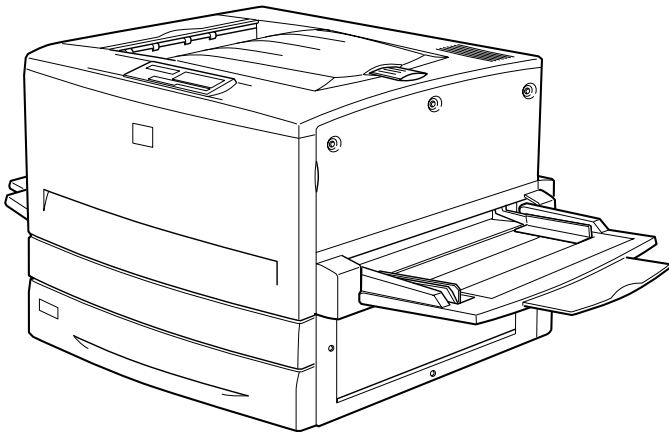


SERVICE MANUAL



Color Laser Page Printer

EPSON AcuLaser C8500



EPSON®

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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 the EPSON AcuLaser C8500. 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.

Manual Configuration

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. DISASSEMBLY / ASSEMBLY AND ADJUSTMENT

Describes the step-by-step procedures for disassembling/assembling and adjusting the product.

CHAPTER 4. DIAGNOSTICS

Provides Epson-approved methods for diagnostics.

CHAPTER 5. TROUBLESHOOTING

Provides the step-by-step procedures for troubleshooting.

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 NOTE, CAUTION, or WARNING 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.



NOTE

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.

Abbreviation

ADC = Automatic Density Control
AG = Analog Ground
ASSY = Assembly
AUX. = Auxiliary
B/W = Black and White
BCR = Bias Charge Roll
Bk = Black
BK = Black
BTR = Bias Transfer Roll
BUR = Back Up Roll
C = Cyan
CART. = Cartridge
CCW = Counterclockwise
CL. = Clutch
CLN = Cleaning (or Cleaner)
CLK = Clock
CONT. = Controller
CR = Charge Roll
CRU = Customer Replaceable Unit
CRUM = CRU Monitor
CW = Clockwise
DB = Developing Bias
DEVE. = Developer
DIAG. = Diagnostic
dpi = dots per inch
DTS = Detach Saw
ELEC. = Electric
EP = Electrophotography

FDR = Feeder
FG = Frame Ground
FRU = Field Replaceable Unit
GND = Ground
H/R = Heat Roll
Hex = Hexadecimal
HVPS = High Voltage Power Supply
I/F = Interface
IBT = Intermediate Belt Transfer
ID = Image Density (or Identification)
L = Left
L/H = Left Hand
L/P = Low Paper
LD = Laser Diode
LEF = Long Edge Feed
LVPS = Low Voltage Power Supply
M = Magenta
MAG. = Magnetic
MCU = Machine Control Unit
MECH. = Mechanical
MOT. = Motor
MSI = Multi Sheet Inserter
N/F = Normal Force
N/P = No Paper
NVM = Non Volatile Memory
O/H = Option Hinge
OHP = Overhead Projector
(In this manual, OHP means OHP film)

OPC = Organic Photo Conductor
P/H = Paper Handling
P/R = Pressure Roll
PCDC = Pixel Count Dispense Control
Pixel = Picture Cell
PPM = Prints Per Minute
PV = Print Volume
PWB = Printed Wiring Board
R = Right
R/H = Right Hand
REGI. = Registration
ROS = Raster Output Scanner
RTN = Return
SEF = Short Edge Feed
SG = Signal Ground
SNR = Sensor
SOL. = Solenoid
SOS = Start Of Scan
SPI = Scans Per Inch
SYNC. = Synchronous
TC = Toner Concentration
TEMP. = Temperature
TR = Transfer
TRANS. = Transport
WDD = Wide Range Dynamic Damper
XERO. = Xerographic
Y = Yellow
YMCBk = Yellow, Magenta, Cyan, Black

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.

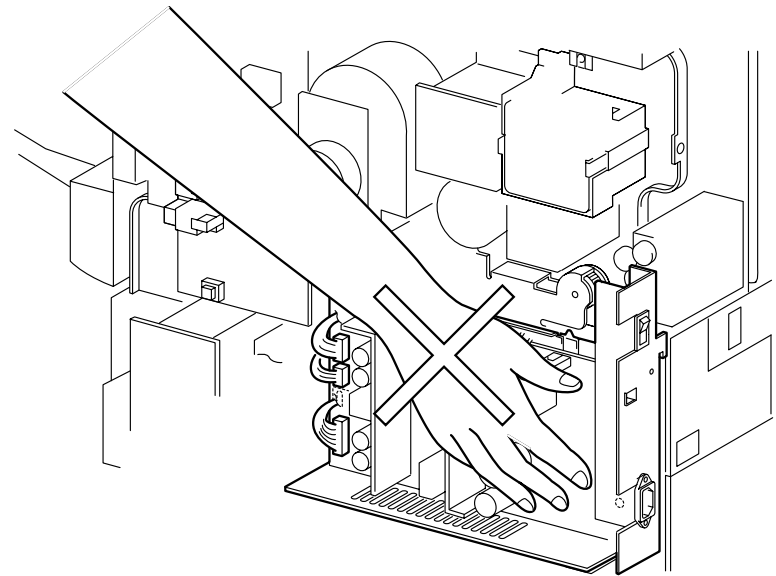
Do not do anything that is dangerous even if not specifically described in this manual. In addition to the descriptions below and those given in this manual, there are many situations and circumstances that are dangerous. Be aware of these when you are working with the printer.

Power Supply

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



Do not touch any live part unless you are instructed to do so by a service procedure. The LVPS power supply switch/inlet part is live even when the power switch has been turned off. Do not touch any live part.

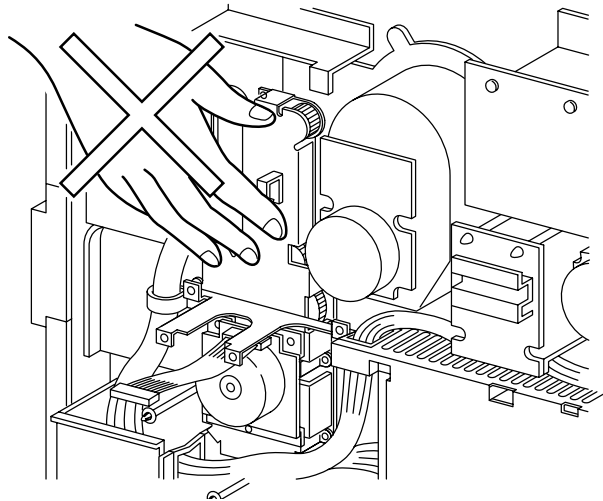


Mechanical Components

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 touch the driving part (e.g., gears) while the assembly (printer) is being driven.



Safety Components

The printer is equipped with safety components (e.g., interlock switches, fuses, thermostat) and safety switches for protecting users and service personnel from injury and the equipment from damage.

The printer has two interlock switches, two safety switches and two interlock connectors that serve as the main safety mechanism.

☐ Front Cover Switch R

This switch is turned off when the Front Cover Assembly is opened. It cuts off the power supply (24VDC, 5VDC-LD) from the power supply unit to stop all operations and disconnects the output (5VDC-LD) circuit from the power supply and stops the laser beam emission.

This switch consists of the following two switches:

- A switch that cuts off the power supply (24VDC, 5VDC-LD) to the control circuits and related parts.
- A switch that directly cuts off the power supply circuit (5VDC-LD) to the laser beam output circuit.

☐ Front Cover Switch L

This is a safety switch. This switch is turned off when the Front Cover Assembly is opened, causing the printer without control units to stop operating.

☐ Top Cover Switch

This is an interlock switch that directly cuts off the power supply (5VDC-LD) circuit to the laser beam output circuit. This switch is turned off when the Top Cover Assembly is removed, cutting off the output (5VDC-LD) circuit from the power supply unit and stopping the laser beam emission.

❑ Exit Chute Switch

This switch is a safety switch. This switch is turned off when the Exit Upper Assembly (the cover on the upper left side of the printer) is opened.

❑ P/J91 (Connector that connects the Main Harness Assembly and Registration Harness Assembly)

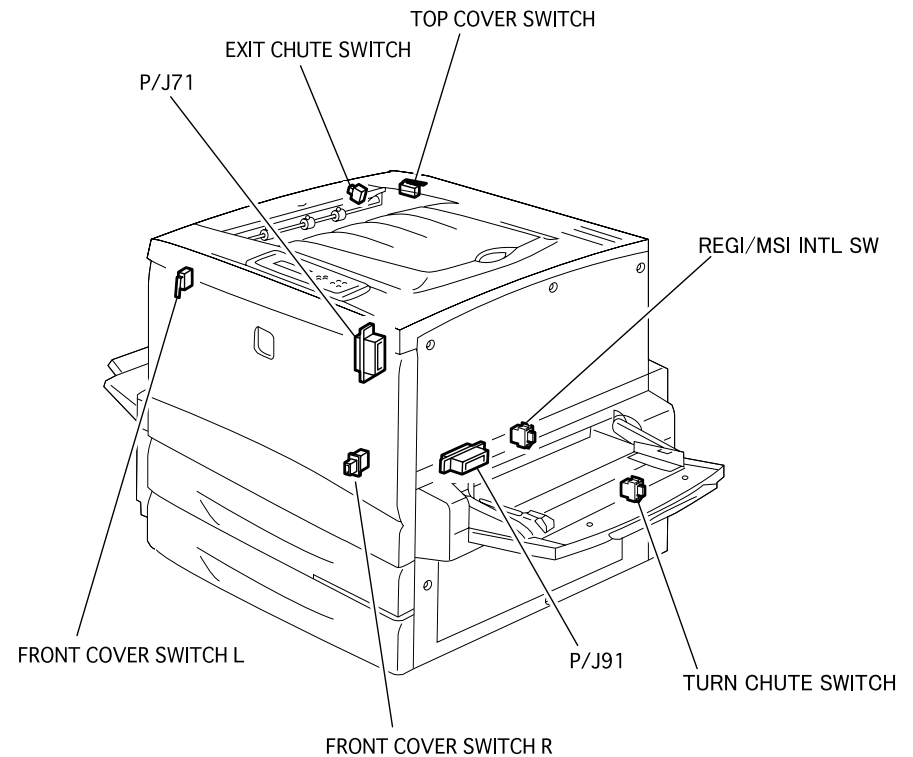
This is an interlock connector that cuts off the power supply (24VDC, 5VDC-LD) to the control circuit and related parts.

This connector is disconnected when the Main P/H Assembly (pull-out type unit on the right side of the printer) is pulled out, cutting off the output (24VDC, 5VDC-LD) from the power supply and stopping the printer operation without control units.

❑ P/J71 (Connector that connects the Fuser Connector and Fuser Harness Assembly)

This is an interlock connector that cuts off the power supply (24VDC, 5VDC-LD) to the control circuit and related parts.

This connector is disconnected when the Fuser Assembly (pull-out type unit on the left side of the printer) is pulled out, cutting off the output (24VDC, 5VDC-LD) from the power supply and stopping the printer operation without control units.



Laser Beam

The printer has two interlock switches: the Front Cover Switch R and the Top Cover Switch. The purpose of these switches is to turn off the laser beam emission if any of the printer covers have been opened; this protects the user or service personnel from exposure to the laser beam from the ROS Assembly.

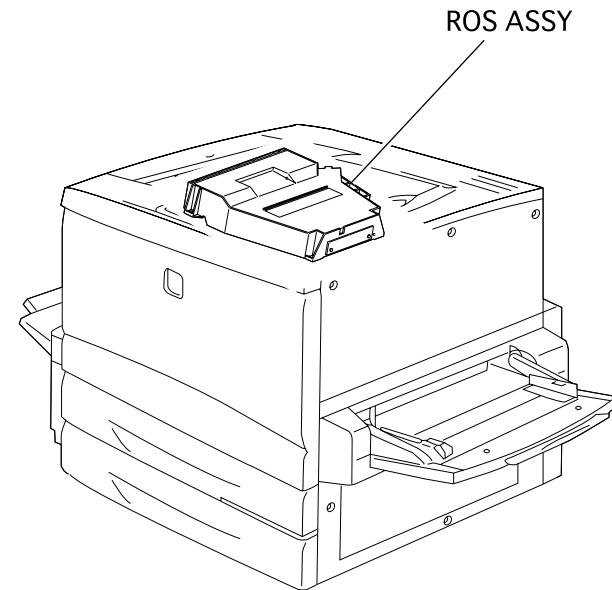
A laser beam may be emitted during a maintenance operation. Do not turn on these interlock switches simultaneously under any circumstances except in a normal operation.



- Do not expose yourself to the laser beam to prevent injury (blindness).
- Do not open the cover that has the laser beam warning label.
- If you disassemble or assemble the printer, turn off the power.
- If you need to work on the printer with power applied, strictly follow the instructions in this manual.
- If you have to activate the printer while pressing the Front Cover Switch R by hand or with a tool, remove the Top Cover. (Do not turn on these interlock switches simultaneously under any circumstances except in a normal operation.)
- Understand how the laser beam functions and take maximum precautions not to injure yourself or anyone around you.

NOTE: The laser beam has a narrower frequency band and more coherent phases than any other light (sunlight, electric light). It has excellent monochromaticity and convergence. A thin laser beam reaches long distances. Because of its convergence characteristic, the laser beam converges into one point, causing high density and high temperature. A laser beam is harmful to the human body.

NOTE: The laser beam in this printer is invisible.



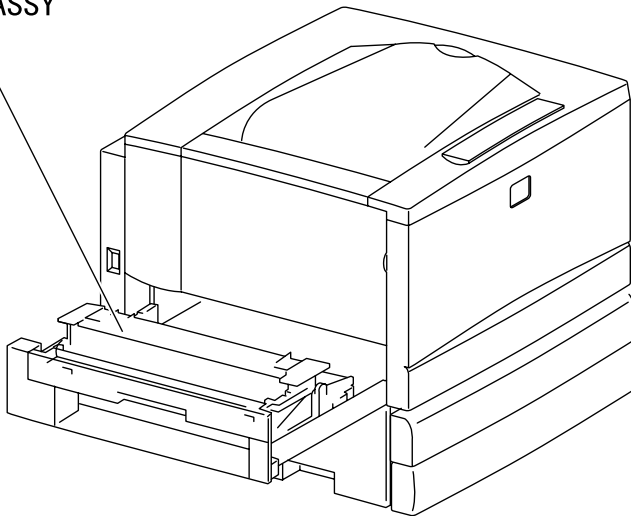
High Temperature Assembly

To prevent you from becoming injured or burned, do the following:
Before working with a high temperature Assembly (e.g., Fuser Assembly), turn off the power, unplug the power cord and wait until it cools down.



The high temperature Assembly is very hot immediately after any printer operations. Wait at least 40 minutes before you start working on the printer.

FUSER ASSY



Parts

To prevent you from becoming injured, keep the following in mind:

- ☐ When handling heavy parts (including the printer itself), use good posture to protect your back whenever you lift, move or place parts.



Do not lift, move or place heavy parts in a body posture that is likely to cause injury to yourself or cause the part to drop.

- ☐ Be careful not to injure yourself with the sharp edges of the parts.
- ☐ Do not work with wet or oily hands-you may drop a part or injure yourself. Dry your hands first.
- ☐ When pulling out a part (including a harness), do not use too much force. Pull out the part carefully and slowly step by step.

Consumables

Some parts may cause a particulate explosion or fire if handled improperly. Do not handle these parts near fire or throw into a fire.

Some materials (e.g., Developer or Fuser Oil) may cause bodily injury. Do not swallow or inhale these materials or allow them to come in contact with the eyes.

Help to protect those around you and follow the prohibitions against swallowing or inhaling those materials. Be careful to protect the eyes at all times.

Place a sheet inside or under the printer so that the floor or workbench is protected.

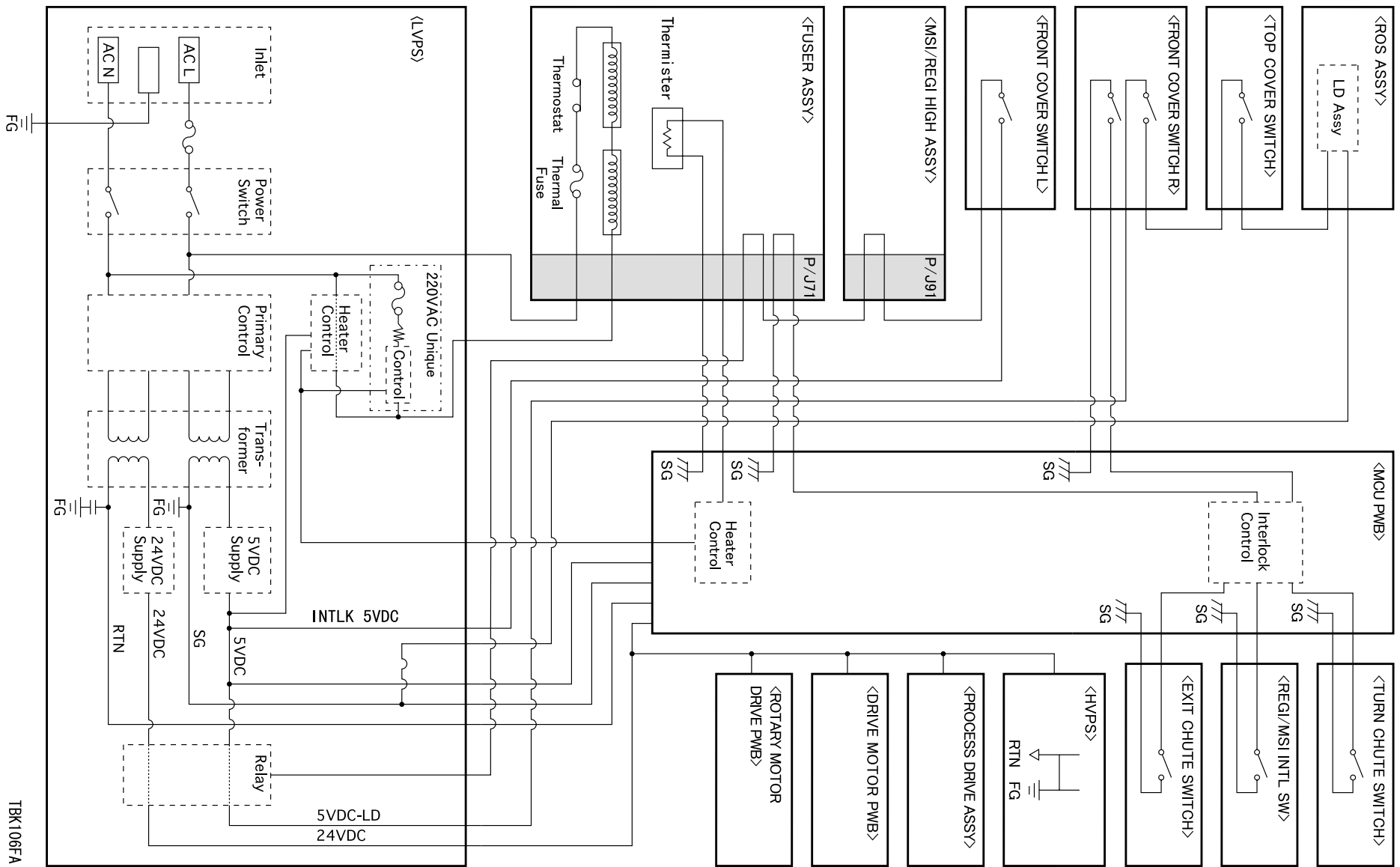
If the Developer or Fuser Oil gets on your clothing, dry it with a cloth and wash with clean water.

NOTE: *The printer has the following consumable parts:*

- *Drum Cartridge*
- *Oil Roll Assembly*
- *Toner Cartridge M*
- *Toner Cartridge Bk*
- *Waste Toner Box*
- *Toner Cartridge Y*
- *Toner Cartridge C*

Improper Printer Use

Modifying, revising, tampering with the printer, especially to the safety mechanism, is strictly prohibited in all circumstances.



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Revision Status

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CHAPTER

1

PRODUCT DESCRIPTIONS

1.1 Features

The EPSON AcuLaser C8500 is a non-impact color page printer with a resolution of 600 dpi. It has mainly improved on the print speed; 6 ppm for color print (A4) and 26 ppm for monochrome print (A4). The main features of the printer are as follows:

ENGINE FEATURES

1. High speed print engine at a print speed of 6 ppm for color, and 26 ppm for B/W (when printing A4). Paper sizes of A5 to A3W are supported.
2. Duplex printing supported. The engine is capable of printing true 600 dpi high resolution in full color.
3. Higher quality printing is possible with high quality plain paper.
4. Capable of printing thick paper, coated paper and transparencies (exclusive transparencies).
5. Features easy maintenance as a color laser printer.
6. Standard paper feed includes 2 bins; MP tray (up to 150 sheets, A3W supported) and standard universal cassette (up to 250 sheets, A3 supported).
Paper feeding of maximum 1400 sheets from 4 bins is possible with a optional lower cassette (Large Capacity Paper Unit, A3 supported) installed.
Paper feeding of maximum 900 sheets from 3 bins is possible with the optional a optional lower paper cassette (500-Sheet Paper Cassette Unit, A3 supported) installed.
7. Standard paper output can output 250 sheets Face-down and 150 sheets Face-up.

CONTROLLER FEATURES

1. Newly designed High Speed Controller
 - A new 64-bit RISC CPU — R5000 - 266 MHz
 - 64-bit high speed memory — SDRAM DIMM (The same RAM as in the EPSON EPL-C8200 can be used.)

- Standard RAM is 64 MB.
By installing additional RAM (3 slots), the maximum memory size can be expanded to 768 MB. (Note: keep the standard RAM 64MB installed and use other two RAM slots if the memory needs to be expanded.)

2. Color technologies

Equipped with Enhanced ASIC (VIP1a).

- Data compression has been incorporated into the hardware to achieve high speed processing.
 - Equipped with AcuLaser Color Halftoning, CRIT (Color RIT).
3. EPSON RIP Station 5300 (On-board option for EPSON Color Copy Station) supported.
 4. Equipped with 2 standard interfaces.
 - IEEE 1284 compliant and ECP compatible parallel Interface
 - Ethernet interface (10Base-T/100Base-TX)
 5. By expanding memory with RAM DIMMs, the following functions can be enhanced and speeded up.
 - Drawing area in AcuLaser Color Halftoning
 - Print Speed
 - Resolution
 6. Equipped with RTC (Real Time Clock). (For job management)
 7. HDD (optional) can be installed.

SOFTWARE FEATURES

1. Installed emulations

- Standard : ESC/Page-Color mode
B/W printing supported by ESC/Page Color (Automatic discrimination between color and B/W is speeded up)
- Standard : LJ4, GL2, ESCP2, FX, I239X, ESC/Page (B/W) mode (full-compatibility with Cardinal+)
- Option : Adobe Postscript Level3 (Peacock-B /PostScript module)

- Option : Color Copy Unit (EPSON RIP Station 5300)
- 2. Through EJP, PJP and Printer MIB, the printer status and printer environment are monitored.
- 3. Remote panel function through a Web browser using EPSON Net Web Assist.
- 4. When flash DIMM is installed, ROM update function is available. (RCC supported)
- 5. Engine controller ROM(Flash) update function available
- 6. HP LaserJet4000 installed, the compatible font with 80 Scalable font installed, NLSP font ROM installed, Euro Symbol supported.
- 7. Engine adjustment function enabled by DIAG mode.
- 8. When a HDD (option) is installed, Electronic sorting, I/F reception buffer expansion (only for Ethernet I/F) and font registration when PostScript3 mode can be equipped.
- 9. Job management functions (available only for the job received from Network I/F)
- 10. Transfer voltage adjustment function
- 11. The default value for Gamma is changed to 1.8.

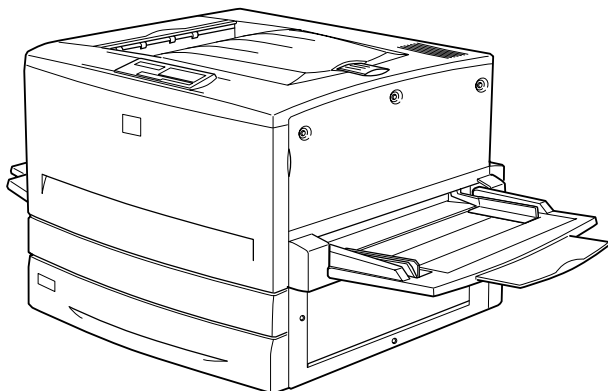


Figure 1-1. Exterior View of the EPSON AcuLaser C8500

1.2 Specifications

This section describes specifications for EPSON AcuLaser C8500.

1.2.1 Basic Specifications

Method

Semi-conductive laser beam scanning and dry electrophotographic process

RESOLUTION

600 dpi

Print mode

- ☐ B/W mode: Standard monochrome print mode that supports the fastest speed.
- ☐ Color mode: Color mode which uses the color toner of Y, M, C, and BK.

SPEED MODE

- ☐ Standard mode: Transports paper at the highest speed supported by the printer.
- ☐ Half speed mode: In this mode, image on thick paper (over 105g/m²), envelopes, and monochrome image on OHP sheet are well fixed.
- ☐ Low speed mode: In this mode, paper is transported slowly to cause color image on OHP sheet to be fixed well.

PRINT SPEED

See Table 1-1.

Table 1-1. Speed Mode

Print mode	Speed mode	LT/A4 LEF ^{*1} (2UP ^{*2})		B (LD)/A3 SEF ^{*3}	
		Standard tray/ cassette	Optional paper cassettes ^{*4}	Standard tray/ cassette	Optional paper cassettes
Monochrom print mode					
Standard mode	Single sided print	26.1 PPM	24.8 PPM	13.8 PPM	13.5 PPM
	Duplex print	20.2 PPM	19.8 PPM	11.0 PPM	10.8 PPM
Half speed mode	Single sided print	4.0 PPM	-	2.0 PPM	-
Color print mode					
Standard mode	Single sided print	6.0 PPM	6.0 PPM	3.0 PPM	3.0 PPM
	Duplex print	6.0 PPM	6.0 PPM	3.0 PPM	3.0 PPM
Half speed mode	Single sided print	2.7 PPM	-	1.3 PPM	-
Low speed mode	Single sided print	2.2 PPM	-	1.2 PPM	-

*1: LEF, or Long Edge Feed, means the longer edge of the paper is the top toward the paper feed direction.

*2: In this mode, the printer creates two print images on the IBT belt and the images are transferred in sequence onto two sheets of paper. It is available for LT/A4 (LEF) or smaller.

*3: SEF, or Short Edge Feed, means the shorter edge of the paper is the top toward the paper feed direction.

*4: 500-Sheet Paper Cassette Unit, Large Capacity Paper Unit

First print

□ Face-up:	B/W	10.9 seconds or less (LT/A4 LEF)
	Color	25.9 seconds or less (LT/A4 LEF)
□ Face-down:	B/W	13.9 seconds or less (LT/A4 LEF)
	Color	28.9 seconds or less (LT/A4 LEF)

NOTE: First print is defined as the duration taken after receiving the start command until outputting the first print. It is applicable when a feeder is selected in the standard mode. (Not applied during the process control operation.)

WARM-UP TIME

Within 300 seconds (at 22 °C, 55% Rh, rated voltage)

PAPER HANDLING

- Standard MSI, Standard universal cassette

Table 1-2. Paper Handling - Standard Tray/Cassette

Paper feeder	Capacity (sheet)	Available paper size	Available Paper Thickness
Standard MSI (MP tray) ^{*1 *2}	150 (16mm)	Min.: 90 x 139.7 mm Max.: 330.2 x 457.2 mm A3, A3W, A4, A5, B4, B5, I-B5, LT, HLT, LG, EXE, GLG, GLT, B(LD), F4	64 -105g/m ² (Recommended paper, Normal paper)
	75	90x139.7-330.2x457.2 Post card, OHP sheet, Label. Thick paper	105- 220g/m ² Thick paper, Special paper
	20	Custom size envelope ^{*3} Monarch, C10, DL, C6	-
Standard universal cassette	250 (26mm)	B5, LT, A4, B4, A3, LG, B(LD), EXE	64 -105g/m ²

*1: For the paper whose width is more than 304.8 mm (12 inch), side guide in the MSI tray must be adjusted.

*2: Paper Empty condition in the MSI tray is detected.

*3: Note the following points when setting envelopes:

- Open flaps and set them facing to the tailing side.
- Set envelopes with the longer edges first. Length (excluding flap) must be shorter than width.
- The minimum length with a flap open must be 143mm.
- The minimum width must be 90mm

☐ Option Cassette Unit

Table 1-3. Paper Handling - Option Cassette Unit

Paper Feeder	Capacity (sheet)	Available Paper Size	Available Paper Thickness
A3W Cassette ^{*1*2}	250 (26mm)	A3W	64-105g/m ² (Recommended paper, Normal paper)
500-Sheet Paper Cassette Unit	500 (53mm)	B5, LT, A4, B4, A3, LG, B(LD), EXE	64-105g/m ² (Recommended paper, Normal paper)
Large Capacity Paper Unit	500 (53mm)	B5, LT, A4, B4, A3, LG, B(LD), EXE	64-105g/m ² (17 - 28lb) (Recommended paper, Normal paper)

*1: Each cassette is equipped with the side guide and end guide (also used to detect paper size). They are adjusted by the users.

*2: Each cassette is equipped with the paper out sensor and paper near empty sensor. Paper near empty condition is defined as follows: 40 sheets +/- 30 sheets, FXL paper (64g/m²)

☐ Optional cassette usage and corresponding paper capacity

Table 1-4. Option Cassette Usage and Capacity

	MSI (MP Tray)	Standard Universal Cassette	A3W Cassette ^{*1}	500-Sheet Paper Cassette Unit ^{*2}	Large Capacity Paper Unit	Capacity ^{*3}
1	150 Sheets	250 Sheets	-	500 Sheets	-	900 Sheets
2	150 Sheets	250 Sheets	-	-	1000 Sheets	1400 Sheets
3	150 Sheets	-	250 Sheets	500 Sheets	-	900 Sheets
4	150 Sheets	-	250 Sheets	-	1000 Sheets	1400 Sheets

*1: Use the A3W cassette by inserting it to the standard universal cassette slot.

*2: Either 500-Sheet Paper Cassette Unit or Large Capacity Paper Unit is installed at the bottom.

*3: Applicable when recommended paper or normal paper is used.

DUPLEX PRINT

- ☐ Minimum size: 182 mm/7.16" (W) x 210 mm/8.26" (L)
- ☐ Maximum size: 304.8 mm/12" (W) x 457.2 mm/18" (L)
- ☐ Paper weight: 64g/m² - 105g/m² (17 lb - 28lb)

PAPER SIZE

□ Normal paper: See Table 1-5.

Table 1-5. Paper Size/ 2- UP Mode Availability

Paper	Size	Paper setting orientation*1				2UP mode availability*2	Duplex print availability
		Standard		Option			
		MSI	Universal cassette	500-Sheet/LCP Unit	A3W cassette		
A3W	328 x 453mm	SEF	–	–	SEF	Unavailable	Unavailable
A3	297 x 420mm	SEF	SEF	SEF	–	Unavailable	Available
A4	210 x 297mm	LEF	LEF	LEF	–	Available	Available
A5	148 x 210mm	LEF	–	–	–	Available	Unavailable
B4	257 x 364mm	SEF	SEF	SEF	–	Unavailable	Available
B5	182 x 257mm	LEF	LEF	LEF	–	Available	Available
I-B5	176 x 250	LEF	–	–	–	Available	Unavailable
LT	8.5 x 11" (215.9 x 279.4mm)	LEF	LEF	LEF	–	Available	Available
HLT	5.5 x 8.5" (139.7 x 215.9mm)	LEF	–	–	–	Available	Unavailable
LG	8.5 x 14" (215.9 x 355.6mm)	SEF	SEF	SEF	–	Unavailable	Available
EXE	7.25 x 10.5" (184.15 x 266.7mm)	LEF	LEF	LEF	–	Available	Available
GLG	8.5 x 13" (215.9 x 330.2mm)	SEF	–	–	–	Unavailable	Available
GLT	8 x 10.5"(203.2 x 266.7mm)	LEF	–	–	–	Available	Available
B (LD)	11 x 17" (279.4 x 431.8mm)	SEF	SEF	SEF	–	Unavailable	Available
F4	210 x 330	SEF	–	–	–	Unavailable	Available

^{*1}: LEF: Long Edge Feed, SEF: Short Edge Feed

^{*2}: 2UP is available only for paper size of LT(LEF) or smaller. For custom size paper, paper length along the loading direction must be 210 mm (8.5 inch) or shorter. As for envelopes, the total length with its flap opened must be 8.5 inch or shorter.

- ☐ Special paper: See Table 1-6

Table 1-6. Paper Size/2-UP Mode Availability

Paper	Size	Paper setting orientation*1				2UP mode availability*2	Duplex print availability
		Standard		Option			
		MSI	Universal cassette	500-Sheet/LCP Unit	A3W cassette		
OHP Sheet	8.5 x 11" (210 x 297mm)	LEF	–	–	–	Available	Unavailable
Post Card	100 x 148 mm	SEF	–	–	–	Available	Unavailable
MON	37/8" x 71/2" (98.43 x 190.54 mm)	LEF*3	–	–	–	Available	Unavailable
C10	41/8 x 91/2 (104.78 x 241.3 mm)	LEF*3	–	–	–	Available	Unavailable
DL	110 x 220 mm	LEF*3	–	–	–	Available	Unavailable
C6	114 x 162	LEF*3	–	–	–	Available	Unavailable

*1: LEF: Long Edge Feed, SEF: Short Edge Feed

*2: 2UP is available only for paper size of LT(LEF) or smaller. For custom size paper, paper length along the loading direction must be 210 mm (8.5 inch) or shorter. As for envelopes, the total length with its flap opened must be 8.5 inch or shorter.

*3: To feed envelope, open the flap and set it to the rear end.

Paper aligning

Single side aligning (front side) for all sizes (both standard tray (MSI) and each cassette)

Consumables

- ☐ TONER CARTRIDGE (Black, Cyan, Magenta, Yellow)
- ☐ DRUM CARTRIDGE (including one WASTE TONER BOX)
- ☐ WASTE TONER BOX

REGULARLY REPLACED PARTS

- ☐ MAIN FUSER ASSEMBLY (including an air filter)

PAPER OUTPUT

- ☐ Face-down (FD):
250 sheets* (B5/EXE or larger, up to 105g/m² (28lb))
- ☐ Face-up (FU):
150 sheets* (A4 or smaller)
50 sheets* (larger than A4)

*: Applicable to the both single and duplex prints. (when recommended paper is used)

See Table 1-7 for FD output availability.

Table 1-7. Face-Down Output Availability

	Paper Size	FD Availability	Paper Size	FD Availability
Normal paper	A3W	Available	HLT	Unavailable
	A3	Available	LG	Available
	A4	Available	EXE	Available
	A5	Unavailable	GLG	Available
	B4	Available	GLT	Available
	B5	Available	B(LD)	Available
	LT	Available	F4	Available
	I-B5	Unavailable		
Special paper	OHP sheet	FU*	C10	FU*
	Postcard	FU*	DL	FU*
	MON	FU*	C6	FU*

NOTE:

- 1: The minimum paper size available for FD ejection is 182 mm in the paper feeding direction x 210 mm vertical to the paper feeding direction.
- 2: "FU*" in the FD availability columns means face-up ejection for OHP, thick paper, and envelope.

DIMENSIONS

Table 1-8. Dimensions

	Description	Dimension (W x D x H) mm ^{*1}
Printer main body	Standard condition ^{*2 *3}	650 x 646 x 554
Option	500-Sheet Paper Cassette Unit	With foot:575 x 602 x 164 With casters:575 x 602 x 206
	Large Capacity Paper Unit	578 x 602 x 264
	A3W Cassette	560 x 547 x 95

*1: Tolerance is +/- 1 mm.

*2: When the standard tray (MSI) and Output tray (FU) are stored.

*3: Printer dimensions with its optional units installed are given in Section 1.2.11 "Exterior View and Parts".

WEIGHT

Table 1-9. Weight

	Description	Weight (kg +/- 1% kg)
Printer body	Standard Condition	71.2
Option	Duplex Unit	8.2
	500-Sheet Paper Cassette Unit	With foot:13.3 With casters:14.0
	Large Capacity Paper Unit	21.2
	A3W Cassette	2.7

NOTE: Total weight after installing optional units is not a total sum of each unit since their installation involves some part removal.

VOLTAGE

- ☐ 110/120V version: 110V/120V $\pm$ 10%, 50/60Hz $\pm$ 3Hz
- ☐ 220/240V version: 220V/240V $\pm$ 10%, 50/60Hz $\pm$ 3Hz

POWER CONSUMPTION

- ☐ Operating (color)*1:
 - Average:500Wh or less
 - Maximum:[100V/120V version]1000W or less (Fuser is on)
[220/240V version]1050W or less (Fuser is on)
- ☐ Operating (B/W)*1:
 - Average:650Wh or less
 - Maximum:[100V/120V version]1000W or less (Fuser is on)
[220/240V version]1050W or less (Fuser is on)
- ☐ Standby mode:
 - Average230Wh or less
 - Maximum900W or less (Fuser is on)
100W or less (Fuser is off)
- ☐ Energy save mode*2:
 - Average160Wh or less
 - Maximum900W or less (Fuser is on)
100W or less (Fuser is off)
- ☐ Low power mode*3:
 - Average30Wh or less

*1: Including the optional cassette unit and duplex unit.

*2: Saves more energy than the standby mode. The required for warming up is shorter.

*3: Full pause status. Conforms to the Energy Star program.

RATED CURRENT

- ☐ 100 V version: 11A or less (at rated voltage)
- ☐ 115V version: 10A or less (at rated voltage)
- ☐ 240V version: 5A or less (at rated voltage)

Product life

- ☐ Printer (including the standard tray):
Approximately 180,000* printed pages (450,000 images) on A4 LEF or five years, whichever comes first.
 - * Note one full color print is formed with four images. So the printer can prints 180, 000 sheets (=450,000 images) if its job ration between the monochrome and color prints is 1:1. If the printer is used only for monochrome print, it can prints 450,000 sheets (= 450,000 images = 90,000 x 4 + 90000).
- ☐ 500-Sheet Paper Cassette Unit:180,000 sheets
- ☐ Large Capacity Paper Unit:180,000 sheets
- ☐ Duplex Unit: 180,000 sheets (each side of paper is counted as one sheet)
- ☐ A3W Cassette: 180,000 sheets

Acoustic noise

- ☐ Printer only
 - Operating:54.8dB (A) or less
 - Stand-by:38.3dB (A) or less
 - Energy Save mode:38.3dB (A) or less
 - Lower power mode:35.0dB (A) or less
- ☐ With the Duplex Unit and Large Capacity Paper Unit installed
 - Operating:59.4dB (A) or less
 - Stand-by:38.3dB (A) or less

- Energy Save mode:38.3dB (A) or less
- Lower power mode:35.0dB (A) or less

Ozone density

0.01 ppm (time waited average value) or less.

TOXICITY

Photo conductor, toner, carrier, plastic material have no effect on human body.

DUST EMISSION

Dust concentration is less than 0.1 mg / m³

1.2.2 Paper Specifications

1.2.2.1 Paper Types

- Recommended paper: 4200 paper (B/W), EPSON high quality normal paper (For color single-side only), EPSON coated paper,
- Normal Paper: Normal copier paper, Recycled paper, 64/m² - 105g/m² (16lb - 28lb)
- Special Paper: Exclusive OHP film, Postcard, Label, Color paper, Thick paper (105g/m² - 220g/m²), Envelope

NOTE 1:lb: Ream Weight = lb/500sheets/17" x 22"
 1 g/m² = 0.2659763 lb

NOTE 2:Before purchasing a large amount of paper, try it out and check that it is properly fed.

NOTE 3:Avoid using the types of paper listed below to prevent abnormal printing, paper jam, and printer malfunction.

- Carbon paper, non-carbon paper, thermal paper, impact paper, acidic paper
- Paper that has gone through a thermal or an ink-jet printer.
- Paper that is too thick or thin.
- Wet (damp) paper
- Paper to which a special coating has been applied, or colored paper that has gone through surface process.
- Paper that has been lubricated (too smooth or slippery).
- Paper whose texture is different on the front and back.
- Paper with holes for binders and perforations.
- Paper with irregular shape or not cut with right angles.
- Paper with labels that come off and stick easily.
- Paper with glue, staples, or paper clips attached.
- Special ink-jet paper (Super Fine Paper, glossy film, and so on.)
- OHP sheets for other color laser printers, monochrome printers, and photocopiers.
- Paper that has gone through other color laser printers, monochrome printers, and photocopiers.
- Pasted paper

1.2.2.2 Paper Source Classification

See Table 1-10.

NOTE: **RF:** Reliable feeding and good image quality

P: Possible, but limited to paper generally available

N: Not supported

Table 1-10. Paper Usability for Each Paper Source

Paper source	Recommended paper	Normal paper	Special paper				
			OHP sheet	Postcard	Labels	Thick paper ^{*1}	Envelope ^{*2}
Standard tray (MSI)	RF	P	RF ^{*3}	P	P	P	P
Standard universal cassette	RF	P	N	N	N	N	N
A3W Cassette (option)	RF	P	N	N	N	N	N
500-Sheet Paper Cassette Unit ^{*4} Large Capacity Paper Unit ^{*4}	RF	P	N	N	N	N	N
Duplex Unit ^{*4}	RF	P	N	N	N	N	N

^{*1:} 105 - 220g/m²

^{*2:} MON, C10, DL, C6

^{*3:} Exclusive OHP sheet only

^{*4:} Optional unit

1.2.2.3 Printable Area

MAXIMUM PRINTABLE AREA

320 mm (12.6") x 457.2 mm (18")

MAXIMUM GUARANTEED PRINT AREA

Area with a margin of 4 mm from each side.

Applied to paper size up to 297 mm (11.7") in width and 444.5 mm (17.5") in length.

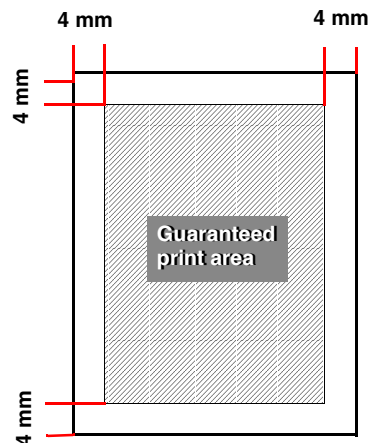


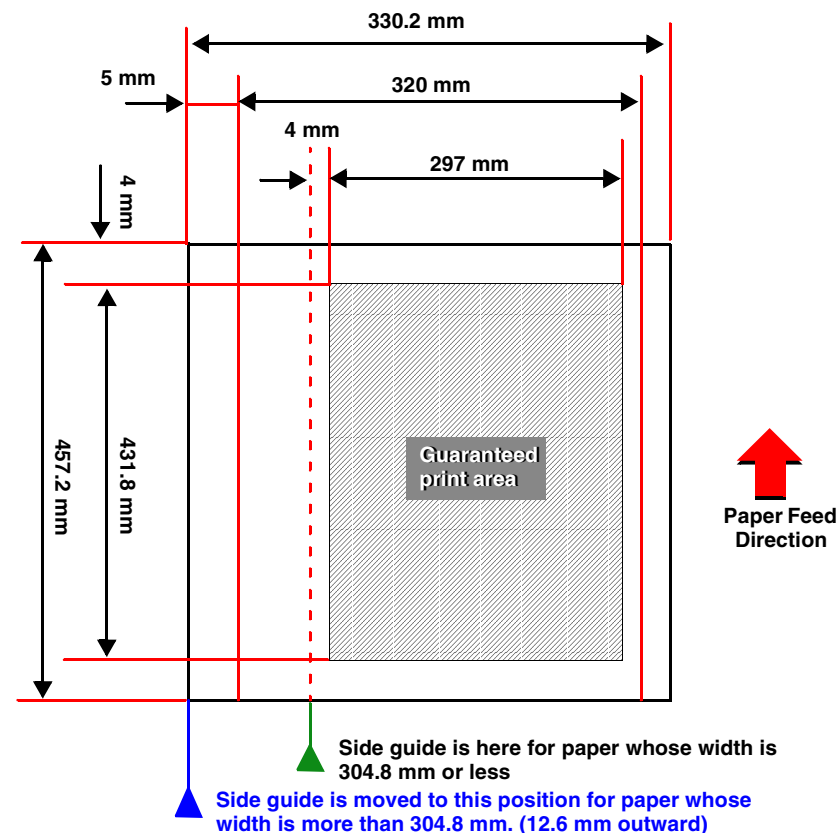
Figure 1-2.
Guaranteed Print Area

Printable area

- ☐ Paper width is 304.8 mm (12") or shorter:
From each edge
- ☐ Paper width is longer than 304.8mm (12")*:
From the point with a margin of 5mm.

* For paper whose width is more than 304.8 mm (12"), the side guide in the MSI must be moved. So print start position changes to 5 mm from the paper edge (a). This change also applies to A3W cassette. (See Figure 1-3.)

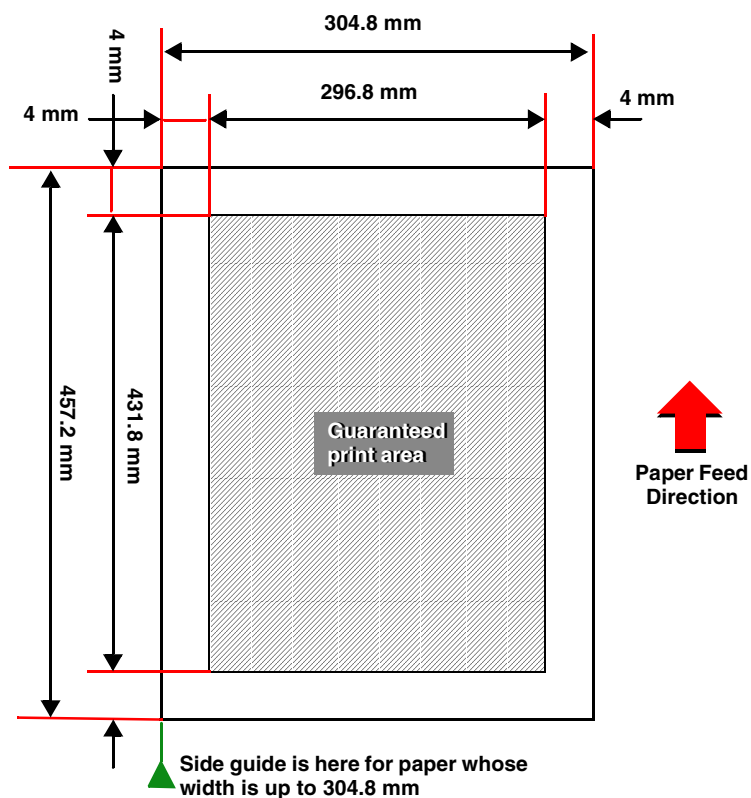
1) Standard Tray (MSI) / A3W Cassette



- Maximum paper size: 330.2 mm (W) x 457.2 mm (L)
- Printable area: 320 mm (W) x 449.2 mm (L)
- Guaranteed print area: 297 mm (W) x 431.8 mm (L)

Figure 1-3. Printable Area - Standard Tray, A3W Cassette

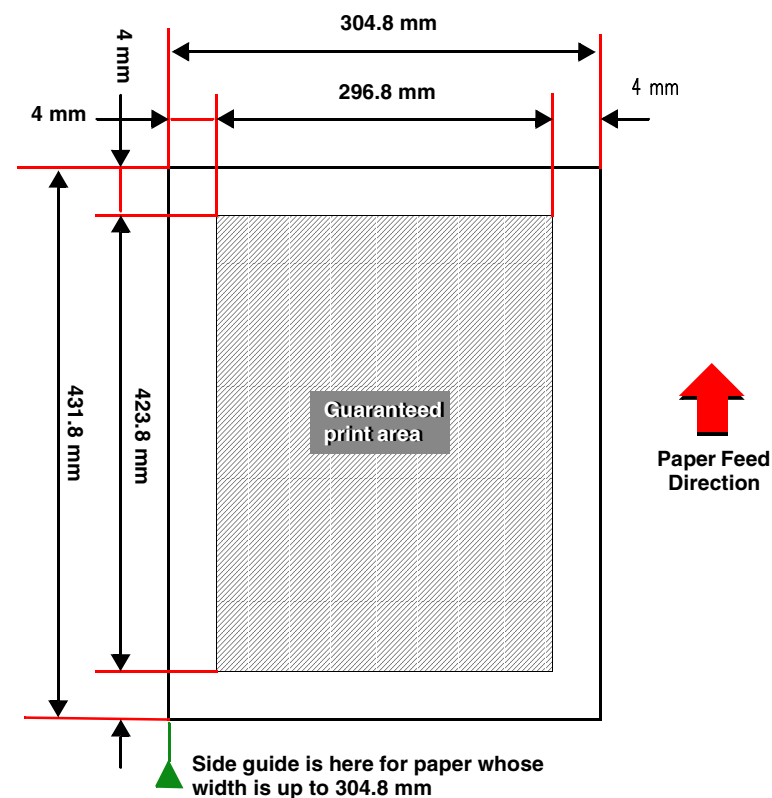
2) Standard Universal Cassette



- Maximum paper size: 304.8 mm (W) x 457.2 mm (L)
- Printable area: 296.8 mm (W) x 449.2 mm (L)
- Guaranteed print area: 296.8 mm (W) x 431.8 mm (L)

Figure 1-4. Printable Area - Universal Cassette

3) 500-Sheet Paper Cassette Unit/Large Capacity Paper Unit



- Maximum paper size: 304.8 mm (W) x 431.8 mm (L)
- Printable area: 296.8 mm (W) x 423.8 mm (L)
- Guaranteed print area: 296.8 mm (W) x 423.8 mm (L)

Figure 1-5. Printable Area -
500-Sheet Paper Cassette Unit/Large Capacity Paper Unit

1.2.3 Reliability and Durability

MPBF

- ☐ Including the standard tray (MSI): 60,000 pages or more*
- ☐ Including the standard tray and Duplex Unit: 60,000 pages or more*
- ☐ Including the 500-Sheet Paper Cassette Unit: 60,000 pages or more*
- ☐ Including the Large Capacity Paper Unit: 60,000 pages or more*

*: = 150,000 images evaluated based on the MPBF in condition that the job ratio of the color and monochrome prints is 1: 1, since 1 page of color print is formed with 4 images.

Paper feed reliability

See the following tables.

NOTE: Paper jam or multiple feeding that occurs to the top sheet of an additional paper stuck is ignored.

Table 1-11. Standard Paper Tray

Rate	Recommended paper	Normal paper	Special paper* ¹
Paper jam rate (single sided print)	1/1000 or less	1/500 or less	1/100
Paper jam rate (Duplex print)	1/600 or less	1/300 or less	-
Multiple feeding rate	1/1000 or less	1/1000 or less	1/50

*1: Feeding reliability for envelopes is defined when printed on the front side under a normal temperature only. (print on a back side is not guaranteed.) Envelopes that are adherent due to high temperature are excluded.

Table 1-12. Standard Universal Cassette

Rate	Recommended paper	Normal paper	Special paper
Paper jam rate (single sided print)	1/3000 or less	1/2000 or less	1/25 or less
Paper jam rate (Duplex print)	1/1800 or less	1/1200 or less	-
Multiple feeding rate	1/800 or less	1/500 or less	1/25 or less

Table 1-13. Optional 500-Sheet Cassette

Rate	Recommended paper	Normal paper	Special paper
Paper jam rate (single sided print)	1/5000 or less	1/3000 or less	1/25
Paper jam rate (Duplex print)	1/3000 or less	1/1800 or less	-
Multiple feeding rate	1/5000 or less	1/3000 or less	1/25

Table 1-14. A3W Cassette

Rate	A3W Paper
Paper jam rate	1/2000
Multiple feeding rate	1/500

PRINT POSITION ACCURACY

- ☐ Main scan direction: Reference position (c) ± 2.5 mm
- ☐ Sub scan direction: Reference position (a) ± 2.0 mm

See Figure 1-6.

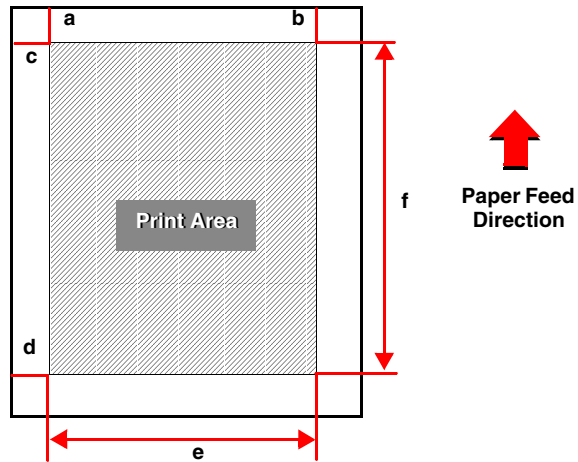


Figure 1-6. Print Position Accuracy

PAPER SKEW

See Figure 1-6 and Table 1-15.

Table 1-15. Paper Skew

Direction	A4 (landscape)	A3
Main scan direction (lc-dl)	$\pm 1.5\text{mm}$ (f=196mm)	$\pm 3.0\text{mm}$ (f=406mm)
Sub scan direction (la-bl)	$\pm 2.0\text{mm}$ (e=271mm)	$\pm 2.0\text{mm}$ (f=271mm)

MAINTAINABILITY

- ☐ MTTR: Within 30 minutes (average) (95% is completed within 50 minutes)

Curl height at ejection

Less than $\pm 15\text{mm}$ (Color printing with the image ratio of 5% in non-aligned condition, which varies depending on the image rate and aligning pattern.)

1.2.4 Operating Environment

TEMPERATURE/HUMIDITY

- ☐ Temperature: 10 to 32°C
- ☐ Humidity: 15% to 85% RH (without condensation)

HEIGHT

3100m or less

LEVELNESS

- ☐ Front - rear direction on the table: 5 mm or less (within 644 mm)
- ☐ Right - left direction on the table: 10 mm or less (within 560 mm)

LUMINOSITY

3000 lx or less (not to be exposed to direct sunlight)

SURROUNDING ENVIRONMENT

Be sure to leave enough space around the printer for proper printer use and operation. See Figure 1-7.

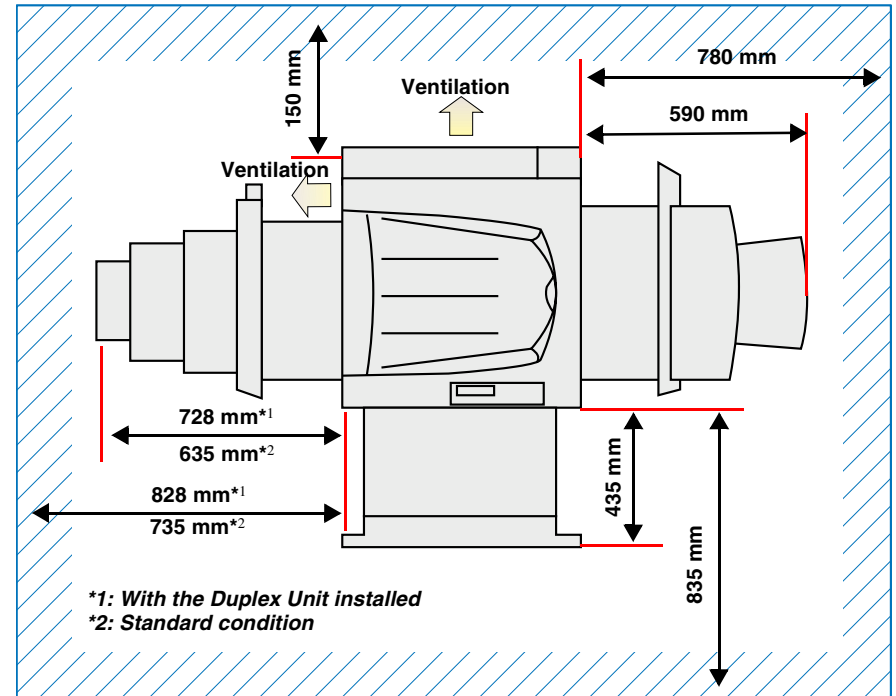


Figure 1-7. Space Requirement

1.2.5 Environmental Conditions for Storage and Transportation and consumables)

TEMPERATURE AND HUMIDITY

Table 1-16. Temperature and Humidity

Condition	Temperature	Humidity* ¹	Guaranty
Normal condition	0 - 35 °C	15 - 80%RH	For 12 months
Extreme condition	High: 35 - 40 °C Low: -20 - 0 °C	High: 80 - 95%RH Low: 5 - 15%RH	1 month (Max.)

*1: Without condensation

STORAGE AIR PRESSURE (ALTITUDE)

0 - 3100 meters (0 up to 15000m is possible during air shipping, but the air pressure in the cargo room must be 70.9275 KPa or more.)

DROP TEST

☐ Printer main body

■ Free drop

Height:	[Bottom]	457 mm (18")
	[Other than bottom]	305 mm (12")
Test times:	[Bottom]	Once
	[Other than bottom]	Once for each face (total 5 faces)

■ Edge drop

Height:	457 mm (18")
Test times:	Once for each edge (Total 4 edges)

☐ Optional units

- Test method: 1 corner, 3 edges, 6 surfaces

■ Drop height:

Duplex Unit:	760 mm
500-Sheet Paper Cassette Unit:	760 mm
Large Capacity Paper Unit:	760 mm
A3W Cassette:	920 mm

Resistance to vibration

- ☐ Frequency: 2 - 500 Hz
- ☐ Acceleration: 12.6 m/s² (on the vibration board) *
- ☐ Direction: Three directions
X, Y: Vertical
Z: Horizontal
- ☐ Duration: 50 minutes

*: Overall rms value

1.2.6 Electrical Specifications

Specifications here are not applicable to any optional units.

AC line noise

- ☐ Pulse width: 50 to 1000 ns
- ☐ Pulse polarity: +/-
- ☐ Repeat: Not synchronized
- ☐ Modes: Common/normal
- ☐ Voltage: 1kv (However, the parts can withstand up to 2kv without damage.)

Instant cutoff

- ☐ DIP amount: 100% (at rated voltage -10% and rated frequency -10%) for one cycle with normal print quality.

Electrostatic durability

No possibility of any error which affects on print quality under the following conditions.

- ☐ Atmospheric discharging: $\pm 8KV$
- ☐ Contact discharging: $\pm 6KV$

Rush current

1/2 cycle, 100A or less, 10 msec or less

Insulation resistance

10M Ω or more

Dielectric strength

There is no breakdown when the following voltages are applied for one minute.

- ☐ 100V/120V model:
 - AC 2000V (Between primary and secondary sides)
 - AC 1000V (Between primary side and chassis)
- ☐ 220V/240V model:
 - AC 2000V (Between primary and secondary sides)
 - AC 1500V (Between primary side and chassis)

Leakage current

- ☐ 100V version: 0.25 mA or less*
- ☐ 120V version: 3.5 mA or less*
- ☐ 220/240V version: 3.5 mA or less*

**: Condition: 1.5K W , 0.15 μ F (between frames and non-charged metallic parts)*

1.2.7 Process Specifications

- ☐ Printing method: Dry electrophotographic with 2 ingredients Using the intermediate belt transfer system
- ☐ Light source: Semi-conductive laser beam
- ☐ Exposed object: OPC drum (organic photo conductor)
- ☐ Charging method: Roller transfer system
- ☐ Developing method: Exposed part developing system
- ☐ Toner: Single-ingredient nonmagnetic toner with carrier
- ☐ 1st transfer: Intermediate belt transfer system
- ☐ 2nd transfer: Roller transfer system
- ☐ Fusing: Heat roller system
- ☐ Density adjustment: Automatic (can not be set by user)

1.2.8 Applicable Standards

SAFETY STANDARDS

- ☐ 100V/120V version: UL1950 3rd Edition
CSA C22.2 No. 950-M95
- ☐ 220V/240V version: IEC950 2nd Edition
EN60950
A3 by VDE with GS-mark

SAFETY REGULATIONS (LASER RADIATION)

- ☐ 100V/120V version: FDA21CFR Chapter 1, Subchapter J, Section 1010, 1040
- ☐ 220V/240V version: IEC825 Class I Laser Product

NOTE: Laser power: 5mW (rated)
Wave length: 785nm +15/-15nm (at 25 °C)

EMI

- ☐ US: FCCPart15 SubpartB, ClassB(ANSI 63.4/11.4D)
- ☐ Europe: EN55022(CISPR Publication22), ClassB
Also, the printer main body meets the following standards:
EN61000-3-2 (Hamonics)
EN61000-3-3 (Flicker)

POWER SUPPLY HARMONIC

Meets the power supply harmonic control guide line.

CONSUMPTION CURRENT

Conforms to the International Energy Star Program (30W or less in the low power mode)
(Conforms to 30W or less in the low voltage mode (International Energy Star Program Draft 3). Main body: 15W or less. Controller: 5V 2.5A 15W)

OTHERS

- ☐ Toner: No effect on human health (OSHA, TSCA, EINECS)
- ☐ Carrier: No effect on human health
- ☐ OPC: No effect on human health (OSHA)
- ☐ Ozone: UL478 (5th edition)
- ☐ Material: SWISS environmental law (must contain no Cds)

1.2.9 Options and Consumable Products

The following tables list the options and consumable products for AcuLaser C8500.

NOTE: The asterisk at the end of each product code is a substitute of the last digit of the product code, which varies by county.

Table 1-17. Options

Product	Code	Remarks
Large Capacity Paper Unit	C813501*	Holds two 500-sheet paper cassettes
500-Sheet Paper Cassette Unit	C813511*	Holds one 500-sheet paper cassette
250-Sheet Paper Cassette A3W	C813521*	
Duplex Unit	C813531*	
Hard Disk Drive	C823771*	
Adobe PostScript 3 Kit	C832431*	
EPSON RIP Station 5300	C850142*/850143*	
Color Copy Station 8500		
32KB Serial Interface Card	C82307*	
32KB Parallel Interface Card	C83610*	
Coax Interface Card	C82314*	
Twinax Interface Card	C82315*	
GPIO Interface Card	C82313*	
10 Base T/100 Base TX	C82363*	
10 Base 2/10 Base T	C82362*	
IEEE1394	C82372*	

Table 1-18. Consumable Products

Product	Code
Toner Cartridge (Yellow)	S050039
Toner Cartridge (Magenta)	S050040
Toner Cartridge (Cyan)	S050041
Toner Cartridge (Black)	S050038
Waste Toner Collector (WASTE TONER BOX)	S050020
Photoconductor unit (DRUM CARTRIDGE)	S051073
EPSON Color Laser Paper (A4)	S041215
EPSON Color Laser Paper (A3)	S041216
EPSON Color Laser Paper (A3W)	S041217
EPSON Color Laser Paper (Letter)	S041218
EPSON Color Laser Transparencies (A4)	S041175
EPSON Color Laser Transparencies (Letter)	S041174
EPSON Coated Paper (A4)	S041383
EPSON Coated Paper (A3)	S041384

TONER CARTRIDGE SPECIFICATIONS

NOTE: Toner cartridges for the AcuLaser C8500 and EPL-C8000/8200 are not compatible.

□ Toner Cartridge life

See Table 1-19.

Table 1-19. Toner Cartridge Life

Item	Life *1
Toner Cartridge (Black)	5,500 images
Toner Cartridge (Cyan)	6,000 images*
Toner Cartridge (Magenta)	6,000 images*
Toner Cartridge (Yellow)	6,000 images*

*1: Defined under the conditions that the image ratio is 5% on A4 (LEF) paper during continuous printing, and different in color printing. Also, life varies depending on the image ratio and printer usage, weather continuous or intermittent.

□ Dimensions and weight

■ Unpacked

Dimensions (W x H x D): 50 mm x 400 mm x 54.5 mm
 Weight: K 0.371 kg
 Y/M/C 0.370 kg

■ Packed

Dimensions (W x H x D): 85 mm x 435 mm x 80 mm
 Weight: K 0.474 kg
 Y/M/C 0.473 kg

NOTE: Tolerance for the dimension and weight is +/- 1%.

□ Environmental conditions for storage and transportation

■ Temperature/Humidity: See Table 1-20.

Table 1-20. Temperature/Humidity

	Temperature	Humidity*1	Guaranty*21
Normal condition	0 - 35 °C	15 - 80% RH	24 months
Extreme condition	High: 35 - 45 °C Low: -20 - 0 °C	High: 80 - 95% Rh Low: 5 - 15% Rh	1 month (Max.)

*1: Without condensation

*2: 12 months for unpacked cartridge under the used condition.

■ Storage air pressure (altitude)

0 - 3,100m (0 up to 15,000 m is possible during air shipping, but the air pressure in the cargo room must be 70.9275KPa or more.)

■ Drop test (packed):

Height: 91 cm
 Test method: 1 corner, 3 edges, 6 surfaces

■ Resistance to vibration (packed):

Frequency: 5 - 100 Hz
 Acceleration: 6.9m/s²
 Direction: 3 directions (X, Y, Z)
 Duration: 50 minutes (single way) for each direction

PHOTOCONDUCTOR UNIT SPECIFICATIONS

NOTE: Toner Photoconductor unit for the AcuLaser C8500 and EPL-C8000/8200 are not compatible.

□ Formation: PHOTOCONDUCTOR
 DRUM CLEANER
 WASTE TONER BOX

□ Life: 20,000 sheets*1 (The waste toner box has the same life)

□ Dimension and weight*2

■ Unpacked

Dimension (W x D x H) : 213 mm x 510 mm x 181 mm
 Weight: 2.4 kg

- Packed
Dimension (W x D x H) : 318 mm x 618 mm x 280 mm
Weight: 3.5 kg

- ☐ Environmental condition for storage and transportation

Same as for the toner cartridge

**1: Defined under the conditions that the image ratio is 5% on A4 (LEF) paper during continuous printing, and different in color printing. Also, life varies depending on the image ratio and printer usage, weather continuous or intermittent printing.*

**2: Tolerance for both dimension and weight is $\pm 1\%$*

WASTE TONER BOX SPECIFICATIONS

NOTE: Waste Toner Boxes for the AcuLaser C8500 and EPL-C8000/8200 are compatible.

- ☐ Formation: WASTE TONER BOX and others

- ☐ Life: 20,000 sheets*¹

- ☐ Dimension and weight*²

- Unpacked
Dimension (W x D x H) : 75.5 mm x 444 mm x 131 mm
Wight: 0.45 kg

- Packed
Dimension (W x D x H) : 149 mm x 495 mm x 192 mm
Weight: 0.87 kg

- ☐ Environmental condition for storage and transportation:

Same as for Toner Cartridge

**1: Defined under the conditions that the image ratio is 5% on A4 (LEF) printing at 4P/J. Life varies depending on the image ratio and printer usage, weather continuous or intermittent printing.*

**2: Tolerances for dimensions and weight are both $\pm 1\%$*

1.2.10 Regularly Replaced Parts

MAIN FUSER ASSEMBLY (including an air filter) 100,000 sheets

1.2.11 Exterior View and Parts

The table below lists the major exterior parts names. For the corresponding location, see the following figures. Note if any part names differ from the descriptions in the User's Guide, they are shown in the brackets.

Table 1-21. Exterior View and Parts

Part name		Part Name	
a	Control Panel	s	Ethernet I/F connector
b	Cover A / EXIT UPPER COVER (Output path cover)	t	Mounting screw hole for EPSON RIP Station 5300
c	STOPPER COVER (Stopper)	u	FRONT MID COVER (Duplex unit slot cover)
d	FRONT COVER	v	Paper cassette 2 / LC2 (Option)
e	Face-Up Tray	w	Paper cassette 3 / LC3 (Option)
f	Standard tray/MSI Tray/MP Tray	x	Cover E / FEEDER CHUTE ASSY
g	Standard Universal Cassette (Standard lower cassette)	y	Unit B / DUP TRANSPORT ASSY
h	RIGHT COVER	z	INVERTER ASSY
i	Unit C / MSI ASSY (Paper path unit)	A	Cover F / INVERTER ASSY
j	Parallel I/F Connector	B	Unit G / DUPLEX UNIT
k	Ground screws	C	DUP TRANSPORT ASSY Connector
l	Interface card slot cover	D	INVERTER ASSY Connector
m	Power switch	E	Large Capacity Paper Unit Connector
n	AC inlet	F	Connector
o	Fuser unit/Unit B	G	Large Capacity Paper Unit

Table 1-21. Exterior View and Parts

Part name		Part Name	
p	Cover D/TURN CHUTE COVER (Paper cassette cover)	H	Logo Plate
q	Filter Assy	I	500-Sheet Paper Cassette Unit
r	Option slot cover (for EPSON RIP Station 5300)	-	-

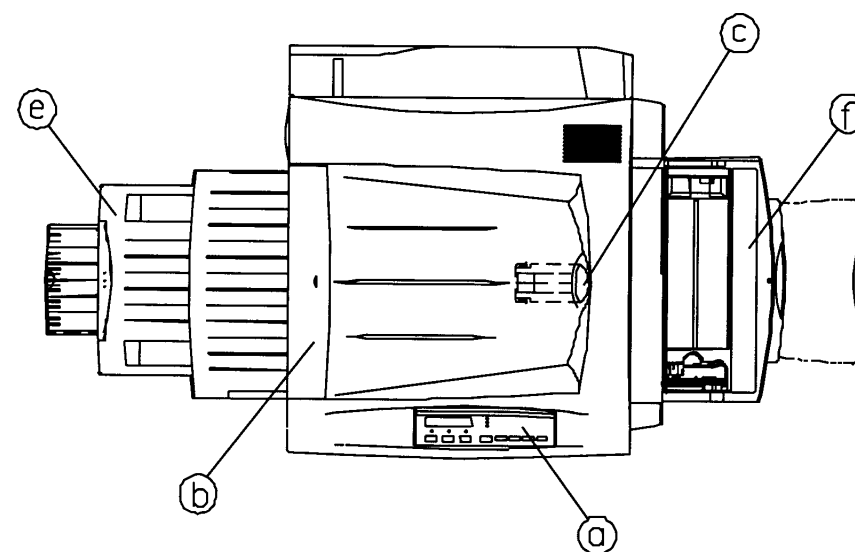
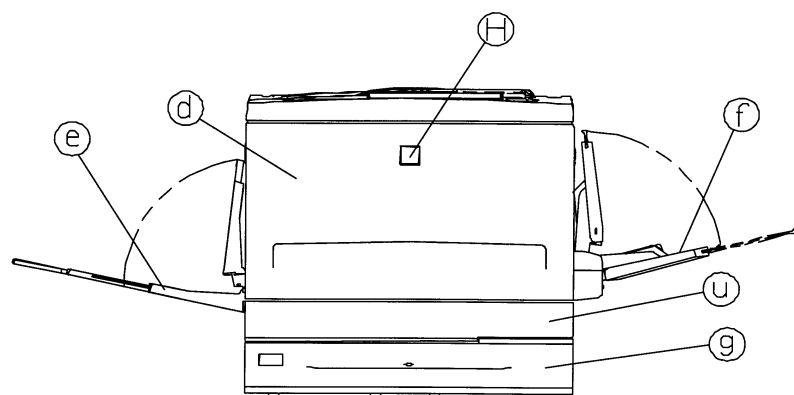
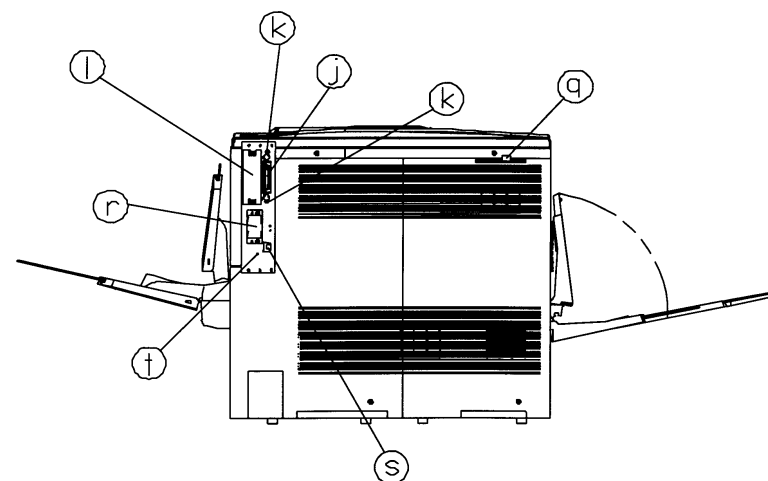


Figure 1-8. Exterior Parts - Top View

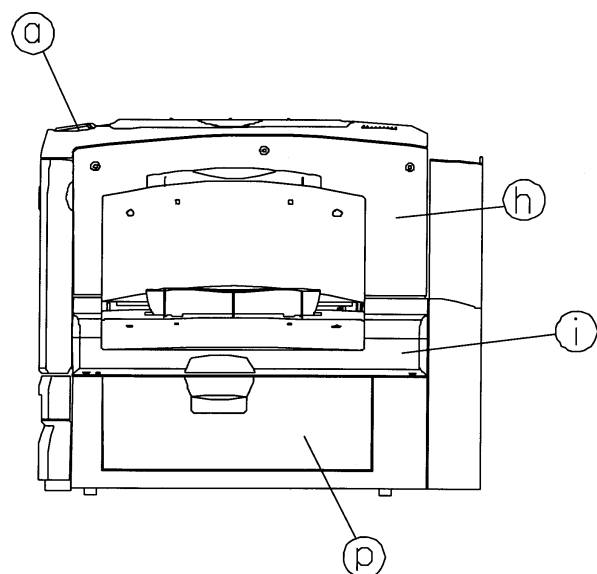
Front View



Back View



Right View



Left View

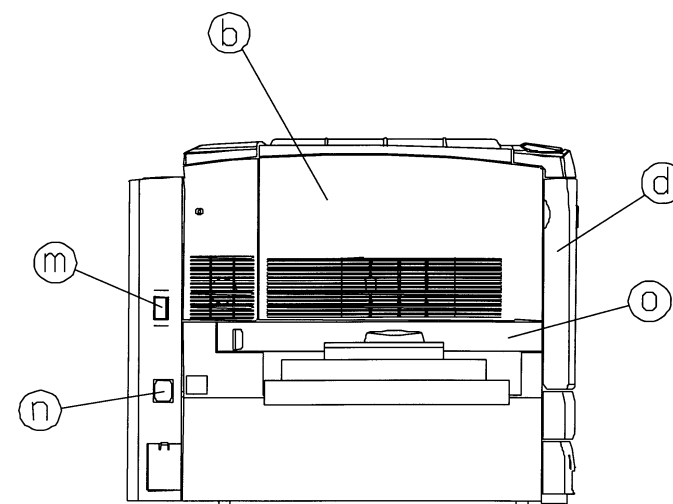
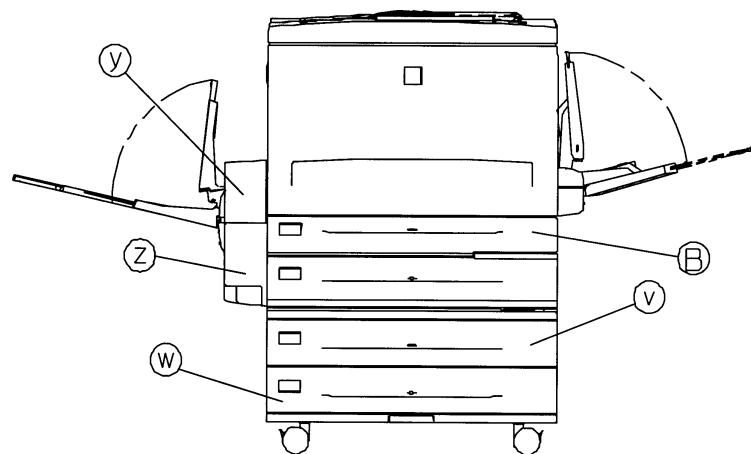
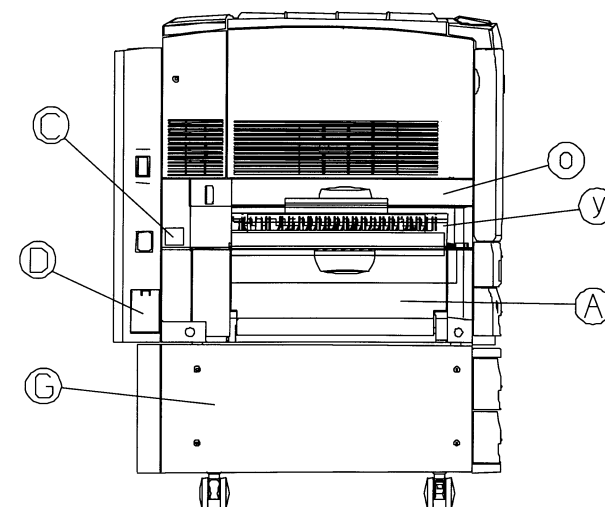


Figure 1-9. Exterior Parts - Printer Main Body

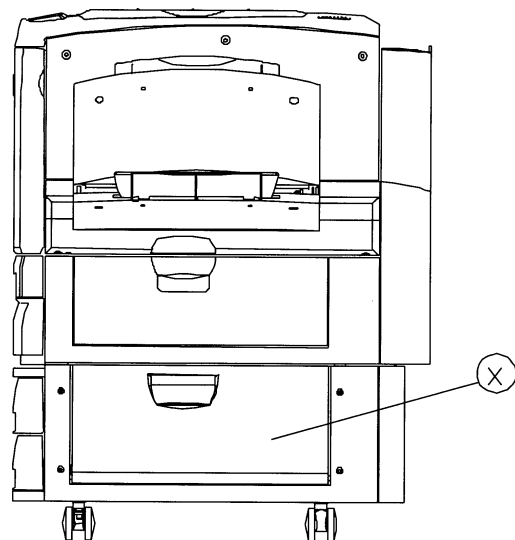
Front View



Left View



Right View



Back View

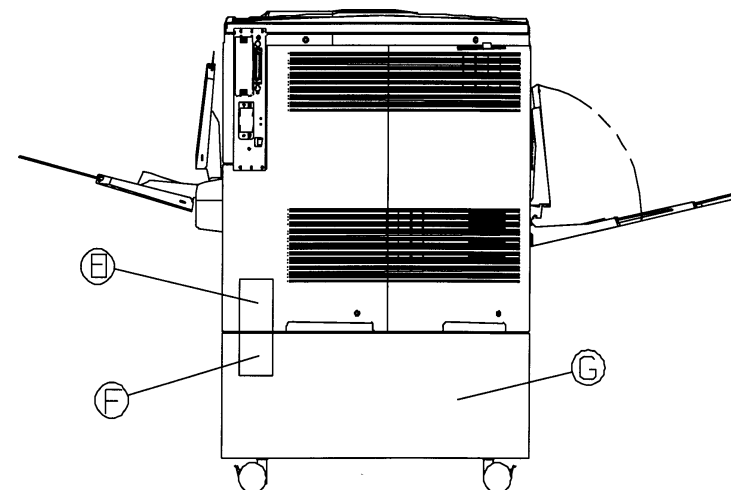
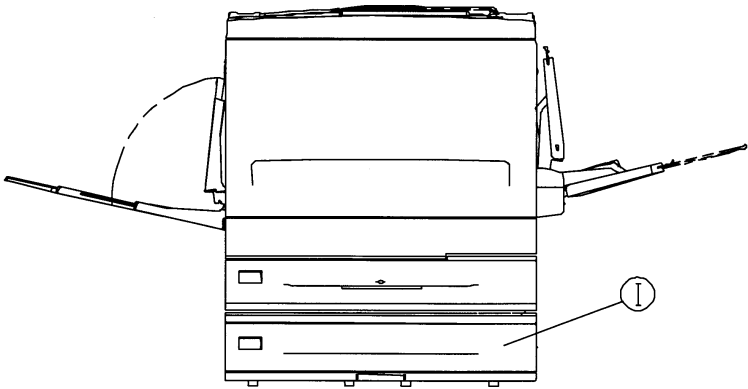
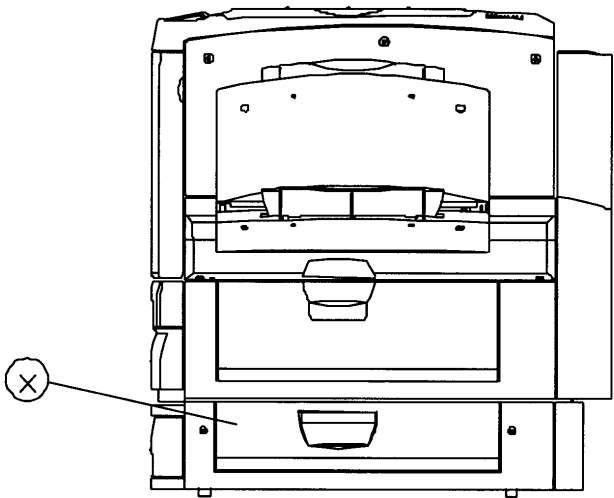


Figure 1-10. Exterior Parts - Options

Front View



Right View



1.2.12 Controller Specifications

CPU

R5000 (266MHz)

ENHANCEMENT TECHNOLOGIES

- ☐ AcuLaser Color Halftoning (B/W supported)
- ☐ RIT, CRIT

RAM

- ☐ SDRAM:
 - 64-bit-wide DIMM (168-pin, 3.3V)
Maximum: 768MB (when a 256MB ROM is installed instead of the standard RAM. With the standard RAM used, the maximum memory size is 576MB.)
 - 3 RAM slots, including 1 for standard RAM
- ☐ Standard: 64MB
- ☐ Expansion: 32MB, 64MB, 128MB, 256MB

ROM

- 32-bit-wide
- ☐ Program: 4MB (ROM DIMM)
 - ☐ Font: 4MB

EXPANSION ROM

- 3 slots (ROM DIMM slots)
- ☐ Slots A, B: Font ROM module, PostScript3 module, EPSON RIP Station 5300 module, CM table
 - ☐ Slot C: Exclusively used for NLSP Font ROM module

PANEL

1-line 20-character LCD, 6 LEDs, 8 buttons

INTERFACES

☐ Standard:

- Parallel 1ch
 - 1EEE-1284-compliant bidirectional
 - B-type connector
 - Compatibility
 - Nibble
 - ECP

- Ethernet 100Base/TX, 10Base/T 1ch

☐ Optional:

- Type-B - 1 slots (for level 3)
- EPSON RIP Station 5300 interface - 1 slot (exclusive)

RTC

Timer function (for job management)

HDD

1 (option)

PRINTER SETTINGS

Made through the panel setting mode, EPL commands, and MIB

PRINTER MODES

- ☐ Standard: ESC/Page-Color, ESC/Page (B/W), LJ4 mode, GL2 mode, ESCP2 mode, FX mode (B/W), 1239X mode (B/W)

- ☐ Optional: Postscript3 (PostScript3 module, Peacock-B)
- ☐ Others: EPL mode, P/L mode, RCC mode, DIAG mode

SUPPLEMENTARY SOFTWARE:

- Status sheet
- Network Status Sheet
- Option I/F Status Sheet*¹
- PS3 Status Sheet*²
- Font Sample (each mode)
- Hex dump
- Support mode
- Maintenance mode (Engine Status Sheet, for engine)

*¹: Only when Type-B level 3 is installed.

*²: Only when a PostScript3 module is installed.

INSTALLATION

Installed to the main printer body.

1.2.13 Controller Configuration

The controller board configuration of this printer can be set for the target market (destination) as indicated below. The settings are made at factory (by jumper resistor).

- ☐ The factory default setting for the paper size (A4 or Letter)
- For North and South America: Letter
 - For Europe, the Pacific / Russia, Taiwan, China and Korea: A4
- ☐ The default paper size (EXE or B5) for paper cassette
- For North and South America, Europe, and the Pacific/Russia : EXE
 - For Taiwan, China and Korea: B5

1.3 Interface Specifications

The AcuLaser C8500 supports the following external interfaces.

- ☐ Standard:
1. Parallel interface

2. Ethernet interface
- ☐ Optional:
- Type-B host interfaces (1 slot)

By installing the I/F board for EPSON RIP Station 5300, EPSON RIP Station 5300 panel and scanner interface are equipped.

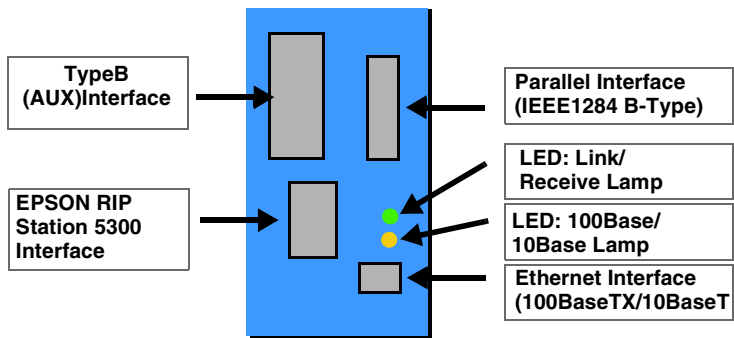


Figure 1-11. Host Interface Slots

1.3.1 Parallel Interface Specifications

INTERFACE TYPE
IEEE 1284 High-Speed Bi-directional Parallel I/F
OPERATING MODES
Compatibility, Nibble, ECP
SYNCHRONIZATION
/STROBE pulse
CONNECTOR TYPE
57RE-40360-830B(D7A)DDK or equivalent
PLUG
Amphenol equivalent
DATA TRANSMISSION TIMING
Refer to Table 1-22 and Figure 1-12.
PIN ASSIGNMENT
Refer to Table 1-24.

Table 1-22. Data Transmission Timing

	Min.	Typ.	Max
(1) Data hold setup	0.5 us		
(2) Data hold	0.5 us		
(3) Strobe pulse	0.5 us		
(4) BUSY to STRBX	0 us		
(5) STROB to BUSY			0.5 us
(6) BUSY to STRBX	0 us		
(7) ACKX pulse width	0.5 us	1 us*	
(8) ACKX to BUSY	0 s		
(9) BUSY to PE or ERRX	2 ms*		
(10) PE or ERRX to BUSY	2 ms*		
(11) Power on to signal output valid			05 s
(12) PE or ERRX to ACKX	2 ms*		
(13) STRBX to ACKX	0 s*		

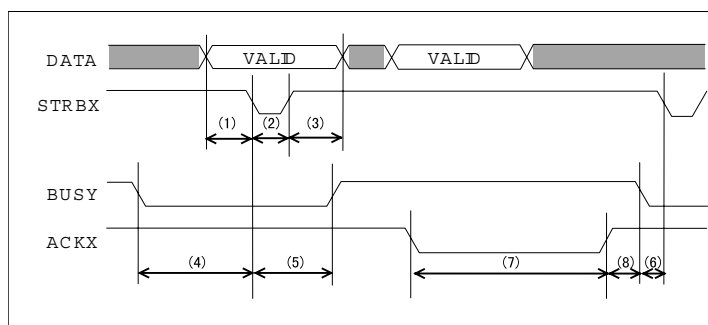


Figure 1-12. Data Transmission Timing

Table 1-23. Centronics Parallel Interface Pin Assignment

Pin #	Signal Names	I/O	Descriptions
1	STRBX	I	Latch pulse used to read data. DATA is valid when the signal is LOW.
2-9	DATA 1-8	I	DATA 8 is MSB and DATA 1 is LSB.
10	ACKNLGX	O	An acknowledge pulse to the host that indicates the data from the host computer has been received.
11	BUSY	O	HIGH status indicates the printer is not ready to accept data.
12	PE	O	Indicates paper empty status in paper tray or cassette selected.
13	SELOT	O	Always HIGH.
14	AUTOX	I	When the signal is LOW, the printer automatically feeds a line as "CR" is input. The "CR" is detected when the printer is turned on or the interface selection is switched from the optional I/F to parallel I/F.
15	NC	-	Not used.
16	GND	-	Ground level for the twisted pair return.
17	CG	-	Connected to the printer chassis. The printer chassis GND and the signal GND are connected each other.
18	NC	-	Not used.
19-30	GND	-	Ground level for the twisted pair return.
31	INITX	I	When the signal is LOW, the STRBX signal is ignored.
32	ERRX	O	The signal is LOW when the printer is in the following condition: 1) User maintenance is required. 2) Service maintenance is required. 3) Another type of error has occurred. 4) The printer is off line.
33	GND	-	Ground level for the twisted pair return.

Table 1-23. Centronics Parallel Interface Pin Assignment

Pin #	Signal Names	I/O	Descriptions
34	NC	-	Not used.
35	+5V	-	Pulled up to +5V through 1K Ω resistor.
36	SELINX	I	Always LOW.

DEVICE ID

***1;

MFG:EPSON;

CMD:PJL,EJL,ESCPL2,ESCP9,PRPXL24-01,PCL,HPGL2-01,ESCPAGE-04,ESCPAGECOLOR-01***2;

MDL:***3;

CLS:PRINTER;

DES:EPSON ***4;

= 1: The hexadecimal value of the "total number of characters +2" of the device ID is entered.

†2: "POSTSCRIPT" is added only when the PostScript 3 module is installed.

†3: Displays model name AL-C8500

†4: Manufacturer and model name are displayed EPSON AL-C8500

Note the MFG, MDL, DES, and CID can be defined by the users. The CID field, which does not reply at initialized device ID, only replies with a user-defined character string. The device ID at re-definition is as shown below. A "*****" represents a user-defined character string.

MFG:*****;

CMD:PJL,EJL,ESCPL2,ESCP9,PRPXL24-01,PCL,HPGL2-01,ESCPAGE-CMD:PJL,EJL,ESCPL2,ESCP9,PRPXL24-01,PCL,HPGL2-01,ESCPAGE-04,ESCPAGECOLOR-01***2;

MDL:*****;

CLS:PRINTER;

DES:*****;

CID:*****;

1.3.2 Ethernet Interface**INTERFACE TYPE**

10BaseT, 100BaseTX, Half Duplex, Full Duplex (Switched at power on)

COMMUNICATION PROTOCOL

1. IPX/SPX (IPX, SPX, NCP, RIP, SAP, PrintServer, RemotePrinter, NDS, SNMP, ENPC)
2. NetBIOS (SMB)
NetBEUI
3. TCP/IP (IP, UDP, TCP, LPR, FTP, TELNET, ARP, ICMP, RARP, BOOTP, DHCP, SNMP, HTTP, ENPC)
4. AppleTalk (ELAP, DDP, ATP, PAP, AARP, NBP, ZIP, RTMP, SNMP, ENPC)

CONNECTOR TYPE

RJ45

APPLICABLE CABLE

2-pair STP (10BaseT, 100BaseTX)

NOTE: Use a shielded cable (category 5) to meet FCC Class B, VCC class B.

PIN CONFIGURATION

See Table 1-24.

Table 1-24. Pin Configuration for the Ethernet I/F

Pin	Signal Name	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.	-

ENTITY TYPE

See Section 1.3.3 "Type B Interface".

1.3.3 Type B Interface

This printer is equipped with a slot for Type B optional interface.

MAIN SYSTEM TYPE

MTP600dpi,PW7748dt600dpi,PRG(*****)rev.AP1300ma,SPD0fast,D4

NOTE: "*****" represents a ROM version.

PRINTER NAME

Same as the product name when shipped from the factory.

PRODUCT NAME

- Brand Name: AL-C8500
- OEM Name: ESC/Page Printer

EMULATION TYPE/ENTITY TYPE**Table 1-25. Emulation Type/Entity Type**

Emulation	Emulation Type	Entity Type
PS*1	POSTSCRIPT-00*1	LaserWriter*1
ESC/Page Color	ESCPAGECOLOR-01	EPSONPAGECOLOR1
ESC/Page	ESCPAGE-04	
LJ4	PCL5E-00	EPSONPCL5
1239X	PRPXL2-01	EPSONPRPXL24
GL2	HPGL24-01	EPSONHPGL2
FX	ESCP9	EPSONFX
ESCP2	ESCPL2	EPSONLQ2

*1: Added when a PostScript3 module is installed.

□ Emulation type

■ Emulation = AUTO

- 1) When PS is not started :AUTO (Emulation Types 1, 2, 3 . . .)
- 2) When PS is started : EJP (POSTSCRIPT-00, other Emulation Types 1, 2, 3 . . .)

■ Emulation = Fixed

EJP (Default Emulation Type, other Emulation Types 1, 2, 3, . . .)

□ Entity Type

■ Emulation = AUTO

See Table 1-25.

■ Emulation = Fixed

The Default Emulation Type and EPSONPAGECOLOR1 are returned.

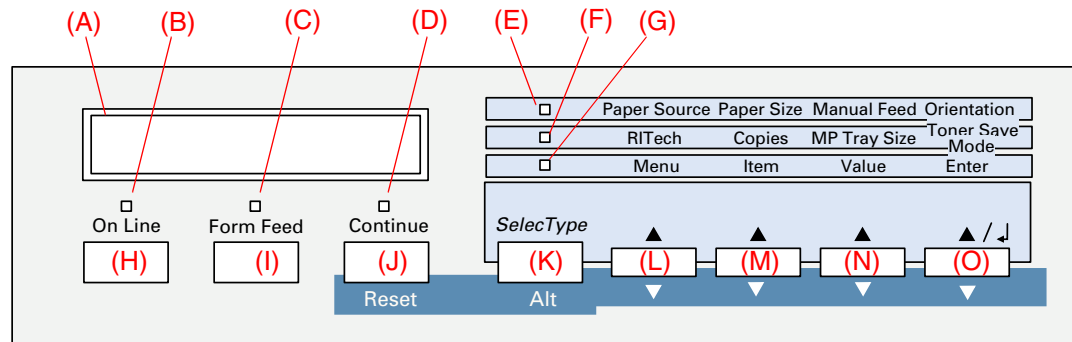


Figure 1-13. Control Panel Appearance

Table 1-26. LEDs and switches on the Control Panel

LED			Button		
Location	Name	Remarks	Location	Name	Remarks
A	LCD Panel	1 line, 20 characters (5 x 7 dot matrix)	H	On Line button	
B	On Line LED	Green	I	Form Feed button	
C	Data LED	Yellow	J	Continue button	

1.4 Control Panel

This section describes the control panel of this printer and its functions.

1.4.1 Appearance and Descriptions

The control panel of this printer consists of the LCD, 8 buttons, and 6 LEDs. See Figure 1-13 and Table 1-26 for the control panel appearance and its descriptions, respectively.

Table 1-26. LEDs and switches on the Control Panel

LED			Button		
Location	Name	Remarks	Location	Name	Remarks
D	Continue LED	Red	K	SelecType/Alt button	Also serves as the Shift button
E	OneTouch Mode 2 LED		L	Menu Select button	
F	OneTouch Mode 1 LED		M	Item Select button	
G	SelecType Mode LED		N	Value Select button	
-	-		O	Enter button	

1.4.1.1 LED Description

LCD (Liquid Crystal Display) (A)

One-line display for 20 characters (5 x 7 dot matrix)
Normally displays printer status. In panel setting mode, LCD displays various setting values.

On Line LED (B)

- ☐ On: The printer is on-line.
- ☐ Off: The printer is a pause status.

Form Feed LED (C)

- ☐ On: Unprinted data remains in the printer. However, the lamp is not lit if the remaining data is not effective print data but other data such as control codes including commands.
- ☐ Off: No effective print data remains in the printer. If control codes are not terminated, the indicator lights up.
- ☐ Blinking: The printer is processing data.

Continue LED (D)

- ☐ Blinking: An error has occurred which can be cleared by pressing the Continue button.

OneTouch Setting Mode 1 LED (E)

- ☐ On: OneTouch mode 1 is enabled. The following 4 items can be set in this mode:
"Paper Source", "Paper Size", "Manual Feed", "Orientation"

OneTouch Mode 2 LED (F)

- ☐ On: OneTouch mode 2 is enabled. The following 4 items can be set in this mode:
"RITech", "Copies", "Mp Tray Size", "Toner Save Mode"

SelectType Mode (G)

- ☐ On: SelectType mode is enabled.

All LEDs

- ☐ All LEDs come on when a service-call error has occurred.

1.4.2 Button Functions

On Line button (H)

When the printer is on-line, pressing this button puts the printer in off-line to prevent printing. Pressing this button during panel setting mode immediately terminates the setting mode and brings the printer back to on-line status.

Form Feed button (I)

If the Form Feed lamp is lit in off-line status, pressing this button causes the printer to print a page of data. If data for multiple pages has been received, it is printed. If the Form Feed LED is lit because the control codes are not terminated, data received up to that point is printed. The printer does not eject paper when the Form Feed LED is on.

Continue button (J)

While the Continue LED is on, pressing this button clears the error. Also, a warning message indicated during on-line status can be cleared by pressing this button.

SelectType button (K) (or Shift button)

Used to select OneTouch mode 1 / OneTouch mode 2 / SelectType mode, as follows:

- ☐ The first push of the button puts the printer in OneTouch mode 1.
- ☐ Pressing this button in the OneTouch mode 1 puts the printer in OneTouch mode 2.
- ☐ Pressing this button in the OneTouch mode 2 activates the SelectType mode to enter the initial level of SelectType mode. (The "Test Menu" appears.)

Menu button (L)

- ☐ Pressing this button activates the SelectType mode. The initial level of the mode ("Test Menu") appears. In the SelectType mode, this button is used to select the setting menu, the primary level of the mode.
- ☐ In OneTouch mode 1, used to select the value for "Paper Source".
- ☐ In OneTouch mode 2, used to select the item for "RITech".
- ☐ In SelectType mode, used to select the setting menu.

NOTE: If this button is pressed with the Shift button held down, setting values and items scroll backward.

Item button (M)

Pressing this button brings up the item that was last selected.

- ☐ In OneTouch mode 1, this button is used to select the value for "Paper Size".
- ☐ In OneTouch mode 2, this button is used to select the value for "Copies".
- ☐ In SelectType mode, this button is used to select the setting item.

NOTE: If this button is pressed with the Shift button held down, setting values and items scroll backward.

Value button (N)

Pressing this button enables the item that was last selected.

- ☐ In OneTouch mode 1, used to select the value for "Manual Feed".
- ☐ In OneTouch mode 2, used to select the value for "MP Tray Size".
- ☐ In SelectType mode, used to select the value for the currently selected setting item. The next available value for the item is indicated.

NOTE: If this button is pressed with the Shift button held down, setting values and items scroll backward.

Enter button (O)

Pressing this button generates "Status Sheet" in "Test Menu".

- ☐ In OneTouch mode 1, used to select the value for "Orientation".
- ☐ In OneTouch mode 2, used to select the value for "Toner Save Mode".
- ☐ In SelectType mode, the setting value is confirmed and printing or other functions are activated.

NOTE: If this button is pressed with the Shift button held down, setting values and items scroll backward.

Reset button (Continue button + Alt button) (K + J)

Pressing this button with the Alt button held down causes the printer to stop printing and reset. After the message "Reset" is indicated on the LCD, if the both buttons are kept pressed for more 5 seconds, "Reset All" is indicated and warm boot is performed.

1.5 Service Functions

Turning the printer on while pressing the specified button(s) until RAM check is completed provides several service functions. The service functions supported with this printer and corresponding activation methods are as listed below.

Table 1-27. Service Functions

Function	Operating Method
Hex Dump	Turn on the power while pressing the Form Feed button.
Support Mode	Turn on the power while pressing the Value button.
EEPROM Initialization	Turn on the power while pressing the On Line + Continue + Menu buttons.
Panel Setting Value Initialization	Turn on the power while pressing the Continue button.
Format Flash ROM Module	Turn on the power while pressing the Alt + Item + Value + Enter buttons.
Program ROM Update	Turn on the power while pressing the On Line + Alt + Value buttons.
ROM Module Copy	Turn on the power while pressing the On Line + Alt + Enter buttons.
Maintenance Mode	Turn on the power while pressing the On Line + Form Feed + Continue buttons.
Engine program ROM update	Turn on the power while pressing the On Line + Alt + Item + Value buttons.
CPU reset when a Service Call occurs.	When a Service Call Error occurs, Press the Alt + Menu + Item + Value + Enter buttons.
Printing of the Error Sheet	Following CPU Reset after a Service Call Error occurs, press the Enter button 2 times.

1.5.1 Hex Dump Mode

- ☐ Buttons: Form Feed + Power on
- ☐ Functions:
 - “Hex Dump” is indicated. Received data is converted into hex ASCII. This is valid for all interfaces. The hex dump sheet contains the following information:
 - Dump list with the received data in hex ASCII format
 - Data list with 1-byte code characters (Unreadable characters are expressed by *.*.)
 - Page number
 - Termination: Press “Reset” button to perform warm boot or turn the printer off and back on.

1.5.2 Support Mode

- ☐ Buttons: Value + Power on
- ☐ Functions: Adds the support mode to the setting menu list. Once it is added, the printer performs warm-boot, then the support mode can be selected and executed. The support mode enables servicers to set items, including HDD initialization, that are normally not set by the users.

NOTE: By using the Support Mode, this printer can adjust the 2nd Bias Transfer Voltage at the user's level. See 1.6.3.6 "Toner Transfer Menu" for detail.

1.5.3 EEPROM Initialization

- ☐ Buttons: On Line + Continue + Menu + Power on
- ☐ Functions: Clears the EEPROM to 00h and writes factory default values. In this printer, however, the Fuser counter and Total pages are not cleared by this operation. Color pages is cleared. (Color Pages is stored in the controller. The fuser counter and Total Pages are stored on the engine side.)
- ☐ Termination: After initializing, the printer performs warm boot and returns to the normal states.

1.5.4 Panel Setting Value Initialization

- ☐ Buttons: Continue + Power on
- ☐ Functions: All panel settings for total environment and interface-specific environment are reset to the factory defaults. Information such as accumulated printed pages to which users have no access is not initialized.
- ☐ Termination: After initializing, the printer performs warm boot and returns to the normal states.

1.5.5 Formatting the Flash ROM Module

- ☐ Buttons: Alt + Item + Value + Enter + Power on
- ☐ Functions: Clears the flash ROM module inserted in the slot A. It starts as the message "DIMM A ERASING" appears.
- ☐ Termination: After formatting the flash ROM module, the printer performs warm boot and returns to the normal states.

1.5.6 Program ROM Update

- ☐ Buttons: On Line + Alt + Value + Power on
- ☐ Functions: Updates the DIMM inserted in the program socket.

1.5.7 ROM Module Copy

- ☐ Buttons: On Line + Alt + Enter + Power on
- ☐ Functions: Copies the contents of the ROM module in the socket B to the flash ROM module in the socket A. If there is no module in the socket B, the contents of the ROM module in the code ROM socket is copied. As the indication "DIMM COPY MODE" appears, press the Enter button. The contents of the ROM is erased and copy process is carried out.
- ☐ Termination: After copying, the printer performs warm boot and returns to the normal states.

1.5.8 Maintenance Mode

- ☐ Buttons: On Line + Form Feed + Continue + Power on
- ☐ Functions: Adds the Maintenance menu to the setting menu. After this operation, the printer automatically performs warm boot and the Maintenance menu is enabled. To eliminate this menu from the setting menus, turn the printer off and back on. Note that all engine-related Service-Call Errors (Service-Call Error e f f) are ignored (No Service-Call Error occurs.) while the Maintenance menu is generated. (Same as for EJJ) Note the following points in the Maintenance mode:
 - Interfaces are always open. (Disconnected)
 - Before entering the Maintenance mode to print an engine status sheet, make sure no engine-related error is indicated in a normal mode (other than Maintenance mode).
 - In this mode, the printer only prints engine status sheet. In case other printouts such as normal status sheet is needed, be sure to check that no engine related error is indicated in a normal mode (other than Maintenance mode), as described above.
- ☐ Termination: Turn the printer off and back on.

1.5.9 Error Recovery Operation (CPU Reset)

By pressing the specified buttons, the following functions are activated.

- a) CPU reset when E*** or C2000 Service call error is indicated
 - Buttons: Alt + Menu + Item + value + Enter
 - Functions: Returns the printer to the normal states without turning off and back on the printer.

NOTE: If the message "Printing SysErr?>" appears after this operation, an error sheet can be printed by pressing the Enter button. If any other button is pressed, the printer returns to the normal status without outputting an error sheet.

- b) Display of error details when E*** or C2000 Service-call error is indicated

Step 1: Press the Continue, Alt, and Menu buttons.

“ERR Y x x x x 0x*****” (code and address) appears. - *1

Step 2: Press any button.

“ERR TYPE 0x*****” (error type) appears.

Step 3: Press any button. The display returns to *1.

1.6 Panel Setting

This printer is equipped with the 2 types of panel setting functions; the OneTouch mode and SelecType mode. The OneTouch mode allow the users to get directly to the specific setting items in the SelecType mode. Therefore, this manual only lists the setting items for the SelecType mode.

OneTouch mode 1, 2

There are two OneTouch modes, OneTouch mode 1 and 2. This mode enables users to make selection by pressing a button in the panel design matrix.

SelecType mode

The SelecType mode has the following two levels.

1. Setting menu
Panel setting items fall into numbers of categories called setting menus.
2. Setting item
This is the lowest level of the panel setting mode. Some items have values to be selected and others are just executed directly.

1.6.1 Setting Methods

1.6.1.1 OneTouch mode

NOTE: OneTouch mode is effective when the printer is free from any error.

1. Enter the OneTouch mode 1 or 2 by pressing the **SelectType** button. (The current values for 4 items are shown on the LCD.)
2. Scroll the setting value list by pressing the **OneTouch** button*.
* “**Menu**”, “**Item**”, “**Value**” and “**Enter**” buttons serve as the OneTouch buttons in this mode.
3. When the desired value is indicated, exit the OneTouch mode, and the new value is stored.
4. To return to the On Line status from the OneTouch mode, do one of the following:
 - Press the **On Line** button.
 - Perform panel setting initialization.
 - Run a status sheet.
 - Press the **SelectType** button.

1.6.1.2 SelecType mode

NOTE: *SelecType mode is effective when the printer is free from any error.*

- To enter the SelecType mode:
Do one of the following:
 - Press the **SelecType** button to enter the SelecType mode through the One touch mode 1 and 2.
 - Press the **Menu**, **Item**, **Value**, or **Enter** button.
- To change the setting, follow the steps below.

Step	Button
1) Changing the setting menu ^{*1}	Menu
2) Changing the setting item ^{*1}	Item
3) Changing the setting value ^{*1}	Value
4) Changing the setting value ^{*1}	Value ^{*2}
5) Enter the value (Executes the operation.)	Enter
6) To the next setting	Menu

^{*1}: The trailing * means the current setting value.

^{*2}: Using the Alt button + Menu/Item/Value button, it is possible to cycle through the lists backward.

- To exit the SelecType mode, do one of the following:
 - Press the **On Line** button.
 - Perform panel setting initialization.
 - Run a status sheet.
 - Press the **SelecType** button.

1.6.2 SelecType Setting Menu List

This section contains the tables which list the SelecType setting menus. The factory defaults values are shown in Bold Italic style.

Test Menu

Item	Value
Status Sheet	
Network Status Sheet ^{*13}	
AUX Status Sheet ^{*9, *14}	
PS3 Status Sheet ^{*11}	
PS3 Font Sample ^{*11}	
ESC/Page Font Sample ^{*22}	
LJ4 Font Sample	
ESCP2 Font Sample	
FX Font Sample	
I239X Font Sample	

Emulation Menu

Item	Value
Parallel	Auto , LJ4, ESCP2, FX, I239X, PS3 ^{*11} , GL2
Network	Auto , LJ4, ESCP2, FX, I239X, PS3 ^{*11} , GL2
AUX ^{*8}	Auto , LJ4, ESCP2, FX, I239X, PS3 ^{*11} , GL2

Printing Menu

Item	Value
Paper Source	Auto , MP, LC1, LC2 ^{*5} , LC3 ^{*6} ,
Page Size	A4 ^{*1} , A3, A5, B5, LT ^{*2} , B, HLT, LGL, GLT, GLG, EXE, F4, MON, C10, DL, C6, IB5, CTM, A3W
Wide A4	Off , On
Orientation	Port , Land
Out Bin	Face-down , Face-Up

Copies	1 ~999
Quantity * ²³	1 ~999
Manual Feed	Off , On
Resolution	600 , 300
Skip Blank Page * ⁶	Off , On
Auto Eject Page	Off , On
Duplex * ⁷	Off , On
Binding * ⁷	Long Edge , Short Edge
Start Page* ⁷	Front , Back

Tray Menu

Item	Value
MP Mode	Normal , Last
MP Tray Size	A4 * ¹ , A3, A5, B5, LT * ² , HLT, LGL, GLT, GLG, EXE, F4, MON, C10, DL, C6, IB5, A3W
LC1 Size * ²⁴	With a standard universal cassette mounted: A4, A3, B4, B5 * ³ , LT, LGL, B, EXE * ⁴ With A3 W Cassette mounted: A3W
LC2 Size * ⁵ , * ²⁴	A4, A3, B4, B5 * ³ , LT, LGL, B, EXE * ⁴
LC3 Size * ⁶ , * ²⁴	A4, A3, B4, B5 * ³ , LT, LGL, B, EXE * ⁴
MP Type	Plain , Letterhead, Recycled, Color, Trnsprncy, Labels
LC1 Type	Plain , Letterhead, Bond, Recycled, Color
LC2 Type* ⁵	Plain , Letterhead, Recycled, Color
LC3 Type* ⁶	Plain , Letterhead, Recycled, Color

Config Menu

Item	Value
RItech	On , Off
Toner Save	Off , On
Top Offset	-30.0 - 0.0 - 30.0 mm step 0.5 mm
Left Offset	-30.0 - 0.0 - 30.0 mm step 0.5 mm
T Offset B * ⁷	-30.0 - 0.0 - 30.0 mm step 0.5 mm
L Offset B * ⁷	-30.0 - 0.0 - 30.0 mm step 0.5 mm
Size Ignore	Off , On
Auto Cont	Off , On
Page Protect	Auto , On
Image Optimum	Auto , Off, On
Paper Type	Normal , Thick, Trnsprnc, Coated

Setup Menu

Item	Value
Time Out	0, 5 ~ 60 ~ 300 step1
Standby * ²⁵	Enable , Disable
Lang	English
Lang	Francais
Sprache	Deutsch
LINGUA	ITALIANO
LENG	ESPAÑOL
SPRAK	SVENSKA
Sprog	Dansk
Taal	Nederl.
KIELI	SUOMI
Ling	Portugues
Panel Lock * ²¹	Off , On
C Toner * ²⁴	E * * * * F, E * * * o F, E * * o o F, E * o o o F, E o o o o F

M Toner * ²⁴	E * * * * F, E * * * * o F, E * * * o o F, E * o o o F, E o o o o F
Y Toner * ²⁴	E * * * * F, E * * * * o F, E * * * o o F, E * o o o F, E o o o o F
K Toner * ²⁴	E * * * * F, E * * * * o F, E * * * o o F, E * o o o F, E o o o o F
Photoconductor * ²⁴	100% - 0%
Total Pages * ²⁴	0 ~ 99999999
Color Pages * ²⁴	0 ~ 99999999
B/W Pages * ²⁴	0 ~ 99999999
SelcType Init	

Clock Menu

Item	Value
LocalTimeDiff	-13.59 - 0.00 - +13.59 step 0:01
Year	2000 - 2099 step1
Month	1 - 12 step1
Date	1 - 31 step1
Hour	0 - 23 step1
Minute	0 - 59 step1

Parallel Menu *²⁶

Item	Value
Parallel I/F	On , Off
Speed	Fast , Normal
Bi-D	Nibble, ECP , Off
Buffer Size	Normal , Maximum, Minimum

Network Menu *²⁶

Item	Value
Network I/F	On , Off
Network Config * ²⁸	No , Yes
Get IPAddress * ¹⁵	Panel, Auto , PING
IP Byte 1 * ¹⁵	0- 192 - 255
IP Byte 2 * ¹⁵	0- 168 - 255
IP Byte 3 * ¹⁵	0- 192 - 255
IP Byte 4 * ¹⁵	0- 168 - 255
SM Byte 1 * ¹⁵	0- 255
SM Byte 2 * ¹⁵	0- 255
SM Byte 3 * ¹⁵	0- 255
SM Byte 4 * ¹⁵	0 - 255
GW Byte 1 * ¹⁵	0- 255
GW Byte 2 * ¹⁵	0- 255
GW Byte 3 * ¹⁵	0- 255
GW Byte 4 * ¹⁵	0- 255
Buffer Size	Normal , Maximum, Minimum

t AUX Menu *⁸ *²⁶

Item	Value
AUX I/F	On , Off
AUX Config * ⁹ , * ²⁸	No , Yes
Get IPAddress * ⁹ , * ²⁷ , * ¹⁵	Panel, Auto, PING
IP Byte 1 * ⁹ , * ²⁷ , * ¹⁵	0 - 255
IP Byte 2 * ⁹ , * ²⁷ , * ¹⁵	0 - 255
IP Byte 3 * ⁹ , * ²⁷ , * ¹⁵	0 - 255

IP Byte 4 †9, †27, †15	0 - 255
SM Byte 1 †9, †27, †15	0 - 255
SM Byte 2 †9, †27, †15	0 - 255
SM Byte 3 †9, †27, †15	0 - 255
SM Byte 4 †9, †27, †15	0 - 255
GW Byte 1 †9, †27, †15	0 - 255
GW Byte 2 †9, †27, †15	0 - 255
GW Byte 3 †9, †27, †15	0 - 255
GW Byte 4 †9, †27, †15	0 - 255
NetWare †9, †27, †15	On, Off
AppleTalk †9, †27, †15	On, Off
NetBEUI †9, †27, †15	On, Off
AUX Init †9, †15	
Buffer Size	Normal , Maximum, Minimum

† ESC/Page Menu†22

Item	Value
Auto CR	On , Off
Auto FF	On , Off
CR Function	CR , CR+LF
LF Function	CR+LF , LF
FF Function	CR+FF , FF
Error Code	Ignore , Space
Avoid Error	Off , On
PGI	On , Off
TriColorSpace	Normal , sRGB
CM Media Type	Off , Opt1, Opt2

† LJ4 Menu

Item	Value
Font Source	Resident , Download †16, ROM A †12, ROM B †12
Font Number	0 - available (Max 65535)
Pitch †18	0.44 - 10.00 - 99.99 cpi step 0.01cpi
Height †18	4.00 - 12.00 - 999.75 pt step 0.25 pt
SymSet	IBM-US , Roman-8, Roman-9, ECM94-1, 8859-2 ISO, 8859-9 ISO, 8859-10ISO, 8859-15ISO, PcBlt775, IBM-DN, PcMultiling, PcE.Europe, PcTk437, PcEur858, Pc1004, WiAnsi, WiE.Europe, WiTurkish, WiBALT, DeskTop, PsText, VeInternati, VeUS, MsPublishin, Math-8, PsMath, VeMath, PiFont, Legal, UK, ANSI ASCII, Swedis2, Italian, Spanish, German, Norweg1, French2, Windows, McText, Pclcelandic†30, Pclt774†30, PcTurk1†30, PcPortugues†30, PcEt850†30, PcTurk2†30, PcCanFrench†30, PcSI437†30, PcNordic†30, 8859-3 ISO†30, 8859-4 ISO†30, WiBaltic†30, WiEstonian†30, WiLatvian†30, Mazowia†30, CodeMJK†30, BpBRASCI†30, BpAbicomp†30, PcGk437†30, PcGk851†30, PcGk869†30, 8859-7 ISO†30, WiGreek†30, Europe3†30, PcCy855†30, PcCy866†30, Pclt866†30, PcUkr866†30, Pclit771, 8859-5 ISO†30, WiCyrillic†30, Bulgarian†30, Hebrew7†30, 8859-8 ISO†30, Hebrew8†30, PcHe862†30, Arabic8†30, PcAr864†30, 8859-6 ISO†30, OCR A†30, OCR B†30
Form	5 - 60 †2 - 64 †1 - 128 Lines
Source SymSet	0 - 277 - 3199
Dest SymSet	0 - 277 - 3199
CR Function	CR , CR+LF
LF Function	LF , CR+LF
Tray Assign	4, 4K , 5S

GL2 Menu

Item	Value
GLMode	LJ4GL2 , Glike
Scale	Off , A0, A1, A2, A3
Origin	Corner , Center
Pen	Pen0 , Pen1, Pen2 ^{*17} , Pen3 ^{*17} , Pen4 ^{*17} , Pen5 ^{*17} , Pen6 ^{*17}
End	Butt , Square, Triangular, Round
Join	Mitered , Miteredbeveled, Triangular, Round, Beveled, None
Pen0	0.05 ~ 0.35 ~ 5.00 mm step 0.05 mm
Pen1	0.05 ~ 0.35 ~ 5.00 mm step 0.05 mm
Pen2 ^{*17}	0.05 ~ 0.35 ~ 5.00 mm step 0.05 mm
Pen3 ^{*17}	0.05 ~ 0.35 ~ 5.00 mm step 0.05 mm
Pen4 ^{*17}	0.05 ~ 0.35 ~ 5.00 mm step 0.05 mm
Pen5 ^{*17}	0.05 ~ 0.35 ~ 5.00 mm step 0.05 mm
Pen6 ^{*17}	0.05 ~ 0.35 ~ 5.00 mm step 0.05 mm

PS3 Menu^{*11}

Item	Value
Error Sheet	Off , On
Coloration	Color , Mono, TrueCol.
Image Protect	Off , On

ESCP2 Menu

Item	Value
Font	Courier , Prestige, Roman, Sans serif, Roman T, Orator S, Sans H, Script, OCR A, OCR B
Pitch	10 cpi , 12 cpi, 15 cpi, Prop.
Condensed	Off , On
T.Margin	0.40 ~ 0.50 ~ 1.50 inch step 0.05 inch
Text	1 ~ 62 ^{*2} ~ 66 ^{*1} ~ available (Max:105) Lines
CGTable	PcUSA , Italic, PcMultilin, PcPortugue, PcCanFrenc, PcNordic, PcTurkish2, PcE.Europe, BpBRASCII, BpAbicomp, 8859-15ISO, PcEur858, PcSI437, PcTurkish1, Pclcelandic, 8859-9 ISO, Mazowia, CodeMJK, PcGk437, PcGk869, 8859-7 ISO, PcCy855, PcCy866, Bulgarian, PcUkr866, Hebrew7, Hebrew8, PcAr864, PcHe862
Country	USA , France, Germany, UK, Denmark, Sweden, Italy, Spain1, Japan, Norway, Denmark2, Spain2, LatinAmeric, Korea, Legal
Auto CR	On , Off
Auto LF	Off , On
Bit Image	Dark , Light, Barcode
ZeroChar	0 , $\emptyset$

FX Menu

Item	Value
Font	Courier , Prestige, Roman, Sans serif, Script, Orator S, OCR A, OCR B
Pitch	10 cpi , 12 cpi, 15 cpi, Prop.
Condensed	Off , On
T. Margin	0.40 ~ 0.50 ~ 1.50 inch step 0.05 inch
Text	1 ~ 62 ^{*2} ~ 66 ^{*1} ~ available (Max:105) Lines

CGTable	PcUSA , Italic, PcMultilin, PcPortugue, PcCanFrenc, PcNordic, PcTurkish2, PcE.Europe, BpBRASCII, BpAbicomp, Roman-8, 8859-15ISO, PcEur858, ISO Latin1
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 , 0

1239X Menu

Item	Value
Font	Courier , Prestige, Gothic, Orator, Script, Presentor, Sans serif
Pitch	10 cpi , 12cpi, 15cpi, 17cpi, 20cpi, 24cpi, Prop.
Code Page	437 , 850, 860, 863, 865
T. Margin	0.30 ~ 0.40 ~ 1.50 inch step 0.05 inch
Text	1 ~ 63 *2 ~ 67 *1 ~ available (Max:105) Lines
Auto CR	Off , On
Auto LF	Off , On
Alt. Graphics	Off , On
Bit Image	Dark , Light
ZeroChar	0 , 0
Character Set	1 *2, 2 *1

Support Menu *10 *19

Item	Value
HDD Format†10	
PS3 HDD Init †10, †11	

Maintenance Menu *20

Item	Value
Engine Status Sheet	
2nd BTR Clear	
IBT Cleaner Clear	
IBT Belt Cleaner	
C Development Clear	
M Development Clear	
Y Development Clear	
K Development Clear	
Fuser Counter Clear	
Total Counter Clear	
Error Log Clear	

*1: The factory default value for Europe, Pacific Rim/Russia, Taiwan, China and Korea.

*2: The factory default value for North/South America.

*3: Displayed only in the models for Taiwan, China, and Korea.

*4: Displayed only in the models for North/South America, Europe, and Pacific Rim/Russia.

*5: Displayed only when an optional paper cassette unit (500-Sheet Paper Cassette Unit/ Large Capacity Paper Unit) is installed.

*6: Displayed only when the Large Capacity Paper Unit is installed.

*7: Displayed only when the Optional Duplex unit is installed.

*8: Displayed only when the TypeB interface card is installed.

*9: Displayed only when the TypeB Level3 is installed.

- *10: Displayed only when the optional HDD is installed.
- *11: Displayed only when the optional PostScript 3 module is installed.
- *12: Displayed only when the optional font module is installed to the optional ROM DIMM socket.
- *13: Displayed only when Network Menu > Network Interface is set to On at start-up.
- *14: Displayed only when AUX Menu > AUX Interface is set to On at start-up.
- *15: Displayed only when "Network Config=Yes" or "AUX Config=Yes".
- *16: Displayed only when a download font exists.
- *17: Displayed only when GLlike mode is selected.
- *18: Either is displayed, depending on the font type selected. "Height" is displayed when a Proportional Spacing font is selected, and "Pitch" is displayed when a Fixed Pitch font is selected. When a setting for Font Source and Font number is changed, the both items are indicated until the LJ4 mode is next activated.
- *19: This setting menu is displayed only when the Support Mode has been activated by the special service function at power-on.
- *20: This setting menu is displayed only when the Maintenance Mode has been activated by the special service function at power-on. Always displayed in English regardless of the Lang setting in the Setup Menu.
- *21: Not displayed in the panel and Status Sheet. It can be set in EJL.
- *22: Not displayed in the panel and Status Sheet. It can be set in EJL. It is not open to users.
- *23: Not displayed in the panel and Status Sheet. It can be set in EJL or PJJ.
- *24: This item is display-only and setting value cannot be changed.
- *25: STANDBYTIME command in EJL is also supported. The default value is 60 minutes.
- *26: When Interface setting is changed, printing on the status sheet for themselves and status read-back with EJL are immediately reflected. However, it becomes valid after warm-boot or at power on again.
- *27: The setting value depends on the Type-B Level3 I/F board setting.
- *28: This is automatically set to "No" after the printer status shifts to "On-line".
- *29: Pre-printed paper can be used only in the MSI Tray and it cannot be fed from LC1/2/3 because of the engine specification.
- *30: When LJ4 Menu > SymSet Value is changed to this Symbol set, Font Source = Resident, Font Number = 0 setting is automatically made, and therefore in order 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 shows the user setting items that are not included in the SelecType setting menu.

Table 1-28. User Setting Items

Setting items	Setting value	Initial value	Setting method
Printer Name	32-byte character string	AL-C8500	EJL, PrinterName command
MFG of the Device ID	32-byte character string	(Undefined)	EJL
MDL of the Device ID	32-byte character string	(Undefined)	EJL
DES of the Device ID	32-byte character string	(Undefined)	EJL
CID of the Device ID	32-byte character string	(Undefined)	EJL

1.6.3 Details of Menus and Settings

This section contains the AcuLaser C8500 specific information on the menus and settings.

1.6.3.1 Printing Menu

PAPER SOURCE

Selects the paper source when “Paper Type” = “Normal”.

- ☐ Auto: Paper is fed from the paper source that holds the selected paper type and size.
- ☐ MP: Paper is fed from the MP tray.
- ☐ LC1: Paper is fed from the 1st paper cassette.
- ☐ LC2: Paper is fed from the 2nd paper cassette.
- ☐ LC3: Paper is fed from the 3rd paper cassette.

Depending on the setting for Page Size or Paper Type, the available paper sources are restricted.

WIDE A4

Effective only in the LJ4 mode.

- ☐ Off: Printable area for graphics remains the ordinal size.
- ☐ On: Printable area for graphics is expanded.

OUT BIN

Selects the output tray.

- ☐ Face-down: Ejects into face-down tray.
- ☐ Face-up: Ejects into face-up tray.

Depending on the setting for Page Size or Paper Type, the available paper sources are restricted.

QUANTITY

Number of copies can be set for collating. Since it has priority over the setting made for “Copies”, the value set for “Copies” is ignored when the selected number of copies for “Quantity” is two or more. This setting is made only by the PJL, EJP, ESC/Page, or ESC/PageColor mode only. The setting value is not stored. If one-job data is too large, the printer indicates “Collate was disabled” and prints one copy.

MANUAL FEED

Determines whether or not to generate the message “Manual Feed xxx yyyy” before printing.

- ☐ Off: Manual Feed is disabled.
- ☐ On: Manual Feed is enabled. “Check Paper Size” error is not generated regardless of the setting for “Size Ignore” for “Config Menu”. With “Manual Feed” on, the printer prints in 1-UP mode only.

1.6.3.2 Tray Menu

MP TYPE

Specifies the type of the paper set in the MP tray.

- ☐ Plain: Ordinal paper such as copy paper
- ☐ Letterhead: Letter paper
- ☐ Recycled: Recycled paper
- ☐ Color: Color paper
- ☐ Trnsprncy: OHP sheet
- ☐ Labels: Labels

When “Paper Size” = “Normal” and “Paper Source” = “Auto”, the printer refers to the values set for this item to search the paper sources that hold the selected paper type, and, of among, it selects the paper source that also matches the selected paper size.

Depending on the setting for Page Size or Paper Type, the available paper sources are restricted.

NOTE: Type of paper that is selected at paper source selection is only designated by the ESC/Page, ESC/Page-Color, or LJ4 command.

LC1 - 3 TYPE

Specifies the types of paper that are set in LC1 - LC3. Available setting values are "Plain", "Letterhead", "Recycled", and "Color". See "MP Type" above for details.

1.6.3.3 Config Menu

RITECH

Turns on/off the RITech function. For B/W printing, RITech works in the general way for monochrome page printers. For color printing, RITech is effective in the AcuLaser Color Halftoning mode by using CRIT function.

TONER SAVE

If this function is turned on for color printing, toner is saved by controlling halftoning level for lower density.

SIZE IGNORE

Determines whether or not to ignore the messages "Paper Set aaaaaa bbbbbb" (error) and "Check Paper Size" (warning).

- ☐ Off: The printer generates the above messages when detecting the corresponding conditions.
- ☐ On: The above mentioned messages are not shown. In this case, make sure the image should not be larger than the page size.

NOTE: When this item is set to "on", the printer prints in 1-UP mode.

PAPER TYPE

Specifies the paper type, to which the printer refers to determine the printing speed and CM.

1.6.3.4 Setup Menu

C/M/Y/K TONER

Shows the remaining level of each toner in five steps. (Display only)

E ■■■■ F 100% ≥ Toner level > 75%
 E ■■■□ F 75% ≥ Toner level > 50%
 E ■■□□ F 50% ≥ Toner level > 25%
 E ■□□□ F 25% ≥ Toner level > 0%
 E □□□□ F Toner level = 0%

NOTE: The remaining level of each toner is evaluated based on the dispense time of each toner cartridge. According to the dispense time, which is stored on the engine side, the engine generates such an error as "Toner Out".

PHOTOCONDUCTOR

This displays the remaining life of the Photoconductor Unit in %. (Display only)
 100% (New) - 0% (end of the service life)

TOTAL PAGES

Indicates the total number of sheets that the printer has printed on (Independence of paper size) (Display only). Once the counter reaches 99999999, it does not add any more. Note the printer shows the value counted on the engine side.

Value range: 0 to 99999999 (in sheet unit)

COLOR PAGES

Indicates the total number of color-printing sheets that the printer has printed. (Display only) Once the counter reaches 99999999, it does not add any more. Note the printer shows the value counted on the controller side.

Value range: 0 to 99999999 (in sheet unit)

B/W PAGES

Indicates the total number of B/W-printing sheets that the printer has printed. (Display only) Since the value is "Total Pages - Color Pages", if the total pages exceeds 99999999, the correct value will not be indicated.

Value range: 0 to 99999999 (in sheet unit)

SELECTYPE INIT

Clears the panel setting values to the factory setting values. The following counters are not reset; page counter, C/M/Y/K toner counter, 2nd BTR counter, IBT Cleaner counter, Fuser Unit counter, the printer 1/printer 2 counters that are on the engine side, and the settings for "Parallel Menu", "Network Menu", and "AUX Menu".

1.6.3.5 Support Menu

The setting menu is displayed, and selection enabled, only when the Support Mode has been activated by hidden operation when the power is turned on. After that, if the power is turned off, then turned on again, the Support Menu is deleted from the Menu. (Support Mode deleted = the printer has switched to the normal mode.

HDD FORMAT

HDD initialization is executed, HDD initialization takes much time and the initialization progress is displayed as "HDD Format***%" (in each 1%). Roboot is executed after the initialization completes. Any interfaces cannot be connected at this time.

1.6.3.6 Toner Transfer Menu

The setting menu is displayed, and selection enabled, only when the Support Mode has been activated by hidden operation when the power is turned on. After that, if the power is turned off, then turned on again, the Toner Transfer Menu is deleted from the Menu. (Support Mode deleted = the printer has switched to the normal mode.

NORMAL

Specify the Offset value of the 2nd BTR transfer voltage for the Plain Paper 1. This setting becomes valid after the power turned off and on again.

THICK

Specify the Offset value of the 2nd BTR transfer voltage for the Cover. This setting becomes valid after the power turned off and on again.

TRANSPARENCY

Specify the Offset value of the 2nd BTR transfer voltage for the Transparency. This setting becomes valid after the power turned off and on again.

COATED

Specify the Offset value of the 2nd BTR transfer voltage for the Coated. This setting becomes valid after the power turned off and on again.

THICK NARROW

Specify the Offset value of the 2nd BTR transfer voltage for the Coated. This setting becomes valid after the power turned off and on again.

ENVELOPE

Specify the Offset value of the 2nd BTR transfer voltage for the Envelope. This setting becomes valid after the power turned off and on again.

1.6.3.7 Maintenance Menu

This menu is indicated and selected only while the Maintenance Mode is activated by the service function at power-on. To eliminate this menu from the setting menu option, turn the printer off and then back on, and the printer returns to the normal mode. This menu is intended for servicers only.



Using this menu, you can reset several counters. When clearing any counter value, be sure to open the Front cover, check that the cover open error is indicated, and then close the cover. Otherwise, the reset operation is not effective. (This is due to engine specifications.)

ENGINE STATUS SHEET

Pressing the Enter button lets the printer print Engine Status Sheet. If language data is still in the printer, the sheet will eject. Make sure the printer is free from any engine related service-call error in the normal mode (any mode other than the maintenance mode) before entering and executing the “Maintenance Menu”. Engine Status Sheet will be printed with RIT, toner-save, and resolution remained in the current settings; and all other set to their factory defaults. The user-default environment remains in effect after printing is completed. The indication on the LED blinks while printing is in progress. The printed sheet will show the count values of the counter on each unit in the engine. The Engine Status Sheet is always printed in English regardless of the Setup menu’s Lang setting.

2ND BTR CLEAR

Resets the 2nd BTR counter. The maintenance engineer must reset this counter after replacing the 2nd BTR with a new one. When the reset operation is done, the printer reboots. Then, be sure to open the Front Cover and close it to make the operation effective.

IBT CLEANER CLEAR

Resets the IBT Cleaner counter. The maintenance engineer must reset this counter after replacing the IBT Cleaner with a new one. When the reset operation is done, the printer reboots. Then, be sure to open the Front Cover and close it to make the operation effective.

IBT BELT CLEANER

Resets the IBT Belt Cleaner counter. The maintenance engineer must reset this counter after replacing the IBT Belt Cleaner with a new one. When the reset operation is done, the printer reboots. Then, be sure to open the Front Cover and close it to make the operation effective.

C DEVELOPMENT CLEAR

Resets the C Development counter. The maintenance engineer must reset this counter after replacing the C Development with a new one. When the reset operation is done, the printer reboots. Then, be sure to open the Front Cover and close it to make the operation effective.

M DEVELOPMENT CLEAR

Resets the M Development counter. The maintenance engineer must reset this counter after replacing the M Development with a new one. When the reset operation is done, the printer reboots. Then, be sure to open the Front Cover and close it to make the operation effective.

Y DEVELOPMENT CLEAR

Resets the Y Development counter. The maintenance engineer must reset this counter after replacing the Y Development with a new one. When the reset operation is done, the printer reboots. Then, be sure to open the Front Cover and close it to make the operation effective.

K DEVELOPMENT CLEAR

Resets the K Development counter. The maintenance engineer must reset this counter after replacing the K Development with a new one. When the reset operation is done, the printer reboots. Then, be sure to open the Front Cover and close it to make the operation effective.

FUSER COUNTER CLEAR

Resets the Fuser Unit counter. The maintenance engineer must reset this counter after replacing the Fuser Unit with a new one. When the reset operation is done, the printer reboots. Then, be sure to open the Front Cover and close it to make the operation effective.

TOTAL COUNTER CLEAR

Resets the Total Pages to 0. (The engine's printer 1 and printer 2 counters are reset.) This operation also clears "Color Pages". When the reset operation is done, the printer reboots. Then, open the Front Cover and close it to make the operation effective.

ERROR LOG CLEAR

Clears Error Log List stored to be printed on Engine Status Sheet. The Error Log lists the latest 20 errors. When the reset operation is done, the printer reboots.

1.7 RAM Expansion

This printer generates the following errors when it detects insufficient memory condition.

“Mem Overflow”, “Image Optimum”, “Need Memory”

In this case, try taking any of the actions below. See Table 1-29.

- For B/W print, lower the resolution to 300 dpi. See Table 1-30.
- For color print, use a non-reciprocal compression format. See Table 1-31.
- Reduce the size of the data buffer. See Table 1-32.
- Fix the interface. See Table 1-33.

To avoid these errors without fail, however, adding memory is recommended.

1.8 Dimensions

The dimension of EPSON AcuLaser C8500 is shown below..

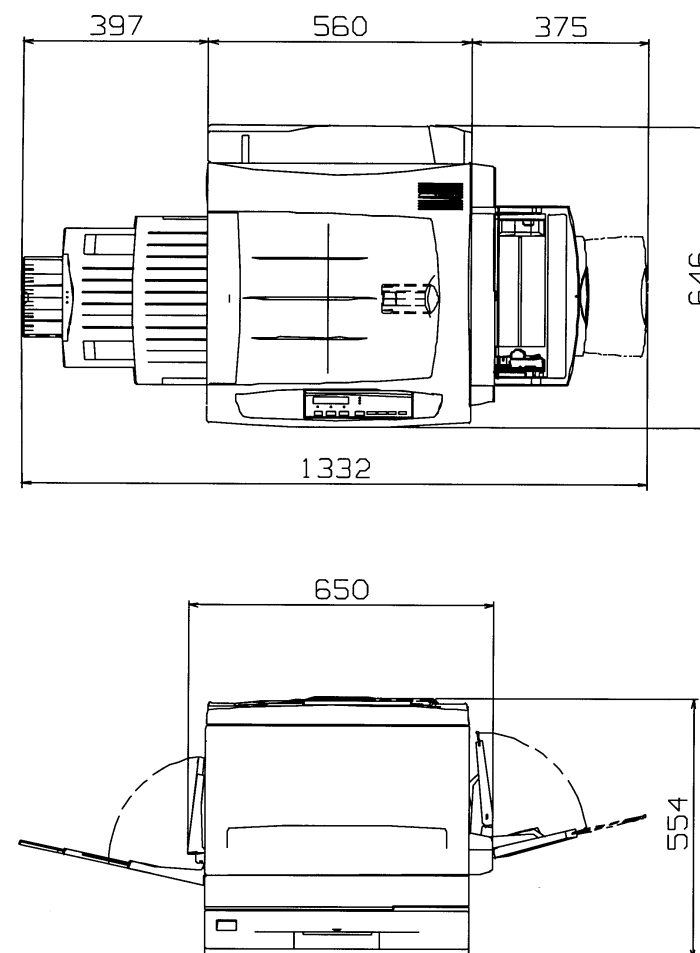


Figure 1-14. the printer

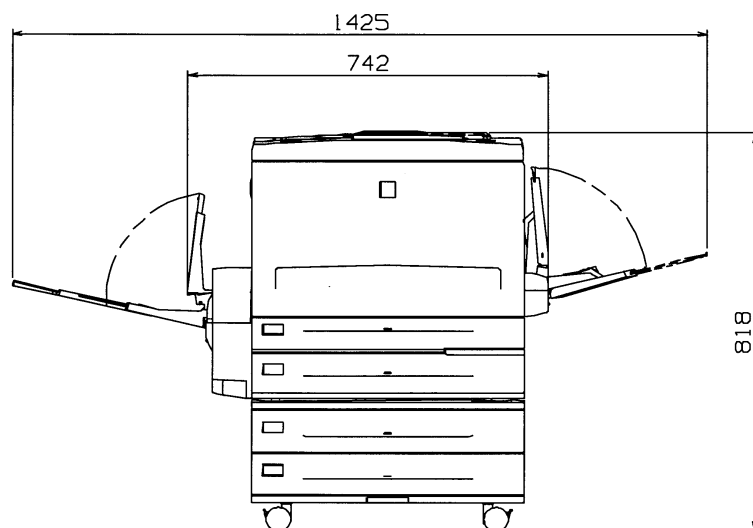


Figure 1-15. With Large Capacity Paper Unit and Duplex Unit

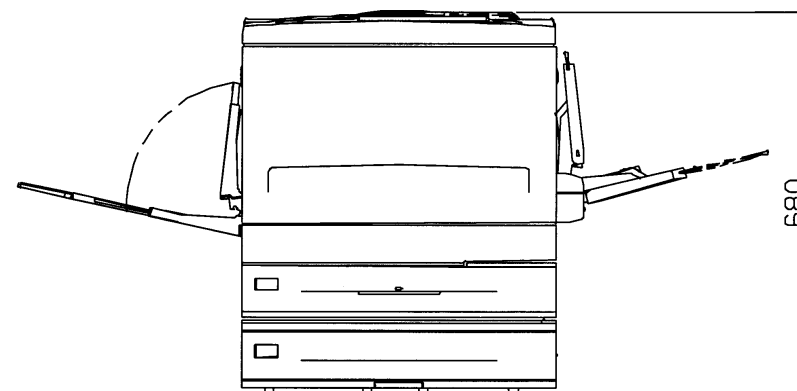


Figure 1-17. With 500-sheet Paper Cassette Unit

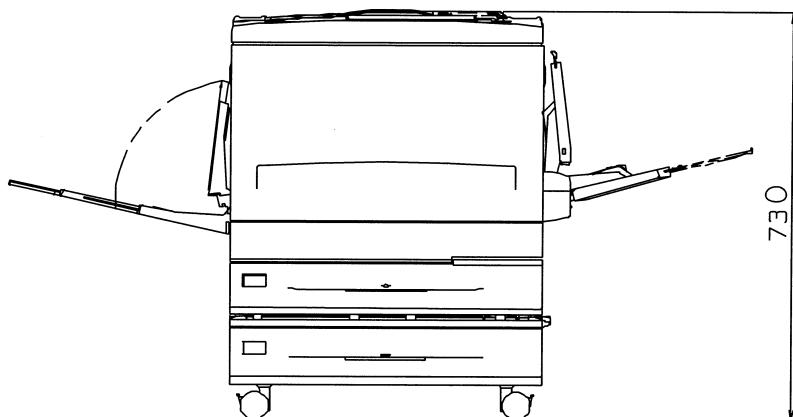


Figure 1-16. With 500-Sheet Paper Cassette Unit (with casters-standards)

1.9 Engine Restrictions

The engine restrictions are classified as follows. Refer to the following tables for more details.

- Restrictions on the period from powering on to printing enable. See Table 1-29.
- Restrictions on the period from the print command is received (Density adjustment at Cycle up). See Table 1-30.
- Restrictions on continuous printing. See Table 1-31.
- Restrictions on the period from printing finished to mechanism ceases. (Density adjustment at Cycle up). See Table 1-32.
- Others. See Table 1-33.

Table 1-29. Restrictions on the period from powering on to printing enable

Item	IBT Rotations	Operational Conditions	Description	Notes
M/C Check	Approx. 6-7	Each time.	CRU installation, check if there is any paper jam remaining.	
Fuser Warm Up	--	Each time.	Fuser warm up	
Process Control (Power Up)	5-77	Printing was stopped because of toner empty error at the last time.	Recovering operation from the toner empty error.	
Calibrating when new photoconductor unit is installed	7	A new photoconductor unit is installed.	Draws patches on both ends on the photoconductor and supplies toner to the cleaner.	
Print quality adjustment (IBT ghost measures)	12	When the IBT rotations are more than 1000 and printed 200 pages or more, additionally, 65Rh<Humidity<35%Rh	Remove the wax adheres on the IBT. The wax is included in toner and caused "ghost".	Once wax is removed, the counter is reset and restart to count. 200pages regardless of paper size (A4/A3). Executed only when the powering on or cover opened/closed.

NOTE: Approx. 5 seconds/ rotation

Table 1-30. Restrictions on the period from the print command is received to printing started (Density adjustment at Cycle up)

Item	IBT Rotations	Operational Conditions	Description	Notes
Density adjustment (Cycle Up)	3	1. At power on and Fuser temperature is 94C or less. 2. Every 20 pages (40 pages when 2-up printing) 3. After Error or Jam. 4. The first printing after the amount of toner is adjusted (Addmix, Sweep Out). After Empty Reset operation is executed.	Decide the BCR and laser output value.	During the operation, the printer becomes APQ mode.
Calibrating when a new toner is detected.	Rotary2-3	When a new toner is detected at powering turned on or a cover opened/closed immediately after Toner empty is detected.	If any new toners are detected, repeat rotary rotation 2 or 3times.	Lose toner in the cartridge.

NOTE: Approx. 5 seconds /rotation

Table 1-31. Restricts on continuous printing

Item	IBT Rotations	Operational Conditions	Description	Notes
High coverage printing measures	Approx. 5	1. Color mode 65%: total A3 2 pages detected. 50%: total A3 10pages detected. 35%: total A3 48pages detected. 2. B/W mode 53%: total A3 2 pages detected. 41%: total A3 10pages detected. 35%: total A3 48pages detected. *Setting value may be changed.	Stop printing to recover print density if the printing with high coverage that exceeds dispense capacity.	-Cycle-down is done after the printing currently executed is finished. -During density adjustment at cycle-down, it is decided if supply toner or not.
Continuous printing restriction	Approx. 5	Corresponds to A3 (50 pages), A4 LEF 2-up (100 pages) since printing started.	Interrupt continuous printing to keep toner density.	-Cycle-down is done after the printing currently executed is finished. -It may reach A3 (6pages), A4 LEF 2-up (12 pages) during Toner Near Empty.
Detects low-density	Approx. 5	In case that low-density is detected while density adjustment in Cycle-up or during printing.	Interrupt printing to supply toner when low density is detected.	-Cycle-down is done after the printing currently executed is finished. -During density adjustment at cycle-down, it is decided if supply toner or not.
After narrow B/W printing	Approx. 5	After printed 30 pages of B/W continuous printing on paper up to 257mm width (B5,B4)	Interrupt to prevent Fuser from overheating.	-Cycle-down is done after the printing currently executed is finished. -After Cycle-down, idle for 1 minute. -During idling, printer becomes APQ mode.

NOTE: Approx. 5 seconds/ rotation

Table 1-32. Restrictions on the period from printing finished to mechanism ceases (Density adjustment at Cycle down)

Item	IBT Rotations	Operational Conditions	Description	Notes
Density adjustment (at cycle down)	3	1. Fuser temperature is 94C or less. 2. Every 20 pages(40 pages when 2-up printing). 3. When the total waiting time exceeds 4 hours. 4. When high Coverage is detected. 5. The first printing after the amount of toner is adjusted (Addmix, Sweep Out). After Empty Reset operation is executed. 6. In case that low-density is detected while density adjustment in Cycle-up or during printing.	TC control	-It may be A3 (6 pages), A4 LEF 2-up (12 pages) when toner near empty occurs. -During the operation, the printer becomes APQ mode.
Density adjustment (supply toner)	6-84	-Low-density is detected during the density adjustment. -During high-coverage measures(not necessary) -Near Toner Empty is detected.	Addmix (supply toner)	During the operation, the printer becomes APQ mode.
Density adjustment (sweeps toner out)	6-12	High-density is detected during the density adjustment.	Sweep Out (sweep toner out)	During the operation, the printer becomes APQ mode.
Print quality adjustment (Rotary idles)*1	Max 10 Rotary revolutions	When the total number of rotary revolutions is relatively small to K toner supplies.	Rotate the rotary and correct developer into the cartridge collector. (Rotary home-positioning operation is repeated several times at cycle-down in order to loosen the toner inclined by B/W continuous printing and to stabilize dispense rate)	During the operation, the printer becomes APQ mode.
Print quality adjustment (IBT ghost masures)*1	2	When the IBT rotations are more than 1000 and printed 200 pages or more, additionally, 65%Rh<Humidity<35%Rh.	Remove the wax that adheres on the IBT (Toner includes wax, and it can cause "ghost").	Once wax is removed, the counter is reset and restart to count. 200 pages regardless of paper size (A4/A3). Rotates two times more than normal cycle-down.

NOTE: Newly added for Cordonbleu.

Table 1-33. Others

Item	IBT Rotations	Operational Conditions	Description	Notes
P/H motor rotation during warm-up	1 minute	P/H motor starts its rotation 1 minute before warm-up completed.	Measures for fixing inferior at start-up. (Photoconductor does not rotate)	
P/H motor rotation during standby	0.5 to 1 sec. at 15 to 30 min. intervals.	P/H motor operates momentary when the printer is on standby.	To prevent the Fuser Nip from leaving marks when P/H motor left heated. (Photoconductor does not rotates)	P/H motor operates momentary when the printer is in standby mode 1.

CHAPTER

2

OPERATING PRINCIPLES

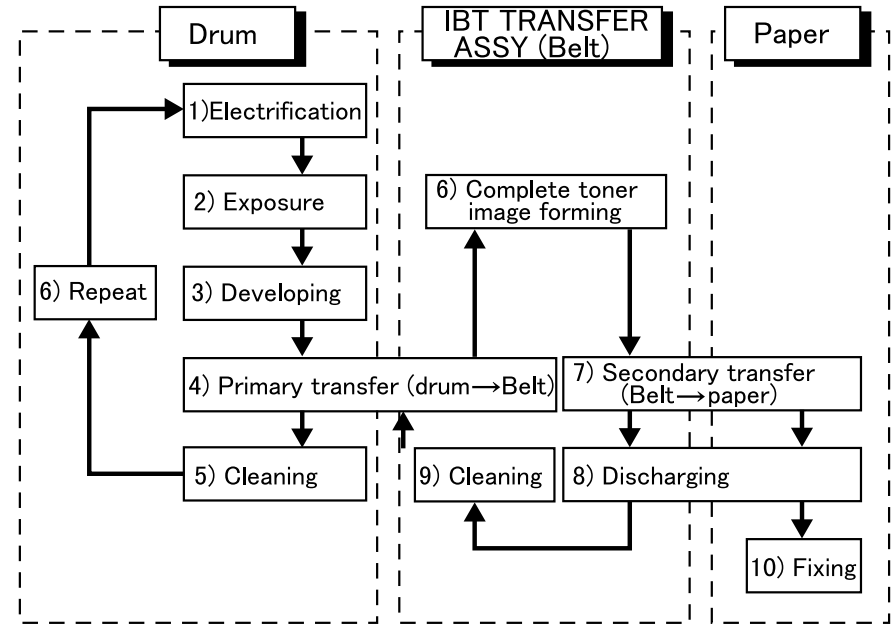
2.1 Print Process

2.1.1 Print Process Overview

This printer is a full color laser printer that works by the principle of electrophotographic recording. Printers using the principle of electrophotographic recording available up to now were only capable of printing with a single color of toner. This printer prints in full color by forming an image of the various color toners “Yellow, Magenta, Cyan, Black (YMCKb)” on the drum and overlapping the various toner images on the IBT BELT ASSY (hereinafter referred to as Belt).

The print process consists of the following basic steps:

- 1) Electrification: The drum surface is charged with electricity.
- 2) Exposure: The image area is exposed by laser radiation.
- 3) Developing: The image area is developed with toner.
- 4) Primary transfer: Toner image on the drum is transferred to the belt.
- 5) Cleaning: The drum is cleaned.
- 6) Repeat: When in the YMCKb mode, steps 1 - 5 are repeated for each of the 4 toner colors, and the complete toner image is formed of the 4 toner colors on the Belt. (This step is not performed in the B/W mode.)
- 7) Secondary transfer: The complete 4-color toner image on the belt is transferred to the paper adhering to the belt.
- 8) Electrical discharging: The electric charge of the paper is discharged.
- 9) Cleaning: The Belt is cleaned.
- 10) Fixing: The toner is fixed on the paper by heat and pressure.



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Figure 2-1. Print Process Overview

2.1.2 Total Print Process Schematic Diagram

NOTE: DEVELOPER ASSY Y, DEVELOPER ASSY M, DEVELOPER ASSY C, and DEVELOPER ASSY BK are hereinafter referred to by the generic term "Developer Assy."

NOTE: TONER CARTRIDGE Y, TONER CARTRIDGE M, TONER CARTRIDGE C and TONER CARTRIDGE BK are hereinafter referred to by the generic term "Toner Cartridge."

The schematic diagram of the entire print process is as shown below.

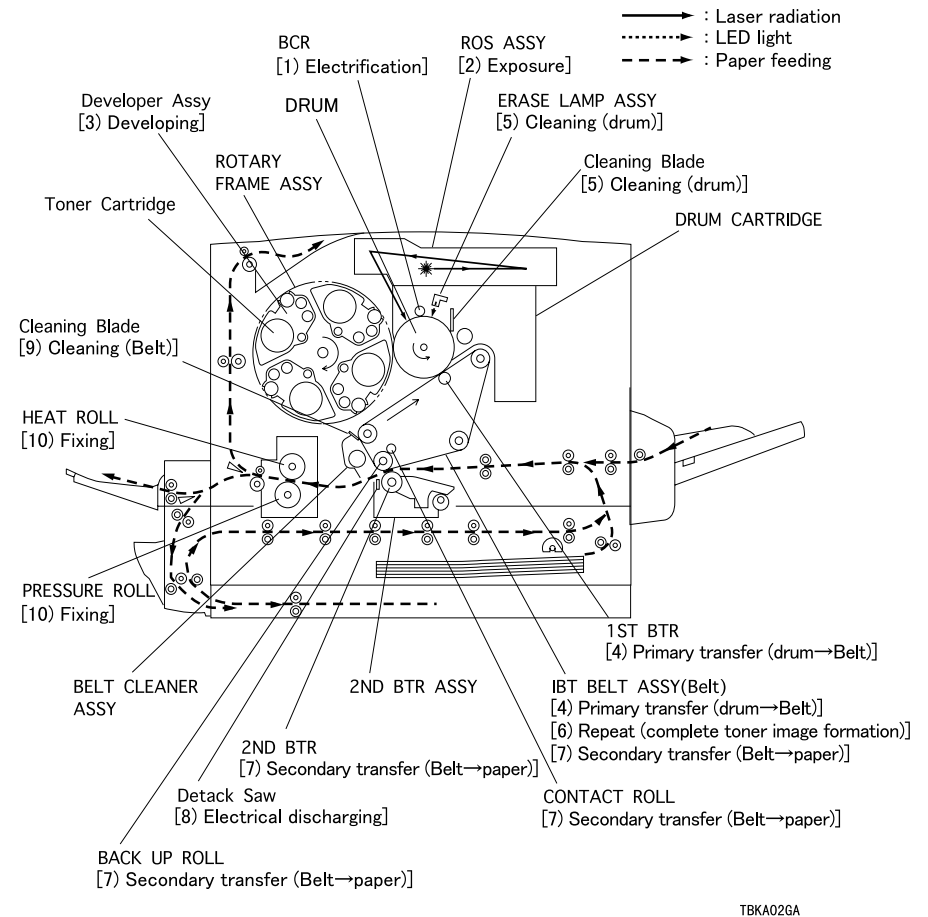


Figure 2-2. Total Print Process Schematic Diagram

2.1.3 Print Process Technical Explanation

2.1.3.1 Electrification

The surface of the drum turning at a certain speed is uniformly electrified with a negative charge by discharging the BCR (Bias Charge Roll) inside the DRUM CARTRIDGE.

- The BCR is constantly in contact with the drum and turns together with the drum. The BCR is a conductive roll that receives a supply of discharge voltage from the HVPS, and discharges by negative DC voltage combined with AC voltage. BCR discharge is carried out in minute intervals near where contact is made with the drum. The drum surface is provided with a uniform negative charge by DC bias voltage. The drum surface is a photoconductor (insulator in the dark, and conductor when light is received), and the inside of the drum consists of a conductive material (aluminum cylinder).

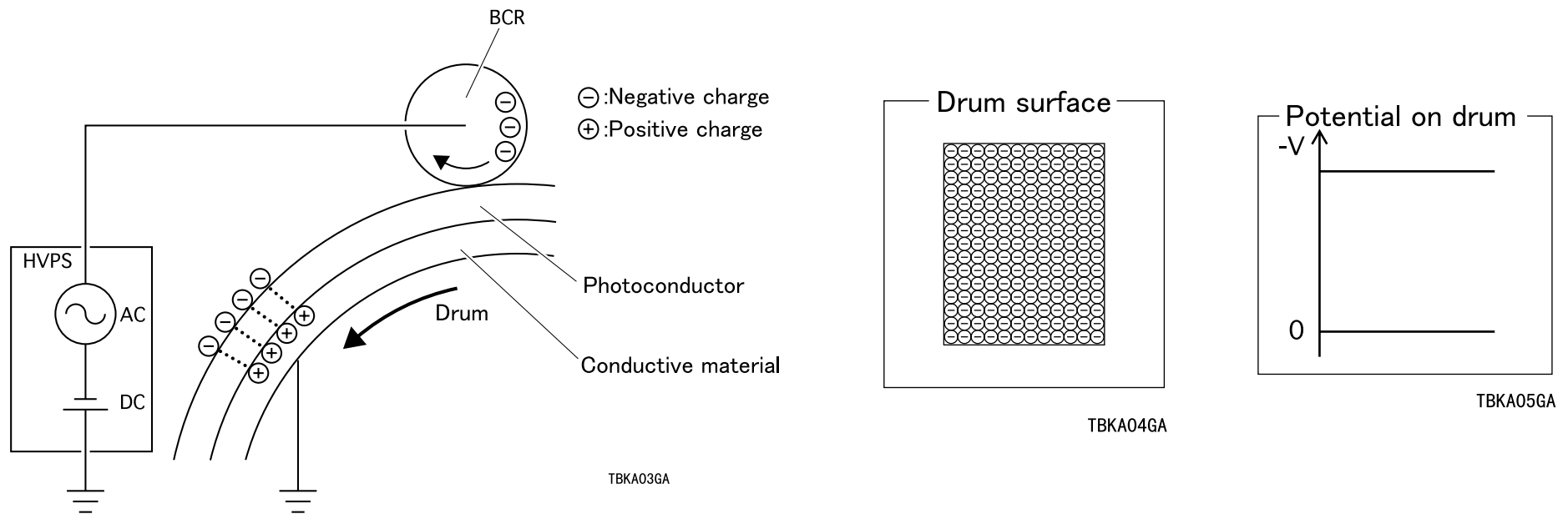


Figure 2-3. Electrification

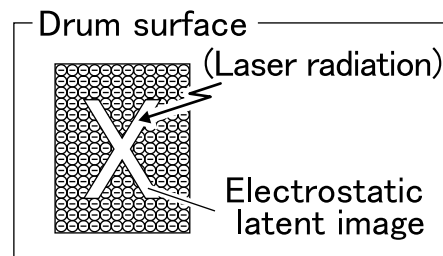
2.1.3.2 Exposure

This is the step where the negatively charged drum surface is scanned with laser radiation, forming an invisible electrostatic latent image.

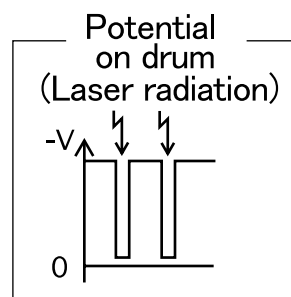
- Laser radiation is emitted in accordance with print data (image data) from the printer controller. Laser radiation is output when print data instructs the printer to print a pixel; laser radiation is not output when instructed not to print (laser beam is emitted for the part to be developed with toner, and not emitted for the part not to be developed with toner).

Laser radiation is emitted from the laser diode inside the ROS ASSY. The drum surface is scanned lengthwise from end to end using a rotating polygon mirror, stationary mirror, and lens attached to the Scanner Assy of the ROS ASSY.

The laser radiation exposed to the drum surface generates a (electron $\rightleftharpoons$ hole) inside the photoconductive layer. (Electrons are excited in the photoconductive band, thus producing a hole in the valence band.) Attracted to the electric field, the electrons migrate toward and flow into the metal part inside.



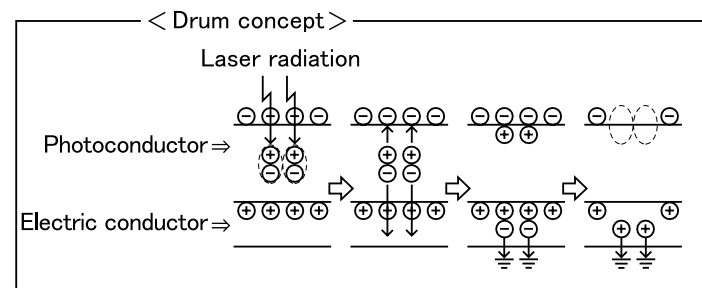
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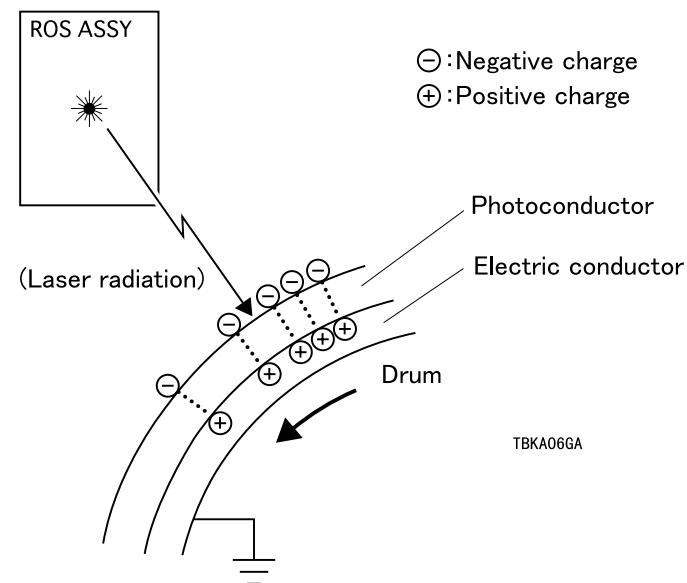
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Figure 2-4. Exposure-1

The hole moves toward the outer surface of the photoconductive layer, where it reunites with the negative charge (electron) of the outer surface, thus reducing the negative charge. As a result, an invisible electrostatic latent image (print image) is formed on the part where the potential of the drum surface rises.



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Figure 2-5. Exposure-2

2.1.3.3 Developing

In this step, toner is electrically applied to the invisible electrostatic latent image on the drum surface, forming a visible image with toner on the drum.

- The printer employs “rotary developing” whereby 4 developers (Developer Assy) are rotated/moved in sequence, and “trickle developing” consisting of a 2-part developer consisting of carrier and toner.

The developer inside the Developer Assy is mixed by a spiral-shaped agitator called an “Auger,” and is furthermore supplied to the Magnet Roll located near the drum surface. The developer consisting of toner and carrier is provided with frictional electrification produced by mixing (toner is provided with a negative charge, and carrier with a positive charge) so that they electrically attract each other.

The carrier is a magnetic substance that is attracted to the magnetic Magnet Roll, where a uniform layer is formed by passing of the Trimmer Blade.

The surface of the Magnet Roll is coated with a thin semiconductor sleeve, which is supplied DB (Developing Bias) voltage from the HVPS. DB voltage is negative DC voltage coupled with AC voltage. DC voltage keeps the Magnet Roll at a certain negative voltage relative to the photoconductive layer of the drum. Potential is lower for the part of the drum surface where the negative charge does not decrease than for the Magnet Roll, and higher than the Magnet Roll for the portion of the drum surface where the negative charge decreases. AC voltage shakes the developer on the surface of the Magnet Roll so the toner can more easily spring toward the drum.

The negatively charged toner is therefore attracted only to the part (electrostatic latent image) where the negative charge of the drum surface has dropped lower than that of the Magnet Roll, forming a toner image on the drum.

When toner adheres to the drum, the negative charge of that part increases, the potential drops, and the toner adherence capability falls.

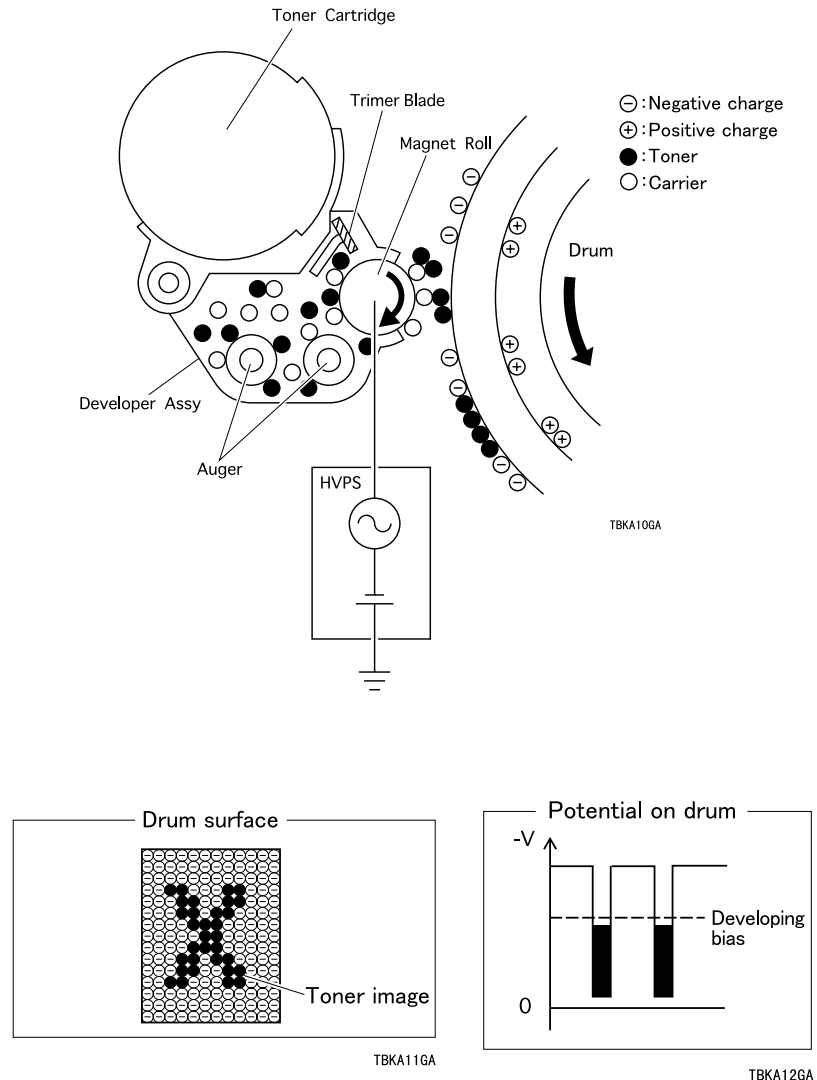


Figure 2-6. Exposure-1

- As the number of prints increases, more toner in the developer is consumed. In order to maintain the proper developing concentration, an amount of toner equal to the amount consumed must be replenished from the Toner Cartridge to the Developer Assy. This is called the "toner dispenser." Two types of control are used for the toner dispenser: PCDC and ADC. (For more information concerning PCDC and ADC, see 2.7.6 "Process Control" in this chapter.
- In order to obtain a full color image consisting of 4 toner colors, a toner image of each of the colors YMCK must be formed on the drum in sequence. The full color toner image is formed by facing the various Developer Assy's toward the drum in sequence by rotating the ROTARY FRAME ASSY's positioned at 90° intervals on the circumference of the 4 Developer Assy's. This is referred to as "rotary developing." (For more information on each position, see 2.7.8 "DEVE. Control" in this chapter.)

