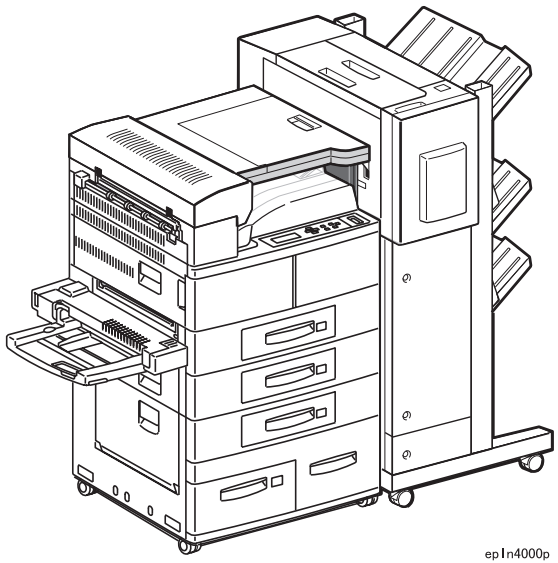
SERVICE MANUAL



Laser Printer

EPSON EPL-N4000 / EPL-N4000+

COLOR IMAGING EPSON

EPSON®

SEPG98002

Notice

PRECAUTIONS

Precautionary notations throughout the text are categorized relative to 1)Personal injury and 2) damage to equipment.

DANGER Signals a precaution which, if ignored, could result in serious or fatal personal injury. Great caution should be exercised in performing procedures preceded by DANGER Headings.

WARNING Signals a precaution which, if ignored, could result in damage to equipment.

The precautionary measures itemized below should always be observed when performing repair/maintenance procedures.

DANGER

1. ALWAYS DISCONNECT THE PRODUCT FROM THE POWER SOURCE AND PERIPHERAL DEVICES PERFORMING ANY MAINTENANCE OR REPAIR PROCEDURES.
2. NO WORK SHOULD BE PERFORMED ON THE UNIT BY PERSONS UNFAMILIAR WITH BASIC SAFETY MEASURES AS DICTATED FOR ALL ELECTRONICS TECHNICIANS IN THEIR LINE OF WORK.
3. WHEN PERFORMING TESTING AS DICTATED WITHIN THIS MANUAL, DO NOT CONNECT THE UNIT TO A POWER SOURCE UNTIL INSTRUCTED TO DO SO. WHEN THE POWER SUPPLY CABLE MUST BE CONNECTED, USE EXTREME CAUTION IN WORKING ON POWER SUPPLY AND OTHER ELECTRONIC COMPONENTS.

WARNING

1. REPAIRS ON EPSON PRODUCT SHOULD BE PERFORMED ONLY BY AN EPSON CERTIFIED REPAIR TECHNICIAN.
2. MAKE CERTAIN THAT THE SOURCE VOLTAGES IS THE SAME AS THE RATED VOLTAGE, LISTED ON THE SERIAL NUMBER/ RATING PLATE. IF THE EPSON PRODUCT HAS A PRIMARY AC RATING DIFFERENT FROM AVAILABLE POWER SOURCE, DO NOT CONNECT IT TO THE POWER SOURCE.
3. ALWAYS VERIFY THAT THE EPSON PRODUCT HAS BEEN DISCONNECTED FROM THE POWER SOURCE BEFORE REMOVING OR REPLACING PRINTED CIRCUIT BOARDS AND/OR INDIVIDUAL CHIPS.
4. IN ORDER TO PROTECT SENSITIVE MICROPROCESSORS AND CIRCUITRY, USE STATIC DISCHARGE EQUIPMENT, SUCH AS ANTI-STATIC WRIST STRAPS, WHEN ACCESSING INTERNAL COMPONENTS.
5. REPLACE MALFUNCTIONING COMPONENTS ONLY WITH THOSE COMPONENTS BY THE MANUFACTURE; INTRODUCTION OF SECOND-SOURCE ICs OR OTHER NONAPPROVED COMPONENTS MAY DAMAGE THE PRODUCT AND VOID ANY APPLICABLE EPSON WARRANTY.

About This Manual

This manual describes basic functions, theory of electrical and mechanical operations, maintenance and repair procedures of EPL-N4000/N4000+. The instructions and procedures included herein are intended for the experienced repair technicians, and attention should be given to the precautions on the preceding page.

Contents

This manual consists of six chapters and Appendix.

CHAPTER 1. PRODUCT DESCRIPTIONS
Provides a general overview and specifications of the product.

CHAPTER 2. OPERATING PRINCIPLES
Describes the theory of electrical and mechanical operations of the product.

CHAPTER 3. TROUBLESHOOTING
Provides the step-by-step procedures for the troubleshooting.

CHAPTER 4. DISASSEMBLY AND ASSEMBLY
Describes the step-by-step procedures for disassembling and assembling the product.

CHAPTER 5. ADJUSTMENTS
Provides Epson-approved methods for adjustment.

CHAPTER 6. MAINTENANCE
Provides preventive maintenance procedures and the lists of Epson-approved lubricants and adhesives required for servicing the product.

APPENDIX Provides the following additional information for reference:

- Connector pin assignments
- Electric circuit boards components layout
- Exploded diagram
- Electrical circuit boards schematics

Symbols Used in This Manual

Various symbols are used throughout this manual either to provide additional information on a specific topic or to warn of possible danger present during a procedure or an action. Be aware of all symbols when they are used, and always read WARNING, CAUTION or NOTE messages.

Indicates an operating or maintenance procedure, practice or condition that, if not strictly observed, could result in injury or loss of life.

Indicates an operating or maintenance procedure, practice, or condition that, if not strictly observed, could result in damage to, or destruction of, equipment.

May indicate an operating or maintenance procedure, practice or condition that is necessary to accomplish a task efficiently. It may also provide additional information that is related to a specific subject, or comment on the results achieved through a previous action.

Safety Information

To prevent accidents during a maintenance procedure, strictly observe the Warnings and Cautions. Do not do anything that is dangerous or not within the scope of this document.

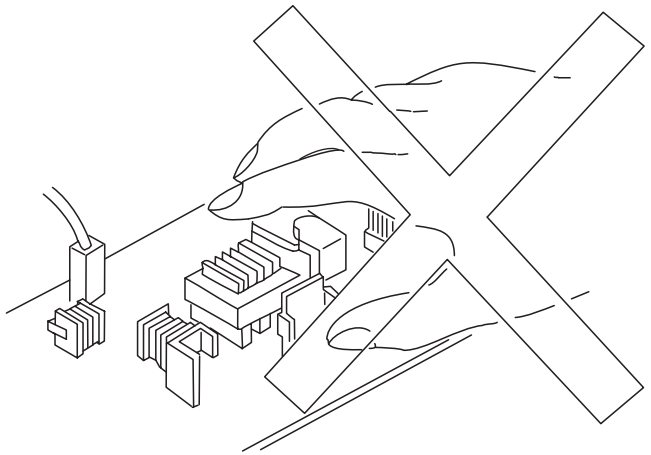
Do not do anything that is dangerous even if not specifically described in this manual. In addition to the descriptions below and those given in this manual, there are many situations and circumstances that are dangerous. Be aware of these when you are working with the printer.

Safety Precautions

POWER SUPPLY AND ELECTRICAL COMPONENTS

Before starting any service procedure, turn off the printer and unplug the power cord from the wall outlet. If you must service the printer with the power applied, be aware of the potential for electrical shock and do all tasks by following the procedures in this manual.

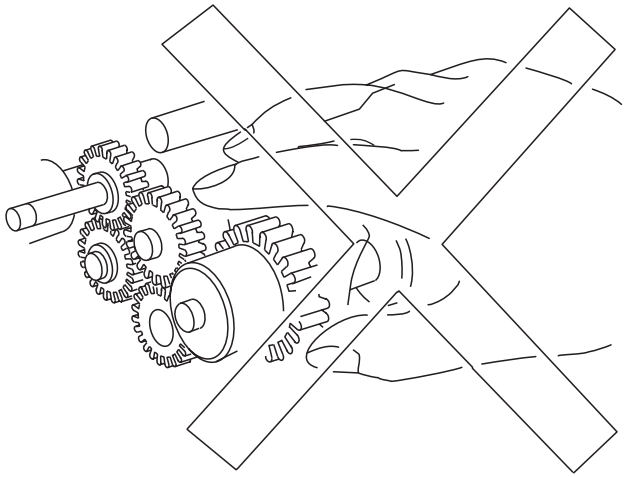
Do not touch any electrified component unless you are instructed to do so by service procedure.



MECHANICAL COMPONENTS

If you service a driving assembly (e.g., gears), first turn off the power and unplug the power cord. Then manually rotate the assembly.

Do not try to manually rotate or stop the drive assemblies while the Main Motor is running.



LASER ASSEMBLY

This printer uses a laser as part of the printing process. The laser beam is a very powerful, straight, narrow beam of light that produces extreme heat at its focal point. The laser beam in this printer is invisible. Although you cannot see the beam, it can still cause severe damage. Direct eye exposure to the laser beam may cause eye injury or blindness.

Never place a mirror or a reflective tool or object in the laser beam path.

To avoid permanent eye damage, follow these directions;

- Before starting any service procedure, switch off the printer power and unplug the power cord from the wall outlet.
- Do not disassemble the ROS Assembly or any laser component that displays a Laser Warning Sticker.
- Use caution when you are working around the ROS Assembly or when you are performing laser related repair procedures.
- Do not disassemble the printer in such a way that the laser beam can exit the printer engine during a print cycle.

Safety Components

Make sure fuses, interlock switches, covers and panels are all functioning properly after you have reinstalled or replaced them.

Warning/Caution Labels

WARNING and CAUTION labels are stuck on dangerous parts in the printer to make you aware of the potential dangers that are present when you are working with those parts.

Revision Status

Revision	Issued Date	Description
Rev. A	November 4, 1998	First Release
Rev.B	September 16, 1999	Add EPL-N400+ and revise all chapters for EPL-N4000/N4000+

Contents

Product Description

Operating Principles

Troubleshooting

Disassembly and Assembly

Adjustment

Maintenance

Appendix

CHAPTER

1

PRODUCT DESCRIPTION

1.1 Features

EPL-N4000/N4000+ is non-impact page printer applied with laser xerographic method.

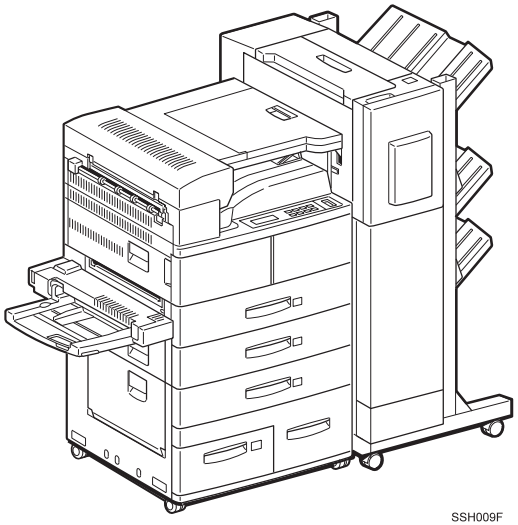


Figure 1-1. Exterior View of EPL-N4000+

ENGINE FEATURES

- ☐ High speed & high reliability A3 engine.
- ☐ Resolution:600 dpi
- ☐ Printing speed:40 ppm (A4) / 40ppm (Letter)
- ☐ Standard paper feeders are two universal cassettes (500 sheets x2) and manual feed tray (50 sheets)
- ☐ Options: large-capacity paper unit (500 sheets(A4 to A3) on MP tray + 1000 sheets on cassette 1 + 1000 sheets (A4, Letter, and Executive sizes) on cassette 2)
  Refer to Table 1-6, “Feeding Method,” on page 10 for details.
- ☐ Offset stacking equipped as standard
- ☐ Wide range of options (Duplex Module, Face-up tray, Envelope Feeder, Multibin Unit, Finisher Stapler*, HDD*)

NOTE: *Finisher Stapler and HDD are only supported from EPL-N4000+. Refer to Table 1-2 on page 4 for support range.*

CONTROLLER FEATURES

- ☐ High speed controller, employing new CPU
  64-bit RISC CPU VR4700 133MHz
- ☐ SDRAM DIMMs adopted
  64MB RAM equipped as standard
  Expandable up to 256 MB (using commercially available SDRAM DIMMs) However, 256MB SDRAM DIMMs cannot be used.
- ☐ Two standard interfaces
  IEEE 1284 parallel interface
  Ethernet interface (100Base-TX)
- ☐ 1 slot for Type B interface
  Type B Level 3 is supported from EPL-N4000+.
- ☐ Enhanced Micro Gray loaded

SOFTWARE FEATURES

- Supported emulation

PCL5e	Enhanced Micro Gray support, paper handling support
PostScript Level3*[1]	Refer to the Adobe PS 3 kit specification
ESC/Page	Enhanced Micro Gray support, paper handling support EPL-N4000+ ESC/Page language has upward compatibility compared to EPL-N4000.
FX, ESC/P2,1239X	Paper handling support
PJL, EJL	
RCC	Firmware updating function
DIAG	Adjusts engine. Not open to users.
EpsonNet WebAssist	Enables to set printer configuration and network configuration using a web browser. Only English version is available and Internet Explorer 4.01 or above is necessary.

NOTE: **[1]PostScript Level3 is optional. To be installed in slot A or B. Dedicated to EPL-N4000. Adobe PS 3 kit needs to be updated to EPL-N4000+, too.*

Firmware	Adobe PS 3 kit module	Print	Finisher, HDD
EPL-N4000	EPL-N400	enable	disable
EPL-N4000	EPL-N4000+	enable	disable
EPL-N4000+	EPL-N4000	disable (invalid Adobe PS 3 kit error)	disable
EPL-N4000+	EPL-N4000+	enable	enable

- Rewriting flash ROM DIMMs

  Flash ROM DIMMs in slot A and the program slot can be rewritten from any I/F. (Not open to users except slot A.)
  Downloading of NLSP is written through slot A and inserted in slot C when used. When rewriting the firmware of Adobe PS 3 kit for EPL-N4000 to Adobe PS 3 kit for EPL-N4000+, insert in slot A.

- Panel Setting

  - EPL-N4000:
    Available to set the printer mode, print menu and device menu individually by each language's environment interface
  - EPL-N4000+:
    All modes except the printer mode are changed to the common environment with interface.
    Environment setting not by the panel operation is added

Table 1-1. Printer environment setting not by the panel setting

	EPL-N4000	EPL-N4000+
Panel setting by Web	---	O
Network setting by Web	O	O
Network setting by ENPC	---	O

NOTE: *"O" = Available*
"--" = Not available

- Support range of EPL-N4000 and EPL-N4000+

  For this product, firmware will be developed in two stages, EPL-N4000 and EPL-N4000+. Firmware is stored in the flash ROM DIMM, and therefore it can be modified from EPL-N4000 to EPL-N4000+. Each support range is as follows: The hardware is common.

Table 1-2. Support Range

Option	EPL-N4000	EPL-N4000+
Large capacity Paper Unit	O	O
Duplex Module	O	O
Multibin Unit; Mailbox Sorter Multiple Sorter Stacker	 O O O O	 O O O O
Finisher Stapler; Stacker + Stapler	 --	 O
Face-up Tray	O	O
Envelope Feeder	O	O
Collate printing (electronic sorter) RAM HDD	 O --	 O O (The RAM sorter is not used when HDD is installed)

☐ Utilities for Printer Setting

Table 1-3. Utilities for Printer Setting

Option	EPL-N4000	EPL-N4000+
EPSON Remote Control Panel	O	-- (panel setting utility)
EPSON Net!2 for Intranet	O	--(Network Setting)
EpsonNet WebAssist (built-in)	--	O (panel, network setting)
EosonNet Web Manager	--	O (network control utility)
EpsonNet WinAssist, MacAssist	--	O (network setting utility)
EPSON Status Monitor 2	O	--(included in the driver function with EPL-N4000+)
EPSON Status Monitor 3	--	O (installed with the printer driver)
EPSON Net Direct Print	--	O

NOTE: *Error will occur if the Finisher and HDD options are installed to EPL-N4000. The Multibin unit and Finisher Stapler cannot be installed at the same time. For installing the Multibin Unit of Finisher Stapler, the Large Capacity Paper Unit is required.*

☐ HDD option

HDD is used up to 1 GB for spooling print data which are received via network. And the Adobe PS 3 kit Option used up to 1GB.
Data spooling: When Network Menu/Buffer Size=Max is selected, received data is spooled in the HDD after the network receiving buffer becomes full.

1.2 Changes from EPL-N4000 to EPL-N4000+

Here explains the changes from EPL-N400 to EPL-N4000+.

DIFFERENCE OF PANEL SETTING

- ☐ "Printing Menu", "Device Menu" "ESC/PS Environment Menu" and "ESC/Page Environment Menu"
  - ■ "Start ,menu", "Initialization Menu" are erased
  - ■ "Setting Initialization = All setting" in the "Initialization Menu" is added as "Setting Initialization" of "Common Menu".
  - ■ "One-touch" is added to "Printer Mode Menu"

DESIGNED FOR FINISHER AND STAPLE

- ☐ The following are added to the panel settings.
  - ■ Setup Menu/Stacker
  - ■ Printing Menu/Staple
  - ■ Printing Menu/Staple position
  - ■ Support Menu/HDD Format
  - ■ Support Menu/Adobe PS 3 kit HDD Init
- ☐ The following are added to the printer message.
  - ■ Finisher Error yyy
  - ■ Can'tAdjustFnshrTray
  - ■ Finisher N Full
  - ■ Install Staple Crtg
  - ■ Cover E Open
  - ■ Cover F Open
  - ■ Cover G Open
  - ■ Cover H Open
  - ■ Staple Cover Open
  - ■ Finisher Not Connect
  - ■ Stapler Supply
  - ■ Can't Staple (Warning)
  - ■ Staple Align (Warning)
  - ■ Check Stapler (Warning)
  - ■ Adobe PS 3 kit Hard Disk full
  - ■ Maintenance Req 0001-0013
- ☐ Following message is erased from the printer message
  - ■ Optional device error

DESIGNED FOR ADOBE PS 3 KIT

- ☐ The following is added to the printer messages.
  - ■ Invalid Adobe PS 3 kit

MODIFIED ESC/PAGE

- ☐ The following were added to the panel setting items.
  - ■ PGI was added to ESC/Page Menu.
  - ■ ESC/Page was added to IES.
- ☐ The following commands were added.
  - ■ Job clear (GS pcO)

- graphics relative position coordinate mode 2 (GS 2 sarG)
- GS command encode (GS n1; n2ecE, GSn1;n2ec{E)
- stretch raster image compression 5 (GS n1; to;n6 srl)
- noPGI mode in gray color space

MODIFIED ESCP2,FX

- ☐ The emulation target was designed for Euro.

RECEIVE DATA SPOOLING, ELECTRONIC SORTING AND PS FONT DOWNLOADING WERE ADDED FOR USE OF HDD

- ☐ The following were added to the panel setting items.
  - Support Menu/HDD Format
  - Support Menu/Adobe PS 3 kit HDD Init
- ☐ The following were added to the printer messages.
  - Invalid HDD
  - Adobe PS 3 kit Hard Disk full

DESIGNED FOR TYPE B OPTION LEVEL3

- ☐ "D4" was added to MAIN System Type of Type-B I/F
- ☐ The following were added to the Panel Setting items.
  - AUX Status Sheet to Test Menu
  - AUX Config to Aux Menu
  - Get IP address to Aux Menu
  - IP Byte to Aux Menu
  - SM Byte to Aux Menu
  - GW Byte to Aux Menu
  - NetWare to Aux Menu
  - Apple Talk to Aux Menu
  - NetBEUI to Aux Menu
  - AUX Init to Aux Menu

ADDED NETWORK PROTOCOL

- ☐ ENPC(EPSON Network Peripheral Control Protocol) protocol was added to the built-in network.
- ☐ Epson Net Web Manager, WinAssist and MacAssist were added to the utilities packed with the product.

DESIGNED FOR PANEL SETTING BY WEB

- ☐ All panel setting items were designed for setting from Web (EPSONNet WebAssist)
- ☐ EPSON Remote Control Panel was deleted from the utilities packed with the product.

MODIFIED PANEL SETTING

The following panel setting items other than the above were modified.

- ☐ The order of Test Menu was changed.
- ☐ It was designed that Binding would also appear in the Printing Menu when the finisher was installed.
- ☐ MP Mode was added to the Tray Menu
- ☐ Setup Menu/Auto Eject Page
- ☐ LANG=SUOMI in the Setup Menu was changed to KIELI=SUOMI.

- Setup Menu/Stacker
- Page Count in the Setup Menu was changed to Total Pages.
- Network Config was added to the Network Menu
- “DHCP”, a choice of Get IP Address in the Network Menu, was changed to “Auto”.
- Default values of IP Address, Subnet Mask and Default Gateway in the Network Menu were changed.
- The Support Menu was added.
- “Total Counter Clear” was moved after “Fuser Counter Clear” in the Maintenance Menu.

MODIFIED APPLE TALK ENTITY TYPE

If Emulation is fixed for a certain language, the language’s Entity Type and EPSONPAGE4 are returned.

1.3 Basic Specification

1.3.1 Controller Specification

CPU

- ☐ CPU: 64-bit RISC CPU VR4700 133MHz

RAM

- ☐ RAM: SDRAM DIMMs adopted
  - ■ 64 MB RAM fitted as standard (SDRAM DIMM type. However, 8MB is used as a system area)
- ☐ DIMM option: 8MB*, 16MB, 32MB, 64MB, 128MB (SDRAM type, 2 slots) Maximum

NOTE: ** 8 MB is rarely distributed and therefore, this is not stated in the catalog and specification.*

ROM

- ☐ Fonts: 2M bytes (mounted on main board)
- ☐ Program: 4M bytes (mounted on flash ROM DIMM board)
- ☐ Expansion ROM: 3 ROM DIMM slots (Can be mounted and removed only when power is off)
  Slot A: Adobe PS 3 kit or option fonts
  Slot B: Adobe PS 3 kit or option fonts
  Slot C: NLSP fonts
  Only one Adobe PS 3 kit can be mounted

HOST INTERFACES

- ☐ Host Interfaces:
  - ■ Standard: Parallel IEEE 1284 compliant, bidirectional, B-type connector. Compatibility, Nibble, ECP
    Ethernet 10 BaseT/100BaseTX
  - ■ Option: Type B I/F slot (1 slot)

PRINTER SETTING

- ☐ By EJL, PJL, HTTP, SNMP and ENPC (EPL-N4000+)
- ☐ Memory element EEPROM serial type 16KB

CONTROL PANEL

- ☐ Control Panel:
  - ■ Switch: 8 switches
  - ■ LED: 6 LEDs
  - ■ LCD: 20-character LCD

MOUNTING

Fixed on main unit

HDD OPTION

- ☐ HDD option: IDE type. 4GB or 6GB (TBD). Dedicated format for EPL-N4000. Required when finisher option is used. Can be used only with software of EPL-N4000+. Already formatted; no initialization required.

MISCELLANEOUS

Mechanical control function is not built in.

1.3.2 Engine Specification

- ☐ Printing Method: Electro-photographic printing, utilizing semiconductor laser beam scan and single-component magnetic toner.
- ☐ Resolution: 600 dpi
- ☐ Printing Speed:

Table 1-4. Printing Speed (PPM)

	One-Side Printing						Duplex Printing					
			MP Tray[a]	High Capacity Feeder[d]					MP Tray	High Capacity Feeder		
Size	C1	C2		C3	C4	C5	C1	C2		C3	C4	C5
A4 ~ L[C]	40	38	32 (16)	38	37	35	28	28	27	26	24	25
A3 ~ P[d]	20	20	19 (12)	20	--	--	14	14	13	13	--	--
LT ~ L	40	37	31 (16)	37	36	35	28	28	27	26	24	22

Note): *a:* ( ) is for custom size(unfixed form).
b. High(large) Capacity Feeder is optional.
c: L means long edge first setting.
d: P means short edge first setting.

☐ Time to print first sheet

Table 1-5. Time to print first sheet(sec.)

One-Side Printing							Duplex Printing					
Size	C1	C2	MP Tray [a]	High Capacity Feeder[d] C3	C4	C5	C1	C2	MP Tray	High Capacity Feeder C3	C4	C5
A4 ~ L[a]	10.0	10.8	TBD	11.1	12.0	13.2	14.6	15.4	TBD	15.7	16.6	17.8
LT ~ L	10.0	10.8	TBD	11.1	12.0	13.2	14.6	15.4	TBD	15.7	16.6	17.8

Note): *a:* ( ) is for custom size(unfixed form).
b. High(large) Capacity Feeder is optional.

☐ Warm-Up Time: Within 60 seconds (at 23 ◦C/rated voltage)

1.3.3 Paper Specification

☐ Paper Feeding
Maximum 6 ways:
MP (Multi purpose tray), Cassette1, Casset 2, Cassette 3, Casset 4, Cassette 5.

☐ Paper Feed volume

- Standard (No optional parts)
  1050 sheets (50 + 500 x 2)
- When using optional parts
  3550 sheets (Standard + 500 + 1000 x 2)

☐ Feeding Method

Table 1-6. Feeding Method

Paper Feeding Method		Volume (sheet)	Paper Size	Paper thickness (g/m^2)
Standard	MP(Multi purpose tray)	50[a]	• Standard size paper (A3, B4, F4, Ledger, Legal, Government Legal, Executive) • Custom size paper	Normal Paper 60-90
		5mm high	A4, B5, A5, Labels, OHP, Thick Paper, Letter, Government Letter, Half-Letter	Normal Paper 60-90 Thick Paper 90-190
	Cassette 1	500	A3-L, B4-P, A4-L, B5-L, A5-L	Normal Paper 60-90
		TBD	Labels, OHP-sheet, thick paper, Letter	Normal Paper 60-90
	Cassette 2	500	A3-P, B4-P, A4-L, B5-L, A5-L	Normal Paper 60-90
		TBD	Labels, OHP-sheet, thick paper, Letter	Normal Paper 60-90
High Capacity Feeder (Optional)	Cassette 3	Same as Cassette 2		
	Cassette 4&5	Each 1000	A3-L, B4-P, A4-L, B5-L, A5-L	Normal Paper 60-90
		TBD	Labels, OHP-sheet, thick paper, Letter	Normal Paper 60-90 Thick Paper 90-190

Note): a.:With 75g/m^2 paper.

Table 1-7. Paper Size and Mounting Direction

Paper Type	Paper	Paper Size	Mounting Direction					
			MP Tray	C1	C2	C3	C4,5	Duplex printing
Normal Paper	A3	297 x 420	P[a]	P[b]	P	P	--[c]	O[d]
	A4	210 x 297	L	L	L	L	L	O
	A5	148 x 210	L	L	--	--	--	--
	B4	257 x 364	P	P	P	P	--	O
	B5	182 x 257	L	L	L	L	L	O
	B(LD)	279.4 x 431.8	P	P	P	P	--	O
	LG	215.9 x 355.6	P	P	P	P	--	O
	GLG	215.9 x 330.2	P	P	P	P	--	O
	LT	215.9 x 279.4	L	L	L	L	L	O
Normal Paper	GLT	215.9 x 266.7	L	--	--	--	--	O
	EXE	184.1 x 266.7	L	L	L	L	L	O
	HLT	139.7 x 215.9	L	L	--	--	--	--
	F4	210 x 330	P	--	--	--	--	O
Special Paper	OHP	A4/LT	L	L	L	L	L	--
	Label	A4/LT	L	L	L	L	L	--

Note): a.L: Long edge first setting.
b.P: Short edge first setting.
c.--: Not available.
d.O: Available.

- ☐ Supported paper size: Width=100 to 297 mm
  Length=139.7 to 431.8 mm
- ☐ Paper Feed Standard: Only one side for each size and each paper feeding
- ☐ Paper Eject

Table 1-8. Paper Eject Volume

Paper Eject Type	Volume (sheet)	Paper size/Type	Thickness (g/m^2)
Face down	500	All size, type and Custom size.	Normal Paper 60-90
Face down (Offset)[a]	--	Normal Paper (Refer to Table1-7 "Paper Size and Mounting Direction"	Normal Paper 60-90 Thick Paper 90-190
Face up	200	Same as Face-up	
Mailbox	100 sheet x each 10 mail box	Normal Paper (Refer to Table1-7 "Paper Size and Mounting Direction"	Normal Paper 60-90

Note): a.Standard function for the face down.
Offset volume: Approx.20mm

☐ Guaranteed print area

- Printable area
  297 mm (width) x 431.8 mm (length)
- Guaranteed print area
  Entire paper area, excluding 4.0 mm from each edge of the paper.

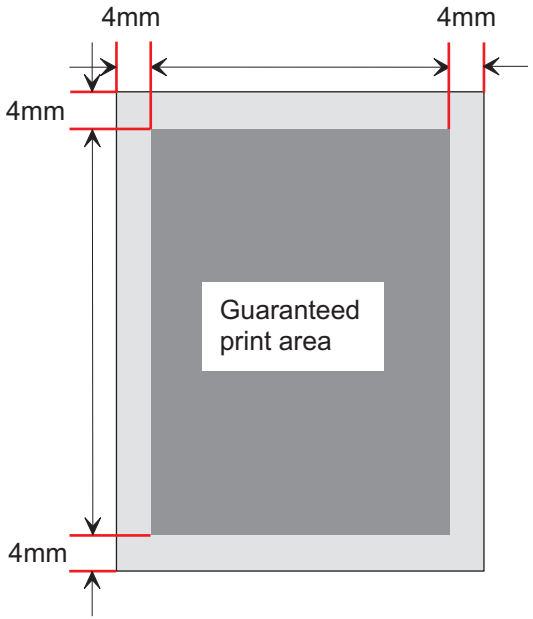


Figure 1-2. Printable Area

1.3.4 Electrical Specification

☐ Power Consumption (printer body)

Table 1-9. Power Consumption

		120V	200V
Input Voltage		108 ~ 127V	198 ~ 254V
Rated Frequency		50-60Hz±3Hz	50-60Hz±3Hz
Maximum Currency		Less than 9.6A	Less than 5.2A
Power Consumption	Maximum	Less than1180W	Less than 1243W
	Continuous printing (Average)	TBD	TBD
	Power Saving (Stand-by) (Heater Off)	Less than 45W	Less than 45W

- High Capacity Feeder (Optional)
  Average consumption electricity: Less than 0.6 A (24V)
  Less than 0.2A (5V)
- Mailbox (Optional)
  Average consumption electricity: Less than 0.6 A (24V)
  Maximum: Less than 2.0 A (24V)
  Average consumption electricity: Less than 0.2 A (5V)
- Duplex (Optional)
  Average consumption electricity: Less than 0.5 A (24 V)
  Less than 0.1 A (5V)

☐ AC Line Noise:
Pulse width = 50 to 1000 ns
Pulse polarity = +/-
Repetition = Asynchronous
Modes = Common / Normal
Voltage = 1KV (parts must be able to withstand 2KV without damage)

- Transient Outage: DIP 100% (at rated voltage-100%) 1 cycle
- Electrostatic Tolerance: Less than ± 8KV
  No damage to image
- Surge Current: 1/2-cycle / Not above 100A
- Insulation Resistance(TBD): Less than 10 MΩ
- Dielectric Strength: Insulation shall not break down when the following voltage is applied between primary circuit and chassis for 1 minute.

Table 1-10. Dielectric strength

	Primary-Chassis	Primary- Secondary
100/120V	AC1000V	AC2000V
200 V Series	AC1500V	AC3000V

- Leakage Current: 120V 3.5 mA or less
  200V series 3.5 mA or less

1.3.5 Reliability, Durability and Maintainability

- MPBF: 400,000 pages (one-side printing)
- Print Volume: Maximum 150,000 pages/month
  Average 25,000 pages/month

Table 1-11. Paper Feed Reliability

	Paper Jam Rate[a]		Double Feed Rate	
	Standard Environment	Average of all environment	Standard Environment	Average of all environment
MP Tray	1/200	1/100	1/100	TBD
Cassette1, 2	1/5000	1/2500	1/5000	1/2500
High capacity feeder, Cassette	1/5000	1/2500	1/5000	1/2500

NOTE: *a. These figures are measured, assuming normal paper is used. This measurement does not apply when boundary face is generated. Boundary face is generated when the additional paper is added to paper already set.*

- Printing position reliability

Table 1-12. Printing position

	One-side printing	duplex printing	MP Tray*
Main Scan direction	±2.0mm	±2.4mm	±2.9mm
Sub scan direction	±1.5mm	±1.9mm	±2.1mm

- Skew (See the figure on next page)

Table 1-13. Skew

	One-side printing	duplex printing	MP Tray*
Main scan direction (|c-d|)	±2.0mm	±2.4mm	±2.9mm
Sub scan direction (|a-b|)	±1.5mm	±1.9mm	±2.1mm

NOTE: *The measurements for MP Tray are based on one-side printing.*

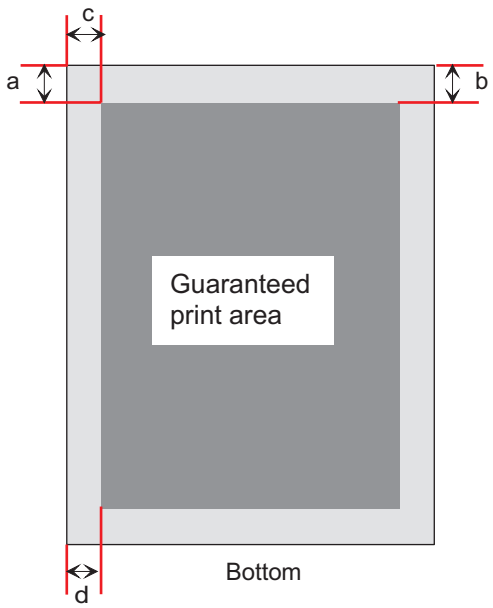


Figure 1-3. Skew

- Product Life: 1500,000 sheets or 5 years in use, whichever comes first.
- Maintenance: MTTR: Average less than 40 minutes.

1.3.6 Safety Approval

☐ Safety Regulation

Table 1-14. Safety Regulation

Model	Applicable Standard
120V	• UL1950 2nd Edition • CSA 22.2 No.950-M95 by UL(=cUL)
200V series	• IEC950 2nd Edition with amendment 1(1995) • CE Directive

☐ Safety Regulation(Laser Radiation)

Table 1-15. Laser Radiation

Model	Applicable Standard
120V	• FDA21 CFR Chapter1. Subchapter j,Section 1010, 1040.
200V series	• IEC 825 Class1 Laser Product

☐ EMC

Table 1-16. EMC

Model	Applicable Standard
120V	• FCC Parts15 Subpart B, Class B • CISPR Publication 22, ClassB(Taiwan)
200V series	• EN55022 ClassB • EN61000-3-2 • EN50082-1 • AS 3548 (Australia) (TBD)

☐ Power consumption: In compliance with International Energy Star program.

☐ Others:

- ■ Toner: No effect on human health. (In compliance with OSHA, TSCA, EINECS, worker safety laws and CSCL)
- ■ OPC: No effect on human health. (In compliance with OSHA)
- ■ Ozone:In compliance with UL478 5th Edition
- ■ Materials: In compliance with Swiss environment protection law (no CdS content)

1.3.7 Environmental Specification

1.3.7.1 Operating Environment(including optional parts)

Table 1-17. Operating Condition

Item	Condition
Temperature	0 to 32 °C
Humidity	15 to 85%RH (without condensation)
Air Pressure(Altitude)	Less than 760 hPa(Less than 2500m)

1.3.7.2 Storage Environment(including optional parts)

Table 1-18. Storage Condition

Item	Normal	Extreme
Temperature	0 to 35 °C	Low Temp.: -10 to 0 °C High Temp.:35 to 40 °C
Humidity	15 to 85%RH	Low Humidity: 5 to 15%RH High Humidity:85 to 90% RH
Storage	12 months	Max. 48 hours

1.3.7.3 Altitude

- Storage
  0 to 3000m (10000ft)
- Transportation
  0 to 15000m (49200ft)

1.3.7.4 Vibration Tolerance

- Vibration
  5 to 100 Hz
- Acceleration
  0.7G
- Direction
  Three directions(X,Y,Z)
- Time
  50 minutes in each direction

1.3.8 External Dimension and weight

- Exterior dimension
  642 mm (W) x 523 mm (D) x 486 mm (H) (No optional parts)

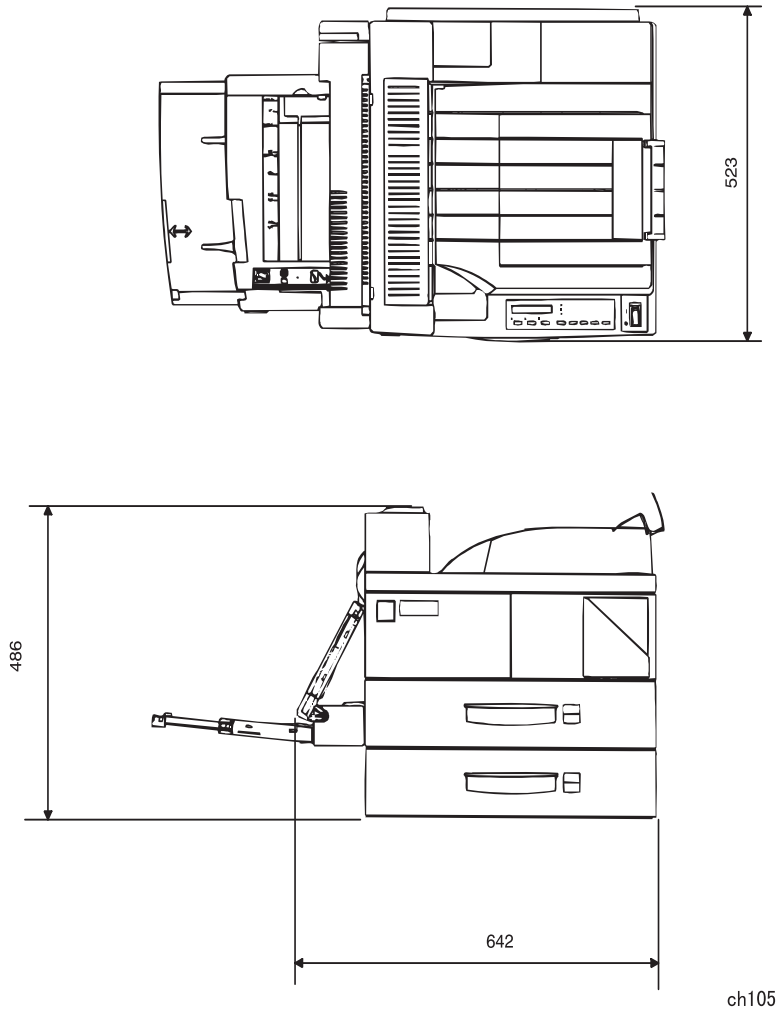


Figure 1-4. Exterior Dimension(No optional parts)

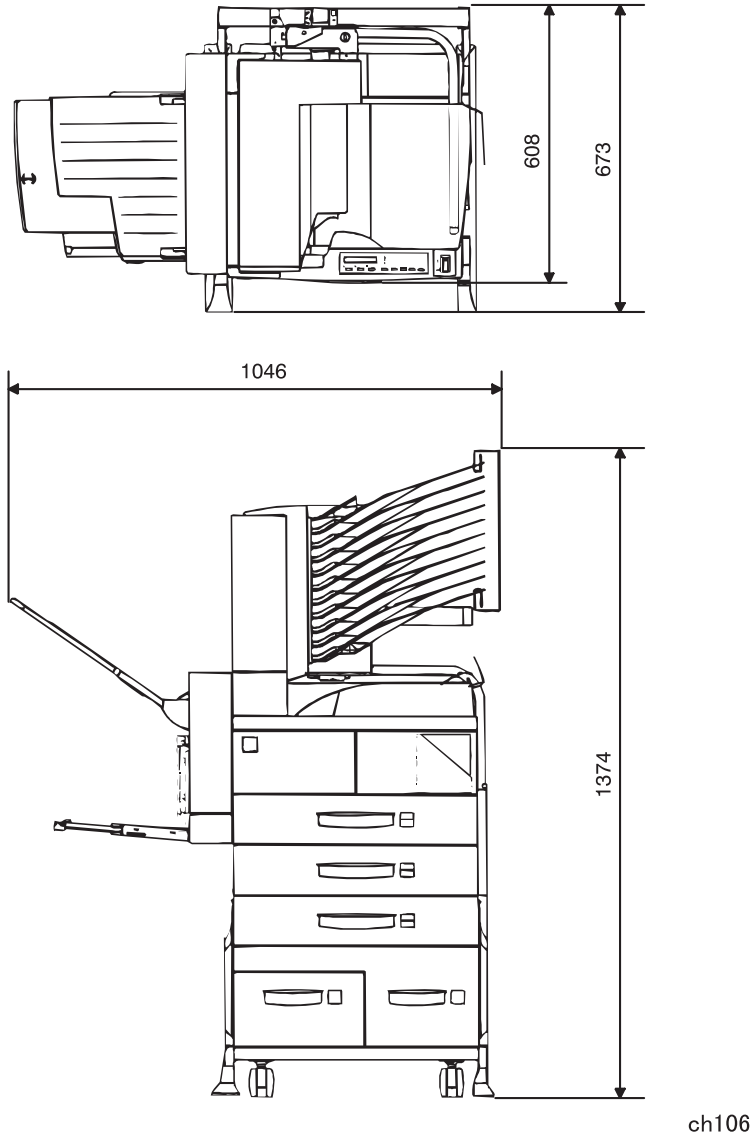


Figure 1-5. Exterior Dimension(with Mailbox, Duplex unit and High Capacity Feeder)

- Weight (No optional parts included)
  41.1 Kg (120V)
  43.6Kg (200V series)
- Optional parts weight
  - High Capacity Feeder: Less than 35 Kg
  - Mailbox: Less than 16Kg
    Less than 6Kg(Bracket)
  - Duplex Print Unit: Less than 5.5 Kg

1.3.9 Other Specifications

- Noise
  - Stand-by: Approx. 42(dB)
  - Operating: Approx. 69(dB)
  - Ozone Density: Less than 0.02 ppm
  - Toxicity: OPC, Tonner and plastic materials are all nontoxic.

1.3.10 Consumables

- Components and life

Table 1-19. Cartridge

Name	Component	Life	Weight
ET Cartridge	• OPC Drum • Charging Roller • Black -Toner • Cleaner Blade	Life: 20000 sheets* OPC drum: 130 k turn.**	3.5Kg

Note)* Toner life is estimated based on continuous printing on A4 size with 5% print coverage. Toner life will vary according to print coverage and printing method (continuous or intermittent, print density, toner-save mode, etc.).

** This rotation corresponds to approximately 45000 sheets printing at A4 continuous printing(landscape setting). This OPC drum life is indicated by minute(s) calculated from the turn on the engine status sheet.

- How to distinguish
  - Method to distinguish: ID on the cartridge
  - Type: Check OEM maker and if it is for Japan or for abroad.

1.3.11 Configuration

In the EPL-N4000 controller the following settings can be configured. The settings are made with jumper resistors, and must thus be set at the factory.

- Settings: A4/Letter. LG, EXE/B4, B5 selection

Table 1-20. Destination-dependent settings (INPT5)

R140	R141	Paper Size Detection
Mounted	Not mounted	B4, B5
Not mounted	Mounted	LGL, EXE

R129	Factory setting for Printing Menu-Page Size
Not mounted	A4
Mounted	LT

NOTE: *For the B4 and B5 settings, LGL and EXE must not be placed in the cassette.*
For the LGL and EXE setting, B4 and B5 must not be placed in the cassette.

1.3.12 Host Interface Specification

EPL-N4000 has the following interfaces fitted as standard.

- ☐ IEEE 1284 parallel interface
- ☐ Ethernet interface
- ☐ Option Type B slot

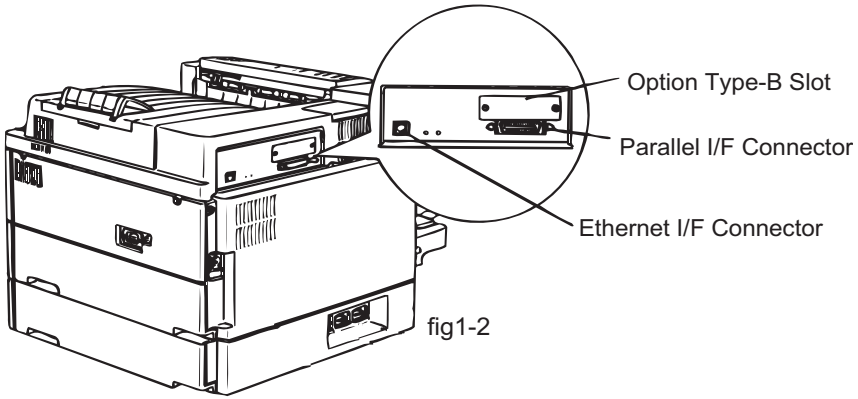


Figure 1-6. Interface Part

The following table shows which host interface configurations can be used.

Table 1-21. Interface

	Parallel I/F	Ethernet I/F	Type-B I/F
I/F automatic selection	O	O	O
I/F fixed(parallel)	O	X	X
I/F fixed(Ethernet)	X	O	X
I/F fixed (AUX)	X	X	O

Note) O: Enable, X: Disable

1.3.12.1 Parallel Interface

- ☐ Interface type:I IEEE 1284 bi-directional parallel interface
- ☐ Operating mode: Compatibility, Nibble, ECP
- ☐ Connector type: 57RE-40360-830B(D7A)DDK or equivalent
- ☐ Compatible plug: Amphenole or equivalent

The default device ID setting for this printer is as follows. The information is shown below including line breaks, but the actual data is a continuous character string, with no line break characters. The CMD items are not in order. The CID, MODE and STATUS items are not included. The DES item contents are MFG and MDL connected by a space. XXXX mentions products name.

- ☐ When Adobe PS 3 kit is not installed

MFG:EPSON;
CMD:PJL, ESCPL2, ESCP9,PRPXL24-01,PCL, HPGL2-01, ESCPAGE-04;
MDL: XXXX;
CLS:RPINTER;
DES: EPSON XXXX;

- ☐ When Adobe PS 3 kit is installed

MFG:EPSON;
CMD:PJL, ESCPL2, ESCP9,PRPXL24-01,PCL, HPGL2-01, ESCPAGE-04,POSTSCRIPT;
MDL: XXXX;
CLS:RPINTER;
DES: EPSON XXXX;

With EPL-N4000+, MFG, MDL, DES and CID of Device ID are user-redenfinable. The DES and CID fields don't respond with the default value, but respond with the defined character string only when redefined. Device ID upon redefinition is as follows. **** is a user-defined character string.

☐ When Adobe PS 3 kit is not installed

MFG:****;
CMD:PJL, EJL, ESCPL2, ESCP9,PRPXL24-01,PCL,HPGL2-01, ESCPAGE-04;
MDL: ****;
CLS:PRINTER;
DES: ****;
CID:****;

☐ When Adobe PS 3 kit is installed

MFG:****;
CMD:PJL, EJL, ESCPL2, ESCP9,PRPXL24-01,PCL,HPGL2-01, ESCPAGE-04;
MDL: ****;
CLS:PRINTER;
DES: ****;
CID:****;

1.3.12.2 Ethernet Interface Specification

☐ Interface type:10BaseT, 100BaseTX, Half Duplex, Full Duplex:
Automatically switched when power is turned on.

☐ Communication protocol

- IPX/SPX(IPX, SPX, NCP, RIP, SAP, PrintServer, RemotePrinter, NDS, SNMP,ENPC)
- NetBIOS(SMB), NetBEUI
- TCP/IP (IP, UDP, TCP, LPR, FTP, TELNET, ARP, ICMP, RARP, BOOTP, DHCP, SNMP, HTTP, SNMP, ENPC)
- Apple Talk (ELAP, DDP, ATP, PAP, AARP, NBP, ZIP, RTMP, SNMP, ENPC)
- ENPC (EPSON Network Peripheral Control Protocol) from EPL-N4000+

☐ Connector type:RJ45

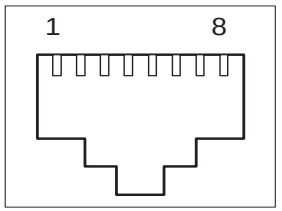


Figure 1-7. RJ45 Connector/Pin Position

☐ Appropriate cable:2-pair STP (10 BaseT, 100BaseTX)
For compliance with FCC class B, EN55022 Class B, and VCCI ClassB, a shielded type cable must be used.

- Pin Assignments

Table 1-22. Pin Assignment

Pin	Signal	I/O
1	Tx+	O
2	Tx-	O
3	Rx+	I
4	N.C.	---
5	N.C.	---
6	Rx-	I
7	N.C.	---
8	N.C.	---

- Printer Name: Factory default setting is the same as Product Name
- Product Name: Product Name
- Emulation Type: See the table below
- Entity Type: See the table below. When Emulation is “Auto”, as it is shown in the table. When Emulation is fixed, Entity Type of default Emulation and EPSONPAGE4 are returned.

Table 1-23. Emulation/Entity Type

Emulation	Emulation Type	Entity Type
PS*1	POSTSCRIPT-00*1	LaserWriter*1
ESC/Page	ESCPAGE-04	
LJ4	PCL5E-00	
RCC*2	--	--
DIAG*2	--	--
I239X	PRPXL24-01	EPSONPRPXL24
GL/2	HPGL2-01	EPSONHPGL2
FX	ESCP9	EPSONFX
ESCP2	ESCPL2	EPSONLQ2

NOTE: **1 Added with Adobe PS 3 kit is installed.*
**2 RCC and DIAG cannot be selected by users.*

1.3.12.3 Type-B Interface

This printer is fitted as standard with a Type B option interface slot.

- ☐ Main system type: MTP600dpi, PW7016dt600dpi, PRG(****)rev, AP1300ma, SPD0fast, D4**** is ROM version. D4 is from EPL-N4000+. Designed for Level3.
- ☐ Printer Name: Factory default setting is same as Product Name
- ☐ Product Name: Product name
- ☐ Emulation Type: See table below.
- ☐ Entity Type: See table below.

Table 1-24. Emulation/Entity Type

Emulation	Emulation Type	Entity Type
PS*1	POSTSCRIPT-00*1	LaserWriter*1
ESC/Page	ESCPAGE-04	EPSONPAGE4
LJ4	PCL5E-00	EPSONPCL5
RCC*3	--	--
DIAG*3	--	--
1239X	PRPXL24-01	EPSONPRPXL24
GL/2	HPGL2-01	EPSONNHPGL2
FX	ESCP9	EPSONNFX
ESCP2	ESCPL2	EPSONLQ2

NOTE: **1:Added when Kent is installed.*
**3:RCC and DIAG cannot be selected by users. The cassette paper size detection jumper setting is not affected.*

- ☐ Emulation Type:
  When emulation is “Auto”,
  Adobe PS 3 kit not started: AUTO (Emulation Type 1,2,3..)
  Adobe PS 3 kit started: EJL (POSTSCRIPT-00, other Emulation Type 1,2,3...)
  When emulation is fixed,
  : EJL (Default Emulation Type, other Emulation Type 1,2,3...)
- ☐ Entity Type
  When Emulation is “Auto”,
  As shown in the table.
  When Emulation is fixed,
  Entity Type of default Emulation and EPSONPAGE4 are returned.

1.4 OPERATION

1.4.1 Control Panel

The control panel of this printer has one display, 6 LEDs and 8 switches. Figure below shows exterior view of the control panel.

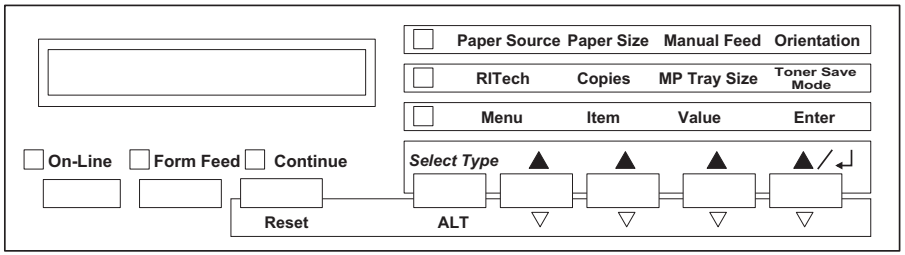


Figure 1-8. Control Panel

LCD DISPLAY

- Specification:20 characters in one row (5x7 dot matrix)
- Function: Usually, LCD display displays printer condition. In case of panel setting mode, setting is performed by the indication.

LED LIGHTS

- On Line LED(green):On = Printer is ready for printing.
  Off = Printer is not ready.
- Data(yellow): On = Received data is not printed out and still left in the printer. But if the received data except effective printing data is left, LED does not turn on.
  Off = No effective received data is left in the printer. But if the control code is not ended, LED is still On.
  Blinking = Processing the data.
- Error(red): Error happens and it can be canceled by Continue switch.
- "One-Touch" Setting Mode 1 LED (green):
  On = indicates that "One-Touch" setting mode 1 is selected. 4 items can be set; Paper Source, Selection, Paper size, Manual Feed, and Orientation.
- "One- Touch" Setting Mode 2 LED (green)
  On = indicates that "One-Touch" setting mode 2 is selected. 4 items can be set; RITech, Copies, MP Tray paper size and Toner Save Mode.
- Select Type Mode LED(green)
  On = indicates that the printer is in the select type panel setting mode.

SWITCHES

- On-line: The printer goes to not-ready state by pressing this button when the printer is in the on-line(ready) status. Pressing this button during the panel setting, the printer escapes from the panel setting mode and immediately goes to the On-line(ready) mode.

NOTE: *If an error occurs after the printer goes to not-ready status, the printer goes to not-ready status even the error is canceled.*

- Form Feed: If Data light is On in the not-ready condition, the printer prints the received data on the one sheet by pressing this button. If the plural numbers of printing is selected, the printer prints out that number. In case of the data which the control code has not ended yet, the printer prints out the data, which has already received.

NOTE: *However, if the data light is off, the printer does not eject the paper.*

- Continue: Error is canceled by pressing this button, while the Continue LED light is on. When warning occurs, warning indication is canceled by pressing this button.
- Select type/Alt switch: Ordinary condition, One-touch setting mode1, 2 and select type mode.
- Menu switch: The printer goes to the setting mode by pressing this switch.
- Item switch: The printer goes to the previous setting item by pressing this switch.
- Value selection switch: The printer goes to the previous setting item by pressing this switch.
- Enter switch: By pressing this button, the printer goes to status sheet in the test printing menu.
- Reset(Continue): The printer stops printing or resets by pressing Alt and Continue switches. After displaying “Reset” on the display, pressing both switches for 5 seconds lead to “Reset All” and executes warm boot.

- **This printer has EEPROM and hard disk drive HDD (option) inside and records various setting values and printing data. If the printer is turned off during this process, writing operation is not guaranteed, and error occurs when the printer is turned on next time. Therefore, never turn off the printer at the following cases;**
  - **From the power on to On-line light on.**
  - **On-line light is blinking**
  - **When the printer is printing(when the paper transporting motor is in active)**
- **When you want to stop printing, press “On-line switch” or perform Job Cancel/Reset.**

Each switch operation for the panel setting is on the next page.

Each switch operation for the panel setting is as follows.

Table 1-25. Switch operation for the panel setting

Switch	On-line (ready)	Not-ready	Panel Setting mode	Panel setting (one touch mode)
Panel setting	Goes to Not ready status and enters to One-touch setting mode1.	Goes to "One-touch" setting mode1.	Escape from the panel setting mode, and goes to On-line status.	Goes to the next panel setting mode.
Setting menu	Goes to select type mode	Goes to select type mode.	Menu selection (indicates next setting menu)*2	Paper selection/ Printer mode selection (indicates the next setting value)*2
Alt + setting menu	Invalid	Invalid	Menu selection (indicates previous setting menu)*2	Paper selection/ Printer mode selection (indicates the next setting value)*2
Item selection	Goes to the previous setting mode.	Goes to the previous setting mode.	Item selection (next setting item is displayed)*2	Paper size selection/No. of Copy selection (indicates the next setting values)
Alt + item selection	Invalid	Invalid	Item selection (previous setting item is displayed)*2	Paper size selection/No. of Copy selection (indicates the previous setting values)
Value selection	Goes to the previous item.	Goes to the previous item.	Displays the next setting value.*2	Minification selection/ Tray paper size selection*2

Table 1-26. Switch operation for the panel setting

Switch	On-line (ready)	Not-ready	Panel Setting mode	Panel setting (one touch mode)
Alt + Value selection	Invalid	Invalid	Displays the previous item.*2	Minification selection/Tray paper size selection (indicates the previous setting value)*2
Enter	Goes to the item of the status sheet.	Goes to the item of the status sheet.	Confirm the setting value. Prints out or perform processing.	Paper direction selection/ Toner saving selection*1 (indicates previous setting value) *2
Alt + Enter	Invalid	Invalid	Invalid	Paper direction selection/ Toner saving (indicates previous setting value) *2

Note) *1 When using duplex print function, select "Duplex" instead of "Toner Save".
*2If you keep pressing, it will be repeat input.

1.4.1.1 Status Sheet

Engine Status Sheet is prepared and Jam Counter is not printed.

- Hardware configuration
  Mounted memory for installed memory

The memory size obtained by subtracting the program code size from the mounted memory is stated for Available Memory. The following legends indicate the fact that options are fitted.

- RAM DIMM: Added to Installed Memory, Available memory
- Type-B I/F: "AUX" is added to "Installed Interface".
- Large Capacity Paper Unit: "Lower Cassette 3, Lower Cassette 4, Lower Cassette 5" is added to "Other Options".
- ENV Tray: "ENV Tray" is added to "Other Options".
- Face-up Tray: When Face-up Enable of Setup Menu = On, "Face-up Tray" is added to "Other Options".
- Duplex Unit: "Duplex Unit" is added to "Other Options".
- Multibin: "Multibin" is added to "Other Options".
- Finisher: "Finisher Stapler" is added to "Other Options".
- HDD: "Hard Disk XGB" is added to "Other Options".
- NLSP Font ROM: The option product name is added to "Other Options".
- Font/Macro ROM: The option product name is added to "Other Options".
- When Adobe PS 3 kit is installed: "Adobe PS 3 kit Menu, Error Sheet" is added to "Default Settings" "Adobe PostScript3" is added to "Installed Emulation" "Version of Adobe PS 3 kit" is added to "Firmware Revision".

NOTE: *For EPL-N4000, Finisher and HDD cannot be installed.*

1.4.2 Panel Setting Mode

Here explains panel setting mode which sets various function of the printer.

1.4.2.1 One Touch Setting Mode

By pressing Select Type(ALT) switch on the control panel, the printer enters to the one-touch setting mode1, then goes to the one-touch setting mode 2. Setting items at each setting mode are mentioned below.

Table 1-27. One touch setting modes

Mode/Switch	Setting Menu	Setting Item	Setting Value	Enter
One touch setting mode1	Paper source	Page size	Minification	Orientation
One touch setting mode2	Printer mode	Copies	MP tray size	Duplex

1.4.2.2 List of Setting Items

The following is a list of the printer setting items. Note that the box in the "Value" column indicates the factory default setting.

Table 1-28. Printer Setting

Menu	Item	Value
Test Menu	• Status sheet • Network Status Sheet*2 • AUX Status Sheet*3 • Adobe PS 3 kit Status Sheet*4 • Adobe PS 3 kit Font Sample*4 • ESC/Page Font Sample*5 • LJ4 Font Sample • ESCP2 Font Sample • FX Font Sample • I239X Font Sample	
Emulation Menu	• Parallel	• ***Auto***, LJ4, ESCP2, FX, I239X, Adobe PS 3 kit*4, GL2
	• Network	• ***Auto***, LJ4, ESCP2, FX, I239X, Adobe PS 3 kit*4, GL2
	• AUX*6	• ***Auto***, LJ4, ESCP2, FX, I239X, Adobe PS 3 kit*4, GL2

NOTE: **1 The order of items appearing on the Test Menu varies depending on whether the version is EPL-N4000 or EPL-N4000+.*
**2 Appears only when Interface=Auto or Network.*
**3 Appears only when Inteface=Auto or AUX at start-up with a Level3-capable Type B host interface (option) installed, and can then be executed from EPL-N4000+. Any other menu has been set or executed before executing this menu, shift to a printable state before execution.*
**4 Appears only when Adobe PS 3 kit is installed.*
**5 Not displayed on the panel. Not printed on the status sheet. Can be executed with EJL.*
**6 Appears only when Type B interface card is installed.*

Table 1-29. Printer Setting

Menu	Item	Value
Printing Menu	• Paper Source	• ***Auto,*** MP[*1, 2], ENV[*2, 3], LC1, LC2, LC3[*4], LC4[*4], LC5[*4]
	• Page Size	• ***A4[*5],*** A3, A5, B4, B5, LT[*6], B, HLT, LGL, GLT, GLG, EXE, F4, MON, C10, DL, C5, IB5, CTM
	• Wide A4	• ***Off,*** On
	• Orientation	• ***Port,*** Land
	• Out bin	• ***Face-down***, Face-up[*8], Stacker[*9], Mailbox 1[*10], Mailbox 2[*10], Mailbox 3[*10] to Mailbox 10[*10], Sorter[*11]
	• Copies	• ***1***-999
	• Quantity[*12]	• ***1***-999
	• Manual Feed	• ***Off***, On
	• Resolution	• ***600,*** 300
	• Skip Blank Page[*13]	• ***Off,*** On
	• Auto Eject Page	• On, ***Off*** (added in EPL-N4000+)
	• Duplex[*14]	• ***Off,*** On
	• Binding[*16]	• ***Long Edge***, Short Edge (changed in EPL-N4000+)
	• Start Page[*14]	• ***Front***, Back
	• Offset Stacking	• ***Off,*** On
	• Staple	• ***None***, Staple (added in EPL-N4000+)
	• Staple position[*50]	• ***Left***, Right (added in EPL-N4000+)

NOTE: **1: Appears only when the MP tray is installed, and can then be selected. The MP tray does not support the envelope size to which the ENV tray corresponds.*
**2: An error will result if neither MP tray nor ENV tray is installed. Therefore, either tray is always present in a normal state.*
**3:Appears only when the ENV tray is installed, and can then be selected.*
**4: Appears only when the Large Capacity Paper Unit is installed, and can then be selected.*
**5: Factory default setting when the A4/LT configuration is A4.*
**6:Factory default setting when the A4/LT configuration is LT.*
**7: CTM size:min. 100 x 139.7mm, max. 297 x 431.8 mm*
**8: Appears only when Face-up Enable=On is set, and can then be selected .*
*:*9: Appears only when the multibin unit is installed and the printer is in Stacker mode and Finisher Stapler is installed, and can then be selected.*
**10: Appears only when the multibin unit is installed and the printer is in Mailbox mode, and can then be selected.*
**11: Appears only when the multibin unit is installed and the printer is in Sorter or MultiSort mode; can then be selected.*
**12: Not displayed on the panel. Not printed on the status sheet. Can be set with EJL, PJL and so forth. Not saved in NVRAM.*
**13: Only LJ4 mode and ESC/Page mode are valid.*
**14: Appears only when the optional duplex unit is installed.*
**15: Appears when the finisher is installed.*
**16:Appears when the optional Duplex Unit or the Finisher Staple is installed.*

Table 1-30. Printer Setting

Menu	Item	Value
Tray Menu	• MP Mode	• ***Normal,*** Last (Added in EPL-N4000+)
	• MP Tray Size[*1]	• ***A4***[*2], A3, A5, B4, LT, B5, B, HLT, LGL,GLT, GLG, EXE, F4, IB5
	• ENV Tray size[*4]	• ***C5***, DL, C10, MON
	• LC1 Size[*5]	• A4, A3, A5, B4[*6], LT, LGL[*7], GLG, B, EXE[*7], B5[*6]
	• LC2 Size[*5]	• A4, A3, B4[*6], LT, LGL[*7], GLG, B, EXE[*7], B5[*6]
	• LC3 Size[*8]	• A4, A3, B4[*6], LT, LGL[*7], GLG, B, EXE[*7], B5[*6]
	• LC4 Size[*8]	• A4, LT, EXE[*7], B5[*6]
	• LC5 Size[*8]	• A4, LT, EXE[*7], B5[*6]
	• MP Type[*1]	• ***Plain***, Preprinted, Letterhead, Prepunched, Bond, Recycled, Color, Transparency, Labels
	• ENV Tray[*9]	• ***Plain***
	• LC1 Type	• ***Plain***, Preprinted, Letterhead, Prepunched, Bond, Recycled, Color, Transparency, Labels
	• LC2 Type	• ***Plain,*** Preprinted, Letterhead Prepunched, Bond, Recycled, Color, Transparency, Labels
	• LC3 Type[*10]	• ***Plain***, Preprinted, Letterhead Prepunched, Bond, Recycled, Color, Transparency, Labels
	• LC4 Type[*10]	• ***Plain***, Preprinted, Letterhead Prepunched, Bond, Recycled, Color, Transparency, Labels
	• LC5 Type[*10]	• ***Plain***, Preprinted, Letterhead Prepunched, Bond, Recycled, Color, Transparency, Labels
Config Menu	• RITech	• ***On***, Off
	• Toner Save	• ***Off,*** On
	• Density	• ***3,*** 4, 5, 1, 2
	• Top Offset	• ***0.0***, -150.0 to 150.0 mm step 0.5 mm
	• Left offset	• ***0.0***, -150.0 to 150.0 mm step 0.5 mm
	• T offset B[*11]	• ***0.0,*** -150.0 to 150.0 mm step 0.5 mm
	• L offset B[*11]	• ***0.0,*** -150.0 to 150.0 mm step 0.5 mm
	• Size Ignore	• ***Off,*** On
	• Auto Cont	• ***Off,*** On
	• Page Protect	• ***Auto,*** On
	• Image Optimum	• ***Auto,*** Off, On

NOTE: **1:Appears only when the MP tray is installed, and can then be selected. The MP tray does not support the envelope size to which the ENV tray corresponds.*
**2: Factory default setting when the A4/LT configuration is A4.*
**3: Factory default setting when the A4/LT configuration is LT.*
**4: Appears only when the ENV tray is installed, and can then be selected.*
**5: Not displayed on the panel. Not printed on the status sheet. Can be extracted with EJL and so forth.*
**6: With the cassette size detect jumper setting as LGL and EXE, LGL is detected when B4 or LGL paper is placed in the cassette. EXE is detected when B5 or EXE paper is placed in it.*
**7: With the cassette size detect jumper settings as B4 and B5, B4 is detected when B4 or LGL paper is placed in the cassette. B is detected when B5 or EXE paper is placed in it.*
**8: Not displayed on the panel. Not printed on the status sheet. Can be extracted with EJL and so forth only when the Large Capacity Paper Unit is installed.*
**9: Not displayed on the panel. Always Plain on this model. Cannot be set with EJL, PJL and command.*
10: Appears only when the Large Capacity Paper Unit is installed, and can then be selected.
**11: Appears only when the Duplex Unit is installed.*

Table 1-31. Printer Setting

Menu	Item	Value
Setup Menu	• Interface*1	• ***Auto***, Parallel, Ethernet, Network, AUX*2
	• Time Out	• 60, 0, 5 to 300 step1
	• Standby*3	• ***Enable***, Disable
	• Lang	• ***English***,
	• Lang	• Francais
	• Sprache	• Deutsch
	• LINGUA	• ITALIANO
	• LENG	• ESPANOL
	• SPRÅK	• SVENSKA
	• Sprog	• Dansk
	• Taal	• Nederl.
	• KIELI	• SUOMI (changed in EPL-N4000+)
	• Ling	• Portugues
	• Panel Lock*14	• ***Off***, On
	• Toner*15	• E****F, E*** F, E** F, E* F, E F
	• Face-up Enable*16, 17	• Off, On
	• Multibin*7,8	• MailBox, Stacker, Sorter, Multisort
	• Stacker*9	• +Face-down, No Face-down (added in EPL-N4000+)
	• Total Pages*5	• 0 to 99999999 (changed in EPL-N4000+)
	• SelecType Init	
Parallel Menu	• Speed	• ***Fast,*** Normal
	• Bi-D	• ***Nibble***, ECP, Off
	• Buffer Size*7	• ***Normal***, Maximum, Minimum

NOTE: **1: EpsonNet WebAssist cannot set/change this item.*
**2: Appears only when the Type B interface card is installed.*
**3: The STANDBYTIME command (not open) of EJL is also supported. Its default value is 60 (minutes)*
**4: Not displayed on the LCD. Can be set with EJL. Not printed on the status sheet.*
**5: This item is for display only, and the setting cannot be changed.*
**6: This item must be set since installation of the face-up tray is not automatically recognized. The changed setting becomes valid after the next warm boot or the power is turned on again.*
**7: When changed on the panel or with EJL, these do not become valid immediately but become valid after warm boot or at power on again. Displaying on the panel, reading with EJL, and printing on the status sheet for themselves are immediately reflected. They are not reflected in the out bin setting range, language, network operation, etc. until warm boot is performed or the power is turned on again. If they are changed on the panel or with EJL, be sure to perform warm boot or turn on the power again. To change more than one of these, change more than one of them, perform warm boot or turn on the power again once at the end.*
**8: Appears only when the multibin unit is installed and can then be selected. When the setting is changed to terminate the panel setting mode, warm boot is performed. After the setting is changed, the test print menu is not displayed until the panel setting mode is terminated. It becomes valid after warm boot.*
**9: Appears when the Stacker can be selected as the outbin.*

Table 1-32. Printer Setting

Menu	Item	Value
Network Menu	• Network config*1 • Get IPAddress*2,3 • IP Byte 1*2,3 • IP Byte 2*2,3 • IP Byte 3*2,3 • IP Byte 4*2,3 • SM Byte 1*2,3 • SM Byte 2*2,3 • SM Byte 3*2,3 • SM Byte 4*2,3 • GW Byte 1*2,3 • GW Byte 2*2,3 • GW Byte 3*2,3 • GW Byte 4*2,3 • Buffer Size*3	• ***No,*** Yes (added in EPL-N4000+) • ***Panel,*** Auto, PING (added in EPL-N4000+) • ***192***, 0 to 255 (added in EPL-N4000+) • ***168,*** 0 to 255 (added in EPL-N4000+) • ***192***, 0 to 255 (added in EPL-N4000+) • ***168,*** 0 to 255 (added in EPL-N4000+) • ***255,*** 0 to 255 (added in EPL-N4000+) • ***255,*** 0 to 255 (added in EPL-N4000+) • ***255,*** 0 to 255 (added in EPL-N4000+) • ***0***, 0 to 255 (added in EPL-N4000+) • **255**, 0 to 255 (added in EPL-N4000+) • ***255,*** 0 to 255 (added in EPL-N4000+) • ***255,*** 0 to 255 (added in EPL-N4000+) • ***255***, 0 to 255 (added in EPL-N4000+) • ***Normal,*** Maximum, Minimum
AUX Menu*4	• AUX Config*5 • Get IPAddress*5,6 • IP Byte 1*5,6 • IP Byte 2*5,6 • IP Byte 3*5,6 • IP Byte 4*5,6 • SM Byte 1*5,6 • SM Byte 2*5,6 • SM Byte 3*5,6 • SM Byte 4*5,6 • GW Byte 1*5,6 • GW Byte 2*5,6 • GW Byte 3*5,6 • GW Byte 4*5,6 • Netware*5,6 • AppleTalk*5,6 • NetBEUI*5,6 • AUX Init*5,6A • Buffer Size*3	• ***No,*** Yes (added in EPL-N4000+) • Panel, Auto, PING (added in EPL-N4000+) • 0 to 255 (added in EPL-N4000+) • 0 to 255 (added in EPL-N4000+) • 0 to 255 (added in EPL-N4000+) • 0 to 255 (added in EPL-N4000+) • 0 to 255 (added in EPL-N4000+) • 0 to 255 (added in EPL-N4000+) • 0 to 255 (added in EPL-N4000+) • 0 to 255 (added in EPL-N4000+) • 0 to 255 (added in EPL-N4000+) • 0 to 255 (added in EPL-N4000+) • 0 to 255 (added in EPL-N4000+) • 0 to 255 (added in EPL-N4000+) • On,Off (added in EPL-N4000+) • ON, Off (added in EPL-N4000+) • ON, Off (added in EPL-N4000+) • ***Normal,*** Maximum, Minimum

NOTE: **1: Automatically returns to "Network Config =No" after shifting to "Ready".*

**2: Appears only when "Network Config=Yes", and can then be selected. Always printed on Status Sheet.*

**3: When changed on the panel or with EJL, these do not become valid immediately but become valid after warm boot or at power on again. Displaying on the panel, reading with EJL, and printing on the status sheet for themselves are immediately reflected. They are not reflected in the out bin setting range, language, network operation etc. until warm boot is performed or the power is turned on again. If they are changed on the panel or with EJL, be sure to perform warm boot or turn on the power again. To change more than one of these, change more than one of them, perform, warm boot or turn on the power again once at the end.*

**4: Appears only when the TypeB interface card is installed.*

**5: Appears only a Level 3-capable Type B host interface (option) is installed, and can then be selected or executed. Automatically returns to "AUX Config=No" after shifting to a printable state.*

**6: Appears only when "AUX Congig=Yes" is selected, and can then be selected or executed. The setting value becomes valid when the network card is restarted after shifting to a printable state. Therefore, when the setting value is changed, if "AUX Status Sheet" in the test print menu is executed before coming out of the panel setting mode, the before change setting value is printed. Before setting or executing menus other than these items, shift to a printable state.*

Table 1-33. Printer Setting

Menu	Item	Value
ESC/Page Menu**	• Auto CR**	• ***On***, Off
	• Auto FF**	• ***On,*** Off
	• CR Function**	• ***CR,*** CR+LF
	• LF Function**	• ***LF+CR,*** LF
	• FF Function**	• ***FF+CR***, FF
	• Error Code**	• ***Ignore,*** Space
	• Avoid Error**	• ***Off,*** On
	• PGI**	• ***On,*** Off (added in EPL-N4000+)
LJ4 Menu	• Font Source	• ***Resident***, Download[*1], ROM A[*2], ROM B[*2]
	• Font Number	• ***0*** to available (Max 65535)
	• Pitch	• ***10.00***, 0.44 to 99.99 cpi step 0.01 cpi
	• Height	• ***12.00***, 4.00 to 999.75 pt step 0.25 pt
	• SymSet	• ***IBM-US***, 8859-2 ISO, Roman-8, ECM94-1 IBM-DN, 8859-9 ISO, 8859-15ISO, Pc Multiling, PcE.Europe, PcTK437, PcEur858, WiiAnsi, PsTex, VeInternati, VeUS, MsPublishin, Math-8, PsMath, VeMath, PiFont, Legal, UK, ANSI ASCII, Swedis2, Ialian, Spanish, German, Norweg1, French2, Windows, PcIcelandic[*4], PcLt774[*4], PcTurk1[*4,5], Pc Portugues[*4], PcET850[*4], PcTurk2[*4,5], PcCanFrench[*4], PcS1437[*4], PcNordic[*4], 8859-3 ISO[*4], 8859-4 ISO,[*4] WiBaltic[*4], WiEstonian[*4], WiLativian[*4], Mazowia[*4,6], CodeMJK[*4,6], BpBRASCII[*4], BpAbicomp[*4], PcCy855[*4,8], PcCy 866[*4,8], PcLt 866,[*4] WiGreek[*4], Europe3[*4], 8859-5 ISO[*4], WiCyrillic[*4], Bulgarian[*4,8], PcUkr866, Hebrew7[*7], 8859-8 ISO[*4], PcAr864[*4], PcHe862[*4], Arabic8[*4], OCR B[*4], 8859-6 ISO[*4], OCR A[*4]
	• Form	• 60[*10], ***64***[*11], 5 to 128 lines
	• Source SymSet	• ***277***, 0 to 3199
	• Dest SymSet	• ***277,*** 0 to 3199
	• CR Function	• ***CR,*** CR +LF
	• LF Function	• ***LF***, CR+LF

NOTE: ***: Not displayed on the panel. Not printed on the status sheet. Can be set and obtained with EJL.*
**1: Appears only when a down load font is present.*
**2: Appears only when an option font is installed in the ROM socket.*
**3:Either is displayed depending on the type of pitch of the font selected. Height is displayed for the fixed pitch font, and pitch for the proportional font.*
**4: Appears only when NLSP Bitmap3 Plus Font ROM is installed.*
**5:Appears only when NLSP EDG OEM Scalable Font ROM for Turkish is installed.*
**6: Appears only when NLSP EDG OEM Scalable Font ROM for Latin is installed.*
**7: Appears only when NLSP EDG OEM Scalable Font ROM for Greek is installed.*
8: Appears only when NLSP EDG OEM Scalable Font ROM for Cyrillic is installed.
**9: When LJ4 Menu SymSet Value is changed to this Symbol set, Font Source= Resident, Font Number=0 setting is automatically made, and therefore to print this symbol is set, a font must be selected for which the Font Source and Font Number Value are supported by this symbol set.*
**10: Factory default setting when the A4/LT configuration is LT.*
**11: Factory default setting when the A4/LT configuration is A4.*

Table 1-34. Printer Setting

Menu	Item	Value
GL2 Menu	• GL-Mode	• GLlike, ***LJ4GL2***
	• Scale	• ***Off***, A0, A1, A2, A3
	• Origin	• ***Corner,*** Center
	• Pen	• ***Pen0***, Pen1, Pen2[*1], Pen3[*1], Pen4[*1], Pen5[*1], Pen6[*1]
	• End	• ***Butt,*** Square, Triangular, Round.
	• Join	• ***Mitered***, Miteredbeveled. Triangular, Round, Beveled, None.
	• Pen0	• 0.05~***0.35***~5.00mm step 0.05mm.
	• Pen1	• 0.05~***0.35***~5.00mm step 0.05mm.
	• Pen2[*1]	• 0.05~***0.35***~5.00mm step 0.05mm.
	• Pen3[*1]	• 0.05~***0.35***~5.00mm step 0.05mm.
	• Pen4[*1]	• 0.05~***0.35***~5.00mm step 0.05mm.
	• Pen5[*1]	• 0.05~***0.35***~5.00mm step 0.05mm.
	• Pen6[*1]	• 0.05~***0.35***~5.00mm step 0.05mm.
Adobe PS 3 kit Menu[*2]	• Error Sheet[*2]	• ***Off***, On
ESCP2 Menu	• Font	• ***Courier,*** Prestige, Roman, Sans serif, Roman T, Orator S, Sans H, Script, OCR A, OCR B.
	• Pitch	• ***10cpi***, 12cpi, 15cpi, Prop.
	• Condensed	• ***Off,*** On
	• T. Margin	• 0.40~***0.50***~1.50 inch step 0.05 inch
	• Text	• 1~62[*3] ***66***[*5]~available (Max 99) Lines
	• CGTable	• ***PcUSA***, Italic, PcMultiln, PcPortugue, PcCanFrenc, PcNordic, PcTurkish2, PcE. Europe, BpBRASCII, BpAbicomp, PcS1437[*5], PcTurkish1[*5], PcIcelandic[*5], 8859-9 ISO[*5], Mazowia[*5], CodeMJK[*5], PcGk437[*5],PcGk851[*5], PcGk869[*5], 8859-7 ISO[*5], PcCy855[*5], PcCy866[*5], Bulgarian[*5], PcUkr866[*5], Hebrew7[*5], Hebrew8[*5], PcAr864[*5], PcHe862[*5]
	• Country	• ***USA,*** France, Germany, UK Denmark, Sweden, Italy, Spain1, Japan, Norway, Denmark2, Spain2, LatinAmeric, Korea,

Table 1-35. Printer Setting

Menu	Item	Value
ESCP2 Menu	• Auto CR	• ***On***, Off
	• Auto LF	• ***Off,*** On
	• Bit Image	• ***Dark***, Light, BarCode
	• ZeroChar	• ***0***, ϕ

NOTE: **1: Appears only in GLike mode.*
**2: Appears only when Adobe PS 3 kit is installed.*
**3: Factory default setting when the A4/LT configuration is LT.*
**4: Factory default setting when the A4/LT configuration is A4.*
**5: Appears only when NLSP Bitmap 3 Plus Font ROM is installed[*6].*
**6: When LJ4 Menu SymSet Value is changed to this Symbol set, Font Source=Resident, Font Number=0 setting is automatically made, and therefore, to print this symbol set, a font must be selected for which the Font Source and Font Number Value are supported by this symbol set.*

Table 1-36. Printer Setting

Menu	Item	Value
FX Menu	• Font	• ***Courier***, Prestige, Roman, Sans serif, Script, Orator S, OCR A, OCR B
	• Pitch	• ***10cpi***, 12cpi, 15cpi, Prop.
	• Condensed	• ***Off,*** On
	• T. Margin	• 0.40~***0.50***~1.50 inch step 0.05 inch
	• Text	• 62[*1], ***66***[*2], 1 to available (Max 99) Lines
	• CGTable	• ***PcUSA***, Italic, PcMultiln, PcPortugue, PcCanFrenc, PcNordic, PcTurkish2, PcE. Europe, BpBRASCII, BpAbicomp BpAbicomp, 8859-15ISO, PcEur858
	• Country	• ***USA,*** France, Germany, UK, Denmark, Sweden, Italy, Spain1, Japan, Norway, Denmark2, Spain2, LatinAmeric
	• Auto CR	• ***On,*** Off
	• Auto LF	• ***Off,*** On
	• Bit Image	• ***Dark***, Light, BarCode
	• ZeroChar	• ***0***, ϕ
1239X Menu	• Font	• ***Courier***, Prestige, Gothic, Orator, Script, Presentor, Sans serif
	• Pitch	• ***10cpi***, 12cpi, 15cpi, 17cpi, 20cpi, 24cpi, Prop.
	• Code Page	• ***437,*** 850, 860, 863, 865
	• T. Margin	• ***0.40***, 0.30 to 1.50 inch step 0.05 inch
	• Text	• 63[*1], ***67***[**2], 1 to available (Max:99) Lines
	• Auto CR	• ***Off,*** On
	• Auto LF	• ***Off,*** On
	• Alt.Graphics	• ***Off,*** On
	• Bit Image	• ***Dark***, Light, BarCode
	• ZeroChar	• ***0***, ϕ
	• CharacterSet	• 1[*1], ***2***[*2]

NOTE: **1: Factory default setting when the A4/LT configuration is LT.*
**2: Factory default setting when the A4/LT configuration is A4.*

Table 1-37. Information Control and its Method

Menu	Item	Value
Support Menu[*1]	• HDD Format[*2]	
	• Adobe PS 3 kit HDD Init[*3]	
Maintenance Menu*[4]	• Engine Status Sheet	
	• Total Counter Clear	
	• Fuser Counter Clear	
	• LC1 Counter Clear	
	• LC2 Counter Clear	
	• LC3 Counter Clear*[5]	
	• LC4 Counter Clear*[5]	
	• LC5 Counter Clear*[5]	
	• MP Counter Clear	
	• TR Counter Clear	
	• DM Counter Clear*[5]	
	• FD Counter Clear	
	• FU Counter Clera*[5]	
	• MB Counter Clear*[5]	
	• Fin Counter Clear*[5]	
	• Staple Count Clear*[5]	
	• Error Log Clear	

NOTE: **1: Appears only when the printer is brought into Support mode by hidden operation at power-on. If n HDD is present, only the menu is displayed, and the items are not displayed.*
**2: Appears when the HDD unit is installed.*
**3: Appears when the Adobe PS 3 kit is mounted and the HDD unit is installed.*
**4: Appears only when the printer is brought into Maintenance mode by hidden operation at power-on. Always written in English regardless of the value of Lang in the Setup Menu.*
**5:Appears regardless of the optional unit installation state. Counter clear can also be executed.*

The following is a list of user setting items not included in the setting menu. They are not cleared by Selc Type Init of the Setup Menu on the panel.

Table 1-38. User Setting Items

Setting item	Setting	Initial value	Setting method
Printer Name command	32-byte character string	Product Name	EJL, PrinterName
MFG of Device ID	32-byte character sting	(undefined)	EJL
MDL of Device ID	32-byte character string	(undefined)	EJL
DES of Device ID	32-byte character sting	(undefined)	EJL
CID of Device ID	32-byte character string	(undefined)	EJL
Name of Mailbin 1	24 bytes of data	Null	EJL, MIB
Name of Mailbin 2	24 bytes of data	Null	EJL, MIB
Name of Mailbin 3	24 bytes of data	Null	EJL, MIB
Name of Mailbin 4	24 bytes of data	Null	EJL, MIB
Name of Mailbin 5	24 bytes of data	Null	EJL, MIB
Name of Mailbin 6	24 bytes of data	Null	EJL, MIB
Name of Mailbin 7	24 bytes of data	Null	EJL, MIB
Name of Mailbin 8	24 bytes of data	Null	EJL, MIB
Name of Mailbin 9	24 bytes of data	Null	EJL, MIB
Name of Mailbin 10	24 bytes of data	Null	EJL, MIB

1.4.2.3 Description of Setting Item and Model-dependent

Described below are model-dependent specification details of the setting items for this printer.

TRAY MENU/MP TRAY SIZE

- The paper sizes which can be set are limited and MON, C10, DL and C5 cannot be set.
- Although the MP tray has a paper width sensor, it cannot confirm the paper size. Therefore, the program refers to MP Tray Size set on the panel as usual.
- When “Paper Set ssss ttt” has occured and then is cleared, MP Tray Size changes to ttt if the specified size ttt matches the result of the paper width sensor differs from neither ttt nor MP Tray Size, it will be controlled as unfixed size, causing single-size printing to be slow and duplex printing to be invalid. Therefore, the paper width guide must be set in place.

TRAY MENU/ENV TRAY SIZE

- The paper sizes which can be set are limited and MON, C10, DL and C5 only are supported.
- The ENV tray also has a paper width sensor and its processing is the same as for the MP tray.

TRAY MENU/MP TYPE, LC1 TYPE LC5 TYPE

- The type of paper placed on each paper feed unit is set.
- When Paper Source = Auto, used to select a unit also matching the paper type, from the paper feed units which match the specified paper size.

- The paper type to be specified in paper feed selection is specified by the PCL5 command and ESC/Page command only. In a printer mode without such specification, the same operation as when Plain is specified is performed.
- No “Paper Type settings are made on EPL-N4000. However, if the paper type settings (MP Type, LC1 to LC5 Type) are “Trnsprncy” and “Prepunched”, the settings will be set on the engine side.
- If the setting is “Label”, the engine is informed of cardboard for temperature control. (TBD)

TRAY MENU/MP MODE

- When trays are not specified by command, EJL, PJL, etc., MP Tray’s paper feed selection is prioritized. If the setting is “Normal” (factory default setting), MP Tray’s paper feed selection is given the highest priority (the same as the existing machine). If the setting is “Last”, MP Tray’s paper feed selection is given the lowest priority.
  Normal: MP Tray>LC1>.....
  Last: LC1>LC2>...>MP Tray
- This setting becomes valid after a warm boot.

1.4.2.4 Printing Menu

PRINTING MENU/OUT BIN

Out Bin items which can be selected in accordance with the settings of Face-up Enable, Multibin and Finisher in the Set Up Menu are as follows.

Table 1-39.

		Multibin				
		(Not installed)	Mailbox	Sorter	MultiSort	Stacker
Face-up Enable	Off	Face-down	Face-down, Mailbox1 - 10	Face-down, Sorter	Face-down, Sorter	Face-down, Stacker
	On	Face down, Face-up	Face-down, Face-up Mailbox1-10	Face-down, Face-up, Sorter	Face-down, Face-up, Sorter	Face-down, Face-up, Stacker

Table 1-40.

		Finisher	
		(Not installed)	Stacker
Face-up Enable	Off	Face-down	Face-down, Stacker
	On	Face-down, Face-up	Face-down, Face-up, Stacker

If Stacker is selected when the Multibin setting is Stacker, the 1500-sheet large-capacity eject unit will be assumed. Paper ejection begins with Multibin 10. When Multibin 1 becomes full, paper is ejected to Face-down. From EPL-N4000+, switching to Face-down is disabled if “Stacker=No Face-down”.
If Sorter is selected when the Multibin setting is Sorter, gathering

printing up to a quantity of 10 can be exceeds 10, a quantity of 1 only is ejected to Multibin 1 and the message “Collate was disabled” is displayed.

If Sorter is selected when the Multibin setting is MultiSort, printing takes place by changing the multibin paper eject destination for each quantity. Quantity is set with EJL or ESC/Page. Paper ejection is carried out in the order of Multibin 1, 2, 3...When Multibin 10 is reached, paper ejection begins from Multibin1 again. If the specified quantity cannot be implemented due to insufficient memory, a quantity of 1 only is ejected to Multibin 1 and the message “Collage was disabled” is displayed.

For mailbox bin selection, only one of 1 to 10 can be selected with the panel and PJL or EJL. More than one bin can be selected with the ESG/ Page command.

If an item, which cannot be selected due to the operation mode of the paper eject unit, is specified by the ESC/Page command, that specification only is ignored and paper is ejected to the place specified on the panel.

PAPER EJECT PORT SELECT SPECIFICATIONS

- Multibin:
  When Multibin=Stacker, Out Bin=Stacker:
  The paper eject destinations are in the order of (Multibin’s) bin 10, bin 9...bin1, Face-down. For the first time after the power is turned on, the program looks for a paper-eject full bin staring from Multibin 1 and begins paper ejection from a bin preceding the full bin. For the second time and subsequent, paper ejection begins from the last paper ejected bin. After there is not any full bin, paper ejection begins from Multibin 10. Whether or not Face-down is used when the last bin becomes full is determined by the panel setting “Stacker”. If Stacker=+Face-down, Face-down is used. If Stacker=No Face-down, Face-down is not used.
  Stacker=+Face-down : bin 10>bin 9>...>bin 1>Face-down
  Stacker=No Face-down : bin 10>bin 9>...bin1 (valid with EPL-N4000+)

- Finisher (valid with EPL-N4000+):
  When Out Bin= Stacker:
  The paper eject destination are in the order of bin 1>bin 2>bin 3>Face-down.
  For the first time after the power is turned on,
  a paper not empty bin is searched for from bin 3 to bin 1 to start paper ejection.
  For the second time and subsequent,
  a paper not empty bin is searched for from the previously paper ejected bin to start paper ejection. After there is no full bin, paper ejection starts from bin 1.
  Whether or not Face-down is used when the last bin becomes full is determined by the panel setting “Stacker”.
  If Stacker=+Face-down:
  Face-down is used without staple designation.
  The error “Finisher 3 Full” occurs and Face-down is not used with staple designation.
  If Stacker=No Face-down,
  the error “Finisher 3 Full” occurs and Face-down is not used.

LIMITATIONS ON PAPER EJECT UNITS

- Multibin (including when Multibin = Stacker and Out Bin = Stacker)
  If the Page Size settings are MON, C10, DL, C5 and CTM or the Type settings are Trnsprncy and Label, the message “Outbin Select Error” is displayed and paper is ejected to Face-down. This is the same as when the paper-fed tray size and type are those aforementioned.

- Finisher:
  If the page size setting is F4, GLT, IB5, (postcard), MON, C10, DL, C5 or CTM, the warning “Outbin Select Error” appears and paper is ejected to Face-down. The same occurs if the paper-fed tray size is any of the above. At this time, staple designation is ignored.
  The number of sheets and the number of copies that can be held in bin 1, bin2 and bin 3 are limited by the paper size and staple designation.

  - Limitation of the number of sheets
    In A4-size, the bin becomes full with 670 sheets (TBD).
    Staple designation has no effect.
    In A3-size, sheets are counted as double the above.

  - Limitation of the number of copies
    If stapled copies are mixed, the bin becomes full with 100 copies at maximum (TBD) in both A4 size and A3 size. Offset stacking is not considered.

However, the bin also becomes full with the full sensor. If there is paper in a finisher bin when the power is turned on, the bin becomes full with approx. 400 sheets.
The above counted value and the last paper ejected bin are not be stored in NVRAM. The number of sheets and the number of copies ejected are reset when the power is turned on.

The number of sheets and the number of copies ejected are reset with no paper detection. Users should remove all paper from the stacker in advance when printing a large quantity of copies.

Table 1-41.

Paper size	Without stapling	With stapling
LT, HLT, EXE, A4, A5, B5	670 sheets	100 copies (TBD)
LG, GLG, B, A3, B4	300 sheets	100 copies (TBD)

PRINTING MENU/QUANTITY

This is the copy quantity setting when copying by quantity. This setting is specified taking preference over the Copies setting. When the printing quantity is 2 or more, the Copies setting will be 1. This setting can be specified only with the PJL, EJL, or ESC/Page command and the setting cannot be stored. If data for 1 job cannot be stored in the printer, the warning “Collate wad disabled” will be displayed and a quantity of 1 only will be printed.

PRINTING MENU/DUPLEX

Duplex printing or one-side printing is set.

- Limitations on duplex printing
  When the Page Size settings are A5, HLT, MON, C10, DL, C5 and CTM or the Type settings are Trnsprncy and Label or Paper Source is ENV Tray, the message “Can’t Print Duplex” will be displayed and printing cannot be started. This is the same as when the size and type of the tray for which an attempt is made to feed paper are those aforementioned. If the paper type settings for the face and back differ from each other, a “Can’t Print Duplex” error will result.

PRINTING MENU/OFFSET STACKING

Specify whether to perform Offset Stacking when outputting paper to a paper eject unit with a shifter. This setting is for all the paper eject units and consequently, it is the setting item valid for Face-down and Finisher with a shifter on the EPL-N4000.
When Multibin = Stacker and Out Bin = Stacker, Offset Stacking becomes invalid and paper is ejected to the center even if the bins to bin1 become full and Face-down switches to.
Where print jobs with Offset Stacking = On and Off are mixed, the paper eject position does not move at a boundary when jobs with Offset Stacking = Off are successive but the paper eject position moves at the boundary if either preceding or following print job has Offset Stacking =On. If printing is not executed as requested due to reset processing or the occurence of a “Collage was disabled” warning, the paper eject position may be shifted.
If one job or quantity contains pages with Offset Stacking = On and Off, the specification for the first page to be output to a paper eject with a shifter only becomes valid.

- Limitations on Offset Stacking
  When the Page Size settings are MON, C10, DL, C5 and CTM or the Type Settings are Trnsprncy, Label and Prepunched, Offset Stacking becomes invalid and paper is ejected to the center. This is the same as when Size or Type of the paper fed unit are those aforementioned.

PRINTING MENU / STAPLE

- Designate stapling
  None: No stapling
  Single: Single stapling
  Double: Central double stapling 0

PRINTING MENU / STAPLE POSITION

- Designate the staple position as a logic position
  L: Left-hand side
  R: Right-hand side (used for right-handed binding in Japan. This is not used in foreign countries)

GENERAL EXPLANATION OF STAPLE DESIGNATION

- If the paper eject destination is not Stacker, designation is ignored and paper is ejected to the specified paper eject destination. No error occurs.
- If the finisher option is not present, designation is ignored. No error occurs.
- If the paper size cannot be sent to the finisher, designation is ignored. (Warning “Outbin Select Error”)
- If the paper size or type that can be sent to the finisher but cannot be stapled is designated, staple designation is ignored and paper is ejected. (TBD. There are no applicable size and type under the present circumstances)
- If an attempt is made to staple different-size paper, or to change the output bin to other than the Stacker during one job, paper is ejected from the compile tray without stapling. (Warning “Can’t Staple”)
- No recovery is an erroneous stapling time. The warning “Check Stapler” occurs.
- If an attempt is made to print with staple designation when there is no staple, the error “Staple Supply” occurs.
- If an attempt is made to staple one sheet, paper is ejected from the compile tray without stapling.

