TOSHIBA

SERVICE MANUAL

PLAIN PAPER FACSIMILE

e-STUDIO50F

File No. SME03003000
R03102142500-TTEC
2003-11

Table of Contents

1 Specifications Table

1.1. Fax Function

Items		Description DP-500F	Remarks
Main Specifications			
1	Compatibility	G3	ITU-T Std. & Non-Std. (MGCS)
2	PSTN Line Port	Yes	
3	Leased Line Port	No	
4	V.24 Line Port	No	
5	Modem Speed	33.6 - 2.4 kbps	With Automatic Fallback
6	Coding Scheme	MMR/MR/MH	
7	ECM	Yes	Conforms to ITU-T
8	Short Protocol	Yes (B, D)	
9	Transmission Speed	Approx. 3 sec	ITU-T Image No. 1 (A4, Std. Resolution)
10	Communication Resolution (pels / mm x lines / mm)	Transmission Std. 8 x 3.85 Fine 8 x 7.7 S-Fine 8 x 15.4 Reception Std. 8 x 3.85 Fine 8 x 7.7 S-Fine 8 x 15.4	
Scanner Mechanism			
1	Scanning Device	CIS	
2	Scanning Speed		
	Std.	5.0 sec	Letter sized document
		5.3 sec	A4 sized document
	Fine	10.0 sec	Letter sized document
		10.6 sec	A4 sized document
	S-Fine	20.0 sec	Letter sized document
		21.2 sec	A4 sized document
3	Scanning Resolution (pel / mm x lines / mm)	Std. 8 x 3.85 Fine 8 x 7.7 S-Fine 8 x 15.4	
4	Document Size (Max.)	10.1 x 78.7 in (257 x 2000 mm)	
5	Document Size (Min.)	5.8 x 5.0 in (148 x 128 mm)	
6	Effective Scanning Width	8.3 in (212 mm)	Letter size for USA and Canada
		8.2 in (208 mm)	A4 size for Other Countries
7	Reduction XMT	No	
8	ADF Capacity	20 sheets	Face Down A4 / Letter (16 lb / 60 g/m^2)
9	Collation Stack	Yes (Face Down)	

Items	Description	Remarks
	DP-500F	
Printer Mechanism		
1 Recording Method	LP	
2 Recording Speed	5 ppm (Letter)	
3 Recording Resolution		
Copy, Fax	406 x 391 dpi	
PC Printing Data	600 x 600 dpi	
4 Recording Paper Size	Letter / A4 / Legal	
5 Effective Printing Width	8.2 in (208 mm)	Letter size for USA and Canada
	8.0 in (202 mm)	A4 size for Other Countries
6 Recording Paper Capacity	150 sheets	A4 / Letter / Legal (20 lb / 75 g/m^2)
7 Collation Stack	Yes	Memory Collation
8 Consumables		See Consumables Section
Memory / Clock		
1 Standard Memory	1 MB (60 pages)	For USA and Canada (ITU-T Image No.1, A4, Std. Resolution)
	2 MB (120 pages)	For Other Countries (ITU-T Image No.1, A4, Std. Resolution)
2 Memory Backup	No	
3 Document Memory type	Dynamic Memory	Without Battery backup
4 Clock Backup	30 minutes	Use of a Gold Capacitor
Copy Quality		
1 Halftone (Tx)	Yes	64-Level Error Diffusion, Quality Mode only
2 Super Fine (Tx & Rx) (pels / mm x lines / mm)	8 x 15.4	
3 Original Contrast Selection (Tx)	Yes	3-Levels
4 Smoothing (Rx)		With Auto Picture / Text Recognition
Fax, Copy	Yes	
PC Printing Data	No	