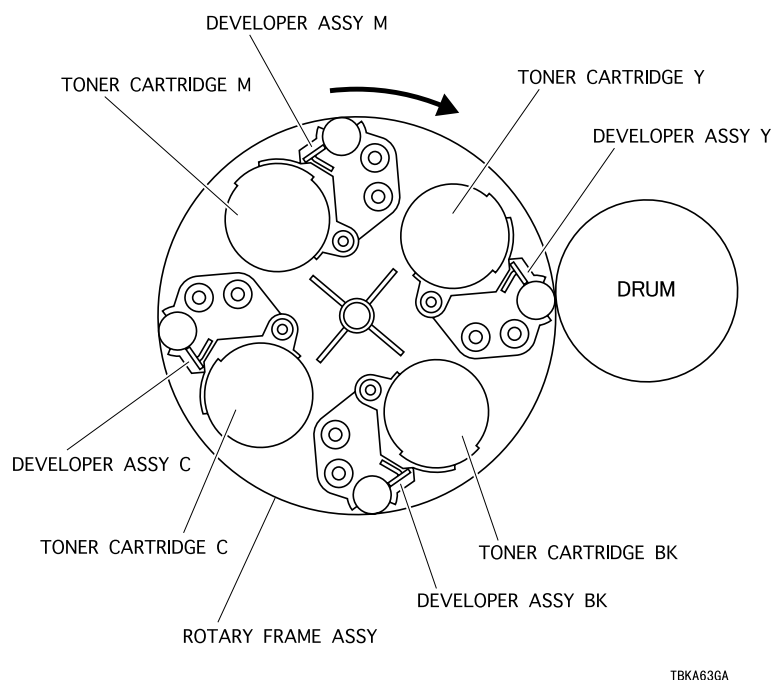


Figure 2-7. Exposure-2

- (The developing charge characteristics of the developer gradually deteriorate due to dirt on the surface produced by toner and smashing of the surface due to mixing. Small amounts of carrier are added to the toner in the Cartridge in order to maintain the charge characteristics, and carrier is dispensed at the same time with toner.

Carrier collected a little at a time in a separate chamber in the Toner Cartridge. By doing so, developer (most of which is carrier) is replaced a little at a time, thus enabling charge characteristics to be maintained. This is referred to as "trickle developing." Trickle developing is carried out using the rotation of the ROTARY FRAME ASSY when rotary developing is performed.

The mechanism of trickle developing is as follows:

1. An L-shaped pipe is inserted in the developer.
2. A small amount of developer is introduced to the pipe.
3. The developer is scooped out and goes deeper into the pipe.
4. Developer is collected in the Toner Cartridge.

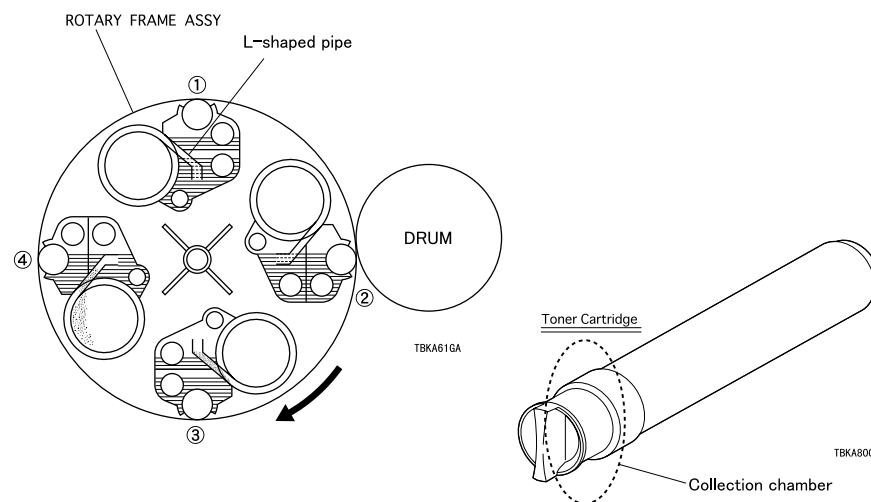


Figure 2-8. Exposure-3

2.1.3.4 Primary Transfer (Drum --> Belt)

This is the step where toner image formed on the drum surface is transferred to the Belt of the TRANSFER ASSY by the 1ST BTR (First Bias Transfer Roll).

- The 1ST BTR is a conductive roll that receives a supply of positive high voltage from the HVPS. The 1ST BTR touches the back surface of the Belt and turns with the Belt to provide the back surface of the Belt with a positive charge.

The toner image (negatively charged) on the drum is attracted by the positive charge of the back surface of the Belt, and is transferred from the drum to the Belt.

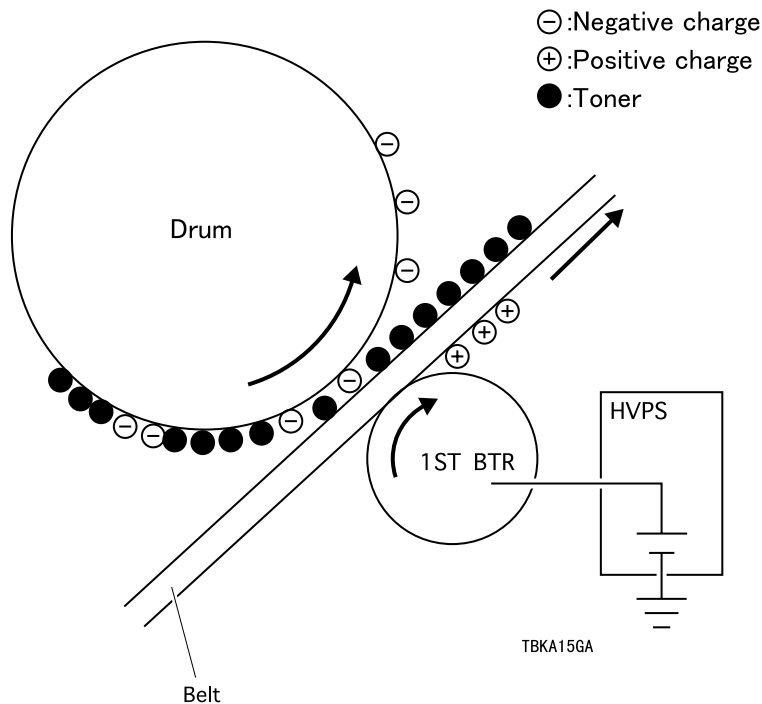
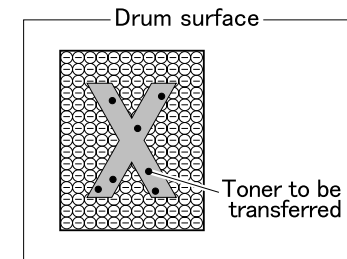
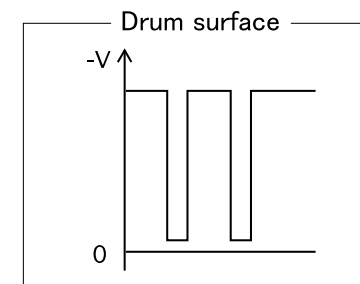


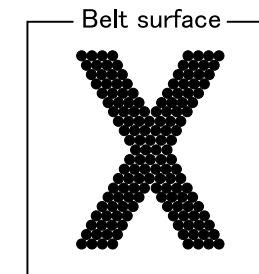
Figure 2-9. Primary Transfer-1



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Figure 2-10. Primary Transfer-2

2.1.3.5 Cleaning (Drum)

This is the step where excess toner and residual charge are eliminated from the drum.

□ Physical drum cleaning

If toner is allowed to remain on the drum, it will interfere with subsequent steps in the process. Remaining toner is scraped off by the Cleaning Blade in contact with the drum.

The toner scraped off the drum is carried off by the Auger inside the DRUM CARTRIDGE, and is collected in the WASTE TONER BOX.

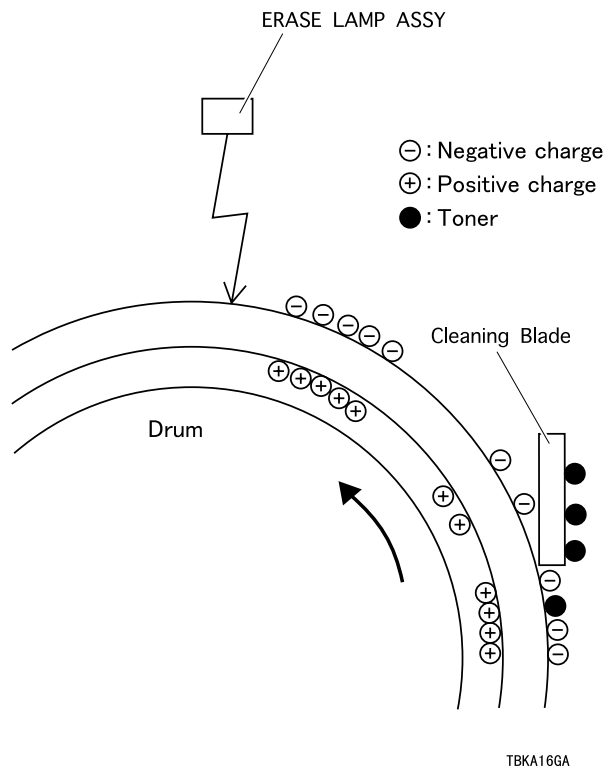


Figure 2-11. Cleaning-1

□ Electrical drum cleaning

A charge remains on the drum surface even after the excess toner is scraped off by the Cleaning Blade. If the charge is allowed to remain on the drum surface, it will interfere with subsequent steps in the process. Residual charge is therefore eliminated from the drum surface by LED light inside the ERASE LAMP ASSY.

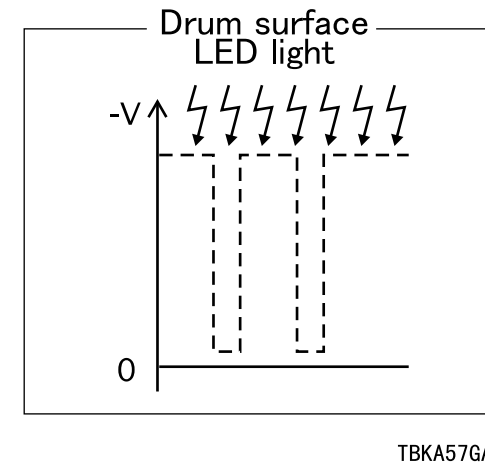
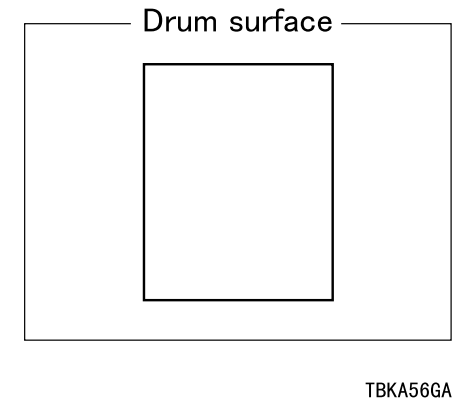


Figure 2-12. Cleaning-2

2.1.3.6 Repeat (Complete Toner Image Forming)

This is the step where the complete toner image consisting of 4 colors is formed on the Belt by sequentially transferring toner images of each color on the drum surface to the Belt.

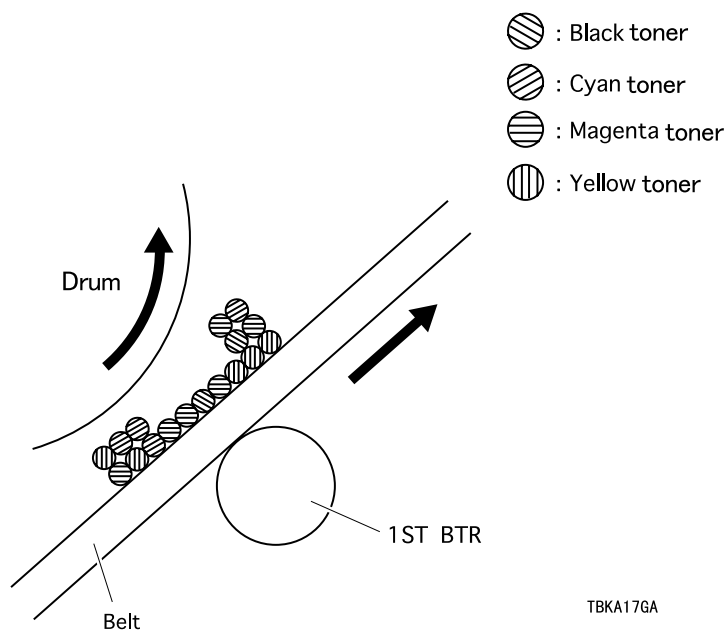


Figure 2-13. Repeat-1

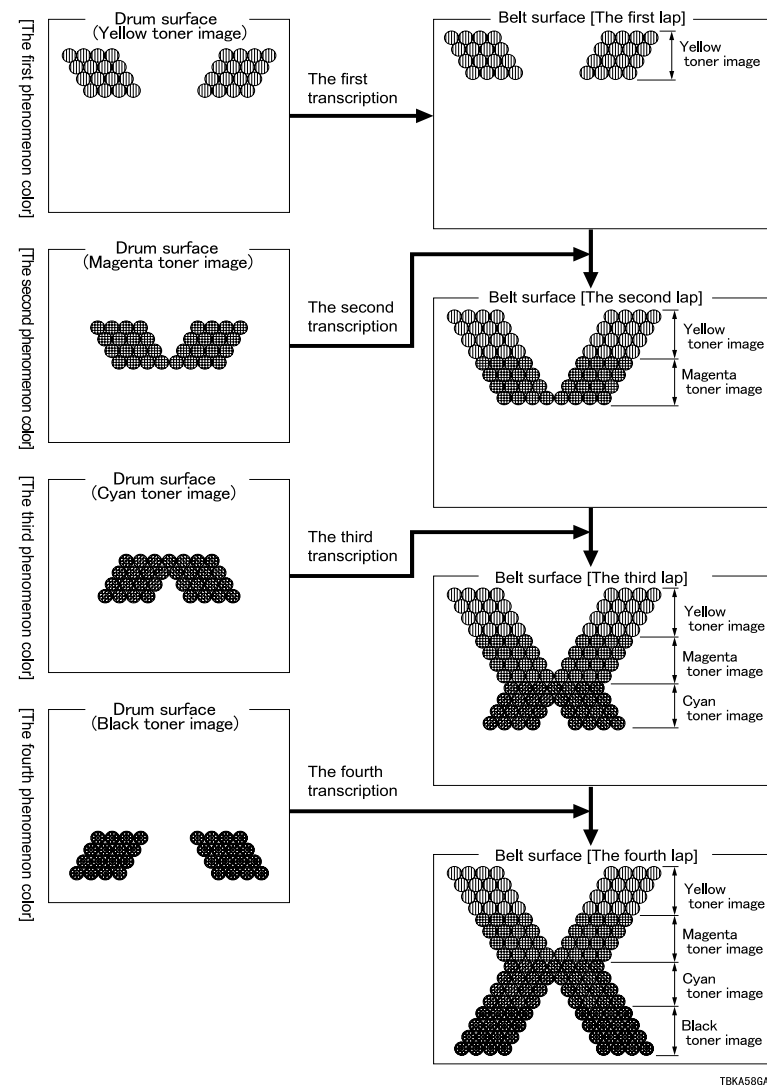


Figure 2-14. Repeat-2

2.1.3.7 Secondary Transfer (Belt --> Paper)

This is the step where the complete toner image formed on the Belt is transferred to paper by supplying voltage to the CONTACT ROLL, BACK UP ROLL, AND 2ND BTR (Second Bias Transfer Roll).

- The CONTACT ROLL is a small-diameter metal roll that makes contact with the BACK UP ROLL. The BACK UP ROLL is a conductive roll that touches the back surface of the Belt, and sandwiches the BELT together with 2ND BTR. The 2ND BTR is a conductive roll that grounds to the frame ground via the center metal shaft.
- The CONTACT ROLL receives a supply of negative high voltage (DC voltage) from the HVPS, and provides the BACK UP ROLL with electric potential. Along with neutralizing the positive charge on the back surface of the Belt, the negative potential conveyed to the BACK UP ROLL induces a positive charge to the 2ND BTR via the Belt and paper. The BACK UP ROLL, Belt, and 2ND BTR each have resistance. Because the paper can act as a capacitor, a positive charge is induced for the 2ND BTR. Neutralizing the charge on the back surface of the belt weakens the Belt's ability to maintain toner. The complete toner image on the Belt is transferred to paper by the positive charge induced for the 2ND BTR.
- The paper is fed in synch with the position of the complete toner image on the Belt, and is transported still adhering to the Belt. When the paper is fed into the area where the 2ND BTR and BACK UP ROLL face each other, high voltage is supplied by the HVPS.

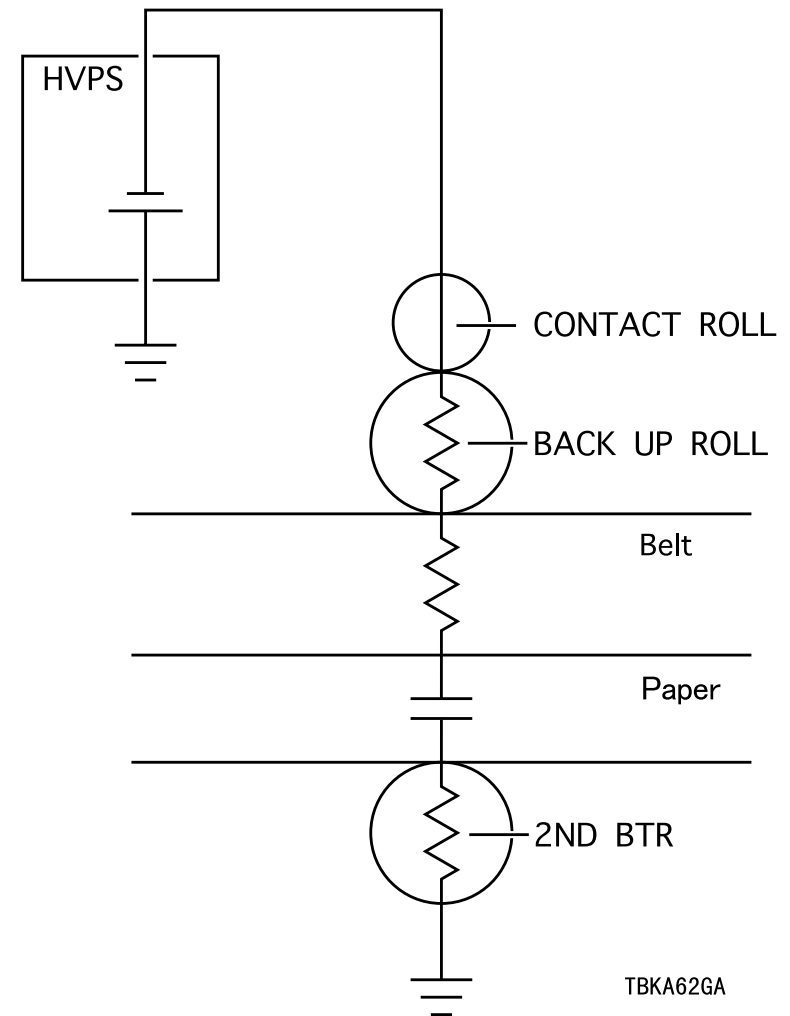


Figure 2-15. Secondary Transfer-1

- A total of 4 toner images is transferred from the drum to the Belt at the "Repeat (Complete Toner Image Formation) step. During this time, the toner image in the process of being formed on the Belt will be destroyed if the 2ND BTR touches the Belt. The 2ND BTR must therefore be moved away from the Belt (retract) except for when transferring the image to paper (advance). Advance and retract are switched by the BTR CAM SOLENOID.

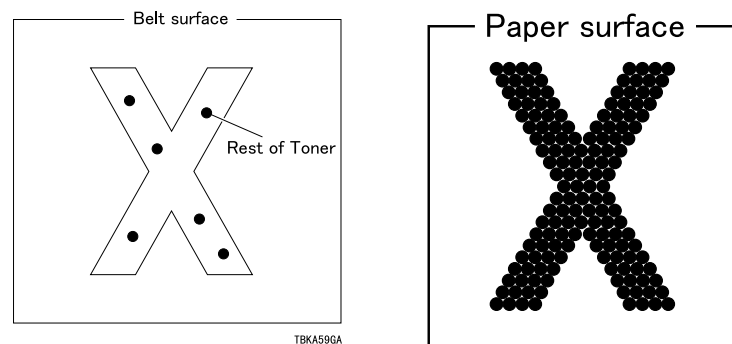
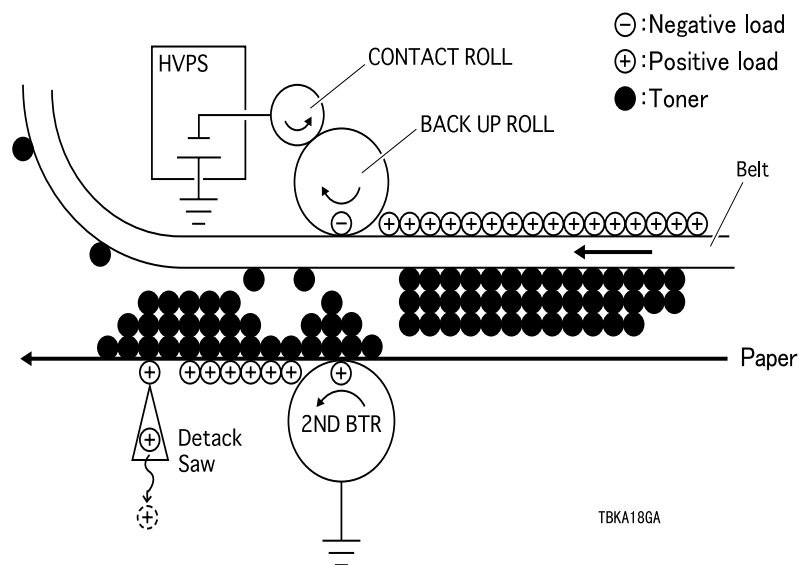


Figure 2-16. Secondary Transfer-2

2.1.3.8 Electrical Discharge

This is the step where the paper charge is neutralized/eliminated by allowing the DC voltage to escape to the surface of the backside of the paper from the Detack Saw (discharge plate).

- The Detack Saw receives a supply of high voltage from the HVPS. Image quality is negatively affected by splattering of toner caused by the positive charge induced at the "Secondary Transfer" step. The paper is discharged by the Detack Saw to prevent affecting the image quality.

2.1.3.9 Cleaning (Belt)

This is the step where toner remaining on the belt after transferring the complete toner image to the paper is physically removed.

- Excess toner from the “Secondary Transfer” step remains on the Belt. If toner is allowed to remain on the Belt, it will interfere with subsequent steps in the process. Remaining toner is scraped off by the Cleaning Blade inside the BELT CLEANER ASSY in contact with the back surface of the Belt. The toner scraped off the Belt is conveyed to inside of the AUGER HIGH ASSY, and is collected in the WASTE TONER BOX.
- A total of 4 toner images are transferred from the drum to the Belt at the “Repeat (Complete Toner Image Formation) step. During this time, the toner image in the process of being formed on the Belt will be destroyed if the Cleaning Blade touches the Belt. The Cleaning Blade therefore must be moved away from the Belt (retract) except for when transferring the image to paper (advance). Advance and retract are switched by the BTR CAM SOLENOID.

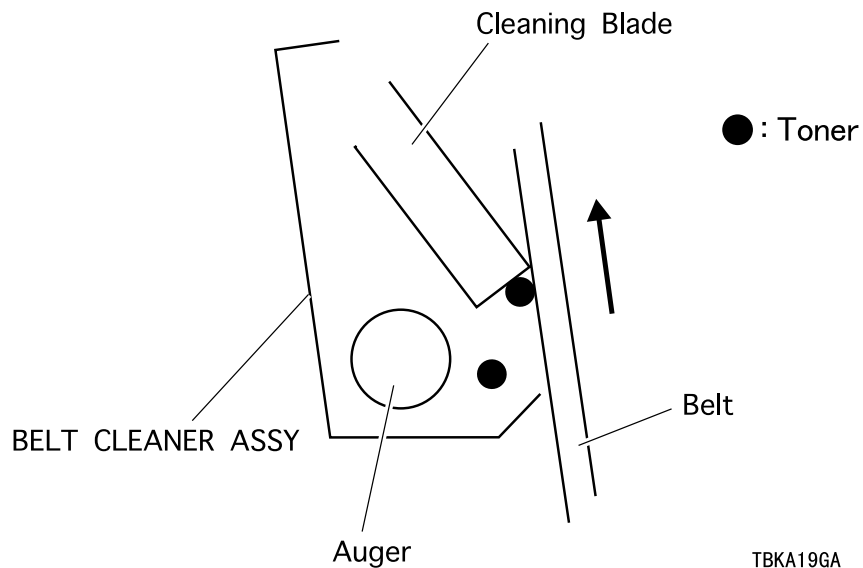


Figure 2-17. Cleaning

2.1.3.10 Fixing

This is the step where toner is fixed on the paper by heat and pressure.

- Because even the slightest touch by the fingers would destroy the complete toner image transferred from the Belt, the toner image is fixed on the paper by the FUSER ASSY (fixer).

Toner is melted by heat of the HEAT ROLL, which uses the H/R HEATER as a source of heat, and is fused on the paper by the pressure of being sandwiched between the HEAT ROLL and PRESSURE ROLL. The PRESSURE ROLL is equipped with a built-in P/R HEATER as an auxiliary source of heat.

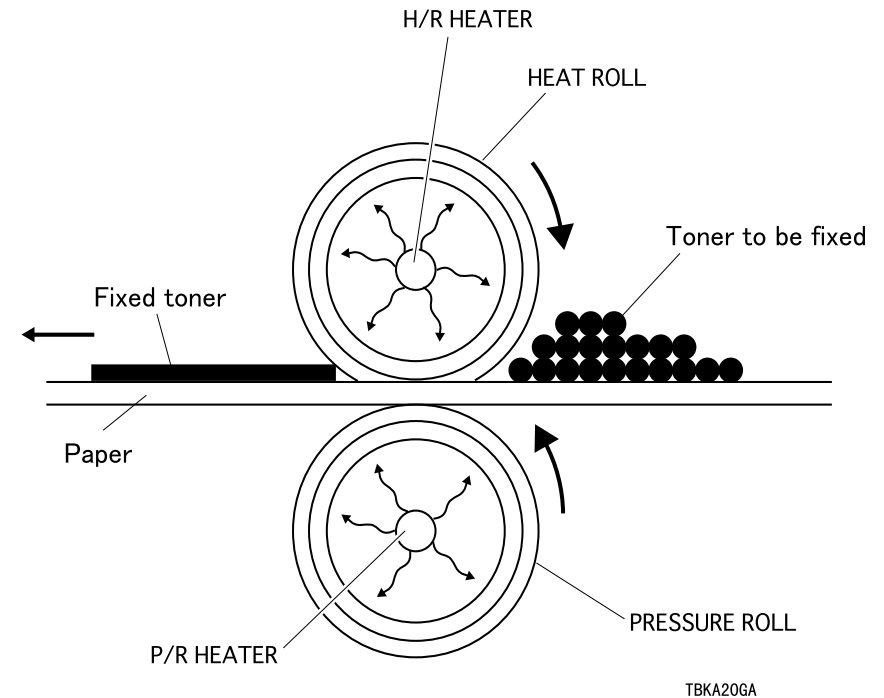
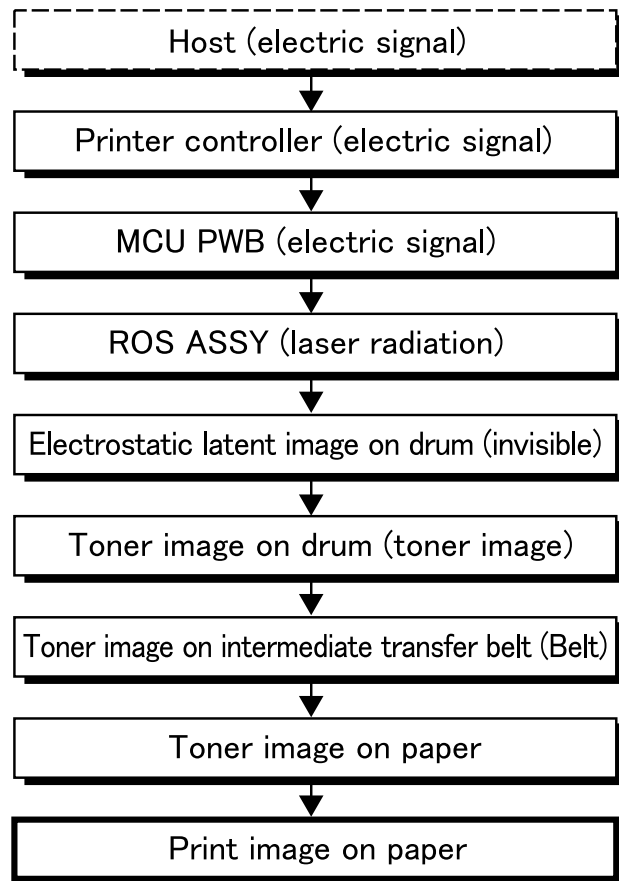


Figure 2-18. Fixing

2.2 Print Data Flow

2.2.1 Data Flow

Print data (electric signal) from the printer controller forms a print image through the following flow:



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Figure 2-19. Print Data Flow

NOTE: Formation of secondary print image

A line of dot images is formed by scanning while laser radiation is turned ON/OFF in accordance with electric signals (VIDEO signal: Expresses image data according to high/low voltage level) from the printer controller.

A single color image (secondary dot image) is completed by scanning 1 screen of the image. To get a full color image, a secondary dot image is formed for each of the 4 colors respectively.

Resolution is determined as follows:

- No. of dots in main scanning direction / inch
- No. of dots in sub scanning direction / inch

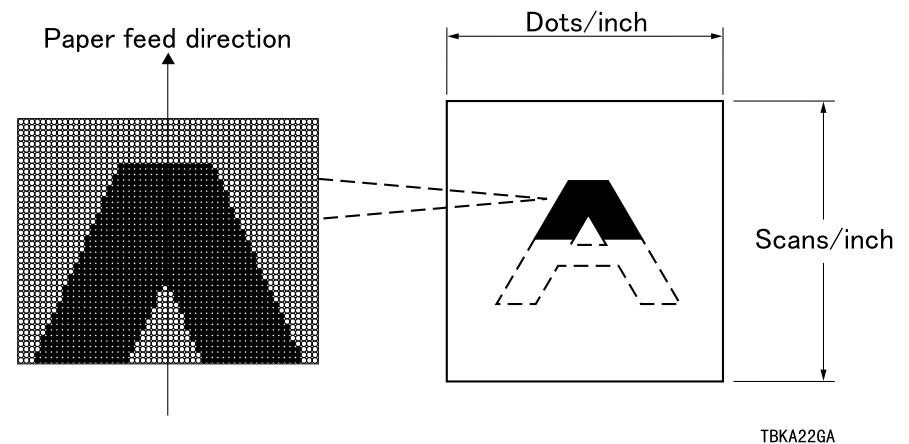


Figure 2-20. Formation of Secondary Print Image

2.3 Drive Transmission Route

2.3.1 PROCESS DRIVE ASSY

Rotation force of the PROCESS DRIVE ASSY is conveyed by the following flow.

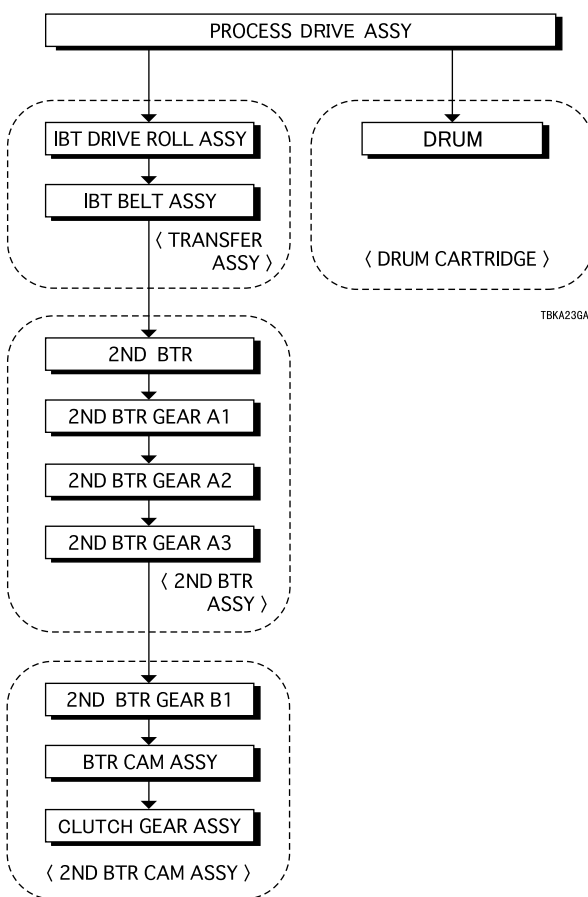


Figure 2-21. Process Drive Assy

2.3.2 FUSER MOTOR ASSY

Rotation force of the FUSER MOTOR ASSY is conveyed via the FUSER DRIVE ASSY by the following flow.

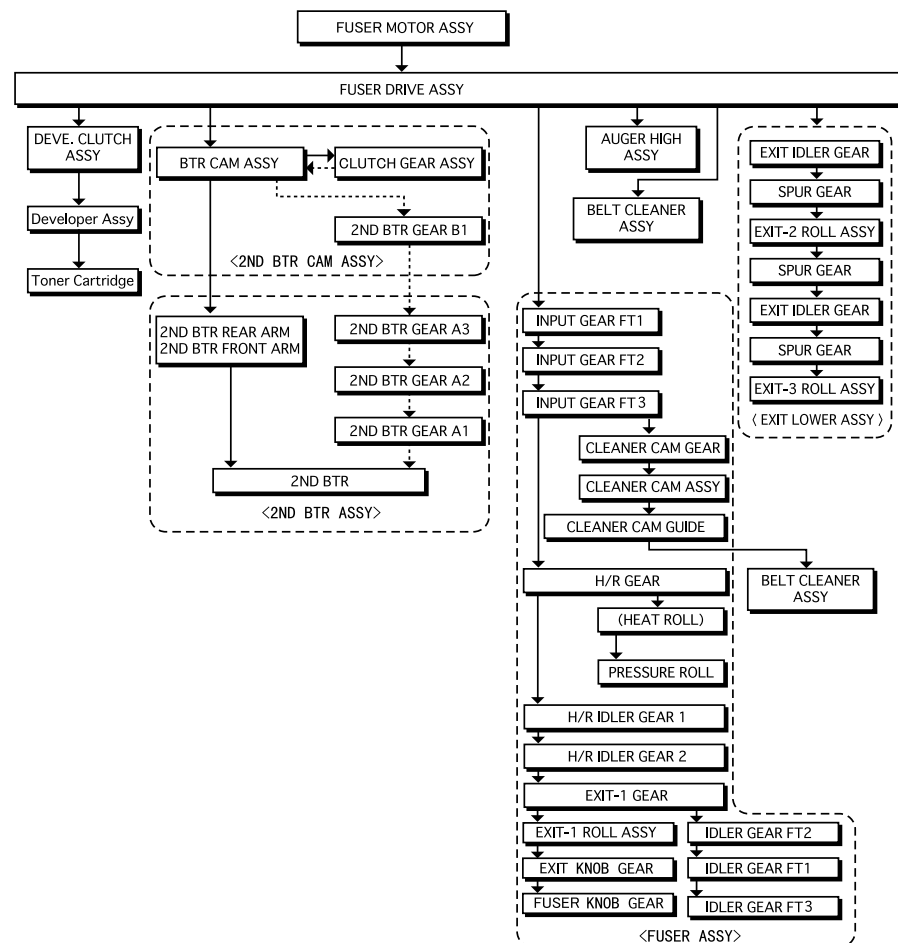


Figure 2-22. Fuser Motor Assy

2.3.3 P/H MOTOR ASSY

Rotation force of the P/H MOTOR ASSY is conveyed via the P/H DRIVE ASSY by the following flow.

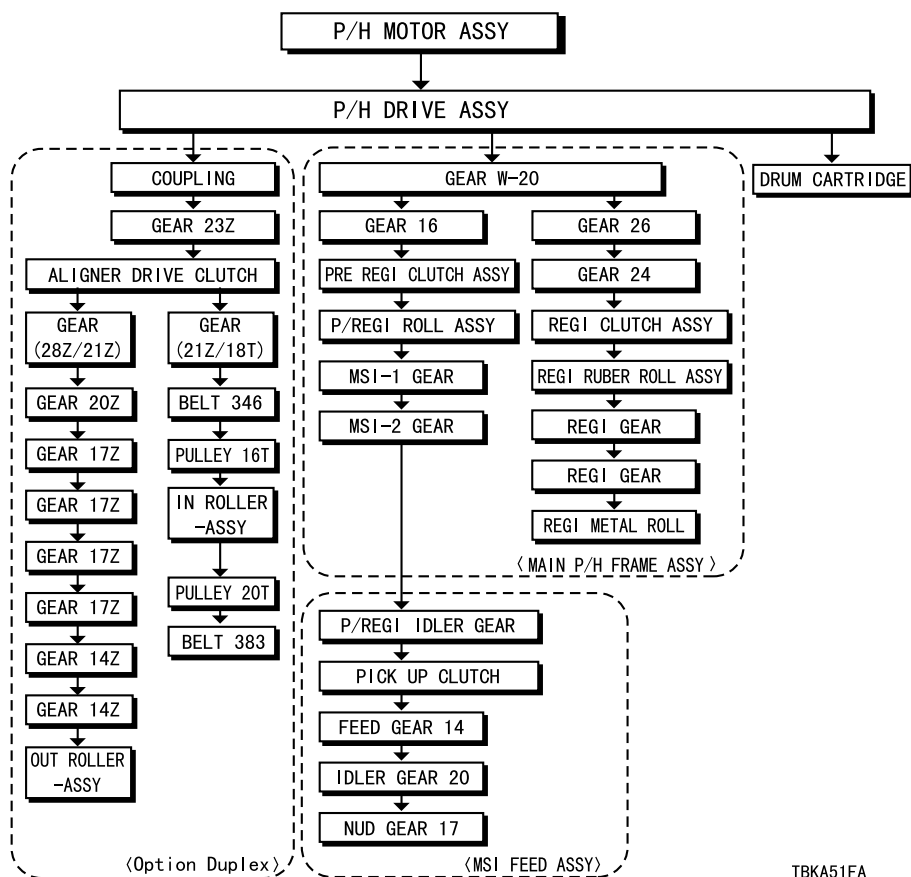
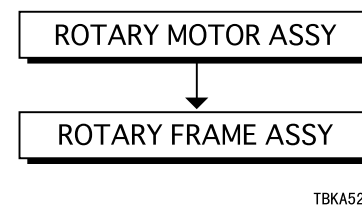


Figure 2-23. P/H Motor Assy

2.3.4 ROTARY MOTOR ASSY

Rotation force of the ROTARY MOTOR ASSY drives the ROTARY FRAME ASSY.



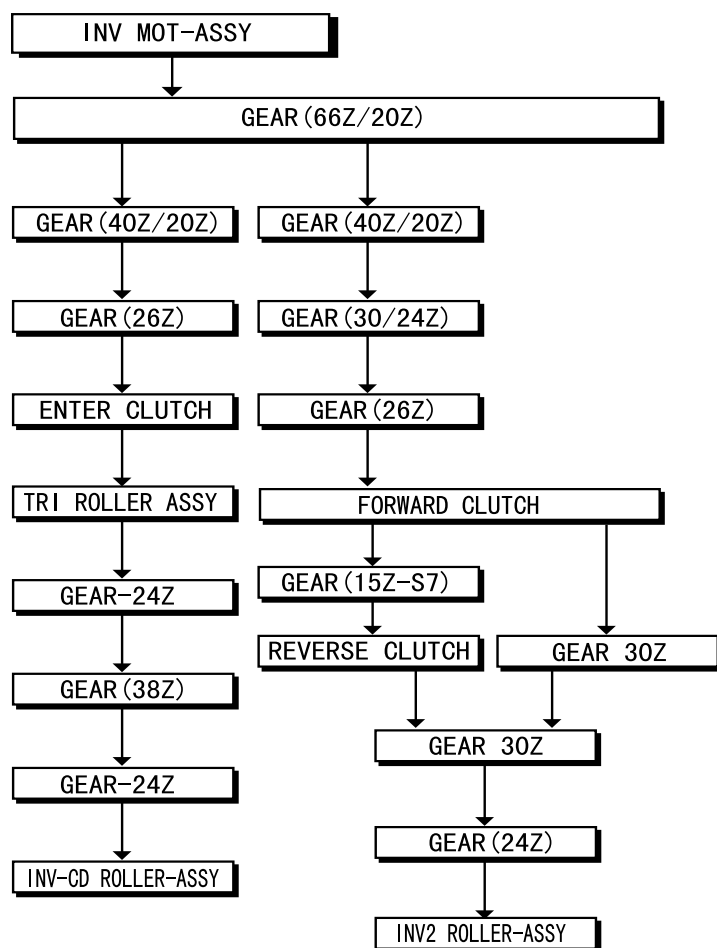
TBKA52FA

Figure 2-24. Rotary Motor Assy

TBKA51FA

2.3.5 INV MOTOR ASSY (Option Duplex)

Rotation force of the INV MOTOR ASSY is conveyed by the following flow.



TBKAA3FA

Figure 2-25. INV Motor Assy

2.3.6 Gear Layout

2.3.6.1 Printer

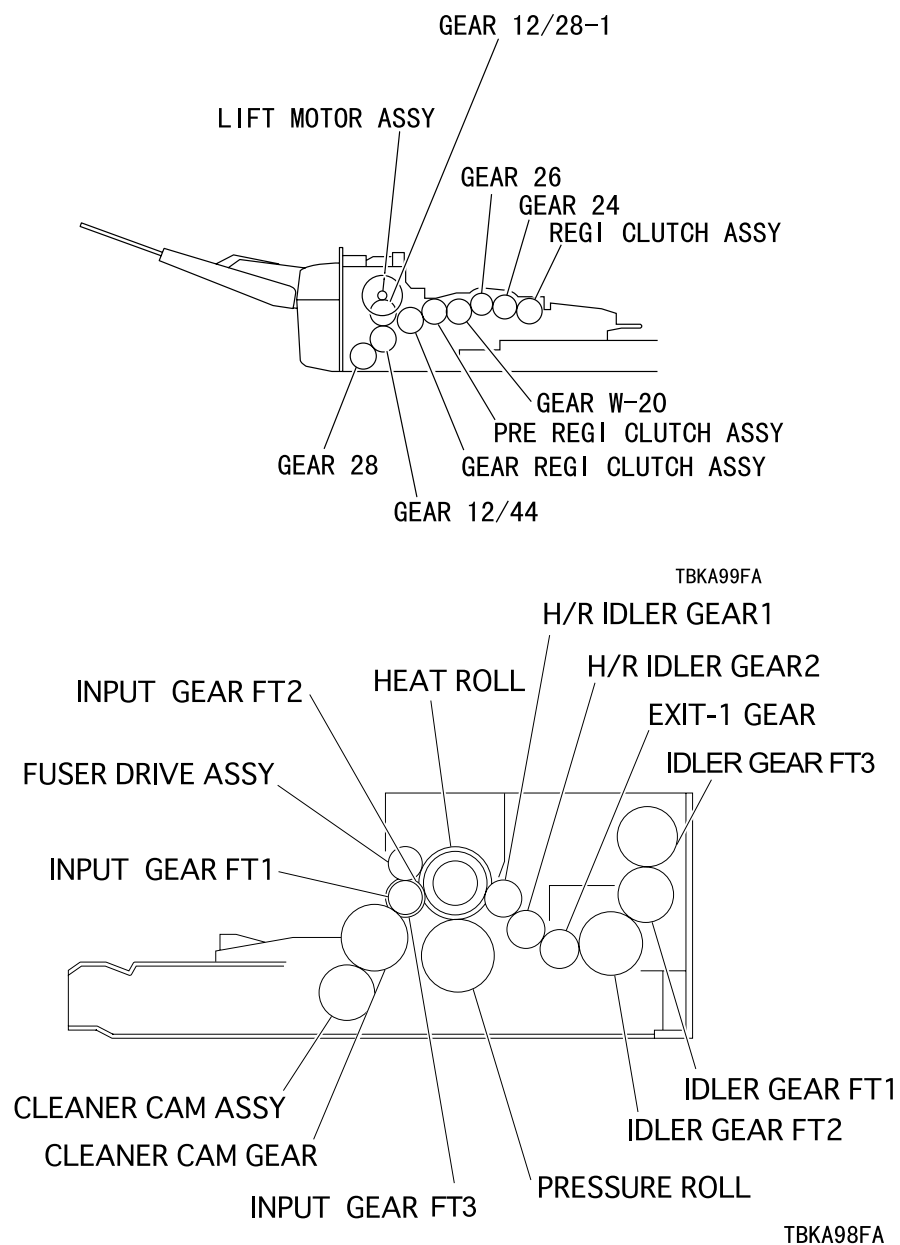
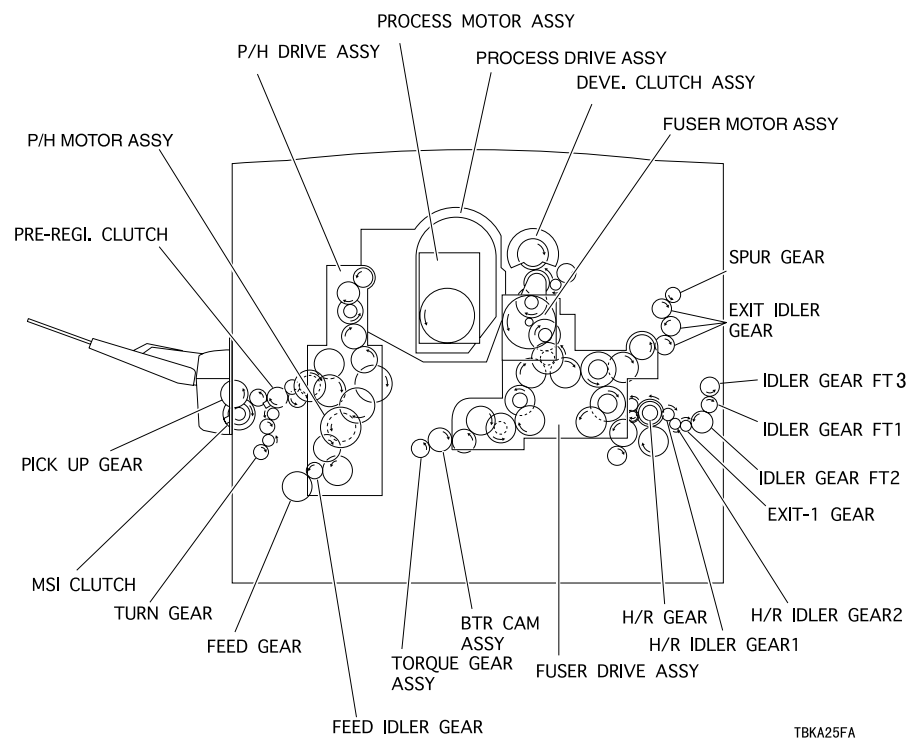
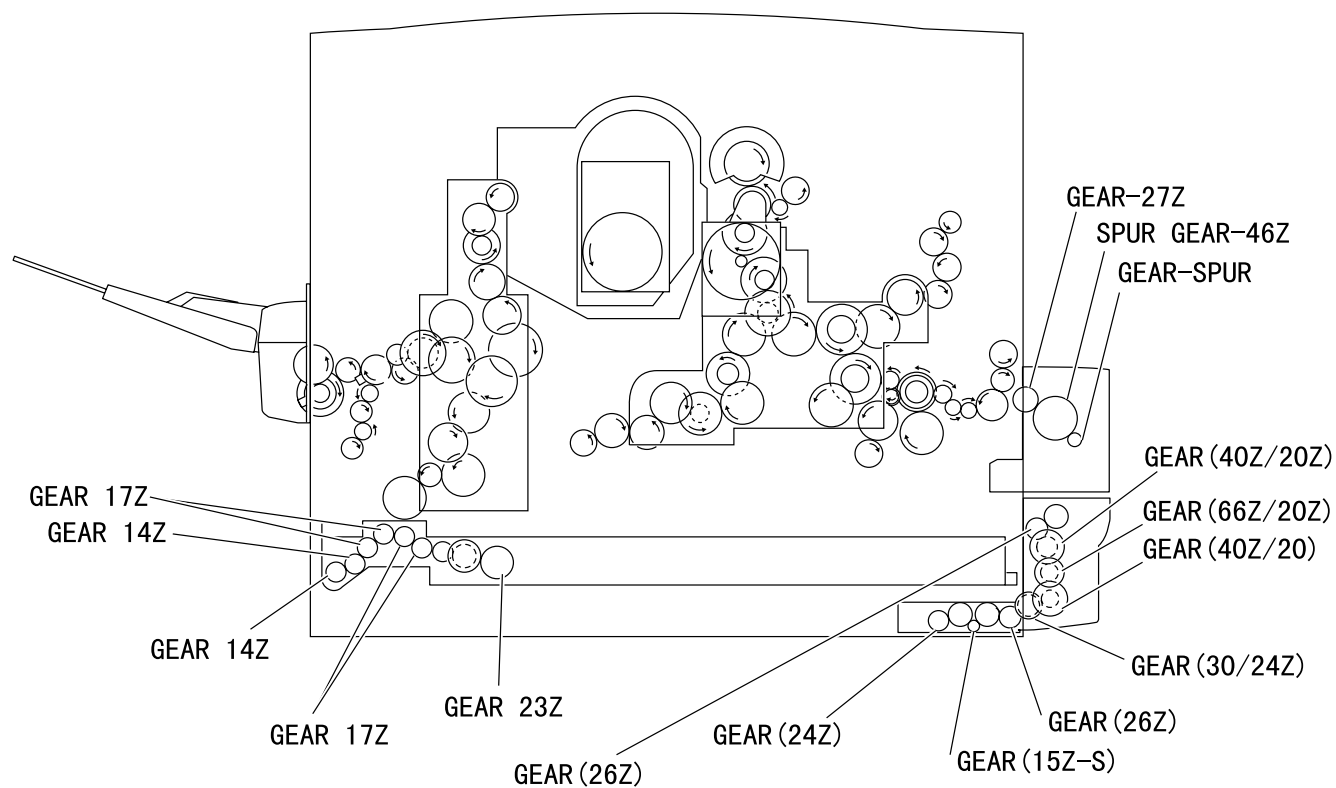


Figure 2-26. Gear Layout - Printer

2.3.6.2 Option Duplex



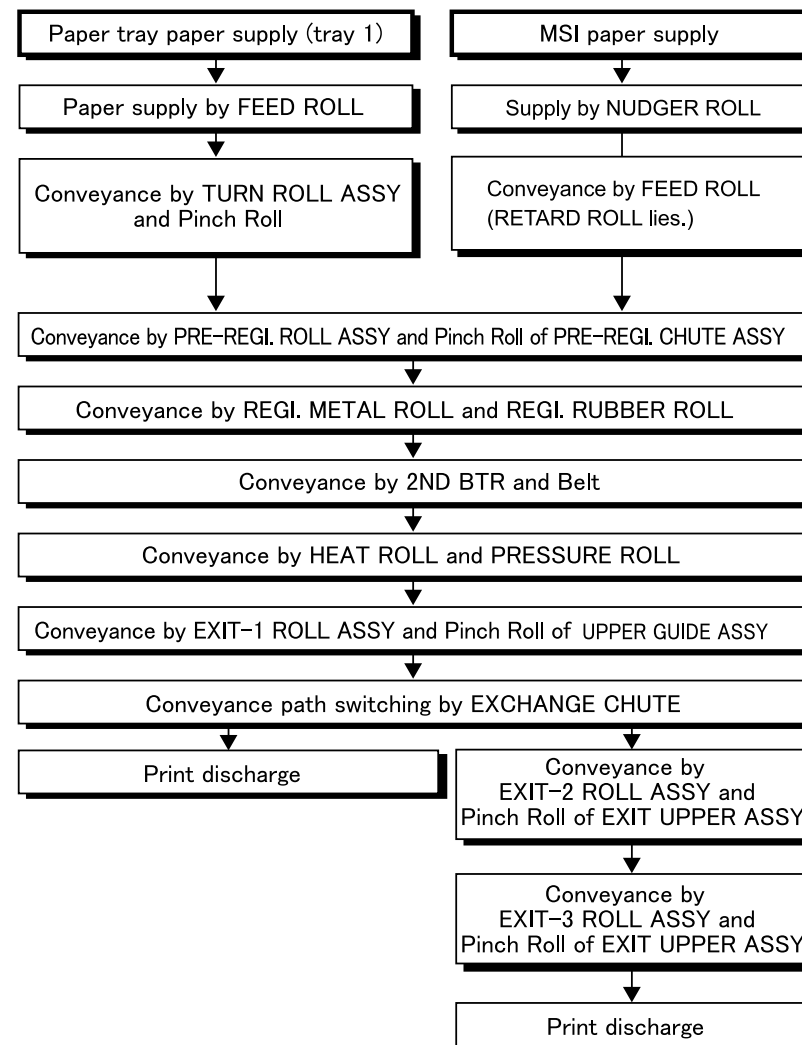
TBKAA4FA

Figure 2-27. Gear Layout - Option Duplex

2.4 Paper Feed

2.4.1 Paper Feed Path (When no options are installed)

NOTE: The paper feed at the bottom of the printer is called "Cassette 1", the first level of the optional FEEDER UNIT is called "Cassette2", and the second level is called "Cassette 3".



TBKA27GA

Figure 2-28. Paper Feed Path (When no options are installed)

2.4.2 Paper Feed Path (Option Duplex)

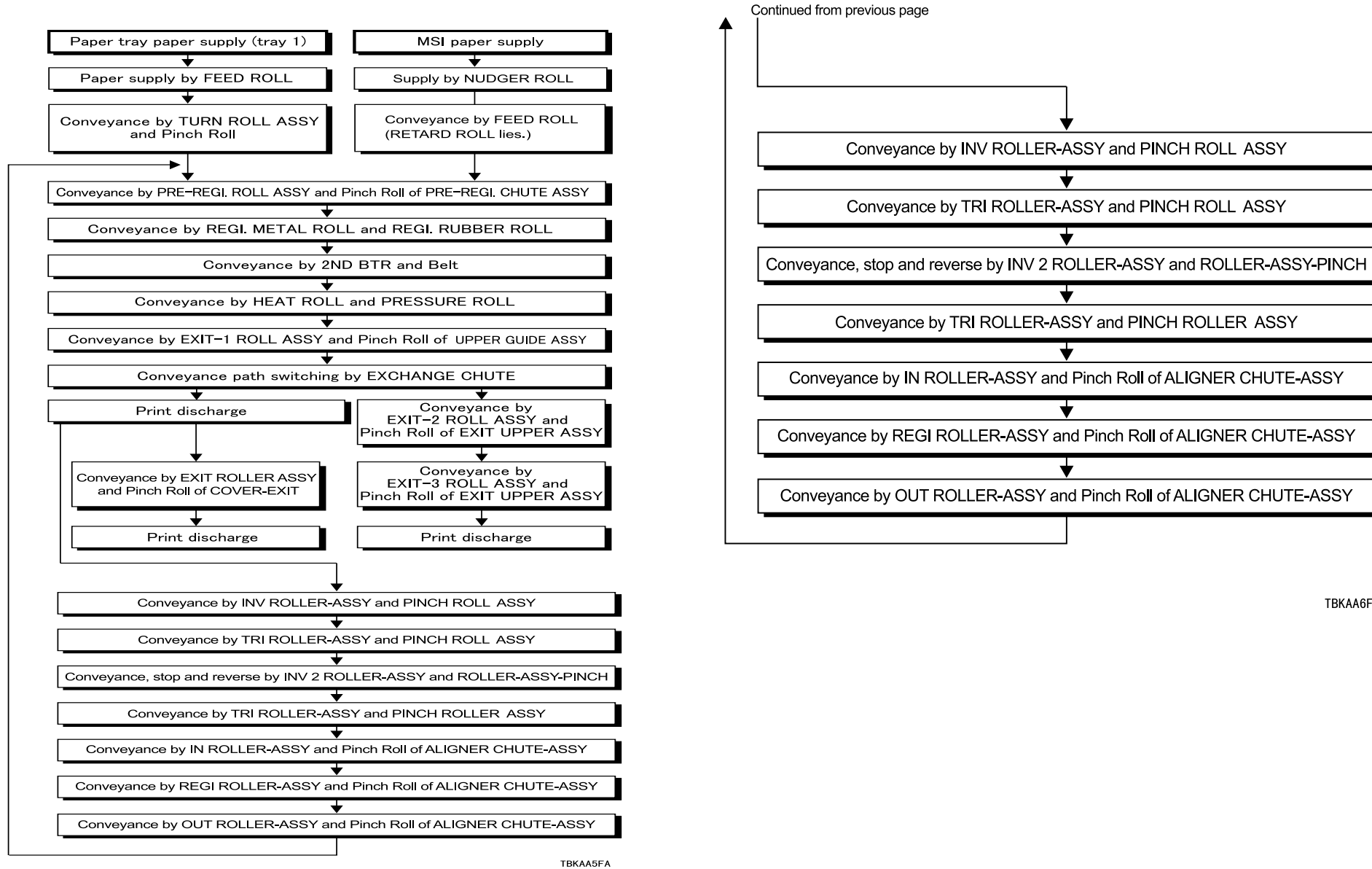
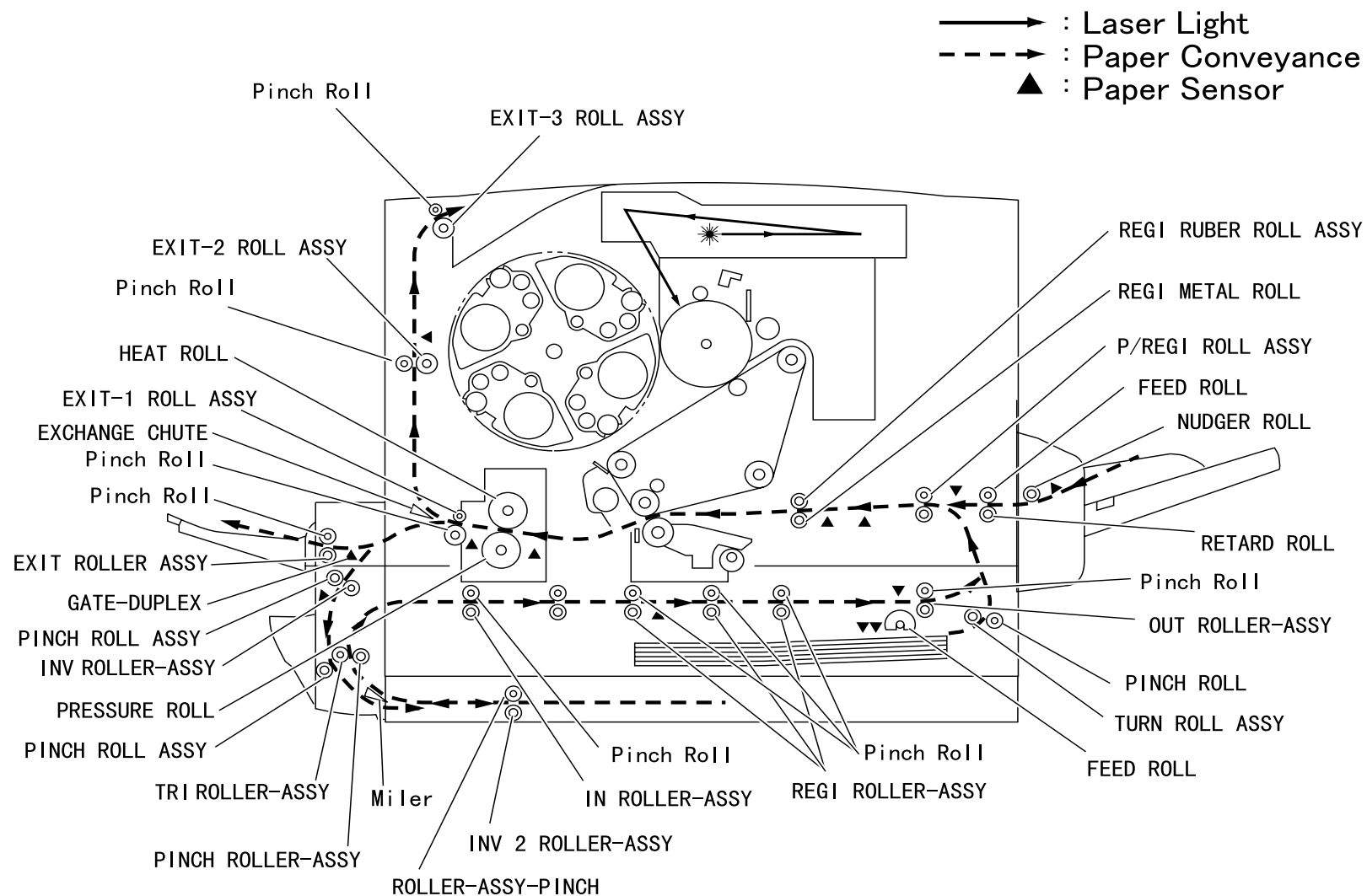


Figure 2-29. Paper Feed Path (Option Duplex)

2.4.3 Paper Conveyance Path Layout



TBKA28GA

Figure 2-30. Paper Conveyance Path Layout

2.5 Function of Main Working Parts

The main working parts of the printer are explained in correspondence to the drawings. The parts are divided into the following blocks according to configuration.

- Paper Tray
- Paper Feeder
- MSI/Paper Transportation I
- MSI/Paper Transportation II
- Xerographics I
- Xerographics II
- Development
- IBT I
- IBT II
- Fusing I
- Fusing II
- Paper Exit
- Frame & Drive
- Electrical

2.5.1 Paper Cassette

UNIVERSAL CASSETTE

- ☐ The END GUIDE is a movable guide that moves in the paper conveyance direction, and aligns the rear edge of the paper. Moving the END GUIDE moves the position of the SIZE ACTUATOR via the SECTOR GEAR. The SIZE ACTUATOR is turned ON by pushing in the Paper Size Switch on the SIZE SWITCH ASSY.
Changing the position of the SIZE ACTUATOR changes the ON/OFF combination of the 4 Paper Size Switches. The printer detects the paper size according to the ON/OFF combination.
- ☐ The REAR GUIDE ASS moves vertically in the paper conveyance direction, and aligns the sides of the paper.
- ☐ In order to obtain friction force by pushing on the paper FEED ROLL, the BOTTOM PLATE ASSY receives push up force by elastic force of the N/F SPRING. A Magnet that corresponds to the LOW PAPER SENSOR is attached to the back surface of the BOTTOM PLATE ASSY.
- ☐ The FRONT SNUBBER is a mechanism for preventing more than one sheet of paper from being fed at a time. The device utilizes the weight of the paper, pressing the corner of the paper edge to convey only one sheet at a time.

2.5.2 Paper Feeder

SIZE SWITCH ASSY

With 4 Paper Size Switches are attached directly to the plate, the SIZE SWITCH ASSY detects paper size and whether or not there is paper in the paper by the switch ON/OFF combinations by change in position of the SIZE ACTUATOR.

CASSETTE NO PAPER SENSOR

Detects whether or not there is paper in the paper by change in position of the CASSETTE N/P ACTUATOR.

LOW PAPER SENSOR

When paper set in the paper gets low, the distance between the BOTTOM PLATE ASSY and LOW PAPER SENSOR gets shorter. When the Magnet on the back surface of the BOTTOM PLATE ASSY approaches the LOW PAPER SENSOR, the LOW PAPER SENSOR detects magnetism, thus sensing that the amount of paper remaining is low.

FEED SOLENOID

Controls operation (rotation/stop) of the FEED ROLL ASSY by controlling rotation of the FEED GEAR.

FEED ROLL ASSY

When the FEED SOLENOID operates, the FEED GEAR and FEED IDLER GEAR mesh. Thus being driven by the P/H MOTOR ASSY, the FEED ROLL ASSY begins to turn, and the FEED ROLL feeds paper from the paper tray.

After completing an entire turn, the notch in the FEED GEAR stops the FEED ROLL ASSY from turning by disengaging the FEED GEAR and FEED IDLER GEAR, thus cutting off drive transmission. This feeds 1 sheet of paper per revolution.

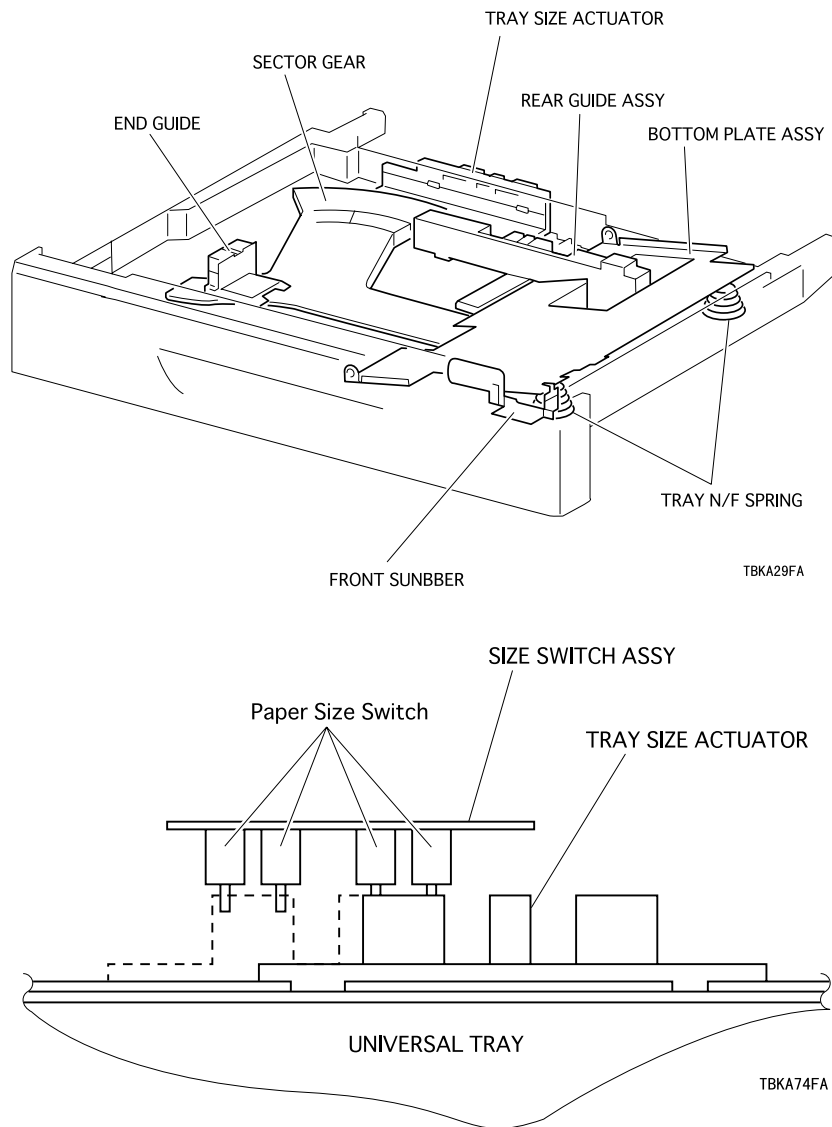


Figure 2-31. Paper Cassette

TURN ROLL ASSY

The TURN ROLL ASSY receives drive by the P/H MOTOR ASSY and rotates, feeding paper discharged from the paper to the MAIN P/H ASSY.

TURN CLUTCH

The TURN CLUTCH is transmits a drive from P/H MOTOR ASSY to TURN ROLL ASSY.

TURN CHUTE SWITCH

When opening and closing of TURN CHUTE UP ASSY was detected and it opened, TURN CHUTE SWITCH is a safety switch in control which makes each movement stop.

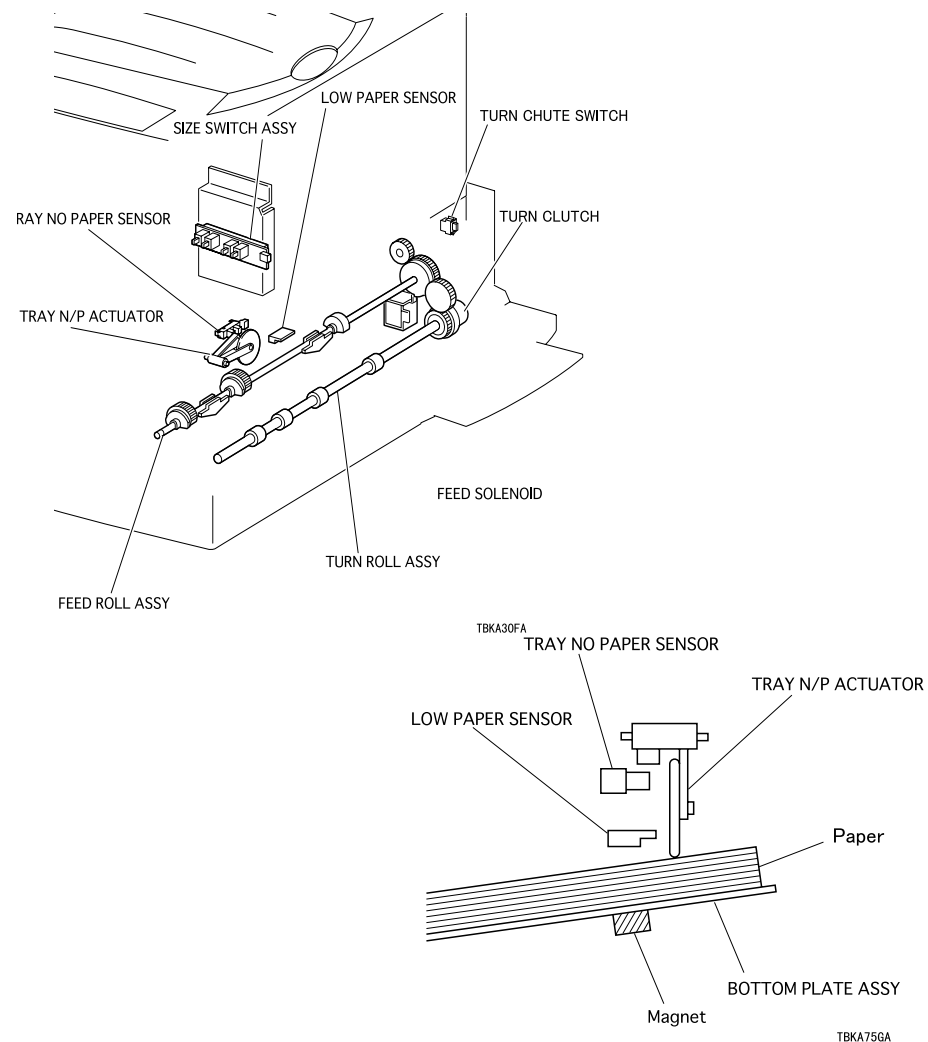


Figure 2-32. Paper Feeder

2.5.3 MSI/Paper Transportation I

MSI BASE ASSY

- ☐ **BOTTOM PLATE SENSOR**
Detects the paper feed angle (max 15°) of the BOTTOM PLATE, and control the LIFT MOTOR ASSY.
- ☐ **LIFT MOTOR ASSY**
MSI ROLL ASSY operation (rotation/stop) is controlled by controlling the rotation of the PICK UP CAM GEAR.

MSI FEED ASSY

- ☐ **EMPTY SENSOR**
Detect some/nothing of the paper inside MSI HOUSING.
- ☐ **PITCH SENSOR**
Detect the interval of the paper sent off by NUDGER ROLL, and control PICK UP CLUTCH.
- ☐ **LEVEL SENSOR**
Detect it, and control LIFT MOTOR ASSY feed position (height) of the paper.
- ☐ **NUDGER ROLL**
Take a drive by the movement of PICK UP CLUTCH, and send off a paper due to the rotation of NUDGERROLL.
- ☐ **FEED ROLL, RETARD ROLL**
The paper sent off by NUDGER ROLL is put in FEED ROLL and RETARD ROLL, and carried to P/REGI ROLL ASSY. A paper after the second sheet is prevented, and separated respectively by one sheet when it passes between FEED ROLL and RETARD ROLL when the form of many sheet is sent off with NUDGER ROLL.
- ☐ **PICK UP CLUTCH**
Cut drive transmission to NUDGER ROLL temporarily, and make the timing of the paper proper to keep the interval of the paper detected by PITCH SENSOR properly.

REGI/MSI INTL SW

Detect that MSI/REGI HIGH ASSY is being inserted into the printer securely.

MSI GUIDE SWITCH

MSI GUIDE SWITCH prohibits running when a paper except for A3 wide was set at the time of use of A3 wide, at the time of the OPTION DUPLEX use mode and at the time of the OPTION SORTER use mode after detecting the condition of MSI REGI GUIDE.

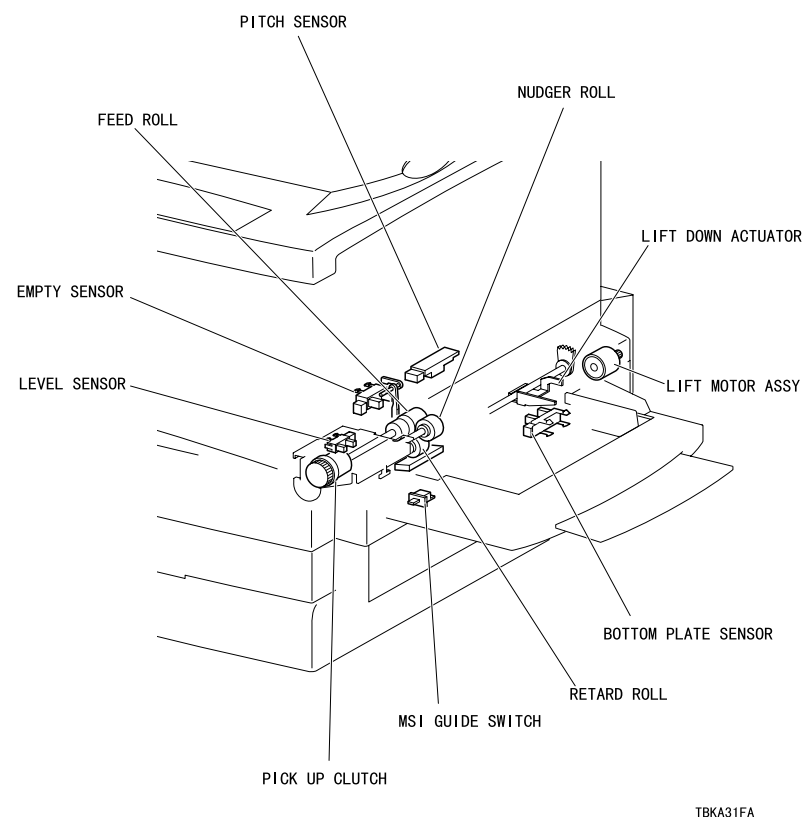


Figure 2-33. MSI /Paper Transportation I - 1

2.5.4 MSI/Paper Transportation II

MAIN P/H FRAME ASSY

The MAIN P/H FRAME ASSY consists of the following parts:

- P/REGI. ROLL ASSY
 - REGI. CLUTCH ASSY
 - PRE-REGI. CLUTCH ASSY
 - REGI. SENSOR
 - OHP SENSOR
 - REGI. METAL ROLL
 - REGI. RUBBER ROLL ASSY
- The REGI. METAL ROLL and REGI. RUBBER ROLL ASSY feed paper in synch with IBT BELT ASSY operation so that the complete toner image on the IBT BELT ASSY is correctly positioned on the paper.
 - The P/REGI. ROLL ASSY transports paper from the MSI ASSY to the REGI. METAL ROLL and REGI. RUBBER ROLL ASSY. The paper rear is also transported during the time when the top edge of the paper reaches the REGI. METAL ROLL and REGI. ROLL ASSY, and the REGI. METAL ROLL and REGI. ROLL ASSY turn, a loop is created for the paper, and paper edge skew is corrected.
 - The REGI. CLUTCH ASSY transmits drive of the P/H MOTOR ASSY to the REGI. METAL ROLL and REGI. RUBBER ROLL ASSY, and matches the paper with the secondary transfer position of the IBT BELT ASSY.
 - The PRE-REGI. CLUTCH ASSY transmits drive of the P/H MOTOR ASSY to the P/REGI. ROLL ASSY.
 - The REGI. SENSOR detects when the top edge of the paper reaches the REGI. METAL ROLL and REGI. RUBBER ROLL ASSY. The REGI. SENSOR also detects the rear edge of the paper in order to determine the size of the paper. (Paper size is determined from the time between when the REGI. CLUTCH turns ON until the REGI. SENSOR no longer detects paper.)

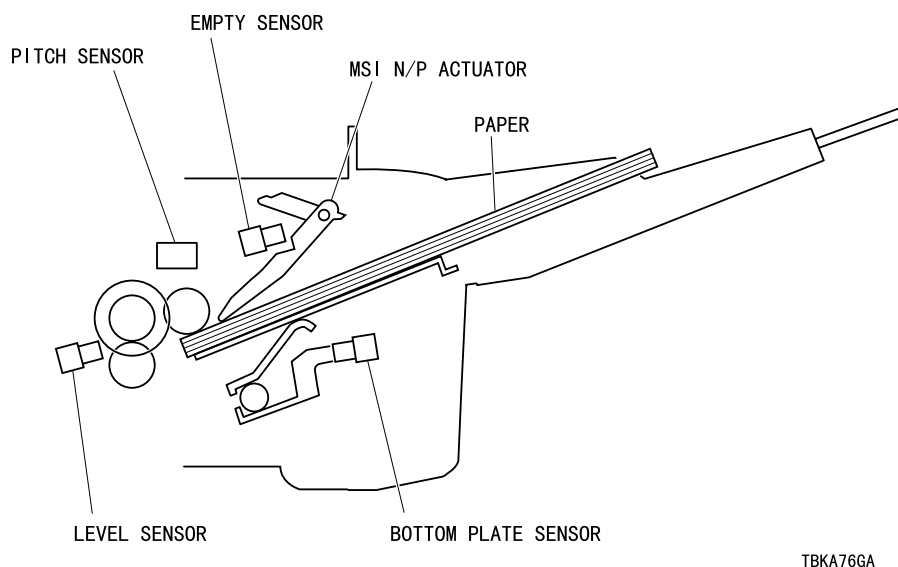
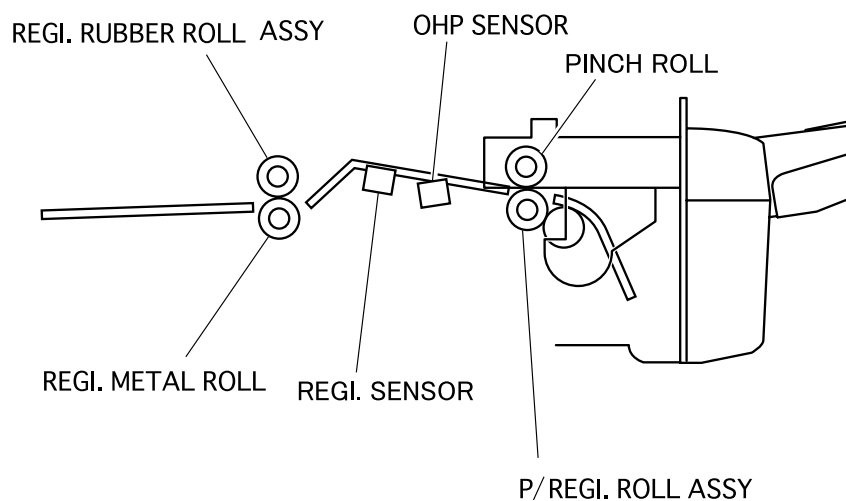


Figure 2-34. Transportation I - 2

- The OHP SENSOR detects the front/back of OHP film (for color). (For details, see 2.7.4 "OHP Front/Back Detection Control".)

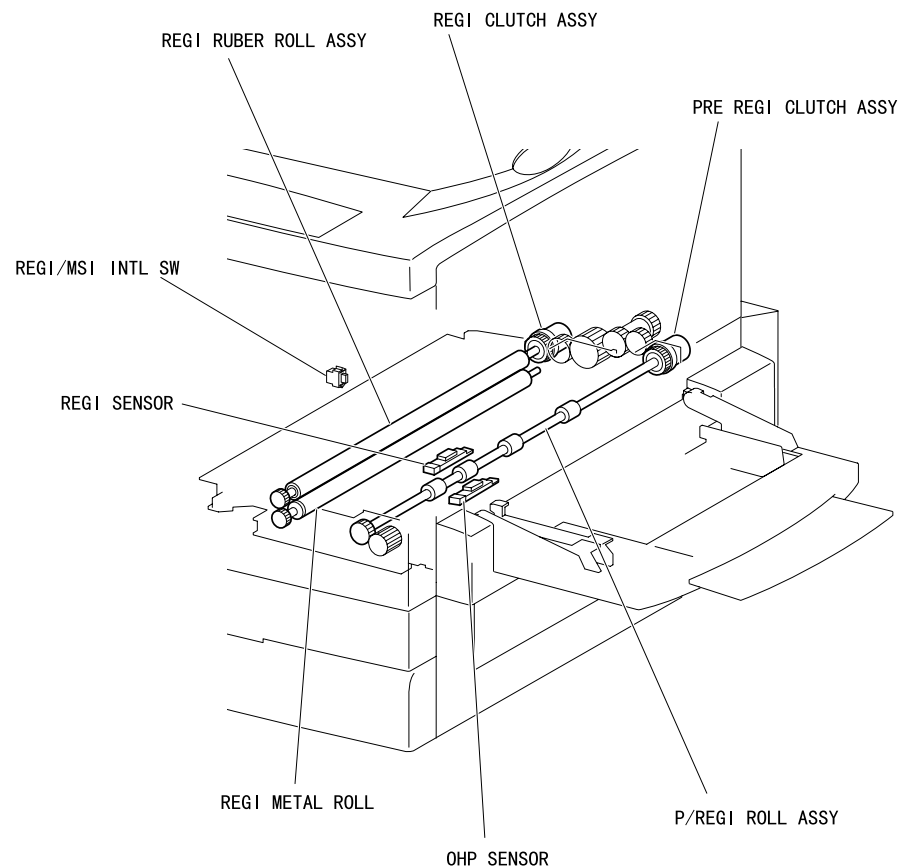
REGI/MSI INTL SW

The REGI/MSI INTL SW detects if the MSI/ REGI HIGH ASSY is installed to the printer. This is a safety switch for control which stops each function if the MSI/ REGI HIGH ASSY is not installed.



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Figure 2-35. MSI/Paper Transportation II - 1



TBKA32FA

Figure 2-36. MSI/Paper Transportation II - 2

2.5.5 Xerographics I

ROS ASSY

The ROS ASSY (Raster Output Scanner Assembly) is the exposure unit that outputs laser radiation to form an electrostatic latent image on the drum surface. Items concerning the ROS ASSY are simply referred to as "ROS" in this manual.

The ROS ASSY consists of the following parts:

- LD Assy
- Scanner Assy
- SOS PWB
- Lens
- Mirror
- Window

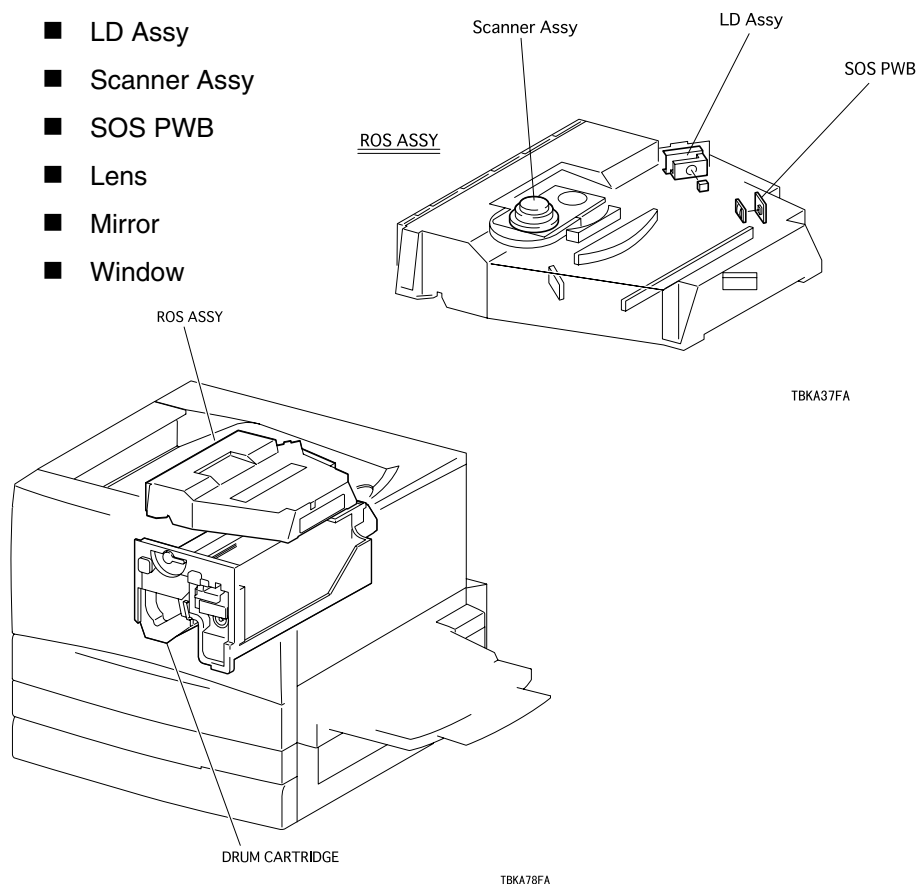


Figure 2-37. Xerographics I

- Image data is input to the ROS ASSY as an electric signal (expresses image data according to voltage level). The LD ASSY (Laser Diode Assembly) converts the image data from electric signals to light signals (expresses data by flashing the laser beam on and off). The proper electrostatic latent image cannot be obtained if the amount of laser radiation fluctuates, so the LD Assy constantly monitors LD output (LD Power) by monitor circuit, and controls power to keep a stable quantity of light. This control is referred to as "APC (Automatic Power Control)." (For details, see 2.7.5.3 "Quantity of Light Control" in this chapter.)
- The Scanner Assy consists of a Scanner Motor that turns at half speed and polygon mirrors mounted on the Scanner Motor shaft. Laser radiation output from the LD Assy strikes the polygon mirror. The polygon mirror has 12 reflecting mirror sides, and reflecting angle of the laser light changes by rotation of the Scanner Motor. The drum surface is scanned lengthwise by laser radiation by changing the reflecting angle. Each reflecting mirror surface scans 1 line.
- Laser radiation reflected by the polygon mirror reaches the drum surface by way of the lens, mirror and window. The lens corrects aberration, the mirror secures a light path, and the window prevents foreign matter from getting inside the ROS.
- Image data writing timing must coincide with the beginning of laser scanning in order to properly form an electrostatic latent image on the drum surface. When laser light is received by the SOS Sensor on the SOS PWB (Start of Scan Printed Wiring Board), it is converted into an electric signal (SOS signal) for detecting the initial position (start of scan reference point) for scanning the various lines.

2.5.6 Xerographics II

DRUM CARTRIDGE

The DRUM CARTRIDGE consists of the XERO. CARTRIDGE and WASTE TONER BOX.

- ☐ The XERO. CARTRIDGE consists of the drum, BCR and Cleaning Blade.
 - The drum is an aluminum cylinder coated with OPC (Organic Photo Conductor) sensitive material. Because OPC sensitive material is photoconductive (maintains charge in the dark, and acts as a conductor to release the charge through earth when struck by light), it forms an electrostatic latent image on the drum by laser scanning.
 - The BCR uniformly electrifies the surface of the drum in the "Electrification" step of the print process.
 - The Cleaning Blade scrapes toner left over from "Primary Transfer" of the print process from the surface of the drum.
- ☐ The WASTE TONER BOX collects toner scraped from the surface of the drum by the Cleaning Blade, and toner scraped from the IBT BELT ASSY by the BELT CLEANER ASSY and brought in by the AUGER HIGH ASSY.

ERASE LAMP ASSY

The ERASE LAMP ASSY eliminates remaining charge by irradiating the surface of the drum with light prior to being electrified by the BCR.

WASTE TONER SENSOR

The WASTE TONER SENSOR detects when the WASTE TONER BOX is full of waste toner.

TONER BOX SENSOR

The TONER BOX SENSOR detects whether or not the WASTE TONER BOX is mounted.

ADC SENSOR ASSY

The ADC ASSY consists of the ADC Sensor and ADC Solenoid, ADC Sensor.

- ☐ ADC Sensor
The ADC (Automatic Density Control) Sensor reads density of the toner image on the surface of the drum and of the surface of the drum itself, and feeds the information back to process control. (For details, see 2.7.6 "Process Control" in this chapter.)
- ☐ ADC Solenoid
If the parts of the ADC Sensor that emit and receive light become dirty from toner, etc., it becomes difficult to accurately measure the concentration of the drum surface and toner image. The ADC Solenoid therefore actuates and cleans the parts of the ADC Sensor that emit and receive light with the cleaning lever.

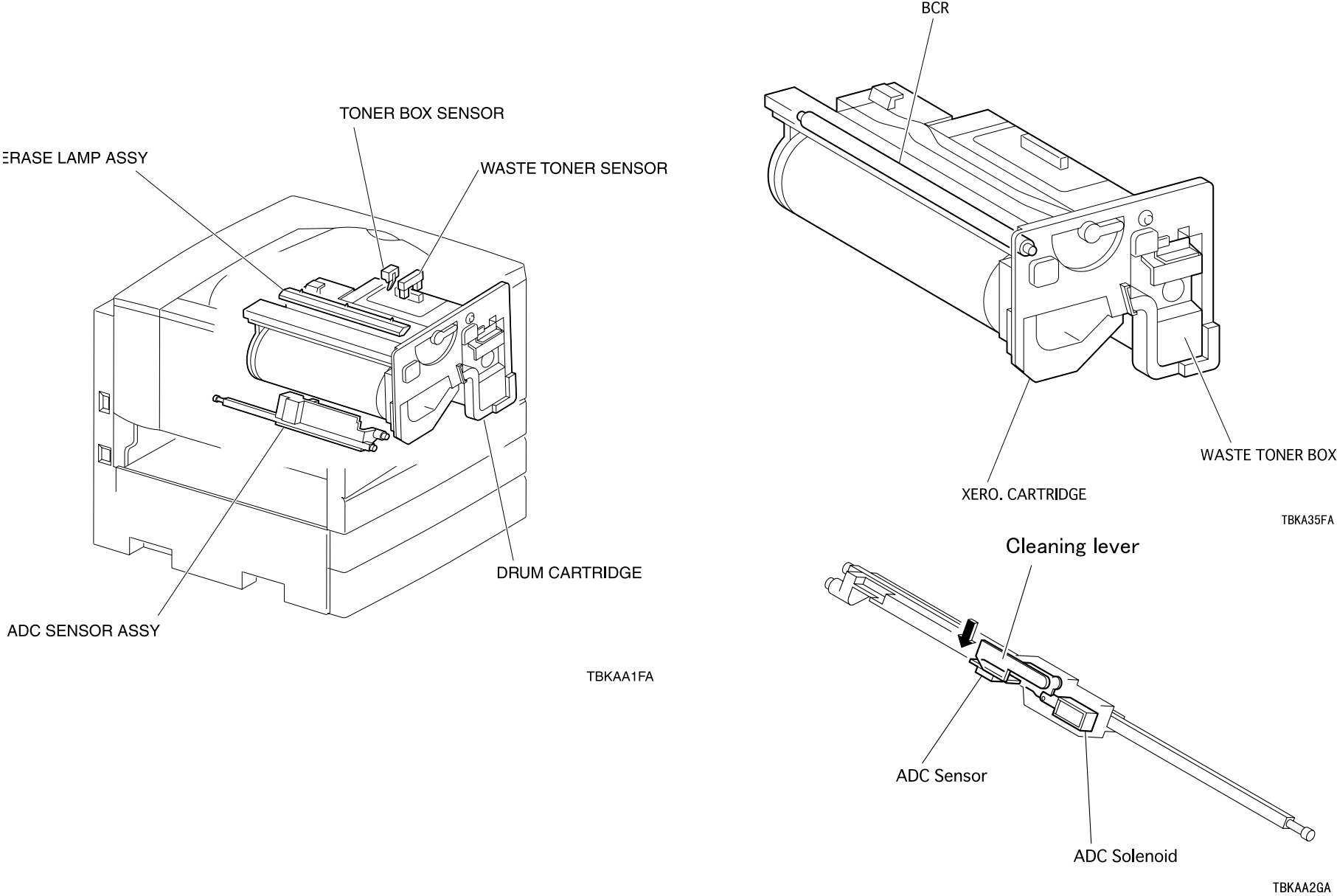


Figure 2-38. Xerographics II

2.5.7 Development

CARTRIDGE SENSOR

The CARTRIDGE SENSOR determines whether the each color of Toner Cartridge mounted is new or old. With trickle developing, the used developer is collected inside a separate chamber in the Toner Cartridge with the two functions. A white reflecting seal is applied inside the collecting chamber. When developer is collected it covers the reflecting surface so light is no longer reflected.

The CARTRIDGE SENSOR is a reflecting photosensor that detects reflection from the reflection chambers inside the various color Toner Cartridges, and determines that no developer has been collected when there is reflection (in other words, the Toner Cartridge is new), or that developer has been collected when there is no reflection (in other words, the Toner Cartridge is not new).

The CARTRIDGE SENSOR also detects reflection from each color Toner Cartridge, and determines that the Toner Cartridge is mounted when there is reflection, or that the Toner Cartridge is not mounted when there is no reflection.

ROTARY SENSOR

Detects home position of the ROTARY FRAME ASSY. The home position is the starting point for DEVE. Control. (For details, see 2.7.8 "DEVE. Control" in this chapter.)

DEVELOPER ASSY Y, DEVELOPER ASSY M, DEVELOPER ASSY C, DEVELOPER ASSY BK

The Developer Assy consists of the Auger, Magnet Roll, Trimmer Blade, and Tracking Roll.

- ☐ The Developer Assy contains 3 Augers: one that supplies toner from the Toner Cartridge to the Developer Assy, one that mixes developer inside the Developer Assy, and one that supplies developer inside the Developer Assy to the Magnet Roll.

- ☐ The Magnet Roll attracts carrier (which is a magnetic material) by force of magnetism, forms a uniform layer of developer, and supplies toner to the drum.
- ☐ Trimmer Blades are arranged at positions having a certain clearance with the Magnet Roll, and form a uniform layer of developer on the Magnet Roll.
- ☐ The Tracking Roll maintains a certain distance between the drum and Magnet Roll.

TONER CARTRIDGE Y, TONER CARTRIDGE M, TONER CARTRIDGE C, TONER CARTRIDGE BK

Toner Cartridges charge toner (including carrier) to be supplied and collect developer (mainly carrier) with reduced electrification characteristics.

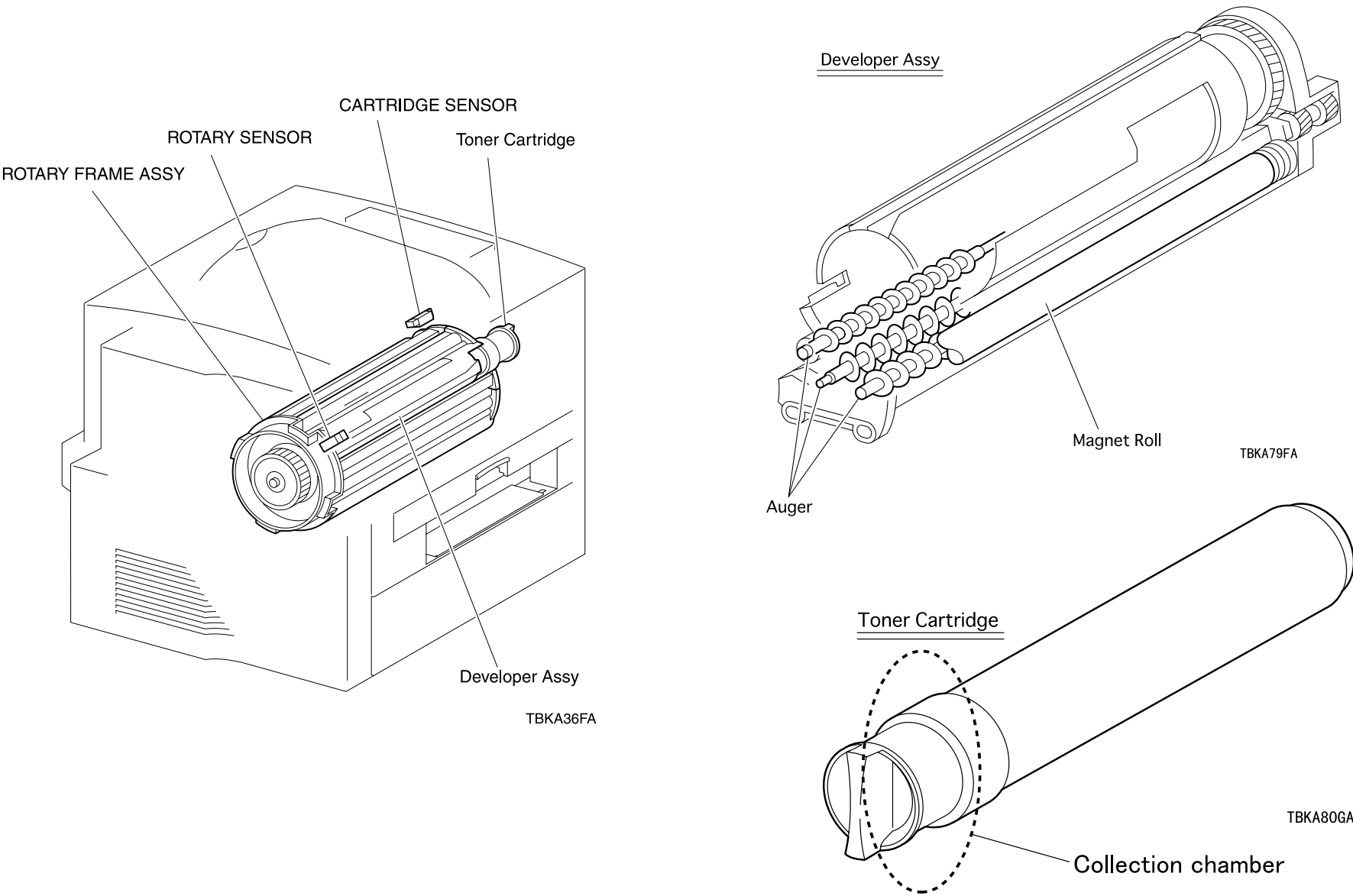


Figure 2-39. Development

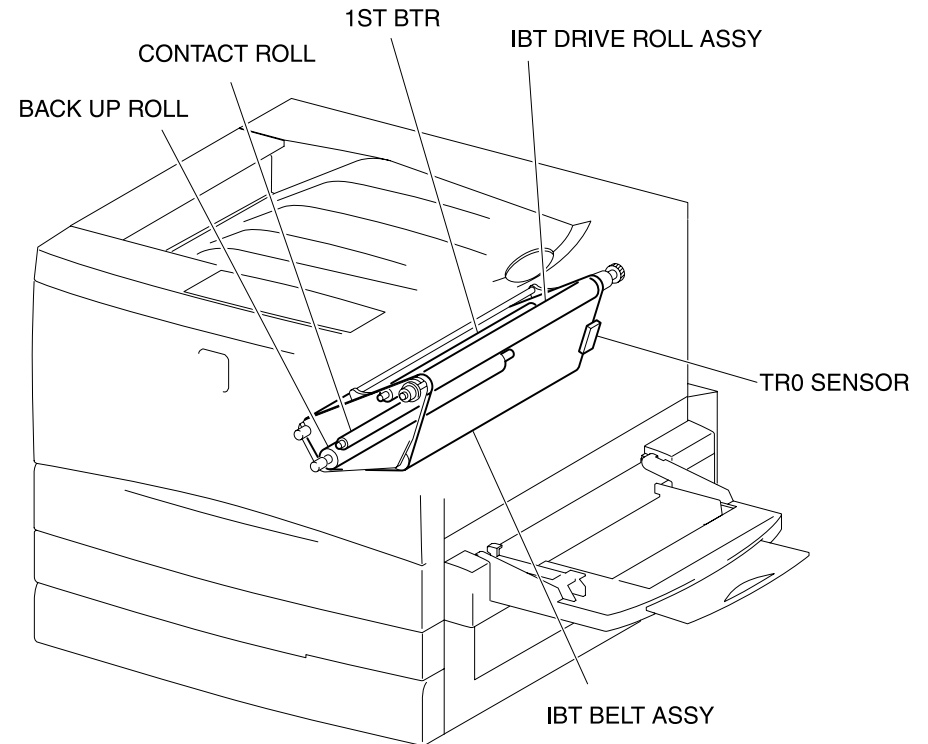
2.5.8 IBT I

TRANSFER ASSY

The TRANSFER ASSY consists of the following parts.

- 1ST BTR
 - BACK UP ROLL
 - CONTACT ROLL
 - IBT DRIVE ROLL ASSY
 - TR0 SENSOR
 - IBT BELT ASSY
- The 1ST BTR (First Bias Roll) is a conductive roll that sandwiches the IBT BELT ASSY together with drum, and transfers the toner image on the drum to the surface of the IBT BELT ASSY (primary transfer).
 - The CONTACT ROLL is metal roll of small diameter that makes contact with the BACK UP ROLL, and supplies transfer voltage to the BACK UP ROLL for secondary transfer.
 - The BACK UP ROLL is a conductive roll that sandwiches the IBT BELT ASSY together with 2ND BTR from the inside, and induces a charge to the 2ND BTR for secondary transfer.
 - The IBT DRIVE ROLL ASSY transmits the drive of the PROCESS MOTOR ASSY to the IBT BELT ASSY.
 - The positions of the each color toner image transferred must line up accurately on the IBT BELT ASSY. A silver mark (TRO mark) is therefore applied to the rear edge of the IBT BELT ASSY as a reference for transfer position of toner images. The TRO SENSOR detects the transfer reference mark once per cycle of the IBT BELT ASSY. A TRO signal (signal for reference point for forming YMCKb image and transfer reference point) when a certain amount of time elapses following a detection signal. For B/W Mode (TRO-less mode), without using TRO signal, where the DRUM and the DEVELOPER ASSY meet is the reference point and a print control is conducted.

- The IBT BELT ASSY transfers a toner image of each color developed on the drum to the 1ST BTR, forming a complete toner image of the 4 overlapped colors. When the 4-color toner image is formed, a supply of negative voltage is received from the BACK UP ROLL, and a complete toner image consisting of 4 colors is transferred (secondary transfer) to paper.



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Figure 2-40. IBT I

2.5.9 IBT II

2ND BTR ASSY

The 2ND BTR ASSY consists of the following parts:

- 2ND BTR
 - 2ND BTR CLEANER
 - Detack Saw (discharge plate)
- ☐ The 2ND BTR (Second Bias Transfer Roll) is a conductive roll that sandwiches the IBT BELT ASSY from the outside together with BACK UP ROLL, induces a charge with the voltage supplied by the BACK UP ROLL, and transfers the toner image on the IBT BELT ASSY to paper (secondary transfer).
- ☐ The 2ND BTR CLEANER scrapes toner from the surface of the 2ND BTR and collects the toner in a space inside the 2ND BTR ASSY.
- ☐ The Detack Saw (discharge plate) allows the charge to escape to the reverse side of the paper, and neutralizes/eliminates the charge of the paper.

2ND BTR CAM ASSY

- ☐ 2ND BTR CAM ASSY consists of the following parts.
- BTR CAM CLUTCH
 - BTR WHEEL SENSOR
 - BTR CAM ASSY
- ☐ The BTR CAM ASSY transmits drive from the P/H MOTOR ASSY to the 2ND BTR CAM ASSY via the P/H DRIVE ASSY, and controls the advance (IBT BELT ASSY and 2ND BTR CLEANER make contact) and retract (IBT BELT ASSY and 2ND BTR CLEANER do not make contact) of the 2ND BTR ASSY.
- ☐ The BTR WHEEL SENSOR detects the BTR WHEEL of the BTR CAM ASSY, and monitors the advance/ retract condition from the BTR CAM ASSY stop position (the CAM position).

- ☐ The BTR CAM ASSY, by operating the BTR CAM, make the advance / retract of the 2ND BTR CAM CLUTCH carry out .

BELT CLEANER ASSY

The BELT CLEANER ASSY consists of the following parts:

- Cleaning Blade
 - Auger
- ☐ The Cleaning Blade makes contact with the IBT BELT ASSY after the secondary transfer step and scrapes residual toner from the IBT BELT ASSY.

- The Auger transports the toners scraped away by the Cleaning Blade to the AUGER HIGH ASSY. (The AUGER HIGH ASSY transports toner to the WASTE TONER BOX.)

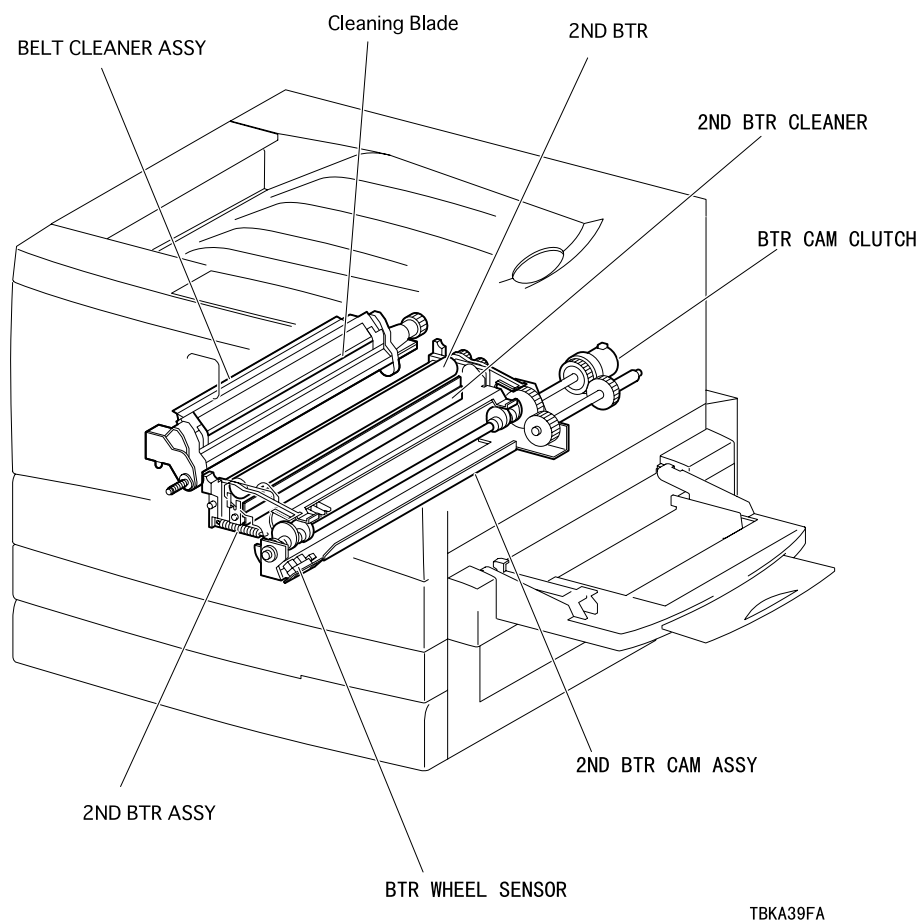


Figure 2-41. IBT II

2.5.10 Fusing I

FUSER ASSY

Along with fixing unfixed toner transferred to paper with heat and pressure, the FUSER ASSY transports the paper before and after fixing. The FUSER ASSY consists of the MAIN FUSER ASSY and FUSER ASSY.

□ MAIN FUSER ASSY

The MAIN FUSER ASSY consists of the HEAT ROLL, PRESSURE ROLL, H/R HEATER, P/R HEATER and TEMP. SENSOR ASSY.

- The HEAT ROLL is a hollow metal roll whose surface is coated with a layer of rubber that adds heat for fixing toner on paper.
- The PRESSURE ROLL is a hollow metal roll whose surface is coated with a layer of rubber that adds heat and pressure for fixing toner on paper.
- The H/R HEATER is a halogen lamp with a sealed heating coil that serves as the source of heat for the HEAT ROLL. The H/R HEATER is contained in the hollow inside of the HEAT ROLL, and raises the temperature of the HEAT ROLL to a temperature where fixing is possible.
- The P/R HEATER is a halogen lamp with a sealed heating coil that serves as the source of heat for the PRESSURE ROLL. The P/R HEATER is contained in the hollow inside of the PRESSURE ROLL, and raises the temperature of the PRESSURE ROLL to a temperature at which fixing is possible.
- The TEMP. SENSOR ASSY is sensor for detecting temperature that uses a thermistor (device for which resistance changes according to temperature). Making constant contact with the HEAT ROLL, the TEMP. SENSOR ASSY detects the surface temperature of the HEAT ROLL. The TEMP. SENSOR ASSY turns the H/R HEATER and P/R HEATER ON/OFF (lamp on/off control) and prevents primary overheating based on the detected temperature.
- The Thermostat is directly connected to the power supply circuit for the H/R HEATER and P/R HEATER. If the TEMP. SENSOR ASSY device for preventing primary overheating fails to operate, the heat causes the

contact inside the Thermostat to open, forcibly interrupting the power supply to the H/R HEATER and P/R HEATER, thus preventing secondary overheating.

- The Thermal Fuse is directly connected to the power supply circuit for the H/R HEATER and P/R HEATER. If the TEMP. SENSOR ASSY device for preventing primary overheating by fails to operate, the Thermal Fuse is melted by heating, forcibly interrupting the power supply to the H/R HEATER and P/R HEATER, and thereby preventing tertiary overheating.
- The FUSER EXIT SENSOR detects passage of paper by change in position of the FUSER EXIT ACTUATOR.
- The H/R FINGER prevents paper from wrapping around the HEAT ROLL.
- The P/R FINGER prevents paper from wrapping around the PRESSURE ROLL.

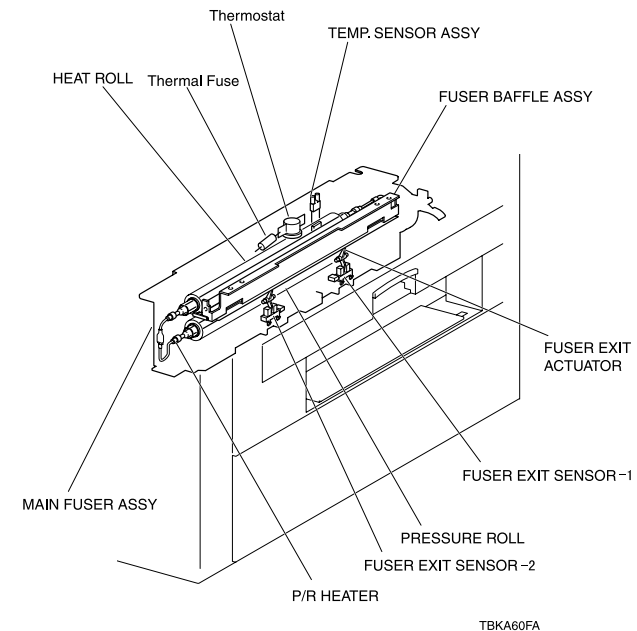


Figure 2-42. Fusing I

2.5.11 Fusing II

FUSER ASSY

Along with fixing unfixed toner transferred to paper with heat and pressure, the FUSER ASSY transports the paper before and after fixing. The FUSER ASSY consists of the MAIN FUSER ASSY and FUSER ASSY.

□ FUSER ASSY

Consisting of the FUSER IN SENSOR, and EXCHANGE SOLENOID etc., the FUSER ASSY transports paper before and after the MAIN FUSER ASSY.

■ FUSER IN SENSOR

The FUSER IN SENSOR detects passage of paper by change in the position of the FUSER IN ACTUATOR. (Detects top edge of paper using detection timing of FUSER EXIT SENSOR as a reference point.)

■ FUSER CHUTE FAN

The FUSER CHUTE FAN pulls the paper along the FUSER PAPER GUIDE and HORIZONTAL CHUTE in order to line up the paper transported to the MAIN FUSER ASSY.

■ CLEANER CAM SOLENOID

The toner image in the process of being formed will be destroyed if the Cleaning Blade of the BELT CLEANER ASSY touches the IBT BELT ASSY before the complete toner image is formed on the IBT BELT ASSY. The Cleaning Blade of the BELT CLEANER ASSY therefore must touch the IBT BELT ASSY only immediately after transferring the image to paper (secondary transfer), and must not touch the IBT BELT ASSY at any other time. The CLEANER CAM SOLENOID transmits drive from the FUSER MOTOR ASSY to the CLEANER CAM ASSY and CLN CAM GUIDE via the FUSER DRIVE ASS, and advances the BELT CLEANER ASSY (Cleaning Blade of the BELT CLEANER ASSY touches IBT BELT ASSY) and retracts the BELT CLEANER ASSY (Cleaning Blade of the BELT CLEANER ASSY does not touch IBT BELT ASSY).

■ EXCHANGE SOLENOID

There are two modes of discharging prints after fixing: FACE UP and FACE DOWN. The EXCHANGE SOLENOID controls the print discharge mode by switching the EXCHANGE CHUTE.

■ EXIT-1 ROLL ASSY

Transports prints coming from the MAIN FUSER ASSY after fixing.

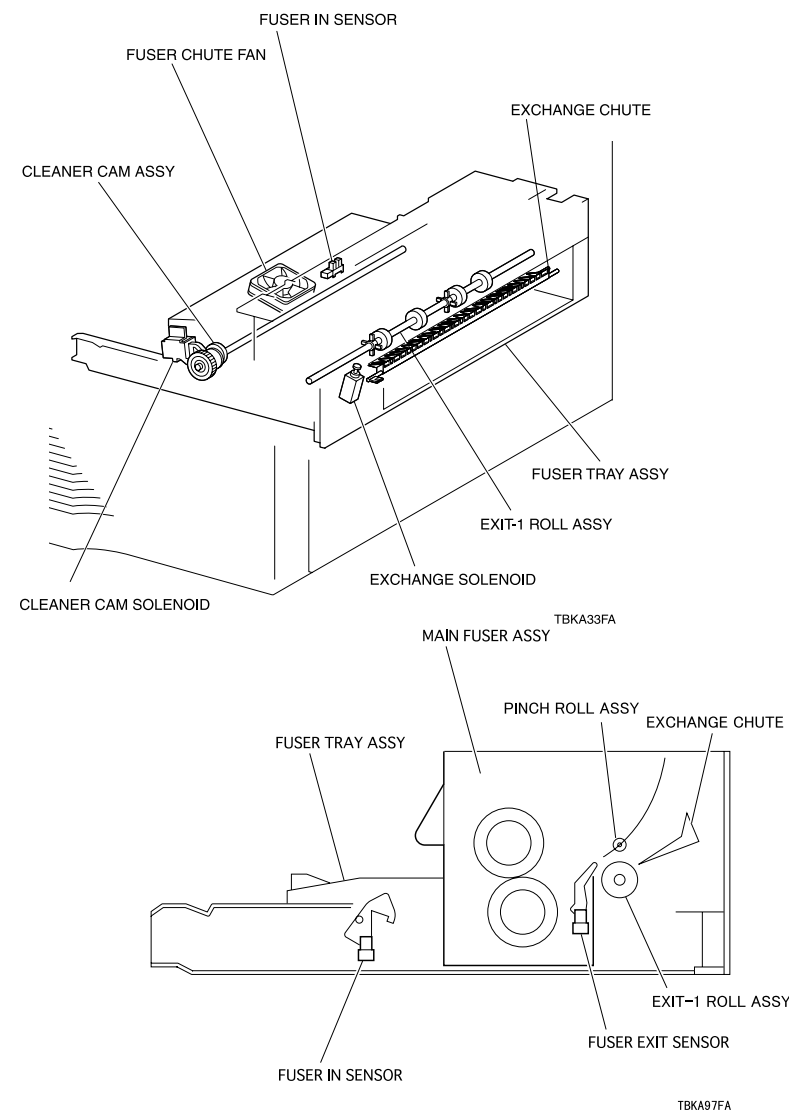


Figure 2-43. Fusing II

2.5.12 Paper Exit

EXIT-2 ROLL ASSY

Transports prints after fixing for FACE DOWN discharge on the TOP COVER ASSY.

EXIT-3 ROLL ASSY

Transports prints after fixing for FACE DOWN discharge on the TOP COVER ASSY.

EXIT CHUTE SWITCH

The EXIT CHUTE SWITCH is a safety switch that detects whether the EXIT UPPER ASSY is open or closed (ON when pushed in by rib of EXIT UPPER ASSY), and stops operation when the EXIT UPPER ASSY is open.

FUSER FAN-1

Discharges heat of the FUSER ASSY to prevent the internal temperature from rising excessively.

EXIT CHUTE FAN

Discharges heat of the FUSER ASSY to prevent the internal temperature from rising excessively.

TOP EXIT SENSOR

The TOP EXIT SENSOR detects passage of the print after fixing by change in position of the actuator.

FULL STACK SENSOR

The FULL STACK SENSOR detects the specified number of prints on the TOP COVER ASSY has been exceeded by change in position of the actuator.

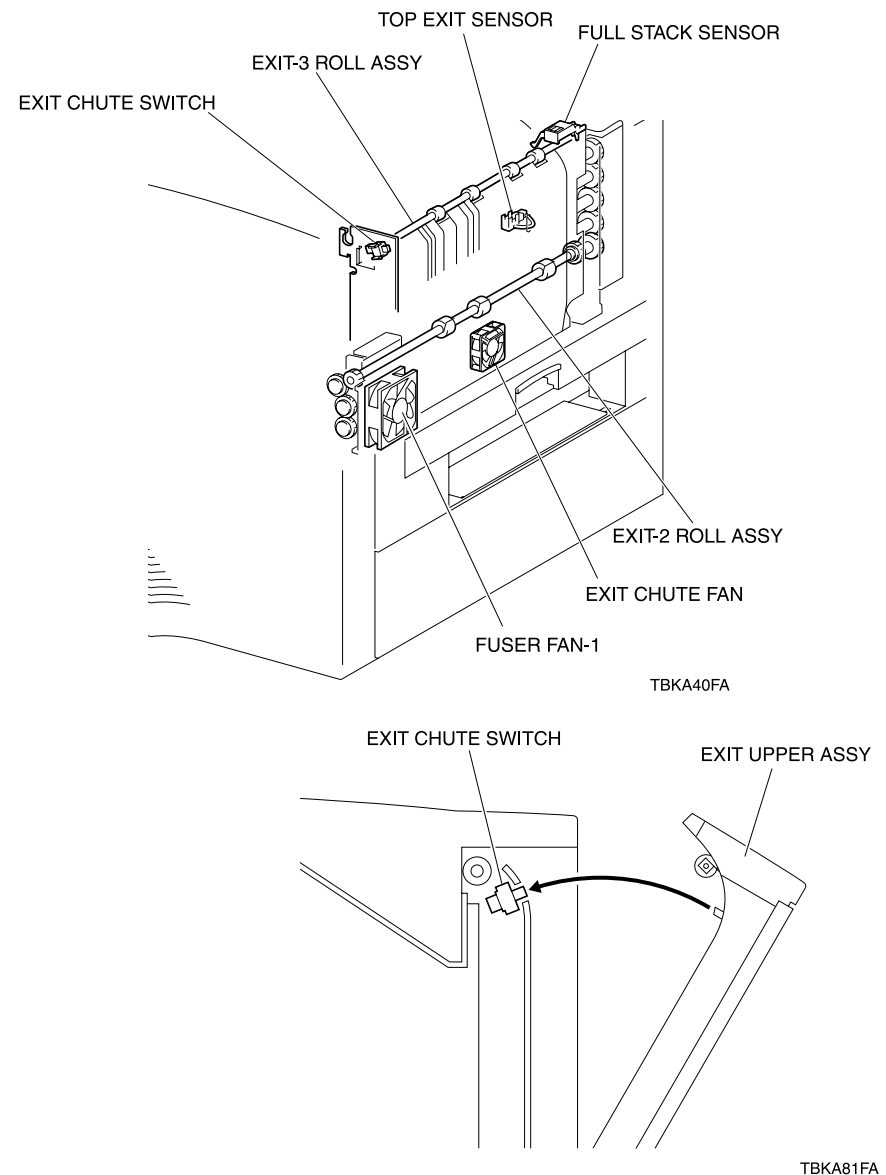


Figure 2-44. Paper Exit

2.5.13 Drive

PROCESS DRIVE ASSY

The PROCESS DRIVE ASSY provides drive for the DRUM CARTRIDGE and TRANSFER ASSY.

P/H MOTOR ASSY

Consisting of the Motor and PWB sections, the P/H MOTOR ASSY provides drive for the following parts via the P/H DRIVE ASSY and FUSER DRIVE ASSY.

- MAIN P/H ASSY

FUSER MOTOR ASSY

The FUSER MOTOR ASSY provides drive for the following parts via the FUSER DRIVE ASSY.

- Developer ASSY
- FUSER ASSY
- 2ND BTR ASSY
- BELT CLEANER
- EXIT LOWER ASSY
- AUGER HIGH ASSY

DRIVE MOTOR PWB

Controls the cycle of the P/H MOTOR and FUSER MOTOR ASSY and provides the power.

P/H DRIVE ASSY

Transmits drive of the P/H MOTOR ASSY to the MAIN P/H FRAME ASSY, DRUM CARTRIDGE, etc.

FUSER DRIVE ASSY

Transmits drive of the FUSER MOTOR ASSY to the FUSER ASSY, 2ND BTR ASSY, Developer Assy, etc.

DEVE. CLUTCH ASSY

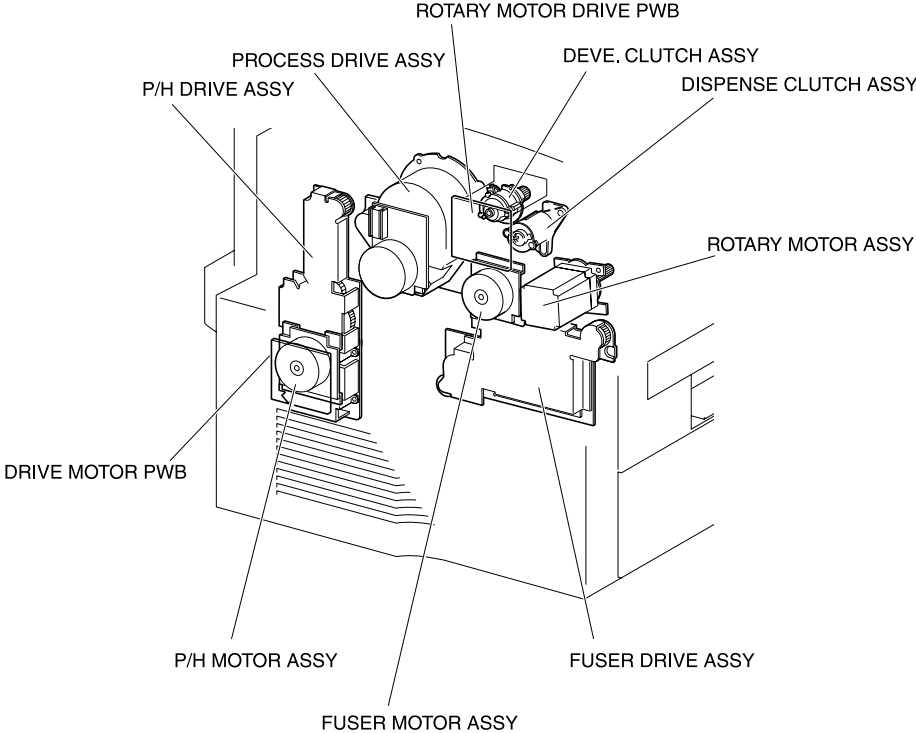
Transmits drive from the FUSER MOTOR ASSY to Auger, the inside of the Developer Assy (Magnet Roll and 2 Augers).

ROTARY MOTOR ASSY

Provides drive for rotating the ROTARY FRAME ASSY.

ROTARY MOTOR PWB

Provides power for and controls rotation of the ROTARY MOTOR ASSY.



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Figure 2-45. Drive

2.5.14 Electrical

FRONT COVER SWITCH R

FRONT COVER SWITCH R is composed of two switches of an interlock switch that detects whether the FRONT COVER ASSY is open or closed, and interrupts the 5VDC-LD circuit that shuts off output (5VDC-LD) from the LVPS when the FRONT COVER ASSY is open and a safety switch in control that makes each movement stop when the FRONT COVER ASSY is open .

FRONT COVER SWITCH L

FRONT COVER SWITCH L is a control safety switch that shuts off 24VDC when the FRONT COVER ASSY is open (interrupts Relay circuit in LVPS).

TOP COVER SWITCH

The TOP COVER SWITCH is an interlock switch that detects whether or not the TOP COVER ASSY is mounted, and interrupts the 5VDC-LD circuit when the TOP COVER ASSY is not mounted.

DEVE. FAN

Discharges internal heat to prevent the internal temperature from rising excessively.

LVPS

Long with providing AC power from the power source to the H/R HEATER and P/R HEATER of the FUSER ASSY, the LVPS creates and supplies low-voltage DC power used by the logic circuit, etc.

Along with the power source circuit, the LVPS includes control circuits for the H/R HEATER and P/R HEATER, inlet, power switch, etc.

HVPS

Supplies high voltage to the following parts to perform steps of the process such as electrification, developing, primary transfer and secondary transfer.

- BCR inside DRUM CARTRIDGE
- Magnet Roll inside Developer Assy
- 1ST BTR inside TRANSFER ASSY
- CONTACT ROLL inside TRANSFER ASSY

MCU PWB

Controls printing based on communication with the printer controller (Controller PWB) and data from the sensors and switches.

The main functions of the MCU PWB are as follows:

- ☐ Communication with the printer controller
- ☐ Reception of data from sensors and switches
- ☐ Control of ROS ASSY, FUSER ASSY and motors (PROCESS DRIVE ASSY, P/H MOTOR ASSY, FUSER MOTOR ASSY, ROTARY MOTOR ASSY)
- ☐ Control of print process
- ☐ Distribution of low voltage DC power output from the LVPS

ENVIRONMENT SENSOR

The ENVIRONMENT SENSOR is the sensor for detecting temperature/humidity that uses a thermistor (device for which resistance changes according to temperature) and humidity sensing element (device for which resistance changes according to humidity).

CONTROLLER FAN

Discharges heat of the CONTROLLER PWB to prevent temperature of the CONTROLLER PWB from rising excessively.

CONTROLLER PWB

Receives data from the host, prints and controls the entire printer.

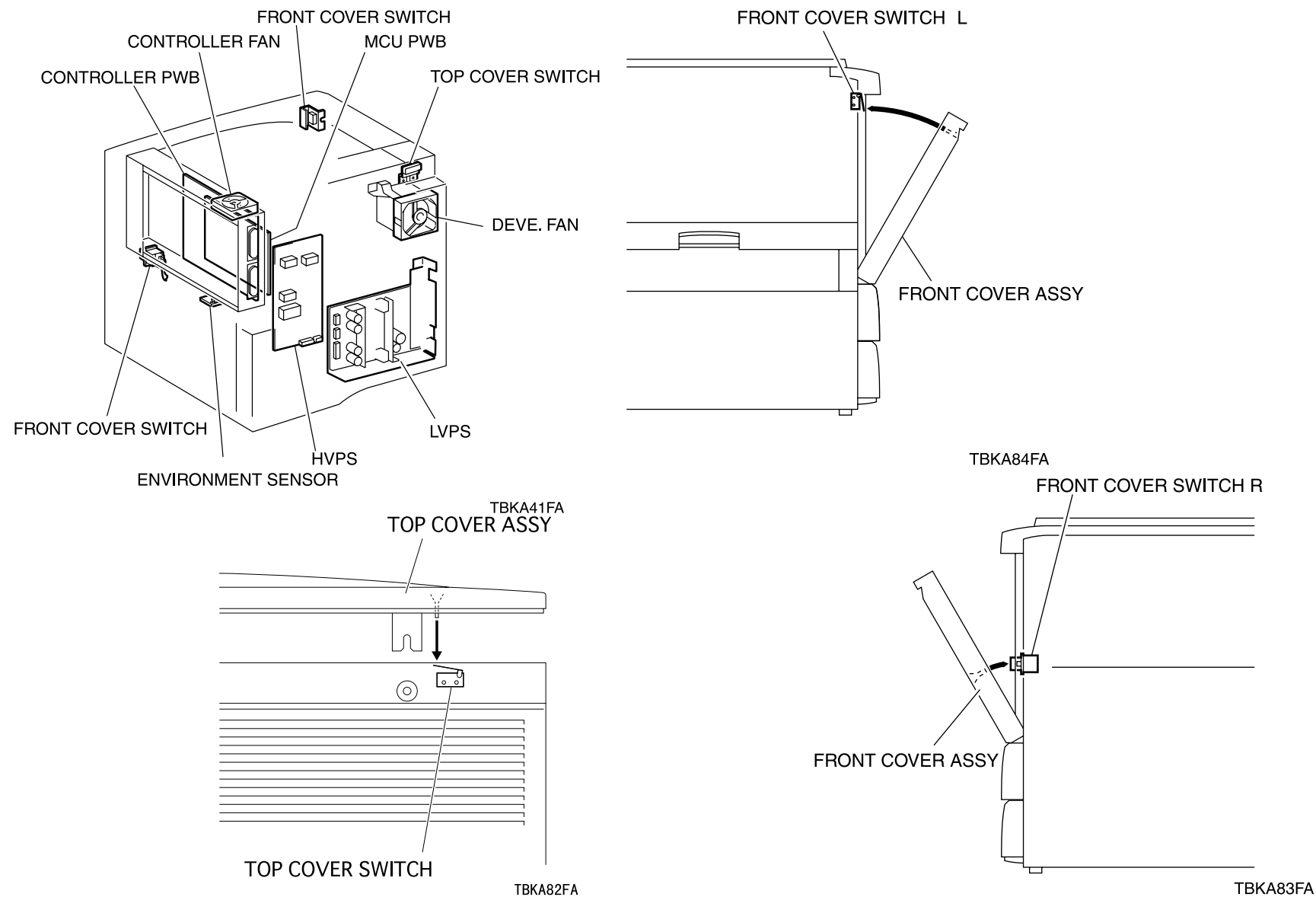


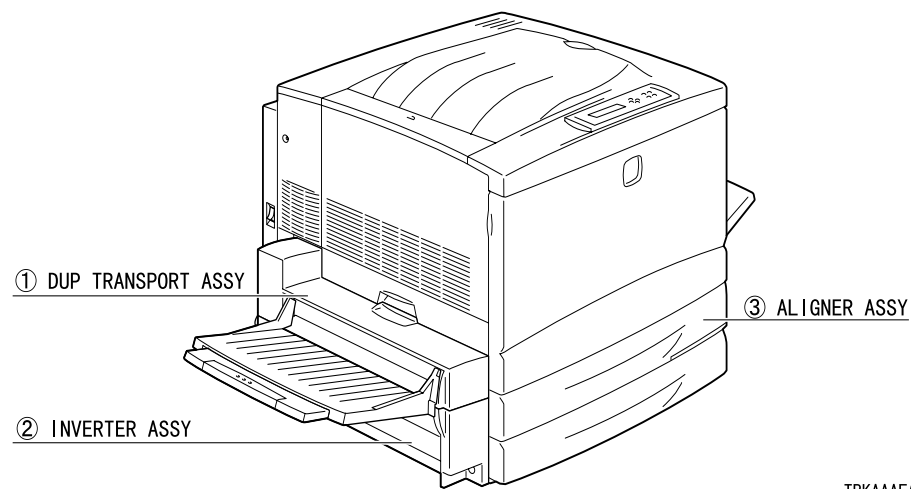
Figure 2-46. Electrical

2.5.15 Option Duplex

Option Duplex consists of the three parts.

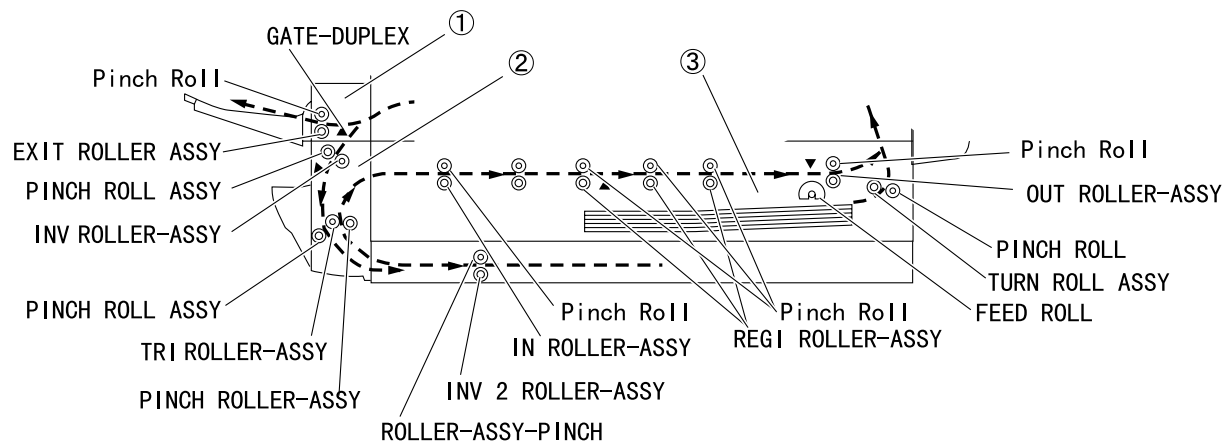
- 1) DUP TRANSPORT ASSY,
- 2) INVERTER ASSY
- 3) ALIGNER ASSY.

You can print the both side of paper by adding this unit.



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Figure 2-47. Whole Drawing



TBKAABFA

Figure 2-48. Both Side Whole Paper Feed

1. DUP TRANSPORT ASSY

- ☐ DUP GATE SOLENOID
Control the way that there are two of the FACE DOWN discharge and the INVERTER ASSY carriage in the print carried by FUSER ASSY and DUP GATE SOLENOID changes GATE-DUPLEX it and it is carried.
- ☐ EXIT ROLLER-ASSY
Discharge a print after the fixation with FACE UP.

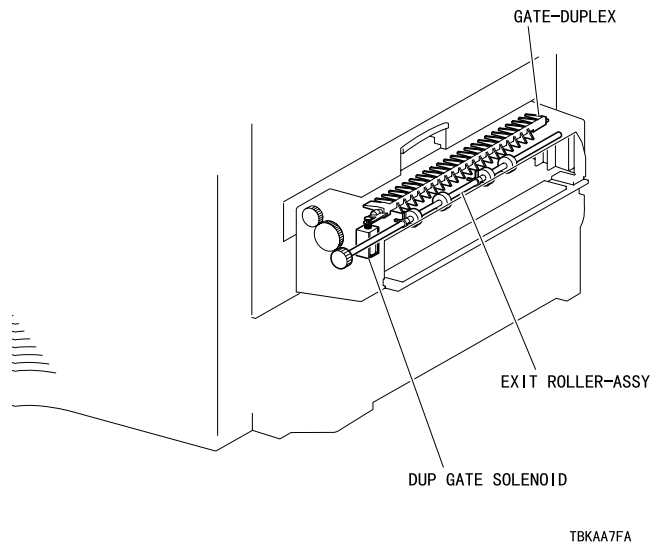


Figure 2-49. Option Duplex-1

2. INVERTER ASSY

The paper which a settlement side is printed on is made to turn over, and carry INVERTER ASSY to ALIGNER ASSY.

- ☐ CAB SWITCH-I/L
CAB SWITCH-I/L is a safety switch in control which makes Be sure to perform the following measures after replacing with a new MAIN FUSER ASSY. Performing these procedures before replacement can lead to many types of problems.

- ☐ DUP CONTROLLER PWB
Do the control of each movement of Option Duplex.
- ☐ FORWARD CLUTCH
Transmit the drive of INV MOT-ASSY to INV2 ROLLER-ASSY.
- ☐ REVERSE CLUTCH
Transmit the drive of INV MOT-ASSY to INV2 ROLLER-ASSY, and do a reversal movement.
- ☐ INV MOT-ASSY
INV MOT-ASSY supplies a drive to the following part.
 - INV2 ROLLER-ASSY
 - TRI ROLLER-ASSY
 - INV ROLLER-ASSY
 - FORWARD CLUTCH
 - REVERSE CLUTCH

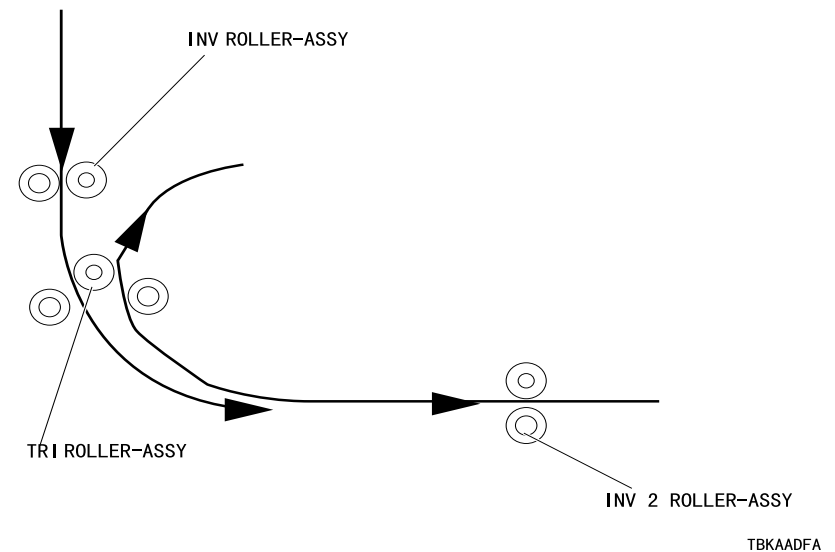


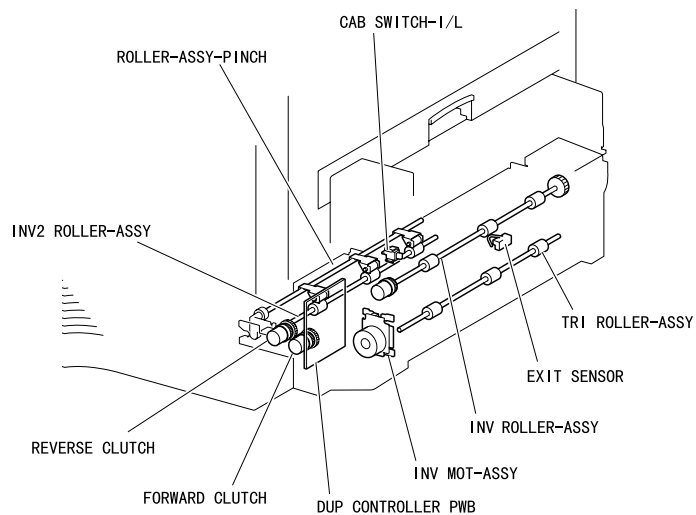
Figure 2-50. Option Duplex-2

☐ EXIT SENSOR

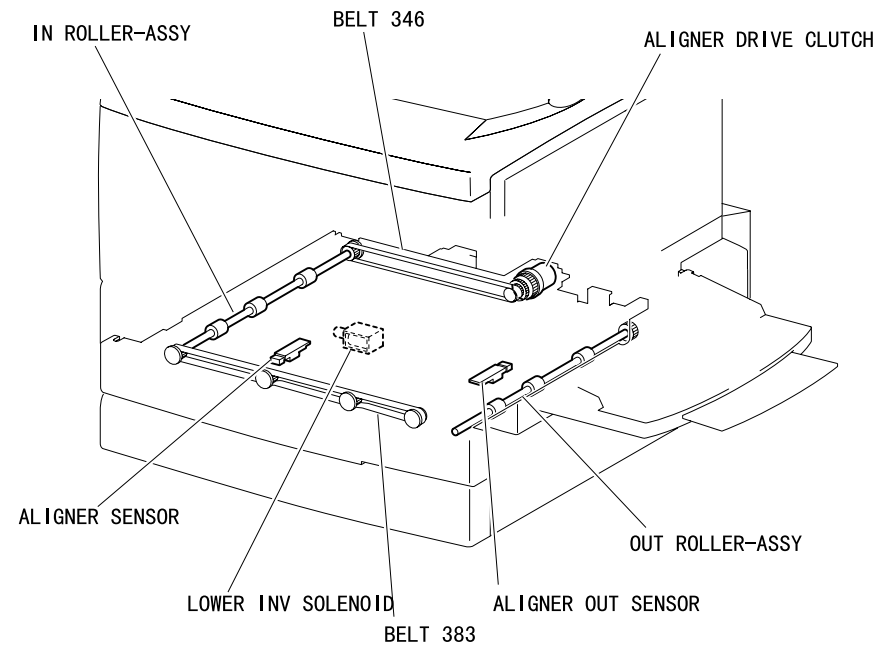
EXIT SENSOR measures the end of the paper carried by DUP
TRANSPORT ASSY, and detect the reversal timing.

3. ALIGNER ASSY

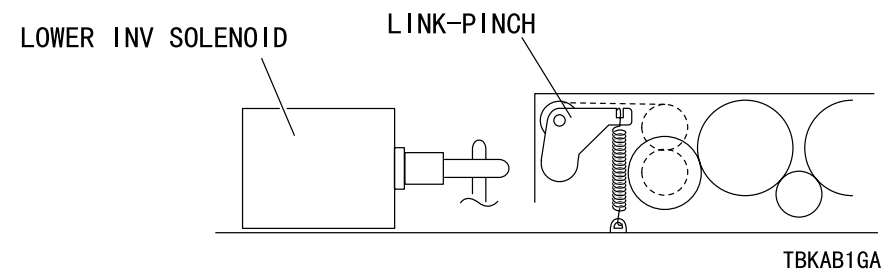
- ❑ IN ROLLER-ASSY
IN ROLLER-ASSY turns a drive from ALIGNER DRIVE CLUTCH through BELT 346, and carries the paper sent off from INVERTER ASSY into ALIGNER ASSY.
- ❑ OUT ROLLER-ASSY
A drive from ALIGNER DRIVE CLUTCH is taken, and OUT ROLLER-ASSY rotates, and carries a paper to MAIN P/H FRAME ASSY.
- ❑ ALIGNER OUT SENSOR
A paper inside ALIGNER ASSY detects that carriage to MAIN P/H FRAME ASSY was finished with ALIGNER OUT SENSOR.
- ❑ ALIGNER SENSOR
ALIGNER SENSOR detects that a paper was carried to ALIGNER ASSY by INVERTER ASSY.
- ❑ ALIGNER DRIVE CLUTCH
ALIGNER DRIVE CLUTCH transmits the drive of P/H MOTOR ASSY to IN ROLLER-ASSY, OUT ROLLER-ASSY via P/H DRIVE ASSY.



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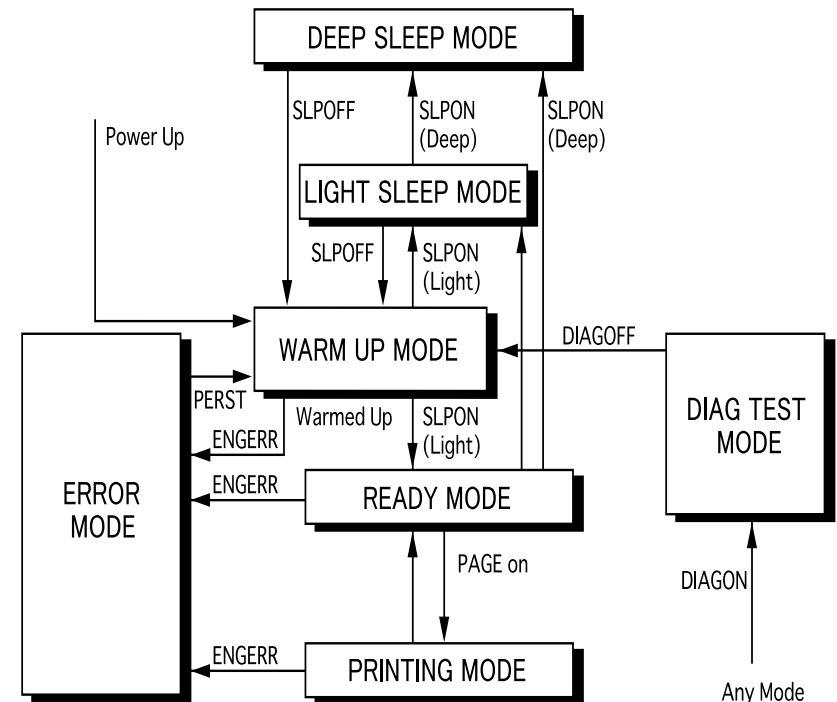
Figure 2-51. Option Duplex-3

2.6 Operation Mode

The printer is equipped with the following 5 modes:

- ☐ **WARM UP MODE**
Mode in which the printer warms up (until ready to print).
- ☐ **READY MODE**
Mode in which the printer is ready to print after the WARM UP mode.
- ☐ **RUNNING MODE**
Mode in which the printer is printing.
- ☐ **SLEEP MODE**
Mode in which the FUSER control temperature is set to low to save power.
- ☐ **DEEP SLEEP MODE**
Mode in which power supply to the FUSER, FUSER FAN and DEVE. FAN is cut off to save power.
- ☐ **DIAG TEST MODE**
Mode in which the printer is able to receive diagnostics or is running diagnostics.
- ☐ **ERROR MODE**
Mode in which the printer detects some kind of problem, not including errors related to no paper tray, paper empty, or life warning.

Transition from mode to mode is as shown below



TBKA42GB

Figure 2-52. Translation of Operation Mode

2.7 Control

NOTE: The Paper Size Switches are from left to right SW SW2, SW3, and SW4. ON is 1 and OFF is 0.

2.7.1 Paper Size Control

Analog Input Test Data and SIZE SWITCH signal voltage according to ON/OFF of Paper Size Switch of SIZE SWITCH ASSY and diagnostics signal corresponding to paper size are as shown in the following table:

Table 2-1. Paper Size Control (Cassette 1)

Paper size	Paper Size Switch				Diagnostics display data	Voltage (Unit: VDC)
	SW1	SW2	SW3	SW4		
No paper cassette	0	0	0	0	0E-0F	0.275-0.293
B5(LEF) ^{*1}	1	1	0	0	BB-BE	3.671-3.715
EXECUTIVE(LEF) ^{*2}						
A4(LEF)	0	1	0	0	47-4A	1.396-1.445
LETTER(LEF)	1	0	1	0	9D-A1	3.098-3.152
A4(SEF) ^{*1}	0	1	1	1	72-76	2.248-2.298
LETTER(SEF) ^{*2}						
LEGAL 14"	1	1	1	0	B8-DB	4.247-4.276
B4(SEF)	0	1	0	1	55-59	1.680-1.730
A3(SEF)	0	0	1	0	2A-2D	0.834-0.871
LEDGER(SEF)	0	0	1	1	3A-3C	1.116-1.157
12"X8"(SEF)	0	0	0	1	1C-1E	0.554-0.583
Nonstandard	1	1	1	1	E7-E9	4.537-4.554

NOTE: For when the ON/OFF status of Paper Size Switches in the same, one of the two is selected according to the specifications. (*1: mm unit specs, *2: Inch unit specs.)

2.7.2 Cassette 2/Cassette 3 paper size control

Analog Input Test Data and SIZE SWITCH signal voltage according to ON/OFF of Paper Size Switch of SIZE SWITCH ASSY and diagnostics signal corresponding to paper size are as follows.

Table 2-2. Paper Size Control (Cassette 2/ Cassette 3)

Paper size	Paper Size Switch				Diagnostics display data	Voltage (Unit: VDC)
	SW1	SW2	SW3	SW4		
No paper tray	0	0	0	0	EBh-F0h	4.78 - 0.05
B5(LEF)	0	1	0	0	9Ah-9Fh	3.15 - 0.05
EXECUTIVE(LEF)						
A4(LEF)	1	0	1	1	3Bh-40h	1.24 - 0.05
LETTER(LEF)	0	1	1	1	7Ah-7Fh	2.50 - 0.05
A4(SEF)	0	0	1	1	BAh-BFh	3.79 - 0.05
LEGAL(14")(SEF)	0	0	1	1	CAh-CFh	4.11 - 0.05
B4(SEF)	0	1	1	1	8Ah-8Fh	2.82 - 0.05
A3(SEF)	1	0	1	1	4Bh-50h	1.56 - 0.05
LEDGER(SEF)	0	1	0	0	AAh-AFh	3.47 - 0.05

2.7.3 Paper Supply Unit Selection Control

If not controlled by the printer controller, the paper supply unit selected when the power is turned ON is as follows:

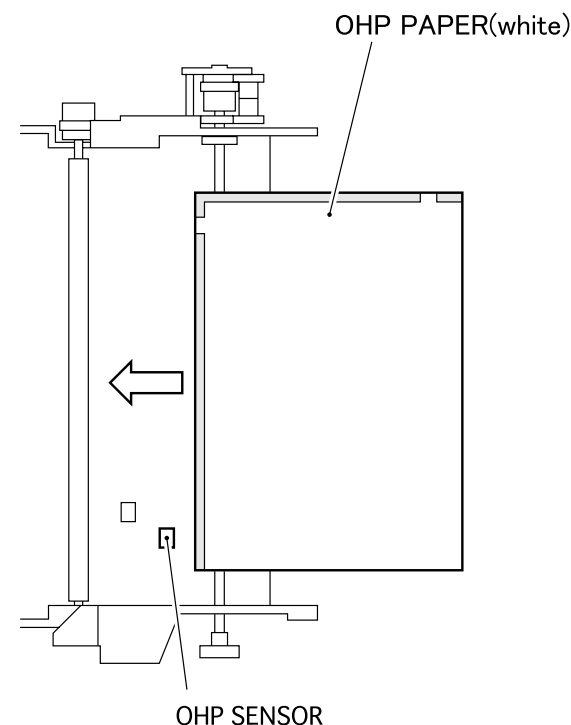
Table 2-3. Paper Supply Unit Selection Control

Priority sequence	Selected paper supply unit	Selection conditions
1st priority	Cassette 1	When paper Cassette 1 is mounted and there is paper in the tray, or when there is no paper in any of the paper supply units.
2nd priority	Cassette 2	When paper Cassette 2 is mounted and there is paper in the and 1 is not selected.
3rd priority	Cassette 3	When paper Cassette 3 is mounted and there is paper in the and neither Cassette 1 nor Cassette 2 is selected.
4th priority	MSI Tray	When there is paper in the MSI and neither Cassette 1, Cassette 2, nor Cassette 3 is selected.

NOTE: The paper at the bottom of the printer is referred to as "Cassette 1." The first level of the optional FEEDER UNIT is called "Cassette 2" and the second level "Cassette 3."

2.7.4 OHP Front/Back Detection Control

OHP white frame detection control is intended to prevent OHP film with white frame from getting stuck on the HEAT ROLL. The Top and bottom ends of the OHP film with white frame are detected by checking signal output of the OHP SENSOR.



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Figure 2-53. OHP Front/Back Detection Control

- OHP White Frame Detection Movement
There is a notch of the transparency in a part of the white zone at the end of the OHP paper with the white frame, and the signal level of two sensors is more different, and it can be detected.

2.7.5 ROS Control

2.7.5.1 Scanner Motor Operation

The Scanner Motor is turned ON/OFF as follows for each mode:

Table 2-4. Scanner Motor Operation

Operation mode	Scanner Motor ON/OFF
WARM UP mode	OFF
READ mode	OFF
PRINTING mode	ON
DEEP SLEEP mode	OFF
LIGHT SLEEP mode	OFF

NOTE: The Scanner Motor runs when diagnostics tool "Printing/Status Control" / "PMSTT" is executed, regardless of the above.

2.7.5.2 ROS Warm-Up

The Scanner Motor starts running at the same time ROS warm-up begins. If the Scanner Motor is running at a constant speed the SO signal interval is shorter than the READY reference value. ROS warm-up is over when the SOS signal interval is shorter than the READY reference value 3 times consecutively after ROS warm-up starts.

2.7.5.3 Quantity of Light Control

Image data is input to the ROS (LD Assy) as an electric signal (expresses image data according to differential signal), and the LD Assy converts the image data from an electric signal to an optical signal (expresses data by flashing the laser beam on and off). If there is disparity in quantity of laser light (LD Power), the optical system (lens, etc.), or sensitivity of the drum, the proper electrostatic latent image cannot be obtained. The LD Assy therefore monitors and controls quantity of laser light based on feedback of potential control (see 2.7.6.1 "Potential Control" in this chapter) so a stable, proper electrostatic latent image can be obtained. This is called "APC (Automatic Power Control)."

APC EXECUTION TIMING

- 1) Prior to printing (print job).
- 2) When VREF signal (reference voltage corresponding to target values for quantity of light) is changed by potential control (when target values for quantity of light are altered).
- 3) Each line by timing of SOS light signal (internal signal to output laser radiation due to SOS signal) while printing.

APC PROCEDURE

- ☐ When APC execution timing is 1, 2.
 - 1) VREF signal is set (by potential control feedback).
 - 2) LD ENB signal is set to Low. (Permits emission of laser radiation.)
 - 3) The different movement voltage at the VDATA signal /nVDATA signal is set to High. (Turns laser radiation on.)
 - 4) PCONT signal is set to Low. (Adjusts quantity of laser radiation so that the quantity monitored is equal to the VREF signal.)
 - 5) PCONT signal is set to high and the different movement voltage at the VDATA signal /nVDATA signal is set to Low. (APC complete)
- ☐ When APC execution timing is 3.
 - 1) The different movement voltage at the VDATA signal /nVDATA signal is set to High and PCONT signal are set to Low prior to SOS on signal. (Adjusts quantity of laser radiation so that the quantity monitored is equal to the VREF signal.)
 - 2) SOS signal is detected.
 - 3) PCONT signal is set to high and the different movement voltage at the VDATA signal /nVDATA signal is set to Low. (APC complete)

2.7.6 Process Control

In order to conduct consistent printing, parameters concerning image forming must be corrected at the appropriate time. Control of the entire printing process including parameter correction control is referred to as “process control.” Process control primarily consists of the following 3 types of control:

- Potential control
- Toner concentration control (PCDC)
- Toner concentration control (ADC)

2.7.6.1 Potential Control

The proper drum electrification (BCR) voltage and quantity of laser radiation are needed in order to obtain consistent printing quality. Potential control controls potential on the drum by measuring by means of the ADC sensor the developing concentration of the Cin 50% patch of each color (Y, M, C, Bk) formed on the drum by BCR voltage, quantity of laser radiation, and developing voltage of differing specifications when printing and the concentration of the part of the drum not developed, calculating the proper BCR voltage / quantity of laser radiation, and feeding it back to the HVPS and ROS.

NOTE: *Cin 50% patch* is an image alternate development of every 3 dots. Whether a certain image will be formed with Bk alone or with the 4 colors YMCBk is determined by color mode. In the case of 4 colors YMCBk, the image is formed in the order of Bk --> Y --> M --> C two colors per single IBT cycle.

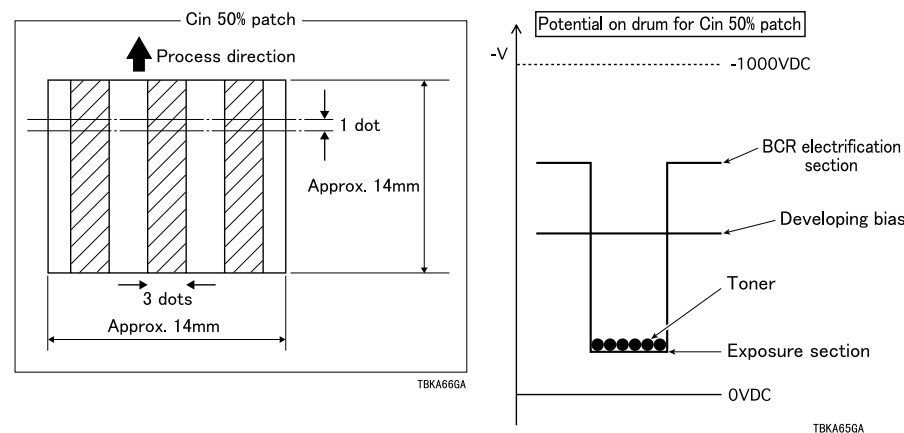
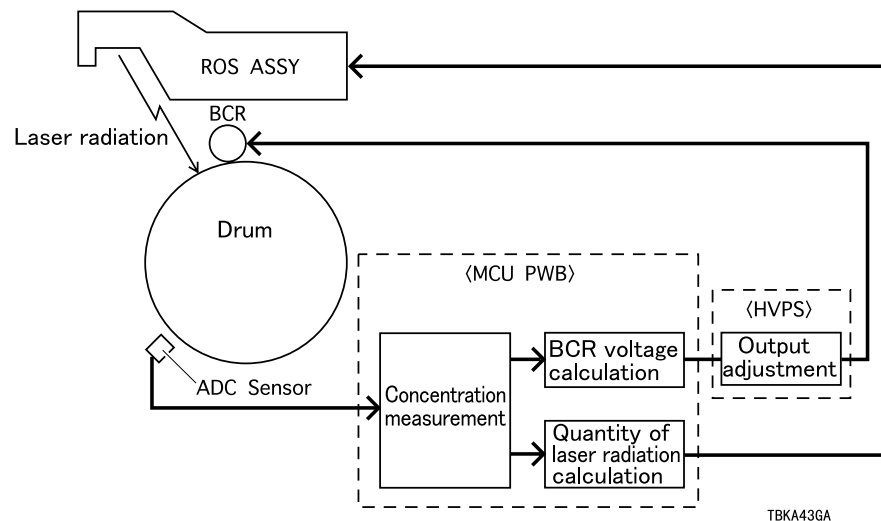


Figure 2-54. Process Control

2.7.6.2 Toner Concentration Control (PCDC)

Concentration of toner in the developer (amount of toner to developer) is reduced by printing. A certain amount of toner must be maintained in the developer in order to obtain consistent printing quality. PCDS (Pixel Count Dispense Control) calculates the amount of toner consumed by the developing process by counting the video signals input to the ROS ASSY.

Turn on DISPENSE CLUTCH ASSY for the amount of time needed to supply that amount of toner (dispense time), turning the Auger in the Developer Assy to supply toner from the Toner Cartridge to the Developer Assy.

The method of counting video signals for PCDC entails charging and discharging the capacitor corresponding to the video signal by CR circuit arranged parallel to the video signal line.

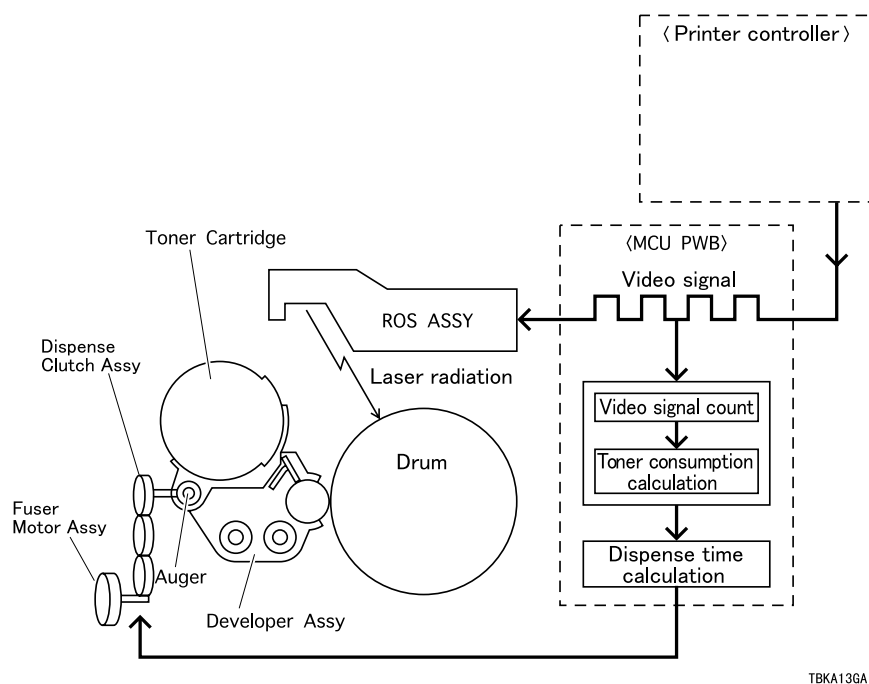


Figure 2-55. Toner Concentration Control (PCDC)

2.7.6.3 Toner Concentration Control (ADC)

In order to conduct consistent printing, the actual amount of toner in developer must be detected while not being affected by laser radiation, and must be maintained. With ADC (Automatic Density Control), BIAS development bands are formed on the drum of the various colors (Y, M, C, Bk) by BCR voltage and developing voltage of differing specifications when printing, and the concentration of the bands is measured by ADC Sensor.

The measurement values are compared with reference values, and if the amount of toner has decreased (if concentration of toner in the developer is low), turn on the DISPENSE CLUTCH ASSY for the corresponding amount of time (dispense time), turning the Auger in the Developer Assy by the drive from DISPENSE CLUTCH ASSY, and thereby supplying toner from the Toner Cartridge to the Developer Assy. If the amount of toner is excessive (concentration of toner in the developer is high), the toner in the developer is consumed by forming BIAS development bands the number of times it takes for the toner to be reduced to the proper amount.