- If an attempt is made to print the 51st sheet when 50 sheets or more are to be stapled, the warning “Can’t Staple” appears and paper is ejected from the compile tray.
- Even if the page size has no problem with stapling, paper may be ejected without stapling depending on the combination of Orientation, Binding, Staple and Staple position. The warning (“Staple Align”) occurs. See the table below.
- In accordance with the combination of designation, the print image is rotated relative to the paper. See the table below.
  - For ejecting paper to any tray other than finisher: The same as EPL-N4000.
  - For ejecting paper to the finisher:
    Without staple designation: Printing is performed 180 degrees reversely.
    With staple designation: The print image is rotated corresponding to the staple position.
  - When Reverse is designated by the driver:
    The print image is reversed compared with the usual staple designation time. As a result, the opposite position is stapled.
  - When Stacker becomes full, paper is ejected to Face-down in the same direction as EPL-N4000.

Table 1-42.

Orientation	Binding	Staple	Staple Position	A4/A5/B5/LT/ HLT/EXE	A3/B4/LG/ GLG/B
Portrait	Shortedge	None		Rotation	Rotation
		Single	L	Rotation, Front	Rotation, Rear
			R	Rear	Rotation, Front
		Double	L	Rotation, (warning)	Rotation, Double
			R	Rotation, (warning)	Rotation, Double
	Longedge	None		Rotation	Rotation
		Single	L	Rotation, Front	Rotation, Rear
			R	Rear	Rotation, Front
		Double	L	Rotation, Double	Rotation, (warning)
			R	Double	Rotation, (warning)
Landscape	Shortedge	None		Rotation	Rotation
		Single	L	Rotation, Rear	Front
			R	Rotation, Front	Rotation, Rear
		Double	L	Rotation, (warning)	Double
			R	Rotation, (warning)	Double
	Longedge	None		Rotation	Rotation
		Single	L	Rotation, Rear	Front
			R	Rotation, Front	Rotation, Rear
		Double	L	Rotation, Double	Rotation, (warning)
			R	Rotation, Double	Rotation, (warning)

NOTE: *Rotation: The print image is rotated 180 degrees.*
Front: Stapling at the front of the compile tray
Double: Double-stapling at the center of the compile tray
Rear: Stapling at the rear of the compile tray

- Even if the combination of staple designation is changed during one job, the first designated staple position is valid, and the 180 degrees rotation is performed throughout the copy.
- For stapling paper other than A4 and A3 at Rear (at the rear of the compile tray), the staple is run parallel to the paper edge.
  The staple angle is as follows:
  - Front (at the front of the compile tray) : 45 degrees
  - Double (double-stapling at the center of the compile tray) : parallel
  - Rear (at the rear of the compile tray) A4, A3:: 45 degrees : parallel
- If Reset is performed while compile tray holds paper, the job is terminated and paper is ejected without stapling.
- Stapling may not be carried out if Print overrun error occurs.

SETUP MENU

- Setup Menu/Auto Eject Page
  Whether or not paper is ejected when a receive time-out occurs.
  On: Paper is ejected with a time-out. Stapling is performed with staple designation.
- Off:Paper is not ejected with a time-out.

SUPPORT MENU

This setting menu appears only when the printer is brought into Support mode by special operation at power-on, and can then be selected. By turning off the power and restarting after that, the Support Menu is deleted from the menu and the printer is brought into usual mode. The support mode is a mode for users to set and execute the items which are not usually set (HDD initialization etc.).

- Support Menu/HDD Format
  Press the setting execution switch, and HDD initialization (formatting) will start. Reboot (warm-boot) after initialization is finished. After rebooting, the support mode is cleared (returning to usual mode).
- Support Menu/Adobe PS 3 kit HDD Init
  Press the setting execution switch, and PS area initialization (no formatting) will start. Reboot (warm-boot) after initialization is finished. After rebooting, the support mode is cleared (returning to usual mode).

MAINTENANCE MENU

- Engine Status Sheet (Maintenance Menu)
  The engine status sheet is printed. Before performing this operation, be sure to place the printer in a normal mode (a mode other than maintenance mode), check that there is no service call related to the engine, turn on the power again, and enter the maintenance mode. The maintenance menu functions from Engine Status Sheet to Error Log Clear are not open to users.
- Total Counter Clear (Maintenance Menu)*1*2
  Execute this operation to clear Total Counts on the engine board to zero. Total Counts are printed on the engine status sheet.

NOTE: *Page Count in the Setup Menu is counted on the controller side (main board), and the value of the Page Count is different from Total Counts on the engine board.*

- Fuser Counter Clear (Maintenance Menu)*1*2
  The serviceman executes this operation only once when the fuser is replaced. Fuser Counter indicated on the engine status sheet becomes zero and Fuser Change increments by one.

NOTE: *The value of Fuser Counter may become negative due to Total Counter Clear.*

- LC1 to 5 Counter Clear (Maintenance Menu)*1*2
  The serviceman executes this operation only once when the LC1 to 5 feed rollers are replaced. LC1 to 5 Counters indicated on the engine status sheet become zero and LC1 to 5 FR Changes increment by one.
- MP Counter Clear (Maintenance Menu)*1*2
  The serviceman executes this operation only once when the feed roller of the MP tray is replaced. MP Counter indicated on the engine status sheet become zero and MP FR Change increment by one.
- TR Counter Clear (Maintenance Menu)*1*2
  The serviceman executes this operation only once when the transfer roller is replaced. TR Counter on the engine status sheet become zero and TR Change increments by one.
- DM Counter Clear (Maintenance Menu)*1*2
  The serviceman executes this operation only once when the duplex unit is replaced. Duplex indicated on the engine status sheet become zero.
- FD Counter Clear (Maintenance Menu)*1*2
  The serviceman executes this operation only once when around Face-down is replaced. Face-down indicated on the engine status sheet become zero.
- FU Counter Clear (Maintenance Menu)*1*2
  The serviceman executes this operation only once when around Face-up indicated on the engine status sheet become zero.
- MB Counter Clear (Maintenance Menu)*1*2
  The serviceman executes this operation only once when the multibin is replaced. Multibin indicated on the engine status sheet become zero.
- Fin Counter Clear (Maintenance Menu)*1*2
  The serviceman executes this operation only once when the finisher is replaced. Finisher indicated on the engine status sheet become zero.
- Staple Count Clear (Maintenance Menu)*1*2
  The serviceman executes this operation only once when the stapler is replaced. Stapler indicated on the engine status sheet become zero.
- Error Log Clear (Maintenance Menu)*2
  The error log list stored to be indicated on the engine status sheet is cleared. The latest 20 error logs are memorized.

NOTE: **1: Before executing these operations, the engine must be stopped completely.*
**2: After execution, warm boot takes place and the printer returns to the normal state.*

1.4.3 User setting items not included in the setting menu

The following is a list of user setting items not included in the setting menu. They are not cleared by Selc Type Init of the Setup Menu on the panel.

Table 1-43. User setting items not included in the setting menu

Setting item	Setting	Initial value	Setting method
Printer name command	32-byte character string	EPL-N4000+ (TBD)	EJL, Printer Name
MFG of Device ID	32-byte character string	(undefined)	EJL
MDL of Device ID	32-byte character string	(undefined)	EJL
DES of Device ID	32-byte character string	(undefined)	EJL
CID of Device ID	32-byte character string	(undefined)	EJL
Name of Mailbin1	24-bytes of data	Null	EJL, MIB
Name of Mailbin2	24-bytes of data	Null	EJL, MIB
Name of Mailbin3	24-bytes of data	Null	EJL, MIB
Name of Mailbin4	24-bytes of data	Null	EJL, MIB
Name of Mailbin5	24-bytes of data	Null	EJL, MIB
Name of Mailbin6	24-bytes of data	Null	EJL, MIB
Name of Mailbin7	24-bytes of data	Null	EJL, MIB
Name of Mailbin8	24-bytes of data	Null	EJL, MIB
Name of Mailbin9	24-bytes of data	Null	EJL, MIB
Name of Mailbin10	24-bytes of data	Null	EJL, MIB

1.4.4 Special Operation Functions

Here lists the special operation functions supported by this printer. The functions are not open to users except for the hexadecimal dump function, initialization of panel settings and Support Mode..

CAUTION

Please handle carefully the information written in this section. Special operation mentioned here are not opened to the users except for hexadecimal dump, initialization of panel settings and Support Mode, since the service man with professional knowledge should perform these operation.

- Hexadecimal Damp
  Received data is converted to hexadecimal ASCII, then it is output. It is effective for all interfaces.
  - Operation
    Turn on the power, pressing “Form Feed” switch.
  - Cancel
    Perform Warm boot by pressing Reset(Continue) switch, or turn the power off and on again.
- Support Mode
  Printer goes to the support menu by this operation.
  - Operation
    Turn on the power, pressing Value Select switch.
- Initialization of EEPROM
  All values, which are stored in the EEPROM at the controller side, are initialized and returned back to the factory setting. After this initialization, the printer perform warm boot and goes back to the normal state.
  - Turn on the power, pressing “On-line” switch, “Continue” switch and “Menu” switch.

CAUTION

Total Counts, LC1 to LC5 Counter, etc., which are controlled by the mechanical controller side, will not be initialized. The total number of copies to be indicated on the status sheet will be initialized as it is counted by the controller side.

- Initialization of the Panel Settings
  This function returns all the panel setting to the factory setting. (common environment, I/F environment). After that, the printer performs warm boot and returns to the normal state.
  - Operation
    Turn on the power, pressing “Continue” switch.

CAUTION

- **All the values which can be set by the user, are initialized.**
- **Values which can be changed by the printing operation or maintenance operation, are not initialized. (For example, the number of printed sheet, toner left quantity, paper volume and all items on the engine status sheet)**

- Forced erasing of Flash ROM Module
  This operation erases the content of the flash ROM module, which is connected to A slot DIMM ROM Module on the main board.
  - Operation:
    Turn on the power, pressing “Alt” switch, “Item” switch, “Value” switch and “Enter” switch. Erasing starts after “Erasing DIMM A” is indicated. After that, the printer performs warm boot and returns to the normal state.

- Program ROM Up Date
  This function updates program DIMM, which is connected to the program socket on the main board.
  - Operation
    Turn the power on, pressing “On-Line” switch, “Alt” switch and “Value” switch.
- Copy of ROM Module
  This function copies the content of ROM module inserted to B socket on the main board to the flash ROM module inserted to A socket. Also, if ROM module is not inserted to B socket, the printer copies the content of ROM module, which is inserted to code ROM socket.
  - Operation:
    Turn the power on, pressing “On-Line” switch, “Alt” switch and “Enter” switch. By pressing “Enter” switch at the point that LCD displays “DIMM COPY MODE”, the printer copies after erasing Flash ROM. After that, the printer performs warm boot and returns to the normal condition.
- Maintenance Mode
  - Operation:
    Power on the printer while pressing “On-Line” switch, “Form Feed” switch and “Continue” switch.

See “Maintenance Mode” on page -46 for more details.

- CPU reset at service call occurence
  - Operation
    Press “Alt”, “Menu”, “Item”, “Value” and “Enter” switches when a service call error has occured.
- Printing of error sheet
  - Operation:
    Press Enter twice after CPU reset at the occurence of a service call error.

1.4.5 Maintenance Mode

Maintenance menu is added to the setting menu, then, the printer performs warm boot and enable to execute the maintenance menu. (See Table 1-28, “Printer Setting,” on page 27)

1.4.5.1 Operation

Turn the printer’s power on while pressing “On-Line” switch, “Form Feed” and “Continue” switches.

CAUTION

In the maintenance mode, since the service require error is ignored, make sure that there is no error signs when you need to print out something, such as Engine status sheet.

- Total Counter Clear
  This function is executed when Total Counter needs to be 0. Since Page Counts indicated on the status sheet is different from Total Counts on the engine board, it does not become 0.
  Note that the value of Fuser Counter may become negative due to Total Counter Clear.
- Fuser Counter
  This function is performed when the toner is exchanged. Fuser Counter on the engine status sheet becomes 0 and +1 is added when the fuser is exchanged.
- LC1~5 Counter Clear
  This function is performed when each Feed Roller Set in cassettes 1 to 5 is exchanged. Each corresponding LC(1 to 5) counter on the engine status sheet becomes 0 and+1 is added when the feed roller set is changed.
- MP Counter Clear
  This function is performed when the Feed Roller of the tray is exchanged. MP counter on the status sheet becomes 0 and +1 is added when the roller is exchanged.
- TR Counter Clear
  This function is performed when the transfer roller is exchanged. TR counter on the engine status sheet becomes 0 and +1 is added when the transfer roller is changed.
- DM Counter Clear
  This function is performed when the duples unit is exchanged. Duples on the engine status sheet becomes 0.
- FD Counter Clear
  This function is performed when the parts around the Face Down are exchanged. Face Down on the engine status sheet becomes 0.
- FU Counter Clear
  This function is performed when the parts around the Face UP are exchanged. Face UP on the engine status sheet becomes 0.
- MB Counter Clear
  This function is performed when the mailbox(multibin) is exchanged. Mailbox on the engine status sheet becomes 0.
- Finisher Counter Clear
  This function is performed when the Finisher is exchanged. Finisher on the engine status sheet becomes 0.
- Stapler Counter Clear
  This function is performed when the Stapler is exchanged. Stapler on the engine status sheet becomes 0.
- Error Log Clear
  This function clears error log list, which is memorized in order to indicated on the engine status sheet. Error log memorizes 20 newest information.

1.4.6 Engine Status Sheet

Engine status sheet prints out the data at the engine side. Usage condition of each following mechanism is indicated.

- Total Counter
  This shows the printed volume after the total counter clear is performed at the maintenance menu. This total counter is different from the total print volume on the status sheet.
- Jam Counter
  Frequency of the Jam occurrence.
- ET Cartridge
  - Toner
    Toner left quantity is indicated by 1% degree.
  - OPC Counter
    OPC is counted by minutes which is read from engine side by drum rotation time.
  - Cartridge Change
    This indicates how many times ET Cartridge is exchanged. +1 is added when the new cartridge is detected.
- Fuser
  - Fuser Counter
    This shows the printed volume after the Fuser Counter Clear is performed.The condition to count is same as the total print volume. Since the actual value is the difference between the previous value before the fuser is exchanged and the current total count value, minus(-) value may be indicated by the total counter clear.
  - Fuser change
    This indicates how many times the Fuser is exchanged and +1 is added when performing Fuser Counter Clear at the Maintenance Menu.
- Input
  - LC n Counter
    This indicates how many papers are fed from LC n(n= tray number) after LCn Counter Clear is performed at the maintenance menu. This value is red from the engine side.
  - MP Counter
    This indicates how many papers are fed from MP(tray) after MP Counter Clear is performed at the maintenance menu. This value is red from the engine side.
  - LC n FR Change
    This indicates how many times Feed Roll of LC n is exchanged. +1 is added when LC n Counter Clear is performed at the maintenance menu.
  - MP FR Change
    This indicates how many times the Feed Roll of MP is exchanged. +1 is added when MP Counter Clear is performed at the maintenance menu.
- Transfer Roller
  - TR Counter
    This indicates how many paper passed through the transfer roller after TR Counter Clear is performed at the maintenance menu. This value is red from the engine side.
  - TR Change
    This indicates how many times the Transfer Roller is exchanged. +1 is added when TR Counter Clear is performed at the maintenance menu.

- Output
  - Duplex
    This indicates how many papers passed through the Duplex unit after DM Counter Clear is performed at the maintenance menu. This value is counted at the controller side.
  - Face-Down
    This indicates how many papers are ejected to Face-Down after FD Counter Clear is performed at maintenance menu. This value is counted at the controller side.
  - Face-up
    This indicates how many papers are ejected to Face-Up after FU Counter Clear is performed at maintenance menu. This value is counted at the controller side.
  - Multi
    This indicates how many papers are ejected to Mialbox(Multibin) after MB Counter Clear is performed at maintenance menu. This value is counted at the controller side.
  - Finisher
    This indicates how many papers are ejected to Finisher after performing Fin Counter Clear at the maintenance menu. This value is counted at the controller side.
  - Staple
    This indicates how many times staple after performing Staple Counter Clear at the maintenance menu.
- Print
  - ...3%
    The printing volume whose printing occupancy is less than 3% and the value is counted at the controller side.
  - ...30%
    The printing volume whose printing occupancy(duty) exceeds 3% and the value is counted at the controller side.
  - Over 30%
    The printing volume whose printing occupancy(duty) exceeds 3% and the value is counted at the controller side.
  - A3/B
    The printing volume of A3 or B size and the value is counted at the controller side.
  - A4/LT
    The printing volume of A4 or LT size and the value is counted at the controller side.
  - A5/HLT
    The printing volume of A5 or HLT size and the value is counted at the controller side.
  - B4/LGL
    The printing volume of B4 or LGL size and the value is counted at the controller side.
  - B5/EXE
    The printing volume of B5 or EXE size and the value is counted at the controller side.
  - Envelope
    The printing volume of MON, C10, DL or C5 size and the value is counted at the controller side.
  - Post Card
    The printing volume of the post card and the value is counted at the controller side.

- Custom
  The printing volume of no-fixed size and the value is counted at the controller side. Since the frequently used paper size or troublesome paper size have priority, GLG, GLT and F4 are not counted. It is the printing value by the requested size.

- MCU
  It is mechanical controller version of the printer body and the value is red from the engine side.

- Duplex
  It is mechanical controller version of the Duplex and the value is red from the engine side.

- Mailbox
  It is mechanical controller version of the Mailbox and the value is red from the engine side.

- Finisher
  It is mechanical controller version of the Finisher and the value is red from the engine side.

- Error Log
  The newest 20 information of control panel message about the generated errors, EJL status codes and total printing volume are recorded.
  The indication order starts with the newest occurence.
  The errors which will be recorded are Service Req. Error(which happened after “On-Line” is indicated), Jam, Abnormal cassette size, Toner cartridge ID error, Toner cartridge R/W error and MCU Version Up.
  If the error is recorded in the same number of the printing value, the new error will not be recorded.

Table 1-44. Information Control and its Method

Name of Information	Place	Range	Count Condition	Clear Condition
Total Counter	Mechanical Controller	~ 100000 times	When printing	Panel
Jam Counter	Controller	~ 100000 times	When Jam occurs	EEPROM Initialization
Toner	Controller	0~100%	When printing	When the new cartridge is detected. EEPROM Initialization
OPC Counter	ET Cartridge		When printing	None
Carriage Change	Controller	0~100 times	When the new cartridge is detected.	EEPROM Initialization
Fuser Counter	Controller		When printing	Panel, EEPROM Initialization
Fuser Change	Controller	0~10 times	Panel	EEPROM Initialization
LC n Counter	Mechanical Controller		When feeding	Panel
MP Counter	Controller	~ 150000 sheets	When feeding	Panel, EEPROM Initialization
LC n FR Change	Controller	0~10 times	Panel	EEPROM Initialization
MP FR Change	Controller	0~10 times	Panel	EEPROM Initialization
TR Counter	Mechanical Controller		Printer	Panel
TR Change	Controller	0~10 times	Panel	EEPROM Initialization
Duplex	Controller	~ 150000 sheets	When passing normal paper	EEPROM Initialization

Table 1-45. Information Control and its Method

Name of Information	Place	Range	Count Condition	Clear Condition
Face Down	Controller	~ 150000 sheets	When ejecting paper	EEPROM Initialization
Face-Up	Controller	~ 150000 sheets	When ejecting paper	EEPROM Initialization
Mailbox (Multibin)	Controller	~ 150000 sheets	When ejecting paper	EEPROM Initialization
Finisher	Controller	~ 150000 sheets	When ejecting paper	EEPROM Initialization
Staple	Controller	~ 150000 times	When executing	EEPROM Initialization
...3%	Controller	~ 150000 pages	When Printing	EEPROM Initialization
...30%	Controller	~ 150000 pages	When Printing	EEPROM Initialization
Over 30%	Controller	~ 150000 pages	When Printing	EEPROM Initialization
A3/B	Controller	~ 150000 pages	When Printing	EEPROM Initialization
A4/LT	Controller	~ 150000 pages	When Printing	EEPROM Initialization
A5/HLT	Controller	~ 150000 pages	When Printing	EEPROM Initialization
B4/LGL	Controller	~ 150000 pages	When Printing	EEPROM Initialization
B5/EXE	Controller	~ 150000 pages	When Printing	EEPROM Initialization
Envelope	Controller	~ 150000 pages	When Printing	EEPROM Initialization
Post Card	Controller	~ 150000 pages	When Printing	EEPROM Initialization

Table 1-46. Information Control and its Method

Name of Information	Place	Range	Count Condition	Clear Condition
Custom	Controller	~ 150000 pages	When printing	EEPROM Initialization
Error Code n	Controller	---	When error happens	Panel, EEPROM Initialization
Error Page n	Controller	---	When error happens	Panel, EEPROM Initialization

Note) "Panel" under the Clear Condition in the Table is in the setting item of the maintenance menu. The count value at the Duplex is performed, distinguishing long edge and short edge, but the value is combined both(long and short edges) at the engine status sheet.

1.4.7 Initialization Process

In this printer, following initialization process are performed automatically or manually. The printer goes to the On-line(ready) condition after initialization process is completed successfully.

☐ Reset Process
This initialization process performs only the active interface, the data received by other interface is stored. This initialization is used when the copies are canceled or the printing invalid data is halted.

- ■ Operation: Press “Continue” switch, pressing the “Alt” switch.
- ■ Processing:
  - • Cancel the print request
  - • Cancel the buffered data from the current port before the initialization.
  - • Canceling the error

☐ Warm boot processing
This initialization process stops printing for all interfaces and perform initialization until right after the power is turned on, but does not perform various checks.

- ■ Operation
  While pressing “ALT” switch, press “Continue” switch until “Reset All” is indicated at LCD.
- ■ Processing:
  - • Initialization of Memory
  - • Clear the received buffer of all interfaces

☐ Cold Start Processing
This initialization is activated by turning the power on, and perform various checking first.

- ■ Processing:
  - • Initialization of engine
  - • Initialization of ROM, EEPROM, DRAM
  - • Initialization and checking of peripheral devices
  - • Initialization of memory

CHAPTER

2

OPERATING PRINCIPLES

2.1 Mechanical Drive

2.1.1 Overview

Mechanical Drive is a term that is used to describe both the rotation of the printer motors and the action of the gear clusters and clutches that are used to transmit and control motor rotation to the various components throughout the printer. The primary purpose of Mechanical Drive within the printer base is to drive a sheet of paper out of a selected paper tray, through the printer and into an output tray. The ROS Motor is not considered part of Mechanical Drive. The Main Drive Motor turns the Main Drive Assembly gears. The Drive Assembly provides drive to the Feed Clutches, the Registration Clutch, the Fuser, the Drum and BTR, and the Exit Clutches. Lift Up Motors supply drive to each paper tray; raising the Bottom Plate of each tray so the paper stack contacts the Feed Rolls. The Offset Motor provides drive to the Offset Rolls.

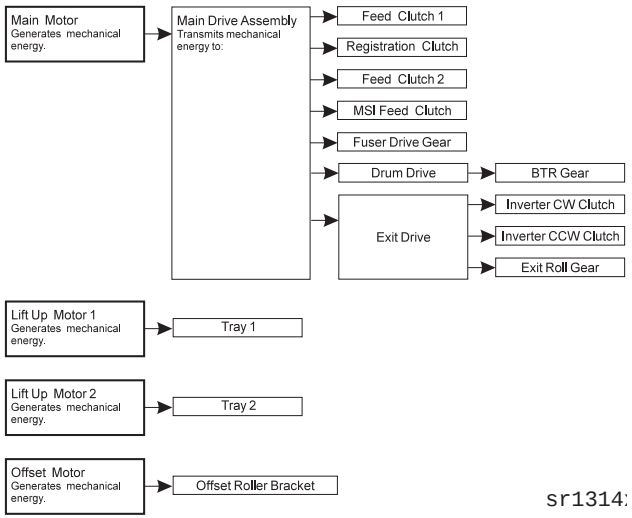


Figure 2-1. Mechanical Drive

2.1.2 Mechanical Drive Component

EPL-N4000/N4000+ is made up of 4 major components.

1. Offset Motor
   A +24VDC motor.

2. Main Drive Assembly
   Contains the +24VDC Main Drive Motor and the Main Drive Assembly Gears. The Main Motor is attached to the Main Drive Assembly.

3. Lift Up Motor 1
   A +24VDC motor.

4. Lift Up Motor 2
   A +24VDC motor.

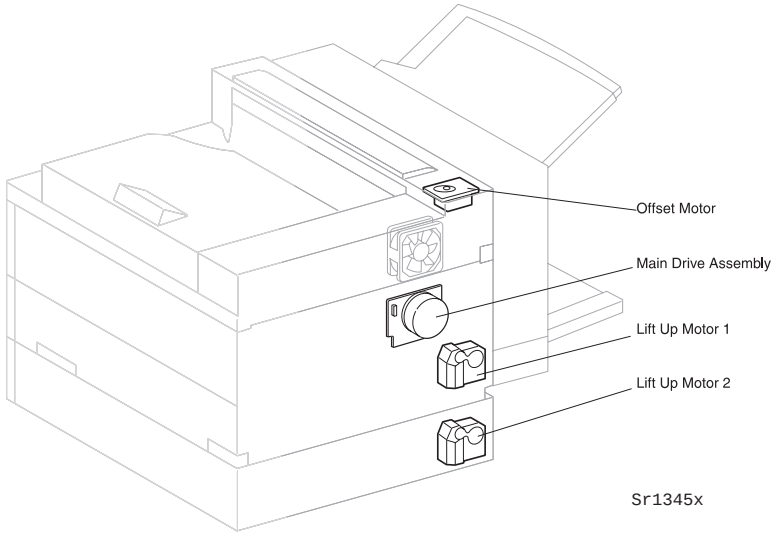


Figure 2-2. Mechanical Drive Major Component

2.1.2.1 Offset Motor

In Offset, printed papers are ejected into either rear side or front side. Offset Motor generates the driving power for Offset page eject. Also, printed papers can be divided by the number of distribution. MCU switches the Offset Motor on and off, during the offset paper eject.

1. When MCU(Machine Control Unit) turns on Offset Motor, the Offset Motor drives the Bracket toward the front of the printer, pushing the Offset Roll along with it.
2. When the Bracket reaches the end of travel, MCU stops Offset Motor.
3. The MCU again switches on the Offset Motor, which drives the Bracket toward the rear of the printer, carrying the Offset Roll along with it.
4. When the Bracket reaches the end of travel, MCU stops Offset Motor and eject the paper, leaving the Offset Bracket in that position.

2.1.2.2 Main Motor and Main Drive Assembly

The MCU PWB switches the Main Motor on and off. The rotation of the Main Motor creates mechanical drive.

The Main Drive Assembly gears transmit the motor drive to Feed Clutch 1, Feed Clutch 2, and the MSI Feed Clutch. At paper feed, the MCU PWB actuates a Feed Clutch, which in turn transmits drive to the appropriate Feed Rolls.

The Main Drive Assembly gears transmit the motor drive to the Registration Clutch. At a specific point in each print cycle, the MCU PWB actuates the Registration Clutch, which in turn transmits drive to the Registration Roll.

The Main Drive Assembly gears transmit the motor drive to the Fuser Drive Gear. When the Left Upper Cover is closed, the DTS Link Rod pushes the Fuser Drive Assembly into contact with the Fuser Drive Gear, which transmits drive to the Fuser Rolls.

The Main Drive Assembly gears transmit the motor drive to the Drum. When the Main Motor is on, the Drum rotates. When the Left Upper Cover is closed, the BTR gear contacts the Drum gear, which in turn rotates the BTR.

The Main Drive Assembly gears transmit the motor drive to the Exit Drive, which transmits drive to the two Inverter Clutches. At a specific point in each print cycle, the MCU PWB actuates either the CW Clutch or the CCW Clutch which drive the Exit Roll and the Offset Roll.

2.1.2.3 Lift Up Motor 1 and Lift Up Motor 2

When a Paper Tray is installed in the printer, the MCU PWB switches on the Lift Up Motor. Each tray has a square metal shaft running along one side of the tray. Attached to the shaft is an L shaped metal tongue.

1. When the tray is inserted into the paper feeder, a pin at the end of the shaft engages the Lift Up Motor gear.
2. When the MCU detects that the tray is inserted, MCU PWB switches on the Lift Up Motor.
3. Then, the motor rotates the square shaft and the square shaft shifts the attached metal tongue, which in turn raises the tray Bottom Plate which raises the paper stack.
4. As the paper stack raises, it pushes up on the No Paper Actuator, which in turn switches the No Paper Sensor.

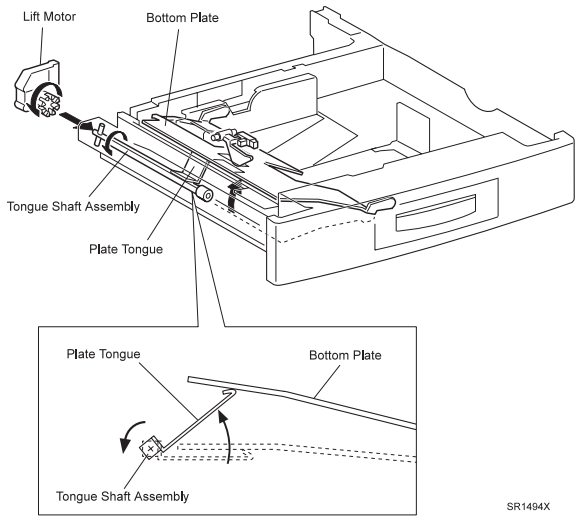


Figure 2-3. Lift Up Mechanism Motor Control

2.1.2.4 Motor Control

The MCU PWB provides power for and controls the operation of the Main Motor, the Lift Up Motors, and the Offset Motor. All motors are +24VDC motors. The Main Motor is a stepper motor. The MCU signals step the Main Motor through a 360° rotation. The MCU PWB provides both forward and reverse control of the Offset Motor.

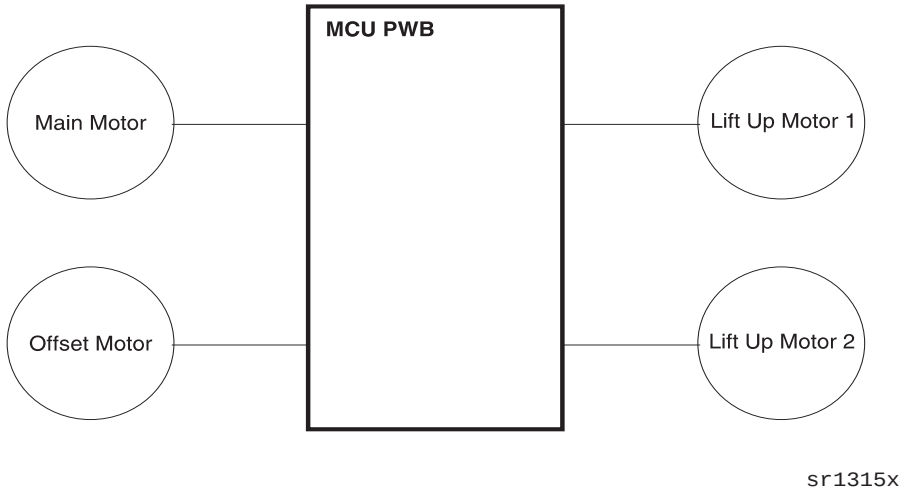


Figure 2-4. Motor Control

2.2 Paper Path

The Paper Path is the physical route that a sheet of paper takes through the printer during a print cycle; from leaving the Paper Cassette to arriving at the Output Tray. Rubber rollers and other components drive the paper along the Paper Path.

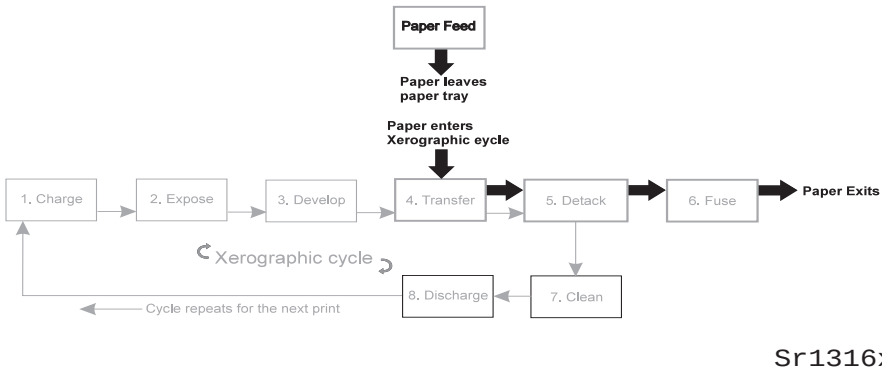


Figure 2-5. Print Cycle

A sheet of paper may be fed from either Tray 1, Tray 2, or from the MSI. At the start of a print cycle the Nudger Roll moves a sheet of paper into the Feed Roll. The Feed Roll moves a single sheet of paper out of Tray 1/Tray 2/MSI and toward the Registration Roll. The Retard Rolls in Tray 1 and Tray 2 or the Retard Pad in the MSI made sure that only one sheet of paper is fed. If the paper was fed from Tray 2 or the MSI the Take Away Roll drives the paper to the Registration Roll. The Registration Roll aligns the lead edge of the paper with the lead edge of the image on the drum. The Registration Roll then drives the paper into the Drum/BTR area. The rotation of the Drum and BTR drive the paper into the Fuser where the Heat and Pressure Rolls drive the paper into the Offset/Pinch Roll.

During simplex printing the Offset Roll drives the paper into the Output tray. During duplex printing, the Offset Roll rotation is reversed and the Offset and Exit Roll drives the paper into the Duplex Module.

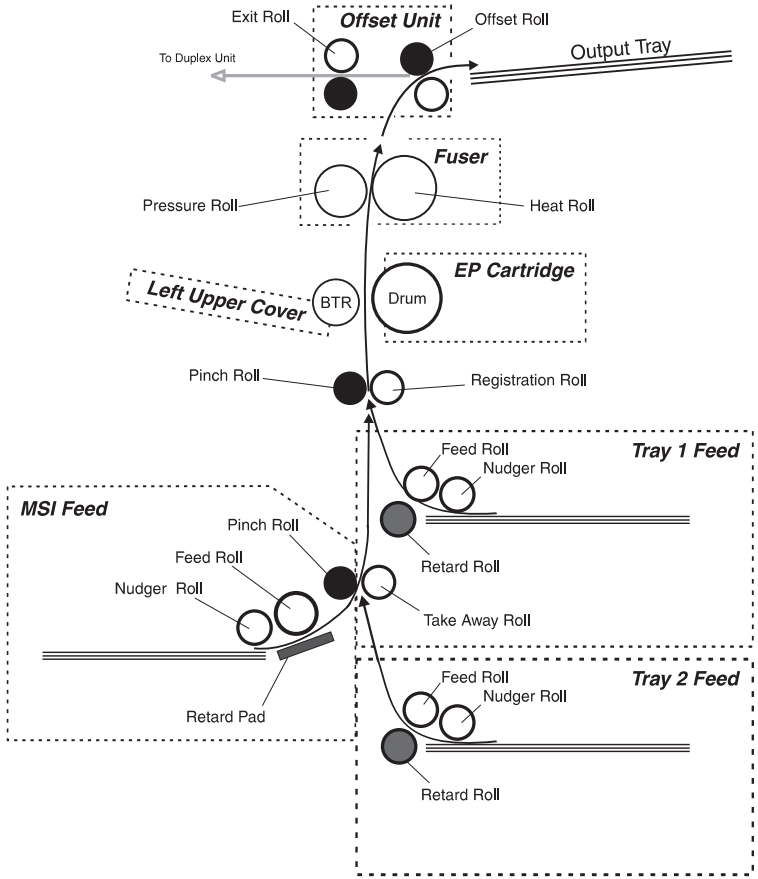


Figure 2-6. Paper Path

2.2.1 Paper Path Components

The Paper Path is made up of a number of major components and subcomponents.

- Tray Assembly
  Holds plain paper of various sizes. Slides into the Feeder.
- Feeder 1 and Feeder 2
  Framework that is attached under the printer. A Tray Assembly slides into the Feeder. The Feeder includes a number of paper feed components.
  - **Lift Up Motor** raises the Tray Bottom Plate so the paper contacts the Feed Roll.
  - **No Paper Sensor** monitors the level of paper in the Tray.
  - **Paper Size Sensor** monitors the size of paper in the Tray.
  - **Feed Clutch** transmits drive to the Feed Roll and Nudger Roll.
  - **Nudger Roll** drives the top sheet of paper into the Feed Roll.
  - **Feed Roll** drives the top sheet of paper out of the Tray.
  - **Retard Roll** prevents multiple sheet feed.
  - **Take Away Roll and Pinch Roll** continue to drive the sheet of paper out of Tray 2 and toward the Registration Roll.
- MSI Feeder
  Paper feed assembly that is attached to the outside of the printer. A small quantity or paper, or the optional Envelope Feeder, fit on the MSI Feeder fold-out tray. The MSI Feeder includes a number of paper feed components.
  - **MSI No Paper Sensor** monitors the level of paper in the MSI tray.
  - **MSI Paper Size Sensor** monitors the size of paper in the Tray.
  - **MSI Feed Clutch** transmits drive to the Feed Roll and Nudger Roll.
  - **Nudger Roll** drives the top sheet of paper into the Feed Roll.
  - **Feed Roll** drives the top sheet of paper out of the MSI tray.
  - **Retard Pad** prevents multiple sheet feed.
  - **Take Away Roll and Pinch Roll** continue to drive the sheet of paper out of the MSI Tray and toward the Registration Roll.
- Registration Roll and Pinch Roll
  The Registration Roll is a driven roll. The Pinch Roll is an idler that rides on the surface of the Registration Roll. The Registration Roll and Pinch Roll register a sheet of paper with the toner image on the surface of the Drum.
- Registration Sensor
  Monitors the movement of paper at the Registration Roll.
- Drum and BTR (Bias Transfer Roll)
  In addition to xerographic functions, the Drum and BTR drive the paper out of the Xerographic area and into the Fuser area.
- Heat Roll and Pressure Roll
  In addition to fusing functions, the Heat Roll and Pressure Roll drive the sheet of paper out of the Fuser and into the Offset Unit.
- Fuser Exit Sensor
  Monitors the movement of paper out of the Fuser.
- Offset and Exit Unit
  The assembly located above the Fuser. The Offset Unit drives paper to either the standard Face Down Output Tray, to the optional Face Up Output Tray, or to the Duplex Module. The Offset Unit includes a number of components.

- **Inverter CW and CCW Clutches** transmit Main Motor drive, forward and reverse, to the Offset Rolls.
- **Offset Roll and Pinch Roll** drive the sheet of paper either forward into the Output Tray or in reverse to the Exit Roll and on to the Duplex Module.
- **Exit Gate Solenoid** controls the Exit Gate to toggle the paper path between the Output Tray or the Exit Roll and on to the Face Up Tray or Duplex Module.
- **Offset Motor and Offset Bracket** moves the Offset Roll back and forth so paper delivered to the Output Tray will stack offset.
- **Exit Roll and Pinch Roll** drive the sheet of paper to either the Face Up Output Tray or to the Duplex Module.

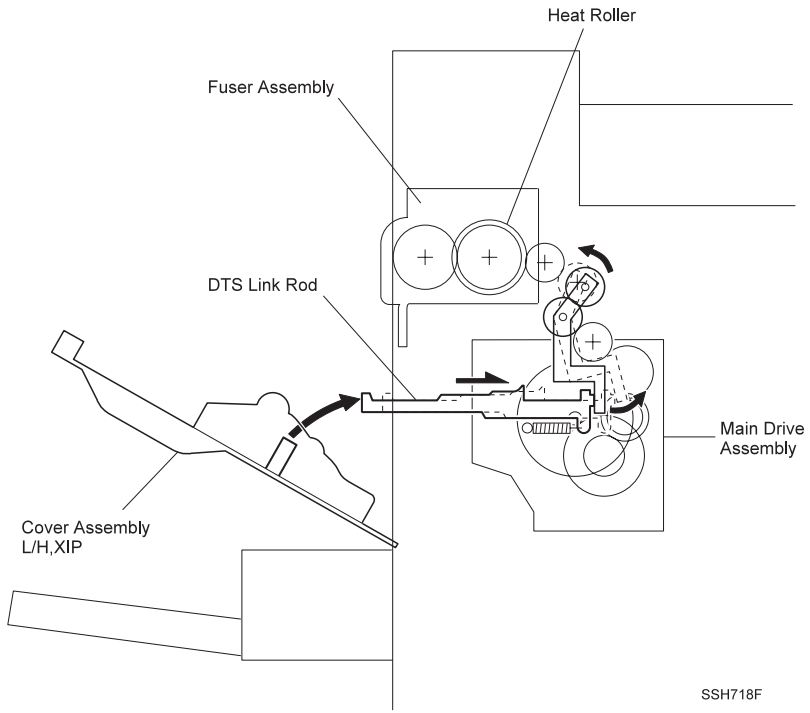


Figure 2-7. Paper Path Component

2.2.2 Paper Feed, Transport and Paper Eject Drive

The Main Drive Assembly provides the mechanical drive for the majority of the Paper Path components. The Offset Motor provides the mechanical drive for the Offset Rolls.

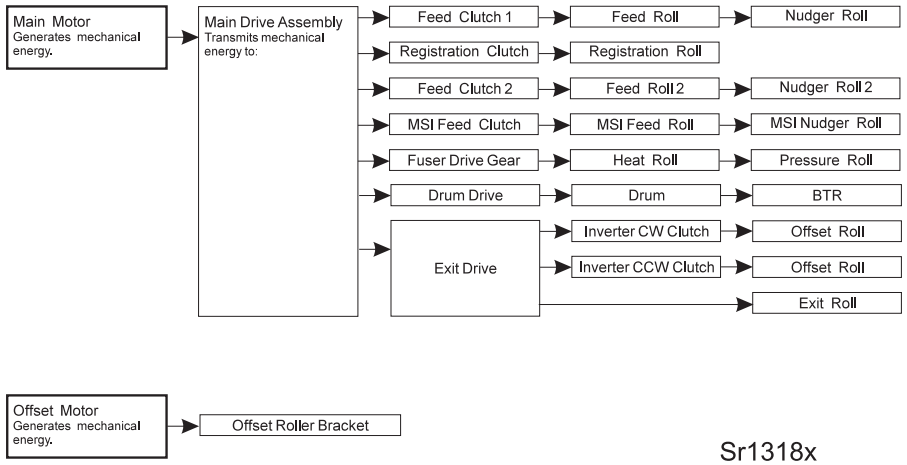


Figure 2-8. Paper Feed, Transport and Paper Eject Drive

When the Left Upper Cover is closed, DTS Link Rod is pushed and Bracket Assembly conveys the motive power of Main Drive Assembly to the Fuser Assembly.

2.2.3 Mechanical drive for paper fed from the MSI

The Main Motor provides mechanical drive for MSI feed(Multi Sheet Inserter). The Drive Assembly transmits drive to the MSI Feed Clutch. The MSI Feed Roll and Nudger Roll are attached to the MSI Clutch. At paper feed, the MCU switches on the MSI Feed Clutch. The MSI Feed Clutch transmits drive to the Feed Roll, which rotates and begins feeding a single sheet of paper out of the MSI Tray. Tray 1 Feed Clutch transmits drive to the Take Away Roll. The Take Away Roll and Pinch Roll drive the sheet of paper into the Registration Roll.

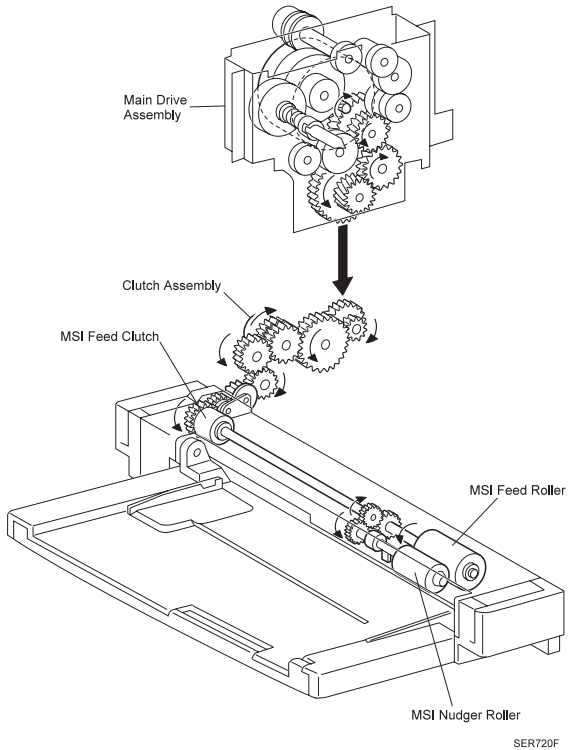


Figure 2-9. MSI Drive Mechanism

2.2.4 Mechanical Drive for Paper Fed from Tray1

The Main Motor provides mechanical drive for MSI feed. The Drive Assembly transmits drive to the MSI Feed Clutch. The MSI Feed Roll and Nudger Roll are attached to the MSI Clutch. At paper feed, the MCU switches on the MSI Feed Clutch. The MSI Feed Clutch transmits drive to the Feed Roll, which rotates and begins feeding a single sheet of paper out of the MSI Tray. Tray 1 Feed Clutch transmits drive to the Take Away Roll. The Take Away Roll and Pinch Roll drive the sheet of paper into the Registration Roll.

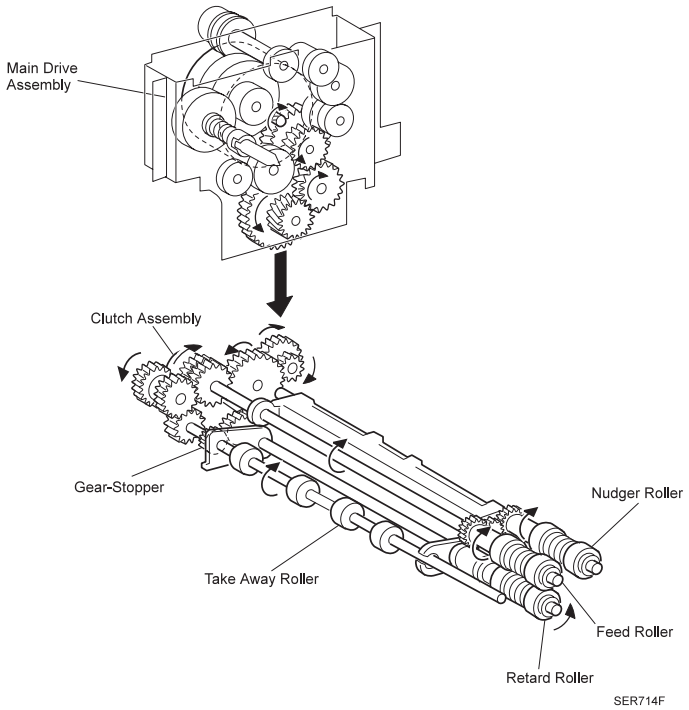


Figure 2-10. Tray 1 Drive Mechanism

2.2.5 Mechanical Drive for Paper Fed from Tray2

The Main Motor provides mechanical drive for Tray 2 feed. The Drive Assembly transmits drive to Tray 2 Feed Clutch. Tray 2 Feed Roll and Nudger Roll are attached to the Feed Clutch. At paper feed, the MCU switches on the Tray 2 Feed Clutch. The Feed Clutch transmits drive to the Feed Roll, which rotates and begins feeding a single sheet of paper out of Tray 2.

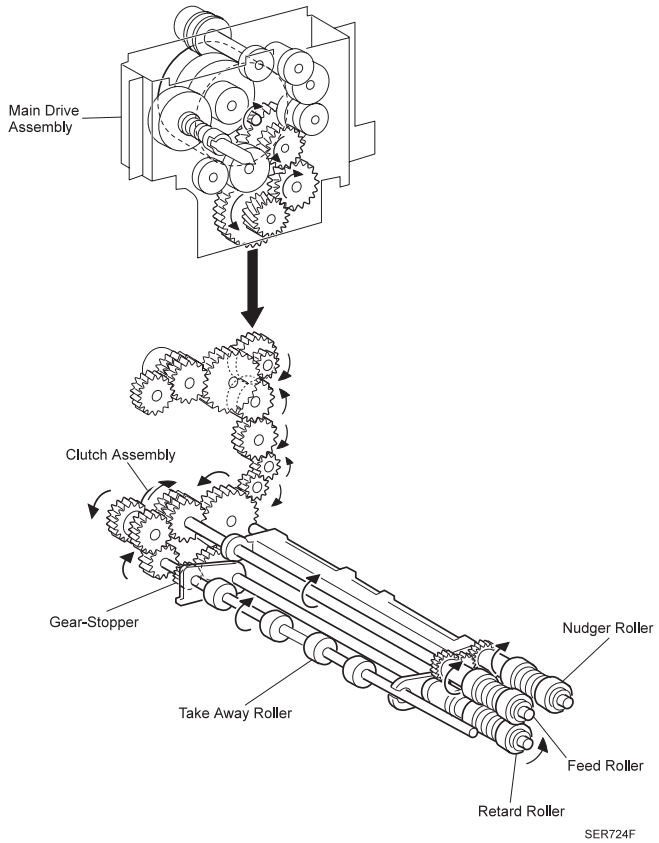


Figure 2-11. Tray 2 Drive Mechanism

2.2.6 Mechanical Drive for Registration

The Main Motor provides mechanical drive for the Registration Roll. The Main Drive Assembly transmits drive to the Registration Clutch. At a specific time in the print cycle the MCU switches on the Registration Clutch. The Registration Clutch transmits drive to the Registration Roll, which rotates and drives the sheet of paper into the Drum/BTR area.

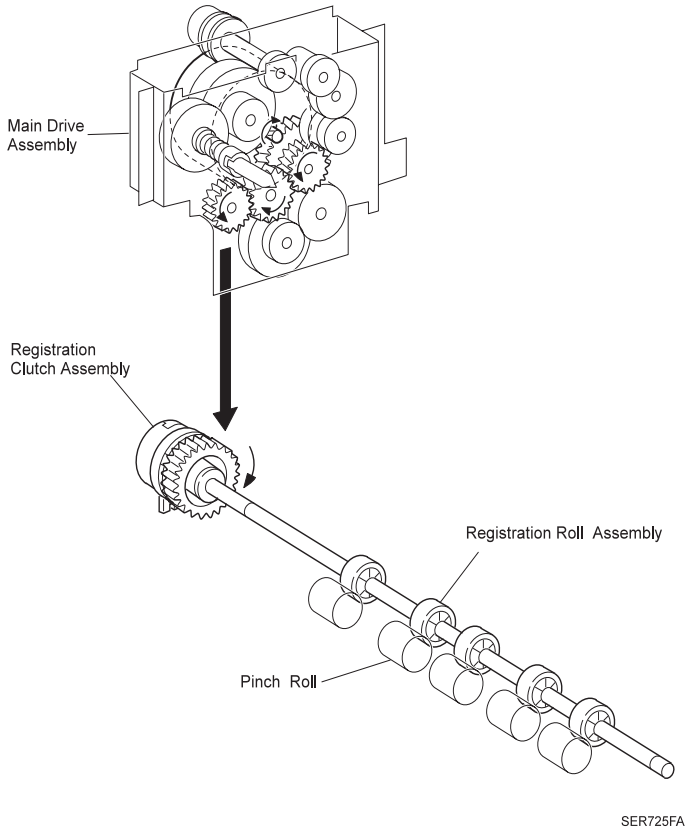


Figure 2-12. Registration Roll Drive Mechanism

2.2.7 Mechanical Drive for the Drum and BTR

The Main Motor provides mechanical drive for the Drum and BTR. The Main Drive Assembly transmits drive to the Drum. A shutter covers and protects the Drum surface. When the Left Cover is closed, a mechanical link opens the Shutter. When the Left Cover is open, the link closes the Shutter. A gear attached to the end of the Drum transmits drive to the BTR. Since the BTR is attached to the Left Cover Assembly, the BTR is driven only when the Left Cover is closed.

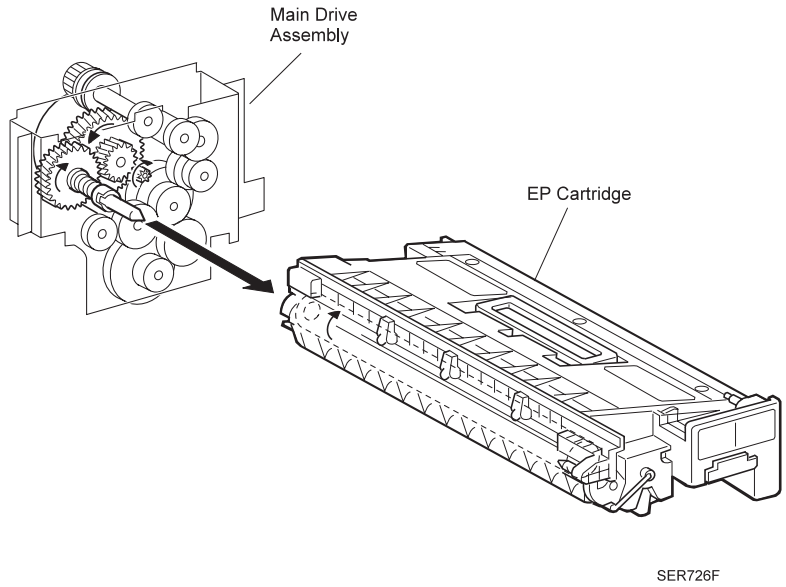


Figure 2-13. Drum/BTR Drive Mechanism

2.2.8 Mechanical Drive for the Fuser

The Main Motor provides mechanical drive for the Fuser Assembly. The Main Drive Assembly transmits drive to the Fuser Drive Assembly and on to the Fuser Heat Roll Gear. A gear at the end of the Heat Roll drives the Pressure Roll. The Heat and Pressure Rolls rotates continuously while the Main Motor is on and the Left Front Cover is closed. Part of the same mechanical link that opens and closes the Drum Shutter when the Left Cover is closed, pushes the Fuser Drive Gear against the Fuser Heat Roll intermediate gear, which transmits drive to the Fuser Heat Roll.

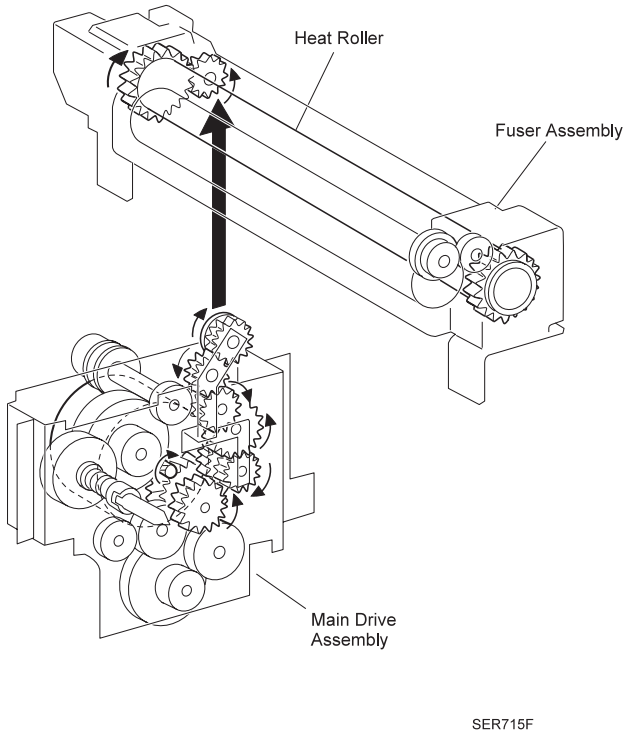


Figure 2-14. Fuser Drive Mechanism

2.2.9 Mechanical Drive for Exit Drive

The Main Motor provides mechanical drive for the Offset and Exit Rolls. The Main Drive Assembly transmits drive to the Inverter CW Clutch and to the Inverter CCW Clutch. At a specific point in the print cycle the MCU switches on the CW Clutch. The CW Clutch transmits forward drive to the Offset Roll, which drives the sheet of paper into the Face Down Output Tray. If the printer is running in Duplex Mode, at a specific point in the forward drive, the MCU switches off the CW Clutch and switches on the CCW Clutch. The CCW Clutch transmits reverse drive to the Offset Roll and to the Exit Roll, which drive the paper back across the top of the Fuser Assembly and into the Duplex Module.

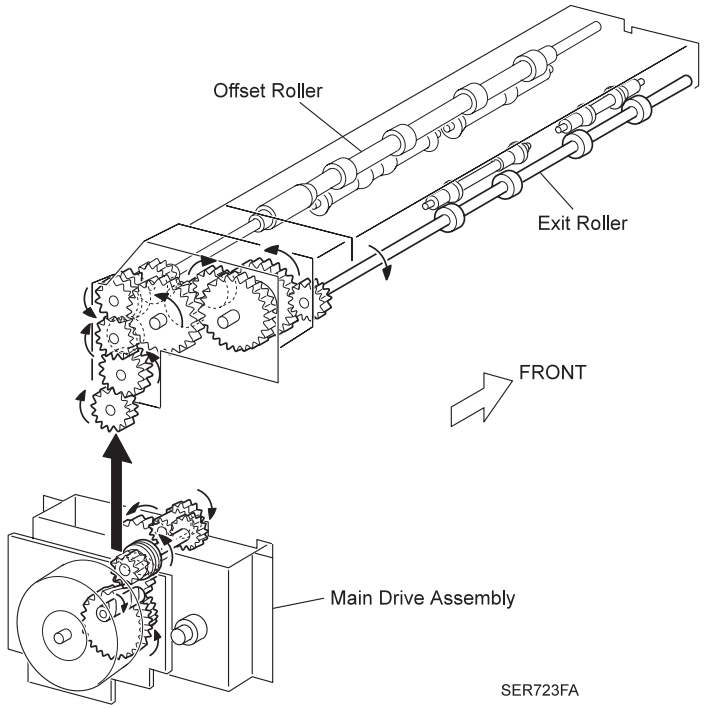


Figure 2-15. Exit Drive Mechanism

2.2.10 Mechanical Drive for Offset

The Offset Motor provides mechanical drive for the Offset Rolls. The Offset Motor transmits drive to the Offset Bracket. If the printer is running in Offset mode, the MCU switches on the Offset Motor. The Motor drives the Offset Bracket toward the front of the printer. The Bracket pushes the Offset Roll along with it. The Offset Rolls drive one sheet of paper into the Face Down Output Tray. The MCU switches the Offset Motor on again, and the Motor drives the Offset Bracket back to the rear of the printer, taking the Offset Roll with it. The Offset Rolls drive the next sheet of paper, slightly offset from the last sheet, into the Face Down Output Tray.

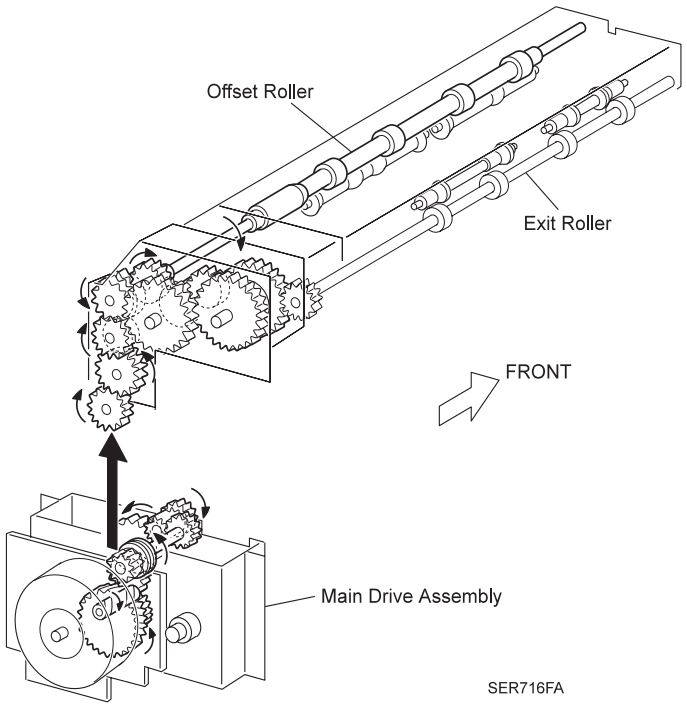


Figure 2-16. Offset Drive Mechanism

2.2.11 Paper Path Component Control

The logic on the MCU PWB controls the Paper Path components. Sensors along the paper path monitor the movement of each sheet of paper and send information back to the MCU. The MCU provides the timing and data processing necessary to actuate clutches and solenoids, switch motors on and off, and to identify paper jams. The MCU PWB provides the +24VDC drive signals for the Main Motor, the Offset Motor, and the assortment of clutches and solenoids within the printer. The MCU PWB also provides +5VDC to the paper path sensors.

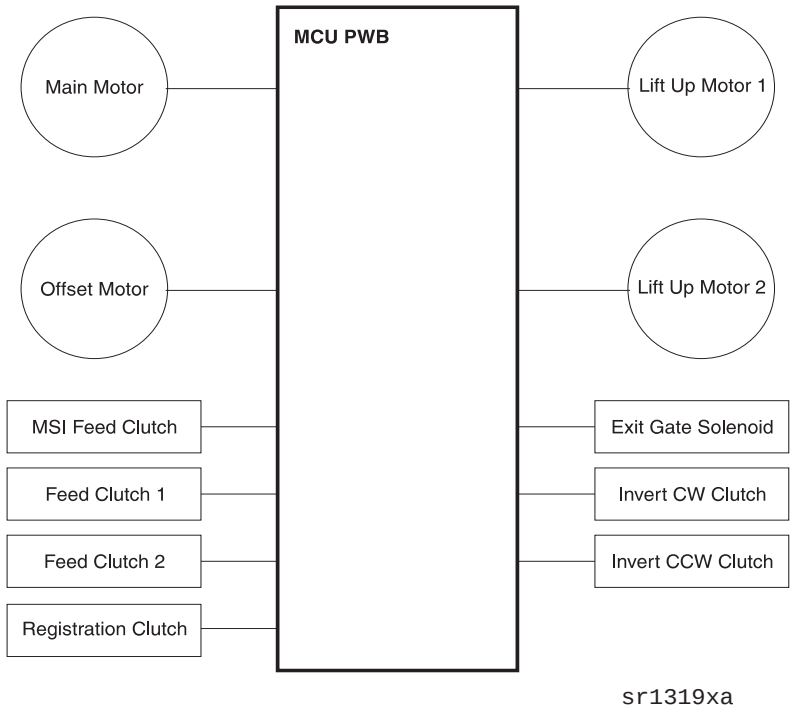


Figure 2-17. Paper Path Component Control

2.3 ROS (Raster Output Scanner)

The ROS (**R**aster **O**utput **S**canner) is the mechanism that carries out **Step 2. Expose** of the print cycle.

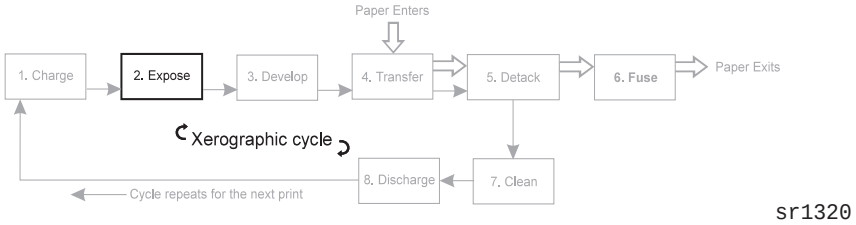


Figure 2-18. Exposure

A semiconductor within the ROS Assembly generates a beam of laser light. Image data received from the print controller modulates this beam, turning it on and off according to image information that is received from the host computer. Through the use of a series of rotating and stationary mirrors within the ROS, the beam sweeps the negative charged drum surface. Whenever the print controller sends a command to print a black pixel, the laser switches on long enough to shine onto the drum at a single pixel point. That point on the drum is now discharged.

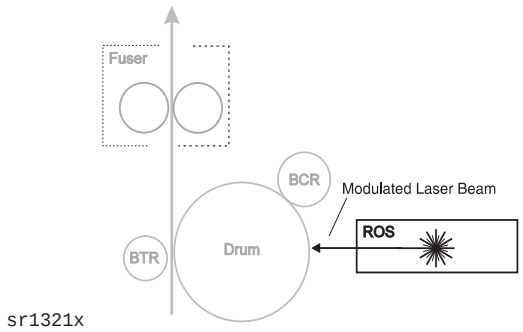


Figure 2-19. Laser Beam

2.3.1 ROS Components

The ROS Assembly is made up of one major component housing a number of sub-components.

WARNING

- **The ROS generates a laser beam. The laser beam is a very powerful and narrow beam of light that produces extreme heat at its focal point. The laser beam in this printer is invisible.**
- **Although you cannot see the beam, it can still cause severe eye injury. Direct eye exposure to the laser beam may cause blindness. Never place a mirror or a reflective tool or object in the laser beam path. Never run the printer with the covers removed or the ROS interlocks bypassed.**

2.3.1.1 Housed inside the ROS Assembly

- ☐ Laser Diode Assembly (LD)
  A semiconductor Laser Diode that generates a 5 milliwatt class 3B laser beam. Circuity on the LD PWB maintains the laser output power at a constant level. The LD PWB is electrically connected to the MCU PWB and to the C262 Main Board. The MCU provides power and control circuitry. C262 Main Board provides the video data input from the host computer

- ☐ Corrective Lenses and Angled Mirror
  Four lenses, two small, one medium, and one wide, and an angled mirror focus the laser beam and direct it toward the Polygon Mirror.

- ☐ Polygon Mirror
  A twelve-side rotating mirror that is attached to the Scanner Motor Assembly. The movement of the rotating Polygon Mirror reflects the laser beam in a sweeping motion, from side to side across and through the wide lens.

- Scanner Motor Assembly
  The Scanner Motor Assembly is attached to the Scanner Motor Assembly PWB. The +24VDC Motor rotates at a constant speed. The Scanner Motor Assembly is electrically connected to the MCU.
- Wide Lens
  A lens that focuses the beam coming from the Polygon Mirror and directs it onto the Angled Mirror.
- Drum Mirror
  Angled so it reflects the laser beam coming from the Angled Mirror, down onto the surface of the drum.
- SOS PWB (Start Of Scan Sensor)
  The SOS Sensor is in-line with the laser beam sweep. The laser beam strikes the SOS Sensor at the beginning of each sweep to let the printer control circuity know that a new scan has started. The SOS PWB is electrically connected to the MCU PWB.

2.3.2 ROS Operation

The MCU PWB supplies +5VDC to drive the Laser Diode semiconductor. The semiconductor uses the +5VDC to generate a 5 milliwatt beam of invisible laser light. As is characteristic of semiconductor devices, the Laser Diode can switch states very rapidly. A switching circuit on the Laser Diode PWB switches the Laser Diode on and off according to image data sent from the C262 main board. Two lenses, an angled mirror, and another two lenses focus the laser beam onto the rotating Polygon Mirror. The Polygon Mirror has twelve mirrored sides and rotates at approximately 15,000 RPM. The Polygon Mirror reflects the laser beam back through the two lenses and onto the Angled Mirror. The movement of the Polygon Mirror reflects the laser beam in a sweeping motion, from side to side, across the Angled Mirror; with one complete sweep for each mirrored side. The Angled Mirror reflects the laser beam onto the Drum Mirror.

The Drum Mirror is aligned at an angle so the mirror reflects the sweeping beam down onto the surface of the Drum. The combination of the rapid sweeping of the laser beam across the surface of the charged Drum and the rapid switching on and off of the laser beam creates, on the Drum, an invisible electrical image that corresponds to the screen image that was sent from the host computer. Located at one corner of the ROS, near the end of the Angled Mirror is the Start of Scan Sensor (SOS) Mirror. The Start of Scan Sensor is located at the opposite corner of the ROS Assembly. Each sweep of the laser beam begins by striking the SOS Mirror, reflecting the beam into the SOS Lens, which focuses the beam onto the SOS Sensor. The SOS Sensor is electrically connected to the MCU PWB. When the laser beam strikes the Sensor, the Sensor notifies the MCU that a new scan has started.

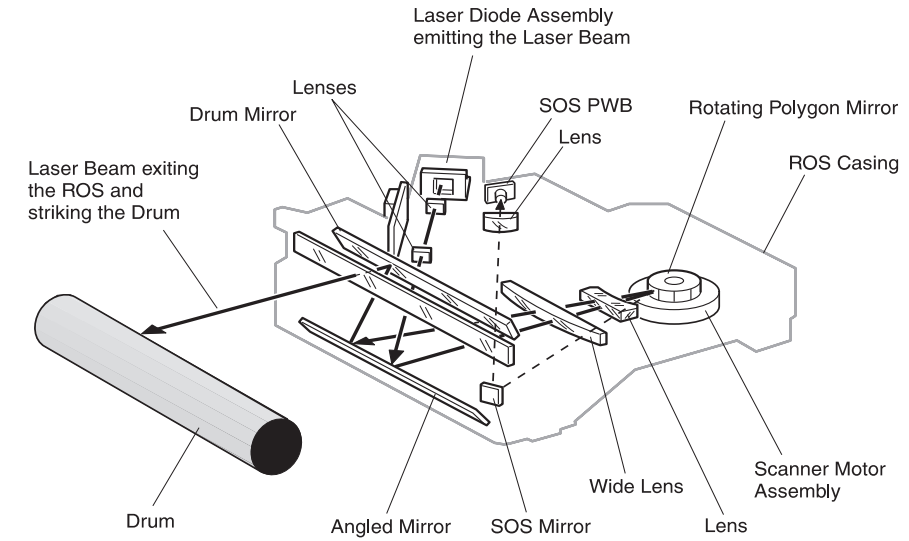


Figure 2-20. Structure of ROS

2.3.2.1 Image Resolution

This printer has an print image resolution of 600 dpi (dots per inch). Print image resolution is determined by the number of dots (or pixels) per inch of beam sweep and the number of sweeps per inch of paper travel.

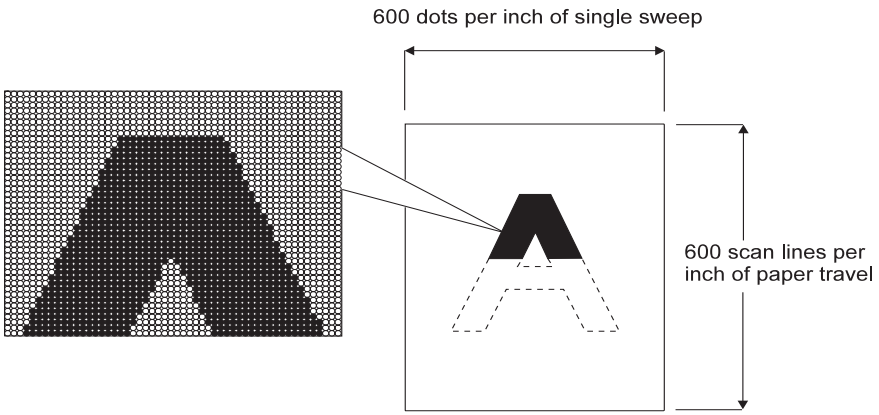


Figure 2-21. Image Resolution

2.3.2.2 ROS Control

The Laser Diode PWB controls laser power monitoring and adjustment. The MCU PWB controls the rest of the ROS Assembly functions. C262 main board processes video data sent from a host computer. The ESS PWB then passes that data on to C262 main board which controls the flow of video data to the Laser Diode PWB. C262 main board switches the laser diode on and off according to the image data being sent from C262 main board. When the data signals for a black pixel, C262 main board rapidly switches the Laser Diode on and off. The MCU PWB provides the +5VDC needed to drive the Laser Diode. The CRU Interlock Switch cuts +5VDC to the Laser Diode when the EP Cartridge is not in place in the printer. The MCU PWB provides the +24VDC needed to run the ROS Motor. The MCU PWB also provides the signal (/RMOT ON) that switches the ROS Motor on and off. To reduce ROS Motor wear, the MCU switches off the ROS Motor after 15 minutes of printer inactivity. The MCU PWB provides the +5VDC (signal 5V) needed by the SOS Sensor. The Sensor returns information about the start of each scan to the MCU through the /SOS signal.

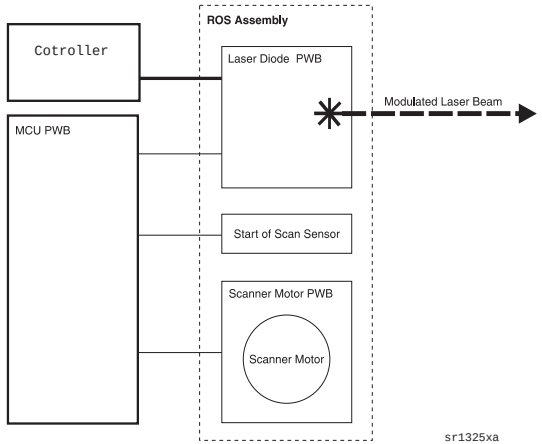


Figure 2-22. ROS Control

- ROS Safeguards

  There are two safety interlocks built into the CRU cavity.
  A molded tab located at the end of the EP Cartridge actuates **Interlock SW1** which, along with **SW2** (the Left Cover Interlock), controls +24VDC out of the MCU PWB. When the Left Cover is open or the EP Cartridge is removed, SW1 and SW2 cut +24VDC out of the MCU PWB.
  An electrical jack at the end of the EP Cartridge completes the +5VDC circuit for **CRU Interlock** switches **SW1** and **SW2**. When the EP Cartridge is removed, +5VDC to the Laser Diode is cut.

Never run the printer with the covers open or removed, the Main Interlock Switch actuated, and the CRU Interlock Switches bypassed. Direct eye exposure to the laser beam may cause serious eye injury or blindness.

2.4 Print Process

Print process step of this printer is to form the toner image on the drum surface, transfer this image to the paper, and fuse the transferred toner image to the paper.

- ☐ Charge
  Places a uniform negative electrostatic charge on the surface of the drum.
- ☐ Expose
  A data modulated laser beam scans the drum surface, converting select negative points to positive points.
- ☐ Develop
  Attaches dry toner to the positive points of the drum.
- ☐ Transfer
  Transfers the dry toner image from the drum to a piece of paper.
- ☐ Detack
  Strips the piece of paper, along with the dry toner image on the paper surface, from the drum.
- ☐ Clean
  Cleans any residual toner from the surface of the drum and prepares the drum for the next print cycle.
- ☐ Discharge
  Cleans any residual electrical charge from the surface of the drum and prepares the drum for the next print cycle.

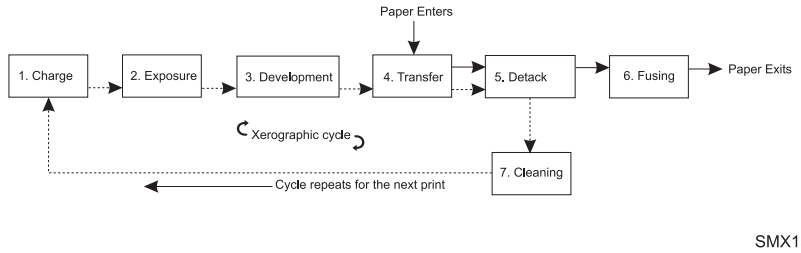


Figure 2-23. Print Process

The figure below shows major component related to the printer process.

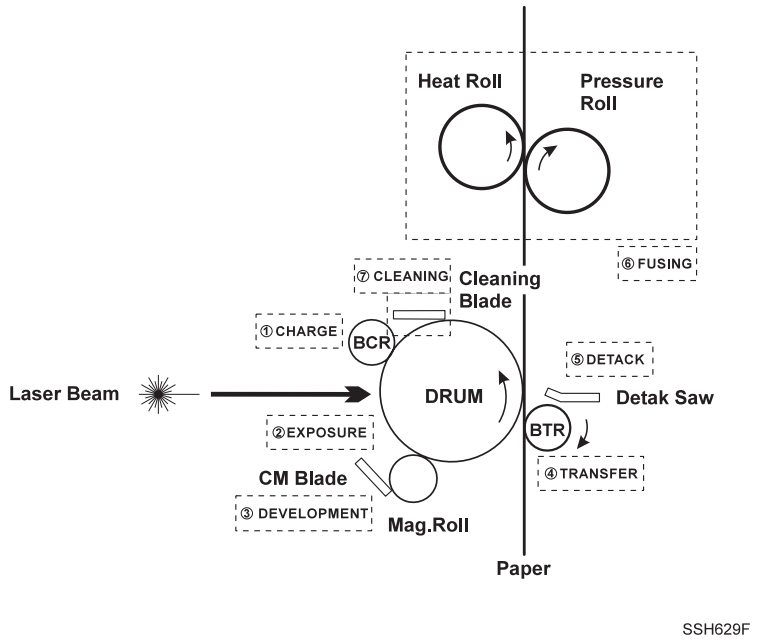


Figure 2-24. Major Component

2.4.1 Charge

The Bias Charge Roll (BCR) places a uniform negative electrostatic charge on the surface of the drum. The drum surface is made of a photoconductive material that holds an electrical charge as long as the drum remains in darkness. Light striking the drum discharges the surface charge.

The BCR is a conductive roll that is positioned slightly above the surface of the drum. The HVPS supplies the BCR with two voltages; a negative DC charge voltage and an AC discharge voltage that is used for electrically cleaning the drum.

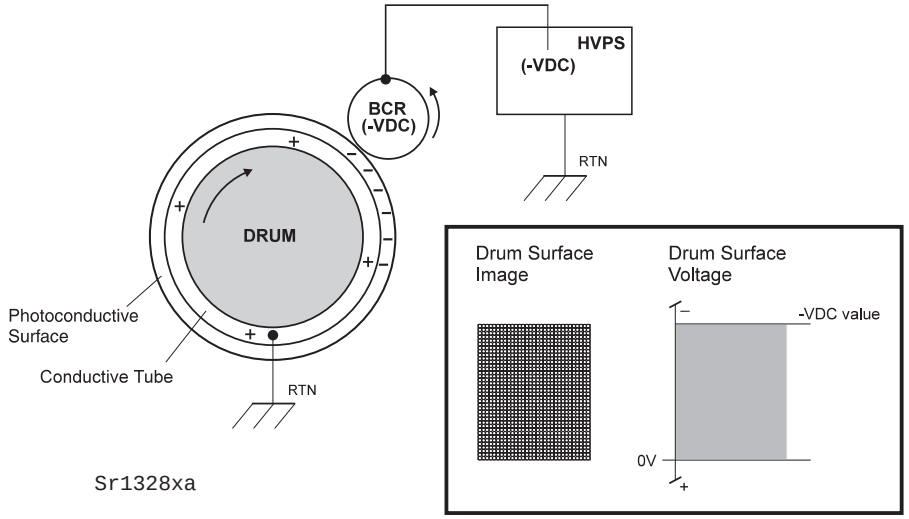


Figure 2-25. Charging

2.4.2 Exposure

The Raster Output Scanner (ROS) generates a beam of laser light. Image data received from the print controller modulates this beam, turning it on and off according to image information that is received from the host computer and software.

Through the use of a series of rotating and stationary mirrors within the ROS, the beam scans the negative charged drum surface. Whenever the print controller sends a command to print a black pixel, the laser switches on long enough to shine onto the drum at a single pixel point. That point is now discharged and slightly less negative than the surrounding negative charge. For the sake of simplicity, the less negative areas are considered "positive". This discharge/no discharge process creates an invisible, electrostatic image on the surface of the drum. This image is called a ***latent*** image.

The ROS also helps to clean and prepare the drum by scanning the surface of the drum at the beginning of each individual printer cycle. This action discharges an residual DC charge that may still remain on the Drum from the last print cycle.

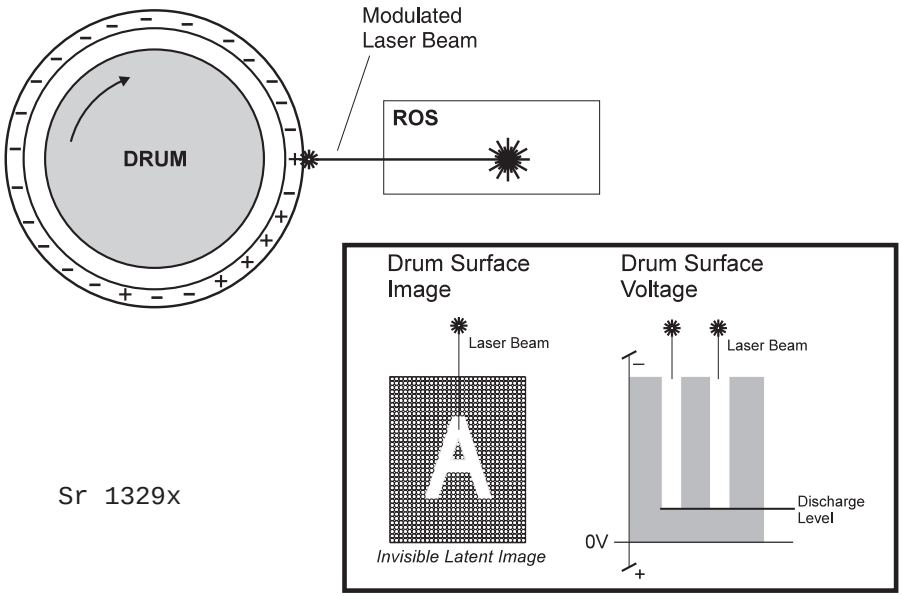


Figure 2-26. Exposure

2.4.3 Develop

The toner contained within the EP Cartridge has a slight magnetic property that causes it to adhere to the Magnetic Roll. The Charge Metering Blade (CM Blade) spreads the toner into a very thin layer on the Magnetic Roll. Friction between the Magnetic Roll and the CM Blade generates a small electrical charge that is transferred to the toner.

The surface of the Magnetic Roll is made up of a thin sheet of conductive material. The HVPS supplies the Magnetic Roll with two voltages; a DC voltage and an AC voltage. The DC voltage is used to transfer toner from the Magnetic Roll to the surface of the drum. The AC voltage agitates the toner on the Magnetic Roll, making toner transfer easier.

The Magnetic Roll maintains a negative DC electrical potential. Negative charged areas of the drum have a lower electrical potential, or higher relative negative value than the Magnetic Roll. Discharged areas of the drum have a higher electrical potential, or lower relative negative value, than the Magnetic Roll. A discharged point on the surface of the drum now appears less negative, or positive, in relation to the negative charge on the Magnetic Roll.

The toner adhering to the Magnet Roll is always in contact with the drum surface. When a less negative point on the drum (a discharged area) comes in contact with the more negative charged toner on the Magnet Roll, toner transfers from the Magnet Roll to that point on the drum. There is now a visible toner image on the drum surface. The image is called a ***developed*** image.

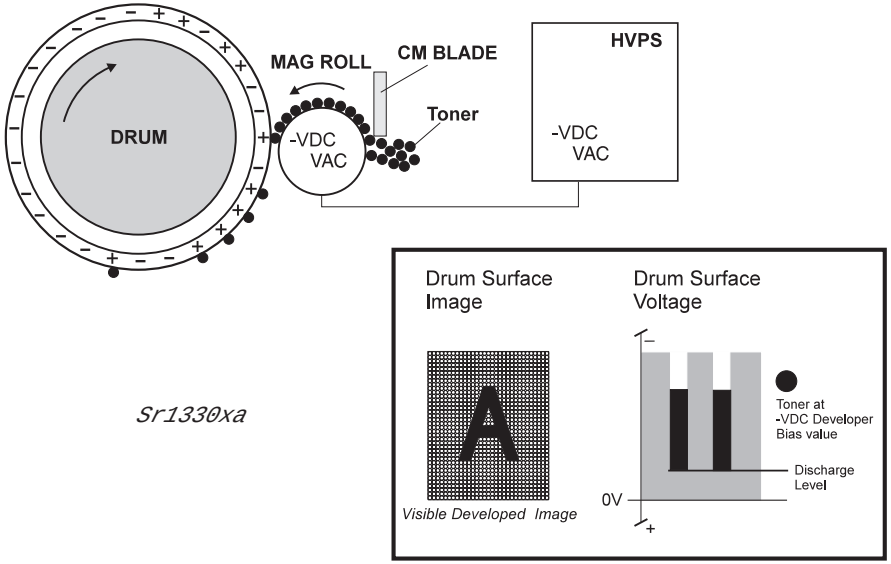


Figure 2-27. Developing

2.4.4 Transfer

As the paper travels between the BTR and the drum surface, the Bias Transfer Roll (BTR) applies a positive charge to the back of the printing paper. This positive charge transfers the negative charged toner image from the drum surface to the top surface of the paper. The toner image is now on the paper and the paper is now stuck to the drum surface, due to the relative electrical differences between the negative electrical charge of the inner conductive layer of the drum and the positive electrical charge of the paper.

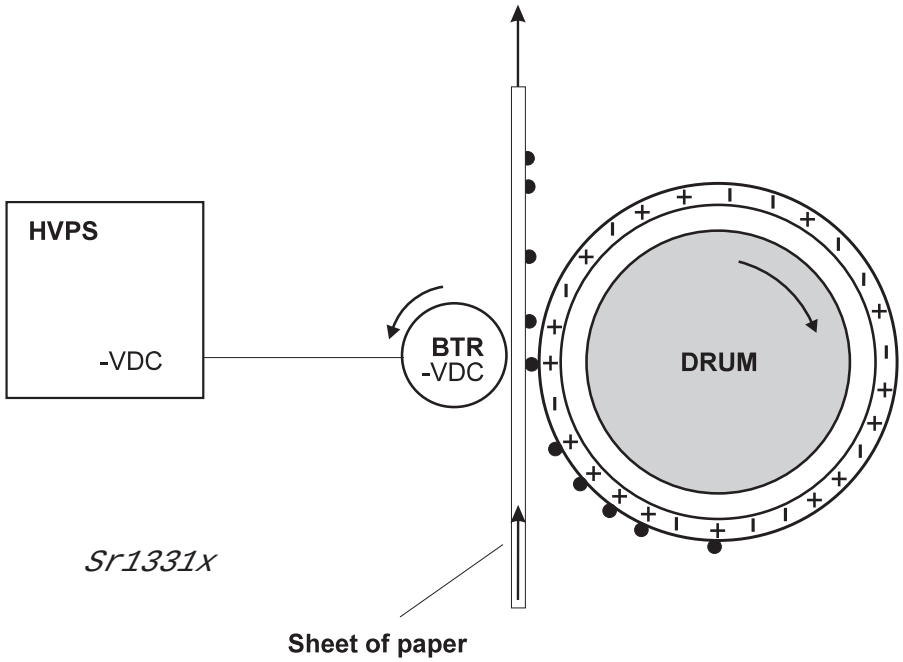


Figure 2-28. Transfer

2.4.5 Detack

After the toner image transfers to the surface of the paper, the Detack Saw (a thin strip of metal that resembles a saw blade) applies a low voltage negative charge to the back of the paper to neutralize the positive voltage that was applied to it by the BTR. Once the positive voltage is neutralized, the paper strips releases easily from the drum surface and continues along the paper path to the Fuser.

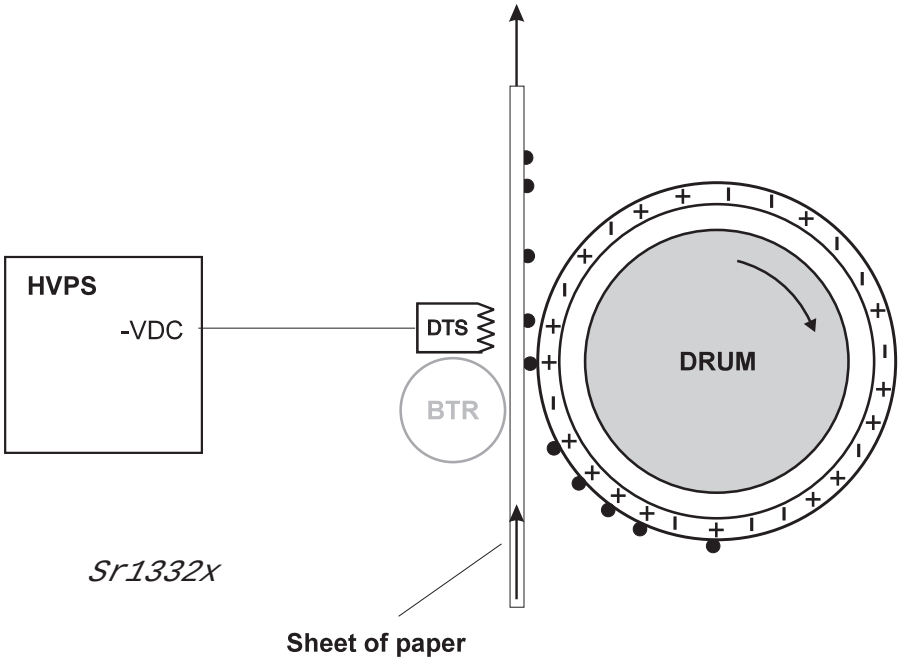


Figure 2-29. Detack

2.4.6 Fusing

When a sheet of paper leaves the transfer area, static electricity holds the unfused toner image to the surface of the paper. After transfer, the paper moves to the Fuser where it passes between the **Heat Roll** and the **Pressure Roll**. The combination of heat and pressure melts the toner image and bonds it permanently to the paper. The fused sheet of paper is then transported to the output tray.

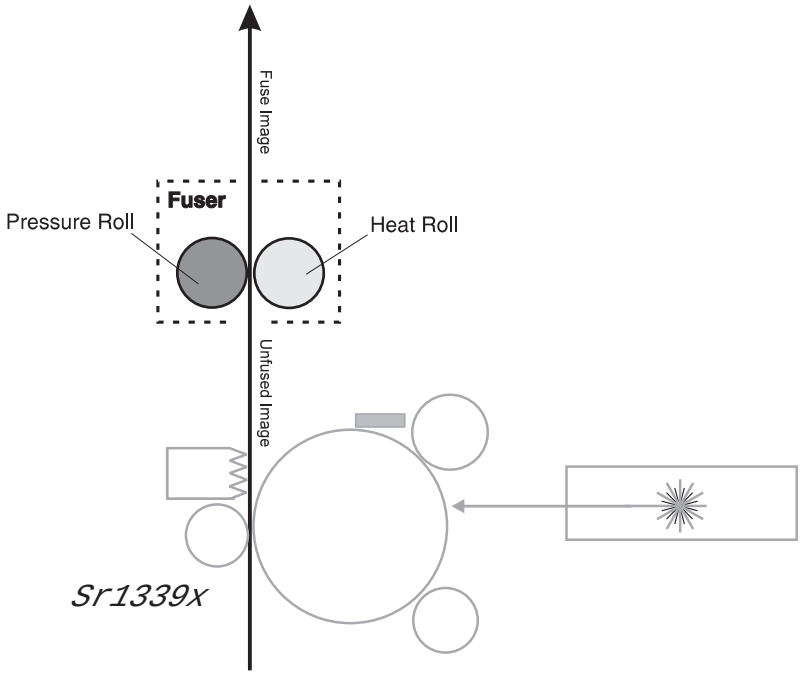


Figure 2-30. Fusing

2.4.7 Clean

The Cleaning Blade removes any toner that remains on the drum after the transfer process. The toner that the Cleaning Blade removes is collected inside the sealed EP Cartridge. Toner that is reclaimed from the drum is not reused by the EP Cartridge.

CHECK POINT

Toner collected by cleaning is collected as left toner and kept in the different room from that for the unused toner. Transfer efficiency is more than 90%. Transfer efficiency varies by the printing rate, humidity environment. Also, left toner is not reused.