Items	Description	Remarks
	DP-500F	
Power Supply		
1 Power Requirement	108 - 132 VAC, 47 - 63 Hz, Single Phase	100 VAC Power Supply
	198 - 255 VAC, 47 - 63 Hz, Single Phase	200 VAC Power Supply
2 Power Consumption	Standby Sleep Mode Less than 0.7 Wh ES=On 5.5 Wh ± 25% ES=Off 17 Wh ± 25% Transmission 17 W ± 25% Reception 450 W ± 15% Copy 450 W ± 15% Maximum 470 W	100 VAC Power Supply ES: Energy Saver
	Standby Sleep Mode Less than 1.0 Wh ES=On 6.0 Wh ± 25% ES=Off 17 Wh ± 25% Transmission 17 W ± 25% Reception 460 W ± 15% Copy 460 W ± 15% Maximum 470 W	200 VAC Power Supply ES: Energy Saver
Environment		
1 Temperature		
Operation	50 to 95°F (10 to 35°C)	
Storage	-4 to 104°F (-20 to 40°C)	
Transport (Max. 72 hours)	-4 to 122°F (-20 to 50°C)	
2 Relative Humidity		
Operation	15 to 70% RH	
Storage	5 to 85% RH	
Transport (Max. 480 hours)	15 to 85% RH	
Standards		
1 PSTN	FCC Part 68 Industry Canada No. CS-03	
2 Safety	UL1950 CSA C22.2 No.950	
3 EMI	ClassB computing device in FCC Part 15	
Construction		
1 Dimensions (W x D x H)	14.0 x 14.3 x 8.7 in (355 x 364 x 220 mm)	Excluding projections
2 Weight (Excluding paper)	16.1 lb (7.3 kg)	Excluding consumable supplies and options

Items		Description	Remarks
		DP-500F	
Attachment & Accessories			
	Toner Cartridge (Starter) Drum Unit Operating Instructions CD-ROM Power Cord Tel Line Cable Paper Tray Paper Tray Cover (Rx) Doc. Return Tray (Tx) Doc. Sub Tray (Tx)	Yes (1)* Yes (1) Yes (1) Yes (1) (PDMS) Yes (1) Yes (1) Yes (1) Yes (1) Yes (1) Yes (1)	*Yield : Approx. 1,000 pages (3% Black, ITU-T Image No. 1 Chart)
Consumables			
1	Process Type	Toner Cartridge and Drum Unit (2 separate pieces)	
2	Yield (3% Black, ITU-T Image No. 1 Chart)	PS-ZT500F : Approx. 6,000 pages	* Determined by Country. Multi Copy Mode Operation Environment 68°F (20°C), 50% RH.
3	Low Toner Warning	Yes	Optical Sensor
Options			
1	Paper Tray	No	
2	Document Memory	No	
3	Page Memory	No	
4	Battery Backup 72 hours	No	
5	G3 Optional Communication Port	No	
6	Handset	Yes	Specific Countries only
7	V.24/Encryption Interface	No	
8	PDL	No	
9	Parallel Port Interface	Standard	
	Printer Interface (GDI)	Standard	
	Scanner Interface (Twain)	Standard	
	Class 2 Interface	Standard	
	PC Interface (MGCS)	Standard	
	Document Manager	Standard	
	MFP Utilities	Standard	
Languages			
	Control Panel Function Label LCD Display Printouts Operator's Manual	English, C-French, Spanish for USA, Canada	Determined by Country.
Multi-Task Operation			
1	Multi Task Operation	Semi-Dual	
2	Direct XMT Reserve	Yes	
3	Memory XMT Reserve	Yes	
4	Number of Memory Job Files	Yes (5 files)	