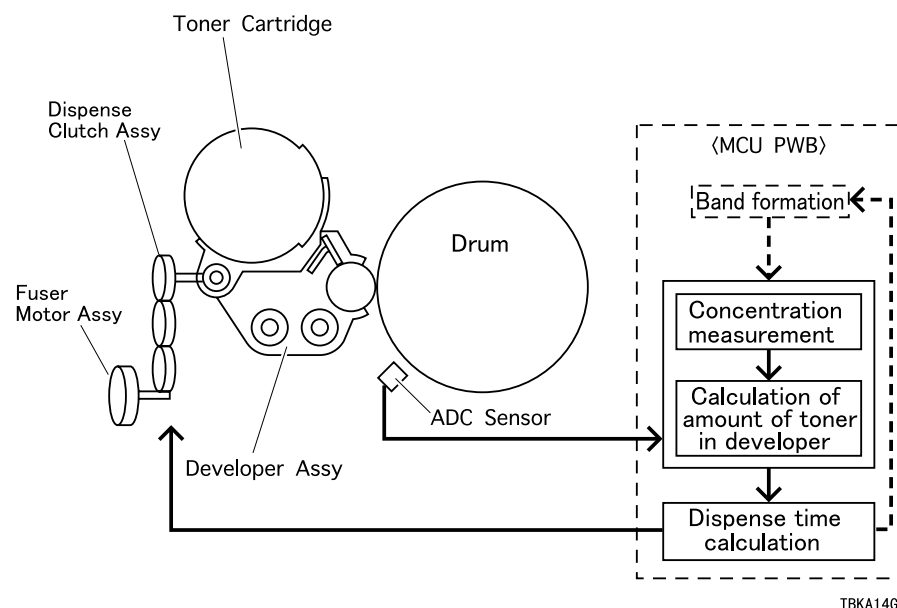
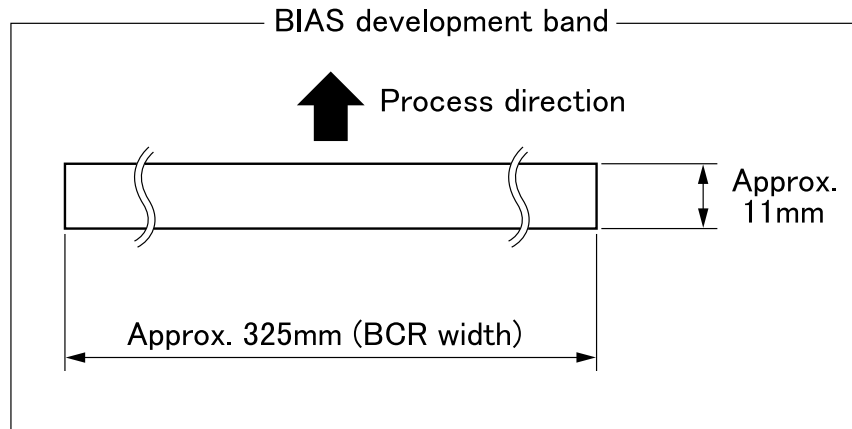
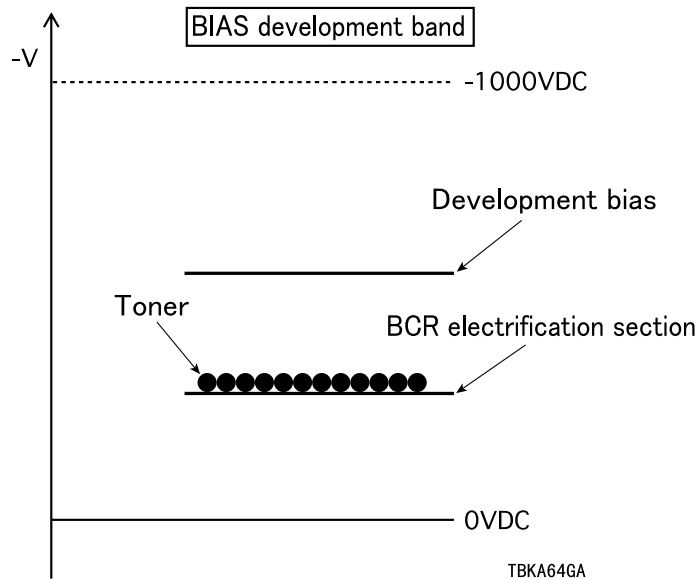


Figure 2-56. Toner Concentration Control(ADC)

NOTE: BIAS development bands are images developed by negatively charged toner in the BCR electrification section by raising the BCR voltage and developing voltage.



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TBKA64GA

Figure 2-57. BIAS Development Band

2.7.6.4 ADC Solenoid Operation

Every 1000 counts (nominal) the ADC Solenoid operates twice (nominal) at a cycle of 0.5sec ON AND 0.5sec OFF. This causes the light emission/reception parts of the ADC Sensor to be cleaned by the cleaning lever.

NOTE: Count is a cumulative total that is incremented by 1 when the length of paper in the paper transport direction is 219mm (LETTER [LEF]) or less, and incremented by 2 when the size of the paper exceeds 219mm (LETTER [LEF]).

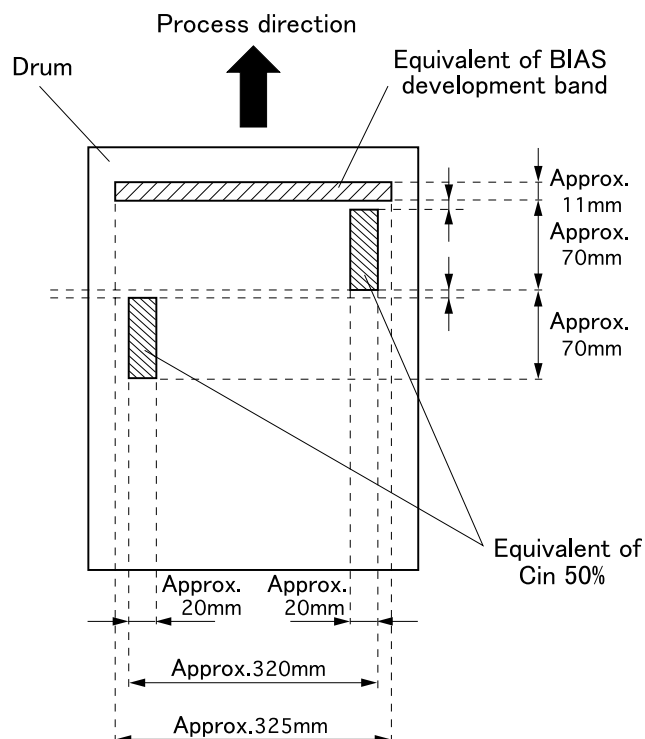
2.7.7 XERO. Control

2.7.7.1 Operation when DRUM CARTRIDGE is Replaced

When the DRUM CARTRIDGE is replaced with a new one, the following image is formed to prevent the Cleaning Blade touching the drum from reversing. By bringing the image to the Cleaning Blade section without carrying out primary transfer, the Cleaning Blade is prevented from reversing.

IMAGE WHEN DRUM CARTRIDGE IS REPLACED

The following image is formed the prescribed number of times (nominal 5 times). This is performed for a total of 3 colors: Yellow, Magenta and Cyan.



TBKA90GA

Figure 2-58. DRUM CARTRIDGE

2.7.7.2 DRUM CARTRIDGE Life Detection Control

☐ Life Detection

Life of the DRUM CARTRIDGE is affected by the total number of revolutions of the drum. Life of the DRUM CARTRIDGE (drum) is detected by totaling the number of Belt revolutions that can be obtained by TRO signal. Detection conditions are as follows:

Table 2-5. DRUM CARTRIDGE Life Detection Control

Conditions	Count
DRUM CARTRIDGE life warning	90,000 count (standard value)
DRUM CARTRIDGE life over	110,000 count (standard value)

NOTE: The count given above is a cumulative value incremented by 2 by TRO signal while the PROCESS MOTOR ASSY is running. (The drum turns twice per revolution of the Belt.)

PROCEDURES WHEN REPLACING



Be sure to perform the following measures after replacing with a new DRUM CARTRIDGE. Performing these procedures before replacement can lead to many types of problems.

- ☐ When life is over
Replace with a new DRUM CARTRIDGE.
- ☐ For life warning
Replace with a new DRUM CARTRIDGE.

2.7.7.3 WASTE TONER BOX Full Detection Control

Determines when the WASTE TONER BOX is full of toner by the chart on the next page (see Figure 2-59, "Waste Toner Box Full Detection Control".) to prevent misdetection of the WASTE TONER SENSOR.

NOTE: Counter A and Counter B described below count the total number of prints. Counter C counts dispense time for colors Y, M, C, and Bk.

Table 2-6. WASTE TONER BOX Full Detection Control

Paper size (paper length in transport direction)	YMCBk mode	B/W mode
Paper size in excess of 219mm	8 count	2 count
Paper size less than 219mm	4 count	1 count

NOTE: The WASTE TONER SENSOR detects when the WASTE TONER BOX is full of toner. The WASTE TONER BOX full warning is given while Counters A/C are counting.

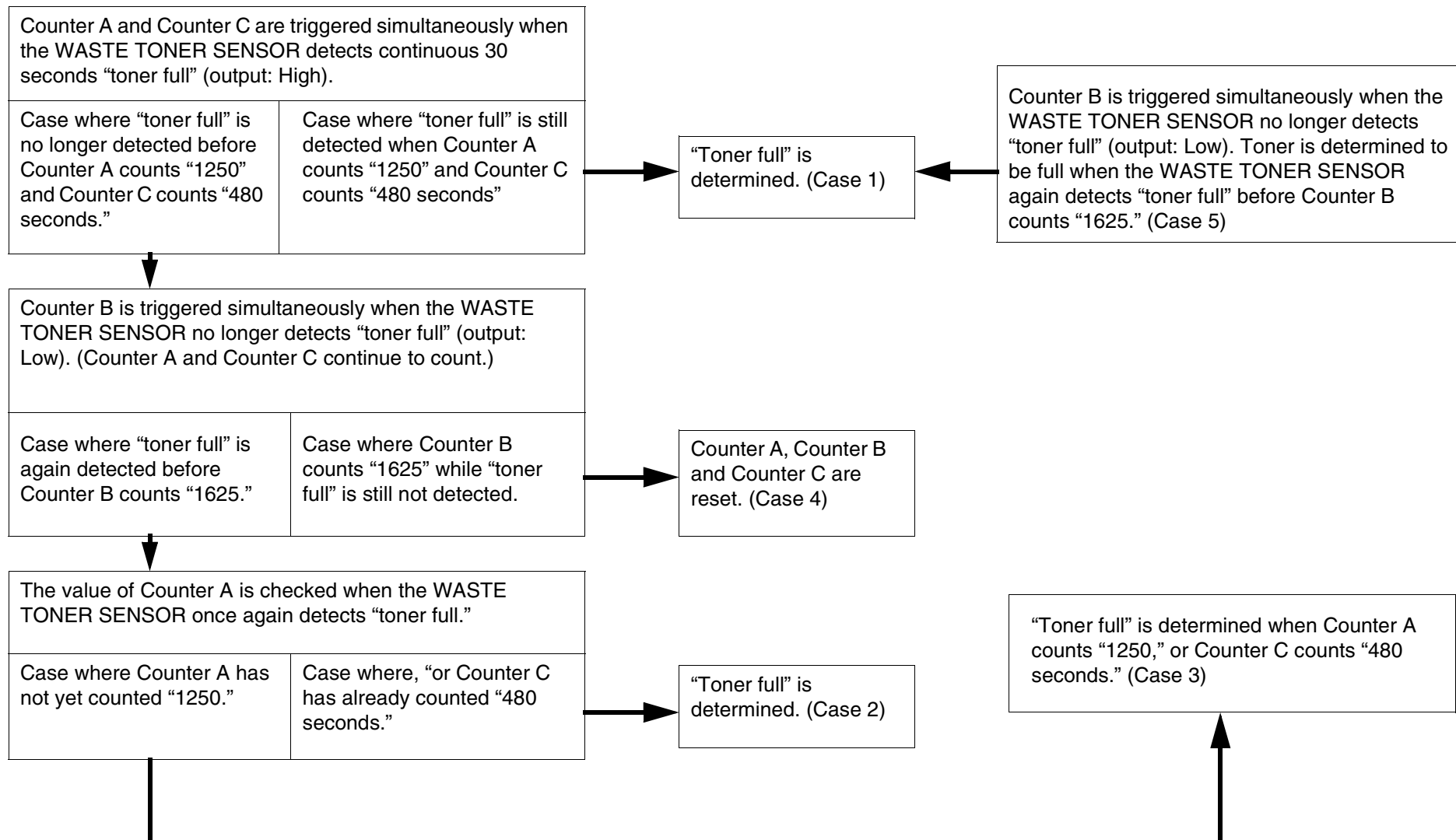
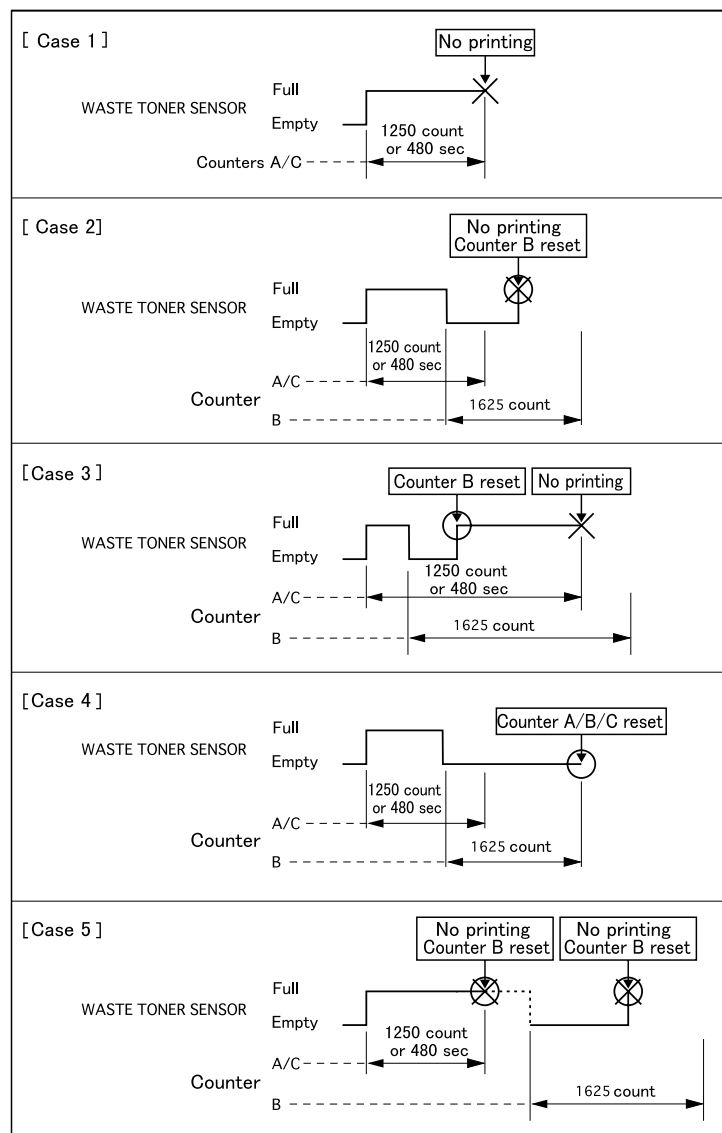


Figure 2-59. Waste Toner Box Full Detection Control

TONER FULL DETERMINATION FLOW



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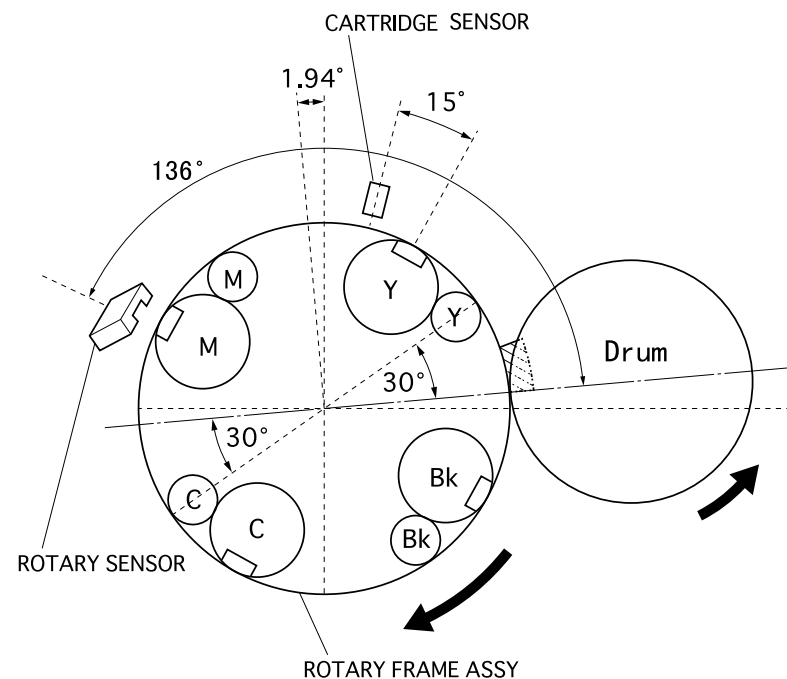
2.7.8 DEVE. Control

2.7.8.1 Home Position Detection Operation

The home position is the position which serves as the starting point for DEVE. Control. The following condition is the home position of the ROTARY FRAME ASSY.

Position 30° from the developing position of the DEVELOPER ASSY in direction opposite rotation direction.

Home position is the position where the ROTARY FRAME ASSY is rotated 136° from where the ROTARY SENSOR detects the protrusion of the ROTARY FRAME ASSY.



TBKA49GA

Figure 2-60. Home Position Detection Operation

2.7.8.2 Toner Cartridge Presence Detection Position

The various color Toner Cartridges are transferred to the following detection positions by rotation of the ROTARY FRAME ASSY, where the CARTRIDGE sense detects whether or not the various color Toner Cartridges are mounted

NOTE: Presence detection is indicated in the turn of Y, M, C, Bk.

TONER CARTRIDGE Y presence detection position	360° from home position in rotation direction
TONER CARTRIDGE M presence detection position	90° from home position in rotation direction
TONER CARTRIDGE C presence detection position	180° from home position in rotation direction
TONER CARTRIDGE Bk presence detection position	270° from home position in rotation direction

2.7.8.3 Toner Cartridge New/Old Detection Position

The various color Toner Cartridges are transferred to the following detection positions by rotation of the ROTARY FRAME ASSY, where the CARTRIDGE sense detects whether the various color Toner Cartridges are new or old.

TONER CARTRIDGE Y new/old detection position	345° from home position in rotation direction
TONER CARTRIDGE M new/old detection position	75° from home position in rotation direction
TONER CARTRIDGE C new/old detection position	165° from home position in rotation direction
TONER CARTRIDGE Bk new/old detection position	255° from home position in rotation direction

2.7.8.4 Developing Position

The various color Developer Assy are transferred to the following developing positions by rotation of the ROTARY FRAME ASSY.

DEVELOPER ASSY Y developing position	30° from home position in rotation direction
DEVELOPER ASSY M developing position	120° from home position in rotation direction
DEVELOPER ASSY C developing position	210° from home position in rotation direction
DEVELOPER ASSY Bk developing position	300° from home position in rotation direction

2.7.8.5 Detection Method Accompanying DEVE. Control

TONER CARTRIDGE PRESENCE DETECTION

Whether or not the various color Toner Cartridges are mounted is detected at the Toner Cartridge presence detection position by the CARTRIDGE SENSOR. The CARTRIDGE SENSOR is a reflection-type photosensor that determines the following by detecting light reflected from the Toner Cartridges.

- Light is reflected The applicable Toner Cartridge is mounted.
- Light is not reflected The applicable Toner Cartridge is not mounted.

TONER CARTRIDGE NEW/OLD DETECTION

Whether the various color Toner Cartridges are new or old is detected at the Toner Cartridge new/old detection position by the CARTRIDGE SENSOR.

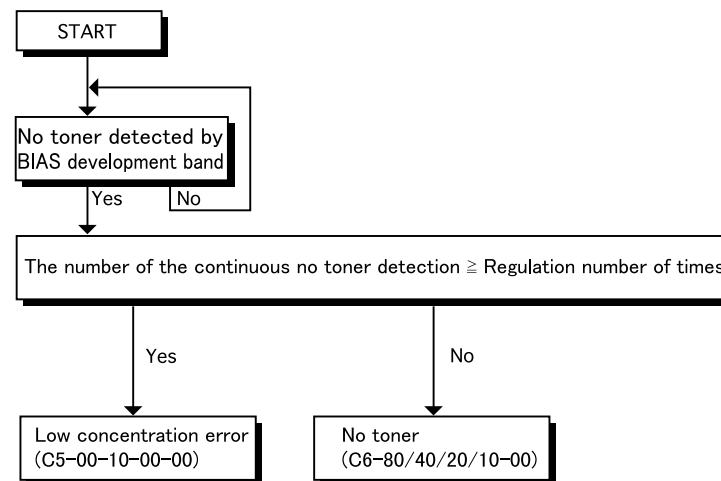
- With trickle development, used developer is collected in a separate chamber in the Toner Cartridge. As the reflecting surface of a reflecting seal applied inside the chamber is covered by the collected developer, it gradually becomes unable to reflect. The CARTRIDGE SENSOR is a photosensor that determines the following by detecting light reflected from the collection chambers of the various Toner Cartridges.

- Light is reflected Chamber contains no collected developer (Toner Cartridge is new).
- Light is not reflected Chamber contains collected developer (Toner Cartridge is not new).

TONER CARTRIDGE “NO TONER” DETECTION

Lack of toner in the toner cartridge is detected by process control. The basic flow for “no toner detection”, “no toner reset”, and “toner life warning” is provided below and on the following pages.

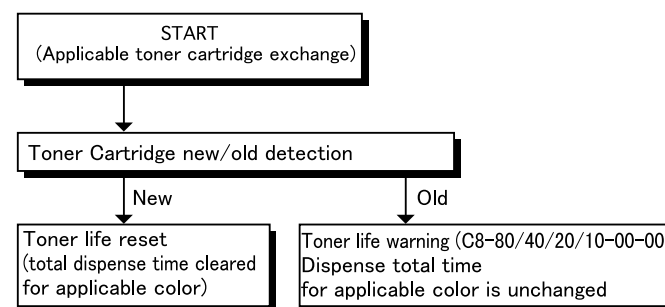
- No toner detection flow



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Figure 2-61. No Toner Detection Flow

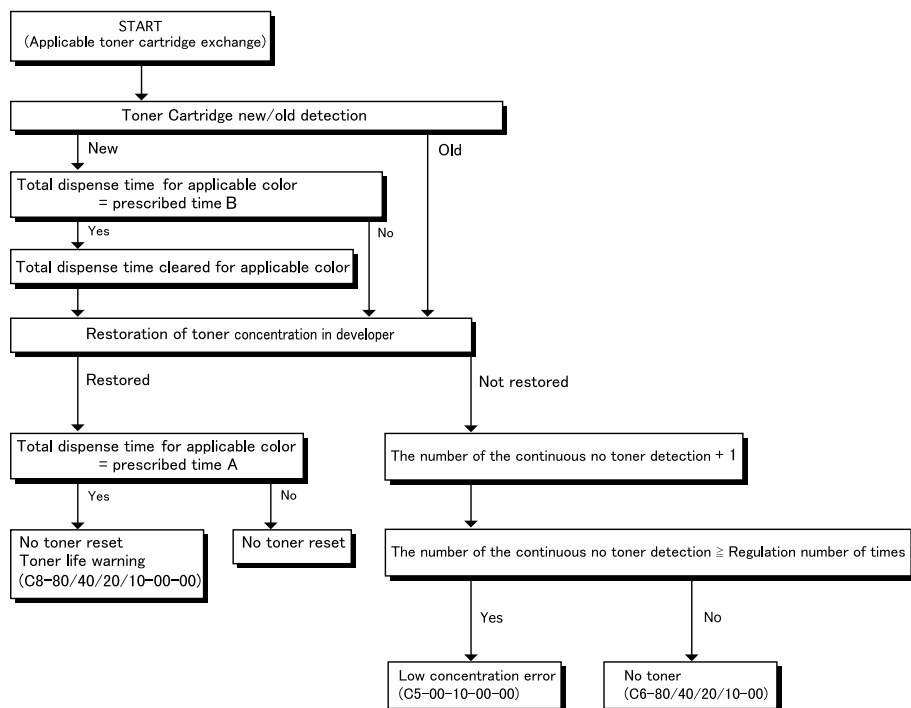
- Toner life warning reset flow



TBKA93GA

Figure 2-62. Toner Life Warning Reset Flow

□ No toner reset flow



TBKA91GA

Figure 2-63. No Toner Reset Flow

2.7.9 IBT Control

2.7.9.1 Primary Transfer (Drum --> Belt)

The act of transferring the toner image formed on the surface of the drum to the Belt is called “primary transfer”. Primary transfer is carried out by output to 1ST BTR of HVPS.

PRIMARY TRANSFER CURRENT DETERMINATION FLOW

The resistance of the 1ST BTR changes according to time and environment. In order to obtain stable transfer characteristics, variation in resistances according to time and environment must be offset by adjusting transfer current. Primary transfer current determination flow is shown on the right.

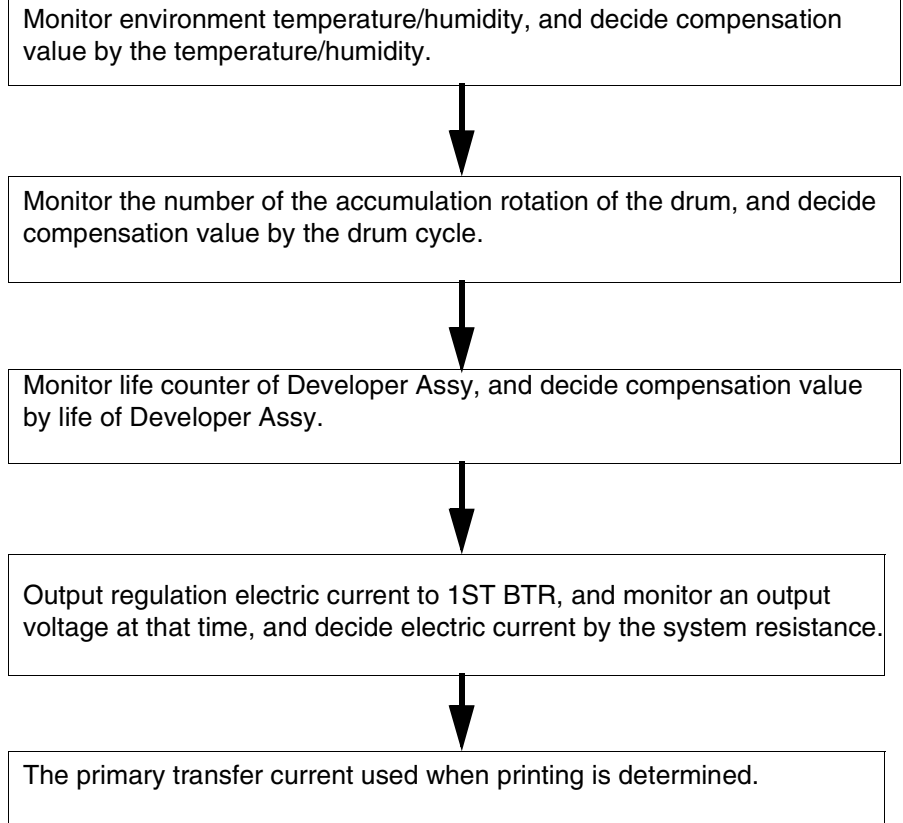


Figure 2-64. Primary Transfer Current Determination Flow

PRIMARY TRANSFER VOLTAGE DETERMINATION TIMING

The process of determining primary transfer voltage is executed only during the Cycle Up Sequence of process control, and is carried out for “C2” seconds “C1” seconds following the TRO signal as soon as process control ends.

2.7.9.2 Secondary Transfer (Belt-->Paper)

The act of transferring the toner image formed on the Belt to paper is called “secondary transfer”. Secondary transfer is carried out by output to the CONTACT ROLL of the HVPS.

SECONDARY TRANSFER DETERMINATION FLOW

The resistance of the 2ND BTR changes according to time and environment. In order to obtain stable transfer characteristics, variation in resistances according to time and environment must be offset by adjusting transfer voltage. Secondary transfer voltage determination flow is as shown on the right.

NOTE: 2ND BTR error is detected when monitor value of output current for the above and secondary transfer is outside the prescribed range.

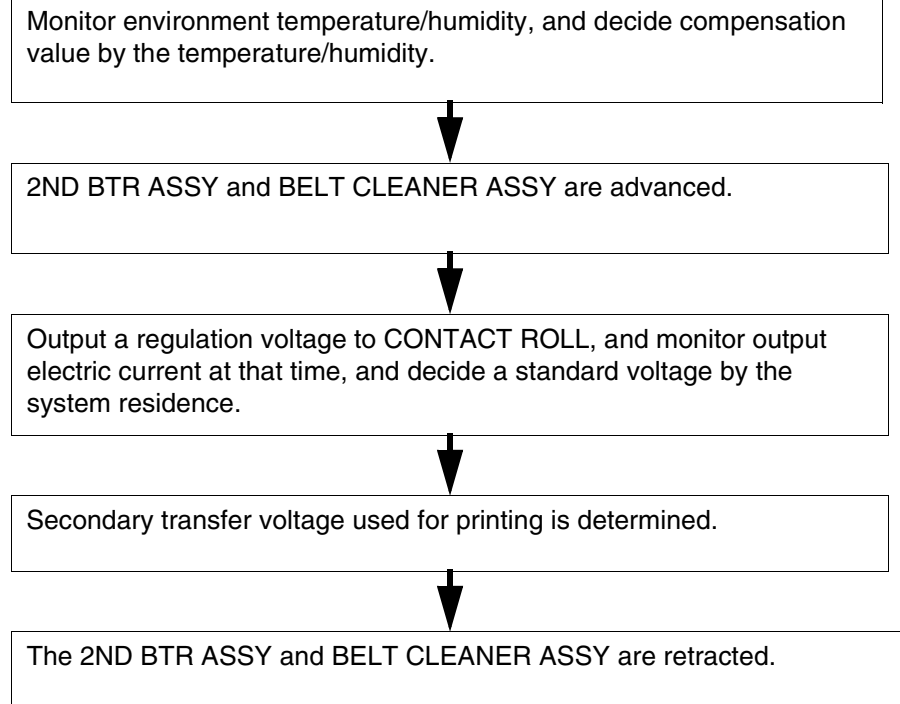


Figure 2-65. Secondary Transfer Determination Flow

SECONDARY TRANSFER VOLTAGE DETERMINATION TIMING

The secondary transfer voltage determination flow is carried out if any of the conditions are found to apply when checking conditions during the Cycle Up Sequence of process control, and is carried out for “D2” seconds “D1” seconds following the TO signal when process control ends.

2ND BTR ADVANCE/RETRACT CONTROL

2ND BTR must be advanced when secondary transfer is output and must be retracted at all other times. This is controlled by the BTR CAM CLUTCH and BTR WHEEL SENSOR.

NOTE: *To advance the 2ND BTR, the BTR CAM CLUTCH is ON, and turn off BTR CAM CLUTCH after you detect the position of the advance condition with BTR WHEEL SENSOR. To retract the 2ND BTR, the BTR CAM CLUTCH is ON, and turn off BTR CAM CLUTCH after you detect the position of the retract condition with BTR WHEEL SENSOR. (Switched by operation of the FUSER MOTOR ASSY.)*

NOTE: *There is very little time between the end of one image and the beginning of the next. If there is not enough time to execute “advance”-“retract”-“advance” (When the space of the paper is under 0.25-second.), it remains the advance condition and output to the CONTACT ROLL of the HVPS also remains ON.*

2.7.9.3 Belt Cleaning

An image cannot be properly formed if there is excess toner on the surface of the Belt. To remove toner, etc., the BELT CLEANER ASSY advances and cleans the surface of the Belt. Advancement and retraction of the BELT CLEANER ASSY is controlled by the CLEANER CAM SOLENOID.

NOTE: *To advance the BELT CLEANER ASSY, the CLEANER CAM SOLENOID is ON continuously, and to retract the BELT CLEANER ASSY, the CLEANER CAM SOLENOID is OFF continuously. (The status is switched by operation of the FUSER MOTOR ASSY.)*

NOTE: *There is very little time between the end of one image and the beginning of the next. If there is not enough time to turn the CLEANER CAM SOLENOID from OFF to ON (for example when printing in the standard speed mode or B/W mode), it remains ON and the BELT CLEANER ASSY remains advanced.*

The following are specific examples of excess toner remaining on the surface of the Belt:

- Toner left over from ordinary printing at time of secondary transfer
- Toner produced by Cin 50% patch or BIAS development band created by process control
- Toner formed on the Belt when paper jam occurs

TYPES OF BELT CLEANING

Belt cleaning is basically classified as the following 3 types:

- ☐ Ordinary cleaning
Cleaning carried out for maximum printable area (18 inches in processing direction) while printing is carried out.
- ☐ Special cleaning
Cleaning is carried out for 1 Belt cycle after Cin 50% patch or BIAS development band is created by process control, and when WARM UP mode begins (except during error recovery after an error occurred during image forming).
- ☐ Cleaning when error occurs
Cleaning is carried out for 1 Belt cycle when WARM UP mode begins during error recovery after an error occurred during image forming (when there is possibility of toner remaining on the Belt).

IBT CLEANER TONER BAND

When the paper of the size of the little width is used by the continuance, toner which hasn't transcribed it into Cleaning Blade of BELT CLEANER ASSY which confronts a non-authority paper part doesn't spread, and give Cleaning Blade damage.

Therefore, when the paper of the size of the little width is used, makes toner figure called an IBT Cleaner toner band on Belt, and damage to give to Cleaning Blade by making this toner spread to Cleaning Blade is prevented.

□ IBT cleaner toner band image

The IBT Cleaner toner band is the image which is equal to “Cin 50%”, and it is formed by 3 colors (Y, M, C) at the time of the YMCKB mode, and formed by a 1 color (BK) at the time of the B/W mode.

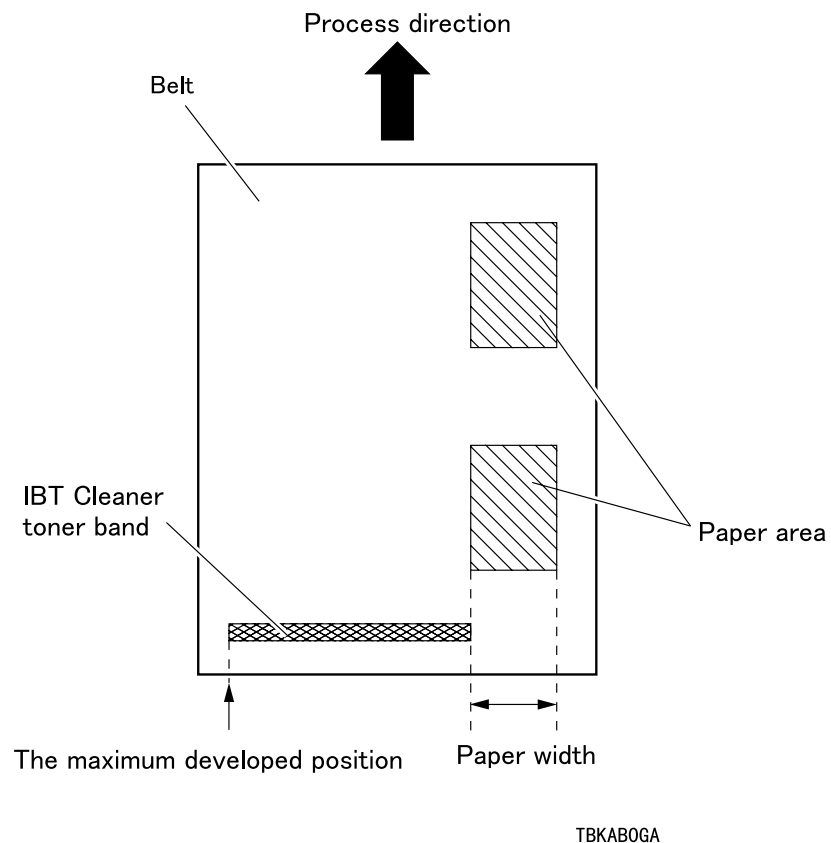


Figure 2-66. IBT Cleaner Toner Band Image

2.7.9.4 IBT-related life detection control

Life detection of the following 3 items is done with IBT.

- TRANSFER ASSY
- 2ND BTR ASSY
- BELT CLEANER ASSY

TRANSFER ASSY LIFE DETECTION CONTROL

□ Life detection

Life of TRANSFER ASSY takes an influence in the print number of sheets (the primary transfer number of times, the secondary transfer number of times, Belt cleaning number of times). Detect life of TRANSFER ASSY by the count added at the time of the Belt rotation. Because TRANSFER ASSY is equal to the device life, warning value/limit value is established as the following.

Table 2-7. TRANSFER ASSY LIFE DETECTION CONTROL

Condition	Cont
TRANSFER ASSY life warning	99,999,999 count (standard value)
TRANSFER ASSY life limit	99,999,999 count (standard value)

NOTE: The above count is the accumulation value made a “1 count” at a TR0 signal one time (IBT BELT ASSY one turn).

□ Procedures when replacing

NOTE: Do the following treatment when exchanging TRANSFER Assy for new one.

After replacing with a new TRANSFER ASSY, perform “Counter Clear”.

NOTE: “Counter Clear” is when a command is sent from the printer controller or diagnostics to reset the life counter corresponding to various error / status code inside the MCU PWB to zero. (For details, see “Chapter 3: Diagnostics Procedures”.)

2.7.10 Transfer Layout Control

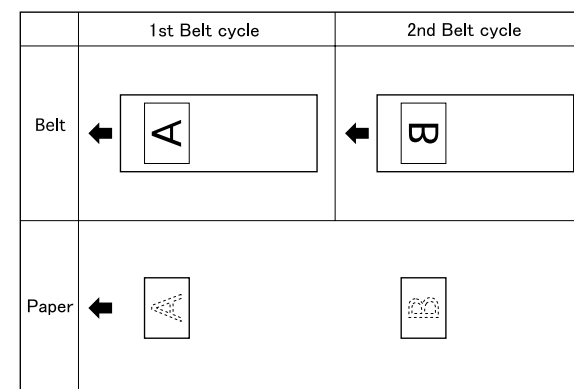
The printing sequence of each transfer layout mode is as follows:

Table 2-8. 1UP/2UP Control

Transfer layout mode	Image positioning for Belt 1 cycle	Applicable paper size	Applicable color mode	Applicable speed mode
1UP mode	1 print	All paper sizes	All modes	All modes
2UP mode	2 prints	A4 (LEF) or LETTER (LEF) Following paper sizes	All modes	All modes
TR0-Less mode	Not fix (It doesn't depend on a Belt one lap.)	All paper sizes	B/W mode	Standard mode

1UP MODE

Paper is transferred at a rate of one sheet of paper per Belt cycle. The printed image (complete toner image) is formed on the paper in the order of Yellow, Magenta, Cyan and Black. (A print image is formed based on the TR0 mark on Belt.)



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Figure 2-67. 1UP Mode

2UP MODE

Paper is transferred at a rate of two sheets of paper per Belt cycle. Transfer is carried out in the order of Yellow for 1ST sheet, Yellow for 2nd sheet, Magenta for 1ST sheet, Magenta Cyan for 1ST sheet, Cyan for 2nd sheet, Black for 1ST sheet, and Black for 2nd sheet.

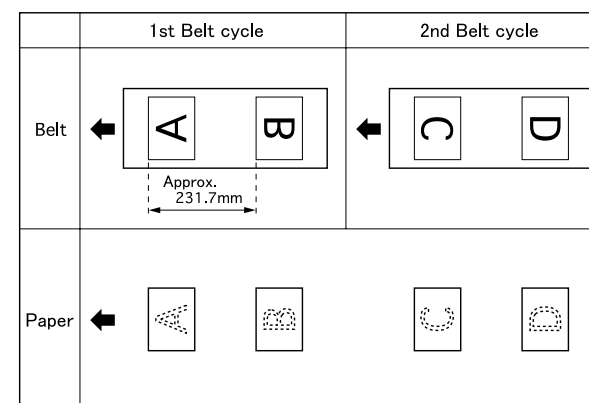


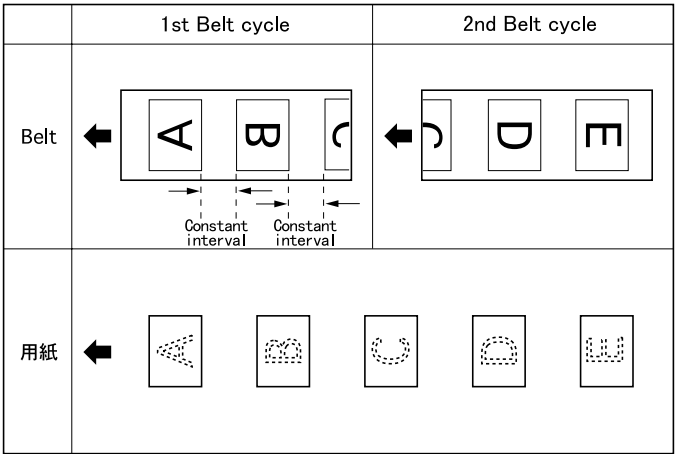
Figure 2-68. 2UP Mode

TR0-LESS MODE

As for how many sheets, paper carriage is not selected per Belt cycle. It is done to become a fixed paper interval regardless of the paper size when it is printed continuously.

The formation of the print image (Complete toner figure) is done to become a fixed interval for every image when it is printed continuously in the same way as the paper carriage, too.

(As for the TR0 mark, a print image is formed independently.)



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Figure 2-69. TRO-less Mode

2.7.11 FUSER Control

2.7.11.1 Fuser Control Method

FUSER temperature is carried out by controlling ON/OFF of the H/R HEATER and P/R HEATER according to FUSER control temperature.

- If surface temperature of the HEAT ROLL (FUSER temperature: Detected temperature of thermistor of TEMP. SENSOR ASSY) is higher than FUSER control temperature, power to the H/R HEATER and P/R HEATER is turned OFF.
- If surface temperature of the HEAT ROLL (FUSER temperature: Detected temperature of thermistor of TEMP. SENSOR ASSY) is lower than FUSER control temperature, power to the H/R HEATER and P/R HEATER is turned ON.

2.7.11.2 Control for WARM UP Mode

The H/R HEATER and P/R HEATER are turned ON (lamp lights) as soon as the FUSER begins to warm-up (WARM UP mode). FUSER warm-up is complete when FUSER temperature reaches FUSER control temperature. FUSER control temperature at warm-up varies according to surface temperature of the HEAT ROLL when power is ON as follows:

NOTE: FUSER control temperature at warm-up is corrected by environment temperature (detected by ENVIRONMENT SENSOR).

NOTE: The Heater is continuously ON after ON/OFF is repeated the prescribed number of times when FUSER warm-up starts.

2.7.11.3 READY / LIGHT SLEEP / DEEP SLEEP Modes Control

ON/OFF control of the H/R HEATER and P/R HEATER is as follows:

Table 2-9. Ready/Light Sleep/Deep Modes Control

Operation mode	Heater ON/OFF control
READ mode	• Heater ON if FUSER temperature is lower than FUSER control temperature • Heater OFF if FUSER temperature is at least as high as FUSER control temperature.
LIGHT SLEEP mode	• Heater ON if FUSER temperature is lower than FUSER control temperature when in LIGHT SLEEP mode. • Heater ON if FUSER temperature is at least as high as FUSER control temperature when in LIGHT SLEEP mode.
DEEP SLEEP mode	Heater always OFF.

2.7.11.4 Control in PRINTING Mode

FUSER control temperature when in PRINTING mode is established by the setting value according to paper quality (regular / OHP film, etc.), color mode (YMCBk mode / B/W mode), environment temperature (detected by ENVIRONMENT SENSOR), and number of consecutive prints. H/R HEATER and P/R HEATER are turned ON/OFF according to FUSER control temperature.

NOTE: There are instances when the heater is forcibly turned ON/OFF before and after the PRINTING mode.

2.7.11.5 FUSER skidding

When the heat distribution of HEAT ROLL and PRESSURE ROLL is not uniform because a problem comes out in the fixation performance, the movement that it is called FUSER skidding occurs.

FUSER skidding turns HEAT ROLL and PRESSURE ROLL by the drive of FUSER MOTOR ASSY.

- ☐ WARM UP mode

FUSER skidding is done from the regulation time before the warm-up completion of FUSER until the regulation time after the completion.

- ☐ READY mode

FUSER skidding is done for about 0.5 seconds in about 1 minute.

2.7.11.6 Prevention of a FUSER NIP scar

When it keeps touching each other in the position where PRESSURE ROLL is the same as HEAT ROLL, the contact part of HEAT ROLL and PRESSURE ROLL is transformed, and it becomes a difference in pressure in the result fixation, and an influence appears in the print image quality.

The following is done to prevent this.

- ☐ Power OFF/DEEP SLEEP mode
Because there is no swelling of HEAT ROLL and PRESSURE ROLL by the heat of H/R HEATER and P/R HEATER, it is preventing the interval of HEAT ROLL and PRESSURE ROLL from becoming less than a constant distance physically. (On this occasion, pressure between HEAT ROLL and PRESSURE ROLL is hardly added.)
- ☐ READY/LIGHT SLEEP mode
HEAT ROLL and PRESSURE ROLL expand by the heat of H/R HEATER and P/R HEATER, because it becomes the condition that it gains fixed pressure and the contact position of HEAT ROLL and PRESSURE ROLL is changed by doing FUSER skidding for about 0.5 seconds in about every 1 minute.

2.7.11.7 MAIN FUSER ASSY Life Detection Control

- ☐ Life detection
The life of the MAIN FUSER ASSY is affected by the number of sheets of the print to be fixed. Detect life of MAIN FUSER ASSY by the count added at the time of printing. Though the life of MAIN FUSER ASSY is “100,000 count”, this is for the value by the regulation condition, warning value/limit value is established as the following.

Table 2-10. MAIN FUSER ASSY Life Detection Control

	Value
MAIN FUSER ASSY life warning.	99,999,999 count (standard value)
MAIN FUSER ASSY life limit.	99,999,999count (standard value)

NOTE: Count is a cumulative total that is incremented by 1 when length of paper in the paper transport direction is 219mm (LETTER [LEF]) or less, and incremented by 2 when the size of the paper exceeds 219mm (LETTER [LEF]).

- ☐ Procedures when replacing
Do the following treatment when exchanging MAIN FUSER Assy for new one.

NOTE: After replacing with a new MAIN FUSER ASSY, perform “Counter Clear”.

NOTE: “Counter Clear” is when a command is sent from the printer controller or diagnostics to reset the life counter corresponding to various error / status code inside the MCU PWB to zero. (For details, see Chapter 3 “Diagnostic Procedure”.)

2.8 Controller Operating Principles

This section describes C311MAIN board which is the MAIN CONTROLLER of LP-8500C/LP-8500CPD.

The main functions of the C311MAIN board are as follows:

- Processing print commands and print data sent from the host computer.
- Producing image video signals.
- Controlling and driving each mechanism in the engine to print image on paper by synchronizing the signals with the engine controller side (MCU PWB).

The printer uses a data bus 64-bit RISC CPU "R5000-2000MHz" for the processor. A 168-pin SDRAM module (CLK: 66.6666MHz), which is one of the major modules used for desk top personal computers, for memory. Combining those equipments, the printer has succeeded in processing data on the C287MAIN board at a high speed.

To run one page of color image, the printer generally processes more than 4 times as large data as for monochrome image. This printer, however, has a high speed image processor ASIC(E05B64) on the C287MAIN board. Since the ASIC allows the printer to give less duty to the PC as well as to the CPU on the C287MAIN board, the printer manages to process color image data at a higher speed than ever.

For communication with the host, the printer has a built-in parallel interface and network interface (10BASE-T/100BASE-TX).

See 2-69 for the circuit board and Figure 2-70 for the C287MAIN board circuit diagram.

As for LP-8500CPD, Script 3 International Font ROM module is installed to socket B, and for socket C, PostScript 3 Japanese Font ROM module.

LP-8500CPD/LP-8300CPD and LP-8300C/LP-8300CPD have different part's codes for the MAIN CONTROLLER PWB (C311MAIN) and a different firmware in the C269PROG MAIN BOARD.

Table 2-11. MAIN BOARD Parts Code

Model Name	Part No.
LP-8500C/LP-8500CPD	2034672
LP-8300C/LP-8300CPD	2036599

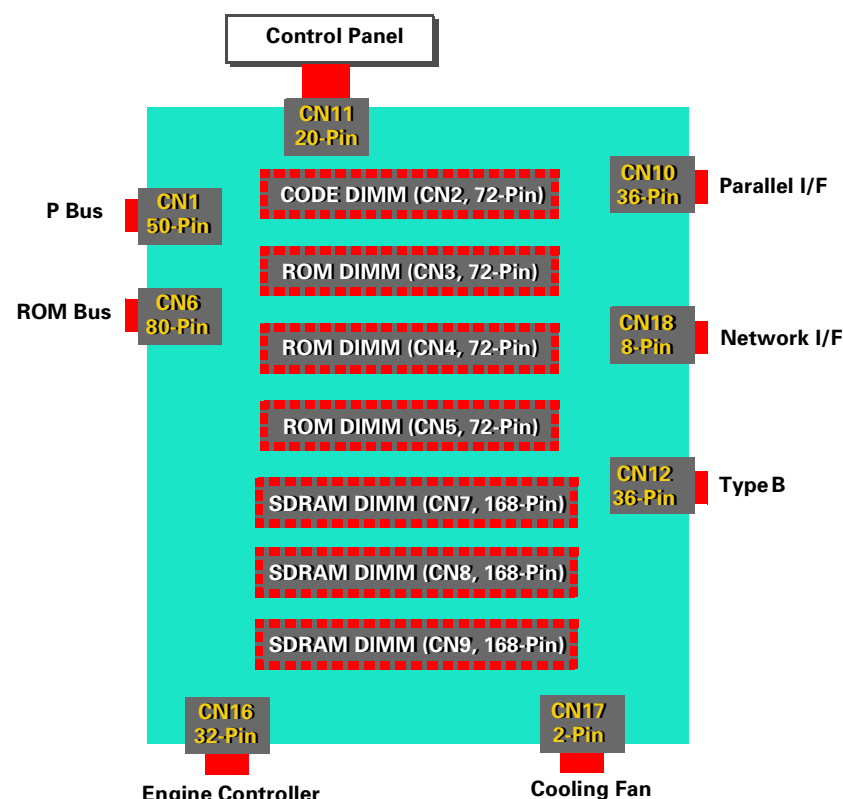


Figure 2-70. Circuit Board

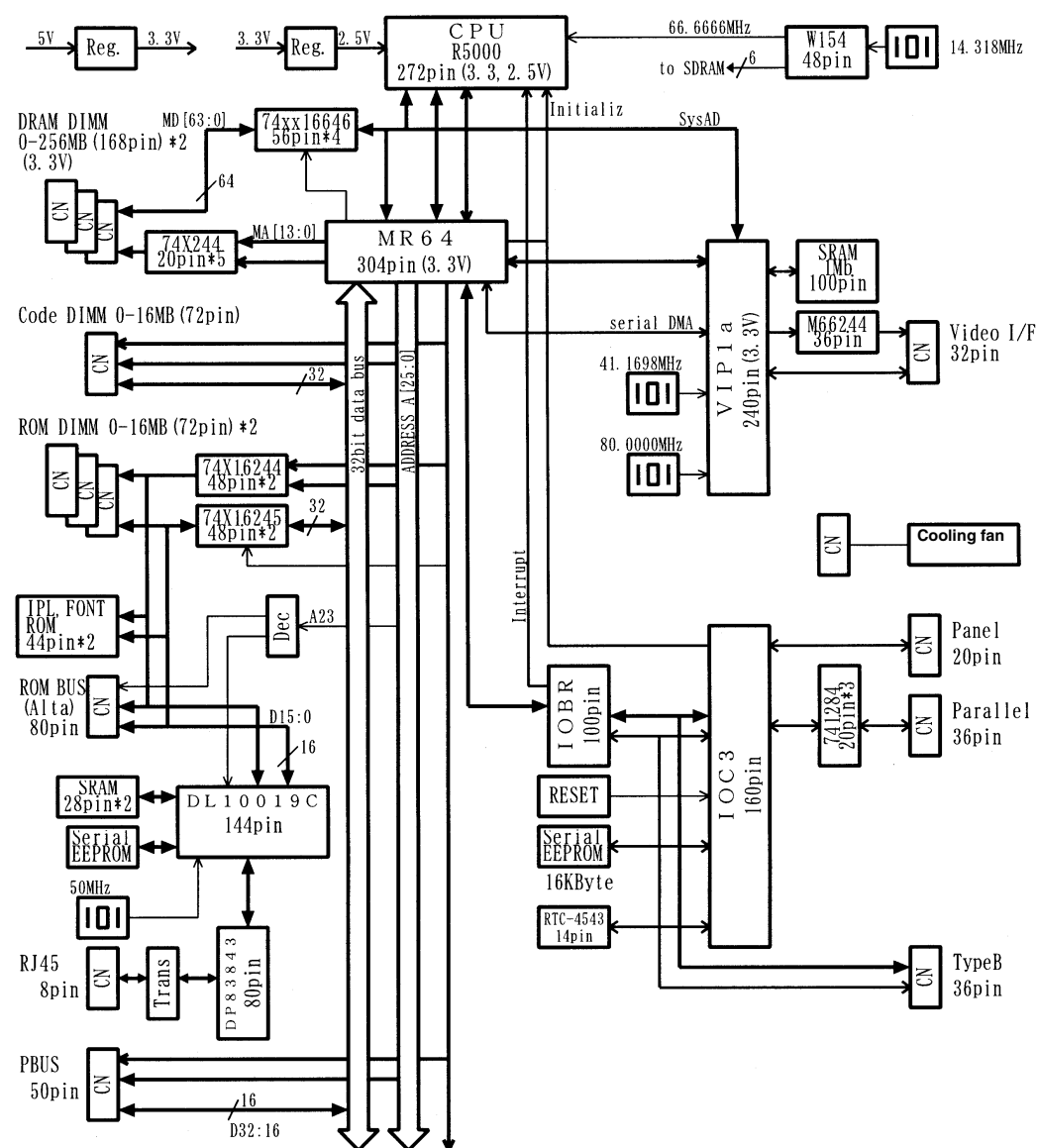


Figure 2-71. C287MAIN Board Circuit Diagram

Table 2-12. C287MAIN Board Major Components

Components	Location	Function	Refer to:
RISC-CPU R5000-260	IC1	A RISC*-type CPU, which operates at 266 MHz (internal) and 3.3V. (External: 66.6666 MHz) <i>*RISC: Reduced Instruction Set Computer</i>	1/7
E05B51 (ASIC)	IC2	- Interface for the CPU. - Controls the following: - Memory areas (SDRAM, Code-DIMM, IPL/FONT ROM, Option ROM DIMM) - DMA - CPGI and RIT/CRIT of the E05B79 - Network circuit - Optional HDD (Hard Disk Drive)	1/7
M51953BFP	IC3	Reset IC	1/7
E05B79	IC6	Manages the following: - CPGI (Color Photo & Graphics Improvement) - PGI (Photo & Graphics Improvement) - CCNV (Color CoNVersion) (RGB -> CMYK) - RIT/CRIT (Color RIT) - Controls video signals - Video I/F for the engine controller board (MCU PWB 41.1698 MHz)	5/7
E05B40	IC5	Manages the following: - Controls the IEEE1284 Parallel B - Controls the EEPROM (IC21) - Controls the I/O of the control panel - Controls the Type-B I/F board - RTC (IC50)control	4/7
E05B52	IC4	Interface for E05B51 and E05B40	4/7
IPL/CG	IC15/16	- IPL and FONT (upper 16Bit data / lower 16Bit data) - Two 512kbit x 16bit (1MB) mask ROMs are directly attached.	2/7

Table 2-12. C287MAIN Board Major Components

Components	Location	Function	Refer to:
AD9561	IC7	8-bit PWM controller (directly connected to E05B64)	5/7
IC61C632A	IC25	S-RAM (1M-bit) Directly connected to E05B79.	5/7
X25128SI	IC21	128K-bit EEPROM, which stores various printer setting information.	4/7
SG-8002	CRU4	Video clock operating at 41.1698MHz. (E05B79)	5/7
SG-8002	CRU2	Video clock operating at 80.000MHz	5/7
MA-406	CR1	Master clock operating at 66.6666MHz. (CPU, SDRAM, E05B51, E05B53, etc.)	6/7
ACT1284	IC22-24	Bus driver for IEEE1284ECP	4/7
NDB6020P	QF1	FET driven at 3.3 VDC	6/7
M51958AFP	IC56	Reset IC	7/7
LM3411	IC8	Regulator (3.3 VDC)	6/7
W154	IC9	Clock driver	6/7
Code DIMM	CN2	Socket P. DIMM with a 4MB FLASH ROM mounted.	2/7
	CN3-5	Sockets A/B/C. Specific optional ROMs are installed.	2/7
SDRAM DIMM	CN7-9	- Slots S0/S1/S2 (Standard: 64MB DIMM is installed in S0.) - S0: A DIMM must be always set in this slot. - S1/S2: A DIMM whose space area is 32, 64, 128, or 256MB can be set in each slot. - The maximum memory size recognized by the C311MAIN board is 758MB.	3/7
DL10019C	IC10	Network controller IC	7/7
DP83843	IC27	PHY	7/7
W24257AJ-15	IC28-29	S-RAM (256k-bit). A high speed working RAM for DL10019C.	7/7
93CS56	IC26	EEPROM. stores network controller settings, MAC address, and hardware revision.	7/7

Table 2-12. C287MAIN Board Major Components

Components	Location	Function	Refer to:
SG-8002	CRU3	Network clock operating at 50.000 MHz. (Network circuit)	7/7
PE-68517	T1	Transistor	7/7
RTC-4543	IC50	Realtime clock	4/7
ROM bus	CN6	A connector for CS-6500. Connect to E05B511(ASIC) ROM Bus.	2/7
P bus	CN1	A connecotor for harddisk. Connect to E05B51(ASIC).	1/7

CHAPTER

3

DISASSEMBLY/ASSEMBLY/ADJUSTMENT

3.1 Overview

This chapter describes procedures for disassembly, assembly, and adjustment of the AcuLaser C8500. Note the procedures are applicable only when the printer has no options installed. For information on removing/installing the options, please see the AcuLaser C8500 Setup Guide.

3.1.1 Precautions for Disassembly, Assembly and Adjustment

Precautions for disassembly, assembly and adjustment are as follows:



- Before starting, be sure to turn the printer off and unplug the power cable from the AC power socket.
- As this printer weighs as much as 71.2Kg, make sure that it is always carried carefully by 4 people or more.
- When working on the FUSER ASSY or nearby parts, be sure to wait until the temperature of the parts cool down to a safe level.
- When printing, make sure that all the outer covers are installed.
- In case you need to print before assembling, note the cautions below:
 1. Be careful not to get your hands and clothes caught in the rotating parts such as rollers and cooling fans.
 2. Never touch any electrical terminal or high voltage components such as HVPS and LVPS.



- When servicing, avoid handling any parts forcibly. Doing so might damage the parts and cause printer malfunction.
- Various types of screws are used to assemble the printer, and wrong usage might crush tapped hole and cause troubles. Therefore, be sure to mount the right screws to the specified positions.

3.1.1.1 Precaution for Handling the Lithium Battery

A lithium battery is attached on the control board of this printer, AcuLase C8500. It is used for backing up the system clock. If you don't handle the battery properly, it may cause the battery to short-circuit or explode. Therefore, be sure to observe the precautions below when handling the lithium battery.



- Before starting, be sure to turn the printer off and unplug the power cable from the AC power socket.
- When replacing the lithium battery with a new one, make sure the new one meets the specifications. (#CR2032 3V Lithium Cell Battery)
- Danger of explosion if battery is incorrectly replaced.
- Dispose of used batteries according to government's laws and regulation.
- Do not charge the lithium battery.



- Avant de commencer, assurez vous que l'imprimante soit éteinte et que le cordon d'alimentation soit débranché.
- Lorsque vous changez la pile au lithium, assurez vous que la nouvelle respecte bien les caractéristiques requises. (#CR2032 3V la pile au lithium)
- Lorsque vous installez la pile au lithium, faites attention à l'insérer dans le bon sens en respectant la polarité.
- Veuillez à jeter les piles usagées selon le règlement local.
- Ne rechargez pas les piles au lithium.



Be careful when servicing on the electrical parts of this printer so you do not damage the electrical elements with static electricity.

3.1.2 Tools

The table below shows the tools used for servicing.

Table 3-1. Tools

Must	Recommended
Phillips screw driver (#2)	Soldering iron
Phillips screw driver (#1)	E-ring holder
Tweezers	Mini screw driver
Pliers	
Vol. 16 SELF TRAINING KIT	
# 752 DIAGNOSTIC TOOL (Part Code: 1058540)	

3.1.3 Items to Check after Assembly

Performs the items described below when completing assembly after repairing the printer or replace any parts.

- ☐ Clean the housings and the interior of the engine. See Section 6.1.2 "Description of the On-site Service".
- ☐ After assembling or adjust the printer, print an engine status sheet to check the counters for the consumables and other parts which need replacing. If any of them is close to its life, replace it with a new one.

NOTE: After replacing the FUSER UNIT, one of the major after service parts, perform the Fuser Counter Clear in the Maintenance mode. See Section 6.2.1 "Entry to the Maintenance Menu".

NOTE: When replacing the MAIN FUSER ASSY, replace the FILTER ASSY as well.

- ☐ Check the program ROM version, and update it if necessary. Refer to Section 3.2.3
- ☐ Print several status sheets and check print quality.
- ☐ Send a few pages of data from the host computer and check for proper functions of the printer.

3.2 Disassembly/Assembly Procedures

This section describes procedures for disassembling/assembling the printer. Unless otherwise specified, assembly can be performed by reversing the disassembly procedure. Refer to Section 3.3 for adjustment procedure. In principle, you are to remove all options before servicing. However, you can leave them if possible.



Some parts are listed as spare parts but not mentioned in disassembly/assembly procedure. Therefore, look carefully how they are installed before you removing them.

NOTE: Directions used in this section are defined as shown in the figure below:

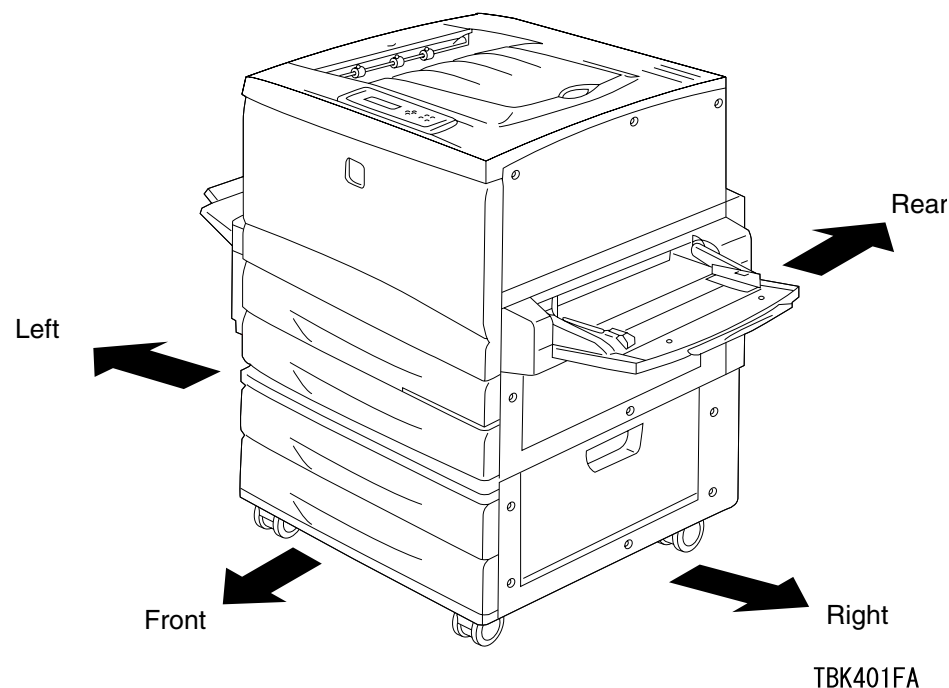


Figure 3-1. Directions

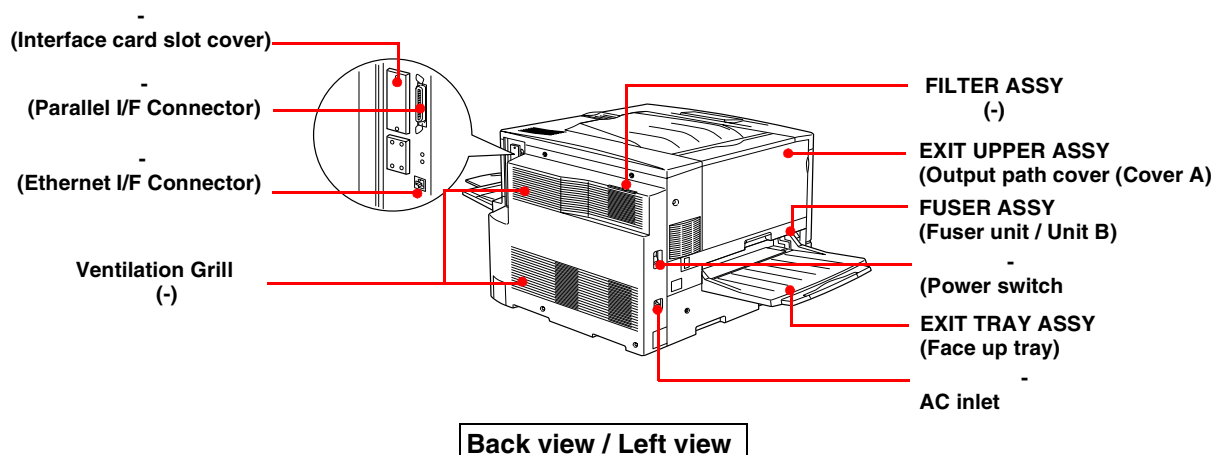
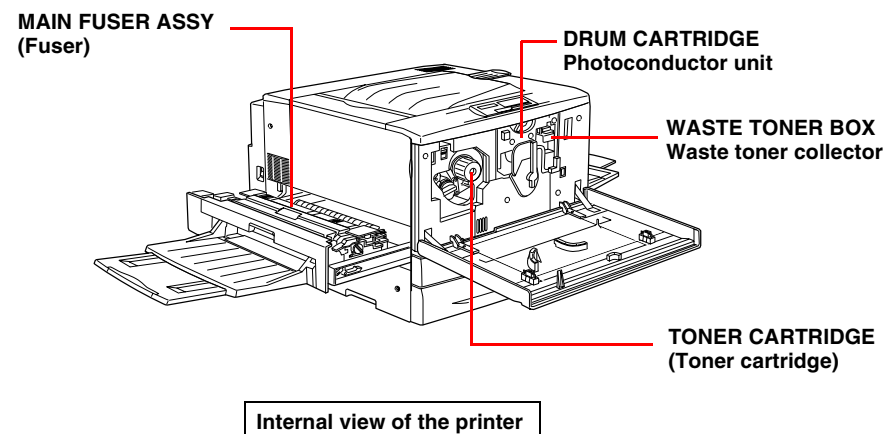
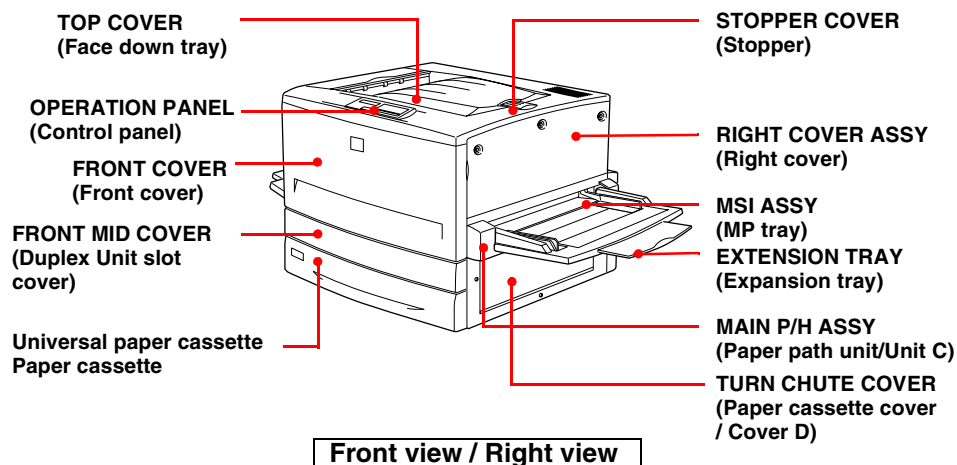
Refer to the followings which explain descriptions used in this chapter.

- ☐ Regarding “(PL X, Y, Z)” at the end of each heading of removal sections, it corresponds to the numbers in the part list in Appendix. Referring to the numbers, you can find the appearance and location of the parts efficiently.
- ☐ Directions are described as mentioned below. (See Figure 3-1.)
 - Front: Front side viewing the printer toward its front side
 - Back: Rear side viewing the printer toward its front side
 - Left: Left hand side viewing the printer toward its front side
 - Right: Right hand side viewing the printer toward its front side
- ☐ Screws are mentioned with descriptions including “(mounting location, color, feature, thread part length, and so on)”.
- ☐ The number in drawing corresponds to the step number in the section.
- ☐ Fasten the screws in the drawings using a Philips screw driver if no instruction is given.
- ☐ If black arrows are shown with numbers, they show the order to act for the step.
- ☐ White arrows (FRONT) in the drawings show the front side of the printer.
- ☐ Refer to Appendix for the connector (P/J) locations and harness routings.
- ☐ The generic term “Developer Assembly” is used for “DEVELOPER ASSY Y”, “DEVELOPER ASSY M”, “DEVELOPER ASSY C”, AND “DEVELOPER ASSY K”.
- ☐ The generic term “TONER CARTRIDGE” is used for “TONER CARTRIDGE Y”, “TONER CARTRIDGE M”, “TONER CARTRIDGE C”, and “TONER CARTRIDGE K”.

3.2.1 Exterior View and Part Names

The part names used in this Chapter are based on the after service part names. (They differ from the ones used in Users Guide.)

The names of the parts which are frequently handled by the users are shown below. (The terms used in User's Guide are also shown with brackets, however, some may not be mentioned.)



3.2.2 Removing/Replacing the Consumables

The consumables available (can be replaced by users) for this printer are as shown below. Refer to Section TBD in Chapter 6 for the procedures.

- TONER CARTRIDGE (Y, M, C, K)
- DRUM CARTRIDGE (including WASTE TONER BOX)
- WASTE TONER BOX

3.2.3 Updating the Main Controller Program ROM

The program ROM of this printer is a flash ROM module and can be updated in one of the following 2 ways:

1. Transferring the ROM updating program data (*.RCC) from the host computer via the standard parallel interface.
2. Copying the program ROM from the flash ROM module which has the most updated program.

Also, when you failed to write the program into the flash ROM and perform the same writing operation again or when you copy the program from the flash ROM module to another flash ROM module, you need to perform:

3. Formatting Flash ROM module

See the following sections for the procedures of each operation.

3.2.3.1 Updating the ROM using a standard parallel interface

Follow the instructions below to update the program ROM using a standard parallel interface.

NOTE: This method is used for updating a *.rcc file. In case of updating a *.crb file, refer to Section 1.5.5.

PREPARATION

Copy the data file (program ROM source file: "file name. RCC") in the route directory (HDD).

NOTE: The personal computer to be used should be able to send binary data from DOS prompt via a parallel interface.

PROCEDURE

1. Print a status sheet.
2. Turn off the printer and the personal computer, and connect an interface to each of them. Be sure to disconnect all interface cables except for the parallel interface cable so the printer will not receive data from any other interfaces.
3. Turn on the printer then the personal computer. The printer starts initializing and warm-up is completed within 5 minutes.

If the OS is Windows95, follow the steps below:

1. Click "Start", then choose "Shut Down".
2. In the Shut Down Window, select "Reset the computer in MS DOS mode?" to reset the computer.
3. MS-DOS starts up. (Continue to the steps below.)
4. Check that the message "**Ready**" is indicated on the LCD panel of the printer.
5. To transfer the program data file from the computer to the printer, type the command (shown below) on the DOS prompt (from the directory that has "*.RCC") and press Enter key.

COPY /B file name.RCC PRN:

6. You see the messages changing as follows:

“Writing DIMM P” → “Reset “ → “Ready”

(Takes about 10 minutes to complete.)

7. When the message is “Ready”, the program has been downloaded. Then turn the printer off.
8. Turn the printer back on and print a status sheet. Then, referring to the status sheet you printed in step 1, check that the program firmware version printed beside the left column of the new status sheet has been updated.

3.2.3.2 Updating by copying from the FLASH ROM module

Follow the steps below.

1. Install the ROM module which has the program ROM source to the socket B of the CONTROLLER PWB.

NOTE: Leave the ROM module in the socket P of the CONTROLLER PWB as it is.

2. Set the ROM module in which the program is to be written in the socket A of the CONTROLLER PWB.

NOTE: Format this ROM module in the way describe in Section 3.2.3.3.

3. Turn the printer on while pressing the “On Line”, “Alt”, and “Enter” buttons. (Keep the buttons down until proceeding to Step 4.) All the LED lamps and LCD on the panel come on and the LCD indicates the message below:

RAM CHECK**.*MB

Numeric is shown in place of *.* and starts counting up, then the engine initialization takes place.

4. When the printer enters the program ROM copy mode, the LCD message shown below appears.

DIMM COPY MODE

Then press the Enter button. You see the message below:

DIMM B>A COPYING □□□□

5. When the program has been properly updated, the printer enters the Ready status. If an error occurs, one of the following messages appears.

DIMM COPY B>A ERROR

FORMAT ERROR DIMM A

6. Turn the printer power off and remove the ROM module from the both sockets A and B.
7. Replace the updated ROM module with the ROM module in the socket P.

3.2.3.3 Formatting the FLASH ROM Module

Flash ROM module can be formatted as instructed below.

1. Install the ROM module to be formatted to the socket A of the CONTROLLER PWB.

NOTE: Leave the ROM module in the socket P of the CONTROLLER PWB as it is.

2. Turn the printer on while pressing down the “Alt”, “Item”, “Value”, and “Enter” buttons, and keep the buttons down until instructed to release them. The LCD and all the LED lamps on the control panel come on and the message bellow appears.

RAM CHECK **. *MB

Numeric is shown in place of **. * and starts increasing, then the engine initialization begins.

When the printer is in the ROM formatting mode, the following messages are indicated consequently.

DIMM A ERASING

Release the buttons at this point. The message below appears.

DIMM A ERASING □ □ □ □

3. After while, the message below appears and the ROM has been formatted.

DIMM A ERASED

4. When an error has occurred, the message bellow appears.

ERASE ERROR

3.2.4 Updating the MCU PWB (Mechanical Controller) Firmware

☐ Files

- POW.EXE Mechanical controller firmware write program
- V1_03_12.MOT Mechanical controller firmware data

(For “XX”, the larger the number is, the latest it is).

☐ How to write the MCU PWB firmware data

1. Connect the printer and PC with a parallel cable.
2. Turn the printer on while pressing the On Line, Alt, Item, and Value buttons.
3. Wait for the LCD to indicate the message “Please send EFU data”.
4. Start Windows 95 and select AL-C8500 for “Set as Default”. Then drag the mechanical controller firmware data to POW.
5. Start MS-DOS and type “V1_03_12.MOT LPT1: /B” on the MS-DOS prompt.
6. When the printer LCD indicates “type=21 sum=****”, press the Enter button.
7. It takes about four minutes for the program to write.
8. When the printer LCD indicates “type=21 sum=****”, turn the printer power off.

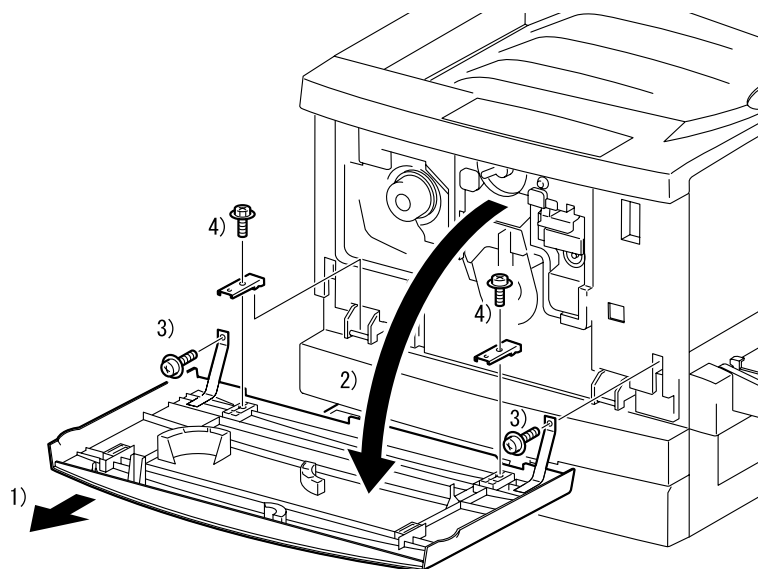
3.2.5 Cover

3.2.5.1 FRONT COVER ASSY (PL1.1.1) Removal

1. Take out the UNIVERSAL CASSETTE about 20cm. (See Section 3.2.6.1.)

NOTE: Be sure to perform Step 1 to support the FRONT COVER ASSY.

2. Open the FRONT COVER ASSY.
3. Remove 2 screws (gold, with a washer, 8mm) securing the right and left COVER SUPPORTs.
4. Remove 2 screws (black, tapped, 10mm) securing the FRONT COVER ASSY and right and left HINGE PLATES. Then remove the FRONT COVER ASSY and right and left HINGE PLATES.

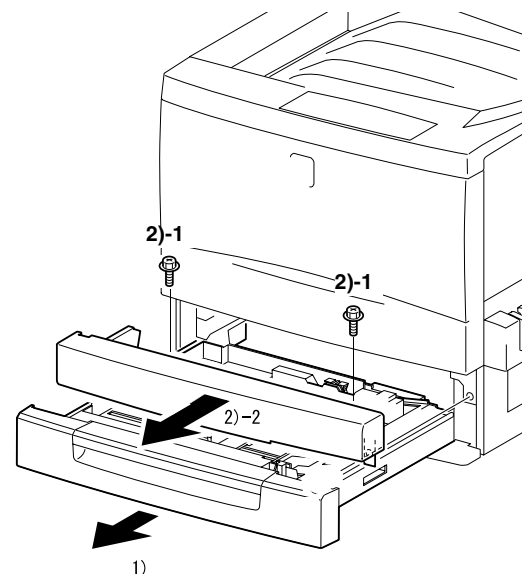


TBK402FA

Figure 3-2. Front Cover Assy Removal

3.2.5.2 FRONT MID COVER (PL1.1.6) Removal

1. Remove the UNIVERSAL CASSETTE.
2. Remove 2 screws (silver, cup head, 8 mm) securing the FONT MID COVER and remove the FRONT MID COVER.

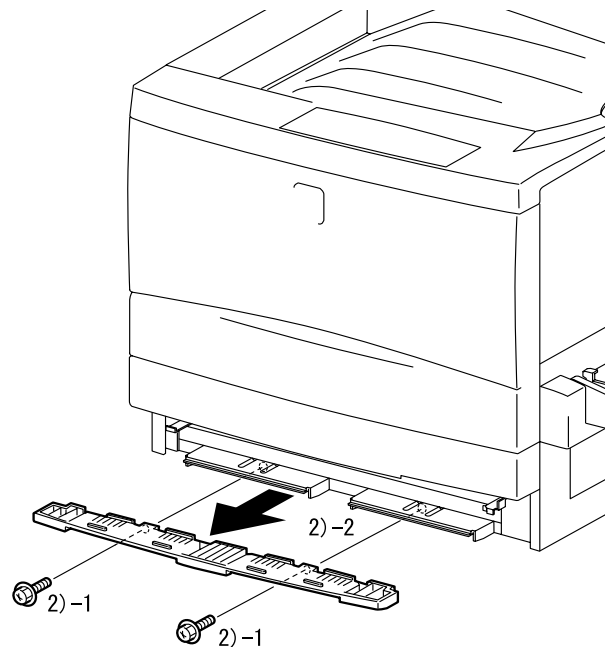


TBK403FA

Figure 3-3. FRONT MID COVER Removal

3.2.5.3 FRONT LOWER COVER (PL1.1.5) Removal

1. Remove the UNIVERSAL CASSETTE (See Section 3.2.6.1.)
2. Remove 2 screws (silver, cup head, 8mm) securing the FRONT LOWER COVER, and remove the FRONT LOWER COVER.

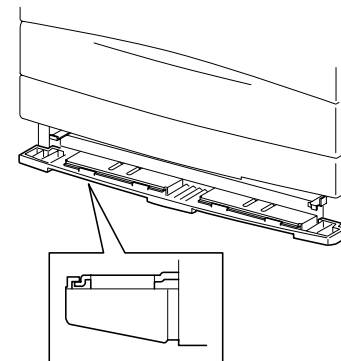


TBK404FA

Figure 3-4. FRONT LOWER COVER Removal



When installing the FRONT LOWER COVER, fit the front edge to 4 hooks in the frame to set the cover to the correct position.



TBK405FA

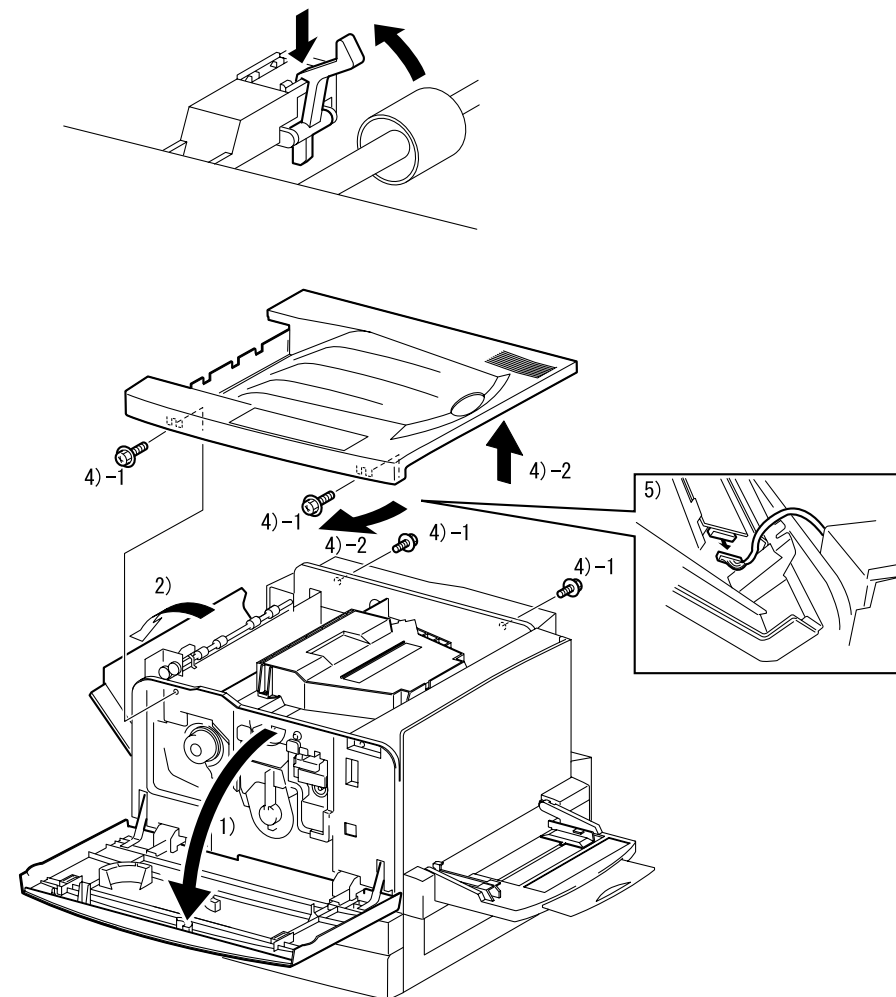
Figure 3-5. Front Lower Cover Installation

3.2.5.4 TOP COVER ASSY (PL1.1.20) Removal

1. Open the FRONT COVER ASSY.
2. Open the EXIT UPPER ASSY.

NOTE: In the following step, the TOP COVER ASSY is kept connected to the printer body with a harness. Therefore, do not move the TOP COVER ASSY too far from the printer.

3. Remove 4 screws (silver, cup head, 8mm) securing the TOP COVER ASSY. Then, lift up the rear end of the TOP COVER ASSY, bring the assembly to the front rotating it clockwise while supporting it by its front left part, and separate the assembly from the printer body.
4. Remove the OPERATION PANEL from the TOP COVER ASSY. (See Section 3.2.5.12.)



CHECK
POINT



When installing the TOP COVER ASSY, be sure to fasten the 2 screws at the back to secure TOP COVER ASSY and REAR COVER ASSY together. Pay a special attention to the left screw. Fasten it while pressing down the TOP COVER ASSY securely so that the rib in the TOP COVER presses the TOP COVER SWITCH without a fail.

TBK406FA

Figure 3-6. TOP COVER ASSY Removal

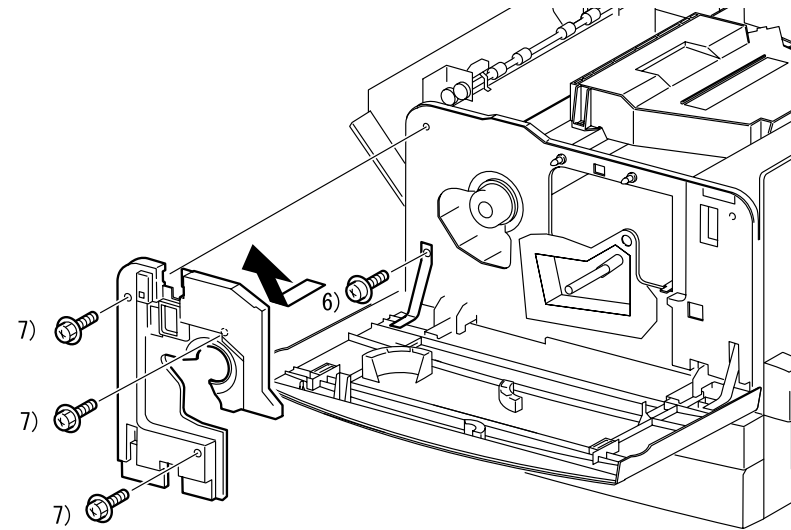
3.2.5.5 L/H INNER COVER ASSY (PL1.1.10) Removal

NOTE: Be sure to perform Step 1 to support the FRONT COVER ASSY.

1. Open the Universal Cassette.
2. Open the FRONT COVER.
3. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
4. Remove the DRUM CARTRIDGE. (See Section 3.2.9.1.)
5. Remove the TENSION LEVER. (See Section 3.2.11.1.)
6. Remove the IBT INNER COVER ASSY. (See Section 3.2.5.6.)

NOTE: As a result of the next step, the FRONT COVER ASSY will be supported by the right hinge and right COVER SUPPORT only. Therefore, be careful not to add excess force to the FRONT COVER ASSY.

7. Remove 1 screw (gold, with a washer, 8mm) fixing the COVER SUPPORT in the FRONT COVER ASSY to the left part of the printer body.
8. Remove 3 screws (silver, cup head, 6mm) securing the L/H INNER COVER ASSY. Then tilt the L/H INNER COVER ASSY forward and lift it up to remove.



TBK407FA

Figure 3-7. L/H INNER COVER ASSY Removal

3.2.5.6 IBT INNER COVER ASSY (PL1.1.14) Removal

1. Open the FRONT COVER.
2. Remove the DRUM CARTRIDGE. (See Section 3.2.9.1.)
3. Remove the TENSION LEVER. (See Section 3.2.11.1.)
4. Remove 2 screws (black, cup head, 6 mm) securing the IBT INNER COVER ASSY. Then, remove the IBT INNER COVER ASSY by lifting it up.

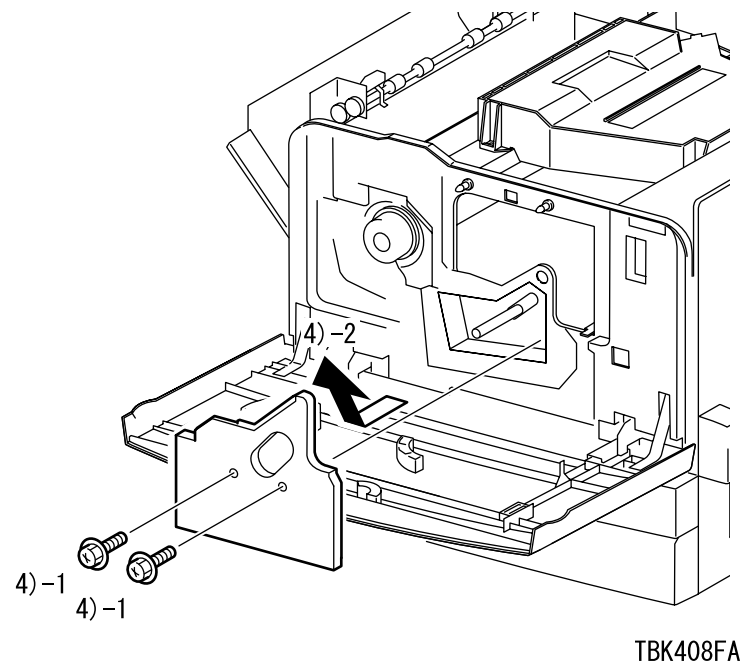


Figure 3-8. IBT INNER COVER ASSY Removal

3.2.5.7 R/H INNER COVER ASSY (PL1.1.15) Removal

1. Open the FRONT COVER.
2. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
3. Remove the DRUM CARTRIDGE. (See Section 3.2.9.1.)
4. Remove the TENSION LEVER. (See Section 3.2.11.1.)
5. Remove the IBT UNDER COVER ASSY. (See Section 3.2.5.6.)

NOTE: As a result of the next step, the FRONT COVER ASSY will be supported by the left hinge and left COVER SUPPORT only. Therefore, be careful not to add excess force to the FRONT COVER ASSY.

6. Remove 1 screw (gold, with a washer, 8mm) fixing the COVER SUPPORT in the FRONT COVER ASSY to the right part of the printer body.
7. Remove 2 screws (silver, cup head, 6mm) securing the R/H INNER COVER ASSY. Then tilt the R/H INNER COVER ASSY forward and lift it up to remove.

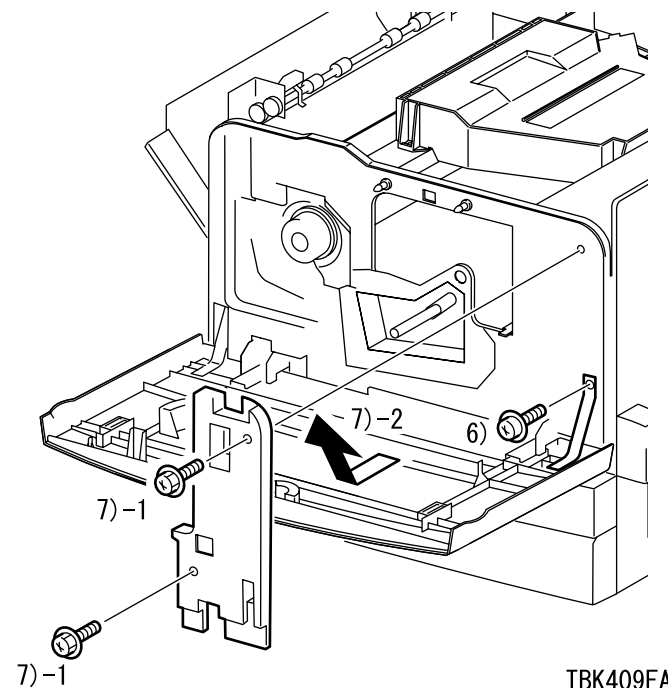


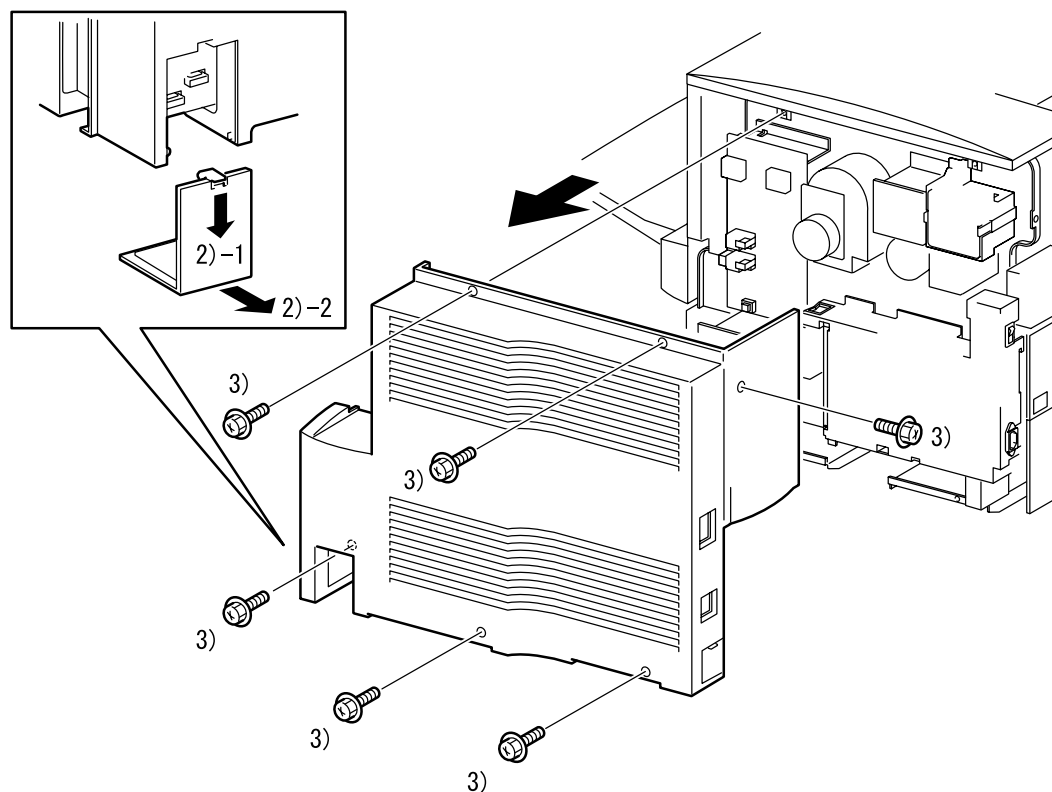
Figure 3-9. R/H INNER COVER ASSY Removal

3.2.5.8 REAR COVER ASSY (PL1.1.30) Removal

1. Take out the MAIN P/H ASSY.
2. Pressing the tub at the upper edge of the P/H COVER, unhook the O/H COVER from the REAR COVER ASSY. Then move the O/H COVER backward to remove it.
3. Remove 6 screws (silver, cup head, 8mm) securing the REAR COVER ASSY and remove the REAR COVER ASSY.



- When installing the REAR COVER ASSY, be sure to fasten the top 2 screws to secure the both TOP COVER ASSY and REAR COVER ASSY. Pay special attention to the left screw. Fasten the screw with the TOP COVER ASSY securely pressed down so that the rib in the TOP COVER presses the TOP COVER SWITCH (PL13.1.3) without fail.
- When installing the REAR COVER ASSY, be careful not to get the harness caught.

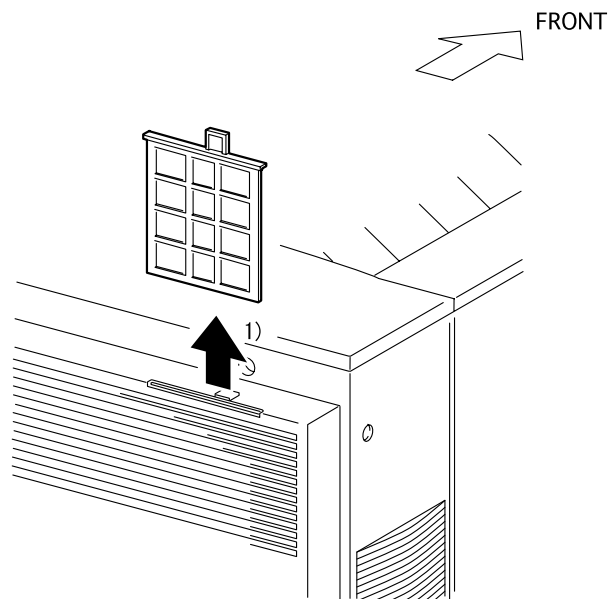


TBK410FA

Figure 3-10. REAR COVER ASSY Removal

3.2.5.9 FILTER ASSY (PL1.1.32) Removal

1. Holding the tab of the FILTER ASSY, unhook the FILTER ASSY and remove it by pulling it upward.

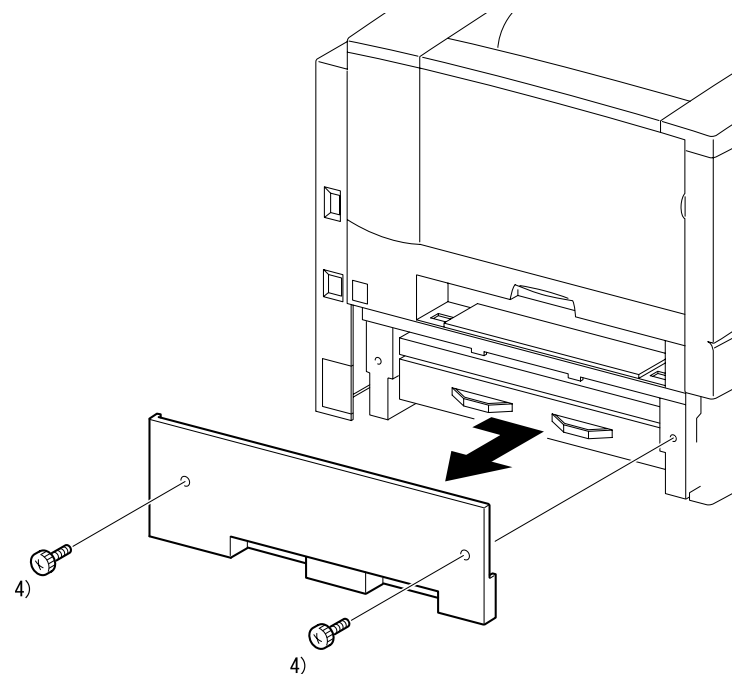


TBK411FA

Figure 3-11. FILTER ASSY Removal

3.2.5.10 LEFT LOWER COVER (PL1.1.40) Removal

1. Take the UNIVERSAL CASSETTE out.
2. Remove the FRONT LOWER COVER. (See Section 3.2.5.3.)
3. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
4. Remove 2 screws (silver, knurled, 8mm) securing the LEFT LOWER COVER. Then, shift the LEFT LOWER COVER forward to remove it.



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Figure 3-12. LEFT LOWER COVER Removal

3.2.5.11 RIGHT COVER ASSY (PL1.1.51) Removal

1. Remove 3 screws (silver, knurled, 8mm) securing the RIGHT COVER ASSY and open the front side of the cover. Then shift the cover to the rear and remove it.

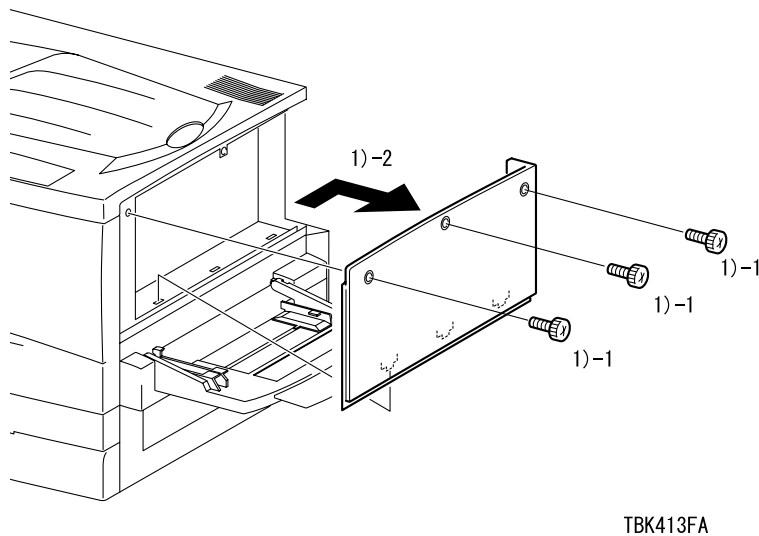


Figure 3-13. RIGHT COVER ASSY Removal



When installing the RIGHT COVER ASSY, fit the hooks in the assembly in the positioning holes at the rear part of the printer.

3.2.5.12 OPERATION PANEL (PL1.1.60) Removal

NOTE: In the first step, the TOP COVER will remain connected to the printer. Therefore, be careful not to move the cover too away from the printer.

1. Remove the TOP COVER along with the OPERATION PANEL. (See Section 3.2.5.4.)

NOTE: In the following step, be careful not to break the hooks in the OPERATION PANEL.

2. Using the 4 hooks in the OPERATION PANEL and remove the panel from the TOP COVER ASSY by pulling it upward.
3. Disconnect the connector for the OPERATION PANEL (P/J317).

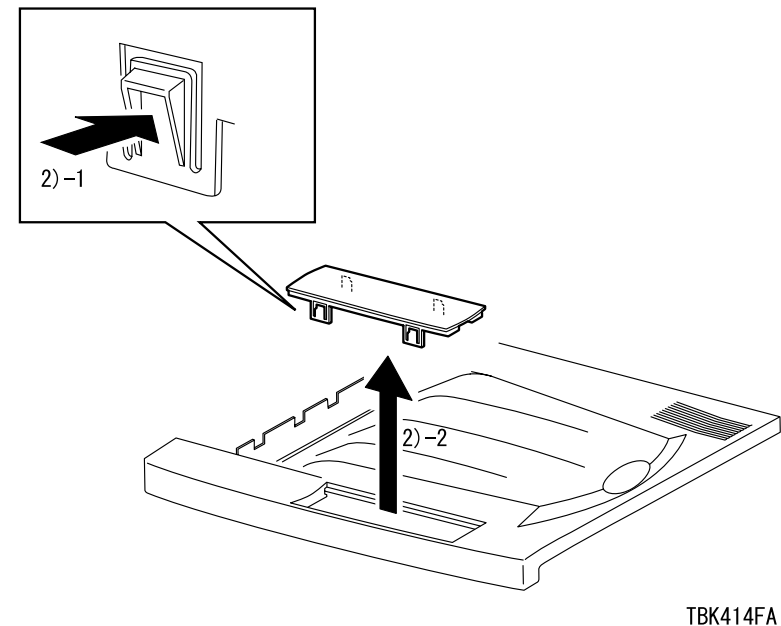
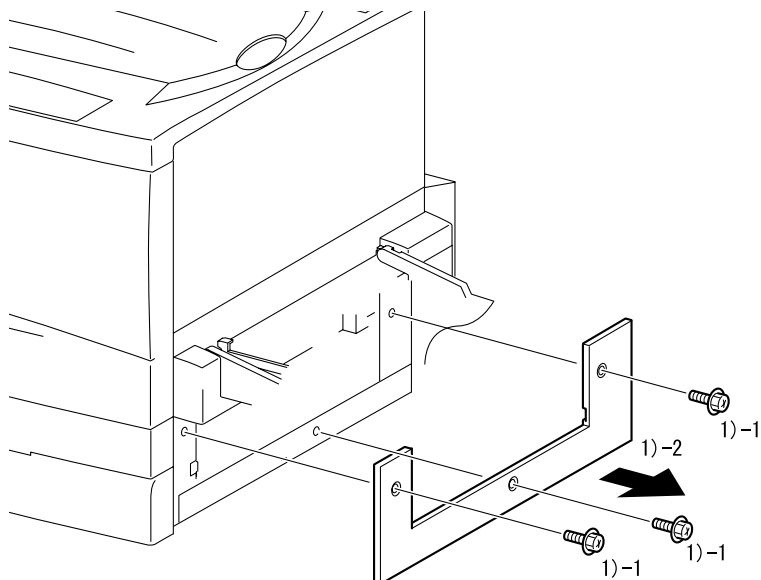


Figure 3-14. OPERATION PANEL Removal

3.2.5.13 RIGHT LOWER COVER (PL1.1.50) Removal

1. Remove 3 screws (silver, cup head, 6 mm) securing the RIGHT LOWER COVER and remove RIGHT LOWER COVER.



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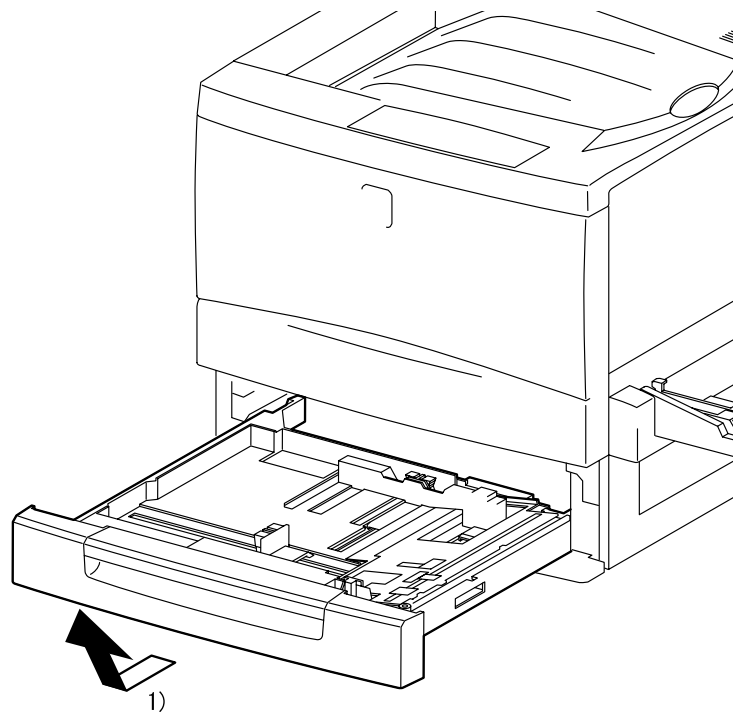
Figure 3-15. RIGHT LOWER COVER Removal

3.2.6 Paper Tray

3.2.6.1 UNIVERSAL CASSETTE (PL2.1.1) Removal

NOTE: In the following step, be sure to handle the UNIVERSAL CASSETTE with the both hands so you do not drop the UNIVERSAL CASSETTE.

1. Draw out the UNIVERSAL CASSETTE, lift it up by its front edge, and then, keeping the cassette lift up, take the tray all the way to remove it.



TBK416FA

Figure 3-16. UNIVERSAL CASSETTE Removal

3.2.6.2 FRONT SNUBBER (PL2.1.9) Removal

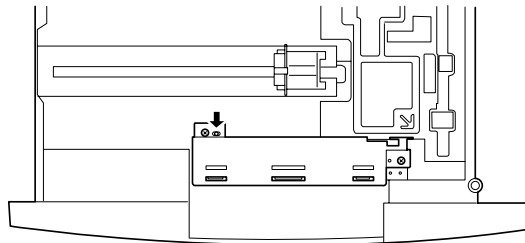
1. Remove the UNIVERSAL CASSETTE. (See Section 3.2.6.1.)

NOTE: In the following steps, be careful not to bend the edge of the FRONT SNUBBER where paper is placed.

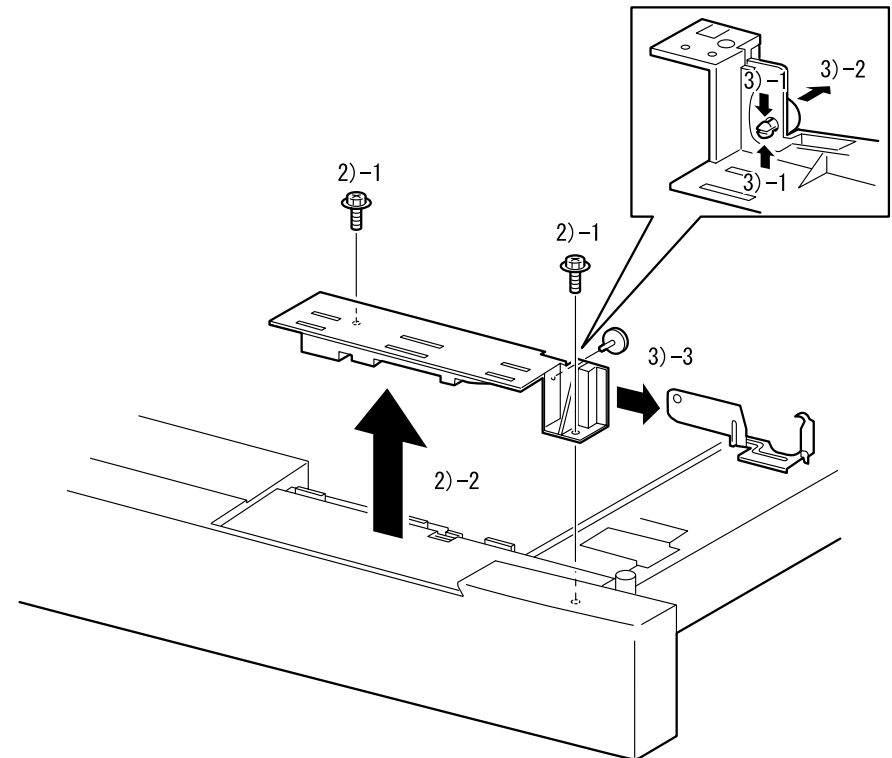
2. Remove 2 screws (black, tapped, 8mm) securing the FRONT GUIDE ASSY and remove the FRONT GUIDE ASSY.
3. Using a tool such as pliers, release the hook securing the FRONT SNUBBER SUPPORT and remove the SNUBBER SUPPORT. Then remove the FRONT SNUBBER.



When installing the FRONT SNUBBER, be sure to align the positioning hole of the FRONT SNUBBER with the rear pin. (Never align it with the front one.)



TBK418FA

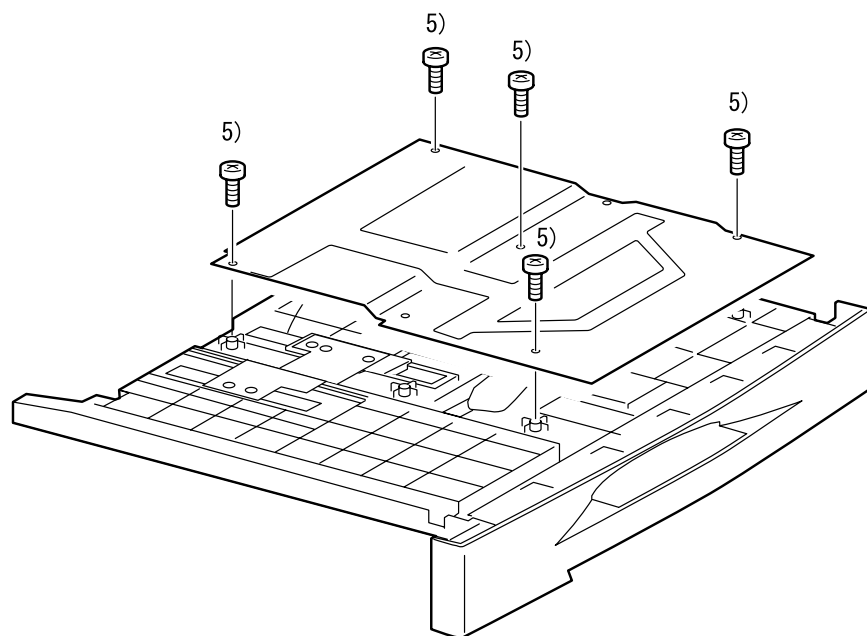


TBK417FA

Figure 3-17. FRONT SNUBBER Removal

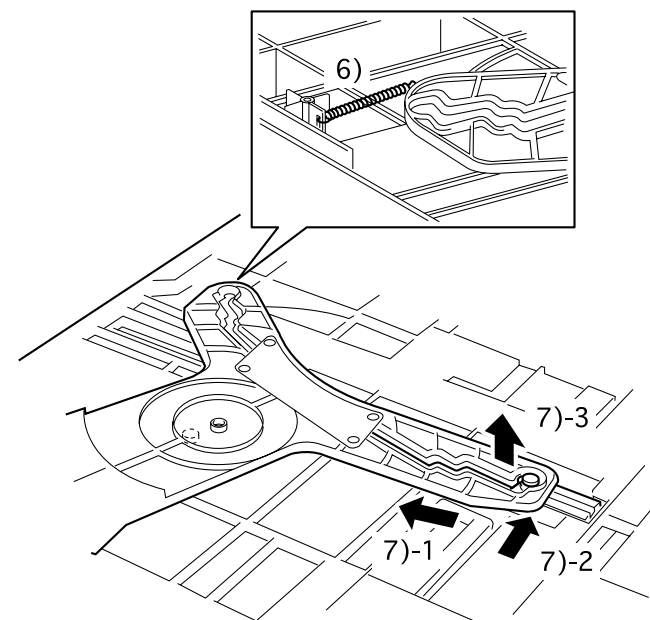
3.2.6.3 END GUIDE (PL2.1.16), SECTOR GEAR (PL2.1.18) Removal

1. Remove the UNIVERSAL CASSETTE. (See Section 3.2.6.1.)
2. Move the END GUIDE to the right end (= minimum paper size fits).
3. Remove 2 screws (black, tapped, 8mm) securing the FRONT GUIDE ASSY and remove the FRONT GUIDE ASSY.
4. Push down the BOTTOM PLATE ASSY to lock it at the bottom.
5. Turn the UNIVERSAL CASSETTE over and remove 5 screws (gold, tapped, 8mm) securing the CASSETTE BOTTOM COVER. Then remove the CASSETTE BOTTOM COVER.
6. Remove the SECTOR GEAR SPRING from the CASSETTE HOUSING and SECTOR GEAR.
7. Release the SECTOR GEAR from the swivel peg in the UNIVERSAL CASSETTE, and slide the SECTOR GEAR along the groove to fit the round end of the groove to the peg in the END GUIDE. Then remove the SECTOR GEAR.



TBK419FA

Figure 3-18. END GUIDE, SECTOR GEAR Removal - 1



TBK420FA

Figure 3-19. END GUIDE, SECTOR GEAR Removal - 2

8. Remove 2 screws (black, cup head, 8mm) securing the LOCK PLATE by the right edge.
9. Remove 2 screws (black, cup head, 10 mm) securing the LOCK PLATE by the left edge, and remove the LOCK PLATE.
10. Remove 2 screws (gold, tapped, 6 mm) securing the REAR GUIDE PLATE L.

NOTE: In the following step, hold the REAR GUIDE while removing the REAR GUIDE PLATE R. so that the REAR GUIDE will not drop.

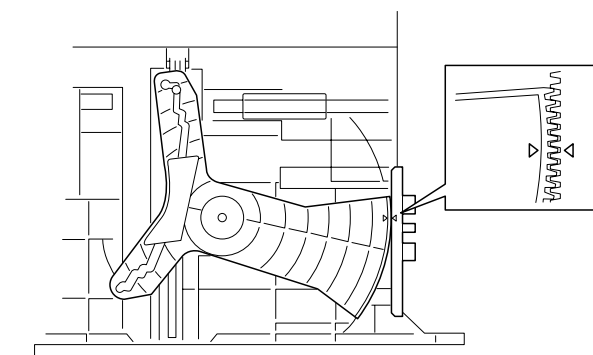
11. Remove 1 screw (gold, tapped, 6 mm) securing the REAR GUIDE PLATE R, and remove the REAR GUIDE PLATE R and the REAR GUIDE ASSY.

NOTE: In the following step, CASSETTE N/F SPRINGS will spring out. Therefore, be careful not to lose them.

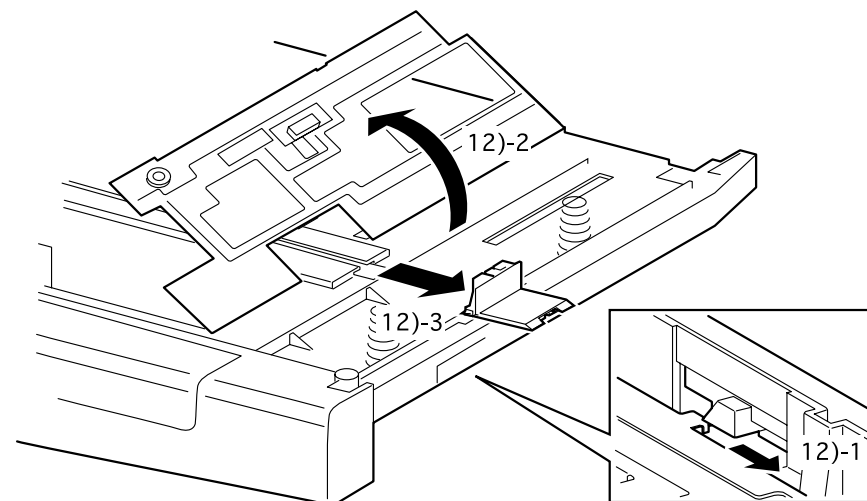
12. Moving the PLATE LINK, free the BOTTOM PLATE ASSY from the lock and open it. Then slide the END GUIDE to the right and remove it.



When installing the SECTOR GEAR, make sure that the triangle marks on the SECTOR GEAR and CASSETTE SIZE ACTUATOR are aligned. Make sure the END GUIDE is set to the minimum paper size position.



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TBK422FA

Figure 3-20. END GUIDE, SECTOR GEAR Removal - 3

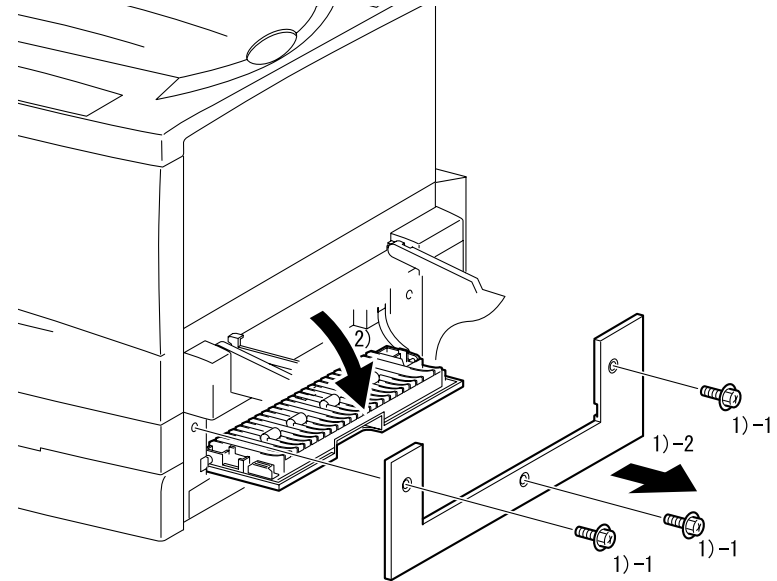
3.2.7 Paper Feeder

3.2.7.1 TURN IN CHUTE (PL3.1.21) Removal

1. Remove 3 screws (silver, cup head, 6 mm) securing the RIGHT COVER ASSY and remove the RIGHT COVER ASSY.
2. Open the TURN CHUTE COVER.
3. Remove 1 screw (silver, with washer, 6 mm) securing the TURN COVER STOPPER to the main body .
4. Pushing the peg at the front edge of the TURN CHUTE UP ASSY with a tool like a screw driver, turn the TURN CHUTE UP ASSY to the right to release its rear peg and remove the TURN CHUTE UP ASSY.
5. Remove the R/H LOWER BRACKET.

NOTE: In the next step, be careful not to damage the hinge part of the TURN IN CHUTE.

6. Press the hinge at the rear part of the TURN IN CHUTE to release the peg and swivel the TURN IN CHUTE right around the front side as the supporting point.



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Figure 3-21. TURN IN CHUTE Removal - 1

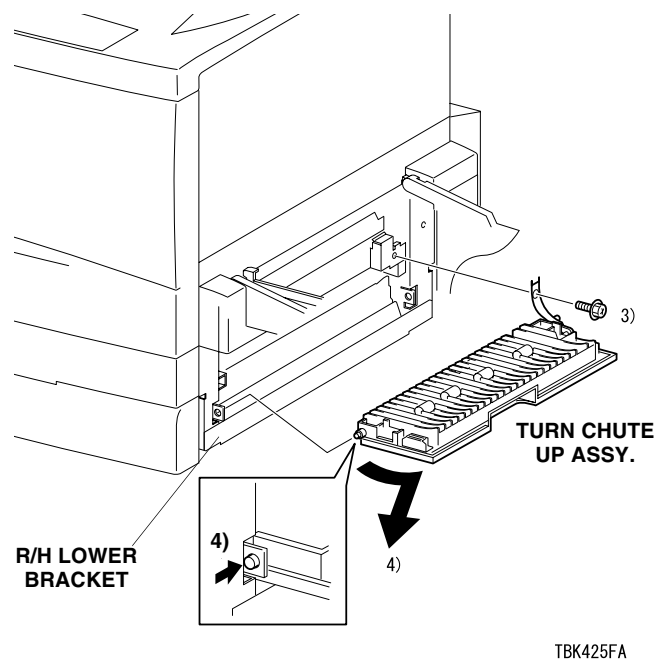
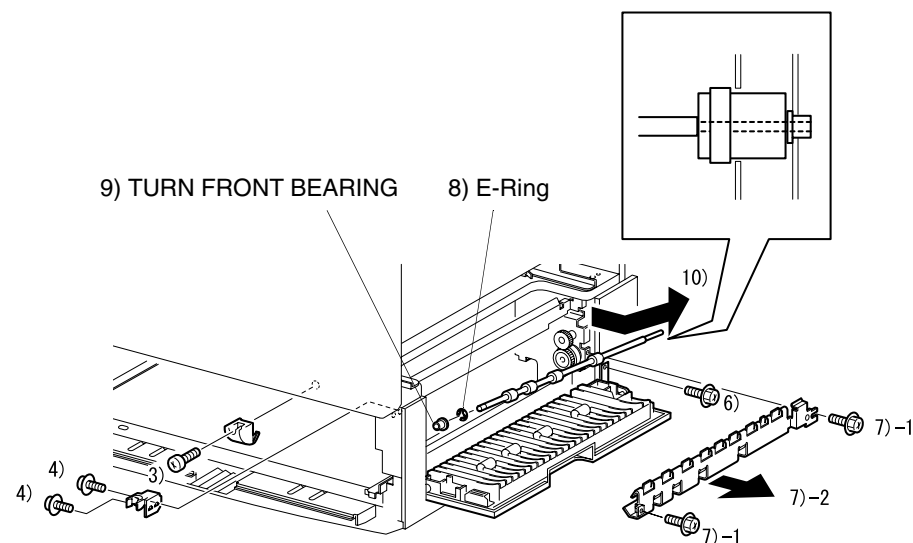


Figure 3-22. TURN IN CHUTE Removal - 2

3.2.7.2 TURN ROLL ASSY (PL3.1.23) Removal

1. Remove the UNIVERSAL CASSETTE. (See Section 3.2.6.1.)
2. Remove the FRONT MID COVER. (See Section 3.2.5.2.)
3. Remove 1 screw (silver, 8 mm) securing the FEED SHAFT GUIDE and remove it.
4. Remove 2 screw (gold, with wa washer, 8 mm) securing the TRAY STOPPER and remove it.
5. Open the TURN CHUTE COVER (TURN CHUTE UP ASSY).
6. Remove 1 screw (silver, with a washer, 6 mm) securing the TURN COVER STOPPER.
7. Remove 2 screws (silver, cup head, 6 mm) securing the TURN CHUTE and remove it by lifting up its lower part.
8. Remove the E-ring fixing the TURN ROLL ASSY.
9. Shift the TURN FRONT BEARING to the rear to release it from the frame.
10. Shift the TURN ROLL ASSY forward to release its rear end from the TURN CLUTCH, turn the rear end to the right, and remove the TURN ROLL ASSY toward the rear.



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Figure 3-23. TURN ROLL ASSY Removal



When installing the TURN ROLL ASSY, first remove and set the MSI TRAY and then position the TRAY STOPPER making sure it is supporting the MSI tray securely.

3.2.7.3 FEED ROLL (PL3.1.31) Removal

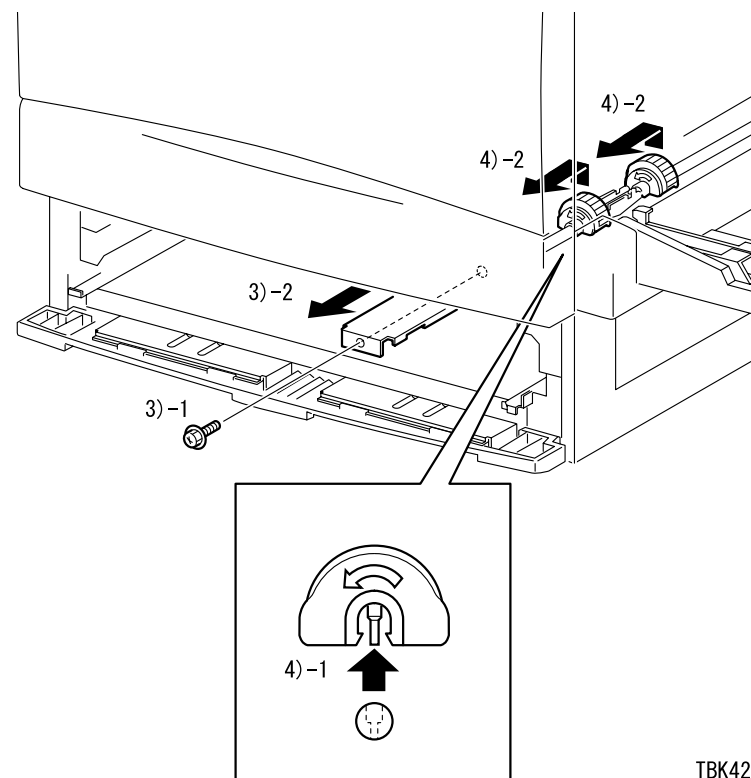
1. Remove the UNIVERSAL CASSETTE. (See Section 3.2.6.1.)
2. Remove the FRONT MID COVER. (See Section 3.2.5.2.)
3. Remove 1 screw (silver, cup head, 6 mm) securing the TRAY SENSOR BRACKET and remove the TRAY SENSOR BRACKET.

NOTE: In the following step, be careful with the metal plate as you maybe hurt with its sharp edge.

4. Insert your hand in the UNIVERSAL CASSETTE slot , release the hook on the FEED ROLL, and remove the FEED ROLL.



When installing the FEED ROLL, make sure the arrow marked on the side of the roll is facing to the rotating direction.



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Figure 3-24. FEED ROLL Removal

3.2.7.4 FEED SOLENOID (PL3.1.35) Removal

1. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)

NOTE: In the following step, the **OPTION BRACKET** is kept connected to the printer body with a harness. Therefore, do not move the **OPTION BRACKET** away from the printer.

2. Remove 2 screws (silver, cup head, 6mm) securing the **OPTION BRACKET** and separate the **OPTION BRACKET** from the printer body.

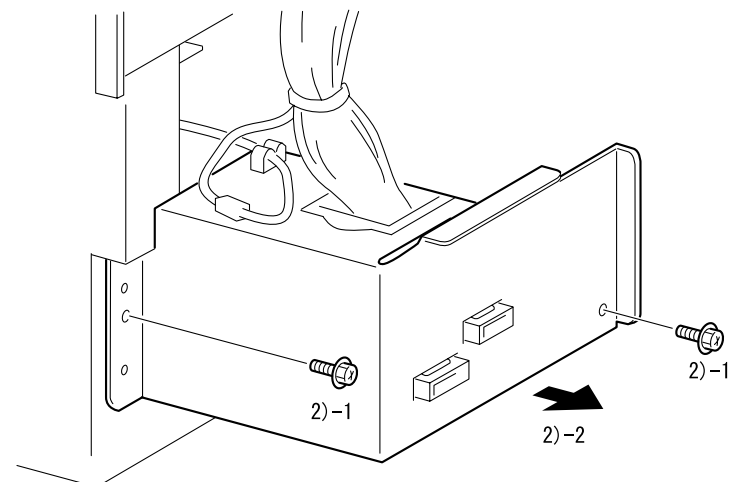
NOTE: When installing the **OPTION BRACKET** in the following step, be careful with its sharp edges. Remove the bracket if necessary.

3. Remove the screw (silver, cup head, 6 mm) securing the **FEED SOLENOID** and remove the **FEED SOLENOID**.

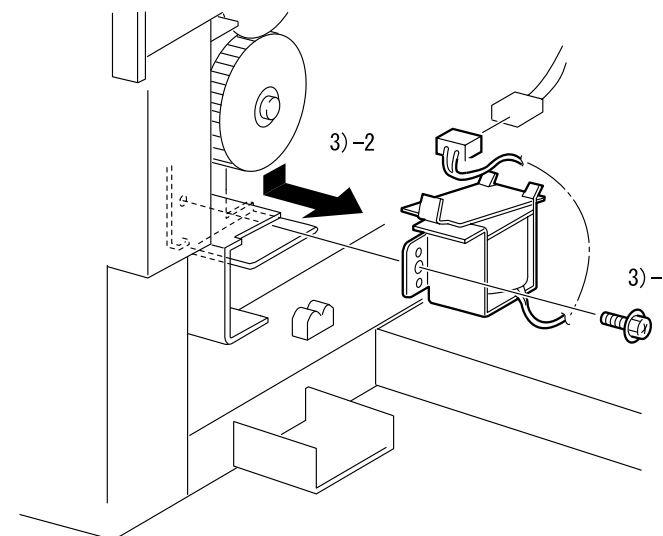
CHECK
POINT



- Make sure the protrusion on the **FEED GEAR** and the arm of the **FEED SOLENOID** are securely engaged.
- After installing the solenoid, check that the notch of the **FEED GEAR** rests on the arm of the solenoid. (The **FEED ROLL** comes to the top.)



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Figure 3-25. FEED SOLENOID Removal

3.2.7.5 FEED ROLL ASSY (PL3.1.29) Removal

1. Remove the REAR COVER ASSY.
2. Remove the UNIVERSAL CASSETTE. (See Section 3.2.6.1.)
3. Remove the FRONT MID COVER. (See Section 3.2.5.2.)
4. Remove the HVPS. (See Section 3.2.16.2.)
5. Remove the P/H DRIVE ASSY along with the DRIVE MOTOR PWB and P/H MOTOR ASSY.
6. Remove the FEED SPRING from the FEED GEAR and the frame.
7. Remove the E-ring fixing the FEED GEAR and remove the FEED GEAR.
8. Remove 1 screw (silver, 8 mm) securing the FEED SHAFT GUIDE and remove the FEED SHAFT GUIDE.
9. Remove 1 screw (silver, cup head, 6 mm) securing the TRAY SENSOR BRACKET and remove the TRAY SENSOR BRACKET.
10. Bring the TURN ROLL to the bottom side, shift the TURN ROLL ASSY to the front to release its rear end from the frame, and remove the TURN ROLL ASSY by shifting it to the bottom rear.
11. Follow the steps below to remove the FEED ROLL ASSY.
 - 11-1. Shift the FEED ROLL ASSY to the front to release its rear end from the frame.
 - 11-2. Move the rear part of the FEED ROLL ASSY to the bottom and then to the rear.
 - 11-3. Remove the FEED ROLL ASSY along with the FEED BEARING at the rear making sure it does not interfere with the CASSETTE N/P SENSOR ASSY.
12. Remove the FEED BEARING and E-ring from the FEED ROLL ASSY.

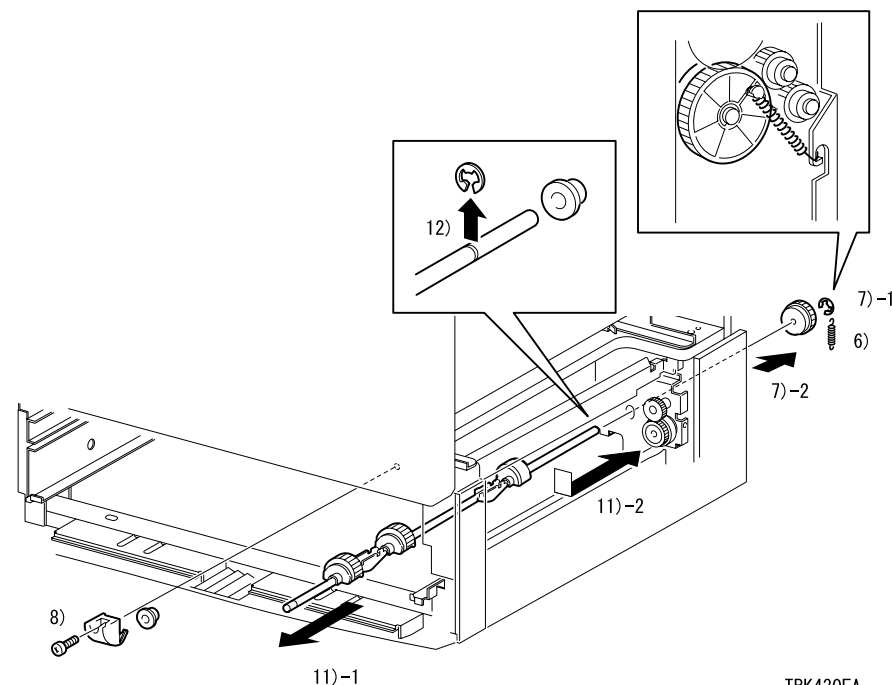


Figure 3-26. FEED ROLL ASSY Removal



After installing the solenoid, check that the notch of the FEED GEAR rests on the arm of the solenoid. (The FEED ROLL comes to the top.)

3.2.7.6 SIZE SWITCH ASSY (PL3.1.5) Removal

1. Remove the REAR COVER. (See Section 3.2.5.8.)
2. Remove the LVPS. (See Section 3.2.16.1.)

NOTE: In the following step, the *OPTION BRACKET* is kept connected to the printer body with a harness. Therefore, do not move the *SIZE BRACKET ASSY* away from the printer.

3. Remove 2 screws (silver, cup head, 6 mm) securing the SIZE BRACKET ASSY and separate the SIZE BRACKET ASSY from the printer body.
4. Disconnect the connector (CN1) for the SIZE SWITCH ASSY and remove the SIZE BRACKET ASSY.
5. Remove 1 screw (black, cup head, 12 mm) securing the SIZE SWITCH ASSY and remove the SIZE SWITCH ASSY from the SIZE SWITCH BRACKET.

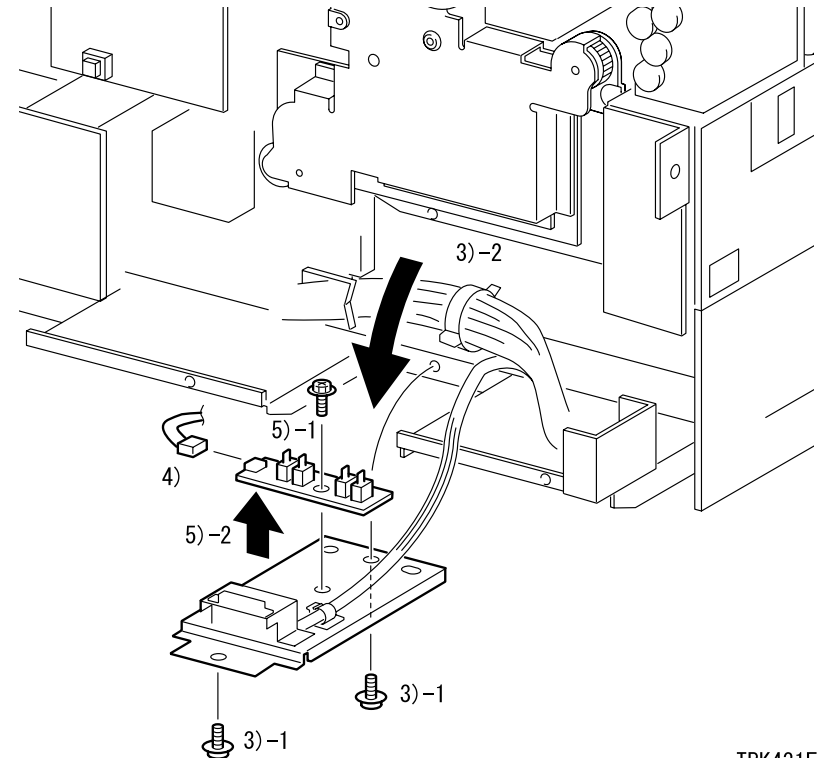


Figure 3-27. SIZE SWITCH ASSY Removal

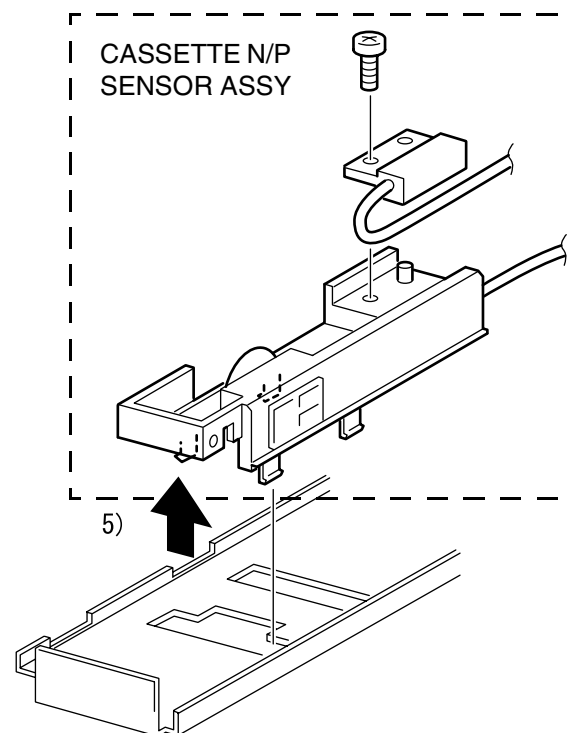
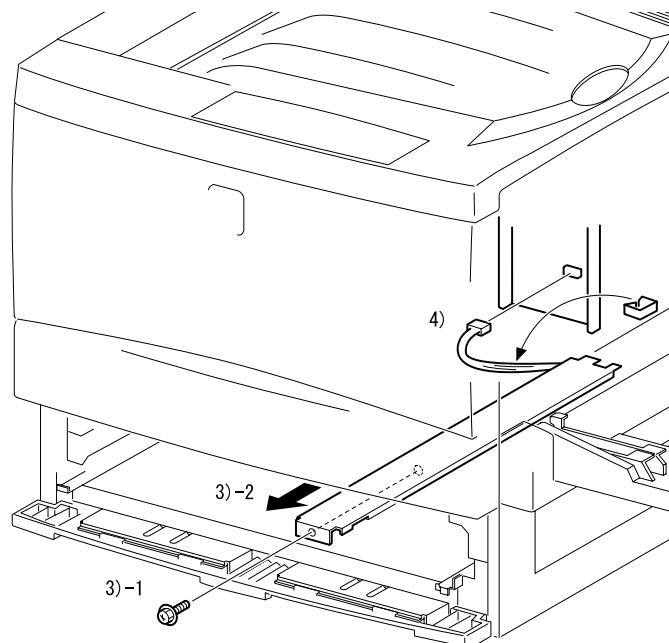
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3.2.7.7 CASSETTE N/P SENSOR ASSY (PL3.1.30) Removal

1. Remove the UNIVERSAL CASSETTE. (See Section 3.2.6.1.)
2. Remove the FRONT MID COVER. (See Section 3.2.5.2.)
3. Remove 1 screw (silver , cup head, 6 mm) securing the TRAY SENSOR BRACKET and remove the TRAY SENSOR BRACKET. (See Section 3.2.7.3.)
4. Disconnect the connector (P/J107).
5. Release the hook on the CASSETTE N/P SENSOR from the CASSETTE SENSOR BRACKET and remove the CASSETTE N/P SENSOR.



When installing the CASSETTE N/P SENSOR ASSY, route the harness carefully so it doesn't float.



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Figure 3-28. CASSETTE N/P SENSOR ASSY Removal

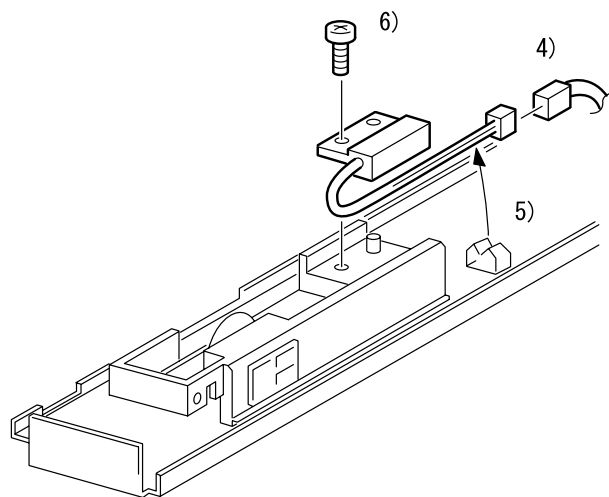
3.2.7.8 LOW PAPER SENSOR (PL3.1.18) Removal

1. Remove the UNIVERSAL CASSETTE. (See Section 3.2.6.1.)
2. Remove the FRONT MID COVER. (See Section 3.2.5.2.)
3. Remove 1 screw (silver , cup head, 6 mm) securing the TRAY SENSOR BRACKET and remove the TRAY SENSOR BRACKET. (See Section 3.2.7.3.)
4. Disconnect the connector (P/J106)
5. Release the hook on the CASSETTE N/P SENSOR from the TRAY SENSOR BRACKET and remove the CASSETTE N/P SENSOR.
6. Remove 1 screw (gold, tapped, 8 mm) securing the LOW PAPER SENSOR and remove the LOW PAPER SENSOR.

CHECK
POINT



When installing the LOW PAPER SENSOR, be sure to fit the peg on the CASSETTE N/P SENSOR with the location hole in the LOW PAPER SENSOR.



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Figure 3-29. LOW PAPER SENSOR Removal

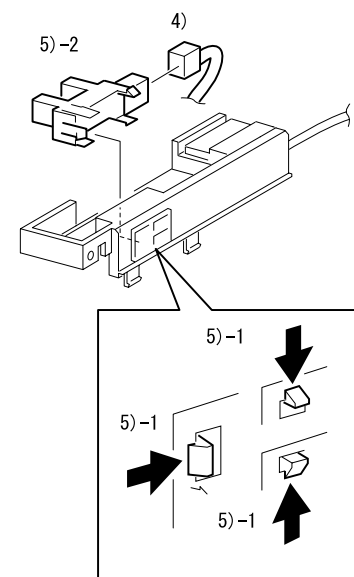
3.2.7.9 TRAY NO PAPER SENSOR (PL3.1.9) Removal

1. Remove the UNIVERSAL CASSETTE. (See Section 3.2.6.1.)
2. Remove the FRONT MID COVER. (See Section 3.2.5.2.)
3. Remove CASSETTE N/P SENSOR ASSY. (See Section 3.2.7.7.)
4. Disconnect the connector (P/J107) for the TRAY NO PAPER SENSOR and remove the harness for the TRAY NO PAPER SENSOR.
5. Release the hooks securing the TRAY NO PAPER SENSOR from the CASSETTE N/P BRACKET and remove the TRAY NO PAPER SENSOR.

CHECK
POINT



When installing the TRAY NO PAPER SENSOR, make sure the CASSETTE N/P ACTUATOR stays above the TRAY NO PAPER SENSOR.



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Figure 3-30. TRAY NO PAPER SENSOR Removal

3.2.8 MSI/Paper Transportation

3.2.8.1 MSI/REGI HIGH ASSY (PL4.1.5) Removal

1. Draw out the MSI/REGI HIGH ASSY.
2. Loosen 2 screws (black, cup head, 12 mm) that are on the P/H FRONT RAIL-L and P/H REAR RAIL-L to prevent the MSI REGI HIGH ASSY from dropping.
3. Remove the MSI/REGI HIGH ASSY by sliding it horizontally.

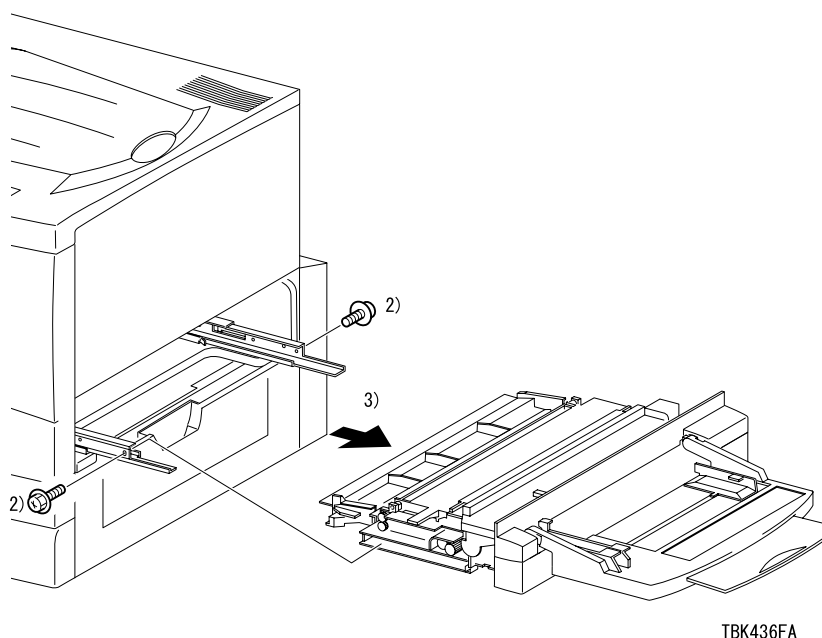


Figure 3-31. MSI/REGI HIGH ASSY Removal

3.2.8.2 MSI GUIDE SWITCH (PL4.1.18) Removal

1. Draw out the MSI/REGI HIGH ASSY.

NOTE: In the following step, remove the MSI FEED ASSY if necessary.

2. Disconnect the connector (P/J205).
3. Using a standard screw driver, push the front arm of the MSI TRAY HOUSING to the rear to free the lock for the arm from the MSI BASE FRAME.
4. Release the rear arm part from the MSI BASE ASSY and remove the MSI GUIDE SWITCH.



When installing the MSI GUIDE SWITCH, set its front arm first to prevent the harness from getting caught.

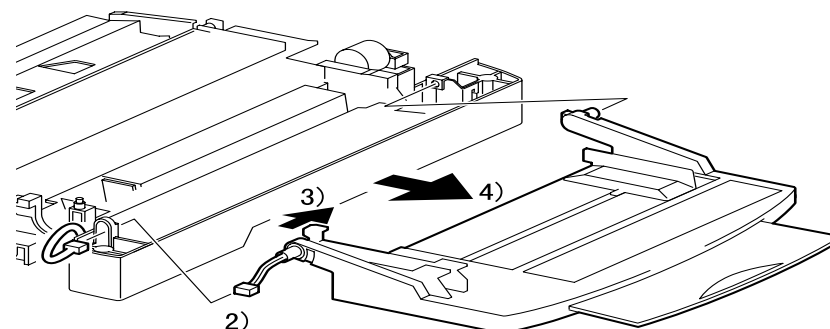


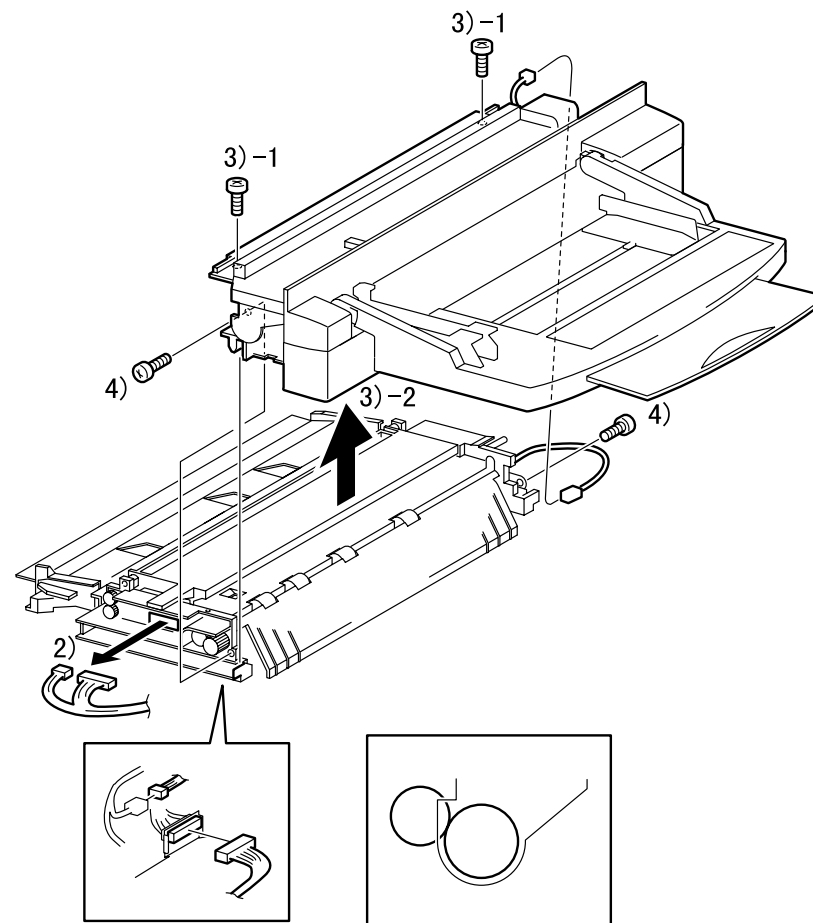
Figure 3-32. MSI GUIDE SWITCH Removal

3.2.8.3 MSI ASSY (PL4.1.6) Removal

1. Draw out the MSI/REGI HIGH ASSY.
2. Disconnect 2 connectors (P/J92B and P/J113B) that connect the MSI ASSY and MAIN P/H FRAME ASSY.
3. Remove 2 screws (gold, tapped, 8 mm) securing the MSI ASSY.
4. Remove 2 screws (gold, tapped, 10 mm) securing the MSI EARTH WIRE to the MAIN P/H ASSY and remove the MSI ASSY.

**CHECK
POINT**

When installing the MSI ASSY, make sure the MSI CLUTCH gear in the MSI ASSY and PRE-REGI. GEAR1 in the MAIN P/H ASSY are properly meshed.



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Figure 3-33. MSI ASSY Removal

3.2.8.4 MSI BASE ASSY (PL4.1.20) Removal

1. Draw out the MSI/REGI HIGH ASSY.
2. Remove the MSI ASSY. (See Section 3.2.8.3.)
3. Remove 4 screws (gold, tapped, 8 mm) securing the MSI FEED ASSY, and separate the MSI FEED ASSY from the MSI BASE ASSY.

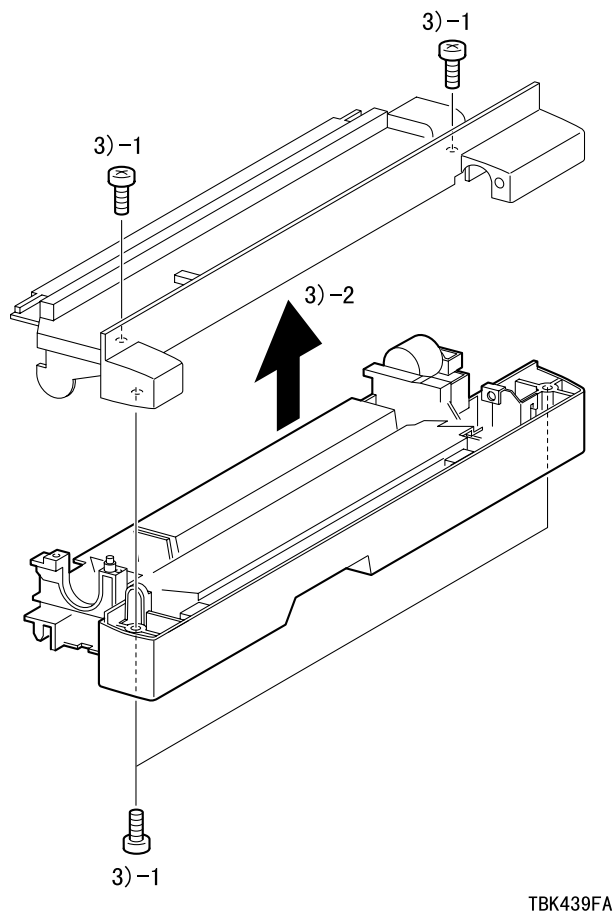


Figure 3-34. MSI BASE ASSY Removal

3.2.8.5 MSI FEED ASSY (PL4.1.30) Removal

1. Draw out the MSI/REGI HIGH ASSY.
2. Remove 6 screws (gold, tapped, 8 mm) securing the MSI FEED ASSY.
3. Disconnect 2 connectors (P/J201 and P/J202) connecting the MSI FEED ASSY and MAIN P/H FRAME ASSY, and remove the MSI FEED ASSY.

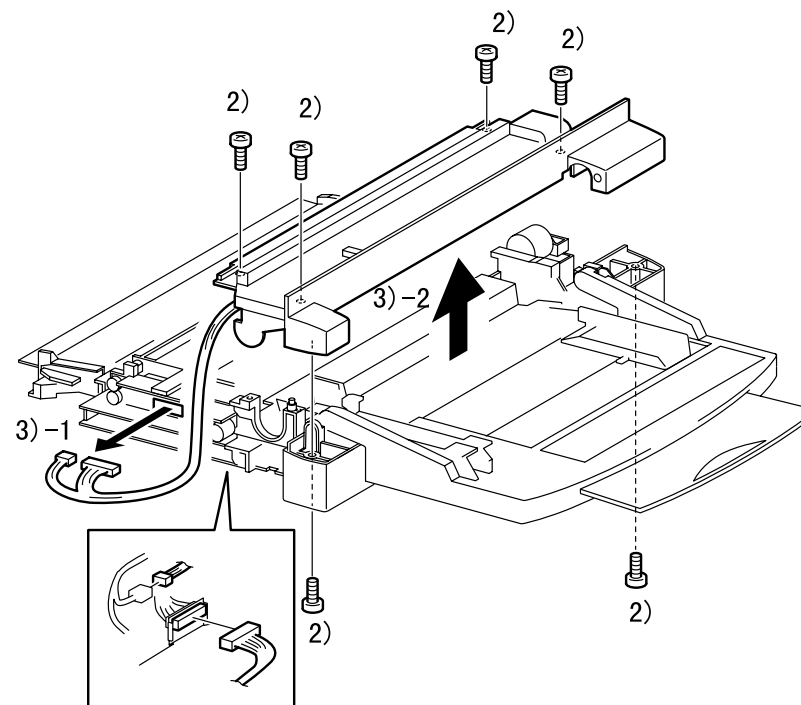
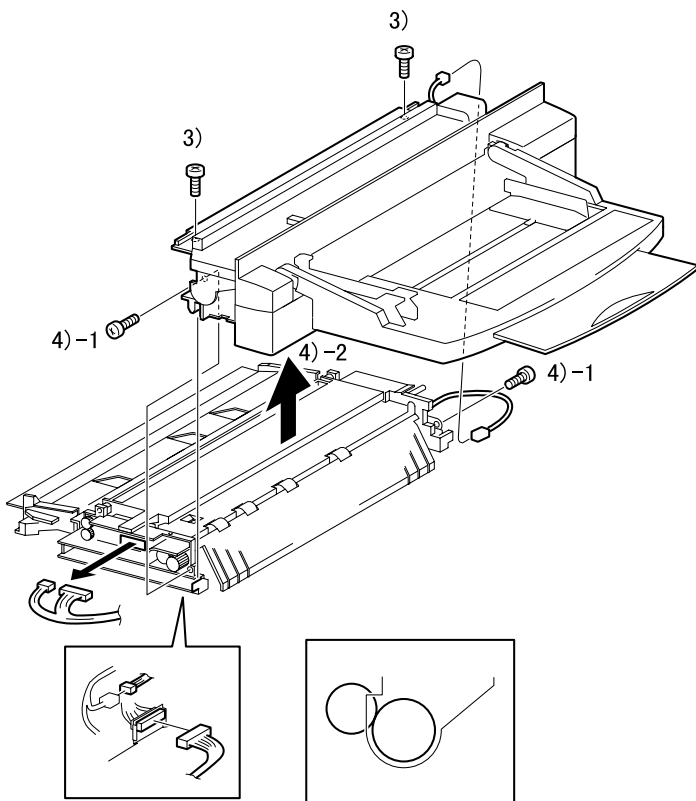


Figure 3-35. MSI FEED ASSY Removal

3.2.8.6 MAIN P/H FRAME ASSY (PL4.1.40) Removal

1. Remove the MSI/REGI HIGH ASSY. (See Section 3.2.8.1.)
2. Remove 2 screws (gold, tapped, 8 mm) securing the MSI FEED ASSY.
3. Remove 2 screws (gold, tapped, 10 mm) securing the MSI BASE ASSY and remove the MAIN P/H FRAME ASSY.

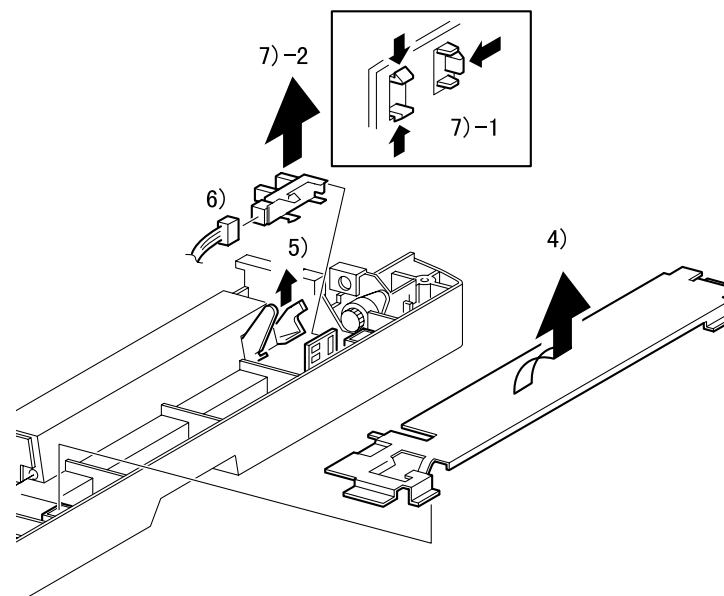


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Figure 3-36. MAIN P/H FRAME ASSY Removal

3.2.8.7 BOTTOM PLATE SENSOR (PL4.2.10) Removal

1. Draw out the MSI/REGI HIGH ASSY.
2. Remove the MSI BASE ASSY. (See Section 3.2.8.4.)
3. Remove the LIFT UP FRAME ASSY. (See Section 3.2.8.8.)
4. Remove the BOTTOM PLATE by opening it to the right.
5. Lift up the LIFT DOWN ACTUATOR and hold it there.
6. Disconnect the connector (P/J210).
7. Release the hooks securing the BOTTOM PLATE SENSOR to the MSI BASE FRAME, and remove the BOTTOM PLATE SENSOR.



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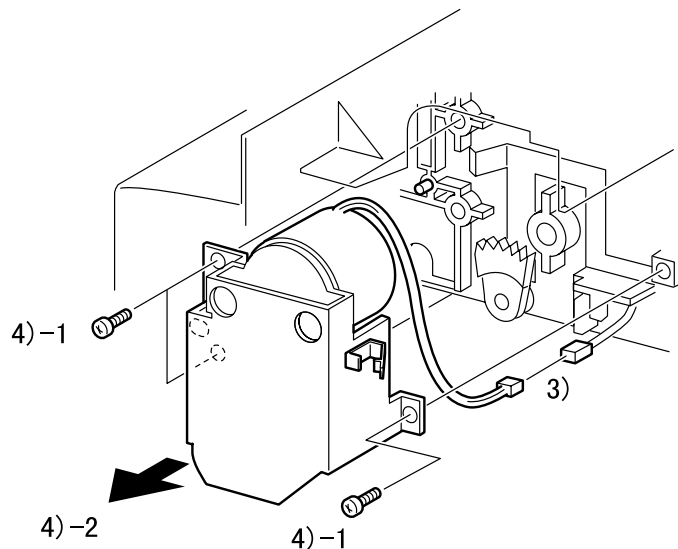
Figure 3-37. BOTTOM PLATE SENSOR Removal

3.2.8.8 LIFT UP FRAME ASSY (PL4.2.20) Removal

1. Draw out the MSI/REGI HIGH ASSY.
2. Disconnect 2 connectors (P/J92B and P/J113B) connecting the MSI ASSY and MAIN P/H FRAME ASSY.
3. Disconnect the connector (P/J208) for the motor harness.
4. Remove 3 screws (gold, tapped, 8 mm) securing the LIFT UP FRAME ASSY and remove the LIFT UP FRAME ASSY.



When installing the LIFT UP FRAME ASSY, be sure to align the protrusion on the MSI BASE FRAME and the hole in the LIFT UP FRAME ASSY.

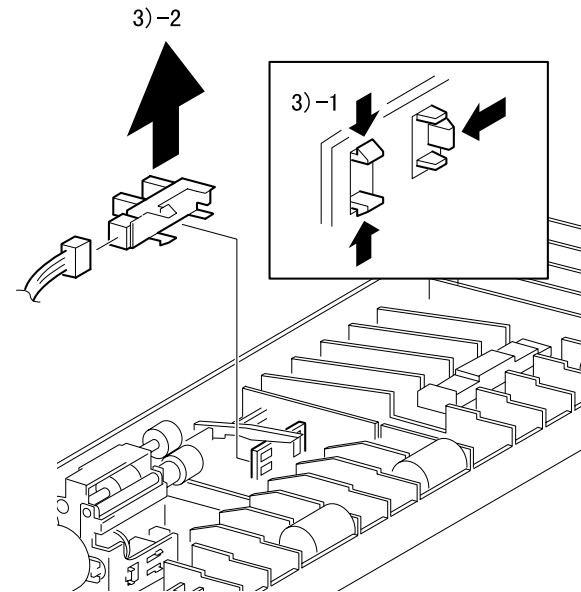


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Figure 3-38. LIFT UP FRAME ASSY Removal

3.2.8.9 EMPTY SENSOR (PL4.3.5) Removal

1. Draw out the MSI/REGI HIGH ASSY.
2. Remove the MSI FEED ASSY. (See Section 3.2.8.5.)
3. Release the hooks for the EMPTY SENSOR from the PRE REGI CHUTE and remove the EMPTY SENSOR.

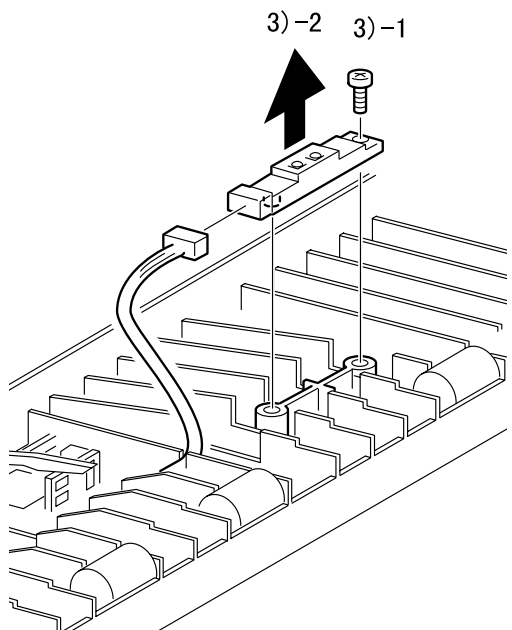


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Figure 3-39. EMPTY SENSOR Removal

3.2.8.10 PITCH SENSOR (PL4.3.6) Removal

1. Draw out the MSI/REGI HIGH ASSY.
2. Remove the MSI FEED ASSY. (See Section 3.2.8.5.)
3. Remove 1 screw (gold, tapped, 8 mm) securing the PITCH SENSOR and remove the PITCH SENSOR.

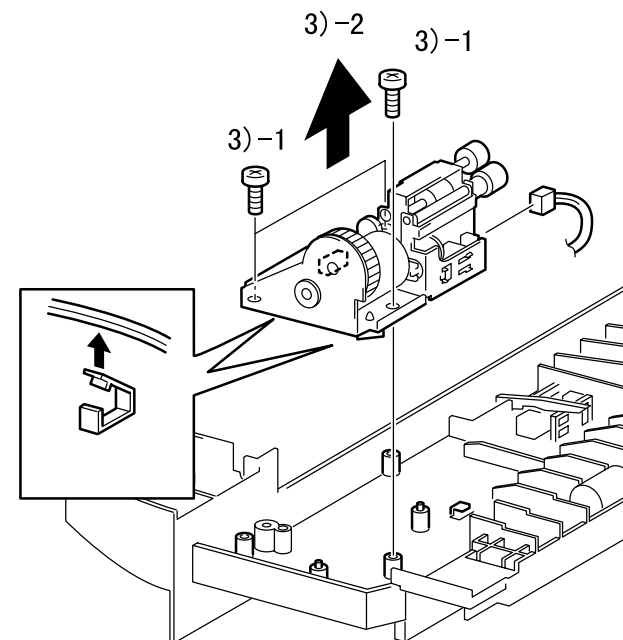


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Figure 3-40. PITCH SENSOR Removal

3.2.8.11 MSI FEED FRAME ASSY (PL4.3.20) Removal

1. Draw out the MSI/REGI HIGH ASSY.
2. Remove the MSI FEED ASSY. (See Section 3.2.8.5.)
3. Remove 3screw (gold, tapped, 8 mm) securing the MSI FEED FRAME ASSY and remove the MSI FEED FRAME ASSY.



