeping with the motor rotation?

YES: a. The horizontal registration assembly is out of place because of damage to the sensor lever. Replace the sensor lever.

b. The horizontal registration assembly malfunctions because of the presence of foreign matter. Remove the foreign matter.

c. The sensor is faulty and cannot detect home position. Replace the sensor.

3. Horizontal registration motor, DC controller PCB

Is the horizontal registration motor control signal generated by the DC controller PCB?

J304-1/2: 24 V, J304-3/4/5/6: motor excitation signal

YES: The horizontal registration motor is faulty. Replace the motor.

NO: Replace the DC controller PCB.

E064

0000 The presence of a high-voltage error is communicated by the composite power supply PCB. (The output for primary charging, developing, or transfer has deviated from a specific level of voltage.)

Main cause The contact has poor connection. The wiring is faulty. The composite power supply PCB is faulty. The DC controller PCB is faulty.

Action

1. Contact

Is any of the contacts of the primary charging roller, developing assembly, or transfer charging roller soiled? Or, is there poor contact?

YES: Clean the contact, and set it once again.

2. Wiring

Is the wiring between the contacts for the following normal: DC controller PCB (J301), composite power supply PCB (J136), primary charging roller, developing assembly, transfer charging roller?

a. DC controller PCB (J301) <-> composite power supply PCB (J136)

b. composite power supply PCB (J130-7) <-> primary charging roller contact

c. composite power supply PCB (J130-1) <-> developing assembly contact

d. composite power supply PCB (FT133) <-> transfer roller contact

NO: Correct the connection.

3. Composite power supply PCB, DC controller PCB

Try replacing the composite power supply PCB. Is the problem corrected?

YES: Yes.

NO: Replace the DC controller PCB.

E100

0001	The BD signal is not detected 10 times or more within 10 msec in 5 msec after the generation of the laser drive signal.
0002	While the laser is ON, the BD signal cycle is outside a specific range 20 times or more continuously.
0003	While the laser is ON, the horizontal sync signal cycle is outside a specific range 20 times or more.
Main cause	The wiring is faulty (short circuit, open circuit). The BD PCB is faulty. The laser scanner unit is faulty. The DC controller PCB is faulty.

Action

1. BD PCB

Try replacing the BD PCB. Is the problem corrected?
YES: End.

2. Laser scanner unit, DC controller PCB

Try replacing the laser scanner unit. Is the problem corrected?
YES: End.
NO: Replace the DC controller PCB.

E110

0000 The motor ready signal does not arrive within 15 sec after the laser scanner motor drive signal is generated.

Main cause The wiring is faulty (short circuit, open circuit, disconnection). The laser scanner motor (M10) is faulty. The main power supply PCB is faulty. The DC controller PCB is faulty.

Action

1. Connector

Are the connector (J312) on the DC controller PCB and the relay connector connected securely?

NO: Connect the connectors securely.

2. Main power supply PCB

During printing, does the voltage between J204-1 (+) and J204-2 (-) on the main power supply PCB change from 0 to about 24 V?

NO: Replace the main power supply PCB.

3. Laser scanner unit, DC controller PCB

Try replacing the laser scanner unit. Is the problem corrected?

YES: End.

NO: Replace the DC controller PCB.

E202

The home position sensor does not go ON when the main power switch is turned on.

0001 The scanner home position sensor does not go OFF when the scanner is moved forward by 40 mm.

0002 The scanner home position sensor does not go ON when the scanner is moved reverse 450 mm.

Main cause The scanner home position sensor (PS400) is faulty. The scanner motor (M400) is faulty. The reader controller PCB is faulty.

Action

1. State

Does the scanner operate when the power is turned on?

NO: See 4.2.9 “The No. 1 mirror base does not operate.”

2. Scanner home position sensor (PS400), Reader controller PCB

Move the No. 1 mirror base by hand from home position. Does the output of the scanner home position sensor change? (J405-2 on the reader controller PCB is 5 V (in HP) or 0V (away from HP))

NO: Replace the sensor.

YES: Replace the rear controller PCB.

E204

0001 While an original is being read, the image leading edge signal does not arrive from the ADF.

Main cause The ADF controller PCB is faulty. The reader controller PCB is faulty.

Caution When this code occurs, no code is indicated, but the keys are locked. The code may be checked in service mode: COPIER>DISPLAY>ERR.

Action

1. Read sensor (S2)

Try replacing the read sensor of the ADF. Is the problem corrected?

YES: End.

2. ADF controller PCB, Reader controller PCB

Try replacing the ADF controller PCB. Is the problem corrected?

YES: End.

NO: Replace the reader controller PCB.

E220

0001 A fault is detected on the inverter PCB for the scanning lamp.

Main cause The inverter PCB is faulty. The reader controller PCB is faulty.

Action

1. Wiring

Is the wiring from the scanning lamp to the reader controller PCB normal?
NO: Connect the connector firmly, and correct or replace the wiring.

2. Inverter PCB, Reader controller PCB

Try replacing the lamp inverter PCB. Is the problem corrected?
YES: End.
NO: Replace the reader controller PCB.

E225

0000 A specific level cannot be attained for the signal during CCD gain correction at power-on.

0002 The edge gain correction level is different from the correction level for the preceding sheet by a specific level or more.

Main cause The scanning lamp is faulty. The CCD PCB is faulty. The rear controller PCB is faulty.

Action

1. Scanning lamp (LAMP1)

Is the lamp ON during the initial operation after the main power switch is turned on?
NO: Replace the scanning lamp.

2. CCD unit, Reader controller PCB

Try replacing the CCD unit. Is the problem corrected?
YES: End.
NO: Replace the reader controller PCB.

E240

0000 A fault occurs in communication between the CPU of the main controller PCB and the CPU of the DC controller PCB.

Main cause The main controller PCB is faulty. The DC controller PCB is faulty.

Action

1. Wiring

Is the wiring from the min controller PCB to the DC controller PCB normal?

NO: Correct the wiring.

2. DC controller PCB, Main controlled PCB

Try replacing the DC controller PCB. Is the problem corrected?

YES: End.

NO: Replace the main controller PCB.

E243

0000 A fault occurs in the communication between the CPU of the control panel PCB and the CPU of the main controller PCB.

Main cause The control panel CPU PCB is faulty. The main controller PCB is faulty.

Action

1. Wiring

Is the wiring from the main controller PCB to the DC controller PCB normal?

NO: Correct the wiring.

2. Control panel CPU PCB, Main controller PCB

Try replacing the control panel CPU PCB. Is the problem corrected?

YES: End.

NO: Replace the main controller PCB.

E248

0001	A difference is discovered between the ID in EEPROM read when the main power switch is turned on and the ID in ROM upon comparison.
0002	The data read does not match the data written to EEPROM.
0003	A difference is discovered between the ID of EEPROM and the ID of ROM upon comparison while writing data.

Main cause The EEPROM (IC403) of the reader controller PCB is faulty. The reader controller PCB is faulty.

Action

1. Execute the following in service mode: COPIER>FUNCTION>CLEAR>CON. Is the proem corrected?
   - YES: End. After executing the service mode, be sure to enter the service mode data newly.

2. EE-PROM, Reader controller PCB

   Try replacing the EE-PROM. Is the problem corrected?
   - YES: End. After replacement, be sure to enter the service mode data newly.
   - NO: Replace the rear controller PCB. After replacement, be sure to enter the service mode date newly.

E261

0000	The intervals of zero-cross signals deviate from the tolerance range while the fixing heater is supplied with power.

Main cause The wiring is faulty (short circuit, open circuit). The main power supply PCB is faulty. The DC controller PCB is faulty.

Making Corrections

1. Connectors

   Are the connector J205 on the main power supply PCB and the connector J308B on the DC controller PCB securely connected? (zero-cross signal: J205-7 <-> J308B-1)
   - NO: Connect the connectors securely.

2. Main power supply PCB, Main controller PCB

   Try replacing the main power supply PCB. Is the problem corrected?
   - YES: End.
   - NO: Replace the DC controller PCB.

E302

0001	During shading, the shading processing does not end on the reader controller PCB after 1 sec.
0002	During stream reading, the edge white addition processing does not end on the rear controller PCB after 10 sec.
Main cause	The CCD PCB is faulty. The wiring is faulty (short circuit, open circuit). The reader controller PCB is faulty.

Action

1. Connector

Are the connectors (J6001/J6002) on the CCD PCB and the connectors (J5002/J5003) on the reader controller PCB connected securely?

NO: Connect the connectors securely.

2. CCD unit

Try replacing the CCD unit. Is the problem corrected?

YES: End.

3. Reader controller PCB, Main controller PCB

Try replacing the reader controller PCB. Is the problem corrected?

YES: End.

NO: Check the wiring; if normal, replace the main controller PCB.

E315

Any of the following is true in the image processing by the main controller:
1. The image data has a fault.
2. The encoding/decoding operation for image data has a fault.
3. The image processing element of the main controller PCB has a fault.

Main cause

The image data is faulty. The main controller PCB is faulty. The HDD is faulty.

Action

If this error occurs during normal copying or printing, the job in question (image data) is cleared when the main power switch is turned off and then on again; i.e., the machine will be reset.
If this error occurs frequently, however, a fault on the main controller PCB is a possibility. Further, if this error occurs in a specific image within the MAIL BOX, damage in data may be assumed; be sure to delete the image from the MAIL BOX.

E601

0000	When an image is transferred between the main controller PCB and the HDD, the main controller PCB detects a fault in control information.
0001	When an image is transferred between the main controller PCB and the DC controller PCB, the DC controller PCB detects a fault in the control information.
Main cause	The wiring is faulty (short circuit, open circuit). The HDD is faulty. The DC controller PCB is faulty. The main controller PCB is faulty

Action

a. E601-0000

1. Wiring

Are the connection and the cable between the connector J1017 on the main controller PCB and the connector J1551 on the HDD normal?

YES: End.

NO: Correct the connection/cable.

2. HDD, Main controller PCB

Try replacing the HDD, and download the system software. Is the problem corrected?

YES: End.

NO: Replace the main controller PCB.

b. E601-0001

1. Wiring

Are the connection and cable between the connector J122 on the DC controller PCB and the connector J1015 on the main controller PCB normal?

NO: Correct the connection/cable.

2. DC controller PCB, Main controller PCB

Try replacing the DC controller PCB. Is the problem corrected?

YES: End.

NO: Replace the main controller PCB.

E602

0001 A mounting fault of the HDD is detected when the HDD is started up from the BOOT ROM.

0002 A data read fault of the HDD is detected when the HDD is started up from the BOOT ROM.

Main cause The wiring is faulty (short circuit, open circuit). The HDD is faulty. The main controller PCB is faulty.

Action

1. Wiring

Are the connection and the cable between connector J1025 of the main controller PCB and the connector J2005 of the HDD normal?

NO: Correct the connector/cable.

2. System software

Try re-installing the system software. Is the problem corrected?

YES: End.

3. HDD, Main controller PCB

Try replacing the HDD, and download the system software. Is the problem corrected?

YES: End.

NO: Replace the main controller PCB.

E604

0000 A fault is detected in the image memory.

Main cause The wiring is faulty (short circuit, open circuit). The HDD is faulty. The main controller PCB is faulty.

E605

0001 A fault is detected in the battery for the image memory.

Main cause The wiring is faulty (short circuit, open circuit). The HDD is faulty. The main controller PCB is faulty.

E606

0001 A mounting fault of the HDD is detected when the HDD is started up from the BOOT ROM.

Main cause The HDD is faulty. The main controller PCB is faulty.

Making Corrections

1. Wiring

Are the connection and cable normal between the connector J1025 on the main controller PCB and the connector J2005 of the HDD?

NO: Correct the connection and the cable.

2. System software

Try re-installing the system software. Is the problem corrected?

YES: End.

3. HDD, Main controller PCB

Try replacing the HDD and downloading the system software. Is the problem corrected?

YES: End.

NO: Replace the main controller PCB.

E674

0000 A faulty occurs in the communication between the fax PCB and the main controller PCB.

Main cause The wiring is faulty (short circuit, open circuit). The fax PCB is faulty. The main controller PCB is faulty.

Making Corrections

1. Wiring

Are the connection and the cable between the connector J 1005 on the main controller PCB and the connector J31 on the FAX PCB normal?

NO: Correct the connection and the cable.

2. FAX PCB, Main controller PCB

Try replacing the FAX PCB. Is the problem corrected?

YES: End.

NO: Replace the main controller PCB.

E677

0001	A fault occurs it the combination between any of the printer boards (accessories) and the main controller PCB.
Main cause	Any of the printer boards (accessories) is faulty. The main controller PCB is faulty.

Action

1. Connector

Is the printer board (accessory) connected correctly?

NO: Correct the connection.

2. Printer board, Main controller PCB

Try replacing the printer board. Is the problem corrected?

YES: End.

NO: Replace the main controller PCB.

E710

0001	When the main power is turned on, the communication IC (IPC) on the reader controller PCB cannot be initialized.
0002	When the main power is turned on, the communication IC (IPC) on the DC controller PCB cannot be initialized.
0003	When the main power is trend on, the communication IC (IPC) on the main controller PCB cannot be initialized.
Main cause	The DC controller PCB is faulty. The reader controller PCB is faulty. The machine controller PCB is faulty.

Action

Malfunction, PCBs

Turn off and then on the main power switch. Is the problem corrected?

YES: End.

NO: If E7100001, replace the reader controller PCB.
If E710-002, replace the DC controller PCB.
If E71-0003, replace the main controller PCB.

E711

0001	Data is written to the error register of the communication IC (IPC) on the reader controller PCB four times or more within 1.5 sec.
0002	Data is written to the error register of the communication IC (IPC) on the DC controller PCB four times or more within 2 sec.
0003	Data is written to the error register of the communication IC (IPC) on the main controller PCB four times or more within 2 sec.
Main cause	The connector has poor connection. The ADF controller PCB is faulty. The finisher controller PCB is faulty. The DA unit PCB is faulty. The card reader PCB is faulty.

Action

a. E711-0001

Connector, ADF controller PCB

Is the interface cable between the ADF controller PCB an the reader controller PCB normal?

NO: Correct the cable.

YES: Replace the ADF controller PCB.

b. E711-0002

connector, Finisher controller PCB

Is the interface cable between the finisher controller PCB and the DC controller PCB normal?

NO: Correct the cable.

YES: Replace the finisher controller PCB.

c. E711-0003

Connector, DA unit PCB

Is the interface cable between the DA unit PCB and the main controller PCB normal?

NO: Correct the cable.

YES: Replace the NE controller PCB.

E712

0001	The communication is not resumed 3 sec or more after data has been written to the error register of the communication IC (IPC) on the ADF controller PCB.
0002	The transmission bit is not enabled 10 sec or more in the sync register of the communication IC (IPC) on e reader controller PCB.
Main cause	The connect has poor connection. The main power supply PCB is faulty. The ADF controller PCB is faulty. The reader controller PCB is faulty.

Action

1. Connector

Is the interface able between the ADF controller PCB and the reader controller PCB normal?

NO: Correct the cable.

2. Main power supply PCB

While the ADF is in operation, does the voltage between J203-2 (+) and J203-1 (-) on the main power supply PCB change from 0 to about 24 V?

NO: Replace the main power supply PCB.

3. ADF controller PCB, Reader controller PCB

Try replacing the ADF controller PCB. Is the problem corrected?

YES: End.

NO: Replace the rear controller PCB.

E713

0000 The communication with the finisher is not resumed 3 sec or more after it is disrupted.

Main cause The connector has poor connection. The option power supply PCB is faulty. The finisher controller PCB is faulty. The DC controller PCB is faulty.

Action

1. Connector

Is the wiring between the finisher controller PCB and the options power supply PCB and between the options power supply PCB and the DC controller PCB normal?

NO: Correct the wiring.

2. Options power supply PCB

Is the voltage between HJ701-6 (+) and J701-7 (-) on the options power supply PCB about 24 V?

NO: Replace the options power supply PCB.

3. Finisher controller PCB, DC controller PCB

Try replacing the finisher controller PCB. Is the problem corrected?

YES: End.

NO: Replace the DC controller PCB.

E716

0000 The ID signal is not detected within a specific period of time after the presence of a pedestal is detected.

Main cause The connector has poor connection. The main power supply PCB is faulty. The pedestal controller PCB is faulty. The DC controller PCB is faulty.

Action

1. Connector

Is the wiring between the pedestal controller PCB and the main power supply PCB and between the main power supply PCB and the DC controller PCB normal?

NO: Correct the wiring.

2. Main power supply PCB

Is the voltage between J206-2 (+) and J206-1 (-) on the main power supply PCB about 24 V?

NO: Replace the main power supply PCB.

3. Pedestal controller PCB, DC controller PCB

Try replacing the pedestal controller PCB. Is the problem corrected?

YES: End.

NO: Replace the DC controller.

E717

0001 The communication with the DA unit is not resumed 3 sec or more after it is disrupted.

Main cause The wiring is faulty (short circuit, open circuit). The DA unit PCB is faulty. The main controller PCB is faulty.

Caution To clear the error, execute the following in service mode: COPIER>FUNCTION>CLEAR>ERR.

Action

1. Connector

Is the connection between the DA unit PCB and the main controller PCB secure?

NO: Correct the connection.

2. DA unit PCB, main controller PCB

Try replacing the DA unit PCB. Is the problem corrected?

YES: End.

NO: Replace the main controller PCB.

E719

0001 The communication between the Card Reader-C1 or the coin vendor and the main controller PCB is disrupted.

Main cause The wiring is faulty (short circuit, open circuit). The Card Reader-C1 is faulty. The coin vendor is faulty. The main controller PCB is faulty.

Caution To clear the error, execute the following in service mode: COPIER>FUNCTION>CLEAR>ERR.

Action

1. Connector

Is the Cad Reader-C1 or the coin vendor connected securely?
NO: Connect it securely.

2. Coin vendor, Main controller PCB

Try replacing the Card Reader-C1 or the coin vendor. Is the problem corrected?
YES: End.
NO: Replace the main controller PCB.

E732

0001 A fault is detected by the main controller PCB in the communication between reader controller PCB and the main controller PCB.

Main cause The connector has poor connection. The reader controller PCB is faulty.

Action

1. Connector, Reader controller PCB

Is the connection between the connector J1014 on the main controller PCB and the connector J409 on the reader controller PCB normal?
NO: Correct the connection.
YES: Replace the reader controller PCB.

E733

0001 A fault is detected by the main controller PCB in the communication between the DC controller PCB and the main controller PCB.

Main cause The connector has poor connection. The DC controller PCB is faulty.

Action

1. Connector, DC controller PCB

Is the connection between the connector J1015 on the main controller PCB and the conductor J316 on the DC controlled PCB normal?

NO: Correct the connection.

YES: Replace the DC controller PCB.

E737

0000 During self diagnosis at power-on, the DRAM check finds a fault in the main controller PCB.

Main cause The connection of the IC socket is faulty. The main controller PCB is faulty.

Action

1. Connection

Is the DRAM fitted to the socket securely?

NO: Fit the DRAM securely.

2. DRAM, Main controller PCB

Try replacing the DRAM. Is the problem corrected?

YES: End.

NO: Replace the main controller PCB.

E740

0001	At power-on, the LAN card has a fault.
0002	The MAC address has a fault.
0003	The LAN card cannot be read.
Main cause	The LAN card is faulty. The main controller PCB is faulty.
Action	

1. Connector

Is the connection between the LAN card and the main controller PCB normal?

NO: Correct the connection.

2. LAN card, Main controller PCB

Try replacing the LAN card. Is the problem corrected?

YES: End.

NO: Replace the main controller PCB.

E741

0000	The PCI bus has a fault.
Main cause	The PCI bus has poor connection. The main controller PCB is faulty.
Action	Each PCI slot may be disabled in service mode to prevent the error: BOARD>PCI1-OFF through PCI3-OFF.

1. Board

Is the connection between the relay board and the main controller PCB normal?

NO: Correct the connection.

2. Relay board, Main Controller PCB

Try replacing the relay board. Is the problem corrected?

YES: End.

NO: Replace the main controller PCB.

E743

0000 The reader controller PCB detects a fault in the communication between the main controller PCB and the reader controller PCB.

Main cause The connector has poor connection. The main controller PCB has a fault.

Action

1. Connector, Main controller PCB

Is the connection between the connector J1014 on the main controller PCB and the connector J409 on the reader controller PCB normal?

NO: Correct the connection.

YES: Replace the main controller PCB.

E744

0000 The BootROM on the main controller PCB and the system software are for different models or are of different types.

Main cause The BootROM is not mounted correctly, or a fault occurred during downloading or when downloading the system software.

Making Corrections

Downloading (system software)

Check the types of the BootROM and the system software, and download system software of the correct type.

E803

0000 The 24V output from the composite main power supply PCB is absent for 1 sec or more.

Main cause The wiring is faulty (short circuit, open circuit). The composite power supply PCB is faulty. The DC controller PCB is faulty.

Making Corrections

1. Connectors

Are the connectors J204 on the main power supply PCB and the connector J300 on the DC controller PCB connected securely?

NO: Connect the connectors securely.

2. Main power supply PCB

Is 24 V supplied by the main power supply PCB (J204) to the DC controller PCB (J300)?

(J204-5 <-> J300-5: OVU3, J204-6 <-> J300-6: OVU3,
J204-7 <-> J300-7: 24VU3, J204-8 <-> J300-8: 24VU3)

NO: Replace the main power supply PCB.

YES: Replace the DC controller PCB.

E805

The clock signal is absent for 5 sec or more after the fan drive signal has been generated. The detail codes of the fans in question are as follows:

0001	developing fan (FM1)
0002	fixing fan (FM2)
0003	curl reducing fan (FM4)
0004	curl reducing fan (FM5)
0005	electrical unit fan (FM3)

Main cause: The fan wiring is faulty (short circuit, open circuit). The fan is faulty. The DC controller PCB is faulty.

Action

1. Foreign matter

Is there foreign matter that prevents the rotation of the fan?

YES: Remove the foreign matter.

2. Wiring, Connector

Are the wiring and connector of the fan normal?

Developing fan (FM1):	DC controller PCB (J302B)
Fixing fan (FM2):	DC controller PCB (J308B)
Curl reducing fan (FM4):	DC controller PCB (J311B)
Curl reducing fan (FM5):	DC controller PCB (J311B)
Electrical unit fan (FM3):	main controller PCB (J1028)

NO: Correct the wiring and the connection.

3. Fan, DC controller PCB

Try replacing the fan. Is the problem corrected?

YES: End.

NO: Replace the DC controller PCB.

E901

0000 The motor ready signal does not arrive within 1.3 sec after the pedestal main motor drive signal is generated.

Main cause The connector has poor connector. The pedestal main motor is faulty. The main power supply PCB is faulty. The pedestal controller PCB is faulty. The DC controller PCB is faulty.

Action

1. Connector

Is the wiring between the pedestal controller PCB and the main power supply PCB and between the main power supply PCB and the DC controller PCB normal?

NO: Correct the wiring.

2. Main power supply PCB

Is the voltage between J206-2 (+) and J206-1 (-) on the main power supply PCB about 24 V?

NO: Replace the main power supply PCB.

3. Pedestal main motor

Try replacing the pedestal main motor. Is the problem corrected?

YES: End.

4. Pedestal controller PCB, DC controller PCB

Try replacing the pedestal controller PCB. Is the problem corrected?

YES: End.

NO: Replace the DC controller PCB.

1.2 ADF Error Codes

When the ADF's self diagnostic mechanism has gone ON, it may be reset by turning off and then on its host machine.

The host machine can still generate copies in book mode if the ADF cable is discontented even while the ADF is out of order.

E420

0001	When the power switch of the host machine is turned on, the back-up data from the EEPROM cannot be read or the data that has been read has a fault.
Main cause	The EEPROM is faulty. The ADF controller PCB is faulty.

E421

0001	The back-up data cannot be written to the EEPROM, or the data that has been written has a fault.
Main cause	The EEPROM has a fault. The ADF controller PCB has a fault.

E422

0001	While the ADF is in standby, the communication with its host machine is disrupted for 5 sec or more; or, while the ADF is in operation, the communication with its host machine is disrupted for 0.5 sec or more.
Main cause	The IPC communication is faulty. The communication line has an open circuit. The ADF controller PCB is faulty.

1.3 Saddle Finisher-G1 Error Codes

When the finisher's self diagnostic mechanism has gone ON, it may be reset by turning off and then on its host machine.

The host machine can still generate copies if the finisher cable is disconnected and the delivery path is set to the delivery tray of the host machine.

1.3.1 Error Code of the Finisher Unit

E501

0001	The communication between the finisher controller PCB and the puncher drive PCB is disrupted.
Main cause	The finisher controller PCB is faulty. The puncher drive PCB is faulty.

E505

0001	When the main power is turned on, the checksum of the finisher controller PCB has a fault.
0002	When the main power is turned on, the checksum of the puncher driverPCB has a fault.
Main cause	The EEPROM is faulty. The finisher controller PCB is faulty. The puncher driver PCB is faulty.

E510

0001	The feeding roller does not leave home position when the feed motor is driven for 2 sec.
0002	The feeding roller does not return to home position when the feed motor is driven for 2 sec.
Main cause	The feed motor (M1) is faulty. The setting roller home position sensor is faulty. The finisher controller PCB is faulty.

E514

0001	The delivery belt does not leave home position when the stack delivery motor is driven for 3 sec.
0002	The delivery belt does not return to home position when the stack delivery motor is driven for 3 sec.
Main cause	The stack delivery motor (M3) is faulty. The delivery belt home position motor (PI7) is faulty. The finisher controller PCB is faulty.

E530

0001	The aligning plate (rear) does not leave home position when the alignment motor (rear) is driven for 3 sec.
0002	The aligning plate (rear) does not return to home position when the alignment motor (rear) is driven for 3 sec.
Main cause	The alignment motor (rear; M5) is faulty. The aligning plate home position sensor (rear; PI5) is faulty. The finisher controller PCB is faulty.