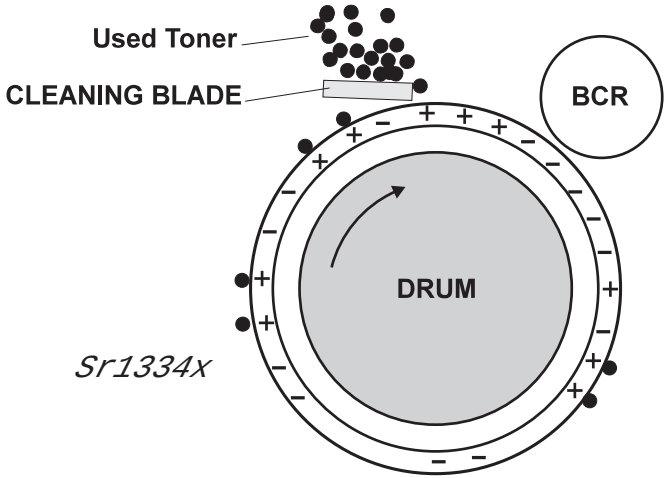
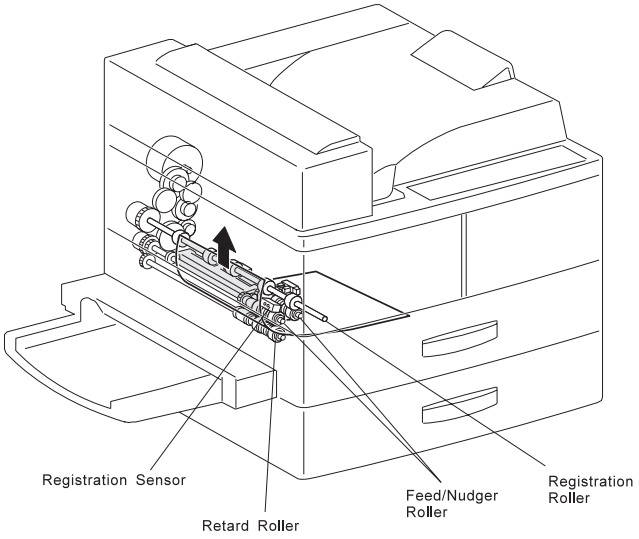


Figure 2-31. Cleaning

2.5 Print Sequence

☐ Paper Feeding from Tray1



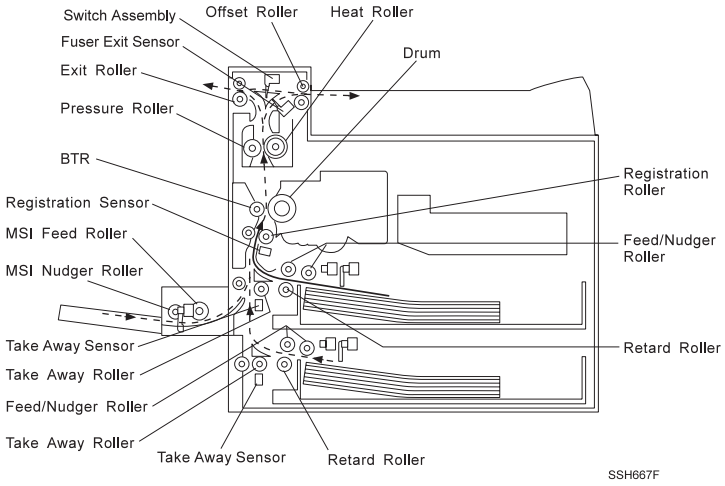
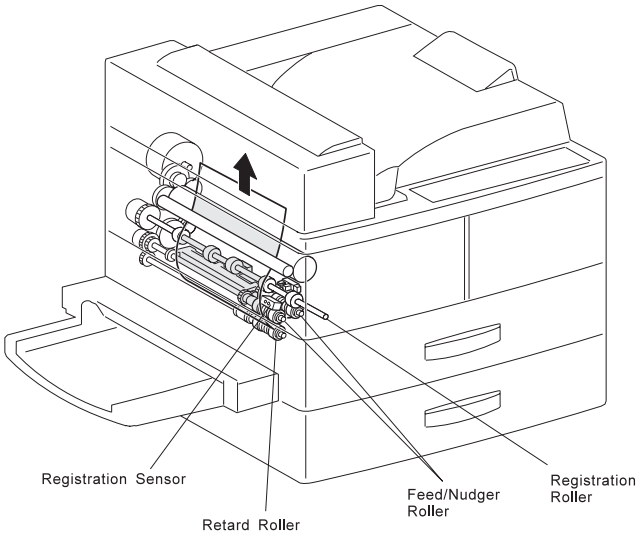


Figure 2-32. Paper Feeding from Tray1

☐ From Registration Roll to BTR/Drum



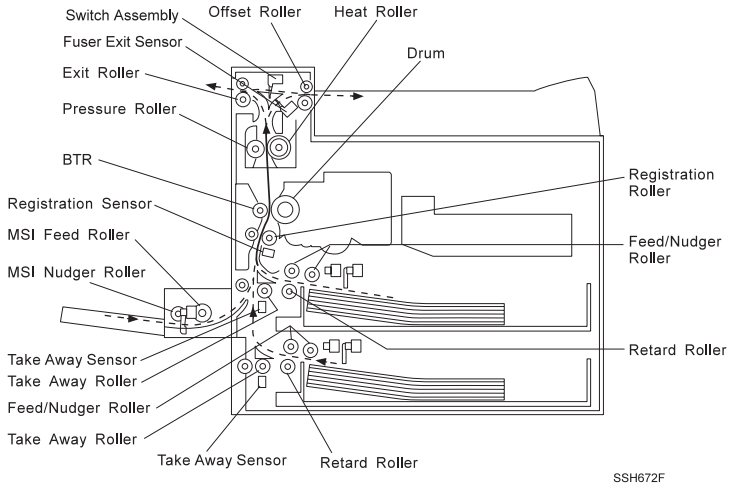


Figure 2-33. From Registration Roll to BTR/Drum

☐ Fusing and Paper Eject

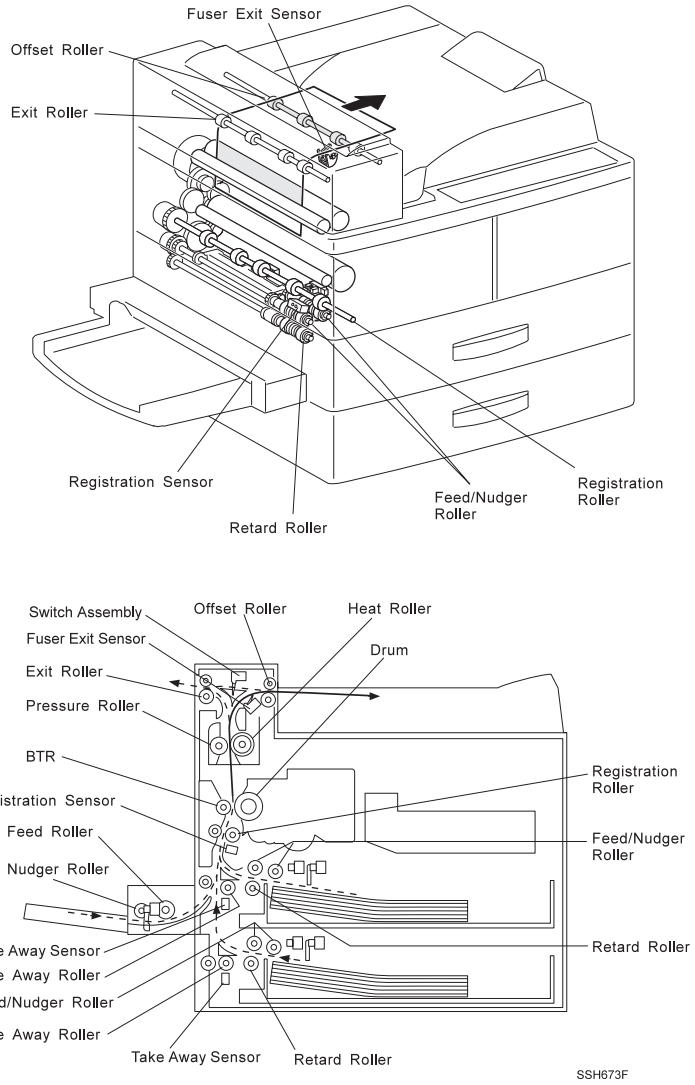


Figure 2-34. Fusing and Paper Eject

☐ Paper Feed from Tray2

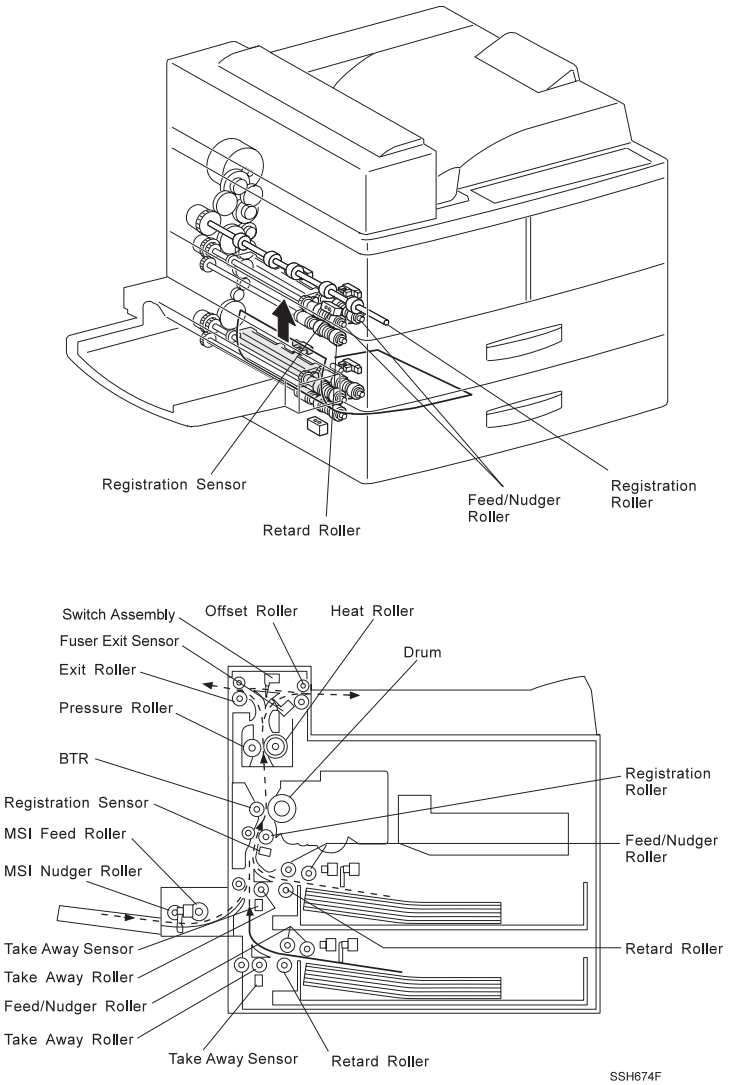


Figure 2-35. Paper Feeding from Tray 2

2.6 Operating Principles for Power Supply Circuit

2.6.1 Power Supply Circuit

The power supplies in this printer provide the voltages that the printer requires to operate. The various printer functions require 110VAC, +5VDC, +24VDC, and several high voltage DC and AC values that are used by xerographics.

The printer AC power cord plugs into a grounded AC wall outlet. The cord carries AC line voltage to the **Noise Filter PWB**. The Noise Filter smooths the AC voltage and sends it to the Main Power Switch. Switching on the Main Power Switch applies AC voltage to the AC Driver PWB and to the Low Voltage Power Supply (LVPS) PWB.

The **AC Driver PWB** is the interface between printer control (MCU) and the Fuser. Fuser sensors connected to the AC Driver PWB send Fuser status information to the Driver PWB, which the PWB routes to the MCU PWB. The MCU processes the information and sends commands back to the AC Driver PWB to tell the AC Driver whether or not to switch on the Fuser Heat Rods.

The **Low Voltage Power Supply PWB**, or LVPS, converts the 110VAC to regulated +24VDC and +5VDC voltages. The LVPS sends these voltages to the MCU PWB. The MCU uses the voltages for internal processing and for printer component operation. The MCU also sends +24VDC to the High Voltage Power Supply PWB.

The **High Voltage Power Supply PWB**, or HVPS, converts the +24VDC received from the MCU PWB to the high voltages that are required by the xerographic system of the printer. The HVPS produces the Charge (CR), Transfer (TR), Developer Bias (DB), and Detack (DTS) voltages, and sends them on to the EP Cartridge and to the Bias Transfer Roll (BTR).

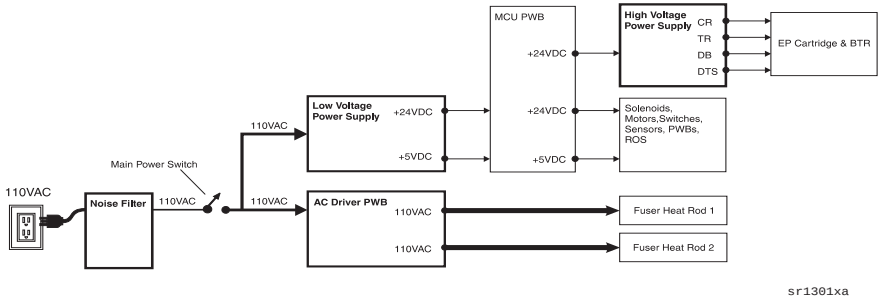


Figure 2-36. Power Supply Circuit

2.6.2 Power Supply Components

This printer is made up of five main components and a number of subcomponents.

- ☐ Noise Filter PWB
  Smooths and removes any fluctuation or hum from the AC line voltage.
  Main Power Switch: Used to switch AC voltage on and off (switches the printer on and off).
- ☐ AC Driver PWB
  Receives smoothed AC voltage from the Noise Filter. The AC Driver PWB receives Fuser temperature information from Fuser sensors and passes that information on to the MCU for processing. The MCU PWB commands the AC Driver to switch on or switch off AC voltage to the Fuser Heat Rods.

- Low Voltage Power Supply (LVPS)
  Takes filtered AC voltage and converts it into regulated +24VDC and +5VDC.
  - The LVPS contains **overcurrent protection circuits**. If an excessive current begins to flow through any of the components supplied by the LVPS, the LVPS immediately shuts down all low voltage output. To reset the LVPS after an overcurrent shutdown; switch off the printer, wait a few minutes, then switch on the printer.
  - The LVPS contains **open circuit protection circuits**. If the LVPS detects that a circuit is open for longer than one minute, the LVPS slowly decreases the LVPS output until the output is zero. To reset the LVPS after an open circuit shutdown; switch off the printer, wait a few minutes, then switch on the printer.
  - The LVPS contains a low +24VDC output protection circuit. If the LVPS detects the +24VDC output dropping below +15VDC, the LVPS slowly decreases the +24VDC LVPS output until the output is zero.
    LVPS Fan: A +24VDC fan that cools the LVPS PWB.
- Machine Control Unit (MCU PWB)
  Takes the +24VDC and +5VDC generated by the LVPS and distributes them to the various components through out the printer, including +24VDC to the High Voltage Power Supply (HVPS).
  - **Interlock Switches SW1 and SW2:** Used as a safety measure. The main interlock circuit for this printer is actually two separated switches wired in series with the MCU PWB. When the EP Cartridge is in place, Interlock Switch SW1 is closed. When the Left Front Cover is closed, Interlock Switch SW2 is closed. With both switches closed, the circuit is complete and the MCU PWB sends +24VDC to the HVPS and other printer components.

If either SW1 is open (the EP Cartridge removed) or SW2 is open (the Left Front Cover is open) the MCU PWB cuts all +24VDC output from the MCU PWB.

Even though the interlock switches cut the +24VDC output from the MCU PWB, +24VDC output from the LVPS is still present throughout the printer as well as 110VAC line voltage along the AC paths in the printer.

- High Voltage Power Supply (HVPS)
  Takes the +24VDC received from the MCU PWB and converts it to the high voltages that are required by the printer xerographic components.
  - The HVPS contains **overcurrent protection circuits.** If an excessive current begins to flow through any of the xerographic components, the HVPS immediately shuts down all high voltage output. To reset the HVPS after an overcurrent shutdown; switch off the printer, wait a few minutes, then switch on the printer.

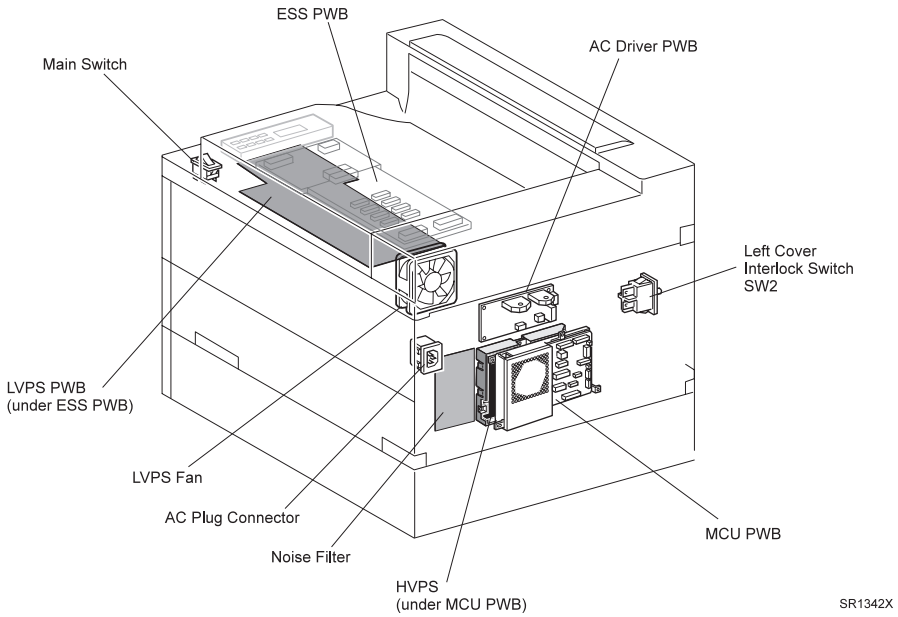


Figure 2-37. Power Supply Component

2.7 Printer Control

Printer Control is a broad term that is used to describe the printer resources that monitor and control the actions and operations of the printer; from warm-up, through the print cycle, to machine error detection.

The center of printer control for the printer base engine is the Machine Control Unit PWB, or MCU PWB. The MCU contains an 8 bit microcomputer. The MCU contains ASICs (Application Specific Integrated Circuits) for image data transfer and communication control, ROM, RAM, a 16 bit integrated timer, programmable timing pattern control, a watch dog timer, serial communications interfaces, an A/D converter, a D/A converter, I/O ports, and a DMA controller.

The MCU PWB provides the logic and information processing that is necessary for the printer to function. Every electrical component within the printer is connected either directly or indirectly to the MCU PWB. Sensors in the printer send printer status information to the MCU. The MCU processes that information and compares it to timing tables that are stored in onboard ROM. Acting on the results of the processing, the MCU sends commands to various printer components; switching on motors, switching off voltages, signaling statuses. Non-Volatile RAM on the MCU PWB stores adjustable operation parameters, such as Fuser temperature and laser strength, that are used as reference during printer operation.

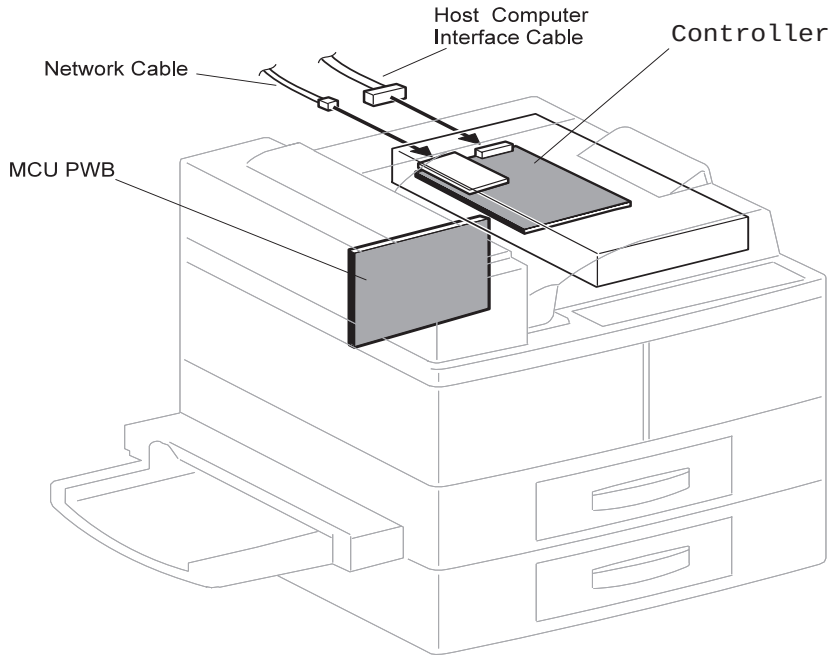


Figure 2-38. Control Circuit Board

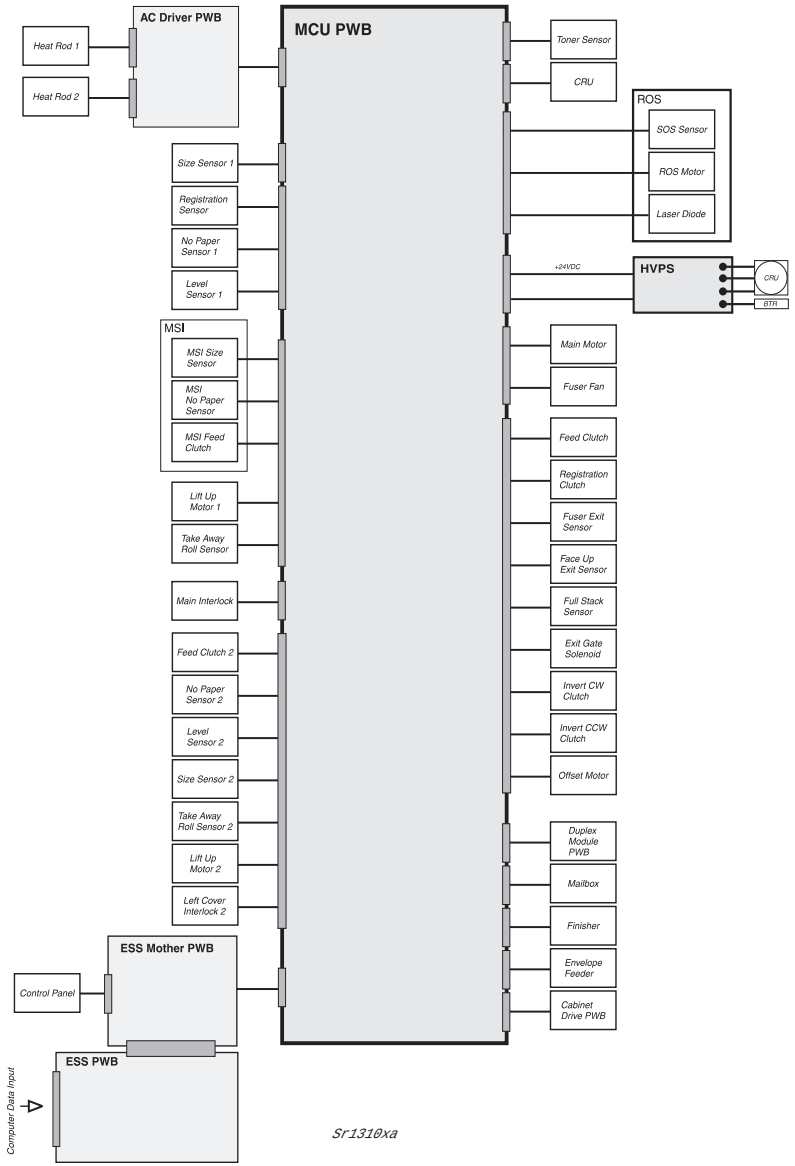


Figure 2-39. Printer Control Component

2.7.1 Printer Control Components

The Printer Control is make up of the MCU PWB and numerous connected components.

2.7.1.1 Machine Control Unit PWB (MCU PWB)

Receives status and command information from sensors and from the C262 Main board. Controls most printer operations. The MCU PWB performs nine major functions:

- ☐ Communicates with the Printer Controller (C262 Main Board).
- ☐ Maintains the system clock.
- ☐ Controls the printing process.
- ☐ Controls the ROS, the Fuser, and the drive assemblies.
- ☐ Distributes +5VDC and +24VDC to various printer components.
- ☐ Monitors printer status.
- ☐ Maintains a running print count.
- ☐ Maintains NVRAM settings.
- ☐ Controls printer options.

2.7.1.2 Components attached to or associated with the MCU PWB:

- ☐ Low Voltage Power Supply
  Converts 110VAC to +5VDC and +24VDC.
- ☐ C262 Main Board
  Connected to the MCU PWB through the C262 Main Board. The interface between the print engine and the host computer. The ESS processes the raw video data sent by the host computer.
- ☐ Control Panel
  Connected to C262 Main Board, the Control Panel displays status information send from the MCU PWB and C262 Main Board.
- ☐ AC Driver PWB
  Switches 110VAC to the two Fuser Heat Rods. Fuser temperature sensors are connected to the AC Drive PWB. The AC Drive PWB sends the temperature information to the MCU PWB.
- ☐ High Voltage Power Supply
  Converts +24VDC received from the MCU PWB to several high voltages that are required by printer xerographics.
- ☐ Toner Sensor
  Magnetic sensor that monitors the CRU toner level.
- ☐ CRU
  Drum usage information that is stored in the CRU.
- ☐ ROS
  The SOS (Start of Scan) Sensor, the ROS Motor, and the Laser Diode.
- ☐ Main Motor
  Provides most of the mechanical drive for the printer.
- ☐ Fuser Fan
  Cools the Fuser area.
- ☐ Feed Clutch
  Transmits Main Motor drive to the Tray 1 Feed Rolls.
- ☐ Registration Gate Clutch
  Transmits Main Motor drive to the Registration Rolls.
- ☐ Fuser Exit Sensor
  Monitors paper travel out of the Fuser.

- Face Up Exit Sensor
  Monitors paper travel out of the Offset Unit.
- Full Stack Sensor
  Monitors the paper level in the Output Tray.
- Exit Gate Solenoid
  Toggles the Exit Gate.
- Inverter CW Clutch
  Transmits Main Motor drive, forward, to the Offset Rolls.
- Inverter CCW Clutch
  Transmits Main Motor drive, reverse, to the Offset Rolls.
- Offset Motor
  Provides mechanical drive for the Offset Unit.
- Duplex Module PWB
  Provides +5VDC, +24VDC, and command and status lines to the Duplex PWB option.
- Mailbox
  Provides +5VDC, +24VDC, and command and status lines to the Mailbox option.
- Finisher
  Provides +5VDC, +24VDC, and command and status lines to the Finisher option.
- Envelope Feeder
  Provides +5VDC, +24VDC, and command and status lines to the Envelope Feeder option.
- Cabinet Drive PWB
  Provides +5VDC, +24VDC, and command and status lines to the High Capacity Feeder option.
- Size Sensor 1
  Monitors the size of the paper that is loaded in Feeder 1. The Actuator Assembly located at the rear of the Paper Tray has series of cams that face the Size Sensor PWB. Pushing the Paper Guide against the paper stack slides the Actuator Assembly along a track. When the Tray is inserted into the Feeder, the cams on the Actuator press the switches on the Size Sensor PWB in a pattern that is unique to the position of the Paper Guide. The MCU PWB interprets this pattern as a specific paper size.

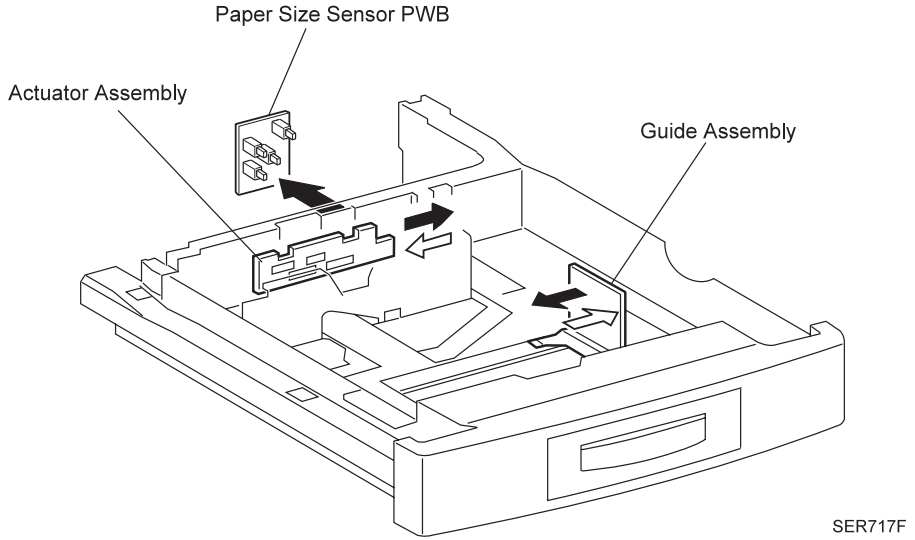


Figure 2-40. Size Sensor

- Registration Sensor
  Monitors paper travel out of the paper tray.

- No Paper Sensor 1
  Monitors the paper level in Feeder 1. When the Lift Motor raise the Bottom Plate, the Plate raises the paper stack, the stack pushes the No Paper Actuator up and away from the No Paper Sensor. The Sensor sends a *paper present* signal to the MCU PWB. When the last sheet of paper is fed out of the Paper Tray, the No Paper Actuator drops through a cutout in the Bottom Plate. The Actuator then blocks the Sensor, and the Sensor sends a no paper signal to the MCU PWB.

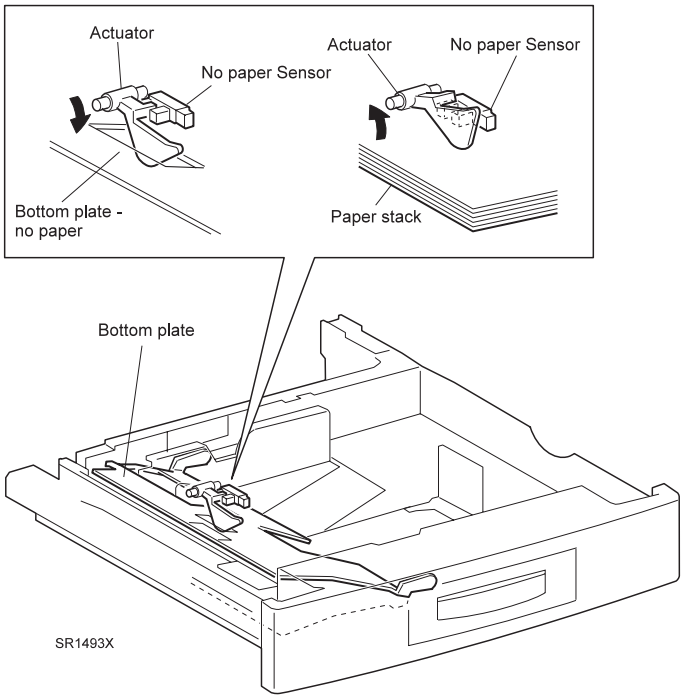


Figure 2-41. No Paper Sensor

- Level 1 Sensor
  Monitors whether or not Tray 1 is installed. Installing the Tray pushes the Link Stopper out, which in turn lowers the Feed Roll and moves the Level 1 Sensor Actuator tab away from the Sensor window.

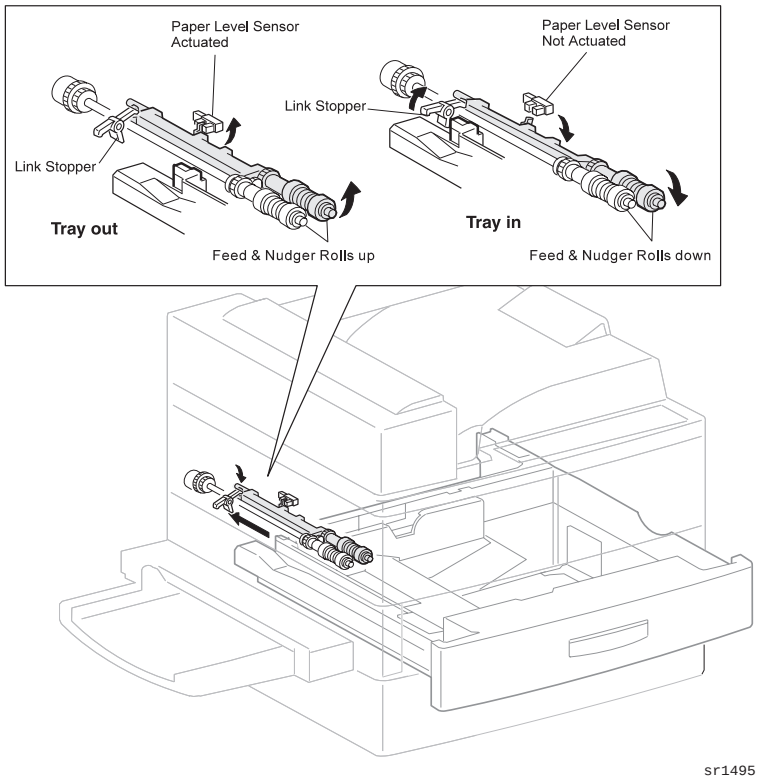


Figure 2-42. Level 1 Sensor

- MSI Size Sensor
  Monitors the size of paper that is loaded in the MSI.

- MSI No Paper Sensor
  Monitors the paper level in the MSI.
- MSI Feed Clutch
  Transmits Main Motor drive to the MSI Feed Rolls.
- Lift Up Motor 1
  Raises the paper tray in Feeder 1. The MCU PWB switches on the Lift Motor. The Motor rotates a square, metal shaft that is located inside the Paper Tray. The Shaft raises the Tongue, which in turn raises the Bottom Plate, and the paper stack, up to the Feed Rolls.

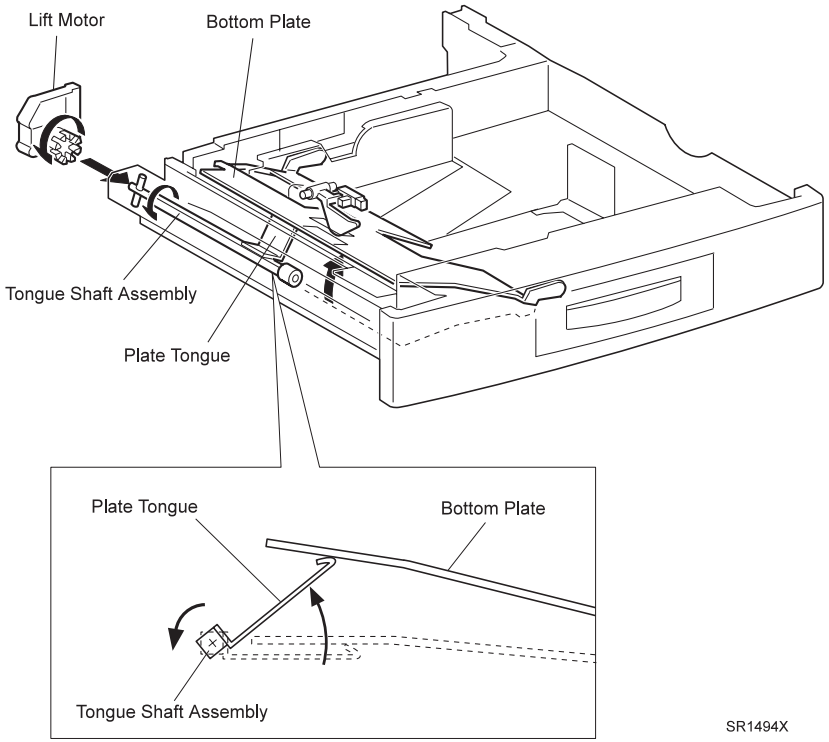


Figure 2-43. Lift Up Motor 1

- Take Away Roll Sensor
  Monitors the paper travel at the Take Away Roll.
- Interlock Switches 1 and 2
  Monitors the CRU position Switch 1 and Left Cover Interlock Switch 2 on Feeder 1.
- Feed Clutch 2
  Transmits Main Motor drive to the Tray 2 Feed Rolls.
- No Paper Sensor 2
  Monitors the paper level in Feeder 2. Functions identical to No Paper Sensor 1.
- Level 2 Sensor
  Monitors whether or not Tray 2 is installed.
- Size Sensor 2
  Monitors the size of the paper that is loaded in Feeder 2.
- Take Away Roll Sensor 2
  Monitors the paper travel at the Take Away Roll 2.
- Lift Up Motor 2
  Raises the paper tray in Feeder 2.
- Left Cover Interlock 2
  Monitors the Left Cover Interlock Switch on Feeder 2.

2.7.1.3 Function of the MCU during printer control

- ☐ Input from sensors
  Sensors tell the MCU what is going on within the printer and what is happening to the sheet of paper during a print cycle.
  - ■ Example below:
    Printer sensors send their status to the MCU PWB. The sensor status signals tell the MCU whether they are actuated or not actuated (on or off, high or low). If measured with a voltmeter, some sensor signals to the MCU would be +5VDC when on and 0VDC when off, while other sensors may be 0VDC when on and +5VDC when off. This high/low decision is determined when the printer is designed.

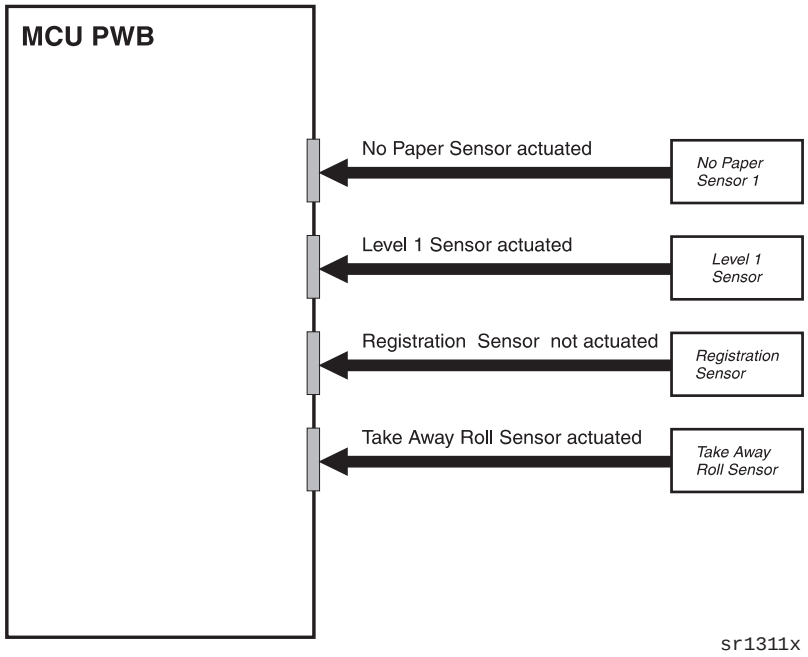


Figure 2-44. Input from Sensors

- ☐ Processing input information
  Logic on the MCU compares the input information with the timing and reference values that are stored in ROM and NVRAM on the PWB.
  - ■ **Example below:**
    The Fuser Thermistor monitors the temperature of the Fuser Heat Roll and sends the current temperature value to the AC Drive PWB. The AC Drive PWB relays the temperature data to the MCU PWB. The MCU compares the current temperature with the set (or expected) temperature that is stored in NVRAM on the MCU PWB. If the current temperature is lower than the set temperature, the MCU sends a signal to the AC Drive PWB to switch on the Fuser Heat Rod until the current temperature reaches the set temperature.

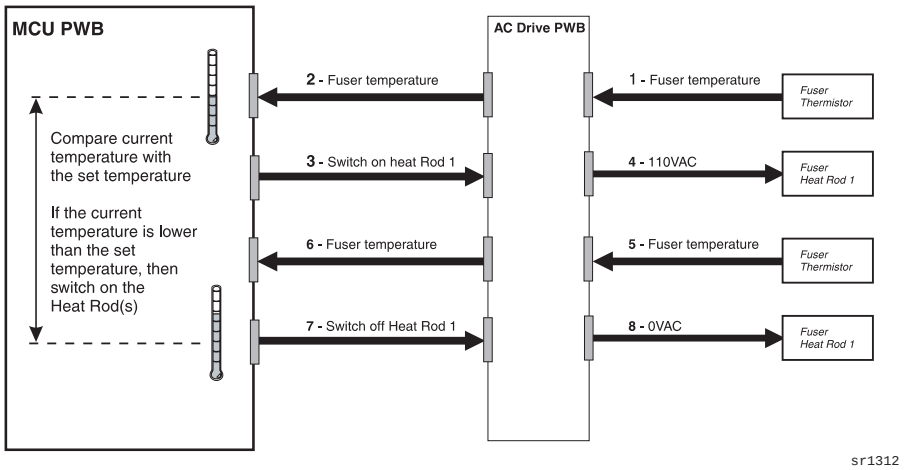


Figure 2-45. Processing Input Information

- Output to motors, solenoids, and other components.
  After comparing input values with timing and reference values, the MCU makes a decision on the current status of the printer, and responds appropriately. The MCU may switch on or off motors, solenoids, or other components. The MCU may also signal that an error occurred.

  - **Example below:**
    A the start of a print cycle, the MCU switches on the Main Drive Motor, and then the Feed Clutch. The MCU uses the Feed Clutch actuation as a timing marker. The Feed Rolls attached to the Feed Clutch drive a sheet of paper out of the paper tray and down the paper path. As the sheet of paper travels down the paper path it strikes the Registration Sensor. The Sensor sends a signal to the MCU PWB telling it that the paper has arrived. The MCU takes the elapsed time from when it actuated the Feed Clutch to the time it received the signal from the Registration Sensor and compares that time with the set time (or expected time) that is stored in ROM on the MCU PWB. If the time elapsed is within range, the print cycle continues. If the time elapsed is slower than the set time or if there was no signal from the Registration Sensor within the set time, the MCU interprets that as an error and sends an E1-1 Misfeed Jam status to the C262 Main Board.

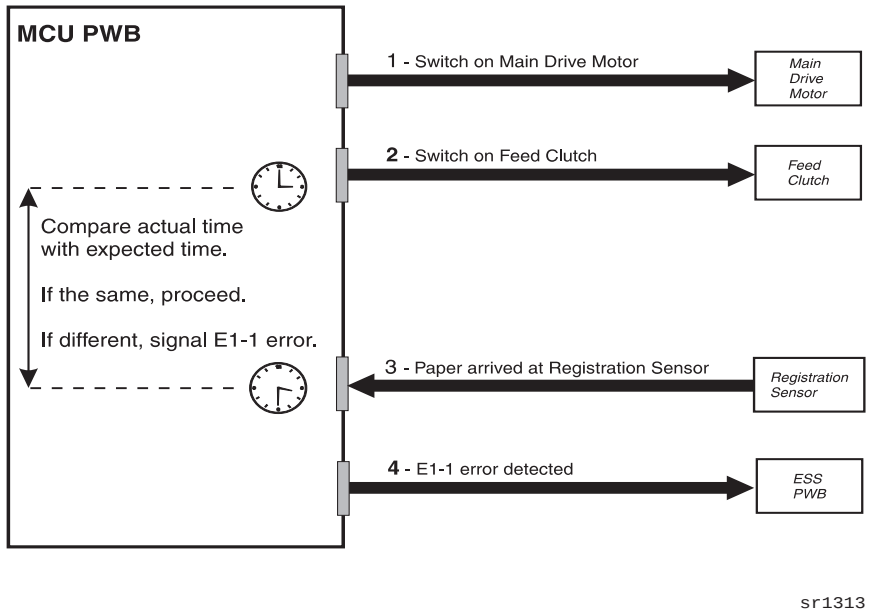


Figure 2-46. Output to Motor, Solenoid and Other Components

2.7.2 Controller

The video data from the host computer is input to the controller circuit through either interface circuit or network board. C262 Main Board, which is the control circuit of this printer, generates video signal by converting the data based on the printing data from the host computer into the laster data. Laster data is sent to Laser Diode PWB as video signal. On the Laser Diode PWB, the emission light of Laser Diode is turned on or off by the video signal.

2.7.2.1 Functions of the Controller

- ☐ Communication between the host computer and network
- ☐ Processing the Printing Data (Analyzing the command and generating video signal)
- ☐ Sending the video signal to ROS Assembly
- ☐ Monitoring the control panel
- ☐ Memory Management
- ☐ Data Buffer

2.7.2.2 Specification on the Controller

The table below shows specifications on the controller.

Table 2-1. Specification on the Controller

Type	Name (Location)	Function
CPU	R4700(IC1)	CPU controls the controller and is driven by 64 bit interior clock 133 MHz.
ASIC	E05B51 (IC2)	Memory control and DMA control.
	E05B52 (IC23)	Connecting E05B51 and E05B40
	E05B40 (IC26)	Control Panel, Host I/F control
	E05B56 (IC32)	PGI, RIT, Engine I/F, Toner Counter
Memory	Mask ROM(IC10, 11) / Flash ROM (CN4,7)	IPL/Font
	ROM DIMM	Code, Local language and Expansion ROM
	DRAM	SDRAM DIMM is used for both Standard and Expansion.
	EEPROM(IC405)	128kbit Serial type, Storing the setting values of the printer.
	EEPROM	64Kbit, Parallel Type, (only pattern)
Host I/F	Parallel I/F	IEEE-1284, B-type connector
	Network	10/100 BaseT
Control Panel	Control Panel Unit	LCD(20x1), 8 SWs, 6 LEDs
Expansion	ROM	Expansion by ROM DIMM
	DRAM	Expansion by DIMM
	Type-B	2 slots, but only Ch1
	Hard Disk	P Bus (No DMA)
	ROM Bus	Expansion for ROM and I/F
Clock	CPU	66.66660 MHz
	Video	67.1749 MHz
	Dot	33.58748 MHz
DMA	Video. Color	PCI (CPU Bus)
	Video. Monochrome	E05B56
	I/O	E05B52 via E05B40 + Type-B

Block diagram of C262 Main Board is shown below.

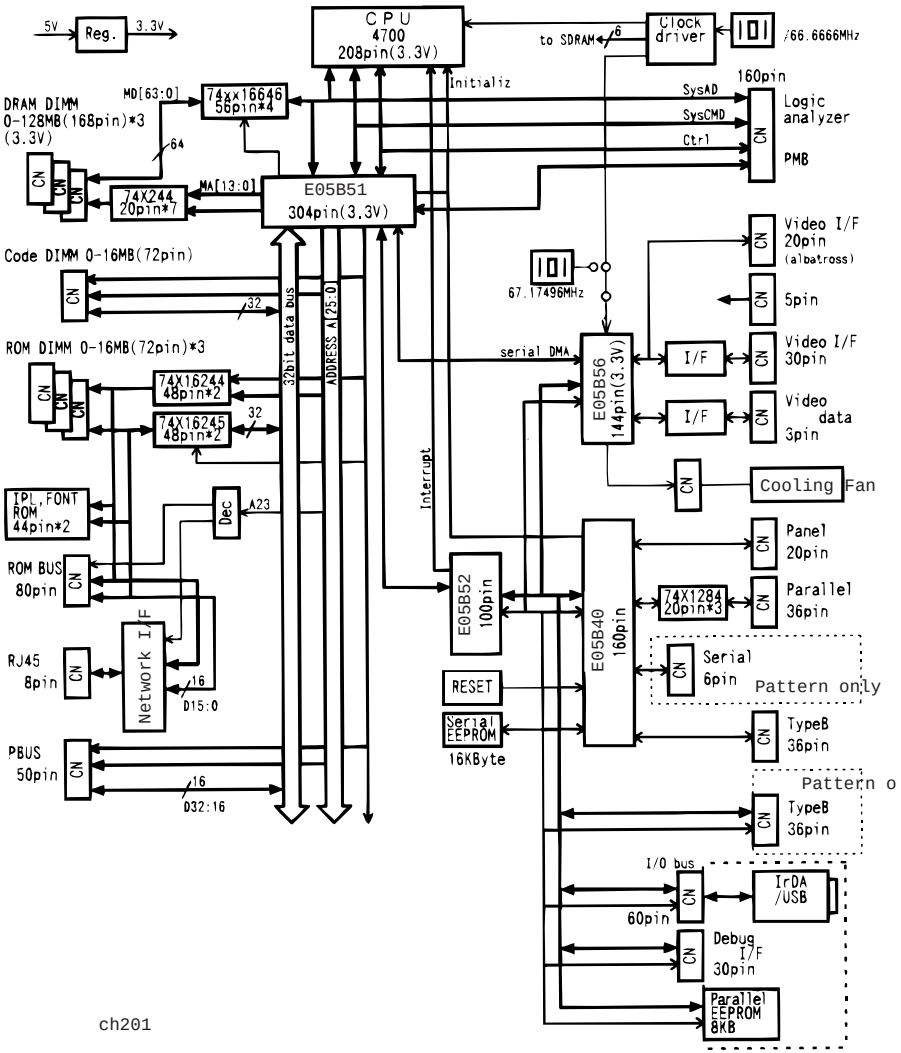


Figure 2-47. Block Diagram of C262 Main Board

CHAPTER

3

TROUBLESHOOTING

3.1 Troubleshooting

3.1.1 Service Flowchart

To use the Service Flowchart, start at Block 1 to identify the problem. After you have identified the problem, return to the Service Flowchart and proceed to Block 2 where you inspect and clean the printer (a through cleaning frequently solves many printer problems). You continue down the Flowchart, in this manner, always returning to the next block in the Service Flowchart after you have completed the tasks outlined in the current block.

If you choose not to use the Service Flowchart, we recommend that you start at the appropriate Fault Isolation Procedure (FIP) Flowchart and proceed from there. In many cases, merely replacing the Print Cartridge with a new one could solve the printer problem.

Table 3-1. Service Flowchart

Block	Procedure
1	• Identify the problem. 1. Vertify that the reported problem does exit. 2. Check for any error codes or messages. 3. Print three test prints. 4. Make note of any print quality problems in the test prints. 5. Make note of any mechanical or electrical abnormalities present. 6. Make note of any unusual noise or smell coming from the printer.
2	• Inspect and Clean the printer. 1. Switch Off printer power. 2. Disconnect the AC power cord from the wall outlet. 3. Remove the EP Cartridge and shield it from strong light. 4. Inspect the printer interior and remove any foreign matter such as paper clips, staples, pieces of paper, paper dust or toner. 5. Clean the printer interior with a lint-free cloth, dampered slightly with cold water. Do not use solvents or chemical cleaners to clean the printer interior. Do not use any type of oil or lubricant on printer parts. 6. Clean all rubber rollers with a lint-free cloth that is dampened slightly with cold water. Use a clean, dry, lint-free cloth to dry the rollers. 7. Clean the ROS window with a soft, dry, lint-free cloth. 8. Use canned air to clean the BTR. Do not touch the BTR with your fingers. Do not use a brush or damp cloth to clean the BTR. 9. While you are cleaning, inspect the interior of the printer for damaged wires, loose connections, toner leakage, and worn or damaged parts. 10.If the EP Cartridge appears excessively dirty or obviously damaged, replace it with a new one.

Table 3-2. Service Flowchart(Cont.)

Block	Procedure
3	• Find the cause of the problem. Use the FIP Flowchart to find the cause of the problem. Use Diagnostic Mode to check printer components. Use the Wiring Diagrams to locate P/Js and test points. Take voltage readings at various test points.
4	• Correct the problem. Use the Disassembly and Assembly procedures(RRPs) to replace a part. Use the Parts List to locate a part inventory number.
5	• Final Checkout. Test the printer to be sure you corrected the initial problem and there are no additional problems present.

3.1.2 FIP Flowchart

If you used the Service Flowchart, it should have directed you to this section. Follow the **FIP Flowchart**, located at the end of this section, to analyze your printer problem.

3.1.2.1 How to use the FIP Flowchart

1. If the LCD displays an error code; go to the **ERROR CODE** box.
2. If you have a printer operation problem; go to the **PRINTER PERFORMANCE** box.
3. If you have an print image problem; go to the **IMAGE QUALITY** box.
4. Follow the arrow leading from your problem box to the individual Primary FIP (Fault Isolation Procedure) that corresponds to your error code, printer operation problem, or print image problem.
5. Follow the instructions presented in the FIP.
6. Voltage and resistance values presented in the FIPs are an approximation. Actual readings may vary from the stated values.
7. Primary FIPs may direct you to a Secondary FIP. In the FIP Flowchart, the relationship between Primary and Secondary FIPs is represented with dotted lines.

3.1.2.2 How to follow a FIP

1. Each numbered step in a FIP instructs you to perform a certain action or procedure.
2. The action box may contain additional information and numbered substeps you must follow to perform the action.
3. The action is followed by a question.
4. If your response to the question is **Yes**, then follow the instructions for a Yes reply.
5. If your response to the question is **No**, then follow the instructions for a No reply.
6. FIPs often ask you to take voltage readings at certain test points within the printer. Refer to “Appendix” for signal information, if necessary.
7. FIPs often ask you to replace a printer component. Chapter 4 Disassembly and Assembly provides you detailed steps for removing and replacing all major parts of the printer.

3.1.2.3 General Notes on Using FIPs

1. FIPs assume there is no malfunction in the printer controller (ESS). If you are unable to fix a problem using the FIPS, we recommend that you replace the printer controller.
2. FIPs frequently use new or "known good" components as troubleshooting tools. We recommend you carry a spare Print Cartridge (EP Cartridge), Fuser Assembly, MCU PWB, ESS PWB, and LVPS PWB.
3. Unless indicated otherwise, the instruction "switch ON main power" means for you to switch ON printer power and let the printer proceed through power-on diagnostics and warm-up until it is on-line and ready to print.
4. Conventions used to represent connectors:
   *P/J XX means a Plug and its corresponding Jack are connected.
   *PXX means a Plug is disconnected. (Unless this plug is soldered to a PWB).
   *JXX means a Jack is disconnected. (Unless this jack is soldered to a PWB).
5. When you are instructed to take a voltage reading between "P/J A–B and P/J X–Y", place the red probe (+) of your meter on pin B of P/J A, and place the black probe (–) of your meter on pin Y of P/J X.
6. When you are instructed to take voltage readings between "P/J X and P/J Y" (without specified pin numbers), check all voltage carrying pins. Refer to the Wiring Diagrams for signals and pin numbers.
7. When you are instructed to take a voltage reading, the black probe (–) is generally connected to a pin that is either RTN (Return) or SG (Signal Ground). You can substitute any RTN pin or test point in the printer, and you can use FG (Frame Ground) in place of any SG pin or test point.
8. Unless a FIP instructs you otherwise; before measuring voltages make sure the printer is switched ON, the Print Cartridge and the Paper Cassette are installed, and the Main Interlock Switch is actuated.

9. All voltage values given in the FIPs are approximate values. Actual measured voltages may vary more than 25% from the values stated in the FIPs. The main purpose of most voltage readings taken in the FIPs is to determine whether or not a component is receiving the correct HIGH voltage value from the power supply and if gating (a voltage drop) occurs during component actuation. Gating signals may be nothing more than a pulse, resulting in a momentary drop in voltage that may be difficult or impossible to read on the average multimeter.

10. FIPs may instruct you to remove or replace a component. Refer to Section 10 Removal and Replacement Procedures for information on how to remove and reinstall a component.

11. When a FIP instructs you to replace a component, and that component is part of a larger assembly, you should replace the entire assembly.

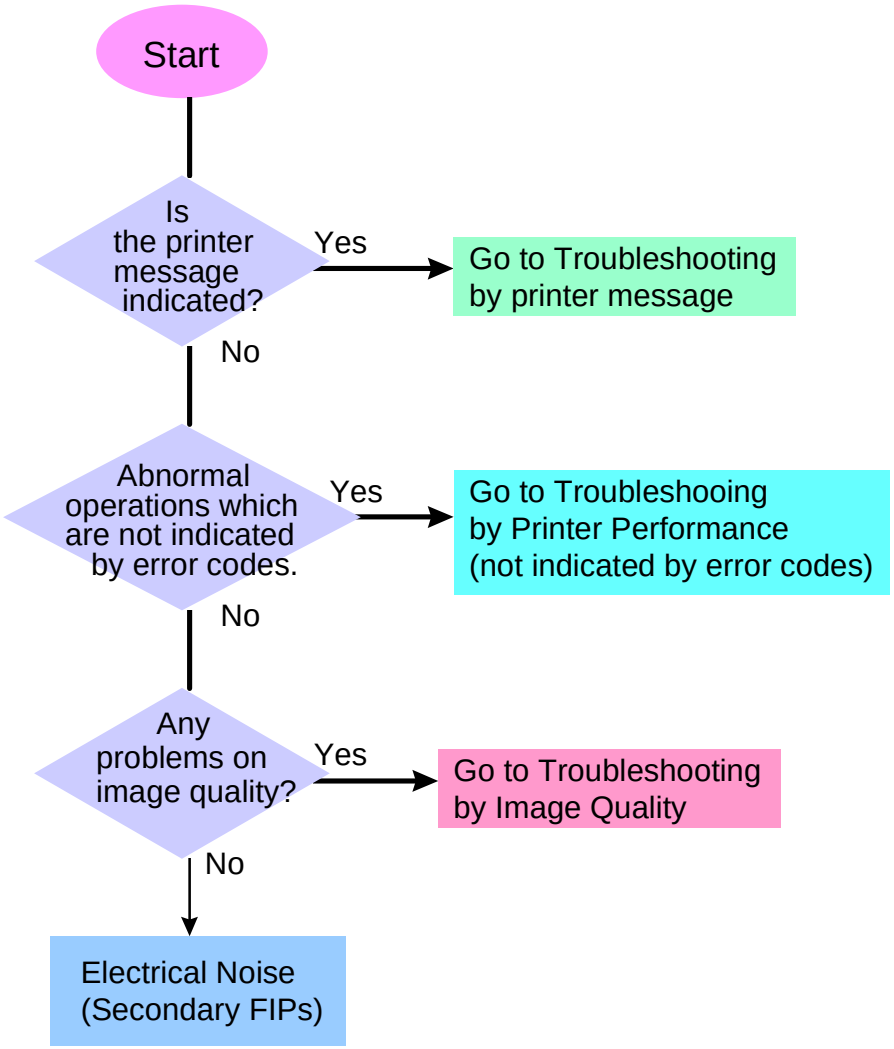


Figure 3-1. FIP Flowchart

3.2 Printer Message

The following lists the printer messages produced by this printer.

Table 3-3. Printer Message

Message	Classification
When printer is powered on	
Service Req effff	Service call error
ROM check	Status
RAM check	Status
MCU version Up?	Error
Self Test	Status
Reset All	Status
Reset	Status
Job Cancel	Status

X Error #yyy
X=LC1, LC2, LC3, LC4, LC5, DM, Multibin, Finisher, yyy=3 number	

xxxxxx	#yyy
LC1	#101:LC1
LC2	#102:LC2
LC3	#103:LC3
LC4	#104:LC4
LC5	#105:LC5
DM	#207:DM comunication
Multibin	#507:Multibin communication
Finisher	#607 Finisher communication
	#511:Finisher Stacker Tray1
	#512:Finisher Stacker Tray2
	#513 Finisher Stacker Tray3
	#521:Finisher Stacker Tray1 Upper Limit
	#522:Finisher Stacker Tray2 Upper Limit
	#523:Finisher Stacker Tray2 Upper Limit
	#531:Finisher Stacker Tray1 Lower Limit
	#532:Finisher Stacker Tray2 Lower Limit

Table 3-4. Printer Message

Message	Classification
Finisher	#533:Finisher Stacker Tray3 Lower Limit
	#541:Finisher Lower Safety
	#542:Finisher Stacker Lower Safety
	#581:Finisher Eject Clamp
	#582: Finisher Tamper Home
	#583: Finisher Stacker Offset
	#584: Finisher Stacker Tray ID
	#585: Finisher Stacker Upper Limit
	#586: Finisher Stacker Lower Limit
	#591: Finisher Stacker Head
	#592: Finisher Stacker Head Home
	#593: Finisher Stapler Front Corner
	#594: Finisher Stapler Front Straight
	#595: Finisher Stapler Rear Straight
	#596: Finisher Clamp Home
Jam X X X X *1 (X=A, B, C, DM, D, MP, ENV, LC1, ..., LC5, E, F, G, H)	
Staple Supply	Error
Stapler Jam	Error
Fac-down Full Multibin 1 Full	Error
Multibin 2 Full	Error
Multibin 3 Full	Error
Multibin 4 Full	Error
Multibin 5 Full	Error
Multibin 6 Full	Error
Multibin 7 Full	Error
Multibin 8 Full	Error
Multibin 9 Full	Error
Multibin 710Full	Error
Finisher 1 Full	Error

Table 3-5. Printer Message

Message	Classification
Finisher 2 Full	Error
Finisher 3 Full	Error
Insert Imaging Crtg *2	Error
Image Crtg ID Error	Error
Image Crtg R/W Error	Error
A Cover open	Error
DM Cover Open	Error
B Cover open	Error
C Cover open	Error
D Cover open	Error
E Cover open	Error
F Cover open	Error
G Cover open	Error
H Cover open	Error
Set MP Tray	Error
Set ENV Tray	Error
Finisher is removed	Error
Manual Feed ssss ttt	Error
Invalid Size LC1	Error
Invalid Size LC2	Error
Invalid Size LC3	Error
Invalid Size LC4	Error
Invalid Size LC5	Error
Turn Paper LC1	Error
Turn Papger LC2	Error
Turn Papger LC3	Error
Can't print Duplex	Error
Paper Out ssss ttt	Error
Toner Oui	Error
Paper Set ssss ttt	Error
Print Oversun	Error
Mem Overflow	Error

Table 3-6. Printer Message

Message	Classification
Duplex Mem Overflow	Error
Invalid ROM B	Error
Write Error ROM P	Error
Reset to Save	Status
Writing ROM P	Status
Menu Locked (panel setting indication)	Warning
Collate was disabled	Warning
Image Optimum	Warning
Check Paper Type	Warning
Staple Limit	Warning
Stapler Align	Warning
Outbin Select Error	Warning
Need Memory	Warning
Format Feed (Indication during the test printing)	Status
Warming Up	Status
Toner Low	Warning
Office	Status
Standby	Status
Ready	Status

*Note*1): In case the paper jam occurs at several locations, indications appears at priority order; A, B, C, DM, D, MP, ENV, LC1,..., LC5, E, F, G, H. Maximum 4 locations are indicated.*

*Note*2)*: *If the toner cartridge is not installed "A Cover Open" also appears simultanenously Therefire, if several errors are detected, "Insert Imaging Crtg" and "A Cover Open" appears regardless of the Cover A condition.*

3.2.1 Printer Message

☐ MCU version up? (Error) (Not opened information)

- Explanation
  This error appears when there is no recognizable character lines of “EPSON” at the Machine Controller side at turning the power on.
- Remedy
  Only “Continue” switch is effective to cancel the error.

1. Press “Continue” switch, when you version up only MCU(Machine Controller). After writing the fixed information of the engine, which is stored in the controller and recognizable character lines of “EPSON” into the Machine Controller, the printer warmboots automatically. The fixed information of the engine to write is the value, which is red from the Machine Controller and stored, when the printer is activated normally last time.
2. When both or either Controller or Machine Controller is replaced with new one, perform “Initialization of EEPROM”. (See Chapter1 Product Description)

☐ XErrorr yyy(Error)

- Explanation
  This error appears when any troubles happen at the Paper Feed or Eject(Exit) devices.
- Remedy
  Turn off the printer once, and check the connection of the errored devices, and turn on the power again. If this does not recover the error, there is a possibility of malfunction.

☐ Jam XXXX (Error)

- Explanation
  Paper Jam occurred at the indicated part. If several parts are indicated, it means there are possibility of paper jam around that parts and does not mean the number of the jammed paper. Since the engine of this printer does not detect the paper size error, if the actually fed paper is longer or shorter than the appointed paper size at the printer size, the printer considers this condition as Paper Jam.
- Remedy
  If the paper jam occurs at the cover, open the indicated cover and remove the jammed paper. Then, close that cover.
  If paper jam occurs at the paper tray or ENV tray, remove the jammed paper and remove all papers in the paper tray or ENV tray once, and set them again. In case of cassette, pull out the indicated cassette, and remove the jammed paper and pull back the cassette.

☐ Face-down Full (Error)

- Explanation
  This error occurs when the printer eject the paper to the Face Down but the Face Down is full. Also, if multi-bin becomes full when printing at multi-bin mode, paper will be ejected from multi-bin to Face Down. In this case, if the Face Down becoes full, this error appears.
- Remedy
  Take papers from Face Down and press “Continue” switch. Then, the printer will resume printing.

- Multibin 1 ~ 10 Full (Error)
  - Explanation
    This error appears when the appointed Multi-bin becomes full.
  - Remedy
    Remove the papers from that bin and press “Continue” switch. The printer will resume printing.
- Finisher 1 ~ 3 Full (Error)
  - This error appears when the appointed Finisher becomes full.
  - Remedy
    Remove the papers from that Finisher and press “Continue” switch. The printer will resume printing.
- A-H Cover Open
  - Explanation
    Indicated cover is open.
  - Remedy
    Close that cover.
- Set MP Tray (Error)
  - Explanation
    This error appears when both paper tray and ENV tray are not installed when the printer is turned on.
  - Remedy
    Install the tray, then error is canceled automatically.
- Set ENV Tray (Error)
  - Explanation
    ENV is removed after turning the power on. Since the Cover is opened when the paper jam error occurs, the ENV might be left uninstalled. Or, non-ENV tray is installed.
  - Remedy
    Install the ENV tray. The error is cancelled automatically.
- Manual Feed ssss ttt (Error)
  - Explanation
    Although there is no setting menu on the panel, when the manual feed mode is selected by ESC/Page command, the printer indicates appointed paper size and feeding device before printing.
  - Remedy
    Press “Continue” switch or “On-line” switch. If there are papers in the appointed tray, the printer feeds paper from there. If not, the printer feeds paper from the device which has most priority. If there is no paper in any devices, this error appears again. Paper size error does not occur even the fed paper is different from the appointed size(tttt).
- Invalid Size LC1 ~ 5 (Error)
  - Explanation
    This error appears when the detected paper size is not supported or has undefined value.
  - Remedy
    Pull out the cassette and set the correct paper size. As soon as the correct paper size is detected, the error is canceled automatically.

- Turn Paper LC1 ~ 3 (Error)
  - Explanation
    This error appears when A4, LT or B5 size paper is set portrait(short edge first).
  - Remedy
    Reset the paper landscape(long edge first). The error is cancelled after closing the cassette.
- Can' Print Duplex (Error)
  - Explanation
    This error appears when duplex printing is not available according to its rules.
  - Remedy
    Pressing "Continue" switch will resume printing, but it will be one-side printing. If "Auto Error Cancel" is On on the device error, one-side printing will be resumed after a while. If the error cause is related to the setting of the paper feed device, duplex printing may resume after feeding setting is changed.
- Paper Set ssss ttt (Error)
  - Explanation
    This error appears when the paper size in the selected paper feeding device does not match with the paper size which is about to be printed out.
- Invalid Option (Error)
  - Explanation
    Finisher or HDD, which can not be used for this printer, is installed in the printer.
  - Remedy
    Turn off the power and remove the corresponding optional device. In case of the options which are supported for this printer, perform the version up of the firmware.
- Collate was disabled (Warning)
  - Explanation
    Due to the lack of memory, all necessary data becomes unable to be stored, as a result, appointed job printing can not be done. Or, copy number which exceeds the maximum bin number is requested.
    Only 1 copy from the fist page to the last page is printed.
- Check Paper Type (Warning)
  - Explanation
    When paper feeding device and paper type are selected automatically, this error appears in case that there is no device, which support both that paper size and paper type, or paper size matches but not paper type. If paper type and paper size matches but there is no paper in the device, this becomes Paper Out error, and this error does not appear.
- Outbin Select Error (Warning)
  - Explanation
    According to the rules of paper exit, the appointed paper exit becomes invalid, and paper is ejected to the other paper exit.

3.2.2 Service Req. Error

3.2.2.1 Engine Error

Following table lists service req. errors related to engine.

Table 3-7. Engine Error

Engine Code	Error Code	Explanation
U1-1	E0004	Abnormal Main Motor
U1-3, U4-9	E0005	Abnormal Fan
U3-5	E0006	Abnormal Polygon Motor
U6-3, U6-4, U6-5	E0008	Abnormal EEPROM related to engine
U3-1, U3-3, U3-4	E0009	Abnormal laser
--	E0014	Communication error related to engine
U4-1, U4-3	E0030	Abnormal Fuser(Time Over)
U4-2	E0032	Abnormal Fuser(Over Heat)
U6-2	E0038	Engine Memory Error

3.2.2.2 Controller Error

The table below shows service req. errors related to the controller.

Table 3-8. Controller Errors

Error Code ffff	Explanation
0017	CPU Error (Undefined interrupt)
0081	CPU Error (TLB modification exception)
0082	CPU Error (TLB-miss exception [Load/Fetch])
0083	CPU Error (TLB-miss exception [Store])
0084	CPU Error (Address Error Exception [Load/Fetch])
0085	CPU Error (Address Error Exception [Store])
0086	CPU Error (Bus error Exception [Fetch])
0087	CPU Error ((Bus error Exception [Load/Fetch])
0088	CPU Error (SYSCALL exception)
0089	CPU Error (Break exception)
0090	CPU Error (Reserved-command exception)
0091	CPU Error (Coprocessor-not-in-use exception)
0092	CPU Error (FPU exception)
0093	CPU Error (TLB exception)
0094	CPU Error (XLTB exception)
0095	CPU Error (Cache exception)
0096	CPU Error (Trap exception)
0097	CPU Error (FPU-error exception)
0098	CPU Error (Watch exception)
0128-0254	CPU Error (Undefined Trap)
0255	CPU Error (NMI exception)
0256	CPU Error (Division by 0)
0257	CPU Error (Calculation overflow)
0258	CPU Error (Break)
0800	IPL Error (Controller defect)
1002	Standard RAM Error (less than standard capacity)

Table 3-9. Controller Error

Error Code ffff	Explanation
1010	Verify Error
1020	RAM Error (Slot 0)
1021	RAM Error (Slot 1)
1022	RAM Error (Slot 2)
1100	RAM checksum error (bit 0 ~15) (font)
1101	RAM checksum error (bit 16 ~31) (program)
1120	RAM checksum error (bit 0 ~7) (program)
1121	RAM checksum error (bit 8 ~15) (program)
1122	RAM checksum error (bit 16 ~23) (program)
1123	ROM checksum error (bit 24 31) (program)
1170	Option FONT ROM Checksum
1180	Option FONT ROM Module A Checksum Error
1181	Option FONT ROM Module B Checksume Error
1185	No support ROM Module
1190	Cannot access Cartridge
1200	EEPROM Write Error
1210	EEPROM write counter overflow
1400	Engine Initialization fault
1700	Network Hardware Error
1999	Other hardware errors
2000	Software Error

3.2.3 Operation when Service Req. Error Occurs

When service req. errors happen, following functions are activated by pressing a particular switch.

- ☐ Reset CPU when service req. errors happen.
  Printer recovers from the error without turning off and on the printer.
  - ■ Operation
    Press Select Type(ALT), Menu, Item, Value switches and Enter switch.
- ☐ Error Sheet Printing
  Service req. errors by CPU reset will be printed. It can be useful for analyzing errors.
  - ■ Operation
    After resetting CPU, press Enter switch twice.

3.3 Printer Performance Problems(not indicated by Error Codes)

Before entering the error analysis, check following points.

1. Is the printer plugged into a recommended AC wall outlet?
2. Is the AC power provided at the wall outlet within recommended specifications?
3. Is the AC power cord connected to the printer?
4. Is the AC power cord in good condition; not frayed or broken?
5. Is the printer properly grounded through the AC wall outlet?
6. Is the printer located in an area where the temperature and humidity are moderate and stable?
7. Is the printer located in an area that is free of dust?
8. Is the printer located in an area away from water outlets, steamers, electric heaters, volatile gases, or open flames?
9. Is the printer shielded from the direct rays of the sun?
10. Does the printer have recommended space around all sides for proper ventilation?
11. Is the printer sitting on a level and stable surface?
12. Is recommended paper stock being used in the printer?
13. Does the customer use the printer as instructed in the User Manual?
14. Are consumables, such as the Print Cartridge (EP Cartridge), replaced at recommended intervals?

3.3.1 Inoperative Printer

Even when the main switch is turned on, LED on the Control Panel is not turned on, LCD is still blank and Fuser Fan does not rotate, and warm-up does not start.

Table 3-10. Inoperative Printer

Step	Actions and Questions	Yes	No
	Suspect Components The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears. • Fuser Assembly • HVPS Assembly • Main Drive Assembly • ROS Assembly • Wiring and connectors linking the components.		
1	AC power cord inspection **Inspect the AC Power Cord** **Is the AC power cord plugged into the back of the printer, and is the other end plugged into an AC wall outlet?**	Go to Step2	Insert AC power code into the printer and AC plug.

Table 3-11. Inoperative Printer

Step	Actions and Questions	Yes	No
2	**AC POWER CHECK** Check the voltage at the AC wall outlet. **Is there approximately 110VAC (or 220VAC if the printer is the 220VAC model) at the AC wall outlet?**	Go to step 3	Troubleshoot the AC power at the wall outlet
3	**ESS PWB CHECK** 1. Switch off the Main Switch. 2. Remove the ESS PWB 3. Switch on the Main Switch. **Do the Control Panel LEDs light up and does the printer go into warm-up?**	Replace the ESS PWB with a new one (See Chapter 4)	Go to step 4
4	**LVPS +5VDC CHECK** 1. Remove the Rear Cover. 2. Measure the voltage between J400-7 and FG, and between J400-8 and FG on the MCU PWB. **Is there +5VDC between J400-7 and FG, and is there +5VDC between J400-8 and FG.**	Go to step 5	Go to step 6
5	**LVPS +24VDC CHECK** Measure the voltage between J400-5 and FG, and between J400-6 and FG on the MCU PWB. **Is there +24VDC between J400-5 and FG, and is there +24VDC between J400-6 and FG?**	Go step 8	Go to step 6

Table 3-12. Inoperative Printer

Step	Actions and Questions	Yes	No
6	**AC POWER IN CHECK** Measure the voltage between J19-1 and J19-3 on the Noise Filter PWB. **Is there 110VAC between J19-1 and J19-3?**	Go to step 7	Replace the Noise Filter PWB (See Chapter 4)
7	**AC POWER TO LVPS CHECK** Measure the voltage between J20-1 and J20-3 on the AC Drive PWB. **Is there 110VAC between J20-1 and J20-3?**	Replace the LVPS Assembly (See Chapter 4)	Replace the Main Power Switch. (See Chapter 4)
8	**OPTION ISOLATION** Remove all options, such as the Duplex Unit or the High Capacity Feeder, from the base printer. **Do the Control Panel LEDs light up and does the printer go into warm-up?**	Replace the options one by one until the printer becomes inoperative again. Go to the Technical Manual of the problem option and troubleshoot for possible electrical short.	Go to Suspect Components

3.3.2 Erratic Operation

The printer has a variety of intermittent problems,but generally does not complete a print cycle. The problems are generally not identified by displayed Error Codes.

Table 3-13. Erratic Operation

Step	Actions and Questions	Yes	No
	SUSPECT COMPONENTS The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears. • Printer options		
1	**Does the printer frequently fail to enter printer warm-up or is the Control Panel frequently inoperative?**	Go to "Inoperative Printer	Go to Stpe2
2	**LVPS +5VDC UNDER LOAD CHECK** 1. Remove the Rear Cover. 2. Generate 50 Grid Test Patterns. 3. While the printing is generating the Test Patterns, measure the voltage between J400-7 and FG on the MCU PWB. **Does the +5VDC measured between J400-7 and FG remain relatively constant throughout the print run, and does not deviate more than a volt during the print run?**	Go to Step3	Replace the LVPS Assembly

Table 3-14. Erratic Operation

Step	Actions and Questions	Yes	No
3	**LVPS +24VDC UNDER LOAD CHECK** 1. Generate 50 Grid Test Patterns. 2. While the printing is generating the Test Patterns, measure the voltage between J400-5 and FG on the MCU PWB. **Does the +24VDC measured between J400-5 and FG remain relatively constant throughout the print run, and does not deviate more than a few volts during the print run?**	Go to step 4	Replace the LVPS Assembly. (See Chapter 4)
4	**TEST PRINT CHECK** **Was the printer able to generate all of the Test Prints requested in steps 2 and 3?**	Go to step 5	Replace the MCU PWB (See Chapter 4)
5	**TEST PRINT CHECK** **Does the printer stop and reset while making test prints?**	Go to FIP Electrical Noise	Go to step 6
6	**HOST SOFTWARE REPLACE-MENT** Reload the Host Drive Software or Host Application Software. **Does the printer still exhibit erratic operation?**	Go to step 7	Problem solved

Table 3-15. Erratic Operation

Step	Actions and Questions	Yes	No
7	**HOST/PRINTER INTERFACE CABLE REPLACEMENT** Replace the interface cable connecting the host to the printer. **Is the problem still present?**	Go to step 8	Problem solved
8	**ESS PWB REPLACEMENT** Replace the ESS PWB (See Chapter 4) Does the printer still exhibit erratic operation?	Go to Suspect Components	Problem solved

3.3.3 Inoperative Control Panel

The Control Panel LEDs, LCD, and /or Keypad do not function or do not function correctly.

Table 3-16. Inoperative Control Panel

Step	Actions and Questions	Yes	No
	SUSPECT COMPONENTS The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears. • Wiring and connectors linking the components. • ESS PWB		
1	**CONTROL PANEL TEST** 1. Remove the Control Panel from the Top Cover 2. Connect the Control Panel to P 410 on the MCU PWB.	Go to step 2	Go to step 3
2	**C262 MAIN CONTROLLER REPLACEMENT** Replace the C262 Main Controller Board. **Is the problem still present?**	Replace the MCU PWB (See Chapter 4)	Problem solved

Table 3-17. Inoperative Control Panel

Step	Actions and Questions	Yes	No
3	**LVPS +5VDC CHECK** Measure the voltage between J400-7 and FG, and between J400-8 and FG on the MCU PWB. **Is there +5VDC between J400-7 and FG, and is there +5VDC between J400-8 and FG.**	Replace the Control Panel.	Replace the LVPS Assembly.

3.3.4 Inoperative Main Drive Assembly

The Main Drive Assembly does not function.

Table 3-18. Inoperative Main Drive Assembly

Step	Actions and Questions	Yes	No
	SUSPECT COMPONENTS The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears. • No recommendations		
1	**MAIN DRIVE ASSEMBLY TEST** **Does the Main Motor run and do the gears of the Drive Assembly rotate normally?**	Replace the MCU PWB	Go to step 2
2	**MAIN DRIVE ASSEMBLY MANUAL TEST** Hand rotate (counter clockwise) the Main Motor. **Can you rotate the Main Motor and do the gears of the Drive Assembly rotate easily and without binding?**	Go to step 9	Go to step 3
3	**EP CARTRIDGE BINDING CHECK** 1. Remove the EP Cartridge. 2. Hand rotate (counter clockwise) the Main Motor. **Can you rotate the Main Motor and do the gears of the Drive Assembly rotate easily and without binding?**	Replace the EP Cartridge with a new one.	Go to step 4

Table 3-19. Inoperative Main Drive Assembly

Step	Actions and Questions	Yes	No
4	**FUSER ASSEMBLY BINDING CHECK** 1. Remove the Fuser Assembly. 2. Hand rotate (counter clockwise) the Main Motor. **Can you rotate the Main Motor and do the gears of the Drive Assembly rotate easily and without binding?**	Replace the Fuser Assembly with a new one.	Go to step 5
5	**EXIT DRIVE ASSEMBLY BINDING CHECK** 1. Lift the Exit Drive Assembly spring-loaded drive gear off of the Main Drive Assembly drive gear. 2. Hand rotate (counter clockwise) the Main Motor. **Can you rotate the Main Motor and do the gears of the Drive Assembly rotate easily and without binding?**	Replace the Exit Drive Assembly.	Go to step 6
6	**TRAY 2 DRIVE BINDING CHECK** 1. Lift the Tray 2 spring-loaded drive gear off of the Main Drive Assembly drive gear. 2. Hand rotate (counter clockwise) the Main Motor. **Can you rotate the Main Motor and do the gears of the Drive Assembly rotate easily and without binding?**	Replace Tray 2 Drive Assembly.	Go to step 7

Table 3-20. Inoperative Main Drive Assembly

Step	Actions and Questions	Yes	No
7	**REGISTRATION CLUTCH BINDING CHECK** 1. Remove the Registration Clutch. 2. Hand rotate (counter clockwise) the Main Motor. **Can you rotate the Main Motor and do the gears of the Drive Assembly rotate easily and without binding?**	Replace the Registration Clutch with a new one.	Go to step 8
8	**FEED CLUTCH BINDING CHECK** 1. Remove the Feed Clutch. 2. Hand rotate (counter clockwise) the Main Motor. **Can you rotate the Main Motor and do the gears of the Drive Assembly rotate easily and without binding?**	Replace the Feed Clutch with a new one.	Replace the Main Drive Assembly.
9	**LVPS +24VDC CHECK** Measure the voltage between J400-5 and FG, and between J400-6 and FG on the MCU PWB. **Is there +24VDC between J400-5 and FG, and is there +24VDC between J400-6 and FG?**	Replace the Main Drive Assembly.	Replace the LVPS Assembly.

3.3.5 Inoperative Paper Feed Drive

Paper feed drive does not work. The problem is not identified by a displayed Error Code.

Table 3-21. Inoperative Paper Feed Drive

Step	Actions and Questions	Yes	No
	SUSPECT COMPONENTS The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears. • LVPS Assembly • All paper path sensors • Wiring and connectors linking the components.		
1	**MAIN DRIVE ASSEMBLY TEST** 1. Remove all of the paper trays from the printer. **Does the Main Motor run and do the gears of the Drive Assembly rotate normally?**	Go to step 2	Go to FIP Inoperative Main Drive Assembly
2	**Is the problem with MSI feed?**	Go to step 4	Go to step 3
3	**TRAY 1 FEED CLUTCH TEST** While the Main Motor is running under 8-1, run Output Test 8-12 to actuate Tray 1 Feed Clutch. **Does the Feed Clutch actuate and do the Feed Rolls rotate?**	Go to step 5	Replace the Tray 1 Feed Clutch.
4	**MSI FEED CLUTCH TEST** **Does the MSI Feed Clutch actuate and do the MSI Feed Rolls rotate?**	Go to step 5	Replace the MSI Feed Clutch.
5	**TEST PRINT STRESS TEST** 1. Generate 100 to 200 Grid Test Patterns. 2. Carefully observe the Main Drive Assembly and Feed Clutches as the test runs. **Does the test suddenly stop; without any visible paper jam and without any Error Code displayed?**	Go to step 6	Treat as an intermittent
6	**NO PAPER SENSOR REPLACEMENT** 1. Replace the No-Paper Sensor in the paper tray used in step 5 2. Generate 100 to 200 Grid Test Patterns. 3. Carefully observe the Main Drive Assembly and Feed Clutches as the test runs. **Does the test suddenly stop; without any visible paper jam and without any Error Code displayed?**	Replace the MCU PWB.	Go to Suspect Components

3.3.6 J1-2 is not displayed when the EP Cartridge is out of toner

The Control Panel LCD does not display the code J1-2 when the EP Cartridge is out of toner.

Table 3-23. J1-2 is not displayed when the EP cartridge is out

Step	Actions and Questions	Yes	No
	SUSPECT COMPONENTS The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears. • LVPS Assembly • ESS PWB • Wiring and connectors linking the components.		
1	**TONER SENSOR TEST** 1. Insert and remove a new EP Cartridge into the printer. **Does the Control Panel LCD display L when the EP Cartridge is in place, and does the LCD display H when you remove the Cartridge?**	Replace the MCU PWB.	Replace the Toner Sensor.

3.3.7 Inoperative Interlock Switch

The Control Panel LCD either does not display an interlock open Error Code whenever a specific door or cover is open, or it does not display an interlock open Error Code when a specific door or cover is closed.

Table 3-24. Inoperative Interlock Switch

Step	Actions and Questions	Yes	No
	SUSPECT COMPONENTS The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears. • Wiring and connectors linking the components. • Printer cover or door		
1	**INTERLOCK SWITCH TEST** 1. Manually actuate and deactuate the switch. **Does the Control Panel LCD display a number that advances by one digit each time you actuate or deactuate the interlock switch?**	Replace the MCU PWB.	Replace the Left Lower Cover Interlock Switch or the Left Cover Interlock Switch.

3.3.8 Inoperative Offset

The Offset function does not work or does not work correctly.

Table 3-25. Inoperative Offset

Step	Actions and Questions	Yes	No
	SUSPECT COMPONENTS The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears. • Wiring and connectors linking the components. • LVPS Assembly		
1	**MAIN DRIVE ASSEMBLY INSPECTION** 1. Remove the Rear Cover Assembly **Does the Main Motor run and do the gears of the Drive Assembly rotate normally?**	Go to step 2	Go to FIP Inoperative Main Drive Assembly
2	**EXIT DRIVE TEST** 1. Remove the Fuser Full Cover. **Does the Exit Motor run forward during 10-6 and reverse during 10-7?**	Go to step 3	Replace the Exit Drive Assembly.

Table 3-26. Inoperative Offset

Step	Actions and Questions	Yes	No
3	**OFFSET TEST** **Does the Offset Roll shift away from the Exit Motor during 10-6 and toward the Motor during 10-7?**	Go to step 4	Replace the Offset Unit Assembly.
4	**MCU PWB REPLACEMENT** Replace the MCU PWB **Does Offset work correctly?**	Problem solved	Go to Suspect Components

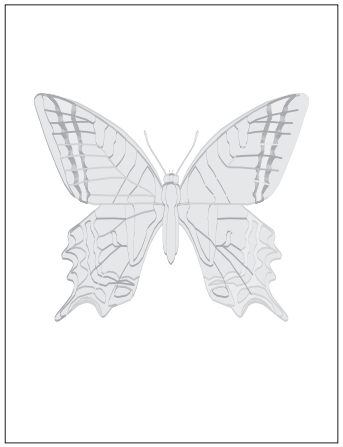
3.4 Image Quality FIPs

The FIP Flowchart or a Primary FIP should have directed you to this section.

Before entering the Image Quality FIPs:

1. Is the printer plugged into a recommended AC wall outlet?
2. Is the AC power provided at the wall outlet within recommended specifications?
3. Is the AC power cord connected to the printer?
4. Is the AC power cord in good condition; not frayed or broken?
5. Is the printer properly grounded through the AC wall outlet?
6. Is the printer located in an area where the temperature and humidity are moderate and stable?
7. Is the printer located in an area that is free of dust?
8. Is the printer located in an area away from water outlets, steamers, electric heaters, volatile gases, or open flames?
9. Is the printer shielded from the direct rays of the sun?
10. Does the printer have recommended space around all sides for proper ventilation?
11. Is the printer sitting on a level and stable surface?
12. Is recommended paper stock being used in the printer?
13. Does the customer use the printer as instructed in the User Manual?
14. Have consumables, such as the EP Cartridge, been replaced at the recommended interval?

3.4.1 Light(Undertoned) Prints



☐Problem

The overall image density is too light. The image may also be unfused due to insufficient image density.

☐SUSPECT COMPONENTS

The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears.

- ROS Assembly
- MCU PWB

Table 3-27. Light Prints

Step	Actions and Questions	Yes	No
1	**PAPER INSPECTION** **Is the paper wrinkled or dimpled?**	Load fresh, dry paper.	Go to step 2
2	**EP CARTRIDGE REPLACEMENT** Install a new EP Cartridge (CRU). **Is the image density normal?**	Problem solved	Go to step 3

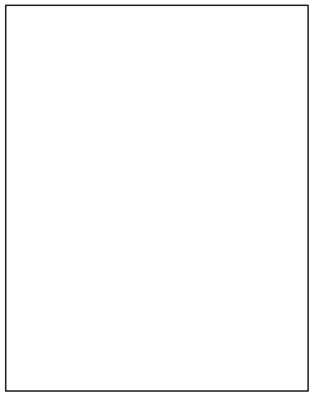
Table 3-28. Light Prints

Step	Actions and Questions	Yes	No
3	**IMAGE DEVELOPMENT INSPECTION** 1. Remove the Rear Cover. 2. Generate a Grid Test Print and switch OFF printer power halfway through the print cycle. 3. Open the Left Upper Cover. 4. Open the Drum Shutter. 5. Hand rotate (counter clockwise) the Main Drive Motor to advance the Drum far enough so you can see the developed image area on the Drum before it reached Transfer. **Is the image on the drum completely developed; with sharp, black, easily read areas?**	Go to step 4	Replace the HVPS Assembly
4	**IMAGE TRANSFER INSPECTION** 1. Carefully remove the Test Print generated in step 3. 2. Inspect the print. **Was the toner image on the drum transferred completely to the paper. And are the grid lines black and unbroken?**	Go to step 5	Replace the BTR Assembly. If the problem persists, replace the HVPS Assembly

Table 3-29. Light Prints

Step	Actions and Questions	Yes	No
5	**FUSER INSPECTION** 1. Generate another Grid Test Print and switch OFF printer power when the print is halfway through the Fuser. 2. Open the Left Upper Cover. 3. Examine the paper areas before the image enters the Fuser and after the image exits the Fuser. **Is the image normal before it enters the Fuser, but light when it exits the Fuser?**	Replace the Fuser Assembly.	Go to Suspect Components

3.4.2 Blank White



SCO002F

☐Problem
The entire print is blank.

☐SUSPECT COMPONENTS
The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears.

•MCU PWB
•CRU Connector and Contact Springs

Table 3-30. Blank White

Step	Actions and Questions	Yes	No
1	**CONTROLLER OR HOST SOFTWARE ISOLATION** Generate a Grid Test Print. **Is the test print image normal?**	Troubleshoot or replace the ESS PWB or reload the Host Driver Software	Go to step 2
2	**EP CARTRIDGE REPLACEMENT** Install a new EP Cartridge. **Is there a normal image on the paper?**	Problem solved	Go to step 3

Table 3-31. Blank White

Step	Actions and Questions	Yes	No
3	**IMAGE DEVELOPMENT INSPECTION** 1. Remove the Rear Cover. 2. Generate a Grid Test Print and switch OFF printer power halfway through the print cycle. 3. Open the Left Upper Cover. 4. Open the Drum Shutter. 5. Hand rotate (counter clockwise) the Main Drive Motor to advance the Drum far enough so you can see the developed image area on the Drum before it reached Transfer. **Is the image on the drum completely developed; with sharp, black, easily read areas?**	Go to step 4	Replace the HVPS Assembly.
4	**IMAGE TRANSFER INSPECTION** 1. Carefully remove the Test Print generated in step 3. 2. Inspect the print. **Was the toner image on the drum transferred completely to the paper. And are the grid lines black and unbroken?**	Suspect an intermittent problem. Replace the MCU PWB and/or refer to the wiring diagrams Section 14 and check for a broken wire or loose connection between components in the Xerographic sections of the printer.	Replace the BTR Assembly. If the problem persists, replace the HVPS Assembly

3.4.3 Black Prints

SCO003F

☐Problem
The entire print is black.

☐SUSPECT COMPONENTS
The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears.

•LVPS Assembly

Table 3-32. Black Prints

Step	Actions and Questions	Yes	No
1	**ROS WINDOW INSPECTION** 1. Remove the EP Cartridge. 2. Inspect the ROS Window for a sheet of paper that may have lodged in front of it and could be blocking the laser beam from reaching the Drum. **Is the ROS Window free of paper?**	Go to step 2	Remove the paper
2	**CONTROLLER OR HOST SOFTWARE ISOLATION** Generate a Grid Test Print. **Is the test print image normal?**	Replace the ESS PWB or reload the Host Software	Go to step 3

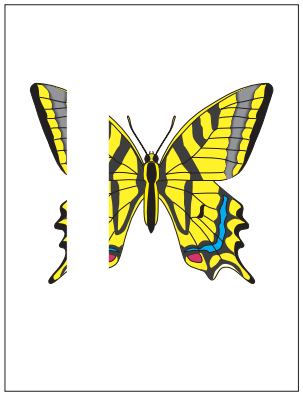
Table 3-33. Black Prints

Step	Actions and Questions	Yes	No
3	**EP CARTRIDGE REPLACEMENT** Install a new EP Cartridge **Is there a normal image on the paper?**	Problem solved	Go to step 4
4	**IMAGE DEVELOPMENT INSPECTION** 1. Remove the Rear Cover 2. Generate a Grid Test Print and switch OFF printer power halfway through the print cycle. 3. Open the Left Upper Cover. 4. Open the Drum Shutter. 5. Hand rotate (counter clockwise) the Main Drive Motor to advance the Drum far enough so you can see the developed image area on the Drum before it reached Transfer. **Is the image on the drum completely developed; with sharp, black, easily read areas and clear, white areas?**	Replace the BTR Assembly.	Go to step 5
5	MAIN CONTROLLER(C262MAIN) BOARD REPLACEMET 1. Replace the Main Controller Board(C262 Main). 2. Generate a Grid Test Print. **Is the printed Test Pattern normal?**	Problem solved	Go to step 6

Table 3-34. Black Prints

Step	Actions and Questions	Yes	No
6	**MCU PWB REPLACEMENT** 1. Replace the MCU PWB. 2. Generate a Grid Test Print. **Is the printed Test Pattern normal?**	Problem solved	Go to step 7
7	**ROS REPLACEMENT** 1. Replace the ROS Assembly. 2. Generate a Grid Test Print. **Is the printed Test Pattern normal?**	Problem solved	Refer to the wiring diagrams Section 14 and check for a broken wire or loose connection between components in the Xerographic sections of the printer.

3.4.4 Vertical Band Deletions



☐Problem

There are areas of the image that are extremely light or missing entirely. These missing areas form wide bands that run vertically along the page, in the direction of paper travel.

☐SUSPECT COMPONENTS

The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears.

- **No recommendations**

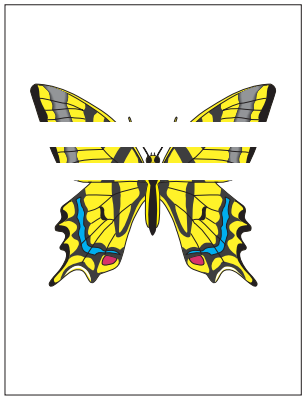
Table 3-35. Vertical Band Deletions

Step	Actions and Questions	Yes	No
1	**ROS WINDOW INSPECTION** 1. Remove the EP Cartridge. 2. Inspect the ROS Window for a scrap of paper or other contamination that may have lodged in front of it and could be blocking part of the laser beam from reach the Drum. **Is the ROS Window free of paper or other contamination?**	Go to step 2	Remove the paper scrap or clean the ROS window.
2	**PAPER INSPECTION** **Is the paper wrinkled or dimpled?**	Load fresh, dry paper.	Go to step 3

Table 3-36. Vertical Band Deletions

Step	Actions and Questions	Yes	No
3	**EP CARTRIDGE REPLACEMENT** Install a new EP Cartridge (CRU). **Are the vertical band deletions gone?**	Problem solved	Go to step 4
4	**IMAGE TRANSFER INSPECTION** 1. Remove the Rear Cover. 2. Generate a Solid Black Test Print and switch OFF printer power halfway through the print cycle. 3. Open the Left Upper Cover. 4. Open the Drum Shutter. 5. Hand rotate (counter clockwise) the Main Drive Motor to advance the Drum far enough so you can see the developed image area on the Drum before it reached Transfer. **Before Transfer was the toner image on the drum normal and without vertical band deletions?**	Go to step 5	Replace the BTR Assembly.
5	**FUSER INSPECTION** 1. Generate another Solid Black Test Print and switch OFF printer power when the print is halfway through the Fuser. 2. Open the Left Upper Cover. 3. Examine the paper areas before the image enters the Fuser and after the image exits the Fuser. **Is the image on the paper normal before it enters the Fuser, but there are vertical band deletions visible when it exits the Fuser?**	Replace the Fuser Assembly.	Go to Suspect Components.

3.4.5 Horizontal Band Deletions



☐Problem

There are areas of the image that are extremely light or missing entirely. These missing areas form wide bands that run horizontally across the page, parallel with the direction of paper travel.

☐SUSPECT COMPONENTS

The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears.

- **CRU Connector and Contact Springs.**
- **MCU PWB.**
- **Fuser Assembly**

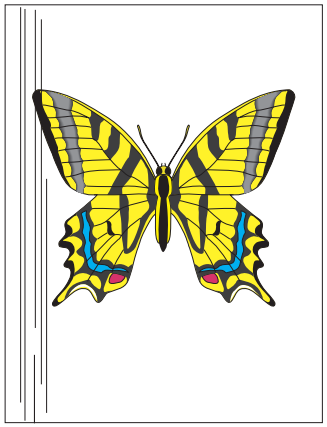
Table 3-37. Horizontal Band Deletions

Step	Actions and Questions	Yes	No
1	**PAPER INSPECTION** **Is the paper wrinkled or dimpled?**	Replace with fresh, dry paper	Go to step 2
2	**EP CARTRIDGE REPLACEMENT** Install a new EP Cartridge. **Are the horizontal band deletions gone?**	Problem solved	Go to step 3

Table 3-38. Horizontal Band Deletions

Step	Actions and Questions	Yes	No
3	**IMAGE TRANSFER INSPECTION** 1. Remove the Rear Cover. 2. Generate a Solid Black Test Print and switch OFF printer power halfway through the print cycle. 3. Open the Left Upper Cover. 4. Open the Drum Shutter. 5. Hand rotate (counter clockwise) the Main Drive Motor to advance the Drum far enough so you can see the developed image area on the Drum before it reached Transfer. **Before Transfer was the toner image on the drum normal and without horizontal band deletions, but there are deletions on the paper after Transfer?**	Go to step 4	Replace the BTR Assembly, then go to step 4
4	**HVPS CHECK** Generate a Solid Black Test Print. **Is the Test Print normal, with no horizontal band deletions?**	Problem solved	Replace the HVPS Assembly.

3.4.6 Vertical Streaks



☐Problem
There are black lines running vertically along the page.

☐SUSPECT COMPONENTS
The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears.

- **No recommendations**

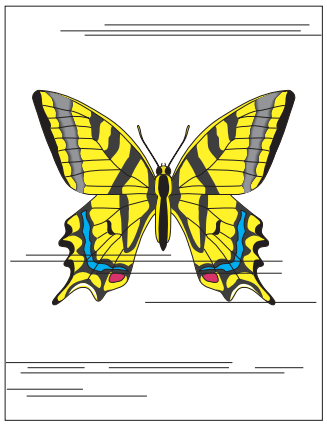
Table 3-39. Vertical Streaks

Step	Actions and Questions	Yes	No
1	**PAPER PATH INSPECTION** Inspect the paper path, between feed and exit, for contamination or obstructions. **Is the paper path free of contamination or obstructions?**	Go to step 2	Remove contamination and obstructions from the paper path.
2	**ROS WINDOW INSPECTION** 1. Remove the EP Cartridge. 2. Inspect the ROS Window for contamination that could be blocking part of the laser beam from reach the Drum. **Is the ROS Window clean?**	Go to step 3	Clean ROS window

Table 3-40. Vertical Streaks

Step	Actions and Questions	Yes	No
3	**EP CARTRIDGE REPLACEMENT** Install a new EP Cartridge (CRU). **Are the vertical streaks gone?**	Problem solved	Go to step 4
4	**IMAGE TRANSFER INSPECTION** 1. Remove the Rear Cover (RRP 1.3). 2. Generate a Grid Test Print and switch OFF printer power halfway through the print cycle. 3. Open the Left Upper Cover. 4. Open the Drum Shutter. 5. Hand rotate (counter clockwise) the Main Drive Motor to advance the Drum far enough so you can see the developed image area on the Drum before it reached Transfer. **Before Transfer was the toner image on the drum normal and without vertical streaks, but there are vertical streaks on the paper after Transfer?**	Go to step 5	Replace the BTR Assembly.
5	**FUSER INSPECTION** 1. Generate another Grid Test Print and switch OFF printer power when the print is halfway through the Fuser. 2. Open the Left Upper Cover. 3. Examine the paper areas before the image enters the Fuser and after the image exits the Fuser. **Is the image on the paper normal before it enters the Fuser, but there are vertical streaks visible when it exits the Fuser?**	Replace the Fuser Assembly.	Replace the ROS Assembly.