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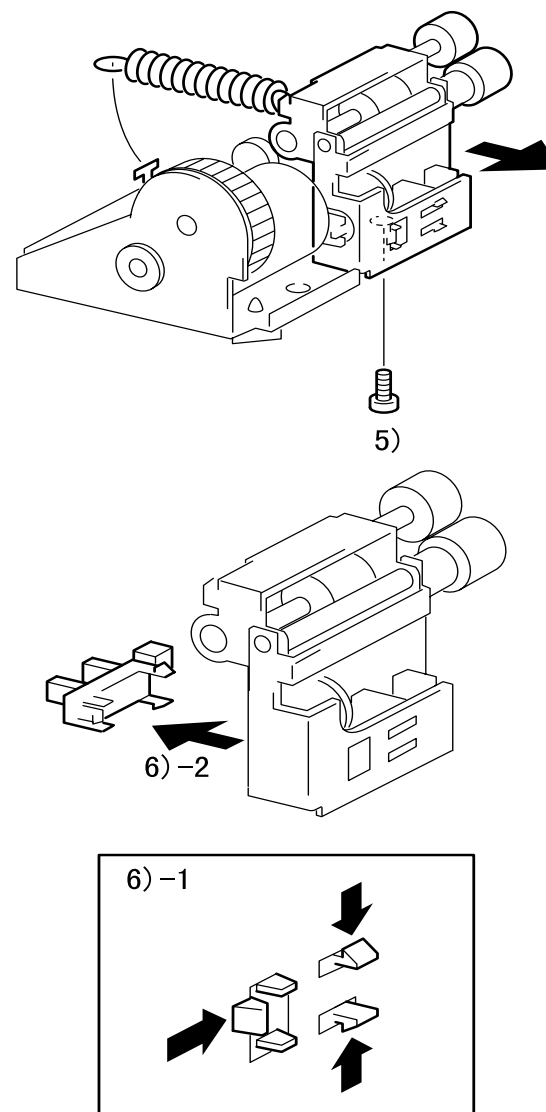
Figure 3-41. MSI FEED FRAME ASSY Removal

3.2.8.12 LEVEL SENSOR (PL4.3.23) Removal

1. Draw out the MSI/REGI HIGH ASSY.
2. Remove the MSI FEED ASSY. (See Section 3.2.8.5.)
3. Remove the MSI FEED FRAME ASSY. (See Section 3.2.8.11.)
4. Remove the RTD SPRING from the MSI FEED TOP FRAME and RTD SUPPORT.
5. Remove 1 screw (silver, 6 mm) securing the LEVEL SENSOR BRACKET.
6. Release the hooks for the LEVEL SENSOR from the LEVEL SENSOR BRACKET and remove the LEVEL SENSOR.



When installing the SENSOR BRACKET, align the protrusion on the MSI FEED TOP FRAME and the positioning hole in the TBD SENSOR BRACKET.

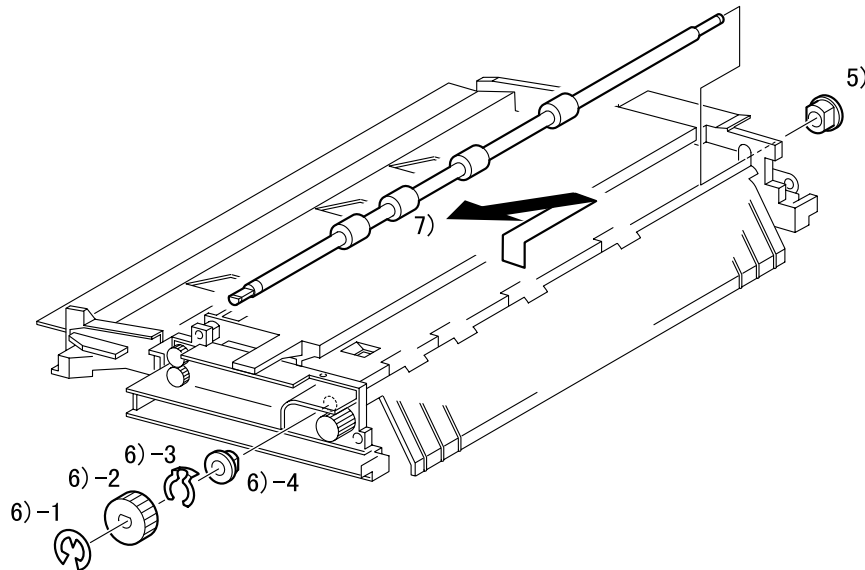


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Figure 3-42. LEVEL SENSOR Removal

3.2.8.13 P/REGI ROLL ASSY (PL4.4.3) Removal

1. Draw out the MSI/REGI HIGH ASSY.
2. Remove the MSI /REGI HIGH ASSY. (See Section 3.2.8.1.)
3. Remove the MAIN P/H FRAME ASSY. (See Section 3.2.8.6.)
4. Remove the PRE REGI CLUTCH ASSY. (See Section 3.2.8.14.)
5. Remove the BEARING 8.
6. Remove the E-ring fixing the MSI-1 GEAR and remove the MSI-1 GEAR, clip, and BEARING 8.
7. Lifting up the front part of the P/REGI ROLL ASSY, slide the P/REGI ROLL ASSY forward to release the rear end, and remove the P/REGI ROLL ASSY by pulling it out to the upper rear.

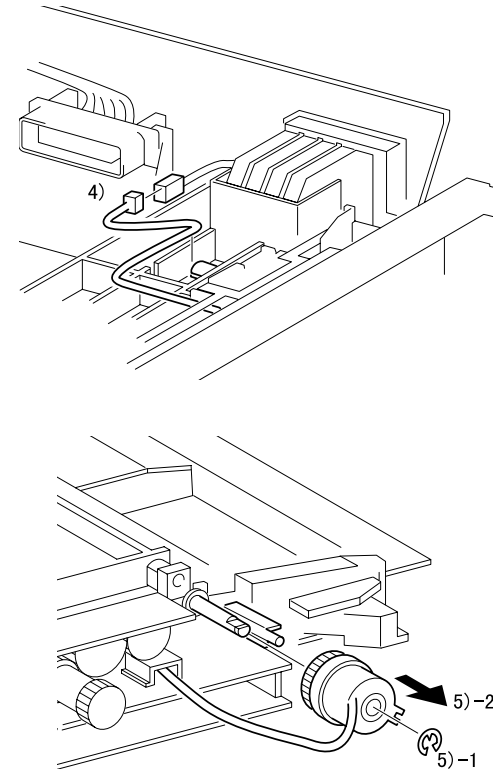


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Figure 3-43. P/REGI ROLL ASSY REMOVAL

3.2.8.14 PRE REGI CLUTCH ASSY (PL4.4.49) Removal

1. Pull out the MSI/REGI HIGH ASSY.
2. Remove the MSI/REGI HIGH ASSY. (See Section 3.2.8.1.)
3. Remove the MAIN P/H FRAME ASSY. (See Section 3.2.8.6.)
4. Disconnect the connector (P/J95).
5. Remove the E-ring securing the PRE-REGI CLUTCH and remove the PRE-REGI CLUTCH.

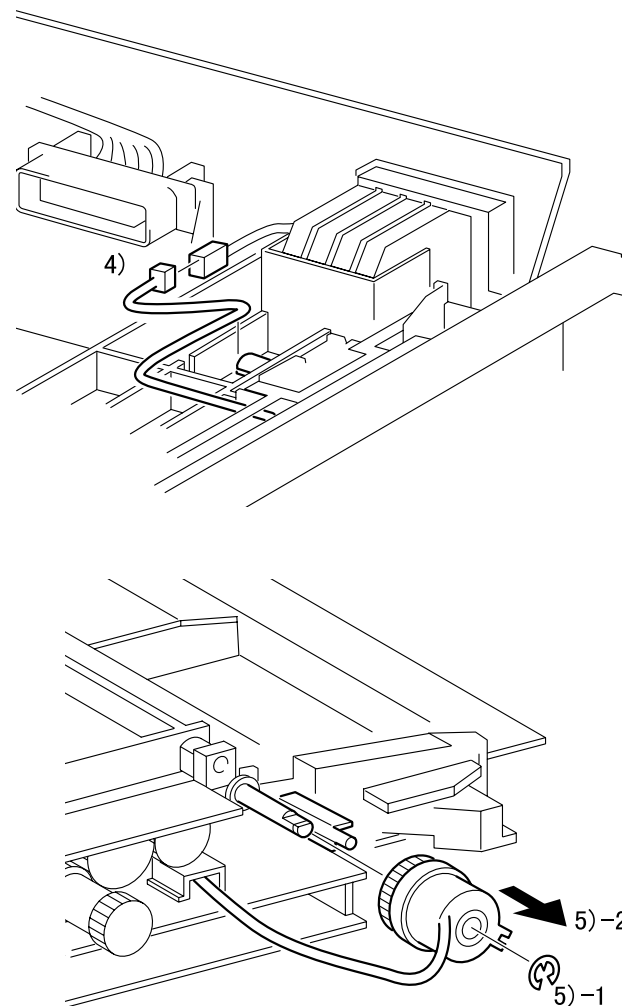


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Figure 3-44. PRE REGI CLUTCH ASSY Removal

3.2.8.15 REGI CLUTCH ASSY (PL4.4.5) Removal

1. Pull out the MSI/REGI HIGH ASSY.
2. Remove the MSI/REGI HIGH ASSY. (See Section 3.2.8.1.)
3. Remove the MAIN P/H FRAME ASSY. (See Section 3.2.8.6.)
4. Disconnect the connector (P/J94).
5. Remove the E-ring securing the REGI CLUTCH ASSY and remove the REGI CLUTCH ASSY.

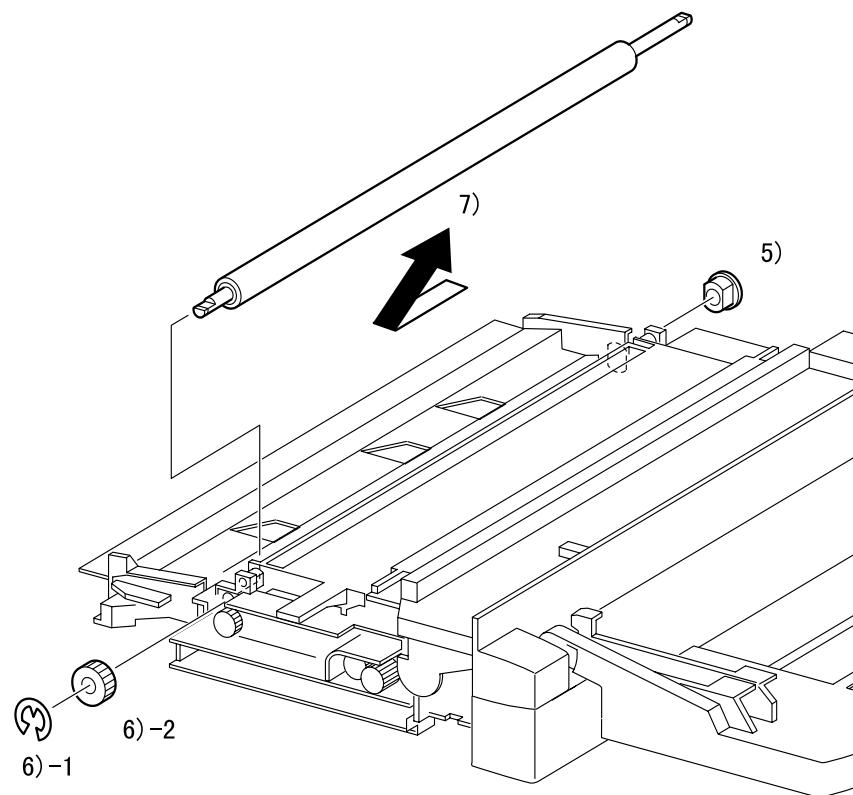


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Figure 3-45. REGI CLUTCH ASSY Removal

3.2.8.16 REGI RUBBER ROLL ASSY (PL4.4.7) Removal

1. Pull out the MSI/REGI HIGH ASSY.
2. Remove the MSI/REGI HIGH ASSY. (See Section 3.2.8.1.)
3. Remove the MAIN P/H FRAME ASSY. (See Section 3.2.8.6.)
4. Remove the REGI CLUTCH ASSY. (See Section 3.2.8.15.)
5. Remove the REGI RUBBER ROLL BEARING.
6. Remove the E-ring securing the REGI GEAR; remove the REGI GEAR and REGI RUBBER ROLL BEARING.
7. Pull the REGI RUBBER ROLL ASSY all the way forward, then lift the rear and remove by pulling out diagonally to the rear.



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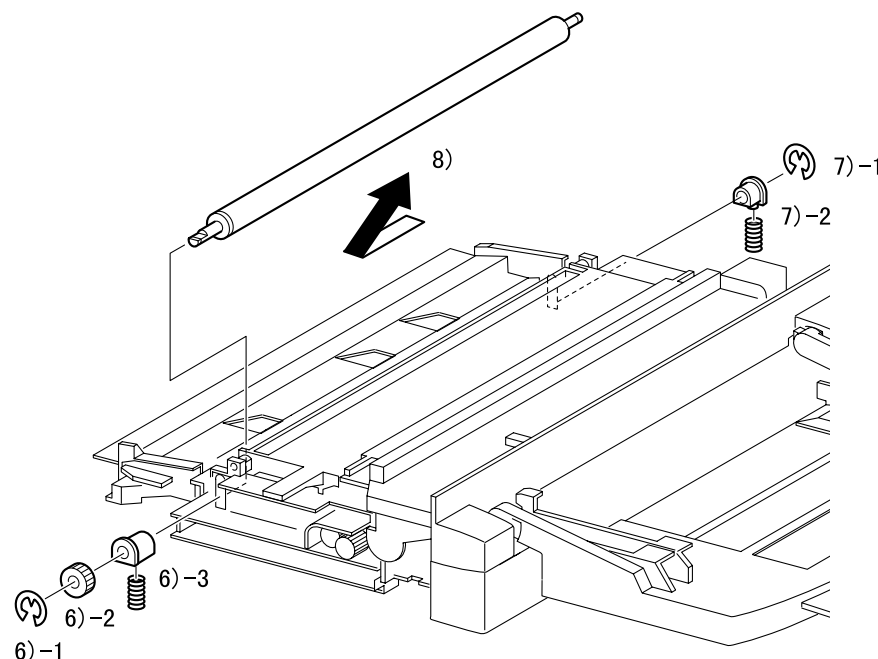
Figure 3-46. REGI RUBBER ROLL ASSY Removal

3.2.8.17 REGI METAL ROLL (PL4.4.8) Removal

1. Pull out the MSI/REGI HIGH ASSY.
2. Remove the MSI/REGI HIGH ASSY. (See Section 3.2.8.1.)
3. Remove the MAIN P/H FRAME ASSY. (See Section 3.2.8.6.)
4. Remove the REGI CLUTCH ASSY. (See Section 3.2.8.15.)
5. Remove the REGI RUBBER ROLL ASSY. (See Section 3.2.8.16.)

NOTE: Be careful not to drop or lose the P/REGI SPRING-1 or P/ REGI SPRING- while performing the following steps.

6. Remove the E-ring securing the REGI GEAR; remove the REGI GEAR and REGI METAL ROLL bearing.
7. Remove the E-ring securing the REGI METAL BEARING and remove the REGI METAL BEARING.
8. Lift the rear of the REGI METAL ROLL and remove by pulling it out diagonally to the rear.

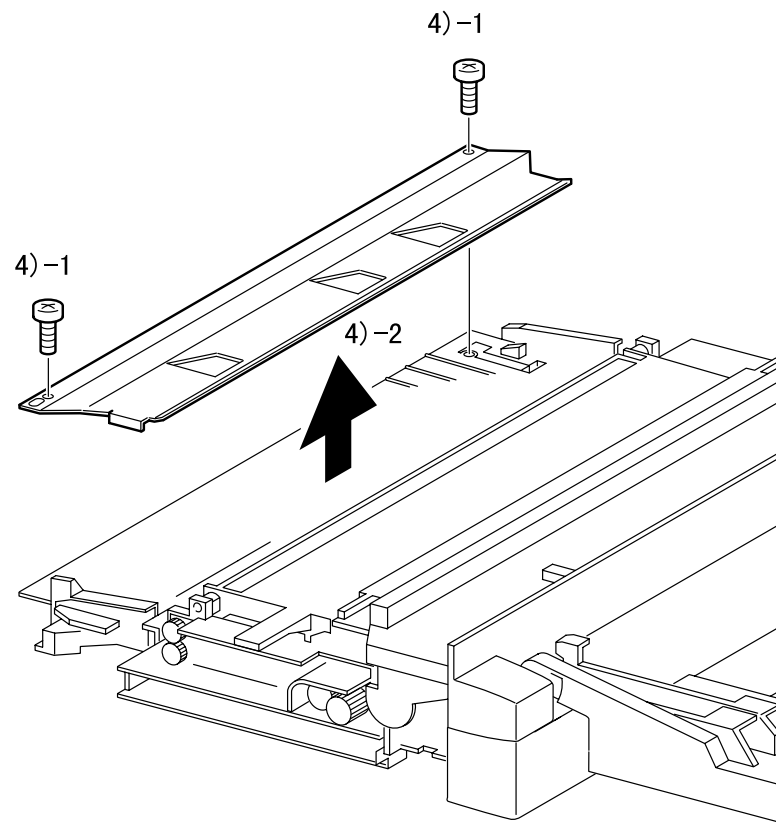


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Figure 3-47. REGI METAL ROLL Removal

3.2.8.18 IBT REGI CHUTE (PL4.4.14) Removal

1. Pull out the MSI/REGI HIGH ASSY.
2. Remove the MSI/REGI HIGH ASSY. (See Section 3.2.8.1.)
3. Remove the MAIN P/H FRAME ASSY. (See Section 3.2.8.6.)
4. Remove the 2 screws (gold, tapping, 6mm) securing the IBT REGI CHUTE, and remove the IBT REGI CHUTE.

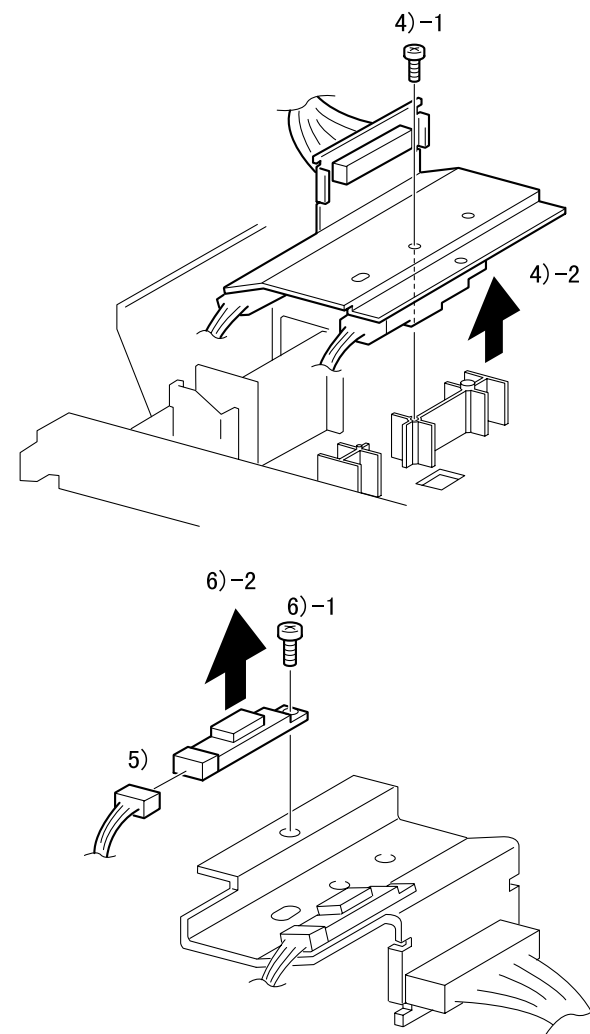


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Figure 3-48. IBT REGI CHUTE Removal

3.2.8.19 REGI SENSOR (PL4.4.24) Removal

1. Pull out the MSI/REGI HIGH ASSY.
2. Remove the MSI/REGI HIGH ASSY. (See Section 3.2.8.1.)
3. Remove the MAIN P/H FRAME ASSY. (See Section 3.2.8.6.)
4. Remove the screw (gold, tapping, 8mm) securing the P/H SENSOR ASSY, and remove the P/H SENSOR ASSY.
5. Disconnect the REGI SENSOR connector (P/J93).
6. Remove the screw (silver, 6mm) securing the REGI SENSOR and remove the REGI SENSOR.

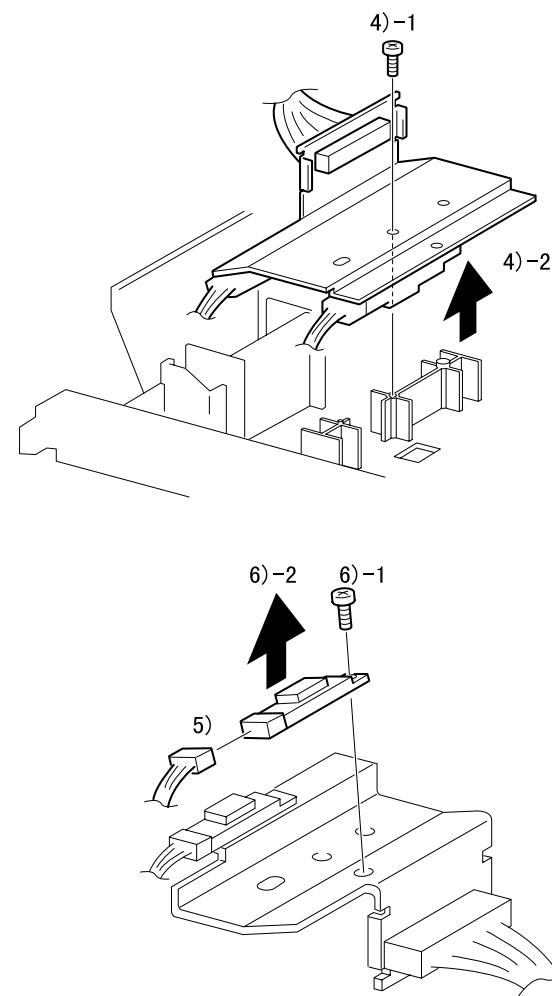


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Figure 3-49. REGI SENSOR Removal

3.2.8.20 OHP SENSOR (PL4.4.25) Removal

1. Pull out the MSI/REGI HIGH ASSY.
2. Remove the MSI/REGI HIGH ASSY. (See Section 3.2.8.1.)
3. Remove the MAIN P/H FRAME ASSY. (See Section 3.2.8.6.)
4. Remove the screw (gold, tapping, 8mm) securing the P/H SENSOR ASSY, and remove the P/H SENSOR ASSY.
5. Disconnect OHP SENSOR connector (P/J98).
6. Remove the screw (silver, 6mm) securing the OHP SENSOR and remove the OHP SENSOR.



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Figure 3-50. OHP SENSOR Removal

3.2.9 Xerographics

3.2.9.1 DRUM CARTRIDGE (PL6.1.10) Removal

1. Open the FRONT COVER ASSY.
2. Turn the TENSION LEVER to the release position and separate the IBT BELT ASSY and DRUM CARTRIDGE.

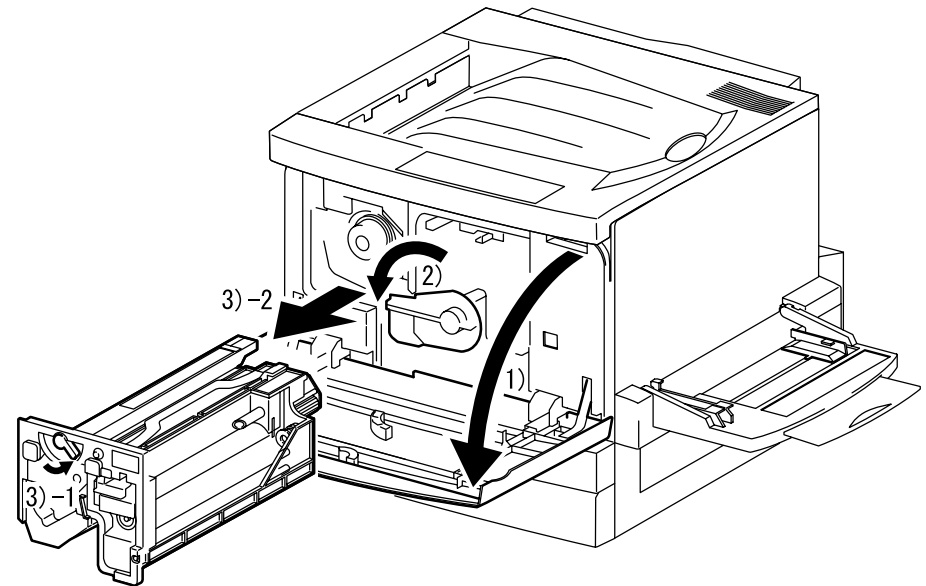
NOTE: Be careful not to touch the surface of the drum when performing the following.

NOTE: After removing, be sure to lay the DRUM CARTRIDGE in its horizontal position in a safe place not exposed to light.

3. Turn the DRUM CARTRIDGE lock lever to the release position. Pull out the DRUM CARTRIDGE, pull the upper belt straight out, and remove the DRUM CARTRIDGE.



Accurately align the XL RAIL ASSY and DRUM CARTRIDGE with the positioning marks.



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Figure 3-51. DRUM CARTRIDGE Removal

3.2.9.2 WASTE TONER BOX (PL6.1.12) Removal

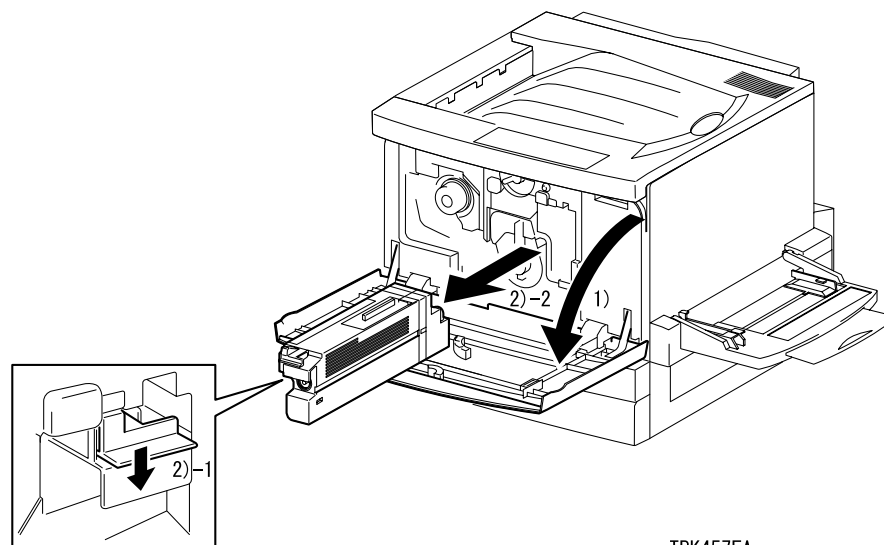
1. Open the FRONT COVER ASSY.

NOTE: After removing, be sure to lay the WASTE TONER BOX in its horizontal position in a safe place.

2. Lift the waste tone box hook lever and remove the WASTE TONER BOX by pulling straight out.



After mounting, make sure the waste tone box is securely hooked in place.



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Figure 3-52. WASTE TONER BOX Removal

3.2.9.3 ROS ASSY (PL6.1.1) Removal

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the 8 screws (silver, w/collar, 6mm) securing the ROS COVER, and remove the ROS COVER.
3. Disconnect the 4 connectors (P/J121, P/J122, P/J124, P/J125) for the ROS ASSY.

NOTE: The ROS ASSY and XL RAIL ASSY are connected by a harness. Be careful not to pull too far apart when performing the following.

NOTE: Be careful not to touch the window of the ROS ASSY (window from which laser beam is emitted) or working parts such as the motor shaft when performing the following steps.

4. Remove the 4 screws (black, w/collar, 12mm) securing the ROS ASSY, and carefully remove the ROS ASSY from the printer.
5. Disconnect the connector (P/J123) on the bottom of the ROS ASSY, and carefully remove the ROS ASSY.



Be sure that the harness does not touch the Scanner Assy motor shaft in the ROS ASSY or get pinched between the ROS ASSY and the frame.

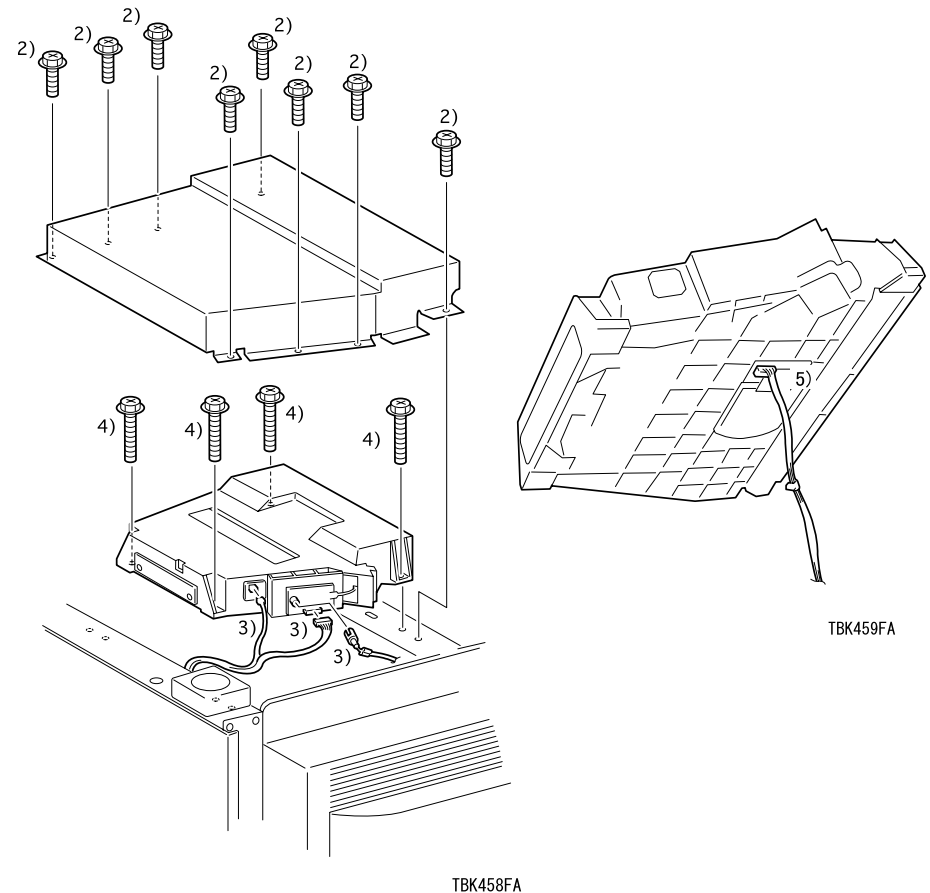


Figure 3-53. ROS ASSY Removal

3.2.9.4 ADC SENSOR ASSY (PL6.1.20) Removal

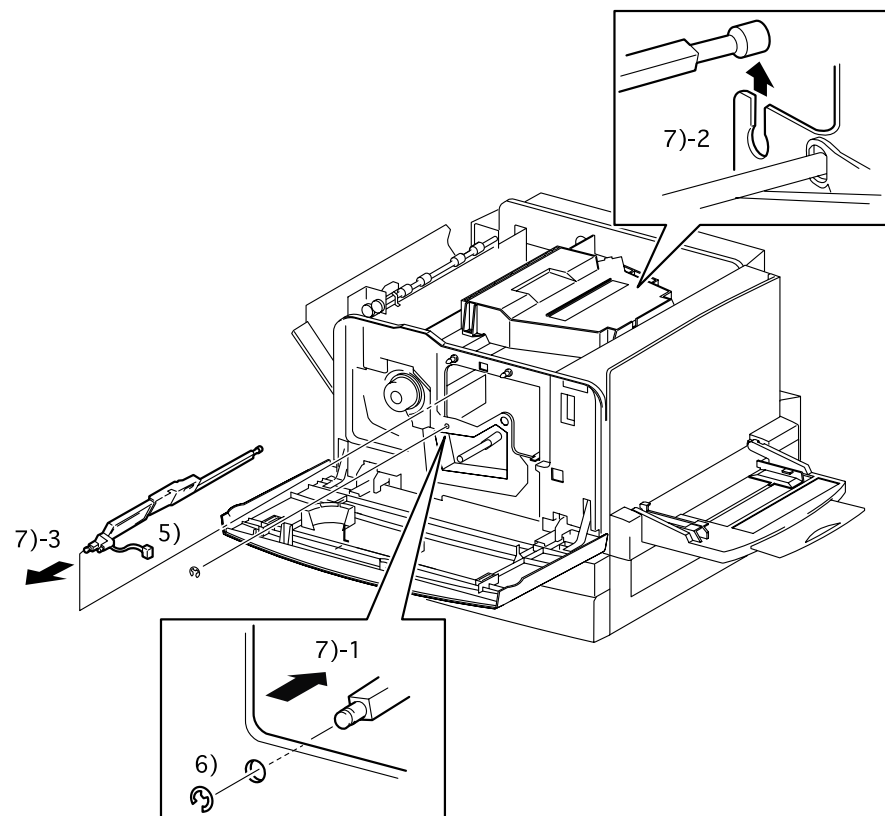
1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the DRUM CARTRIDGE. (See Section 3.2.9.1.)
3. Remove the TENSION LEVER. (See Section 3.2.11.1.)
4. Remove the INNER COVER ASSY. (See Section 3.2.5.5/Section 3.2.5.6/Section 3.2.5.7.)
5. Disconnect the ADC SENSOR ASSY connector (P/J81), remove the harness from the clamp, and pull out the connector (J81) from the hole through which the harness runs.

NOTE: Be careful not to touch the IBT BELT ASSY or Magnet Roll of the Developer Assy when performing the following.

6. Remove the E-ring securing the ADC SENSOR ASSY.
7. Slide the ADC sensor to the rear and remove the front of the shaft from the frame. Then remove the rear end of the shaft from the frame and remove the ADC SENSOR ASSY from the front.



Securely mount the shaft of the ADC SENSOR ASSY on the frame to the front and rear of the printer.



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Figure 3-54. ADC SENSOR ASSY Removal

3.2.9.5 XL RAIL ASSY (PL6.1.40) Removal

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the DRUM CARTRIDGE. (See Section 3.2.9.1.)
3. Remove the ROS ASSY. (See Section 3.2.9.3.)
4. Disconnect the ERASE LAMP ASSY connector (P/J86) and TONER BOX HARNESS connector (P/J116).
5. Free the harnesses of the ERASE LAMP harness, ROS HARNESS and VIDEO HARNESS by removing them from the clamp.

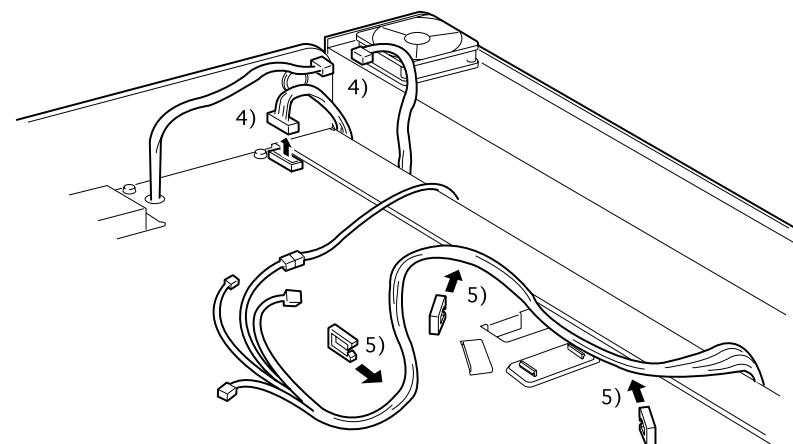
NOTE: Be careful not to damage the IBT BELT ASSY, harnesses, XL RAIL ASSY, and the Magnet Roll of the Developer Assy while performing the following.

NOTE: Be careful not to touch the IBT BELT ASSY of Magnet Roll surface while performing the following.

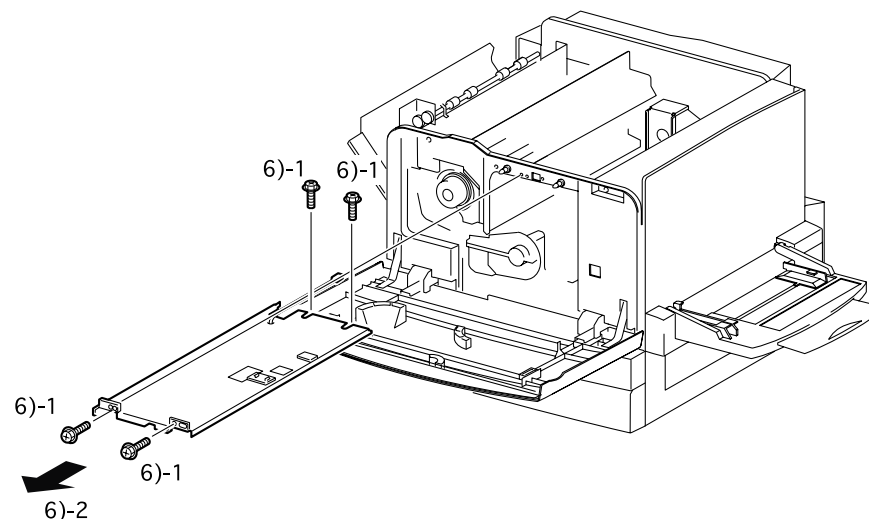
6. Remove the 4 screws (silver, w/collar, 6mm) securing XL RAIL ASSY and remove the XL RAIL ASSY.



- Be careful not to damage the IBT BELT ASSY, harnesses, XL RAIL ASSY, and the Magnet Roll of the Developer Assy while mounting.
- Be careful not to touch the IBT BELT ASSY of Magnet Roll surface while mounting.



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Figure 3-55. XL RAIL ASSY Removal

3.2.9.6 WASTE TONER SENSOR (PL6.1.42) Removal

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the DRUM CARTRIDGE. (See Section 3.2.9.1.)
3. Remove the ROS ASSY. (See Section 3.2.9.3.)
4. Remove the XL RAIL ASSY. (See Section 3.2.9.5.)
5. Free the XL RAIL ASSY by unhooking and removing the harness from the clamp.
6. Disconnect the WASTE TONER SENSOR connector (P/J88).
7. Unhook the WASTE TONER SENSOR from the XL RAIL and remove the WASTE TONER SENSOR.



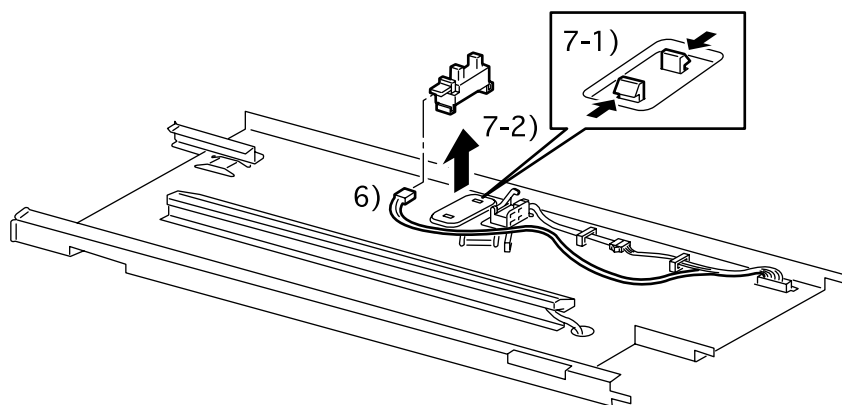
Be careful not to allow slack in the harness when mounting.

3.2.9.7 TONER BOX SENSOR (PL6.1.43) Removal

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the DRUM CARTRIDGE. (See Section 3.2.9.1.)
3. Remove the ROS ASSY. (See Section 3.2.9.3.)
4. Remove the XL RAIL ASSY. (See Section 3.2.9.5.)
5. Free the TONER BOX SENSOR harness by removing it from the clamp.
6. Disconnect the TONER BOX SENSOR connector (P/J83).
7. Unhook the TONER BOX SENSOR from the XL RAIL and remove the TONER BOX SENSOR.

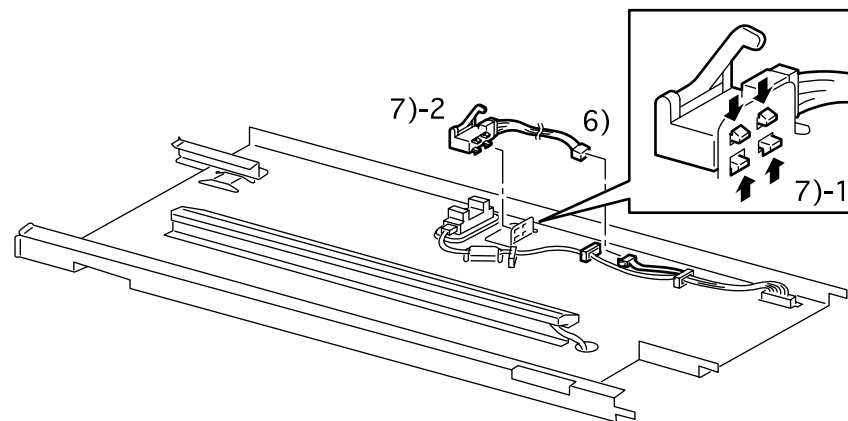


Be careful not to allow slack in the harness when mounting.



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Figure 3-56. WASTE TONER SENSOR Removal



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Figure 3-57. TONER BOX SENSOR Removal

3.2.9.8 ERASE LAMP ASSY (PL6.1.30) Removal

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the DRUM CARTRIDGE. (See Section 3.2.9.1.)
3. Remove the ROS ASSY. (See Section 3.2.9.3.)
4. Remove the XL RAIL ASSY. (See Section 3.2.9.5.)
5. Free the ERASE LAMP ASSY by pulling its harness through the hole.
6. Unhook the ERASE LAMP ASSY from the XL RAIL with a screwdriver, etc., and remove the ERASE LAMP ASSY.

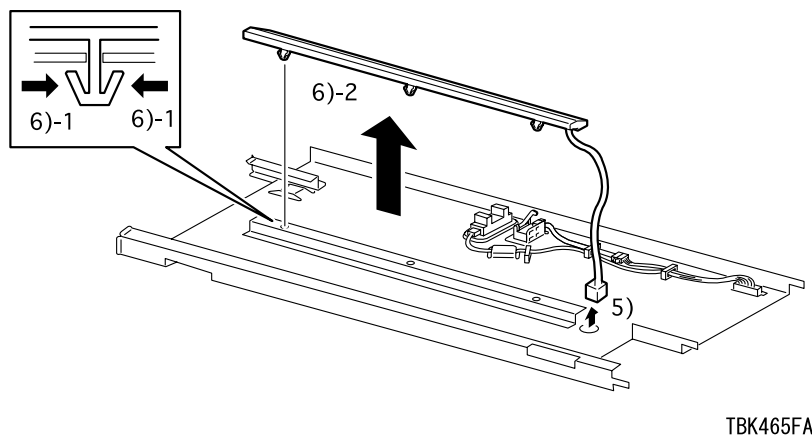


Figure 3-58. ERASE LAMP ASSY Removal

3.2.10 Development

3.2.10.1 Toner Cartridge (PL7.1.1, PL7.1.2, PL7.1.3, PL7.1.4) Removal

NOTE: TONER CARTRIDGE Y, TONER CARTRIDGE M, TONER CARTRIDGE C and TONER CARTRIDGE BK are hereinafter referred to by the generic term "Toner Cartridge."

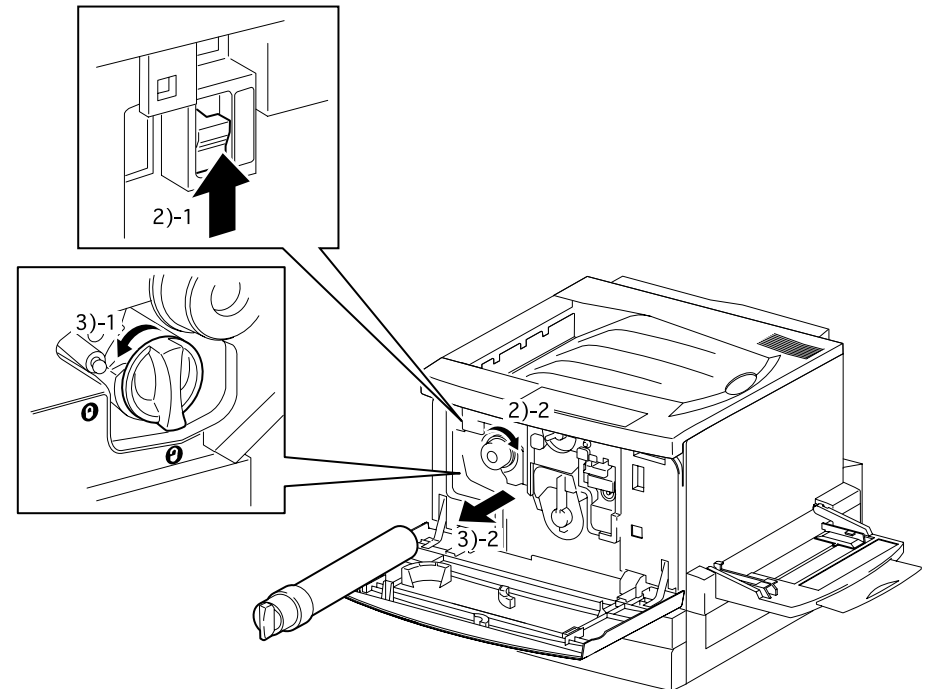
1. Open the FRONT COVER ASSY.
2. Lift the ROTARY LATCH LEVER, turn the ROTARY KNOB ASSY, and move the Toner Cartridge to the replacement position.

NOTE: After removing, be sure to lay the Toner Cartridge in its horizontal position in a safe place.

3. turn the Toner Cartridge to the replacement position, and remove the Toner Cartridge.



Make sure the arrow on the end of the Toner Cartridge is at the top when inserting.



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Figure 3-59. Toner Cartridge Removal

3.2.10.2 DEVELOPER ASSY (PL7.1.10, PL7.1.20, PL7.1.30, PL7.1.40) Removal

NOTE: DEVELOPER ASSY Y, DEVELOPER ASSY M, DEVELOPER ASSY C, and DEVELOPER ASSY BK are hereinafter referred to by the generic term "Developer Assy."

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the DRUM CARTRIDGE. (See Section 3.2.9.1.)

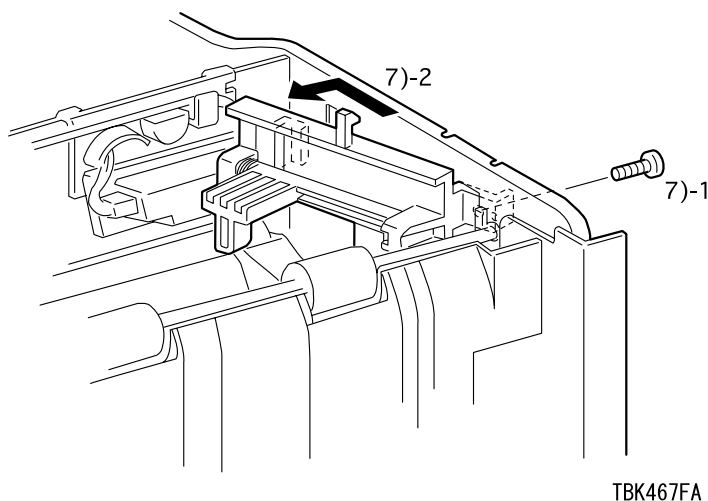


Figure 3-60. DEVELOPER ASSY Removal - 1

3. Remove the TENSION LEVER. (See Section 3.2.11.1.)

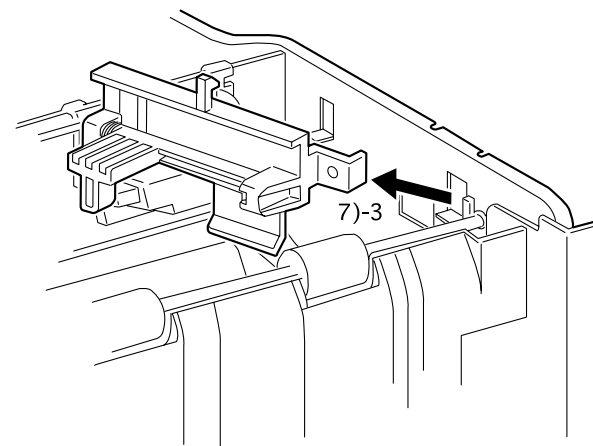


Figure 3-61. DEVELOPER ASSY Removal - 2

4. Remove the INNER COVER ASSY. (See Section 3.2.5.5/Section 3.2.5.6/Section 3.2.5.7.)
5. Remove the TONER CARTRIDGE Mounted on the Developer Assy to be removed. (See Section 3.2.10.1.)
6. Free the harness by unhooking from the ROTARY LATCH ASSY.
7. Remove the screw (black, w/collar, 8mm) securing the ROTARY LATCH ASSY. Slide the rotary latch to the right, unhook and remove.

NOTE: Be careful not to drop the screws when performing the following.

<<Continued on the following page>>

8. Turn the ROTARY FRAME ASSY and remove the screw (silver, M4, 22mm) securing the Developer Assy. Align with the hole in the front of the frame, insert a screwdriver into the hole, and remove the screw.

NOTE: Be careful not to touch the Magnet Roll, etc., of the Developer Assy while performing the following.

NOTE: At this point the ROTARY LATCH ASSY has been dismantled. Be aware that the ROTARY FRAME ASSY can turn when the following step of the procedure.

NOTE: After removing, be sure to lay the Developer Assy in its horizontal position in a safe place.

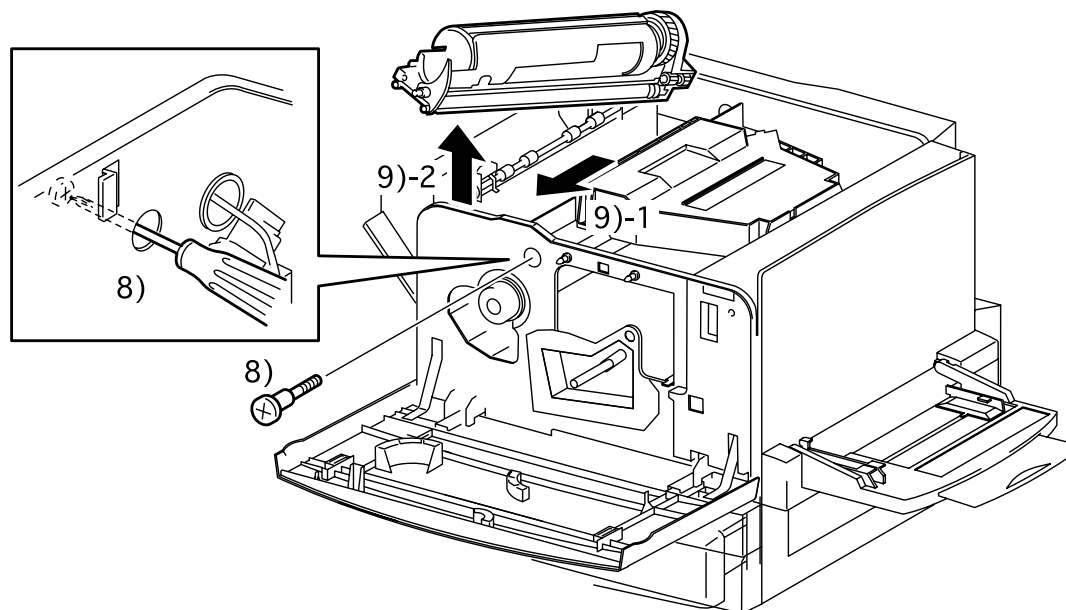
9. Slide the Developer Assy forward, lift from the front and remove the Developer Assy.



After mounting, be sure to make the adjustment as described in Section 3.3.2 "Development".



After mounting, enter the maintenance mode to reset the counter (Development Clear) for the replaced color of the Developer Assy. (For details, see Chapter 6.)



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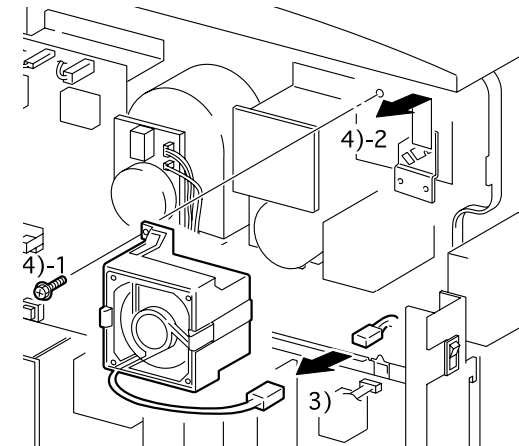
Figure 3-62. DEVELOPER ASSY Removal - 3

3.2.10.3 ROTARY SENSOR (PL7.2.22) Removal

1. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
2. Free the harness by unhooking from the FAN DUCT.
3. Disconnect the DEVE. FAN connector (P/J82).
4. Remove the screw (silver, w/collar, 8mm) securing the FAN DUCT. Slide the FAN DUCT up, unhook from the frame, and remove the FAN DUCT together with the DEVE. FAN.
5. Disconnect the ROTARY SENSOR connector ((P/J58).
6. Remove the screw (silver, w/collar, 6mm) securing the ROTARY SENSOR ASSY, and remove the ROTARY SENSOR ASSY.
7. Unhook the ROTARY SENSOR from the ROTARY SENSOR PLATE and remove the ROTARY SENSOR.



Run the harness so that it does not touch the gears, etc.



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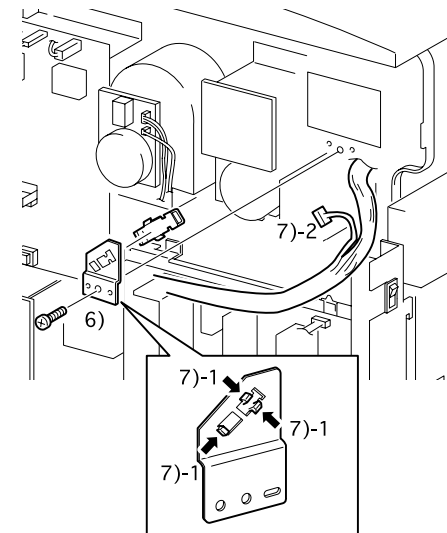
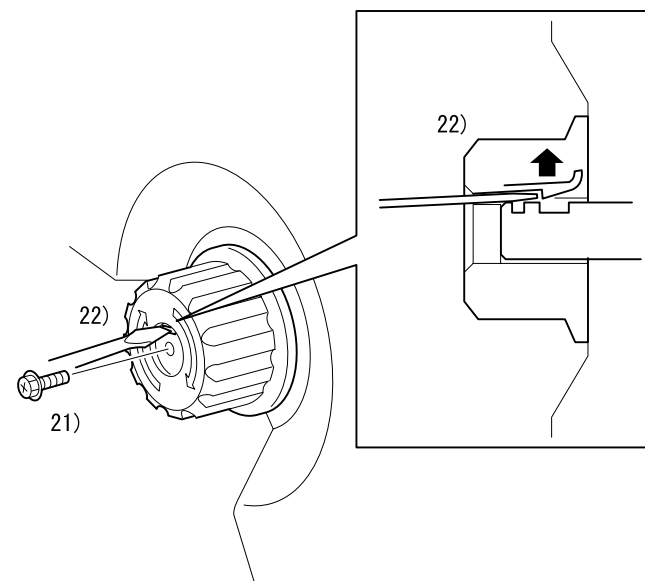


Figure 3-63. ROTARY SENSOR Removal

3.2.10.4 ROTARY FRAME ASSY (PL7.2.2) Removal

1. Remove the FRONT COVER ASSY. (See Section 3.2.5.1.)
2. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
3. Remove the DRUM CARTRIDGE. (See Section 3.2.9.1.)
4. Remove the TENSION LEVER. (See Section 3.2.11.1.)
5. Remove the INNER COVER ASSY. (See Section 3.2.5.5/Section 3.2.5.6/Section 3.2.5.7.)
6. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
7. Remove all Toner Cartridges. (See Section 3.2.10.1.)
8. Remove the FRONT COVER SWITCH L. (See Section 3.2.16.7.)
9. Remove all Developer assy'. (See Section 3.2.10.2.)
10. Remove the ROTARY SENSOR. (See Section 3.2.10.3.)
11. Remove the FUSER ASSY. (See Section 3.2.12.1.)
12. Remove the EXIT UPPER ASSY. (See Section 3.2.13.2.)
13. Remove the EXIT LOWER ASSY. (See Section 3.2.13.3.)
14. Remove the ROTARY MOTOR DRIVE PWB. (See Section 3.2.14.8.)
15. Remove the ROTARY MOTOR ASSY. (See Section 3.2.14.7.)
16. Remove the DISPENSE CLUTCH ASSY. (See Section 3.2.14.9.)
17. Remove the LVPS. (See Section 3.2.16.1.)
18. Remove the FUSER DRIVE ASSY. (See Section 3.2.14.2.)
19. Remove the DEVE. CLUTCH ASSY. (See Section 3.2.14.10.)
20. Remove the DEVE. TIE PLATE. (See Section 3.2.15.1.)
21. Remove the screw (black, w/collar, 8mm) securing the ROTARY KNOB ASSY.

22. Remove the ROTARY KNOB ASSY with a screwdriver, etc.



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Figure 3-64. ROTARY FRAME ASSY Removal - 1

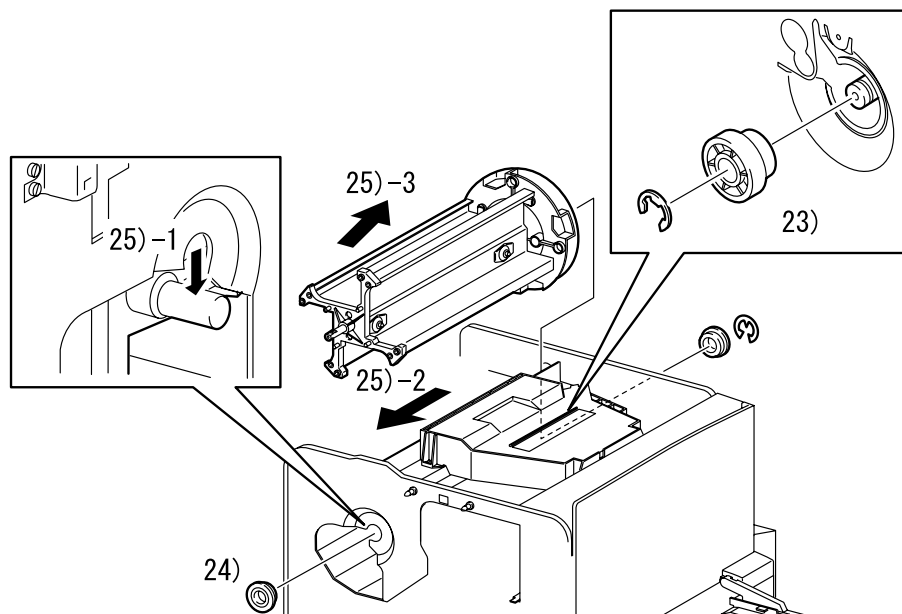
NOTE: The ROTARY FRAME ASSY is very heavy. Be careful not to drop or touch other parts with the ROTARY FRAME ASSY while performing the following.

<<Continued on the following page>>

23. Remove the E-ring securing the rear of the ROTARY FRAME ASSY and remove the ROTARY REAR BEARING.

NOTE: Keep the front shaft of the ROTARY FRAME ASSY from falling from the printer frame while performing the following step by leaving the front of the ROTARY FRAME ASSY supported.

24. Remove the front ROTARY FRONT BEARING of the ROTARY FRAME ASSY.
25. After removing the front shaft of the ROTARY FRAME ASSY from the slot of the printer frame, slide the ROTARY FRAME ASSY forward, remove the rear shaft from the printer frame, lift the ROTARY FRAME ASSY from the rear and remove.



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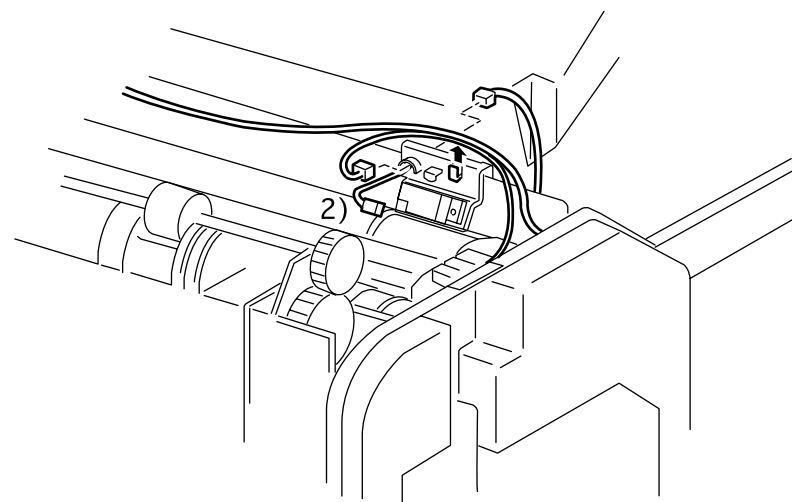
Figure 3-65. ROTARY FRAME ASSY Removal - 2

3.2.10.5 CARTRIDGE SENSOR (PL7.2.26) Removal

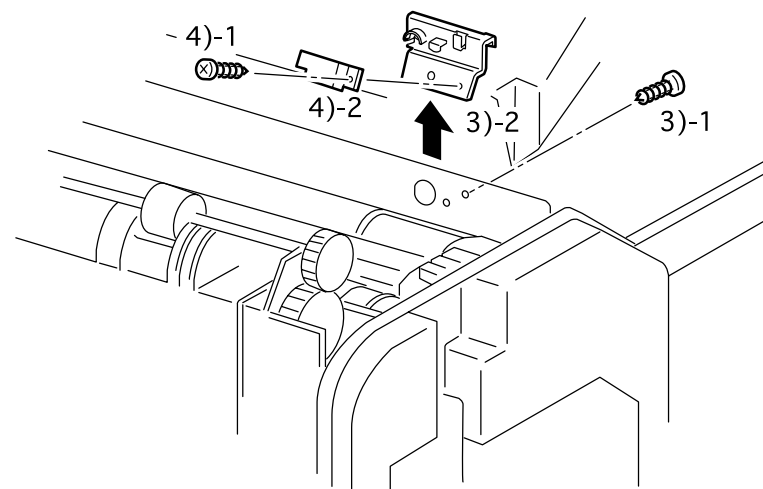
1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Disconnect the CARTRIDGE SENSOR connector (P/J87) and FRONT COVER SWITCH L connector (P/197), and free the harness by disconnecting from the CART. SENSOR PLATE.
3. Remove the screw (gold, tapping, 8mm) securing the CART. SENSOR ASSY and remove the CART. SENSOR ASSY.
4. Remove the screw (gold, tapping, 8mm) securing the CARTRIDGE SENSOR and remove the CARTRIDGE SENSOR.



Securely hook the harness in the hooks of the USED SENSOR PLATE and ROTARY LATCH ASSY so there is no slack in the harness.



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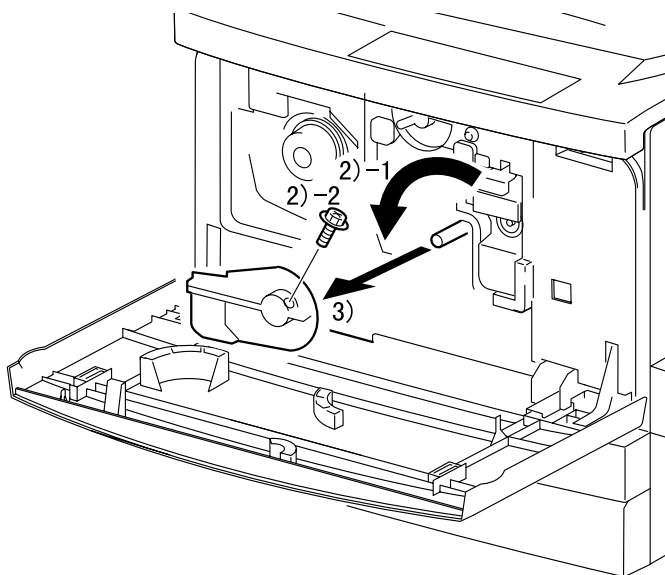
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Figure 3-66. CARTRIDGE SENSOR Removal

3.2.11 IBT

3.2.11.1 TENSION LEVER (PL8.1.21) Removal

1. Open the FRONT COVER ASSY.
2. Turn the lever to the tension release position. Remove the screw (Black, w/ washer, 12mm) securing the TENSION LEVER.
3. Pull out the TENSION LEVER and remove.



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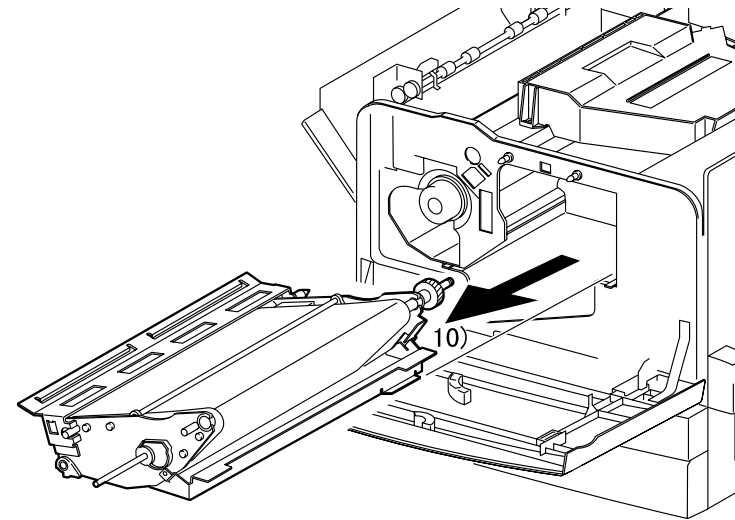
Figure 3-67. TENSION LEVER Removal

3.2.11.2 TRANSFER HIGH ASSY (PL8.1.20) Removal

1. Remove the DRUM CARTRIDGE. (See Section 3.2.9.1.)
2. Remove the TENSION LEVER. (See Section 3.2.11.1.)
3. Remove the IBT INNER COVER ASSY. (See Section 3.2.5.6.)
4. Remove the FUSER ASSY. (See Section 3.2.12.1.)
5. Remove the BELT CLEANER ASSY. (See Section 3.2.11.3.)
6. Remove the 2ND BTR ASSY. (See Section 3.2.11.4.)
7. Pull out the MSI/REGI HIGH ASSY.
8. Disconnect the ADC SENSOR ASSY connector (P/J81) and connector (P/J54) from the TR0 SENSOR. Then, remove the harness from clamps.
9. Remove the 4 screws (silver, w/collar, 8mm) securing the PANEL HIGH ASSY, and remove the PANEL HIGH ASSY.

NOTE: Make sure the IBT BELT ASSY does not touch any other part while performing the following. Never touch the surface of the IBT BELT with your hands. (You may hold the assembly by the ribs on either side.)

10. Lift the TRANSFER HIGH ASSY slightly and remove it by pulling forward.



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Figure 3-68. TRANSFER HIGH ASSY Removal

3.2.11.3 BELT CLEANER ASSY (PL8.1.23) Removal

1. Remove the FUSER ASSY. (See Section 3.2.12.1.)

NOTE: Toner may spill from the BELT CLEANER ASSY while performing the following. You should therefore spread paper on the frame below the BELT CLEANER ASSY, and be careful not to spill toner while performing the work.

NOTE: Be careful not to touch the IBT BELT ASSY or cleaning blade of the BELT CLEANER ASSY. Do not allow the Cleaning Blade to come in contact with any other parts.

NOTE: After removing the BELT CLEANER ASSY in the following procedure, place it on paper in case toner is spilled.

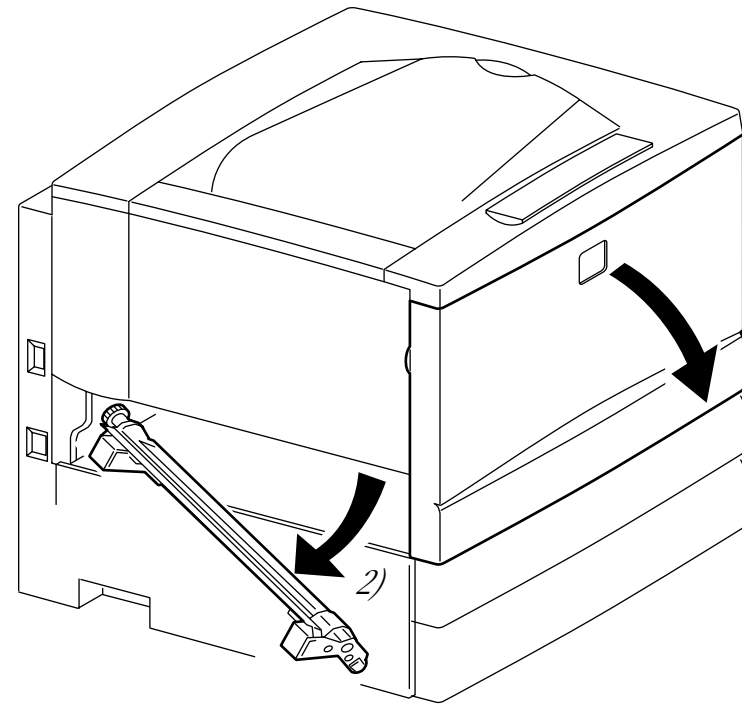
2. Pull the shaft underneath the BELT CLEANER ASSY toward the rear, undo the lock, and remove the BELT CLEANER ASSY by sliding the front to the left.



Accurately align the toner port of the AUGER HIGH ASSY and toner discharge port of the BELT CLEANER ASSY when mounting.



After replacing the BELT CLEANER ASSY with a new part, enter the maintenance mode to reset the counter (IBT Cleaner Clear). (For details, see Chapter 6.)



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Figure 3-69. BELT CLEANER ASSY Removal

3.2.11.4 2ND BTR ASSY (PL8.1.22) Removal

1. Remove the FUSER ASSY. (See Section 3.2.12.1.)
2. Remove the BELT CLEANER ASSY. (See Section 3.2.11.3.)

NOTE: Be sure not to touch the IBT ASSY or the roller of the 2ND BTR ASSY, or allow the roller of the 2ND BTR ASSY to come in contact with any other parts while performing the following.

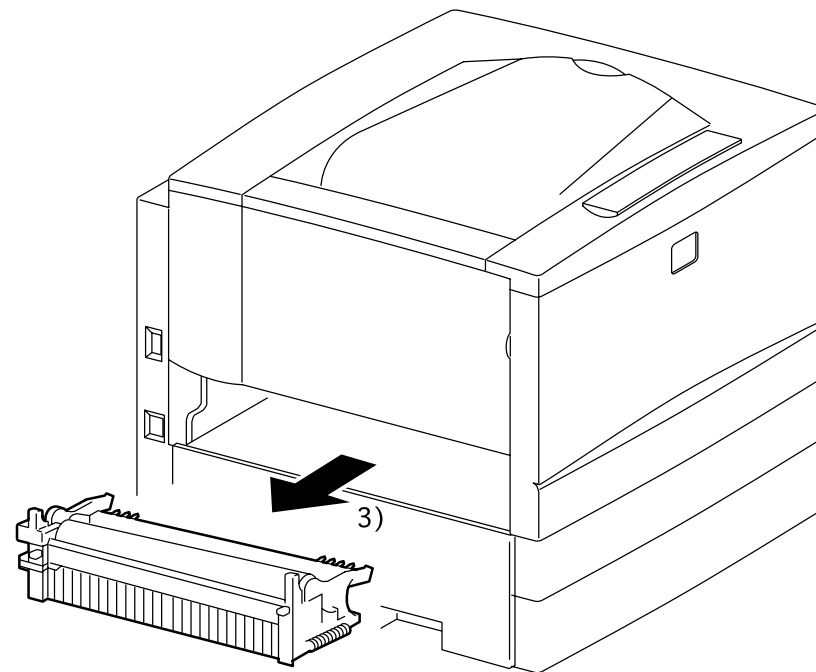
3. Pull out and remove the 2ND BTR ASSY from the left side of the printer.



When mounting, be sure to push the 2ND BTR ASSY firmly in place.



After replacing the 2ND BTR ASSY with a new part, enter the maintenance mode to reset the counter (2ND BTR Clear). (For details, see Chapter 6.)

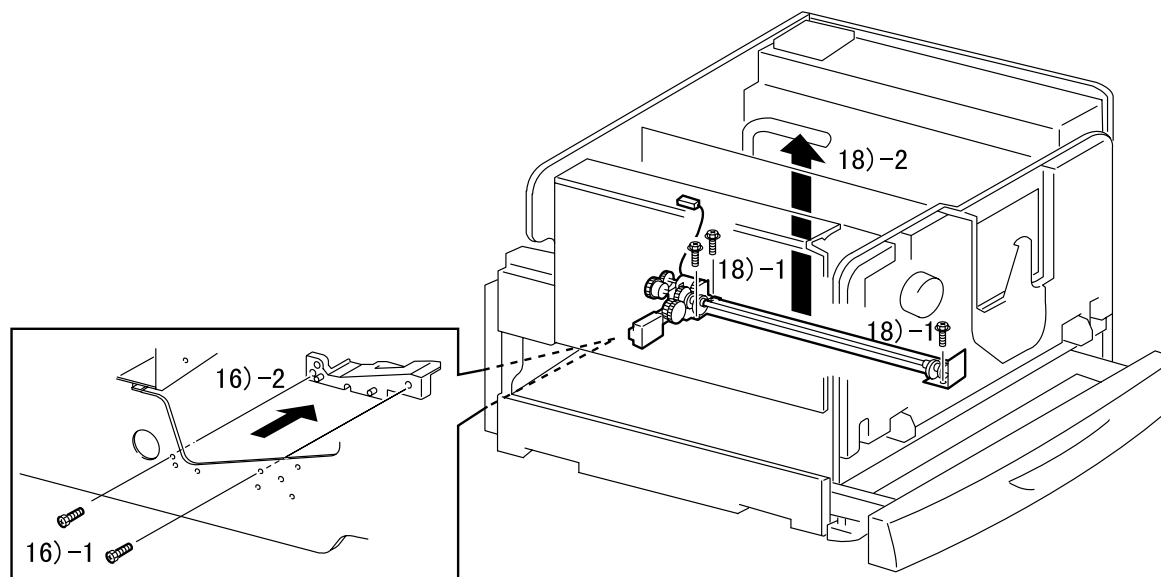


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Figure 3-70. 2ND BTR ASSY Removal

3.2.11.5 2ND BTR CAM ASSY (PL8.1.1) Removal

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
3. Remove the DRUM CARTRIDGE. (See Section 3.2.9.1.)
4. Remove the TENSION LEVER. (See Section 3.2.11.1.)
5. Remove the INNER COVER ASSY. (See Section 3.2.5.5/Section 3.2.5.6/Section 3.2.5.7.)
6. Remove the ROS ASSY. (See Section 3.2.9.3.)
7. Remove the XL RAIL ASSY. (See Section 3.2.9.5.)
8. Remove the FUSER ASSY. (See Section 3.2.12.1.)
9. Remove the BELT CLEANER ASSY. (See Section 3.2.11.4.)
10. Remove the 2ND BTR ASSY. (See Section 3.2.11.4.)
11. Remove the BTR CAM CLUTCH. (See Section 3.2.11.9.)
12. Remove the HVPS. (See Section 3.2.16.2.)
13. Remove the PROCESS DRIVE ASSY. (See Section 3.2.14.6.)
14. Pull out the MSI/REGI HIGH ASSY.
15. Remove the TRANSFER HIGH ASSY. (See Section 3.2.11.2.)
16. Remove the 2 screws (black, tapping, 10mm) securing the IBT FRONT BRACKET ASSY, and remove the IBT FRONT BRACKET ASSY.
17. Disconnect the BTR WHEEL SENSOR connector (P/J100).
18. Remove the 3 screws (black, w/collar, 4mm) securing the 2ND BTR CAM ASSY, and remove from the front hole of the BASE FRAME ASSY.



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Figure 3-71. 2ND BTR CAM ASSY Removal

3.2.11.6 AUGER HIGH ASSY (PL8.1.6) Removal

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
3. Remove the DRUM CARTRIDGE. (See Section 3.2.9.1.)
4. Remove the TENSION LEVER. (See Section 3.2.11.1.)
5. Remove the INNER COVER ASSY. (See Section 3.2.5.5/Section 3.2.5.6/Section 3.2.5.7.)
6. Remove the MSI/REGI HIGH ASSY. (See Section 3.2.8.1.)
7. Remove the ROS ASSY. (See Section 3.2.9.3.)
8. Remove the XL RAIL ASSY. (See Section 3.2.9.5.)
9. Remove the FUSER ASSY. (See Section 3.2.12.1.)
10. Remove the BELT CLEANER ASSY. (See Section 3.2.11.3.)
11. Remove the 2ND BTR ASSY. (See Section 3.2.11.4.)
12. Remove the BTR CAM CLUTCH. (See Section 3.2.11.9.)
13. Remove the HVPS. (See Section 3.2.16.2.)
14. Remove the PROCESS DRIVE ASSY. (See Section 3.2.14.6.)
15. Remove the TRANSFER HIGH ASSY. (See Section 3.2.11.2.)
16. Remove the 2ND BTR CAM ASSY. (See Section 3.2.11.5.)

NOTE: Steps 18 - 21 apply only to printers with CRUM specifications, and may be omitted for printers without CRUM specifications.

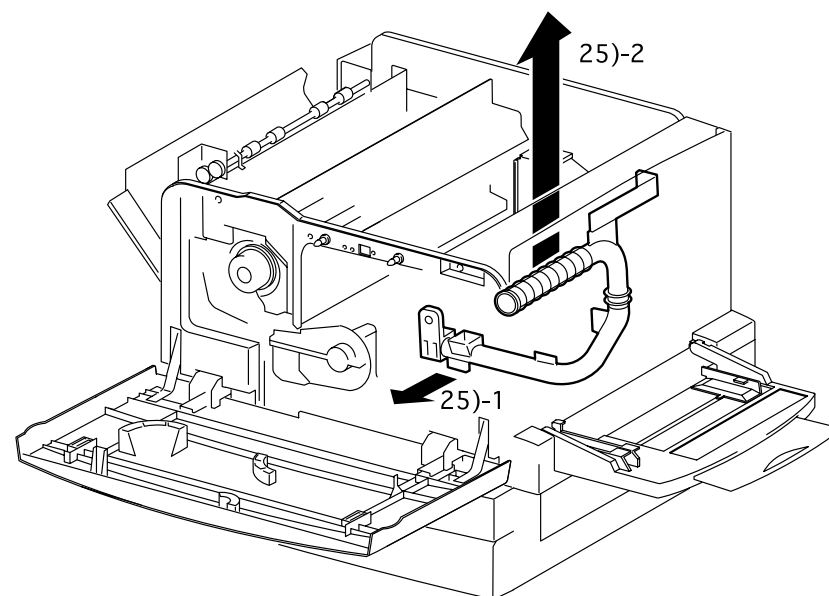
17. Remove the RIGHT COVER ASSY. (See Section 3.2.5.11.)
18. Remove the CONTROLLER PWB. (See Section 3.2.17.1.)
19. Remove the CONT. CHASSIS ASSY. (See Section 3.2.17.3.)
20. Remove the screw (silver, w/collar, 6mm) securing the CRUM ASSY, and remove the CRUM ASSY from inside the printer.
21. Remove the screw (silver, w/collar, 8mm) securing the AUGER HIGH ASSY at the rear of the printer.
22. Remove the screw (silver, w/collar, 8mm) and KL clip securing the AUGER HIGH ASSY inside the printer (lower side).

23. Remove the screw (silver, w/collar, 8mm) securing the AUGER HIGH ASSY inside the printer (upper side).
24. Free the harness by removing from the clamp of the P/H DRIVE ASSY.
25. Remove the 2 screws (black, tapping, 10mm) securing the IBT REAR BRACKET ASSY, and remove the IBT REAR BRACKET ASSY.

NOTE: Toner may spill from the AUGER HIGH ASSY while performing the following. You should therefore spread paper on the frame below the AUGER HIGH ASSY, and be careful not to spill toner while performing the work.

NOTE: After removing the AUGER HIGH ASSY in the following procedure, place it on paper in case toner is spilled.

26. Remove the AUGER HIGH ASSY from the top.



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Figure 3-72. AUGER HIGH ASSY Removal

3.2.11.7 IBT BELT ASSY (PL8.2.2) Removal

1. Remove the DRUM CARTRIDGE. (See Section 3.2.9.1.)
2. Remove the TENSION LEVER. (See Section 3.2.11.1.)
3. Remove the IBT INNER COVER ASSY. (See Section 3.2.5.6.)
4. Remove the FUSER ASSY. (See Section 3.2.12.1.)
5. Remove the BELT CLEANER ASSY. (See Section 3.2.11.3.)
6. Remove the 2ND BTR ASSY. (See Section 3.2.11.4.)
7. Remove the MSI/REGI HIGH ASSY. (See Section 3.2.8.1.)

NOTE: Be careful not to touch the surface of the IBT BELT with you hands while performing the following steps.

NOTE: Spread paper on the frame below the IBT BELT ASSY without getting dirty while performing the work.

8. Remove the TRANSFER HIGH ASSY. (See Section 3.2.11.2.)

NOTE: Stand the TRANSFER HIGH ASSY while performing the work while performing the following.

9. Mount the TENSION LEVER, and lift the PUSH IN LEVER while turning.
10. Spread the arms securing the PUSH IN SHAFT of the TRANSFER ASSY to the left/right, and remove the PUSH IN SHAFT.
11. Turn the TENSION LEVER, lift the arm to which the PUSH IN SHAFT is attached, and remove the TENSION LEVER.
12. Disconnect the TR0 SENSOR connector (P/J57).
13. Remove the 2 screws (rear) (black, w/collar, 8mm) securing the IBT R/H RAIL and IBT L/H RAIL.
14. Remove the 2 screws (front) (black, w/collar, 8mm) securing the IBT R/H RAIL and IBT L/H RAIL, and remove the IBT R/H RAIL, the IBT L/H RAIL and COLLAR.

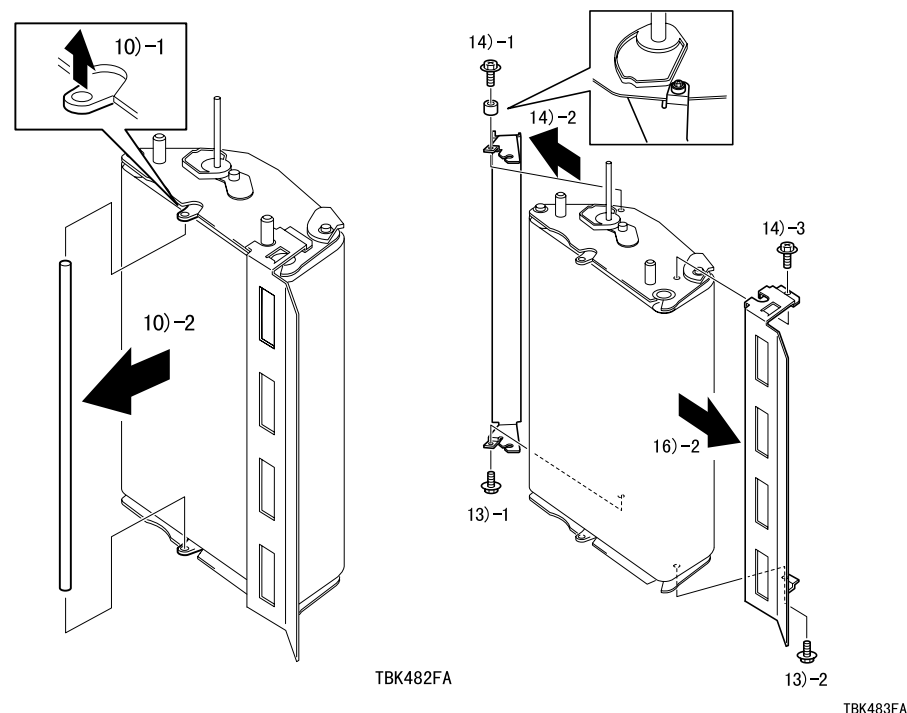
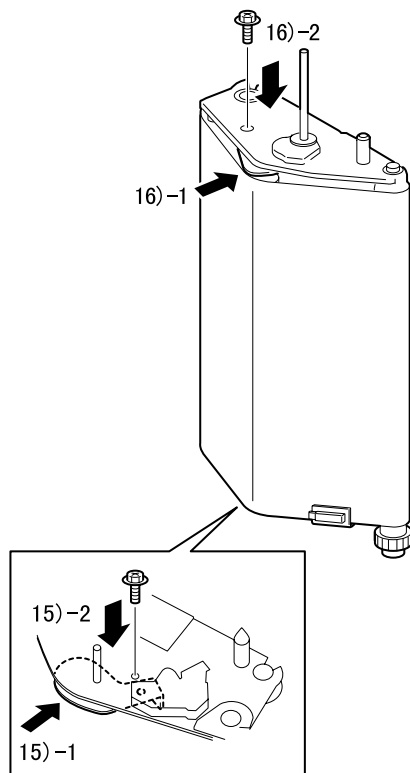


Figure 3-73. IBT BELT ASSY Removal - 1

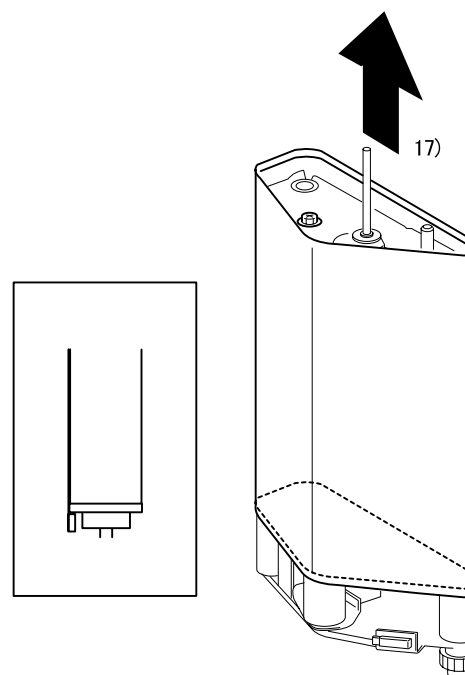
<<Continued on the following page>>

15. Push in the metal cams on rear side of the TRANSFER ASSY, and insert one of the 4 screws securing the RAIL into the hole on the side, and lock the metal cam.
16. Push in the metal cams on front side of the TRANSFER ASSY, and insert one of the other screws securing the RAIL into the hole on the side, and lock the metal cam.
17. Remove the LIB at the bottom of the IBT BELT ASSY from the TRANSFER ASSY, and remove the IBT BELT ASSY to the forward



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Figure 3-74. IBT BELT ASSY Removal - 2



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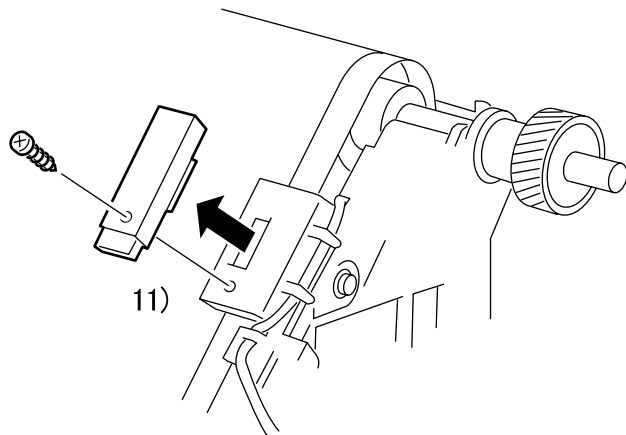
Figure 3-75. IBT BELT ASSY Removal - 3



- Be careful not to damage or dirty the IBT BELT ASSY while mounting.
- Be sure to clean the PUSH IN SHAFT of all foreign matter or lubrication prior to
- Mounting down the silver mark (TR0) of the IBT BELT.

3.2.11.8 TR0 SENSOR (PL8.2.33) Removal

1. Remove the DRUM CARTRIDGE. (See Section 3.2.9.1.)
2. Remove the TENSION LEVER. (See Section 3.2.11.1.)
3. Remove the IBT INNER COVER ASSY. (See Section 3.2.5.6.)
4. Remove the FUSER ASSY. (See Section 3.2.12.1.)
5. Remove the BELT CLEANER ASSY. (See Section 3.2.11.3.)
6. Remove the 2ND BTR ASSY. (See Section 3.2.11.4.)
7. Remove the MSI/REGI HIGH ASSY. (See Section 3.2.8.1.)
8. Remove the TRANSFER HIGH ASSY. (See Section 3.2.11.2.)
9. Remove the 2 screws (black, w/collar, 10mm) securing the IBT R/H RAIL, remove the COLLAR, and get down the IBT R/H RAIL.
10. Disconnect the TR0 SENSOR connector (P/J57).
11. Remove the screw (black/w/collar, 10mm) securing the TR0 SENSOR, and remove the TR0 SENSOR.

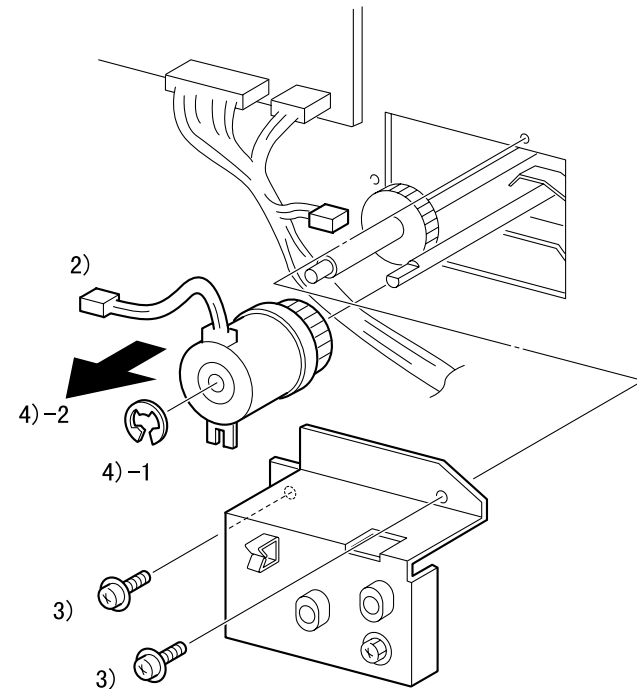


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Figure 3-76. TR0 SENSOR Removal

3.2.11.9 BTR CAM CLUTCH (PL8.3.4) Removal

1. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
2. Disconnect the BTR CAM CLUTCH connector (P/J63).
3. Remove the 2 screws (silver, w/collar, 6mm) securing the BTR REAR BRACKET, and remove the BTR REAR BRACKET.
4. Remove the E-ring securing the BTR CAM CLUTCH, and remove the BTR CAM CLUTCH.



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Figure 3-77. BTR CAM CLUTCH Removal

3.2.12 Fusing

3.2.12.1 FUSER ASSY (PL9.1.1) Removal

1. Remove the EXIT TRAY ASSY. (See Section 3.2.13.1.)
2. Remove the FRONT MID COVER, let loose fully the drop preventing screw.
3. Pull out the FUSER ASSY, and remove by lifting diagonally.

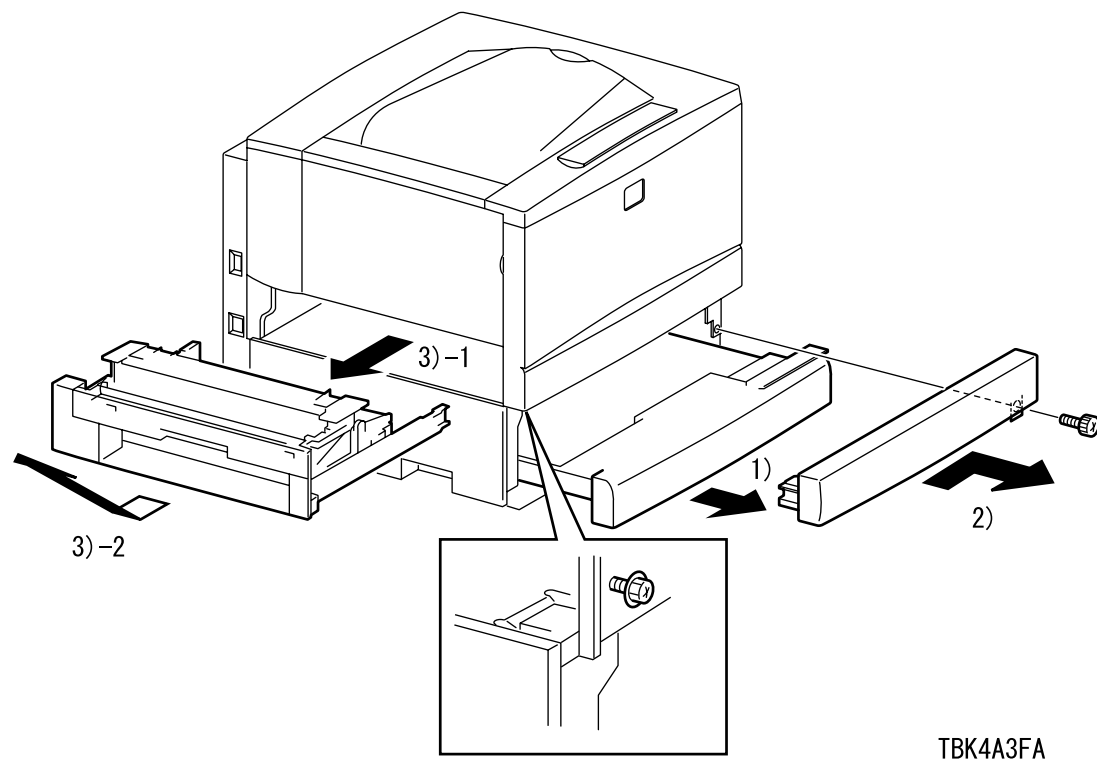


Figure 3-78. FUSER ASSY Removal

3.2.12.2 MAIN FUSER ASSY (PL9.1.2) Removal

1. Remove the EXIT TRAY ASSY. (See Section 3.2.13.1.)
2. Pull out the FUSER ASSY.
3. Disconnect the 2 connectors (P/J72B, P/J79) of the MAIN FUSER ASSY.
4. Remove the 3 screws (gold, w/washer, 8mm) securing the MAIN FUSER ASSY, Remove the MAIN FUSER ASSY.

CAUTION

After replacing the MAIN FUSER ASSY with a new part, enter the maintenance mode to reset the counter (Fuser Counter Clear). (For details, see Chapter 6.)

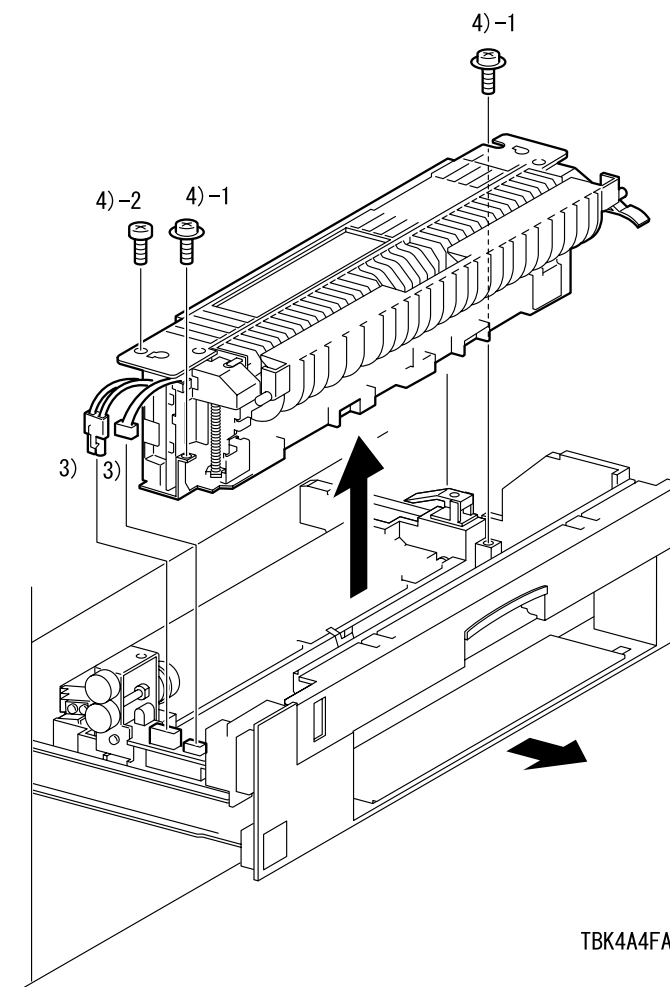
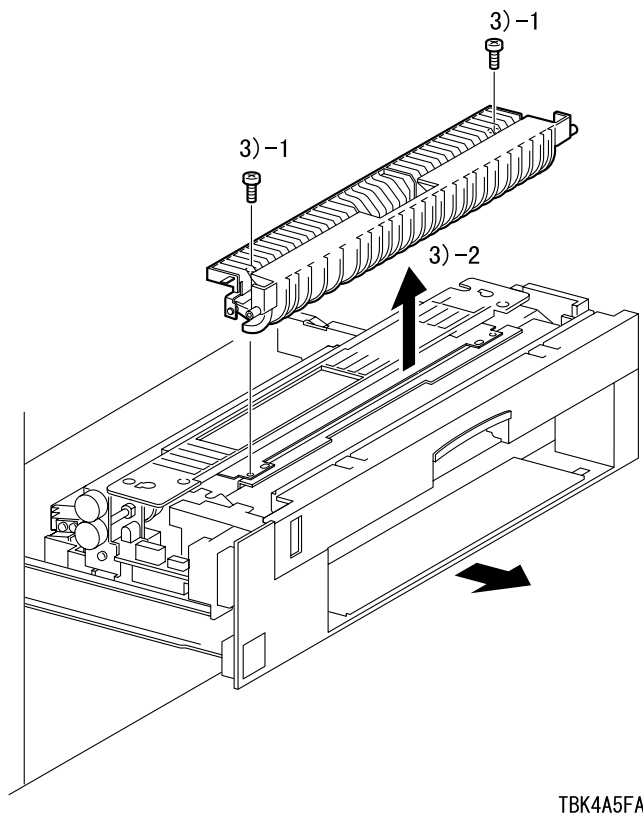


Figure 3-79. MAIN FUSER ASSY Removal

3.2.12.3 UPPER GUIDE ASSY (PL9.2.20) Removal

1. Remove the EXIT TRAY ASSY. (See Section 3.2.13.1.)
2. Pull out the FUSER ASSY.
3. Remove the 2 screws (silver, 6mm) securing the UPPER GUIDE ASSY, and remove the UPPER GUIDE ASSY.



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Figure 3-80. UPPER GUIDE ASSY Removal

3.2.12.4 FUSER UPPER ASSY (PL9.2.30) Removal

1. Remove the EXIT TRAY ASSY. (See Section 3.2.13.1.)
2. Pull out the FUSER ASSY.
3. Remove the MAIN FUSER ASSY. (See Section 3.2.12.2.)
4. Remove the UPPER GUIDE ASSY. (See Section 3.2.12.3.)
5. Free the harness of the TEMP. SENSOR ASSY by unhooking from the FUSER UPPER ASSY.

NOTE: When the FUSER UPPER ASSY is removed in the following, the FUSER FRONT COVER and FUSER REAR COVER will no longer be secured. Be careful not to allow the covers to fall.

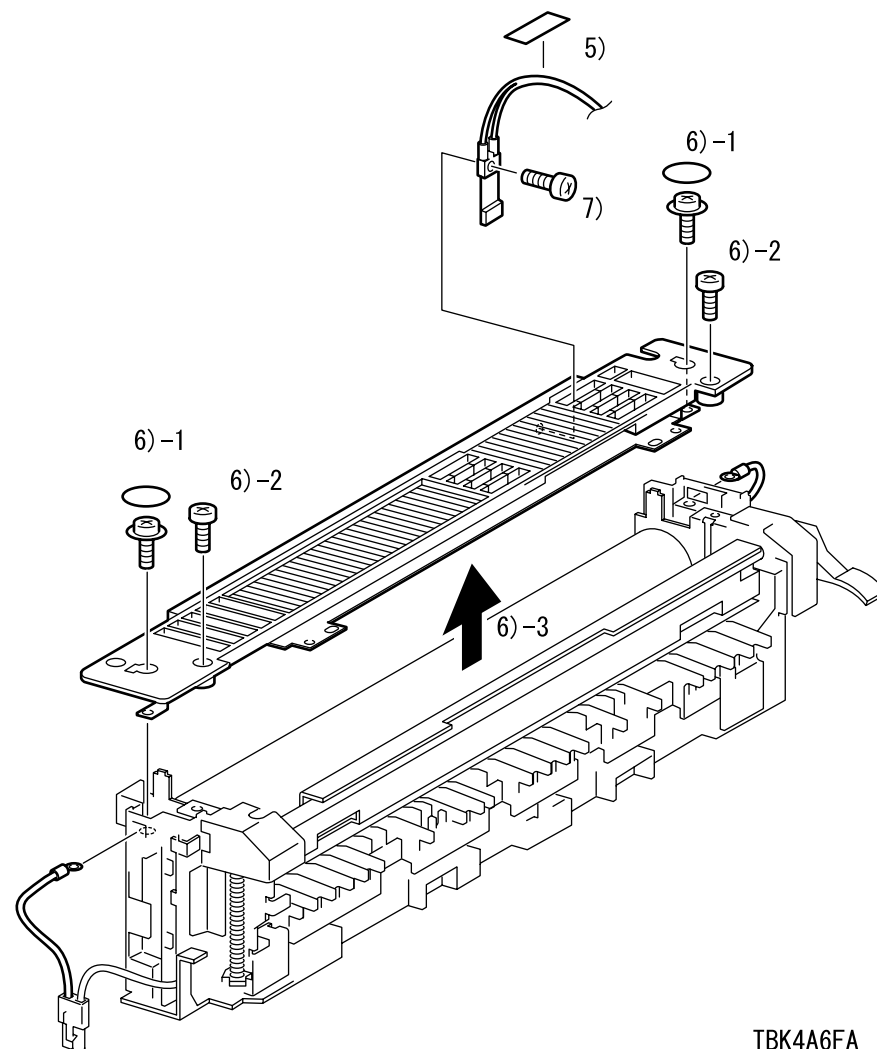
6. Remove the 2 screws (gold, w/washer, 8mm) and 2 screws (silver, 6mm) (total of 4 screws) securing the FUSER UPPER ASSY, and remove the FUSER UPPER ASSY.

NOTE: Be careful not to damage the surface of the HEAT ROLL with screwdriver, etc., when removing the TEMP. SENSOR ASSY while performing the following.

7. Remove the screw (silver, tapping, 14mm) securing the TEMP. SENSOR ASSY, and remove the TEMP. SENSOR ASSY from the FUSER UPPER ASSY.



The front screws (gold, w/washer, 8mm) also secure the H/R HEATER. The rear screws (gold, w/washer, 8mm) also secure the HEATER WIRE.



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Figure 3-81. FUSER UPPER ASSY Removal

3.2.12.5 H/R HEATER (PL9.2.37) Removal

1. Remove the EXIT TRAY ASSY. (See Section 3.2.13.1.)
2. Pull out the FUSER ASSY.
3. Remove the MAIN FUSER ASSY. (See Section 3.2.12.2.)
4. Remove the UPPER GUIDE ASSY. (See Section 3.2.12.3.)
5. Remove the FUSER UPPER ASSY. (See Section 3.2.12.4.)
6. Remove the screw (black, w/collar, 8mm) securing the FUSER NIP HANDLE, and remove the FUSER NIP HANDLE.
7. Pass the front terminal of the H/R HEATER through the hole in the FUSER FRONT COVER, and remove the FUSER FRONT COVER.

NOTE: The connector (P/JF250) for the H/R HEATER and P/R HEATER is tightly connected. Be careful not to damage these heaters when disconnecting the connector while performing the following.

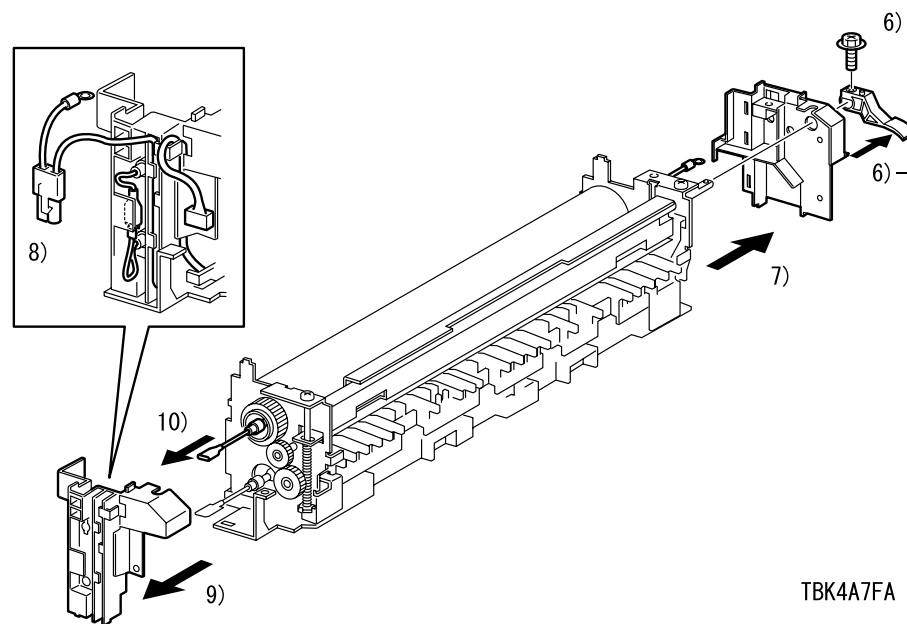
8. Free the wire and harness by unhooking from the FUSER REAR COVER. Disconnect the connector (P/JF250) for the H/R HEATER and P/R HEATER.

NOTE: The gear is no longer secured when the FUSER REAR COVER is removed. Be careful not to allow the gear to fall out while performing the following.

9. Pass the rear terminal of the H/R and P/R HEATER through the hole in the FUSER REAR COVER, and remove the FUSER REAR COVER.

NOTE: Be careful not to touch the surface of the H/R HEATER while removing the H/R HEATER in the following.

10. Remove the H/R HEATER by pulling straight out from the rear.



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Figure 3-82. H/R HEATER Removal

3.2.12.6 P/R HEATER (PL9.2.38) Removal

1. Remove the EXIT TRAY ASSY. (See Section 3.2.13.1.)
2. Pull out the FUSER ASSY.
3. Remove the MAIN FUSER ASSY. (See Section 3.2.12.2.)
4. Remove the UPPER GUIDE ASSY. (See Section 3.2.12.3.)
5. Remove the FUSER UPPER ASSY. (See Section 3.2.12.4.)
6. Remove the screw (black, w/collar, 8mm) securing the FUSER NIP HANDLE, and remove the FUSER NIP HANDLE,.
7. Pass the front terminal of the H/R HEATER through the hole in the FUSER FRONT COVER, and remove the FUSER FRONT COVER.

NOTE: The connector (P/JF250) for the H/R HEATER and P/R HEATER is tightly connected. Be careful not to damage the heaters when disconnecting the connector in the following step.

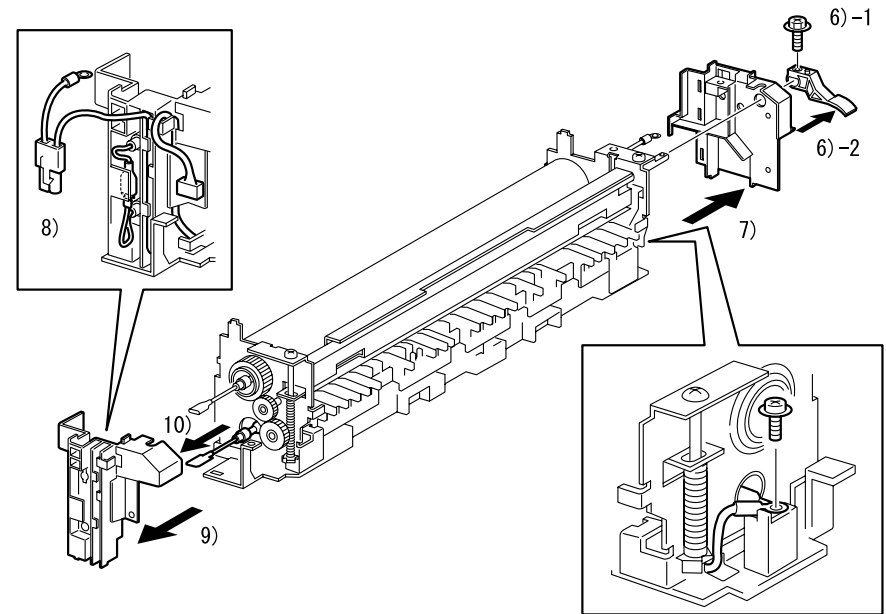
8. Free the wire and harness by unhooking from the FUSER REAR COVER. Disconnect the connector (P/JF250) for the H/R HEATER and P/R HEATER.

NOTE: The gear is no longer secured when the FUSER REAR COVER is removed. Be careful not to allow the gear to fall out while performing the following.

9. Pass the rear terminal of the H/R and P/R HEATER through the hole in the FUSER REAR COVER, and remove the FUSER REAR COVER.

NOTE: Be careful not to touch the surface of the P/R HEATER while removing the P/R HEATER in the following step.

10. Remove the P/R HEATER by pulling straight out from the rear.



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Figure 3-83. P/R HEATER Removal

3.2.12.7 LOWER GUIDE ASSY (PL9.2.13) Removal

1. Remove the EXIT TRAY ASSY. (See Section 3.2.13.1.)
2. Pull out the FUSER ASSY.
3. Remove the MAIN FUSER ASSY. (See Section 3.2.12.2.)
4. Remove the UPPER GUIDE ASSY. (See Section 3.2.12.3.)

NOTE: Be careful not to damage the surface of the PRESSURE ROLL with the P/R FINGER while removing the LOWER GUIDE ASSY.

NOTE: Make sure the FUSER EXIT ACTUATOR does not interfere with the FUSER EXIT SENSOR and fall out while mounting the LOWER GUIDE ASSY.

5. Remove the screw (silver, 6mm) securing the LOWER GUIDE ASSY. Slide the LOWER GUIDE ASSY forward and remove.

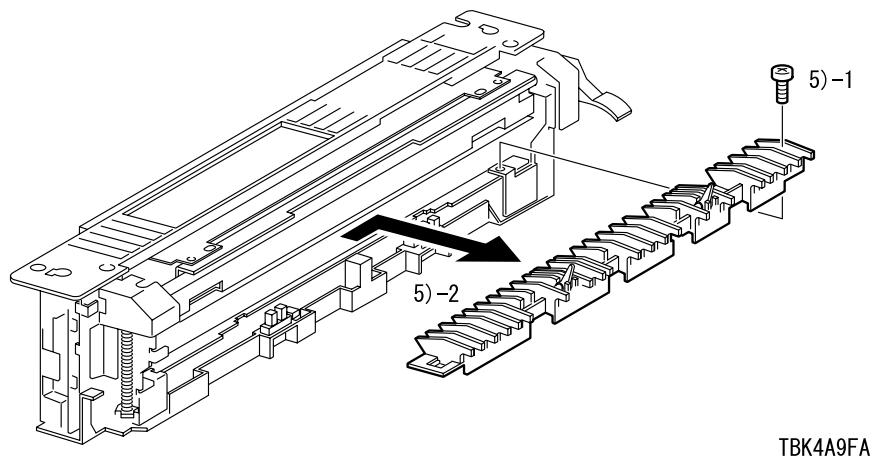


Figure 3-84. LOWER GUIDE ASSY Removal

3.2.12.8 FUSER EXIT SENSOR-1 (PL9.2.3) Removal

1. Remove the EXIT TRAY ASSY. (See Section 3.2.13.1.)
2. Pull out the FUSER ASSY.
3. Remove the MAIN FUSER ASSY. (See Section 3.2.12.2.)
4. Remove the UPPER GUIDE ASSY. (See Section 3.2.12.3.)
5. Remove the LOWER GUIDE ASSY. (See Section 3.2.12.7.)
6. Disconnect the FUSER EXIT SENSOR-1 connector (P/J 721).
7. Unhook FUSER EXIT SENSOR-1 from the FUSER BOTTOM PLATE and remove.

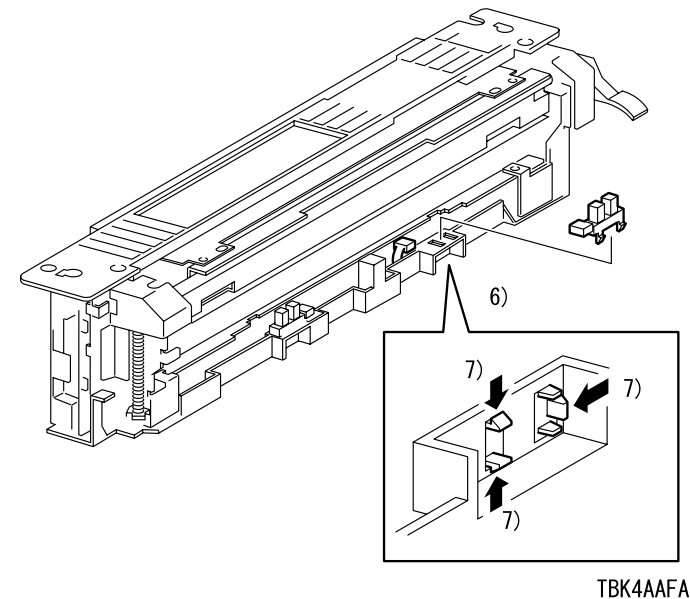


Figure 3-85. FUSER EXIT SENSOR-1 Removal

3.2.12.9 FUSER EXIT SENSOR-2 (PL9.2.4) Removal

1. Remove the EXIT TRAY ASSY. (See Section 3.2.13.1.)
2. Pull out the FUSER ASSY.
3. Remove the MAIN FUSER ASSY. (See Section 3.2.12.2.)
4. Remove the UPPER GUIDE ASSY. (See Section 3.2.12.3.)
5. Remove the LOWER GUIDE ASSY. (See Section 3.2.12.7.)
6. Disconnect the FUSER EXIT SENSOR-2 connector (P/J 722).
7. Unhook FUSER EXIT SENSOR-2 from the FUSER BOTTOM PLATE and remove.

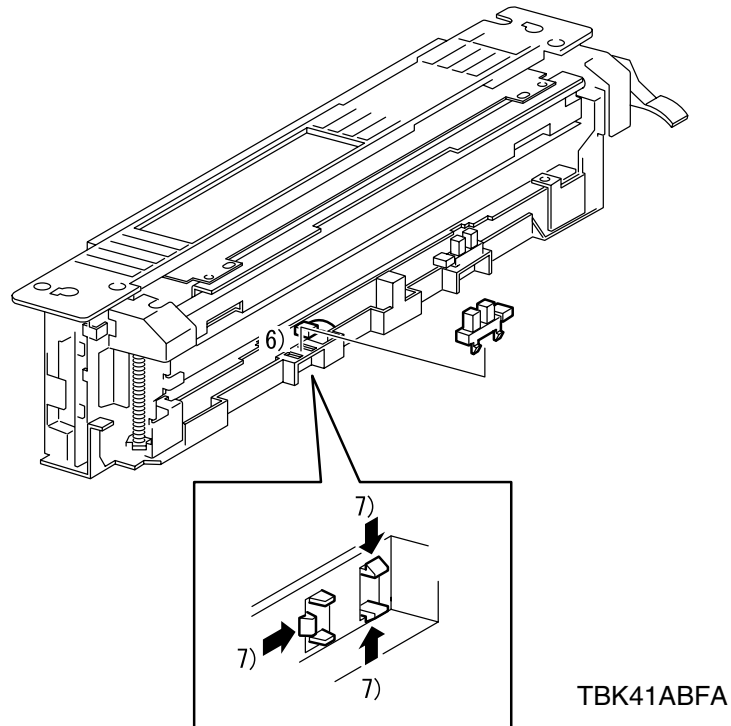


Figure 3-86. FUSER EXIT SENSOR-2 Removal

3.2.12.10 HEAT ROLL (PL9.2.25) Removal

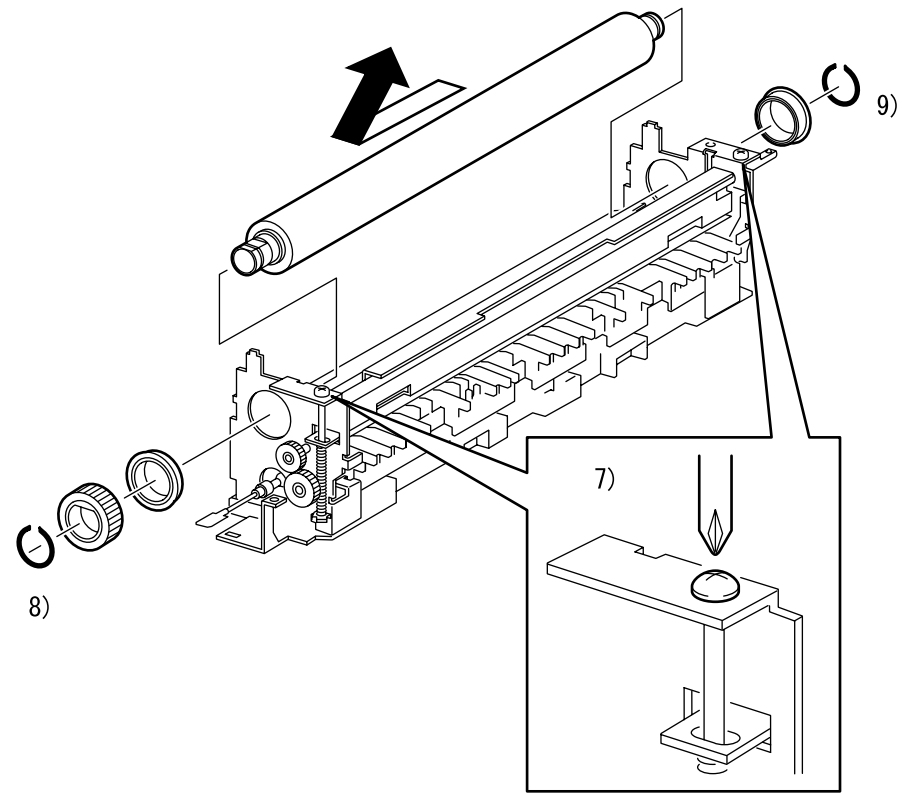
1. Remove the EXIT TRAY ASSY. (See Section 3.2.13.1.)
2. Pull out the FUSER ASSY.
3. Remove the MAIN FUSER ASSY. (See Section 3.2.12.2.)
4. Remove the UPPER GUIDE ASSY. (See Section 3.2.12.3.)
5. Remove the FUSER UPPER ASSY. (See Section 3.2.12.4.)
6. Remove the H/R HEATER. (See Section 3.2.12.5.)
7. Loosen the 2 screws for adjusting the front/rear NIP width.
8. Remove the H/R RING securing the rear H/R GEAR. Remove the H/R GEAR and rear H/R BEARING.
9. Remove the front H/R RING and remove the front H/R BEARING.

NOTE: Be careful not to damage the surface of the HEAT ROLL while performing the following.

10. Slide the HEAT ROLL to the rear and remove the front from the frame. After doing so, slide the HEAT ROLL forward and remove.



After mounting, make the adjustment as described in Section 3.3.1 "NIP Pressure of the MAIN FUSER ASSY".



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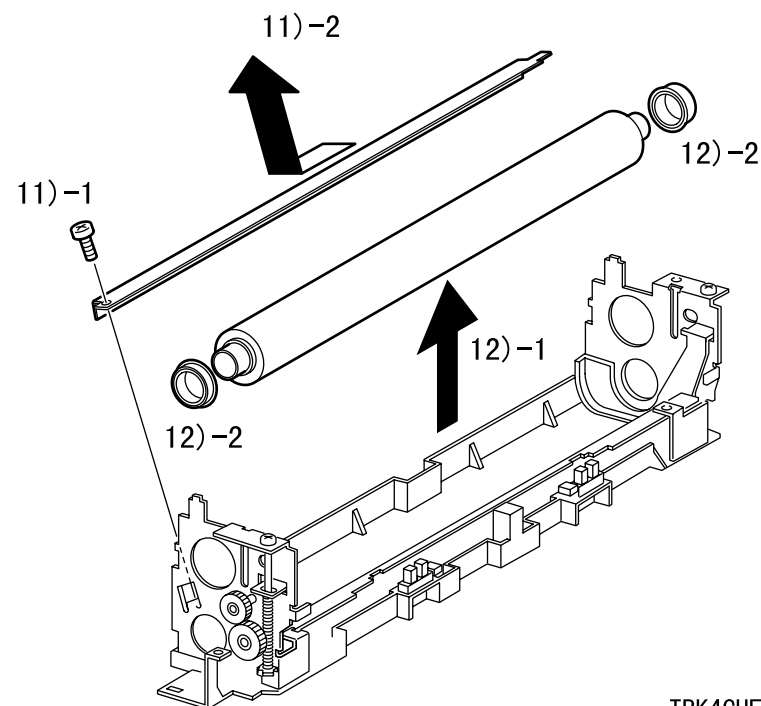
Figure 3-87. HEAT ROLL Removal

3.2.12.11 PRESSURE ROLL (PL9.2.10) Removal

1. Remove the EXIT TRAY ASSY. (See Section 3.2.13.1.)
2. Pull out the FUSER ASSY. (See Section 3.2.12.1.)
3. Remove the MAIN FUSER ASSY. (See Section 3.2.12.2.)
4. Remove the UPPER GUIDE ASSY. (See Section 3.2.12.3.)
5. Remove the FUSER UPPER ASSY. (See Section 3.2.12.4.)
6. Remove the H/R HEATER. (See Section 3.2.12.5.)
7. Remove the P/R HEATER. (See Section 3.2.12.6.)
8. Remove the LOWER GUIDE ASSY. (See Section 3.2.12.7.)
9. Remove the HEAT ROLL. (See Section 3.2.12.10.)
10. Remove the FUSER BAFFLE ASSY. (See Section 3.2.12.20.)
11. Remove the screw (gold, 6mm) securing the FUSER INLET PLATE, and remove the FUSER INLET PLATE.

NOTE: Be sure not to damage the surface of the PRESSURE ROLL while performing the following.

Lift the PRESSURE ROLL and remove together with the 2 front/rear P/R BEARINGS. After doing so, remove the P/R BEARINGS from the PRESSURE ROLL.



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Figure 3-88. PRESSURE ROLL Removal



- Be careful to mount the FUSER BAFFLE ASSY.
- Put the both side frame to the H/ROLL BEARING while mounting the FUSER BAFFLE ASSY.



After mounting, make the adjustment as described in Section 3.3.1 "NIP Pressure of the MAIN FUSER ASSY".

3.2.12.12 TEMP. SENSOR ASSY (PL9.2.6) Removal

1. Remove the EXIT TRAY ASSY. (See Section 3.2.13.1.)
2. Pull out the FUSER ASSY. (See Section 3.2.12.1.)
3. Remove the MAIN FUSER ASSY. (See Section 3.2.12.2.)
4. Remove the UPPER GUIDE ASSY. (See Section 3.2.12.3.)
5. Remove the FUSER UPPER ASSY. (See Section 3.2.12.4.)
6. Remove the H/R HEATER. (See Section 3.2.12.5.)
7. Remove the P/R HEATER. (See Section 3.2.12.6.)
8. Remove the LOWER GUIDE ASSY. (See Section 3.2.12.7.)
9. Remove the 2 screws (black, w/collar, 8mm) securing the FUSER BOTTOM PLATE, remove the FUSER BOTTOM PLATE.
10. Disconnect the connector (P/J721,P/J722) from the FUSER EXIT SENSOR-1/-2, unhook the harness from the FUSER BOTTOM PLATE, and remove the TEMP. SENSOR ASSY.

ADJUSTMENT
REQUIRED

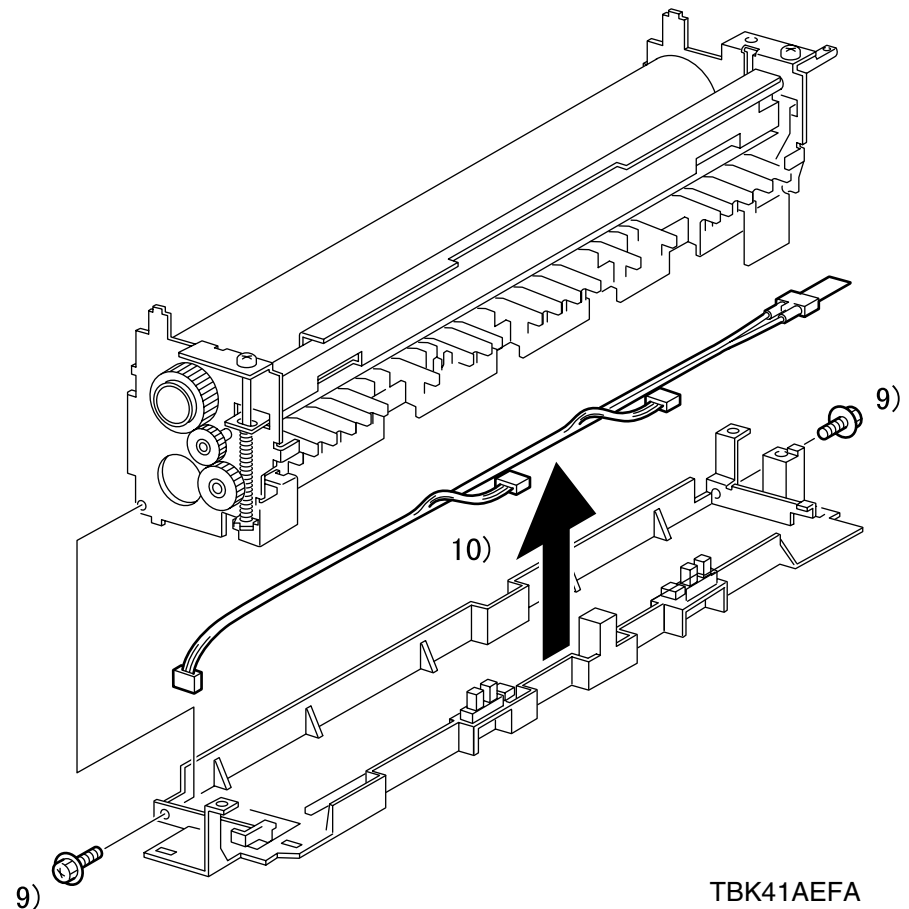


After mounting, adjustment as described in Section 3.3.1 "NIP Pressure of the MAIN FUSER ASSY".

CHECK
POINT



When mounting, hook the harness on the FUSER BOTTOM PLATE hook so there is no slack in the harness.



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Figure 3-89. TEMP. SENSOR ASSY Removal

3.2.12.13 EXCHANGE CHUTE (PL9.3.17) Removal

1. Remove the EXIT TRAY ASSY. (See Section 3.2.13.1.)
2. Pull out the FUSER ASSY. (See Section 3.2.12.1.)
3. Remove the MAIN FUSER ASSY. (See Section 3.2.12.2.)
4. Remove the 2 screws (gold, tapping, 10mm) securing the FUSER FRONT RAIL, and remove the FUSER FRONT RAIL.
5. Remove the screw (gold, tapping, 10mm) securing EXCHANGE STOPPER-F, and remove EXCHANGE STOPPER-F.
6. Remove the screw (gold, tapping, 10mm) securing EXCHANGE STOPPER-R, and remove EXCHANGE STOPPER-R.

NOTE: Be careful not to damage the front/rear hinges of the exchange chute while performing the following.

7. Remove the EXCHANGE CHUTE by pulling straight out from the right side.



Insert the U-shaped parts on the front and rear of the EXCHANGE CHUTE securely into the plunger when mounting the EXCHANGE CHUTE.

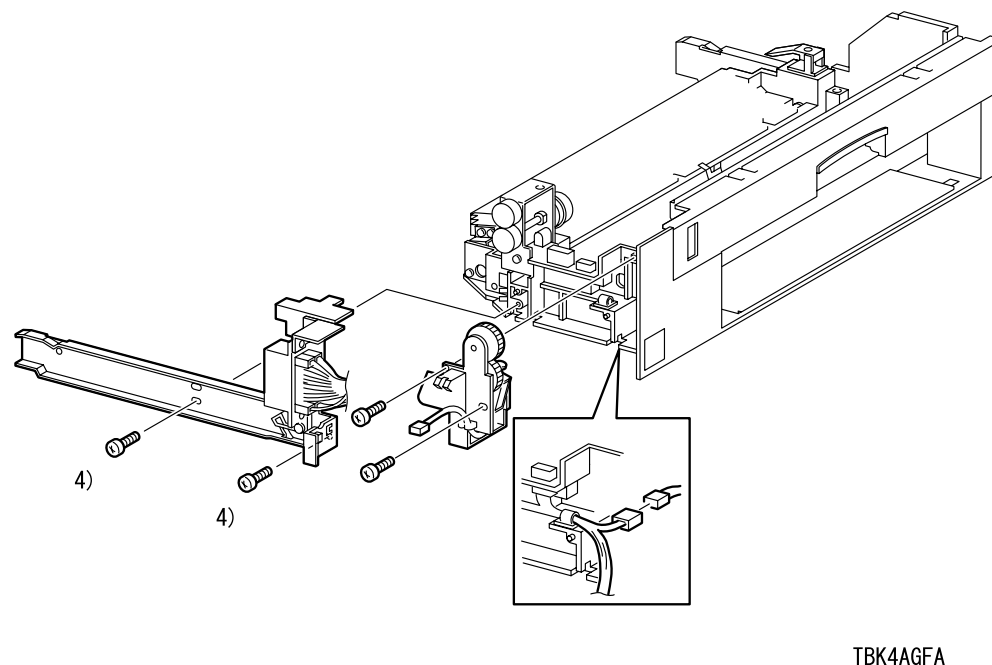
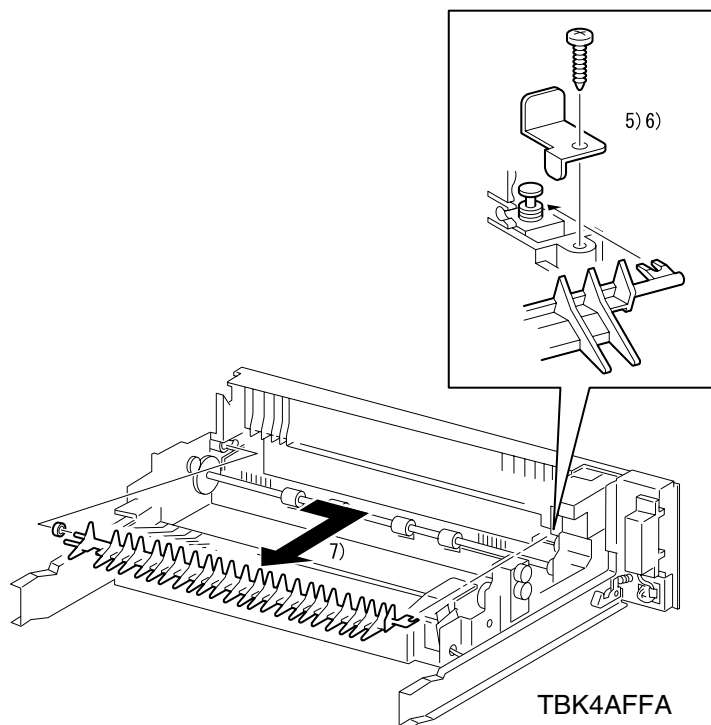


Figure 3-90. EXCHANGE CHUTE Removal

3.2.12.14 EXCHANGE SOLENOID (PL9.3.22) Removal

1. Remove the EXIT TRAY ASSY. (See Section 3.2.13.1.)
2. Pull out the FUSER ASSY. (See Section 3.2.12.1.)
3. Remove the MAIN FUSER ASSY. (See Section 3.2.12.2.)
4. Remove the EXCHANGE CHUTE. (See Section 3.2.12.13.)

NOTE: The FUSER REAR RAIL and FUSER TRAY ASSY are connected by a harness. Be careful not to pull too far apart while performing the following.

5. Remove the 2 screws (gold, tapping, 10mm) securing the FUSER REAR RAIL. Separate the FUSER TRAY ASSY and FUSER REAR RAIL together with the FUSER GEAR COVER.
6. Disconnect the EXCHANGE SOLENOID connector (P/J74).

NOTE: The gear is no longer secured when the EXCHANGE BRACKET is removed. Be careful not to allow the gear to fall out while performing the following.

7. Remove the 2 screws (gold, tapping, 10mm) securing the SOLENOID ASSY, and remove the SOLENOID ASSY together with FUSER EARTH-B.
8. Remove the 2 screws (silver, 3mm) securing the EXCHANGE SOLENOID to the EXCHANGE BRACKET, and remove the EXCHANGE BRACKET.

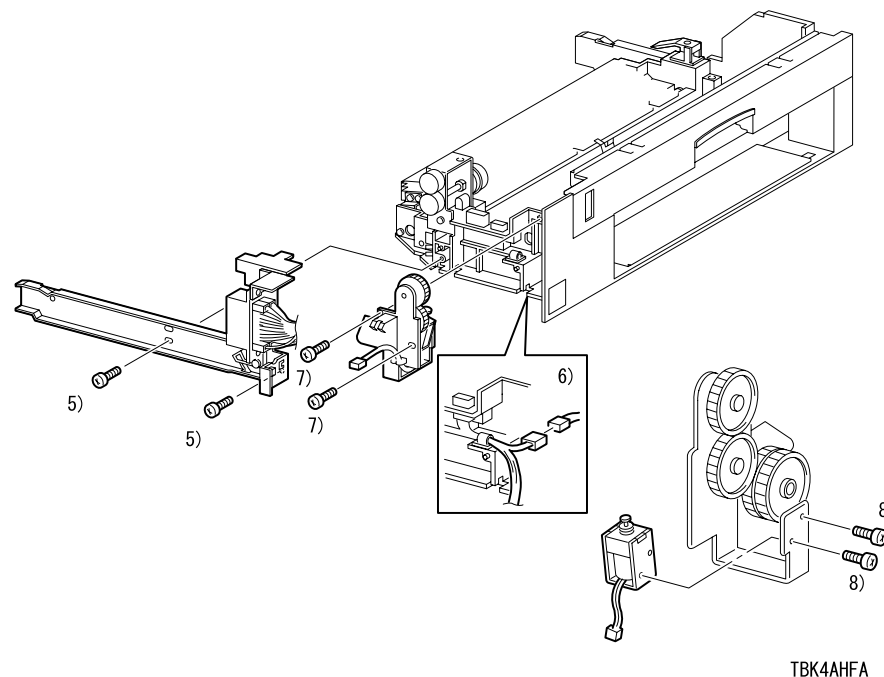


Figure 3-91. EXCHANGE SOLENOID Removal

3.2.12.15 CLEANER CAM SOLENOID (PL9.4.24) Removal

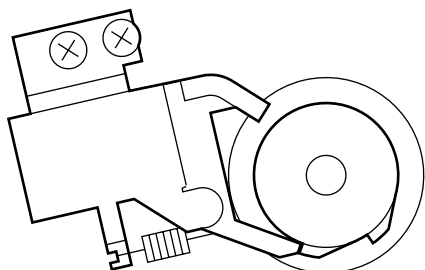
1. Remove the EXIT TRAY ASSY. (See Section 3.2.13.1.)
2. Pull out the FUSER ASSY. (See Section 3.2.12.1.)
3. Remove the MAIN FUSER ASSY. (See Section 3.2.12.2.)

NOTE: The FUSER REAR RAIL and FUSER TRAY ASSY are connected by a harness. Be careful not to pull too far apart while performing the following.

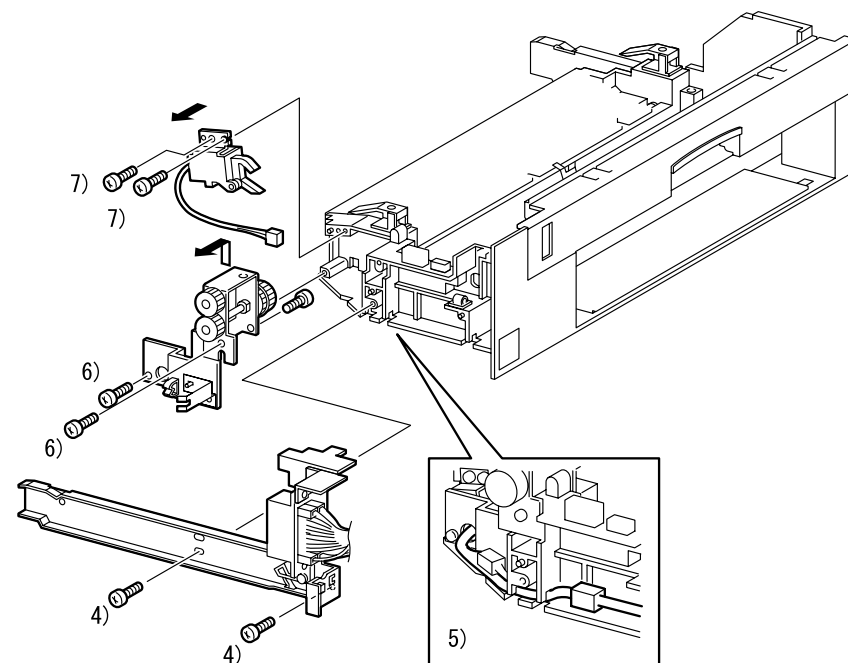
4. Remove the 2 screws (gold, tapping, 10mm) securing the FUSER REAR RAIL. Separate the FUSER TRAY ASSY and FUSER REAR RAIL together with the FUSER GEAR COVER.
5. Disconnect the CLEANER CAM SOLENOID connector (P/J62), and free the harness by removing from the clamp.
6. Remove the 2 screws (gold, tapping, 10mm) securing INPUT BRACKET FT, and remove INPUT BRACKET FT together with FUSER EARTH-A, etc.
7. Remove the 2 screws (gold, tapping, 10mm) securing the CLEANER CAM SOLENOID, and remove the CLEANER CAM SOLENOID.



When mounting the CLEANER CAM SOLENOID, secure it at the position where bottom end of the CLEANER CAM SOLENOID armature touches the Spring Clutch when the armature is at the vacuum position.



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Figure 3-92. CLEANER CAM SOLENOID Removal

3.2.12.16 CLEANER CAM ASSY (PL9.4.25) Removal

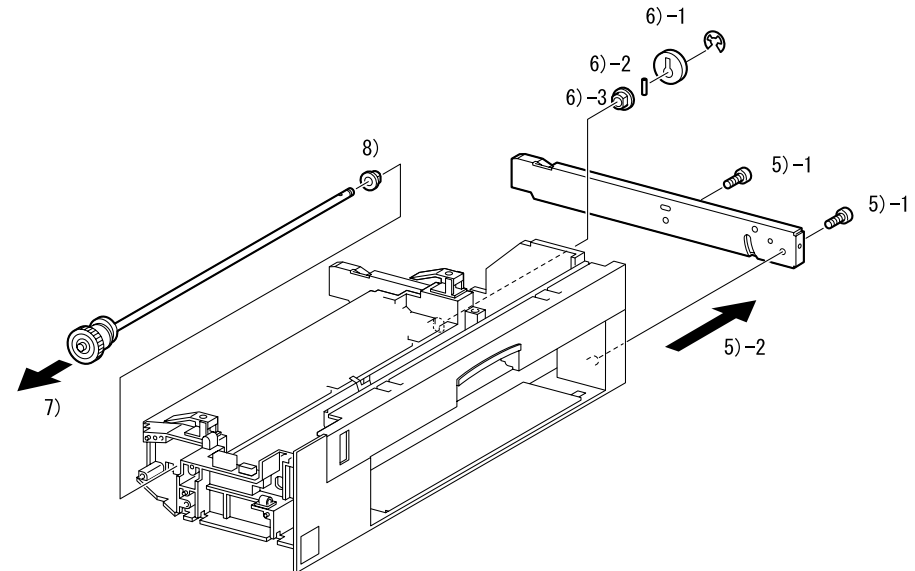
1. Remove the EXIT TRAY ASSY. (See Section 3.2.13.1.)
2. Remove the FUSER ASSY. (See Section 3.2.12.1.)
3. Remove the MAIN FUSER ASSY. (See Section 3.2.12.2.)
4. Remove the CLEANER CAM SOLENOID. (See Section 3.2.12.15.)
5. Remove the 2 screws (gold, tapping, 10mm) securing the FUSER FRONT RAIL, and remove the FUSER FRONT RAIL.

NOTE: Be sure not to drop and lose the CLEANER CAM PIN when removing the CLEANER CAM in the following step of the procedure.

6. Remove the E-ring securing the CLEANER CAM. Remove the CLEANER CAM, CLEANER CAM PIN, and CLN CAM BEARING-F.
7. Remove the CLEANER CAM ASSY together with CLN CAM BEARING-F by pulling straight out from the rear.
8. Remove CLN CAM BEARING-F from the CLEANER CAM ASSY.



The right/left direction of the cam must be adjusted after mounting it.



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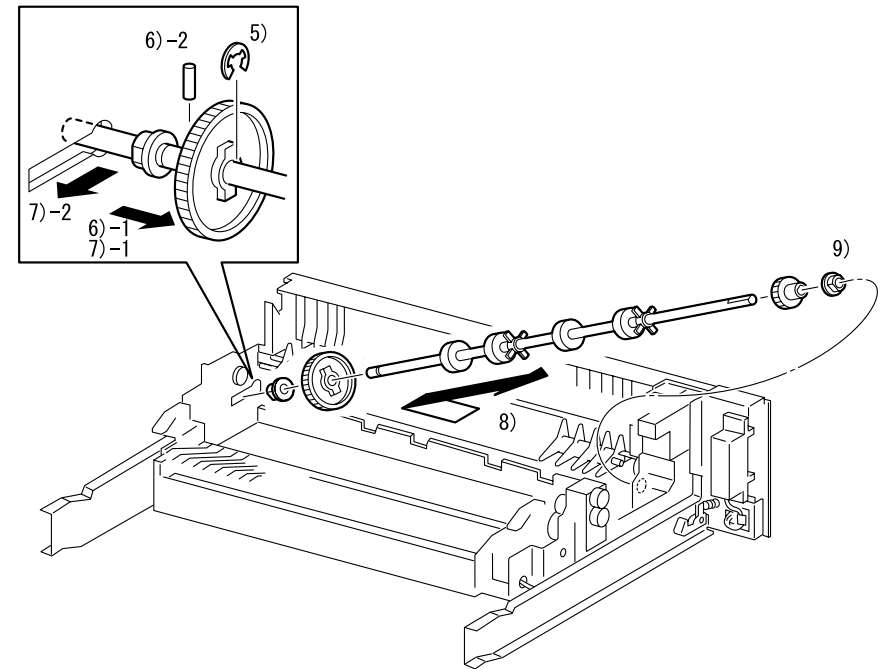
Figure 3-93. CLEANER CAM ASSY Removal

3.2.12.17 EXIT-1 ROLL ASSY (PL9.3.14) Removal

1. Remove the EXIT TRAY ASSY. (See Section 3.2.13.1.)
2. Remove the FUSER ASSY. (See Section 3.2.12.1.)
3. Remove the MAIN FUSER ASSY. (See Section 3.2.12.2.)
4. Remove the E-ring securing the FUSER KNOB and FUSER KNOB GEAR. Remove the FUSER KNOB, FUSER GEAR and FUSER KNOB WASHER.
5. Remove the E-ring securing the EXIT KNOB GEAR.
6. Slide the EXIT KNOB GEAR to the rear and remove the EXIT ROLL PIN.
7. Slide the front EXIT-1 BEARING to the rear, and slide the front of the EXIT-1 ROLL ASSY to the right.

NOTE: The rear EXIT-1 BEARING of the EXIT-1 ROLL ASSY remains but is not secured to the FUSER TRAY when the following step of the procedure is performed. Be careful not to lose the EXIT-1 BEARING.

8. Slide the EXIT-1 ROLL ASSY forward and dismount the rear of the EXIT-1 ROLL ASSY. Remove to the rear the EXIT-1 ROLL ASSY together with the EXIT 1 GEAR and EXIT-1 BEARING.
9. Remove the EXIT-1 BEARING and the EXIT 1 GEAR from the EXIT-1 ROLL ASSY.



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Figure 3-94. EXIT-1 ROLL ASSY Removal

3.2.12.18 FUSER IN SENSOR (PL9.4.4) Removal

1. Remove the FUSER ASSY. (See Section 3.2.12.1.)
2. Remove the 2 screws securing the HORIZONTAL CHUTE (gold, tapping, 10mm). Lift and remove the HORIZONTAL CHUTE together with the FUSER PAPER GUIDE.
3. Remove the 2 screws (gold, tapping, 10mm) securing the FUSER BOTTOM COVER. Slide the FUSER BOTTOM COVER to the rear and remove.
4. Unhook the FUSER IN HOLDER from the FUSER TRAY and remove.
5. Disconnect the FUSER IN SENSOR connector (P/J117).
6. Unhook the FUSER IN SENSOR from the FUSER TRAY and remove.

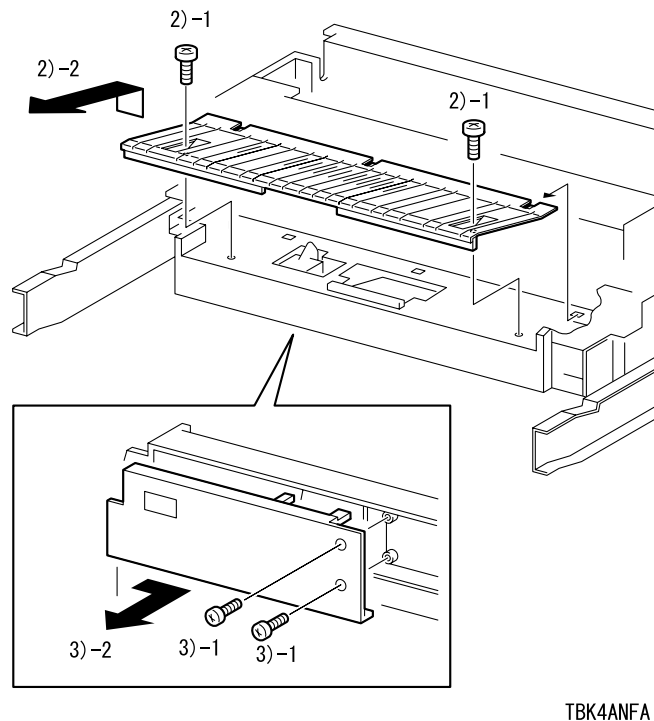


Figure 3-95. FUSER IN SENSOR Removal - 1

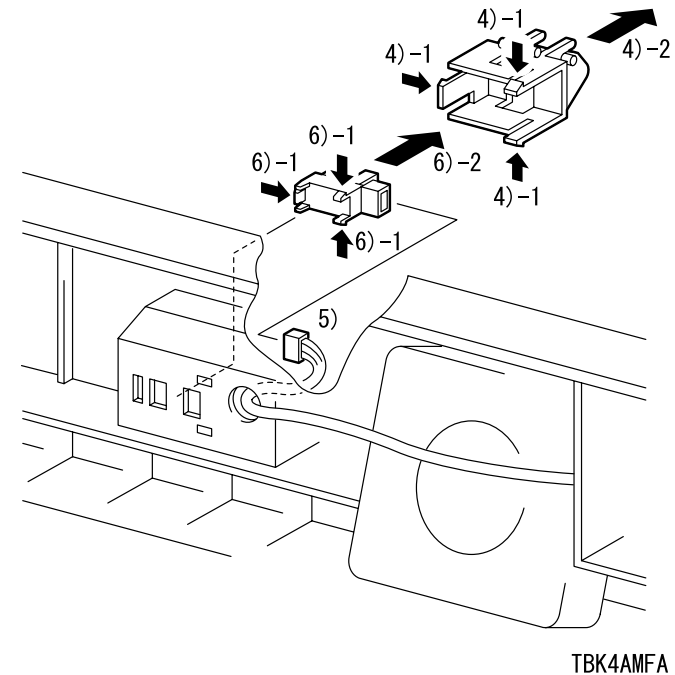
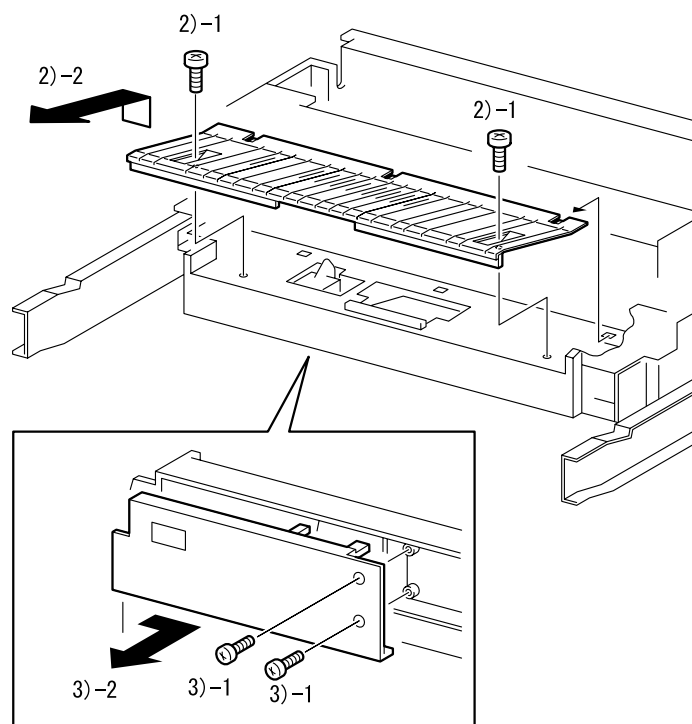


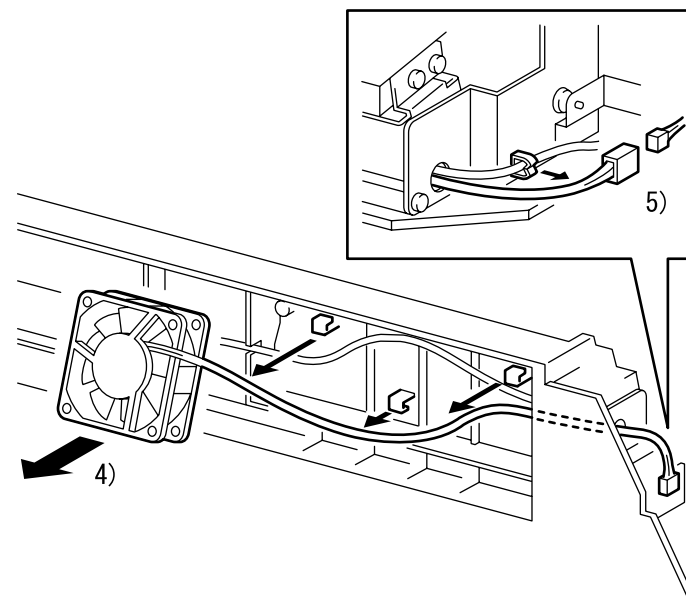
Figure 3-96. FUSER IN SENSOR Removal - 2

3.2.12.19 FUSER CHUTE FAN (PL9.4.10) Removal

1. Remove the FUSER ASSY. (See Section 3.2.12.1.)
2. Remove the 2 screws securing the HORIZONTAL CHUTE (gold, tapping, 10mm). Lift and remove the HORIZONTAL CHUTE together with the FUSER PAPER ASSY
3. Remove the 2 screws (gold, tapping, 10mm) securing the FUSER BOTTOM COVER. Slide the FUSER BOTTOM COVER to the rear and remove.
4. Remove the FUSER CHUTE FAN from the FUSER TRAY.
5. Disconnect the FUSER CHUTE FAN connector (P/J80).



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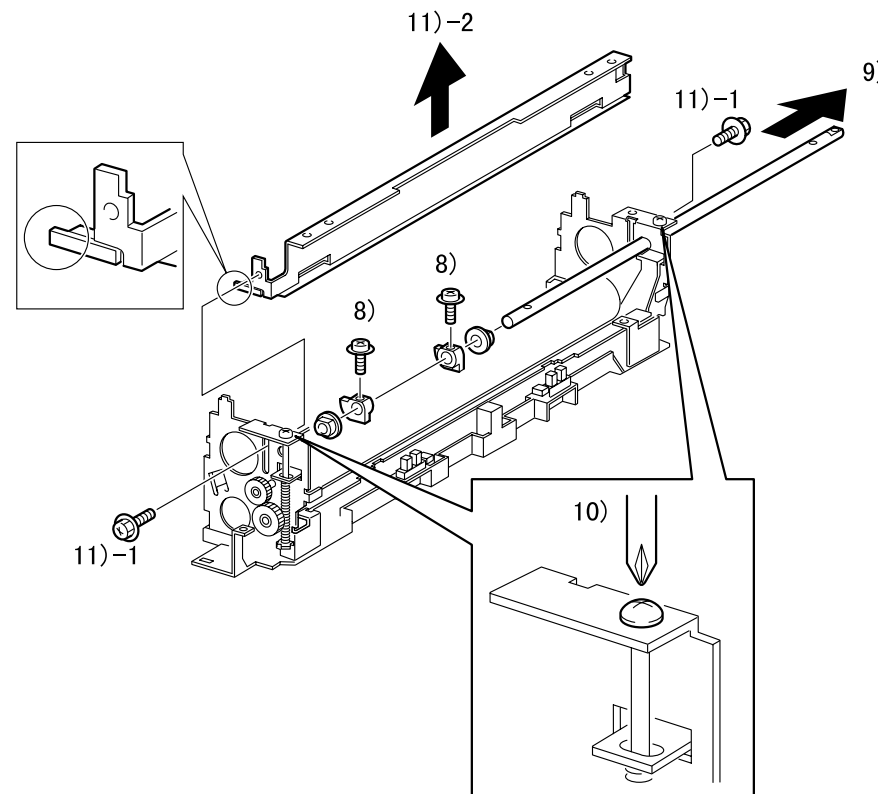


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Figure 3-97. FUSER CHUTE FAN Removal

3.2.12.20 FUSER BAFFLE ASSY (PL9.2.41) Removal

1. Remove the EXIT TRAY ASSY. (See Section 3.2.13.1.)
2. Pull out the FUSER ASSY. (See Section 3.2.12.1.)
3. Remove the MAIN FUSER ASSY. (See Section 3.2.12.2.)
4. Remove the UPPER GUIDE ASSY. (See Section 3.2.12.3.)
5. Remove the FUSER UPPER ASSY. (See Section 3.2.12.4.)
6. Remove the H/R HEATER. (See Section 3.2.12.5.)
7. Remove the HEAT ROLL. (See Section 3.2.12.10.)
8. Remove the 2 screws (black, w/collar, 8mm) securing the NIP FRONT CAM and NIP REAR CAM to FUSER NIP SHAFT.
9. Pull out the FUSER NIP SHAFT to the front, remove the NIP REAR CAM, NIP FRONT CAM and the front/rear FUSER NIP BEARING, and remove the FUSER NIP SHAFT.
10. Let loose fully the NIP adjustment screw.
11. Remove the 2 screws (silver, w/collar, 6mm) securing the FUSER BAFFLE ASSY, and remove the FUSER BAFFLE ASSY to the up.



Be careful to mount the FUSER BAFFLE ASSY.



After mounting, make the adjustment as described in Section 3.3.1 "NIP Pressure of the MAIN FUSER ASSY".

IMPORTANT

Put the both side frames to the H/ROLL BEARING while mounting the FUSER BAFFLE ASSY.

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Figure 3-98. FUSER BAFFLE ASSY Removal

3.2.13 Paper Exit

3.2.13.1 EXIT TRAY ASSY (PL10.1.10) Removal

1. Bend the rear hinge of the EXIT TRAY ASSY inward, remove the boss from the FUSER TRAY, remove the front hinge, and remove the EXIT TRAY ASSY.



Mount the EXIT TRAY ASSY so that the spring of the front hinge touches the outside of the FUSER TRAY ASSY.

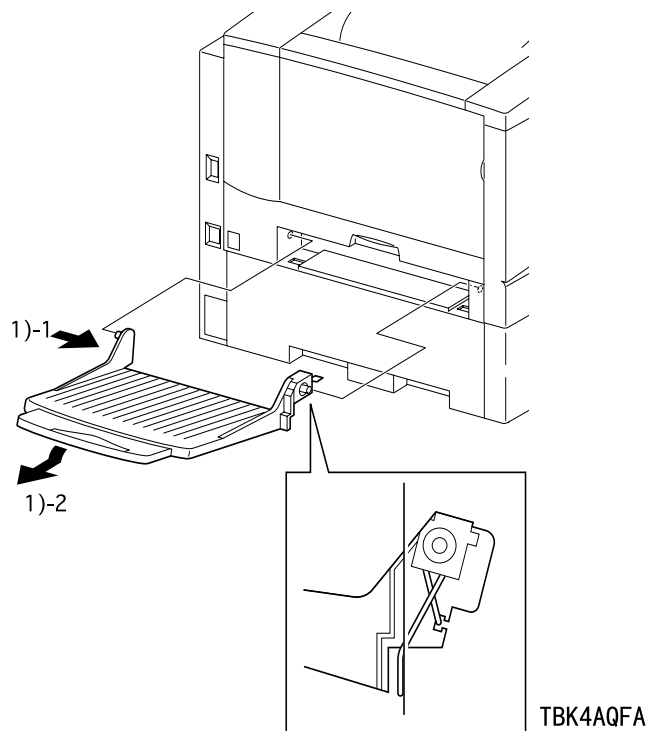


Figure 3-99. EXIT TRAY ASSY Removal

3.2.13.2 EXIT UPPER ASSY (PL10.1.2) Removal

1. Open the EXIT UPPER ASSY.

NOTE: Be careful not to damage the hinges of the EXIT UPPER ASSY when performing the following.

2. Bend the front hinges of the EXIT UPPER ASSY inward, remove the boss from the front of the EXIT LOWER ASSY, and remove the hinge of the EXIT UPPER ASSY. Then remove the rear hinge and remove the EXIT UPPER ASSY.

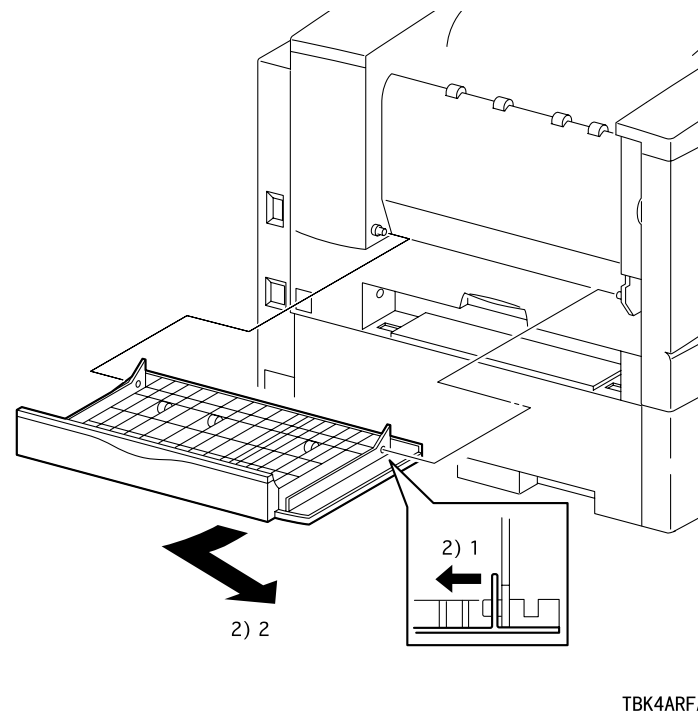


Figure 3-100. EXIT UPPER ASSY Removal

3.2.13.3 EXIT LOWER ASSY (PL10.1.1) Removal

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
3. Remove the EXIT UPPER ASSY. (See Section 3.2.13.2.)

NOTE: Connector (P/J163B) is not used in the following procedure for printers without the full stack detection specification.

4. Remove clamp.
5. Remove the 2 connectors (P/J111B, P/J161B) of the EXIT LOWER ASSY.
6. Remove the 5 screws (black, w/collar, 8mm) securing the EXIT LOWER ASSY. Lift and remove the EXIT LOWER ASSY.

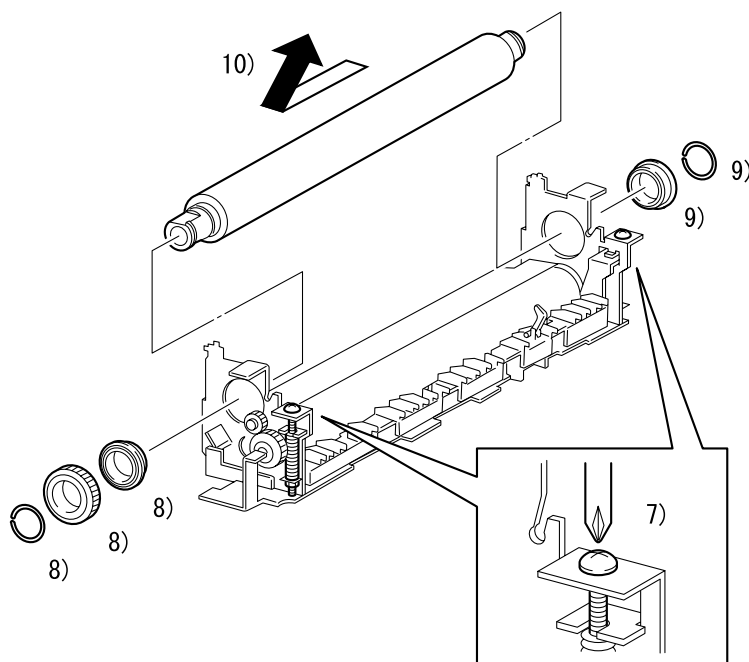
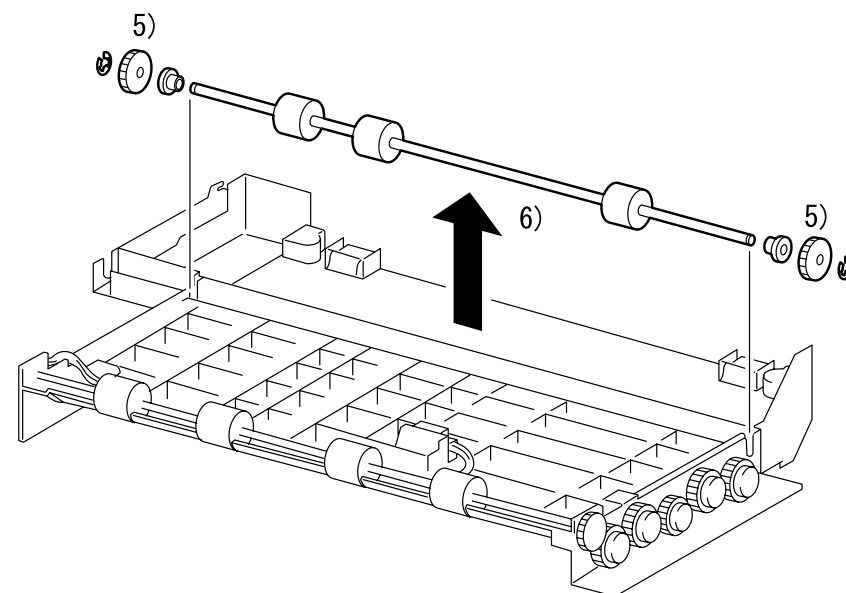


Figure 3-101. EXIT LOWER ASSY Removal

3.2.13.4 EXIT-2 ROLL ASSY (PL10.2.5) Removal

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
3. Remove the EXIT UPPER ASSY. (See Section 3.2.13.2.)
4. Remove the EXIT LOWER ASSY. (See Section 3.2.13.3.)
5. Remove the 2 front/rear E-rings securing the EXIT-2 ROLL ASSY. Remove the 2 SPUR GEARS, the EXIT FRONT BEARING, and EXIT REAR BEARING.
6. Remove the EXIT-2 ROLL ASSY.

