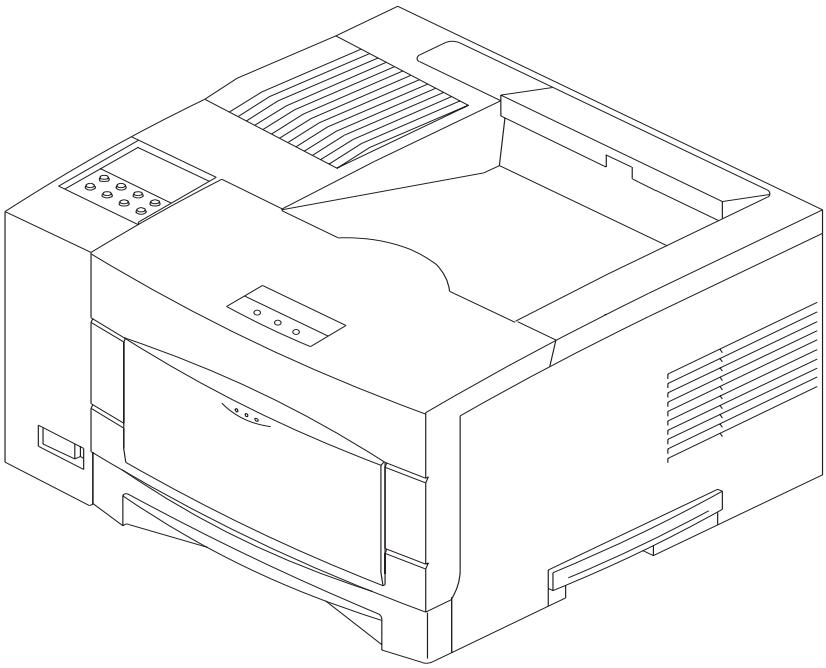
Laser Printer

DP N17

Service Manual

Code: 687200Q-00



September, 1999

PUBBLICATION ISSUED BY:

Olivetti Lexikon S.p.A.
Documentazione
77, Via Jervis - 10015 Ivrea (Italy)

Printed in Italy

This service manual contains information that applies to the Network Laser Printers.

NOTICE

This manual is for use by Technicians and trained technicians only.

NOTICE

While every care has been taken in the preparation of this manual, no liability will be accepted by arising out of any inaccuracies or omissions.

All service documentation is supplied to external customers for informational purposes only. Service documentation is intended for use by certified, product-trained service personnel only. Olivetti does not warrant or represent that such documentation is complete. Nor does Olivetti represent or warrant that it will notify or provide to such customer any future changes to this documentation. Customer's service of equipment, or modules, components, or parts of such equipment may void any otherwise applicable Olivetti warranties. If Customer services such equipment, modules, components, or parts thereof, Customer releases Olivetti from any and all liability for Customer's actions, and Customer agrees to indemnify, defend, and hold Olivetti harmless from any third party claims which arise directly or indirectly from such service.

Olivetti, DP N17 are trademarks or registered trademarks of Olivetti

Centronics is a trademark of Centronics Data Computer Corporation.

Hewlett Packard, LaserJet+, LaserJet 500+, LaserJet Series II, DeskJet, 7475A and any other Hewlett Packard products mentioned in this publication are trademarks of Hewlett Packard Company.

AppleTalk is a registered trademark of Apple Computer Corporation.

NOVELL is a registered trademark of Novell Inc.

PostScript is a registered trademark of Adobe Corporation.

Warning

This equipment complies with the requirements in Part 15 of FCC rules for a class A computing device. Operation of the equipment in a residential area may cause unacceptable interference to radio and TV reception, requiring the operator to take whatever steps are necessary to correct the interference.

Electrostatic Discharge

This caution indicates that there are components which are sensitive to damage caused by electrostatic discharge.

CAUTION

These components are susceptible to electrostatic discharge. Observe all ESD procedures to avoid damage

Shock Hazard

This symbol indicates the presence of potentially hazardous voltages.

CLASS 1 LASER PRODUCT

The Laser Printers are certified to comply with Laser Product Performance Standards, set by the U.S. Department of Health and Human Services, as a Class 1 Laser Product. This means that this is a class of laser product that does not emit hazardous laser radiation; this is possible only because the laser beam is totally enclosed during all modes of customer operation.

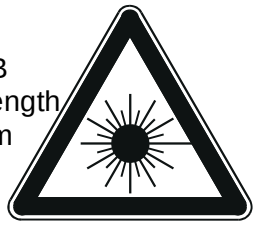
The laser and output of the laser scanner unit produces a beam that, if looked into, could cause eye damage. Service procedures must be followed exactly as written without change.

When servicing the machine or laser module, follow the procedures specified in the manual and there will be no hazards from the laser.

Laser (FDA): Any laser label visible to service must be reproduced in the service manual with location shown or indicated. Safe working procedures and clear warnings concerning precautions to avoid possible exposure must also be included.

The following laser symbol will be displayed at the start of any procedure where possible exposure to the laser beam exists.

Laser Class 3B
780nm Wavelength
5mW Maximum



WARNING
Invisible laser radiation when cover open and interlocks defeated. Avoid exposure to beam.

VARO!
Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

VARNING!
Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

Each Network Laser Printer has two laser warning labels. The first label is located on the top of the Laser Unit. The second is located behind the right-hand cover. These labels are visible when the covers are removed. See the illustrations on the next page for the location of the labels.

CLASS 3B
780nm
5mWmax

危険　開いたりインターロックを無効にすると不可視のレーザ放射を受けます。
直接放射や散乱放射に、目や皮膚が、さらされないこと。

DANGER　INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED.
AVOID EXPOSURE TO BEAM.

CAUTION　INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED.
AVOID EXPOSURE TO BEAM.

PRECAUCIÓN　RADIACIÓN LASÉRICA INVISIBLE CUANDO SE abra Y ANULE EL INTERBLOQUEO
EVITE LA EXPOSICIÓN DIRECTA AL HAZ

VARNING　OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH.
SPÄRRAR ÄR URKOPPLADE. STRÅLEN ÄR FARLIG.

ADVARSEL　USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHETSLÅS BRYTES. UNNGÅ
EKSPONERING FOR STRÅLEN.

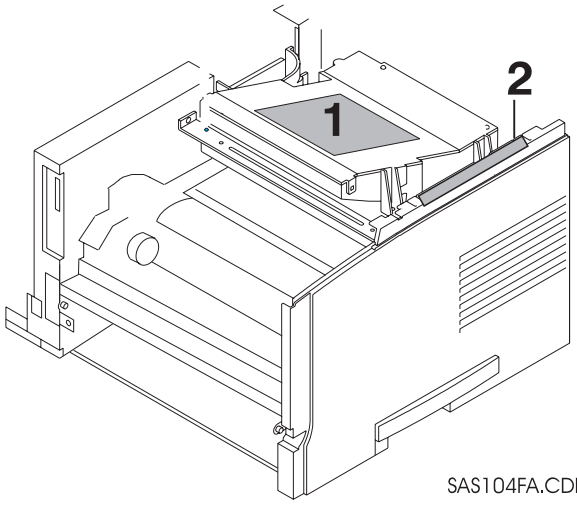
ADVARSEL　USYNLIG LASERSTRÅLING VED ÅBNING. NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION.
UNDGÅ UDSAETTELSE FOR STRÅLING.

VARO!　NÄKYMÄTÖN AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA
LASERSÄTEILYLLE ÄLÄ KATSO SÄTEESEN.

VORSICHT!　UNSICHTBARE LASERSTRAHLUNG. WENN ABDECKUNG GEÖFFNET UND
SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT. NICHT IN DER STRAHL BLICKEN.

ATTENTION　EMISSION DE RADIATION LASER INVISIBLE QUAND L'APPAREIL EST OUVERT ET LORSQUE LA
SÉCURITÉ EST NEUTRALISÉE EVITER DE S'EXPOSER AU RAYON LASER

(1)

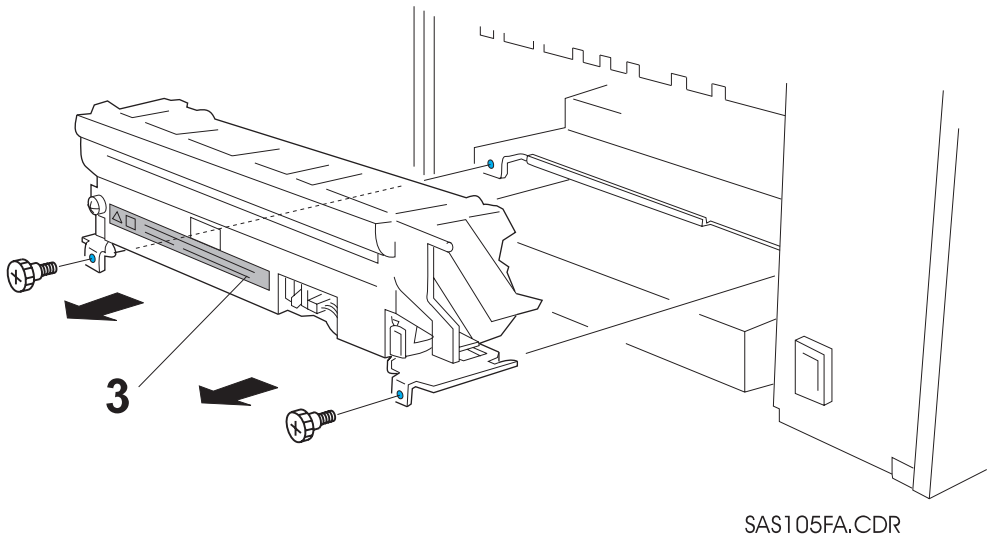


SAS104FA.CDR

CAUTION　INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
ADVERSEL　USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARNING　OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. STRÅLEN ÄR FARLIG.
ADVERSEL　USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPENS. UNNGÅ EKSPONERING FOR STRÅREN.
VARO!　NÄKYMÄTÖNTÄ AVATTAESSA OLET ALTTIINA LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
VOSICHT!　UNSICHTBARE LASERSTRAHL UNG. WENN ABDECKUNG GEÖFFNET. NICHT IN DER STRAHL BLICKEN.
ATTENTION　EMISSION DE RADIATION LASER INVISIBLE QUAND L'APPAREIL EST OUVERT.
EVITER DE S'EXPOSER AU RAYON LASER.
注意　開くと不可視のレーザ放射を受けます。直接放射や散乱放射に目や皮膚がさらされないこと。

(2)

The warning sticker illustrated below is affixed to the area identified with **(3)**.



This page intentionally blank.

Table of Contents

Title **Page**

Introduction xi

Organization xii

Service Call Procedures 1-1

Printer Specifications 2-1

Parts List 3-1

Repair/Adjustment Procedures 4-1

General Procedures/Information 5-1

Wiring Data 6-1

Repair Analysis Procedures 7-1

500-Sheet Paper Feeder Option 8-1

Offset Catch Tray (OCT) Option 9-1

Duplex Module Option 10-1

Envelope Feeder 11-1

Introduction

The *Network Laser Printers Service Manual* is the primary document used for repairing and maintaining the Network Laser Printers.

This manual contains Service Call Procedures, Diagnostic Procedures, General Information, Repair Analysis Procedures, Copy Quality Analysis Procedures, Wiring Data, and Parts List information that will enable the Service Representative to repair the Network Laser Printers failures.

Organization

This manual is divided into eleven sections. The title and description of each section of this service manual is as follows:

Section 1 - Service Call Procedures

This section is used to identify a suspected problem. It contains Call Flow, Initial Actions, and Final Actions. This part of the service manual should always be used to start the service call.

Section 2 - Printer Specifications

This section contains all the printer specifications for the Network Laser Printers.

Section 3 - Parts List

This section contains illustrations of disassembled subsystems and a listing of the spared parts.

Section 4 - Repair/Adjustment Procedures

This section contains the instructions for removal, replacement, and adjustment of the spared parts.

Section 5 - General Procedures/Information

This section contains diagnostic routines, printer setup procedures, and a listing of tools and supplies.

Section 6 - Wiring Data

This section contains illustrations of the plug/jack locations and the routing of power and signal cables.

Section 7 - Repair Analysis Procedures (RAPS)

This section contains the procedures necessary to repair failures in the printer. This section also contains the procedures necessary to troubleshoot copy quality problems.

Section 8 - 500-Sheet Paper Feeder Option

This section contains Specifications, Parts List, REPs, Wiring Diagrams, Troubleshooting, and RAPs information for the 500-Sheet Paper Feeder option.

Section 9 - Offset Catch Tray (OCT) Option

This section contains Specifications, Parts List, REPs, Wiring Diagrams, Troubleshooting, and RAPs information for the OCT option.

Section 10 - Duplex Module Option

This section contains Specifications, Parts List, REPs, Wiring Diagrams, Troubleshooting, and RAPs information for the Duplex Module option.

Section 11 - Envelope Feeder Option

This section contains Specifications, Parts List, REPs, Wiring Diagrams, Troubleshooting, and RAPs information for the Envelope Feeder option.

Conventions

This manual uses the following names and acronyms interchangeably.

- The “Multi-Sheet Bypass Feeder” (MBF) is also referred to as the “Front Tray.”
- “Trays” are also referred to as “cassettes.”
- The “Print Engine Controller” is also referred to as the “MCU” or the “AMCU.”
- “Tray 1” is also referred to as the “250 Sheet Feeder” or “Main Tray.”
- “Offset Catch Tray” (OCT) is also referred to as the “Offset Bin.”
- “Stack” or “stacker” are also referred to as “Bin.”

Section 1

Service Call Procedures

Call Flow Diagram 1-3

Initial Actions 1-4

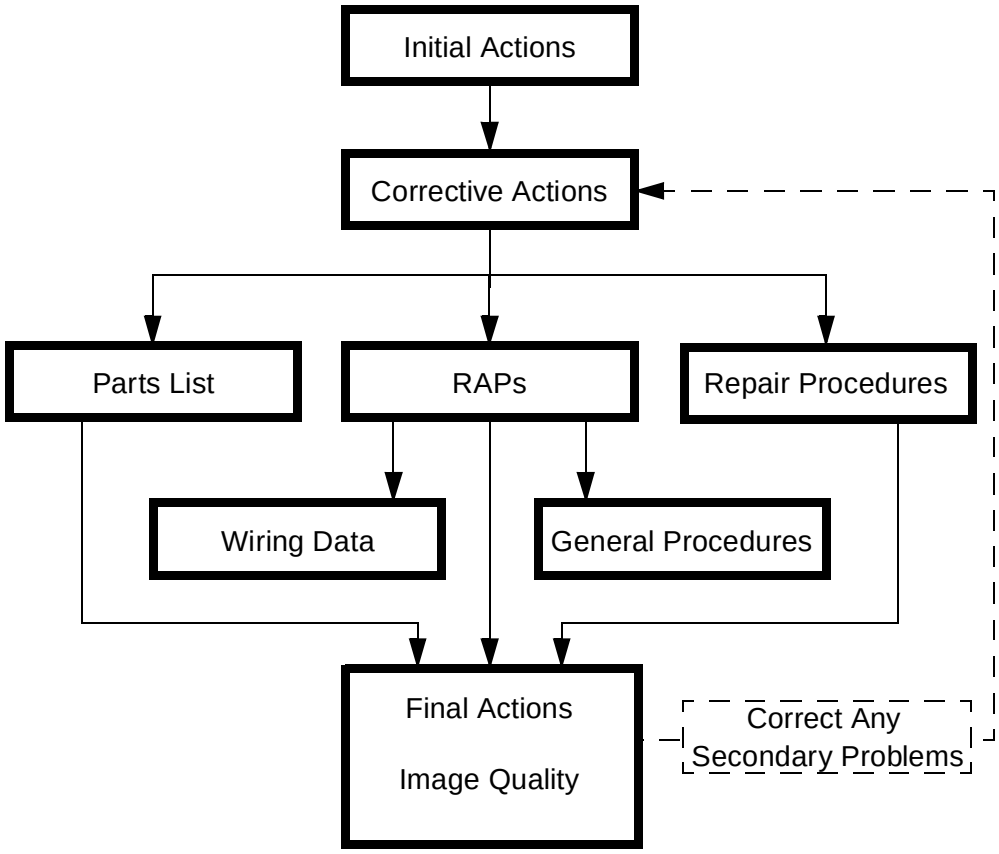
Corrective Actions 1-4

Final Actions 1-4

1.1 Call Flow Diagram

The basic troubleshooting steps are outlined in the Call Flow Diagram (Figure 1.1.1). All service calls begin with Initial Actions and end with Final Actions.

Figure 1.1.1 Call Flow Diagram



1.2 Initial Actions

1. Question the operator and verify the problem.
2. Check that the printer paper path is clear of foreign matter such as staples, paper clips, and paper scraps.
3. After you have identified the problem symptom, check the following items:
   - The printer is connected to a wall power outlet, and the outlet is supplying the correct voltage.
   - The printer power cord is not frayed or broken.
   - The printer is correctly grounded.
   - The printer is in an appropriate operating environment, with no extremes of heat or humidity.
   - The printer is not exposed to direct sunlight.
   - The space around the printer meets the requirements.
   - The printer is on a level and stable surface.
4. Perform **Corrective Actions.**

1.3 Corrective Actions

1. If the printer has an obvious failure or fault, you can go directly to the appropriate **Repair Procedure** or **Repair Analysis Procedure (RAP)** and begin corrective action.
2. If the fault is not obvious, follow the **Entry Level RAP** to identify the problem and begin corrective action. See Section 7.2.1.
3. After all corrective actions have been made, perform **Final Actions**. See Section 1.4.

1.4 Final Actions

1. Correct any secondary problems.
2. Reinstall the machine covers.
3. Clean the machine **(Printer Cleaning)** and the work area.
4. Generate **System Controller Test Prints** to evaluate print quality.
5. Perform the **Image Quality Checkout** procedures in section 7 to correct any print quality defects.
6. Ask the customer to send a print job to verify printer operation.
7. Provide operator training as required.
8. Close the call.

Section 2

Printer Specifications

Electrical Specifications **2-3**
Mechanical Specifications **2-3**
Minimum Space Requirements **2-4**
Functional Specifications **2-5**
Paper Specifications **2-6**
Options **2-8**

2.1 Electrical Specifications

The Network Laser Printers are available in 220 volt configuration that can be used with the power sources as shown in Table 2.1.1.

Table 2.1.1 Electrical Specifications

Line Voltage	Line Voltage Tolerance	Frequency	Frequency Tolerance	Power Consumption
110/115 VAC	90 - 132 VAC	50/60 Hz	47 - 63 Hz	580 Watts
220/240 VAC	198 - 264 VAC	50/60 Hz	47 - 63 Hz	670 Watts

2.2 Mechanical Specifications

Table 2.2.1 Mechanical Specifications

Unit	Width	Depth	Height	Weight
Metric	442 mm	418 mm	294 mm	18.6 Kg
SAE	17.4 in.	16.5 in.	11.6 in.	40.9 lbs

2.3 Minimum Space Requirements

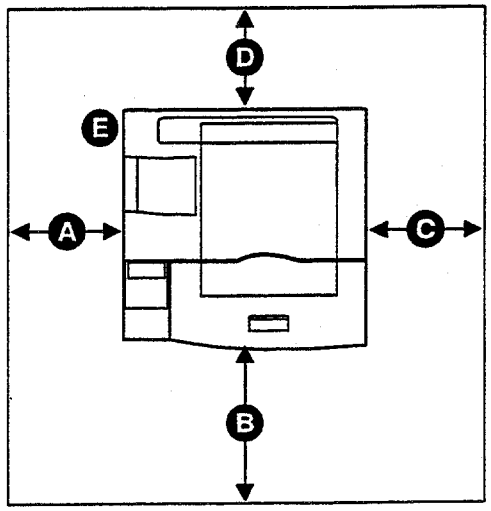
Top View

A 2 inches (50 mm)

B 20 inches (508 mm)

C 2 inches (50 mm)

D 12 inches (305 mm)



SEC0201.PCX

CAUTION Do not block the fan at the top rear left corner (**E**).

NOTE: The 500-Sheet Paper Feeder adds 4.8 inches (120 mm) to the height of the printer; the Offset Catch Tray (OCT) adds 5.2 inches (130 mm).

2.4 Functional Specifications

- Printing Method: Xerographic Process
- Exposure method: Scanning Laser
- Fusing Method: Heat and Pressure

Table 2.4.1 Print Speed and Resolution

Mode	Print Speed - ppm (pages per minute)	Resolution - dpi (dots per inch)
Simplex	17 ppm	1200 dpi
Duplex	13 ppm	1200 dpi

Table 2.4.2 Operating Environment

Temperature	Humidity	Altitude	Noise	Level
5^{o} - 35^{o} C 50^{o} - 90^{o} F	15 - 85% RH	0 - 3000 m 0 - 10,000 Ft.	Running 49.5 dB Standby 35.0 dB	Within 5^{o}

2.5 Paper Specifications

The recommended standard paper type is 80 gsm.

Paper Weight Limitations:

- Bond paper - 16 to 28 lbs (60 to 105 gsm)
- Cardstock - 50 lbs (190 gsm)

Table 2.5.1 Paper Sizes

Paper Type	Size
A4	8.27 x 11.69 inches 210 x 297 mm
Letter	8.5 x 11 inches 216 x 279 mm
B5 (ISO)	6.93 x 9.84 inches 176 x 250 mm
Executive	7.25 x 10.5 inches 184 x 267 mm
Folio	8.5 x 13 inches 216 x 330 mm
Legal	8.5 x 14 inches 216 x 356 mm
Commercial-10 Envelope	4.13 x 9.5 inches 105 x 241 mm
Monarch Envelope	3.87 x 7.5 inches 98 x 191 mm
DL Envelope	4.33 x 8.66 inches 110 x 220 mm
C5 Envelope	6.38 x 9.02 inches 162 x 229 mm
OHP Film (Transparency)	A4 or Letter
Label Paper	A4 or Letter

Table 2.5.2 Standard Tray Capacity

Paper Type	Capacity (Sheets)
Letter, B5, Executive, A5, Folio, and Legal	250
A4	230
OHP Film (transparency)	10
Label Paper	10

Table 2.5.3 MBF Tray Capacity

Paper Type	Capacity (Sheets)
A4, Letter, B5, Executive, Folio, and Legal	100
Monarch, Commercial-10, C5, and DL Envelopes	10
OHP Film (transparency)	30
Label Paper	30

Table 2.5.4 Optional 500-Sheet Feeder

Paper Type	Capacity (Sheets)
A4, Letter, Folio, and Legal	500

2.6 Options

The customer can install the following options:

- Up to two 500-sheet High Capacity Paper Decks or Trays
- High Capacity Envelope Feeder
- SIMMs (RAM) (sizes: 4, 8, 16, and 32mb)
- Flash SIMM (8mb)
- I/O PWBs — 10/100 BaseT, Token Ring
- Hard Drive
- 500 Sheet Offsetting Catch Tray
- Duplex Module

Section 3

Parts List

About the Parts List 3-3

PL 1 Covers I 3-4

PL 2 Covers II 3-6

PL 3 Paper Tray 3-8

PL 4 Paper Transportation I 3-10

PL 5 Paper Transportation II 3-12

PL 6 Paper Transportation III 3-14

PL 7 Fusing 3-16

PL 8 Paper Exit 3-18

PL 9 Drive and Xerographic Module 3-20

PL 10 Electrical Module I (with Top Cover) 3-22

PL 11 Electrical Module II (with Chassis) 3-24

PL 12 System Controller 3-26

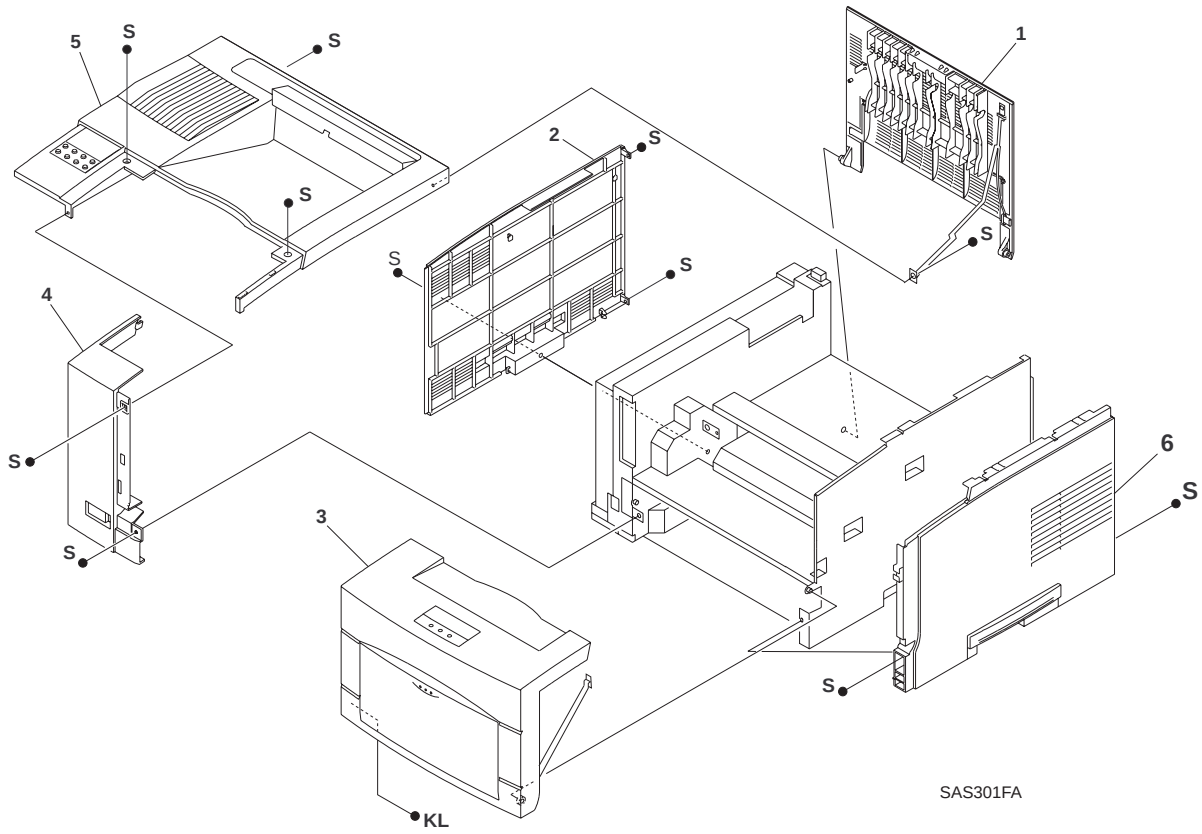
About the Parts List

This section identifies all part numbers and the corresponding location of all spared subsystem components.

Using the Parts List:

1. Each item number in the part number listing corresponds to an item number in the related illustration. Also, the parts in a given subsystem of the machine will be located in the same illustration or in a series of associated illustrations.
2. The letters “C,” “E,” “KL,” and “S” in each illustration stand for a C-ring, an E-ring, a KL clip, and a screw, respectively.
3. The diamond symbol in each illustration indicates an assembly with one or more components.
4. The notation “with X-Y” following an item name indicates an assembly is made up of components X through Y. For example, “1... (with items 2-4)” means item 1 consists of the items 2, 3, and 4 within the same page.

PL 1 Covers I

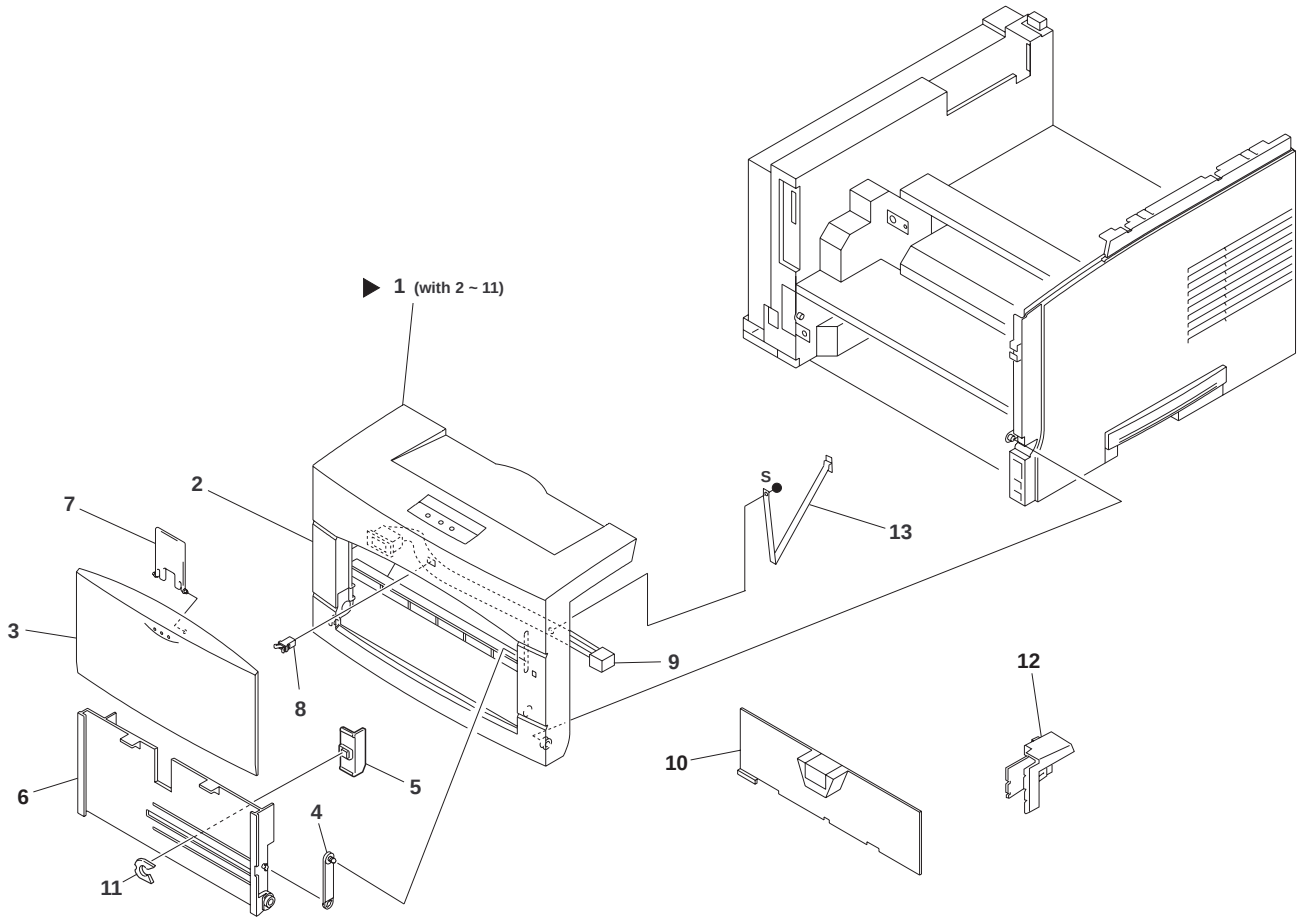


PL 1 Covers I

Item	Part	Description
1.	576491 Q	Rear Cover
2.	576492 R	System Controller Cover
3.	128905W	Front Cover Assembly (exploded on PL 2)
4.	417194 F	Left Front Cover
5.	576495 L	Top Cover
6.	576496 M	Right Cover

(*) Not available

PL2 Covers II



SAS302FE

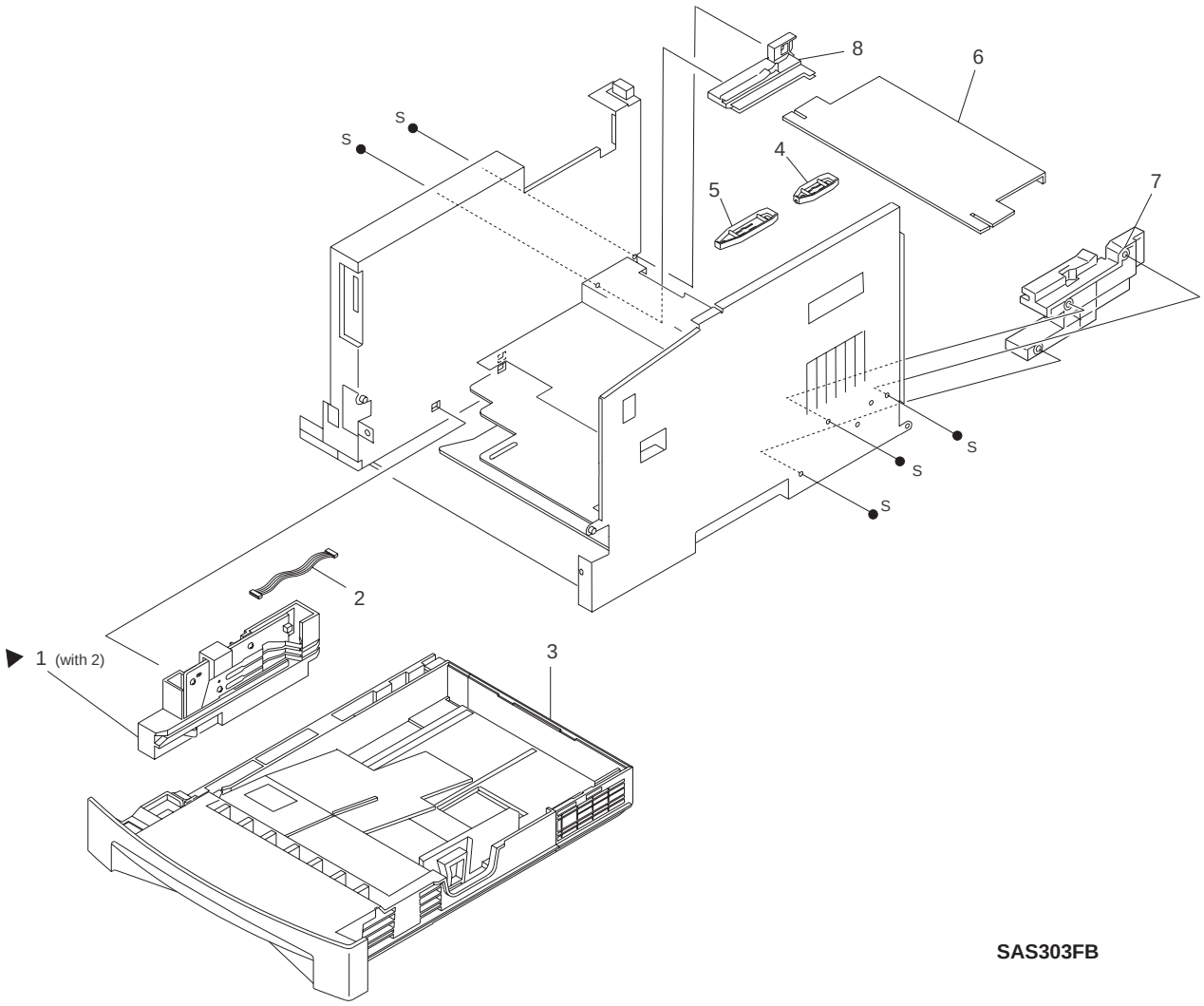
PL 2 Covers II

Item	Part	Description
1.	(*)	Front Cover Assembly (with items 2-11)(See *NOTE*)
2.	(*)	Front Cover
3.	(*)	Tray Cover
4.	(*)	Tray Stopper
5.	(*)	Holder Guide
6.	(*)	Main Tray
7.	(*)	Tray Extender
8.	576498 X	Catch Holder
9.	(*)	Envelope Front Harness (See *NOTE*)
10.	(*)	Inner Cover
11.	(*)	E Ring
12.	(*)	Harness Cover
13.	(*)	Cover Stopper

(*) Not available

NOTE: This harness and six screws located on the Front Cover Assembly are not detachable.

PL 3 Paper Tray



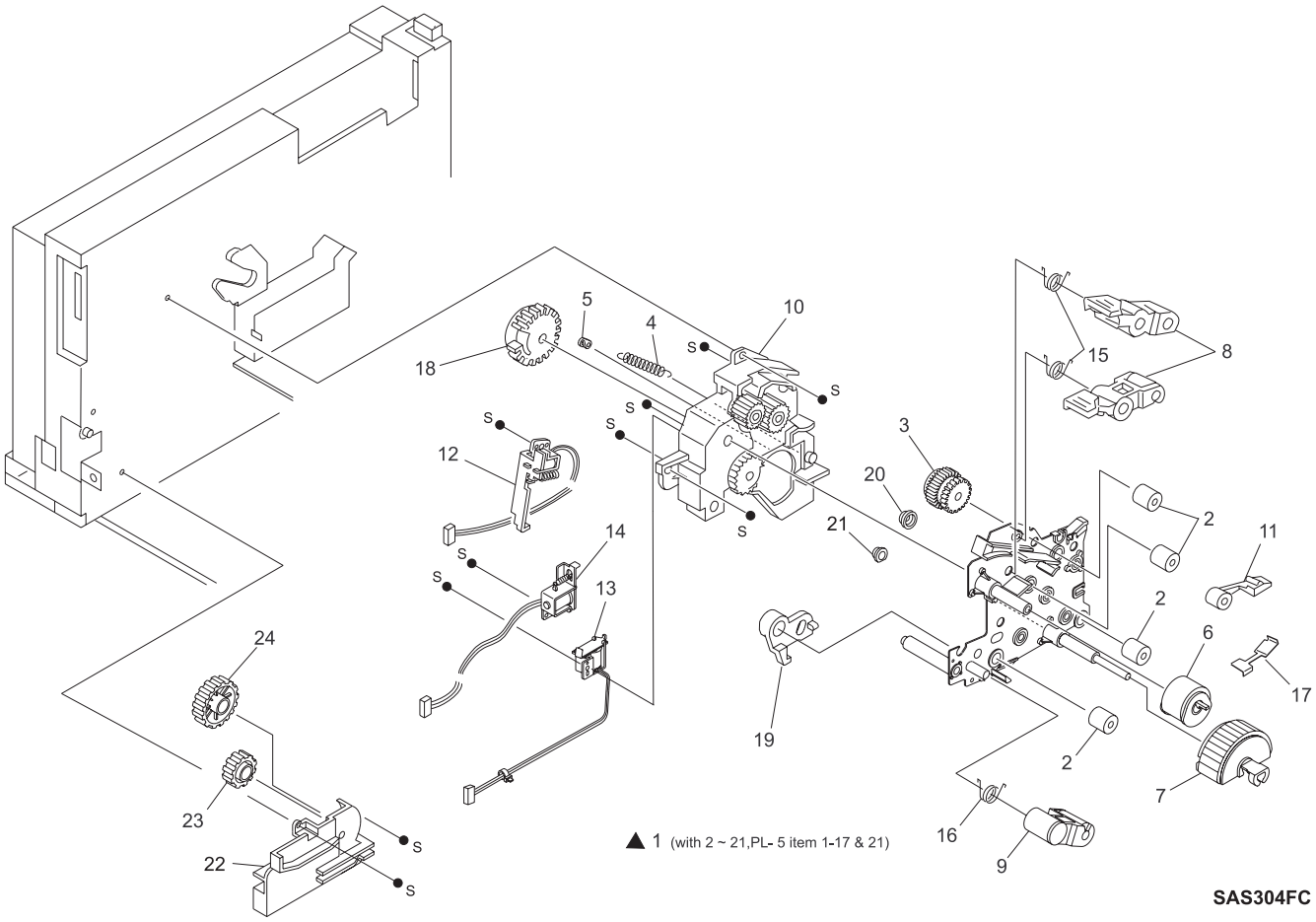
SAS303FB

PL 3 Paper Tray

Item	Part	Description
1.	576499 Y	Paper Size Sensor Assembly (with item 2)
2.	(*)	Paper Size Harness
3.	576500 D	250-Sheet Tray
4.	(*)	Front Tray Rail
5.	(*)	Rear Tray Rail
6.	576501 S	Tray Cover
7.	(*)	Right Rail Guide
8.	(*)	Left Rail Guide

(*) Not available

PL 4 Paper Transportation I

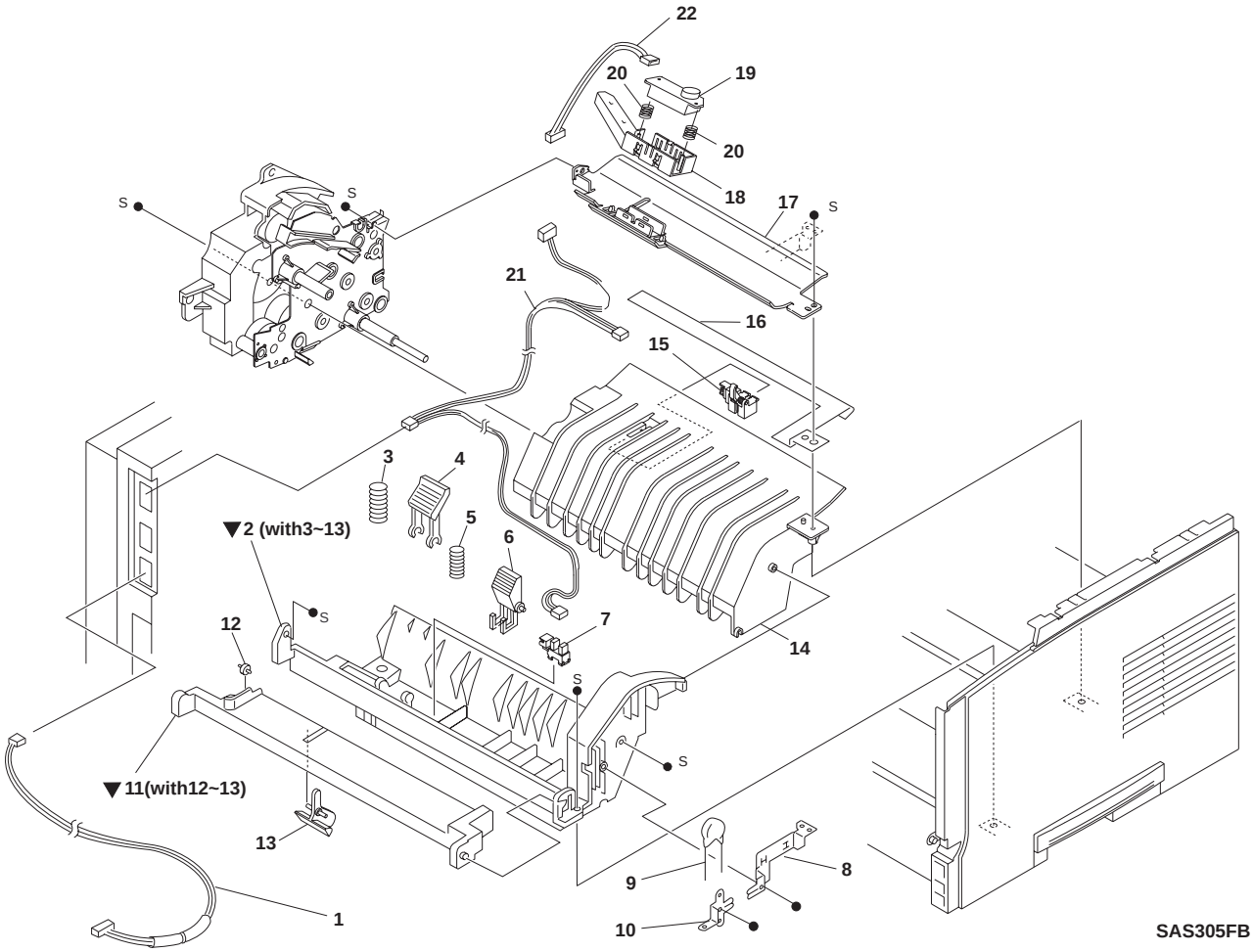


PL 4 Paper Transportation I

Item	Part	Description
1.	576502 T	Paper Handler Unit Assembly (with items 2-21 and PL 5 items 1-17 & 21)
2.	576503 U	Registration Roll
3.	576504 V	Registration (Spring) Clutch
4.	(*)	Lever Spring
5.	(*)	Lever
6.	576505 W	Front Tray (MBF) Roll
7.	576506 X	250-Sheet Feed Roll
8.	576507 Y	Pinch Roll
9.	576508 H	Turn Pinch Roll
10.	(*)	Supporter
11.	576509 A	Duplex Pinch Roll
12.	576510 W	Registration Solenoid
13.	576511 K	Tray 1 Solenoid
14.	576512 L	Front Tray (MBF) Solenoid
15.	(*)	Pinch Roll Spring
16.	(*)	Turn Roll Spring
17.	(*)	Duplex Pinch Spring
18.	(*)	Front Tray (MBF) Gear
19.	(*)	Release Link
20.	(*)	Registration Bushing
21.	(*)	Pinch Registration Bushing
22.	576513 M	Lower Support
23.	576514 N	Gear (23T)
24.	576515 P	Gear (42T)
25.	(*)	Turn Roll

(*) Not available

PL 5 Paper Transportation II

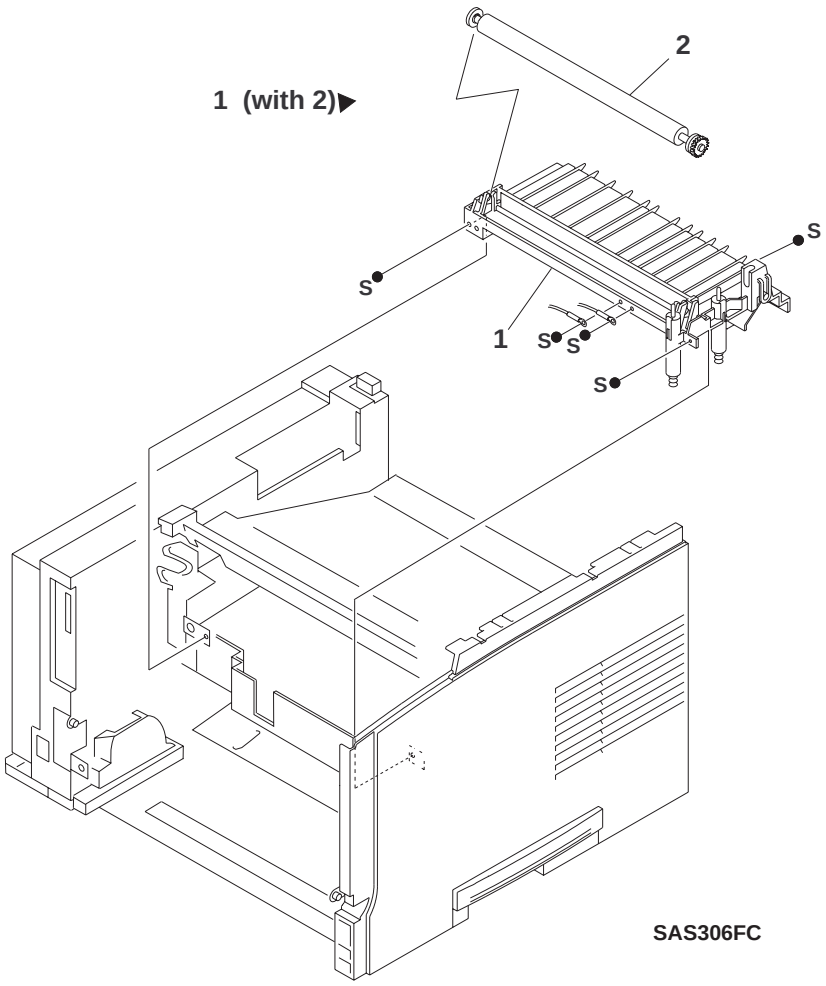


PL 5 Paper Transportation II

Item	Part	Description
1.	576516 Q	Envelope Harness
2.	(*)	Front Tray (MBF) Chute Assembly (with items 3-13)
3.	(*)	N/F Spring
4.	576517 R	Retard
5.	(*)	Retard Spring
6.	(*)	Multi Holder
7.	576518 S	No Paper Sensor
8.	(*)	Right Spring
9.	(*)	Varistor
10.	(*)	Left Spring
11.	(*)	Tray Bottom Assembly (with items 12-13)
12.	(*)	Cam Roll
13.	576519 T	Front Tray (MBF) No Paper Actuator
14.	(*)	Bottom Chute
15.	576520 Y	Registration Sensor
16.	(*)	Earth Bottom Spring
17.	(*)	Inlet Chute
18.	(*)	Toner Holder Sensor (P/O item 23)
19.	(*)	Toner Sensor (P/O item 23)
20.	(*)	Toner Sensor 1 Spring (P/O item 23)
21.	(*)	Paper Handler Harness
22.	(*)	Toner Sensor Harness
23.	417202 X	Toner Sensor Kit (with items 18-20)

(*) Not available

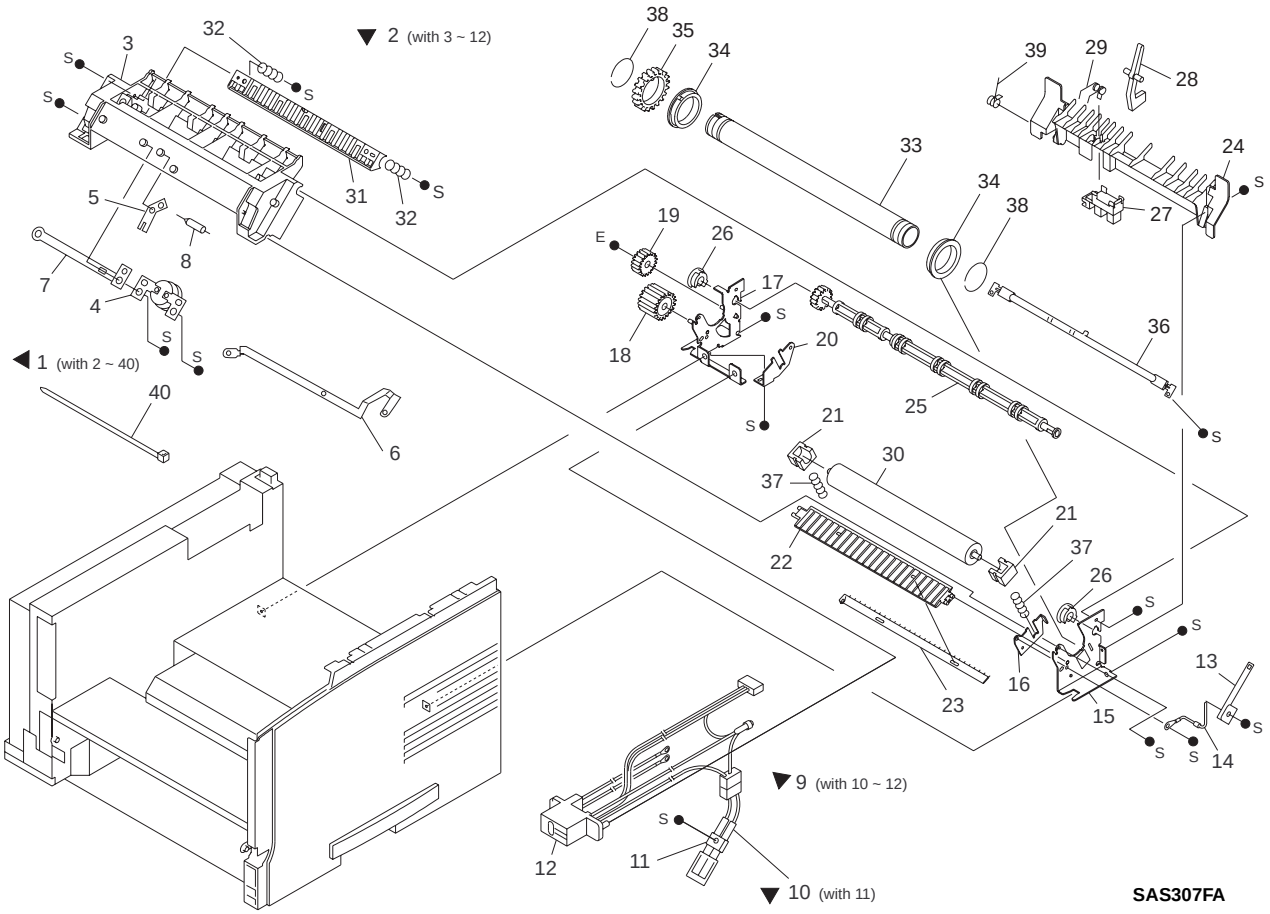
PL 6 Paper Transportation III



PL 6 Paper Transportation III

Item	Part	Description
1.	576524 Q	BTR (Bias Transfer Roll) Chute Assembly (with item 2)
2.	576525 R	BTR

PL 7 Fusing

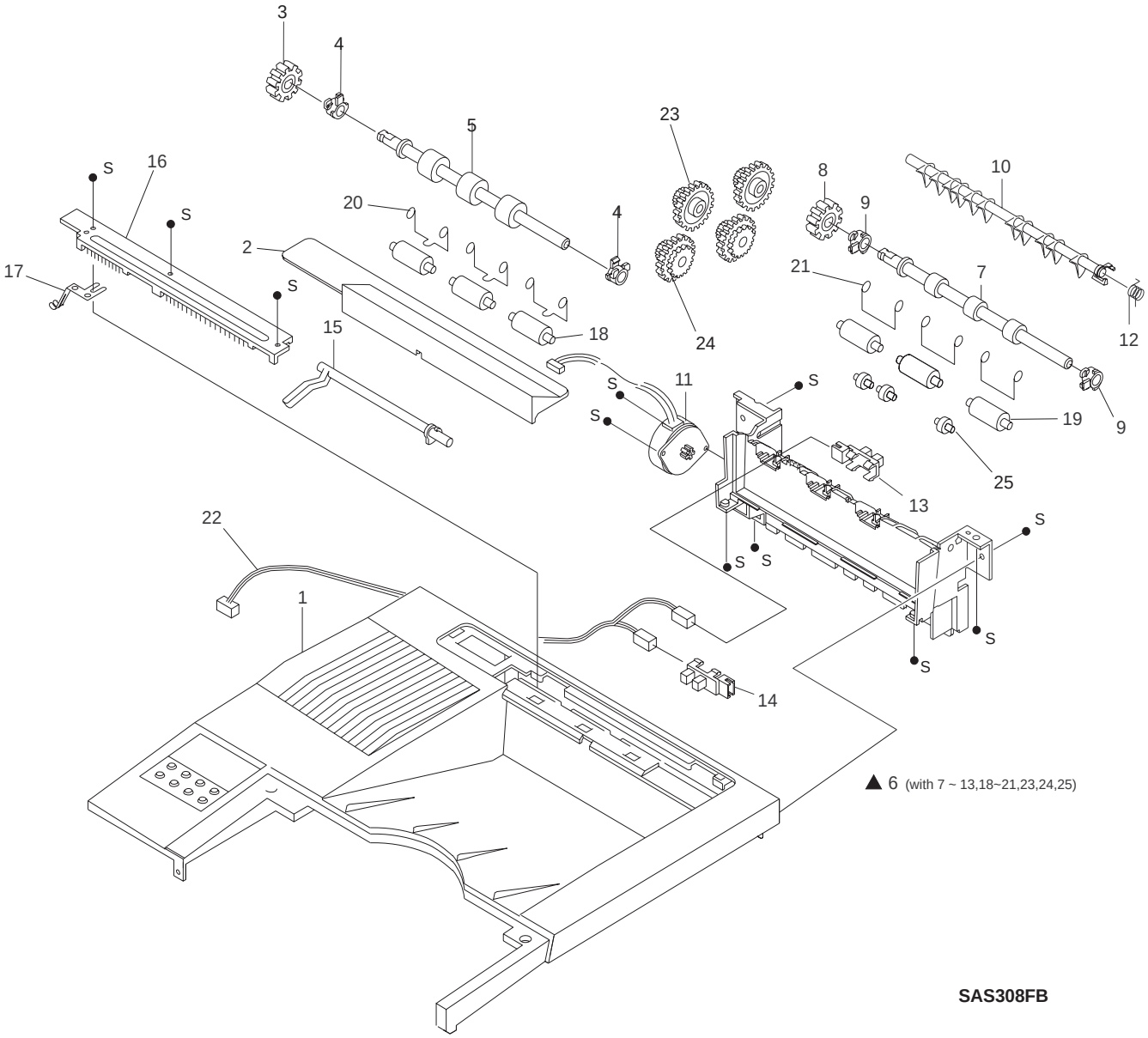


PL 7 Fusing

Item	Part	Description
1.	(*)	Fuser Assembly (115v) (with items 2-40)
	576526 J	Fuser Assembly (220v) (with items 2-40)
2.	(*)	Top Cover Assembly
3.	(*)	Top Cover
4.	(*)	Thermostat
5.	(*)	Fuse Plate
6.	(*)	Harness 1 Plate
7.	(*)	Harness 2 Plate
8.	(*)	Fuse
9.	(*)	Fuse Harness
10.	(*)	Exit Harness Assembly
11.	(*)	Temperature Sensor
12.	(*)	Fuser Plug Connector
13.	(*)	Earth H Spring
14.	(*)	Diode Ground
15.	(*)	Right Frame
16.	(*)	Right Pressure Roll Lever
17.	(*)	Left Frame
18.	(*)	Drive Gear (15T)
19.	(*)	Exit Idle Gear (12T)
20.	(*)	Left Pressure Roll Lever
21.	(*)	Pressure Roll Bearing
22.	(*)	Inlet Chute
23.	(*)	Static Eliminator
24.	(*)	Lower Exit Chute
25.	(*)	Decurl Roll
26.	(*)	Exit Bearing
27.	(*)	Exit Photo Sensor
28.	(*)	Exit Actuator
29.	(*)	Exit Actuator Spring
30.	(*)	Pressure Roll
31.	(*)	Exit Chute
32.	(*)	Exit Spring
33.	(*)	Heat Roll
34.	(*)	Heat Roll Bearing
35.	(*)	Heat Roll Gear
36.	(*)	Quartz Heater
37.	(*)	Pressure Roll Spring
38.	(*)	Roller Ring
39.	(*)	Exit Spring
40.	(*)	Cable Tie

(*) Not available

PL 8 Paper Exit

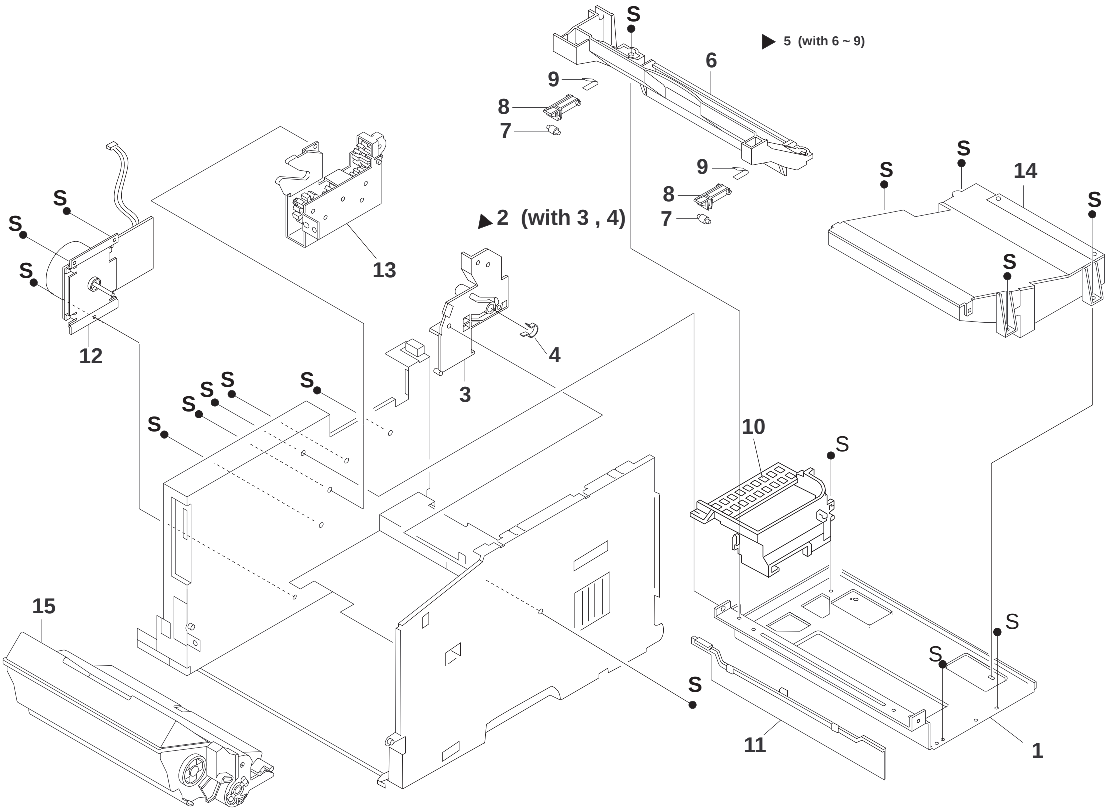


PL 8 Paper Exit

Item	Part	Description
1.	(*)	Top Cover (Refer to PL1 item 5)
2.	576527 K	Option Cover
3.	576528 U	Exit Gear
4.	576529 V	Exit Bearing
5.	417198 K	Exit Roll
6.	576530 S	Exit Assembly (with items 7-13, 18-21, 23, 24)
7.	576531 P	Middle Roll
8.	(*)	Exit Gear
9.	(*)	Exit Bearing
10.	(*)	Exit Gate
11.	576532 Q	Exit Motor
12.	(*)	Direction Spring
13.	576533 R	Rear Cover Sensor
14.	576534 J	Stack Full Sensor
15.	576535 K	Stack Full Actuator
16.	(*)	Eliminator
17.	(*)	Exit Earth Spring
18.	576536 L	Pinch Exit Roll
19.	576537 M	Pinch Middle Roll
20.	(*)	Pinch Exit Spring
21.	(*)	Pinch Middle Spring
22.	576538 W	Exit Harness
23.	(*)	Gear (26T)
24.	(*)	Gear (47W)
25.	(*)	Roll

(*) Not available

PL 9 Drive and Xerographic Module



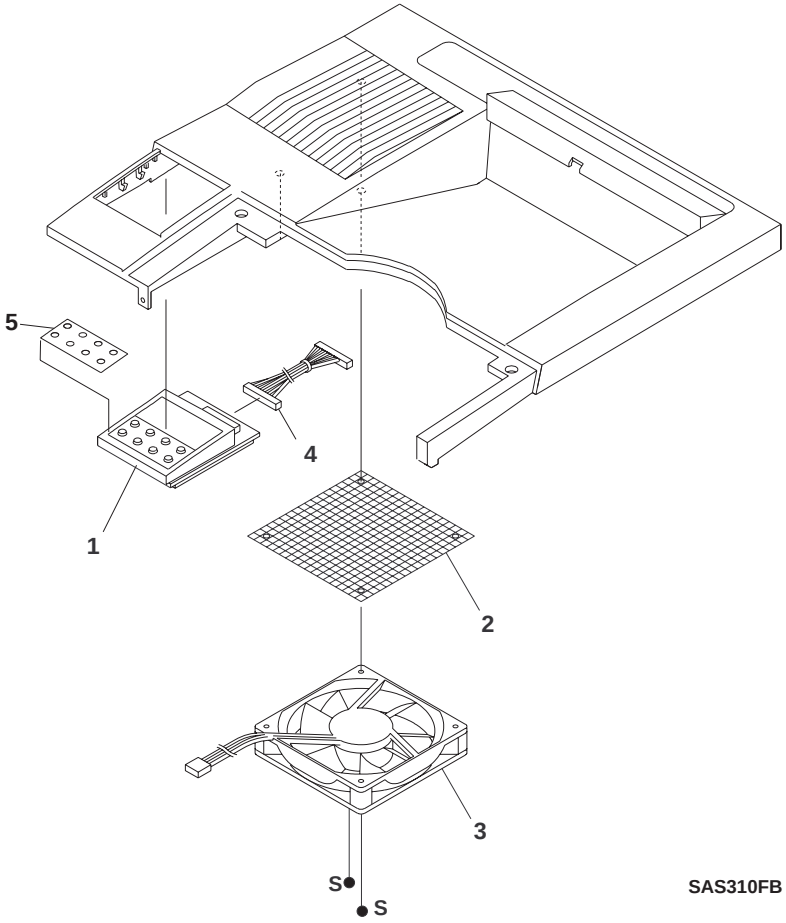
SAS309FC

PL 9 Drive and Xerographic Module

Item	Part	Description
1.	(*)	ROS Plate
2.	(*)	CRU Side Guide Assembly (with items 3-4)
3.	(*)	CRU Side Guide
4.	(*)	Spring
5.	(*)	CRU Top Guide Assembly (with items 6-9)
6.	(*)	CRU Top Guide
7.	(*)	Roller
8.	(*)	Arm
9.	(*)	Spring
10.	(*)	L Duct
11.	(*)	S Duct
12.	576539 X	Main Motor Assembly
13.	576540 C	Drive
14.	576541 Z	Laser Assembly
15.	(*)	EP Cartridge

(*) Not available

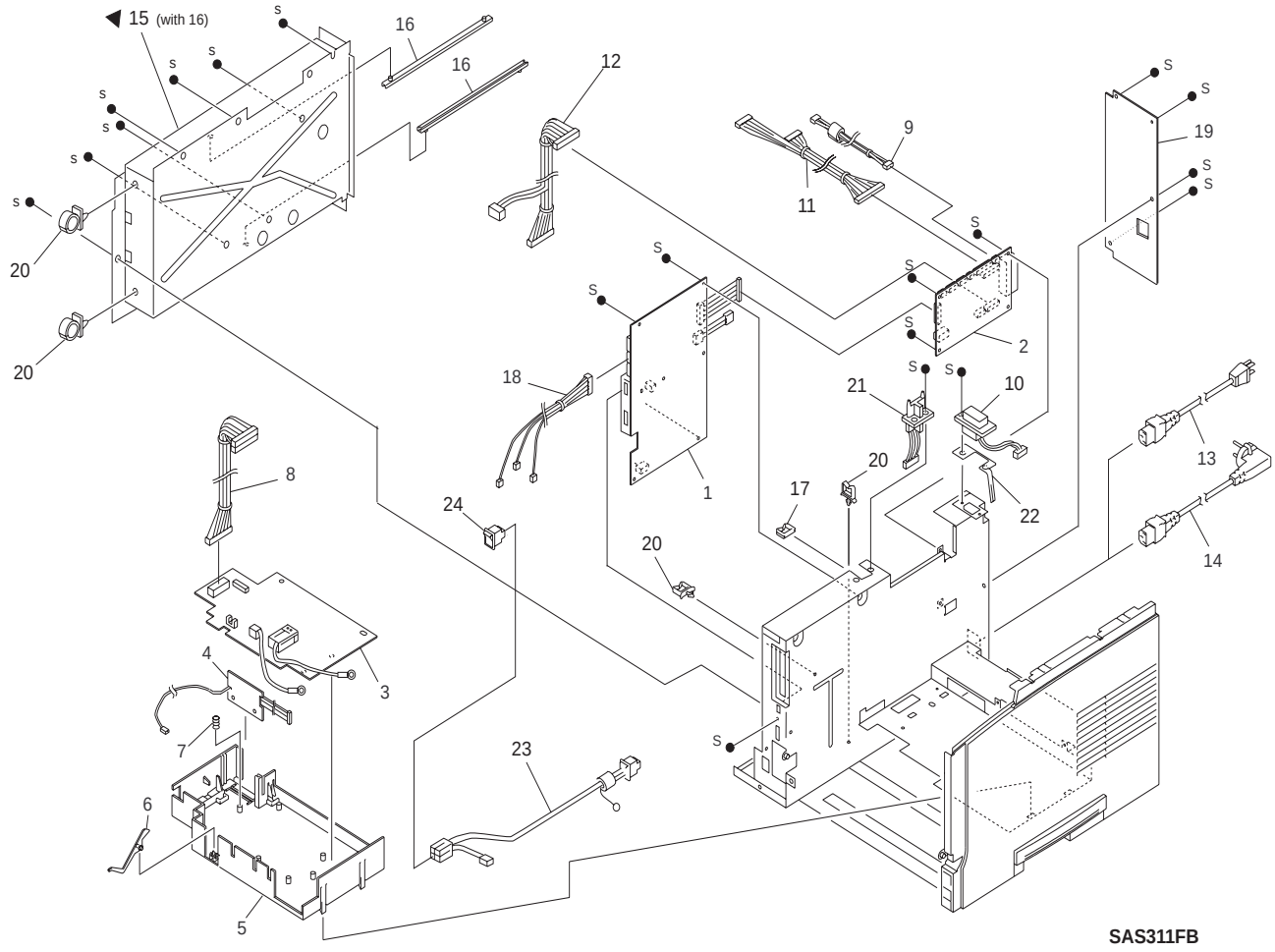
PL 10 Electrical Module I (with Top Cover)



PL 10 Electrical Module I (with Top Cover)

Item	Part	Description
1.	417190 P	Control Panel (W/O Item 5)
2.	576543 T	Fan Filter
3.	576544 U	Fan
4.	576545 V	Panel Harness
5.	417199 L	Control Panel Label

PL 11 Electrical Module II (with Chassis)

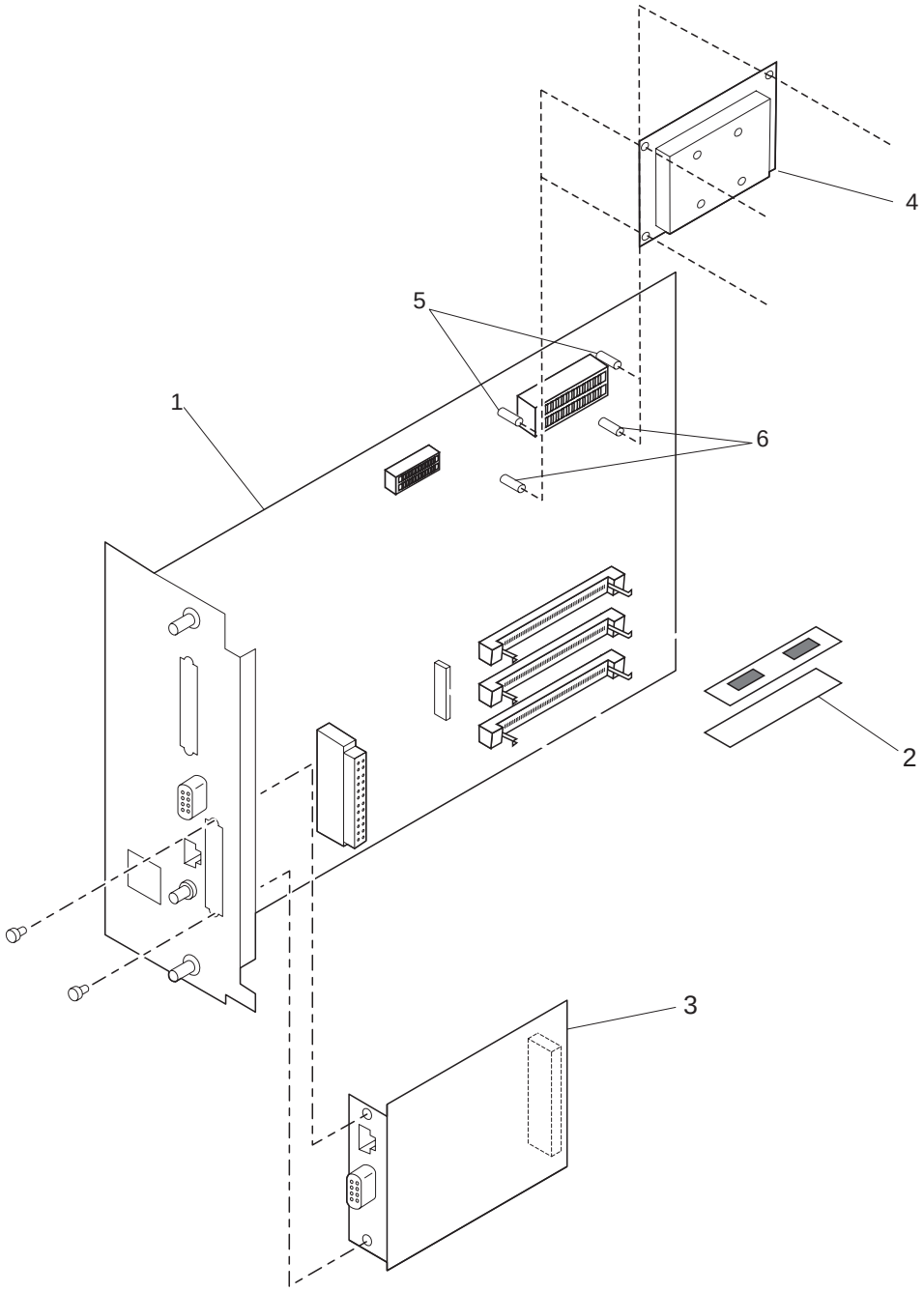


PL 11 Electrical Module II (with Chassis)

Item	Part	Description
1.	576546 W	LVPS
2.	576547 X	Print Engine Controller
3.	576548 G	HVPS
4.	576549 H	Fuser PWB
5.	(*)	HVPS Chassis
6.	576550 E	No Paper Actuator
7.	(*)	Earth Spring
8.	576551 T	HVPS Harness
9.	576552 U	SOS Harness
10.	576553 V	OCT Harness
11.	576554 W	Laser Harness
12.	576555 X	Tray Harness
13.	(*)	US Power Cord
14.	(*)	EC Power Cord
15.	(*)	Electric Box Chassis (with item 16)
16.	(*)	Rail Guide
17.	(*)	Bush
18.	576556 Y	Feed Harness
19.	(*)	Back Panel
20.	(*)	Clamp
21.	(*)	Top Harness
22.	(*)	Motor Earth Spring
23.	(*)	Inlet Harness
24.	417200 H	Main Switch Repair Kit

(*) Not available

PL 12 System Controller



PL 12 System Controller

Item	Part	Description
1.	129074 Y	System Controller PWBA
2.	(*)	Memory SIMM
3.	(*)	Token Ring PWBA
4.	(*)	Hard Drive Assembly
5.	(*)	Standoff Locking
6.	(*)	Standoff Post

(*) Not available

CODE	PAGE	CODE	PAGE	CODE	PAGE
129074Y	26	576550E	24		
417190P	22	576551T	24		
417194F	4	576552U	24		
417198K	20	576553V	24		
417199L	22	576554W	24		
417200H	24	576555X	24		
417202X	12	576556Y	24		
576491Q	4				
576492R	4				
576495L	4				
576496M	4				
576498X	6				
576499Y	8				
576500D	8				
576501S	8				
576502T	10				
576503U	10				
576504V	10				
576505W	10				
576506X	10				
576507Y	10				
576508H	10				
576509A	10				
576510W	10				
576511K	10				
576512L	10				
576513M	10				
576514N	10				
576515P	10				
576516Q	12				
576517R	12				
576518S	12				
576519T	12				
576520Y	12				
576524Q	14				
576525R	14				
576526J	16				
576527K	20				
576528U	20				
576529V	20				
576530S	20				
576531P	20				
576532Q	20				
576533R	20				
576534J	20				
576535K	20				
576536L	20				
576538W	20				
576538W	20				
576539X	20				
576540C	20				
576541Z	20				
576543T	22				
576544U	22				
576545V	22				
576546W	24				
576547X	24				
576548G	24				
576549H	24				

Section 4

Repair/Adjustment Procedures

Overview 4-5
Notations in the REP Text 4-6
Before You Start Any REP 4-6

Covers I 4-7
Rear Cover 4-7
Left Cover 4-8
Harness Cover 4-9
Front Cover Assembly 4-10
Left Front Cover 4-11
Top Cover Assembly 4-12
Right Cover 4-13

Covers II 4-14
Envelope Feeder (EF) Cover 4-14
Inner Cover 4-15
Front Tray 4-16
Front Tray Cover 4-17
Tray Extender 4-18

Paper Tray (Tray I) 4-19
Paper Size Sensor 4-19

Paper Transportation I 4-20
Paper Handling Unit Assembly 4-20
Feed Roll Assembly 4-21
Duplex Refeed Roll 4-22
Front Tray Roll 4-23

Paper Transportation II 4-24
Toner Sensor 4-24
Inlet Chute Assembly 4-25
Registration Sensor 4-26
Front Tray Chute Assembly 4-27
Tray Bottom 4-28
Retard Assembly 4-29
Multi Holder 4-30
Front Tray No Paper Actuator 4-31
No Paper Sensor 4-32
Bottom Chute 4-33
Supporter 4-34
Pinch Roll Assembly 4-36
Turn Pinch Roll Assembly 4-37
Registration Solenoid/Tray 1 Solenoid/
Front Tray Solenoid 4-38
Registration Clutch Assembly 4-39

Paper Transportation III 4-40
Bias Transfer Roll (BTR) Assembly 4-40
BTR Chute Assembly 4-41

Fusing 4-42
Fuser Assembly (CRU) 4-42

Paper Exit 4-43
Exit Roll Assembly 4-43
Middle Roll Assembly 4-44
Exit Gate 4-45
Exit Motor Assembly 4-46
Rear Cover Sensor 4-47
Option Cover/Eliminator Assembly 4-48
Stack Full Sensor 4-49
Stack Full Actuator 4-50

Drive and Xerographic Modules 4-51
Main Motor Assembly 4-51
Drive Assembly 4-52
Laser Assembly 4-53

Electrical Module I 4-54
Control Panel Assembly 4-54
Fan Assembly 4-55

Electrical Module II 4-56
System Controller Chassis 4-56
Low Voltage Power Supply (LVPS) 4-57
Print Engine Controller 4-58
High Voltage Power Supply (HVPS) 4-59
Fuser PWB 4-60
No Paper Actuator 4-61
Main Power Switch 4-62

4.1 Overview

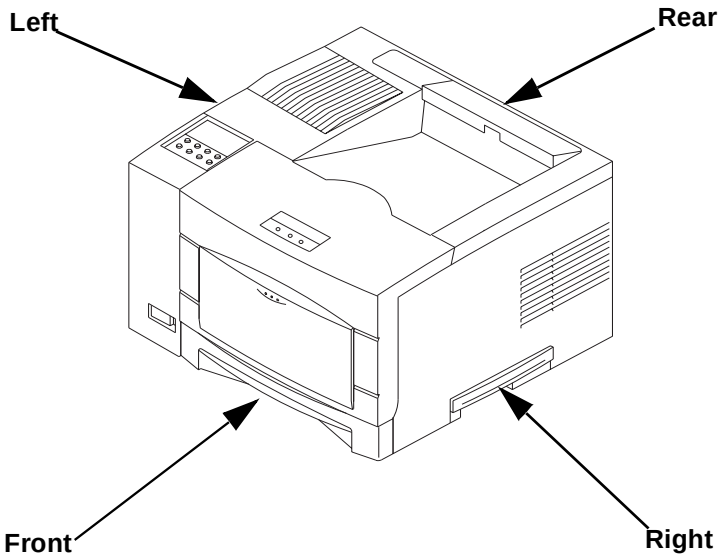
This section contains Network Laser Printers Repair Procedures (REPs):

1) Covers I
2) Covers II
3) Paper Tray
4) Paper Transportation I
5) Paper Transportation II
6) Paper Transportation III
7) Fusing
8) Paper Exit
9) Drive Assembly and Xerographic Modules
10) Electrical I
11) Electrical II

4.1.1 Notations in the REP Text

Locations given in the REPs assume you are facing the Control Panel with the following orientation:

Figure 4.1.1.1 Printer Orientation



The following notations apply:

- Arrows in the illustrations show direction of movement. Follow the numerical order if the arrows are numbered.
- The notation *screw (number, type, length of thread)* identifies individual screws.
- The notation *REP X.Y* in a REP step directs you to another REP to see how to perform a related procedure.
- The notation *Figure X.Y* references the illustration corresponding to the REP you are performing.
- A number followed by a parenthesis, e.g., 8), references the corresponding REP step.

4.1.2 Before You Start Any REP

There are a number of steps you should follow **before** you begin any procedure:

1. If applicable, cancel pending jobs and take the printer offline.
2. Switch the printer main power OFF, and disconnect the power cord from the wall outlet.
3. Remove the EP Cartridge from the printer; and store it in a safe, dark place.
4. Do not use force to remove or install printer components.
5. Use only the screw size and type designated in the REP. The wrong screw could easily damage tapped holes.
6. Wear a wrist strap to dissipate static electricity, which may damage sensitive electronic parts.
7. See *Section 6*, *Wiring Diagrams,* for detailed wiring diagrams.

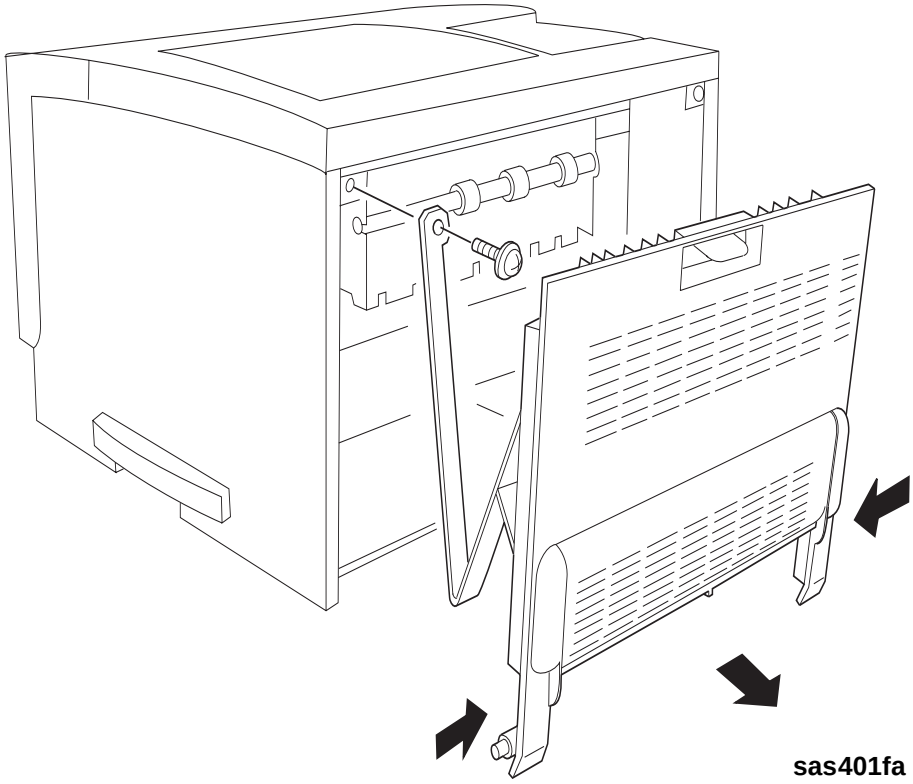
4.2 Covers I

4.2.1 Rear Cover

Removal

1. Open the Rear Cover.
2. Remove the screw securing the stopper to the Frame. (See Figure 4.2.1.1).
3. Press and unlatch the pivots on both ends of the Rear Cover and remove the cover.

Figure 4.2.1.1 Rear Cover Removal



Replacement

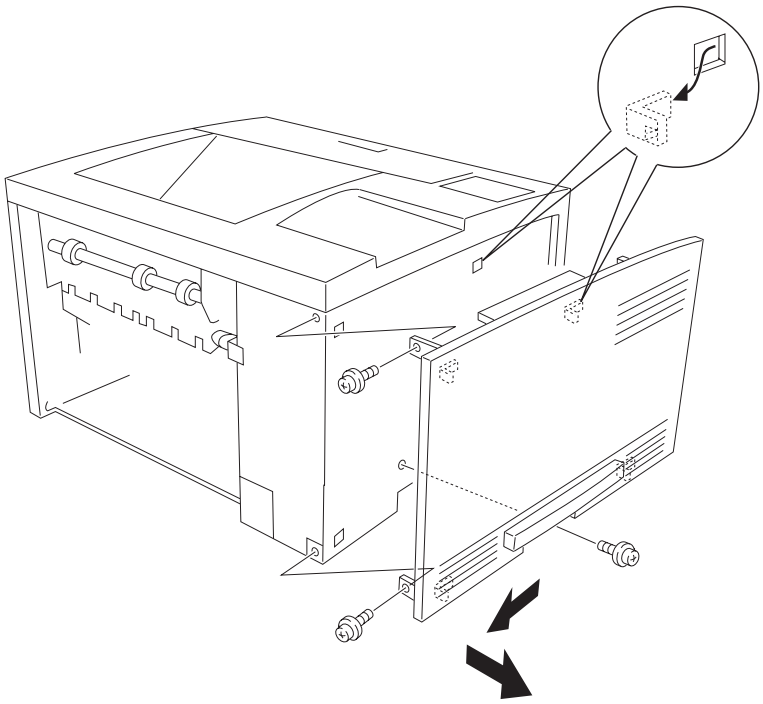
Perform the removal steps in reverse order.

4.2.2 Left Cover

Removal

1. Remove the three screws securing the cover to the Frame. (See Figure 4.2.2.1.)
2. Pull the rear end of the cover to snap it off the Frame.

Figure 4.2.2.1 Left Cover Removal



SAS402FB

Replacement

Perform the removal steps in reverse order.

4.2.3 Harness Cover

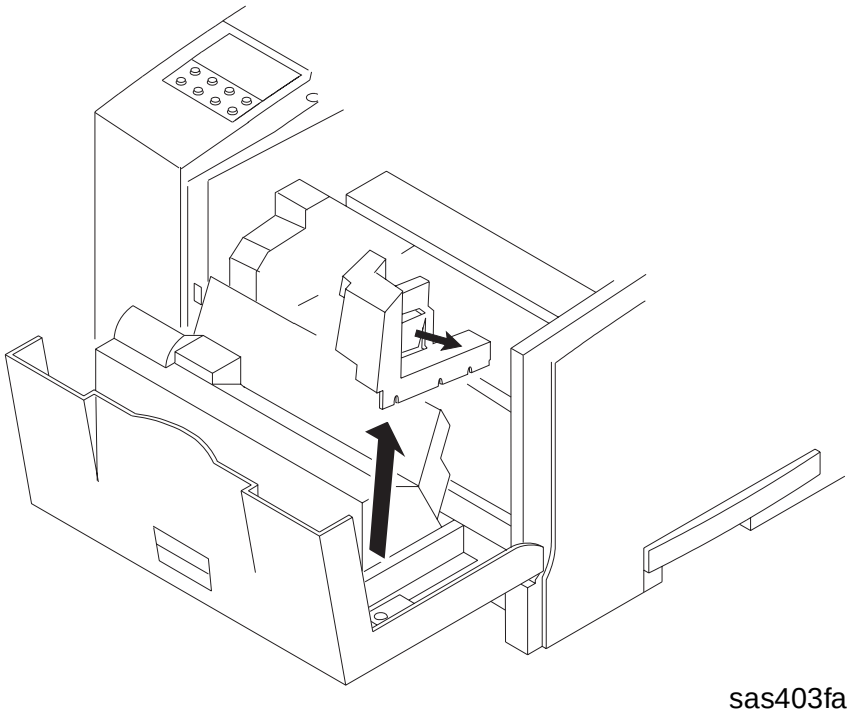
Removal

1. Open the Front Cover.
2. Press the latch on the left, and use a flat-slot screwdriver to free the latch on the right by slightly lifting upward. (See Figure 4.2.3.1.)

NOTE: Notice the routing of the harness underneath the Harness Cover.

3. Remove the Harness Cover by pulling it upward and out of the Front Cover Assembly.

Figure 4.2.3.1 Harness Cover Removal



sas403fa

Replacement

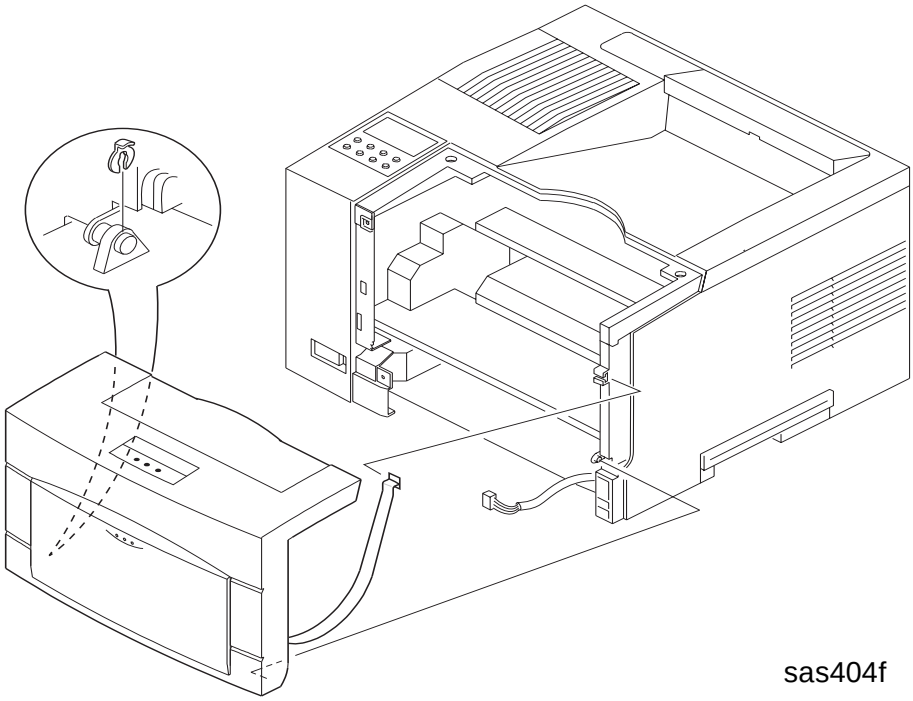
Perform the removal steps in reverse order.

4.2.4 Front Cover Assembly

Removal

1. Open the Front Cover Assembly.
2. Remove the Harness Cover (*REP 4.2.3 Harness Cover*).
3. Disconnect P/J 130.
4. Slide the Cover Stopper to the left to free it from the Frame. (See Figure 4.2.4.1.)
5. Remove the KL clip securing the cover to the printer.
6. Slide the Front Cover Assembly to the right, and remove the assembly.

Figure 4.2.4.1 Removing the Front Cover



sas404f

Replacement

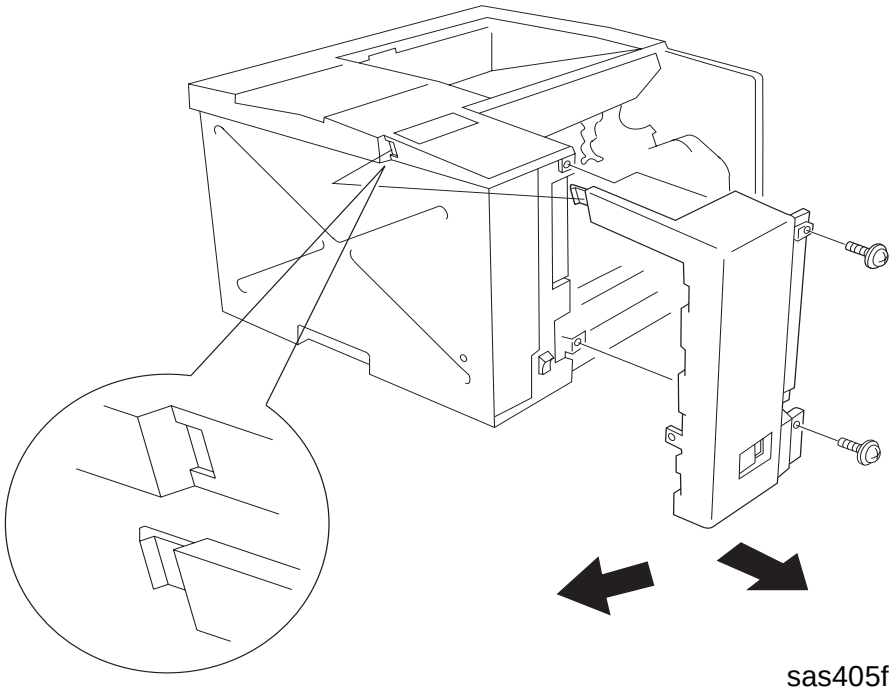
Perform the removal steps in reverse order.

4.2.5 Left Front Cover

Removal

1. Open the Front Cover.
2. Remove the two screws securing the Front Cover to the Frame. (See Figure 4.2.5.1).
3. Remove the Front Cover from the Top Cover Assembly by rotating the Front Cover and pulling it towards you.

Figure 4.2.5.1 Left Front Cover Removal



sas405f

Replacement

Perform the removal steps in reverse order.

4.2.6 Top Cover Assembly

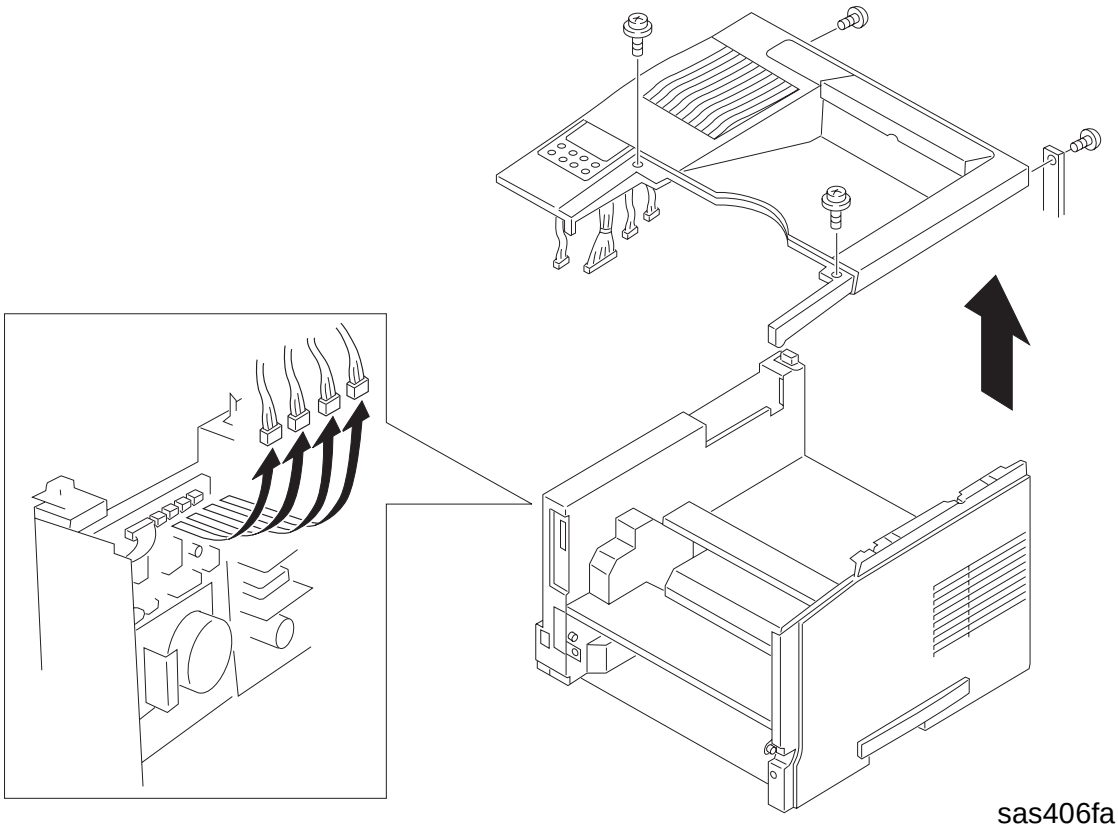
Removal

1. Open the Front Cover Assembly.
2. Remove the Left Cover (*REP 4.2.2 Left Cover*).
3. Remove the Left Front Cover (*REP 4.2.5 Left Front Cover*).
4. Remove the System Controller Chassis (*REP 4.12.1 System Controller Chassis*).
5. Disconnect the four connectors (P/Js 23, 24, 28, and 32) from the Print Engine Controller. (See Figure 4.2.6.1.)
6. Remove the four screws securing the Top Cover.

NOTE: You must open the Rear Cover to remove two of the four screws.

7. Remove the Wire Harness from the Wire Holder.
8. Lift upward and remove the Top Cover Assembly.

Figure 4.2.6.1 Top Cover Assembly Removal



sas406fa

Replacement

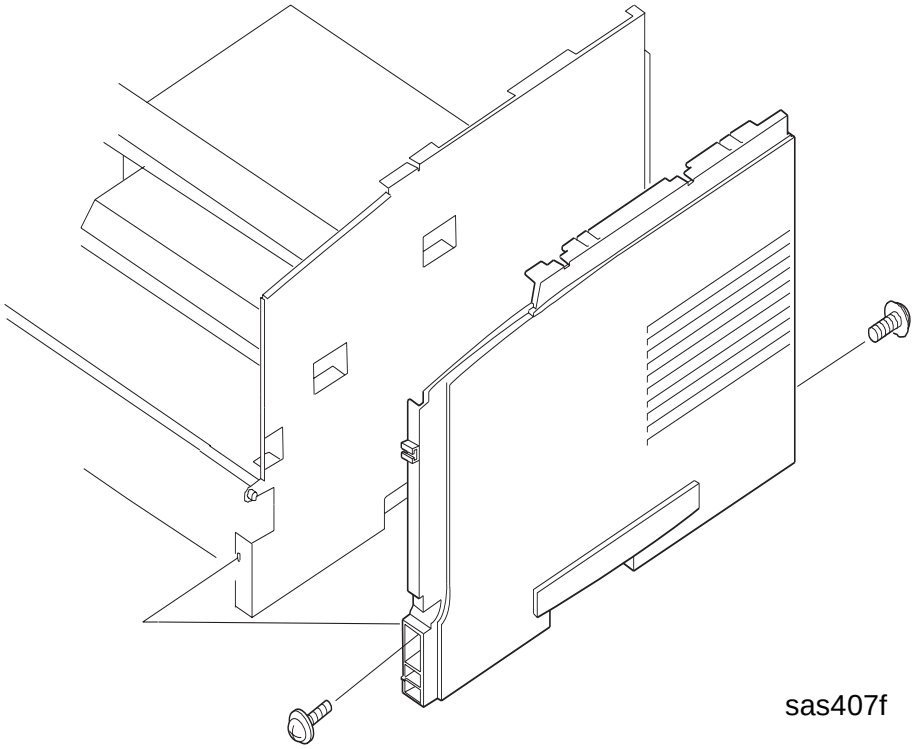
Perform the removal steps in reverse order.

4.2.7 Right Cover

Removal

1. Open the Front Cover Assembly.
2. Remove the Stopper securing the Front Cover Assembly to the Frame.
3. Open the Rear Cover Assembly.
4. Remove the screw securing the Stopper of the Rear Cover to the Frame, and remove the Stopper.
5. Remove the Top Cover Assembly (*REP 4.2.6 Top Cover Assembly*).
6. Remove the two screws securing the Right Cover to the Frame.
7. Unlatch the hooks securing the Right Cover at the top and bottom and remove the Right Cover.
8. Using a flat blade screwdriver, unlatch the two hooks securing the top of the Right Cover.
9. Unlatch the two bottom hooks and the rear hook. Pull the Right Cover out while biasing it down.

Figure 4.2.7.1 Right Cover Removal



Replacement

Perform the removal steps in reverse order.

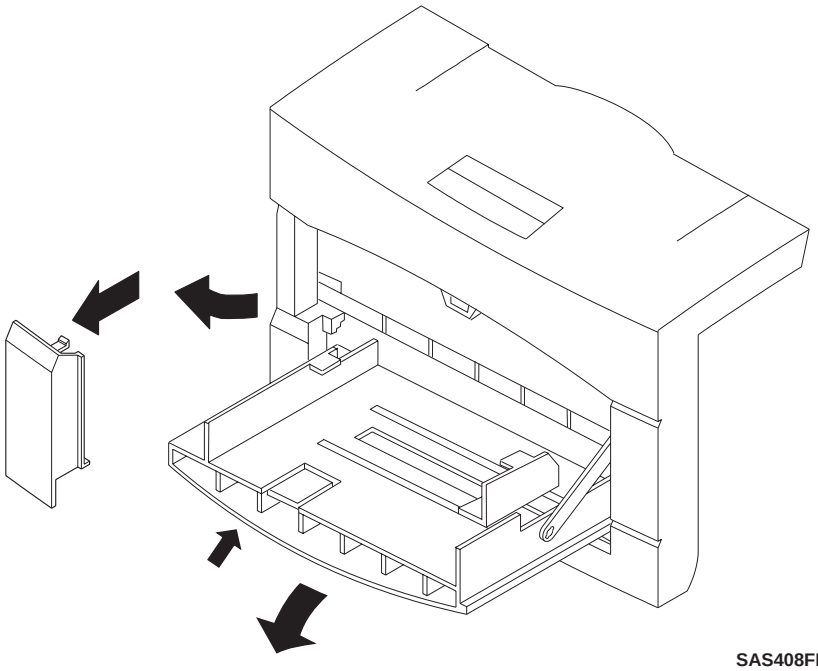
4.3 Covers II

4.3.1 Envelope Feeder (EF) Cover

Removal

1. Press the top of the Front Tray Cover to release the latch and open the tray.
2. Open the EF Cover by 90 degrees. (See Figure 4.3.1.1.)
3. Grasp the EF Cover and remove it by pulling to the left.

Figure 4.3.1.1 EF Cover Removal



Replacement

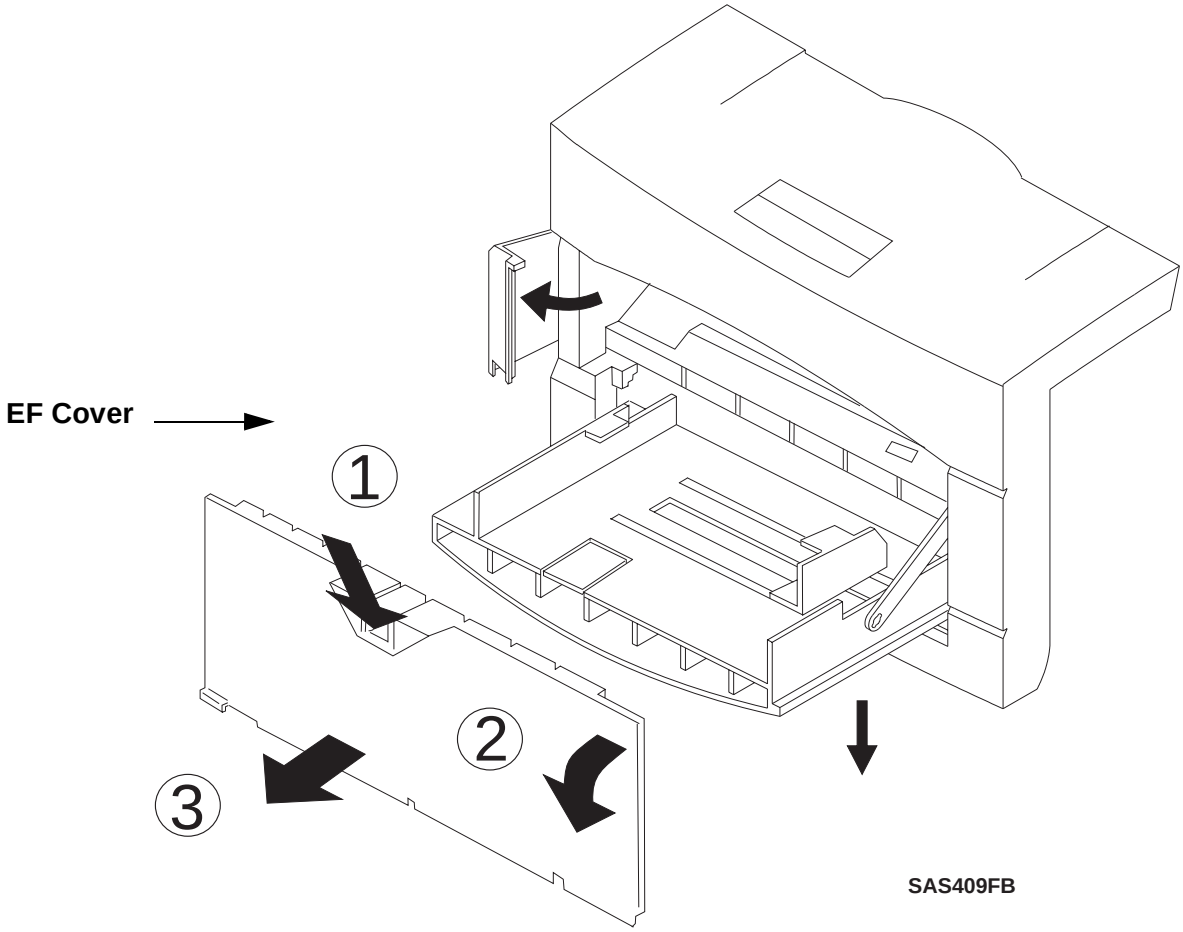
Perform the removal steps in reverse order.

4.3.2 Inner Cover

Removal

1. Press the top of the Front Tray Cover Assembly to release the latch and open the tray.
2. Open the EF Cover by 90 degrees. (See Figure 4.3.2.1.)
3. Release the latch on the top of the Inner Cover (1), pull the cover down (2), and then remove the cover by pulling it to the front (3).

Figure 4.3.2.1 Inner Cover Removal



Replacement

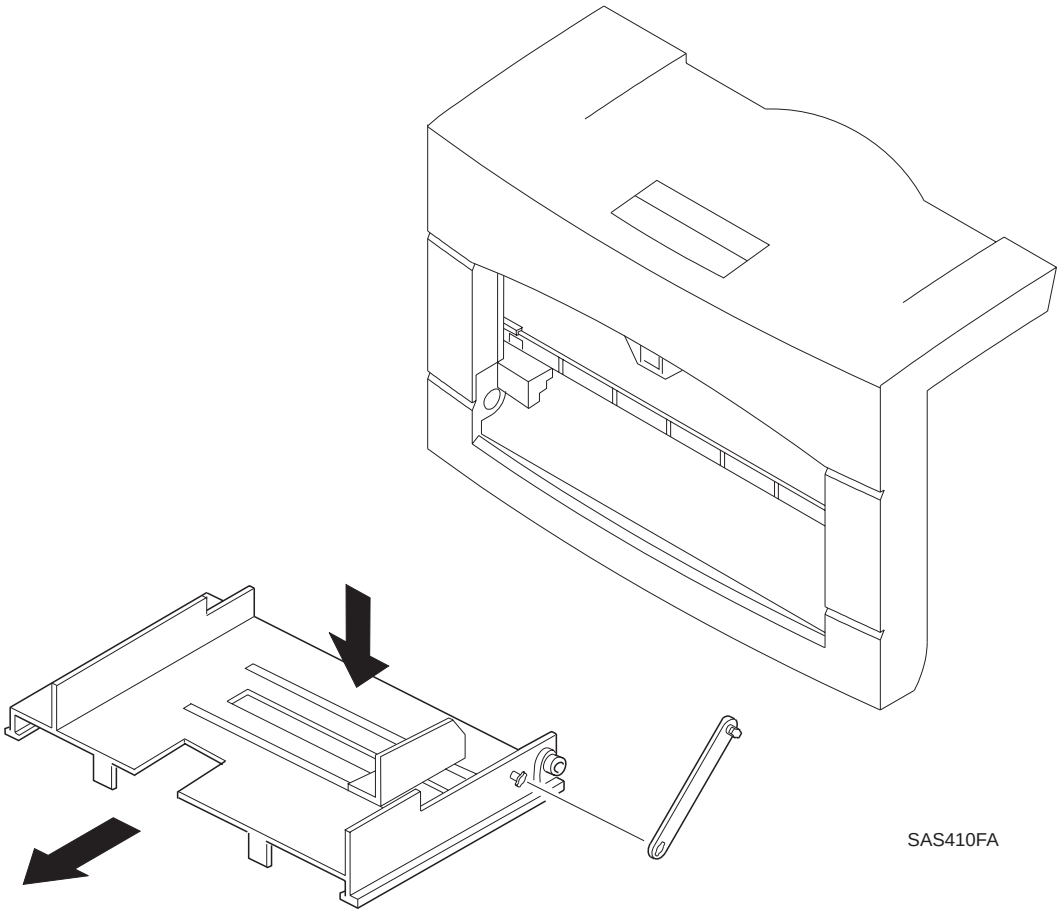
Perform the removal steps in reverse order.

4.3.3 Front Tray

Removal

1. Press the top of the Front Tray Cover Assembly to release the latch and open the tray.
2. Remove the Front Tray Cover (*REP 4.3.4 Front Tray Cover*).
3. Lift the front tray slightly and disengage the Tray Stopper Arm from the right side of the Front Tray Cover Assembly. (See Figure 4.3.3.1.)
4. Press the sides of the cover inward on both ends to flex the cover hinge pivots out of the holes.
5. Remove the Front Cover from the Front Tray Cover Assembly.

Figure 4.3.3.1 Tray Cover Removal



Replacement

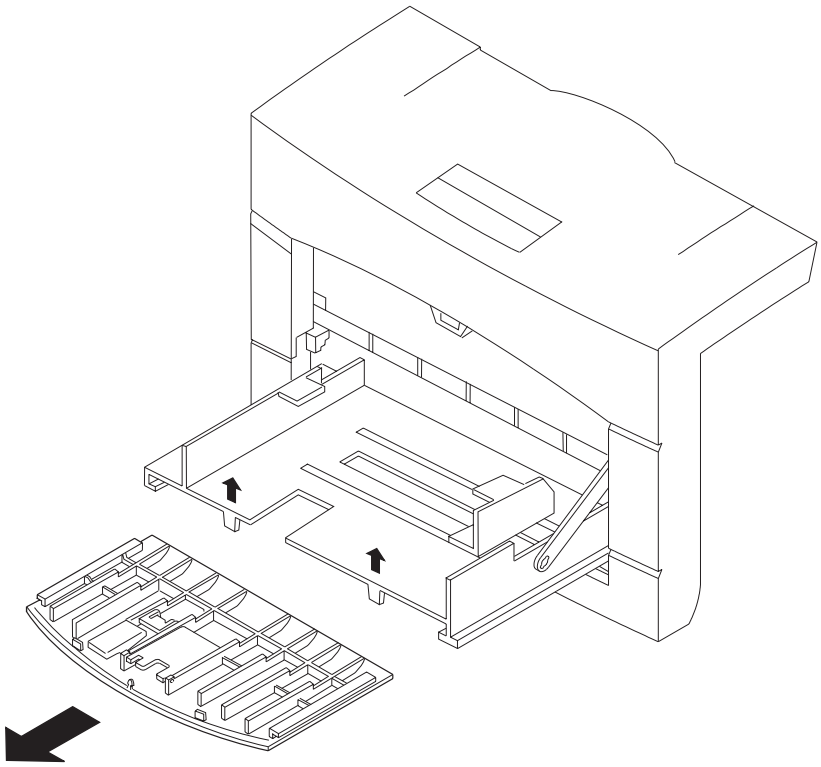
Perform the removal steps in reverse order.

4.3.4 Front Tray Cover

Removal

1. Press the top of the Front Tray Cover Assembly to release the latch and open the tray.
2. Pull the Front Tray Cover out fully. (See Figure 4.3.4.1.)
3. Lift the Front Tray with your fingers to clear the stops on the Front Tray Cover; then pull the Front Tray Cover out of the Front Tray Cover Assembly. (See Figure 4.3.4.1.)

Figure 4.3.4.1 Front Tray Cover Removal



SAS411FC

Replacement

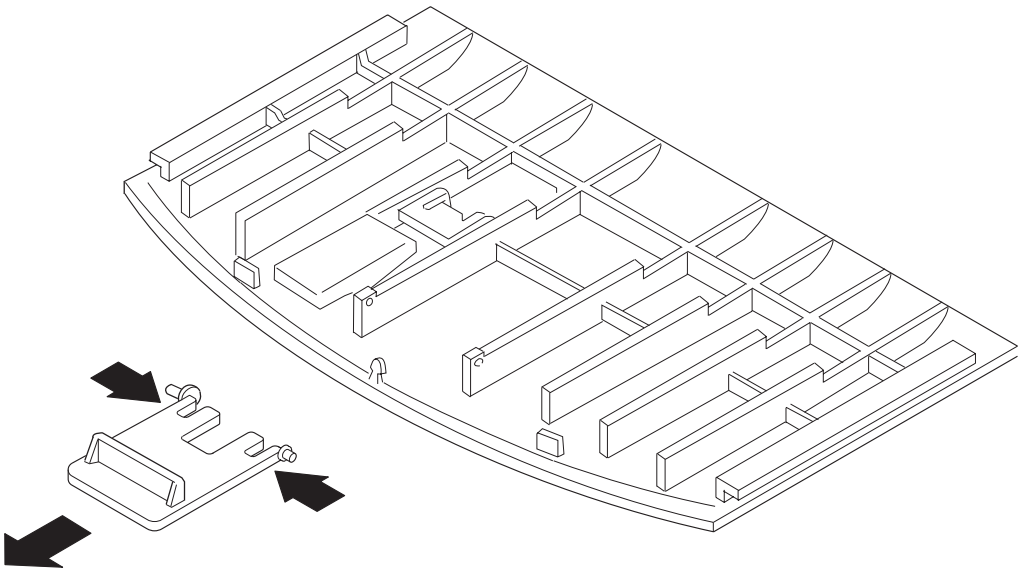
Perform the removal steps in reverse order.

4.3.5 Tray Extender

Removal

1. Press the top of the Front Tray Cover Assembly to release the latch and open the Front Tray.
2. Pull the Front Tray out fully. (See Figure 4.3.5.1.)
3. Unlatch the Tray Extender.
4. Bend the Right Tray Cover supporting rib towards the right, while biasing the Tray Extender towards the left so that the Tray Extender snaps out of the rib of the Cover Tray.

Figure 4.3.5.1 Tray Extender Removal



SAS412FC

Replacement

Perform the removal steps in reverse order.

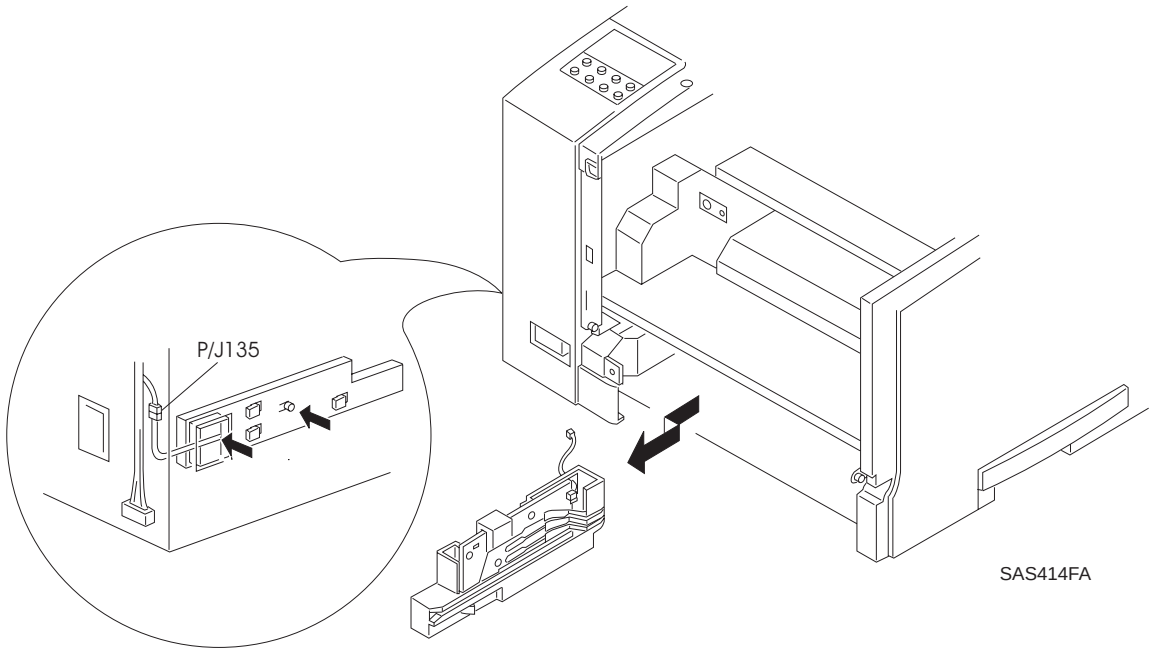
4.4 Paper Tray (Tray I)

4.4.1 Paper Size Sensor

Removal

1. Remove the Paper Tray.
2. Remove the Rear Cover (*REP 4.2.1 Rear Cover*).
3. Remove the Left Cover (*REP 4.2.2 Left Cover*).
4. Remove the Front Cover Assembly (*REP 4.2.4 Front Cover Assembly*).
5. Remove the Paper Handling Unit Assembly (*REP 4.5.1 Paper Handling Unit Assembly*).
6. Remove the System Controller Chassis (*REP 4.12.1 System Controller Chassis*).
7. Disconnect the Paper Size Sensor connector (P/J 135). (See Figure 4.4.1.1.)
8. Press the round clip and the Paper Size Sensor Assembly Stop from the System Controller side to the paper tray side; then slide the Paper Size Sensor towards the front and remove it.

Figure 4.4.1.1 Paper Size Sensor Removal



Replacement

Perform the removal steps in reverse order.

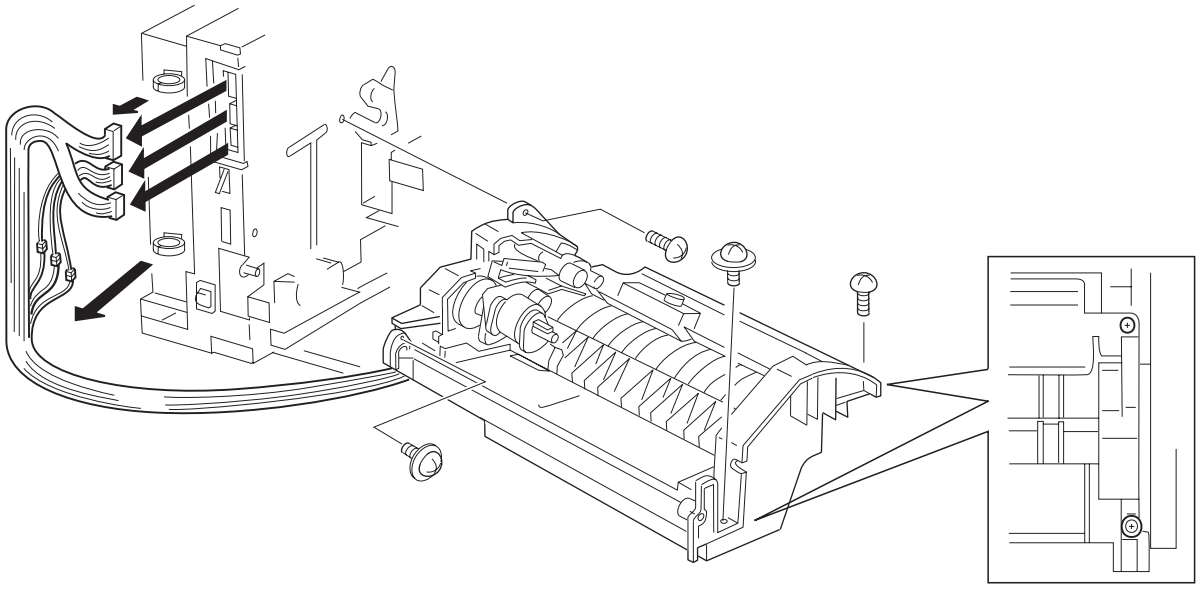
4.5 Paper Transportation I

4.5.1 Paper Handling Unit Assembly

Removal

1. Remove the Left Cover (*REP 4.2.2 Left Cover*).
2. Remove the Left Front Cover (*REP 4.2.5 Left Front Cover*).
3. Remove the Front Cover Assembly (*REP 4.2.4 Front Cover Assembly*).
4. Remove the EP Cartridge.
5. Disconnect the three connectors (P16, P17, and P27) from the LVPS. (See Figure 4.5.1.1.) Then remove the harness from the cable clamps.
6. Remove the four screws securing the Paper Handling Unit Assembly.
7. Carefully lift the Paper Handling Unit Assembly upward; then remove the Assembly.

Figure 4.5.1.1 Paper Handling Unit Assembly Removal



SAS415FC

Replacement

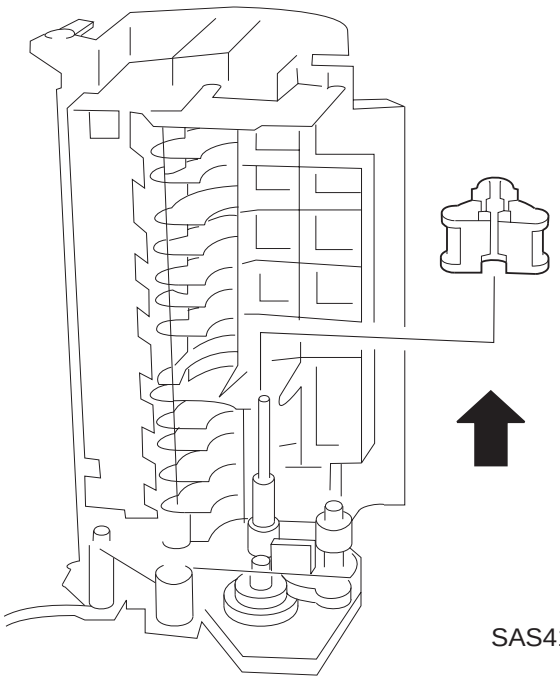
Perform the removal steps in reverse order.

4.5.2 Feed Roll Assembly

Removal

1. Remove the EP Cartridge.
2. Remove the Paper Handling Unit Assembly (*REP 4.5.1 Paper Handling Unit Assembly*).
3. Position the Paper Handling Unit Assembly on the gear side.
4. Slightly push back the two release tabs on the Feed Roll Assembly while lifting the Feed Roll up the shaft.
5. Remove the Feed Roll Assembly by tilting and rotating the Assembly to one side.

Figure 4.5.2.1 Feed Roll Assembly Removal



Replacement

Perform the removal steps in reverse order

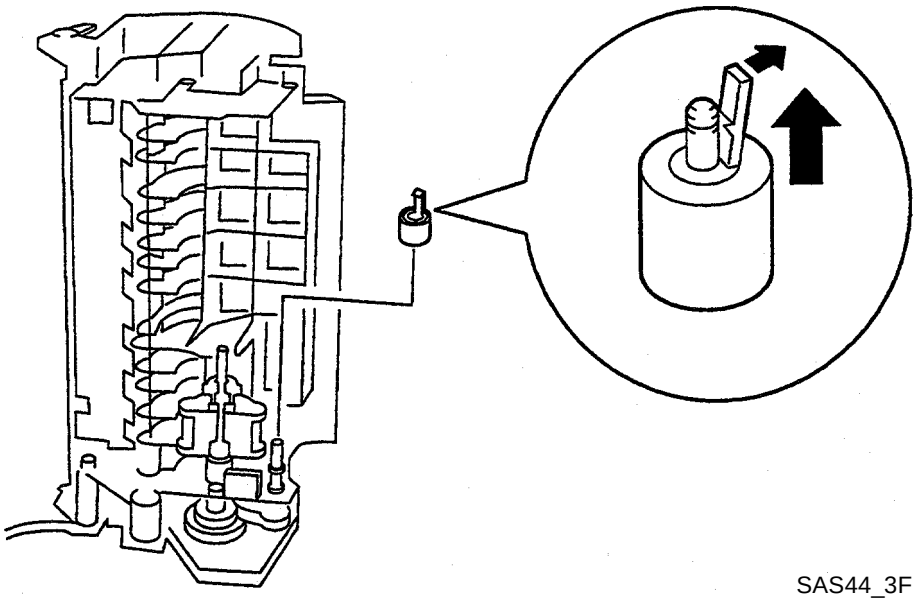
4.5.3 Duplex Refeed Roll

Removal

1. Remove the Paper Handling Unit Assembly (*REP 4.5.1 Paper Handling Unit Assembly*).
2. Position the Paper Handling Unit Assembly on the gear side.
3. Pull slightly on the latch; then remove the Duplex Refeed Roll by lifting it upward. (See Figure 4.5.3.1.)

NOTE: The Duplex Refeed Roll is located next to the Feed Roll.

Figure 4.5.3.1 Duplex Refeed Roll Removal



SAS44_3F

Replacement

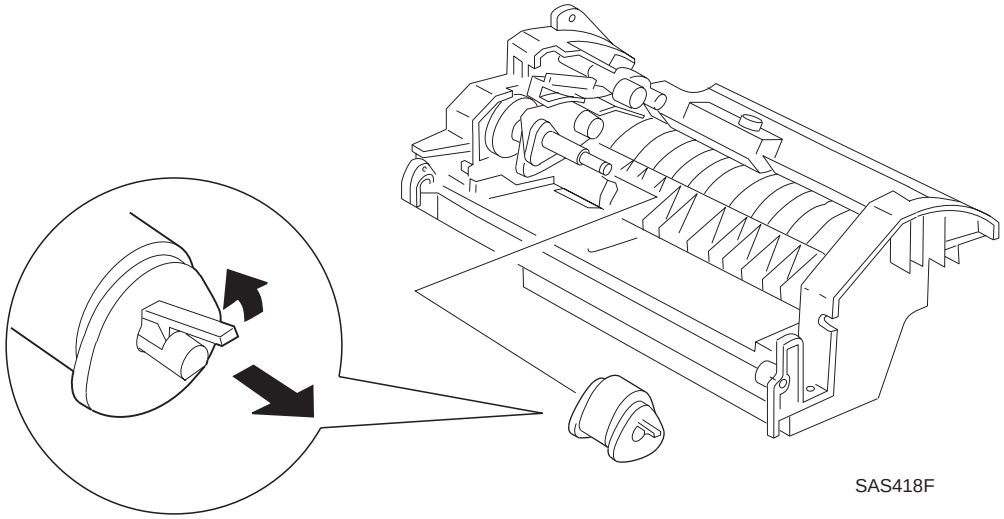
Perform the removal steps in reverse order.

4.5.4 Front Tray Roll

Removal

1. Open the Front Cover Assembly.
2. Press the Bottom Tray Assembly down.
3. Pull slightly on the latch; then remove the Front Tray Roll by sliding it to the right. (See Figure 4.5.4.1.)

Figure 4.5.4.1 Front Tray Roll



Replacement

Perform the removal steps in reverse order.

4.6 Paper Transportation II

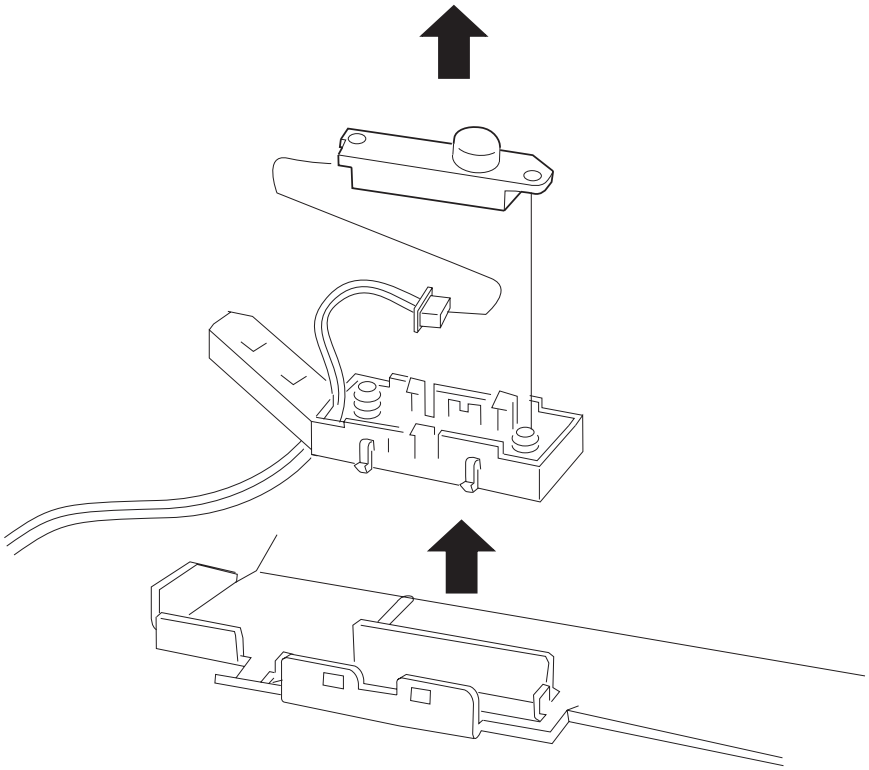
4.6.1 Toner Sensor

Removal

NOTE: Carefully note the routing of the wiring harness.

1. Pull the Toner Sensor Assembly towards the front from the rear while lifting upward on the Toner Sensor Assembly.
2. Disconnect the connector from the Toner Sensor (P137). (See Figure 4.6.1.1.)
3. Disengage the three clips, lifting up the Toner Sensor.

Figure 4.6.1.1 Toner Sensor Removal



sas419fa

Replacement

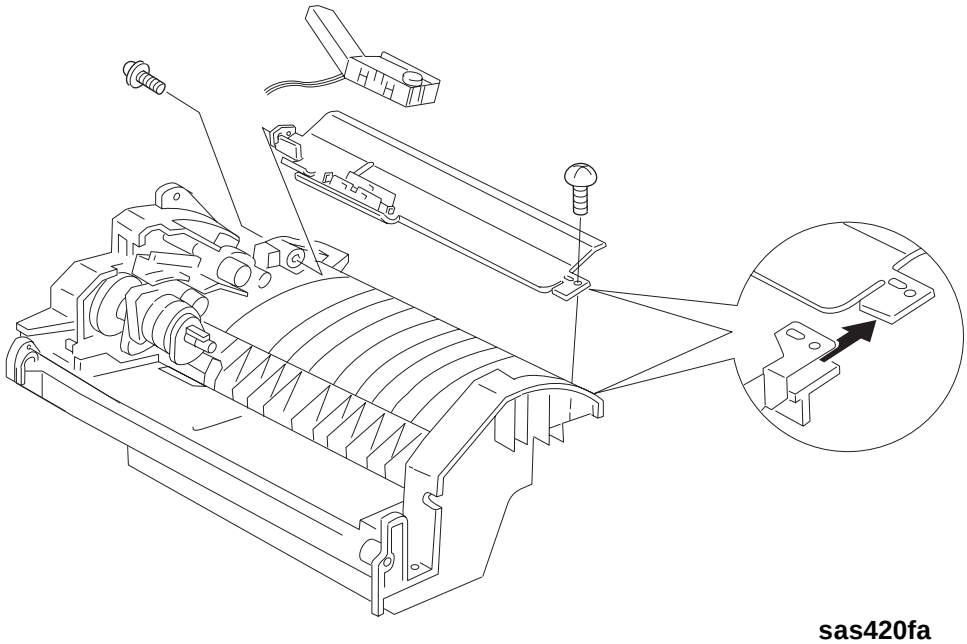
Perform the removal steps in reverse order.

4.6.2 Inlet Chute Assembly

Removal

1. Remove the Paper Handling Unit Assembly (*REP 4.5.1 Paper Handling Unit Assembly*).
2. Free the Toner Sensor wire harness from the Inlet Chute Assembly.
3. Remove the two screws securing the Inlet Chute Assembly. (The screw on the right was already removed in step 1.)
4. Bias the Inlet Chute Assembly towards the right and slightly towards the rear in order to clear the bosses at the left side of the Chute Assembly. Lift upward and remove the assembly.

Figure 4.6.2.1 Inlet Chute Assembly Removal



sas420fa

Replacement

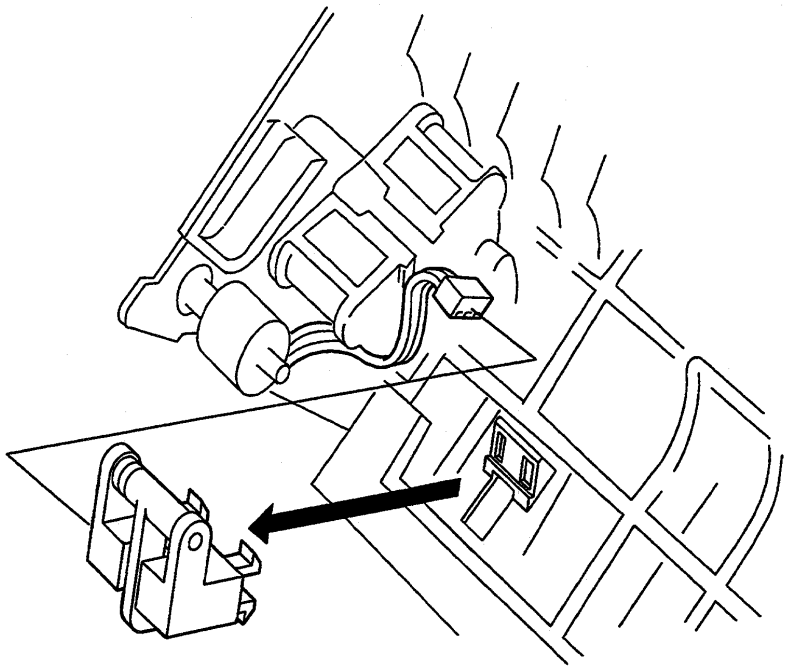
Perform the removal steps in reverse order.