Items	Description	Remarks
	DP-500F	
Dialing/Telephone Features		
1 One-Touch Keys	16 (8 x 2)	Upper / Lower switching operation
2 One-Touch / Program Keys	2 (1 x 2)	Upper / Lower switching operation
3 One-Touch Auto Dialers	18	Upper / Lower switching operation
4 Abbr. Auto Dialers	82	
5 Total Auto Dialers	100	
6 Max. Tel Number Digits	36	
7 Max. Station Name Characters	15	
8 Directory Search Dialing	Yes	With Directory Search key
9 Full Number Dialing (Buffered Dialing)	Yes	Max. 7 stations
10 Direct Dialing (Monitor Dialing)	Yes	Voice mode (Monitor Dialing Mode) Requires to press START to start fax communication. Automatic Redialing is not available.
11 Automatic Redialing	Yes	
12 Manual Redialing	Yes	
13 Chain Dialing (Hybrid Dial)	Yes	On Monitor Dialing mode only
14 Line Monitor Speaker	Yes	
15 Pulse / Tone Dialing	Yes	10 pps / DTMF
16 Pulse to Tone Change	Yes	
17 Flash Key	Yes	
18 External Telephone Jack	1	Handset or External Telephone
Transmission Features		
1 Direct Transmission	Yes	ADF Transmission
2 Memory Transmission	Yes	Page Retransmission
3 Quick Memory Transmission	No	
4 Multi-Station Transmission (Sequential Broadcasting)	Yes	Max. 107 stations
5 Direct Deferred Transmission	No	ADF Deferred Transmission
6 Deferred Memory Transmission	Yes	Max. 5 timers
7 Deferred Multi-Station Transmission	Yes	
8 Priority Direct Transmission	Yes	Priority ADF Transmission
9 Priority Memory Transmission	No	
10 Batch Transmission	No	

Items		Description	Remarks
		DP-500F	
Reception Features			
1	Substitute Reception	Yes	
2	Fixed Reduction	Yes	LTR / A4: 70 - 100%, LGL: 80 -100% (in 1% Steps), Top & Center Alignment
3	Auto Reduction	Yes	LTR / A4: 70 - 100%, LGL: 80 -100% (in 1% Steps), Top & Center Alignment
4	Overlap Printing	Yes	Page End Approx. 0.39 in (10 mm)
5	Receive to Memory	No	
6	Distinctive Ring Detector (DRD)	Yes	Specific Countries only
Receive Control			
1	Fax / Tel Auto Switch	Yes	Specific Countries only
2	Silent Reception	No	
3	External TAM Interface	Yes	Specific Countries only
4	Remote Reception	Yes (DTMF)	Specific Countries only
Polling			
1	Polling	Yes	
2	Turnaround Polling	No	
3	Multi-Station Polling	Yes	Max. 107 stations
4	Deferred Polling	No	
5	Deferred Multi-Station Polling	No	
6	Direct Polling Tx	No	
7	Memory Polling Tx	No	
8	Preset Polling Password	Yes	
9	Temporary Polling Password	Yes	
10	Continuous Polling	No	
Convenience			
1	Panel Display	Yes	16 x 1 Alphanumeric LCD
2	Voice Contact	No	
3	Edit File Mode	No	Delete Operation: Press [STOP] key
4	Incomplete File Save	No	
5	Automatic Cover Sheet	No	
Copy Features			
1	Single Copy	Yes	
2	Multiple Copy	Yes	Multi Sort Copy only
3	Reduction Copy	Yes	
4	Copying Resolution (pels / mm x lines / mm)	8 x 15.4	

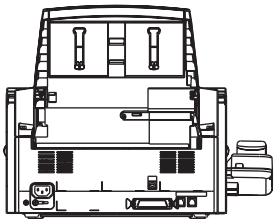
Items	Description	Remarks
	DP-500F	
Certainty		
1 Verification Stamp	No	For USA and Canada
	Yes	Specific Countries only
2 Header / Total Page Print	Yes	
3 Transaction Journal	Yes	32 Transactions / with View Mode
4 Comm. Journal	Yes	With Image
5 Last Ind. XMT Journal	Yes	
6 Power Failure Report	Yes	
List Printouts		
1 One-Touch List	Yes	
2 ABBR. No. List	Yes	
3 Program List	Yes	
4 Directory Search List	Yes	
5 Fax Parameter List	Yes	
6 File List	No	
7 Ind. XMT Journal	Yes	
8 Directory Sheet	Yes	
9 Character Code List	No	
Identifications		
1 Logo	Yes	25 Characters
2 Multiple Logo	No	
3 Character ID	Yes	16 Characters
4 Numeric ID	Yes	20 Digits
Special Communications		
1 Password XMT / RCV	No	
2 Selective Reception	No	TSI Check
3 Relay XMT Request	No	
4 Relay XMT Center	No	
5 Confidential XMT / Polling	No	
6 Confidential Center	No	
7 Mailbox XMT / Polling	No	
8 Mailbox Center	No	
9 File XMT	No	
10 Fax Forward	Yes	Received File Transfer
11 Sub-Address XMT	Yes	T. Routing
12 Sub-Address RCV	No	
13 OMR-XMT	No	