3.4.7 Horizontal Streaks



☐Problem
There are black lines running horizontally across the page.

☐SUSPECT COMPONENTS
The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears.

- **MCU PWB**
- **CRU Connector and Contact Springs**

Table 3-41. Horizontal Streaks

Step	Actions and Questions	Yes	No
1	**EP CARTRIDGE REPLACEMENT** Install a new EP Cartridge. **Are the horizontal streaks gone?**	Problem solved	Go to step 2

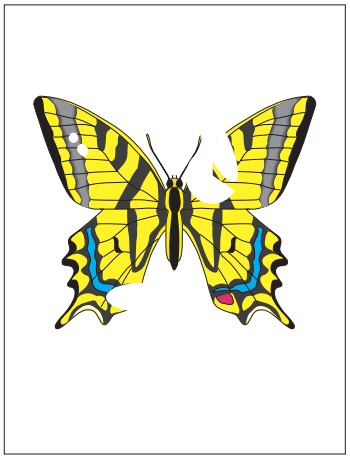
Table 3-42. Horizontal Streaks

Step	Actions and Questions	Yes	No
2	**IMAGE DEVELOPMENT INSPECTION** 1. Remove the Rear Cover. 2. Generate a Blank Test Print and switch OFF printer power halfway through the print cycle. 3. Open the Left Upper Cover. 4. Open the Drum Shutter. 5. Hand rotate (counter clockwise) the Main Drive Motor to advance the Drum far enough so you can see the developed image area on the Drum before it reached Transfer. **Is the image on the drum completely white; without any horizontal streaks visible?**	Go to step 3	Replace the ROS Assembly.
3	**IMAGE TRANSFER INSPECTION** Inspect the Blank Test Print you generated in step 2. **Are horizontal streaks visible on the paper after Transfer?**	Replace the BTR Assembly.	Go to step 4
4	**FUSER INSPECTION** 1. Generate another Blank Test Print and switch OFF printer power when the print is halfway through the Fuser. 2. Open the Left Upper Cover. 3. Examine the paper areas before the image enters the Fuser and after the image exits the Fuser. **Is the image on the paper normal before it enters the Fuser, but there are horizontal streaks visible when it exits the Fuser?**	Replace the Fuser Assembly.	Go to step 5

Table 3-43. Horizontal Streaks

Step	Actions and Questions	Yes	No
5	**C262 MAIN CONTROLLER REPLACEMENT** Replace the C262 Main Board. **Are the horizontal streaks gone?**	Problem solved	Go to step 6
6	**HVPS REPLACEMENT** Replace the HVPS Assembly. **Are the horizontal streaks gone?**	Problem solved	Go to Suspect Components

3.4.8 Spot Deletions



☐Problem

There are areas of the image that are extremely light or missing entirely. These missing areas form spots that are localized to small areas of the page.

☐SUSPECT COMPONENTS

The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears.

- **No recommendations**

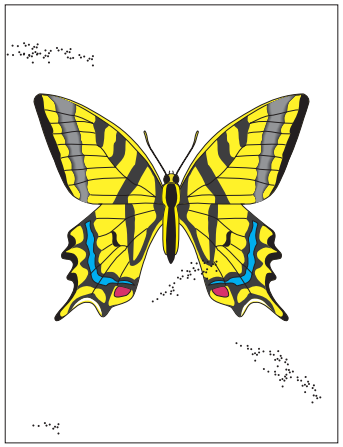
Table 3-44. Spot Deletions

Step	Actions and Questions	Yes	No
1	**PAPER INSPECTION** **Is the paper wrinkled or dimpled?**	Replace with fresh, dry paper	Go to step 2
2	**EP CARTRIDGE REPLACEMENT** Install a new EP Cartridge. **Are the spot deletions gone?**	Problem solved	Go to step 3

Table 3-45. Spot Deletions

Step	Actions and Questions	Yes	No
3	**IMAGE TRANSFER INSPECTION** 1. Remove the Rear Cover. 2. Generate a Black Test Print and switch OFF printer power halfway through the print cycle. 3. Open the Left Upper Cover. 4. Open the Drum Shutter. 5. Hand rotate (counter clockwise) the Main Drive Motor to advance the Drum far enough so you can see the developed image area on the Drum before it reached Transfer. **Before Transfer was the toner image on the drum normal and without spot deletions, but there are spot deletions on the paper after Transfer?**	Replace the BTR Assembly.	Go to step 4
4	**FUSER INSPECTION** 1. Generate another Black Test Print and switch OFF printer power when the print is halfway through the Fuser. 2. Open the Left Upper Cover. 3. Examine the paper areas before the image enters the Fuser and after the image exits the Fuser. **Is the image on the paper normal before it enters the Fuser, but there are spot deletions visible when it exits the Fuser?**	Replace the Fuser Assembly.	Replace the paper with fresh, dry paper. If problem continues, thoroughly clean the inside of the printer.

3.4.9 Spots



☐Problem
There are spots of toner randomly scattered across the page.

☐SUSPECT COMPONENTS
The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears.

- **No recommendations**

Table 3-46. Spots

Step	Actions and Questions	Yes	No
1	**EP CARTRIDGE INSPECTION** 1. Remove the EP Cartridge. 2. Inspect the outside of the Cartridge. 3. Open the Shutter and inspect the Drum. **Is the EP Cartridge dirty and is it leaking toner?**	Replace the EP Cartridge	Go to step 2

Table 3-47. Spots

Step	Actions and Questions	Yes	No
2	**INTERIOR INSPECTION AND CLEANING** 1. With the EP Cartridge removed, inspect the interior of the printer for toner contamination. 2. Vacuum or wipe all interior surfaces, including Feed Rolls. 3. Generate 30 Blank Test Prints to clean out the printer. 4. Examine the last print out. **Are the spots gone?**	Problem solved	Go to step 3
3	**IMAGE TRANSFER INSPECTION** 1. Remove the Rear Cover. 2. Generate a Blank Test Print and switch OFF printer power halfway through the print cycle. 3. Open the Left Upper Cover. 4. Open the Drum Shutter. 5. Hand rotate (counter clockwise) the Main Drive Motor to advance the Drum far enough so you can see the developed image area on the Drum before it reached Transfer. **Is the paper clean before Transfer, but there are spots on the paper after Transfer?**	Replace the BTR Assembly.	Go to step 4

Table 3-48. Spots

Step	Actions and Questions	Yes	No
4	**FUSER INSPECTION** 1. Generate another Blank Test Print and switch OFF printer power when the print is halfway through the Fuser. 2. Open the Left Upper Cover. 3. Examine the paper areas before the image enters the Fuser and after the image exits the Fuser. **Is paper clean before it enters the Fuser, but there are spots on the paper when it exits the Fuser?**	Replace the Fuser Assembly.	Clean or replace the Offset/Exit Assembly.

3.4.10 Residual Image or Ghosting

☐Problem

There are faint, ghost images appearing randomly on the page. The images may be either from a previous page or from the page currently being printed.

☐SUSPECT COMPONENTS

The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears.

- **MCU PWB**

Table 3-49. Residual Image or Ghosting

Step	Actions and Questions	Yes	No
1	**CUSTOMER USAGE INSPECTION** Inspect the residual images. **Was the customer printing numerous copies of the same image?**	Go to step 2	Go to step 3

Table 3-50. Residual Image or Ghosting

Step	Actions and Questions	Yes	No
2	Generate a print run of 30 pages of varying images. **Do residual images still appear?**	Go to step 3	Problem solved. Avoid printing numerous copies of the same image.
3	**EP CARTRIDGE REPLACEMENT** Install a new EP Cartridge. **Are the ghost images gone?**	Problem solved	Go to step 4
4	**FUSER INSPECTION** 1. Generate ten Grid Test Prints and switch OFF printer power when the last print is halfway through the Fuser. 2. Carefully remove the EP Cartridge and inspect the toner image on the print before it enters the Fuser and immediately after it exits the Fuser. **Is the image on the paper normal before it enters the Fuser, but there are ghost images on the paper when it exits the Fuser?**	Replace the Fuser Assembly.	Replace the BTR Assembly.

3.4.11 Background

☐Problem

There is toner contamination on all or part of the page. The contamination appears as a very light gray dusting.

☐SUSPECT COMPONENTS

The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears.

- **HVPS Assembly**
- **MCU PWB**
- **C262 Main Controller Board**

Table 3-51. Background

Step	Actions and Questions	Yes	No
1	**EP CARTRIDGE REPLACEMENT** Install a new EP Cartridge. **Is the background gone?**	Problem solved	Go to step 2

Table 3-52. Background

Step	Actions and Questions	Yes	No
2	**IMAGE DEVELOPMENT INSPECTION** 1. Remove the Rear Cover. 2. Generate a Blank Test Print and switch OFF printer power halfway through the print cycle. 3. Open the Left Upper Cover. 4. Open the Drum Shutter. 5. Hand rotate (counter clockwise) the Main Drive Motor to advance the Drum far enough so you can see the developed image area on the Drum before it reached Transfer. **Is the image on the drum completely clean; without any noticeable background toner?**	Go to step 3	Replace the ROS Assembly
3	**IMAGE TRANSFER INSPECTION** 1. Remove the Rear Cover. 2. Generate a Blank Test Print and switch OFF printer power halfway through the print cycle. 3. Open the Left Upper Cover. 4. Open the Drum Shutter. 5. Hand rotate (counter clockwise) the Main Drive Motor to advance the Drum far enough so you can see the developed image area on the Drum before it reached Transfer. **Before Transfer was the drum clean and without noticeable background toner, but there was background visible on the paper after Transfer?**	Replace the BTR Assembly.	Go to step 4

Table 3-53. Background

Step	Actions and Questions	Yes	No
4	**FUSER INSPECTION** 1. Generate another Blank Test Print and switch OFF printer power when the print is halfway through the Fuser. 2. Open the Left Upper Cover. 3. Examine the paper areas before the image enters the Fuser and after the image exits the Fuser. **Is paper clean before it enters the Fuser, but there is background on the paper when it exits the Fuser?**	Replace the Fuser Assembly.	Go to Suspect Components

3.4.12 Skewed Image

☐Problem

The printed image is not parallel with the sides of the page.

SUSPECT COMPONENTS

The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears.

•ROS Assembly

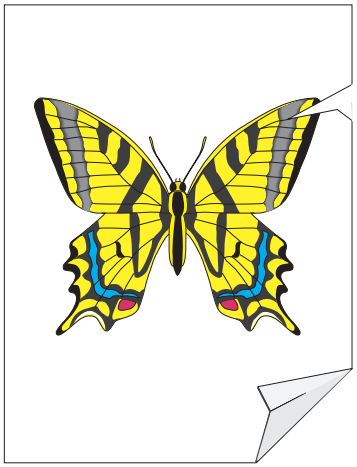
Table 3-54. Skewed Image

Step	Actions and Questions	Yes	No
1	**PAPER FEED INSPECTION** **Are the paper cassettes installed correctly, and is the paper correctly loaded into each cassette?**	Go to step 2	Reload the paper and reinstall the cassettes.
2	**PAPER PATH INSPECTION** Inspect the paper path, between the feed tray and the exit tray, for contamination or obstructions. **Is the paper path free of obstructions?**	Go to step 3	Remove obstructions or contamination from the paper path.

Table 3-55. Skewed Image

Step	Actions and Questions	Yes	No
3	**FEED, NUDGER, AND RETARD ROLL REPLACEMENT** Replace the Feed Roll, Nudger Roll, and Retard Roll for the Feeder having the skew problem. **Is the image still skewed?**	Go to step 4	Problem solved
4	**REGISTRATION ROLL REPLACEMENT** Replace the Registration Roll. **Is the image still skewed?**	Replace the EP Cartridge	Problem solved

3.4.13 Damaged Prints



☐Problem
The printed page comes out of the printer either wrinkled, creased, or torn.

☐SUSPECT COMPONENTS
The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears.

- **No recommendations**

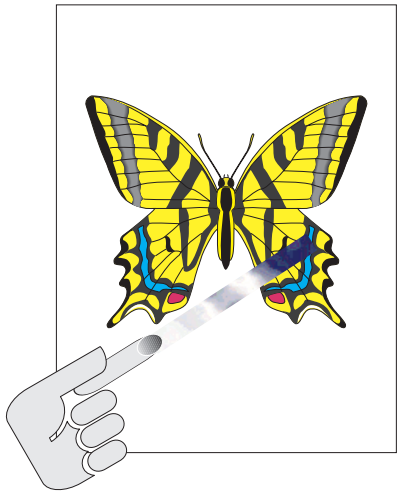
Table 3-56. Damaged Prints

Step	Actions and Questions	Yes	No
1	**PAPER INSPECTION** Inspect the paper that is loaded in the Feeder that is having the damage problem **Is the paper in the Feeder already wrinkled, creased, or torn?**	Replace with fresh, dry paper	Go to step 2
2	**PAPER PATH INSPECTION** Inspect the paper path, between the feed tray and the exit tray, for paper scrap, obstructions, or broken printer components. **Is the paper path clear and there are no broken components?**	Go to step 3	Clear the paper path or replace the broken component.

Table 3-57. Damaged Image

Step	Actions and Questions	Yes	No
3	**PAPER FEED INSPECTION** Run a Grid Test Print and switch OFF printer power halfway through the print cycle. Open the Left Upper Cover. **Is the paper fed crooked?**	Go to FIP Skewed Image	Go to step 4
4	**PAPER PATH ROLLS INSPECTION** Inspect all of the rolls along the paper path, between the feed tray and the exit tray, for contamination, wear, or damage. **Are the paper path rolls free of contamination, wear, or damage?**	Go to step 5	Replace any damaged or worn rolls.
5	**EP CARTRIDGE INSPECTION** 1. Run a Grid Test Print and switch OFF printer power before the sheet of paper reaches the Fuser. 2. Open the Left Upper Cover. **Is the paper damaged before it reaches the Fuser?**	Replace the EP Cartridge and/or the BTR Assembly.	Go to step 6
6	**FUSER INSPECTION** 1. Run another Grid Test Print and switch OFF printer power when the print is halfway through the Fuser. 2. Open the Left Upper Cover. 3. Examine the paper areas before the image enters the Fuser and after the image exits the Fuser. **Is paper undamaged before it enters the Fuser, but there is damage visible as it exits the Fuser?**	Replace the Fuser Assembly.	Clean or replace the Offset/Exit Assembly.

3.4.14 Unfused Image or Image Easily Rubbed Off



☐Problem
The printed image is not fully fused to the paper. The image easily rubs off.

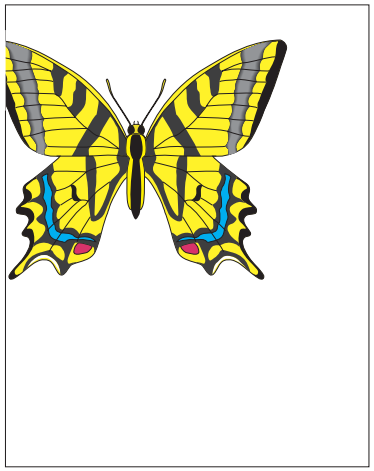
☐SUSPECT COMPONENTS
The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears.

- **MCU PWB**
- **AC Drive PWB**

Table 3-58. Unfused Image or Image Easily Rubbed Off

Step	Actions and Questions	Yes	No
1	**PAPER INSPECTION** **Is the paper wrinkled or dimpled?**	Replace with fresh, dry paper	Go to step 2
2	**IMAGE DENSITY INSPECTION** Run a Black Test Print. **Is the Test Print a rich, dark gray?**	Replace the Fuser Assembly.	Go to Image Quality FIP Light (Undertoned) Prints

3.4.15 Image not Registered Correctly



☐Problem
The printed image is not centered on the page or is bleeding off of the page.

☐SUSPECT COMPONENTS
The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears.

- **ROS Assembly**
- **C262 Main Controller Board**

3.5 Secondary FIPs

The FIP Flowchart or a Primary FIP should have directed you to this section. Before entering the Secondary FIPs:

1. Is the printer plugged into a recommended AC wall outlet?
2. Is the AC power provided at the wall outlet within recommended specifications?
3. Is the AC power cord connected to the printer?
4. Is the AC power cord in good condition; not frayed or broken?
5. Is the printer properly grounded through the AC wall outlet?
6. Is the printer located in an area where the temperature and humidity are moderate and stable?
7. Is the printer located in an area that is free of dust?
8. Is the printer located in an area away from water outlets, steamers, electric heaters, volatile gases, or open flames?
9. Is the printer shielded from the direct rays of the sun?
10. Does the printer have recommended space around all sides for proper ventilation?
11. Is the printer sitting on a level and stable surface?
12. Is recommended paper stock being used in the printer?
13. Does the customer use the printer as instructed in the User Manual?
14. Are consumables, such as the EP Cartridge, replaced at recommended intervals?

Table 3-59. Electrical Noise Troubleshooting

Step	Actions and Questions	Yes	No
	SUSPECT COMPONENTS The following components are associated with this specific problem. One or more of these components may have failed partially or completely. If you cannot isolate the problem using this FIP, replace each component listed below, one at a time, until the problem disappears. • Lift Up Motors • Feed Clutches • ROS Assembly. • Offset Unit. • ESS PWB.		
1	**EXTERNAL NOISE** 1. Check if there is other electrical equipment, such as electrical generators, radio transmitters, or devices using electrical motors, within ten feet of the printer. 2. Shut off the other electrical equipment or relocate the printer at least twenty feet away from the other devices. **Is the Electrical Noise problem still present?**	Go to step 2	Permanently relocate either the printer or the problem device.

Table 3-60. Electrical Noise Troubleshooting

Step	Actions and Questions	Yes	No
2	**OPTION ISOLATION** If the printer has options installed, such as Duplex Unit or the High Capacity Feeder, remove each option one at a time, and see how the printer operations without that option installed. **Does the Electrical Noise problem go away when you remove a specific option?**	Go to step 3	Go the Technical Manual for the problem option and troubleshoot for arcing solenoids, motor, or faulty PWBs or wiring.
3	**AC GROUND** Check the AC wall outlet. **Is the AC wall outlet correctly wired and grounded?**	Go to step 4	Repair the AC wall outlet
	Steps 4 through 11 attempt to find a faulty printer component that may be generating electrical noise. If replacing a component does not solve the problem, reinstall the old component before moving on to the next step.		
4	**EP CARTRIDGE REPLACEMENT** Replace the EP Cartridge **Is the Electrical Noise problem still present?**	Go to step 5	Problem solved
5	**MAIN SWITCH REPLACEMENT** Replace the Main Power Switch. **Is the Electrical Noise problem still present?**	Go to step 6	Problem solved

Table 3-61. Electrical Noise Troubleshooting

Step	Actions and Questions	Yes	No
6	**HVPS REPLACEMENT** Replace the HVPS Assembly. **Is the Electrical Noise problem still present?**	Go to step 7	Problem solved
7	**AC DRIVER REPLACEMENT** Replace the AC Driver PWB. **Is the Electrical Noise problem still present?**	Go to step 8	Problem solved
8	**LVPS ASSEMBLY REPLACE-MENT** Replace the LVPS Assembly. **Is the Electrical Noise problem still present?**	Go to step 9	Problem solved
9	**FUSER ASSEMBLY REPLACE-MENT** Replace the Fuser Assembly. **Is the Electrical Noise problem still present?**	Go to step 10	Problem solved.
10	**MCU PWB REPLACEMENT** Replace the MCU PWB. **Is the Electrical Noise problem still present?**	Go to step 11	Problem solved.
11	**MAIN DRIVE ASSEMBLY REPLACEMENT** Replace the Main Drive Assembly. **Is the Electrical Noise problem still present?**	Go to Suspect Components	Problem solved.

CHAPTER

4

DISASSEMBLY AND ASSEMBLY

4.1 Overview

This section contains the removal and replacement procedures for major parts and subsystems within the printer.

4.1.1 Cautions before starting

See the precautions below when disassembling or assembling EPLN4000.

WARNING

- **Switch off the printer power and disconnect the AC power cord from the wall outlet.**
- **Wait at least 30 minutes for the Fuser to cool before removing parts in the Fuser area.**
- **Since this printer weights approximately 50Kg, at least two people should carry it when moving it.**

CAUTION

- **Remove the EP Cartridge and cover it with a dark cloth or place it in a sealed container to protect it from exposure to light.**
- **Disconnect all interface cables from the back of the printer.**
- **Wear an electrostatic discharge wrist strap to protect sensitive printer PWBs from damage.**

4.1.2 Tools

The table below shows the tools recommended for disassembling and assembling. Use only tools that meet these specification.

Table 4-1. Tools

Name	Availability	Code
+ Driver No.1	O	B743800100
+ Driver No.2	O	B743800500
- Driver	O	B743000100
A pair of tweezers	O	B641000100
Cutting Pliers	O	B740400100

4.1.3 Notations in the Manual

- Locations such as R or right, given in the manual assume you are facing the printer console panel.

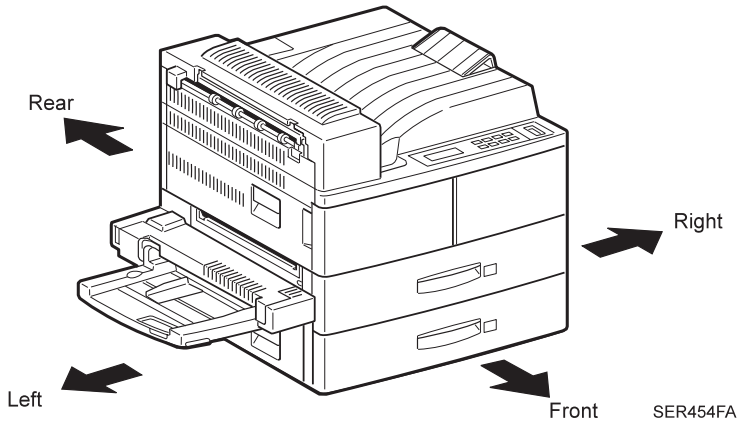


Figure 4-1. Notations

- Arrows in an illustration show direction of movement when removing a component.
- Slashes in a part name indicate that numerous components share the same heading and function. For example, "Gears In/Feed/Out" refers to Gear In, Gear Feed, and Gear Out.

4.2 Procedures for Disassembling

This section describes procedures for disassembling EPL-N4000/N4000+. Unless specified, assembling can be done by reversing the disassembly procedures. If you need to disassemble the unit which are not written on the manual, refer to the exploded diagrams provided in Appendix.

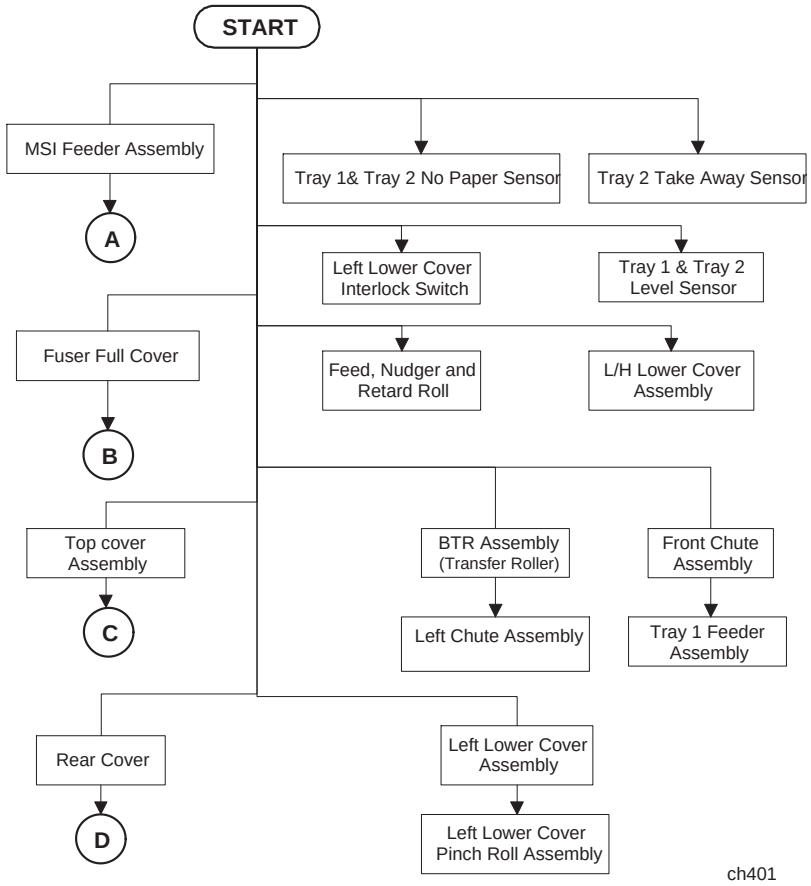


Figure 4-2. Flow Chart 1

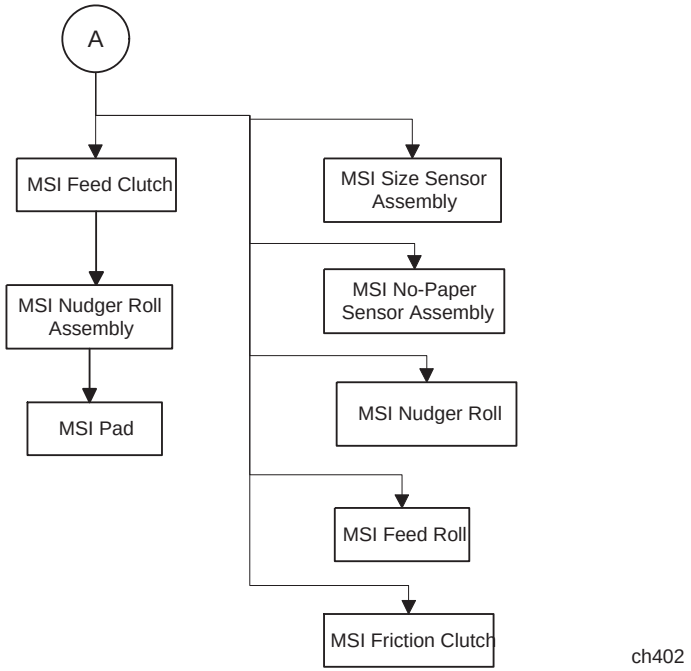


Figure 4-3. Flow Chart 2

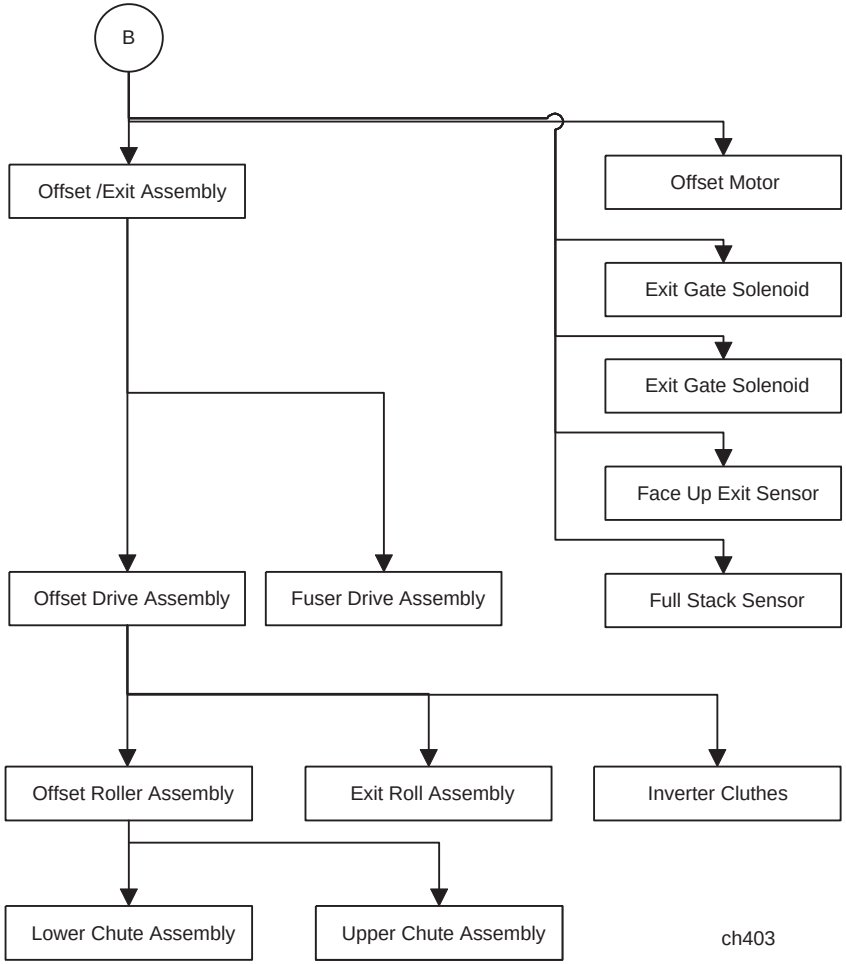


Figure 4-4. Flow Chart 3

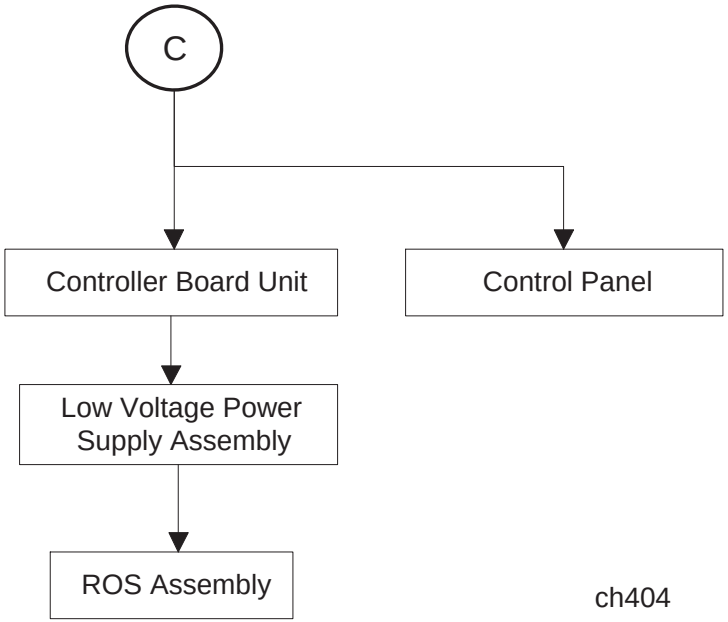


Figure 4-5. Flow Chart 4

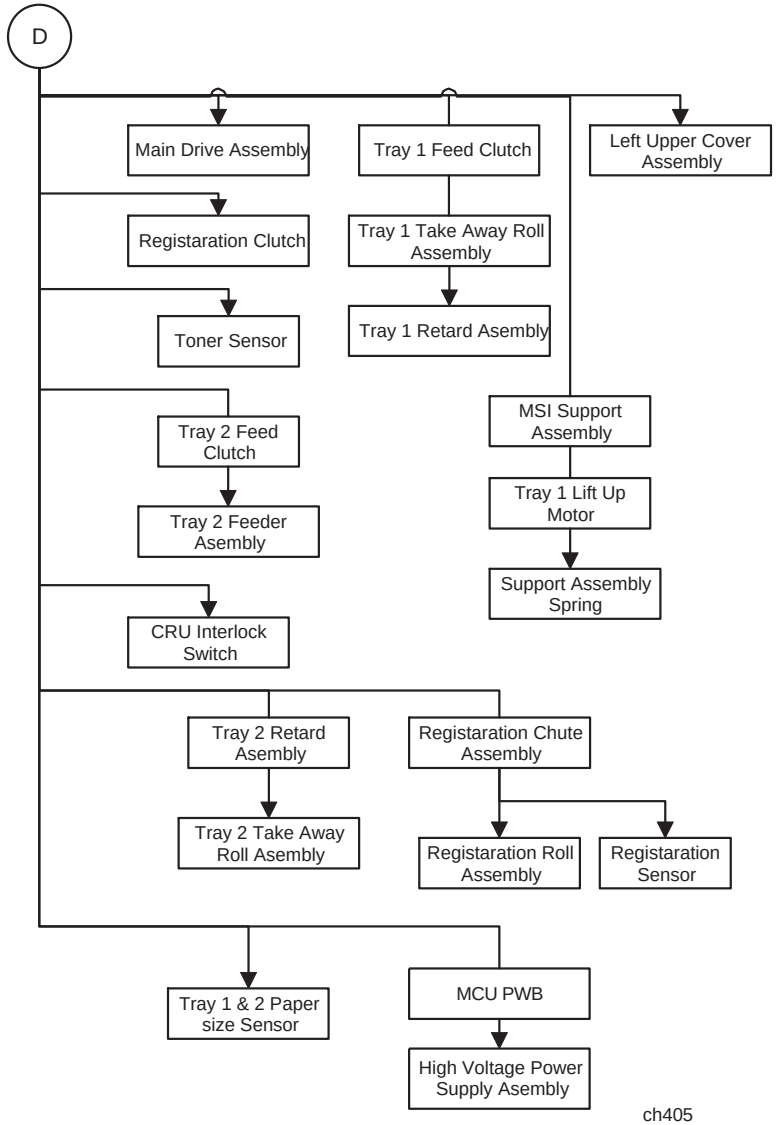


Figure 4-6. Flowchart 5

4.2.1 Fuser Full Cover

(See “Top Cover Assembly” on page -253)

4.2.1.1 Removal

1. Remove the Mailbox or the HCS if either are installed.
2. Open the Duplex Unit if one is installed.
3. Open the Left Upper Cover Assembly and remove the screw securing the Fuser Cover to the frame. (See the figure below)
4. Open the Front Left Cover and remove the screw securing the Fuser Cover to the frame. (See the figure below)
5. Lift the Fuser Cover off of the Top Cover Assembly.

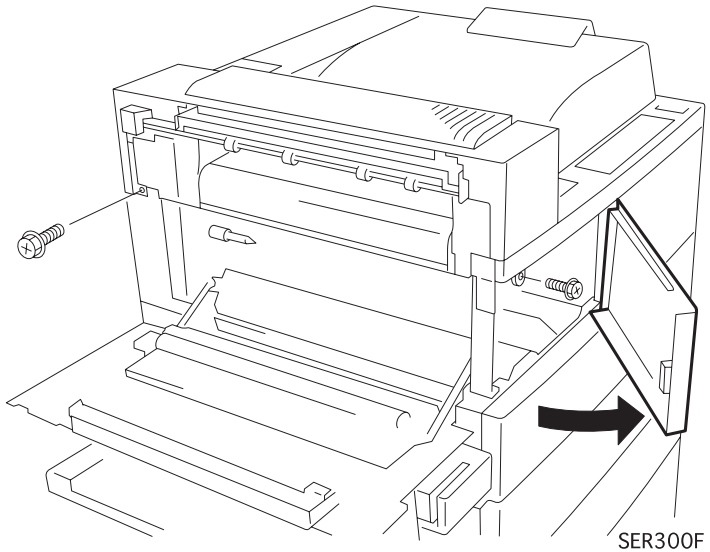


Figure 4-7. Fuser Full Cover Removal

4.2.1.2 Installation

1. Open the Duplex Unit if one is installed.
2. Open the Left Upper Cover.
3. Slide the tabs that are located at both ends of the Cover into the corresponding openings in the Top Cover Assembly. (See the figure below)
4. Lower the Fuser Full Cover onto the Fuser Assembly.
5. Press the Fuser Full Cover into place. Make sure the tabs remain in place, the Fuser Full Cover meshes smoothly with the Top Cover, and the two screw holes in the Fuser Full Cover line up with the holes in the printer frame.
6. Use two screws to secure the Fuser Full Cover.

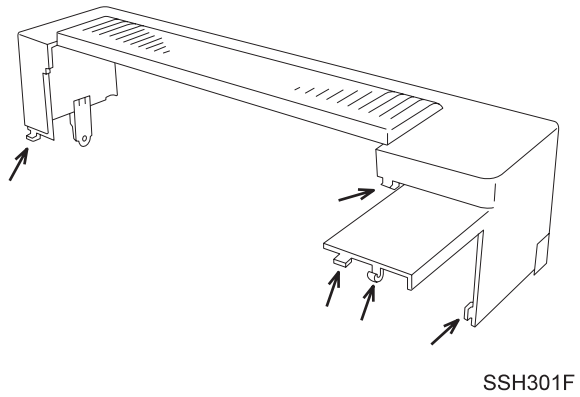


Figure 4-8. Tabs of Fuser Full Cover

4.2.2 Top Cover Assembly

(See “Top Cover Assembly” on page -253)

4.2.2.1 Removal

1. Unplug the AC Power Cord from the rear of the printer.
2. Remove the Fuser Full Cover. (See “Fuser Full Cover” on page -138)
3. Disconnect J204 from the Fuser Fan.
4. Remove the two screws securing the right side of the Top Cover Assembly to the Right Cover (See figure below).

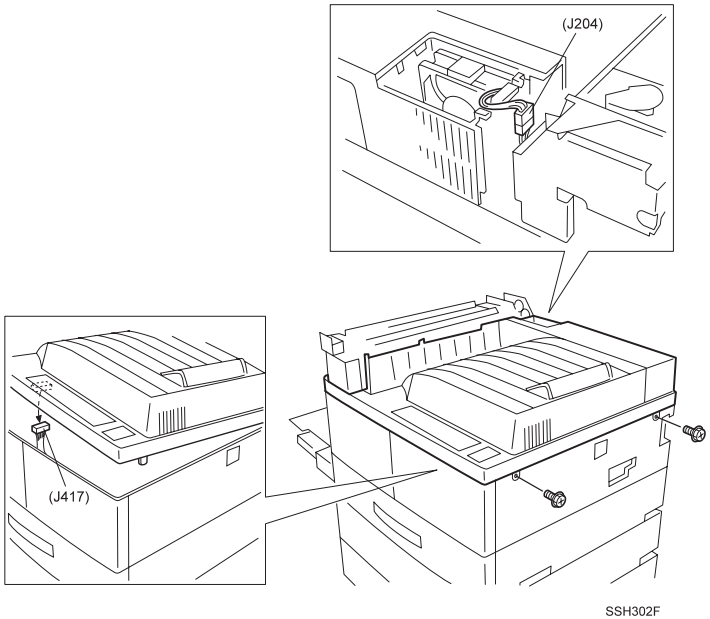


Figure 4-9. Removal of Top Cover Assembly

5. Carefully lift the Top Cover a few inches off of the printer frame.
6. Disconnect the J417 from the Control Panel, and lift the Top Cover Assembly off of the printer frame.

4.2.2.2 Installation

1. Unplug the AC Power Cord from the rear of the printer.

Do not reinstall the Top Cover while the AC power Cord is connected to the printer. While reinstalling the Top Cover you may accidently switch on the Main Power Switch.

2. Reconnect J417 to the Control Panel.
3. Reinstall the Top Cover Assembly onto the printer frame.
4. Make sure the screw holes at the right side of the Top Cover line up with the screw holes in the printer frame, and the left end of the Cover is under the Exit Chute Pinch Rolls.
5. Use two screws to secure the Top Cover Assembly to the Right Cover.
6. REconnect J204 to the Fuser Fan.
7. Reinstall the Fuser Full Cover. (See “Fuser Full Cover” on page -138)

4.2.3 Rear Cover Assembly

(See “Rear, Left and Right Cover” on page -255)

4.2.3.1 Removal

1. Remove the AC power cord from the rear of the printer.
2. Remove the two screws securing the Rear Cover Assembly to the printer frame.
3. Pull the bottom of the Rear Cover away from the printer frame and slide the Cover down to remove it.

4.2.3.2 Installation

1. Slide the top edge of the Rear Cover under the edge of the Top Cover, then press the Rear Cover against the printer frame.
2. Slide the Cover down so the bottom edge catches the lip of the printer frame.
3. Use two screws to secure the Rear Cover Assembly to the printer frame.
4. Reconnect the AC power cord to the rear of the printer.

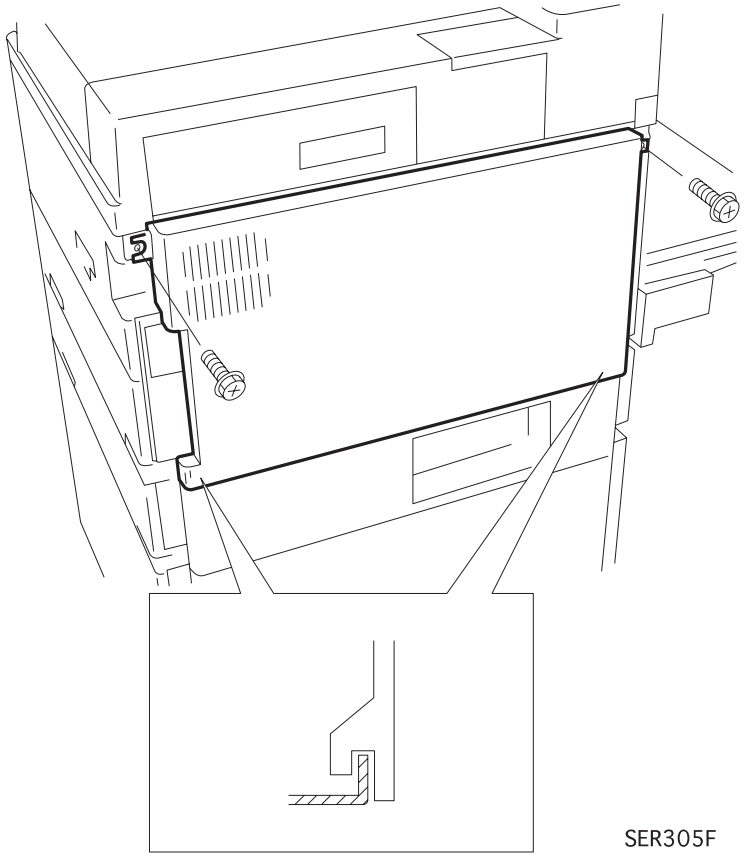


Figure 4-10. Removal of Rear Cover Assembly

4.2.4 Right Cover

(See “Rear, Left and Right Cover” on page -255)

4.2.4.1 Removal

1. Remove the two screws securing the Top Cover to the Right Cover.
2. Carefully raise the right end of the Top Cover and at the same time lift the Right Cover up and away from the printer frame.

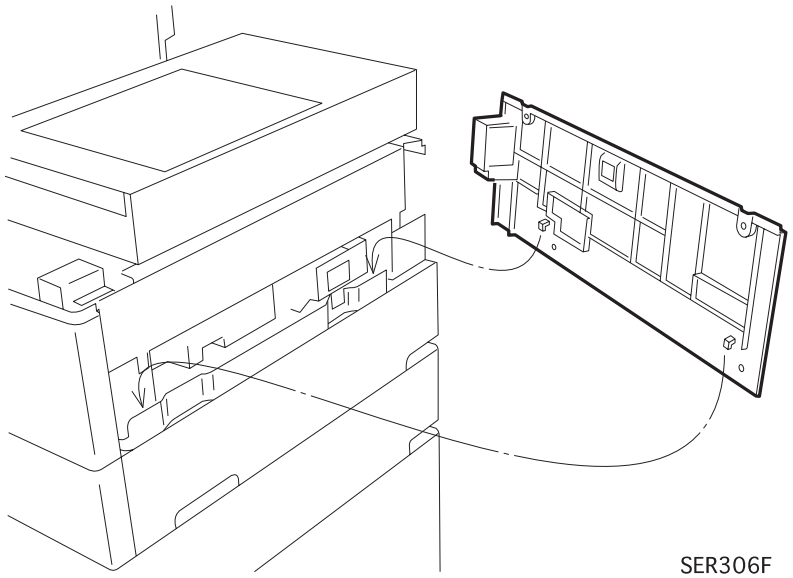


Figure 4-11. Removal of Right Cover

4.2.4.2 Installation

1. Raise the right end of the Top Cover.
2. Press the Right Cover against the printer frame and slide the Cover down until the two hooks at the bottom lip of the Cover are hooked in place under the Tray 1 Cover.
3. Press the top of the Right Cover against the printer frame while you lower the Top Cover. Make sure the Top Cover screw tabs rest on top of the Right Cover.
4. Use two screws to secure the Right Cover (and Top Cover) to the printer frame.

4.2.5 Control Panel

(See “Top Cover Assembly” on page -253)

4.2.5.1 Removal

1. Remove the Top Cover. (See “Top Cover Assembly” on page -139)
2. Disconnect the J417 from the Control Panel.
3. Push in on the four tabs securing the Control Panel to the Top Cover, while you press the Control Panel out of the Cover.

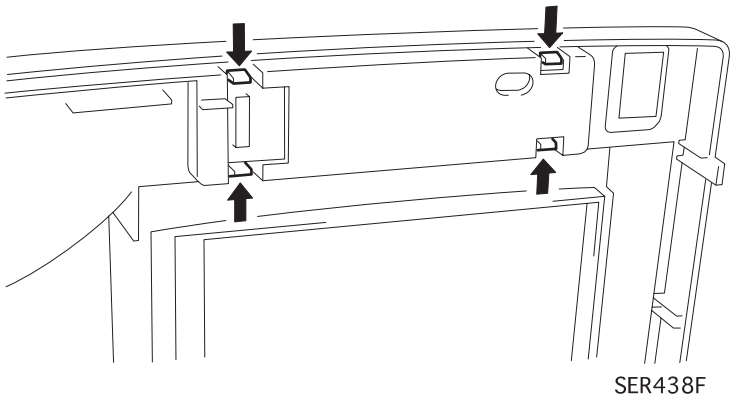


Figure 4-12. Removal of Control Panel

4.2.5.2 Installation

1. Position the Control Panel over the opening in the Top Cover Assembly, and press the Panel into the opening. The panel snaps into place.
2. Reconnect J417.
3. Reinstall the Top Cover. (See “Top Cover Assembly” on page -139)

4.2.6 Rear Cover 1TM

(See “Rear, Left and Right Cover” on page -255)

4.2.6.1 Removal

1. Disconnect all option plugs from the Plug Jack located at the rear of the printer.
2. Remove the two screws securing the Rear Cover 1TM to the printer frame.
3. Lift up on the Cover and remove it from the printer frame.

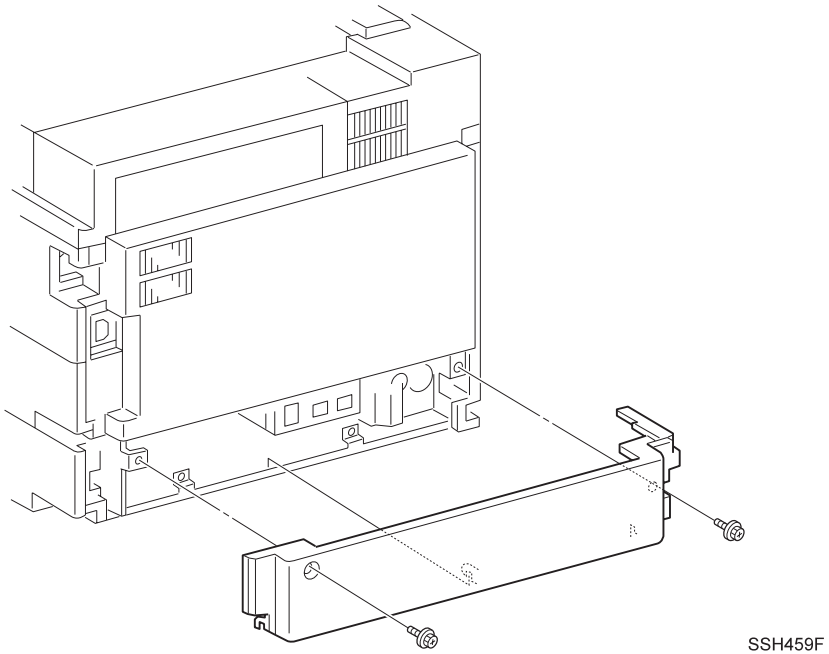


Figure 4-13. Removal of Rear Cover 1TM

4.2.6.2 Installation

1. Reinstall the Rear Cover 1TM by first hooking the bottom edge of the Cover onto the frame, then pressing the top of the Cover against the frame.
2. Use two screws to secure the Cover to the printer frame.
3. Reconnect the option plugs to the Plug Jack located at the rear of the printer.

4.2.7 Tray 1 Lift Up Motor

(See “Tray Interface -Tray 1” on page -258)

4.2.7.1 Removal

1. Slide Tray 1 halfway out of the printer.
2. Remove the Rear Cover. (“Rear Cover Assembly” on page -140)
3. Disconnect the J203 from the rear of Tray 1 Lift Up Motor.
4. Remove the three long screws securing the Motor to the printer frame.
5. Slide the Motor out to remove it.

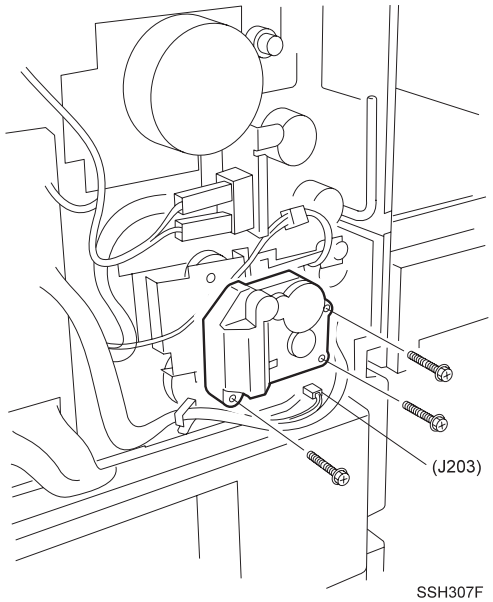


Figure 4-14. Removal of Tray 1 Lift Up Motor

4.2.7.2 Installation

1. Reinstall the Lift Up Motor onto the printer frame. Be careful not to trap any wires between the Motor and the frame.
2. Use three long screws to secure the Motor to the frame. Use one screw on the lower left and two screws on the right side of the Motor.
3. Reconnect J203 to the rear of the Lift Up Motor.
4. Reinstall the Rear Cover. (“Rear Cover Assembly” on page -140)
5. Slide Tray 1 into the printer.

4.2.8 Tray 1 Feed Clutch

(See “Tray Interface -Tray 1” on page -258)

4.2.8.1 Removal

1. Remove the Rear Cover. (“Rear Cover Assembly” on page -140)
2. Open the Duplex Unit.
3. Open the Left Upper Cover.
4. Disconnect J202 from the Tray 1 Feed Clutch.
5. Remove the E ring that is securing the Feed Clutch to the shaft.
6. Slide the Feed Clutch away from the printer frame, then rotate the Clutch until you have enough clearance from the Support Spring to slide the Clutch completely off of the shaft.

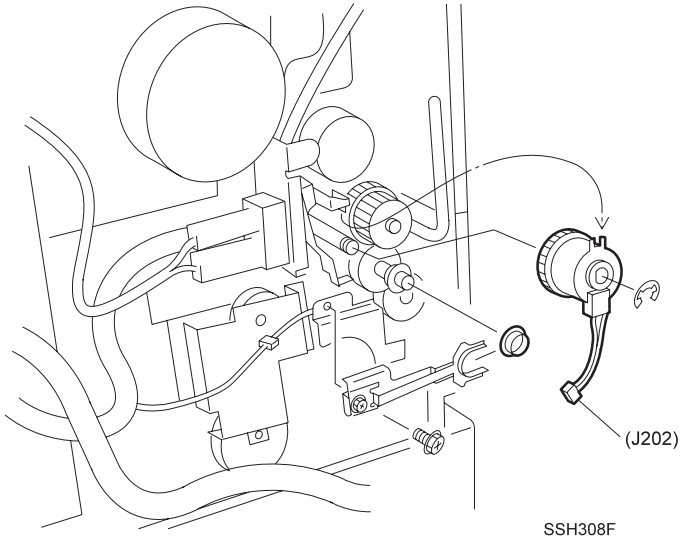


Figure 4-15. Removal of Tray 1 Feed Clutch

4.2.8.2 Installation

1. Position the Feed Clutch over the end of the Feed Shaft.
2. Reposition the Feed Clutch so it fits the key notch on the shaft and you can feel the Clutch slide onto the shaft, and press the Clutch onto the shaft until the Clutch P/J clears the Support Spring.
3. Rotate the Clutch until the slot in the Clutch lines up with the key on the frame.
4. Press the Clutch onto the shaft until it stops, and make sure the key on the frame is in the slot in the Clutch.
5. Use an E ring to secure the Clutch to the shaft.
6. Reconnect J202 to the Feed Clutch.
7. Reinstall the Rear Cover. (See “Rear Cover Assembly” on page -140)

4.2.9 Feed, Nudger, and Retard Rolls

(See “Paper Pick Up - Tray 1” on page -259 and “Retard and Take Away- Tray 2” on page -263)

CHECK POINT

- **Use this procedure for Feeders1 and Feeders 2.**
- **Replace the Feeder, Nudger, and Retard Rolls as a unit.**
- **If Feed Roll is exchanged, be sure to perform LC1~5 Counter Clear. (See “Panel Setting Mode” on page -26 and “Maintenance Mode” on page -46)**

4.2.9.1 Removal

1. Remove the paper tray from the appropriate feeder.
2. Press in on the front of the Chute, and remove the Chute.
3. Pull out on the Roll latch and slide the Roll off of the shaft.
4. Repeat step 3 for the remaining two Rolls.

4.2.9.2 Installation

1. Position the Roll with the latch end facing out, and slide the Roll onto the shaft.
2. Rotate and push the Roll down the shaft until the latch locks the Roll into place.
3. Repeat steps 1 and 2 for the remaining two Rolls.
4. Reinstall the Chute by sliding the opening in the rear of the Chute into the tab on the frame, then slightly squeezing the Chute and hooking the tab at the front of the Chute into the opening on the frame.
5. Reinstall the paper tray.
6. Reset the Paper Feeder Usage Log for the feeder with the new Rolls.

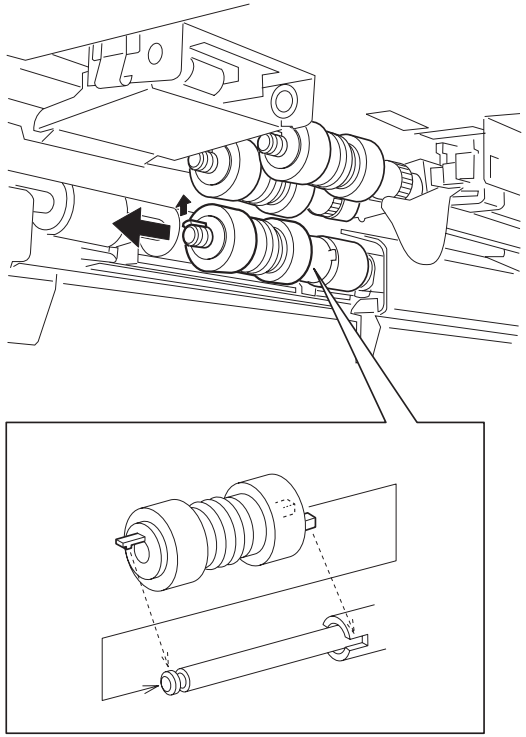


Figure 4-16. Removal of Feed, Nudger&Retard Rolls

4.2.10 Tray1 Take Away Roll Assembly

(See “Retard and Take Away- Tray 2” on page -263)

4.2.10.1 Removal

1. Remove the Duplex Unit, if one is installed.
2. Remove the EP Cartridge. (“EP Cartridge (Toner Cartridge)” on page -192)
3. Remove Tray 1 and Tray 2.
4. Remove the Left Upper Cover Assembly. (“Left Upper Cover Assembly” on page -185)
5. Remove the Rear Cover Assembly. (“Rear Cover Assembly” on page -140)
6. Remove the MSI Support Assembly. (“MSI Support Assembly” on page -166)
7. Remove the retaining clip from the docking stud that is located at the lower right of the Tray, and remove the stud.
8. Remove the screw securing the docking clip to Tray 2, and remove the clip.
9. Disconnect P403, P404, P406, and P408 from the MCU PWB.
10. Remove the screw securing the Option Connector Bracket the frame, and remove the Bracket.
11. Remove the screw securing the retaining clip that is located under the Option Connector Bracket, and remove the clip. (Figure on your right)
12. Remove Tray 1 Lift Motor. (“Tray 1 Lift Up Motor” on page -144)

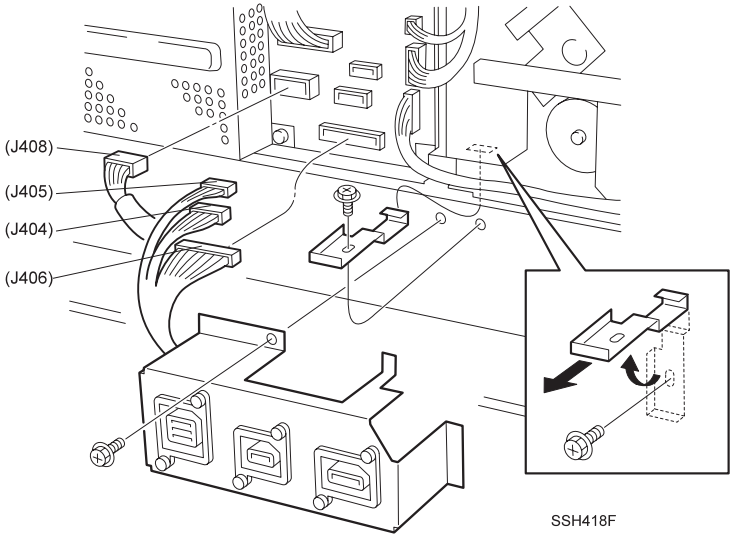


Figure 4-17. Removal of Bracket

CAUTION

The following steps has you lift the printer. The printer is very heavy and requires two people to lift it. Do not attempt to lift the printer by yourself.

13. Lift the printer off of Tray 2.
14. Set the printer, with the right side down, on a level and stable work surface.

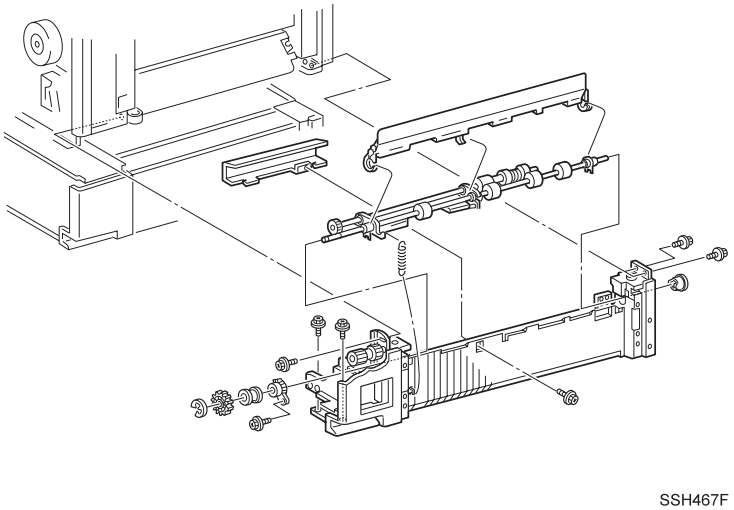


Figure 4-18. Removal of Tray1 Take Away Roll Assembly

15. Remove the Support Assembly Spring. (“Support Assembly Spring” on page -152)

16. Remove Tray 1 Feed Clutch, along with the Gear and Bearing. (“Tray 1 Feed Clutch” on page -145)

17. Remove the four screws securing Tray 1 Take Away Roll Assembly to the rear of the frame.

18. Remove the two screws securing Tray 1 Take Away Roll Assembly to the front of the frame.

19. Locate the two plastic mounting pins, located at each end of the Assembly, that secure the top of the Assembly to the bottom of the printer frame.

20. Press the two plastic mounting pins out of the mounting holes, and pull Tray 1 Take Away Assembly away from the printer.

4.2.10.2 Installation

1. Reinstall Tray 1 Take Away Roll Assembly onto the bottom of the printer frame.

2. Align the two plastic mounting pins, located on the top of the Assembly, with the two mounting holes located in the bottom of the printer frame.

3. Press the Assembly into the frame so the mounting pins snap into the holes.

4. Use two screws to secure the front of the Assembly to the printer frame.

5. Use four screws to secure the rear of the Assembly to the printer frame.

6. Reinstall Tray 1 Feed Clutch, along with the Gear and Bearing. (“Tray 1 Feed Clutch” on page -145)

7. Reinstall the Support Assembly Spring. (“Support Assembly Spring” on page -152)

CAUTION

The following steps has you lift the printer. The printer is very heavy and requires two people to lift it. Do not attempt to lift the printer by yourself.

8. Set the printer onto Tray 2.

9. Reinstall Tray 1 Lift Motor. (“Tray 1 Lift Up Motor” on page -144)

10. Reinstall the retaining clip that is located under the Option Connector Bracket, and use one screw to secure the clip.

11. Reinstall the Option Connector Bracket to the frame, and use one screw to secure the Bracket.

12. Reconnect P403, P404, P406, and P408 to the MCU PWB.

13. Reinstall the docking clip to Tray 2, and use one screw to secure the clip.

14. Reinstall the docking stud located at the lower right of the Tray, and use a retaining clip to secure the stud.

15. Reinstall the MSI Support Assembly. (“MSI Support Assembly” on page -166)

16. Reinstall the Rear Cover Assembly. (“Rear Cover Assembly” on page -140)

17. Reinstall the Left Upper Cover Assembly.

18. Reinstall Tray 1 and Tray 2.

19. Reinstall the EP Cartridge. (“EP Cartridge (Toner Cartridge)” on page -192)

20. Reinstall the Duplex Unit, if one was installed.

4.2.11 Tray 1 Feeder Assembly

(See “Paper Pick Up - Tray 1” on page -259)

CAUTION

Take care not to break or dislodge the No Paper Actuator when removing or replacing the Tray1 Feeder Assembly.

4.2.11.1 Removal

1. Tray 1 from the printer.
2. Remove the Rear Cover. (“Rear Cover Assembly” on page -140)
3. Remove the Front Chute. (“Tray 1&2 Front Chute Assemblies” on page -155)
4. Remove Tray 1 Feed Clutch along with the Feed Gear and Bearing. (“Tray 1 Feed Clutch” on page -145) (Refer to the figure).
5. Remove the E ring that is securing the Feed Gear (located behind the Feed Clutch) to the shaft, and remove the Feed Gear and Bearing.
6. Hold down the Stopper Link while you pull the Feeder Assembly to the front of the printer frame.
7. Remove the Feeder Assembly from Feeder 1.

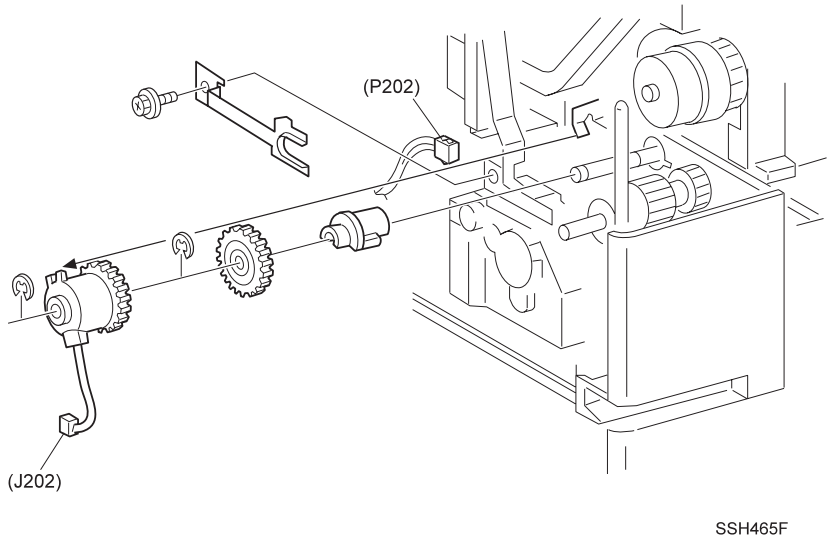


Figure 4-19. Removal of Tray1 Feed Clutch

4.2.11.2 Installation

1. Hold down the Stopper Link while you insert the end of the Feed Shaft into the opening in the rear of the printer frame.
2. Slide the Bearing into the Bearing cutout (refer to the figure).
3. When both the Bearing is in place and the end of the Feed Shaft is through the opening in the rear of the frame, release the Stopper Link.
4. The Nudger Shaft should rest on top of the Stopper Link, and the Link should secure the Feeder Assembly in place on the frame.
5. Make sure the Paper Level Actuator tab on the Feeder is positioned in the center of the arms of the Paper Level Sensor.
6. Slide the Feed Bearing onto the Feed Shaft and press the Bearing into the cutout in the frame.
7. Reinstall the Feed Gear onto the Feed Shaft, and use an E ring to secure it to the Shaft.
8. Reinstall Tray 1 Feed Clutch along with the Feed Gear and Bearing. (“Tray 1 Feed Clutch” on page -145)
9. Reinstall the Front Chute. (“Tray 1&2 Front Chute Assemblies” on page -155)
10. Reinstall the Rear Cover. (“Rear Cover Assembly” on page -140)
11. Reinstall Tray 1.

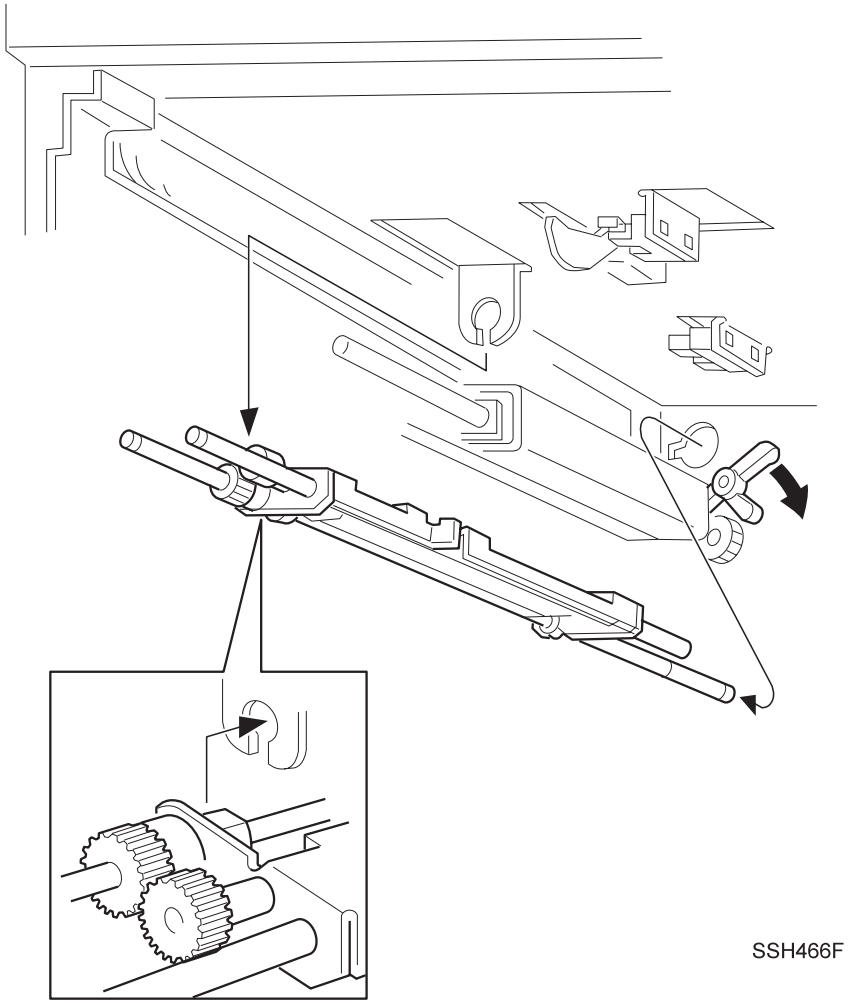


Figure 4-20. Removal of Tray1 Feed Assembly

4.2.12 Support Assembly Spring

(See “Retard and Take Away-Tray 1” on page -260)

4.2.12.1 Removal

1. Remove Tray 1 Lift Up Motor. (“Tray 1 Lift Up Motor” on page -144)
2. Remove the screw securing the Support Assembly Spring to the printer frame, and remove the Spring.

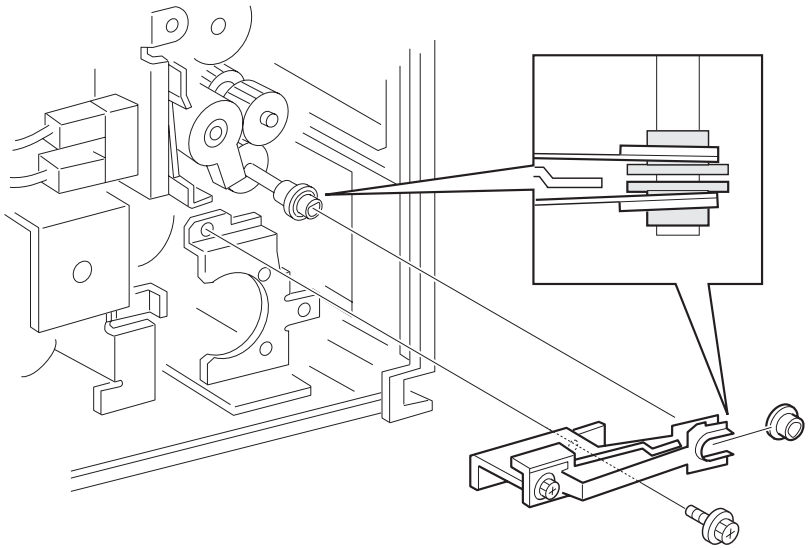


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Figure 4-21. Removal of Support Assembly Spring

4.2.12.2 Installation

1. Reinstall the Support Assembly Spring. (Refer to the figure for correct positioning).
2. Make sure the front and rear arms of the Spring are positioned as shown in the figure.
3. Use one screw to secure the Spring to the frame.
4. Reinstall Tray 1 Lift Up Motor. (“Tray 1 Lift Up Motor” on page -144)

4.2.13 Tray1 Retard Assembly

(See “Retard and Take Away-Tray 1” on page -260)

4.2.13.1 Removal

1. Remove Tray 1 Take Away Roll Assembly. (“Tray1 Take Away Roll Assembly” on page -147)
2. Remove the Left Middle Cover. (“L/H Low Cover Assembly” on page -178)
3. Remove the screw securing the Feed In Chute to the Assembly, and slide the Chute to the front of the Assembly to remove it.
4. Remove the plastic Feed Chute (“Retard and Take Away-Tray 1” on page -260) from the Take Away Roll.
5. Unhook the spring from the Retard Support.
6. Remove Tray 1 Support Assembly Spring. (“Support Assembly Spring” on page -152)
7. Remove the screw securing the Gear Stopper (“Retard and Take Away-Tray 1” on page -260) to the Assembly, and move the Stopper out of the way.
8. Remove the E ring securing Gear 22/20 (“Retard and Take Away-Tray 1” on page -260) to the shaft and remove the Gear.
9. Remove the plastic bearing securing the Take Away Roll Shaft to the front of the Retard Frame, and remove the Retard Assembly and Take Away Roll.
10. Remove the E rings and Gears attached to the rear of the Take Away Roll Shaft.
11. Remove the Center Bearing on the Take Away Roll Shaft, and slide the Roll out of the Retard Support.

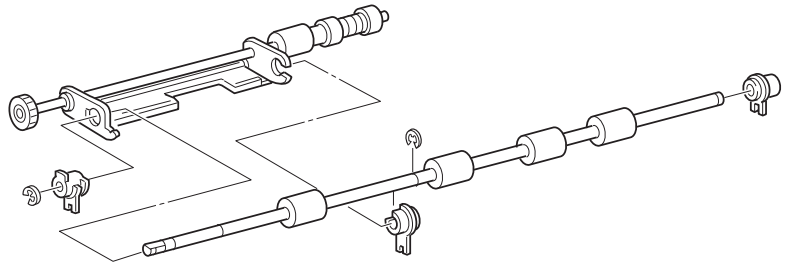

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Figure 4-22. Disassembly of Tray1 Retard Assembly

4.2.13.2 Installation

1. Reinstall the Take Away Roll Shaft onto the Retard Support.
2. Reinstall the Center Bearing onto the Take Away Roll Shaft, and secure the Shaft to the Support.
3. Reinstall the Gears (“Retard and Take Away-Tray 1” on page -260) and E rings to the rear of the Take Away Roll Shaft.
4. Reinstall the Retard Assembly and Take Away Roll back into the Retard Frame.
5. Reinstall the plastic bearing into the hole at the front of the Retard Frame.
6. Reinstall Gear 22/20 to the rear of the shaft, and use an E ring to secure the Gear.

7. Align the screw hole in the Gear Stopper with the screw hole in the frame, and use one screw to secure the Stopper.

8. Reinstall the Tray 1 Support Assembly Spring. (“Support Assembly Spring” on page -152)

9. Reattach the spring to the Retard Support.

10. Reinstall the plastic Feed Chute to the Take Away Roll.

11. Reinstall the Feed In Chute, and use one screw to secure it to the Assembly.

12. Reinstall the Left Middle Cover (“L/H Low Cover Assembly” on page -178).

13. Reinstall Tray 1 Take Away Roll Assembly. (See “Tray1 Take Away Roll Assembly” on page -147)

4.2.14 Tray 1&2 Front Chute Assemblies

(See “Tray Interface -Tray 1” on page -258 and “Tray Interface-Tray 2” on page -261)

4.2.14.1 Removal

1. Remove either Paper Tray 1 or Paper Tray 2.
2. Use a flat blade screwdriver to unhook the front of the Chute, and remove the Chute.

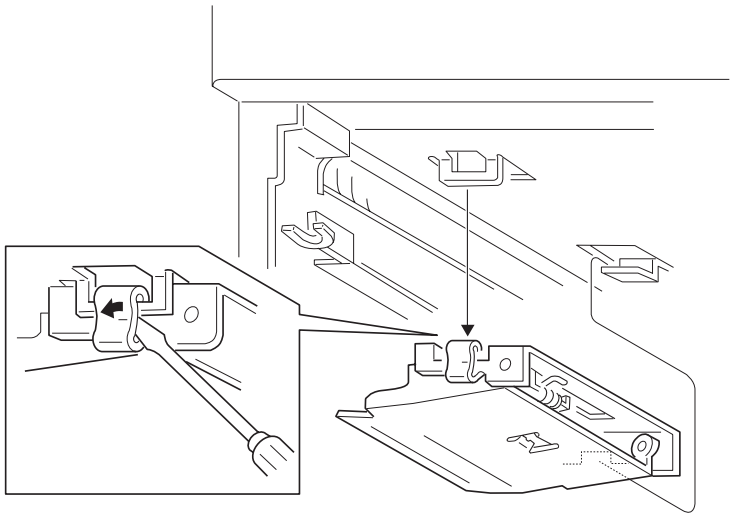

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Figure 4-23. Removal of Front Chute

4.2.14.2 Installation

1. Remove either Paper Tray 1 or Paper Tray 2.
2. Reinstall the Chute by sliding the opening in the rear of the Chute into the tab on the printer frame, then hooking the tab at the front of the Chute into the opening on the frame.
3. Reinstall the Paper Tray.

4.2.15 Tray 1 & Tray 2 Level Sensors

(See “Tray Interface -Tray 1” on page -258 and “Tray Interface-Tray 2” on page -261)

Use this procedure for removing and replacing the Paper Level Sensors for Trays 1 and 2.

4.2.15.1 Removal

1. Remove the Paper Tray associated with the Paper Level Sensor you are going to remove.
2. Squeeze the Sensor latches and remove the Paper Level Sensor from the frame.
3. Disconnect the P/J from the Sensor.

4.2.15.2 Installation

1. Reconnect the P/J to the Sensor.
2. Position the Sensor with the arms of the Sensor facing the Feed Assembly Actuator.
3. Reinstall the Paper Level Sensor into the slot in the frame by first inserting the front latch of the Sensor through the front opening in the frame.
4. Press in on the rear latch and inserting it into the rear opening.
5. Release the rear latch and the Sensor snaps into place.
6. Release the Actuator and make sure it moves freely between the arms of the Sensor.
7. Reconnect the P/J to the Sensor.
8. Reinstall the Paper Tray.

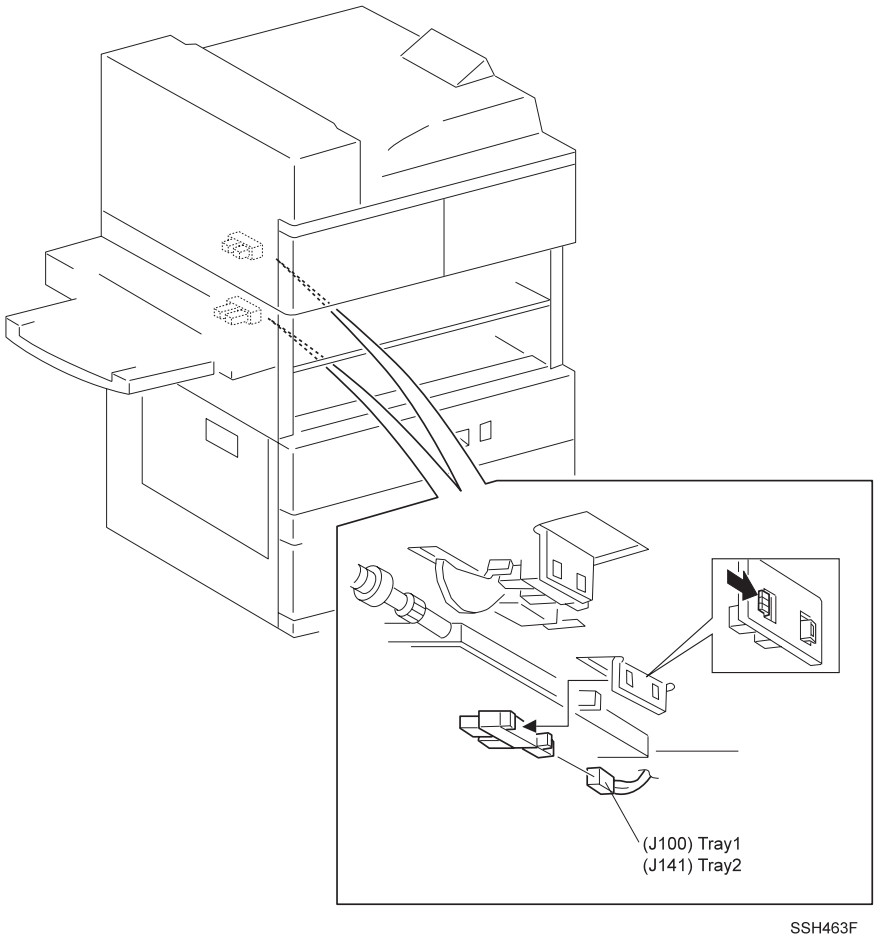

Figure 4-24. Removal of Level Sensor

4.2.16 Tray1 & Tray 2 No Paper Sensors

(See “Tray Interface -Tray 1” on page -258 and “Tray Interface-Tray 2” on page -261)

Use this procedure for removing and reassembling the No Paper Sensors for Trays 1 and 2.

4.2.16.1 Removal

1. Remove the Paper Tray associated with the No Paper Sensor you are going to remove.
2. Squeeze the Sensor latches and remove the No Paper Sensor from the frame.
3. Disconnect the P/J from the Sensor.

4.2.16.2 Installation

1. Reconnect the P/J to the Sensor.
2. Push the No Paper Actuator up and out of the way.
3. Position the Sensor with the arms of the Sensor facing the Actuator.
4. Reinstall the No Paper Sensor into the slot in the frame by first inserting the front latch of the Sensor through the front opening in the frame.
5. Press in on the rear latch and inserting it into the rear opening.
6. Release the rear latch and the Sensor snaps into place.
7. Release the Actuator and make sure it moves freely between the arms of the Sensor.
8. Reconnect the P/J to the Sensor.
9. Reinstall the Paper Tray.

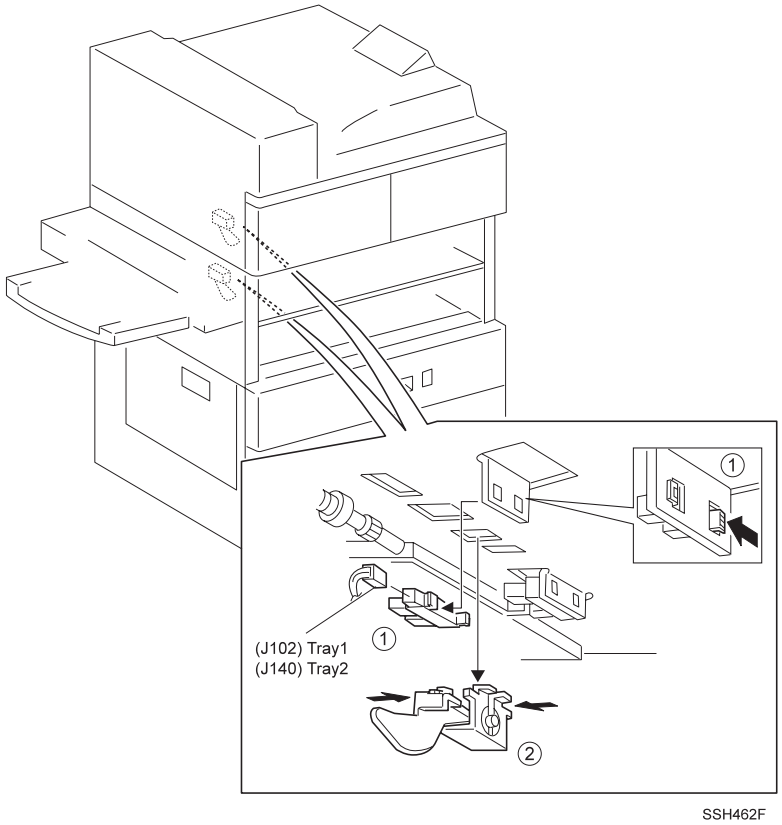

Figure 4-25. Removal of No Paper Sensor

4.2.17 Tray 1 & Tray 2 Paper Size Sensors

(See “Tray Interface -Tray 1” on page -258 and “Tray Interface-Tray 2” on page -261)

4.2.17.1 Removal

1. Remove either Paper Tray 1 or Paper Tray 2 from the printer.
2. Disconnect the P/J from the Size Sensor PWB.
3. Remove the screw securing the Size Sensor PWB to the printer frame, pull the PWB straight out and remove it from the frame.

4.2.17.2 Installation

1. Remove either Paper Tray 1 or Paper Tray 2 from the printer.
2. Reinstall the Paper Size Sensor PWB onto the printer frame. Align the positioning tabs and screw holes.
3. Reconnect the P/J to the Size Sensor PWB.
4. Use one screw to secure the PWB to the frame.
5. Reinstall the Paper Tray.

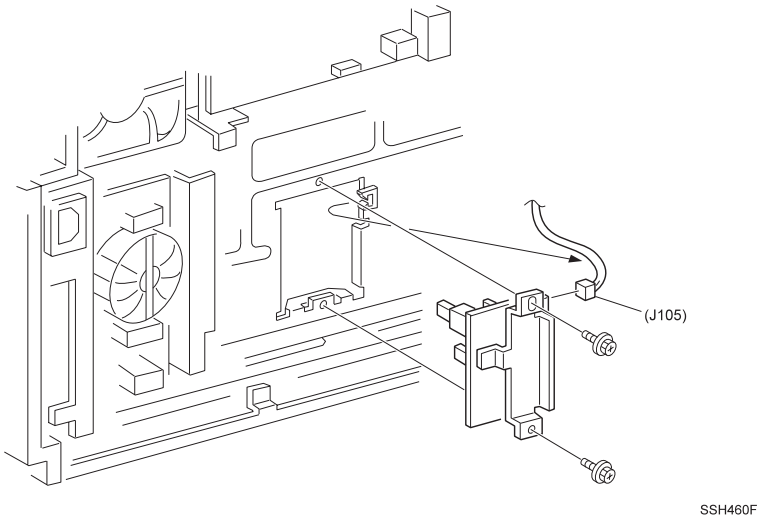

Figure 4-26. Removal of Tray1 Paper Size Sensor

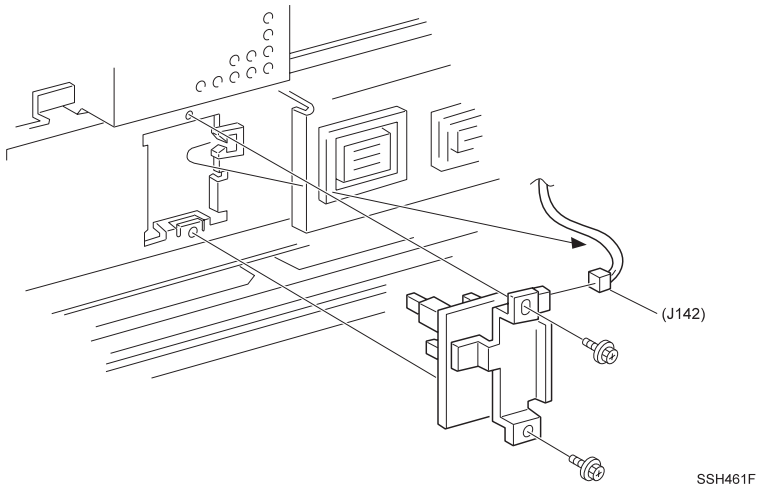

Figure 4-27. Removal of Tray2 Paper Size Sensor

4.2.18 Tray 2 Feed Clutch

(See “Paper Pick Up-Tray 2” on page -262)

4.2.18.1 Removal

1. Remove the Rear Cover 1TM. (See “Rear Cover 1TM” on page -143)
2. Disconnect J240 from the Feed Clutch.
3. Remove the E ring securing the Clutch to the shaft, and slide the Clutch off of the shaft.
4. Remove the E ring securing the Gear to the shaft, and slide the Gear and Bearing off of the shaft.

4.2.18.2 Installation

1. Slide the Bearing onto the shaft, and seat it in the cutout in the printer frame.
2. Slide the Gear onto the shaft, and use an E ring to secure it to the shaft.
3. Slide the Feed Clutch onto the shaft, making sure the positioning notch on the shaft hooks onto the tab on the frame.
4. Use an E ring to secure the Clutch to the shaft.
5. Reconnect J240 to the Feed Clutch.
6. Reinstall the Rear Cover 1TM. (“Rear Cover 1TM” on page -143)

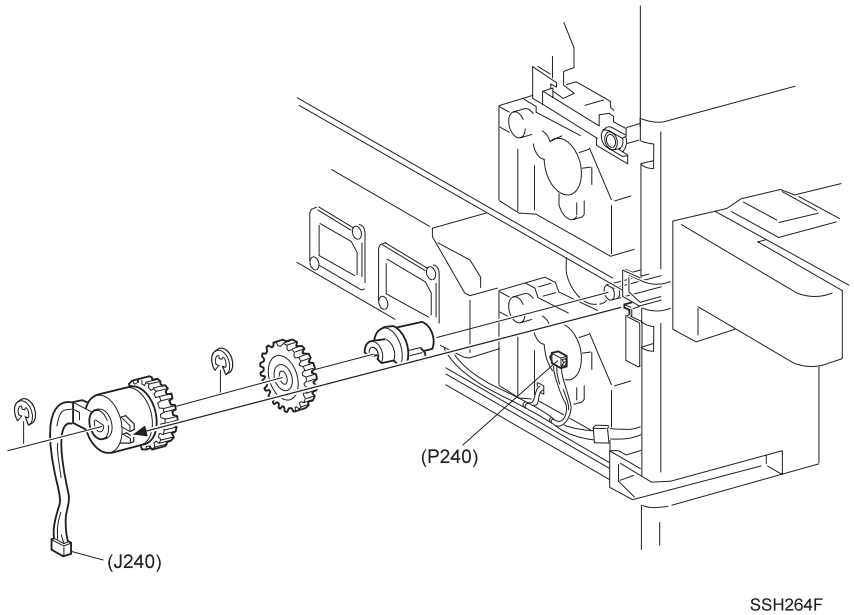

Figure 4-28. Removal of Tray2 Feed Clutch

4.2.19 Tray 2 Feeder Assembly

(See “Paper Pick Up - Tray 1” on page -259)

CAUTION

Take care not to break or dislodge the NO Paper Actuator when removing or replacing the Tray2 Feeder Assembly.

4.2.19.1 Removal

1. Tray 2 from the printer.
2. Remove the Rear Cover. (“Rear Cover Assembly” on page -140)
3. Remove the Front Chute. (“Tray 1&2 Front Chute Assemblies” on page -155)
4. Remove Tray 2 Feed Clutch along with the Feed Gear and Bearing. (“Tray 2 Feed Clutch” on page -159) (Refer to the figure on your right).
5. Remove the E ring that is securing the Feed Gear (located behind the Feed Clutch) to the shaft, and remove the Feed Gear and Bearing.
6. Hold down the Stopper Link while you pull the Feeder Assembly to the front of the printer frame.
7. Remove the Feeder Assembly from Feeder 2.

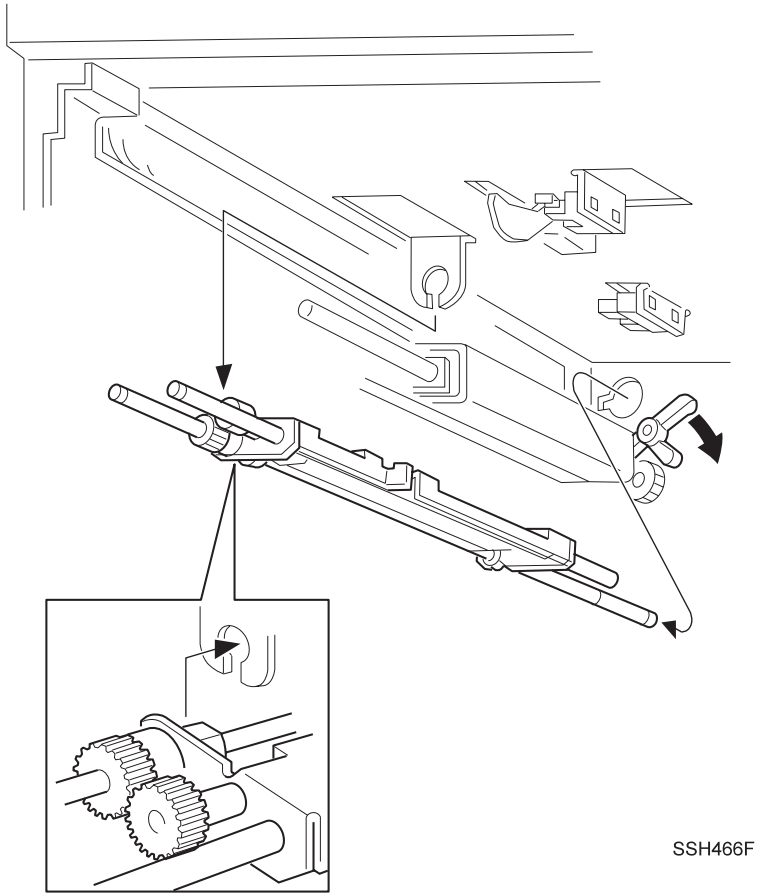

Figure 4-29. Removal of Tray2 Feeder Assembly

4.2.19.2 Installation

1. Hold down the Stopper Link while you insert the end of the Feed Shaft into the opening in the rear of the printer frame.
2. Slide the Bearing into the Bearing cutout (refer to the figure on the previous page).
3. When both the Bearing is in place and the end of the Feed Shaft is through the opening in the rear of the frame, release the Stopper Link.
4. The Nudger Shaft should rest on top of the Stopper Link, and the Link should secure the Feeder Assembly in place on the frame.
5. Make sure the Paper Level Actuator tab on the Feeder is positioned in the center of the arms of the Paper Level Sensor.
6. Slide the Feed Bearing onto the Feed Shaft and press the Bearing into the cutout in the frame.
7. Reinstall the Feed Gear onto the Feed Shaft, and use an E ring to secure it to the Shaft.
8. Reinstall Tray 2 Feed Clutch along with the Feed Gear and Bearing. (“Tray 2 Feed Clutch” on page -159)
9. Reinstall the Front Chute. (“Tray 1&2 Front Chute Assemblies” on page -155)
10. Reinstall the Rear Cover. (“Rear Cover Assembly” on page -140)
11. Reinstall Tray 2.

4.2.20 Tray2 Take Away Roll Assembly

(See “Retard and Take Away- Tray 2” on page -263)

4.2.20.1 Removal

1. Remove Tray 2 Retard Assembly. (“Tray 2 Retard Assembly” on page -163)
2. Remove the E rings and Gears attached to the rear of the Take Away Roll shaft.
3. Remove the Center Bearing on the Take Away Roll Shaft, and slide the Roll out of the Retard Support.

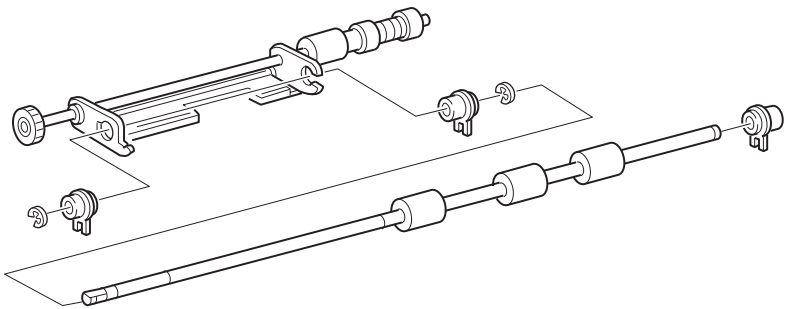

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Figure 4-30. Removal of Tray2 Take Away Roll Assembly

4.2.20.2 Installation

1. Reinstall the Take Away Roll shaft onto the Retard Support.
2. Reinstall the Center Bearing onto the Take Away Roll shaft, and secure the shaft to the Support.
3. Reinstall the Gears and E rings to the rear of the Take Away Roll shaft.
4. Reinstall Tray 2 Retard Assembly. (“Tray 2 Retard Assembly” on page -163)

4.2.21 Tray 2 Retard Assembly

(See “Retard and Take Away- Tray 2” on page -263)

4.2.21.1 Removal

1. Open the Left Lower Cover.
2. Remove the screw securing the Feed In Chute to the Assembly, and slide the Chute to the front of the Assembly to remove it.
3. Remove the plastic Feed Chute from the Take Away Roll.
4. Unhook the spring from the Retard Support.
5. Remove the screw securing the Gear Stopper to the Assembly, and move the Stopper out of the way.
6. Remove the E ring securing Gear 22 to the shaft and remove the Gear.
7. Remove the plastic bearing securing the Take Away Roll Shaft to the front of the printer frame, and remove the Retard Assembly and attached Take Away Roll.
8. Remove the Take Away Roll. (“Tray2 Take Away Roll Assembly” on page -162)

4.2.21.2 Installation

1. Reinstall the Take Away Roll Shaft onto the Retard Support. (“Tray2 Take Away Roll Assembly” on page -162)
2. Reinstall the Retard Assembly and Take Away Roll back into the printer frame.
3. Reinstall the plastic bearing into the hole at the front of the frame.
4. Reinstall Gear 22 to the rear of the shaft, and use an E ring to secure the Gear.
5. Align the screw hole in the Gear Stopper with the screw hole in the frame, and use one screw to secure the Stopper.
6. Reattach the spring to the Retard Support.
7. Reinstall the plastic Feed Chute to the Take Away Roll.
8. Reinstall the Feed In Chute, and use one screw to secure it to the Assembly.