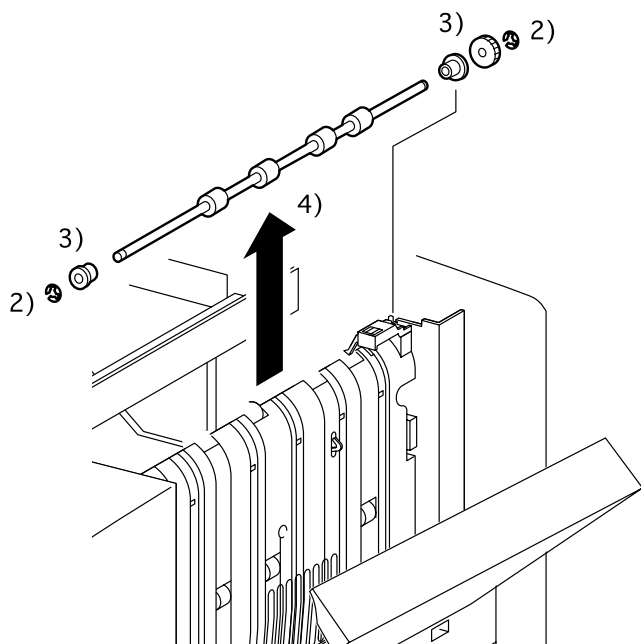


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Figure 3-102. EXIT-2 ROLL ASSY Removal

3.2.13.5 EXIT-3 ROLL ASSY (PL10.2.6) Removal

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the 2 front/rear E-rings securing the EXIT-3 ROLL ASSY.
3. Remove the SPUR GEAR, EXIT FRONT BEARING, and EXIT REAR BEARING.
4. Remove the EXIT-3 ROLL ASSY.



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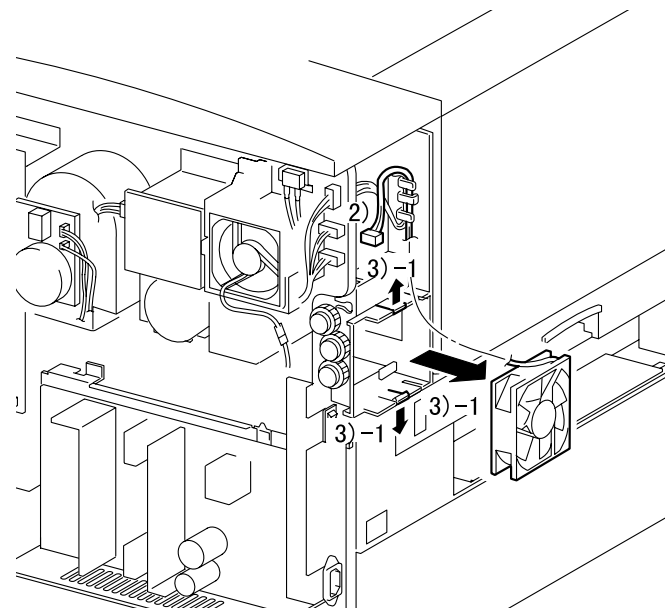
Figure 3-103. EXIT-3 ROLL ASSY Removal

3.2.13.6 FUSER FAN-1 (PL10.2.15) Removal

1. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
2. Remove FRAME CLAMP-PS.
3. Disconnect the FUSER FAN-1 connector (P/J111B), and free the harness by removing it from the clamp.
4. Spread the hook on the frame that secures FUSER FAN-1, and remove FUSER FAN-1.



Mount so that the manufacturer's label on the surface of the FUSER FAN faces outside.



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Figure 3-104. FUSER FAN-1 Removal

3.2.13.7 TOP EXIT SENSOR (PL10.2.12) Removal

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
3. Remove the EXIT UPPER ASSY. (See Section 3.2.13.2.)
4. Remove the EXIT LOWER ASSY. (See Section 3.2.13.3.)
5. Disconnect the TOP EXIT SENSOR connector (P/J165).
6. Unhook the TOP EXIT SENSOR and remove.

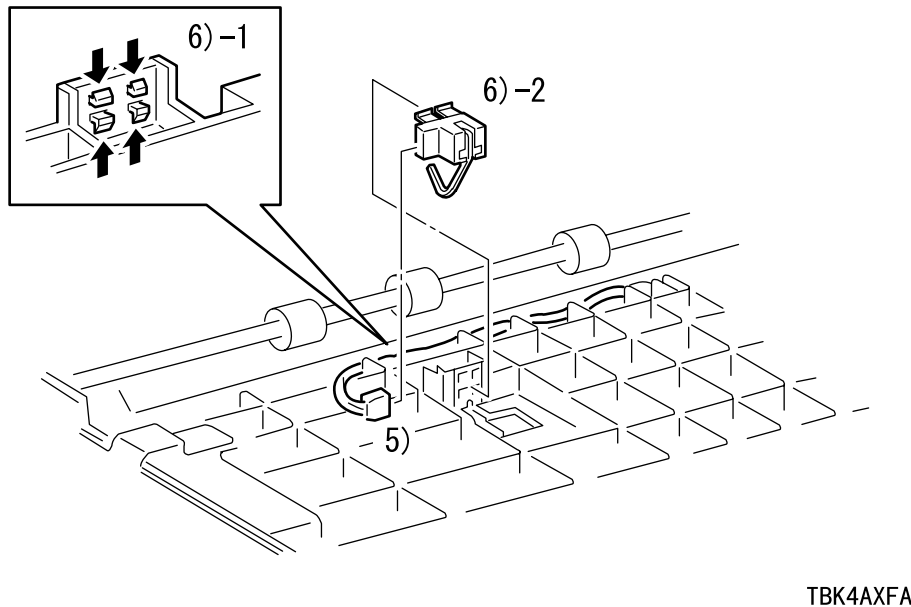


Figure 3-105. TOP EXIT SENSOR Removal

3.2.13.8 EXIT CHUTE SWITCH (PL10.2.13) Removal

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
3. Remove the EXIT UPPER ASSY. (See Section 3.2.13.2.)
4. Remove the EXIT LOWER ASSY. (See Section 3.2.13.3.)
5. Disconnect the EXIT CHUTE SWITCH connector (P/J166).
6. Unhook the EXIT CHUTE SWITCH and remove.

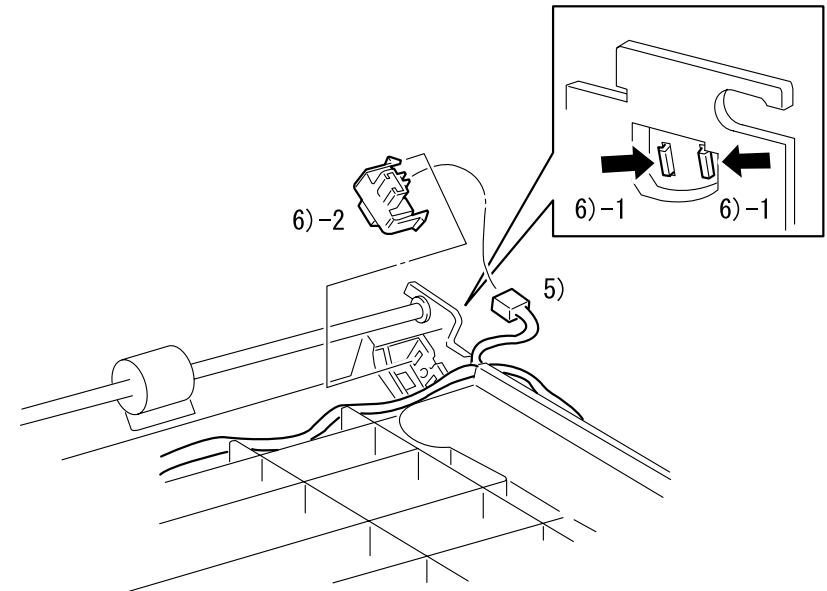
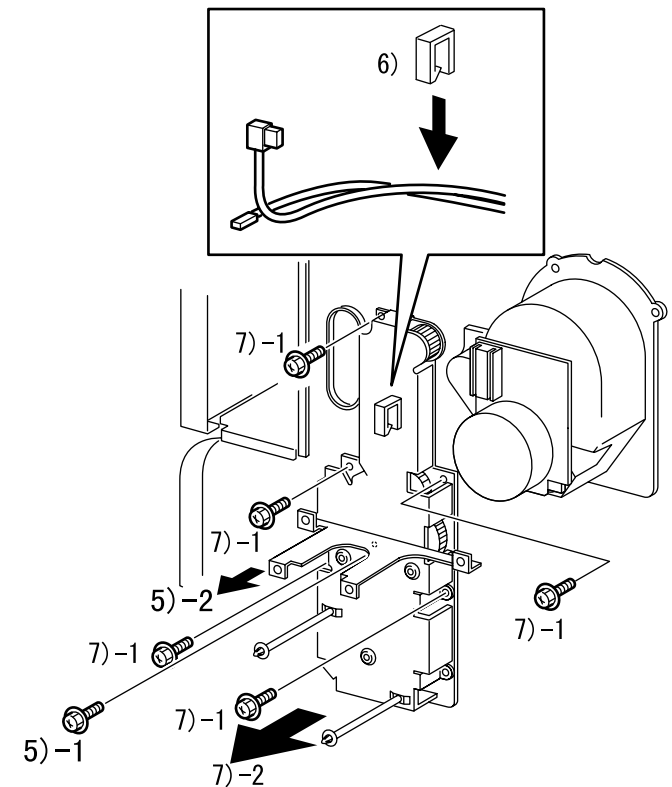


Figure 3-106. EXIT CHUTE SWITCH Removal

3.2.14 Drive

3.2.14.1 P/H DRIVE ASSY (PL11.1.1) Removal

1. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
2. Remove the HVPS. (See Section 3.2.16.2.)
3. Remove the DRIVE MOTOR PWB. (See Section 3.2.14.5.)
4. Remove the P/H MOTOR ASSY. (See Section 3.2.14.4.)
5. Remove the screw (silver, w/collar, 6mm) securing the MOTOR PWB BRACKET to the P/H DRIVE ASSY, and remove the MOTOR PWB BRACKET.
6. Free the 2 wires by removing from the clamp of the P/H DRIVE ASSY.
7. Remove the 5 screws (black, w/collar, 10mm) securing the P/H DRIVE ASSY, and remove the P/H DRIVE ASSY together with the 2 MOTOR PWB SUPPORTS.
8. Remove the 2 MOTOR PWB SUPPORTS from the P/H DRIVE ASSY.



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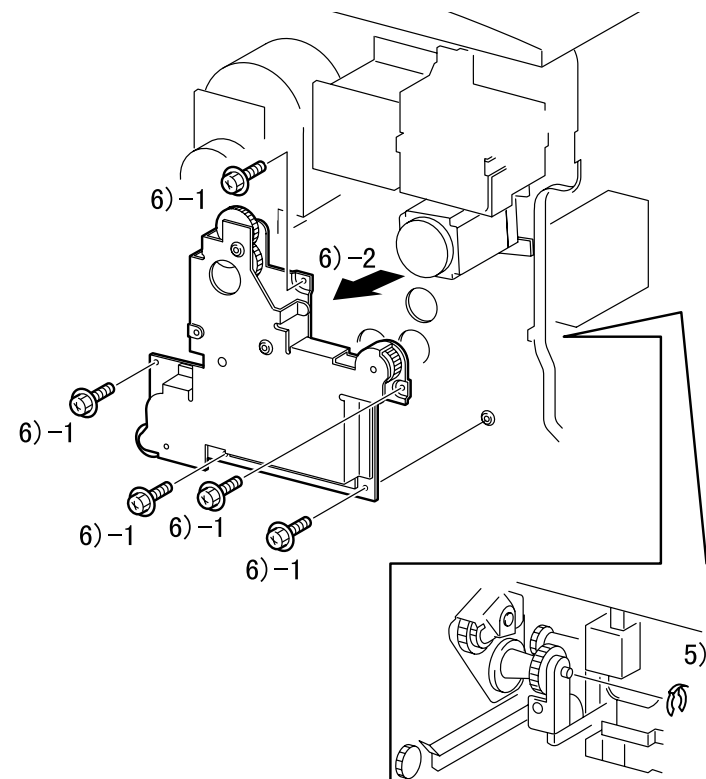
Figure 3-107. P/H DRIVE ASSY Removal

3.2.14.2 FUSER DRIVE ASSY (PL11.1.2) Removal

1. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
2. Remove the FUSER ASSY. (See Section 3.2.12.1.)
3. Remove the FUSER MOTOR ASSY. (See Section 3.2.14.3.)
4. Remove the LVPS. (See Section 3.2.16.1.)
5. Remove the KL clip securing the AUGER HIGH ASSY inside the printer.
6. Remove the 5 screws (silver, w/collar, 6mm) securing the FUSER DRIVE ASSY, and remove the FUSER DRIVE ASSY.



Be careful not to pinch the harness when mounting.

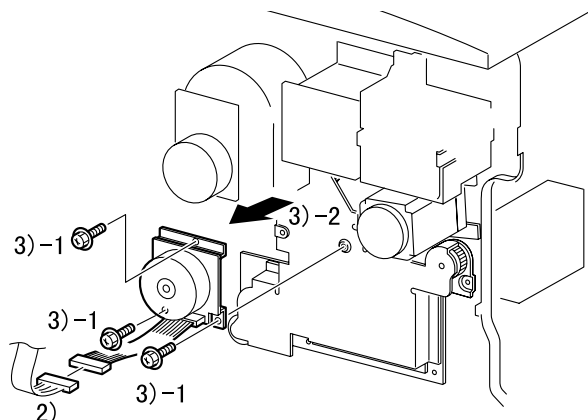


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Figure 3-108. FUSER DRIVE ASSY Removal

3.2.14.3 FUSER MOTOR ASSY (PL11.1.4) Removal

1. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
2. Disconnect the connector (P/J47) from the FUSER MOTOR ASSY.
3. Remove the 3 screws (black, w/collar, 4mm) securing the FUSER MOTOR ASSY, and remove the FUSER MOTOR ASSY.

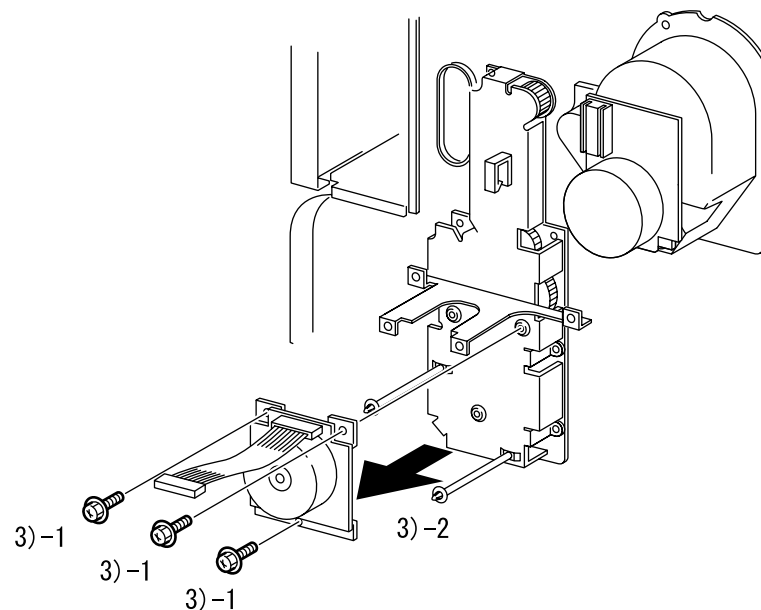


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Figure 3-109. FUSER MOTOR ASSY Removal

3.2.14.4 P/H MOTOR ASSY (PI11.1.5) Removal

1. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
2. Remove the DRIVE MOTOR PWB. (See Section 3.2.14.5.)
3. Remove the 3 screws (black, w/collar, 4mm) securing the P/H MOTOR ASSY, and remove the P/H MOTOR ASSY.

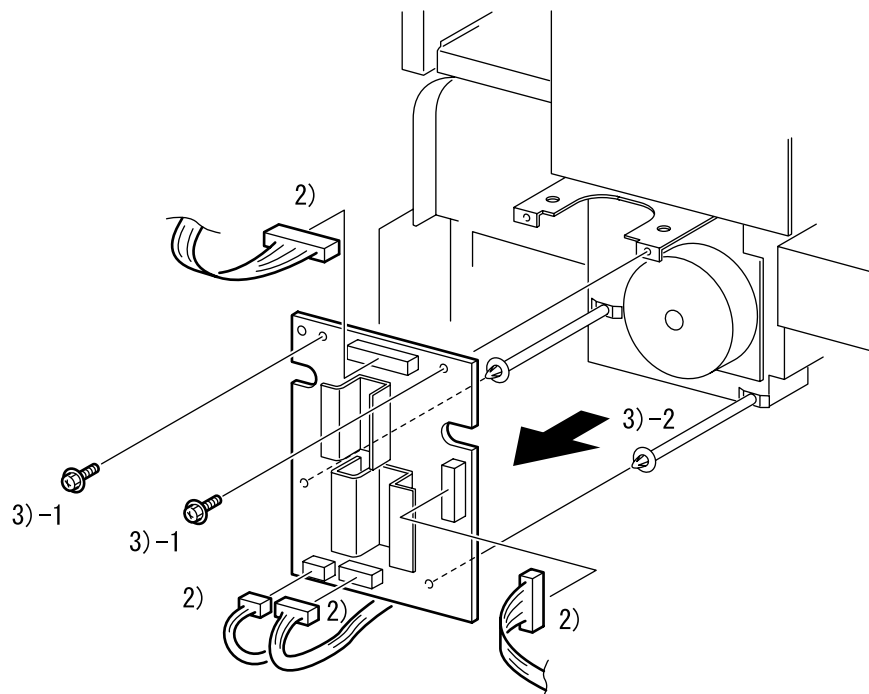


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Figure 3-110. P/H MOTOR ASSY Removal

3.2.14.5 DRIVE MOTOR PWB (PL11.1.6) Removal

1. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
2. Disconnect the 4 connectors (CN1, P/J48, P/J49, P/J50) of the DRIVE MOTOR PWB.
3. Remove the 2 screws (silver, w/collar, 6mm) securing the DRIVE MOTOR PWB, and remove the DRIVE MOTOR PWB from the 2 MOTOR PWB SUPPORTS.



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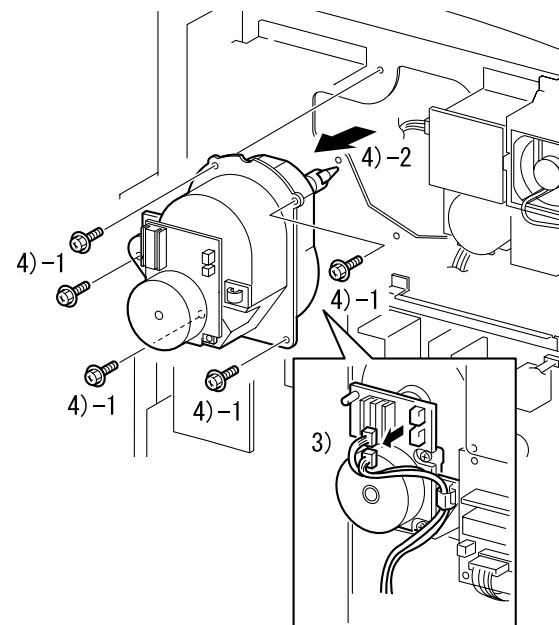
Figure 3-111. DRIVE MOTOR PWB Removal

3.2.14.6 PROCESS DRIVE ASSY (PL11.1.10) Removal

1. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
2. Remove the HVPS. (See Section 3.2.16.2.)
3. Disconnect the 2 connectors (P/J51, P/J52) of the PROCESS MOTOR ASSY, and free the harness by removing from the clamp.
4. Remove the 5 screws (black, w/collar, 8mm) securing the PROCESS DRIVE ASSY, and remove the PROCESS DRIVE ASSY.



Align the positioning boss of the printer frame with the positioning hole of the PROCESS DRIVE ASSY when mounting.



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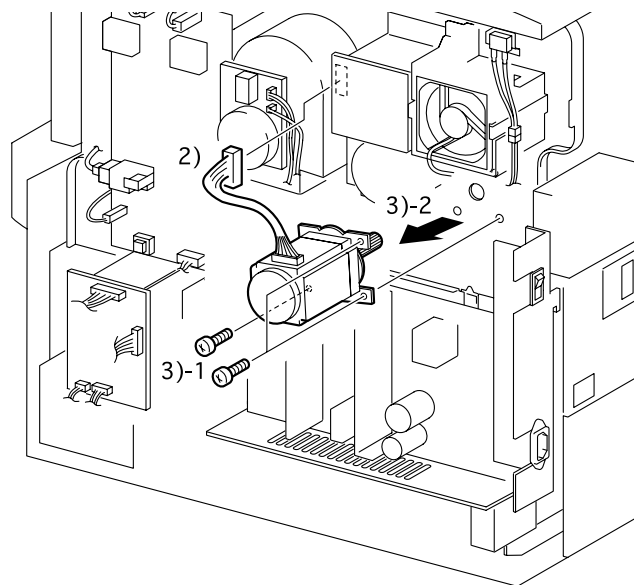
Figure 3-112. PROCESS DRIVE ASSY Removal

3.2.14.7 ROTARY MOTOR ASSY (PL11.1.20) Removal

1. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
2. Disconnect the connector (P/J247) of the ROTARY MOTOR ASSY.
3. Remove the 3 screws (gold, 6mm) securing the ROTARY MOTOR ASSY, and remove the ROTARY MOTOR ASSY.



Be careful not to pinch the harness when mounting.



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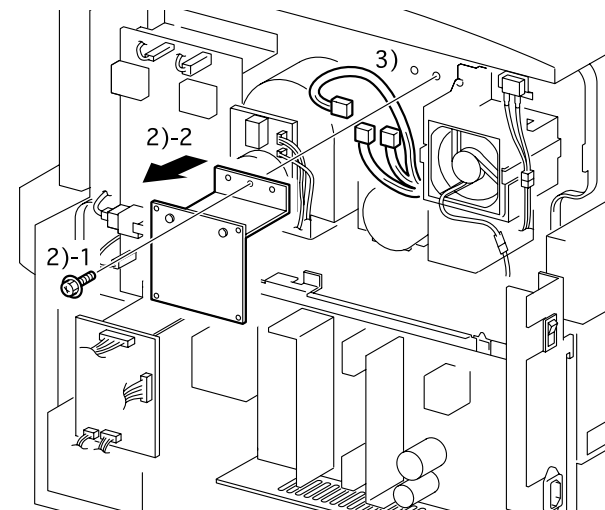
Figure 3-113. ROTARY MOTOR ASSY Removal

3.2.14.8 ROTARY MOTOR DRIVE PWB (PL11.1.21) Removal

1. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)

NOTE: The ROTARY MOTOR PWB and printer remain connected by a harness. Be careful not to pull too far apart while performing the following.

2. Remove the screw (silver, w/collar, 8mm) securing the ROTARY MOTOR DRIVE PWB, and separate the ROTARY MOTOR DRIVE PWB from the printer.
3. Disconnect the 3 connectors (P/J245, P/J246, P/J247) of the ROTARY MOTOR DRIVE PWB, and remove the ROTARY MOTOR DRIVE PWB.

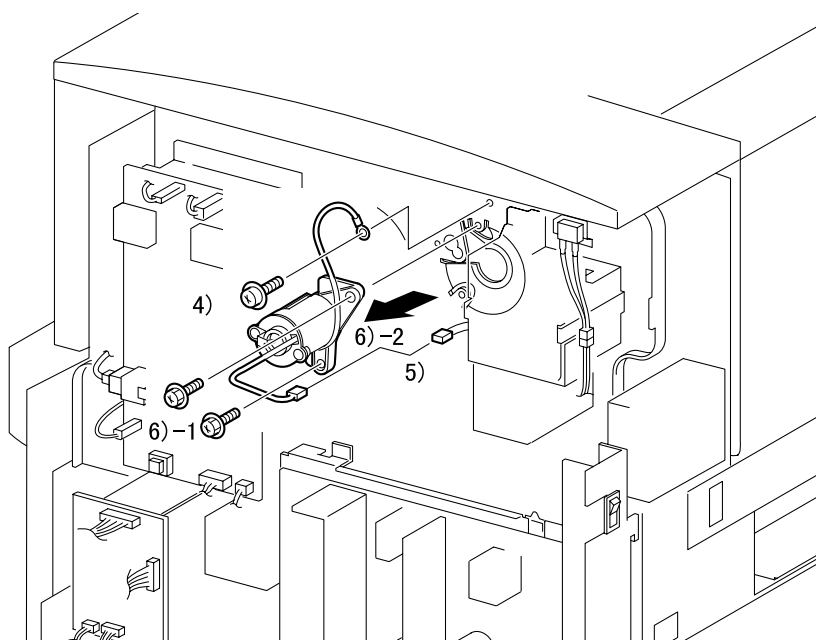


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Figure 3-114. ROTARY MOTOR DRIVE PWB Removal

3.2.14.9 DISPENSE CLUTCH ASSY (PL11.1.22) Removal

1. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
2. Remove the FUSER MOTOR ASSY. (See Section 3.2.14.3.)
3. Remove the ROTARY MOTOR DRIVE PWB. (See Section 3.2.14.8.)
4. Remove the screw (silver, w/washer, 6mm) securing the earth terminal.
5. Disconnect the connector (P/J55) of the DISPENSE CLUTCH ASSY.
6. Remove the 2 screws (silver, w/collar, 10mm) securing the DISPENSE CLUTCH ASSY, slide the gear of the DISPENSE CLUTCH ASSY to the notch in the printer frame hole, and remove the DISPENSE CLUTCH ASSY.

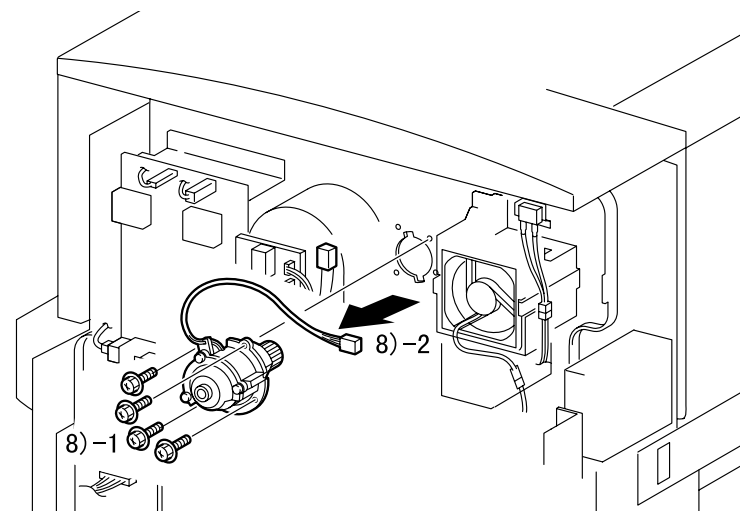


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Figure 3-115. DISPENSE CLUTCH ASSY Removal

3.2.14.10 DEVE. CLUTCH ASSY (PL11.1.23) Removal

1. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
2. Remove the FUSER ASSY. (See Section 3.2.12.1.)
3. Remove the FUSER MOTOR ASSY. (See Section 3.2.14.3.)
4. Remove the ROTARY MOTOR DRIVE PWB. (See Section 3.2.14.8.)
5. Remove the LVPS. (See Section 3.2.16.1.)
6. Remove the FUSER DRIVE ASSY. (See Section 3.2.14.2.)
7. Disconnect the connector (P/J56) of the DEVE. CLUTCH ASSY, and free the harness by removing from the clamp.
8. Remove the 4 screws (silver, w/collar, 10mm) securing the DEVE. CLUTCH ASSY, and remove the DEVE. CLUTCH ASSY.



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Figure 3-116. DEVE. CLUTCH ASSY Removal

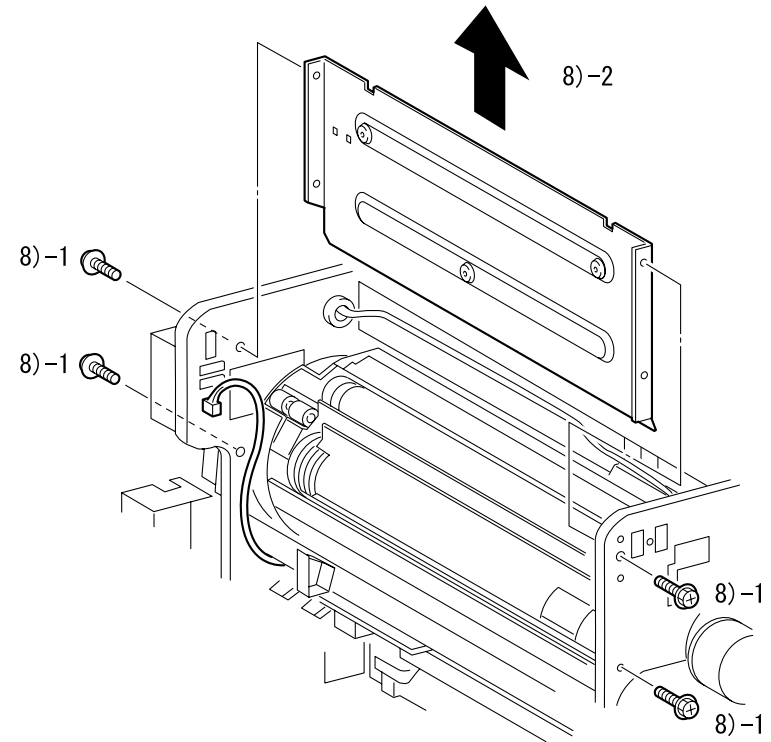
3.2.15 Frame

3.2.15.1 DEVE. TIE PLATE (PL12.1.3) Removal

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
3. Remove the DRUM CARTRIDGE. (See Section 3.2.9.1.)
4. Remove the TENSION LEVER. (See Section 3.2.11.1.)
5. Remove the INNER COVER ASSY. (See Section 3.2.5.5/Section 3.2.5.6/Section 3.2.5.7.)
6. Remove the EXIT UPPER ASSY. (See Section 3.2.13.2.)
7. Remove the EXIT LOWER ASSY. (See Section 3.2.13.3.)

NOTE: Be careful not to damage the DEVE. TIE PLATE by getting it caught on the connector attached to the rear frame of the printer while performing the following.

8. Remove the 4 screws (black, w/collar, 8mm) securing the DEVE. TIE PLATE, lift the DEVE. TIE PLATE, and remove.



TBK4BWFA

Figure 3-117. DEVE. TIE PLATE Removal

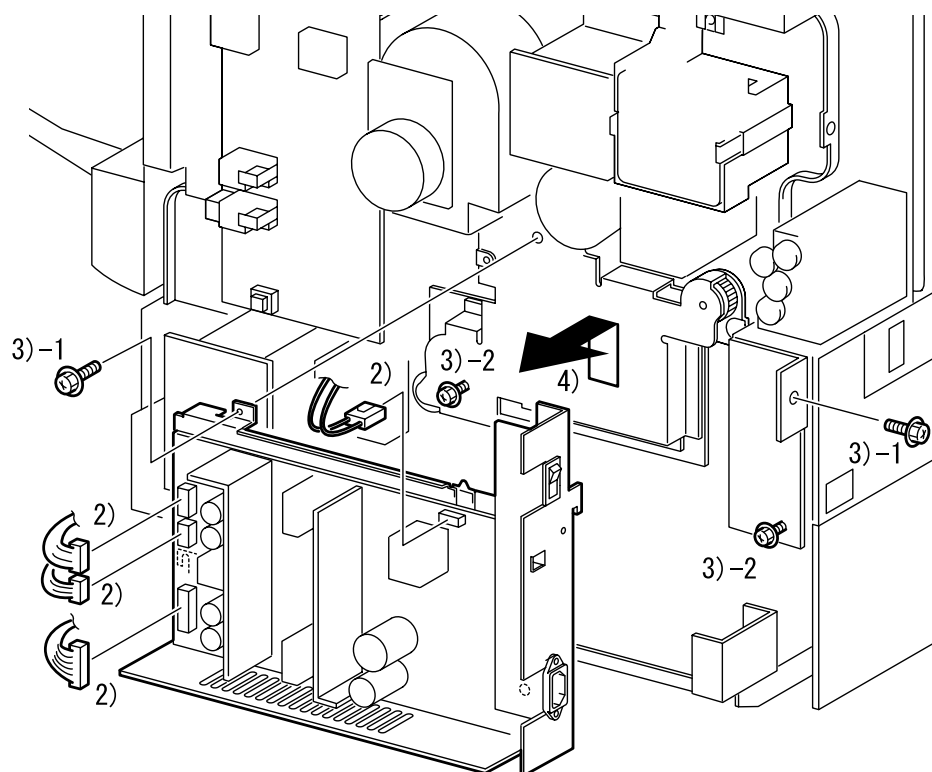
3.2.16 Electrical

3.2.16.1 LVPS (PL13.1.1) Removal

1. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
2. Remove the 4 connectors (P/J32, P/J33, P/J34, P/J35) of the LVPS.
3. Remove 2 of the 4 screws (silver, w/collar, 6 mm) securing the LVPS, and loosen the remaining 2 screws (silver, w/collar, 8mm).
4. Lift the LVPS, unhook the left hook, and remove the LVPS.



- Be careful not to get the harness caught in the gears or on sheet metal when mounting.
- Be sure to hook the left hook securely on the frame when mounting.



TBK4BLFA

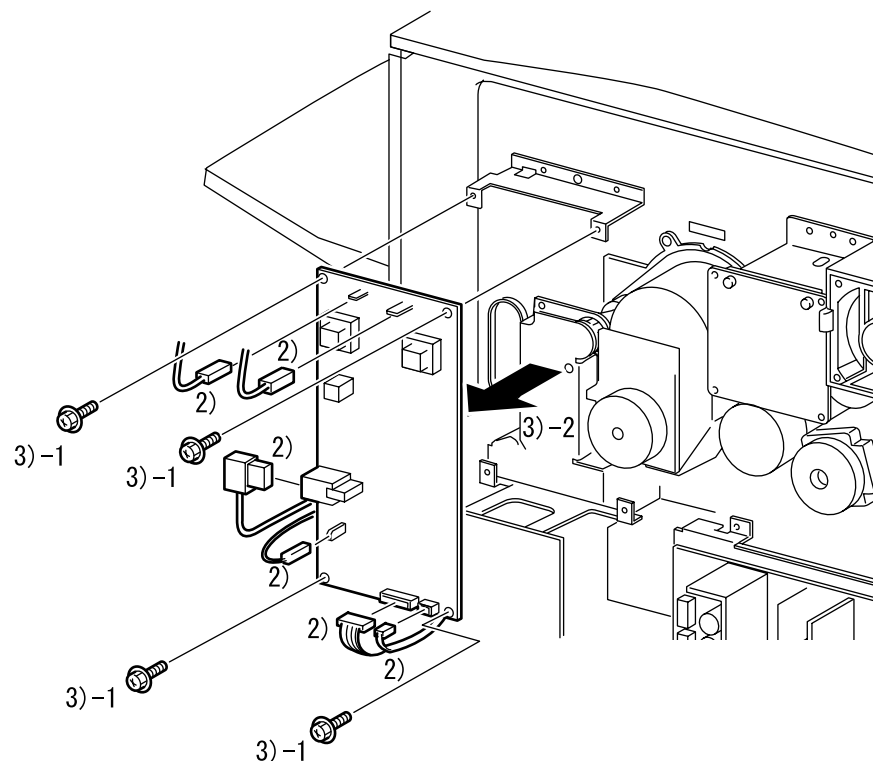
Figure 3-118. LVPS Removal

3.2.16.2 HVPS (PL13.1.2) Removal

1. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
2. Remove the 6 connectors (P/J41, P/J42, P/JA, P/JC, P/JD, P/JF) of the HVPS.
3. Remove the 4 screws (silver, w/collar, 6mm) securing the HVPS, and remove the HVPS.



Be careful not to get the harness caught in the gears or on sheet metal when mounting.

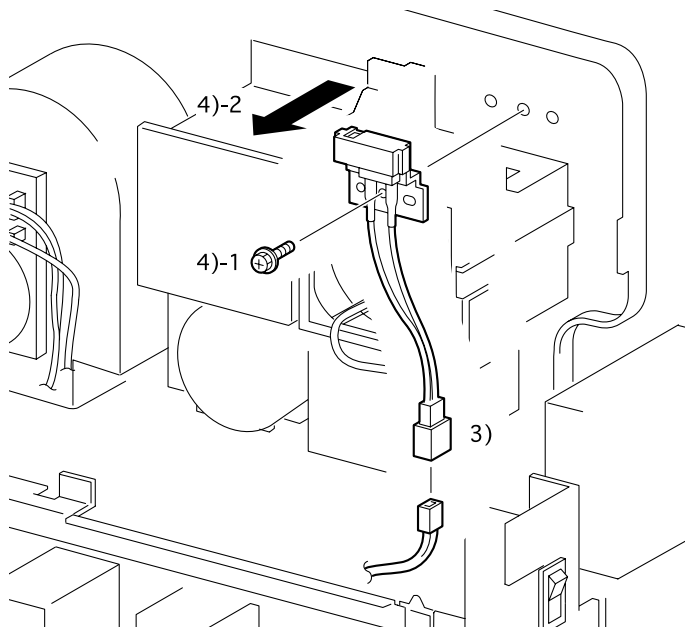


TBK4BMFA

Figure 3-119. HVPS Removal

3.2.16.3 TOP COVER SWITCH (PL13.1.3) Removal

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
3. Disconnect the connector (P/J195) of the TOP COVER SWITCH.
4. Remove the screw (black, w/collar, 6mm) securing the TOP COVER SWITCH, and remove the TOP COVER SWITCH.

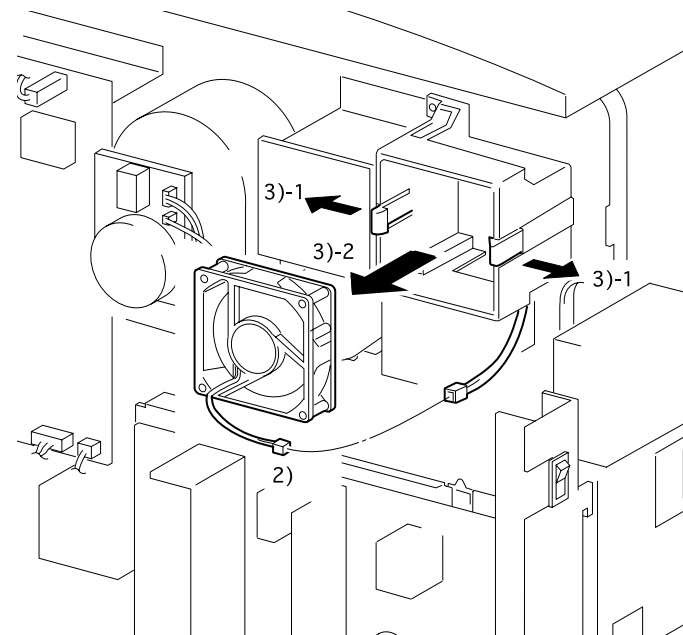


TBK4BZFA

Figure 3-120. TOP COVER SWITCH

3.2.16.4 DEVE. FAN (PL13.1.5) Removal

1. Remove the REAR COVER ASSY. (See Section 3.2.5.8.)
2. Remove the DEVE. FAN connector (P/J82), and free the harness by removing from the FAN DUCT.
3. Spread the FAN DUCT hook securing the DEVE. FAN, and remove the DEVE. FAN.



TBK4CAFA

Figure 3-121. DEVE. FAN Removal



- Mount so that the manufacturer's label on the surface of the DEVE. FAN faces outside.
- Attach the harness securely when mounting.

3.2.16.5 MCU PWB (PL13.2.1) Removal

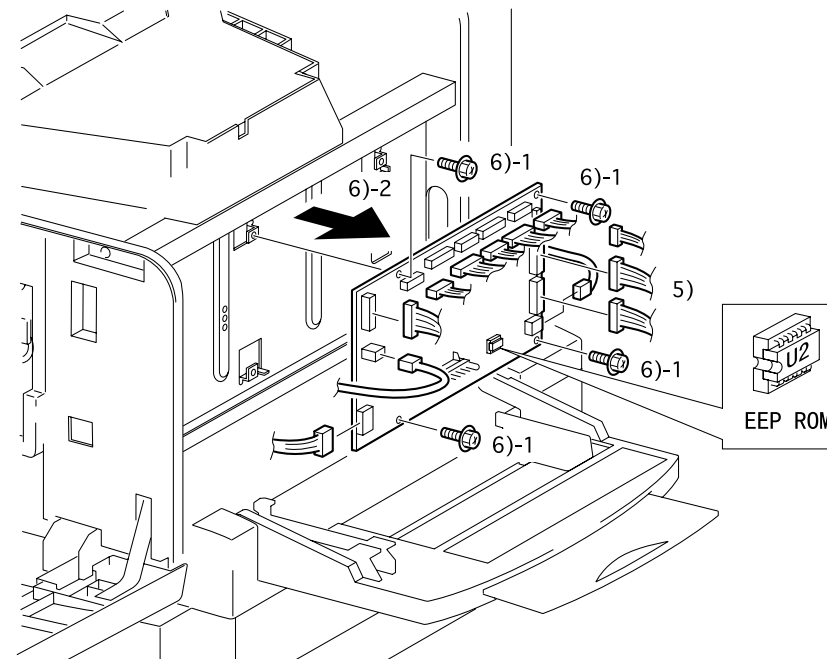
CAUTION


When replacing the MCU PWB, mount the new MCU PWB after removing the EEPROM(U2) housing the NVM DATA from the MCU PWB that is not replaced.

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the RIGHT COVER ASSY. (See Section 3.2.5.11.)
3. Remove the CONTROLLER PWB. (See Section 3.2.17.1.)
4. Remove the CONT. CHASSIS ASSY. (See Section 3.2.17.3.)
5. Remove the 12 connectors (P/J10, P/J12, P/J14, P/J15, P/J16, P/J17, P/J18, P/J19, P/J20, P/J21, P/J22, P/J23) of the MCU PWB.
6. Remove the 4 screws (silver, w/collar, 6 mm) securing the MCU PWB, and remove the MCU PWB.

**CHECK
POINT**


Connect the earth wire to the bottom screw of the screws securing the MCU PWB.



TBK4CBFA

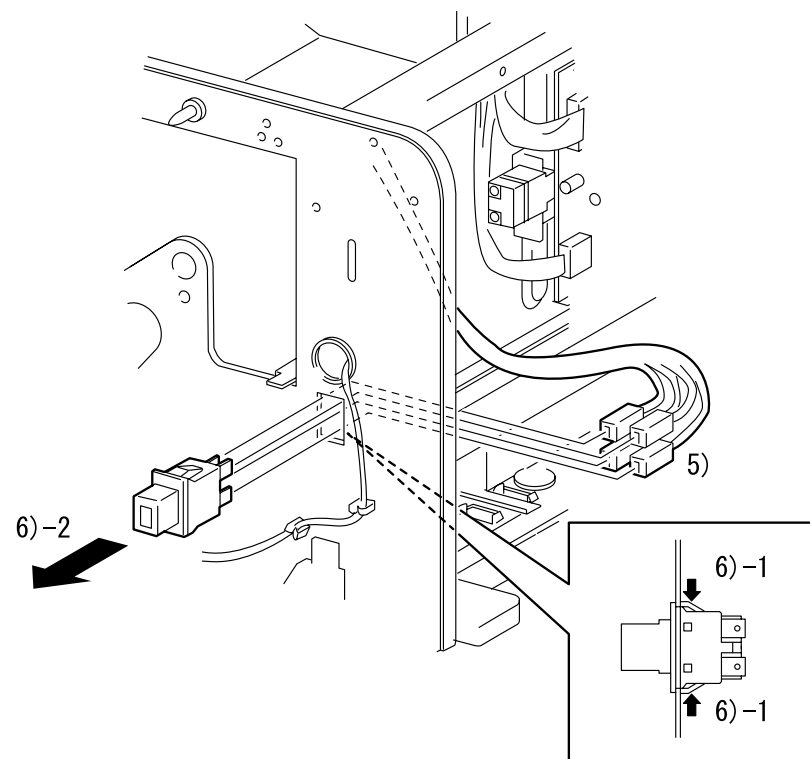
Figure 3-122. MCU PWB Removal

3.2.16.6 FRONT COVER SWITCH R (PL13.2.3) Removal

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the RIGHT COVER ASSY. (See Section 3.2.5.11.)
3. Remove the CONTROLLER PWB. (See Section 3.2.17.1.)
4. Remove the CONT. CHASSIS ASSY. (See Section 3.2.17.3.)
5. Disconnect the 4 connectors (P/J191, P/J192, P/J193, P/J194) of FRONT COVER SWITCH R. Unhook FRONT COVER SWITCH R from the frame, push forward, and remove.



Mount the FRONT COVER SWITCH R securely.



TBK40CFA

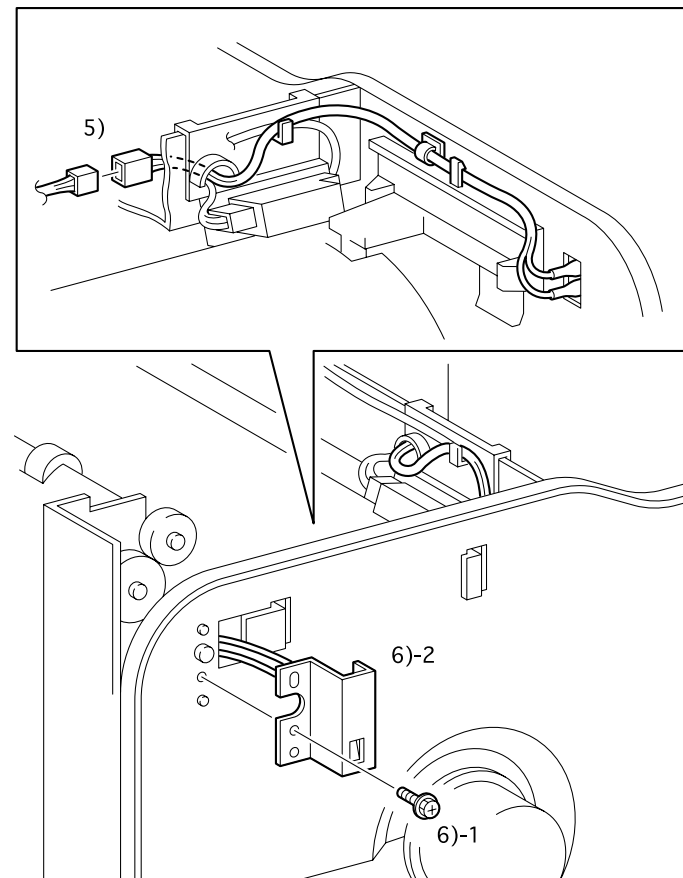
Figure 3-123. FRONT COVER SWITCH R Removal

3.2.16.7 FRONT COVER SWITCH L (PL13.2.4) Removal

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the DRUM CARTRIDGE. (See Section 3.2.9.1.)
3. Remove the TENSION LEVER. (See Section 3.2.11.1.)
4. Remove the INNER COVER ASSY. (See Section 3.2.5.5/Section 3.2.5.6/Section 3.2.5.7.)
5. Disconnect the connector (P/J197) of FRONT COVER SWITCH L, and free the harness by unhooking it.
6. Remove the screw (silver, w/collar, 6mm) securing FRONT COVER SWITCH L, remove the harness from the hole in the frame, and remove FRONT COVER SWITCH L.



Run the harness correctly when mounting FRONT COVER SWITCH L.



TBK4CDFA

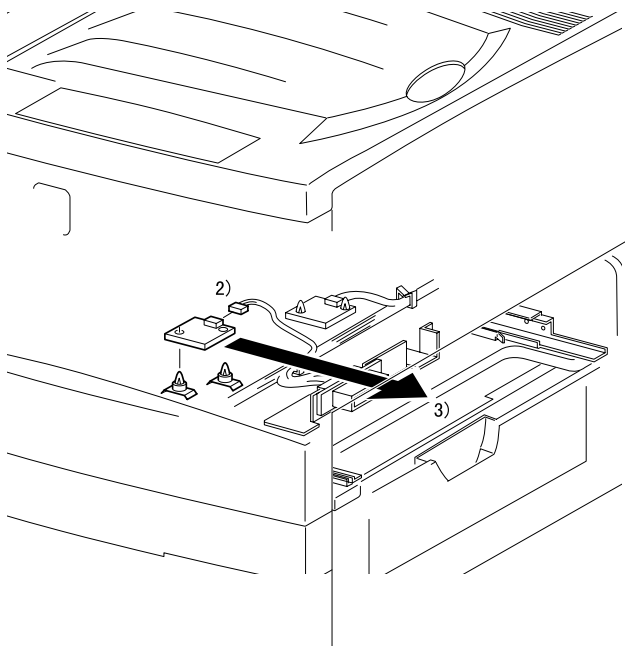
Figure 3-124. FRONT COVER SWITCH L Removal

3.2.16.8 ENVIRONMENT SENSOR (PL13.2.5) Removal

1. Remove the MSI/REGI HIGH ASSY. (See Section 3.2.8.1.)
2. Disconnect the ENVIRONMENT SENSOR connector (P/J105), and free the harness by removing it from the clamp.

NOTE: Be careful not to touch the IBT BELT ASSY surface while performing the following.

3. Remove the ENVIRONMENT SENSOR from the 2 PWB SUPPORT securing the ENVIRONMENT SENSOR.



TBK40EFA

Figure 3-125. ENVIRONMENT SENSOR Removal

3.2.17 Controller



Since the lithium battery is installed to the **CONTROLLER PWB** of AcuLaser C8500, be sure to pay attention to the following:

- Do not short-circuit the lithium battery.
- When mounting the lithium battery, be sure to set it in the correct direction paying attention to its polarity.
- Do not warm the battery or throw it in the fire.



Be careful when servicing on the electrical parts of this printer so you do not damage the electrical elements with static electricity.

8. Remove the **CONTROLLER PWB** together with the **CONT. PLATE ASSY**.
9. Remove the 2 screws securing the **CONT. PLATE ASSY** to the parallel interface connector on the **CONTROLLER PWB**, and remove the **CONTROLLER PLATE ASSY**.

3.2.17.1 CONTROLLER PWB (PL14.1.10) Removal

1. Pull out the **MAIN P/H ASSY**.
2. Remove the **RIGHT COVER ASSY**. (See Section 3.2.5.11.)
3. Disconnect the 2 connectors (P/J1, P/J600) of the **CONTROLLER PWB**.
4. Remove the 8 screws (silver, w/collar, 8mm) securing the **CONTROLLER PWB** by the lower area.
5. Remove the 6 screws (silver, w/collar, 8mm) securing the **CONTROLLER PWB** by the upper area.
6. Remove the hexagon screw that is sticking out from the board surface (beside the socket 2).
7. Remove the 4 screws (silver, w/collar, 8mm) securing the **CONT. PLATE ASSY**.

NOTE: When removing the **CONTROLLER PWB** in the next step, be sure to watch out for the connectors and **MCU PWB** located behind the **CONTROLLER PWB** to avoid damaging them.

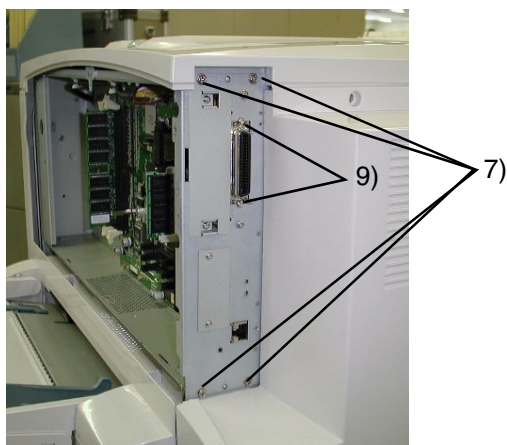
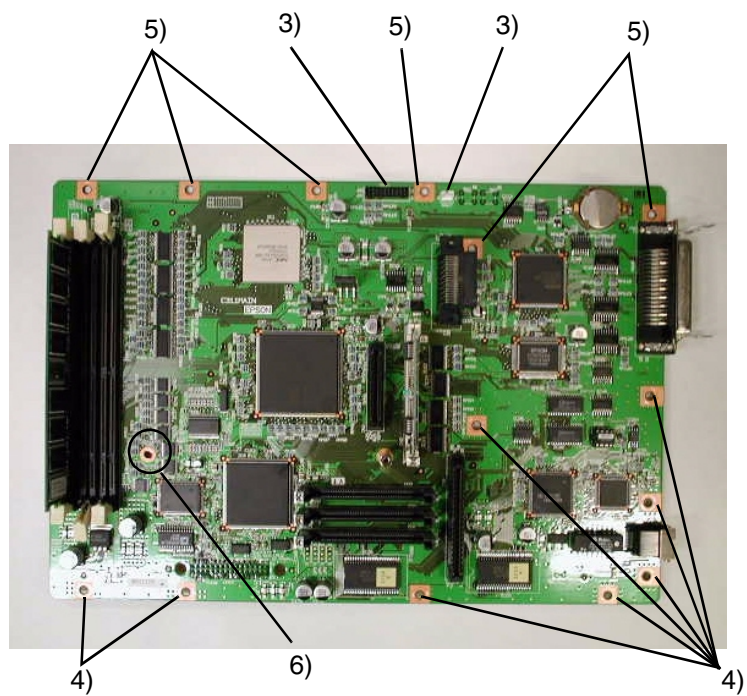


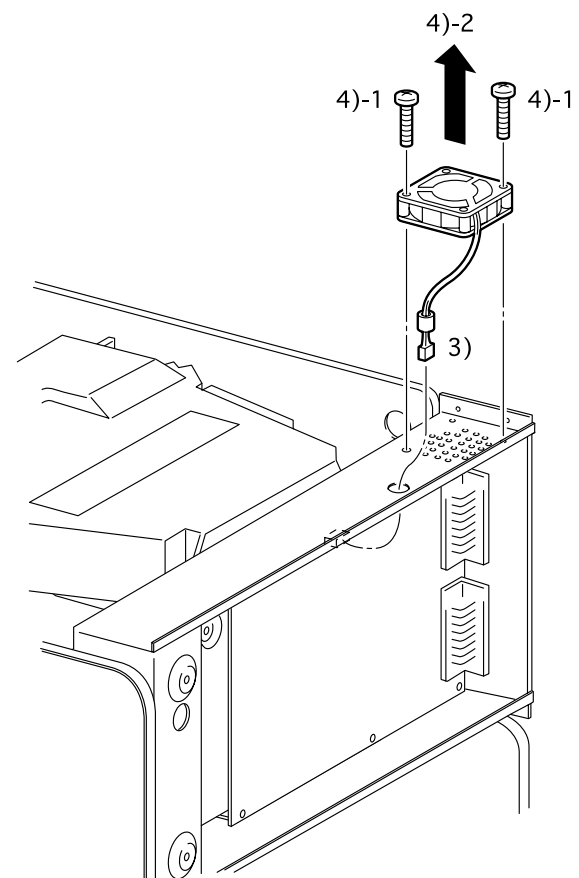
Figure 3-126. CONTROLLER PWB Removal

3.2.17.2 CONTROLLER FAN (PL14.1.2) Removal

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the RIGHT COVER ASSY. (See Section 3.2.5.11.)
3. Disconnect the CONTROLLER FAN connector (P/J1).
4. Remove the 2 screws (gold, 20mm) securing the CONTROLLER FAN, and remove the CONTROLLER FAN.



Be careful not to pinch the harness when mounting.

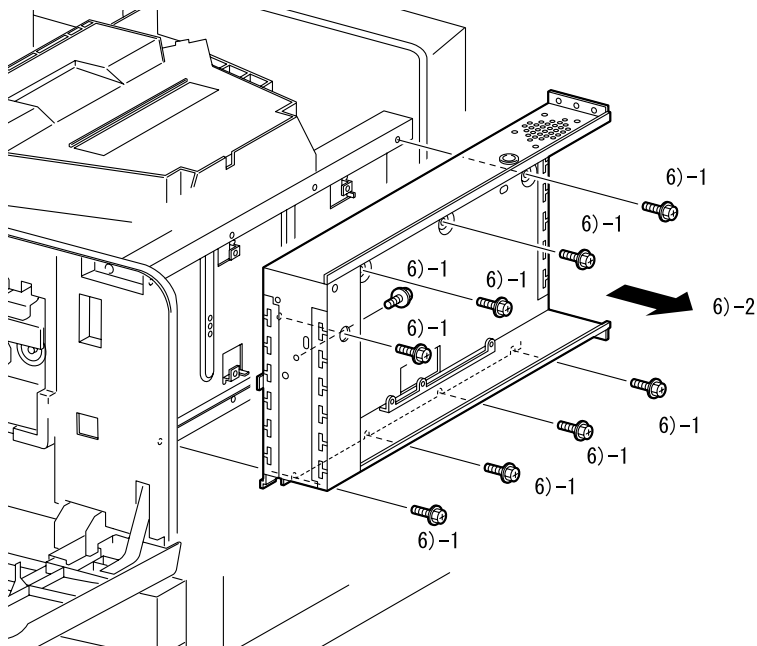


TBK4BTFA

Figure 3-127. CONTROLLER FAN Removal

3.2.17.3 CONT. CHASSIS ASSY (PL14.1.1) Removal

1. Remove the TOP COVER ASSY. (See Section 3.2.5.4.)
2. Remove the RIGHT COVER ASSY. (See Section 3.2.5.11.)
3. Remove the MSI/REGI HIGH ASSY. (See Section 3.2.8.1.)
4. Remove the CONTROLLER PWB. (See Section 3.2.17.1.)
5. Remove the CONTROLLER FAN. (See Section 3.2.17.2.)
6. Remove the 9 screws (silver, w/collar, 6mm) securing the CONT. CHASSIS ASSY, and remove the CONT. CHASSIS ASSY.



TBK4C1FA

Figure 3-128. CONT. CHASSIS ASSY Removal

3.2.17.4 Lithium Battery Removal



- Before starting, be sure to turn the printer off and unplug the power cable from the AC power socket.
- When replacing the lithium battery with a new one, make sure the new one meets the specifications. (#CR2032 3V Lithium Cell Battery)
- Danger of explosion if battery is incorrectly replaced.
- Dispose of used batteries according to government's laws and regulation.
- Do not charge the lithium battery.



- Avant de commencer, assurez vous que l'imprimante soit éteinte et que le cordon d'alimentation soit débranché.
- Lorsque vous changez la pile au lithium, assurez vous que la nouvelle respecte bien les caractéristiques requises. (#CR2032 3V la pile au lithium)
- Lorsque vous installez la pile au lithium, faites attention à l'insérer dans le bon sens en respectant la polarité.
- Veuillez à jeter les piles usagées selon le règlement local.
- Ne rechargez pas les piles au lithium.

1. Remove the RIGHT COVER ASSY. (See Section 3.2.5.11.)
2. Using a standard screwdriver, remove the lithium battery.

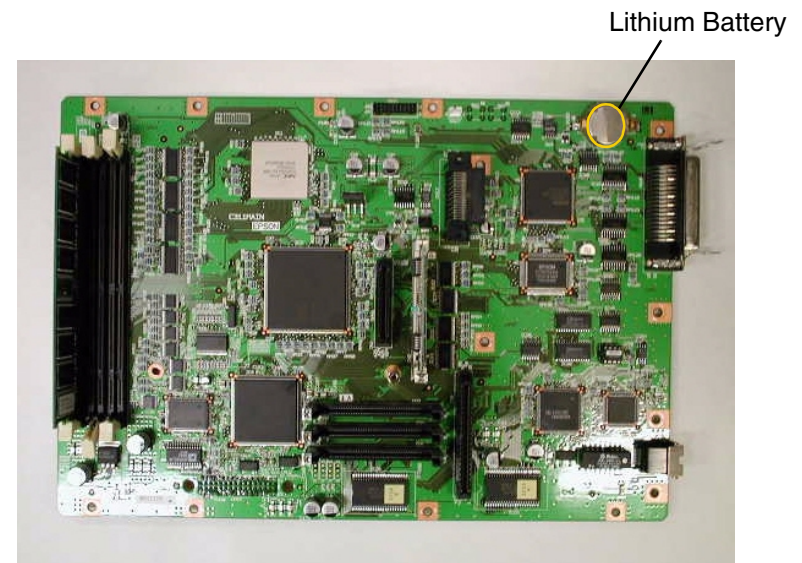


Figure 3-129. Lithium Battery Removal

3.3 Adjustment

This section describes the adjustments necessary for the EPSON AcuLaser C8500.

3.3.1 NIP Pressure of the MAIN FUSER ASSY

Make this adjustment to set fixing level to a proper level.



The FUSE R section becomes extremely hot. Be careful not to burn yourself when making the adjustment.

NOTE: Be sure to begin the adjustment after warming up.

1. Remove the EXIT TRAY ASSY. (See Section 3.2.13.1.)
2. Pull out the FUSER ASSY.
3. Remove the MAIN FUSER ASSY. (See Section 3.2.12.2.)
4. Remove the UPPER GUIDE ASSY. (See Section 3.2.12.3.)
5. Remove the FUSER UPPER ASSY. (See Section 3.2.12.4.)
6. Remove the FUSER FRONT COVER and FUSER REAR COVER. (See Section 3.2.12.5.)
7. Wait 10 seconds and then remove the paper.
8. Measure the width of the discolored portion of the paper. (Measure 15mm from the edge of the paper.)
9. NIP pressure is properly set if the measurement is 4.8 (± 0.2mm, and the difference between the 2 measurements is about 0.2mm.
10. Turn the 2 NIP width adjustment nuts on the front/rear of the MAIN FUSER ASSY, and set the NIP SPRING length at $[43.4 \pm 0.1\text{mm}]$.

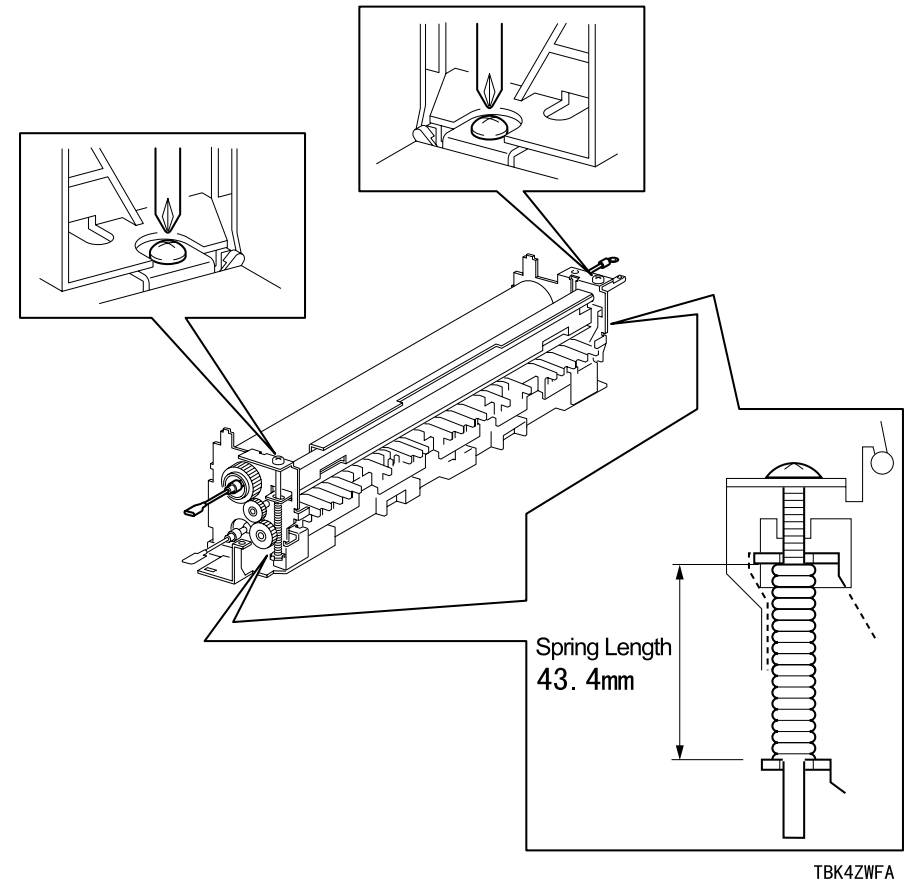


Figure 3-130. NIP Pressure Adjustment

3.3.2 Development

This adjustment must be performed when the DEVELOPER ASSY is replaced or the impulse banding problem occurs.

Table 3-2. Occurrence Point of the Rear Edge Smear

Paper size	Rear edge from the paper (mm)	Reference: EPL-C8000/C8200
A3	27 mm	40 mm
A4 2UP (Second pieces)	50 mm	65 mm

CONFIRMATION PROCEDURE]

1. Remove the TOP COVER. (See Section 3.2.5.4.)
2. Remove the L/H INNER COVER. (See Section 3.2.5.5.)
3. Disconnect the DEVE. CONTACT PLATE ASSY (F187).
4. Remove the screw (silver, w/collar, 6mm) securing the DEVE. CONTACT PLATE ASSY, and remove the DEVE. CONTACT PLATE ASSY.

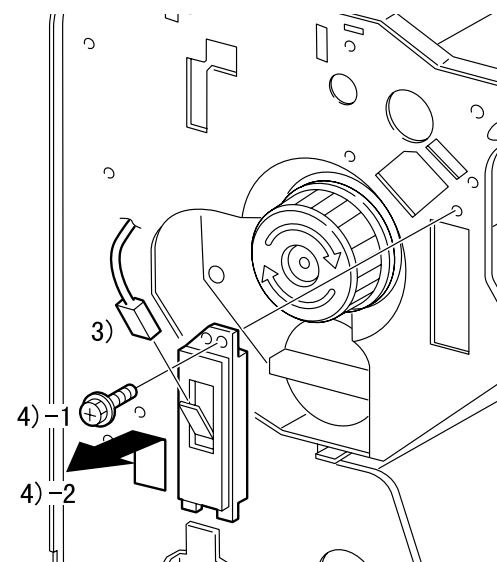


Figure 3-131. Confirmation Procedure - 1

5. Release the ROTARY LATCH ASSY. Turn the DEVELOPER ASSY clockwise and lock the ROTARY LATCH ASSY in the notch of the ROTARY FRAME ASSY at the position where the tracking roll of the target DEVELOPER ASSY is on top.

NOTE: Do not touch the surface (surface around circumference) of the tracking roll with your fingers while performing the following. If you accidentally touch the surface the tracking roll with your fingers or oily substances get on the surface, wipe clean with a clean cloth.

6. Clean the white tracking roll in front of the target Developer Assy (in front of the Magnet Roll) with a clean cloth.

NOTE: Mark the position of the tracking roll so you can accurately determine how much the position changes when you perform the following. If the tracking roll is already marked, use that mark instead.

7. Mark the white tracking roll in front of the target Developer Assy (in front of the Magnet Roll) so you can see how much the position has changed.
8. Turn the side of the white tracking roll, set at the location of the white tape in accordance with the following figure.

NOTE: Position changes in the following procedure depend on how the extent to which the drum flange and tracking roll come in contact with each other. If the overhang of the drum flange and tracking roll is large, the position of the tracking roll changes significantly; if the overhang is small, the position changes less.

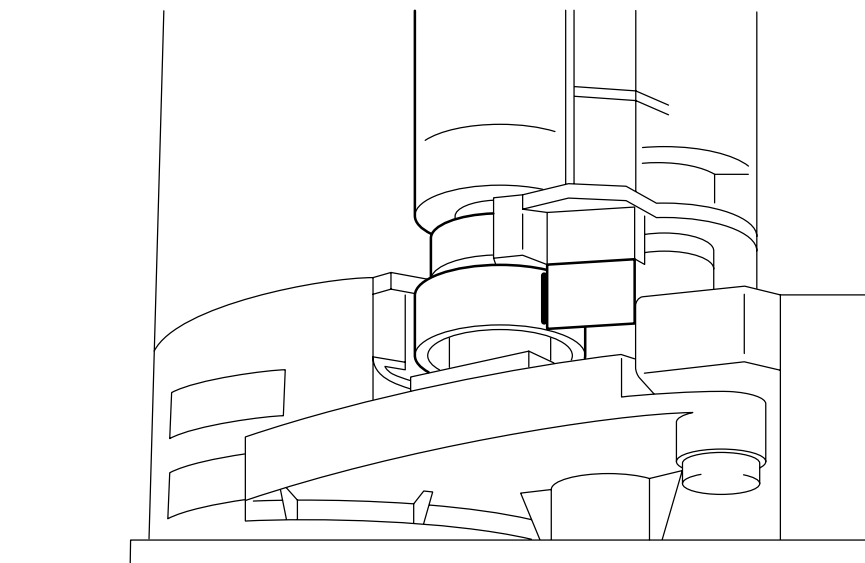


Figure 3-132. Confirmation Procedure - 2

NOTE: Turn the ROTARY FRAME ASSY as slowly as possible while performing the following. Turning the ROTARY FRAME ASSY too fast will produce discrepancy in the amount of position change, thus making it impossible to get an accurate reading. Visually inspect to make sure the black drum flange and tracking roll touch each other while turning.

NOTE: If you do not raise the lever of the ROTARY LATCH ASSY in the following, the lever and tracking roll will touch. This will allow the tracking roll to turn and you will not be able to accurately determine the amount of position change.

NOTE: The tracking roll is rotated when the black drum flange and tracking roll touch in the following step of the procedure.

9. Lift with your hand the lever of the ROTARY LATCH ASSY which prevents the Developer Assy from turning, and turn the ROTARY FRAME ASSY as slowly as possible 360(clockwise).

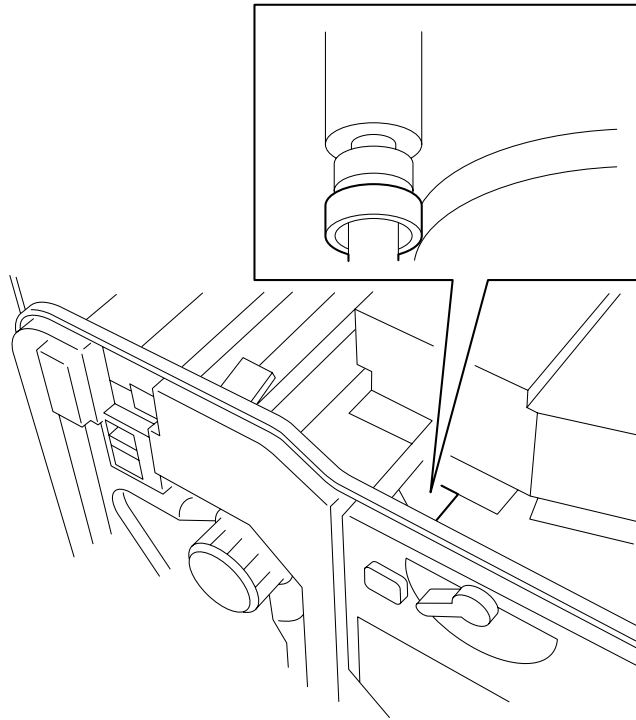


Figure 3-133. Confirmation Procedure - 3

10. Make sure the amount of position change with the mark made in step 7 of this procedure are 3 - 5mm.

NOTE: If outside the standard, adjust the right value by the gap adjustment plate of the Magnet Roll following procedure.

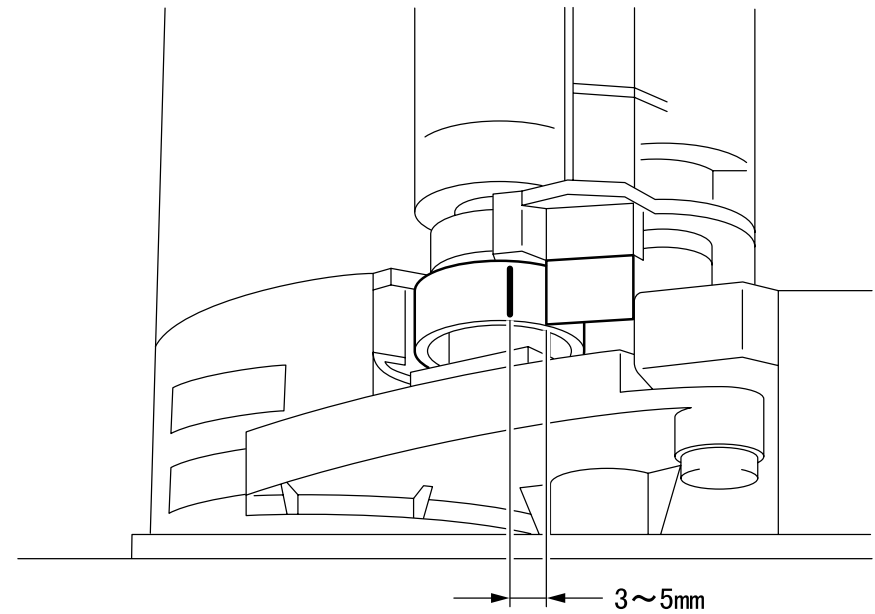


Figure 3-134. Confirmation Procedure - 4

ADJUSTMENT PROCEDURE

- ☐ Confirmation : Confirm the gap of the Drum and the Magnet Roll.
 - ☐ Adjustment : Adjust the gap of the Drum and the Magnet Roll
11. Turn the target DEVELOPER ASSY clockwise to the location that you can see from the lower left hole , let loose the inside screw (black, w/collar, 8mm) of the gap adjustment plate.
 12. Turn the target DEVELOPER ASSY clockwise to the mounting position of TONER CARTRIDGE , let loose the outside screw (black, w/collar, 8mm) of the Magnet Roll gap adjustment plate.
 13. Turn the target DEVELOPER ASSY clockwise until the notch of the DEVE. CONTACT PLATE and the teeth of the DEVELOPER ASSY that removed at steps 4 are in its horizontal position.
 14. Move the over hung of the drum flange and the Magnet Roll while adjusting for left or right the gap adjustment plate of the Magnet Roll, and secure the right side screw of the turn screw.
 15. After repeating steps 8 through 10 and measuring the regulation value, turn the target DEVELOPER ASSY clockwise to the mounting position of TONER CARTRIDGE, and secure the other screw of the gap adjustment plate.
 16. Return the printer to its original position, conduct a test print, and make sure that printer operation and print quality is correct.

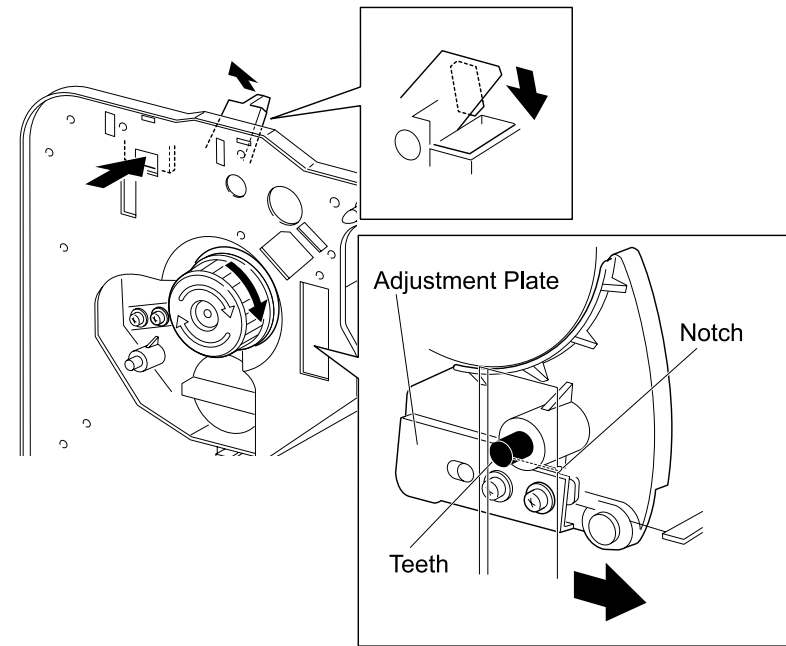


Figure 3-135. Adjustment Procedure

CHAPTER

4

DIAGNOSTICS

4.1 Diagnostics by the Diagnostic Commander

4.1.1 Overview

This printer, AcuLaser C8500 can perform a test print by using the off-line CONTROLLER PWB.

- ☐ Test print using the jumper setting on MCU PWB (DIP SW):
See Section 4.1.2 “Method of Printing Test Prints”.
- ☐ Test print using the diag board DIP switch setting:
See Section 4.2.1.3 “Overview of the DIAG. PWB”.

4.1.2 Method of Printing Test Prints

1. Remove the RIGHT COVER ASSY.
2. Remove the CONTROLLER PWB.



Do not touch conductive parts and during FIRMWARE parts in the following procedures.

3. Set paper and turn the power ON.

NOTE: When a tool, such as a mini minus screwdriver, is used, the rest of the changing Dip-Switch process can be done easily.

NOTE: As for entering the READY mode, confirm that continuous lighting of H/R HEATER and P/R HEATER became space fault fire with the next process from the gap in the print outlet of FUSER ASSY.

4. Turn on Dip-Switch (S1 : It is at the back of the working hole of CONT.CHASSIS ASSY.) for the test print on MCU PWB in the top of the interface connector (P11) of MCUPWB after entering the READY mode
5. Start a print movement by turning on Dip-Switch (S1). (continuous print is done.)

6. To stop printing, turn off the Dip-Switch(S1) on the MCU PWB if it is present.

(A device stops after a print during the treatment is discharged.)



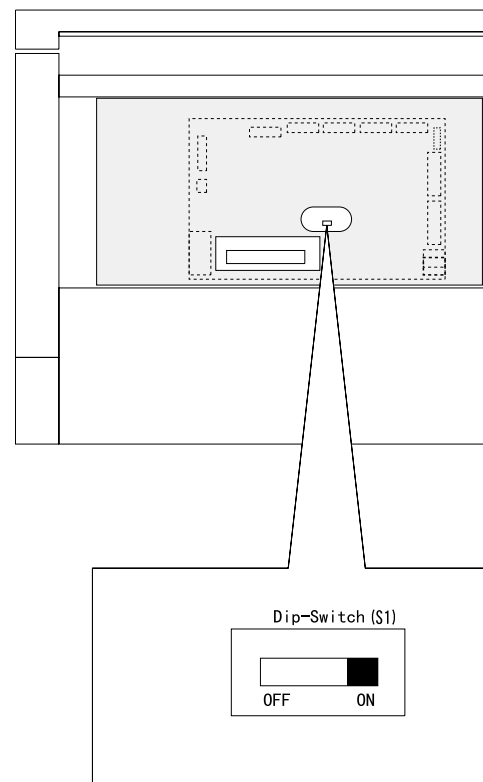
Make sure that your hand does not touch the other elements when changing the Dip-Switch.

NOTE: The paper feed unit is in a position selected in (Section 2.7.3 “Paper Supply Unit Selection Control”).

NOTE: The paper size is set in accordance with the [USIZESET] command. (See Section 4.1 “Diagnostics by the Diagnostic Commander”).

When the printer is in an error status, printing operation cannot be started.

NOTE: For information about the READY mode, see Section 2.6 “Operation Mode”.



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Figure 4-1. Test Print Procedure

4.1.3 Test Print Patterns

The test print is done in the following patterns that each color appears in each quarter area of the paper.

NOTE: Depending on the specifications, the image may protrude beyond the paper leading edge, leaving no margin.

NOTE: If the MCU PWB EEPROM (NVM) [Image Area Selection] is set to [Wide], the image is recorded onto paper without right and left margins.

NOTE: A straight line extending in the paper transport direction, a clock used for MCU PWB increases jitter, making an evaluation of the quality of the image impossible.

- In a straight line extending in the laser beam scanning direction, a one dot line is printed at intervals of every 128 dots. On the back edge of each color, the 128 dot interval may vary.
- In a straight line extending in the paper transport direction, an approximately 6 dot line is printed at every [approx. 6 dots x 128]. On the left and right edges of each color, the [approx. 6 dots x 128] interval may vary.

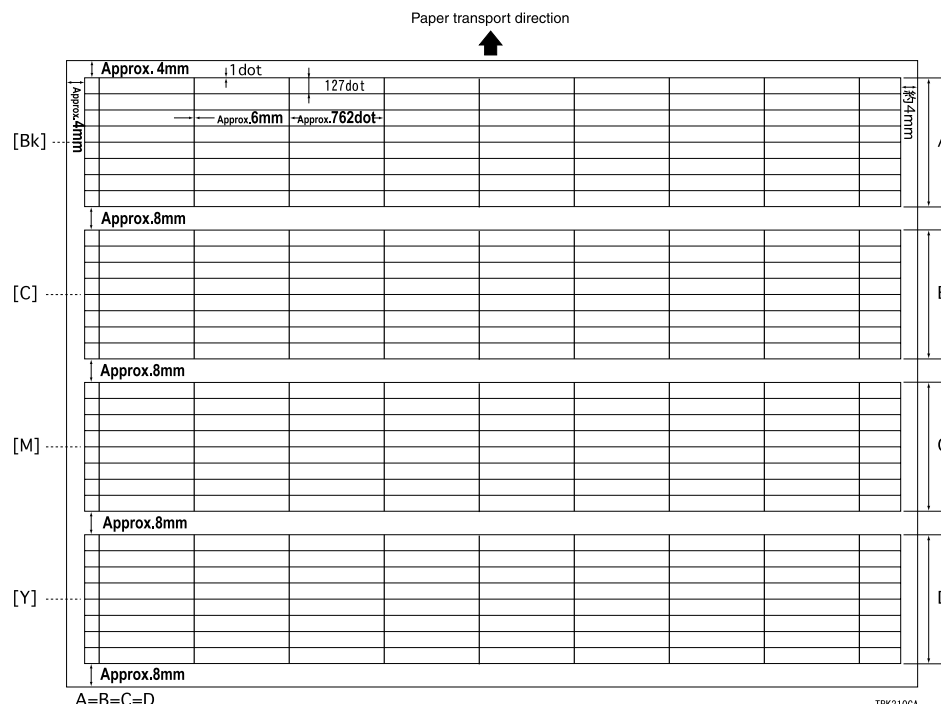


Figure 4-2. Test Print Pattern

4.2 Diagnostics Commander

4.2.1 Overview

In principle, the contents of the diagnostics commander should be supported by the printer controller, so the description of the use of the diagnostics commander given here is simply for a reference.

4.2.1.1 Configuration

This printer can execute, set diagnostics and various settings and do the renewal (renewal) of FIRMWARE of MCU PWB using diagnostics tools (maintenance tool.)

When configured as shown in the figure below, the printer operates the diagnostics commander (an application software) on a personal computer to send commands from the DIAG. PWB to the MCU PWB and download the FIRMWARE for execution.

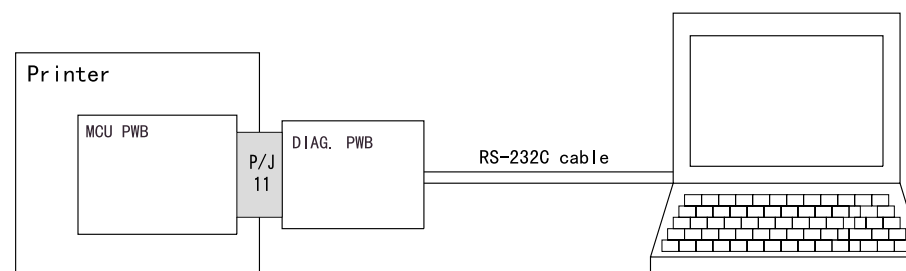
NOTE: The combination of DIAG. PWB, DIAG HARNESS, RS-232C cable, personal computer, and diagnostics commander is called the diagnostics tool (Maintenance tool.)

The diagnostics tools supplied by SEIKO EPSON are shown in the following table.

Table 4-1. Diagnostic Commandar Tools

Items	Part Code	Description
#752 Diagnostic Tool	1058540	DIAG. PWB (circuit board) and the diagnostics commander(2 floppy discs)
Vol.16 SELF TRAINING KIT		

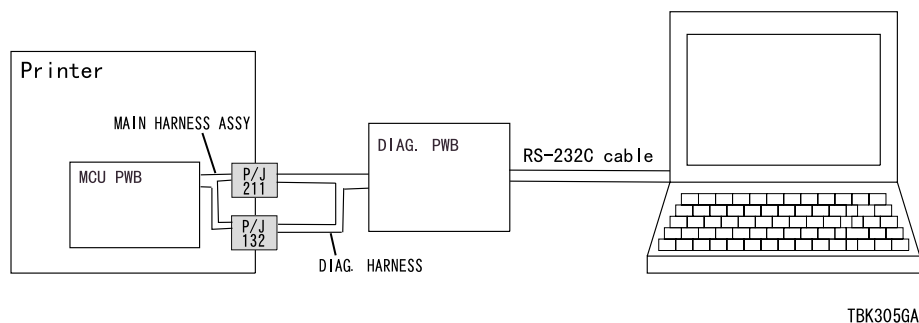
<MCU PWB Direct Connection>



TBK302GA

<Option Connector Connection>

Only down load of FIRMWARE can do it by this composition.



“P/J 132” and “P/J 211” are connectors for the Printer and the Option Feeder connection.

Figure 4-3. DIAG Tool configuration

4.2.1.2 Overview of the Diagnostic Commander

The diagnostic commander has mainly diagnostics function and FIRMWARE download function. The diagnostic function is a tool which controls the printer by communicating the data (commands and statuses) with the MCU PWB instead of the printer controller (CONTROLLER PWB.)

During the execution of diagnostics, commands related to the diagnostics are sent. The diagnostics commander also supports commands besides diagnostics and statuses and can perform communications.

The FIRMWARE download function is a tool which downloads a new FIRMWARE to up date the engine control program housing to flash ROM on MCU PWB.

4.2.1.3 Overview of the DIAG. PWB

This circuit board is equipped with a connector with the MCU PWB, a connector with DIAG HARNESS, a connector with RS-232C cable (D-Sub 25 pin female and 2 D-Sub 9 pin females, 4 dip switches).

Table 4-2. Dip Switch Functions

Dip-Switch	Initial Setting	Description
1	ON	For switching the type of RS-232C cable (ON : All strikes rate line cable, OFF : Strike rate CTC/RTS inside folding cable)
2	OFF	Switching by the difference in the connection composition (ON: At the time of the option connector connection, OFF: At the time of direct connection with MCU PWB)
3	OFF	For the test print of the device simple substance. (It can be used in the same way as Dip-Switch on MCU PWB.) (ON : Test print start, OFF : Test print stop)
4	OFF	Switching by the difference in the connection composition (ON: At the time of the option connector connection, OFF: At the time of direct connection with MCU PWB)

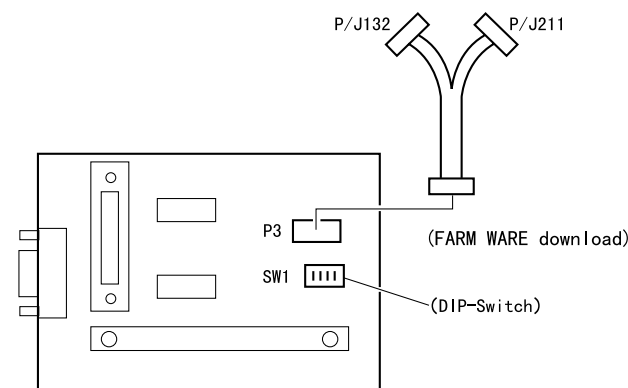


Figure 4-4. DIAG PWB

4.2.2 Preparation

4.2.2.1 Personal Computer

Prepare a personal computer which supports the execution of the diagnostics commander. Set the communications port (RS-232C.)

- ☐ Specifications of the personal computer

Table 4-3. Personal Computer Specification

Item	Function
Type	IBM PC compatible
CPU	Pentium 133 [MHz] or greater
Memory	At least 16 [Mbyte]
Display	At least 640 x 480
OS	Windows95(Beyond 4.00.950a)
Recommendation	IBM Think Pad 535

NOTE: Only IBM Think Pad 535E operation has been verified. IBM compatibles will run the program but have not been verified.

- ☐ Communication Port

Table 4-4. Communication Port

Item	Format
Port No.	1(variable)
Transfer rate	9600bps
Start bit	1
Length of data	8Bits
Parity	Odd number
Stop bit	1
Transfer control	Total 2
Flow control	Enabled (RTS / CTS)

4.2.2.2 Installation of the Diagnostics Commander

[Procedure]

1. Launch Windows 95, select "Set" from "Start menu," and then "Control Panels" from "Set."
2. Double click on the "Addition and deletion of applications" icon in the "Control Panel" window.
3. Set Disk 1 of the installation disk (DIAG. TOOL-1) of the diagnostics commander into the floppy disk drive.
4. Click on the "Setup (I)" button in the "Addition and deletion of the applications property" window.
5. Complete installation according to the subsequently displayed instructions. [Execute "SETUP.exe"]
6. Execute [Program (P)]-[Tsubaki Service Commander V*.**]-[Registry Entry] from the "Start menu."
7. Copy files "xxx. DAT" into the "DAT" folder in the folder in which the diagnostics commander has been installed from the data disk (DIAG. TOOL-2.)

4.2.2.3 Uninstalling the Diagnostics Commander

[Procedure]

1. Launch Windows 95, select "Set" from "Start menu," and then "Control Panels" from "Set."
2. Double click on the "Addition and deletion of applications" icon in the "Control Panel" window.
3. Select the [Tsubaki Service Commander V*.**] and click on the "Add and Delete (R)" button in the "Addition and deletion of the applications property" window.
4. Hereafter complete uninstalling according to the subsequently displayed instructions.

4.2.2.4 Connection of the diagnostics tools (MCU PWB)

[Procedure]

1. Remove a RIGHT COVER ASSY (Section 3.2.5.11 "RIGHT COVER ASSY (PL1.1.51) Removal").
2. Remove the CONTROLLER PWB (Section 3.2.17.1 "CONTROLLER PWB (PL14.1.10) Removal").

NOTE: In the following procedure, make sure soldered surfaces not to make contact with the CONT. CHASSIS ASSY.
If necessary, insert an electrical insulator between a circuit board and a metal plate such as a piece of paper folded over itself four times.

3. Connect the DIAG. PWB with the interface connector of MCU PWB so that the Dip-Switch of the DIAG. PWB can be seen from the outside.
4. Connect the DIAG. PWB with the personal computer with a RS-232C cable.

NOTE: The RS-232C must match the settings of the Dip-Switch of the DIAG. PWB and the connector, be completely shielded, and have the length of 2m or less.

NOTE: Make Dip-Switch of DIAG. PWB the establishment which was suitable for the used connection condition, and use it
(Establishment in direct connection with MCU PWB : 2=OFF, 4=OFF).

4.2.2.5 Connection of the diagnostics tools (Option Connector)

NOTE: Be careful with this connection because only FIRMWARE download of MCU PWB can be done.

[Procedure]

1. Remove all the connectors which connect those option units and a device itself electrically when an optional loading paper unit and a Duplex unit are increased. (Option Feeder unit : P/J132, P/J211 / Option Duplex unit : P/J134, P/J75)

2. Remove the O/H COVER. (See Chapter 3)

NOTE: In the following procedure, make sure that DIAG. PWB never touches body.

3. Connect DIAG. PWB and DIAG. HARNES, a connector (P132, P211) for the option loading paper unit of DIAG. HARNES and the printer.
4. Connect the DIAG. PWB with the personal computer with a RS-232C cable.

NOTE: The RS-232C must match the settings of the Dip-Switch of the DIAG. PWB and the connector, be completely shielded, and have the length of 2 m or less.

NOTE: Make Dip-Switch of DIAG. PWB the establishment which was suitable for the used connection condition, and use it.
(Establishment in the option connector connection : 2=ON, 4=OFF)

4.2.3 Commands / Statuses

4.2.3.1 Overview of Commands and Statuses

Commands and statuses are data that are used for communications between the printer controller and MCU PWB.

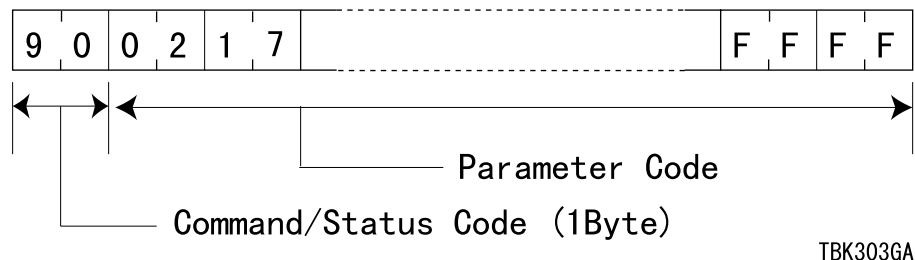
The printer controller uses these communication to control the printer.

NOTE: For details of Commands / Statuses, see the interface specifications.

NOTE: The communications directions of Commands / Status are defined as follows. (These definitions apply to the entire chapter.)

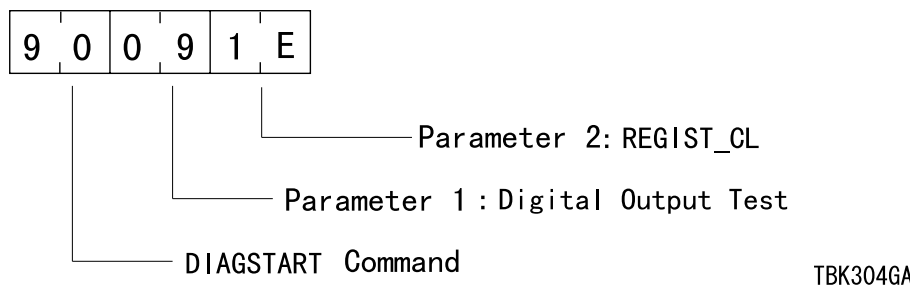
- Command: Printer controller (Diagnostics tool) to MCU PWB
- Status: MCU PWB to printer controller (diagnostics tool)

4.2.3.2 Data Format



The data format is defined such that the first byte is assigned to a command or status code and the following bytes to commands and parameter codes attached to the statuses. The number of the bytes for the parameters is variable, and there are cases when there is no parameter code. Each code is indicated in hex.

Example: Diagnostics (REGIST_CL) execution command.



4.2.3.3 Categories of Commands / Statuses

Each command and status are categorized into the following four groups according to the type of printer control.

- ☐ Paper, Media, and Output
Paper feed method (location), type of paper, paper size setting / confirmation, paper output method (location)
- ☐ Printing / Status Control
Printing control, setting an operation mode, error / status codes (the status of the printer) confirmation.
- ☐ Parameter Control
Life times, counter settings and confirmation.
- ☐ Diagnostics Control
Diagnostics execution/quit, EEPROM read and write, setting the FIRMWARE for MCU PWB.

4.2.4 Operating the Diagnostics Commander

4.2.4.1 Starting Up the Diagnostics Commander

[Procedure]

1. Connect the Diag tool with the printer.
2. Turn ON the power supply of the printer.
3. Launch Windows 95, and select [Program (P)]-[Tsubaki Service Commander V*.**]-[TSCV*] from the "Start menu."
4. To quit the diagnostics commander, click on the [Close] button.

4.2.4.2 Communications Connection

[Procedure]

1. Click on the [Manual] tab or [Auto] tab according to what you want to send.
2. Click on the [Connect] button to connect the communications port.
3. Click on the [Sync] button to establish communications.

NOTE: Clicking on the [Service] tab establishes communications.

NOTE: When exiting the [Manual] tab, or [Auto] tab, disconnect communications by clicking on the [Disconnect] button.

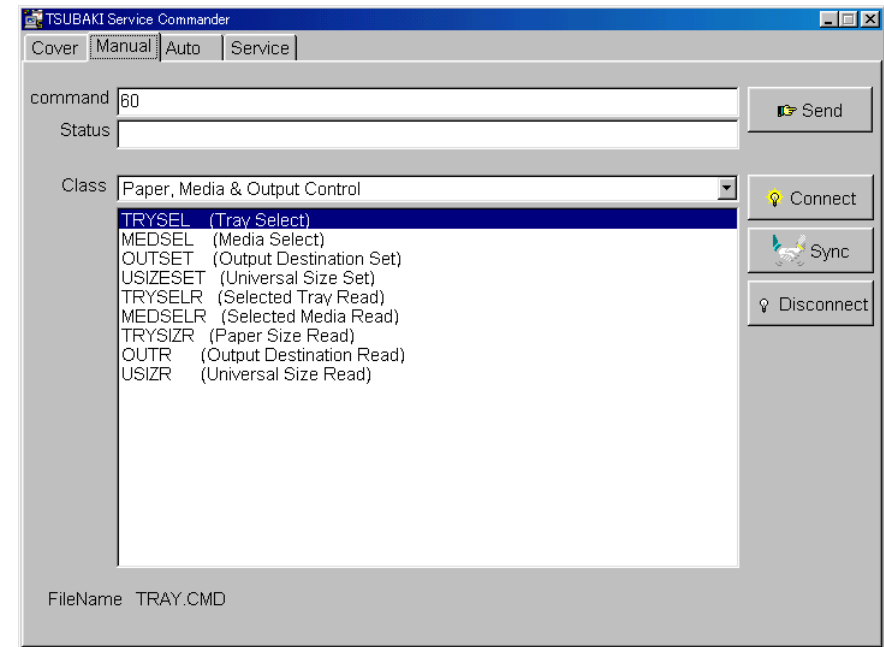


Figure 4-5. Window when the [Manual] tab is selected.

4.2.4.3 Log Display

You can display the communications process between the Dialog Commander and MCU PWB in the [Log Window].

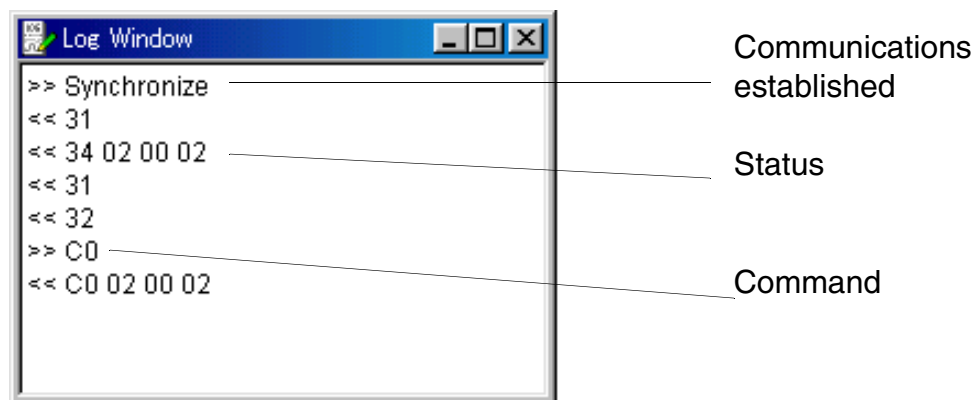
NOTE: When using the Diag function, always display [Log Window] and save the log.

DISPLAYING THE LOG WINDOW

1. Move the cursor to the plain area in the [Tsubaki Service Commander] main window and right-click to display the [Log Window Open] button.
2. Click the [Log Window Open] button to display the [Log Window].
3. The commands and status sent and received are displayed in Hex code in the [Log Window].
4. In addition, self-issued statuses (not displayed in the [Status] column) which do not require commands from the printer are also displayed.

NOTE: Statuses which are not displayed in the [Status] column but are displayed in the [Log Window] are as follows.

- IGNORED[41 XX(CMD) XX(REASON)]
- PFA[30 XX(AMODE) XX(SHEET1) XX(SHEET2)]
- ENGERR[31]
- ERRRV[32]
- ENGWRN[33]
- SCH[34 XX(STSMODE) XX(STSMODE2) XX(STSCALL)]
- PFA2[35 XX(SHEET)]
- COLOR[36 XX(PLANE)]
- PPOUT[20 XX(DEST) XX(DOPT) XX(SHEET)]
- PCH[21 XX(TRAY) XX(SIZE) XX(MEDIA)]
- PPOUT2[22 XX(DEST) XX(DOPT) XX(SHEET)]
- DCH[23 XX(DEST) XX(INFO_D)]



LOG WINDOW PROCEDURES

Moving the cursor to inside the [Log Window] and right-clicking displays the [Log Clear], [Log Save], and [Log Window Close] buttons.

By clicking these buttons you can do the following:

- [Log Clear] Log Clear is executed, deleting the contents of the Log Window.
- [Log Save] Saves the contents of the log. In the [Log Save] window, specify a filename and click [Save]. If you do not specify a file extension, "LOG" is automatically attached.
- [Log Window Close] Closes the Log Window.

NOTE: You can display the saved log file using an editor such as Memo Pad.

4.2.4.4 [Manual] Tab Operation

With [Manual] tab, you can send commands and receive statuses.

NOTE: Send commands only after communications are established.

NOTE: For the details of the commands and statuses, see Section 4.2.7 "Command/Status List".

SELECTION FROM A PULL-DOWN MENU

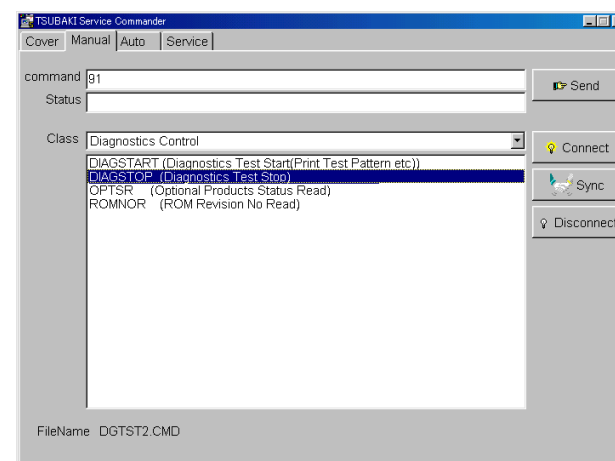
NOTE: There are command codes and parameter codes in the pull-down menu that cannot be selected.

NOTE: Be careful with the thing as well which hasn't been used for pull down menu because they are indicated. Don't transmit the command which is not in Section 4.2.7 "Command/Status List" even if it is indicated again by the pull-down menu.

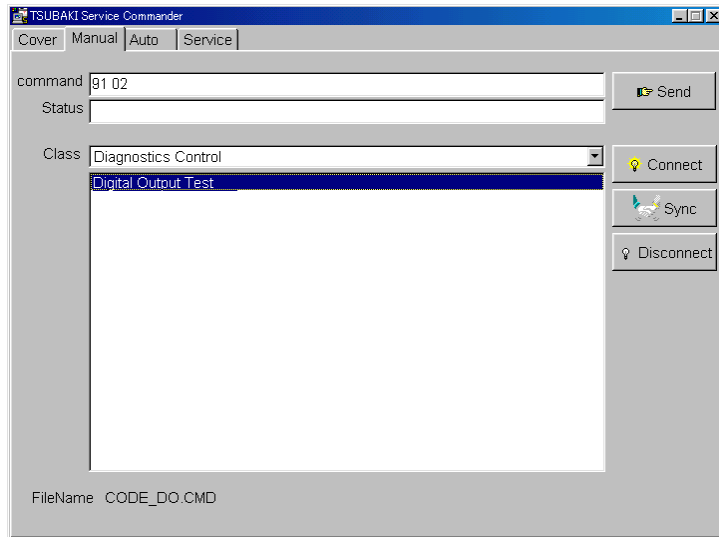
[Procedure]

1. Connect DIAG TOOL with the printer, launch the diagnostics commander.
2. Click on the [Manual] tab to display the Manual screen.
3. Establish communications. (See Section 4.2.4.2 "Communications Connection").
4. Click on the [Class] column and select the class with the command code to be sent from four classes described in Section 4.2.3.1 "Overview of Commands and Statuses".
5. Select the command code to be sent from the command codes displayed.
6. The command code selected is displayed in the [Command] column.

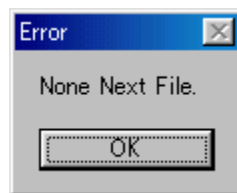
NOTE: Clicking once only displays the command code in the [Command] column.



NOTE: Double clicking displays the command code in the [Command] column, and also the parameter codes of the selected command code if it has any having parameter codes.



7. As above, selecting a parameter code displays the parameter code in the [Command] column. Double clicking when there are no parameters causes an [Error] window to be displayed.



8. After completing command selection, click on the [Send] button to send the command to be sent.

NOTE: To select the other commands without sending them, move the cursor into the window for selecting parameters, click the right button, and click on the [Go Back] button. This returns you to the previous parameter.

9. For commands having a corresponding status, the status will be displayed in the [Status] column in hex code.

NOTE: Before changing to another menu ([Auto] or [Service]), click on the [Disconnect] button to disconnect communications.

DIRECT ENTRY FROM THE COMMAND COLUMN

[Procedure]

1. Connect DIAG TOOL with the printer, launch the diagnostics commander.
2. Click on the [Manual] tab to display the Manual window.
3. Establish communications by connecting (See Section 4.2.4.2 "Communications Connection").
4. Enter the command codes and the parameter codes in hex code with a one-byte space between them in the [Command] column.

NOTE: Use regular ASCII characters for input.

5. After entering the command to be sent, click on the [Send] button to send the command.
6. For a command with a corresponding status, the status is displayed in the [Status] column in the hex codes.

NOTE: Before changing to another menu ([Auto] or [Service]), click on the [Disconnect] button to disconnect communications.

4.2.4.5 [Auto] Tab Procedures

Auto Run File allows you to transmit consecutively 2 or more commands.

NOTE: Use Auto Run File only after communications are established.

NOTE: It is necessary to separately create a file for Auto Run File with recorded commands.

[Procedure]

1. Connect DIAG TOOL with the printer, launch the diagnostics commander.
2. Click the [Auto] tab to go to the Auto window
3. Communications connection is established (See Section 4.2.4.2 "Communications Connection").
4. Click the [File Open] button to display the [Auto Run File Open] window.
5. Specify the Auto Run File name and click [Open].
6. The display parts of the Auto Run file are displayed on the screen.
7. Click the [Start] button to start sequential execution of the commands recorded in the Auto Run file.

NOTE: To stop execution of Auto Run File, click the [Stop] button.

NOTE: For other menus ([Manual]) and [Service]), click the [Disconnect] button to cut off communications, then execute.

CREATING AN AUTO RUN FILE

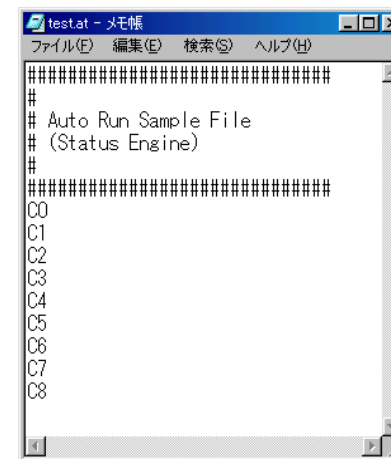
NOTE: You can make a file using an editor such as Memo Pad.

NOTE: Input all letters in ASCII.

As shown in the figure, the file is written in hex code 1 command per line, with words separated by 1 byte.

The file name must be regular alphabetical characters with ".AT" as the file extension. Save in the [Auto] folder in the folder in which the diagnostics commander is installed.

Lines headed by "#" are displayed in the Auto window.



SAMPLE AUTO RUN FILE] AUTO RUN FILE

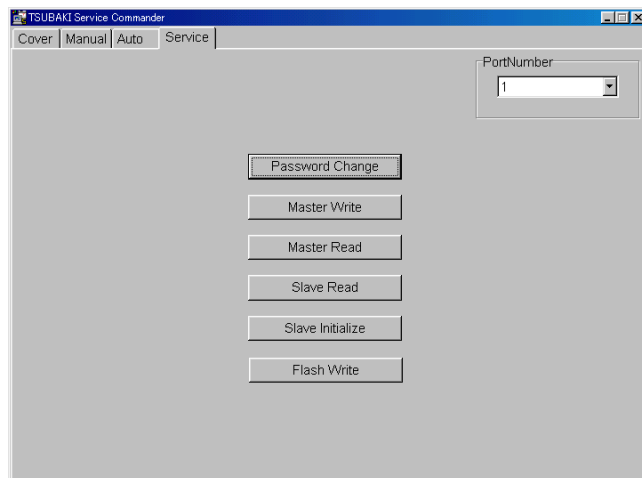
An Auto Run file (filename Test. AT) that sends the above commands is installed as a sample.

[SERVICE] TAB PROCEDURES

With the [Service] tab lets you write specifications to the MCU PWB EEPROM(NVM), set the password, read the Master, and read/initialize the Slave, and execute the FIRMWARE download function.

NOTE: The [Master] is the COMMUNICATION ASSY.
The [Slave] is the MCU PWB NVM.

The following screen is indicated by the direct connection with MCU PWB or the option connector connection when it clicks on Service tab after DIAG. tool was connected and DIAG. commander was started.

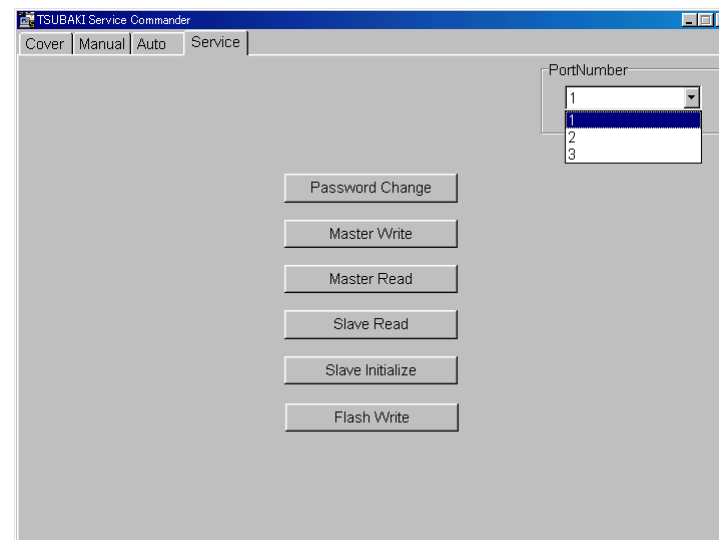


NOTE: Connect DIAG. tool by direct connection with MCU PWB when using [Password Change], [Master Write], [Master Read], [Slave Read], [Slave Initialize] surely. When [Port Number], [Flash Write] are used, even which of the direct connection with MCU PWB or the option connector connection is good.

NOTE: The connection establishment of the communication is done by clicking on either menu button.

PORT NUMBER

The port number of the personal computer can be specified with [Port Number]. (Contents of a change are kept.) If necessary, specify either port number.



PASSWORD CHANGE

NOTE: This service is not available.

MASTER WRITE

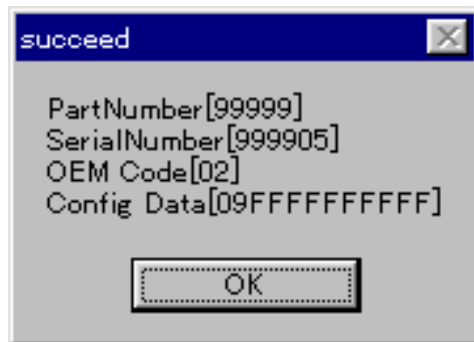
NOTE: This service is not available.

MASTER READ

[Master Read] lets you read the contents of the [Master].

NOTE: If [Master Read] is executed when communications are not established, the Diagnostics Commander will hang. Always use another tab to make sure that communications are connected and established before using [Master Read].

- 1) Click the [Master Read] button.
- 2) The contents read from [Master] are displayed.



The contents read from [Master] are as follows:

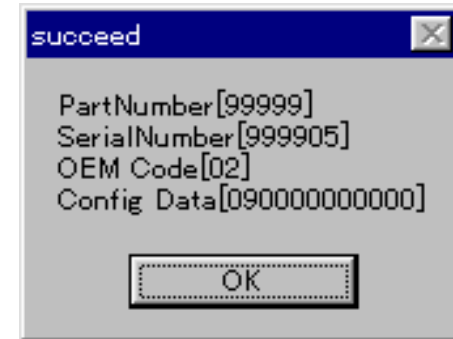
Part Number[99999]:	Solid Information
Serial Number[xxxxxx]:	[xxxxxx] refers to the last six of the ten digits.
OEM code[02]:	Solid Information
Config. Data[09fffffffff]:	TBD

SLAVE READ

[Slave Read] lets you read the contents of the [Slave].

NOTE: If [Slave Read] is executed when communications are not established, the Diagnostics Commander will hang. Always use another tab to make sure that communications are connected and established before using [Master Read].

- 1) Click the [Slave Read] button.
- 2) The contents read from [Slave] are displayed.



The contents read from [Master] are as follows:

Part Number[99999]:	Solid Information
Serial Number[xxxxxx]:	[xxxxxx] refers to the last six of the ten digits.
OEM code[02]:	Solid Information

SLAVE INITIALIZE



Never execute [Slave Initialize] unless instructed to by this manual.

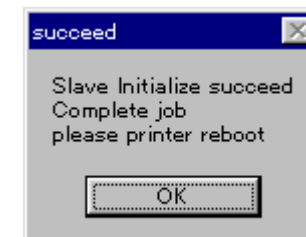
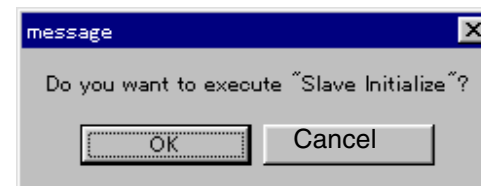
[Slave Initialize] lets you initialize the contents of the [Slave] (delete the contents.)

NOTE: If [Slave Initialize] is executed when communications are not established, the Diagnostics Commander will hang up. Always use another tab to make sure that communications are connected and established before using [Master Read].

- 1) Click the [Slave Initialize] button.
- 2) When a message window is displayed, click on the [OK] button.
- 3) Initialization of the [Slave] starts.

NOTE: After initializing the [Slave], turning the power OFF/ON starts automatic writing to the [Slave].

NOTE: Because, in some cases, there are procedures that must be completed before turning the power OFF/ON after initializing the [Slave], always follow the procedures in this manual.



FLASH WRITE



Use only the download file provided formally.

A program (FIRMWARE) for the engine control that it is stored in Flash ROM on MCU PWB can be renewed with Flash Write by download by the FIRMWARE down function.

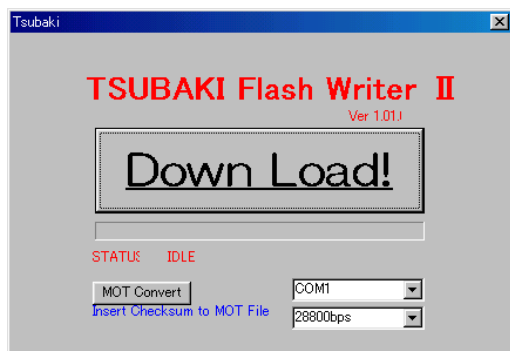
NOTE: While downloading, never turn off the power supply of the device and the personal computer.

NOTE: Remove all the connectors which surely connect an Optional Feeder unit and a Duplex unit and a device itself electrically when using FlashWrite. (Option Feeder unit : P/J132, P/J211
Option Duplex unit : P/J134, P/J75)

NOTE: Do the establishment of Dip-Switch of DIAG. PWB in accordance with the way of connecting it though how to connect DIAG. tool is two kinds surely.

1. As a preparation in advance, prepare for a file (*.mot) for download, and copy the file in optional folder of the personal computer.
2. Click the [Flash Write] button.

- When a message window is displayed, click on the [OK] button.
(Download program [f_w2_113.exe : TSUBAKI Flash Writer II] starts.)



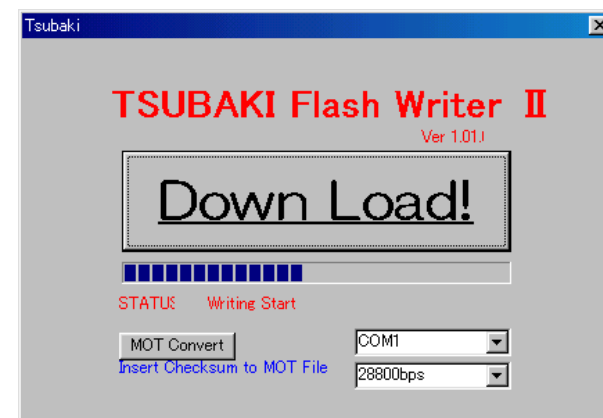
NOTE: When “TSUBAKI Flash Writer II” starts, confirm the ROM version of MCU PWB, and judge Flash ROM or Mask ROM, it becomes “MCU ROM is not Flash type” in the case of Mask ROM and be careful of “TSUBAKI Flash Writer II” because it isn't started.

NOTE: Never use this for the one for the development though there is “MOT Convert button” of “TSUBAKI Flash Writer II”.

- Set up a port to use, and a communication speed.
- Click the [Down Load!] button.
- Choose a file (*.mot) for download prepared in advance, and click the [Open] button.



- Download is started. (Progress conditions are indicated under the [Down Load!] button.)



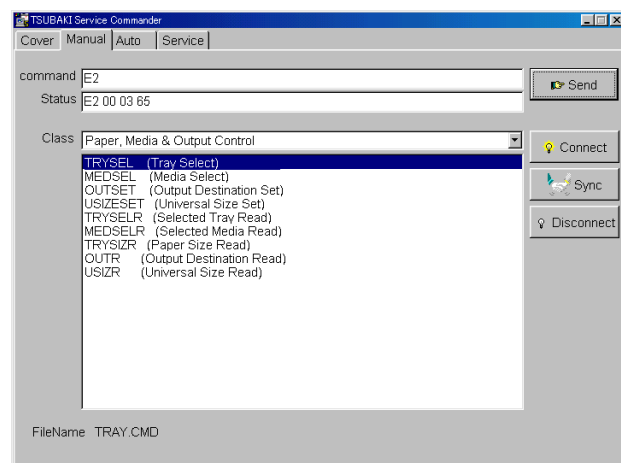
- When download is completed, a “Successful” message comes out, click the [OK] button, and click the [Close] button of TSUBAKI Flash Writer II because .
- Download work is completed in OFF/ on of the power supply (device).

NOTE: Carry it out again from the beginning after you confirm connection condition and so on if a [Error] message is indicated. Exchange MCU PWB, and confirm it when even the practice of the re-occasion becomes a “Error” message.

- **Communication Error**
- **Verify Error**

NOTE: Confirm the version of FIRMWARE in front of download after/
because the version of FIRMWARE can be confirmed by
transmitting a command “E2” with Manual tab.

- Command : [E2]
- Status : [E2 XX XX XX] (“XXXXXX” is the version of FIRMWARE.)



4.2.5 Diagnostics Execution

4.2.5.1 Diagnostics Execution Procedures

The diagnostics commander command transmission function lets you send the following commands to execute diagnostics.

1. The DIAGON command sends [75h] to enter the DIAG TEST mode for executing diagnostics. (The DIAGON command is in [Command Class: Printing/Status Control].)
2. The DIAGSTART command sets the parameter to [90h] and sends it to start diagnostics. (The DIAGSTART command is in [Command Class: Diagnostics Control].) Setting the diagnostics code as a parameter allows execution of various diagnostics procedures.
3. The DIAGSTOP command sets the parameter to [91h] and sends it to stop diagnostics. (The DIAGSTOP command is in [Command Class: Diagnostics Control].)
4. The DIAGOFF command sends [76h] to leave the DIAG TEST mode for executing diagnostics. (The DIAGON command is in [Command Class: Printing/Status Control].)

4.2.5.2 Diagnostics Types

Diagnostics is a function that lets you diagnose problems. Including All Test Stop, there are 9 types of diagnostics as shown below.

Table 4-5. Diagnostics Types

Parameter (Hex)	Diagnostics Type	Description
00	Test Print	Sets the printer internal test print parameter.
01	Digital Input Test	Executes input testing of sensors and switches that have digital signals.
02	Digital Output Test	Executes output testing of functional parts operated by digital signals (motors and solenoids, etc.).
03	Analog Input Test	Executes input testing of sensors and output monitors that have analog signals.
04	Analog Output Test	Executes output testing of functional parts operated by analog signals (HVPS output, etc.).
05	EEPROM Read	Executes reading of all data types from the MCU PWB EEPROM(NVM).
06	EEPROM Write	Executes writing of all data types from the MCU PWB EEPROM(NVM).
07	EEPROM Initialize	Executes initialization of all data in the MCU PWB EEPROM(NVM).
FF	All Tests Stop	Stops all diagnostics.

4.2.5.3 Test Print

This lets you set the parameter for the printer's internal test print.

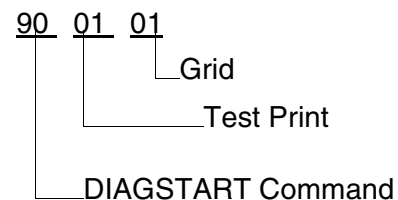
Table 4-6. Test Print

DIAGON command: [75]		DIAGOFF command: [76]
DIAGSTART Command (Test Print) : [90 00 XX]		
DIAGSTOPCommand (Test Print) : Unnecessary		
Parameter	Function	Data (hex)
1	Diagnostics Type	00 : Test Print
2	Image	01 : Grid
3	DGST	[For status] 06: Pass, 07:Fail
Status present([90 00 XX])		

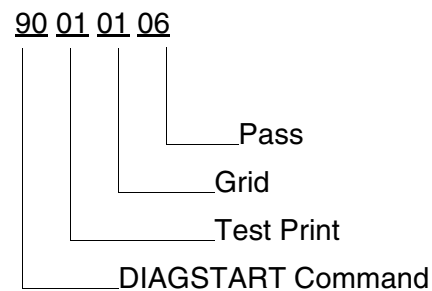
NOTE: After setting the test print described above, sending [PFC command (70 00 F0 01)] executes test print.

NOTE: “Grid” in the above table is the same as Section 4.1.3 “Test Print Patterns”.

EX) [Command]



EX) [Status]



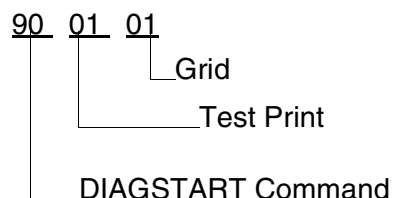
4.2.5.4 Digital Input Test

This lets you detect the High/Low level of switches and sensors that have digital signals.

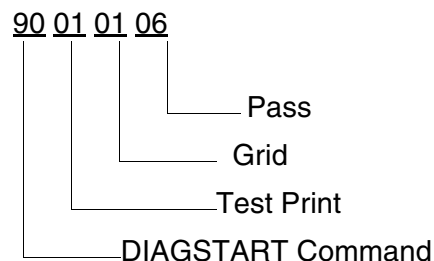
Table 4-7. Digital Input Test Parameter

DIAGON command: [75]		DIAGOFF command: [76]
DIAGSTART Command(Digital Input Test) : [90 01 XX]		
DIAGSTOP Command(Digital Input Test) : [Unnecessary]		
Parameter	Function	Data (hex)
1	Diagnostics Type	00 : Test Print
2	Code_DO	Device code (See the next section [2.5.6].)
3	Data	[Status only] 00: low, 01: High or XX (data)
Status present([90 01 XX XX])		

EX) [Command]



EX) [Status]



4.2.5.5 Digital Input Test Device Code

Table 4-8. Digital Input Test Device Code

Digital Input Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item When status data is [High]	Check Method
TOP_TRAY_FULL_SNR	15	FULL STACK SENSOR FULL STACK SENSE Signal : High	Check by using the Actuator to switch between light passed and light blocked states at the Sensor.
EXIT_TOP_SNR	16	TOP EXIT SENSOR TOP EXIT PAPER SENSE Signal : High	Check by using the Actuator to switch between light passed and light blocked states at the Sensor.
FUSER_ENT_SNR	24	FUSER IN SENSOR FUSER IN PAPER SENSE Signal : High	Check by using the FUSER IN ACTUATOR to switch between light passed and light blocked states at the Sensor.
FUSER_EXIT_SNR	25	FUSER EXIT SENSOR-1 FUSER EXIT-1 PAPER SENSE Signal : High	Check by using the FUSER EXIT ACTUATOR-1 to switch between light passed and light blocked states at the Sensor.
OHP_SNR	27	OHP SENSOR OHP WHITE SENSE Signal : High	Check by using paper to switch between light present and light absent states at the Sensor.
REGIST_SNR	29	REGI. SENSOR REGI. PAPER SENSE Signal : High	Check by using paper to switch between light present and light absent states at the Sensor.
BOTTOM_DOWN_SNR	2A	BOTTOM PLATE SENSOR	Check by using the BOTTOM PLATE to switch between light passed and light blocked states at the Sensor.

Table 4-8. Digital Input Test Device Code

Digital Input Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
MSI_PITCH _SNR	2B	PITCH SENSOR	Check by using paper to switch between light present and light absent states at the Sensor.
		MSI PITCH PAPER SENSE Signal : High	
BOTTOM _UP_SNR	2C	LEVEL SENSOR	Check by using the NUDGER SUPPORT ASSY to switch between light passed and light blocked states at the Sensor.
		MSI LEVEL SENSE Signal : High	
NSRDY	35	CONTROLLER PWB	-
		/SRDY Signal : High	
NPAGE	3B	CONTROLLER PWB	-
		/PAGE Signal : High	
TR0_SNR	42	TR0 SENSOR	Check by using TR0 mark of IBT BELT ASSY to switch between light present and light absent states at the Sensor.
		TR0-MSENSE Signal : High	
ROTARY _HOME_SNR	43	ROTARY SENSOR	Check by using the ROTARY FRAME ASSY to switch between light passed and light blocked states at the Sensor.
		ROTARY SENSE Signal : High	
FUSER_EXIT _SNR2	4B	FUSER EXIT SENSOR-2	Check by using the FUSER EXIT ACTUATOR-2 to switch between light passed and light blocked states at the Sensor.
		FUSER EXIT-2 PAPER SENSE Signal : High	
NSOS	50	ROS ASSY	-
		nSOS Signal : High	
TONER _FULL_SNR	51	WASTE TONER SENSOR	Check by using paper to switch between light present and light absent states at the Sensor.
		WASTE TONER SENSE Signal : High	

Table 4-8. Digital Input Test Device Code

Digital Input Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
WASTE _TONER_BOX	52	TONER BOX SENSOR	Check by using the Actuator to switch between light passed and light blocked states at the Sensor.
		TONER BOX SENSE Signal : High	
MCU_CHECK	53	Not used	-
TEST_PIN	54	Dip-Switch(S1) of MCU PWB	Checking by switching between ON/OFF at the MCU PWB Dip-Switch.
		TEST PRINT ON Signal : High	
PAP_EMPTY _SNR_1	60	TRAY N/P SENSOR ASSY (Cassette 1)	Check by using the Actuator to switch between light passed and light blocked states at the Sensor.
		[1]TRAY PAPER SENSE Signal : High	
NEAR _EMPTY_SW	61	LOW PAPER SENSOR (Cassette 1)	Check by increasing and decreasing the amount of paper in Cassette 1 to switch between detected and not detected states at the Sensor.
		[1]LOW PAPER SENSE Signal : High	
FUSER _UNIT_SW	62	FUSER ASSY	Checking by opening and closing the FUSER ASSY
		FUSER ASSY SENSE Signal : High	
OIL_ROLL_SW	63	Not used	-
OIL_LIFE_SW	64	Not used	-
MSI_PAP2_SNR	65	Not used	-
MSI_PAP_SNR	66	EMPTY SENSOR	Check by using the MSI N/P ACTUATOR to switch between light passed and light blocked states at the Sensor.
		MSI PAPER SENSE Signal : High	

Table 4-8. Digital Input Test Device Code

Digital Input Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
TONER_EMPTY_SNR	67	CARTRIDGE SENSOR	After turning ON [LOW] the SENSOR ON signal at Digital Output Test [75], check by using paper to switch between light present and light absent states at the Sensor.
		CARTRIDGE SENSE Signal : High	
PH_MOT_FAIL	70	FUSER MOTOR ASSY	After checking by switching between connected and disconnected states at the DRIVE MOTOR PWB connector(P/J49), check by turning ON[LOW] the FUSER-P/ H MOTOR ON signal at Digital Output Test[53].
		FAIL F Signal : High	
PH2_MOT_FAIL	71	P/H MOTOR ASSY	After checking by switching between connected and disconnected states at the DRIVE MOTOR PWB connector(P/J49), check by turning ON[LOW] the FUSER-P/ H MOTOR ON signal at Digital Output Test[53].
		FAIL P Signal : High	
PR_MOT_FAIL	72	PROCESS DRIVE ASSY	After checking by switching between connected and disconnected states at the PROCESS DRIVE ASSY connector(P/J51), check by turning ON[LOW] the PROCESS MOTOR ON signal at Digital Output Test[54].
		FAIL Signal : High	

Table 4-8. Digital Input Test Device Code

Digital Input Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
FRONT_DOOR_SW	73	FRONT COVER SWITCH R	Checking by opening and closing the FRONT COVER ASSY.
		FRONT COVER SWITCH ON Signal : High	
TOP_DOOR_SW	74	EXIT CHUTE SWITCH	Checking by opening and closing the EXIT UPPER ASSY.
		EXIT CHUTE SWITCH ON Signal : Signal : High	
MSI_SIDE_GUIDE_SW	75	MSI GUDE SWITCH	Checking by opening and closing the MSI REGI.GUIDE.
		MSI GUDE SWITCH ON Signal : High	
2BTR_PHT_SNR	76	BTR WHEEL SENSOR	Check by using paper to switch between light present and light absent states at the Sensor.
		BTR WHEEL SENSE Signal : High	
REGI_UNIT_SNR	77	REGI/MSI INTL SW	Checking by opening and closing the MSI/ REGI HAIGH ASSY.
		REGI/MSI INTL SWITCH ON Signal : High	
OPT_SORTER_R EADY	80	Option Sorter	Check by switching between connected and disconnected states at the connector (P/J133) of Option Sorter unit and the printer.
		SORTER READY Signal : High	
INTLK24	82	24VDC to MCU PWB	Checking by opening and closing the FRONT COVER ASSY. (Even MSI/REGI HIGH ASSY or FUSER ASSY is acceptable.)
		24VDC(between LVPS and MCU PWB) : High	

Table 4-8. Digital Input Test Device Code

Digital Input Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
OPT_DUP _READY	83	Option Duplex	Check by switching between connected and disconnected states at the connector (P/J134) of Option Duplex unit and the printer.
		DUPLEX READY Signal : High	
RH_DOOR_SW	84	TURN CHUTE SWITCH	Checking by opening and closing the TURN CHUTE UP ASSY.
		TURN CHUTE SWITCH ON Signal : High	
FAN_FUSER1 _ALARM	85	FUSER FAN-1	Check by using FUSER FAN-1 to switch between bound and unbound states.
		ALARM Signal : High	
FAN_FUSER3 _ALARM	86	EXIT CHUTE FAN	Check by using EXIT CHUTE FAN to switch between bound and unbound states.
		ALARM Signal : High	
FAN_REAR _ALARM	87	DEVE. FAN	Check by using DEVE. FAN to switch between bound and unbound states.
		ALARM Signal : High	
OPT_DUP _INVERT_IN _SNR	90	INVERTER SENSOR	Check by using the Actuator to switch between light passed and light blocked states at the Sensor.
		INVERT PAPER SENSE Signal : High	
OPT_DUP _ALN_SNR	91	ALIGNER SENSOR	Check by using paper to switch between light present and light absent states at the Sensor.
		ALIGNER IN PAPER SENSE Signal : High	

Table 4-8. Digital Input Test Device Code

Digital Input Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
OPT_DUP _OUT_SNR	92	ALIGNER OUT SENSOR	Check by using paper to switch between light present and light absent states at the Sensor.
		ALIGNER OUT PAPER SENSE Signal : High	
OPT_DUP _DOOR_SW	93	CAB SWITCH-I/L	Checking by opening and closing the INVERTER CHUTE.
		INVERTER CHUTE SWITCH ON Signal : High	
OPT_DUP _TRAY_SW	94	ALIGNER ASSY	Checking by opening and closing the ALIGNER ASSY.
		ALIGNER SENSE Signal : High	
OPT_DUP_24V	95	24V to Option Duplex	Checking by opening and closing the FRONT COVER ASSY. (Even MSI/REGI HIGH ASSY or FUSER ASSY is acceptable.)
		24VDC(between LVPS and Option Duplex) : High	
OPT_DUP _MOT_FAIL	96	INVERTER MOTOR	After checking by switching between connected and disconnected states at the INVERTER MOTOR connector(P/J147), check by turning ON[LOW] the INVERTER MOTOR ON signal at Digital Output Test[A0].
		INVERTER MOTOR FAIL Signal : High	
OPT_FEEDER1 _NEAR_END _SW	A0	LOW PAPER SENSOR-2T SENSOR (Cassette 2)	Check by increasing and decreasing the amount of paper in Cassette 2 to switch between detected and not detected states at the Sensor.
		[2]LOW PAPER SENSE Signal : High	

Table 4-8. Digital Input Test Device Code

Digital Input Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
OPT_FEEDER1 _EMPTY_SNR	A4	NO PAPER SENSOR (Cassette 2)	Check by using the NO PAPER SENSOR ACTUATOR to switch between light passed and light blocked states at the Sensor.
		[2]TRAY PAPER SENSE Signal : High	
OPT_FEEDER1 _LEVEL_UP _SNR	A5	NUDGER SENSOR (Cassette 2)	Check by using the NUD/ FEED BRACKET ASSY to switch between light passed and light blocked states at the Sensor.
		[2]TRAY LEVEL SENSE Signal : High	
OPT_FEEDER1 _PASS_SNR	A6	FEED OUT SENSOR (Cassette 2)	Check by using paper to switch between light present and light absent states at the Sensor.
		[2]FEED OUT PAPER SENSE Signal : High	
OPT_FEEDER2 _NEAR_END _SW	B0	LOW PAPER SENSOR-2T SENSOR (Cassette 3)	Check by increasing and decreasing the amount of paper in Cassette 3 to switch between detected and not detected states at the Sensor.
		[3]LOW PAPER SENSE Signal : High	
OPT_FEEDER2 _EMPTY_SNR	B4	NO PAPER SENSOR (Cassette 3)	Check by using the NO PAPER SENSOR ACTUATOR to switch between light passed and light blocked states at the Sensor.
		[3]TRAY PAPER SENSE Signal : High	
OPT_FEEDER2 _LEVEL_UP_SNR	B5	NUDGER SENSOR (Cassette 3)	Check by using the NUD/ FEED BRACKET ASSY to switch between light passed and light blocked states at the Sensor.
		[3]TRAY LEVEL SENSE Signal : High	

Table 4-8. Digital Input Test Device Code

Digital Input Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
OPT_FEEDER2 _PASS_SNR	B6	FEED OUT SENSOR (Cassette 3)	Check by using paper to switch between light present and light absent states at the Sensor.
		[3]FEED OUT PAPER SENSE Signal : High	
OPT_FEEDER _DOOR_SW	C0	FEEDER R/H COVER SWITCH F or FEEDER R/H COVER SWITCH R	Checking by opening and closing the FEEDER CHUTE ASSY.
		FEEDER R/H COVER SWITCH F ON Signal : High or FEEDER R/H COVER SWITCH R ON Signal : High	
OPT_FEEDER _DOOR2_SW	C1	FEEDER R/H COVER SWITCH F or FEEDER R/H COVER SWITCH R	Checking by opening and closing the FEEDER CHUTE ASSY.
		FEEDER R/H COVER SWITCH F ON Signal : High or FEEDER R/H COVER SWITCH R ON Signal : High	
OPT_FEEDER _24V	C2	24V to Option Feeder	Checking by opening and closing the FRONT COVER ASSY. (Even MSI/REGI HIGH ASSY or FUSER ASSY is acceptable.)
		24VDC(between LVPS and Option Feeder) : High	

Table 4-8. Digital Input Test Device Code

Digital Input Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
OPT_FEEDER _MOTOR_FAIL	C3	FEEDER MOTOR ASSY	After checking by switching between connected and disconnected states at the FEEDER MOTOR ASSY connector(P/ J239), check by turning ON[LOW] the OPT. FEEDER MOTOR ON signal at Digital Output Test[B8].
		OPT. FEEDER MOTOR FAIL Signal : High	
OPT_SORTER _STACK_FULL_S NR	D0	SORTER STACK SENSOR	Check by using paper to switch between light present and light absent states at the Sensor.
		SORTER STACK SENSE Signal : High	
OPT_SORTER _PASS_SNR	D1	SORTER PASS SENSOR	Check by using the Actuator to switch between light passed and light blocked states at the Sensor.
		SORTER PASS PAPER SENSE Signal : High	
OPT_SORTER _INTLK_SW	D2	SORTER INTLK SWITCH	Checking by opening and closing the SORTER UPPER COVER.
		SORTER INTLK SWITCH ON Signal : High	
OPT_SORTER _BIN_HOME _SW	D3	BIN HOME SWITCH	Check by turning switch ON and OFF by hand.
		BIN HOME SWITCH ON Signal : High	
OPT_SORTER _BIN_CAM _SW	D4	BIN CAM SWITCH	Check by turning switch ON and OFF by hand.
		BIN CAM SWITCH ON Signal : High	

Table 4-8. Digital Input Test Device Code

Digital Input Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
OPT_SORTER _JOINT_SW	D5	SORTER JOINT SWITCH	Check by pulling and setting the printer and Option Sorter Unit.
		SORTER JOINT SWITCH ON Signal : High	
OPT_SORTER _EXIST_SNR	D6	EXIST SENSOR	Check by using paper to switch between light present and light absent states at the Sensor.
		EXIST PAPER SENSE Signal : High	

4.2.5.6 Digital Output Test

This lets you turn ON/OFF each component that is operated by a digital signal.

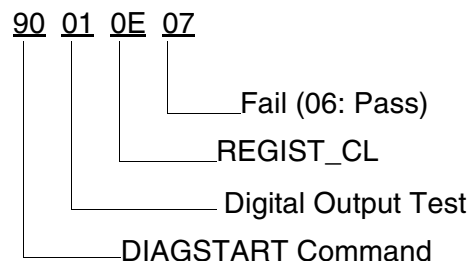
Table 4-9. Digital Output Test

DIAGON command: [75]		DIAGOFF command: [76]
DIAGSTART Command (Digital Output Test) : [90 02 XX]		
DIAGSTOP Command (Digital Output Test) : [91 02 XX]		
Parameter	Function	Data (hex)
1	Diagnostics Type	02 : Digital Output Test
2	Code_DO	Device code (See the next section [2.5.7].)
3	DGST	[Status only] 06 : Pass , 07 : Fail
Status present ([90 02 XX], [91 02 XX XX])		

EX) [Command]



EX) [Status]



- During high voltage output, never touch parts with high voltage output or energized with high voltage.
- When the laser is operating, never touch the drive section.
- During laser beam output, all the covers must be installed.

NOTE: To prevent electrification exhaustion, never execute [BCR] ON, [ERASE LAMP ASSY] ON, and [ROS ASSY LD] ON when [PROCESS DRIVE ASSY] is OFF.

NOTE: To prevent the CLEANING BLADE from reversing on itself, never set the [PROCESS DRIVE ASSY] to ON immediately after replacing the DRUM CARTRIDGE with a new one.

NOTE: With [PROCESS DRIVE ASSY] ON, [FUSER-P/H MOTOR] ON, [DEVE. CLUTCH ASSY] ON, and at each color development position, never turn only [DB output (AC component)] ON or turn both [DB output (AC component)] and [DB output (DC component)] ON.

NOTE: Never turn ON for 10 seconds or more the [DISPENSE MOTOR ASSY] with [FUSER-P/H MOTOR] ON at each color's development position. Otherwise a toner jam or gear damage may occur.

NOTE: Never set the 2ND GTR to [Advance] with [PROCESS DRIVE ASSY] OFF and [FUSER-P/H MOTOR] ON. Otherwise the IBT BELT ASSY may be scratched.

NOTE: Never turn ON the [PROCESS DRIVE ASSY] with the 2ND GTR set to [Advance]. Otherwise the IBT BELT ASSY may be scratched.

NOTE: Never turn ON the 1ST BTR with the [PROCESS DRIVE ASSY] OFF. Otherwise the IBT BELT ASSY may be damaged.

NOTE: Never turn ON the 2ND BTR with the [PROCESS DRIVE ASSY] OFF and the [FUSER-P/H MOTOR] OFF. Otherwise the IBT BELT ASSY may be damaged.

NOTE: To prevent dirt from getting into the printer and damage to the gears caused by improper meshing, never execute [FUSER-P/H MOTOR] ON or [DEVE. CLUTCH ASSY] ON when slightly shifted from development position for each color.

NOTE: Never turn ON for long time. Otherwise the device may be damaged.

NOTE: For check methods with <WARNING> <CAUTION> indicated, check thoroughly the WARNINGS and CAUTIONs in the “2.6.6 Digital Output Test” so as to execute without causing any problems.

NOTE: For check methods with <WARNING> <CAUTION> indicated, check thoroughly the WARNINGS and CAUTIONs in the “2.6.6 Digital Output Test” so as to execute without causing any problems.

4.2.5.7 Digital Output Test Device Code



For check methods with <WARNING> <CAUTION> indicated, check thoroughly the WARNINGS and CAUTIONs so as to execute without causing any problems.

Table 4-10. Digital Output Test Device Code

Digital Output Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
MAIN_MOT _SPEED0	00	PROCESS DRIVE ASSY	<WARNING> <CAUTION> Check by the change in operational sound or visually that the motor rotation goes to medium speed (one half speed). (During executing with code [54], executing DIAGSTOP changes the PROCESS DRIVE ASSY to one half speed.)
		Set the WDD SPEED0 signal to High with DIAGSTOP. (It doesn't function with DIAGSTART.)	

Table 4-10. Digital Output Test Device Code

Digital Output Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
MAIN_MOT _SPEED1	06	PROCESS DRIVE ASSY	<WARNING> <CAUTION> Check by the change in operational sound or visually that the motor rotation goes to low speed (1/3 speed). (During executing with code [54], executing with [01] and DIAGSTOP changes the PROCESS DRIVE ASSY to one half speed.)
		Set the WDD SPEED1 signal to High with DIAGSTOP. (It doesn't function with DIAGSTART.)	
OPT_FLAG	07	Option Feeder	Check the signal. (Not operating)
		Set the FEEDER FLAG to Low.	
FEED_START	08	Option Feeder	Check the signal. (Not operating)
		Set the FEEDER START to Low.	
DUP_START	09	Option Duplex	Check the signal.(Not operating)
		Set the DUPLEX START to Low.	
BTR_2ND	0A	HVPS	<WARNING> <CAUTION> Do not check the 2ND BTR output. Check the signal. (Check during executing with code [54]. HVPS can not normally without executing with Analog Output Test[01].)
		Set 2BTR ON signal to Low.	

Table 4-10. Digital Output Test Device Code

Digital Output Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
BTR_1ST	0B	HVPS	<WARNING> <CAUTION> Do not check the 2ND BTR output. Check the signal. (Check during executing with code [54]. HVPS can not be normal without executing with Analog Output Test[00].)
		Set 1BTR ON signal to Low.	
DEVE_DC	0C	HVPS	<WARNING> <CAUTION> Do not check the 1ST BTR output. Check the signal. (Check during executing with code [54]. HVPS can not normally without executing with Analog Output Test[03].)
		Set DB DC ON signal to Low.	
DEVE_AC	0D	HVPS	<WARNING> <CAUTION> Do not check the DB output. Check the signal. (Check during executing with code [54]. HVPS can not normally without executing with Analog Output Test[06].)
		Set DB AC ON signal to Low.	

Table 4-10. Digital Output Test Device Code

Digital Output Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
BCR_DC	0E	HVPS	<WARNING> <CAUTION> Do not check the BCR output. Check the signal. (Check during executing with code [54]. HVPS can not normally without executing with Analog Output Test[02].)
		Set BCR ON signal to Low.	
ROTARY_MOT_POWER	10	ROTARY MOTOR ASSY	Check the signal.(Not operating) [Turn it off automatically in 10msec rest.]
		Set ROARY MOTOR HOLD signal to Low.	
ROTARY_MOT	11	ROTARY MOTOR ASSY	Check the signal.(Not operating) [Turn it off automatically in 10msec rest.]
		Set ROTARY MOTOR ON signal to Low.	
PATH_SOL_PUSH	17	EXCHANGE SOLENOID	Check by operational sound that the Solenoid is operating and visually that the EXCHANGE CHUTE is operating. (Though ON/ OFF is repeated with 0.12sec/ 1sec, only the first time of the beginnings can be checked.)
		Set EXCHANGE SOLENOID PUSH ON signal to Low.	

Table 4-10. Digital Output Test Device Code

Digital Output Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
PATH_SOL_PULL	18	EXCHANGE SOLENOID	Check by operational sound that the Solenoid is operating and visually that the EXCHANGE CHUTE is operating. (Though ON/ OFF is repeated with 0.12sec/ 1sec, only the first time of the beginnings can be checked.)
		Set EXCHANGE SOLENOID PULL ON signal to Low.	
OPT_DUP_PATH_SOL_PUSH	19	DUP GATE SOLENOID	Check by operational sound that the Solenoid is operating and visually that the GATE-DUPLEX is operating. (Though ON/ OFF is repeated with 0.12sec/ 1sec, only the first time of the beginnings can be checked.)
		Set DUP GATE SOLENOID PUSH ON signal to Low.	
OPT_DUP_PATH_SOL_PULL	1A	DUP GATE SOLENOID	Check by operational sound that the Solenoid is operating and visually that the GATE-DUPLEX is operating. (Though ON/ OFF is repeated with 0.12sec/ 1sec, only the first time of the beginnings can be checked.)
		Set DUP GATE SOLENOID PULL ON signal to Low.	

Table 4-10. Digital Output Test Device Code

Digital Output Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
CST1_FEED _SOL	1B	FEED SOLENOID	Check by operational sound that the Solenoid is operating and visually that the amateur is operating. (ON/ OFF is repeated with 0.12sec/1sec.)
		Set FEED SOLENOID ON signal to Low.	
TURNROLL _CL	1C	TURN CLUTCH	Check by operational sound that the clutch is operating.
		Set [1]TURN CLUTCH ON signal to Low.	
REGIST_CL	1E	REGI. CLUTCH	Check by operational sound that the clutch is operating.
		Set REGI. CLUTCH ON signal to Low.	
PRE-REG_CL	1F	PRE-REGI. CLUTCH	Check by operational sound that the clutch is operating.
		Set PRE-REGI. CLUTCH ON signal to Low.	
MSI_FEED_CL	20	PICK UP CLUTCH	Check by operational sound that the clutch is operating.
		Set PICK UP CLUTCH ON signal to Low.	
MAG_ROLL _CL	21	DEVE. CLUTCH ASSY	<CAUTION> Check by operational sound that the clutch is operating.
		Set DEVE. CLUTCH ON signal to Low.	
RTS_CLR	22	MCU PWB	-
		Set /CRDY signal to Low.	
MSI_MOT	23	LIFT MOTOR ASSY	<CAUTION> -[Turn it off automatically in 0.12msec rest.]
		Set MCU PWB signal to Low.	

Table 4-10. Digital Output Test Device Code

Digital Output Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
MSI_MOT_0	2D	LIFT MOTOR ASSY	<CAUTION> Check visually that the BOTTOM PLATE is operating in the lift up direction. (During executing with this code, LIFT MOTOR ASSY turns in the lift up direction by executing with code [23].)
		Set LIFT MOTOR UP ON signal to High.	
MSI_MOT_1	2E	LIFT MOTOR ASSY	<CAUTION> Check visually that the BOTTOM PLATE is operating in the lift down direction. (During executing with this code, LIFT MOTOR ASSY turns in the lift down direction by executing with code [23].)
		Set LIFT MOTOR DOWN ON signal to High.	
NREADY	3A	MCU PWB	-
		Set /READY signal to Low	
NVSYNC	3C	MCU PWB	-
		Set /VSYNC signal to Low.	
PRE_TR0	3F	MCU PWB	-
		Set MCU PWB inside signal (PRE-TR0) to Low.	

Table 4-10. Digital Output Test Device Code

Digital Output Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
VDENB	44	ROS ASSY	-
		Set MCU PWB inside signal (LDENB) to High.	
THSEL	46	MCU PWB	-
		Set MCU PWB inside signal (sermister breakage detection signal) to Low.	
HR_LAMP_SSR	47	H/R HEATER, P/R HEATER	Check the H/R HEATER and P/R HEATER light up. [Turn it off automatically in 0.12msec rest.]
		Set HEATER ON signal to Low.	
CNTR_RST	4C	MCU PWB	-
		Set MCU PWB inside signal (Watch dog timer cancel signal) to Low.	
PH2_MOT_SPEED	52	Not used.	-
PH_MOT	53	FUSER MOTOR ASSY, P/H MOTOR ASSY	<WARNING> <CAUTION> Check the rotation of two motors. (It rotates in standard speed unless a code [57], [62] are executed.)
		Set FUSER-P/H MOTOR ON signal to Low.	

Table 4-10. Digital Output Test Device Code

Digital Output Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
MAIN_MOT	54	PROCEASS DRIVE ASSY	<WARNING> <CAUTION> Check the rotation of the motor. (It rotates in standard speed unless DIAGSTOP is executed with the code [00], [06].)
		Set PROCESS MOTOR ON signal to Low.	
DISPENCE_MOT	56	DISPNESE CLUTCH ASSY	<CAUTION> Check by operational sound that the clutch is operating.
		Set DISPNESE CLUTCH ON signal to Low.	
PH_MOT_SPEED0	57	FUSER MOTOR ASSY, P/H MOTOR ASSY	<WARNING> <CAUTION> Check by the change in operational sound or visually that the rotation of two motors goes to medium speed (one half speed). (During executing with code [53], executing this code changes the FUSER MOTOR ASSY and the P/H MOTOR ASSY to one half speed.)
		Set FUSER-P/H MOTOR SPEED0 signal to Low.	

Table 4-10. Digital Output Test Device Code

Digital Output Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
REAR_FAN _SPEED	60	DEVE. FAN	<WARNING> Check visually that the rotation of the DEVE. FAN goes to high speed. (During executing with code [61], executing this code changes the DEVE. FAN to high speed.)
		Set DEVE. FAN SLOW-SPEED signal to Low.	
REAR_FAN	61	DEVE. FAN	<WARNING> Check visually the rotation of the DEVE. FAN.
		Set DEVE. FAN ON signal to Low.	
PH_MOT _SPEED1	62	FUSER MOTOR ASSY, P/H MOTOR ASSY	<WARNING> <CAUTION> Check by the change in operational sound or visually that the rotation of two motors goes to low speed (1/3 speed). (During executing with code [53] and [57], executing this code changes the FUSER MOTOR ASSY and the P/H MOTOR ASSY to 1/3 speed.)
		Set FUSER-P/H MOTOR SPEED signal to Low.	
FUSER_FAN_1	63	FUSER FAN-1	<WARNING> Check visually the rotation (low speed) of the FUSER FAN-1.
		Set FUSER FAN-1 ON signal to Low.	

Table 4-10. Digital Output Test Device Code

Digital Output Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
FUSER_FAN_2	64	FUSER CHUTE FAN	<WARNING> Check visually the rotation of the FUSER CHUTE FAN.
		Set FUSER CHUTE FAN ON signal to Low.	
FUSER_FAN _SPEED	65	FUSER FAN-1	<WARNING> Check visually that the rotation of the FUSER FAN-1 goes to high speed. (During executing with code [63], executing this code changes the FUSER FAN-1 to high speed.)
		Set FUSER FAN-1 SLOW-SPEED signal to Low.	
IBT_CLEANER_S OL	66	CLEANER CAM SOLENOID	<CAUTION> Check by operational sound that the solenoid is operating.
		Set CLEANER CAM SOLENOID ON signal to Low.	
ADC_CLEAN _SOL	67	ADC SENSOR ASSY	Check by operational sound that the solenoid is operating. (Repeat ON/OFF with 0.12sec/1sec.)
		Set ADC SOLENOID ON signal to Low.	
BTR_2ND_CL	70	BTR CAM CLUTCH	<CAUTION> Check by operational sound that the clutch is operating.
		Set BTR CAM CLUTCH ON signal to Low.	
ERASE_LAMP	71	ERASE LAMP ASSY	Check LED light up. (Do it while executing a code [54].)
		Set ERASE LAMP ON signal to Low.	
ADC_LED	72	ADC SENSOR ASSY	Check the signal. (LED of the ADC Sensor is turned on.)
		Set ADC LED ON signal to Low.	

Table 4-10. Digital Output Test Device Code

Digital Output Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
ROS_MOT	74	ROS ASSY	<CAUTION> Check the rotation of the motor by operational sound.
		Set SCANNER MOTOR ON signal to Low.	
CART_PHOTO_LED	75	CARTRIDGE SENSOR	Check the signal. (LED of the CARTRIDGE SENSOR is turned on.)
		Set SENSOR LED ON signal to Low.	
OPT_SORTER_START	77	Option Sorer	Check the signal.(Not operating)
		Set SORTER START signal to Low.	
IBT_CL	82	Not used.	-
ENERGY_STAR	84	LVPS	Check the INTLK signal of the LVPS. (The INTLK signal becomes Low at the ENERGYSTAR signal Low.)
		Set ENERGY STAR signal to Low.	
FUSER_FAN_3	85	EXIT CHUTE FAN	<WARNING> Check the rotation of the EXIT CHUTE FAN by operational sound.
		Set EXIT CHUTE FAN ON signal to Low.	
OPT_DUP_MOT	A0	INVERTER MOTOR	<WARNING><CAUTION> Check the rotation of the motor.
		Set INVERTER MOTOR ON signal to Low.	
OPT_DUP_INV_CL	A1	ENTER CLUTCH	Check by operational sound that the clutch is operating.
		Set ENTER CLUTCH ON signal to Low.	

Table 4-10. Digital Output Test Device Code

Digital Output Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
OPT_DUP_ALN_CL	A2	ALGNER DRIVE CLUTCH	Check by operational sound that the clutch is operating.
		Set ALGNER DRIVE CLUTCH ON signal to Low.	
OPT_DUP_INV_FORWARD_CL	A3	FROWARD CLUTCH	Check by operational sound that the clutch is operating.
		Set FROWARD CLUTCH ON signal to Low.	
OPT_DUP_INV_REVERSE_CL	A4	REVERSE CLUTCH	Check by operational sound that the clutch is operating.
		Set REVERSE CLUTCH ON signal to Low.	
OPT_DUP_INV_ROLL_PUSH_SOL	A5	LOWER INV SOLENOID	<CAUTION> Check by operational sound that the solenoid is operating. (Repeat ON/OFF with 0.1sec/0.9sec.)
		Set LOWER INV SOLENOID PUSH ON signal to Low.	
OPT_DUP_INV_ROLL_PULL_SOL	A6	LOWER INV SOLENOID	<CAUTION> Check by operational sound that the solenoid is operating. (Repeat ON/OFF with 0.1sec/0.9sec.)
		Set LOWER INV SOLENOID PULL ON signal to Low.	
OPT_FEEDER1_FEED_CL	B0	FEED CLUTCH (Cassette 2) [TA CLUTCH ASSY]	Check by operational sound that the clutch is operating.
		Set [2]FEED CLUTCH ON signal to Low.	

Table 4-10. Digital Output Test Device Code

Digital Output Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
OPT_FEEDER2 _FEED_CL	B1	FEED CLUTCH (Cassette 3) [TA CLUTCH ASSY] Set [3]FEED CLUTCH ON signal to Low.	Check by operational sound that the clutch is operating.
OPT_FEEDER1 _LIFTUP_CL	B2	FEEDER LIFT CLUTCH (Cassette 2) Set [2]FEEDER LIFT CLUTCH ON signal to Low. * A function only becomes effective with this code, it functions by this code's becoming effective while a code [B6] is executed.	<WARNING><CAUTION> Check by operational sound that the clutch is operating. (During executing with code [B8] and [B6], the lift up movement of Cassette 2 and Cassette 3 is done by executing this code.) [WARNING! Stop at the order of the code [B6], [B2], [B8] at the time of the stop.]
OPT_FEEDER2 _LIFTUP_CL	B3	FEEDER LIFT CLUTCH (Cassette 3) Set [3]FEEDER LIFT CLUTCH ON signal to Low. * A function only becomes effective with this code, it functions by this code's becoming effective while a code [B7] is executed.	<WARNING><CAUTION> Check by operational sound that the clutch is operating. (During executing with code [B8] and [B7], the lift up movement of Cassette 3 is done by executing this code.) [WARNING! Stop at the order of the code [B7], [B3], [B8] at the time of the stop.]

Table 4-10. Digital Output Test Device Code

Digital Output Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
OPT_FEEDER1 _TURN_ROLL _CL	B4	TURN CLUTCH ASSY (Cassette 2) Set [2]TURN CLUTCH ON signal to Low.	Check by operational sound that the clutch is operating.
OPT_FEEDER2 _TURN_ROLL _CL	B5	TURN CLUTCH ASSY (Cassette 3) Set [3]TURN CLUTCH ON signal to Low.	Check by operational sound that the clutch is operating.
OPT_FEEDER1 _NUDGER _ROLL_SOL	B6	NUD SOLENOID ASSY (Cassette 2) Set [2]NUD SOLENOID ON signal to Low.	<CAUTION> Check by operational sound that the solenoid is operating.
OPT_FEEDER2 _NUDGER _ROLL_SOL	B7	NUD SOLENOID ASSY (Cassette 3) Set [3]NUD SOLENOID ON signal to Low.	<CAUTION> Check by operational sound that the solenoid is operating.
OPT_FEEDER _MOT	B8	FEEDER MOTOR ASSY Set FEEDER MOTOR ON signal to Low.	<WARNING><CAUTION> Check the rotation of the motor.
OPT_FEEDER _READY_SIGNA L	B9	Not used.	-
OPT_SORTER _FEED_MOT	C0	SORTER P/H MOTOR Send the SORTER P/ HMOTOR ON command to Option Sorter.	<WARNING> -(Not operating)

Table 4-10. Digital Output Test Device Code

Digital Output Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
OPT_SORTER _FEED_HIGH_S PEED	C1	SORTER P/H MOTOR	<WARNING> Check the rotation of the motor. (During executing with code [C0], executing this code changes the SORTER P/H MOTOR to high speed.)
		Send the SORTER P/H HIGH SPEED command to Option Sorter.	
OPT_SORTER _FEED_MIDDLE_ SPEED	C2	SORTER P/H MOTOR	<WARNING> Check the rotation of the motor. (During executing with code [C0], executing this code changes the SORTER P/H MOTOR to medium speed.)
		Send the SORTER P/H MIDDLE SPEED command to Option Sorter.	
OPT_SORTER _FEED_LOW_SP EED	C3	SORTER P/H MOTOR	<WARNING> Check the rotation of the motor. (During executing with code [C0], executing this code changes the SORTER P/H MOTOR to low speed.)
		Send the SORTER P/H LOW SPEED to Option Sorter.	
OPT_SORTER _FEED_S- LOW_SPEED	C4	SORTER P/H MOTOR	<WARNING> Check the rotation of the motor. (During executing with code [C0], executing this code changes the SORTER P/H MOTOR to super-low speed.)
		Send the SORTER P/H S-LOW SPEED command to Option Sorter.	

Table 4-10. Digital Output Test Device Code

Digital Output Test [DIAGSTART : [90 02 XX] , DIAGSTOP : [91 02 XX]]			
Name	Code (Hex)	Function Item	Check Method
		When status data is [High]	
OPT_SORTER _BIN_MOT_DOW N	C5	BIN MOTOR	<WARNING> Check the rotation of the motor. (It stops automatically by the extreme bottom step arrival.)
		Send the BIN MOTOR DOWN command to Option Sorter.	
OPT_SORTER _BIN_MOT_UP	C6	BIN MOTOR	<WARNING> Check the rotation of the motor. (It stops automatically by the extreme upper step arrival.)
		Send the BIN MOTOR UP command to Option Sorter.	

4.2.5.8 Analog Input Test

This lets you detect the signal level of sensors and output monitors that have analog signals.

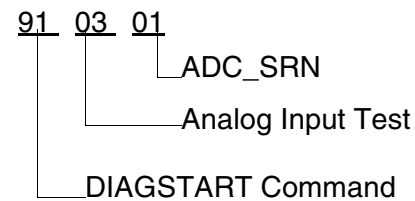
NOTE: Do use this without this manual or the wise instructed.

Table 4-11. Analog Input Test

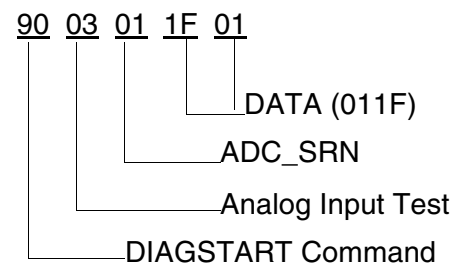
DIAGON command: [75]		DIAGOFF command: [76]
DIAGSTART command (Analog Input Test) : [90 03 XX]		
DIAGSTOP command (Analog Input Test) : Unnecessary		
Parameter	Function	Data (hex)
1	Diagnostics Type	02 : Digital Output Test
2	Code_AI	Device code (See the next section [2.6.9].)
3	Data	[Status only] data
Status present ([90 03 XX XX XX])		

NOTE: Status data is displayed in 2 bytes in order from the least significant.

EX) [Command]



EX) [Status]



4.2.5.9 Analog Input Test Device Code



For items with <WARNING> <CAUTION> indicated, check thoroughly the WARNINGS and CAUTIONs for the output test so as to execute without causing any problems.

Table 4-12. Analog Input Test Device Code

Analog Input Test [DIAGSTAR : [90 03 XX] , DIAGSTOP : Unnecessary]			
Name	Code (Hex)	Functional Item	Check Method
		Check Signal	
		Data Range	
BTR_2ND_IN	00	HVPS (Secondary transfer electric current monitor)	<WARNING> <CAUTION> Conduct 2ND BTR output with Digital Output Test [54] and [A0] and Analog Output Test [01], and check the data with this diagnostic.
		2BTR I MONI Signal	
		0000-03FFh (0-4.1[V])	
ADC_SNR	01	ADC Sensor (ADC SENSOR ASSY)	Check by this DIAG while executing Digital Output Test with the code [72].
		ADC SIG Signal	
		0000-03FFh(0-4.1[VDC])	
PAP_SIZE_SW_1	02	SIZE SWITCH ASSY (Cassette 1Cassette 2)	Switch ON/OFF the four Cassette 1 SIZE SWITCH ASSY paper size switches and check the data with this diagnostic.
		[1] SIZE SWITCH Signal	
		0000-00FFh(0-4.1[V]) See "7.2 Paper Size Control" in Chapter 10.	

Table 4-12. Analog Input Test Device Code

Analog Input Test [DIAGSTAR : [90 03 XX] , DIAGSTOP : Unnecessary]			
Name	Code (Hex)	Functional Item	Check Method
		Check Signal	
		Data Range	
HR_THERMISTOR	03	TEMP. SENSOR ASSY	Check data. [Note : When DigitalOutputTest [46] is executed, it becomes the thermister breakage detection mode, and becomes the [00EAh] above in the case of the breakage.]
		TEMP. Signal	
		0000-00FFh (0-4.1[VDC])	
ENV_THERM	04	ENVIRONMENT SENSOR (Temperature)	Check data.
		ENVIRONMENT TEMP.	
		0000-00FFh (0-4.1[VDC])	
_5V_BUNATSU	05	5VDC power supply monitor	- Measure the error of the 5VDC power supply, and correct data on the code [02]. It usually becomes 00C9-00DE (3.23V-3.57V).
		5VDC pressure inside MCU PWB	
		0000-00FFh (0-4.1[VDC])	
ENV_HUMIDITY	06	ENVIRONMENT SENSOR (Humidity)	Check data.
		HUMIDITY SENSOR signal.	
		0000-00FFh (0-4.1[VDC])	
BTR_1ST_IN	07	HVPS (First transfer electric current monitor)	<WARNING> <CAUTION> Conduct 1ST BTR output with Digital Output Test [54] and Analog Output Test [00], and check the data with this diagnostic.
		1BTR I MONI Signal	
		0000-03FFh (0-4.1[V])	

Table 4-12. Analog Input Test Device Code

Analog Input Test [DIAGSTAR : [90 03 XX] , DIAGSTOP : Unnecessary]			
Name	Code (Hex)	Functional Item	Check Method
		Check Signal	
		Data Range	
OPT_FEEDER_P AP _SIZE_SW_1	0A	AUX SIZE SWITCH ASSY (Cassette 2)	Do ON/ OFF of four Paper Size Switches of AUX SIZE SWITCH ASSY of the Cassette 2, check the data by this DIAG.
		[2] PAPER SIZE Signal	
		0000-00FFh(0-4.1[V]) See Section 2.7.1 "Paper Size Control".	
OPT_FEEDER_P AP _SIZE_SW_2	0B	AUX SIZE SWITCH ASSY (Cassette 3)	Do ON/ OFF of four Paper Size Switches of AUX SIZE SWITCH ASSY of the Cassette 3, check the data by this DIAG.
		[3] PAPER SIZE Signal	
		0000-00FFh(0-4.1[V]) See Section 2.7.1 "Paper Size Control".	