E531

0001	The stapler does no leave home position when the stapler/folder motor is driven for 1.5 sec.
0002	The stapler does not return to home position when the stapler/folder motor is driven for 1.5 sec.
0003	The clock signal is disrupted for 1 sec or more while the stapler/folder motor is driven.
Main cause	The stapler home position sensor (PI19) is faulty. The stapler/folder motor (M7) is faulty. The stapler/folder clock sensor (PI4) is faulty. The finisher controller PCB is faulty.

E532

0001	The stapler unit does not leave home position when the stapler slide motor is driven for 4.5 sec.
0002	The stapler unit does not return to home position when the stapler slide motor is driven for 4.5 sec.
Main cause	The slide home position sensor PI180 is faulty. The stapler slide motor (M8) is faulty. The finisher controller PCB is faulty.

E537

0001	The aligning plate (front) does not leave home position when the alignment motor (front) is driven for 3 sec.
0002	The aligning plate (front) does not return to home potion when the alignment motor (front) is driven for 3 sec.
Main cause	The alignment motor (front; M4) is faulty. The aligning plate home position sensor (front; PI4) is faulty. The finisher controller PCB is faulty.

E540

0001	The paper surface sensor remains unchanged 10 sec after the tray ascent/descent motor is driven.
0002	The tray upper sensor goes ON while the tray is moving up.
0003	The clock for the clock sensor is disrupted for 10 sec or more while the tray ascent/descent motor is driven.
Main cause	The paper surface sensor (PI9) is faulty. The tray ascent/descent motor clock sensor (PI17) is faulty. The tray upper limit sensor (PI15) is faulty. The tray ascent/descent motor (M6) is faulty. The finisher controller PCB is faulty.

E577

0001	The paddle does not leave home position when the paddle motor is driven for 2 sec or more.
0002	The paddle does not return to home position when the paddle motor is driven for 2 sec or more.
0003	The stack ascent/descent guide does not leave home position when the paddle motor is driven for 2 sec or more.
0004	The stack ascent/descent guide does not return to home position when the paddle motor is driven for 2 sec or more.
Main cause	The paddle home position sensor (PI2) is faulty. The stack ascent/descent home point sensor Pixx0 is faulty. The paddle motor (M2) is faulty. The finisher controller PCB is faulty.

E590

0001	The puncher does not return to home position when the puncher motor is driven for 250 msec.
0002	The clock from the puncher motor clock sensor is disrupted for 60 msec or more when the puncher motor is driven.
Main cause	The puncher home position sensor (PI1P) is faulty. The puncher motor (M1P) is faulty. The puncher motor clock sensor (PI3P) is faulty. The puncher driver PCB is faulty.

E592

	In the course of sensor output automatic adjustment, the light-receiving voltage is 2.5 V or less even when the light-emitting voltage is set to 4.4 V. In the course of output automatic adjustment, the light-receiving voltage is 2.5 V or more even when the light-emitting voltage is set to 0 V. In the course of sensor output automatic adjustment, the light-emitting voltage is set to 4.4 V or more.
0001 to 0005	Horizontal registration sensor
0006	Puncher waste full sensor
Main cause	The horizontal registration sensor is faulty. The puncher waste sensor is faulty. The puncher driver PCB is faulty.

E593

0001	The puncher not leave home position when the puncher shift motor is driven for 1 sec.
0002	The puncher does not return to home position when the puncher shift motor is driven for 1 sec.
Main cause	The horizontal registration home position sensor (PI2P) is faulty. The puncher shift motor (M2P) is faulty. The puncher drive PCB is faulty.

E5F1

0001	The folding roller does not leave home position when the stapler/folder motor is driven for 1.5 sec.
0002	The folding roller does to return to home position when the stapler/folder motor is driven for 3.5 sec or more.
0003	The clock is disrupted for 1 sec or more while the stapler/folder motor is driven.
Main cause	The folding roller home position sensor (PI12) is faulty. The stapler/folder motor (M7) is faulty. The stapler/folder clock sensor (PI14) is faulty. The finisher controller PCB is faulty.

1.4 Finisher-J1 Error Codes

When the finisher's self diagnostic mechanism has gone ON, it may be reset by turning off and then on its host machine.

While the finisher is out of order, prints can still be made by disabling the finisher operation as follows (other than delivery):

1) Service mode
   [1] Turn off and then on the main power switch.
   [2] Set '1' to SORTER>OPTION>MD-SPRTN.
   [3] Turn off and then on the main power switch.
2) User mode
   [1] Turn off and then on the main power switch.
   [2] Set 'OFF' the following: 'adjustment/cleaning'>'staple/offset function'.
   [3] Turn off and then on the main power switch.

E500

0000	The communication between the copier and the finisher is disrupted and is not corrected for 5 sec or less.
Cause	The copier harness is faulty. (disconnected connector, open circuit) The finisher controller PCB or the copier's DC controller PCB is faulty.

E514

0000	At the start of the motor CW operation, the stack handling motor (M2) may be driven for a specific number of rotations; however, the stack delivery lever home position sensor (S8) does not go ON.
Cause	The stack handling motor (M2) is faulty. The stack delivery lever home position sensor (S8) is faulty, the connector is disconnected, or an open circuit exits. The stack handling motor (M2) relay harness is faulty. The return roller is faulty.

E530

0000	The alignment motor (M4) is driven for a specific number of rotations, but the aligning plate home position sensor (S7) does not go ON. The alignment motor (M4) is driven for a specific number of rotations, but the aligning plate home position sensor (S7) does not go OFF.
Cause	The rear alignment motor (M4) is faulty. The rear aligning plate home position sensor (S7) is faulty. The rear alignment motor relay harness is faulty. The rear aligning plate is subjected to an excess load.

E531

0000	The stapling home position sensor (S16) does not go off 0.5 sec after the stapler motor is rotated CW. The stapling home position sensor (S16) dos not go ON with 0.5 sec after the stapler motor is rotated CW and, thereafter, the sensor does not go ON within 0.5 sec after the motor is rotated in reverse.
Cause	The stapler motor (M6) is faulty. The stapling home position sensor (S16) is faulty. The stapler harness is faulty. The finisher controller PCB is faulty.

E537

0000	The aligning plate home position sensor (S6) does not go ON when the front alignment motor (M3) is driven for a specific number of rotations. The aligning plate home position sensor (S6) does not go OFF when the front alignment motor (M3) is driven for a specific number of rotations.
Cause	The front alignment motor (M3) is faulty. The front aligning plate home position sensor (S6) is faulty. The front alignment motor relay harness is faulty. The front aligning plate is subjected to an excess load.

E577

0000	The return roller does not reach home position when the delivery motor (Ml) has been driven as much as will move it to the return roller home position sensor (S3).
Cause	The delivery motor (M1) or the finisher controller PCB is faulty. The return roller home position sensor (S3) is faulty, the harness connector is disconnected, or an open circuit exits. The delivery motor relay harness is faulty. The return roller is faulty.

E580

0000	The delivery tray upper limit sensor (S13) goes ON while the delivery tray ascent/descent motor (M5) is in operation. The clock signal of the delivery tray ascent/descent motor clock sensor (S9) is not detected 15 times or more within 0.8 sec while the delivery tray ascent/descent motor (M5) is in operation. The delivery tray paper height sensor (S10) does not go ON 4 sec after the delivery tray ascent/descent motor (M5) starts to move up. The delivery tray paper height sensor (S10) does not go OFF 4 sec after the delivery tray ascent/descent motor (M5) starts to move down.
Cause	The delivery tray ascent/descent motor (M5) is faulty. The delivery tray paper height sensor (S10) is faulty, the harness is disconnected, or an open circuit exits. The delivery tray ascent/descent motor lock sensor (S9) is faulty, the connector is disconnected, or an open circuit exits. The delivery tray ascent/descent motor is subjected to an excess load. The finisher controller PCB is faulty.

E585

0000	At the start of the motor CCW operation, the stack handling motor (M2) may be driven for a specific number of rotations; however, the stack delivery lever home position sensor (S8) does not go ON.
Cause	The stack handling motor (M2) is faulty. The stack delivery lever home position sensor (S8) is faulty, the connector is disconnected, or an open circuit exits. The stack handling motor (M2) relay harness is faulty. The return roller is faulty.

CHAPTER 7

UPGRADING

1 Upgrading

1.1 Outline

The machine is upgraded either by downloading data from a PC or by replacing its DIMM/ROM.

The following five items are upgraded by downloading from a PC:

- BOOT ROM (machine J1009 DIMM ROM)
- HD Format (machine HDD; formatting)
- Language (machine HDD)
- RUI (machine HDD)
- System (machine HDD)
- DADF-H1 (CPU; Use the downloader PCB) See 1.6 Downloader PCB
- Finisher-J1 (CPU; Use the downloader PCB) See 1.6 Downloader PCB

As indicated, the language module may also be downloaded.

The machine may be connected to a network when downloading data from a PC.

For instructions on upgrading by means of replacing the DIMM/ROM, see 1.7 “Upgrading by Replacing the DIMM/ROM.”

1.1.1 Download Mode

The machine provides two types of download modes; although any of the two may be used to download all files, select with care if you want to format the hard disk (select the HD Format), as a specific partition must be selected.

You can use any of the two when using a parallel cable; however, the use of a network cable will require you to start up the machine’s network environment, necessitating the use of downloading in service mode.

- Downloading in Download Mode

To start download mode,

1) While holding down ‘2’ and ‘8’ on the keypad at the same time, turn on the power switch.
2) Hold down ‘2’ and ‘8’ on the keypad until the bottom of the touch panel indicates the message “Download Mode.”

Partition Available for Formatting the Hard Disk
/BOOTDEV
ALL

- Downloading in Service Mode

To start download mode,

1) Start service mode.
2) Make the following selection: COPIER>FUNCTION>SYSTEM>DOWNLOAD. Then, press 'OK' so that the machine will be in download standby mode (message "STANDBY").

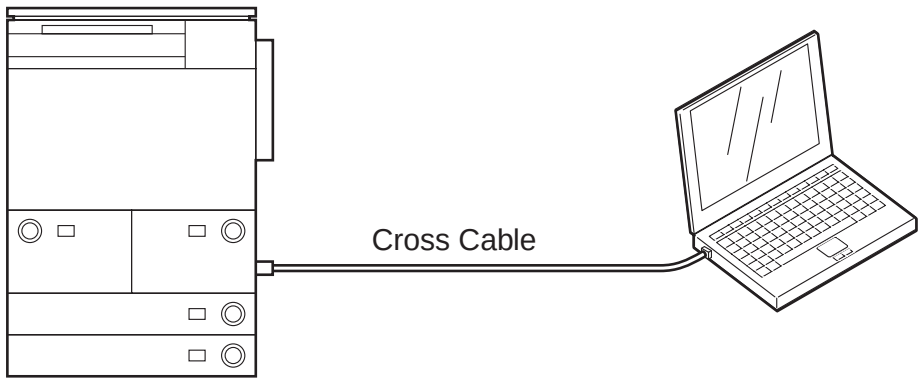
Partition Available for Formatting the Hard Disk
/PDLDEV
/FSTDEV
/DOSDEV

If you use the Service Support Tool while the machine is not in download mode, the machine will treat data from the interface as a local print job and, accordingly, will increment the job count.
When you use the Service Support Tool, be sure to switch the machine to download mode in advance by following the instructions on the screen.

1.1.2 Making Pre-Checks

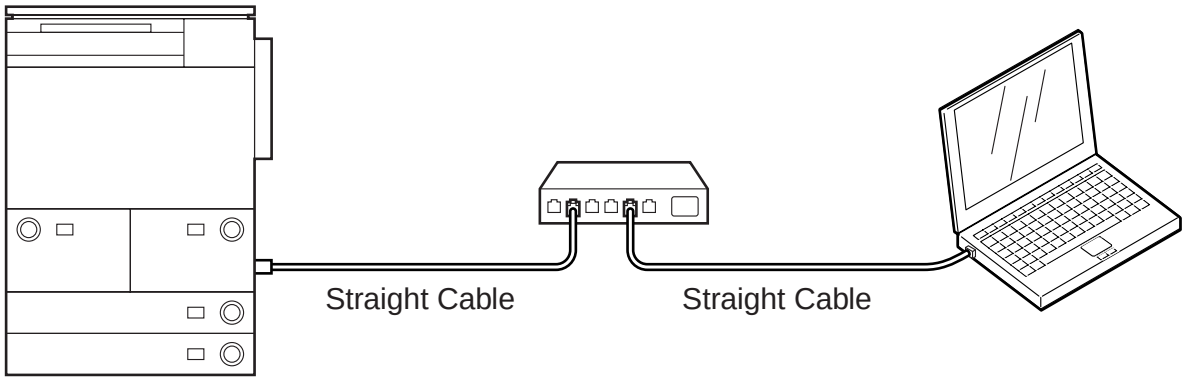
Prepare the following:

- PC to which the Service Support Tool (version 1.25 or later) has been installed
- System CD (for iR2200/iR2800/iR3300)
- Connection cable
  The type of cable depends on how the machine is to be connected to the PC.
  - In the case of a bi-Centronics interface,
    obtain a parallel cable (indicating IEEE 1284Std-compliant).
  - Using a Network Cable
    Connect the machine with the PC using a cross Ethernet cable or a straight Ethernet cable and a HUB.
    The following shows how a cross Ethernet cable may be used.



F07-101-01

If you are using a straight Ethernet cable and a HUB, you are encouraged to connect the machine with the PC on a one-on-one basis, outside the user's network environment.



F07-101-02


Memo

Differences in Connection Between Bi-Centronics Cable and Network Cable

Each has its own advantages and disadvantages; select one to suit specific needs:

Connection with a Bi-Centronics Cable (using a parallel cable)

Advantages:

- You can use the Service Support Tool without considering the environment of the user's network.
- If the system is not installed on the hard disk, the system may be installed or the hard disk may be formatted using download mode.

Disadvantages:

- The specifications of the PC used or the chip set may not allow the use of high-speed mode, i.e., it has a low level of compatibility.
- The PC must have a parallel interface.
- You can not use high-speed mode on Windows NT or Windows 2000.

Connection with a Network Cable

Advantages:

- It is relatively high speed.
- It is less dependent on the PC to be used.
- The use of a cross cable enables direct connection.

Disadvantages:

- You must change the network settings of the machine or the PC to suit the user's network environment. More importantly, you must change the machine back to its initial settings after the task.
- You must have a good knowledge of networking.
- The system must start up normally and the network settings must be correct.


Memo

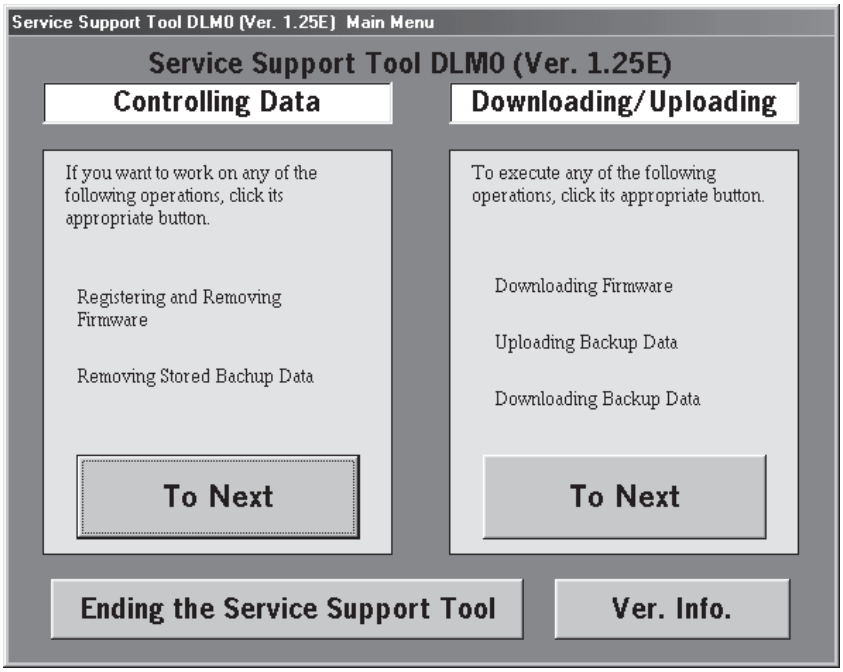
Points to Note When Using a Bi-Centronics Interface and a Network

The Service Support Tool allows you to select one of two interfaces to suit specific needs. If both are in use, you must turn the machine off and then on first before making a switch-over (i.e., from Bi-Centronics to Network or vice versa), thereby preventing errors in the event of simultaneous writing operations.

1.2 Data Control

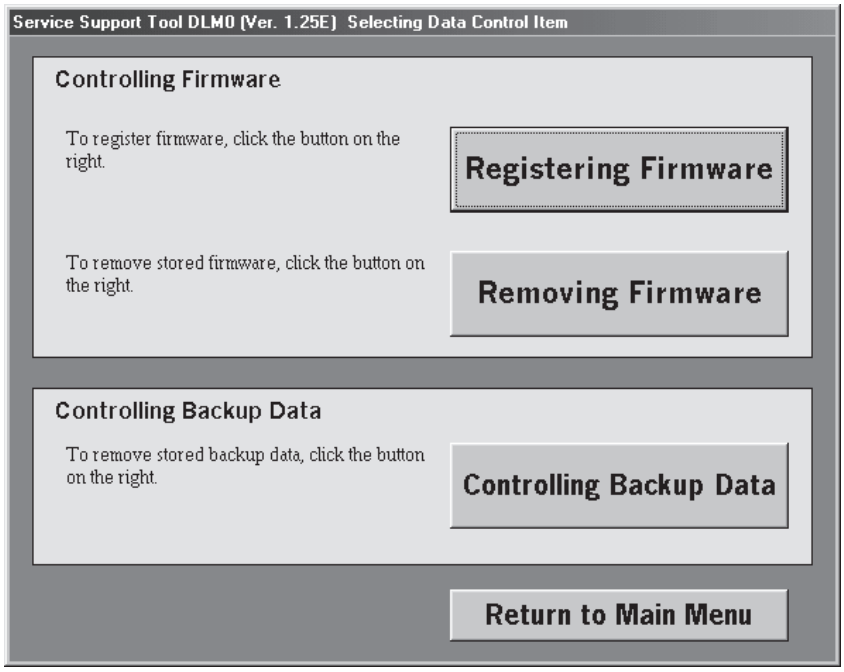
You must install the files to use (System, RUI, HD Format , BOOT, Language) before executing downloading.

1) Start up the Service Support Tool.
2) Under ‘Controlling Data’, select ‘To Next’.



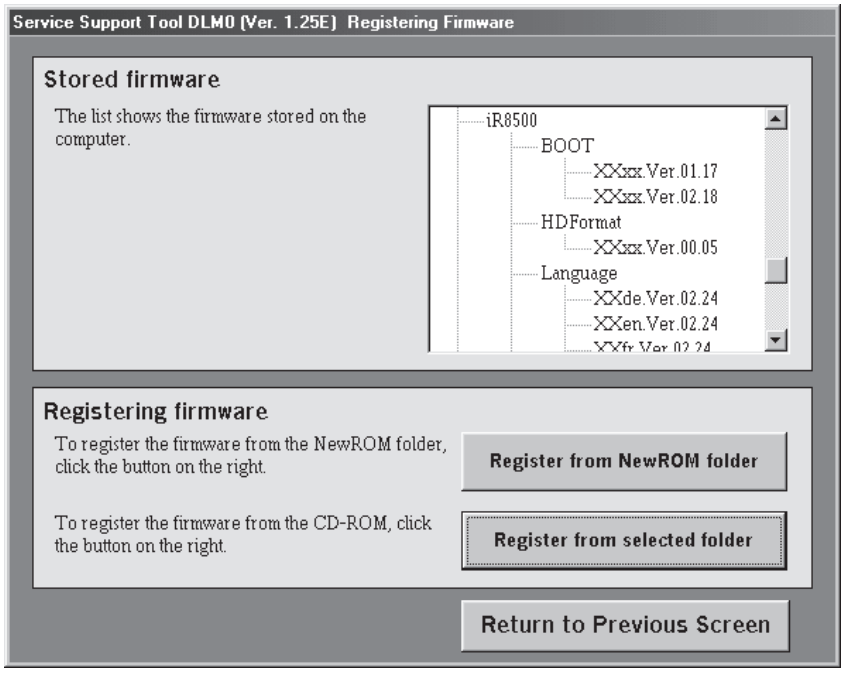
F07-102-01

3) From the Control Work screen of the firmware, select ‘Registering Firmware’.



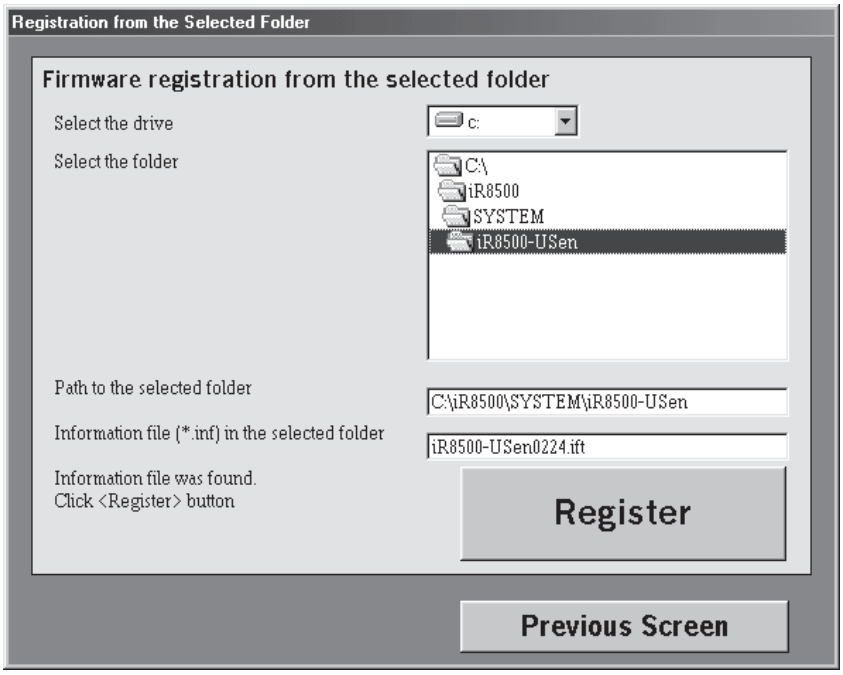
F07-102-02

4) From the following screen, select ‘Register from selected folder’.



F07-102-03

5) Select the drive to which you have inserted the System CD.
6) Select the folder of the suitable version, and click ‘Register’.
   On this screen, it is in the case of iR8500.



F07-102-04

Note: For iR2800/iR3300 User
You must select the folder of iR2200.
Such software can be used in common.

1.3 Downloading the System Software, RUI, and Language Module

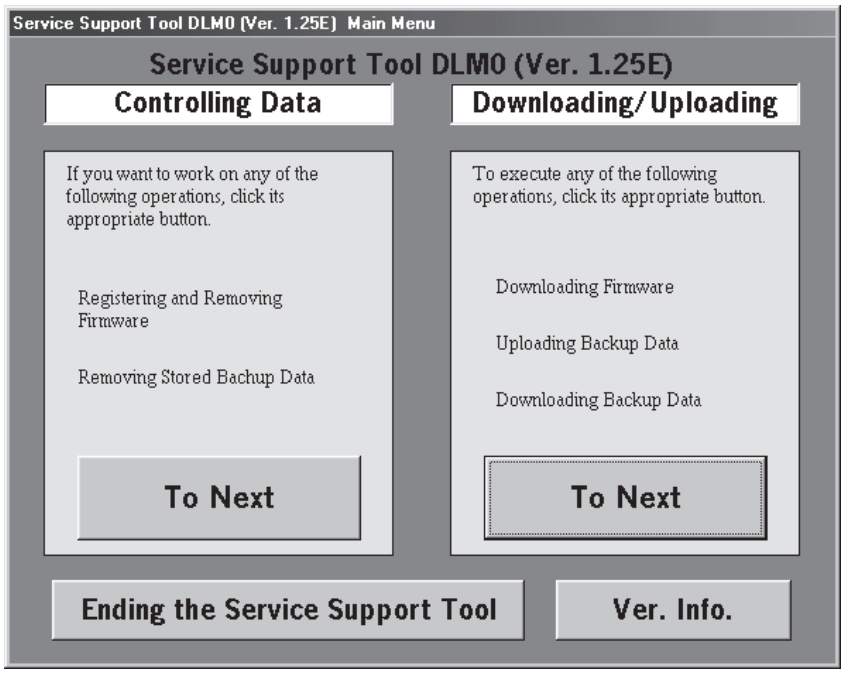
1.3.1 Making Connections

The discussions that follow are based on the use of a parallel cable:

- Check to make sure that the Processing/Data lamp is OFF.
  1) Turn off the machine's main power switch, and disconnect the power plug and the network cable.
  2) Using a parallel cable, connect the PC to the parallel connector on the left side of the controller.
- At this time, the PC must remain OFF.
- Connect the 25-pin connector of the cable to the PC and the 36-pin connector to the machine.
  3) Turn on the power switch of the PC, and start up the Service Support Tool.
  4) Connect the machine's power plug to the power outlet, and turn on the main power switch.