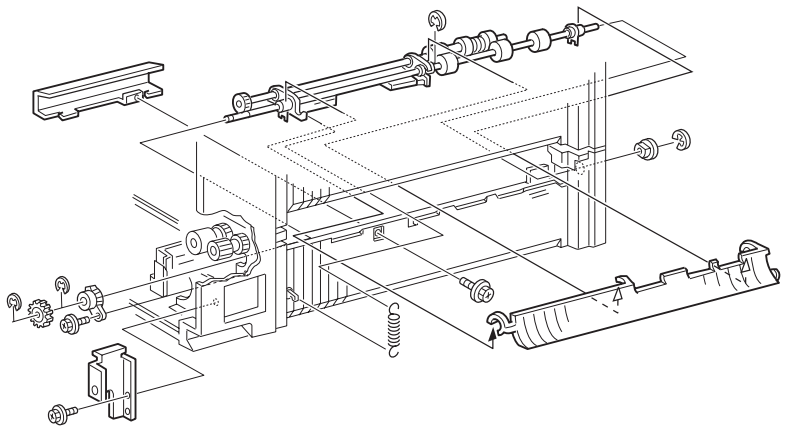

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Figure 4-31. Removal of Tray2 Retard Assembly

4.2.22 MSI Feeder Assembly (Manual Feeder)

(See “MSI Feeder Assembly” on page -266)

4.2.22.1 Removal

1. Face the left side of the printer.
2. Hold both sides of the MSI Feeder Assembly and firmly pull the Assembly toward you and out of the printer.

4.2.22.2 Installation

1. Face the left side of the printer.
2. Position the MSI Feeder against the MSI Support.
3. Tilt the MSI Feeder so the Feed Gear slides through the cutout in the printer cover.
4. Hold the MSI Feeder Assembly level and push the Assembly against the printer.

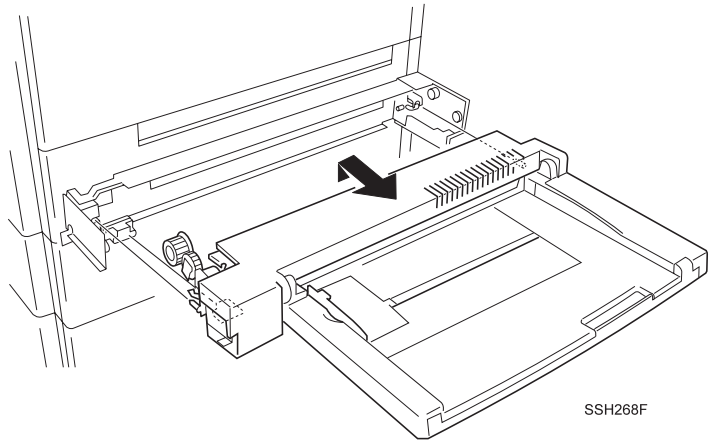

Figure 4-32. Removal of MSI Feeder Assembly

4.2.23 MSI Tray Assembly

(See “MSI Tray Assembly” on page -164)

4.2.23.1 Removal

1. Remove the MSI Feeder Assembly. (“MSI Feeder Assembly (Manual Feeder)” on page -164)
2. Remove the two screws securing the MSI Top Cover to the MSI Assembly, and remove the Top Cover.

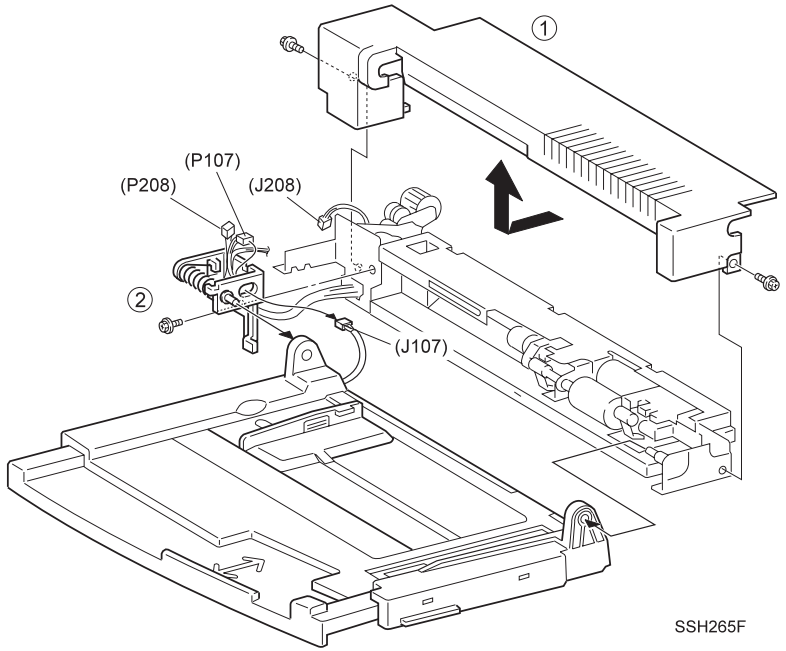

Figure 4-33. Remove l of MSI Top Cover

3. Disconnect the P/J that runs from the Tray Assembly to the Feeder Assembly.
4. Release the Tray Spring that is attached to the left side of the Tray.
5. Push out on the Front Support as you slightly bow the Tray, and release the pivot hole on the right side of the Tray from the metal shaft on the Front Support.
6. Remove the MSI Tray Assembly.

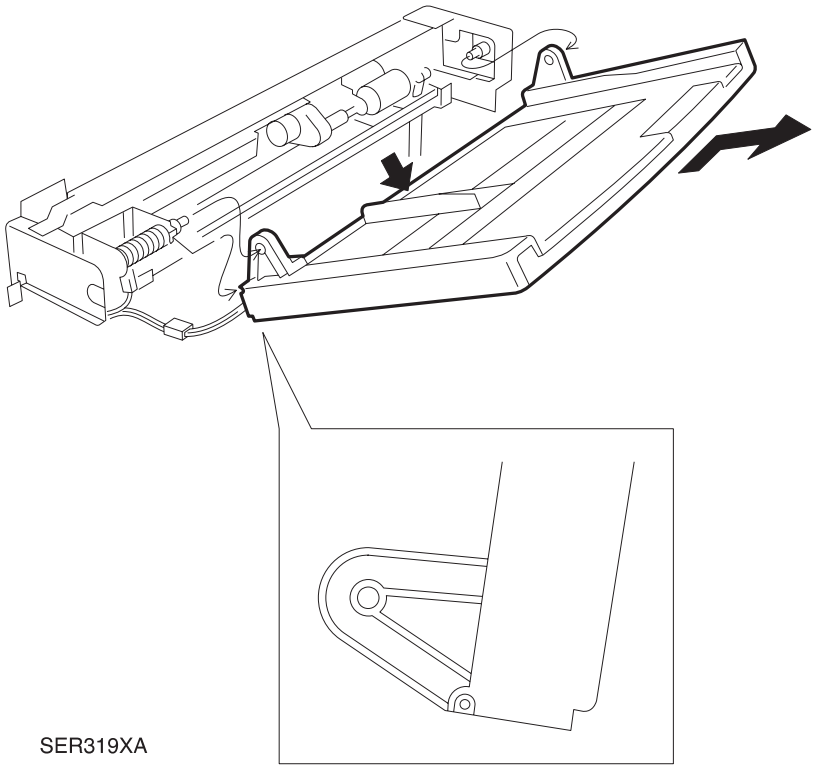

Figure 4-34. Removal of MSI Tray Assembly

4.2.23.2 Installation

1. Slide pivot hole on the left side of the Tray onto the metal shaft on the Rear Support.
2. Push out on the Front Support as you slightly bow the Tray, and slid the pivot hole on the right side of the Tray into the metal shaft on the Front Support.
3. Insert the free end of the Tray Spring into the slot at the bottom edge of the Tray.
4. Reconnect the P/J that runs from the Tray Assembly to the Feeder Assembly.
5. Reinstall the MSI Top Cover and use two screws to secure it to the MSI Assembly.
6. Reinstall the MSI Feeder Assembly. (“MSI Feeder Assembly (Manual Feeder)” on page -164)
7. Reinstall the Duplex Unit if one was installed.

4.2.24 MSI Support Assembly

(See “Multi Sheet Inserter and MSI/Duplex Support” on page -265)

4.2.24.1 Removal

1. Remove the MSI Feeder Assembly. (“MSI Feeder Assembly (Manual Feeder)” on page -164)
2. Remove the one screw securing the Front Support Cover to the Support Assembly, and remove the Cover.
3. Remove the one screw securing the Rear Support Cover to the Support Assembly, and remove the Cover.
4. Remove the Rear Cover Assembly. (“Rear Cover Assembly” on page -140)
5. Disconnect J603.
6. Remove the four screws securing the MSI Support Assembly to the printer frame, and remove the Assembly.

4.2.24.2 Installation

1. Position the MSI Support Assembly a few inches from the printer frame.
2. Insert the wire harness into the cutout in the printer frame.
3. Slide the two positioning pins that are located at both ends of the Support Assembly into the holes in the frame.
4. Use four screws to secure the Assembly to the frame.
5. Reconnect J603.
6. Reinstall the Rear Cover Assembly. “Rear Cover Assembly” on page -140)
7. Reinstall the Rear Support Cover and use one screw to secure it to the Support Assembly.
8. Reinstall the Front Support Cover and use one screw to secure it to the Support Assembly.
9. Reinstall the MSI Feeder Assembly. (“MSI Feeder Assembly (Manual Feeder)” on page -164)

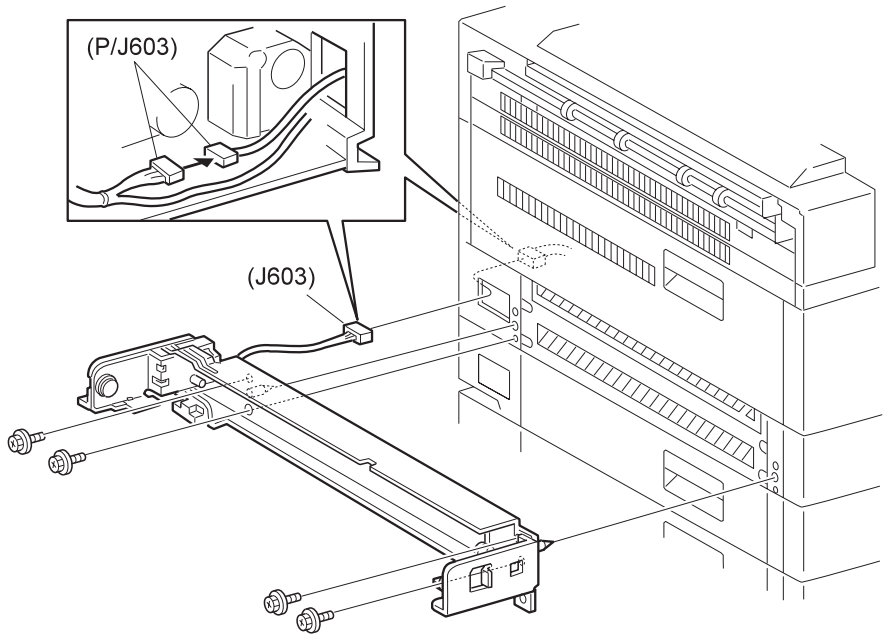

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Figure 4-35. Removal of MSI Support Assembly

4.2.25 MSI Size Sensor Assembly

(See “MSI Tray Assembly” on page -268)

4.2.25.1 Removal

1. Remove the MSI Feeder Assembly. (“MSI Feeder Assembly (Manual Feeder)” on page -164)
2. Place the MSI Feeder upside down, with the Tray facing you.
3. Remove the two screws securing the Lower Cover to the Upper Cover.
4. Locate the three latches on the right side of the Tray. (See the figure)
5. Press the first latch while you pry the edge of the Lower Cover out of the Upper Cover.
6. Repeat step 4 for the remaining two latches located on the right side of the Tray.
7. Repeat step 4 for the two latches that are located on the left side of the Tray, and remove the Lower Cover from the Upper Cover.
8. Remove the MSI Tray.
9. Squeeze together the latches holding the MSI Size Sensor to the MSI Side Guide, and pry the Sensor off away from the Upper Cover.
10. Disconnect J107 and remove the Sensor Assembly.

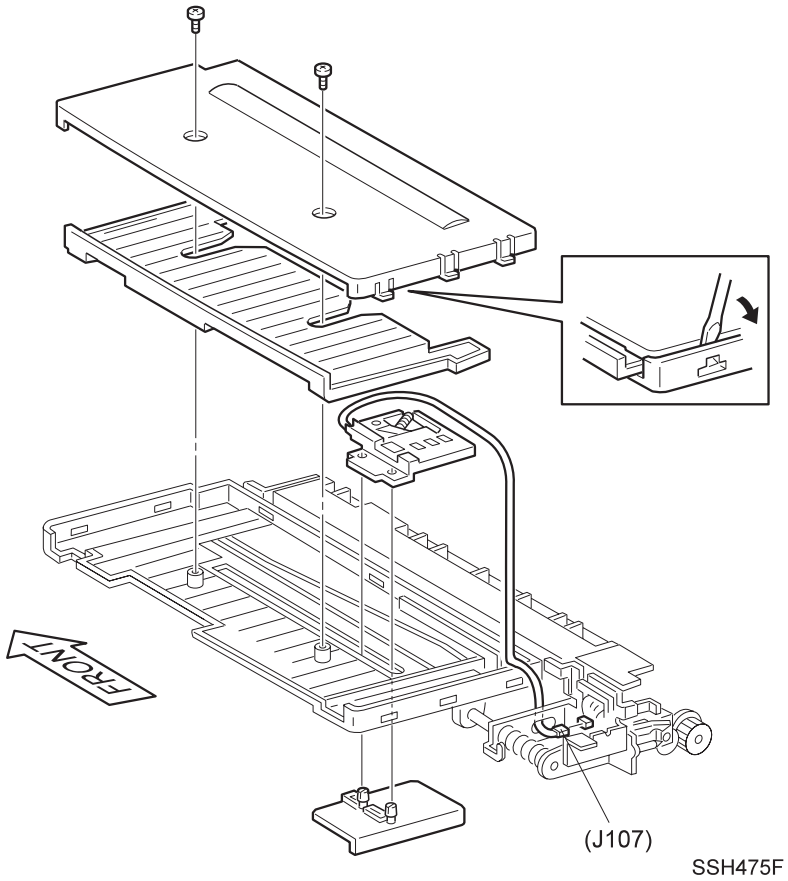

Figure 4-36. Removal of MSI Size Sensor Assembly

4.2.25.2 Installation

1. Reinstall the MSI Side Guide, making sure the two latch tabs at the bottom of the Guide fit through the cutout in the Upper Cover.

- **Be sure to engage the actuator of MSI Sensor and the hole of MSI Size Link.**
- **Be sure that actuator also moves when you mode the Link.**

2. Slide the Side Guide all the way to the right (toward the MSI Tray Spring).
3. Hold the Side Guide in place while you press the two holes in the Size Sensor onto the two latch tabs. Press hard enough so the Size Sensor locks into place.
4. Make sure the spring-loaded arm of the Sensor is under the molded track.
5. Slide the Sensor Assembly to the left to make sure it moves smoothly and the spring-loaded arm lowers as you move the Sensor to the left, and raises when you move the Sensor to the right.
6. Route the Sensor wire harness along the molded channel and through the cutout on the right side of the Upper Cover.
7. Reconnect J107.
8. Reinstall the MSI Tray, with the arrow side facing down.
9. Slide the three tabs on the upper edge of the Lower Cover into the three cutouts in Upper Cover, and press the Lower Cover onto the Upper Cover.
10. Press at the five latch locations to make sure the latches have locked the Lower Cover in place.
11. Use two screws to secure the Lower Cover to the Upper Cover.
12. Reinstall the MSI Feeder Assembly. (“MSI Feeder Assembly (Manual Feeder)” on page -164)

4.2.26 MSI Feed Clutch

(See “Upper Feeder Assembly” on page -267)

4.2.26.1 Removal

1. Remove the MSI Tray Assembly. (“MSI Tray Assembly” on page -164)
2. Remove MSI Top Cover.
3. Remove the screw securing the MSI Tray Support (PL4.1.9) to the Feeder Assembly, and pull the Support away from the Assembly (Figure below).

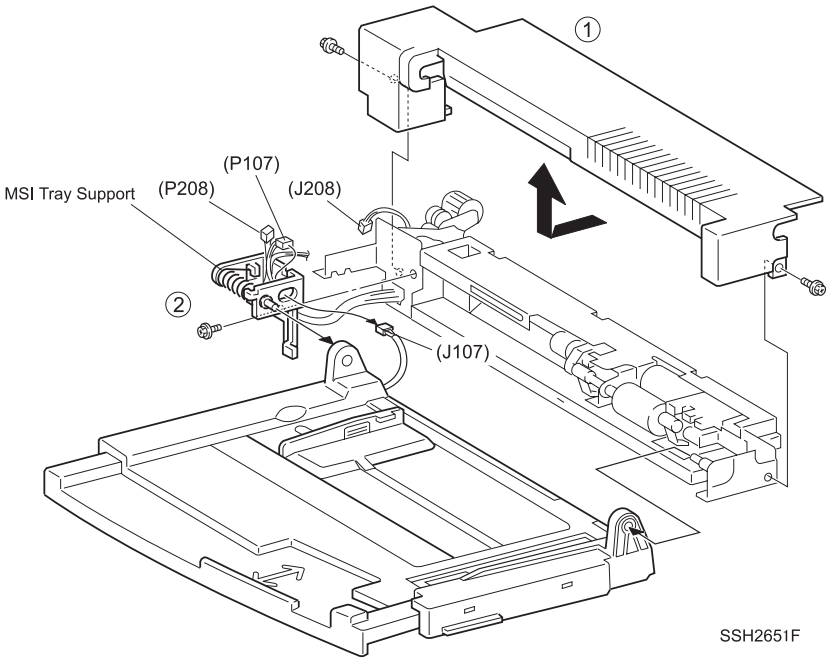

Figure 4-37. Removal of MSI Tray Support

4. Disconnect the J208 running to the MSI Feed Clutch.
5. Remove the screw securing the Rear Hook Bracket to the Feeder Assembly and remove the Bracket (Figure below).

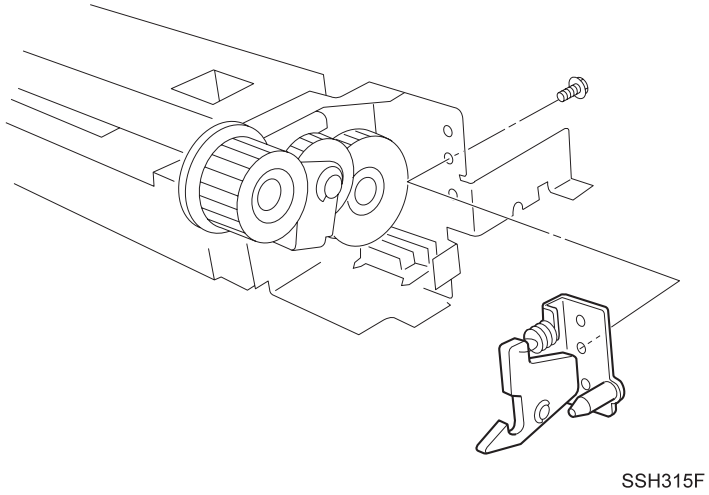

Figure 4-38. Removal of Rear Hook Bracket

6. Remove the E-ring securing the MSI Link Gear to the idler shaft, and slide the Gear, along with the MSI Drive Gear Assembly off of the shaft (Figure below).

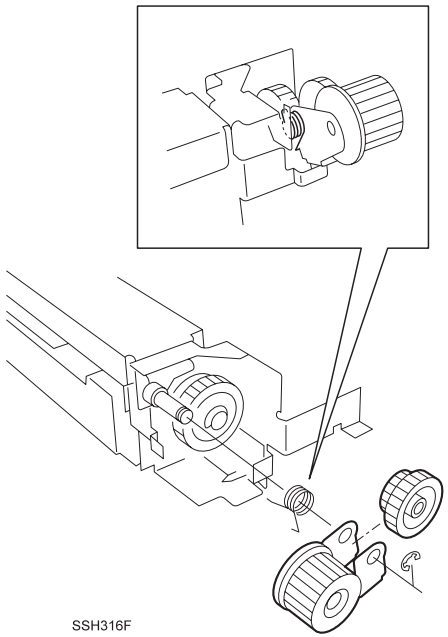

Figure 4-39. Removal of MSI Link Gear

7. Remove the E-ring securing the MSI Feed Clutch to the Feed Shaft and slide the Clutch off of the Feed Shaft (Figure right).

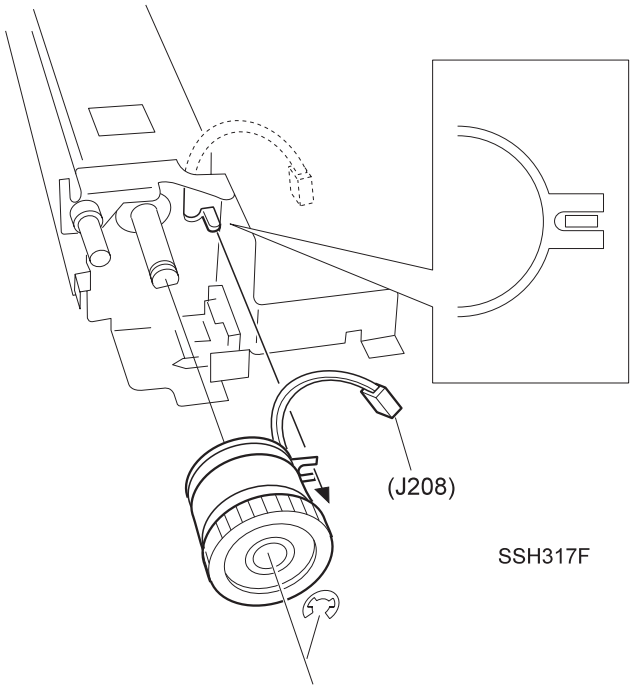

Figure 4-40. Removal of MSI Feed Clutch

4.2.26.2 Installation

1. Position the MSI Feed Clutch with the gear facing out, and slide the Clutch onto the Feed Shaft.
2. Thread the Clutch wire harness through the cutout in the Support frame.
3. Rotate the Clutch so the notch in the Clutch fits into the key in the Assembly (Figure on the previous page).
4. Use and E-ring to secure the MSI Feed Clutch to the Feed Shaft.
5. Reinstall the Link Spring onto the Rear Latch (Figure on the previous page).
6. Slide the MSI Link Gear, along with the MSI Drive Gear Assembly, onto the idler shaft.
7. Use an E-ring to secure the MSI Link Gear to the idler shaft.
8. Reinstall the Rear Hook Bracket to the Feeder Assembly, and use one screw to secure the Bracket.
9. Reconnect J208.
10. Reinstall the MSI Tray Support and use a screw to secure it to the Feeder Assembly.
11. Reinstall the MSI Tray Assembly. (“MSI Tray Assembly” on page -164)

4.2.27 MSI Feed Roll

(See “Upper Feeder Assembly” on page -267)

4.2.27.1 Removal

1. Remove the MSI Tray Assembly. (“MSI Tray Assembly” on page -164)
2. Remove the screw securing the MSI No-Paper Sensor Bracket (“Upper Feeder Assembly” on page -267) to the Feeder Assembly, and lift the Sensor Bracket out of the way.
3. Remove the KL clip securing the MSI Feed Roll to the Feed Shaft, and slide the Feed Roll off of the shaft.

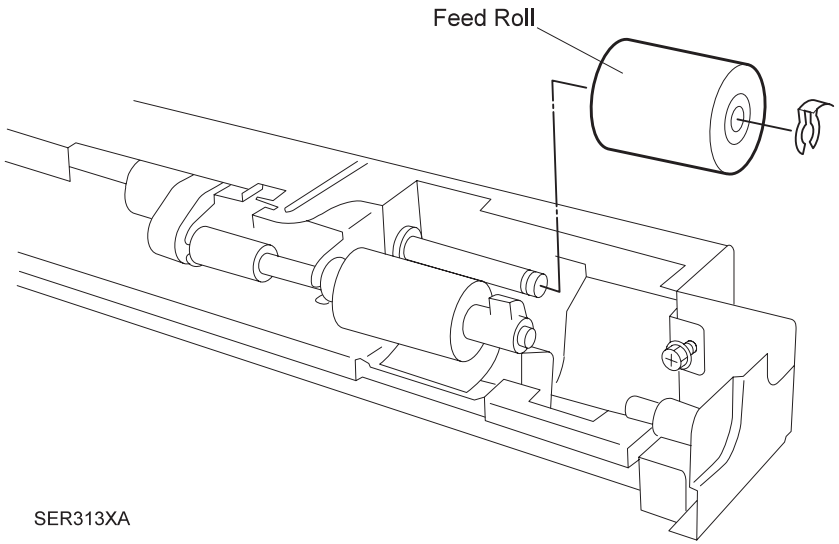

Figure 4-41. Removal of MSI Feed Roll

4.2.27.2 Installation

1. Position the Feed Roll so the metal end of the hole is facing the No-Paper Sensor.

CHECK POINT

One-way clutch is built in the Feed Roll.
Be careful for the direction of the clutch when installing it. If this clutch is installed wrong, it causes paper feed failure.

2. Press down the Retard Pad and slide the MSI Feed Roll onto the Feed Shaft.
3. Use a KL clip to secure the Roll to the shaft.
4. Reinstall the No-Paper Sensor Bracket onto the Feeder Assembly, and use one screw to secure it to the Assembly.
5. Reinstall the MSI Tray Assembly. (“MSI Tray Assembly” on page -164)

4.2.28 MSI Nudger Roll

(See “Upper Feeder Assembly” on page -267)

4.2.28.1 Removal

1. Remove MSI Feed Roll. (“MSI Feed Roll” on page -172)
2. Remove the E-clip securing the MSI Gate (“Upper Feeder Assembly” on page -267) to the Nudger Shaft and remove the Gate.
3. Remove the E-clip securing the Nudger Roll to the Nudger Shaft and slide the Nudger Roll off of the shaft.

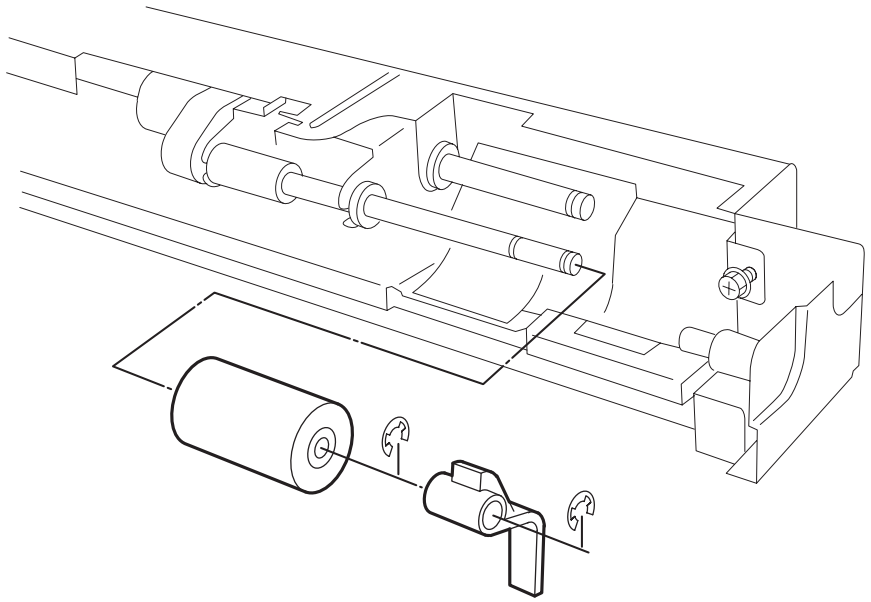

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Figure 4-42. Removal of MSI Nudger Roll

4.2.28.2 Installation

1. Slide the Nudger Roll, forked end first, onto the Nudger Shaft, making sure the forked end engages the pin at the end of the shaft.
2. Use an E-clip to secure the Nudger Roll to the Shaft.
3. Slide the MSI Gate onto the Shaft (see the illustration for correct positioning of the Gate).
4. Use an E-clip to secure the Gate to the Shaft.
5. Reinstall the No-Paper Sensor Bracket onto the Feeder Assembly, and use one screw to secure it to the Assembly.
6. Reinstall the MSI Feeder Assembly. (“MSI Feeder Assembly (Manual Feeder)” on page -164)

4.2.29 MSI Nudger Roll Assembly

(See “MSI Tray Assembly” on page -268)

4.2.29.1 Removal

1. Remove the MSI Feed Clutch. (“MSI Feed Clutch” on page -169)
2. Remove MSI Feed Roll. (“MSI Feed Roll” on page -172)
3. Remove the E-ring securing the MSI Front Feed Bearing to the Feed Shaft, and remove the Bearing.
4. Slide the Feed Shaft out of the Nudger Roll Assembly, and remove the Assembly from the MSI Feeder frame.
5. Remove the Front and Rear Feed Bearings from the Nudger Roll Assembly.

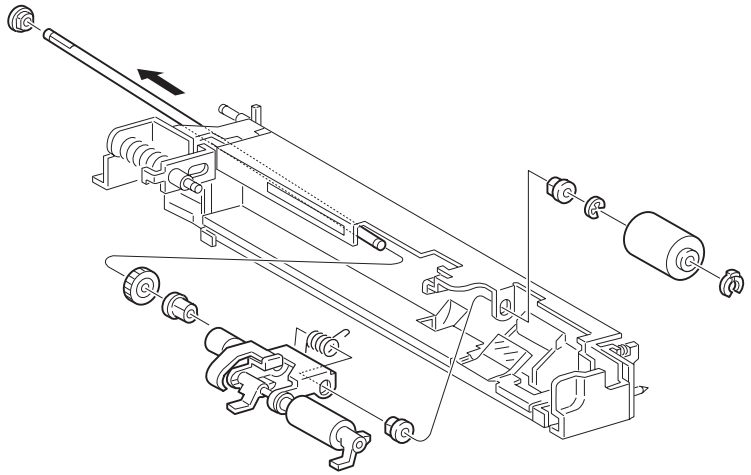

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Figure 4-43. Removal of MSI Nudger Roll Assembly

4.2.29.2 Installation

1. Reinstall the Front and Rear Feed Bearings onto the Nudger Roll Assembly (see the figure for correct placement).
2. Hook one end of the Feed Spring over the Nudger Roll Assembly frame.
3. Reinstall the Nudger Roll Assembly into the MSI Feeder Assembly.
4. Hold the Feed Gear in place, with the flat side against the Nudger Roll Assembly.
5. Slide the Feed Shaft through the Feed Gear, through the Rear Feed Bearing, through the Nudger Roll Assembly, through the Feed Spring, through the Front MSI Bearing, and out through the cutout for the Front Feed Bearing.
6. Slip the Front Feed Bearing over the end of the Feed Shaft, and slide the Bearing into the cutout in the frame.
7. Continue sliding the Feed Shaft as far as it will go.
8. Use an E ring to secure the Shaft to the Front Feed Bearing.
9. Hook the free end of the Feed Spring through the opening at the rear of the Assembly frame.
10. Reinstall the MSI Feed Roll. (“MSI Feed Roll” on page -172)
11. Reinstall the MSI Feed Clutch. (“MSI Feed Clutch” on page -169)

4.2.30 MSI Pad

(See “MSI Feeder Assembly (Manual Feeder)” on page -164)

4.2.30.1 Removal

1. Remove the MSI Feed Roll. (“MSI Feed Roll” on page -172)
2. Remove the MSI Nudger Roll. (“MSI Nudger Roll” on page -173)
3. Turn the MSI Feeder upside down.
4. Remove the KL clip securing the MSI Pad Pin to the Feeder, and slide the Pin out of the MSI Pad.
5. Turn the MSI Feeder right side up.
6. Pull back the MSI Paper Guide and slide the MSI Pad to the right and out of the Feeder.

4.2.30.2 Installation

1. Pull back the MSI Paper Guide and slide the MSI Pad between the Guide and the Pad Spring.
2. Turn the MSI Feeder upside down.
3. Slide the MSI Pad Pin into the hole in the Feeder, through the holes in the three legs of the MSI Pad, and out through the other hole in the Feeder.
4. Use a KL clip to secure the MSI Pad Pin to the Feeder.
5. Press down on the MSI Pad to make sure it moves smoothly and has a spring-action return.
6. Reinstall the MSI Nudger Roll. (“MSI Nudger Roll” on page -173)
7. Reinstall the MSI Feed Roll. (“MSI Feed Roll” on page -172)

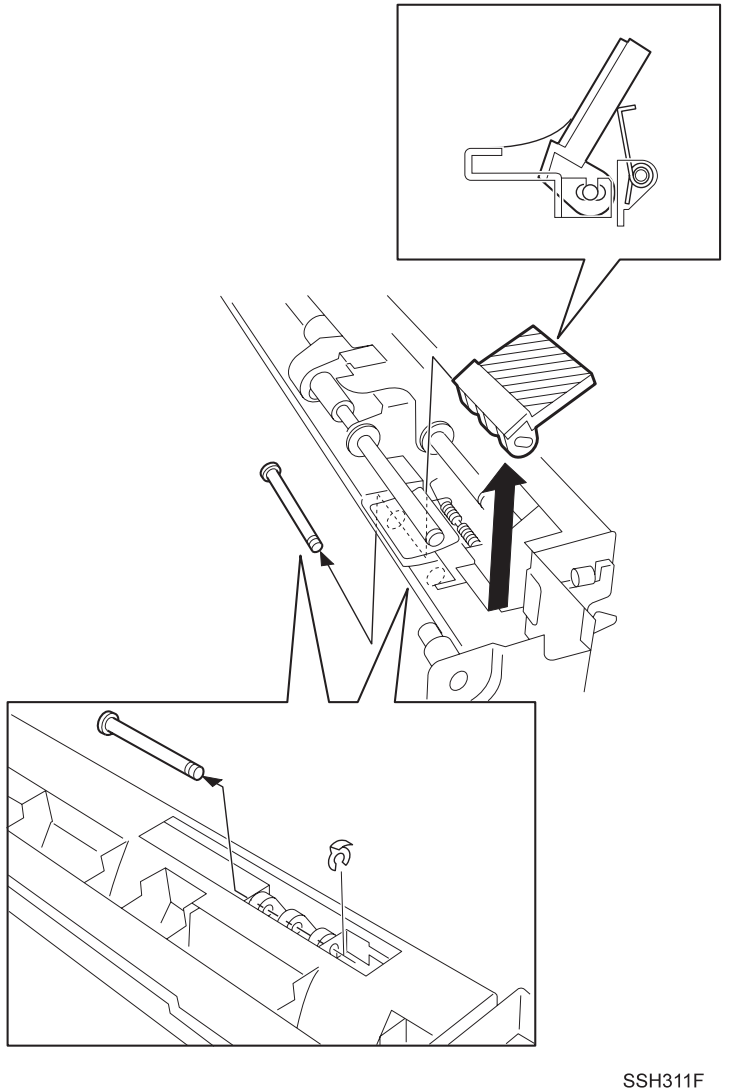

Figure 4-44. Removal of MSI Pad

4.2.31 MSI Friction Clutch

(See “Upper Feeder Assembly” on page -267)

4.2.31.1 Removal

1. Remove the MSI Tray Assembly. (“MSI Tray Assembly” on page -164)
2. Remove the E ring securing the Clutch to the shaft.
3. Rotate the Clutch clockwise as you pull the it off of the shaft.

4.2.31.2 Installation

1. Make sure the Spacer is in place on the Clutch shaft.
2. Rotate the Spacer so the tabs on the Spacer mesh with the notches on the Clutch Gear.

CAUTION

When performing step3, push only the rear of the Clutch. Never press the sides of the Clutch. Pressing the sides of the Clutch will cause the Clutch break apart.

3. Slide the Friction Clutch onto the shaft, rotating the Clutch as you slide it toward the Spacer.
4. Make sure the Clutch and Spacer mesh.
5. Use one E ring to secure the Clutch to the shaft.
6. Reinstall the MSI Tray Assembly. (“MSI Tray Assembly” on page -164)

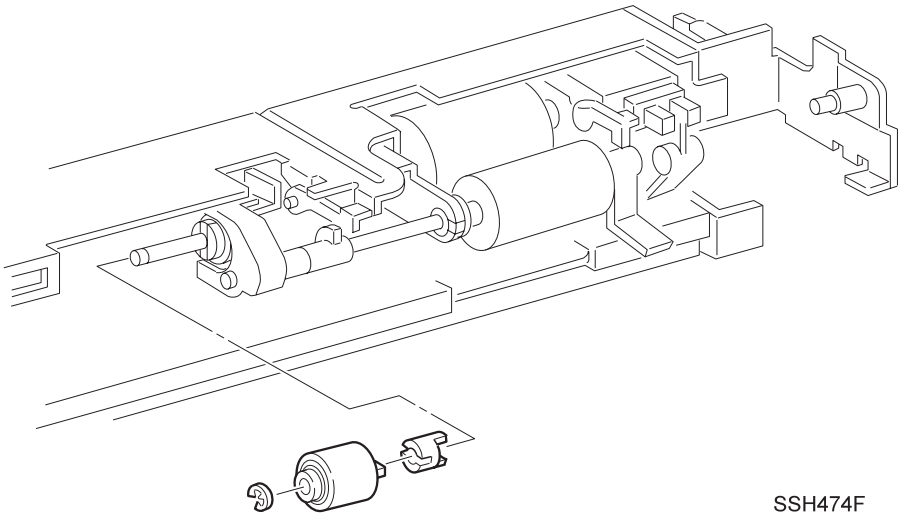

Figure 4-45. Removal of MSI Friction Clutch

4.2.32 MSI No-Paper Sensor Assembly

(See “Upper Feeder Assembly” on page -267)

4.2.32.1 Removal

1. Remove the MSI Feeder Assembly. (“MSI Feeder Assembly (Manual Feeder)” on page -164)
2. Remove the screw securing the MSI No-Paper Sensor Bracket to the Feeder Assembly, and lift the Sensor Bracket off of the Feeder.
3. Disconnect the P/J from the No-Paper Sensor.
4. Squeeze the Sensor latches and remove the Sensor from the Bracket.

4.2.32.2 Installation

1. Position the Senor so the P/J connector faces the screw hole in the Sensor Bracket.
2. Insert the Sensor latches into the two opening in the Bracket. The Sensor snaps into place.
3. Make sure the arm of the No Paper Actuator is between the two arms of the Sensor.
4. Reconnect the P/J to the No-Paper Sensor.
5. Insert the Bracket prong through the keyhole opening in the back of the Feeder.
6. Slide the Bracket to the right so the screw hole in the Bracket lines up with the screw hole in the Feeder.
7. Use one screw to secure the Bracket to the Feeder.
8. Manually actuate the No Paper Actuator to make sure it moves freely between the arms of the Sensor.
9. Reinstall the MSI Feeder Assembly. (“MSI Feeder Assembly (Manual Feeder)” on page -164)

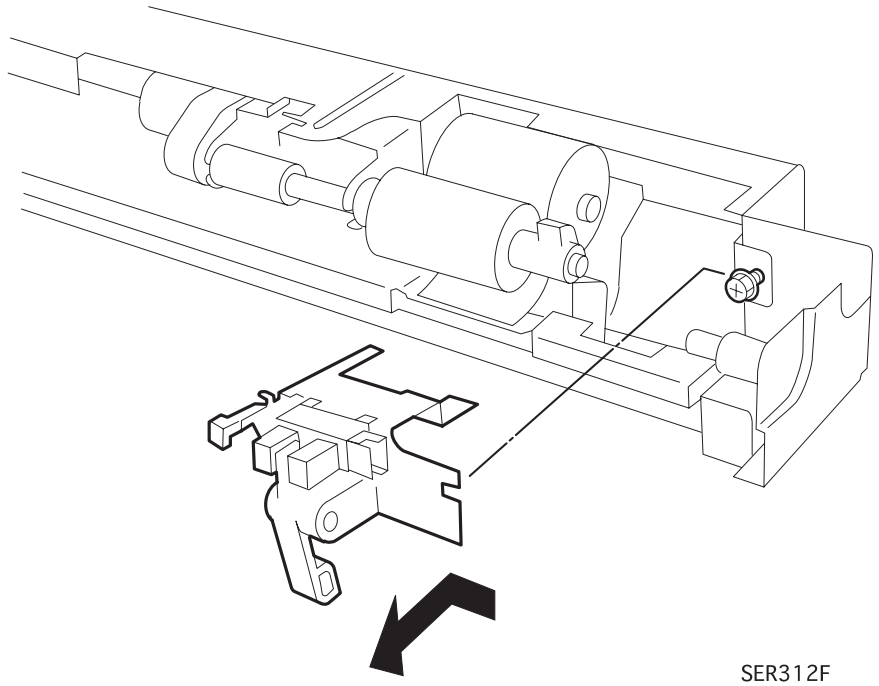

Figure 4-46. Removal of MSI No-Paper Sensor

4.2.33 L/H Low Cover Assembly

(See “Tray 1 Frame and Left Cover” on page -269)

4.2.33.1 Removal

1. Remove the MSI Support Assembly. (“MSI Support Assembly” on page -166)
2. Remove the four screws securing the Left Middle Cover to the printer frame, and remove the Cover.

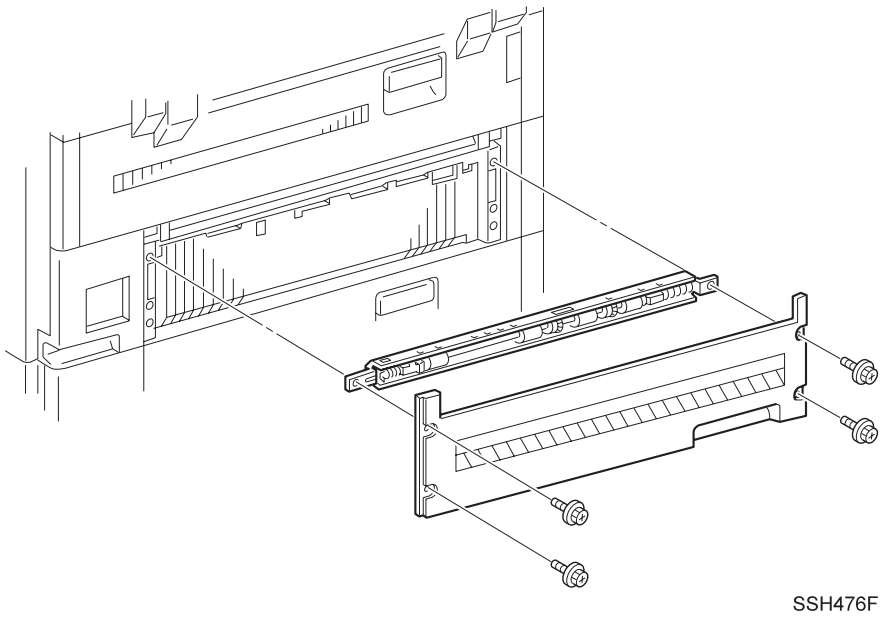

Figure 4-47. Removal of Left Middle Cover

3. LIft the Pinch Roll Bracket off of the Left Middle Cover.
4. Remove the two Holding Springs, and lift the Pinch Roll out of the Bracket.
5. Remove the two Center Bearings, the two Shaft Springs, and the two End Brackets from the Shaft.

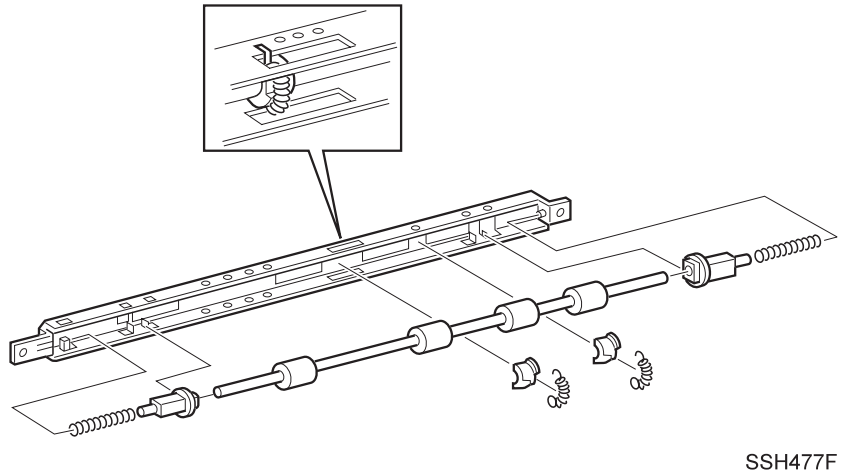

Figure 4-48. Disassembly of L/H Low Cover Assembly

4.2.33.2 Installation

1. Reinstall the two End Bearings onto the Shaft.
2. Reinstall the two Shaft Springs over the End Bearings.
3. Compress the Shaft Springs and reinstall the Shaft into the Bracket. Make sure that the lip of each Bearing is trapped behind the tabs in the Bracket, and that each Pinch Roll lines up with the corresponding cutout in the Bracket.
4. Hook one end of each Holding Spring into a spring hole in one side of the Bracket.
5. Bring the Springs over the Shaft and hook the other end of each Spring into the spring hole on the opposite side of the Bracket.
6. Slide a Center Bearing under each Holding Spring, as shown in the figure.
7. Reinstall the Pinch Roll Bracket onto the Left Middle Cover, as shown in the figure.
8. Reinstall the Left Middle Cover onto the printer frame.
9. Use four screws to secure the Left Middle Cover to the printer frame.
10. Reinstall the MSI Support Assembly. (“MSI Support Assembly” on page -166)

4.2.34 Left Lower Cover Assembly

(See “Tray 2 Frame and Left Cover” on page -270)

4.2.34.1 Removal

1. Open the Left Lower Cover.
2. Remove the screw securing the Front Hinge to the printer frame.
3. Pull the Left Lower Cover away from the printer frame.

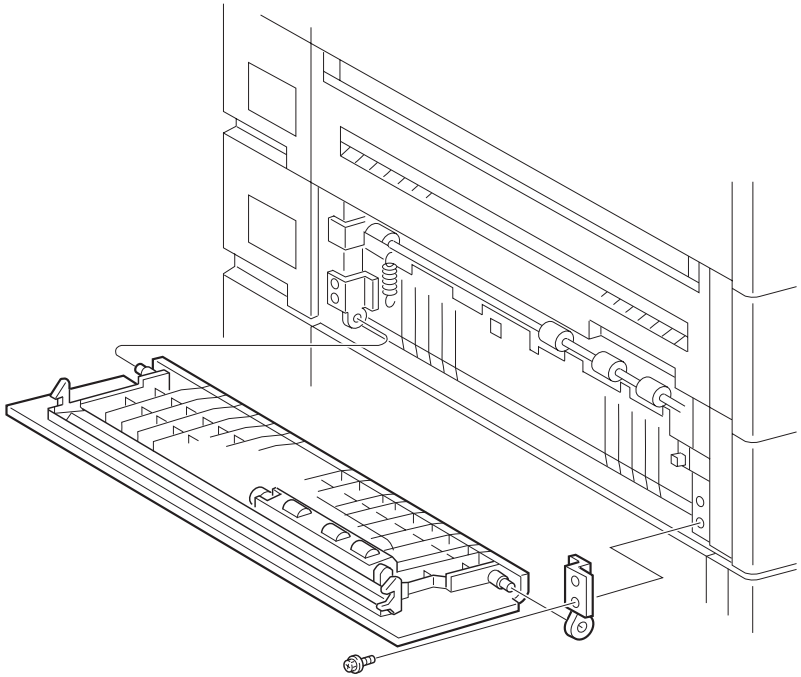

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Figure 4-49. Removal of Left Lower Cover Assembly

4.2.34.2 Installation

1. Reinstall the Front Hinge onto the pivot post on right side of the Left Lower Cover.
2. Reinstall the Left Lower Cover by first sliding the left pivot post into the Rear Hinge.
3. Use one screw to secure the Front Hinge to the printer frame.
4. Close the Left Lower Cover.

4.2.35 Left Lower Cover Pinch Roll Assembly

(See “Tray 2 Frame and Left Cover” on page -270)

4.2.35.1 Removal

1. Remove the Left Lower Cover Assembly. (“Left Lower Cover Assembly” on page -180)
2. Remove the three screws securing the Pinch Roll Bracket to the Assembly, and remove the Bracket.
3. Unhook the two Pinch Roll Springs and lift the Pinch Roll out of the Bracket.
4. Remove the two Center Bearings and the two End Bearings from the Roll.

4.2.35.2 Installation

1. Reinstall an End Bearing to each end of the Pinch Roll.
2. Reinstall the Pinch Roll onto the Bracket.
   Make sure that the lip of each Bearing is trapped behind the tabs in the Bracket.
3. Hook one end of each Pinch Roll Spring into a spring hole in one side of the Bracket.
4. Bring the Springs over the Pinch Roll Shaft and hook the other end of each Spring into the spring hole on the opposite side of the Bracket.
5. Slide a Center Bearing under each Pinch Roll Spring, as shown in the figure.
6. Reinstall the Bracket onto the Left Lower Cover Assembly, and use three screws to secure it to the Assembly.
7. Reinstall the Left Lower Cover Assembly.(“Left Lower Cover Assembly” on page -180)

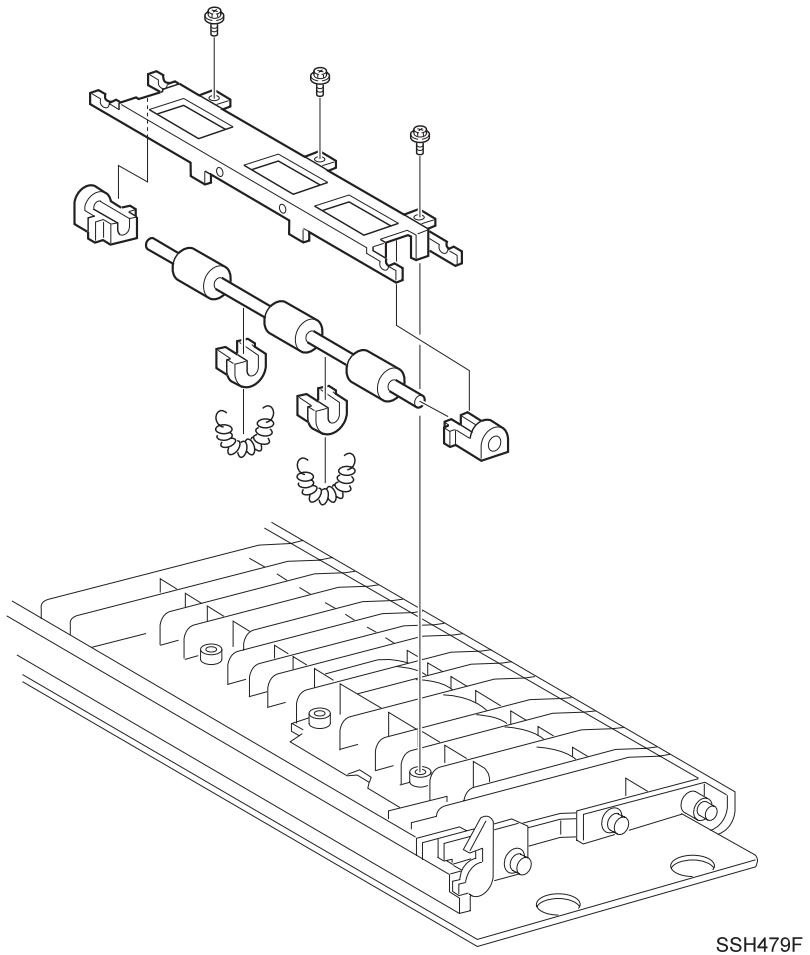

Figure 4-50. Removal of Left Lower Cover Pinch Roll Assembly

4.2.36 Left Lower Cover Interlock Switch

(“Tray 2 Frame and Left Cover” on page -270)

4.2.36.1 Removal

1. Open the Left Lower Cover.
2. Squeeze the sides of the Switch and pull it away from the printer frame.
3. Disconnect J144.

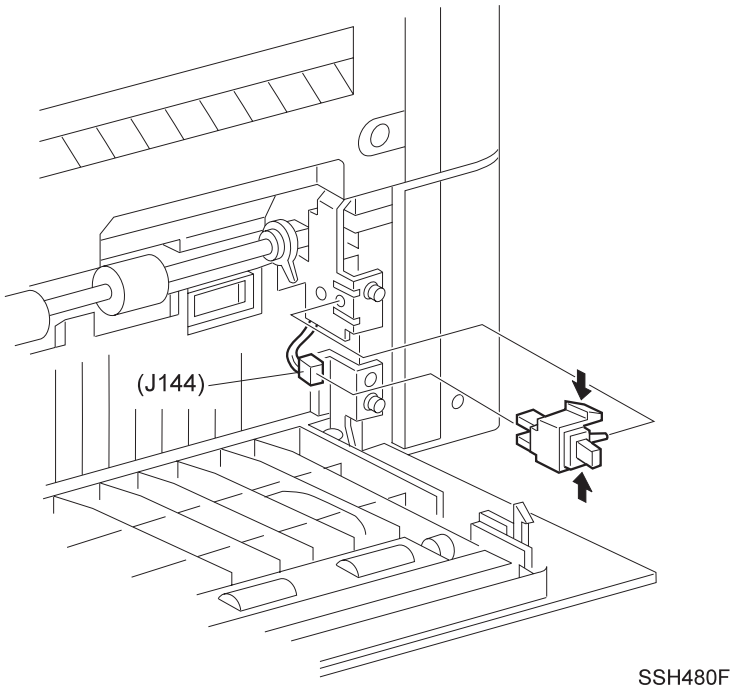

Figure 4-51. Removal of Left Lower Cover Interlock Switch

4.2.36.2 Installation

1. Reconnect J144.
2. Squeeze the sides of the Switch while inserting the locating tab on the Switch into the opening in the frame.
3. Release the sides of the Switch and press it into the frame.
4. The Switch snaps into place.
5. Close the Left Lower Cover.

4.2.37 Tray 2 Take Away Sensor

(“Tray 2 Frame and Left Cover” on page -270)

4.2.37.1 Removal

1. Open the Left Lower Cover.
2. Squeeze in all four Sensor latches while you pull the Sensor out of the printer frame.
3. Disconnect J143 from the Sensor.

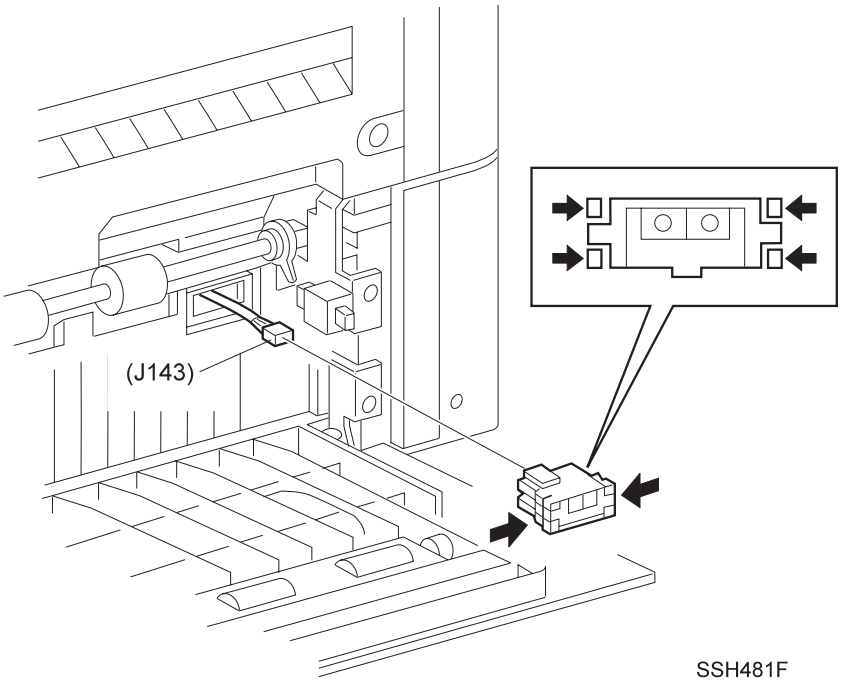

Figure 4-52. Removal of Tray2 Take Away Sensor

4.2.37.2 Installation

1. Reconnect J143 to the Sensor.
2. Insert the Sensor into the cutout in the frame. (See the figure for correct positioning).
3. Press in on the Sensor until it snaps into place.
4. Close the Left Lower Cover.

4.2.38 Registration Clutch

(See “Registration” on page -271)

4.2.38.1 Removal

1. Remove the Rear Cover. (“Rear Cover Assembly” on page -140)
2. Disconnect P/J 200 from the Registration Clutch.
3. Remove the E clip securing the Registration Clutch to the Registration Shaft.
4. Push out on the shaft latch as you slide the Clutch off of the shaft.

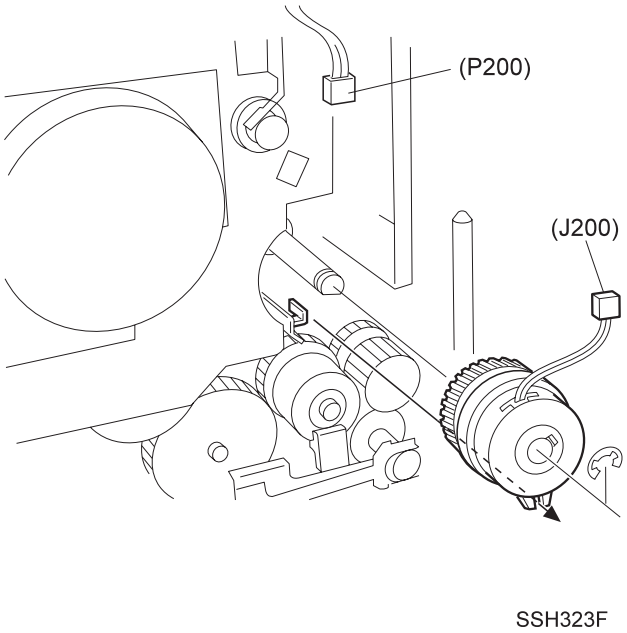

Figure 4-53. Removal of Registration Clutch

4.2.38.2 Installation

1. Slide the Registration Clutch onto the shaft. The shaft latch snaps the Clutch into place on the shaft.
2. Use an E clip to secure the Registration Clutch to the Registration Shaft.
3. Reconnect P/J 200 from the Registration Clutch.
4. Reinstall the Rear Cover. (“Rear Cover Assembly” on page -140)

4.2.39 Left Upper Cover Assembly

(See “Left Upper Cover Assembly” on page -272)

4.2.39.1 Removal

1. Remove the Rear Cover. (“Rear Cover Assembly” on page -140)
2. Open the Duplex Unit.
3. Open the Left Upper Cover.

CAUTION

When the Left Upper Cover is open, the BTR is exposed. Do not touch the BRT. Grease and dirt on, or physical damage to the BTR will effect print quality.

4. Use a screwdriver blade to open the latch securing the Front Shaft Hinge, and slide the Hinge out of the Cover Assembly. Do not slide the Hinge completely out of the printer frame.
5. Use a screwdriver blade to open the latch securing the Rear Shaft Hinge, and slide the Hinge out of the Cover Assembly. Do not slide the Hinge completely out of the printer frame.
6. Pull the Left Upper Cover Assembly away from the printer frame.
7. Remove the two screws securing the two Cover Supports to the frame, and remove the Cover.

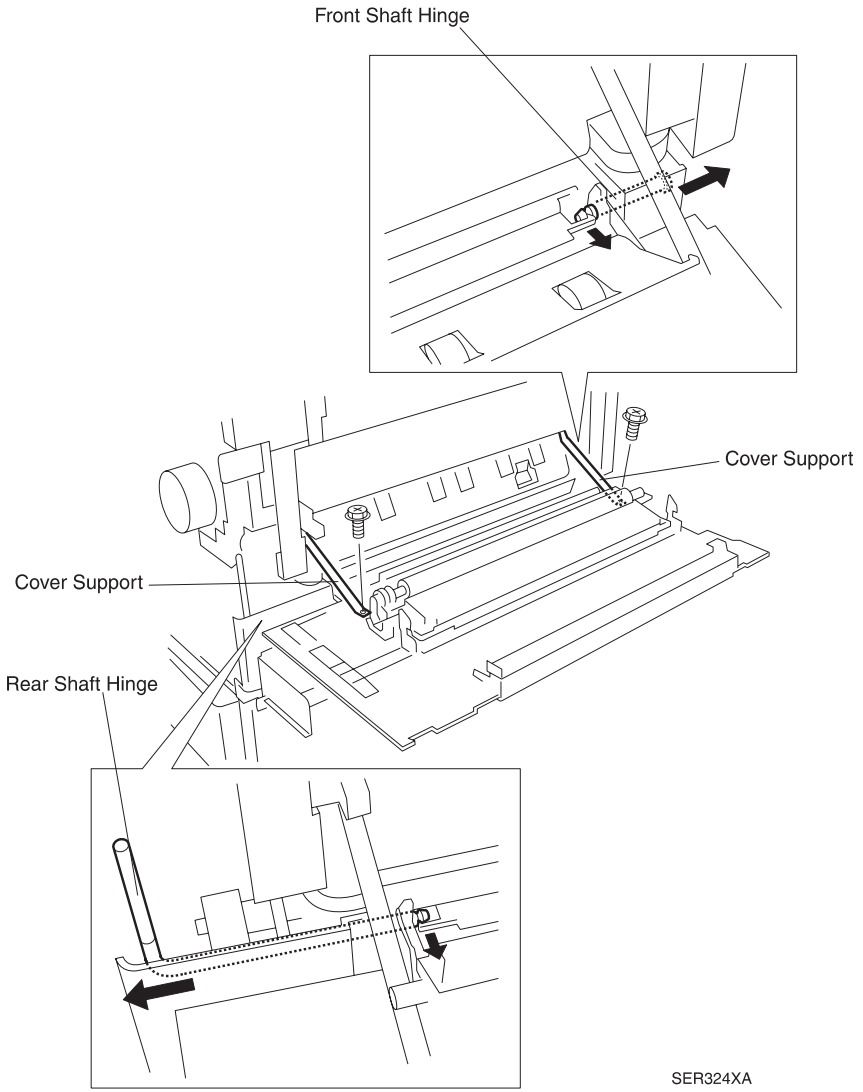

Figure 4-54. Removal of Left Upper Cover Assembly

4.2.39.2 Installation

1. Open the Duplex Unit.

CAUTION

When the Left Upper Cover is open, the BTR is exposed. Do not touch the BRT. Grease and dirt on, or physical damage to the BTR will effect print quality.

2. Reinstall the Left Upper Cover Assembly so the hinge openings in the Cover arms line up with the hinge holes in the printer frame.
3. Slide the Rear Shaft Hinge into the hinge opening in the Rear Cover arm, until the latch locks the Hinge onto the shaft.
4. Slide the Front Shaft Hinge into the hinge opening in the Front Cover arm, until the latch locks the Hinge onto the shaft.
5. Use two screws to secure the two Cover Supports to the frame.
6. Reinstall the Rear Cover. (“Rear Cover Assembly” on page -140)
7. Open and close the Cover to make sure it opens and latches correctly.

4.2.40 Left Chute Assembly

(See “Left Upper Cover Assembly” on page -272)

4.2.40.1 Removal

1. Open the Left Upper Cover.
2. Remove the BTR Assembly. (“BTR Assembly (Transfer roller unit)” on page -194)
3. Push down on the rear of the Chute Assembly and use the blade of a small screwdriver to free the rear latches from the Cover.
4. Push down on the front of the Chute Assembly and use the blade of a small screwdriver to free the front latches from the Cover.
5. Remove the Left Chute Assembly.
6. Release the two springs and remove the Registration Roll Assembly from the Chute Assembly.

4.2.40.2 Installation

1. Reinstall the Registration Roll Assembly onto the Chute Assembly. Make sure the cutout in the Chute Assembly capture the lips of the three bearings on the shaft.
2. Hook the free ends of the two springs into the holes in the Chute, so the springs lay on top of the bearings and secure the shaft to the Chute.
3. Position the Left Chute Assembly so the cutout for the Registration Senor is located opposite the Registration Sensor.
4. Lift the clear mylar strip out of the way as you lower the Chute onto the Upper Cover.
5. As you lower the Chute make sure the top of the two Comp Springs fit into the tabs on the underside of the Chute.
6. Press the front of the Chute so the two latches lock the front of the Chute into place.
7. Press the rear of the Chute so the two latches lock the rear of the Chute into place. (“BTR Assembly (Transfer roller unit)” on page -194)
8. Reinstall the BTR Assembly.
9. Close the Left Upper Cover.

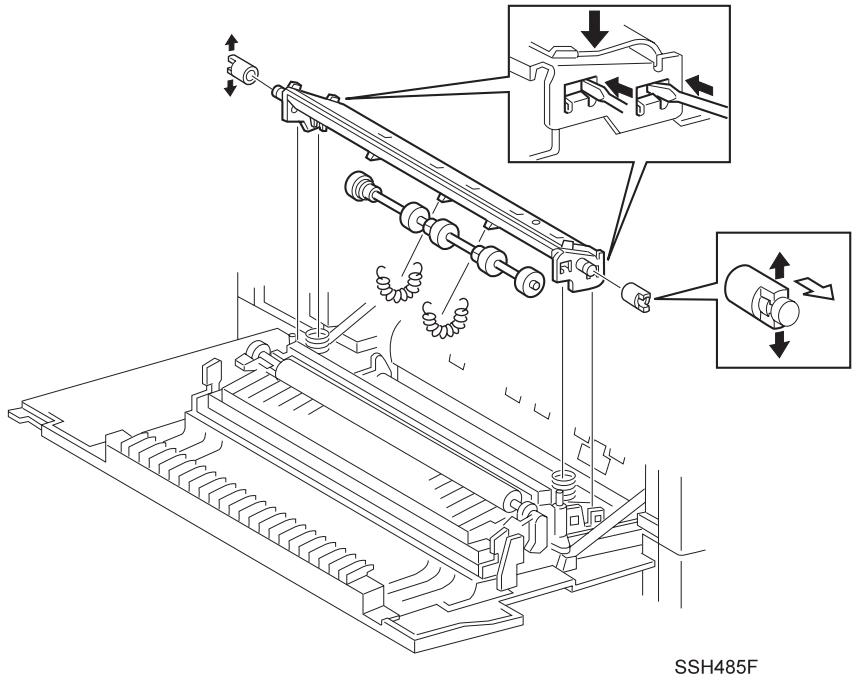

Figure 4-55. Removal of Left Chute Assembly

4.2.41 Registration Chute Assembly

(See “Registration” on page -271)

4.2.41.1 Removal

1. Remove the Left Upper Cover Assembly. (“Left Upper Cover Assembly” on page -185)
2. Remove the Registration Clutch.(“Registration Clutch” on page -184)
3. Remove the screw securing the Inner Cover to the printer frame, and remove the Inner Cover.
4. Remove the EP Cartridge. (“EP Cartridge (Toner Cartridge)” on page -192)
5. Remove the screw securing the Magnet Plate to the printer frame, and remove the Plate.
6. Remove the two screws (under the Magnet Plate) securing the front of the Registration Chute to the printer frame.
7. Remove the two screws (under the Registration Clutch) securing the rear of the Registration Chute to the printer frame, and remove the Chute.
8. Disconnect P/J103 from the Registration Sensor.

4.2.41.2 Installation

1. Reconnect P/J103 to the Registration Sensor.
2. Reinstall the Registration Chute Assembly into the printer frame.Make sure the mylar strip is on the outside of the Chute.
3. Align the four screw holes (two at each end) in the Registration Chute with the four screw holes in the printer frame.
4. Use two screws to secure the Chute to the front of the frame, and use two screws to secure the Chute to the rear of the frame.
5. Reinstall the Magnet Plate to the printer frame, and use one screw to secure the Plate.
6. Reinstall the Inner Cover to the frame, and use one screw to secure the Cover.
7. Reinstall the Left Upper Cover Assembly.
8. Reinstall the Registration Clutch. (“Left Upper Cover Assembly” on page -185)
9. Reinstall the EP Cartridge. (“EP Cartridge (Toner Cartridge)” on page -192)

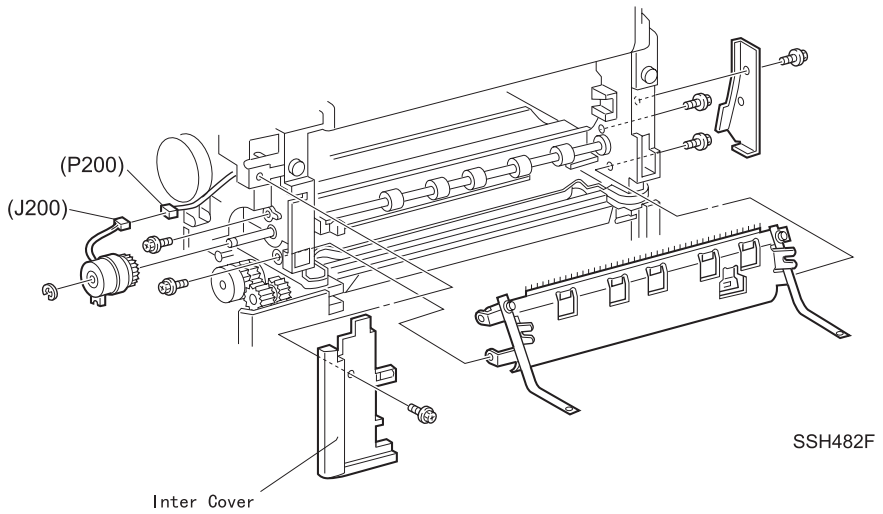

Figure 4-56. Removal of Registration Chute Assembly

4.2.42 Registration Roll Assembly

(See “Registration” on page -271)

4.2.42.1 Removal

1. Remove the Registration Chute Assembly. (“Registration Chute Assembly” on page -188)
2. Remove the E ring fro the rear of the Registration Roll Shaft.
3. Slide the Shaft to the rear to free the front of the Shaft from the front bearing.
4. Remove the Registration Roll Assembly.

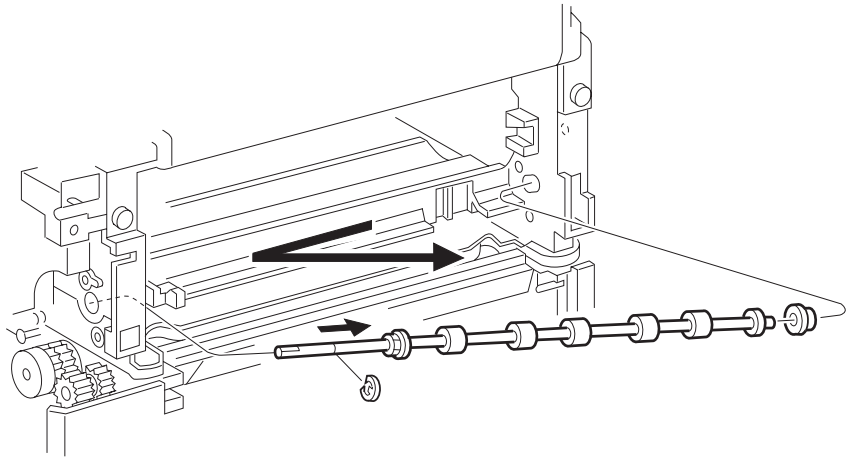

Figure 4-57. Removal of Registration Roll Assembly

4.2.42.2 Installation

1. Make sure both the front and rear bearings are in place in the frame.
2. Slide the rear of the Registration Roll Shaft through the rear bearing.
3. Slide the front of the Shaft to the front bearing.
4. Use one E ring to secure the rear of the Shaft to the rear bearing.
5. Reinstall the Registration Chute Assembly. (“Registration Chute Assembly” on page -188)

4.2.43 Registration Sensor

(See “Registration” on page -271)

4.2.43.1 Installation

1. Open the Left Upper Cover.
2. Squeeze in all four Sensor latches while you pull the Sensor out of the Registration Chute Assembly.
3. Disconnect J103 from the rear of the Sensor.

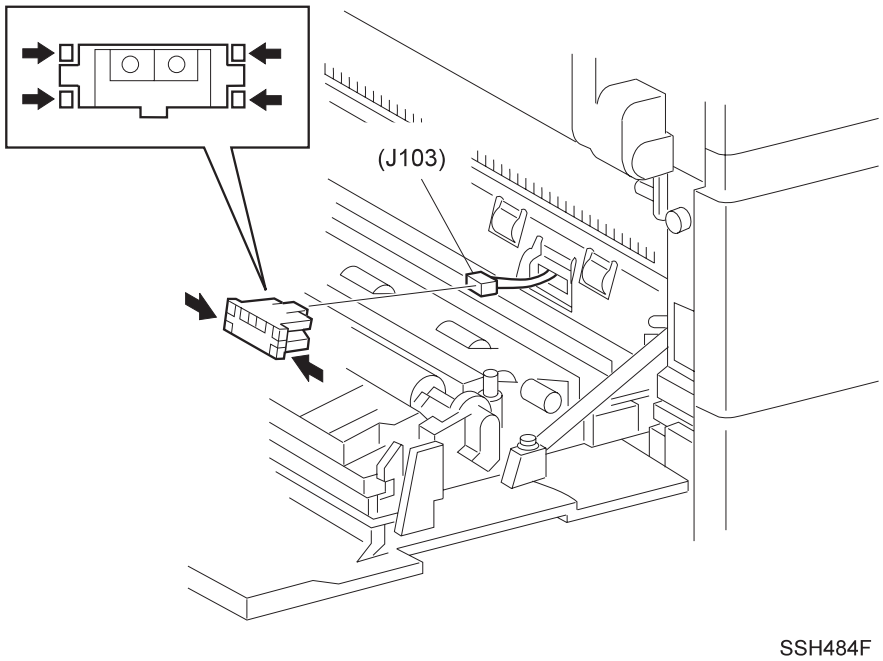

Figure 4-58. Removal of Registration Sensor

4.2.43.2 Installation

1. Reconnect J103 to the Registration Sensor.
2. Insert the Sensor into the cutout in the Registration Chute Assembly.
3. Press in on the Sensor unit it snaps into place.
4. Close the Left Upper Cover.

4.2.44 ROS Assembly

(See “ROS Assembly” on page -274)

4.2.44.1 Removal

1. Remove the Low Voltage Power Supply. (“Low Voltage Power Supply(LVPS) Assembly” on page -215)
2. Disconnect the J106, J207, J407, and J430 from the ROS.
3. Remove the four screws that secure the ROS to the printer frame.
4. Lift the ROS Assembly off of the printer frame.
5. Place the ROS Assembly on a flat and stable surface.

CAUTION

Do not remove covers of disassemble the ROS Assembly. There are no replaceable parts of field adjustable points located inside the ROS Assembly.

4.2.44.2 Installation

1. Reinstall the ROS Assembly onto the printer frame.

CHECK POINT

The small PWB mounted on the side of the ROS Assembly should be near the HVPS and MCU side of the printer frame.

2. Reposition the ROS Assembly until the two locating pins mounted on the bottom of the ROS drop into locating holes that are cut into the printer frame.
3. Make sure you have not trapped any wire harnesses under the ROS Assembly.
4. Use four screws to secure the ROS Assembly to the printer frame.
5. Reconnect J106, J207, J407, and J430 to the ROS.
6. Reinstall the LVPS. (“Low Voltage Power Supply(LVPS) Assembly” on page -215)

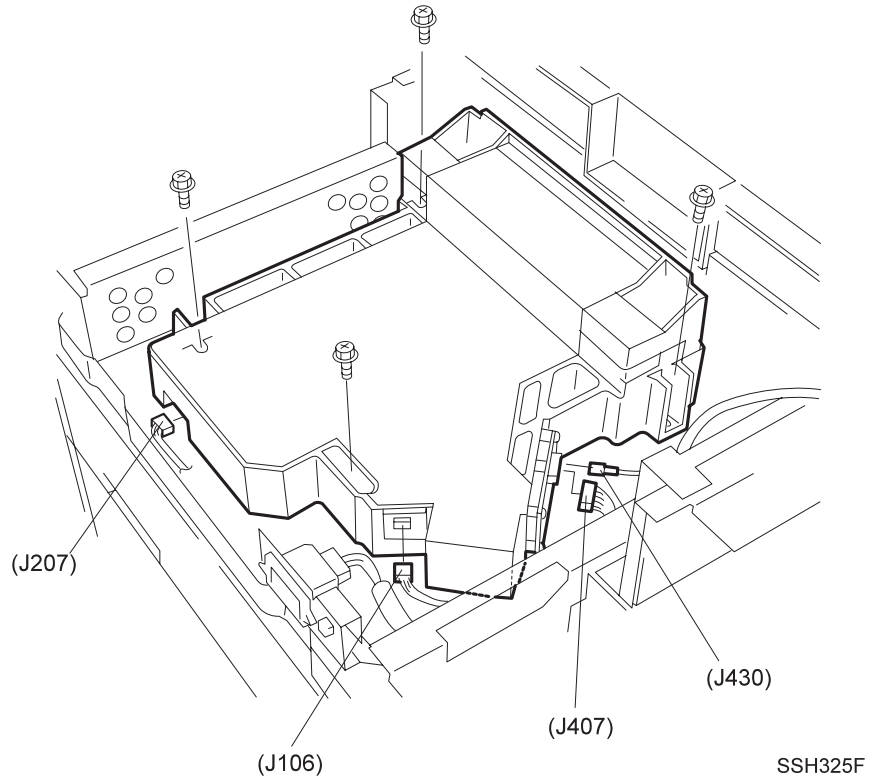

Figure 4-59. Removal of ROS Assembly

4.2.45 EP Cartridge (Toner Cartridge)

(See “Xerography and Development Transport Chute Assembly” on page -274)

4.2.45.1 Removal

1. Open the Duplex Unit.
2. Open the Left Upper Cover.

CAUTION

Do not attempt to remove the EP Cartridge without first opening the LEFT Upper Cover.

3. Open the Front Left Cover (Cover Assembly FL).
4. Pull up on the orange handle and slide the EP Cartridge half way out of the printer.
5. Hold on to the top handle and slide the EP Cartridge out of the printer.
6. If you are removing the EP Cartridge as part of another RRP, place the EP Cartridge in a covered box or cover it with a dark cloth to protect it from exposure to light.

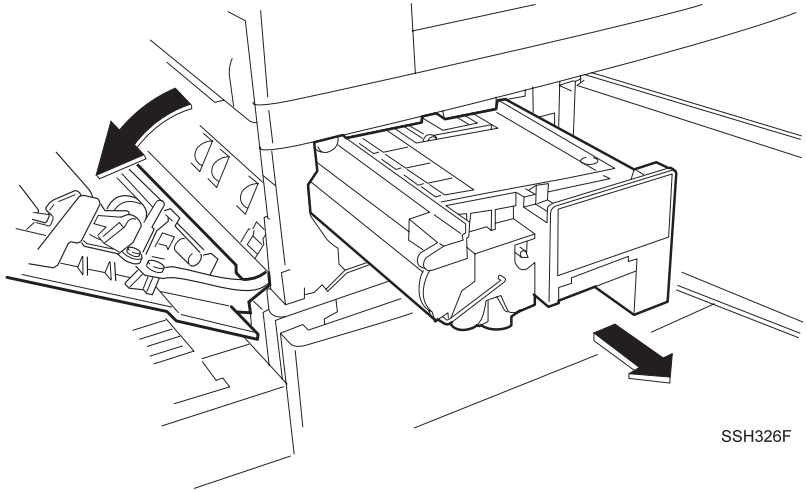

Figure 4-60. Removal of EP Cartridge

4.2.45.2 Installation

1. Open the Duplex Unit.
2. Open the Left Upper Cover.

CAUTION

Do not attempt to install the EP Cartridge without first opening the Left Upper Cover.

3. Open the Front Left Cover Assembly (Cover Assembly FL).
4. Hold the EP Cartridge by the top handle and carefully slide the EP Cartridge into the printer.

5. Release the top handle and allow it to fold out of the way, then slide the EP Cartridge the rest of the way into the printer.

6. Push firmly on the end of EP Cartridge to make sure it is correctly seated in the printer.

7. Hold the edges of the EP Cartridge and pull out, to make sure the EP Cartridge is latched in place.Do not hold the handle when pulling out. You will release the EP Cartridge latch.

8. Close the Front Left Cover.

9. Close the Left Upper Cover

10. Close the Duplex Unit.

4.2.46 BTR Assembly (Transfer roller unit)

(See “Xerography and Development Transport Chute Assembly” on page -274)

4.2.46.1 Removal

1. Open the Left Upper Cover.
2. Face the left side of the printer.
3. Hole the rear BTR lever in your left hand and the front BTR lever in you right hand.
4. Rotate both levers away from you to unlock the BTR.
5. With both levers back, lift the BTR out of the Cover Assembly.

CAUTION

Do not touch the sponge roll surface of the BTR. Grease and dirt on, or physical damage to the BTR will effect print quality.

4.2.46.2 Installation

1. Open the Left Upper Cover Assembly.
2. Face the left side of the printer.
3. Hold the BTR by the end levers.

CAUTION

- **Do not touch the sponge roll surface of the BTR. Grease and dirt on, or physical damage to the BTR will effect print quality.**
- **If BTR Assembly is exchanged, be sure to reset the TR Counter. (See “Maintenance Mode” on page -46)**

4. Position the BTR so the BTR gear on one end of the Roll is to the rear.
5. Press the ends of the BTR into the BTR Sleeves. The BTR snaps into place.
6. Rotate both levers toward to you lock the BTR in place.
7. Close the Left Upper Cover.

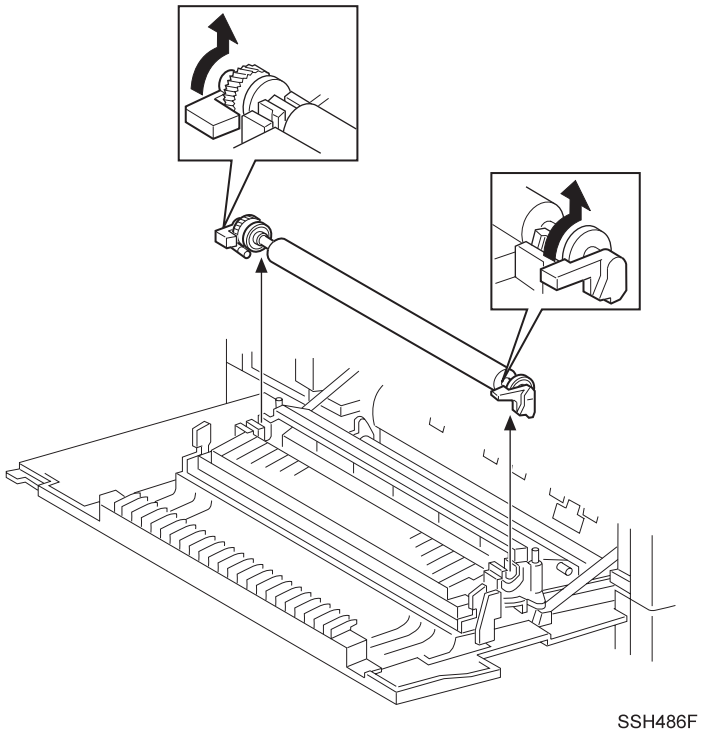

Figure 4-61. Removal of BTR Assembly

4.2.47 Toner Sensor

(See “Xerography and Development Transport Chute Assembly” on page -274)

4.2.47.1 Removal

1. Remove the Rear Cover. (“Rear Cover Assembly” on page -140)
2. Disconnect P/J127 from the MCU PWB.
3. Open the Left Upper Cover.
4. Remove the EP Cartridge.(“EP Cartridge (Toner Cartridge)” on page -192)
5. Use the flat blade of a screwdriver to pry up the front end of the Toner Sensor (refer to the figure below).
6. When the front end is freed, remove the Sensor along with the attached wire harness.

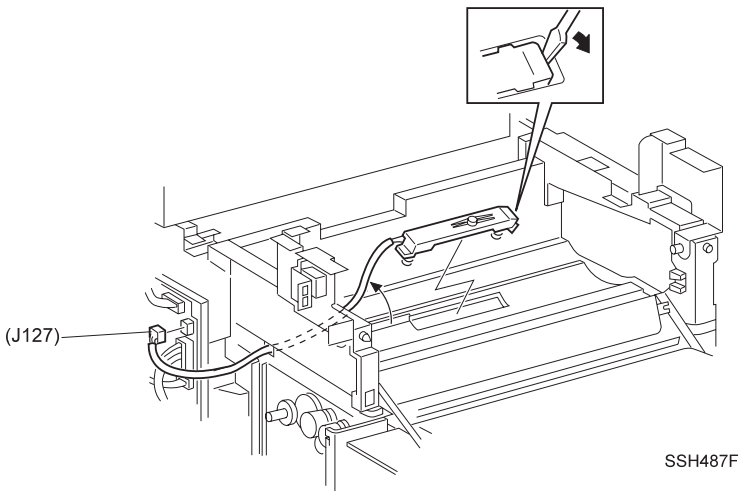

Figure 4-62. Removal of Toner Sensor

4.2.47.2 Installation

1. Reinstall the Toner Sensor and attached springs. (refer to the figure for correct positioning).
2. Route the attached wire harness along the channel and through the small opening in the rear of the frame.
3. Press the Toner Sensor into the cutout in the bottom of the EP Cartridge cavity.
4. Press and release the Toner Sensor to make sure it has a spring-action return.
5. Reconnect P/J127 to the MCU PWB.
6. Reinstall the Rear Cover. (“Rear Cover Assembly” on page -140)
7. Reinstall the EP Cartridge. (“EP Cartridge (Toner Cartridge)” on page -192)
8. Close the Left Upper Cover.

4.2.48 CRU Interlock Switch

(See “Xerography and Development Transport Chute Assembly” on page -274)

4.2.48.1 Removal

1. Remove the EP Cartridge. (“EP Cartridge (Toner Cartridge)” on page -192)
2. Remove the Rear Cover. (“Rear Cover Assembly” on page -140)
3. Disconnect J232 and J233 from the CRU Interlock Switch.
4. Disconnect J234 from the Interlock Switch wire harness.
5. Remove the screw securing the CRU Interlock Switch to the printer frame, and remove the Switch.

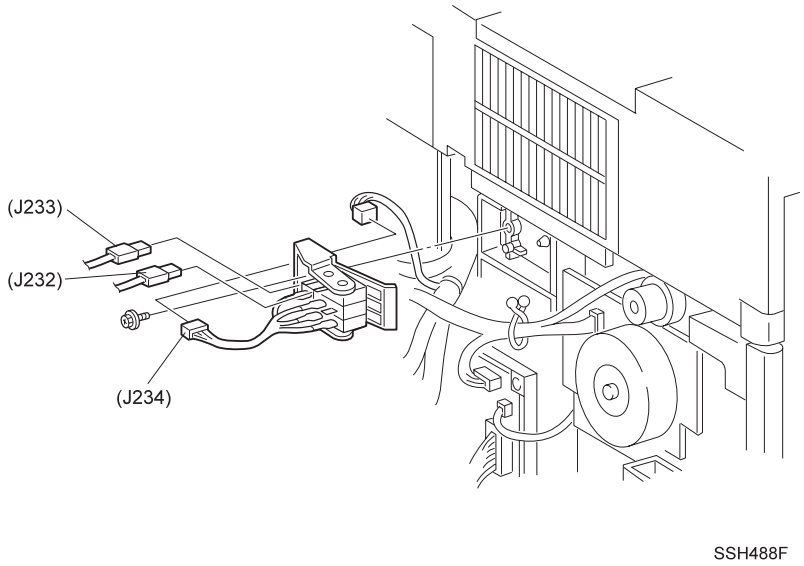

Figure 4-63. Removal of CRU Interlock Switch

4.2.48.2 Installation

1. Line up the two positioning holes on the CRU Interlock Switch with the two position tabs on the printer frame.
2. Use one screw to secure the Switch to the frame.
3. Reconnect J234 to the Interlock Switch wire harness.
4. Reconnect J232 and J233 to the Interlock Switch.
5. Reinstall the Rear Cover. (“Rear Cover Assembly” on page -140)
6. Reinstall the EP Cartridge. (“EP Cartridge (Toner Cartridge)” on page -192)

4.2.49 Fuser Assembly

(See “Fuser Assembly” on page -276)

WARNING

The fuser is extremely hot. Switch off printer main power and wait at least thirty minutes for the Fuser to cool down before attempting to work on or remove the Fuser Assembly.

4.2.49.1 Removal

1. Open the Left Upper Cover.
2. Open the Left Front Cover.
3. Pull out the handles that are located on each end of the Fuser Assembly.
4. Loosen the two thumb screws that secure the Fuser Assembly to the printer frame.
5. Pull the Fuser out of the printer.

4.2.49.2 Installation

1. Open the Left Upper Cover.
2. Open the Left Front Cover
3. Position the Fuser Assembly with J12 on the left end of the Assembly aligned with P12 mounted on the printer frame.
4. Hold on to the Fuser handles and slide the Fuser Assembly into the printer frame.
5. Firmly push the Fuser Assembly to make sure J12 is mated correctly with P12.
6. Tighten the two thumb screws to secure the Fuser Assembly to the printer frame.
7. Close the Left Upper Cover and the Left Front Cover.

CAUTION

If Fuser is exchanged, be sure to reset the Fuser Counter. (See “Maintenance Mode” on page -46)

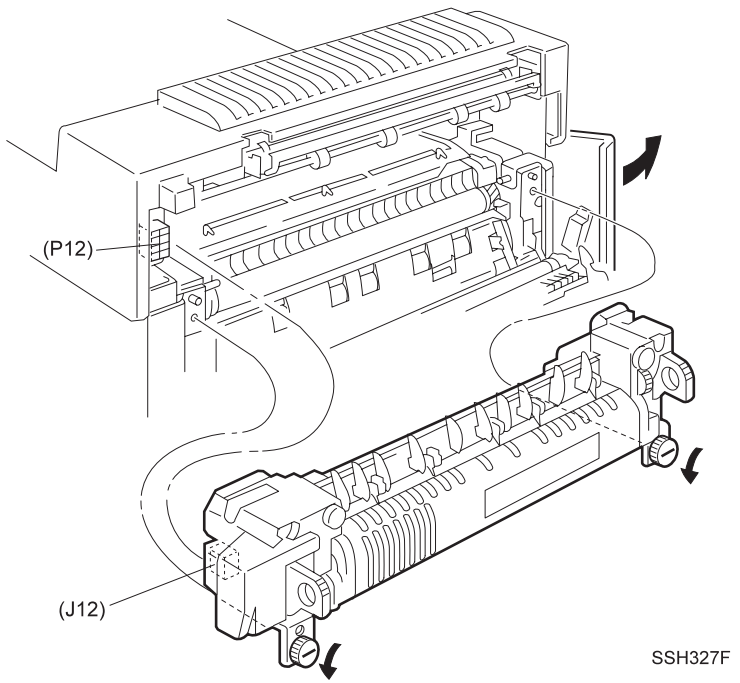

Figure 4-64. Removal of Fuser Assembly

4.2.50 Fuser Drive Assembly

(See “Fuser Drive Assembly” on page -282)

4.2.50.1 Removal

1. Remove the Fuser Assembly. (“Fuser Assembly” on page -197)
2. Remove the EP Cartridge. (“EP Cartridge (Toner Cartridge)” on page -192)
3. Remove the Offset Unit Assembly. (“Offset/Exit Assembly” on page -200)
4. Disconnect J23 from the AC Driver PWB and free the wire harness from the harness clips.
5. Disconnect FB (red wire) from the HVPS and free the wire harness from the harness clips.
6. Remove P204 wire harness from the Fuser Drive Assembly.
7. Disconnect J104, J600, and J602.
8. Remove the two screws securing the Fuser Drive Assembly to the printer frame, and lift the Assembly off of the frame.
9. Remove the screw securing the green ground wire to the printer frame.
10. Pull up and remove the Fuser Drive Assembly.

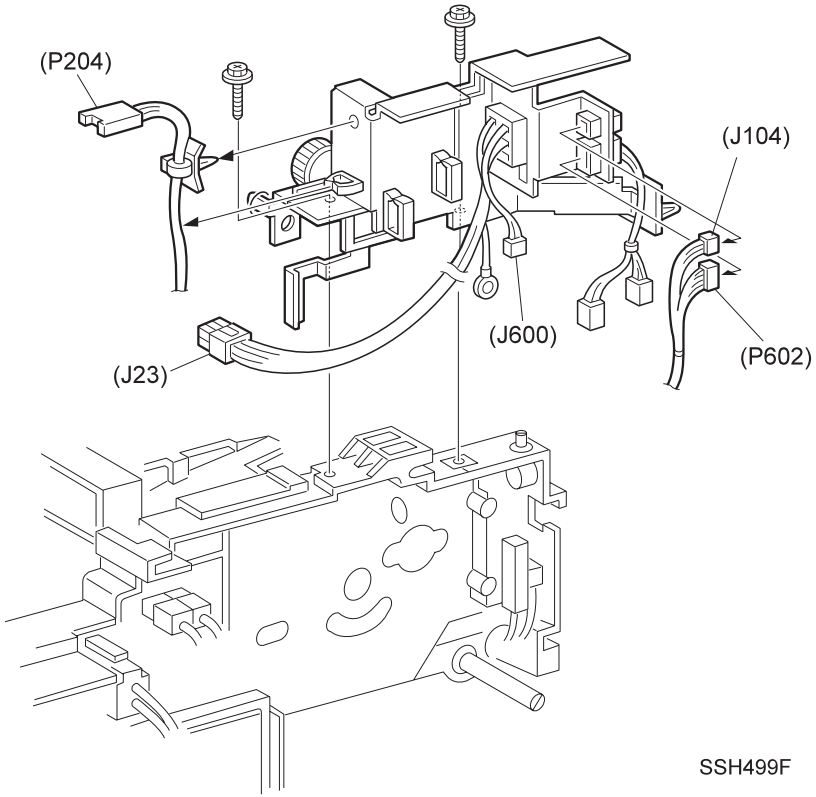

Figure 4-65. Removal of Fuser Drive Assembly

4.2.50.2 Installation

1. Reinstall the Fuser Drive Assembly onto the printer frame. (Refer to the figure for correct positioning)
2. Align the Assembly so the screw holes and locating holes in the Assembly line up with the screw holes and locating tabs on the frame.
3. Use two screws to secure the Assembly to the frame.
4. Reinstall the green ground wire to the printer frame, and use one screw to secure the wire.
5. Reconnect J104, J600, and J602.
6. Reinstall P204 wire harness to the Fuser Drive Assembly.
7. Reconnect FB (red wire) to the HVPS and secure the wire harness under the harness clips.
8. Reconnect J23 to the AC Driver PWB and secure the wire harness under the harness clips.
9. Reinstall the Offset Unit Assembly. (“Offset/Exit Assembly” on page -200)
10. Reinstall the EP Cartridge. (“EP Cartridge (Toner Cartridge)” on page -192)
11. Reinstall the Fuser Assembly. (“Fuser Assembly” on page -197)

4.2.51 Offset/Exit Assembly

(See “Exit Lower Chute” on page -277 and “Exit Upper Chute Assembly” on page -279)

4.2.51.1 Removal

1. Remove the Fuser Full Cover. (“Fuser Full Cover” on page -138)
2. Remove the Rear Cover Assembly. (“Rear Cover Assembly” on page -140)
3. Open the Duplex Unit.
4. Open the Upper Left Cover.
5. Remove J104, J209, J601, and J602 from the Offset Unit Assembly.
6. Remove the three screws (one screw at the front of the Assembly, next to the solenoid, and two screws at the rear of the Assembly) securing the Offset Unit to the printer frame.
7. Lift the Offset Unit up and off of the printer frame.