Items	Description	Remarks
	DP-500F	
Others		
1 Access Code	Yes	
2 PIN Code Access	Yes	For USA / Canada / Hong Kong only PBX Access code
3 Intelligent Redial (AI)	Yes	2 Files
4 Department Code	No	
5 Energy Saver Mode	Yes	
6 Daylight Saving Time	Yes	USA, Canada and Germany only
7 Self Diagnostic Function	Yes	
8 Remote Diagnostic Function	Yes	Specific Countries only
9 Check & Call Function	Yes	
Firmware Update / Download		
1 Remote Update	Yes	Using G3 Protocol
2 Local Update		
Memory Card (FROM)	No	
Parallel Port	Yes	
3 Download to FROM Card	No	

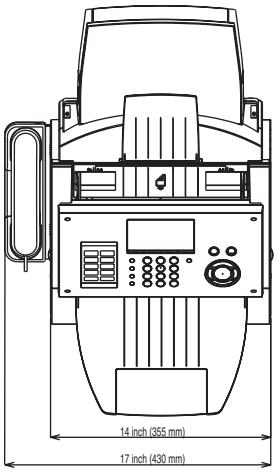
1.2. Printer Function

Items	Description	Remarks
	DP-500F	
Interface		
1 Centronics Parallel I/F (IEEE-1284)	Yes	ECP Mode
2 LAN (Network)	No	
3 USB Port	No	
4 IEEE-1394	No	
Printer Function		
1 Printing Size	Letter / A4 / Legal	
2 Bypass	No	
3 Stapling	No	
4 Printing Resolution	600 dpi	
5 OS	Win 98/Me/NT 4.0/2000/XP	
6 GDI	Yes	MH Coding
7 PDL (PCL6)	No	
8 PDL (PostScript 2)	No	
9 Duplex Printing	No	
10 Collation Stack	Yes	Printer Driver setting (Descending Output Order)
11 Status Monitor	Yes	Win 98/Me/NT 4.0/2000/XP : Local Connection
12 Network Printing	No	
13 Network Status Monitor	No	
14 Smoothing	No	
15 Applicable PC	IBM PC, AT or Compatible	
16 Multi-Task Operation		
Printing while Fax-XMT from Memory	Yes	
Printing while Fax-RCV into Memory	No	
Fax-XMT from Memory while Printing	Yes	
Fax-RCV into Memory while Printing	Yes	
17 Output to Separate Tray for Printing, Fax, Copy	No	
18 Font	No	
19 Security Print	No	
Scanning Function		
1 Halftone	Yes	64 Level Error Diffusion
2 Scanning Width	8.3 in (212 mm)	Letter size for USA and Canada
	8.2 in (208 mm)	A4 size for Other Countries
3 Scanning Resolution	200 dpi	
4 Driver	TWAIN	
5 2-Sided Scanning	No	