4.2.5.10 Analog Output Test

This lets you turn ON/OFF with specified data components operated by analog signals.

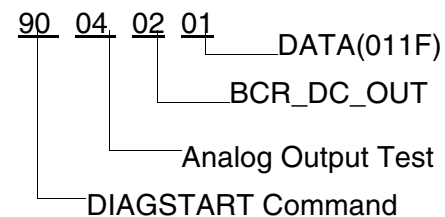
NOTE: Do use this without this manual or otherwise instructed.

Table 4-13. Analog Output Test Parameter

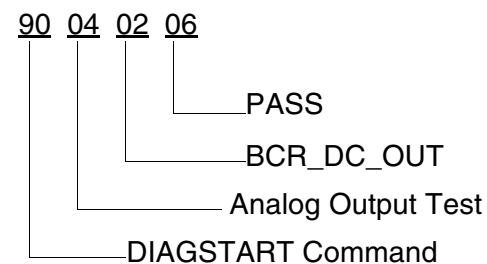
DIAGON command: [75]		DIAGOFF command: [76]
DIAGSTART command (Analog Output Test) : [90 04 XX XX]		
DIAGSTOP command (Analog Output Test) : [91 04 XX XX]		
Parameter r	Function	Data (Hex)
1	Diagnostics Type	04 : Analog Output Test
2	Code_AO	Device code (See the next section [2.6.11].))
3	Data	[For command] data: (output level)
	DGST	[For command] 06 : Pass , 07 : Fail
Status present ([90 04 XX XX], [91 04 XX XX])		

NOTE: Status data is displayed in 2 bytes in order from the least significant.

EX) [Command]



EX) [Status]





- During high voltage output, never touch parts with high voltage output or energized with high voltage.
- When the laser is operating, always keep all covers in place.
- Never touch an operating drive section .

NOTE: To prevent electrification exhaustion, never execute [BCR] ON, [ERASE LAMP ASSY] ON, and [ROS ASSY LD] ON when [PROCESS DRIVE ASSY] is OFF.

NOTE: With [PROCESS DRIVE ASSY] ON, [FUSER-P/H MOTOR] ON, [DEVE. CLUTHC ASSY] ON, and at each color development position, never turn only [DB output (AC component)] ON or turn both [DB output (AC component)] and [DB output (DC component)] ON.

NOTE: Never turn ON for 10 seconds or more the [DISPENSE MOTOR ASSY] at each color's development position. Otherwise a toner jam or gear damage may occur.

NOTE: Never turn ON the 1ST BTR with the [PROCESS DRIVE ASSY] OFF. Otherwise the IBT BELT ASSY may be damaged.

NOTE: Never turn ON the 2ND BTR with the [PROCESS DRIVE ASSY] OFF and the [FUSER-P/H MOTOR] OFF. Otherwise the IBT BELT ASSY may be damaged.

NOTE: To prevent dirt from getting into the printer and damage to the gears caused by improper meshing, never execute [FUSER-P/H MOTOR] ON or [DEVE. CLUTCH ASSY] ON when slightly shifted from development position for each color.

4.2.5.11 Analog Output Test Device Code



For check methods with <WARNING> <CAUTION> indicated, check thoroughly the WARNINGS and CAUTIONS in the Section 4.2.5.6 “Digital Output Test” so as to execute without causing any problems.

Table 4-14. Analog Output Test Device Code

Analog Output Test [DIAGSTAR : [90 04 XX] , DIAGSTOP : 91 04 XX XX]			
Name	Code (Hex)	Functional Item	Check Method
		Check Signal	
		Data Range	
BTR_1ST_OUT	00	HVPS	<WARNING> <CAUTION> Check with the 1BTR CONT signal. (Do 1ST BTR output when you execute this DIAG at the same time with Digital Output Test [54] and [0B].)
		Output the 1BTR CONT signal with a value based on data.	
		00-FFh (0-4.1[VDC])	
BTR_2ND_OUT	01	HVPS	<WARNING> <CAUTION> Check with the 2BTR CONT signal. (Do 2ND BTR output when you execute this DIAG at the same time with Digital Output Test [54] and [0A].)
		Output the 2BTR CONT signal with a value based on data.	
		00-FFh (0-4.1[VDC])	
BCR_DC_OUT	02	HVPS	<WARNING> <CAUTION> Check with the BCR DC CONT signal. (Do BCR output when you execute this DIAG at the same time with Digital Output Test [54] and [0E].)
		Output the BCR DC CONT signal with a value based on data.	
		00-FFh (0-4.1[VDC])	

Table 4-14. Analog Output Test Device Code

Analog Output Test [DIAGSTAR : [90 04 XX] , DIAGSTOP : 91 04 XX XX]			
Name	Code (Hex)	Functional Item	Check Method
		Check Signal	
		Data Range	
DEVE_DC_OUT	03	HVPS	<WARNING> <CAUTION> Check with the DB DC CONT signal. (Do DB output when you execute this DIAG at the same time with Digital Output Test [54] and [0C].)
		Output the DB DC CONT signal with a value based on data.	
		00-FFh (0-4.1[VDC])	
LD_POWER	05	ROS ASSY	<WARNING> <CAUTION> Check with the VREF signal. (Laser rays can't output it.)
		Output the VREF signal with a value based on data.	
		00-FFh (0-4.1[VDC])	
DTCK_SAW_OUT	06	HVPS	<WARNING> <CAUTION> Check with the DB DC CONT signal. (Do DB output when you execute this DIAG at the same time with Digital Output Test [54] and [0D].)
		Output the DB AC CONT signal with a value based on data.	
		00-FFh (0-4.1[VDC])	

Table 4-14. Analog Output Test Device Code

Analog Output Test [DIAGSTAR : [90 04 XX] , DIAGSTOP : 91 04 XX XX]			
Name	Code (Hex)	Functional Item	Check Method
		Check Signal	
		Data Range	
Deve Rotary Motor	0A	ROTARY MOTOR ASSY	<WARNING> <CAUTION> Check visually that the ROTARY MOTOR ASSY is rotating at the specified angle. (A ROTARY MOTOR ON signal functions too, and ROTARY MOTOR ASSY turns it in the designated angle.)
		Output the ROTARY MOTOR CLOCK signal with a value based on data.	
		00h : Home Position	
		01: From the incumbent position, +15deg	
		02: From the incumbent position, +30deg	
		03: From the incumbent position, +45deg	
		04: From the incumbent position, +60deg	
		05: From the incumbent position, +90deg	
		06: From the incumbent position, +180deg	
		07: From the incumbent position, +270deg	
		08: From the incumbent position, +300deg	

4.2.5.12 EEPROM Read

This lets you read and check the data stored in the MCU PWB EEPROM(NVM).

Table 4-15. EEPROM Read Parameter

DIAGON command: [75]		DIAGOFF command: [76]
DIAG Command (EEPROM Read) : [90 05 XX XX]		
DIAG Command (EEPROM Read) : Unnecessary		
Parameter	Function	Data (hex)
1	Diagnostics Type	05 : EEPROM Read
2	Code_EP	NVM number (see "2.6.15 NVM List")
3	Code_EP	NVM number (see "2.6.15 NVM List")
4	Data	[Status only] data
5	Data	[Status only] data
6	Data	[Status only] data
7	Data	[Status only] data
Status present ([90 05 XX XX XX XX XX XX])		

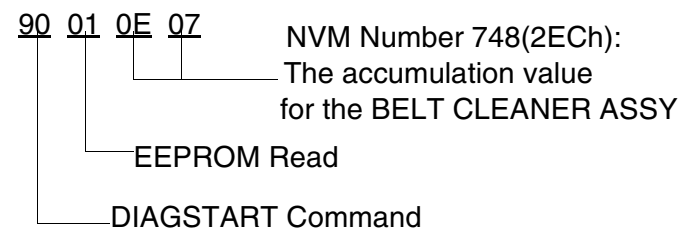
NOTE: Code_EP (NVM number) must be entered in 2 bytes in order from the least significant.

NOTE: Status data is displayed in 4 bytes in order from the least significant.

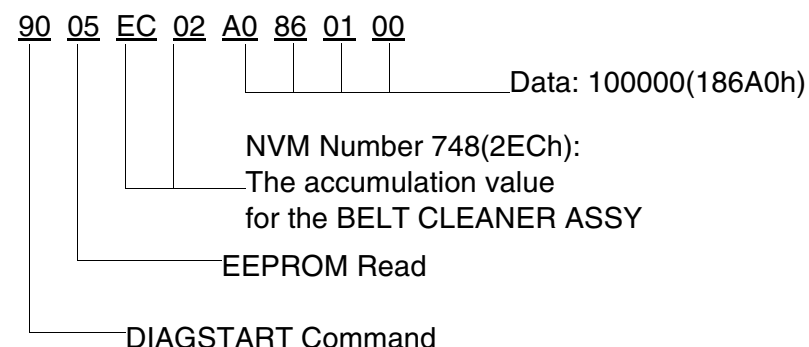
NOTE: There are three kinds of data of 1Byte, 2Byte and 4Byte in Code_EP (NVM number). But, be careful with the status because it becomes the indication of 4Byte completely. 1Byte of the lowest rank in 4Byte becomes Data of the appropriateness NVM number by the thing of 1Byte, and other 3Bytes data indicates data of other NVM numbers. 2Byte of the lowest rank in 4Byte becomes Data of the appropriateness NVM number by the thing of 2Byte, and other 2Bytes data indicates data of other NVM numbers.

NOTE: When data is a negative value, values decrease from [FFh]: [-1] = [FFh], [-2] = [FFh], etc.

EX) [Command]



EX) [Status]



NOTE: When MCU PWB is exchanged, though it is being made a principle that exchange of EEPROM (NVM : U2) is done, begin to read the following NVM number from MCU PWB before the exchange surely, and do [EEPROMRead], and write down value when exchange of EEPROM isn't made. (Do Log Save.) And, recommend it when you do Read Out of the following NVM number and write down value to grasp use conditions if necessary when others maintain it.

- [720(02D0h)] : Counter C for the WASTE TONER BOX FULL detection.
- [724(02D4h)] : The whole image count accumulation value of the device.
- [728(02D8h)] : The Magnet Roll drive accumulation time of DEVELOPER ASSY BK.
- [730(02DAh)] : The Magnet Roll drive accumulation time of DEVELOPER ASSY Y.
- [732(02DCh)] : The Magnet Roll drive accumulation time of DEVELOPER ASSY M.
- [734(02DEh)] : The Magnet Roll drive accumulation time of DEVELOPER ASSY C.
- [736(02E0h)] : Dispense accumulation time for the TONER CARTRIDGE BK Life detection.
- [738(02E2h)] : Dispense accumulation time for the TONER CARTRIDGE Y Life detection.
- [740(02E4h)] : Dispense accumulation time for the TONER CARTRIDGE M Life detection.
- [742(02E6h)] : Dispense accumulation time for the TONER CARTRIDGE C Life detection.
- [744(02E8h)] : Seat count accumulation value for the MAIN FUSER ASSY Life check.
- [748(02ECh)] : The count accumulation value of BELT CLEANER ASSY.
- [752(02F0h)] : The whole seat count accumulation value of the device.
- [760(02F8h)] : The count accumulation value of TRANSFER ASSY.
- [764(02FCh)] : Count accumulation value for the DRUM CARTRIDGE Life detection.
Caution: When a CRUM function is endowed, don't do the thing except Read Out absolutely.
- [768(0300h)] : The count accumulation value of 2ND BTR ASSY.
- [772(0304h)] : Counter A for the WASTE TONER BOX Full detection.
- [774(0306h)] : Counter B for the WASTE TONER BOX Full detection.
- [776(0308h)] : The whole Yellow image count accumulation value of the device.
- [780(030Ch)] : The whole Black image count accumulation value of the device.
- [788(0314h)] : The image count accumulation value of DEVELOPER ASSY BK.
- [792(0318h)] : The image count accumulation value of DEVELOPER ASSY Y.
- [796(031Ch)] : The image count accumulation value of DEVELOPER ASSY M.
- [800(0320h)] : The image count accumulation value of DEVELOPER ASSY C.
- [966(03C6h)] : The total dispense accumulation time of TONER CARTRIDGE BK.
- [968(03C8h)] : The total dispense accumulation time of TONER CARTRIDGE Y.
- [970(03CAh)] : The total dispense accumulation time of TONER CARTRIDGE M.

- [972(03CCh)] : The total dispense accumulation time of TONER CARTRIDGE C.
- [974(03CEh)] : The total dispense accumulation time of TONER CARTRIDGE BK.
- [976(03D0h)] : The total dispense accumulation time of TONER CARTRIDGE Y.
- [978(03D2h)] : The total dispense accumulation time of TONER CARTRIDGE M.
- [980(03D4h)] : The total dispense accumulation time of TONER CARTRIDGE C.

NOTE: *The partly same contents can be done by the Section 4.2.6
“Count Accumulation Value Read/Write” as well.*

4.2.5.13 EEPROM Write

This lets you write and change data stored in the MCU PWB EEPROM(NVM).

NOTE: NVM numbers besides those specified in this manual are important system values. Never write to these values.

NOTE: After writing data, you must send the DIAGOFF command to write to the EEPROM.

NOTE: When MCU PWB is exchanged, though it is being made a principle that exchange of EEPROM (NVM : U2) is done, begin to read the following NVM number from MCU PWB before the exchange surely, and do [EEPROMRead], and write down value when exchange of EEPROM isn't made. (Do Log Save.) And write the value estimated more than the use conditions when it isn't made that if it begins to read it, exchange of EEPROM in either.

Table 4-16. EEPROM Write

DIAGON command: [75]		DIAGOFF command: [76]
DIAG Command (EEPROM Write) : [90 06 XX X YY XX XX XX]		
DIAG Command (EEPROM Write) : Unnecessary		
Parameter	Function	Data (Hex)
1	Diagnostics Type	06 : EEPROM Write
2	Code_EP	NVM number (see "2.6.15 NVM List")
3	Code_EP	NVM number (see "2.6.15 NVM List")
4	Data	[For command] data
	DGST	[For status] 06 : Pass , 07 : Fail
5	Data	[For command] data
6	Data	[For command] data
7	Data	[[For command] data
Status present ([90 06 XX XX XX])		

NOTE: Code_EP (NVM number) must be entered in 2 bytes in order from the least significant.

NOTE: Status data is displayed in 4 bytes in order from the least significant.

NOTE: Be fully careful because it can't recover any more if you don't input Length.

NOTE: When data is a negative value, values decrease from [FFh]: [-1] = [FFh], [-2] = [FEh], etc.

- [720(02D0h)] : Counter C for the WASTE TONER BOX FULL detection.
- [724(02D4h)] : The whole image count accumulation value of the device.
- [728(02D8h)] : The Magnet Roll drive accumulation time of DEVELOPER ASSY BK.
- [730(02DAh)] : The Magnet Roll drive accumulation time of DEVELOPER ASSY Y.
- [732(02DCh)] : The Magnet Roll drive accumulation time of DEVELOPER ASSY M.
- [734(02DEh)] : The Magnet Roll drive accumulation time of DEVELOPER ASSY C.
- [736(02E0h)] : Dispense accumulation time for the TONER CARTRIDGE BK Life detection.
- [738(02E2h)] : Dispense accumulation time for the TONER CARTRIDGE Y Life detection.
- [740(02E4h)] : Dispense accumulation time for the TONER CARTRIDGE M Life detection.
- [742(02E6h)] : Dispense accumulation time for the TONER CARTRIDGE C Life detection.
- [744(02E8h)] : Seat count accumulation value for the MAIN FUSER ASSY Life check.
- [748(02ECh)] : The count accumulation value of BELT CLEANER ASSY.
- [752(02F0h)] : The whole seat count accumulation value of the device.
- [760(02F8h)] : The count accumulation value of TRANSFER ASSY.
- [764(02FCh)] : Count accumulation value for the DRUM CARTRIDGE Life detection.
Caution: When a CRUM function is endowed, don't do the thing except Read Out absolutely.
- [768(0300h)] : The count accumulation value of 2ND BTR ASSY.
- [772(0304h)] : Counter A for the WASTE TONER BOX Full detection.
- [774(0306h)] : Counter B for the WASTE TONER BOX Full detection.
- [776(0308h)] : The whole Yellow image count accumulation value of the device.
- [780(030Ch)] : The whole Black image count accumulation value of the device.
- [788(0314h)] : The image count accumulation value of DEVELOPER ASSY BK.
- [792(0318h)] : The image count accumulation value of DEVELOPER ASSY Y.
- [796(031Ch)] : The image count accumulation value of DEVELOPER ASSY M.
- [800(0320h)] : The image count accumulation value of DEVELOPER ASSY C.
- [966(03C6h)] : The total dispense accumulation time of TONER CARTRIDGE BK.
- [968(03C8h)] : The total dispense accumulation time of TONER CARTRIDGE Y.
- [970(03CAh)] : The total dispense accumulation time of TONER CARTRIDGE M.

- [972(03CCh)] : The total dispense accumulation time of TONER CARTRIDGE C.
- [974(03CEh)] : The total dispense accumulation time of TONER CARTRIDGE BK.
- [976(03D0h)] : The total dispense accumulation time of TONER CARTRIDGE Y.
- [978(03D2h)] : The total dispense accumulation time of TONER CARTRIDGE M.
- [980(03D4h)] : The total dispense accumulation time of TONER CARTRIDGE C.

NOTE: After periodic replacement of the MAIN FUSER ASSY and after replacing the no-CRUM function specification DRUM CARTRIDGE with a new one, write [0] to the following applicable VNM number data below. (Setting a life counter value to “0” is referred to as “Counter Clear”).

And as for each part of 2ND BTR ASSY, BELT CLEANER ASSY, DEVELOPER ASSY Y, DEVELOPER ASSY M, DEVELOPER ASSY C, DEVELOPER ASSY BK as well, after periodic replacement of them with a new one, write [0] to the following applicable VNM number data below.

- When replacing MAIN FUSER ASSY with new one : [744(02E8h)]
- When replacing TRANSFER ASSY with new one : [760(02F8h)]
- When replacing 2ND BTR ASSY with new one : [768(0300h)]
- When replacing BELT CLEANER ASSY with new one : [748(02ECh)]
- When replacing DEVELOPER ASSY Y with new one : [730(02DAh)], [792(0318h)]
- When replacing DEVELOPER ASSY M with new one : [732(02DCh)], [796(031Ch)]

- When replacing DEVELOPER ASSY C with new one : [734(02DEh)], [800(0320h)]
- When replacing DEVELOPER ASSY BK with new one : [728(02D8h)], [788(0314h)]

NOTE: The partly same contents can be done by the Section 4.2.6 “Count Accumulation Value Read/Write” as well.

4.2.5.14 EEPROM Initialize

The lets you initialize the MCU PWB EEPROM(NVM:U2).

NOTE: Never initialize values not specified in this manual.

NOTE: If values not specified in this manual are accidentally initialized, conduct NV number read in the [CAUTION!] in [EEPROM Read]. Next conduct [NVM Write] in the [Service] tab. Then write the value read in advance in [EEPROM Write]. (Or conduct [NVM Write] in the [Service] tab.)

NOTE: After sending a command, you must send the DIAGOFF command to complete EEPROM initialization.

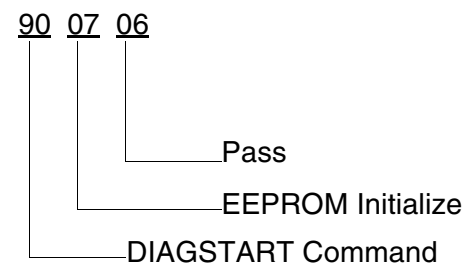
Table 4-17. EEPROM Initialization

DIAGON command: [75]		DIAGOFF command: [76]
DIAG Command : (EEPROM Initialize) : [90 07]		
DIAG Command : (EEPROM Initialize) : Unnecessary		
Parameter	Function	Data (Hex)
1	Diagnostics Type	Status only] 06 : Pass , 07 : Fail07 : FEEPROM Initialize
2	DGST	[Status only] 06 : Pass , 07 : Fail
Status present([90 70 XX])		

EX) [Command]



EX) [Status]



4.2.5.15 NVM List

NOTE: Never write to NVM numbers not listed in the following table as they are system area values.

NOTE: Never write to items with an “x” unless otherwise specified as they are system settings.

NOTE: Before replacing the MCU PWB, always conduct read of the items below with a * record them, and, then, after replacement is complete, conduct a write of these values. And write the value estimated more than the use conditions when it isn't made that if it begins to read it, exchange of EEPROM in either. Because default (initial) values vary depending on the specifications, the values below are for reference only. Description of Data

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
(Read only)	0 (0000)	1	MCU PWB Version information	-	-
			The version indication of FIRMWARE of MCU PWB	-	
	1 (0001)	1	Tip Registration adjustment (except for MSI loading paper)	-	55 (C9)
			An image is moved by data small in the tip direction.	0.988ms ec	
	2 (0002)	1	Tip Registration adjustment (MSI loading paper/postcard)	-	48 (D0)
			An image is moved by data small in the tip direction.	0.988ms ec	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
	3 (0003)	1	Tip Registration adjustment (MSI loading paper/ normal paper, OHP, label, coat paper)	-	50 (CE)
			An image is moved by data small in the tip direction.	0.988ms ec	
	4 (0004)	1	Tip Registration adjustment (MSI loading paper/ cardboard)	-	66 (BE)
			An image is moved by data small in the tip direction.	0.988ms ec	
X	5 (0005)	1	TOP EXIT SENSOR On Jam ([C4-80-00])time adjustment	-	0 (00)
			Detection timing becomes early by data small.	8.8msec	
X	6 (0006)	1	TOP EXIT SENSOR Off Jam ([C4-80-00])time adjustment	-	0 (00)
			Detection timing becomes early by data small.	8.8msec	
X	7 (0007)	1	FUSER EXIT SENSOR Off Jam ([C4-40-00])time adjustment	-	12 (0C)
			Detection timing becomes early by data small.	8.8msec	
X	8 (0008)	1	2UP Paper Pitch time adjustment (MSI)	-	51 (33)
			The space of the form of 2UP becomes small by data small.	0.988ms ec	
X	9 (0009)	1	REGI. SENSOR Jam ([C4-20-00])time adjustment(MSI)	-	0 (00)
			Detection timing becomes early by data small.	8.8msec	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
X	10 (000A)	1	REGI. SENSOR Jam ([C4-00-10])time adjustment(Duplex)	-	0 (00)
			Detection timing becomes early by data small.	8.8msec	
X	11 (000B)	1	2UP Paper Pitch time adjustment (Cassette 1)	-	51 (33)
			The space of the form of 2UP becomes small by data small.	0.988msec	
X	12 (000C)	1	REGI. SENSOR Jam ([C4-20-00])time adjustment(Feeder)	-	0 (00)
			Detection timing becomes early by data small.	8.8msec	
X	13 (000D)	1	PITCH SENSOR Check time adjustment(MSI)	-	0 (00)
			Check time becomes early by data small.	8.8msec	
X	14 (000E)	1	PICK UP CLUTCH On time adjustment(MSI)	-	0 (00)
			ON timing after the stop becomes early by data small.	8.8msec	
X	15 (000F)	1	FUSER EXIT SENSOR wind Jam ([C4-40-00])time adjustment	-	0 (00)
			Detection timing becomes early by data small.	8.8msec	
X	16 (0010)	1	OHP detection excuse switch	0, 1,	0 (00)
			0:ON(standard)	-	
			1:OFF		
			2:ON(unique)		

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
X	18 (0011)	1	A code by the country	0, 1	0 (00)
			0:Japan 1:Others	-	
X	19 (0013)	1	Image area choice	0, 1	1 (01)
			0:Standard 1:Wide	-	
	20 (0014)	1	Side Registration adjustment (cassette 1)	0-64 (00-40)	33 (21)
			An image is moved by data small in the left end direction.	0.17mm	
	21 (0015)	1	Side Registration adjustment (cassette 2)	0-64 (00-40)	35 (23)
			An image is moved by data small in the left end direction.	0.17mm	
	22 (0016)	1	Side Registration adjustment (cassette 3)	0-64 (00-40)	36 (24)
			An image is moved by data small in the left end direction.	0.17mm	
	23 (0017)	1	Side Registration adjustment(MSI)	0-64 (00-40)	32 (20)
			An image is moved by data small in the left end direction.	0.17mm	
	24 (0018)	1	*Side Registration adjustment(Duplex)	0-64 (00-40)	17 (11)
			An image is moved by data small in the left end direction.	0.17mm	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
X	27 (001B)	1	Paper Jam detection excuse switching	0,1,2,3	0 (00)
			0: Detection of JAM and size mismatch ON 1: No JAM detection 2: No size mismatch detection 3: No detection of JAM and size mismatch	-	
X	29 (001D)	1	FUSER EXIT SENSOR On Jam ([C4-40-00])time adjustment	-	0 (00)
			Detection timing becomes early by data small.	8.8msec	
X	37 (0025)	1	Form size detection adjustment (size mismatch detection margin)	-	0 (00)
			A detection margin becomes small by data small.	8.8msec	
X	40 (0028)		The first sheet loading paper of 1UP/2UP timing compensation (Cassette 1)	-	125 (7D)
			Loading paper timing becomes early by data small.	20msec	
X	41 (0029)	1	The first sheet loading paper of 1UP/2UP timing compensation (Cassette 2)	-	136 (88)
			Loading paper timing becomes early by data small.	20msec	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
X	42 (002A)	1	The first sheet loading paper of 1UP/2UP timing compensation (TrayÇR)	-	136 (88)
			Loading paper timing becomes early by data small.	20msec	
X	43 (002B)	1	The first sheet loading paper of 1UP/2UP timing compensation (MSI)	-	194 (C2)
			Loading paper timing becomes early by data small.	20msec	
X	44 (002C)	1	The first sheet loading paper of 1UP/2UP timing compensation (Duplex)	-	146 (92)
			Adjust the first sheet of body intake timing of 1UP and 2UP.	20msec	
	49 (0031)	1	Tip Registration adjustment (MSI loading paper/envelope)	-	-48 (D0)
			An image is moved by data small in the tip direction.	0.988msec	
	50 (0032)	1	Tip Registration adjustment (MSI loading paper (Dummyless) / normal paper, OHP, label, coat paper)	-	45 (2D)
			An image is moved by data small in the tip direction.	0.988msec	
	51 (0033)	1	Tip Registration adjustment (MSI loading paper (Dummyless) /cardboard)	-	34 (22)
			An image is moved by data small in the tip direction.	0.988msec	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
	52 (0034)	1	Tip Registration adjustment (MSI loading paper (Dummyless) /envelope)	-	-12 (F4)
			An image is moved by data small in the tip direction.	0.988ms ec	
X	53 (0035)	1	Regi loop quantity adjustment (except for MSI loading paper)	-	-21 (EB)
			The amount of loop becomes small by data small.	0.988ms ec	
	55 (0037)	1	Tip Registration adjustment (MSI loading paper (Dummyless) /postcard)	-	19 (13)
			An image is moved by data small in the tip direction.	0.988ms ec	
X	56 (0038)	1	Regi loop quantity adjustment (MSI loading paper/normal paper, OHP, label, coat paper)	-	-8 (F8)
			The amount of loop becomes small by data small.	0.988ms ec	
X	57 (0039)	1	Regi loop quantity adjustment (MSI loading paper/ Cardboard)	-	-36 (DC)
			The amount of loop becomes small by data small.	0.988ms ec	
X	68 (0044)	1	Regi loop quantity adjustment (MSI loading paper/postcard)	-	-32 (E0)
			The amount of loop becomes small by data small.	0.988ms ec	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
X	69 (0045)	1	FUSER STANDBY Temperature	-	115 (73)
			Temperature rises by data small.	1 (A/D value)	
X	70 (0046)	1	FUSER RUN-012 Temperature (Normal paper, B/W, 1-X)	-	112 (70)
			Temperature rises by data small.	1 (A/D value)	
X	71 (0047)	1	FUSER RUN-011 Temperature (Normal paper, YMCBk, 1-X)	-	107 (6B)
			Temperature rises by data small.	1 (A/D value)	
X	72 (0048)	1	FUSER RUN-041 Temperature (Cardboard/envelope, YMC[Bk])	-	112 (70)
			Temperature rises by data small.	1 (A/D value)	
X	73 (0049)	1	FUSER RUN-021 Temperature (Overseas label paper, YMCBk)	-	112 (70)
			Temperature rises by data small.	1 (A/D value)	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
X	74 (004A)	1	FUSER RUN-031 Temperature (Domestic label paper, YMCBk)	-	118 (76)
			Temperature rises by data small.	1 (A/D value)	
X	75 (004B)	1	FUSER RUN-051 Temperature(OHP, YMCBk)	-	118 (76)
			Temperature rises by data small.	1 (A/D value)	
X	76 (004C)	1	FUSER RUN-014 Temperature(Normal paper, B/W, X-oo)	-	112 (70)
			Temperature rises by data small.	1 (A/D value)	
X	77 (004D)	1	FUSER RUN-013 Temperature(Normal paper, YMCBk, X-oo)	-	107 (6B)
			Temperature rises by data small.	1 (A/D value)	
X	78 (004E)	1	FUSER RUN-061 Temperature(Coat paper, YMCBk)	-	112 (70)
			Temperature rises by data small.	1 (A/D value)	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
X	80 (0050)	1	FUSER RUN-052 Temperature(OHP, B/W, 1-X)	-	112 (70)
			Temperature rises by data small.	1 (A/D value)	
X	81 (0051)	1	FUSER RUN-053 Temperature(OHP, B/W, X- oo)	-	112 (70)
			Temperature rises by data small.	1 (A/D value)	
X	82 (0052)	1	FUSER RUN-042 Temperature(Cardboard/ envelope, B/W)	-	112 (70)
			Temperature rises by data small.	1 (A/D value)	
X	83 (0053)	1	FUSER RUN-022 Temperature(Overseas label paper, B/W)	-	112 (70)
			Temperature rises by data small.	1 (A/D value)	
X	84 (0054)	1	FUSER RUN-032 Temperature(Domestic label paper, B/W)	-	112 (70)
			Temperature rises by data small.	1 (A/D value)	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
X	85 (0055)	1	FUSER RUN-061 Temperature(Coat paper, B/ W)	-	112 (70)
			Temperature rises by data small.	1 (A/D value)	
X	98 (0062)	1	POWER SAVE temperature adjustment (POWER SAVE temperature)	-	198 (C6)
			POWER SAVE temperature becomes small by data small.	1 (A/D value)	
X	103 (0067)	1	Regi loop quantity adjustment (MSI loading paper/envelope)	-	-48 (D0)
			The amount of loop becomes small by data small.	0.988ms ec	
X	104 (0068)	1	Regi loop quantity adjustment (Dummyless/normal paper, OHP, label, coat paper)	-	-8 (F8)
			The amount of loop becomes small by data small.	0.988ms ec	
X	105 (0069)	1	Regi loop quantity adjustment([Dummyless]/ Cardboard)	-	-32 (E0)
			The amount of loop becomes small by data small.	0.988ms ec	
X	106 (006A)	1	Regi loop quantity adjustment([Dummyless]/ Envelope)	-	-48 (D0)
			The amount of loop becomes small by data small.	0.988ms ec	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
X	108 (006C)	1	Regi loop quantity adjustment([Dummyless]/ Postcard)	-	-32 (E0)
			The amount of loop becomes small by data small.	0.988ms ec	
	114 (0072)	1	Bk Toner Concentration (Black toner concentration)	1,2,3,4,5	3 (03)
			Change a concentration goal value by offset value 4. (Thicken a goal for concentration by data small.)	-	
	115 (0073)	1	Y Toner Concentration (Yellow toner concentration)	1,2,3,4,5	3 (03)
			Change a concentration goal value by offset value 3. (Thicken a goal for concentration by data small.)	-	
	116 (0074)	1	M Toner Concentration (Magenta toner concentration)	1,2,3,4,5	3 (03)
			Change a concentration goal value by offset value 3. (Thicken a goal for concentration by data small.)	-	
	117 (0075)	1	C Toner Concentration (Cyan toner concentration)	1,2,3,4,5	3 (03)
			Change a concentration goal value by offset value 3. (Thicken a goal for concentration by data small.)	-	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
X	134 (0086)	1	ENVIRONMENT SENSOR temperature monitor mean	0-50 (00-32)	22 (16)
			Last time, the temperature monitor mean of the measurement.	1Åé	
X	135 (0087)	1	ENVIRONMENT SENSOR humidity monitor mean	0-100 (00-64)	50 (32)
			Last time, the humidity monitor mean of the measurement.	1%	
	352 (0160)	1	2ND BTR offset level(Normal paper)	1-10 (01-0A)	3 (03)
			Change 2ND BTR output by offset value. (Make output absolute value small by data small.)	200VDC	
	353 (0161)	1	2ND BTR offset level(Coat paper)	1-10 (01-0A)	3 (03)
			Change 2ND BTR output by offset value. (Make output absolute value small by data small.)	200VDC	
	354 (0162)	1	2ND BTR offset level(Cardboard)	1-10 (01-0A)	3 (03)
			Change 2ND BTR output by offset value. (Make output absolute value small by data small.)	200VDC	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
	355 (0163)	1	2ND BTR offset level(Envelope)	1-10 (01-0A)	3 (03)
			Change 2ND BTR output by offset value. (Make output absolute value small by data small.)	200VDC	
	356 (0164)	1	2ND BTR offset level(Label)	1-10 (01-0A)	3 (03)
			Change 2ND BTR output by offset value. (Make output absolute value small by data small.)	-	
	357 (0165)	1	2ND BTR offset level(Postcard)	1-10 (01-0A)	3 (03)
			Change 2ND BTR output by offset value. (Make output absolute value small by data small.)	-	
	358 (0166)	1	2ND BTR offset level(OHP)	1-10 (01-0A)	3 (03)
			Change 2ND BTR output by offset value. (Make output absolute value small by data small.)	-	
X	359 (0167)	1	1STEP offset value with 2ND BTR offset level [3-10].(Normal paper)	0-30 (00-1E)	15 (0F)
			Offset value (voltage) becomes small by data small.	13VDC	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
X	360 (0168)	1	1STEP offset value with 2ND BTR offset level [3-10].(Coat paper)	0-30 (00-1E)	15 (0F)
			Offset value (voltage) becomes small by data small.	13VDC	
X	381 (017D)	1	1STEP offset value with 2ND BTR offset level [3-10].(Cardboard)	0-30 (00-1E)	15 (0F)
			Offset value (voltage) becomes small by data small.	13VDC	
X	382 (017E)	1	1STEP offset value with 2ND BTR offset level [3-10].(Envelope)	0-30 (00-1E)	15 (0F)
			Offset value (voltage) becomes small by data small.	13VDC	
X	383 (017F)	1	1STEP offset value with 2ND BTR offset level [3-10].(Label)	0-30 (00-1E)	15 (0F)
			Offset value (voltage) becomes small by data small.	13VDC	
X	384 (0180)	1	1STEP offset value with 2ND BTR offset level [3-10].(Postcard)	0-30 (00-1E)	15 (0F)
			Offset value (voltage) becomes small by data small.	13VDC	
X	385 (0181)	1	1STEP offset value with 2ND BTR offset level [3-10].(OHP)	0-30 (00-1E)	15 (0F)
			Offset value (voltage) becomes small by data small.	13VDC	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
X	386 (0182)	1	1STEP offset value with 2ND BTR offset level [1-3].(Normal paper)	0-23 (00-17)	31 (1F)
			Offset value (voltage) becomes small by data small.	13VDC	
X	387 (0183)	1	1STEP offset value with 2ND BTR offset level [1-3].(Coat paper)	0-23 (00-17)	31 (1F)
			Offset value (voltage) becomes small by data small.	13VDC	
X	388 (0184)	1	1STEP offset value with 2ND BTR offset level [1-3].(Cardboard)	0-23 (00-17)	31 (1F)
			Offset value (voltage) becomes small by data small.	13VDC	
X	389 (0185)	1	1STEP offset value with 2ND BTR offset level [1-3].(Envelope)	0-23 (00-17)	31 (1F)
			Offset value (voltage) becomes small by data small.	13VDC	
X	390 (0186)	1	1STEP offset value with 2ND BTR offset level [1-3].(Label)	0-23 (00-17)	31 (1F)
			Offset value (voltage) becomes small by data small.	13VDC	
X	391 (0187)	1	1STEP offset value with 2ND BTR offset level [1-3].(Postcard)	0-23 (00-17)	31 (1F)
			Offset value (voltage) becomes small by data small.	13VDC	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
X	392 (0188)	1	1STEP offset value with 2ND BTR offset level [1-3].(OHP)	0-23 (00-17)	31 (1F)
			Offset value (voltage) becomes small by data small.	13VDC	
X	448 (01C0)	1	The concentration goal value for the electric potential control Cin 50% patch (Black)	-	61 (3D)
			Thicken a goal for concentration by data small.	-	
X	449 (01C1)	1	The concentration goal value for the electric potential control Cin 50% patch (Yellow)	-	100 (64)
			Thicken a goal for concentration by data small.	-	
X	450 (01C2)	1	The concentration goal value for the electric potential control Cin 50% patch (Magenta)	-	96 (60)
			Thicken a goal for concentration by data small.	-	
X	451 (01C3)	1	The concentration goal value for the electric potential control Cin 50% patch (Cyan)	-	102 (66)
			Thicken a goal for concentration by data small.	-	
X	502 (01F6)	2	TONER CARTRIDGE BK Life warning value	-	8700 (21FC)
			Dispense time	100msec	
X	504 (01F8)	2	TONER CARTRIDGE Y Life warning value	-	7900 (1EDC)
			Dispense time	100msec	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
X	506 (01FA)	2	TONER CARTRIDGE M Life warning value	-	7200 (1C20)
			Dispense time	100msec	
X	508 (01FC)	2	TONER CARTRIDGE C Life warning value	-	8200 (2008)
			Dispense time	100msec	
X	520 (0208)	4	Printer Life warning value	-	99,999,9 99 (05F5 E0FF)
			Count	-	
X	532 (0214)	4	TRANSFER ASSY Life warning value	-	1,000,00 0 (000F 4240)
			Count	-	
X	536 (0218)	4	TRANSFER ASSY Life limit value	-	99,999,9 99 (05F5 E0FF)
			Count	-	
X	548 (0224)	4	BELT CLEANER ASSY Life warning value	-	99,999,9 99 (05F5 E0FF)
			Count	-	
X	552 (0228)	4	BELT CLEANER ASSY Life limit value	-	99,999,9 99 (05F5 E0FF)
			Count	-	
X	556 (022C)	4	2ND BTR ASSY Life warning value	-	99,999,9 99 (05F5 E0FF)
			Count	-	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
X	560 (0230)	4	2ND BTR ASSY Life limit value	-	99,999,9 99 (05F5 E0FF)
			Count	-	
X	644 (0284)	2	Image counter for ADC Sensor Cleaning	0-1000 (0000- 03E8)	0 (0000)
			All the color image count accumulation value. (Form length in the carriage direction is less than 219mm, in 1 color 1 count and more than 219mm, 1 color 2 count.)	-	
X	646 (0286)	2	VCLEAN_READ mean (except inter image)	0-1024 (0000- 0400)	768 (0300)
			The ADC Sensor measurement mean of screen surface.	-	
X	656 (0290)	1	Toner Empty Flag (Black)	0, 1	0 (00)
			0:Empty condition detection 1:Empty condition un- detection	-	
X	657 (0291)	1	Toner Empty Flag (Yellow)	0, 1	0 (00)
			0:Empty condition detection 1:Empty condition un- detection	-	
X	658 (0292)	1	Toner Empty Flag (Magenta)	0, 1	0 (00)
			0:Empty condition detection 1:Empty condition un- detection	-	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
X	659 (0293)	1	Toner Empty Flag (Cyan)	0, 1	0 (00)
			0:Empty condition detection 1:Empty condition un- detection	-	
*	720 (02D0)	2	WASTE TONER BOX Life counter (Counter C)	-	0 (0000)
			All the color dispense time accumulation value.	1sec	
*	724 (02D4)	4	Printer image counter	-	0 (0000 0000)
			All the color image count accumulation value. (Form length in the carriage direction is less than 219mm, in 1 color 1 count and more than 219mm, 1 color 2 count.)	-	
*	728 (02D8)	2	DEVELOPER ASSY BK Developing medicine drive time counter	-	0 (0000)
			DEVE.CLITCH ASSY movement accumulation time	1min	
*	730 (02DA)	2	DEVELOPER ASSY Y developing medicine drive time counter	-	0 (0000)
			DEVE.CLITCH ASSY movement accumulation time	1min	
*	732 (02DC)	2	DEVELOPER ASSY M developing medicine drive time counter	-	0 (0000)
			DEVE.CLITCH ASSY movement accumulation time	1min	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
*	734 (02DE)	2	DEVELOPER ASSY C developing medicine drive time counter	-	0 (0000)
			DEVE.CLITCH ASSY movement accumulation time	1min	
*	736 (02E0)	2	TONER CARTRIDGE BK Life counter	-	0 (0000)
			Dispense accumulation time.	100msec	
*	738 (02E2)	2	TONER CARTRIDGE Y Life counter	-	0 (0000)
			Dispense accumulation time.	100msec	
*	740 (02E4)	2	TONER CARTRIDGE M Life counter	-	0 (0000)
			Dispense accumulation time.	100msec	
*	742 (02E6)	2	TONER CARTRIDGE C Life counter	-	0 (0000)
			Dispense accumulation time.	100msec	
*	744 (02E8)	4	MAIN FUSER ASSY Life counter	-	0 (0000 0000)
			Count accumulation value. (Form length in the carriage direction is less than 219mm, in 1 color 1 count and more than 219mm, 1 color 2 count.)	-	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
*	748 (02EC)	4	BELT CLEANER ASSY Life counter	-	0 (0000 0000)
			Count accumulation value. (Count 1 print as 1 count in the case of 2 print on a Belt one page with 2UP, count 1 print as 2 count in the case of 1 print on a Belt one page with 1UP and 2UP.)	-	
*	752 (02F0)	4	Printer Life counter	-	0 (0000 0000)
			Count accumulation value. (Form length in the carriage direction is less than 219mm, in 1 color 1 count and more than 219mm, 1 color 2 count.)	-	
*	760 (02F8)	4	TRANSFER ASSY Life counter	-	0 (0000 0000)
			Count accumulation value. (At a TR0 signal one time [IBT BELT ASSY one turn], 1 count.)	-	
X	764 (02FC)	4	DRUM CARTRIDGE Life counter	-	0 (0000 0000)
*			Count accumulation value. (At a TR0 signal one time [IBT BELT ASSY two turn], 2 count.) *Actually becomes the value of CRUM of DRUM CARTRIDGE by the CRUM function specification, EEPROM Write is never to do it.	-	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
*	768 (0300)	4	2ND BTR ASSY Life counter	-	0 (0000 0000)
			Count accumulation value. (At a TR0 signal one time [IBT BELT ASSY one turn], 1 count.)	-	
*	772 (0304)	2	WASTE TONER BOX Life counter(Counter A)	-	0 (0000)
			All the color image count accumulation value. (Form length in the carriage direction is less than 215.9mm, in 1 color 1 count and more than 215.9mm, 1 color 2 count.)	-	
*	774 (0306)	2	WASTE TONER BOX Life counter(Counter B)	-	0 (0000)
			All the color image count accumulation value. (Form length in the carriage direction is less than 215.9mm, in 1 color 1 count and more than 215.9mm, 1 color 2 count.)	-	
*	776 (0308)	4	Printer Yellow image counter (Statistical Counter Y)	-	0 (0000 0000)
			Yellow image count accumulation value. (Form length in the carriage direction is less than 219mm, in 1 count and more than 219mm, 2 count.)	-	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
*	780 (030C)	4	Printer Black image counter (Statistical Counter BK)	-	0 (0000 0000)
			Black image count accumulation value (Form length in the carriage direction is less than 219mm, in 1 count and more than 219mm, 2 count.)	-	
*	788 (0314)	4	DEVELOPER ASSY BK Life counter	-	0 (0000 0000)
			Black image count accumulation value (In the case of 1up/2up mode, count 1 print as 1 count in the case of 2 print on a Belt one page with 2UP, count 1 print as 2 count in the case of 1 print on a Belt one page with 1UP and 2UP.) (In the case of TR0-Less mode, from the confrontation of the drum during the print and MagnetRoll, in every 5sec, 2 count.)	-	
*	792 (0318)	4	DEVELOPER ASSY Y Life counter	-	0 (0000 0000)
			Yellow count accumulation value (Count 1 print as 1 count in the case of 2 print on a Belt one page with 2UP, count 1 print as 2 count in the case of 1 print on a Belt one page with 1UP and 2UP.)	-	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
*	796 (031C)	4	DEVELOPER ASSY M Life counter	-	0 (0000 0000)
			Magent count accumulation value (Count 1 print as 1 count in the case of 2 print on a Belt one page with 2UP, count 1 print as 2 count in the case of 1 print on a Belt one page with 1UP and 2UP.)	-	
*	800 (0320)	4	DEVELOPER ASSY C Life counter	-	0 (0000 0000)
			Cyan count accumulation value (Count 1 print as 1 count in the case of 2 print on a Belt one page with 2UP, count 1 print as 2 count in the case of 1 print on a Belt one page with 1UP and 2UP.)	-	
X	804 (0324)	4	DEVELOPER ASSY BK Life warning value	-	99,999,999 (05F5 E0FF)
			Count	-	
X	808 (0328)	4	DEVELOPER ASSY Y Life warning value	-	99,999,999 (05F5 E0FF)
			Count	-	
X	812 (032C)	4	DEVELOPER ASSY M Life warning value	-	99,999,999 (05F5 E0FF)
			Count	-	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
X	816 (0330)	4	DEVELOPER ASSY C Life warning value	-	99,999,999 (05F5 E0FF)
			Count	-	
X	820 (0334)	4	DEVELOPER ASSY BK Life limit value	-	99,999,999 (05F5 E0FF)
			Count	-	
X	824 (0338)	4	DEVELOPER ASSY Y Life limit value	-	99,999,999 (05F5 E0FF)
			Count	-	
X	828 (033C)	4	DEVELOPER ASSY M Life limit value	-	99,999,999 (05F5 E0FF)
			Count	-	
X	832 (0340)	4	DEVELOPER ASSY C Life limit value	-	99,999,999 (05F5 E0FF)
			Count	-	
*	966 (03C6)	2	All TONER CARTRIDGE BK dispense accumulation time counter	-	0 (0000)
			Dispense accumulation time. (Minute level)	1min	
*	968 (03C8)	2	All TONER CARTRIDGE Y dispense accumulation time counter	-	0 (0000)
			Dispense accumulation time. (Minute level)	1min	

Table 4-18. NVM List

EEPROM Read([90 05 XX XX]), EEPROM Write([90 06 XX XX YY XX (XX XXXX)])					
Can/ Cannot Use	NVM No. (Hex)	Data Byte	Function	Set Range (Hex)	Default (Hex)
			Description of Data	Units	
*	970 (03CA)	2	All TONER CARTRIDGE M dispense accumulation time counter	-	0 (0000)
			Dispense accumulation time. (Minute level)	1min	
*	972 (03CC)	2	All TONER CARTRIDGE C dispense accumulation time counter	-	0 (0000)
			Dispense accumulation time. (Minute level)	1min	
*	974 (03CE)	2	All TONER CARTRIDGE BK dispense accumulation time counter	-	0 (0000)
			Dispense accumulation time. (Second level)	1sec	
*	976 (03D0)	2	All TONER CARTRIDGE Y dispense accumulation time counter	-	0 (0000)
			Dispense accumulation time. (Second level)	1sec	
*	978 (03D2)	2	All TONER CARTRIDGE M dispense accumulation time counter	-	0 (0000)
			Dispense accumulation time. (Second level)	1sec	
*	980 (03D4)	2	All TONER CARTRIDGE C dispense accumulation time counter	-	0 (0000)
			Dispense accumulation time. (Second level)	1sec	

4.2.6 Count Accumulation Value Read/Write

Reading from EEPROM (NVM) of MCU PWB and writing to EEPROM (NVM) can be done in the same way as [EEPROM Read/Write] of the Section 4.2.5 “Diagnostics Execution” by the command/status of [Parameter Control] by the various accumulation value of the count.

NOTE: When periodic replacement of the MAIN FUSER ASSY and after replacing MCU PWB, the no-CRUM function specification DRUM CARTRIDGE, 2ND BTR ASSY, BELT CLEANER ASSY, DEVELOPER ASSY Y, DEVELOPER ASSY M, DEVELOPER ASSY C and DEVELOPER ASSY BK with a new one, be based on [CAUTION!] of [EEPROM Read/Write] of Section 4.2.5 “Diagnostics Execution”.

NOTE: The same contents can be done with [EEPROM Read/Write] of the Section 4.2.5 “Diagnostics Execution” as well, When EEPROM Read/Write is done, it doesn't need to do reading/writing with [Parameter Control].

NOTE: It can do reading/writing establishment value such as registration too except for counter accumulation value with the command/status of [Parameter Control].

4.2.6.1 Read

Table 4-19. Count Accumulation Value - Read

Item	Command	Note
DRUM CARTRIDGE	[D0 00]	In the same way as the NVM number 764 (02FC)
TONER CARTRIDGE Y	[D0 01]	In the same way as the NVM number 738(02E2)
TONER CARTRIDGE M	[D0 02]	In the same way as the NVM number 740(02E4)
TONER CARTRIDGE C	[D0 03]	In the same way as the NVM number 742(02E6)
TONER CARTRIDGE BK	[D0 04]	In the same way as the NVM number 738(02E0)
WASTE TONER BOX (Counter A)	[D0 11]	In the same way as the NVM number 772(0304)
WASTE TONER BOX (Counter B)	[D0 12]	In the same way as the NVM number 774(0306)
WASTE TONER BOX (Counter C)	[D0 13]	In the same way as the NVM number 720(02D0)
MAIN FUSER ASSY	[D0 0C]	In the same way as the NVM number 764(02E8)
2ND BTR ASSY	[D0 09]	In the same way as the NVM number 768(0300)
BELT CLEANER ASSY	[D0 0A]	In the same way as the NVM number 748(02EC)
DEVELOPER ASSY Y	[D0 0D]	In the same way as the NVM number 792(0318)
DEVELOPER ASSY M	[D0 0E]	In the same way as the NVM number 796(031C)
DEVELOPER ASSY C	[D0 0F]	In the same way as the NVM number 800(0320)
DEVELOPER ASSY BK	[D0 10]	In the same way as the NVM number 788(0314)

Table 4-19. Count Accumulation Value - Read

Item	Command	Note
TRANSFER ASSY	[D0 14]	In the same way as the NVM number 760(02F8)
The whole of the device (Sheet count)	[D0 05]	In the same way as the NVM number 752(02F0)
The whole of the device (Image count)	[D0 07]	In the same way as the NVM number 724(02D4)

NOTE: A status becomes 4Byte like the following ex) toward the above command.

ex) Command[D0 09] Status

[D0 09 V1 V2 V3 V4][[V1-V4]

is still the numerical value of 10, and shows count accumulation value more than the high rank in order. It becomes [00 12 34 56] in the case of [123,456].

4.2.6.2 Write

Table 4-20. Count Accumulation Value - Write

Item	Command	Note
TONER CARTRIDGE Y	[80 01 V1 V2 V3 V4]	
TONER CARTRIDGE M	[80 02 V1 V2 V3 V4]	
TONER CARTRIDGE C	[80 03 V1 V2 V3 V4]	
TONER CARTRIDGE BK	[80 04 V1 V2 V3 V4]	
WASTE TONER BOX (Counter A)	[80 11 V1 V2 V3 V4]	
WASTE TONER BOX (Counter B)	[80 12 V1 V2 V3 V4]	
WASTE TONER BOX (Counter C)	[80 13 V1 V2 V3 V4]	
MAIN FUSER ASSY	[80 0C V1 V2 V3 V4]	* When replacing with new MAIN FUSER ASSY, do counter clear.
2ND BTR ASSY	[80 09 V1 V2 V3 V4]	* When replacing with new 2ND BTR ASSY, do counter clear.
BELT CLEANER ASSY	[80 0A V1 V2 V3 V4]	* When replacing with new BELT CLEANER ASSY, do counter clear.
DEVELOPER ASSY Y	[80 0D V1 V2 V3 V4]	* When replacing with new DEVELOPER ASSY Y, do counter clear.
DEVELOPER ASSY M	[80 0E V1 V2 V3 V4]	* When replacing with new DEVELOPER ASSY M, do counter clear.
DEVELOPER ASSY C	[80 0F V1 V2 V3 V4]	* When replacing with new DEVELOPER ASSY C, do counter clear.
DEVELOPER ASSY BK	[80 10 V1 V2 V3 V4]	* When replacing with new DEVELOPER ASSY BK, do counter clear.

Table 4-20. Count Accumulation Value - Write

Item	Command	Note
TRANSFER ASSY	[80 14 V1 V2 V3 V4]	* When replacing with new TRANSFER ASSY, do counter clear.
The whole of the device (Sheet count)	[80 05 V1 V2 V3 V4]	
The whole of the device (Image count)	[80 07 V1 V2 V3 V4]	

NOTE: As for the above [V1-V4], write the value which it read with Section 4.2.6.1 “Read”

NOTE: of the former clause. When the reading value is bigger than Life limit value (limit value), replace the parts to apply in principle, write the value of [00 00 00 00](Life counter).

4.2.7 Command/Status List

4.2.7.1 Paper, Media & Output Control

□ Command/Status

With distinction column [C/S] of the following command/status, make a command [C] and a status [S], show [command/status code] + [parameter code] in the command/status column and a command/status code of that will be shown soon in 16.l

Table 4-21. Command/Status - Paper, Media & Output Control

Name	C/S	Command/Status	Explanation
PPOUT	C	None	-
	S	20, DEST, DOPT, SHEET	Paper discharge information
PPOUT2	C	None	-
	S	22, DEST, DOPT, SHEET	Paper discharge information
PCH	C	None	-
	S	21, TRAY, SIZE, INFO_T	Paper feed unit , Paper size information
DCH	C	None	-
	S	23, DEST, INFO_D	Paper discharge part condition information
TRYSEL	C	60, TRAY	Paper feed unit selection
	S	None	-
MEDSEL	C	61, MEDIA	Paper quality (paper type) selection
	S	None	-
OUTSET	C	63, DEST, DOPT	Discharge location selection
	S	None	-

Table 4-21. Command/Status - Paper, Media & Output Control

Name	C/S	Command/Status	Explanation
USIZESET	C	64, TRAY, SIZE, FSIZEU, FSIZEU, SSIZEU, SSIZEL	Setting of undefined paper size
	S	None	-
TRYSEL	C	B0	Information on the currently selected paper feed unit
	S	B0, TRAY	
MEDSEL	C	B1	Information on the currently selected paper quality
	S	B1, MEDIA	
TRYSIZR	C	B2, TRAY	Information on paper size in a specified paper feed unit
	S	B2, TRAY, SIZE, INFO_T	
USIZR	C	B4, TRAY	Information on undefined paper size in a specified paper feed unit
	S	B4, TRAY, SIZE, FSIZEU, FSIZEU, SSIZEU, SSIZEL	
OUTR	C	B3	Discharge location information
	S	B3, DEST, DOPT	

□ Parameter Code Explanation

NOTE: Only a main parameter code is explained here. Refer to [Interface spec.] for the parameter code which mention is not in, and the detailed contents.

SHEET/ FSIZEU/ FSIZEL/ SSIZEU/ SSIZEL PARAMETER

**Table 4-22. SHEET/ FSIZEU/ FSIZEL/ SSIZEU/ SSIZEL
PARAMETER**

Parameter Code	Parameter Code
SHEET	Paper discharge number of sheets: 1Byte (Hex)
FSIZEU	Laser beam scanning direction size: Most significant 1Byte (Hex) [Set in 0.1mm units]
FSIZEL	Laser beam scanning direction size: Least significant 1Byte (Hex) [Set in 0.1mm units]
SSIZEU	Paper feed direction size: Most significant 1Byte (Hex) [Set in 0.1mm units]
SSIZEL	Paper feed direction size: Least significant 1Byte (Hex) [Set in 0.1mm units]

INFO_T/INFO_D PARAMETER

NOTE: As for the following parameter, contents are prescribed in the Bit unit.

Table 4-23. INFO_T/INFO_D PARAMETER

Data(Bit)	INFO_T	INFO_D
7	-	-
6	-	-
5	-	-
4	-	-
3	-	-
2	MSI REGI. GUIDE (Down Position)	-
1	OHP/LABEL TRAY (Use)	-
0	No Paper	Full Stack

TRAY/SIZE/MEDIA/DEST/DOPT PARAMETER

See the following table below.

Table 4-24. TRAY/ SIZE/ MEDIA/ DEST/ DOPT Parameter

Data (Hex)	TRAY		SIZE		MEDIA	DEST	DOPT
	Feeder Unit	Paper Size Setting Enable(O)/ Disable(X)	Paper Size	Detection at Paper Tray Enable(O)/ Disable(X)	Paper Quality	Discharge Location	Sorter
00	-	-	No paper tray	O	Not specified	FACE DOWN	BIN #0
01	Cassette 1	X	MONARCH(LEF)	X	Regular paper	FACE UP (Include Duplex)	BIN #1
02	Cassette 2	X	Official government postcard(SEF)	X	OHP film	-	BIN #2
03	Cassette 3	X	COM-10(LEF)	X	Label paper (Overseas)	Sorter	BIN #3
04	MSI	O	DL (LEF)	X	Thick paper	-	BIN #4
05	-	-	STATEMENT(L EF)	X	Label paper (Domestic)	-	BIN #5
06	-	-	A5(LEF)	X	-	-	BIN #6
07	-	-	C5(SEF)	X	Coat paper	-	BIN #7
08	-	-	B5(LEF)	O	-	-	BIN #8
09	-	-	EXECUTIVE(L EF)	O	-	-	BIN #9
0A	-	-	8"x10"(LEF)	X	Thick paper (HiGloss)	-	HI-STACK BIN
0B	-	-	A4(LEF)	O	Coat paper(HiGloss)	-	-
0C	-	-	LETTER(LEF)	O	Regular paper (HiGloss)	-	-
0D	-	-	LETTER(SEF)	O	Postcard(HiGloss)	-	-
0E	-	-	LETTER Tab(LEF)	X	Postcard	-	-
0F	-	-	A4(SEF)	O	Envelope	-	-
10	-	-	A4 Tab(LEF)	X	-	-	-
11	-	-	Sp. Folio(SEF)	X	-	-	-

Table 4-24. TRAY/ SIZE/ MEDIA/ DEST/ DOPT Parameter

Data (Hex)	TRAY		SIZE		MEDIA	DEST	DOPT
	Feeder Unit	Paper Size Setting Enable(O)/ Disable(X)	Paper Size	Detection at Paper Tray Enable(O)/ Disable(X)	Paper Quality	Discharge Location	Sorter
12	-	-	Folio(SEF)	O	-	-	-
13	-	-	LEGAL14"(SEF)	O	-	-	-
14	-	-	B4(SEF)	O	-	-	-
15	-	-	A3(SEF)	O	-	-	-
16	-	-	LEDGER(SEF)	O	-	-	-
17	-	-	312.5mm x440mm(SEF)	X	-	-	-
18	-	-	12"x18"(SEF)	X	-	-	-
19	-	-	12.5"x18"(SEF)	X	-	-	-
1A	-	-	13"x18"(SEF)	X	-	-	-
1B	-	-	Undefined (regular paper)	O (Cassette 1 only)	-	-	-
1C	-	-	Undefined (envelope)	X	-	-	-

4.2.7.2 Printing/Status Control

□ Command/Status

With distinction column [C/S] of the following command/status, make a command [C] and a status [S], show [command/status code] + [parameter code] in the command/status column and a command/status code of that will be shown soon in 16.

Table 4-25. Command/Status Control

Name	C/S	Command/Status	Explanation
PFA	C	None	-
	S	30, AMODE, SHEET1, SHEET2	Feeder permission information
ENGERR	C	None	-
	S	31	Device error
ERRRV	C	None	-
	S	32	Device error release
ENGWRN	C	None	-
	S	33	Device warning
SCH	C	None	-
	S	34, STSMODE, STSMODE2, STSCALL	Error information on status of printer
PFA2	C	None	-
	S	35, SHEET	Feeder permission information
COLOR	C	None	-
	S	36, PLANE	Color information
PFCRDY	C	None	-
	S	37	Preparation for [PFC] reception
WRNOFF	C	None	-
	S	38	Device warning stop
PFC	C	70, PMODE, CMODE, SHEET, BIN	Feeder request information
	S	None	-

Table 4-25. Command/Status Control

Name	C/S	Command/Status	Explanation
PMSTT	C	71	Scanner Motor rotation start request
	S	None	-
PERST	C	72	Error reset request
	S	None	-
SLPON	C	73, SLEEPMODE	Enter applicable SLEEP mode request
	S	None	-
SLPOFF	C	74	Leave applicable SLEEP mode request
	S	None	-
DIAGON	C	75	Enter DIAG TEST mode request
	S	None	-
DIAGOFF	C	76	Leave DIAG TEST mode request
	S	None	-
STOP	C	77	Print movement stop request
	S	None	-
ABORT	C	78	Discharge of fed paper and operation stop request
	S	None	-
PAGEC	C	7A	[VSYNC] signal request
	S	None	-
SSENG	C	C0	Error information on status of printer
	S	C0, STSMODE, STSMODE2, STSCALL	

Table 4-25. Command/Status Control

Name	C/S	Command/Status	Explanation
SSDTCH	C	C1	Some/nothing detection information about the consumable parts, the paper tray, and so on
	S	C1, STSDTCH1, STSDTCH2	
SSTRAY	C	C2	Error information on status of paper tray
	S	C2, STSTRAY	
SSCRUM	C	C3	Error information on CRUM function of the DRUM CARTRIDGE
	S	C3, STSCRUM	
SSJAM	C	C4	Error information on paper jam
	S	C4, STSJAM1, STSJAM2	
SSHW	C	C5	Error information on hardware
	S	C5, STSHW1, STSHW2 , STSHW3 , STSHW4	
SSLIFE	C	C6	Error information on life
	S	C6, STLIFE1, STLIFE2	
SSOPEN	C	C7	Error information on cover, etc. open
	S	C7, STSOPEN1, STSOPEN2	
SSWARN	C	C8	Error information on warning

□ Parameter Code Explanation

NOTE: Only the main parameter code is explained here.

SLPON COMMAND PARAMETER

Table 4-26. SLPON Command Parameter

SLPON Command Code: [73]	
Data (Hex)	SLEEPMODE
0	LIGHT SLEEP Mode
1	DEEP SLEEP Mode

SSENG STATUS PARAMETER

NOTE: The parameters below are stipulated in Bit units.

Table 4-27. SSENG Status Parameter

SSENG Status Code: [C0]			
Data (Bit)	STSMODE	STSMODE2	STSCALL
7	-	LIGHT SLEEP Mode	Consumable parts error (SSCONS command:[C1])
6	DIAG TEST Mode	DEEP SLEEP Mode	No paper (SSTRAY command:[C2])
5	WARN UP Mode	-	CRUM error (SSCRUN command:[C3])
4	Acknowledge Print Quality Mode	-	Paper jam (SSJAM command:[C4])
3	READY Mode	-	Hardware error (SSHWS command:[C5])

Table 4-27. SSENG Status Parameter

SSENG Status Code: [C0]			
Data (Bit)	STSMODE	STSMODE2	STSCALL
2	PRINT Mode	-	Life over (SSLIFE command:[C6])
1	ERROR Mode	-	Cover open (SSOPEN command:[C7])
0	-	-	Warming (SSWARN command:[C8])

SSDTCH STATUS PARAMETER

NOTE: The parameters below are stipulated in Bit units.

Table 4-28. SSDTCH Status Parameter

SSDTCH Status Code: [C1]		
Data (Bit)	STSDTCH1	STSDTCH2
7	Cassette 1 None	TONER CARTRIDGE Y None
6	Cassette 2 None	TONER CARTRIDGE M None
5	Cassette 3 None	TONER CARTRIDGE C None
4	-	TONER CARTRIDGE Bk None
3	MAIN FUSER ASSY None	-
2	WASTE TONER BOX None	-
1	-	-
0	-	-

NOTE: The parameters below are stipulated in Bit units.

SSCASSETTE/SSCRUM STATUS PARAMETER

NOTE: The parameters below are stipulated in Bit units

Table 4-29. SSCASSETTE/SSCRUM Status Parameter

	SSTRAY Status Code: [C2]	SSCRUM Status Code: [C3]
Data (Bit)	SSCASSETTE	SSCRUM
7	No paper of the Cassette 1	Communication error
6	No paper of the MSI	Verify error
5	No paper of the Cassette 2	Used DRUMCARTRIDGE installation
4	No paper of the Cassette 3	ID error
3	-	Count error
2	-	Imitation error 1
1	-	Imitation error 2
0	-	-

SSJAM STATUS PARAMETER

NOTE: The parameters below are stipulated in Bit units.

Table 4-30. SSJAM Status Parameter

	SSJAM Status Code: [C4]	
Data (Bit)	SSJAM1	SSJAM2
7	Paper jam in EXIT UPPER ASSY/ EXIT LOWER ASSY (Exit Jam)	Paper remaining in the INVERTER ASSY (Duplex In Jam)
6	Paper jam in FUSER ASSY (Fuser Jam)	Paper remaining in the INVERTER ASSY ASSY/ ALIGNER ASSY (Duplex Mid Jam)
5	Paper jam in MAIN P/H FRAME ASSY (Regi. Jam)	Paper remaining in the ALIGNER ASSY (Duplex Out Jam)
4	Paper jam in Option Feeder (Option Feeder Jam)	Paper remaining in the MAIN P/H FRAME ASSY (Duplex Regi. Jam)
3	-	Paper remaining in the Option Sorter (Option Sorter Jam)
2	OHP set error (End side)	-
1	Size mismatch	-
0	OHP set error (Tip side)	-

SSHW STATUS PARAMETER

NOTE: The parameters below are stipulated in Bit units.

Table 4-31. SSHW Status Parameter

SSHW Status Code: [C5]		
Data (Bit)	STSHW1	STSHW2
7	Option Feeder communication error	ROTARY SENSOR error
6	Option Duplex communication error	ADC Sensor error
5	Option Sorter communication error	High concentration error
4	MCU PWB(ROM/RAM) error	Low concentration error
3	MCU PWB(NVM) error	PCDC error
2	FUSER MOTOR ASSY error	High density error
1	TR0 SENSOR error	2ND BTR error
0	ROS ASSY error	BTR WHEEL SENSOR error
Data (Bit)	STSHW3	STSHW4
7	FUSER overcoat heat error	FEEDER MOTOR ASSY error
6	FUSER warm-up error	INVERTER MOTOR error
5	FUSER Heater error	FUSER FAN-1 error
4	FUSER low temperature error	EXIT CHUTE FAN error
3	FUSER sermister breakage error	DEVE. FAN error
2	P/H MOTOR ASSY error	-
1	PROCESS DRIVE ASSY error	-
0	ENVIRONMENT SENSOR error	Sorter Motor error

SSLIFE STATUS PARAMETER

NOTE: The parameters below are stipulated in Bit units.

Table 4-32. SSLIFE Status Parameter

SSJAM Status Code: [C6]		
Data (Bit)	STSLIFE1	STSLIFE2
7	Yellow TONER None	BELT CLEANER ASSY Life over
6	Magenta TONER None	2ND BTR ASSY Life over
5	Cyan TONER None	-
4	Black TONER None	TRANSFER ASSY Life over
3	-	DEVELOPER ASSY Y Life over
2	WASTE TONER BOX Full	DEVELOPER ASSY M Life over
1	DRUM CARTRIDGE Life over	DEVELOPER ASSY C Life over
0	-	DEVELOPER ASSY BK Life over

SSOPEN STATUS PARAMETER

NOTE: The parameters below are stipulated in Bit units.

Table 4-33. SSOPEN Status Parameter

SSOPEN Status Code: [C7]		
Data (Bit)	STSOPEN1	STSOPEN2
7	FRONT COVER ASSY open	SORTER UPPER COVER open
6	MSI/REGI. HIGH ASSY open	-
5	FUSER ASSY open	-
4	EXIT UPPER ASSY open	-
3	FEEDER CHUTE ASSY open	-
2	INVERTER CHUTE open	-
1	ALIGNER ASSY None	-
0	TURN CHUTE COVER open	-

Table 4-34. SSWARN Status Parameter

SSWARNStatus Code: [C8]			
Data (Bit)	STSWARN1	STSWARN2	STSWARN3
3	BIN error	DEVELOPER ASSY YK life warning	MSI lift up error
2	WASTE TONER BOX Full warning	DEVELOPER ASSY M life warning	MSI lift down error
1	DRUM CARTRIDGE life warning	DEVELOPER ASSY C life warning	Feeder lift up error
0	TRANSFER ASSY life warning	DEVELOPER ASSY BK life warning	Feeder lift down error

SSWARN STATUS PARAMETER

The parameters below are stipulated in Bit units. CAUTION!Don't use

Table 4-34. SSWARN Status Parameter

SSWARNStatus Code: [C8]			
Data (Bit)	STSWARN1	STSWARN2	STSWARN3
7	Yellow toner life warning	BELT CLEANER ASSY life warning	Cassette 1 remaining paper amount warning
6	Magenta toner life warning	2ND BTR ASSY life warning	Cassette 2 remaining paper amount warning
5	Cyan toner life warning	Full Stack warning (Option Sorter)	Cassette 3 remaining paper amount warning
4	Black toner life warning	Printer life warning	Full Stack warning (TOP COVER ASSY)

4.2.7.3 Parameter Control

CAUTION

Don't use without indicate in this manual except for [LIFCNTSET (80)], [CTLSET (85)], [LIFCNTR (D0)], [LIFLIMR (D1)], [CTLSETR (D7)] and [LIFWNGR (F0)] command.

□ Command/Status

With distinction column [C/S] of the following command/status, make a command [C] and a status [S], show [command/status code] + [parameter code] in the command/status column and a command/status code of that will be shown soon in 16.

NOTE: [V1-V4] is still the numerical value of 10, and shows count accumulation value more than the high rank in order.

Table 4-35. Command/Status-Parameter Control

Name	C/S	Command/Status	Explanation
LIFCNTSET	C	None	-
	S	80, LIFE, V1, V2, V3, V4	Write data to life counter
LIFLIMSET	C	None	-
	S	81, LIFE, V1, V2, V3, V4	<Do not use unless instructed to> Change life limit value
CTLSET	C	None	-
	S	85, CTL, V1, V2, V3	<Do not use unless instructed to> Change control value
LIFWNGSET	C	None	-
	S	88, LIFE, V1, V2, V3, V4	<Do not use unless instructed to> Change life warning value

Table 4-35. Command/Status-Parameter Control

Name	C/S	Command/Status	Explanation
LIFCNTR	C	D0, LIFE	Read data of life counter
	S	D0, LIFE, V1, V2, V3, V4	
LIFLIMR	C	D1, LIFE	Read life limit value
	S	D1, LIFE, V1, V2, V3, V4, V5, V6, V7, V8	
CTLSETR	C	D7, CTL	Read control value
	S	D7, CTL, V1, V2, V3	
STCCNR	C	DB, STC	Read statistical counter value
	S	DB, STC, V1, V2, V3	
LIFWNGR	C	F0, LIFE	Read life warning value
	S	F0, LIFE, V1, V2, V3, V4	
CRIDR	C	F2	Read CRUM ID
	S	F2, ID	
CRMDR	C	F3	Read CRUM data
	S	F3, V1, V2, V3, V4, V5, V6, V7	

□ Parameter Code Explanation

NOTE: Only a main parameter code is explained here.

Refer to [Interface spec.] for the parameter code which mention is not in, and the detailed contents.

LIFE/TIM/CTL/STC PARAMETER CODE

Table 4-36. LIFE/TIM/CTL/STC Parameter Code

Data (Hex)	LIFE (Life Counters)	CTL (Control Value/ Set Point)	STC (Statistical Counters)
00	DRUM CARTRIDGE	-	-
01	TONER CARTRIDGE Y	Cycle Down Wait Timer	Statistical Counter Y
02	TONER CARTRIDGE M	Hold Wait Timer	-
03	TONER CARTRIDGE C	Duplex Mode	-
04	TONER CARTRIDGE BK	-	Statistical Counter Bk
05	Device	-	-
07	Device (Image count)	-	-
08	-	Y Toner Concentration (Yellow toner concentration)	-
09	2ND BTR ASSY	M Toner Concentration (Magenta toner concentration)	-
0A	BELT CLEANER ASSY	C Toner Concentration (Cyan toner concentration)	-

Table 4-36. LIFE/TIM/CTL/STC Parameter Code

Data (Hex)	LIFE (Life Counters)	CTL (Control Value/ Set Point)	STC (Statistical Counters)
0B	-	Bk Toner Concentration (Black toner concentration)	-
0C	MAIN FUSER ASSY	-	-
0D	DEVELOPER ASSY Y	-	-
0E	DEVELOPER ASSY M	-	-
0F	DEVELOPER ASSY C	-	-
10	DEVELOPER ASSY BK	-	-
11	WASTE TONER BOX (Counter A)	Tip registration adjustment (All the Feeder Unit commonness : about 0.1mm unit)	-
12	WASTE TONER BOX (Counter B)	-	-
13	WASTE TONER BOX (Counter C)	-	-
14	TRANSFER ASSY	-	-
16	-	Side registration adjustment (Cassette 1 : about 0.1mm unit)	-
17	-	Side registration adjustment (Cassette 2 : about 0.1mm unit)	-
18	-	Side registration adjustment (Cassette 3 : about 0.1mm unit)	-

Table 4-36. LIFE/TIM/CTL/STC Parameter Code

Data (Hex)	LIFE (Life Counters)	CTL (Control Value/ Set Point)	STC (Statistical Counters)
19	-	Side registration adjustment (MSI : about 0.17mm unit)	-
1A	-	Side registration adjustment (Duplex : about 0.17mm unit)	-
1B	-	Enable(O)/Disable(X) of size mismatch	-
1F	-	2ND BTR offset level (Regular paper)	-
20	-	2ND BTR offset level (OHP)	-
22	-	2ND BTR offset level (Thick paper)	-
25	-	2ND BTR offset level (Coat paper)	-
2A	-	2ND BTR offset level (Label paper)	-
2B	-	2ND BTR offset level (Postcard)	-
2C	-	2ND BTR offset level (Envelope)	-
2D	-	A code by the country	-
FF	All Life Counters	-	-

NOTE: Though the above [FF] in the data can be used only when all value is initialized, never use it when there are directions in this manual.

4.2.7.4 Diagnostics Control

□ Command/Status

With distinction column [C/S] of the following command/status, make a command [C] and a status [S], show [command/status code] + [parameter code] in the command/status column and a command/status code of that will be shown soon in 16.

NOTE: [V1-V4] is still the numerical value of 10, and shows count accumulation value more than the high rank in order.

Table 4-37. Diagnostic Control

Name	C/S	Command/Status	Explanation
IGNORED	C	None	-
	S	41, CMD, REASON	Reject command reception (Displays command code applicable to CMD.)
OPTSR	C	E1	Option status
	S	E1, OPTION	
ROMNOR	C	E2	MCU PWB firmware version
	S	E2, V1, V2, V3	
DIAGSTART	C	90, ...	Refer to Section 4.2.5 "Diagnostics Execution".
	S	90, ...	
DIAGSTOP	C	91, ...	Refer to Section 4.2.5 "Diagnostics Execution"
	S	91, ...	

□ Parameter Code Explanation

REASON/OPTION PARAMETER CODE

NOTE: The parameters below are stipulated in Bit units.

Table 4-38. REASON/OPTION Parameter Code

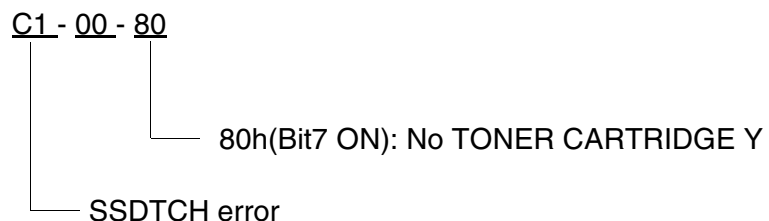
Data (Bit)	REASON (Reason Ignored)	OPTION (Option Status) [0=Off, 1=Installed]
7	Purge	-
6	No Configuration	-
5	Full Stack, Lift up/down error	-
4	-	Option Sorter
3	Life over	-
2	Size mismatch	Option Feeder (Cassette 2&3)
1	No paper	Option Feeder (Cassette 2)
0	Unknown command	Option Duplex

4.2.8 Error / Status Code

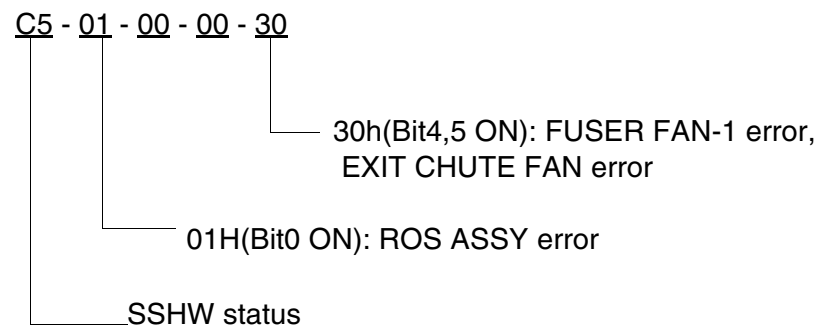
The statuses [SSENG], [SSCONS], [SSTRAY], [SSJAM], [SSHW], [SSLIFE], [SSOPEN], [SSWARN] in the Command/Status category [Printing/Status Control] let you find out the error/status codes of the printer. A detection error in Bit units is set for each status parameter. (For a description of each parameter, see Section 4.2.7 “Command/Status List”). “Chapter 2 Troubleshooting” contains error codes as the same code as these statuses.

NOTE: In Section 4.2.7 “Command/Status List”, instead of a space between each Byte, a hyphen [-] is used.

EX) In the case of the single error



EX) In the case of the compound error



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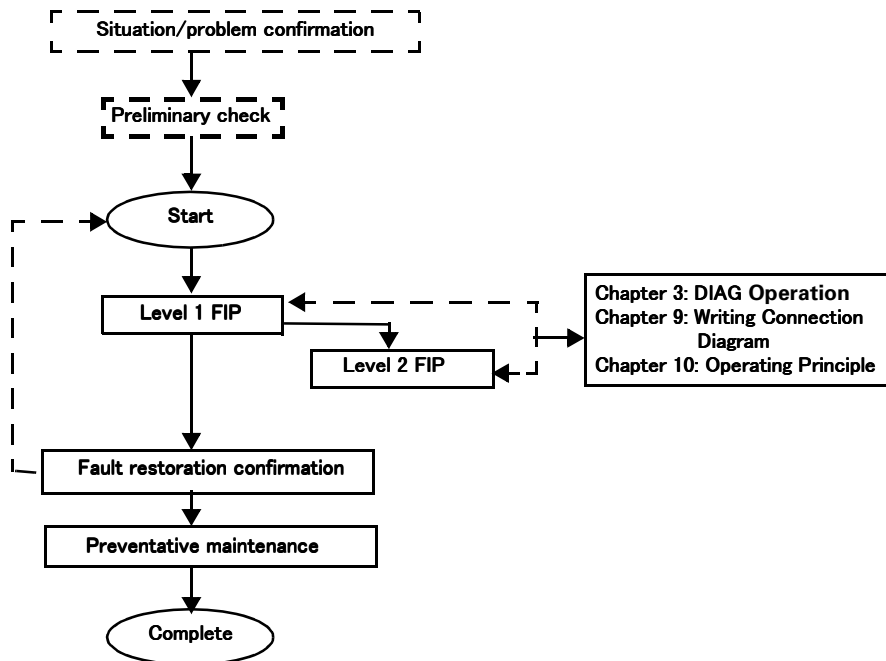
TROUBLESHOOTING

5.1 Overview

After confirming the problem and carrying out preliminary checks, you should take advantage of FIP (Fault Isolation Procedure), and the information in "Chapter 3: DIAG Operation," "Chapter 9: Wiring Connection Diagram," and "Chapter 10: Operating Principle" to troubleshoot efficiently.

5.1.1 Troubleshooting Procedure

The troubleshooting procedure flow is as follows:



5.1.2 Preliminary Checks

Check the following before troubleshooting:

1. Make sure power source voltage is within specifications. (Measure voltage from the electric outlet.)
2. Make sure the POWER CORD is not damaged, shorted or disconnected. Make sure there is not incorrect connection in the POWER CORD.
3. Make sure the printer is properly grounded.
4. Avoid locating the printer in places exposed to high temperatures, excessive humidity, low temperatures, low humidity, or radical temperature variation.
5. Avoid locating the printer near water lines, humidifiers, heat-radiating equipment, sources of fire, or in places exposed to excessive dust or where struck directly by air from air-conditioners.
6. Avoid locating the printer in places where volatile or inflammable gases are produced.
7. Avoid locating the printer in places exposed to direct sunlight.
8. The printer should be located in a well-ventilated area.
9. The printer should be located on a secure, level surface.
10. Paper should be within specifications. (We recommend standard paper.)
11. The printer handled and operated as described in the manuals.
12. Parts to be replaced periodically should be replaced in accordance with the prescribed printing count for replacement.

5.1.3 1.3 Precautions When Performing Work

1. Be sure to unplug the POWER CORD except when necessary when performing work.



Never touch conducting parts other than required when the power is ON. The power switch/inlet part of the LVPS is conducting electricity event when the power is OFF. Be careful not to touch conducting parts.

2. If performing work with the power ON, the covers off, and the interlock and safety switches ON, be especially sure to disconnect the ROS ASSY connector (P/J121).



If performing work with the power ON, the covers off, and the interlock and safety switches ON, there is danger of laser radiation being emitted from the ROS ASSY. Be sure to disconnect the ROS ASSY connector (P/J121).

3. If performing work with the power ON, and the REAR COVER off, high voltage may be output by the HVPS, so be sure to disconnect the HVPS connector (P/J41).



If performing work with the power ON, and the REAR COVER off, high voltage may be output by the HVPS, so be sure to disconnect the HVPS connector (P/J41). If FIP requires the HVPS connector (P/J41) to be connected, be extremely careful not to touch the HVPS and high voltage output parts.

4. When outputting high voltage using the DIAG tool, etc., make sure all the covers are mounted unless specifically instructed otherwise.



When outputting high voltage using the DIAG tool, etc., never touch the high voltage output parts. Be sure to follow the procedure given in the manuals when outputting high voltage using the DIAG tool, etc.

5. When outputting high voltage using the DIAG tool, etc., make sure all the covers are mounted unless specifically instructed otherwise.



When operating driving parts using the DIAG tool, etc., never touch the driving parts. Be sure to follow the procedure given in the manuals when outputting high voltage using the DIAG tool, etc.

6. Be careful not to get burned when touching parts that become hot.
7. if possible, the worker should connect himself to earth with a wrist band, etc., to eliminate static electricity from his body before performing the procedures described herein.

5.1.4 Self-Diagnostic Function by LCD Message

This printer is equipped with a self-diagnostic function. If the printer detects an error, it indicates the error information with the LED lamps on the LCD panel.

Types of error occur to a page printer vary widely, such as poor print quality or abnormal operation, and it makes identification of failed part and component more difficult. For easy and efficient repair, this section describes troubleshooting procedures using LCD messages and typical types of abnormal output.

The following tables list the LCD messages. As for the units used for the messages and the cover positions, see Figure 5-1.

Table 5-1. LCD Message List

Message	LED Description		Category	Refer to:
	On Line	Continue		
Calibrating Printer	On	Off	Status	Page 5-8
Can't Print Duplex	Off	On	Error	Page 5-14
Check OHP Sheet	Off	Off	Error	Page 5-9
Check Paper Size	-	-	Warning	Page 5-15
Check Paper Type	-	-	Warning	Page 5-15
Collate was Disabled	-	-	Warning	Page 5-15
Copy System Error	Off	Off	Error	Page 5-14
Cover A Open	Off	Off	Error	Page 5-11
Cover D Open	Off	Off	Error	Page 5-11
Cover E Open	Off	Off	Error	Page 5-12
Cover F Open	Off	Off	Error	Page 5-12
Depleted Battery	-	-	Warning	Page 5-18

Table 5-1. LCD Message List

Message	LED Description		Category	Refer to:
	On Line	Continue		
Form Feed	Off	Off	Status	Page 5-7
Format Error ROM A	On	Off	Warning	Page 5-17
Format Error ROM B	On	Off	Warning	Page 5-17
Front Cover Open	Off	Off	Error	Page 5-11
HDD CHECK	Off	Off	Status	Page 5-8
Image Optimum	-	-	Warning	Page 5-16
Install Photocondctr	Off	Off	Error	Page 5-10
Install Waste T Box	Off	Off	Error	Page 5-10
Invalid AUX I/F Card	Off	Off	Error	Page 5-13
Invalid HDD	Off	Off	Error	Page 5-13
Invalid PS3	Off	Off	Error	Page 5-14
Invalid ROM A	Off	Off	Error	Page 5-13
Invalid ROM B	Off	Off	Error	Page 5-14
Irregular Density	On	Off	Error	Page 5-10
Jam xxxxxxxxxxxxxxxx*1	Off	Off	Error	Page 5-9
Job Cancel	Off	Off	Status	Page 5-7
Manual Feed sss ttt	Off	On	Error	Page 5-12
Mem Overflow	Off	On	Error	Page 5-13
Menus Locked	-	-	Warning	Page 5-15
Need Memory	On	Off	Warning	Page 5-16
Offline	Off	Off	Status	Page 5-8
Outbin Select Error	-	-	Warning	Page 5-16
PS3 Hard Disk full	-	-	Warning	Page 5-18
Paper Set sss*2 ttt*3	Off	On	Error	Page 5-12

Table 5-1. LCD Message List

Message	LED Description		Category	Refer to:
	On Line	Continue		
Paper Out sss*5 ttt*4	Off	Off	Error	Page 5-12
Photocondctr Trouble	Off	Off	Error	Page 5-10
Print Overrun	Off	On	Error	Page 5-13
RAM CHECK	Off	Off	Status	Page 5-7
Ready	On	Off	Status	Page 5-8
Replace Phtocondctr	Off	Off	Error	Page 5-11
Replace Waste T Box	Off	Off	Error	Page 5-11
Reset	Off	Off	Status	Page 5-7
Reset All	On	Off	Status	Page 5-7
Rest to Save	Off	Off	Status	Page 5-7
ROM CHECK	Off	Off	Status	Page 5-7
Self Test	On	Off	Status	Page 5-7
Standby	On	Off	Status	Page 5-8
Turn Page sss	Off	Off	Error	Page 5-12
Time exceeded	-	-	Warning	Page 5-15
Unit B Open	Off	Off	Error	Page 5-11
Unit C Open	Off	Off	Error	Page 5-11
Unit G Open	Off	Off	Error	Page 5-11
uuuu Toner Crtg Out	Off	Off	Error	Page 5-10
uuuu Toner Low	-	-	Warning	Page 5-17
uuuu Toner Out	Off	Off	Error	Page 5-10
Warming Up			Status	Page 5-7
Waste T Box Nearfull	-	-	Warning	Page 5-18
Worn Fuser	-	-	Warning	Page 5-18

Table 5-1. LCD Message List

Message	LED Description		Category	Refer to:
	On Line	Continue		
Worn Photoconductor	-	-	Warning	Page 5-17
Write Error ROM A	Off	Off	Error	Page 5-14
Write Error ROM P	Off	Off	Error	Page 5-14
Writing ROM A	Off	Off	Status	Page 5-7
Writing ROM P	Off	Off	Status	Page 5-7
Wrong Photodonductor	Off	Off	Error	Page 5-10

*1: "xxxxxxxxxxxxxxxx" = A, B, C, D, E, F, G

*2: "sss" represents a value other than "Auto" and "MP" for "Paper Source" in the "Printing Menu".

*3: "ttt" represents the corresponding value for the selected paper source "sss" in "Tray Menu".

*4: See 5.1.4.4.

*5: "sss" represents a value other than "Auto" for "Paper Souse."

*6: uuuu = CMYK. Displays corresponding letters only.

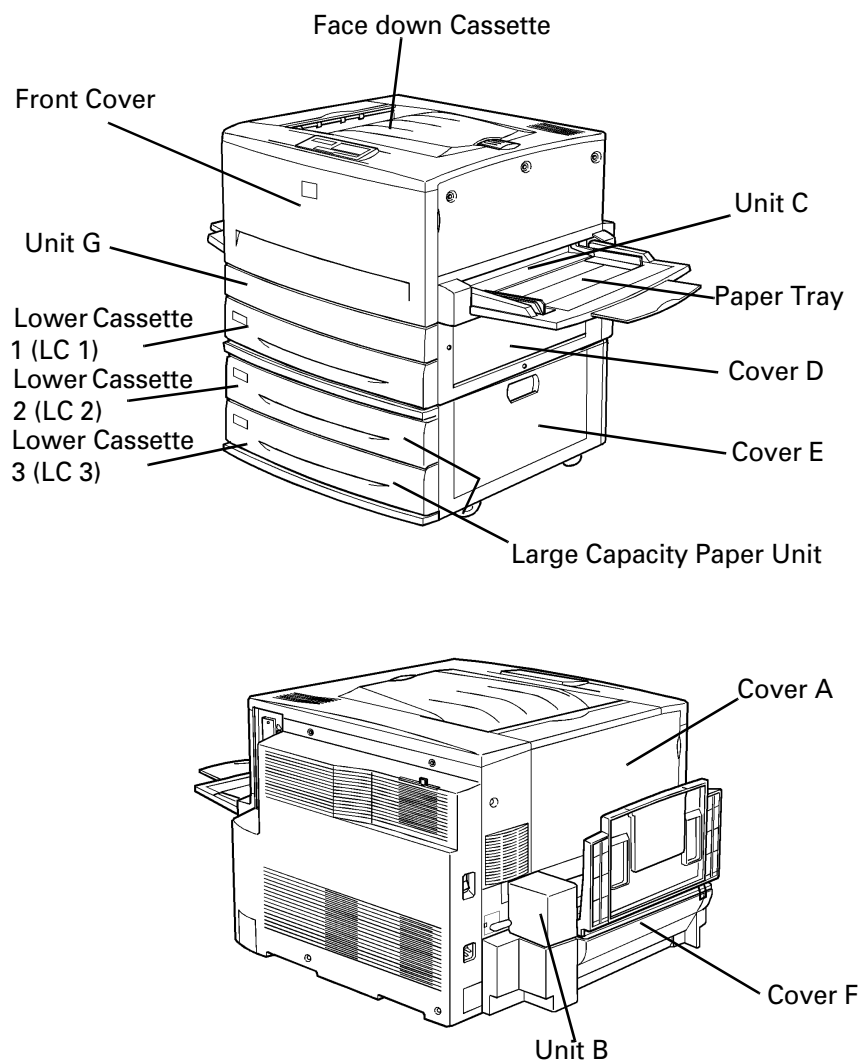


Figure 5-1. The locations of Units/Covers.

5.1.4.1 Status Message

The printer shows a status message only when:

- The printer is free from any errors.
- The printer is initializing.

Only one status message is applied to describe the current printer status. The explanation for each status message and solutions for errors are described below.

NOTE: *“Ready” message means that the printer performs printing as soon as the “Ready” message is displayed during the message shown.*

ROM Check

Indicates that ROM check and format check are in process.

RAM Check

Indicates that the RAM's operation and memory checks are in process.

Self Test

Testing and initializing the printer.

Reset All

The printer is warmbooting, which is followed by reset operation with the message “Reset” indicated.

Reset

Resets the printer.

Job Cancel

Job is being canceled.

Reset To Save

Appears when the print settings were changed during printing. Perform one of the following to clear the message.

1. Press the On Line button to override the error and continue printing. However, the changes are not effective until the ongoing job is completed.
2. Reset the printer or perform a warm boot for a instant change of the setting, but be aware that this erases any print data in the printer's memory.

Writing ROM A

The printer is writing data to the form overlay ROM module. Do not remove the module or switch off power until finished.

Writing ROM P

The printer is writing program data to the program ROM module. Do not remove the module or switch off power until finished.

Form Feed

The “Form Feed” button has been pressed to forcibly print out the remaining print data and eject the sheet.

Warming Up

A “Ready” message that indicates the printer is warming up.

Calibrating Printer

A "Ready" message that indicates the engine is calibrating.

Offline

The printer receives data and produces printing data but does not print. To return the printer to the ready status, press the On Line or Continue button. Note performing reset or rest all operation erases all printing data.

Standby

A Ready message. Indicates in which energy save mode the printer is; level 1 or 2.

v=1: Standby level 1

v=2: Standby level 2

Ready

The printer is in an on-line status.

HDD Check

Checks the HDD function.

HDD Format *%**

Formatting the HDD. The progress is indicated by percentage.

5.1.4.2 Error Message

Error messages are indicated according to the priority. Therefore, if multiple errors have been detected, the message with the highest priority appears in the LCD.

See the following pages for the error messages and their explanations and solutions.

Check OHP Sheet

LED: **On Line** = off **Continue** = off

Explanation: OHP sheet was fed backside, or not-EPSON-approved OHP sheet was fed into the printer, which caused a paper jam in the MSI entry slot.

Jam xxxxxxxxxxxxxxxx

LED: **On Line** = off **Continue** = off

Explanation: A paper jam occurred at the location indicated. If more than one location is indicated, it is possible that jammed paper is near those places. Therefore, the number of jammed sheets and the indicated locations may not necessarily match.

Paper is jammed at :

■ G: Unit G.	4081
■ F: Near Cover F.	4009
■ C: Near Unit C.	4009
■ D: Near Cover D.	4009
■ E: Near Cover E.	4009
■ B: Near Unit B.	4008
■ A: Near Cover A.	4012

NOTE: The priority order in case that only one status item can be returned, as in EJL, is 4081-, 4082-, 4009, 4008, or 4012-.

Solution: <Feed>

Remove the jammed paper near the paper source and open the paper feeding unit (and the feeder cover if 2/3-Cassette Large Capacity Paper Cassette Unit is installed) to check that there is no paper, then close the unit. You must open the paper feeding unit (or the feeder if 2/3-Cassette Large Capacity Paper Cassette Unit is installed) to clear the error. After warming up, the printer resumes printing the page that was effected by the error.

<Fuser>

Open the Fuser Unit, remove the jammed paper, and close the unit. The error will be automatically cleared. After warming up, the printer resumes printing the page that was effected by the error.

<Exit>

Open the exit cover, remove the jammed paper, and close the unit. The error will be automatically cleared. After warming up, the printer resumes printing the page that was effected by the error.

Irregular Density

LED: **On Line = off Continue = off**

Explanation: The print data sent to the printer requires too much toner, CMYK density exceeds 280%, near the top edge, which causes the printer to print making paper jam around a paper source.

Solution: Open the paper feed unit, clear the jam, and then close the unit. Abandon the print job and turn the printer off and back on.

uuuu Toner Crtg Out

LED: **On Line = off Continue = off**

Explanation: One or more Toner Cartridges are not installed. The uuuu area identifies which Toner Cartridge is not installed in the order C M Y K.

Solution: Open the front cover, install the missing cartridge(s), and close the cover. The error will be automatically cleared.

Install Photocondctr

LED: **On Line = off Continue = off**

Explanation: The photoconductor unit is not installed, or it is installed incorrectly.

Solution: Turn the printer off, open the front cover, install (or reinstall) the photoconductor unit, and close the cover, and turn the printer back on.

Install Waste T Box

LED: **On Line = off Continue = off**

Explanation: The Waste Toner Box is not installed.

Solution: Open the front cover, install the Waste Toner Box, and close the cover to clear the error.

Wrong Photoconductor

LED: **On Line = off Continue = off**

Explanation: A wrong photoconductor unit is installed.

Solution: Turn the printer off and open the front cover. Replace the wrong photoconductor unit with a correct one. Close the front cover, and turn the printer back on.

Photocondctr Trouble

LED: **On Line = off Continue = off**

Explanation: The Photoconductor unit is not working properly.

Solution: Turn the printer off and open the front cover if closed. Replace the photoconductor unit with a good one. Close the cover and turn the printer back on to clear the error.

uuuu Toner Out

LED: **On Line = off Continue = off**

Explanation: The printer detected that one or more Toner Cartridges are empty and need to be replaced. The printer stops printing to prevent the engine from being damaged. Pressing the Continue button does not clear the error. The uuuu area identifies which Toner Cartridge is empty.

Solution: Open the front cover, replace the empty Toner Cartridge with a new one, and close the cover to clear the error.

Replace Photocondctr

LED: **On Line** = off **Continue** = off

Explanation: The engine has detected that the photoconductor has expired. Printing stopped.

Solution: Open the front cover, replace the photoconductor unit with a new one, and close the cover. Then turn the printer off and back on.

Replace Waste T Box

LED: **On Line** = off **Continue** = off

Explanation: The engine has detected that the Waste Toner Box is full. Printing stopped.

Solution: Open the front cover, replace the Waste Toner Box with a new one, and close the cover to clear the error.

Front Cover Open

LED: **On Line** = off **Continue** = off

Explanation The front cover is open.

Solution: Close the cover to clear the error.

Exit Cover Open

LED: **On Line** = off **Continue** = off

Explanation: The exit cover is open.

Solution: Close the cover to clear the error.

Cover A Open

LED: **On Line** = off **Continue** = off

Explanation: The Cover A (Paper Exit Cover) is open.

Solution: Close the Cover A. The error will be automatically cleared.

Cover D Open

LED: **On Line** = off **Continue** = off

Explanation: The Cover D (Right Cover) is open.

Solution: Close the Cover D. The error will be automatically cleared.

Unit G Open

LED: **On Line** = off **Continue** = off

Explanation: The Unit G (Duplex Tray) is open.

Solution: Close the Unit G. The error will be automatically cleared.

Unit C Open

LED: **On Line** = off **Continue** = off

Explanation: The Unit C (Paper Feed Unit) is open.

Solution: Close the Unit C. The error will be automatically cleared.

Unit B Open

LED: **On Line** = off **Continue** = off

Explanation: The Unit B (Fusing Unit) is open.

Solution: Close the Unit B. The error will be automatically cleared.

Cover E Open

LED: **On Line** = off **Continue** = off

Explanation: The Cover E (Feeder Cover) is open.

Solution: Close the Cover E. The error will be automatically cleared.

Cover F Open

LED: **On Line** = off **Continue** = off

Explanation: The Cover F (Left Cover) is open.

Solution: Close the Cover F. The error will be automatically cleared.

Turn Paper sss

LED: **On Line** = off **Continue** = off

Explanation: Paper is set with the short edge first.

Solution: Set the paper with the long edge first. The error will be automatically cleared.

Manual Feed sss ttt

LED: **On Line** = off **Continue** = off

Explanation: "Manual Feed" is not on the panel, but when "Manual Feed" is enabled by the ESC/Page (or ESC/Page-Color) command, the printer indicates the selected paper feed mechanism and paper size before starting printing operation.

Solution: Press the Continue button or On Line button to restart printing. When there is no paper on the selected paper feed tray (cassette), the printer indicates this error. When the paper size or paper tray is different from that is selected, the "Check Paper Size" error and "Check Paper Type" error will not be indicated.

Paper Out sss ttt

LED: **On Line** = off **Continue** = off

Explanation: 1. There is no paper loaded in the selected paper source sss.
2. Paper is set in none of the paper sources. (In this case, the paper source previously used is indicated. If this condition is detected at the power on, however, "LC1" is indicated).
"ttt" shows the paper size selected for the paper source sss.

Solution: 1. Load the correct size of paper ttt in the paper source sss to clear the error.
2. Load the correct size of paper in any of the paper sources to clear the error.

Paper Set sss ttt

LED: **On Line** = off **Continue** = blinking

Explanation: When "Size Ignore" in the "Config" menu = Off and "Auto Cont" in the "Config" menu = Off, the paper loaded in the selected paper source sss does not match the specified paper size ttt.

Solution: When "Size Ignore" in the "Config" menu = Off and "Auto Cont" in the "Config" menu = Off, perform any of the following:

1. Set the paper of size ttt in the paper source sss and press the Continue button. The error is cleared and the printer feeds paper from the paper source ssss to resume printing.
2. Press the Continue button without changing the paper. The error is cleared and the printer resume printing on paper from the paper source sss.
3. Reset the printer or perform a warm boot.

When "Size Ignore" in the "Config" menu = Off and "Auto Cont" in the "Config" menu = Off, the printer will automatically override the paper mismatch error after a specified period of time passes a print on paper from the paper source sss.

Print Overrun

LED: **On Line** = off **Continue** = blinking

Explanation: The print data is so complicated that the printer cannot process the data quickly enough.

Solution: When "Auto Cont" in "Config" menu = Off, perform any of the following:

1. If the printer has enough memory, it will attempt to print one more time, which may bring up the same error. If there is not enough memory or if the Print Overrun error recurs, however, the data for that page will be lost and the printer will begin processing the next page of data.
2. Reset the printer or perform a warm boot.
3. When "Auto Cont" in "Config" menu = On, the printer will automatically override the error after a specified period of time and undergo the same process as described above.

Mem Overflow

LED: On Line = off, Continue = blinking

Explanation: While processing a print job, the printer ran out of memory.

Solution: When "Auto Cont" in "Config" menu = Off, perform any of the following:

1. Press the Continue button. The action follows varies depending on the cause of the error. If the size of the graphic data has exceeded the buffer size, the printer ejects the page before the error, ignoring the command that caused the error. If the cause of the error is a failure

in registering the font macro pattern or so, the printer ignores the bad command and continues to print.

2. Reset the printer or perform a warm boot. When "Auto Cont" in "Config" menu = On, the printer will automatically override the error after a specified period of time and undergo the same process as described above.

Invalid HDD

LED: **On Line** = off **Continue** = off

Explanation: A problem relating the HDD (Hard Disc Drive) unit has occurred.

Solution: Turn the printer off and replace the HDD Unit with a valid one.

Invalid AUX I/F Card

LED: **On Line** = off **Continue** = off

Explanation: The I/F card currently installed can not be used with this printer.

Solution: Turn the printer off and remove the card.

Invalid ROM A

LED: **On Line** = off **Continue** = off

Explanation: The ROM module in slot A can not be used with this printer. (The ROM module is write-protected, un-formatted or broken. If the module is writable and unformatted, Write Error ROM is indicated.

Solution: Turn the printer off and remove the card.

Invalid ROM B

LED: **On Line** = off **Continue** = off

Explanation: The ROM module in slot B can not be used with this printer.
(The ROM module is write-protected, unformatted or broken.
If the module is writable and unformatted, Write Error ROM is indicated.

Solution: Turn the printer off and remove the card.

Write Error ROM A

LED: **On Line** = off **Continue** = off

Explanation: "Write" was attempted to write a write-protected ROM
module in slot A. Write process was not completed
successfully. There is no ROM module inserted in slot A.

Solution: 1. Turn the printer off and remove the ROM module.
2. Perform "Reset All".

Write Error ROM P

LED: **On Line** = off **Continue** = off

Explanation: "Write" was attempted to write a write-protected ROM
module, or "Write process" was not completed successfully.
Data reception failed, or the sum of the received data is
incorrect. There is not enough memory for a batch data.

Solution: 1. Turn the printer off and remove the ROM module.
2. Perform "Reset All".

3. If the error still occur after performing "Reset All", perform
"Service Call".

Copy System Error

LED: **On Line** = off **Continue** = off

Explanation: Some units of the copy system are not installed properly.

Solution: Turn the power off and install the units of the copy system
properly, or remove all the units and turn the power off.

Can't Print Duplex

LED: **On Line** = off **Continue** = blinking

Explanation: The printer cannot print duplex because of the duplex printing
restrictions. Previous models print out single-side, and then
indicate "Failed to Print Duplex". However, from this model,
the error is indicated before printing.

Solution: Press the Continue button to resume printing (printing will be
single-sided). When Auto Cont=off on the Config menu, the
printer resumes single-side printing after a while. When the
error is caused from the paper feed source setting and if the
paper feed source condition changes, the printer might
resume duplex printing after the error is cleared.

Invalid PS3

LED: **On Line** = off **Continue** = off

Explanation: A fatal problem relating the PS3 card occurred.

Solution: Turn the power off and replace the HDD Unit with a valid one.

5.1.4.3 Warning Message

Warning errors have no effect on printer operation.

Menus Locked

LED: No effect on LED state.

Explanation: Panel setting change was attempted despite "Panel Lock" is effective in ETL.

Solution: Press the Continue button.

PS3 Hard Disk full

LED: No effect on LED state.

Explanation: When a HDD unit is used for PS3, the area for PS3 has reached the limit.

Solution: Press the Continue button or reset the printer.

Collate was disabled

LED: No effect on LED state.

Explanation: There is not enough memory to save a whole 1-job data when copy is designated. The warning message appears during the 1st copy.

Solution: Press the Continue button. Adding optional memory is recommended.

Check Paper Size

LED: No effect on LED state.

Condition: "Size Ignore" in the "Config" menu = Off

Explanation: The selected paper size (PAGE SIZE) and the size of the paper fed do not match. If this error does not occur when the paper is fed from the paper tray, the value for MP tray size in the

printing menu is replaced with the value for the Page Size. Depending on the paper sizes, the printer may not be able to detect paper size mismatches and this warning will not be displayed.

When this warning occurs, be sure to check if any pages (of the wrong size) were printed before the printer detected the paper size mismatch.

Solution: Press the Continue button to clear the error.

Time Exceeded

LED: No effect on LED state.

Explanation: Paper was forcibly output blank as the print data did not arrive within the specified time (set on the engine side) even though the paper was pre-fed.

Solution: The printer attempts printing again using the same data. If the same problem occurs, the printer ejects the pre-fed paper and continues to print with the next data. Perform any of the following to clear the message.

1. Press the Continue button.
2. Perform a "Reset" operation.

Image Optimum

- LED:** No effect on LED state.
- Explanation:** There was not enough memory to process the print data and the printer optimized the data (reduced the resolution). For the monochrome printing, the printer reduces the resolution, and for color printing, the printer prints by the nonreversible compression.
- Solution:** This message remains even after the print job has finished printing. Perform either of the following procedures to clear the warning.
1. Press the Continue button to clear the warning.
 2. Perform a "Reset" operation.

Check Paper Type

- LED:** No effect on LED state.
- Explanation:** There is no paper source that has the selected paper size and type. The printer selects the paper source that has the paper of the selected size, ignoring the paper type. When both paper size and paper type match but there is no paper, the printer indicates "Paper Out" error, and this warning will not be indicated.
- Solution:**
1. Press the Continue button to clear the warning.
 2. Perform a "Reset" operation.

Outbin Select Error

- LED:** No effect on LED state.
- Explanation:** Because of the paper exit mechanism restrictions, the paper exit source becomes invalid and the sheet is ejected to another tray (Face-Up).
- Solution:** Perform either of the following procedures to clear the warning.

1. Press the continue button to clear the warning.
2. Perform a "Reset" operation.

Need Memory

- LED:** No effect on LED state.
- Explanation:** While processing print data, the printer ran out of memory. The printer attempted to compress the data, however, the printer reached the threshold* and generated this warning. If the data is still processing, the printer continues to print. In some cases, the printer can process the data and print even after this warning message appears. If the user presses the Continue button and the printer reaches the threshold again while processing the same page of data, the printer will show the same warning. In case the printer prints by reducing the resolution after the warning, the warning "Image Optimum" will be indicated. (This message has higher priority.)
- The printer-specific value that is not to be changed.
- Solution:** This message remains even after the print job has finished printing. Perform one of the following to clear the warning.
1. Press the Continue button.
 2. To force out from the warning during data processing, perform a reset operation or warm boot.

NOTE: *Installation of additional memory is recommended.*

Format Error ROM A

LED: No effect on LED state.

Explanation: If the ROM inserted in the slot A is new, take a necessary action. If the message appears after a writing operation, however, it means writing was not executed properly or memory was damaged. In this case, attempt writing again or turn the printer off and remove the ROM module.

Solution: Perform either of the following procedures.

1. Press the Continue button.
2. Turn the printer off and remove the ROM module.

Format Error ROM B

LED: No effect on LED state.

Explanation: If the ROM inserted in the slot B is new, take a necessary action. If the message appears after a writing operation, however, it means writing was not executed properly or memory was damaged. In this case, attempt writing again or turn the printer off and remove the ROM module.

Solution: Perform either of the following procedures.

1. Press the Continue button.
2. Turn the printer off and remove the ROM module.

uuuu Toner Low

LED: No effect on LED state.

Explanation: The engine has detected (by measuring the dispense time) the toner level for one or more Toner Cartridges has fallen below 80%. The uuuu area indicates which Toner Cartridge is low, Y, M, C, or K.

Solution: Perform any of the following procedures to clear the warning message.

1. Press the Continue button.
2. Perform a Reset operation.
3. Replace the indicated toner cartridge with a new one.

Worn Photocondctr

LED: No effect on LED state.

Explanation: The photoconductor unit is approaching the end of its life. The engine's detection system calculates the remaining lifetime, and generates this message when the number of pages left approaches:

- Color print: 1,125 pages (A4, 4.5% duty)
- Black print: 4,500 pages (A4, 4.5% duty)

Solution: It is recommended that the photoconductor unit be replaced when this message appears (although it is possible to continue using the existing unit until the "Replace Photocondctr" error occurs). Do any of the following to clear the warning message.

1. Press the Continue button.
2. Perform a Reset operation.
3. Replace the photoconductor unit with a new one.

Waste T Box Nearfull

- LED:** No effect on LED state.
- Explanation:** The Waste Toner Box is almost full. (The engine's detection system calculates the level of waste toner, and generates this message when the Waste Toner Box is almost full.)
- Solution:** It is recommended that the Waste Toner Box be replaced when this message appears (although it is possible to continue using the existing box until the "Replace Waste T Box" error occurs).
- Perform any of the following procedures to clear the warning message.
1. Press the Continue button.
 2. Perform a Reset operation.
 3. Replace the Waste Toner Box with a new one.

PS3 Hard Disk full

- LED:** No effect on LED state.
- Explanation:** The optional PS3 module uses the HDD. The HDD capacity that can be used for PS3 reaches its limit.
- Solution:** Perform any of the following procedures to clear the warning message.
1. Press the Continue button.
 2. Turn the power off and remove the ROM module.

Depleted Battery

- LED:** No effect on LED state.
- Explanation:** The battery life is running out. Users can continue printing, but preparation for a new battery is recommended. This is not an after-sales part.
- Solution:** Press the Continue button to clear the error.

Worn Fuser

- LED:** No effect on LED state.
- Explanation:** The fuser unit life is coming.
- Solution:** The fuser unit is one of the service parts; The following explanation is not explained in the User's Guide. The fuser unit still can be used, but replacing the fuser unit is recommended. The message is cleared by any of the following action.
1. Press the Continue button.
 2. Perform a Reset operation.
 3. Replace the fuser unit with a new one.

NOTE: For version 1.0 (Model code: M12087, IA2905[May 29, 2000]), this message is not installed. For version 1.1 (Model code: M12808, IA0806[June 8, 2000]), this message is installed. The IA xxxx code will be shown at the bottom of the status sheet.

5.1.4.4 Service-Call Error Messages

See the following tables for the detailed information on the Service-Call Error messages.

Engine Related Service-Call Error

Table 5-2. Engine Related Service-Call Errors

Error Type E	Error Code fff	Explanation	FIP
E	113	Fuser Unit malfunction (No Fuser Unit)	FIP-1.2
E	510	ROS motor malfunction	FIP-1.16
E	511	Motor 1 malfunction	FIP-1.15
E	512	P/H Motor malfunction	FIP-1.14
E	513	NVRAM malfunction	FIP-1.13
E	516	Duplex Unit malfunction (Communication)	*
E	517	Optional single/double cassette malfunction	*
E	520	2nd BTR malfunction (Advance)	FIP-1.24
E	521	2nd BTR malfunction	FIP-1.23
E	523	PCDC malfunction	FIP-1.21
E	524	Toner density malfunction (Low density)	FIP-1.20
E	525	Toner density malfunction (High density)	FIP-1.19
E	526	ADC sensor soiled	FIP-1.18
E	527	Deve home position sensor malfunction	-
E	530	Environment (humidity)sensor malfunction	FIP-1.27
E	531	PR Motor malfunction	FIP-1.15
E	532	P/H Motor2 malfunction	FIP-1.14
E	533	Thermosensor malfunction	FIP-1.25
E	534	Fuser Unit malfunction (Low Temperature)	FIP-1.26
E	535	Fuser Unit malfunction (Lamp)	FIP-1.26
E	536	Fuser Unit malfunction (Time out)	-
E	537	Fuser Unit malfunction (Overheat)	FIP-1.25
E	543	Rear fan malfunction	FIP-1.30

Table 5-2. Engine Related Service-Call Errors

Error Type E	Error Code fff	Explanation	FIP
E	544	Fuser Unit fan2 malfunction	-
E	545	Fuser Unit fan1 malfunction	FIP-1.28
E	546	Duplex Unit motor malfunction	*
E	547	Optional single/double cassette unit feeder motor malfunction	*
E	620	K Deve service life	FIP-1.31
E	621	C Deve service life	FIP-1.31
E	622	M Deve service life	FIP-1.31
E	623	Y Deve service life	FIP-1.31
E	624	IBT service life	FIP-1.31
E	626	2nd BTR service life	FIP-1.31
E	627	IBT cleaner service life	FIP-1.31
E	830	Optional double cassette unit LC3 malfunction	*
E	831	Optional single/double cassette unit LC2 malfunction	*
E	832	MP tray malfunction (lift down)	FIP-1.40
E	833	MP tray malfunction (lift up)	FIP-1.39
E	998	Engine communication error	FIP-1.43

*1: Does not appear with this printer because the printer's life ends earlier.

Controller Related Service-Call Error

Table 5-3. Controller Related Service-Call Error

Error Type	Error Code	Explanation	FIP
C	0017	CPU error (undefined interrupt)	FIP-1.43
C	0081	CPU error (TLB correction exception)	FIP-1.43
C	0082	CPU error (TLB miss exception [Load/Fetch])	FIP-1.43
C	0083	CPU error (TLB miss exception [Store])	FIP-1.43
C	0084	CPU error (Address-error exception [Load/Fetch])	FIP-1.43
C	0085	CPU error (Address-error exception [Store])	FIP-1.43
C	0086	CPU error (Bus error exception [Fetch])	FIP-1.43
C	0087	CPU error (Bus error exception [Load/Store])	FIP-1.43
C	0088	CPU error (SYSCALL exception)	FIP-1.43
C	0089	CPU error (Break exception)	FIP-1.43
C	0090	CPU error (Reserved command exception)	FIP-1.43
C	0091	CPU error (Coprocessor-not-in-use exception)	FIP-1.43
C	0092	CPU error (FPU exception)	FIP-1.43
C	0093	CPU error (TLB exception)	FIP-1.43
C	0094	CPU error (XTLB exception)	FIP-1.43
C	0095	CPU error (cache exception)	FIP-1.43
C	0096	CPU error (Trap exception)	FIP-1.43
C	0097	CPU error (FPU exception)	FIP-1.43
C	0098	CPU error (Watch exception)	FIP-1.43
C	0128~0254	CPU error (Undefined trap)	FIP-1.43
C	0255	CPU error (NMI exception)	FIP-1.43
C	0256	CPU error (Division by zero)	FIP-1.43
C	0257	CPU error (Operation overflow)	FIP-1.43
C	0258	CPU error (break)	FIP-1.43
C	0800	IPL error (Controller problem)	FIP-1.43
C	1002	Error in standard RAM (Capacity below standard, or other)	FIP-1.45

Table 5-3. Controller Related Service-Call Error

Error Type	Error Code	Explanation	FIP
C	1010	Verify error	FIP-1.44
C	1020	RAM DIMM error (Slot 0)	FIP-1.45
C	1021	RAM DIMM error (Slot 1)	FIP-1.45
C	1022	RAM DIMM error (Slot 2)	FIP-1.45
C	1100	ROM (font) checksum error (IC14) (bit 0 to 15)	FIP-1.46
C	1101	ROM (font) checksum error (IC13) (bit 16 to 31)	FIP-1.46
C	1120	ROM (program) checksum error (bit 0 to 7)	FIP-1.47
C	1121	ROM (program) checksum error (bit 8 to 15)	FIP-1.47
C	1122	ROM (program) checksum error (bit 16 to 23)	FIP-1.47
C	1123	ROM (program) checksum error (bit 24 to 31)	FIP-1.47
C	1170	Checksum error: optional font ROM	FIP-1.48
C	1180	Checksum error: optional ROM module A	FIP-1.48
C	1181	Checksum error: optional ROM module B	FIP-1.48
C	1182	Checksum error: optional ROM module C	FIP-1.48
C	1185	Unsupported ROM module	FIP-1.48
C	1200	EEPROM (IC20) write error	FIP-1.49
C	1210	EEPROM (IC20) write limit (number of writes reached limit)	FIP-1.49
C	1400	Engine initialization error	FIP-1.51
C	1500	CCNV (IC24) hardware error	FIP-1.50
C	1550	Compression SRAM initialization hardware error	FIP-1.52
C	1600	Video hardware error (including PWMIC calibration error) (IC24 or IC26)	FIP-1.50
C	1700	Integrated network hardware error	FIP-1.51
C	1999	Other hardware errors	FIP-1.51
C	2000	Software error*	FIP-1.51

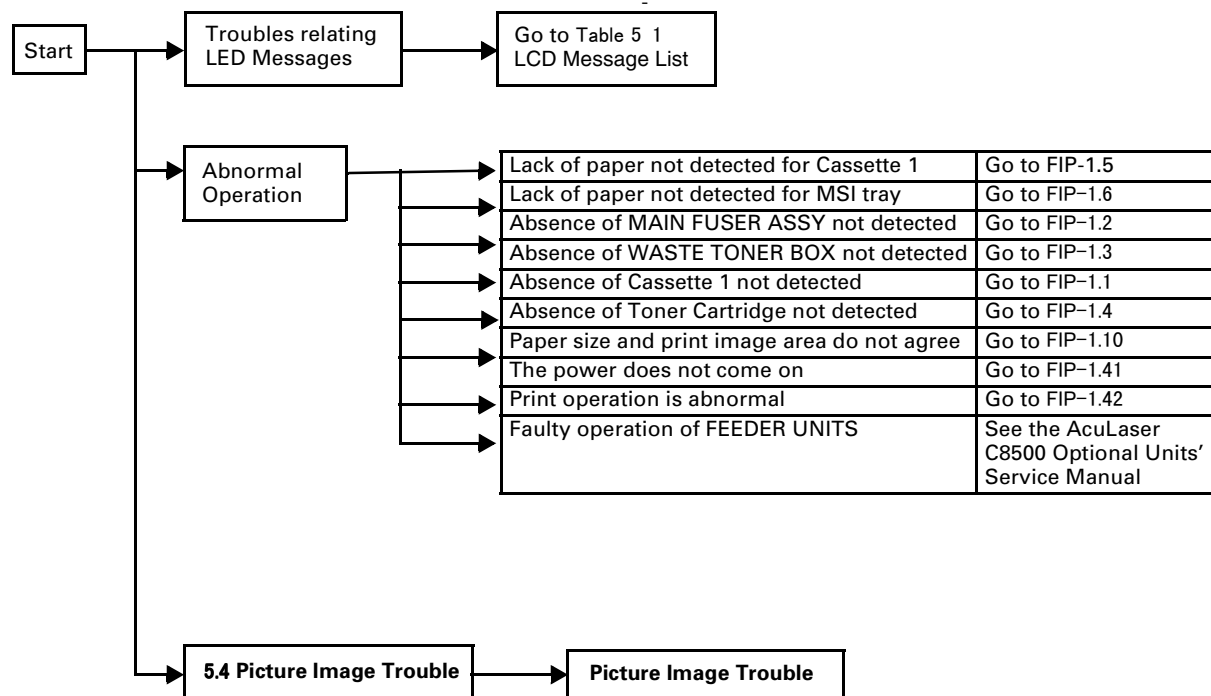
* If software errors occur, you may want to use the #F691 Diagnostic Tool to perform "Slave Initialize" (from the service menu). After performing the command, turn the printer off and back on. For details, see Chapter 4.

5.2 Level 1 FIP (Fault Isolation Procedure)

5.2.1 Precautions When Using FIP (Fault Isolation Procedure)

1. FIP assumes that the printer controller (CONTROLLER PWB) is functioning properly. If you are troubleshooting and cannot repair a problem, replace the printer controller with one that is functioning properly and see if that helps. If the problem still cannot be fixed, check "Main Check Parts" of "Initial Check" and replace related parts in the sequence given.
2. Troubleshooting by FIP requires consumable parts, such as MCU PWB, DRUM CARTRIDGE, and Y/M/C/K ET cartridges. Make sure those parts are functioning properly before troubleshooting.
3. At the "Initial Check" of FIP, check that it can be done at a simple level.
4. In addition to "Main Check Parts" of "Initial Check," check configuration parts of main check parts and other related parts.
5. Be sure to unplug the POWER CORD except when necessary when performing work. Never touch conducting parts except when necessary if the POWER CORD is plugged in.
6. The following is indicated for connectors:
 - Indicates connector (P/J12) is connected.
 - Indicates "plug" side with connector (P/J12) disconnected (doesn't include when directly mounted on board).
 - Indicates "jack" side with connector (P/J12) disconnected (doesn't include when directly mounted on board).
7. "P/J1-2PIN <=> P/J3-4PIN" in FIP means to measure "2PIN" of "P/J1" by connecting to positive side of meter, and "4PIN" of "P/J3" by connecting to negative side.
8. "P/J1 <=> P/J2" means to measure all pins between "P/J1" and "P/J2" while referring to "Chapter 9: Wiring Connection Diagram."
9. With "P/J1-2PIN <=> P/J3-4PIN" when measuring voltage in FIP, the negative side "P/J3 - 4PIN" is always AG (analog ground), SG (signal ground), or RTN (return). After making sure there is conductivity between AG's, SG's and RTN's respectively, you can connect the negative side to a PIN of another AG, SG or RTN instead of "P/J3 - 4PIN." AG's, SG's and RTN's are however not all of the same level, so you must be careful not to confuse them.
10. The terminal surface (every other one toward yourself / away from yourself) the side of the connector must be used when measuring voltage of P/J16, P/J17, P/J19 and P/J20B. The terminal surface is small, so using a tester with slender probes, you must make reliable contact with the inside terminal surface in particular.
11. To measure voltage, particularly when unnecessary, mount the DRUM CARTRIDGE and paper tray, and measure with the FRONT COVER ASSY, TOP COVER ASSY, MAIN P/H ASSY, FUSER ASSY and EXIT UPPER ASSY closed and the power ON.
12. Numerical values in FIP are target values; approximate values are judged as being the same.
13. There are no specific instructions for parts to be removed and their removal in order to perform checks indicated in FIP. Be careful when performing such work.
14. "Replacement" in FIP indicates parts which are possible sources of trouble. "Replacement" also indicates parts or assembly parts containing such parts (HIGH ASSY) to be replaces and checked.
15. In FIP, the paper tray feed at the bottom of the printer is called "Cassette 1," the first level of the optional FEEDER UNIT is called "Cassette 2, the second level is called "Cassette 3".
16. FIP contains a section that distinguished between whether a DIAG toll (maintenance tool) is used or not, and the problem is repaired according to the applicable instructions.
17. FIP contains a section that distinguishes between certain specifications, and the problem is repaired according to the applicable instructions.
18. Troubleshooting for options proceeds according to the respective manuals for options. Keep the required option manual on hand and refer to when needed.

5.2.2 FIP Entry Chart



FIP-1.1 Cassette 1 Not Set

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check UNIVERSAL CASSETTE, TRAY SIZE ACTUATOR, SIZE SWITCH ASSY, FEEDER PWB, MCU PWB	Replace and remount the faulty part(s)	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Check the Printer Controller (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*UNIVERSAL CASSETTE mounting check Can the UNIVERSAL CASSETTE be installed smoothly?	Go to step 4	Replace the faulty part(s).
4	*END GUIDE ACTUATOR check Does the END GUIDE ACTUATOR push in the PAPER SIZE SWITCH when the Cassette 3 is installed? • After inserting a sheet of paper from the rear onto the SIZE SWITCH ASSY and installing the Cassette 3, pull out the paper. If you feel resistance, it means the switches are pushed.	■ With the tool: Go to step 5. ■ Without the tool: Go to FIP-2.5.	Replace the faulty part(s).
5	*Paper size check • By using the DIAG tool, check by Digital Input Test device code "25" .	Go to step 6.	Go to FIP-2.5.
6	*FEEDER PWB check Replace the relevant FEEDER PWB. Does the problem still occur?	Replace the MCU PWB.	Problem solved.

FIP-1.2 Fuser Unit Malfunction (No Fuser Unit)

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check FUSER ASSY, MCU PWB, FUSER HARNESS ASSY, FUSER CONNECTOR	Replace and remount the concerned part(s)	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Check the Printer controller (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*FUSER ASSY mounting check Is the FUSER ASSY properly mounted? • Check by removing and reinstalling the FUSER ASSY.	■ With the tool: Go to step 4. ■ Without the tool: Go to step 5.	Replace the faulty part(s).
4	*FUSER ASSY detection circuit check Is the FUSER ASSY detection circuit functioning properly? • By using the DIAG tool, check by Digital Input Test device code "24".	Go to step 5.	Replace the MCU PWB
5	*FUSER ASSY detection circuit power source check Is the voltage for P19-16PIN <=> P19-15PIN 5VDC?	Go to step 6.	Replace the MCU PWB
6	*FUSER ASSY detection signal check Is the voltage for P/J19-18PIN <=> P/J19-7PIN as follows? ■ With the FUSER ASSY, the value is 0VDC. ■ Without the FUSER ASSY, the value is 5VDC.	Replace the MCU PWB	Go to step 7.
7	*FUSER HARNESS ASSY continuity check Does the FUSER HARNESS ASSY have a proper continuity between J71 <=> J78?	Go to step 9.	Replace the FUSER HARNESS ASSY.
8	*FUSER CONNECTOR continuity check Does the FUSER CONNECTOR have a proper continuity between P71 <=> J17?	Go to step 9.	Replace the FUSER CONNECTOR.

9	*FUSER ASSY replacement check Replace the FUSER ASSY. Does the problem still occur?	Replace the MCU PWB	Problem solved.

FIP-1.3 WASTE TONER BOX Not Mounted

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check WASTE TONER BOX, DRAM CARTRIDGE, TONER BOX SENSOR, TONER BOX HARNESS, MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s)	Go to step 2.
2	*WASTE TONER BOX mounting check Is the WASTE TONER BOX properly installed?	Go to step 3.	Install the WASTE TONER BOX properly.
3	*DRUM CARTRIDGE mounting check Is the DRUM CARTRIDGE properly installed?	Go to step 4.	Install the DRUM CARTRIDGE properly.
4	*TONER BOX SENSOR mounting check Is the TONER BOX SENSOR properly mounted?	■ With the tool: Go to step 5. ■ Without the tool: Go to FIP-2.16	Remount the TONER BOX SENSOR.
5	*TONER BOX SENSOR check Is the TONER BOX SENSOR functioning properly? • By using the DIAG tool, check by Digital Input Test device code "52"	Replace the MCU PWB	Go to FIP-2.16

FIP-1.4 TONER CARTRIDGE BK/C/M/Y Not Mounted

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check Toner Cartridge, CARTRIDGE SENSOR, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Toner Cartridge seal check Is the white reflecting seal applied to the concerned the Toner Cartridge?	Go to step 3.	Replace the concerned Toner Cartridge
3	*CARTRIDGE SENSOR check Is the CARTRIDGE SENSOR installed properly?	Go to step 4.	Remount the CARTRIDGE SENSOR
4	*Toner Cartridge replacement check Is the status solved when the concerned Toner Cartridge is replaced with a new one?	Problem solved.	■ With the tool: Go to step 5. ■ Without the tool: Go to FIP-2.20
5	*CARTRIDGE SENSOR check Is the CARTRIDGE SENSOR functioning properly? • By using the DIAG tool, check by Digital Input Test device code "67".	Replace the MCU PWB	Go to FIP-2.20

FIP-1.5 Cassette 1 No Paper

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check CASSETTE N/P ACTUATOR, CASSETTE NO PAPER SENSOR, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Check the Printer controller (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*BOTTOM PLATE ASSY check Does the BOTTOM PLATE ASSY lift normally when the UNIVERSAL TRAY is pushed in? • Remove the TURN IN CHUTE and check.	Go to step 4.	Replace the faulty part(s) (paper cassette, etc.)
4	*Cassette N/P ACTUATOR check Does the Cassette N/P ACTUATOR operate smoothly when there is paper and it is removed from the detection section of the Cassette NO PAPER SENSOR? • Remove the MAIN P/H FRAME ASSY and check with Cassette 1 pushed all the way in.	■ With the tool: Go to step 5. ■ Without the tool: Go to FIP-2.3	Replace the faulty part(s)
5	*Cassette NO PAPER SENSOR check Is the Cassette NO PAPER SENSOR functioning properly? • Check by Digital Input Test device code "60" using DIAG tool.	Replace the MCU PWB	Go to FIP-2.3

FIP-1.6 MSI Tray No Paper

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check MCU PWB, MSI N/P ACTUATOR, EMPTY SENSOR	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Check the Printer controller (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	Does the status occur at a letter size or smaller?	Go to step 4.	Replace the concerned part(s). <i>e.g.</i> MSI N/P ACTUATOR ...etc.
4	*MSI N/P ACTUATOR check Is the actuator operating depending the conditions below? ■ Paper is set: The MSI N/P ACTUATOR is away from the detection area of the EMPTY SENSOR. ■ No paper is set: The MSI N/P ACTUATOR is blocking the detection area of the EMPTY SENSOR. ■ Does the actuator move smoothly?	■ With the tool: Go to step 5. ■ Without the tool: Go to FIP-2.7	Replace and remount the concerned part(s). <i>e.g.</i> MSI N/P ACTUATOR ...etc.
5	*EMPTY SENSOR check Is the EMPTY SENSOR functioning properly? • By using the DIAG tool, check by Digital Input Test device code "60" .	Replace the MCU PWB	Go to FIP FIP-2.7

FIP-1.7 CRUM Error

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check DRUM CARTRIDGE, CRUM CONNECTOR ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*CRUM CONNECTOR ASSY continuity check Is there proper continuity between J23 <=> p22?	Go to step 3.	Replace the CRUM CONNECTOR ASSY.
3	*DRUM CARTRIDGE replacement check Is there still a problem after replacing with new DRUM CARTRIDGE of proper specifications?	Replace the MCU PWB	Problem solved.

FIP-1.8 EXIT JAM

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check REGI. SENSOR, EXIT LOWER ASSY, TOP EXIT SENSOR EXIT-2 ROLL ASSY, P/H DRIVE ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If error still occurs after replacing, go to step 3.)	Go to step 3.
3	Are you using curled paper or paper that tends to curl?	Change to different paper.	Go to step 4.
4	*EXIT LOWER ASSY check Is there foreign matter in the paper route of the EXIT LOWER ASSY? Is there anything wrong with parts?	■ With tool: Go to step 5. ■ Without tool: Go to FIP-2.29	Clean or replace the faulty part(s).
5	*TOP EXIT SENSOR check Is the TOP EXIT SENSOR functioning properly? Check by Digital Input Test device code "16" using DIAG tool.	Go to step 6.	Go to FIP-2.29
6	*EXIT-2 ROLL ASSY check Is the EXIT-2 ROLL ASSY worn? Is there foreign matter adhering to the EXIT-2 ROLL ASSY?	Clean or replace the EXIT-2 ROLL ASSY	Go to step 7.
7	*EXIT LOWER ASSY drive route check Is there anything wrong with the drive rout of the EXIT LOWER ASSY? Are the gears faulty or worn?	Replace the faulty part(s)	Go to step 8.
8	*P/H DRIVE ASSY check Is the P/H DRIVE ASSY improperly mounted? Are the gears faulty?	Replacement or remounting of P/H DRIVE ASSY	Replace the MCU PWB.

FIP-1.9 FUSER JAM

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check FUSER EXIT ACTUATOR, FUSER EXIT SENSOR-1 FUSER EXIT SENSOR-2, FUSER IN ACTUATOR FUSER IN SENSOR, FUSER DRIVE ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If error still occurs after replacing, go to step 3.)	Go to step 3.
3	Are you using curled paper or paper that tends to curl?	Change to different paper.	Go to step 4.
4	*FUSER EXIT ACTUATOR check Does the FUSER EXIT ACTUATOR operate smoothly according to the following conditions below? ■ When there is paper and it is removed from the FUSER EXIT SENSOR detection section, does it operate smoothly? ■ When there is no paper and the FUSER EXIT SENSOR detection section is screened off, does it operate smoothly?	■ With tool: Go to step 5. ■ Without tool: Go to FIP-2.26 If not restored, go to FIP-2.25	Replace the faulty part(s)
5	*FUSER EXIT SENSOR check Is the FUSER EXIT SENSOR-1/-2 functioning properly? • By using the DIAG tool, check by Digital Input Test device code "25,4B" .	Go to step 6.	Go to FIP-2.26
6	*FUSER IN ACTUATOR check Does the FUSER IN ACTUATOR operate smoothly under the following conditions? ■ When there is paper and it is removed from the FUSER IN SENSOR detection section ■ When there is no paper and the FUSER IN SENSOR detection section is screened off	■ With tool: Go to step 5. ■ Without tool: FIP-2.25	Replace the faulty part(s)

7	*FUSER IN SENSOR check Is the FUSER IN SENSOR functioning properly? • By using the DIAG tool, check by Digital Input Test device code "24" .	Go to step 8.	Go to FIP-2.25
8	*FUSER DRIVE ASSY check Is the FUSER DRIVE ASSY improperly mounted? Are the gears faulty?	Replace or remount the FUSER DRIVE ASSY	Go to step 9.
9	*FUSER ASSY check Will the status be solved if the FUSER ASSY is replaced?	Replace the FUSER ASSY	Replace the MCU PWB.
10	*FUSER IN ACTUATOR check Does the FUSER IN ACTUATOR operate smoothly? when there is paper and it is removed from the FUSER IN SENSOR detection section, or when there is no paper and the FUSER IN SENSOR detection section is screened off?	■ With tool: Go to step 11. ■ Without tool: Go to FIP-2.25	Replace the faulty part(s)
11	*FUSER IN SENSOR check Is the FUSER IN SENSOR functioning properly? • By using the DIAG tool, check by Digital Input Test device code "28" .	Go to step 12.	Go to FIP-2.25
12	*FUSER DRIVE ASSY check Is the FUSER DRIVE ASSY improperly mounted? Are the gears faulty?	Replace or remount the FUSER DRIVE ASSY.	Go to step 13.
13	*FUSER ASSY check Will the status be solved if the FUSER ASSY is replaced?	Replace the FUSER ASSY	Replace MCU PWB

FIP-1.10 REGI. JAM

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check REGI. SENSOR, MAIN P/H FRAME ASSY TURN ROLL ASSY, FEED ROLL, P/H DRIVE ASSY FEED SOLENOID, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	Are you using curled paper or paper that tends to curl?	Change to different paper.	Go to step 4.
4	*MAIN P/H FRAME ASSY check Are there foreign matters in the paper route of the MAIN P/H FRAME ASSY? Is there anything wrong with parts?	■ With tool: Go to step 5. ■ Without tool: Go to FIP-2.12	Clean and replace the faulty part(s).
5	* REGI. SENSOR check Is the REGI. SENSOR functioning properly? By using the DIAG tool, check by Digital Input Test device code "29".	Go to step 6.	Go to FIP-2.12
6	* MAIN P/H FRAME ASSY drive route check Is there anything wrong with the drive rout of the MAIN P/H FRAME ASSY? Are the gears faulty or worn?	Replace the faulty part(s).	Go to step 7.
7	*TURN ROLL ASSY check Is the TURN ROLL ASSY worn? Are there foreign matters adhering to the TURN ROLL ASSY?	Replace and clean the TURN ROLL ASSY	Go to step 8.
8	*FEED ROLL check Is the FEED ROLL worn? Are there foreign matters adhering to the FEED ROLL?	Replace and clean the FEED ROLL	Go to step 9.

9	*P/H DRIVE ASSY check Is the P/H DRIVE ASSY improperly mounted? Are the gears faulty?	Replace and remount the P/ H DRIVE ASSY.	Go to step 10.
10	*FEED SOLENOID check Is the FEED SOLENOID functioning properly?	Replace the MCU PWB.	Go to FIP-2.6

FIP-1.11 OHP Film Incorrect Mounting

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check OHP SENSOR, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*Dirt / foreign matter check Is/Are there dirt or foreign matters on the surface of the FRONT OHP SENSOR or REAR OHP SENSOR?	Remove dirt/foreign matters.	Go to step 4.
4	*Transport route check Is/Are there dirt or foreign matters in the OHP film transport route?	Remove dirt/foreign matters.	■ With tool: Go to step 8. ■ Without tool: FIP-2.11
5	*OHP SENSOR check Is the OHP SENSOR functioning properly? • By using the DIAG tool, check by Digital Input Test device code "1D".	Replace the OHP SENSOR.	Go to FIP-2.11

FIP-1.12 Size Mismatch

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check SIZE SWITCH ASSY, MAIN P/H ASSY, REGI. SENSOR CASSETTE SIZE ACTUATOR, END GUIDE, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*Paper size check Are you using the correct paper size in accordance with the specifications?	Go to step 4.	Use the correct paper in accordance with the specifications.
4	Is paper being supplied from the MSI tray?	Go to step 5	Replace the MCU PWB.
5	*MSI paper size setting check Does the paper size set by the DIAG tool or controller agree with the paper size set for the MSI tray?	Go to step 6.	Alter the setting to agree with the actual paper size.
6	*Paper size detection mechanism check Does the paper size set in the concerned tray agree with the ON/OFF combination of the 4 Paper Size Switches on the SIZE SWITCH ASSY? • Make sure the TRAY SIZE ACTUATOR works together with the END GUIDE. Check if the Cassette SIZE ACTUATOR pushes the Paper Size Switch in when the tray is mounted. (The Paper Size Switch is pushed in if the paper has resistance when inserted on the SIZE SWITCH ASSY from the rear.)	■ With tool: Go to step 7. ■ Without tool: Go to step 8. If the problem still occurs after performing the following treatment, go to FIP-2.25	Replace the faulty part(s).
7	*Paper size check Does the size of the paper mounted in the concerned paper cassette agree with the Paper Size Switch data? • By using the DIAG tool, check by Digital Input Test device code "02".	■ With tool: Go to step 8. ■ Without tool: Go to FIP-2.25	Replace the faulty part(s)

8	*REGI. SENSOR check Is the REGI. SENSOR functioning properly? • By using the DIAG tool, check by Digital Input Test device code "29".	Problem solved.	Go to FIP 2.25 "Faulty FUSER IN SENSOR."

FIP-1.13 NVRAM malfunction

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check COMMUNICATION ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	Does the error occur when the power is turned ON?	Go to step 3.	Go to the concerned FIP when other errors/status codes occur.
3	Load the program data to the MCU PWB Flash ROM. Does the problem still occur?	Go to step 4.	Problem solved.
4	Does the error occur when MCU PWB is replaced, and the power is turned ON again?	Go to FIP-2.36	Problem solved.

NOTE: The problem is probably due to outside noise. Proceed to FIP 2.36 "Noise" and check.

NOTE: Replace the MCU PWB with a normal one. If the same error still occurs after loading the firmware, go to FIP 2.41 "Noise" and check.

FIP-1.14 P/H MOTOR malfunction

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check P/H MOTOR ASSY, HEAT ROLL, PRESSURE ROLL, FUSER ASSY, BELT CLEANER ASSY, EXIT LOWER ASSY, FEED ROLL ASSY, MAIN P/H ASSY, WASTE TONER BOX, 2ND BTR CAM ASSY, AUGER HIGH ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*P/H Motor operation check When the test print is conducted, does the P/H Motor slightly operate and stop?	Go to step 5.	Go to step 4.
4	*P/H Motor operation check When the test print is conducted, does the P/H Motor stop?	Go to FIP-2.31	Replace the MCU PWB.
5	*Drive transmission check Does the rotor of the P/H MOTOR ASSY turn smoothly? • Check by turning the rotor of the P/H MOTOR ASSY in the counterclockwise direction with your hand.	Go to step 6.	Replace the P/H MOTOR ASSY.
6	*FUSER ASSY check Do the HEAT ROLL and PRESSURE ROLL turn smoothly? • Check by turning INPUT GEAR FT1 with your hand.	Go to step 7.	Replace the faulty part(s).
7	*BELT CLEANER ASSY check Does the BELT CLEANER ASSY turn smoothly? • Check by turning the gear with your hand.	Go to step 8.	Replace the BELT CLEANER ASSY.
8	*EXIT LOWER ASSY check Does the EXIT LOWER ASSY turn smoothly? • Check by turning the EXIT IDLER GEAR with your hand.	Go to step 9.	Replace the faulty part(s).

9	*MAIN P/H FRAME ASSY check Does the MAIN P/H FRAME ASSY turn smoothly?	Go to step 10.	Replacement of faulty part(s).
10	*WASTE TONER BOX check Does the rotor of the P/H MOTOR ASSY turn smoothly when the WASTE TONER BOX is removed? Check by turning the rotor of the P/H MOTOR ASSY in the counterclockwise direction with your hand.	Go to step 11.	Replace the WASTE TONER BOX.
11	*FEED ROLL ASSY check Does the FEED ROLL ASSY turn smoothly? *Check by turning the rotor of the P/H MOTOR ASSY in the counterclockwise direction with your hand after lowering the FEED SOLENOID armature and making the gears mesh.	Go to step 12.	Replace the faulty part(s)
12	*2ND BTR CAM ASSY check Does the 2ND BTR CAM ASSY turn smoothly? Check by turning the rotor of the P/H MOTOR ASSY in the counterclockwise direction with your hand with the FUSER ASSY, BELT CLEANER ASSY and 2ND BTR ASSY removed.	Go to step 13.	Replace the faulty part(s)
13	*AUGER HIGH ASSY check Does the AUGER HIGH ASSY turn smoothly? Check by turning the rotor of the P/H MOTOR ASSY in the counterclockwise direction with your hand with the FUSER ASSY, BELT CLEANER ASSY and 2ND BTR ASSY removed.	Replace the MCU PWB.	Replace the AUGER HIGH ASSY

FIP-1.15 Motor 1 (PR Motor) malfunction

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check PROCESS DRIVE ASSY, TRANSFER ASSY, TR0 SENSOR MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*Process Motor operation check Does the Process Motor operate when test print is conducted?	Go to step 4.	Go to step 9.
4	*PROCESS DRIVE ASSY mounting check Is the PROCESS DRIVE ASSY mounted securely?	Go to step 5.	Remount the PROCESS DRIVE ASSY
5	*TRANSFER ASSY mounting check Is the TRANSFER ASSY mounted securely?	Go to step 6.	Remount the TRANSFER ASSY.
6	*PROCESS DRIVE ASSY check Does the output shaft of the PROCESS DRIVE ASSY turn smoothly when the rotor of the PROCESS DRIVE ASSY is turned by hand?	Go to step 7.	Remount the PROCESS DRIVE ASSY.
7	*TR0 SENSOR mounting check Is the TR0 SENSOR mounted securely?	■ With tool: Go to step 8. ■ Without tool: Go to FIP-2.23	Remount the TR0 SENSOR.
8	*TR0 SENSOR check Is the TR0 SENSOR functioning properly? • By using the DIAG tool, check by Digital Input Test device code "42".	Replace the MCU PWB.	Go to FIP-2.23
9	*PROCESS DRIVE ASSY foreign matter check Is the rotation of the PROCESS DRIVE ASSY blocked by foreign matters?	Remove the foreign matters	■ With tool : Go to step 10. ■ Without tool: Go to FIP-2.31

10	*PROCESS DRIVE ASSY check Is the PROCESS DRIVE ASSY functioning properly? • By using the DIAG tool, check by Digital Input Test device code "10".	Replace the MCU PWB.	Go to FIP-2.30

FIP-1.16 ROS motor malfunction

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check ROS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to FIP-2.17)	Go to FIP-2.17

FIP-1.17 ROTARY MOTOR ASSY-Related Error

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check ROTARY MOTOR ASSY, ROTARY FRAME ASSY ROTARY SENSOR ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*Rotary Motor drive check Does the Rotary Motor drive? • Check by conducting test print.	Go to step 4.	Go to step 8.
4	*ROTARY FRAME ASSY rotation check Is the rotation of the ROTARY FRAME ASSY being blocked by foreign matters?	Remove the foreign matters.	Go to step 5.
5	*ROTARY SENSOR ASSY mounting check Is the ROTARY SENSOR ASSY properly mounted?	Go to step 6.	Remount the ROTARY SENSOR ASSY.
6	*ROTARY MOTOR ASSY mounting check Is the ROTARY MOTOR ASSY properly mounted?	■ With tool: Go to step 7. ■ Without tool: Go to FIP-2.32	Remount the ROTARY MOTOR ASSY.
7	*ROTARY SENSOR ASSY check Is the ROTARY SENSOR ASSY functioning properly? • By using the DIAG tool, check by the Digital Input Test device code "43" .	Replace the MCU PWB.	Go to FIP-2.32
8	*ROTARY FRAME ASSY rotation check Is rotation of the ROTARY FRAME ASSY being blocked by foreign matter?	Remove the foreign matters.	■ With tool: Go to step 9. ■ Without tool: Go to FIP-2.32

9	*ROTARY MOTOR ASSY check Is the ROTARY MOTOR ASSY functioning properly? • By using the DIAG tool, check by Digital Output Test device code "10,11".	Replace the MCU PWB.	Go toFIP-2.32

FIP-1.18 ADC sensor soiled

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check ADC SENSOR ASSY, MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*ADC Sensor surface check Is/ Are there dirt or foreign matters adhering to the surface of the ADC Sensor?	Remove the foreign matters.	Go to step 4.
4	*ADC SENSOR ASSY mounting check Is the ADC SENSOR ASSY properly mounted?	■ With tool: Go to step 5. ■ Without tool: Go to FIP-2.18	Remount the ADC SENSOR ASSY
5	*ADC Sensor check Is the ADC Sensor functioning properly? • By using the DIAG tool, check by the Digital Input Test device code "76" and "67".	Replace the MCU PWB	Go to FIP-2.18
6	*ADC Solenoid check Is the ADC Solenoid functioning properly? • By using the DIAG tool, check by Digital Output Test device code "36".	Replace the MCU PWB	Go to FIP-2.19

FIP-1.19 Toner density malfunction (High density)

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check DEVE.CONTACT ASSY, ADC SENSOR ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*DEVE. CONTACT ASSY check Is DEVE. CONTACT ASSY contact surface distorted? Are there foreign matters on the DEVE. CONTACT ASSY contact surface?	Replace the DEVE. CONTACT ASSY t	Go to step 4.
4	*ADC Sensor surface check Is there dirt or foreign matter on the surface of the ADC Sensor?	Remove the foreign matters.	■ With tool: Go to step 5. ■ Without tool: Go to FIP-2.18
5	*ADC Sensor check Is the ADC Sensor functioning properly? • By using the DIAG tool, check by the Digital Input Test device code "72".	Go to step 6.	Go to FIP-2.18
6	*ADC Solenoid check Is the ADC Solenoid functioning properly? • By using the DIAG tool, check by the Digital Output Test device code "67" .	Go to step 7.	Go to FIP-2.19
7	*MCU PWB replacement check Replace the MCU PWB. Does the problem still occur?	Go to FIP-2.35	Problem solved.

FIP-1.20 Toner density malfunction (Low density)

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check DISPENSE CLUTCH ASSY, DEVE CONTACT PLATE ASSY, Developer Assy, MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*Drum surface image check Are the various toner images developed on the Drum surface? • If you think there may be an image in the process of being transferred while printing, turn the power OFF, and visually inspect Cin50% patch on the Drum surface.	Go to step 8.	Go to step 4.
4	*Drum surface picture image check • If you think there may be an image in the process of being transferred while printing, turn the power OFF, and visually inspect Cin50% patch on the Drum surface.	Go to step 5.	Go to step 11.
5	*DISPENSE CLUTCH mounting check Is the DISPENSE CLUTCH properly mounted?	■ With tool: Go to step 6. ■ Without tool: Go to FIP-2.33 If not restored, go to step 7.	Remount the DISPENSE CLUTCH ASSY.
6	*DISPENSE CLUTCH check Is the DISPENSE CLUTCH functioning properly? • By using the DIAG too, check by the Digital Output Test device code "25".	Go to step 7.	Go to FIP-2.33
7	*DEVE. CONTACT ASSY check Is the DEVE. CONTACT ASSY contact surface distorted? Are there foreign matters on the DEVE. CONTACT ASSY contact surface?	Replace the DEVE. CONTACT ASSY	Go to FIP-2.35 • If not restored, go to FIP-2.17

8	*ADC Sensor surface check Is/Are there dirt or foreign matters on the surface of the ADC Sensor?	Remove the foreign matters.	■ With tool: Go to step 9. ■ Without tool: Go to FIP-2.18
9	*ADC Sensor check Is the ADC Sensor functioning properly? • By using the DIAG tool, check by Digital Input Test device code "72".	Go to step 10.	Go to FIP-2.18
10	*ADC Solenoid check Is the ADC Solenoid functioning properly? • By using the DIAG tool, check by the Digital Output Test device code "67".	Go to step 11.	Go to FIP-2.19
11	*Developer Assy replacement check Replace the Developer Assy with a new one with the concerned color. Does the problem still occur?	Replace the MCU PWB.	Problem solved.

FIP-1.21 PCDC malfunction

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*MCU PWB replacement check Replace the the MCU PWB. Does the problem still occur?	Go to FIP-2.36	Problem solved.

FIP-1.22 HIGH COVERAGE Error

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*MCU PWB replacement check Replace the the MCU PWB. Does the problem still occur?	Go to FIP-2.36	Problem solved.

FIP-1.23 2ND BTR malfunction

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check 2ND BTR, BTR CAM SOLENOID, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*Retract check During the test printing, does the 2ND BTR ASSY retract ? • Check the operation of the BTR CAM SOLENOID from the rear side.	Go to step 4.	■ With tool: Go to step 9. ■ Without tool: Go to FIP-2.24
4	*BTR CAM CLUTCH mounting check Is the BTR CAM CLUTCH mounted properly?	Go to step 5.	Remount the BTR CAM CLUTCH.
5	*BTR CAM ASSY shape check Is the BTR CAM ASSY bent or distorted?	Remount the BTR CAM CLUTCH.	Go to step 6.
6	*2ND BTR ASSY mounting check Is the 2ND BTR ASSY mounted properly?	Go to step 7.	Remount the 2ND BTR ASSY.
7	*TRANSFER ASSY mounting check Is the TRANSFER ASSY mounted properly?	Go to step 8.	Remount the TRANSFER ASSY.
8	*MCU PWB replacement check Replace the the MCU PWB. Does the problem still occur?	Go to FIP-2.35	Problem solved.
9	*BTR CAM SOLENOID check Is the BTR CAM SOLENOID functioning properly? • By using the DIAG tool, check by the Digital Output Test device code "2E".	Replace the MCU PWB.	Go to FIP-2.24

FIP-1.24 2ND BTR malfunction (ADVANCE)

Step	Check	Treatment	
		Yes	No
1	*Initial setting BTR CAM CLUTCH, FUSER DRIVE ASSY BTR WHEEL SENSOR, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*FUSER Motor check Is the FUSER Motor functioning properly? • Check by Digital Output Test device code "57" using DIAG tool.	Go to step 4.	■ With tool: Go to step 9.
4	*FUSER DRIVE ASSY mounting check Is the FUSER DRIVE ASSY mounted properly?	Go to step 5.	Remount the FUSER DRIVE ASSY.
5	*PROCESS DRIVE ASSY check Is the PROCESS DRIVE ASSY functioning properly? • Check by Digital Output Test device code "54" using DIAG tool.	Go to step 6.	Replace the PROCESS DRIVE ASSY.
6	*2ND BTR ASSY mounting check Is the 2ND BTR ASSY mounted properly?	Go to step 7.	Remount the 2ND BTR ASSY
7	*BTR WHEEL SENSOR mounting check Is the BTR WHEEL SENSOR mounted properly?	Go to step 8.	Remount the BTR WHEEL SENSOR
8	*BTR WHEEL SENSOR check Is the BTR WHEEL SENSOR functioning properly? • By using the DIAG tool, check by the Digital Input Test device code "76" .	Replace the MCU PWB.	Replace the BTR WHEEL SENSOR.
9	*BTR CAM CLUTCH check Is the BTR CAM CLUTCH functioning properly? • By using the DIAG tool, check by the Digital Output Test device code "70" .	Replace the MCU PWB.	Go to FIP-2.24

FIP-1.25 Fuser malfunction (Overheat)

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check FUSER CONNECTOR, TEMP. SENSOR ASSY, H/R HEATER, P/R HEATER, FUSER ASSY, MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*FUSER CONNECTOR Is the FUSER CONNECTOR securely connected when the FUSER ASSY is mounted?	Go to step 4.	Check the FUSER CONNECTOR
4	*TEMP. SENSOR ASSY check Does the problem occur as soon as the power is turned ON?	Go to FIP-2.27	Go to step 5.
5	*H/R HEATER, P/R HEATER check Do the H/R HEATER and P/R HEATER light when the FUSER ASSY is cold and the power is turned ON?	Go to step 6.	Replace the H/R HEATER and the P/R HEATER
6	Does the problem occur during the FUSER warm up?	Go to FIP-2.27	Go to step 7.
7	*MAIN HARNESS ASSY check Is there a proper conductivity between J21 <=> J33?	Go to step 8.	Replace the MAIN HARNESS ASSY.
8	*LVPS check Is the voltage between P21-3PIN <=> P21-2PIN 5.5VDC?	Go to step 9.	Replace the LVPS.
9	*HEATER ROD ON signal check Is the voltage between P/J33-12PIN <=> P/J33-13PIN as follows? ■ During the FUSER warm-up, the value is 0VDC. ■ When the warm-up is completed, the value changes from 0VDC to 5.5VDC.	Problem solved.	Replace the MCU PWB.

FIP-1.26 Fuser Unit malfunction (Low temperature/ Lamp)

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check FUSER ASSY, MCU PWB, FUSER HARNESS ASSY FUSER CONNECTOR, FUSER ASSY, TEMP. SENSOR ASSY H/R HEATER, P/R HEATER, LVPS, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*TEMP. SENSOR ASSY check Does the problem occur as soon as the power is turned ON?	Go to FIP-2.27	Go to step 4.
4	*H/R HEATER, P/R HEATER check Do the H/R HEATER and P/R HEATER light when the FUSER ASSY is cold and the power is turned ON?	Go to step 5.	Replace the H/R HEATER and the P/R HEATER.
5	Does the problem occur during the FUSER warm up?	Go to FIP-2.27	Go to step 6.
6	*MAIN HARNESS ASSY check Is there a proper conductivity between J21 <=> J33?	Go to step 7.	Replace the MAIN HARNESS ASSY.
7	*LVPS check Is the voltage between P21-3PIN <=> P21-2PIN 4.5VDC?	Go to step 8.	Replace the LVPS.
8	*HEATER ROD ON signal check Is the voltage between P/J33-12PIN <=> P/J33-13PIN as follows? ■ The value is 0VDC during the FUSER warm-up. ■ The value changes from 0VDC to 5.5VDC when the warm-up is completed?	Replace the LVPS.	Replace the MCU PWB.

FIP-1.27 Environment (humidity) sensor malfunction

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check ENVIRONMENT SENSOR, P/H HARNESS ASSY MCU PWB	Replace and remount the concerned part(s).	■ With tool: Go to step 2. ■ Without tool: Go to step 3.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Replace the MCU PWB.	Go to step 3.
3	*ENVIRONMENT SENSOR thermistor resistance check Is the resistance between J105-1PIN <=> J105-2PIN approx. 5k Ω at a room temperature?	Go to step 4.	Replace the ENVIRONMENT SENSOR.
4	*P/H HARNESS ASSY continuity check Is there a proper continuity between J071 <=> J105?	Replace the MCU PWB	Replace the P/H HARNESS ASSY.

FUSER FAN: 15min

FIP-1.28 FUSER FAN-1 malfunction

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check FUSER FAN-1, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*FUSER FAN-1 check Is the FUSER FAN-1 functioning properly? • By using the DIAG tool, check by the Analog Output Test device code "63".	Go to step 4.	Replace the FUSER FAN-1.
4	*The confirmation of the HARNESS of the body Is there a breakage or contact defect on the HARNESS between the MCU PWB and the FUSER FAN-1?	Replace the MCU PWB.	Replace the HARNESS.

FIP-1.29 FUSER CHUTE FAN Error

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check FUSER CHUTE FAN, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*FUSER CHUTE FAN check Is the FUSER CHUTE FAN functioning properly? • By using the DIAG tool, check by the Analog Output Test device code "64".	Go to step 4.	Replace the FUSER CHUTE FAN.
4	*The confirmation of body HARNESS Is there a breakage or contact defect on HARNESS between the MCU PWB and the FUSER CHUTE FAN?	Replace the MCU PWB.	Replace the HARNESS.

FIP-1.30 Rear fan malfunction

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check DEVE.(Rear) FAN, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*DEVE. FAN check Is the DEVE.(Rear) FAN functioning properly? • By using the DIAG tool, check by the Analog Output Test device code "60".	Go to step 4.	Replace the DEVE.(Rear)FAN.
4	*The confirmation of body HARNESS Is there a breakage or contact defect on the HARNESS between the MCU PWB and the DEVE. FAN?	Replace the MCU PWB.	Replace the HARNESS.

FIP-1.31 Life Error/Over/Warning

The FIP for error/status code is as follows:

- "Yellow toner Life error."
- "Magenta toner Life Error."
- "Cyan toner Life Error."
- "Black toner Life Error."
- "DRUM CARTRIDGE Life over."
- "BELT CLEANER ASSY Life over."
- "2ND BTR ASSY Life Over."
- "IBT Life Error."
- "DEVELOPER ASSY Y Life Over."
- "DEVELOPER ASSY M Life Over."
- "DEVELOPER ASSY C Life Over."
- "DEVELOPER ASSY K Life Over."
- "Yellow toner Life Warning."
- "Magenta toner Life Warning."
- "Cyan toner Life Warning."
- "Black toner Life Warning."
- "WASTE TONER BOX Full Warning"
- "DRUM CARTRIDGE Life Warning"
- "BELT CLEANER ASSY Life Warning"
- "2ND BTR ASSY Warning"
- "Printer Life Warning"
- "DEVELOPER ASSY Y Life Warning."
- "DEVELOPER ASSY M Life Warning."
- "DEVELOPER ASSY C Life Warning."
- "DEVELOPER ASSY K Life Warning."

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Check by the Error Reset Does the problem still occur after the "error reset?"	Go to step 3.	Problem solved.
3	Does the problem occur after replacing the concerned part(s)?	Go to step 4.	Replace the concerned part(s).
4	Does the problem occur when the power is turned ON?	Go to step 7.	Go to step 5.

5	Does the problem still occur when the power is turned On again?	Go to step 7.	Go to step 6.
6	Does the problem occur when the power is turned ON/OFF repeatedly?	Go to step 7.	Go to FIP-2.36
7	*MCU replacement check Does the problem still occur after replacing with the normal MCU?	Check the printer controller	Replace the MCU PWB.

FIP-1.32 WASTE TONER BOX Full

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check WASTE TONER SENSOR, WASTE TONER BOX, TONER BOX HARNESS, MAIN HARNESS ASSY MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*WASTE TONER BOX transmission section check Is/Are there dirt or foreign matters on the sensor transmission section on top of the WASTE TONER BOX? Is there abnormality such as rising of the screen inside the WASTE TONER BOX?	Replace and clean the WASTE TONER BOX.	With tool: Go to step 4. Without tool: Go to FIP-2.15
3	*WASTE TONER SENSOR check Is the WASTE TONER SENSOR functioning properly? • By using the DIAG tool, check by the Digital Input Test device code "51".	Replace the MCU PWB.	Go to FIP-2.15

FIP-1.33 FRONT COVER ASSY Open

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check FRONT COVER SWITCH R, FRONT COVER SWITCH L MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*FRONT COVER SWITCH R push-in check Is the operation for the actuator of the FRONT COVER ASSY is as follows? ■ When the FRONT COVER ASSY is closed, turn on the FRONT COVER SWITCH R. ■ When the FRONT COVER ASSY is opened, turn off the FRONT COVER SWITCH R.	■ With tool: Go to step 4. ■ Without tool: Go to step 5.	Replacement of faulty part(s).
4	*FRONT COVER SWITCH R check Is the FRONT COVER SWITCH R functioning properly? • By using the DIAG tool, check by the Digital Input Test device code "23".	Replace the MCU PWB.	Go to step 5.
5	*FRONT COVER SWITCH R power check Is the voltage between P19-2PIN <=> P19-3PIN 5VDC.	Go to step 6.	Go to FIP-2.1
6	*FRONT COVER detection signal check Is the voltage between P19-2PIN <=> P19-3PIN as follows? ■ When the FRONT COVER ASSY is open, the value is 0VDC . ■ When the FRONT COVER ASSY is closed, the value changes from 0VDC to 5.5VDC .	Replace the MCU PWB.	Go to step 7.
7	*MSI HARNESS ASSY continuity check Is there a proper continuity between J019 <=> P197?	Replace the FRONT COVER SWITCH R	Replace the MAIN HARNESS ASSY

FIP-1.34 MSI/REGI HIGH ASSY Open

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check MAIN P/H FRAME ASSY, MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*MAIN P/H FRAME ASSY mounting check Is the MAIN P/H FRAME ASSY pushed in securely.	Go to step 4	Replace the faulty part(s).
4	*MAIN P/H FRAME ASSY mounting detection check Is the detection of the MAIN P/H FRAME ASSY mounting functioning properly? • By using the DIAG tool, check by the Digital Input Test device code "20".	Replace the MCU PWB.	Go to step 5.
5	*MAIN P/H FRAME ASSY power check Is the voltage between P20-30PIN <=> P20-31PIN 5VDC?	Go to step 6.	Go to FIP-2.1
6	*MAIN P/H FRAME ASSY mounting signal check Is the voltage for P20-30PIN <=> P20-31PIN as follows? ■ With the MAIN P/H FRAME ASSY, 0VDC. ■ Without the MAIN P/H FRAME ASSY, 5VDC.	Replace the MCU PWB.	Go to step 7.
7	*P/H HARNESS ASSY continuity check Is there a proper continuity between J020B <=> P91?	Replace the MAIN P/H FRAME ASSY.	Replace the P/H HARNESS ASSY.

FIP-1.35 FUSER ASSY Open

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check FUSER ASSY, MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*FUSER ASSY mounting check Is the FUSER ASSY pushed in securely?	Go to step 4	Replace the faulty part(s).
4	*FUSER ASSY mounting detection check Is the detection of the FUSER ASSY mounting functioning properly?	Replace the MCU PWB.	Go to step 5.
5	*FUSER ASSY power supply check Is the voltage 5VDC between P19-16PIN <=> P19-15PIN 5VDC ?	Go to step 6.	Go to FIP-2.1
6	* MAIN P/H FRAME mounting signal check Is the voltage between P19-16PIN <=> P19-15PIN as follows? ■ When the FUSER ASSY is closed, the value is 0VDC. ■ When the FUSER ASSY is opened, the value is 5VDC.	Go to step 7.	Replace the MCU PWB.
7	*MAIN HARNESS ASSY continuity check Is there a proper continuity between J019 <=> P71?	Replace the FUSER ASSY.	Replace the MAIN HARNESS ASSY.