4.6.3 Registration Sensor

Removal

1. Remove the Paper Handling Unit Assembly (*REP 4.5.1 Paper Handling Unit Assembly*).
2. Use a flat-slot screwdriver blade to unhook the front Sensor Registration clip. (See Figure 4.6.3.1.)
3. Insert the screwdriver blade into the opening to unhook the rear Registration Sensor clip.
4. Disconnect P123 from the Registration Sensor.

Figure 4.6.3.1 Registration Sensor Removal



SAS421F

Replacement

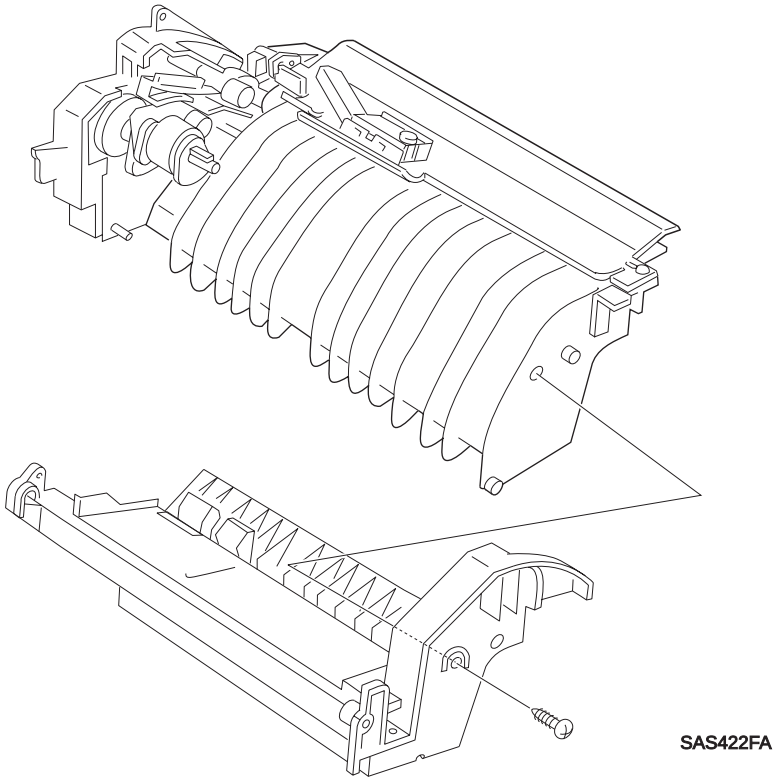
Perform the removal steps in reverse order.

4.6.4 Front Tray Chute Assembly

Removal

1. Remove the Paper Handling Unit Assembly (*REP 4.5.1 Paper Handling Unit Assembly*).
2. Remove the Inlet Chute Assembly (*REP 4.6.2 Inlet Chute Assembly*).
3. Remove the screw securing the Front Tray Chute Assembly on the right.
4. Bias the Front Tray Chute Assembly towards the right while pulling upward, and then remove the assembly.

Figure 4.6.4.1 Front Tray Chute Assembly Removal



Replacement

1. Compress the Bottom Tray until it stops.
2. Perform the removal steps in reverse order.

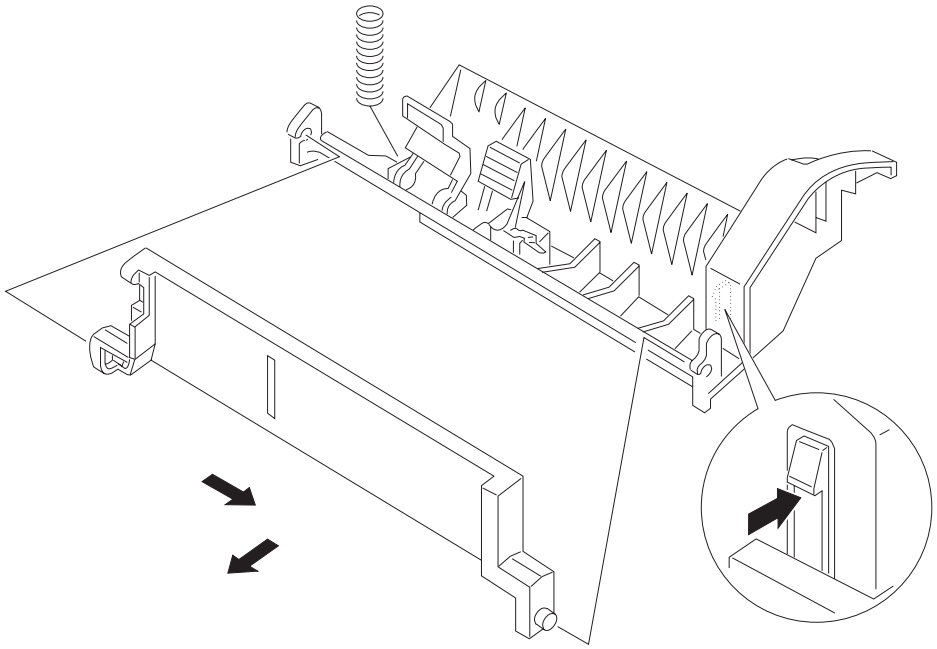
4.6.5 Tray Bottom

Removal

1. Remove the Front Tray Chute Assembly (*REP 4.6.4 Front Tray Chute Assembly*).
2. Compress the Tray Bottom.
3. Compress the tab on the right limiting the Tray Bottom upward travel.
4. Raise the Tray Bottom to the upright position and pull the right pivot out of position.
5. Remove the Tray Bottom by pulling the Tray Bottom away from the left pivot.

NOTE: Be careful not to lose the springs when the Tray Bottom is decompressed.

Figure 4.6.5.1 Tray Bottom Removal



sas423fa

Replacement

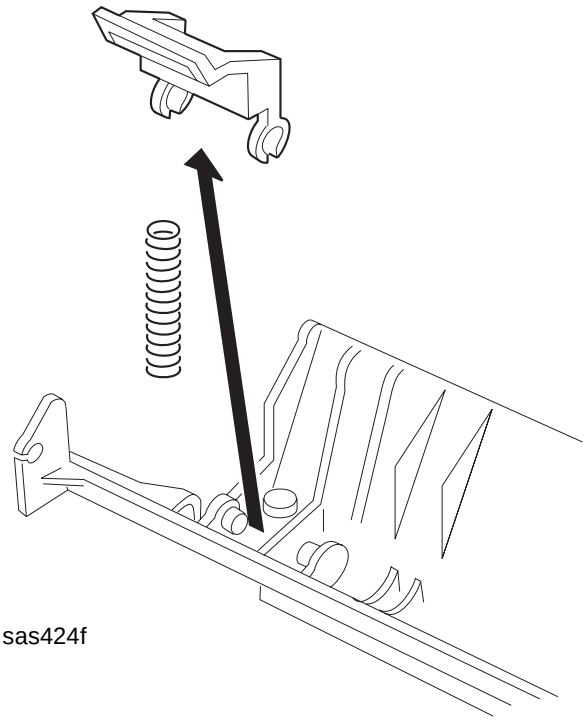
1. Compress the Tray Bottom with the springs in position.
2. Perform the removal steps in reverse order.

4.6.6 Retard Assembly

Removal

1. Remove the Tray Bottom (*REP 4.6.5 Tray Bottom*).
2. Press the Retard Assembly down to the level plane, and remove the Assembly by unclipping it from the Tray Bottom.

Figure 4.6.6.1 Retard Assembly Removal



sas424f

Replacement

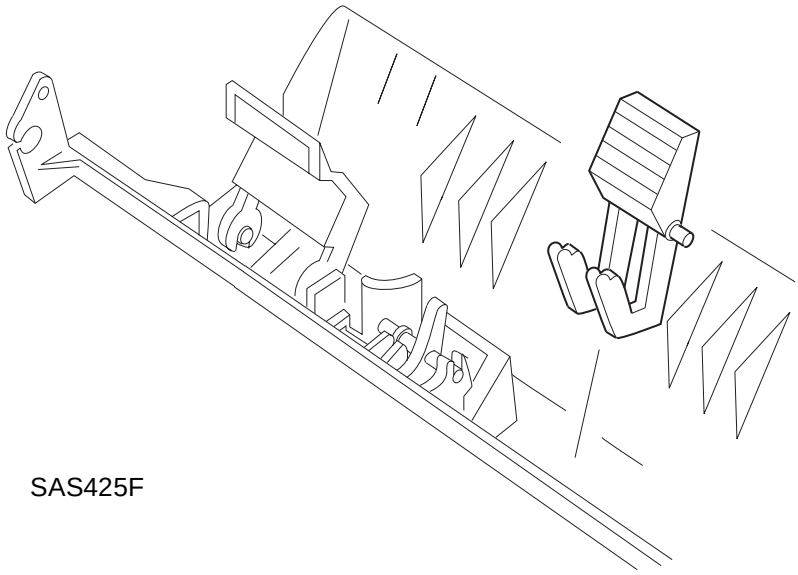
Perform the removal steps in reverse order.

4.6.7 Multi Holder

Removal

1. Remove the Tray Bottom (*REP 4.6.5 Tray Bottom*).
2. Pull the Multi Holder upward out of the Tray Bottom.

Figure 4.6.7.1 Multi Holder Removal



SAS425F

Replacement

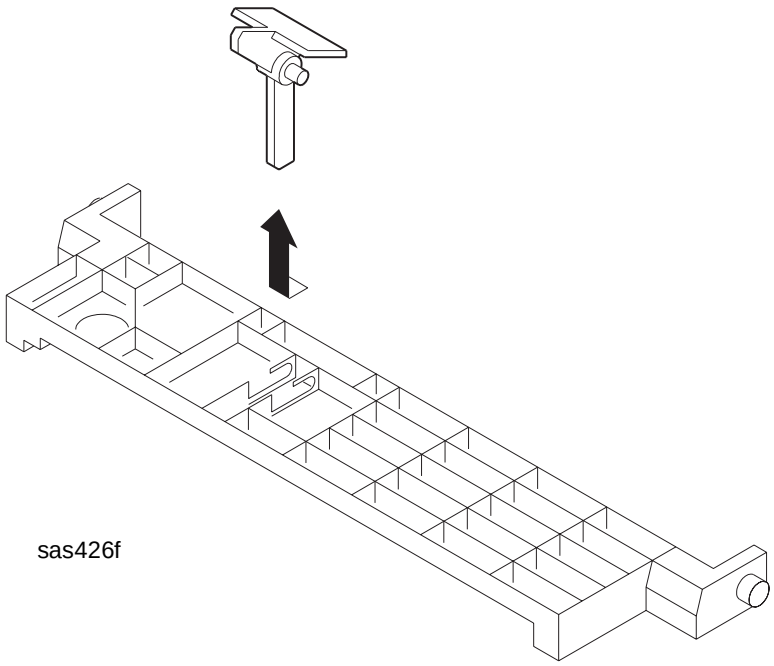
Perform the removal steps in reverse order.

4.6.8 Front Tray No Paper Actuator

Removal

1. Remove the Tray Bottom (*REP 4.6.5 Tray Bottom*).
2. Turn the Tray Bottom upside down, and pull and remove the Front Tray No Paper Actuator out of position.

Figure 4.6.8.1 Front Tray No Paper Actuator Removal



sas426f

Replacement

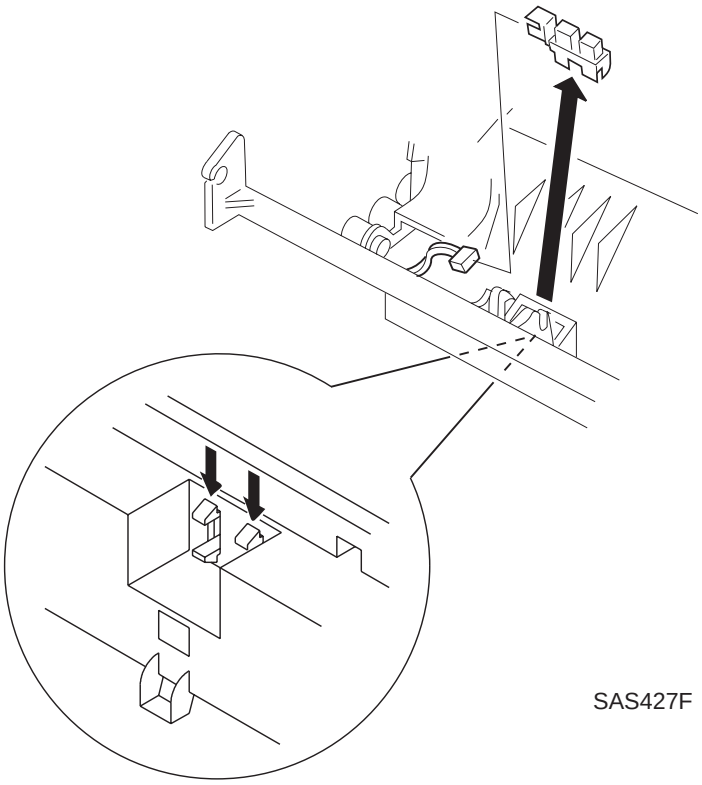
Perform the removal steps in reverse order.

4.6.9 No Paper Sensor

Removal

1. Remove the Tray Bottom (*REP 4.6.5 Tray Bottom*).
2. Use a flat-slot screwdriver blade. From the underside of the Tray Bottom, unhook the front No Paper Sensor clip.
3. Lift the loosened No Paper Sensor by prying it with a screwdriver and disengage the rear clips.
4. Disconnect the Sensor connector, and remove the No Paper Sensor.

Figure 4.6.9.1 No Paper Sensor Removal



Replacement

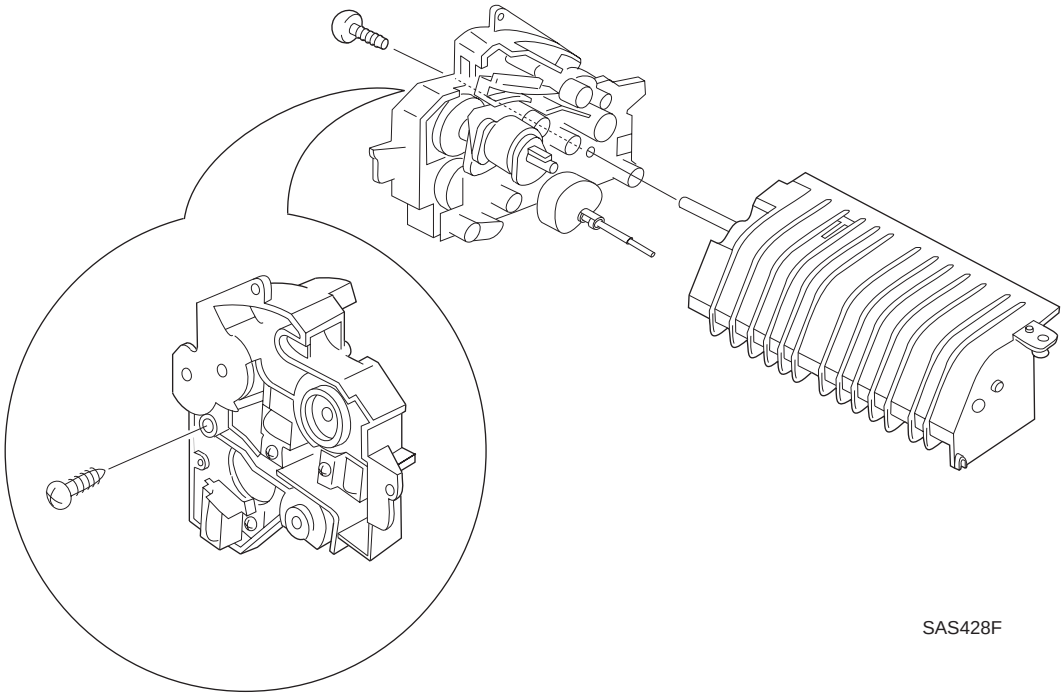
Perform the removal steps in reverse order.

4.6.10 Bottom Chute

Removal

1. Remove the Paper Handling Unit Assembly (*REP 4.5.1 Paper Handling Unit Assembly*).
2. Remove the Registration Sensor (*REP 4.6.3 Registration Sensor*).
3. Remove the Front Tray Chute Assembly (*REP 4.6.4 Front Tray Chute Assembly*).
4. Pull out the wire harness from the junction connector (P/J 128) of the Toner Sensor.
5. Remove the screw securing the Bottom Chute on the right.
6. Remove the screw securing the right supporter to the Bottom Chute.
7. Remove the Bottom Chute from the Paper Handling Unit Assembly.

Figure 4.6.10.1 Bottom Chute Removal



Replacement

Perform the removal steps in reverse order.

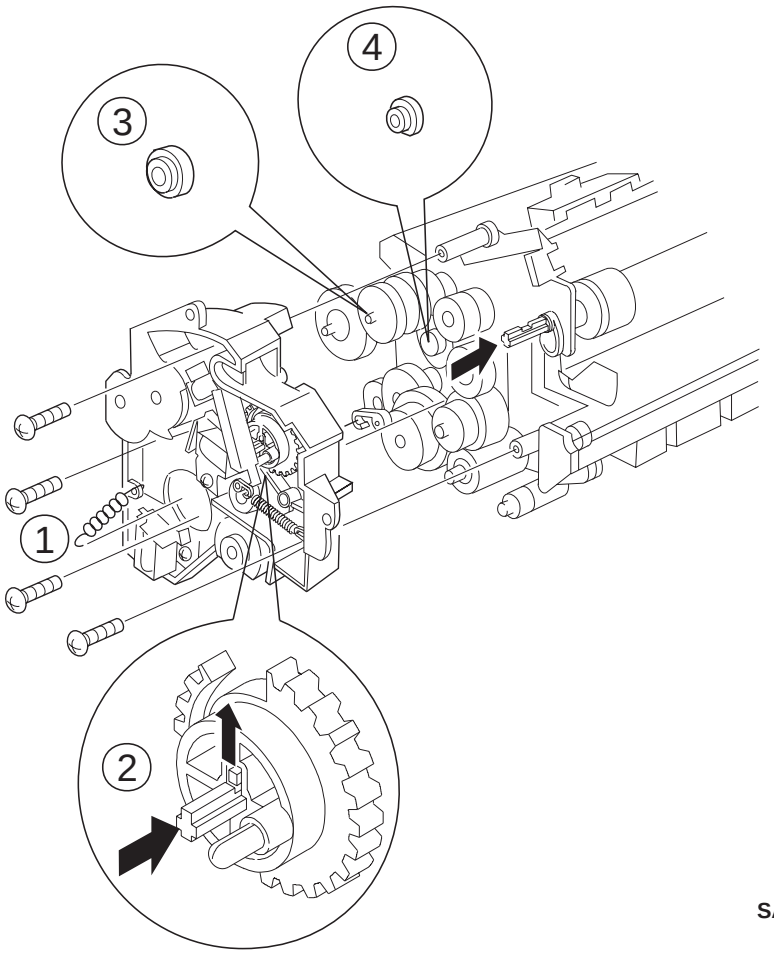
4.6.11 Supporter

Removal

1. Remove the Paper Handling Unit Assembly (*REP 4.5.1 Paper Handling Unit Assembly*).
2. Raise the Paper Handling Unit Assembly approximately 90 degrees.
3. Remove the wire harnesses connected to the No Toner Sensor and the Registration Sensor away from the Supporter.
4. Remove the Lever Spring (1).
5. Remove the three screws securing the Supporter to the Registration Plate as well as the screw securing the Supporter to the Bottom Chute.
6. Use tweezers to release the latch up out of the Front Tray Gear shaft, and pull off the Supporter along with the Front Tray Gear (2).

CAUTION! The Registration Bushing (3) and the P/Registration Bushing (4) might fall off simultaneously. Be careful not to lose them.

Figure 4.6.11.1 Supporter Removal



SAS429FA

Replacement

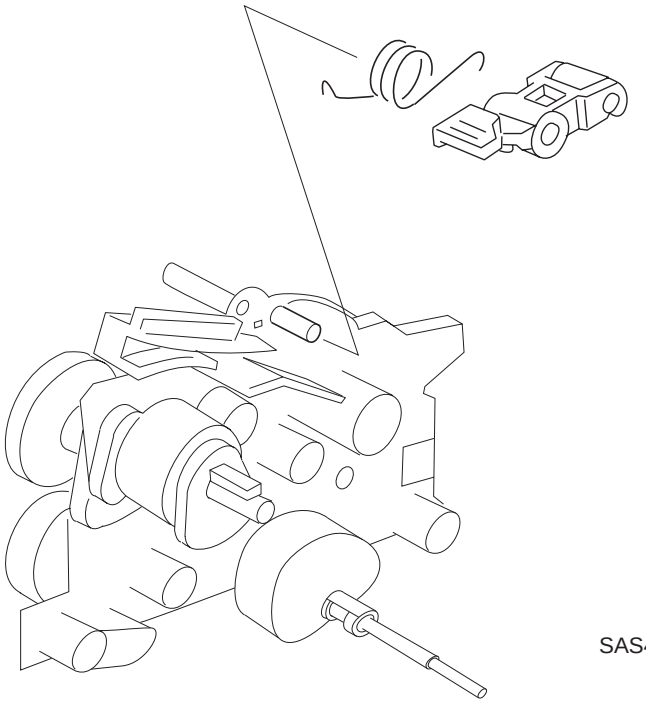
Perform the removal steps in reverse order.

4.6.12 Pinch Roll Assembly

Removal

1. Remove the Paper Handling Unit Assembly (*REP 4.5.1 Paper Handling Unit Assembly*).
2. Remove the Supporter (*REP 4.6.11 Supporter*).
3. Unclip the spring from the Registration Plate.
4. Unlatch the clip securing the Pinch Roll Assembly to the Registration Plate.
5. Remove the Pinch Roll Assembly with the Pinch Roll springs.

Figure 4.6.12.1 Pinch Roll Assembly Removal



SAS431FA

Replacement

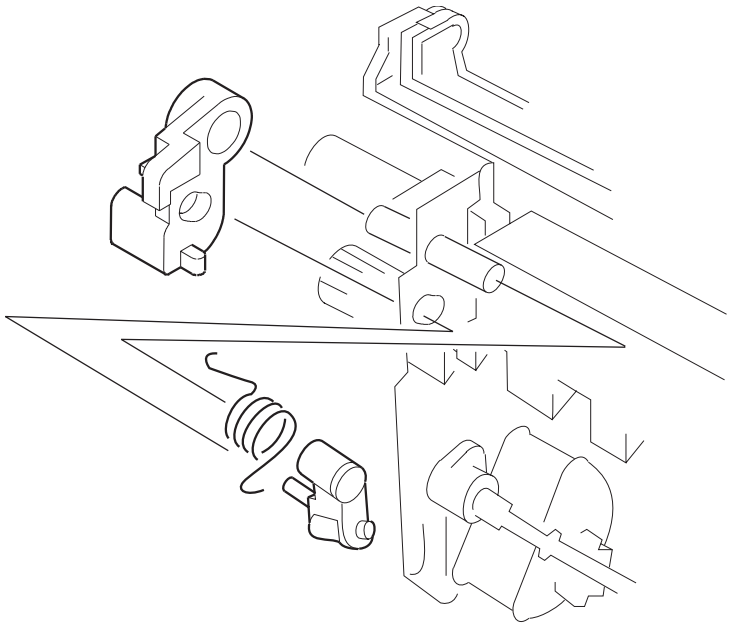
Perform the removal steps in reverse order.

4.6.13 Turn Pinch Roll Assembly

Removal

1. Remove the Paper Handling Unit Assembly (*REP 4.5.1 Paper Handling Unit Assembly*).
2. Remove the Supporter (*REP 4.6.11 Supporter*).
3. Unhook the spring on the Registration Plate side from the Release Link.
4. Remove the Turn Pinch Roll Assembly with the Turn Pinch Roll Spring.

Figure 4.6.13.1 Turn Pinch Roll Assembly Removal



sas423f

Replacement

Perform the removal steps in reverse order.

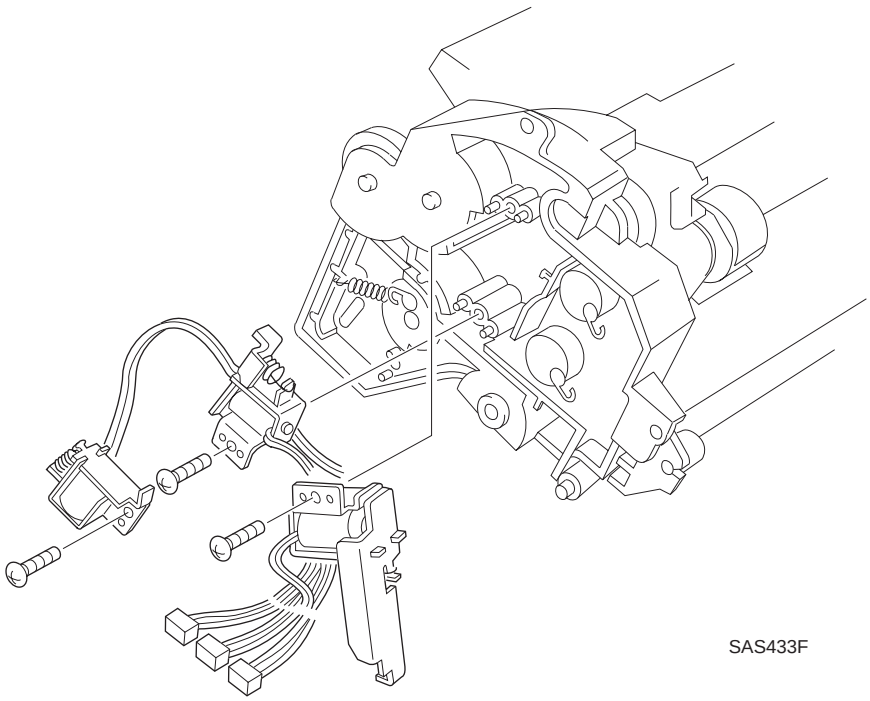
4.6.14 Registration Solenoid/Tray 1 Solenoid/Front Tray Solenoid

Removal

1. Remove the Paper Handling Unit Assembly (*REP 4.5.1 Paper Handling Unit Assembly*).
2. Remove the three screws securing the Registration Solenoid, Tray 1 Solenoid, and Front Tray Solenoid.
3. Pull the three Solenoids away from the Supporter with the wire harness.

NOTE: You can remove these three Solenoids separately at this point.

Figure 4.6.14.1 Registration Solenoid/Tray 1 Solenoid/Front Tray Solenoid Removal



Replacement

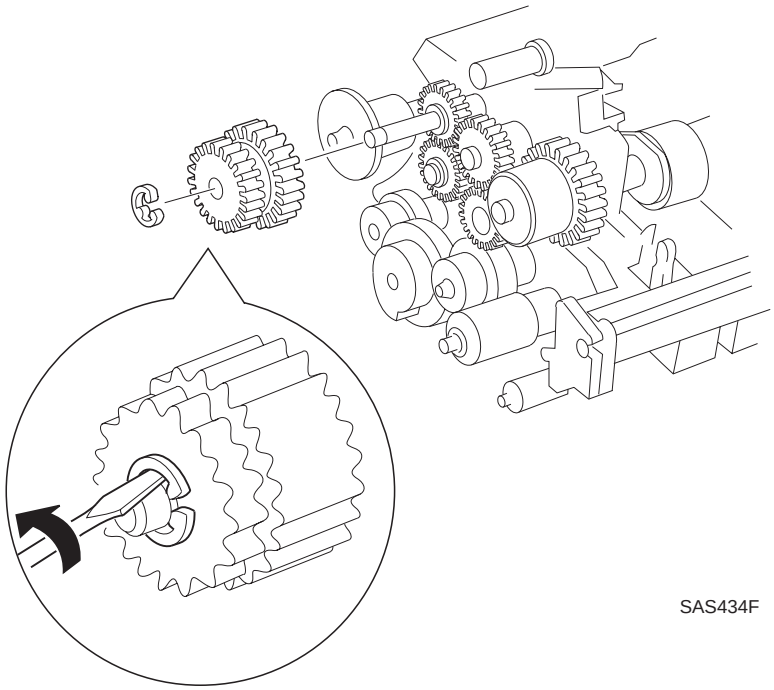
Perform the removal steps in reverse order.

4.6.15 Registration Clutch Assembly

Removal

1. Remove the Paper Handling Unit Assembly (*REP 4.5.1 Paper Handling Unit Assembly*).
2. Remove the Supporter (*REP 4.6.11 Supporter*).
3. Remove the Registration Bushing. (See Figure 4.6.11.1.)
4. Use a flat-slot screwdriver blade to pry off the E-ring.
5. Slide the Registration Clutch Assembly off together with the Idler Gear.

Figure 4.6.15.1 Registration Clutch Assembly Removal



Replacement

Perform the removal steps in reverse order.

4.7 Paper Transportation III

4.7.1 Bias Transfer Roll (BTR) Assembly

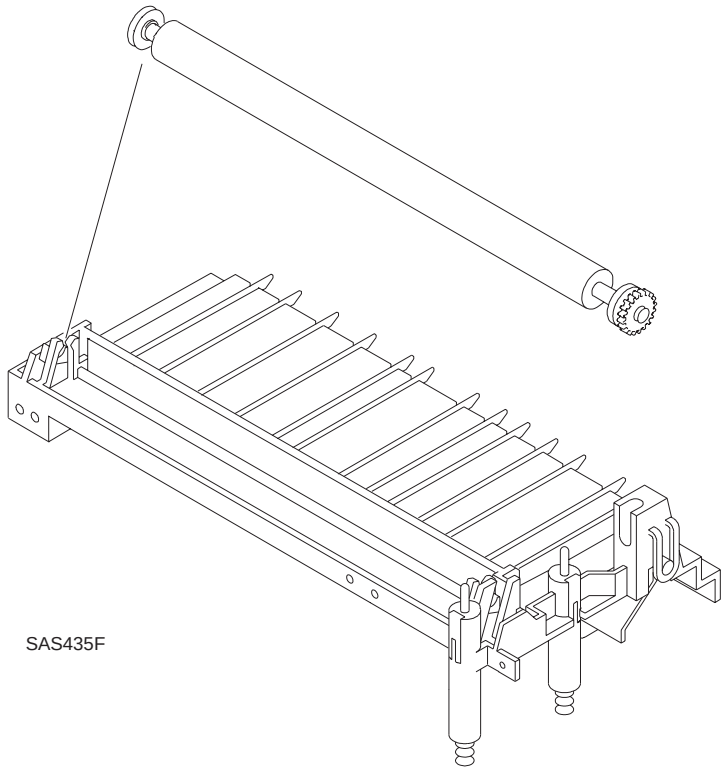
Removal

1. Open the Front Cover Assembly.
2. Remove the EP Cartridge.

WARNING! To prevent contamination of the BTR, do not touch the foam portion of the roll. Handle the roll by the shaft extension on each end.

3. Use a slotted screwdriver to lift each end of the BTR Assembly upward, and remove the Assembly.

Figure 4.7.1.1 BTR Assembly Removal



Replacement

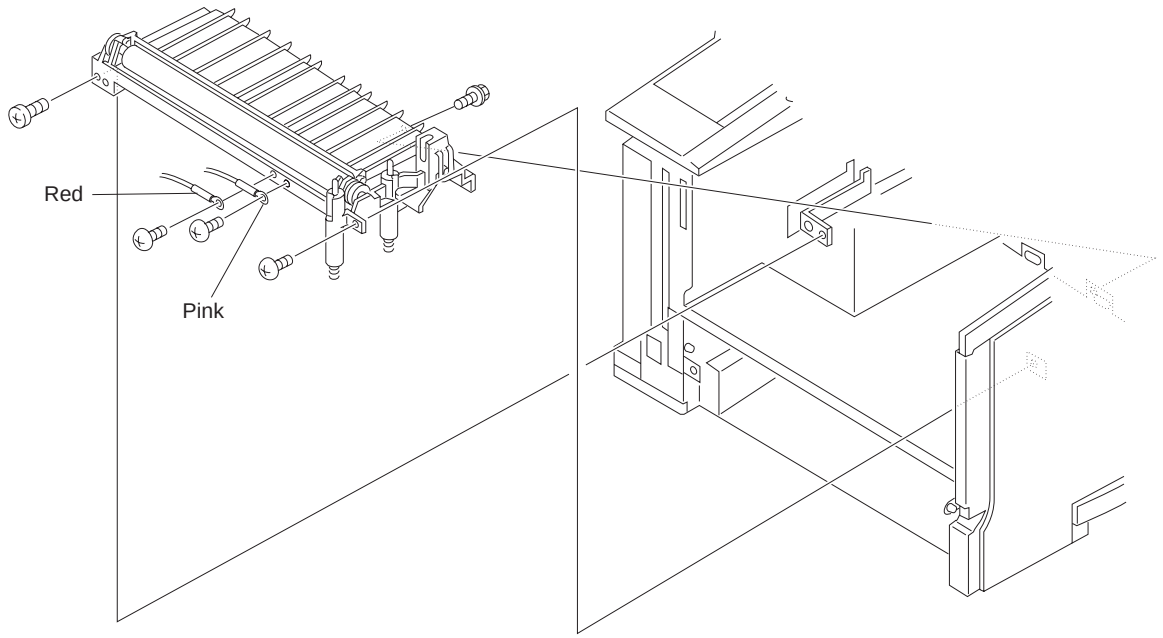
Perform the removal steps in reverse order.

4.7.2 BTR Chute Assembly

Removal

1. Remove the Paper Handling Unit Assembly (*REP 4.5.1 Paper Handling Unit Assembly*).
2. Remove the two screws securing the BTR Chute Assembly. (See Figure 4.7.2.1.)
3. Remove the two screws securing the HVPS leads.
4. Remove the Duplex Module, if present.
5. Remove the Fuser Module (*REP 4.8.1 Fuser Assembly (CRU)*).
6. Remove the rear screw securing the BTR Chute Assembly to the Frame.
7. Lift the BTR Chute Assembly upward and remove it.

Figure 4.7.2.1 BTR Chute Assembly removal



SAS436FC

Replacement

Perform the removal steps in reverse order.

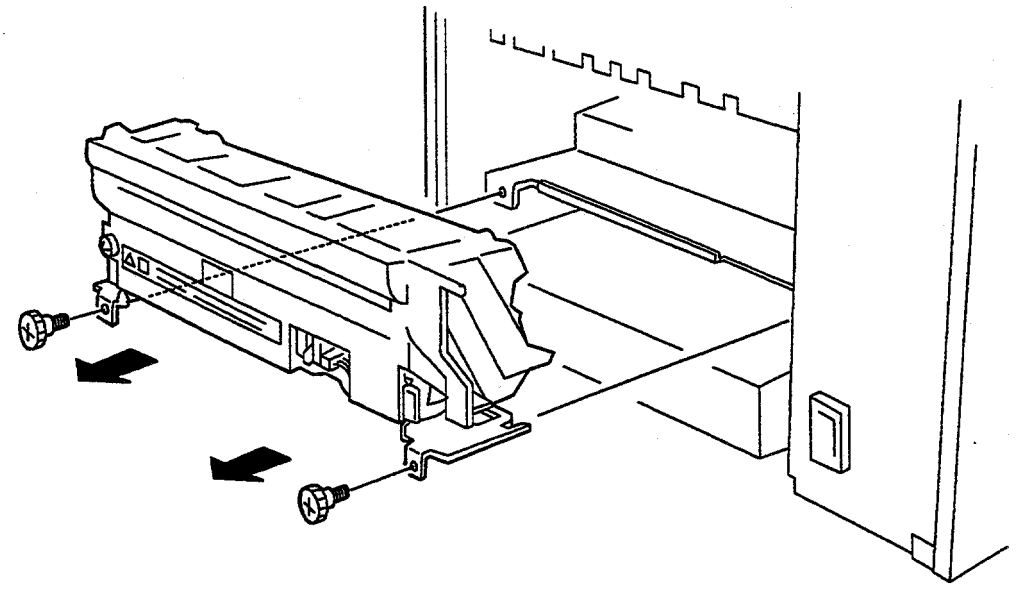
4.8 Fusing

4.8.1 Fuser Assembly (CRU)

Removal

1. Remove the Duplex Module, if installed. (*REP 10.3.1 Duplex Module*.)
2. Remove the two Fuser Module anchor screws. (See Figure 4.8.1.1.)
3. Grasp the Fuser Assembly by the peach felt tabs on both ends; then remove the Fuser Assembly by firmly pulling it towards you.

Figure 4.8.1.1 Fuser Assembly (CRU) Removal.



SAS437F

Replacement

1. Perform the removal steps in reverse order.
2. If a new Fuser Assembly was installed, reset the Fuser Life Counter.
3. Turn on the printer power while simultaneously pressing the **ONLINE (0)** and **MENU DOWN (5)** keys. When the counter is reset, a row of black boxes will appear on the LCD screen and you may release the keys.

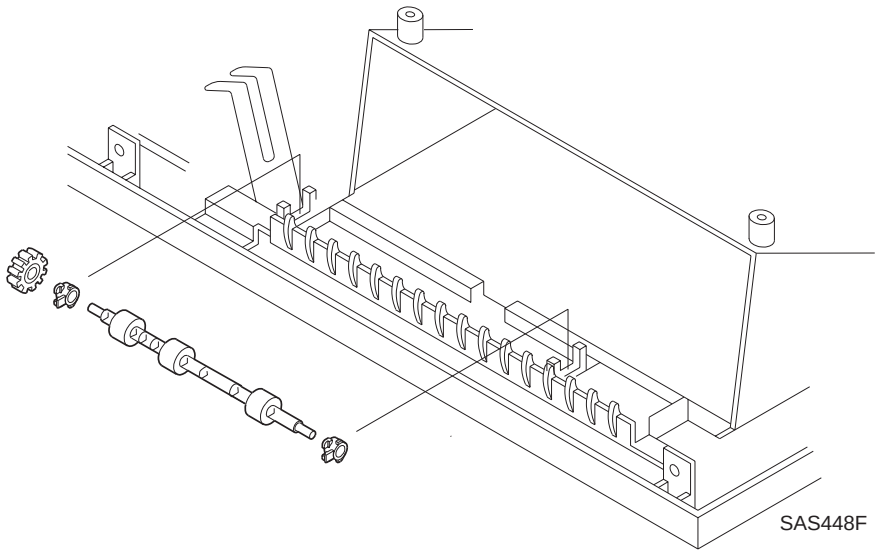
4.9 Paper Exit

4.9.1 Exit Roll Assembly

Removal

1. Remove the Top Cover Assembly (*REP 4.2.6 Top Cover Assembly*).
2. Remove the Option Cover *(REP 4.9.6 Option Cover/Eliminator Assembly).*
3. Remove the three screws securing the Eliminator Assembly and take off the Exit Assembly.
4. Turn the Top Cover Assembly over.
5. Disconnect P/J24 (Exit Motor) and P/J124 (Rear Cover Sensor).
6. Remove the four screws securing the Exit Roll Assembly to the back side of the Top Cover Assembly, and remove the Exit Roll Assembly from the Top Cover Assembly.
7. Pry off the hook of the bearings from the top face side of the Top Cover Assembly, and remove the Exit Roll Assembly together with the two bearings.
8. Disengage the latch of the Gear and slide off the Gear and the two bearings together. (See Figure 4.9.1.1.)

Figure 4.9.1.1 Exit Roll Assembly Removal



Replacement

Perform the removal steps in reverse order.

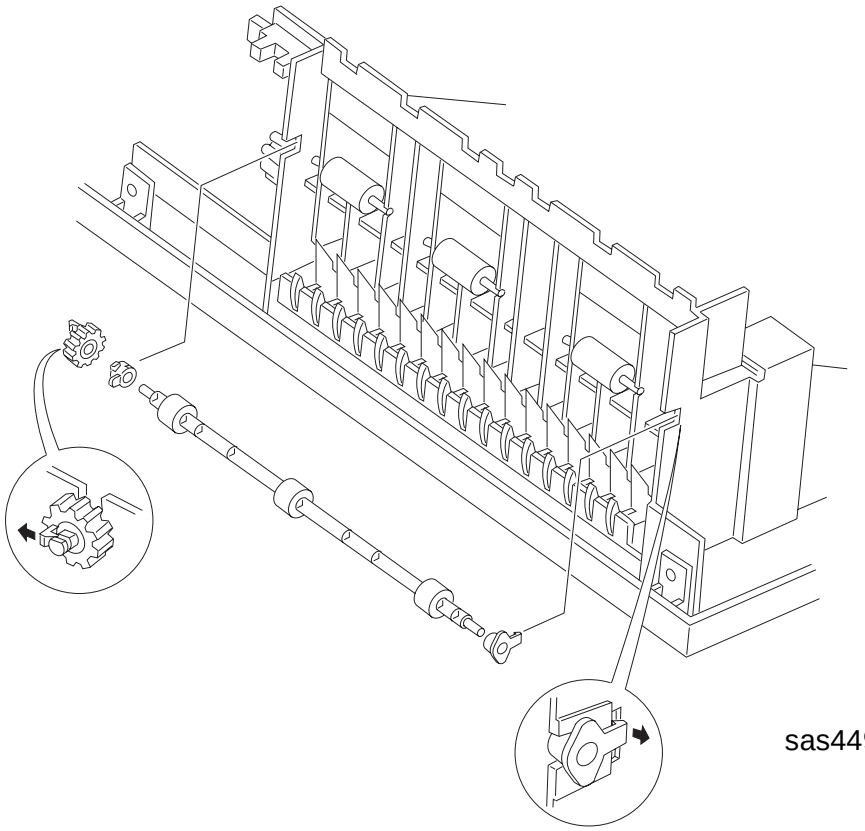
4.9.2 Middle Roll Assembly

Removal

1. Remove the Top Cover Assembly (*REP 4.2.6 Top Cover Assembly*).
2. Turn the Top Cover Assembly over.
3. Pull the locking tab on the gear to unlatch the Gear from the Middle Roll Assembly.
4. Pull the Gear away from the Middle Roll Assembly.
5. Unhook both bearings and pull the Middle Roll Assembly together with the bearings away from the Exit Assembly Frame.

NOTE: The Middle Pinch Rolls might fall off when you remove the Middle Roll Assembly.

Figure 4.9.2.1 Middle Roll Assembly Removal



Replacement

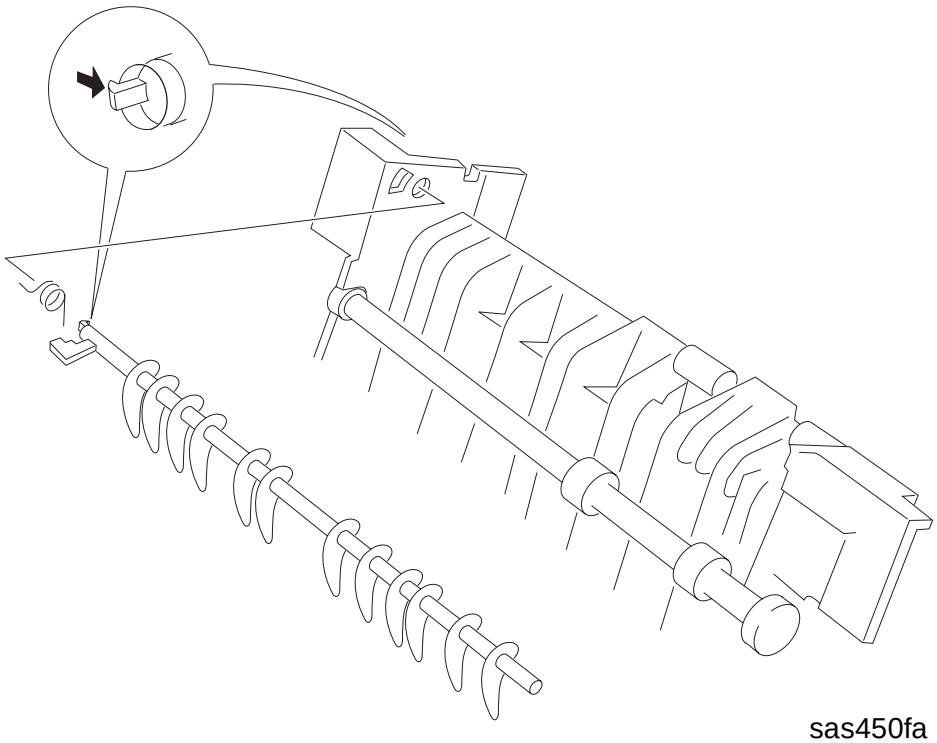
Perform the removal steps in reverse order.

4.9.3 Exit Gate

Removal

1. Remove the Top Cover Assembly (*REP 4.2.6 Top Cover Assembly*).
2. Turn the Top Cover Assembly over.
3. Remove the four screws securing the Exit Assembly, and remove the Assembly from the Top Cover Assembly.
4. Bend the Exit Gate to remove the Gate from the Exit Motor end of the Exit Assembly.
5. Unlatch the shaft on the Direction Spring side of the Exit Gate, and remove the Gate and Direction Spring from the Exit Assembly.
6. Remove the Direction Spring from the Exit Gate.

Figure 4.9.3.1 Exit Gate Removal



sas450fa

Replacement

Perform the removal steps in reverse order.

4.9.4 Exit Motor Assembly

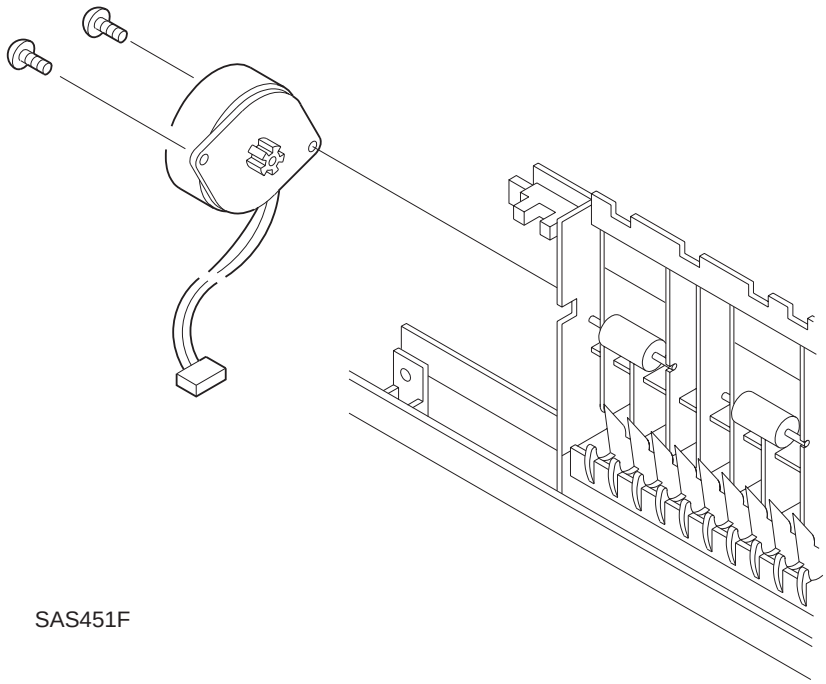
Removal

1. Remove the Top Cover Assembly (*REP 4.2.6 Top Cover Assembly*).
2. Turn the Top Cover Assembly over.
3. Disconnect P/J24 (Exit Motor).
4. Remove the two screws securing the Exit Motor Assembly, and pull the Exit Motor Assembly out. (See Figure 4.9.4.1).

NOTE: Note the routing of the Exit Motor wiring harness.

5. Remove the Exit Motor wiring harness from the Cover Assembly.

Figure 4.9.4.1 Exit Motor Assembly Removal



SAS451F

Replacement

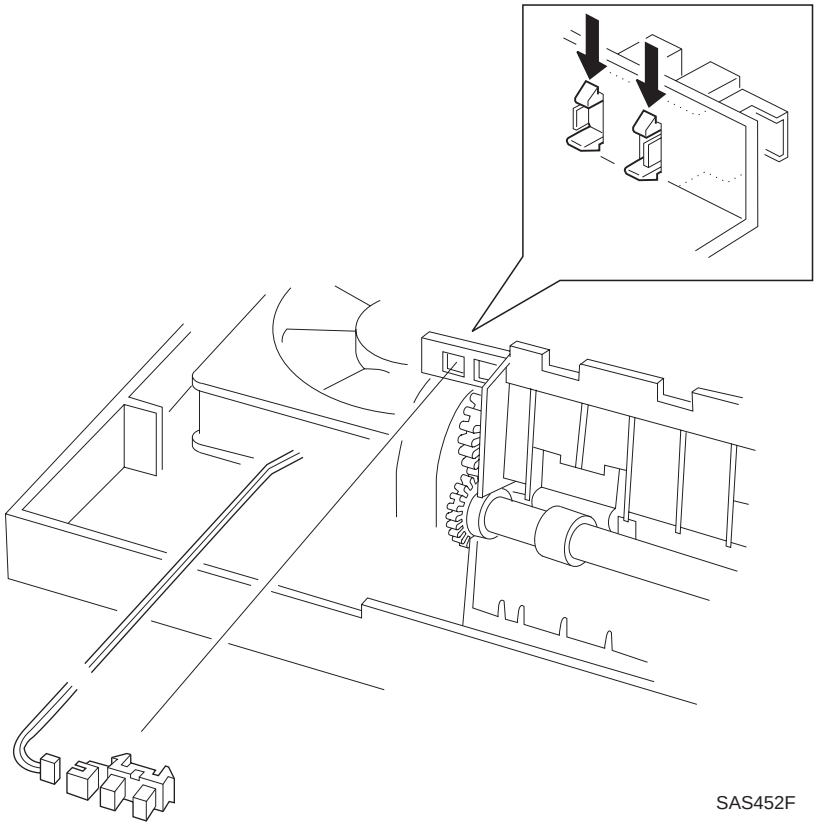
Perform the removal steps in reverse order.

4.9.5 Rear Cover Sensor

Removal

1. Remove the Top Cover Assembly (*REP 4.2.6 Top Cover Assembly*).
2. Turn the Top Cover Assembly over.
3. Unhook the Rear Cover Sensor clip by pressing it from the rear of the Top Cover Assembly, and remove the Rear Cover Sensor. (See Figure 4.9.5.1.)
4. Unplug the Rear Cover Sensor connector, and remove the sensor.

Figure 4.9.5.1 Rear Cover Sensor Removal



Replacement

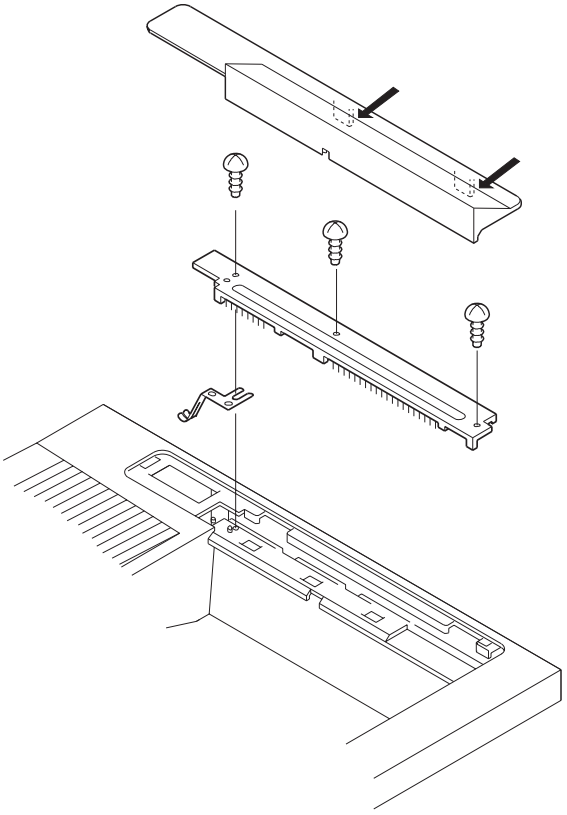
Perform the removal steps in reverse order.

4.9.6 Option Cover/Eliminator Assembly

Removal

1. Remove the Option Cover. (Press the two hooks of the Option Cover Plate from under the rear part of the Top Cover Assembly.)
2. Remove the three screws.
3. Remove the Eliminator Assembly along with the Exit Earth Spring.

Figure 4.9.6.1 Option Cover/Eliminator Assembly Removal



sas453f

Replacement

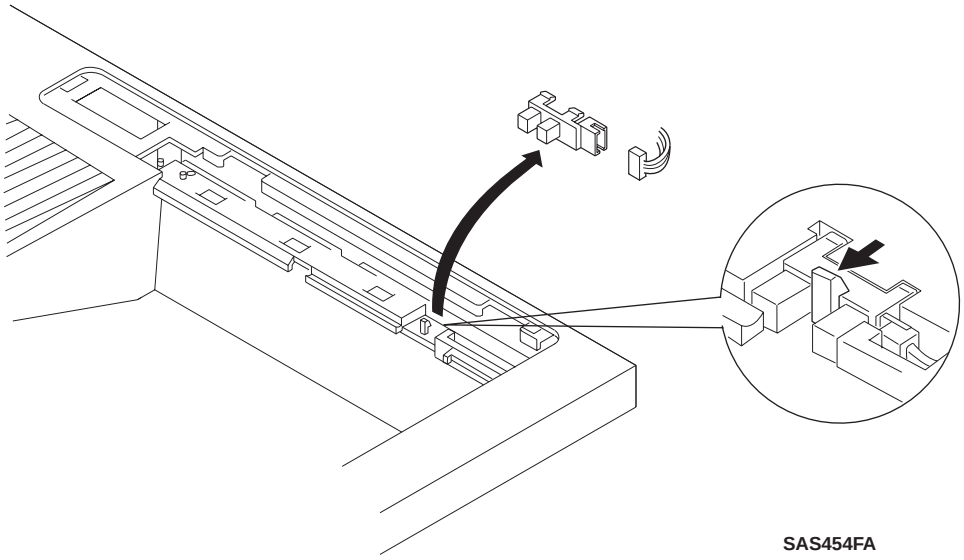
Perform the removal steps in reverse order.

4.9.7 Stack Full Sensor

Removal

1. Remove the Rear Option Cover Plate and the Eliminator Assembly. (*REP 4.9.6 Option Cover/ Eliminator Assembly*.)
2. Use a flat-slot screwdriver blade to unhook the Stack Full Sensor clip. (See Figure 4.9.7.1.)
3. Disconnect the connector, and remove the Stack Full Sensor.

Figure 4.9.7.1 Stack Full Sensor Removal



Replacement

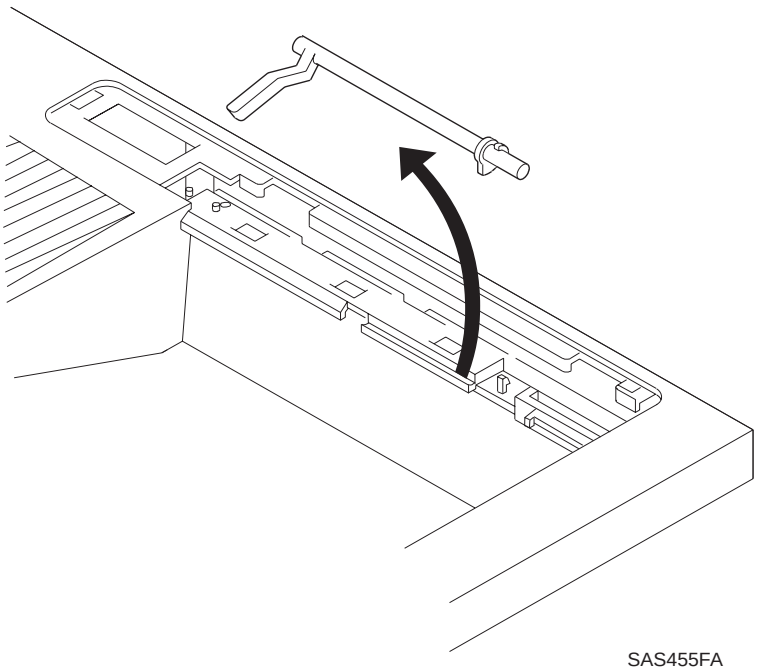
Perform the removal steps in reverse order.

4.9.8 Stack Full Actuator

Removal

1. Remove the Rear Option Cover Plate and the Eliminator Assembly. (*REP 4.9.6 Option Cover/ Eliminator Assembly*.)
2. Lift the right end of the Stack Full Actuator upward, and remove the Actuator. (See Figure 4.9.8.1.)

Figure 4.9.8.1 Stack Full Actuator Removal



Replacement

Perform the removal steps in reverse order.

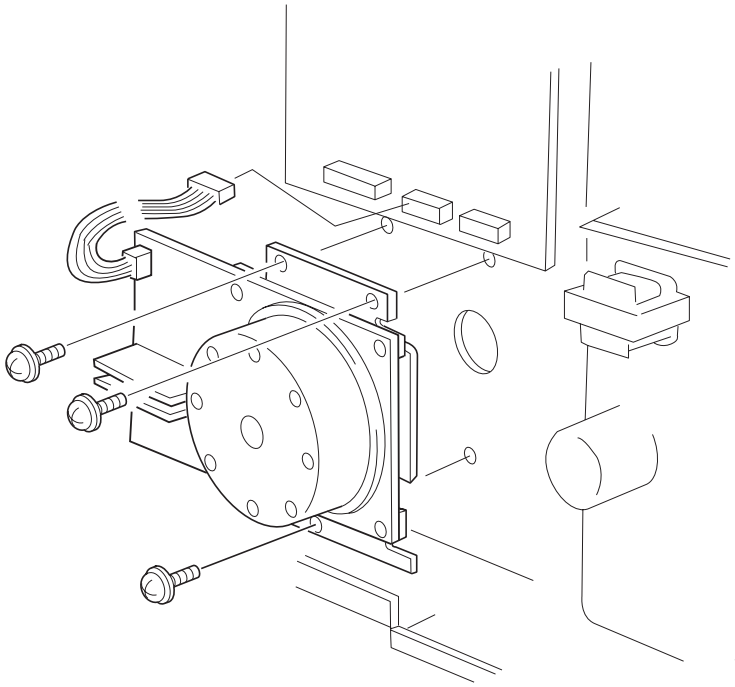
4.10 Drive and Xerographic Modules

4.10.1 Main Motor Assembly

Removal

1. Remove the System Controller Chassis (*REP 4.12.1 System Controller Chassis*).
2. Disconnect P14 from the Print Engine Controller. (See Figure 4.10.1.1.)
3. Remove the three screws securing the Main Motor Assembly to the Frame.
4. Remove the Main Motor Assembly along with the wire harness.

Figure 4.10.1.1 Main Motor Assembly Removal



Replacement

Perform the removal steps in reverse order.

4.10.2 Drive Assembly

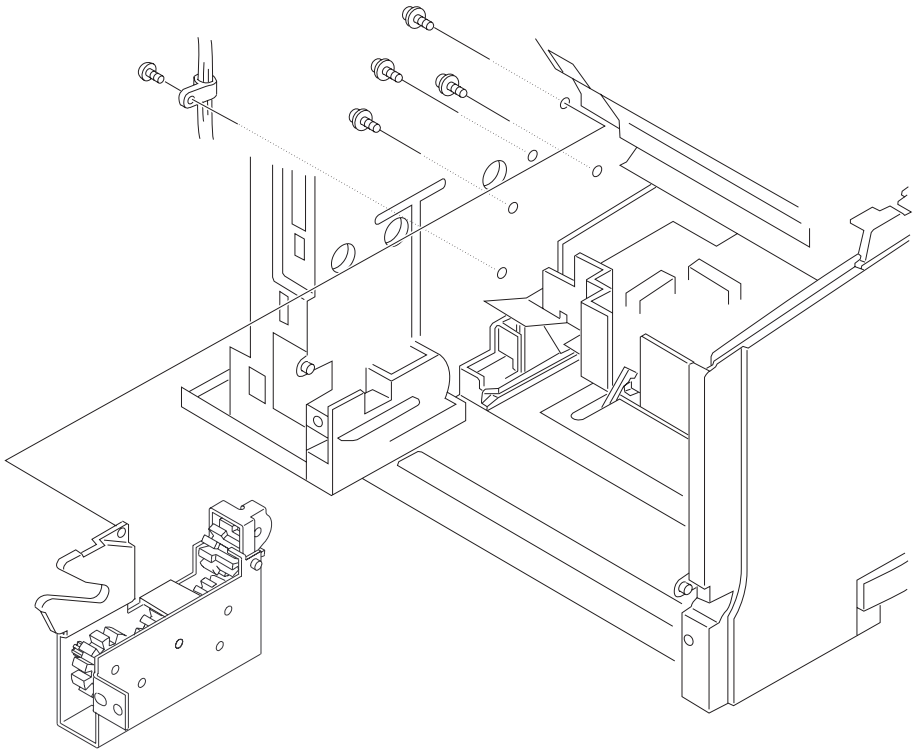
Removal

1. Remove the BTR Chute Assembly (*REP 4.7.2 BTR Chute Assembly*).
2. Remove the Main Motor Assembly (*REP 4.10.1 Main Motor Assembly*).

NOTE: It is not necessary to completely remove the Print Engine Controller to access the Drive Assembly securing screws.

3. Partially remove the Print Engine Controller (*REP 4.12.3 Print Engine Controller*).
4. Remove the four screws securing the Drive Assembly to the Frame. (See Figure 4.10.2.1.)
5. Remove the screw securing the “P” clamp.
6. Pull the Drive Assembly towards the front of the printer and remove the Assembly.

Figure 4.10.2.1 Drive Assembly Removal



SAS457FC

Replacement

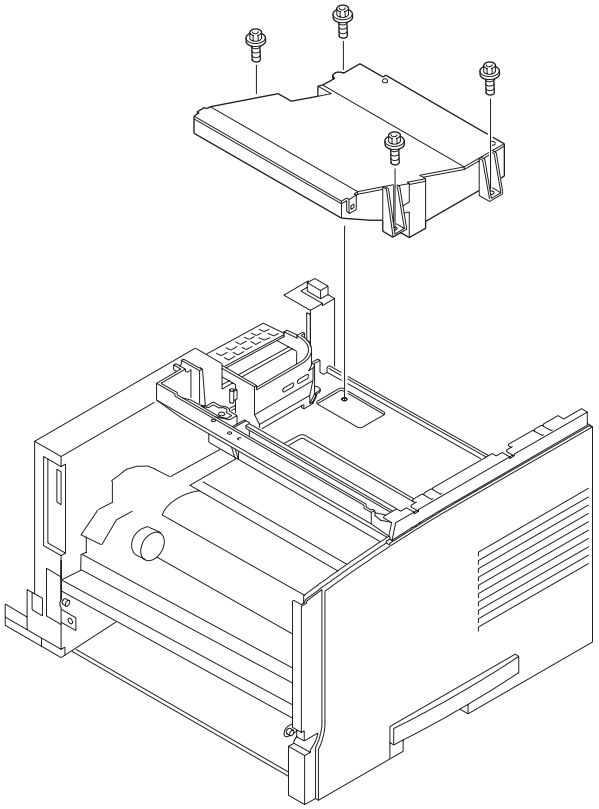
Perform the removal steps in reverse order.

4.10.3 Laser Assembly

Removal

1. Remove the Top Cover Assembly (*REP 4.2.6 Top Cover Assembly*).
2. Remove the four screws (hexagon-shaped with a black flange) securing the Laser Assembly, and lift the Laser Assembly.
3. Disconnect P/J112, P/J113, and P/J114 after lifting the Laser Assembly.

Figure 4.10.3.1 Laser Assembly Removal



Replacement

Perform the removal steps in reverse order.

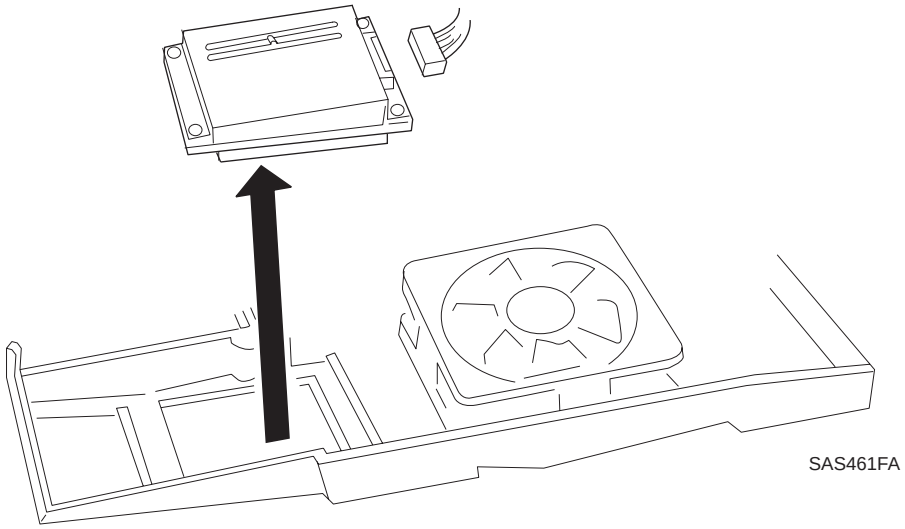
4.11 Electrical Module I

4.11.1 Control Panel Assembly

Removal

1. Remove the Top Cover Assembly (*REP 4.2.6 Top Cover Assembly*).
2. Turn the Top Cover over.
3. Disconnect P33 from the Control Panel. (See Figure 4.11.1.1.)
4. Open and release the hooks that lock the Control Panel Assembly. Spread the hooks wider apart; then lift and remove the Control Panel Assembly. (See Figure 4.11.1.1.)

Figure 4.11.1.1 Control Panel Assembly Removal



Replacement

Perform the removal steps in reverse order.

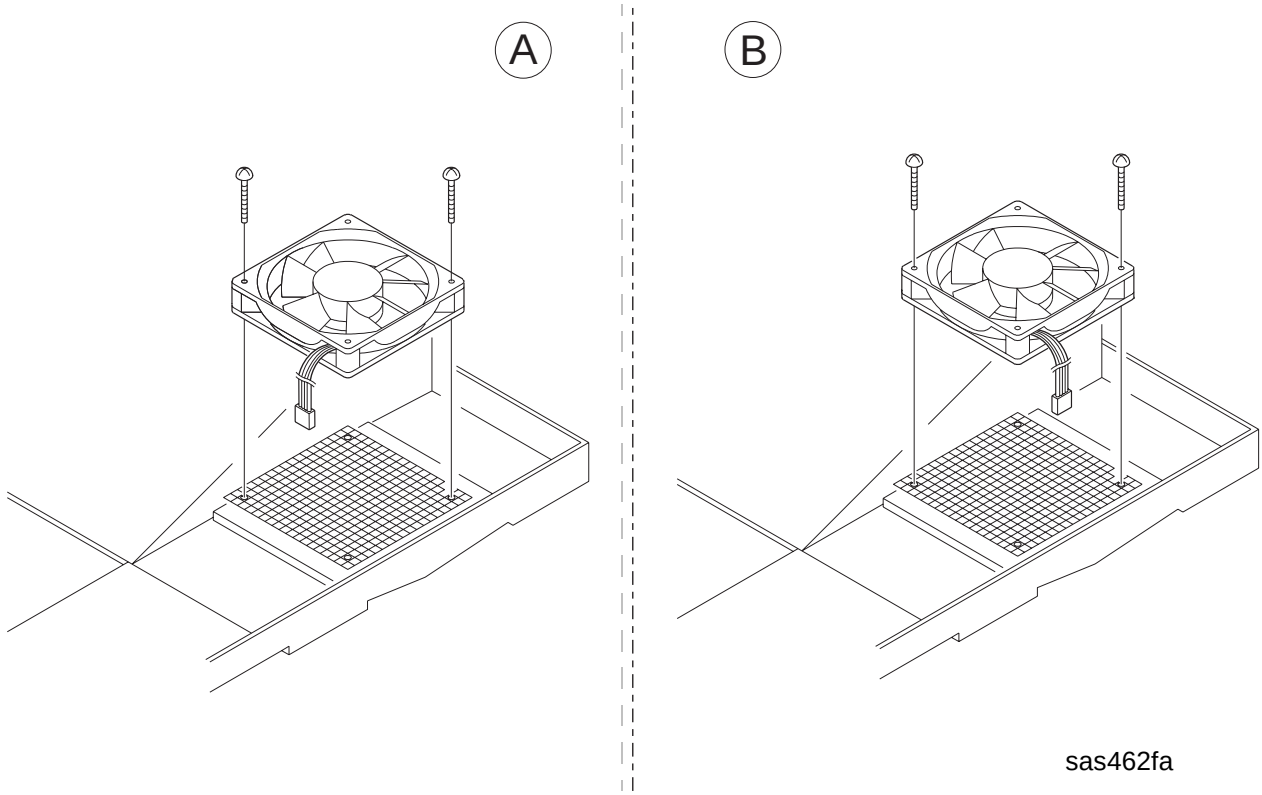
4.11.2 Fan Assembly

Removal

1. Remove the Top Cover Assembly (*REP 4.2.6 Top Cover Assembly*).
2. Turn the Top Cover over.
3. Remove the two screws securing the Fan Assembly, and remove the Assembly. (See Figure 4.11.2.1.)

CAUTION The direction of the Fan Harness will vary depending on the manufacturer.

Figure 4.11.2.1 Fan Assembly Removal



Replacement

Perform the removal steps in reverse order.

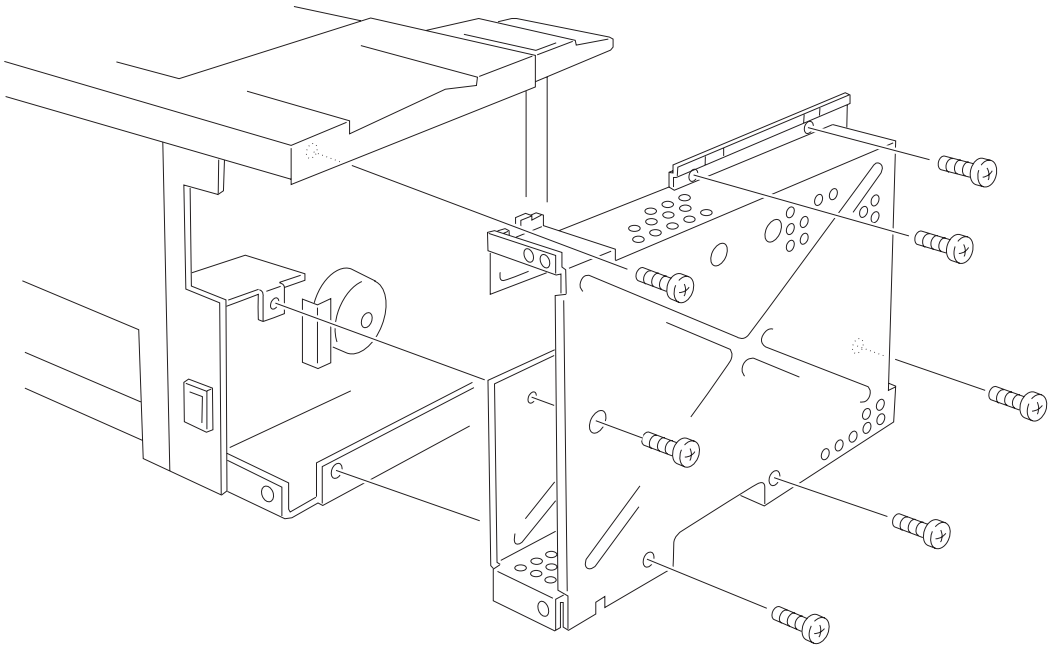
4.12 Electrical Module II

4.12.1 System Controller Chassis

Removal

1. Remove the Left Cover (*REP 4.2.2 Left Cover*).
2. Remove the Left Front Cover (*REP 4.2.5 Left Front Cover*).
3. Remove the System Controller PWB.
4. Remove the seven screws securing the System Controller Chassis. (See Figure 4.12.1.1.)
5. Free the Wire Harnesses from the Paper Handling Unit Assembly.
6. Remove the System Controller Chassis.

Figure 4.12.1.1 System Controller Chassis Removal



sas464fb

Replacement

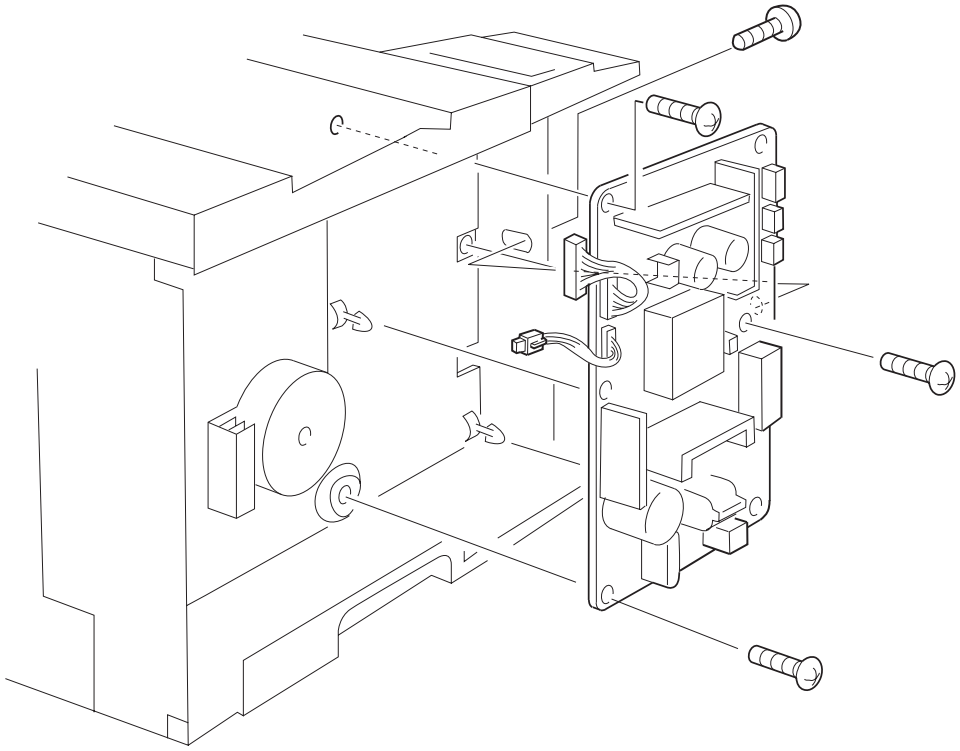
Perform the removal steps in reverse order.

4.12.2 Low Voltage Power Supply (LVPS)

Removal

1. Remove the System Controller Chassis (*REP 4.12.1 System Controller Chassis*).
2. Disconnect P13 and P25 from the Print Engine Controller. (See Figure 4.12.2.1.)
3. Disconnect P16, P17, P27, P131, P1, and P3 from the LVPS.
4. Remove the four screws securing the LVPS to the Frame.
5. Pinch the heads of the three PWB standoffs to release the LVPS from the Frame.
6. Carefully remove the LVPS.

Figure 4.12.2.1 LVPS Removal



sas465fa

Replacement

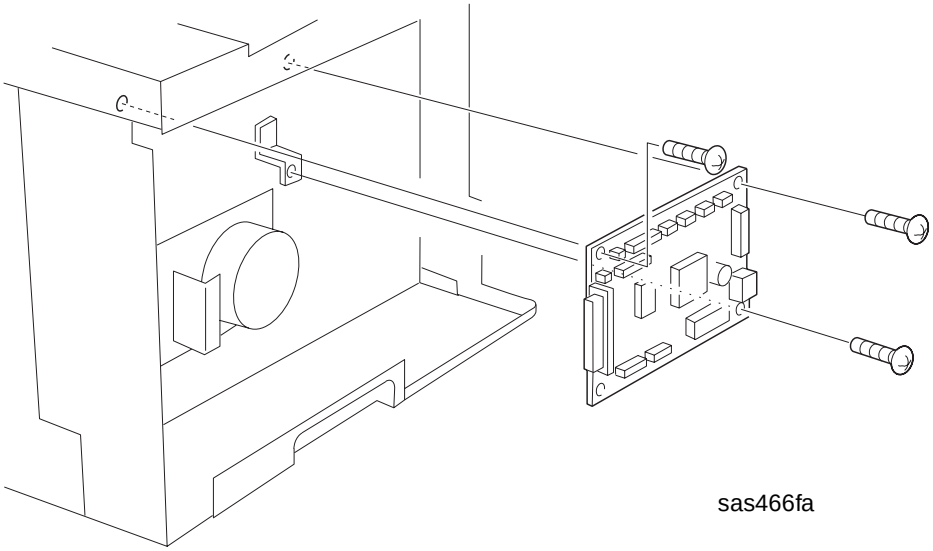
Perform the removal steps in reverse order.

4.12.3 Print Engine Controller

Removal

1. Remove the System Controller Chassis (*REP 4.12.1 System Controller Chassis*).
2. Disconnect P13, P14, P15, P18, P19, P21, P22, P23, P24, P25, P28, and P32 from the Print Engine Controller.
3. Remove the three screws securing the Print Engine Controller to the Frame. (See Figure 4.12.3.1.)
4. Pinch the head of the PWB standoff to release the LVPS from the Frame, and remove the Print Engine Controller.

Figure 4.12.3.1 Print Engine Controller Removal



sas466fa

Replacement

Perform the removal steps in reverse order.

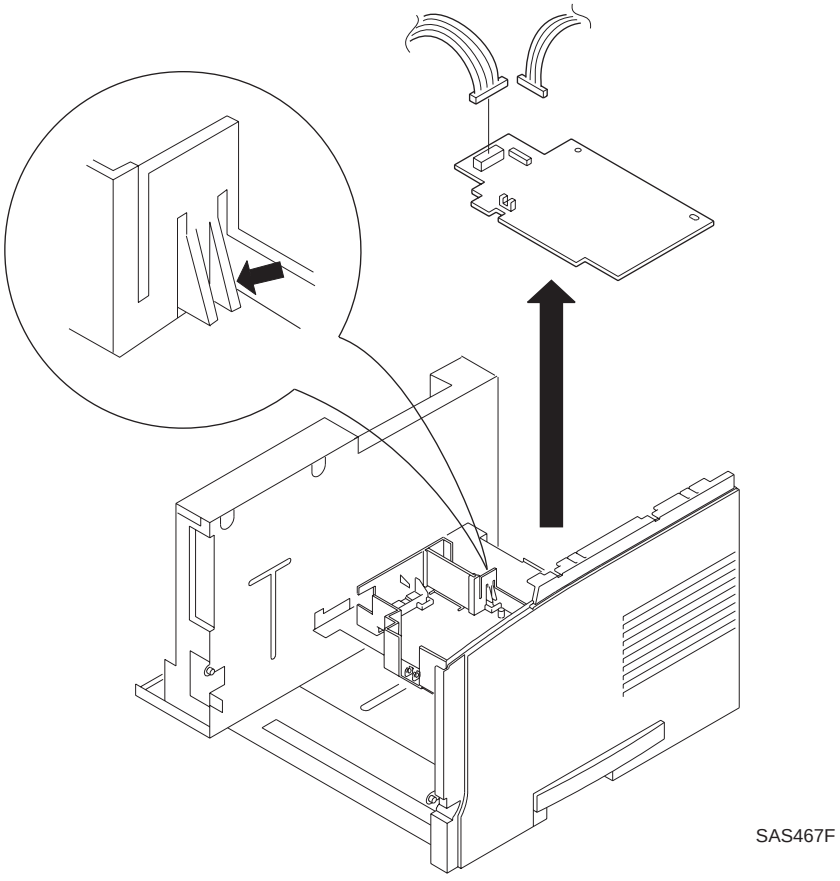
4.12.4 High Voltage Power Supply (HVPS)

Removal

1. Remove the EP Cartridge.
2. Remove the BTR Chute Assembly (*REP 4.7.2 BTR Chute Assembly*).
3. Remove the No Paper Actuator (*REP 4.12.6 No Paper Actuator*).
4. Disconnect P115 and P111 from the HVPS. (See Figure 4.12.4.1.)
5. Use your fingers to open and release the left rear hook securing the HVPS so the PWB floats from the two bosses.
6. Lift the LVPS up and toward the rear to clear the front tabs, then remove the HVPS.

CAUTION The Earth Spring may fall off simultaneously at this time. Do not lose it.

Figure 4.12.4.1 HVPS Removal



Replacement

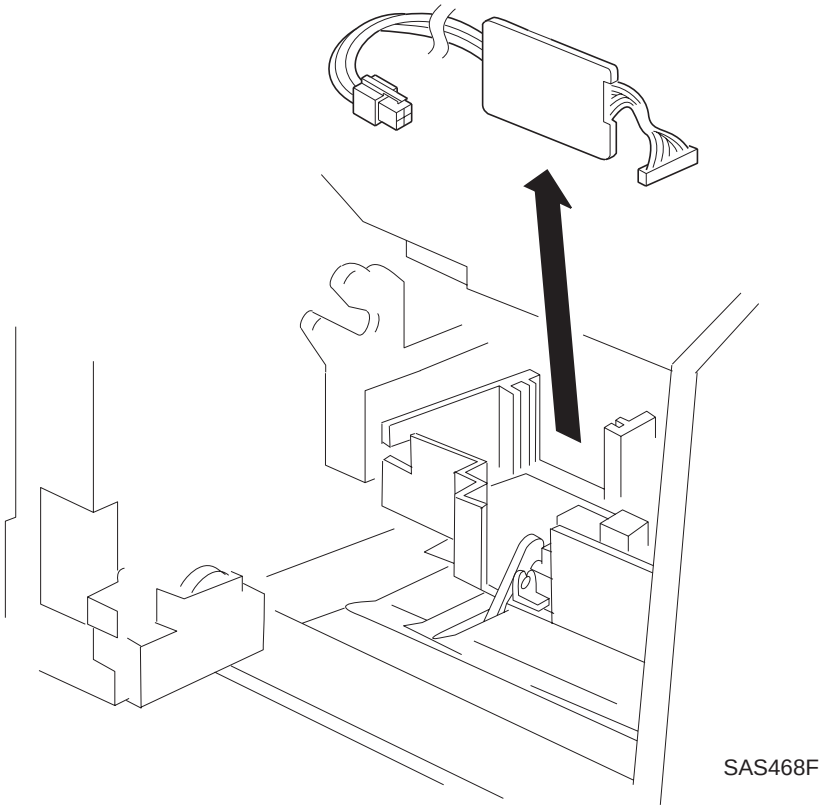
Perform the removal steps in reverse order, ensuring the HVPS is positioned under the retaining tabs.

4.12.5 Fuser PWB

Removal

1. Remove the BTR Chute Assembly (*REP 4.7.2 BTR Chute Assembly*).
2. Remove the System Controller Chassis (*REP 4.12.1 System Controller Chassis*).
3. Disconnect P3 from the LVPS. (See Figure 4.12.5.1.)
4. Disconnect P115 from the HVPS.
5. Remove the wire harnesses from the rear, and slide the PWB Fuser out of the channel.

Figure 4.12.5.1 Fuser PWB Removal



Replacement

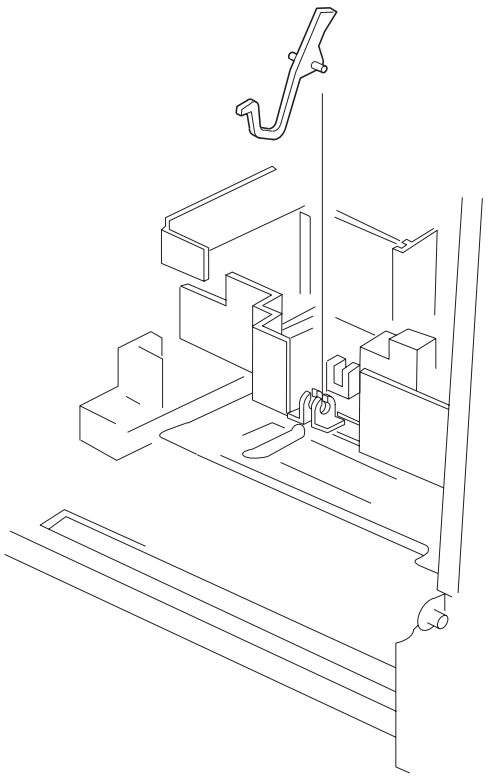
Perform the removal steps in reverse order.

4.12.6 No Paper Actuator

Removal

1. Remove the BTR Chute Assembly (*REP 4.7.1 Bias Transfer Roll (BTR) Assembly*).
2. Lift and remove the No Paper Actuator.

Figure 4.12.6.1 No Paper Actuator Removal



Replacement

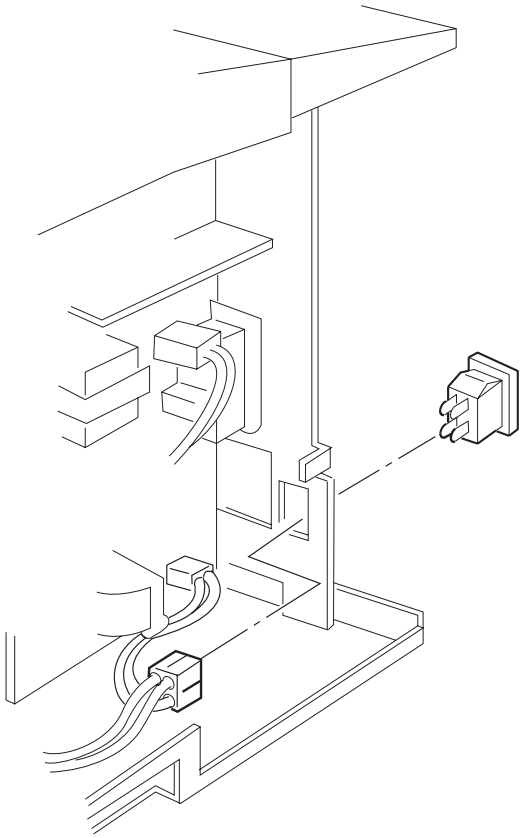
Perform the removal steps in reverse order.

4.12.7 Main Power Switch

Removal

1. Remove the System Controller Chassis (*REP 4.12.1 System Controller Chassis*).
2. Unplug the Harness Connector from the Main Power Switch. (See Figure 4.12.7.1.)
3. Squeeze on the switch retaining clamps while pushing the switch out from the printer.

Figure 4.12.7.1 Main Power Switch Removal



Replacement

Perform the removal steps in reverse order.

Section 5

General Procedures/Information

Printer Operations 5-3
Control Panel 5-3
Printer Modes 5-4
Ready Mode 5-4
Menu Mode 5-6
Menu Tree 5-7
Main Menu 5-8
Job Menu 5-9
Password Menu 5-10
Tray Menu 5-11
PCL Menu 5-12
System Menu 5-13
Parallel Menu 5-15
Serial Menu 5-16
Ethernet Menu 5-17
Token Ring Menu 5-19
Novell Menu 5-21
Print Menu 5-22
Reset Menu 5-23

Diagnostic Mode 5-24
Diagnostic Mode 1 5-25
Print Counter Operation 5-28
Sensor Input Test 5-29
Reading Fuser Set Temperature 5-31
Reading Fuser Temperature 5-32
Confirm MBF Solenoid Operation 5-34
Confirm Tray 1 Solenoid Operation 5-35

Confirm Tray 2 Solenoid Operation 5-36
Confirm Tray 3 Solenoid Operation 5-37
Confirm Envelope Solenoid Operation..... 5-38
Confirm Direction Solenoid Operation 5-39
Confirm Registration Solenoid Operation 5-40
Main Motor Operation 5-41
Duplex Motor H.S. (High Speed) Operation..... 5-42
Duplex Motor L.S. (Low Speed) Operation 5-43
Exit Motor CW (Clockwise) Operation 5-44
Exit Motor CCW (Counter Clockwise) Operation 5-45
Offset Catch Tray (OCT) Drive Motor Operation 5-46
Offset Motor CW (Clockwise) Operation..... 5-47
Offset Motor CCW (Counter Clockwise) Operation ... 5-48
HVPS (Charge Roll AC) Operation 5-49
HVPS (Charge Roll DC) Operation..... 5-51
HVPS (Developer Bias DC) Operation 5-52
HVPS (Developer Bias AC) Operation..... 5-53
HVPS (Detack Saw) Operation..... 5-54
HVPS (Bias Transfer Roll -) Operation 5-55
HVPS (Bias Transfer Roll +) Operation 5-56
Exit Diagnostics Operation..... 5-57
ROM Checksum..... 5-58
Paper Tray Size Operation 5-59
Diagnostic Mode 2 5-60
Diagnostic Mode 3 5-62
Setting and Verification of Registration..... 5-65
Print Engine Controller Test Print 5-69
System Controller Test Print..... 5-70

Diagnostic Mode 2 Error and Status Codes..... 5-71
Error/Status Code Display Conditions, Printer Action, and Recovery Procedures 5-73

Service Cleaning Procedure..... 5-79
Preparation Procedure..... 5-79
Paper Path Cleaning Procedure 5-79

Printer Data and Tag Information..... 5-80
Printer Data Labels..... 5-80

5.1 Printer Operations

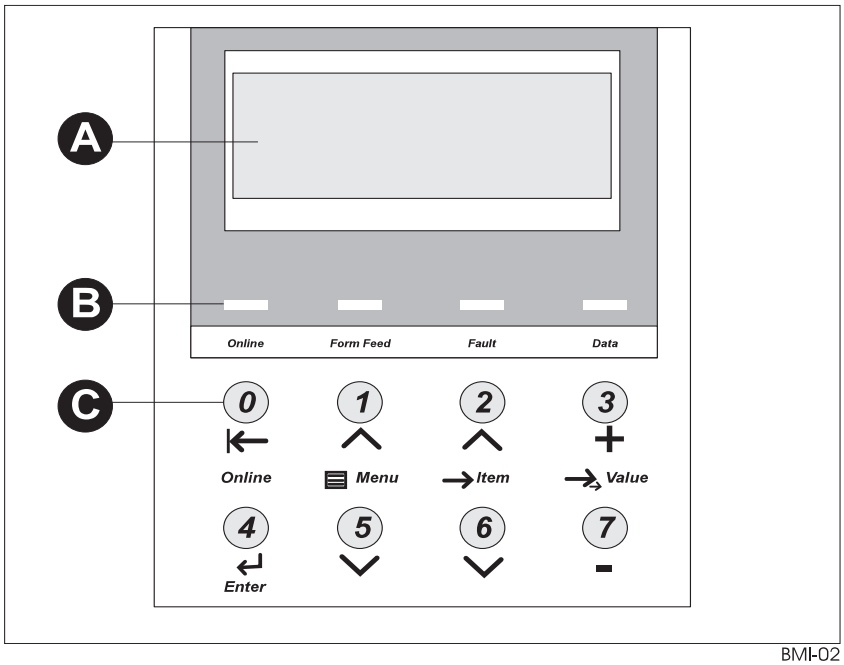
The information provided in this section is based on the standard functions of this model printer. The diagnostic procedures presented in this section are accessed at the printer control panel.

5.1.1 Control Panel

The Control Panel is located to the left of the Top Cover and has one input device and two output devices:

Liquid Crystal Display	The Liquid Crystal Display (LCD) displays messages sent from the Printer Controller and the System Controller. The LCD displays two lines of text, with sixteen characters per line.
LED	The four indicator LEDs are, from left to right, **Online**, **Form Feed**, **Fault**, and **Data**.
User Input Device	The Control Panel keypad is the main user input device. The keypad has eight keys.

Figure 5.1.1.1 Control Panel



- **A -** 2-line by 16-character display
- **B -** Indicator lights (LEDs)
- **C -** Control keys (8)

5.1.2 Printer Modes

The Network Laser Printer has three modes of operation, each with a unique set of options:

1. Ready Mode (see *5.1.3 Ready Mode*).
2. Menu Mode (see *5.1.4 Menu Mode*).
3. Diagnostic Mode (see sections *5.2.1 Diagnostic Mode 1*, *5.2.2 Diagnostic Mode 2*, and *5.2.3 Diagnostic Mode 3*). There are three Diagnostic Modes:
   - Diagnostic Mode 1 = Component Test Mode
   - Diagnostic Mode 2 = Test Print Mode
   - Diagnostic Mode 3 = Configuration Mode

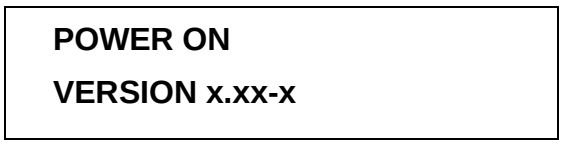
5.1.3 Ready Mode

The Ready Mode is the normal operating mode for the printer. In this mode, the printer is online, under control of the System Controller, and ready to generate output.

When the printer power is switched on, the printer enters a warm-up state called the *Power-On Diagnostic Sequence*. If the printer detects no errors, the fuser comes up to operating temperature and the main motor starts running.

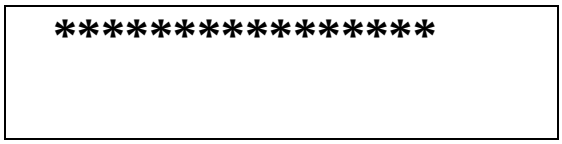
During warm up:

1 The LCD display will display the initial Power On screen.



2 Two lines of black squares are displayed on the LCD to verify that the pixels of the display are functional.

3 The LCD display fills with black asterisks (*). The asterisks appear as the Power-On Diagnostics progress.



4 When the *Power-On Diagnostic Sequence* completes, the LCD will display the Xerox copyright information.

5 The printer will display **Initializing...,** then **Processing...,** and ultimately **Ready** when it is warmed up and ready to print.

5.1.4 Menu Mode

The Menu Mode allows you to set, change, or adjust the various features/options available in the Network Laser Printer. The menus displayed on any particular printer depend upon the options installed in the printer. If an option is not installed, the menu items for that option will not be displayed.

Entering the Menu Mode:

1. Press the **MENU UP (1)** or **MENU DOWN (5)** key. The top line of the LCD will display MENUS.
2. From the Main Menu you can access the 12 major menus. (See *Figure 5.1.4.2.1 Menu Tree*.)
3. Press the **MENU UP (1)** or **MENU DOWN (5)** key to scroll through the major menus.
4. When the desired major menu is displayed, press the **ITEM UP (2)** or **ITEM DOWN (6)** key to view submenus or options available on a menu.
5. Each of the twelve major menus has a number of submenus listed under them.
6. When the desired submenu is displayed, press the **ENTER** key to select that submenu item.
7. In some cases you will have another level of submenus. If another level exists, press the **VALUE PLUS (3)** or **VALUE MINUS (7)** key to scroll through the submenus, then press the **ENTER** key to select the desired submenu item.
8. You will now be at the lowest level of the menus. At this level you set, change, or adjust the feature or option you selected.
9. Use the **VALUE PLUS (3)** or **VALUE MINUS (7)** key to scroll through the settings.
10. When the desired setting is displayed, press the **ENTER** key to “save” your setting to NV RAM.
11. When you have completed all settings, press the **ONLINE** key to return the printer to the “Ready” mode.

NOTE: On the following pages, the menu tree and all the possible menu paths will be illustrated. The menu tree may be different on different printers depending upon the options installed. Most of the menu selections are straight forward and can be set to match the customers requirements without any additional information. Where additional information is required, the information is contained in the Network Laser Printers User Guide.

5.1.4.1 Menu Tree

The menu tree illustrates the twelve major menus that can be accessed from the menu mode. To access the menus:

1. Press the **MENU UP (1)** or **MENU DOWN (5)** key to scroll through the major menus.
2. Press the **ITEM UP (2)** or **ITEM DOWN (6)** key to scroll through submenus.
3. Press the **VALUE PLUS (3)** or **VALUE MINUS (7)** key to move scroll through additional submenu options.

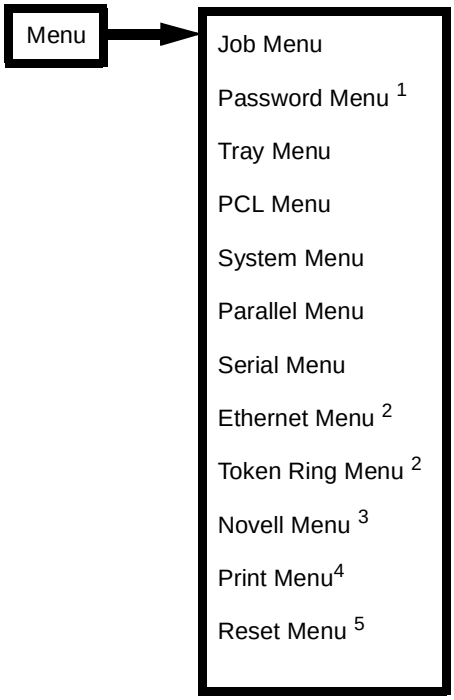
A breakdown of each major menu is illustrated on the following pages.

5.1.4.2 Main Menu

The Main Menu is a system of submenus, each containing options designed to configure the system.

1. Press the **MENU UP (1)** key.
2. When “Menus/Jobs Menu” is displayed, use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll through the available menus.
3. When the desired menu is displayed, press the **ITEM UP (2)** or **ITEM DOWN (6)** key to select the displayed menu.

Figure 5.1.4.2.1 Menu Tree



1 Appears only when the hard drive is installed.

3 Appears only when Novell is enabled from the Ethernet and Token Ring menus.

4 This was formally called the Test Menu

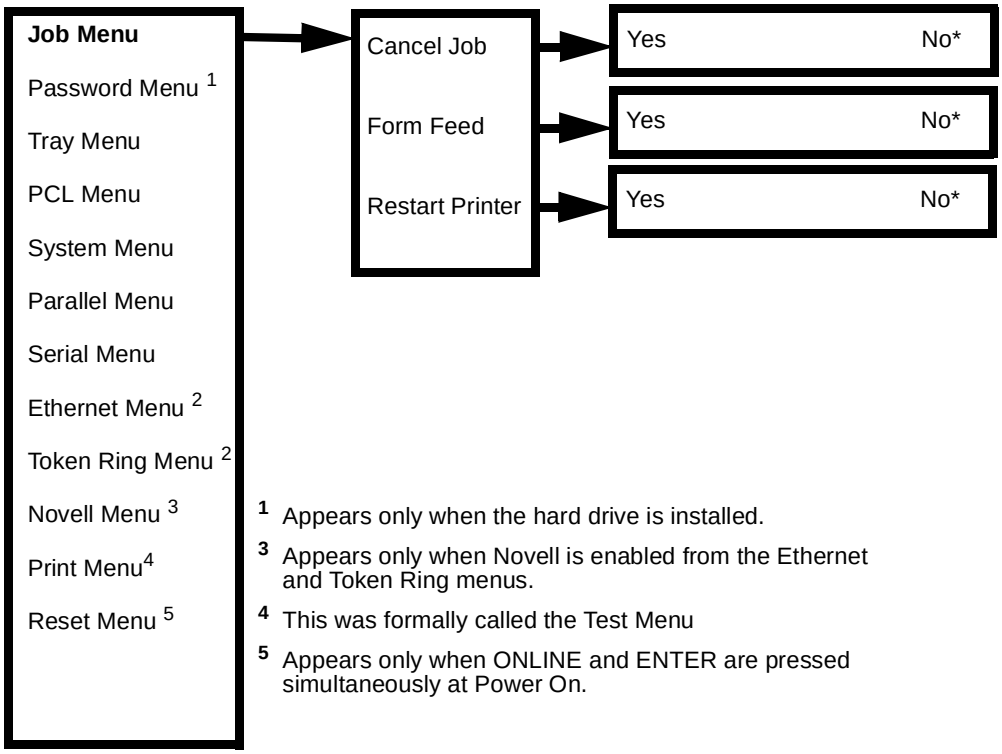
5 Appears only when ONLINE and ENTER are pressed simultaneously at Power On.

5.1.4.3 Job Menu

The complete Job Menu is illustrated below. To select the Job Menu:

1. Press the **MENU UP (1)** or **MENU DOWN (5)** key until “Job Menu” is displayed.
2. Press the **ITEM UP (2)** or **ITEM DOWN (6)** key to view the options available.
3. Press the **VALUE PLUS (3)** or **VALUE MINUS (7)** key to select options from the submenu.
4. When the desired option is displayed, press **ENTER**.

Figure 5.1.4.3.1 Job Menu



1 Appears only when the hard drive is installed.

3 Appears only when Novell is enabled from the Ethernet and Token Ring menus.

4 This was formally called the Test Menu

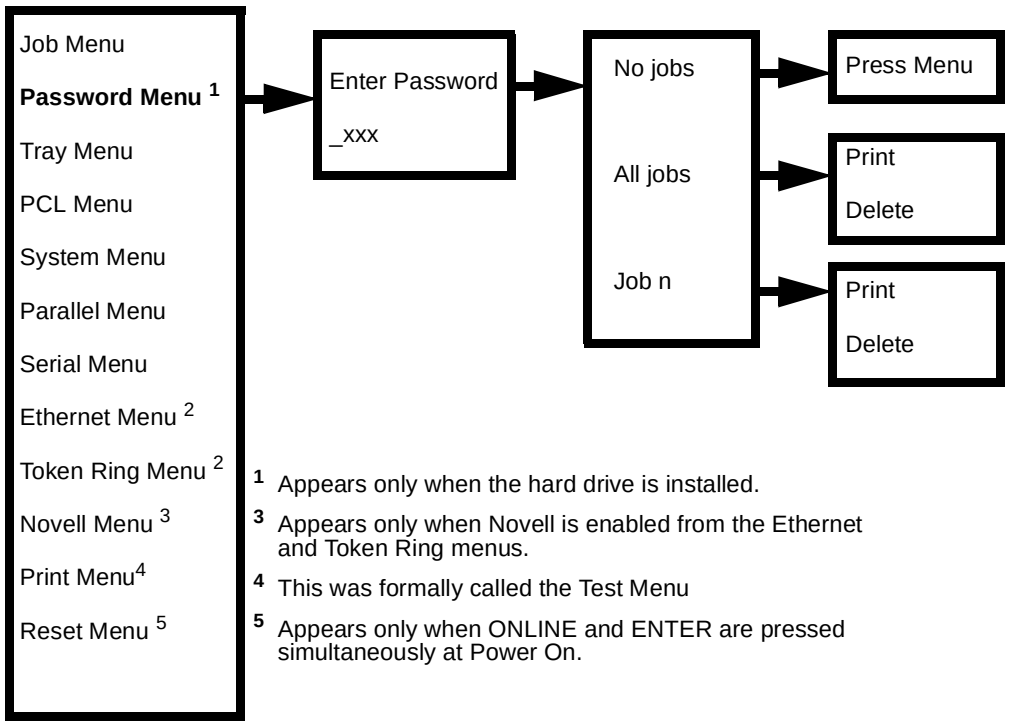
5 Appears only when ONLINE and ENTER are pressed simultaneously at Power On.

5.1.4.4 Password Menu

The Password Menu is available only when the Hard Disk Drive is installed. This menu is used to print or delete secure jobs. To select the Password Menu:

1. Press the **MENU UP (1)** or **MENU DOWN (5)** key until “Password Menu” is displayed.
2. Press the **ITEM UP (2)** or **ITEM DOWN (6)** key, the “Enter Password” menu is displayed.
3. Enter four digit Password, then press **ENTER**
4. Press the **ITEM UP (2)** or **ITEM DOWN (6)** key to move through the password submenu.
5. Press the **VALUE PLUS (3)** or **VALUE MINUS (7)** key to select options from the submenu.
6. When the desired submenu option is displayed, press **ENTER**.

Figure 5.1.4.4.1 Password Menu



1 Appears only when the hard drive is installed.

3 Appears only when Novell is enabled from the Ethernet and Token Ring menus.

4 This was formally called the Test Menu

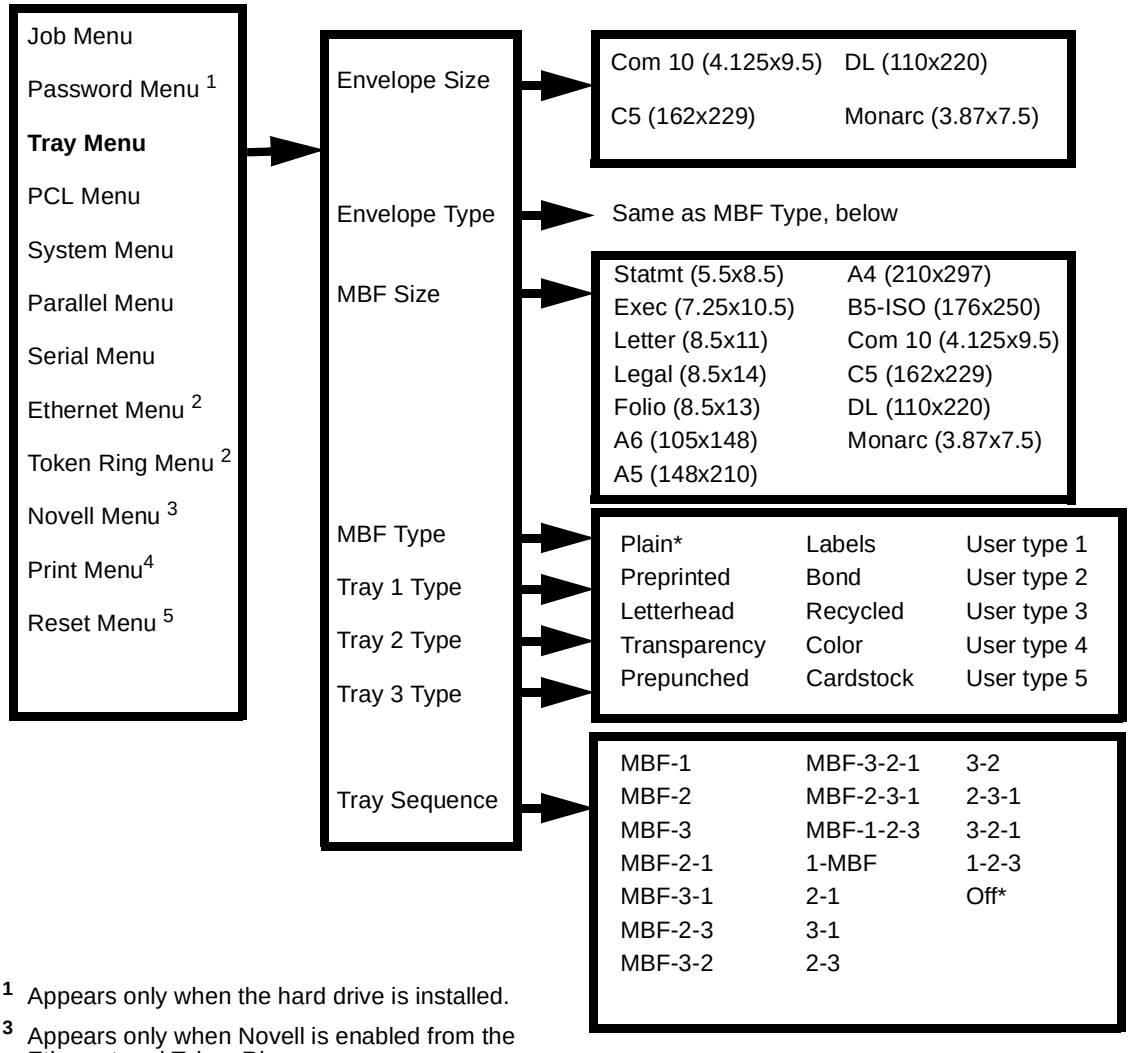
5 Appears only when ONLINE and ENTER are pressed simultaneously at Power On.

5.1.4.5 Tray Menu

The Tray Menu allows you to access tray settings that are common to all system languages (PCL and PostScript). To select the Tray Menu:

1. Press the **MENU UP (1)** or **MENU DOWN (5)** key until “Tray Menu” is displayed.
2. Press the **ITEM UP (2)** or **ITEM DOWN (6)** key to move through the Tray submenu.
3. Press the **VALUE PLUS (3)** or **VALUE MINUS (7)** key to select options from the submenu.
4. When the desired submenu option is displayed, press **ENTER**.

Figure 5.1.4.5.1 Tray Menu



1 Appears only when the hard drive is installed.

3 Appears only when Novell is enabled from the Ethernet and Token Ring menus.

4 This was formally called the Test Menu

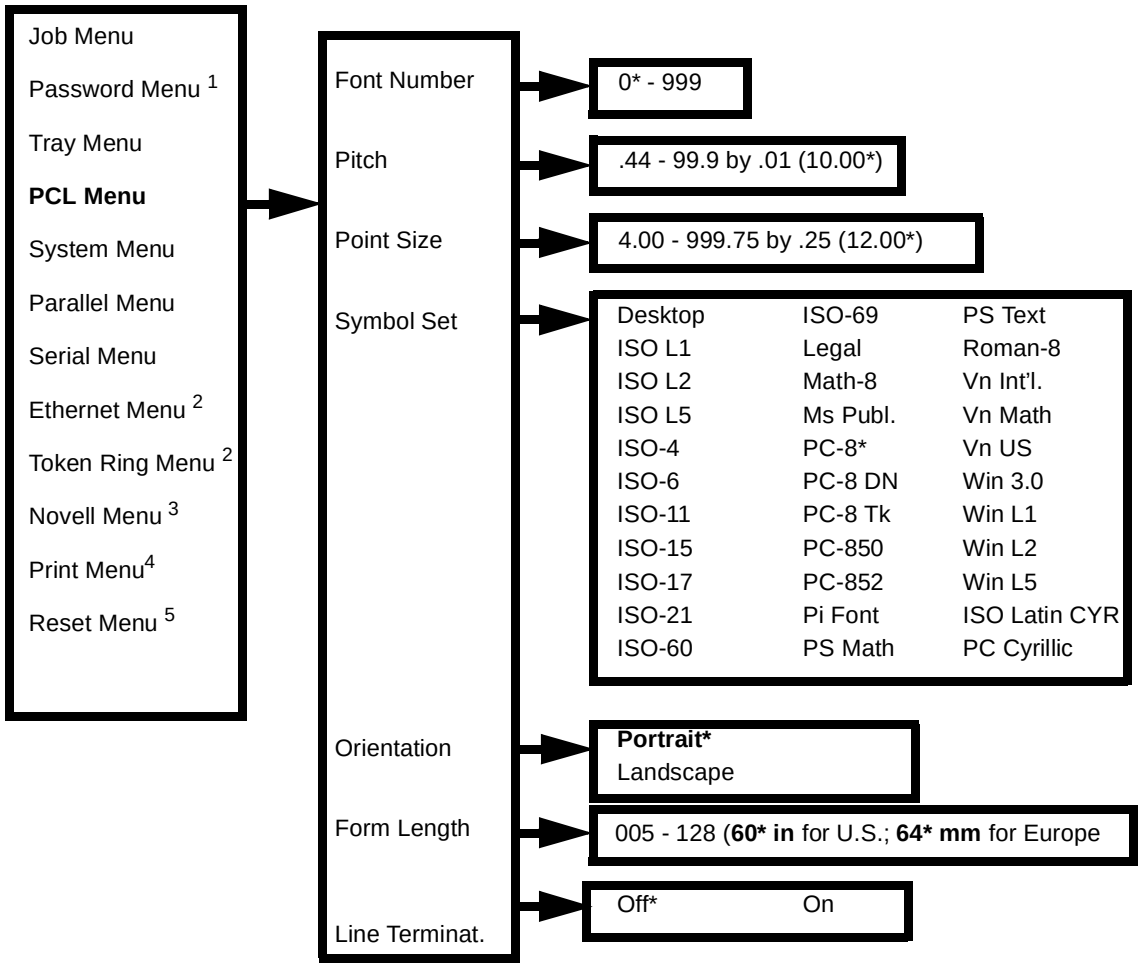
5 Appears only when ONLINE and ENTER are pressed simultaneously at Power On.

5.1.4.6 PCL Menu

The PCL Menu options establish the default configuration for the printer when printing PCL emulation jobs. To select the PCL Menu:

1. Press the **MENU UP (1)** or **MENU DOWN (5)** key until “PCL Menu” is displayed.
2. Press the **ITEM UP (2)** or **ITEM DOWN (6)** key to move through the PCL submenu.
3. Press the **VALUE PLUS (3)** or **VALUE MINUS (7)** key to select options from the submenu.
4. When the desired submenu option is displayed, press **ENTER**.

Figure 5.1.4.6.1 PCL Menu



[1] Appears only when the hard drive is installed.

[3] Appears only when Novell is enabled from the Ethernet and Token Ring menus.

[4] This was formally called the Test Menu

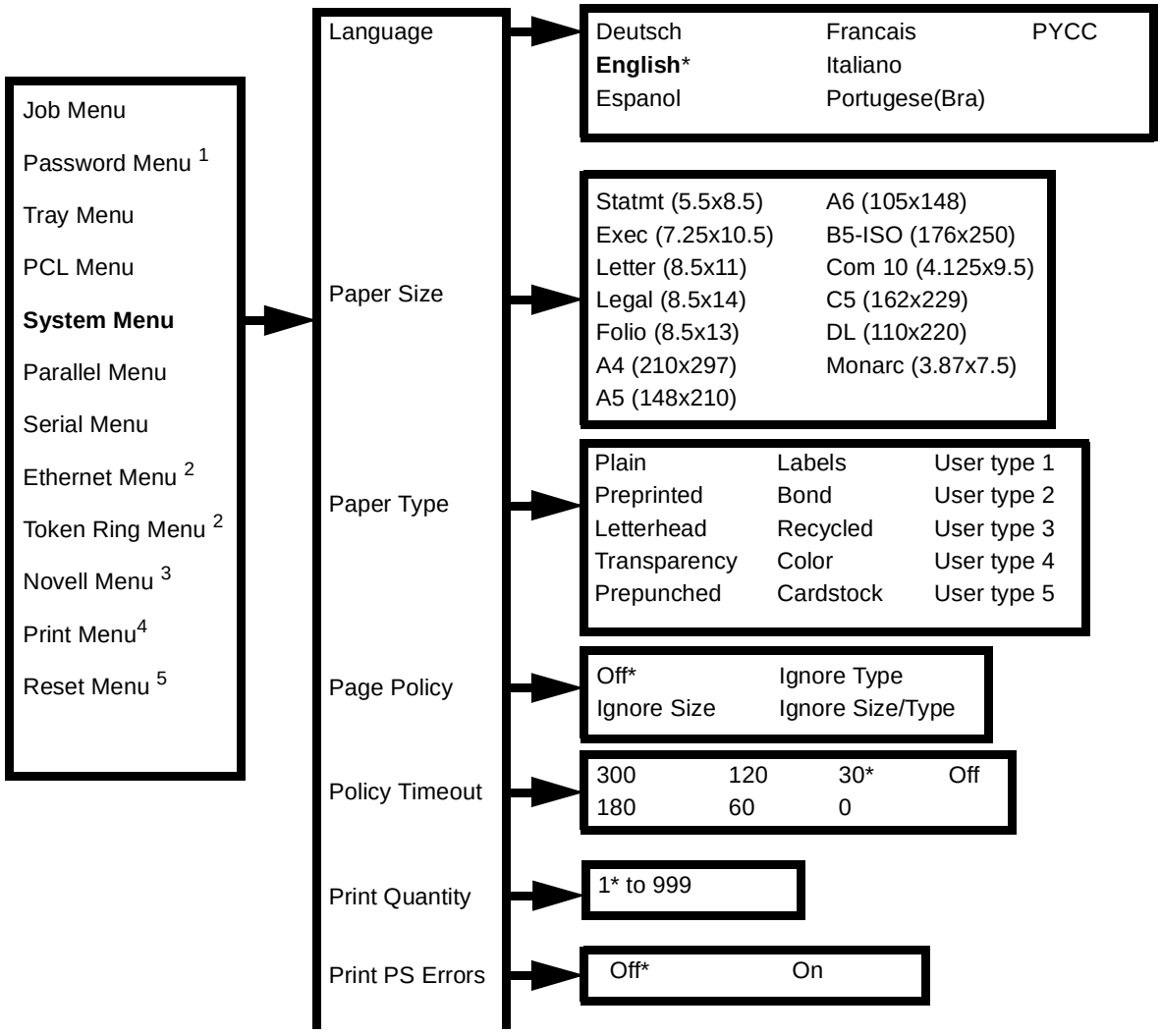
[5] Appears only when ONLINE and ENTER are pressed simultaneously at Power On.

5.1.4.7 System Menu

The System Menu options set general printer features. To select the System Menu:

1. Press the **MENU UP (1)** or **MENU DOWN (5)** key until “System Menu” is displayed.
2. Press the **ITEM UP (2)** or **ITEM DOWN (6)** key to move through the System submenu.
3. Press the **VALUE PLUS (3)** or **VALUE MINUS (7)** key to select options from the submenu.
4. When the desired submenu option is displayed, press **ENTER**.

Figure 5.1.4.7.1 System Menu



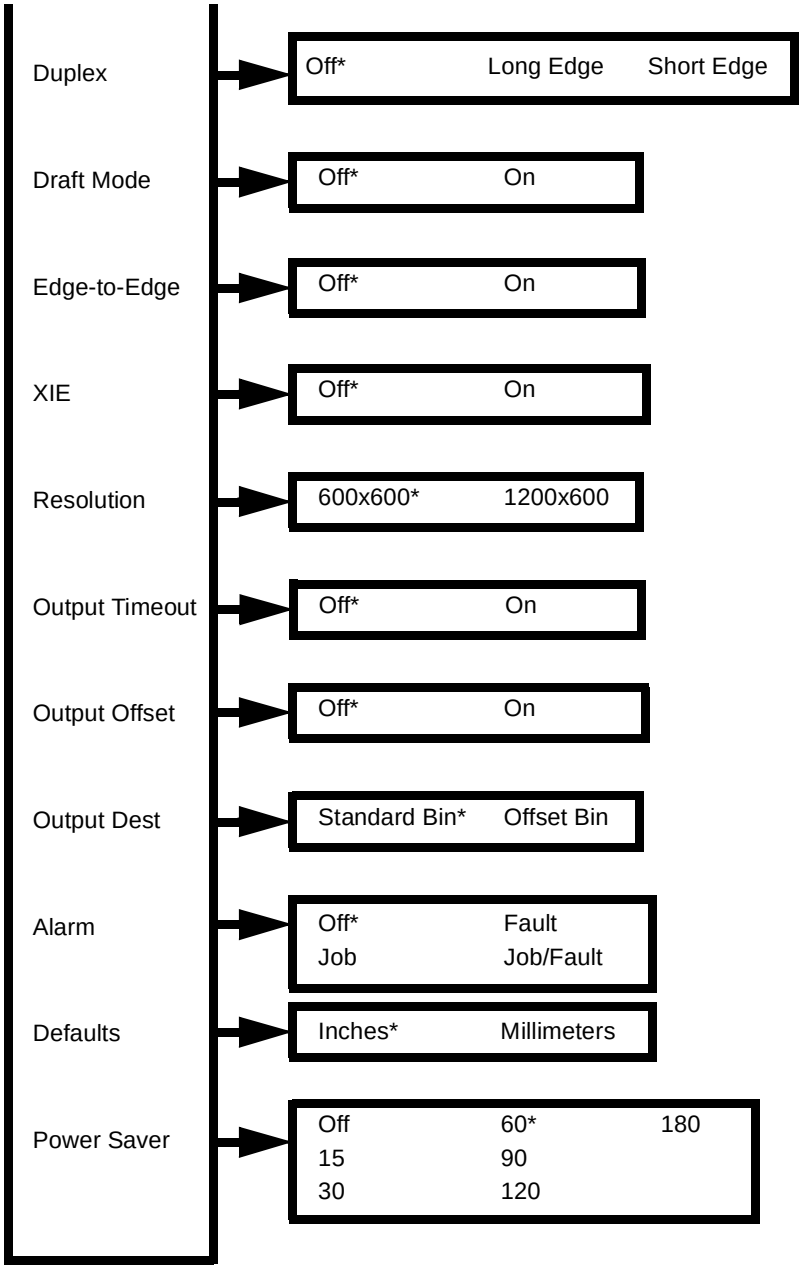
1 Appears only when the hard drive is installed.

3 Appears only when Novell is enabled from the Ethernet and Token Ring menus.

4 This was formally called the Test Menu

5 Appears only when ONLINE and ENTER are pressed simultaneously at Power On.

Figure 5.1.4.7.1 System Menu (continued)



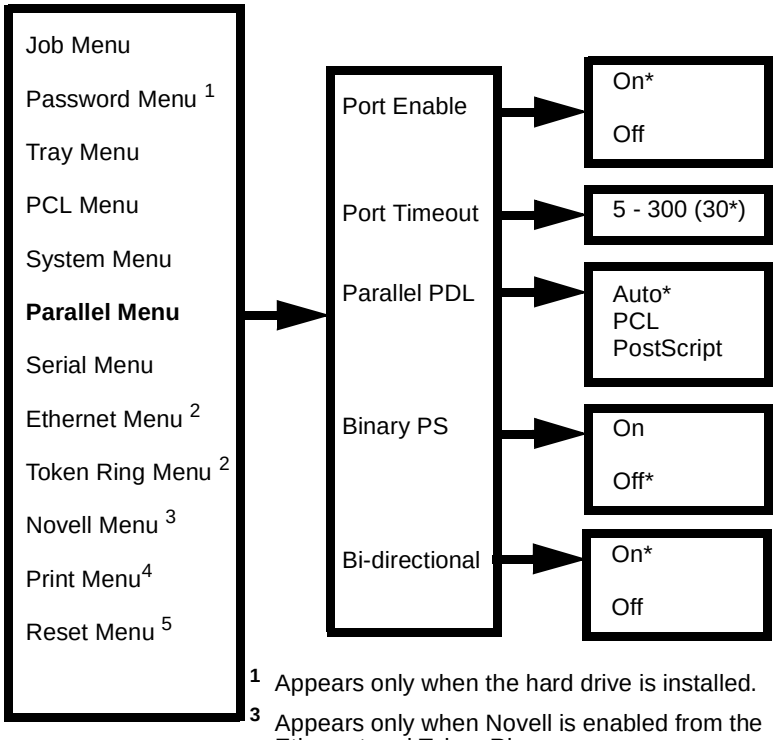
Continued on next page.

5.1.4.8 Parallel Menu

The Parallel Menu sets options for the parallel port connection. To select the Parallel Menu:

1. Press the **MENU UP (1)** or **MENU DOWN (5)** key until “Parallel Menu” is displayed.
2. Press the **ITEM UP (2)** or **ITEM DOWN (6)** key to move through the Parallel submenu.
3. Press the **VALUE PLUS (3)** or **VALUE MINUS (7)** key to select options from the submenu.
4. When the desired submenu option is displayed, press **ENTER**.

Figure 5.1.4.8.1 Parallel Menu



1 Appears only when the hard drive is installed.

3 Appears only when Novell is enabled from the Ethernet and Token Ring menus.

4 This was formally called the Test Menu

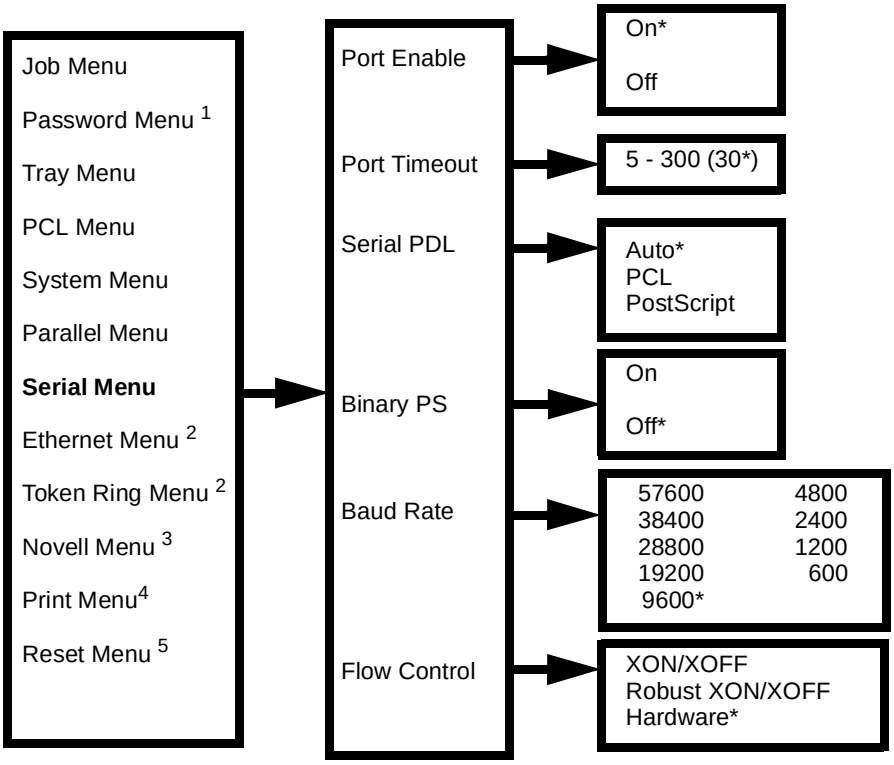
5 Appears only when ONLINE and ENTER are pressed simultaneously at Power On.

5.1.4.9 Serial Menu

The Serial Menu sets options for the serial port connection. To select the Serial Menu:

1. Press the **MENU UP (1)** or **MENU DOWN (5)** key until “Serial Menu” is displayed.
2. Press the **ITEM UP (2)** or **ITEM DOWN (6)** key to move through the Serial submenu.
3. Press the **VALUE PLUS (3)** or **VALUE MINUS (7)** key to select options from the submenu.
4. When the desired submenu option is displayed, press **ENTER**.

Figure 5.1.4.9.1 Serial Menu



1 Appears only when the hard drive is installed.

3 Appears only when Novell is enabled from the Ethernet and Token Ring menus.

4 This was formally called the Test Menu

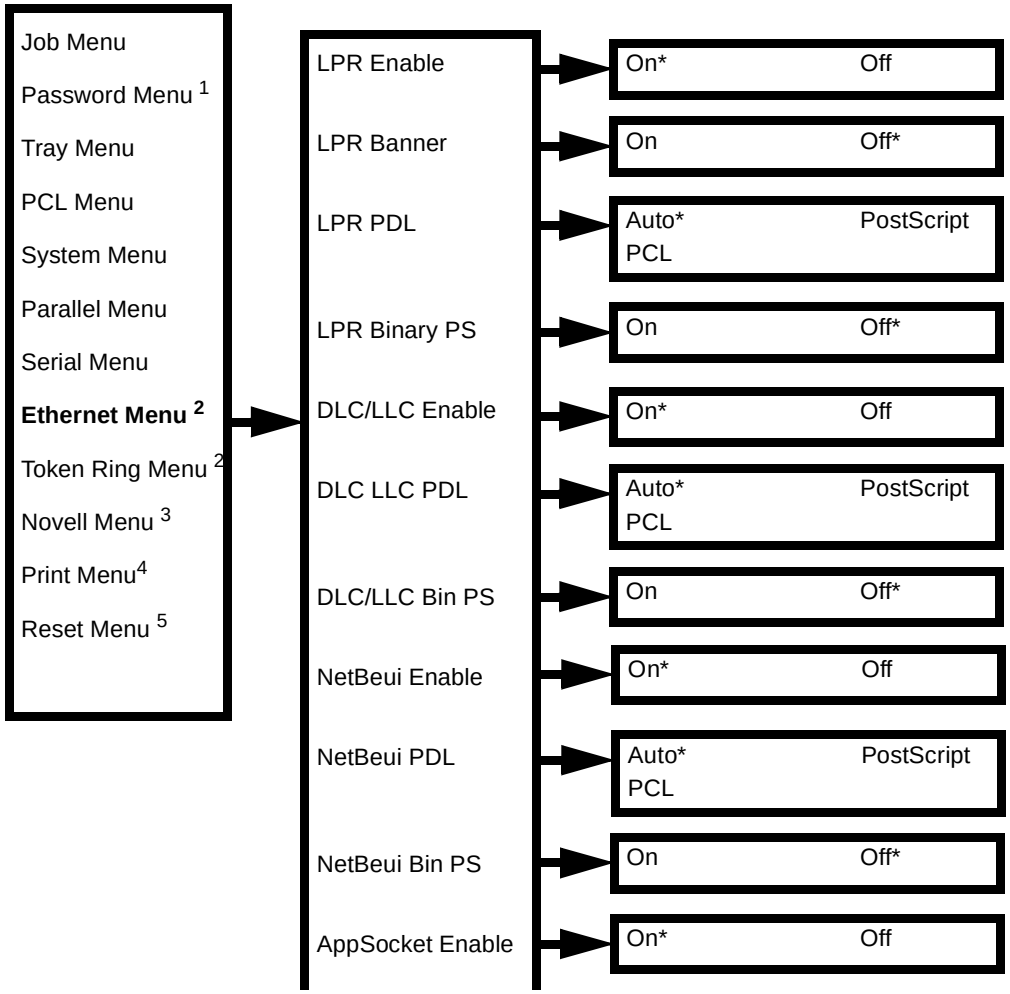
5 Appears only when ONLINE and ENTER are pressed simultaneously at Power On.

5.1.4.10 Ethernet Menu

The Ethernet Menu set options for the Ethernet port. To select the Ethernet Menu:

1. Press the **MENU UP (1)** or **MENU DOWN (5)** key until “Ethernet Menu” is displayed.
2. Press the **ITEM UP (2)** or **ITEM DOWN (6)** key to move through the Ethernet submenu.
3. Press the **VALUE PLUS (3)** or **VALUE MINUS (7)** key to select options from the submenu.
4. When the desired submenu option is displayed, press **ENTER**.

Figure 5.1.4.10.1 Ethernet Menu



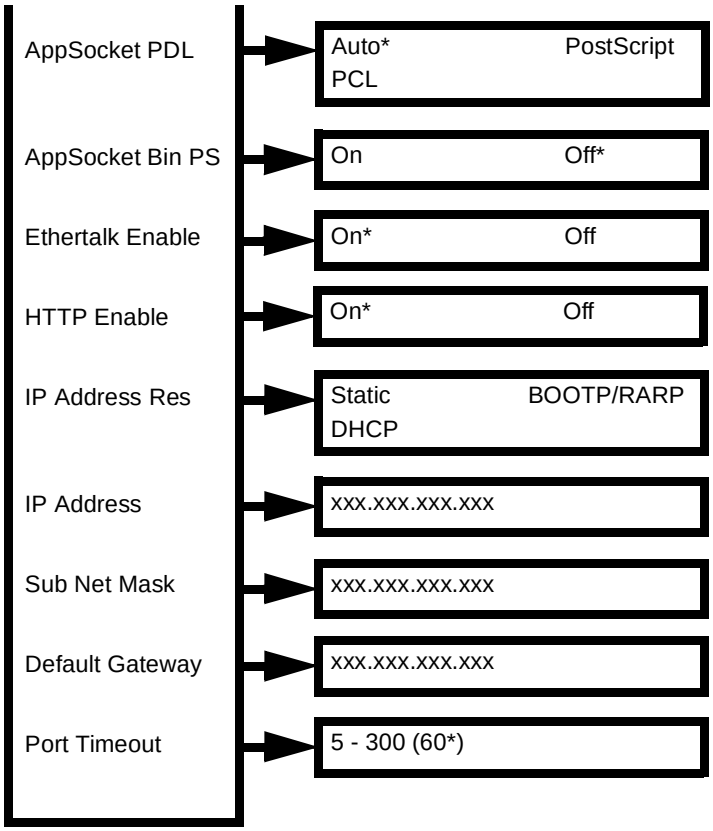
1 Appears only when the hard drive is installed.

3 Appears only when Novell is enabled from the Ethernet and Token Ring menus.

4 This was formally called the Test Menu

5 Appears only when ONLINE and ENTER are pressed simultaneously at Power On.

Figure 5.1.4.10.1 Ethernet Menu (continued)



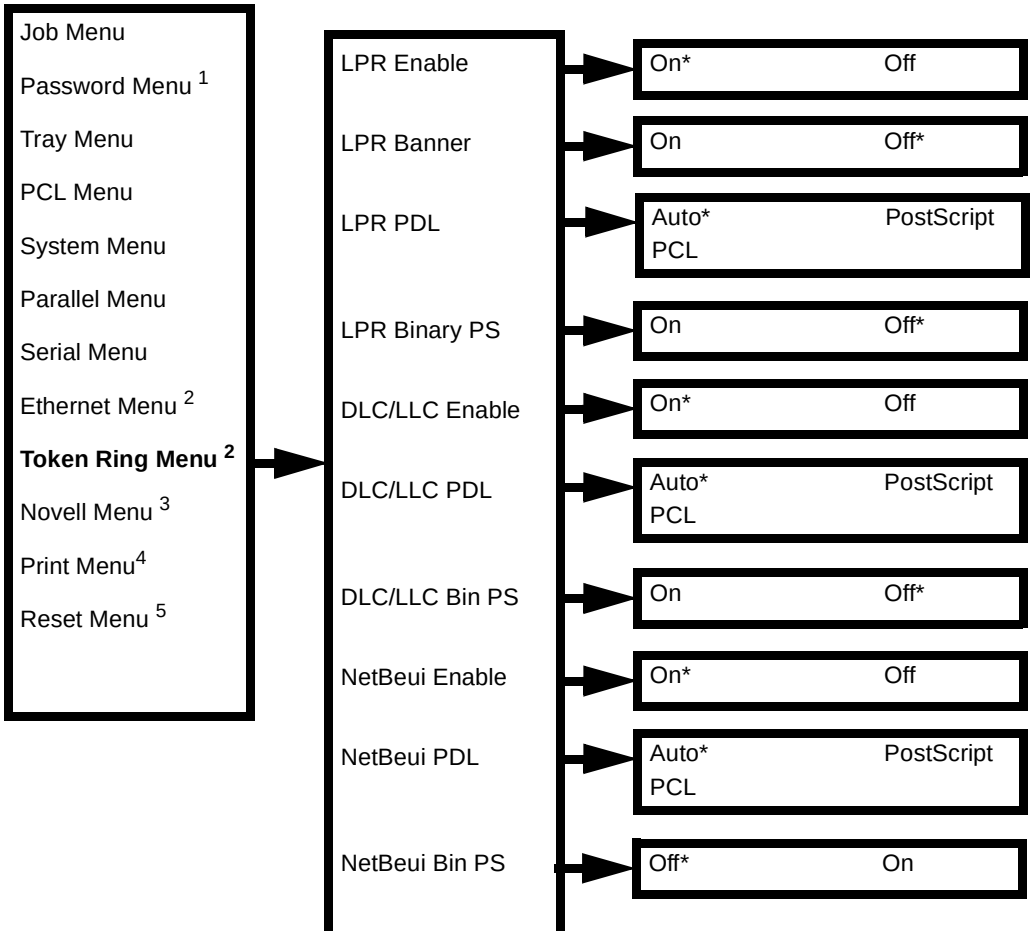
Continued on next page.