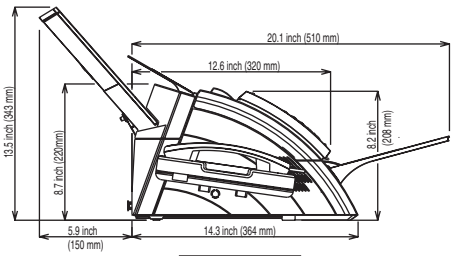
1.3. External View



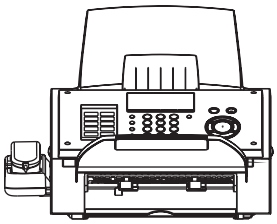
REAR VIEW



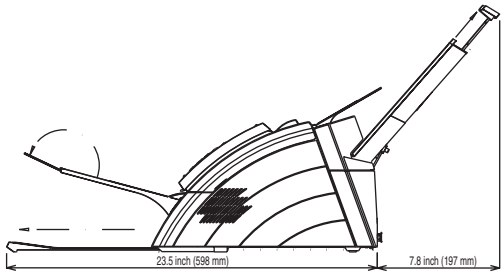
TOP VIEW



LEFT SIDE VIEW



FRONT VIEW



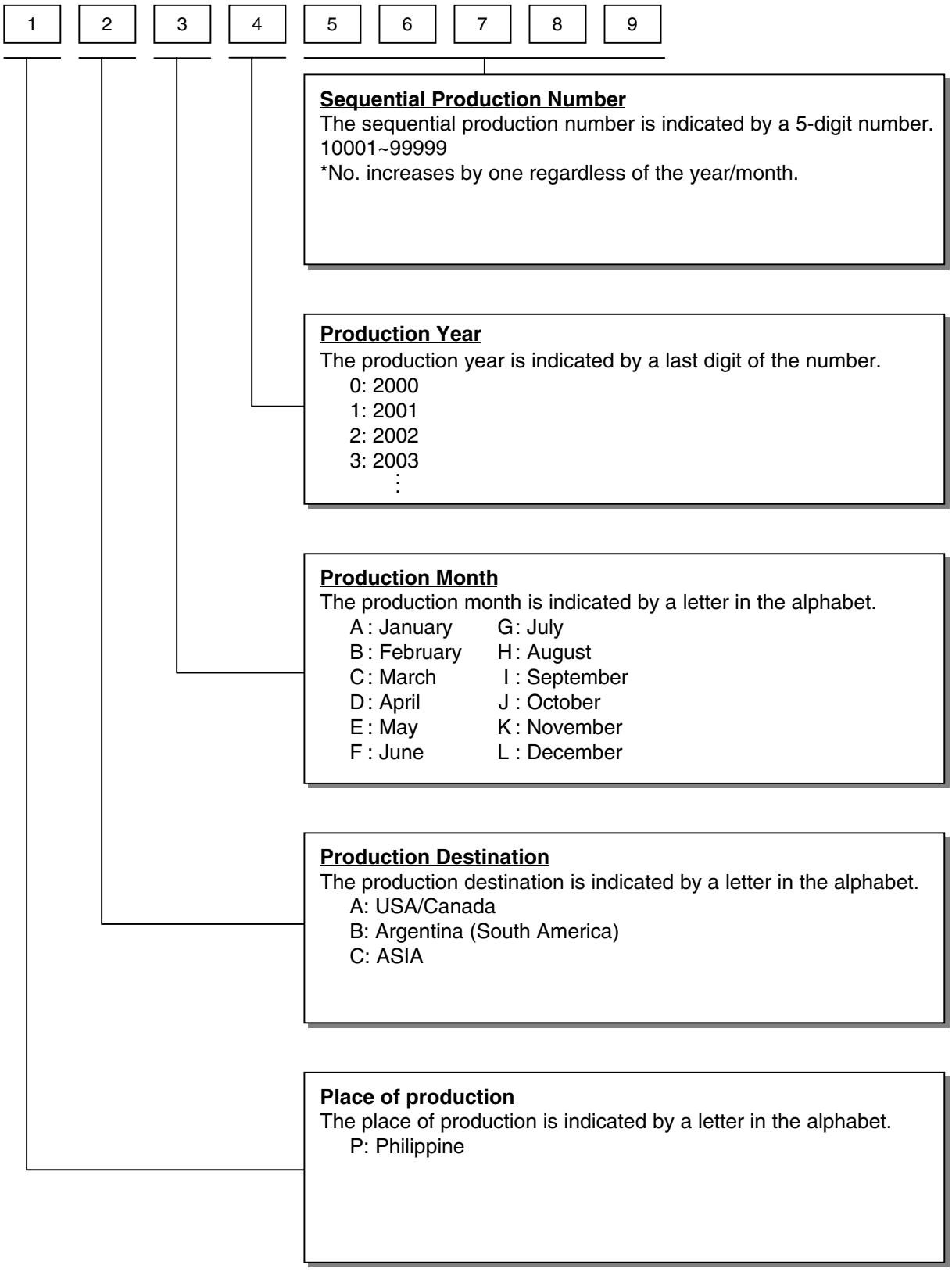