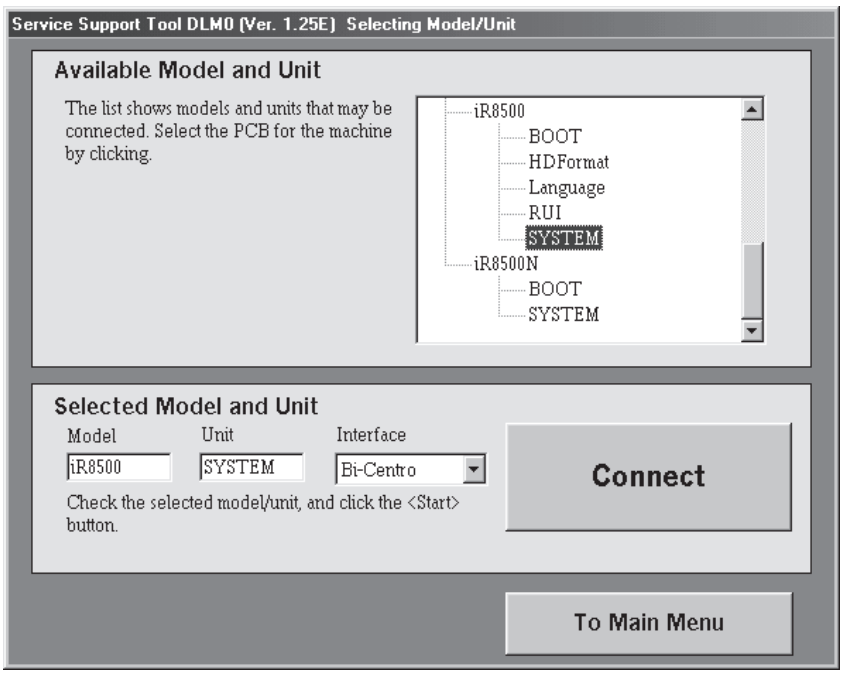
1.3.2 Downloading

1) Under 'Downloading/Uploading', select 'To Next'.



F07-103-01

2) Start the machine's service mode, and make the following selections: COPIER>FUNCTION>SYSTEM>DOWNLOAD. Then, press 'OK' so that the machine will be in download standby mode (notation "STNDBY").
3) Select SYSTEM, RUI, or Language, and select the interface (either Bi-Centronics or Network). The discussions that follow assume that you have selected bi-Centronics. On this screen, it is in the case of iR8500.



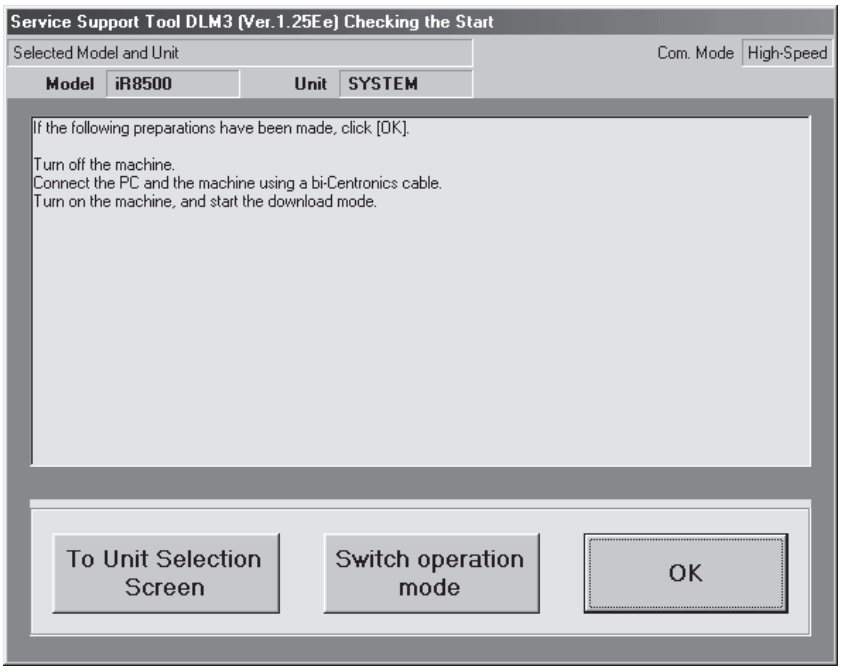
F07-103-02

Memo

About the Language Module (Language)

A language module is a unit containing the language data needed to indicate messages in the control panel, each module designed for a specific language. Install only those language modules you need, thus saving time spent for downloading. You can switch among installed language modules in user mode: common settings> display language. At time of shipment, five modules (languages) are installed. The modules will be lost once you format the had disk, requiring you to install them once again to suit the needs of the user. To check the version of the modules, make the following selections: COPIER>DISPLAY>VERSION>LANG-XX. Check to make sure that the version of each language module matches the version of the installed system software; otherwise, use the langue module built into the system software to start up. The built-in module is not part of the modules that may be selected as the display language; for this reason, you will not be able to make use of the language switch unless you have installed modules independently of the system software. If you replace an existing language module with a module of an inappropriate version, 'E744-0001' will be indicated when the machine is started up for the first time; to reset the error, install a module of the correct version.

4) If the notation in the upper right of the screen is ‘High-Speed’, go to step 6); if ‘Low-Speed’, go to step 5).

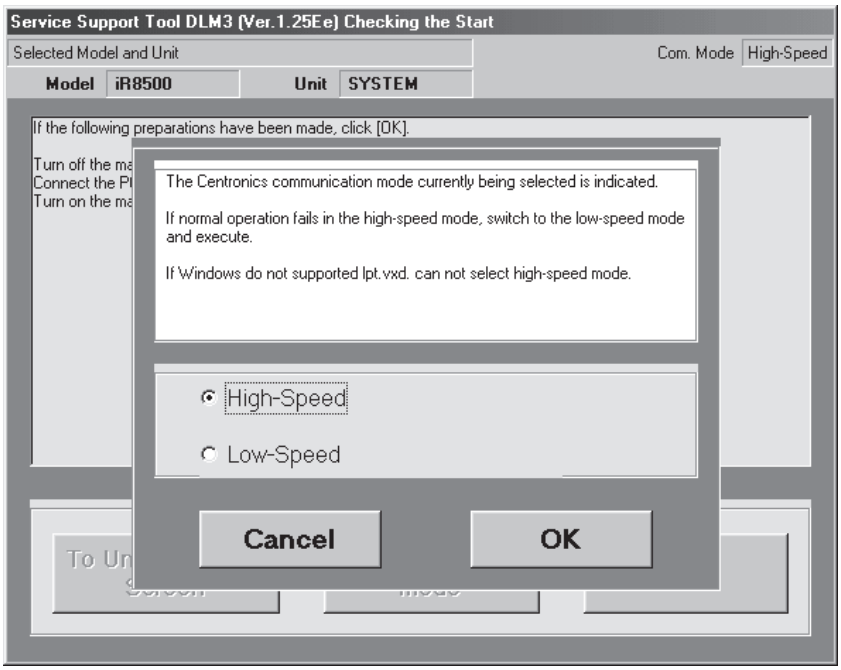


F07-103-03

5) Click ‘Switch operation mode’ to bring up the Centronics Communication Mode Change screen. Select ‘High-Speed’, and press ‘OK’ to move to step 6).

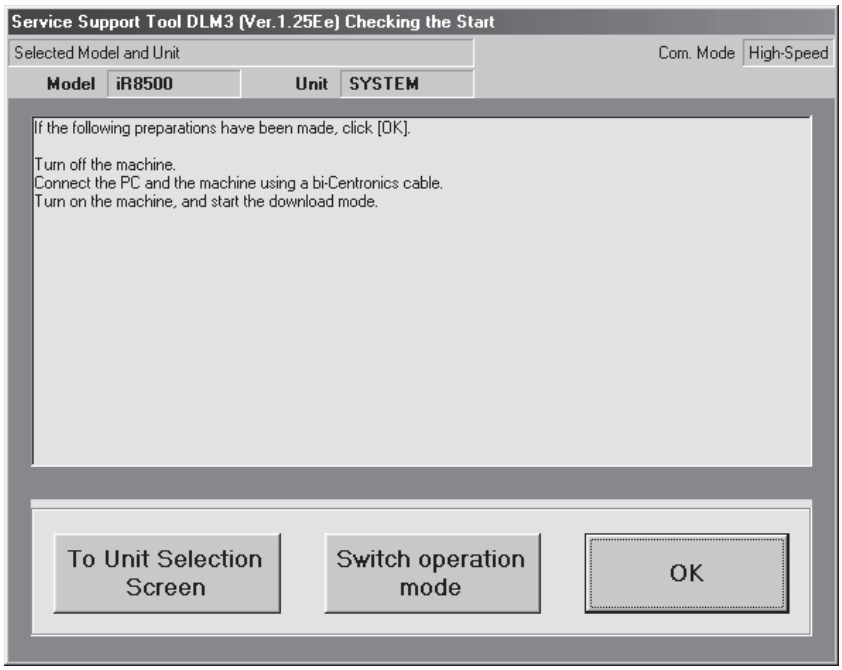
Memo

High-speed mode is not supported on Windows NT and Windows 2000.



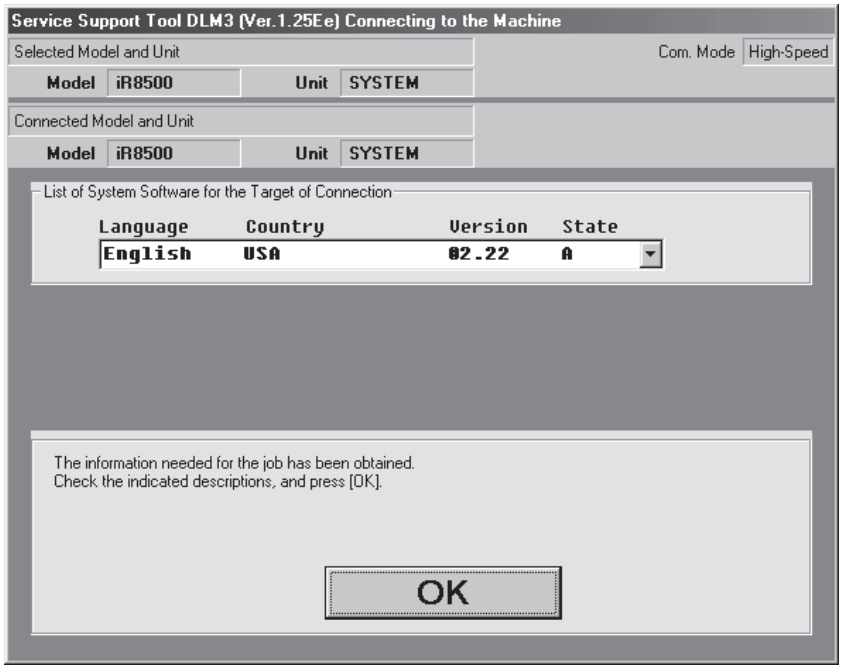
F07-103-04

6) Click ‘OK’ to start connection.



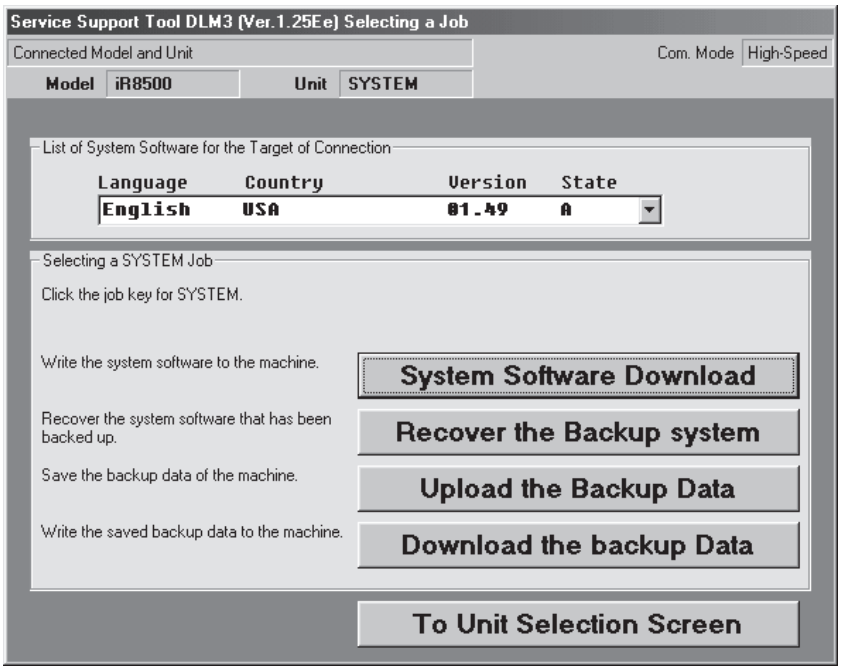
F07-103-05

7) When connection is done, the following screen will appear. Click ‘OK’.



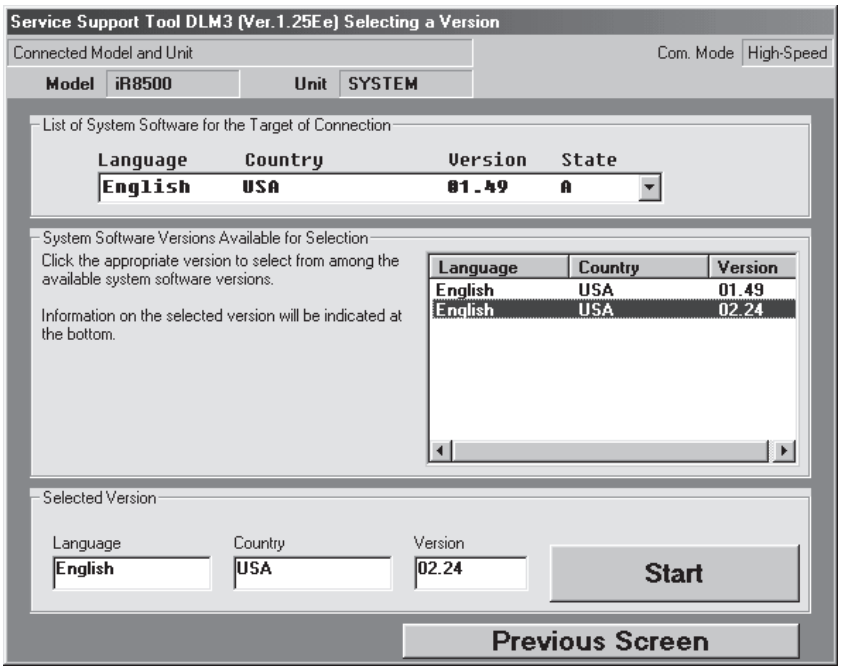
F07-103-06

8) Select ‘System Software Download’ of the Service Support Tool screen.



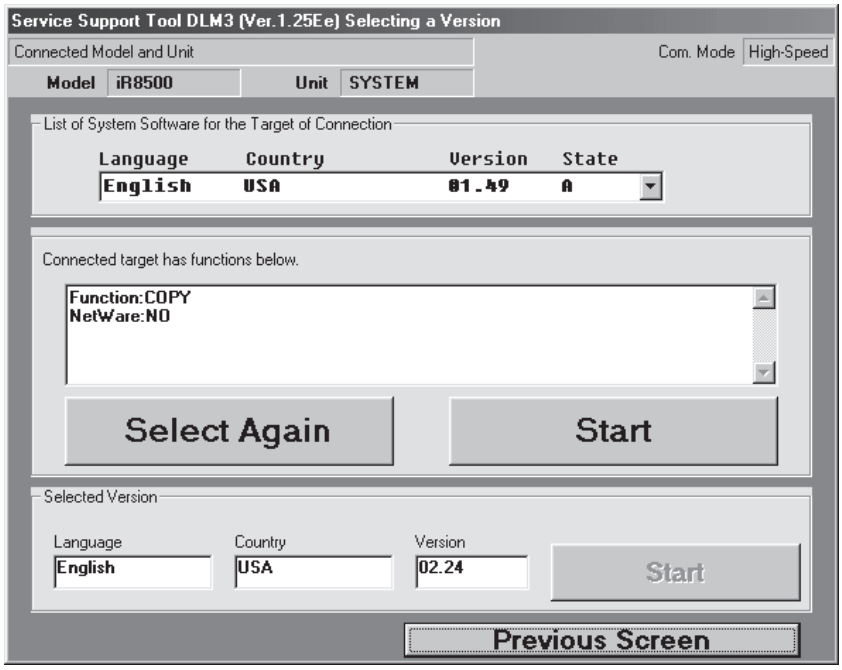
F07-103-07

9) Select the files suited to the language and the country in question from the ‘list of software’ on the Service Support Tool screen, and click ‘Start’.



F07-103-08

10) The following screen will appear to indicate the types of software that will be downloaded: “Function: COPY/PRINTER” “NetWare: YES/NO.” If the indications are correct, click ‘Start’.



F07-103-09

Memo

Installing System Software with Different Functions
Normally, you cannot upgrade existing system software by means of downloading unless the old and new systems have the same functions; an attempt to do so will result in an error. If the user obtains the official Upgrading kit and follow the appropriate procedure, however, such upgrading is possible; for details, see the Installation Procedure that comes with the Upgrading kit.

11) Check the progress bar, which indicates the progress of downloading.
12) When downloading ends, turn off the PC by making the following selections: OK>To Unit Selection Screen>OK>To Main Menu>Ending the Service Support Tool>End.

1.3.3 After Downloading

1) Turn off the machine's main power switch, and disconnect its power plug.
2) Turn off the PC.
3) Disconnect the parallel cable from the PC and the machine.
4) If a network cable is connected, connect it to its correct location, and turn on the machine's main power switch.
5) When the machine has started up, start service mode to check the system version for the HDD: COPIER>DISPLAY>VERSION>MN-CONT.

1.4 Upgrading the BOOT ROM

1.4.1 Making Preparations

When you upgrade the machine's BOOT ROM, you will directly replace the contents of the ROM DIMM. Take full care.

1) Check to see that the machine's Data lamp is OFF.
2) Turn off the machine's main power switch, and disconnect the power plug and the network cable.

Limits on Preparing the BOOT ROM
You will not be able to prepare the BOOT ROM unless the following conditions are met:

On this screen, it is in the case of iR8500.

- The model of the machine is the same; e.g., you cannot use the iR2200 BOOT ROM data to upgrade an iR5000.
- The parameter "function" (COPY or PRINTER) must match when downloading the system software; i.e., you cannot use the iR2200N (PS/PCL model) BOOT ROM data to upgrade an iR2200. (The same is true of from PS/PCL model to COPY.)

Any attempt made in disregard of the above will cause a mismatch error when the machine runs a check before writing.

1.4.2 Connection

The following discussions assume the use of a network cable (cross cable).

Making Preparations

If you want to download firmware to the machine using a network, you need to set up the PC and the machine's network environment.

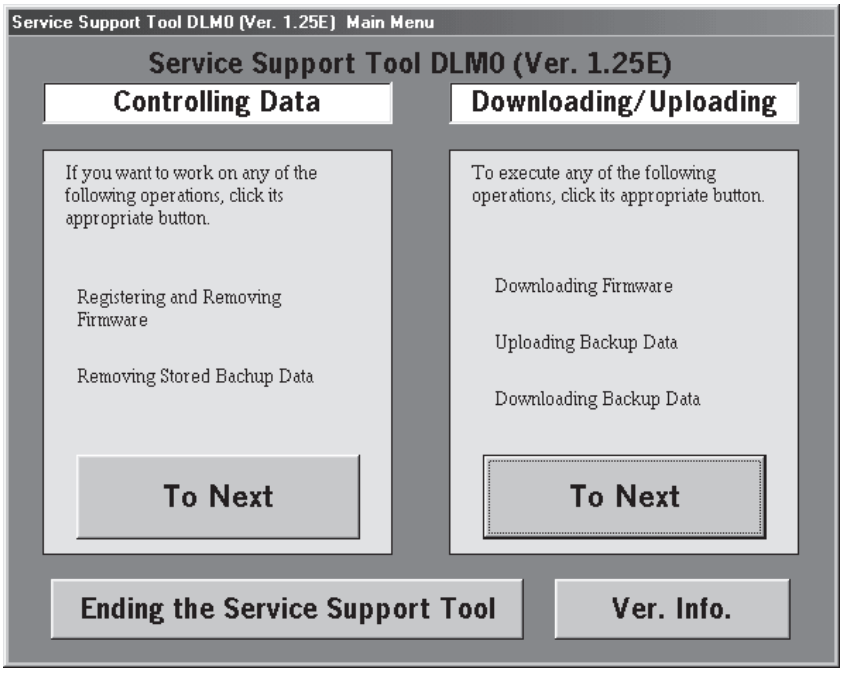
Use TCP/IP as the communication protocol for downloading form a network using the Service Support Tool. Connect the PC to the machine by way of the network, and check to make sure that all are ready for communication by sending a PING command from the PC or the machine.

1) Connect the machine's network connector (RJ-45) and the network connector of the PC using a network cable (cross cable).
2) Turn on the PC, and start up the Service Support Tool.
3) Connect the machine's power plug to the power outlet, and start service mode; make the following selections: COPIER>FUNCTION>SYSTEM>DOWNLOAD. Then, click 'OK' so that the machine will be in download standby mode (notation "STNDBY").

1.4.3 Preparing BOOT ROM

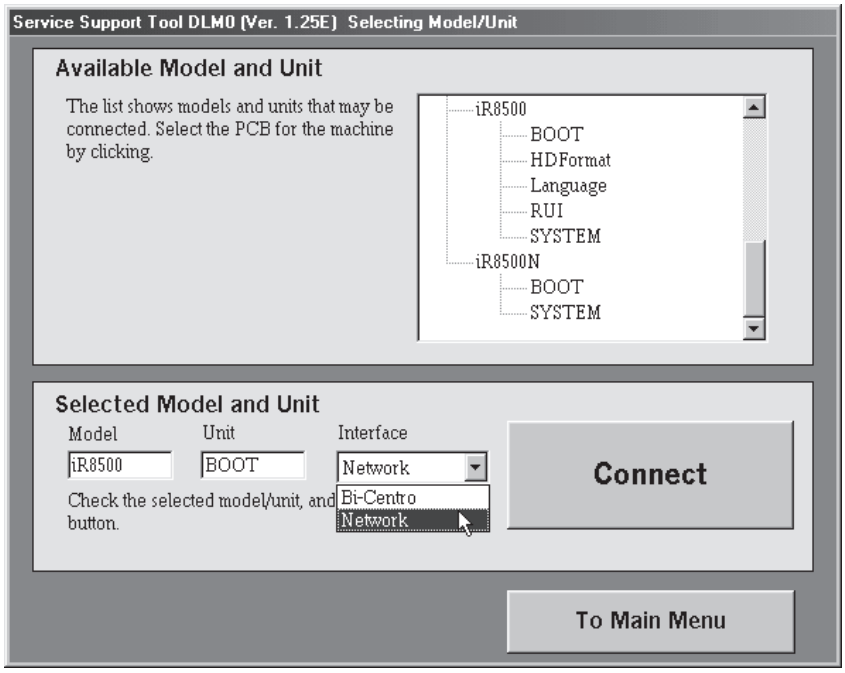
The discussions that follow assume upgrading an iR8500 (COPY model).

1) User 'Downloading/Uploading', select 'To Next'.



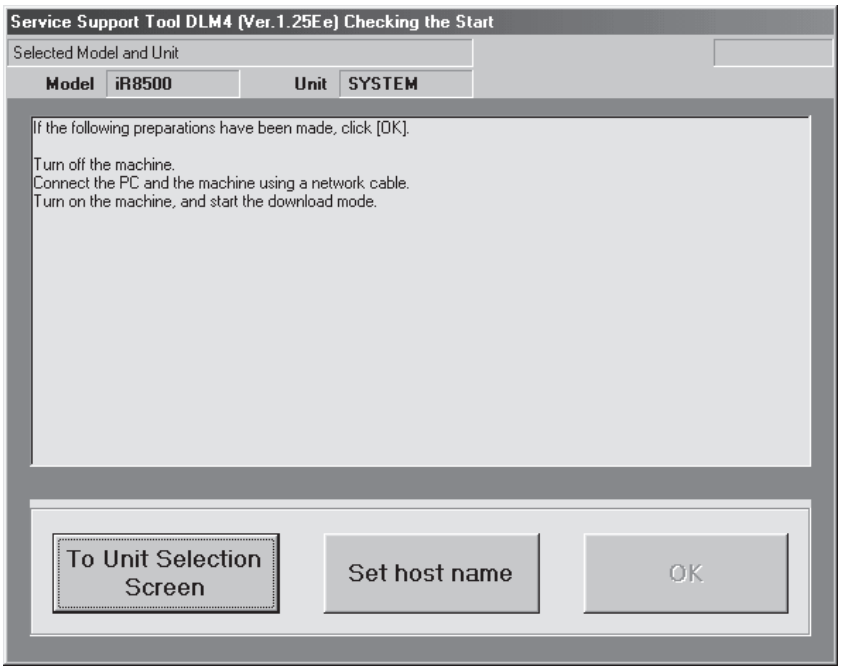
F07-104-01

2) Select the correct BOOT, and select an interface (bi-Centronics or Network). (The example selects iR8500 for BOOT, and Network is selected for Interface.)



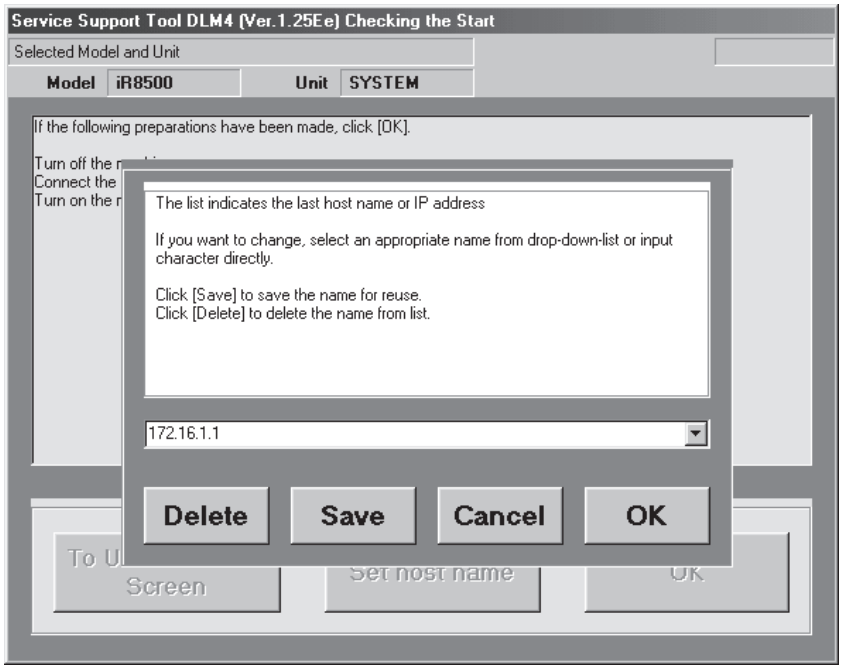
F07-104-02

3) To enter the IP address or the host name of the machine to connect, click ‘Set host name’.