4.2.51.2 Installation

1. Open the Duplex Unit.
2. Open the Upper Left Cover.
3. Reinstall the Offset Unit onto the printer frame.
4. Use three screws (one screw at the front of the Assembly, next to the solenoid, and two screws at the rear of the Assembly) to secure the Offset Unit to the printer frame.
5. Reconnect J104, J209, J601, and J602 to the Offset Unit Assembly.
6. Reinstall the Rear Cover Assembly. (“Rear Cover Assembly” on page -140)
7. Reinstall the Fuser Full Cover.(“Fuser Full Cover” on page -138)

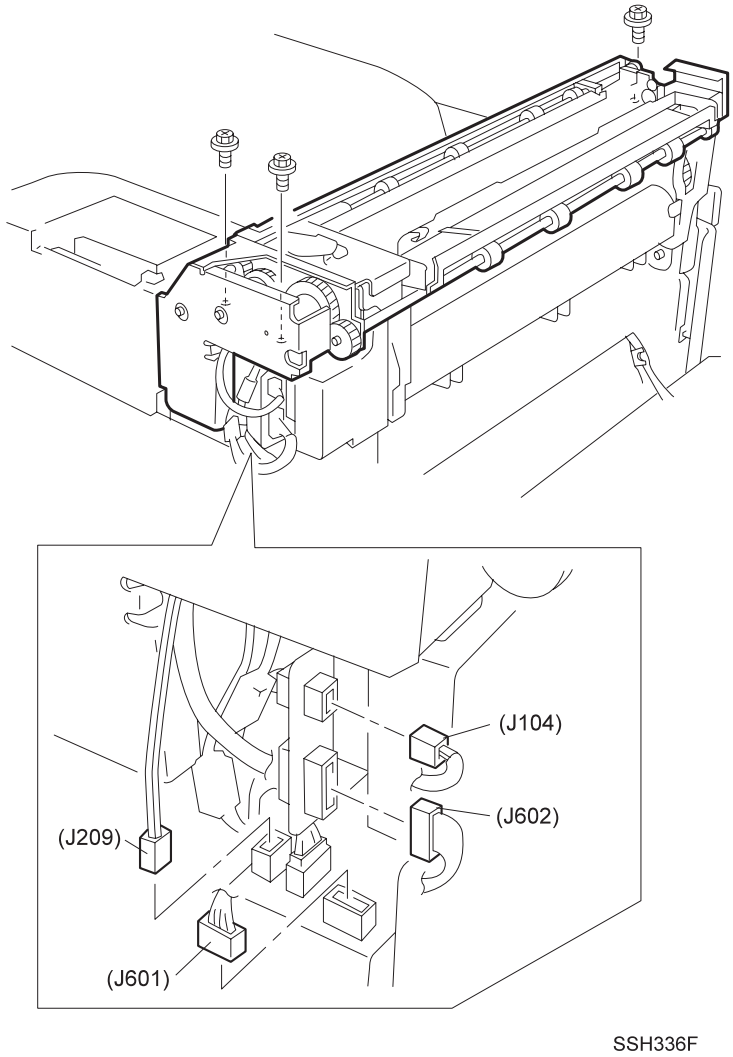

Figure 4-66. Removal of Offset/Exit Assembly

4.2.52 Exit Drive Assembly

(See “Exit Drive Assembly” on page -280)

4.2.52.1 Removal

1. Remove the Offset Unit Assembly.(“Offset/Exit Assembly” on page -200)
2. Remove the three screws securing the Exit Drive Assembly to the Offset Unit Assembly.
3. Pull the Exit Drive Assembly straight out and away from the Offset Unit.

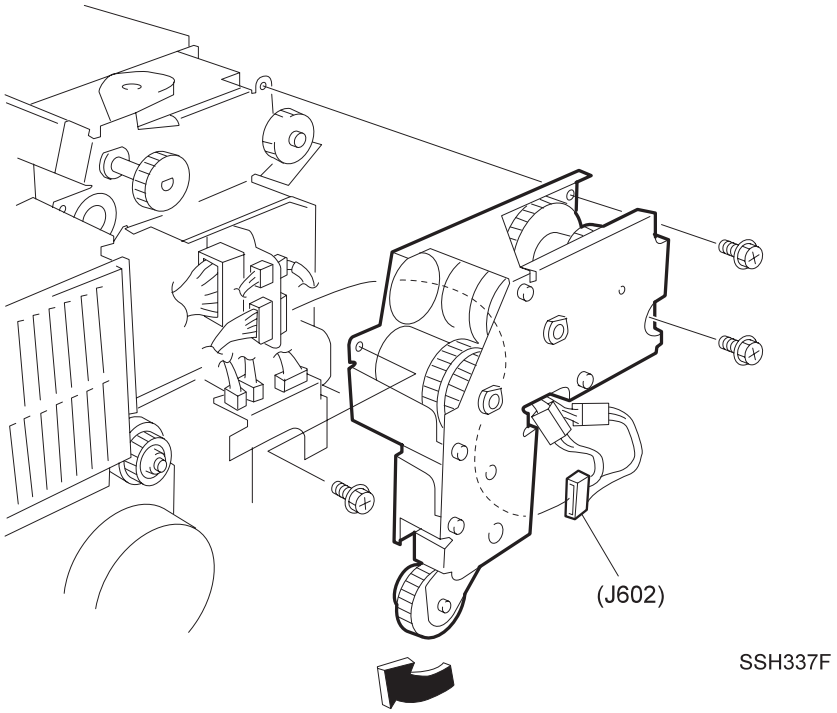

Figure 4-67. Removal of Exit Drive Assembly

4.2.52.2 Installation

1. Align the Exit Drive Assembly with the Offset Unit Assembly so the white drive gear and shaft fit through the corresponding opening in the Exit Drive Assembly.
2. Press the Exit Drive Assembly onto the Offset Unit, slightly repositioning the Assembly so the positioning pin on the upper right side of the Offset Unit fits through the corresponding hole in the Exit Drive Assembly. Make sure you do not trap any wire harnesses between the Exit Drive Assembly and the Offset Unit Assembly.
3. Use three screws to secure the Exit Drive Assembly to the Offset Unit Assembly.
4. Reinstall the Offset Unit Assembly. (“Offset/Exit Assembly” on page -200)

4.2.53 Exit Gate Solenoid

(See “Exit Lower Chute” on page -277)

4.2.53.1 Removal

1. Remove the Fuser Full Cover. (“Fuser Full Cover” on page -138)
2. Disconnect J210 from the Exit Gate Solenoid.
3. Remove the wire harness from the harness clips.
4. Remove the two screws securing the Exit Gate Solenoid to the Offset Assembly, and remove the Solenoid.

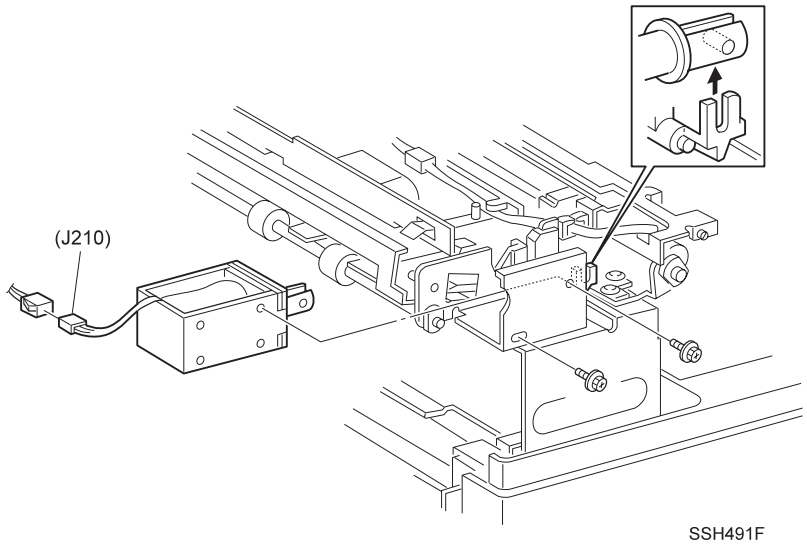

Figure 4-68. Removal of Exit Gate Solenoid

4.2.53.2 Installation

1. Position the Exit Gate Solenoid so the wire harness faces up.
2. Reinstall the Solenoid onto the Offset Assembly, making sure the crossbar of the solenoid plunger latches onto the Solenoid Link.
3. Use two screws to secure the Solenoid to the Assembly.
4. Reconnect J210.
5. Secure the wire harness to the harness clips.
6. Reinstall the Fuser Full Cover. (“Fuser Full Cover” on page -138)

4.2.54 Offset Motor

(See “Exit Lower Chute” on page -277)

4.2.54.1 Removal

1. Remove the Fuser Full Cover. (“Fuser Full Cover” on page -138)
2. Remove the two screws securing the Motor to the Offset Assembly.
3. Lift the Motor off of the Assembly and free the Motor arm from the Offset Roll Rack.
4. Disconnect J209 from the Offset Motor.

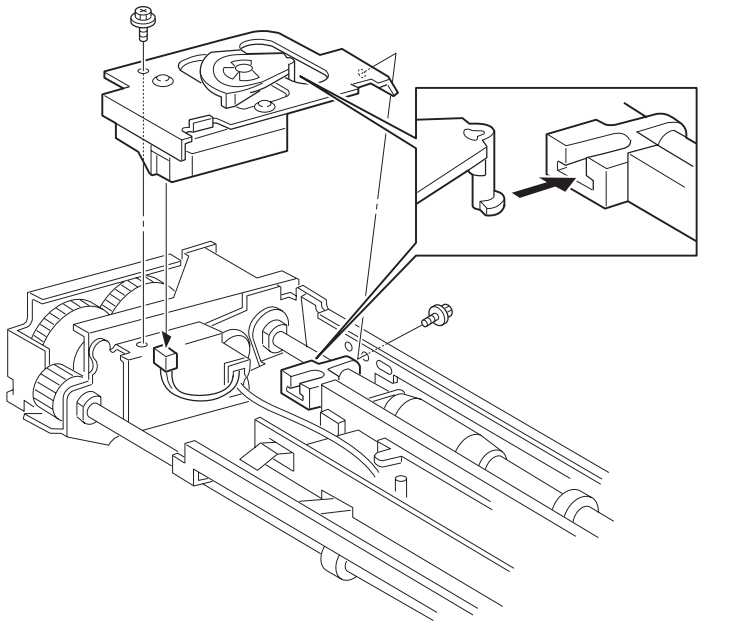

Figure 4-69. Removal of Offset Motor

4.2.54.2 Installation

1. Insert the Motor arm into the Offset Roll Rack.
2. Reconnect J209 to the Offset Motor.
3. Reinstall the Offset Motor onto the Offset Assembly.
4. Use two screws to secure the Motor to the Assembly.
5. Reinstall the Fuser Full Cover. (“Fuser Full Cover” on page -138)

4.2.55 Face Up Exit Sensor

(See “Exit Lower Chute” on page -277)

4.2.55.1 Removal

1. Remove the Fuser Full Cover. (“Fuser Full Cover” on page -138)
2. Disconnect J109.
3. Remove the two screws securing the Face Up Exit Sensor to the Exit Sensor Bracket and remove the Sensor.
4. Remove the two screws securing the Exit Sensor Bracket to the Lower Chute, and remove the Bracket.
5. Unhook the Exit Sensor Spring from the Bracket, and remove the Exit Sensor Actuator.

4.2.55.2 Installation

1. Reinstall the Exit Sensor Actuator onto Exit Sensor Bracket.
2. Hook the Exit Sensor Spring onto the Bracket.
3. Reinstall the Bracket onto the Lower Chute, and use two screws to secure the Bracket.
4. Reinstall the Face Up Exit Sensor onto the Bracket, and use two screws to secure the Sensor.
5. Reconnect J109.
6. Reinstall the Fuser Full Cover. (“Fuser Full Cover” on page -138)

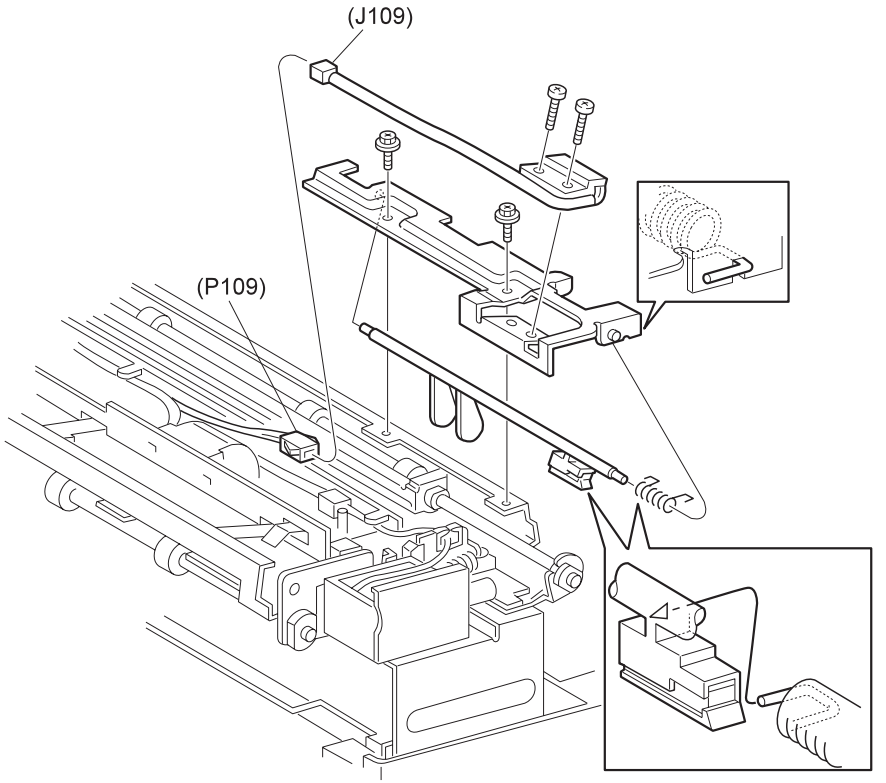

Figure 4-70. Removal of Face Up Exit Sensor

4.2.56 Offset Roller Assembly

(See “Offset Roller” on page -278)

4.2.56.1 Removal

1. Remove the Offset Drive Assembly. (“Exit Drive Assembly” on page -201)
2. Remove the Offset Motor. (“Offset Motor” on page -203)
3. Remove the Face Up Exit Sensor. (“Face Up Exit Sensor” on page -204)
4. Remove the Gear located at the end of the Roller Assembly.
5. Remove the K clip securing the Roller shaft to the rear bearing.
6. Slide the bearing out of the Offset Assembly frame.
7. Slide the front bearing out the Assembly frame, and remove the Offset Roller Assembly.

4.2.56.2 Installation

1. Slide the rear of the Roller shaft through the rear bearing cutout in the Assembly frame.
2. Insert the front bearing, still attached to the front of the shaft, into the front bearing cutout in the Assembly frame.
3. Use a K clip to secure the shaft to the rear bearing.
4. Reinstall the Gear onto the rear of the shaft. The Gear snaps into place.
5. Reinstall the Face Up Exit Sensor. (“Face Up Exit Sensor” on page -204)
6. Reinstall the Offset Motor. (“Offset Roller Assembly” on page -205)
7. Reinstall the Offset Drive Assembly. (“Exit Drive Assembly” on page -201)

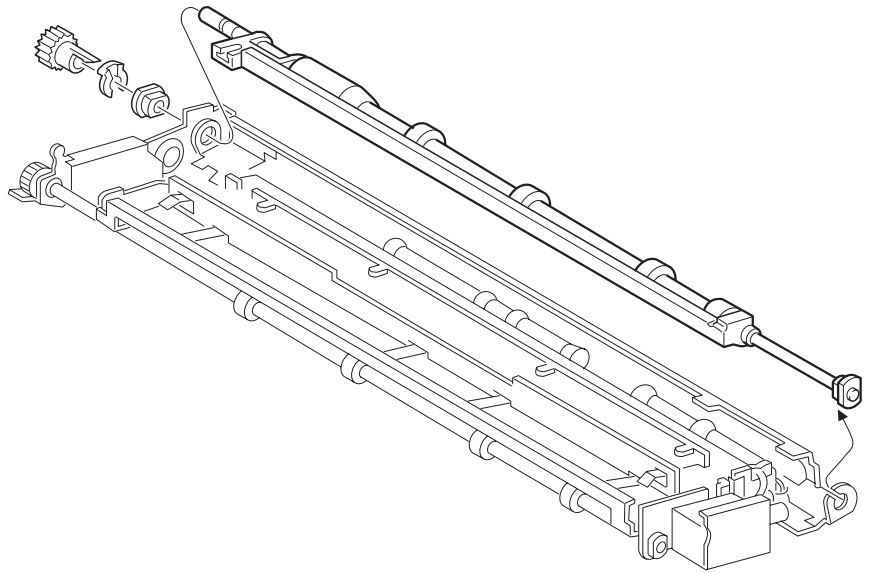

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Figure 4-71. Removal of Offset Roller Assembly

4.2.57 Lower Chute Assembly

(See “Exit Lower Chute” on page -277)

4.2.57.1 Removal

1. Remove the Offset Roller Assembly. (“Offset Roller Assembly” on page -205)
2. Remove the five screws securing the Lower Chute to the Exit Assembly frame, and separate the Lower Chute from the frame.
3. Release J104 wire harness from the harness clips.
4. Squeeze the latches to unlock the Fuser Exit Sensor, and remove the Sensor from the Lower Chute.

4.2.57.2 Installation

1. Reinstall the Fuser Exit Sensor by pressing the Sensor latches into the cutouts in the Lower Chute.

CHECK POINT

Make sure you install the Sensor with the wire harness positioned to the rear of the Lower Chute, and the Sensor actuator moving freely though the cutout below the Sensor.

2. Secure J104 wire harness under the harness clips located on the Lower Chute.
3. Reinstall the Lower Chute to the Exit Assembly frame. Use five screws to secure the Lower Chute.
4. Reinstall the Offset Roller Assembly.(“Offset Roller Assembly” on page -205)

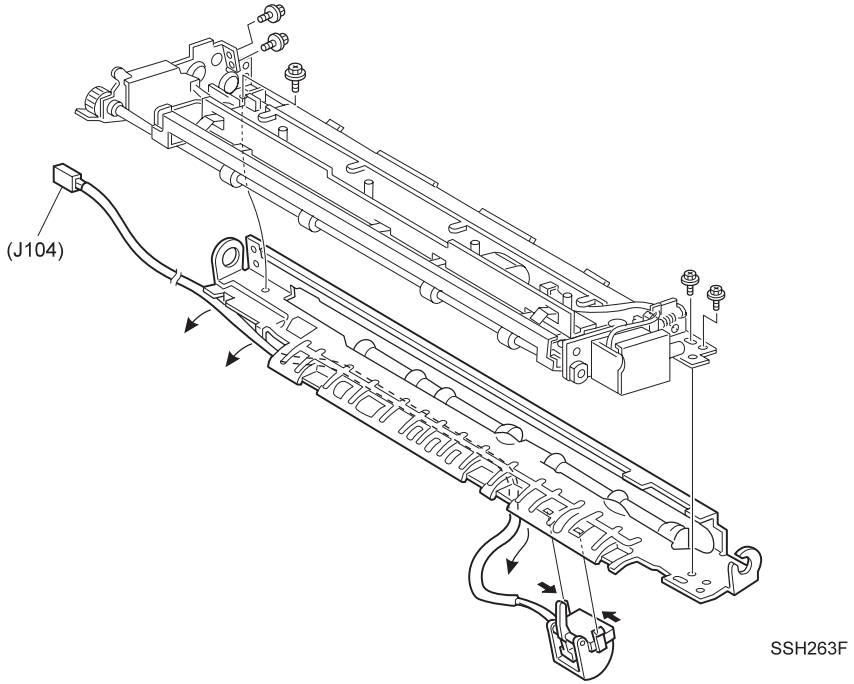

Figure 4-72. Removal of Lower Chute Assembly

4.2.58 Upper Chute Assembly

(See “Exit Upper Chute Assembly” on page -279)

4.2.58.1 Removal

1. Remove the Offset Roller Assembly. (“Offset Roller Assembly” on page -205)
2. Disconnect P/J 133 and free the wire harness from the harness clips.
3. Disconnect P/J 210 and free the wire harness from the harness clips.
4. Open the Upper Chute Assembly and loosen, do not remove, the rear screw securing the Face Up Lower Chute to the frame.
5. Remove the three rear screws that secure the Lower Chute to the frame.
6. Carefully pull the frame far enough to the rear to free the rear hinge of the Upper Chute.
7. Pull the Upper Chute to the rear and free the front hinge and remove the Upper Chute Assembly.

4.2.58.2 Installation

1. Reinstall the front hinge of the Upper Chute Assembly into the cutout at the front of the frame.
2. Carefully pull the frame far enough to the rear so you can slip the rear hinge of the Upper Chute into the cutout at the rear of the frame.
3. Use three screws to secure the Lower Chute to the frame.
4. Open the Upper Chute Assembly and tighten the rear screw securing the Face Up Lower Chute to the frame.
5. Reconnect P/J 210 and route the wire harness under the harness clips.
6. Reconnect P/J 133 and route the wire harness under the harness clips.
7. Reinstall the Offset Roller Assembly. (“Offset Roller Assembly” on page -205)

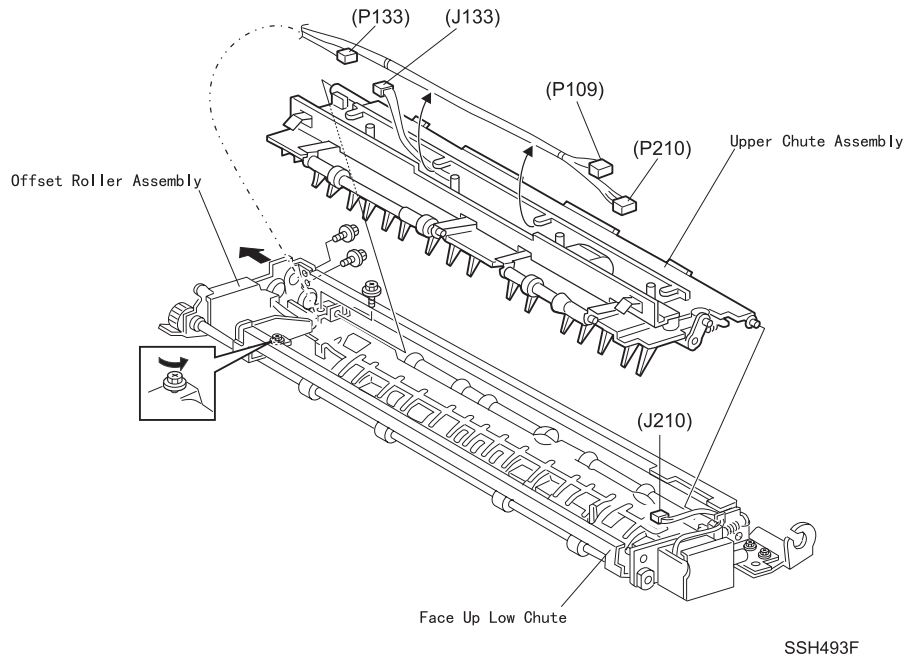

Figure 4-73. Removal of Upper Chute Assembly

4.2.59 Exit Roll Assembly

(See “Offset Roller” on page -278)

4.2.59.1 Removal

1. Remove the Exit Drive Assembly. (“Exit Drive Assembly” on page -201)
2. Remove the two screws securing the Face Up Lower Chute to the Assembly frame, and remove the Chute.
3. Remove the K clip securing the Gear located at the rear of the Exit Roll shaft, and remove the Gear and rear bearing.
4. Remove the E ring securing the front of the Exit Roll shaft to the Assembly frame, and remove the front bearing.
5. Slide the shaft to the rear, and remove the shaft from the Assembly.

4.2.59.2 Installation

1. Reinstall the Exit Roll Assembly by sliding the rear of the shaft through the bearing cutout at the rear of the Assembly frame.
2. Slide the front of the shaft into the bearing cutout at the front of the Assembly frame.
3. Reinstall both front and rear bearings.
4. Use an E ring to secure the front of the shaft.
5. Slide the Gear onto the rear of the shaft and use a K clip to secure the Gear.
6. Reinstall the Face Up Lower Chute, and use two screws to secure it to the Assembly frame.
7. Reinstall the Exit Drive Assembly. (“Exit Drive Assembly” on page -201)

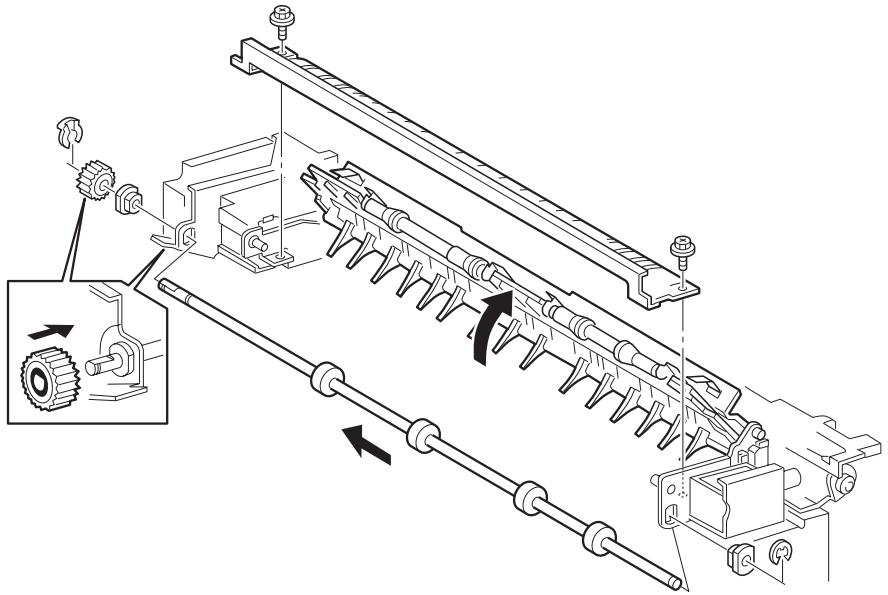

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Figure 4-74. Removal of Exit Roll Assembly

4.2.60 Full Stack Sensor

(See “Exit Upper Chute Assembly” on page -279)

4.2.60.1 Removal

1. Remove the Fuser Full Cover. (“Fuser Full Cover” on page -138)
2. Disconnect J133 and remove the wire harness from the harness clips.
3. Squeeze the latches to unlock the Full Stack Sensor, and remove the Sensor from the Offset Assembly.

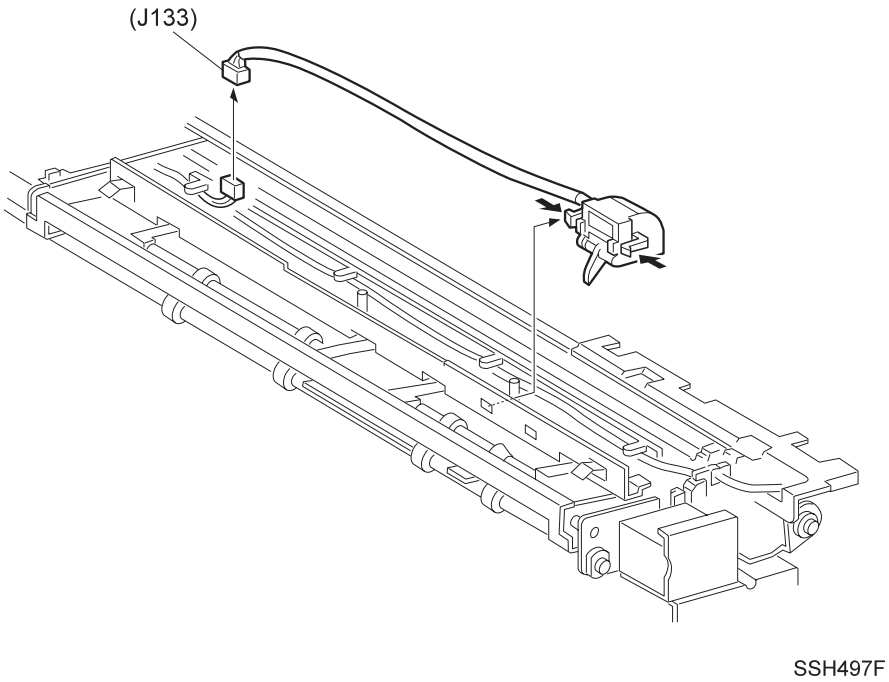

Figure 4-75. Removal of Full Stack Sensor

4.2.60.2 Installation

1. Reinstall the Full Stack Sensor by pressing the Sensor latches into the cutouts in the Offset Assembly.

CHECK POINT

Make sure you install the Sensor with the wire positioned to the rear of the Offset Assembly, and the Sensor actuator moving freely through the cutout below the Sensor.

2. Reconnect J133 and secure the wire harness under the harness clips.
3. Reinstall the Fuser Full Cover. (“Fuser Full Cover” on page -138)

4.2.61 Inverter Clutches

(See Appendix “Exit Drive Assembly” on page -280)

4.2.61.1 Removal

1. Remove the Exit Drive Assembly.(“Exit Drive Assembly” on page -201)
2. Remove the four screws securing the Drive Support to the Inverter Bracket, and lift the Support off of the Bracket.
3. Disconnect P/J 218 and P/J 219, and free the wire harness from the harness clips.
4. Slide the CCW Gear off of the CCW Clutch.
5. Slide the CW Gear off of the CW Clutch.
6. Lift the CCW Clutch off of the bearing, and remove the Clutch.
7. Lift the CW Clutch off of the bearing, and remove the Clutch.

4.2.61.2 Installation

1. Reinstall the two bearings into the cutouts in the Inverter Bracket.
2. Position the CW Clutch so the gear faces away from the Bracket, and insert the shaft at the rear of the Clutch into the bearing. Make sure the notch in the Clutch hooks onto the tab on the Bracket. (Refer to the figure for correct positioning).
3. Position the CCW Clutch so the gear faces away from the Bracket, and insert the shaft at the rear of the Clutch into the bearing. Make sure the notch in the Clutch hooks onto the tab on the Bracket. (Refer to the figure for correct positioning).
4. Reinstall the CW Gear onto the CW Clutch shaft.
5. Reinstall the CCW Gear on to the CCW Clutch shaft.
6. Route the wire harness under the harness clips and reconnect P/J 218 and P/J 219.
7. Carefully reinstall the Drive Support onto the Inverter Bracket, making sure the Clutch shafts fit into the bearings in the Support.
8. Use four screws to secure the Drive Support to the Inverter Bracket.
9. Reinstall the Exit Drive Assembly. (“Exit Drive Assembly” on page -201)

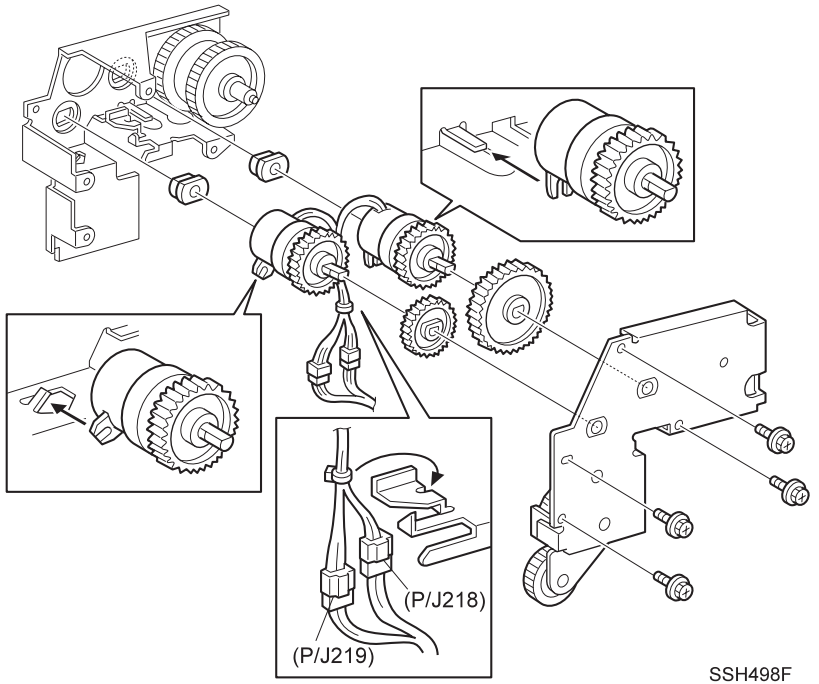

Figure 4-76. Removal of Inverter Clutches

4.2.62 Main Drive Assembly

(See “Main Drive Assembly” on page -281)

4.2.62.1 Removal

1. Remove the EP Cartridge. (“EP Cartridge (Toner Cartridge)” on page -192)

CAUTION

Do not attempt to remove the Main Drive Assembly without first removing the EP Cartridge.

2. Remove the Rear Cover. (“Rear Cover Assembly” on page -140)
3. Open the Left Upper Cover.
4. Remove the Left Cover Interlock Switch Assembly. (“Left Cover Interlock Switch Assembly” on page -219)
5. Remove the screw securing the Inner Cover to the printer frame, and remove the Inner Cover (See Figure on your right).

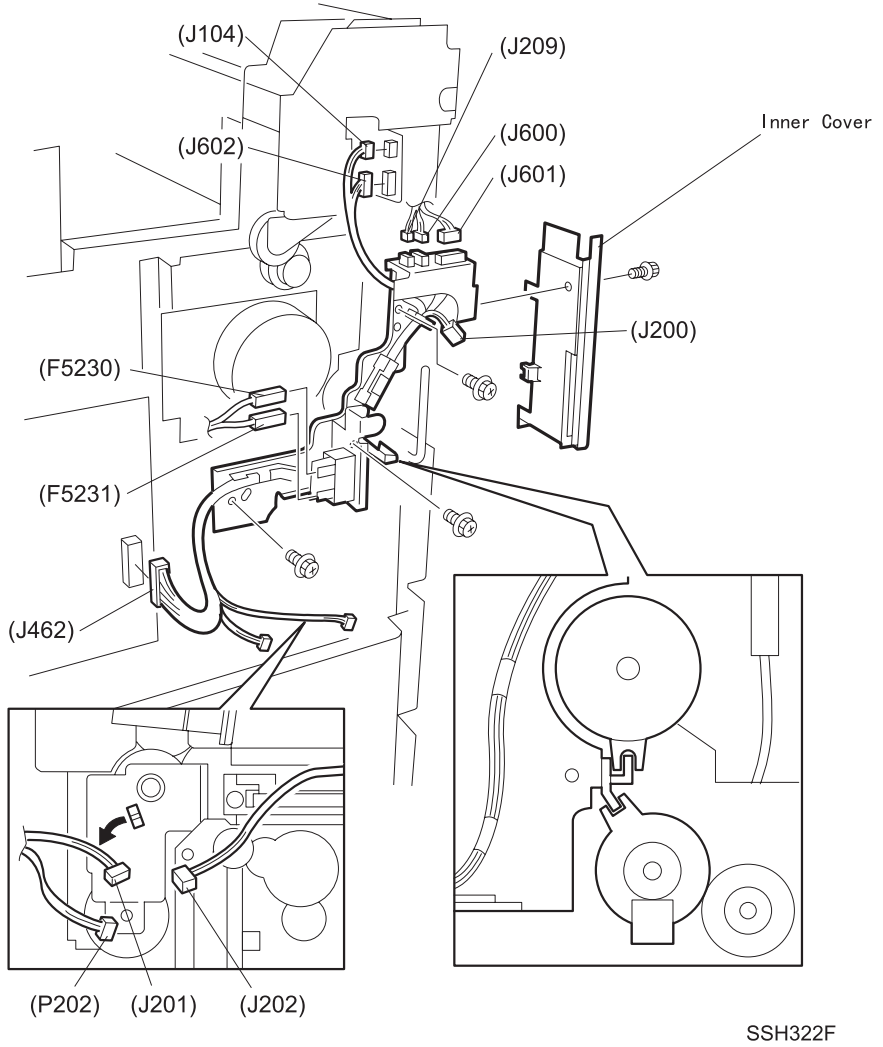

Figure 4-77. Removal of Main Drive Assembly

6. Disconnect J205 from the Main Motor PWB.

7. Release the wire harness that is located just above the Main Motor PWB from the wire clip and move the harness out of the way.

8. Remove the screw securing the green ground wire to the Main Drive Assembly, and move the ground wire out of the way (Figure below).

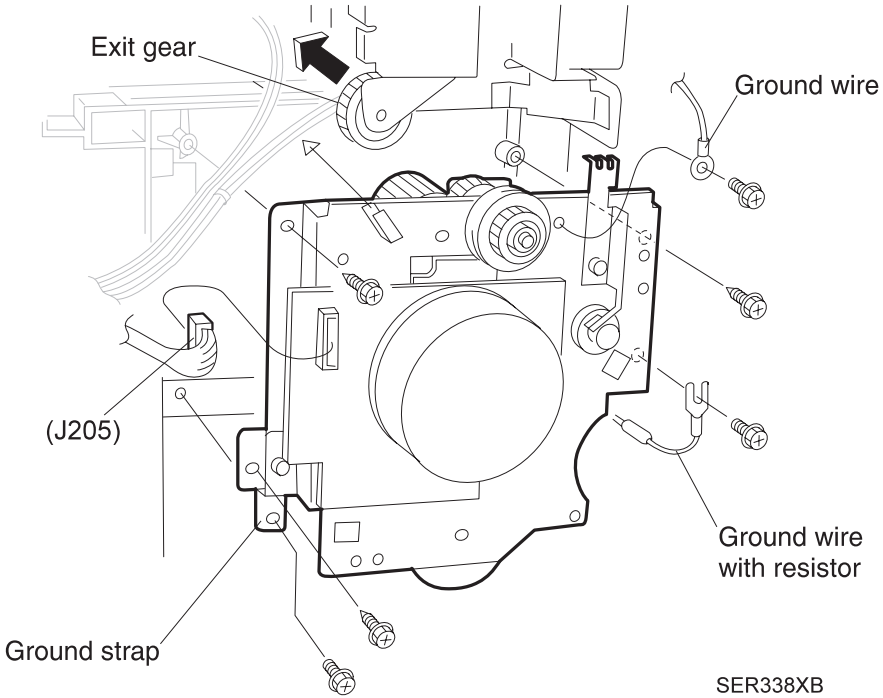

Figure 4-78. Removal of Main Motor PWB

9. Disconnect P/J 462 from the MCU PWB.

10. Disconnect P/J 202, J209, J600, and J601.

11. Remove the three screws securing the Harness Support to the Main Drive Assembly, and move the Harness Support and attached harness out of the way.

12. Remove the three self-tapping screws securing the Main Drive Assembly to the printer frame. The bottom right screw also secures a ground wire (with attached resistor) to the printer frame.

13. Remove the screw that secures a ground strap at the bottom left of the Main Drive Assembly.

14. Lift the Exit Gear out of the way, and pull the Main Drive Assembly straight back and out of the printer frame.

CHECK POINT

If you are having difficulty removing the Main Drive Assembly, check to make sure there are no wire harness in the way, the Registration Clutch location notch in not in the way, and that the drive pin on the Drive Assembly is in the center of the cutout in the printer frame.

4.2.62.2 Installation

1. Remove the EP Cartridge. (“EP Cartridge (Toner Cartridge)” on page -192)
2. Open the Left Upper Cover.
3. Push all of the wire harnesses out of the way.
4. Rotate the Registration Clutch and the Feed Clutch so the location notches are not in the way of Main Drive installation.
5. Lift the Exit Gear out of the way and slide the drive pin at the back of the Main Drive Assembly into the large opening in the printer frame.
6. Make sure there are no wire harnesses trapped between the Drive Assembly and the printer frame.
7. Reach around through the open Left Upper Cover and take hold of the drive pin. Center the pin in the printer frame opening while you push the Drive Assembly against the frame.
8. Use one screw to secure the ground strap at the bottom left of the Main Drive Assembly.
9. Use a self-tapping screw to secure the ground wire with the attached resistor and the Main Drive Assembly to the printer frame.
10. Use three self-tapping screws to finish securing the Main Drive Assembly to the printer frame.
11. After securing the Main Drive Assembly, wiggle the Assembly to make sure it is firmly in place.
12. Position the Harness Support against the Main Drive Assembly.
13. Rotate the Registration Clutch and in the Feed Clutch so the slots in the Clutches line up with the key on the Harness Support, then press the Support against the Main Drive Assembly.
14. Use three screws to secure the Harness Support to the Main Drive Assembly.
15. Reconnect P/J 202, J209, J600, and J601.
16. Reconnect P/J 462 to the MCU PWB.
17. Reinstall the green ground wire to the screw hole at the top of the Main Drive Assembly, and use one screw to secure the wire to the Assembly.
18. Secure the wire harness at the top of the Main Drive Assembly to the wire clip that is located just above the Main Motor.
19. Reconnect J205 to the Main Motor PWB.
20. Reinstall the Inner Cover and use one screw to secure the Cover to the printer frame.
21. Reinstall the Left Cover Interlock Switch. (“Left Cover Interlock Switch Assembly” on page -219)
22. Reinstall the Rear Cover.(“Rear Cover Assembly” on page -140)
23. Reinstall the EP Cartridge. (“EP Cartridge (Toner Cartridge)” on page -192)

4.2.63 Main Power Switch

(See “Power Inlet and LVPS” on page -283)

4.2.63.1 Removal

1. Remove the Top Cover Assembly.(“Top Cover Assembly” on page -139)
2. Remove the screw securing the Main Switch Bracket to the Power Supply Assembly.
3. Pull the Bracket and Switch up and away from the Power Supply.
4. Disconnect the four wires from the Switch.
5. Squeeze the two clips on the underside of the Switch while you slide the Switch out the top of the Bracket.

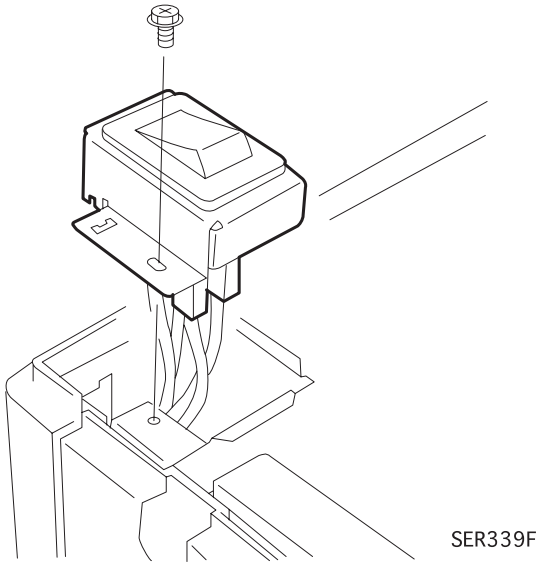

Figure 4-79. Removal of Main Power Switch

4.2.63.2 Installation

1. Slide the Main Switch into the opening in the top of the Main Switch Bracket. It snaps into place.
2. Reconnect the four wires to the Switch. Follow the illustration below when reconnecting the wires. The illustration represents the underside of the Main Switch Bracket and Main Switch.

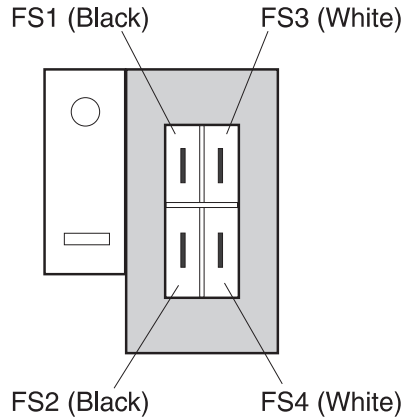

Figure 4-80. Pin position of Main Switch

3. Reinstall the Main Switch Bracket onto the Power Supply Assembly. Make sure you align the screw hole in the Bracket with the screw hole in the Power Supply.
4. Use one screw to secure the Bracket to the Power Supply Assembly.
5. Reinstall the Top Cover Assembly.(“Top Cover Assembly” on page -139)

4.2.64 Low Voltage Power Supply(LVPS) Assembly

(See “Power Inlet and LVPS” on page -283)

4.2.64.1 Removal

1. Remove the Top Cover Assembly.(“Top Cover Assembly” on page -139)
2. Remove the Right Cover. (“Right Cover” on page -141)
3. Remove four screws securing the ESS Assembly to the LVPS, and tilt the ESS Assembly back and out of the way.
4. Remove the Main Power Switch.
5. Remove the five screws securing the LVPS to the printer frame.
6. Pull the LVPS a few inches out so you can access the rear of the Power Supply.
7. Disconnect J1, J235, J501, and J502 from the LVPS.
8. Remove the wire harnesses from the harness clips at the rear of the LVPS.
9. Remove the LVPS Assembly.

4.2.64.2 Installation

1. Position the LVPS Assembly above the printer frame, with the LVPS Fan facing the rear of the printer.
2. Route the four black and white Main Power Switch wires to the rear of the LVPS.
3. Reconnect J1, J235, J501, and J502 to the LVPS.
4. Reinstall the wire harnesses into the harness clips at the rear of the LVPS.
5. Slide the LVPS into place in the printer frame. Make sure you do not trap the Main Switch wires between the LVPS and the printer frame. Align the LVPS so the five screw holes in the LVPS line up with the five screw holes in the printer frame.
6. Use five screws to secure the LVPS to the printer frame.
7. Reinstall the Main Power Switch. (“Main Power Switch” on page -214)
8. Reinstall the ESS Assembly and use four screws to secure it to the top of the LVPS.
9. Reinstall the Right Cover.(“Right Cover” on page -141)
10. Reinstall the Top Cover Assembly.(“Top Cover Assembly” on page -139)

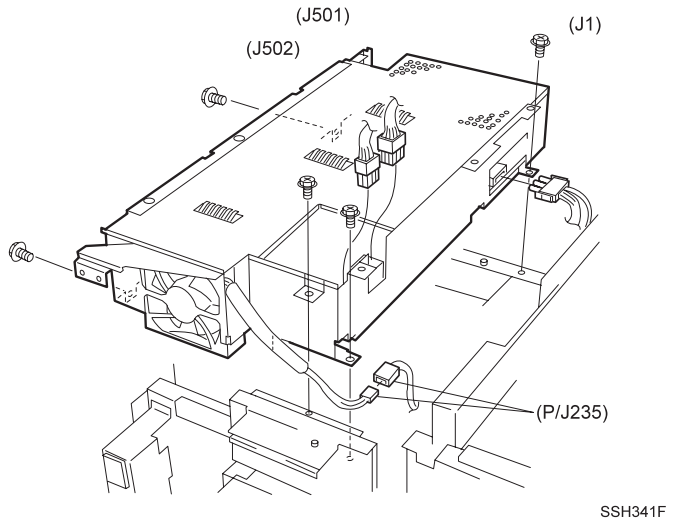

Figure 4-81. Removal of LVPS Assembly

4.2.65 AC Driver PWB

(See “HVPS and MCU PWB” on page -284)

4.2.65.1 Removal

1. Remove the Top Cover Assembly.(“Top Cover Assembly” on page -139)
2. Remove the Rear Cover Assembly.(“Rear Cover Assembly” on page -140)
3. Remove the four screws securing the ESS Assembly to the LVPS, and tilt the Assembly back and out of the way.
4. Remove the two screws securing the Bracket and AC Drive PWB to the frame. The Bracket will fall off when you remove the two screws. Do not lose the Bracket.
5. Disconnect the four P/Js that are attached to the AC Drive PWB.
6. Squeeze the four latches securing the PWB to the printer frame and remove the PWB.

4.2.65.2 Installation

1. Align the four holes in AC Drive PWB to the four latches on the frame and press the PWB into place.
2. Reconnect the four P/Js to the AC Drive PWB.
3. Reinstall the Bracket under the frame so it sandwiches SSR1 and SSR2 between it and the frame.
4. Use two screws to secure the Bracket and SSR1 and SSR2 to the frame.
5. Reinstall the ESS Assembly and use four screws to secure it to the LVPS.
6. Reinstall the Rear Cover Assembly. (“Rear Cover Assembly” on page -140)
7. Reinstall the Top Cover Assembly. (“Top Cover Assembly” on page -139)

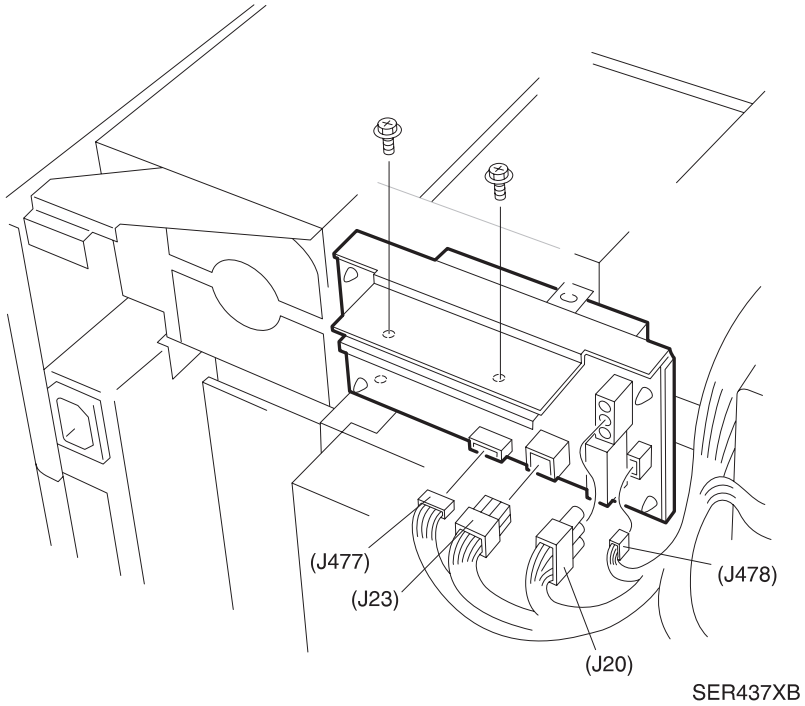

Figure 4-82. Removal of AC Driver PWB

4.2.66 High Voltage Power Supply(HVPS) Assembly

(See “HVPS and MCU PWB” on page -284)

4.2.66.1 Removal

1. Remove the MCU PWB.(“MCU(Machine Control Unit) PWB” on page -220)
2. Disconnect J500, DTS, FB, CB, and BTR from the HVPS PWB.

CAUTION

The PWB is easily broken. Use care when removing the P/Js from the HVPS PWB. Use your fingers to hold down the PWB while you carefully disconnect each P/J.

3. Remove the two screws, one on the left side and one on the right side, that secure the HVPS Assembly to the printer frame.
4. Pull out on the HVPS Assembly while your release the two clips, one at the top and one on the right side, that secure the HVPS to the printer frame.
5. Remove the HVPS Assembly from the frame.

4.2.66.2 Installation

1. Reinstall the HVPS Assembly onto the printer frame.
2. Align the two positioning holes on the HVPS with the two tabs on the frame. Make sure you do not trap any wire harnesses between the HVPS Assembly and the printer frame.
3. Push the HVPS against the frame until the two clips snap into place.
4. Use two screws to secure the HVPS Assembly into place on the printer frame.
5. Reconnect J500, DTS, FB, CB, and BTR to the HVPS PWB.
6. Reinstall the MCU PWB. (“MCU(Machine Control Unit) PWB” on page -220)

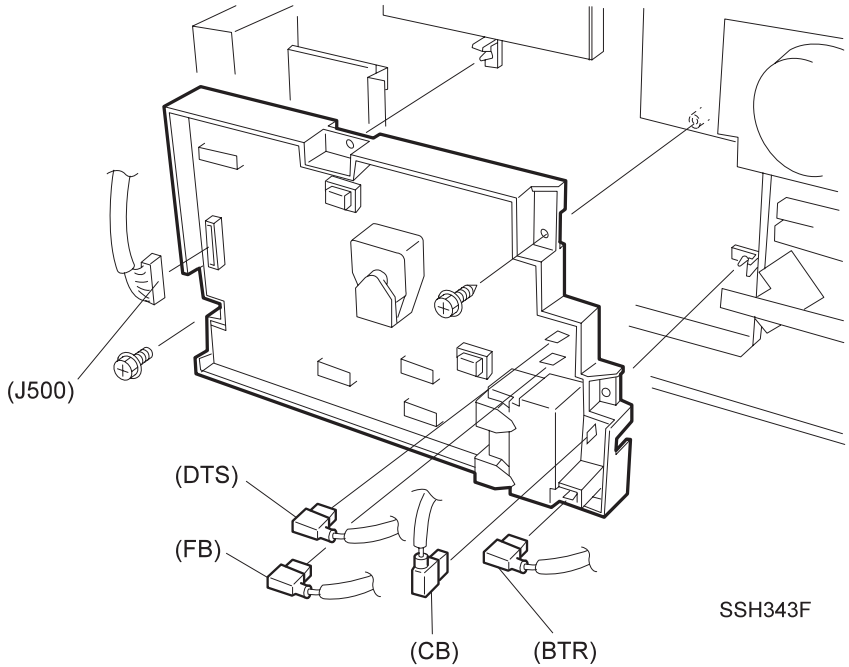

Figure 4-83. Removal of HVPS

4.2.67 Noise Filter PWB

(See “Power Inlet and LVPS” on page -283)

4.2.67.1 Removal

1. Remove the Rear Cover. (“Rear Cover Assembly” on page -140)
2. Disconnect J19, F55, and F56 from the Noise Filter PWB.
3. Remove the two screws securing the Noise Filter PWB to the printer frame.
4. Squeeze the two latches securing the PWB to the printer frame, and remove the PWB.

4.2.67.2 Installation

1. Align the two holes in the left side of the Noise Filter PWB with the two plastic latches on the printer frame, and press the PWB into place.
2. Use two screws to secure the Noise Filter PWB to the printer frame.
3. Reconnect J19, F55, and F56 to the Noise Filter PWB.
4. Reinstall the Rear Cover.(“Rear Cover Assembly” on page -140)

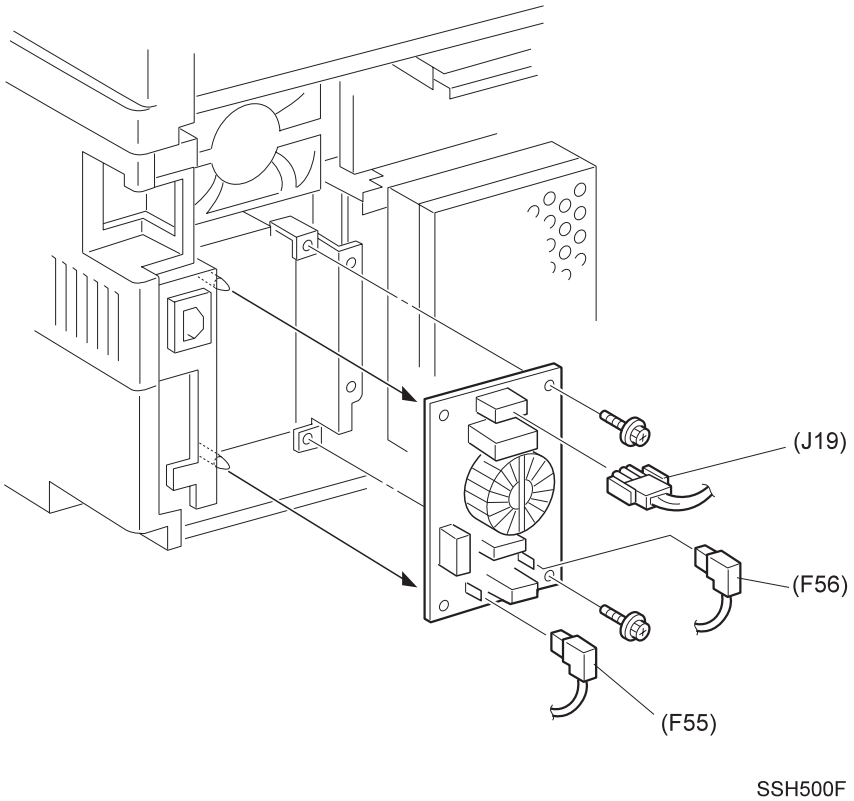

Figure 4-84. Removal of Noise Filter PWB

4.2.68 Left Cover Interlock Switch Assembly

(See “HVPS and MCU PWB” on page -284)

4.2.68.1 Removal

1. Remove the Rear Cover Assembly. (“Rear Cover Assembly” on page -140)
2. Disconnect F5230 and F5231 from the Interlock Switch.
3. Remove the screw that secures the Interlock Switch Bracket to the printer frame, and pull the Assembly out of the printer.
4. Rotate the Switch Lever so it is straight up, and slide it off of the Bracket.
5. Press the two clips securing the Switch to the Bracket and push the Switch out of the Bracket.

4.2.68.2 Installation

1. Position the Switch against the opening in the Bracket so the two wire terminals are on the outside of the Bracket, away from the screw hole.
2. Press the Switch into the Bracket. It snaps into place.
3. Position the Switch Lever against the Switch, with the foot of the Lever facing out.
4. Rotate the Switch Lever so it is straight up, and slide it onto the Bracket. Press and release the Lever to make sure it is functioning correctly.
5. Open the Duplex Unit and the Left Upper Cover.
6. Position the Switch Bracket against the printer frame, slightly down from the screw hole in the printer frame.
7. Raise the Bracket so the aligning key at the bottom of the Switch meshes with the slot in the printer frame. The key and slot keep the Bracket from moving during operation.
8. Align the screw hole in the Bracket with the screw hole in the Frame.
9. Use one screw to secure the Interlock Switch Assembly to the printer frame.
10. Open and close the Left Upper Cover to make sure the Switch functions correctly.
11. Reconnect F5230 and F5231 to the Interlock Switch.
12. Reinstall the Rear Cover Assembly. (“Rear Cover Assembly” on page -140)

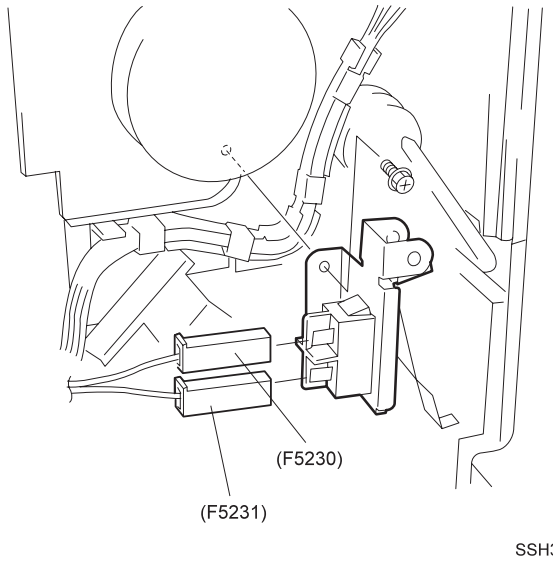

Figure 4-85. Removal of Left Cover Interlock Switch

4.2.69 MCU(Machine Control Unit) PWB

(See “HVPS and MCU PWB” on page -284)

4.2.69.1 Removal

1. Remove the Rear Cover Assembly. (“Rear Cover Assembly” on page -140)
2. Disconnect the seventeen P/Js that are connected to the MCU PWB.
3. Remove the four screws securing the MCU Bracket to the printer frame, and remove the Bracket and the attached MCU PWB.
4. Remove the six screws securing the MCU Cover to the MCU Bracket, and remove the Cover.

CAUTION

- **Wear an electrostatic wrist strap and use caution when working with the MCU PWB. Static electricity can damage the sensitive electronics of the MCU.**
- **Handle the MCU PWB by the edges of the PWB or by the plastic connectors mounted on the board. Never touch any of the ICs that are mounted on the PWB.**

5. Place the Bracket and MCU on a flat, non-conductive surface.
6. Remove the four screws securing the MCU PWB to the MCU Bracket.
7. Hold on to one of the plastic connectors mounted on the PWB, and lift the MCU off of the Bracket.

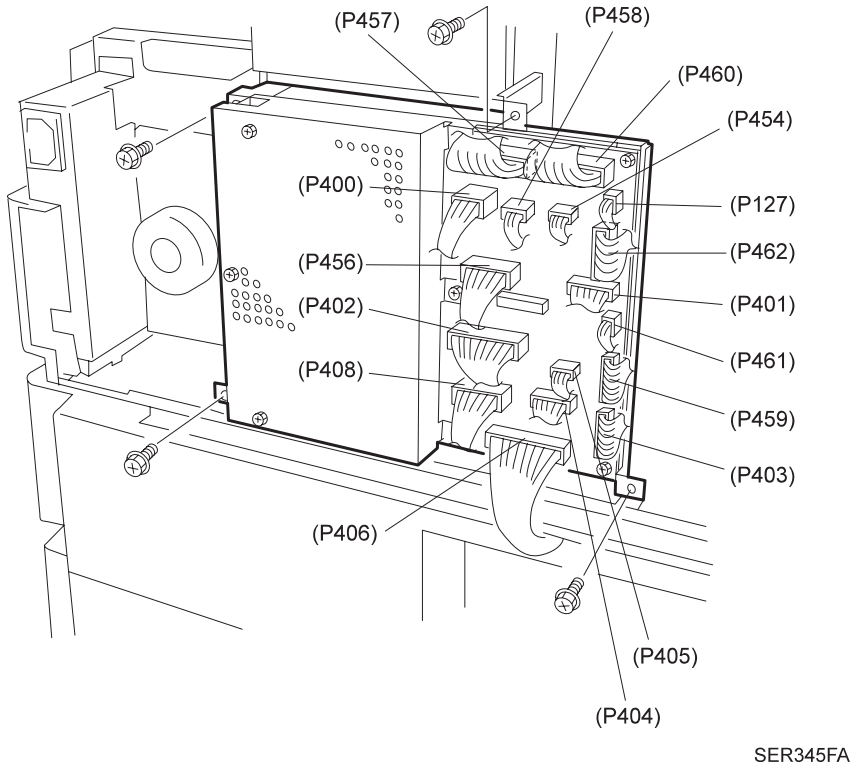

Figure 4-86. Removal of MCU PWB

4.2.69.2 Installation

1. Place the Bracket on a flat, non-conductive surface.
2. Hold on to the edges of the PWB or one of the plastic connectors mounted on the board, and reinstall the MCU into the Bracket. Position the MCU so the connectors are on the right.
3. Use four screws, one in each corner, to secure the MCU PWB to the Bracket.

Do not overtighten these four screws. Overtightening may crack the PWB.

4. Reinstall the MCU Cover onto the MCU Bracket. Position the Cover so the three screw tabs are on the right and aligned over the three screw holes in the center of the MCU PWB.
5. Use six screws to secure the MCU Cover to the MCU Bracket.
6. Reinstall the MCU PWB Bracket onto the printer frame. Make sure you do not trap any wire harnesses between the Bracket and the frame.
7. Use four screws to secure the Bracket to the printer frame.
8. Reconnect the seventeen P/Js to the MCU PWB.
9. Reinstall the Rear Cover Assembly. (“Rear Cover Assembly” on page -140)

4.2.70 Controller Board

(See “Controller Assembly” on page -285)

4.2.70.1 Removal

1. Remove Top Cover Assembly. (“Top Cover Assembly” on page -139)
2. Remove the fourteen screws that secure the ESS Cover to the ESS Box.

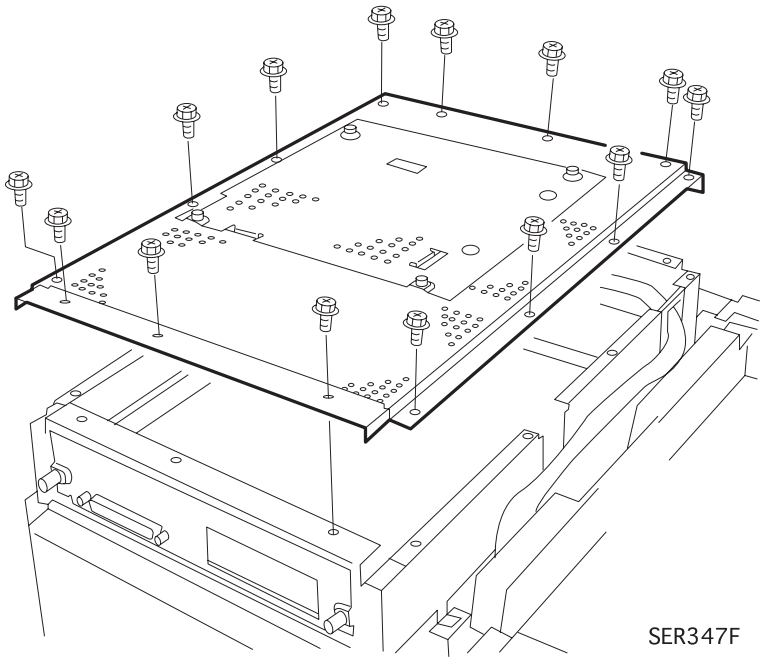

Figure 4-87. Removal of ESS Cover

3. Lift the ESS Cover off of the ESS Box.
4. Remove harness from the connector parts(CN14,CN19, CN20, and CN21) on the controller board.
5. Removes twelve screws that secure the controller board. (A wire of CN14 is secured by one fixing screw of ESS Cover)
6. Remove 2 screws that secure the I/F bail lock parts of the controller board to the ESS Box, and remove controller board.

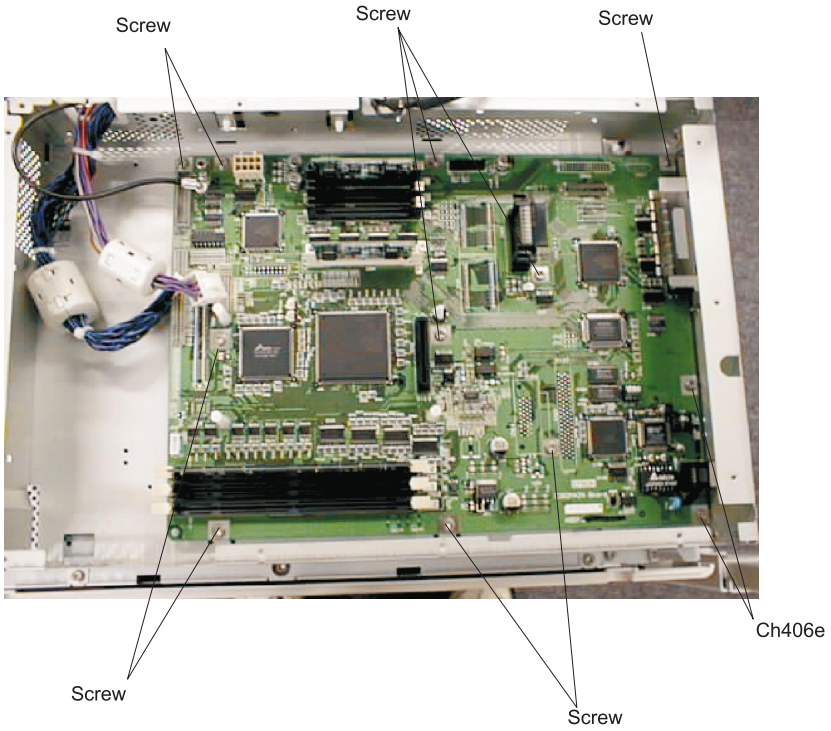

Figure 4-88. Removal of Controller Board

4.2.71 ESS Box

4.2.71.1 Removal

1. Remove the ESS Cover.
2. Disconnect CN14, CN19, CN20 and CN21 form the controller board and remove the wire harness from the wire clamps. Then, release the wire harness from the wire clamps and pull the harness free of the ESS Box.
3. Remove the four screws securing the ESS Box to the printer frame, and remove the Box.

4.2.71.2 Installation

1. Reinstall the ESS Box onto the printer frame. Align the ESS Box so the cutout for the ESS PWB faces the rear of the printer.
2. Use four screws to secure the ESS Box to the printer frame.
3. Route the wire harness along the outside back of the ESS Box and through the grommet at the rear of the Box.
4. Use the wire clamps to secure the wire harness to the Box. There are two clamps along the outside back of the ESS Box, and two clamps on the interior of the ESS Box.
5. Reconnect CN14, CN19, CN20 and CN21 of the controller board.
6. Reinstall the ESS Cover.

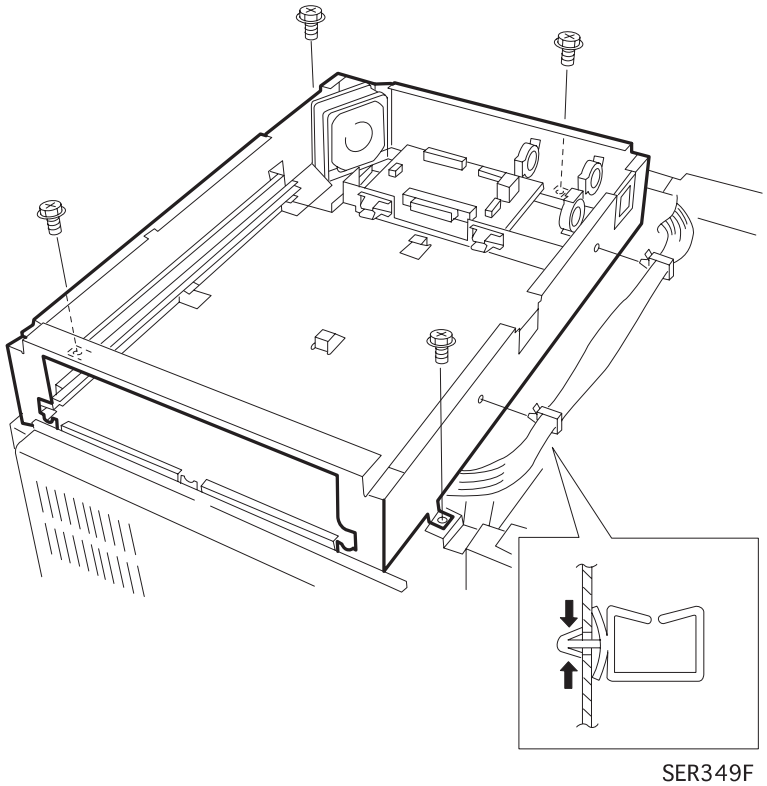

Figure 4-89. Removal of ESS Box

CHAPTER

5

ADJUSTMENT

No adjustment is necessary for this printer.

CHAPTER

6

MAINTENANCE

6.1 Maintenance

This section explains about maintenance of the printer. Lubrication and adhesion points are not really regulated for this printer. However, there are some exchange units by the users are regulated.

6.1.1 Exchange Units and Parts by User

Any units or parts that user can change are listed below. Refer to the figure on your right.

Table 6-1. Exchange Units and Parts

Reference No. in the figure	Name	Life (Page volume, one-side printing)
1	EP Cartridge	20000
2	Fuser	300000
3	BTR (Transfer Roller)	300000
4	Feed Roll (Tray1)	300000
5	Feed Roll (Tray2)	300000
6	Feed Roll (Tray3)	300000
7	Feed Roll (Tray4)	300000
8	Feed Roll (Tray5)	300000

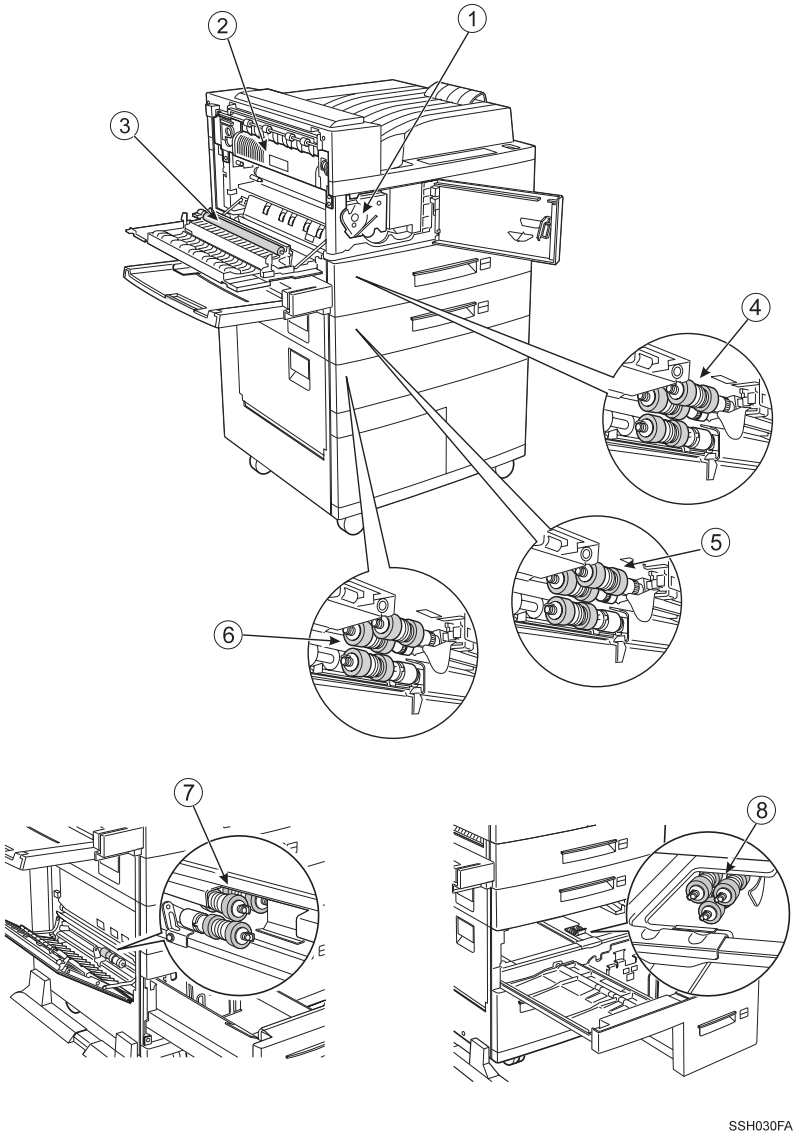

Figure 6-1. Exchange Units and Parts

CAUTION

- **If the fuser is exchanged, be sure to perform Fuser Counter Clear. (See “Maintenance Mode” on page -46)**
- **If BTR(transfer roller) is exchanged, be sure to perform TR Counter Clear. (See “Maintenance Mode” on page -46)**
- **If Feed Roll is exchanged, be sure to perform LC1 ~5 Counter Clear. (See “Maintenance Mode” on page -46)**

CHAPTER

7

APPENDIX

7.1 Connector Pin Diagram

7.1.1 Pin Alighnment

Figure on next page shows major component of wiring diagram in this printer.

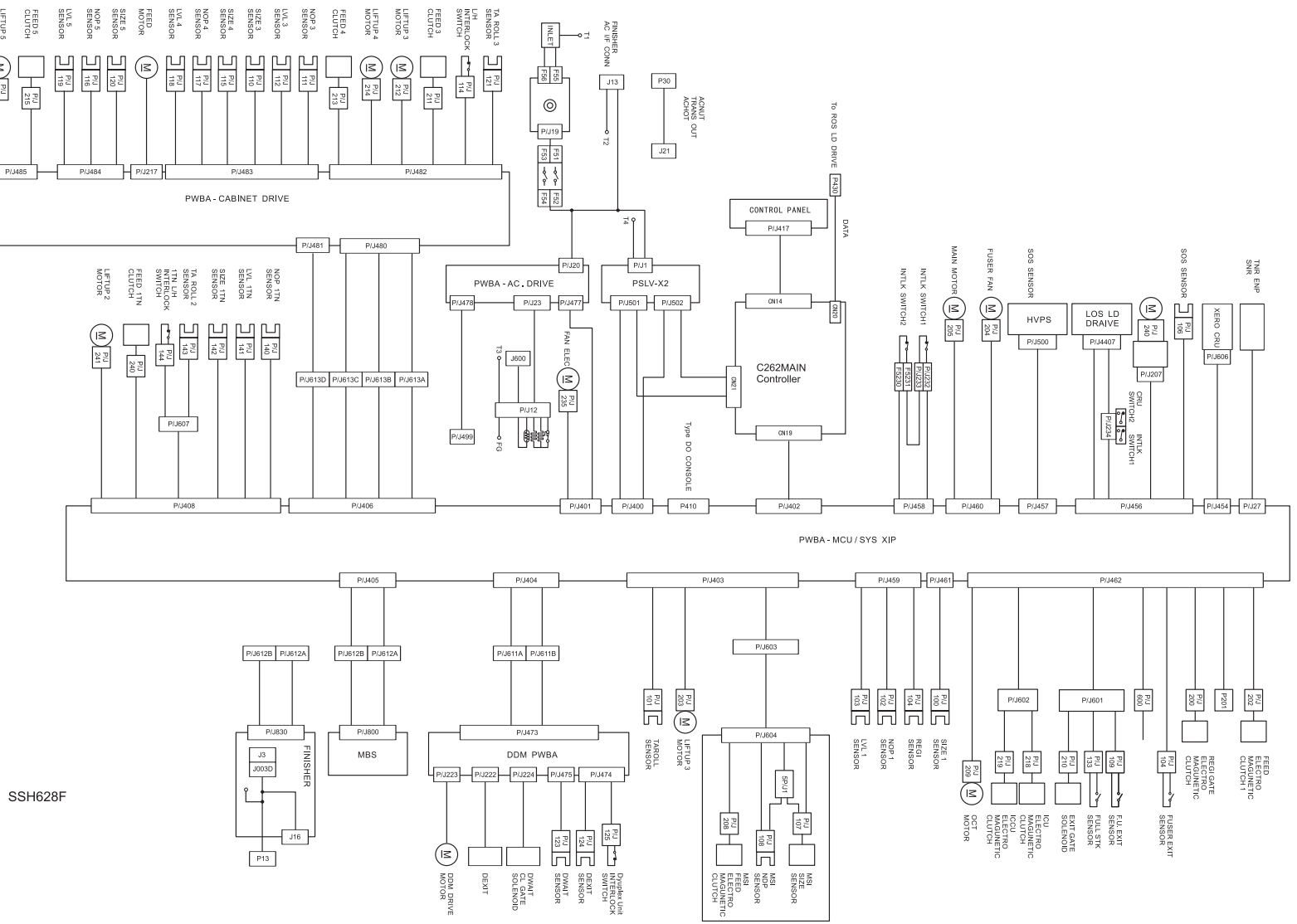

Figure 7-1. Major Component Connecting Diagram

7.1.2 How to use P/J location Table and Map

Use the table and maps in this section to locate specific P/J connectors within the printer. To find the location of a P/J:

1. Locate the P/J connector number in the first column of the table.
2. Find the page number for the corresponding map in the second column.
3. Go to that page and find the connector.

Table 7-1. P/J Location Table

P/J	Location Map	Connected to	Other end connected to
1	page -235 page -238	LVPS (110VAC)	Main Switch F52/F53
12	page -236	Fuser Heat Rods & STS	J23 AC Drive PWB & J600
13	page -234	Finisher AC voltage connector	CE11 & CE12 (110VAC line)
19	page -238	Output - Noise Filter PWB	F51/F53
20	page -238	AC Drive PWB	AC Hot and AC N
23	page -238	AC Drive PWB	P/J12 Fuser Heat Rods & STS
100	page -235	Registration Sensor	P/J459 MCU PWB
101	page -235	Take Away Roll 1 Sensor	P/J403 MCU PWB
102	page -235	Tray 1 No Paper Sensor	P/J459 MCU PWB

Table 7-2. P/J Location Table

P/J	Location Map	Connected to	Other end connected to
103	page -235	Tray 1 Level Sensor	P/J459 MCU PWB
104	page -236	Fuser Exit Sensor	P/J462 MCU PWB
105	page -236	Tray 1 Paper Size Sensor	P/J461 MCU PWB
106	page -234	SOS Sensor	P/J456 MCU PWB
107	page -235	MSI Size Sensor	P/J403 MCU PWB
108	page -235	MSI No Paper Sensor	P/J403 MCU PWB
109	page -236	Face Up Exit Sensor	P/J462 MCU PWB
127	page -236	MCU PWB	Toner Sensor
133	page -236	Full Stack Sensor	P/J462 MCU PWB
140	page -237	Tray 2 No Paper Sensor	P/J408 MCU PWB
141	page -237	Tray 2 Level Sensor	P/J408 MCU PWB
142	page -237	Tray 2 Size Sensor	P/J408 MCU PWB
143	page -237	Take Away Roll Sensor	P/J408 MCU PWB
144	page -237	Tray 2 Left Cover Interlock Switch	P/J607 and P/J408 MCU PWB
200	page -236	Registration Clutch	P/J462 MCU PWB
201	page -236	Take Away Clutch	P/J462 MCU PWB
202	page -236	Feed Clutch 1	P/J462 MCU PWB
203	page -236	Lift Up Motor 1	P/J403 MCU PWB
204	page -236	Fuser Fan	P/J460 MCU PWB
205	page -236	Main Motor	P/J460 MCU PWB

Table 7-3. P/J Location Table

P/J	Location Map	Connected to	Other end connected to
207	page -234	Scanner Motor Assembly	P/J456 MCU PWB
208	page -235	MSI Feed Clutch	P/J403 MCU PWB
209	page -236	Offset Motor	P/J462 MCU PWB
210	page -236	Exit Gate Solenoid	P/J462 MCU PWB
218	page -236	Inverter CW Clutch	P/J462 MCU PWB
219	page -236	Inverter CCW Clutch	P/J462 MCU PWB
232	page -236	Interlock Switch 2	P/J458 MCU PWB
233	page -236	Interlock Switch 1	P/J458 MCU PWB
234	page -236	CRU Switch 1 and CRU Switch 2	P/J407 Laser Diode Driver P/J456 MCU PWB
235	page -238	LVPS Fan	P/J401 MCU PWB
240	page -237	Tray 2 Feed Clutch	P/J408 MCU PWB
241	page -237	Tray 2 Lift Up Motor	P/J408 MCU PWB
400	page -236	MCU PWB	P/J501 & P502 LVPS
401	page -236	MCU PWB	P/J477 AC Drive P/J235 Fuser Fan
402	page -236	MCU PWB	P/J422 - ESS Mother PWB
403	page -236	MCU PWB	P/J107 MSI Size Sensor P/J108 MSI No Paper Sensor P/J208 MSI Feed Clutch
404	page -236	MCU PWB	P/J611 Duplex Module
405	page -236	MCU PWB	P/J612 Mailbox or P612 Finisher

Table 7-4. P/J Location Table

P/J	Location Map	Connected to	Other end connected to
406	page -236	MCU PWB	P/J480/P/J481 HCF Cabinet PWB
407	page -234	Laser Diode Driver	P/J456 MCU PWB
408	page -236	MCU PWB	P/J140 No Paper Sensor 2 P/J141 Level 2 Sensor P/J142 Size 2 Paper Sensor P/J143 Take Away Roll 2 Sensor P/J144 Left Cover 2 Interlock Switch P/J240 Tray 2 Feed Clutch P/J241 Tray 2 Lift Up Motor
410	page -236	MCU PWB	Type D0 Console
CN20	--	Controller	P/J430 Laser Diode Driver
CN14	page -235	Control Panel	Controller
CN21	---	Controller	P/J501/502 LVPS PWB
	---	Controller	P/J417 Control Panel PWB
CN19	---	Controller	P/J402 MCU PWB
430	page -234	Laser Diode Driver	ESS Mother PWB
454	page -236	MCU PWB	P/J606 CRU - CRU Memory
456	page -236	MCU PWB	P/J106 SOS Sensor P/J207 ROS Motor P/J234 CRU Interlock P/J407 Laser Diode Driver

Table 7-5. P/J Location Table

P/J	Location Map	Connected to	Other end connected to
457	page -236	MCU PWB	P/J500 HVPS
458	page -236	MCU PWB	P/J233 Interlocks SW1 and SW2
459	page -236	MCU PWB	P/J100 Registration Sensor P/J102 No Paper 1 Sensor P/J103 Level 1 Sensor
460	page -236	MCU PWB	P/J204 Fuser Fan P/J205 Main Motor
461	page -236	MCU PWB	P/J105 Size Sensor 1
462	page -236	MCU PWB	P/J202 Feed Clutch 1 P/J201 Take Away Roll 1 Clutch P/J200 Registration Clutch P/J104 Fuser Exit Sensor P/J601 Face Up Exit Sensor P/J601 Full Stack Sensor P/J601 Exit Gate Solenoid P/J218 Inverter CW Clutch P/J219 Inverter CCW Clutch
477	page -238	AC Drive PWB	P/J401 MCU PWB
478	page -238	AC Drive PWB	Test output connector
499	page -234	Test output connector	P/J478 AC Drive PWB
500	page -236	HVPS	P/J457 MCU PWB
501	page -235 page -238	LVPS	P/J420 ESS Mother PWB P/J400 MCU PWB
502	page -235 page -238	LVPS	P/J420 ESS Mother PWB P/J400 MCU PWB

Table 7-6. P/J Location Table

P/J	Location Map	Connected to	Other end connected to
600	page -236	Fuser STS	P/J462 MCU PWB
601	page -236	P109 Face Up Exit Sensor P133 Full Stack Sensor P210 Exit Gate Solenoid	P/J462 MCU PWB
602	page -236	P218 Inverter CW Clutch P219 Inverter CCW Clutch	P/J642 MCU PWB
603	page -235	P/J604 MSI	P/J403 MCU PWB
604	page -235	P107 MSI Size Sensor J108 MSI No Paper Sensor P200 MSI Feed Clutch	P/J403 MCU PWB
607	page -237	P/J143 Take Away Roll Sensor P/J144 Tray 2 Left Cover Interlock Switch	P/J408 MCU PWB
611 A,B	page -237	P/J473 Duplex PWB	P/J404 MCU PWB
612 A,B	page -237	P/J800 Mailbox PWB P/J830 Finisher PWB	P/J405 MCU PWB
607	page -237	P/J143 Take Away Roll Sensor P/J144 Tray 2 Left Cover Interlock Switch	P/J408 MCU PWB
613 A~D	page -237	P/J406 MCU PWB	P/J480 Finisher PWB P/J481 Finisher PWB

Table 7-7. P/J Location Table

P/J	Location Map	Connected to	Other end connected to
F51~54	page -238	Main Power Switch	P/J19 Noise Filter PWB P/J20 AC Drive PWB P/J1 LVPS PWB
F55	page -238	Noise Filter PWB	AC Power Cord Hot
F56	page -238	Noise Filter PWB	AC Power Cord Neutral
F5230	page -236 page -237	Main Interlock Switch	P/J458 MCU PWB
F5231	page -236 page -237	Main Interlock Switch	P/J458 MCU PWB
BTR	page -237	Bias Transfer Roll	HVPS
CB	page -237	Charge Roll	HVPS
DTS	page -237	Detack Saw	HVPS
DB	page -237	Magnet Roll	HVPS
T4	page -238	Frame Ground	P/J1 LVPS PWB

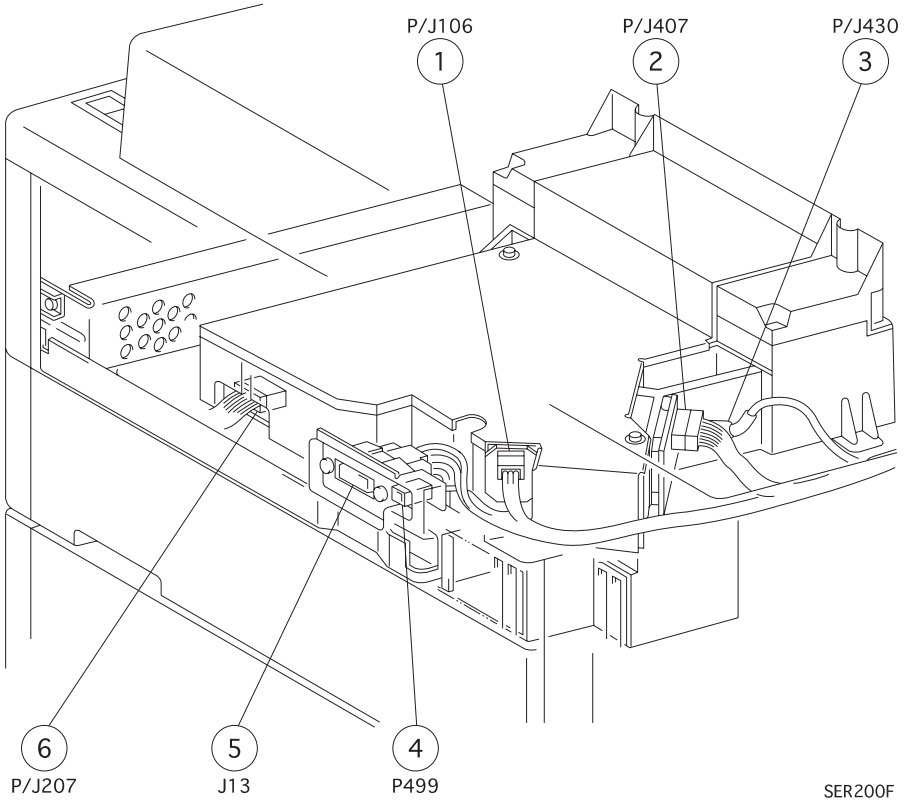

Figure 7-2. P/J Location Map1

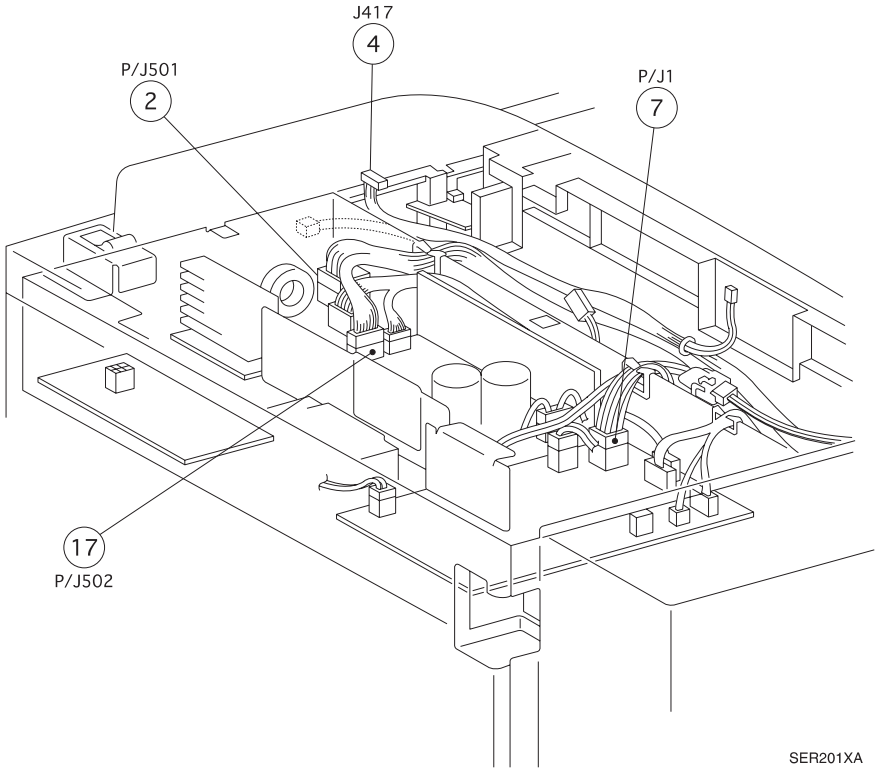

Figure 7-3. P/J Location Map2

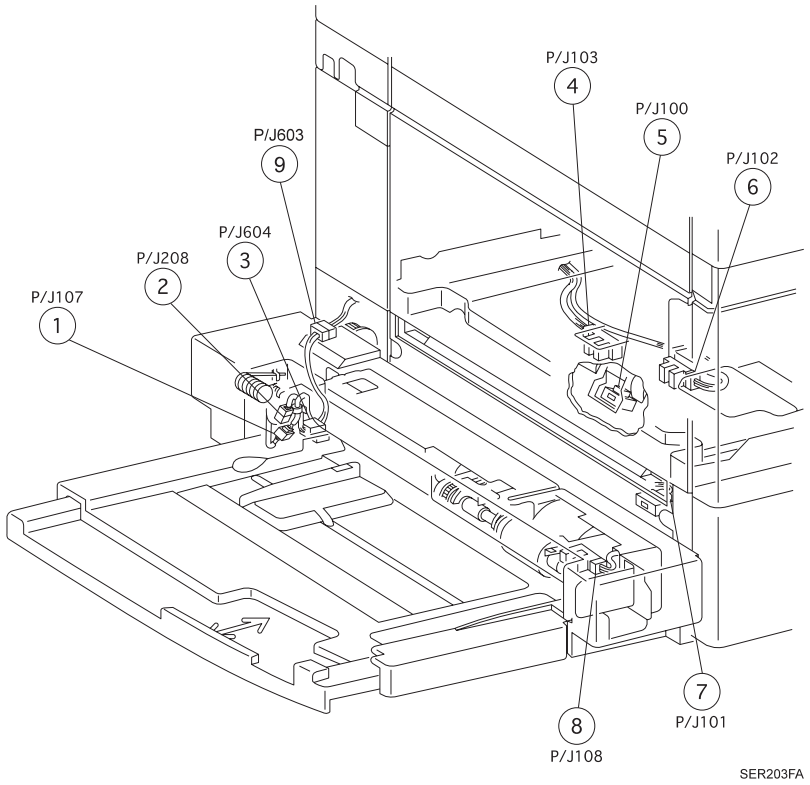

Figure 7-4. P/J Location Map3

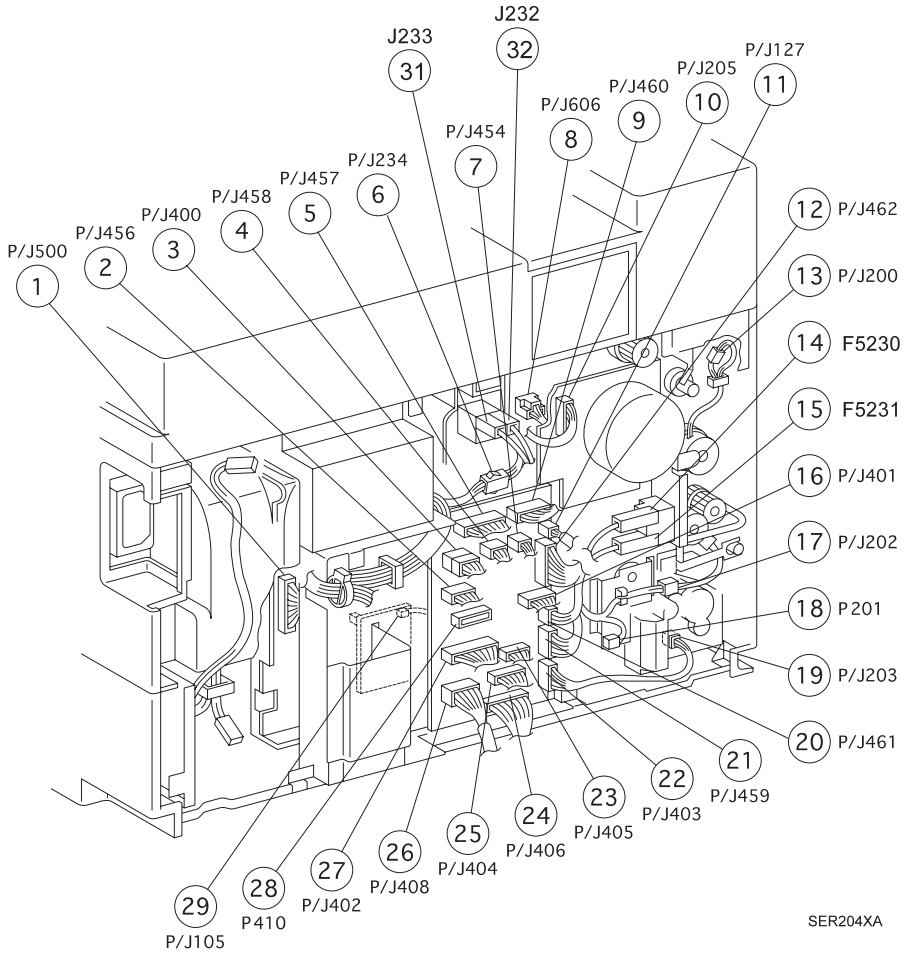

Figure 7-5. P/J Location Map4

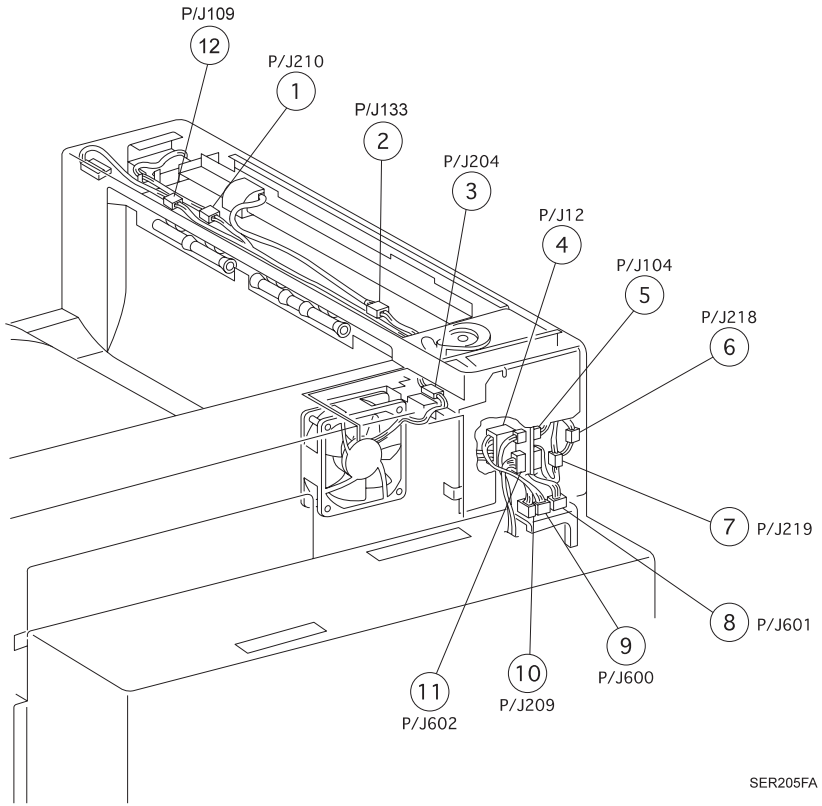

Figure 7-6. P/J Location Map5

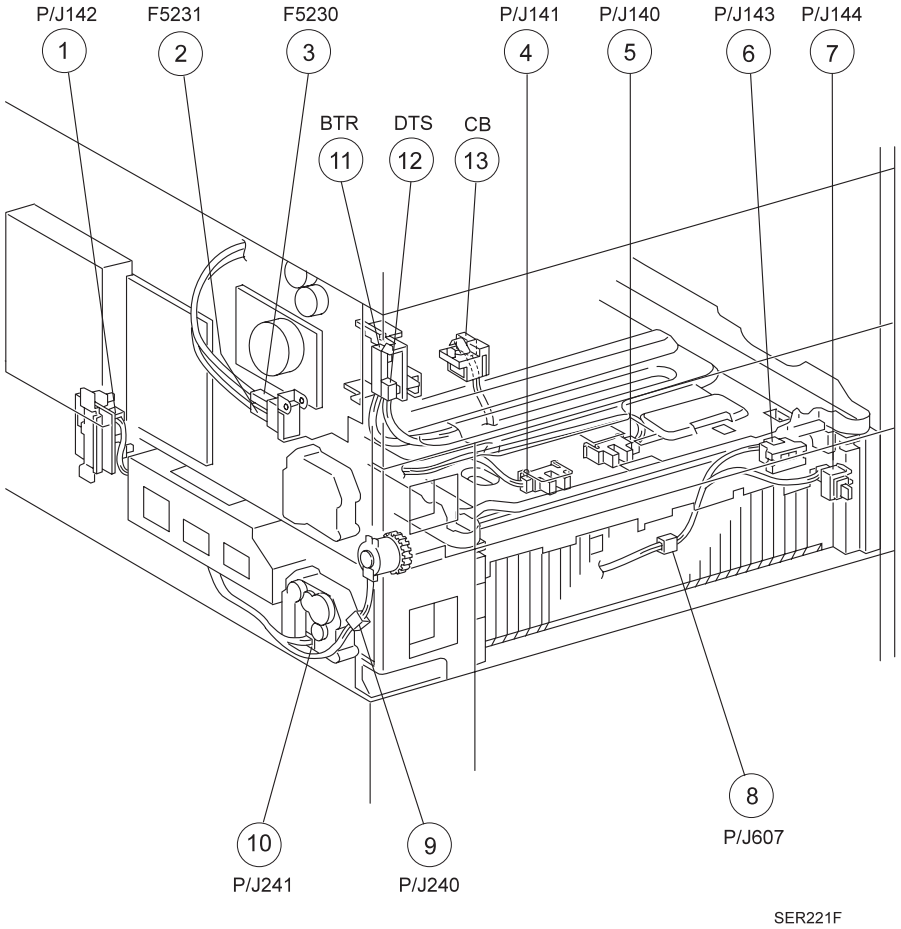

Figure 7-7. P/J Location Map6

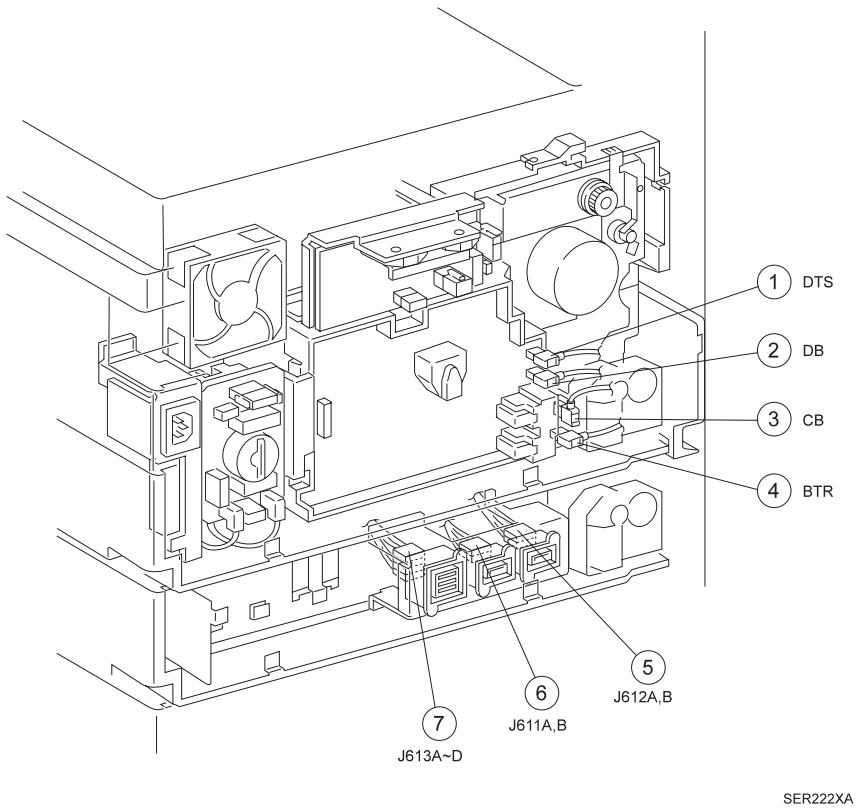

Figure 7-8. P/J Location Map7

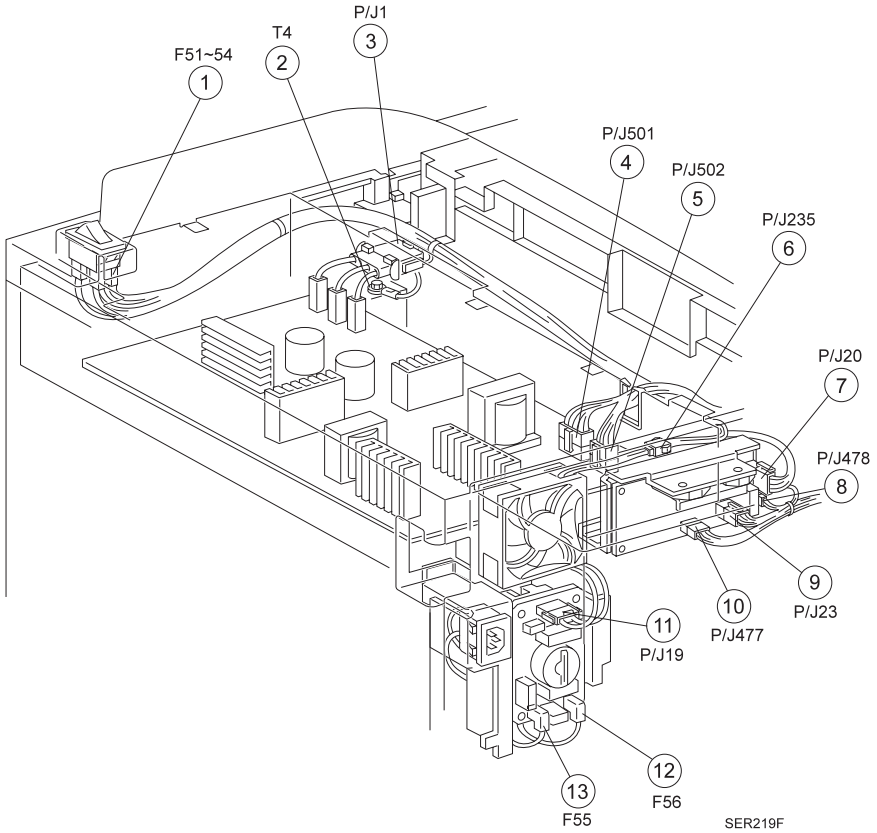

Figure 7-9. P/J Location Map8

7.1.3 Signal Information

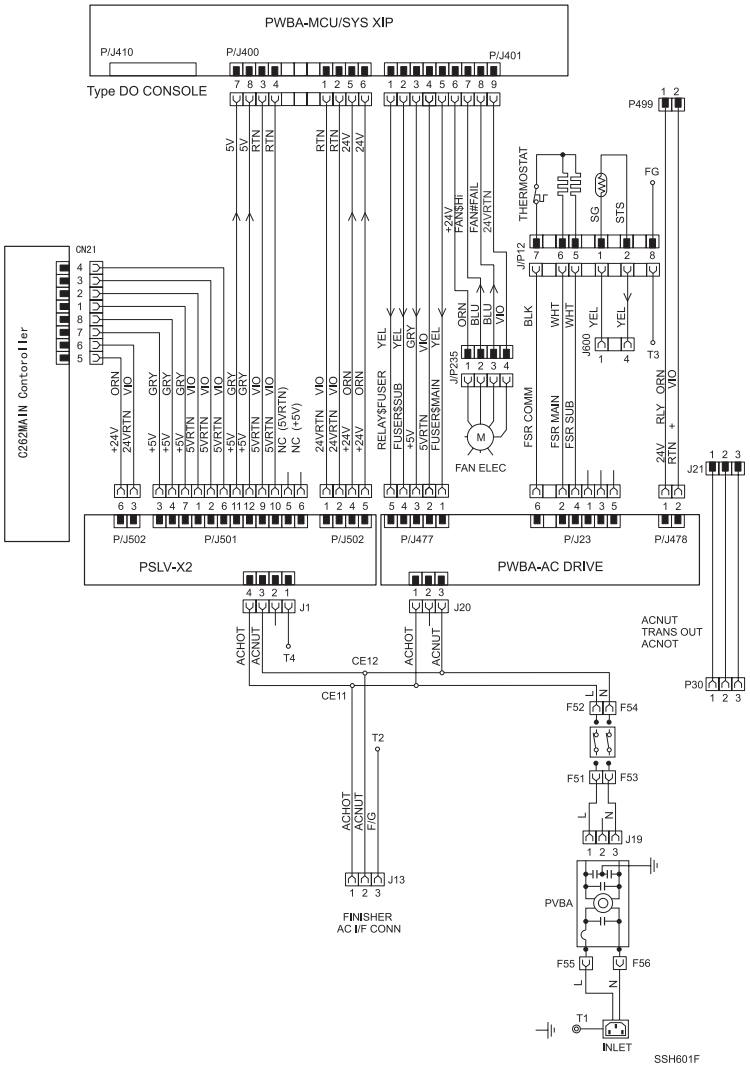

Figure 7-10. AC In↔Noise Filter LVPS ↔C262 Main Controller Board ↔AC Drive PWB ↔D0 Console

Table 7-8. Signal Name

Signal Name	Description
FUSER$MAIN	Switches Main Heat Rod. Low=On. High=Off
FUSER$SUB	Switches Heat Rod 2. Low=On. High=Off
RELAY$FUSER	Fuser relay control that switches AC to the Heat Rods. Low=On. High=Off
FAN$HI	Switches Fuser Fan speed. Low=High speed. High=Low speed
FAN#FAIL	Monitors Fuser Fan. Low=Operating correctly. High=Not operating correctly.