5.1.4.11 Token Ring Menu

The Token Ring Menu sets options for the Token Ring port. To select the Token Ring Menu:

1. Press the **MENU UP (1)** or **MENU DOWN (5)** key until “Token Ring Menu” is displayed.
2. Press the **ITEM UP (2)** or **ITEM DOWN (6)** key to move through the Token Ring submenu.
3. Press the **VALUE PLUS (3)** or **VALUE MINUS (7)** key to select options from the submenu.
4. When the desired submenu option is displayed, press **ENTER**.

Figure 5.1.4.11.1 Token Ring Menu



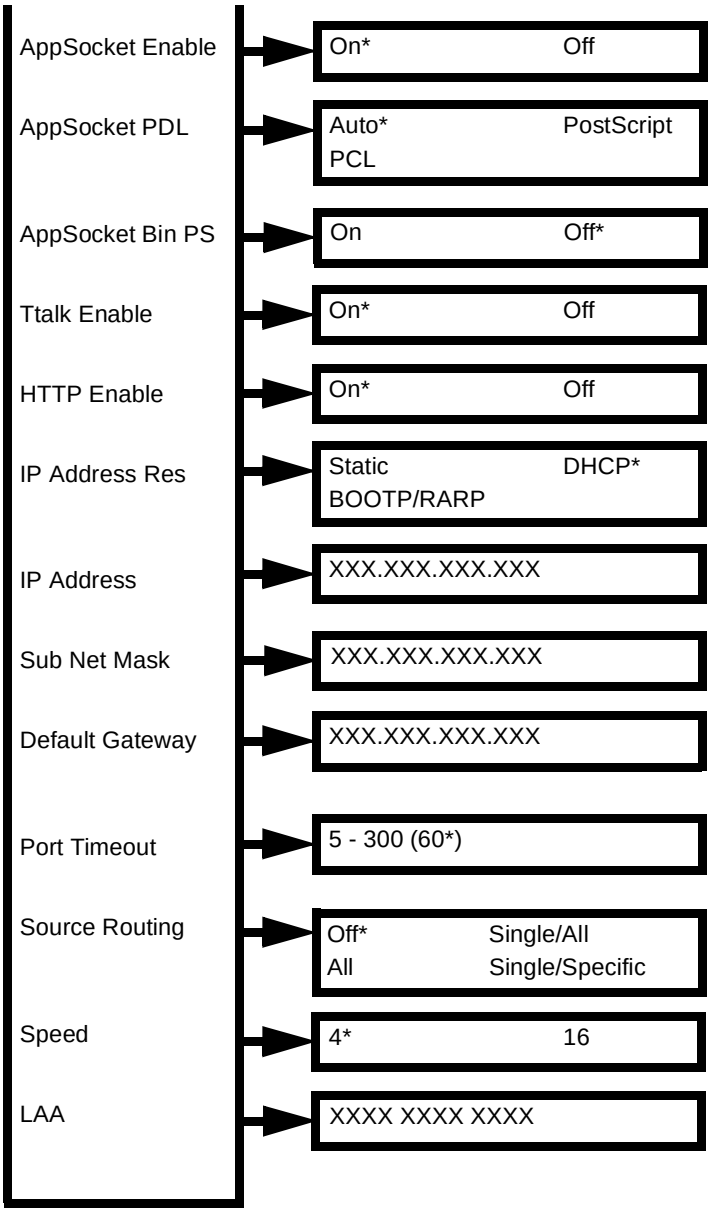
1 Appears only when the hard drive is installed.

3 Appears only when Novell is enabled from the Ethernet and Token Ring menus.

4 This was formally called the Test Menu

5 Appears only when ONLINE and ENTER are pressed simultaneously at Power On.

Figure 5.1.4.11.1 Token Ring Menu (continued)



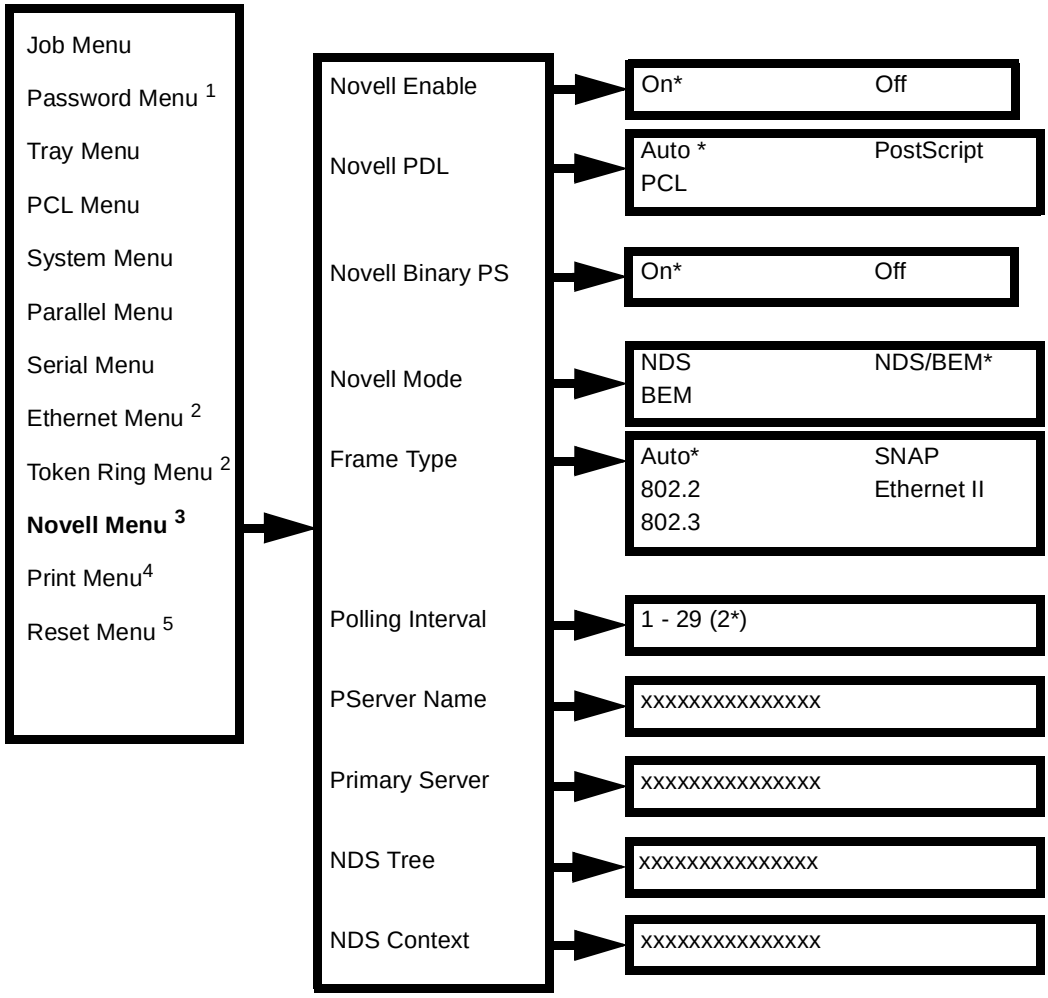
Continued on next page.

5.1.4.12 Novell Menu

The Novell Menu allows you to modify Novell parameters. It appears only if Novell is enabled from the Ethernet menu. To select the Novell Menu:

1. Press the **MENU UP (1)** or **MENU DOWN (5)** key until “Novell Menu” is displayed.
2. Press the **ITEM UP (2)** or **ITEM DOWN (6)** key to move through the Novell submenu.
3. Press the **VALUE PLUS (3)** or **VALUE MINUS (7)** key to select options from the submenu.
4. When the desired submenu option is displayed, press **ENTER**.

Figure 5.1.4.12.1 Novell Menu



1 Appears only when the hard drive is installed.

3 Appears only when Novell is enabled from the Ethernet and Token Ring menus.

4 This was formally called the Test Menu

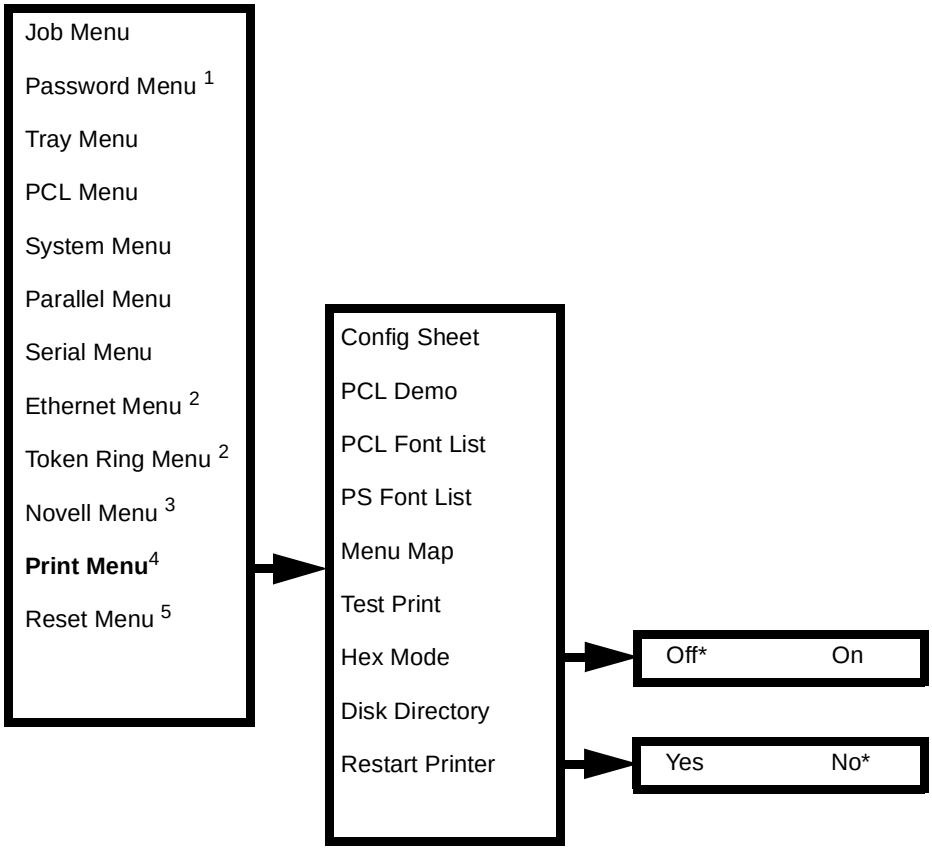
5 Appears only when ONLINE and ENTER are pressed simultaneously at Power On.

5.1.4.13 Print Menu

The Print Menu options are used to generate printer reports. All options other than Restart Printer and Hex Mode cause the printer to generate a printed report. To select the Test Menu:

1. Press the **MENU UP (1)** or **MENU DOWN (5)** key until “Test Menu” is displayed.
2. Press the **ITEM UP (2)** or **ITEM DOWN (6)** key to move through the Test submenu.
3. Press the **VALUE PLUS (3)** or **VALUE MINUS (7)** key to select options from the submenu.
4. When the desired submenu option is displayed, press **ENTER**.

Figure 5.1.4.13.1 Test Menu



1 Appears only when the hard drive is installed.

3 Appears only when Novell is enabled from the Ethernet and Token Ring menus.

4 This was formally called the Test Menu

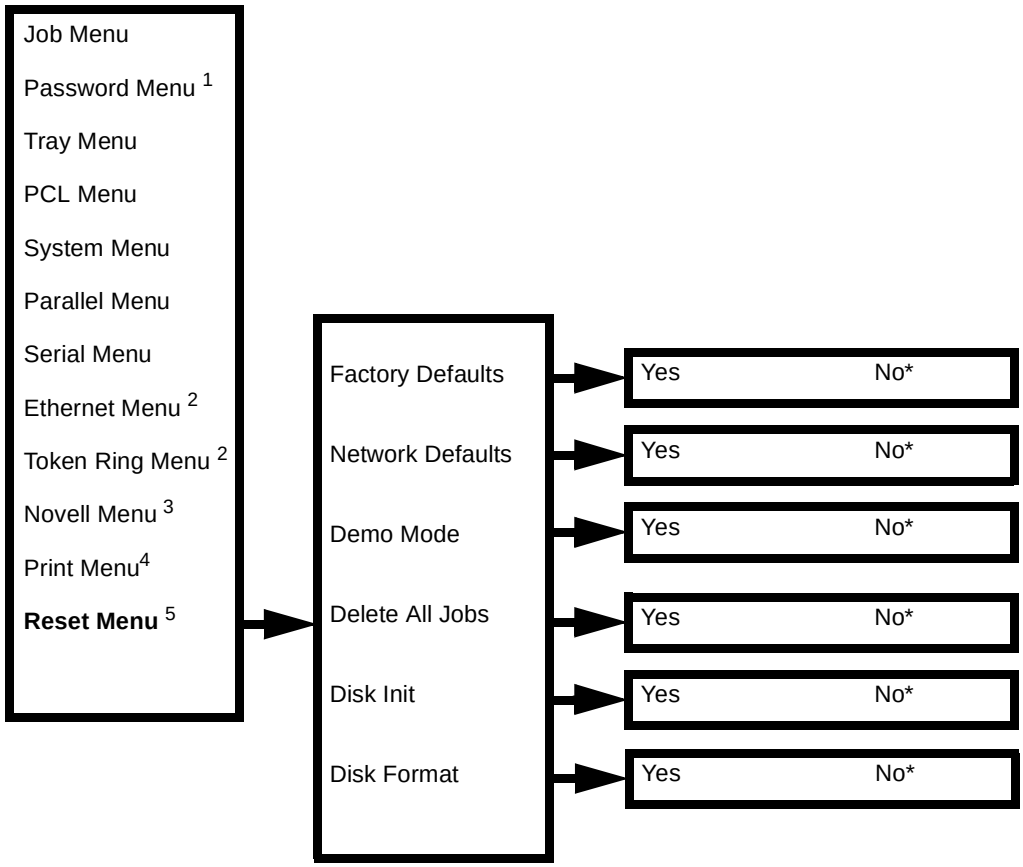
5 Appears only when ONLINE and ENTER are pressed simultaneously at Power On.

5.1.4.14 Reset Menu

The Reset Menu is used to reset various printer functions. The Reset Menu only appears in the Main Menu if the printer is powered on while simultaneously holding down the **ONLINE** and **ENTER** keys. To select the Reset Menu:

1. Press the **MENU UP (1)** or **MENU DOWN (5)** key until “Reset Menu” is displayed.
2. Press the **ITEM UP (2)** or **ITEM DOWN (6)** key to move through the Reset submenu.
3. Press the **VALUE PLUS (3)** or **VALUE MINUS (7)** key to select options from the submenu.
4. When the desired submenu option is displayed, press **ENTER**.

Figure 5.1.4.14.1 Reset Menu



1 Appears only when the hard drive is installed.

3 Appears only when Novell is enabled from the Ethernet and Token Ring menus.

4 This was formally called the Test Menu

5 Appears only when ONLINE and ENTER are pressed simultaneously at Power On.

5.2 Diagnostic Mode

The Diagnostics Mode allows you to test various switches and sensors, turn on various output devices, adjust printer functions, and display the total number of prints produced. There are three different Diagnostic Modes. The Diagnostic Mode and the options available depend upon the mode of entry.

- Diagnostic Mode 1 -While switching ON the printer, press and hold the **ITEM UP (2)** and the **ITEM DOWN (6)** keys until the LCD displays *IOT?*.

  Press the **VALUE MINUS (7)** key.
  This Diagnostic Mode tests various switches and sensors and shows printer fuser settings.

- Diagnostic Mode 2 -While switching ON the printer, press and hold the **ITEM UP (2)** and the **ITEM DOWN (6)** keys until the LCD displays *IOT?*.

  Press the **ENTER (4)** key.
  This Diagnostic Mode prints a grid test pattern in either simplex or duplex mode.

- Diagnostic Mode 3 - While switching ON the printer, press and hold the **ITEM UP (2)** and the **ITEM DOWN (6)** keys until the LCD displays *IOT?*.

  Press the **ENTER (4)** key and the **VALUE MINUS (7)** key simultaneously. Immediately release the **VALUE MINUS (7) key**. Hold the **ENTER (4)** key down until the count reaches “3,” then release.
  This Diagnostic Mode allows the adjustment of the setup parameters.

5.2.1 Diagnostic Mode 1

Table 5.2.1.1 lists the tests contained in Diagnostic Mode 1

Table 5.2.1.1 Diagnostic Mode 1 Tests

Test Type	LCD Display Message	Test Function
Total Print Count	PRINT COUNTER OPERATION	Shows the total number of prints made.
Input Test	SENSOR INPUT TEST	Tests a sensor or switch function.
Output Test	READING FUSER SET TEMPERATURE	Shows the Fuser temperature setting (temperature code).
Output Test	READING FUSER TEMPERATURE	Shows the actual temperature of the Fuser.
Output Test	CONFIRM MBF SOLENOID OPERA	Tests the MBF Feed Solenoid function.
Output Test	CONFIRM TRAY 1 SOLENOID OPERA	Tests the Tray 1 (top) Feed Solenoid function.
Output Test	CONFIRM TRAY 2 SOLENOID OPERA	Tests the Tray 2 (lower 1) Feed Solenoid function.
Output Test	CONFIRM TRAY 3 SOLENOID OPERA	Tests the Tray 3 (lower 2) Feed Solenoid function.
Output Test	CONFIRM ENVELOPE SOLENOID OPERA	Tests the Envelope Tray (optional) Feed Solenoid function.
Output Test	CONFIRM DIRECT SOLENOID OPERA	Tests the Exit Direction Solenoid function.
Output Test	CONFIRM REG. SOLENOID OPERA	Tests the Registration Solenoid
Output Test	MAIN MOTOR OPERATION	Tests the Main Motor function.
Output Test	DUPLEX MTR H.S. OPERATION	Tests the Duplex Motor function (high-speed rotation).
Output Test	DUPLEX MTR L.S. OPERATION	Tests the Duplex Motor function (low-speed rotation).
Output Test	EXIT MOTOR-CW OPERATION	Tests the Exit Motor Clockwise (CW) function.
Output Test	EXIT MOTOR-CCW OPERATION	Tests the Exit Motor Counter Clockwise (CCW) function.
Output Test	OCT DRIVE MOTOR OPERATION	Tests the Offset Catch Tray (OCT) Motor function.
Output Test	OFFSET MOTOR-CW OPERATION	Tests the Offset Motor Clockwise (CW) function.
Output Test	OFFSET MOTOR-CCW OPERATION	Tests the Offset Motor Counter Clock-wise (CCW) function.

Test Type	LCD Display Message	Test Function
Output Test	HVPS (C. ROLL AC) OPERATION	Tests the High Voltage Power Supply (HVPS) AC voltage to the Charge Roll
Output Test	HVPS (C. ROLL DC) OPERATION	Tests the High Voltage Power Supply (HVPS) DC voltage to the Charge Roll
Output Test	HVPS (DEV. BIA DC) OPERATION	Tests the High Voltage Power Supply (HVPS) AC voltage to the Developer Bias Charge Roll.
Output Test	HVPS (DEV.BIA AC) OPERATION	Tests High Voltage Power Supply (HVPS) DC voltage to the Developer Bias Charge Roll.
Output Test	HVPS (DETACK SAW) OPERATION	Tests High Voltage Power Supply (HVPS) DC voltage to the Detack Saw.
Output Test	HVPS (T. ROLL-) OPERATION	Tests High Voltage Power Supply (HVPS) negative DC voltage to the Bias Transfer Roll.
Output Test	HVPS (T. ROLL+) OPERATION	Tests High Voltage Power Supply (HVPS) positive DC voltage to the Bias Transfer Roll.
Output Test	EXIT DIAGNOSTICS OPERATION	Exits the diagnostic test(s) currently running.
Output Test	ROM CHECKSUM	Displays the Print Engine Controller ROM check sum.
Output Test	PAPER TRAY SIZE OPERATION	Shows the paper size reported from each Paper Size Sensor.

To enter Diagnostic Mode 1:

1. Switch off the printer power
2. While switching ON the printer, press and hold the **ITEM UP (2)** and the **ITEM DOWN (6)** keys until the LCD displays *IOT?*.
3. Press the **VALUE MINUS (7)** key. The LCD displays PRINT COUNTER OPERATION. This message indicates that the printer is in Diagnostics Mode 1.

PRINT COUNTER **OPERATION**

NOTE: You cannot enter a Diagnostics Mode if Power-On Diagnostic Sequence finds an error in ROM/ RAM Check.

*NOTE: To execute a test, press the **ENTER (4)** key.*

NOTE: Throughout this manual, the term Tray 1 refers to the tray loaded into the Standard paper tray, the term Tray 2 refers to the tray loaded into the optional lower 1 paper tray, and the term Tray 3 refers to the tray loaded into the optional lower 2 paper tray.

NOTE: Exit Diagnostics does not have a test function and is used to exit an output test mode.

*NOTE: To select a desired diagnostics test, press the **MENU UP (1)** or **MENU DOWN (5)** key until the desired diagnostic is displayed on the LCD. Diagnostic tests are displayed one-by-one in the order they appear on the Diagnostic Tests Table on the previous pages.*

5.2.1.1 Print Counter Operation

This diagnostic displays the total number of print cycles. This print count is taken from the actuator signals sent to the Feed Solenoid. The total count increments even when paper jams in the paper tray and is not actually output.

Execute Print Counter Operation:

1. Enter Diagnostics Mode 1. The LCD displays the PRINT COUNTER OPERATION message, indicating the printer is in Diagnostics Mode 1.
2. Press the **ENTER** key. The LCD displays the print total.

PRINT COUNTER
Prt Cnt = XXXXXX

   XXXXXX = Total number of prints.
3. If you wish to exit this test and enter another test, press the **MENU UP (1)** or **MENU DOWN (5)** key to select another function.
4. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.2 Sensor Input Test

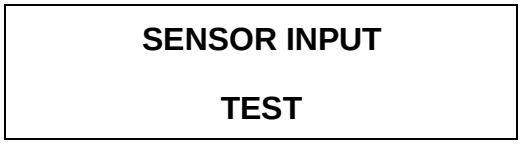
This diagnostic test allows you to check the function of the sensors and switches. In this mode, the number on the LCD (at the rightmost position on the bottom line, (as shown in step 2 below), increments by one each time the transition of the signal from any sensor or switch is detected. You can check the function of the sensors and switches from this change of the number. The sensors and switches checked by this input test are as follows:

- Keypad keys on the Control Panel (except **ITEM UP (2)**)
- Exit Sensor
- Duplex Sensor*
- Registration Sensor
- Paper Size Sensor (Trays 1, 2* and 3*)
- No Paper Sensor (Trays 1, 2*, 3*, MBF Tray and Envelope*)
- Front Cover Interlock Switch
- Rear Cover Interlock Switch
- EP Cartridge Sensor
- Toner Empty Sensor
- Full Stack Sensor
- Full Stack (OCT) Sensor*
- OCT Home Sensor*
- OCT Exit Sensor*

NOTE: The sensors marked with (*) are sensors of optional units.

Execute Sensor Input Test:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays SENSOR INPUT TEST.



3. Press the **ENTER** key to run the test. The INPUT COUNTS message is displayed on the LCD, and now you can check the sensors and switches. Press **ITEM UP (2)** again to stop the input test and return to the state in which the test is selected.

4 Check the function of the sensors and switches by manually actuating with your finger or a screw driver. If the sensor or switch is functioning correctly, the number at the position on the bottom line of the LCD increments by one each time you actuate the sensor or switch. If the number does not increment, the sensor or switch may be faulty.

SENSOR INPUT Input Counts 01	SENSOR INPUT Input Counts 02

5 If you wish to exit this test and enter another test, press the **ITEM UP (2)** key until the LCD displays SENSOR INPUT TEST, then press the **MENU UP (1)** or **MENU DOWN (5)** key.

6 To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

WARNING! ***Never run the SENSOR INPUT TEST with the Front Cover open because the laser light is emitted if you press on the interlock switch and LD switch simultaneously by actuating or cheating. Disconnect connector P/J 118 on the CRU Sensor PWB or connector P/J 12 on the Print Engine Controller PWB before executing SENSOR INPUT TEST when you must perform the input test with the Front Cover open.***

5.2.1.3 Reading Fuser Set Temperature

NOTE: This diagnostic displays the current fuser setting. If you wish to change the fuser setting, you must enter Diagnostic Mode 3 and perform "Fuser Temp. Adjustment."

This diagnostic displays the current setting for the fuser temperature. The setting is displayed as a two digit hexadecimal code. The setting has 16 steps (Table 5.2.1.4).

Execute Reading Fuser Set Temperature:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays READING FUSER SET TEMPERATURE.
3. Press the **ENTER** key to start the test. The LCD displays a two-digit temperature code that corresponds to one of the 16 temperature steps.

   READING FUSER

   Set Temp = XX

4. If you wish to exit this test and enter another test, press the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
5. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.4 Reading Fuser Temperature

This diagnostic displays the current temperature of the fuser.

Execute Reading Fuser Temperature:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays READING FUSER TEMPERATURE.
3. Press the **ENTER** key to start the test.

The LCD displays a two-digit temperature code within the range that corresponds to the 16 temperature steps (see Table 5.2.1.4.1).

READING FUSER **Current Temp = XX**

4. The temperature code displayed will continually change as the fuser heats up and cools down.
5. If you wish to exit this test and enter another test, press the **ITEM UP (2)** key to exit, then use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
6. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

Table 5.2.1.4.1 Fuser Temperature Codes

Reading Fuser Set Temp	Reading Fuser Temp	Fuser Temp Adjustment	Fuser Temperature (^{o}C)
AF	A8~B1	0	165
AA	A4~AD	1	168
A6	A0~A9	2	171
A2	9C~A5	3	174
9E	97~A0	4	177
99	93~9C	5	180
95	8F~98	6	183
91	8A~94	7	186
8D	87~8F	8	189
88	84~8B	9	192
84	7F~87	A	195
80	7A~83	B	198
7C	77~7E	C	201
77	73~7A	D	204
73	6F~76	E	207
6F	6A~72	F	210

5.2.1.5 Confirm MBF Solenoid Operation

This diagnostic tests the MBF Feed Solenoid.

Execute Confirm MBF Solenoid Operations:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays CONFIRM MBF SOLENOID OPERA.
3. Press the **ENTER** key to start the test. The LCD displays the CONFIRM MBF message.

CONFIRM MBF **Operation EXECED**

4. Verify that when you press the **ENTER** key, the MBF Tray Feed Solenoid energizes momentarily.
5. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
6. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.6 Confirm Tray 1 Solenoid Operation

This diagnostic tests the paper feed solenoid in Tray 1.

Execute Confirm Tray 1 Solenoid Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays the CONFIRM TRAY 1 SOLENOID OPERA. message.
3. Press the **ENTER** key to start the test. The LCD displays the CONFIRM TRAY 1 message.

CONFIRM TRAY 1 **Operation EXECED**

4. Verify that when you press the **ENTER** key, Tray 1 Feed Solenoid energizes momentarily (about 2 seconds).
5. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
6. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.7 Confirm Tray 2 Solenoid Operation

This diagnostic tests the paper feed solenoid in Tray 2.

Execute Confirm Tray 2 Solenoid Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays the CONFIRM TRAY 2 SOLENOID OPERA. message.
3. Press the **ENTER** key to start the test. The LCD displays the CONFIRM TRAY 2 message.

CONFIRM TRAY 2 **Operation EXECED**

4. Verify that when you press the **ENTER** key, Tray 2 Feed Solenoid energizes momentarily.
5. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
6. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.8 Confirm Tray 3 Solenoid Operation

This diagnostic tests the paper feed solenoid in Tray 3.

Execute Confirm Tray 3 Solenoid Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays the CONFIRM TRAY 3 SOLENOID OPERA. message.
3. Press the **ENTER** key to start the test. The LCD displays the CONFIRM TRAY 3 message.

CONFIRM TRAY 3 **Operation EXECED**

4. Verify that when you press the **ENTER** key, Tray 3 Feed Solenoid energizes momentarily.
5. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
6. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.9 Confirm Envelope Solenoid Operation

This diagnostic tests Envelope Tray Feed Solenoid function.

Execute Confirm Envelope Solenoid Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays the *C*ONFIRM ENVELOPE SOLENOID OPERA. message.
3. Press the **ENTER** key to start the test. The LCD displays the CONFIRM ENVELOPE message.

CONFIRM ENVELOPE **Operation EXECED**

4. Verify that when you press the **ENTER** key, the Envelope Tray Feed Solenoid energizes momentarily.
5. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
6. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.10 Confirm Direction Solenoid Operation

This diagnostic tests the Exit Direction Solenoid function.

Execute Confirm Direction Solenoid Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays the CONFIRM DIRECT SOLENOID OPERA. message.
3. Press the **ENTER** key to execute the test. The LCD displays the CONFIRM DIRECT OPERA. message.

CONFIRM DIRECT
Operation EXECED

4. Verify that the Exit Direction Solenoid energizes momentarily.

NOTE: The Direction Solenoid is physically located in the Offset Catch Tray accessory. This option must be installed to verify operation of the Exit Direction Solenoid.

5. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
6. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.11 Confirm Registration Solenoid Operation

This diagnostic tests the Registration Solenoid

Execute Confirm Registration Solenoid Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays the CONFIRM REG SOLENOID OPERA. message.
3. Press the **ENTER** key to start the test. The LCD displays the CONFIRM REG message.

CONFIRM REG
Operation EXECED

4. Verify that the Registration Solenoid energizes momentarily each time the **ENTER** key is pressed
5. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
6. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.12 Main Motor Operation

This diagnostic tests the Main Drive Motor.

WARNING! This test switches on the Main Motor. Be careful around the Motor and Drive Assembly.

Execute Main Motor Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays the MAIN MOTOR OPERATION message.
3. Press the **ENTER** key to start the test. The LCD displays the MAIN MOTOR message.

MAIN MOTOR
Operation EXECED

4. Verify that when you press the **ENTER** key, the Motor and Drive Assembly turn for approximately 25 seconds.
5. If you wish to exit this test and enter another test, press the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to **EXIT DIAGNOSTICS MENU**. Then press the **ENTER** key. Refer to *5.2.1.27 Exit Diagnostics Operation*.
6. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.13 Duplex Motor H.S. (High Speed) Operation

This diagnostic tests the Duplex Motor function (high speed rotation).

Execute Duplex Motor H.S. Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays the DUPLEX MTR H.S. OPERATION message.
3. Press the **ENTER** key to start the test. The LCD displays the DUPLEX MOTOR H.S. message.

DUPLEX MTR H.S.
Operation EXECED

4. Verify that when you press the **ENTER** key, the Duplex Motor turns at a high speed.
5. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
6. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

NOTE: If this option is not installed "NO Duplex" will appear as test result on LCD screen.

5.2.1.14 Duplex Motor L.S. (Low Speed) Operation

This diagnostic tests the Duplex Motor function (low-speed rotation).

Execute Duplex Motor L.S. Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays the DUPLEX MTR L.S. OPERATION message.
3. Press the **ENTER** key to execute the test. The LCD displays the MOTOR DUPLEX L.S. message.

DUPLEX MTR L.S. **Operation EXECED**

4. Verify that each time the **ENTER** key is pressed the Duplex Motor rotates at low speed.
5. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
6. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

NOTE: If this option is not installed "NO Duplex" will appear as test result on LDC screen.

5.2.1.15 Exit Motor CW (Clockwise) Operation

This diagnostic tests the Exit Motor clockwise function.

Execute Exit Motor CW Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays the EXIT MOTOR-CW OPERATION message.
3. Press the **ENTER** key to execute the test. The LCD displays the EXIT MOTOR-CW message.

EXIT MOTOR-CW
Operation EXECED

4. Verify that each time the **ENTER** key is pressed the Exit Motor rotates clockwise.
5. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
6. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.16 Exit Motor CCW (Counter Clockwise) Operation

This diagnostic tests the Exit Motor counterclockwise function.

Execute Exit Motor CCW Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays the EXIT MOTOR-CWW OPERATION message.
3. Press the **ENTER** key to execute the test. The LCD displays the EXIT MOTOR-CWW OPERATION message.

   EXIT MOTOR-CCW

   Operation EXECED

4. Verify that each time the **ENTER** key is pressed the Exit Motor rotates counter clockwise.
5. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
6. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.17 Offset Catch Tray (OCT) Drive Motor Operation

This diagnostic tests the OCT Motor function.

Execute OCT Drive Motor Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays the OCT DRIVE MOTOR OPERATION message.
3. Press the **ENTER** key to execute the test. The LCD displays the OCT DRIVE MOTOR message.

OCT DRIVE MOTOR
Operation EXECED

4. Verify that the Offset Catch Tray Motor rotates momentarily each time the **ENTER** key is pressed.
5. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
6. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.18 Offset Motor CW (Clockwise) Operation

This diagnostic tests the Offset Motor clockwise function.

Execute Offset Motor CW Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays OFFSET MOTOR-CW OPERATION message.
3. Press the **ENTER** key to execute the test. The LCD displays the OFFSET MOTOR-CW message.

OFFSET MOTOR-CW **Operation EXECED**

4. Verify that the Offset Catch Tray (OCT) Motor rotates clockwise each time the **ENTER** key is pressed.
5. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
6. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.19 Offset Motor CCW (Counter Clockwise) Operation

This diagnostic tests the Offset Motor counter clockwise function.

Execute Offset Motor CCW Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays OFFSET MOTOR-CCW OPERATION message.
3. Press the **ENTER** key to execute the test. The LCD displays the OFFSET MOTOR-CCW message.

   OFFSET MOTOR-CCW

   Operation EXECED

4. Verify that the Offset Motor rotates in a Counter Clockwise direction each time **ENTER** is pressed.
5. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
6. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.20 HVPS (Charge Roll AC) Operation

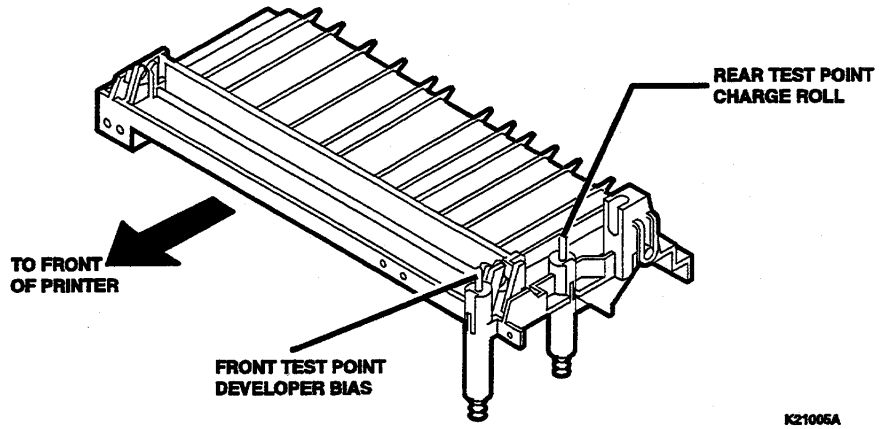
This diagnostic tests HVPS AC voltage to the Bias Charge Roll.

WARNING! ***This test switches on the HVPS. Never touch the parts supplied with a high voltage from the HVPS when running the following diagnostics. The HVPS output voltages switched on by these procedures can be measured by means of a multimeter. Be sure to observe the following procedures to check the voltages.***

Execute HVPS (Charge Roll AC) Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays HVPS (C. ROLL AC) OPERATION message.
3. Remove the EP Cartridge from the printer.
4. Bypass the Front Cover interlock switch and the EP Cartridge interlock switch with an Interlock Bypass key or equivalent.
5. Set the multimeter to read a **momentary** AC voltage (approximately one second in duration) in the 1k VAC range.
6. Using alligator clips, connect the multimeter to the following terminals:
   - Positive test probe to the rear pin of the two voltage supply pins on the right side of the Transfer Chute Assembly (see Figure 5.2.1.20.1).
   - Negative test probe to the LVPS frame or the printer frame.

Figure 5.2.1.20.1 Test Point Locations



7 Press the **ENTER** key to execute the test. The LCD displays the HVPS (C. ROLL AC) message.

HVPS (C. ROLL AC)
Operation EXECED

NOTE: Voltage is present for approximately one second each time the Enter key is pressed to execute the test.

8 The normal momentary output voltage to the Charge Roll is approximately 820 VAC.

9 If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.

10 To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.21 HVPS (Charge Roll DC) Operation

This diagnostic tests HVPS DC voltage to the Bias Charge Roll.

WARNING! ***This test switches on the HVPS. Never touch the parts supplied with a high voltage from the HVPS when running the following diagnostics. The HVPS output voltages switched on by these procedures can be measured by means of a multimeter. Be sure to observe the following procedures to check the voltages.***

Execute HVPS (Charge Roll DC) Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays HVPS (C. ROLL DC) OPERATION message.
3. Remove the EP Cartridge from the printer.
4. Bypass the Front Cover interlock switch and the EP Cartridge interlock switch with an Interlock Bypass key or equivalent.
5. Set the multimeter to read a **momentary** minus DC voltage (approximately one second in duration), in the 500 to 600 VDC range.
6. Using alligator clips, connect the multimeter to the following terminals:
   - Positive test probe to the rear pin of the two voltage supply pins on the right side of the Transfer Chute Assembly (see Figure 5.2.1.20.1).
   - Negative test probe to the LVPS frame or the printer frame.
7. Press the **ENTER** key to execute the test. The LCD displays the HVPS (C. ROLL DC) message.

HVPS (C. ROLL DC)
Operation EXECED

*NOTE: Voltage is present for approximately one second each time the **ENTER** key is pressed.*

8. The normal momentary HVPS Charge Roll output voltage is approximately -510 VDC.
9. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
10. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.22 HVPS (Developer Bias DC) Operation

This diagnostic tests the HVPS DC voltage to the Developer Bias Charge Roll. During this test the high voltage will be present for only a few seconds.

WARNING! This test switches on the HVPS. Never touch the parts supplied with a high voltage from the HVPS when running the following diagnostics. The HVPS output voltages switched on by these procedures can be measured by means of a multimeter. Be sure to observe the following procedures to check the voltages.

Execute HVPS (Developer Bias DC) Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays HVPS (DEV. BIA DC) OPERATION message.
3. Remove the EP Cartridge from the printer.
4. Bypass the Front Cover interlock switch and the EP Cartridge interlock switch with an Interlock Bypass key or equivalent.
5. Set the multimeter to read a **momentary** minus DC voltage (approximately one second in duration), in the 500 to 600 VDC range.
6. Using alligator clips, connect the multimeter to the following terminals:
   - Positive test probe to the front pin of the two voltage supply pins on the right side of the Transfer Chute Assembly (see Figure 5.2.1.20.1).
   - Negative test probe to the LVPS frame or the printer frame.
7. Press the **ENTER** key to execute the test. The LCD displays the HVPS (DEV.BIA DC) message.

HVPS (DEV.BIA DC)
Operation EXECED

*NOTE: Voltage is present for approximately one second each time the **ENTER** key is pressed.*

8. The normal momentary HVPS Developer Bias output voltage is approximately -400 VDC.
9. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
10. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.23 HVPS (Developer Bias AC) Operation

This diagnostic tests HVPS AC voltage to the Developer Bias Charge Roll.

WARNING! ***This test switches on the HVPS. Never touch the parts supplied with a high voltage from the HVPS when running the following diagnostics. The HVPS output voltages switched on by these procedures can be measured by means of a multimeter. Be sure to observe the following procedures to check the voltages.***

Execute HVPS (Developer Bias AC) Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays HVPS (DEV BIA AC) OPERATION message.
3. Remove the EP Cartridge from the printer.
4. Bypass the Front Cover interlock switch and the EP Cartridge interlock switch with an Interlock Bypass key or equivalent.
5. Set the multimeter to read a **momentary** voltage (approximately one second in duration) in the 2500 VAC range.
6. Using alligator clips, connect the multimeter to the following terminals:
   - Positive test probe to the front pin of the two voltage supply pins on the right side of the Transfer Chute Assembly (see Figure 5.2.1.20.1).
   - Negative test probe to the LVPS frame or the printer frame.
7. Press the **ENTER** key to execute the test. The LCD displays the HVPS (DEV.BIA AC) message.

HVPS (DEV.BIA AC)
Operation EXECED

*NOTE: Voltage is present for approximately one second each time **ENTER** is pressed.*

8. The normal momentary HVPS Developer Bias output voltage is approximately 2.0 KVAC.
9. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
10. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.24 HVPS (Detack Saw) Operation

This diagnostic tests HVPS AC voltage to the Detack Saw.

WARNING! This test switches on the HVPS. Never touch the parts supplied with a high voltage from the HVPS when running the following diagnostics. The HVPS output voltages switched on by these procedures can be measured by means of a multimeter. Be sure to observe the following procedures to check the voltages.

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays HVPS DETACK SAW OPERATION message.
3. Remove the EP Cartridge from the printer.
4. Bypass the Front Cover interlock switch and the EP Cartridge interlock switch with an Interlock Bypass key or equivalent.
5. Set the multimeter to read a **momentary** voltage (approximately one second in duration), in the 750 VAC range.
6. Connect the multimeter to the following terminals:
   - Positive test probe directly probing the Detack Saw
   - Negative test probe to the LVPS frame or the printer frame.
7. Press the **ENTER** key to execute the test. The LCD displays the HVPS (DETACK SAW) message.

HVPS (DETACK SAW)
Operation EXECED

*NOTE: Voltage is present for approximately one second each time the **ENTER** key is pressed.*

8. The normal momentary HVPS Detack Saw output voltage is approximately 430 VAC.
9. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
10. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.25 HVPS (Bias Transfer Roll -) Operation

This diagnostic tests HVPS negative DC voltage to the Bias Transfer Roll.

WARNING! This test switches on the HVPS. Never touch the parts supplied with a high voltage from the HVPS when running the following diagnostics. The HVPS output voltages switched on by these procedures can be measured by means of a multimeter. Be sure to observe the following procedures to check the voltages.

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays HVPS (T. ROLL-) OPERATION message.
3. Remove the EP Cartridge from the printer.
4. Bypass the Front Cover interlock switch and the EP Cartridge interlock switch with an Interlock Bypass key or equivalent.
5. Set the multimeter to read a **momentary** minus DC voltage (approximately one second in duration), in the 1000 VDC range.
6. Connect the multimeter to the following terminals:
   - Positive test probe directly to the shaft of the Bias Transfer Roll
   - Negative test probe to the LVPS frame or the printer frame.
7. Press the **ENTER** key to execute the test. The LCD displays the HVPS (T. ROLL-) message.

HVPS (T. ROLL-)
Operation EXECED

NOTE: Voltage is present for approximately one second each time the **ENTER** *key is pressed.*

8. The normal momentary HVPS Bias Transfer Roll output voltage is approximately -900 VDC.
9. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
10. To exit this test and return to normal operation, switch the printer power OFF and then switch it ON.

5.2.1.26 HVPS (Bias Transfer Roll +) Operation

This diagnostic tests HVPS positive DC voltage to the Bias Transfer Roll.

WARNING! This test switches on the HVPS. Never touch the parts supplied with a high voltage from the HVPS when running the following diagnostics. The HVPS output voltages switched on by these procedures can be measured by means of a multimeter. Be sure to observe the following procedures to check the voltages.

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays HVPS (T. ROLL+) OPERATION message.
3. Remove the EP Cartridge from the printer.
4. Bypass the Front Cover interlock switch and the EP Cartridge interlock switch with an Interlock Bypass key or equivalent.
5. Set the multimeter to read a **momentary** DC voltage (approximately one second in duration) in the 1000 VDC range.
6. Connect the multimeter to the following terminals:
   - Positive test probe directly to the shaft of the Bias Transfer Roll
   - Negative test probe to the LVPS frame or the printer frame.
7. Press the **ENTER** key to execute the test. The LCD displays the HVPS (T. ROLL+) message.

HVPS (T. ROLL+)
Operation EXECED

*NOTE: Voltage is present for approximately one second each time the **ENTER** key is pressed.*

8. The normal momentary HVPS Bias Transfer Roll output voltage is approximately +2.7 KVDC.
9. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
10. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.27 Exit Diagnostics Operation

This procedure is used to exit the diagnostic test currently running.

Execute Exit Diagnostics Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1. (If executing Exit Diagnostics Operation from another diagnostic, skip this step.)
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays the EXIT DIAGNOSTICS OPERATION message.
3. Press the **ENTER** key.

EXIT DIAGNOSTICS
Operation EXECED

4. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
5. To exit and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.28 ROM Checksum

This diagnostic displays the Print Engine Controller ROM checksum.

Execute ROM Checksum:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays ROM CHECKSUM message.
3. Press the **ENTER** key. The LCD displays the following message.

ROM **CheckSum = XXXX**

   XXXX = ROM CheckSum value.
4. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
5. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.1.29 Paper Tray Size Operation

This diagnostic shows the contact actuation (combination of closed contacts) of each Paper Size Sensor.

Execute Paper Tray Size Operation:

1. Enter Diagnostics Mode 1. The LCD displays PRINT COUNTER OPERATION indicating the printer is in Diagnostics Mode 1.
2. Press the **MENU UP (1)** or **MENU DOWN (5)** key until the LCD displays the PAPER TRAY SIZE OPERATION message.
3. Press the **ENTER** key. The LCD displays each paper tray and the associate paper size. For example;

MBF TRAY
LETTER

4. Use the **ENTER (4)** key to scroll through the various paper trays available; MBF, Tray 1, Tray 2, Tray 3, Envelope, etc.

NOTE: If an option paper tray is not installed, the LCD will display "No cassette."

NOTE: Paper Type = Letter (8.5 x 11), Folio (8.5 x 13), Legal (8.5 x 14).

5. If you wish to exit this test and enter another test use the **MENU UP (1)** or **MENU DOWN (5)** key to scroll to another test.
6. To exit this test and return to normal operation, switch OFF the printer power then switch it ON.

5.2.2 Diagnostic Mode 2

To enter Diagnostic Mode 2:

1. Switch off the printer power.
2. Remove paper from all trays except the one under test.
3. While switching ON the printer, press and hold the **ITEM UP (2)** and the **ITEM DOWN (6)** keys until the LCD displays *IOT?*.
4. Press the **ENTER (4)** key.

This Diagnostics Mode produces test prints. The letter within the parentheses ( ) indicates the mode, (S = Simplex, D = Duplex). The number after **TEST PRINT ( )** is the number of test prints produced. Each time a test print is produced, the number will increment by one.

ENTERING IOT
DIAGNOSTICS MODE

NOTE: You cannot enter a Diagnostics Mode if the Power-On Diagnostic Sequence finds an error in ROM/RAM Check.

To run test prints:

1. Enter Diagnostics Mode 2.
2. Press the **VALUE MINUS (7)** key to choose simplex or duplex mode.

NOTE: Duplex mode can only be selected when a duplex option is installed.

NOTE: Duplex Mode cannot be selected if an envelope feeder is installed.

3. Press the **ENTER** key to start printing test patterns. (See Figure 5.2.2.1 for an example of an IOT Test Print.)

READY TO PRINT
PRINT MODE ON

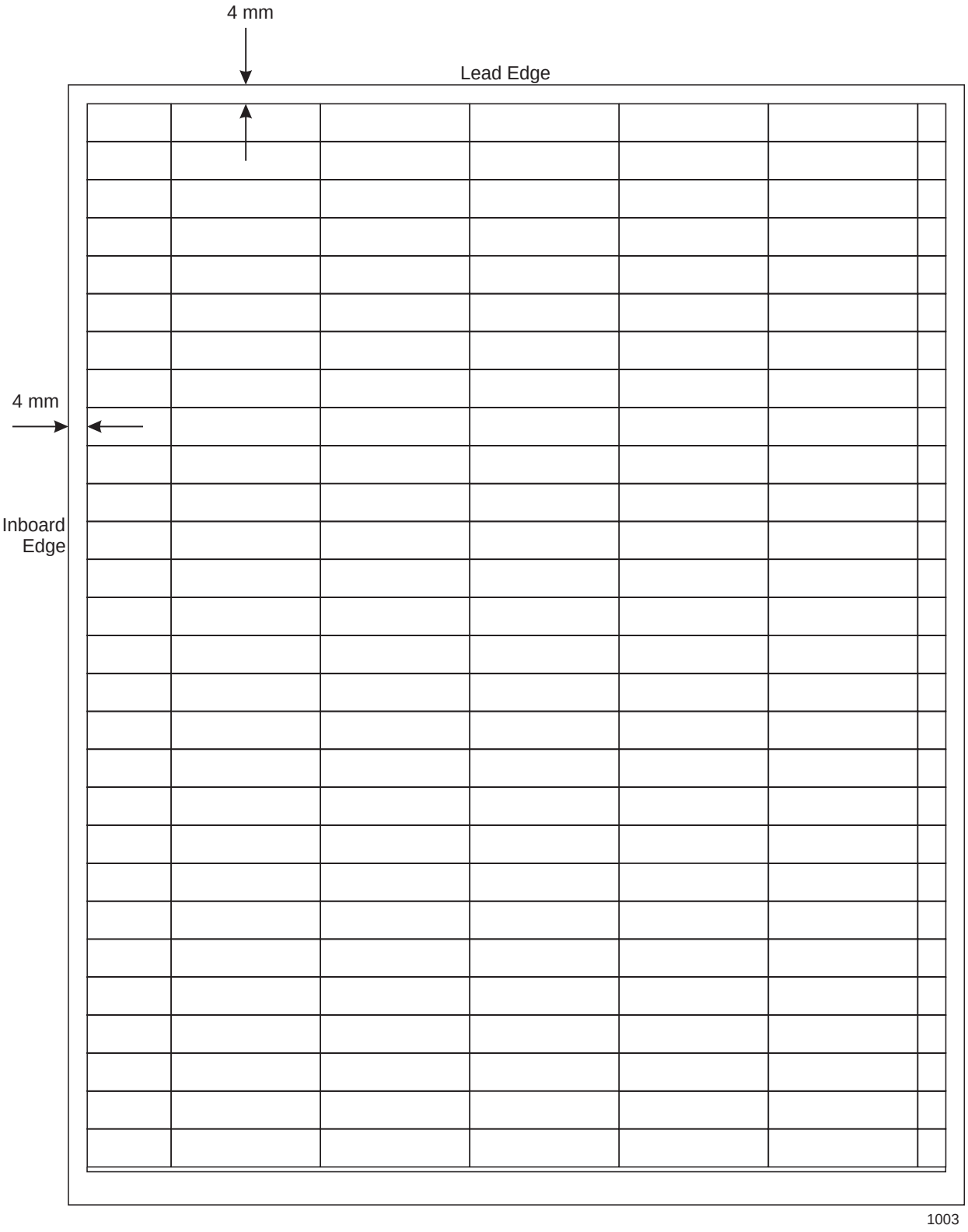
4. The printer will continue to print test patterns until the **ITEM UP (2)** key is pressed.

READY TO PRINT
PRINT MODE OFF

5. To exit the test, switch off the printer power.

NOTE: In order to manually produce an IOT Test Print, refer to the procedure in 5.2.4 Print Engine Controller Test Print.

Figure 5.2.2.1 IOT Test Print



5.2.3 Diagnostic Mode 3

To enter Diagnostic Mode 3:

1. Switch off the printer power.
2. While switching ON the printer, press and hold the **ITEM UP (2)** and the **ITEM DOWN (6)** keys until the LCD displays *IOT?*.
3. Press the **ENTER (4)** key and the **VALUE MINUS (7)** key simultaneously. Immediately release the **VALUE MINUS (7) key**. Hold the **ENTER (4)** key down until the count reaches “3,” then release.

RELEASE THE KEY **1**	**RELEASE THE KEY** **2**	**RELEASE THE KEY** **3**

4. The LCD displays the PRINT DENSITY ADJUSTMENT. This message indicates that the printer is in Diagnostic Mode 3.

To select, adjust, or change any of the functions in Diagnostic Mode 3, perform the following:

1. Enter Diagnostic Mode 3.
2. Press the **MENU DOWN (5)** key until the desired function is displayed on the LCD panel.
3. Press the **ENTER** key to select the function.
4. Press the **VALUE PLUS (3)** or **VALUE MINUS (7)** keys until the desired setting is displayed.
5. Press the **ENTER** key to lock in the setting.
6. Press the **ITEM UP** key to exit this step.
7. Switch off the printer to exit the Diagnostic Mode.

Message Displayed on LCD (Top Line)	Option Values [Factory Defaults]	Are Changes Possible?
Function	Option Description	
PRINT DENSITY ADJUSTMENT	0 to C (13 steps) [Factory default value: 3]	Yes
Sets print density	“0” sets lightest density. C sets darkest density.	
TRAY 1 PROC. ADJUSTMENT	0 to F (16 steps) [Factory default value: A]	Yes
Sets the lead edge registration for paper fed from Tray 1.	"0" sets the narrowest lead edge registration gap. "F" sets the widest lead edge registration gap. Approximately 0.5mm per step.	

Message Displayed on LCD (Top Line)	Option Values [Factory Defaults]	Are Changes Possible?
Function	Option Description	
TRAY 2 PROC. ADJUSTMENT	0 to F (16 steps) [Factory default value: A]	Yes
Sets the lead edge registration for paper fed from Tray 2.	"0" sets the narrowest lead edge registration gap. "F" sets the widest lead edge registration gap. Approximately 0.5mm per step.	
TRAY 3 PROC. ADJUSTMENT	0 to F (16 steps) [Factory default value: A]	Yes
Sets the lead edge registration for paper fed from Tray 3.	"0" sets the narrowest lead edge registration gap. "F" sets the widest lead edge registration gap. Approximately 0.5mm per step.	
TRAY 1 SCAN ADJUSTMENT	0 to 8 (9 steps) [Factory default value: 4]	Yes
Sets the side edge registration for paper fed from Tray 1.	"0" sets the narrowest left side edge registration gap. "8" sets the widest left side edge registration gap. Approximately 0.5mm per step.	
TRAY 2 SCAN ADJUSTMENT	0 to 8 (9 steps) [Factory default value: 4]	Yes
Sets the side edge registration for paper fed from Tray 2.	"0" sets the narrowest left side edge registration gap. "8" sets the widest left side edge registration gap. Approximately 0.5mm per step.	
TRAY 3 SCAN ADJUSTMENT	0 to 8 (9 steps) [Factory default value: 4]	Yes
Sets the side edge registration for paper fed from Tray 3.	"0" sets the narrowest left side edge registration gap. "8" sets the widest left side edge registration gap. Approximately 0.5mm per step.	
FUSER TEMP. ADJUSTMENT	0 to F (16 steps) [Factory default value: 5]	Yes
Sets the Fuser temperature.	"0" sets the lowest temperature. "F" sets the highest temperature. Approximately 3^{o}C per step.	

Message Displayed on LCD (Top Line)	Option Values [Factory Defaults]	Are Changes Possible?
Function	Option Description	
DUPLEX PROC. ADJUSTMENT	to F (16 steps) [Factory default value: A]	Yes
Sets the lead edge registration for duplex print.	"0" sets the narrowest lead edge registration gap. "F" sets the widest lead edge registration gap. Approximately 0.54mm per step.	
DUPLEX SCAN ADJUSTMENT	0 to 8 (9 steps) [Factory default value: 4]	Yes
Sets the side edge registration for duplex print.	"0" sets the narrowest left side edge registration gap. "8" sets the widest left side edge registration gap. Approximately 0.5mm per step	
MBF PROC. ADJUSTMENT	0 to F (16 steps) [Factory default value: A]	Yes
Sets the lead edge registration for paper fed from MBF.	"0" sets the narrowest lead edge registration gap. "F" sets the widest lead edge registration gap. Approximately 0.54mm per step.	
MBF SCAN ADJUSTMENT	0 to 8 (9 steps) [Factory default value: 4]	Yes
Sets the side edge registration for paper fed from MBF.	"0" sets the narrowest left side edge registration gap. "8" sets the widest left side edge registration gap. Approximately 0.5mm per step.	
ENVELOPE PROC. ADJUSTMENT	0 to F (16 steps) [Factory default value: A]	Yes
Sets the lead edge registration for envelope fed from Envelope Tray.	"0" sets the narrowest lead edge registration gap. "F" sets the widest lead edge registration gap. Approximately 0.54mm per step.	
ENVELOPE SCAN ADJUSTMENT	0 to 8 (9 steps) [Factory default value: 4]	Yes
Sets the side edge registration for envelope fed from Envelope Tray.	"0" sets the narrowest left side edge registration gap. "8" sets the widest left side edge registration gap. Approximately 0.5mm per step	
TEST PRINT OPERATION	Press the Enter key to produce the grid test print shown in Figure 5.2.2.1.	

5.2.3.1 Setting and Verification of Registration

This section covers setting and verifying registration of the printer.

WARNING! Make sure the printer has all the covers in place when you perform the test print.

To **set the printer registration**, do the following:

1. Remove all paper from trays except the tray to be tested/adjusted.
2. Enter Diagnostic Mode 3.
3. Press the **MENU DOWN (5)** key until PRINT DENSITY ADJUSTMENT is displayed on the LCD panel.
4. Press the **ENTER** key.

TEST PRINT
PLEASE WAIT

5. Compare the printed test pattern with Figure 5.2.2.1.
6. If the printed test pattern is within specifications, go to step 13.
7. If the test pattern is not within specifications, press the **MENU DOWN** key until the Registration message for the tray selected is displayed.
8. Press the **ENTER** key, the LCD displays the current NVM value.
9. Note the current setting displayed on the LCD panel.
10. Press the **VALUE PLUS** or **VALUE MINUS** key until the desired setting is displayed.
11. Press the **ENTER** key to write the new value into NVM.
12. Repeat steps 3 through 11 until the printed test pattern is within specification.
13. Switch the printer power off; then switch the printer power on.
14. Select the desired paper tray by entering the Menu Mode and selecting the default tray in either PCL or PostScript.
15. Enter the Menu Mode, enter the Test Menu, and run a test print. (See Figure 5.2.3.1.1).
16. If the test print is within specification, exit the Menu Mode. (See Procedure).
17. If the test print is not within specification, enter Diagnostic Mode 3 and repeat steps 7 through 15.
18. If another tray needs to be checked/adjusted, repeat steps 2 through 17.

The two methods to verify registration are:

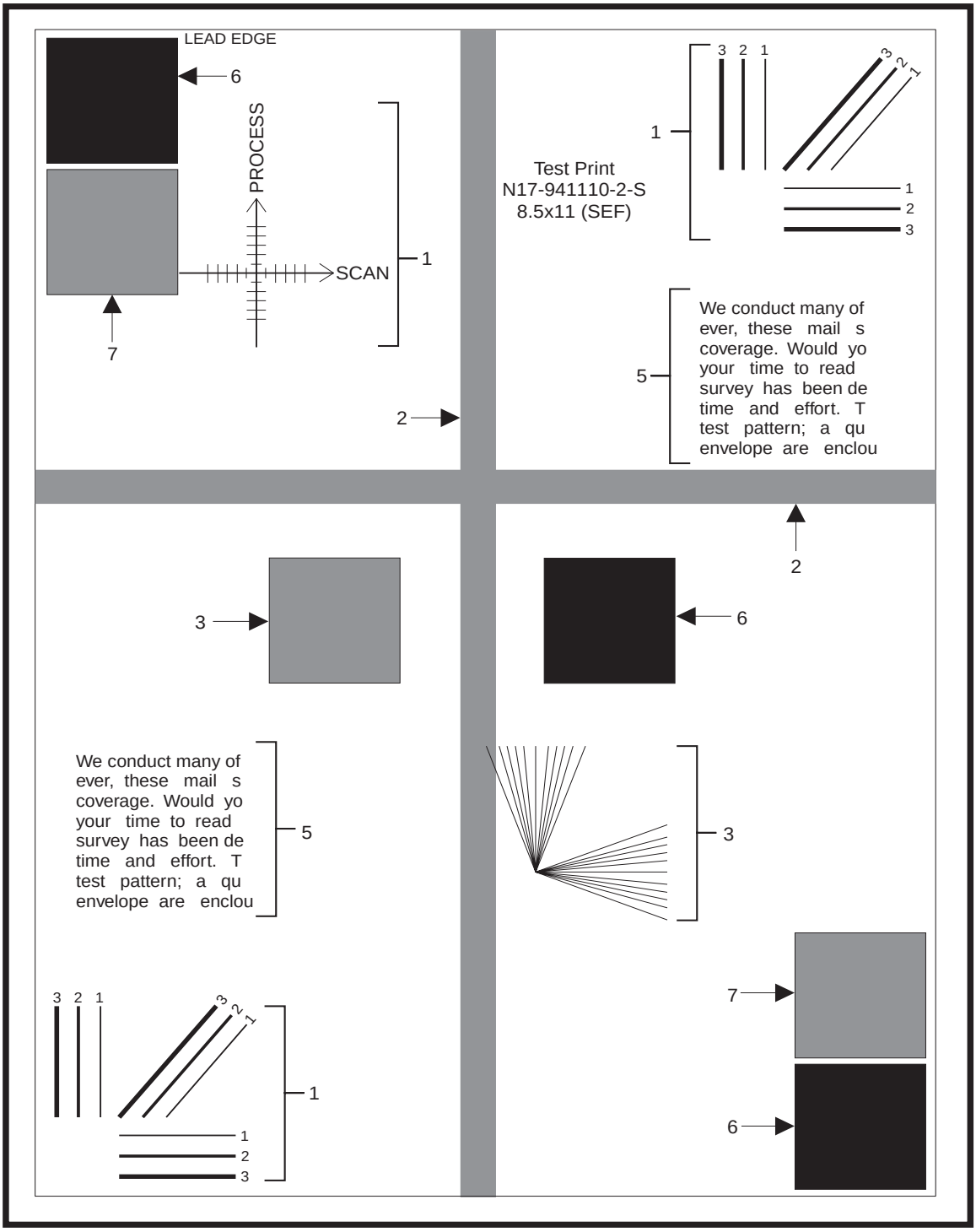
1. IOT Test Print (see Figure 5.2.2.1)
   - Measure 4mm from the top edge (lead edge) of the paper to the top edge of the IOT Test Print.
   - Measure 4mm from the left edge of the paper to the left edge of the IOT Test Print.

NOTE: The ideal registration should measure 4mm in both directions to properly register the test pattern on the page.

2. System Controller Test Print (see Figure 5.2.3.1.1)
   - Fold the top edge (lead edge) of the test print down to the top edge of the scan direction ladder chart. This folded edge should occur directly on the scan line of the Registration Target in order to center the scan direction registration. (See Figure 5.2.3.1.1).
   - Fold the left edge of the test print over to the left edge of the process direction ladder chart. This folded edge should occur directly on the process line of the Registration Target in order to center the process direction registration. (See Figure 5.2.3.1.1).

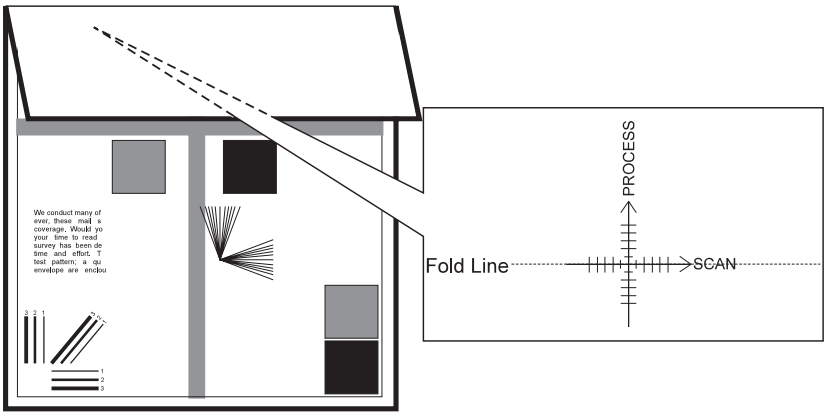
NOTE: The ideal registration for the System Controller Test Print is for the two fold lines (in the scan direction and in the process direction) to intersect at the center of the registration target.

Figure 5.2.3.1.1 System Controller Test Print



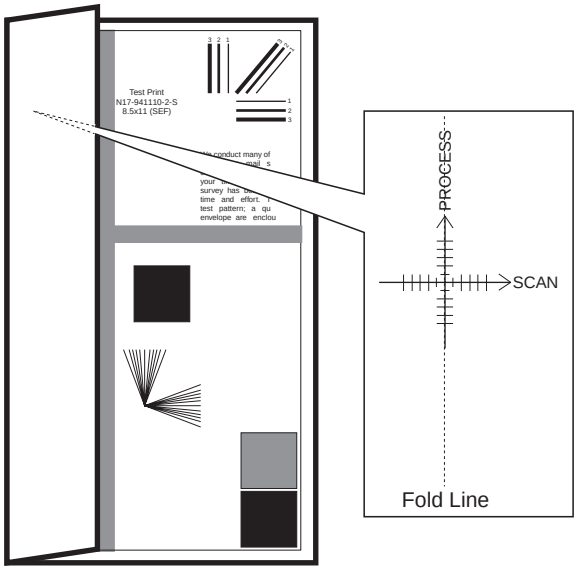
SAS1002

Figure 5.2.3.1.1 Lead Edge-to-Trail Edge Registration



1002a

Figure 5.2.3.1.1 Side-to-Side Registration



1002b

5.2.4 Print Engine Controller Test Print

There are three methods to produce a Print Engine Controller Test Print.

NOTE: The System Controller must be installed to enter diagnostics.

1. Enter Diagnostic Mode 2 and then press **ENTER.** The printer will continue to produce test prints until you press **ITEM UP (2)** to stop the test prints.
2. Enter Diagnostic Mode 3 and then press the **MENU UP (1)** or **MENU DOWN (5)** key until PRINT DENSITY ADJUSTMENT is displayed on the LCD. Press the **Enter** key to produce the test print. One Print Engine Controller test print is produced.
3. The following method bypasses the System Controller.

NOTE: The System Controller does not have to be in the printer for this method to produce a Print Engine Controller Test Print.

- Switch off the printer power.
- Short the two male pins of P/J35 on the Print Engine Controller.

NOTE: No damage is caused if the shorting tool comes into contact with the metal parts of the printer frame.

- Turn on the printer power.

NOTE: P/J35 is a white plug located directly above P/31, the Print Engine Controller-to-System Controller plug.

NOTE: Each time the two pins of P35 are momentarily shorted together, one Print Engine Controller Test Print is produced. However, if the pins are held shorted, the test pattern prints continuously.

5.2.5 System Controller Test Print

NOTE: The System Controller must be installed to produce System Controller test prints.

1. Press the **ONLINE** key to enter the Offline Mode.
2. Press **MENU UP (1)** or **MENU DOWN (5)** key to scroll through menu options until **MENUS/TEST MENU** is displayed.
3. Scroll with the **ITEM UP (2)** or **ITEM DOWN (6)** key until **TEST MENU/TEST PRINT** is displayed.
4. Press **ENTER**. **Processing... TEST** is displayed and the System Controller Test Print is produced.

5.3 Diagnostic Mode 2 Error and Status Codes

NOTE: These error codes may be displayed on the printer control panel if a fault condition is detected during Diagnostic Mode 2 operation when the print engine cannot access the normal system error messages. See 5.3.1 Error/Status Code Display Conditions, Printer Action, and Recovery Procedures for more detailed information on these status codes.

Table 5.3.0.1 Error and Status Code Table

Error/Status Code	Message Displayed on LCD	Description
U6	NV MEMORY FAIL	There is a problem in the Print Engine Controller Nonvolatile Memory (CPU).
U2	PRINTER FAULT U2: LASER FAIL	There is a problem in the Laser Assembly.
U4	PRINTER FAULT U4: FUSER FAIL	There is a problem in the Fuser.
U5	PRINTER FAULT U5: FAN FAIL	There is a problem in the Fan.
U1	PRINTER FAULT U1: MOTOR FAILURE	There is a problem in the Main Motor.
E11	PRINTER FAULT E11: T2/3 REMOVED	Paper Tray 2 or 3 is removed.
E9	PRINTER FAULT E9: OCT REMOVED	The OCT Unit is removed.
E5	PRINTER FAULT E5: CLOSE COVERS	An interlock switch is open (Front Cover or Rear Cover).
E8	PRINTER FAULT E8: ENV. REMOVED	The Envelope Feeder is not in place.
E7	PRINTER FAULT E7: DUP REMOVED	The Duplex Module is not in place.
E4	PRINTER FAULT E4: OPEN COVERS	There is a paper jam in the Exit Sensor area (Exit jam).
E3	PRINTER FAULT E3: OPEN COVERS	There is a paper jam between the Registration Sensor and the Exit sensor (Registration jam).
E2	PRINTER FAULT E2: OPEN COVERS	There is a paper jam between the current Feeder Assembly and the Registration Sensor (Misfeed jam).
E1	PRINTER FAULT E1: OPEN COVERS	There is a paper jam in the Duplex Module (Refeed jam).

Error/Status Code	Message Displayed on LCD	Description
E6	PRINTER FAULT E6: OPEN COVERS	There is a paper jam in the OCT Unit (OCT jam).
J3	PRINTER FAULT J3: EP CARTRIDGE	The EP Cartridge is not in place.
C3	PRINTER FAULT C3: (TRAY 1)	Tray 1 is not in place.
C3	PRINTER FAULT C3: (TRAY 2)	Tray 2 is not in place (in a printer with the optional lower 1 tray).
C3	PRINTER FAULT C3: (TRAY 3)	Tray 3 is not in place (in a printer with the optional lower 2 tray).
C5	PRINTER FAULT C5: (MBF)	Paper or envelope needs to be fed through the front tray, and printing is in the manual feed mode.
C5	PRINTER FAULT C5: FULL STACK	The Exit Tray is full.
C5	PRINTER FAULT C5: TRAY 1	Tray 1 is empty.
C5	PRINTER FAULT C5: TRAY 2	Tray 2 is empty (in a printer with the optional lower 1 tray).
C5	PRINTER FAULT C5: TRAY 3	Tray 3 is empty (in a printer with the optional lower 2 tray).
C5	PRINTER FAULT C5: MBF	The MBF is empty.
C5	PRINTER FAULT C5: ENVELOPE	The Envelope tray is empty.
	PRINTER FAULT PAPER SIZE ERROR	The paper size detected is different than the paper size setting in the Nonvolatile memory.
	FUSER LIFE EXP.	Fuser life count expires. Replace fuser.
J5	REPLACE PRINT CARTRIDGE * This message is displayed alternately with "READY TO PRINT" at five second intervals.	The EP Cartridge is near the end of its life, or the Toner is running low.

5.3.1 Error/Status Code Display Conditions, Printer Action, and Recovery Procedures

Table 5.3.1.1 Error/Status Code Display Conditions, Printer Action, and Recovery Procedures

Code	Display Conditions	Printer Action	Recovery Procedures
U6	1. A Nonvolatile Memory read error occurred when the printer power was switched on. 2. Nonvolatile Memory write error occurred during write to the Non-volatile Memory.	Immediately or after completing the current cycle when printing, the printer shuts down the Main Motor, Laser Motor, and the power supply to the Fuser.	Switch off the printer power, then back on again.
U2	1. The SOS signal intervals are longer than the set READY interval after 20 seconds from the start of Laser warm up. (Warm up Failure) 2. The actual LD output is lower than the LD power setting. 3. The SOS signal intervals become longer than the set Fail interval after the Laser warm up is completed.	Immediately or after completing the current cycle when printing, the printer shuts down the Main Motor, Laser Motor, and the power supply to the Fuser.	Switch off the printer power, then back on again.
U4	1. The Fuser warm up does not finish within 80 seconds. 2. The Fuser temperature becomes lower than the set LOW Trouble temperature after the Fuser warm up is completed. 3. The Fuser temperature rises higher than the set HIGH Trouble temperature after the Fuser warm up is completed. 4. Discontinuity is detected in the Thermistor circuit of the Heater Assembly. 5. The power supply to the Heater Quartz continues for 10 or more seconds while the Main Motor is stopping after the Fuser warm up is completed. (S.T.S Failure) * When the software is overrun, or removed, the printer is reset by the watch dog timer.	Immediately or after completing the current cycle when printing, the printer shuts down the Main Motor, Laser Motor, and the power supply to the Fuser.	Switch off the printer power, then back on again.

Code	Display Conditions	Printer Action	Recovery Procedures
U5	The FAN ALM (Fan Alarm) signal becomes active (High) after a specified period of time from the printer power being switched on. * The active (High) state of the FAN ALM signal indicates that the Fan Motor is stopping.	Immediately or after completing the current cycle when printing, the printer shuts down the Main Motor, Laser Motor, and the power supply to the Fuser.	Switch off the printer power, then switch it back on again.
U1	The MOT ALM (Main Motor Alarm) signal becomes active (High) after 50 milliseconds from the printer power being switched on.	Immediately or after completing the current cycle when printing, the printer shuts down the Main Motor, Laser Motor, and the power supply to the Fuser.	Switch off the printer power, then switch it back on again.
E11	Tray 2 or 3 is removed after the printer power is switched on.	The printer immediately shuts down the Main Motor, Laser Motor, and the power supply to the Fuser.	Reinstall the removed tray.
E9	The OCT Unit is removed while it is selected.	The printer immediately shuts down the Main Motor, Laser Motor, and the power supply to the Fuser.	Reinstall the OCT.
E5	An Interlock Switch opens. * The Front or Rear Cover is opened.	The printer immediately shuts down the Main Motor, Laser Motor, and the power supply to the Fuser.	Close the open cover.
E8	The Envelope Feeder is removed while it is selected.	The printer immediately shuts down the Main Motor, Laser Motor, and the power supply to the Fuser.	Reinstall the Envelope Feeder.
E7	The Duplex Module is removed while the Duplex Print Mode is selected.	The printer immediately shuts down the Main Motor, Laser Motor, and the power supply to the Fuser.	Open the Rear Cover, reinstall the Duplex Module, and close the Rear Cover.

Code	Display Conditions	Printer Action	Recovery Procedures
E4	1. The Exit Sensor is not deactuated in the specified time after the actuation of the Registration Sensor. 2. The Exit Sensor is being actuated when the printer is switched on. 3. The Exit Sensor is being actuated when an Interlock Switch is closed. 4. The Exit Sensor is actuated during an Erase Cycle.	The printer immediately shuts down the Main Motor, Laser Motor, and the power supply to the Fuser. When the actual paper length is greater than the paper length detected, however, the printer ejects the paper and then stops the Main Motor.	Open the Front or Rear Cover, remove the jamming paper, then close the cover.
E3	The Exit Sensor is not actuated within the specified time after the actuation of the Registration Sensor.	The printer immediately shuts down the Main Motor, Laser Motor, and the power supply to the Fuser. When the actual paper length is greater than the paper length detected, however, the printer ejects the paper and then stops the Main Motor.	Open the Front or Rear Cover, remove the jamming paper, then close the cover.
E2	1. The Registration Sensor is actuated before the specified time after the actuation of the Feed Roll Clutch (Too Soon Jam). 2. The Registration Sensor is not actuated within the specified time after the actuation of the Feed Roll Clutch (Misfed Jam). 3. The Registration Sensor is being actuated when the printer is switched on. 4. The Registration Sensor is being actuated when an interlock switch is closed. 5. The Registration Sensor is actuated during an Erase cycle.	For the first sheet of paper, the printer immediately shuts down the Main Motor, Laser Motor, and the power supply to the Fuser. For the second and following sheet of paper, the printer complete the current print cycle and then shuts down the Main Motor, Laser Motor, and the power supply to the Fuser.	Open the Front or Rear Cover, remove the jamming paper, then close the cover.

Code	Display Conditions	Printer Action	Recovery Procedures
E1	1. The Duplex Sensor is not actuated within the specified time after the actuation of the Exit Sensor (Duplex Jam). 2. The Duplex Sensor is not deactuated within the specified time after its actuation (Duplex Jam). 3. The Duplex Sensor is being actuated when an interlock switch is closed. 4. The Duplex Sensor is being actuated when an interlock switch is closed. 5. The Duplex Sensor is actuated during an Erase cycle.	The printer immediately shuts down the Main Motor, Laser Motor, and the power supply to the Fuser.	Open the Rear Cover, remove the jamming paper, then close the cover.
E6	1. The OCT Sensor is not actuated within the specified time after the actuation of the Exit Sensor (OCT Jam). 2. The OCT Sensor is not deactuated within the specified time after its actuation (OCT Jam). 3. The OCT Sensor is being actuated when an interlock switch is closed. 4. The OCT Sensor is being actuated when an interlock switch is closed. 5. The OCT Sensor is actuated during an Erase cycle.	The printer immediately shuts down the Main Motor, Laser Motor, and the power supply to the Fuser.	Open the Rear Cover, remove the jamming paper, then close the cover.
J3	The EP Cartridge switch becomes open.	The printer immediately shuts down the Main Motor, Laser Motor, and the power supply to the Fuser.	Install an EP Cartridge.
C3	1. Tray 1 is not in place (in a standard printer). 2. Tray 2 is not in place (with the optional lower 1 tray). 3. Tray 3 is not in place (with the optional lower 2 tray).	The printer immediately stops the Main Motor and Laser Motor.	Insert the tray.
C5	1. The selected paper feeder is out of paper. 2. The Exit Tray is full. (The Full Stack Sensor is actuated.)	The printer completes the current print cycle.	1. Supply the paper feeder with paper, or select another paper feeder. 2. Take the prints out of the tray.

Code	Display Conditions	Printer Action	Recovery Procedures
PAPER SIZE ERROR	The actual paper size is different from the paper size detected or set in the Nonvolatile memory.	In Ready Mode, the printer completes the current print cycle. In Offline Mode, the printer competes the current print cycle and is immediately ready to print.	Send the RESET MISPRINT command to solve the PAPER SIZE MISMATCH state.
J5	The printer made ten prints since the Toner Empty Sensor is actuated.	Display of warning message only (Intermittent Display)	Replace the EP Cartridge with a new one.

This page intentionally left

5.4 Service Cleaning Procedure

Proper diagnosis of printer problems requires that the printer be cleaned before troubleshooting begins. This section directs you in performing the cleaning and preliminary checkout procedures.

5.4.1 Preparation Procedure

1. Switch off the printer power.
2. Disconnect the power cord from the AC outlet.
3. Open the Front Cover.
4. Remove the EP Cartridge and store it in a safe, dark place.
5. During the cleaning procedure, check for foreign objects, such as staples, paper clips, etc., in the printer. Also check for other problems, such as damaged or crimped wires, loose connectors or terminals, and worn or damaged parts.

5.4.2 Paper Path Cleaning Procedure

1. Remove the Transport Chute Assembly. Use a brush to clean the Detack Saw.
2. Check the paper path and the rollers along the path for the presence of foreign object. Remove any objects found, then use a brush or dry cloth to clean the paper path and the rollers.

NOTE: Do not use the brush on the BTR surface. If the surface is heavily contaminated, use a vacuum cleaner to clean the surface.

NOTE: For heavy contamination, use a damp cloth (water or cleaning solvent) to clean the rollers. Dry them with a clean cloth.

3. Remove the Top Cover. Use a brush to clean the Fan and the Top Cover portion around the Fan Exhaust.

NOTE: Suffocated exhaust area may cause an overheat of the printer interior.

4. Run a few test prints again to check for proper printer operation and print quality.

5.5 Printer Data and Tag Information

5.5.1 Printer Data Labels

The printer serial number, data label, and retrofit (change) tag matrix are located on the printer as illustrated in Figure 5.5.1.1 and Figure 5.5.1.2.

Figure 5.5.1.1 Printer Tag Matrix

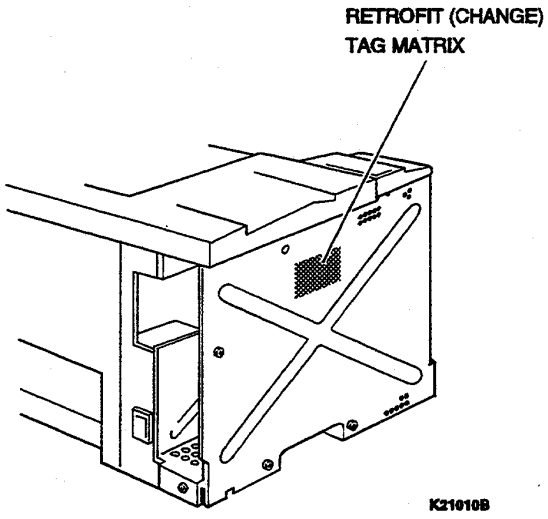
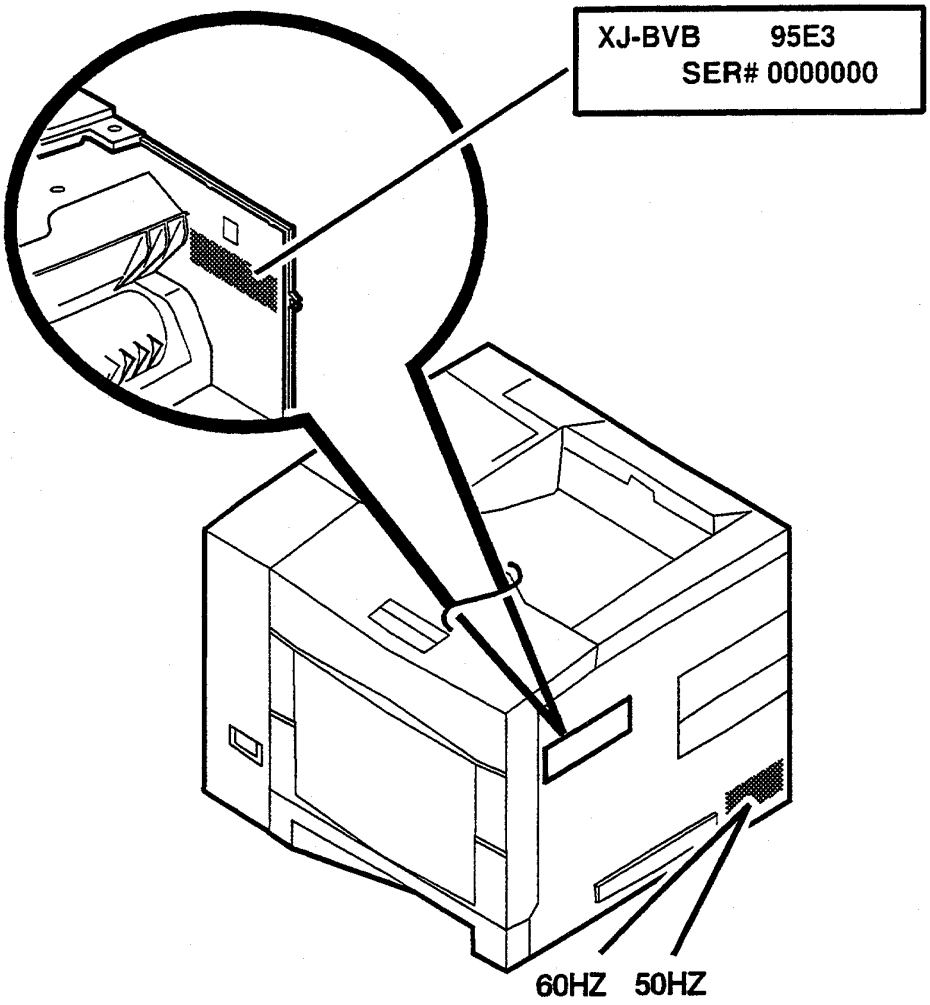


Figure 5.5.1.2 Printer Data Label and Serial Number Plate



Section 6

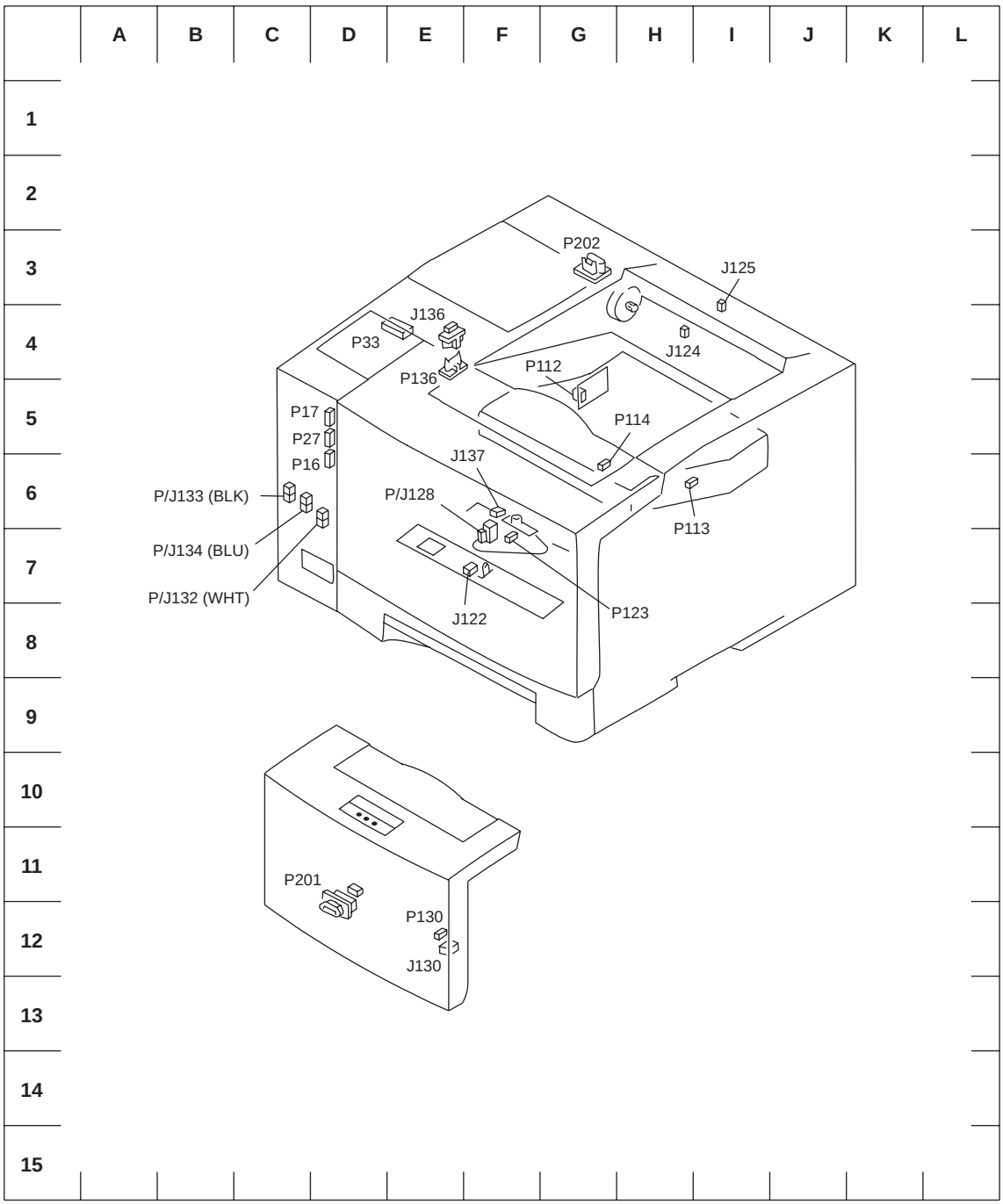
Wiring Data

Wiring Diagrams 6-3
Base Engine Connector Locators 6-3
Base Engine PWB Connector Locators 6-4
HVPS Connector Locators 6-5
P/J Table 6-6

Wiring 6-10
General Wiring Diagram 6-10
Wiring for Connection between Components 6-11
Organization 6-11
Wiring Diagram Notation 6-12
Connection and Wiring between Components 6-14

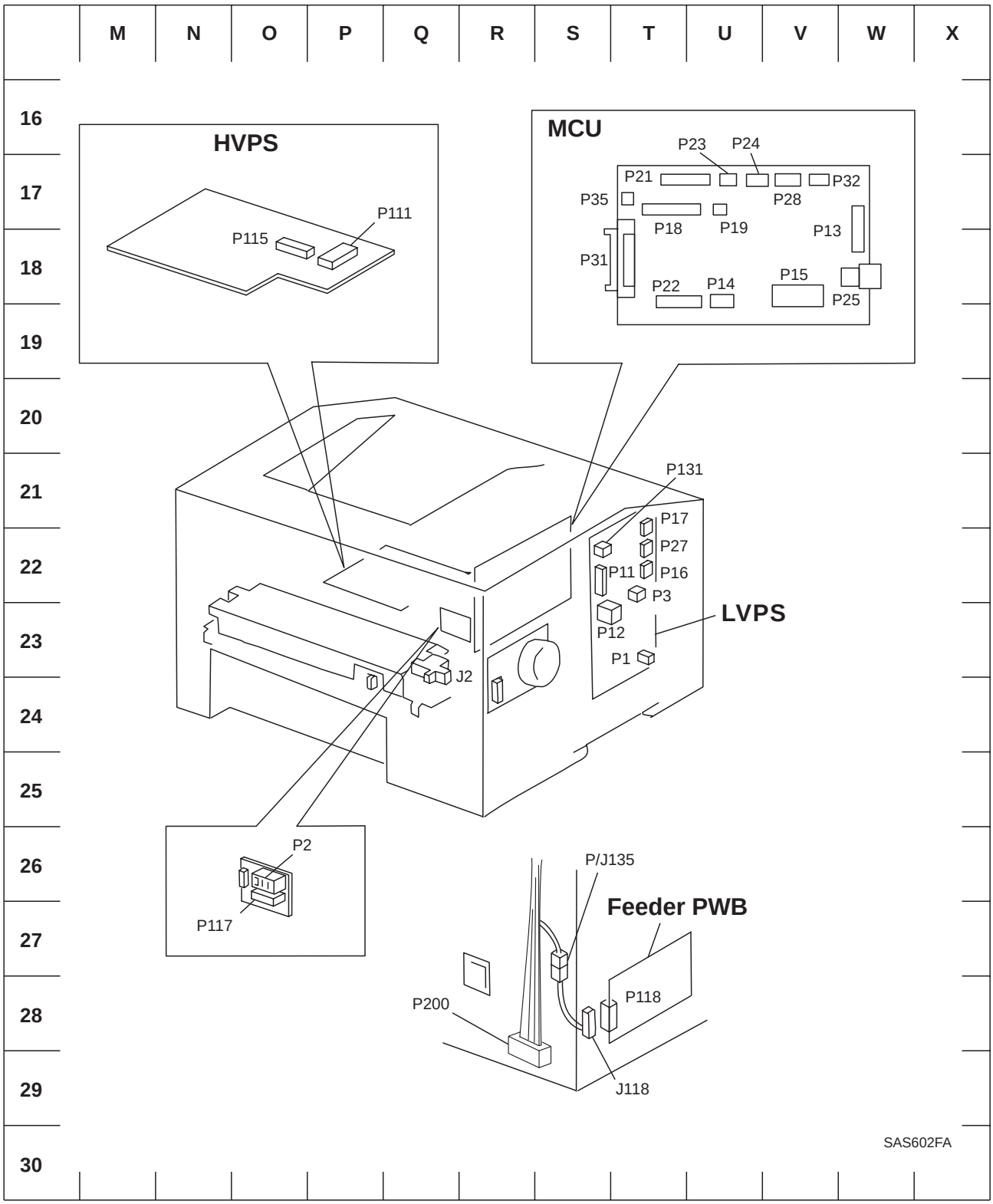
6.1 Wiring Diagrams

6.1.1 Base Engine Connector Locators

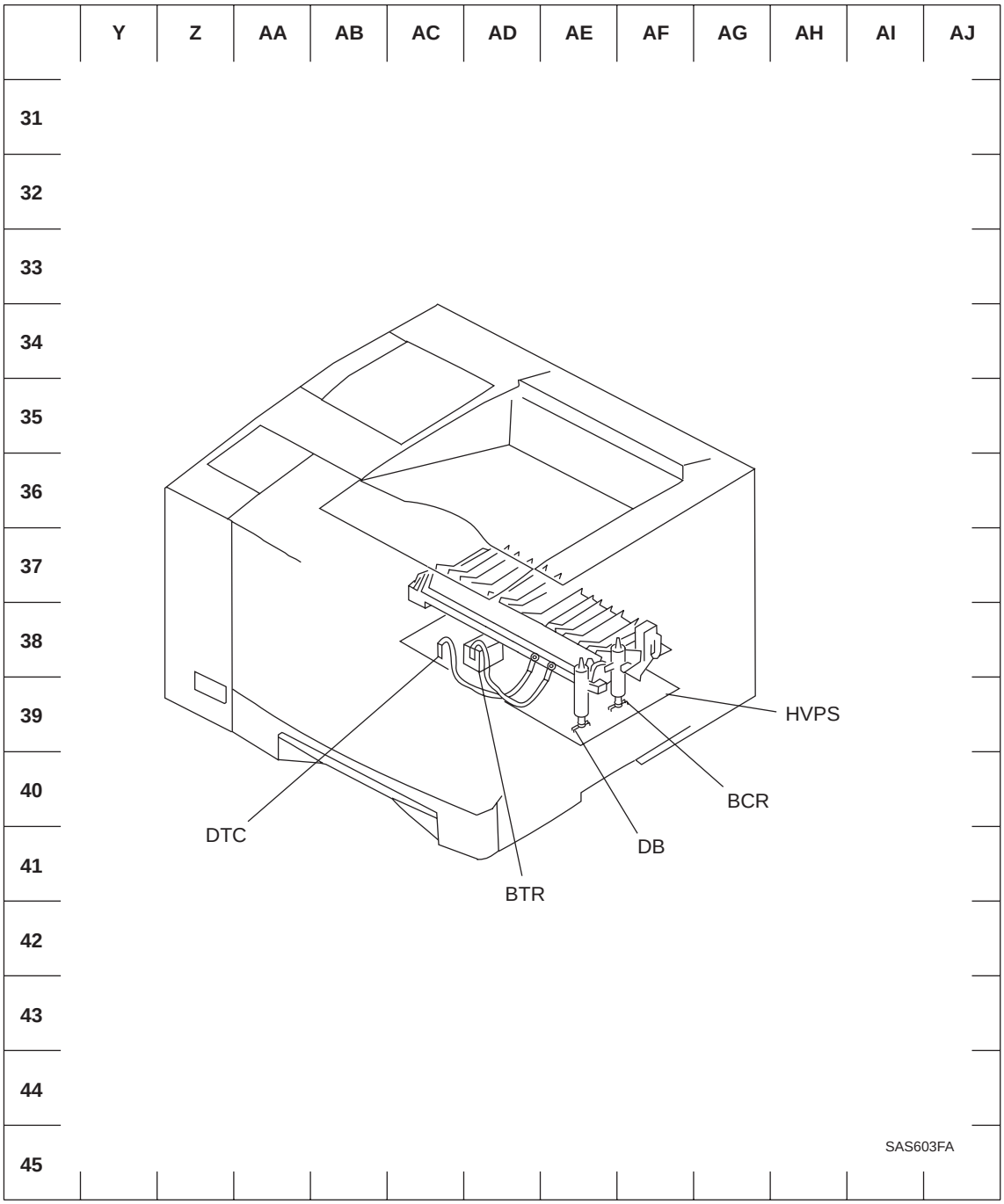


SAS601FA

6.1.2 Base Engine PWB Connector Locators



6.1.3 HVPS Connector Locators



6.1.4 P/J Table

P/J	Coordinates	Mounting (1*)		Harness (2*)		Description
		Mounting Part	PL	Name (*3)	PL	
1	T23	LVPS	11-1	@Inlet Assembly	11-23	Connection between LVPS and Main Switch
2	Q26 Q23	P2:Fuser PWB J2:Fuser Unit	11-4 7-1	No harness	-	Connection between Fuser PWB and Fuser Unit
3	T22	LVPS	11-1	@Fuser PWB	11-4	Connection between LVPS and Fuser PWB
11	S22	MCU	11-2	@LVPS	11-1	Connection between MCU and LVPS
12	S22	MCU	11-2	@LVPS	11-1	Connection between MCU and LVPS
13	W17	MCU	11-2	@LVPS	11-1	Connection between MCU and LVPS
14	U18	MCU	11-2	@Main Motor	9-12	Connection between MCU and Main Motor
15	V18	MCU	11-2	Harness Assembly HVPS	11-8	Connection between MCU and HVPS.
16	D6 T22	LVPS	11-1	Harness Assembly Env.	5-1	Connection between LVPS and Harness Assembly ENV, Front
17	D5 T21	LVPS	11-1	Harness Assembly P/H	5-21	Connection between LVPS and No Paper MBF sensor, Registration Sensor, and No Toner Sensor
18	T17	MCU	11-2	Harness Assembly Laser	11-11	Connection between MCU and LDD (laser) and Scanner (laser)
19	U17	MCU	11-2	Harness Assembly SOS	11-9	Connection between MCU and SOS
21	T17	MCU	11-2	Harness Assembly OCT	11-10	Connection between MCU and OCT
22	T18	MCU	11-2	Harness Assembly Tray	11-12	Connection between MCU and Deck2
23	U17	MCU	11-2	@Fan Assembly	10-3	Connection between MCU and Fan
24	U17	MCU	11-2	@Motor Assembly Step Exit	8-11	Connection between MCU and Exit Motor
25	W18	MCU	11-2	@LVPS	11-1	Connection between MCU and LVPS
27	D5 T22	LVPS	11-1	Harness Assembly Feed	11-18	Connection between LVPS and P/J132 (Feed Sol 1), P/J 133 (Turn Clutch), and P/J134 (MBF Sol)
28	V17	MCU	11-2	Harness Assembly Exit	8-22	Connection between MCU and Full Stack Sensor and Rear Cover Interlock
31	S18	MCU	11-2	No harness	-	Connection between MCU and Controller
32	V17	MCU	11-2	Harness Assembly Panel	10-4	Connection between MCU and Control Panel

(*1) PL in the “Mounting” column indicates the corresponding Parts List and Item number in Section 3.

(*2) PL in the “Harness” column indicates the corresponding Parts List and Item number in Section 3.

(*3) @ at the beginning of the harness name indicates that the harness is a part of the component.

6.1.5 P/J Table

P/J	Coordi-nates	Mounting (1*)		Harness (2*)		Description
		Mounting Part	PL	Name (*3)	PL	
33	E4	Control Panel Assembly	10-1	Harness Assembly Panel	10-4	Connection between Control Panel and MCU
35	T17	MCU	11-2	No harness	-	For printing test
111	P18	HVPS	11-3	Harness Assembly HVPS	11-8	Connection between HVPS and MCU
112	G5	LDD (laser)	9-14	Harness Assembly Laser	11-11	Connection between LDD (laser) and MCU
113	H6	SOS (laser)	9-14	Harness Assembly SOS	11-9	Connection between SOS (laser) and MCU
114	G6	Scanner (laser)	9-14	Harness Assembly Laser	11-11	Connection between Scanner (laser) and MCU
115	O18	HVPS	11-3	@Fuser PWB	11-4	Connection between HVPS and Fuser PWB
117	O27	Fuser PWB	11-4	No harness	-	Connection between Fuser PWB and Duplex Unit
118	S28	Size Sensor Assembly	3-1	Harness Assembly Size	3-2	Connection between Feeder PWB and MCU
122	F7	MBF Chute Assembly	5-2	Harness Assembly P/H	5-21	Connection between No Paper MBF Sensor and LVPS
123	F7	MBF Chute Assembly	5-2	Harness Assembly P/H	5-21	Connection between Registration Sensor and LVPS
124	H4	Exit Assem-bly	8-6	Harness Assembly Exit	8-22	Connection between Rear Cover Interlock and MCU
125	I4	Top Cover	8-1	Harness Assembly Exit	8-22	Connection between Full Stack Sensor and MCU
128	F7	Bottom Chute	5-14	P: Toner Sensor Harness Assembly J: Harness Assembly P/H	5-22 5-21	Connection between Toner Sensor and LVPS
130	E12	Front Cover Assembly	2-1	P: Harness Assembly Env. Front J: Harness Assembly Env.	2-9 5-15	Relay between Envelope Feeder Unit and LVPS

(*1) PL in the “Mounting” column indicates the corresponding Parts List and Item number in Section 3.

(*2) PL in the “Harness” column indicates the corresponding Parts List and Item number in Section 3.

(*3) @ at the beginning of the harness name indicates that the harness is a part of the component.

6.1.6 P/J Table

P/J	Coordi-nates	Mounting (1*)		Harness (2*)		Description
		Mounting Part	PL	Name (*3)	PL	
131	S22	LVPS	11-1	Harness Assembly top	11-21	Connection between Top Cover Interlock and LVPS
132	D6	Chassis Assembly on Elec. Box front panel	11-(*4)	P: Harness Assembly Feed	11-18	Connection between Feed Solenoid 1 and LVPS
133	C6	Chassis Assembly on Elec. Box front panel	11-(*4)	P: Harness Assembly Feed	11-18	Connection between Turn Clutch and LVPS
134	C6	Chassis Assembly on Elec. Box front panel	11-(*4)	P: Harness Assembly Feed	11-18	Connection of MBF Solenoid
135	S27	Below MCU and above Inlet	11-(*5)	P: Harness Assembly Tray J: Harness Assembly Size	11-12 3-2	Relay of connection between Feeder PWB and MCU
136	E4 E5	P: Top Cover J: Frame (above LVPS)	10-(*6) 11-(*7)	P: Connector Assembly Cover Top J: Harness Assembly Top	10-6 11-21	Connection between Top Cover Interlock and LVPS
137	F6	Bottom Chute	5-14	Toner Sensor Harness Assembly	5-22	Connection between Toner Sensor and LVPS
200	R29	Frame (below MCU and above Inlet)	11-(*5)	Harness Assembly Tray	11-12	Connection between Deck 2 and MCU
201	D12	Front Cover Assembly	2-1	P: Harness Assembly Env. Front	2-9	Connection between Envelope Feeder and LVPS
202	G3	Frame	11-(*8)	Harness Assembly OCT	11-10	Connection between the OCT PWB and the MCU

(*1) PL in the “Mounting” column indicates the corresponding Parts List and Item number in Section 3.

(*2) PL in the “Harness” column indicates the corresponding Parts List and Item number in Section 3.

(*3) @ at the beginning of the harness name indicates that the harness is a part of the component.

(*4) Between the two clamps above the Power Switch

(*5) Beside the Inlet

(*6) Top Cover Connector Assembly is not detachable and is not listed in PL10.

(*7) On the LVPS

(*8) Secured together with Spring Earth Motor (PL11-22)

6.1.7 P/J Table

P/J	Coordi-nates	Mounting (1*)		Harness (2*)		Description
		Mounting Part	PL	Name (*3)	PL	
DTC	AC38	HVPS	11-3	Wire Assembly TDC (@HVPS)	11-3	Connection between HVPS and Transfer Chute Assembly
BTR	AD38	HVPS	11-3	Wire Assembly BTR (@HVPS)	11-3	Connection between HVPS and Transfer Chute Assembly
DB	AE39	HVPS	11-3	Spring DB (@Trans Chute Assembly (*4))	6-1	Connection between HVPS and Spring DB of Trans Chute Assembly by contact
BCR	AF39	HVPS	11-3	Spring BTR (@Trans Chute Assembly (*4))	6-1	Connection between HVPS and Spring DB of Trans Chute Assembly by contact

(*1) PL in the “Mounting” column indicates the corresponding Parts List and Item number in Section 3.

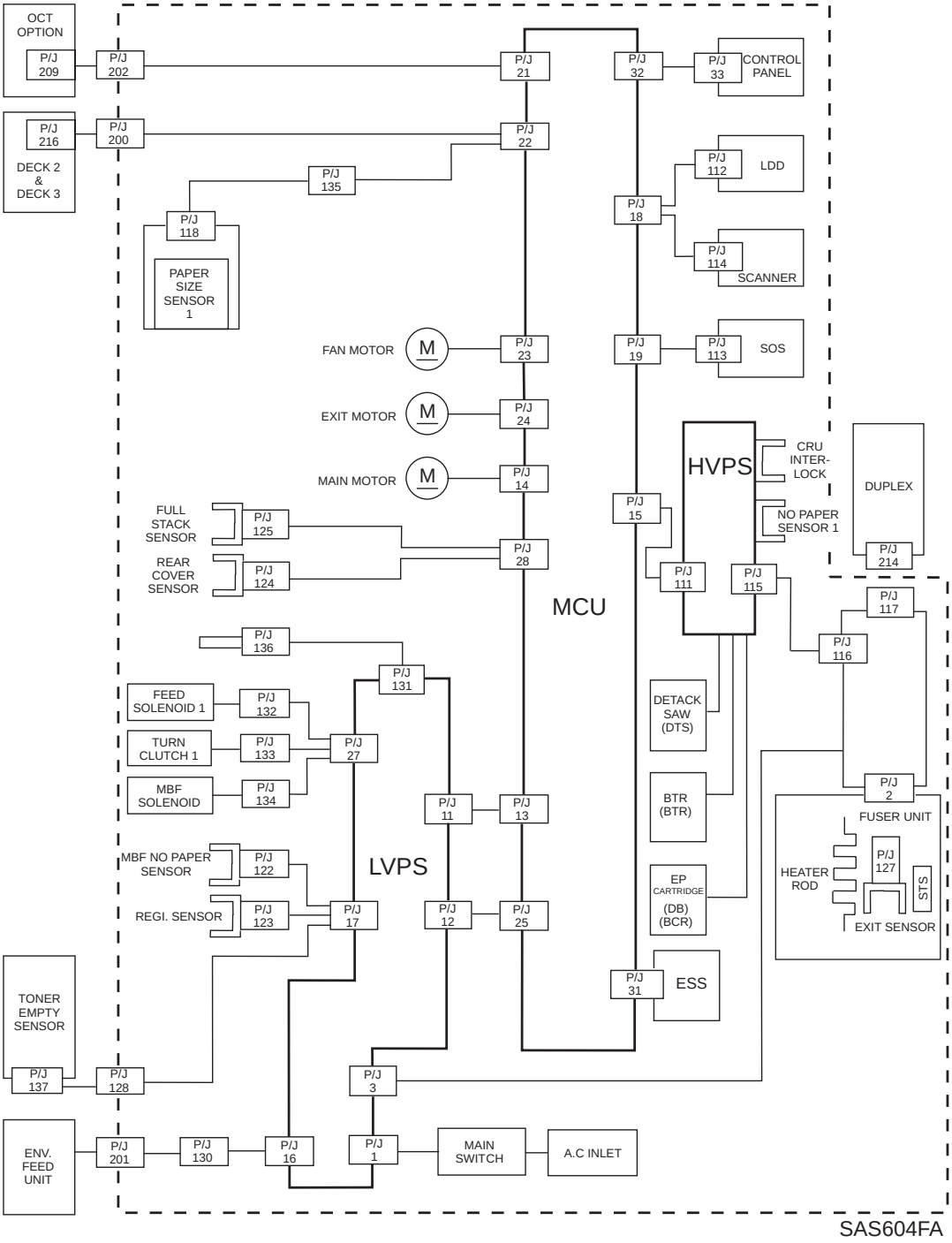
(*2) PL in the “Harness” column indicates the corresponding Parts List and Item number in Section 3.

(*3) @ at the beginning of the harness name indicates that the harness is a part of the component.

(*4) Wires are not used for connection. Connection is established by contact with the Spring.

6.2 Wiring

6.2.1 General Wiring Diagram



6.2.2 Wiring for Connection between Components

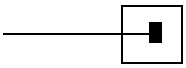
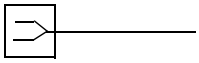
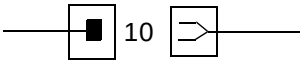
6.2.2.1 Organization

The general connection and wiring diagram is divided into the following 19 blocks and the wiring and signals between the components in each blocks are described.

1. LVPS ↔ MCU
2. LVPS ↔ Feed Solenoid 1, Turn Clutch, and MBF Feed Solenoid
3. LVPS ↔ MBF No Paper Sensor, Registration Sensor, and Toner Empty Sensor
4. LVPS ↔ Envelope Feeder Unit
5. MCU HVPS
6. HVPS EP Cartridge, Bias Transfer Roll, Detack Saw
7. HVPS ↔ Fuser PWB
8. Fuser PWB ↔ Fuser Unit
9. Fuser PWB ↔ Duplex PWB ↔ Duplex Motor and Feeder Sensor
10. MCU ↔ LDD and Scanner Motor
11. MCU ↔ SOS
12. MCU ↔ Control Panel
13. MCU ↔ Main Motor
14. MCU ↔ Fan Motor
15. MCU ↔ Exit Motor
16. MCU ↔ Full Stack Sensor and Rear Cover Sensor
17. MCU ↔ Deck1 PWB ↔ Deck2 PWB ↔ Deck3 PWB
18. OCT PWA ↔ OCT Stack Sensor, OCT Home Sensor, OCT Direct Solenoid, OCT Motor, and OCT Offset Motor
19. MCU ↔ ESS and LVPS ↔ ESS

This page intentionally blank.

6.2.2.2 Wiring Diagram Notation

Notation/Symbol	Description
	Represents a plug.
	Represents a jack.
P/J11  10	Represents the connection of Pin 10 of connectors P11 and J11.
5V INTLK	Shows the signal name of the wire.
/HEAT ON	A "/" at the beginning of the signal name indicates that the signal is a negative logic signal and true when it is Low.
5VDC	Shows the DC voltage measured with the negative probe of a meter connected to the SG.
SG, FG, RTN	SG: Signal Ground FG: Frame Ground RTN: Return line. There is a continuity between the Signal Ground and the RTN line. There are two types of machine with or without a continuity between the Signal Ground and Frame Ground according to the specifications.

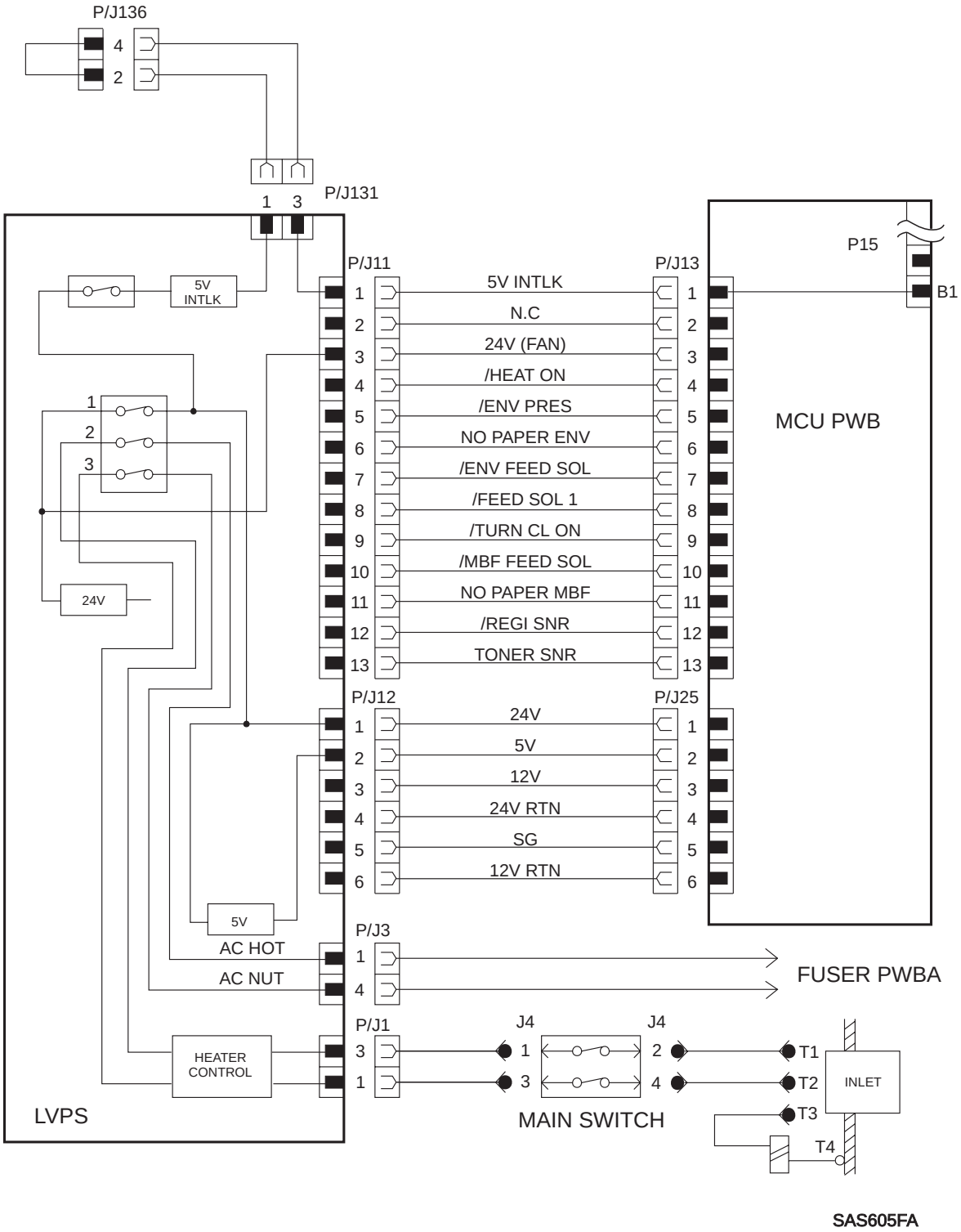
NOTE: "TTL" in the "HIGH Level" and "LOW Level" columns of the signal tables indicates that the signal is TTL_CMOS compatible. The HIGH and LOW levels of a TTL signal are as below.

HIGH level: 4 to 5 volts

LOW level: 0 to 0.8 volts

6.2.3 Connection and Wiring between Components

1. LVPS ↔ MCU (XC SPECIFICATIONS)



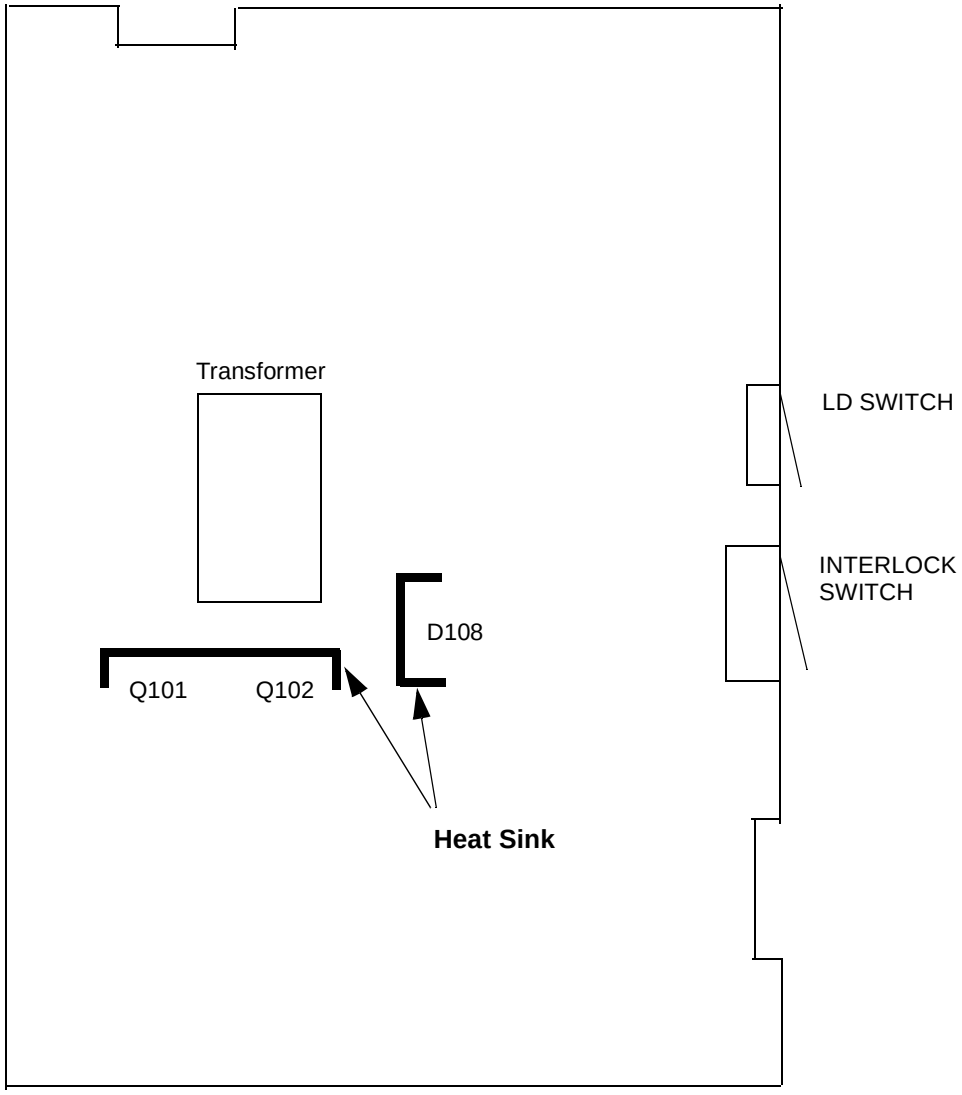
1. LVPS ↔ MCU (XC SPECIFICATIONS)

P11	P13	Signal Name	Signal Direction L: LVPS, M:MCU	Trigger	HIGH Level	LOW Level
1	1	5V INTLK	L → M	-	+5V	0V
3	3	24V (FAN)	L → M	-	+24V	0V
4	4	HEAT ON	L← M	Level	TTL	TTL
5	5	EVN PRES	L → M	Level	TTL	TTL
6	6	NO PAPER ENV	L → M	Level	TTL	TTL
7	7	ENV FEED SOL	L ← M	Level	+24V	0V
8	8	FEED SOL 1	L ← M	Level	+24V	0V
9	9	TURN CL ON	L ← M	Level	+24V	0V
10	10	MBF FEED SOL	L ← M	Level	24V	0V
11	11	NO PAPER MBF	L → M	Level	TTL	TTL
12	12	REGI SNR	L → M	Level	TTL	TTL
13	13	TONER SNR	L → M	Level	TTL	TTL

This page intentionally blank.

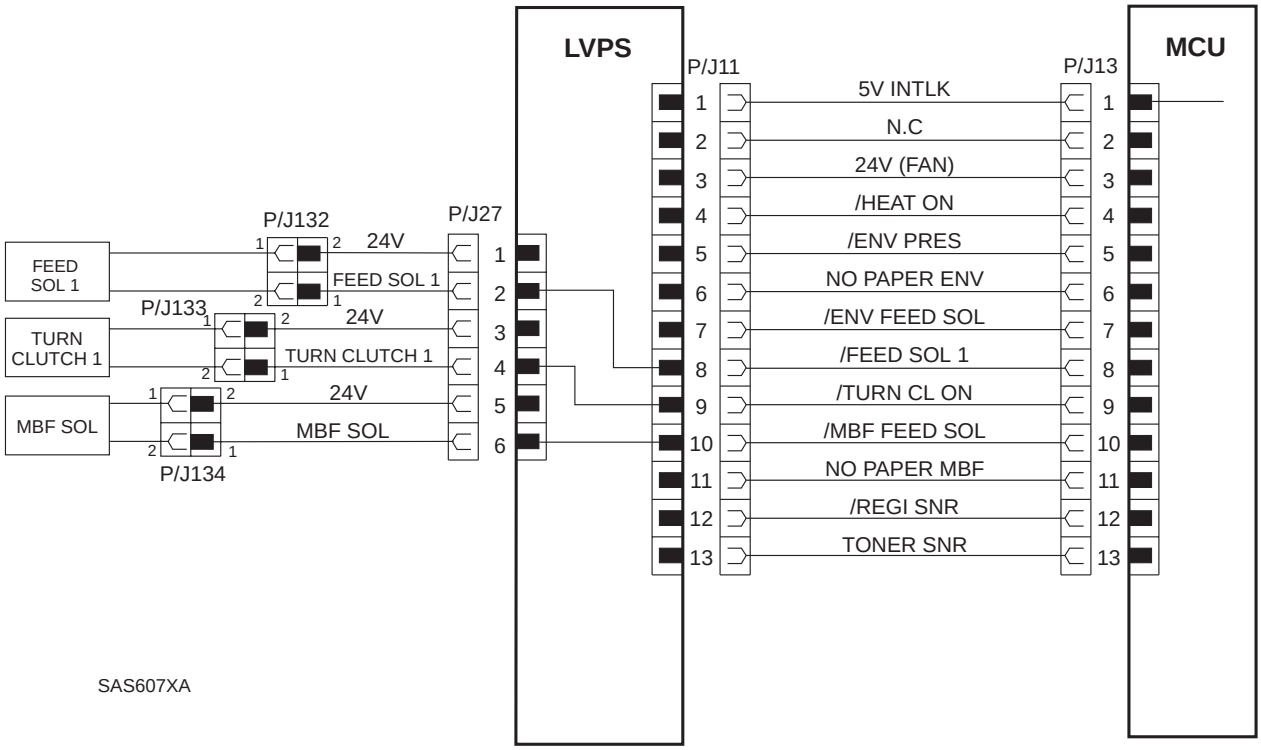
1. LVPS ↔ MCU (XC SPECIFICATIONS)

WARNING! You can be shocked by electricity if you simultaneously touch the two Heat Sinks shown in the Figure below.