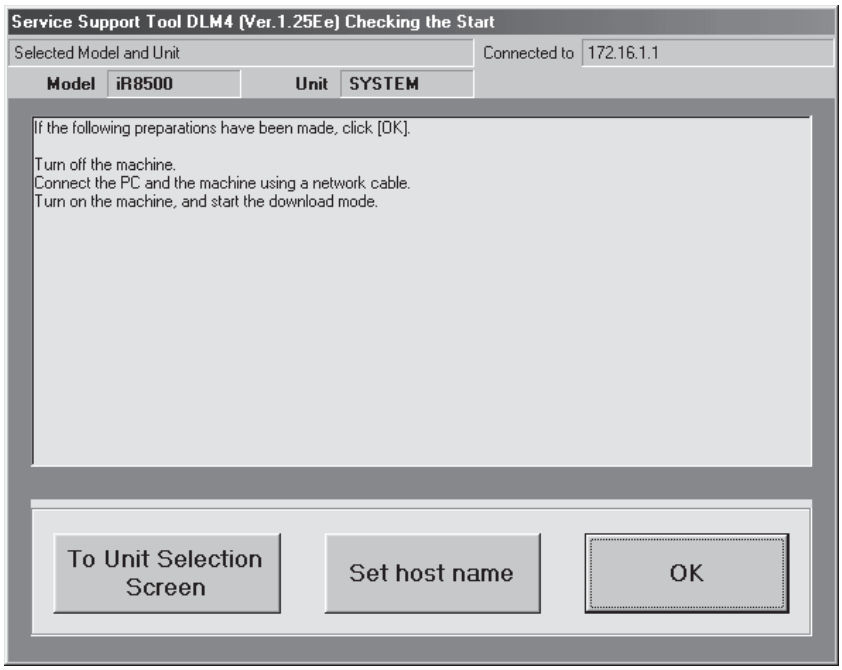
F07-104-03

4) Enter the IP address or the host name (here, 172.16.1.1), and click ‘Save’. Then, click ‘OK’.



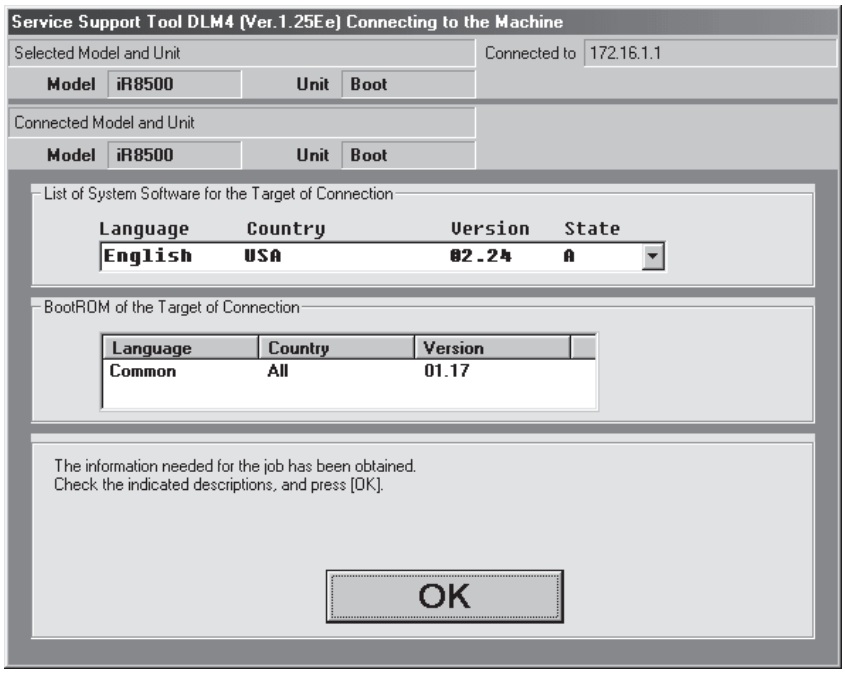
F07-104-04

5) Check to see that the notation in the upper right indicates the IP address or the host name of the machine to connect; then, click ‘OK’ to start connection.



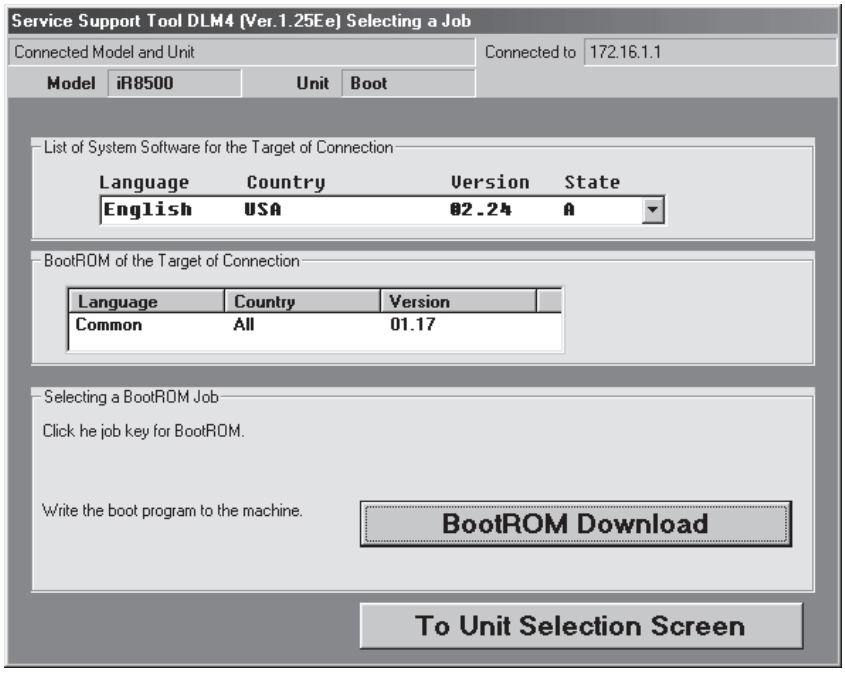
F07-104-05

6) When connection is done, the following screen appears. Click 'OK'.



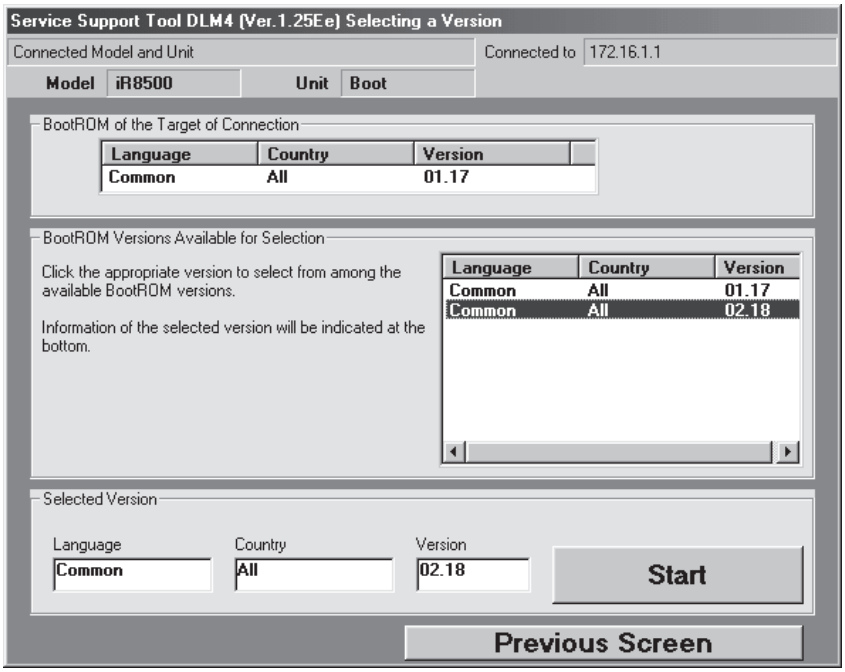
F07-104-06

7) Select 'BOOT ROM Download' on the Service Support Tool screen.



F07-104-07

8) Select the files for the version in question of the Service Support Tool from 'list of software'; then, click 'Start' to start downloading.



F07-104-08

9) See the progress bar, which indicates the progress of downloading.

Take full care so that the machine and the PC will not be turned off while downloading is taking place. Otherwise, they may fail to start up.

10) When downloading ends, turn off the PC by making the following selections: OK>To Unit Selection Screen>OK>To Main Menu>Ending the Service Support Tool>End.

1.4.4 After Downloading

1) Turn off the machine's main power switch, and disconnect the power plug.
2) Turn off the PC.
3) Disconnect the network cable (cross cable) and the PC from the machine.
4) If a network cable is connected, connect it to the correct location, and turn on the machine's main power switch.
5) When the machine has started up, start service mode, and check the version of the BOOT ROM: COPIER>DISPLAY>VERSION>BOOT-ROM.

1.5 Formatting the HDD

If you have replaced the HDD, you must format it and then download the system software, RUI, and language.

1.5.1 Making Connections

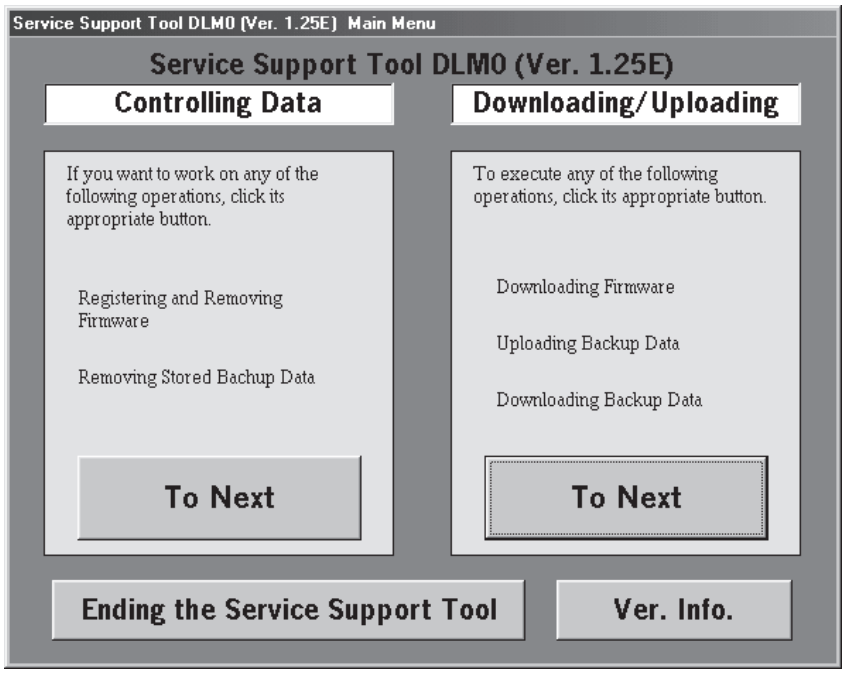
The discussions that follow assume the use of a parallel cable:

1) Using a parallel cable, connect the PC to the parallel connector on the left side of the controller.
- At this time, the PC must remain OFF.
- Connect the 25-pin connector of the bi-Centronics cable to the PC and the 36-pin connector to the machine.

2) Turn on the PC, and start up the Service Support Tool.
3) Connect the machine's power plug to the power outlet; while holding down '2' and '8' of the keypad at the same time, turn on the main power switch.

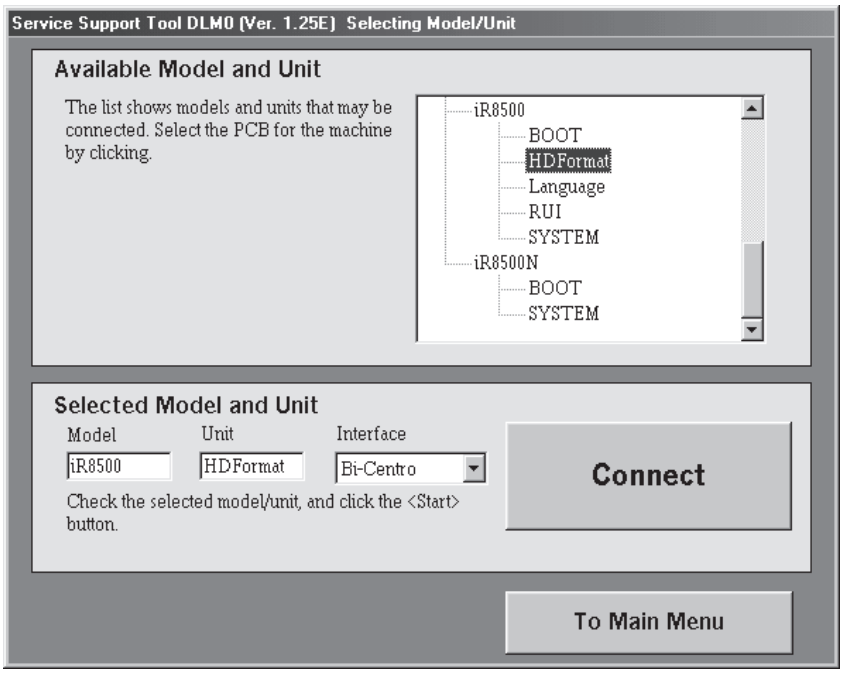
1.5.2 Starting Formatting

1) Under 'Downloading/Uploading', select 'To Next'.



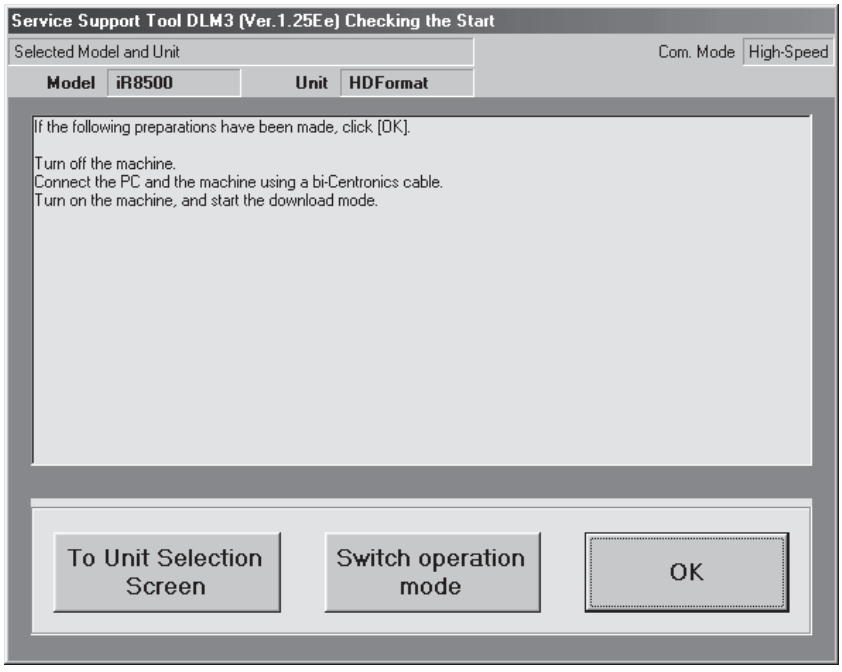
F07-105-01

2) Select ‘HD Format’, and select ‘Connect’.



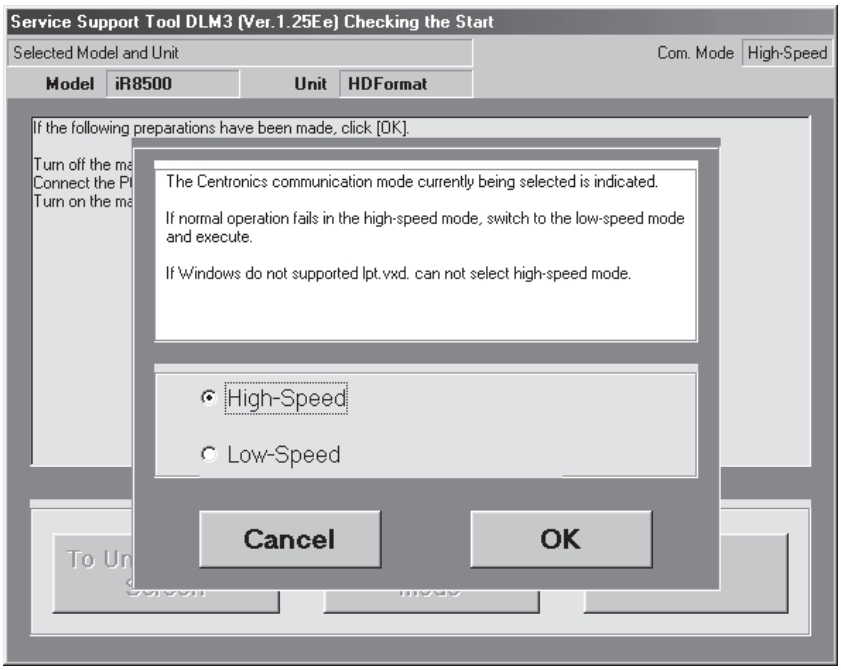
F07-105-02

3) At this time, if the notation in the upper right of the screen is ‘High-Speed’, go to step 5); if ‘Low-Speed’, go to step 4).



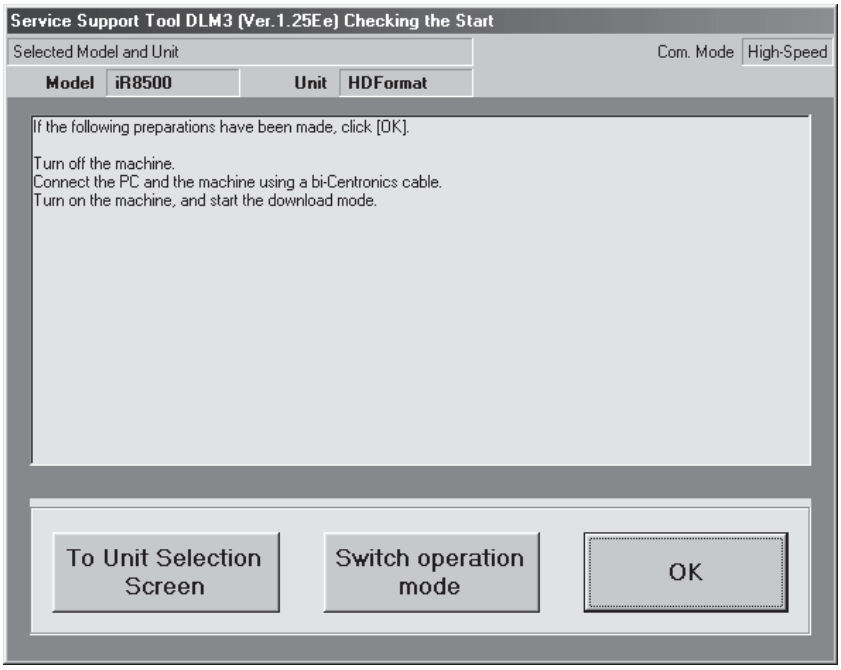
F07-105-03

4) Click ‘change operation mode’ so that the Centronics Communication Mode change screen will appear. Select ‘high-speed’, and click ‘OK’; then, go to step 6).



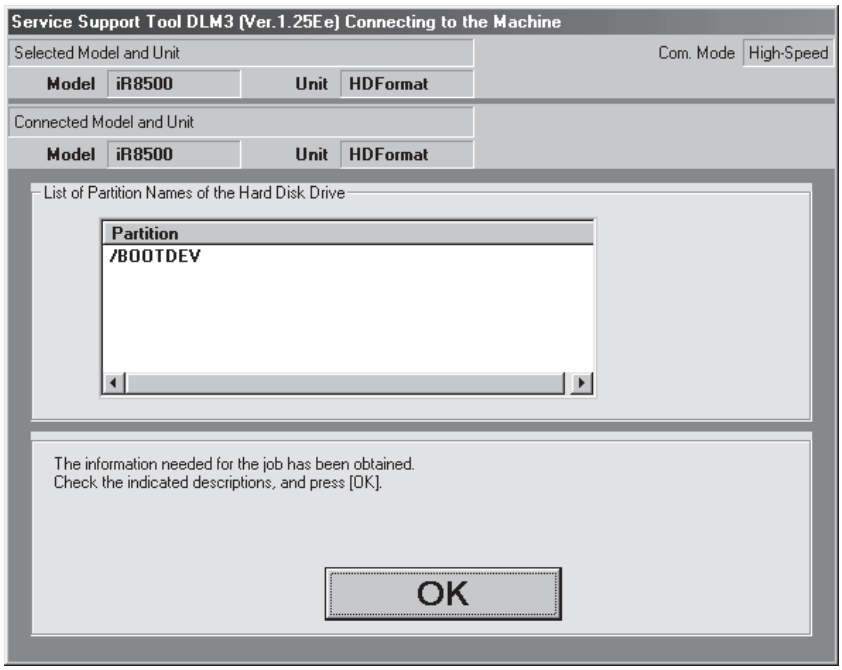
F07-105-04

5) Click ‘OK’ to start connection.



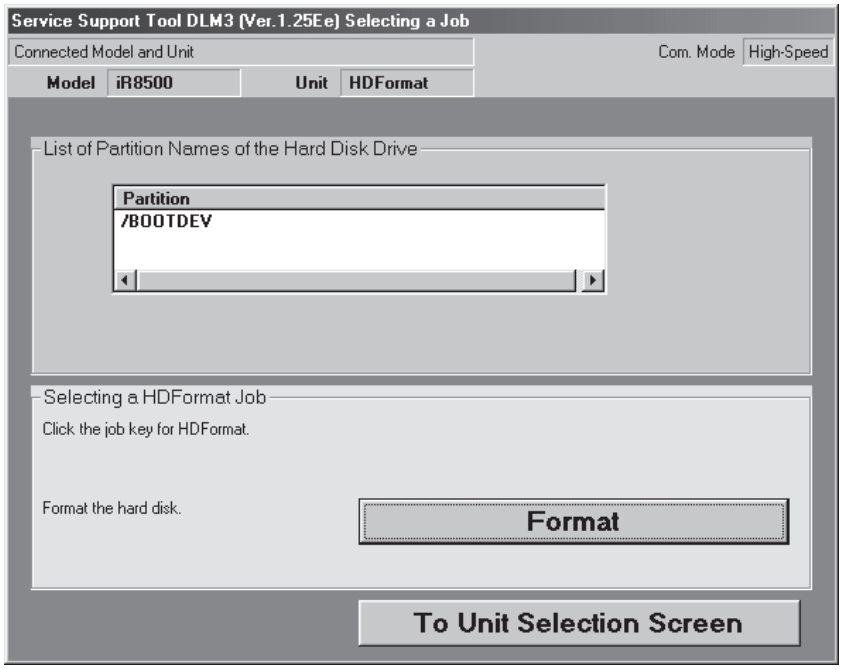
F07-105-05

6) When connection is done, the following screen will appear. Select ‘OK’.



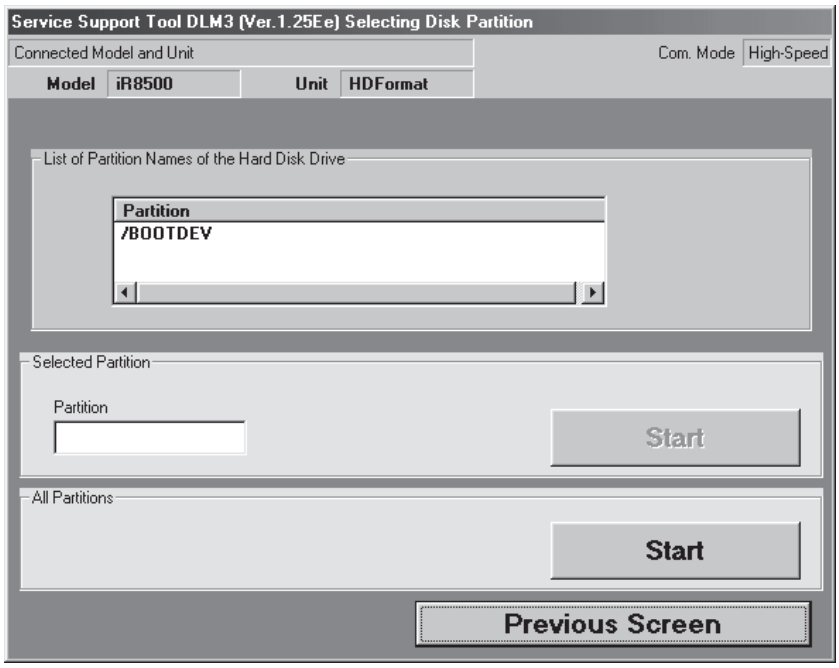
F07-105-06

7) When the Check screen appears, select ‘Format’.