FIP-1.36 EXIT UPPER ASSY Open

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check FUSER ASSY, MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*EXIT CHUTE SWITCH push-in check Is the operation for the actuator of the EXIT UPPER ASSY is as follows? ■ When the EXIT UPPER ASSY is closed, turn on the EXIT UPPER SWITCH . ■ When the EXIT UPPER ASSY is opened, turn off the EXIT UPPER SWITCH.	■ With tool: Go to step 4. ■ Without tool: Go to step 5.	Replace the faulty part(s).
4	*EXIT CHUTE SWITCH check Is the EXIT CHUTE SWITCH functioning properly? • By using the DIAG tool, check by the Digital Input Test device code "20".	Replace the MCU PWB.	Go to step 5.
5	*EXIT CHUTE SWITCH power check Is the voltage between P17-10PIN <=> P17-11PIN 5VDC ?	Go to step 6.	Go to FIP-2.1
6	*EXIT CHUTE SWITCH signal check Is the voltage between P17-10PIN <=> P17-11PIN as follows? ■ When the EXIT UPPER is closed, the value is 0VDC. ■ When the EXIT UPPER is opened, the value is 5VDC.	Replace the MCU PWB.	Go to step 7.
7	*MAIN HARNESS ASSY continuity check Is the a proper continuity between J17 <=> J161?	Replace the EXIT CHUTE SWITCH.	Replace the MAIN HARNESS ASSY.

FIP-1.37 TURN CHUTE COVER Open

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check TURN CHUTE SWITCH, TURN CHUTE HARNESS	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*TURN CHUTE SWITCH push-in check Is the operation for the actuator of the TURN CHUTE COVER is as follows? ■ When the TURN CHUTE COVER is closed, turn on the TURN CHUTE SWITCH. ■ When the TURN CHUTE COVER is opened, turn off the TURN CHUTE SWITCH.	■ With tool: Go to step 4. ■ Without tool: Go to step 5.	Replace the faulty part(s).
4	*TURN CHUTE SWITCH check Is the TURN CHUTE SWITCH functioning properly? • By using the DIAG tool, check by the Digital Input Test device code "84".	Replace the MCU PWB.	Go to step 5.
5	*TURN CHUTE SWITCH power check Is the voltage between P109-2PIN <=> P109-3PIN 5VDC ?	Go to step 6.	Go to FIP-2.1
6	*TURN CHUTE HARNESS continuity check Is there a proper continuity between J103 <=> J103A?	Replace the TURN CHUTE SWITCH.	Replace the TURN CHUTE HARNESS.

FIP-1.38 Cassette 1 Paper Remaining Warning

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check UNIVERSAL CASSETTE, BOTTOM PLATE ASSY LOW PAPER SENSOR, FEEDER PWB, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*UNIVERSAL CASSETTE check Can the UNIVERSAL CASSETTE be mounted smoothly?	Go to step 4.	Replace the faulty part(s).
4	*BOTTOM PLATE ASSY check Does the BOTTOM PLATE ASSY lift normally when the UNIVERSAL CASSETTE is pushed in? • Remove the TURN IN CHUTE-3T and check.	Go to step 5.	Replace the faulty part(s).
5	*LOW PAPER SENSOR mounting check Is the LOW PAPER SENSOR properly mounted?	Go to step 6.	Remount the LOW PAPER SENSOR
6	*LOW PAPER SENSOR check Is the LOW PAPER SENSOR functioning properly?	Go to step 7.	Go to FIP-2.4
7	*FEEDER PWB replacement check Replace it with the properly functioning FEEDER PWB. Does the problem still occur?	Replace the MCU PWB.	Problem solved.

FIP-1.39 MSI Tray malfunction (Lift Up)

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check LIFT MOTOR ASSY, LEVEL SENSOR, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*MSI HARNESS ASSY mounting check Is the MSI HARNESS ASSY properly mounted?	Go to step 4.	Remount the CONNECTOR.
4	*The confirmation of the body HARNESS Is there a breakage or contact defect on HARNESS between the MCU PWB and the MSI ASSY?	Go to step 5.	Replace the HARNESS.
5	*LIFT MOTOR ASSY check Is the LIFT MOTOR ASSY functioning properly? • By using the DIAG tool, check by the Digital Output Test device code "2D".	Go to step 6.	Remount the LIFT MOTOR ASSY.
6	*LEVEL SENSOR check Is the LEVEL SENSOR functioning properly? • By using the DIAG tool, check by the Digital Input Test device code "2C".	Remount the MCU PWB.	Remount the LIFT MOTOR ASSY.

FIP-1.40 MSI Tray malfunction (Lift Down)

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check LIFT MOTOR ASSY, LEVEL SENSOR, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*MSI HARNESS ASSY mounting check Is the MSI HARNESS ASSY properly mounted?	Go to step 4.	Remount the CONNECTOR.
4	*The confirmation of the body HARNESS Is there a breakage or contact defect on HARNESS between MCU PWB and MSI ASSY?	Go to step 5.	Replace the HARNESS.
5	Replace and remount the concerned part(s).	Go to step 2.	Remount the LEVEL MOTOR ASSY.
6	*LEVEL SENSOR check Is the LEVEL SENSOR functioning properly? • By using the DIAG tool, check by the Digital Input Test device code "2C".	Remount the MCU PWB.	Remount the LEVEL SENSOR.

FIP-1.41 No Power

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check P/H HARNESS ASSY, REGI. HARNESS ASSY MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Printer controller check Disconnect the printer controller, and turn the power ON after waiting 2 - 3 minutes. Is the voltage between the pins as follows? ■ P33-6PIN<=>P33-8PIN ■ P33-5PIN<=>P33-7PIN ■ P33-3PIN<=>P33-4PIN • Check if the source voltage of each part is shorted.	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	*Source voltage short check Disconnect the connectors other than J12 and J21 on the MCU PWB. Disconnecting each connector and turn the power ON after waiting 2 - 3 minute. Is the voltage 5VDC between the following pins? ■ P33-6PIN<=>P33-8PIN ■ P33-5PIN<=>P33-7PIN ■ P33-3PIN<=>P33-4PIN • Check if source voltage of each part is shorted.	Replace the part(s) for which source voltage is shorted.	Replace the MCU PWB.

FIP-1.42 Abnormal Printing Operation

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check LVPS, HVPS, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	The printer does not operate the printing at all.	Go to step 4.	Go to step 3.
3	Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to FIP-2.1, "FaultyLVPS ÇTVDC".
4	Does it become the "Reset" status during the printing operation?	Go to FIP-2.36	Go to step 5.
5	*Interface cable check Replace the Interface cable with the properly functioning one. Does the problem still occur?	Go to step 6.	Problem solved.
6	*MCU PWB Replacement check Replace the MCU PWB with the properly functioning one. Does the problem still occur?	Check the host side.	Problem solve.

FIP-1.43 Engine Communication Error

Step	Check	Treatment	
		Yes	No
1	*Initial setting - Remove all of the option units related to electricity and modules. Bring everything back to a normal status. - Check if all connectors are properly connected to the CONTROLLER PWB. - Re-insert the DIMM.	Replace and remount the concerned part(s).	Go to step 2.
2	*Environmental Improvement of the CONTROLLER PWB Up-date the program to the latest one in the DIMM.	Replace and remount the concerned part(s).	Go to step 3.
3	*CONTROLLER PWB Replacement check Replace the MCU PWB with the properly functioning one. Does the problem still occur?	–	Problem solved.

FIP-1.44 Verify Error (DIMM (Slot P) Related

Step	Check	Treatment	
		Yes	No
1	*Initial setting - Remove all of the option units related to electricity and modules. Bring everything back to normal status. - Check if all connectors are properly connected to the CONTROLLER PWB. - Re-insert the DIMM.	Replace and remount the concerned part(s).	Go to step 2.
2	*DIMM check After formatting the DIMM, load the control program to the DIMM. Insert the DIMM in the socket P until it locks securely. NOTE: Since the DIMM has the right direction to insert , make sure to insert it in the correct direction.	Replace and remount the concerned part(s).	Problem solved.

FIP-1.45 Error in standard RAM

Step	Check	Treatment	
		Yes	No
1	*Initial setting - Remove all of the option units related to electricity and modules. Bring everything back to a normal status. - Check if all connectors are properly connected to the CONTROLLER PWB.	Replace and remount the concerned part(s).	Go to step 2.
2	*SD-RAM check - Remove all SD-RAMs from the RAM slots in order of 0, 1, and 2, and then re-insert them in the RAM slots. - Make sure to insert each SD-RAM one by one (S0, S1, and S2) so that the SD-RAM error can be identified. - Every time you insert a SD-RAM, make sure to follow the procedures below and repeat it for each one. - Turn the power off. - Add the SD-RAM. - Turn the power on. - Insert the SD-RAM in the socket until it locks securely. NOTE: Since the SD-RAM has the right direction to insert, make sure to insert it in the correct direction. - Made sure the Slot0 is set in the standard SD-RAM(32MB).	Replace and remount the concerned part(s).	Problem solved.

FIP-1.46 CONTROLLER PWB (IC15, IC16)–Related Error

Step	Check	Treatment	
		Yes	No
1	*Initial setting - Remove all of the option units related to electricity and modules. Bring everything back to a normal status. - Check if all connectors are properly connected to the CONTROLLER PWB.	Replace and remount the concerned part(s).	Go to step 2.
2	*Related IC Replacement According to the error, follow the procedure below. - If "Error C1100" occurs, replace IC 16. - If "Error C1101" occurs, replace IC 15. - Other than those above, replace the CONTROLLER PWB.	Replace and remount the concerned part(s).	Problem solved.

FIP-1.47 ROM Checksum Error (DIMM (P) Related)

Step	Check	Treatment	
		Yes	No
1	*Initial setting - Remove all of the option units related to electricity and modules. Bring everything back to a normal status. - Check if all connectors are properly connected to the CONTROLLER PWB. - Re-insert the DIMM.	Replace and remount the concerned part(s).	Go to step 2.
2	*Related unit Replacement - Force-clear the installed DIMM and up-date the program to the latest one in the DIMM. - Force-clear the new DIMM and up-date the program in the DIMM. - Other than those above, replace the CONTROLLER PWB.	Replace and remount the concerned part(s).	Problem solved.

FIP-1.48 Checksum Error (DIMM Slot A, B, C Related)

Step	Check	Treatment	
		Yes	No
1	*Initial setting - Remove all of the option units related to electricity and modules. Bring everything back to a normal status. - Check if all connectors are properly connected to the CONTROLLER PWB.	Replace and remount the concerned part(s).	Go to step 2.
2	*DIMM check - Insert the DIMM in the socket until it locks securely. NOTE: Since the DIMM has the right direction to insert , make sure to insert it in the correct direction. - Check if the DIMM is available for this printer, AcuLaser C8500. - Other than those above, replace the CONTROLLER PWB.	Replace and remount the concerned part(s).	Problem solve.

FIP-1.49 CONTROLLER PWB EEPROM (IC21)–Related Error

Step	Check	Treatment	
		Yes	No
1	*Initial setting - Remove all of the option units related to electricity and modules. Bring everything back to normal status. - Check if all connectors are properly connected to the CONTROLLER PWB.	Replace and remount the concerned part(s).	Go to step 2.
2	*IC 21 check According to the error, follow the procedure below. ■ If "Error C1200" occurs, execute "SelecType Init" in the Panel Setting, or replace IC 21. ■ If "Error C1101" occurs, replace IC 21. ■ Other than those above, replace the CONTROLLER PWB.	Replace and remount the concerned part(s).	Problem solved.

FIP-1.50 CONTROLLER PWB ASIC (IC6, IC7)–Related Error

Step	Check	Treatment	
		Yes	No
1	*Initial setting - Remove all of the option units related to electricity and modules. Bring everything back to normal status. - Check if all connectors are properly connected to the CONTROLLER PWB.	Replace and remount the concerned part(s).	Go to step 2.
2	*Related IC Replacement According to the error, follow the procedure below. ■ If "Error C1100", replace IC 16. ■ If "Error C1101", replace IC 15. ■ Other than those above, replace the CONTROLLER PWB.	Replace and remount the concerned part(s).	Problem solved.

FIP-1.51 CONTROLLER PWB-Related to Other Hardware Errors

Step	Check	Treatment	
		Yes	No
1	*Initial setting - Remove all of the option units related to electricity and modules. Bring everything back to normal status. - Check if all connectors are properly connected to the CONTROLLER PWB. - Re-insert the DIMM.	Replace and remount the concerned part(s).	Go to step 2.
2	*MCU PWB initialization - By using the Diag Command, execute "Slave Initialize". - Turn the power on and off. - Does the printer operate properly?	Problem solved.	Go to step 3.
3	*Related unit Replacement Replace the CONTROLLER PWB.	Replace and remount the concerned part(s).	Problem solved.

FIP-1.52 SRAM (IC 25) Initialization Error

Step	Check	Treatment	
		Yes	No
1	*Initial setting - Remove all of the option units related to electricity and modules. Bring everything back to normal status. - Check if all connectors are properly connected to the CONTROLLER PWB. - Re-insert the DIMM.	Replace and remount the concerned part(s).	Go to step 2.
2	*Related unit Replacement Replace the CONTROLLER PWB.	Replace and remount the concerned part(s).	Problem solved.

FIP-1.53 RTC (IC 50) Abnormal Printing

Step	Check	Treatment	
		Yes	No
1	*Initial setting - Remove all of the option units related to electricity and modules. Bring everything back to normal status. - Check if all connectors are properly connected to the CONTROLLER PWB. - Re-insert the DIMM.	Replace and remount the concerned part(s).	Go to step 2.
2	*Related unit Replacement Replace the CONTROLLER PWB or IC 50.	Replace and remount the concerned part(s).	Problem solved.

5.3 Level 2 FIP (Fault Isolation Procedure)

FIP-2.1 FaultyLVPS 5 VDC

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check LVPS, MCU PWB, MAIN HARNESS ASSY	Replace and remount the concerned part(s).	Go to step 2.
2	*LVPS check ■ P32-15PIN<=>P32-17PIN ■ P33-1PIN<=>P33-4PIN ■ P33-2PIN<=>P33-5PIN ■ P33-3PIN<=>P33-6PIN	Go to step 3.	Replace the LVPS.
3	*MAIN HARNESS ASSY continuity check Is there a continuity between J33 <=> J12?	Replace the MCU PWB.	Replace the MAIN HARNESS ASSY.

FIP-2.2 IP 2.2 Faulty LVPS 24VDC

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check LVPS, MCU PWB, MAIN HARNESS ASSY, FUSER ASSY MAIN P/H FRAME ASSY, FRONT COVER SWITCH L P/H HARNESS ASSY, FUSER CONNECTOR	Replace and remount the concerned part(s).	Go to step 2.
2	*LVPS check Is the voltage between P32-6PIN <=> P32-4PIN 24VDC?	Go to step 5.	Go to step 3.

3	*Interlock route check Is the voltage between P32-6PIN <=> P32-12PIN 5VDC? • Close the FUSER ASSY, MAIN P/H FRAME ASSY FRONT COVER ASSY and check.	Go to step 4.	Replace the LVPS.
4	*LVPS relay route check Is the voltage between P33-9PIN <=> P32-4PIN 5VDC? • Close the FUSER ASSY, MAIN P/H FRAME ASSY FRONT COVER ASSY and check.	Go to step 5.	Replace the LVPS.
5	*MAIN HARNESS ASSY continuity check Is there a continuity between J32 <=> J21?	Replace the MCU PWB.	Replace the MAIN HARNESS ASSY.
6	*FUSER ASSY mounting check Is the FUSER ASSY securely mounted?	Go to step 7.	Replace the faulty part(s)
7	*MAIN P/H FRAME ASSY mounting check Is the MAIN P/H FRAME ASSY securely mounted?	Go to step 8.	Replace the faulty part(s).
8	*Power supply to FRONT COVER SWITCH L check Is the voltage between J199-1PIN<=> P32-4PIN 5VDC?	Go to step 9.	Replace the MAIN HARNESS ASSY.
9	*FRONT COVER SWITCH R check Is the voltage between P/J198-1PIN<=> P32-4PIN 5VDC? • Close the FRONT COVER ASSY and check.	Go to step 10.	Replace the FRONT COVER SWITCH R.
10	*MAIN HARNESS ASSY check Is the voltage between P97-1PIN <=> P32-4PIN 5VDC? • Close the FRONT COVER ASSY and check.	Go to step 11.	Replace the MAIN HARNESS ASSY.
11	*MAIN P/H FRAME ASSY connection source voltage check Is the voltage between P91-1PIN <=> P32-4PIN 24VDC? • Close the FUSER ASSY, FRONT COVER ASSY, TOP COVER ASSY and check.	Go to step 12.	Replace the P /H HARNESS ASSY.
12	*FUSER ASSY connection source voltage check Is the voltage between P71-3PIN <=> P32-4PIN 5VDC? • Close the MAIN P/H FRAME ASSY FRONT COVER ASSY and check.	Go to step 13.	Go to step 16.
13	*MAIN HARNESS ASSY check Is the voltage between J70-2PIN <=> P32-4PIN 5VDC? • Close the MAIN P/H FRAME ASSY, FUSER ASSY FRONT COVER ASSY and check.	Go to step 15.	Go to step 14.

14	*MCU PWB check Is the voltage 5VDC between P/J21-1PIN <=> P/J21-2PIN 5VDC? • Close the MAIN P/H FRAME ASSY, FUSER ASSY FRONT COVER ASSY and check.	Replace the MCU PWB.	Replace the MAIN HARNESS ASSY.
15	*FUSER ASSY check Is there a proper continuity between J71-3PIN <=> J71-4PIN?	Go to step16.	Replace the FUSER ASSY.
16	*MAIN P/H FRAME ASSY check Is there a proper continuity between J91-1PIN <=> J91-2PIN?	Go to step 17.	Replace the MAIN P/H FRAME ASSY.
17	*P/H HARNESS ASSY continuity check Is there a proper continuity between P91-1PIN <=> J97-2PIN?	Go to step 18.	Replace the P/H HARNESS ASSY.
18	*FUSER CONNECTOR continuity check Is there a proper continuity between P91-1PIN <=> J97-2PIN?	Replace the MAIN HARNESS ASSY.	Replace the FUSER CONNECTOR.

FIP-2.3 Faulty CASSETTE NO PAPER SENSOR

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check CASSETTE NO PAPER SENSOR, MAIN HARNESS ASSY CASSETTE SENSOR HARNESS, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*CASSETTE NO PAPER SENSOR power supply check Is the voltage between P16-30PIN <=> P16-3PIN 5VDC?	Go to step 3.	Go to FIP-2.1
3	*CASSETTE NO PAPER detection signal power supply check Is the voltage between P16-32PIN <=> P16-31PIN? 5VDC	Go to step 4.	Replace the MCU PWB.
4	*CASSETTE NO PAPER detection signal check Is the voltage between P/J16-32PIN <=> P/J16-31PIN as follows? ■ When transmitting (paper), the value is 0VDC. ■ When blocked (no paper), the value is 5VDC.	Replace the MCU PWB.	Go to step 5.
5	*CASSETTE SENSOR HARNESS continuity check Is there a proper continuity between J107 <=> P101?	Go to step 6.	Replace the CASSETTE SENSOR HARNESS.
6	*MAIN HARNESS ASSY continuity check Is there a proper continuity between J101 <=> J16?	Replace the CASSETTE NO PAPER SENSOR.	Replace the MAIN HARNESS ASSY.

FIP-2.4 Faulty LOW PAPER SENSOR

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check LOW PAPER SENSOR, CASSETTE SENSOR HARNESS, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*LOW PAPER power supply check Is the voltage between P16-33PIN <=> P16-34PIN 5VDC ?	Go to step 3.	Replace the MCU PWB.
3	*LOW PAPER detection signal power supply check Is the voltage between P/J16-33PIN <=> P/J16-34PIN as follows? ■ When approx. 20 sheets of paper are mounted , the value is 0VDC. ■ When approx. 200 sheets of paper are mounted, the value is 5VDC.	Replace the MCU PWB.	Go to step 4.
4	*P/H HARNESS ASSY check Is there a proper continuity between J106 <=> P101?	Replace the LOW PAPER SENSOR ASSY.	Replace the CASSETTE SENSOR HARNESS ASSY.

FIP-2.5 Faulty SIZE SWITCH ASSY

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check SIZE SWITCH ASSY, MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*SIZE SWITCH ASSY power supply check Is there 5VDC between P16-28PIN <=> P16-27PIN?	Go to step 3.	Go to FIP-2.1
3	*REGI. Detection signal check Is there proper voltage between P/J16-29PIN <=> P/J16-27PIN for each paper size? • Check by switching paper size while referring to 7.1 "Paper Size Control" in Chapter 10.	Replace the MCU PWB.	Go to step 4.
4	*MAIN HARNESS ASSY continuity check Is there proper continuity between J102 <=> J16?	Replace the SIZE SWITCH ASSY.	Replace the MAIN HARNESS ASSY.

FIP-2.6 Faulty FEED SOLENOID

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check FEED SOLENOID, MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*FEED SOLENOID power supply check Is the voltage between P/J17-29PIN <=> P/J17-30PIN 24VDC?	Go to step 3.	Go to FIP-2.1
3	*FEED SOLENOID check Is the continuity (approx. 90 Ω) between J17-29PIN <=> J17-30PIN?	Replace the MCU PWB.	Go to step 4.
4	*MAIN HARNESS ASSY check Is there a proper continuity between J17 <=> J103PIN?	Replace the FEED SOLENOID.	Replace the MAIN HARNESS ASSY.

FIP-2.7 Faulty EMPTY SENSOR

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check EMPTY SENSOR, MSI HARNESS ASSY REGI. HARNESS ASSY, P/H HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*EMPTY SENSOR power supply check Is the voltage between P20-3PIN <=> P20-4PIN 5VDC?	Go to step 3.	Go to FIP-2.1
3	*EMPTY detection signal power supply check Is the voltage between P20-5PINH <=> P20-4PIN 5VDC?	Go to step 4.	Replace the MCU PWB.
4	*EMPTY detection signal check Is the voltage between P/J020-14PIN <=> P/J20-4PIN when (paper) and 5VDC when (no paper)? Is the voltage between P/J16-32PIN <=> P/J16-31PIN as follows? ■ When reflecting (paper), the value is 0VDC. ■ When not reflecting (no paper), the value is 5VDC.	Replace the MCU PWB.	Go to step 5.
5	*MSI HARNESS ASSY continuity check Is there a proper continuity between J206 <=> and P205?	Go to step 6.	Replace the MSI HARNESS ASSY.
6	*REGI. HARNESS ASSY continuity check Is there a proper continuity between J205 <=> J201?	Go to step 7.	Replace the REGI. HARNESS ASSY.
7	*P/H HARNESS ASSY continuity check Is there a proper continuity between P201 <=> J20?	Replace the EMPTY SENSOR.	Replace the P/H HARNESS ASSY.

FIP-2.8 Faulty MSI OHP SENSOR

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check MSI OHP SENSOR, MSI HARNESS ASSY REGI. HARNESS ASSY, P/H HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*MSI OHP SENSOR power supply check Is the voltage between P20-11PIN <=> P20-13PIN 5VDC?	Go to step 3.	Go to FIP-2.1
3	*MSI OHP detection signal power supply check Is the voltage between P20-12PIN <=> P20-13PIN 5VDC?	Go to step 4.	Replace the MCU PWB.
4	*MSI OHP detection signal check Is the voltage between P/J20-12PIN <=> P/J20-13PIN as follows? ■ When reflecting (paper), the value is 0VDC. ■ When not reflecting (no paper), the value is 5VDC. • Use white paper to check transmission/block status. OHP film is transparent and therefore cannot be accurately evaluated.	Replace the MCU PWB.	Go to step 5.
5	*MSI HARNESS ASSY check Is there a proper continuity between J20B5 <=> P92?	Go to step 6.	Replace the MSI HARNESS ASSY.
6	*REGI. HARNESS ASSY check Is there a proper continuity between J92 <=> J91?	Go to step 7.	Replace the REGI. HARNESS ASSY.
7	*P/H HARNESS ASSY check Is there a proper continuity between P91 <=> J20?	Replace the MSI SHORT N/P SENSOR.	Replace the P/H HARNESS ASSY.

FIP-2.9 Faulty MSI EDGE SENSOR

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check REGI. SENSOR, EXIT LOWER ASSY, TOP EXIT SENSOR EXIT-2 ROLL ASSY, P/H DRIVE ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*Engine and controller division check Can a test print (single sheet / consecutive printing, about 10 sheets each) be performed normally with the engine alone?	Printer controller check (If an error still occurs after replacing, go to step 3.)	Go to step 3.
3	Are you using curled paper or paper that tends to curl?	Change to different paper.	Go to step 4.
4	*EXIT LOWER ASSY check Is there foreign matter in the paper route of the EXIT LOWER ASSY? Is there anything wrong with parts?	■ With tool: Go to step 5. ■ Without tool: Go to FIP-2.29	Clean and replace the faulty part(s)
5	*TOP EXIT SENSOR check Is the TOP EXIT SENSOR functioning properly? By using the DIAG tool, check by the Digital Input Test device code "09".	Go to step 6.	Go to FIP-2.29
6	*EXIT-2 ROLL ASSY check Is the EXIT-2 ROLL ASSY worn? Are there any foreign matters adhering to the EXIT-2 ROLL ASSY?	Replace and clean the EXIT-2 ROLL ASSY	Go to step 7.
7	*EXIT LOWER ASSY drive route check Is there anything wrong with the drive rout of the EXIT LOWER ASSY? Are the gears faulty or worn?	Replace the faulty part(s).	Go to step 8.
8	*P/H DRIVE ASSY check Is the P/H DRIVE ASSY improperly mounted? Are the gears faulty?	Replace and remount the P/H DRIVE ASSY.	Replace the MCU PWB.

FIP-2.10 Faulty PICK UP CLUTCH

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check PICK UP CLUTCH, P/H HARNESS ASSY REGI. MAIN HARNESS, MSI HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*PICK UP CLUTCH power supply check Is the voltage between P/J20-27PIN <=> P/J20-28PIN 24VDC?	Go to step 3.	Go to FIP-2.1
3	*PICK UP CLUTCH check Is there a continuity (approx. 169Ω) between J20-27PIN <=> J20-28PIN?	Change paper.	Go to step 4.
4	*P/H HARNESS ASSY check Is there a proper continuity between J20 <=> P91B?	■ With tool: Go to step 5. ■ Without tool: Go to FIP-2.29	Clean and replace the concerned part(s).
5	*REGI. HARNESS check Is there a proper continuity between J91 <=> J113PIN?	Go to step 6.	Go to FIP-2.29
6	*MSI HARNESS ASSY check Is there a proper continuity between P113 <=> J20?	Replace and clean the EXIT-2 ROLL ASSY	Go to step 7.

FIP-2.11 Faulty OHP SENSOR

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check OHP SENSOR, REGI. HARNESS ASSY P/H HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*FRONT OHP SENSOR power supply check Is the voltage between P020-17PIN <=> P020-15PIN 5VDC?	Go to step 3.	Go to FIP-2.1
3	*FRONT OHP detection signal power supply check Is the voltage between P020-16PIN <=> P020-15PIN 5VDC?	Go to step 4.	Replace the MCU PWB.
4	*FRONT OHP detection signal check Is the voltage between P020-16PIN <=> P020-15PIN as follows? ■ When reflecting (paper), the value is 0VDC. ■ When not reflecting (no paper), the value is 5VDC. • Use white paper to check transmission/block status. OHP film is transparent and therefore cannot be accurately evaluated.	Replace the MCU PWB.	Go to step 5.
5	*REGI. HARNESS ASSY continuity check Is there a proper continuity between J98 <=> J020B?	Go to step 6.	Replace the REGI. HARNESS ASSY.
6	*P/H HARNESS ASSY check Is there a proper continuity between P91 <=> J020B?	Replace the OHP SENSOR.	Replace the P/H HARNESS ASSY.

FIP-2.12 Faulty REGI. SENSOR

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check REGI. SENSOR, REGI. HARNESS ASSY P/H HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*REGI. SENSOR power supply check Is the voltage between P020B-20PIN <=> P20-18PIN 5VDC?	Go to step 3.	Go to FIP-2.1
3	*REGI. detection signal power supply check Is the voltage between P20-19PIN <=> P20-18PIN 5VDC?	Go to step 4.	Replace the MCU PWB.
4	*REGI. detection signal check Is the voltage between P/J20-19PIN <=> P/J20-18PIN as follows? ■ When reflecting (paper), the value is 0VDC. ■ When not reflecting (no paper), the value is 5VDC.	Replace the MCU PWB.	Go to step 5.
5	*REGI. HARNESS ASSY continuity check Is there a proper continuity between J93 <=> J91B?	Go to step 6.	Replace the REGI. HARNESS ASSY replacement
6	*P/H HARNESS ASSY check Is there a proper continuity between P91B <=> J020?	Replace the REGI. SENSOR.	Replace the P/H HARNESS ASSY.

FIP-2.13 REGI. CLUTCH

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check REGI. CLUTCH, P/H HARNESS ASSY REGI. HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*REGI. CLUTCH power supply check Is there 24VDC between P/J20-23PIN <=> P/J20-24PIN?	Go to step 3.	Go to FIP-2.1
3	*REGI. CLUTCH check Is there continuity (approx. 171 Ω) between J20-23PIN <=> J20-24PIN?	Replace the MCU PWB.	Go to step 4.
4	*P/H HARNESS ASSY check Is there proper continuity between J20 <=> P91B?	Go to step 5.	Replace the P/H HARNESS.
5	*REGI. HARNESS ASSY continuity check Is there proper continuity between J91B <=> P94PIN?	Replace the REGI. CLUTCH.	Replace the REGI. HARNESS ASSY.

FIP-2.14 PRE-REGI. CLUTCH

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check REGI. CLUTCH, P/H HARNESS ASSY REGI. HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*REGI. CLUTCH power supply check Is the voltage between P/J20-25PIN <=> P/J20-26PIN 24VDC?	Go to step 3.	Go to FIP 2.2 "Faulty LVPS 24VDC."
3	*REGI. CLUTCH check Is there a continuity (approx. 174 Ω) between J20-25PIN <=> J20-26PIN?	Replace the MCU PWB.	Go to step 4.
4	*P/H HARNESS ASSY check Is there a proper continuity between J20 <=> P91B?	Go to step 5.	Replace the P/H HARNESS ASSY.
5	*REGI. HARNESS ASSY continuity check Is there a proper continuity between J91B <=> P95PIN?	Replace the REGI. CLUTCH.	Replace the REGI. HARNESS ASSY.

FIP-2.15 Faulty WASTE TONER SENSOR

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check WASTE TONER SENSOR, WASTE TONER BOX, TONER BOX HARNESS, MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s)	Go to step 2.
2	*WASTE TONER SENSOR power supply check Is the voltage between P22-14PIN <=> P22-12PIN 5VDC?	Go to step 3.	Go to FIP-2.1
3	*WASTE TONER detection signal power supply check Is the voltage between P22-13PIN <=> P22-12PIN 5VDC?	Go to step 4.	Replace the MCU PWB.
4	*WASTE TONER detection signal check Is the voltage between P/J22-13PIN <=> P/J22-12PIN as follows? ■ When transmitting (WASTE TONER LOW level), the value is 0VDC. ■ When blocked (WASTE TONER HIGH level), the value is 5VDC.	Replace the MCU PWB.	Go to step 5.
5	*TONER BOX HARNESS continuity check Is there a proper continuity between J88 <=> P116?	Go to step 6.	Replace the TONER BOX HARNESS.
6	*MAIN HARNESS ASSY continuity check Is there a proper continuity between J116 <=> J22?	Replace the WASTE TONER SENSOR.	Replace the MAIN HARNESS ASSY.

FIP-2.16 Faulty TONER BOX SENSOR

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check TONER BOX SENSOR, TONER BOX HARNESS MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s)	Go to step 2.
2	*TONER BOX SENSOR power supply check Is the voltage between P22-15PIN <=> P22-16PIN 5VDC?	Go to step 3.	Go to FIP-2.1
3	*TONER BOX detection signal power supply check Is the voltage between P22-14PIN <=> P22-16PIN 5VDC ?	Go to step 4.	Replace the MCU PWB.
4	*TONER BOX detection signal check Is the voltage between P/J22-14PIN <=> P/J22-16PIN as follows? ■ When transmitting (WASTE TONER BOX), the value is 0VDC. ■ When blocked (no WASTE TONER BOX) , the value is 5VDC.	Replace the MCU PWB.	Go to step 5.
5	*TONER BOX HARNESS continuity check Is there a proper continuity between J88<=> P116?	Go to step 6.	Replace the TONER BOX HARNESS.
6	*MAIN HARNESS ASSY continuity check Is there a proper continuity between J116 <=> J22?	Replace the TONER BOX SENSOR.	Replace the MAIN HARNESS ASSY.

FIP-2.17 Faulty ROS ASSY

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check ROS ASSY, MAIN HARNESS ASSY, EXIT HARNESS, TOP EXIT SENSOR, FRONT COVER SWITCH R, MAIN HARNESS, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*SOS SENSOR power supply check Is the voltage between P14-1PIN <=> P14-3PIN 5VDC?	Go to step 3.	Go to FIP-2.1
3	*SOS detection signal power supply check Is the voltage between P14-2PIN <=> P14-3PIN 5VDC?	Go to step 4.	Replace the MCU PWB.
4	*Scanner Motor operation check Does the Scanner Motor run when turned ON? • Check by listening.	Go to step 7.	Go to step 5.
5	*Scanner Motor power supply check Is the voltage between P14-10PIN <=> P14-11PIN ?	Go to step 6.	Go to FIP-2.2
6	*Scanner Motor ON signal check Does the voltage between P14-12PIN <=> P14-13PIN change from 24VDC to 0VDC when the Scanner Motor is turned ON?	Go to step 7.	Go to step 15.
7	*LDD power supply check Is the voltage between P33-1PIN <=> P33-2PIN 5VDC?	Go to step 8.	Replace the LVPS.
8	*LDD power supply continuity check Is there a continuity between J33-1PIN <=> J33-2PIN?	Go to step 15.	Go to step 9.

9	*MAIN HARNESS ASSY continuity check Is there a proper continuity between the following? ■ J33-2PIN<=>P195-2PIN ■ P195-1PIN<=>J196-2PIN ■ P196-1PIN<=>J194-1PIN ■ J193-1PIN<=>J33-1PIN	Go to step 10.	Replace the MAIN HARNESS ASSY.
10	*TOP COVER SWITCH continuity check Is there a continuity between J195-1PIN <=> J195-2PIN when the contact is pushed and no continuity when let go?	Go to step 11.	Replace the TOP COVER SWITCH.
11	*TOP COVER ASSY tab check Do the tabs of the TOP COVER ASSY securely push in the contact of the TOP COVER SWITCH when the TOP COVER ASSY is mounted?	Go to step 12.	Replace the faulty part(s).
12	*FRONT COVER SWITCH R continuity check Is there continuity between the terminals of the FRONT COVER SWITCH R when the FRONT COVER is closed and no continuity when it is open?	Go to step 13.	Replace the FRONT COVER SWITCH R.
13	*FRONT COVER ASSY tab check Do the tabs of the FRONT COVER ASSY securely push in the contact of the FRONT COVER SWITCH R when the FRONT COVER ASSY is mounted?	Go to step 14.	Replace the faulty part(s).
14	*MAIN HARNESS ASSY continuity check Is there a proper continuity between J116 <=> J18?	Go to step 15.	Replace the MAIN HARNESS.
15	*MCU PWB replacement check Replace with the properly functioning MCU PWB. Does the problem still occur?	Replace the ROS ASSY.	Problem solved.

FIP-2.18 Faulty ADC Sensor

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check ADC SENSOR ASSY, MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*ADC Sensor power supply check Is the voltage between P16-18PIN <=> P16-21PIN 5VDC?	Go to step 3.	Go to FIP-2.1
3	*MAIN HARNESS ASSY continuity check Is there a proper continuity between J16 <=> J81?	Go to step 4.	Replace the MAIN HARNESS ASSY
4	*ADC SENSOR ASSY replacement check Replace with the properly functioning ADC SENSOR ASSY. Does the problem still occur ?	Replace the MCU PWB.	Problem solved.

FIP-2.19 Faulty ADC Solenoid

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check ADC SENSOR ASSY, MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*ADC Solenoid power supply check Is there 24VDC between P/J16-22PIN <=> P/J16-23PIN?	Go to step 3.	Go to FIP-2.2
3	*ADC Solenoid check Is there a continuity (approx. 36 Ω) between J16-22PIN <=> J16-23PIN?	Replace the MCU PWB.	Go to step 4.
4	*MAIN HARNESS ASSY check Is there a proper continuity between J16 <=> P81?	Replace the ADC SOLENOID.	Replace the P/H HARNESS ASSY.

FIP-2.20 Faulty CARTRIDGE SENSOR

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check CARTRIDGE, FUSER CONNECTOR, FUSER HARNESS ASSY MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*CARTRIDGE SENSOR power supply check Is the voltage between P17-5PIN <=> P17-3PIN 5VDC ?	Go to step 3.	Go to FIP-2.1
3	*CARTRIDGE detection signal power supply check Is the voltage between P017-4PIN <=> P17-3PIN 5VDC?	Go to step 4.	Replace the MCU PWB.
4	*CARTRIDGE detection signal check Is the voltage between P/J17-4PIN <=> P/J17-3PIN as follows? ■ When transmitting (Cartridge), the value is 0VDC. ■ When blocked (no Cartridge), the value is 5VDC.	Replace the MCU PWB.	Go to step 5.
5	*CARTRIDGE SENSOR HARNESS continuity check Is there a proper continuity between J87 <=> J17?	Replace the CARTRIDGE SENSOR.	Replace the CART. SENSOR HARNESS.

FIP-2.21 Faulty FUSER EXIT SENSOR-1

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check FUSER EXIT SENSOR-1, MAIN HARNESS ASSY FUSER HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*FUSER EXIT SENSOR-1 power supply check Is the voltage between P19-16PIN <=> P19-17PIN 5VDC?	Go to step 3.	Go to FIP-2.1
3	*FUSER EXIT detection signal power supply check Is the voltage between P19-18PIN <=> P19-17PIN 5VDC?	Go to step 4.	Replace the MCU PWB.
4	*FUSER EXIT detection signal check Is the voltage between P/J19-18PIN <=> P/J19-17PIN as follows? ■ When transmitting (paper), the value is 0VDC. ■ When blocked (no paper), the value is 5VDC.	Replace the MCU PWB.	Go to step 5.
5	*MAIN HARNESS continuity check Is there a proper continuity between J721 <=> P72?	Go to step 6.	Replace the HARNESS
6	*FUSER HARNESS ASSY continuity check Is there a proper continuity between J71B <=> J72?	Go to step 7.	Replace the FUSER HARNESS ASSY.
7	*MAIN HARNESS ASSY continuity check Is there a proper continuity between P71B <=> J19?	Replace the FUSER EXIT SENSOR-1.	Replace the MAIN HARNESS ASSY.

FIP-2.22 Faulty ROTARY SENSOR

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check ROTARY SENSOR, MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*ROTARY SENSOR power supply check Is the voltage between P16-16PIN <=> P16-14PIN 5VDC?	Go to step 3.	Go to FIP-2.1
3	*ROTARY SENSOR detection signal power supply check Is the voltage between P16-16PIN <=> P16-14PIN 5VDC?	Go to step 4.	Replace the MCU PWB.
4	*ROTARY SENSOR detection signal check Is the voltage between P/J16-16PIN <=> P/J16A-14PIN as follows? ■ When transmitting (no notch), the value is 0VDC. ■ When blocked (notch detected), the value is 5VDC.	Replace the MCU PWB.	Go to step 5.
5	*MAIN HARNESS ASSY continuity check Is there a proper continuity between J16 <=> J58?	Replace the ROTARY SENSOR.	Replace the MAIN HARNESS.

FIP-2.23 Faulty TR0 SENSOR

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of parts of non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check TR0 SENSOR, MAIN HARNESS ASSY, TR0 HARNESS MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*TR0 SENSOR power supply check Is the voltage between P16-7PIN <=> P16-9PIN 5VDC?	Go to step 3.	Go to FIP-2.1
3	*TR0 SENSOR detection signal power supply check Is the voltage between P16-8PIN <=> P16-9PIN 5VDC?	Go to step 4.	Replace the MCU PWB.
4	*TR0 SENSOR detection signal check Is the voltage between P/J16-8PIN <=> P/J16-9PIN as follows? ■ When transmitting (IBT BELT mark detection), the value is 0VDC. ■ When blocked (no IBT BELT mark detection), the value is 5VDC.	Replace the MCU PWB.	Go to step 5.
5	*TR0 HARNESS continuity check Is there a proper continuity between J57 <=> J54?	Go to step 6.	Replace the TR0 HARNESS.
6	*MAIN HARNESS ASSY continuity check Is there a proper continuity between J54 <=> J16?	Replace the TRO SENSOR.	Replace the MAIN HARNESS.

FIP-2.24 Faulty BTR CAM CLUTCH

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of any non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check BTR CAM CLUTCH, MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*BTR CAM CLUTCH power supply check Is the voltage between P/J18-23PIN <=> P/J18-24PIN 24VDC?	Go to step 3.	Go to FIP-2.1
3	*TRO SENSOR detection signal power supply check Is there a proper continuity between P/J18-24PIN <=> P/J14-23PIN?	Replace the MCU PWB.	Go to step 4.
4	*MAIN HARNESS ASSY continuity check Is there a proper continuity between J18 <=> J63?	Replace the BTR CAM CLUTCH.	Replace the MAIN HARNESS ASSY.

FIP-2.25 Faulty FUSER IN SENSOR

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of any non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check FUSER IN SENSOR, MAIN HARNESS ASSY FUSER HARNESS ASSY, FUSER IN HARNESS, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*FUSER IN SENSOR power supply check Is the voltage between P19-4PIN <=> P19-5PIN 5VDC?	Go to step 3.	Go to FIP-2.1
3	*FUSER IN detection signal power supply check Is the voltage between P19-6PIN <=> P19-5PIN 5VDC?	Go to step 4.	Replace the MCU PWB.
4	*FUSER IN detection signal check Is the voltage between P/J19-6PIN <=> P/J19-5PIN as follows? ■ When transmitting (paper), the value is 0VDC. ■ When blocked (no paper), the value is 5VDC.	Replace the MCU PWB.	Go to step 5.
5	*FUSER IN HARNESS continuity check Is there a proper continuity between J117 <=> P76?	Go to step 6.	Replace the FUSER IN HARNESS.
6	*FUSER HARNESS ASSY Is there a proper continuity between J71A <=> J76?	Go to step 7.	Replace the FUSER HARNESS ASSY.
7	*MAIN HARNESS ASSY continuity check Is there a proper continuity between P71A <=> J19?	Replace the FUSER IN SENSOR.	Replace the MAIN HARNESS ASSY.

FIP-2.26 Faulty FUSER EXIT SENSOR

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of any non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check FUSER EXIT SENSOR, MAIN HARNESS ASSY FUSER HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*FUSER EXIT SENSOR power supply check Is the voltage between P19-16PIN <=> P19-17PIN 5VDC?	Go to step 3.	Go to FIP-2.1
3	*FUSER EXIT detection signal power supply check Is the voltage between P19-14PIN <=> P19-17PIN 5VDC ?	Go to step 4.	Replace the MCU PWB.
4	*FUSER EXIT detection signal check Is the voltage between P/J19-14PIN <=> P/J19-17PIN as follows? ■ When transmitting (paper), the value is 0VDC. ■ When blocked (no paper), the value is 5VDC.	Replace the MCU PWB.	Go to step 5.
5	*MAIN HARNESS continuity check Is there a proper continuity between J722 <=> P72?	Go to step 6.	Replace the HARNESS.
6	*FUSER HARNESS ASSY continuity check Is there a proper continuity between J71B <=> J72?	Go to step 7.	Replace the FUSER HARNESS ASSY.
7	*MAIN HARNESS ASSY continuity check Is there a proper continuity between P71B <=> J19?	Replace the FUSER EXIT SENSOR.	Replace the MAIN HARNESS ASSY.

FIP-2.27 Faulty TEMP. SENSOR ASSY

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of any non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check TEMP. SENSOR ASSY, MAIN HARNESS ASSY FUSER HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*TEMP. SENSOR ASSY thermistor check Is there dirt or foreign matter on the detection surface of the thermistor?	Replace and clean the TEMP. SENSOR ASSY.	Go to step 3.
3	*TEMP. SENSOR ASSY thermistor resistance check Is there 240k Ω between P72-2PIN <=> P72-4PIN at room temperature (18 - 20°C)?	Go to step 4.	Replace and clean the TEMP. SENSOR ASSY.
4	*FUSER HARNESS ASSY continuity check Is there a proper continuity between J71B <=> J72?	Go to step 5.	Replace the FUSER HARNESS ASSY.
5	*MAIN HARNESS ASSY continuity check Is there a proper continuity between P71B <=> J19?	Replace and remount the concerned part(s).	Go to step 2.

FIP-2.28 Faulty CLEANER CAM SOLENOID

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of any non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check CLEANER CAM SOLENOID, FUSER HARNESS ASSY MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*CLEANER CAM SOLENOID power supply check Is the voltage between P/J19-12PIN <=> P/J21-3PIN 24VDC?	Go to step 3	Go to FIP-2.2
3	*CLEANER CAM SOLENOID check Is there a continuity (approx. 215 Ω) between J19-12PIN <=> J19-13PIN?	Replace the MCU PWB.	Go to step 4.
4	*FUSER HARNESS ASSY check Is there a proper continuity between J62 <=> J71BPIN?	Go to step 5.	Replace the FUSER HARNESS ASSY.
5	*MAIN HARNESS ASSY check Is there a proper continuity between P71B <=> J19PIN?	Replace the CLEANER CAM SOLENOID.	Replace the MAIN HARNESS ASSY.

FIP-2.29 Faulty TOP EXIT SENSOR

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of any non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check TOP EXIT SENSOR, MAIN HARNESS ASSY EXIT HARNESS, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*TOP EXIT SENSOR power supply check Is the voltage between P17-9PIN <=> P17-10PIN 5VDC?	Go to step 3	Go to FIP-2.1
3	*TOP EXIT power supply check Is the voltage between P17-11PIN <=> P17-10PIN 5VDC?	Go to step 4.	Replace the MCU PWB.
4	*TOP EXIT detection signal check Is the voltage between P/J17-11PIN <=> P/J17-10PIN as follows? ■ When transmitting (paper), the value is 0VDC. ■ When blocked (no paper), the value is 5VDC.	Replace the MCU PWB.	Go to step 5.
5	*EXIT HARNESS continuity check Is there a proper continuity between J165 <=> J161?	Go to step 6.	Replace the EXIT HARNESS.
6	*MAIN HARNESS ASSY continuity check Is there a proper continuity between J161 <=> J17?	Replace the TOP EXIT SENSOR.	Replace the MAIN HARNESS ASSY.

FIP-2.30 Faulty PROCESS DRIVE ASSY

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of any non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check PROCESS DRIVE ASSY, MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*PROCESS DRIVE ASSY power supply check Is the voltage between P/J51-2 <=> P/J51-1 24VDC?	Go to step 4.	Go to step 3.
3	*LVPS power supply check Is the voltage between J32-7 <=> J32-11 24VDC?	Replace the MAIN HARNESS ASSY.	Go to FIP-2.2
4	*PROCESS DRIVE ON signal voltage check Is the voltage between P18-17 <=> P18-14? 24VDC	Go to step 5.	Replace the MCU PWB.
5	*PROCESS DRIVE SPEED signal voltage check Is the voltage between P18-15 <=> P18-14 24VDC?	Go to step 6.	Replace the MCU PWB.
6	*MAIN HARNESS ASSY continuity check Is there a proper continuity between J50 <=> J18?	Replace the PROCESS DRIVE ASSY.	Replace the MAIN HARNESS ASSY.

FIP-2.31 Faulty P/H MOTOR ASSY

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of any non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check P/H MOTOR ASSY, MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*P/H MOTOR ASSY power supply check Is the voltage between P/J49-2 <=> P/J49-1?	Go to step 4.	Go to step 3.
3	*LVPS power supply check Is the voltage between J32-8 <=> J32-7 24VDC?	Replace the MAIN HARNESS ASSY.	Go to FIP-2.2
4	*P/H MOTOR ON signal voltage check Is the voltage between P18-11 <=> P18-8 24VDC?	Go to step 5.	Replace the MCU PWB.
5	*P/H MOTOR SPEED signal voltage check Is the voltage between P016B-9 <=> P016B-10 24VDC?	Go to step 6.	Replace the MCU PWB.
6	*MAIN HARNESS ASSY continuity check Is there a proper continuity between J50 <=> J18A?	Replace the P/H MOTOR ASSY.	Replace the MAIN HARNESS ASSY.

FIP-2.32 Faulty ROTARY MOTOR ASSY

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of any non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check ROTARY MOTOR ASSY, MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*ROTARY MOTOR ASSY power supply check Is the voltage between P/J246-3 <=> P/J246-1 24VDC?	Go to step 4.	Go to step 3.
3	*LVPS power supply check Is the voltage between J32-3 <=> J32-2 24VDC?	Replace the MAIN HARNESS ASSY.	Go to FIP-2.2
4	*ROTARY MOTOR ASSY power supply check Is the voltage between P18-5 <=> P18-4 5VDC?	Go to step 5.	Go to FIP-2.2
5	*ROTARY MOTOR ON signal voltage check Is the voltage between P18-2 <=> P18-4 24VDC?	Go to step 6.	Replace the MCU PWB.
6	*MAIN HARNESS ASSY continuity check Is there a proper continuity between J245 <=> J18?	Replace the ROTARY MOTOR ASSY.	Replace the MAIN HARNESS ASSY.

FIP-2.33 Faulty DISPENSE CLUTCH ASSY

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of any non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check DISPENSE CLUTCH ASSY, MAIN HARNESS ASSY MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*DISPENSE CLUTCH ASSY power supply check Is the voltage between P18-19PIN <=> J21-3PIN 24VDC?	Go to step 3.	Go to FIP-2.2
3	*DISPENSE CLUTCH ASSY check Is there a continuity (approx. 150 Ω) between P18-19PIN <=> P21-3PIN?	Replace the MCU PWB.	Go to step 4.
4	*MAIN HARNESS ASSY check Is there a proper continuity between J18 <=> J55?	Replace the DISPENSE CLUTCH ASSY.	Replace the MAIN HARNESS ASSY.

FIP-2.34 Faulty DEVE. CLUTCH ASSY

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of any non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check DEVE. CLUTCH ASSY, MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*DEVE. CLUTCH ASSY power supply check Is the voltage between P18-21PIN <=> P21-3PIN 24VDC?	Go to step 3.	Go to FIP-2.2
3	*DEVE. CLUTCH ASSY check Is there a continuity (approx. 150 Ω) between P18-21PIN <=> P21-3PIN?	Replace the MCU PWB.	Go to step 4.
4	*MAIN HARNESS ASSY check Is there a proper continuity between J18 <=> J56?	Replace the DEVE. CLUTCH ASSY.	Replace the MAIN HARNESS ASSY.

FIP-2.35 Faulty HVPS

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of any non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check BCR WIRE, DEVE. WIRE, BCR CONNECTOR ASSY DEVE. CONTACT PLATE ASSY 2ND BTR ASSY, TRANSFER ASSY, 2ND BTR CAM ASSY HVPS, MAIN HARNESS ASSY, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	*BCR WIRE check Is there continuity between the terminals of the BCR WIRE?	Go to step 3.	Replace the BCR WIRE.
3	*DEVE. WIRE check Is there continuity between the terminals of the DEVE. WIRE?	Go to step 4.	Replace the DEVE. WIRE.
4	*BCR CONNECTOR ASSY check Is the BCR CONNECTOR ASSY distorted, damaged or improperly mounted?	Remount/replace the BCR CONNECTOR ASSY.	Go to step 5.
5	*DEVE. CONTACT PLATE ASSY check Is the DEVE. CONTACT PLATE ASSY distorted, damaged or improperly mounted?	Remount/replace the DEVE. CONTACT PLATE ASSY.	Go to step 6.
6	*2ND BTR ASSY check Is there proper continuity in the high voltage route inside the 2ND BTR ASSY?	Go to step 7.	Replace the 2ND BTR ASSY.
7	*TRANSFER ASSY internal check Is there proper continuity in the high voltage route inside the TRANSFER ASSY? • Check continuity between the terminals of the 1ST BTR WIRE and 1ST BTR, and between the terminals of the CONTACT ROLL WIRE and 1ST BTR.	Go to step 8.	Replace the TRANSFER ASSY.
8	*HVPS power supply check Is there 24VDC between P/J41-3 <=> P/J41-1?	Go to step 10.	Go to step 9.
9	*LVPS power supply check Is the voltage between J32-3 <=> J32-5 24VDC?	Replace the MAIN HARNESS ASSY.	Go to FIP-2.2

10	*MAIN HARNESS ASSY continuity check Is there a proper continuity between J16 <=> J42?	Go to step 11.	Replace the MAIN HARNESS ASSY.
11	*MCU PWB replacement check Replace with the properly functioning MCU PWB? Does the problem still occurs?	Replace the HVPS.	Problem solved.

FIP-2.36 Noise

Step	Check	Treatment	
		Yes	No
1	*Initial setting Use of any non-EPSON specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check LVPS, BCR CONNECTOR ASSY DEVE. CONTACT PLATE ASSY 2ND BTR ASSY, H/R HEATER, P/R HEATER DRUM CARTRIDGE, MCU PWB	Replace and remount the concerned part(s).	Go to step 2.
2	Is the printer securely grounded?	Go to step 3.	Properly ground the printer.
3	Are there any devices, near the printer, which can cause the noise ?	Relocate the printer or the device which can cause the noise.	Go to step 4.
4	*LVPS check Is the ground wire connected to the power switch/inlet of the LVPS fastened securely?	Go to step 5.	Fasten the ground securely.
5	*BCR CONNECTOR ASSY check Is the BCR CONNECTOR ASSY distorted, damaged or improperly mounted?	Go to step 6.	Remount/replace the BCR CONNECTOR ASSY.
6	*DEVE. CONTACT PLATE ASSY check Is the DEVE. CONTACT PLATE ASSY distorted, damaged or improperly mounted?	Go to step 7.	Remount/replace the DEVE. CONTACT PLATE ASSY.
7	*2ND BTR ASSY check Is there a proper continuity in the high voltage route inside the 2ND BTR ASSY?	Go to step 8.	Replace the 2ND BTR ASSY.
8	*H/R HEATER, P/R HEATER check Are the both ends of the H/R HEATER and P/R HEATER fastened securely?	Go to step 9.	Fasten the both ends securely.
9	*DRUM CARTRIDGE replacement check Replace with the properly functioning DRUM CARTRIDGE. Does the problem still occur?	Go to step 10.	Problem solved.

10	*MCU PWB replacement check Replace with the properly functioning MCU PWB? Does the problem still occur?	Go to step 11.	Problem solved.
11	*Initial Check Double check the main parts and the related to the main parts. Does the problem still occur?	Replace and remount the concerned part(s).	Problem solved. *1

*1: Check the state because it can be considered as a noise comes from outside.

5.4 Picture Image Trouble

5.4.1 Picture Image Troubleshooting Entry Chart

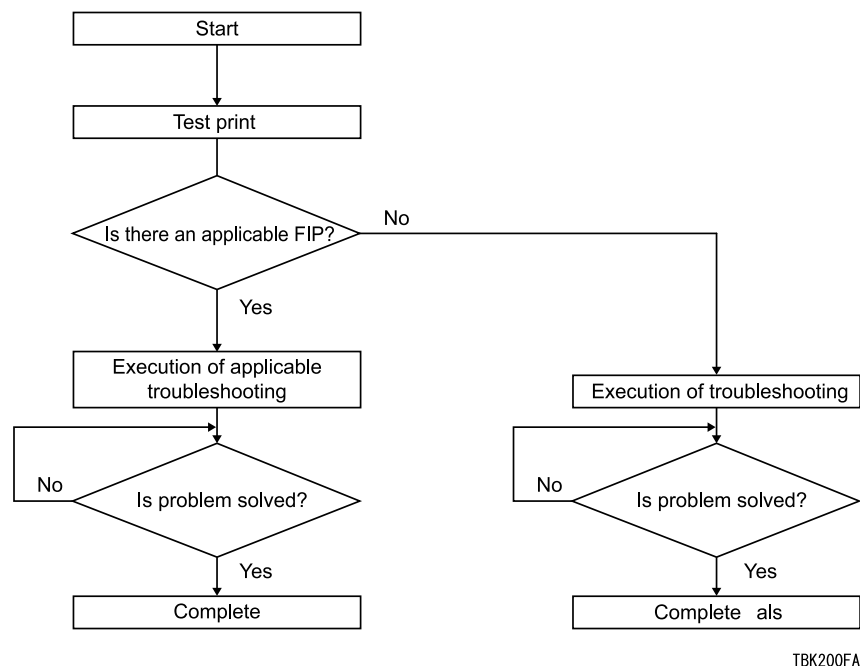


Figure 5-2. Picture Image Troubleshooting Entry Chart

5.5 Picture Quality FIP

NOTE: The following explanation assumes the printer controller is functioning properly. You can however easily determine whether the problem is the printer controller or engine by conducting a test print with the engine alone, with the exception of problems that cannot be recognized through a test print.

- If the test print by the engine alone is good, the problem is caused by the printer controller.
- If there is something wrong with the test print by the engine alone is good, the problem is caused by the engine.

If it appears there is something wrong with the printer controller, replace the printer controller and interface cable with properly functioning parts and see if that works.

If the problem continues to occur, check the host side and perform troubleshooting efficiently using the following picture quality FIP according to a description of the problem.

If a problem involving printing quality occurs, first find out exactly what the problem is, make a test print on A3 or A4 paper, and then troubleshoot effectively by using the corresponding picture quality FIP chart.

If the problem cannot be resolved by picture quality FIP, recheck with picture quality FIP, and replace "Main Check Parts" of "Initial Check" in the order in which they are given and see if that works. Perform troubleshooting using Section 1.3 "Interface Specifications".

Picture quality FIP covers the following typical problems involving picture quality:

- FIP-3.1
- FIP-3.2
- FIP-3.3
- FIP-3.4
- FIP-3.5
- FIP-3.6
- FIP-3.7
- FIP-3.8
- FIP-3.9
- FIP-3.10

NOTE: Roll diameter and print interval that affect picture quality are as follows.

Table 5-4. Roll Diameters and Print Intervals

Part	Diameter	Cycle
Magnet Roll	Same period / π	28 mm
Drum	Same period / π	264 mm
BCR	Same period / π	44 mm
1ST BTR	Same period / π	59 mm
BACK UP ROLL	Same period / π	88 mm
2ND BTR	Same period / π	88 mm
HEAT ROLL	Same period / π	119 mm
PRESSURE ROLL	Same period / π	117 mm
FEED ROLL	Same period / π	90 mm

FIP-3.1 Too Light

Description / initial check		
White The picture image has a white streak in the paper transport direction or is too light. *Initial check Use of parts of incorrect specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check DRUM CARTRIDGE, HVPS, ROS ASSY, MCU PWB, HEAT ROLL, PRESSURE ROLL, MAIN FUSER ASSY		
Item	Check	Treatment (when there is a problem)
1	Faulty electrification Occurs when DRUM CARTRIDGE is replaced?	Replace DRUM CARTRIDGE.
2	Faulty ROS ASSY Still occurs when laser radiation exit of ROS ASSY is half covered with paper?	Check "Faulty ROS ASSY."
3	Faulty HEAT ROLL/PRESSURE ROLL Is the HEAT ROLL/PRESSURE ROLL damaged? Is there dirt or foreign matter adhering to the HEAT ROLL/PRESSURE ROLL?	Replace or clean the HEAT ROLL/PRESSURE ROLL.
4	Faulty Developer Assy Is the trimmer cap of the Developer Assy of the concerned color clogged?	Replace the Developer Assy of the concerned color.

FIP-3.2 All White

Description / initial check		
All White No printing is transferred; page remains completely white. *Initial check Use of parts of incorrect specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check DRUM CARTRIDGE, HVPS, ROS ASSY, MCU PWB		
Item	Check	Treatment (when there is a problem)
1	Empty Toner Cartridge Is there enough toner in the Toner Cartridge?	Toner Cartridge replacement
2	Laser route blocked off Is there foreign matter or dirt in the path of the laser beam from the ROS ASSY to the drum?	Remove foreign matter or dirt in the path of the laser beam from the ROS ASSY to the drum.
3	Faulty electrification/developing Is the toner image on the drum properly developed? *If you suspect that primary transfer is in progress while printing, turn the power OFF and visually inspect the drum (position prior to transfer).	Check "Faulty HVPS."
4	Faulty primary transfer Is the toner image on the drum properly transferred to the TRANSFER BELT ASSY? *If you suspect that primary transfer is in progress while printing, turn the power OFF and visually inspect the TRANSFER BELT ASSY.	Check "Faulty HVPS."

5	Faulty secondary transfer Is the toner image on the TRANSFER BELT ASSY properly transferred to paper? *If you suspect that primary transfer is in progress while printing, turn the power OFF and visually inspect the paper.	Check "Faulty HVPS."
6	Faulty DRUM CARTRIDGE No longer occurs when replaced with new DRUM CARTRIDGE?	Replace DRUM CARTRIDGE.

FIP-3.3 All Black

Description / initial check		
All Black Entire surface is printed completely black. *Initial check Use of parts of incorrect specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check DRUM CARTRIDGE, HVPS, ROS ASSY, MCU PWB		
Item	Check	Treatment (when there is a problem)
1	Faulty electrification Still occurs when laser radiation exit of ROS ASSY is covered with paper?	Check "Faulty HVPS."
2	Faulty ROS ASSY Still occurs when laser radiation exit of ROS ASSY is half covered with paper?	Check "Faulty ROS ASSY."
3	Faulty DRUM CARTRIDGE No longer occurs when replaced with new DRUM CARTRIDGE?	Replace DRUM CARTRIDGE.

FIP-3.4 White or Too Light in Paper Transport Direction

Description / initial check		
White The picture image has a white streak in the paper transport direction or is too light. *Initial check Use of parts of incorrect specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check DRUM CARTRIDGE, HVPS, ROS ASSY, MCU PWB, HEAT ROLL, PRESSURE ROLL, MAIN FUSER ASSY		
Item	Check	Treatment (when there is a problem)
1	Faulty electrification Occurs when DRUM CARTRIDGE is replaced?	Replace DRUM CARTRIDGE.
2	Faulty ROS ASSY Still occurs when laser radiation exit of ROS ASSY is half covered with paper?	Check "Faulty ROS ASSY."
3	Faulty HEAT ROLL/PRESSURE ROLL Is the HEAT ROLL/PRESSURE ROLL damaged? Is there dirt or foreign matter adhering to the HEAT ROLL/PRESSURE ROLL?	Replace or clean the HEAT ROLL/PRESSURE ROLL.
4	Faulty Developer Assy Is the trimmer cap of the Developer Assy of the concerned color clogged?	Replace the Developer Assy of the concerned color.

FIP-3.5 White or Too Light in Paper Transport and Vertical Directions

Description / initial check		
White The picture image has a white streak in the paper transport and vertical directions or is too light. *Initial check Use of parts of incorrect specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check Developer Assy, DRUM CARTRIDGE, 2ND BTR, HEAT ROLL PRESSURE ROLL, FEED ROLL ASSY		
Item	Check	Treatment (when there is a problem)
1	Cyclic check Is the problem cyclical?	Replace the concerned part(s). *You can tell from diameter of roll an interval that appears on print.
2	Faulty print controller No longer occurs when print controller is replaced?	Replace print controller.

FIP-3.6 Black Dots

Description / initial check		
Black Dots Black dots appear on print. *Initial check Use of parts of incorrect specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check DRUM CARTRIDGE, HVPS, 2ND BTR ASSY, MAIN FUSER ASSY, HEAT ROLL, PRESSURE ROLL		
Item	Check	Treatment (when there is a problem)
1	Paper dampness No longer occurs when replaced with new paper?	Replace paper. (The user should keep paper in a place where there is not much humidity.)
2	Faulty electrification/developing Is the toner image on the drum properly developed? *If you suspect that primary transfer is in progress while printing, turn the power OFF and visually inspect the drum (position prior to transfer).	Check "Faulty HVPS."
3	Faulty primary transfer Is the toner image on the drum properly transferred to the TRANSFER BELT ASSY? *If you suspect that primary transfer is in progress while printing, turn the power OFF and visually inspect the TRANSFER BELT ASSY.	Check "Faulty HVPS."

4	Faulty HEAT ROLL/PRESSURE ROLL Is the HEAT ROLL/PRESSURE ROLL damaged? Is there dirt or foreign matter adhering to the HEAT ROLL/PRESSURE ROLL?	Replace or clean the HEAT ROLL/PRESSURE ROLL.
5	Faulty DRUM CARTRIDGE No longer occurs when replaced with new DRUM CARTRIDGE?	Replace DRUM CARTRIDGE.

FIP-3.7 Fogging

Description / initial check		
Fogging When toner adheres to the margins of the print. *Initial check Use of parts of incorrect specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check DRUM CARTRIDGE, HVPS, Developer Assy, DEVE. CONTACT PLATE ASSY		
Item	Check	Treatment (when there is a problem)
1	Deterioration of developer No longer occurs when Developer Assy of concerned color is replaced?	Replace Developer Assy.
2	DEVE. CONTACT PLATE ASSY mounting check Is the DEVE. CONTACT PLATE ASSY properly mounted?	Properly mount the DEVE. CONTACT PLATE ASSY.
3	Faulty HVPS No longer occurs when HVPS is replaced?	Replace HVPS.
4	Faulty drum No longer occurs when DRUM CARTRIDGE is replaced?	Replace DRUM CARTRIDGE.

FIP-3.8 Paper Skew

Description / initial check		
Skew When picture image printing is skewed. *Initial check Use of parts of incorrect specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check MAIN FUSER ASSY, MSI FEED ASSY, FEED ROLL ASSY, TURN ROLL ASSY, MAIN P/H FRAME ASSY		
Item	Check	Treatment (when there is a problem)
1	Faulty paper mounting Is paper or paper cassette properly mounted?	Properly mount paper or paper cassette. (The user should mount paper and the paper cassette properly.)
2	Paper transport route problem Are there burrs, foreign matter or dirt in the paper transport route?	Clean/replace concerned part(s).
3	Feed roll problem Do the feed rolls feed paper properly?	Clean/replace concerned part(s).
4	Paper roll problem Is there foreign matter/dirt on the paper transport rolls? Are they distorted or not functioning properly?	Clean/replace concerned part(s).
5	ROS ASSY mounting check Is the ROS ASSY improperly mounted?	ROS ASSY remounting
6	Faulty DRUM CARTRIDGE No longer occurs when replaced with a new DRUM CARTRIDGE?	Replace DRUM CARTRIDGE.

FIP-3.9 Wrinkles

Description / initial check		
Wrinkles Paper becomes wrinkled when printing. *Initial check Use of parts of incorrect specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check MAIN FUSER ASSY, HEAT ROLL, PRESSURE ROLL, MCU PWB, DRUM CARTRIDGE, TURN ROLL ASSY, FEED ROLL ASSY, Paper cassette		
Item	Check	Treatment (when there is a problem)
1	Paper dampness No longer occurs when replaced with new paper?	Replace paper. (The user should keep paper in a place where there is not much humidity.)
2	Faulty HEAT ROLL/PRESSURE ROLL Is the HEAT ROLL/PRESSURE ROLL damaged? Is there dirt or foreign matter adhering to the HEAT ROLL/PRESSURE ROLL?	Replace or clean the HEAT ROLL/PRESSURE ROLL.
3	Skew Is paper being fed at an angle?	Check "Skew."
4	Paper transport route problem Are there burrs, foreign matter or dirt in the paper transport route?	Clean/replace concerned part(s).
5	Paper roll problem Is there foreign matter/dirt on the paper transport rolls? Are they distorted or not functioning properly?	Clean/replace concerned part(s).

FIP-3.10 Unsatisfactory Fixing

Description / initial check		
Unsatisfactory Fixing When the image can be easily rubbed off with your hand. *Initial check Use of parts of incorrect specifications, improper mounting, damage, distortion, dirt, adherence of foreign matter? *Main parts to check TEMP. SENSOR ASSY, MAIN FUSER ASSY, HEAT ROLL, PRESSURE ROLL, MCU PWB		
Item	Check	Treatment (when there is a problem)
1	Paper dampness No longer occurs when replaced with new paper?	Replace paper. (The user should keep paper in a place where there is not much humidity.)
2	Dirty TEMP. SENSOR ASSY Is the surface of the TEMP. SENSOR ASSY dirty?	Clean/replace the TEMP. SENSOR ASSY.
3	Faulty HEAT ROLL/PRESSURE ROLL Is the HEAT ROLL/PRESSURE ROLL damaged? Is there dirt or foreign matter adhering to the HEAT ROLL/PRESSURE ROLL?	Replace or clean the HEAT ROLL/PRESSURE ROLL.
4	Faulty MAIN FUSER ASSY Is pressure reliably applied between the HEAT ROLL and PRESSURE ROLL?	Perform Adjustment 1.1. Replace MAIN FUSER ASSY.

CHAPTER

6

MAINTENANCE

6.1 About On-Site Servicing

This section contains information you need when visiting your customer for on-site servicing including preventive maintenance required to prevent any potential printer malfunction as well as normal maintenance. To prevent accident during servicing, observe the “WARNING” and “CAUTION” carefully and avoid servicing in a dangerous situation.



- **Before servicing, be sure to turn the printer off and unplug the power cord from the wall outlet before to prevent injury, burnt, and electrification. If you must keep the power applied to measure voltage, be aware of the potential for electrical shock and do all tasks with the most care.**
- **Never inspect any motor, sprocket, and gear while the printer is operating.**
- **Weight**
This printer weighs quite heavily (about 71.2Kg). Be sure to carry it by 4 people or more and take a good posture keeping your back low.
- **Safety Components**
Make sure the safety components function properly. The safety devices include fuses, interlock switches and others such as panels and covers for protecting users.
- **Do not touch the FUSER ASSEMBLY (Fusing unit) while it is still very hot shortly after operation.**
- **After servicing, note the following points when turning on the printer for operation.**
(Continues to the next page.)



- **Do not catch your hands and clothes in the rotating parts such as rollers and fans.**
- **Keep your hands off the electrical terminals and high voltage components such as HVPS and LVPS.**
- **Be aware that this printer emits laser beam when the printer is under the both of the following conditions.**
 - **The printer power switch is on and the printer is in “Ready” status.**
 - **Interlock switches are off (The TOP COVER and the FRONT COVER are closed.)**



- **Be careful of sharp edges of the metal frames used in many parts of this printer.**
- **Do not disassembly the TONER CARTRIDGE.**
- **Do not leave the DRUM CARTRIDGE in direct sun light.**
- **Do not disassembly the ROS ASSEMBLY.**
- **Avoid touching IC and other electrical element with your bare hands to protect them from static electricity.**
- **Do not turn off the power until all motors stop.**
- **In case you need to transport the printer:**
 1. **Remove the DRUM CARTRIDGE from the printer.**
 2. **Pack the printer using the exclusive packing materials and on a pallet.**
- **Do not dispose of any replaced parts and consumables at your customer’s place.**
- **Once color toner gets on a floor, it is hardly cleaned out. Therefore, be sure to place a sheet or cloth inside the printer so that the floor is protected.**

6.1.1 On-site Service Flow

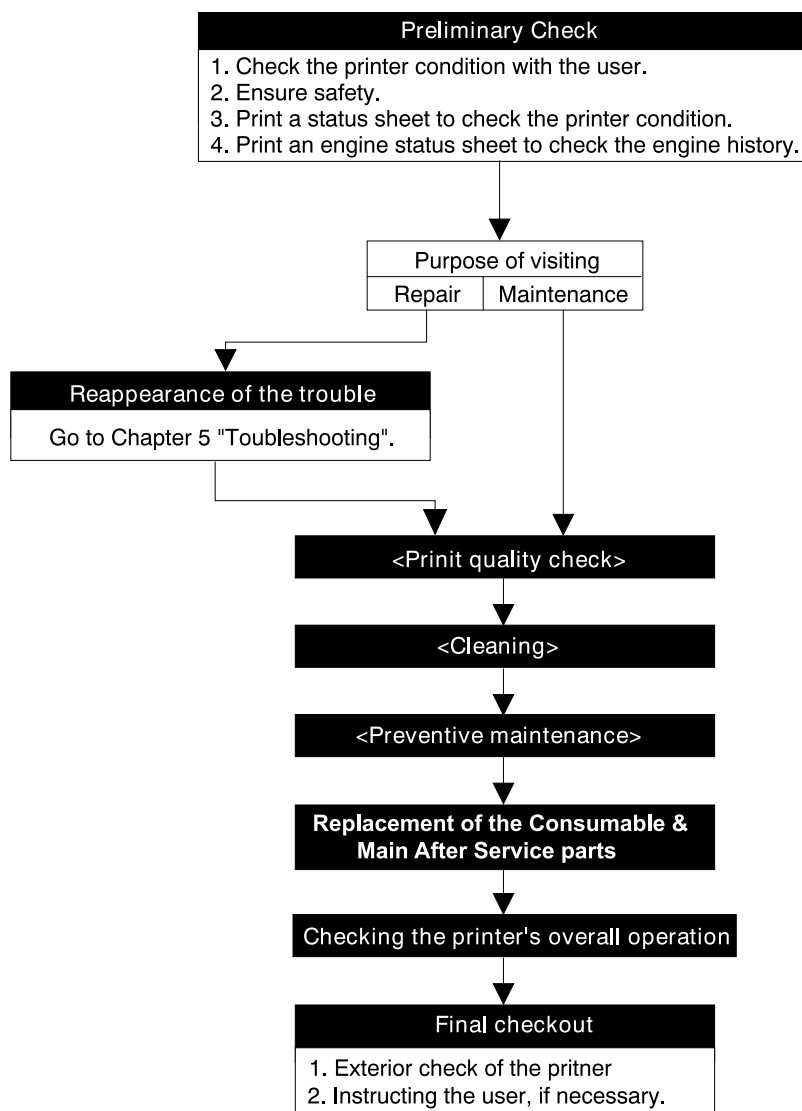


Figure 6-1. On-site Service Flowchart

6.1.2 Description of the On-site Service

This section gives instruction on the on-site service in detail.

PRELIMINARY CHECK

1. Ask the users the following:
 - How often paper feed malfunction occurs.
 - How the printer is used. (paper, volume, environment, etc.)
 - Output quality (each side: front/back separately)
2. Check safety matters: the condition of plug connections, the damage for plugs and codes.
3. Print a status sheet to check the printer condition.
4. Print an engine status sheet. Check the life of the Consumables, Regularly Replaced Parts, and Main After Sales Parts, and the printer's condition.

REAPPEARANCE OF THE TROUBLE

Perform troubleshooting described in Chapter 5.

1. Referring to Section 5.1.4, "Self-Diagnostic Function by LCD Message", identify the trouble and perform necessary troubleshooting.
2. If necessary, proceed to "Level 1 FIP" and "Level 2 FIP".
3. If a print quality problem (completely blank/black page), a fatal problem, due to an engine malfunction is identified, go to "Print quality troubleshooting".

PRINT QUALITY CHECK

1. Print several pages of monochrome and color status sheet to check print quality.

<Points to check>

- Color balance
- Improper color position
- Too dark/light printing
- Abnormal reappearance at low density
- Others

2. If any abnormality is found in the listed check points:
 - Check the life counters of the consumables and regularly replaced parts. (See Section 6.2.)
 - Perform the adjustment. (See Chapter 3)

CLEANING

1. Remove any foreign matter lodged in the 2ND BTR ASSEMBLY, MAIN P/H ASSEMBLY, FUSER ASSEMBLY, and rollers in the paper paths and so on. Then clean the dirt using a brush or dry soft cloth.

NOTE: To remove severe dirt, remove it with a moistened cloth then wipe with a dry cloth. Be sure not to mar the dirty part during cleaning.

2. Using a soft cloth, clean out the spilt toner in the following parts: DEVELOPER, TONER CARTRIDGE (including their installing positions), inside of the FRONT COVER, WASTE TONER BOX installation point and its adjacent parts, BELT CLEANER ASSEMBLY and its adjacent parts.
3. Clean the fan ducts. Remove the REAR COVER and remove the dust adhered to the DEVE. FAN, FUSER FAN, and REAR COVER with a brush. Also, remove the dust accumulated on the CONTROLLER FAN and the TOP COVER by removing the TOP COVER.

NOTE: Clogged dust around the fan ducts and fans can heat up the air inside of the printer, which may cause a printer malfunction.

PREVENTIVE MAINTENANCE (CHECKING THE CONSUMABLES AND REGULARLY REPLACED PARTS)

In addition to repair and maintenance of the printer, preventive maintenance is required to maintain the printer's good operation and to prevent any potential problem in other parts than the serviced parts.

1. After repairing or maintenance, output several status sheets and check that the printer operates normally.
2. After repairing or maintenance, output an engine status sheet.

NOTE: Referring to the total number of the printed pages, determine if any regularly replaced part needs replacing, and replace it if necessary.

REPLACING THE CONSUMABLES AND REGULARLY REPLACED PARTS

Replace any regularly replaced part if necessary. (See Section 6.3 "Consumable Replacement" and Section 6.4 "Regularly Replaced Parts Replacement".)

CHECKING OVERALL PRINTER OPERATION

After servicing, give an overall checking to the printer. Print some status sheets and a test prints, both single and double side print with the Option Duplex installed, with the data transportation from the host computer. Check the following:

1. Print quality: Check that print quality is good.
2. Operation: Check that paper is fed properly and there is no abnormal noise.

FINAL CHECKOUT

1. Check exterior view of the printer.
2. If necessary, give an instruction to the users.
 - How to clear the paper jam error
 - How to replace the consumables
 - What kind of paper can be used for the printer.

6.2 Maintenance Menu

The Maintenance Menu contains the following functions:

1. Shows life counter values for:
 - 1) the Consumabl/Regularly Replaced parts (See 6.3.)
 - 2) the Main After-Sales parts (See 6.4.)
 - 3) the total number of printed pages and color print pages.
2. Resets the counter values for the Regularly Replaced parts and the Main After-Sales parts.
3. Resets the counter values for total printed page number and total color print pages.

The Regularly Replaced parts refer to MAIN FUSER ASSY. The Main After-Sales parts refer to 2nd BTR, IBT CLEANER, IBT BELT, and C/M/Y/K DEVELOPER.

After replacing the parts mentioned above, return to the Maintenance Menu and reset the concerned counter values. After resetting the counter values, be sure to open and close the FRONT COVER.

NOTE: 1. Be sure to remove all interface cables.
2. Make sure the "Service call error" is occurred.
3. In order to end the Maintenance Menu, make sure the engine is not alive, and then, turn the power off.

6.2.1 Entry to the Maintenance Menu

CAUTION


- Make sure the following conditions before entering the Maintenance menu:
 - All interface cables are disconnected.
 - “Service Call Error” is not indicated.
- Before exiting the menu, ensure the engine is not live. If not, you can turn the printer off.

1. Turn the printer on while pressing the “On Line”, “Form Feed”, and “Continue” at the same time. All LED lamps and the LCD come on and the following messages appear consequently in the LCD. (Keep the buttons down until instructed to do so.)

RAM CHECK **.*

NOTE: **. * represents numeric which counts up.

NOTE: Do not release the buttons until the next message appears.

MAINTENANCE MODE

Ready

(The printer is in a usual ready status.)

2. Referring to Figure 6-2 on the right, activate the desirable function through the panel operation.

CAUTION


If you reset the counter using the Maintenance Mode, open the cover once. Be sure the Cover Open Error is shown, then close the cover. If this operation is not properly done, the counter cannot be reset (due to the engine function).

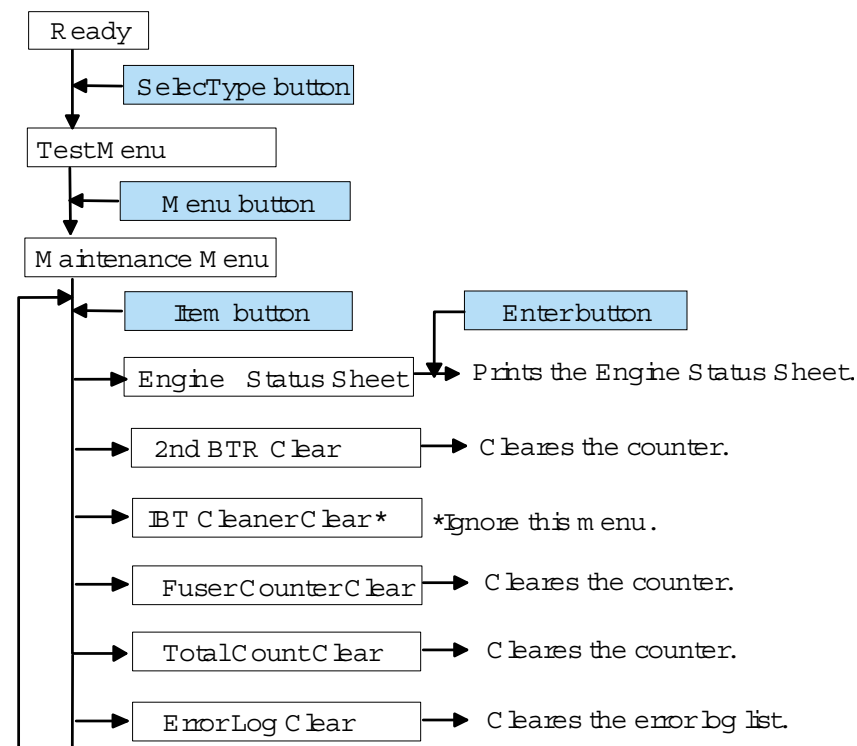


Figure 6-2. Maintenance Menu Operation

6.2.2 Engine Status Sheet

1. Total Counts

Total sheets:	Shows the same value as for Total Pages in the Setup Menu. Sheets are counted regardless of the sizes.
Total Plaes:	Shows the total number of planes. 1 plane = A4 LEF (each color)
Color Sheets:	Shows the same values as for the Color Page in the Setup Menu. Sheets are counted regardless of the sizes.

2. Jam Counts: Shows the number of times the jam occurred.

3. ET Cartridge

C Toner:	Shows the amount of the C Toner used (the dispense time. Unit: 100m seconds).
M Toner:	Shows the amount of the M Toner used (the dispense time. Unit: 100m seconds).
Y Toner:	Shows the amount of the Y Toner used (the dispense time. Unit: 100m seconds).
K Toner:	Shows the amount of the K Toner used (the dispense time. Unit: 100m seconds).

4. Xero CRU: Shows the amount of the Photoconductor Unit used (the number of rotation times). When a new Photoconductor Unit is installed, the count is reset.

5. Fuser: Shows the amount of the Fuser Unit used. The indicated value is the total number of sheets printed after the “FuserUnit Clear” is executed in the Maintenance Mode.

6. 2nd BTR: Shows the amount of the 2nd BTRused. The indicated value is the total number of sheets printed after the “2nd BTR Clear” is executed in the Maintenance Mode.

7. IBT Cleaner: Shows the amount of the IBT Cleaner used. The indicated value is the number of sheets printed after the “IBT Cleaner Clear” is executed in the MaintenanceMode.

8. Development Unit

Deve C:	Shows the amount of the Development Unit C used. The indicated value is the number of sheets printed after the “C DevelopmentClear” is executed in the MaintenanceMode.
Deve M:	Shows the amount of the Development Unit M used. The indicated value is the number of sheets printed after the “M DevelopmentClear” is executed in the MaintenanceMode.
Deve Y:	Shows the amount of the Development Unit Y used. The indicated value is the number of sheets printed after the “Y DevelopmentClear” is executed in the MaintenanceMode.
Deve K:	Shows the amount of the Development Unit K used. The indicated value is the number of sheets printed after the “K DevelopmentClear” is executed in the MaintenanceMode.

9. IBT Belt: Shows the amount of the IBT Belt used. The indicated value is the number of the IBT Belt cycle (rotation times) after the “IBT Belt Clear” is executed in the Maintenance Menu.

10. 2nd BTR Offset

Plain Paper 1 : Shows the offset value of the 2nd BTR transfer voltage for Plain Paper 1.

Transparency : Shows the offset value of the 2nd BTR transfer voltage for transparency.

Cover : Shows the offset value of the 2nd BTR transfer voltage for the cover.

Coated Paper 1 : Shows the offset value of the 2nd BTR transfer voltage for Coated Paper 1.

Card : Shows the offset value of the 2nd BTR transfer voltage for the card.

Envelope : Shows the offset value of the 2nd BTR transfer voltage for the envelope.

11. Engine Version

MCU : The value calculated from the engine side with the mechanism controller version in the printer.

Example: For Version 1.03.02,

the value is indicated as “010302”.

Duplex: The value calculated from the engine side with the mechanism controller version in the printer.

Example: For Version 0.1.29,

the value is indicated as “000129”.

LCC: The value calculated from the engine side with the mechanism controller version in the printer.

Example: For Version 0.1.27,

the value is indicated as “000127”.

12. Error Log

Llists the latest 20 errors indicating the corresponding panel messages, EJJ status codes, and Total Pages. The most recent error appears at the top of the list, and then the rest in order of recentness. The errors appear are "Service Req efff " (excluding ones that occur during warming-up) and "Jam xxxxx". If an error occurs when another error is already recorded for the same Total Pages, the recent one is not included in the list.

Engine Status Sheet					
Total Counts					
Total Pages		99,999,999	pages		
Total Planes		99,999,999	planes		
Color Pages		99,999,999	pages		
Jam Counts		100,000			
ET Cartridge					
C Toner		10,000	(100msec)		
M Toner		10,000	(100msec)		
Y Toner		10,000	(100msec)		
K Toner		12,500	(100msec)		
Xero CRU			cycle		
Fuser		999,999	pages		
2nd BTR		999,999	pages		
IBT Cleaner		999,999	pages		
IBT Belt		999,999	cycle		
Development Unit					
C Development		999,999	planes		
M Development		999,999	planes		
Y Development		999,999	planes		
K Development		999,999	planes		
2nd BTR Offset					
Plain Paper 1		3			
Transparency		3			
Cover		3			
Coated Paper 1		3			
Card		3			
Envelope		3			
Engine Version					
MCU		010302			
Duplex		000129			
LCC		000127			
Error Log					
Panel Message	Code	Page	Date	Time	
zzzzzzzzzzzzzzzzzzzzzzzzzzz	xxxx	yyyyyyyyy	YYYY/MM/DD	HH:MM	
zzzzzzzzzzzzzzzzzzzzzzzzzzz	xxxx	yyyyyyyyy	YYYY/MM/DD	HH:MM	
zzzzzzzzzzzzzzzzzzzzzzzzzzz	xxxx	yyyyyyyyy	YYYY/MM/DD	HH:MM	

The detailed information for the Engine Status Sheet and

Table 6-1. Engine Status Sheet Information Details

Information	Kept by:	Counter limit *1	Count unit	When to count	Conditions for clearing the counter	Where to store
Total Sheets Total Planes Color Sheets	Engine Engine Controller	~ 99,999,999 ~ 99,999,999 ~ 99,999,999	Sheets Planes Sheets	Printing Transferring Printing	Maintenance Menu>Total Counter Clear Maintenance Menu>Total Counter Clear EJL, (EEPROM Initialization)*2, Maintenance Menu>Total Counter Clear	MCU PWB MCU PWB CONTROLLER PWB
Jam Counts	Controller	~ 100,000	Times	Jam occurrence	(EEPROM Initialization) *2	CONTROLLER PWB
C Toner M Toner Y Toner K Toner	Engine Engine Engine Engine	~ 12,000 ~ 11,200 ~ 12,000 ~ 12,250	100msec 100msec 100msec 100msec	Supplying toner to the Developer Assy	Detection of a new C Toner Cartridge Detection of a new M Toner Cartridge Detection of a new Y Toner Cartridge Detection of a new K Toner Cartridge	MCU PWB
Xero CRU	Engine	~ 110,000	Cycle	The photoconductor unit rotates.	Detection of a new Photoconductor	DRUM CARTRIDGE
Fuser Oil Fuser Oil (Rate) Fuser (Dispense)	Engine Engine Engine	~ 20,000 ~ 133,300 ~ 70,564	Sheets Sheets 100msec	Printing Printing Supplying toner to the Developer Assy	Detection of a new Fuser Oil Roll Detection of a new Fuser Oil Roll SelectType, Maintenance Menu>Fuser Counter Clear	MCU PWB
Fuser (Planes)	Engine	~ 250,000	Planes	Transferring	Maintenance Menu>Fuser Counter Clear	
2nd BTR	Engine	~ 100,000	Sheets	Printing	Maintenance Menu>2nd BTR Clear	MCU PWB
IBT Cleaner	Engine	~ 999,999	Sheets	Printing	Maintenance Menu>IBT Cleaner Clear	MCU PWB
MCU	Engine	–	–	–	–	MCU PWB
Error Code 1 Error Page 1 : Error Code 20 Error Page 20	Controller Controller Controller Controller	– – – –	– – – –	Error occurrence Error occurrence Error occurrence Error occurrence	Maintenance Menu>Error Log Clear, (EEPROM Initialization) *2	CONTROLLER PWB

*1: If the counter kept by the controller reaches the limit, it will not add point anymore.

*2: Means the counter is cleared as a result of the “EEPROM Initialization”, one of the power-on operations.

6.3 Consumable Replacement

This printer allows the users to replace the consumables. The consumables includes the following 3 items shown in Figure 6-4 on the right.

The life information on the consumables is as follows:

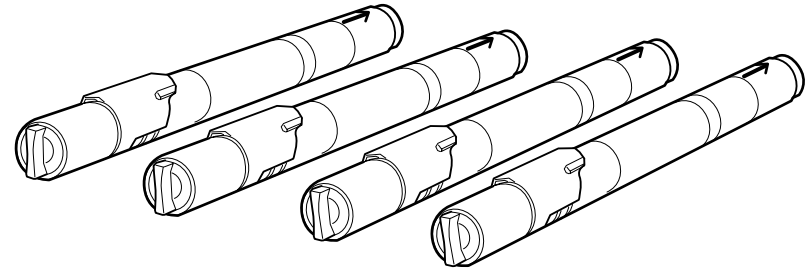
Step 1: Warning indication "NEAR END" on the LCD

Step 2: Life "END" indication on the LCD

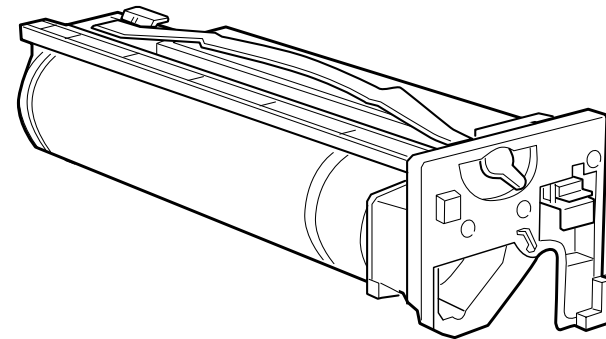
As for the toner level, the users can check by printing a status sheet or panel operation, or "EPSON printer window 3."

The service men, on the other hand, can access to detailed information, including the life end warning, by using the Maintenance Mode. Referring to the statistics, replacement timing for each item is assumed. The following sections show the replacement procedures for each consumable item.

a) TONER CARTRIDGE



b) PHOTOCONDUCTOR UNIT



c) WASTE TONER BOX

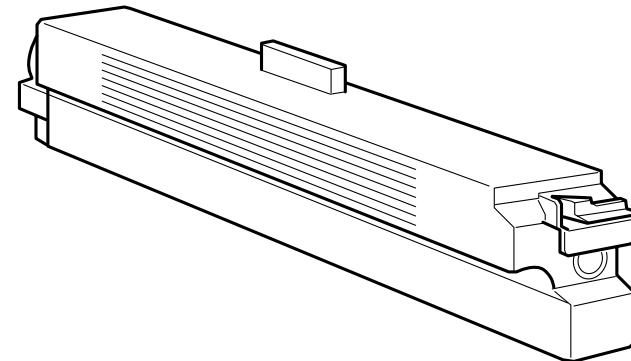


Figure 6-3. Consumables

6.3.1 TONER CARTRIDGE Replacement

TONER CARTRIDGE includes Yellow, Magenta, Cyan, and K (Black) toner cartridges.

Toner cartridges.

CAUTION



- Ensure that the colors of the TONER CARTRIDGE to be installed and the toner cartridge installation position are the same.
- Never use the TONER CARTRIDGE once taken out.
- If you have moved the TONER CARTRIDGE from a warm place into a cold place, leave it in a room temperature for 1 hour or more. Otherwise, the printer may produce abnormal printing due to condensation.
- If toner gets on your hands or cloth, wash it off with water. Toner is harmless to human body but hard to come off once left on skin or clothes.
- You must put used TONER CARTRIDGES in a plastic bag and disposed of them as inflammable, strictly following the local regulation.

1. Referring to the LCD message, check the color of the TONER CARTRIDGE which needs to be replaced.
2. Open the FRONT COVER.

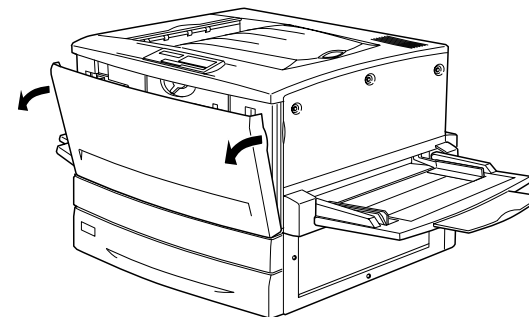


Figure 6-4. FRONT COVER Open

3. If you can see the color that you need to replace at the installation window, go to Step 4. If you the cartridge to be replaced is not in the installation window, move it into the window by repeating the operation described in the figure below.

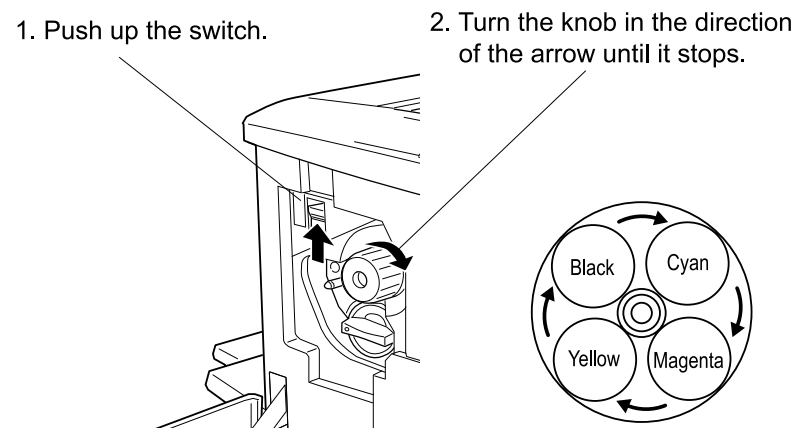


Figure 6-5. TONER CARTRIDGE Replacement 1

4. Remove the cartridge following the steps below:

- 1) Turn the cartridge knob counterclockwise 90 degrees so that the ● symbol on the knob is aligned with the unlocking symbol.

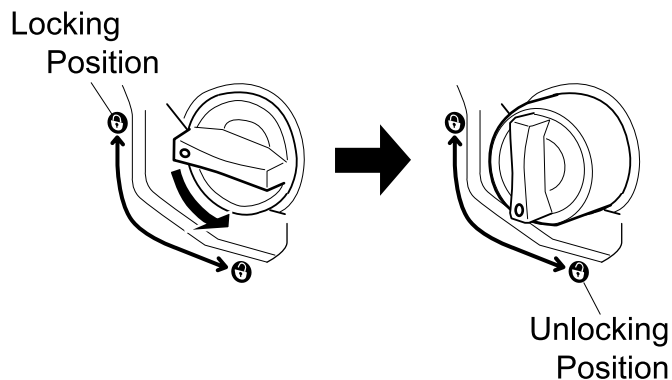


Figure 6-6. TONER CARTRIDGE Replacement 2

- 2) Pull the cartridge horizontally out of the slot.

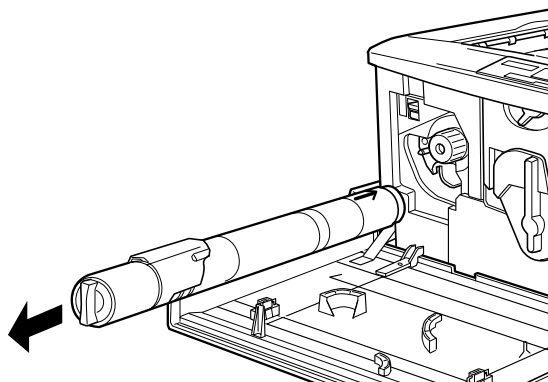


Figure 6-7. TONER CARTRIDGE Replacement 3

NOTE: Put the cartridge in a plastic bag and dispose of it as inflammable.

5. Hold a new TONER CARTRIDGE by the right and left ends and gently shake it up and down to distribute toner evenly.

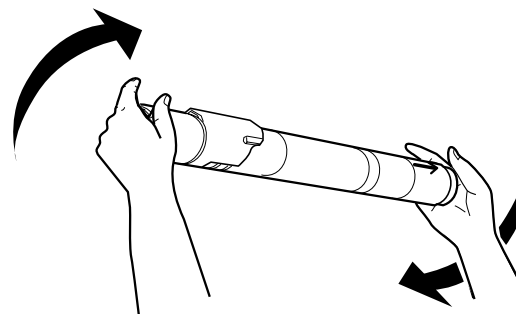


Figure 6-8. TONER CARTRIDGE Replacement 4

6. Reinsert the cartridge following the steps below:

- 1) Hold the cartridge the orange arrow side up. Insert it all the way into the cartridge slot until the cartridge end hits the slot end.

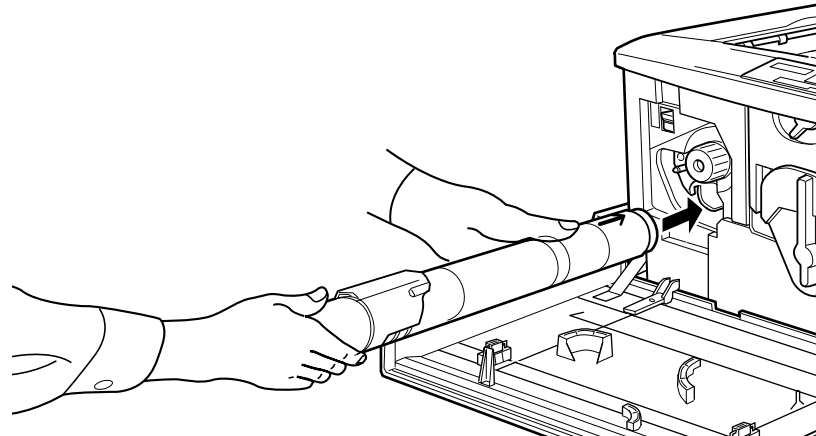


Figure 6-9. TONER CARTRIDGE Replacement 5

NOTE: If the TONER CARTRIDGE is not properly positioned, it may cause toner to spill inside the printer and bring out low print quality and printer malfunction and errors.

- 2) Turn the cartridge knob counterclockwise 90 degrees so that the ● symbol on the knob is aligned with the locking symbol. When the knob is turned all the way and set horizontally, TONER CARTRIDGE replacement is completed.

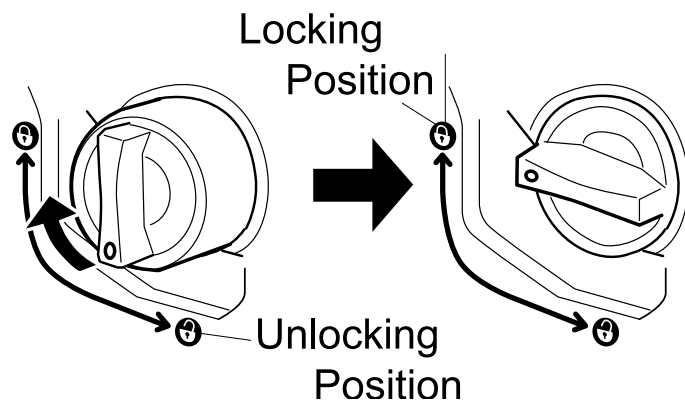


Figure 6-10. TONER CARTRIDGE Replacement 6

7. To replace the TONER CARTRIDGES for other colors, follow the same operations described in Step 3 to 6.
8. Close the FRONT COVER and check if the LCD is indicating "Ready".

NOTE: The TONER CARTRIDGE counter is automatically reset when a new TONER CARTRIDGE is detected.

6.3.2 PHOTOCONDUCTOR UNIT Replacement

The PHOTOCONDUCTOR of the DRUM CARTRIDGE is exposed by the ROS ASSEMBLY and developed by the DEVELOPER ASSEMBLY, and transmits images onto the IBT.

The consumable DRUM CARTRIDGE ASSEMBLY contains the WASTE TONER BOX.

CAUTION


- When replacing the DRUM CARTRIDGE, be sure to turn the printer power off.
- DO NOT touch the surface of the photoconductor (a blue cylindrical part) with your hands. Also handle it with a care since scratches and oil from your skin can damage its surface and may affect print quality.
- Avoid exposing the DRUM CARTRIDGE to the direct sunlight and strong light. Even in a room light, do not leave it for more than 5 minutes.
- In order to avoid scratching the photoconductor surface, work with it on a flat table.
- DO NOT reuse the toner in the WASTE TONER BOX.
- Be sure to put the used DRUM CARTRIDGE in a plastic bag and disposed of it as inflammable, strictly following the local regulation.

1. Turn the printer power on.
2. Open the FRONT COVER.

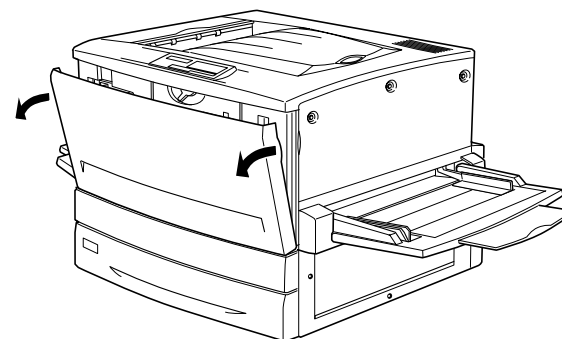


Figure 6-11. Front Cover Open

3. Turn the TENSION LEVER in the direction indicated with the arrow. (See the left of Figure 6-12 below.)
4. Turn the DRUM CARTRIDGE LEVER in the direction indicated with the arrow. (See the right of Figure 6-12 below.)

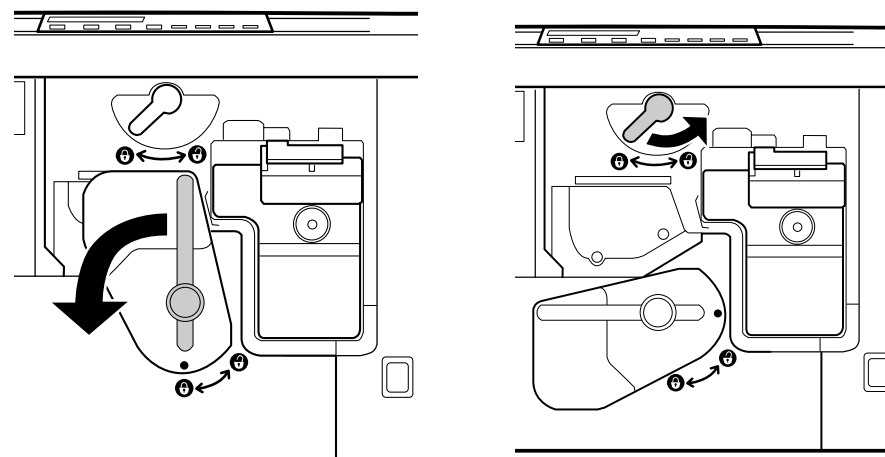


Figure 6-12. DRUM CARTRIDGE Replacement 1

5. Hold the handle in the DRUM CARTRIDGE and pull the DRAM CARTRIDGE out approximately 20 cm (8 inches).
6. Hold the handle on top of the DRUM CARTRIDGE and pull the DRUM CARTRIDGE all the way out carefully.

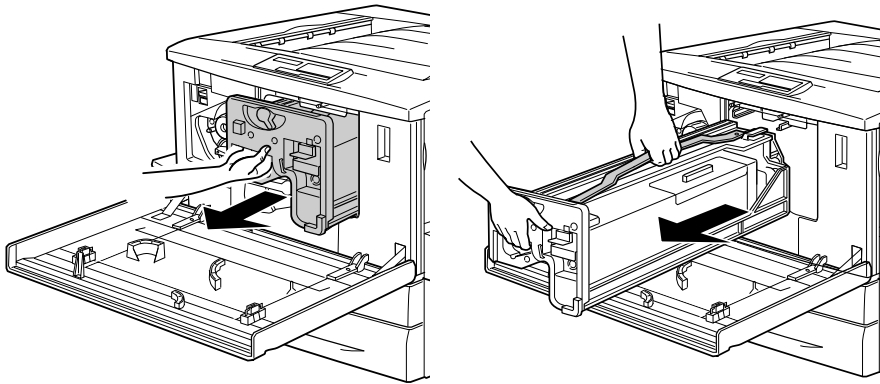


Figure 6-13. DRUM CARTRIDGE Replacement 2

7. Remove the protective sheet on a new DRUM CARTRIDGE.

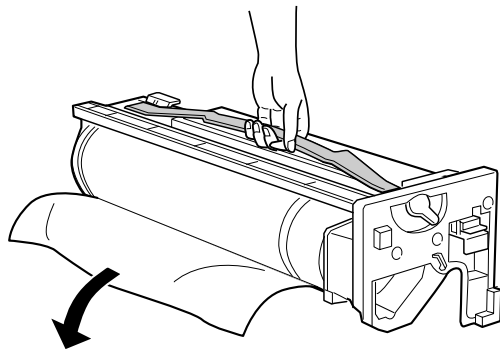


Figure 6-14. DRUM CARTRIDGE Replacement 3

8. Hold the orange handle on top of the DRUM CARTRIDGE and place the right and left guide edges on the rails in the printer. Then, insert the DRUM CARTRIDGE straight into the printer. Be sure to push it enough to feel resistance.

NOTE: Ensure that the photoconductor (a blue cylindrical part) is not in contact with any parts inside the printer during its installation.

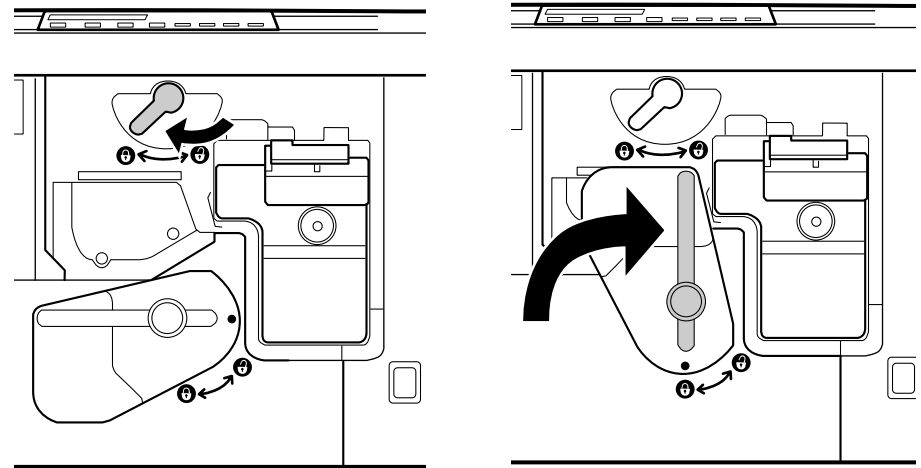


Figure 6-15. DRUM CARTRIDGE Replacement 4

9. Turn the lever on the DRUM CARTRIDGE, in the direction indicated with the arrow.
10. Close the FRONT COVER.
11. Turn the printer power off. After a few seconds, turn the power on again and restart the printer.

6.3.3 WASTE TONER BOX Replacement

The WASTE TONER BOX is to collect the excess toner released when printing. The consumable DRUM CARTRIDGE contains the WASTE TONER BOX. Therefore, if you replace the DRUM CARTRIDGE with a new one, the WASTE TONER BOX does not need to be replaced.

CAUTION

- DO not reuse the toner in the WASTE TONER BOX.
- Be sure to put the used WASTE TONER BOX in a plastic bag and disposed of it as inflammable, strictly following the local regulation.

1. Open the FRONT COVER.

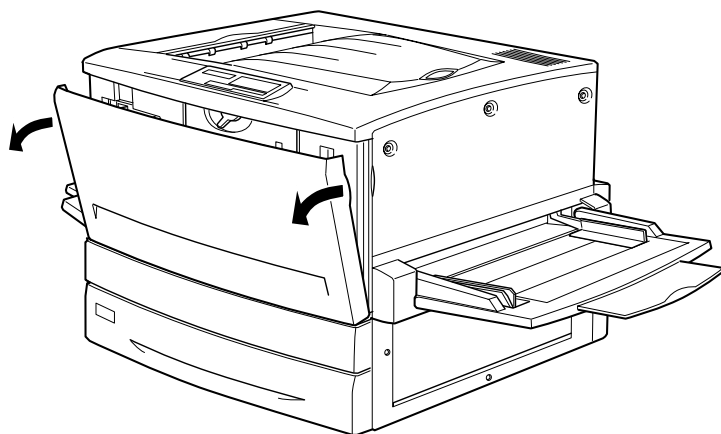


Figure 6-16. FRONT COVER Open

2. Hold the lever and push down the tab of the WASTE TONER BOX.



Figure 6-17. WASTE TONER BOX Replacement 1

3. Pull the WASTE TONER BOX straight out.

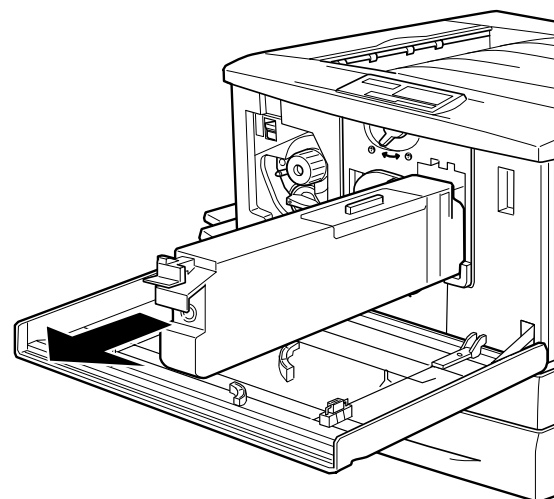


Figure 6-18. WASTE TONER BOX Replacement 2

4. Hold the handle on a new WASTE TONER BOX and insert it into the printer all the way until the tab clicks.

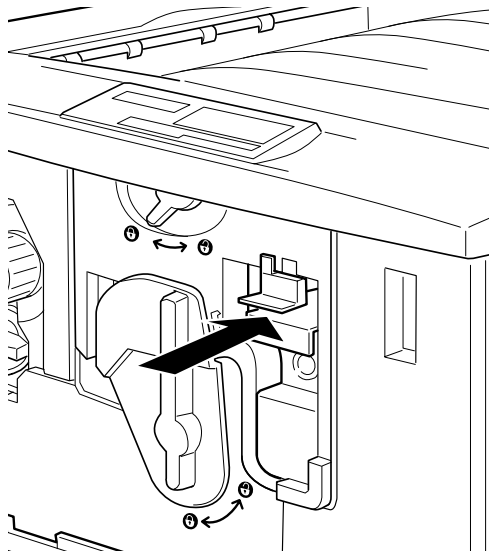


Figure 6-19. WASTE TONER BOX Replacement 3

5. Close the FRONT COVER. The printer automatically returns to the ready status.

6.4 Regularly Replaced Parts Replacement

The Regularly Replaced part for this printer, AcuLaser C8500, is the MAIN FUSER ASSY only. When you replace the MAIN FUSER ASSY, see Chapter 3, "Section 3.2.12.2".

After replacing the MAIN FUSER ASSY, be sure to reset the relevant counter in the Maintenance Menu.

6.5 Main After-Sales Parts Replacement

The Main After-Sales parts are as follows:

- 2ND BTR
- IBT CLEANER
- IBT BELT
- DEVELOPER C
- DEVELOPER M
- DEVELOPER Y
- DEVELOPER Bk

When you replace the parts above, refer to the relevant section in Chapter 3.

After replacing any of these parts, be sure to reset the relevant counter in the Maintenance Menu.

6.6 Installation

This section provides a guideline in order to install the printer on its place.

POWER



The printer must be connected singly by a power cable to an electrical outlet capable of supplying power greater than the maximum power consumption of the printer.

GROUND

The printer must be properly and reliably connected to earth.



- **Be sure to connect to one of the following.**
 - Electrical outlet earth terminal
 - Steel buried at least 650mm deep
 - Tertiary earth terminal
- **Do not connect to the following as earth for the printer.**
 - X Gas piping
 - X Dedicated telephone earth
 - X Water pipe partially made of plastic

SETUP LOCATIONS

- ☐ Provide enough space to operate the printer. (See Chapter 6, Figure 1-7)
- ☐ Avoid places subject to high temperatures, excessive humidity, low temperatures, excessively low humidity, and extreme temperature change.
- ☐ Avoid places near water lines and outlets, humidifiers, heaters, sources of fire, places exposed to excessive dust, or where air from an air conditioner strikes.
- ☐ Avoid places where volatile or combustible gases are produced.
- ☐ Avoid places exposed to direct sunlight.
- ☐ Avoid poorly ventilated places.
- ☐ Avoid places that are not solid and stable.
- ☐ Avoid places that are not flat and level.

UNPACKING THE PRINTER

Remove the printer from its packing crate and make sure you have the correct printer and correct number of accessories. Check the printer for any signs of damage, etc.

- Printer unit (including DRUM CARTRIDGE and UNIVERSAL CASSETTE)
- DRUM CARTRIDGE
- TONER CARTRIDGE Y
- TONER CARTRIDGE M
- TONER CARTRIDGE C
- TONER CARTRIDGE BK

- EXIT TRAY ASSY

- Power cord

SETUP PROCEDURE

For details, see the “Operating Instructions” manual.



- **The printer weighs approximately 71.2kg, and requires four people to carry it. Workers should be careful not to injure themselves when carrying the printer.**
- **Be sure to grip the handles with both hands when lifting the printer. Gripping the printer by any part other than the handles could result in dropping or equipment damage.**
- **When lifting the printer, bend your knees sufficiently to avoid hurting your back.**
- **The protective sheet, spacers, and fasteners are needed when relocating the printer. Be sure to store them for possible reuse in the future after setting up the printer.**

1. Make sure that all parts packed with the printer are present.
2. Remove the fastening tape from the printer.
3. Remove the fasteners.
4. Mount the EXIT TRAY ASSY on the FUSER ASSY.
5. Remove the protective sheet and mount the DRUM CARTRIDGE on the printer.

6. After removing the toner cartridge from its sealed package, hold the toner cartridge by both ends and shake firmly 7 or 8 times.
7. While turning the ROTARY FRAME ASSY, mount each toner cartridge.

NOTE: Be sure to mount the toner cartridge in the insertion section of the same color.

8. Close the FRONT COVER ASSY.
9. Pull out the UNIVERSAL CASSETTE and push up the BOTTOM PLATE ASSY for the UNIVERSAL CASSETTE and lock in the lower position.
10. Set paper in the UNIVERSAL CASSETTE.

NOTE: Observe the following when setting paper.

- 1) Align all 4 corners of the paper before setting.
- 2) Place the paper underneath the tabs in the front of the paper tray.
- 3) Adjust the paper guide to the size of the paper.

11. Adjust the paper guide to the size of the paper. Insert the UNIVERSAL CASSETTE and close.

12. Set paper in the MSI TRAY ASSY.

NOTE: Observe the following when setting paper.

- 1) Align all 4 corners of the paper before setting.
- 2) Adjust the paper guide to the size of the paper.

13. Connect the power cord.
14. Turn on the printer's power switch and turn the power on.
15. Test-print several pages from each paper feeder to make sure everything is functioning properly.

CHAPTER

7

APPENDIX

7.1 Overview

This chapter describes the printer parts. The parts are grouped into 15 major plates. These plates are divided further into the following 28 smaller plates. Each plate has an illustration and a corresponding parts list.

* PL1.1 Cover	* PL9.1 Fusing
* PL2.1 Paper Tray	* PL9.2 Fusing
* PL3.1 Paper Feeder	* PL9.3 Fusing
* PL4.1 MSI/Paper Transportation	* PL9.4 Fusing
* PL4.2 MSI/Paper Transportation	* PL10.1 Paper Exit
* PL4.3 MSI/Paper Transportation	* PL10.2 Paper Exit
* PL4.4 MSI/Paper Transportation	* PL11.1 Drive
* PL5.1 Omitted	* PL12.1 Frame
* PL6.1 Xerographics	* PL13.1 Electrical
* PL7.1 Development	* PL13.2 Electrical
* PL7.2 Development	* PL14.1 Controller
* PL8.1 IBT	* PL20.1 Option Tray
* PL8.2 IBT	* PL20.2 Option Tray
* PL8.3 IBT	* PL21.1 Option Tray
* PL8.4 IBT	

7.2 Parts List and Exploded Diagrams

7.2.1 How to Use the Parts List and Exploded Diagrams

Followings are the points to note when using the part list and exploded diagrams.

- The numbers in each illustration correspond to the parts list number for that illustration.
- PL "X.Y.Z" indicates part Z in Plate "X.Y."
- The capital letters shown in the illustrations stand for the following:
 - S: screw
 - E: E ring
 - KL: KL clip
 - C: C ring
 - N: nut
- The arrowheads in the illustrations indicate assemblies made up of lower parts with their numbers.
- A circled capital letter is connected to the same circled capital letter in the illustration.
- A "with 2-5" in the illustrations or list shows that the part includes items 2, 3, 4 and 5. A "with 2-5, PL6.1.1" shows that the part includes items 2, 3, 4 and 5 of the plate and also includes item 1 of plate 6.1.
- An asterisk (*) indicates that there is a note about the part on the same page.

NOTE: For spare parts, see the Spare Parts List (published separately).

NOTE: For harness and wire connectors (P/J), see Section 7.3 "Wiring Diagrams".

7.2.2 Parts List Tables

See the following table for parts numbers and names.

Table 7-1. Parts List

Part No.	Part Name
01-1-01	FRONT COVER ASSY
01-1-04	HINGE PLATE
01-1-05	FRONT LOWER COVER
01-1-06	FRONT MID COVER
01-1-10	L/H INNER COVER ASSY
01-1-12	ROTARY LATCH LEVER
01-1-13	ROTARY LATCH SPRING
01-1-14	IBT INNER COVER ASSY
01-1-15	R/H INNER COVER ASSY
01-1-21	TOP COVER
01-1-22	STOPPER COVER
01-1-31	REAR COVER
01-1-32	FILTER ASSY
01-1-35	REAR O/H COVER
01-1-40	LEFT LOWER COVER
01-1-41	LEFT O/H COVER
01-1-50	RIGHT LOWER COVER
01-1-51	RIGHT COVER ASSY
01-1-60	PANEL
01-1-70	“LOGO Plateaus”
02-1-01	UNIVERSAL TRAY
02-1-03	PLATE LINK SPRING

Table 7-1. Parts List

Part No.	Part Name
02-1-04	PLATE LINK
02-1-05	BOTTOM PLATE ASSY
02-1-06	TRAY N/F SPRING
02-1-08	FRONT GUIDE
02-1-09	FRONT SNUBBER
02-1-10	SNUBBER STOPPER
02-1-11	REAR GUIDE ASSY
02-1-15	REAR GUIDE SPRING
02-1-16	END GUIDE
02-1-17	TRAY SIZE ACUTUATOR
02-1-18	CESTOR GEAR
02-1-19	SPRING
03-1-01	TURN COVER STOPPER
03-1-05	SIZE SWITCH ASSY
03-1-07	TRAY SENSOR ASSY
03-1-11	TURN CHUTE UP ASSY
03-1-17	TURN CHUTE COVER
03-1-18	LOW PAPER SENSOR
03-1-21	TURN IN CHUTE
03-1-22	TURN CHUTE ASSY
03-1-23	TURN ROLL ASSY
03-1-25	TURN GEAR S
03-1-26	TURN GEAR L
03-1-27	TURN GEAR M
03-1-28	TURN GEAR D

Table 7-1. Parts List

Part No.	Part Name
03-1-29	FEED ROLL ASSY
03-1-31	FEED ROLL
03-1-35	FEED SOLENOID
03-1-36	FEED GEAR
03-1-37	FEED SPRING
03-1-38	FED IDLER GEAR
03-1-40	TRAY STOPPER
03-1-41	TURN UPPER CHUTE
03-1-42	TURN CLUTCH
03-1-46	TURN CHUTE HARNESS
03-1-47	TURN GEAR COVER
03-1-48	EXIT CHUTE SWITCH
04-1-03	EXIT CHUTE SWITCH
04-1-06	MSI ASSY
04-1-40	MAIN P/H FRAME ASSY
04-1-50	MSI TRAY ASSY
04-2-04	P/B PAD
04-2-08	MSI HARNESS ASSY
04-2-09	GEAR 28
04-2-10	BOTTOM PLATE SENSOR
04-2-20	LIFT UP FRAME ASSY
04-2-26	LIFT MOTOR ASSY
04-3-05	E.R.M. SENSOR
04-3-06	SENSOR
04-3-07	MSI N/P ACTUATOR

Table 7-1. Parts List

Part No.	Part Name
04-3-20	MSI FEED FRAME ASSY
04-3-23	BOTTOM PLATE SENSOR
04-3-28	ROLL
04-3-29	FEED ROLL
04-3-39	ETD SPRING
04-3-41	PICK UP CLUTCH
04-3-45	RETARD ROLL
04-4-03	P/REGI ROLL ASSY
04-4-04	PRE REGI CLUTCH ASSY
04-4-05	PRE REGI CLUTCH ASSY
04-4-16	REGI HARNESS ASSY
04-4-20	P/H FRONT RAIL-L
04-4-21	P/H REAR RAIL-L
04-4-24	SENSOR
04-4-25	SENSOR
06-1-01	ROS ASSY
06-1-20	ADC SENSOR ASSY
06-1-30	ERASE LAMP ASSY
06-1-42	WASTE TONER SENSOR
06-1-43	TONER BOX SENSOR
06-1-44	TONER BOX HARNESS
06-1-50	BCR CONNECTOR ASSY
06-1-60	RECEPTACLE ASSY
06-1-70	CRUM CONNECTOR ASSY
07-1-10	ET CARTRIDGE YELLOW UNIT

Table 7-1. Parts List

Part No.	Part Name
07-1-20	ET CARTRIDGE MAGENTA UNIT
07-1-30	ET CARTRIDGE CYAN UNIT
07-1-40	ET CARTRIDGE BLACK UNIT
07-2-05	ROTARY LATCH ASSY
07-2-11	DEVE.CONTACT PLATE ASSY
07-2-22	ROTARY SENSOR
07-2-32	USED CART.SENSOR
08-1-01	2ND BTR CAM ASSY
08-1-02	BTR REAR BRACKET ASSY
08-1-06	AUGER HIGH ASSY
08-1-11	IBT REAR BRACKET ASSY
08-1-20	TRANSFER HIGH ASSY
08-1-21	TENSION LEVER
08-1-22	2ND BTR ASSY
08-1-23	BELT CLEANER ASSY
08-2-02	IBT BELT ASSY
08-2-33	TRO SENSOR
08-3-02	BTR CAM CLUTCH
08-3-03	CAM ASSY-M
08-3-04	BOTTOM PLATE SENSOR
09-1-02	MAIN FUSER ASSY+
09-1-03	FUSER TRAY ASSY
09-2-03	E.R.M. SENSOR
09-2-04	E.R.M. SENSOR
09-2-06	TEMP.SENSOR ASSY

Table 7-1. Parts List

Part No.	Part Name
09-2-10	PRESSURE ROLL
09-2-13	LOWER GUIDE ASSY
09-2-25	HEAT ROLL
09-2-26	BEARING
09-2-28	H/R GEAR
09-2-29	H/R RING
09-2-30	FUSER UPPER ASSY+
09-2-31	STS SEAL
09-2-32	SEAL Q/L
09-2-37	H/R HEATER
09-2-38	P/R HEATER
09-2-43	FUSER NIP HANDLE
09-3-04	FUSER TRAY LEVER
09-3-05	FUSER TRAY CAP-B
09-3-06	FUSER FRONT RAIL
09-3-07	FUSER REAR RAIL
09-3-14	EXIT-1 ROLL ASSY
09-3-17	EXCHANGE CHUTE
09-3-22	EXCHANGE SOLENOID
09-3-29	FUSER HARNESS ASSY
09-4-03	FUSER TRAY CAP-A
09-4-04	E.R.M. SENSOR
09-4-07	FUSER IN ACTUATOR
09-4-08	FUSER IN SPRING
09-4-10	FUSER CHUTE FAN

Table 7-1. Parts List

Part No.	Part Name
09-4-14	INPUT BRACKET ASSY
09-4-22	CLEANER CAM GEAR
09-4-24	CLEANER CAM SOLENOID
09-4-25	CLEANER CAM ASSY
10-1-01	EXIT LOWER ASSY
10-1-02	EXIT UPPER ASSY
10-1-10	EXIT TRAY ASSY
10-2-04	FUSER PINCH ASSY
10-2-05	EXIT-2 ROLL ASSY
10-2-06	EXIT-3 ROLL ASSY
10-2-12	TOP EXIT SENSOR
10-2-13	EXIT CHUTE SWITCH
10-2-14	EXIT HARNESS
10-2-15	FUSER FAN-1
10-2-16	EXIT CHUTE FAN
11-1-01	P/H DRIVE ASSY
11-1-02	FUSER DRIVE ASSY
11-1-04	FUSER MOTOR ASSY
11-1-05	P/H MOTOR ASSY
11-1-06	DRIVE MOTOR PWB
11-1-10	PROCESS DRIVE ASSY
11-1-20	ROTARY MOTOR ASSY
11-1-21	ROTARY MOTOR DRIVE PWB
11-1-22	DISPENSE CLUTCH ASSY
11-1-23	DEVE.CLUTCH ASSY

Table 7-1. Parts List

Part No.	Part Name
12-1-28	FRAME FOOT
12-1-29	SHEET CLAMP
13-1-01	LVPS
13-1-02	HVPS
13-1-03	TOP COVER SWITCH
13-1-05	DEVE.FAN
13-1-14	BCR WIRE
13-1-15	DEVE.WIRE
13-1-16	MAIN HARNESS ASSY
13-1-17	FUSER CONNECTOR
13-1-20	POWER CORD
13-2-01	MCU PWB
13-2-02	COMMUNICATION PWB
13-2-03	FRONT COVER SWITCH R
13-2-04	FRONT COVER SWITCH L
13-2-05	ENVIRONMENT SENSOR
13-2-20	P/H HARNESS ASSY
13-2-21	ROS HARNESS
14-1-01	CONT.CHASSIS ASSY
14-1-02	CONTROLLER FAN
14-1-20	WIRE HARNESS
14-1-26	“GROUNDING SPRING,TYPE-B”
14-1-27	GUIDE RAIL

7.2.3 Exploded Diagrams

See the following parts for the exploded locations.

These parts are for AcuLaser C8500 as well as LP-8500C.

The parts to which no reference number is assigned will not be available as after-sale service parts.

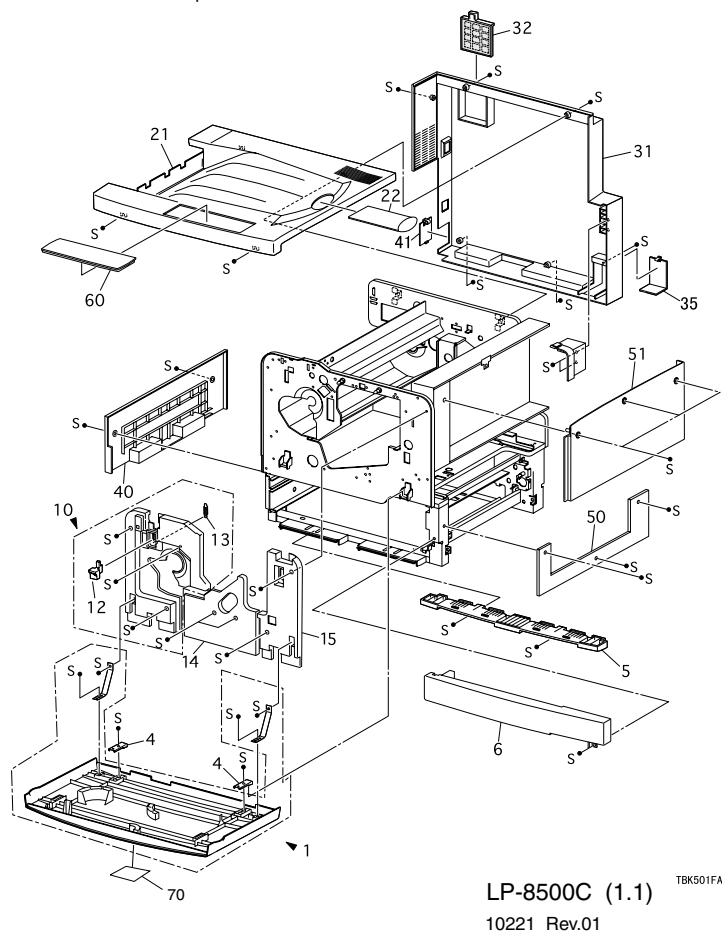


Figure 7-1. PL1.1 Cover

The parts to which no reference number is assigned will not be available as after-sale service parts.

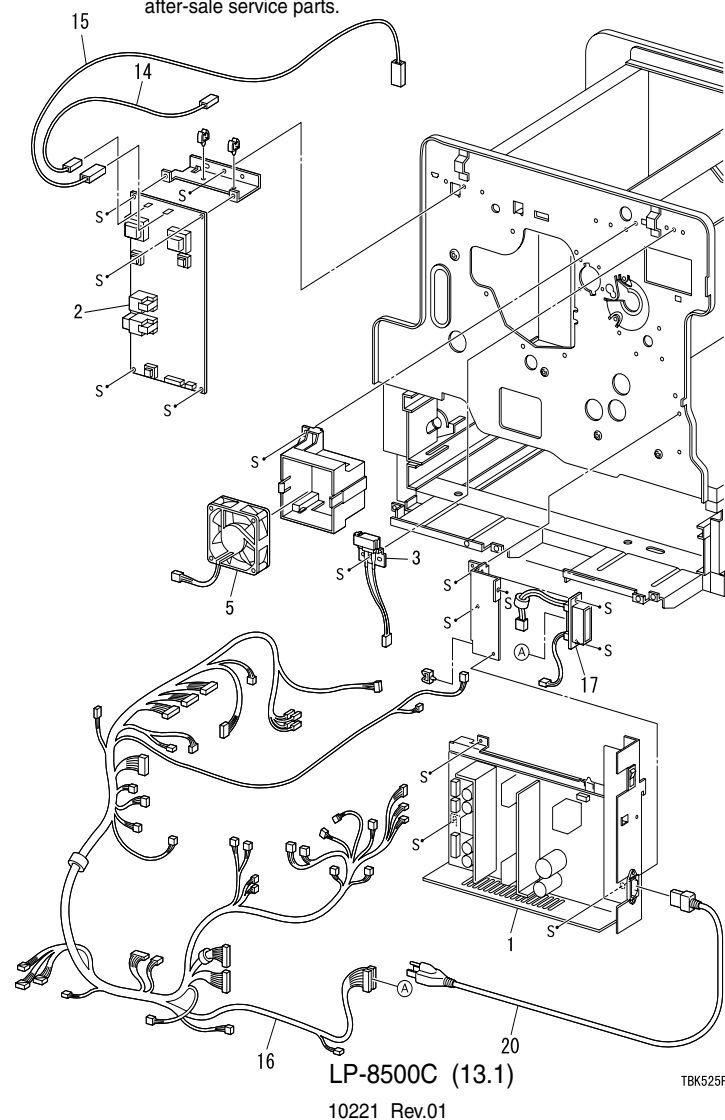
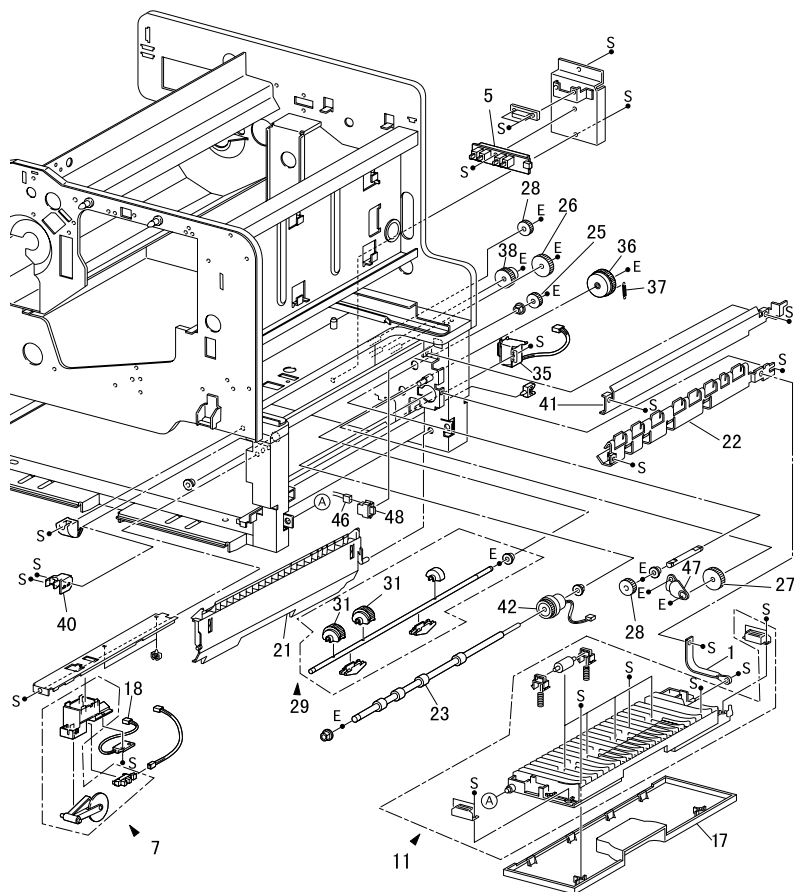


Figure 7-2. PL2.1 Paper Tray

The parts to which no reference number is assigned will not be available as after-sale service parts.



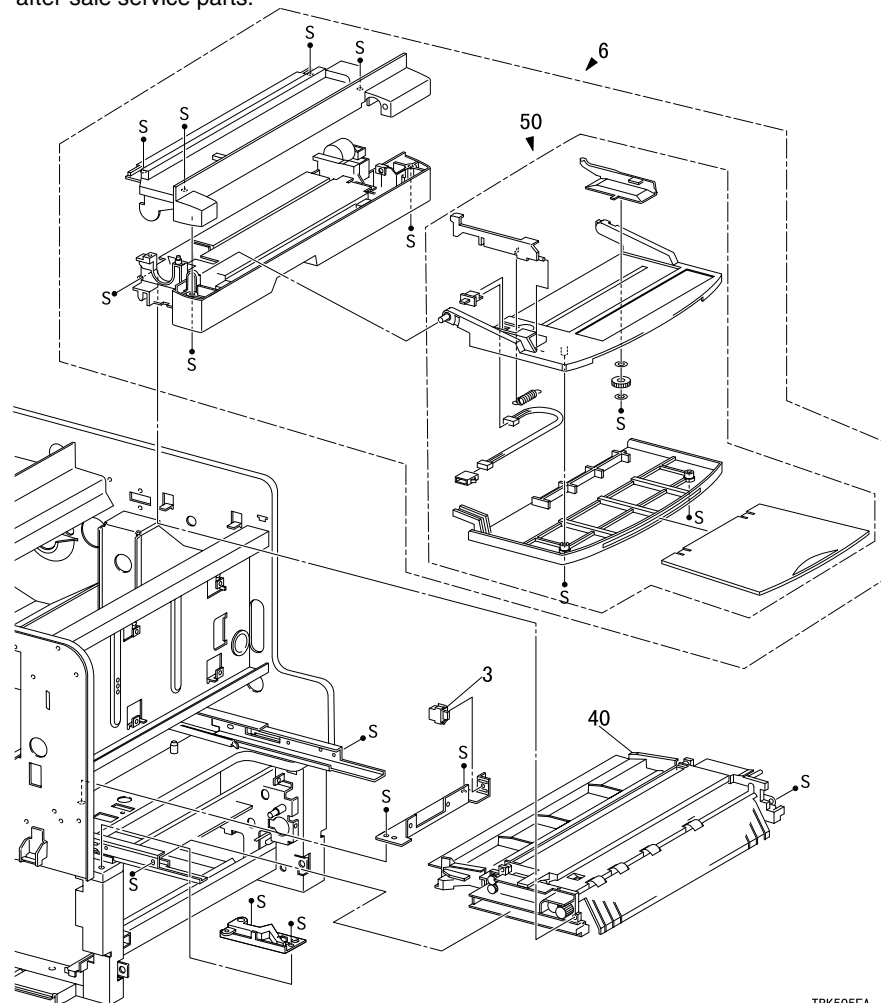
LP-8500C (3.1)

10221 Rev.01

TBK504FA

Figure 7-3. PL3.1 Paper Feeder

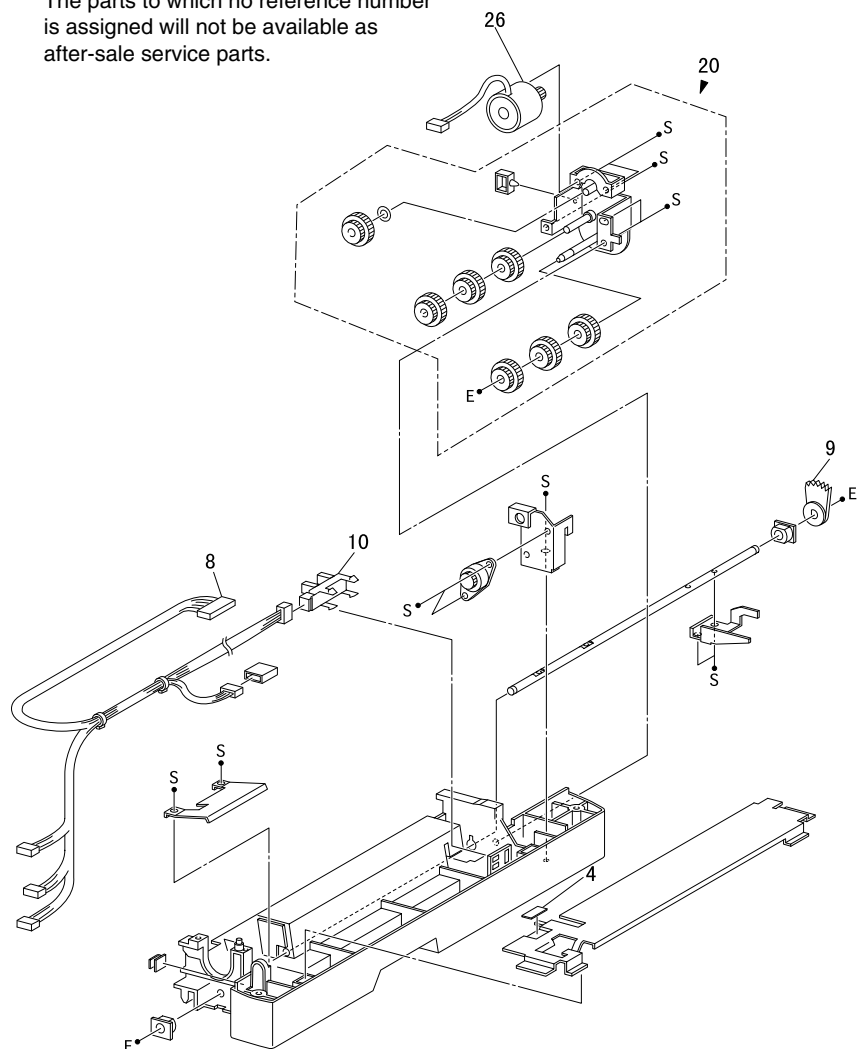
The parts to which no reference number is assigned will not be available as after-sale service parts.



TBK505FA

Figure 7-4. PL4.1 MSI/Paper Transportation 1

The parts to which no reference number is assigned will not be available as after-sale service parts.

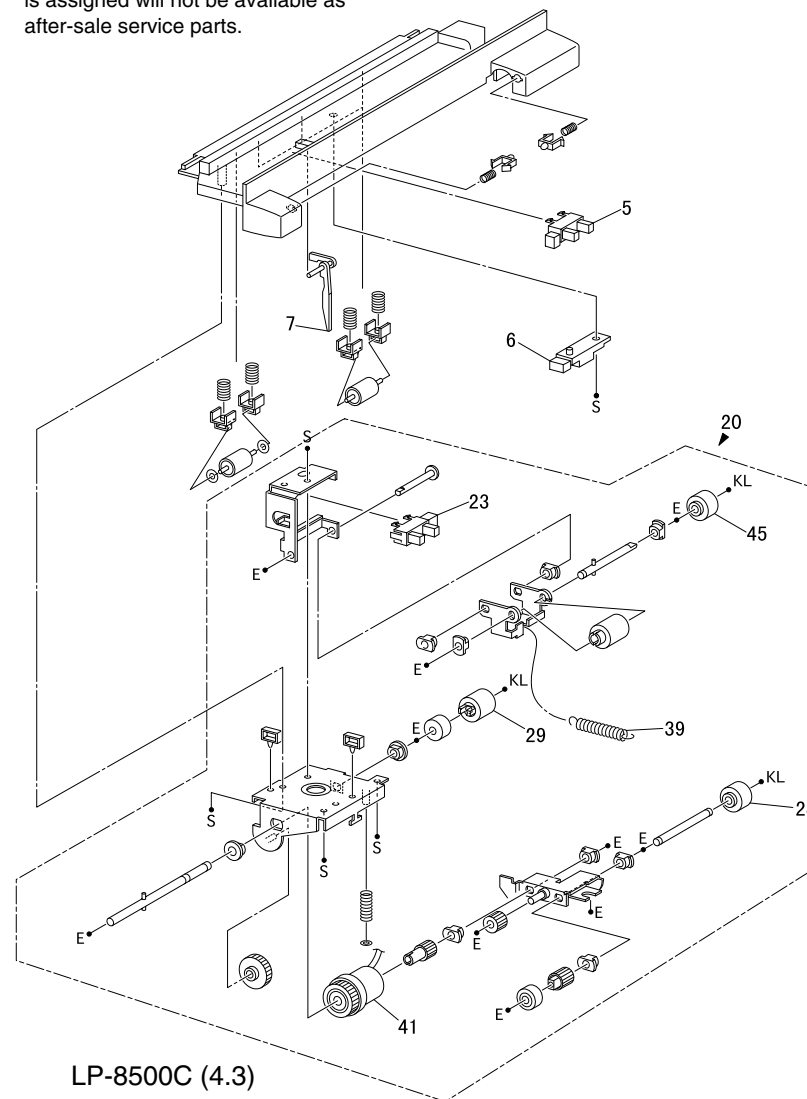


LP-8500C(4.2)
10221 Rev.01

TBK506FA

Figure 7-5. PL4.2 MSI/Paper Transportation 2

The parts to which no reference number is assigned will not be available as after-sale service parts.

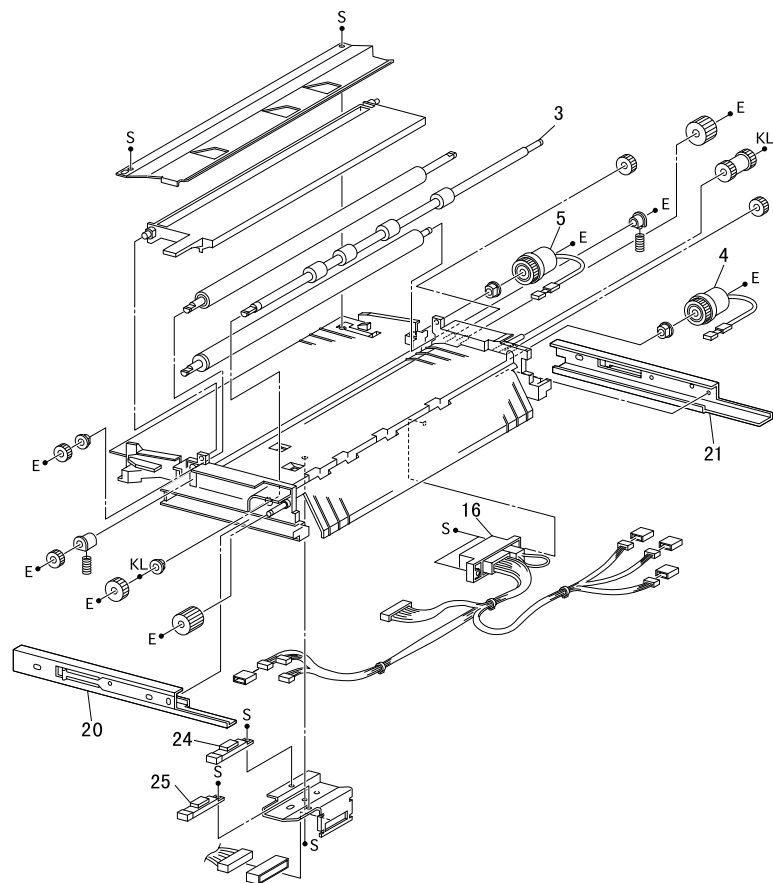


LP-8500C (4.3)
10221 Rev.01

TBK507FA

Figure 7-6. PL4.3 MSI/Paper Transportation 3

The parts to which no reference number is assigned will not be available as after-sale service parts.

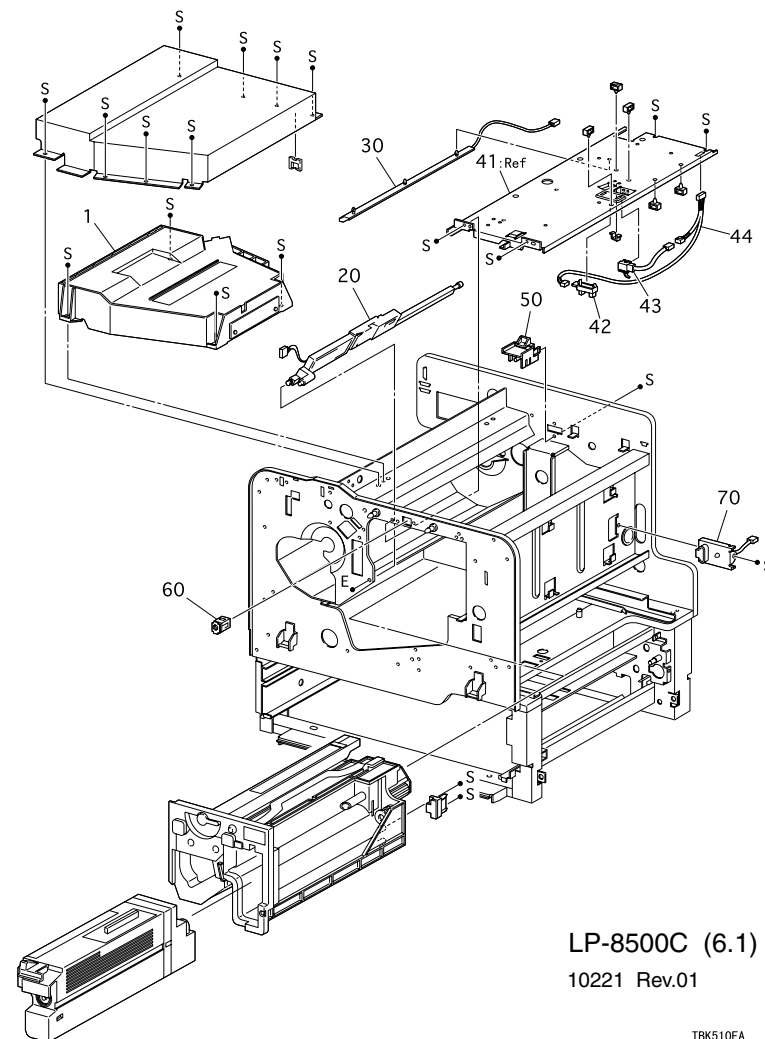


TBK508FA

LP-8500C (4.4)
10221 Rev.01

Figure 7-7. PL4.4 MSI/Paper Transportation 4

The parts to which no reference number is assigned will not be available as after-sale service parts.

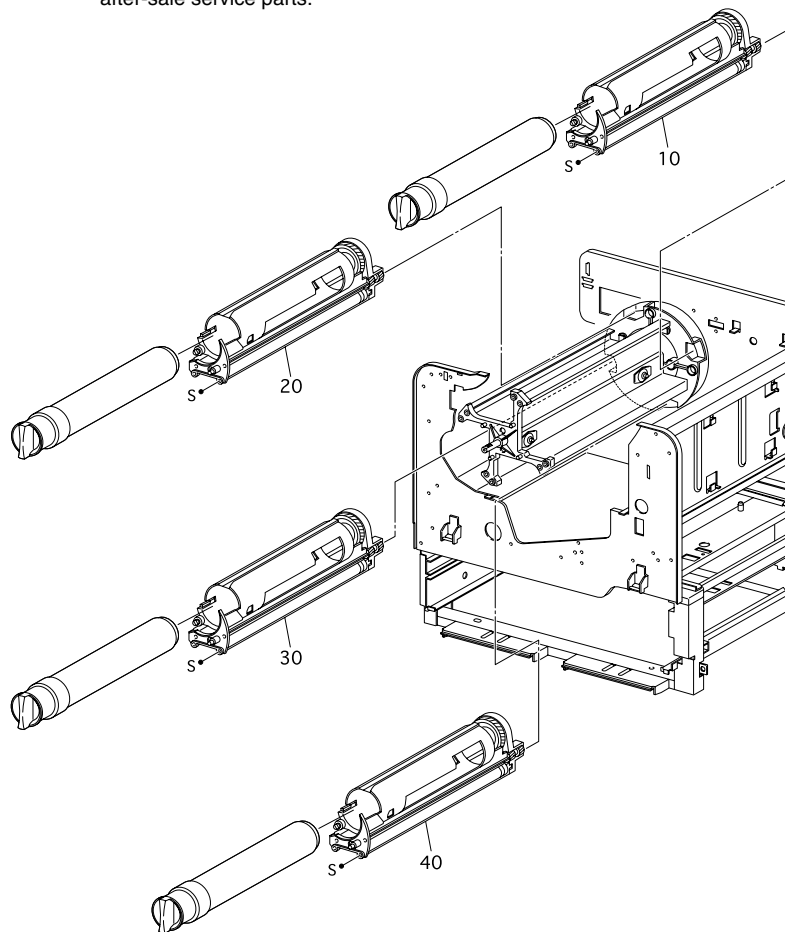


TBK510FA

LP-8500C (6.1)
10221 Rev.01

Figure 7-8. L6.1 Xerographics

The parts to which no reference number is assigned will not be available as after-sale service parts.



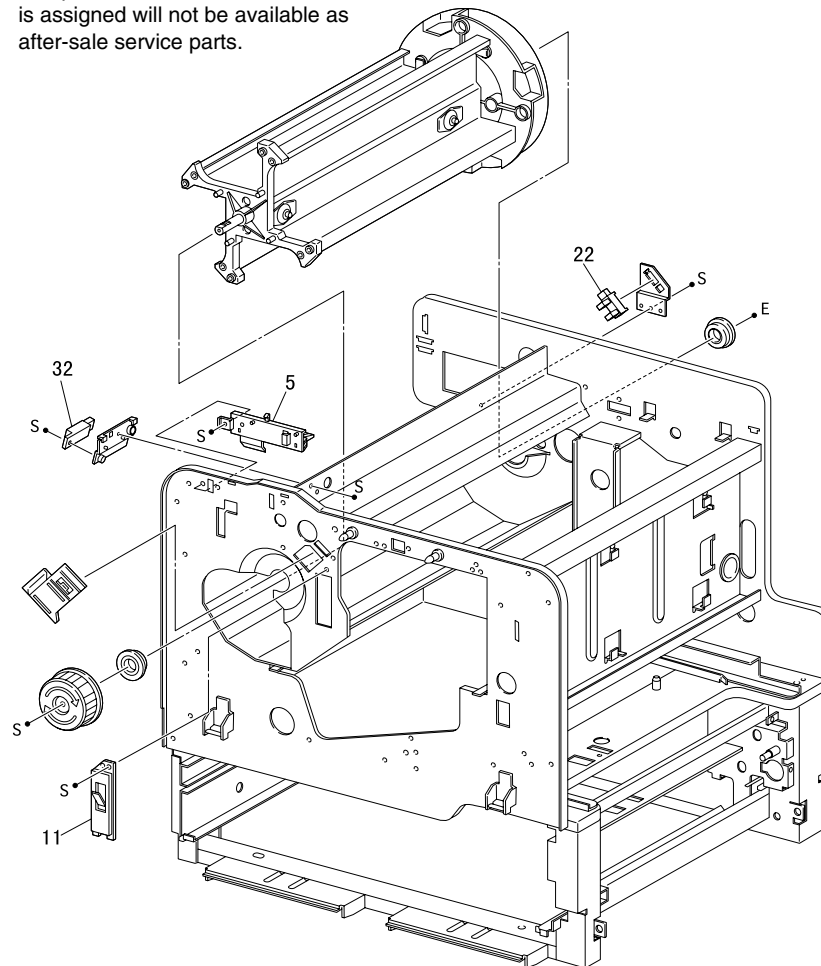
LP-8500C (7.1)

10221 Rev.01

TBK511FA

Figure 7-9. PL7.1 Development 1

The parts to which no reference number is assigned will not be available as after-sale service parts.



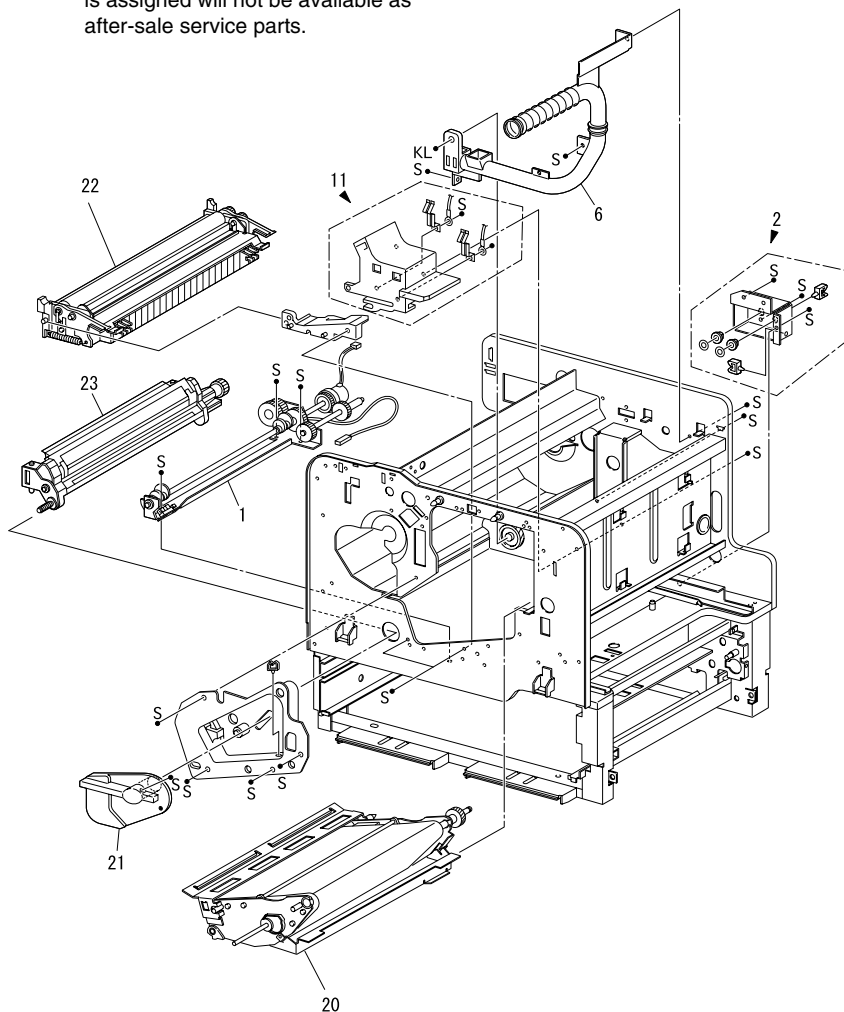
LP-8500C (7.2)

10221 Rev.01

TBK512FA

Figure 7-10. PL7.2 Development 2

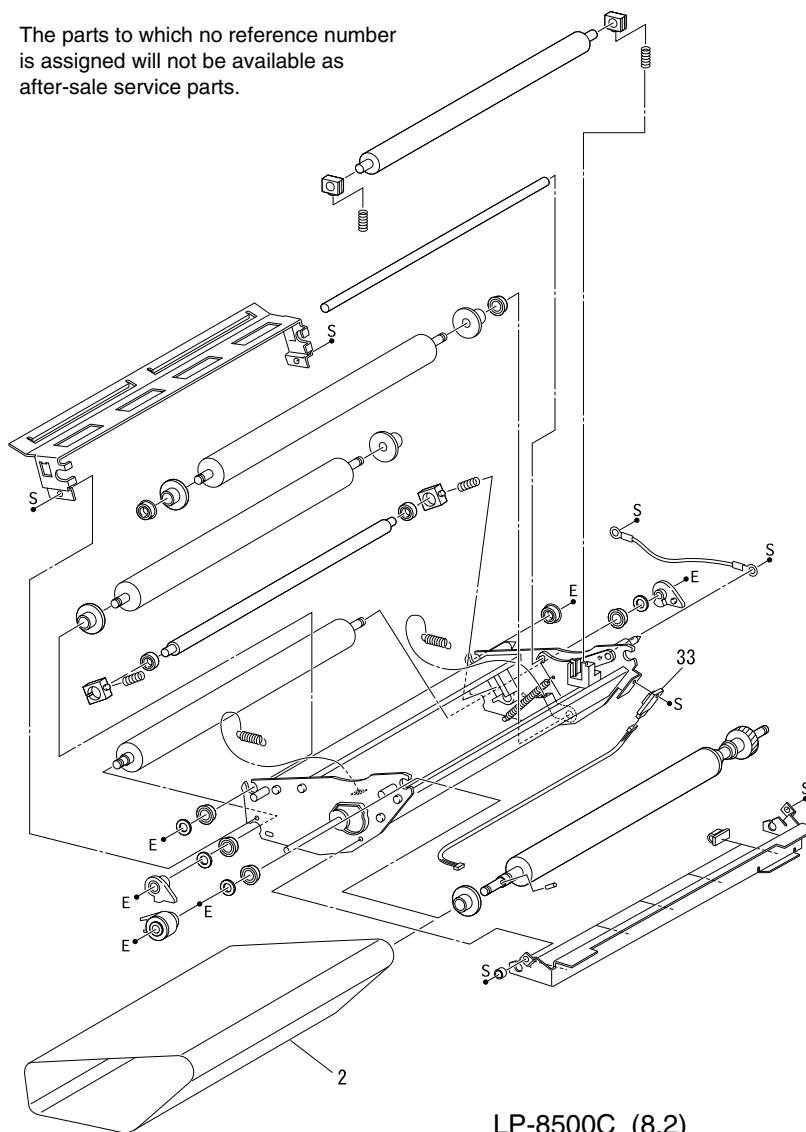
The parts to which no reference number is assigned will not be available as after-sale service parts.



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LP-8500C (8.1)
10221 Rev.01

Figure 7-11. PL8.1 IBT 1

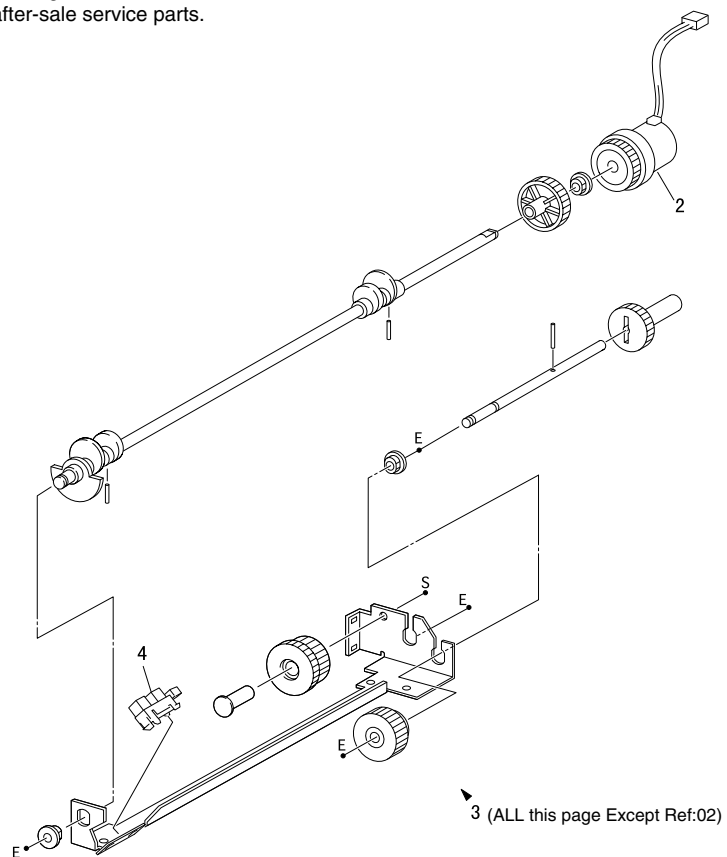


TBK514FA

LP-8500C (8.2)
10221 Rev.01

Figure 7-12. PL8.2 IBT 2

The parts to which no reference number is assigned will not be available as after-sale service parts.

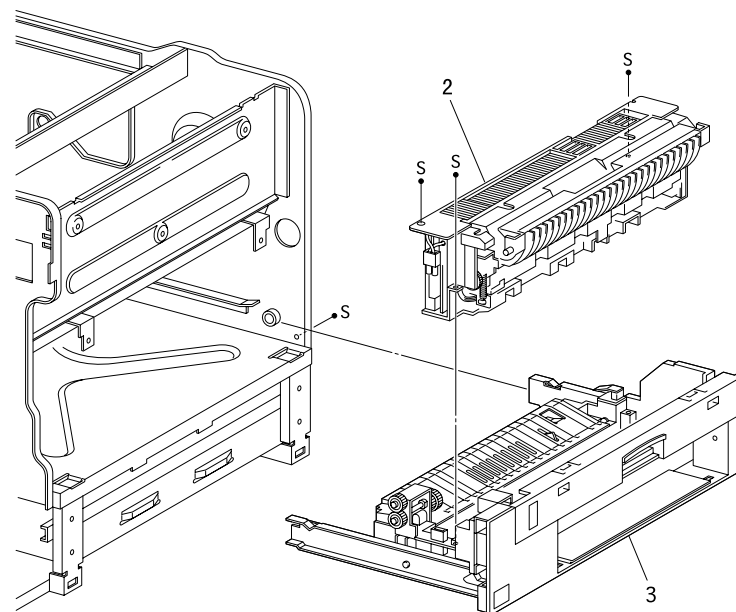


TBK515FA

LP-8500C (8.3)
10221 Rev.01

Figure 7-13. PL8.3 IBT 3

The parts to which no reference number is assigned will not be available as after-sale service parts.