LVPS

2. LVPS ↔ FEED SOLENOID 1, TURN CLUTCH, AND MBF SOLENOID



2. LVPS ↔ FEED SOLENOID 1, TURN CLUTCH, AND MBF SOLENOID

Signal Name	Description
FEED SOL1	Signal to actuate the Feed Solenoid which feeds paper on Tray 1 (Normally LOW level, and HIGH level when paper is fed)
TURN CLUTCH1	Signal to make paper wait before the Registration Sensor (Normally LOW level, and HIGH level when making paper wait)
MBF SOL	Signal to actuate the Feed Solenoid which feeds paper on MB (Normally LOW level, and HIGH level when paper is fed)

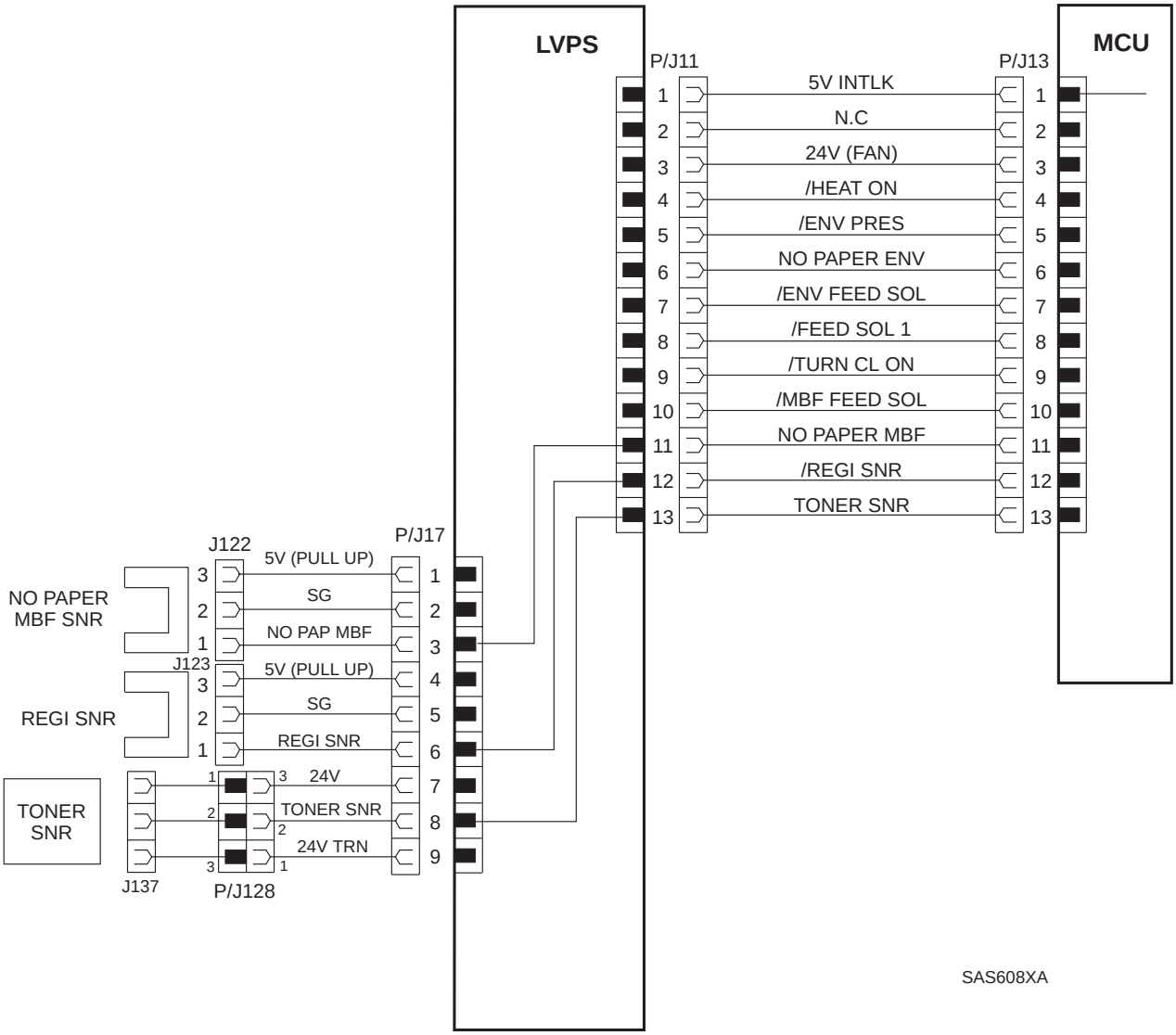
P13X	P13	Signal Name	Signal Direction S:SNR/SOL L:LVPS	Trigger	HIGH Level	LOW Level
P132-1	2	FEED SOL1	S ← L	Level	+24V	0V
P133-1	4	TURN CLUTCH1	S ← L	Level	+24V	0V
P134-1	6	MBF SOL	S ← L	Level	+24V	0V

P11	P13	Signal Name	Signal Direction M:MCU L:LVPS	Trigger	HIGH Level	LOW Level
8	8	/FEED SOL1	L ← M	Level	+24V	0V
9	9	/TURN CL ON	L ← M	Level	+24V	0V
10	10	/MBF FEED SOL	L ← M	Level	+24V	0V

Resistance of the Solenoids

Solenoid	Resistance (Ambient Temperature: 20 ^{O}C)
Feed Solenoid	96 Ω ± 10%
Turn Solenoid (Turn Clutch1)	250 Ω ± 10%
MBF Solenoid	96 Ω ± 10%

3. LVPS ↔ MBF NO PAPER SENSOR, REGISTRATION SENSOR, AND TONER EMPTY SENSOR



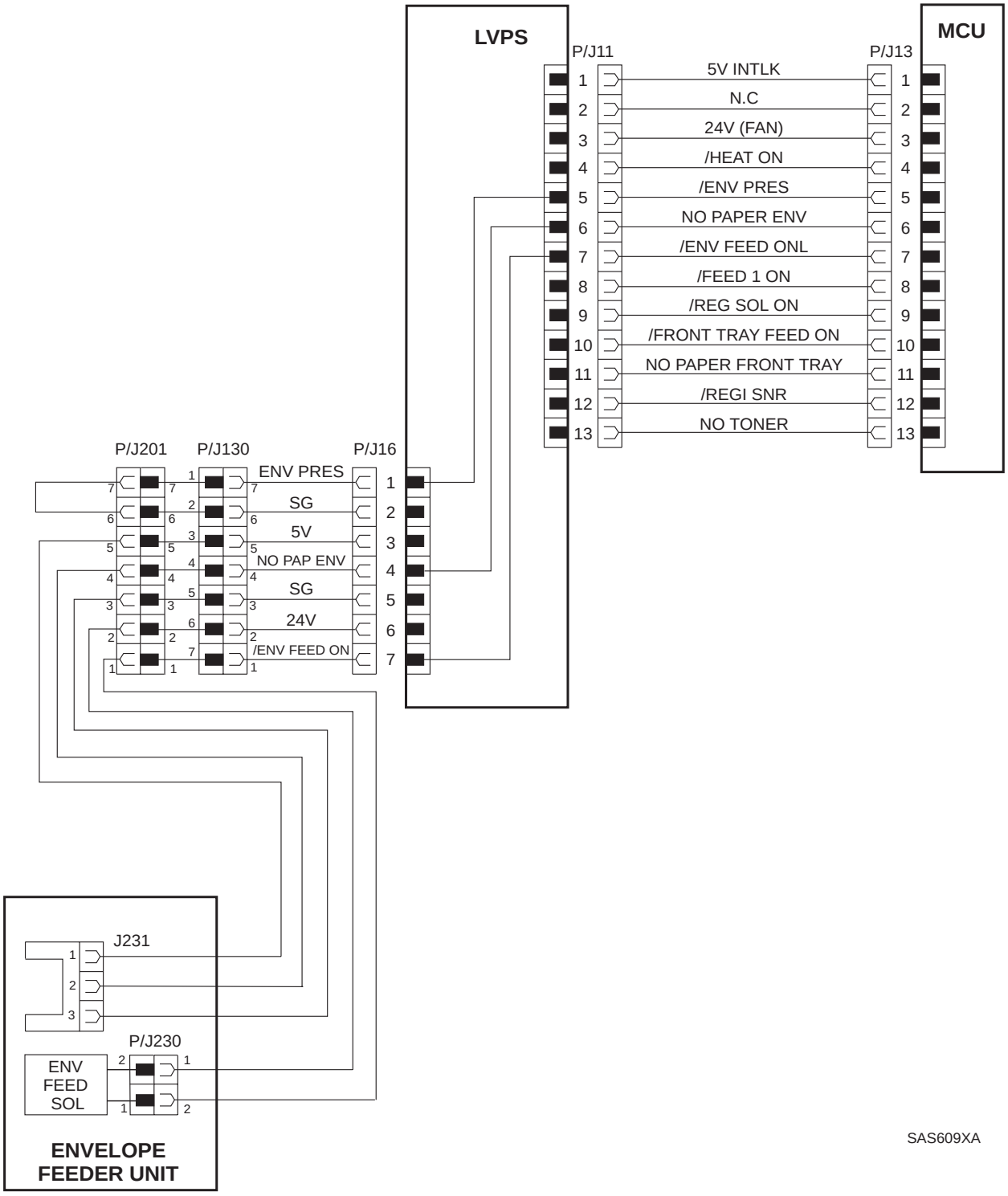
3. LVPS ↔ MBF NO PAPER SENSOR, REGISTRATION SENSOR, AND TONER EMPTY SENSOR

Signal Name	Description
NO PAP MBF	Signal for detecting the presence or absence of paper on the MBF (LOW level when paper is present and HIGH level when paper is not present)
REGI SNR	Signal for detecting the arrival of paper at the Registration Sensor in the P/H section (LOW level when paper is at the sensor, and HIGH level when no paper is at the sensor)
TONER SNR	Signal for monitoring the toner level in the CRU (LOW level when the toner is available, and HIGH level when the Cartridge is empty)

P12X	P13	Signal Name	Signal Direction S:SNR L:LVPS	Trigger	HIGH Level	LOW Level
P122-1	3	NO PAP MBF	S → L	Level	TTL	TTL
P123-1	6	REGI SNR	S → L	Level	TTL	TTL
P128-1	8	TONER SRN	S → L	Level	TTL	TTL

P11	P13	Signal Name	Signal Direction L: LVPS M: MCU	Trigger	HIGH Level	LOW Level
11	11	/NO PAPER MBF	L → M	Level	TTL	TTL
12	12	/REGI SNR	L → M	Level	TTL	TTL
13	13	TONER SNR	L → M	Level	TTL	TLL

4. LVPS ↔ ENVELOPE FEEDER UNIT



4. LVPS ↔ ENVELOPE FEEDER UNIT

Signal Name	Description
ENV PRES	Signal for detecting if the optional Envelope Feeder is installed or not (LOW level when the Envelope Feeder is in place, and HIGH level when it is not in place)
NO PAP ENV	Signal for detecting the absence of envelopes on the Envelope Feeder (LOW level when envelopes are present, and HIGH level when no envelope is present)
ENV FEED SOL	Signal to actuate the Feed Solenoid which feeds en envelope on MBF (Normally LOW level, and HIGH level when feeding)

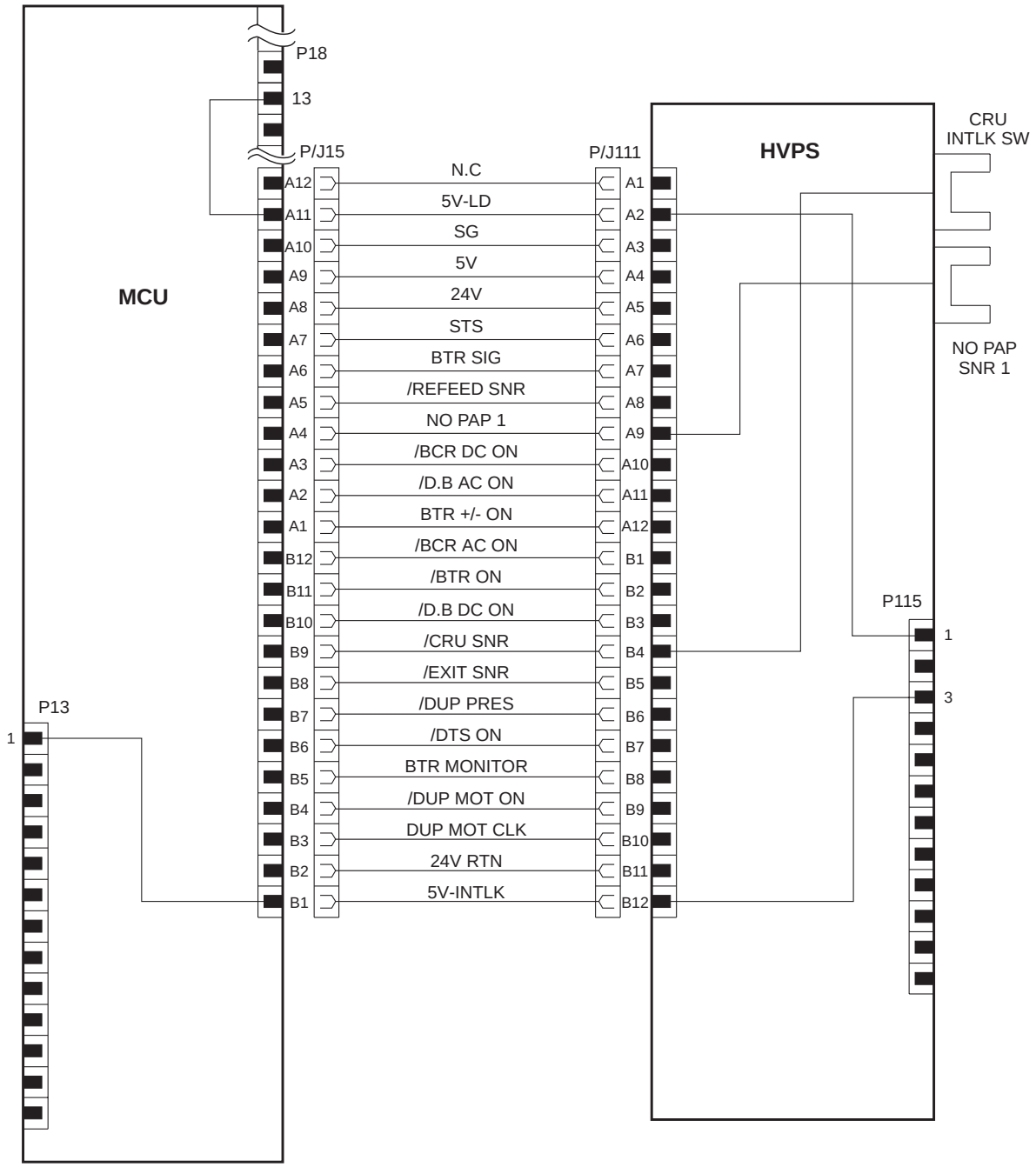
P130	P16	Signal Name	Signal Direction E: ENV L: LVPS	Trigger	HIGH Level	LOW Level
7	1	ENV PRE	E → L	Level	TTL	TTL
4	4	NO PAP ENV	E → L	Level	TTL	TTL
1	7	ENV FEED SOL	E ← L	Level	+24V	0V

P11	P13	Signal Name	Signal Direction L: LVPS M: MCU	Trigger	HIGH Level	LOW Level
5	5	/ENV PRES	L → M	Level	TTL	TTL
6	6	NO PAPER ENV	L → M	Level	TTL	TTL
7	7	/ENV FEED SOL	L ← M	Level	+24V	0V

Resistance of the Envelope Feed Solenoid

Solenoid	Resistance (Ambient Temperature: 20 ^{O}C)
Electromagnetic Clutch	172 Ω ± 10%

5. MCU ↔ HVPS



SAS610F

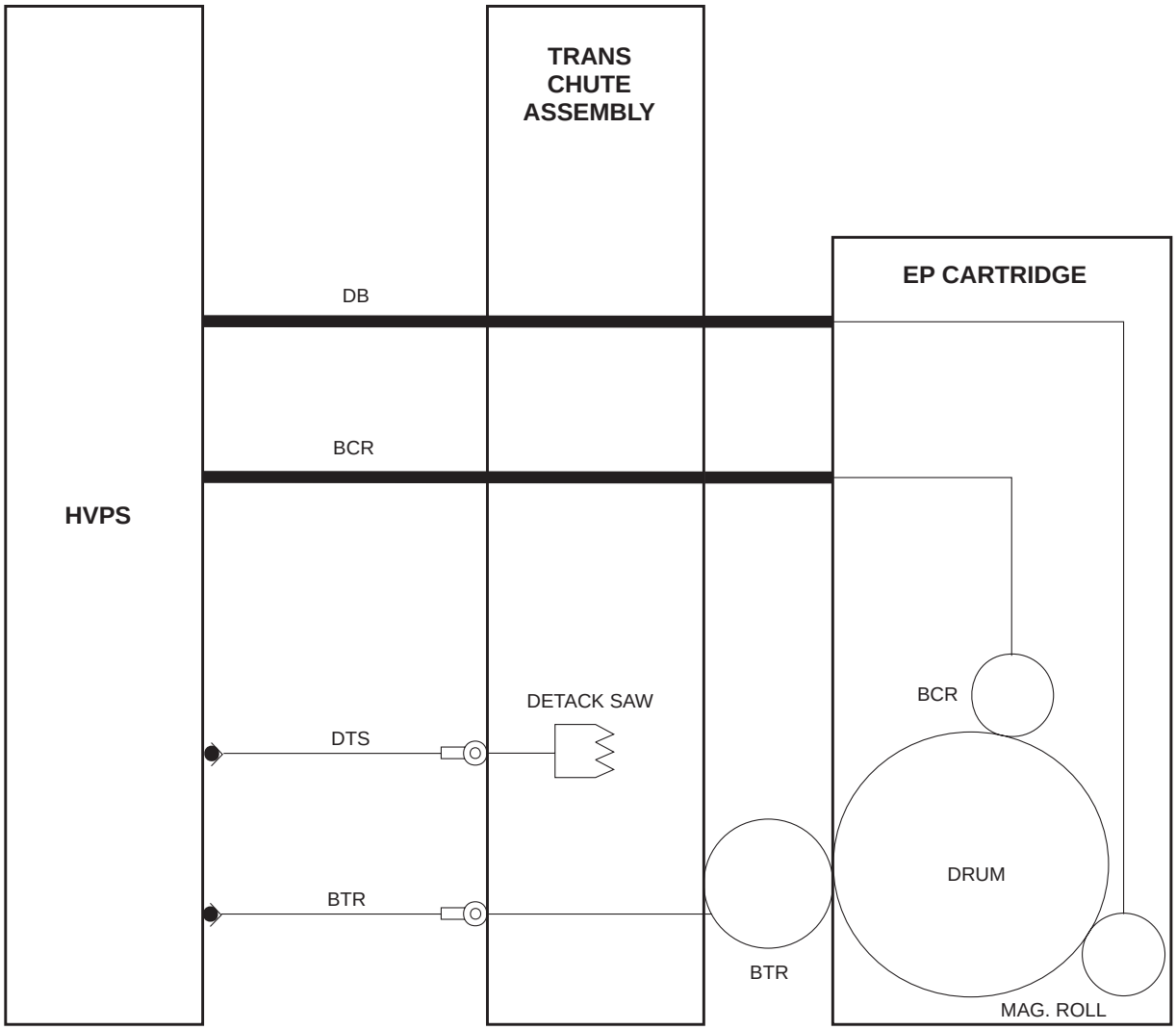
5. MCU ↔ HVPS

Signal Name	Description
5V-LD	+5V power source to the Laser Diode (0V when the Front Cover is open or when the Fuser Unit is not in place)
STS	Signal from the temperature sensor which detects the temperature of the Fuser Heat Roll (analog signal)
BTR SIG	Signal for setting the Transfer Current (analog signal)
/REFEED SNR	Signal for monitoring the paper passing through the Duplex Unit (Low level when paper is at the sensor, and HIGH level when paper is not at the sensor)
NO PAP1	Signal for detecting the presence/absence of paper in Tray 1
/BCR DC ON	Signal for switching on or off the application of the Charge Voltage (DC component) to the BCR (Normally LOW level, and HIGH level only when applying the charge voltage)
/DB AC ON	Signal for switching on or off the application of the Development Voltage (AC component) to the Magnet Roll (Normally LOW level, and HIGH level only when the Development Voltage is applied)
BTR +/- ON	Signal for switching the polarity of the Transfer Voltage (LOW level when selecting “+” and HIGH level when selecting “-”)
/BCR AC ON	Signal for switching on or off the application of the Charge Voltage (AC component) to the BCR (Normally LOW level, and HIGH level only when applying the Charge Voltage)
/BTR ON	Signal for switching on or off the application of the Transfer Voltage (Normally LOW level, and HIGH level only when applying the Transfer Voltage)
/DB DC ON	Signal for switching on or off the application of the Developing Voltage (Normally LOW level, and HIGH level only when applying the Transfer Voltage)
CRU SNR	Signal for detecting if the CRU is in place or not (LOW level when the CRU is in place and HIGH level when the CRU is not in place)
/EXIT SNR	Signal for monitoring the paper passing the exit part of the Fuser Unit
/DUP PRES	Signal for detecting if the Duplex Unit is installed or not (LOW level when the Duplex Unit is in place and HIGH level when the Duplex Unit is not in place)
/DTS ON	Signal for switching on or off the application of a voltage to the eliminator plate (Normally LOW level, and HIGH level only when applying the voltage)
BTR MONITOR	Signal used for measuring the Transfer Current on the BTR (analog signal)
/DUP MOT ON	Signal for switching on or off the Motor of the Duplex Unit
DUP MOT CLK	Reference clock for driving the Motor of the Duplex Unit
5V-INTLK	Refer to “1. LVPS ↔ MCU (XC Specifications)”

5. MCU ↔ HVPS

P15	P11	Signal Name	Signal Direction M: MCU H: HVPS	Trigger	HIGH Level	LOW Level
A11	A2	5V-LD	M ← H	-	+5V	0V
A7	A6	STS	M ← H	-	*	*
A6	A7	BTR SIG	M → H	-	*	*
A5	A8	/REFEED SNR	M ← H	Level	TTL	TTL
A4	A9	NO PAP1	M ← H	Level	TTL	TTL
A3	A10	/BCR DC ON	M → H	Level	TTL	TTL
A2	A11	/DB AC ON	M → H	Level	TTL	TTL
A1	A12	BTR +/- ON	M → H	Level	TTL	TTL
B12	B1	/BCR AC ON	M → H	Level	TTL	TTL
B11	B2	/BTR ON	M → H	Level	TTL	TTL
B10	B3	/DB DC ON	M → H	Level	TTL	TTL
B9	B4	CRU SNR	M ← H	Level	TTL	TTL
B8	B5	/EXIT SNR	M ← H	Level	TTL	TTL
B7	B6	/DUP PRES	M ← H	Level	TTL	TTL
B6	B7	/DTS ON	M → H	Level	TTL	TTL
B5	B8	BTR MONITOR	M ← H	-	*	*
B4	B9	/DUP MOT ON	M → H	Level	TTL	TTL
B3	B10	DUP MOT CLK	M → H	-	TTL	TTL
B1	B12	5V-INTLK	M → H	-	+5V	0V

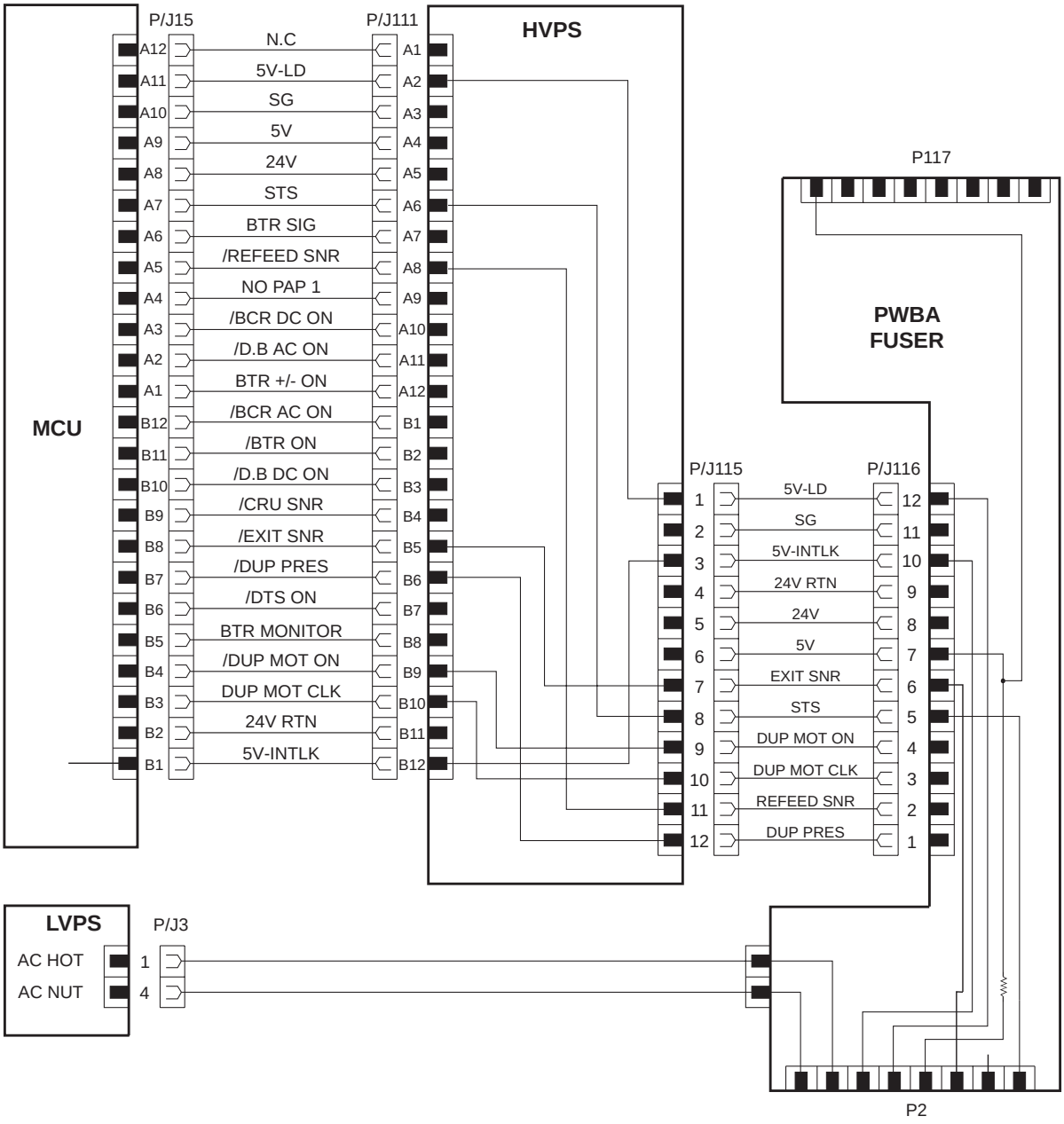
6. HVPS ↔ EP CARTRIGE, BIAS TRANSFER ROLL, AND DETACK SAW



SAS611F

Signal Name	Description
DB	HVPS output to the Magnet Roll
BCR	HVPS output to the BCR
DTS	HVPS output to the DTS
BTR	HVPS output to the BTR (+DC in Transfer Operation, and -DC when cleaning BTR)

7. HVPS ↔ FUSER PWB



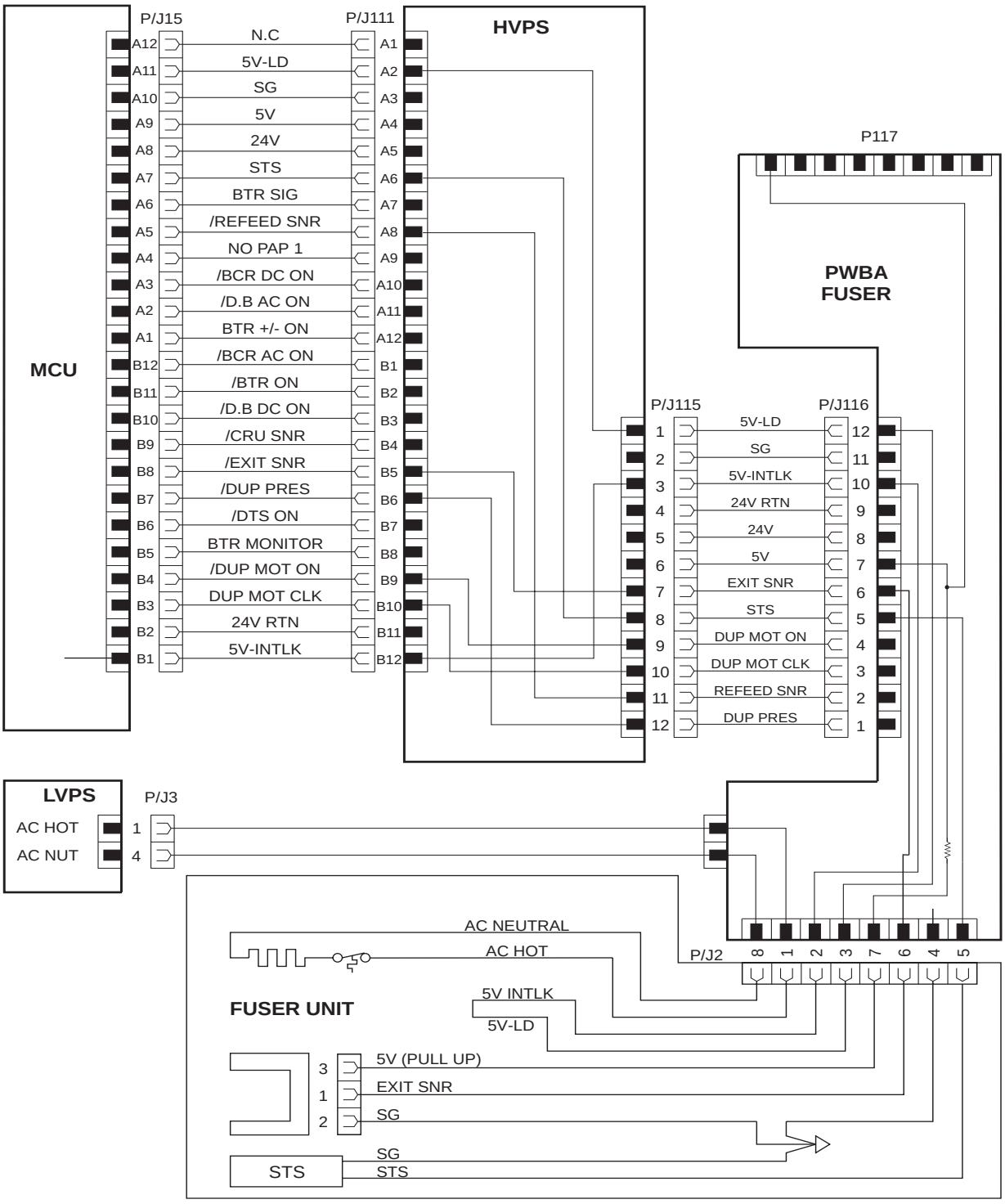
SAS612F

7. HVPS ↔ FUSER PWB

Signal Name	Description
5V-LD	Refer to “5. MCU ↔ HVPS”
5V-INTLK	Refer to “1. LVPS ↔ MCU (XC Specifications)”
EXIT SNR	Refer to “5. MCU ↔ HVPS”
STS	Refer to “5. MCU ↔ HVPS”
DUP MOT ON	Refer to “5. MCU ↔ HVPS”
DUP MOT CLK	Refer to “5. MCU ↔ HVPS”
REFEED SNR	Refer to “5. MCU ↔ HVPS”
DUP PRES	Refer to 5

P115	P116	Signal Name	Signal Direction H: HVPS F: FUSER	Trigger	HIGH Level	LOW Level
1	12	5V-LD	H ← F	-	+5V	0V
3	10	5V-INTLK	H → F	-	+5V	0V
7	6	EXIT SNR	H ← F	Level	TTL	TTL
8	5	STS	H ← F	-	*	*
9	4	DUB MOT ON	H → F	Level	TTL	TTL
10	3	DUP MOT CLK	H → F	Level	TTL	TTL
11	2	REFEED SNR	H ← F	Level	TTL	TTL
12	1	DUP PRESS	H ← F	Level	TTL	TTL

8. FUSER PWB ↔ FUSER UNIT



SAS613F

8. FUSER PWB ↔ FUSER UNIT

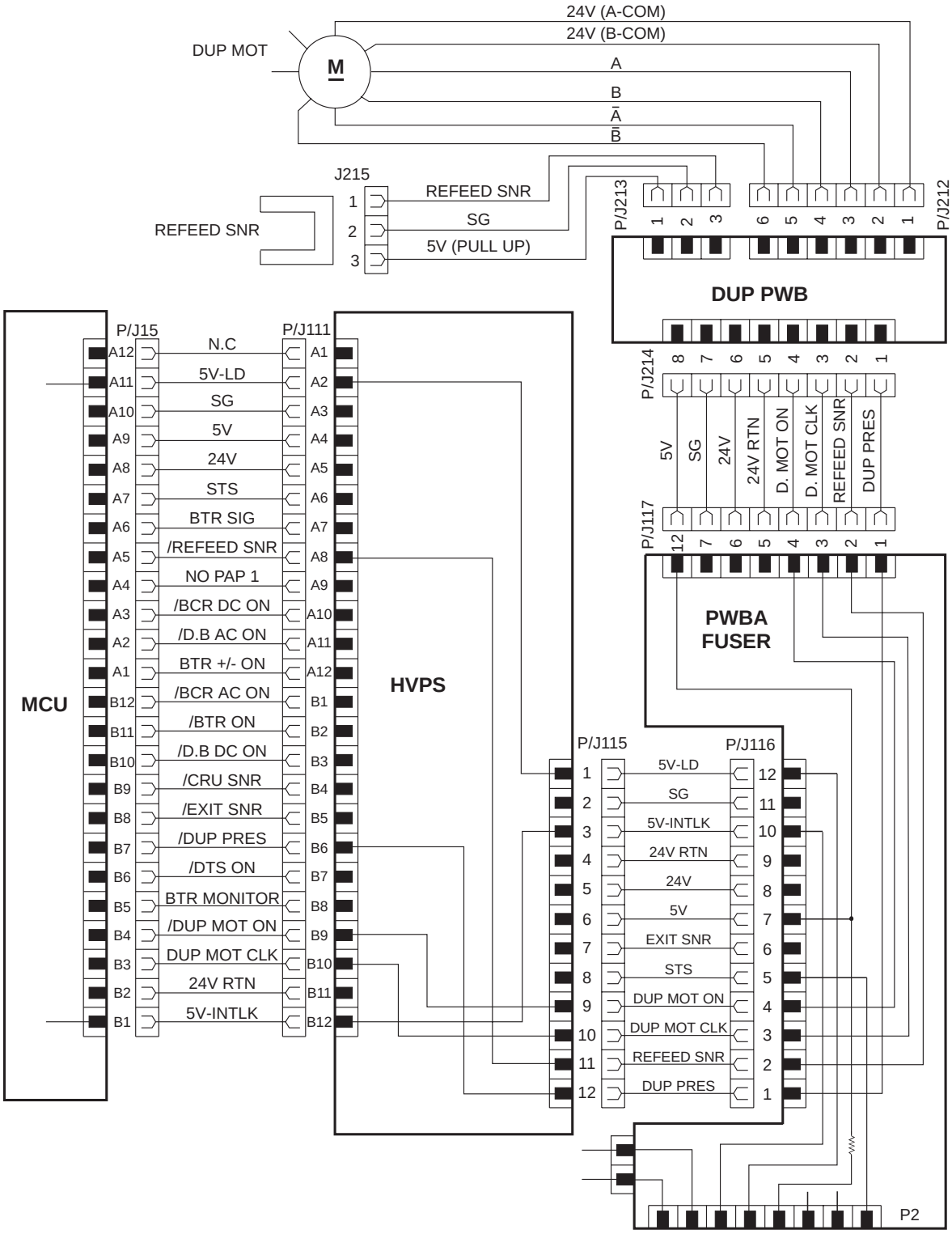
Signal Name	Description
AC NUT	AC power for the Heat Quartz
AC HOT	AC power for the Heat Quartz
5V-INTLK	Refer to “1. LVPS ↔ MCU (XC Specifications)”
5V-LD	Refer to “5. MCU↔HVPS”
EXIT SNR	Refer to “5. MCU↔HVPS”
STS	Refer to “5. MCU↔HVPS”

P2	Signal Name	Signal Direction P: PWA FUSER F: FUSER UNIT	Trigger	HIGH Level	LOW Level
8	AC NUT	*	*	*	*
1	AC HOT	*	*	*	*
2	5V-INTLK	P → F	-	+5V	0V
3	5V-LD	P ← F	-	+5V	0V
6	EXIT SNR	P ← F	Level	TTL	TTL
5	STS	P ← F	-	*	*

1. The temperature at which the Fuse melts: 141 ^{o}C (Nominal Temperature)
2. The temperature at which the contacts of the Thermostat open:
   Temperature of the contacts 150 ^{o}C (Non-contact type)
3. The rated power of the Heater Rod:
   100 V machine: 500 ± 25 W (for 115 Vr.m.s.)
   220 V machine: 500 ± 25 W (for 220 Vr.m.s.)
4. The resistance of the Thermistor in the Heater Assembly

Temperature(^{o}C)	20	180
Resistance (kΩ)	223 - 327 (Ishizuka Electronic) 240 - 326 (Shibaura Electronic)	2.1 - 2.3

9. FUSER PWB ↔ DUPLEX PWB ↔ DUPLEX MOTOR, AND REFEED SENSOR

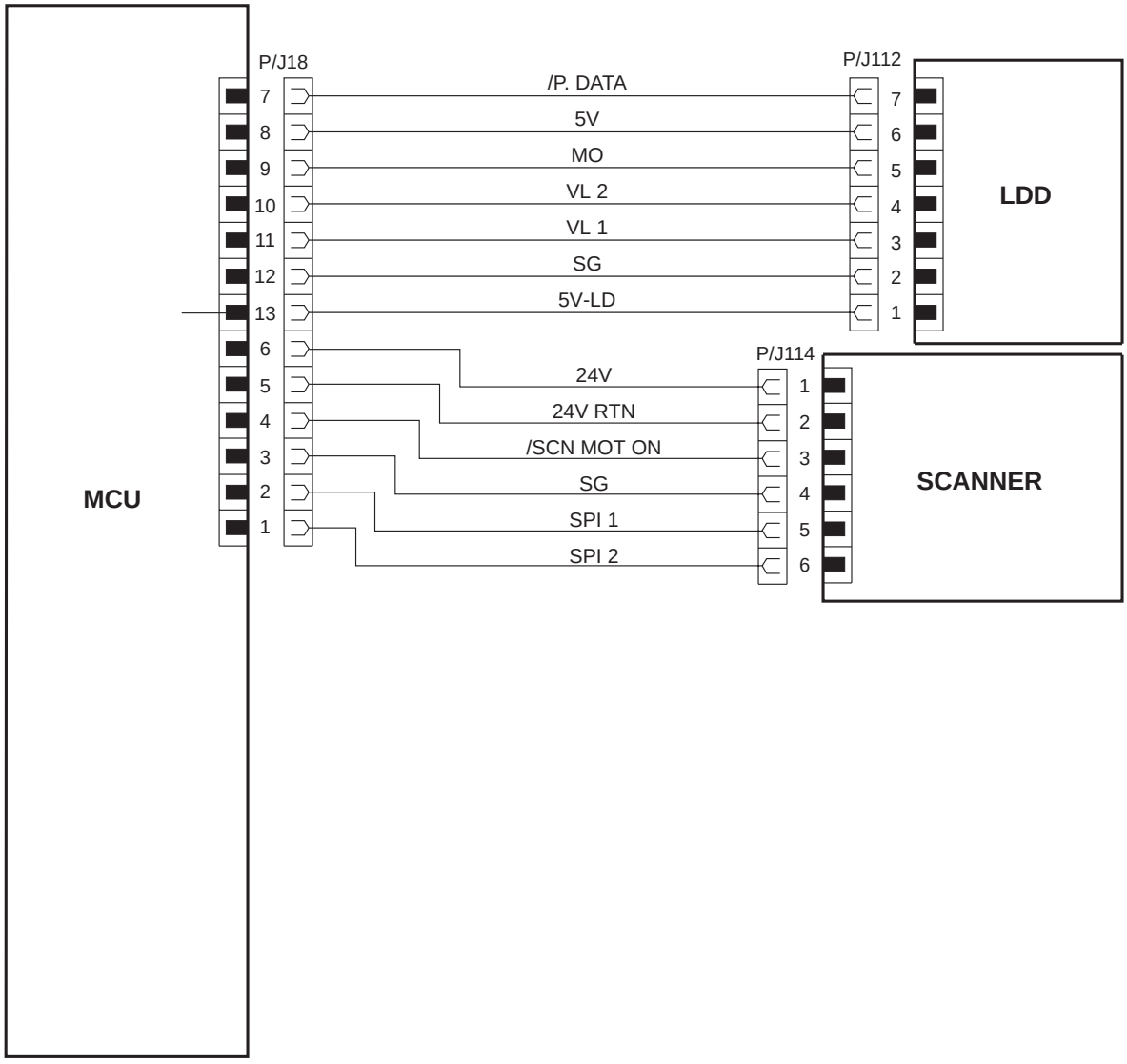


9. FUSER PWB ↔ DUPLEX PWB ↔ DUPLEX MOTOR, AND REFEED SENSOR

P117	P214	Signal Name	Signal Direction F: Fuser PWB D: Duplex PWB	Trigger	HIGH level	LOW level
4	4	D. MOT ON	F → D	Level	TTL	TTL
3	3	D. MOT CLK	F → D	Level	TTL	TTL
2	2	REFEED SNR	F ← D	Level	TTL	TTL
1	1	DUP PRES	F ← D	Level	TTL	TTL

P	P21X	Signal Name	Signal Direction M: Duplex Motor R: Refeed Sensor D: Duplex PWB	Trigger	HIGH Level	LOW Level
P215	P213-3	PREFEED SNR	R → D	Level	TTL	TTL
-	P212-3	A	M ← D	Level	+24V	0V
-	P212-4	B	M ← D	Level	+24V	0V
-	P212-5	/A	M ← D	Level	+24V	0V
-	P212-6	/B	M ← D	Level	+24V	0V

10. MCU ↔ LDD AND SCANNER MOTOR



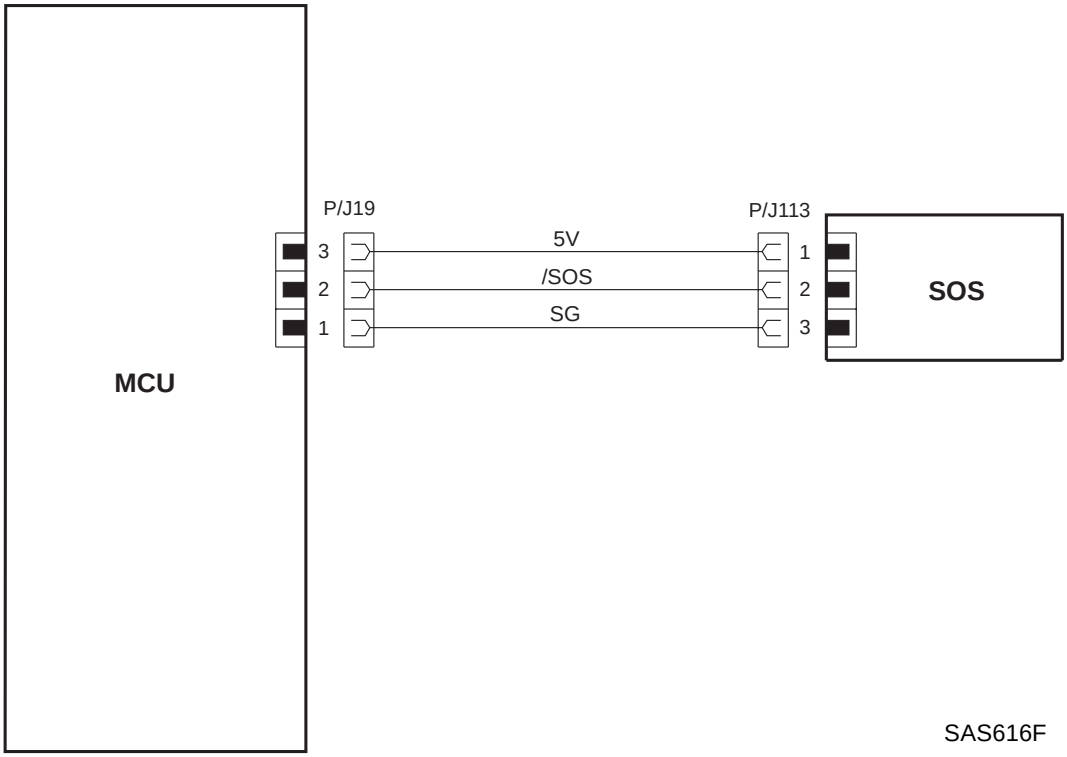
SAS614F

10. MCU ↔ LDD AND SCANNER MOTOR

Signal Name	Description
/P. DATA	Print Image Data (Black dot: LOW level, White dot: HIGH level)
MO	Signal for monitoring the electric current of the LD (Analog signal)
VL2	Sets the drive voltage for the LD (Analog signal)
VL1	Sets the drive voltage for the LD (Analog signal)
5V-LD	Refer to “5. MCU↔HVPS”
/SCAN MOT ON	Signal for switching on and off the Scanner Motor (LOW level when switching on and HIGH level when switching off)
SPI 1	Resolution switching signal 1 (600 dpi: High level)
SPI 2	Resolution switching signal 2 (600 dpi: High level)

P18	P11X	Signal Name	Signal Direction M: MCU L: LDD S: SCANNER	Trigger	HIGH Level	LOW Level	Note
7	P112-7	/P. DATA	M → L	Level	TTL	TTL	
9	P112-5	MO	M ← L	-	*	*	0.85 V (*1)
10	P112-4	VL2	M → L	-	*	*	0 - 3.5 V (*1)
11	P112-3	VL1	M → L	-	*	*	0 - 3.5 V (*1)
14	P112-1	5V-LD	M → L	-	5V	0V	
4	P114-3	/SCN MOT ON	M → S	Level	TTL	TTL	
2	P114-5	SPI 1	M → S	Level	TTL	TTL	Set to High
1	P114-6	SPI 2	M → S	Level	TTL	TTL	Set to High

11. MCU ↔ SOS



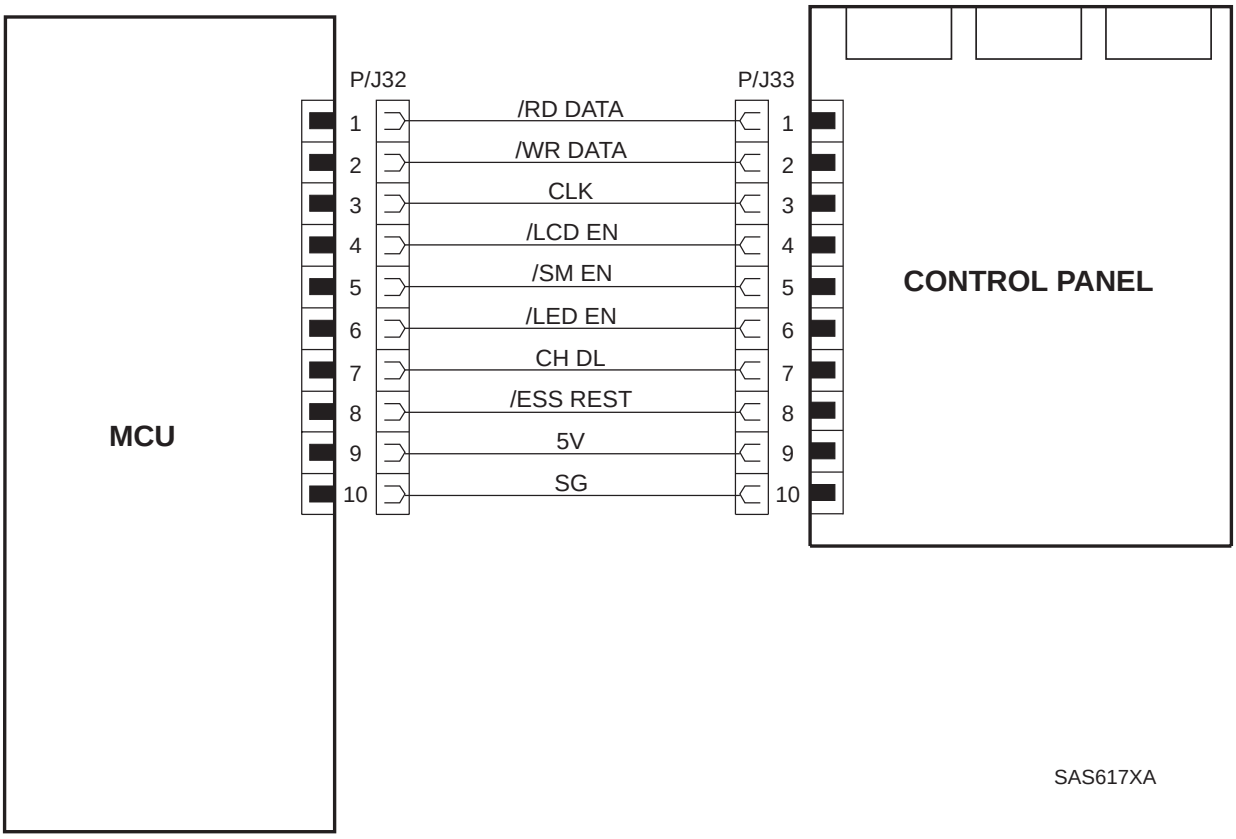
SAS616F

Signal Name	Description
/SOS	SOS detection signal (normally HIGH level and LOW level when the laser light is detected)

P2	P113	Signal Name	Signal Direction M: MCU S: SOS	Trigger	HIGH Level	LOW Level
2	2	/SOS	M → S	Level	TTL	TTL

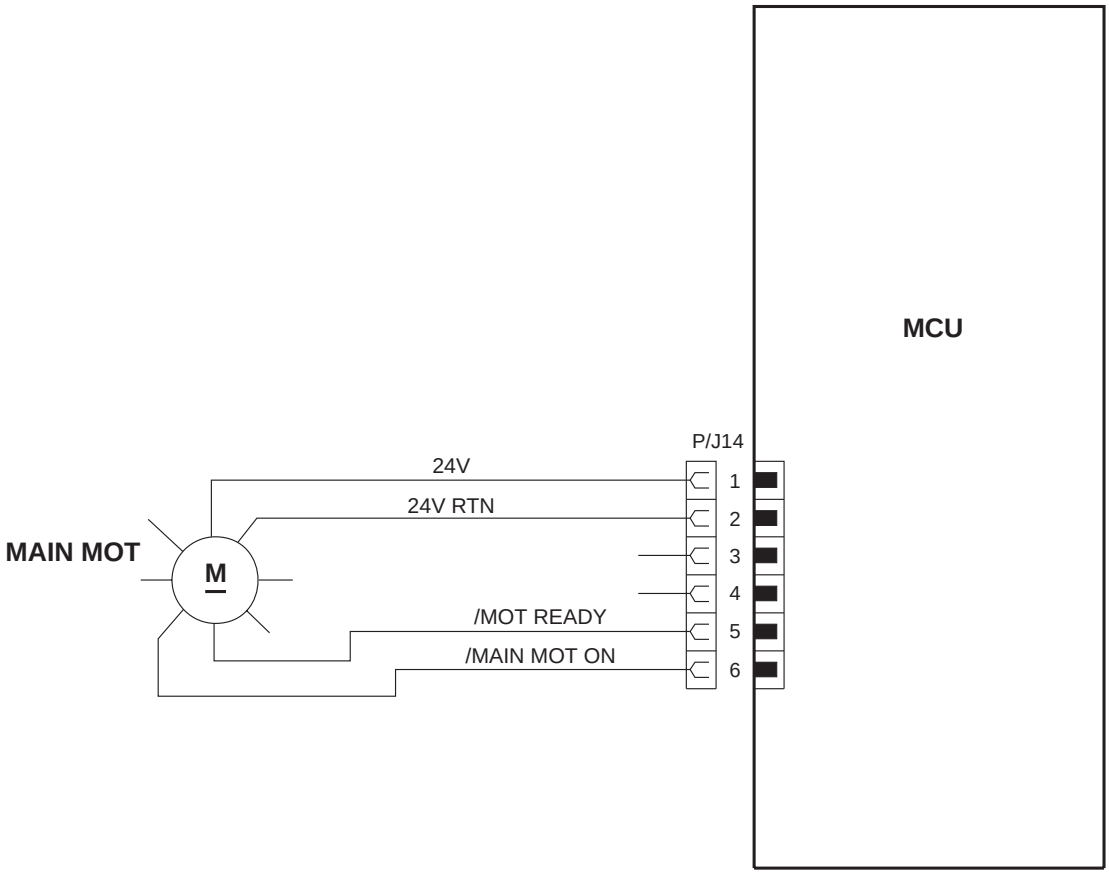
SAS615F

12. MCU ↔ CONTROL PANEL



Signal Name	Description
RD DATA	Data line for reading the information on the keys from the Control Panel (serial signal)
/WR DATA	Data line for writing the display data for the LCD and LEDs on the Control Panel (serial signal)
CLK	Synchronization signal for the data transmission
/LCD EN	Enable signal for selecting the LCD (LOW level when selecting the LCD, and HIGH level when not selecting the LCD)
/SW EN	Enable signal for selecting the Switches (LOW level when selecting the Switches, and HIGH level when not selecting the Switches)
/LED EN	ENABLE signal for selecting the LEDs (LOW level when selecting the LEDs, and HIGH level when not selecting the LEDs)
CH OL	Signal for selecting a register in the LCD controller (LOW level when selecting the Data Register and HIGH level when selecting the Instruction Register)
ESS RESET	Reset signal for the Control Panel (normally HIGH level, and LOW level when resetting the Control Panel)

13. MCU ↔ MAIN MOTOR



13. MCU ↔ MAIN MOTOR

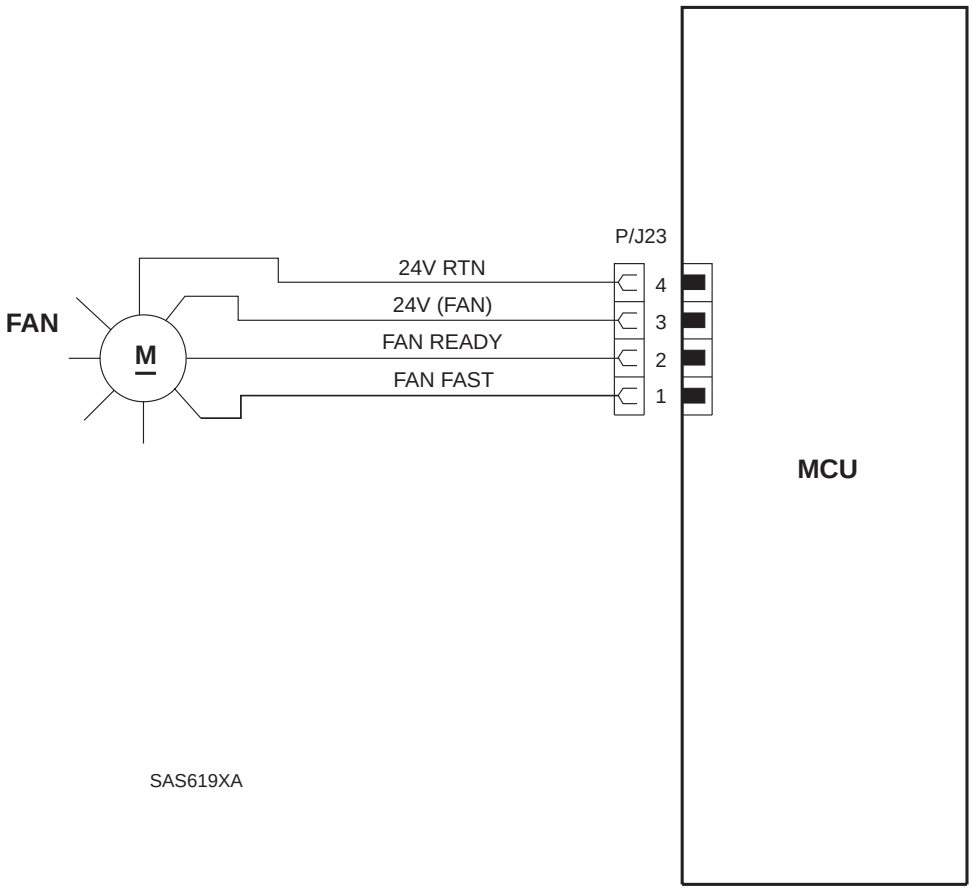
Signal Name	Description
/MOT READY	Signal for detecting a problem in the Main Motor (LOW level when the motor is normal, and HIGH level when the motor is abnormal)
/MAIN MOT ON	Signal for switching on and off the Main Motor (LOW level when switching on the motor, and HIGH level when switching off the motor)

P14	Signal Name	Signal Direction MO: Main Motor M: MCU	Trigger	HIGH Level	LOW Level
5	/MOT READY	MO → M	Level	TTL	TTL
6	/MAIN MOT ON	MO ← M	Level	TTL	TTL

The Main Motor also rotates in the following conditions:

1) When the power is turned on (boom operation): 1 second
2) When the cover is closed after a paper jam is cleared (boom operation and erase cycle): 1 sec. (Boom operation) + 2.4 sec. (Erase cycle) = 3.4 sec.

14. MCU ↔ FAN MOTOR



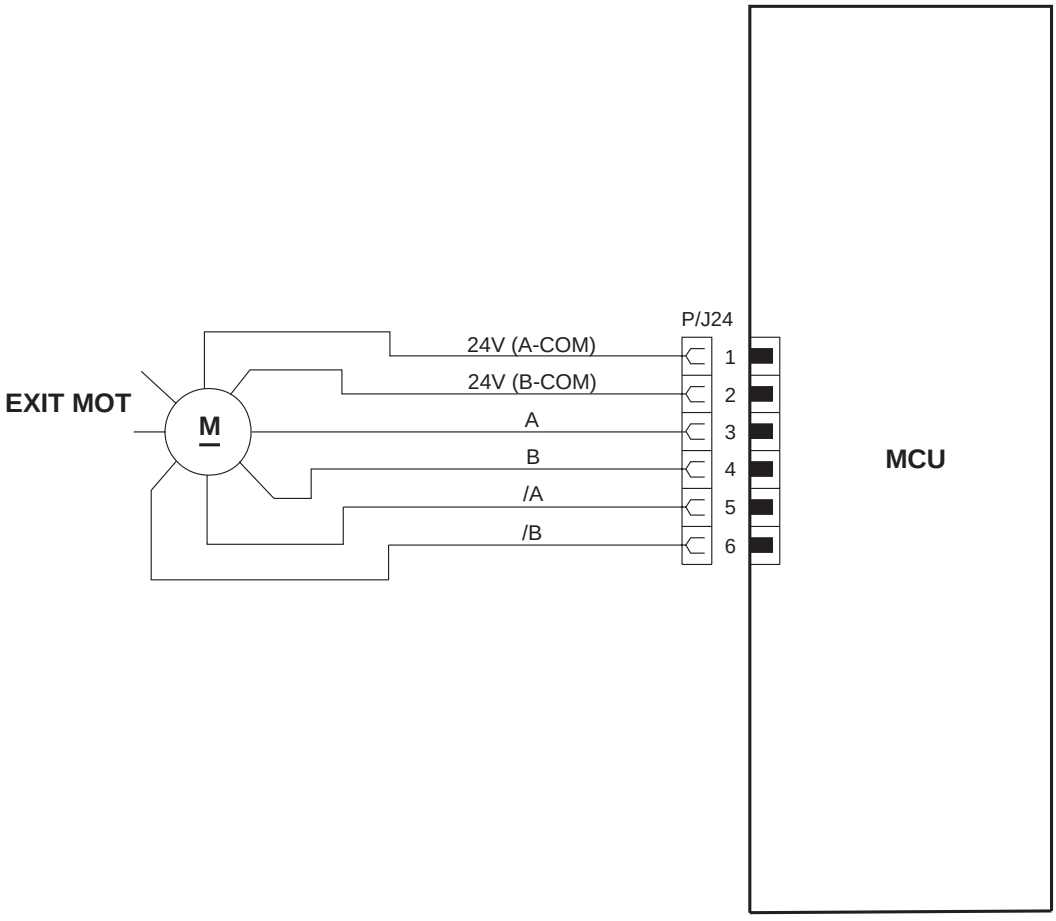
SAS619XA

14. MCU ↔ FAN MOTOR

Signal Name	Description
FAN READY	Signal for detecting a problem in the Fan Motor (LOW level when the motor is normal, and HIGH level when the motor is abnormal)
FAN FAST	Control signal for switching the motor speed (LOW level for the High speed, and HIGH level for the Low speed)

P23	Signal Name	Signal Direction F: FAN M: MCU	Trigger	HIGH Level	LOW Level
2	FAN READY	F → M	Level	TTL	TTL
1	FAN FAST	F ← M	Level	TTL	TTL

15. MCU ↔ EXIT MOTOR



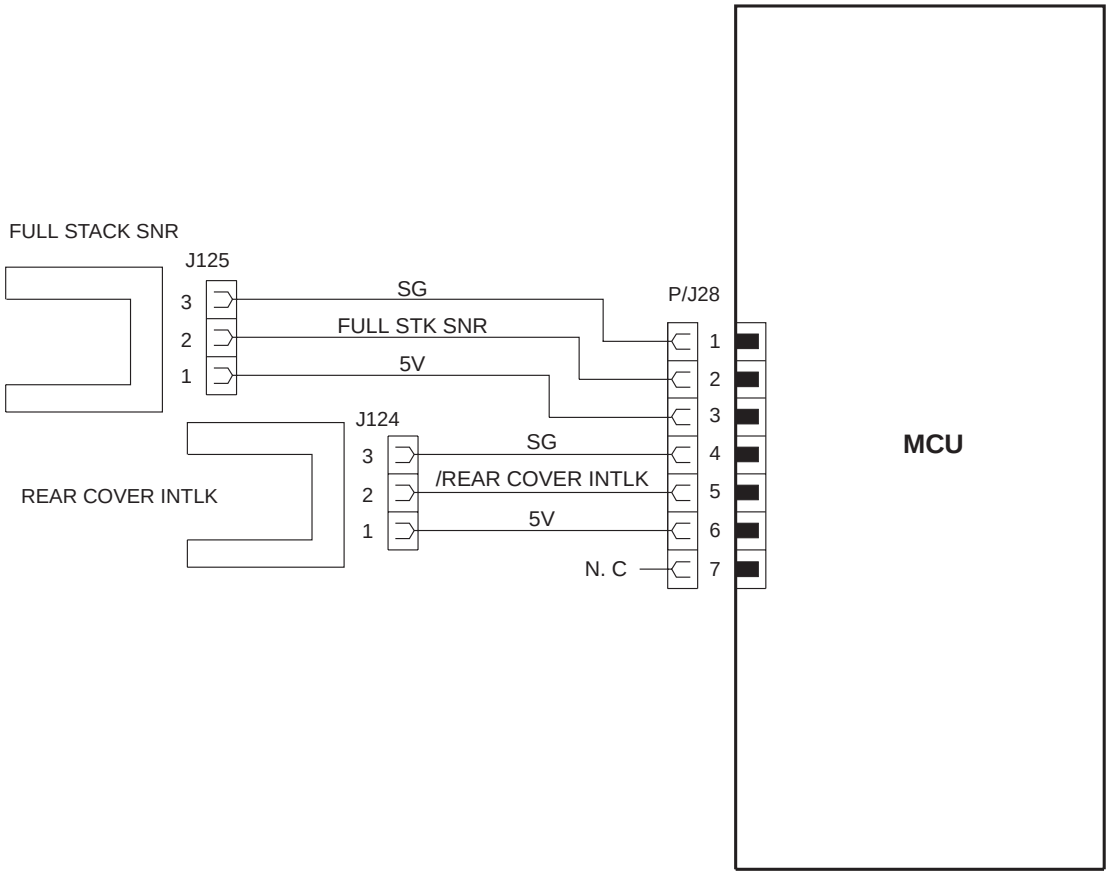
SAS620F

15. MCU ↔ EXIT MOTOR

Signal Name	Description
A	Phase A drive signal for the stepping motor (LOW level when driving, and HIGH level when not driving)
B	Phase B drive signal for the stepping motor (LOW level when driving, and HIGH level when not driving)
/A	Phase /A drive signal for the stepping motor (LOW level when driving, and HIGH level when not driving)
/B	Phase /B drive signal for the stepping motor (LOW level when driving, and HIGH level when not driving)

P24	Signal Name	Signal Direction E: Exit Motor M: MCU	Trigger	HIGH Level	LOW Level
3	A	E ← M	Level	24V	0V
4	B	E ← M	Level	24V	0V
5	/A	E ← M	Level	24V	0V
6	/B	E ← M	Level	24V	0V

16. MCU ↔ FULL STACK SENSOR AND REAR COVER SENSOR

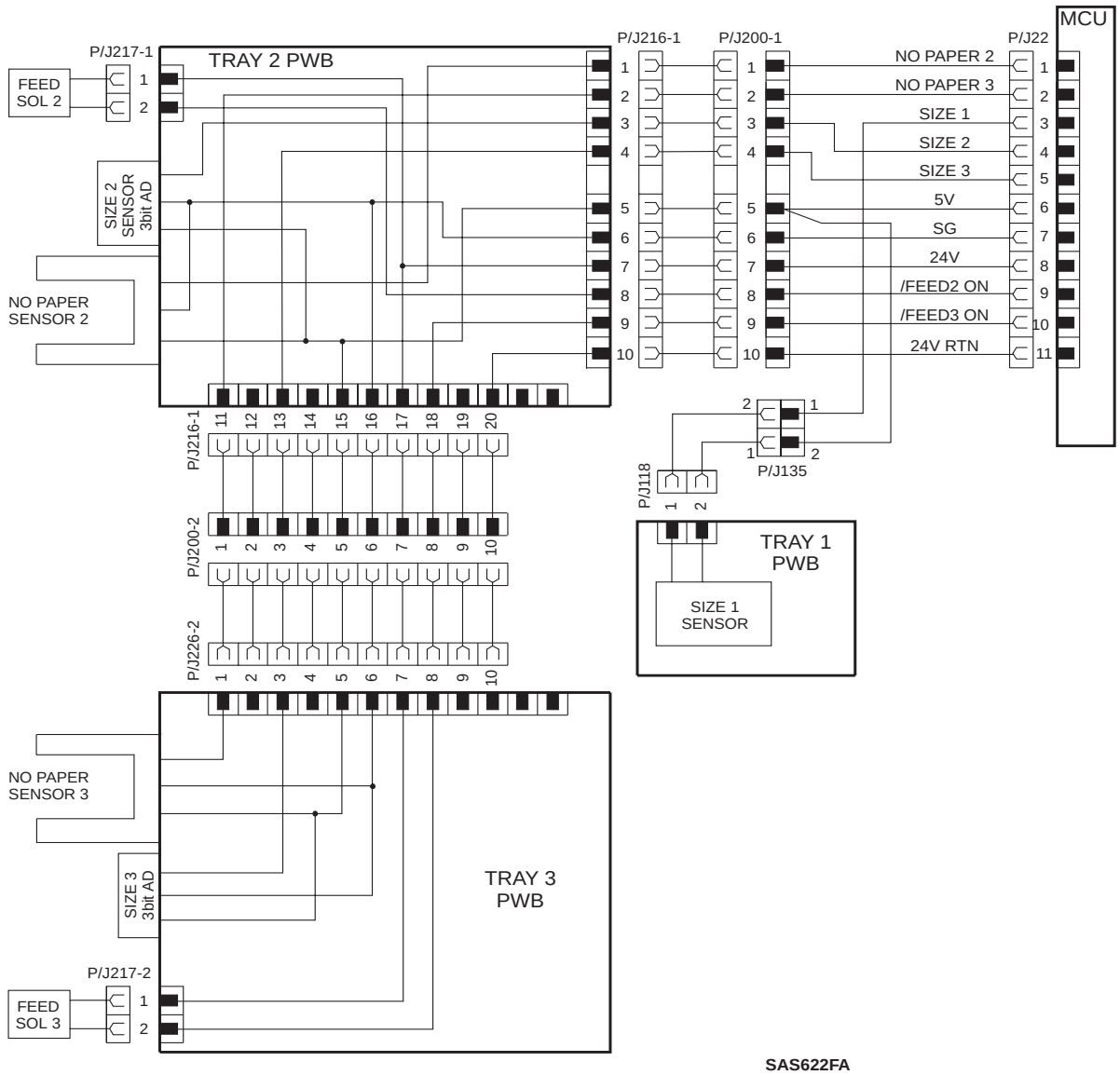


16. MCU ↔ FULL STACK SENSOR AND REAR COVER SENSOR

Signal Name	Description
FULLSTK SNR	Signal for detecting the amount of paper on the Exit Tray (LOW level when the Exit Tray is not full, and HIGH level when the Exit Tray is full)
/REAR COVER INTLK	Signal for detecting the Open/Close state of the Rear Cover (LOW level when the Rear Cover is closed, and HIGH level when the Rear Cover is opened)

P12X	P21	Signal Name	Signal Direction S: Sensor M: MCU	Trigger	HIGH Level	LOW Level
P125-2	2	FULLSTK SNR	S → M	Level	TTL	TTL
P124-2	5	/REAR COVER INTLK	S → M	Level	TTL	TTL

17. MCU ↔ DECK1 PWB ↔ DECK2 PWB ↔ DECK3 PWB



17. MCU ↔ DECK1 PWB ↔ DECK2 PWB ↔ DECK3 PWB

Signal Name	Function
NO PAP2	Detection signal on the presence/absence of paper in Tray 2 (Low when paper is present and High when out of paper)
NO PAP3	Detection signal on the presence/absence of paper in Tray 3 (Low when paper is present and High when out of paper)
SIZE2	Detection signal on the size of the paper in Tray 2 (Analog signal)
SIZE3	Detection signal on the size of the paper in Tray 3 (Analog signal)
/FEED2 ON	Actuation signal of the Feed Solenoid which feeds out paper in Tray 2 (Low when feeding paper and High when not feeding paper)
/FEED3 ON	Actuation signal of the Feed Solenoid which feeds out paper in Tray 3 (Low when feeding paper and High when not feeding paper)
SIZE1	Detection signal on the size of paper in Tray 1 (Analog signal).

P	P21	Signal Name	Signal Direction D: DECK M: MCU	Trigger	HIGH Level	LOW Level
P200-1	1	NO PAP2	D → M	Level	TTL	TTL
P200-2	2	NO PAP3	D → M	Level	TTL	TTL
P200-3	4	SIZE2	D → M	-	*	*
P200-4	5	SIZE3	D → M	-	*	*
P200-8	9	/FEED2 ON	D ← M	Level	TTL	0V
P200-9	10	/FEED3 ON	D ← M	Level	TTL	0V
P135-1	3	SIZE1	D → M	-	*	*

Resistance of the Solenoid

Solenoid	Resistance (Ambient Temperature: 20 ^{o}C)
Feed Solenoid 2	96 Ω ± 10%
Feed Solenoid 3	96 Ω ± 10%

17. MCU ↔ DECK1 PWB ↔ DECK2 PWB ↔ DECK3 PWBA

Table 6.2.3.1 Main Tray

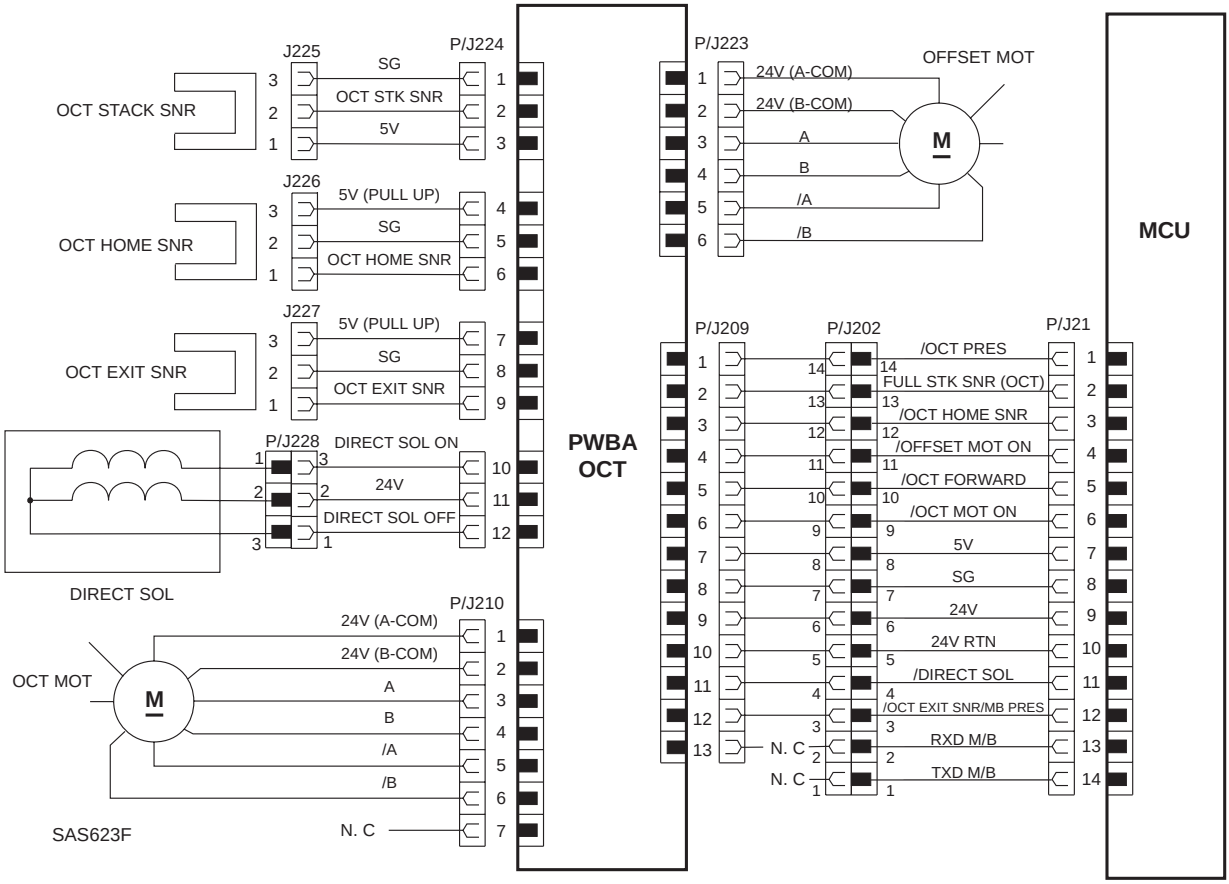
Size	Size SNR Voltage (V) Vsnr			S2 (*)	S1 (*)	S0 (*)
	+5VDC Measured at P/J22-6					
	4.77V Min.	5.10V Typ.	5.44 Max.			
No Cassette	0.00	0.00	0.00	0	0	0
B5	1.01	1.10	1.19	1	0	0
Statement	1.67	1.81	1.95	0	1	0
Legal 13”	2.13	2.30	2.48	1	1	0
Letter	2.47	2.67	2.88	0	0	1
Executive	2.74	2.95	3.18	1	0	1
A4	2.95	3.18	3.41	0	1	1
Legal 14”	3.12	3.36	3.60	1	1	1

Table 6.2.3.1 Second and Third Trays

Size	Size SNR Voltage (V) Vsnr			S2 (*)	S1 (*)	S0 (*)
	+5VDC Measured at P/J22-6					
	4.77V Min.	5.10V Typ.	5.44 Max.			
No Deck	0.00	0.00	0.00	0	0	0
No Tray	0.55	0.60	0.65	0	0	0
Legal 13”	2.31	2.49	2.69	1	1	0
Letter	3.19	3.43	3.68	0	0	1
A4	1.91	2.07	2.23	0	1	1
Legal 14”	3.03	3.27	3.51	1	1	1

This page intentionally blank.

18. MCU ↔ OCT STACK SENSOR, OCT HOME SENSOR, OCT EXIT SENSOR, OCT DIRECT SOLENOID, OCT MOTOR, AND OCT OFFSET MOTOR



18. MCU ↔ OCT STACK SENSOR, OCT HOME SENSOR, OCT EXIT SENSOR, OCT DIRECTION SOLENOID, OCT MOTOR, AND OCT OFFSET MOTOR

Signal Name	Function
/OCT PRES	Signal for detecting the presence of optional OCT (LOW level when installed, and HIGH level when not installed)
FULLSTK SNR (OCT)	Signal for monitoring the amount of paper ejected on the OCT tray (LOW level when not full, and HIGH level when full)
/OCT HOME SNR	Signal for detecting the home position of the Offset Motor (LOW level at the home position, and HIGH level not at the home position)
/OFFSET MOT ON	Signal for switching on and off the Paper Offset Motor (LOW level when switching on and HIGH level when switching off)
/OCT FORWARD	Signal for switching the direction of rotation of the Paper Offset Motor (LOW level for the offsetting (forward) direction, and HIGH level for the return direction)
/OCT MOT ON	Signal for switching on and off the OCT Motor (LOW level when switching on and HIGH level when switching Off)
/DIRECT SOL	Signal for switching the direction of paper ejection (LOW level to the standard tray and HIGH level to the optional unit)
/OCT EXIT SNR	Signal for monitoring paper when OCT is installed (LOW level when paper is present, and HIGH level when paper is not present)
RXD M/B	Signal for communication between ESS and Mail Box
TXD M/B	Signal for communication between ESS and Mail Box

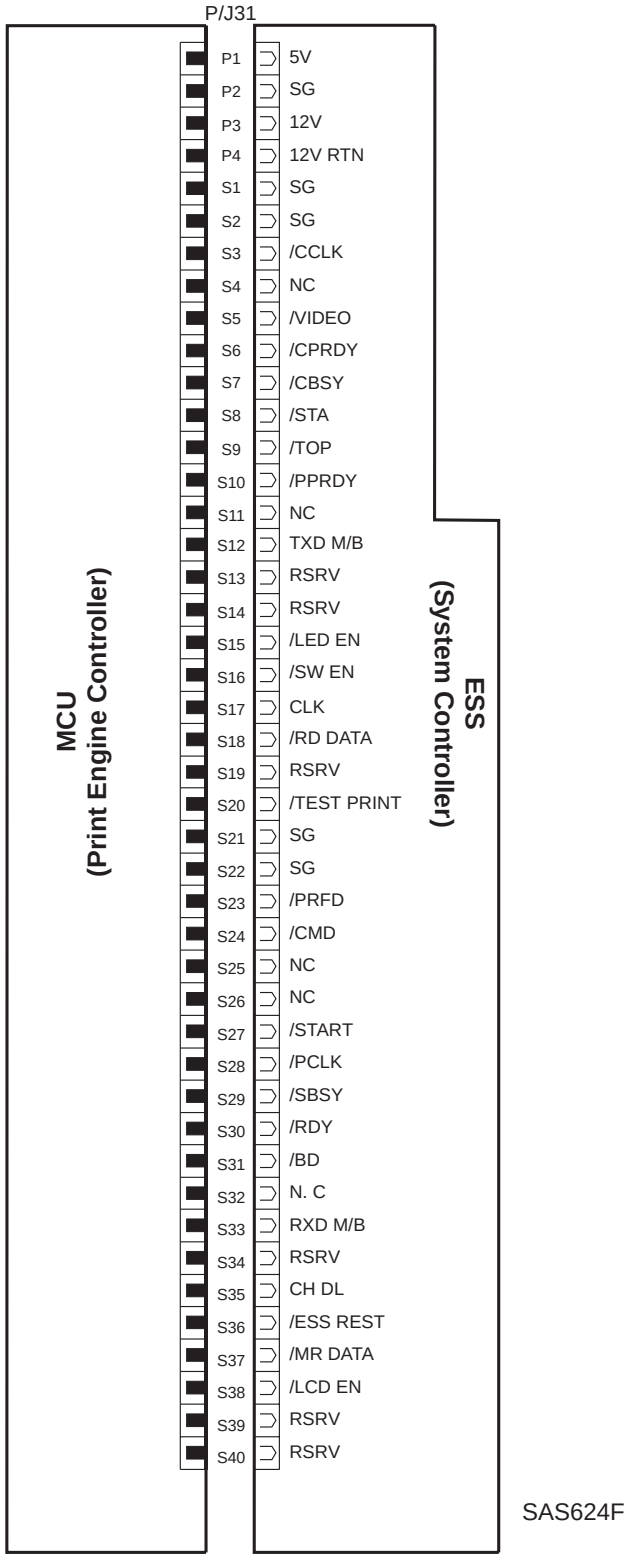
J202	P21	Signal Name	Signal Direction O: PWB OCT M: MCU	Trigger	HIGH Level	LOW Level
P14(7)	1	/OCT PRES	O → M	Level	TTL	TTL
P13(6)	2	FULLSTK SNR (OCT)	O → M	Level	TTL	TTL
P12(5)	3	/OCT HOME SNR	O → M	Level	TTL	TTL
P11(4)	4	/OFFSET MOT ON	O ← M	Level	TTL	TTL
P10(3)	5	/OCT FORWARD	O ← M	Level	TTL	TTL
P9(2)	6	/OCT MOT ON	O ← M	Level	TTL	TTL
P4(4)	11	/DIRECT SOL	O ← M	Level	+5V	0V
P3(3)	12	/OCT EXIT	O → M	Level	TTL	TTL

18. MCU ↔ OCT STACK SENSOR, OCT HOME SENSOR, OCT EXIT SENSOR, OCT DIRECT SENSOR, OCT MOTOR, AND OCT OFFSET MOTOR

Signal Name	Function
OCT STK SNR	Signal for monitoring the amount of paper on the OCT tray (LOW Level when not full, and HIGH Level when full)
OCT HOME SNR	Signal for detecting the home position of the Offset Motor (LOW Level at the home position, and HIGH Level not at the home position)
OCT EXIT SNR	Signal for monitoring paper when OCT is installed (LOW Level when paper is present, and HIGH level when paper is not present)
DIRECT SOL ON	Signal for switching the direction of paper ejection (LOW level to the standard tray and HIGH level to the optional unit)
OFFSET SOL OFF	Signal for switching the direction of paper ejection (LOW level to the standard tray and HIGH level to the optional unit)

J	P224	Signal Name	Signal Direction O: PWB OCT OS: OCT SNR/SOL	Trigger	HIGH Level	LOW Level
J225-2	2	OCT STK SNR	O ← OS	Level	TTL	TTL
J226-1	6	OCT HOME SNR	O ← OS	Level	TTL	TTL
J227-1	9	OCT EXIT SNR	O ← OS	Level	TTL	TTL
J228-3	10	DIRECT SOL ON	O → OS	Level	TTL	TTL
J223-1	12	DIRECT SOL OFF	O → OS	Level	TTL	TTL

19. MCU ↔ ESS AND LVPS ↔ ESS



Section 7

Repair Analysis Procedures

Using RAPs 7-5

Preliminary Steps 7-6
Entry Level RAP 7-7

RAPs with Fault Messages / Status Codes 7-9
IOT NVM Fail Message (U6) 7-9
Laser Fail Message (U2) 7-10
Fuser Failure Message (U4) 7-13
Motor Failure Message (U1) 7-15
Fan Failure Message (U5) 7-16
Close Covers Message (E5) 7-17
Paper Jam Open Rear Cover/Clear Paper Path Message (E4) 7-18
Paper Jam Open Front Cover/Remove Print Cartridge Clear Paper Path Message (E3) 7-20
Tray 1 Jam/Open Tray /Open Front Cover/Remove Jam Sheet Message (E2) or MBF Jam/Remove All Paper Open Front Cover/Remove Jam Sheet Message (E2) 7-23
Paper Size Jam/Open Rear Cover Message 7-26
Insert Tray X Message (C3) 7-27
Load Tray 1 xx xxx Message (C5) 7-27
Load MBF Tray xx x xx Message (C5: MBF) 7-29
Remove Output from Standard Bin Message (C5: Stack Full) 7-30

Toner Low Message (J5) 7-31
Install Print Cartridge Message (J3) 7-32
Error Codes 7-33
Power On Diagnostics (POD) Failure 7-33
Control Panel Displays Black Boxes 7-35
Error Code “0001” 7-36
Error Code “0040” 7-37
Error Code “0101” 7-38
Error Code “0102” 7-39
Error Code "0103" 7-40

RAPs without Fault/Status Codes 7-41
Inoperative Printer 7-41
Malfunctioning LCD/Malfunctioning LED 7-43
Inoperative Keypad 7-44
Erratic Operation 7-45
Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC) 7-46
Low Voltage Power Supply (LVPS) Assembly Failure (+12VDC) 7-47
Low Voltage Power Supply (LVPS) Assembly Failure (+24VDC) 7-48
Quartz Heater Failure 7-49
Temperature Sensor Assembly Failure 7-50
Exit Sensor Assembly Failure 7-52
Registration Sensor Failure 7-53
MBF Tray No Paper Sensor Failure 7-54
Tray 1 No Paper Actuator, No Paper Sensor Failure 7-55
Bin Full Sensor Failure 7-56
Size Sensor Assembly Failure 7-57
MBF Tray Paper Handling Solenoid Failure 7-59
Paper Handling (Feed) Solenoid Assembly Failure (Tray 1) . 7-60
Registration Solenoid Assembly (Turn Clutch) Failure 7-61
Drive Assembly Failure 7-62
Fan Assembly Failure 7-63
Toner Sensor Assembly Failure 7-64
Exit Assembly Failure 7-66
Fuser PWB Failure 7-67
HVPS Failure 7-68
Electrical Noise 7-69
Mechanical Noise 7-72

Image Quality RAPs 7-74
Image Quality Entry Flowchart 7-75
Image Quality Defect Definitions 7-76
Image Quality Checkout 7-78
Solid Area Density 7-79
Background 7-80

Deletions 7-81
Fusing 7-82
Resolution 7-83
Registration (Lead Edge to Trail edge) 7-84
Registration (Side-to-Side) 7-85
Skew 7-86
Skips/Smears 7-87
Spots 7-88
Other Print Defects 7-89
Non-Uniform Image Quality 7-90
Black Prints 7-91
Horizontal Band Deletions 7-92
Vertical Band Deletions 7-93
Spot Deletions 7-94
Light Prints 7-95
Blank Prints 7-96
Extraneous Marks 7-97
Character Defects 7-98
Spots 7-99
Unfused Image Procedure 7-100
Misregistered Image 7-101
Streaks 7-102
Residual Image 7-103
Background 7-104
Damaged Prints 7-105
Xerox Image Enhancement 7-106
Resolution 7-107
Skewed Image 7-108
Skips/Smears 7-109

Communications Entry RAP 7-110
Serial / Parallel RAP 7-111
Ethernet 7-112
Token Ring 7-114

7.1 Using RAPs

In each of the following Repair Analysis Procedures (RAPs), you are instructed to perform certain actions and make observations. The instruction is followed by a statement. If your response to the statement is “Yes,” perform the action following the “Y.” If your response to the question is “No,” perform the action following the “N.”

In addition, keep the following points in mind while performing any RAP:

1. If possible, have a spare EP Cartridge on hand. Some RAPs use this component as a troubleshooting tool.
2. RAPs use the following notation when referring to printer connections:
   - P/JXX – indicates Plug/Jack XX is connected to a component.
   - P XX – refers to the plug of P/J XX (except for connectors soldered directly to the board).
   - J XX – refers to the jack on P/J XX (except for connectors soldered directly to the board).

CAUTION Use an Electronic Discharge Kit (ESD) when handling sensitive electrical components.

When you take a voltage reading at a P/J location, the notation “P/J A–B and P/J X–Y” indicates that you should place the red probe (+) of the voltmeter on pin B of P/J A, and place the black probe (-) of the voltmeter on pin Y of P/J X. In most cases the second P/J pin in the notation is a Return (RTN), Frame Ground (FG), or Signal Ground (SG).

3. When a RAP tells you to take a voltage reading between P/J X and P/J Y, with no pin numbers given, refer to the Wiring and Connection Diagrams in Section 6 and take readings on ALL pins.
4. Unless otherwise instructed by a RAP, take all voltage readings with the EP Cartridge and Paper Trays installed, and with the Top Cover and Exit Door closed.
5. Voltage values stated in RAPs are approximate. Actual voltages may differ slightly. A small difference in voltage is acceptable.
6. Refer to the appropriate Repair Procedures if you must remove or replace a component.
7. The term *replacement* means the named part or parts could be the cause of the initial problem. Replace the entire assembly that a RAP directs you to replace.

Image Quality Problems

Use letter-size paper (11”) or A4 paper when troubleshooting an image quality problem.

Use the Test Print option, 5.1.4.13 Print Menu (System Controller Test Pattern), to determine whether an image quality problem is being caused by the printer or by the PC. The printer generates the Test Print. If the Test Print is normal but the regular prints have an image quality problem, the problem may be with the PC.

7.2 Preliminary Steps

If the printer is displaying an obvious failure or fault, go immediately to the appropriate Repair Procedure or Repair Analysis Procedure. If you are not sure where to begin troubleshooting, go to *7.2.1 Entry Level RAP*.

7.2.1 Entry Level RAP

1 Switch printer off then switch it on. Within 2 minutes the printer displays READY on the Control Panel Display.

Y: Go to step 5.

N: Go to step 2.

2 The printer displays a Fault Message or Error Code.

Y: Go to the appropriate Fault Message/Error Code RAP.

N: Go to step 3.

3 The LCD is blank.

Y: Go to *RAP 7.4.2 Malfunctioning LCD/Malfunctioning LED.*

N: Go to step 4.

4 The top line of the LCD is black squares.

Y: Go to *RAP 7.3.17.2 Control Panel Displays Black Boxes.*

N: Go to step 5.

5 The printer responds to keypad actions.

Y: Go to step 6.

N: Go to *RAP 7.4.3 Inoperative Keypad.*

6 Run a System Controller Test Print (*5.1.4.13 Print Menu*) from all trays. The printer displays a Fault Message/Error Code.

Y: Go to the appropriate Fault Message/Error Code RAP.

N: Go to step 7.

7 The printer produces a System Controller Test Print.

Y: Go to step 8.

N: Go to step 9.

8 The System Controller Test Print meets/surpasses the Image Quality Specifications.

Y: Go to step 12.

N: Go to *7.5 Image Quality RAPs* to identify the image quality defect(s).

9 Run a Print Engine Controller Test Print in Diagnostic Mode 2 or Diagnostic Mode 3.

Y: Replace the System Controller.

N: Go to step 10.

10 Produce a Print Engine Controller Test Print using procedure *5.2.4 Print Engine Controller Test Print*, step 3, shorting the two pins of P35 on the Print Engine Controller. A Print Engine Controller Test Print is produced.

Y: In the following order, replace the System Controller and the Print Engine Controller.

N: Go to step 11.

11 A fault condition exists that does not have an associated Fault Message/Error Code.

Y: Go to the appropriate RAP in *7.4 RAPs without Fault/Status Codes*.

N: Go to step 12.

12 Request the customer to send a print job from the host. The job prints successfully without defects.

Y: Go to Final Actions.

N: Go to *7.6 Communications Entry RAPs*.

7.3 RAPs with Fault Messages / Status Codes

7.3.1 “IOT NVM Fail - Power Off/On” Message (U6)

NOTE: This problem may also be caused by external noise. If the problem still exists at the end of this RAP, go to RAP 7.4.25 Electrical Noise.

1 Switch the power OFF and then ON. The code reappears.

Y: Go to step 2.

N: Return to Final Actions.

2 Switch the power OFF and then ON. The code still appears when the power comes on.

Y: Go to step 4.

N: Go to step 3.

3 Repeat switching the printer power OFF and then ON. The code keeps appearing when the power comes on.

Y: Go to step 4.

N: The problem is corrected. Go to Final Actions.

4 Diagnostic Mode 3 can be accessed.

Y: Go to step 5.

N: Replace the Print Engine Controller.

5 The function values are correct.

Y: Replace the Print Engine Controller.

N: Go to step 6.

6 Correct the incorrect function values and switch the power OFF and then ON. The code reappears.

Y: Replace the Print Engine Controller.

N: Go to Final Actions.

7.3.2 “Laser Fail - Power Off/On” Message (U2)

NOTE: Refer to Figure 7.3.2.1 U2 Message Troubleshooting Schematic while performing this RAP.

1 The Laser Scanner Motor is spinning after executing the Test Print Mode (Diagnostic Mode 2).

NOTE: If you find it difficult to hear the Scanner Motor spinning, disable the Main Motor by disconnecting P/J14 from it.

Y: Go to step 2.

N: Go to step 11.

2 There is +5VDC between P/J18-8 and P/J18-12.

Y: Go to step 5.

N: Go to step 3.

3 There is +5VDC between P/J25-2 and P/J25-6.

Y: Replace the Print Engine Controller.

N: Go to step 4.

4 There is +5VDC between P/J12-2 and P/J12-6.

Y: Replace the LVPS.

N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

5 There is +5VDC between P/J18-13 (5V-LD) and P/J18-12 (SG).

Y: Go to step 14.

N: Go to step 6.

6 There is +5VDC between P/J112-1 (5V-LD) and P/J112-2.

Y: Replace the Laser Assembly.

N: Go to step 7.

7 There is +5VDC between P/J11-13 and P/J12-5.

Y: Go to step 8.

N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

8 Refer to Figure 7.3.2.1, and check for continuity between P/J112-1 and P/J11-13. There is an open circuit.

Y: Replace the open component.

N: Go to step 9.

9 There is +24VDC between P/J18-6 and P/J18-5.

Y: Go to step 10.

N: Go to *RAP 7.4.7 Low Voltage Power Supply (LVPS) Assembly Failure (+24VDC).*

10 With the printer's resolution set to 600 DPI, there is a high logic level (approximately +5VDC) measured between P/J18-2 and P/J18-3 and between P/J18-1 and P/J18-3.

NOTE: To perform this analysis, disconnect P/J15 from the Print Engine Controller and close all covers.

Y: Go to step 11.

N: Replace the Print Engine Controller.

11 Enter the Test Print Mode. Check for approximately +5VDC between P/J18-4 and P/J18-3. There is a low logic level (approximately 0VDC) when the Scanner Motor is turned on and a high logic level (approximately +5VDC) when the Scanner Motor is turned off.

Y: Go to step 12.

N: Replace the Print Engine Controller.

12 There is +5VDC between P/J19-3 and P/J19-1.

Y: Go to step 13.

N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

13 There is continuity between P/J18 and P/J112 and between P/J18 and P/J114.

Y: Go to step 14.

N: Replace the Laser Harness.

14 There is continuity between P/J19 and P/J113.

Y: Go to step 15.

N: Replace the SOS Harness.

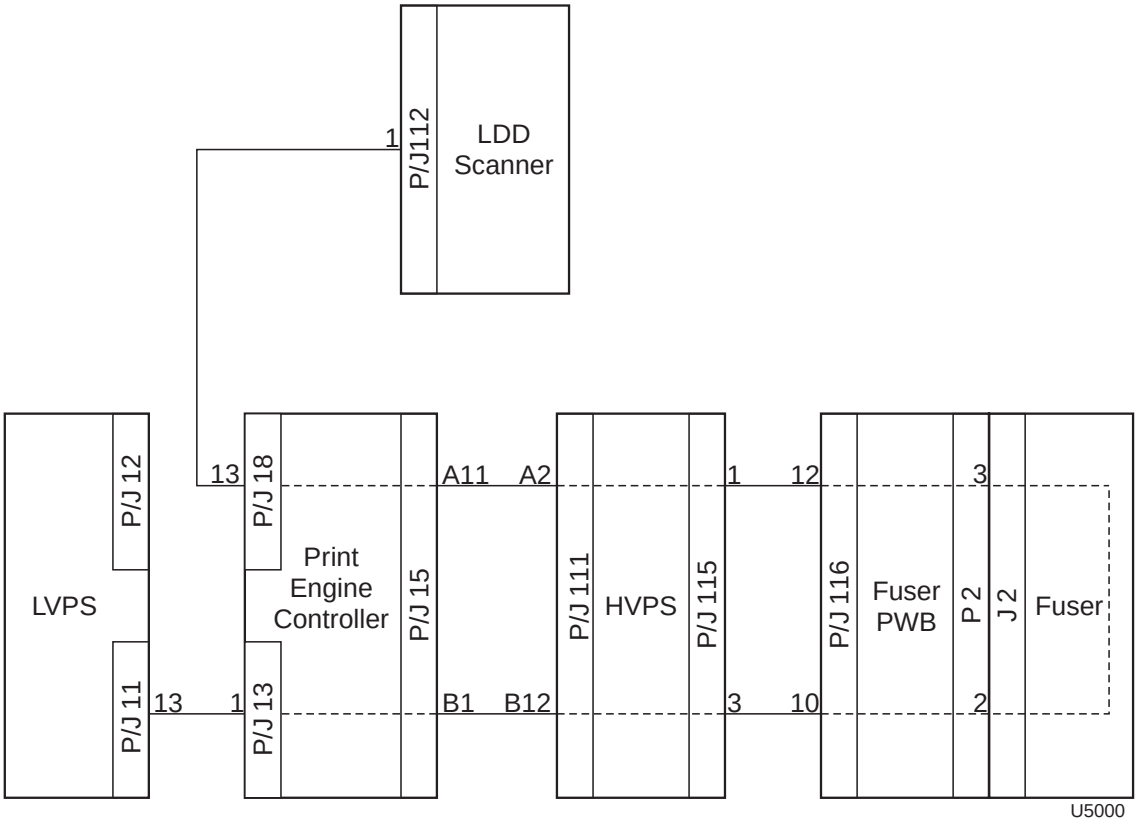
15 Problem is resolved.

Y: Correction is complete.

N: Replace the Laser Assembly.

NOTE: If the U2 problem is not resolved, go to RAP 7.4.25 Electrical Noise.

Figure 7.3.2.1 U2 Message Troubleshooting Schematic



7.3.3 “Fuser Failure” Power Off/On (U4)

Initial Analysis

Check the interlock tab on the front and rear covers.

1 Open the rear cover and cheat the rear cover interlock sensor. At power on, the Fuser heater turns on.

Y: Go to step 8.

N: Go to step 2.

CAUTION Before performing the following step, let the Fuser Assembly cool down.

2 Remove the Fuser Assembly. There is continuity between P2-1 and P2-5.

Y: Go to step 3.

N: Replace the Fuser Assembly.

3 At power on, line voltage can be measured between J2-1 and J2-5.

Y: Check condition of P/J2. If the connectors are damaged, replace the Fuser PWB or the Fuser Assembly.

N: Go to step 4.

4 At power on, line voltage can be measured between J3-1 and J3-4.

Y: Replace the LVPS-to-Fuser PWB Harness.

N: Go to step 5.

5 At power on, line voltage can be measured between P/J1-1 and P/J1-2.

Y: Go to step 7.

N: Go to step 6.

6 At power on, line voltage can be measured between T7 and T8 of the main power switch.

Y: Go to step 9.

N: Replace the Main Power Switch.

7 At power on, P/J11-10 is at a low logic level (approximately +5VDC).

Y: Replace the LVPS.

N: *Go to RAP 7.4.9 Temperature Sensor Assembly Failure.*

8 After the power-on sequence, the Fuser heater cycles off and on.

Y: Replace the Print Engine Controller.

N: Go to *RAP 7.4.9 Temperature Sensor Assembly Failure.*

9 Verify continuity between T7 and P/J1-1 and T8 and P/J1-2. Continuity is measured on both wires.

Y: Replace LVPS

N: Repair open wire

This page intentionally blank.

7.3.4 “Motor Failure” Power Off/On (U1)

1 The Main Motor Assembly is revolving when power comes on.

Y: Replace, in order, the Print Engine Controller, Main Motor Assembly.

N: Go to step 2.

2 Switch OFF the printer power and remove the Main Motor Assembly *(REP 4.10.1 Main Motor Assembly)* from the Drive Assembly. Rotate the Drive Assembly by hand. The Dirve Assembly is binding.

Y: Repair or replace as necessary.

N: Reinstall the Main Motor Assembly, then go to step 3.

3 Grip the bottom mounting bracket of the Main Motor Assembly *(REP 4.10.1 Main Motor Assembly)* firmly. Switch ON the printer power. The Main Motor revolves.

CAUTION **The initial thrust of the Main Motor turning on is quite strong and may surprise you if you are not aware of it. Do not grip the Main Motor itself.**

NOTE: The Main Motor can be made to revolve while producing IOT Test Prints by shorting together the two male pins of P/J35 on the Print Engine Controller. P/J35 is a white plug located directly above P/31, the Print Engine Controller to System Controller plug. The Main Drive Motor also turns when the printer power is turned off and then on.

Y: Go to *RAP 7.4.19 Drive Assembly Failure.*

N: Go to step 4.

4 There is +24VDC between P/J14-1 and P/J14-2 on the Print Engine Controller.

Y: Replace the Main Motor Assembly.

N: Go to step 5.

5 There is +24VDC between P/J25-1 and P/J25-4 on the Print Engine Controller.

Y: Replace the Print Engine Controller.

N: Go to step 6.

6 There is +24VDC between P/J12-1(LVPS) and P/J25-4 (Print Engine Controller).

Y: Replace the Print Engine Controller.

N: Replace the LVPS Assembly.

7.3.5 “Fan Failure - Power Off Now” Message (U5)

Initial Analysis

Check for an obstruction blocking fan.

1 Check that the Fan Assembly is spinning when power comes on.

Y: Go to step 2.

N: *Go to RAP 7.4.20 Fan Assembly Failure.*

2 There is +5VDC between P/J23-2 and P/J23-4 when the code appears.

Y: Replace the Fan Assembly.

N: Replace the Print Engine Controller.

7.3.6 “Close Covers” Message (E5)

1 The Front Cover Assembly actuates the interlock switch when the Cover is closed, and deactuates it when the Cover is open.

NOTE: You can inspect this while performing the Diagnostic Mode 1, Sensor Input Test.

Y: Go to step 3.

N: Go to step 2.

2 Ensure voltages between P/J11-13 and P/J12-5 are +5VDC while the Interlock Switch is actuated.

Y: Go to step 4.

N: Go to step 3.

3 Ensure +5VDC between P/J131-1 and P/J12-5.

Y: Check for continuity between P/J131-1 and P/J11-13, and then replace the appropriate harness.

N: Replace the LVPS.

4 The Rear Cover Assembly obstructs the Rear Cover Sensor when the Cover is closed, and does not obstruct it when the Cover is open.

NOTE: You can inspect this while performing the Diagnostic Mode 1, Sensor Input Test.

Y: Replace the Print Engine Controller PWB.

N: Go to step 5.

5 There is +5VDC between P/J28-6 and P/J28-4.

Y: Go to step 6.

N: Replace the Print Engine Controller.

6 There is +5VDC between J124-1 and J124-3.

Y: Go to step 7.

N: Check the Rear Cover Interlock Harness for continuity. If good, replace the Print Engine Controller.

7 Voltage at P/J124-2 (Rear Cover Interlock) is +0VDC when the cover is closed and +5VDC when the cover is open.

Y: Replace the Print Engine Controller.

N: Replace the Rear Interlock Sensor.

7.3.7 “Paper Jam Open Rear Cover/Clear Paper Path” Message (E4)

1 The problem appears when power comes on.

Y: Go to step 2.

N: Go to step 3.

2 There is a sheet of paper or foreign object actuating the Exit Actuator.

Y: Remove the paper or object.

N: Go to step 9.

3 The Decurl Roll of the Fuser Assembly is rotating normally.

NOTE: Open the Rear Cover Assembly and insert a piece of paper into the Cover Sensor. Perform a visual inspection by generating a test print.

Y: Go to step 4.

N: Replace the Fuser Assembly.

4 There is nothing wrong with paper being fed into the Decurl Roll.

Y: Go to step 5.

N: Replace the Fuser Assembly.

5 Ensure the Exit Actuator uncovers the Photo Sensor Assembly when it detects the presence of a sheet and covers it when no sheet is present.

NOTE: Diagnostics Mode 1, Sensor Input Test.

Y: Go to step 6.

N: Go to *RAP 7.4.22 Exit Assembly Failure.*

6 The parameter for the Diagnostic Mode 1 (Paper Tray Size) is compatible with the sheet size present in the paper tray being used.

Y: Go to step 8.

N: Go to step 7.

NOTE: This error message code could appear on the LCD when the length in the paper feed direction of the paper now loaded is longer than that of the sheet size set for the printer.

NOTE: Ensure the paper guide in the back of the paper tray is adjusted properly.

7 Ensure the Size Sensor Assembly shows a correct switch combination for the sheet size present in Tray 1 when the tray presses the Size Spring. See *Table 7.4.15.1 Tray 1*.

Y: Replace the Paper Tray.

N: Go to *RAP 7.4.15 Size Sensor Assembly Failure.*

NOTE: Remove Tray 1 and perform a visual inspection while inserting the Tray Assembly into the slot.

NOTE: Refer to Sheet Size Selection for switch combinations for various sheet sizes.

8 The Mid Roll Assembly has normal rotation.

NOTE: This can be inspected while performing the Diagnostic Mode 1, Exit Motor.

Y: Go to step 9.

N: Go to step 10.

9 The Exit Roll Assembly is rotating normally.

Y: Go to step 11.

N: Go to step 12.

10 There is +24VDC between the following pins:

- P/J24-1 and P/J24-3
- P/J24-2 and P/J24-4

Y: Replace the Exit Step Motor Assembly.

N: Replace the Print Engine Controller.

11 Ensure the Stack Full Actuator uncovers the Stack Full Sensor when it detects the presence of a sheet and covers it when no sheet is present.

Y: Go to step 12.

N: Replace the Stack Full Actuator or the Stack Full Sensor.

NOTE: This can be inspected by performing the Diagnostic Mode 1, Sensor Input Test.

12 Ensure the Rear Cover Assembly is functioning properly.

Y: Replace the Print Engine Controller.

N: Replace the Rear Cover Assembly.

7.3.8 “Paper Jam Open Front Cover/Remove Print Cartridge Clear Paper Path” Message (E3)

1 Curled sheets of paper are being used in the input paper tray.

Y: Load fresh paper.

N: Go to step 2.

2 The Exit Actuator is covered with a print sheet when the code appears.

Y: Go to step 13.

N: Go to step 3.

3 Ensure the paper size being used conforms to the paper size specification of the printer.

Y: Go to step 4.

N: Load appropriate paper.

NOTE: A paper jam could be caused by an out-of-specification paper whose length is shorter than 139.7 millimeters because it is not suitable for the printers paper transport mechanism.

4 The following transmission gears driving those of the EP Cartridge are functioning properly:

- Tray 1 Feed Roll Assembly.
- Registration Roll Assembly.
- Pinch Roll Assembly.
- MBF Tray Roll Assembly.

NOTE: Open the Front Cover and remove the EP Cartridge. This can be inspected by pressing the Interlock Switch while performing Diagnostic Mode 1, Main Motor.

Y: Go to step 7.

N: Go to step 5.

WARNING! In the next step, do not touch the HVPS and its associated parts which emit high voltages.

5 There is +24VDC between the following pins:

- P/J27-1 and P/J27-2
- P/J27-3 and P/J27-4
- P/J27-5 and P/J27-6

Y: Go to step 6.

N: *Go to RAP 7.4.7 Low Voltage Power Supply (LVPS) Assembly Failure (+24VDC).*

6 Each of the gears of the Drive Assembly functions normally.

NOTE: This can be inspected while performing Diagnostic Mode 1 - Main Motor.

Y: Replace the Paper Handling Solenoid Assembly.

N: Replace the Main Motor Assembly or the Drive Assembly.

7 There seems to be nothing wrong with paper fed into the inlet between the Chute Bottom and the Chute Inlet.

Y: Go to step 8.

N: Check for obstructions in the chute. If okay, replace the Chute Inlet Assembly.

WARNING! Do not touch the HVPS and its associated parts which emit high voltages.

8 Ensure the Registration Sensor Actuator uncovers the sensor when it detects the presence of a sheet and covers it when no sheet is present.

NOTE: This can be inspected by performing the Diagnostic Mode 1, Sensor Input Test.

Y: Go to step 9.

N: Go to *RAP 7.4.11 Registration Sensor Failure.*

9 Ensure the drum shutter opens as the EP Cartridge is installed.

Y: Go to step 10.

N: Replace the EP Cartridge.

NOTE: Insert the EP Cartridge. The Drum Shutter Lever opens the Drum shutter on the EP Cartridge.

10 Bias Transfer Roll (BTR) Assembly is turning properly.

NOTE: Open the Front Cover and remove the EP Cartridge. This can be inspected by pressing the Interlock Switch. Conduct a visual inspection.

Y: Go to step 11.

N: Replace or clean the BTR Assembly.

11 The BTR Chute Assembly is dirty or stained.

Y: Replace or clean the BTR Assembly.

N: Go to step 12.

12 The Heater Roll and the Pressure Roll are functioning properly.

NOTE: Open the Front Cover and cheat the Front Cover interlock. The Heater Roll and Pressure Roll can be inspected while performing Diagnostic Mode 1, Main Motor.

Y: Go to step 13.

N: Replace the Fuser Assembly.

13 There is nothing wrong with paper being fed into the Decurl Roll.

NOTE: Open the Rear Cover Assembly and insert a piece of paper into the Rear Cover Sensor. Perform a visual inspection by generating a test print.

Y: Go to step 14.

N: Replace the Fuser Assembly.

14 Ensure the Exit Actuator uncovers the Exit Photo Sensor when it detects the presence of a sheet, and covers it when no sheet is present.

NOTE: This can be inspected by performing Diagnostic Mode 1, Sensor Input Test.

Y: Go to step 15.

N: Go to *RAP 7.4.22 Exit Assembly Failure.*

15 Nothing seems wrong with paper from the Fuser Assembly being fed into the inlet between the Exit Roll Assembly and the Middle Roll Assembly.

NOTE: Remove the Option Cover and perform a visual inspection through the opening.

Y: Replace the Print Engine Controller.

N: Replace the Exit Assembly or the Rear Cover Assembly.

7.3.9 "Tray 1 Jam/Open Tray 1 Open Front Cover/Remove Jam Sheet" Message (E2) or MBF Jam/Remove All Paper Open Front Cover/Remove Jam Sheet" Message (E2)

Initial Analysis

Inspect the condition of Tray 1 and the MBF Tray feed rolls. Clear or replace if necessary.

1 Curled sheets of paper are being used in the input paper tray.

Y: Load fresh paper.

N: Go to step 2.

2 The code appears when power comes on.

Y: Go to step 3.

N: Go to step 4.

3 There is a sheet of paper or foreign object which would have actuated the Registration Sensor.

Y: Remove the paper or object.

N: Go to step 6.

4 The Main Motor Assembly is functioning properly.

NOTE: The Main Motor Assembly can be inspected while performing Diagnostic Mode 1 - Main Motor. Open the Front Cover Assembly and bypass the Front Cover Interlock.

Y: Go to step 5.

N: Go to *RAP 7.4.19 Drive Assembly Failure.*

5 All the transmission gears of the Drive Assembly are functioning properly.

NOTE: The Drive Assembly gears can be inspected while performing Diagnostic Mode 1, Main Motor.

Y: Go to step 6.

N: Go to *RAP 7.4.19 Drive Assembly Failure.*

6 Tray 1 Feed Roll Assembly and cams are functioning properly.

NOTE: Open the Front Cover and remove the EP Cartridge. Tray 1 Feed Roll Assembly and cams can be inspected by pressing the Interlock Switch while performing Diagnostic Mode 1, Confirm Tray 1 Solenoid Operation.

Y: Go to step 8.

N: Go to step 7.

7 Ensure that the Tray 1 Feed Roll Assembly drives the paper fully through the Paper Handling Unit Assembly.

NOTE: Remove the EP Cartridge and cheat the Front Cover interlock. Perform a visual inspection by generating a test print.

Y: Go to step 8.

N: Replace the faulty parts of the Tray 1 Feed Roll Assembly.

8 Ensure the Retard Assembly is making contact with the pinch roll of the MBF Roll Assembly.

Y: Go to step 9.

N: Replace the Retard Assembly.

NOTE: This can be inspected by producing a test print from the MBF Tray. Stop the printer when the MBF Feed Roll rotates 180^{o}.

9 Ensure the spring exerts adequate pressure to the Retard Assembly and the pinch roll of the MBF Roll Assembly.

Y: Go to step 10.

N: Replace the Retard Assembly.

NOTE: This can be tested by pulling on the paper sheet fed in step 8. Resistance to removing the paper indicates adequate Retard Pad pressure.

10 The parameter for the Diagnostic Mode 1 (Paper Tray Size) is compatible with the size of the print sheets present in Tray 1.

Y: Go to step 14.

N: Go to step 11.

NOTE: Code E2 could appear on the LCD when the length of the paper now loaded is longer than that of the sheet size set for the printer.

NOTE: Ensure the paper guide in the back of the tray is adjusted properly.

11 Ensure the Size Sensor Assembly shows a correct switch combination for the paper size in Tray 1 when the tray presses the Size Sensor Assembly Spring.

NOTE: Remove Tray 1, and perform a visual inspection while reinserting Tray 1.

Y: Go to *RAP 7.4.15 Size Sensor Assembly Failure.*

N: Replace Tray 1.

12 Remove Tray 1. Ensure the plate rises up when the latch is released.

NOTE: Without pulling this latch, the plate should lock when pressed down to the bottom of the tray.

Y: Go to step 13.

N: Replace Tray 1.

13 Install Tray 1. Ensure the paper stack in the tray is lifted up.

NOTE: Conduct a visual inspection from the rear of the printer.

NOTE: Ensure the paper guide in the back of the tray is adjusted properly.

Y: Go to step 14.

N: Replace the tray.

14 Ensure the No Paper Actuator moves smoothly.

Y: Go to step 15.

N: Replace the No Paper Actuator.

15 Ensure the No Paper Sensor of Tray 1 is functioning properly.

Y: Go to step 17.

N: Go to *RAP 7.4.12 MBF Tray No Paper Sensor Failure.*

NOTE: This can be inspected while performing the Diagnostic Mode 1, Sensor Input Test.

16 Ensure that the paper pushes the Registration Sensor Actuator and that the actuator returns when no paper is present.

Y: Go to step 17.

N: Replace the Registration Sensor.

17 Ensure the Registration Sensor is functioning properly.

NOTE: This can be inspected by performing the Diagnostic Mode 1, Sensor Input Test.

Y: Replace the Print Engine Controller.

N: Go to *RAP 7.4.11 Registration Sensor Failure.*

7.3.10 “Paper Size Jam/Open Rear Cover” Message

1 Ensure that the correct paper size is designated in the Tray Menu.

Y: Go to step 2.

N: Correct the paper size in the Tray Menu.

2 The paper size indicated by the Diagnostic Mode 1 (Paper Tray Size) is compatible with the size of the paper present in the paper Tray.

Y: Go to step 4.

N: Go to step 3.

3 Visually check if the Size Sensor Assembly shows the correct switch combination for the size of the paper in the Tray 1 when the Tray presses the Size Sensor Assembly Springs.

Y: Go to *RAP 7.4.15 Size Sensor Assembly Failure.*

N: Replace Tray 1.

4 Check if the Registration Sensor actuates when the sheet is present and deactuates when there is no sheet present.

Y: Go to step 5.

N: Clear the obstruction or replace the Registration Sensor Actuator.

NOTE: This can be inspected by performing Diagnostic Mode 1, Sensor Input Test.

5 Check if the Registration Sensor is functioning correctly.

Y: Replace the Print Engine Controller.

N: Go to *RAP 7.4.11 Registration Sensor Failure.*

7.3.11 “Insert Tray X” Message (C3)

1 Ensure the Size Sensor Assembly shows a correct switch combination for the size of the print sheets present in Tray 1 when the tray presses the Size Sensor Assembly Spring.

NOTE: Ensure the paper guide in the back of the tray is adjusted properly.

NOTE: Remove Tray 1, and perform a visual inspection while inserting the tray into the slot.

Y: Go to step 2.

N: Replace Tray 1.

2 The parameter for the Diagnostic Mode 1 (Paper Tray Size) is compatible with the switch combination shown on the Size Sensor Assembly.

NOTE: You can inspect this by changing the position of the Size Spring.

Y: Replace the Print Engine Controller.

N: Go to *RAP 7.4.15 Size Sensor Assembly Failure.*

7.3.12 “Load Tray 1 xx xxx” Message (C5)

Initial Action

In this case, C5 is a Status Code that usually appears when trying to reproduce a paper-out condition while printing from Tray 1 in the Diagnostics Mode. When a C5 “No Paper” condition is displayed, an associated tray is usually displayed with it. Please ensure that the correct size paper is in the tray.

1 The selected tray is out of paper.

Y: Load the paper tray with the correct size paper.

N: Go to step 2.

2 Remove Tray 1 and check if the plate in the tray will rise up ***fully into position*** when the plate release is actuated.

Y: Go to step 3.

N: Remove any obstructions that might be preventing the tray from rising fully into position. Ensure that the plate release actuator is projecting up high enough to actuate the plate release as the tray is inserted into the printer. Replace Tray 1.

3 The No Paper Actuator for the Tray Assembly is functioning correctly. Consider that if the High Voltage Power Supply is not in the correct position, the No Paper Actuator will not be in position to actuate the No Paper Sensor.

Y: Go to step 4.

N: Inspect and correct/replace the No Paper Actuator.

4 The No Paper Sensor for the Tray Assembly is functioning correctly. This can be verified by performing Diagnostic Mode 1, Sensor Input Test.

Y: Replace the Print Engine Controller.

N: Go to step 5.

5 Verify the continuity of the harness between P/J15 and P/J111. There is continuity.

Y: Replace the HVPS.

N: Replace the harness between P/J15 and p/J111.

7.3.13 “Load MBF Tray xx x xx” Message (C5: MBF)

Initial Actions

In this case, C5 is a Status Code that usually appears when trying to reproduce a paper-out condition while printing from the MBF Tray in the Diagnostics Mode. When a C5 “No Paper” condition is displayed, an associated tray is usually displayed with it. Please ensure that the correct size paper is in the tray.

1 The MBF Tray is out of paper.

Y: Load the MBF Tray with the correct size paper.

N: Go to step 2.

2 The MBF Tray No Paper Actuator is functioning correctly.

Y: Go to step 3.

N: Inspect and correct/replace the MBF Tray No Paper Actuator.

3 The MBF Tray No Paper Sensor is functioning correctly. This can be verified by performing Diagnostic Mode 1, Sensor Input Test.

Y: Replace the Print Engine Controller.

N: Go to step 4.

4 The voltage between P/J17-1 and P/J17-2 is approximately +1.2VCD.

Y: Go to step 5.

N: Replace the LVPS.

5 The voltage between P/J22-3 and P/J22-2 is approximately +1.2VCD.

Y: Go to step 6.

N: Replace the MBF Tray No Paper Sensor Harness between P/J17 and P/J22.

6 The voltage between P/J17-3 and P/J17-2 is at a low logic level (approximately 0VDC) when the sensor detects paper in the MBF Tray and at a high logic level (approximately +5VDC) when the MBF Tray is empty.

Y: Go to step 7.

N: Replace the MBF Tray No Paper Sensor.

7 The voltage between P/J11-3 and P/J12-5 is at a low logic level (approximately 0VDC) when the sensor detects paper in the MBF Tray and at a high logic level (approximately +5VDC) when the MBF Tray is empty.

Y: Go to step 8.

N: Replace the LVPS.

8 The voltage between P/J13-11 and P/J12-5 is at a low logic level (approximately 0VDC) when the sensor detects paper in the MBF Tray and at a high logic level (approximately +5VDC) when the MBF Tray is empty.

Y: Replace the Print Engine Controller.

N: Replace the harness between P/J11 and P/J13.

7.3.14 “Remove Output from Standard Bin” Message (C5: Full Stack)

Initial Action

In this case, C5 is a Status Code that usually appears when trying to reproduce a Bin-Full condition while printing in the Diagnostics Mode. When a C5 “Full Stack” condition is displayed, please empty the Output Bin.

1 Ensure the Stack Full Actuator remains actuated when it detects the presence of a full stack of paper and deactuates when it does not detect a full stack.

Y: Go to step 2.

N: Remove any obstructions that might be preventing the Bin Full Actuator from deactuating into the home position before replacing the Bin Full Actuator.

2 The Stacker Full Sensor is functioning correctly. This can be checked using Diagnostic Mode 1, Input Sensor Test.

Y: Replace the Print Engine Controller.

N: Go to step 3.

3 The No Paper Sensor for the Tray Assembly is functioning correctly. This can be verified by performing Diagnostic Mode 1, Input Sensor Test.

Y: Replace the Print Engine Controller.

N: Go to *RAP 7.4.14 Bin Full Sensor Failure.*

7.3.15 “Toner Low” Message (J5)

1 Install a new EP Cartridge, and check if Code J5 reappears.

Y: Go to step 2.

N: Correction completed.

2 The Toner Sensor Assembly is functioning properly.

NOTE: Open the Front Cover and actuate the Front Cover interlock switch. Inspect the above by removing and installing the EP Cartridge in the Diagnostic Mode 1, Input Sensor Tray. To Perform this analysis, disconnect P/J12, P/J15, and P/J18 from the Print Engine Controller.

Y: Replace the Print Engine Controller.

N: *Go to RAP 7.4.21 Toner Sensor Assembly Failure.*

7.3.16 “Install Print Cartridge” Message (J3)

1 Ensure the Print Cartridge interlock is functioning properly by doing the following:

- Open the front cover and remove the print cartridge.
- Ensure the projection on the Print Cartridge that activates the sensor is not damaged.
- Use the Diagnostic Mode 1, Input Sensor Test and manually actuate and deactuate the print cartridge interlock switch. The print cartridge sensor increments the Diagnostic Mode 1 counter.

  Y: Replace the Print Engine Controller.

  N: Go to step 2.

2 Check for +5VDC at P/J111-A4 to A3. (For convenience, you can make this check at the Fuser PWB P/J116-7 to P/J116-11.)

  Y: Go to step 6.

  N: Go to step 3.

3 Check for +5VDC between P/J15-A9 and P/J15-A10.

  Y: Replace the Wire Harness between P/J15 and P/J111.

  N: Go to step 4.

4 Check for +5VDC between P/J25-2 and P/J25-5.

  Y: Replace the Print Engine Controller.

  N: Go to step 5.

5 Check for +5VDC between P/J12-2 and P/J12-5.

  Y: Replace the Wire Harness between P/J12 and P/J25.

  N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

6 Check for +5VDC between P/J15 B9 (CRU SNR) and P/J15-A10 when the Print Cartridge is removed and 0VDC when the print cartridge is installed.

  Y: Replace Print Engine Controller.

  N: Go to step 7.

7 Check for +5VDC between P/J111-B4 and P/J111-A3.

  Y: Replace the Wire Harness between P/J111 and P/J15.

  N: Replace the High Voltage Power Supply.

NOTE: Disconnect P/J12 and P/J15 from the Print Engine Controller and perform the analysis.

7.3.17 Error Codes

7.3.17.1 Power On Diagnostics (POD) Failure

Insure that the Test LED is functioning properly. The Test LED can be viewed through a small hole located above the RJ45 Connector on the System Controller.

- When printer power is applied, the Test LED will glow to indicate the start of the “Power On Diagnostics” (POD) tests. At the successful completion of the Power On Diagnostics, the LED will go off then glow again for one second, the go off.
- If a fault condition occurs during one of the “Power On Diagnostic” tests, that test is immediately halted and the LED will flash a sequence that identifies the halted test. (Refer to *Table 7.3.17.1.1 Diagnostic LED Flash Sequence Table*.)
- If the LED does not glow or glows continuously, perform the following:

1 Switch OFF the printer.

2 Remove the System Controller. Remove all option/peripheral components from the System Controller.

3 Reinstall the System Controller ensuring proper seating, and switch on the printer.

4 The diagnostic LED functions properly.

Y: Reinstall the option/peripheral components one at a time and retest.

NOTE: If the LED still does not function properly, check the +5 VDC to the System Controller PWB before replacing the System Controller PWB

N: Replace the System Controller PWB

Table 7.3.17.1.1 Diagnostic LED Flash Sequence Table

Control Panel	LED Repeating Flash Sequence	Fault	Corrective Action
0001 - ESS	1 flash - 1 second - 1 flash...etc.	System Controller CPU	Replace the System Controller PWB.
0001 - Base RAM	2 flashes - 1 second - 2 flashes...etc	Base RAM	Replace the System Controller PWB.
0001 - Base ROM	3 flashes - 1 second - 3 flashes...etc	Base ROM	Replace the System Controller PWB.

Control Panel	LED Repeating Flash Sequence	Fault	Corrective Action
0001 - ASIC	4 flashes - 1 second - 4 flashes...etc	ASIC Controller failure	Ensure that the System Controller is properly seated. Replace the System Controller PWB.
0001 - DMA	5 flashes - 1 second - 5 flashes...etc	DMA Controller	Replace System Controller PWB.
0001 - COMM	6 flashes - 1 second - 6 flashes...etc	Communication port internal loopback test	Replace System Controller PWB.
1000 - IOT	8 flashes - 1 second - 8 flashes...etc	IOT Handshake Failure	Replace in order: System Controller PWB, then Print Engine Controller PWB.
0010 - DISK	9 flashes - 1 second - 9 flashes...etc	Hard disk failure	Replace the Hard Disk Drive. If the problem persists, replace the System Controller PWB.
0101 - SIMM1	10 flashes - 1 second - 10 flashes...etc	SIMM Board 1 Failure	Perform *7.3.17.5 Error Code "0101"*.
0102 - SIMM2	11 flashes - 1 second - 11 flashes...etc	SIMM Board 2 Failure	Perform *7.3.17.6 Error Code "0102"*.
0103 - SIMM3	12 flashes - 1 second - 12 flashes...etc	SIMM Board 3 Failure	Perform *7.3.17.7 Error Code "0103"*.
2000 - XIE RAM	15 flashes - 1 second - 15 flashes...etc	Printer Image Enhancement (XIE) RAM Failure	Replace the System Controller PWB.
3000 - TOKEN RING	16 flashes - 1 second - 16 flashes...etc	Token Ring Card Failure	Perform *7.6.3 Token Ring*.
4000 - NIC	17 flashes - 1 second - 17 flashes...etc	Fast Ethernet Card Failure	Perform *7.6.2 Ethernet*.
0040 - ROM BOARD	18 flashes - 1 second - 18 flashes...etc	Optional Flash ROM Board Failure	Perform *7.3.17.4 Error Code "0040"*.
5000 - MEMORY	None	Memory size not large enough to load the system software.	Add additional memory SIMMs or replace current SIMMs with larger capacity SIMMs.

7.3.17.2 Control Panel Displays Black Boxes

You were directed to this RAP because the Control Panel display has a single row of black boxes on the top line during “Power ON Diagnostics.”

1. Switch OFF the printer.
2. Remove the System Controller and reseat the Boot ROM on the System Controller PWB.
3. Reinstall the System Controller ensuring proper seating, and switch on the printer.
4. The Control Panel displays “READY” indicating test completion.
   - Y: Go to Final Actions.
   - N: Observe the Diagnostic LED at power on.

NOTE: If the LED flashes, see Table 7.3.17.1.1 Diagnostic LED Flash Sequence Table. If the LED does not glow or glows continuously, perform RAP 7.3.17.1 Power On Diagnostics (POD) Failure.

7.3.17.3 Error Code “0001”

You were directed to this RAP because the Control Panel displayed the error code “0001” during the Power On Diagnostics.

1. Switch OFF the printer power.
2. Reseat the System Controller and then switch on the printer power.
3. The control panel displays “READY”.
   - Y: Go to Final Actions.
   - N: Observe the Diagnostic LED at power on.

NOTE: If the LED flashes, refer to Table 7.3.17.1.1 Diagnostic LED Flash Sequence Table If the LED does not glow or glows continuously, perform RAP 7.3.17.1 Power On Diagnostics (POD) Failure.

7.3.17.4 Error Code “0040”

You were directed to this RAP because the Control Panel displayed the error code “0040” during the Power On Diagnostics

1. Switch OFF the printer power.
2. Remove the System Controller and reseat the Flash ROM SIMM
3. Reinstall the System Controller ensuring proper seating and switch on the printer power.
4. The Control Panel displays “READY”.
   - Y: Go to Final Actions.
   - N: Go to step 5.
5. Switch OFF the printer power.
6. Remove the System Controller and move the Flash ROM SIMM to the other SIMM location.
7. Reinstall the System Controller and switch on the printer power.
8. The Control Panel displays “READY”.
   - Y: Go to Final Actions.
   - N: Replace the Flash ROM SIMM.

7.3.17.5 Error Code “0101”

You were directed to this RAP because the Control Panel displayed the error code “0101” during the Power On Diagnostics.

1. Switch OFF the printer power.
2. Remove the System Controller. If there is a RAM SIMM in location 2, remove it.
3. Move the RAM SIMM in location 1 into location 2.
4. Reinstall the System Controller and switch on the printer power.
5. The Control Panel displays code 0102.
   - Y: Replace the RAM SIMM currently in location 2.
   - N: Go to step 6.
6. Switch OFF the printer power.
7. Remove the System Controller and move the RAM SIMM back to location 1.
8. Reinstall the System Controller and switch on the printer power.
9. The Control Panel displays code 0101.
   - Y: Replace the System Controller.
   - N: Go to Final Actions.

7.3.17.6 Error Code “0102”

You were directed to this RAP because the Control Panel displayed the error code “0102” during the Power On Diagnostics.

1. Switch OFF the printer power.
2. Remove the System Controller. If there is a RAM SIMM in location 3, remove it.
3. Move the RAM SIMM in location 2 into location 3.
4. Reinstall the System Controller and switch on the printer power.
5. The Control Panel displays code 0103.
   - Y: Replace the RAM SIMM currently in location 3.
   - N: Go to step 6.
6. Switch OFF the printer power
7. Remove the System Controller and move the RAM SIMM back to location 2.
8. Reinstall the System Controller and switch on the printer power.
9. The Control Panel displays code 0102.
   - Y: Replace the System Controller.
   - N: Go to Final Actions.

7.3.17.7 Error Code “0103”

You were directed to this RAP because the Control Panel displayed the error code “0103” during the Power On Diagnostics.

1. Switch OFF the printer power.
2. Remove the System Controller. If there is a RAM SIMM in location 2, remove it.
3. Move the RAM SIMM in location 3 into location 2.
4. Reinstall the System Controller and switch on the printer power.
5. The Control Panel displays code 0102.
   - Y: Replace the RAM SIMM currently in location 2.
   - N: Go to step 6.
6. Switch OFF the printer power
7. Remove the System Controller and move the RAM SIMM back to location 3.
8. Reinstall the System Controller and switch on the printer power.
9. The Control Panel displays code 0103.
   - Y: Replace the System Controller.
   - N: Go to Final Actions.

7.4 RAPs without Fault/Status Codes

7.4.1 Inoperative Printer

WARNING! Do not touch the HVPS or its associated parts which emit high voltages.

1 Disconnect the System Controller. Switch ON the Main Power. The Fan Assembly turns.

Y: Go to step 2.

N: Go to step 3.

2 Remove all options on the System Controller. Reinstall the System Controller. Switch ON the main power. The fan assembly starts to spin.

Y: Replace all options one at a time and retest.

N: Replace the System Controller PWB.

3 Check for the voltages between the following pins:

- +24VDC between J11-11 and J12-5
- +24VDC between J12-1 and J12-5
- +5VDC between J11-13 and J12-5
- +5VDC between J12-2 and J12-5

NOTE: Check +5VDC circuits for short circuit.

NOTE: Check +24VDC circuits for short circuit.

NOTE: To start the above, disconnect P/J11 from the Print Engine Controller and wait five minutes to switch on the printer power. Conduct this analysis before the LVPS Assembly stops voltage output due to the absence of sufficient load (within 30 seconds after switching on the printer power).

Y: Go to step 4.

N: Replace the LVPS Assembly.

4 Disconnect P/J111 on the HVPS and switch on the printer power. The Fan Assembly starts to spin.

Y: Replace the HVPS Assembly.

N: Go to step 5.

5 Disconnect P/J21 of the Fan Assembly and switch on the printer power. Ensure the LCD is functioning when power comes on.

Y: Replace the Fan Assembly.

N: Go to step 6.

6 Reconnect P/J21, disconnect P/J27, and switch on the printer power. Ensure the Fan Assembly is functioning properly when power comes on.

Y: Replace the Paper Handling Solenoid Assembly.

N: Go to step 7.

7 Disconnect P/J14 on the Print Engine Controller and switch on the printer power. Ensure the Fan Assembly is functioning properly when power comes on.

Y: Replace the Drive Assembly.

N: Go to step 8.

8 Disconnect P/J128, which is connected to the Toner Sensor Assembly, and switch on the printer power. Ensure the Fan Assembly is functioning properly when power comes on.

Y: Replace the Toner Sensor.

N: Go to step 9.

9 Disconnect P/J18 on the Print Engine Controller and switch on the printer power. Ensure the Fan Assembly is functioning properly when power comes on.

Y: Replace the Laser Assembly.

N: Go to step 10.

10 Disconnect P/J19 on the Print Engine Controller. Wait for a few minutes, and switch on Main Power. The Fan Assembly starts to spin.

Y: Replace the Laser Assembly.

N: Replace the Print Engine Controller.

7.4.2 Malfunctioning LCD/Malfunctioning LED

1 Switch OFF the printer power and ensure that the Cable Harness is properly connected between P/J32 and P/J33. Check for continuity between P/J32 and P/J33.

NOTE: The System Controller Chassis will have to be removed and the Top Cover Chassis may have to be loosened or removed to perform this check.

Y: Go to step 2.

N: Replace the Cable Harness between P/J32 and P/J33.

2 Switch the printer power ON. Check for +5VDC between P/J33-9 and P/J33-10.

Y: Replace the following parts in order:

- Control Panel Assembly
- System Controller

N: Go to step 3.

3 Check for +5VDC between P/J32-9 and P/J32-10.

Y: Replace the cable between P/J32 and P/J33.

N: Go to step 4.

4 Check for +5VDC between P/J25-2 and P/J25-5.

Y: Replace the Print Engine Controller.

N: Go to step 5.

5 Check for +5VDC between P/J12-2 and P/J12-5.

Y: Replace the harness between P/J25 and P/J12.

N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

7.4.3 Inoperative Keypad

You were directed to this RAP because the Keypad failed to indicate a key press.

1 Enter Diagnostic Mode 1. The Control Panel displays **PRINTER COUNTER OPERATION.**

Y: Go to step 2.

N: Go to step 4.

2 Press the **MENU DOWN (5)** key to display SENSOR INPUT TEST. Then press the **ENTER (4)** to select SENSOR INPUT TEST. The Control Panel displays SENSOR INPUT. INPUT COUNT = XX.

Y: Go to step 3.

N: Go to step 4.

3 Press all keys, except the **ITEM UP (2)** key, and observe that the display indicates the actuation of each key press. The counter increments by one when each key is pressed.

Y: Go to Final Actions.

N: Go to step 4.

4 Switch the printer OFF. Remove the System Controller Chassis and loosen/remove the top cover. Verify P/J32 is properly connected to the Print Engine Controller and that P/J33 is properly connected to the Control Panel Assembly and free of damage. Check for continuity between P/J32 and P/J33. There is continuity.

Y: Go to step 5.

N: Replace the cable.

5 Switch the printer power ON. Check for +5VDC between P/J33-9 and P/J33-10.

Y: Replace the following parts in order:

- Control Panel Assembly
- System Controller

N: Go to step 6.

6 Check for +5VDC between P/J32-9 and P/J32-10.

Y: Replace the cable.

N: Go to step 7.

7 Check for +5VDC between P/J25-2 and P/J25-5.

Y: Replace the Print Engine Controller.

N: Go to step 8.

8 Check for +5VDC between P/J12-2 and P/J12-5.

Y: Replace the harness between P/J25 and P/J12.

N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

7.4.4 Erratic Operation

1 The printer enters the printing cycle.

Y: Go to step 2.

N: Go to step 3.

2 Enter the Test Print Mode and perform the Test Print operation. The printer outputs the prints as usual.

Y: Go to step 4.

N: Replace the Print Engine Controller.

3 A reset occurs while the printer is printing an output.

Y: *Go to RAP 7.4.25 Electrical Noise.*

N: Go to step 4.

4 Install a new Print Engine Controller. The code still appears.

Y: Replace the System Controller.

N: Correction completed.

7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC)

NOTE: Ensure the Front Interlock and the Laser Diode Interlock are actuated.

1 Check for +5VDC between P/J11-13 (5V INTLK) and P/J12-5.

Y: Go to step 6.

N: Go to step 2.

2 Check for +5VDC between P/J131-3 and P/J12-5.

Y: Perform a continuity check between P/J131-3 and P/J11-13 before replacing the Print Engine Controller.

N: Go to step 3.

3 Check for +5VDC between P/J136-4 and P/J131-3.

Y: Replace the harness between P/J136-4 and P/J12-5.

N: Go to step 4.

4 Check for +5VDC between P/J 136-2 and P/J12-5.

Y: Replace the jumper/harness between P/J136-2 and P/J136-4.

N: Go to step 5.

5 Check for +5VDC between P/J131-1 and P/J12-5.

Y: Replace the wire harness between P/J131 and P/J136.

N: Replace the LVPS Assembly.

6 Check for +5VDC between P/J25-2 and P/J25-5 (disconnect P/J25).

Y: Replace the Print Engine Controller.

N: Go to step 7.

NOTE: Conduct this analysis before the LVPS Assembly would stop voltage output due to the absence of sufficient load (within 30 seconds after switching on the printer power).

7 Check for +5VDC between P/J12-2 and P/J12-5 (disconnect P/J25 for this check).

Y: Replace the LVPS.

N: Replace the LVPS.

NOTE: If the +5VDC was present with P/J13 or P/J25 disconnected and disappears when the P/J is connected, check for a possible short to earth ground on that particular +5VDC output of the Print Engine Controller. Otherwise, replace the LVPS.

7.4.6 Low Voltage Power Supply (LVPS) Assembly Failure (+12VDC)

1 Check for +12VDC between P/J12-3 (+12VDC) and P/J12-6 with P/J25 disconnected.

NOTE: Conduct this analysis before the LVPS Assembly stops voltage output due to the absence of sufficient load (within 30 seconds after switching on the printer power).

Y: Ensure the voltage can be read at P/J25 (disconnected) before going to step 2.

N: Replace the LVPS.

2 Check for +12VDC between P/J25-3 and P/J25-6 with P/J25 connected to the Print Engine Controller.

Y: Go to step 3.

N: Replace the Print Engine Controller.

3 Check for +12VDC between P/J25-3 and P/J25-6 with P/J25 connected and the System Controller installed.

Y: Allow the system to warm up for 10 minutes before going to Final Actions.

N: Remove all of the options and retest prior to replacing the System Controller.

7.4.7 Low Voltage Power Supply (LVPS) Assembly Failure (+24VDC)

1 Check for +24VDC between P/J11-11 (24V FAN) and P/J12-4 with P/J13 disconnected.

NOTE: Conduct this analysis before the LVPS Assembly stops voltage output due to the absence of sufficient load (within 30 seconds after switching on the printer power).

Y: Go to step 2.

N: Replace the LVPS.

2 Check for the voltages between P/J12-1 (+24VDC) and P/J12-4 with P/J25 disconnected.

NOTE: Conduct this analysis before the LVPS Assembly stops voltage output due to the absence of sufficient load (within 30 seconds after switching on the printer power).

Y: If the +24VDC disappears after connecting P/J13 and P/J25, replace the Print Engine Controller.

N: Replace the LVPS Assembly.

7.4.8 Quartz Heater Failure

1 There is resistive continuity between J3-1 and J3-4 on the LVPS.

Y: Go to step 2.

N: Go to step 6.

2 Check if the voltage between P/J13-4 (/HEAT ON) and P/J25-5 (S6) is 0VDC when the printer power is on and all cover interlocks are actuated and goes to +5VDC when the interlocks are deactuated.

NOTE: Disconnect P/J115 from the HVPS before checking the voltage.

NOTE: This can be checked by opening and closing the Front Cover when the Fuser Assembly has cooled to room temperature.

Y: Go to step 3.

N: Go to step 4.

3 Check for 0VDC between P/J11-10 (/HEAT ON) and P/J12-5 (SG) when the printer power is on and all cover interlocks are actuated and check for +5VDC when the interlocks are deactuated.

NOTE: Disconnect P/J115 from the HVPS before checking the voltage.

NOTE: This can be checked by opening and closing the Front Cover when the Fuser Assembly has cooled to room temperature.

Y: Replace the LVPS Assembly.

N: Replace the Wire Harness between P/J11 and P/J13.

4 There is +5VDC between P/J25-2 and P/J25-5 on the Print Engine Controller.

Y: Go to *RAP 7.4.9 Temperature Sensor Assembly Failure.*

N: Go to step 5.

NOTE: The LD power source of the Laser Assembly, "+5VDC-LD," also supplies power for generating the Quartz Heater actuating signal.

5 Disconnect P/J18 from the Print Engine Controller and switch on the printer power. Ensure the Quartz Heater is functioning properly when power comes on.

Y: Replace the Laser Assembly.

N: Replace the Print Engine Controller.

6 Remove the Fuser Assembly. There is continuity between J2-1 and J2-5.

Y: Go to step 7.

N: Replace the Fuser Assembly.

7 There is continuity between the following pins:

- P/J3-1 on the LVPS and P/J2-1 on the Fuser PWB
- P/J3-4 on the LVPS and P/J2-5 on the Fuser PWB

Y: Go to step 2.

N: Replace the Fuser Harness Assembly.

NOTE: If the cause cannot be determined by the RAP 7.3.3 “Fuser Failure” Power Off/On (U4), replace Fuser-associated components, such as the LVPS Assembly or the Print Engine Controller. It is rare, but possible, for the Thermostat or the Fuser Assembly to malfunction one time.

7.4.9 Temperature Sensor Assembly Failure

1 Check the Temperature Sensor Assembly for contamination. There is a problem in the Assembly.

Y: Clean the Temperature Sensor Assembly or replace the Fuser Assembly.

N: Go to step 2.

2 Check if the resistance between P/J115-8 (STS) and P/J115-2 on the HVPS is in a range of 200 to 350K ohms.

NOTE: Perform this when the Fuser Assembly has cooled to room temperature (18~22^{O}C).

Y: Go to step 3.

N: Replace the Fuser Assembly.

3 Ensure the resistance between P/J15-A7 and P/J15-A10 on the Print Engine Controller is in a range of 200 to 350K ohms.

NOTE: Perform this when the Fuser Assembly has cooled to room temperature (18~22^{O}C).

Y: Replace the Print Engine Controller.

N: Go to step 4.

4 There is continuity between P/J15 and P/J111.

Y: Replace the HVPS.

N: Replace the Harness.

7.4.10 Exit Sensor Assembly Failure

1 There is +5VDC between P2-7 and P2-4.

Y: Go to step 6.

N: Go to step 2.

2 There is +5VDC between P/J116-7 and P/J116-11.

Y: Replace the Fuser PWB.

N: Go to step 3.

3 There is +5VDC between P/J115-6 and P/J115-2.

Y: Replace the Fuser Harness.

N: Go to step 4.

4 There is +5VDC between P/J111-A4 and P/J111-A3.

Y: Replace the HVPS.

N: Go to step 5.

5 There is +5VDC between P/J15-A9 and P/J15-A10.

Y: Replace the HVPS Harness.

N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

6 The voltage between P/J2-6 and P/J2-4 is at a low logic level (0VDC) when the sensor detects a piece of paper and at a high logic level (+5VDC) when not.

Y: Go to step 7.

N: Replace the Fuser Assembly.