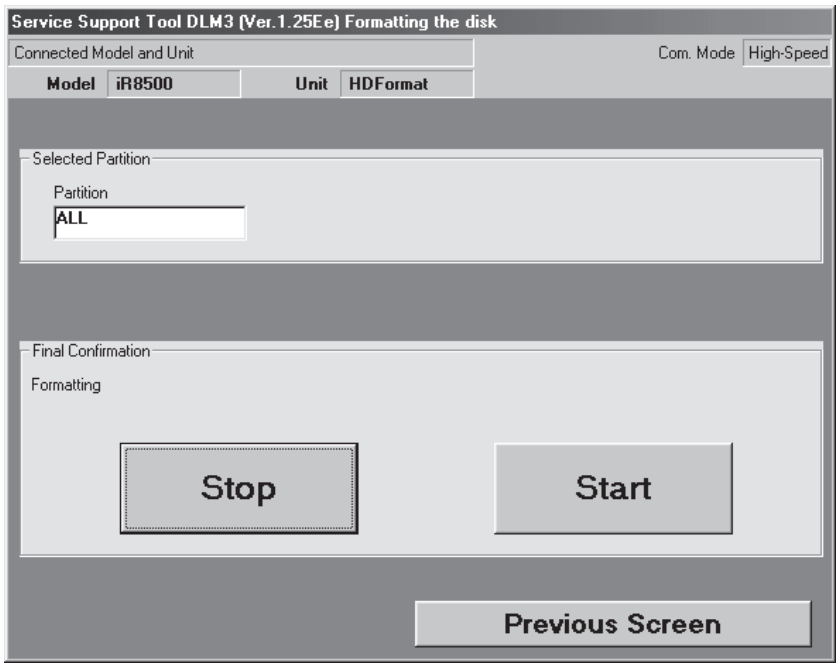
F07-105-07

8) When the Start Check screen appears, select 'Start' to format all partitions.



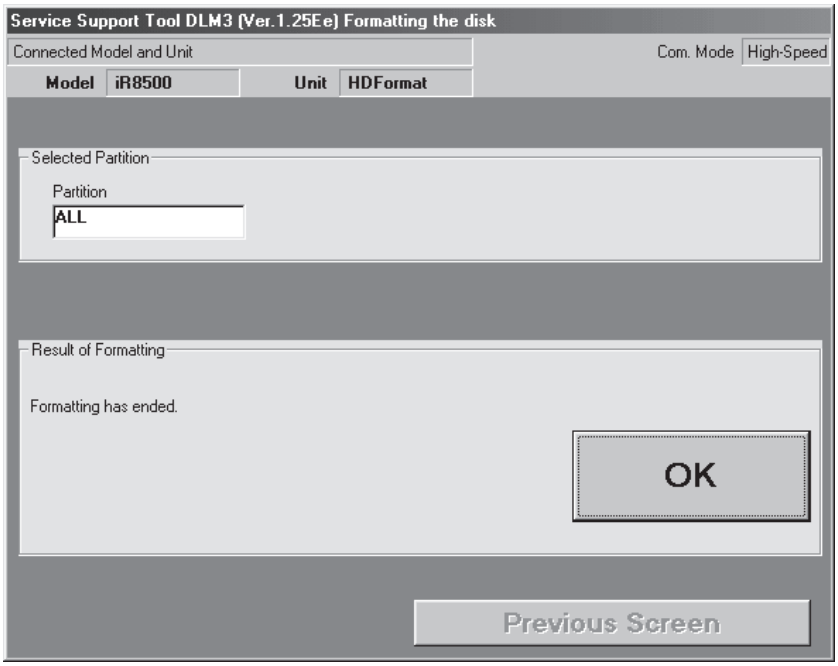
F07-105-08

9) When the Start Check screen appears once again, select 'Start'.



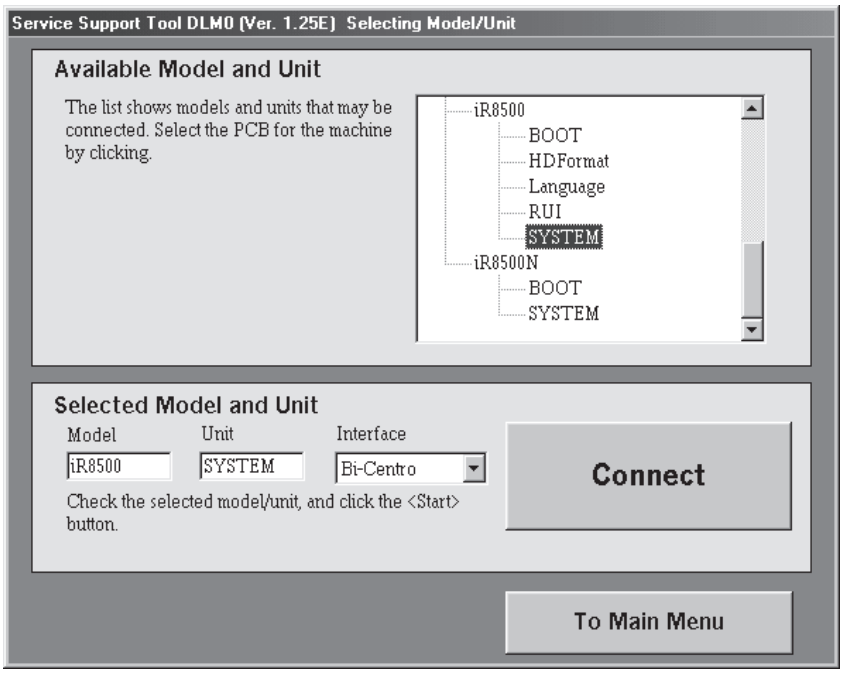
F07-105-09

10) When formatting is done, the message “Format Finished” appears. Click ‘OK’.



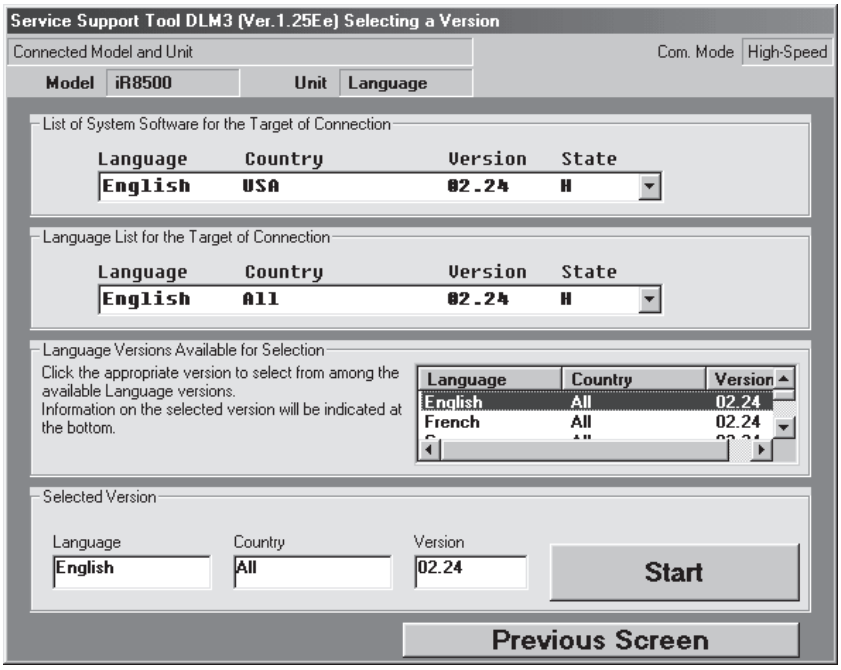
F07-105-10

11) To continue downloading system, select ‘To Unit Selection Screen’, and click ‘OK’. Then, start downloading system.



F-07-105-11

12) When the system downloading ends, install the RUI and the Language module in the same way.



F07-105-12

1.5.3 Points to Note When Formatting the Hard Disk

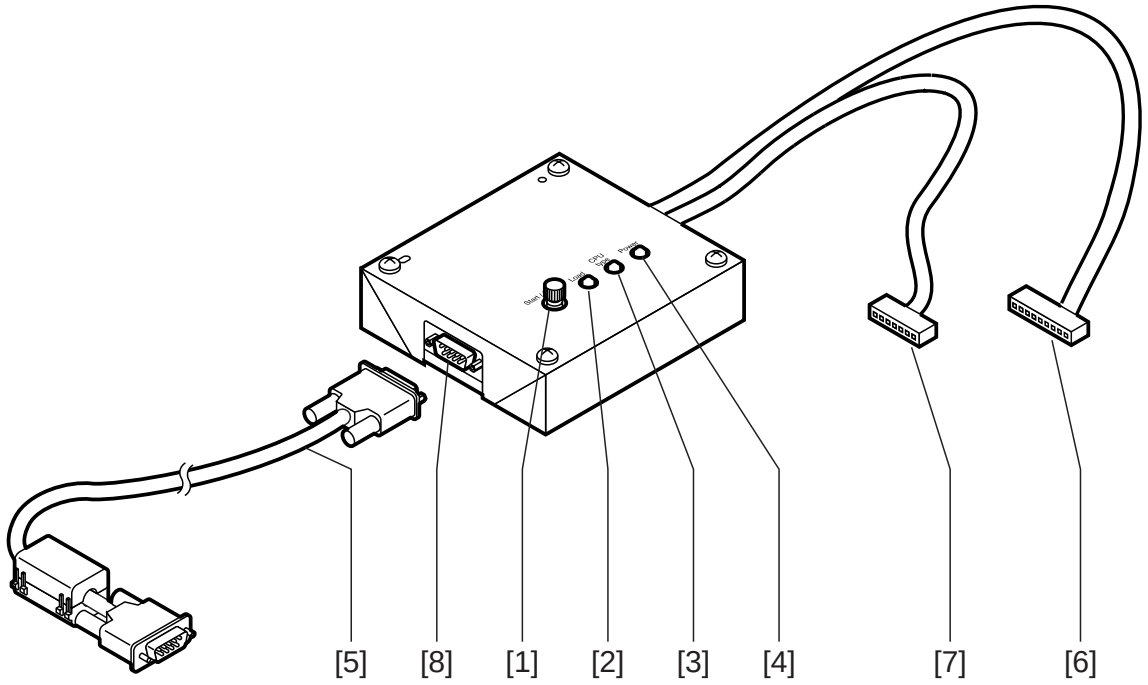
1. If you have formatted the hard disk, you must also download the system software at the same time. Otherwise, 'E602-0002' will be indicated when you turn on the power.
   If the system software is yet to be installed to the hard disk, the hard disk may still be formatted or the system software may be downloaded in download mode.
   Connecting to the Network (using network cable)
2. If you want to install the Language module after installing the system software, you must be sure that its version is compatible with the version of the system software. If you install a Language module not compatible with the system software in question and, in addition, if that language is selected in user mode, 'E744-0001' will be indicated.
3. If you installed the system software after formatting the hard disk, you may notice a faulty image on the control panel display. This is a normal condition, and will disappear when you turn off and then on the machine twice.

1.6 Downloader PCB

1.6.1 Purpose

Used for upgrading the CPU mounted on the option's PCB (For DADF-H1/Finisher-J1).

1.6.2 Downloader PCB Components



F07-106-01

Component names and functions

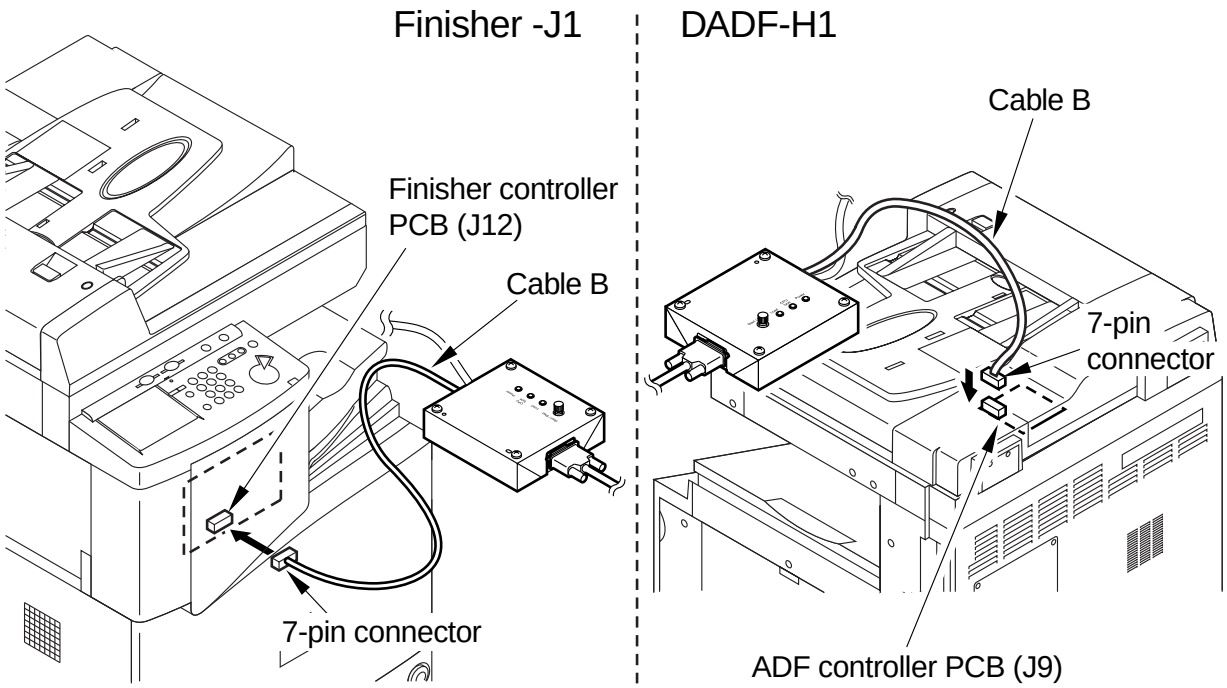
Ref.	Name	Function
[1]	START/STOP key	Press to start or stop downloading.
[2]	LOAD LED	Lights when downloading is enabled.
[3]	Model indicating LED	Not use in this model.
[4]	Power indicating LED	Lights when power is supplied to the downloader PCB from the finisher.
[5]	RS-232C cable (totally wired straight, 9-pin)	Connects the downloader PCB and the PC to each other. Connect the cable so the ferrite core of the cable is positioned on the PC side.
[6]	Cable A (9-pin) (about 70 cm long)	Not use in this model.
[7]	Cable B (7-pin) (about 50 cm long)	Connects the downloader PCB and the option's PCB to each other.
[8]	RS-232C connector	Connects the RS-232c cable to the downloader PCB.

T07-106-01

1.6.3 Download Procedure

a. Connecting to the option

1) Turn off the copier.
2) Detach the ADF or Finisher PCB cover.
3) Insert cable B (7pin) into ADF controller PCB (J9) or Finisher controller PCB (J12).

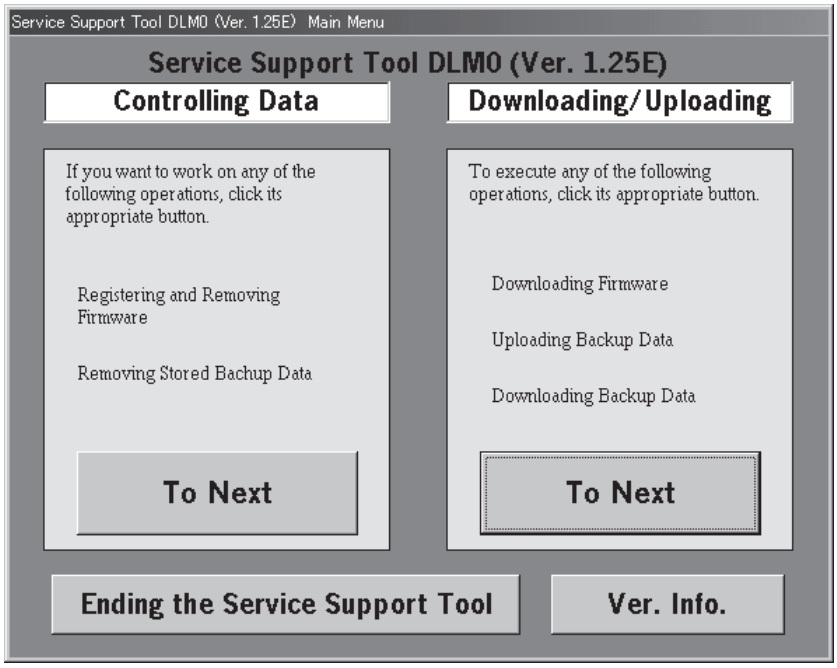


F07-106-02

4) Connect the RS-232C cable to the PCB and the RS-232C connector of the PC. The ferrite core of the cable is positioned on the PC side.
5) Turn on the copier.
   The power indicating LED on the PCB light.

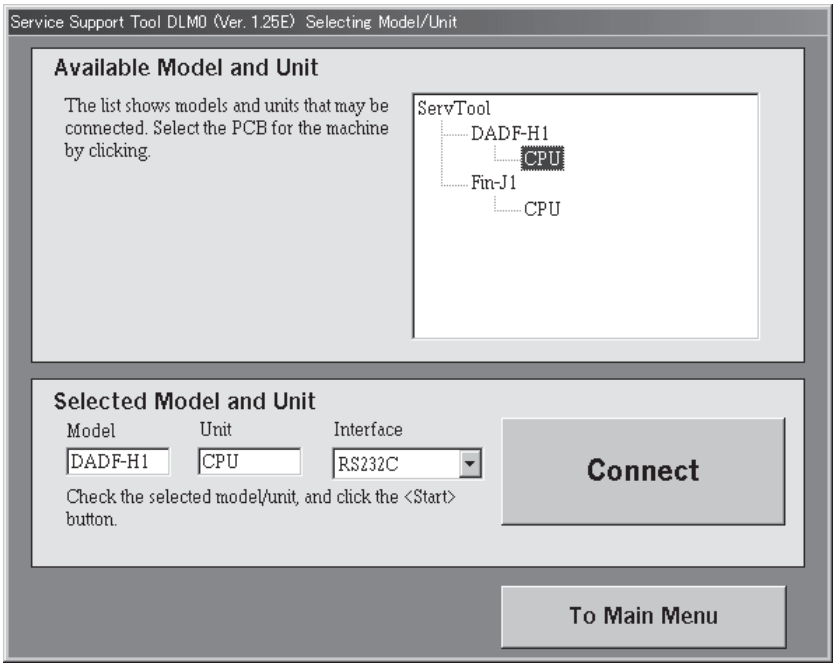
b. Downloading

1) Start the service support tool.
2) Choose “Downloading/Uploading.”



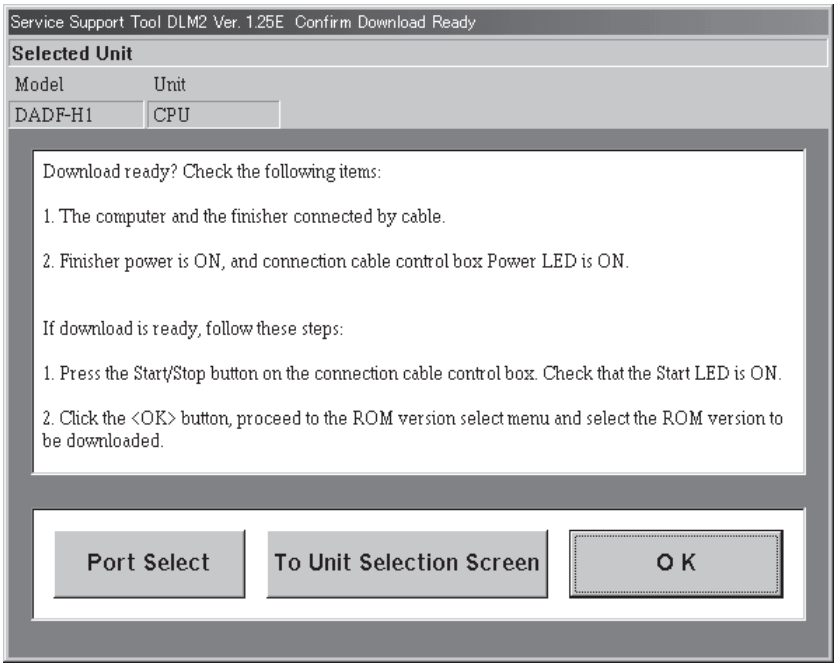
F07-106-03

3) Press the START/STOP key.
   The LOAD LED lights.
4) Choose suitable folder.
   Highlight the model name and click Connect. (ex.DADF-H1)



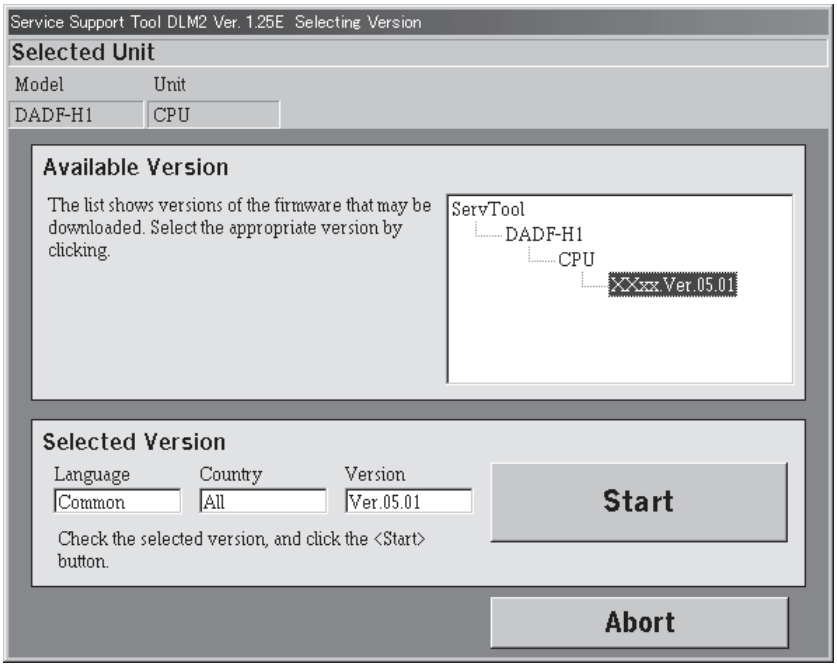
F07-106-04

5) Get ready for downloading as instructed on the screen.
Click OK to proceed further.



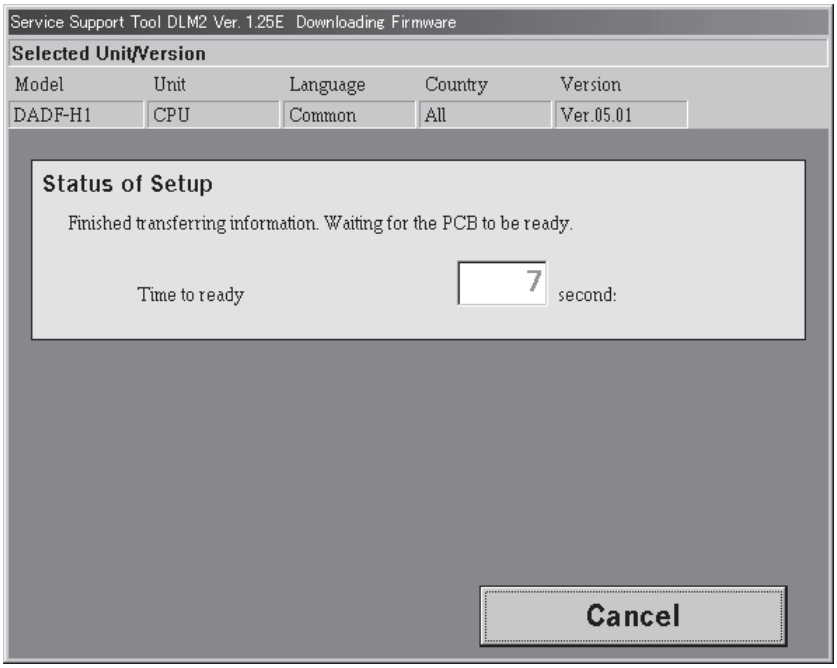
F07-106-05

6) Choose the ROM version to download.



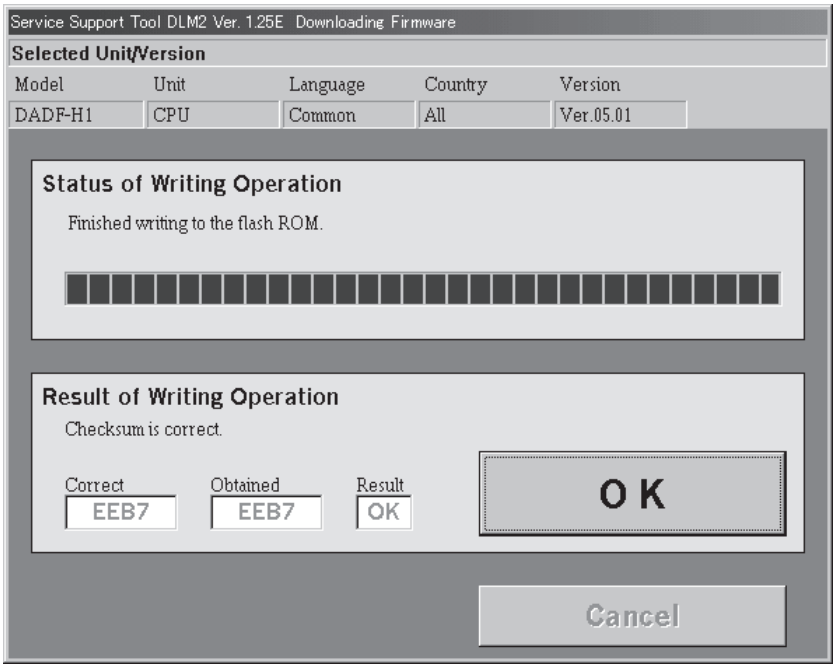
F07-106-06

7) Click START to let the PC and the downloader PCB to start downloading the program.