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LP-8500C (9.1)
10221 Rev.01

Figure 7-14. PL9.1 Fusing 1

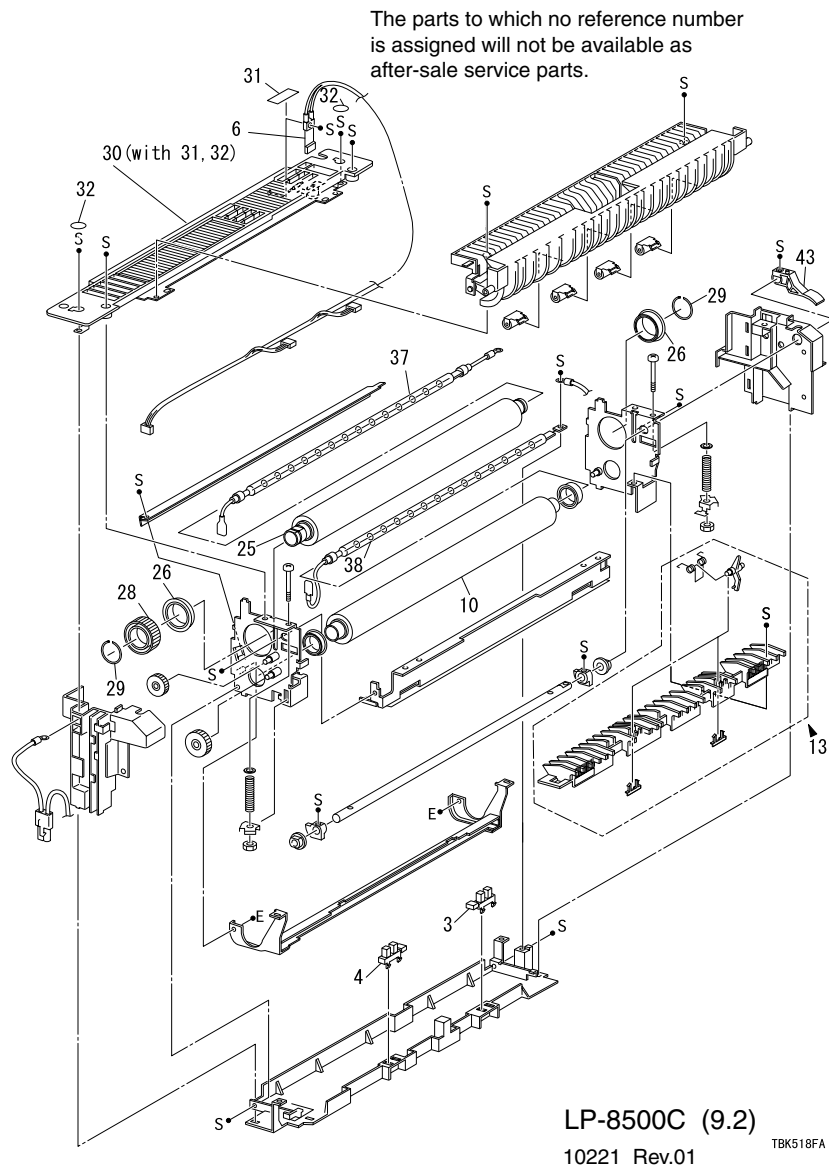


Figure 7-15. PL9.2 Fusing 2

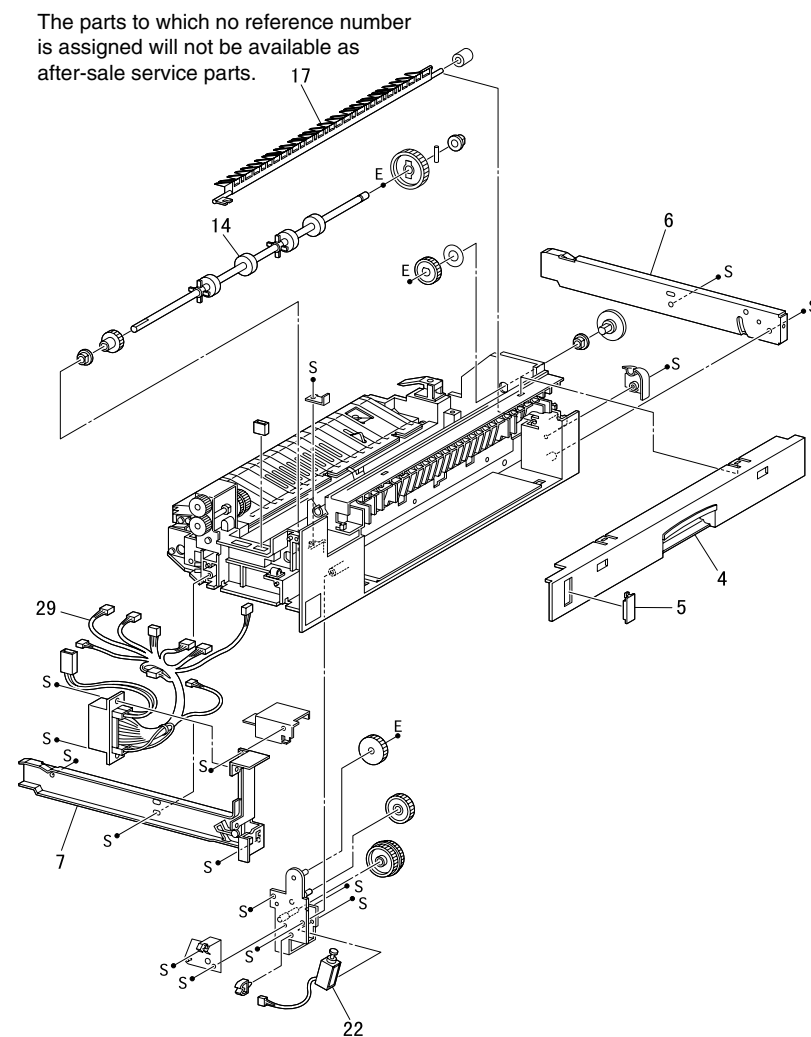
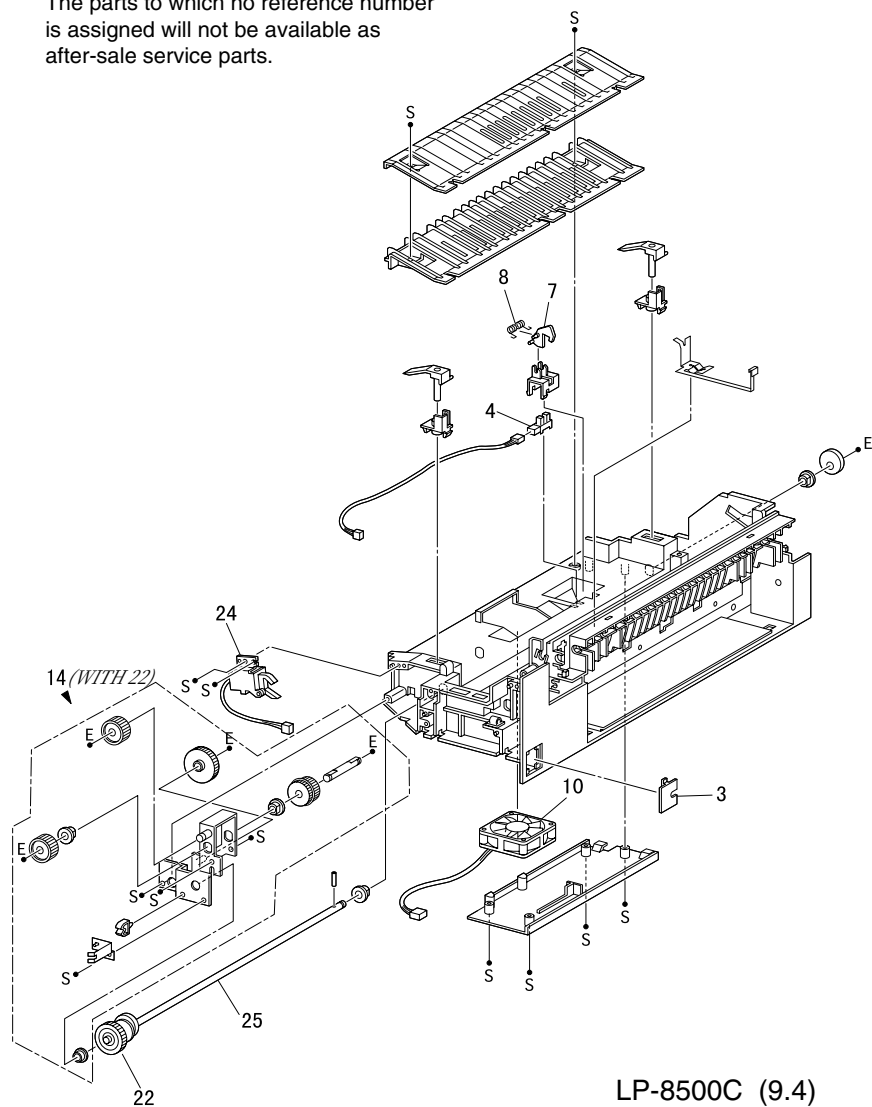


Figure 7-16. PL9.3 Fusing 3

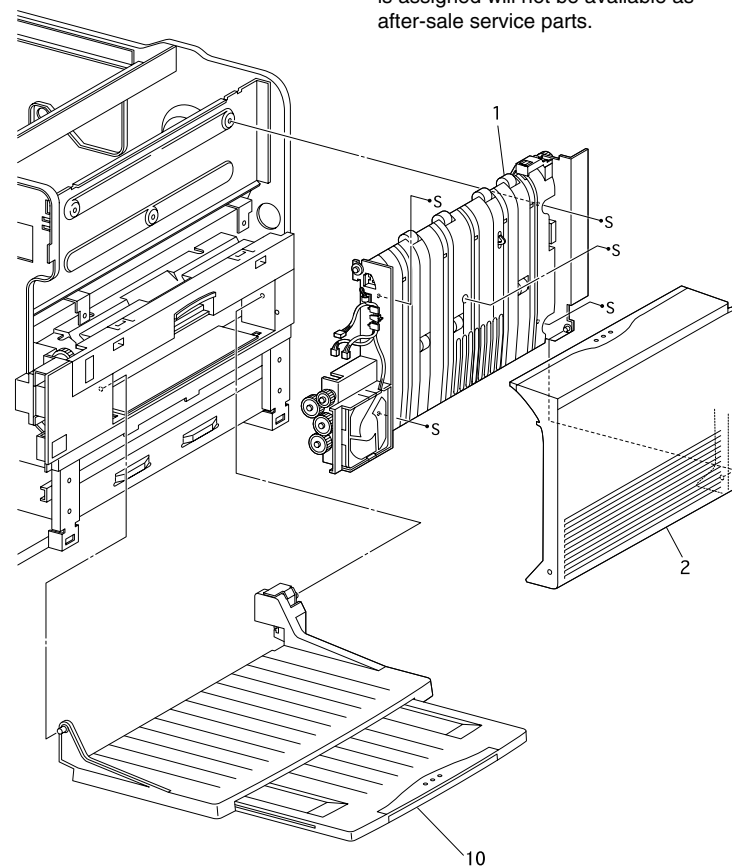
The parts to which no reference number is assigned will not be available as after-sale service parts.



LP-8500C (9.4)
10221 Rev.01 TBK520FA

Figure 7-17. PL9.4 Fusing 4

The parts to which no reference number is assigned will not be available as after-sale service parts.

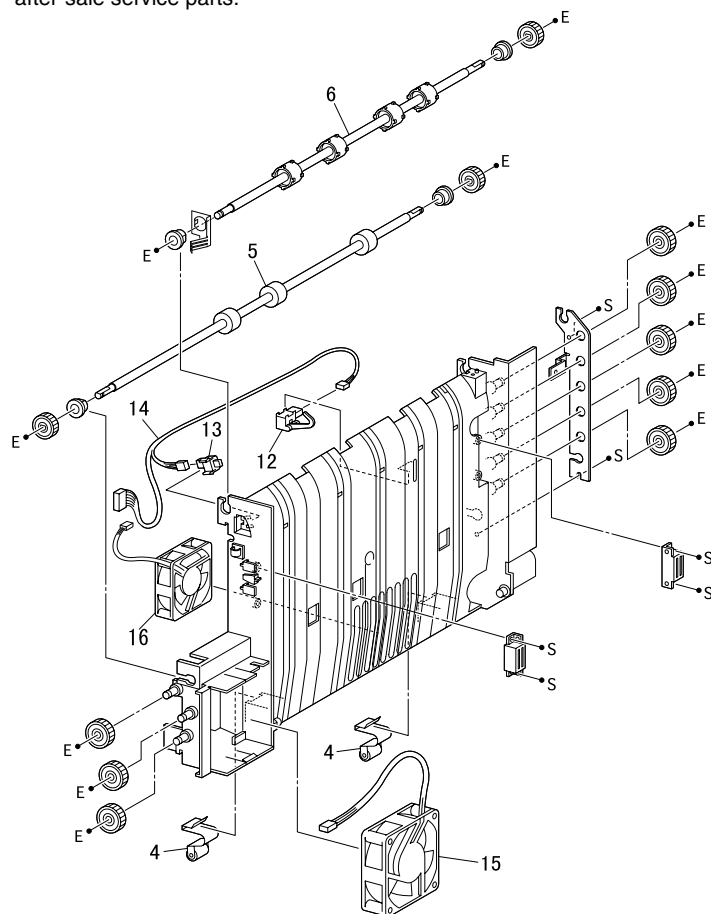


TBK521FA

LP-8500C (10.1)
10221 Rev.01

Figure 7-18. PL10.1 Paper Exit 1

The parts to which no reference number is assigned will not be available as after-sale service parts.

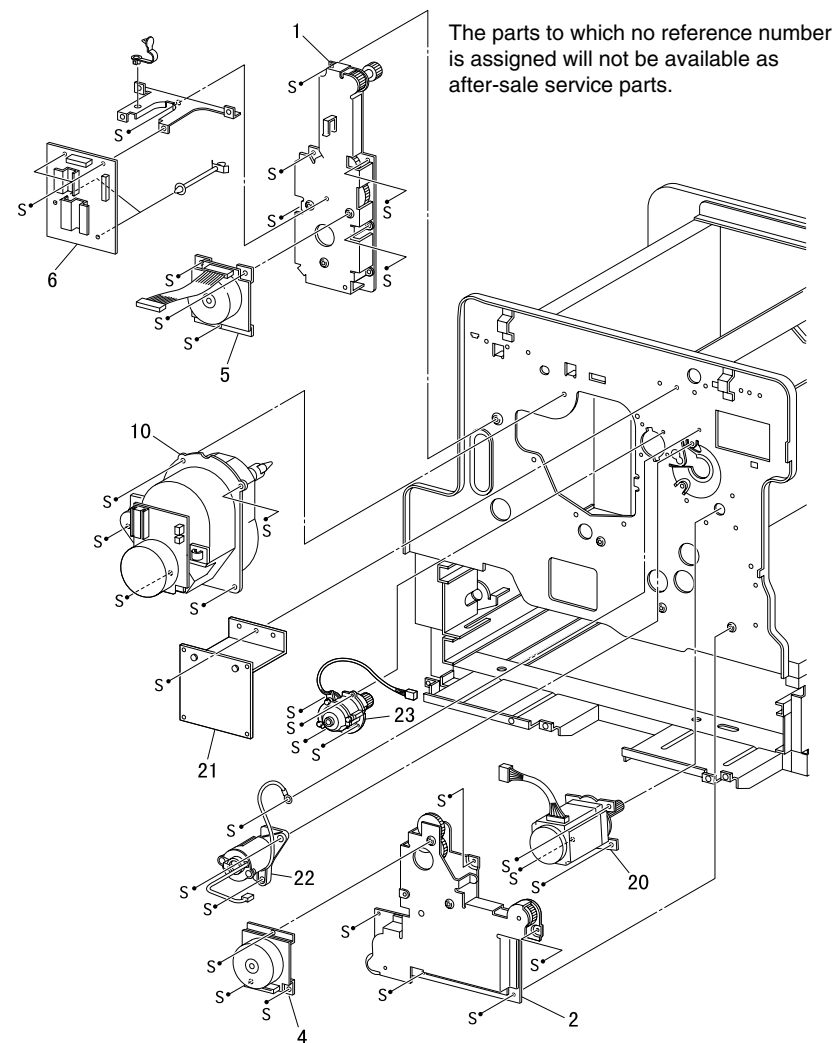


TBK522FA

LP-8500C (10.2)

10221 Rev.01

Figure 7-19. PL10.2 Paper Exit 2

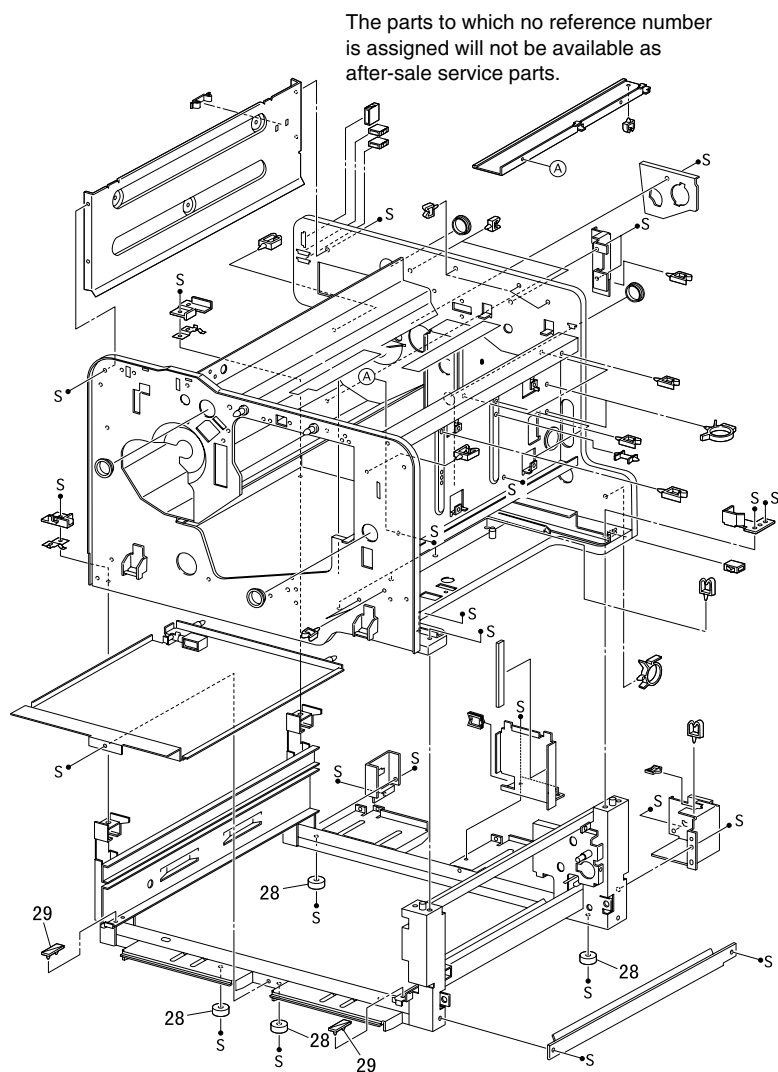


TBK523FA

LP-8500C (11.1)

10221 Rev.01

Figure 7-20. PL11.1 Drive

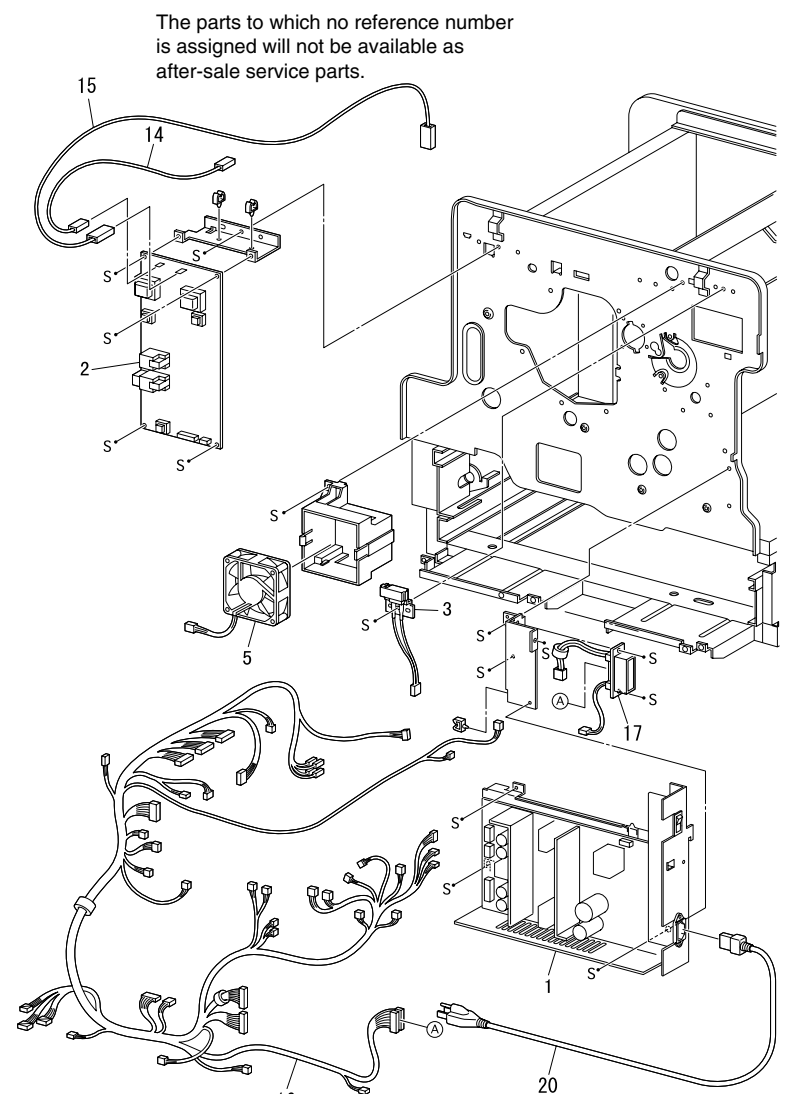


LP-8500C (12.1)

10221 Rev.01

TBK524FA

Figure 7-21. PL12.1 Frame



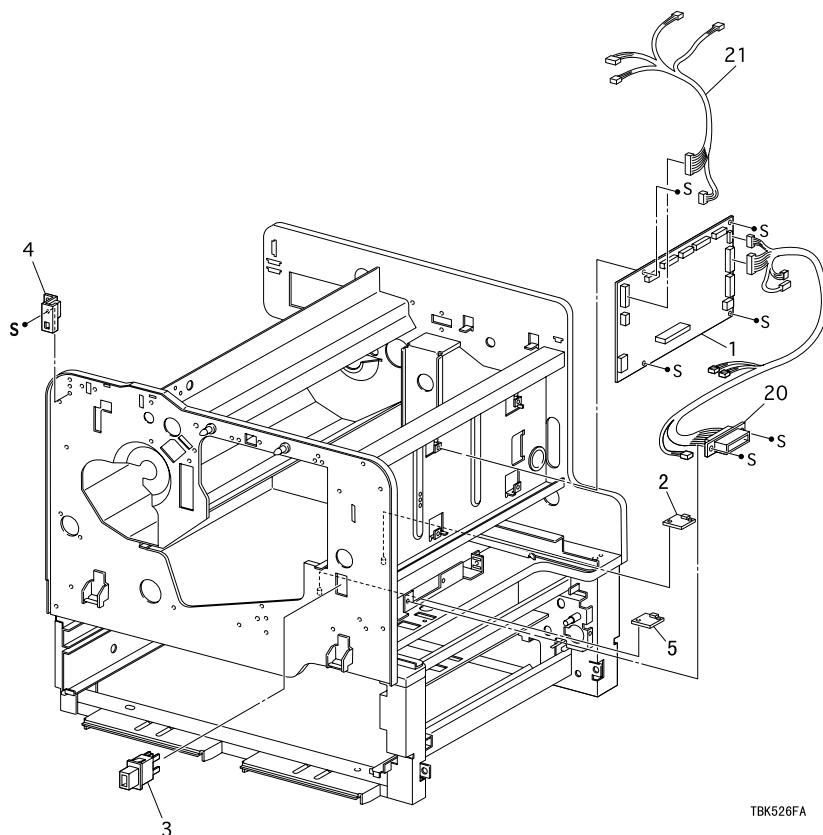
LP-8500C (13.1)

10221 Rev.01

TBK525FA

Figure 7-22. PL13.1 Electrical 1

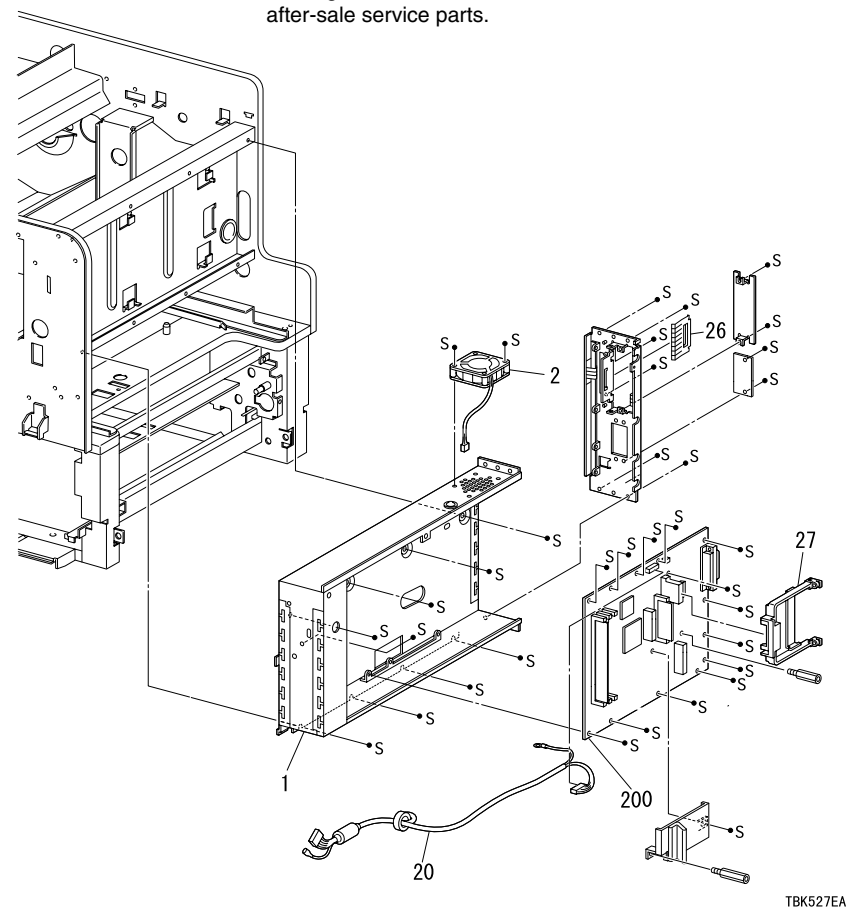
The parts to which no reference number is assigned will not be available as after-sale service parts.



LP-8500C (13.2)
10221 Rev.01

Figure 7-23. PL13.2 Electrical 2

The parts to which no reference number is assigned will not be available as after-sale service parts.



LP-8500C (14.1)
10221 Rev.01

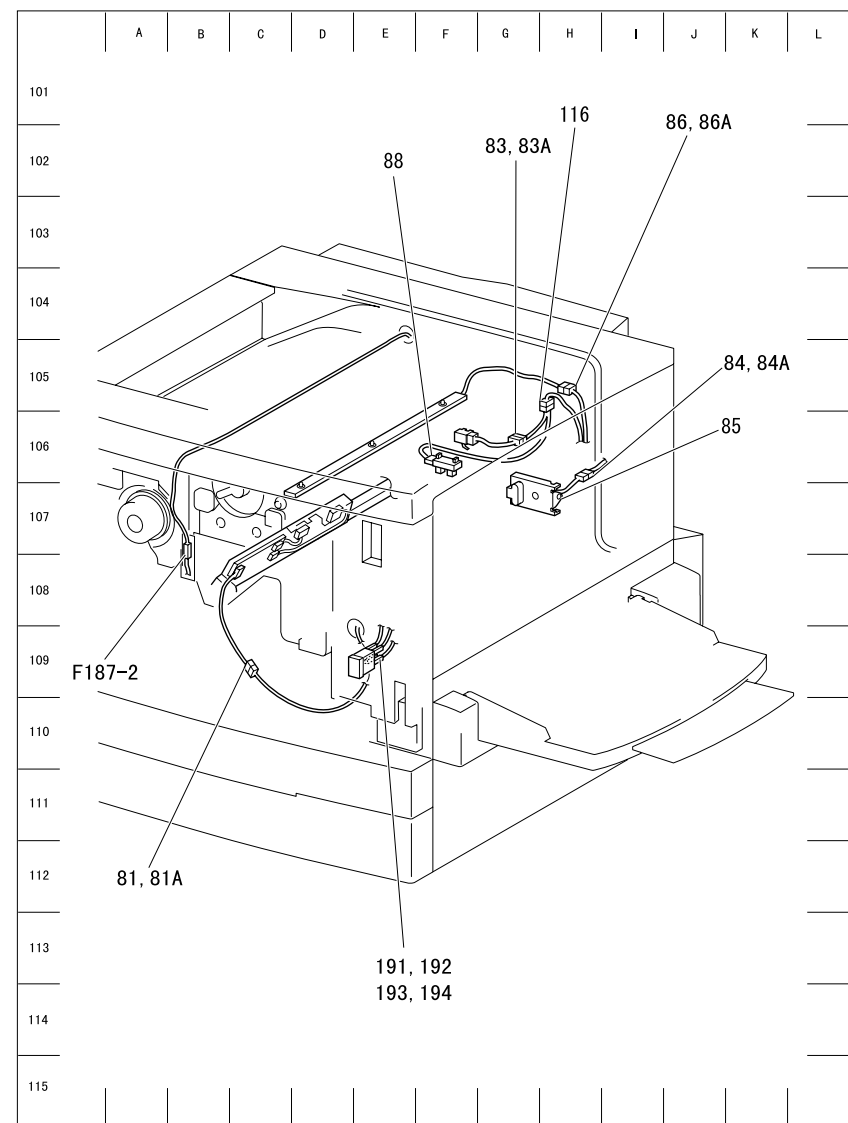
Figure 7-24. PL14.1 Controller

7.3 Wiring Diagrams

This section describes the connector locations. “P” and “J” stand for “Plug” and “Jack”, respectively.

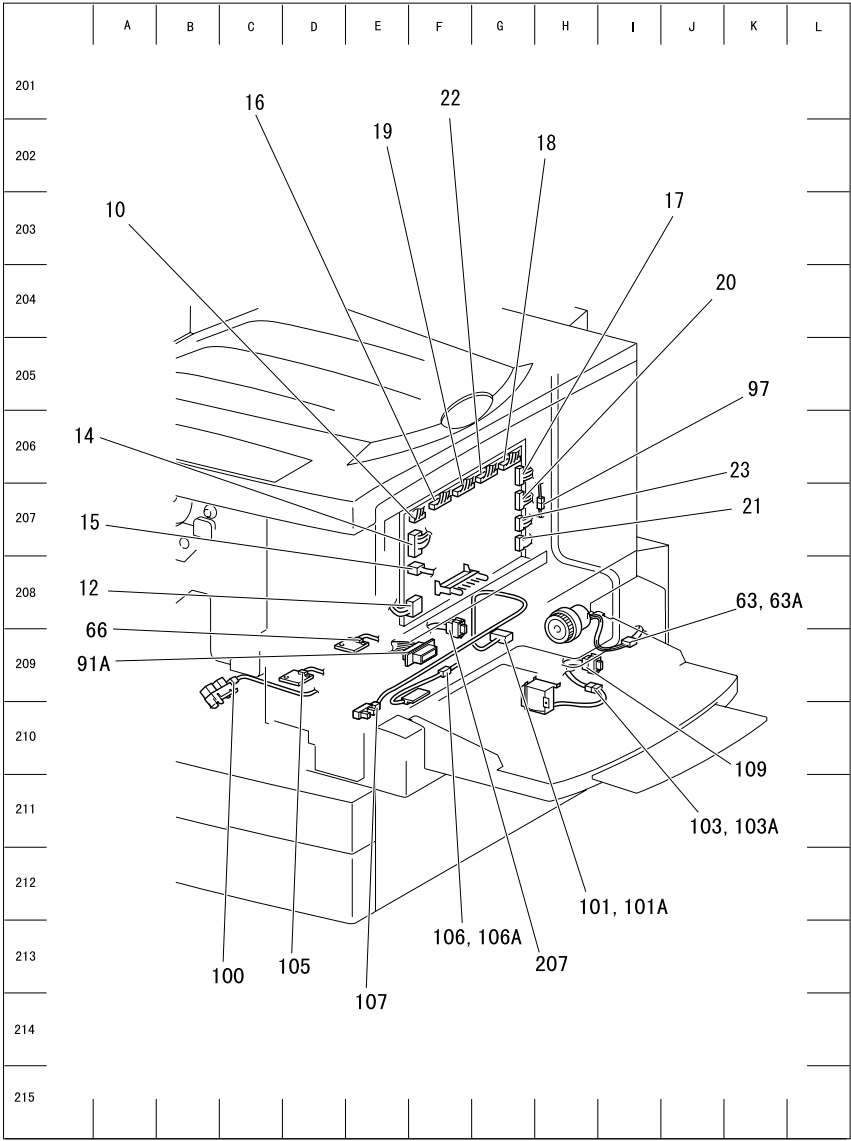
7.3.1 P/J Locations

See the following figures for the P/J locations.



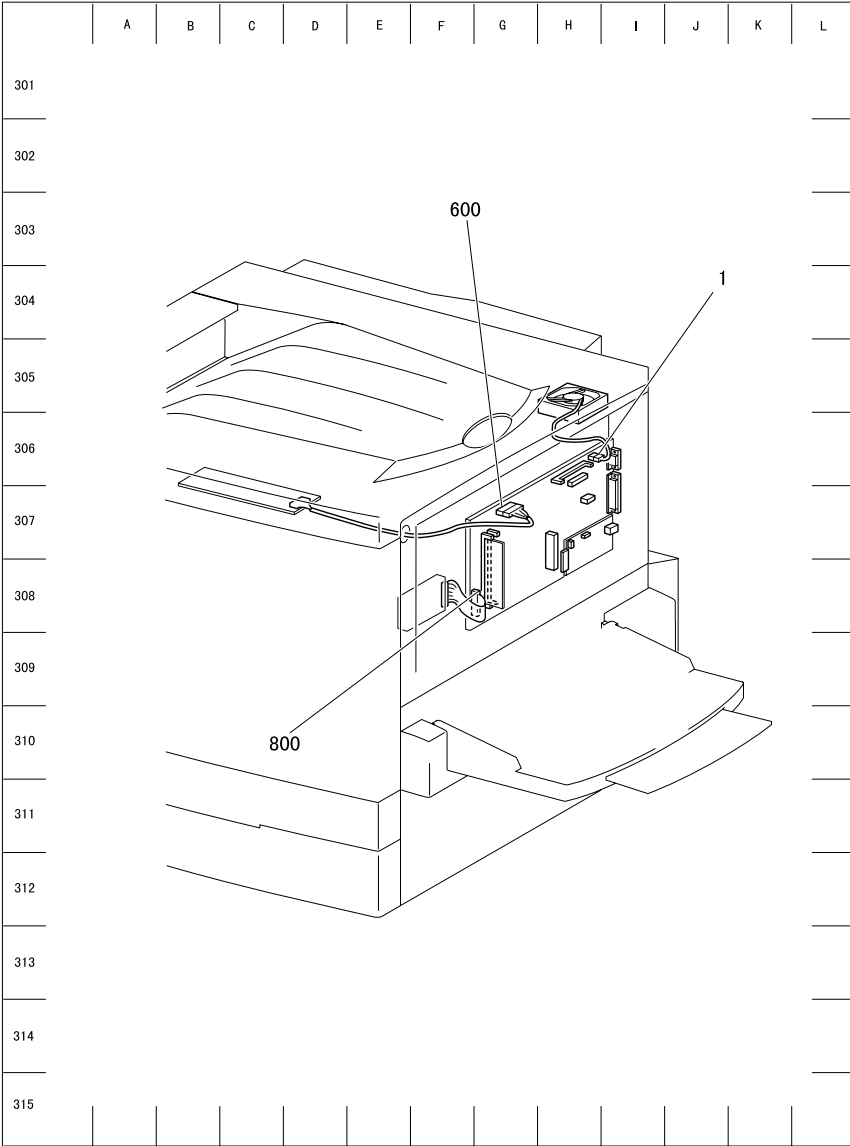
TBK801FA

Figure 7-25. P/J Location 1



TBK802FA

Figure 7-26. P/J Location 2



TBK803FA

Figure 7-27. P/J Location 3

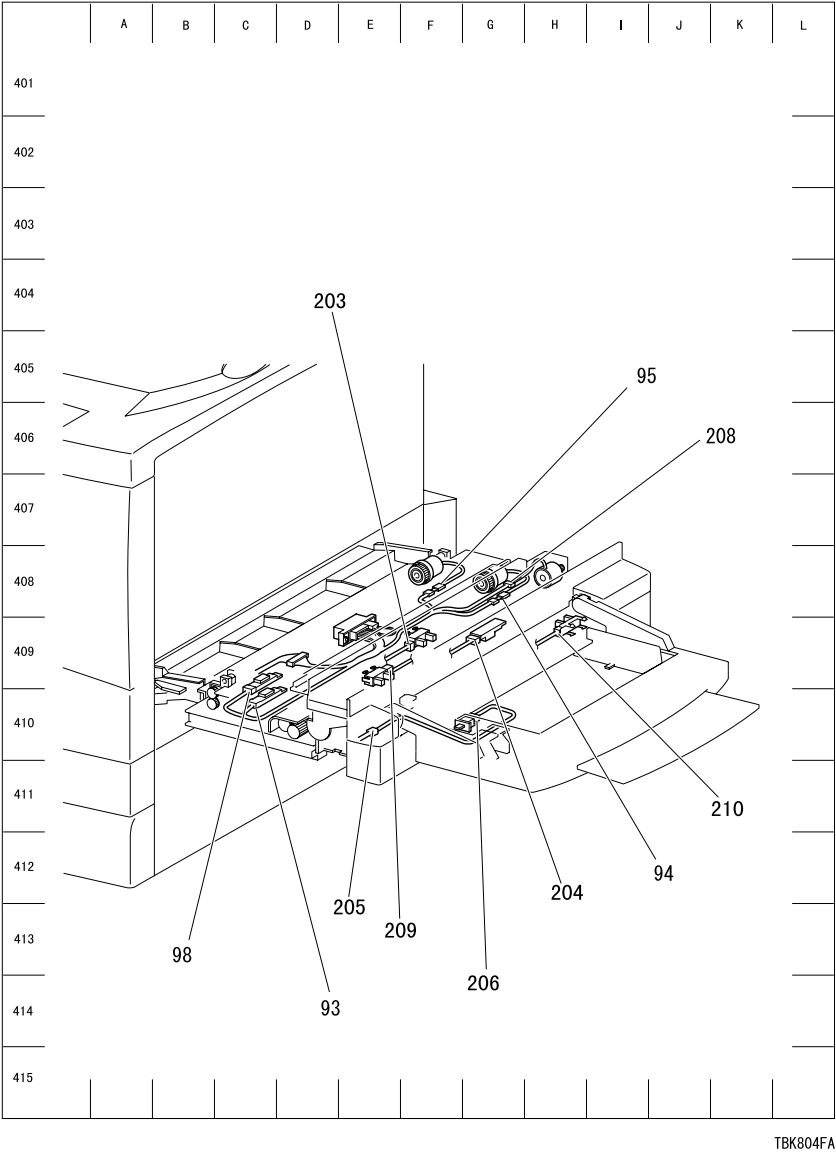


Figure 7-28. P/J Location 4

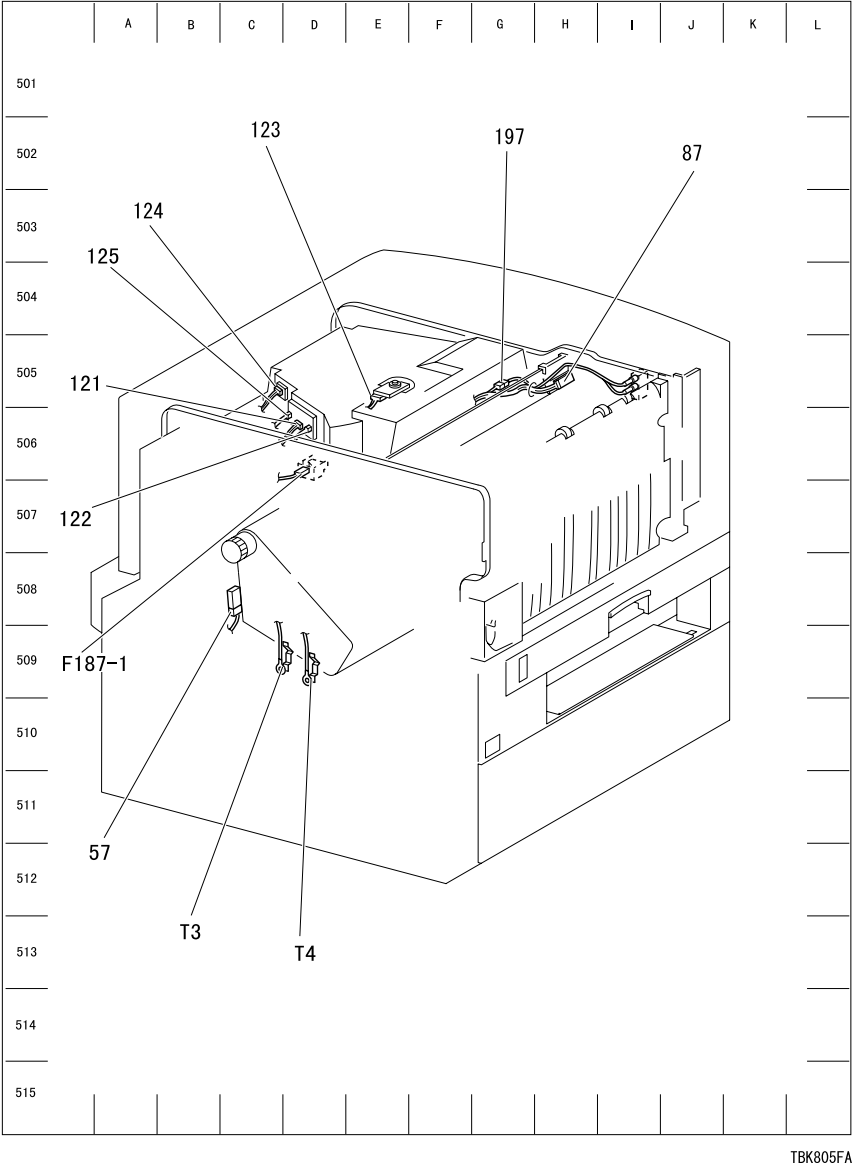
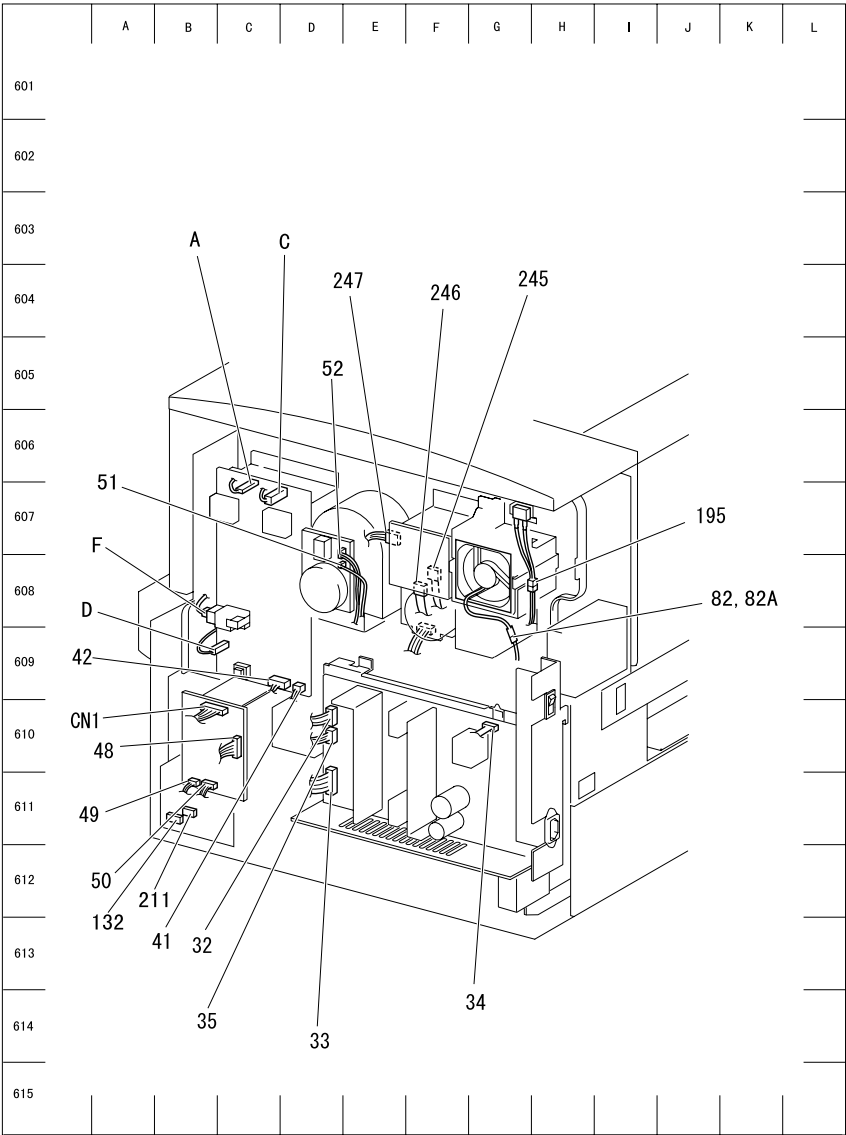
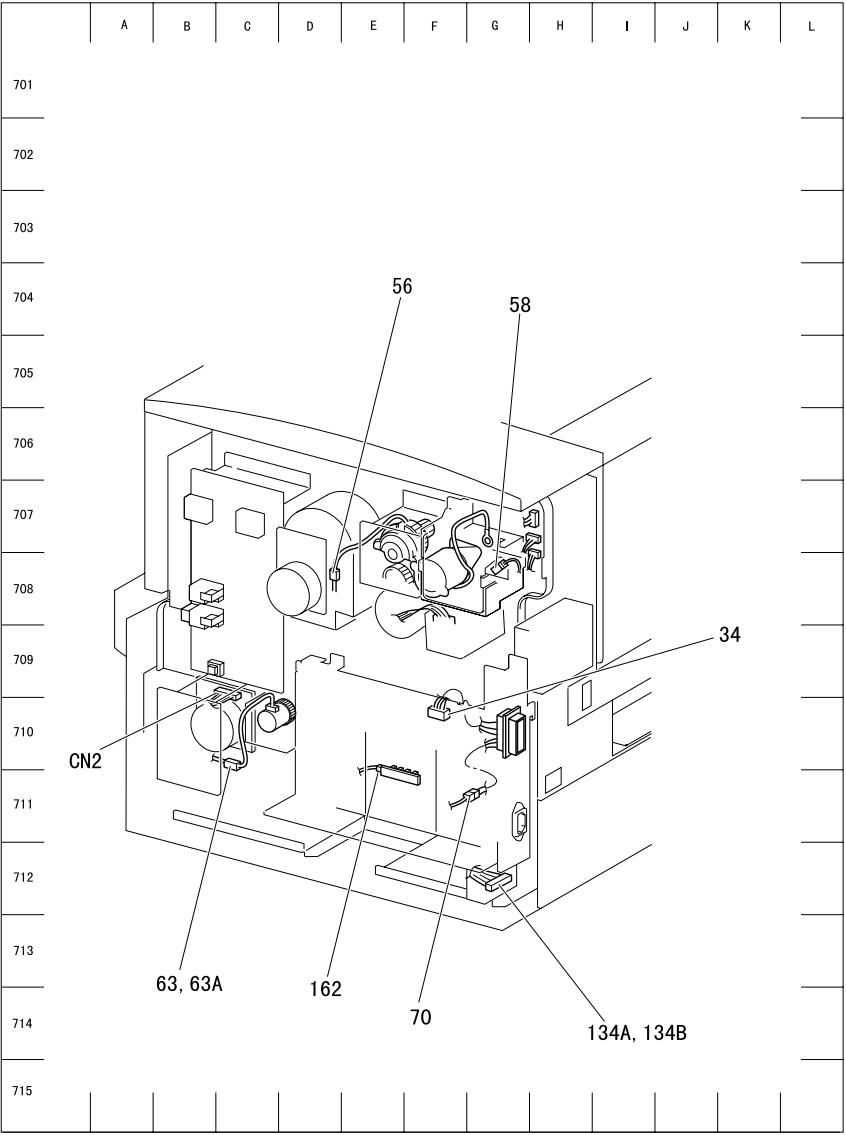


Figure 7-29. P/J Location 5



TBK806FA

Figure 7-30. P/J Location 6



TBK807FA

Figure 7-31. P/J Location 7

7.3.2 Plug and Jack (P/J) Location Tables

See the following table for the plug and jack (P/J) location.

Table 7-2. P/J Location

P/J	Coordinates	Description
12	F-208	Connects MCU PWB and MAIN HARNESS ASSY
14	F-207	Connects MCU PWB and ROS HARNESS
15	F-208	Connects MCU PWB and ROS HARNESS
16	F-207	Connects MCU PWB and MAIN HARNESS ASSY
17	G-206	Connects MCU PWB and MAIN HARNESS ASSY
18	G-206	Connects MCU PWB and MAIN HARNESS ASSY
19	F-207	Connects MCU PWB and MAIN HARNESS ASSY
20	G-206	Connects MCU PWB and P/H HARNESS ASSY
21	G-207	Connects MCU PWB and MAIN HARNESS ASSY
22	G-206	Connects MCU PWB and MAIN HARNESS ASSY
23	G-207	Connects MCU PWB and P/H HARNESS ASSY
32	D-610	Connects LVPS and MAIN HARNESS ASSY
33	D-611	Connects LVPS and MAIN HARNESS ASSY
34	G-610 F-710	Connects LVPS and FUSER CONNECTOR
35	D-610	Not used
41	D-609	Connects HVPS and FUSER CONNECTOR
42	C-609	Connects HVPS and MAIN HARNESS ASSY
47		Connects FUSER MOTOR ASSY and MAIN HARNESS ASSY
48	C-610	Connects DRIVE MOTOR PWB and MAIN HARNESS ASSY
49	B-611	Connects P/H MOTOR ASSY and MAIN HARNESS ASSY
50	B-611	Connects P/H MOTOR ASSY and MAIN HARNESS ASSY

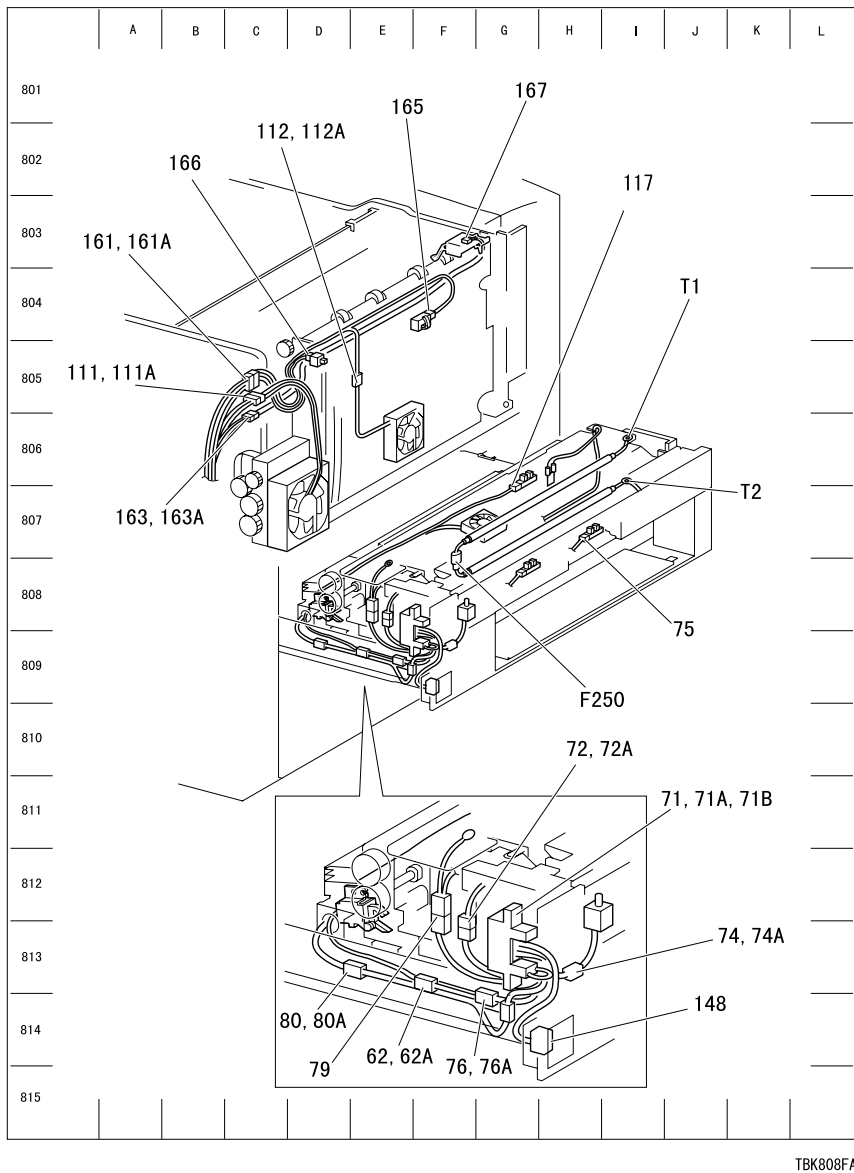


Figure 7-32. P/J Location 8

Table 7-2. P/J Location (continued)

P/J	Coordinates	Description
51	D-608	Connects PROCESS DRIVE ASSY and MAIN HARNESS ASSY
52	D-607	Connects PROCESS DRIVE ASSY and MAIN HARNESS ASSY
54		Connects MAIN HARNESS ASSY and TR0 HARNESS
54A		Connector inside MAIN HARNESS ASSY
55		Connects DISPENSE CLUTCH ASSY and MAIN HARNESS ASSY
55A		Connector inside MAIN HARNESS ASSY
56	D-708	Connects DISPENSE CLUTCH ASSY and MAIN HARNESS ASSY
56A		Connector inside MAIN HARNESS ASSY
57	C-508	Connects TR0 SENSOR and TR0 HARNESS
58	G-708	Connects ROTARY SENSOR and MAIN HARNESS ASSY
62	F-813	Connects CLEANER CAM SOLENOID and FUSER HARNESS ASSY
62A	F-813	Connector inside FUSER HARNESS ASSY
63	I-209	Connects BTR CAM CLUTCH and MAIN HARNESS ASSY
63A	I-209	Connector inside MAIN HARNESS ASSY
66	E-209	Connects COMMUNICATION PWB and P/H HARNESS ASSY
70	G-711	Connects FUSER CONNECTOR and MAIN HARNESS ASSY
71	G-813	Connects FUSER CONNECTOR and FUSER HARNESS ASSY
71A	G-813	Connects MAIN HARNESS ASSY and FUSER HARNESS ASSY
71B	G-813	Connects MAIN HARNESS ASSY and FUSER HARNESS ASSY

Table 7-2. P/J Location (continued)

P/J	Coordinates	Description
72	F-813	Connects FUSER EXIT SENSOR-1, FUSER EXIT SENSOR-2, TEMP. SENSOR ASSY and FUSER HARNESS ASSY
74	H-813	Connects EXCHANGE SOLENOID and FUSER HARNESS ASSY
74A	H-813	Connector inside FUSER HARNESS ASSY
75	H-807	Connects LOWER INV SOLENOID and FUSER HARNESS ASSY
75A	H-807	Connector inside FUSER HARNESS ASSY
76	G-814	Connects FUSER HARNESS ASSY and FUSER IN HARNESS
76A	G-814	Connector inside FUSER HARNESS ASSY
78		Connector inside FUSER HARNESS ASSY
79	F-812	Connects FUSER HARNESS ASSY and HEATER WIRE
80	E-813	Connects FUSER CHUTE FAN and FUSER HARNESS ASSY
80A	E-813	Connector inside FUSER HARNESS ASSY
81	C-109	Connects ADC SENSOR ASSY and MAIN HARNESS ASSY
81A	C-109	Connector inside MAIN HARNESS ASSY
82	G-609	Connects DEVE. FAN and MAIN HARNESS ASSY
82A	G-609	Connector inside MAIN HARNESS ASSY
83	G-106	Connects TONER BOX SENSOR and TONER BOX HARNESS
83A	G-106	Connector inside TONER BOX HARNESS
84	H-106	Connects CRUM CONNECTOR ASSY and MAIN HARNESS ASSY
84A	H-106	Connector inside MAIN HARNESS ASSY
85	H-107	Connector inside CRUM CONNECTOR ASSY
86	H-105	Connects ERASE LAMP ASSY and MAIN HARNESS ASSY

Table 7-2. P/J Location (continued)

P/J	Coordinates	Description
86A	H-105	Connector inside MAIN HARNESS ASSY
87	H-505	Connects CARTRIDGE SENSOR and MAIN HARNESS ASSY
88	F-106	Connects WASTE TONER SENSOR and TONER BOX HARNESS
91	F-209	Connects P/H HARNESS ASSY and REGI HARNESS ASSY
91A	F-209	Connects P/H HARNESS ASSY and REGI HARNESS ASSY
91B	F-209	Connects P/H HARNESS ASSY and REGI HARNESS ASSY
93	C-410	Connects OHP SENSOR and REGI HARNESS ASSY
94	G-408	Connects REGI. CLUTCH and REGI HARNESS ASSY
94A	G-408	Connector inside REGI HARNESS ASSY
95	F-408	Connects PRE-REGI. CLUTCH and REGI HARNESS ASSY
95A	F-408	Connector inside REGI HARNESS ASSY
97	H-207	Connects MAIN HARNESS ASSY and P/H HARNESS ASSY
98	C-409	Connects REGI. SENSOR and REGI HARNESS ASSY
100	C-209	Connects BTR WHEEL SENSOR and P/H HARNESS ASSY
101	G-209	Connects MAIN HARNESS ASSY and TRAY SENSOR HARNESS
101A	G-209	Connector inside MAIN HARNESS ASSY
102		Connects SIZE SWITCH ASSY and MAIN HARNESS ASSY
103	H-209	Connects FEED SOLENOID and MAIN HARNESS ASSY
103A	H-209	Connector inside MAIN HARNESS ASSY
104		Connects TURN CLUTCH and MAIN HARNESS ASSY
104A		Connector inside MAIN HARNESS ASSY
105	D-209	Connects ENVIRONMENT SENSOR and P/H HARNESS ASSY

Table 7-2. P/J Location (continued)

P/J	Coordinates	Description
106	F-209	Connects LOW PAPER SENSOR and TRAY SENSOR HARNESS
106A	F-209	Connector inside TRAY SENSOR HARNESS
107	E-210	Connects TRAY NO PAPER SENSOR and TRAY SENSOR HARNESS
108		Connects MAIN HARNESS ASSY and TURN CHUTE HARNESS
108A		Connector inside MAIN HARNESS ASSY
109	H-209	Connects TURN CHUTE SWITCH and TURN CHUTE HARNESS
111	C-805	Connects FUSER FAN-1 and MAIN HARNESS ASSY
111A	C-805	Connector inside MAIN HARNESS ASSY
112	E-805	Connects CONTROLLER FAN and EXIT HARNESS
112A	E-805	Connector inside EXIT HARNESS
116	H-105	Connects MAIN HARNESS ASSY and TONER BOX HARNESS
116A	H-105	Connector inside MAIN HARNESS ASSY
117	G-806	Connects FUSER HARNESS ASSY and FUSER IN HARNESS
121	D-506	Connects LDD PWB and ROS HARNESS
122	D-506	Connects LDD PWB and ROS HARNESS
123	E-505	Connects ROS ASSY (Scanner Assy) and ROS HARNESS
124	C-505	Connects ROS ASSY (SOS PWB) and ROS HARNESS
125	D-506	Connects LDD PWB and MAIN HARNESS ASSY
132	B-611	Connects MAIN HARNESS ASSY and Option Feeder
134A	G-712	Connects MAIN HARNESS ASSY and Option Duplex
134B	G-712	Connects MAIN HARNESS ASSY and Option Duplex

Table 7-2. P/J Location (continued)

P/J	Coordinates	Description
148	H-814	Connects MAIN HARNESS ASSY and Option Duplex
155		Connects MAIN HARNESS ASSY and Option Duplex
161	C-805	Connects MAIN HARNESS ASSY and EXIT HARNESS
161A	C-805	Connector inside MAIN HARNESS ASSY
163	C-806	Connects MAIN HARNESS ASSY and FULL STACK HARNESS
163A	C-806	Connector inside MAIN HARNESS ASSY
165	F-804	Connects TOP EXIT SENSOR and EXIT HARNESS
166	D-805	Connects EXIT CHUTE SWITCH and EXIT HARNESS
167	F-803	Connects FULL STACK SENSOR and FULL STACK HARNESS
191	E-109	Connects FRONT COVER SWITCH R and MAIN HARNESS ASSY
192	E-109	Connects FRONT COVER SWITCH R and MAIN HARNESS ASSY
193	E-109	Connects FRONT COVER SWITCH R and MAIN HARNESS ASSY
194	E-109	Connects FRONT COVER SWITCH R and MAIN HARNESS ASSY
195	H-608	Connects TOP COVER SWITCH and MAIN HARNESS ASSY
197	G-505	Connector inside FRONT COVER SWITCH L
197A	G-505	Connector inside FRONT COVER SWITCH L
198		Connects FRONT COVER SWITCH L and MAIN HARNESS ASSY
199		Connects FRONT COVER SWITCH L and MAIN HARNESS ASSY
201		Connects REGI HARNESS ASSY and MSI HARNESS ASSY

Table 7-2. P/J Location (continued)

P/J	Coordinates	Description
202		Connects PICK UP CLUTCH and REGI HARNESS ASSY
202A		Connector inside MSI HARNESS ASSY
203	F-409	Connects EMPTY SENSOR and REGI HARNESS ASSY
204	G-409	Connects PITCH SENSOR and REGI HARNESS ASSY
205	E-410	Connects MSI HARNESS ASSY and MSI TRAY HARNESS
206	G-410	Connects MSI GUIDE SWITCH and MSI TRAY HARNESS
207	G-209	Connects REGI/MSI INTL SW and P/H HARNESS ASSY
208	G-408	Connects LIFT MOTOR ASSY and REGI HARNESS ASSY
208A	G-408	Connector inside REGI HARNESS ASSY
209	E-409	Connects LEVEL SENSOR and MSI HARNESS ASSY
210	H-409	Connects BOTTOM PLATE SENSOR and MSI HARNESS ASSY
211	B-611	Connects MSI HARNESS ASSY and FEEDER HARNESS
245	F-608	Connects ROTARY MOTOR DRIVE PWB and MSI HARNESS ASSY
246	F-608	Connects ROTARY MOTOR DRIVE PWB and MSI HARNESS ASSY
247	E-607	Connects ROTARY MOTOR DRIVE PWB and ROTARY MOTOR ASSY
CN1	B-610	Connects DRIVE MOTOR PWB and FUSER MOTOR ASSY
CN2	C-709	Connects FUSER MOTOR ASSY and DRIVE MOTOR PWB
F187-1	D-506	Connects BCR CONNECTOR ASSY and BCR WIRE
F187-2	B-102	Connects DEVE. CONTACT PLATE ASSY and DEVE. WIRE
F250	F-808	Connects P/R HEATER and H/R HEATER
A	C-607	Connects HVPS and BCR WIRE

Table 7-2. P/J Location (continued)

P/J	Coordinates	Description
C	C-607	Connects HVPS and DEVE. WIRE
D	B-609	Connects HVPS and 1ST BTR WIRE
F	B-608	Connects HVPS and CONTACT ROLL WIRE
T1	I-806	Connects H/R HEATER and HEATER WIRE
T2	I-806	Connects P/R HEATER and HEATER WIRE
T3	D-509	Connects IBT REAR BRACKET and 1ST BTR WIRE
T4	D-509	Connects IBT REAR BRACKET and CONTACT ROLL WIRE

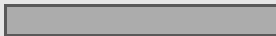
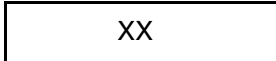
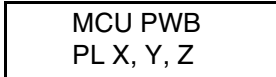
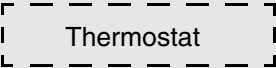
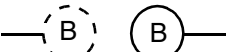
7.4 Wiring Diagrams and Signal Information

7.4.1 Overall Wiring Connection Diagram

The symbols used in the overall wiring connection diagrams on the following pages are as follows:

NOTE: DEVELOPER ASSY Y, DEVELOPER ASSY M, DEVELOPER ASSY C, and DEVELOPER ASSY BK are hereinafter referred to by the generic term "DEVELOPER ASSY".

Table 7-3. Symbols Used in the Overall Wiring Connection Diagrams

Symbols	Description
	Indicates connection of parts by HARNESS, wire, etc.
	Indicates connection of parts by a conductor such as leaf spring.
	A box with no part name inside indicates a path by a connector (P/J) or screw. A number inside the box indicates connector number.
	Indicates a connector (P/J) written across several locations. The number inside the box indicates connector number.
	Boxes with part names inside indicate those parts. The part name shown here indicates item Z of plate (PL) XY in Section 7.2 "Parts List and Exploded Diagrams".
	Indicates functional element inside part.
	Indicates a section in Section 7.4.2 "Wiring and Signal Descriptions between Components". The number inside indicates the section number.
	Indicates that "A" and "A" are connected within the same section.
	Indicates that "B" and "B" are connected in different sections. Indicates that information concerning the connections is given in the section with the solid line circle in Section 7.4.2 "Wiring and Signal Descriptions between Components".

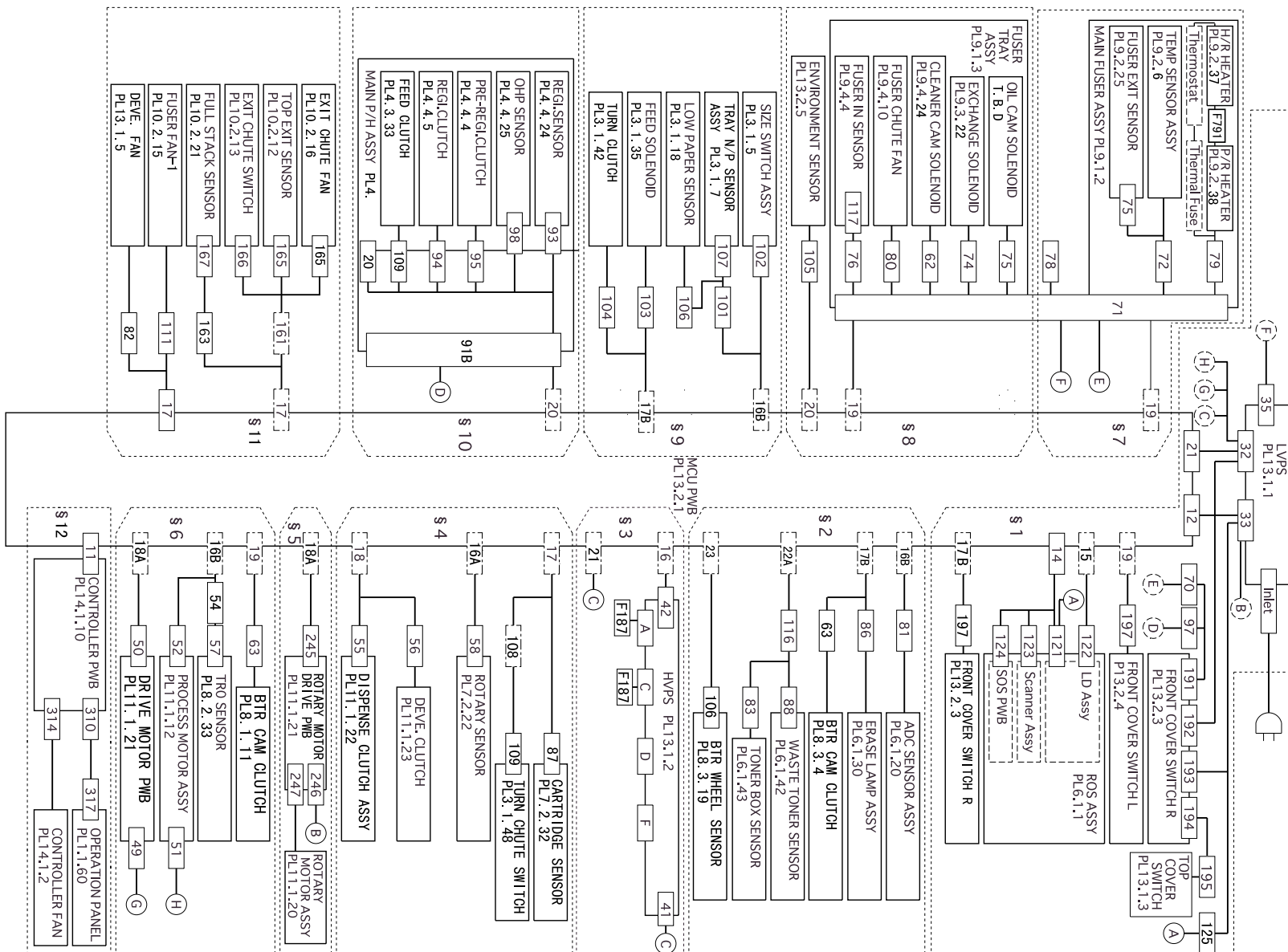


Figure 7-33. Overall Wiring Connection Diagram

7.4.2 Wiring and Signal Descriptions between Components

7.4.2.1 Configuration

Wiring connection diagrams are divided into 13 sections and provide details concerning connections between parts.

§1 MCU PWB, LVPS, ROS ASSY, FUSER ASSY, MAIN P/H FRAME ASSY, FRONT COVER SWITCH R, FRONT COVER SWITCH L, TOP COVER SWITCH

Connects MCU PWB and LVPS.
Connects MCU PWB and ROS ASSY.
Connects MCU PWB and FRONT COVER SWITCH R.
Connects LVPS and FUSER ASSY.
Connects LVPS and MAIN P/H ASSY.
Connects LVPS and FRONT COVER SWITCH R.
Connects LVPS and FRONT COVER SWITCH L.
Connects LVPS and TOP COVER SWITCH.
Connects LVPS and ROS ASSY.

§2 MCU PWB, ADC SENSOR ASSY, ERASE LAMP ASSY, BTR CAM CLUTCH, CRUM ASSY, WASTE TONER SENSOR, TONER BOX SENSOR, BTR WHEEL SENSOR

Connects MCU PWB and ADC SENSOR ASSY.
Connects MCU PWB and ERASE LAMP ASSY.
Connects MCU PWB and BTR CAM CLUTCH.
Connects MCU PWB and WASTE TONER SENSOR.
Connects MCU PWB and TONER BOX SENSOR.
Connects MCU PWB and BTR WHEEL SENSOR.
Connects MCU PWB and CRUM ASSY.

§3 MCU PWB, HVPS, LVPS

Connects MCU PWB and HVPS.
Connects MCU PWB and LVPS.
Connects LVPS and HVPS.

§9 MCU PWB, SIZE SWITCH ASSY, TRAY NO PAPER SENSOR, LOW PAPER SENSOR, FEED SOLENOID, TURN CLUTCH

Connects MCU PWB and SIZE SWITCH ASSY.
Connects MCU PWB and TRAY NO PAPER SENSOR.

§4 MCU PWB, TURN CHUTE SWITCH, CARTRIDGE SENSOR, ROTARY SENSOR, DEVE. CLUTCH ASSY, DISPENSE CLUTCH ASSY

Connects MCU PWB and TURN CHUTE SWITCH.
Connects MCU PWB and CARTRIDGE SENSOR.
Connects MCU PWB and ROTARY SENSOR.
Connects MCU PWB and DEVE. CLUTCH ASSY.
Connects MCU PWB and DISPENSE CLUTCH ASSY.

§5 MCU PWB, LVPS, ROTARY MOTOR PWB, ROTARY MOTOR ASSY

Connects MCU PWB and ROTARY MOTOR PWB.
Connects LVPS and ROTARY MOTOR PWB.
Connects ROTARY MOTOR PWB and ROTARY MOTOR ASSY.

§6 MCU PWB, LVPS, TR0 SENSOR, DRIVE MOTOR PWB, FUSER MOTOR ASSY, P/H MOTOR ASSY, PROCESS DRIVE ASSY

Connects MCU PWB and BTR CAM CLUTCH.
Connects MCU PWB and TR0 SENSOR.
Connects MCU PWB and DRIVE MOTOR PWB.
Connects MCU PWB and PROCESS DRIVE ASSY.
Connects LVPS and DRIVE MOTOR PWB.
Connects LVPS and PROCESS DRIVE ASSY.
Connects DRIVE MOTOR PWB and FUSER MOTOR ASSY.
Connects DRIVE MOTOR PWB and P/H MOTOR ASSY.

§7 MCU PWB, LVPS, MAIN FUSER ASSY

Connects LVPS and MAIN FUSER ASSY.
Connects MCU PWB and MAIN FUSER ASSY.

§8 MCU PWB, FUSER TRAY ASSY, ENVIRONMENT SENSOR

Connects MCU PWB and FUSER TRAY ASSY.
Connects MCU PWB and ENVIRONMENT SENSOR.

Connects MCU PWB and LOW PAPER SENSOR.
Connects MCU PWB and FEED SOLENOID.
Connects MCU PWB and TURN CLUTCH.

§10. MCU PWB, MAIN P/H FRAME ASSY

Connects MCU PWB and MAIN P/H FRAME ASSY.

§11. MCU PWB, MAIN P/H FRAME ASSY, MSI ASSY, REGI/MSI INTL SW, COMMUNICATION PWB

Connects MCU PWB and MAIN P/H FRAME ASSY.

Connects MAIN P/H FRAME ASSY and MSI ASSY.

Connects MCU PWB and REGI./MSI INTL SW.

Connects MCU PWB and COMMUNICATION PWB.

§12. MCUPWB, FULLSTACKSENSOR, TOPEXITSSENSOR, EXITCHUTESWITCH, EXIT CHUTE FAN, FUSER FAN-1, DEVE. FAN

Connects MCU PWB and TOP EXIT SENSOR.

Connects MCU PWB and FULL STACK SENSOR.

Connects MCU PWB and EXIT CHUTE SWITCH.

Connects MCU PWB and EXIT CHUTE FAN.

Connects MCU PWB and FUSER FAN-1.

Connects MCU PWB and DEVE. FAN.

§13. MCU PWB, CONTROLLER PWB, OPERATION PANEL, CONTROLLER FAN

Connects MCU PWB and CONTROLLER PWB.

Connects CONTROLLER PWB and OPERATION PANEL.

Connects CONTROLLER PWB and CONTROLLER FAN.

7.4.3 Notation on the Diagrams for the Wiring and Signal Descriptions between Components

The symbols used in the wiring connection diagrams for parts on the following pages are as follows. (Explanations of commonly used symbols are omitted.)

Table 7-4.

Symbols Used in the Wiring Connection Diagrams

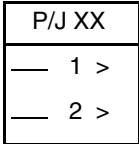
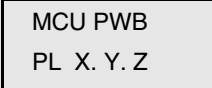
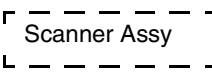
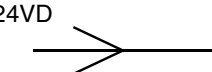
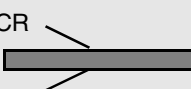
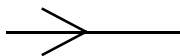
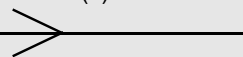
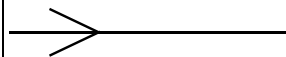
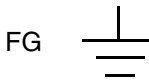
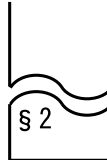
Symbol	Description
	Indicates connector. Connector number is given above and pin number is given below.
	Indicates plug side of connector.
	Indicates jack side of connector.
	Boxes with part names inside indicate those parts. The part name shown here indicates item Z of plate (PL) XY in Section 7.2.2 "Parts List Tables"
	Indicates screw connection. Terminal (connector) number is given in parentheses.
	Indicates that "A" and "A" are connected.
	Indicates part connected by harness, wire, etc. Also indicates signal wire name and details. Arrows on the line indicate signal direction.
	Indicates connection between parts by conductor such as leaf spring. Also indicates signal wire name and details. Arrows on the line indicate signal direction.

Table 7-4.

Symbols Used in the Wiring Connection Diagrams (continued)

Symbol	Description
	Indicates function and signal theoretical value (Low: L, High: H) when operating. Also indicates voltage when signal is "High."
	Indicates function and signal theoretical value (Low: L, High: H) when function is detected. Also indicates voltage when signal is "High".
	Indicates function and signal theoretical value (Low: L, High: H) when switch is on. Also indicates voltage when signal is "High".
24VDC	Indicates voltage measurement when the negative side of the DC power is connected to the corresponding ground (SG, AG or RTN).
SG	Indicates signal ground.
AG	Indicates analog ground.
	Indicates frame ground.
RTN	Indicates return.
	Indicates a single connector drawing divided into a different section or the same section. The other section is indicated at the bottom.
*	Indicates reference concerning that section.

Connection Diagram § 1 MCU PWB, LVPS, ROS ASSY, FUSER ASSY, MAIN P/H FRAME ASSY, FRONT COVER SWITCH R, FRONT COVER SWITCH L, TOP COVER SWITCH (1/2)

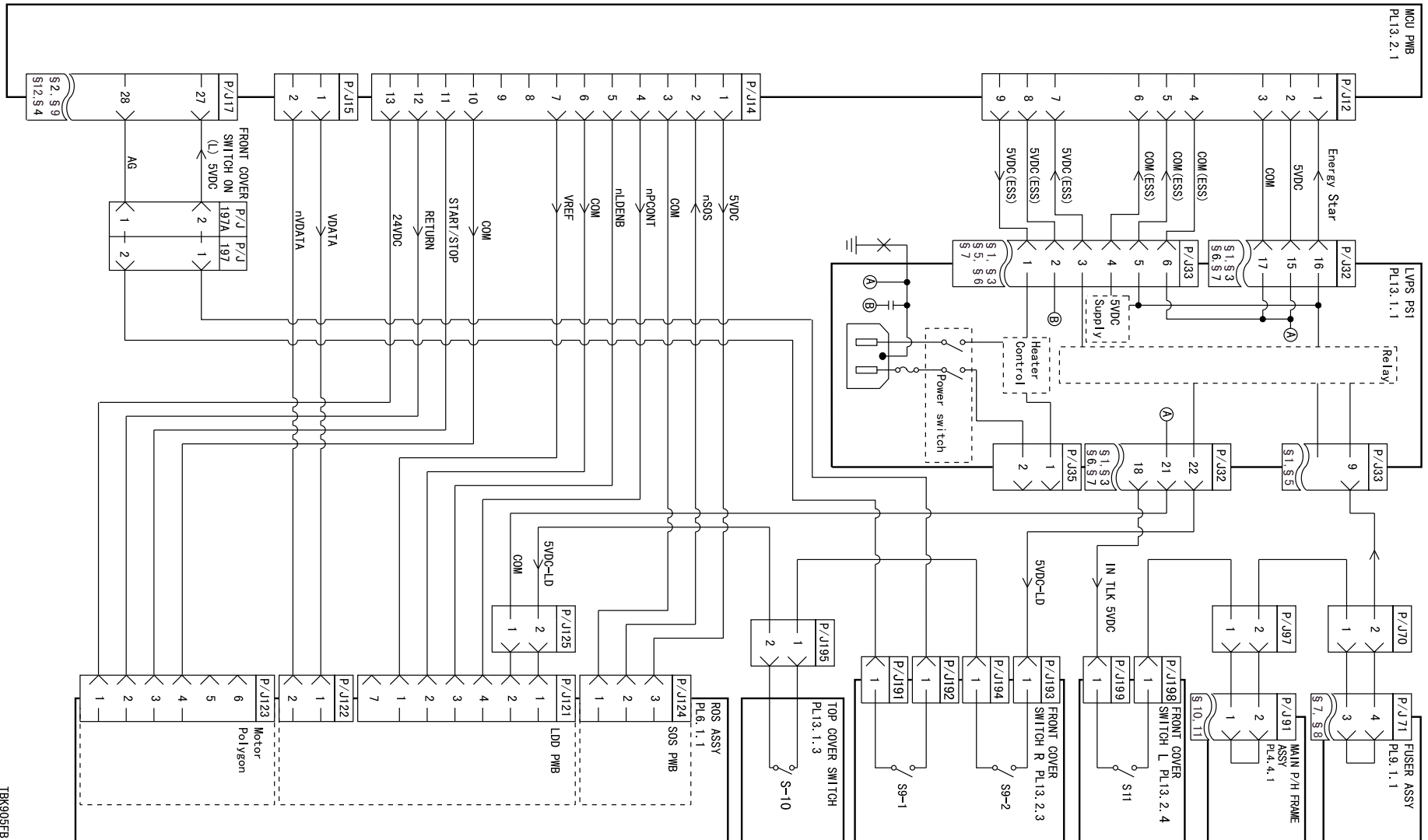


Table 7-5. Signal Description - § 1

Signal line	Description
HEATER ON(L) 5VDC	Control signal for P/R HEATER and H/R HEATER on/off.
24VDC-I/L	Detection of interlock connector, interlock switches, and the LVPS relay control signal.
5VDC-LD	Supply voltage of the LD ASSY of the ROS ASSY.
SOS	Scanning start reference signal based on input of light to SOS SENSOR of laser beam SOS PWB.
VREF	Reference voltage for target value for laser power.
LD ENB	Control signal for LD on-enable / force off. (High: Force off, Low: On enable)
SCANNER MOTOR ON(L) 5VDC	On/off control signal for scanner motor of ROS ASSY.
PCONT	Mode control signal for LD power control (APC). (Low: Sample mode, High: Hold mode)
VDATA	Pixel data signal that effects LD emission. (High: LD on, Low: LD off)
FRONT COVER SWITCH ON(L) 5VDC	FRONT COVER open (off) / closed (on) detection signal by FRONT COVER SWITCH L.

□ LVPS excess current protection circuit

All output is shut off when 24VDC/5VDC supply voltage is shorted. After restoring the short, reset the printer by turning the power off and then, after waiting 2 to 3 minutes, back on.

□ LVPS excess voltage protection circuit

All output is shut off when 24VDC/5VDC supply voltage is shorted. The operation point at this time is 7VDC or less for 5VDC, and 27 - 36VDC for 24VDC (reference). Reset the printer by turning the power off and then, after waiting 2 to 3 minutes, back on.

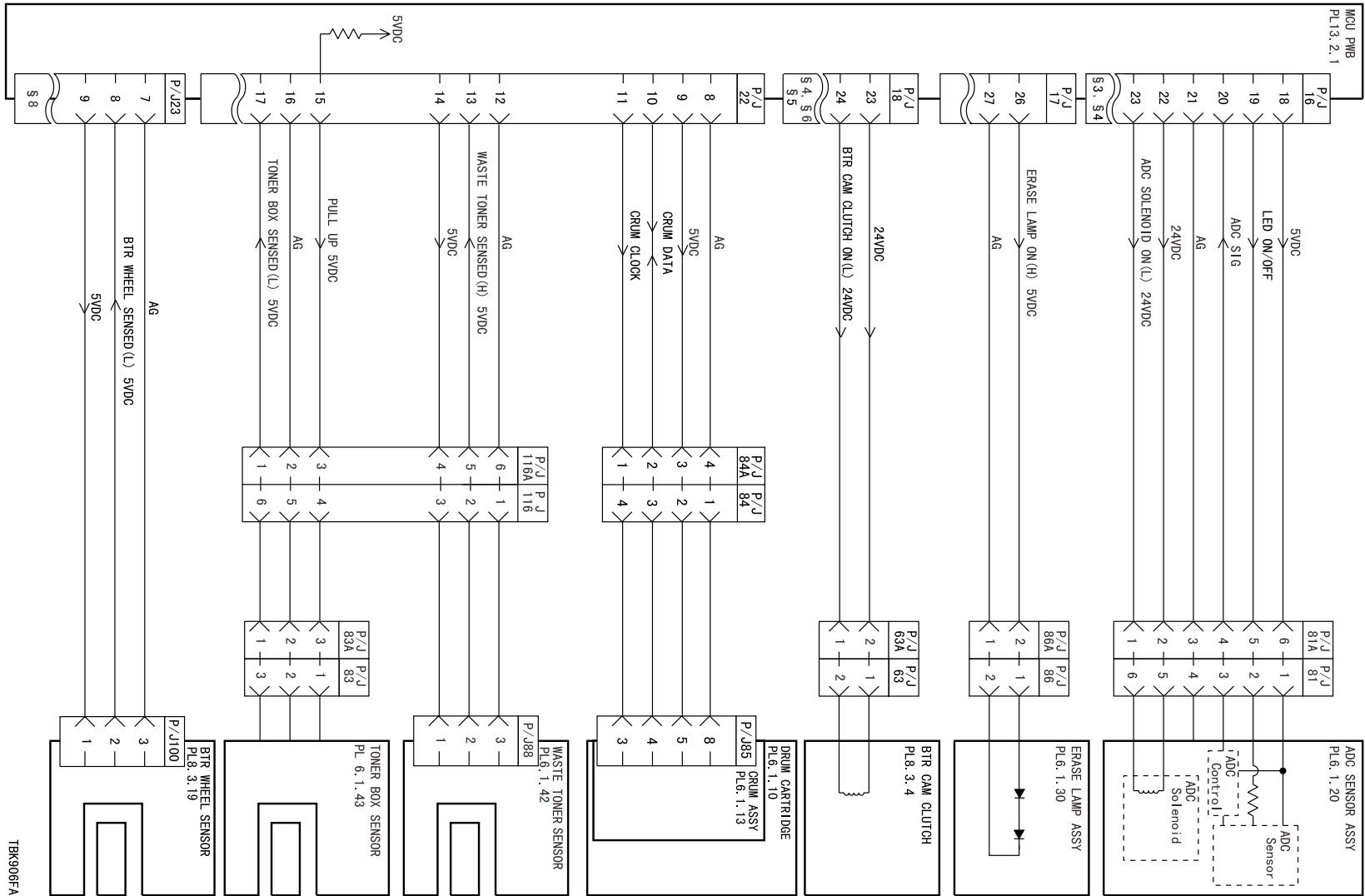
□ Output interruption by FRONT COVER SWITCH R

When FRONT COVER SWITCH R trips, the "24VDC-I/L" circuit is interrupted, shutting off 24VDC power supply to the MCU PWB and 5VDC-LD power supply to the ROS ASSY (LD ASSY).
When FRONT COVER SWITCH R is on, 24VDC-I/L is supplied to the LVPS relay circuit, and 24VDC and 5VDC-LD is output by the LVPS. FRONT COVER SWITCH R is also the interlock SWITCH for the 5VDC-LD circuit.



FRONT COVER SWITCH R and the TOP COVER SWITCH are interlock switches for laser radiation. To avoid exposure to laser radiation, never turn on both of these two interlock switches simultaneously (except during regular operations) or short the circuit to effect laser emission. Exposure to laser radiation could result in blindness. Be sure to follow the procedures described in this Service Manual for tasks requiring the printer operation during servicing.

Connection Diagram § 2 MCU PWB, ADC SENSOR ASSY, ERASE LAMP ASSY, BTR CAM CLUTCH, CRUM ASSY, WASTE TONER SENSOR, TONER BOX SENSOR, BTR WHEEL SENSOR (1/2)



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Table 7-6. Signal Description - § 2

Signal line	Description
LED ON(L) 5VDC	Control signal for LED on/off in ADC SENSOR of ADC SENSOR ASSY.
ADC SIG	Measurement signal issued by the ADC SENSOR of ADC SENSOR ASSY. (Analog value)
ADC SOLENOID ON(L) 24VDC	On/off control signal for ADC solenoid of ADC SENSOR ASSY.
ERASE LAMP ON(H) 5VDC	Control signal for LED on/off in ERASE LAMP ASSY.
BTR CAM CLUTCH ON(L) 24VDC	On/off control signal for BTR CAM CLUTCH
WASTE TONER SENSED(H) 5VDC	WASTE TONER BOX full detection signal issued by the WASTE TONER SENSOR.
TONER BOX SENSED(L) 5VDC	Waste toner box present (Low) / not present (High) detection signal issued by the TONER BOX SENSOR.
CRUM DATA	Write and read data for CRUM ASSY of DRUM CARTRIDGE.
CRUM CLOCK	Clock signal for CRUM ASSY of DRUM CARTRIDGE.

☐ ADC SIG signal

Measurement value for normal drum surface with no toner image should be approximately 3.5 ± 0.1 VDC.

☐ ADC solenoid coil resistance: $36\Omega \pm 1\%$ (20°C)

Connection Diagram - § 3 MCU PWB, HVPS, LVPS (1/2)

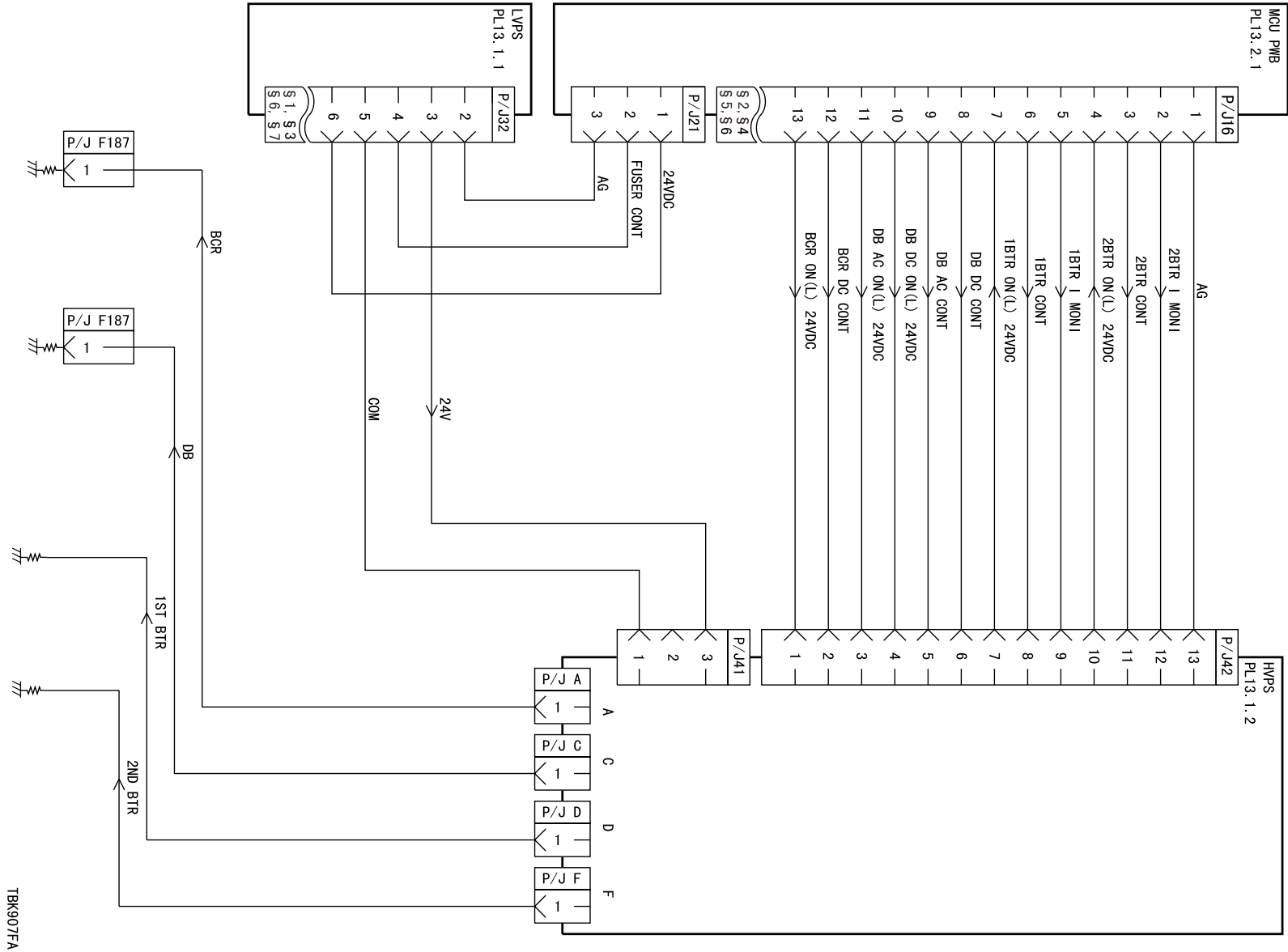
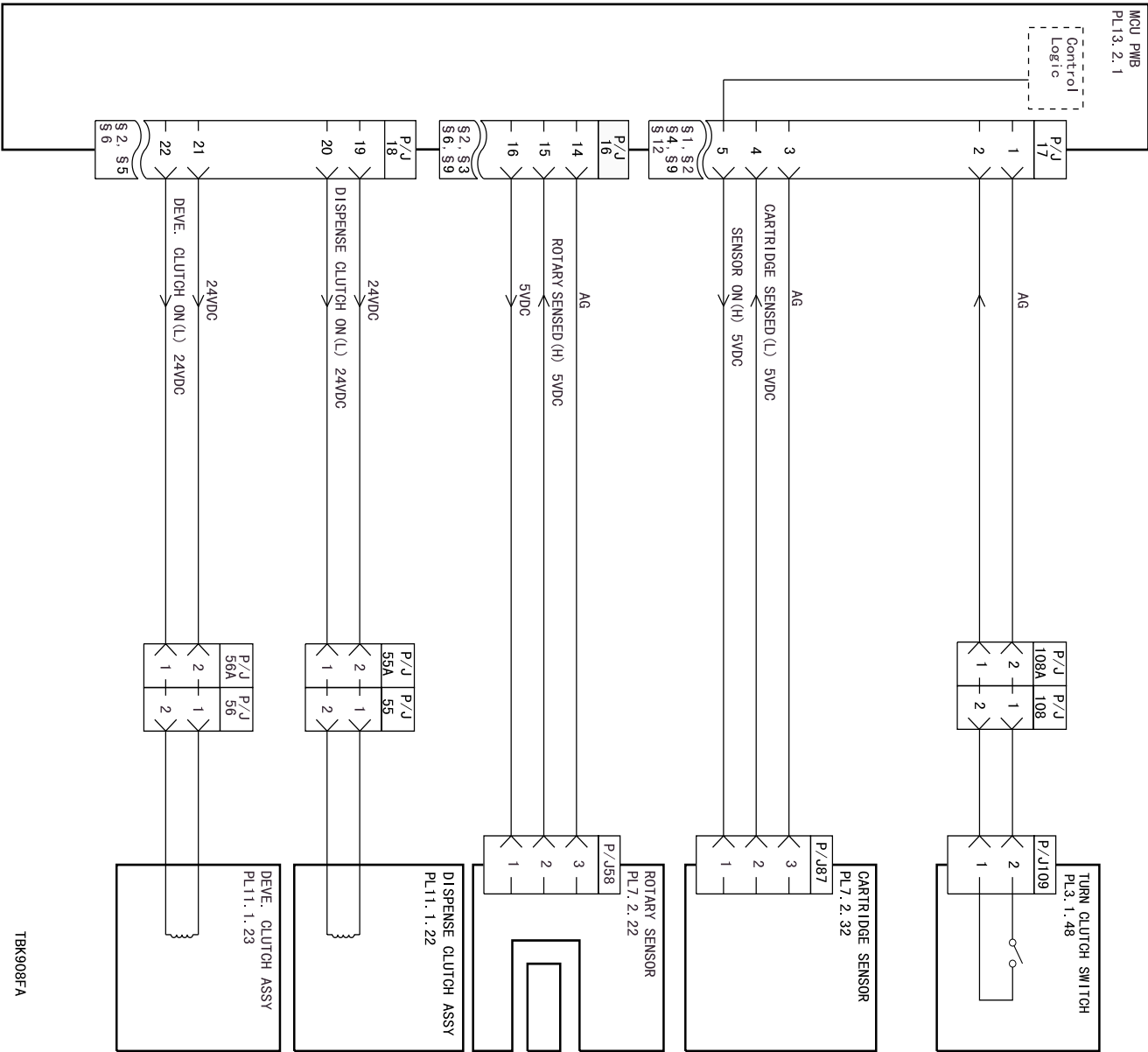


Table 7-7. Signal Description - § 3

Signal line	Description
DTS ON(L) 24VDC	On/off control signal for DTS output.
2BTR I MONI	Current monitor signal for 2ND BTR output. (Analog value)
2BTR CONT	Output control signal for 2ND BTR output. (Analog value)
2BTR ON(L) 24VDC	On/off control signal for 2ND BTR output.
1BTR I MONI	Voltage monitor signal for 1ST BTR output. (Analog value)
1BTR CONT	Output control signal for 1ST BTR output. (Analog value)
1BTR ON(L) 24VDC	On/off control signal for 1ST BTR output.
DB DC CONT	Output control signal for DB output (DC element). (Analog value)
DB AC ON(L) 24VDC	On/off control signal for DB output (DC element).
DB DC ON(L) 24VDC	On/off control signal for DB output (AC element).
BCR DC CONT	Output control signal for BCR output (DC element). (Analog value)
BCR ON(L) 24VDC	On/off control signal for BCR output.

Connection Diagram - § 4

MCU PWB
TURN CHUTE SWITCH
CARTRIDGE SENSOR
ROTARY SENSOR
DEVE. CLUTCH ASSY
DISPENSE CLUTCH ASSY (1/2)



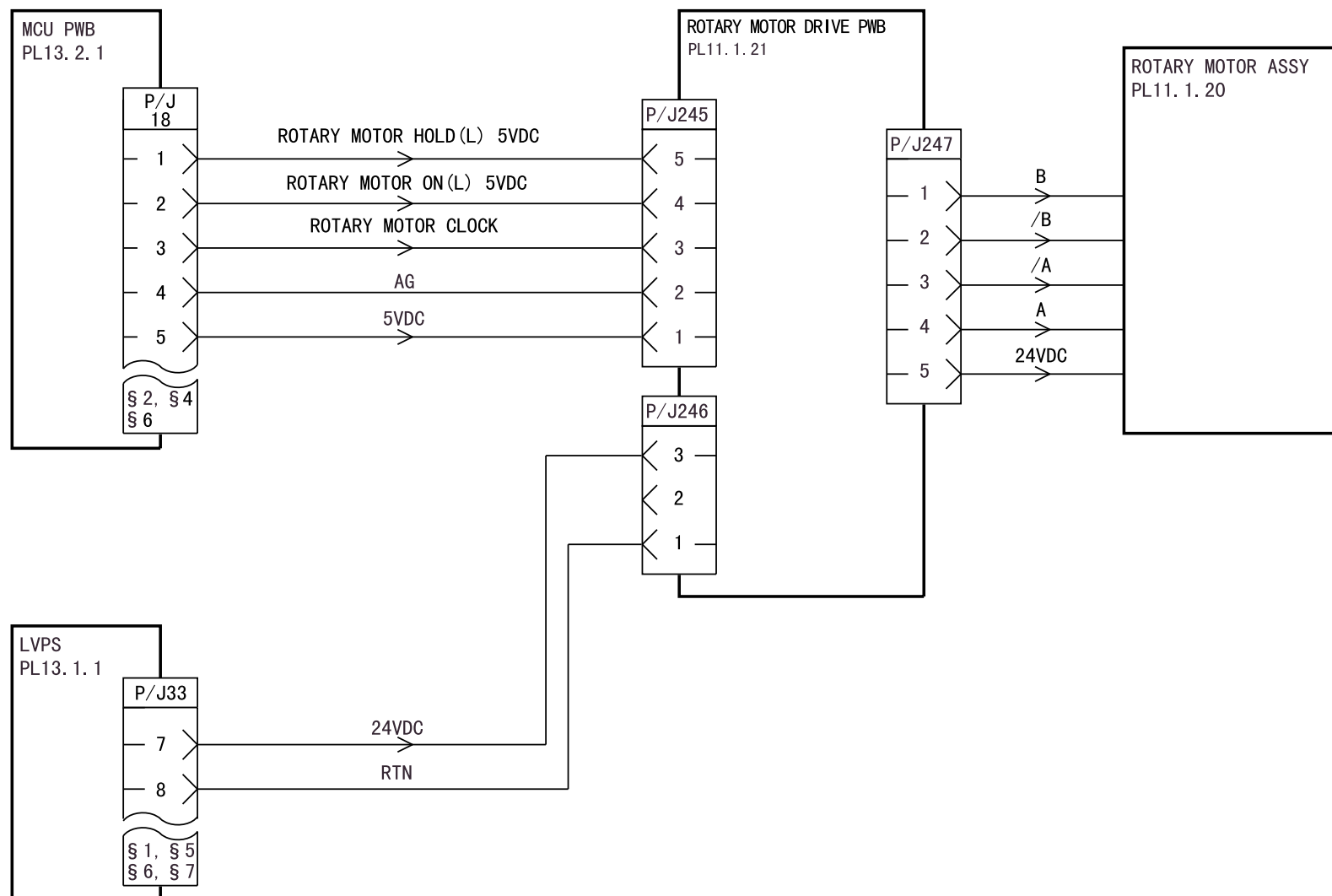
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Table 7-8. Signal Description - § 4

Signal line	Description
SENSOR ON(H) 5VDC	Sensor power ON (High) / OFF (Low) signal for USED CART. SENSOR and CARTRIDGE SENSOR.
CARTRIDGE SENSED(L) 5VDC	Toner cartridge present (Low) / not present (High) detection signal issued by the CARTRIDGE SENSOR.
ROTARY SENSED(H) 5VDC	ROTARY FRAME ASSY protrusion detection signal issued by the ROTARY SENSOR.
DEVE. CLUTCH ON(L) 24VDC	On/off control signal for DEVE. CLUTCH.
DISPENSE CLUTCH ON(L) 24VDC	On/off control signal for DISPENSE CLUTCH ASSY.

□ DEVE. CLUTCH coil resistance: $150\Omega \pm 10\%$ (20°C)

□ DEVE. CLUTCH coil resistance: TBD

Connection Diagram § 5 MCU PWB, LVPS, ROTARY MOTOR PWB, ROTARY MOTOR ASSY (1/2)

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Table 7-9. Signal Description - § 5

Signal line	Description
ROTARY MOTOR HOLD(L) 5VDC	Hold current control signal of ROTARY MOTOR ASSY.
ROTARY MOTOR ON(L) 5VDC	Drive power on/off signal for ROTARY MOTOR ASSY.
ROTARY MOTOR CLOCK	Clock signal for ROTARY MOTOR ASSY.
A, /A, B, /B	Excitation signal for ROTARY MOTOR ASSY.

□ ROTARY MOTOR ASSY description.

- Motor type: Hybrid stepping motor
- Direction of rotation: Clockwise direction (as viewed from rear of printer)
- Step angle: $1.8^{\circ} \pm 0.18^{\circ}$
- Winding resistance: $0.9 - 0.95 \pm 10\%$ (25°C)
- Excitation sequence : See the following table.

Table 7-10. Excitation Sequence

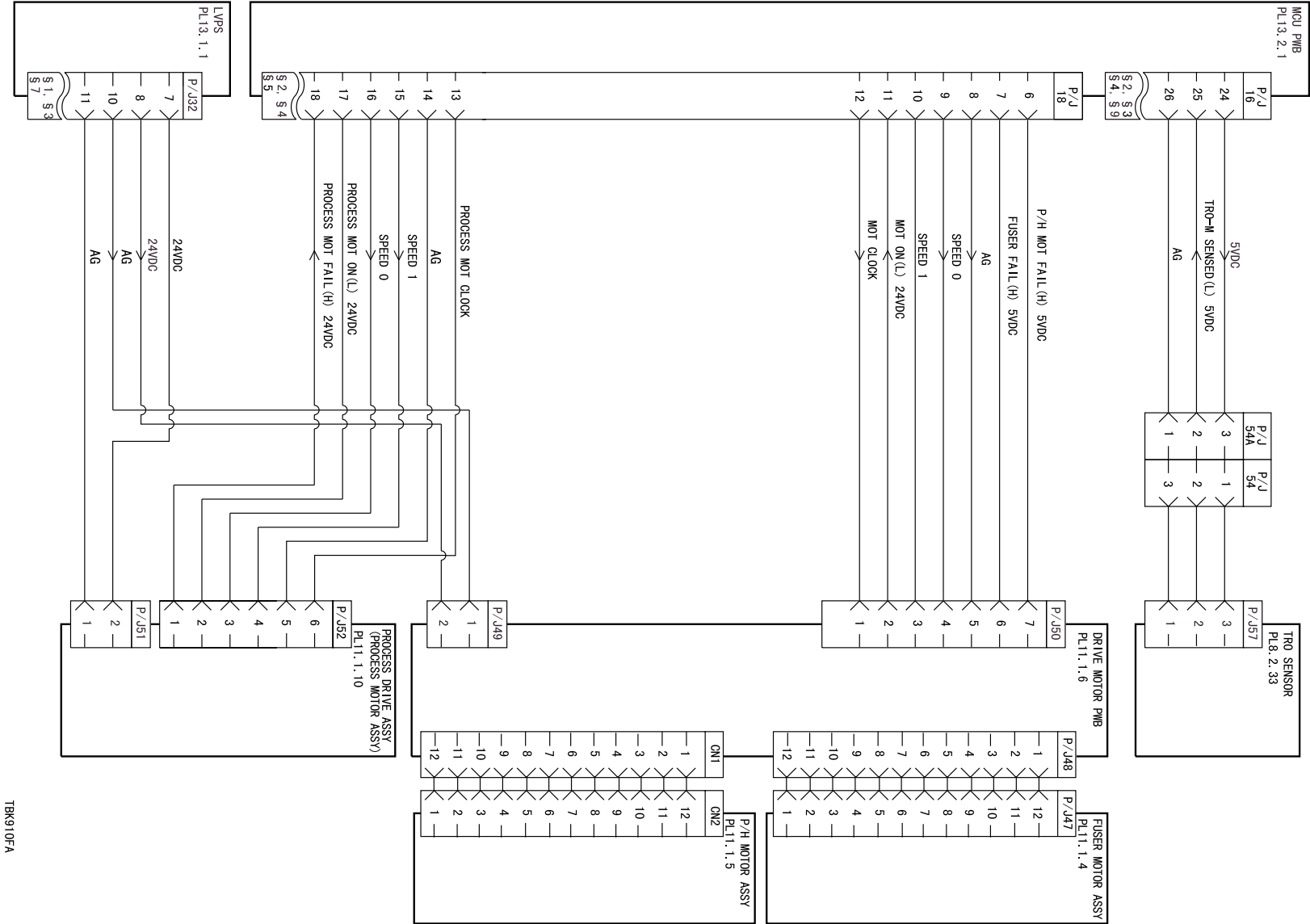
Phase	Steps (2-phase excitation)							
	1	2	3	4	5	6	7	8
Phase B	*			*	*			*
/B		*	*			*	*	
A	*	*			*	*		
Phase/A			*	*			*	*

- Rotation/hold according to signal

Table 7-11. Rotation/Hold According to Signal

ROTARY MOTOR ON(L) 5VDC	ROTARY MOTOR HOLD(L) 5VDC	Status
Low	High	ROTARY MOTOR ASSY ready for rotation. (Actual rotation is in accordance with ROTARY MOTOR clock.)
Low	Low	ROTARY MOTOR ASSY on hold.
High	Low or High	ROTARY MOTOR ASSY neither turns nor on hold.

Connection Diagram - § 6 MCU PWB, LVPS, TR0 SENSOR, DRIVE MOTOR PWB, FUSER MOTOR ASSY, P/H MOTOR ASSY, PROCESS DRIVE ASSY (1/2)



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Table 7-12. Signal Description - § 6

Signal line	Description
TR0-M SENSED(L) 5VDC	TR mark detection signal for IBT belt ASSY issued by the TR0 SENSOR.
P/H MOT FAIL(H) 5VDC	Fail detection signal for P/H MOTOR ASSY. (High: Abnormal, Low: Normal)
FUSER FAIL(H) 5VDC	Fail detection signal for FUSER MOTOR ASSY. (High: Abnormal, Low: Normal)
MOT ON(L) 24VDC	On/off control signal for P/H MOTOR ASSY and FUSER MOTOR ASSY.
MOT CLOCK	Clock output signal for P/H MOTOR ASSY and FUSER MOTOR ASSY.
PROCESS MOT CLOCK	Clock output signal for PROCESS MOTOR.
PROCESS MOT ON(L) 24VDC	On/off control signal for PROCESS MOTOR.
PROCESS MOT FAIL(H) 24VDC	Fail detection signal for PROCESS MOTOR.

□ PROCESS MOTOR ASSY description.

- Motor type: Permanent magnet magnetic field DC servomotor
- Number of poles: 3-phase, 8-poles
- Motor control speed: 1735.358rpm $\pm$ 0.5% (standard speed),
867.679rpm $\pm$ 0.5% (half speed)
578.453rpm $\pm$ 0.5% (1/3 speed)
- Direction of rotation: Counterclockwise direction
(as viewed from rear of printer)
- Rotation fault detection: Detects abnormality when a variation in control speed of 6.25% or greater occurs.

□ P/H MOTOR ASSY description.

- Motor type: Permanent magnet magnetic field DC servomotor
- Number of poles: 3-phase, 8- poles
- Motor control speed: 1667rpm $\pm$ 0.5% (standard speed), 833.5rpm $\pm$ 0.5% (half speed) 555.667rpm (1/3 speed)
- Direction of rotation: CCounterclockwise direction (as viewed from rear of printer)
- Rotation fault detection: Detects abnormality when a variation in control speed of 6.25% or greater occurs. (P/H MOT FAIL signal is "High".)

□ FUSER MOTOR ASSY description.

- Motor type: Permanent magnet magnetic field DC servomotor
- Motor control speed: 1667rpm $\pm$ 0.5% (standard speed) 833.5rpm $\pm$ 0.5% (half speed)
555.667rpm $\pm$ (1/3 speed)
- Direction of rotation: Counterclockwise direction
(as viewed from rear of printer)
- Rotation fault detection: Detects abnormality when a variation in control speed of 6.25% or greater occurs. (FUSER FAIL signal is "High".)

□ BTR CAM SOLENOID coil resistance: 220 $\pm$ 10% (20°C)

Connection Diagram § 7 MCU PWB, LVPS, MAIN FUSER ASSY (1/2)

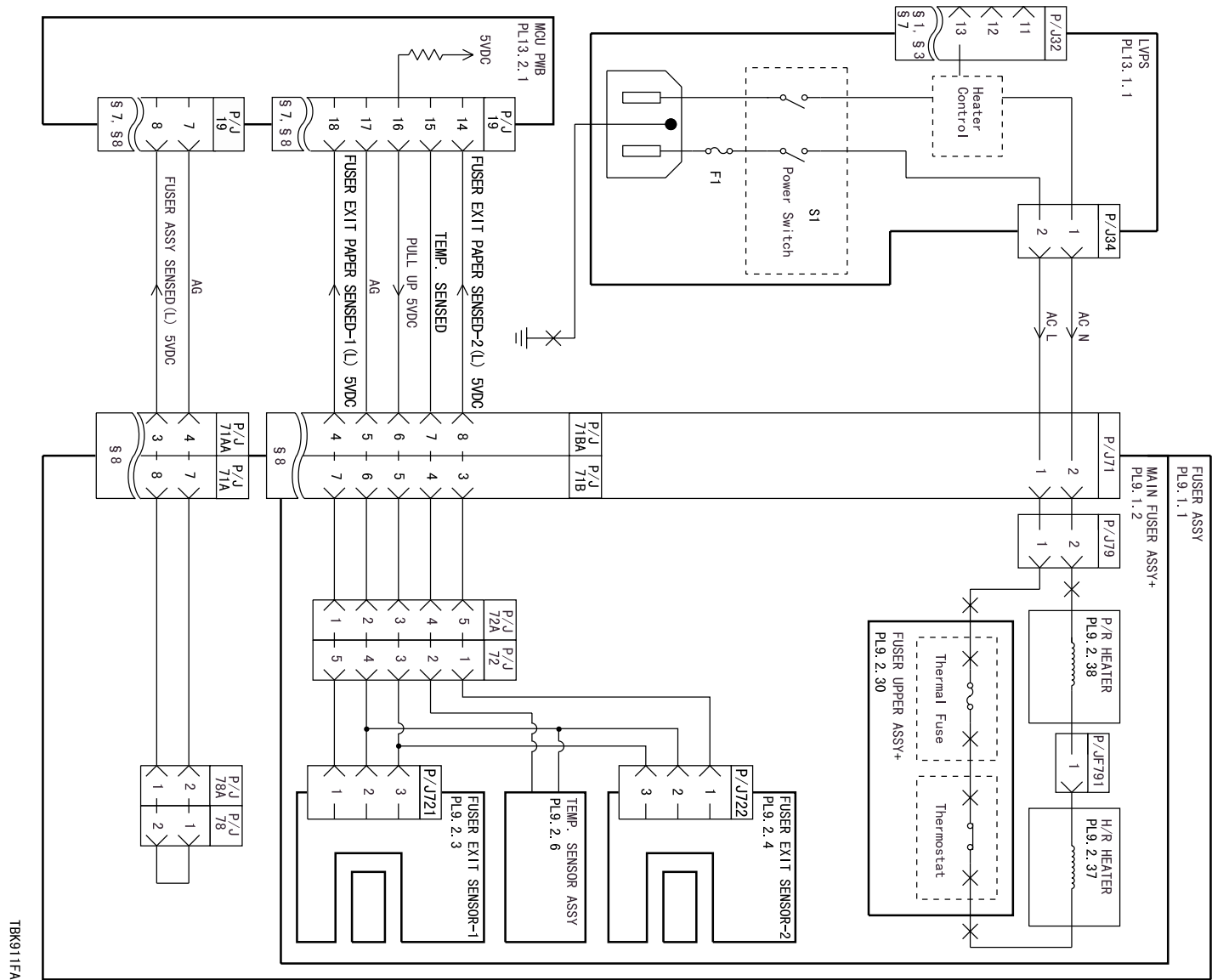
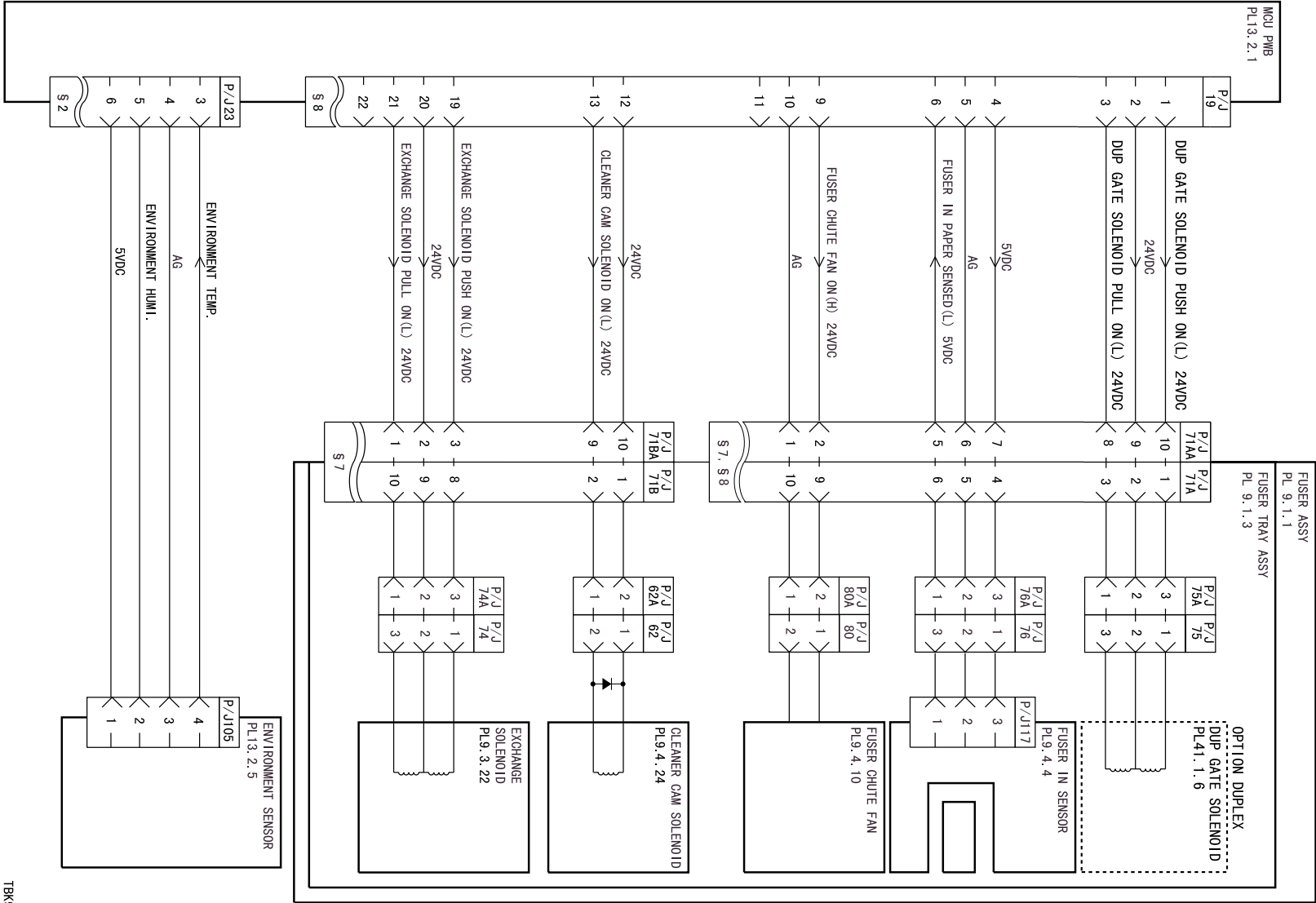


Table 7-13. Signal Description - § 7

Signal line	Description
AC N	Neutral side of AC input from power source (supply voltage for heater).
AC L	Line side of AC input from power source (supply voltage for heater).
TEMP. SENSED	Surface temperature data of heat roll measured by the thermistor of TEMP. SENSOR ASSY to determine the FUSER control temperature. (Analog value)
FUSER EXIT PAPER SENSED(L) 5VDC	Paper detection signal for fuser issued by the FUSER EXIT SENSOR.
FUSER ASSY SENSED(L) 5VDC	Connection detection signal for FUSER ASSY.

- ☐ Thermal fuse melting temperature: 141 °C (+0 °C /-6°C)
- ☐ Thermostat contact open temperature: 150 °C ± 5.6°C
- ☐ Heater rated power
P/R HEATER : 249 ± 12.5W(31V), H/R HEATER : 558 ± 27.9W(69V)

Connection Diagram - § 8 MCU PWB, FUSER TRAY ASSY, ENVIRONMENT SENSOR (1/2)



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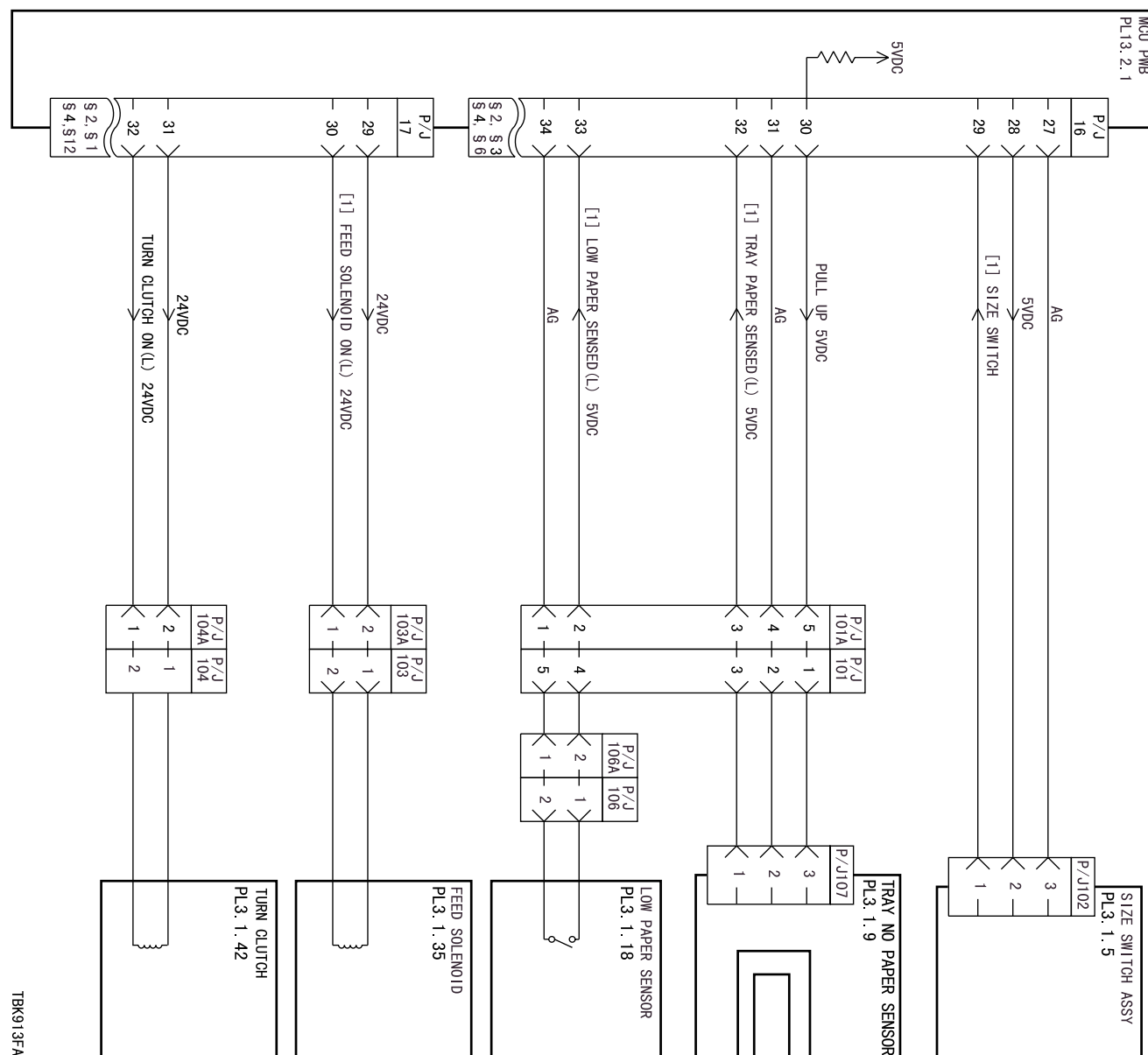
Table 7-14. Signal Description - § 8

Signal line	Description
EXCHANGE SOLENOID PUSH ON(L) 24VDC	On/off control signal for EXCHANGE SOLENOID in push direction (face-up discharge).
EXCHANGE SOLENOID PULL ON(L) 24VDC	On/off control signal for EXCHANGE SOLENOID in pull direction (face-down discharge).
CLEANER CAM SOLENOID ON(L) 24VDC	On/off control signal for CLEANER CAM SOLENOID.
FUSER CHUTE FAN ON(H) 24VDC	On/off control signal for FUSER CHUTE FAN.
FUSER IN PAPER SENSED(L) 5VDC	Paper detection signal for FUSER unit issued by the FUSER IN SENSOR.
ENVIRONMENT TEMP.	Printer environment temperature data measured by ENVIRONMENT SENSOR thermistor. (Analog value)
ENVIRONMENT TEMP.	Printer environment humidity data measured by ENVIRONMENT SENSOR humidity. (Analog value)

- ☐ EXCHANGE SOLENOID coil resistance: $45 \Omega \pm 10\%$ (20°C) [24VDC - between signals]
- ☐ CLEANER CAM SOLENOID coil resistance: $220 \Omega \pm 10\%$ (20°C)
- ☐ FUSER CHUTE FAN description.
 - Number of poles: 4
 - Rotation speed: $5000 \pm 1000\text{rpm}$

Connection Diagram - § 9

MCU PWB
 SIZE SWITCH ASSY
 TRAY NO PAPER SENSOR
 LOW PAPER SENSOR
 FEED SOLENOID
 TURN CLUTCH (1/2)



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NOTE:

The numbers (1, 2, 3, 4) preceding the signal line name indicate the cassette number. Cassette 1 is the paper feed unit consisting of a paper cassette beneath the printer, cassette 2 is the top cassette of the optional feeder unit, and cassette 3 is the second.

Table 7-15. Signal Description - § 9

Signal line	Description
[1] SIZE SWITCH	Detection signal for size of paper in cassette 1. (Analog value)
[1] FEED SOLENOID ON(L) 24VDC	On/off control signal for cassette 1 FEED SOLENOID.
[1] TRAY PAPER SENSED(L) 5VDC	Signal for detecting presence of paper in the paper cassette issued by the TRAY NO PAPER SENSOR. (High Paper not detected, Low: Paper detected)
[1] LOW PAPER SENSED(L) 5VDC	Signal for detecting when paper in the paper cassette is low issued by the TRAY 1 LOW PAPER SENSOR. (High: Enough, Low: Low)

□ FEED SOLENOID coil resistance: $90\Omega \pm 10\%$ (20°C)

□ TURN CLUTCH coil resistance

□ Feed SWITCH description.

Size of paper in the paper cassette is determined by the on/off status of the Paper Size Switches of the SIZE SWITCH ASSY. Paper Size Switch on/off status and SIZE SWITCH voltage for each paper size are shown in the following table.

NOTE: The Paper Size Switches when viewing the printer from the front are from left to right: SW1, SW2, SW3, and SW4. "On" is "1" and "off" is "0".

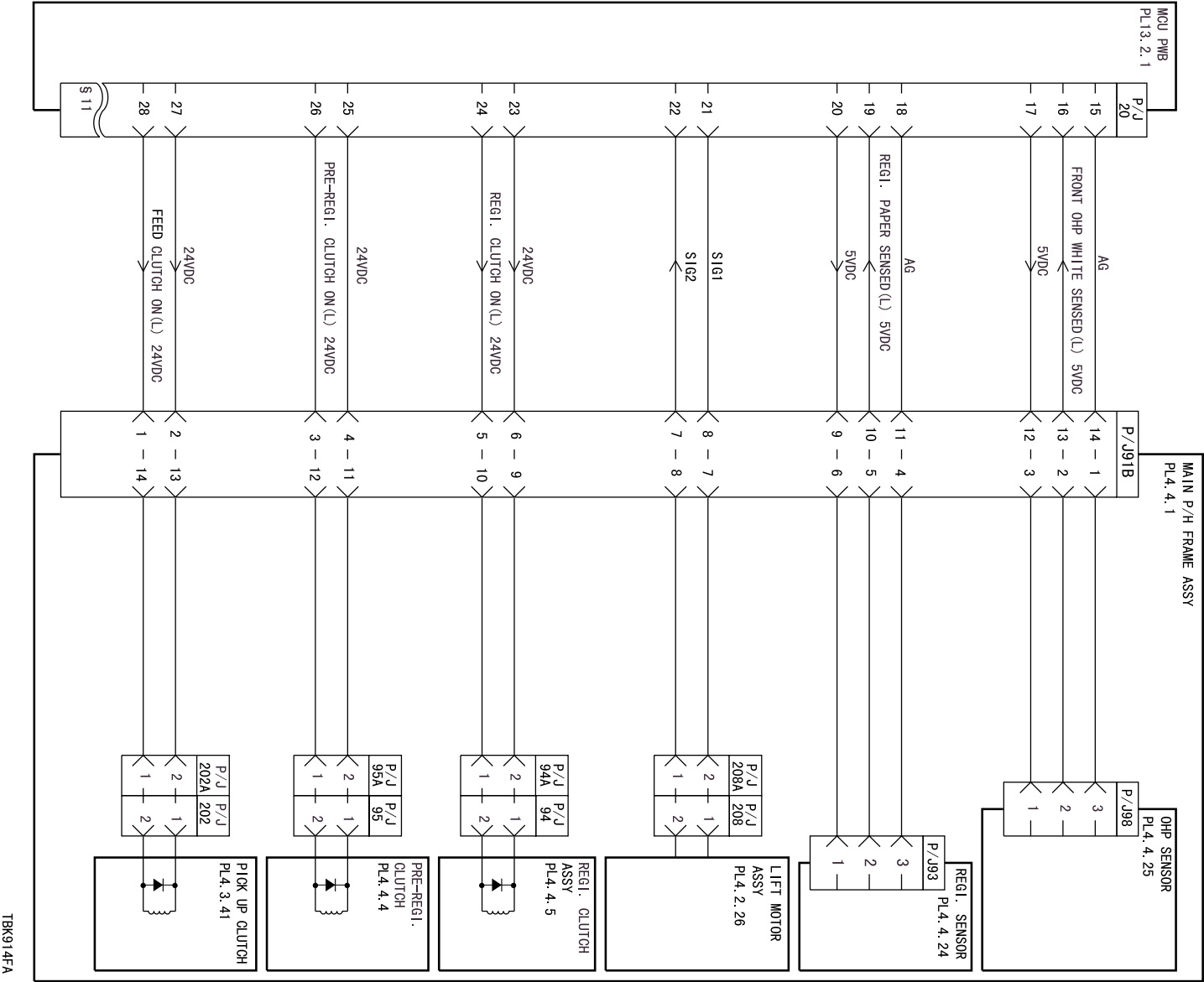
Table 7-16. Size Switch Signals

Paper size	Paper Size Switch				Voltage (Unit: VDC)
	SW1	SW2	SW3	SW4	SW4
No paper cassette	0	0	0	0	0.275-0.293
B5(LEF) *1	1	1	0	0	3.671-3.715
EXECUTIVE(LEF) *2					
A4(LEF)	0	1	0	0	1.396-1.445
LETTER(LEF)	1	0	1	0	3.098-3.152
A4(SEF) *1	0	1	1	1	2.248-2.298
LETTER(SEF)*2					
LEGAL14 (SEF)	1	1	1	0	4.247-4.276
B4(SEF)	0	1	0	1	1.680-1.730
A3(SEF)	0	0	1	0	0.834-0.871
LEDGER(SEF)	0	0	1	1	1.116-1.157
12" X 8" (SEF)	0	0	0	1	0.554-0.583
Nonstandard	1	1	1	1	4.537-4.554
Not used	1	0	0	0	-
Not used	1	0	0	1	-
Not used	0	1	1	0	-
Not used	1	0	1	1	-
Not used	1	1	0	1	-

*: When the paper size switch on/off status is same, one of the two shown below is selected according to specifications.

*1: Milimeter unit spec., *2: Inch unit spec.)

Connection Diagram - § 10 MCU PWB, MAIN P/H FRAME ASSY (1/2)



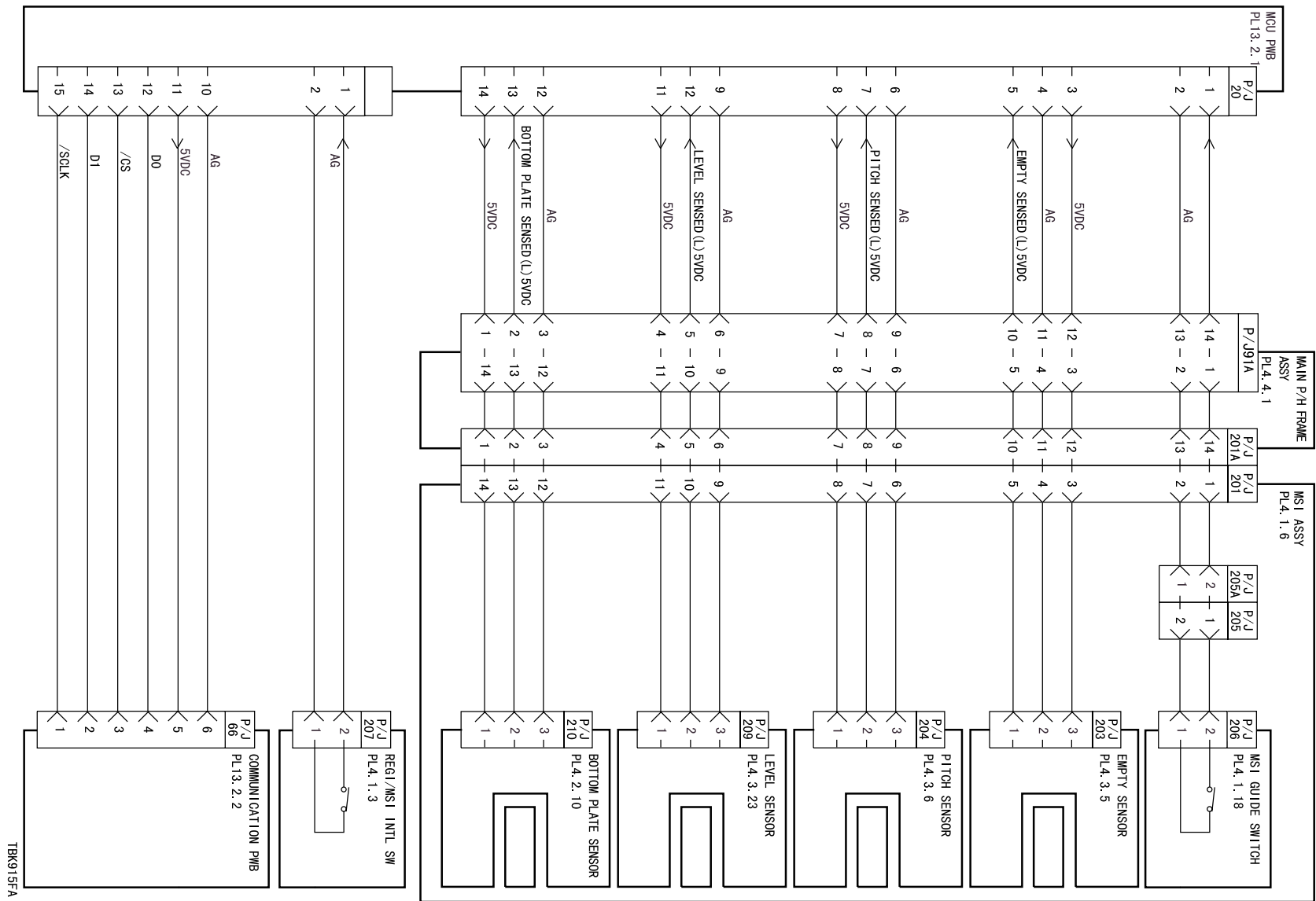
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Table 7-17. Signal Description - § 10

Signal line	Description
REGI. PAPER SENSED(L) 5VDC	Paper detection signal for MAIN P/H ASSY issued by the REGI. SENSOR.
FRONT OHP WHITE SENSED(L) 5VDC	White strip detection signal for OHP film (for color) by FRONT OHP SENSOR. * For more information concerning front/back detection for OHP film, see Section TBD "OHP Front/Back Detection Control" in Chapter 2.
REAR OHP WHITE SENSED(L) 5VDC	White strip detection signal for OHP film (for color) by FRONT OHP SENSOR. * For more information concerning front/back detection for OHP film, see Section TBD "OHP Front/Back Detection Control" in Chapter 2.
PRE-REGI. CLUTCH ON(L) 24VDC	On/off control signal for PRE-REGI. CLUTCH.
REGI. CLUTCH ON(L) 24VDC	On/off control signal for REGI. CLUTCH.
FEED CLUTCH ON(L) 24VDC	On/off control signal for REGI. BRAKE CLUTCH.
MAIN P/H ASSY SENSED(L) 5VDC	Connection detection signal for MAIN P/H ASSY.

- ☐ PRE-REGI. CLUTCH coil resistance: $172\Omega \pm 10\%$ (20°C)
- ☐ REGI. CLUTCH coil resistance: $172\Omega \pm 10\%$ (20°C)
- ☐ FEED CLUTCH coil resistance: TBD

Connection Diagram - § 11 MCU PWB, MAIN P/H FRAME ASSY, MSI ASSY,
REGI/MSI INTL SW. COMMUNICATION PWB (1/2)

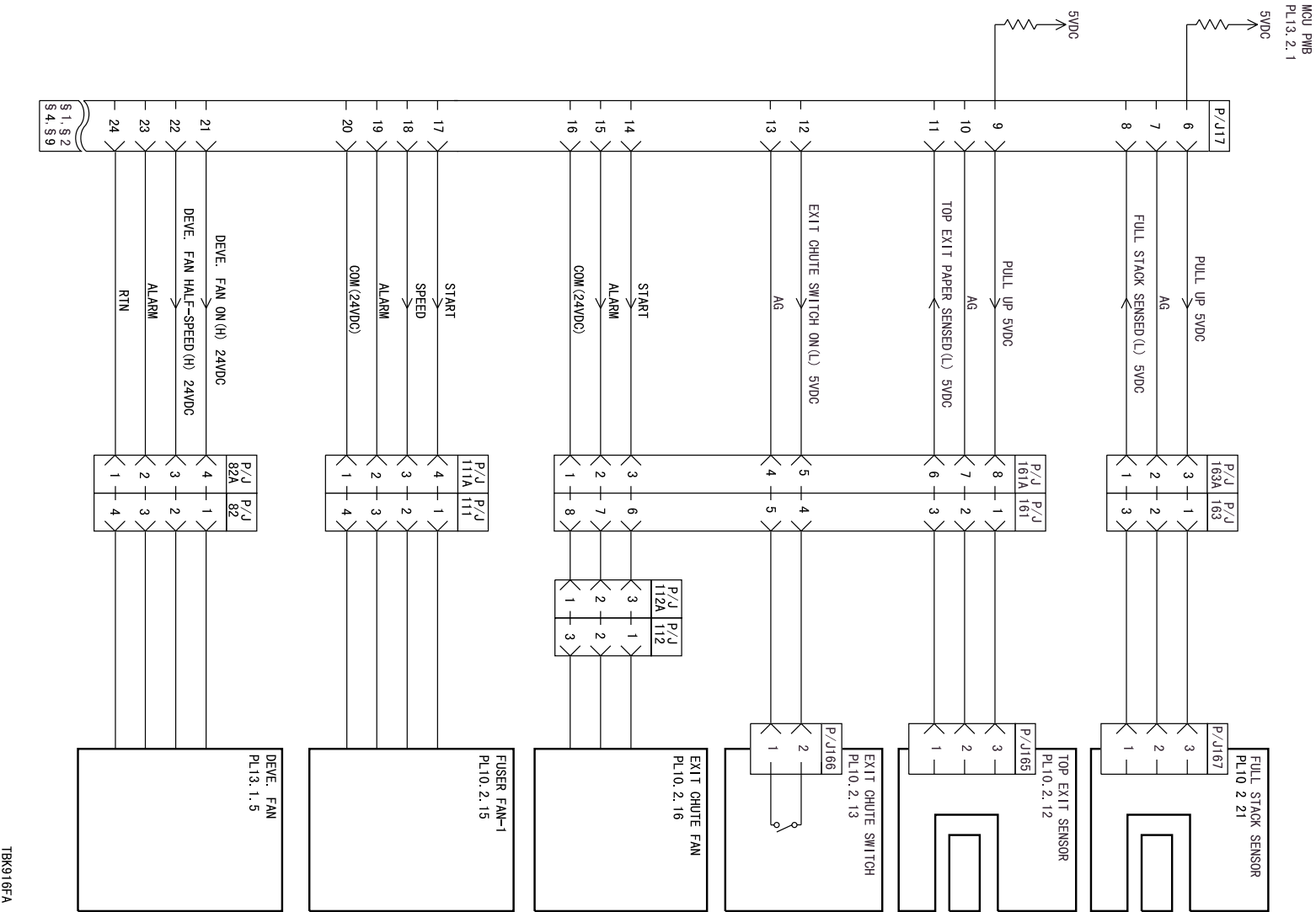


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Table 7-18. Signal Description - § 11

Signal line	Description
EMPTY SENSED (L) 5VDC	Signal for detecting presence of paper in the MSI ASSY issued by the EMPTY SENSOR. (High Paper not detected, Low: Paper detected)
PITCH SENSED (L) 5VDC	TBD
LEVEL SENSED (L) 5VDC	TBD
BOTTOM PLETE SENSED (L) 5VDC	TBD

Connection Diagram § 12 MCU PWB, FULL STACK SENSOR, TOP EXIT SENSOR, EXIT CHUTE SWITCH, EXIT CHUTE FAN, FUSER FAN-1, DEVE. FAN (1/2)



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Table 7-19. Signal Description - § 12

Signal line	Description
TOP EXIT PAPER SENSED(L) 5VDC	Paper detection signal for EXIT LOWER ASSY issued by the TOP EXIT SENSOR.
EXIT CHUTE SWITCH ON(L) 5VDC	Signal for detecting whether exit upper ASSY is open (off) or closed (on) issued by the EXIT CHUTE SWITCH.
FULL STACK SENSED(L) 5VDC	Signal for detecting full stack status of TOP COVER paper issued by the FULL STACK SENSOR. (High: Not Full Stack, Low: Full Stack)
FUSER FAN HALF-SPEED(H) 24VDC	FUSER FAN high speed (Low) / low speed (High) rotation control signal.
FUSER FAN ON(H) 24VDC	On/off control signal for FUSER FAN.
DEVE. FAN HALF-SPEED(H) 24VDC	DEVE. FAN high speed (Low) / low speed (High) rotation control signal.
DEVE. FAN ON(H) 24VDC	On/off control signal for DEVE. FAN.

☐ FUSER FAN description

- Number of poles: 4
- Rotation speed: 3400 ± 200rpm (high speed), 1900 ± 250rpm (low speed)

☐ DEVE. FAN description

- Number of poles: 4
- Rotation speed: 3400 ± 200rpm (high speed), 2500 ± 250rpm (low speed)

Connection Diagram - § 13 MCU PWB, CONTROLLER PWB, OPERATION PANEL, CONTROLLER FAN (1/2)

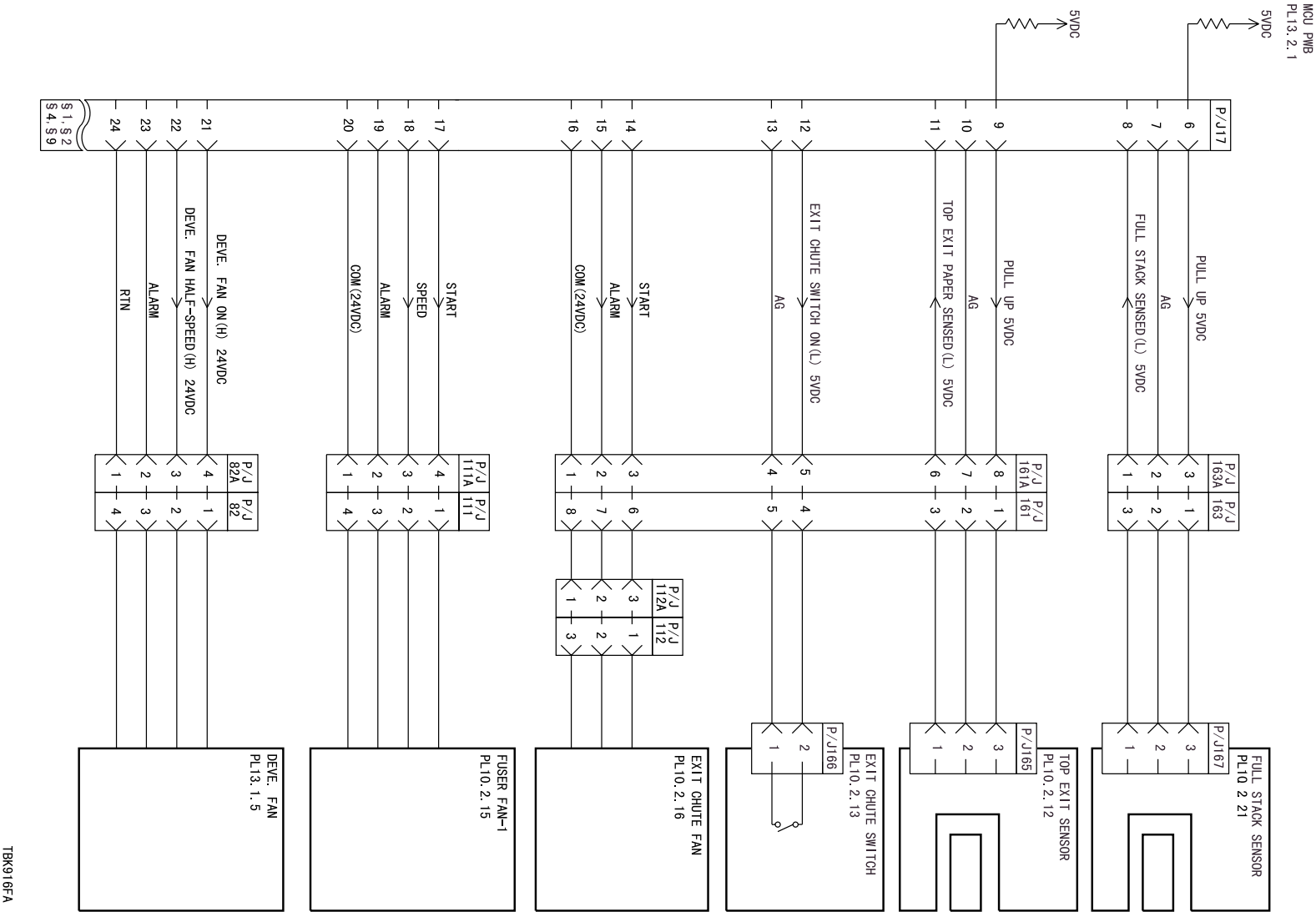


Table 7-20. Signal Description - § 13

Signal line	Description
TEST PRINT ON(L) 5VDC	Setting to low level (connecting to SG) enables internal test print.

- ☐ For P/J11 signals, see the interface specifications.
- ☐ Signals between the CONTROLLER PWB and operation pane differ according to OEM customized specifications.
- ☐ Controller description
 - Number of poles: 4
 - Rotation speed: 2000 ± 400rpm

7.5 Component Layout

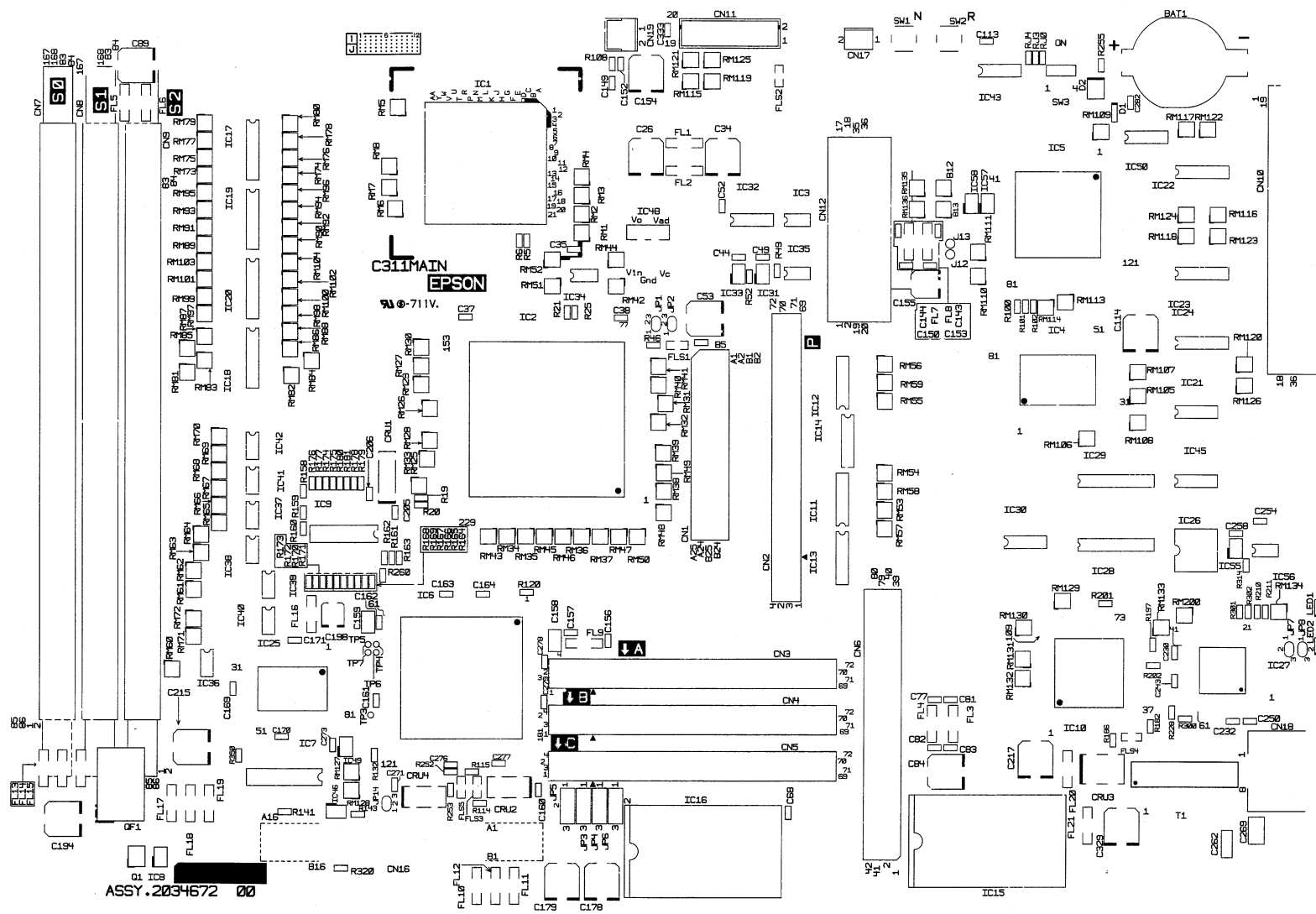


Figure 7-34. C311MAIN Component Layout - Component Side

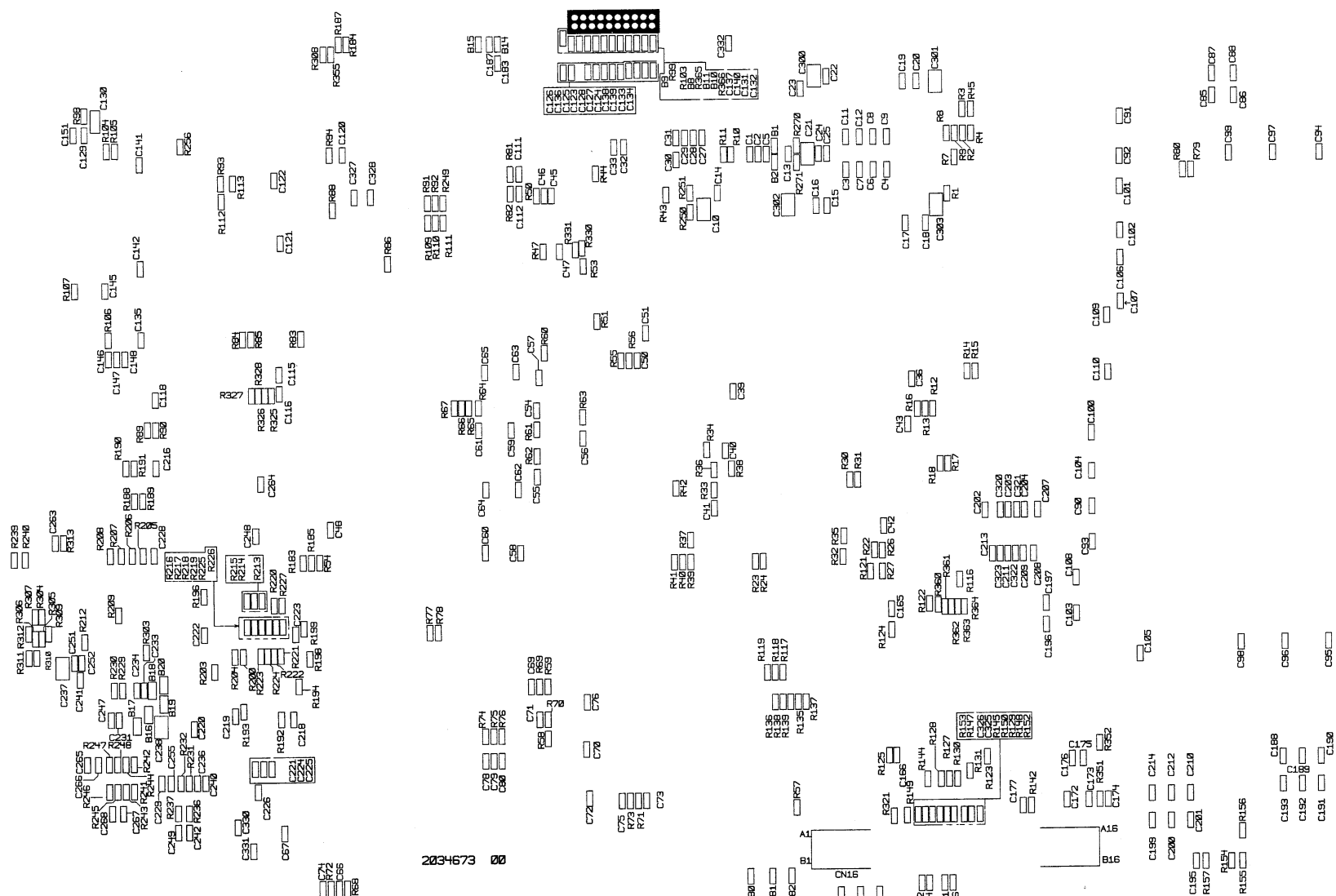


Figure 7-35. C311MAIN Component Layout - Soldered Side

7.6 Circuit Diagrams

See the following pages for the C311MAIN circuit diagrams.

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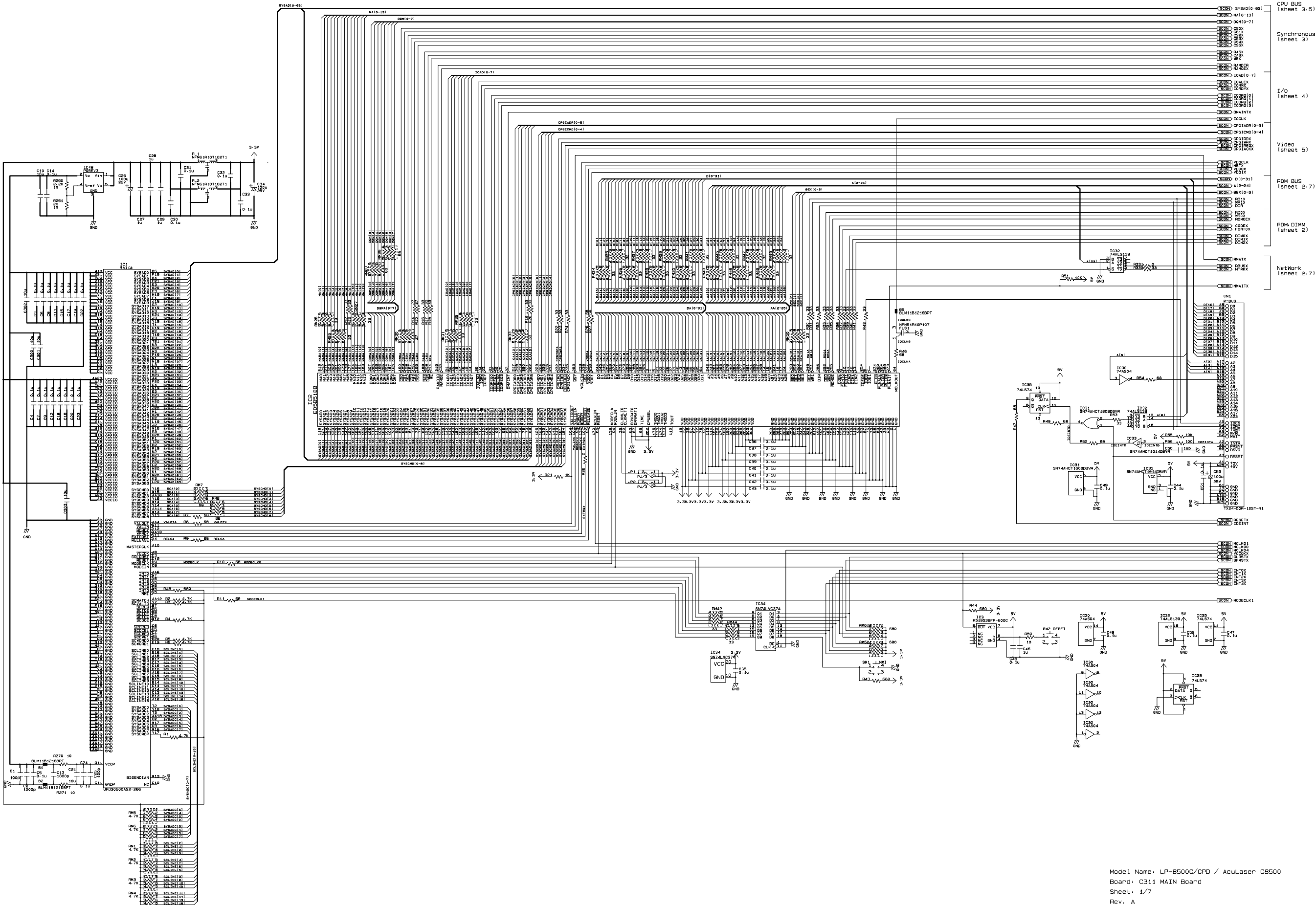
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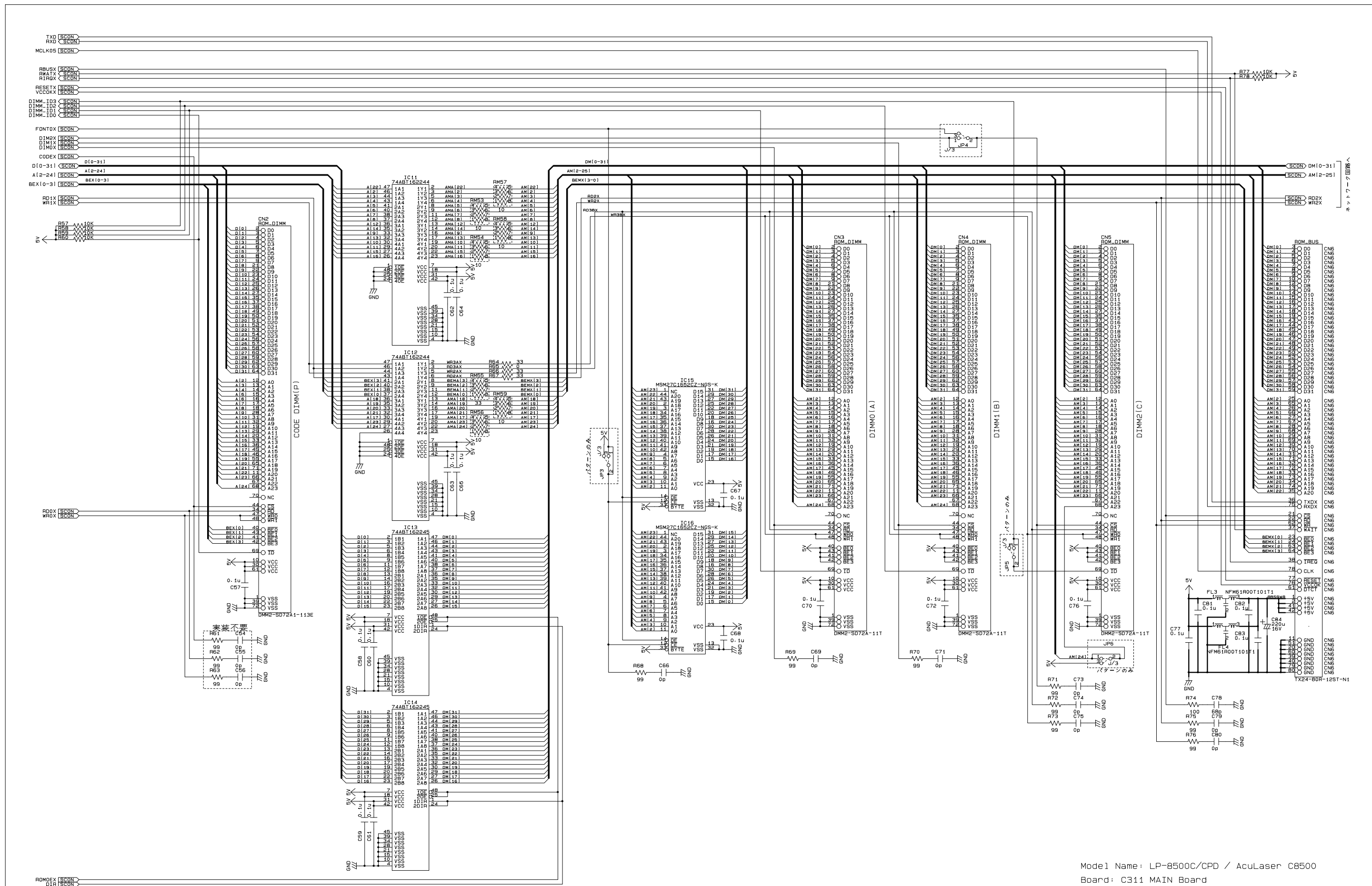
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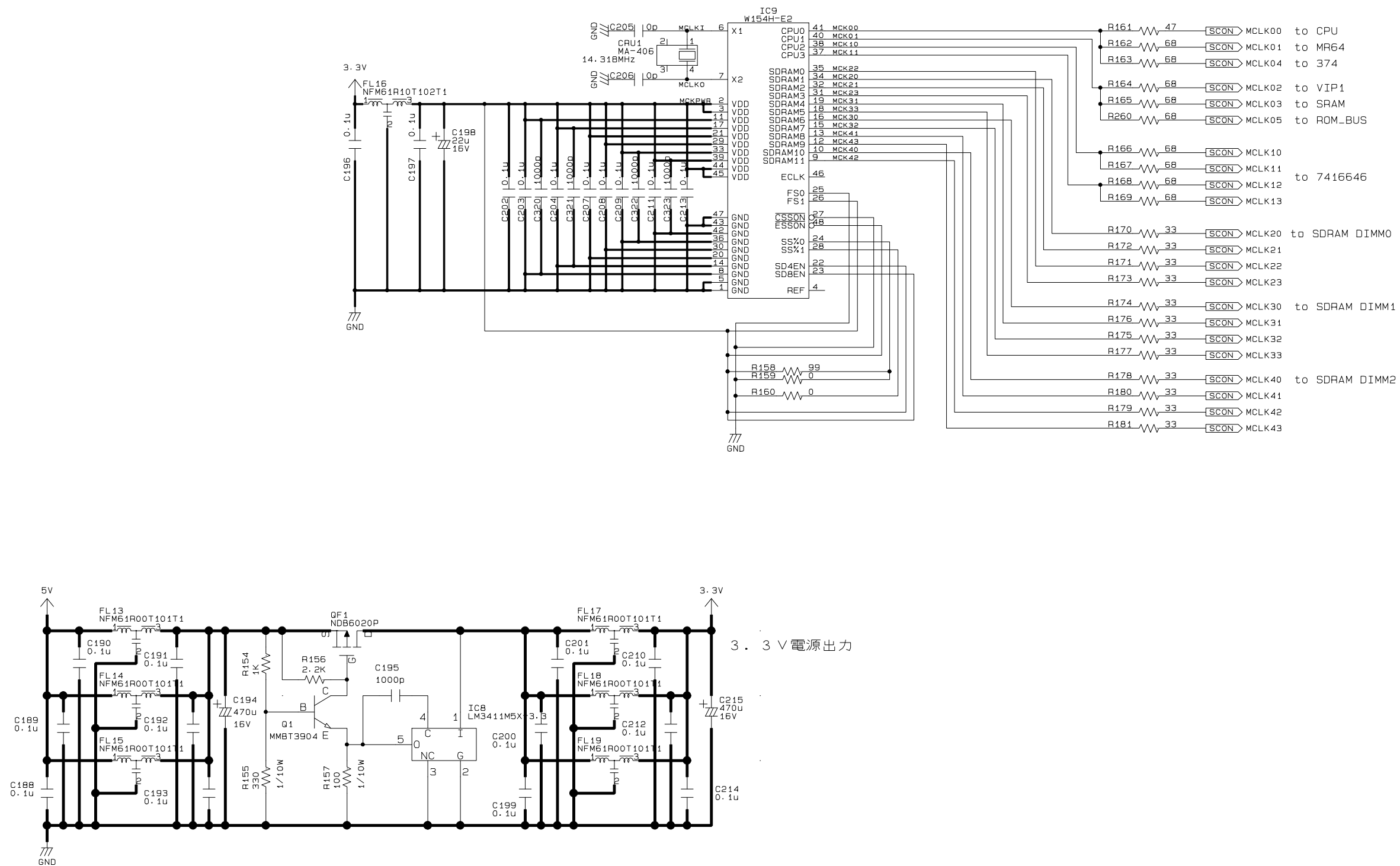
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Model Name: LP-8500C/CPD / AcuLaser C8500

Board: C311 MAIN Board

Sheet: 6/7

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