7 The voltage between P/J116-6 and P/J116-11 is at 0VDC.

Y: Go to step 8.

N: Replace the Fuser PWB.

8 The voltage between P/J115-7 and P/J115-2 is 0VDC.

Y: Go to step 9.

N: Replace the Fuser Harness.

9 The voltage between P/J111-B5 and P/J111-A3 is 0VDC.

Y: Go to step 10.

N: Replace the HVPS.

10 The voltage between P/J15-B8 and P/J15-A10 is 0VDC.

Y: Replace the Print Engine Controller.

N: Replace the HVPS Harness.

7.4.11 Registration Sensor Failure

1 There is +5VDC between P/J123-3 and P/J123-2.

Y: Go to step 3.

N: Go to step 2.

2 There is +5VDC between P/J17-4 and P/J17-5.

Y: Go to step 3.

N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

3 The voltage measured between P/J123-1 and P/J123-2 is at a low logic level (0VDC) when paper is at the sensor and at a high logic level (+5VDC) when no paper is at the sensor.

Y: Go to step 4.

N: Replace the Registration Sensor.

4 The voltage measured between P/J17-6 and P/J17-5 is at a low logic level (0VDC) when paper is at the sensor and at a high logic level (+5VDC) when no paper is at the sensor.

Y: Go to step 5.

N: Replace the Sensor Harness.

5 The voltage measured between P/J11-2 and P/J17-5 is 0VDC when there is paper at the sensor.

Y: Go to step 6.

N: Replace the LVPS.

6 The voltage measured between P/J13-12 and P/J17-5 is 0VDC when there is paper at the sensor.

Y: Replace the Print Engine Controller.

N: Replace the Wire Harness between P/J11 and P/J13.

7.4.12 MBF Tray No Paper Sensor Failure

1 There is +5VDC between P/J122-3 and P/J122-2.

Y: Go to step 3.

N: Go to step 2.

2 There is +5VDC between P/J17-1 and P/J17-2.

Y: Replace the MBF No Paper Sensor.

N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

3 The voltage measured between P/J17-3 and P/J17-2 is at a low logic level (0VDC) when the MBF No Paper Sensor detects paper and at a high logic level (+5VDC) when the MBF No Paper Sensor detects no paper.

Y: Go to step 4.

N: Replace the MBF No Paper Sensor.

4 The voltage measured between P/J11-3 and P/J17-2 is 0VDC when there is paper at the sensor.

Y: Go to step 5.

N: Replace the LVPS.

5 The voltage measured between P/J13-11 and P/J17-2 is 0VDC.

Y: Replace the Print Engine Controller.

N: Replace the Wire Harness between P/J11 and P/J13.

7.4.13 Tray 1 No Paper Actuator, No Paper Sensor Failure

1 The No Paper Actuator is closed when paper is in Tray 1 and open when there is no paper in Tray 1.

Y: Go to step 2.

N: Replace the HVPS.

2 There is +5VDC between P/J111-A4 and P/J111-A3.

Y: Go to step 4.

N: Go to step 3.

3 There is +5VDC between P/J15-A9 and P/J15-A10.

Y: Replace the HVPS Harness.

N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

4 The voltage between P/J15-A4 and P/J15-A10 is at a low logic level (0VDC) when the No Paper Sensor detects paper in the tray and at a high logic level (+5VDC) when there is no paper.

Y: Replace the Print Engine Controller.

N: Go to step 5.

5 The voltage between P/J111-A9 and P/J111-A3 is 0VDC.

Y: Replace the HVPS Harness.

N: Replace the HVPS.

7.4.14 Bin Full Sensor Failure

1 There is +5VDC between P/J28-1 and P/J28-3.

Y: Go to step 2.

N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

2 There is +5VDC between P/J125-1 and P/J125-3.

Y: Go to step 3.

N: Replace the Stack Full Sensor Harness.

3 The voltage between P/J28-2 and P/J28-1 is at a low logic level (0VDC) when the sensor detects that the tray is not full and at a high logic level (+5VDC) when it detects a full tray.

Y: Replace the Print Engine Controller.

N: Go to step 4.

4 Verify continuity of the Stack Full Sensor Harness. The harness is good.

Y: Replace the Stack Full Sensor.

N: Replace the Stack Full Sensor Harness.

7.4.15 Size Sensor Assembly Failure

1 Press the Size Sensor Assembly. Ensure the spring actuates the corresponding Paper Size Switch.

NOTE: Conduct a visual inspection after removing the paper tray.

Y: Go to step 2.

N: Replace the relevant Size Sensor Assembly.

2 There is +4.77 to +5.44 VDC between P/J22-6 and P/J22-7 on the Print Engine Controller.

Y: Go to step 3.

N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

NOTE: Disconnect P/J15 from the Print Engine Controller and perform the analysis.

3 Check for the voltage between P/J22-3 (Tray 1), P/J22-4 (Tray 2), P/J22-5 (Tray 3), and P/J22-7 (SG) on the Print Engine Controller. The result is compatible with the value for the switch combination shown in *Table 7.4.15.1 Tray 1* and *Table 7.4.15.2 Second and Third Trays*.

Y: Replace the Print Engine Controller.

N: Go to step 4.

4 There is continuity between J22 on the Print Engine Controller and J118 on the Paper Size Sensor Assembly.

Y: Replace the Size Sensor Assembly.

N: Replace the Feed Harness Assembly.

Table 7.4.15.1 Tray 1

Size	Size SNR Voltage (V) Vsnr			S2 (*)	S1 (*)	S0 (*)
	+5VDC Measured at P/J22-6					
	4.77V Min.	5.10V Typ.	5.44 Max.			
No Cassette	0.00	0.00	0.00	0	0	0
B5	1.01	1.10	1.19	1	0	0
Statement	1.67	1.81	1.95	0	1	0
Legal 13”	2.13	2.30	2.48	1	1	0
Letter	2.47	2.67	2.88	0	0	1
Executive	2.74	2.95	3.18	1	0	1
A4	2.95	3.18	3.41	0	1	1
Legal 14”	3.12	3.36	3.60	1	1	1

Table 7.4.15.2 Second and Third Trays

Size	Size SNR Voltage (V) Vsnr			S2 (*)	S1 (*)	S0 (*)
	+5VDC Measured at P/J22-6					
	4.77V Min.	5.10V Typ.	5.44 Max.			
No Deck	0.00	0.00	0.00	0	0	0
No Tray	0.55	0.60	0.65	0	0	0
Legal 13”	2.31	2.49	2.69	1	1	0
Letter	3.19	3.43	3.68	0	0	1
A4	1.91	2.07	2.23	0	1	1
Legal 14”	3.03	3.27	3.51	1	1	1

The following legend applies to *Table 7.4.15.1 Tray 1* and *Table 7.4.15.2 Second and Third Trays*.

- (*): Contact Actuation of Paper Size Sensor
- 1: Closed
- 0: Open
- Position of contacts: S2: Top; S1: Middle; S0: Bottom

7.4.16 MBF Tray Paper Handling Solenoid Failure

1 There is +24VDC between P/J27-5 and P/J17-2 on the LVPS.

Y: Go to step 2.

N: *Go to RAP 7.4.7 Low Voltage Power Supply (LVPS) Assembly Failure (+24VDC).*

NOTE: Disconnect P/J15 from the Print Engine Controller and perform the analysis.

2 In standby, there is +24VDC between P/J134-2 and P/J17-2.

Y: Go to step 3.

N: Replace the Feed Harness (P/J27 to P/J134).

3 In standby, there is +24VDC between P/J134-1 and P/J17-2.

Y: Go to step 4.

N: Replace the MBF Tray Feed Solenoid.

4 In standby, there is +24VDC between P/J27-6 and P/J17-2.

Y: Go to step 5.

N: Replace the Feeder Harness (P/J27 to P/J134).

5 In standby, there is +24VDC between P/J11-4 and P/J17-2.

Y: Go to step 6.

N: Replace the LVPS.

6 In standby, there is +24VDC between P/J13-10 and P/J17-2.

Y: Go to step 7.

N: Replace the LVPS Harness.

7 The voltage between P/J27-6 and P/J17-2 is 0VDC when the MBF Tray Solenoid is actuated, and the voltage is 0VDC when deactuated.

Y: Replace the Paper Handling Solenoid Assembly.

N: Replace the Print Engine Controller.

NOTE: You can inspect this while performing Diagnostic Mode 1, MBF Solenoid. Disconnect P/J15 from the Print Engine Controller to perform the analysis.

7.4.17 Paper Handling (Feed) Solenoid Assembly Failure (Tray 1)

1 There is +24VDC between P/J27-1 on the Print Engine Controller and P/J17-2 on the LVPS.

Y: Go to step 2.

N: *Go to RAP 7.4.7 Low Voltage Power Supply (LVPS) Assembly Failure (+24VDC).*

NOTE: Disconnect P/J15 from the Print Engine Controller and perform the analysis.

2 In standby, there is +24VDC between P/J132-2 and P/J17-2.

Y: Go to step 3.

N: Replace the Feed Harness (P/J27 to P/J132).

3 In standby, there is +24VDC between P/J132-1 and P/J17-2.

Y: Go to step 4.

N: Replace the Tray 1 Solenoid.

4 In standby, there is +24VDC between P/J27-2 and P/J17-2.

Y: Go to step 5.

N: Replace the Feed Harness (P/J27 to P/J32).

5 In standby, there is +24VDC between P/J11-6 and P/J17-2.

Y: Go to step 6.

N: Replace the LVPS.

6 In standby, there is +24VDC between P/J13-4 and P/J17-2.

Y: Go to step 7.

N: Replace the LVPS Harness.

7 The voltage between P/J27-2 and P/J17-2 on the LVPS is 0VDC when the Feed Solenoid is actuated, and the voltage is +24VDC when deactuated.

NOTE: This can be inspected while performing the Diagnostic Mode 1, Tray 1 Solenoid. Read the meter quickly because the Feed Solenoid is ON for just one second in the Diagnostic Mode.

Y: Replace the Tray 1 Solenoid Assembly.

N: Replace the Print Engine Controller.

7.4.18 Registration Solenoid Assembly (Turn Clutch) Failure

1 There is +24VDC between J27-3 and J17-2 on the LVPS.

Y: Go to step 2.

N: *Go to RAP 7.4.7 Low Voltage Power Supply (LVPS) Assembly Failure (+24VDC).*

NOTE: Disconnect P/J15 from the Print Engine Controller and perform the analysis.

2 In standby, there is +24VDC between P/J133-2 and P/J17-2.

Y: Go to step 3.

N: Replace the Feed Harness (P/J133-1 and P/J27-4).

3 In standby, there is +24VDC between P/J133-1 and P/J17-2.

Y: Go to step 4.

N: Replace the Registration Solenoid.

4 In standby, there is +24VDC between P/J27-4 and P/J17-2.

Y: Go to step 5.

N: Replace the Feed Harness (P/J27 to P/J133).

5 In standby, there is +24VDC between P/J11-5 and P/J17-2.

Y: Go to step 6.

N: Replace the LVPS.

6 In standby, there is +24VDC between P/J13-9 and P/J17-2.

Y: Go to step 7.

N: Replace the LVPS Harness.

7 The voltage between P/J27-4 and P/J17-2 on the LVPS is 0VDC when the Registration Solenoid is actuated, and +24VDC when deactuated.

NOTE: You can inspect this while performing the Diagnostic Mode 1, Registration Solenoid.

Y: Replace the Registration Solenoid Assembly.

N: Replace the Print Engine Controller.

7.4.19 Drive Assembly Failure

CAUTION **This gear should always rotate counterclockwise (viewed from the right side of the printer). Note: Do not turn this gear in the reverse direction.**

1 Ensure there is normal movement in the Drive Assembly by cranking it manually.

NOTE: The Gear secured on the Main Motor Assembly shaft rotates counterclockwise (viewed from the right side of the printer).

Y: Go to step 2.
N: Replace the Drive Assembly.

2 Ensure there is normal movement in the Registration Roll Assembly by cranking it manually.

NOTE: Open the Front Cover and ensure the Registration Roll rotates smoothly.

Y: Go to step 3.
N: Replace the Registration Roll Assembly.

3 Ensure there is normal movement in the Pinch Roll Assembly by cranking it manually.

NOTE: Open the Front Cover and ensure the Registration Roll rotates smoothly.

Y: Go to step 4.
N: Replace the Pinch Roll Assembly.

NOTE: Disconnect P/J15 from the Print Engine Controller and perform the analysis.

4 Ensure there is normal movement in the Pinch Roll Assembly by cranking it manually.

NOTE: Open the Front Cover and ensure the Registration Roll rotates smoothly.

Y: Go to step 5.
N: Replace the Pinch Roll Assembly.

5 Ensure there is normal movement in the Turn Pinch Roll Assembly by cranking it manually.

NOTE: Open the Front Cover and ensure the Registration Roll rotates smoothly.

Y: Go to step 6.
N: Replace the MBF Tray Roll Assembly.

6 Ensure there is normal movement in Tray 1 Feed Roll Assembly by cranking it manually.

Y: Go to step 7.
N: Replace the Tray 1 Feed Roll Assembly.

CAUTION **This gear should always rotate counterclockwise (viewed from the right side of the printer). Note: Do not turn this gear otherwise in the reverse rotating direction.**

7 Remove the EP Cartridge. Manually crank the transmission gears of the Drive Assembly.

NOTE: Ensure the gear secured on the Main Motor shaft rotates smoothly counterclockwise (viewed from the right side of the printer).

Y: Replace the EP Cartridge.

N: Go to step 8.

8 Remove the Fuser Assembly. Manually crank the transmission gears of the Drive Assembly.

NOTE: Ensure the gear secured on the Main Motor shaft rotates smoothly counterclockwise (viewed from the right side of the printer).

Y: Replace the Fuser Assembly.

N: Go to step 9.

9 There is +24VDC between P/J14-1 and P/J14-2 on the Print Engine Controller.

Y: Go to step 10.

N: *Go to RAP 7.4.7 Low Voltage Power Supply (LVPS) Assembly Failure (+24VDC).*

10 There is +5VDC between P/J14-3 and P/J14-4 on the Print Engine Controller

Y: Go to step 11.

N: *Go to RAP 7.4.7 Low Voltage Power Supply (LVPS) Assembly Failure (+24VDC).*

NOTE: Disconnect P/J15 from the Print Engine Controller and perform the analysis.

11 There is continuity between J14-1 and J14-2 on the Print Engine Controller.

Y: Go to step 12.

N: Replace the Main Motor Assembly.

NOTE: Disconnect P/J15 from the Print Engine Controller and perform the analysis.

12 Install a new Print Engine Controller. The problem still exists.

Y: Replace the Drive Assembly.

N: Correction Completed.

NOTE: Disconnect P/J15 from the Print Engine Controller and perform the analysis.

7.4.20 Fan Assembly Failure

1 There is +24VDC between P/J23-3 and P/J23-4 on the Print Engine Controller.

Y: Go to step 2.

N: *Go to RAP 7.4.7 Low Voltage Power Supply (LVPS) Assembly Failure (+24VDC).*

NOTE: Disconnect P/J15 from the Print Engine Controller and perform the analysis.

2 The fan does not revolve at all.

Y: Replace the Fan Assembly.

N: Go to step 3.

3 Ensure between P/J23-1 and P/J25-5 on the Print Engine Controller there is +5VDC with the fan ON.

Y: Replace the Fan Assembly.

N: Replace the Print Engine Controller.

7.4.21 Toner Sensor Assembly Failure

1 There is +24VDC between P17-7 and P17-9 on the LVPS.

Y: Go to step 2.

N: *Go to RAP 7.4.7 Low Voltage Power Supply (LVPS) Assembly Failure (+24VDC).*

2 There is +5VDC between P17-8 and P17-9 on the LVPS.

Y: Go to step 4.

N: Go to step 3.

3 There is continuity between P/J13 on the Print Engine Controller and P/J11 on the LVPS; P/J25 on the Print Engine Controller and P/J12 on the LVPS.

Y: Replace the Print Engine Controller.

N: Replace the LVPS Harness Assembly.

4 The voltage between P/J17-8 and P/J25-5 is 0VDC with the EP Cartridge installed (or sufficient toner present), and the voltage is +5VDC with the EP Cartridge removed (or no toner present).

NOTE: Keep the Front Cover Assembly closed while performing this.

Y: Replace the Print Engine Controller.

N: Go to step 5.

5 There is continuity between J17 and J128.

Y: Replace the Toner Sensor Assembly.

N: Replace the Registration Harness Assembly.

NOTE: Disconnect P/J15 from the Print Engine Controller and perform the analysis.

7.4.22 Exit Assembly Failure

1 There is +24VDC between P/J12-1 and P/J12-4 on the LVPS.

Y: Go to step 2.

N: Replace the LVPS Assembly.

2 There is continuity between J12 on the LVPS and J25 on the Print Engine Controller.

Y: Go to step 3.

N: Replace the LVPS Harness Assembly.

3 There is +24VDC between the following points.

- P/J24-1 and P/J25-4 on the Print Engine Controller
- P/J24-2 and P/J25-4 on the Print Engine Controller

Y: Go to step 4.

N: Replace the Print Engine Controller.

4 There is continuity between the following points (approximately 2.3 ohms) on the Print Engine Controller.

- P/J24-1 and P/J24-3
- P/J24-1 and P/J24-5
- P/J24-2 and P/J24-4
- P/J24-2 and P/J24-6

Y: Go to step 5.

N: Replace the Exit Motor Assembly.

5 Manually crank the following transmission gears of the Exit Assembly.

- Exit Roll Assembly
- Mid Roll Assembly

Y: Go to step 6.

N: Replace the Exit Assembly.

6 Manually crank the Exit Motor Assembly.

Y: Go to step 7

N: Replace the Exit Motor Assembly.

7 Install a new Print Engine Controller. The problem is still present.

Y: Replace the Exit Assembly.

N: The correction is completed.

7.4.23 Fuser PWB Failure

1 Ensure the voltage between P/J11-13 and P/J12-5 on the LVPS is +5VDC while the Interlock Switch is actuated.

Y: Go to step 2.

N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

2 There is continuity between J11 on the LVPS and J13 on the Print Engine Controller.

Y: Go to step 3.

N: Replace the LVPS Harness Assembly.

3 Ensure the voltage between P/J15-B1 and P/J15-A10 on the Print Engine Controller is +5VDC while the Interlock Switch is actuated.

Y: Go to step 4.

N: Replace the Print Engine Controller.

4 There is continuity between J15 on the Print Engine Controller and J111 on the HVPS.

Y: Go to step 5.

N: Replace the HVPS Harness Assembly.

5 Ensure the voltage between P/J115-3 and P/J115-2 on the HVPS is +5VDC while the Interlock Switch is actuated.

Y: Go to step 6.

N: Replace the HVPS Assembly.

6 There is continuity between J115 on the HVPS and J116 on the Fuser PWB.

Y: Go to step 7.

N: Replace the Fuser PWB Harness Assembly.

7 Ensure the voltage between P2-2 and P2-4 on the Fuser PWB is +5VDC while the Interlock Switch is actuated.

Y: Go to Final Actions.

N: Replace the Fuser PWB.

7.4.24 HVPS Failure

1 There is +24VDC between P15-A8 and P15-B2 on the Print Engine Controller.

Y: Go to step 2.

N: *Go to RAP 7.4.7 Low Voltage Power Supply (LVPS) Assembly Failure (+24VDC).*

NOTE: Disconnect P/J15 from the Print Engine Controller and perform the analysis.

2 There is +5VDC between P15-A9 and P15-A10 on the Print Engine Controller.

Y: Go to step 3.

N: *Go to RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

NOTE: Disconnect P/J15 from the Print Engine Controller and perform the analysis.

3 There is +24VDC between P15-A3 and P15-A10 on the Print Engine Controller.

Y: Go to step 4.

N: Replace the HVPS Assembly.

4 There is +24VDC between P15-B12 and P15-A10 on the Print Engine Controller.

Y: Go to step 5.

N: Replace the HVPS Assembly.

5 There is +24VDC between P15-B11 and P15-A10 on the Print Engine Controller.

Y: Go to step 6

N: Replace the HVPS Assembly

6 There is +24VDC between P15-B10 and P15-A10 on the Print Engine Controller.

Y: Go to step 7.

N: Replace the HVPS Assembly.

7 There is continuity between J15 on the Print Engine Controller and J111 on the HVPS.

Y: Go to step 8.

N: Replace the HVPS Harness Assembly.

8 Install a new Print Engine Controller. The problem is still present.

Y: Replace the HVPS Assembly.

N: The correction is completed.

7.4.25 Electrical Noise

You were directed to this RAP because electrical noise emissions are interfering with the operation of the printer. Use this RAP to diagnose and eliminate the electrical noise. Sometimes an arcing electrical voltage can be the source of the problem. In light of this, particular attention should be directed to the areas of the HVPS and line voltage.

Initial Actions

- Remove all of the installed options in order to isolate this noise problem. Test the base printer with no options installed. If the noise problem is eliminated, reinstall all of the optional components, one at a time, and retest.

  Determine which optional component is the source of the noise and replace that component.
- When a cover or printer component is removed and replaced/reinstalled for testing purposes, ensure that the cover or component is positioned securely into place with all of the proper hardware (screws) before retesting. Some components, such as the HVPS and the Transport Chute Assembly, are dependent on ground connections when properly positioned and secured.

1 Ensure that the printer is properly grounded; that is, ensure that the line voltage is correctly polarized and the proper ground connection is established between the printer and the wall outlet.

Y: Go to step 2.

N: Inform the customer that the wall outlet must be properly polarized and that the proper ground connection must be established.

2 There is an electrical device that might be generating noise around the printer.

Y: Move either the device or the printer to a different location.

N: Go to step 3.

3 There is resistive continuity measured across the Ground Diode Assembly (Fuser area) in one direction and infinite resistance in the opposite direction.

Y: Go to step 4.

N: Replace the Fuser Assembly.

4 Visually check that the anode side of the Ground Diode Assembly is connected to a tab that is brushing against the metal part of the Heat Roll.

Y: Go to step 5.

N: Replace the Fuser Assembly if the tab cannot be made to contact the metal tube of the Heat Roll.

5 The Transport Chute Assembly is grounded to the printer chassis through a Transport Chute rear mounting screw.

Y: Go to step 6.

N: Make sure that the screw securing the rear of the Transport Chute Assembly to the printer chassis is secured tightly.

6 Ensure there is a ground contact from the EP Cartridge to the Chassis Ground (through the drum shaft). Measure continuity from the printer chassis to the drum shaft contact on the EP Cartridge when installed.

Y: Go to step 7.

N: Clean the drum shaft ground contact or replace the EP Cartridge.

7 There is ground contact to the Exit Motor when the Top Cover is mounted through the spring contact attached to the printer chassis.

Y: Go to step 8.

N: Remove the obstruction or reform the spring contact.

8 Check to make sure there is a spring ground contact from the Eliminator Assembly to chassis ground when the Top Cover is mounted.

Y: Go to step 9.

N: Remove the obstruction or reform the spring contact.

9 Check for high voltage arcing at the Detack Saw. Visually inspect the Detack Saw and listen for a buzzing or arcing sound while performing Diagnostic Mode 1, HVPS (Detack Saw). There is arcing present.

Y: Check for foreign material or toner contamination of the Detack Saw. Clean or replace the Transport Chute Assembly.

N: Go to step 10.

10 Replace the following components in the following order and retest after installation of each new component:

a. Exit Drive Motor

b. Main Drive Motor

c. High Voltage Power Supply (HVPS)

d. Low Voltage Power Supply (LVPS)

e. Print Engine Controller

f. System Controller

g. Laser Assembly

The electrical noise is eliminated.

Y: Go to Final Actions.

N: Go to Step 11.

11 There is continuity between the Heat Roll and the Nip Lever L.

NOTE: Remove the Fuser Top Cover Assembly and the Left Fuser Cover to perform this.

Y: Go to step 12.

N: Secure continuity.

12 There is continuity between the Earth Plate and the Wire Assembly.

Y: Go to step 13.

N: Secure continuity.

13 Install a new EP Cartridge, and perform Diagnostic Mode 1, Main Motor. The noise is still present.

NOTE: Ensure all the covers and the EP Cartridge are put on the printer.

Y: Secure firm contact between the Earth Plate and the EP Cartridge; then go to step 14.

N: Correction completed.

14 Ensure that the printer is grounded properly.

Y: Go to step 15.

N: Ground the printer properly.

15 Inspect the grounding path and try to repeat the initial analysis. The noise is still present.

Y: Replace the relevant components.

N: Correction completed.

NOTE: Some kind of noise external to the printer may have caused this problem. Check the exterior of the printer.

7.4.26 Mechanical Noise

You were directed to this RAP to diagnose and repair an audible mechanical noise coming from within the printer. Please be aware that electrical arcing may also generate an audible noise, especially in the areas of the High Voltage Power Supply and the line voltage.

1 The noise is present in the standby mode.

Y: Power OFF the printer and perform the following checks. Repair/replace any faulty component:

- Inspect the Fan Assembly and any associated wire harness.
- Inspect the Laser Assembly.
- Inspect/remove the Hard Drive Assembly mounted on the System Controller. After removal, test again in the standby mode to determine if the Hard Drive is the source of the noise.

N: Go to step 2.

2 Execute Diagnostic Mode 1, Main Motor. The noise is present.

Y: Go to step 3.

N: Go to step 5.

3 Open the Front Cover Assembly and remove the EP Cartridge. Remember to bypass the interlocks for the Front Cover Assembly and the EP Cartridge. Perform Diagnostic Mode 1, Main Motor and inspect the drive train gears for broken or missing teeth. The noise is present.

Y: Go to step 4.

N: Inspect the Front Cover Assembly for loose, broken, or misaligned parts. Replace the EP Cartridge if necessary.

4 Open the Rear Cover, remove the Fuser Assembly, and bypass the Rear Cover interlock. While performing Diagnostic Mode 1, Main Motor, inspect the drive train gears from the rear of the printer for broken or missing teeth. The noise is present.

Y: Carefully inspect/repair the Paper Handling Unit for the source of the noise before replacing the Main Motor Assembly.

N: Replace the Fuser Assembly.

5 Perform Diagnostic Mode 1 (Exit Motor CW and CCW respectively). The noise is present.

Y: Determine the exit component causing the noise and replace.

N: Go to step 6.

6 Power OFF the printer. Remove all the interlock bypasses in steps 3 and 4, and install the EP Cartridge. Remove all input and output options, and the Hard Disk from the System Controller. Close the Front and Rear Cover Assemblies. Power ON the printer, and from Diagnostic Mode 2 (Test Print Mode), run a Print Engine Controller Test Print. The noise is present.

Y: Inspect the Tray 1 Feed Roll drive components and replace as necessary.

N: Go to step 7.

7 Power OFF the printer, empty Tray 1 and load paper in the MBF Tray (MBF). Power ON the printer and run a Print Engine Controller Test Print in Diagnostic Mode 2 (Test Print Mode). The noise is present.

Y: Inspect the MBF Tray Feed Roll drive and associated gears. Replace as necessary.

N: Go to step 8.

8 Reinstall all the optional components one at a time, testing each time for the noise.

Y: When the source of the noise is discovered, isolate the defective component(s) and replace.

N: Go to Final Actions.

WARNING! When Diagnostic Mode 1, Main Motor, is enabled, the Main Drive Motor will run. Be extremely careful around moving parts.

7.5 Image Quality RAPs

This section contains image quality repair procedures to assist in correcting image quality defects. These procedures provide defect samples, definitions and specifications to help identify the type of defect that exists, the test pattern to use, and actions required to correct the defects.

Throughout these procedures, the term “vertical” refers to the process direction (the direction paper travels through the printer); the term “horizontal” refers to the scanning direction (the direction the laser beam scans across the page).

Be sure to check the paper tray to determine whether paper is being fed long edge or short edge first. This determines “vertical” and “horizontal” for paper fed from that particular tray.

Cleaning procedures should always be performed before beginning any Print Quality Repair procedure.

Be sure that the paper meets printer specifications. Changing the paper, or using paper from a previously unopened ream, will resolve many print quality issues.

After resolving an image quality problem, return to *RAP 7.5.3 Image Quality Checkout* to verify that no other image quality defects exist.

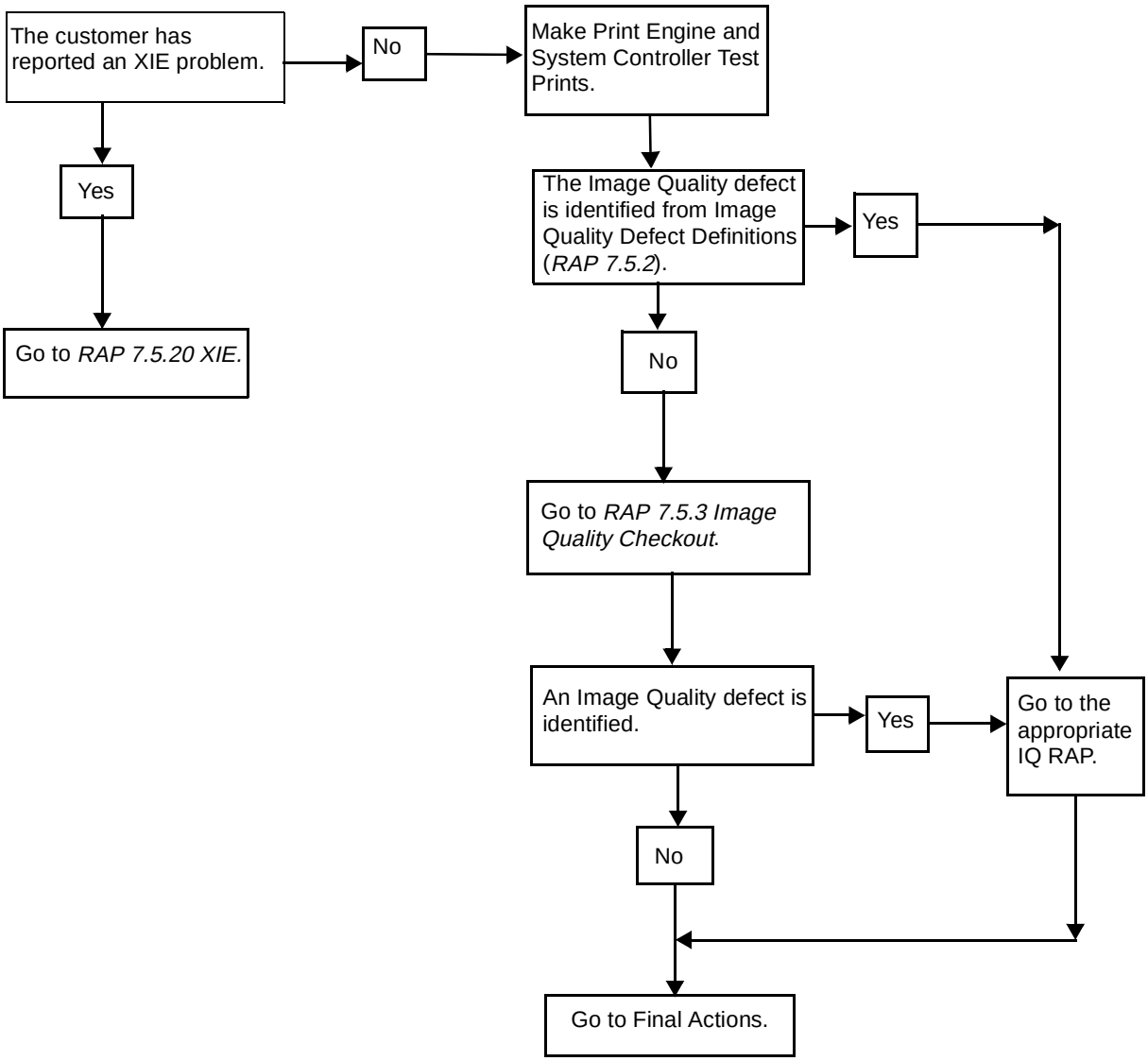
7.5.1 Image Quality Entry Flowchart

Initial Actions

Replace paper in all trays from a previously unopened ream.

Procedure

Use the following Flow Chart to assist in identifying an Image Quality Defect.



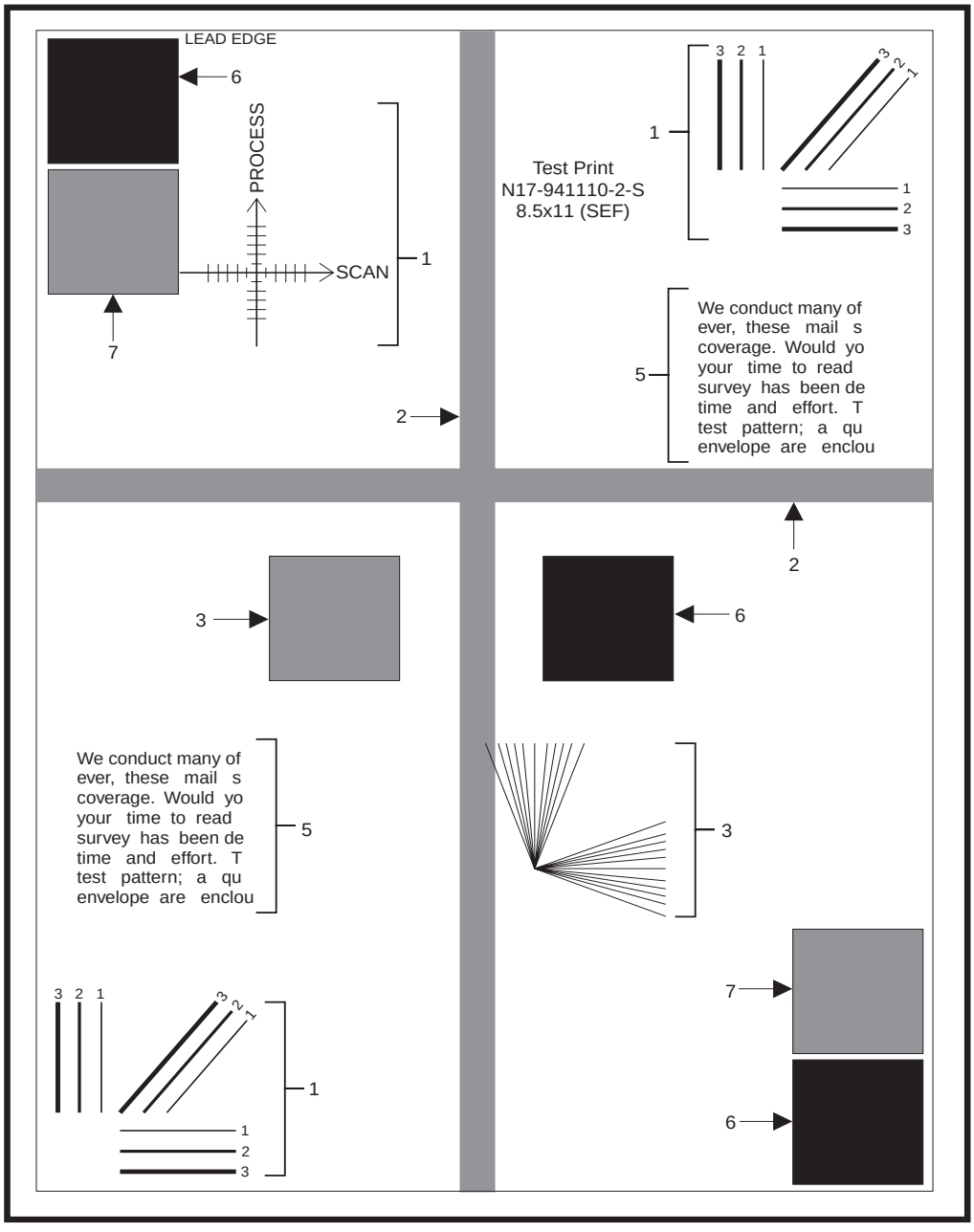
7.5.2 Image Quality Defect Definitions

Table 7.5.2.1 Image Quality Defect Definitions

Defect Definitions	Go to
NON-UNIFORM IMAGE QUALITY: The line darkness and solid area density image varies across the print.	***RAP 7.5.4***
BLACK PRINTS: The print is completely covered with toner and has no visible image.	***RAP 7.5.5***
HORIZONTAL DELETIONS: There are areas of the image that are extremely light or missing entirely. These missing areas form wide bands that run horizontally across the page in the direction of scanning.	***RAP 7.5.6***
VERTICAL DELETIONS: There are areas of the image that are extremely light or missing entirely. These missing areas form wide bands that run vertically along the page in the direction of paper movement.	***RAP 7.5.7***
SPOT DELETIONS: Solid areas are marked with irregular white areas.	***RAP 7.5.8***
LIGHT PRINTS: Refer to the Solid Area Density specification.	***RAP 7.5.9***
BLANK PRINTS: Prints with no visible image.	***RAP 7.5.10***
EXTRANEOUS MARKS: Horizontal or vertical bands, or other marks that are print defects caused by bad or incorrect font data, print drivers, electrical noise or other causes not directly related to the electrophotographic process.	***RAP 7.5.11***
CHARACTER DEFECTS: Garbled print, missing, repeating, or scrambled characters are problems relating to font data or character generation. These are print defects not related to the electrophotographic process.	***RAP 7.5.12***
SPOTS: There are spots of toner on the page.	***RAP 7.5.13***
UNFUSED IMAGE: Part of or all of the image is unfused. Refer to the specification.	***RAP 7.5.14***
MISREGISTERED IMAGE (lead edge to trail edge): Displacement of the image, in the process direction, from its intended position on the print. **(inboard to outboard):** Displacement of the image, across the process direction, from its intended position on the print.	***RAP 7.5.15***
STREAKS: Extraneous dark lines/bands in or across the process direction. These are Print Engine defects not related to the System Controller or Host Data.	***RAP 7.5.16***
RESIDUAL IMAGES: The image from a previous print, which was not removed during the cleaning process, has been developed on the current print.	***RAP 7.5.17***
BACKGROUND: Uniform toner contamination in non image areas. Refer to the Background specification.	***RAP 7.5.18***
DAMAGED PRINTS: Creases, wrinkles, excessive curl, cuts, folds or embossed marks.	***RAP 7.5.19***
XIE SMOOTHING: Near-vertical and near-horizontal lines are jaggy.	***RAP 7.5.20***
RESOLUTION: At 300 DPI two pixel lines and halftone patches cannot be reproduced clearly on the print.	***RAP 7.5.21***
SKEWED IMAGE: Angular displacement of the image from its intended position on the print. Refer to the specification.	***RAP 7.5.22***
SKIPS / SMEARS: Skip-Loss or stretching of the image in bands across the process direction. Smear-The distortion of the image in bands across the process direction that cause it to appear to be blurred or compressed.	***RAP 7.5.23***

Each area of the test pattern is used for a print quality parameter. The areas and the print quality parameters are listed in Figure 7.5.2.2.

Figure 7.5.2.2 System Controller Test Print Pattern



SAS1002

1	Resolution (2 places)	**5**	Resolution and Uniformity (2 places)
2	Skips and Smears (2 places.	**6**	Solid Area Density (3 places)
3	XIE Smoothing (2 places)	**7**	Half Tone Resolution (2 places)
4	Registration		

7.5.3 Image Quality Checkout

This procedure is used to check that the quality of the printed image meets the specifications. Refer to Figure 7.5.2.2.

The Image Quality Checkout includes the following:

1) Solid Area Density
2) Background
3) Deletions
4) Fusing
5) Resolution
6) Registration (Lead Edge to Trail Edge)
7) Registration (Side-to-side)
8) Skew
9) Skips/Smears
10) Spots
11) Other Defects

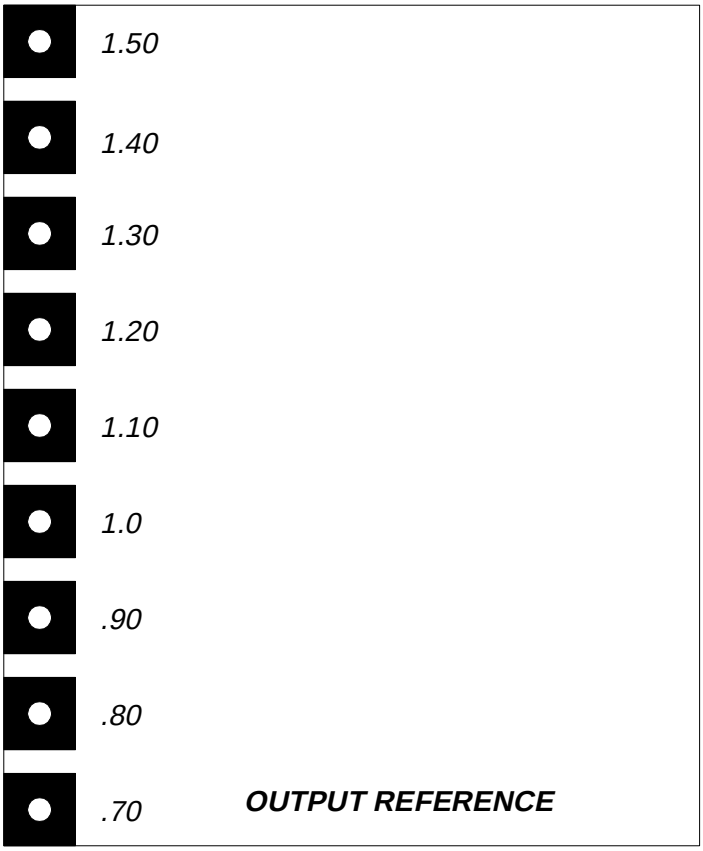
Procedure

Use new paper, whenever possible, to check the image quality of prints. Make five (5) prints of the Print Engine Controller Test Pattern, Procedure 5.2.4, and five (5) prints of the System Controller Test Pattern, Procedure 5.2.5. Discard the first two prints and retain the remaining prints for image quality analysis. Go to the Solid Area Density checkout.

Solid Area Density

1. Compare the solid areas on the System Controller Test Patterns with the Output Reference document (82P520) (refer to Figure 7.5.3.1). There are no solid areas on any print lighter than the 1.20 density square on the scale, and there are no two solid areas on any print that differ in density of more than one density square.
   - Y: The Solid Area Density is within specifications. Go to the **Background** checkout.
   - N: Go to step 2.
2. The solid area density is uniform.
   - Y: Go to step 3.
   - N: Go to *RAP 7.5.4 Non-Uniform Image Quality.*
3. The prints are too faint.
   - Y: Go to *RAP 7.5.9 Light Prints.*
   - N: Go to step 4.
4. The prints are black.
   - Y: Go to *RAP 7.5.5 Black Prints.*
   - N: Go to *RAP 7.5.18 Background.*

Figure 7.5.3.1 Special tool (Olivetti Code: 687340K)



Background

Compare the Test Prints with the Visual Scale (Olivetti code: 687350M). The worst background area on any print should be at, or below, area 3 on the rating guide (see Figure 7.5.3.2).

1 The pattern is free from background.

Y: The printed test patterns meet the Background specification. Go to the **Deletions** checkout.

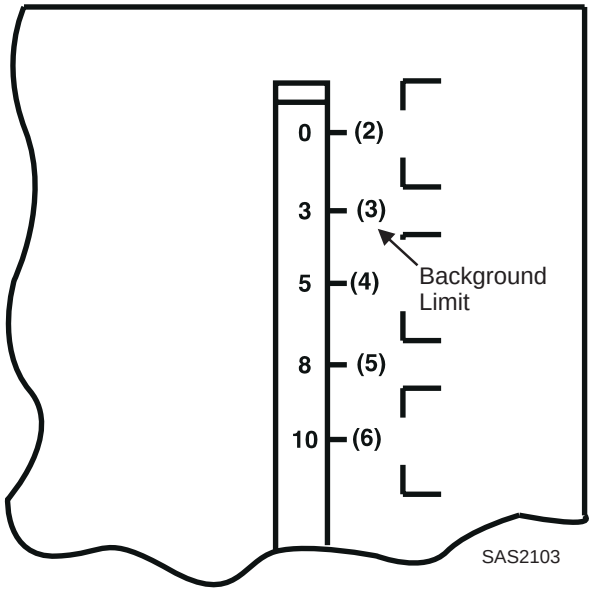
N: Go to step 2.

2 The background is uniform.

Y: Go to *RAP 7.5.18 Background.*

N: Go to *RAP 7.5.4 Non-Uniform Image Quality.*

Figure 7.5.3.2 Rating Guide.



Deletions (Line, Band, Spot)

Inspect Test Prints for the presence of deletions (missing image). There should be no deletions with a diameter larger than 0.5 mm visible on test prints (Figure 7.5.3.3).

1 There are deletions on the test prints.

Y: Go to step 2.

N: Go to **Fusing** checkout on the next page.

2 There are vertical (in direction of paper movement) Line/Band deletions present.

Y: Go to *RAP 7.5.7 Vertical Band Deletions.*

N: Go to step 3.

3 There are Horizontal (in direction of scanning) Line/Band Deletions present.

Y: Go to *RAP 7.5.6 Horizontal Band Deletions.*

N: Go to step 4.

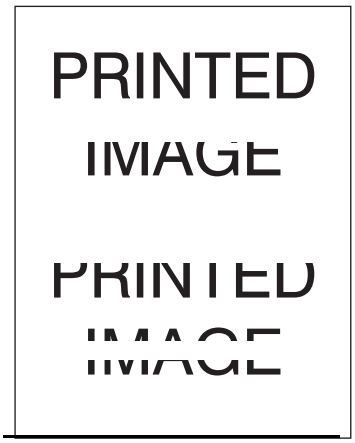
4 There are Spot Deletions present.

Y: Go to *RAP 7.5.8 Spot Deletions.*

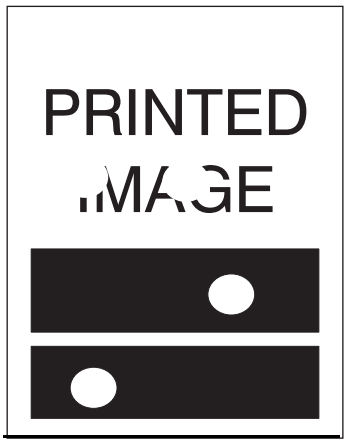
N: The defect apparently is not manifesting as a deletion. Continue to the **Fusing** checkout on next page.

Figure 7.5.3.3 Line, Band, or Spot Deletions

asm7-14



asm7-12



asm7-18

Fusing

NOTE: The operating environment of the paper is from 5 Celsius at 15% relative humidity to 35 Celsius at 85% relative humidity. The fusing performance of the printer will vary according to the environment.

- A cold environment will affect the warm-up time.
- The weight (lb. / gsm) of the paper or transparency will affect the fusing of prints.
- High humidity will have an adverse affect on the fusing of prints.

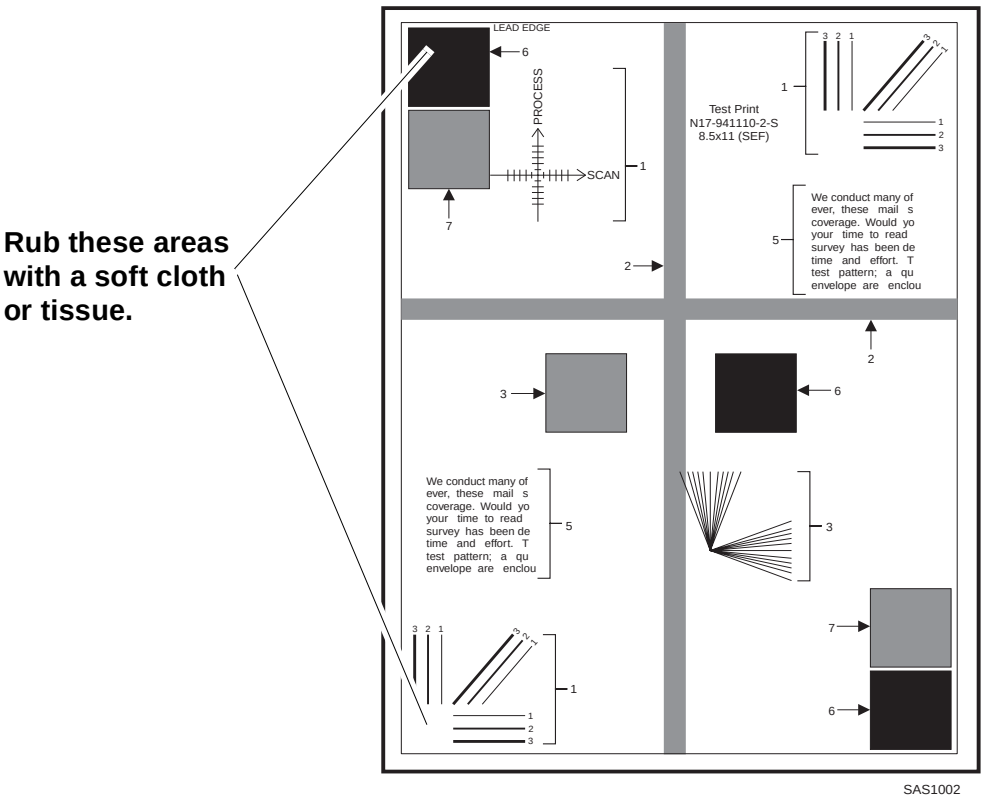
Check the fusing quality of the image of a System Controller Test Pattern (Figure 7.5.3.4). Rub the image three times with a soft cloth or tissue. The image should not lift off of the surface of the print.

The fusing quality of the image meets the specification.

Y: The printed test patterns meet the Fusing specification. Go to the **Resolution** checkout on the next page.

N: Go to *RAP 7.5.14 Unfused Image Procedure.*

Figure 7.5.3.4 Fusing Quality



Resolution

Refer to Figure 7.5.3.5. Observe the three image areas on several System Controller Test Patterns. Check the resolution of the images in each of the areas:

Area 1:

When set at 600 DPI, the two pixel vertical, horizontal and diagonal lines should be clear and continuous. The diagonal lines might appear to be narrower than the others.

Area 2:

The text paragraphs should be roughly equal in density.

Area 3:

The half-tone patches adjacent to the solid blocks in the corners should be uniform in appearance.

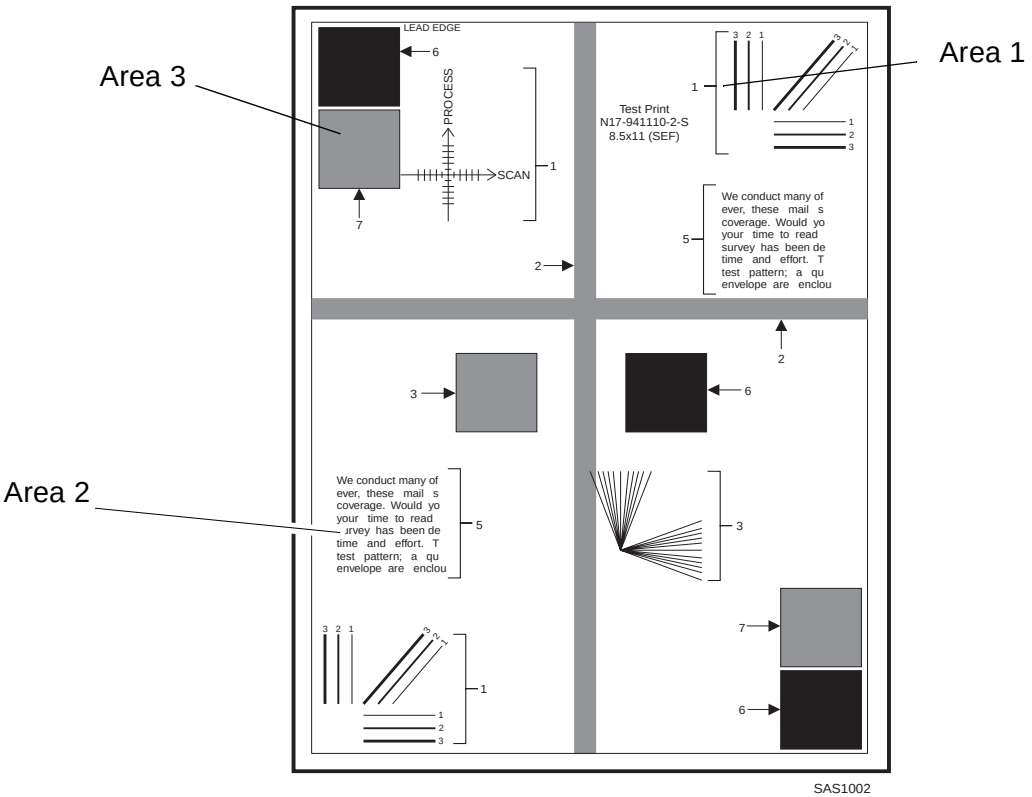
1 The resolution of the image meets the specification.

Y: Go to step 2.

N: Go to *RAP 7.5.21 Resolution.*

2 The printed test patterns meet the Resolution specification. Go to the **Registration** checkout on the next page.

Figure 7.5.3.5 Resolution



Registration (Lead Edge to Trail Edge)

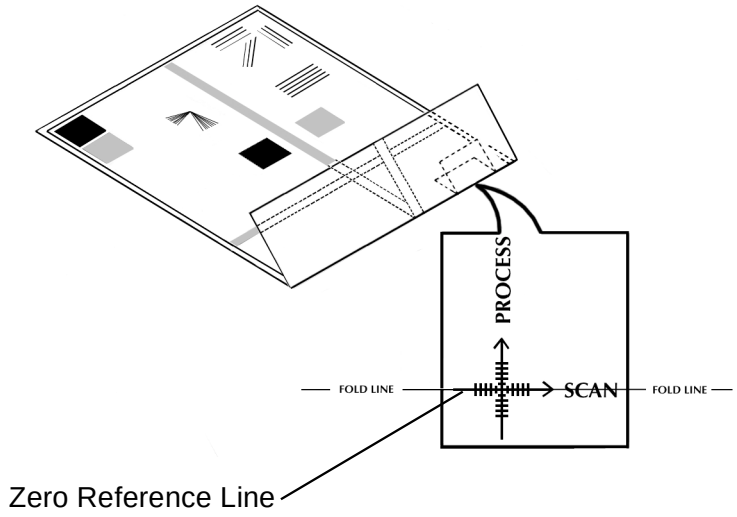
Measure the registration on two consecutive System Controller Test Patterns. Fold the lead edge to the top line of the ladder chart. Observe the fold at the zero reference line, Figure 7.5.3.6.

The fold is within +/- 2.0 mm from the zero reference line.

Y: The test prints meet the Lead Edge to Trail Edge registration specification. Go to the **Registration (Side-to-side)** checkout.

N: Go to *RAP 7.5.15 Misregistered Image.*

Figure 7.5.3.6 Registration (Lead Edge to Trail Edge)



1000a.tif

Registration (Side-to-Side)

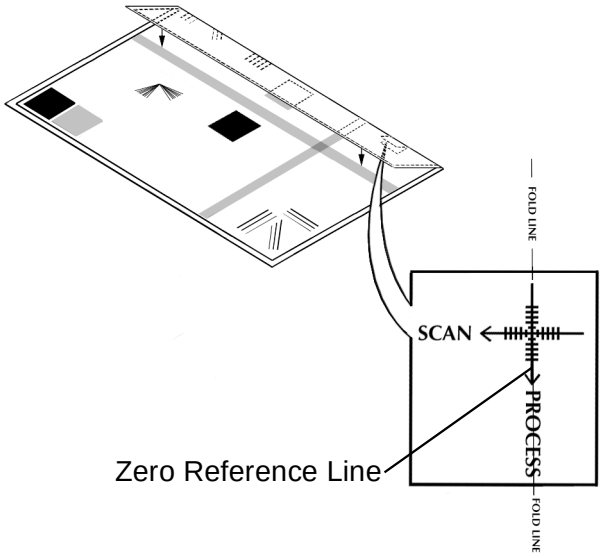
Measure the registration on two consecutive System Controller Test Patterns. Fold the left edge of the test print to the left edge of the ladder chart and crease the paper. Observe the fold at the zero reference line.

The fold is within +/- 2.5 mm from the zero reference line (Figure 7.5.3.7).

Y: The printed test patterns meet the Inboard to Outboard registration specification. Go to the **Skew** checkout on the next page.

N: Go to *RAP 7.5.15 Misregistered Image.*

Figure 7.5.3.7 Registration (Side-to-Side)



1001a.tif

Skew

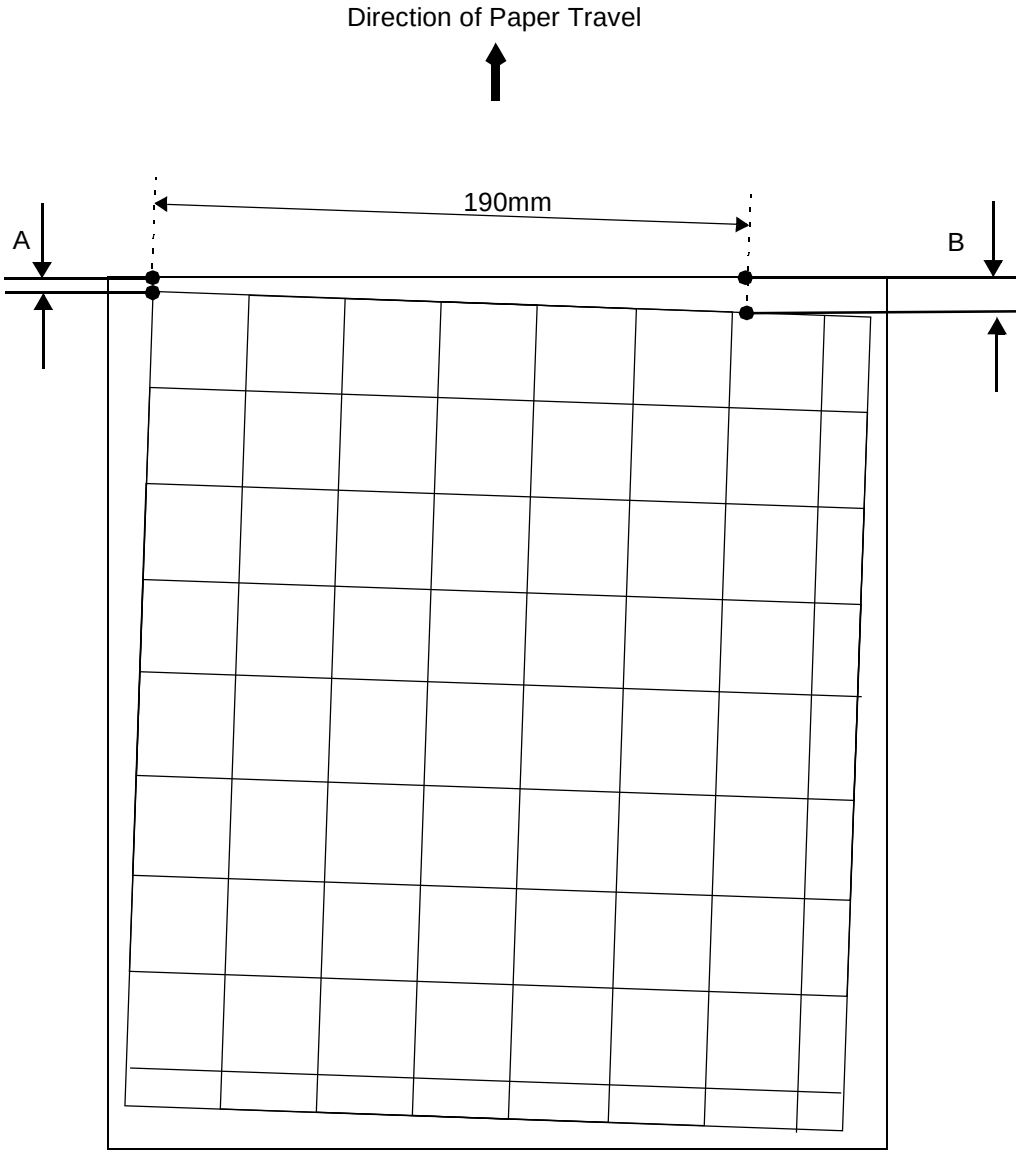
Observe the Printer Engine Controller test pattern. Measure the dimensions ‘A’ and ‘B’ on two consecutive test patterns and check the following, Figure 7.5.3.8. The difference between ‘A’ and ‘B’ should be no more than 1.5 mm from any source.

The skew on the test patterns meets the specification.

Y: The printed test patterns meet the Skew specification. Go to the **Skips and Smears** checkout on the next page.

N: Go to *RAP 7.5.22 Skewed Image.*

Figure 7.5.3.8 Print Engine Controller Test Pattern



Skips/Smears

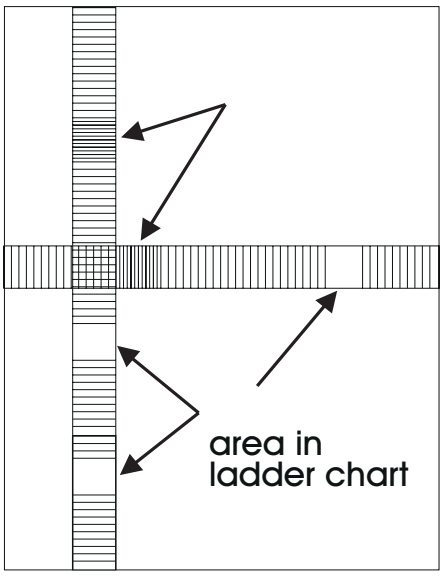
Print a System Controller Test Pattern with the print resolution set to 600 dpi. Inspect the process direction ladder chart test pattern. The pattern should be free from skips and smears and lines should exist in the side-to-side scan direction, Figure 7.5.3.9.

The test prints are free from skips and smears.

Y: Go to the **Spots** checkout on the next page.

N: Go to *RAP 7.5.23 Skips/Smears.*

Figure 7.5.3.9 Skips/Smears



SAS1025

Spots

Inspect the test prints for spots (Figure 7.5.3.10). Within a 208 x 95 mm square:

- There should be no spots larger than or equal to 0.5 mm visible on the prints.
- There should be no more than 1 spot measuring between 0.4 mm and 0.5 mm visible on the print.
- There should be no more than 16 spots measuring between 0.25 mm and 0.4 mm visible on the print.
- Any spot measuring less than 0.25 mm is acceptable.

The prints are free of spots or the spots that are visible fall within the acceptable range.

Y: Go to **Other Print Defects** checkout on the next page.

N: Go to *RAP 7.5.13 Spots.*

Figure 7.5.3.10 Spots

asm7-18

Other Print Defects

Inspect the Test Patterns for other Print Defects. There should be no other Print Defects.

1 Test Prints are free of defects.

Y: Go to Final Actions.

N: Go to step 2.

2 There are dark streaks present on the Test Prints.

Y: Go to *RAP 7.5.16 Streaks.*

N: Go to step 3.

3 There is a residual image (ghosts) on the Test Prints.

Y: Go to *RAP 7.5.17 Residual Image.*

N: Go to step 4.

4 There is print damage: wrinkles, creases, tears, etc.

Y: Go to *RAP 7.5.19 Damaged Prints.*

N: Go to step 5.

5 There are character defects on the print sample.

Y: Go to *RAP 7.5.12 Character Defects.*

N: There are no print defects. Return to *RAP 7.2.1 Entry Level RAP*, step 12.

7.5.4 Non-Uniform Image Quality

Definition

The line darkness and solid area density image varies across the print.

NOTE: If the problem has not been resolved after completing this RAP, go to RAP 7.5.7 Vertical Band Deletions.

Initial Actions

- Remove the EP Cartridge and gently rock it back and forth to distribute toner evenly in cartridge. Reinstall the cartridge.
- Ensure the grounding pin on the EP Cartridge is in proper contact with the Earth Plate Assembly.

Procedure

1 Generate five prints of the System Controller Test Pattern from Tray 1. Image Quality varies from inboard to outboard.

Y: Go to step 3.

N: Go to step 2.

2 Image quality varies from lead edge to trail edge.

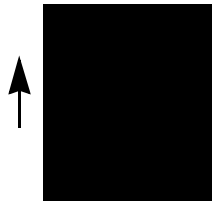
Y: Replace the HVPS.

N: Return to *RAP 7.5.1 Image Quality Entry Flowchart.*

3 Do the following:

- Inspect the Bias Transfer Roll for contamination. Clean or replace the EP Cartridge.
- Inspect the Photoreceptor for deterioration and/or contamination. Replace the EP Cartridge.
- Check for laser beam obstructions such as dust or lint fibers between the Laser Assembly and the EP Cartridge.
- Perform the procedure for Light Prints, *RAP 7.5.9 Light Prints*.

7.5.5 Black Prints

Sample Image	**Definition**
	The entire print is black.

Initial Actions

- Ensure that print density (see *Section 5.2.3 Diagnostic Mode 3* for more information) is set to default (3).
- Generate the System Controller Test Print, *Section 5.1.4.13 Print Menu*, and Print Engine Controller Test Print, *5.2.2 Diagnostic Mode 2*.
- If both prints are completely black, replace the EP Cartridge.
- If any image is visible on the prints, go to *RAP 7.5.18 Background.*

Procedure

1 Only the System Controller Test Print is black.

Y: Check the seating of the System Controller. If OK replace the System Controller.

N: Go to step 2.

2 Cover the Laser Assembly window (laser beam outlet) using a piece of paper, and generate a test print. The entire print is still black.

Y: *Go to RAP 7.4.24 HVPS Failure.*

N: Go to step 3.

3 Cover half of the Laser Assembly window (laser beam outlet) using a piece of paper, and generate a test print. The print is black only in the area not covered with the paper.

Y: *Go to RAP 7.3.2 "Laser Fail - Power Off/On" Message (U2).*

N: Go to step 4.

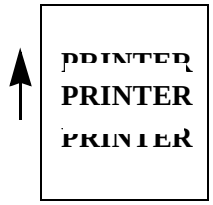
4 The HVPS has faulty output. Refer to *REP 5.2.1.21 HVPS (Charge Roll DC) Operation* and perform diagnostic.

Y: Go to *RAP 7.4.24 HVPS Failure.*

N: Install a new EP Cartridge.

7.5.6 Horizontal Band Deletions

Sample Image



Definition

Deletion is an area of the print where the image is missing or extremely light. Horizontal band deletions are missing bands which extend across the short dimension of the page (at the right angle to the direction of paper travel).

Procedure

1 Replace paper in paper tray. Problem solved.

Y: Use new paper (and ask the customer to keep paper stock in a dry place).

N: Go to step 2.

2 The HVPS has faulty output voltage. Refer to *5.2.1.22 HVPS (Developer Bias DC) Operation*.

Y: Go to *RAP 7.4.24 HVPS Failure.*

N: Go to step 3.

3 Use Diagnostic Mode 1, Main Motor, to check the Drive Assembly. The transmission gears turn the EP Cartridge gear.

Y: Go to step 4.

N: Go to *7.3.4 "Motor Failure" Power Off/On (U1).*

4 The Bias Transfer Roll (BTR) Assembly is contaminated.

Y: Replace the BTR Assembly.

N: Go to step 5

5 Generate a test print and switch OFF the printer in the middle of the print cycle. Inspect the toner image on the Drum surface. There is a complete toner image on the Drum surface.

Y: Go to *RAP 7.4.24 HVPS Failure,* and ensure the BTR output is normal.

N: Go to step 6.

6 Install a new EP Cartridge.The problem is solved.

Y: Go to Final Actions.

N: Go to step 7.

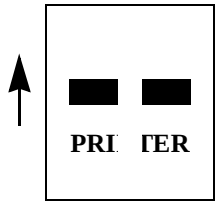
7 The band deletions occur at approximately 62.0mm intervals. There are scratches or contamination on the Heat Roll or Pressure Roll surface.

Y: Clean the Heat Roll/Pressure Roll or replace the Fuser Assembly.

N: Replace the Fuser Assembly.

7.5.7 Vertical Band Deletions

Sample Image



Definition

Deletion is an area of the print where the image is missing or extremely light. Vertical band deletions are missing bands of lines which extend across the long dimension of the page (in the direction of paper travel).

Initial Actions

Remove the EP Cartridge and rock it gently back and forth to distribute the toner evenly in the cartridge.

Procedure

1 Replace paper in the Paper Tray. Problem is solved.

Y: Use new paper (and ask the customer to keep paper stock in a dry place).

N: Go to step 2.

2 Check the laser beam path from the Drum to the Laser Assembly for contamination or obstacles. The laser beam path is contaminated or hindered with obstacles.

Y: Remove the contamination or obstacles.

N: Go to step 3.

3 Install a new EP Cartridge. The problem is solved.

Y: Go to Final Actions.

N: Go to step 4.

4 The Bias Transfer Roll (BTR) is contaminated.

Y: Clean or replace the BTR.

N: Go to step 5.

5 Generate a test print and switch OFF the printer in the middle of the print cycle. Inspect the toner image on the Drum surface. There is a complete toner image on the Drum surface.

Y: Go to step 6.

N: Go to *7.4.24 HVPS Failure*.

6 There are burrs, obstacles, or contamination areas in the paper path.

Y: Clean, repair, or replace the faulty component.

N: Go step 7.

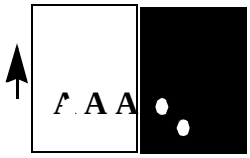
7 There are scratches or contamination on the Heat Roll/Pressure Roll surface.

Y: Clean the Heat Roll/Pressure Roll or replace the Fuser Assembly.

N: If the problem is not resolved, Go to *RAP 7.5.4 Non-Uniform Image Quality.*

7.5.8 Spot Deletions

Sample Image



Definition

Deletion is an area of the print where the image is missing or extremely light. Spot deletions are missing spots localized to small areas of the page.

Procedure

1 Replace the paper in the paper tray. Problem is solved.

Y: Use new paper (and ask the customer to keep paper stock in a dry place).

N: Go to step 2.

2 The Bias Transfer Roll (BTR) Assembly is contaminated.

Y: Replace the BTR Assembly.

N: Go to step 3.

3 If the spot deletions occur at approximately 94.0mm intervals, the Drum has possibly caused the deletions. Replace the EP Cartridge with a new one. The problem is solved.

Y: Go to Final Actions.

N: Go to step 4.

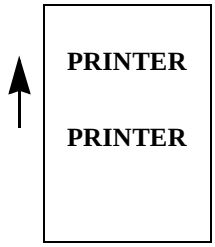
4 The spot deletions occur at approximately 62.0mm intervals, there are scratches or contamination on the Heat Roll/Pressure Roll surface.

Y: Clean and/or repair the Heat Roll/Pressure Roll or replace the Fuser Assembly.

N: Replace the Fuser Assembly.

7.5.9 Light Prints

Sample Image



Definition

The overall image density is lighter than normal, or extremely light.

Initial Action

Ensure that the print density is set to the default value (3). Execute Diagnostic Mode 3, Print Density.

Procedure

1 Replace the paper in the paper tray. Problem solved.

Y: Use new paper (and ask the customer to keep paper stock in a dry place).

N: Go to step 2.

2 Inspect the Drum ground path shown below. The printer is grounded all through the ground path.

- Drum > Drum shaft pin > Plate Earth > HVPS > LVPS.

Y: Go to step 3.

N: Complete the Drum ground path.

3 Check the laser beam path from the Drum to the Laser Assembly for contamination or obstacle. The laser beam path is contaminated or obstructed.

Y: Remove the contamination or obstacles.

N: Go to step 4.

4 The HVPS DB (DC) has faulty output voltage. Refer to *5.2.1.23 HVPS (Developer Bias AC) Operation*.

Y: Go to *RAP 7.4.24 HVPS Failure.*

N: Go to step 5.

5 The Bias Transfer Roll (BTR) Assembly is contaminated.

Y: Replace the BTR Assembly.

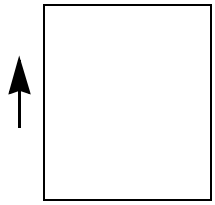
N: Go to step 6.

6 Generate a test print and switch OFF the printer in the middle of the print cycle. Inspect the toner image on the Drum surface. A complete toner image shows on the drum surface.

Y: Go to *RAP 7.4.24 HVPS Failure,* and check if the BTR output is normal.

N: Install a new EP Cartridge.

7.5.10 Blank Prints

Sample Image	**Definition**
	The entire print is blank.

Initial Action

Generate the System Controller Test Print (*5.2.5 System Controller Test Print*) and Print Engine Controller Test Print (*5.2.4 Print Engine Controller Test Print*).

Procedure

1 Only the System Controller Test Print is blank.

Y: Reseat the System Controller and retest before replacing the System Controller.

N: Go to step 2.

2 Inspect the Drum grounding path shown below. The printer is grounded all through the ground path.

- Drum > Drum Shaft Pin > Plate Earth > HVPS > LVPS.

Y: Complete the Drum ground path.

N: Go to step 3.

3 Check the laser beam path from the Drum to the Laser Assembly for contamination or obstacles. The laser beam path is contaminated or hindered with obstacles.

Y: Remove the contamination or obstacles.

N: Go to step 4.

4 Generate a test print and switch OFF the printer in the middle of the print cycle. Inspect the toner image on the Drum surface. A complete toner image is present on the Drum surface.

Y: Go to step 5.

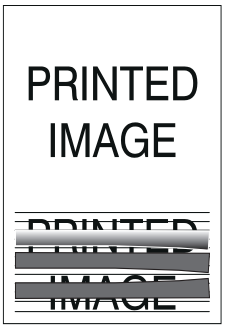
N: Replace the EP Cartridge. Go to *7.4.24 HVPS Failure*, if the problem is not resolved.

5 The Bias Transfer Roll (BTR) Assembly is contaminated.

Y: Clean or replace the BTR Assembly.

N: Go to *RAP 7.4.24 HVPS Failure.*

7.5.11 Extraneous Marks



SAS2104

Definition

Horizontal or vertical bands, or other marks that are print defects caused by bad or incorrect font data, print drivers, electrical noise or other causes not directly related to the electrophotographic process.

Procedure

1 The customer has changed the host software or configurations.

Y: The customer will have to reconfigure the system.

N: Go to step 2.

2 Extraneous marks can be caused by bad font data from the host. Ask the customer to download different fonts from the host. The problem is solved.

Y: Go to Final Actions.

N: Go to step 3.

3 Generate several System Controller Test Prints. The print job exhibits the extraneous markings.

Y: Check the Laser Assembly and EP Cartridge grounds for damage or contamination.

N: Go to step 4.

4 Open the Front Cover and visually inspect the left drum grounding plate on the EP Cartridge and the left drum support. They are free of damage and contamination.

Y: Go to step 5.

N: Repair or replace the grounding spring or the EP Cartridge if necessary.

5 Disconnect the host interface cable. Attempt to generate a test print. The test print is free from defects.

Y: Go to step 6.

N: Replace the System Controller, then replace the Printer Engine Controller.

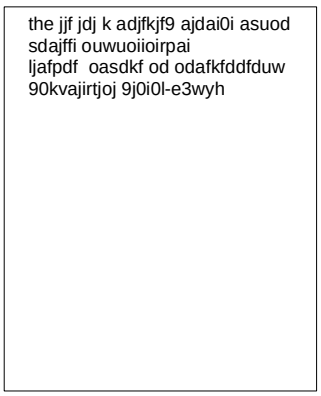
6 Check for a problem with the host interface cable. Ensure that the host interface cable meets specifications. The cable is within the maximum length.

- Parallel: 10 ft. (3.0 meters)

Y: If the problem persists, go to *RAP 7.4.4 Erratic Operation.*

N: Ask the customer to provide a cable of proper length.

7.5.12 Character Defects



Definition

Garbled print, missing, repeating, or scrambled characters are problems relating to font data or character generation. These are print defects not related to the xerographic process.

Initial Actions

- Generate a printer Configuration Sheet. Ask the customer to verify that the printer and host settings match.
- Ensure that the host interface cable meets specification. The maximum parallel cable length is 10 ft. (3.0 meters).
- Optional Interface: Refer to the network specifications for the environment where the printer is installed.

Procedure

1 Disconnect the host interface cable. Generate System Controller Test Prints (see *5.2.5 System Controller Test Print*). The test prints are acceptable.

Y: Go to step 2.

N: Replace the System Controller.

2 Inform the customer that they may have bad font data. Ask the customer to reload the font.

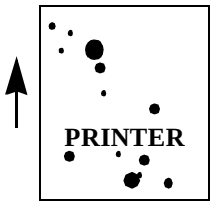
3 The job prints correctly.

Y: Problem resolved.

N: Go to *RAP 7.6 Communications Entry RAPs.*

7.5.13 Spots

Sample Image



Definition

There are toner deposits in non-image areas of the print.

Initial Action

- Check the paper supply for spot contamination prior to printing and replace with clean paper.
- Inspect the paper path for toner contamination. Clean as necessary.

Procedure

1 The Bias Transfer Roll (BTR) Assembly is contaminated.

Y: Replace the BTR Assembly.

N: Go to step 2.

2 If the spots occur at approximately 94.0mm intervals, the Drum has possibly caused the deletions. Replace the EP Cartridge with a new one. The problem is solved.

Y: Go to Final Actions.

N: Go to step 3.

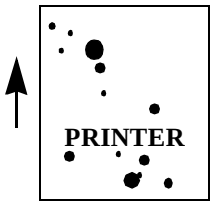
3 The spot deletions occur at approximately 62.0mm intervals. There are scratches or contamination on the Heat Roll/Pressure Roll surface.

Y: Clean the Heat Roll/Pressure Roll or replace the Fuser Assembly.

N: Replace the Fuser Assembly.

7.5.14 Unfused Image Procedure

Sample Image



Definition

Part or all of the image is unfused.

1 Replace the paper in the paper tray. Problem is solved.

Y: Use new paper (and ask the customer to keep paper stock in a dry place).

N: Go to step 2.

2 Enter Diagnostic Mode 3 (5.2.3 Diagnostic Mode 3). Fuser Temp parameter is set to default (5).

Y: Go to step 3.

N: Correct the parameter setting.

3 Image quality is light.

Y: *Go to RAP 7.5.9 Light Prints.*

N: Go to step 4.

4 Generate a Print Engine Test Print. The Heat Lamp lights while the printer is operating.

Y: Go to step 5.

N: Go to *RAP 7.4.8 Quartz Heater Failure.*

5 There is damage or contamination on the Heat Roll or Pressure Roll Assembly surface.

Y: Clean the Heat Roll/Pressure Roll or replace the Fuser Assembly.

N: Go to step 6.

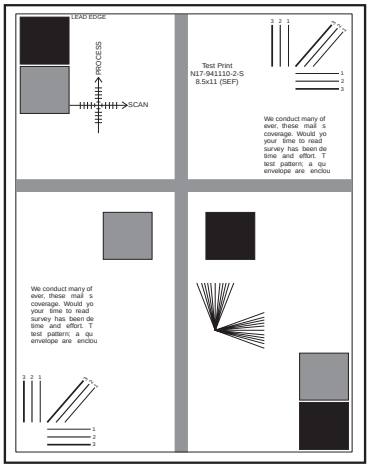
6 The Heat Roll and Pressure Roll Assemblies have the appropriate pressure between them.

Y: Replace the Fuser Assembly.

N: In the following order, replace:

- Fuser Assembly
- Print Engine Controller
- System Controller

7.5.15 Misregistered Image



SAS1002

Definition

Displaced position of the image from its intended position on the print. See *Figure 7.5.2.2 System Controller Test Print Pattern*.

Procedure:

1 Make sure the paper trays are installed properly and the pressure plates and snubbers (metal tabs located on the front of the paper trays) are not damaged.

Y: Go to step 2.

N: Repair or replace the Paper Tray.

2 The paper path, between the paper trays and the Registration Roll, is free of obstructions.

Y: Go to step 3.

N: Clean or repair the paper path components.

3 The vertical registration varies between prints.

Y: Replace the Registration Rolls.

N: Go to step 4.

4 Perform the Vertical Registration and Horizontal Registration adjustments (see *5.2.3.1 Setting and Verification of Registration*).

Does the registered image meet specification?

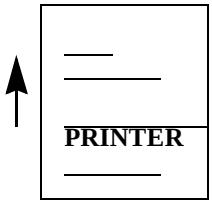
Y: Problem resolved.

N: Replace the Paper Tray. If the problem persists, replace the following components:

- Paper Handling Unit Assembly
- Drive Motor Assembly
- Printer Engine Controller

7.5.16 Streaks

Sample Image



Definition

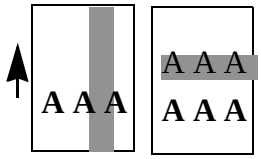
Unnecessary streaks run across the entire or partial page in a horizontal or vertical direction. The width of these streaks should be less than 1.0mm.

Procedure

1. Remove the EP Cartridge and inspect the surface of the Photoreceptor for scratches and bands of toner. The Photoreceptor is free from defects.
   - Y: Go to step 2.
   - N: Replace the EP Cartridge, if necessary.
2. Inspect the Fuser Heat and Pressure Rolls for contamination or damage. The Fuser Heat Roll/ Pressure Rolls are free from damage or contamination.
   - Y: Go to step 3.
   - N: Clean or replace the Fuser Assembly.
3. Inspect the Bias Transfer Roll (BTR) for cleanliness/damage. The Bias Transfer Roll is free from contamination or defects.
   - Y: Go to step 4.
   - N: Clean or replace the BTR, as necessary.
4. Inspect the paper path for contamination/obstruction. The paper path is free from contamination or debris.
   - Y: If the problem persists, go to *RAP 7.4.25 Electrical Noise.*
   - N: Clean/repair the paper path.

7.5.17 Residual Image

Sample Image



Definition

A ghost image, either from a previously printed page or the page in progress, is transferring onto the print due to incomplete cleaning at the end of printing cycle.

Procedure

1 Replace the paper in the paper tray with new paper. The problem is solved.

Y: Use new paper (and ask the customer to keep paper stock in a dry place).

N: Go to step 2.

2 The Bias Transfer Roll (BTR) is contaminated.

Y: Replace the BTR Assembly.

N: Go to step 3.

3 If the ghost images occur at approximately 94.0mm intervals, the Drum has possibly caused this problem. (If the ghost images occur at approximately 53.0mm intervals, the Magnet Roll has possibly caused this problem.) Replace the EP Cartridge with a new one. The problem is solved.

Y: Go to Final Actions.

N: Go to step 4.

4 The ghost images occur at approximately 61 or 62 mm intervals, and there are scratches or contamination on the Heat Roll or Pressure Roll surfaces.

Y: Clean or replace the Fuser Assembly.

N: Go to step 5.

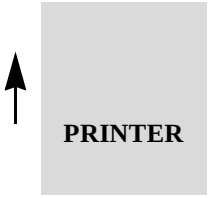
5 Enter Diagnostic Mode 3 (*Section 5.2.3 Diagnostic Mode 3*). The Fuser Temperature parameter is set to the default (5).

Y: Go to Final Actions.

N: Correct the parameter setting.

7.5.18 Background

Sample Image



Definition

There is contamination in the entire or partial non-image areas of the print.

Procedure

1 Ensure that the print density is set to the default value (3). Execute Diagnostic Mode 3, Print Density.

Y: Go to step 2.

N: Reset the print density setting to the default (3).

2 Cover the Laser Assembly window (laser beam outlet) using a piece of paper, and generate a test print. Background is still present.

Y: *Go to RAP 7.4.24 HVPS Failure.*

N: Go to step 3.

3 Inspect the HVPS BCR/Developer Bias contacts and also the Earth Ground contacts to the EP Cartridge for damage or contamination. The contacts are free from contamination and/or damage.

Y: Go to step 4.

N: Clean/repair the contacts or replace the following components, as required:

- BTR Chute Assembly
- HVPS
- Cartridge

4 The HVPS DB (DC) has faulty output voltage. Refer to *5.2.1.23 HVPS (Developer Bias AC) Operation*.

Y: Go to *RAP 7.4.24 HVPS Failure.*

N: Go to step 5.

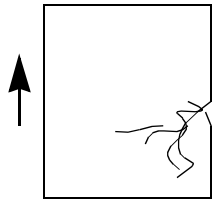
5 Replace the EP Cartridge with a new one. The problem is solved.

Y: Go to Final Actions.

N: Replace the HVPS.

7.5.19 Damaged Prints

Sample Image



Definition

There are wrinkles, creases, or tears on the prints.

Procedure

1 Replace the paper in the paper tray with new paper. Problem is solved.

Y: Use new paper (and ask the customer to keep paper stock in a dry place).

N: Go to step 2.

2 The image is skewed.

Y: *Go to RAP 7.5.22 Skewed Image.*

N: Go to step 3.

3 Observe where the damage is occurring, before or after the Fuser. Damage occurs before the Fuser.

Y: Inspect for burrs, obstacles, or contaminated spots/rolls along the paper path, before the Fuser, and repair/replace the faulty component, including the EP Cartridge.

N: Go to step 4.

4 The damage occurs during or after fusing.

Y: Inspect for burrs, obstacles, damage, or contaminated spots/rolls along the paper path, including or after the Fuser, and repair/replace the faulty component, including the Fuser Assembly.

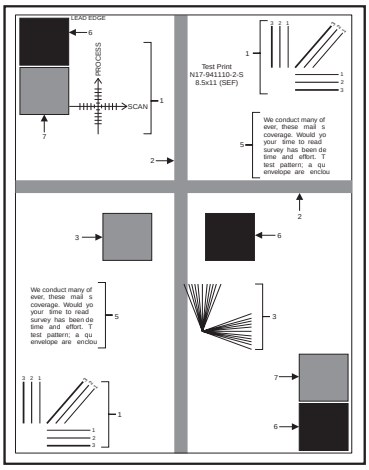
N: Go to step 5.

5 The damage occurs during the exit phase of paper transportation.

Y: Clean/align/replace the exit components, including any options.

N: The problem is resolved. Go to Final Actions.

7.5.20 Printer Image Enhancement (XIE)



Definition

XIE Smoothing is a technology that smooths the jagged lines-most noticeably on curved, near-vertical, and near-horizontal lines. The incidence of jagged lines should be noticeably less on prints with XIE enhancement switched on. See *Figure 7.5.2.2 System Controller Test Print Pattern* for a full-size illustration.

Initial Action:

Ensure that XIE is switched on, in the System Menu (5.1.4.7 System Menu).

Procedure:

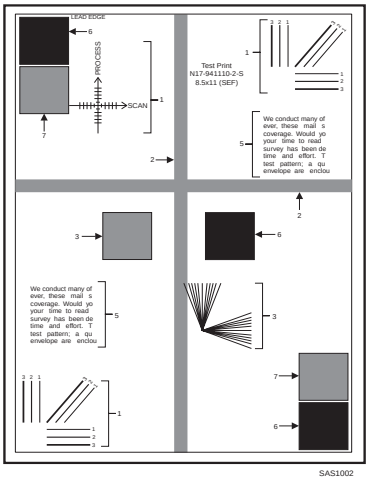
1. Run five System Controller test prints, (see *5.1.4.13 Print Menu*). Save the last two for analysis and mark them XIE.
2. Switch OFF XIE and run five prints. Again, save the last two for analysis and mark them XIE off.
3. Use a loupe or other magnifier to compare the prints in step 1 with the prints in step 2 for differences in jaggy lines on curved, near-vertical, and near-horizontal lines. There is a visual difference.

   Y: Problem resolved, see *NOTE*.

   N: Replace the System Controller PWB.

NOTE: When the problem has been resolved, return to RAP 7.5.3 Image Quality Checkout to verify that no other image quality defects exist.

7.5.21 Resolution



Definition

At 600 DPI, two pixel lines and halftone patches cannot be reproduced clearly on the print. See *Figure 7.5.2.2 System Controller Test Print Pattern Legend*.

Initial Action:

- Ensure the resolution is set to 600 DPI in the System Menu (5.1.4.7 System Menu).
- Ensure that the print density is set to the default value (3). Execute Diagnostic Mode 3, Print Density.

Procedure:

1 Replace the EP Cartridge. The problem is resolved.

Y: Return to Final Actions.

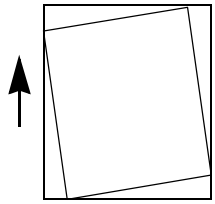
N: Replace the following in sequence to resolve the problem:

- Laser Assembly
- High Voltage Power Supply (HVPS)

NOTE: After problem is resolved, reinstall the old EP Cartridge.

7.5.22 Skewed Image

Sample Image



Definition

The image is not parallel to the edges of the print sheet.

Procedure

1 The paper trays are installed incorrectly, or the paper is loaded incorrectly into the tray.

Y: Reinstall the paper tray and/or reload the paper (and instruct the customer in correct paper tray installation and paper loading).

N: Go to step 2.

2 Install a new EP Cartridge. The problem is solved.

Y: Go to Final Actions.

N: Go to step 3.

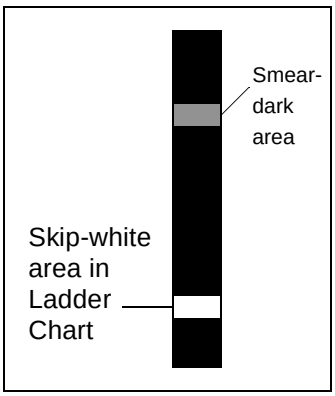
3 There are burrs, obstacles, or contaminated spots in the paper path.

Y: Clean or replace the faulty component.

N: Go to step 4

4 Inspect paper Transportation Rolls, Fuser Assembly and Feedout Rolls for proper operation and wear. If no wear or faulty operation is discovered replace the Laser Assembly.

7.5.23 Skips/Smears



Definition

Skip: Loss or stretching of the image in bands across the process direction.

Smear: The distortion of the image in bands across the process direction that cause it to appear to be blurred or compressed.

Initial Action

Run five (5) System Controller Test Patterns.

Procedure

1 There are skips and/or smears on the test prints.

Y: Perform the following in sequence to resolve a Skips or Smears problem:

- Paper stock meets specifications.
- Inspect the Drive Assembly for damaged and worn gears. Replace, if necessary.
- Inspect the Main Drive Motor for smooth operation and wear of drive gear. Replace, if necessary.
- Inspect the BTR Chute Assembly for damage/wear.
- Inspect the Fuser Assembly and Feedout Rolls for smooth operation and wear. Replace worn part(s) if necessary.
- Replace the EP Cartridge if the problem still exists.

N: Go to step 2.

2 There are skips/smears on the customer documents.

Y: Ask the customer to ensure their application is operating properly.

N: Problem resolved. Go to Final Actions.

7.6 Communications Entry RAPs

You were directed to this RAP because a problem exists where the customer is unable to communicate to the printer via a Host computer.

Procedure

1 Print a Configuration Sheet. The Configuration Sheet printed successfully.

Y: Go to step 2.

N: Go to *RAP 7.2.1 Entry Level RAP* and troubleshoot the printer.

2 The printer is Network connected.

Y: Go to step 3.

N: Go to *RAP 7.6.1 Serial / Parallel.*

3 The Configuration Sheet shows the parameters for each Connectivity Option PWB installed.

Y: Go to step 4.

N: Go to step 7.

4 The Configuration Sheet indicates that Parallel Port Enable is On.

Y: Go to step 5.

N: Configure the Parallel Port Enable to On and go to step 5.

5 Connect an Anacom G80 or equivalent test box to the printer parallel port and send a job to the printer. The job prints successfully.

Y: Go to step 6.

N: Replace the System Controller PWB.

6 The job prints free of data corruption.

Y: Go to step 7.

N: Replace the System Controller PWB.

7 The Token Ring Option PWB is installed in the printer.

Y: Go to *RAP 7.6.3 Token Ring.*

N: Go to *RAP 7.6.2 Ethernet.*

7.6.1 Serial / Parallel

You were directed to this RAP because the printer does not respond to commands or the printer responds incorrectly to commands sent from the Host; however, a configuration sheet can be printed.

Initial Actions

- Switch the printer power OFF.
- Disconnect and reconnect the host interface cable from the serial and/or parallel interface port(s). Notify the customer if any visual signs of damage to the cable(s) are noticed.
- Switch the printer power ON.
- Generate a Configuration Sheet and go to step 1.

Procedure

1 The interface being used is serial.

Y: Go to step 2.

N: Go to step 3.

2 Review the configuration Sheet and verify that the customer's HOST Serial Configuration is the same as the Configuration Sheet. The configuration matches the HOST computer the customer is using.

Y: Go to step 3.

N: Configure the printer to match customer's computer, then go to step 3.

3 Review the Configuration Sheet. The Serial and/or Parallel Interfaces is (are) indicated as "Port Enabled-ON"

Y: Go to step 4.

N: Configure "Enable Port-ON" for interface(s) being used by customer. Once properly enabled, go to step 4.

4 Generate a Configuration Sheet and verify "Enable Port-ON" for interface(s) being used. The Configuration Report indicates "Enable Port-ON" for interface(s) being used.

Y: Go to step 5.

N: Replace the System Controller PWB, PL 12.

5 Connect the Anacom G80 or similar test box to the printer port(s) and send a test job(s). The job prints correctly.

Y: Go to step 6.

N: Replace the System Controller PWB, PL 12.

6 The problem is either in the Host Interface Cable(s) or the Host System(s). The problem is found and resolved.

Y: Go to Final Actions.

N: Call for technical assistance.

7.6.2 Ethernet

You were directed to this RAP because the printer does not respond, or responds incorrectly, to commands sent from the Host; however, a configuration sheet can be printed.

Initial Actions

Perform all succeeding steps in the following order:

- Power OFF the printer.
- Disconnect the host interface cable from the Ethernet PWB.
- Reseat the Ethernet PWB into its connector on the System Controller PWB.
- Reconnect the host interface cable. Notify customer of any signs of cable damage.
- Power ON the printer.
- Generate a Configuration Sheet and go to step 1.

Procedure

1 Review the Configuration Sheet. The Ethernet Menu is listed on the Configuration Sheet.

Y: Go to step 2.

N: If an optional Ethernet PWB is being used, go to step 5. If optional Ethernet PWB is not installed, replace the system controller.

2 The printer is being used in the NOVELL environment.

Y: Go to step 3.

N: Go to step 6.

3 Ask the System Administrator to select the KERMIT utility on the Host System. KERMIT reports that the printer is being serviced.

Y: Go to step 4.

N: Replace the Ethernet PWB. If the problem still exists, Inform the System Administrator that the problem is either in the host interface cable, the Twisted Pair Concentrator, the Coaxial "T" Connectors, or the host system.

4 Ask the System Administrator to send a print job to the printer. The job prints correctly.

Y: Go to Final Actions.

N: Go to step 8.

5 Power OFF the printer. Reseat the Ethernet PWB. Power ON the printer. Generate a Configuration Sheet. The Ethernet Menu is listed on the Configuration Sheet.

Y: Go to Final Actions.

N: Replace, in the following order; Ethernet PWB, System Controller.

6 Ask the System Administrator to enter the routing table NETSTAT on the Sun System and PING the printer. The printer responds back to the PING.

Y: Go to step 7.

N: Replace the Ethernet PWB. If the problem still exists, inform the System Administrator that the problem is either in the Host Interface Cable, the Routing Table, or the Host System. Also, the IP Address might be incorrect.

7 Ask the System Administrator to send a print job to the printer. The job prints correctly.

Y: Go to Final Actions.

N: Go to step 8.

8 Enable printer Hex Dump on the System Menu and ask the System Administrator to resend the job. Review results with the System Administrator. The System Administrator corrects problem in job and problem is solved.

Y: Go to Final Actions.

N: Call for technical assistance.

7.6.3 Token Ring

You were directed to this RAP because the control panel displayed the error code “3000” during the power on diagnostics, or the printer does not respond, or responds incorrectly, to commands from the Host; however, a configuration sheet can be printed.

Initial Actions

Perform all succeeding steps in the following order:

- Power OFF the printer.
- Disconnect the host interface cable from the Token Ring PWB.
- Reseat the Token Ring PWB into its connector on the System Controller PWB.
- Reconnect the host interface cable. Notify customer of any signs of cable damage.
- Power ON the printer.
- Generate a Configuration Sheet and go to step 1.

1 Review the Configuration Sheet. The Token Ring Menu is listed on the Configuration Sheet.

Y: Go to step 2.

N: Replace, in the following order; Token Ring PWB, System Controller PWB.

2 Ask the System Administrator to select the NICPRINT utility on the Host system. NICPRINT reports that the printer that is being serviced is “RUNNING.”

Y: Go to step 3.

N: Inform the System Administrator that the problem is either in the Host, the MAU, or the host interface cable.

3 Ask the System Administrator to send a print job to the printer. The job prints correctly.

Y: Go to Final Actions.

N: Go to step 4.

4 Enable printer Hex Dump on the System Menu and ask the System Administrator to resend the job. Review results with the System Administrator. The System Administrator corrects problem in job and problem is solved.

Y: Go to Final Actions.

N: Call for technical assistance.

Section 8

500-Sheet Paper Feeder Option

Specifications 8-3
Configuration 8-3
Basic Configuration 8-3
Installation on to the Base Engine 8-5
Electric Specifications 8-6
Power Supply 8-6
Mechanical Specifications 8-6
Dimensions and Weight 8-6

500 Sheet Paper Feeder and Tray Parts List 8-8
PL 13 500 Sheet Paper Feeder and Tray 8-8

500 Sheet Paper Feeder and Trays REPS 8-10
Feeder 2 and 3 (Optional) 8-10
500 Chute Assembly 8-11
500 Left Cover 8-12
500 Right Cover 8-13
500 Feed Roll Assembly 8-14
Clutch Lever 8-15
500 Feed Spring 8-16
500 Turn Roll Assembly 8-17
500 Pinch Roll 8-18

No Paper Actuator 8-19
500 Paper Size PWB Assembly 8-20
500 Size Spring 8-21
Tray Latch Spring 8-22
500 Solenoid Assembly 8-23

Paper Transportation 8-24
Paper Transportation Mechanism..... 8-24
Paper Path..... 8-25

Drive Power Transmission 8-26

Function of Major Components 8-26
500-Sheet Paper Feeder 8-26
Function 8-26
Locations of Major Components 8-28

500 Sheet Paper Feeder and Trays Wiring Diagrams 8-29
Connector Locators 8-29
Wiring Schematic..... 8-30
P/J Table..... 8-31
P216 Pin Layout 8-32

How to Perform Troubleshooting 8-33

RAPs..... 8-33
Tray 2/3 Failure (E11)..... 8-33
Insert Tray 2, Insert Tray 3 (C3) 8-35
Load Tray 2, Load Tray 3 (C5) 8-35
Abnormal Operation..... 8-36
Sensor Assembly Size Failure..... 8-37

Installation, Removal, and Call Information..... 8-38

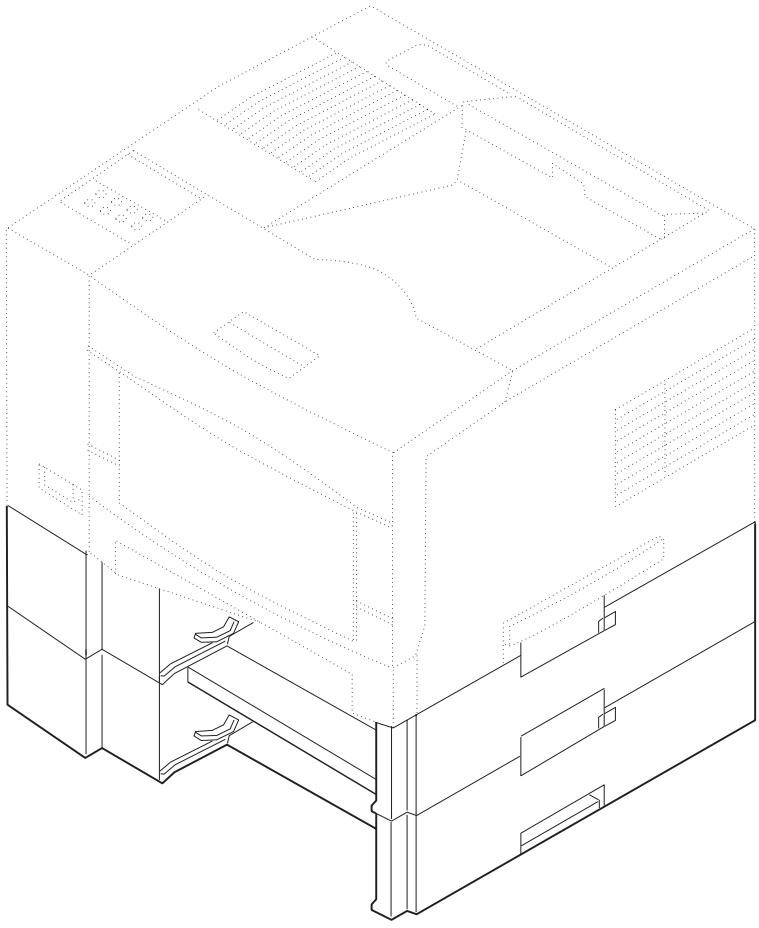
8.1 Specifications

8.1.1 Configuration

8.1.1.1 Basic Configuration

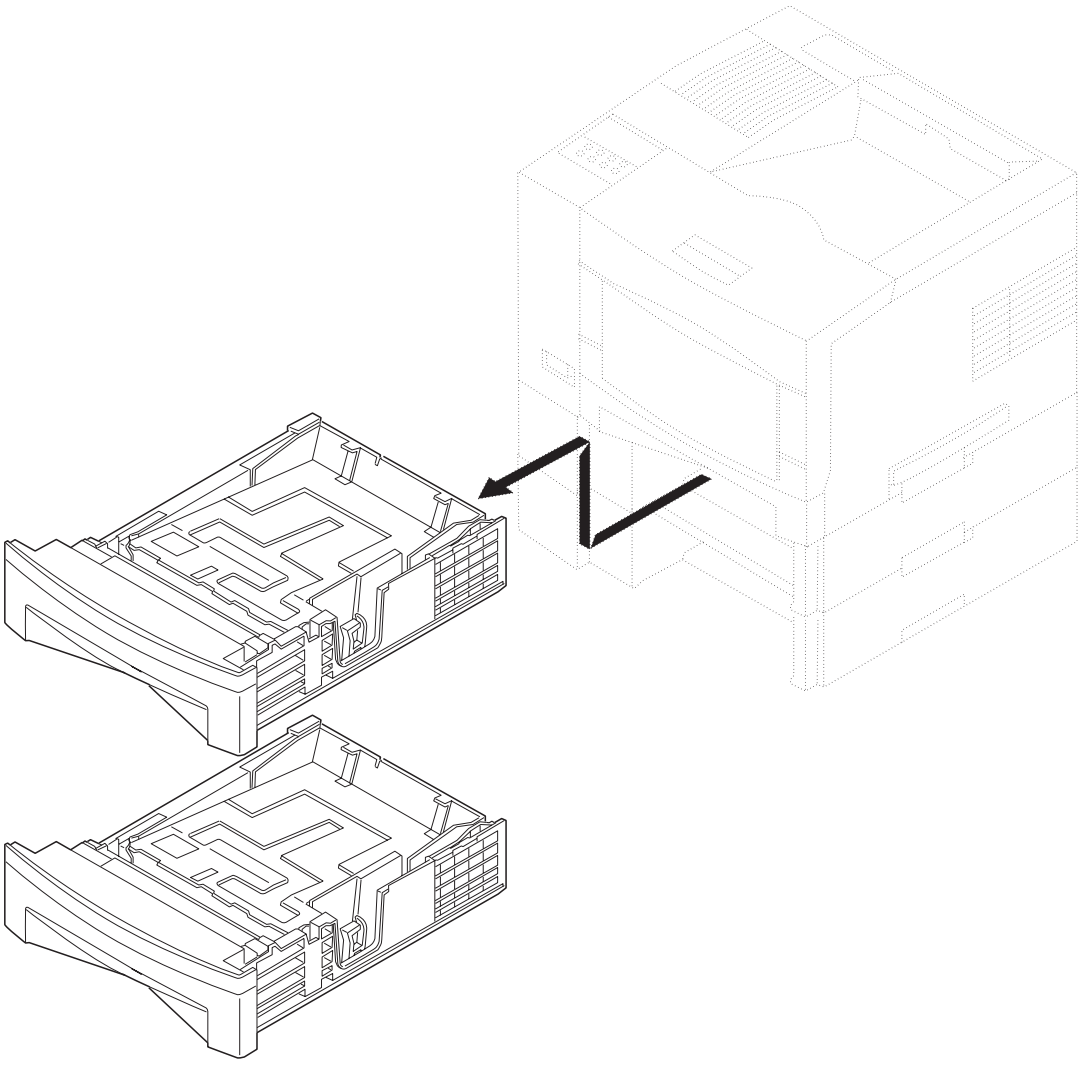
The 500-Sheet Paper Feeder consists of a paper tray (500-Sheet Tray) which can accommodate 500 sheets of paper and a deck (500-Sheet Deck) with a paper feeding mechanism in which the 500-Sheet Tray is loaded.

The 500-Sheet Paper Feeder can be used for both the second and third feeder; the 500-Sheet Paper Deck attached to the bottom of the base engine is referred to as the second feeder (Feeder 2) and that attached to the bottom of the second feeder as the third feeder (Feeder 3). Therefore, the printer can have one or two 500-Sheet Paper Feeders installed.



SAS213F

Figure 8.1.1.1.1 Deck without Tray



SAS214F

Figure 8.1.1.1.2 Paper Tray

8.1.1.2 Installation on to the Base Engine

See the Printer User Guide for the detailed installation procedure.

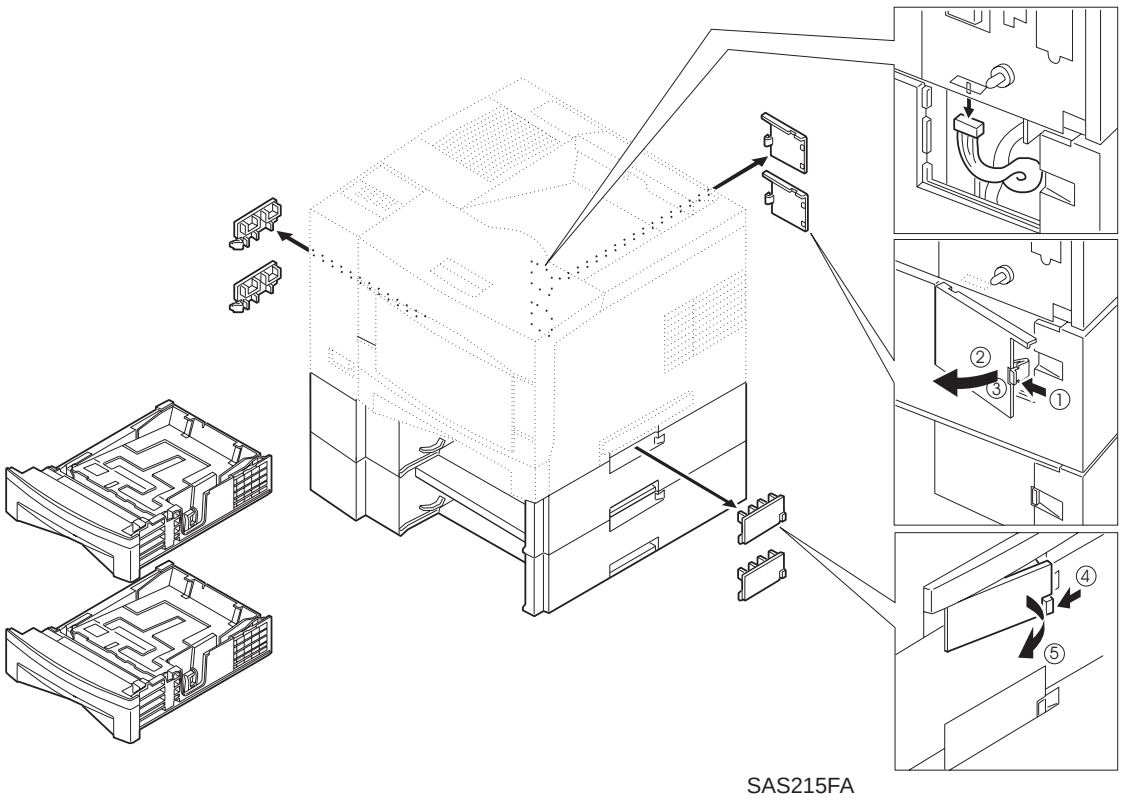


Figure 8.1.1.2.1 Installation on to the Base Engine

8.1.2 Electric Specifications

8.1.2.1 Power Supply

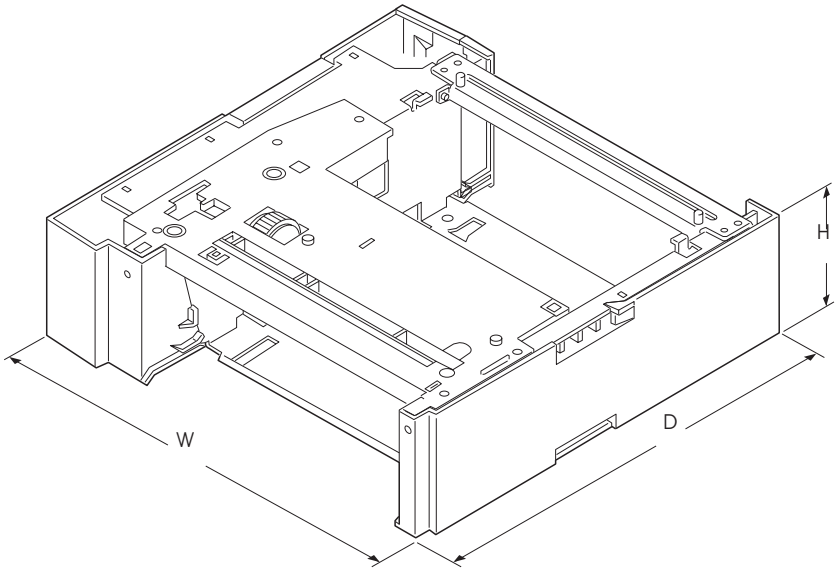
+24V DC and +5V DC are supplied from the base engine.

8.1.3 Mechanical Specifications

8.1.3.1 Dimensions and Weight

	Width	Depth	Height	Weight
Tray + Deck	426 mm	410 mm	120 mm (*1)	4.7kg

(*1) except the pins on the deck for the connection to the base engine.



SAS216F

Figure 8.1.3.1.1 Deck

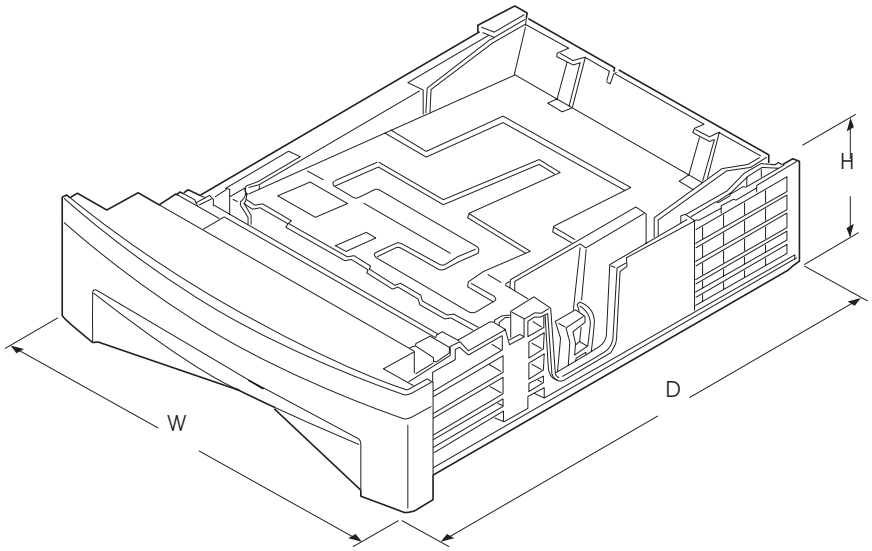
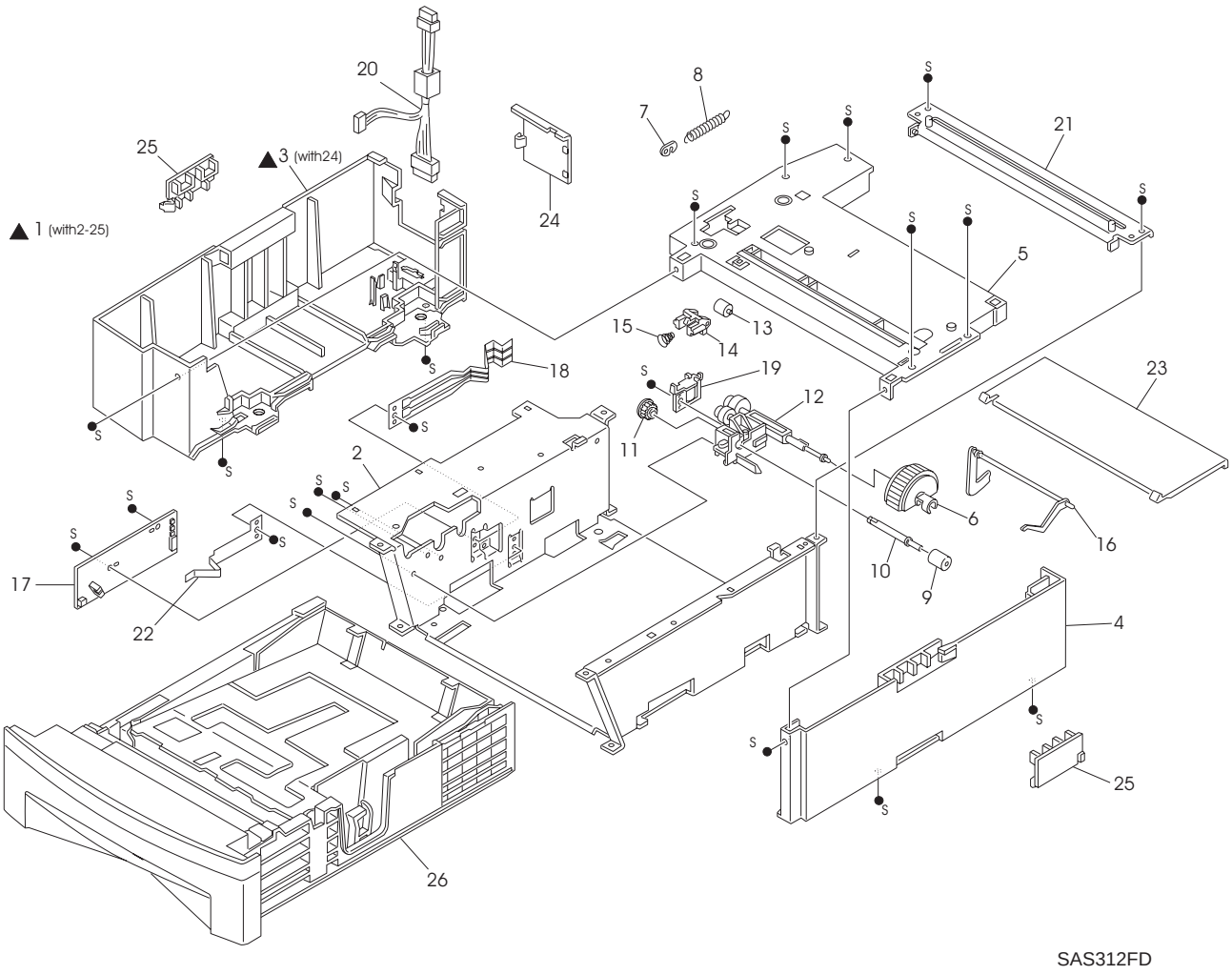


Figure 8.1.3.1.2 Tray

8.2 500 Sheet Paper Feeder and Tray Parts List

8.2.1 PL 13 500 Sheet Paper Feeder and Tray



8.2.2 PL 13 500 Sheet Paper Feeder and Tray

Item	Part	Description
1.	(*)	500 Feeder Assembly (with item 2-26)
2.	(*)	500 Frame
3.	(*)	500 Left Cover (with item 24)
4.	(*)	500 Right Cover
5.	(*)	500 Chute
6.	417346 W	500 Feed Roll
7.	(*)	Clutch Lever
8.	(*)	500 Feed Spring
9.	417347 X	500 Turn Roll
10.	(*)	500 Turn Shaft
11.	(*)	500 Turn Gear
12.	(*)	Roll Sub-Assembly
13.	(*)	500 Pinch Roll
14.	(*)	500 Pinch Holder
15.	(*)	500 Pinch Spring
16.	417348 G	500 No Paper Actuator
17.	417349 H	500 Paper Size PWB
18.	417350 E	Tray Actuator Spring
19.	417351 T	500 Solenoid
20.	(*)	500 Harness
21.	(*)	500 Tie Plate
22.	(*)	Tray Latch Spring
23.	(*)	500 Rear Cover
24.	(*)	Connector Cover
25.	417352 U	Stopper Handle
26.	(*)	500-Sheet Tray

(*) Not available

8.3 500 Sheet Paper Feeder and Trays REPS

8.3.1 Feeder 2 and 3 (Optional)

NOTE: The removal procedure for Feeders 2 and 3 are different. Skip the steps for Feeder 3 in the procedure below when Feeder 3 is not installed.

Removal

1. Pull out the Tray of Feeder 2.
2. Pull out the Tray of Feeder 3.
3. Remove the Feeder 2 Connector Cover (1, 2 in the illustration below). Disconnect the connector of the harness of Feeder 2 by pulling downward (3 in the illustration below).
4. Remove the Feeder 3 Connector Cover (1, 2 in the illustration below). Disconnect the connector of the Feeder 3 Connector Harness by pulling downward (3 in the illustration below).
5. Remove the Stopper Handles which secure the printer and Feeder 2 to each other (4, 5 in the illustration below).
6. Remove the Stopper Handles which secure Feeder 2 and Feeder 3 to each other (4, 5 in the illustration below).
7. Lift the printer off Feeder 2.
8. Lift Feeder 2 off Feeder 3.

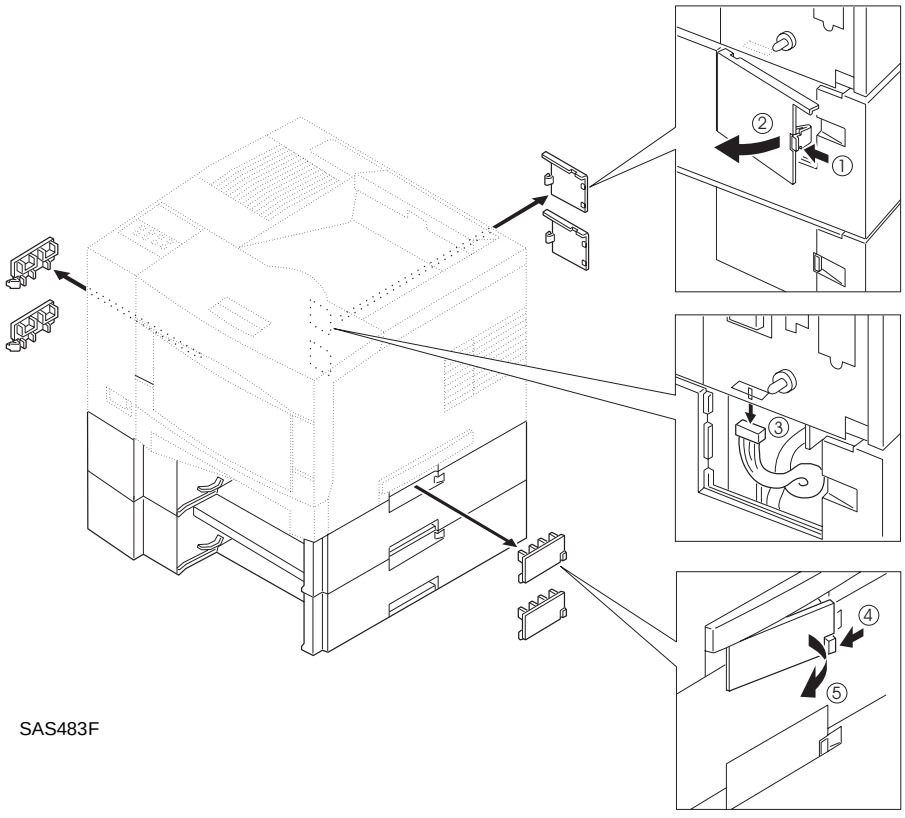


Figure 8.3.1.1 Removing Feeder 2 and 3

Replacement

Perform the removal steps in reverse order.

8.3.2 500 Chute Assembly

NOTE: The removal procedure for the 500 Chute Assembly is the same for Feeders 2 and 3.

Removal

1. Remove Feeder 2 (3) (*REP 8.3.1 Feeder 2 and 3 (Optional)*).
2. Remove the Left Cover (*REP 8.3.3 500 Left Cover*).
3. Remove the Right Cover (*REP 8.3.4 500 Right Cover*).
4. Remove the two screws on both sides of the 500 Frame Assembly.
5. Remove the five screws which secure the 500 Chute Assembly to the 500 Frame Assembly from the top.
6. Position the No Paper Actuator to clear the No Paper Sensor mounted to the 500 Paper Size PWB.
7. Lift off the 500 Chute Assembly.

NOTE: When removing the 500 Chute Assembly, turn and raise the No Paper Actuator in order to clear the No Paper Sensor mounted on the 500 Paper Size PWB.

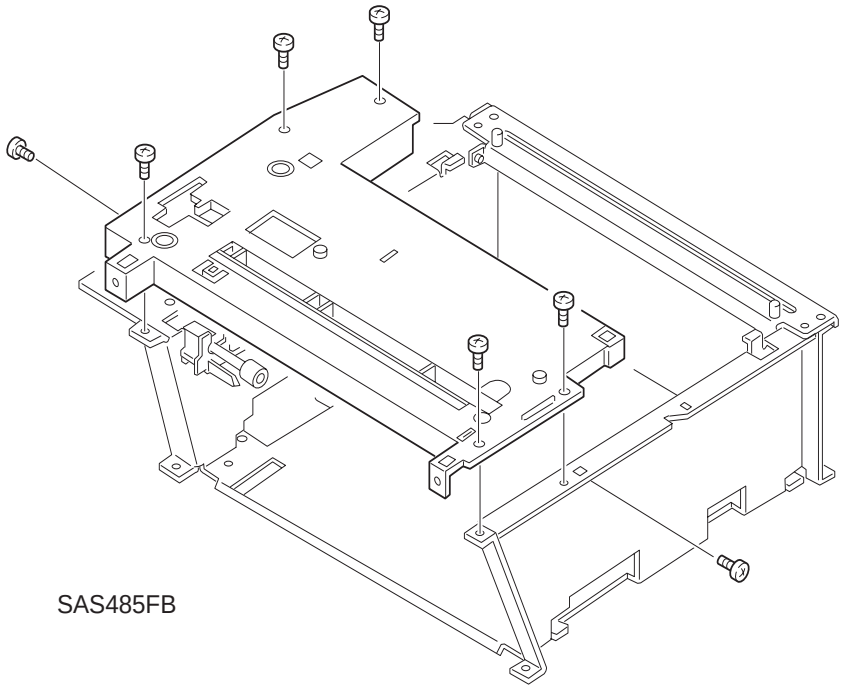


Figure 8.3.2.1 Removing the 500 Chute Assembly

Replacement

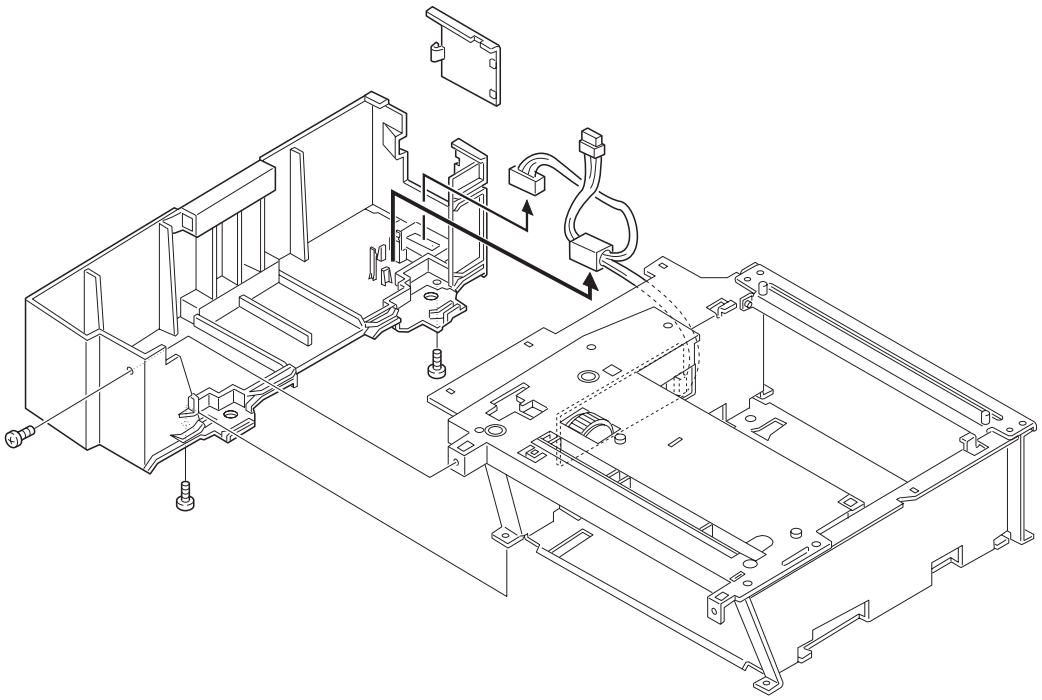
Perform the removal steps in reverse order.

8.3.3 500 Left Cover

NOTE: The removal procedure for the 500 Left Cover is the same for Feeders 2 and 3.

Removal

1. Remove Feeder 2 (3) (*REP 8.3.1 Feeder 2 and 3 (Optional)*).
2. Remove the two screws on the bottom side.
3. Remove the one screw on the front side.
4. Disconnect P/J216 from the 500 Paper Size PWB Assembly.
5. Remove the 500 Left Cover.



SAS472FC

Figure 8.3.3.1 Removing the 500 Left Cover

Replacement

Perform the removal steps in reverse order.

8.3.4 500 Right Cover

NOTE: The removal procedure for the 500 Right Cover is the same for Feeders 2 and 3.

Removal

1. Remove Feeder 2 (3) (*REP 8.3.1 Feeder 2 and 3 (Optional)*).
2. Remove the two screws on the bottom side.
3. Remove the one screw on the front side.
4. Remove the 500 Right Cover.

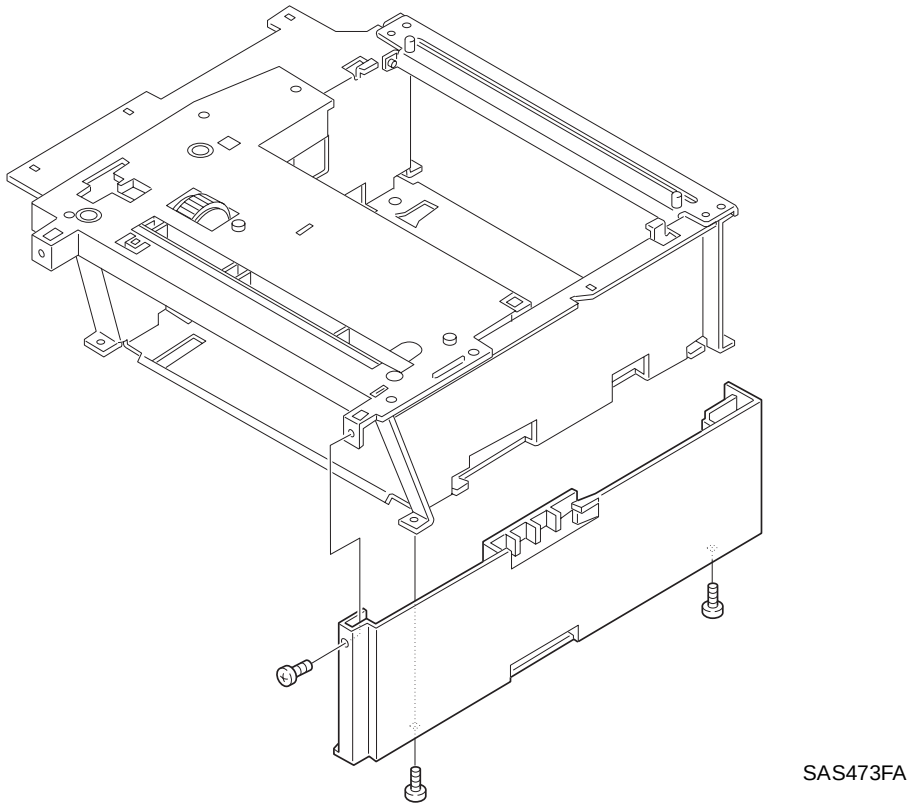


Figure 8.3.4.1 Removing the 500 Right Cover

Replacement

Perform the removal steps in reverse order.

8.3.5 500 Feed Roll Assembly

NOTE: The removal procedure for the 500 Feed Roll Assembly is the same for Feeders 2 and 3.

Removal

1. Remove Feeder 2 (3) (*REP 8.3.1 Feeder 2 and 3 (Optional)*).
2. Place the Feeder Unit with the Left Cover downward.
3. Reach into the 500 Feed Roll Solenoid and manually disengage the 500 Feed Roll latch.
4. Rotate the 500 Feed Roll Assembly by 180 degrees and take the 500 Feed Roll Assembly off of the shaft by opening its latches.

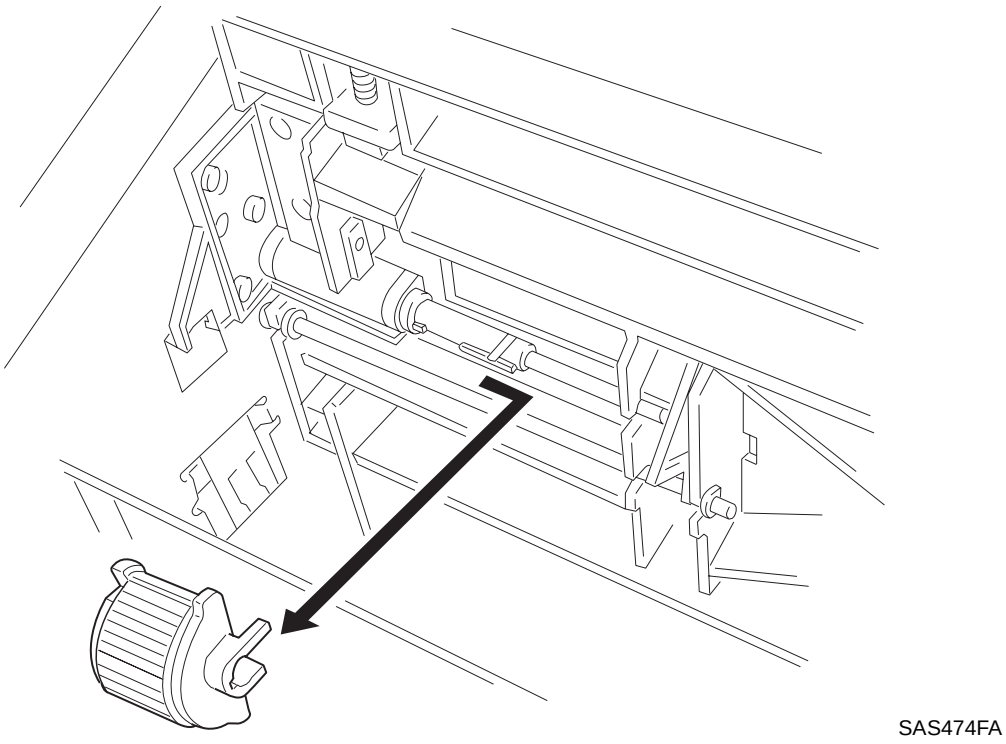


Figure 8.3.5.1 Removing the 500 Feed Roll Assembly

Replacement

Perform the removal steps in reverse order.

8.3.6 Clutch Lever

NOTE: The removal procedure for the Clutch Lever is the same for Feeders 2 and 3.

Removal

1. Remove the 500 Left Cover (*REP 8.3.3 500 Left Cover*).
2. Remove the spring attached to the Clutch Lever (*REP 8.3.7 500 Feed Spring*).
3. Squeeze the top of the shaft holding the Clutch Lever.
4. Remove the Clutch Lever by hand.