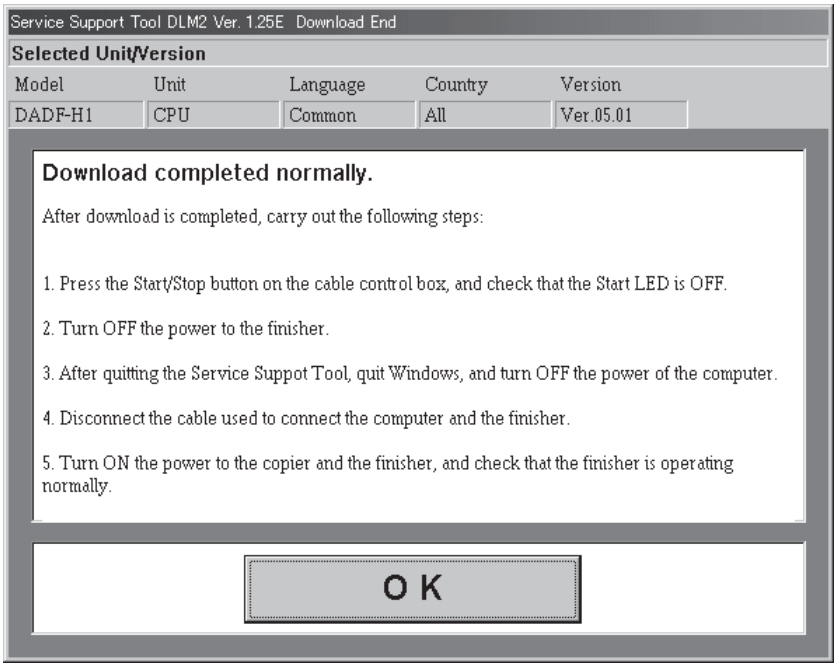
F07-106-07

8) Click OK when the download completes.



F07-106-08

9) Exit as instructed on the screen.



F07-106-09

1.6.4 Disconnecting

1) Press the START/STOP key.
   The LOAD LED goes off.
2) Turn off the copier.
3) Disconnect cable B from the finisher or ADF.
4) Reattach the cover to the finisher or ADF.
5) Turn on the copier

1.7 Upgrading by Replacing the DIMM/ROM

The following items may be upgraded by replacing the DIMM/ROM; the DIMM/ROM will be provided as a service part on its own:

- Copier
  Reader controller PCB: by replacement of flash ROM DIMM 5V; J413 [1]
  DC controller PCB: by replacement of flash ROM DIMM 5V; J322 [2]
  Main controller PCB: by replacement of BOOT ROM 3.3V; J1010, see MEMO [3]

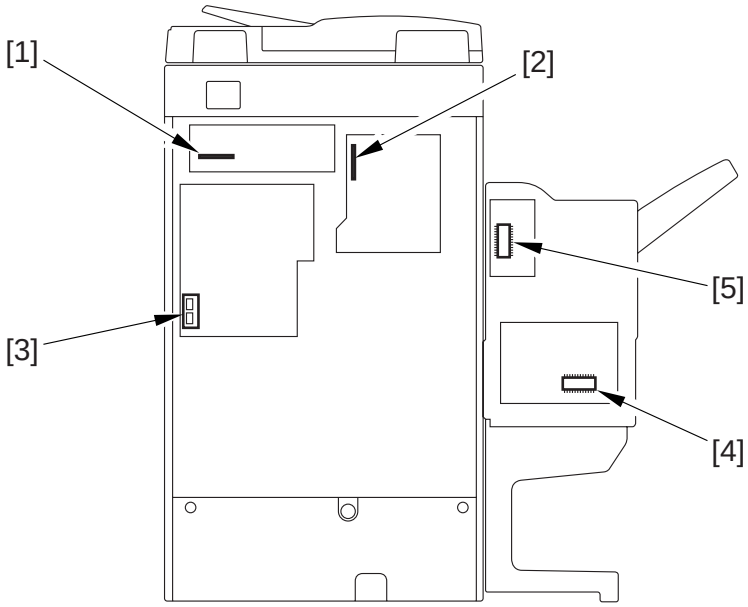
Saddle Finisher-G1
  Finisher controller PCB: by replacement of ROM; IC6 (DIP type) [4]
  Punch driver PCB: by replacement of ROM; IC1001 (DIP type) [5]

Memo

DADF-H1/Finisher-J1
These products are updated using a personal computer.

Memo

The BOOT ROM [3] on the main controller PCB may be upgraded using a PC. For details, see the descriptions under 1.4 “Upgrading the BOOT ROM.”



F07-107-01

2 Backing Up Data

2.1 Outline

Using the Service Support Tool, you can back up the data of the SRAM mounted to the main controller PCB.

The SRAM contains the following items of data:

- Service mode settings
- User mode settings
- Various MACHINE DATA

Once you have backed up the data, you may write it to the main controller PCB after replacing the PCB; or, you can simplify the work involved in entering service mode or user mode settings.

It is recommended to back up the data whenever possible using the Service Support Tool when you have updated the service mode settings or the user mode settings.

2.2 Backing Up Data

2.2.1 Making Preparations

- Install the system software to the Service Support Tool, making sure that its version is the same as that of the machine in question.
- Check to make sure that the machine's Data lamp is OFF.
- Turn off the machine's main power switch, and disconnect the power plug; as necessary, disconnect the network cable.

2.2.2 Making Connections

The discussions that follow assume the use of a parallel cable:

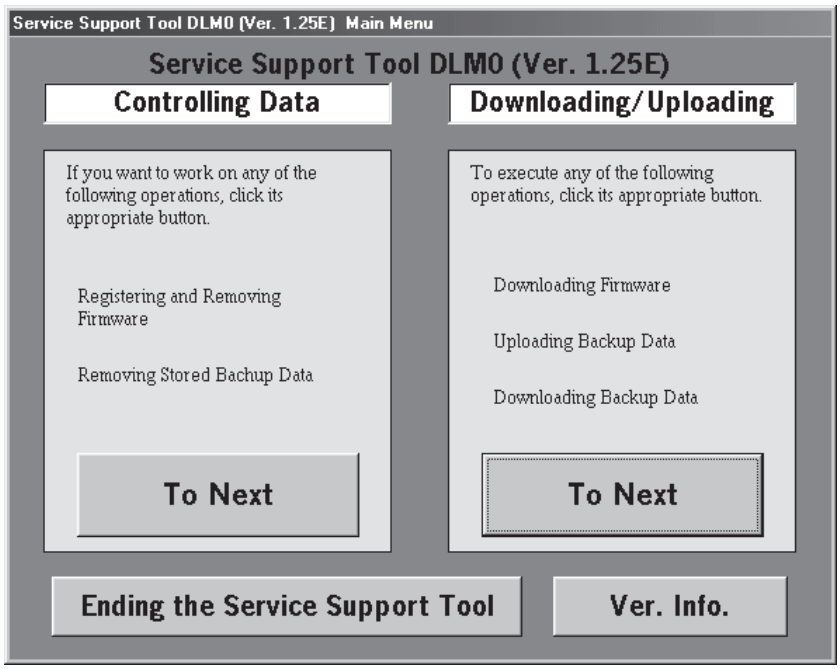
1) Using a parallel cable, connect the PC to the parallel connector on the right side of the controller.
- At this time, the PC must remain OFF.
- Connect the 25-point connector of the parallel cable to the PC and the 36-pin connector to the machine.

2) Turn on the power switch of the PC, and start up the Service Support Tool.
3) Connect the machine's power plug to the power outlet, and turn on its main power switch.
4) Start service mode.
5) Make the following selections so that the machine will enter download standby mode (notation "STNDBY"): COPIER>FUNCTION>SYSTEM>DOWNLOAD.

You can select 'network' as the interface for data backup. Here, the use of a bi-Centronics cable is assumed.

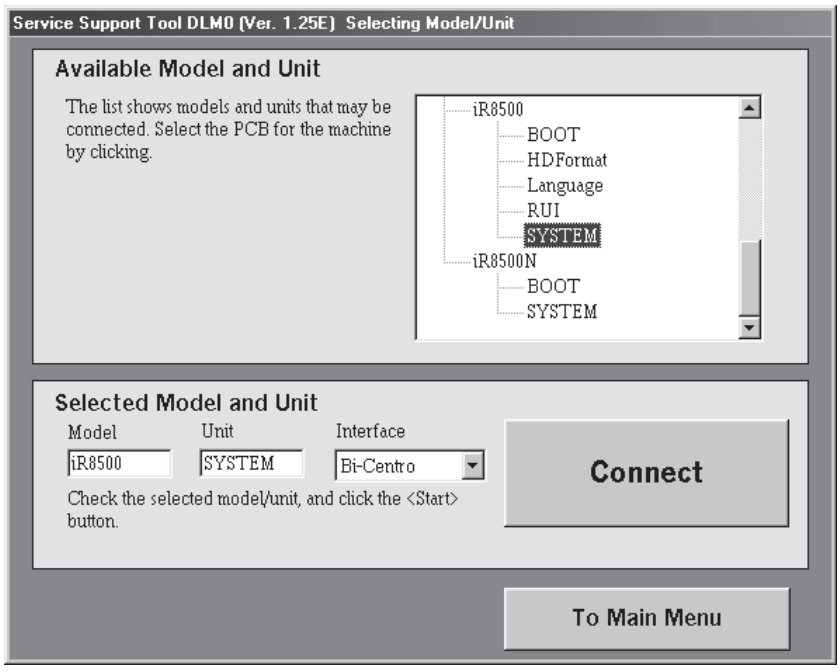
2.2.3 Backing Up Data

1) Under 'Downloading/Uploading', select 'To Next'.



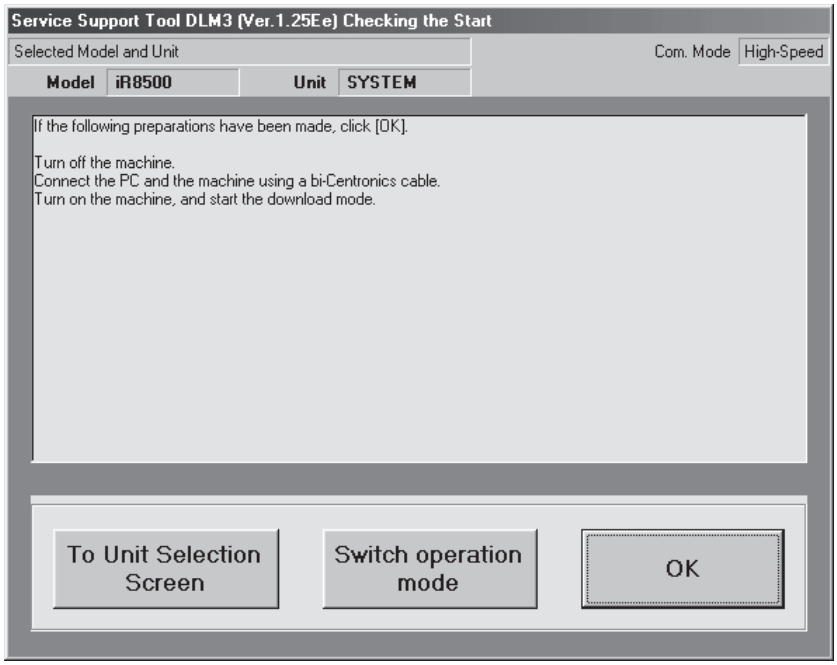
F07-202-01

2) Select 'SYSTEM', and select 'Connect'. The discussions that follow assume the use of a bi-Centronics cable as the interface.



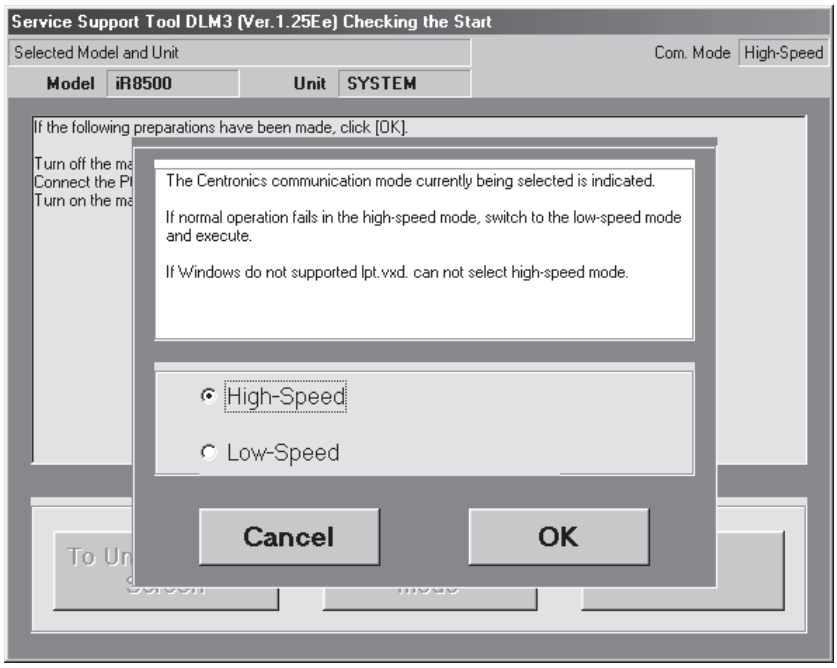
F07-202-02

3) At this time, if the notation in the upper right of the screen is ‘High-Speed’, go to step 5); if ‘Low-Speed’, go to step 4).



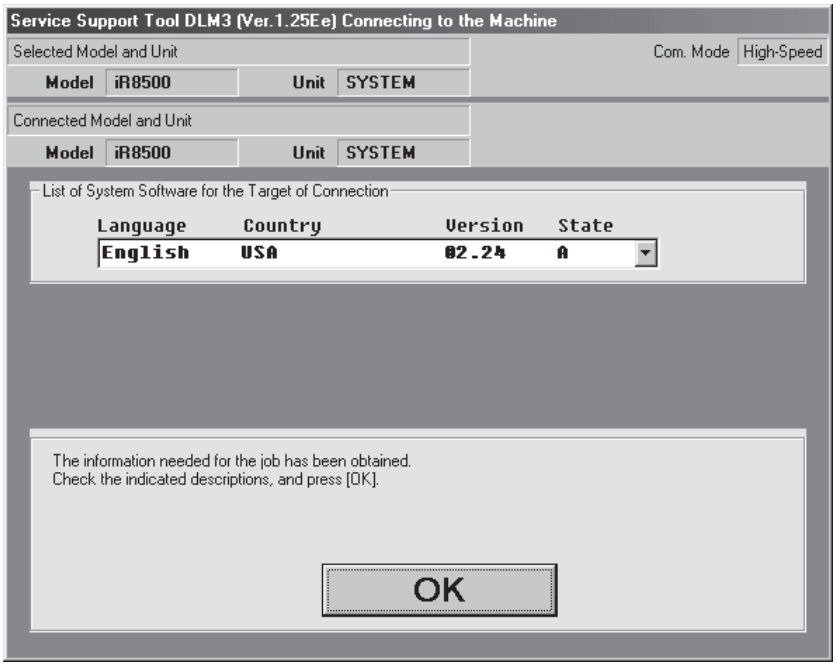
F07-202-03

4) Click ‘Switch operation mode’ to bring up the Centronics Communication Mode Change screen. Select ‘High-Speed’, and click ‘OK’ to move to step 5).



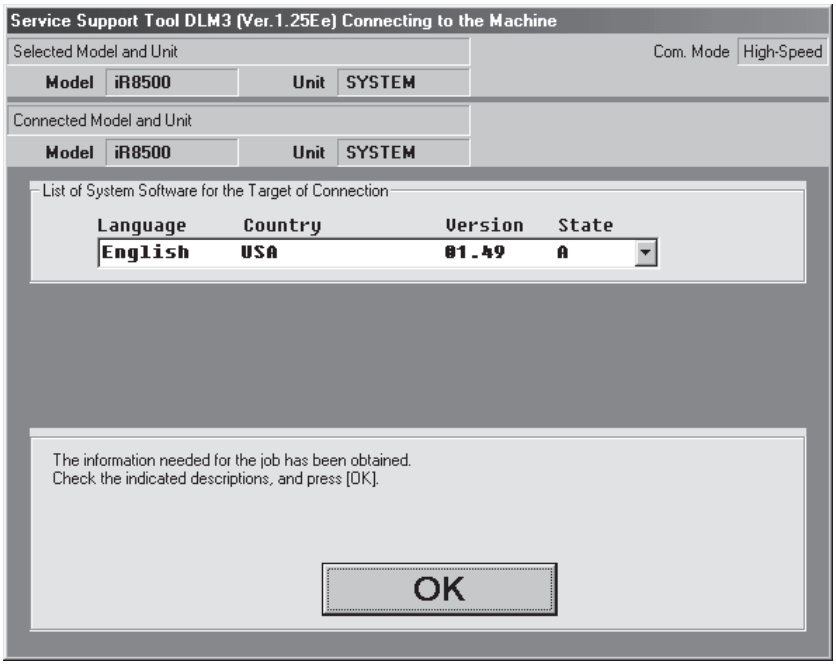
F07-202-04

5) Click ‘OK’ to start connection.



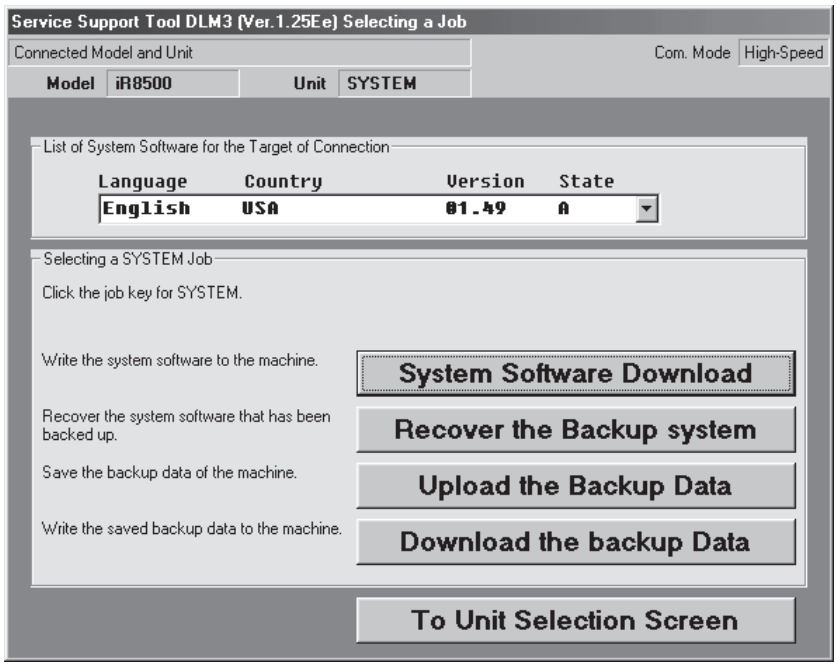
F07-202-05

6) When connection is done, the following screen appears. Click ‘OK’.



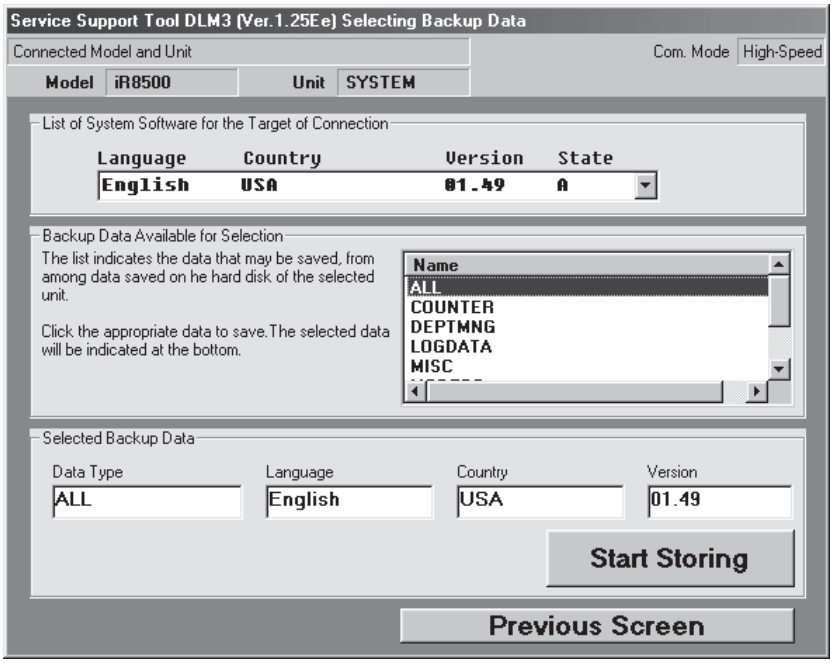
F07-202-06

7) Select ‘Upload the Backup Data’ on the Service Support Tool screen.



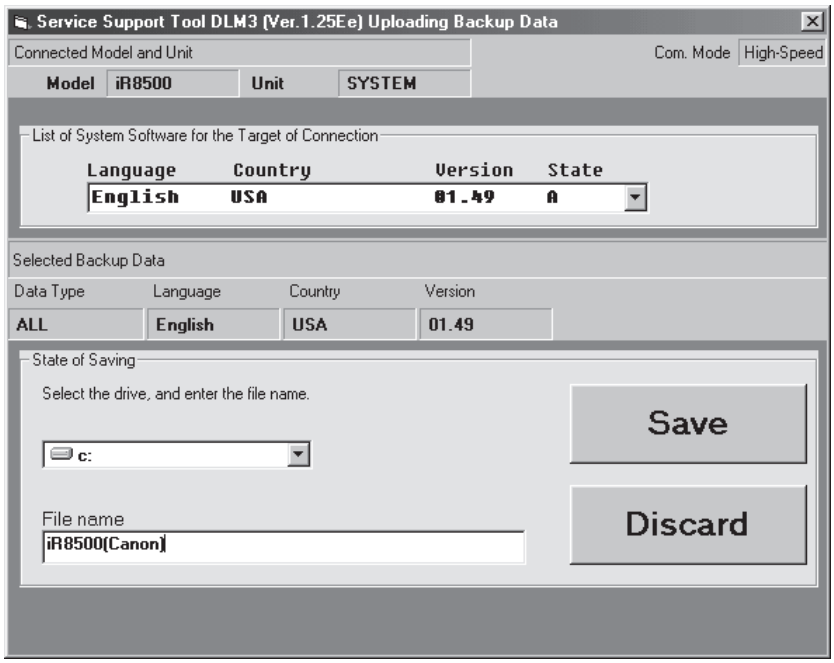
F07-202-07

8) Select ‘ALL’, and select ‘Start Storing’.



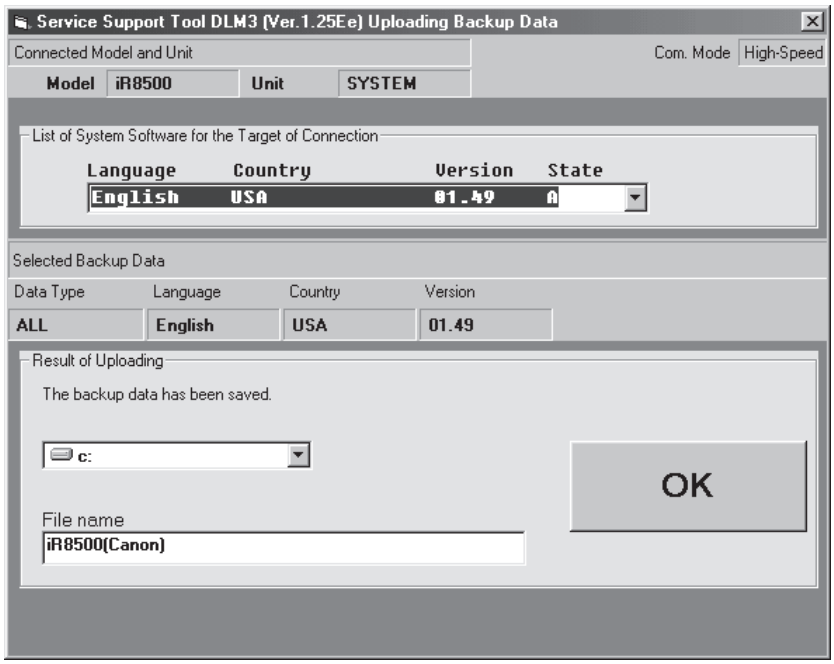
F07-202-08

9) See the progress bar, indicating the progress of the save operation.
10) Select the drive to save the data to, and enter the file name; the, select 'Save'.



F07-202-09

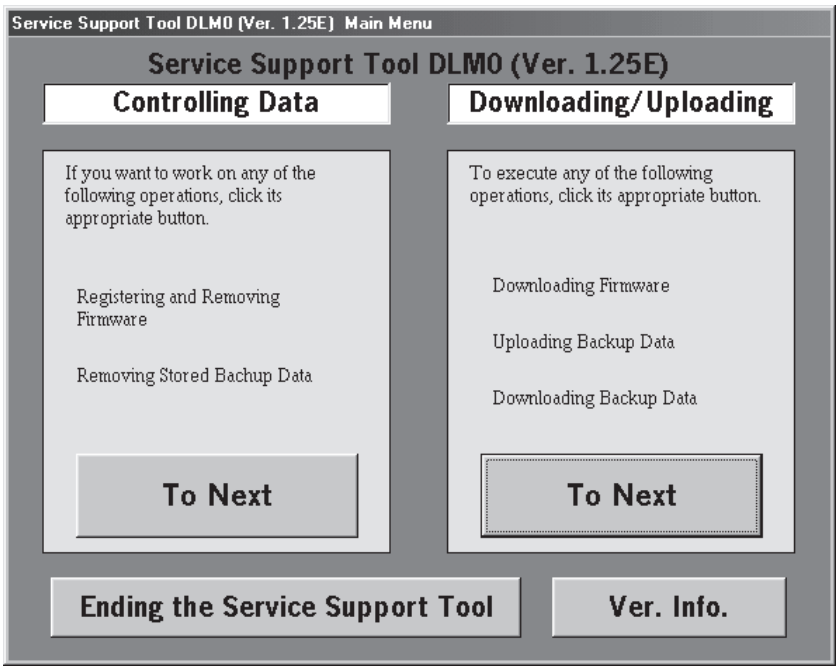
11) When the selected file has been stored on the selected drive, the following screen will appear; make the following selections to end the Service Support Tool: OK>To Unit Selection Screen>OK>To Main Menu>Ending the Service Support Tool>End.