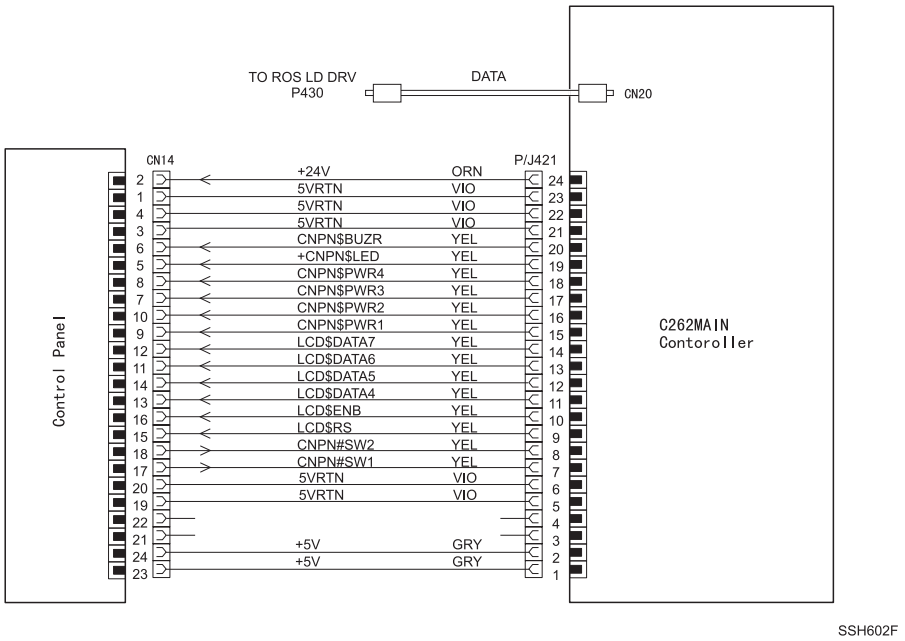

Figure 7-11. Console↔C262 Main Controller

Table 7-9. Signal Name

Signal Name	Description
CNPN$BUZR	Control Panel buzzer
+CNPN$LED	LED synch. High=Off. Low=On
CNPN$PWR4	Key synch. High=Key pressed. Low=Key not pressed
CNPN$PWR3	Source for Key and LED. High=On. Low=Off
CNPN$PWR2	Source for Key and LED. High=On. Low=Off
CNPN$PWR1	Source for Key and LED. High=On. Low=Off
LCD$DATA7	Logic line for Controller LCD
LCD$DATA6	Logic line for Controller LCD
LCD$DATA5	Logic line for Controller LCD
LCD$DATA4	Logic line for Controller LCD
LCD$ENB	LCD Controller write signal.
LCD$RS	LCD Controller register select signal. High=Data register. Low=Instruction register
CNPN#SW1	Key synch. High=Key pressed. Low=Key not pressed
CNPN#SW2	Key synch. High=Key pressed. Low=Key not pressed

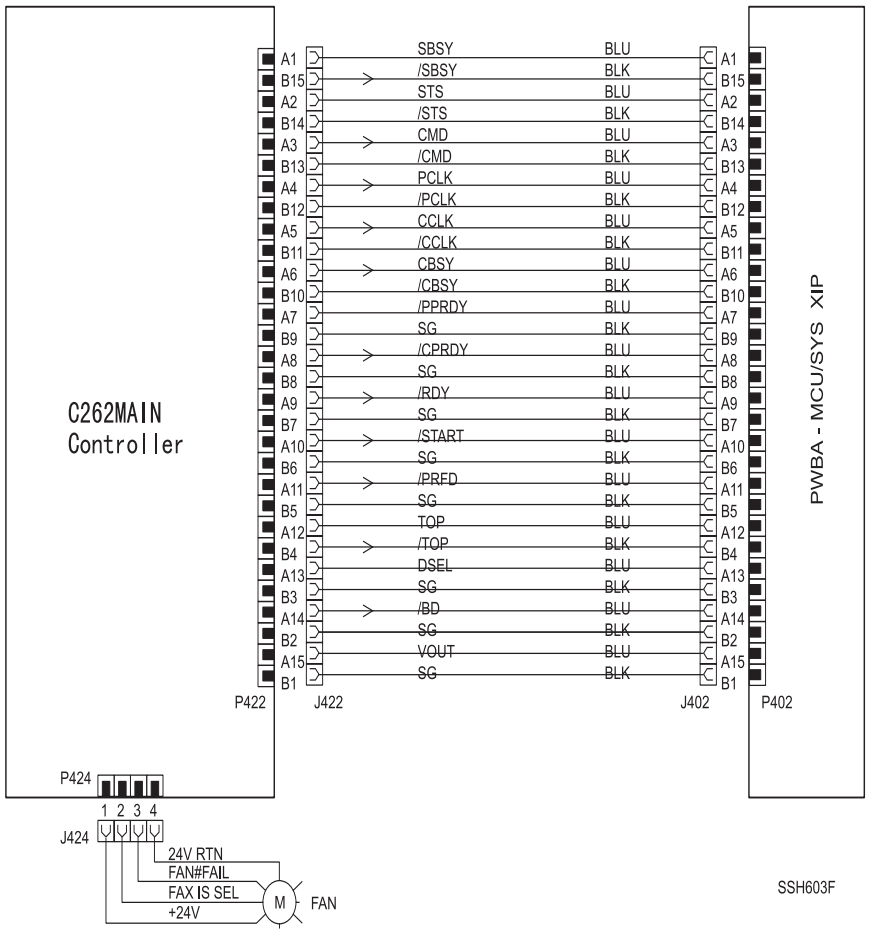

Figure 7-12. C262 Main Controller ↔ ESS PWB ↔ MCU PWB

Table 7-10. Signal Name

Signal Name	Description
/SBSY	Status busy signal. Low=Transmitting signal. High=Not transmitting
/STA	Status from MCU to ESS
/CMD	Command from ESS to MCU
/PCLK	Clock signal which is sent from the printer to ESS, and command timing for sending the status. Clock speed is 9600 bps
/CCLK	Clock signal for status and command timing - ESS to MCU. Clock speed 9.6kHz ~ 500kHz
/CBSY	Command busy signal - ESS to MCU Low=ESS is transmitting command. High=ESS is not transmitting.
/PPRDY	Status indicating MCU initialization is complete and printer is On-Line. Low=Printer initialization complete. High=Printer initialization not complete
/CPRDY	Status indicating ESS initialization is complete. Low=ESS initialization complete. High=ESS initialization not complete
/RDY	Status indicating that the MCU is ready to accept control commands. Low=Accept commands. High=Ignore commands
/START	Command from ESS to the MCU to begin a print cycle. Low=Start. High=Do not start. Starts print cycle only when /RDY is also Low.
/PRFD	Command from the ESS to the MCU to feed paper
/TOP	Video data synch signal from MCU to ESS
DSEL	Command to select the No Paper signal
/BD	Video data synch signal from MCU to ESS
VOUT	Video data signal from the ESS Low=Black, High=White

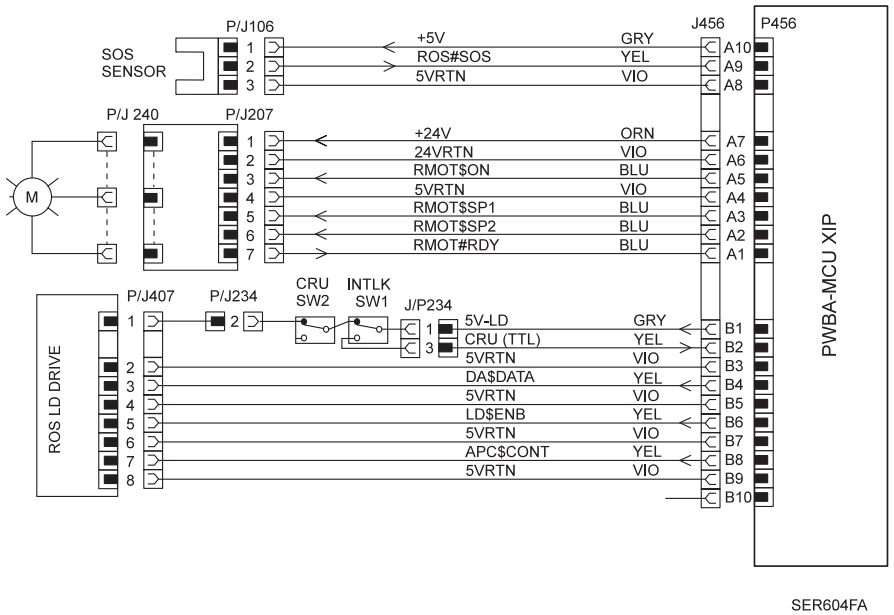

Figure 7-13. ROS ↔ MCU PWB

Table 7-11. Signal Name

Signal Name	Description
CRU#DET	Monitors CRU presence. High=CRU installed. Low=CRU not installed
DA$DATA	Data used to set laser
LD$ENB	Enables laser - MCU to the LD Drive. High=No enabled. Low=Enabled
APC$CNT	Monitors APC count
RMOT$ON	Controls Scanner Motor. High=Off. Low=On
RMOT$SP1	Controls Scanner Motor speed. SP3-1 -010=Standby. SP3-1-110=480dpi. SP3-1-011=600dpi.
RMOT$SP2	Controls Scanner Motor speed. SP3-1 -010=Standby. SP3-1-110=480dpi. SP3-1-011=600dpi.
RMOT#RDY	Monitors Scanner Motor speed. Low=Speed correct. High=Speed not correct.
ROS#SOS	Monitors start of scan. High=Off. Low=On

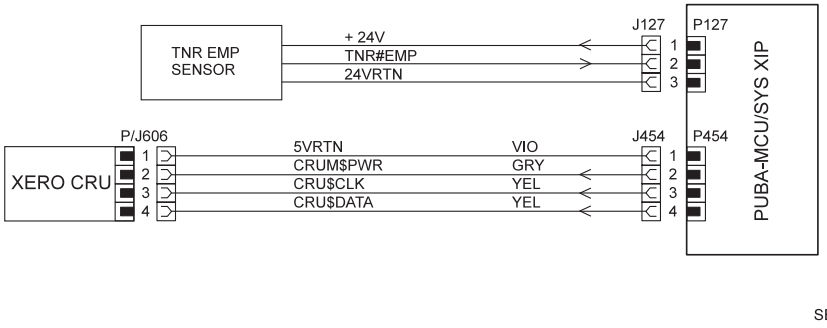

Figure 7-14. Toner Sensor ↔ Xerographic CRU ↔ MCU PWB

Table 7-12. Signal Name

Signal Name	Description
CRUM$PWR	Switches CRUM power.
CRU$CLK	Clock signal for CRU Memory
CRU$DATA	CRU Memory data
TNR#EMP	Monitor toner quantity in the ET Cartridge. Low=Quantity is low. Hiigh=Enough quantity.

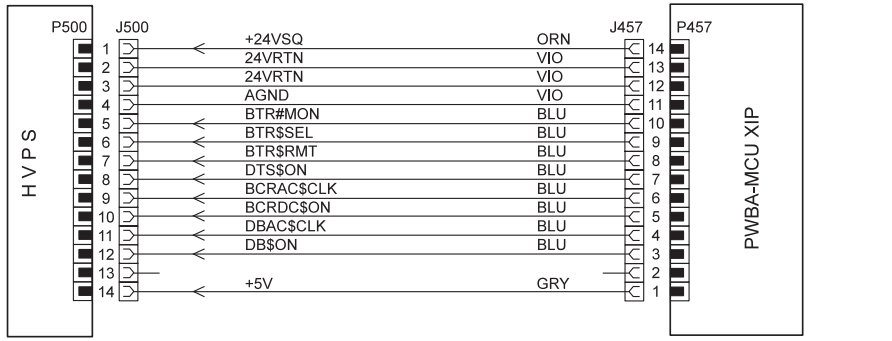

Figure 7-15. HVPS M ↔CU PWB

Table 7-13. Signal Name

Signal Name	Description
BTR#MON	Monitors BTR current level
BTR$SEL	Switches BTR voltage. High=Positive voltage. Low=Negative voltage
BTR$RMT	Controls the current value to the BTR
DTS$ON	Switches Detack Saw and Chute Bias voltage. High=Off. Low=On
BCRAC$CLK	Controls the AC voltage value to the BCR. Negative logic
BCRDC$ON	Switches BCR voltage. High=Off. Low=On
DBAC$CLK	Controls the AC voltage value to the Magnet Roll. Negative logic
DB$ON	Switches DB voltage. Negative logic

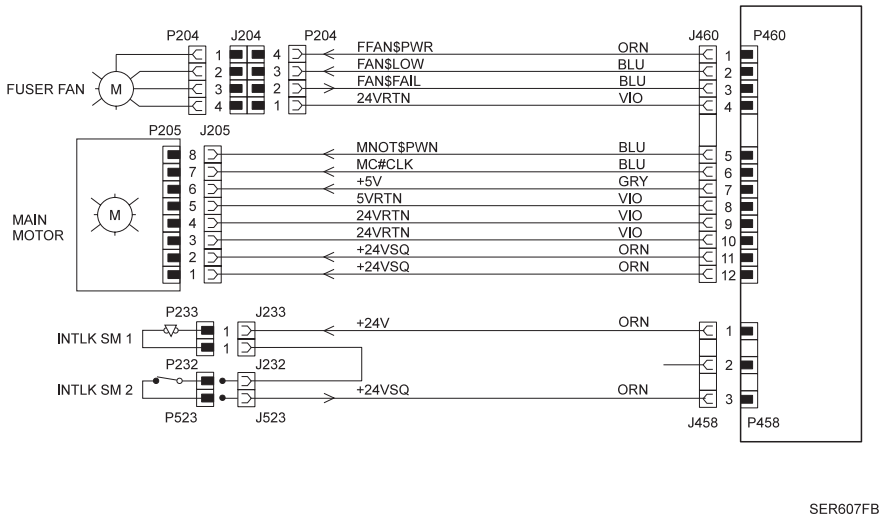

Figure 7-16. Fuser Fan ↔ Main Motor ↔ Interlock SM1&SM2 ↔ MCU PWB

Table 7-14. Signal Name

Signal Name	Description
MMOT$PWM	Switches Main Motor. High=Off. Low=On.
MC#CLK	Monitors the speed of the Main Motor.
FFAN$PWR	Switches the Fuser Fan. High=On. Low =Off
FAN$LOW	Switches the speed of the Fuser Fan. High=Low speed. Low=High speed
FUSER$FAIL	Monitors the Fuser Fan. Low=Operation correct. High=Operation incorrect
INTLK#SW1	Monitors Left Cover interlock switch. High=Cover open. Low=Cover closed.

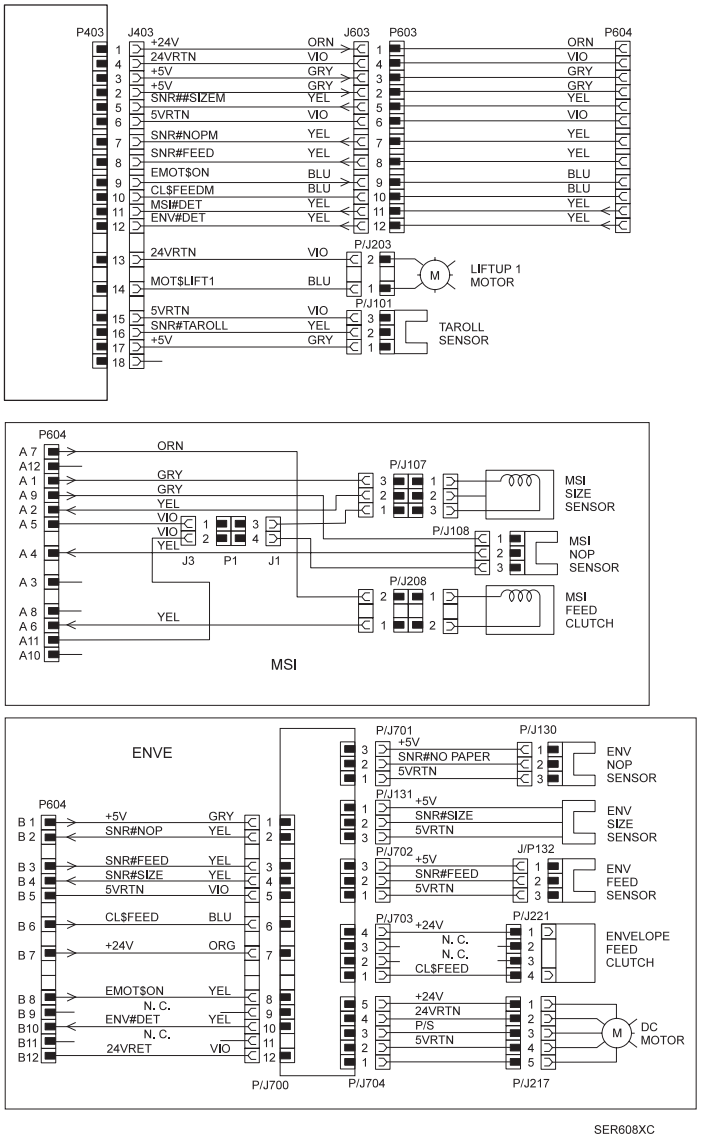

Figure 7-17. TRAY1 ↔ MCU PWB-MSI ↔ MCU PWB-ENVELOPE FEEDER ↔ MCU PWB

Table 7-15. Signal Name

Signal Name	Description
SNR#SIZEM	Analog signal from the MSI Size Sensor. Voltage levels 0VDC~5VDC
SNR#SIZE	Analog signal from the Envelope Size Sensor. Voltage levels 0VDC~5VDC
SNR#NOPM	Monitors level of paper in the MSI. High=No paper present. Low=Paper present
SNR#NOP	Monitors level of paper in the Envelope Feeder
CL$FEEDM	Controls MSI paper feed. High=No feed. Low=Feed
CL$FEED	Controls Envelope feed. High=No feed. Low=Feed
MSI#DET	Monitors presence of MSI. High=MSI not present. Low=MSI present
ENV#DET	Monitors presence of Envelope Feeder. High=Envelope Feed not present. Low=Envelope Feeder present
EMOT$ON	Switches Envelope Feed Motor. High=Off. Low=On
SNR#FEED	Monitors paper between Envelope Feeder and base engine. High=Paper present Low=No paper
MOT$LIFT1(TTL)	Switches Tray 1 Lift Up Motor. High=On. Low=Off
SNR#TAROL1	Monitors paper between Tray 2 and Tray 1. High=Paper present. Low=No paper

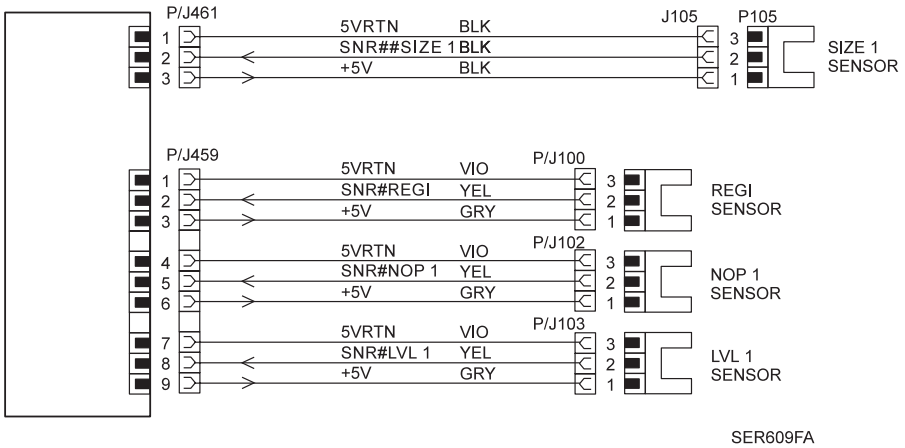

Figure 7-18. Size 1 Sensor ↔ Registration Sensor ↔ No-Paper1 Sensor ↔ Level 1 Sensor ↔ MCU PWB

Table 7-16. Signal Name

Signal Name	Description
SNR#SIZE1	Analog signal from the Tray 1 Size Sensor. Voltage levels 0VDC~5VDC
SNR#REGI	Monitors paper flow at the Registration Sensor. High=Paper present. Low=No paper
SNR#NOP1	Monitors level of paper in Tray 1
SNR#LVL1	Monitors position of Tray 1. High=Not in position. Low=In position

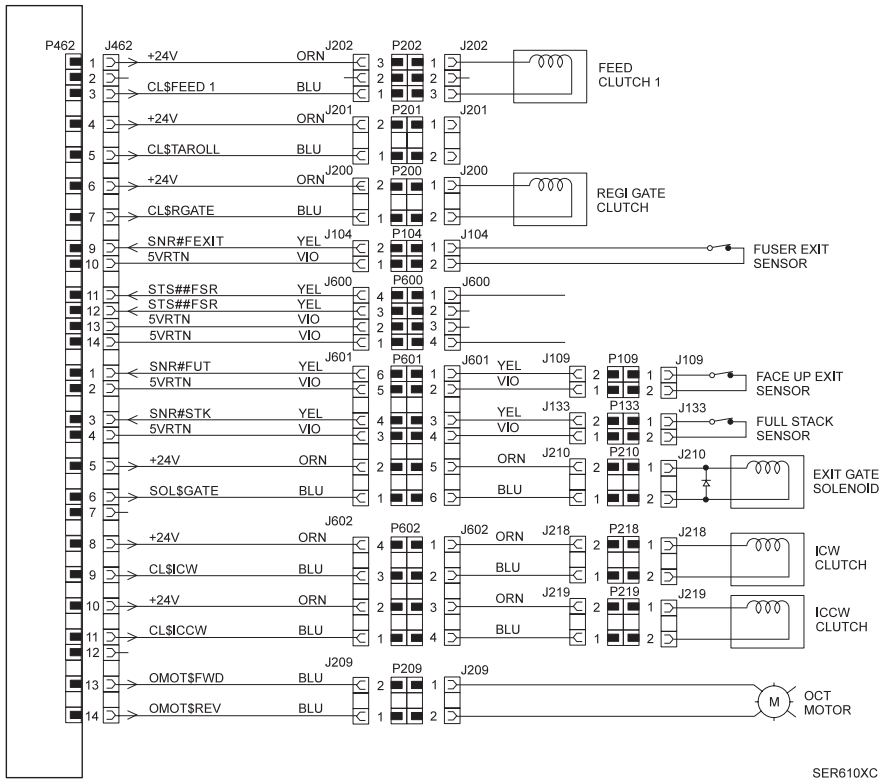

Figure 7-19. Other Clutch and Sensor, Offset Mother, Exit Gate Solenoid ↔ MCU PWB

Table 7-17. Signal Name

Signal Name	Description
CL$FEED1	Controls Tray 1 paper feed. High=No feed. Low=Feed
CL$RGATE	Controls Registration Clutch. High=Clutch off. Low=Clutch on
STS#FSR	Fuser Heat Roll temperature. Analog signal.
SNR#FEXIT	Monitors paper leaving the Fuser. High=Paper present. Low=Paper not present
SNR#FUT	Monitors paper arriving at the Face Up output tray. High=Paper not present. Low=Pape present
SOL$GATE	Controls Gate Solenoid. High=Face Down output. Low=Face Up output.
CL$ICCW	Controls Inverter CCW Clutch. High=Off. Low=On
CLS$ICW	Controls Inverter CW Clutch. High=Off. Low=On
OMOT$FWD	Controls forward motion of the Offset Motor. High=On. Low=Off
OMOT$REV	Controls reverse motion of the Offset motor. High=On. Low=Off
SNR#STK	Monitors the Full Stack Sensor. High=Tray full. Low=Tray not full

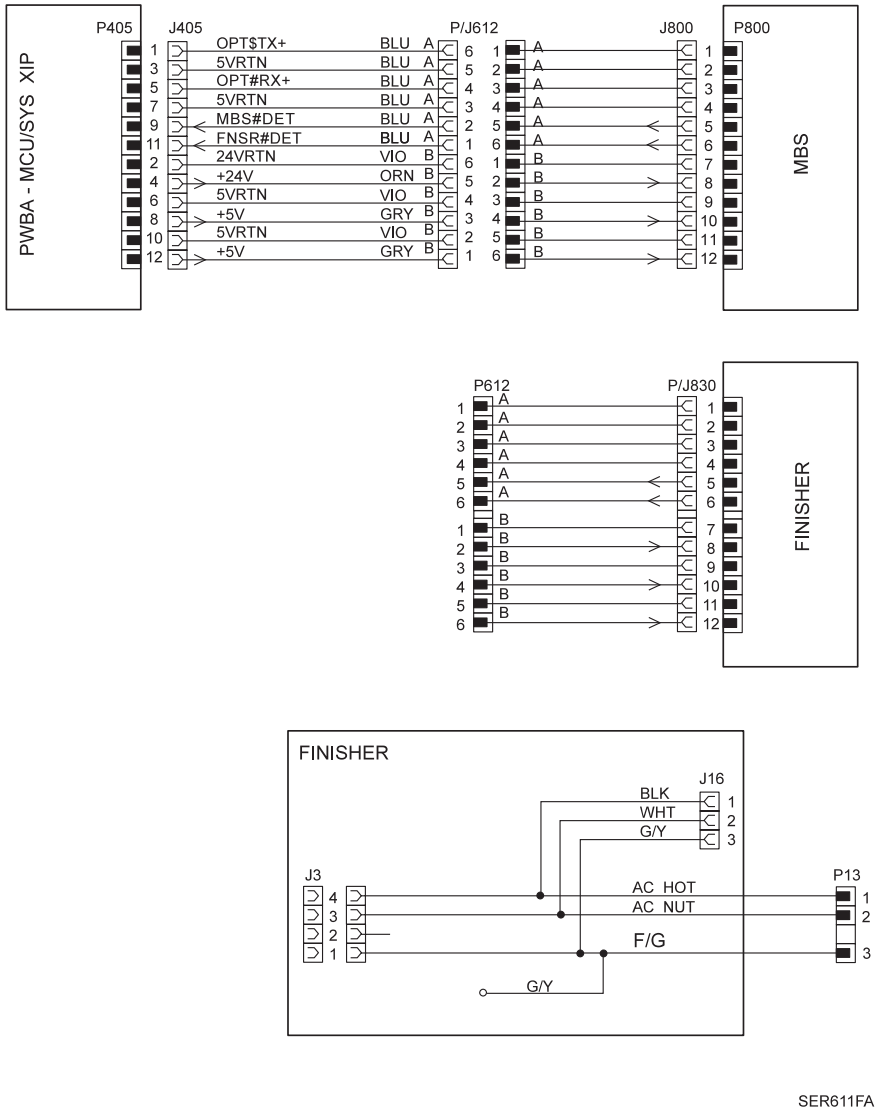

Figure 7-20. Multibin ↔ Finisher ↔ MCU PWB

Table 7-18. Signal Name

Signal Name	Description
OPT$TX+	Status of Finisher or Mailbox sent to MCU. High=Mark. Low=No mark
OPT#RX+	Status of MCU sent to the Finisher or Mailbox. High=Mark. Low=No mark
MBS#DET	Monitors presence of Mailbox. High=Mailbox not installed. Low=Mailbox installed
FSNR#DET	Monitors presence of Finisher. High=Finisher not installed. Low=Finisher installed

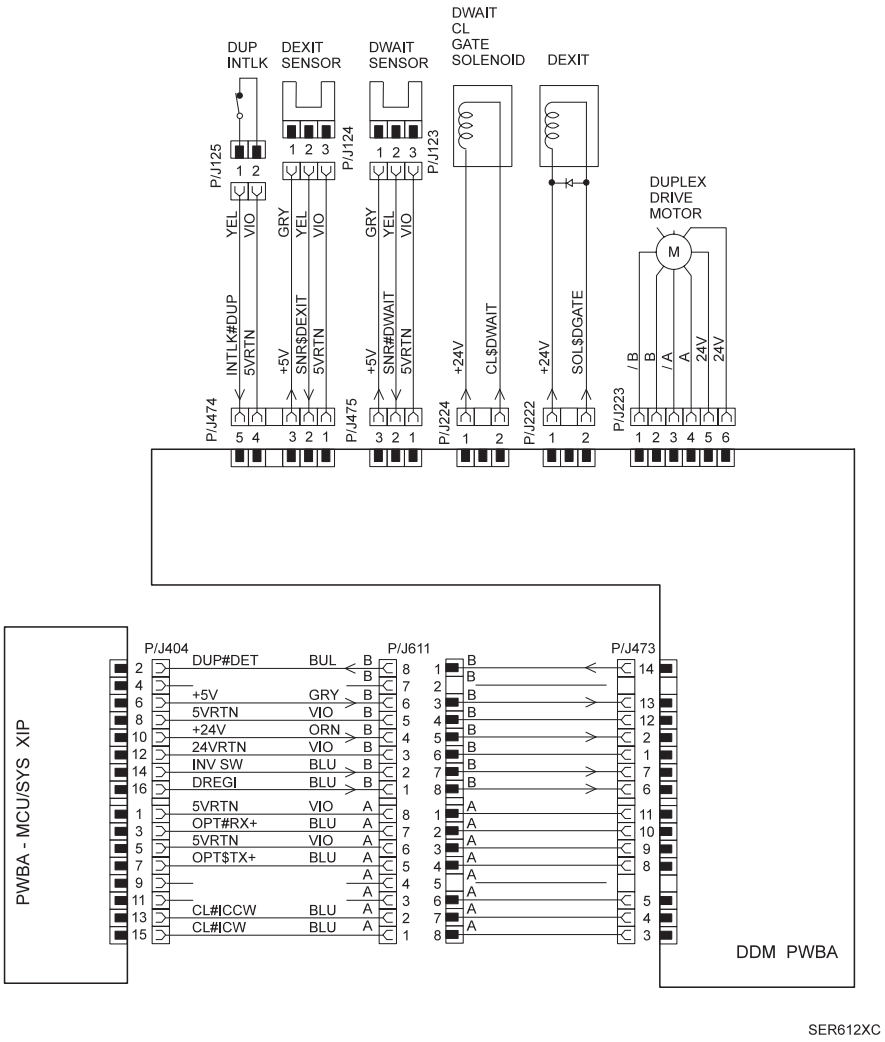

Figure 7-21. Duplex PWB ↔ MCU PWB

Table 7-19. Signal Name

Signal Name	Description
OPT$TX+	Status of Duplex Module sent to MCU. High=Mark. Low=No mark
OPT#RX+	Status of MCU sent to the Duplex Module. High=Mark. Low=No mark
DUP#DET	Monitors presence of a Duplex Module. High=Duplex Module installed. Low=Duplex Module not installed
DREGI	Monitors paper at the Registration Sensor. High=Paper present. Low=Paper not present
INV SW	Monitors paper at the Fuser Exit Sensor. High=Paper present. Low=Paper not present
CL$ICW	Switches the Inverter CW Clutch. High=Off. Low=On
CL$ICCW	Switches the Inverter CCW Clutch. High=Off. Low=On
INTLK#DUP	Monitors the Duplex Cover Interlock Switch. High=Cover open. Low=Cover closed.
SNR#DEXIT	Monitors paper at the Duplex Exit Sensor. High=Paper present. Low=Paper not present
SNR#DWAIT	Monitors paper at the Duplex Wait Sensor. High=Paper present. Low=Paper not present
SOL$DGATE	Switches the Duplex Exit Gate Solenoid. High=Off. Low=On
/A, A, /B, B	Pulse signals sent by the Duplex PWB to rotate the Duplex Motor

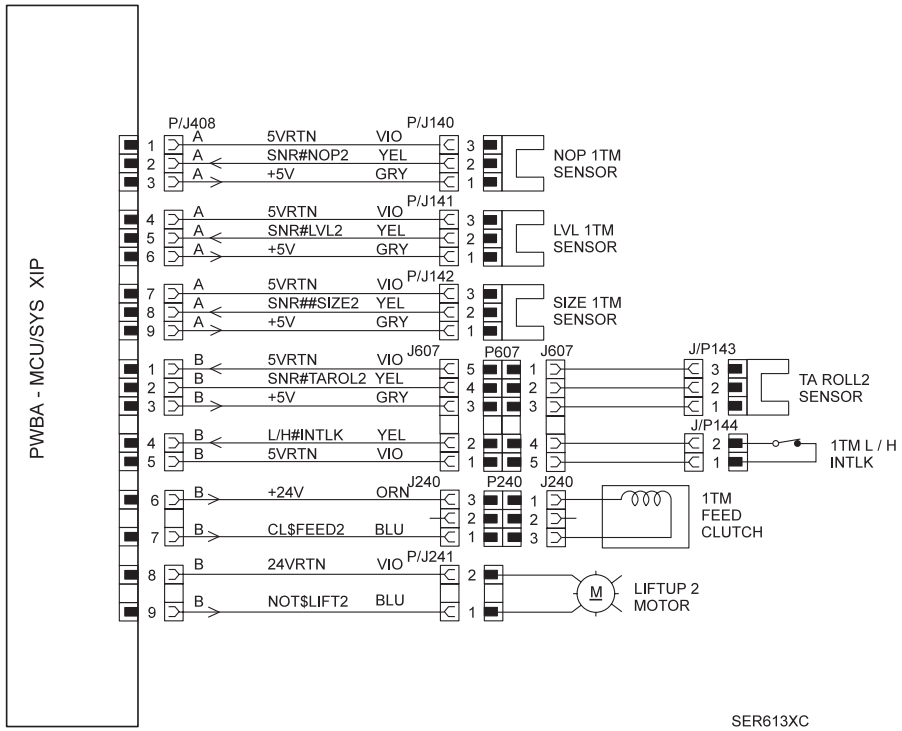

Figure 7-22. Tray2 Component ↔ MCU PWB

Table 7-20. Signal Name

Signal Name	Description
SNR#SIZE2	Analog signal from the Tray 2 Size Sensor. Voltage levels 0VDC~5VDC
SNR#NOP2	Monitors level of paper in Tray 2. High=No paper present. Low=Paper present
SNR#TAROL2	Monitors paper between Tray 2 and Tray 3. High=Paper present. Low=No paper
SNR#LVL2	Monitors position of Tray 2. High=Not in position. Low=In position
L/H#INTLK	Monitors the Left Cover Interlock Switch. High= Cover open (switch off). Low=Cover closed (switch on).
CL$FEED2	Controls Tray 2 paper feed. High=No feed. Low=Feed
MOT$LIFT2	Switches Tray 2 Lift Up Motor. High=On. Low=Off

7.2 Board Component Layout

7.2.1 C262 Main Board Component

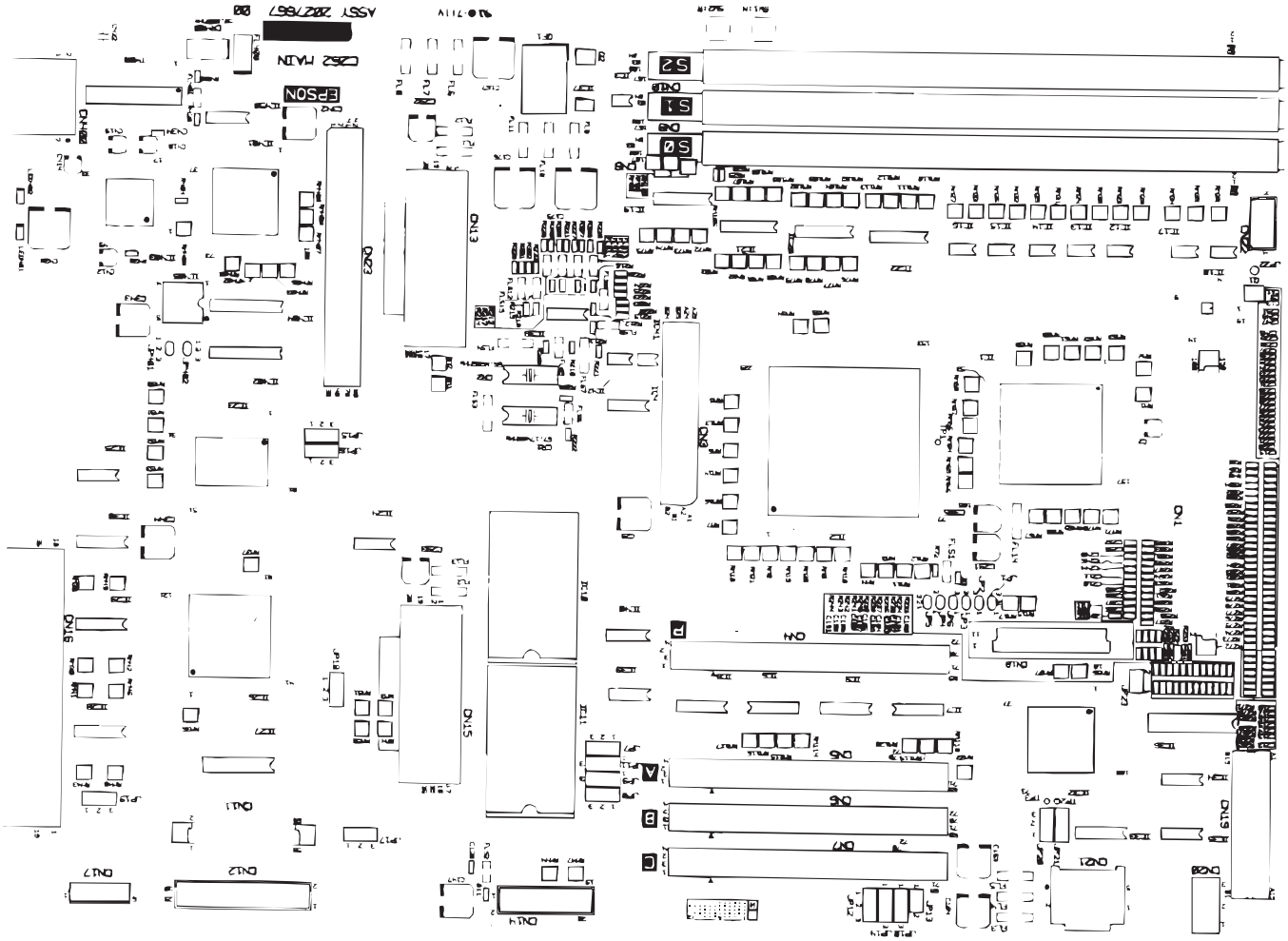

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Figure 7-23. C262 Main Component

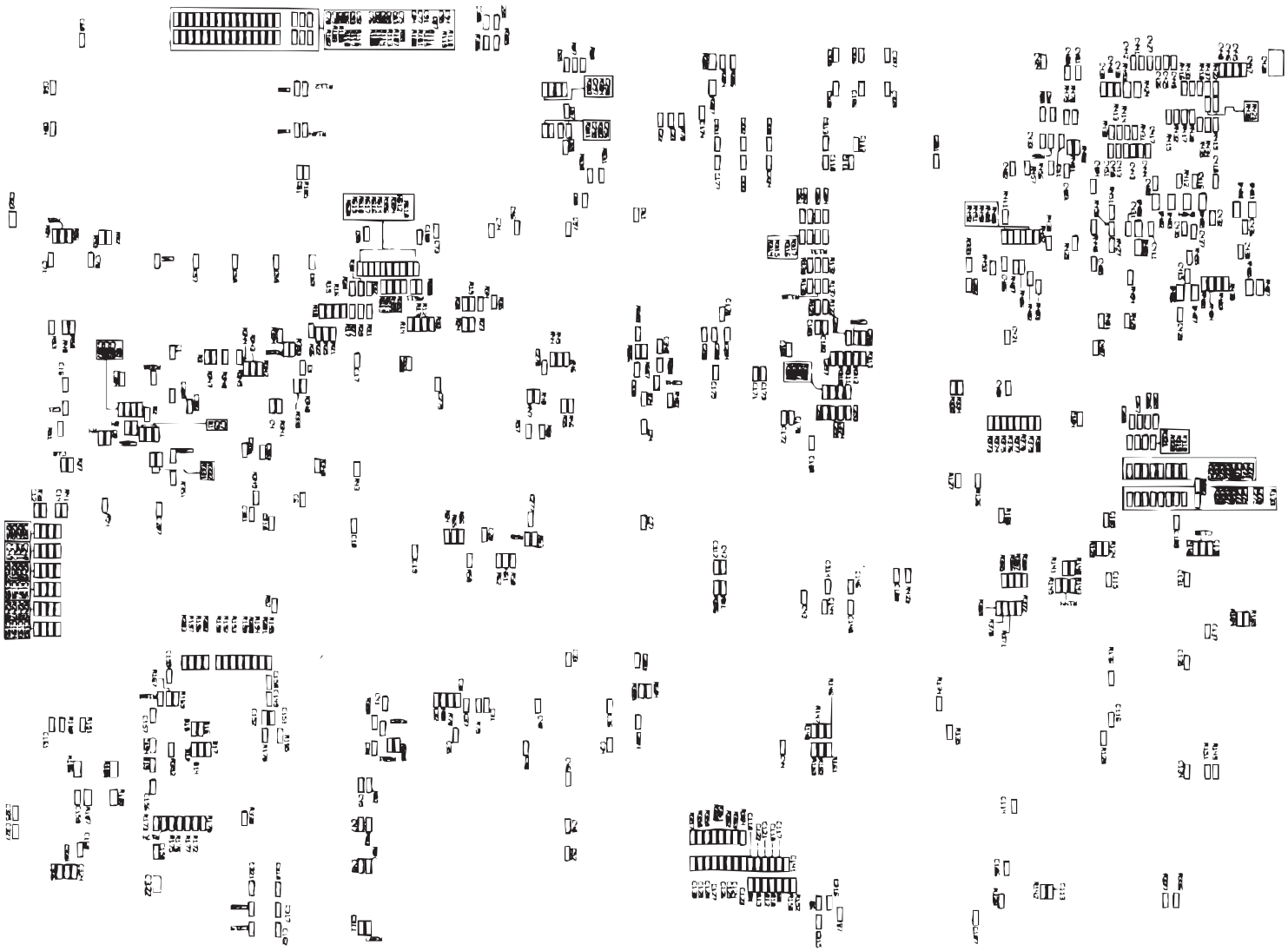

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Figure 7-24. C262 Main Component Layout (Soldered side)

7.3 Parts List

7.3.1 Top Cover Assembly

Table 7-21. Parts Name for Top Cover Assembly

No. in the Figure	Unit / Parts Name
1	COVER ASSEMBLY (with 2,3)
2	TOP COVER
3	LABEL SWITCH
4	CONSOLE PANEL
5	-----
6	COVER ESS
7	STOPPER
8	FAN ASSEMBLY FUSER
9	COVER-FUSER FULL

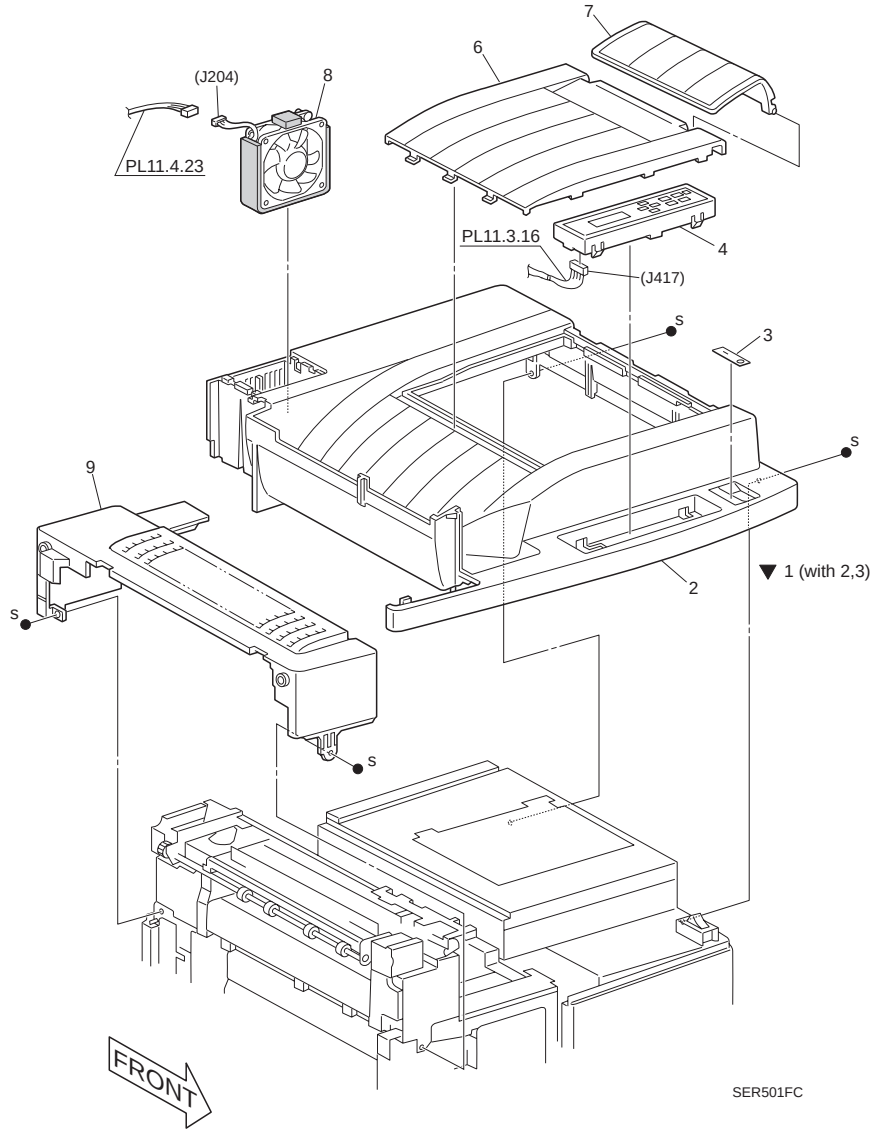


Figure 7-25. Top Cover Assembly

7.3.2 Front Cover

Table 7-22. Parts Name for Front Cover

No. in the Figure	Unit / Parts Name
1	COVER ASSEMBLY
2	SPRING TORSION
3	COVER F/R
4	PLATE MAGNET
5	DOCT BOTTOM
6	---
7	---
8	STUDIO DOCKING
9	SPRING EME FRONT
10	BRACKET DOCKING LEFT
11	---
12	BRACKET DOCKING REAR
99	KIT TRAY2 MOUNTING (8,10,12)

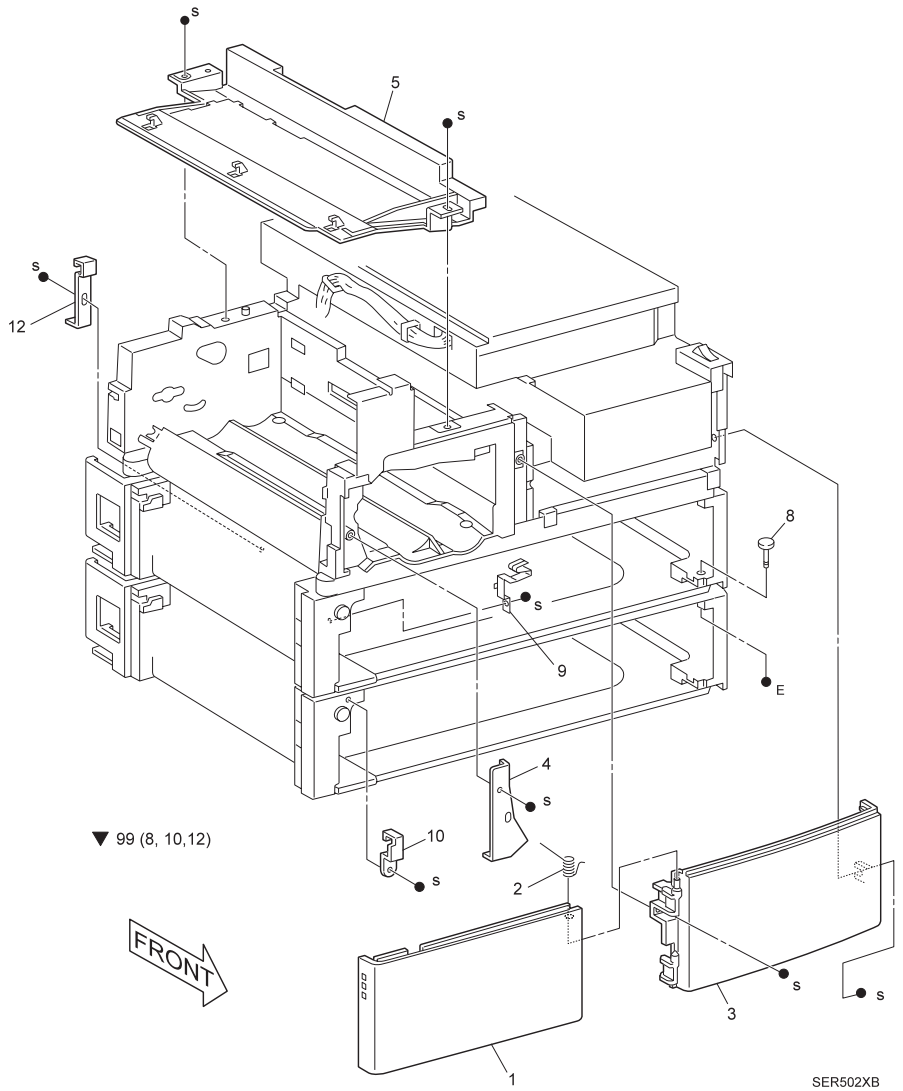


Figure 7-26. Front Cover

7.3.3 Rear, Left and Right Cover

Table 7-23. Parts Name for Rear, Left and Right Cover

No. in the Figure	Unit / Parts Name
1	COVER INNER, LH
2	COVER RH
3	COVER ASSEMBLY, REAR OEM
4	COVER REAR 1TM, OEM

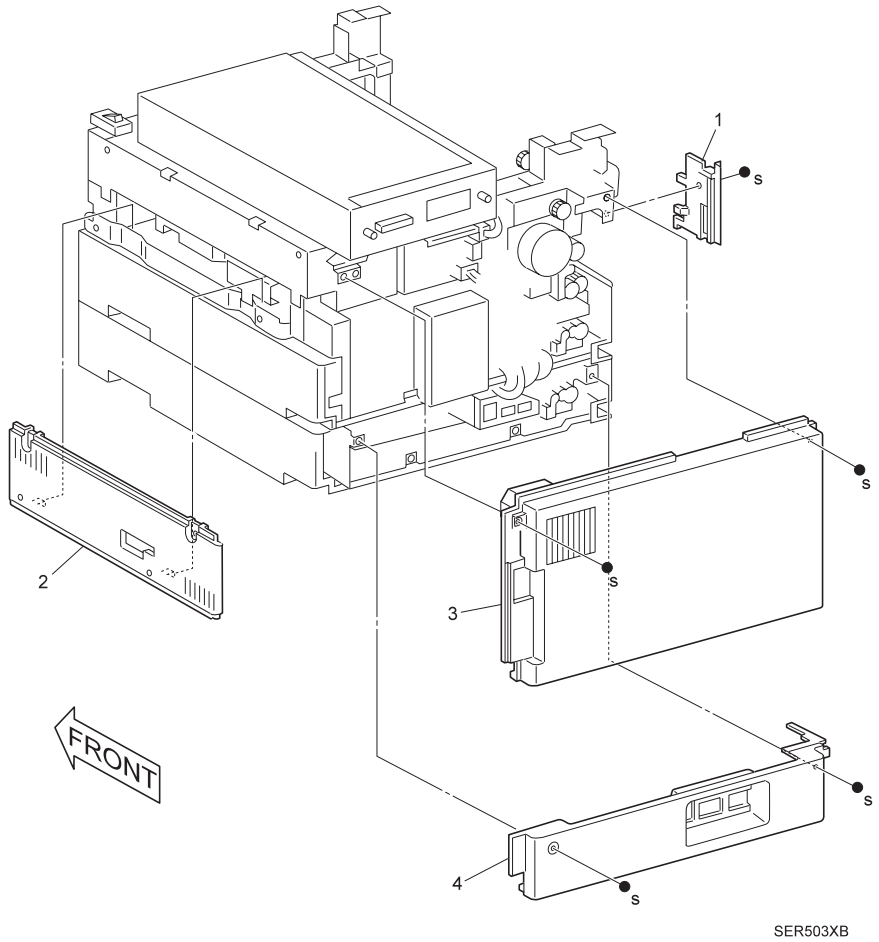


Figure 7-27. Rear, Left and Right Cover

7.3.4 Tray Unit - Paper Stack

Table 7-24. Parts Name for Tray-Unit Paper Stacker

No. in the Figure	Unit / Parts Name
1	TRAY ASSEMBLY (with 2-18 and Tray Unit-End Guide)
2	PLATE BOTTOM
3	PAD BOTTOM
4	PLATE TONGUE
5	SHAFT ASSEMBLY -TONGUE
6	BEARING
7	GUIDE ASSEMBLY -SIDE
8	LEVER
9	SHAFT
10	SPRING
11	PLATE SIDE
12	ACTUATOR
13	LINK
14	SPRING TORSION
15	STOPPER L/F
16	HOUSING -TRAY
17	WASHER
18	WASHER - SIDE GUIDE

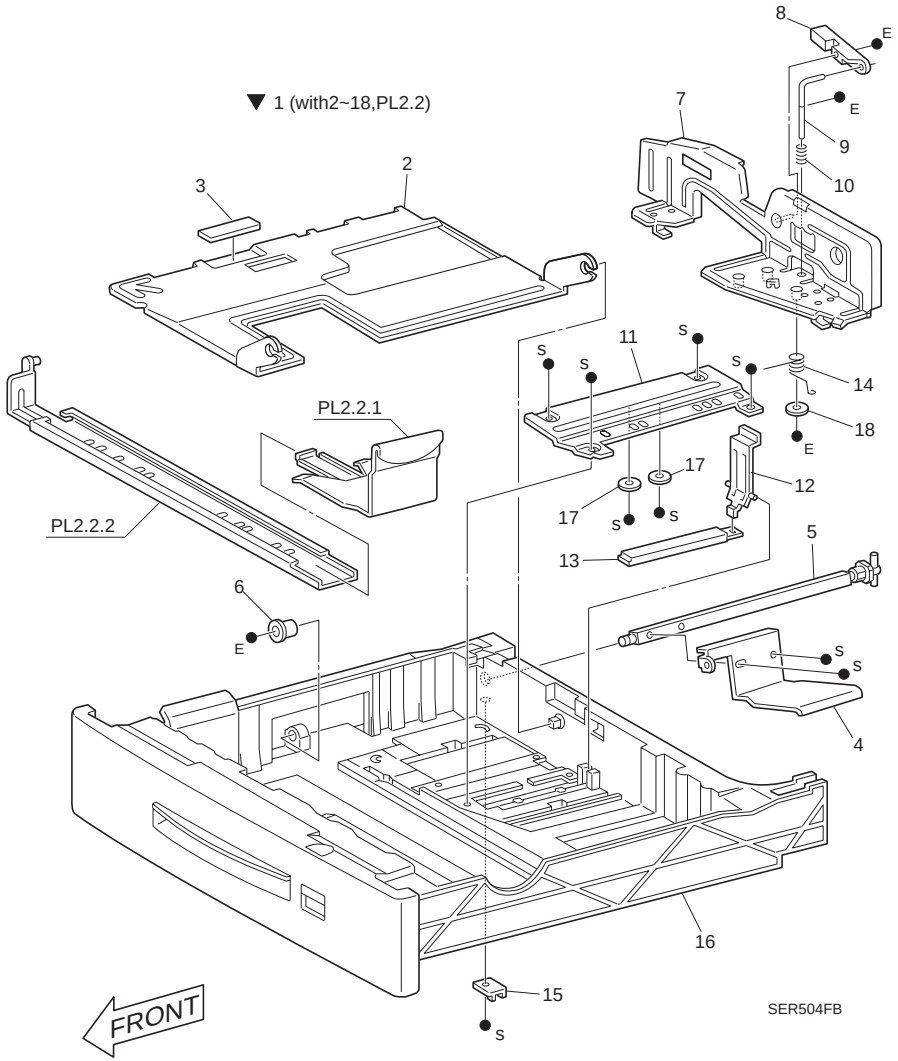


Figure 7-28. Tray Unit-Paper Stack

7.3.5 Tray Unit - End Guide

Table 7-25. Parts Name for Tray Unit-End Guide

No. in the Figure	Unit / Parts Name
1	GUIDE ASSEMBLY - END
2	PLATE ASSEMBLY - END
3	ACTUATOR ASSEMBLY
4	CABLE ASSEMBLY
5	SPRING - EXTENSION
6	PULLEY
7	GUIDE ACTUATOR
99	KIT CASSETTE CABLES (with 4 and 5)

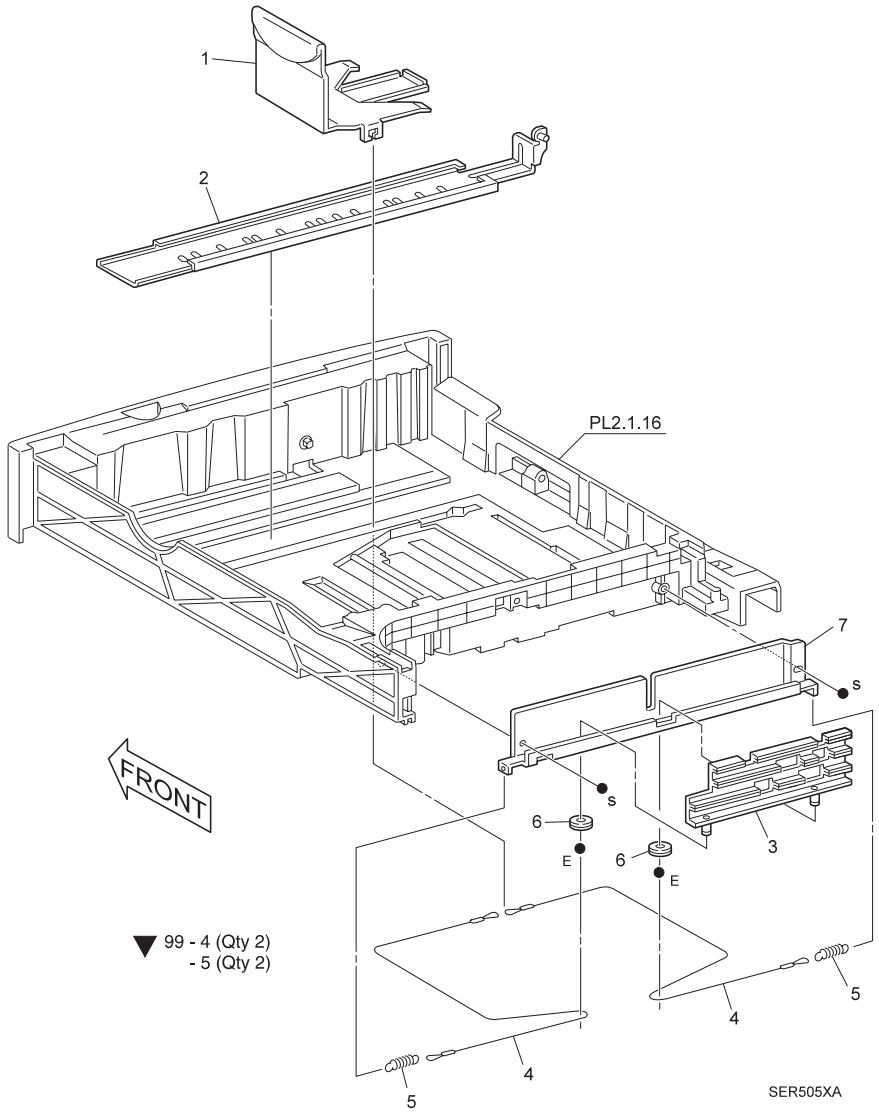


Figure 7-29. Tray Unit -End Guide

7.3.6 Tray Interface -Tray 1

Table 7-26. Parts Name for Tray Interface-Tray 1

No. in the Figure	Unit / Parts Name
1	SW ASSEMBLY-PS
2	MOTOR ASSEMBLY
3	ACTUATOR-SNR
4	SUPPORT ACTUATOR
5	PHOTO INTERRUPTOR
6	---
7	CHUTE ASSEMBLY FRONT, 1T (for Tray1 only)
8	STOPPER TRAY, F
9	STOPPER TRAY, R
10	SOACER, L
11	LINK STOPPER
12	SPRING TORSION
99	KIT ACTUATOR SENSOR ASSY (with 3 and 4)

CHECK POINT

- **All items, except item 7, in the list above can be used with both Tray 1 and Tray 2.**
- **Item 7 can be used only for Tray 1.**

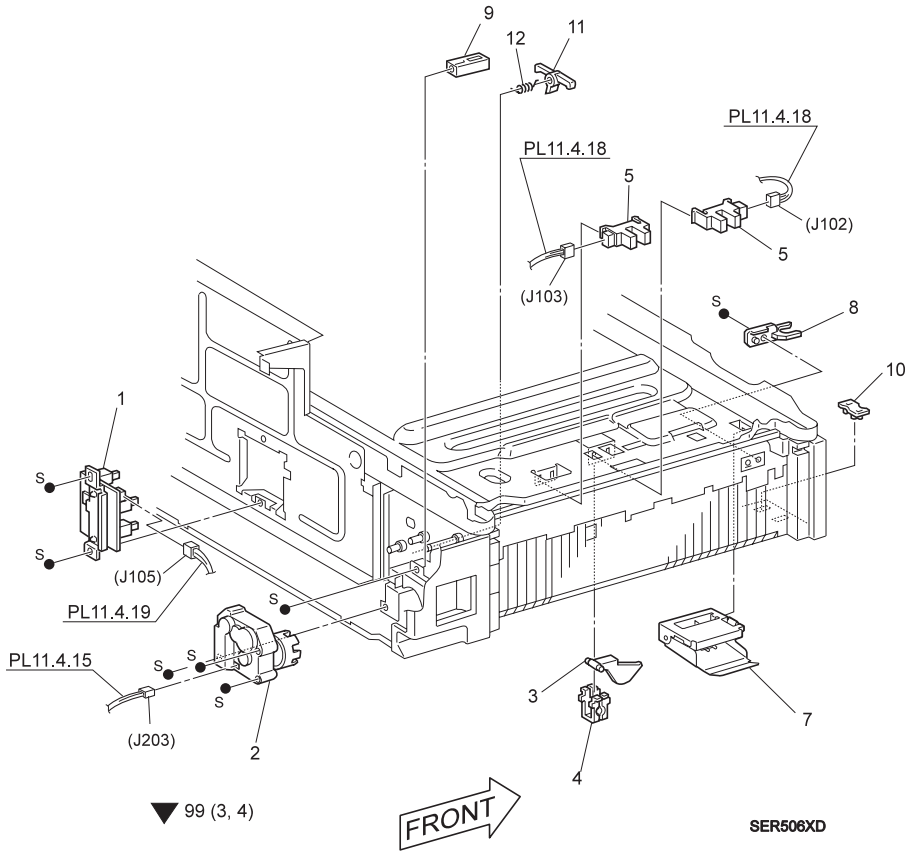


Figure 7-30. Tray Interface-Tray 1

7.3.7 Paper Pick Up - Tray 1

Table 7-27. Parts Name for Paper Pick Up-Tray1

No. in the Figure	Unit / Parts Name
1	GEAR-46T M/N
2	CLUTCH ASSEMBLY
3	GEAR ASSEMBLY 28T M/N (for Tray 1 only)
4	CLUTCH ONE-WAY (for Tray 1 only)
5	FEEDER ASSEMBLY M/N, XIP (with 6 -14)
6	ROLL ASSEMBLY
7	CLUTCH ASSEMBLY O.W.
8	CLUTCH GEAR 25T
9	BEARING
10	SHAFT FEED M/N
11	GEAR 31T
12	GEAR 25T
13	SUPPORT ASSEMBLY NUDGER
14	BEARING
97	KIT TRAY 1 CLUTCH (1 - 4)
98	KIT FEED ROLL (with 6, Qty 6)
99	KIT PICK UP GEAR TRAY 1 (with 1 and 3)

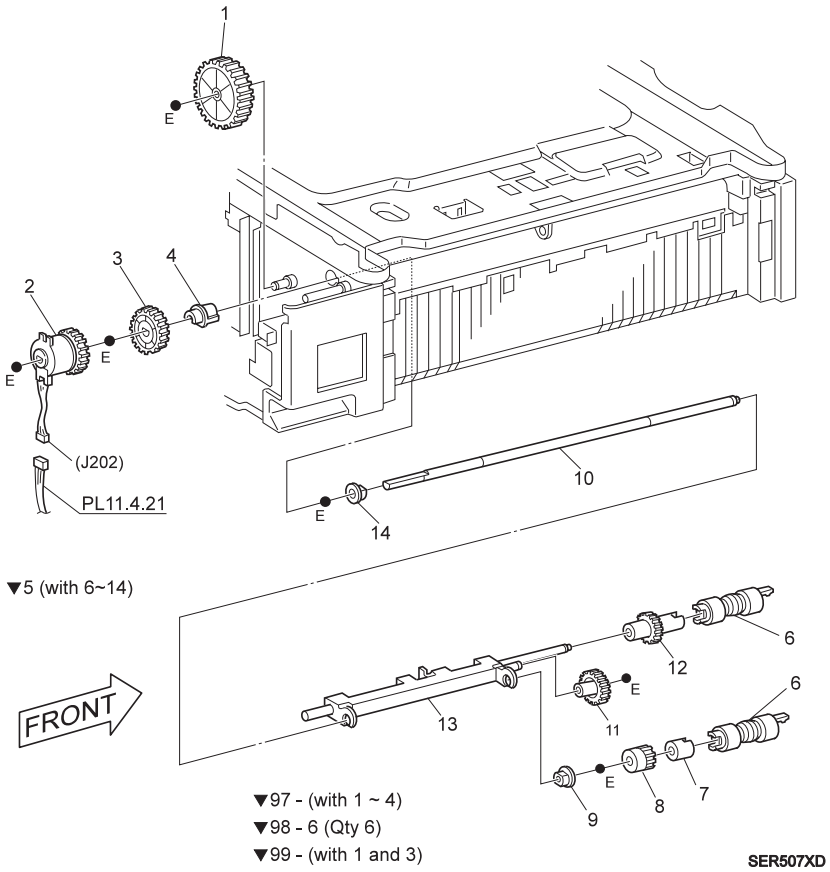


Figure 7-31. Paper Pick Up-Tray1

CHECK POINT

- **All items, except item 3 and 4, in the list above can be used with both Tray 1 and Tray 2.**
- **Item 3 and 4 can be used only for Tray 1.**

7.3.8 Retard and Take Away-Tray 1

Table 7-28. Parts Name for Retard & Take Away-Tray1

No. in the Figure	Unit / Parts Name
1	RETARD ASSEMBLY, XIP (2 to 8)
2	GEAR 22 T, XIP
3	SHAFT ASSEMBLY RET, XIP
4	BEARING
5	ROLL ASSEMBLY
6	SPACER
7	CLUTCH ASSEMBLY-FRICTION
8	SUPPORT RETARD
9	GEARING
10	GEAR 22
11	SPACER
12	GEAR STOPPER, XIP
13	BEARING, R
14	BEARING, C
15	ROLLER ASSEMBLY S/F
16	BEARING
17	BEARING
18	CHUTE ASSEMBLY FEED, OUT
19	CHUTE ASSEMBLY FEED, IN
20	GEAR 22/20, IOT H/N
21	SUPPORT ASSEMBLY, SPRING
22	SPRING
23	RETARD FRAME
98	RETARD ASSEMBLY TRAY1 HIGH (with 1 and 9-23)
99	KIT TAKE AWAY GEAR TRAY 1 (with 2, 10, and 20)

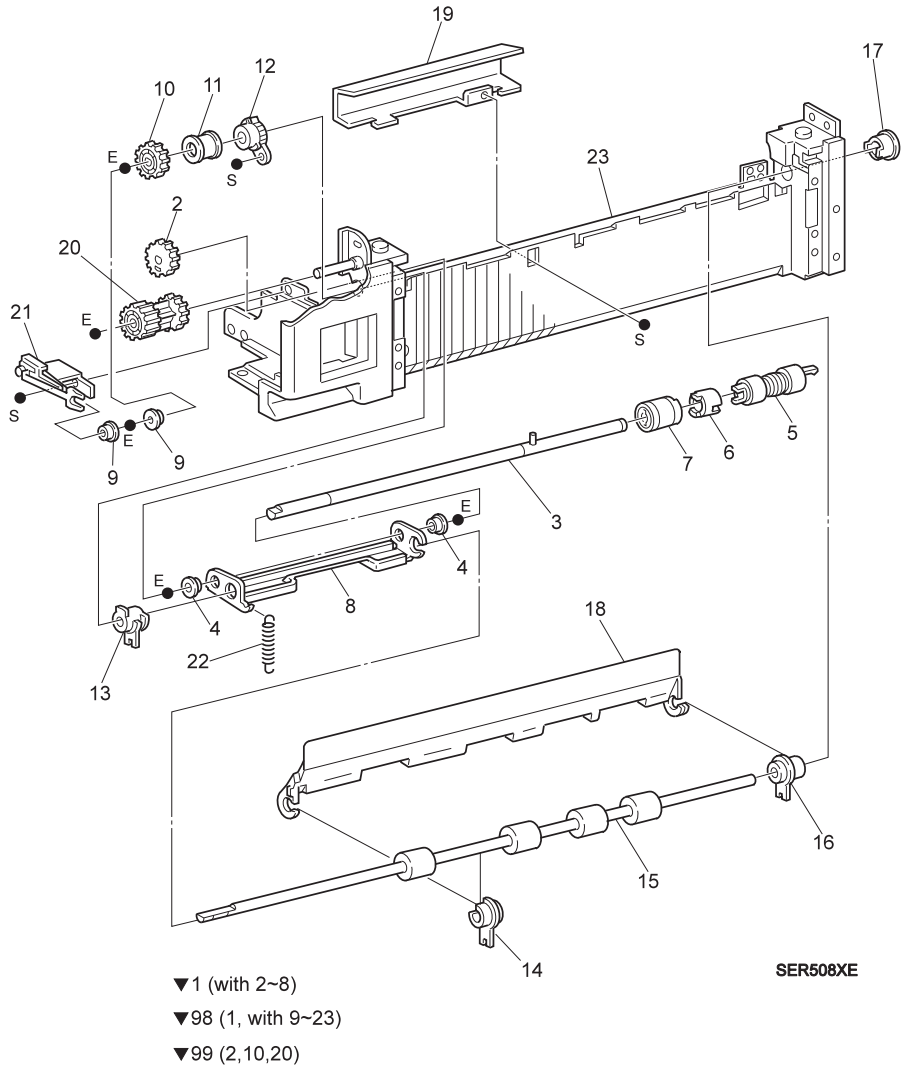


Figure 7-32. Retard & Take Away-Tray1

7.3.9 Tray Interface-Tray 2

Table 7-29. Parts Name for Tray Interface-Tray2

No. in the Figure	Unit / Parts Name
1	SW ASSEMMBLY PS
2	MOTOR ASSEMBLY
3	ACTUATOR -SNR
4	SUPPORT ACTUATOR
5	PHOTO INTERRUPTER
6	---
7	CHUTE ASSEMBLY FRONT, 2T(for Tray 2 only)
8	STOPPER, TRAY F
9	STOPPER, TRAY R
10	SPACER, L
11	LINK STOPPER
12	SPRING TORSION
99	KIT ACTUATOR SENSOR ASSY (with 3 and 4)

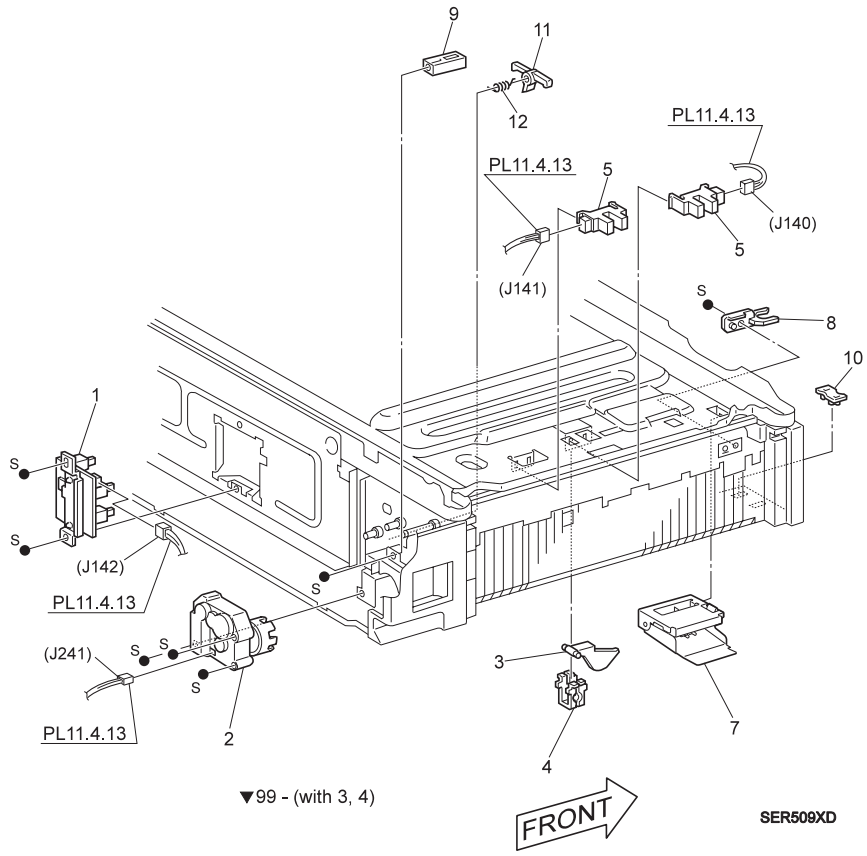


Figure 7-33. Tray Interface-Tray2

7.3.10 Paper Pick Up-Tray 2

Table 7-30. Parts Name for Paper Pick Up-Tray2

No. in the Figure	Unit / Parts Name
1	GEAR 46T M/N
2	CLUTCH ASSEMBLY
3	GEAR 28T M/N (for Tray2 and High Capacity Feed only)
4	BEARING FEED (for Tray2 and High Capacity Feed only)
5	FEEDER ASSEMBLY M/N, XIP (with 6 to 14)
6	FOLL ASSEMBLY
7	CLUTCH ASSEMBLY OW
8	CLUTCH GEAR 25T
9	BEARING
10	SHAFT FEED M/N
11	GEAR 31T
12	GEAR 25T
13	SUPPORT ASSEMBLY NUDGER
14	BEARING
97	KIT TRAY 2 CLUTCH (with 1- 4)
98	KIT FEED ROLL (Qty 6 of item 6)
99	KIT PICKUP GEAR TRAY2 (with 1 and 3)

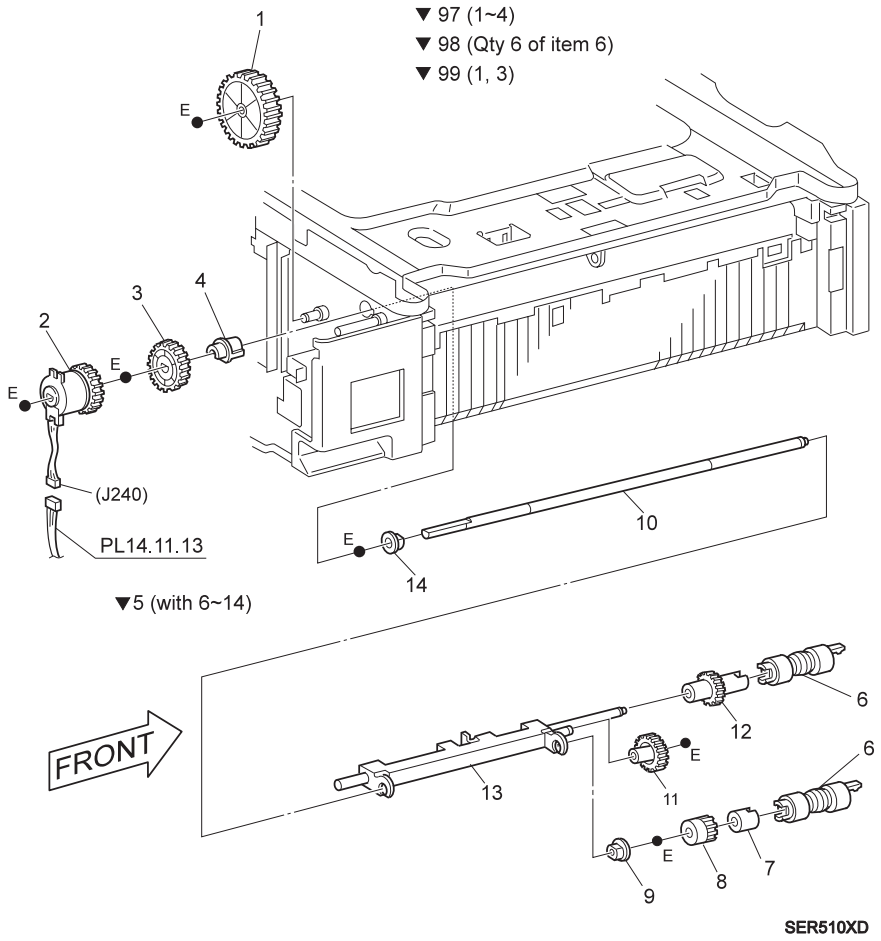


Table 7-31. Paper Pick Up-Tray2

7.3.11 Retard and Take Away- Tray 2

Table 7-32. Parts Name for Retard and Take Away-Tray2

No. in the Figure	Unit / Parts Name
1	RETARD ASSEMBLY, XIP (with 2 to 8)
2	GEAR 22 T, XIP
3	SHAFT ASSEMBLY RET, XIP
4	BEARING
5	ROLL ASSEMBLY
6	SPACER
7	CLUTCH ASSEMBLY-FRICTION
8	SUPPORT RETARD
9	---
10	GEAR 22
11	BEARING
12	GEAR STOPPER, XIP
13	---
14	---
15	ROLLER ASSEMBLY, T/A
16	---
17	BEARING
18	CHUTE - F/O, 1TM, E
19	CHUTE FEED, IN
20	GEAR 22/20, C H/N
21	---
22	SPRING
23	BRACKET
98	KIT RETARD TAKEAWAY TRAY2 (with 1 and 10, 11, 15, 17 and 18)
99	KIT TAKE AWAY GEAR TRAY 2 (with 2, 10, and 20)

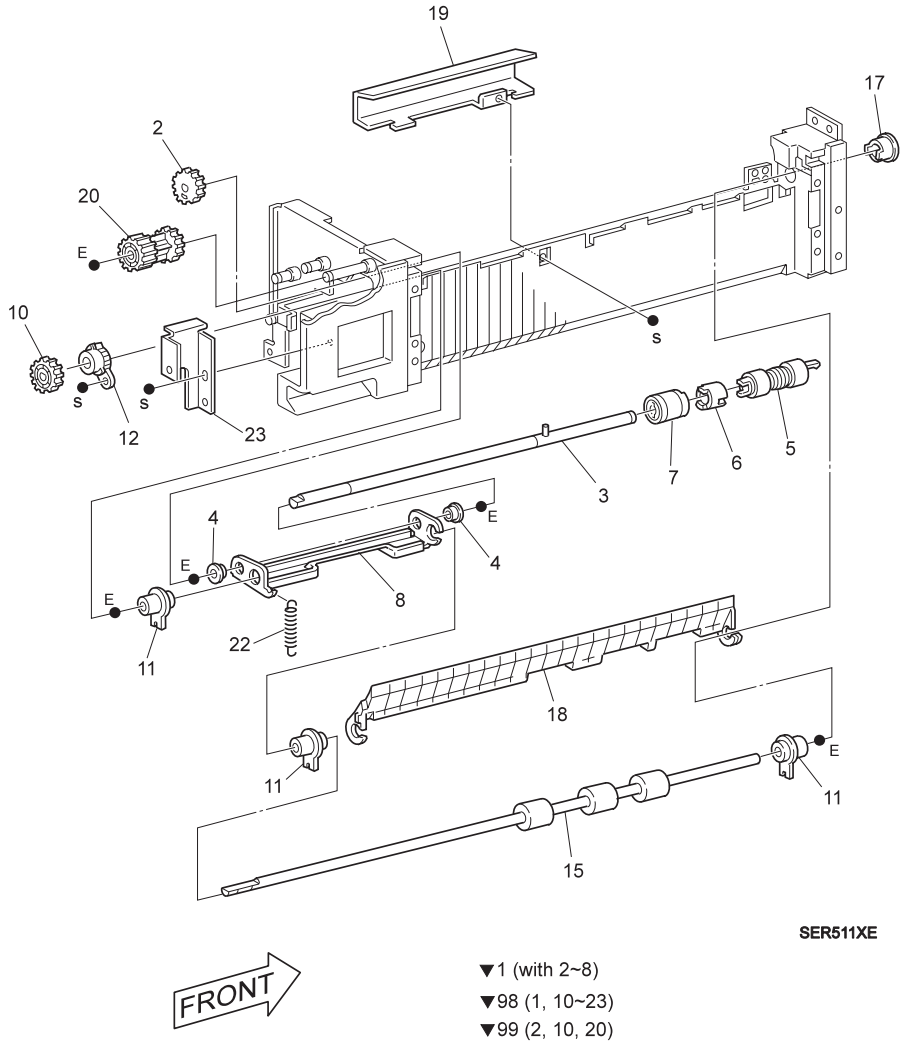


Figure 7-34. Retard and Take Away-Tray2

7.3.12 Feed Drive Transmission

Table 7-33. Parts Name for Feed Drive Transmission

No. in the Figure	Unit / Parts Name
1	GEAR 16T
2	GEAR 30T
3	SHAFT C/L T/A
4	---
5	SUPPORT C/L T/A
6	GEAR 31T
7	GEAR 33T
8	GEAR 16/22
9	LINK ASSEMBLY
10	SPRING TORSION
11	BEARING
12	HARNESS CLAMP
99	KIT FEED DRIVE REPAIR (with 1,2, and 6-11)