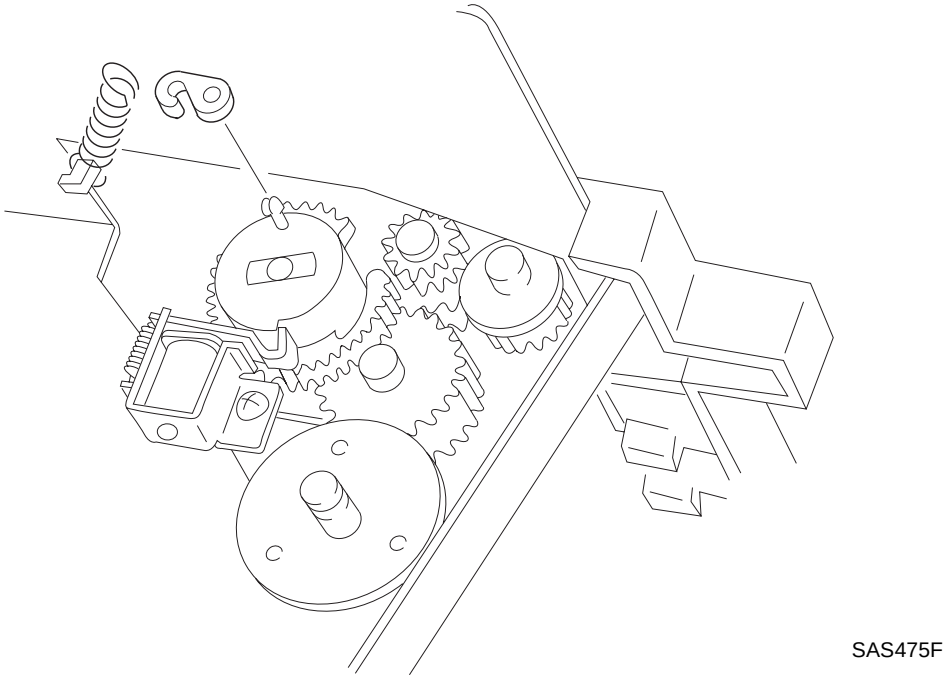


Figure 8.3.6.1 Removing the Clutch Lever

Replacement

Perform the removal steps in reverse order.

8.3.7 500 Feed Spring

NOTE: The removal procedure for the 500 Feed Spring is the same for Feeders 2 and 3.

Removal

1. Remove the 500 Left Cover (*REP 8.3.3 500 Left Cover*).
2. Remove the 500 Feed Spring by hand.

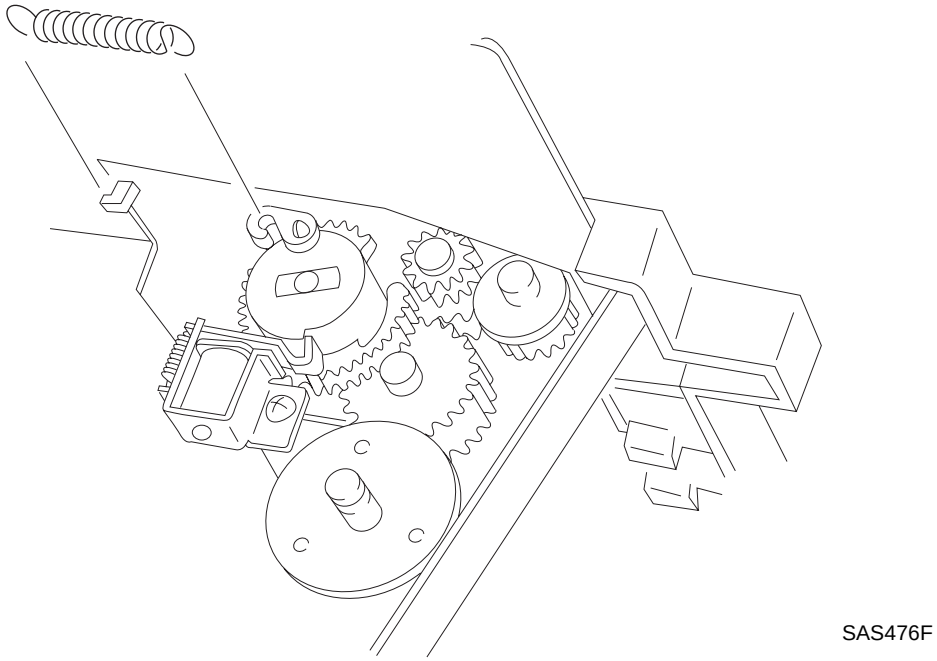


Figure 8.3.7.1 Removing the 500 Feed Spring

Replacement

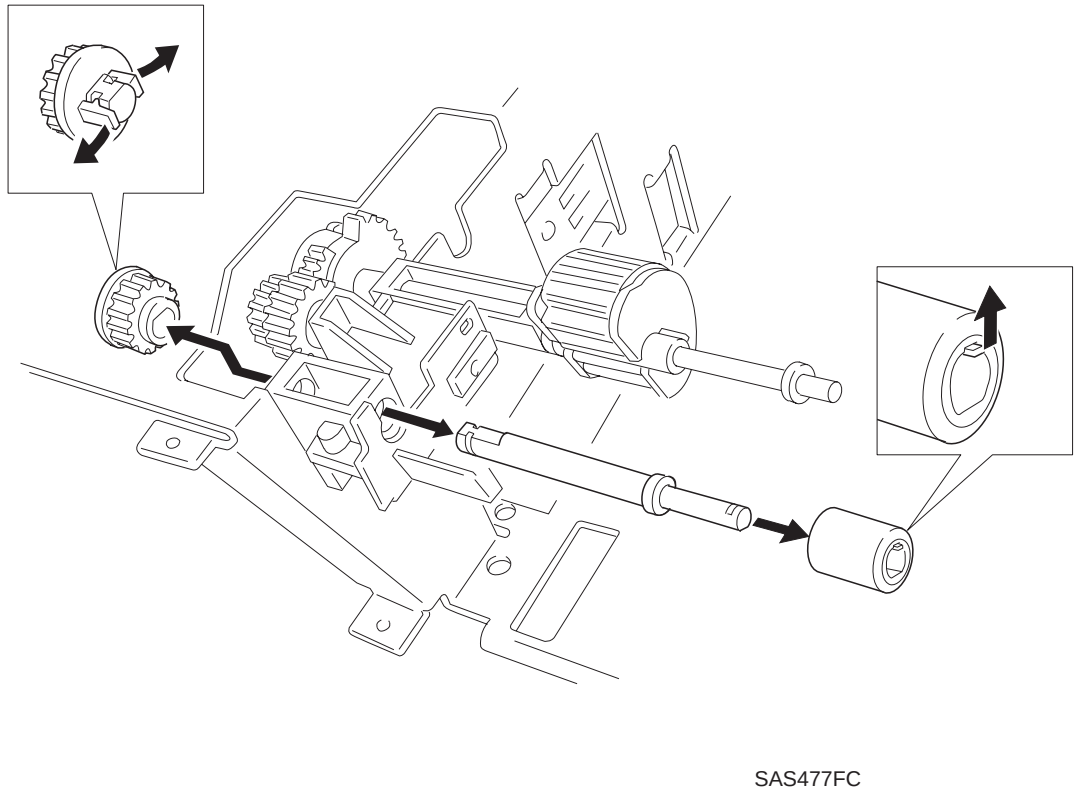
Perform the removal steps in reverse order.

8.3.8 500 Turn Roll Assembly

NOTE: The removal procedure for the 500 Turn Roll Assembly is the same for Feeders 2 and 3.

Removal

1. Remove the 500 Chute Assembly (*REP 8.3.2 500 Chute Assembly*).
2. Disengage the latch of the gear of the 500 Turn Roll Assembly and pull the Roll Assembly inward together with the shaft.
3. Release the latch and slide the Roll Assembly off of the shaft.



SAS477FC

Figure 8.3.8.1 Removing the 500 Turn Roll Assembly

Replacement

Perform the removal steps in reverse order.

8.3.9 500 Pinch Roll

NOTE: The removal procedure for the 500 Pinch Roll is the same for Feeders 2 and 3.

Removal

1. Remove the 500 Chute Assembly (*REP 8.3.2 500 Chute Assembly*).
2. Push the Latch with a screwdriver to free the Pinch Roll holder from the 500 Chute Assembly.
3. Pull the 500 Pinch Roll along with the holder and the spring downward off of the 500 Chute Assembly.
4. Pry the 500 Pinch Roll off of the holder.

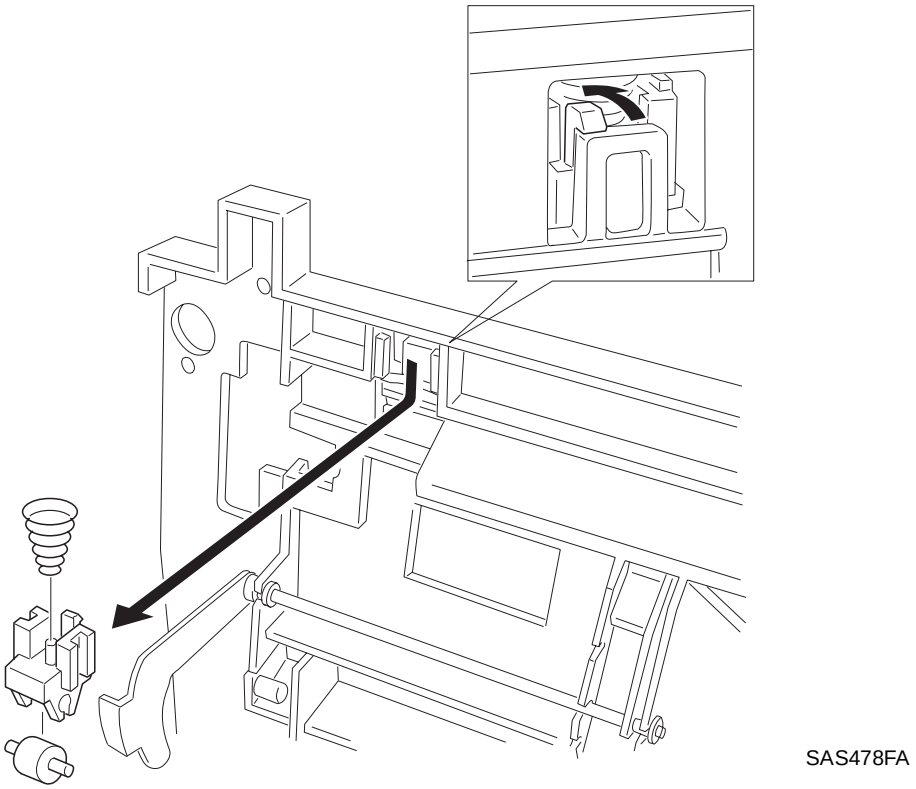


Figure 8.3.9.1 Removing the 500 Pinch Roll

Replacement

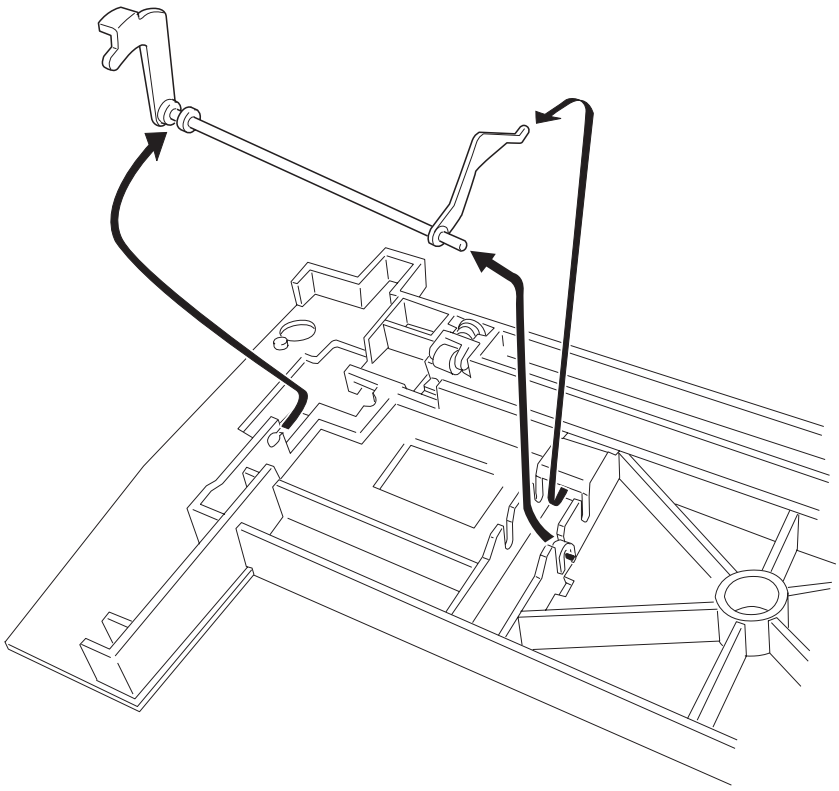
Perform the removal steps in reverse order.

8.3.10 No Paper Actuator

NOTE: The removal procedure for the No Paper Actuator is the same for Feeders 2 and 3.

Removal

1. Remove the 500 Chute Assembly (*REP 8.3.2 500 Chute Assembly*).
2. Put the 500 Chute Assembly upside down.
3. Push/pry the left end of the Actuator off of the Chute and then shift the right end portion off along the shaft to remove it.



SAS479FC

Figure 8.3.10.1 Removing the No Paper Actuator

Replacement

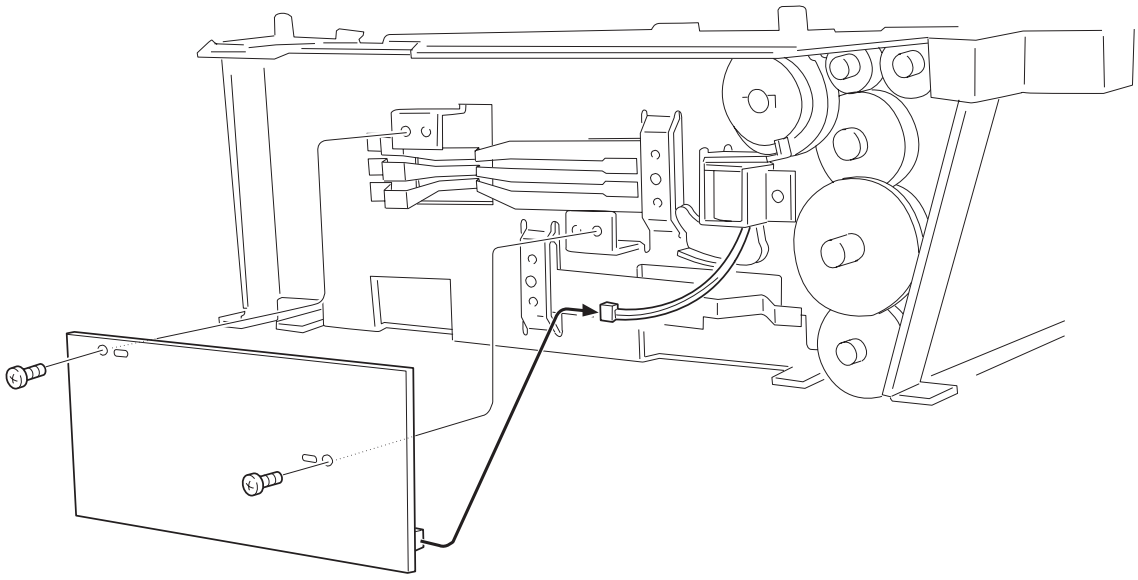
Perform the removal steps in reverse order.

8.3.11 500 Paper Size PWB Assembly

NOTE: The removal procedure for the 500 Paper Size PWB Assembly is the same for Feeders 2 and 3.

Removal

1. Remove the 500 Left Cover (*REP 8.3.3 500 Left Cover*).
2. Remove the two screws which secure the 500 Paper Size PWB Assembly.
3. Lift the PWB Assembly and disconnect the one connector on the parts-mounted side of the PWB.
4. Remove the PWB Assembly.



SAS480FA

Figure 8.3.11.1 Removing the 500 Paper Size PWB Assembly

Replacement

Perform the removal steps in reverse order.

8.3.12 500 Size Spring

NOTE: The removal procedure for the 500 Paper Size PWB Assembly is the same for Feeders 2 and 3.

Removal

1. Remove the 500 Paper Size PWB Assembly (*REP 8.3.11 500 Paper Size PWB Assembly*).
2. Remove the one screw which secures the 500 Size Spring, from the inside of the Feeder.
3. Take the 500 Size Spring rearward off the Feeder.

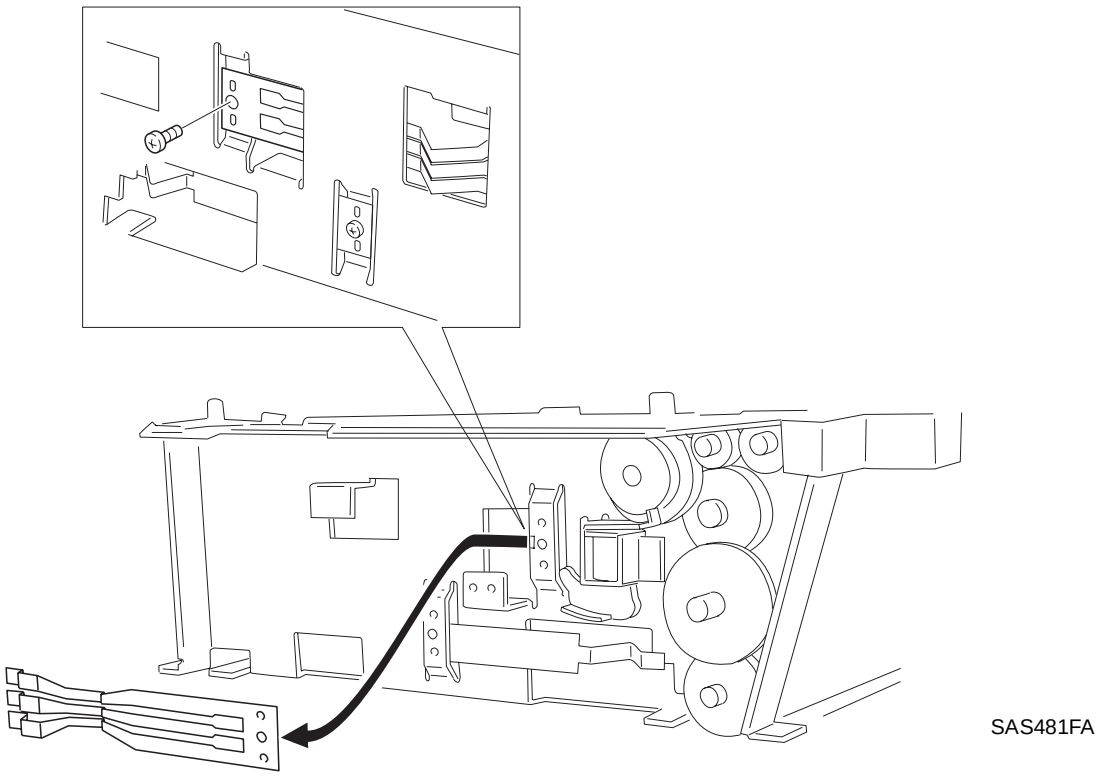


Figure 8.3.12.1 Removing the 500 Size Spring

Replacement

Perform the removal steps in reverse order.

8.3.13 Tray Latch Spring

NOTE: The removal procedure for the Tray Latch Spring is the same for Feeders 2 and 3.

Removal

1. Remove the 500 Paper Size PWB Assembly (*REP 8.3.11 500 Paper Size PWB Assembly*).
2. Remove the one screw which secures the Tray Latch Spring from the inside of the Feeder.
3. Move the Tray Latch Spring towards the front to remove it from the Feeder.

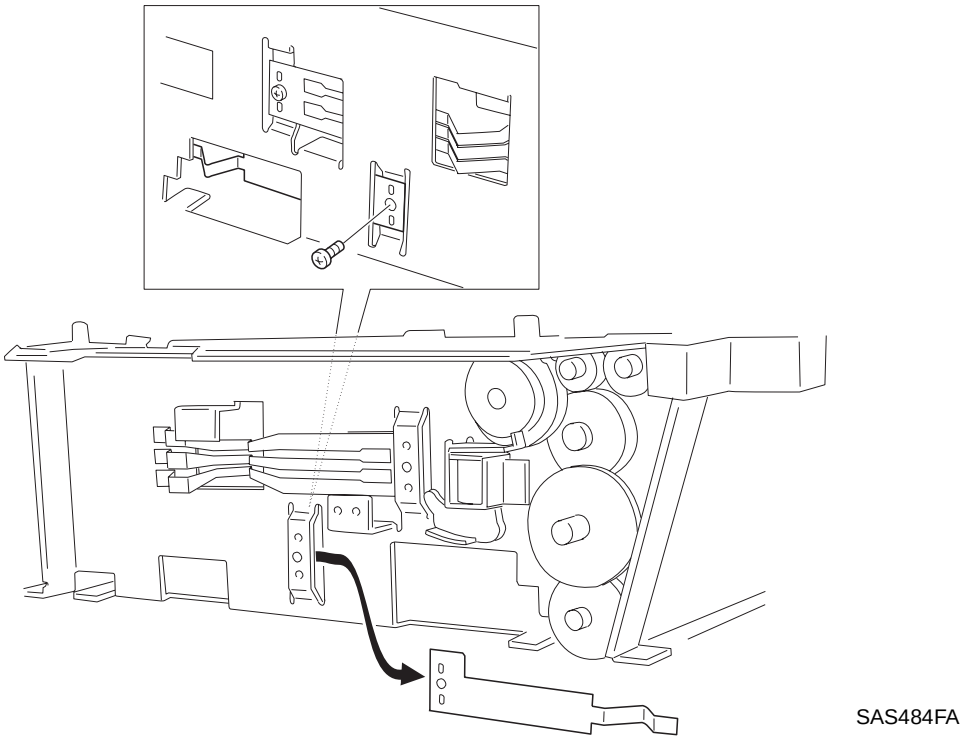


Figure 8.3.13.1 Removing the Tray Latch Spring

Replacement

Perform the removal steps in reverse order.

8.3.14 500 Solenoid Assembly

NOTE: The removal procedure for the 500 Solenoid Assembly is the same for Feeders 2 and 3.

Removal

1. Remove the 500 Left Cover (*REP 8.3.3 500 Left Cover*).
2. Remove the one screw which secures the 500 Solenoid Assembly.
3. Disconnect the connector on the 500 Paper Size PWB Assembly, and take off the 500 Solenoid Assembly.

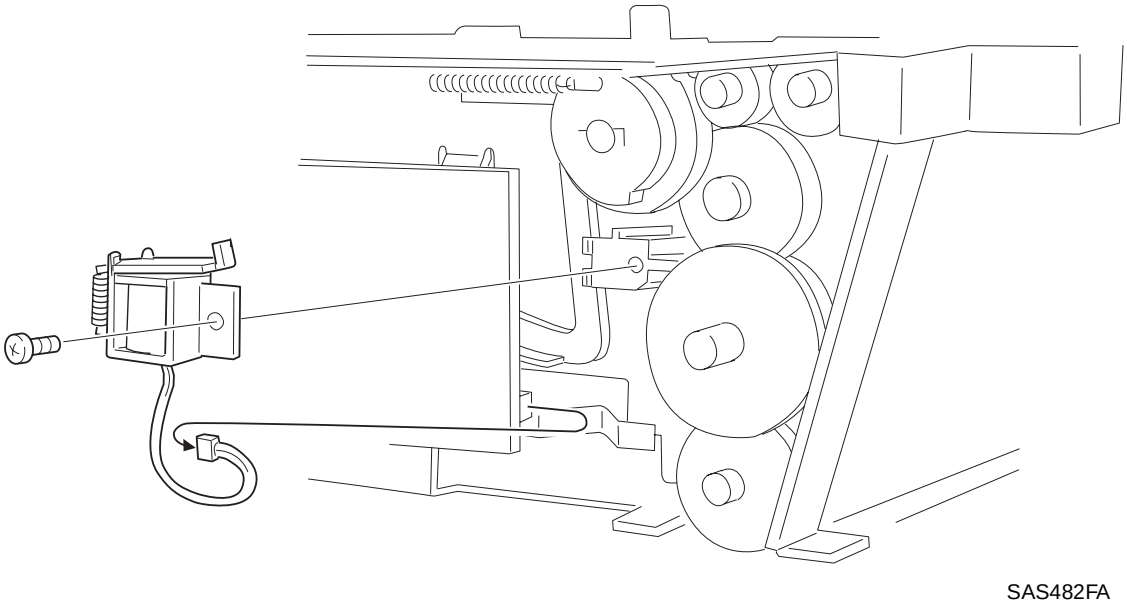


Figure 8.3.14.1 Removing the 500 Solenoid Assembly

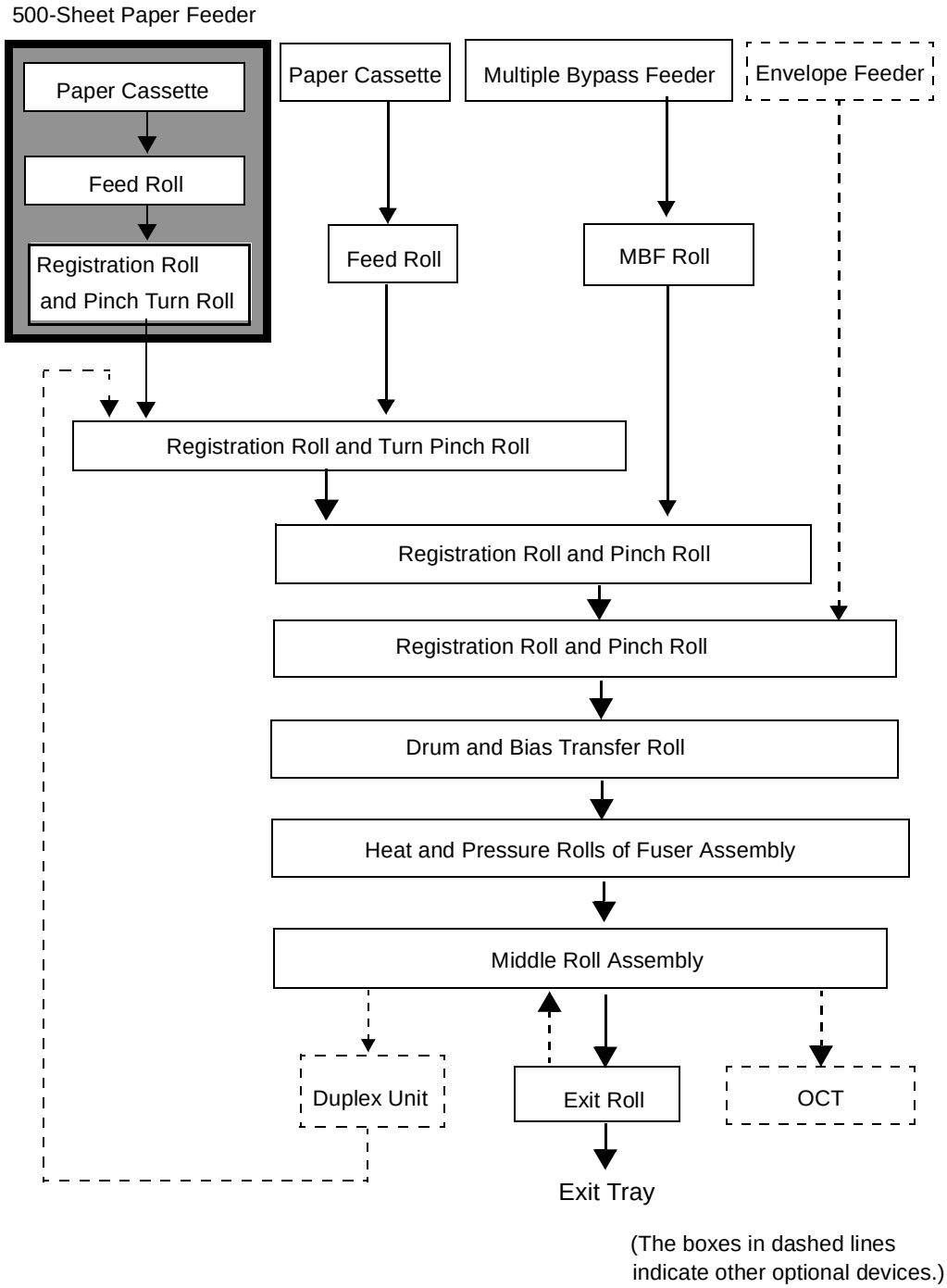
Replacement

Perform the removal steps in reverse order.

8.4 Paper Transportation

8.4.1 Paper Transportation Mechanism

The paper transport mechanism is shown below along the path of paper travel. (For the paper transportation in other devices, refer to their respective service manuals.)



8.4.2 Paper Path

Figure 8.4.1 shows the path of paper travel through the printer with a 500-Sheet Paper Feeder installed.

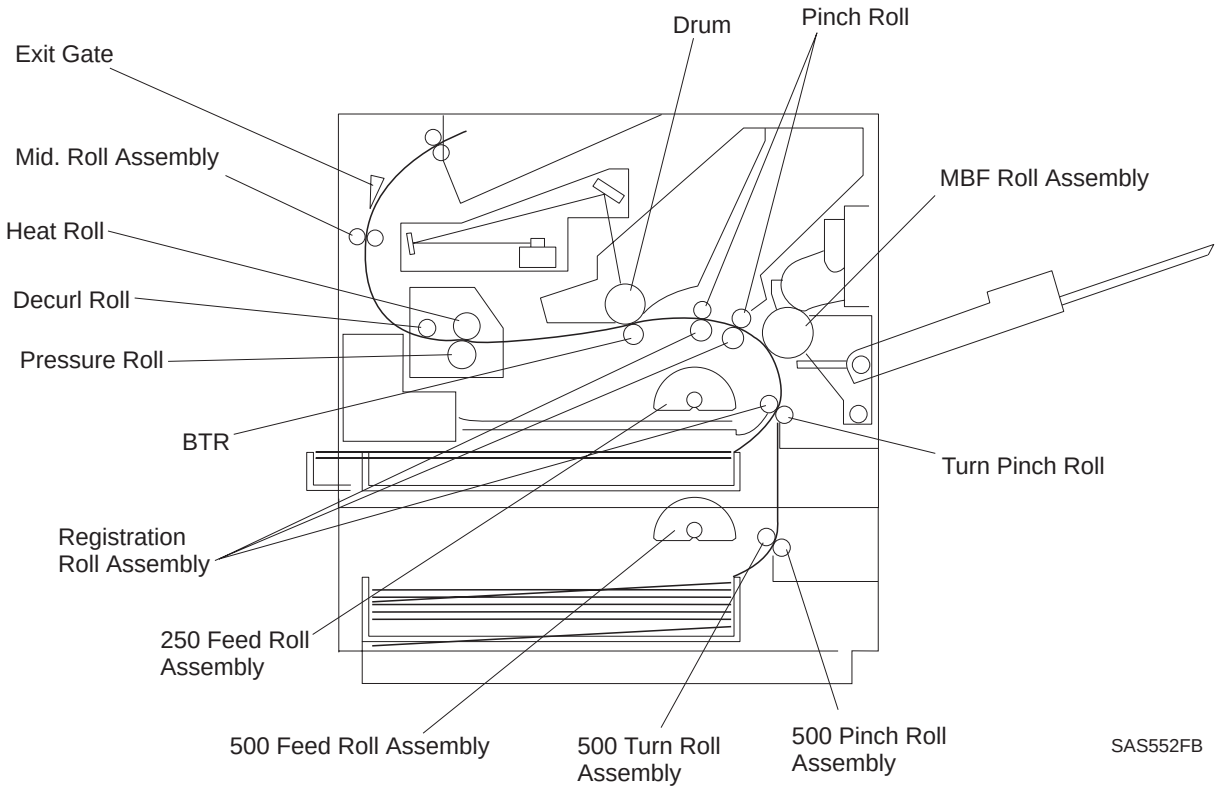


Figure 8.4.1 Paper Path

8.5 Drive Power Transmission

The drive power is generated by the Drive Assembly of the base engine and transmitted to the 500-Sheet Paper Feeder.

8.6 Function of Major Components

The function of the major components is described below with reference to the drawings.

8.6.1 500-Sheet Paper Feeder

8.6.1.1 Function

- 500-Sheet Paper Tray:

  This Tray can accommodate up to 500 cut sheets of plain paper.

  The Tray is provided with a Paper Guide at the rear part on its right side. When the Paper Guide is set to a desired paper size, the straps of the Actuator on the left side of the Tray are expanded or compressed. The middle part of each strap thereby projects or retracts, forming the pattern of projections (number and position) which corresponds to the paper size. The projections press the Size Spring on the Feeder PWB against the Paper Size Switches.

  The Tray is provided with a slot for allowing paper from the lower (bottom) Feeder to pass through into the printer between the handle portion at the front and the body portion which accommodates paper.

- 500 Paper Size PWB Assembly:

  Three Paper Size Switches, Tray Latch Spring and Tray Actuator Spring are mounted on this printed wiring board.

- Paper Size Switches:

  These switches are directly mounted on the PWB. They are “On” when being pressed by the Size Spring. The Tray (loaded or unloaded) and the size of paper are detected by the combination of On and Off switches.

- Tray Actuator Spring:

  The Tray Actuator Spring presses the Size Spring against the Paper Size Switches with the pattern of projections corresponding to the paper size.

- Tray Latch Spring:

  This Latch is a spring which secures the 500-Sheet Tray in place.

- 500 Solenoid Assembly:

  This solenoid controls the rotation (On and Off) of the Registration Roll Assembly and the 500 Feed Roll Assembly.

- Registration Roll Assembly:

  This roll drives paper between the Turn Pinch Roll and the Registration Roll Assembly.

- 500 Feed Roll Assembly:

  This roll rotates once each time the 500 Solenoid Assembly is actuated and pushes a sheet of paper out of the Tray.

8.6.1.2 Locations of Major Components

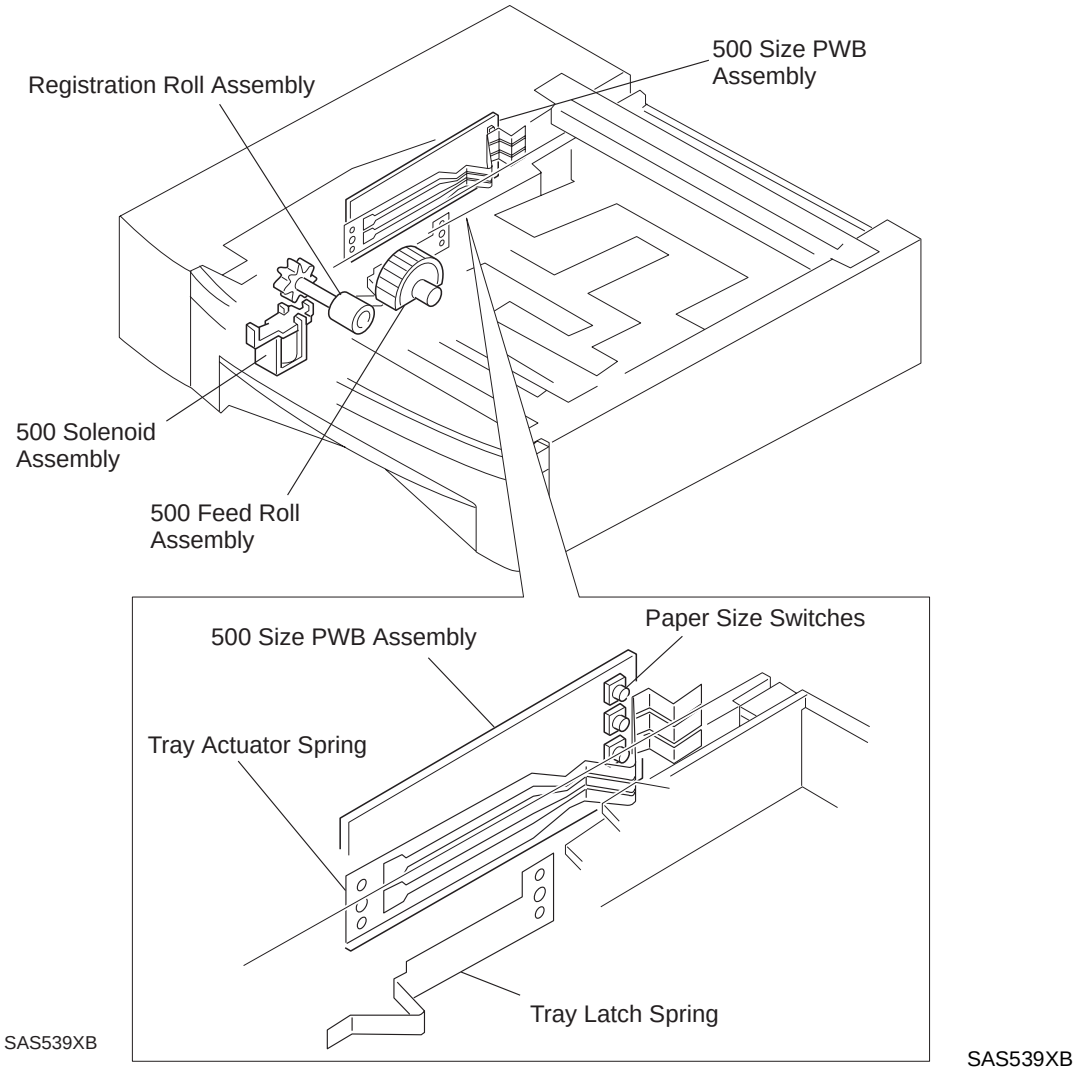
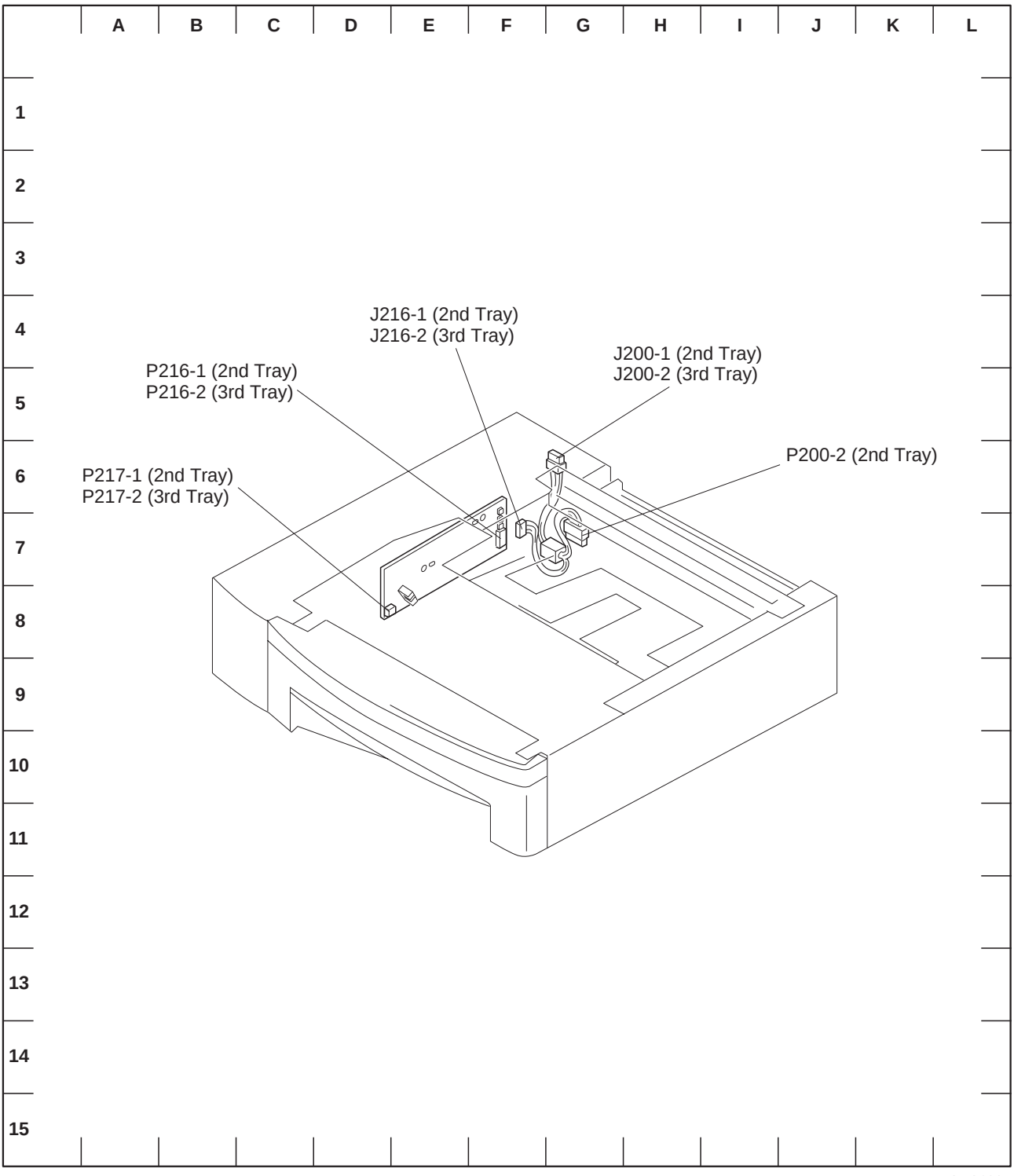


Figure 8.6.1.2.1 Locations of Major Components

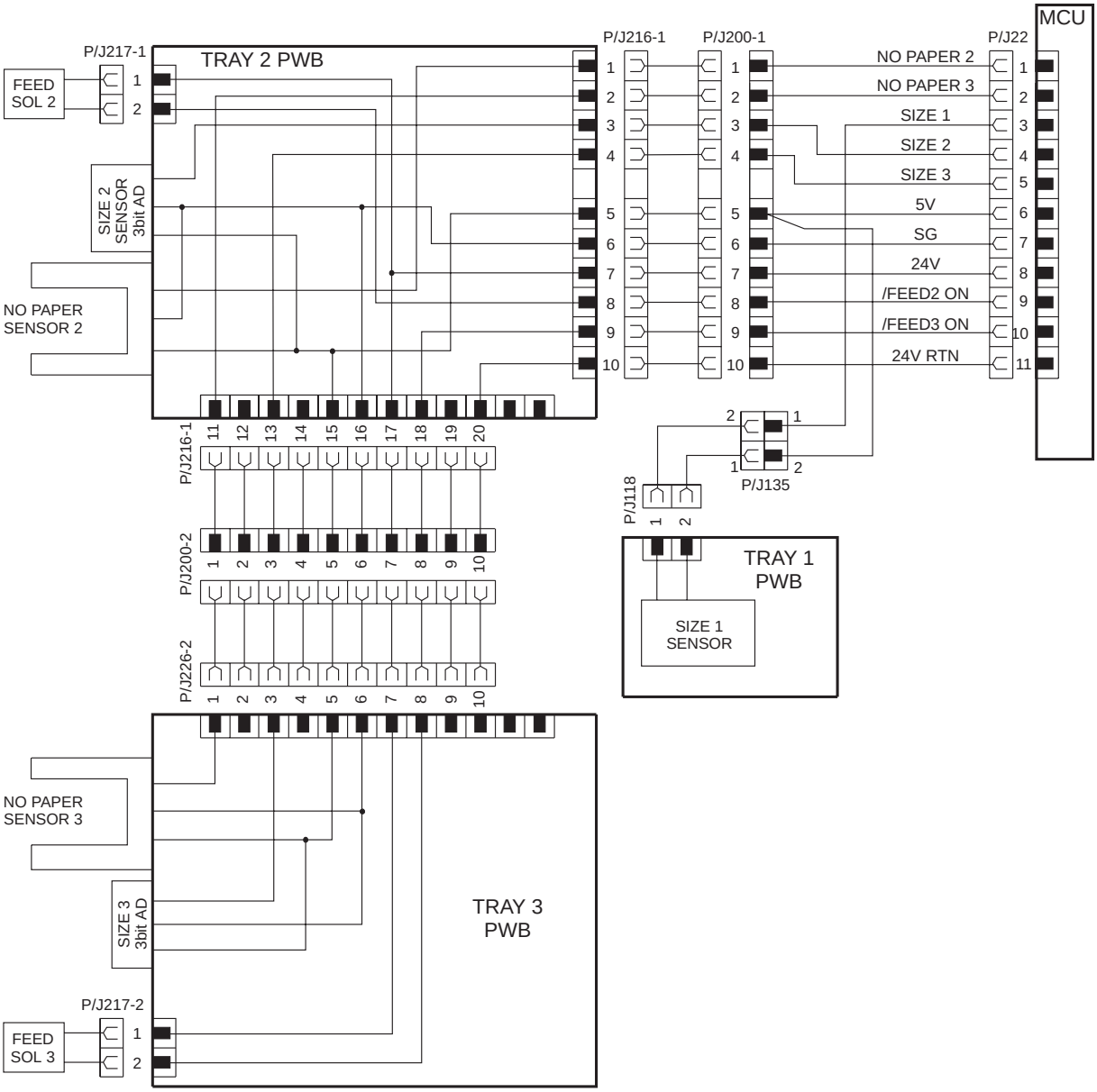
8.7 500 Sheet Paper Feeder and Trays Wiring Diagrams

8.7.1 Connector Locators



SAS628F

8.7.2 Wiring Schematic



SAS622FA

8.7.3 P/J Table

NOTE: If "-1" is attached on the PJ number, the PJ is a part of the Second Tray; and, if "-2" is attached, the PJ is a part of the third Tray.

PJ	Coordinate	Mounting (*1)		Harness (*2)		Description
		Mounted on	PL	Name (*3)	PL	
200	G7 G6	P: 500 Left Cover J: (*4)	13-3	500 Harness Assembly	13-20	1. Connection between the Tray Harness Assembly of the base engine and the 500 Harness Assembly of the Second Tray. 2. Connection between the Tray Harness Assembly of the Second Tray and the 500 Harness Assembly of the Third Tray.
216	F7	500 Paper Size PWB Assembly	13-17	500 Harness Assembly	13-20	1. Connection between the Tray Harness Assembly of the base engine and the 500 Paper Size PWB Assembly of the Second Tray. 2. Connection between the 500 Harness Assembly of the Second Tray and the 500 Paper Size PWB Assembly of the Third Tray.
217	E8	500 Paper Size PWB Assembly	13-17	@ 500 Solenoid Assembly	13-19	Connection between the 500 Paper Size PWB Assembly and the 500 Solenoid Assembly.

(*1): The "PL" on the "Mounting" column indicates the corresponding parts list and item number in Section 3.

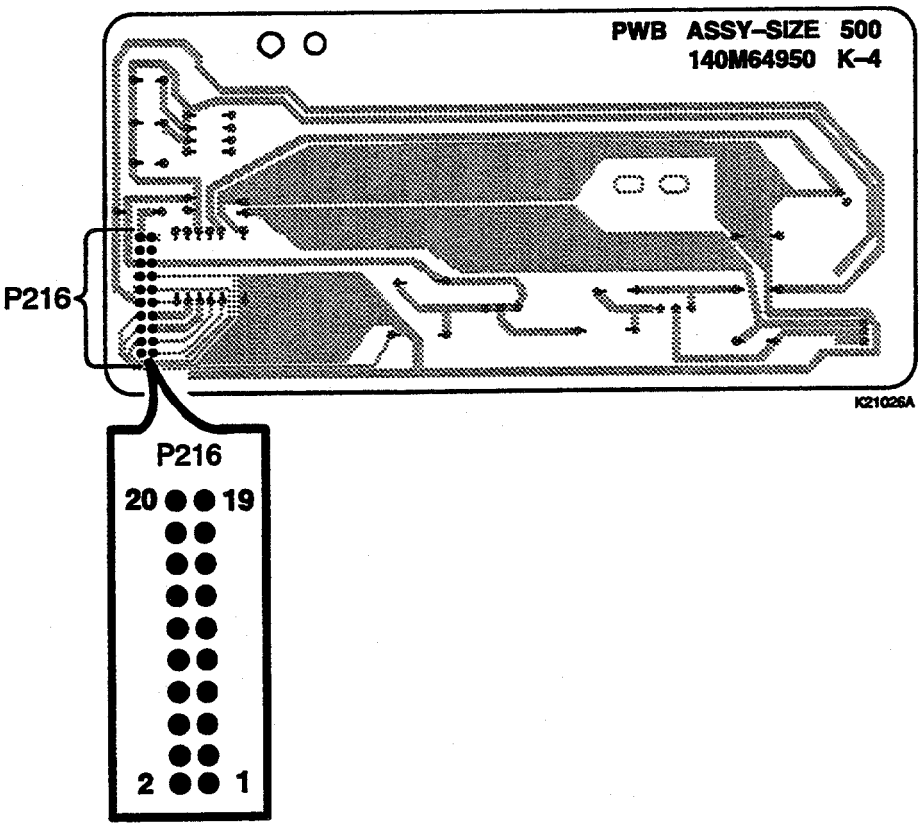
(*2): The "PL" on the "Harness" column indicates the corresponding parts list and item number in Section 3.

(*3): @ at the beginning of the harness name indicates that the harness is a part of the component.

(*4): It has not fixed yet because it is set at installation.

8.7.4 P216 Pin Layout

Refer to the P216 Pin Layout when troubleshooting the 500-Sheet Paper Feeder option.



8.8 How to Perform Troubleshooting

Refer to *8.7.2 Wiring Schematic* in this section for the 500 Sheet Paper Feeder wiring diagram.

8.9 RAPs

8.9.1 Tray 2/3 Failure (E11)

1 There is +5VDC between P216-5 and P216-6.

Y: Go to step 4.

N: Go to step 2.

2 There is +5VDC between J200-5 and J200-6.

Y: Replace the Deck 2 Harness Assembly.

N: Go to step 3.

3 There is +5VDC between P/J22-6 and P/J22-7.

Y: Replace the Tray Harness Assembly.

N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

4 There is +5VDC between P220-5 and P200-6.

Y: Go to step 5.

N: Replace the Deck 3 Harness Assembly.

5 There is voltage between P/J22-4 and P/J22-7 and between P/J22-5 and P/J22-7 in the range of 1.9VDC to 3.6VCD.

NOTE: Measure voltage with paper loaded into the paper tray and the tray inserted into the paper deck. Second set of voltages are present only when Deck 2 is installed.

Y: Replace the Print Engine Controller.

N: Go to step 6.

6 There is voltage between P/J200-3 and P/J200-6 and between P/J200-4 and P/J200-6 in the range of 1.9VDC to 3.6VCD.

NOTE: Measure voltage with paper loaded into the paper tray and the tray inserted into the paper deck. Second set of voltages are present only when Deck 2 is installed.

Y: Replace the 500 Tray Harness Assembly.

N: Go to step 7.

7 There is voltage between P/J216-3 and P/J216-6 and between P/J216-4 and P/J216-6 in the range of 1.9VDC to 3.6VCD.

NOTE: Measure voltage with paper loaded into the paper tray and the tray inserted into the paper deck. Second set of voltages are present only when Deck 2 is installed.

Y: Replace the Deck 2 Harness Assembly.

N: Go to step 8.

8 There is voltage between P/J216-3 and P/J216-6.

NOTE: Measure voltage with paper loaded into the paper tray and the tray inserted into the paper deck.

Y: Go to step 9.

N: Replace the Tray 2 PWB.

9 There is voltage between P/J219-3 and P/J219-6.

NOTE: Measure voltage with paper loaded into the paper tray and the tray inserted into the paper deck. Check required only when Deck 2 is installed.

Y: Replace the Tray 2 PWB.

N: Go to step 10.

10 There is voltage between P/J220-3 and P/J220-6.

NOTE: Measure voltage with paper loaded into the paper tray and the tray inserted into the paper deck. Check required only when Deck 2 is installed.

Y: Replace the Deck 3 Harness Assembly.

N: Replace the Tray 3 PWB.

8.9.2 Insert Tray 2, Insert Tray 3 (C3)

1 Remove the 500 sheet paper tray and inspect the condition of the Size Sensor switch actuators. The switch actuators contact the size switch sensor springs when the tray is inserted.

Y: Go to step 2.

N: Replace the 500 sheet tray.

2 Execute Diagnostic Mode 1 - Paper Tray Size. The paper size reported corresponds to the size of the paper loaded.

Y: Replace the Print Engine Controller.

N: Go to *RAP 8.9.5 Sensor Assembly Size Failure.*

8.9.3 Tray 2 Empty, Tray 3 Empty (C5)

Initial Action

In this case C5 is a Status Code that usually appears when trying to reproduce a paper-out condition while printing in the Diagnostics Mode from the lower tray(s). When a C5 “No Paper” condition is displayed, an associated tray is usually displayed with it. Please ensure that the correct size paper is in the tray.

1 The selected tray is out of paper.

Y: Load the paper tray with the correct size paper.

N: Go to step 2.

2 Remove the 500 Tray Assembly. Check if the plate in the tray will rise up ***fully into position*** when the plate release is actuated.

Y: Go to step 3.

N: Remove any obstructions that might be preventing the tray from rising fully into position. Ensure that the plate release actuator is projecting out from the left side far enough to actuate the plate release as the tray is inserted into the printer. Replace the 500 Tray Assembly.

3 The No Paper Actuator for the 500 Tray Assembly is functioning normally.

Y: Go to step 4.

N: Inspect and correct/replace the No Paper Actuator.

4 The No Paper Sensor for the 500 Tray Assembly is functioning correctly. This can be verified by performing Diagnostic Mode 1, Input Sensor Test.

Y: Replace the Print Engine Controller.

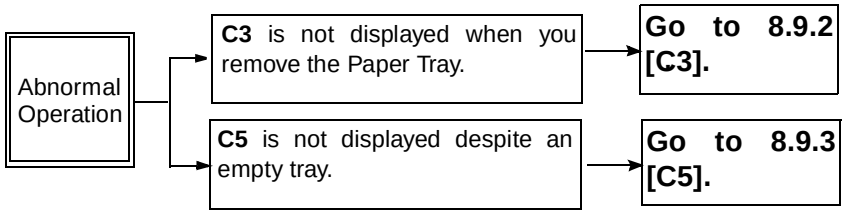
N: Go to step 5.

5 Verify the continuity of the Deck Harness Assembly and the Tray Harness Assembly. The Harness is good.

Y: Replace the Deck Tray 500 Paper Size PWB.

N: Replace the defective harness.

8.9.4 Abnormal Operation



8.9.5 Sensor Assembly Size Failure

1 Press the Sensor Size Assembly. Check if the spring actuates the corresponding Paper Size switch. Conduct a visual inspection after removing the 500 Tray Assembly.

Y: Go to step 2.

N: Replace the relevant 500 Paper Size PWB Assembly.

2 There is +5VDC between P/J22-6 and P/J22-7.

Y: Go to step 3.

N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

3 Check for the voltage between P/J22-4 and PJ22-7, and between P/J22-5 and P/J22-7. The result is compatible with the value the switch combination shown in *Table 8.9.5.1 Second and Third Trays*.

Y: Replace the Print Engine Controller.

N: Go to step 4.

4 There is continuity between J22 and J200.

Y: Go to step 5.

N: Replace the Tray Harness Assembly.

5 There is continuity between J200 and J216 (Deck 2). There is continuity between J219 and J220 (Deck 3).

Y: Replace the 500 Paper Size PWB Assembly.

N: Replace the 500 Harness Assembly.

Table 8.9.5.1 Second and Third Trays

Size	Size SNR Voltage (V) Vsnr (Size 2 and Size 3)			S2 (*)	S1 (*)	S0 (*)
	+5VDC Measured at P/J22-6					
	4.77V Min.	5.10V Typ.	5.44 Max.			
No Deck	0.00	0.00	0.00	0	0	0
No Tray	0.55	0.60	0.65	0	0	0
Legal 13”	2.31	2.49	2.69	1	1	0
Letter	3.19	3.43	3.68	0	0	1
A4	1.91	2.07	2.23	0	1	1
Legal 14”	3.03	3.27	3.51	1	1	1

The following legend applies to *Table 8.9.5.1 Second and Third Trays*.

- (*): Contact Actuation of Paper Size Sensor
- 1: Closed
- 0: Open
- Position of contacts: S2: Top; S1: Middle; S0: Bottom

8.10 Installation, Removal, and Call Information

For the installation and removal of the 500 Sheet Paper Feeder, see the Printer User Guide.

Section 9

Offset Catch Tray (OCT) Option

Specifications 9-3
Configuration 9-3
Basic Configuration 9-3
Installation into the base engine. 9-3
Electrical Specifications 9-3
Power Supply 9-3
Mechanical Specifications 9-3
Dimensions and Weight 9-3

Offset Catch Tray (OCT) Parts List 9-4
PL 14 OCT 9-4
PL 14 OCT 9-5
PL 15 OCT 9-6
PL 15 OCT 9-7

OCT REPS 9-8
OCT Unit 9-8
Exit Tray Assembly 9-9
Exit Tray 9-10
Exit Chute Assembly 9-11
Rear Cover 9-12
Lower Chute/Full Stack Sensor/Full Stack Actuator 9-13
Direction Solenoid/Solenoid Lever 9-14
OCT PWB Assembly 9-15

Offset Assembly/Exit Sensor Assembly 9-16
Offset Motor/OCT Sensor/Cam Gear 9-17
Exit Roll Assembly 9-18
Exit Roll 9-19
Drive Motor Assembly/Middle Roll Assembly 9-20

Paper Transportation 9-22
Paper Transportation Mechanism 9-22
Paper Path 9-23
Drive Power Transmission 9-24

Function of Major Components 9-25
OCT Unit 9-25
Function 9-25
Major Components of the OCT Unit (View 1) 9-26
Major Components of the OCT Unit (View 2) 9-27

Wiring Diagrams 9-28
Connector Locator 9-28
P/J Table 9-29
Wiring Schematic 9-30

OCT RAPS 9-31
Offset Bin Fail - Power Off/On (E9) 9-31
Offset Jam/Open Rear Cover (E6) 9-32
Abnormal Operation 9-33
Offset Failure 9-34
OCT Stack Full Sensor Failure 9-35
OCT Home Sensor Failure 9-37
OCT Exit Sensor Failure 9-38
OCT Drive Motor Assembly Failure 9-39
Offset Motor Assembly Failure 9-40
Direction Solenoid Failure 9-41

Installation and Removal 9-42

9.1 Specifications

9.1.1 Configuration

9.1.1.1 Basic Configuration

This unit is the optional Offset Catch Tray (OCT) which is mounted on top of the base engine and offsets printed paper sheets to separate copies.

9.1.1.2 Installation into the base engine.

See the Printer User Guide for instructions on installing the OCT into the base engine.

9.1.2 Electrical Specifications

9.1.2.1 Power Supply

+24V DC and +5V DC are supplied from the base engine.

9.1.3 Mechanical Specifications

9.1.3.1 Dimensions and Weight

Width	Depth	Height	Weight
399 mm	280 mm (407.8 mm *1)	130 mm (157 mm *2)	2.25 kg

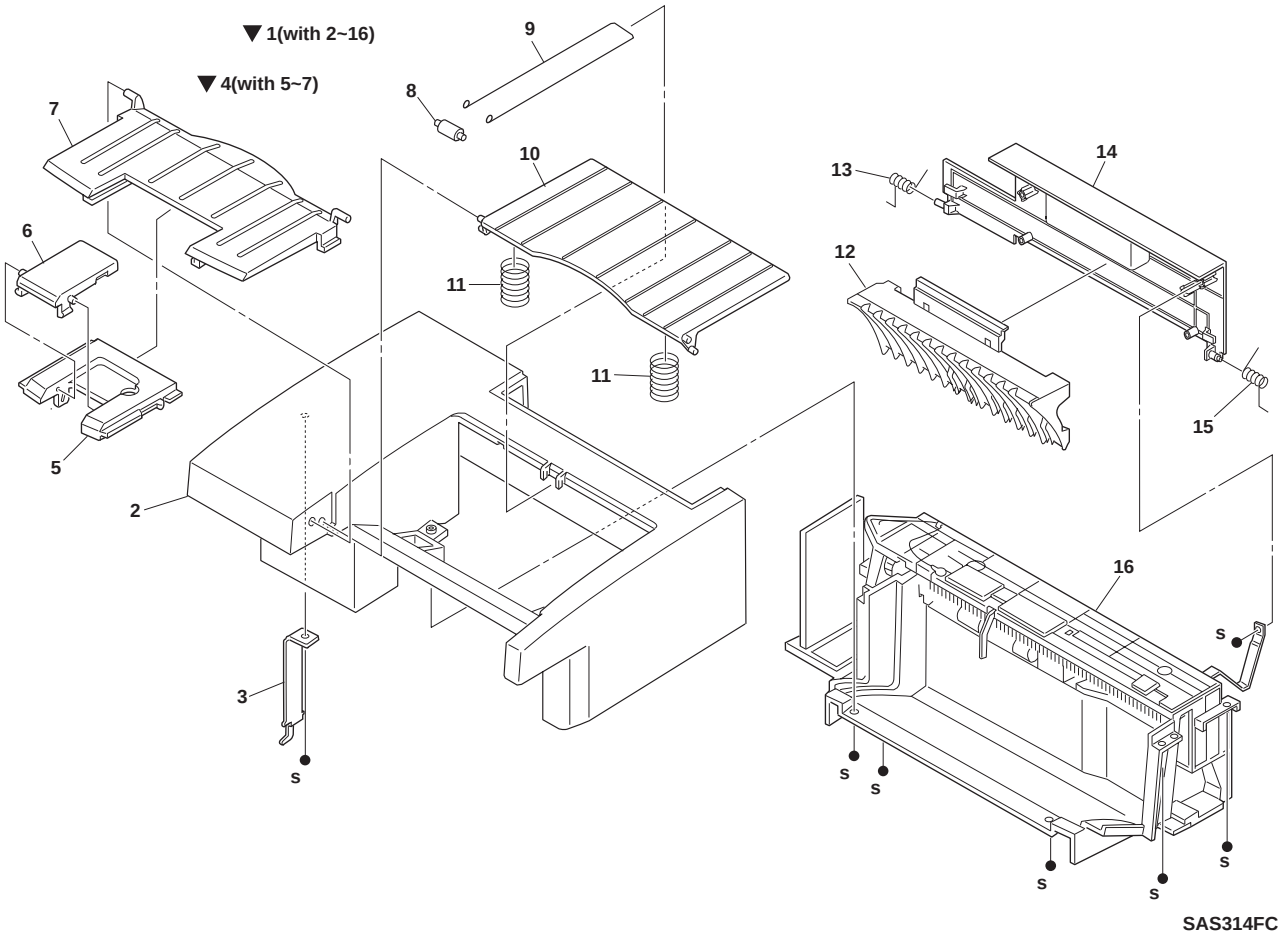
*1: When the Exit Tray Assembly is extended.

*2: When the connector to the base engine is included.

9.2 Offset Catch Tray (OCT) Parts List

The Parts List shows the names of the parts of the OCT that are shown in the exploded drawings. For the locations of the connectors (P/J), see *Section 9.6 Wiring Diagrams*.

9.2.1 PL 14 OCT



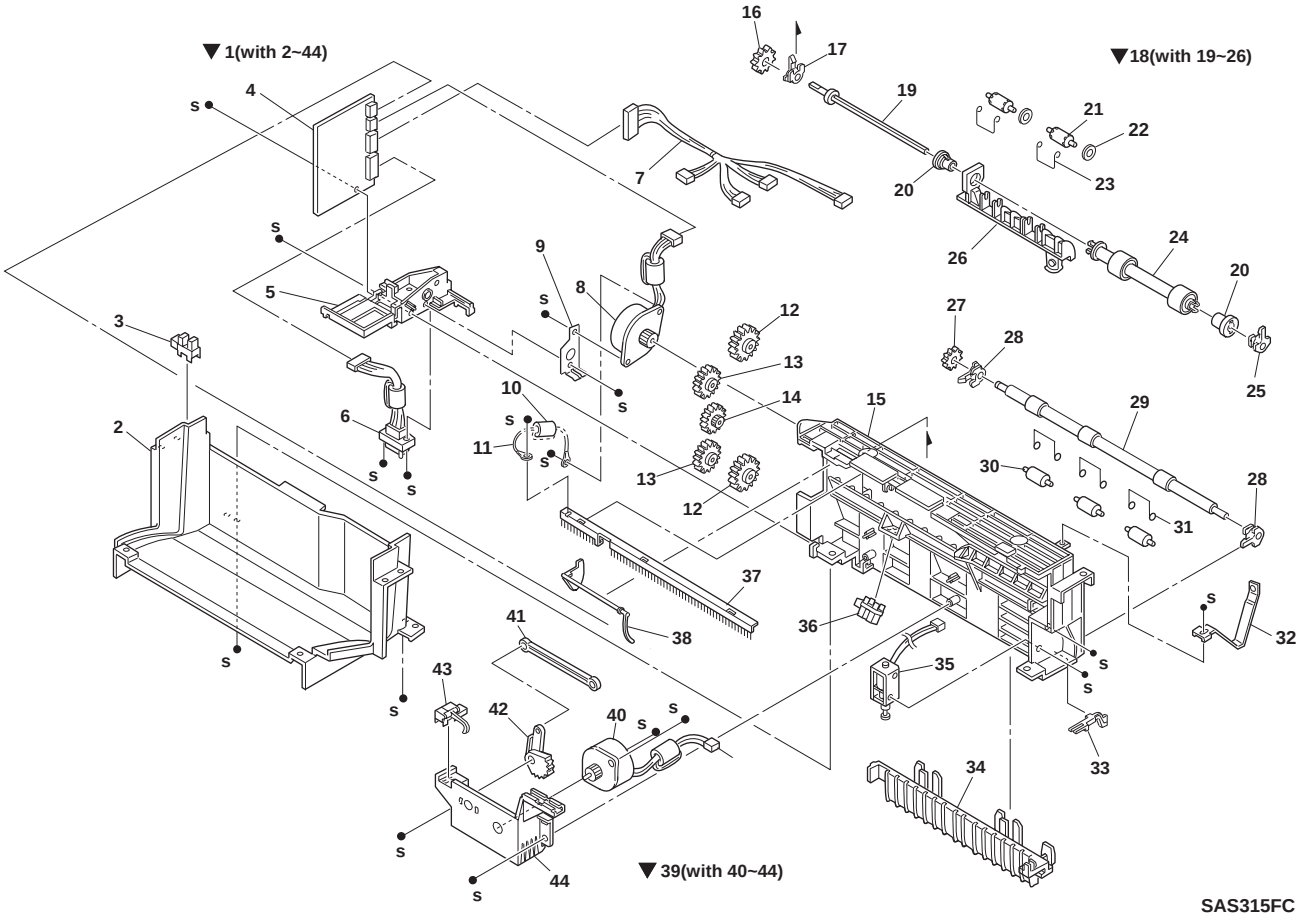
SAS314FC

9.2.2 PL 14 OCT

Item	Part	Description
1.	(*)	OCT Assembly (with items 2-16)
2.	(*)	OCT Cover
3.	(*)	Hook Cover
4.	4173307 Y	Exit Tray Assembly (with items 5-7)
5.	(*)	Stopper Guide
6.	(*)	Stopper
7.	(*)	Exit Tray
8.	417308 H	Weight Roller
9.	417309 A	OCT Stopper Link
10.	417310 W	Exit Tray
11.	(*)	Tray Spring
12.	(*)	Exit Chute
13.	(*)	Left Chute Spring
14.	(*)	Rear Cover
15.	(*)	Right Chute Spring
16.	(*)	Exit Chute Assembly (Exploded on PL 16)

(*) Not available

9.2.3 PL 15 OCT



9.2.4 PL 15 OCT

Item	Part	Description
1.	(*)	Exit Chute Assembly (with items 2-44)
2.	(*)	Lower Chute
3.	576534 J	OCT Full Sensor
4.	417311 K	OCT PWB
5.	(*)	Holder
6.	(*)	OCT Harness
7.	(*)	CONN Harness
8.	417312 L	(Drive) Step Motor
9.	(*)	H Earth Plate
10.	(*)	OCT Wire
11.	(*)	Ferrite Core
12.	(*)	Gear (27T)
13.	(*)	Gear (26T)
14.	(*)	Gear (47W)
15.	(*)	Gear Housing
16.	(*)	Exit Gear
17.	(*)	Exit Bearing
18.	417313 M	Roll Assembly (with items 19-26)
19.	(*)	Exit Shaft
20.	(*)	Offset Bearing
21.	417314 N	Exit Pinch Roll
22.	(*)	Washer
23.	(*)	Pinch Spring
24.	(*)	Exit Roll
25.	(*)	Exit Bearing
26.	(*)	OCT Guide
27.	(*)	Exit Gear
28.	(*)	Exit Bearing
29.	417315 P	Mid Roll
30.	417314 N	Mid Pinch Roll
31.	(*)	Pinch Spring
32.	(*)	Cover Stopper
33.	417317 R	Solenoid Lever
34.	(*)	Exit Chute
35.	417318 S	Direction Solenoid
36.	417319 T	OCT Exit Sensor
37.	(*)	Eliminator
38.	417320 Y	OCT Full Actuator
39.	(*)	Offset Assembly (with items 40-44)
40.	417321 M	Offset Step Motor, Alternate
41.	417322 N	Lever
42.	417323 P	Cam Gear
43.	417324 Q	OCT Home Sensor
44.	(*)	Offset Chassis

(*) Not available

9.3 OCT REPS

9.3.1 OCT Unit

Removal

1. Press the two latches in the bottom part of the rear surface of the OCT Unit, and raise the unit from behind.
2. Disengage the hook inserted in the Top Cover near the Fan at the left side for the base engine from the Top Cover.

NOTE: Raise the OCT Unit about 3 cm by step 1 and then move it rearward about 3 cm; the hook comes out of the Top Cover.

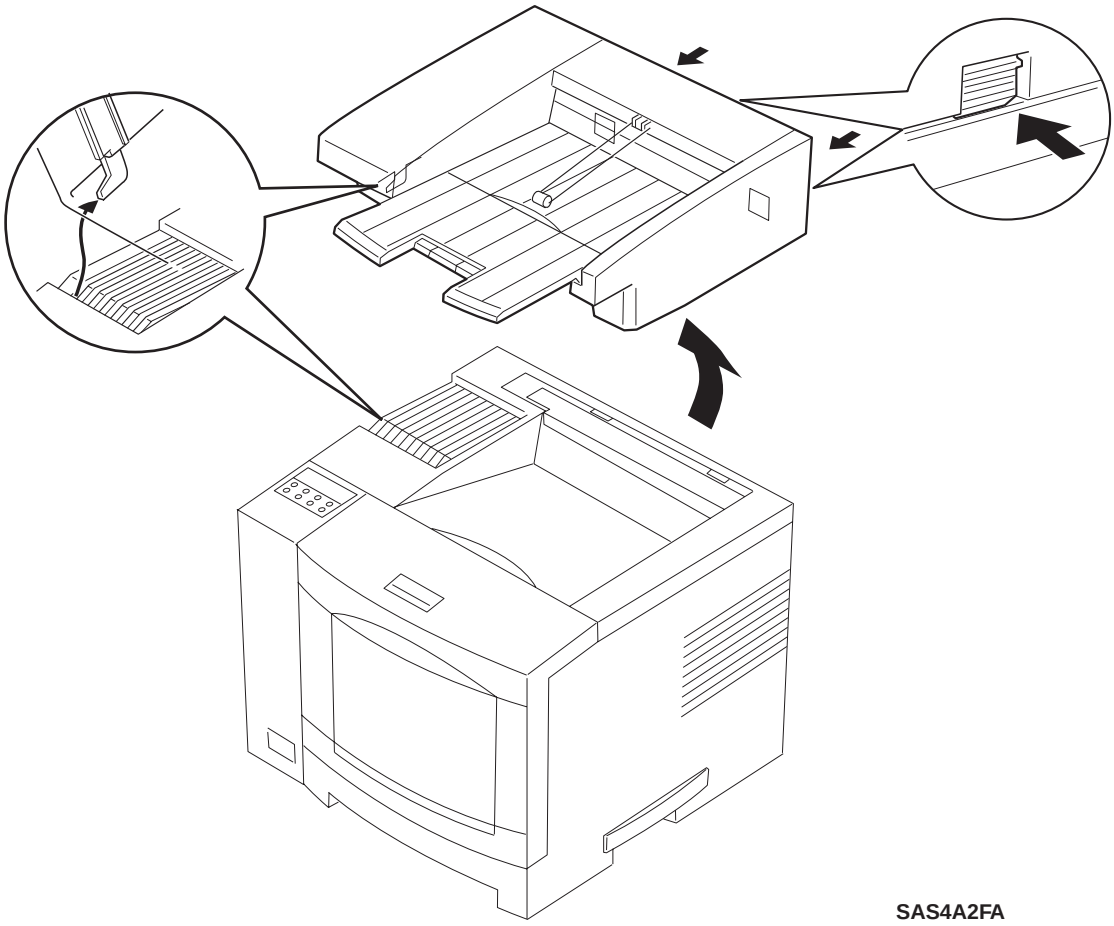


Figure 9.3.1.1 Removing the OCT Unit

Replacement

Perform the removal steps in reverse order.

9.3.2 Exit Tray Assembly

Removal

1. Remove the OCT Unit (*REP 9.3.1 OCT Unit)*.
2. Press the right side portion of the OCT Cover outward to disengage the projection in the right side of the Exit Tray Assembly from the OCT Cover.
3. Press the left side portion of the OCT Cover outward to disengage the projection in the left side of the Exit Tray Assembly from the OCT Cover.

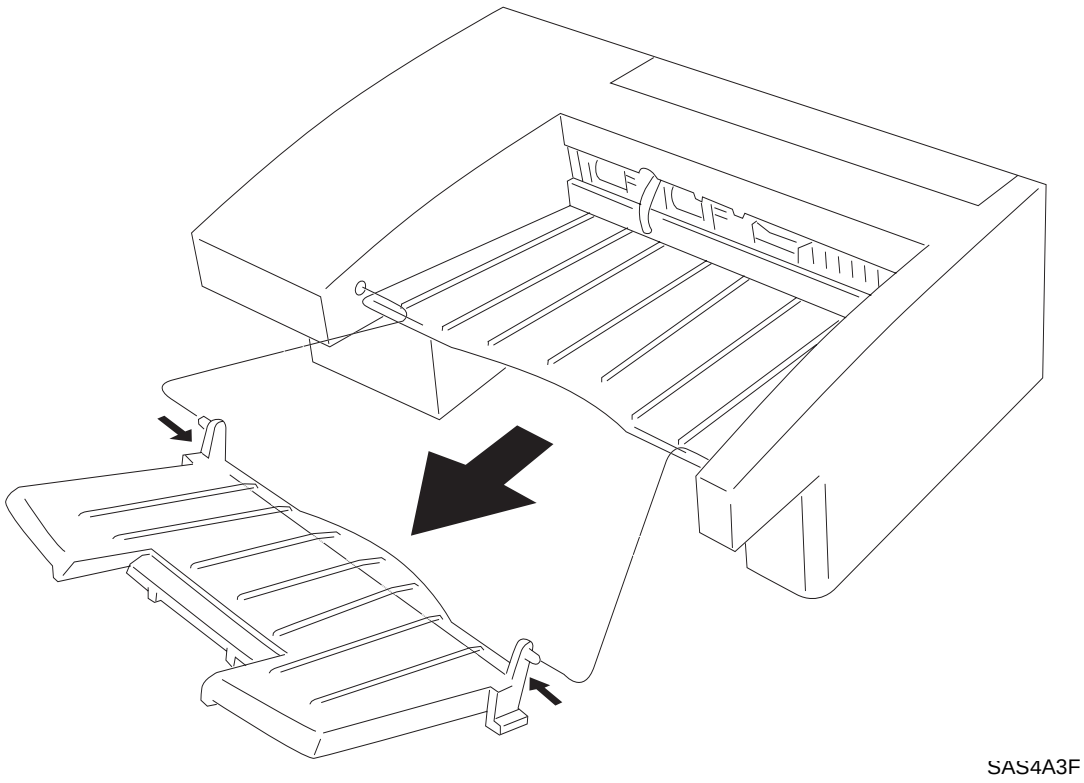


Figure 9.3.2.1 Removing the Exit Tray Assembly

Replacement

Perform the removal steps in reverse order.

9.3.3 Exit Tray

Removal

1. Remove the OCT Unit (*REP 9.3.1 OCT Unit)*.
2. Disengage the left side of the Exit Tray from the holes in the OCT Cover.
3. Disengage the right side of the Exit Tray from the holes in the OCT Cover, taking care of the springs.

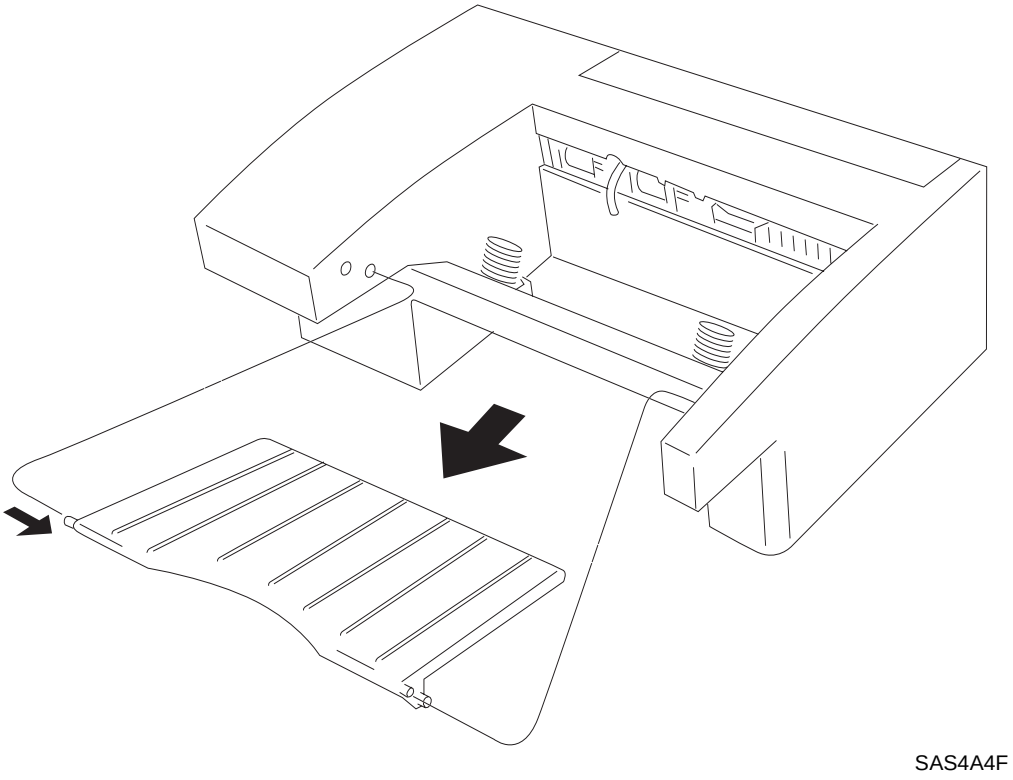


Figure 9.3.3.1 Removing the Exit Tray

Replacement

Perform the removal steps in reverse order.

9.3.4 Exit Chute Assembly

Removal

1. Remove the OCT Unit (*REP 9.3.1 OCT Unit)*.
2. Put the OCT Unit upside down.
3. Remove the five screws which secure the Exit Chute Assembly to the OCT Cover.
4. Open the Rear Cover about 45 degrees, and raise the Exit Chute Assembly off of the OCT Cover.

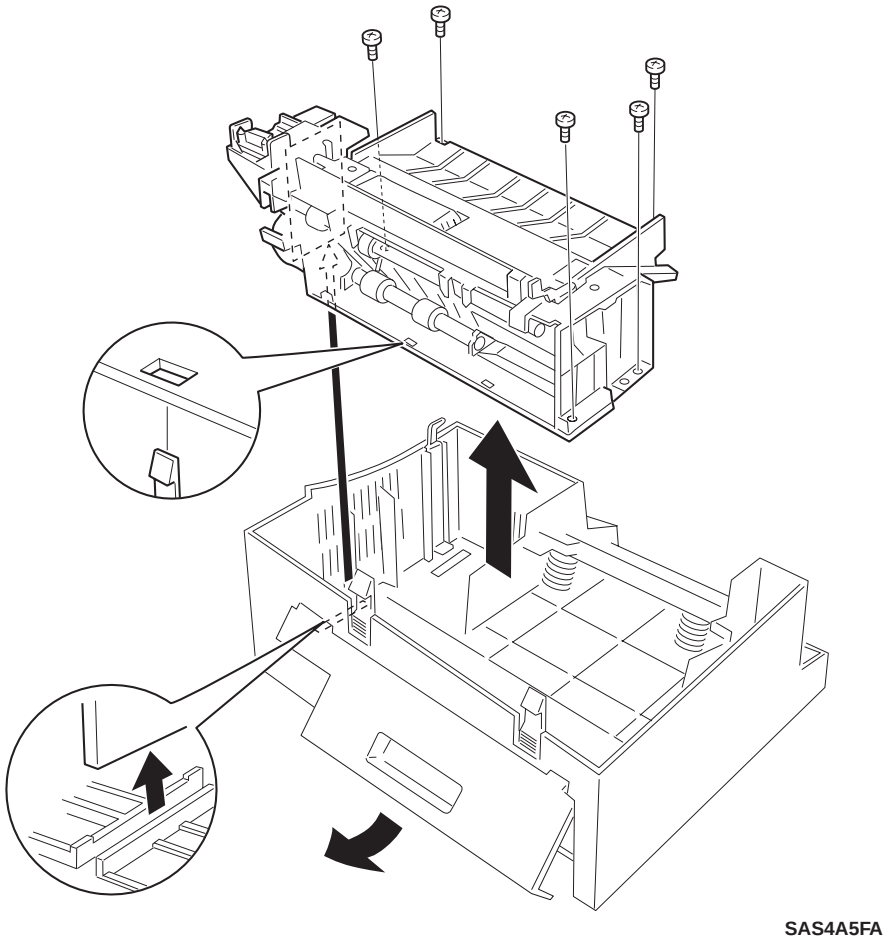


Figure 9.3.4.1 Removing the Exit Chute

Replacement

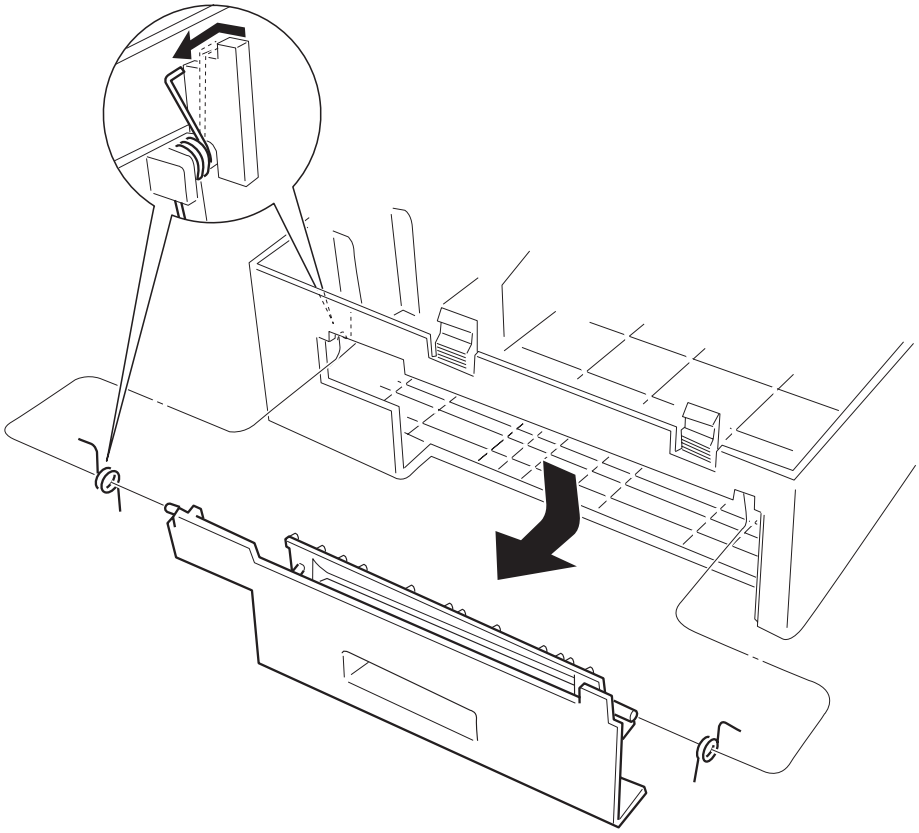
Perform the removal steps in reverse order.

NOTE: Be careful not to pinch the OCT Full Actuator when replacing the Exit Chute Assembly.

9.3.5 Rear Cover

Removal

1. Remove the OCT Unit (*REP 9.3.1 OCT Unit)*.
2. Put the OCT Unit upside down with the rear directed to you.
3. Press the end of the left spring towards you and then inward (to the right) to disengage.
4. Press the end of the right spring in the same manner.
5. Remove the Rear Cover downward.



SAS4A6FA

Figure 9.3.5.1 Removing the Rear Cover

Replacement

Perform the removal steps in reverse order.

9.3.6 Lower Chute/Full Stack Sensor/Full Stack Actuator

Removal

1. Remove the Exit Chute Assembly (*REP 9.3.4 Exit Chute Assembly)*.
2. Push back a portion of the H Earth Plate that lowers the Eliminator.
3. Press the latches securing the Eliminator and detach the Eliminator from the Exit Chute Assembly.
4. Pull the Full Stack Actuator out of the bearings at both sides.
5. Disconnect the harness of the Full Stack Sensor.
6. Press the latches of the Full Stack Sensor to detach the Full Stack Sensor from the Lower Chute.
7. Remove the two screws which fasten the Lower Chute.
8. Lift off the Lower Chute.

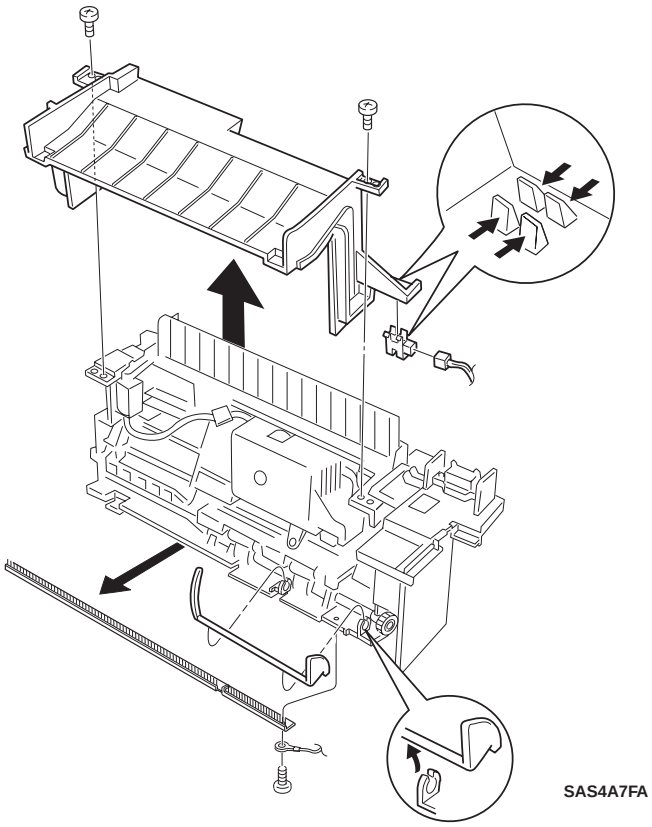


Figure 9.3.6.1 Removing the Lower Chute/Full Stack Sensor/Full Stack Actuator

Replacement

Perform the removal steps in reverse order.

9.3.7 Direction Solenoid/Solenoid Lever

Removal

1. Remove the Lower Chute (*REP 9.3.6 Lower Chute/Full Stack Sensor/Full Stack Actuator)*.
2. Disconnect the Solenoid Harness from the relay connector between the Connector Harness Assembly and Solenoid.
3. Remove the two screws which fasten the Solenoid.
4. Slide the Solenoid off the Solenoid Lever.
5. Pry off the Exit Chute latch near the Direction Solenoid.
6. Slide the Solenoid Lever off the pivot projection.

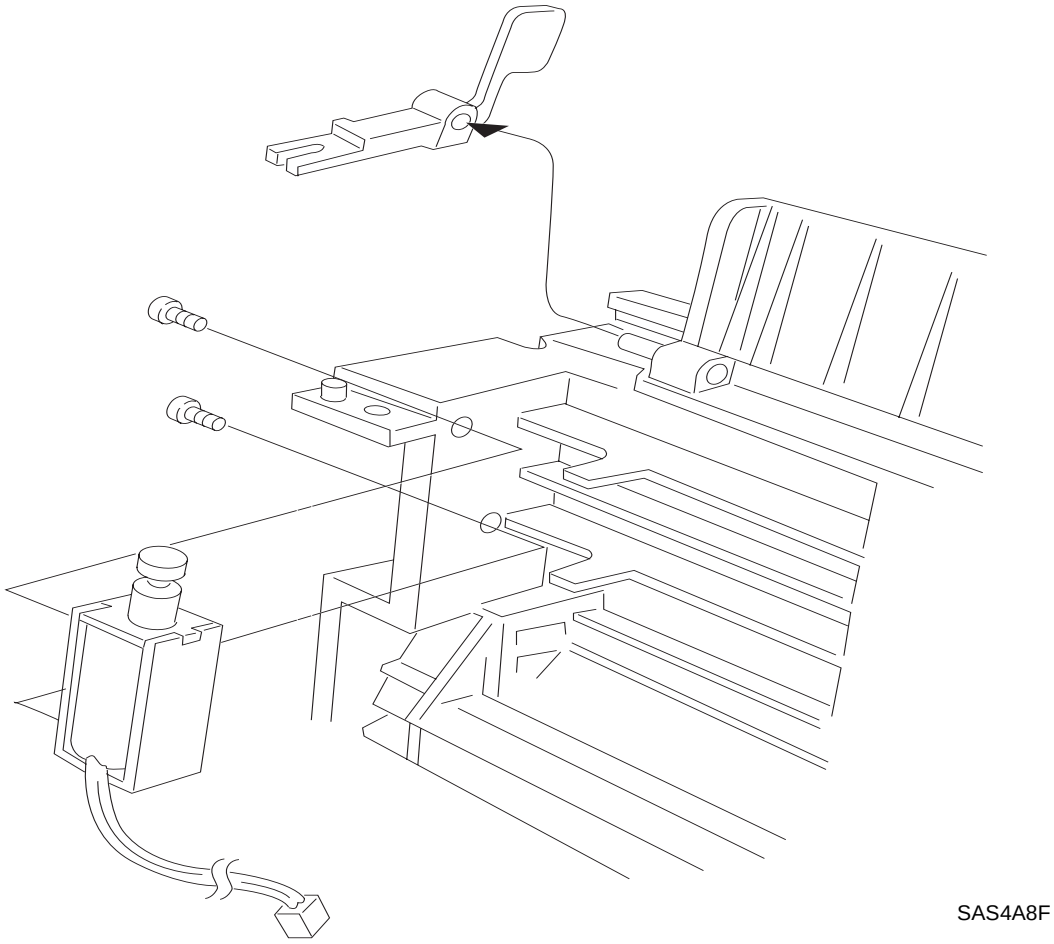


Figure 9.3.7.1 Removing the Solenoid/Solenoid Lever

Replacement

Perform the removal steps in reverse order.

9.3.8 OCT PWB Assembly

Removal

1. Remove the Inner Exit Chute (*REP 9.3.4 Exit Chute Assembly)*.
2. Remove the four connectors (J209, J224, J210, and J223) connected to the OCT PWB Assembly.
3. Remove one screw which fastens the OCT PWB Assembly.
4. Remove the OCT PWB Assembly.

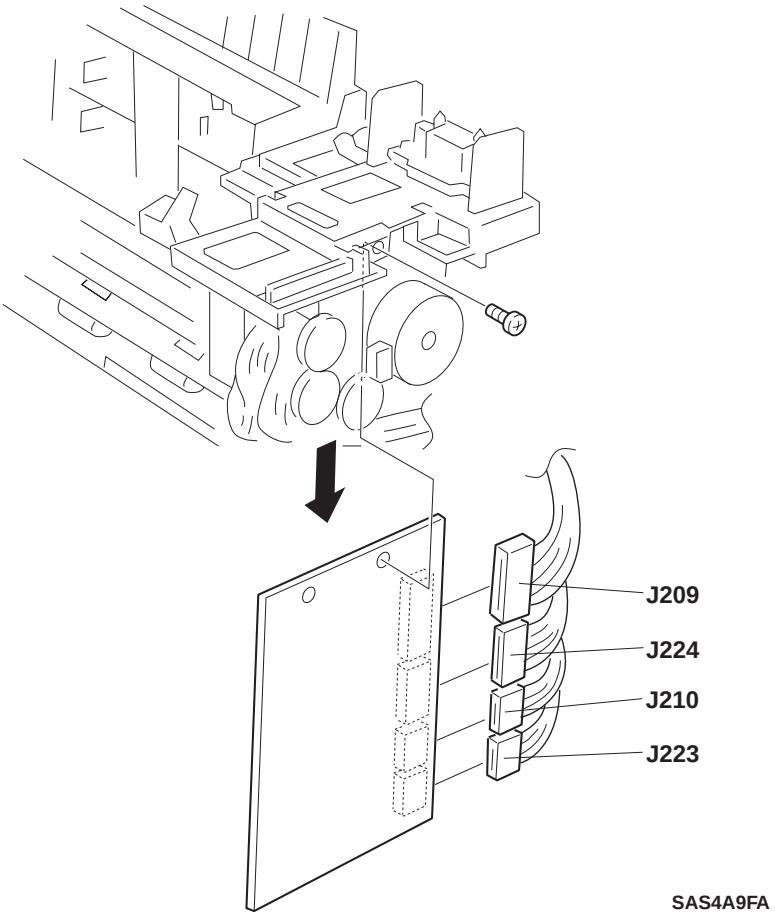


Figure 9.3.8.1 Removing the OCT PWB Assembly

Replacement

Perform the removal steps in reverse order.

9.3.9 Offset Assembly/Exit Sensor Assembly

Removal

1. Remove the Lower Chute (*REP 9.3.6 Lower Chute/Full Stack Sensor/Full Stack Actuator)*.
2. Remove the Lever from the OCT Guide.
3. Disconnect the connector from P223 of the PWB.
4. Release the Connector Harness Assembly (J223) disconnected from P223 from the wiring path.
5. Remove the two screws which fasten the Offset Assembly.
6. Raise and slide the Offset Assembly off of the Roll Assembly and disconnect connector J226 from the OCT Home Sensor.
7. Remove the Offset Assembly.
8. Disconnect connector J227 of the Exit Sensor Assembly.
9. Press the latches with a screwdriver to detach the sensor.

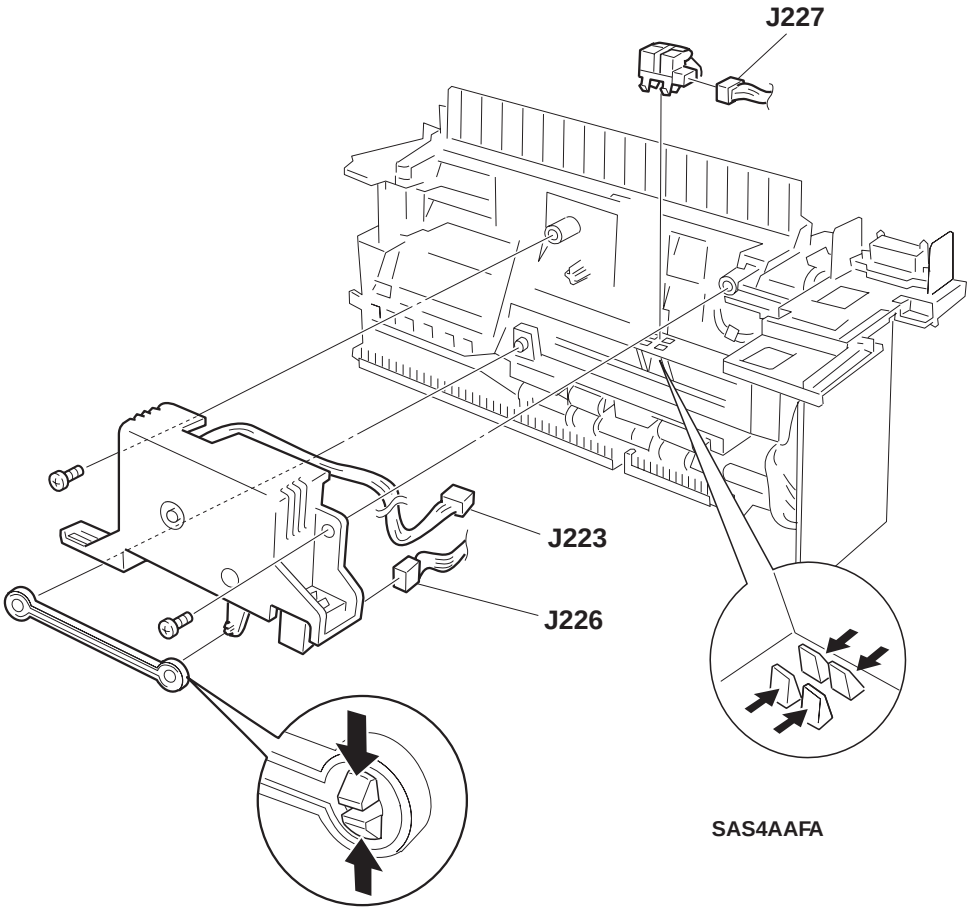


Figure 9.3.9.1 Removing the Offset Assembly/Exit Sensor Assembly

Replacement

Perform the removal steps in reverse order.

9.3.10 Offset Motor/OCT Sensor/Cam Gear

Removal

1. Remove the Offset Assembly (*REP 9.3.9 Offset Assembly/Exit Sensor Assembly)*.
2. Remove the two screws which fasten the Offset Motor.
3. Lift off the Offset Motor.
4. Press the latches of the shaft of the Cam Gear inward to slide off the Cam Gear.
5. Press the latches of the OCT Home Sensor inward to detach the OCT Home Sensor.

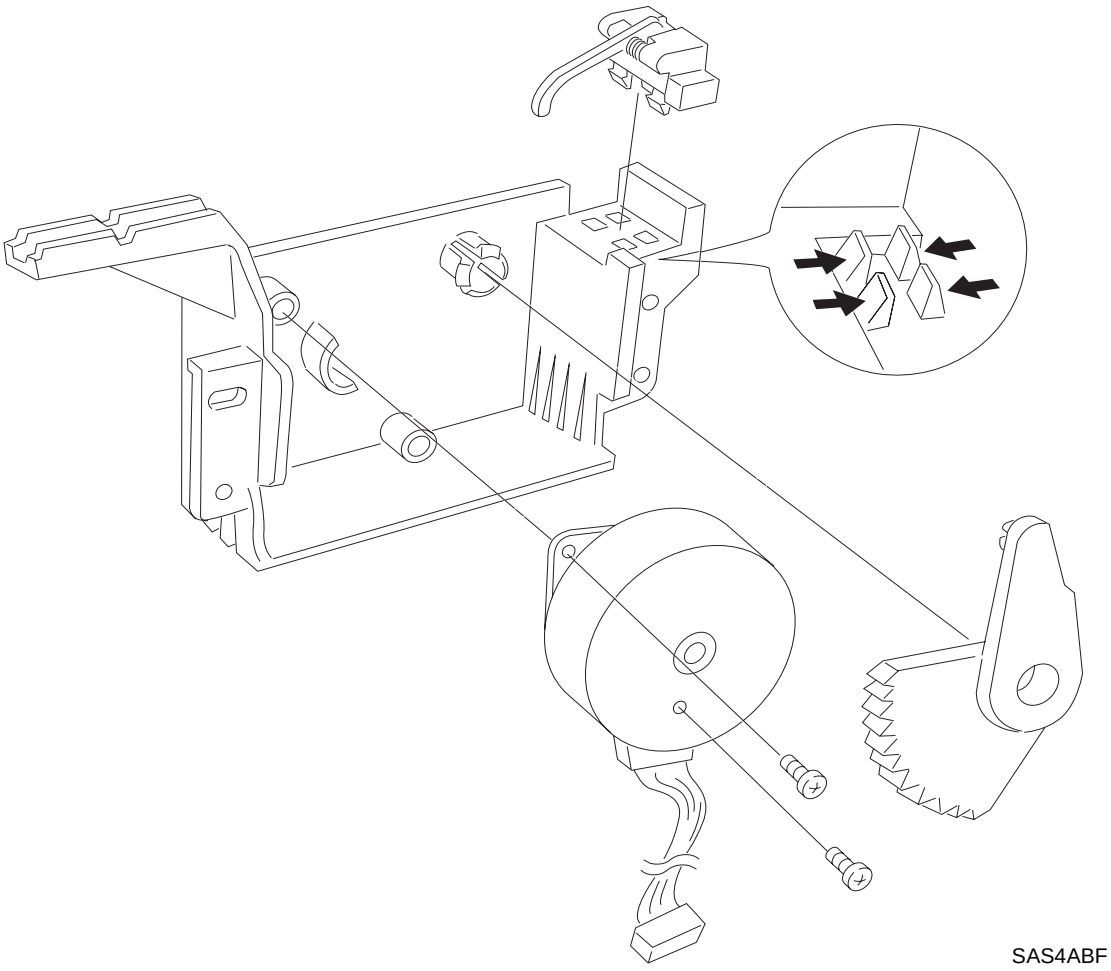


Figure 9.3.10.1 Removing the Offset Motor/OCT Sensor/Cam Gear

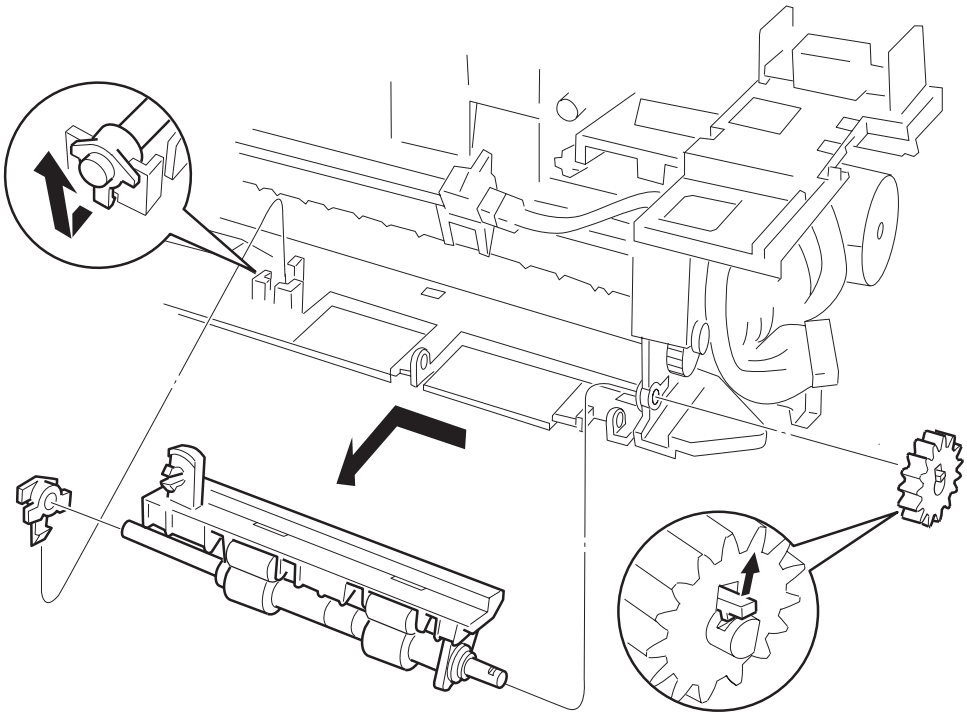
Replacement

Perform the removal steps in reverse order.

9.3.11 Exit Roll Assembly

Removal

1. Remove the Offset Assembly (*REP 9.3.9 Offset Assembly/Exit Sensor Assembly)*.
2. Release the latch of the Exit Bearing at the right side and lift off the Exit Bearing.
3. Press the latch of the Gear to disengage and pull the shaft towards the right to slide the Gear off of the shaft.
4. Remove the shaft together with the Exit Roll Assembly.



SAS4ACFA

Figure 9.3.11.1 Removing the Exit Roll Assembly

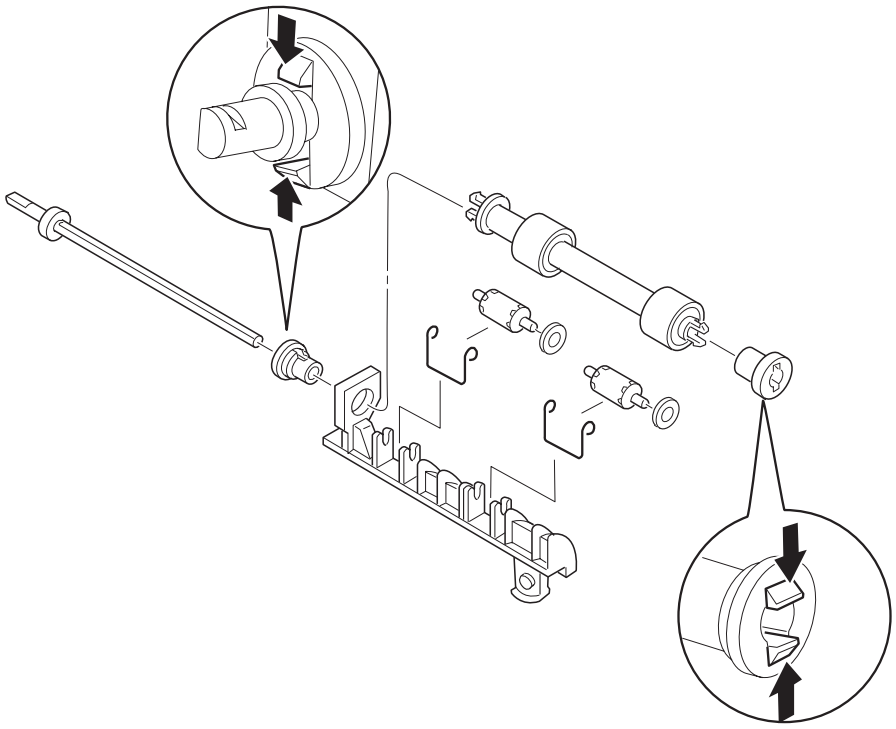
Replacement

Perform the removal steps in reverse order.

9.3.12 Exit Roll

Removal

1. Remove the Exit Roll Assembly (*REP 9.3.11 Exit Roll Assembly)*.
2. Release the left Offset Bearing and slide it towards the left on the shaft.
3. Slide the Exit Roll off the shaft towards the right.
4. Detach the right Offset Bearing from the Exit Roll.
5. Pull the shaft out towards the left together with the left Offset Bearing.
6. Remove the two Pinch Rolls and the two washers from their respective springs.



SAS4ADFA

Figure 9.3.12.1 Removing the Exit Roll

Replacement

Perform the removal steps in reverse order.

9.3.13 Drive Motor Assembly/Middle Roll Assembly

Removal

1. Remove the Exit Chute Assembly (*REP 9.3.4 Exit Chute Assembly)*.
2. Remove the OCT PWB Assembly (*REP 9.3.8 OCT PWB Assembly)*.

NOTE: At this time, J210 is removed.

3. Remove the one screw that secures the Holder.
4. Remove the one screw that secures the Drive Motor Assembly and the H Earth Plate.
5. Remove the Holder together with the Earth Plate from the Gear Housing (**1** in Figure 9.3.13.1).
6. Remove the one screw which secures the Earth Plate to the Holder.
7. Remove the Earth Plate from the Holder.
8. Hold the Drive Motor Assembly and remove the one screw which secures the Drive Motor Assembly and OCT Wire Assembly.
9. Pull off the Drive Motor Assembly (**2** in Figure 9.3.13.1).
10. Release the latch of the Exit Bearing of the Middle Roll Assembly and detach the Exit Bearing (**3** in Figure 9.3.13.1).
11. Pull the right end of the Middle Roll Assembly towards you about 3 cm (**4** in Figure 9.3.13.1); release the latch of the left Exit Gear while holding the Middle Roll Assembly at the position (**6** in Figure 9.3.13.1); and pull off the Roll Assembly towards the right (**5** in Figure 9.3.13.1).
12. Detach the left Exit Bearing from the Gear Housing (**7** in Figure 9.3.13.1).

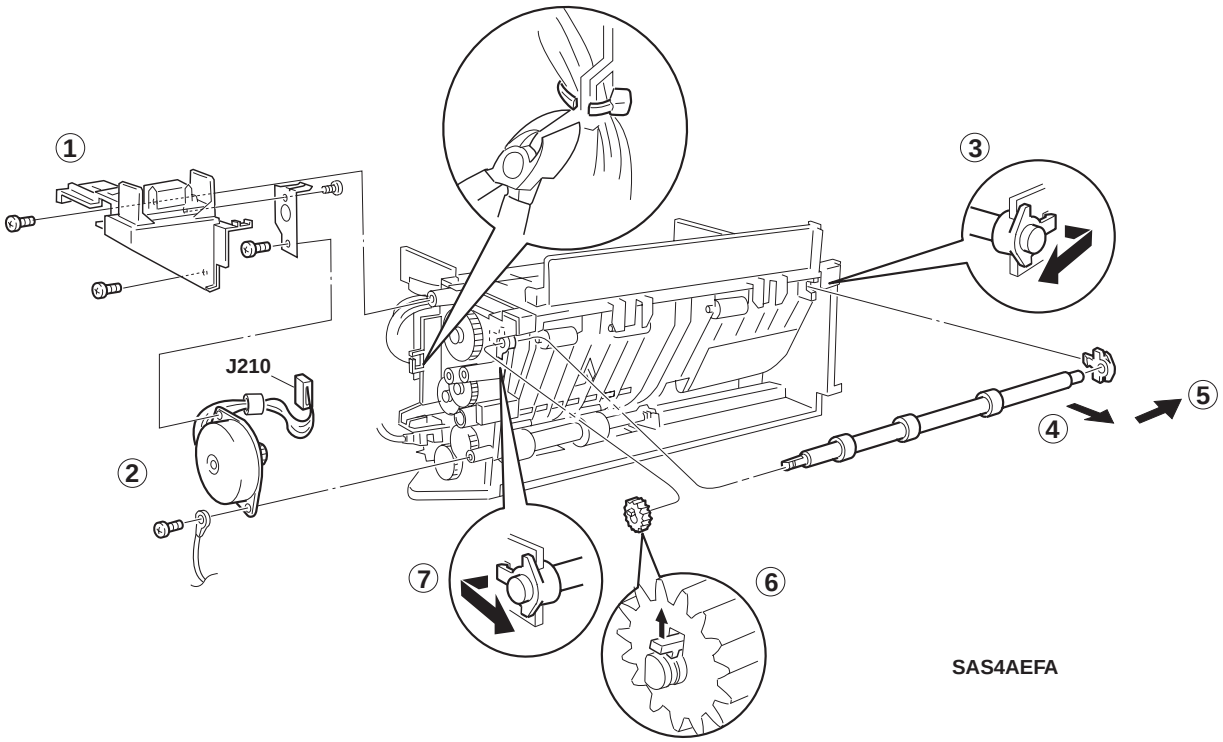


Figure 9.3.13.1 Removing the Drive Motor Assembly/Middle Roll Assembly

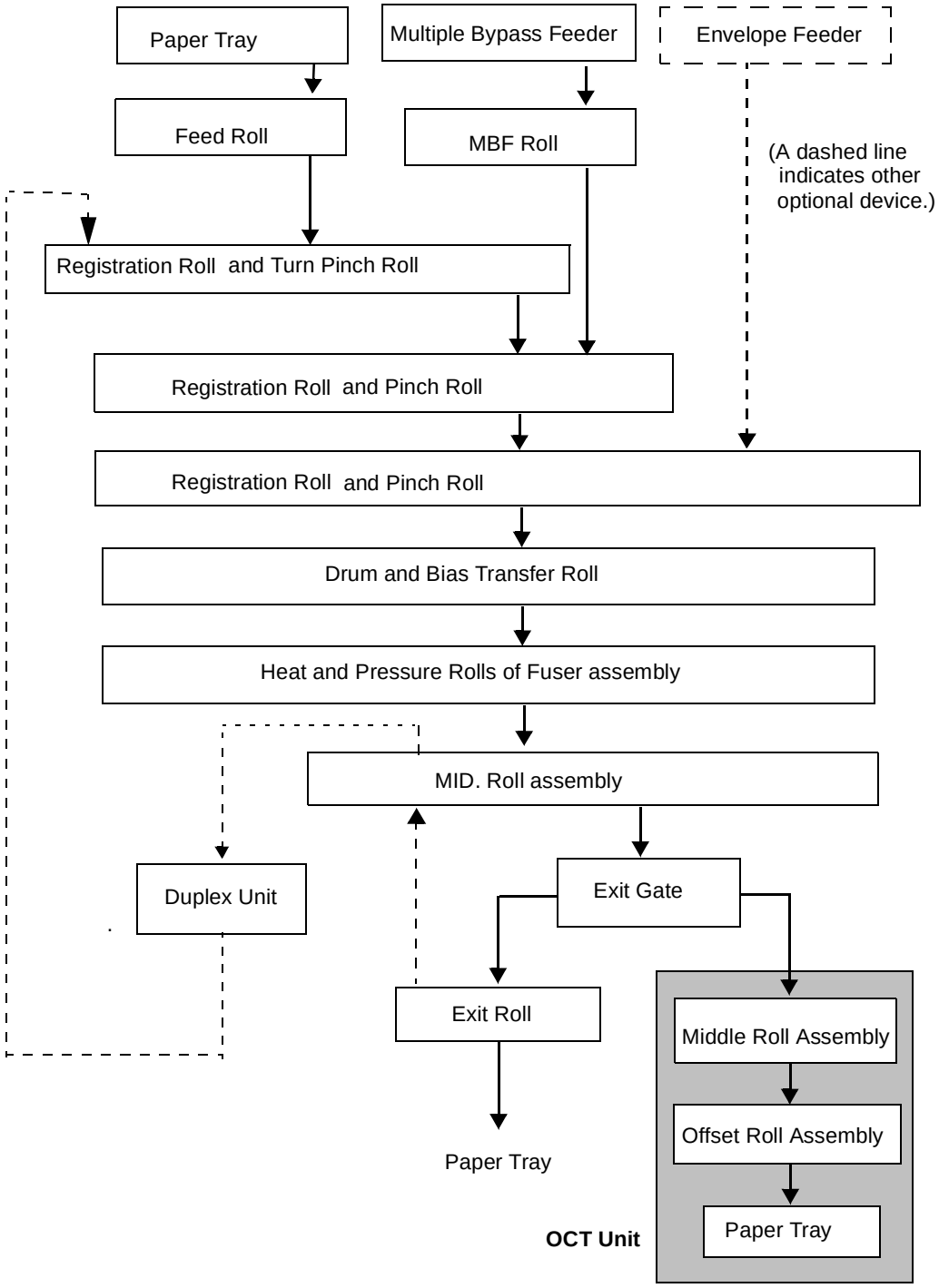
Replacement

Perform the removal steps in reverse order.

9.4 Paper Transportation

9.4.1 Paper Transportation Mechanism

The paper transportation mechanism is shown below along the path of paper travel. (For the paper transportation in other devices, refer to their respective service manuals.)



9.4.2 Paper Path

The path of paper travel through the printer with the OCT Unit installed is shown in Figure 9.4.2.1.

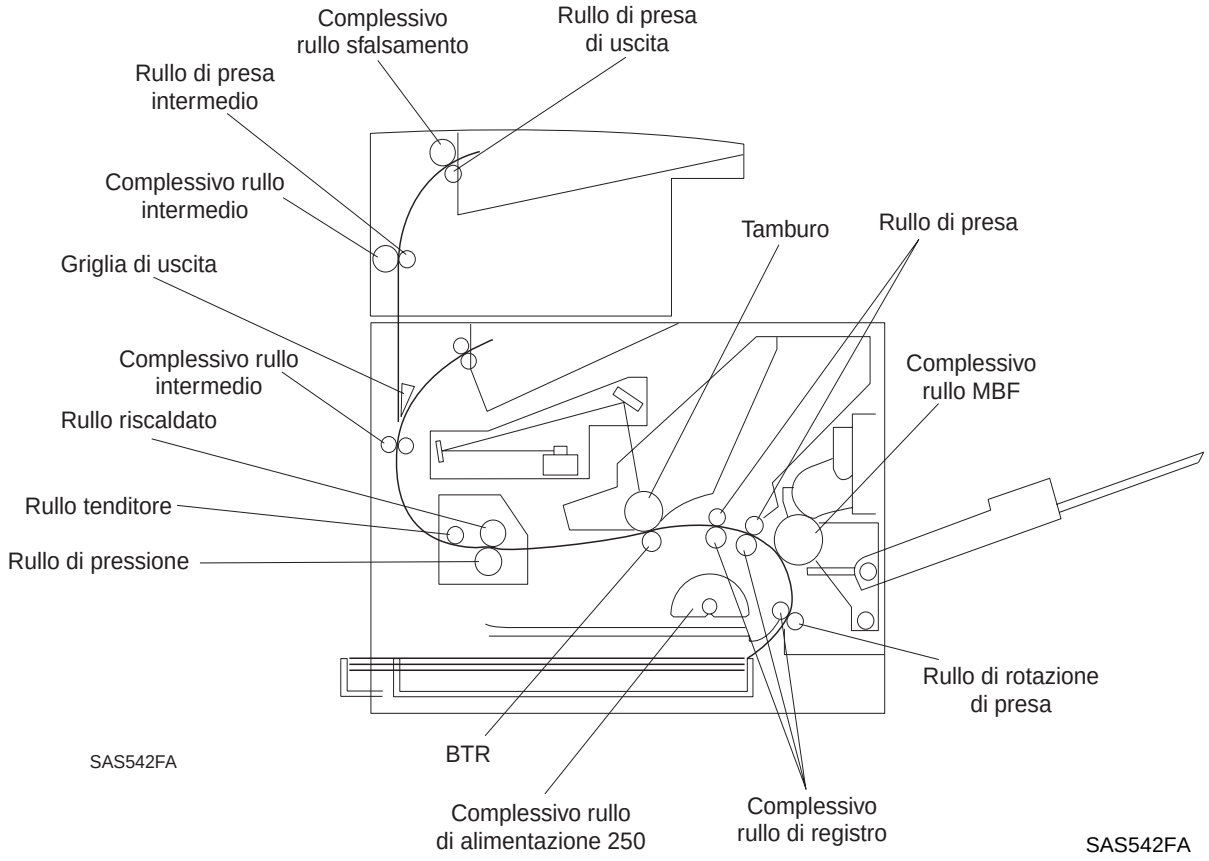


Figure 9.4.2.1 Paper Path

9.4.3 Drive Power Transmission

The drive power for the OCT Unit is generated and distributed as shown below.

The OCT Motor Assembly Drive generates the drive power for ejecting paper. The Offset Motor Assembly moves the Offset Roll Assembly (Exit Roll Assembly) in alternate directions (offsetting movement) by means of the Cam Gear.

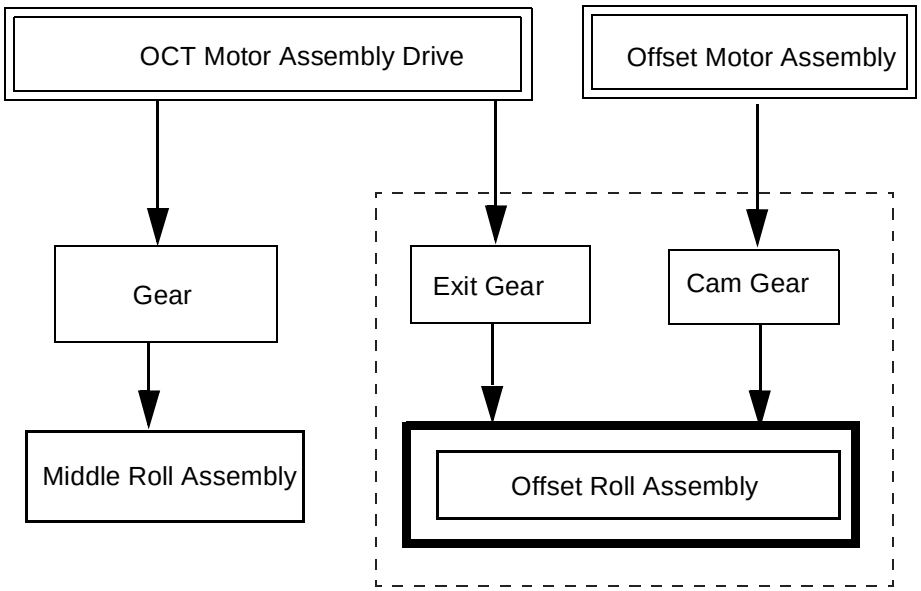


Figure 9.4.3.1 Drive Power Transmission

9.5 Function of Major Components

The function of the major components constituting the OCT Unit are described below with reference to the drawings.

9.5.1 OCT Unit

9.5.1.1 Function

- OCT Motor Assembly Drive:

  The OCT Motor Assembly drives the Middle Roll Assembly and the Offset Roll Assembly.

- Offset Motor Assembly:

  The Offset Motor Assembly shifts the Offset Roll Assembly to produce an offset of about 28 mm.

- Stack Full Sensor and Stack Full Sensor Actuator:

  The Stack Full Sensor and the Stack Full Sensor Actuator detect when printed sheets accumulate in the Tray beyond the capacity (500 sheets).

- OCT PWB Assembly:

  The OCT PWB Assembly controls the operation.

- Offset Roll Assembly:

  The Offset Roll Assembly ejects printed sheets into the Exit Tray. During the Offset operation, it ejects printed sheets at the offset-position displaced 28 mm from the normal position.

- Exit Sensor:

  The Exit Sensor is located between the Middle Roll Assembly and the Offset Roll Assembly; it detects printed sheets.

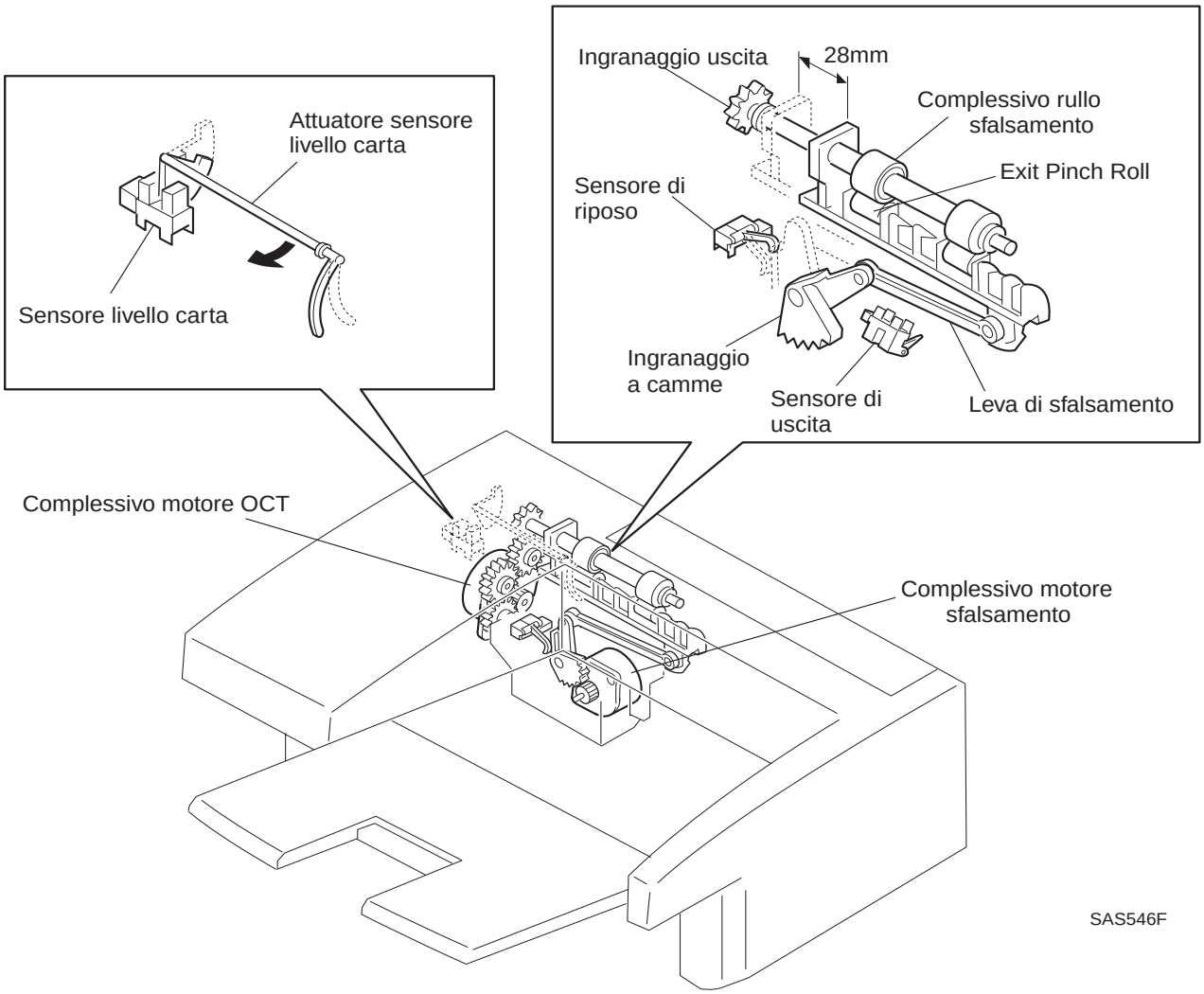
- Home Sensor:

  The Home Sensor is operated On and Off by the Cam Gear; it detects when the Offset Roll Assembly is at the home position.

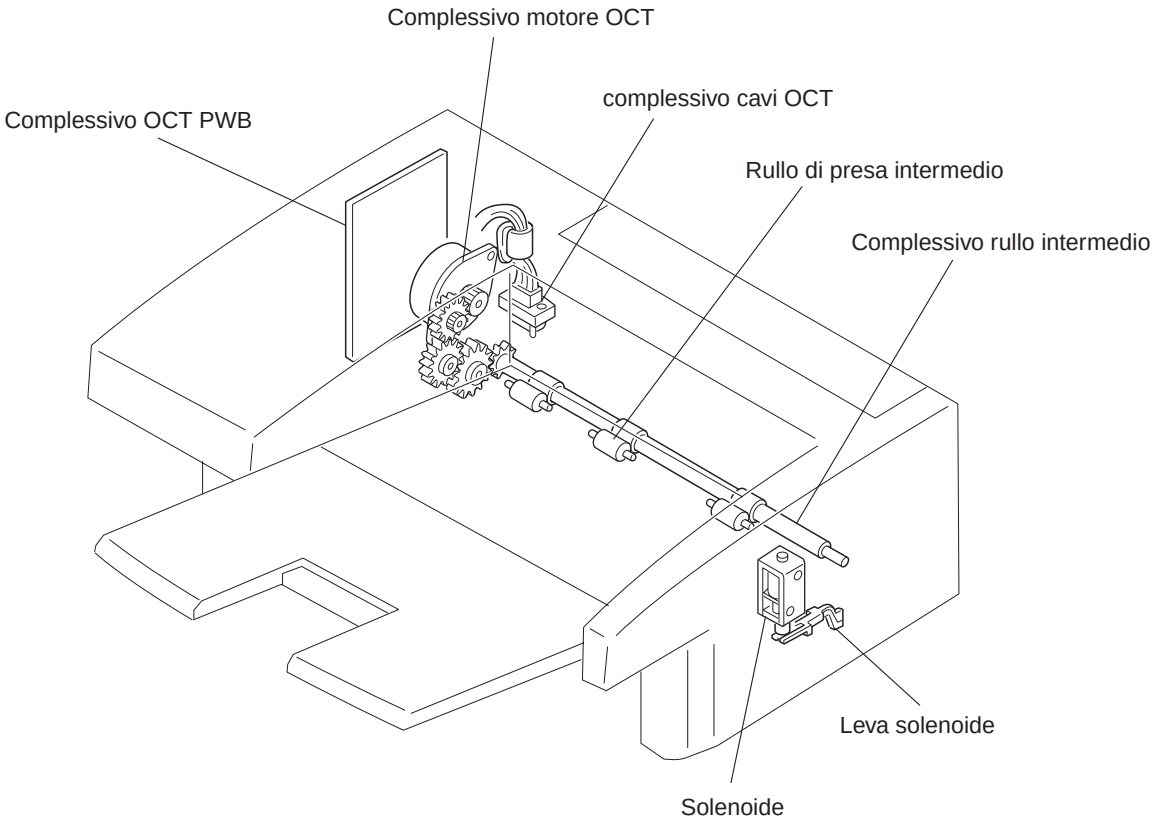
- Solenoid and Solenoid Lever:

  The Solenoid and Solenoid Lever switches the paper path between the Printer Engine and the OCT Unit. When the solenoid is actuated, the Solenoid Lever is pushed to move the Exit Gate of the Printer Engine. The paper path is then switched from the Exit Tray of the Printer Engine to the OCT.

9.5.1.2 Major Components of the OCT Unit (View 1)



9.5.1.3 Major Components of the OCT Unit (View 2)



9.6 Wiring Diagrams

9.6.1 Connector Locator

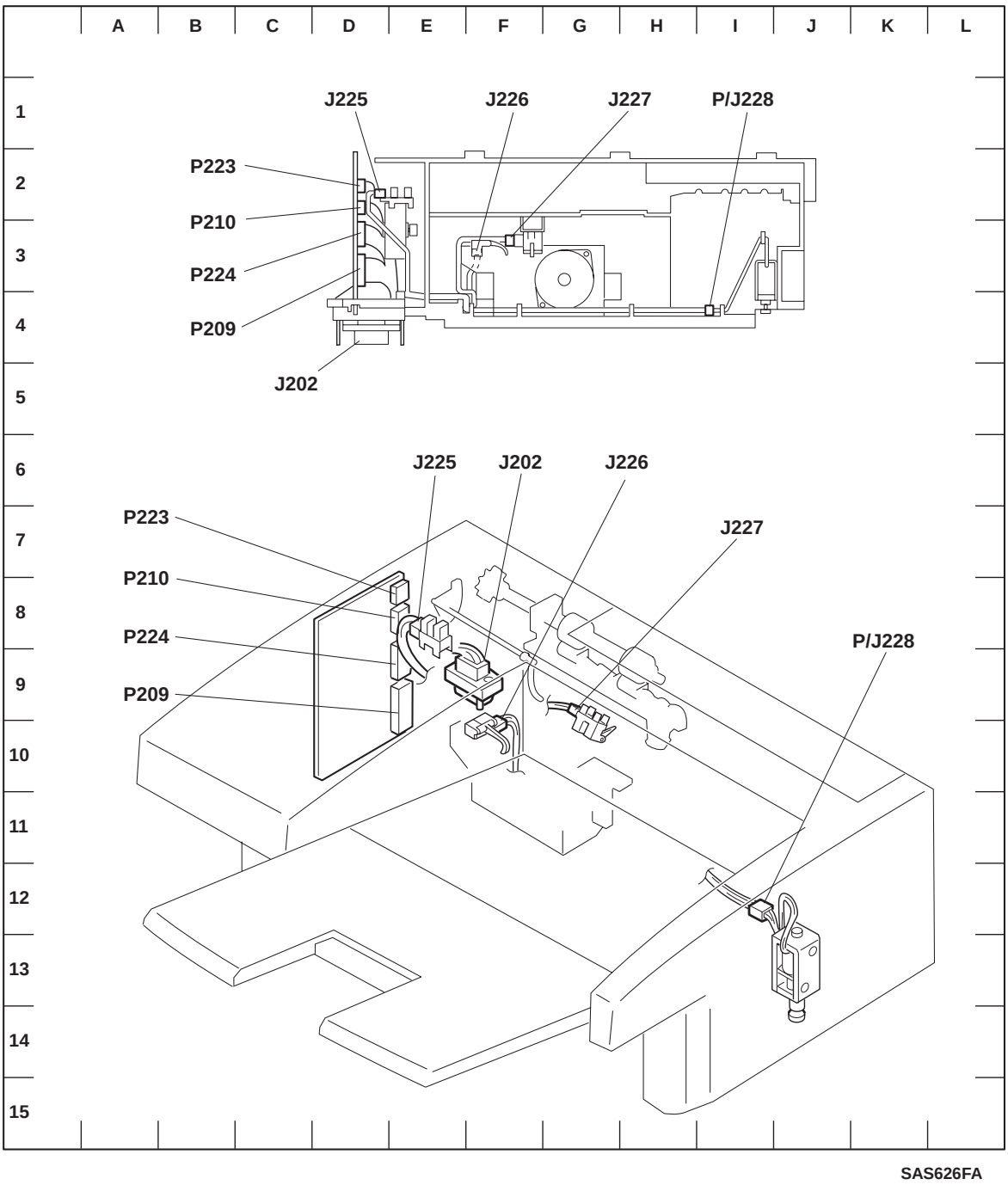


Figure 9.6.1.1 Wiring Diagram - Connector Locator

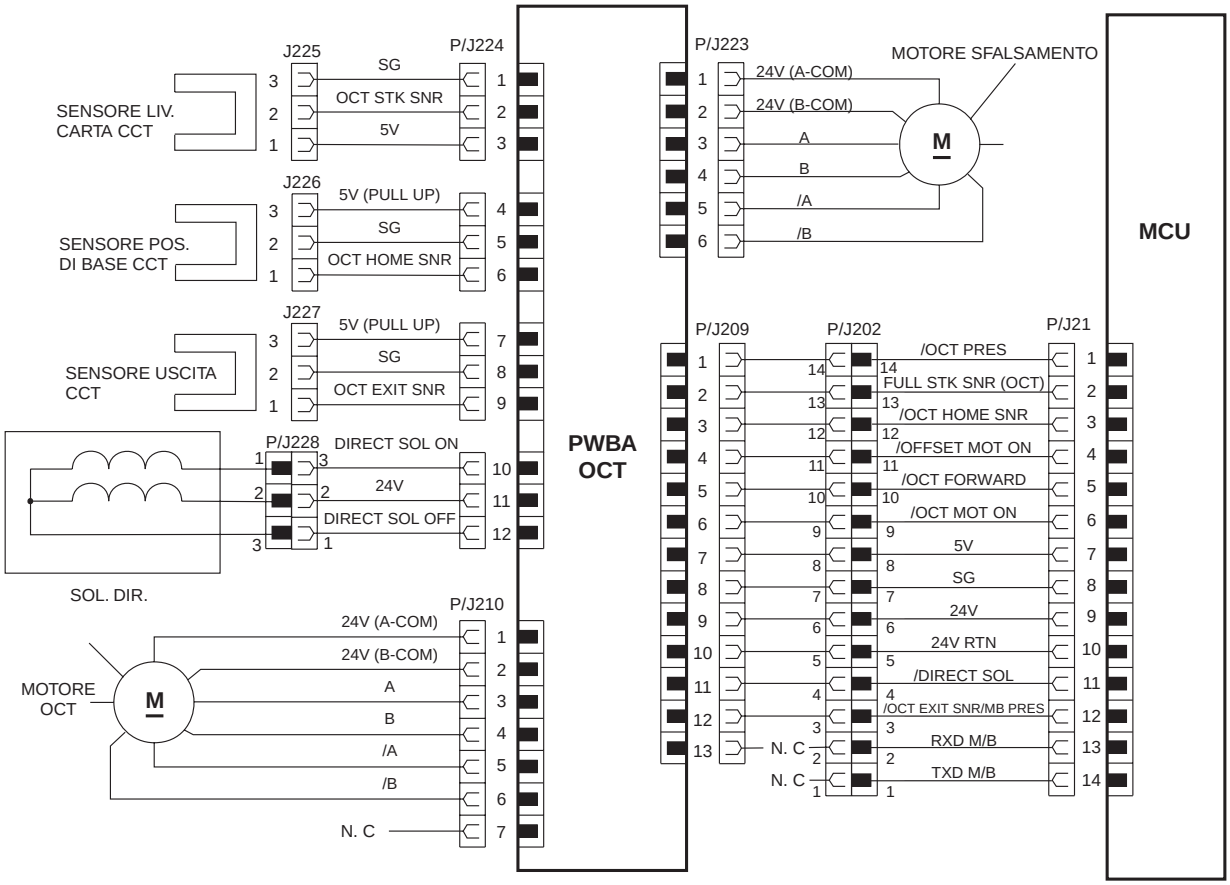
9.6.2 P/J Table

PJ	Coordinate	Mounting		Harness		Description
		Mounted on	PL*1	Name*2	PL*1	
202	D4 E9	Holder	15-5	OCT Harness Assembly	15-6	Connects the OCT PWB and the Print Engine Controller.
209	D3 E9	OCT PWB	15-4	OCT Harness Assembly	15-6	Connects the OCT PWB and the Print Engine Controller.
210	D2 E8	OCT PWB	15-4	@Drive Motor Assembly	15-8	Connects the OCT PWB and the Drive Motor Assembly.
223	D2 E7	OCT PWB	15-4	@Offset Motor Assembly	15-40	Connects the OCT PWB and the Offset Motor Assembly.
224	D3 E8	OCT PWB	15-4	Connector Harness Assembly	15-7	Connects the OCT PWB and J225 (Stack Full Sensor)], J226 (OCT Home Sensor), J227 (Exit Sensor), and P/J228 (Direct Solenoid).
225	D2 E8	Stack Full Sensor	15-3	Connector Harness Assembly	15-7	Connects the OCT PWB and the Stack Full Sensor.
226	F3 F9	Home Sensor	15-43	Connector Harness Assembly	15-7	Connects the OCT PWB and the Home Sensor.
227	F3 G9	Exit Sensor	15-36	Connector Harness Assembly	15-7	Connects the OCT PWB and the Exit Sensor.
228	I4 I12	Bottom part of Gear Housing	15-15	P: Connector Harness Assembly	15-7	Connects the OCT PWB and the Direction Solenoid.