F07-202-10

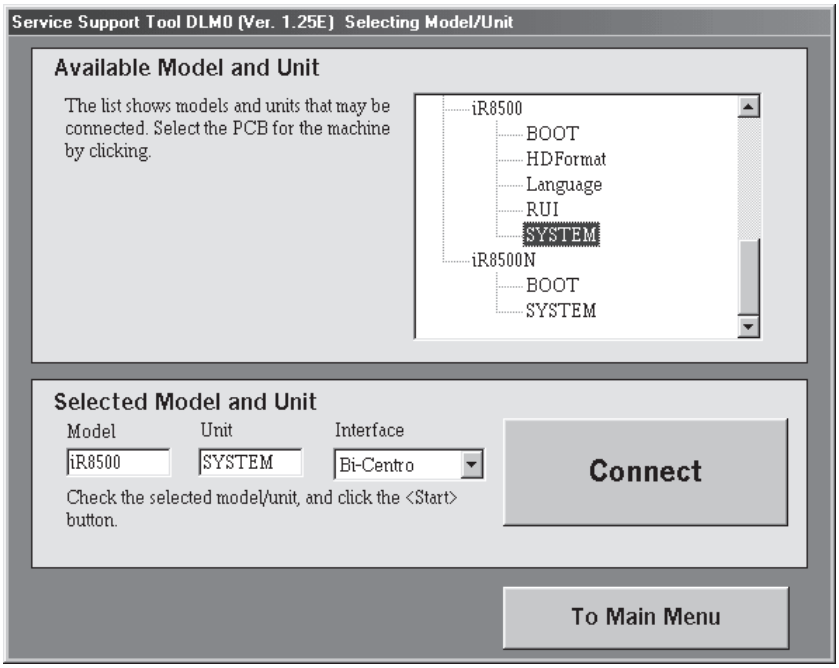
2.2.4 Downloading Backup Data

1) Under 'Downloading/Uploading', select 'To Next'.



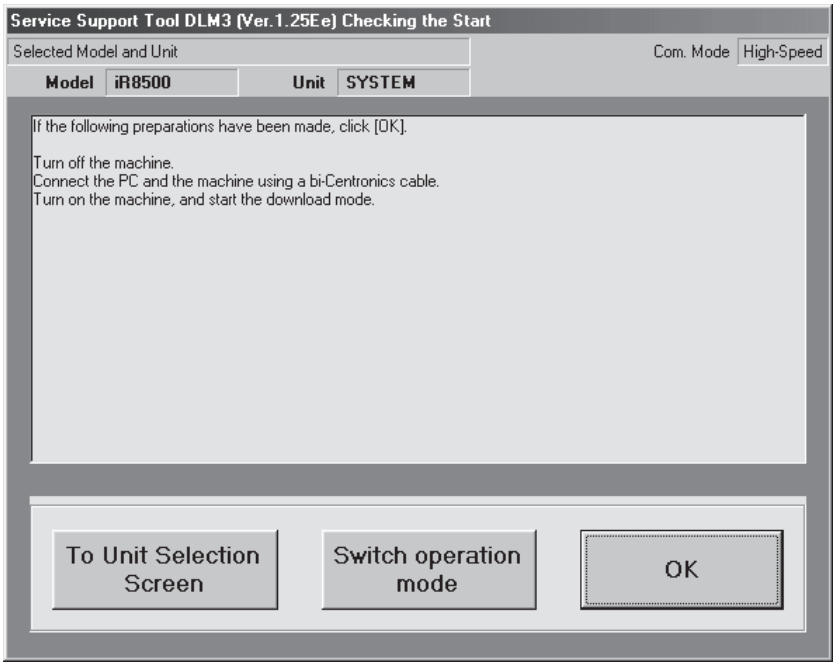
F07-202-11

2) Select 'SYSTEM', and select 'Connect'.



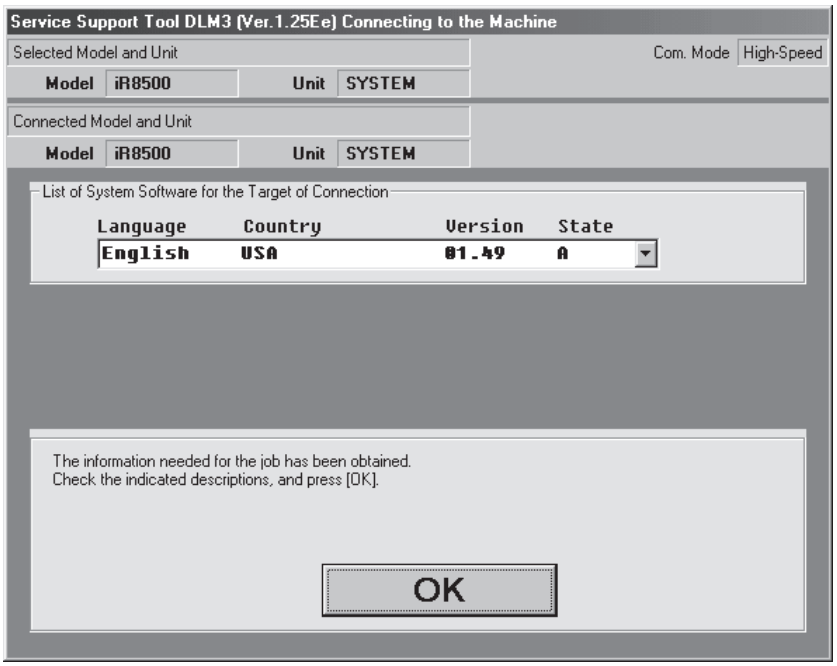
F07-202-12

3) Select 'OK', and start connection.



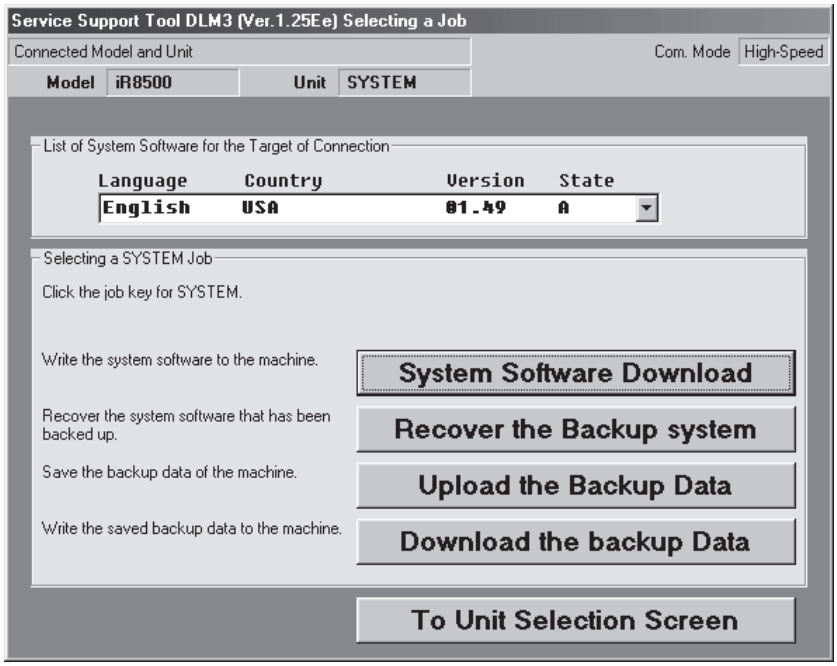
F07-202-13

4) When connection is done, the following screen appears. Click 'OK'.



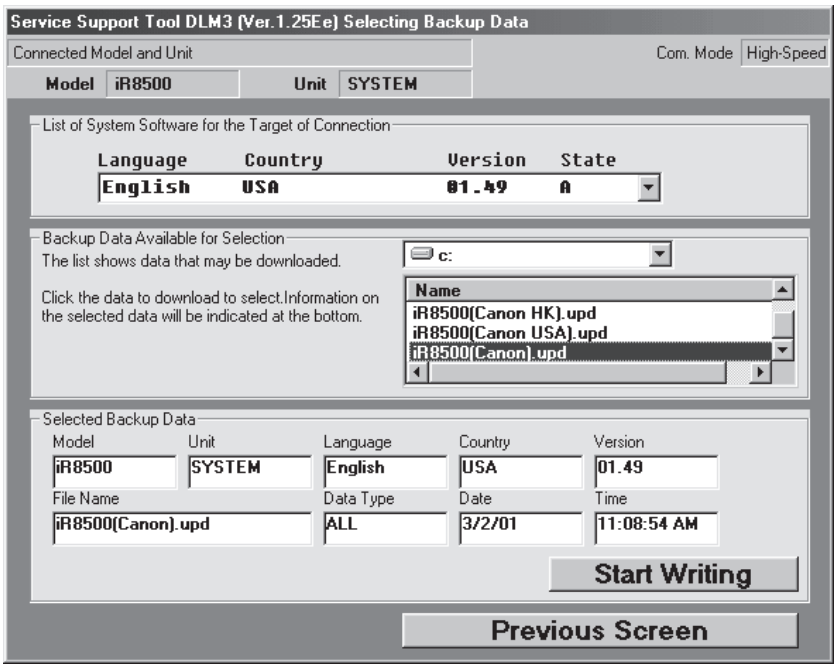
F07-202-14

5) Select ‘Download the backup Data’.



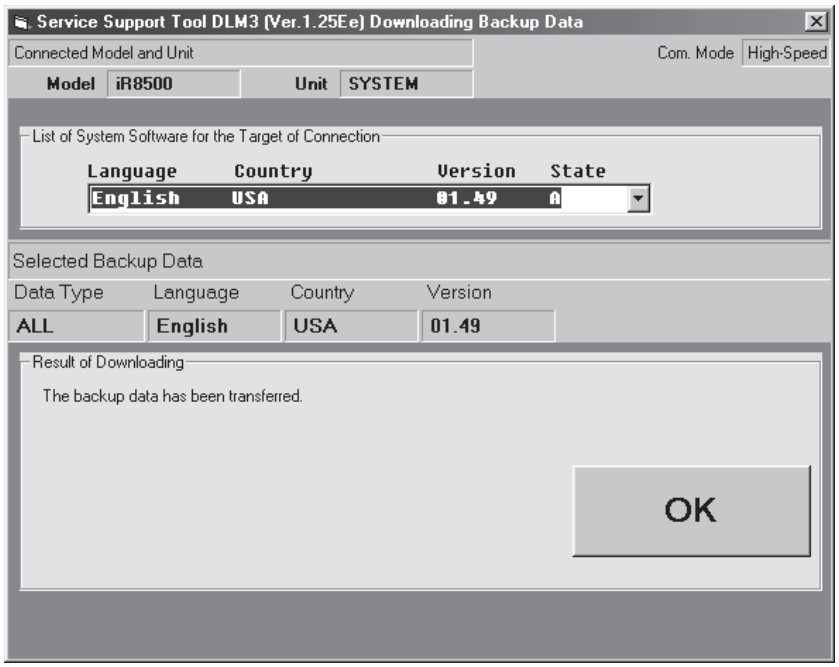
F07-202-15

6) Select the file to download, and select ‘Start Writing’.



F07-202-16

7) See the progress bar, indicating the progress of the downloading operation. At the end, the following screen will appear. Select ‘OK’.



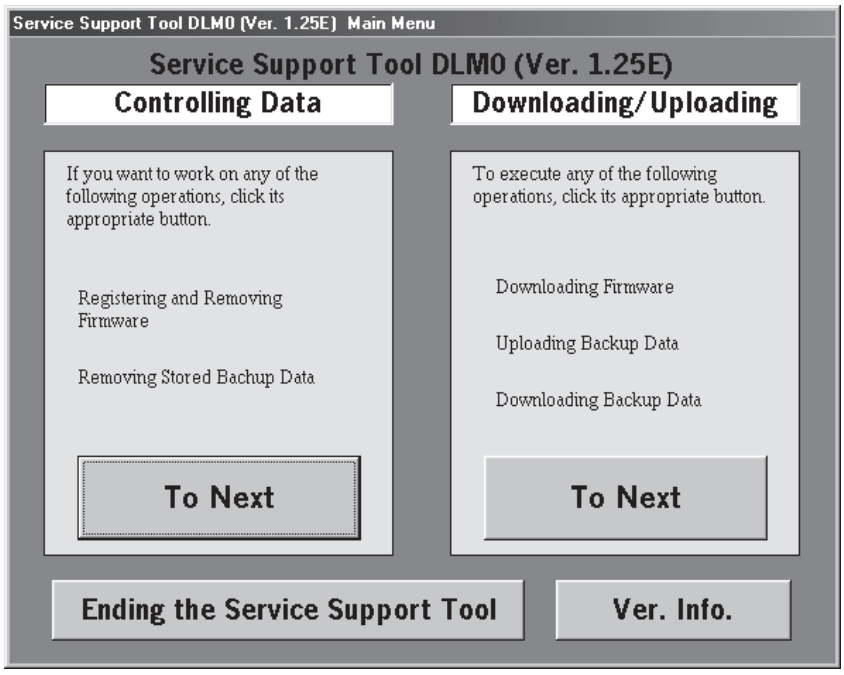
F07-202-17

8) Make the following selections to end the Service Support Tool: To Unit Selection Screen>OK>To Main Menu>Ending the Service Support Tool>End.

2.2.5 Managing Backup Data

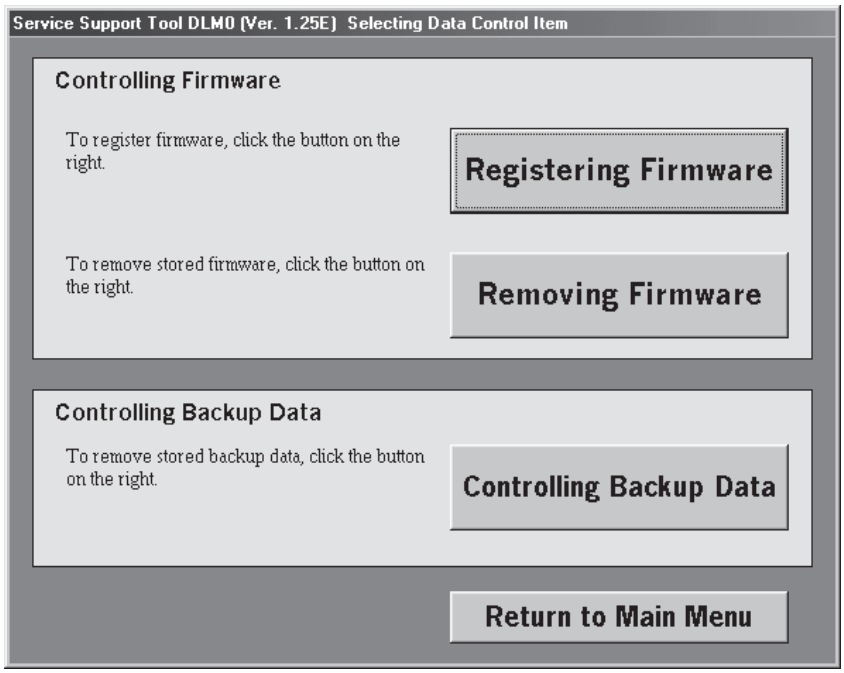
You can delete backup data that has become obsolete as follows:
You need not connect a PC to the machine to do so.

1) Under 'Controlling Data', select 'To Next'.



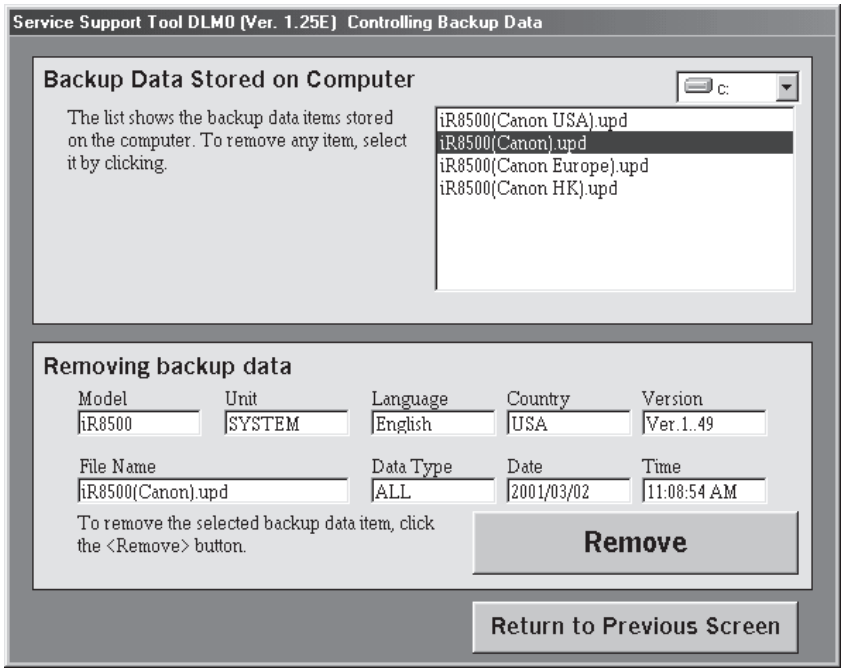
F07-202-18

2) Select 'Controlling Backup Data'.



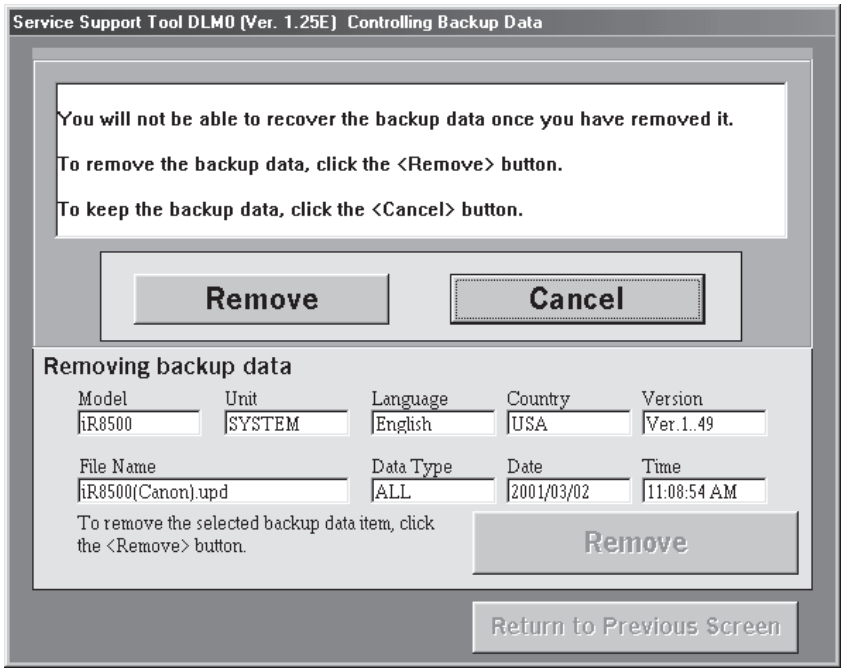
F07-202-19

3) Select the file to delete from the list of 'Backup Data Stored on Computer'; then select 'Remove'.



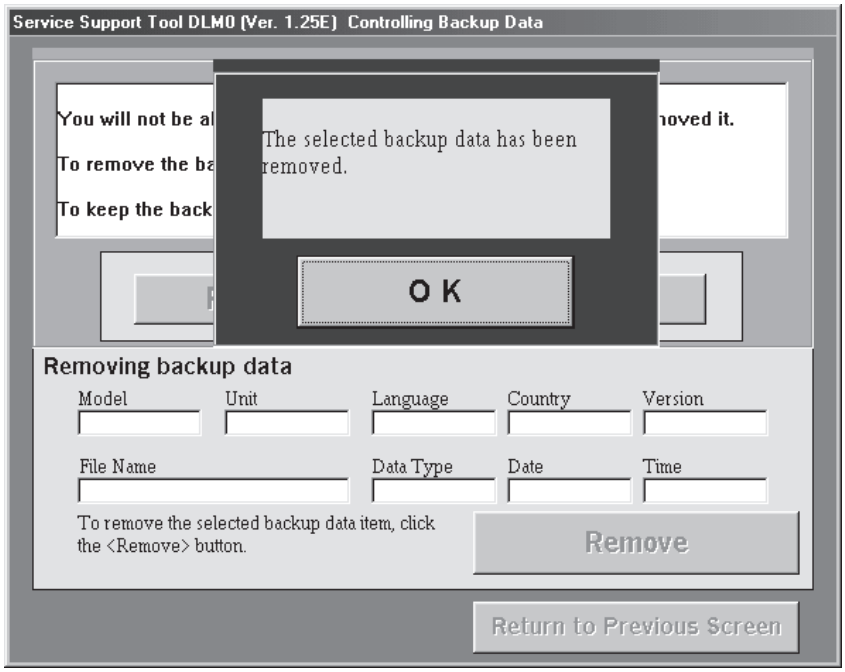
F07-202-20

4) When the Delete Check screen appears, check the description for the selected file, and select 'Remove'.



F07-202-21

5) When the Delete Finish screen appears, click ‘OK’. Make the following selections to end the Service Support Tool: Return to Previous Screen>Return to Main Menu>Ending the Service Support Tool>End.



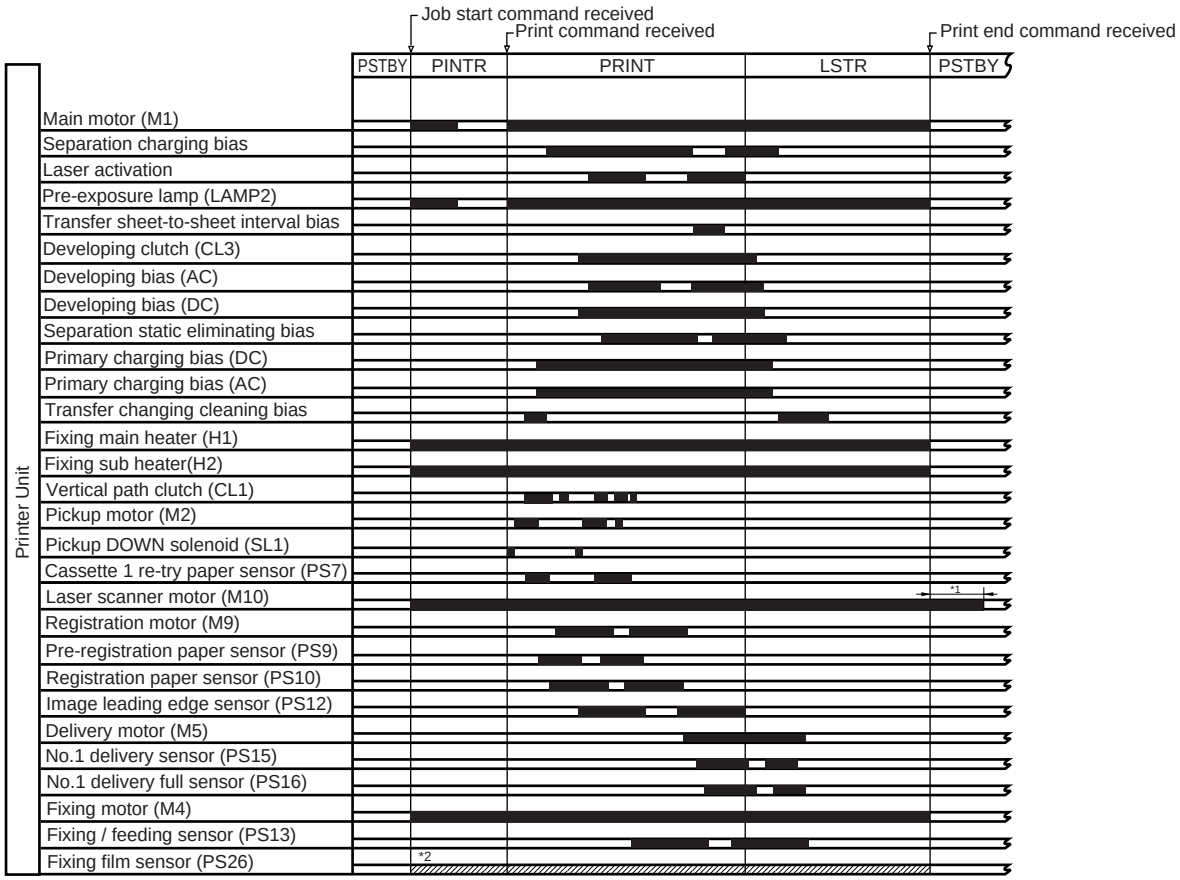
F07-202-22

APPENDIX

A. General Timing Chart

General Timing Chart (printer unit)

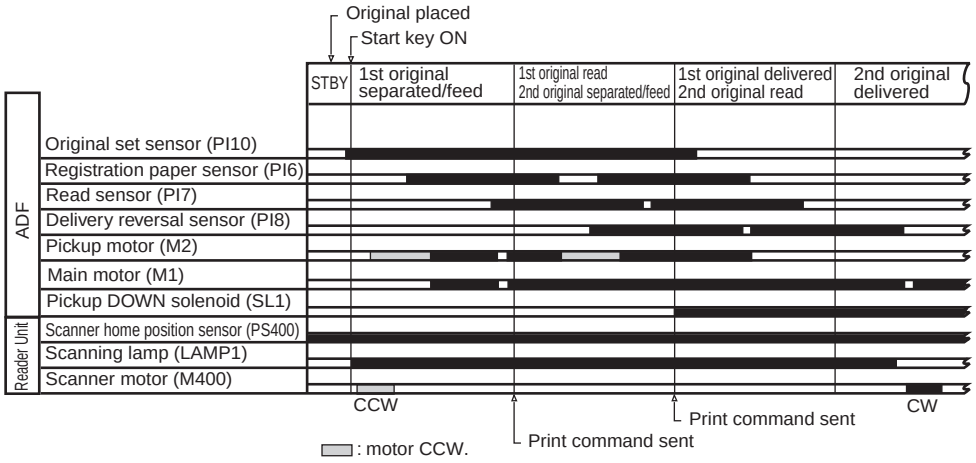
- A4, 2 sheets, Single-sided, Direct, Cassette (reversal delivery)



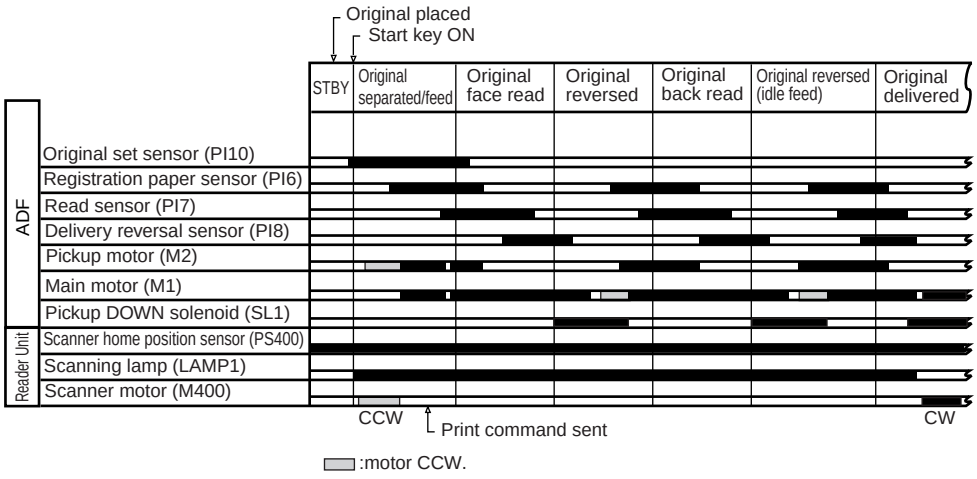
*1: Varies between 0 and 9 min to suit the selected silent mode shift interval.
*2: Goes ON once every 540 msec.