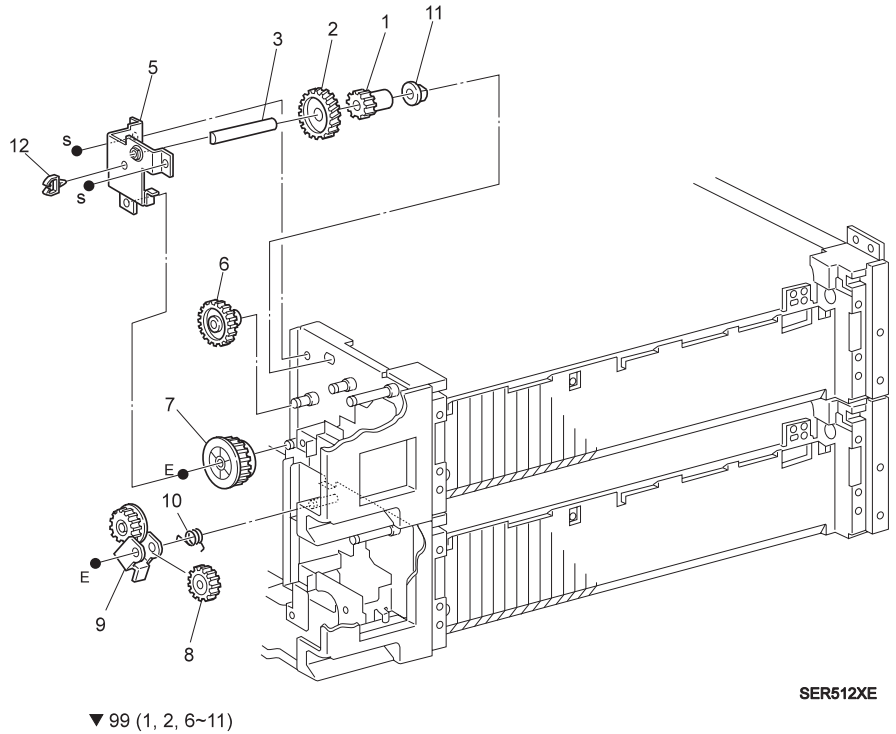


Figure 7-35. Feed Drive Transmission

7.3.13 Multi Sheet Inserter and MSI/Duplex Support

Table 7-34. Parts Name for Multi Sheet Inserter and MSI/Duplex Support

No. in the Figure	Unit / Parts Name
1	SUPPORT FRONT COVER
2	SUPPORT REAR COVER
3	MSI/DUPLEX CUPPORT ASSEMBLY
4	HARNESS ASSEMBLY DRAWER(
5	SPRING, DAMPER F
6	SPRING DAMPER R
7	MULTI SHEET INSERTER ASSEMBLY
8	MSI TOP COVER
9	MULTI SHEET TRAY SUPPORT
10	MULTI SHEET INSERTER HINGE STUD
11	MULTI SHEET TRAY SPRING
12	MSI HARNESS CLAMP

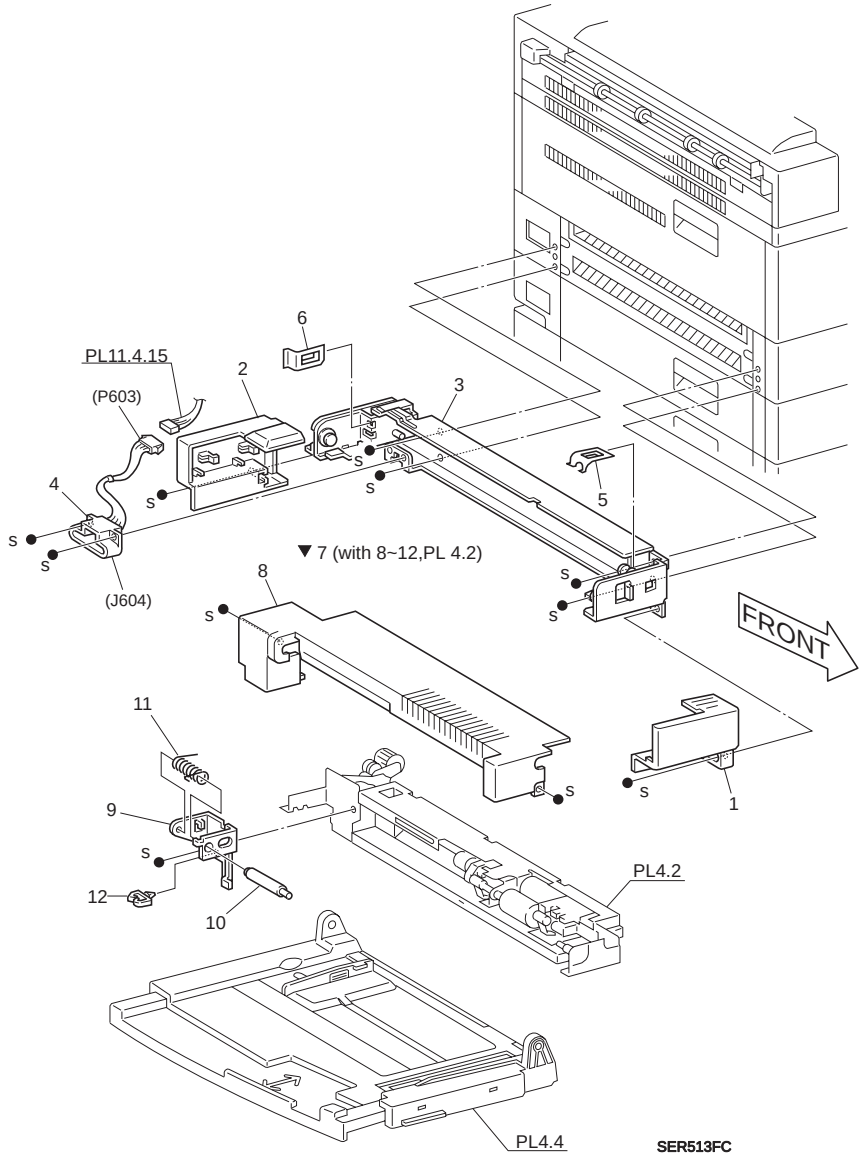


Figure 7-36. Multi Sheet Inserter and MSI/Duplex Support

7.3.14 MSI Feeder Assembly

Table 7-35. Parts Name for MSI Feeder Assembly

No. in the Figure	Unit / Parts Name
1	MSI FEEDER ASSEMBLY (with 2-17, PL4.3)
2	MSI LINK GEAR
3	MSI DRIVE GEAR ASSEMBLY
4	MSI DRIVE LINK SPRING
5	MSI TIE PLATE
6	MSI PAD
7	MSI PAD PIN
8	MSI PAD SHAFT
9	MSI PAD SPRING
10	MSI PAPER GUIDE
11	MSI BRACKET
12	MSI HOOK BRACKET FRONT
13	MSI HOOK BRACKET REAR
14	LATCH -FRONT
15	MULTI SHEET INSERTER HOOK SPRING
16	MSI LOWER CHUTE
17	LATCH-REAR

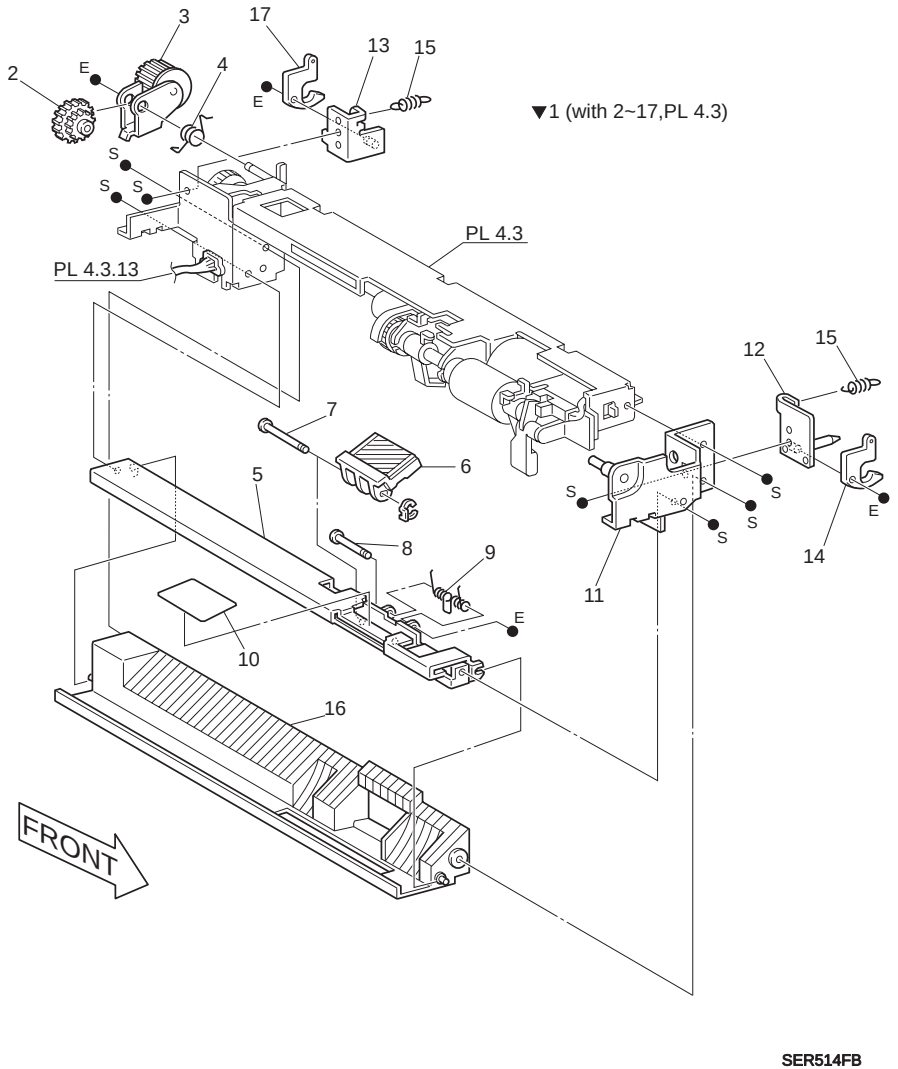


Figure 7-37. MSI Feeder Assembly

7.3.15 Upper Feeder Assembly

Table 7-36. Parts Name for Upper Feeder Assembly

No. in the Figure	Unit / Parts Name
1	UPPER FEEDER ASSEMBLY(with 2 -26)
2	MSI FEED CLUTCH
3	MSI FEED BEARING REAR 1
4	MSI FEED SHAFT
5	MSI FEED GEAR
6	MSI FEED BEARING REAR 2
7	MSI FEED SPRING
8	MSI FEED BEARING FRONT
9	MSI FEED ROLLER
10	MSI NO PAPER SENSOR
11	MSI NO PAPER SENSOR BRACKET
12	MSI STOPPER
13	MSI WIRE HARNESS (P604 < > J108/P107/P208)
14	MSI NUDGER ROLLER ASSEMBLY(with 15 to 25)
15	MSI NUDGER ROLLER SUPPORT
16	MSI NUDGER GEAR COVER
17	MSI NUDGER GEAR
18	MSI NUDGER BEARING REAR
19	MSI GATE
20	MSI NUDGER ROLLER BEARING FRONT
21	MSI NUDGER ROLLER SHAFT
22	MSI NUDGER ROLLER
23	MSI FRICTION CLUTCH
24	MSI FRICTION CLUTCH SPACER
25	MSI FRICTION CLUTCH GEAR
26	UPPER FEEDER FRAME

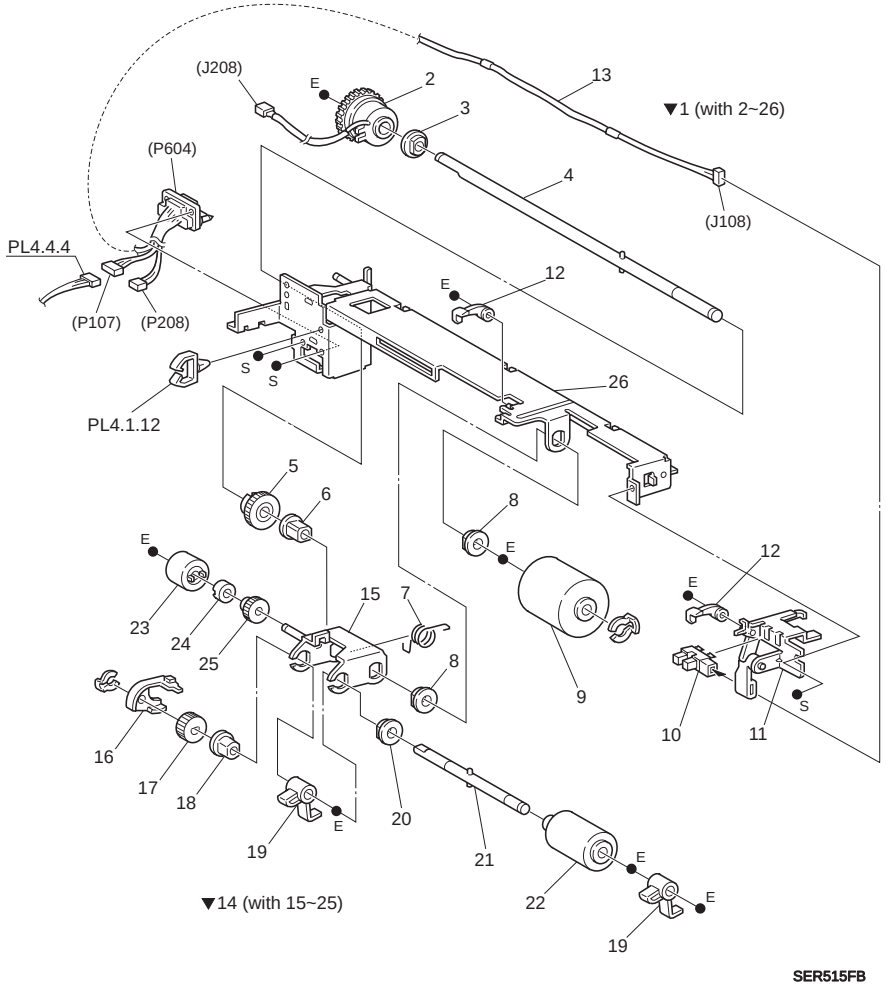


Figure 7-38. Upper Feeder Assembly

7.3.16 MSI Tray Assembly

Table 7-37. Parts Name for MSI Tray Assembly

No. in the Figure	Unit / Parts Name
1	MSI TRAY ASSEMBLY(with 2 - 9)
2	MSI PAD
3	MSI SIDE GUIDE
4	MSI SIZE SENSOR ASSEMBLY
5	MSI SIZE GUIDE SPRING
6	MSI SIZE GUIDE LINK
7	MSI TARY LOWER COVER
8	MSI TRAY
9	MSI TRAY UPPER COVER

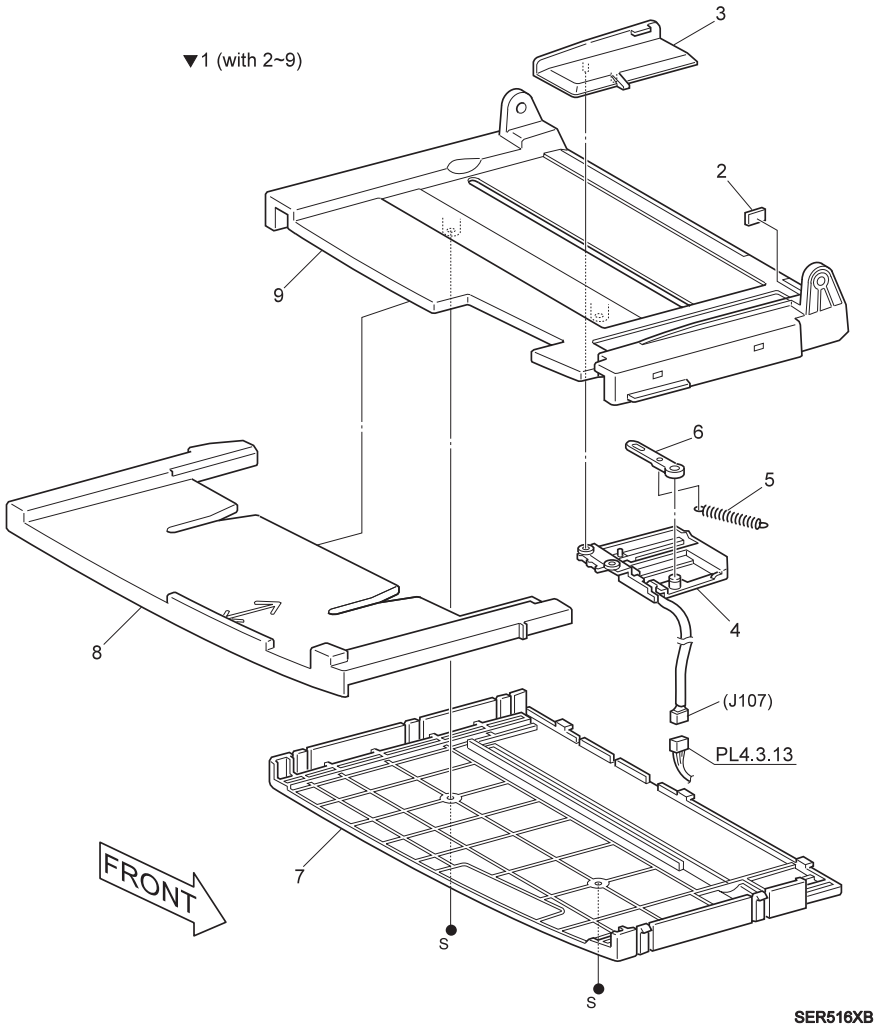


Figure 7-39. MSI Tray Assembly

7.3.17 Tray 1 Frame and Left Cover

Table 7-38. Parts Name for Tray1 Frame and Left Cover

No. in the Figure	Unit / Parts Name
1	PANCHI ROLL ASSEMBLY (with 2 to 7)
2	HOLDING SPRING
3	SHAFT SPRING
4	CENTER BEARING
5	END BEARING
6	PINCH ROLLER
7	PINCH ROLLER BRACKET
8	COVER ASSEMBLY L/H, LOW (with9, 10 and 13)(
9	GROUNDING METAL
10	LEFT MIDDLE COVER
11	FRAME LH
12	TAKE AWAY SENSOR 1
13	TAKE AWAY SENSOR SHIELD

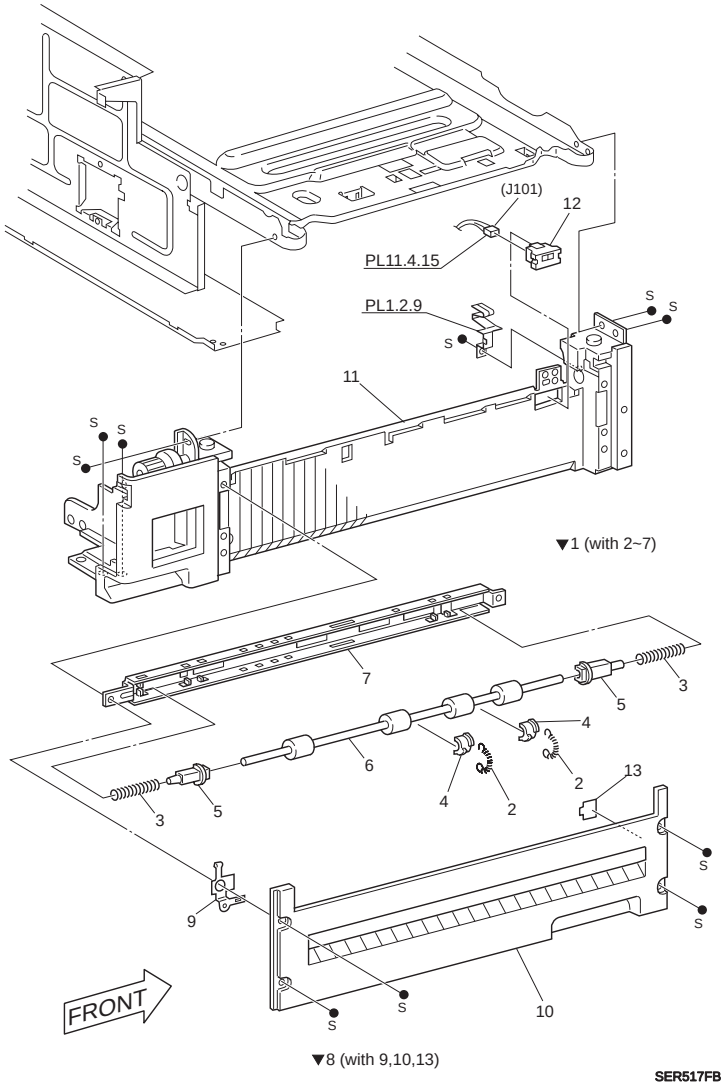


Figure 7-40. Tray1 Frame and Left Cover

7.3.18 Tray 2 Frame and Left Cover

Table 7-39. Parts Name for Tray 2 Frame and Left Cover

No. in the Figure	Unit / Parts Name
1	LEFT LOWER COVER ASSEMBLY(with 2,3, 9-11,14 and 23)
2	LEFT LOWER COVER
3	PINCHI ROLL ASSEMBLY(with 4-8, and 21)
4	PINCH ROLL END BEARING
5	PINCH ROLL CENTER BEARING
6	PINCH ROLLER
7	PINCH ROLL SPRING
8	PINCH ROLL BRACKET
9	LEFT LOWER COVER HANDLE ASSEMBLY
10	FONT FRAME
11	REAR FRAME
12	FRONT HINGE
13	REAR HINGE
14	FEED OUT CHUTE
15	LEFT LOWER COVER INTERLOCK SWITCH
16	TRAY 2 WELL TIE PLATE
17	SPRING-EME
18	CAP
19	TAKE AWAY SENSOR
20	SUPPORT-REAR
21	WASHER
22	INTERLOCK/SENSOR HARNESS
23	TAKE AWAY SENSOR SHIELD

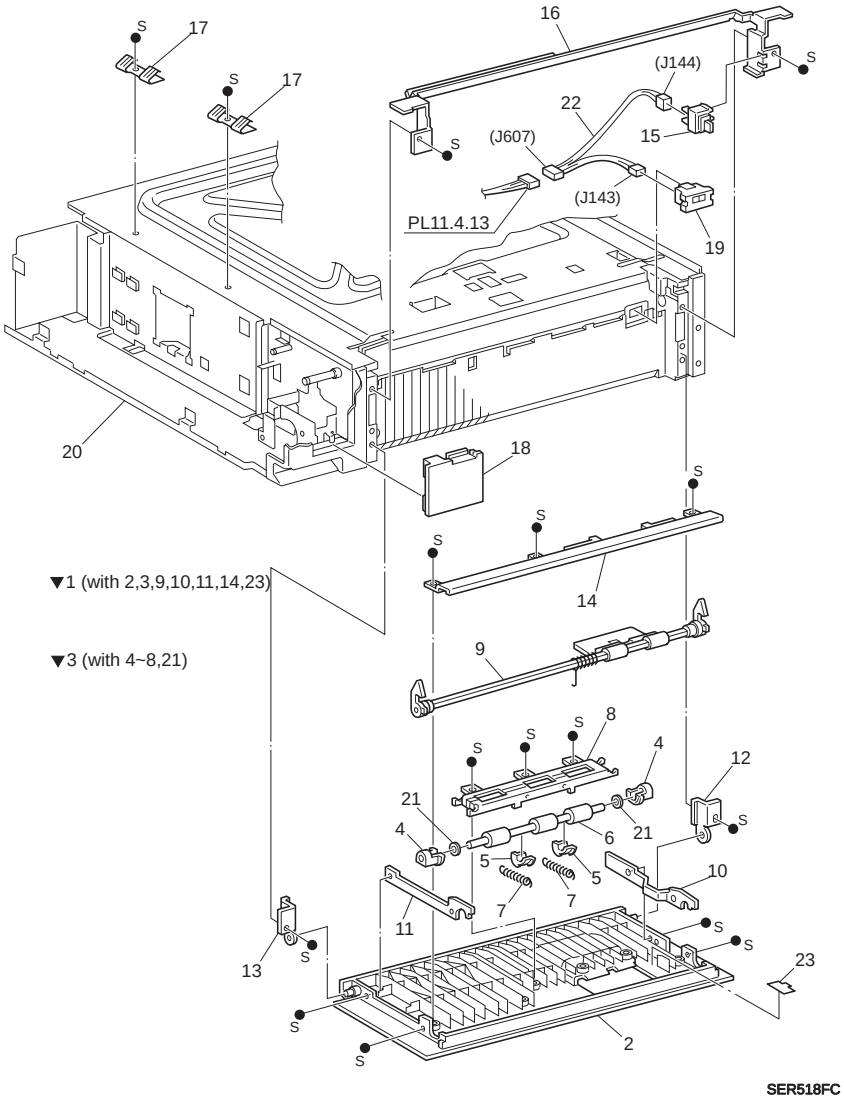


Figure 7-41. Tray 2 Frame and Left Cover

7.3.19 Registration

Table 7-40. Parts Name for Registration

No. in the Figure	Unit / Parts Name
1	CLUTCH ASSEMBLY REGISTRATION
2	BEARING
3	ROLLER ASSEMBLY REGISTRATION
4	CHUTE ASSEMBLY REGISTRATION
5	CHUTE REGISTRATION
6	ELIMINATOR
7	SENSOR
8	RESISTOR ASSEMBLY
9	FRAME -L/H

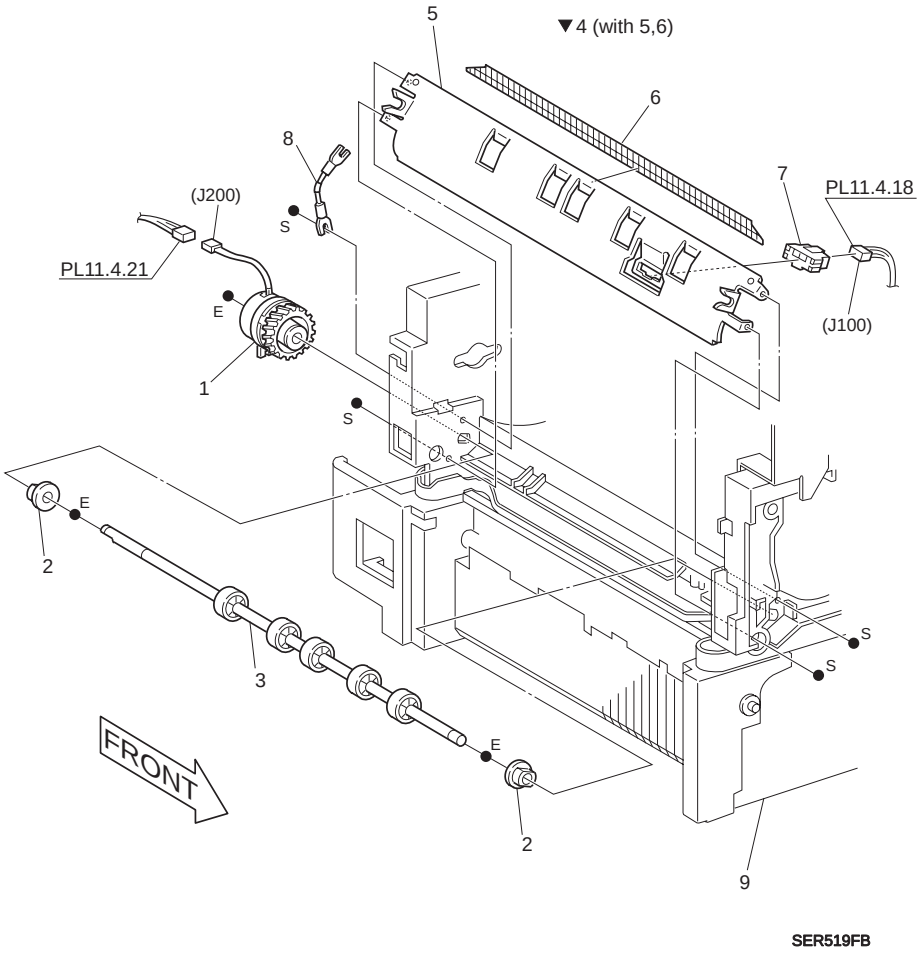


Figure 7-42. Registration

7.3.20 Left Upper Cover Assembly

Table 7-41. Parts Name for Left Upper Cover Assembly

No. in the Figure	Unit / Parts Name
1	SHAFT-HINGE
2	SHAFT-HINGE GEAR m/n
3	COVER ASSEMBLY L/H, XIP
4	CHUTE LOWER
5	GUIDE PAPER
6	SPRING COMP
7	CHUTE ASSEMBLY L/H
8	SPRING EXTENSION
9	ROLLER ASSEMBLY-REGISTRATION L/H
10	CHUTE ASSEMBLY-REGISTRATION L/H
11	GUIDE PAPER
12	GUIDE PAPER
13	PULLEY
14	SUPPORT-L/H COVER

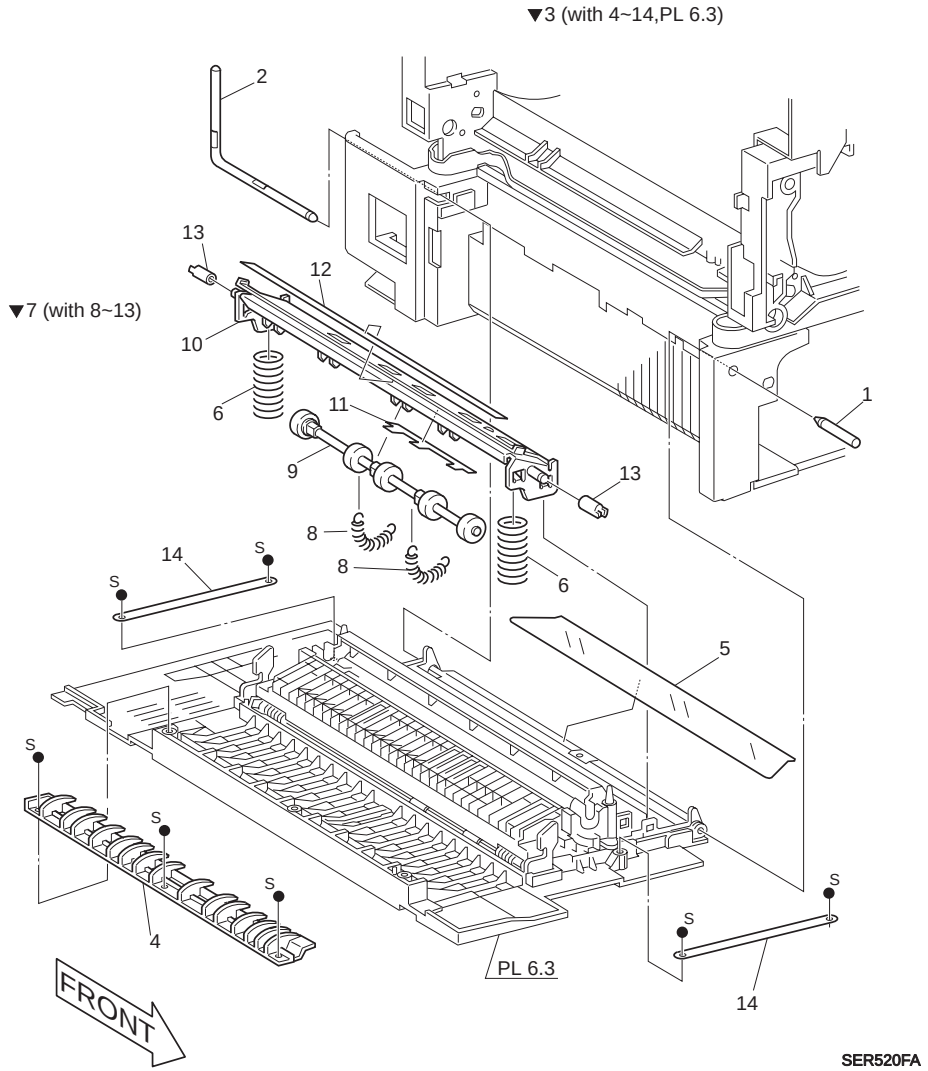


Figure 7-43. Left Upper Cover Assembly

7.3.21 Transport Chute Assembly

Table 7-42. Parts Name for Transport Chute Assembly

No. in the Figure	Unit / Parts Name
1	SHAFT-HINGE
2	SHAFT-HINGE GEAR m/n
3	COVER ASSEMBLY L/H, XIP
4	CHUTE LOWER
5	GUIDE PAPER
6	SPRING COMP
7	CHUTE ASSEMBLY L/H
8	SPRING EXTENSION
9	ROLLER ASSEMBLY-REGISTRATION L/H
10	CHUTE ASSEMBLY-REGISTRATION L/H
11	GUIDE PAPER
12	GUIDE PAPER
13	PULLEY
14	FRAME-L/H, F
15	FRAME-L/H, R
16	HANDLE ASSEMBLY-L/H

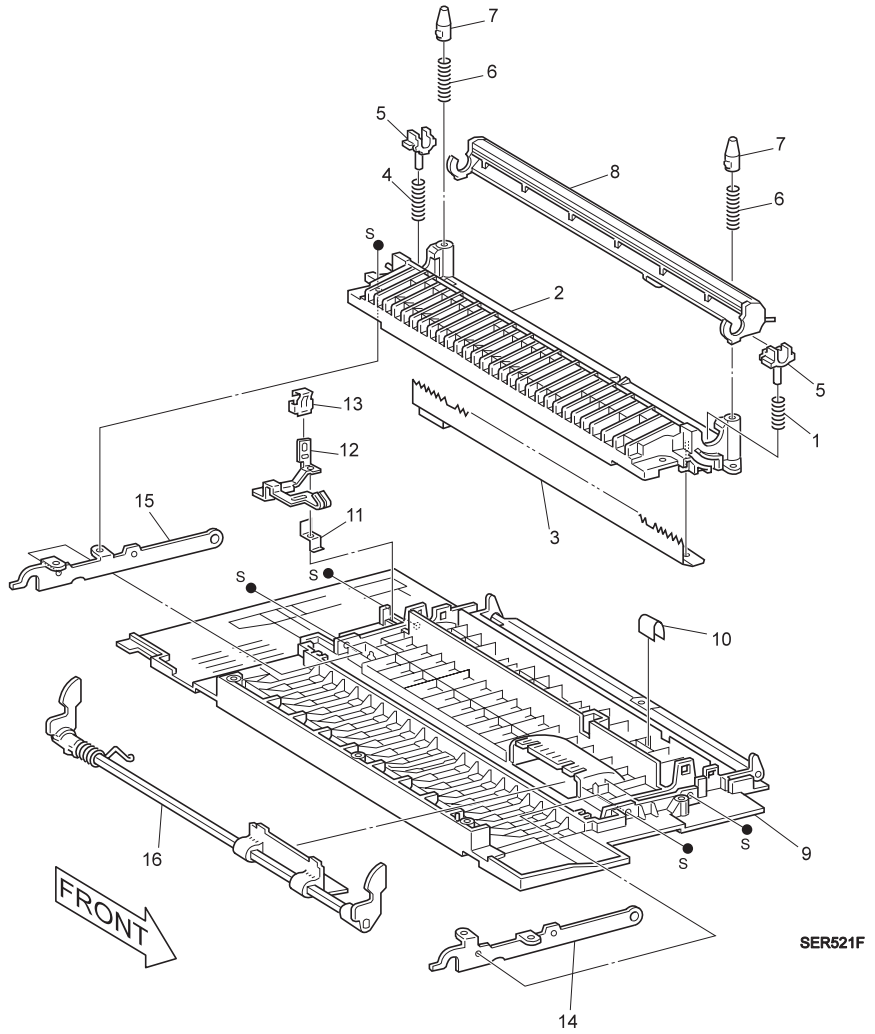


Figure 7-44. Transport Chute Assembly

7.3.22 ROS Assembly

Table 7-43. Parts Name for ROS Assembly

No. in the Figure	Unit / Parts Name
1	ROS ASSEMBLY

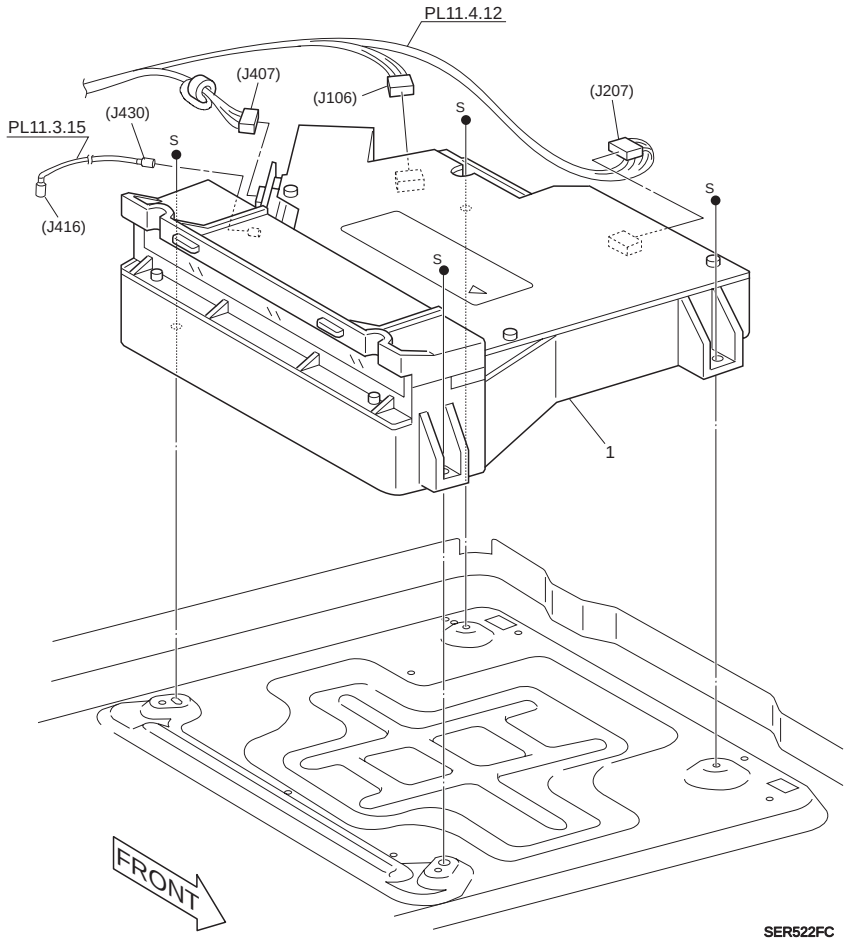


Figure 7-45. ROS Assembly

Figure 7-46. Xerography and Development Transport Chute Assembly

7.3.23 Xerography and Development

Table 7-44. Parts Name for Xerography and Development

No. in the Figure	Unit / Parts Name
1	BTR ASSEMBLY (with 2-7)
2	BTR FRONT LEVER
3	BTR ROLL
4	BTR
5	BTR POSITIONING PIN
6	BTR GEAR
7	BTR GEAR LEVER
8	BTR/DTS GUIDE ASSEMBLY (with 9-11)
9	BTR/DTS GUIDE BRACKET
10	BTR LEAD PLATE
11	DTS LEAD PLATE
12	DTS KUBJ ROD
13	DTS LINK ROD
14	TONER EMTPTY SENSOR
15	TONER SENSOR SPRING
16	CRU CONNECTOR ASSEMBLY (with 17-20)
17	CRU CONNECTOR (J454<>J606)
18	CRU CONNECTOR BRACKET
19	CRU CONNECTOR SPRING
20	STUD SCREW
21	BTR GUIDE
22	CB ASSEMBLY
23	CRU INTERLOCK SWITCH ASSEMBLY(with 24 and 25)
24	CRU INTERLOCK SWITCH BRACKET
25	CRU INTERLOCK SWITCH ASSEMBLY
26	---
27	PLATE CONTACT C
28	PLATE CONTACT D
29	PWB STUD
30	EP CARTRIDGE (Customer Replaceable Unit-CRU)

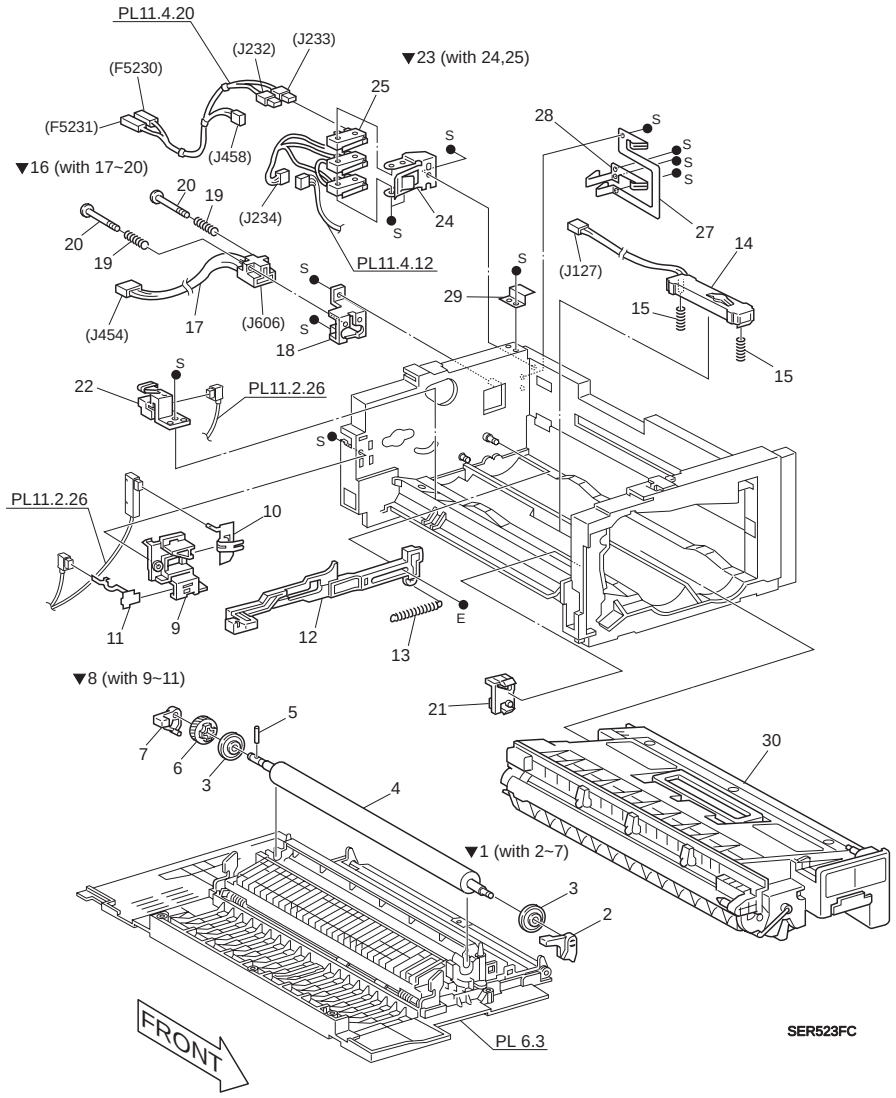


Figure 7-47. Xerography and Development

7.3.24 Fuser Assembly

Table 7-45. Parts Name for Fuser Assembly

No. in the Figure	Unit / Parts Name
1	FUSER ASSEMBLY - 115V(Customer Replaceable Unit-CRU) FUSER ASSEMBLY - 220V(Customer Replaceable Unit-CRU)

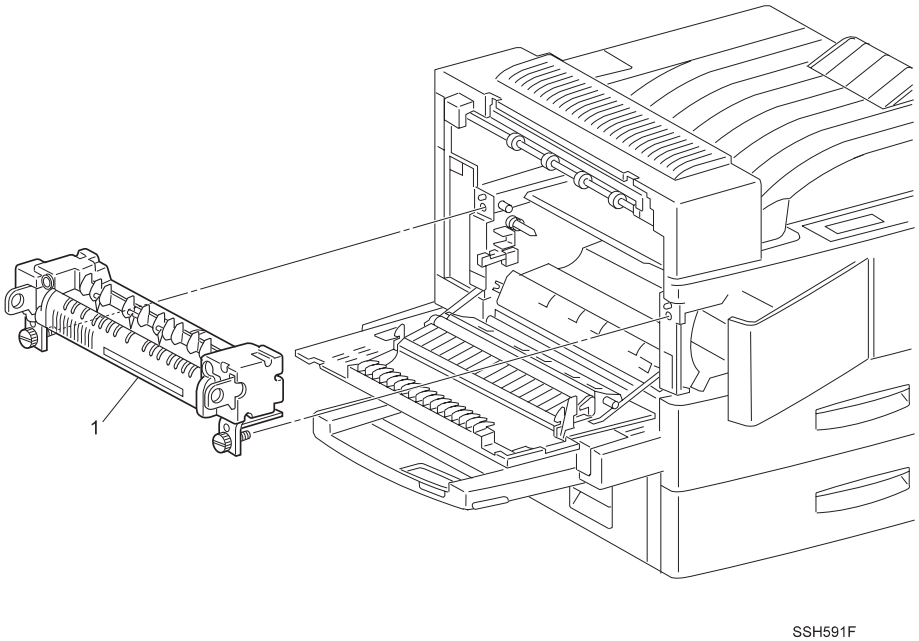


Figure 7-48. Fuser Assembly

7.3.25 Exit Lower Chute

Table 7-46. Parts Name Exit Lower Chute

No. in the Figure	Unit / Parts Name
1	TRANSPORT ASSEMBLY FULL(with PL9.1, PL9.2, PL9.3, and PL9.4)
2	SOLENOID ASSEMBLY
3	LINK-SOLENOID
4	SPRING
5	OFFSET MOTOR
6	LOWER CHUTE ASSEMBLY(with 7-15)
7	PINCH ROLLER SPRING FRONT 1
8	PINCH ROLLER SPRING REAR 1
9	PINCH ROLLER SPRING FRONT 2
10	PINCH ROLLER FRONT
11	PINCH ROLLER REAR
12	FUSER ROLLER REAR
13	LOWER CHUTE
14	ELIMINATOR
15	PINCH ROLL SPRING REAR 2
16	EXIT SENSOR
17	EXIT ACTUATOR
18	EXIT SESOR SPRING
19	EXIT SENSOR BRACKET
20	BRACKET ASSEMBLY-FRONT
21	LOWER CHUTE-FACE UP
22	FRAME ASSEMBLY-REAR
23	EXIT HARNESS (J601<>J109/J133/J210)

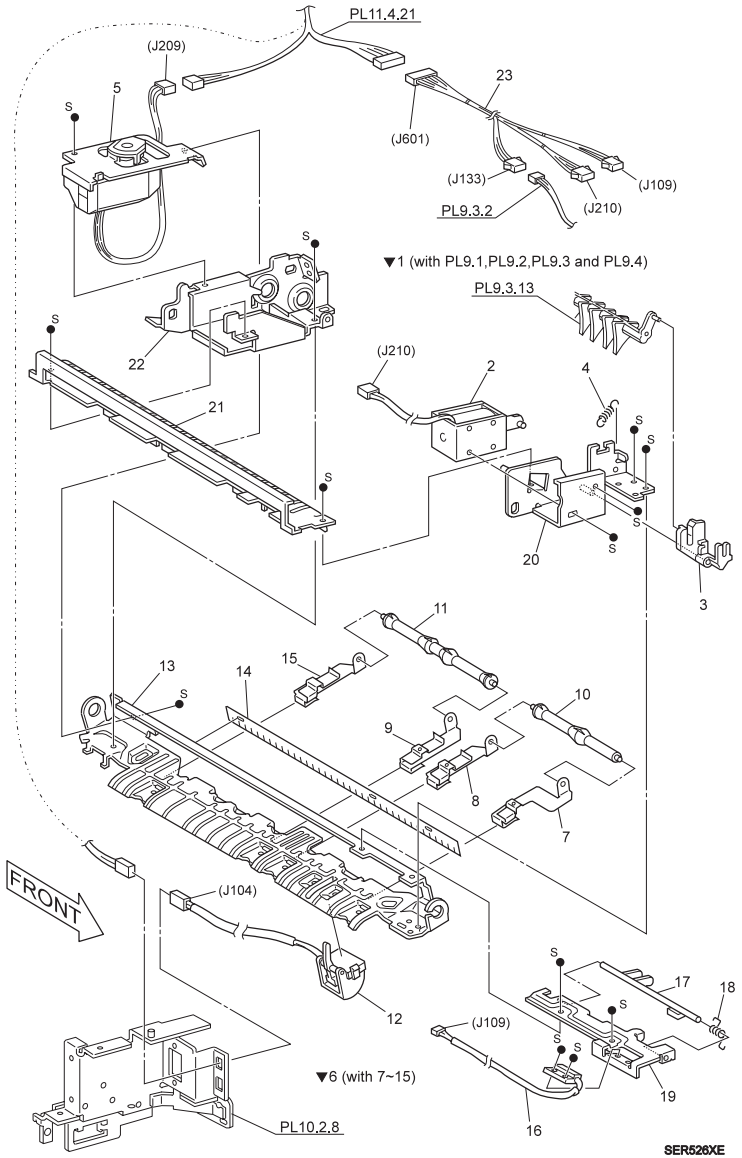


Figure 7-49. Exit Lower Chute

7.3.26 Offset Roller

Table 7-47. Parts Name for Offset Roller

No. in the Figure	Unit / Parts Name
1	BEARING
2	ROLLER ASSEMBLY-EXIT FUT
3	GEAR-19 ASSEMBLY
4	OFFSET ROLLER ASSEMBLY
5	OFFSET RACK
6	OFFSET BRACKET
7	OFFSET ROLLER SLEEVE
8	OFFSET ROLLER
9	OFFSET ROLLER BEARING REAR
10	OFFSET ROLLER BEARING FRONT
11	OFFSET SHAFT
12	OFFSET SHAFT PIN
13	GEAR-19

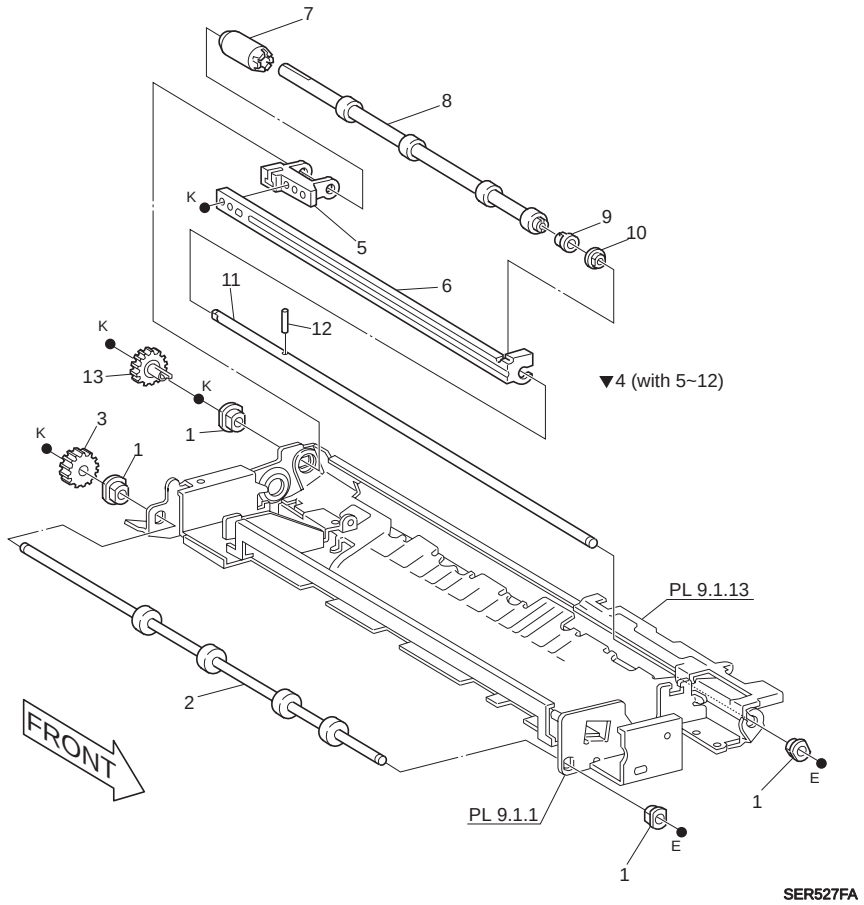


Figure 7-50. Offset Roller

7.3.27 Exit Upper Chute Assembly

Table 7-48. Parts Name for Exit Upper Chute Assembly

No. in the Figure	Unit / Parts Name
1	CHUTE ASSEMBLY-UPPER
2	SWITCH ASSEMBLY
3	PLATE-TIE
4	SPRING PLATE
5	SPRING ASSEMBLY-PINCH, H
6	SPRING ASSEMBLY-PINCH, I
7	PINCH ROLLER, FRONT
8	PINCH ROLLER, REAR
9	EXIT UPPER CHUTE
10	GUIDE PAPER
11	GUIDE PAPER
12	EXIT MIDDLE CHUTE
13	EXIT GATE
14	EXIT GATE SPRING
15	SPRING ASSEMBLY -PINCH, J
16	SPRING ASSEMBLY-PINCH, K

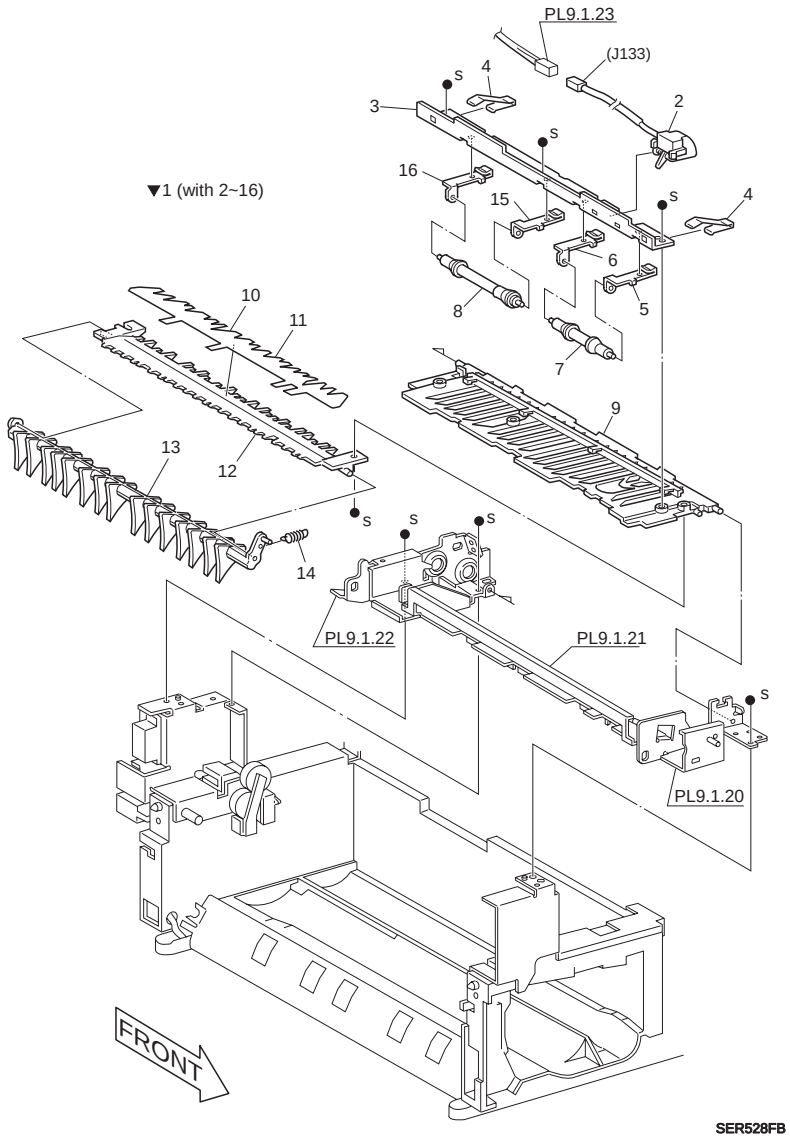


Figure 7-51. Exit Upper Chute Assembly

7.3.28 Exit Drive Assembly

Table 7-49. Parts Name for Exit Drive Assembly

No. in the Figure	Unit / Parts Name
1	EXIT DRIVE ASSEMBLY (with 2-19)
2	EXIT DRIVE SUPPORT
3	EXIT DRIVE IDLER PULLEY
4	EXIT GEAR 1
5	EXIT GEAR 2
6	EXIT GEAR BRACKET
7	EXIT IDLER GEAR
8	EXIT RATCHET SPRING
9	INVERTER COW GEAR
10	INVERTER CLUTCH
11	INVERTER CCW SHAFT
12	BEARING
13	INVERTER CW GEAR
14	---
15	INVERTER CW SHAFT
16	INVERTER EXIT GEAR REAR
17	INVERTER EXIT GEAR FRONT
18	INVERTER ERACKET
19	EXIT WIRE HARNESS (J602<>J218/J219)

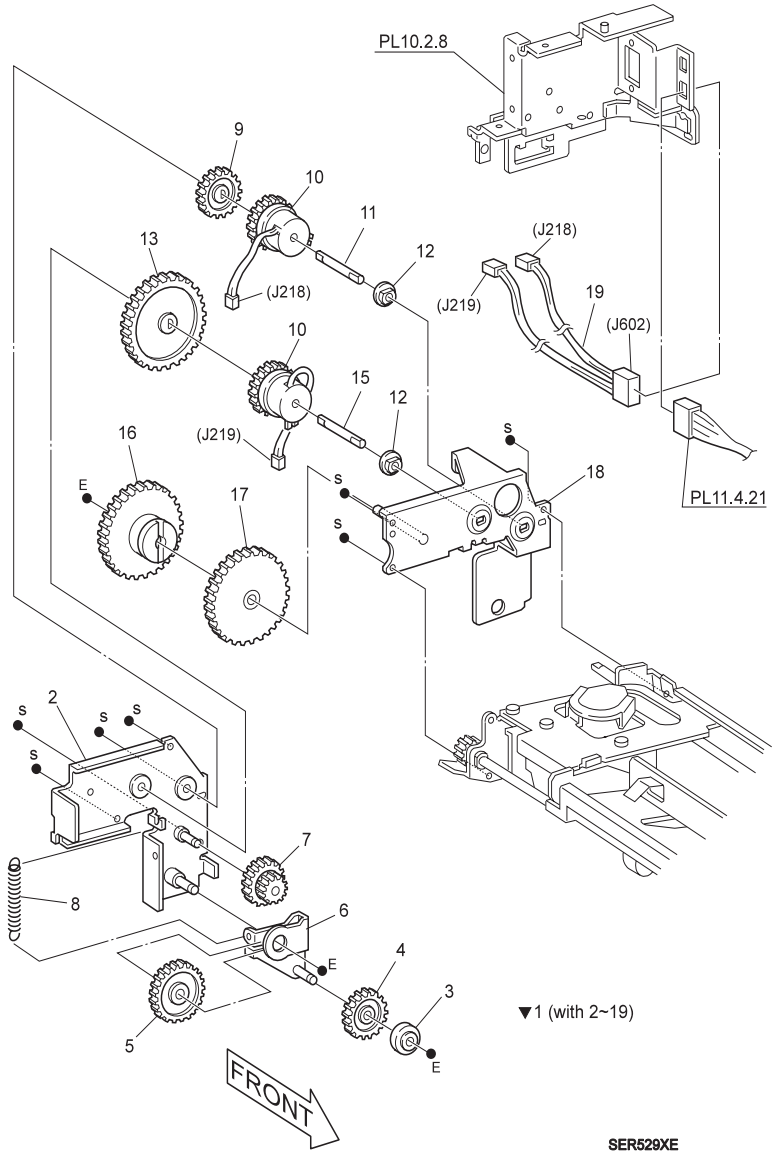


Figure 7-52. Exit Drive Assembly

7.3.29 Main Drive Assembly

Table 7-50. Parts Name for Main Drive Assembly

No. in the Figure	Unit / Parts Name
1	MAIN DRIVE ASSEMBLY
2	HARNESS CLAMP

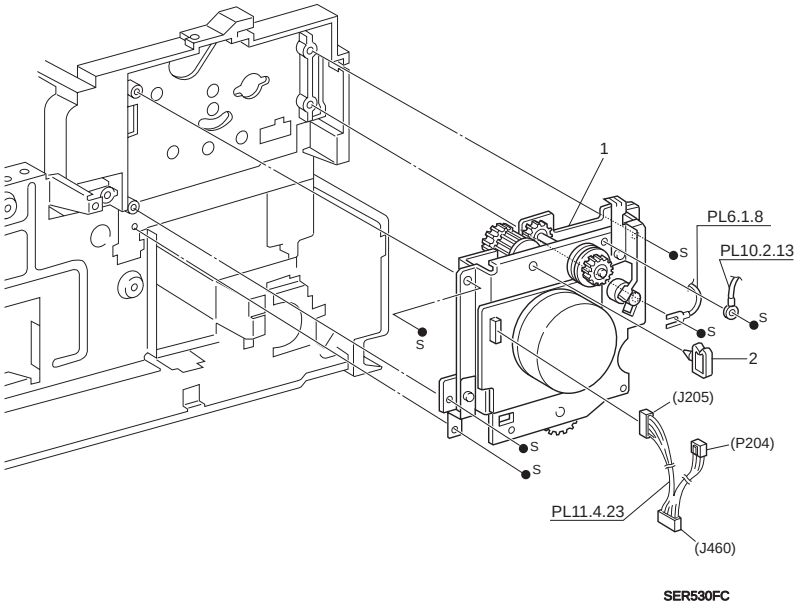


Figure 7-53. Main Drive Assembly

7.3.30 Fuser Drive Assembly

Table 7-51. Parts Name for Fuser Drive Assembly

No. in the Figure	Unit / Parts Name
1	FRAME ASSEMBLY EXIT REAR (with 2-9)
2	GEAR 22T
3	BRACKET ASSEMBLY
4	BRACKET ASSEMBLY
5	BRACKET
6	SPRING
7	BRACKET
8	FRAME ASSEMBLY-EXIT, REAR
9	STOPPER HOOK
10	HARNESS CLAMP 1
11	HARNESS CLAMP 2
12	HARNESS CLAMP 3
13	DRAWER CONNECTOR (P12<>J23/J600)
14	CONNECTOR P104
15	CONNECTOR P602

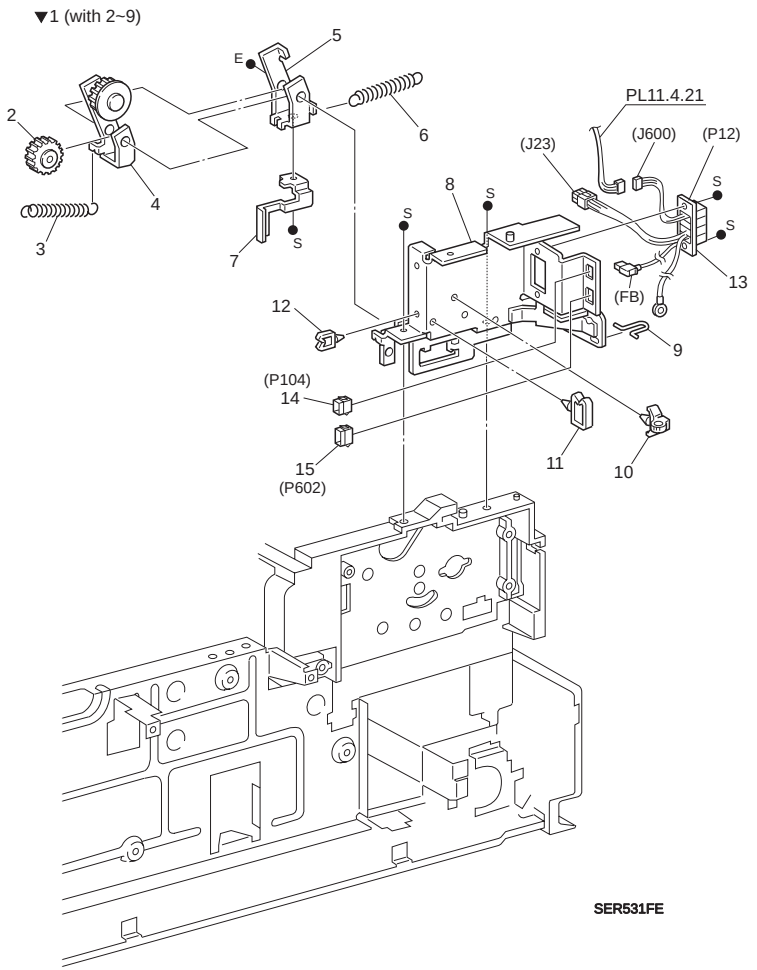


Figure 7-54. Fuser Drive Assembly

7.3.31 Power Inlet and LVPS

Table 7-52. Parts Name for Power Inlet and LVPS

No. in the Figure	Unit / Parts Name
1	POWER INLET CONNECTOR
2	NOISE FILTER PWB 100V/120V NOISE FILTER PWB 220V
3	BRACKET-N/F
4	PWB STUD
5	HARNESS CLAMP
6	MAIN POWER HARNESS (F51-F54/J1<>J13/J19/J20)
7	MAIN SWITCH
8	BRACKET ASSEMBLY SWITCH
9	OUTLET
10	BRACKET FINISHER
11	PS ASSEMBLY-M4 100V/120V PS ASSEMBLY-M4 220V

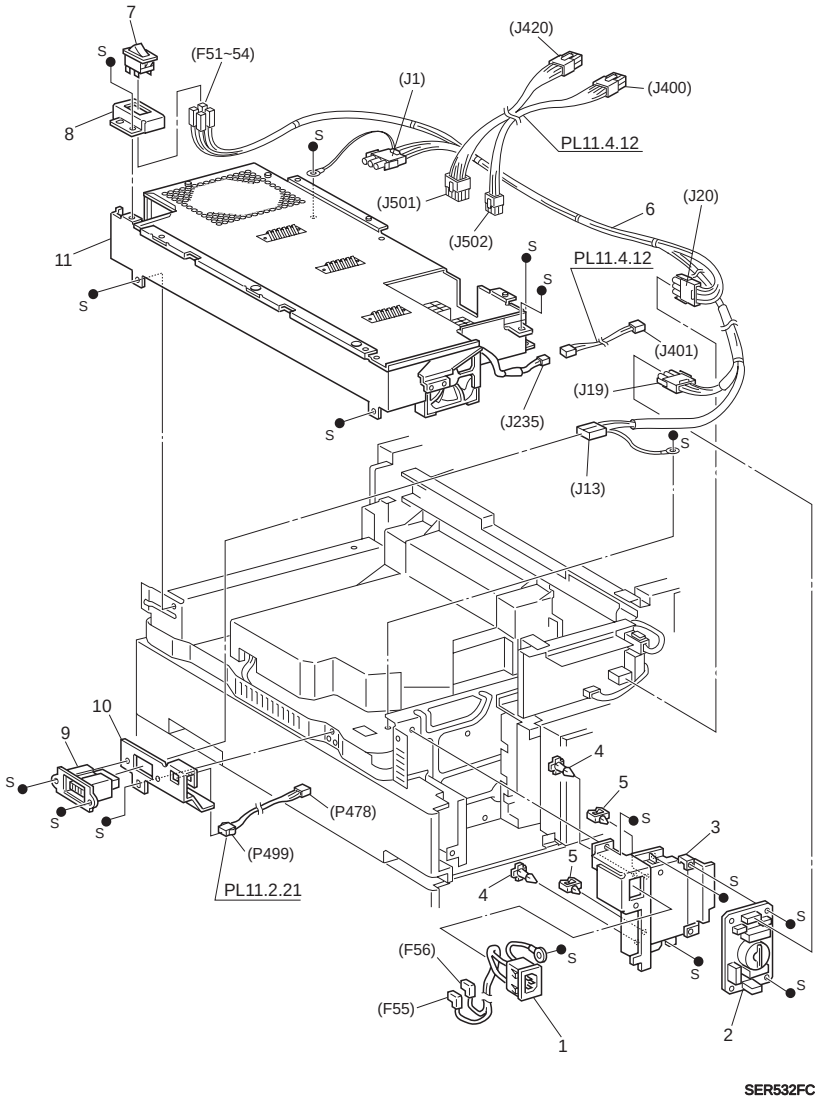


Figure 7-55. Power Inlet and LVPS

7.3.32 HVPS and MCU PWB

Table 7-53. Parts Name for HVPS and MCU PWB

No. in the Figure	Unit / Parts Name
1	AC DRIVER PWB 120V AC DRIVER PWB 220V
2	---
3	---
4	HVPS
5	MCU ASSEMBLY
6	MCU PWB
7	BRACKET MCU
8	COVR MCU
9	---
10	LEFT COVER INTERLOCK SWITCH
11	INTERLOCK SWITCH BRACKET
12	INTERLOCK SWITCH LEVER
13	SUPPORT HARNESS
14	HARNESS CHANNEL
15	---
16	---
17	HARNESS CLAMP 2
18	PWB SUPPORT
19	HARNESS CLAMP 4
20	BRACKET AC-DRIVE
21	---
22	HCF CONNECTOR
23	DUPLEX UNIT CONNECTOR
24	MAIL BOX CONNECTOR
25	OPTION CONNECTOR BRACKET
26	HARNESS-ASEEMBLY, EXIT
27	TRANSFORMER 220V

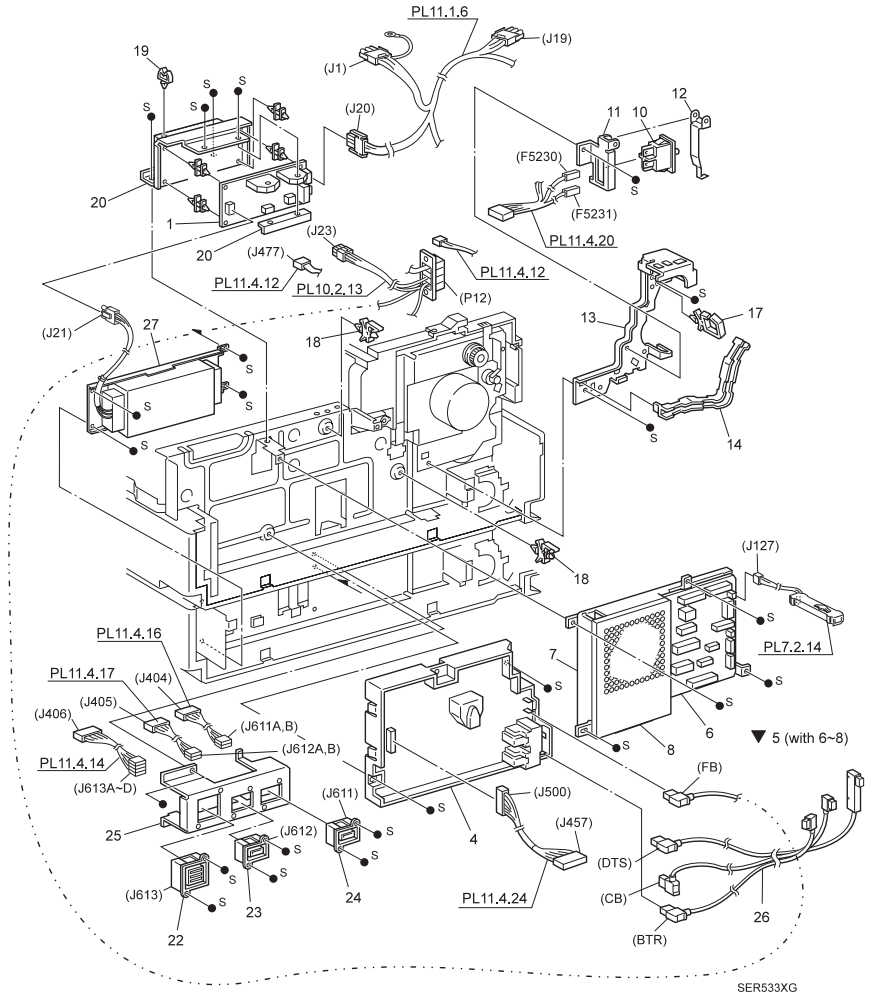


Figure 7-56. HVPS and MCU PWB

7.3.33 Controller Assembly

Table 7-54. Parts Name for Controller Assembly

No. in the Figure	Unit / Parts Name
1	CONTROLLER ASSEBLY
4	BUSHS SADDLE
8	BOX ASSEMBLY
9	BUSH SADDLE
10	COVER-ESS
11	COVER-SIMM
14	CONTROLLER BOARD
15	HARNESS ASSEMBLY ROS V
16	HARNESS ASSEMBLY CONSOLE
17	CORE

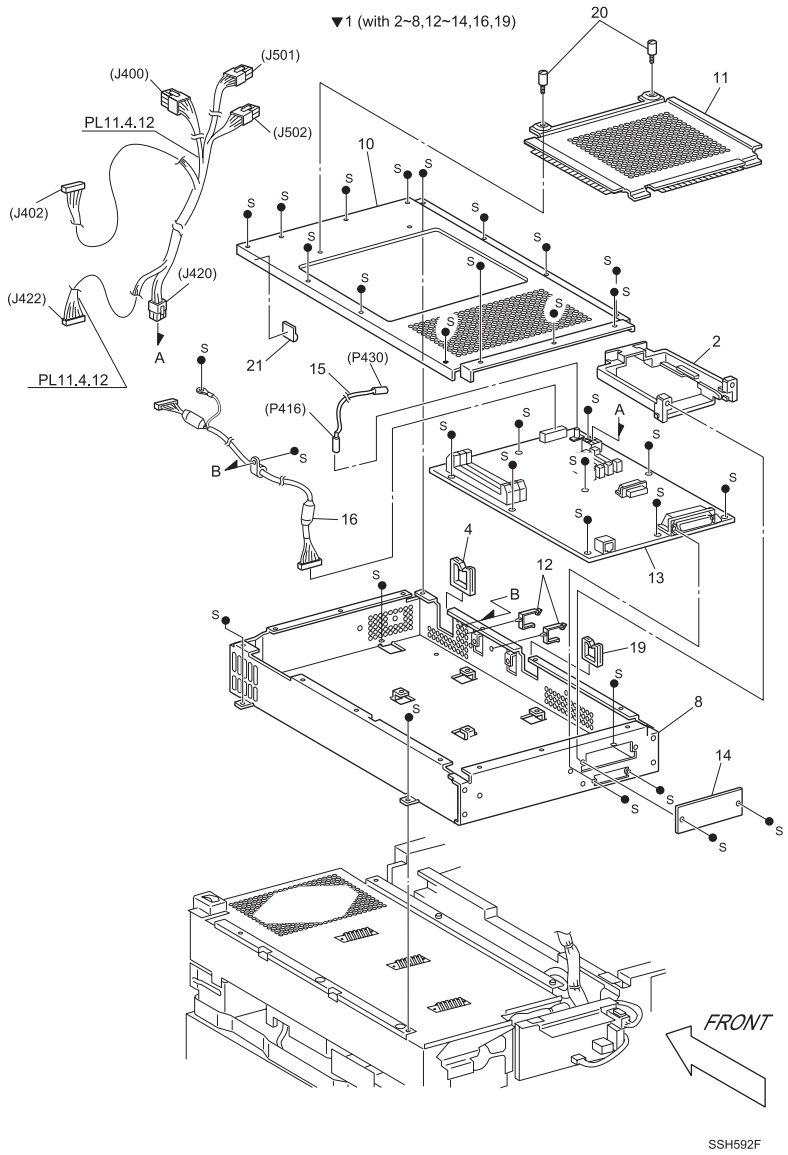


Figure 7-57. Controller Assembly

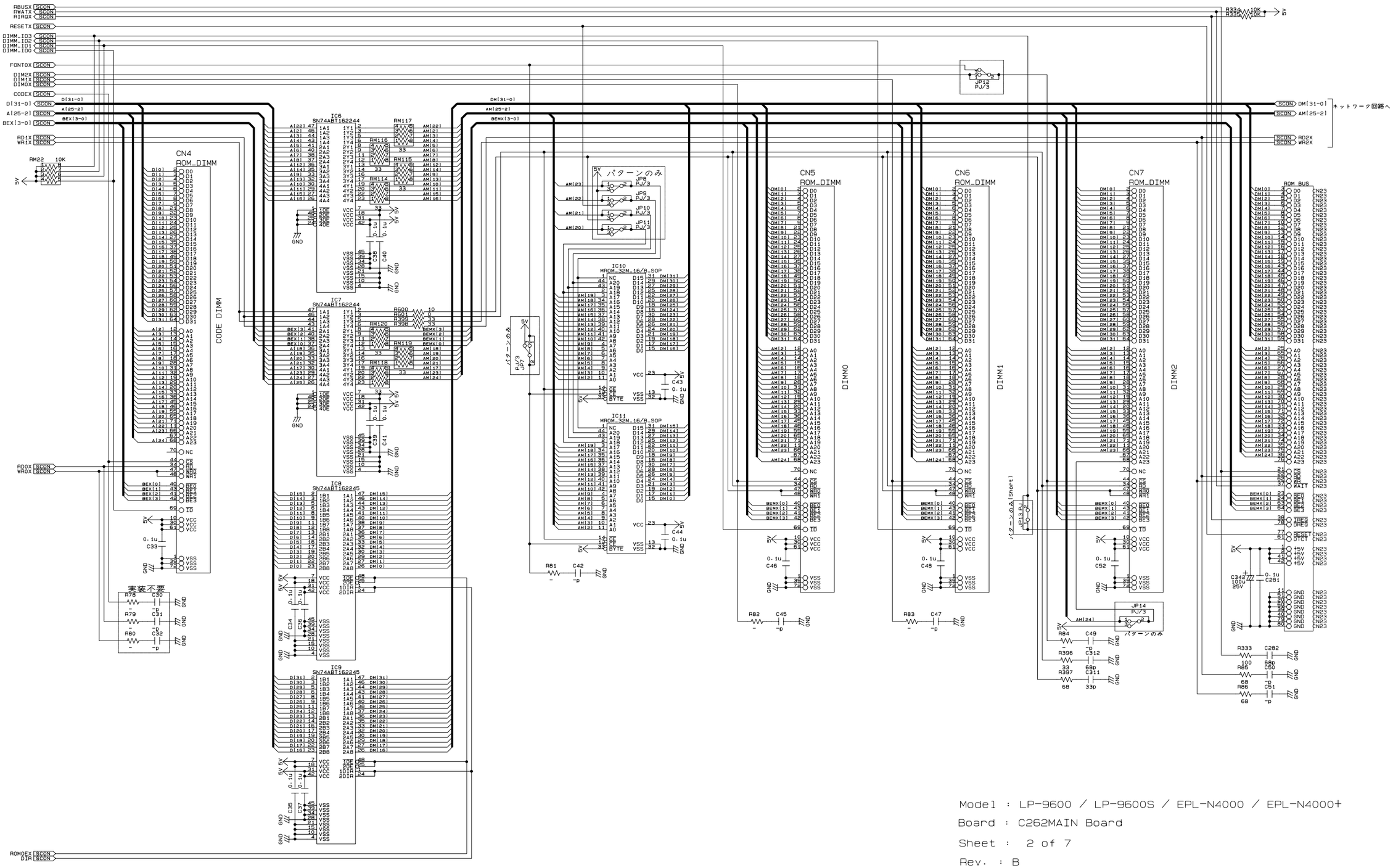
CPU BUS (sheet 3, 5)
Synchronous DRAM (sheet 3)
I/O (sheet 4)
Video (sheet 5)
ROM BUS (sheet 2, 7)
ROM-DIMM (sheet 2)
Network (sheet 2, 7)

IC1 R4700
IC2 E05B51BA
IC3 MS1963BFP-600C
IC4 74AS04
IC39 74AS08
IC40 74ALS139
IC41 74LV74
IC42 74LS14

SW1 NMI
SW2 RESET

P BUS
CN1 CPU_BUS

Model : LP-9600 / LP-9600S / EPL-N4000 / EPL-N4000+
Board : C262MAIN Board
Sheet : 1 of 7
Rev. : B



Model : LP-9600 / LP-9600S / EPL-N4000 / EPL-N4000+

Board : C262MAIN Board

Sheet : 2 of 7

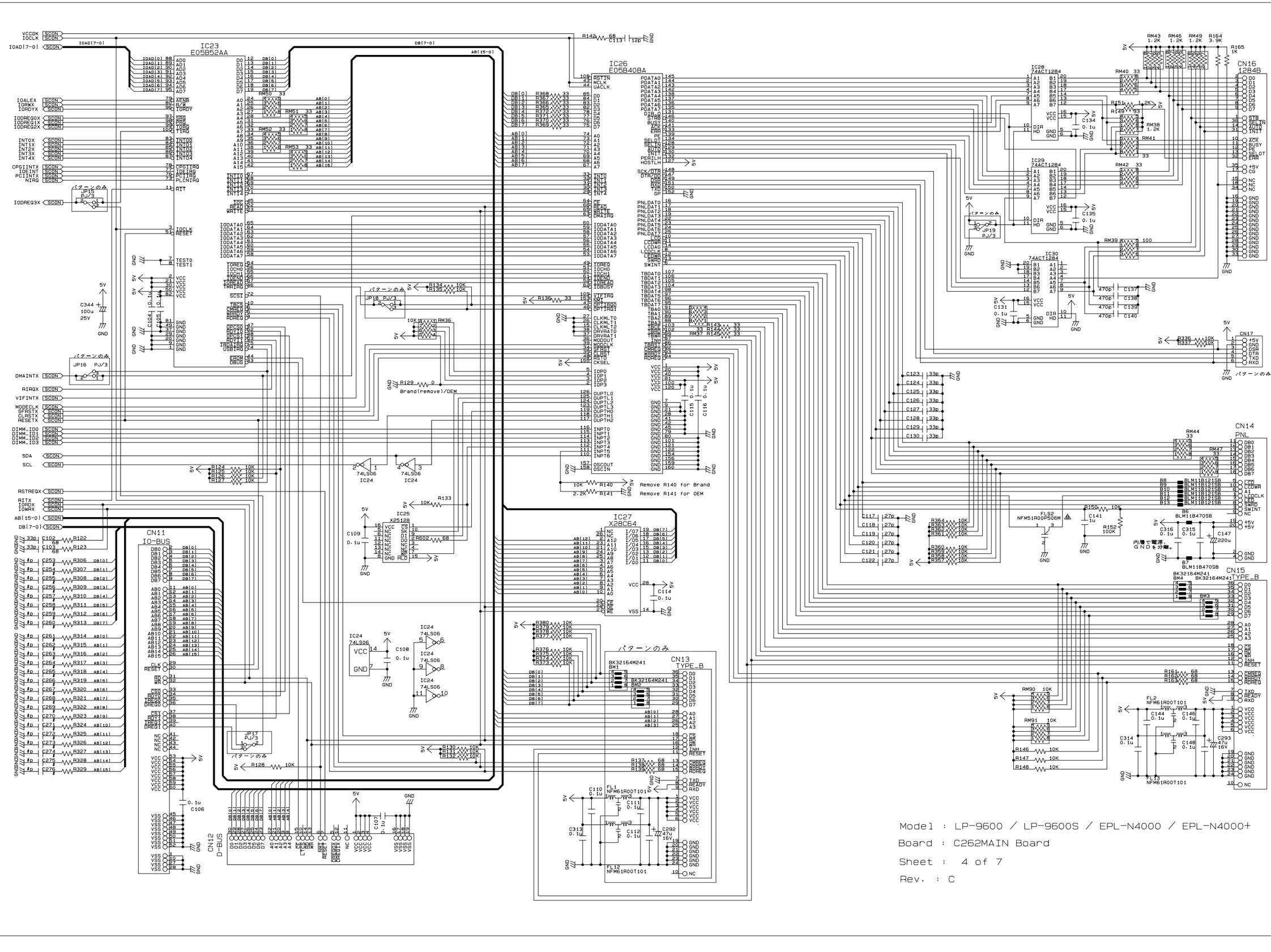
Rev. : B

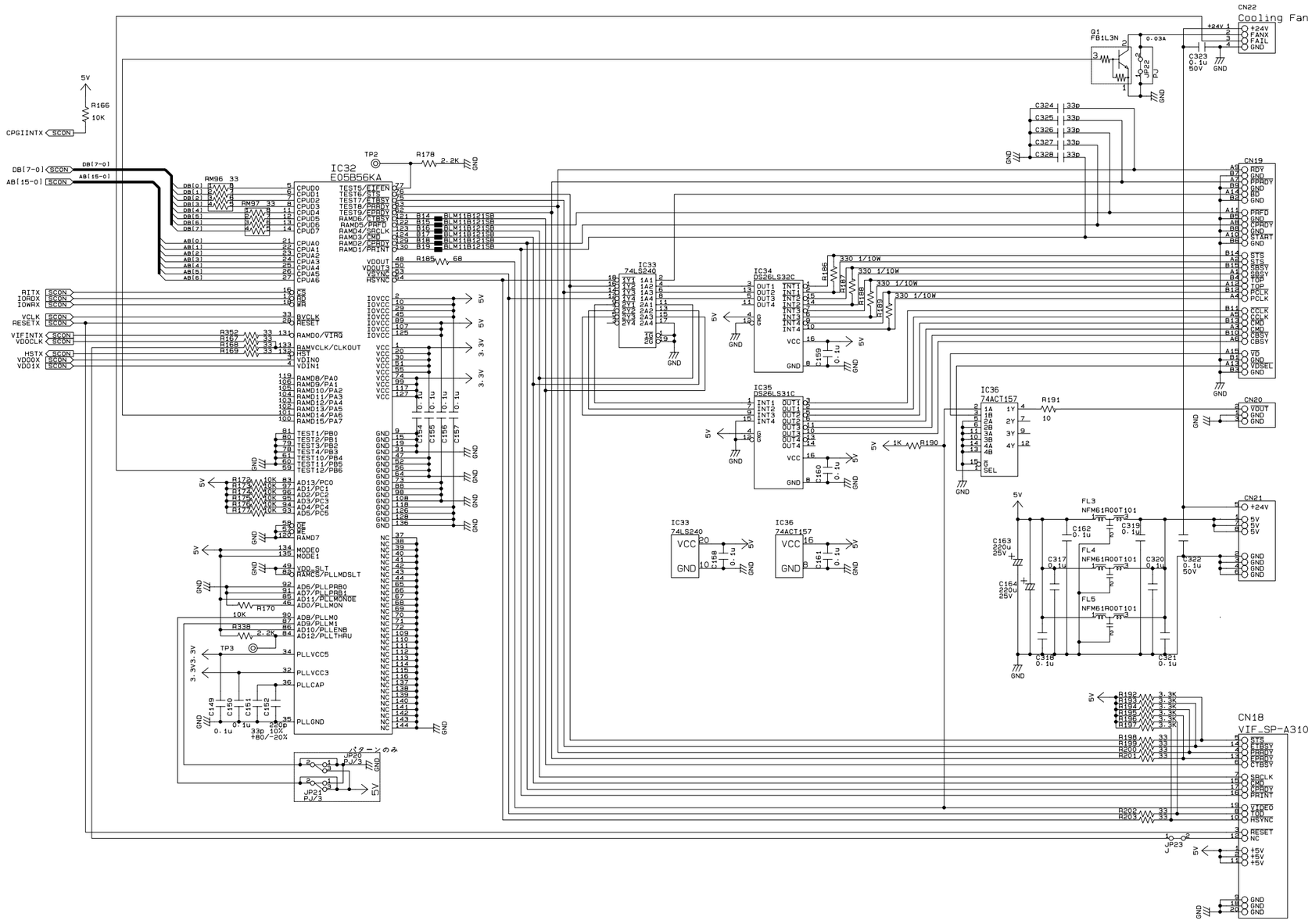
Model : LP-9600 / LP-9600S / EPL-N4000 / EPL-N4000+

Board : C262MAIN Board

Sheet : 3 of 7

Rev. : B


IC23
E05B52AA
IC26
E05B40BA
IC27
X28C64
IC28
74ACT1284
IC29
74ACT1284
IC30
74ACT1284
CN11
IO-BUS
CN12
D-BUS
CN13
TYPE_B
CN14
PNL
CN15
TYPE_B
CN16
1284B
CN17
IC24
74LS06
IC25
X25128
JP15 PJ/3
JP16 PJ/3
JP17 PJ/3
JP18 PJ/3
JP19 PJ/3
パターンのみ
Brand(remove)/OEM
Remove R140 for Brand
Remove R141 for OEM
内層で電源、GNDを分離。
Model : LP-9600 / LP-9600S / EPL-N4000 / EPL-N4000+
Board : C262MAIN Board
Sheet : 4 of 7
Rev. : C

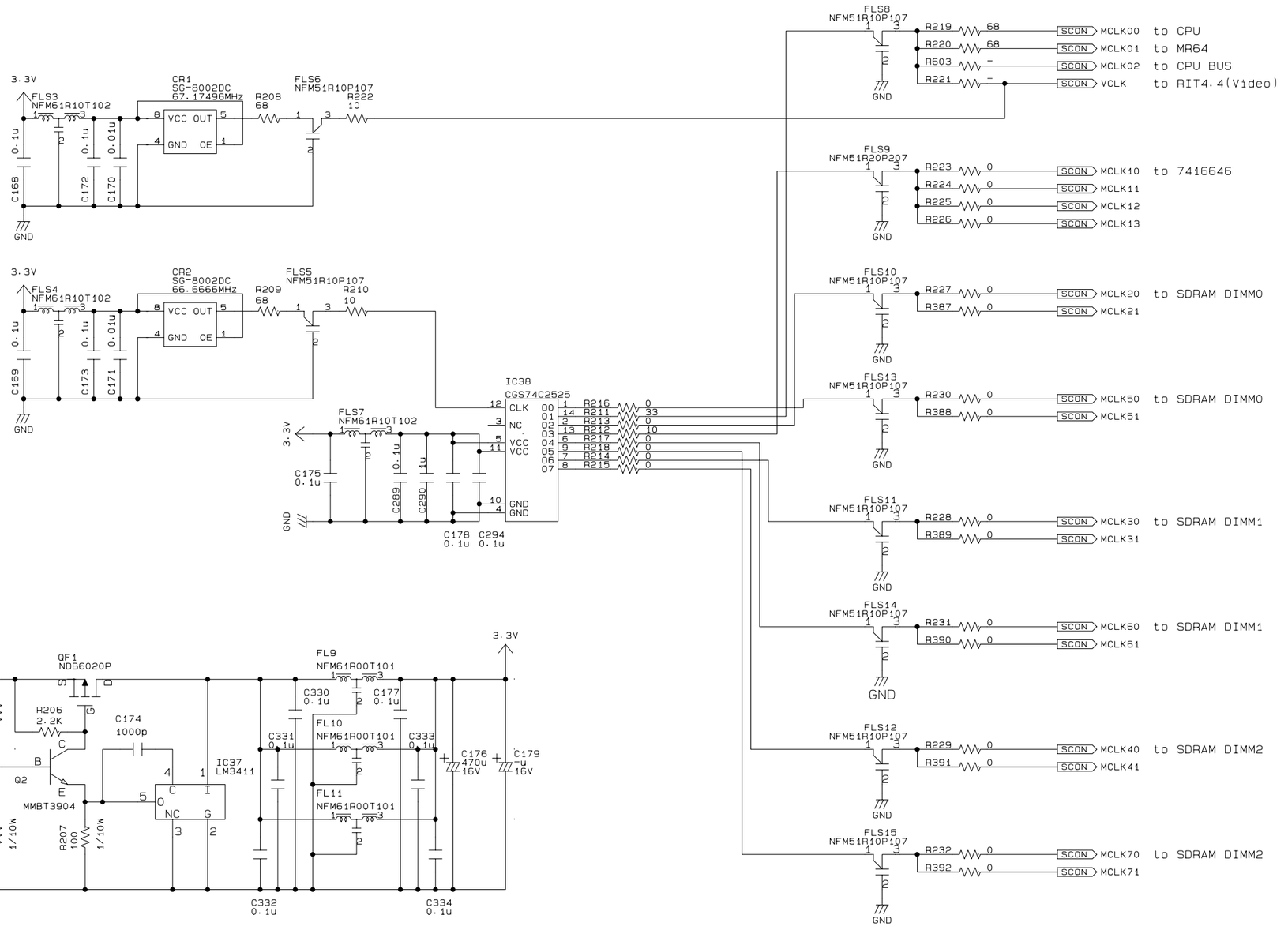


Model : LP-9600 / LP-9600S / EPL-N4000 / EPL-N4000+

Board : C262MAIN Board

Sheet : 5 of 7

Rev. : A

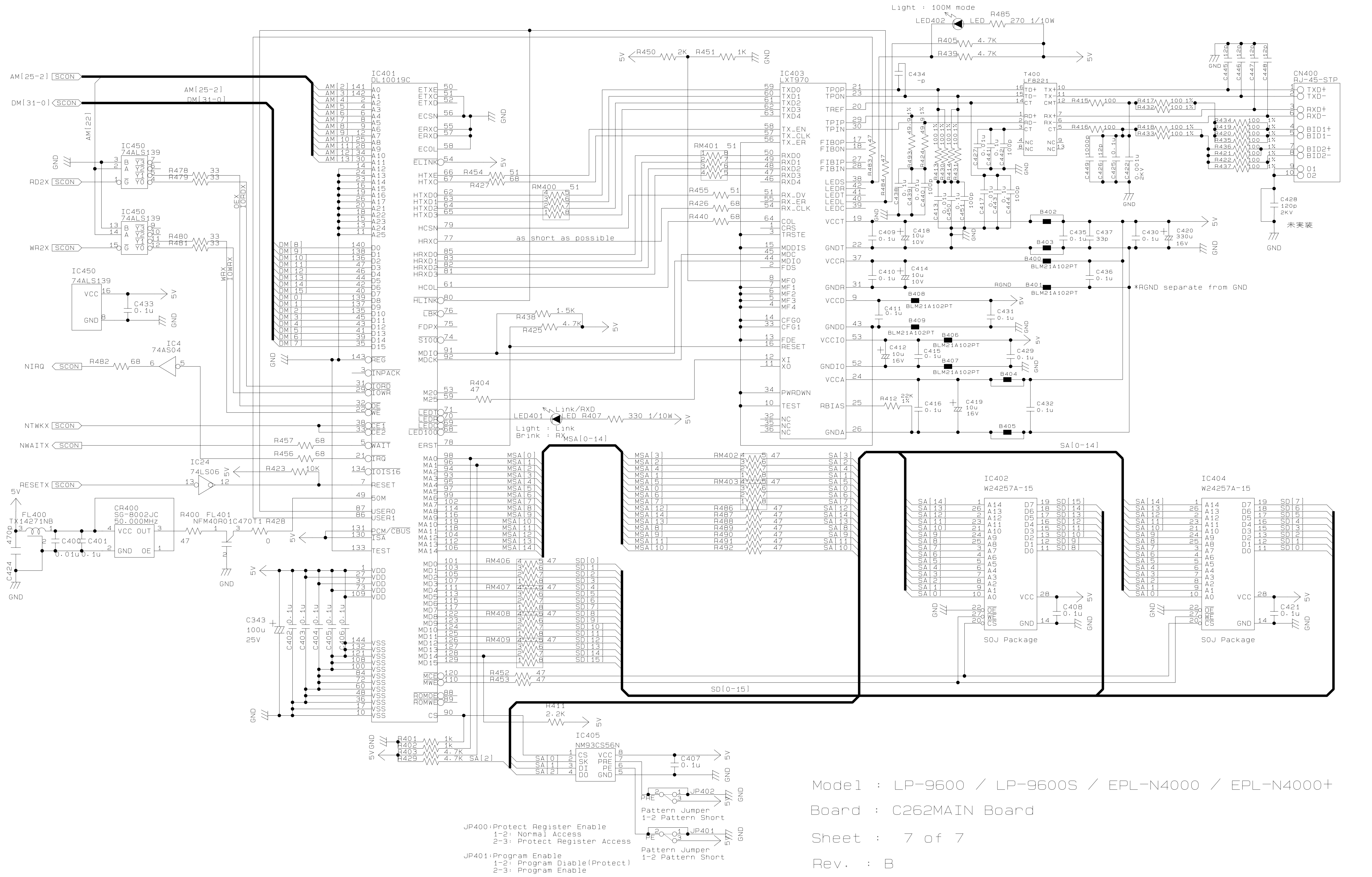


Model : LP-9600 / LP-9600S / EPL-N4000 / EPL-N4000+

Board : C262MAIN Board

Sheet : 6 of 7

Rev. : A



Model : LP-9600 / LP-9600S / EPL-N4000 / EPL-N4000+

Board : C262MAIN Board

Sheet : 7 of 7

Rev. : B