*1: indicates the corresponding Parts list and item number in Section 3.

*2: @ at the beginning of the harness name indicates that the harness is a part of the component.

9.6.3 Wiring Schematic



SAS623F

9.7 OCT RAPS

NOTE: Refer to the Wiring Diagram 9.6.1 when problem solving the following RAPS.

9.7.1 Offset Bin Fail - Power Off/On (E9)

1 There is +5VDC between J209-7 and J209-8.

Y: Go to step 2.

N: Go to step 4.

2 Check the OCT PWB. The voltage between J209-1 and J209-8 is at the low level.

Y: Go to step 3.

N: Replace the OCT PWB.

3 Check the Print Engine Controller. The voltage between J21-1 and J21-8 is at the low level.

Y: Replace the Print Engine Controller.

N: Replace the OCT Harness Assembly.

4 Check the LVPS. There is +5VDC between J21-7 and J21-8.

Y: Replace the OCT Harness Assembly.

N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

9.7.2 Offset Jam/Open Rear Cover (E6)

Initial Actions

- Inspect the OCT paper path for torn pieces of paper or other foreign material.
- Inspect the OCT Exit Sensor and Stack Full Sensor Actuators for free movement.

1 Check for rotation of OCT Middle and Exit Roll Assemblies while executing Diagnostic Mode 1, OCT Motor. The rolls rotate normally.

Y: Go to step 5.

N: Go to step 2.

2 There is +24VDC between P/J210-1 and P/J210-3 and between P/J210-2 and P/J210-4.

Y: Go to *RAP 9.7.8 OCT Drive Motor Assembly Failure.*

N: Go to step 3.

3 There is +24VDC between J209-9 and J209-10.

Y: Replace the OCT PWB.

N: Go to step 4.

4 There is +24VDC between P/J21-9 and P/J21-10.

Y: Replace the OCT Harness Assembly.

N: Go to *RAP 7.4.7 Low Voltage Power Supply (LVPS) Assembly Failure (+24VDC).*

5 The OCT Exit Sensor is functioning properly.

NOTE: This can be inspected by performing Diagnostic Mode 1, Sensor Input Test.

Y: Replace the Print Engine Controller.

N: Got to step 6.

6 The voltage between P/J224-9 and P/J224-8 is at the low level when paper is present and at the high level when paper is not present.

Y: Go to step 7.

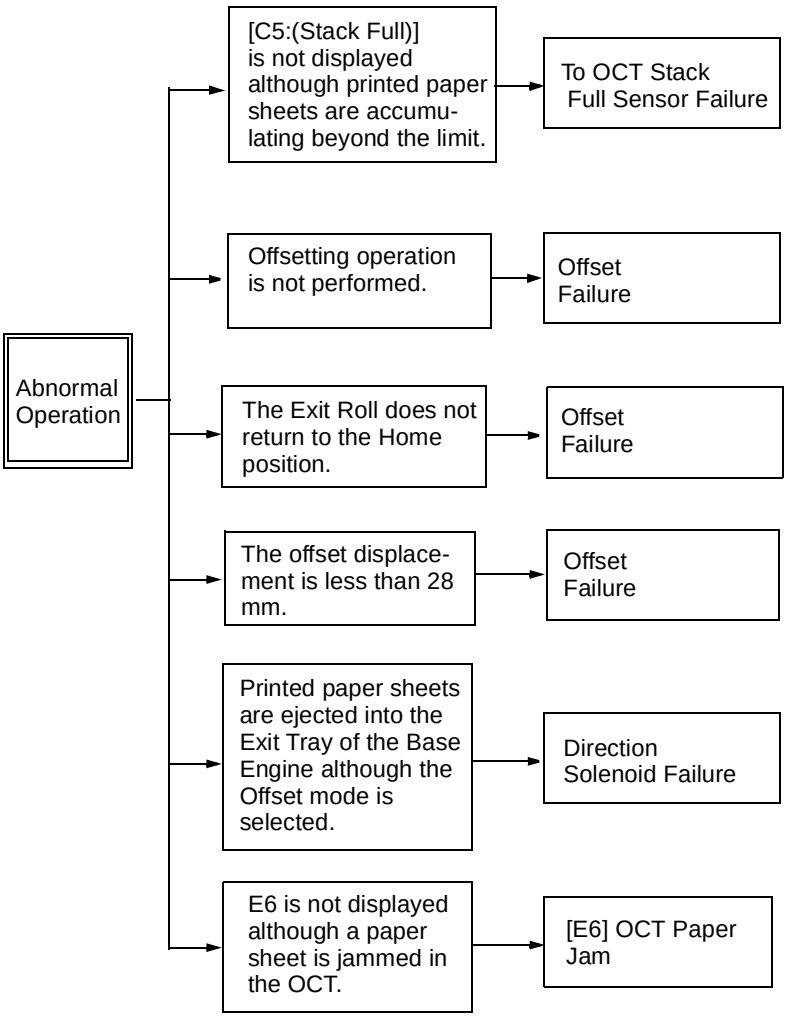
N: Go to *RAP 9.7.7 OCT Exit Sensor Failure.*

7 The voltage between P/J209-12 and P/J209-8 is at the low level when paper is present and at the high level when paper is not present.

Y: Replace the OCT Harness Assembly.

N: Replace the OCT PWB.

9.7.3 Abnormal Operation



9.7.4 Offset Failure

1 Manually move the offset arm back and forth from the home position to check the OCT Home Sensor. Does the OCT Home Sensor function correctly?

NOTE: Execute Diagnostic Mode 1, Sensor Input Test, and check the operation of the OCT Home Sensor.

Y: Go to step 2.

N: Go to *RAP 9.7.6 OCT Home Sensor Failure.*

2 Check the Offset Motor Assembly. Does the Offset Motor Assembly move the Offset Exit Roll Assembly in the offset direction?

NOTE: Execute Diagnostic Mode 1, Offset Motor CW, and check the operation of the Offset Motor Assembly.

Y: Go to step 3.

N: Go to step 4.

3 Does the OCT Offset Motor Assembly move the Exit Roll Assembly back to the Home position?

NOTE: Execute Diagnostic Mode 1, Offset Motor CCW, and check operation.

Y: Replace the Print Engine Controller PWB.

N: Go to step 4. Check the Offset Motor Assembly.

4 The voltage measured between P/J209-4 and P/J209-8 is at a low level when the motor is switched On and a high level when switched Off.

Y: Go to *RAP 9.7.8 OCT Drive Motor Assembly Failure* and *RAP 9.7.9 Offset Motor Assembly Failure*.

N: Go to step 5.

5 The voltage measured between P/J21-4 and P/J21-8 is at a low level when the motor is switched On and high level when switched Off.

Y: Replace the OCT Harness Assembly.

N: Replace the Print Engine Controller.

9.7.5 OCT Stack Full Sensor Failure

Initial Actions

Check that the Full Stack Sensor Actuator has free movement.

1 The Full Stack Sensor functions correctly.

NOTE: This can be inspected by performing Diagnostic Mode 1, Sensor Input Test.

Y: Replace the Print Engine Controller

N: Go to step 2.

2 Check the voltage applied to the Stack Full Sensor. There is +5VDC between P224-1 and P224-3.

Y: Go to step 3.

N: Go to step 6.

3 Check the signal of the Stack Full Sensor (OCT STK SNR). There is +5VDC between P224-2 and P224-3.

Y: Go to step 4.

N: Replace the OCT PWB.

4 Check the signal of the Stack Full Sensor (OCT STK SNR). The voltage between P/J224-2 and P/J224-1 is at the high level when the Exit Tray is full and at the low level when the Exit Tray is not full.

Y: Go to step 6.

N: Go to step 5.

5 Check the Connector Harness Assembly. There is continuity between J225 and J224.

Y: Replace the Stack Full Sensor.

N: Replace the Connector Harness Assembly.

6 Check the voltage applied to the Stack Full Sensor. There is +5VDC between P21-7 and P21-8.

Y: Go to step 7.

N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

7 Check the signal of the Stack Full Sensor (STK FULL SNR (OCT)). There is +5VDC between P21-2 and P21-8, when the OCT is full.

Y: Go to step 8.

N: Replace the Print Engine Controller.

8 Check the signal of the Stack Full Sensor (STK FULL SNR (OCT)). The voltage between P/J21-2 and P/J21-8 is at the high level when the Exit Tray is full and at the low level when the Exit Tray is not full.

Y: Replace the Print Engine Controller.

N: Go to step 9.

9 Check the OCT Harness Assembly. There is continuity between J209 and J202 and between P202 and J21.

Y: Replace the OCT PWB.

N: Replace the OCT Harness Assembly.

9.7.6 OCT Home Sensor Failure

1 There is +1.2VDC between P224-4 and P224-5.

Y: Go to step 2.

N: Go to step 5.

2 There is +5VDC between P224-6 and P224-5 when off of the Home position.

Y: Go to step 3.

N: Go to step 6.

3 The voltage between P/J224-6 and P/J224-5 is at the high level when the OCT Exit Roll Assembly is not at the Home position and at the low level when at the Home position.

Y: Go to step 7.

N: Go to step 4.

4 There is continuity between J226 and J224.

Y: Replace the OCT Home Sensor.

N: Replace the Connector Harness Assembly.

5 There is +5VDC between P21-7 and P21-8.

Y: Go to step 8.

N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

6 There is +5VDC between P21-3 and P21-8 when the OCT Exit Roll Assembly is off of the Home position.

Y: Go to step 8.

N: Replace the Print Engine Controller.

7 The voltage between P/J21-3 and P/J21-8 is at the high level when the Exit Roll Assembly is not at the Home position and at the low level when at the Home position.

Y: Replace the Print Engine Controller.

N: Go to step 8.

8 Check the OCT Harness Assembly. There is continuity between J209 and J202 and between P202 and J21.

Y: Replace the OCT PWB.

N: Replace the OCT Harness Assembly.

9.7.7 OCT Exit Sensor Failure

1 Check the voltage applied to the OCT Exit Sensor Assembly. There is +1.2VDC between P224-7 and P224-8.

Y: Go to step 2.

N: Go to step 5.

2 Check the signal of the OCT Exit Sensor Assembly (OCT EXIT SNR). There is +5VDC between P224-9 and P224-8.

Y: Go to step 3.

N: Go to step 6.

3 Check the signal of the OCT Exit Sensor Assembly (OCT EXIT SNR). The voltage between P/J224-9 and P/J224-8 is at the high level when paper is not present and at the low level when paper is present.

Y: Go to step 7.

N: Go to step 4.

4 Check the Connector Harness Assembly. There is continuity between J227 and J224.

Y: Replace the OCT EXIT Sensor Assembly.

N: Replace the Connector Harness Assembly.

5 Check the voltage applied to the OCT Exit Sensor Assembly from the Print Engine Controller. There is +5VDC between P21-7 and P21-8.

Y: Go to step 8.

N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

6 Check the signal of the OCT Exit Sensor Assembly (OCT EXIT SNR). There is +5VDC between P21-12 and P21-8 (paper not present).

Y: Go to step 7.

N: Replace the Print Engine Controller.

7 Check the signal of the Sensor Assembly (OCT EXIT SNR). The voltage between P/J21-12 and P/J21-8 is at the high level when paper is not present and at the low level when paper is present.

Y: Replace the Print Engine Controller.

N: Go to step 8.

8 Check the OCT Harness Assembly. There is continuity between J209 and J202 and between P202 and J21.

Y: Replace the OCT PWB.

N: Replace the OCT Harness Assembly.

9.7.8 OCT Drive Motor Assembly Failure

1 Check the Power Supply to the OCT Drive Motor Assembly. There is +24VDC between the following pins:

- P210-1 and P209-8
- P210-2 and P209-8
- P210-3 and P209-8
- P210-4 and P209-8
- P210-5 and P209-8
- P210-6 and P209-8

Y: Go to step 2.

N: Replace the OCT PWB.

2 Check the resistance of the windings of the OCT Drive Motor Assembly. There is approximately 115 ohms resistance between the following pins:

- J210-1 and J210-3
- J210-1 and J210-5
- J210-2 and J210-4
- J210-2 and J210-6

Y: Replace the OCT PWB.

N: Replace the OCT Drive Motor Assembly (Exit).

9.7.9 Offset Motor Assembly Failure

1 Check the Cam Gear. Does the rotation of the gear of the Offset Motor Assembly move the Cam Gear smoothly?

NOTE: Check by rotating the Cam Gear manually.

Y: Go to step 2.

N: Replace the Cam Gear.

2 Check the Power Supply to the Step Motor Assembly. There is +24VDC between the following pins:

- P223-1 and P209-8
- P223-2 and P209-8
- P223-3 and P209-8
- P223-4 and P209-8
- P223-5 and P209-8
- P223-6 and P209-8

Y: Go to step 3.

N: Replace the OCT PWB.

3 Check the resistance of the windings of the Offset Motor Assembly. There is approximately 115 ohms resistance between the following pins:

- J223-1 and J223-3
- J223-1 and J223-5
- J223-2 and J223-4
- J223-2 and J223-6

Y: Replace the OCT PWB.

N: Replace the Offset Motor Assembly.

9.7.10 Direction Solenoid Failure

1 Does the Direction Solenoid function correctly?

NOTE: Execute Diagnostic Mode 1, Direction Solenoid, and check the operation.

Y: Check the condition of the Solenoid Lever and the Exit Gate.

N: Go to step 2.

2 Check the voltage applied to the Solenoid. There is +24VDC between P224-11 and P224-8.

Y: Go to step 3.

N: Go to step 6.

3 Check the signal to the Solenoid. The voltage between P/J224-10 and P/J224-8 is at the low level when the OCT is selected and at the high level (+24VDC) when not selected. The voltage between P/J224-12 and P/J224-8 is at the high level (+24VDC) when the OCT is selected and at the low level when not selected.

Y: Replace the Direction Solenoid.

N: Go to step 4.

4 Check the Connector Harness Assembly. There is continuity between J224 and J228.

Y: Go to step 5.

N: Replace the Connector Harness Assembly.

5 Check the resistance of the windings of the Solenoid. The resistance between J228-1 and J228-2 is about 90Ω. The resistance between J228-3 and J228-2 is about 90Ω.

Y: Go to step 6.

N: Replace the Direction Solenoid.

6 Check the voltage applied to the Solenoid. There is +24VDC between P21-9 and P21-10.

Y: Go to step 7.

N: Go to *RAP 7.4.7 Low Voltage Power Supply (LVPS) Assembly Failure (+24VDC).*

7 Check the control signal of the Solenoid. The voltage between P/J21-11 and P/J21-8 at the low level when the OCT is selected and at the high level (+5VDC) when not selected.

Y: Replace the Print Engine Controller.

N: Go to step 8.

8 Check the OCT Harness Assembly. There is continuity between J209 and J202 and between P202 and J21.

Y: Replace the OCT PWB.

N: Replace the OCT Harness Assembly.

9.8 Installation and Removal

For the installation and removal of the OCT Unit, see the Printer User Guide.

Section 10

Duplex Module Option

Specifications 10-3
Configuration 10-3
External View 10-3
Installation in the Base Engine 10-3
Electric Specifications 10-4
Power Supply 10-4
Mechanical Specifications 10-4
Dimensions and Weight: 10-4

Duplex Module Parts List 10-6
PL 16 Duplex Module 10-6

Duplex Module REPS 10-8
Duplex Module 10-8
Direction Chute and Upper Chute 10-9
Duplex Pinch Roll (on the Upper Chute) 10-10
Duplex Cover 10-11
Connector Chute 10-12

Duplex Pinch Roll (Connector Chute Side)..... 10-13
Duplex PWB Assembly..... 10-14
Duplex Sensor Assembly..... 10-15
Duplex Harness Assembly..... 10-16
Duplex Motor Assembly..... 10-17
Duplex Transfer Roller Assembly 10-18
Latch 10-19

Paper Transportation 10-20
Paper Transportation Mechanism..... 10-20
Paper Path..... 10-21

Drive Power Transmission 10-22

Function Of Major Components..... 10-22
Function of Duplex Transport Roll Assemblies..... 10-22
Locations of Major Components 10-23

Wiring Diagrams..... 10-24
Connector Locators 10-24
P/J Table..... 10-25

Duplex Module RAPS..... 10-26
Duplex Unit Fail (E7)..... 10-26
Paper Jam in Duplex Unit (E1) 10-27
Non-Supported Paper Size Inserted in the Duplex Mode.... 10-29
Abnormal Operation..... 10-30
Exit Switch-to-Duplex Failure..... 10-31
Duplex Sensor Assembly Failure..... 10-32

Installation and Removal 10-33

10.1 Specifications

10.1.1 Configuration

10.1.1.1 External View

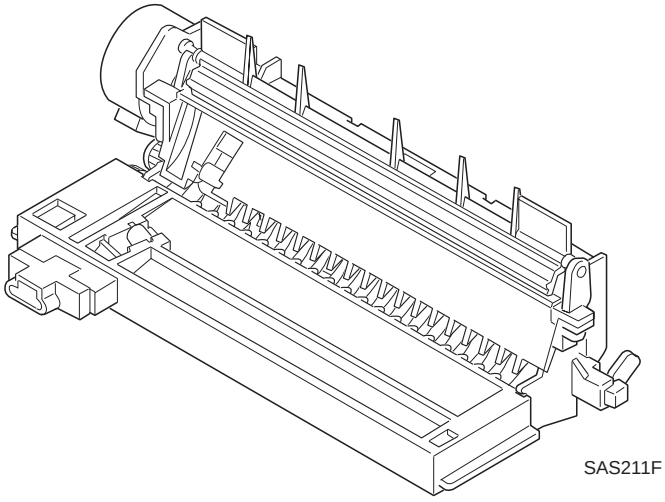


Figure 10.1.1.1.1 External View

10.1.1.2 Installation in the Base Engine

The Duplex Unit is installed in the base engine from the rear with the Rear Cover opened. (See the Printer User Guide for the detailed installation procedure.)

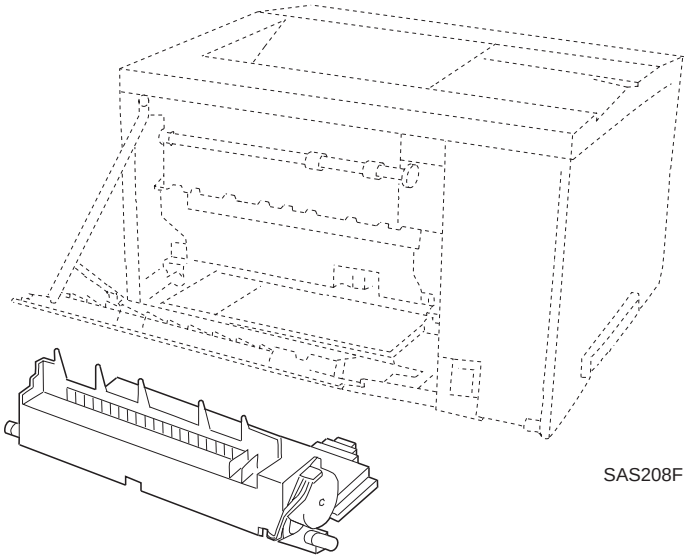


Figure 10.1.1.2.1 Installation in the Base Engine

10.1.2 Electric Specifications

10.1.2.1 Power Supply

+24V DC and +5V DC are supplied from the base engine.

10.1.3 Mechanical Specifications

10.1.3.1 Dimensions and Weight:

Width	Depth	Height	Weight
300 mm	135 mm	100 mm	1.0 kg

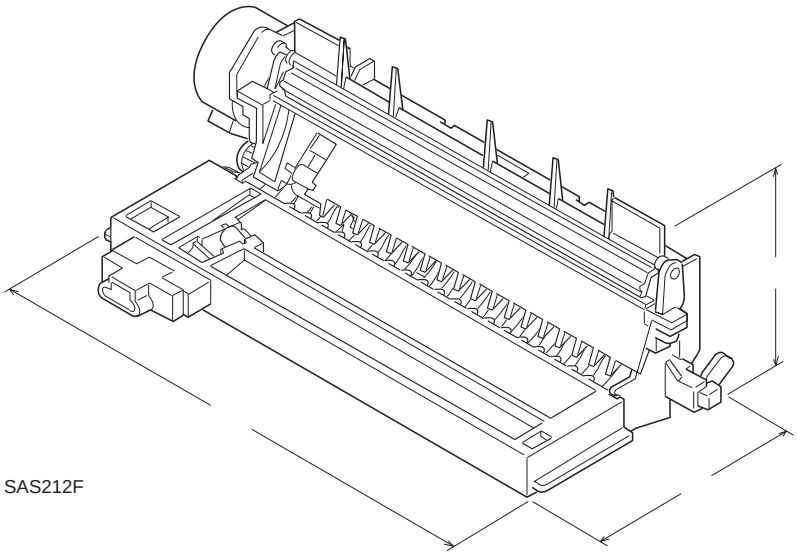
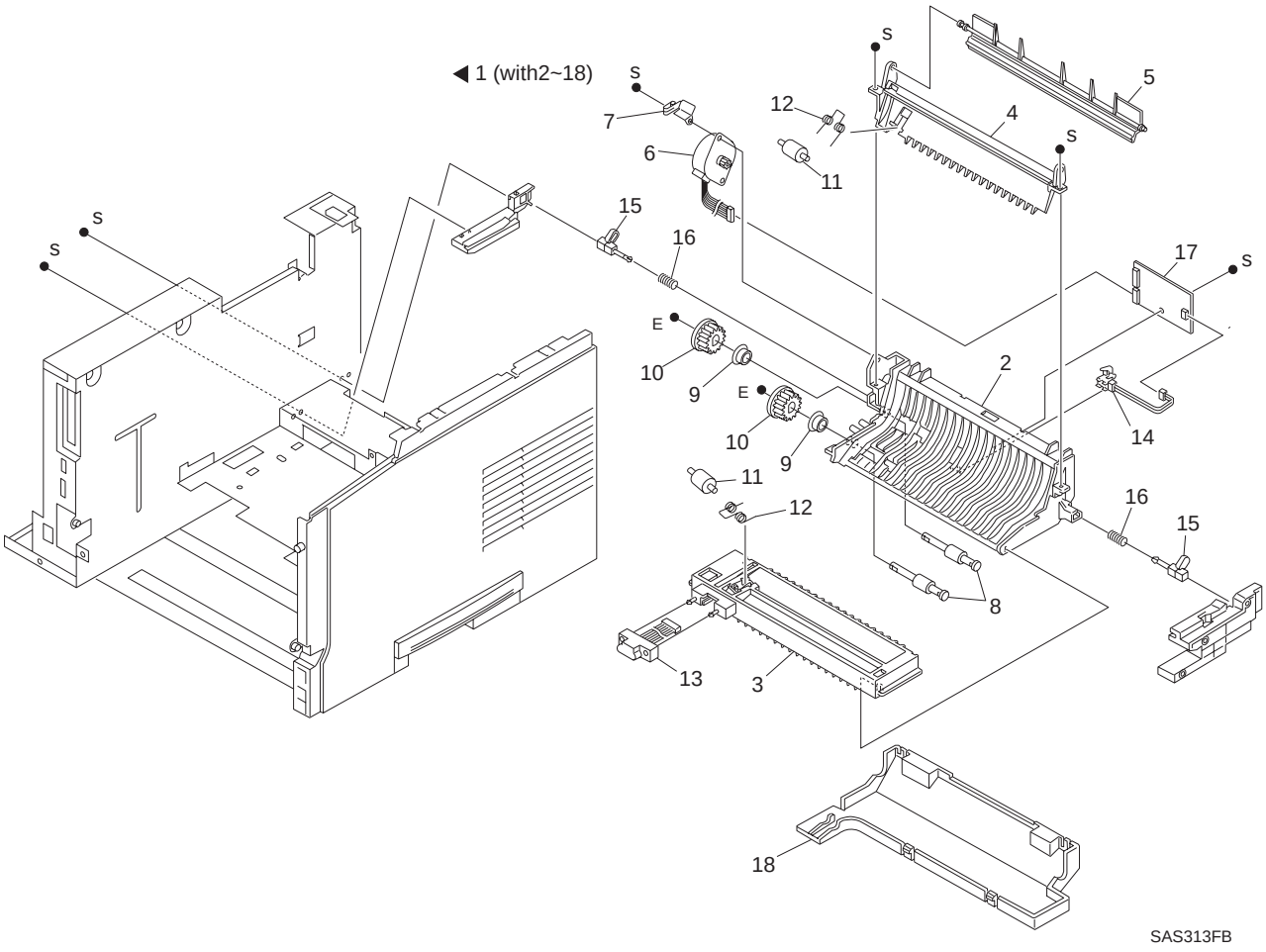


Figure 10.1.3.1.1 Mechanical Specifications

This page intentionally blank.

10.2 Duplex Module Parts List

10.2.1 PL 16 Duplex Module



10.2.2 PL 16 Duplex Module

Item	Part	Description
1.	(*)	Duplex Module Assembly (with Item 2-18)
2.	(*)	Duplex Lower Chute
3.	(*)	Connector Chute
4.	(*)	Upper Chute
5.	(*)	Direction Chute
6.	417301 S	Duplex Drive
7.	(*)	Ground Spring
8.	417302 T	Duplex Transfer Roller
9.	(*)	Bearing
10.	(*)	Roll Gear (15T)
11.	417303 U	Duplex Pinch Roll
12.	417304 V	Pinch Spring
13.	(*)	Duplex Harness
14.	417305 W	Duplex Sensor
15.	(*)	Latch
16.	(*)	Compression Spring
17.	417306 X	Duplex PWB
18.	(*)	Duplex Cover

(*) Not available

10.3 Duplex Module REPS

10.3.1 Duplex Module

Removal

1. Open the Rear Cover Assembly.
2. Press both latches inward and pull out the Duplex Module.

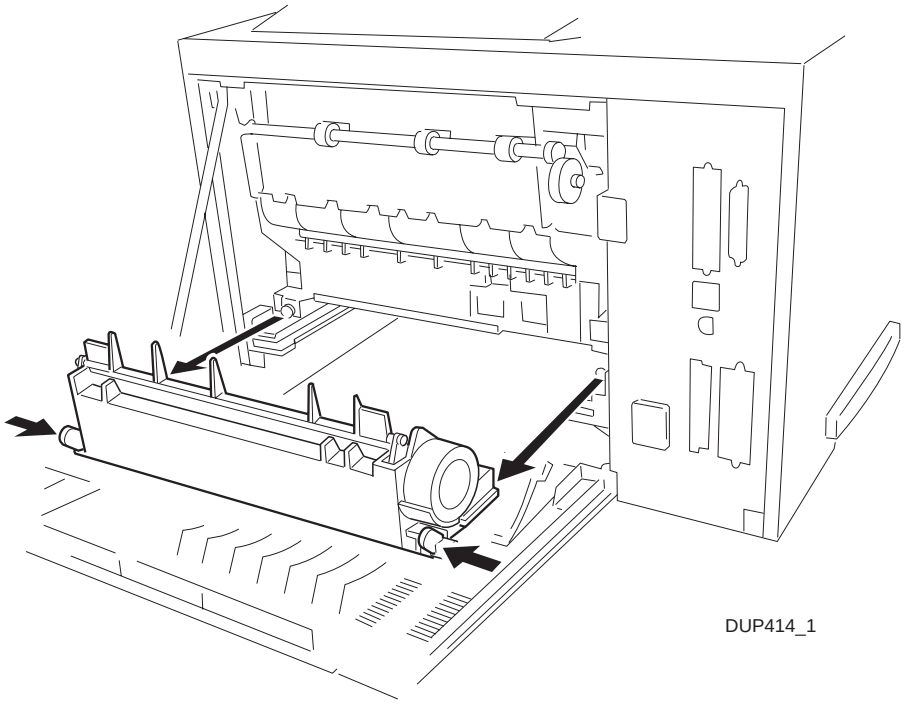


Figure 10.3.1.1 Duplex Module Removal

Replacement

Perform the removal steps in reverse order.

10.3.2 Direction Chute and Upper Chute

Removal

1. Remove the Duplex Module (*REP 10.3.1 Duplex Module*).
2. Raise the left end of the Direction Chute off the holder, then slide the Direction Chute to the left in the direction of the axis to take the right end off the holder.
3. Remove the two screws which secure the Upper Chute to the Duplex Module.
4. Lift off the Upper Chute.

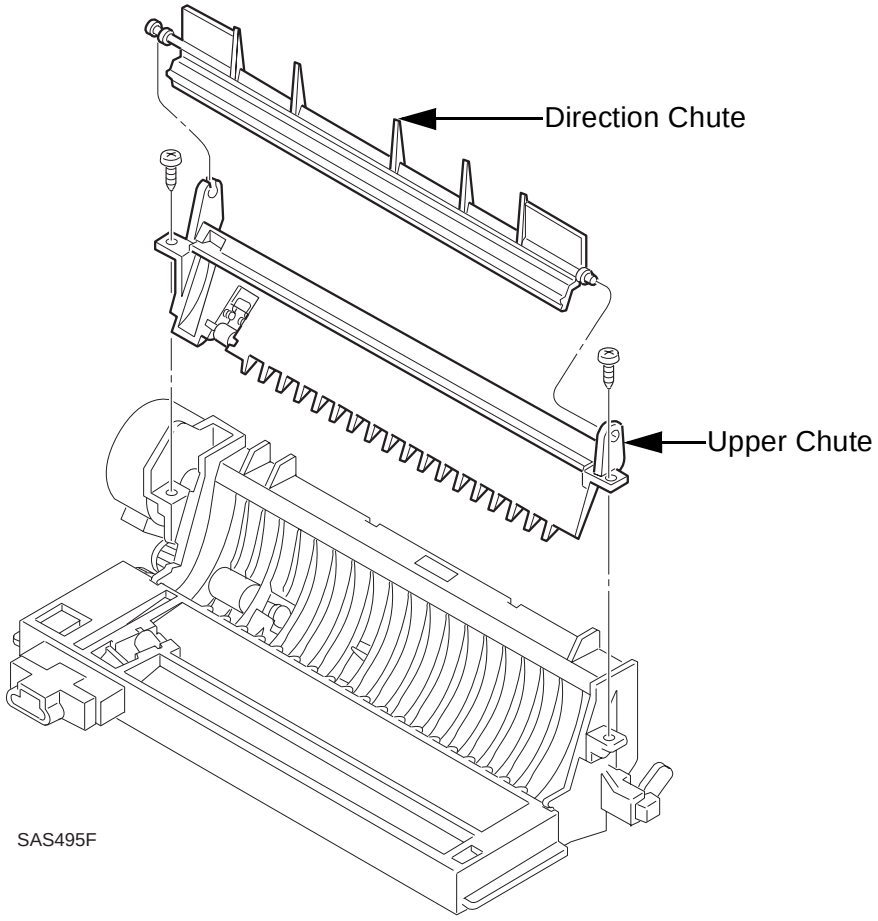


Figure 10.3.2.1 Removing the Direction Chute and the Upper Chute

Replacement

Perform the removal steps in reverse order.

10.3.3 Duplex Pinch Roll (on the Upper Chute)

Removal

1. Remove the Upper Chute (*REP 10.3.2 Direction Chute and Upper Chute*).
2. Press the Duplex Pinch Roll from behind to take it off the Upper Chute.
3. Remove the Pinch Spring from the hook.

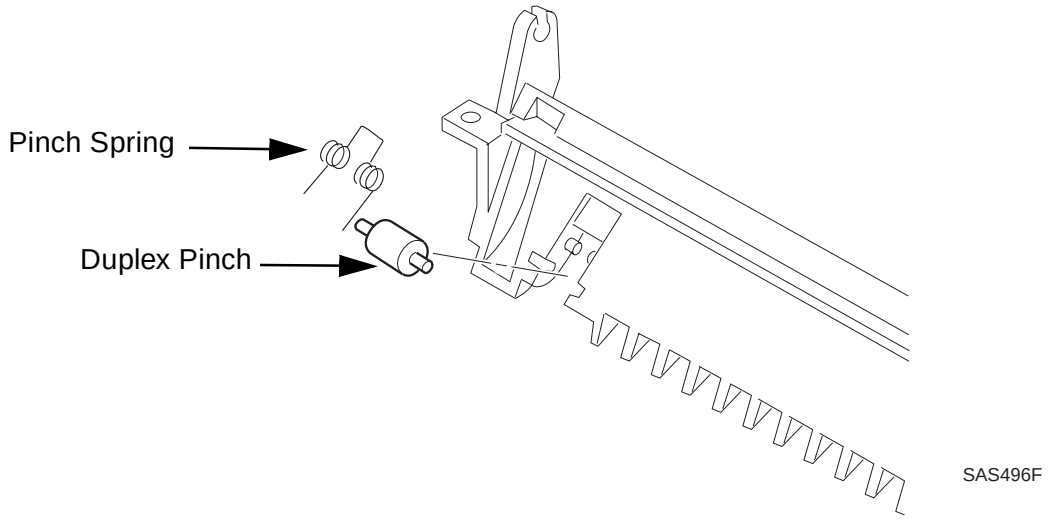


Figure 10.3.3.1 Removing the Duplex Pinch Roll

Replacement

Perform the removal steps in reverse order.

10.3.4 Duplex Cover

Removal

1. Remove the Duplex Module (*REP 10.3.1 Duplex Module*).
2. Put the Duplex Module upside down with the Duplex Cover up.
3. Press the Duplex Cover in the direction shown by the smaller arrows in the figure below and raise it to remove from the Duplex Module.

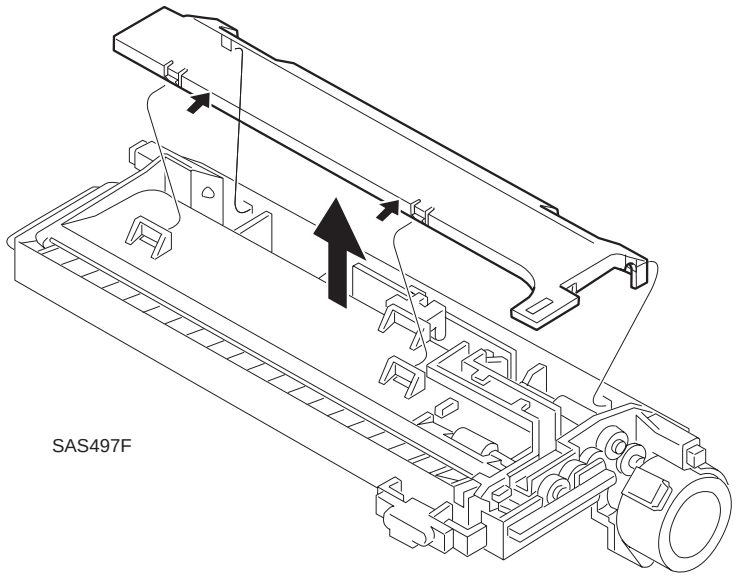


Figure 10.3.4.1 Removing the Duplex Cover

Replacement

Perform the removal steps in reverse order.

10.3.5 Connector Chute

Removal

1. Remove the Duplex Module (*REP 10.3.1 Duplex Module*).
2. Remove the one screw which secures the Connector Chute to the Duplex Module.
3. Press inward the two claws which retain the Duplex Harness Assembly to disengage and detach the Duplex Harness Assembly from the Connector Chute.

NOTE: Leave the Duplex Harness Assembly detached.

4. Shift/pry the Connector Chute slightly to the right to disengage the pin in the inside of the right end of the Connector Chute from the Duplex Module.
5. Pull the Connector Chute off the indentations of the Duplex Module.

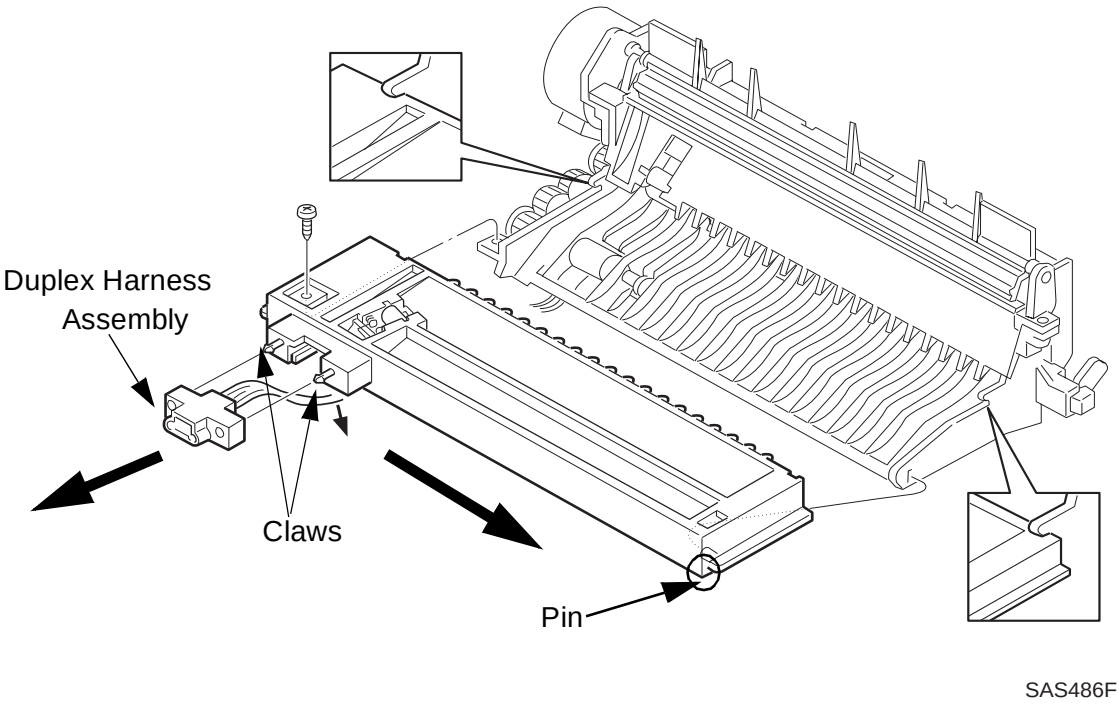


Figure 10.3.5.1 Removing the Connector Chute

Replacement

Perform the removal steps in reverse order.

10.3.6 Duplex Pinch Roll (Connector Chute Side)

Removal

1. Remove the Connector Chute (*REP 10.3.5 Connector Chute*).
2. Press the Duplex Pinch Roll from behind to remove it from the Connector Chute.
3. Remove the Pinch Spring from the hook.

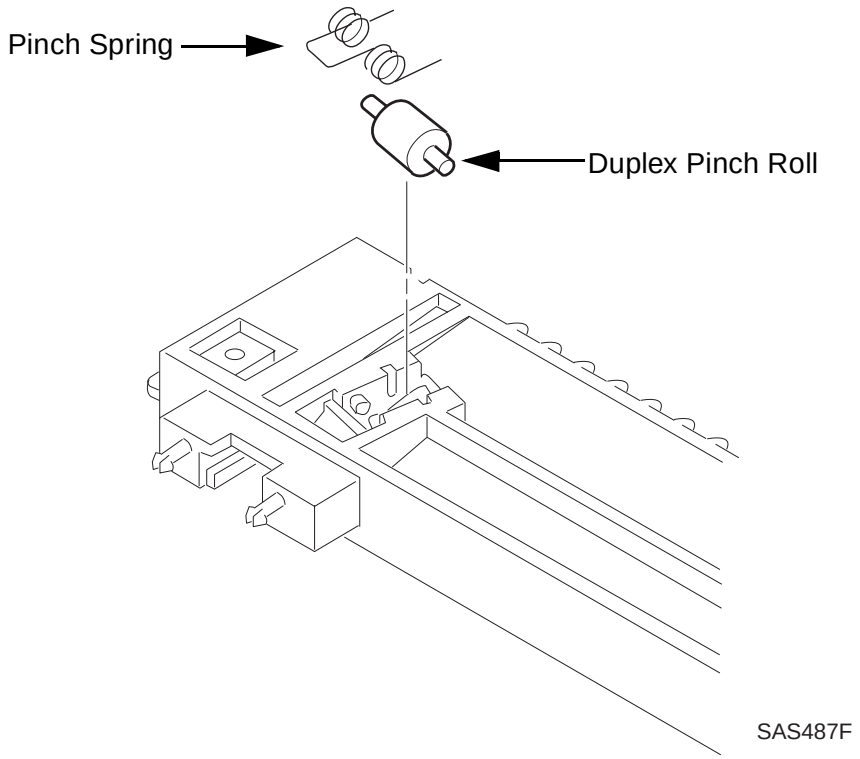


Figure 10.3.6.1 Removing the Duplex Pinch Roll (Connector Chute Side)

Replacement

Perform the removal steps in reverse order.

10.3.7 Duplex PWB Assembly

Removal

1. Remove the Duplex Cover (*REP 10.3.4 Duplex Cover*).
2. Press/pull out the pin that secures the Duplex PWB Assembly.
3. Slide the Duplex PWB Assembly upward to remove it from the Duplex Module.
4. Disconnect the three Connectors connected to the PWB Assembly.

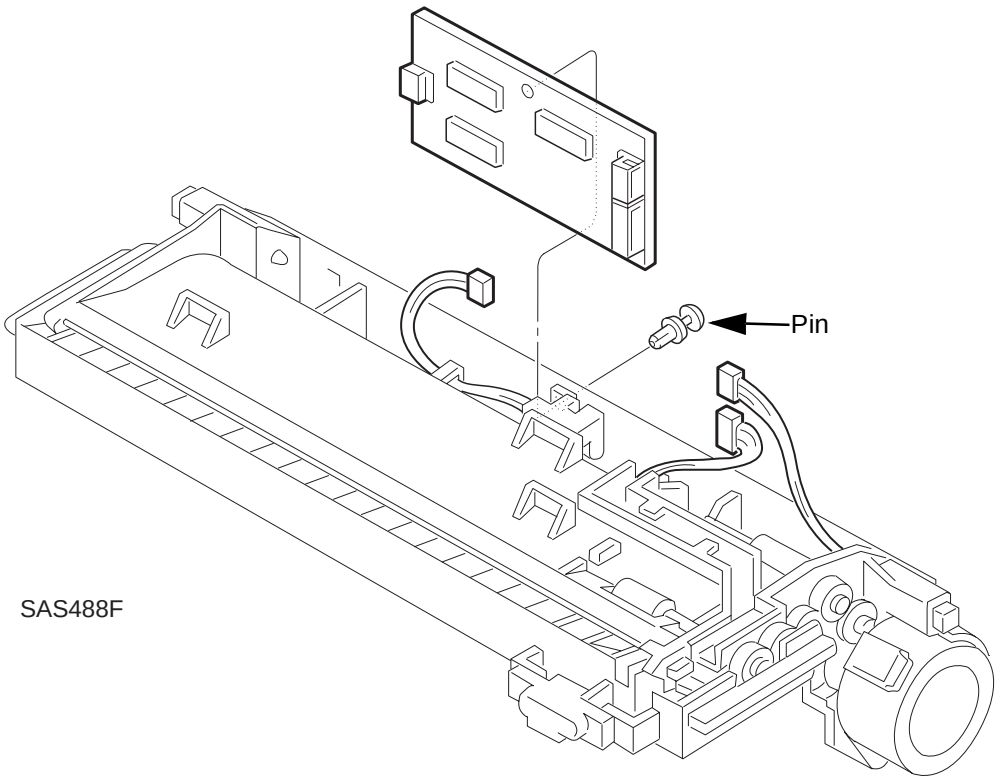


Figure 10.3.7.1 Removing the Duplex PWB Assembly

Replacement

Perform the removal steps in reverse order.

10.3.8 Duplex Sensor Assembly

Removal

1. Remove the Duplex PWB Assembly (*REP 10.3.7 Duplex PWB Assembly*).
2. Press the claws of the Duplex Sensor Assembly inward to disengage and pull the Duplex Sensor Assembly, together with the harness, off the Duplex Module.

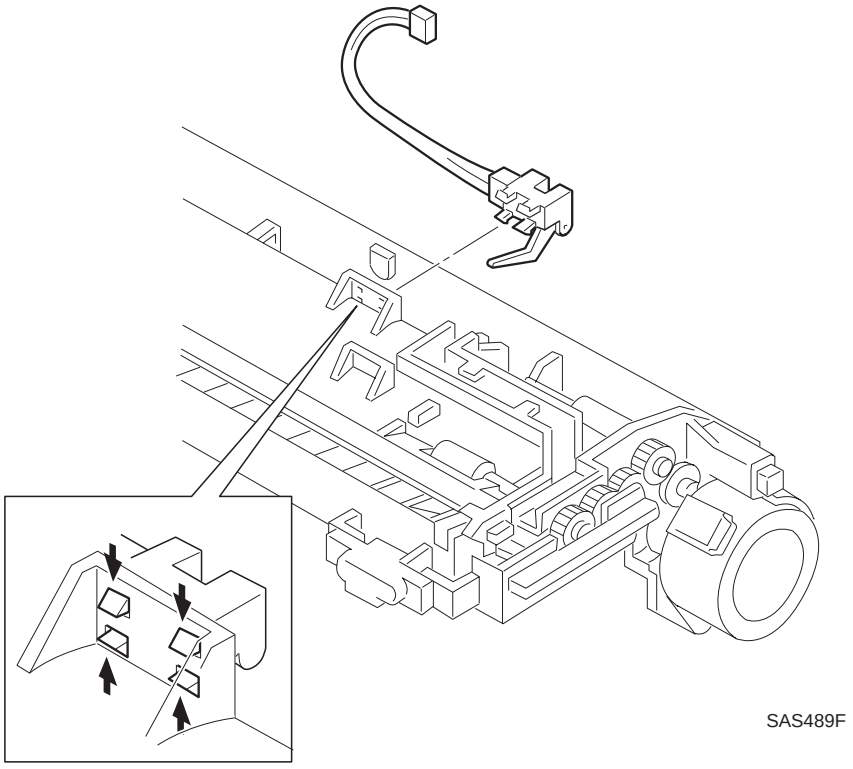


Figure 10.3.8.1 Removing the Duplex Sensor Assembly

Replacement

Perform the removal steps in reverse order.

10.3.9 Duplex Harness Assembly

Removal

1. Remove the Duplex PWB Assembly (*REP 10.3.7 Duplex PWB Assembly*).
2. Press the two claws which retain the Duplex Harness Assembly towards each other to disengage and detach the Duplex Harness Assembly from the Connector Chute.
3. Remove the Duplex Harness Assembly from the Duplex Module along the wiring path.

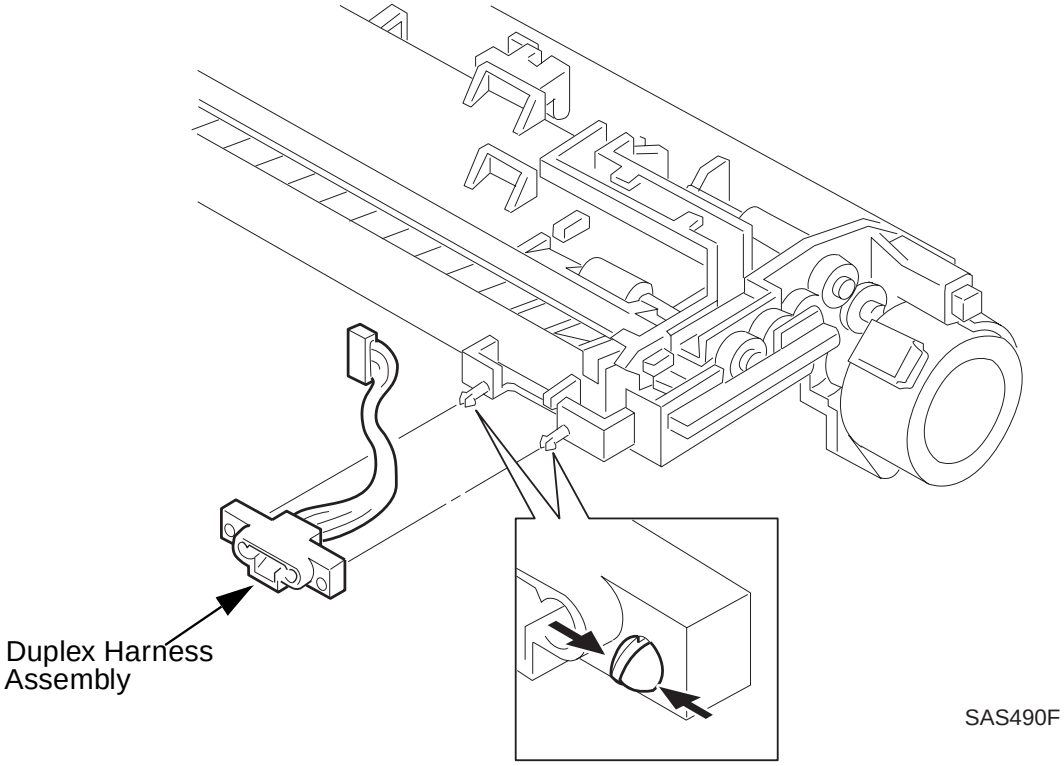


Figure 10.3.9.1 Removing the Duplex Harness Assembly

Replacement

Perform the removal steps in reverse order.

10.3.10 Duplex Motor Assembly

Removal

1. Remove the Duplex PWB Assembly (*REP 10.3.7 Duplex PWB Assembly*).
2. Remove the two screws which secure the Duplex Motor Assembly to the Duplex Module.
3. Remove the Earth Spring attached to the Drive Motor.
4. Remove the Duplex Motor Assembly together with the harness.

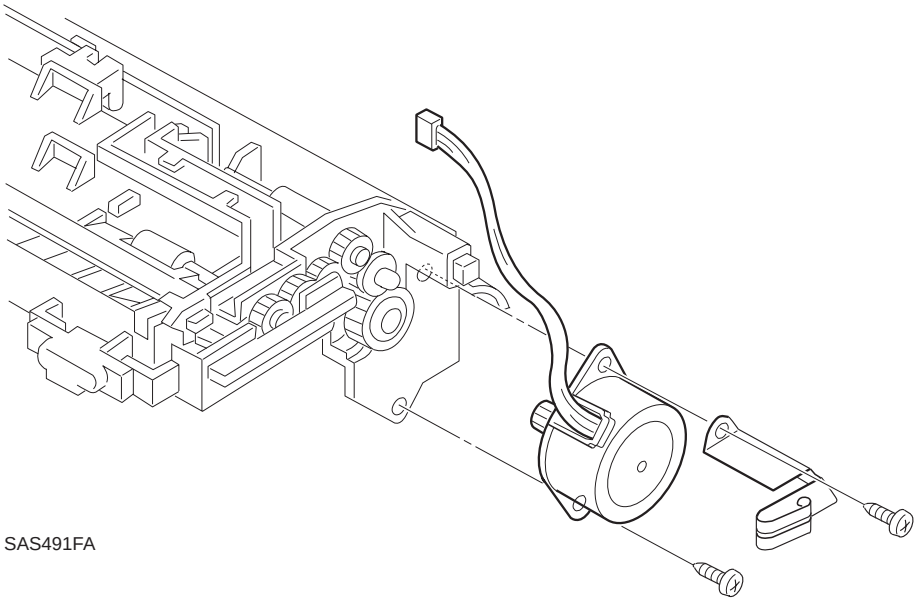


Figure 10.3.10.1 Duplex Motor Assembly

Replacement

Perform the removal steps in reverse order.

10.3.11 Duplex Transfer Roller Assembly

Removal

1. Remove the Duplex Cover (*REP 10.3.4 Duplex Cover*).
2. Slide the Roller Gear off the shaft of each of the two Duplex Transfer Roller Assemblies, pulling the lever on the gear away from the shaft.
3. Slide the bearing off the shaft of each Duplex Transfer Roller Assembly.
4. Shift each Duplex Transfer Roller Assembly to the inside to align the chordal grooves in the shaft with the supporting wall (with the grooves directed vertically) and then lift and pull towards the Duplex PWB.

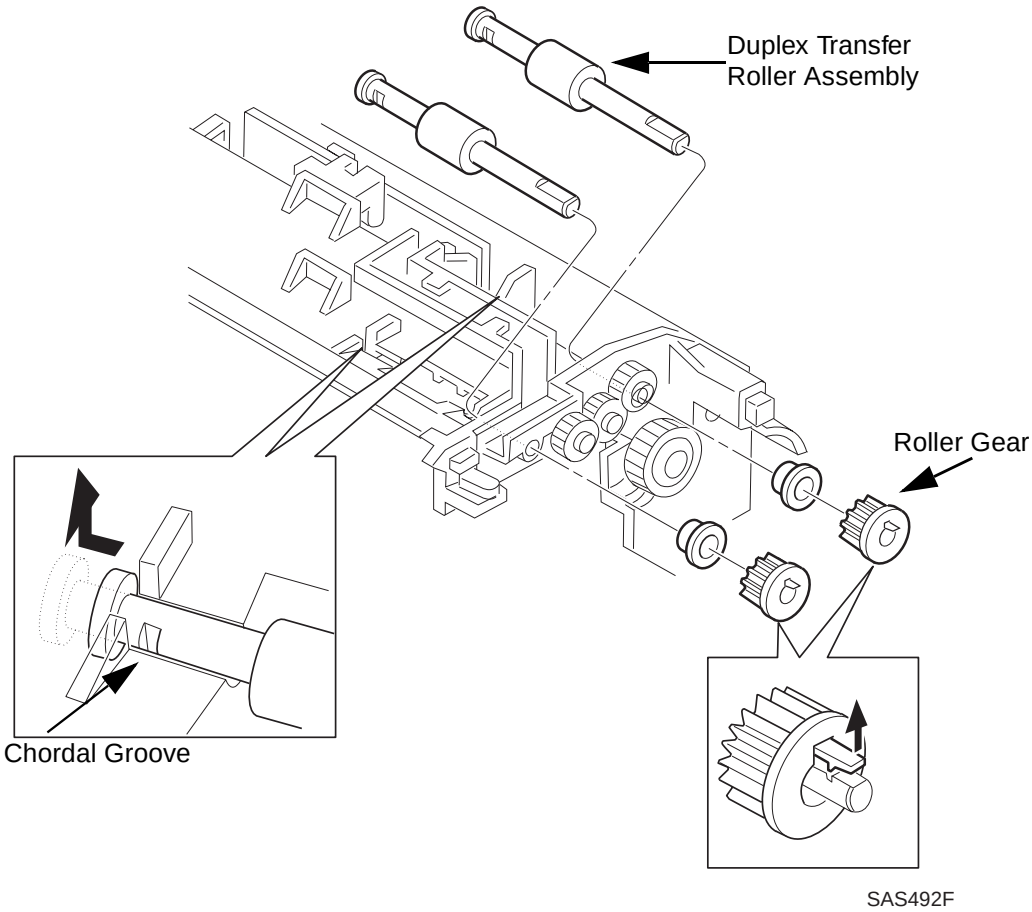


Figure 10.3.11.1 Duplex Transfer Roller Assembly

Replacement

Perform the removal steps in reverse order.

10.3.12 Latch

Removal

1. Remove the Duplex Cover (*REP 10.3.4 Duplex Cover*).
2. Pull off the latches outward, pressing the hooks towards each other to disengage.

NOTE: Be careful not to lose the Compression Spring.

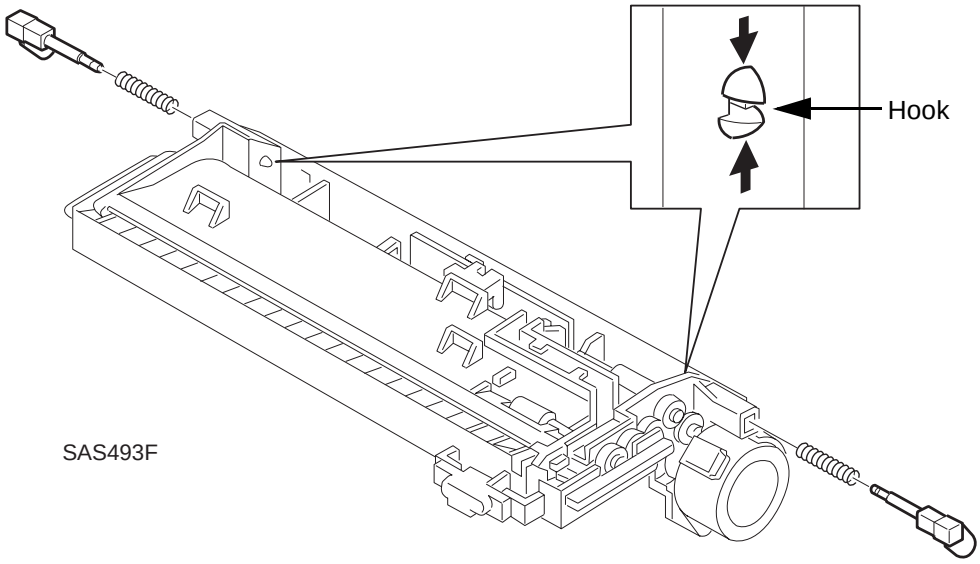


Figure 10.3.12.1 Removing the Latch

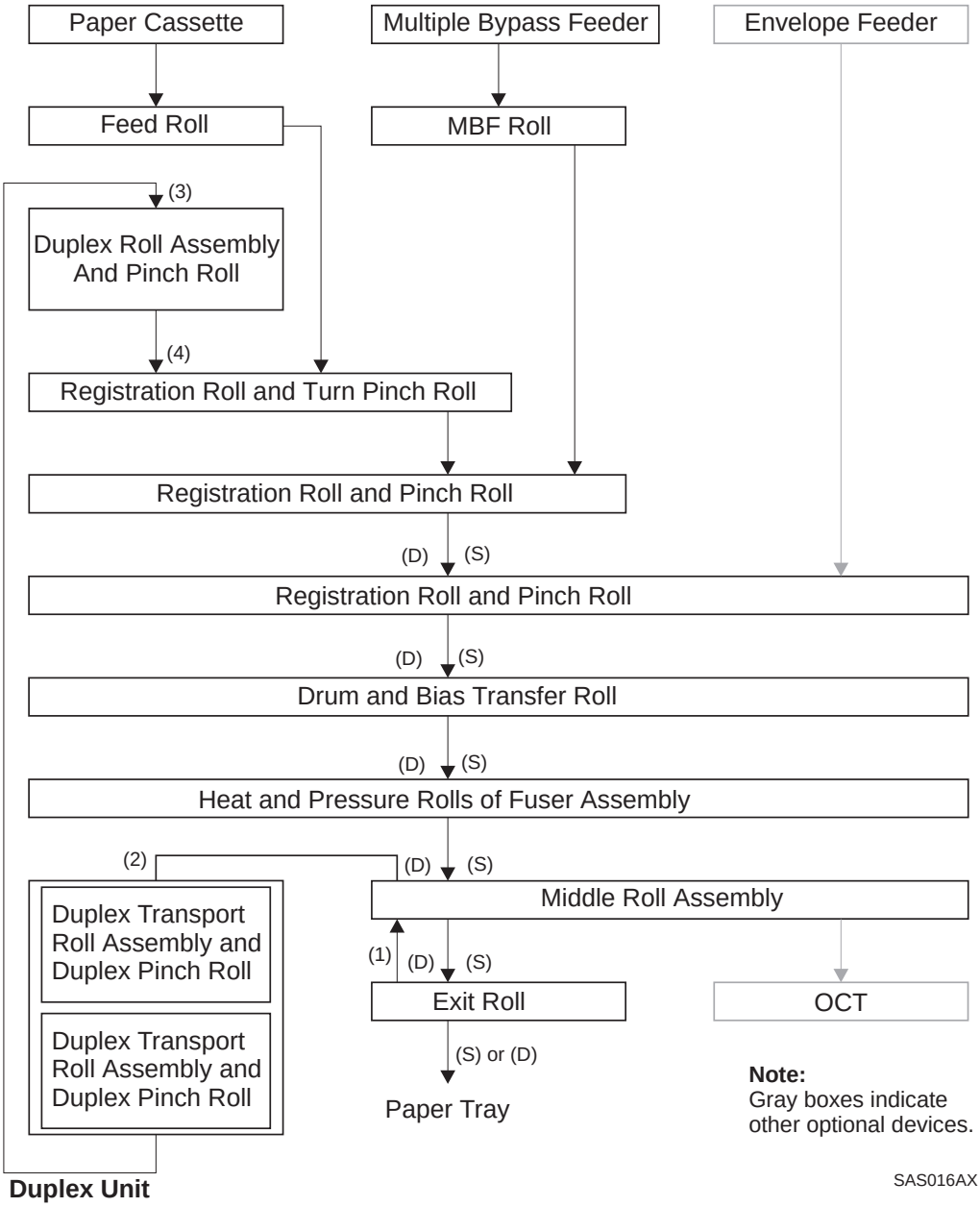
Replacement

Perform the removal steps in reverse order.

10.4 Paper Transportation

10.4.1 Paper Transportation Mechanism

The paper transport mechanism is shown below along the path of paper travel. (S) and (D) designate Simplex and Duplex. In the Duplex transport, paper is turned upside down by rolls 1 to 4. (For the paper transportation in other devices, refer to their respective service manuals.)



10.4.2 Paper Path

The path of paper travel through the printer with the Duplex Unit installed is shown in Figure 10.4.2.1.

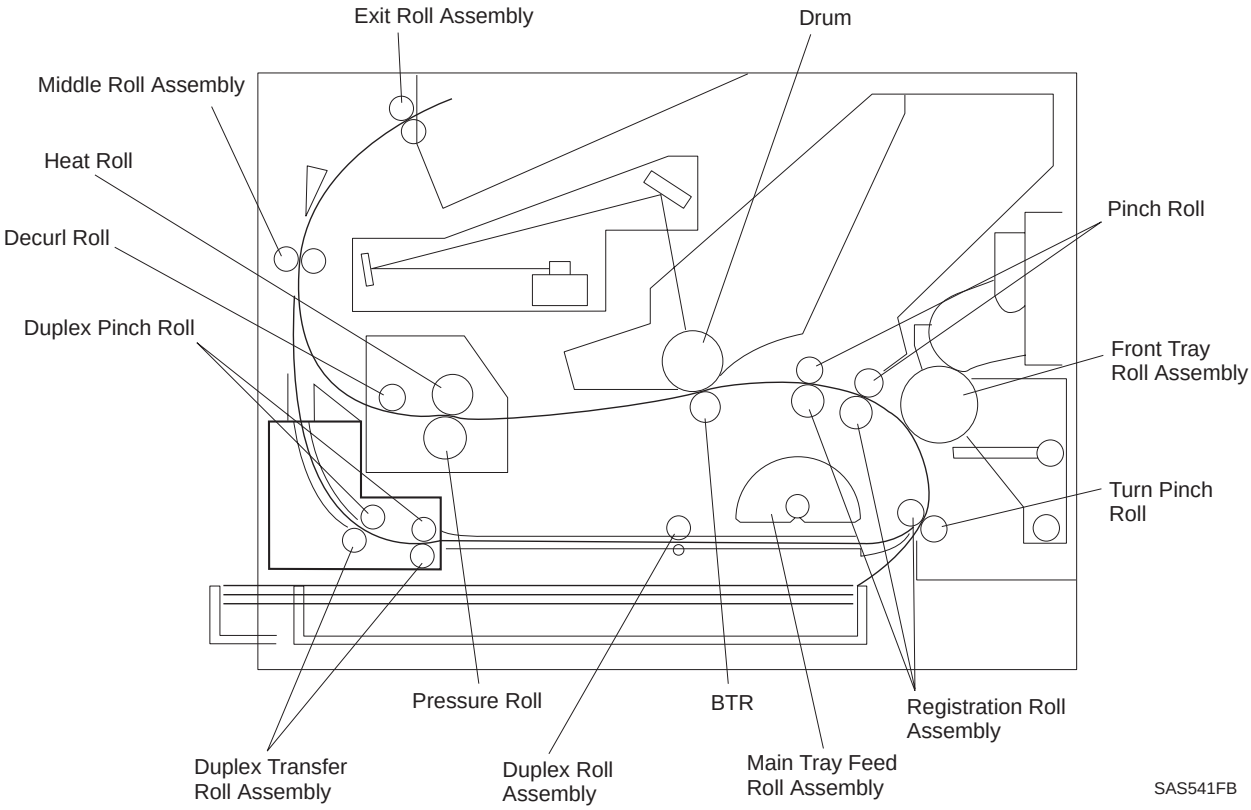


Figure 10.4.2.1 Paper Path

10.5 Drive Power Transmission

The drive power for the Duplex Unit is generated by the Duplex Drive Assembly and transmitted in the flow as shown in Figure 10.5.1.

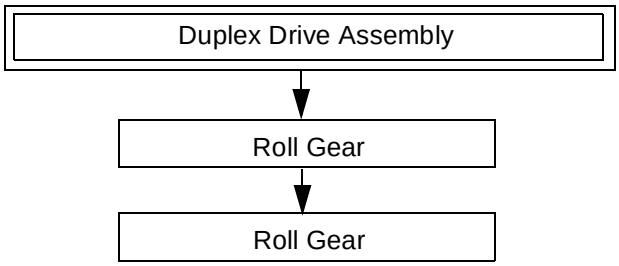


Figure 10.5.1 Drive Power Transmission

10.6 Function Of Major Components

The function of the major components is described below with reference to the drawings.

10.6.1 Function of Duplex Transport Roll Assemblies

These roll assemblies transport the paper sent from the Middle Roll Assembly of the base engine along the Chute.

- Duplex Drive Assembly:

  The Duplex Drive Assembly drives the Duplex Transport Roll Assemblies.
- Duplex Sensor Assembly:

  This sensor detects the entrance of paper into and the exit of paper from the Duplex Unit.
- Duplex PWB Assembly:

  This PWB Assembly controls the operation of the Duplex Unit.

10.6.2 Locations of Major Components

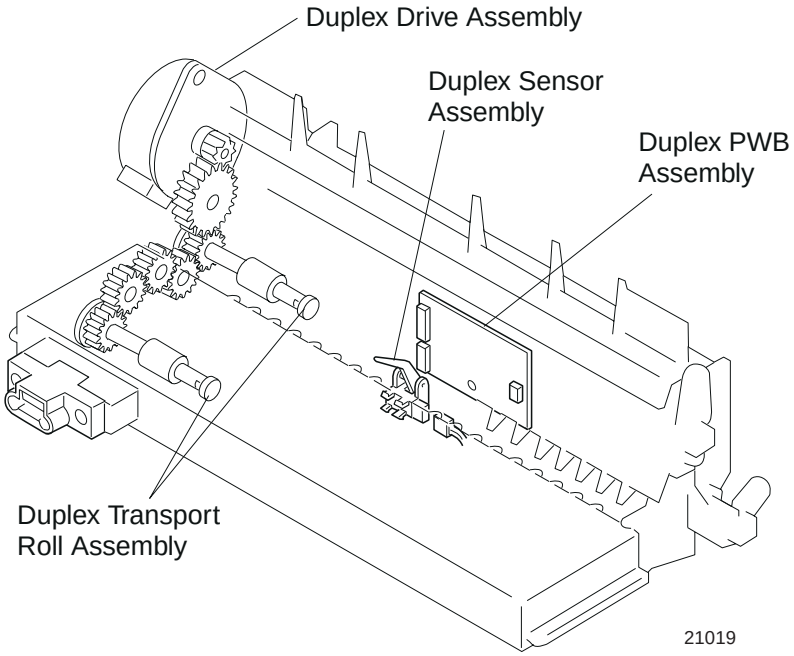


Figure 10.6.2.1 Locations of Major Components

10.7 Wiring Diagrams

10.7.1 Connector Locators

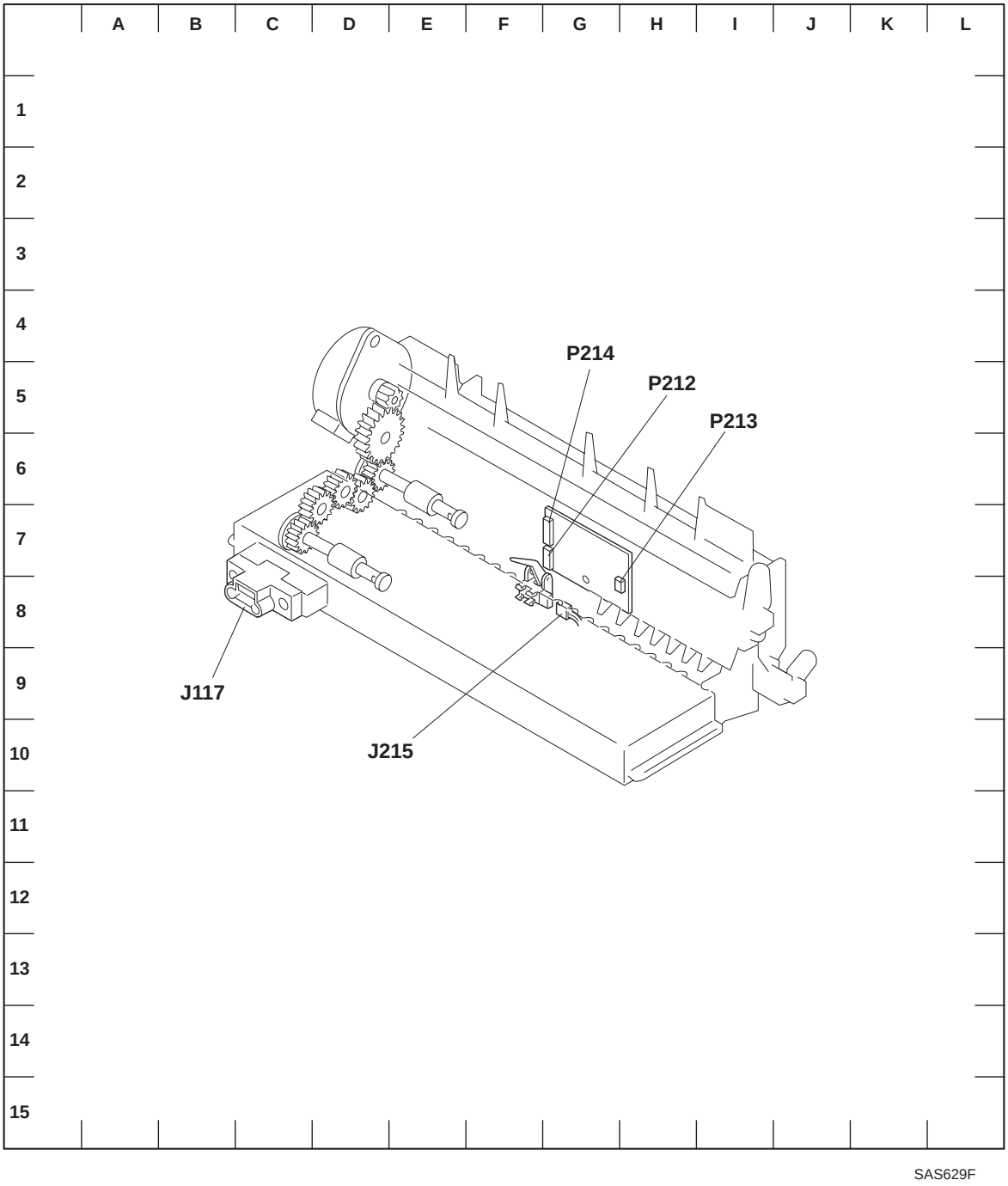


Figure 10.7.1.1 Connector Locators

10.7.2 P/J Table

PJ	Coordinate	Mounting (*1)		Harness (*2)		Description
		Mounted on	PL	Name (*3)	PL	
117	B7	Connector Chute	16-3	Duplex Harness Assembly	16-13	Connection between the Duplex PWB and Print Engine Controller
212	G7	Duplex PWB	16-17	@Motor Assembly	16-6	Connection between the Duplex PWB and Motor Assembly
213	H8	Duplex PWB	16-17	@Duplex Sensor Assembly	16-14	Connection between the Duplex PWB and the Duplex Sensor Assembly
214	G7	Duplex PWB	16-17	Duplex Harness Assembly	16-13	Connection between the Duplex PWB and the Print Engine controller
215	G8	Duplex Sensor Assembly	16-14	@Duplex Sensor Assembly	16-14	Connection between the Sensor and Harness of the Duplex Sensor Assembly (*4)

Notes:

(*1): The “PL” on the “Mounting” column indicates the corresponding parts list and item number.

(*2): The “PL” on the “Harness” column indicates the corresponding parts list and item number.

(*3): @ at the beginning of the harness name indicates that the harness is a part of the component.

(*4): The Sensor and the Harness are detachable, but they are treated as an assembly in this manual.

10.8 Duplex Module RAPS

10.8.1 Duplex Unit Fail (E7)

1 Check the Duplex Harness Assembly. There is a +5VDC between P/J214-7 and P/J214-8.

Y: Go to step 2.

N: Go to step 6.

2 Check the Duplex PWB. The voltage is between P/J214-1 and P/J214-7 at the low level.

Y: Go to step 3.

N: Replace the Duplex PWB.

3 Check the PWB Fuser. The voltage is between P/J116-1 and P/J116-11 at the low level.

Y: Go to step 4.

N: Replace the Fuser PWB.

4 Check the HVPS. The voltage is between P/J111-A3 and P/J111-B6 at the low level.

Y: Go to step 5.

N: Replace the HVPS.

5 Check the Print Engine Controller. The voltage is between P/J15-B7 and P/J15-A10 at the low level.

Y: Replace the Print Engine Controller.

N: Replace the HVPS Harness Assembly.

6 Check the LVPS. There is a +5VDC between P/J117-12 and P/J117-7.

Y: Replace the Duplex Harness Assembly.

N: Go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

10.8.2 Paper Jam in Duplex Unit (E1)

1 The jam occurs immediately when the power is switched on.

Y: Go to step 2.

N: Go to step 3.

2 There are pieces of paper or any foreign matter in the Duplex Unit area.

Y: Remove what is in the Exit area.

N: Go to step 3.

3 Check the rotation of the Duplex Roll Transport Assembly. The Duplex Roll Transport Assembly rotates normally.

NOTE: Execute Diagnostic Mode 1, Duplex Motor High and Low, and perform a visual inspection.

Y: Go to step 5.

N: Go to step 4.

4 Check the Motor Assembly. There is a +24VDC between P/J212-1 and P/J212-3 and between P/J212-2 and P/J212-4.

Y: Replace the Motor Assembly.

N: Go to step 9.

5 Check the Duplex Sensor Assembly. The Duplex Sensor Assembly operates normally.

NOTE: Execute Diagnostic Mode 1, Sensor Input Test, to check it.

Y: Go to step 6.

N: Go to *RAP 10.8.6 Duplex Sensor Assembly Failure.*

6 Check the Duplex Sensor Assembly. The voltage is between P/J213-3 and P/J213-2 at the low level when paper is present and at the high level when paper is not present.

Y: Go to step 7.

N: Replace the Duplex Sensor Assembly.

7 Check the Duplex PWB. The voltage is between P/J214-7 and P/J214-2 at the low level when paper is present and at the high level when paper is not present.

Y: Go to step 8.

N: Replace the Duplex PWB.

8 Check the Print Engine Controller. The voltage is between P/J15-A5 and P/J15-A10 at the low level when paper is present and at the high level when paper is not present.

Y: Replace the Print Engine Controller.

N: Replace the Duplex Harness Assembly.

9 There is 24V between P/J214-6 and P/J214-5.

Y: Go to step 10.

N: Replace the Duplex PWB.

10 There is 24V between P/J116-8 and P/J116-9.

Y: Go to step 11.

N: Replace the Fuser PWB.

11 There is 24V between P/J111-A5 and P/J111-B11.

Y: Go to step 12.

N: Replace the HVPS.

12 There is 24V between P/J15-A8 and P/J15-B2.

Y: Replace the Print Engine Controller if the problem is not solved. Go to *RAP 7.4.7 Low Voltage Power Supply (LVPS) Assembly Failure (+24VDC).*

N: Replace the Print Engine Controller HVPS Harness.

10.8.3 Non-Supported Paper Size Inserted in the Duplex Mode

1 Check the paper size. One of the four available sizes of paper (Legal 14”, Legal 13”, A4, or Letter) is being used.

Y: Go to step 2.

N: Use paper in a size that is supported.

2 Check the configuration sheet for the paper size set for the MBF Tray. The paper matches that selected on the configuration sheet.

Y: Go to step 3.

N: Use the paper size corresponding to the size displayed on the configuration sheet.

3 Check the paper size. The paper size reported matches the size of the paper in the Tray Assembly.

NOTE: Execute Diagnostics Mode 1, Paper Tray Size, to check set size.

Y: Go to step 5.

N: Go to step 4.

4 Perform a Tray Assembly analysis.

NOTE: Check if the paper guide in the back of the Tray is adjusted properly.

NOTE: Refer to Table 7.4.15.1 and Table 7.4.15.2 for switch combinations for various sheet sizes.

Check if the Size Sensor Assembly shows a correct switch combination for the size of the print sheets present in the Tray when the Tray presses the Size Spring Sensor Assembly.

Remove the Tray Assembly and perform a visual inspection while inserting the Paper Tray into the slot.

Y: Go to *RAP 10.8.6 Duplex Sensor Assembly Failure.*

N: Replace the Tray Assembly.

5 Perform a Duplex Sensor Assembly analysis. Check if the Duplex Sensor Assembly pushes the actuator when it detects the presence of a sheet and turns it back when there is no sheet present.

Remove the Duplex Sensor Assembly and perform a visual inspection.

Y: Go to step 6.

N: Replace the Duplex Sensor Assembly.

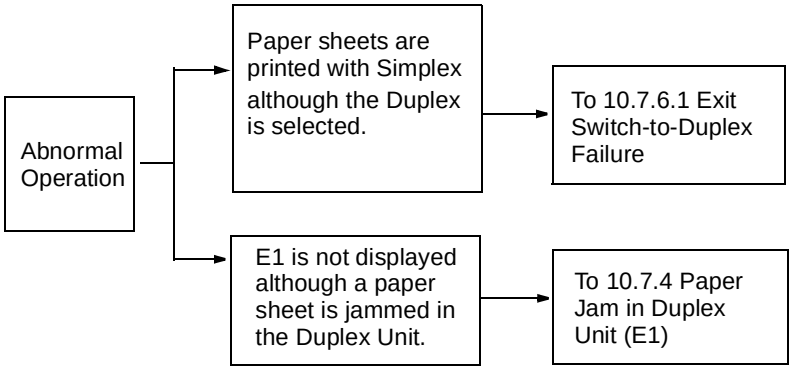
6 Perform a Duplex Sensor Assembly analysis. Check if the Duplex Sensor Assembly is functioning normally.

You can inspect it by performing Diagnostic Mode 1, Sensor Input Test.

Y: Replace the Print Engine Controller.

N: Go to *RAP 10.8.6 Duplex Sensor Assembly Failure.*

10.8.4 Abnormal Operation



10.8.5 Exit Switch-to-Duplex Failure

1 Check the Exit Assembly. The Exit Assembly functions correctly.

NOTE: Execute Diagnostic Mode 1, Exit Motor CW, and check if the Exit Motor rotates clockwise.

Y: Go to step 2.

N: Go to *RAP 7.4.10 Exit Sensor Assembly Failure.*

2 Check the Print Engine Controller. The “Exit Switch-to-Duplex Failure” occurs after the Print Engine Controller was replaced.

Y: Check the System Controller PWB Assembly connection to the Print Engine Controller PWB connection.

N: The problem is solved.

10.8.6 Duplex Sensor Assembly Failure

1 There is a +5VDC between P213-1 and P213-2.

Y: Go to step 6.

N: Go to step 2.

2 There is a +5VDC between P124-8 and P124-7.

Y: Replace the Duplex PWB.

N: Go to step 3.

3 There is a +5VDC between P115-6 and P115-2.

Y: Replace the Fuser PWB.

N: Go to step 4.

4 There is a +5VDC between P111-A4 and P111-A3.

Y: Replace the HVPS.

N: Go to step 5.

5 There is a +5VDC between P15-A9 and P15-A10.

Y: Replace the Print Engine Controller to the HVPS Harness.

N: Replace the Print Engine Controller. If the problem is not resolved, go to *RAP 7.4.5 Low Voltage Power Supply (LVPS) Assembly Failure (+5VDC).*

6 The voltage is between P213-3 and P213-2 at a high level when the Duplex Sensor is not actuated and at a low level when actuated.

Y: Go to step 7.

N: Verify the continuity of the Sensor Harness. If this is fine, replace the Duplex Sensor.

7 The voltage is between P117-2 and P117-7 at a high level when the Duplex Sensor is not actuated and at a low level when actuated.

Y: Go to step 8.

N: Replace the Duplex PWB.

8 The voltage is between P115-11 and P115-2 at a high level when the Duplex Sensor is not actuated and at a low level when actuated.

Y: Go to step 9.

N: Replace the Fuser PWB.

9 The voltage is between P15-A5 and P15-A10 at a high level when the Duplex Sensor is not actuated and at a low level when actuated.

Y: Replace the Print Engine Controller.

N: Validate the continuity of the Print Engine to the HVPS Harness. If this is fine, replace the HVPS.

10.9 Installation and Removal

For installation and removal of the Duplex Unit, see the Printer User Guide.

Section 11

Envelope Feeder Option

Specifications 11-3
Configuration 11-3
Basic Configuration 11-3
Installation on the base engine 11-3
Electrical Specifications 11-3
Power Supply 11-3
Power Consumption 11-3
Mechanical Specifications 11-3
Dimensions and Weight 11-3
Supported Envelope Types and Size 11-4

Envelope Feeder Parts List 11-5
PL20 Envelope Feeder 11-6
PL20 Envelope Feeder 11-7

Envelope Feeder REPS 11-8
Before You Start Any REP 11-8
Weight Assembly/Weight Holder/Weight Arm 11-9
Bottom Cover/Tray Extension 11-10
Side Cover 11-11
One Way Clutch Assemblies A & B (26T)/Envelope Feeder Solenoid (29T)/Transfer Clutch Assembly (25T)/ Torque Clutch Assembly 11-12
No Paper Sensor 11-14
Top Cover 11-15
Bottom Shaft Assembly/Transfer Roll Assembly 11-18
Feed Roll Assembly-1 and -2/Feed Belt 11-19

No Paper Actuator 11-21
Retard Holder/Retard Main Spring/Retard Roll Assembly..... 11-22
Pinch Roll/Feed Bearing/Pinch Spring..... 11-24
Envelope Harness Assembly..... 11-26

Paper Transport..... 11-27
Paper Transport Mechanism 11-27
Paper Path..... 11-28

Drive Power Transportation 11-29

Function of Major Components 11-30
Envelope Feeder 11-30
Function 11-30
Envelope Feeder Major Components 11-31
Envelope Feeder Control..... 11-33
Paper Transportation Control (Paper Jam Detection) ... 11-33
No Paper Detection..... 11-33

Wiring Diagrams..... 11-34
Connector Locator 11-34
P/J Table..... 11-35

Envelope Feeder RAPS..... 11-36
Env. Feeder Fail Message (E8) 11-36
Env. Feeder Empty Message (C5) 11-37
EnvelFeeder Jam/Remove All Envel alternating with
Remove EnvFeeder/Open Front Cover and
Remove Jam Envel Message (E2) 11-38

Installation and Removal 11-40

11.1 Specifications

11.1.1 Configuration

11.1.1.1 Basic Configuration

The Envelope Feeder option is mounted on the Front Cover Assembly of the N17 Network Laser Printer and has the capacity of up to 75 envelopes of five different types.

11.1.2 Installation on the Base Engine

See the N17 User Guide for the detailed procedure.

11.1.3 Electrical Specifications

11.1.3.1 Power Supply

+24VDC and +5VDC are supplied from the N17 Base Printer.
(+24V is for Envelope Feeder Solenoid and +5V is for the No Paper Sensor).

11.1.3.2 Power Consumption

Voltage	Maximum Current (Feeding)
5 VDC	0.02 A
24 VDC	0.02 A

11.1.4 Mechanical Specifications

11.1.4.1 Dimensions and Weight

Unit	Width	Depth	Height	Weight
Metric	255 mm	260 mm	130 mm	1.56 Kg
SAE	10.0 in.	19.2 in.	5.1 in.	3.43 lbs.

11.1.5 Supported Envelope Types and Size

Envelope Type	Envelope Size
Com-10	4.125 in. x 9.5 in.
C5	162mm x 229mm
DL	110mm x 220mm
Monarch	3.875 in. x 7.5 in.
C6	114mm x 162mm

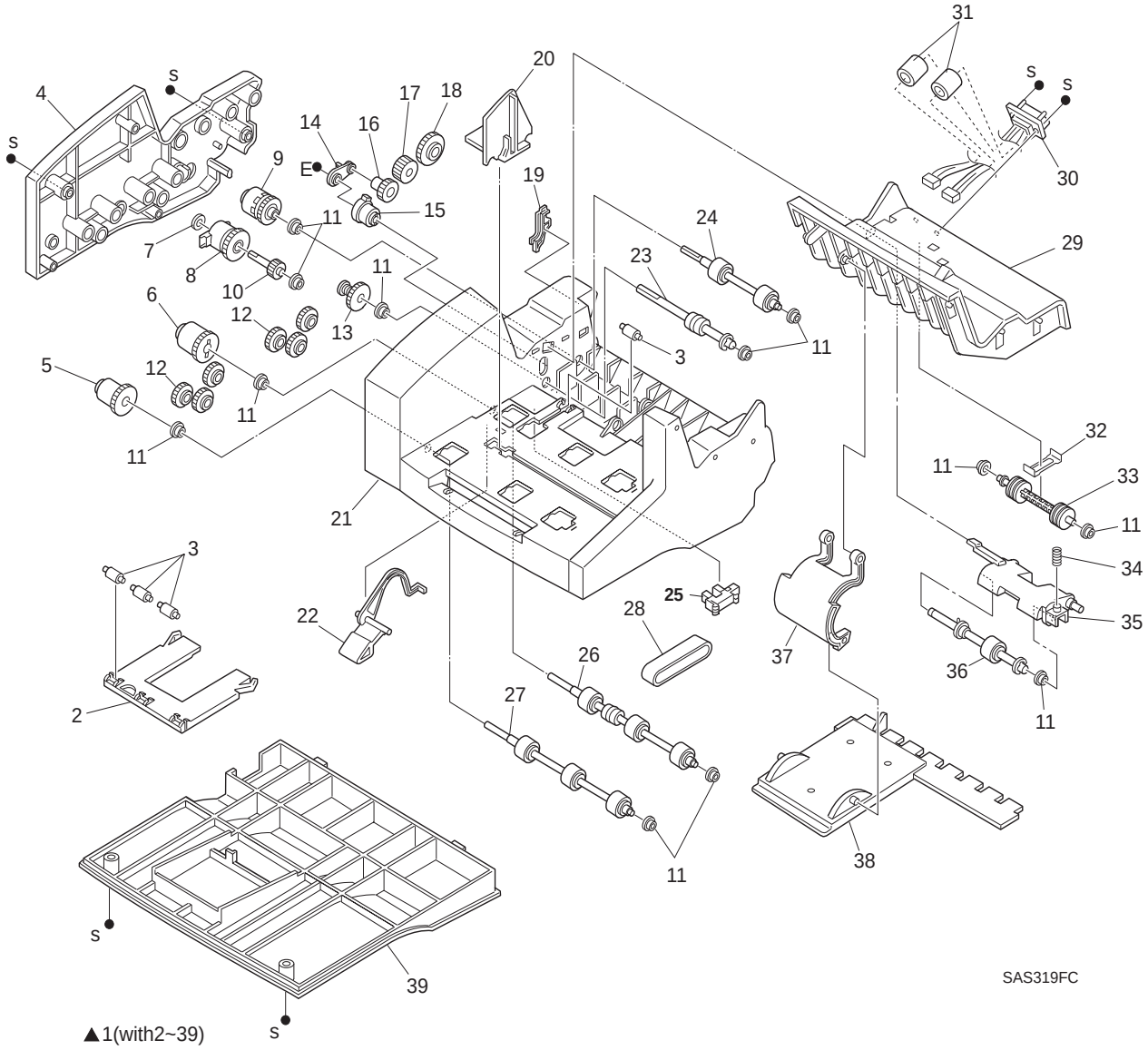
11.2 Envelope Feeder Parts List

The parts list identifies the parts constituting the Envelope Feeder option and is shown in one exploded drawing:

- PL20 Envelope Feeder

For the locations of the connectors (P/J), see *Section 11.7 Wiring Diagrams*.

11.2.1 PL20 Envelope Feeder



11.2.2 PL20 Envelope Feeder

Item	Part	Description
1.	(*)	Envelope Feeder Assembly
2.	417325 R	Tray Extension
3.	417326 J	Envelope Pinch Roll
4.	417327 K	Side Cover
5.	417328 U	One Way Clutch Assembly B (26T) {2 piece Gear & Clutch}
6.	417329 V	One Way Clutch Assembly A (26T) {2 piece Gear & Clutch}
7.	(*)	Envelope Feeder Solenoid Bearing
8.	036758 G	Envelope Feeder Solenoid (29T)
9.	417330 S	Transfer Clutch Assembly (25T)
10.	417331 P	Electric Clutch Shaft (17T)
11.	036757 X	Feeder Bearing
12.	417332 Q	Idler Gear (21T))
13.	417333 R	One Way Clutch Assembly (26T)
14.	(*)	Retard Link
15.	417334 J	Torque Clutch Assembly
16.	417335 K	Gear (23T)
17.	417336 L	Drive Gear (21T)
18.	417337 M	Printer Engagement Gear (29T)
19.	--	Harness Cover
20.	417338 W	Envelope Side Guide
21.	(*)	Main Chassis
22.	417339 X	No Paper Actuator
23.	417340 C	Bottom Shaft Assembly
24.	417341 Z	Transfer Roll Assembly
25.	127677 X	No Paper Sensor
26.	417342 S	Feed Roll Assembly-1
27.	417343 T	Feed Roll Assembly-2
28.	417344 U	Feed Belt
29.	(*)	Top Cover
30.	(*)	Envelope Harness Assembly
31.	(*)	Ferrite Core
32.	(*)	Pinch Spring
33.	036770 G	Pinch Roll
34.	(*)	Retard Main Spring
35.	(*)	Retard Holder
36.	417345 V	Retard Roll Assembly
37.	(*)	Weight Arm (includes item 38)
38.	(*)	Weight Holder
39.	(*)	Bottom Cover

11.3 Envelope Feeder REPS

This section explains the removal and replacement procedures (REPS) for the Envelope Feeder parts which are listed in *Section 11.2 Envelope Feeder Parts List*.

NOTE: Parts listed on the parts list that do not have a REP can be easily removed and replaced without a procedure. However, carefully look at how they are installed before removing them.

11.3.1 Before You Start Any REP

There are a number of steps you should follow **before** you begin any procedure:

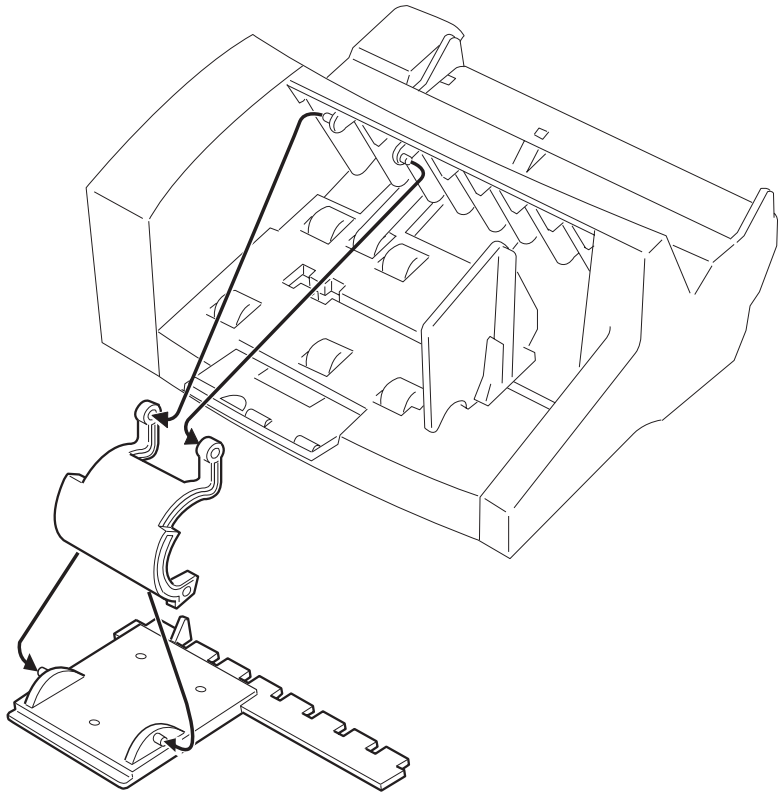
1. If applicable, cancel pending jobs and take the printer offline.
2. Switch OFF the printer main power and disconnect the power cord from the wall outlet.
3. Do not use force to remove or install printer or Envelope Feeder components.
4. Use only the screw size and type designated in the REP. The wrong screw could easily damage tapped holes.
5. Wear a wrist strap to dissipate static electricity which may damage sensitive electronic parts.
6. See *Section 6, Wiring Diagrams,* for detailed wiring diagrams.

11.3.2 Weight Assembly/Weight Holder/Weight Arm

Removal

1. Detach the Weight Assembly from the Top Cover.
2. Detach the Weight Arm from the Weight Holder.

NOTE: The Weight Holder is spared as part of the Weight Arm.



SAS4C4FA

Figure 11.3.2.1 Weight Assembly, Weight Holder, and Weight Arm Removal

Replacement

Perform the removal steps in reverse order

11.3.3 Bottom Cover/Tray Extension

Removal

1. Place the Envelope Feeder on its right Side.
2. Remove the two screws which secure the Bottom Cover.
3. Pull out the Tray Extension completely and move it upward (to the right in Figure 11.3.3.1) about 5cm (See (1) in Figure 11.3.3.1) and remove the Bottom Cover from the Main Chassis (See (2) in Figure 11.3.3.1).
4. Remove the Tray Extension from the bottom of the Envelope Feeder (See (3) in Figure 11.3.3.1).

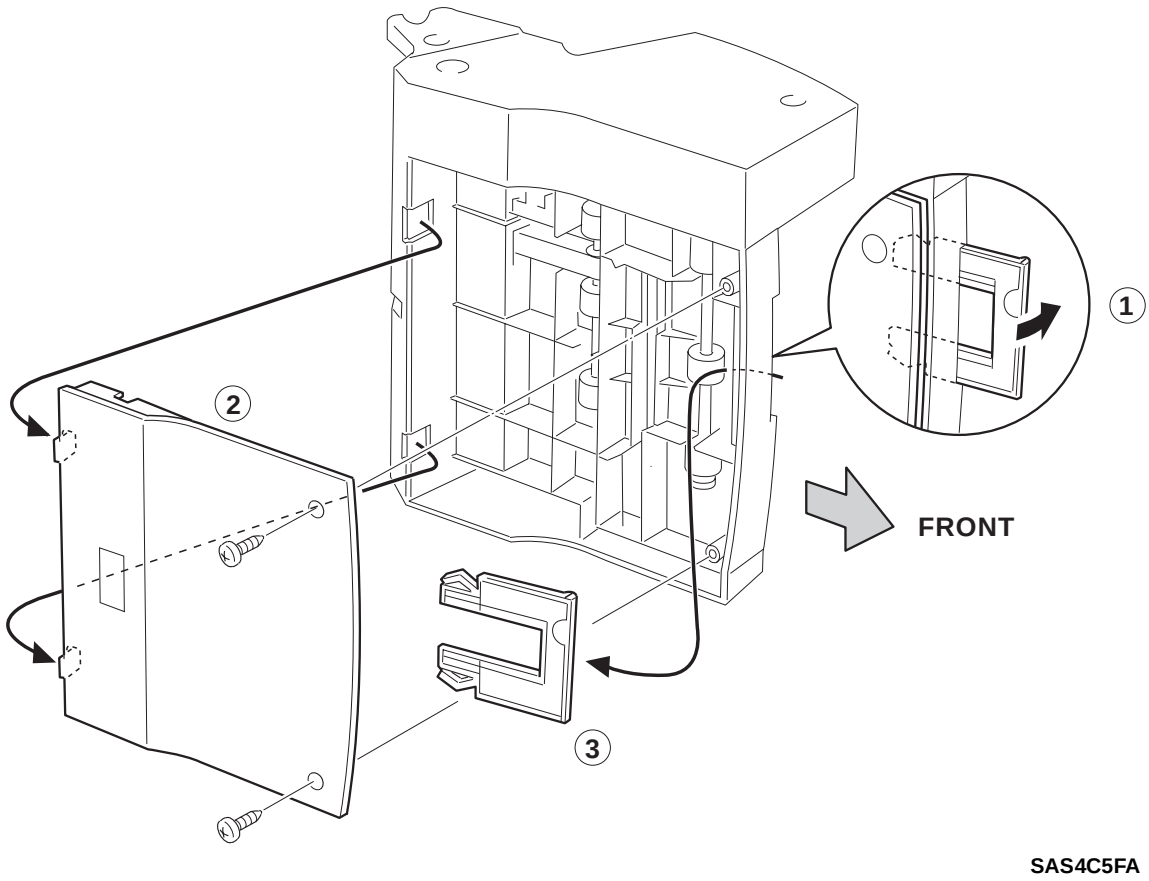


Figure 11.3.3.1 Bottom Cover and Tray Extension Removal

Replacement

Perform the removal steps in reverse order.

NOTE: First reinstall the Tray Extension and then the Bottom Cover.

11.3.4 Side Cover

Removal

1. Place the Envelope Feeder on its right side.
2. Remove the two screws which secure the Side Cover.
3. Grasp the Side Cover at the location indicated (See 3 in Figure 11.3.4.1) and lift it off.

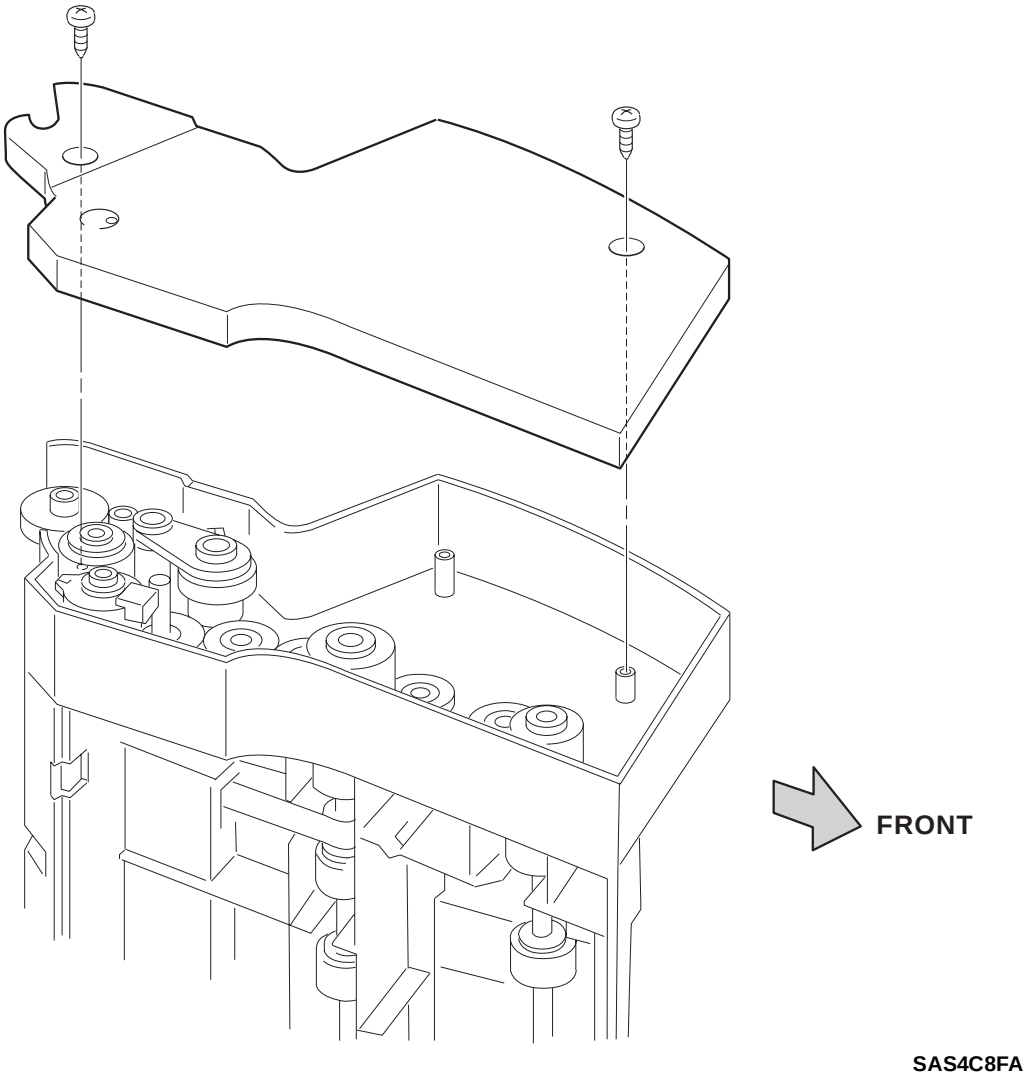


Figure 11.3.4.1 Side Cover Removal

Replacement

Perform the removal steps in reverse order.

11.3.5 One Way Clutch Assemblies A & B (26T)/Envelope Feeder Solenoid(29T)/Transfer Clutch Assembly (25T)/Torque Clutch Assembly

Removal

NOTE: Since the gears are greased, take care that the grease does not stick to your hands. If grease sticks to your hands, wipe it off completely with a paper towel to prevent grease contamination of other parts.

1. Remove the Bottom Cover (*REP 11.3.3 Bottom Cover/Tray Extension)*.
2. Remove the Side Cover (*REP 11.3.4 Side Cover)*.
3. Lift off the One Way Clutch Assembly A (26T) {Clutch and Gear} while holding the roll on the Feeder Roll Assembly (See (1) in Figure 11.3.5.1).
4. Lift off the One Way Clutch Assembly B (26T) {Clutch and Gear} while holding the roll on the Feeder Roll Assembly (See (2) in Figure 11.3.5.1).
5. Lift off the Transfer Clutch Assembly (25T) (See (3) in Figure 11.3.5.1).
6. Remove the Envelope Feeder Solenoid Bearing on the Envelope Feeder Solenoid (29T) (See (4) in Figure 11.3.5.1).

NOTE: Be careful not to forget to reinstall the Envelope Feeder Solenoid Bearing when reinstalling the Envelope Feeder Solenoid.

7. Disconnect J230 of the Envelope Harness Assembly from the Envelope Feeder Solenoid (29T) (See (5) in Figure 11.3.5.1).
8. Lift off the Envelope Feeder Solenoid (29T) together with the Envelope Feeder Solenoid Shaft (See (6) in Figure 11.3.5.1).

NOTE: The Feeder Bearing can sometimes come off along with the Envelope Feeder Solenoid Shaft. Take care not to loose the Feeder Bearing (See (7) in Figure 11.3.5.1).

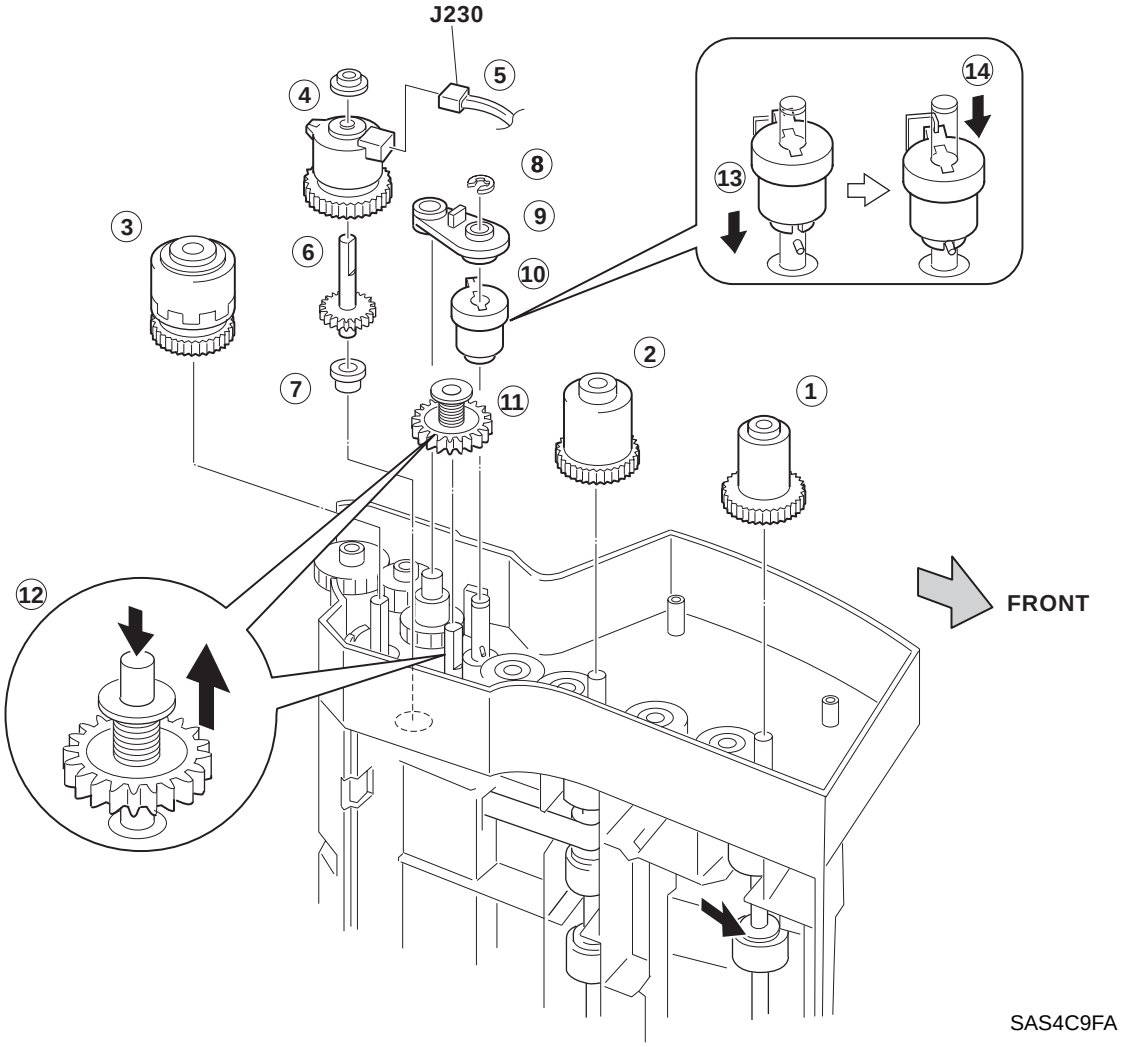
9. Separate the Torque Clutch Assembly Shaft (17T) from the Torque Clutch Assembly (See (6) in Figure 11.3.5.1).
10. Remove the KL Ring (See (8) in Figure 11.3.5.1).
11. Lift off the Retard Link (See (9) in Figure 11.3.5.1).

NOTE: Be careful when replacing the Retard Link, it must be installed with the top side up. Install the Retard Link with the locating tab facing upward.

12. Lift off the Torque Clutch Assembly (See (10) in Figure 11.3.5.1).
13. Lift off the One Way Clutch Assembly (26T) (See (11) in Figure 11.3.5.1) while holding the Retard Roll Assembly Shaft (See (12) in Figure 11.3.5.1)

NOTE: Be careful when reinstalling the One Way Clutch Assembly insure that the gear is oriented on the bottom.

Figure 11.3.5.1 One Way Clutch Assemblies Removal



Replacement

Perform the removal steps in reverse order.

NOTE: Align the lower half of the Torque Clutch Assembly with the pin on the shaft (See (13) in Figure 11.3.5.1).

NOTE: Position the Torque Clutch Assembly Stop to align with the Rotation-Prevention Bracket and slide the upper half onto the lower half (See (14) in Figure 11.3.5.1).

NOTE: If the Envelope Feeder Solenoid Bearing is not installed, the body of the Envelope Feeder Solenoid is visible through the peephole beside the bearing hole in the outside surface of the Side Cover.

NOTE: Verify proper alignment of One Way Clutches to their respective gears (See (1) & (2) in Figure 11.3.5.1).

11.3.6 No Paper Sensor

Removal

1. Remove Bottom Cover (REP 11.3.3).
2. Press the retaining tabs with a screwdriver to detach the No Paper Sensor from the Main Chassis.
3. Disconnect the No Paper Sensor from J231 of the Envelope Harness Assembly.

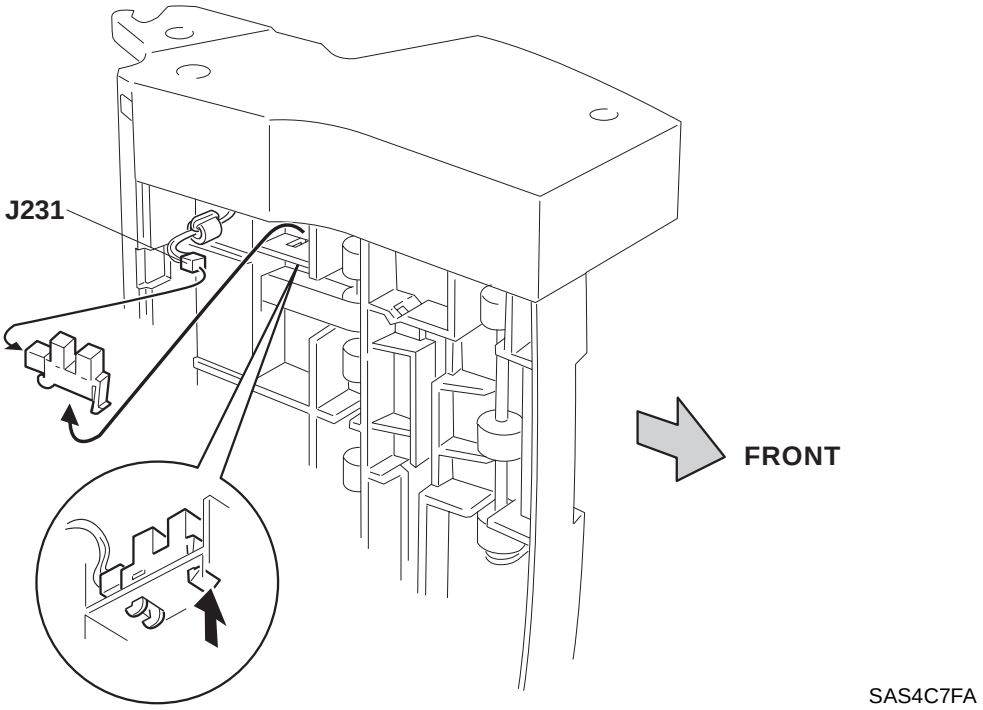


Figure 11.3.6.1 No Paper Sensor Removal

Replacement

Perform the removal steps in reverse order.

11.3.7 Top Cover

Removal

NOTE: Since the gears are greased, take care that the grease does not stick to your hands. If grease sticks to your hands, wipe it off completely with a paper towel to prevent grease contamination of other parts.

1. Remove the Envelope Feeder Solenoid (29T) / Transfer Clutch Assembly (25T) / One Way Clutch Assembly (26T) / Torque Clutch Assembly (*REP 11.3.5*).
2. Remove the Harness Cover (See (1) in Figure 11.3.7.1).
3. Remove the No Paper Sensor. (REP 11.3.6).
4. Slide off the ferrite core on which the wire is wound once from the wire end with J230 (See (2) in Figure 11.3.7.1).
5. Slide off the ferrite core on which the wire is wound once from the wire end with J231 (See (3) in Figure 11.3.7.1).
6. Release the Envelope Harness from the wiring loom (See (4) in Figure 11.3.7.1).
7. Raise the Top Cover and widen the gap (See (5) in Figure 11.3.7.2) between the bottom end (right side) of the Top Cover and the bottom part (right-side part) of the Main Chassis. Push in the three pins of the Top Cover from the holes in the Main Chassis (See (6) in Figure 11.3.7.2), then move the bottom part of the Top Cover away from the surface on which envelopes are stacked (See (8) in Figure 11.3.7.2).
8. Pull down the Top Cover to detach it from the Main Chassis (See (8) in Figure 11.3.7.2).

NOTE: Pull out the Harness carefully from the hole at the gear side of the Main Chassis along with the Top Cover.

Figure 11.3.7.1 Top Cover Removal

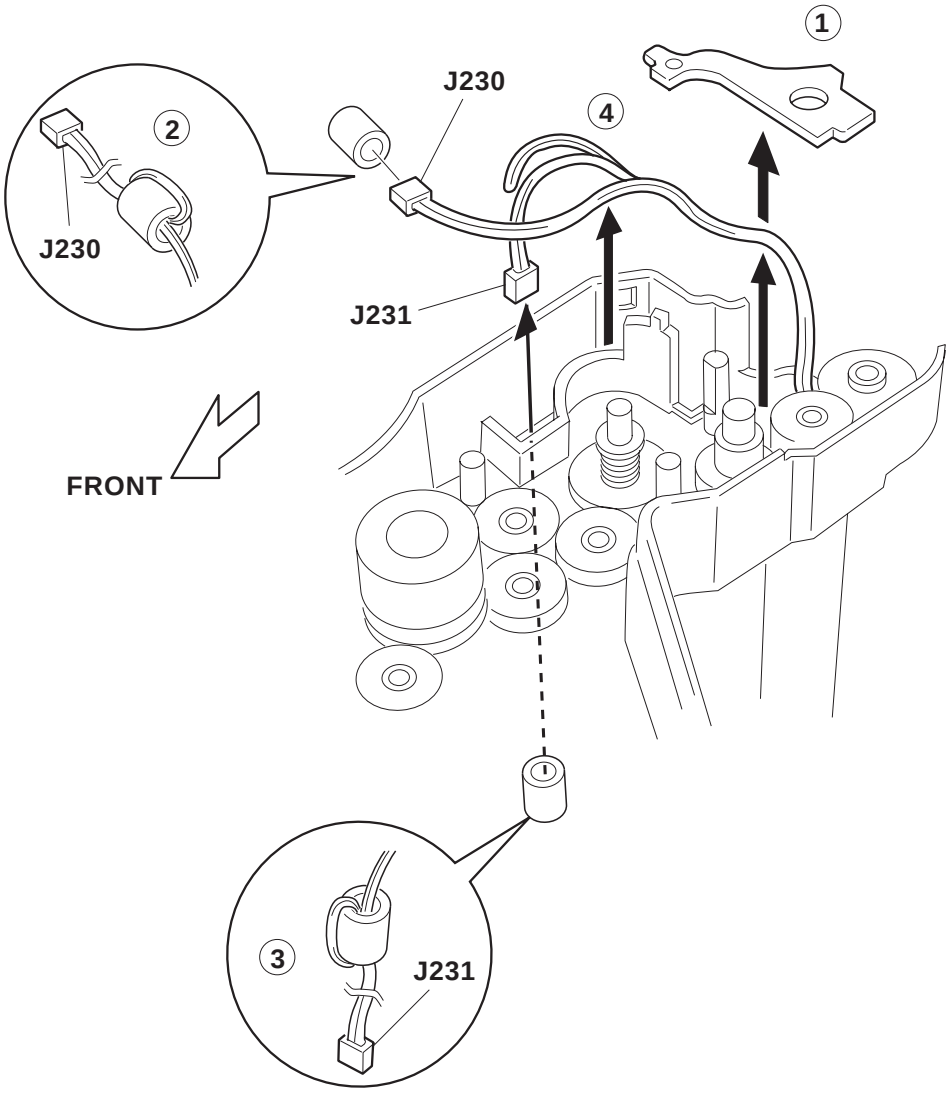
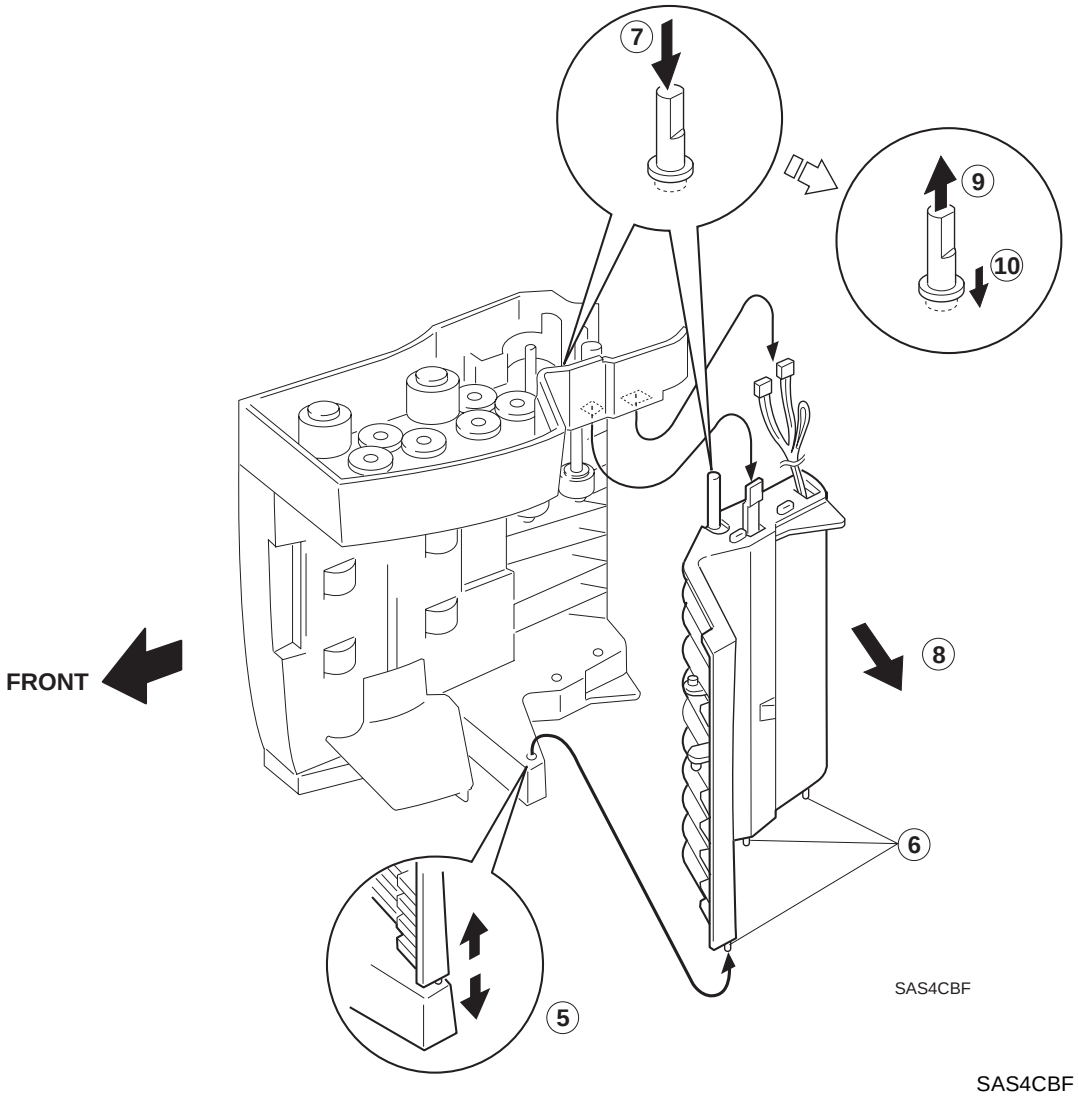


Figure 11.3.7.2 Top Cover Removal



SAS4CBF

Replacement

Perform the removal steps in reverse order.

NOTE: Press the Feeder Bearing onto the Transfer Roll Assembly and into place so that Transfer Roll Assembly is pushed up when the Top Cover is replaced (See (9) & (10) in Figure 11.3.7.2).

NOTE: Verify proper alignment of Feed Belt to the Retard Roll.

11.3.8 Bottom Shaft Assembly/Transfer Roll Assembly

Removal

1. Remove the Top Cover (*REP 11.3.7 Top Cover)*.
2. Raise the lower Feeder Bearing and the Bottom Shaft Assembly together about 4 mm off the Bearing Support of the Main Chassis (See (1) in Figure 11.3.8.1).
3. Remove the Feed Belt from the Bottom Shaft Assembly passing it under the bottom end of the Retard Roll Assembly (See (2) in Figure 11.3.8.1).
4. Move the bottom portion of the Retard Roll Assembly about 3 cm toward you while holding the Roll Assembly in the state of step 2, then remove the whole assembly downward (See (3) in Figure 11.3.8.1).
5. Slide the upper Feeder Bearing from the Bearing Hole in the Main Chassis (See (4) in Figure 11.3.8.1).
6. Raise the Feeder Bearing and the Transfer Roll Assembly together about 4 mm off the Bearing Support of the Main Chassis (See (5) in Figure 11.3.8.1).
7. Move the bottom portion of the Transfer Roll Assembly about 3 cm toward you while holding the Roll Assembly in the state of step 6, then remove the whole assembly downward (See (6) in Figure 11.3.8.1).
8. Slide the upper Feeder Bearing from the Bearing Hole in the Main Chassis (See (7) in Figure 11.3.8.1).

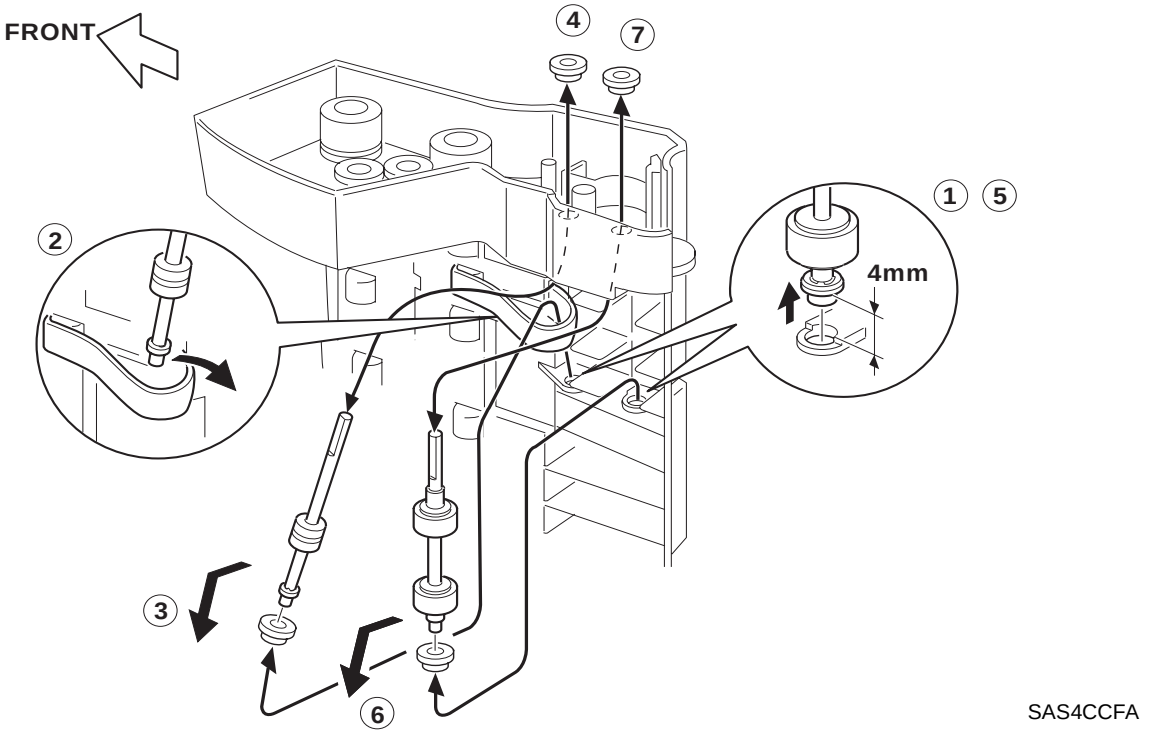


Figure 11.3.8.1 Bottom Shaft Assembly/Transfer Roll Assembly Removal

Replacement

Perform the removal steps in reverse order.

11.3.9 Feed Roll Assembly-1 and -2/Feed Belt

Removal

1. Remove the Bottom Shaft Assembly (REP 11.3.8).

NOTE: The Transfer Roll Assembly does not need to be removed.

2. Raise the lower Feeder Bearing and the Feed Roll Assembly-1 together about 4 mm off the Support Bearing of the Main Chassis (See (2) in Figure 11.3.9.1).
3. Move the bottom portion of the Feed Roll Assembly-1 (shaft & bearing) about 6 cm toward while holding the Roll Assembly toward the drive side and remove the bearing. Then remove the whole assembly downward (See (3) in Figure 11.3.9.1).
4. Slide off the Feed Belt along the slot on the bottom side of the chassis (See (4) & (5) in Figure 11.3.9.2).
5. Remove the upper Feeder Bearing from the Bearing Hole in the Main Chassis (See (6) in Figure 11.3.9.1).
6. Remove the Envelope Pinch Roll and lift out the Feed Belt.
7. Remove the One Way Clutch Assembly (26T) B (REP 11.3.6) (See (7) in Figure 11.3.9.1).
8. Raise the lower Feeder Bearing and the Feed Roll Assembly-2 together about 4 mm off the Support Bearing of the Main Chassis (See (8) in Figure 11.3.9.1).

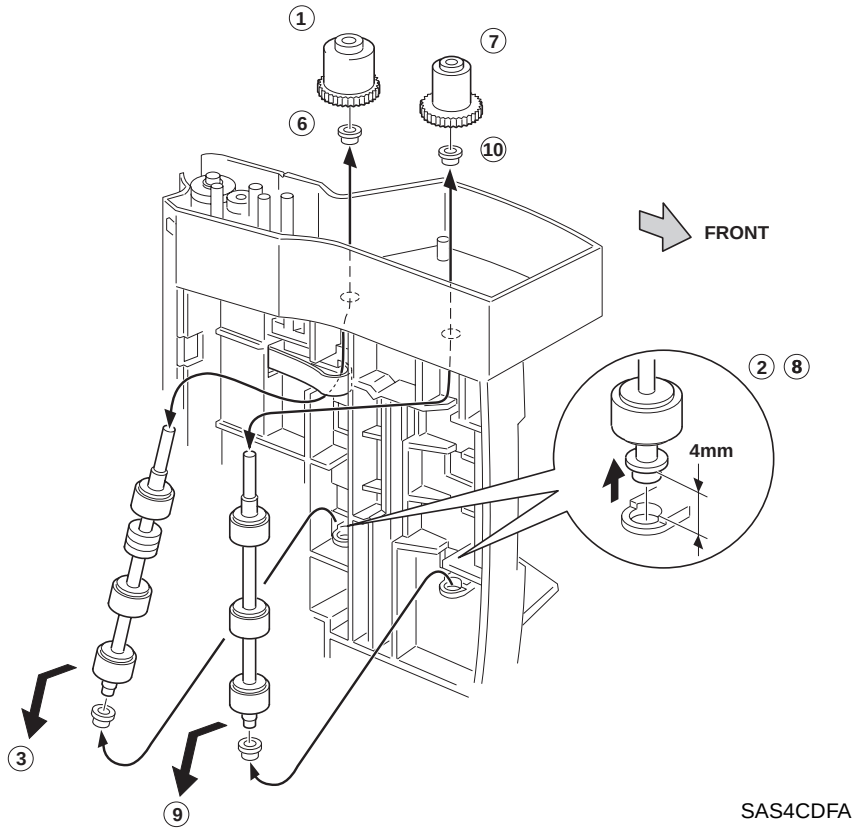


Figure 11.3.9.1 Feed Roll Assembly-1 and -2 Removal

9. Move the bottom portion of the Feed Roll Assembly-2 about 6 cm toward you while holding the Roll Assembly in the state of step 8, then remove the whole assembly downward (See (9) in Figure 11.3.9.1).t out
10. Remove the upper Feeder Bearing from the Bearing Hole in the Main Chassis (See (10) in Figure 11.3.9.1).