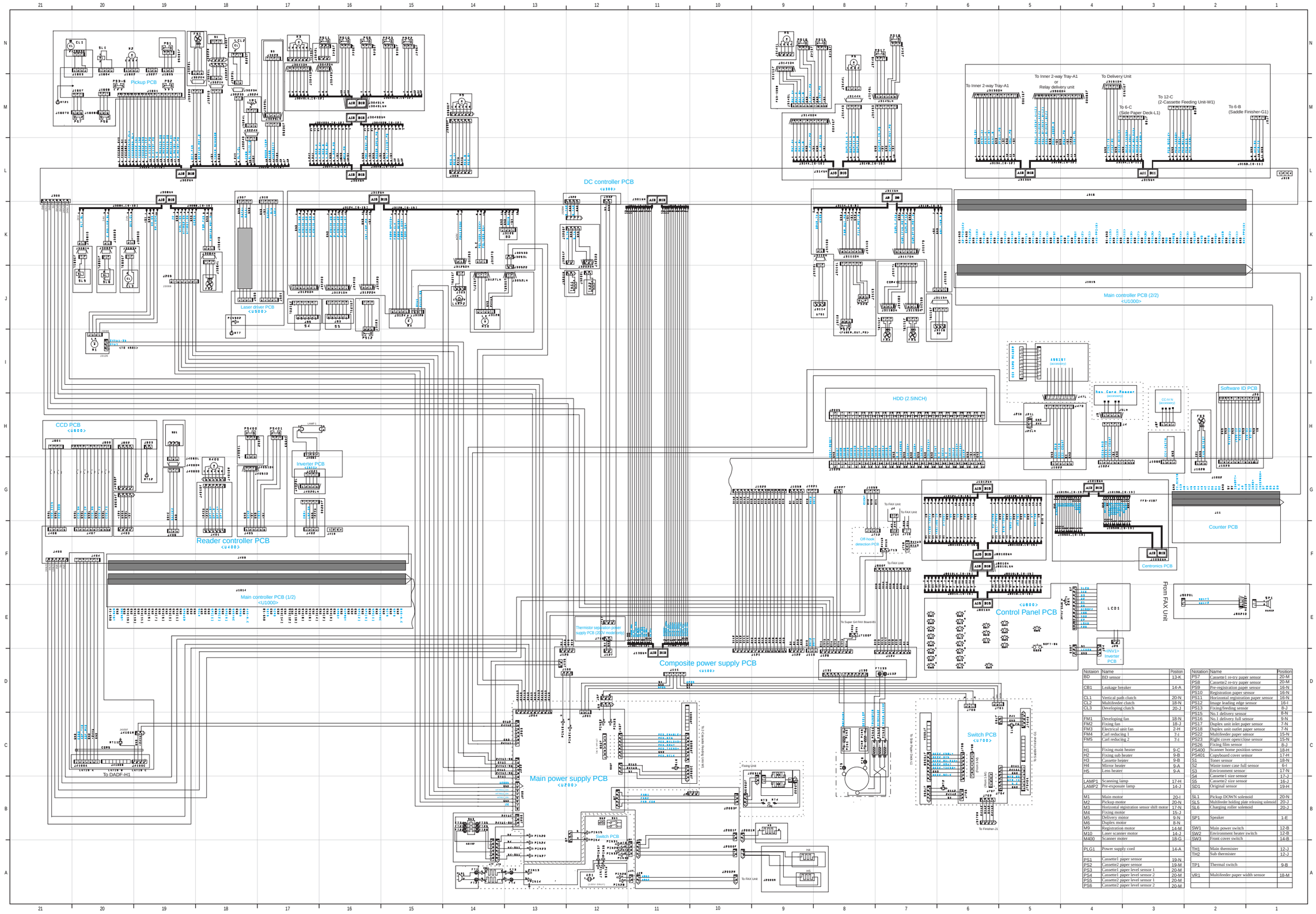
General Timing Chart (reader unit w/ ADF)

- A4, 2 sheets, Signal-sided, Direct



- A4, 1 sheet, Double-sided, Direct

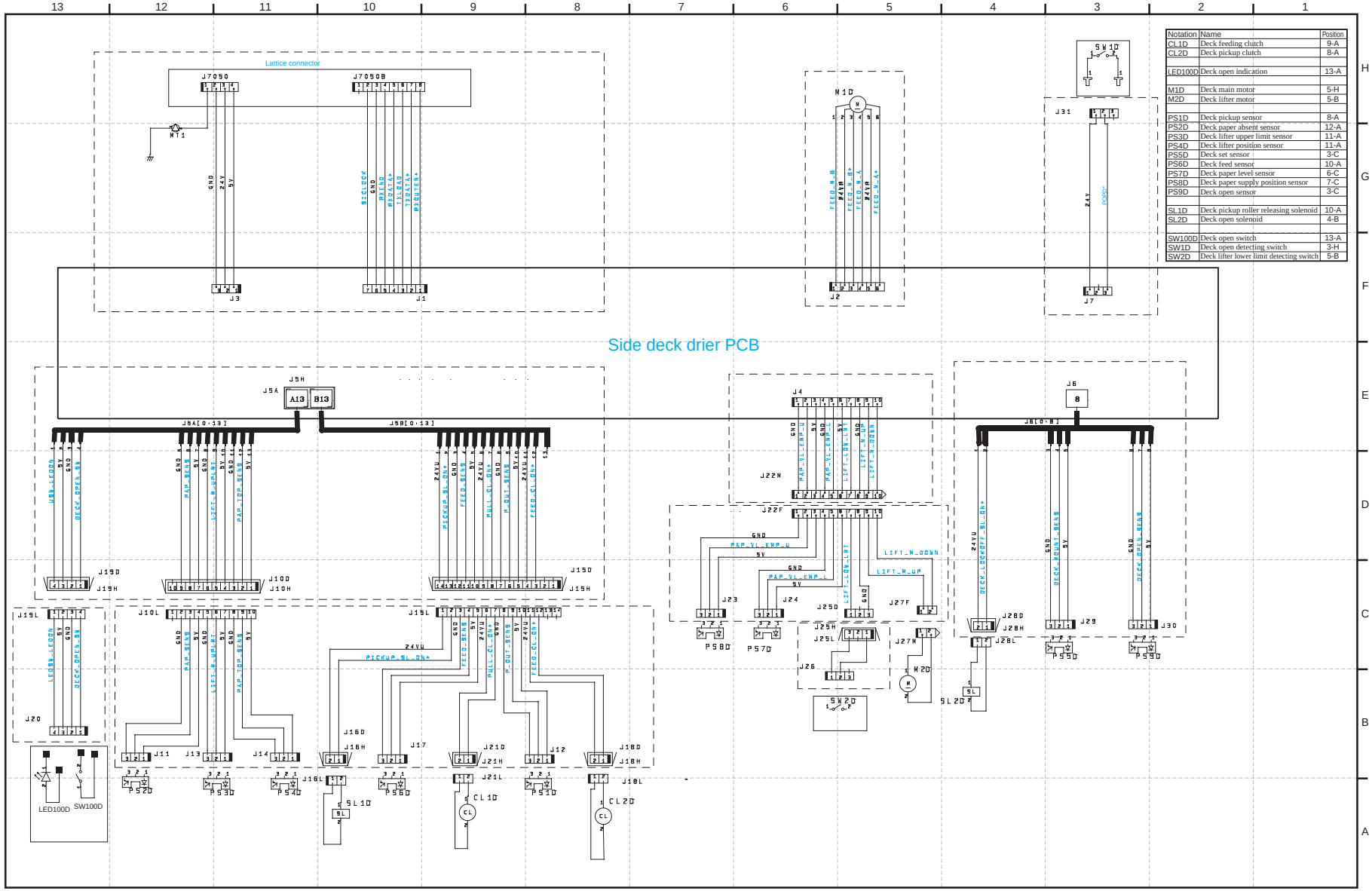




Notation	Name	Position
BD	BD sensor	13-K
CB1	Leakage breaker	14-A
CL1	Vertical path clutch	20-N
CL2	Multifeeder clutch	18-N
CL3	Developing clutch	20-J
FM1	Developing fan	18-N
FM2	Fixing fan	18-J
FM3	Electrical unit fan	2-H
FM4	Curl reducing 1	7-I
FM5	Curl reducing 2	7-I
H1	Fixing maih heater	9-C
H2	Fixing sub heater	9-B
H3	Cassette heater	9-B
H4	Mirror heater	9-A
H5	Lens heater	9-A
LAMP1	Scanning lamp	17-H
LAMP2	Pre-exposure lamp	14-J
M1	Main motor	20-I
M2	Pickup motor	20-N
M3	Horizontal registration sensor shift motor	17-N
M4	Fixing motor	15-J
M5	Delivery motor	9-N
M6	Duplex motor	8-N
M9	Registration motor	14-M
M10	Laser scanner motor	14-J
M400	Scanner motor	18-G
PLG1	Power supply cord	14-A
PS1	Cassette1 paper sensor	19-N
PS2	Cassette2 paper sensor	19-M
PS3	Cassette1 paper level sensor 1	20-M
PS4	Cassette1 paper level sensor 2	20-M
PS5	Cassette2 paper level sensor 1	20-M
PS6	Cassette2 paper level sensor 2	20-M

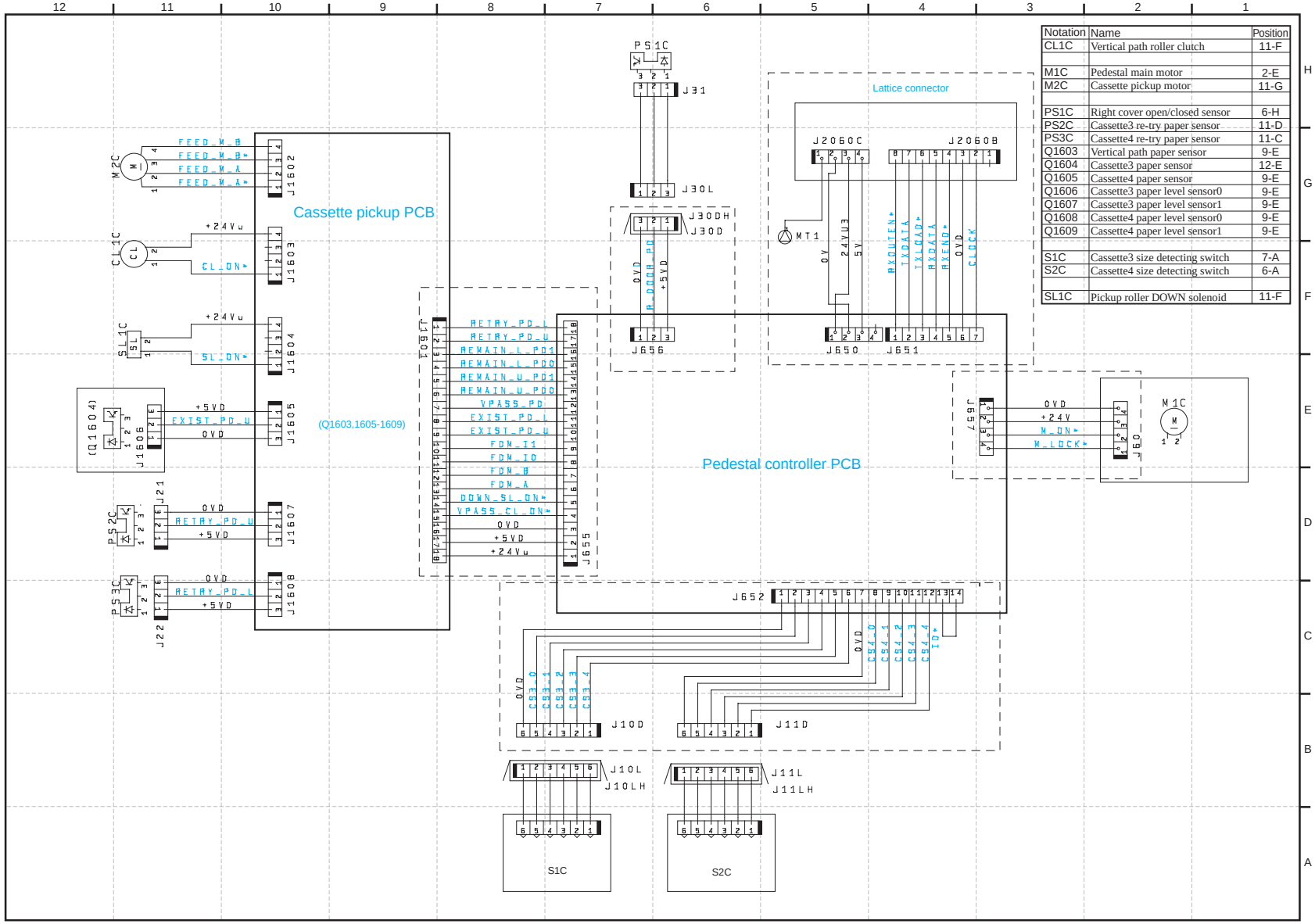
Notation	Name	Position
PS7	Cassette1 re-try paper sensor	20-M
PS8	Cassette2 re-try paper sensor	20-M
PS9	Pre-registeration paper sensor	16-N
PS10	Registration paper sensor	16-N
PS11	Horizontal registration paper sensor	16-N
PS12	Image leading edge sensor	18-I
PS13	Fixing/feeding sensor	8-J
PS15	No.1 delivery sensor	8-N
PS16	No.1 delivery full sensor	9-N
PS17	Duplex unit inlet paper sensor	7-N
PS18	Duplex unit outlet paper sensor	7-N
PS22	Multifeeder paper sensor	15-N
PS23	Right cover open/close sensor	15-N
PS26	Fixing film sensor	8-J
PS400	Scanner home position sensor	18-H
PS401	Copyboard cover sensor	17-H
S1	Toner sensor	18-N
S2	Waste toner case full sensor	6-I
S3	Environment sensor	17-N
S4	Cassette1 size sensor	17-J
S5	Cassette2 size sensor	16-J
SD1	Original sensor	19-H
SL1	Pickup DOWN solenoid	20-N
SL5	Multifeeder holding plate releasing solenoid	20-J
SL6	Charging roller solenoid	20-J
SP1	Speaker	1-E
SW1	Main power switch	12-B
SW2	Environment heater switch	12-B
SW3	Front cover switch	14-B
TH1	Main thermister	12-J
TH2	Sub thermistee	12-J
TP1	Thermal switch	9-B
VR1	Multifeeder paper width sensor	18-M

C. Side Paper Deck-L1 General Circuit Diagram



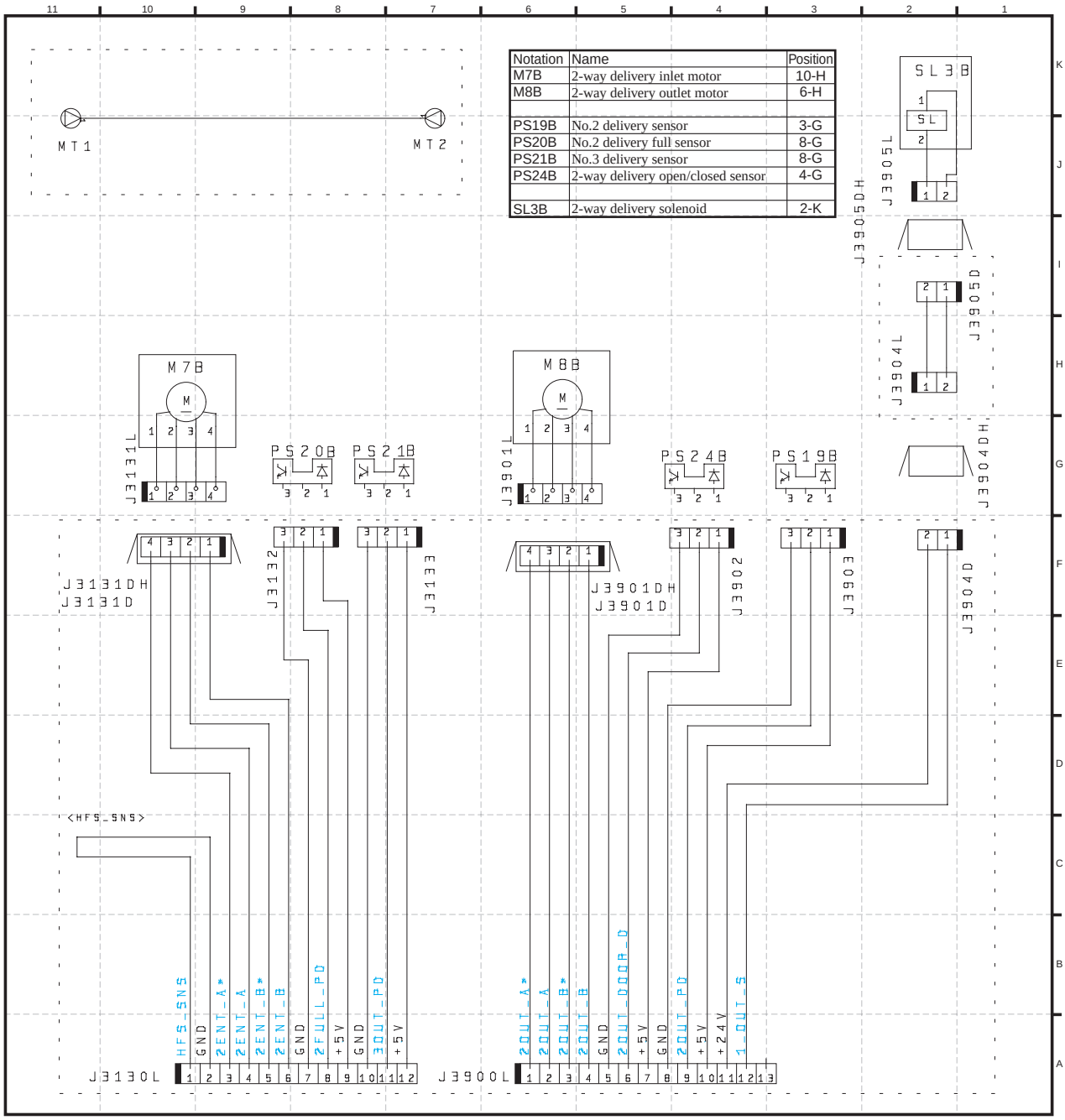
Notation	Name	Position
CL1D	Deck feeding clutch	9-A
CL2D	Deck pickup clutch	8-A
LED100D	Deck open indication	13-A
M1D	Deck main motor	5-H
M2D	Deck lifter motor	5-B
PS1D	Deck pickup sensor	8-A
PS2D	Deck paper absent sensor	12-A
PS3D	Deck lifter upper limit sensor	11-A
PS4D	Deck lifter position sensor	11-A
PS5D	Deck set sensor	3-C
PS6D	Deck feed sensor	10-A
PS7D	Deck paper level sensor	6-C
PS8D	Deck paper supply position sensor	7-C
PS9D	Deck open sensor	3-C
SL1D	Deck pickup roller releasing solenoid	10-A
SL2D	Deck open solenoid	4-B
SW100D	Deck open switch	13-A
SW1D	Deck open detecting switch	3-H
SW2D	Deck lifter lower limit detecting switch	5-B

D. 2-Cassette Feeding Unit-W1 General Circuit Diagram



Notation	Name	Position
CL1C	Vertical path roller clutch	11-F
M1C	Pedestal main motor	2-E
M2C	Cassette pickup motor	11-G
PS1C	Right cover open/closed sensor	6-H
PS2C	Cassette3 re-try paper sensor	11-D
PS3C	Cassette4 re-try paper sensor	11-C
Q1603	Vertical path paper sensor	9-E
Q1604	Cassette3 paper sensor	12-E
Q1605	Cassette4 paper sensor	9-E
Q1606	Cassette3 paper level sensor0	9-E
Q1607	Cassette3 paper level sensor1	9-E
Q1608	Cassette4 paper level sensor0	9-E
Q1609	Cassette4 paper level sensor1	9-E
S1C	Cassette3 size detecting switch	7-A
S2C	Cassette4 size detecting switch	6-A
SL1C	Pickup roller DOWN solenoid	11-F

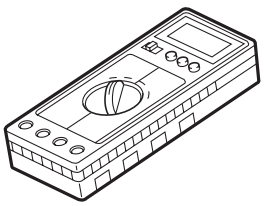
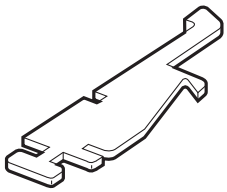
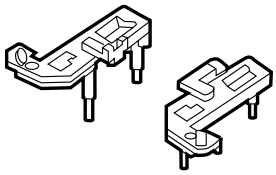
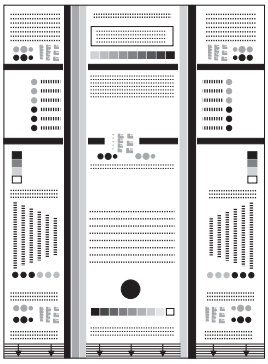
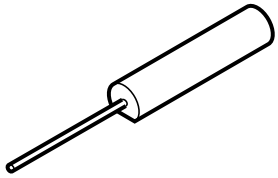
E. Inner 2-Way Tray-A1 General Circuit Diagram

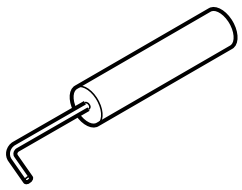


Notation	Name	Position
M7B	2-way delivery inlet motor	10-H
M8B	2-way delivery outlet motor	6-H
PS19B	No.2 delivery sensor	3-G
PS20B	No.2 delivery full sensor	8-G
PS21B	No.3 delivery sensor	8-G
PS24B	2-way delivery open/closed sensor	4-G
SL3B	2-way delivery solenoid	2-K

F. List of Special Tools

The following special tools will be needed in addition to the standard tools set:

No.	Name	Toll No.	Shape	Rank	Remarks
1	Digital multimeter	FY9-2002		A	Used when making electrical checks.
2	Door switch	TKN-0093		A	
3	Mirror positioning tool (front, rear)	FY9-3009		B	Used when positioning the No. 1/No. 2 mirror.
4	NA-3 Test Sheet	FY9-9196		A	Used when adjusting/ checking images.
5	Tester extension pin	FY9-3038		A	Used when making electrical checks.

No.	Name	Toll No.	Shape	Rank	Remarks
6	Tester extension pin (L-shaped)	FY9-3039		A	Used when making electrical checks.

Rank:

A: each service person is expected to carry one.
B: each group of five persons is expected to carry one.
C: each workshop is expected to carry one.

G. List of Solvents/Oils

No.	Name	Uses	Composition	Remarks
1	Alcohol	Cleaning: e.g., glass, plastic, rubber parts; external covers.	Fluorescent family hydrocarbon, alcohol, surface activating agent, water	• Do not bring near fire. • Procure locally. • Substitute: IPA (isopropyl alcohol)
2	Solvent	Cleaning: metal part; oil, toner.	Fluorescent family hydrocarbon, chlorine family hydrocarbon, alcohol.	• Do not bring near fire. • Procure locally.
3	Heat resisting grease	Lubrication: fixing drive parts	Mineral family lithium soap, molybdenum disulfide,	Tool No.: CK-0427 (500g/can)
4	Lubricant		Mineral oil (paraffin family)	Tool No.: CK-0524 (100cc)
5	Lubricant	Lubrication: drive parts, friction parts	Silicone oil	Tool No.: CK-0551 (20g)
6	Lubricant	Lubrication: scanner rail	Silicone oil	Tool No.: FY9-6011 (50cc)

Prepared by

Office Imaging Products Quality Assurance Center
CANON INC.
Printed in Japan

REVISION 0 (MAR. 2001) (18723/18756/22109/32205/35338)

5-1, Hakusan 7-chome, Toride-shi, Ibaraki 302-8501 Japan

This publication is printed on 100% recycled paper.

Canon

PRINTED IN JAPAN (IMPRIME AU JAPON) 0401M0.7-1