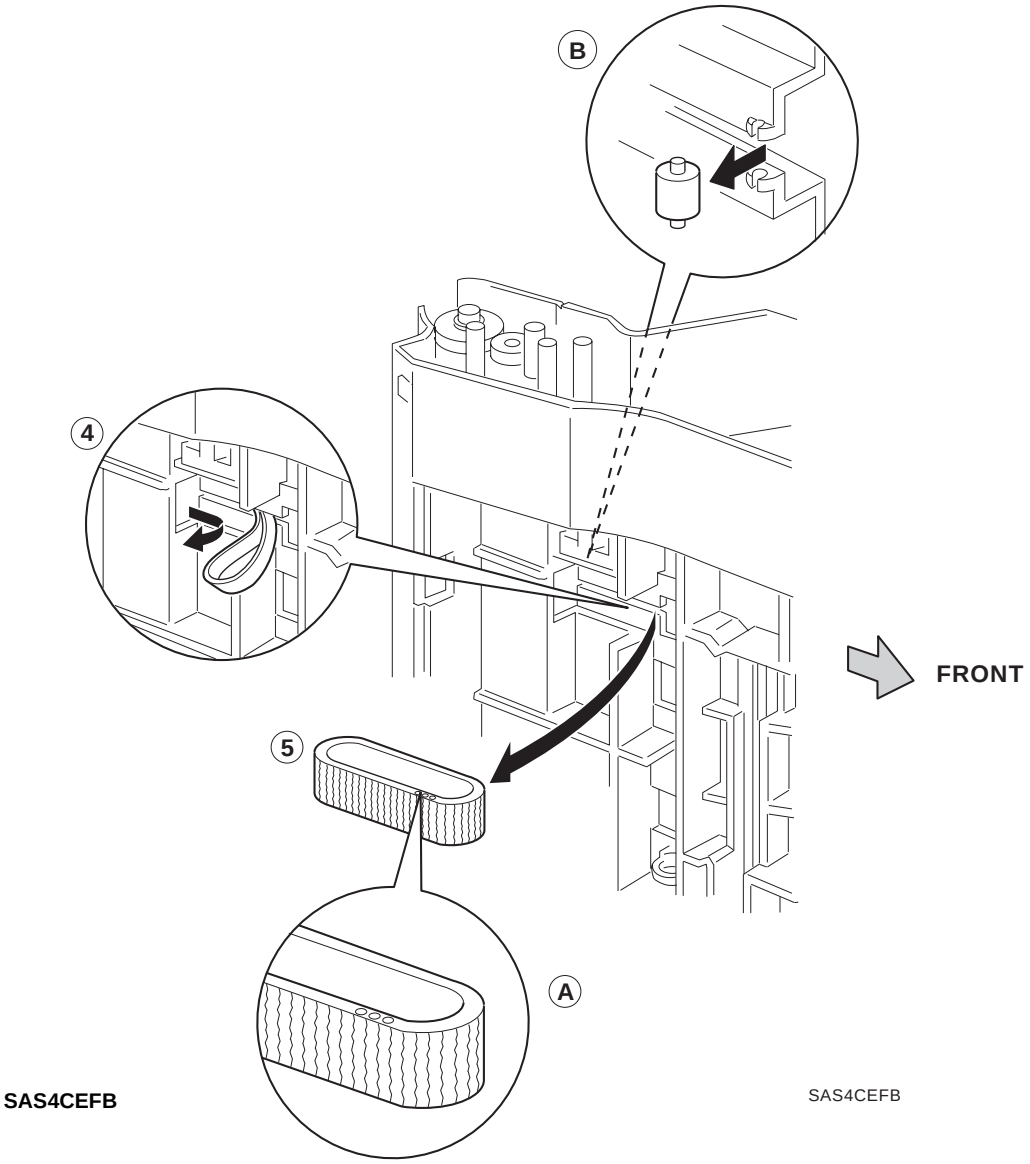


Figure 11.3.9.2 Feed Belt Removal

Replacement

Perform the removal steps in reverse order.

NOTE: Install the Feed Belt with the mark facing up. (A in the Figure 11.3.9.2). If installed with the mark down, misfeeds can occur.
*Also, **Never** install the Feed Belt inside out.*

11.3.10 No Paper Actuator

Removal

1. Remove the Feed Roll Assembly-1 (REP 11.3.9).

NOTE: It is not necessary to remove the Feed Roll Assembly-2. or Feed Belt.

2. Press the No Paper Actuator from the side of the surface on which envelopes are stacked toward the bottom. This will remove the No Paper Actuator from the retaining tabs of the lower Bearing.
3. Slide the No Paper Actuator off the upper bearing hole.

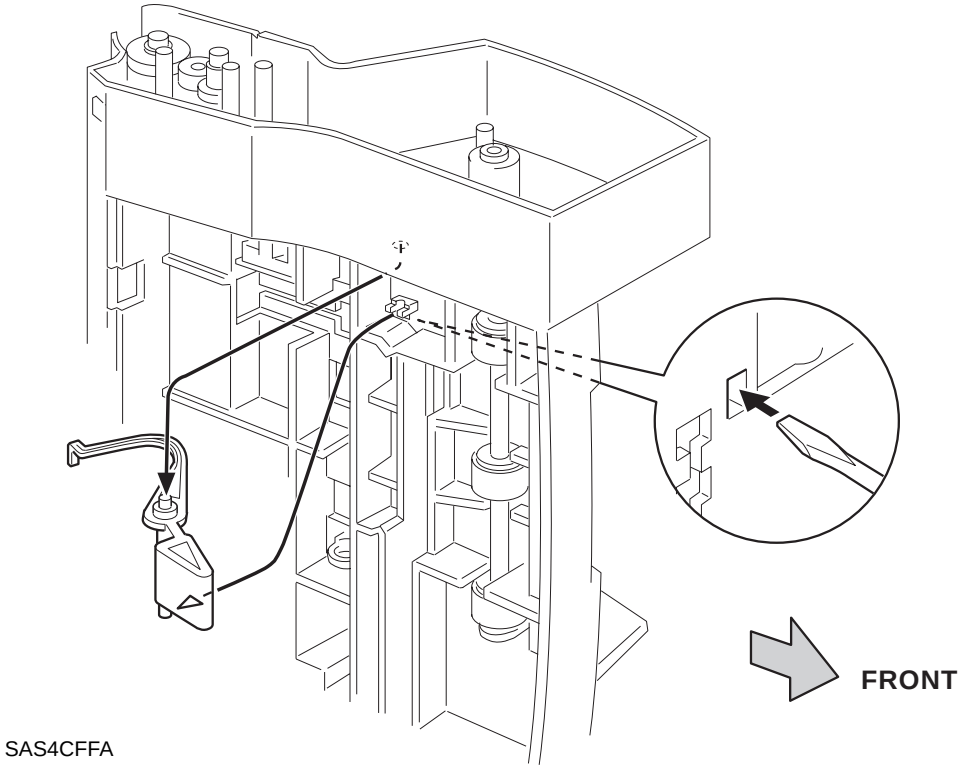


Figure 11.3.10.1 No Paper Actuator Removal

Replacement

Perform the removal steps in reverse order.

11.3.11 Retard Holder/Retard Main Spring/Retard Roll Assembly

Removal

1. Remove the Top Cover (REP 11.3.7).
2. Set the Top Cover upside down.
3. Hold and depress the gear-side portion of the Retard Roll Assembly (See (1) in Figure 11.3.11.1) to allow its opposite portion to disengage from the hooks on the Top Cover (See (2) in Figure 11.3.11.1) while holding the opposite side and raise it about 3 cm, then remove the whole assembly in an angularly upward motion (See (3) in Figure 11.3.11.1).
4. Slide the Feeder Bearings and the Retard Roll Assembly together about 4 mm to the gear side to let the Bearings come off the bearing holes at the Retard Gear Holder side (See (4) in Figure 11.3.11.2) and lift up the Feed Bearings and the Retard Roll Assembly toward the gear side (See (5) in Figure 11.3.11.2) from the Retard Holder (See (6) in Figure 11.3.11.2).
5. Separate the Feeder Bearings from the Transfer Roll Assembly (See (7) in Figure 11.3.11.2).
6. Remove the Retard Main Spring from the Retard Holder (See (8) in Figure 11.3.11.2).

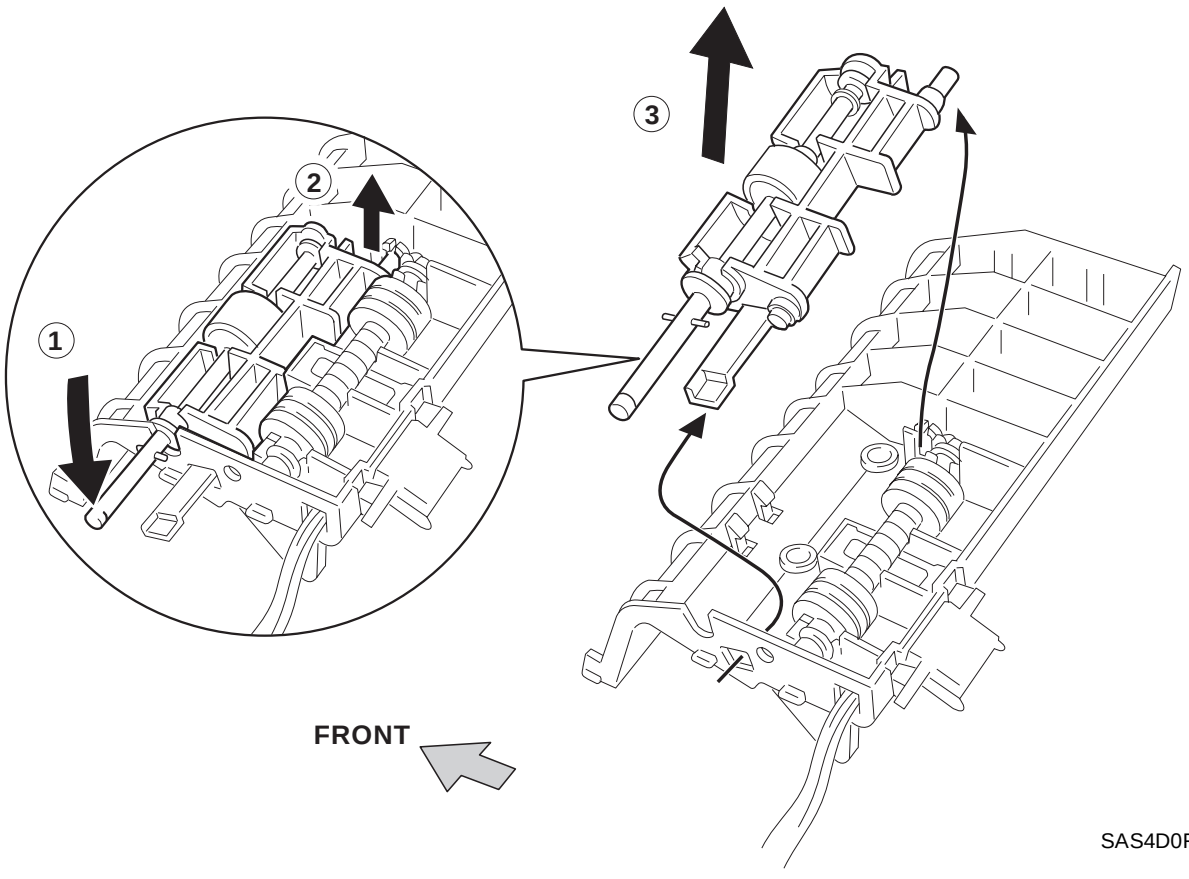


Figure 11.3.11.1 Retard Holder & Retard Roll Assembly Removal

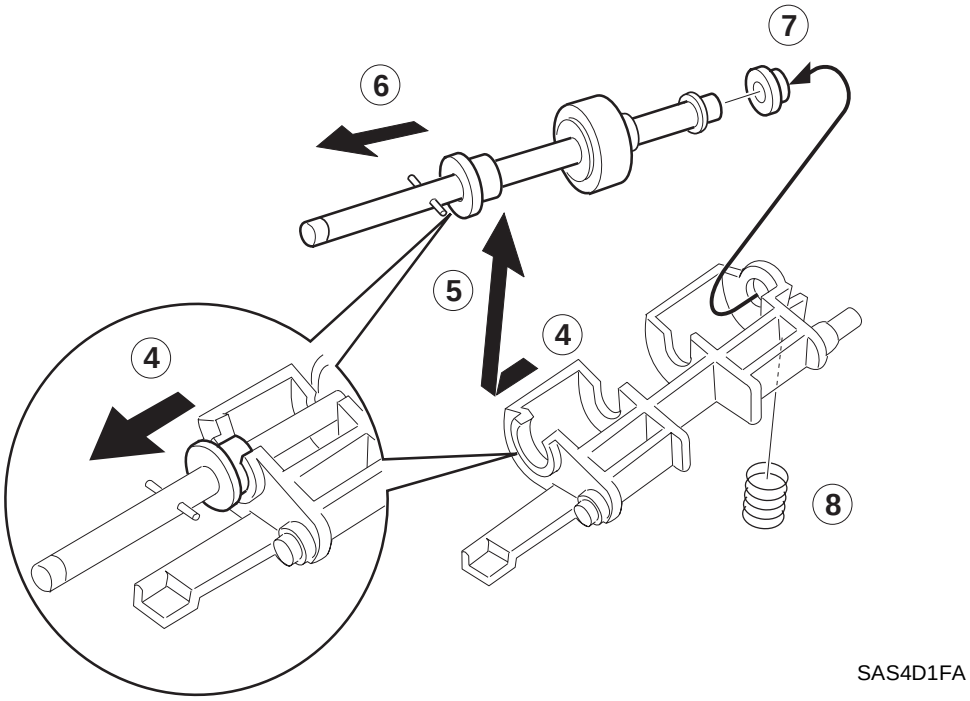


Figure 11.3.11.2 Retard Roll Assembly and Retard Main Spring Removal

Replacement

Perform the removal steps in reverse order.

11.3.12 Pinch Roll/Feed Bearing/Pinch Spring

Removal

1. Remove the Top Cover (REP 11.3.7).
2. Grasp the Pinch Roll and remove it from the Top Cover (See Figure 11.3.12.1).

NOTE: The Feed Bearings come off along with the Pinch Roll.

3. Remove the two Feed Bearings from the Pinch Roll (See Figure 11.3.12.1).
4. Lift off the Spring from the Top Cover (See Figure 11.3.12.1).

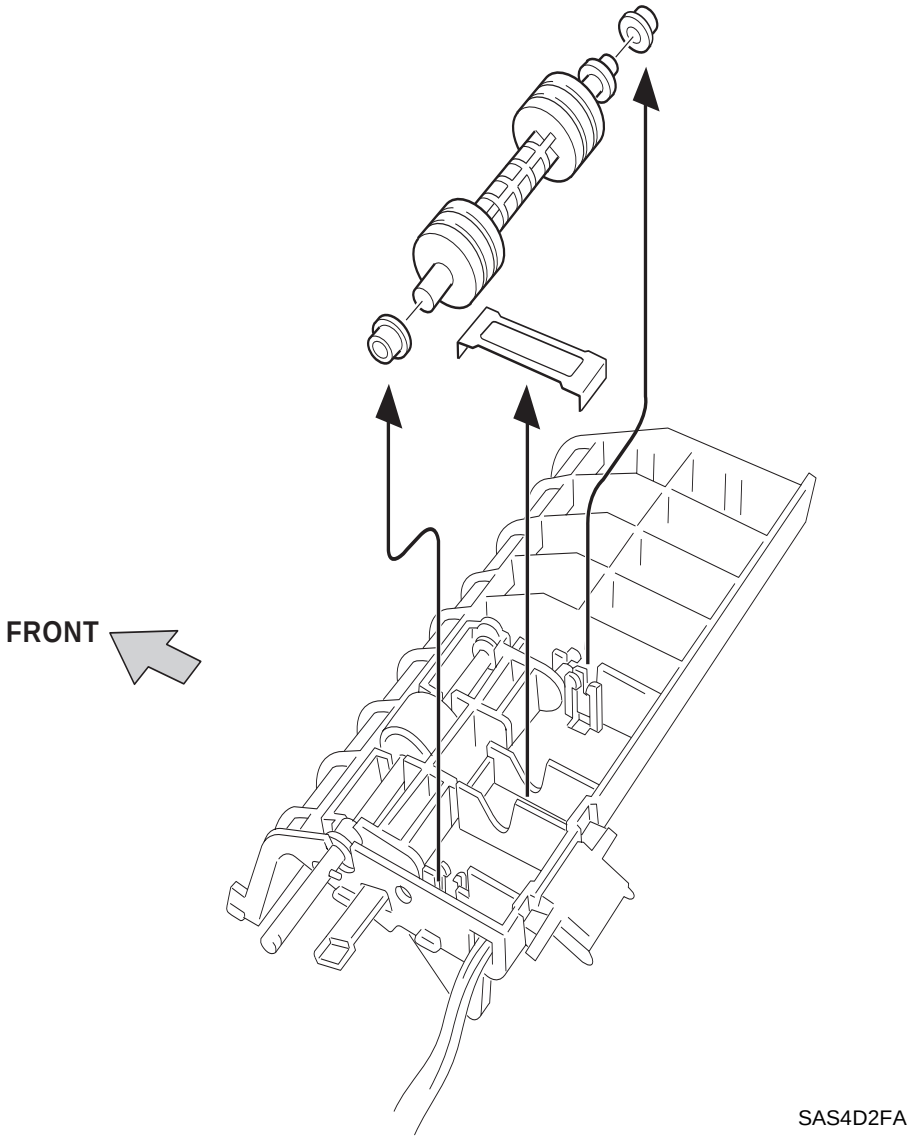


Figure 11.3.12.1 Pinch Roll/Feed Bearing/Pinch Spring Removal

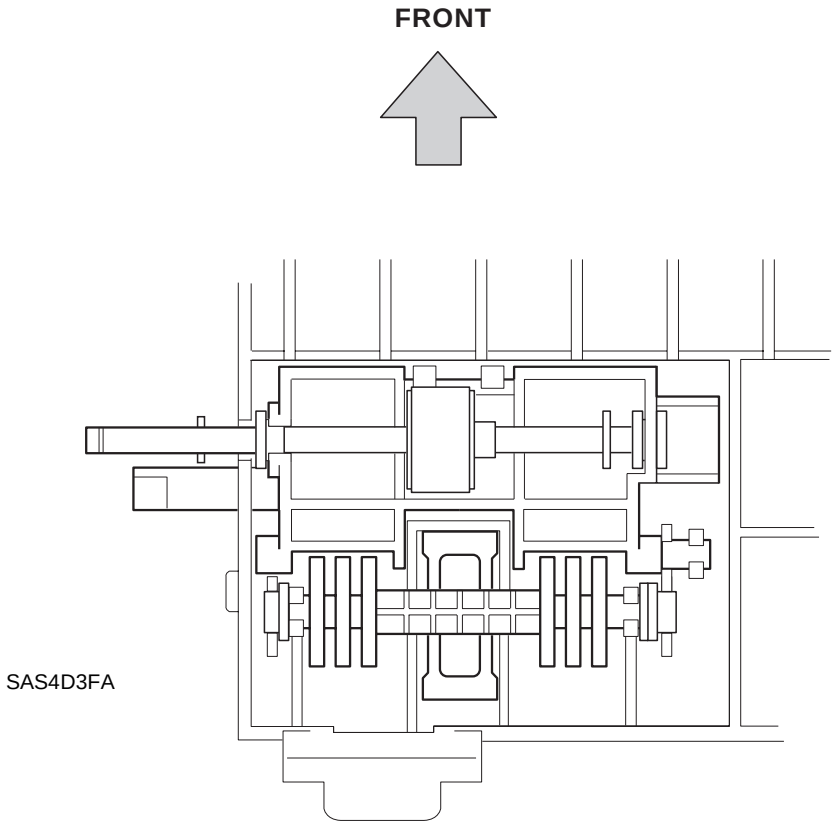


Figure 11.3.12.2 Pinch Roll/Feed Bearing/Pinch Spring Reinstalled

Replacement

Perform the removal steps in reverse order.

NOTE: Use Figure 11.3.12.2 to verify proper reinstallation.

11.3.13 Envelope Harness Assembly

Removal

1. Remove the Top Cover (REP 11.3.7).
2. Orient the Top Cover so that J201 can be easily accessed.
3. Remove the two screws which fasten J201.
4. Pull out the Envelope Harness Assembly through the Top Cover.

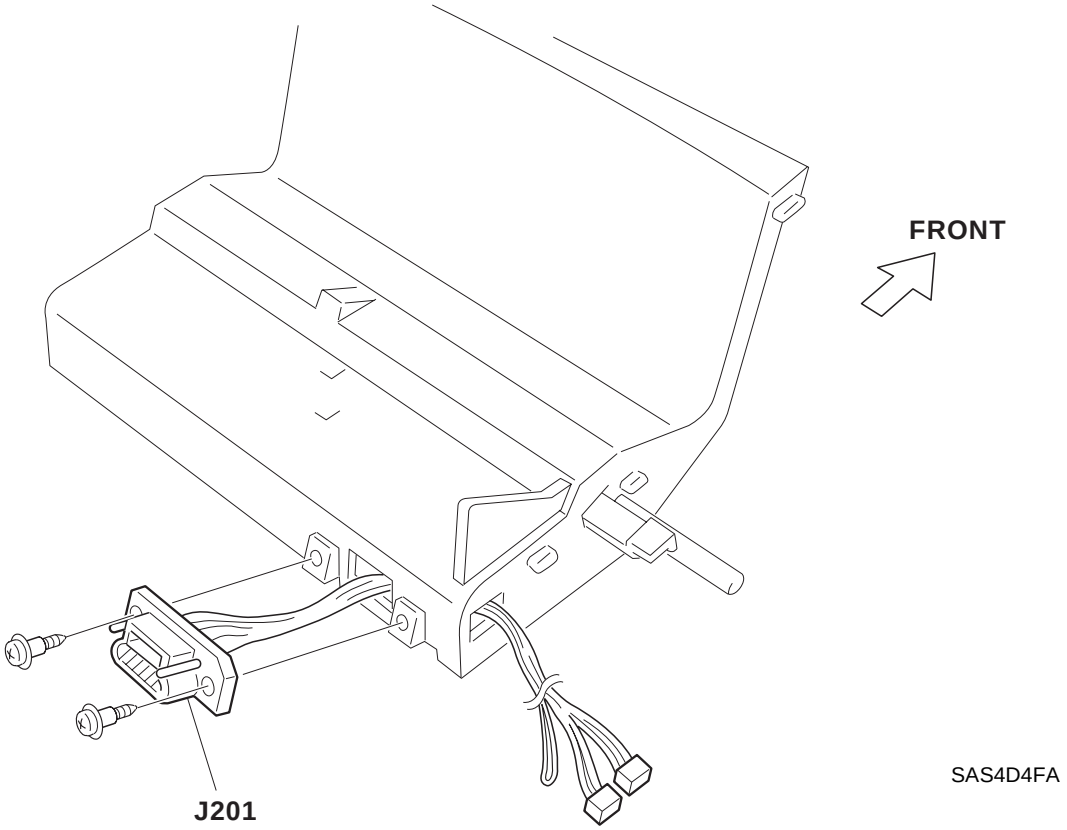


Figure 11.3.13.1 Envelope Harness Assembly Removal

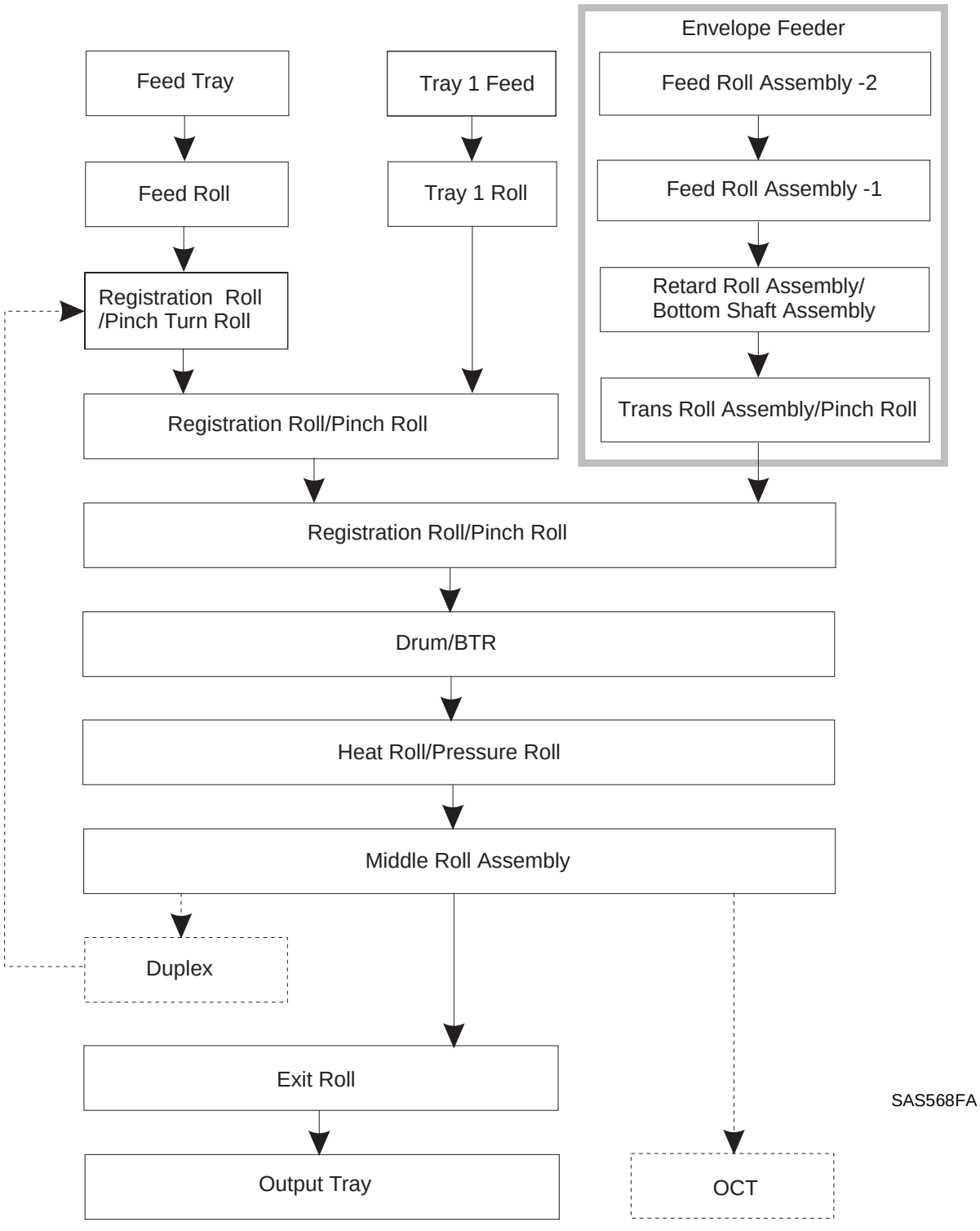
Replacement

Perform the removal steps in reverse order.

11.4 Paper Transport

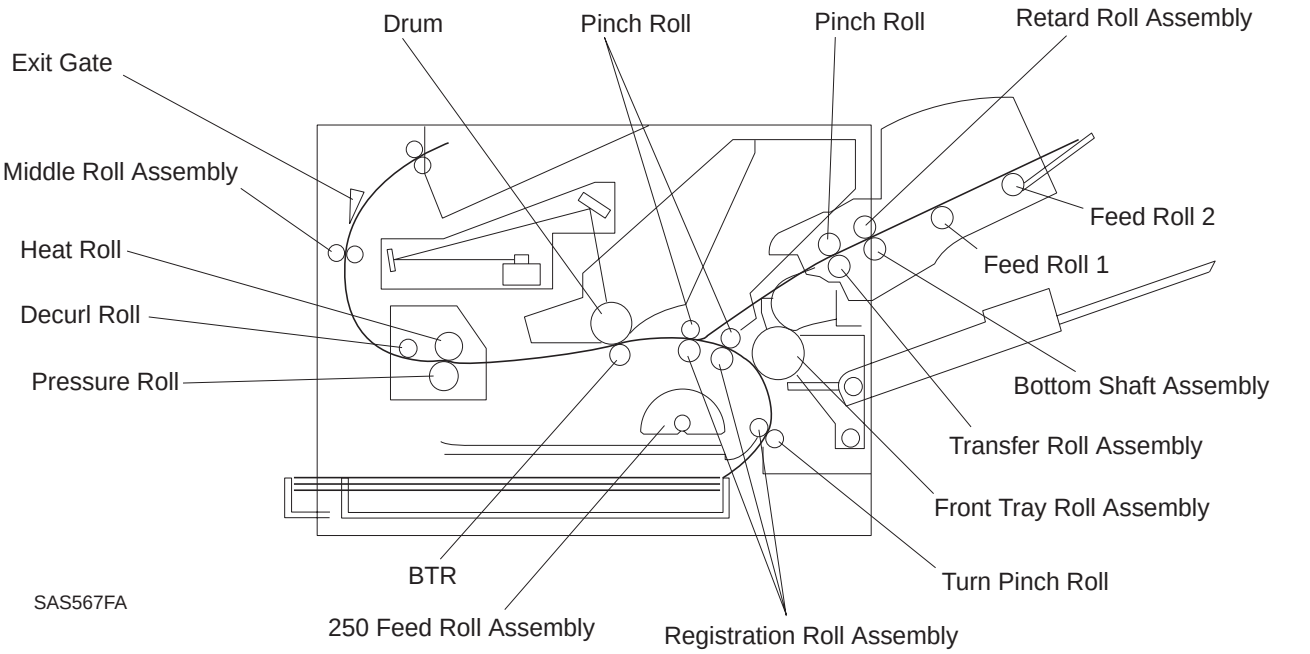
11.4.1 Paper Transport Mechanism

The paper transport mechanism of the printer with the Envelope Feeder installed is shown below along the path of paper travel.



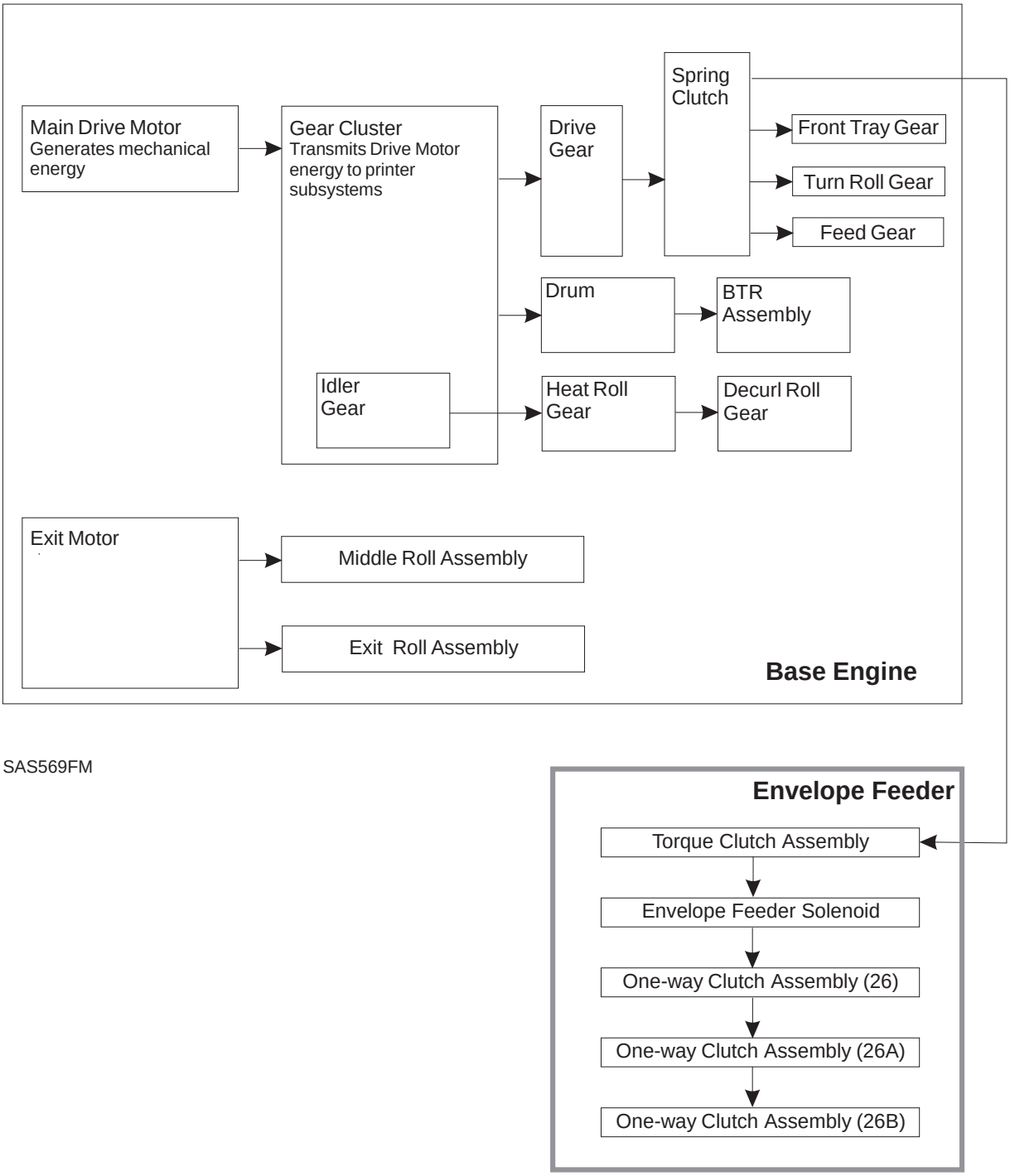
11.4.2 Paper Path

The path of paper travel through the printer with the Envelope Feeder installed is shown in the figure below.



11.5 Drive Power Transportation

The drive power is transmitted to the Envelope Feeder from the Base Engine Drive Assembly by the transmission path as shown below.



11.6 Function of Major Components

The function of the major components constituting the Envelope Feeder is described below with reference to the drawings.

11.6.1 Envelope Feeder

11.6.1.1 Function

- Feed Roll Assembly-1 & Feed Roll Assembly-2:)
  - — Drive envelopes stacked in the Envelope Feeder to the nip of the Retard Roll.
- Retard Roll Assembly & Bottom Shaft Assembly:
  - — Permits only one envelope at a time to be transported to the Transfer Roll.
- Transfer Roll Assembly & Pinch Roll:
  - — Feeds one envelope to the Registration Roll Assembly in the printer at the same drive speed as in the printer.
- One Way Clutch Assembly:
  - — Functions as a protective part that prevents the Registration Clutch Assembly (Spring Clutch) in the P/H Unit of the Printer from breaking if the rotation of the Feed Roll Assembly-1 is prevented during the feeding operation of an envelope.
- One Way Clutch Assembly:
  - — Functions as a protective part that prevents the Registration Clutch Assembly (Spring Clutch) in the P/H Unit of the Printer from breaking when the rotation of the Feed Roll Assembly-2 is prevented during the feeding operation of an envelope. It also prevents a multiple feed of Monarch-size envelopes. Since the value of the torque of the One Way Clutch Assembly (26T)-B is different from that of the One Way Clutch Assembly (26T)-A, these Clutch Assemblies cannot be interchanged
- Envelope Feeder Solenoid:
  - — Receives a Low signal (Signal Name: ENV FEED SOL) from the Print Engine Controller to provide, along with the Mechanical Drive supplied by the printer drives, rotational movement of Feed Roll Assemblies-1 and 2 for 1.7 seconds.
- Transfer Clutch Assembly:
  - — Functions as a protective part that prevents the Registration Clutch Assembly (Spring Clutch) in the P/H Unit of the Printer from breaking when a jam stop occurs with an envelope under the Transfer Clutch Assembly nip.
- Torque Clutch Assembly:
  - — Provides the Retard Torque that permits only one envelope to be sent to the Retard & Transfer roll Assemblies.
- One Way Clutch Assembly:
  - — Allows the Retard Roll Assembly to rotate freely after 1.7 seconds of feeding operation. This clutch drives only the Retard Roll Assembly and does not drive the gears following it while the trail end portion of the envelope being transferred is under the Retard Roll Assembly.

11.6.2 Envelope Feeder Major Components

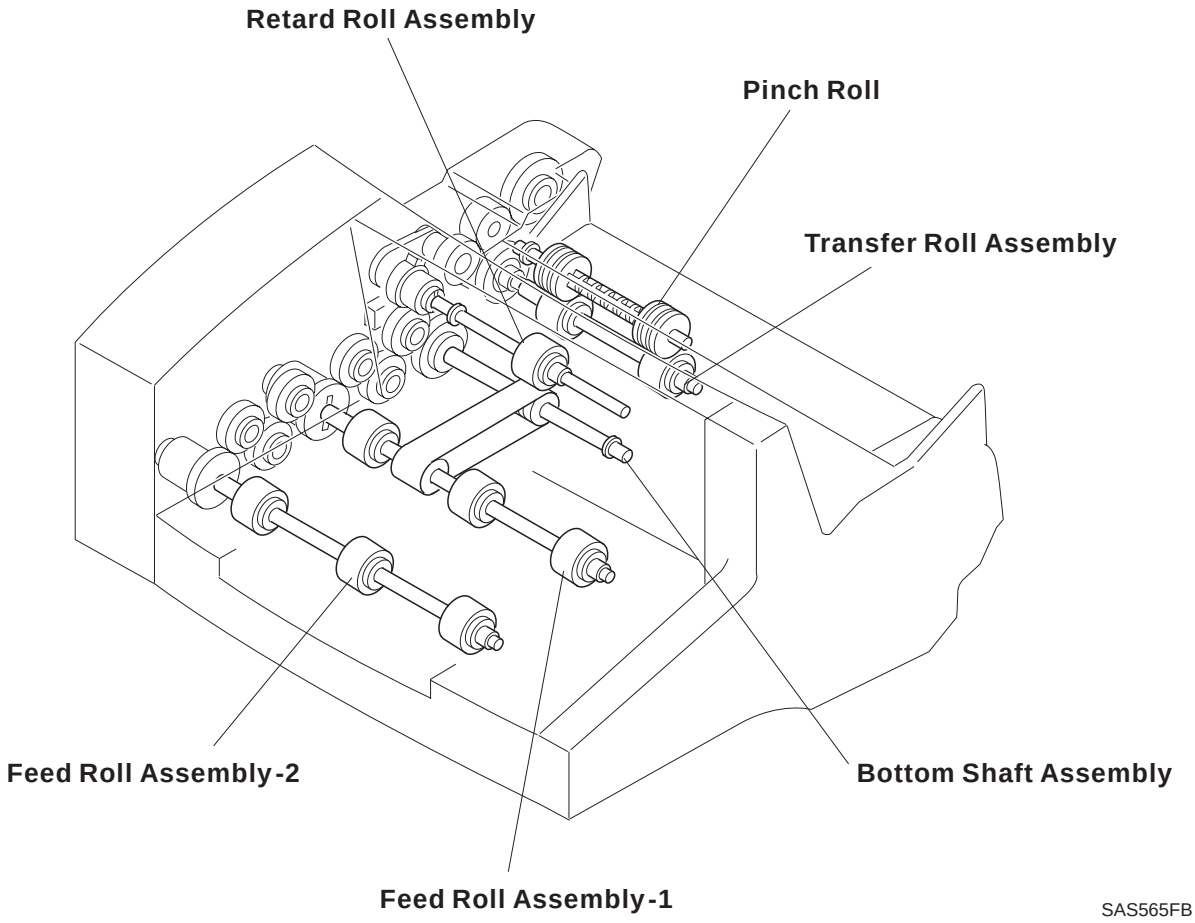


Figure 11.6.2a Major Components of the Envelope Feeder

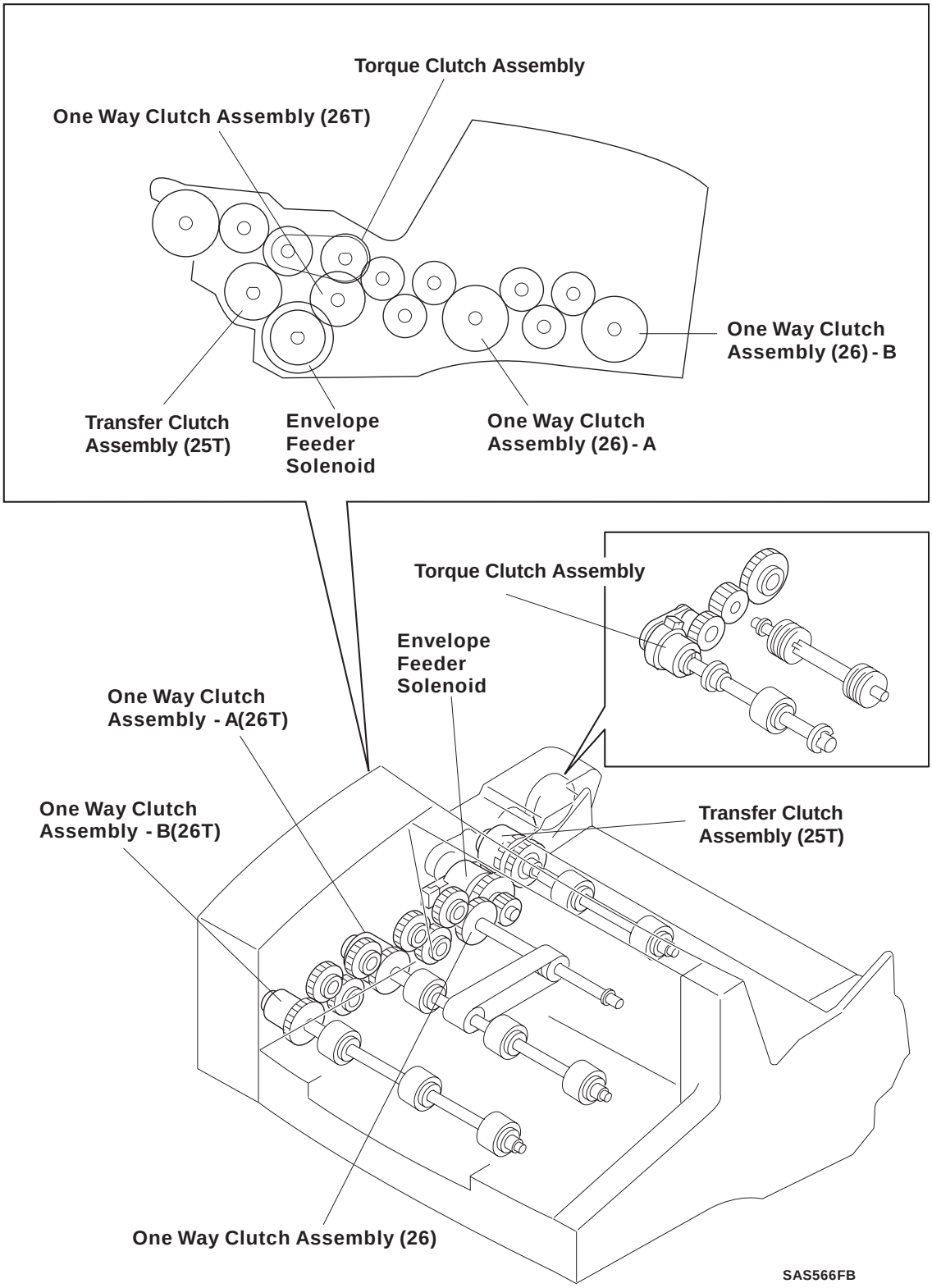


Figure 11.6.2b Major Components of the Envelope Feeder

11.6.3 Envelope Feeder Control

11.6.3.1 Paper Transportation Control (Paper Jam Detection)

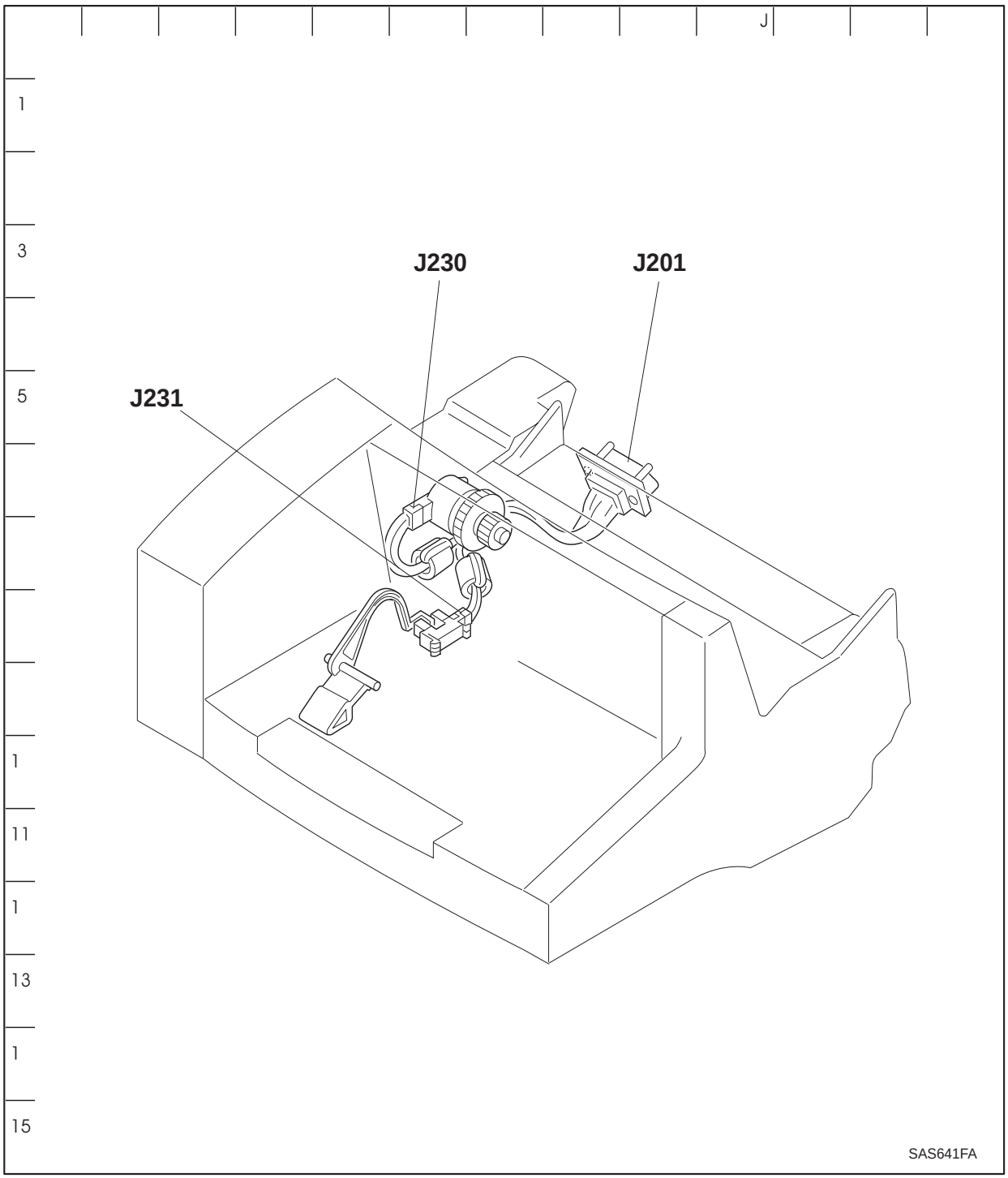
(1) E2 Specified Time
Regarding the E2 Specified Time when sheets of paper are fed from the Envelope Feeder, refer to the Section 6 “Paper Transport Control (Paper Jam Detection)” in this N17 Service Manual.

11.6.3.2 No Paper Detection

Print Engine Controller checks the high/low level of the No Paper signal at a 10msec interval so that a No Paper condition may be detected. When the No Paper signal is received three times, the Print Engine Controller assumes that the Envelope Feeder is out of envelopes, and changes the corresponding status bit to a high level.

11.7 Wiring Diagrams

11.7.1 Connector Locator



11.7.2 P/J Table

PJ	Coor-dinate	Mounting		Harness		Description
		Mounted on (*)	PL	Name (*)	PL	
201	H6	Top Cover	20-29	Envelope Harness Assembly	20-30	Connects the Envelope Feeder and LVPS of the Base Engine.
230	E6	Main Chassis	20-21	Envelope Harness Assembly	20-30	Connects the Envelope Feeder Solenoid and LVPS of the Base Engine.
231	E8	Main Chassis	20-21	Envelope Harness Assembly	20-30	Connects the No Paper Sensor and LVPS of the Base Engine.

* PL indicates the Parts List and item number corresponding to the parts listed.

11.8 Envelope Feeder RAPS

11.8.1 Env. Feeder Fail Message (E8)

1 Verify the Envelope Feeder is properly connected to the Base Printer at P/J201. The Feeder is properly installed.

Y: Go to step 2.

N: Reinstall and verify proper operation.

2 With the printer powered on and the Envelope Feeder connected, verify the voltage between P/J201 Pins 6 and 7 is less than 1.0 VDC. The voltage is less than 1.0 VDC.

Y: Go to step 3.

N: Replace the Envelope Harness Assembly.

3 Verify the voltage between P/J16-1 and P/J16-2 is less than 1.0 VDC. The voltage is less than 1.0 VDC.

Y: Go to step 4.

N: Replace the Front Envelope Harness Assembly.

4 Verify the voltage between P/J13-9 and P/J25-5 is less than 1.0 VDC. The voltage is less than 1.0 VDC.

Y: Replace the Print Engine Controller.

N: Replace the LVPS.

11.8.2 Env. Feeder Empty Message (C5)

1 Verify the No Paper Actuator moves freely. The Actuator moves freely.

Y: Go to step 2.

N: Replace the No Paper Actuator.

2 Enter Diagnostic Mode 1 - Sensor Input Test, and verify the operation of the No Paper Sensor. The No Paper Sensor operates properly.

Y: Replace the Print Engine Controller.

N: Go to step 3.

3 Remove Envelope Feeder and verify continuity of the Envelope Feeder Harness. The continuity of the Harness is good.

Y: Go to step 4.

N: Replace Envelope Harness Assembly.

4 Enter the Diagnostic Mode 1, Input Sensor Test, and momentarily ground P201-4 (Bottom Portion of Connector, Center Pin) twice. The UI indicates sensor actuation.

Y: Replace the Low Paper Sensor.

N: Troubleshoot the electrical wiring from the Print Engine Controller (P/J13) to P201 using Wiring Data in Section 6.2.3 (LVPS to ENVELOPE FEEDER UNIT). Repair or replace faulty component(s).

11.8.3 EnvelFeeder Jam/Remove All Envel alternating with Remove EnvFeeder/Open Front Cover and Remove Jam Envel Message (E2)

Initial Actions

- Verify envelopes are correct size (type) for Envelope Feeder (See table 11.1.5).
- Verify the Envelope Feeder is properly installed in printer.
- Inspect Envelope Feeder for foreign material in feed path.

Procedures

1 Remove Envelope Feeder from Printer. Print a Configuration Sheet from the MBF Tray.The UI displays the message “Front Tray Jam/Remove Jam Sheet”.

Y: Go to RAP 7.3.9.

N: Go to step 2.

2 Visually inspect the Envelope Feeder’s Feed Roll Assemblies, Transfer Roll Assemblies, and Feed Belt for damage or wear. Damage and/or wear is found.

Y: Replace faulty component(s).

N: Go to step 3.

3 Reinstall the Envelope Feeder. Enter Diagnostic Mode 2 and generate a Test Pattern from the Envelope Feeder. The Envelope Feeder Feed Roll Assemblies 1 & 2 rotate.

Y: Go to step 4.

N: Go to step 7.

4 The Test Pattern produced in step 3 misfeeds before it reaches the Pinch Roll.

Y: Clean/replace Feed Roll Assemblies 1 & 2, the Feed Belt, and the Retard Roll Assembly.

N: Go to step 5.

5 The Pinch Roll and Transfer Roll Assemblies Rotate when the envelope is fed into the Pinch Roll nip.

Y: Go to step 6.

N: Remove Envelope Feeder and inspect the operation of the Transfer Clutch Assembly, Transfer Roll Assembly, the Pinch Roll Assembly and associated driver gears.

6 The Pinch Roll & Transfer Roll Assemblies fed the Test Pattern, produced in step 3, into the nip of the Registration Roll in the Printer.

Y: Go to RAP 7.3.9 and troubleshoot E2 Printer Jam.

N: Remove Envelope Feeder and inspect the Pinch Roll, Transfer Roll, and associated Drive Gears.

7 Execute Diagnostic Mode 1, Confirm Envelope Solenoid Operation. The Envelope Feeder Solenoid energizes and de-energizes.

Y: Remove the Envelope Feeder and Side Cover (REP 11.3.4). Visually inspect the gears and one way clutches for proper operation. Replace any faulty/damaged component.

N: Go to step 8.

8 Remove Envelope Feeder from the N17 printer. Execute Diagnostic Mode 1, Confirm Envelope Solenoid Operation, and measure the voltage across P201-1 & P201-2 (Bottom Portion of Connector, Right Two Pins). The voltage should go from 0VDC in idle state to 24VDC when test is executed. The voltage changes from 0VDC to 24VDC when executing.

Y: Go to step 9.

N: Troubleshoot the electrical wiring from the Print Engine Controller (P/J13) to P201 using Wiring Data in Section 6.2.3 (4. LVPS to ENVELOPE FEEDER UNIT). Repair or replace faulty component(s).

9 Verify the continuity of the Envelope Feeder Harness. The continuity of the Harness is good.

Y: Replace the Envelope Feeder Solenoid.

N: Replace the Envelope Harness Assembly.

11.9 Installation and Removal

For the installation and removal of the Envelope Feeder, see the N17 User Guide.

UPDATING STATUS

DATE	UPDATED PAGES	PAGES	CODE
9/1999	1st EDITION	517	687200Q-00

DP N17
WITH OPTION

SPARE PARTS CATALOGUE
(FROM SERVICE MANUAL)

PARTS LIST

DP N17

PL 1 COVERS 1 ..... Page 3-4
PL 2 COVERS 2 ..... " 3-6
PL 3 PAPER TRAY ..... " 3-8
PL 4 PAPER TRANSPORTATION 1 ..... " 3-10
PL 5 PAPER TRANSPORTATION 2 ..... " 3-12
PL 6 PAPER TRANSPORTATION 3 ..... " 3-14
PL 7 FUSING ..... " 3-16
PL 8 PAPER EXIT ..... " 3-18
PL 9 DRIVE AND XEROGRAPHIC MODULE ..... " 3-20
PL 10 ELECTRICAL MODULE 1 (WITH TOP COVER) ..... " 3-22
PL 11 ELECTRICAL MODULE 1 (WITH CHASSIS) ..... " 3-24
PL 12 SYSTEM CONTROLLER ..... " 3-26

500 SHET PAPER FEEDER AND TRAY

PL 13 500 SHEET PAPER FEEDER AND TRAY ..... " 8-8

OFFSET CATCH TRAY

PL 14 OCT (OFFSET CATCH TRAY) ..... " 9-4
PL 15 OCT (OFFSET CATCH TRAY) ..... " 9-6

DUPLEX MODULE

PL 16 DUPLEX MODULE ..... " 10-6

ENVELOPE FEEDER

PL 20 ENVELOPE FEEDER ..... " 11-6

GENERAL CODES INDEX ..... " A-1

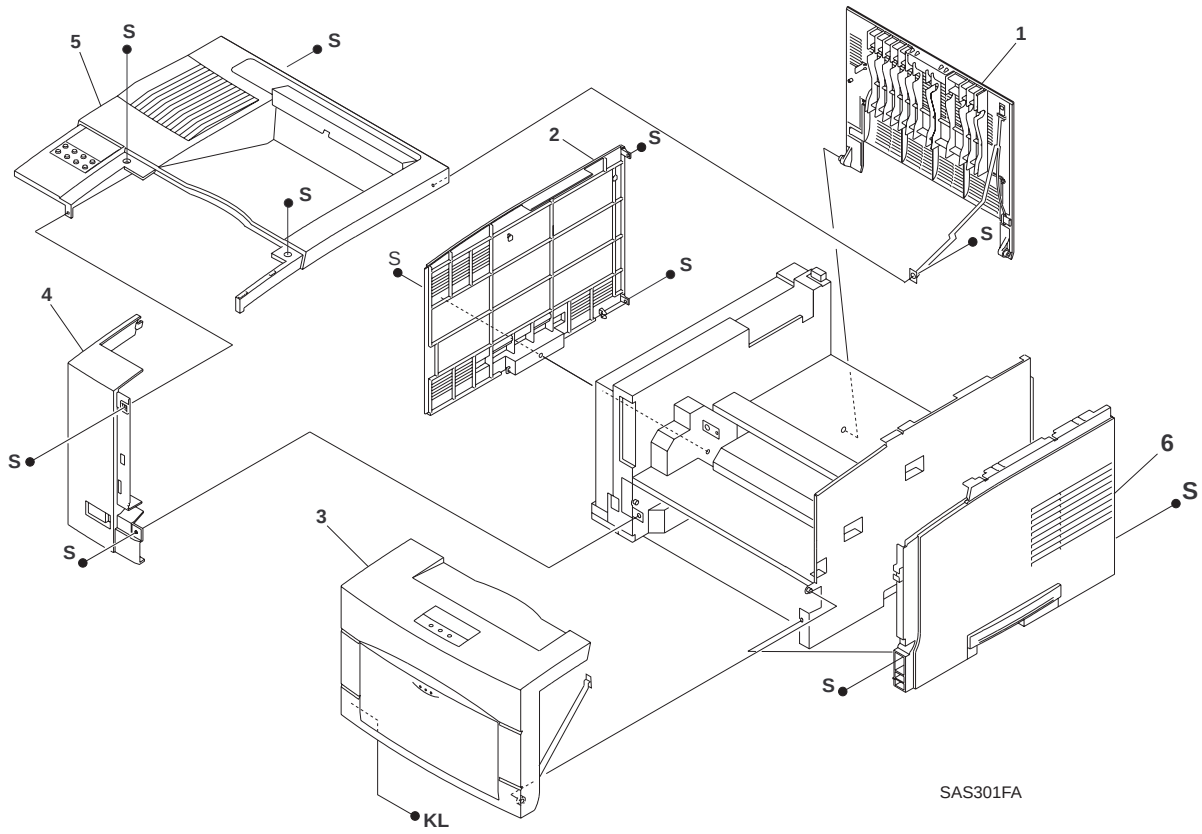
About the Parts List

This section identifies all part numbers and the corresponding location of all spared subsystem components.

Using the Parts List:

1. Each item number in the part number listing corresponds to an item number in the related illustration. Also, the parts in a given subsystem of the machine will be located in the same illustration or in a series of associated illustrations.
2. The letters “C,” “E,” “KL,” and “S” in each illustration stand for a C-ring, an E-ring, a KL clip, and a screw, respectively.
3. The diamond symbol in each illustration indicates an assembly with one or more components.
4. The notation “with X-Y” following an item name indicates an assembly is made up of components X through Y. For example, “1... (with items 2-4)” means item 1 consists of the items 2, 3, and 4 within the same page.

PL 1 Covers I

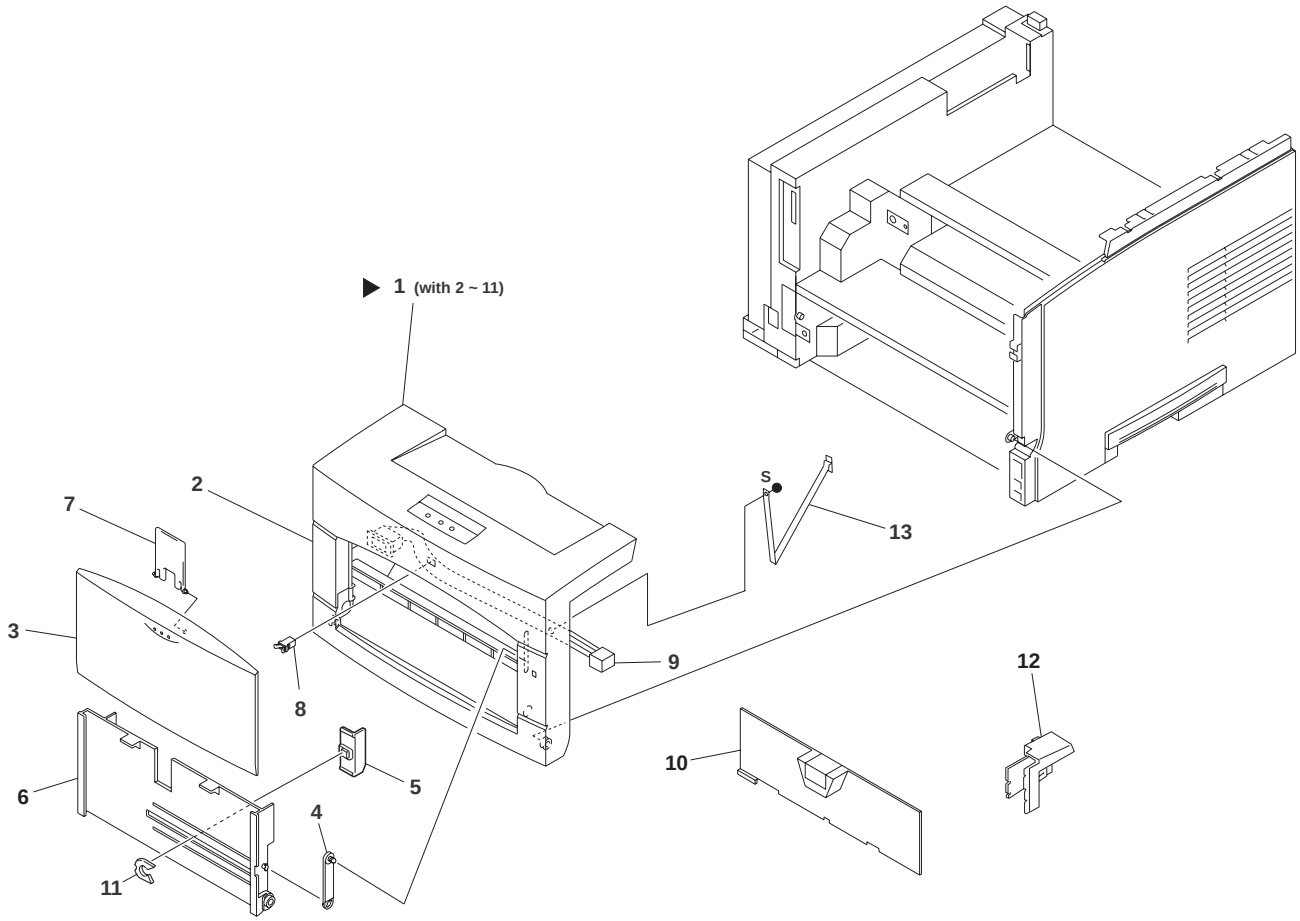


PL 1 Covers I

Item	Part	Description
1.	576491 Q	Rear Cover
2.	576492 R	System Controller Cover
3.	128905W	Front Cover Assembly (exploded on PL 2)
4.	417194 F	Left Front Cover
5.	576495 L	Top Cover
6.	576496 M	Right Cover

(*) Not available

PL2 Covers II



SAS302FE

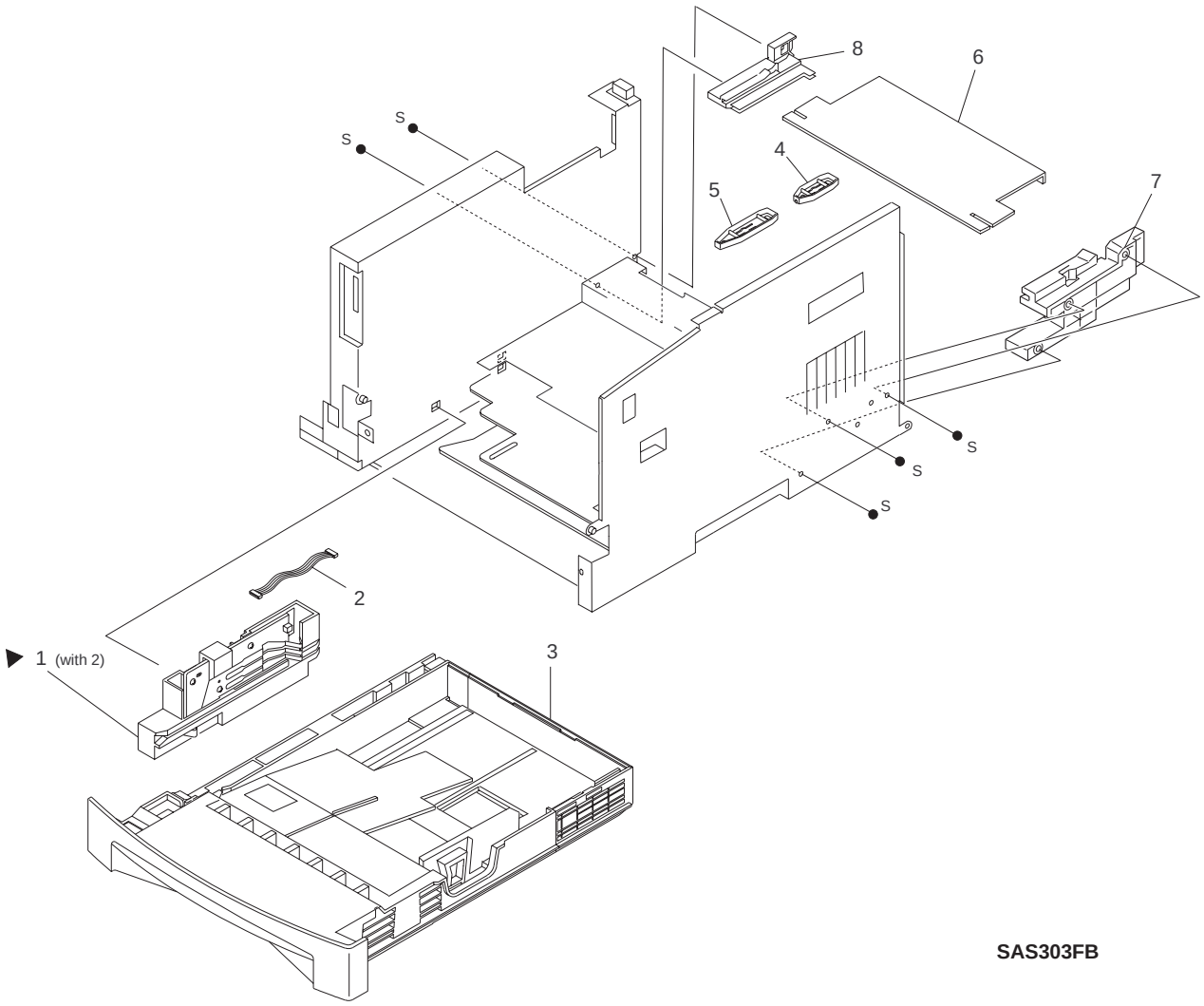
PL 2 Covers II

Item	Part	Description
1.	(*)	Front Cover Assembly (with items 2-11)(See *NOTE*)
2.	(*)	Front Cover
3.	(*)	Tray Cover
4.	(*)	Tray Stopper
5.	(*)	Holder Guide
6.	(*)	Main Tray
7.	(*)	Tray Extender
8.	576498 X	Catch Holder
9.	(*)	Envelope Front Harness (See *NOTE*)
10.	(*)	Inner Cover
11.	(*)	E Ring
12.	(*)	Harness Cover
13.	(*)	Cover Stopper

(*) Not available

NOTE: This harness and six screws located on the Front Cover Assembly are not detachable.

PL 3 Paper Tray



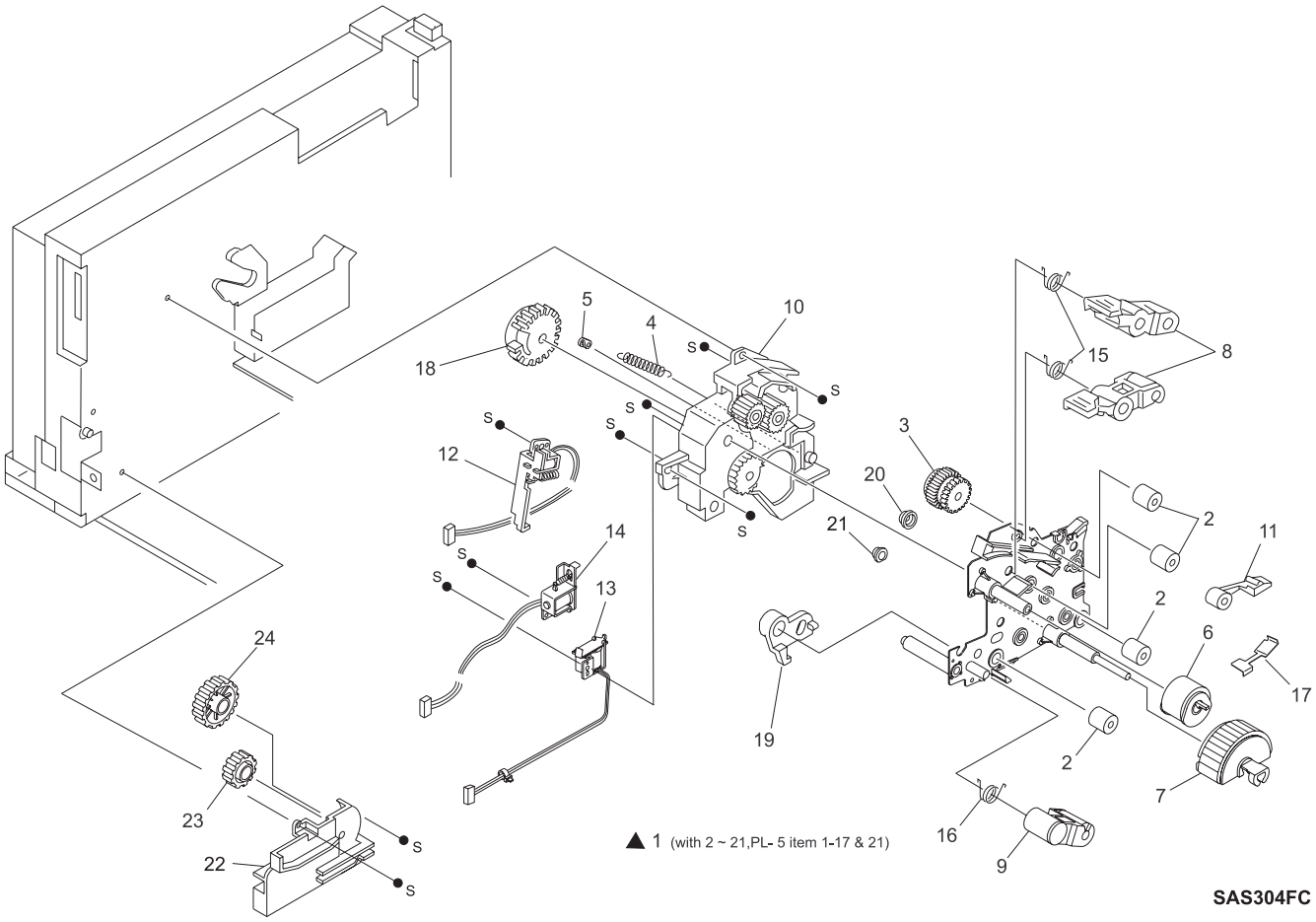
SAS303FB

PL 3 Paper Tray

Item	Part	Description
1.	576499 Y	Paper Size Sensor Assembly (with item 2)
2.	(*)	Paper Size Harness
3.	576500 D	250-Sheet Tray
4.	(*)	Front Tray Rail
5.	(*)	Rear Tray Rail
6.	576501 S	Tray Cover
7.	(*)	Right Rail Guide
8.	(*)	Left Rail Guide

(*) Not available

PL 4 Paper Transportation I

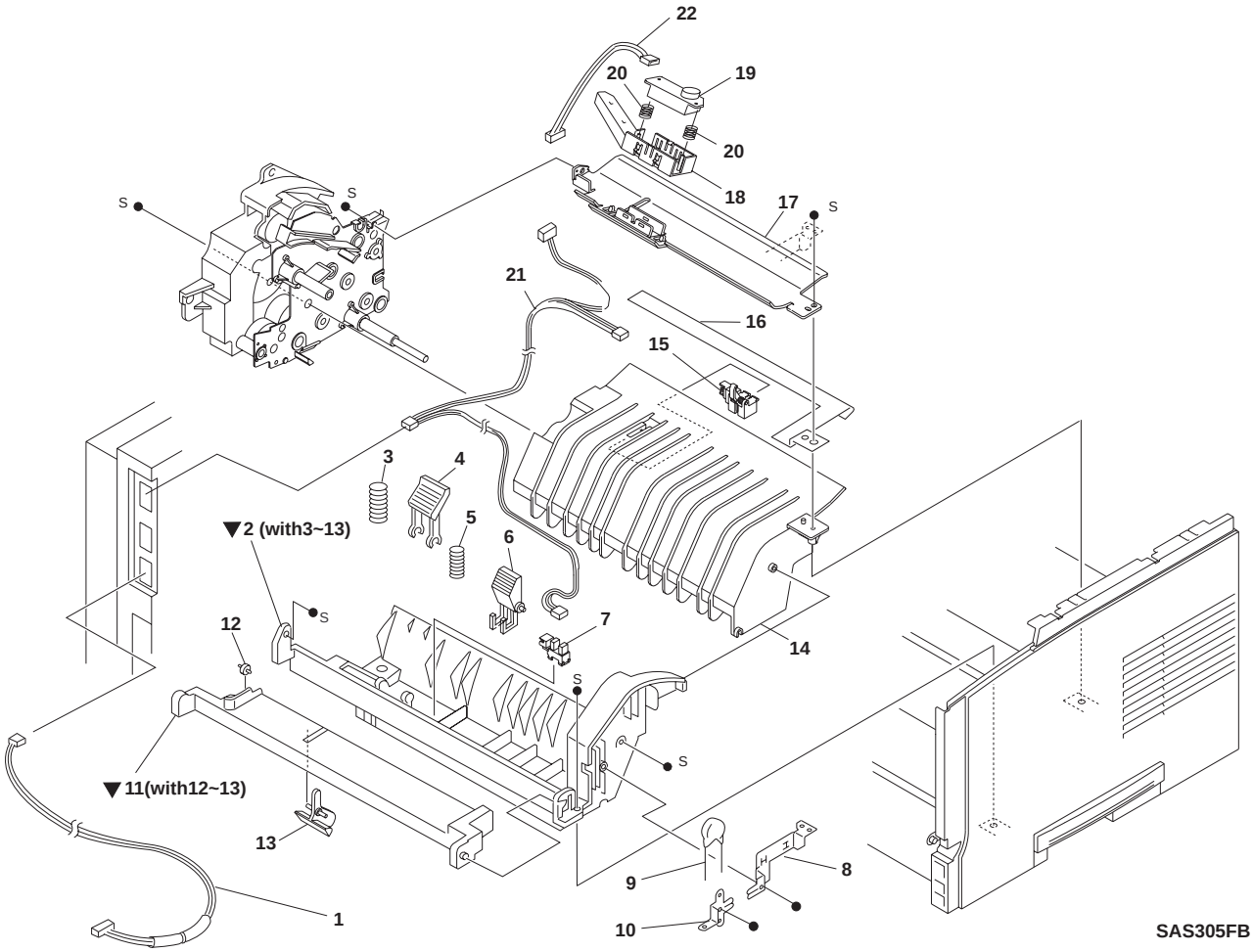


PL 4 Paper Transportation I

Item	Part	Description
1.	576502 T	Paper Handler Unit Assembly (with items 2-21 and PL 5 items 1-17 & 21)
2.	576503 U	Registration Roll
3.	576504 V	Registration (Spring) Clutch
4.	(*)	Lever Spring
5.	(*)	Lever
6.	576505 W	Front Tray (MBF) Roll
7.	576506 X	250-Sheet Feed Roll
8.	576507 Y	Pinch Roll
9.	576508 H	Turn Pinch Roll
10.	(*)	Supporter
11.	576509 A	Duplex Pinch Roll
12.	576510 W	Registration Solenoid
13.	576511 K	Tray 1 Solenoid
14.	576512 L	Front Tray (MBF) Solenoid
15.	(*)	Pinch Roll Spring
16.	(*)	Turn Roll Spring
17.	(*)	Duplex Pinch Spring
18.	(*)	Front Tray (MBF) Gear
19.	(*)	Release Link
20.	(*)	Registration Bushing
21.	(*)	Pinch Registration Bushing
22.	576513 M	Lower Support
23.	576514 N	Gear (23T)
24.	576515 P	Gear (42T)
25.	(*)	Turn Roll

(*) Not available

PL 5 Paper Transportation II

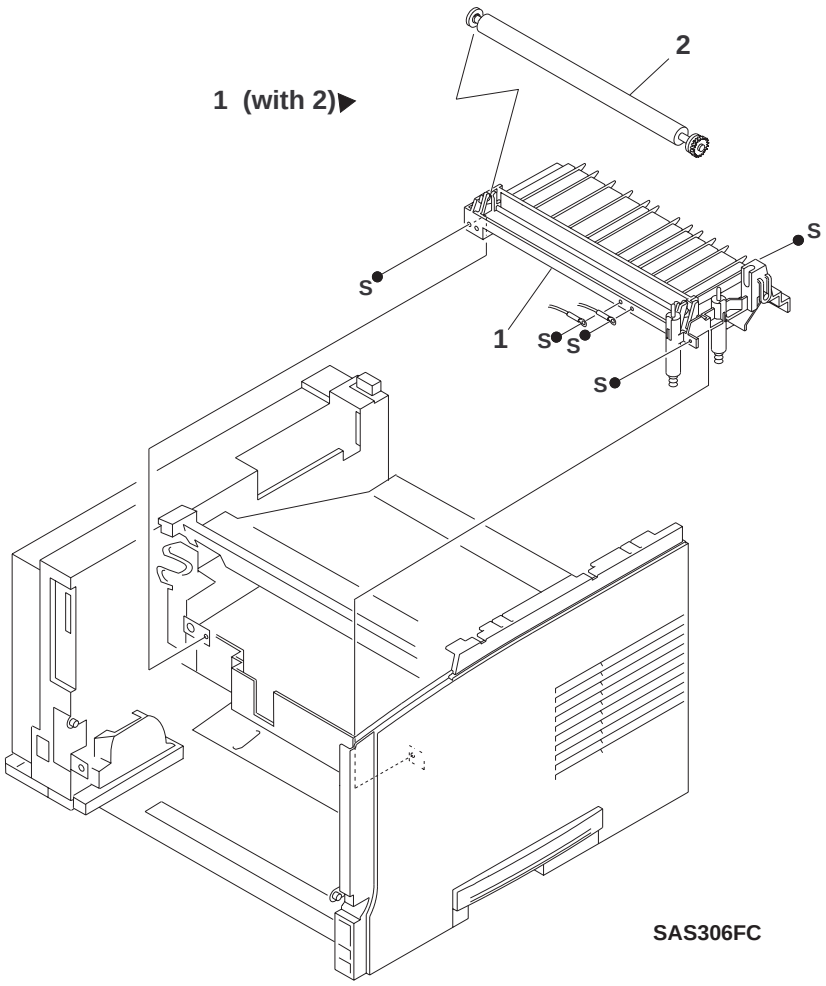


PL 5 Paper Transportation II

Item	Part	Description
1.	576516 Q	Envelope Harness
2.	(*)	Front Tray (MBF) Chute Assembly (with items 3-13)
3.	(*)	N/F Spring
4.	576517 R	Retard
5.	(*)	Retard Spring
6.	(*)	Multi Holder
7.	576518 S	No Paper Sensor
8.	(*)	Right Spring
9.	(*)	Varistor
10.	(*)	Left Spring
11.	(*)	Tray Bottom Assembly (with items 12-13)
12.	(*)	Cam Roll
13.	576519 T	Front Tray (MBF) No Paper Actuator
14.	(*)	Bottom Chute
15.	576520 Y	Registration Sensor
16.	(*)	Earth Bottom Spring
17.	(*)	Inlet Chute
18.	(*)	Toner Holder Sensor (P/O item 23)
19.	(*)	Toner Sensor (P/O item 23)
20.	(*)	Toner Sensor 1 Spring (P/O item 23)
21.	(*)	Paper Handler Harness
22.	(*)	Toner Sensor Harness
23.	417202 X	Toner Sensor Kit (with items 18-20)

(*) Not available

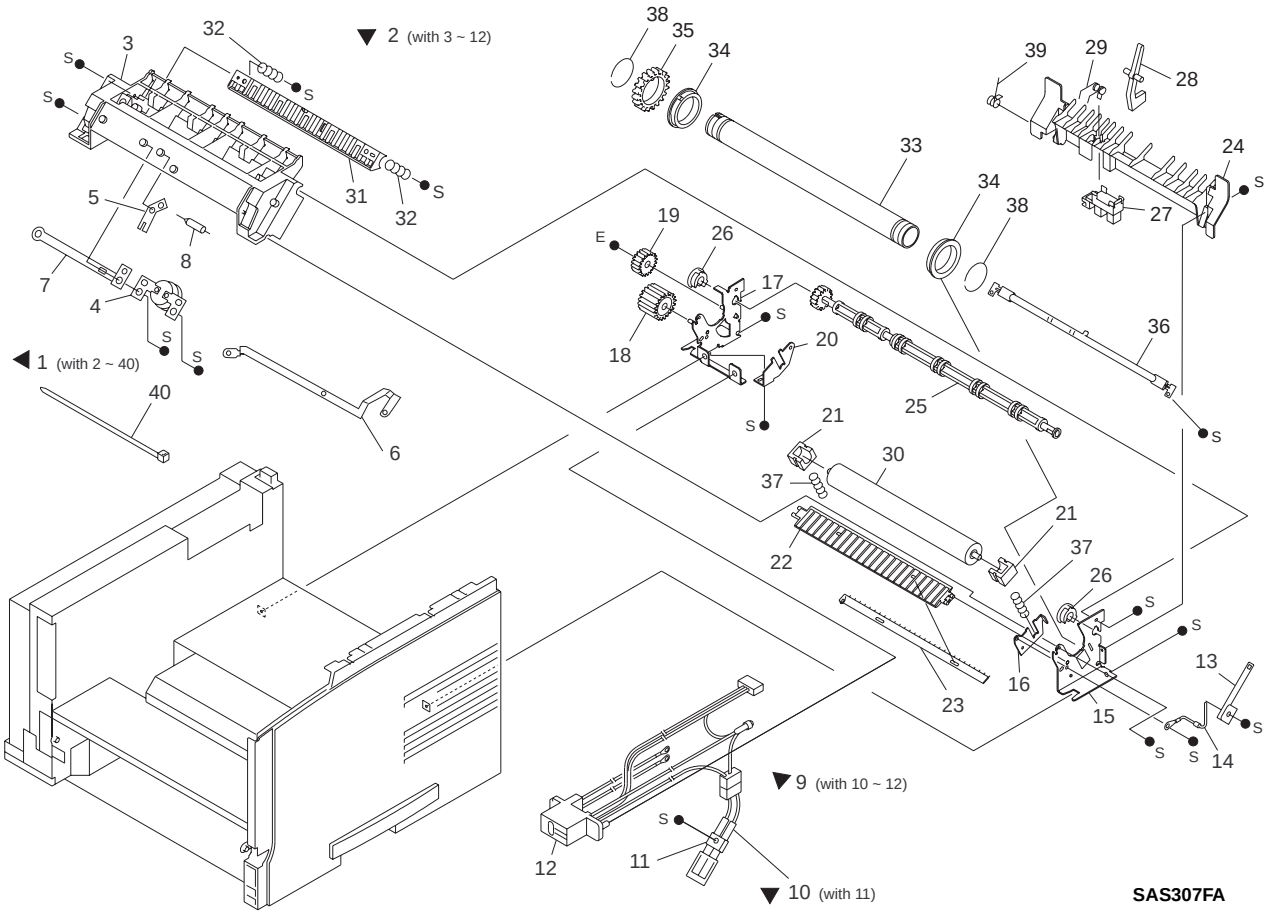
PL 6 Paper Transportation III



PL 6 Paper Transportation III

Item	Part	Description
1.	576524 Q	BTR (Bias Transfer Roll) Chute Assembly (with item 2)
2.	576525 R	BTR

PL 7 Fusing

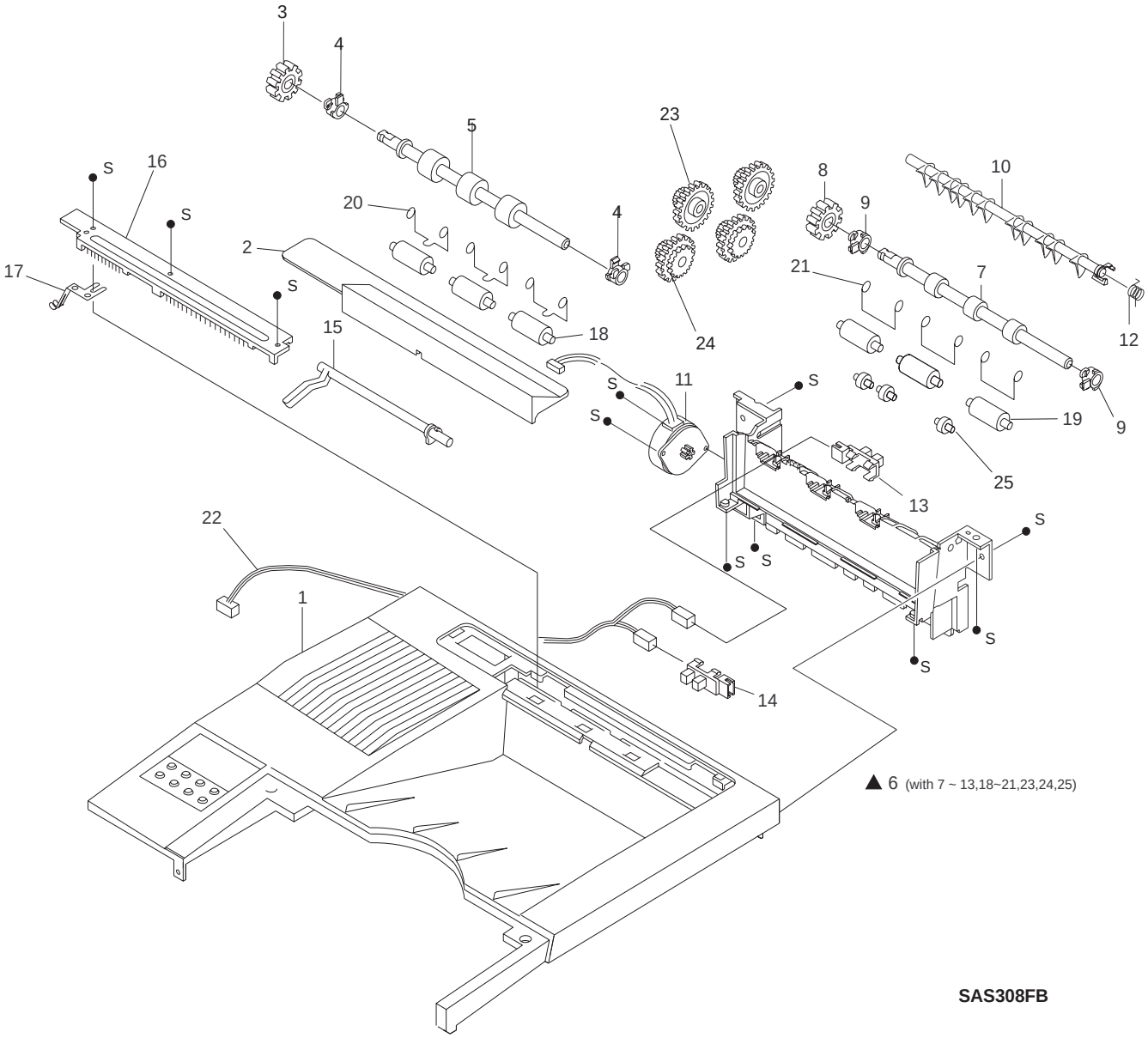


PL 7 Fusing

Item	Part	Description
1.	(*)	Fuser Assembly (115v) (with items 2-40)
	576526 J	Fuser Assembly (220v) (with items 2-40)
2.	(*)	Top Cover Assembly
3.	(*)	Top Cover
4.	(*)	Thermostat
5.	(*)	Fuse Plate
6.	(*)	Harness 1 Plate
7.	(*)	Harness 2 Plate
8.	(*)	Fuse
9.	(*)	Fuse Harness
10.	(*)	Exit Harness Assembly
11.	(*)	Temperature Sensor
12.	(*)	Fuser Plug Connector
13.	(*)	Earth H Spring
14.	(*)	Diode Ground
15.	(*)	Right Frame
16.	(*)	Right Pressure Roll Lever
17.	(*)	Left Frame
18.	(*)	Drive Gear (15T)
19.	(*)	Exit Idle Gear (12T)
20.	(*)	Left Pressure Roll Lever
21.	(*)	Pressure Roll Bearing
22.	(*)	Inlet Chute
23.	(*)	Static Eliminator
24.	(*)	Lower Exit Chute
25.	(*)	Decurl Roll
26.	(*)	Exit Bearing
27.	(*)	Exit Photo Sensor
28.	(*)	Exit Actuator
29.	(*)	Exit Actuator Spring
30.	(*)	Pressure Roll
31.	(*)	Exit Chute
32.	(*)	Exit Spring
33.	(*)	Heat Roll
34.	(*)	Heat Roll Bearing
35.	(*)	Heat Roll Gear
36.	(*)	Quartz Heater
37.	(*)	Pressure Roll Spring
38.	(*)	Roller Ring
39.	(*)	Exit Spring
40.	(*)	Cable Tie

(*) Not available

PL 8 Paper Exit

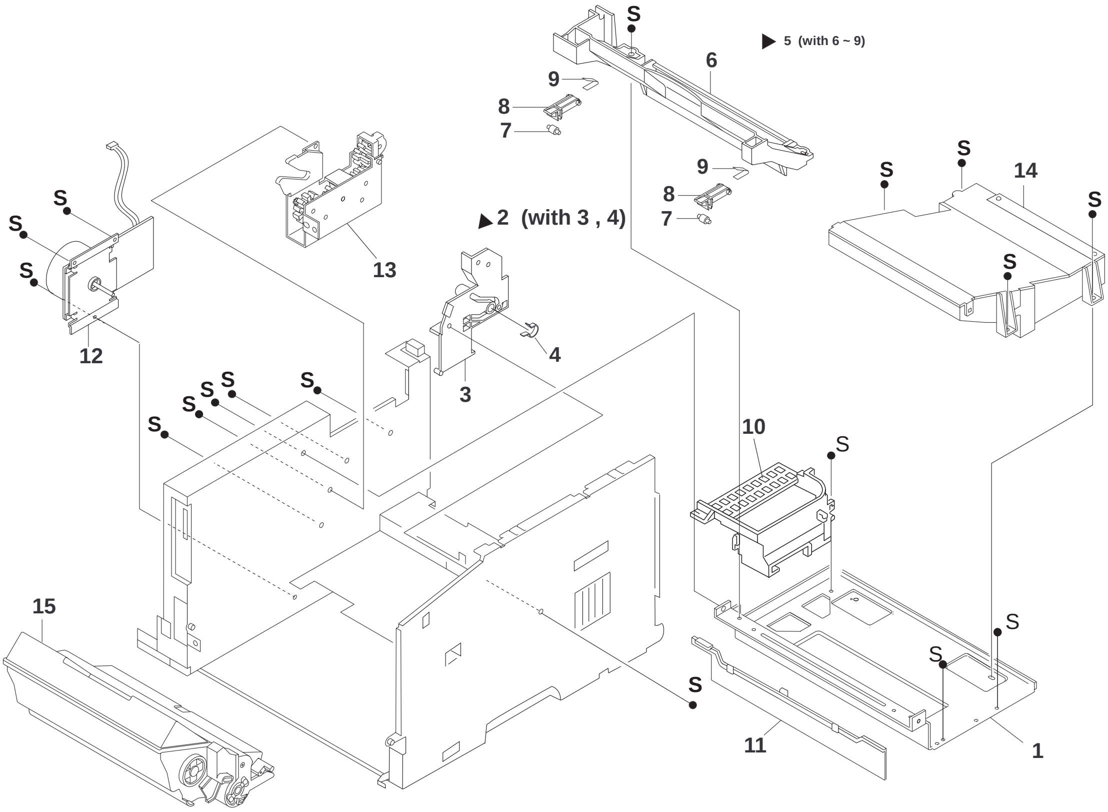


PL 8 Paper Exit

Item	Part	Description
1.	(*)	Top Cover (Refer to PL1 item 5)
2.	576527 K	Option Cover
3.	576528 U	Exit Gear
4.	576529 V	Exit Bearing
5.	417198 K	Exit Roll
6.	576530 S	Exit Assembly (with items 7-13, 18-21, 23, 24)
7.	576531 P	Middle Roll
8.	(*)	Exit Gear
9.	(*)	Exit Bearing
10.	(*)	Exit Gate
11.	576532 Q	Exit Motor
12.	(*)	Direction Spring
13.	576533 R	Rear Cover Sensor
14.	576534 J	Stack Full Sensor
15.	576535 K	Stack Full Actuator
16.	(*)	Eliminator
17.	(*)	Exit Earth Spring
18.	576536 L	Pinch Exit Roll
19.	576537 M	Pinch Middle Roll
20.	(*)	Pinch Exit Spring
21.	(*)	Pinch Middle Spring
22.	576538 W	Exit Harness
23.	(*)	Gear (26T)
24.	(*)	Gear (47W)
25.	(*)	Roll

(*) Not available

PL 9 Drive and Xerographic Module



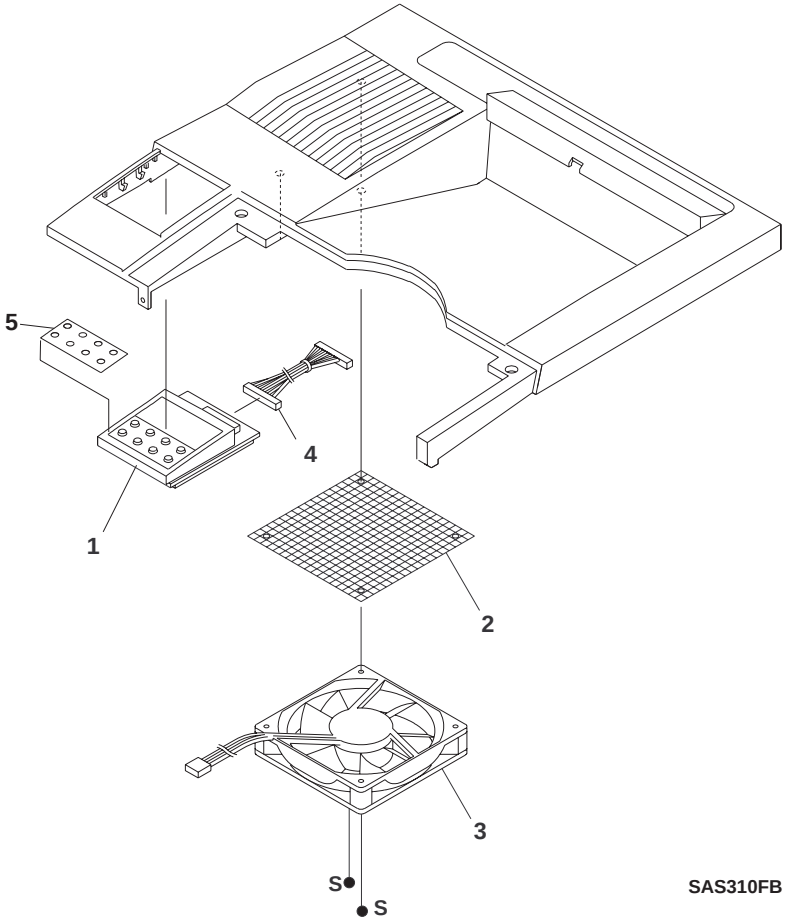
SAS309FC

PL 9 Drive and Xerographic Module

Item	Part	Description
1.	(*)	ROS Plate
2.	(*)	CRU Side Guide Assembly (with items 3-4)
3.	(*)	CRU Side Guide
4.	(*)	Spring
5.	(*)	CRU Top Guide Assembly (with items 6-9)
6.	(*)	CRU Top Guide
7.	(*)	Roller
8.	(*)	Arm
9.	(*)	Spring
10.	(*)	L Duct
11.	(*)	S Duct
12.	576539 X	Main Motor Assembly
13.	576540 C	Drive
14.	576541 Z	Laser Assembly
15.	(*)	EP Cartridge

(*) Not available

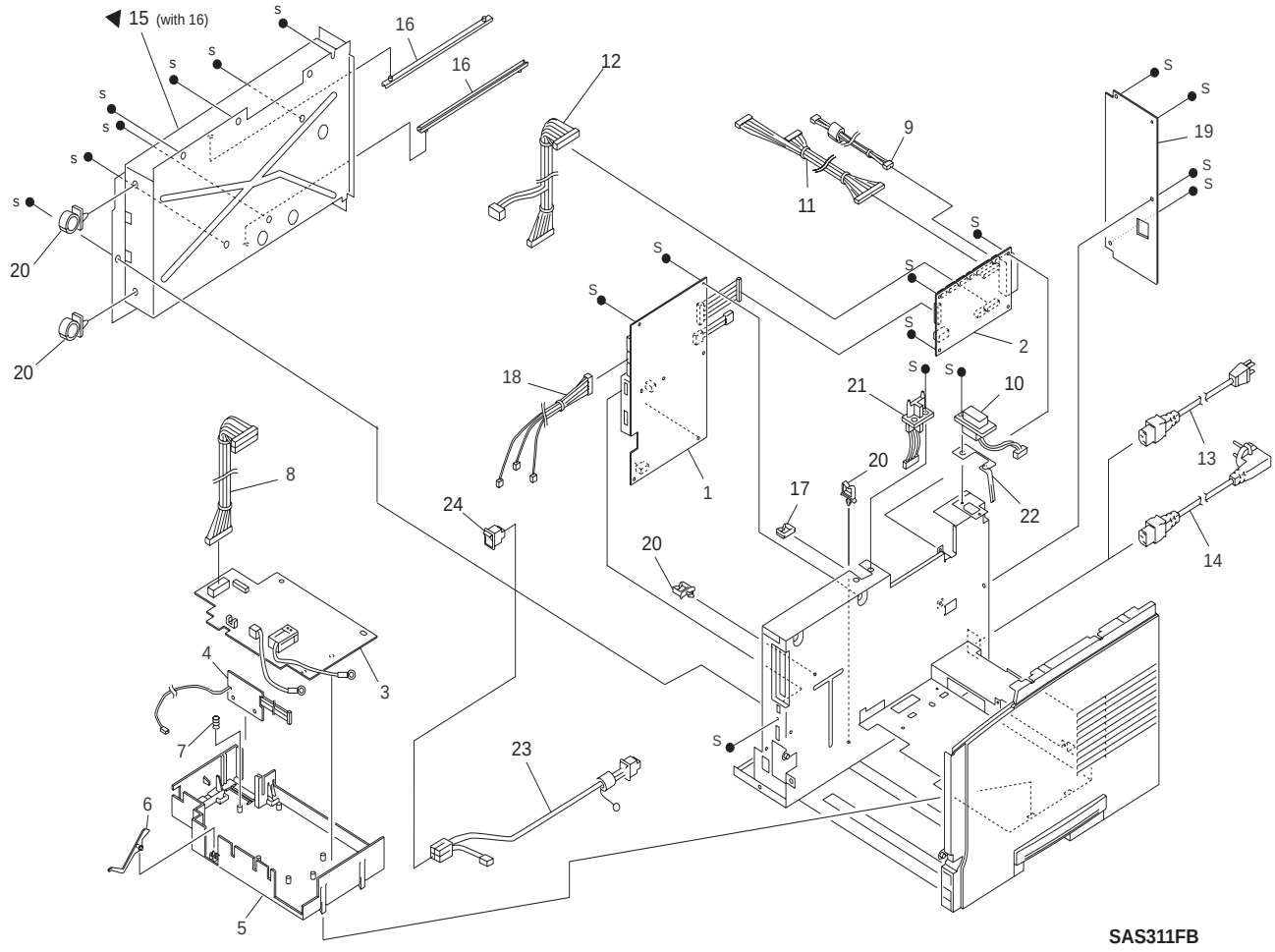
PL 10 Electrical Module I (with Top Cover)



PL 10 Electrical Module I (with Top Cover)

Item	Part	Description
1.	417190 P	Control Panel (W/O Item 5)
2.	576543 T	Fan Filter
3.	576544 U	Fan
4.	576545 V	Panel Harness
5.	417199 L	Control Panel Label

PL 11 Electrical Module II (with Chassis)

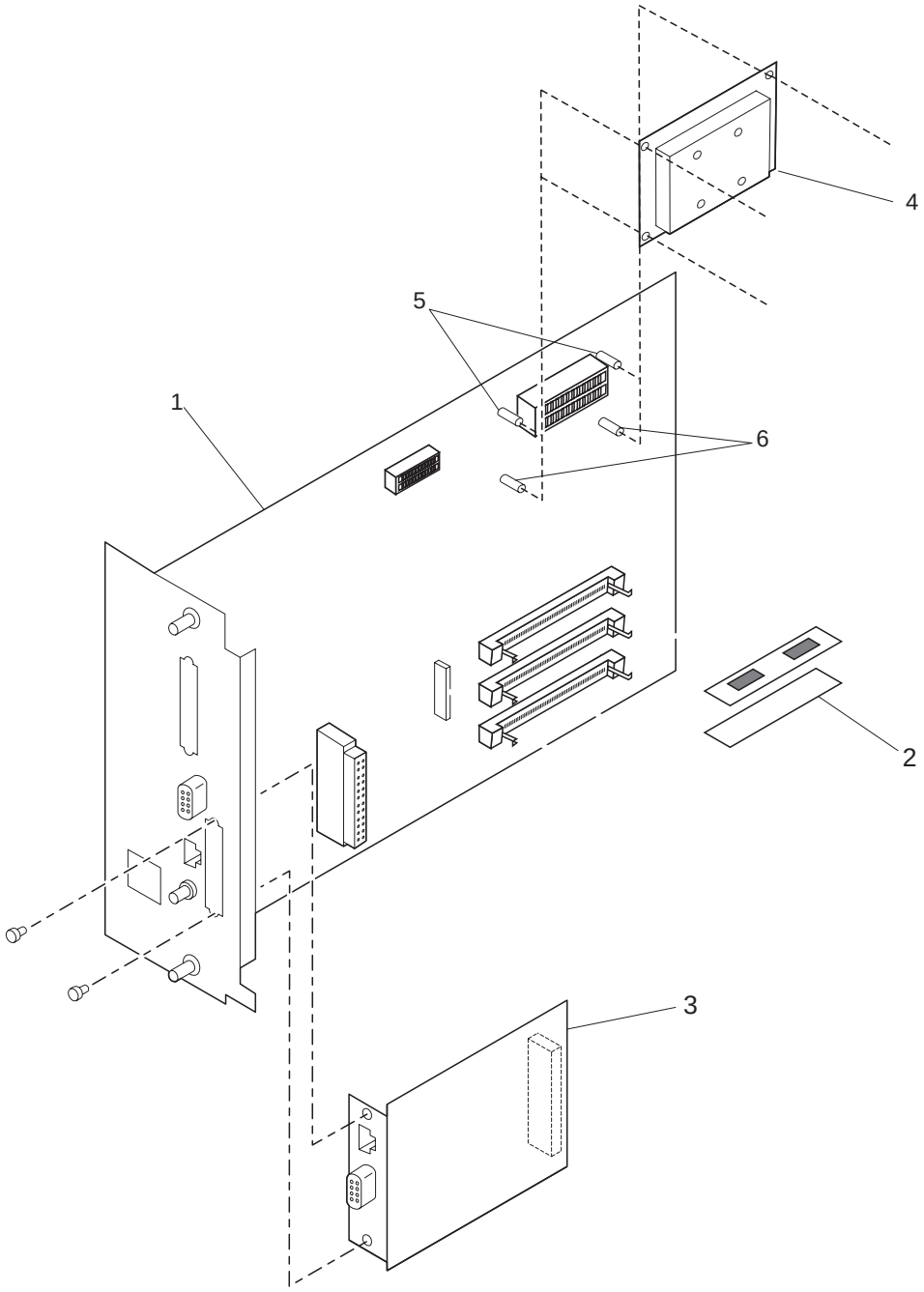


PL 11 Electrical Module II (with Chassis)

Item	Part	Description
1.	576546 W	LVPS
2.	576547 X	Print Engine Controller
3.	576548 G	HVPS
4.	576549 H	Fuser PWB
5.	(*)	HVPS Chassis
6.	576550 E	No Paper Actuator
7.	(*)	Earth Spring
8.	576551 T	HVPS Harness
9.	576552 U	SOS Harness
10.	576553 V	OCT Harness
11.	576554 W	Laser Harness
12.	576555 X	Tray Harness
13.	(*)	US Power Cord
14.	(*)	EC Power Cord
15.	(*)	Electric Box Chassis (with item 16)
16.	(*)	Rail Guide
17.	(*)	Bush
18.	576556 Y	Feed Harness
19.	(*)	Back Panel
20.	(*)	Clamp
21.	(*)	Top Harness
22.	(*)	Motor Earth Spring
23.	(*)	Inlet Harness
24.	417200 H	Main Switch Repair Kit

(*) Not available

PL 12 System Controller



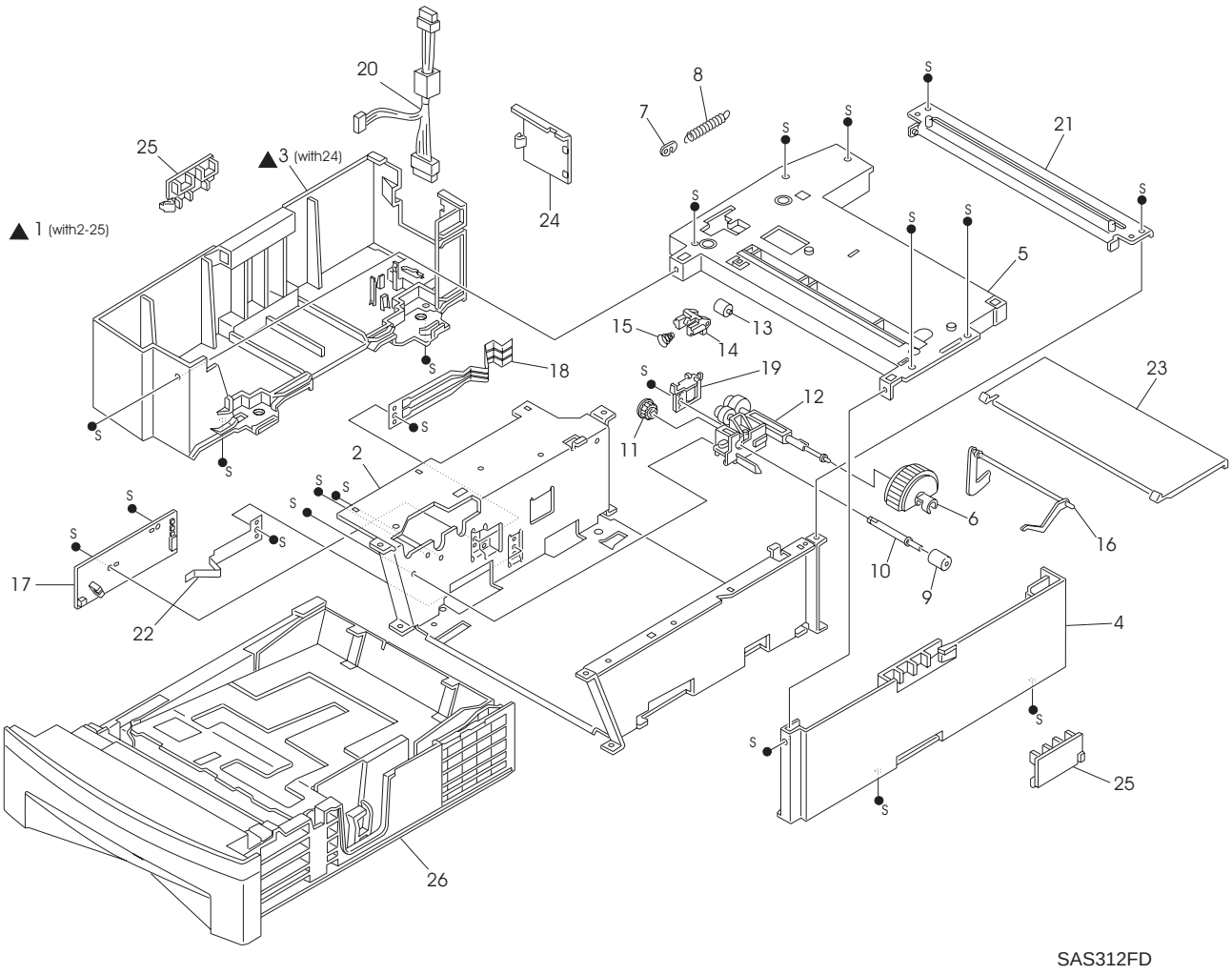
PL 12 System Controller

Item	Part	Description
1.	129074 Y	System Controller PWBA
2.	(*)	Memory SIMM
3.	(*)	Token Ring PWBA
4.	(*)	Hard Drive Assembly
5.	(*)	Standoff Locking
6.	(*)	Standoff Post

(*) Not available

8.2 500 Sheet Paper Feeder and Tray Parts List

8.2.1 PL 13 500 Sheet Paper Feeder and Tray



8.2.2 PL 13 500 Sheet Paper Feeder and Tray

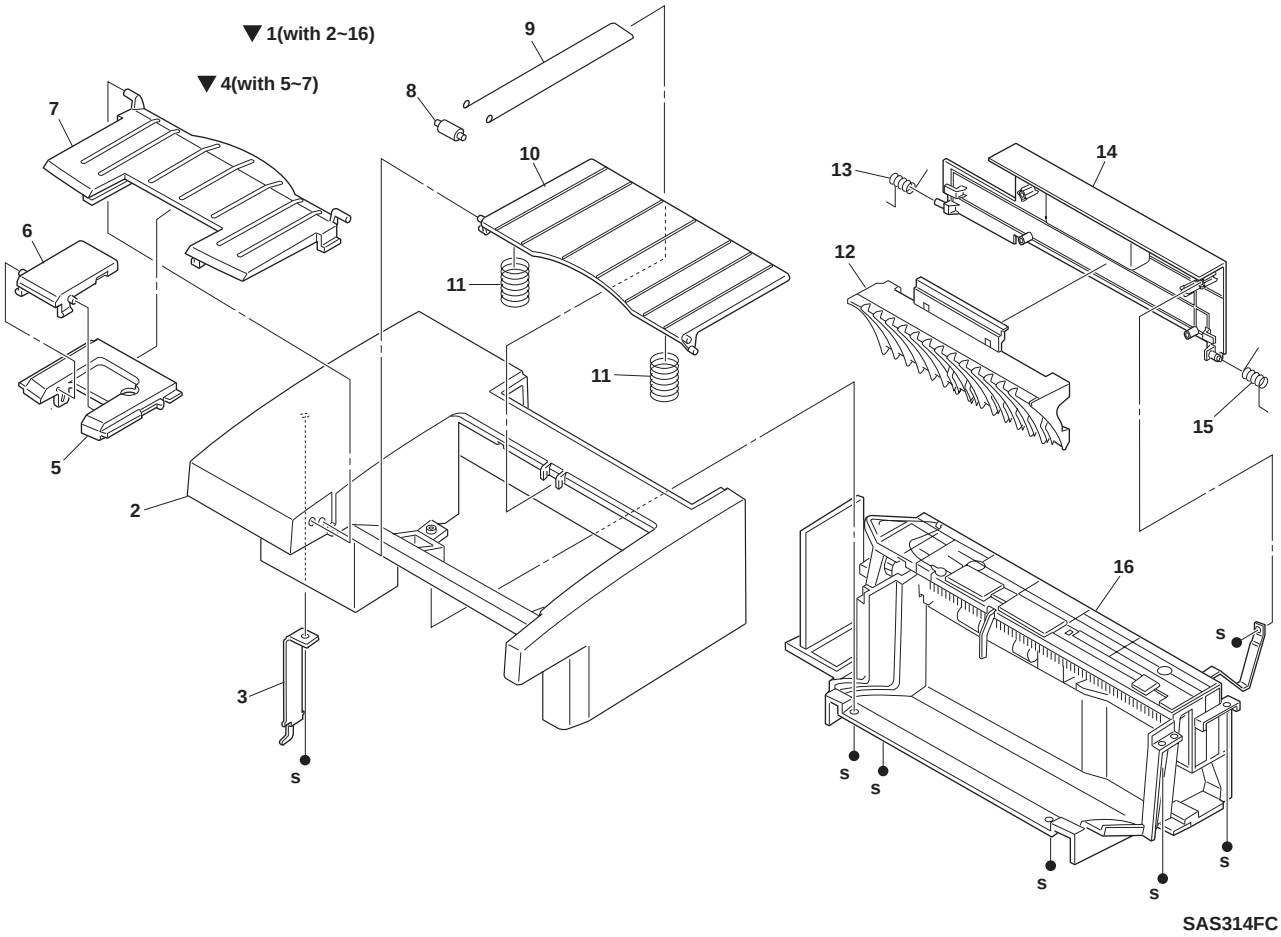
Item	Part	Description
1.	(*)	500 Feeder Assembly (with item 2-26)
2.	(*)	500 Frame
3.	(*)	500 Left Cover (with item 24)
4.	(*)	500 Right Cover
5.	(*)	500 Chute
6.	417346 W	500 Feed Roll
7.	(*)	Clutch Lever
8.	(*)	500 Feed Spring
9.	417347 X	500 Turn Roll
10.	(*)	500 Turn Shaft
11.	(*)	500 Turn Gear
12.	(*)	Roll Sub-Assembly
13.	(*)	500 Pinch Roll
14.	(*)	500 Pinch Holder
15.	(*)	500 Pinch Spring
16.	417348 G	500 No Paper Actuator
17.	417349 H	500 Paper Size PWB
18.	417350 E	Tray Actuator Spring
19.	417351 T	500 Solenoid
20.	(*)	500 Harness
21.	(*)	500 Tie Plate
22.	(*)	Tray Latch Spring
23.	(*)	500 Rear Cover
24.	(*)	Connector Cover
25.	417352 U	Stopper Handle
26.	(*)	500-Sheet Tray

(*) Not available

9.2 Offset Catch Tray (OCT) Parts List

The Parts List shows the names of the parts of the OCT that are shown in the exploded drawings. For the locations of the connectors (P/J), see *Section 9.6 Wiring Diagrams*.

9.2.1 PL 14 OCT



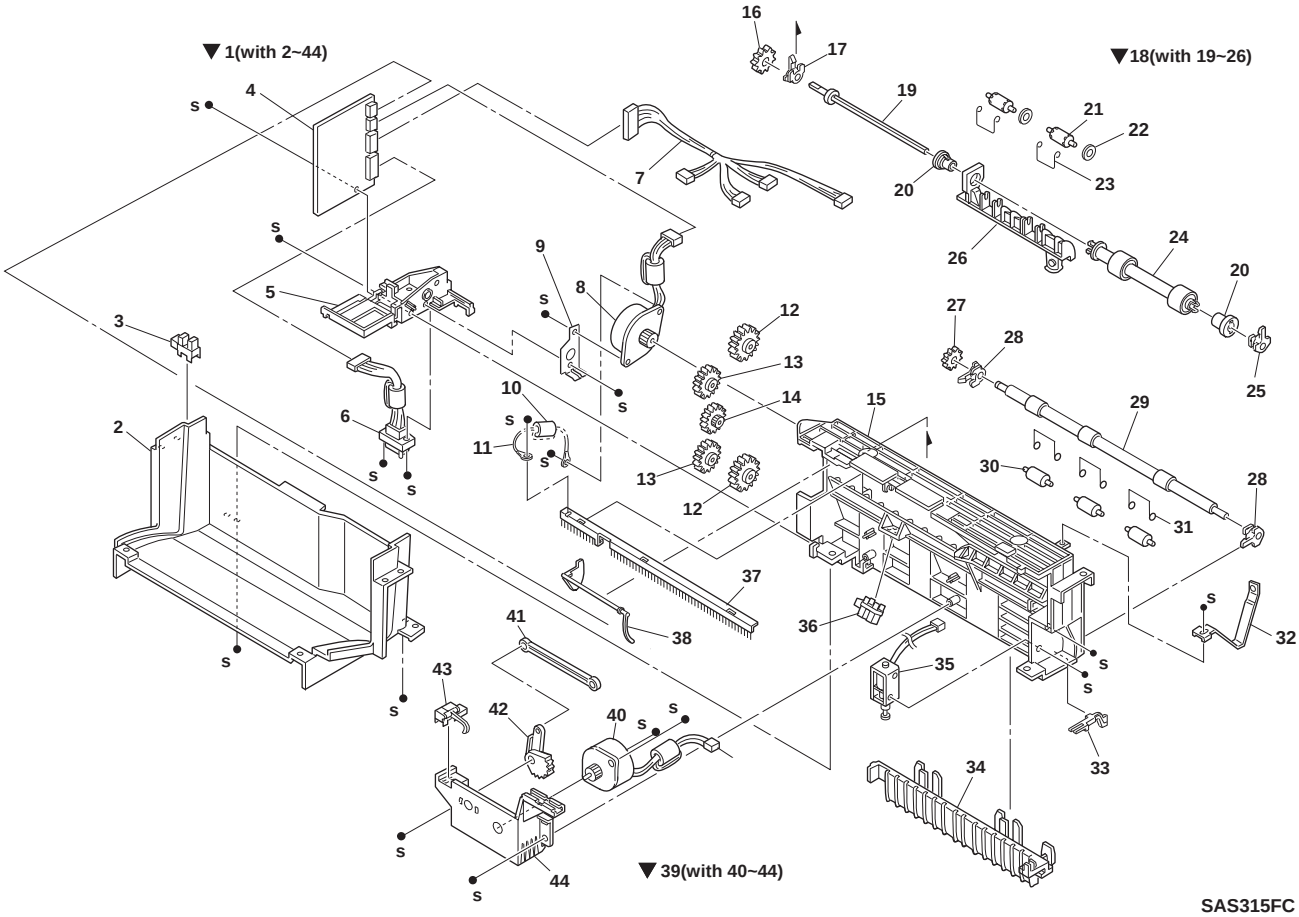
SAS314FC

9.2.2 PL 14 OCT

Item	Part	Description
1.	(*)	OCT Assembly (with items 2-16)
2.	(*)	OCT Cover
3.	(*)	Hook Cover
4.	4173307 Y	Exit Tray Assembly (with items 5-7)
5.	(*)	Stopper Guide
6.	(*)	Stopper
7.	(*)	Exit Tray
8.	417308 H	Weight Roller
9.	417309 A	OCT Stopper Link
10.	417310 W	Exit Tray
11.	(*)	Tray Spring
12.	(*)	Exit Chute
13.	(*)	Left Chute Spring
14.	(*)	Rear Cover
15.	(*)	Right Chute Spring
16.	(*)	Exit Chute Assembly (Exploded on PL 16)

(*) Not available

9.2.3 PL 15 OCT



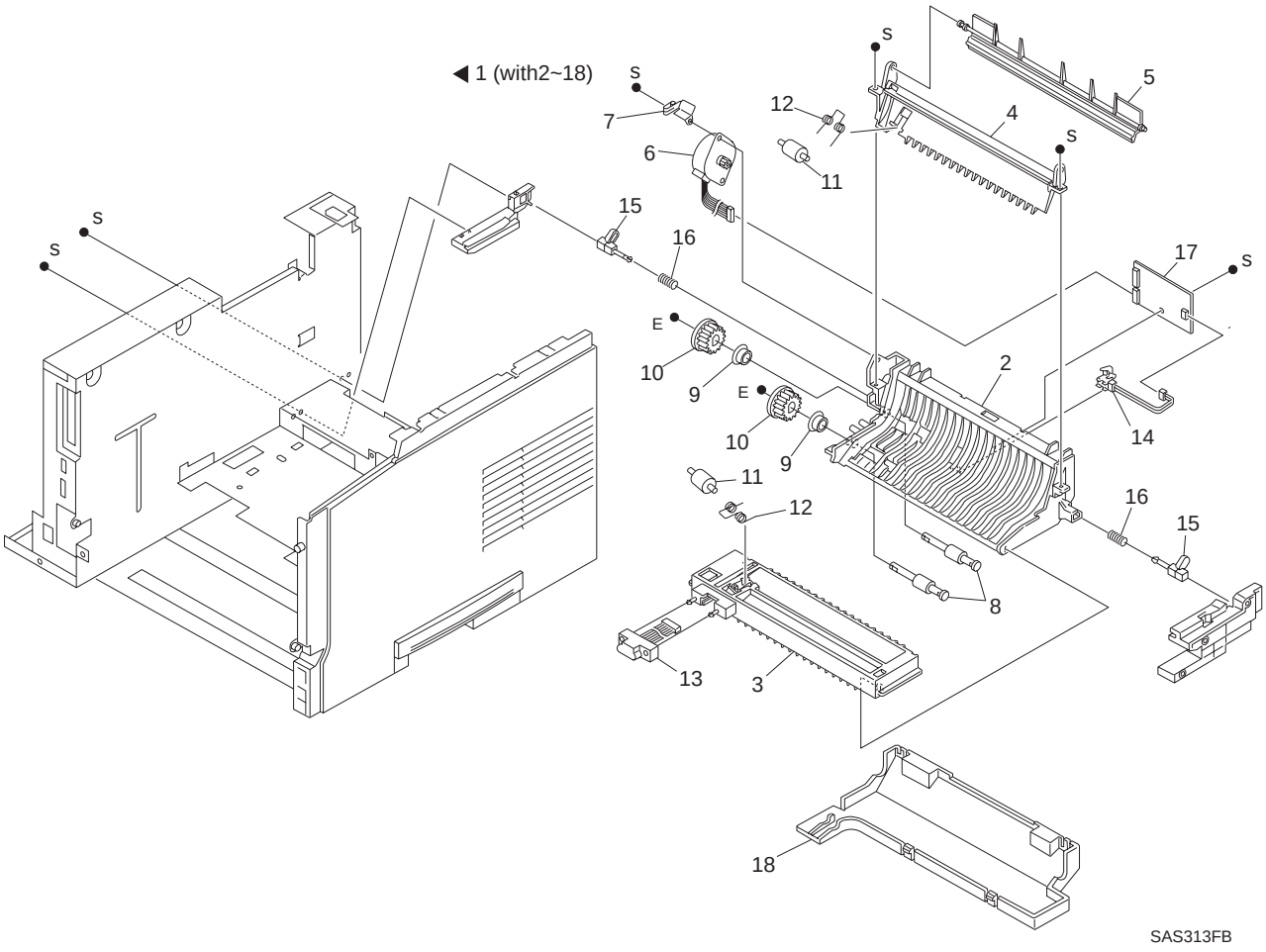
9.2.4 PL 15 OCT

Item	Part	Description
1.	(*)	Exit Chute Assembly (with items 2-44)
2.	(*)	Lower Chute
3.	576534 J	OCT Full Sensor
4.	417311 K	OCT PWB
5.	(*)	Holder
6.	(*)	OCT Harness
7.	(*)	CONN Harness
8.	417312 L	(Drive) Step Motor
9.	(*)	H Earth Plate
10.	(*)	OCT Wire
11.	(*)	Ferrite Core
12.	(*)	Gear (27T)
13.	(*)	Gear (26T)
14.	(*)	Gear (47W)
15.	(*)	Gear Housing
16.	(*)	Exit Gear
17.	(*)	Exit Bearing
18.	417313 M	Roll Assembly (with items 19-26)
19.	(*)	Exit Shaft
20.	(*)	Offset Bearing
21.	417314 N	Exit Pinch Roll
22.	(*)	Washer
23.	(*)	Pinch Spring
24.	(*)	Exit Roll
25.	(*)	Exit Bearing
26.	(*)	OCT Guide
27.	(*)	Exit Gear
28.	(*)	Exit Bearing
29.	417315 P	Mid Roll
30.	417314 N	Mid Pinch Roll
31.	(*)	Pinch Spring
32.	(*)	Cover Stopper
33.	417317 R	Solenoid Lever
34.	(*)	Exit Chute
35.	417318 S	Direction Solenoid
36.	417319 T	OCT Exit Sensor
37.	(*)	Eliminator
38.	417320 Y	OCT Full Actuator
39.	(*)	Offset Assembly (with items 40-44)
40.	417321 M	Offset Step Motor, Alternate
41.	417322 N	Lever
42.	417323 P	Cam Gear
43.	417324 Q	OCT Home Sensor
44.	(*)	Offset Chassis

(*) Not available

10.2 Duplex Module Parts List

10.2.1 PL 16 Duplex Module

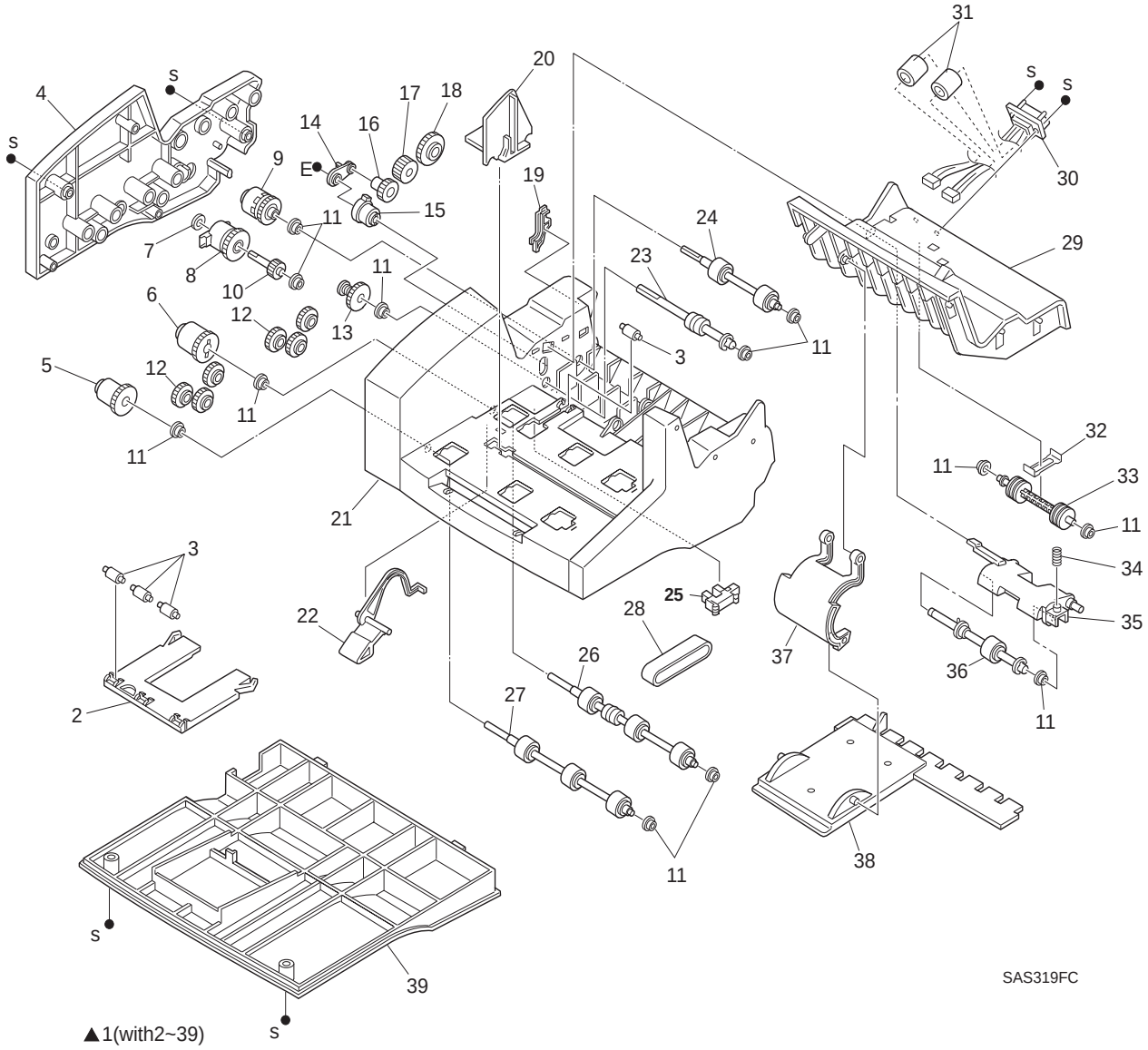


10.2.2 PL 16 Duplex Module

Item	Part	Description
1.	(*)	Duplex Module Assembly (with Item 2-18)
2.	(*)	Duplex Lower Chute
3.	(*)	Connector Chute
4.	(*)	Upper Chute
5.	(*)	Direction Chute
6.	417301 S	Duplex Drive
7.	(*)	Ground Spring
8.	417302 T	Duplex Transfer Roller
9.	(*)	Bearing
10.	(*)	Roll Gear (15T)
11.	417303 U	Duplex Pinch Roll
12.	417304 V	Pinch Spring
13.	(*)	Duplex Harness
14.	417305 W	Duplex Sensor
15.	(*)	Latch
16.	(*)	Compression Spring
17.	417306 X	Duplex PWB
18.	(*)	Duplex Cover

(*) Not available

11.2.1 PL20 Envelope Feeder



11.2.2 PL20 Envelope Feeder

Item	Part	Description
1.	(*)	Envelope Feeder Assembly
2.	417325 R	Tray Extension
3.	417326 J	Envelope Pinch Roll
4.	417327 K	Side Cover
5.	417328 U	One Way Clutch Assembly B (26T) {2 piece Gear & Clutch}
6.	417329 V	One Way Clutch Assembly A (26T) {2 piece Gear & Clutch}
7.	(*)	Envelope Feeder Solenoid Bearing
8.	036758 G	Envelope Feeder Solenoid (29T)
9.	417330 S	Transfer Clutch Assembly (25T)
10.	417331 P	Electric Clutch Shaft (17T)
11.	036757 X	Feeder Bearing
12.	417332 Q	Idler Gear (21T))
13.	417333 R	One Way Clutch Assembly (26T)
14.	(*)	Retard Link
15.	417334 J	Torque Clutch Assembly
16.	417335 K	Gear (23T)
17.	417336 L	Drive Gear (21T)
18.	417337 M	Printer Engagement Gear (29T)
19.	--	Harness Cover
20.	417338 W	Envelope Side Guide
21.	(*)	Main Chassis
22.	417339 X	No Paper Actuator
23.	417340 C	Bottom Shaft Assembly
24.	417341 Z	Transfer Roll Assembly
25.	127677 X	No Paper Sensor
26.	417342 S	Feed Roll Assembly-1
27.	417343 T	Feed Roll Assembly-2
28.	417344 U	Feed Belt
29.	(*)	Top Cover
30.	(*)	Envelope Harness Assembly
31.	(*)	Ferrite Core
32.	(*)	Pinch Spring
33.	036770 G	Pinch Roll
34.	(*)	Retard Main Spring
35.	(*)	Retard Holder
36.	417345 V	Retard Roll Assembly
37.	(*)	Weight Arm (includes item 38)
38.	(*)	Weight Holder
39.	(*)	Bottom Cover

GENERAL CODES INDEX

CODE	PAGE	CODE	PAGE	CODE	PAGE
036757X	11-6	417349H	8-8	576552U	3-24
036758G	11-6	417350E	8-8	576553V	3-24
036770G	11-6	417351T	8-8	576554W	3-24
127677X	11-6	417352U	8-8	576555X	3-24
128905W	3-4	576491Q	3-4	576556Y	3-24
129074Y	3-26	576492R	3-4		
417190P	3-22	576495L	3-4		
417194F	3-4	576496M	3-4		
417198K	3-18	576498X	3-6		
417199L	3-22	576499Y	3-8		
417200H	3-24	576500D	3-8		
417202X	3-12	576501S	3-8		
417301S	10-6	576502T	3-10		
417302T	10-6	576503U	3-10		
417303U	10-6	576504V	3-10		
417304V	10-6	576505W	3-10		
417305W	10-6	576506X	3-10		
417306X	10-6	576507Y	3-10		
417307Y	9-4	576508H	3-10		
417308H	9-4	576509A	3-10		
417309A	9-4	576510W	3-10		
417310W	9-4	576511K	3-10		
417311K	9-6	576512L	3-10		
417312L	9-6	576513M	3-10		
417313M	9-6	576514N	3-10		
417314N	9-6	576515P	3-10		
417315P	9-6	576516Q	3-12		
417316Q	9-6	576517R	3-12		
417317R	9-6	576518S	3-12		
417318S	9-6	576519T	3-12		
417319T	9-6	576520Y	3-12		
417320Y	9-6	576524Q	3-14		
417321M	9-6	576525R	3-14		
417322N	9-6	576526J	3-16		
417323P	9-6	576527K	3-18		
417324Q	9-6	576528U	3-18		
417325R	11-6	576529V	3-18		
417326J	11-6	576530S	3-18		
417327K	11-6	576531P	3-18		
417328U	11-6	576532Q	3-18		
417329V	11-6	576533R	3-18		
417330S	11-6	576534J	3-18		
417331P	11-6	576534J	9-6		
417332Q	11-6	576535K	3-18		
417333R	11-6	576536L	3-18		
417334J	11-6	576537M	3-18		
417335K	11-6	576538W	3-18		
417336L	11-6	576539X	3-20		
417337M	11-6	576540C	3-20		
417338W	11-6	576541Z	3-20		
417339X	11-6	576543T	3-22		
417340C	11-6	576544U	3-22		
417341Z	11-6	576545V	3-22		
417342S	11-6	576546W	3-24		
417343T	11-6	576547X	3-24		
417344U	11-6	576548G	3-24		
417346W	8-8	576549H	3-24		
417347X	8-8	576550E	3-24		
417348G	8-8	576551T	3-24		

STATO DI AGGIORNAMENTO
UPDATING STATUS

DATA DATE	PAGINE AGGIORNATE UPDATED PAGES	PAGINE PAGES	CODICE CODE
10/1999	**1ª EDIZIONE - 1st EDITION**	**41**	**687200Q-00**