RIGHT SIDE VIEW

1.3.1. Serial Number Contents

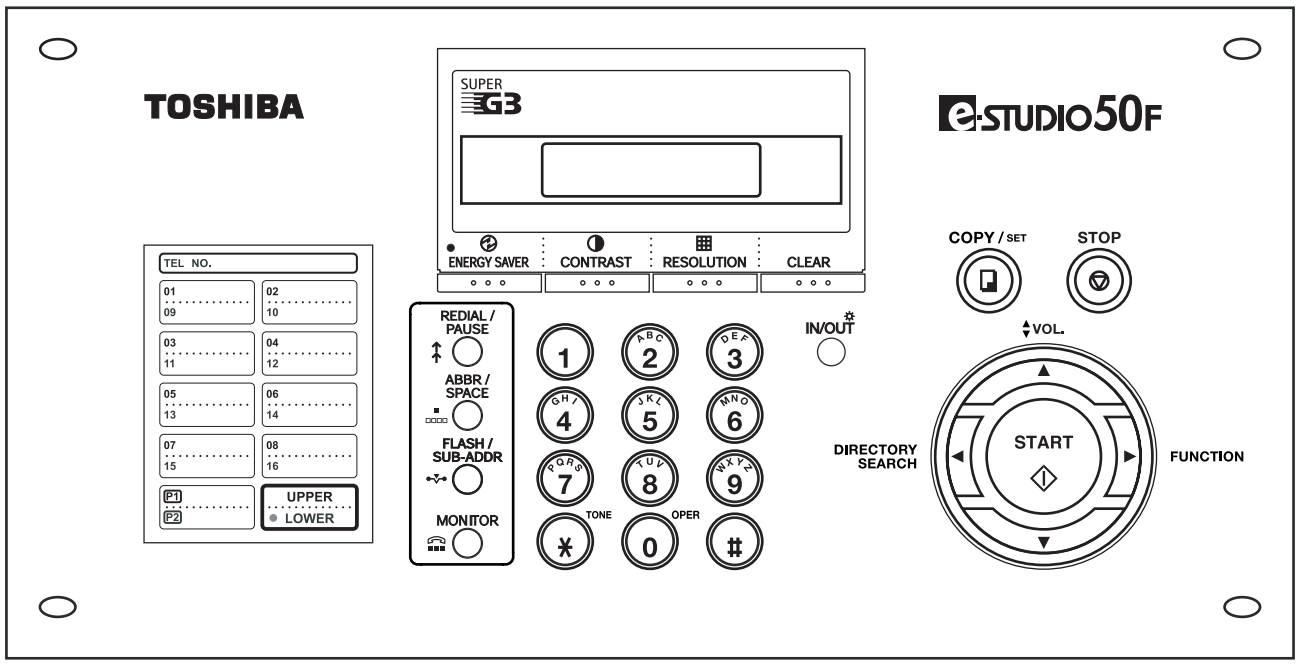
The contents of the 9-digit Serial Number is as follows:

Note:

Model DP-500F will utilize this format starting with first production.

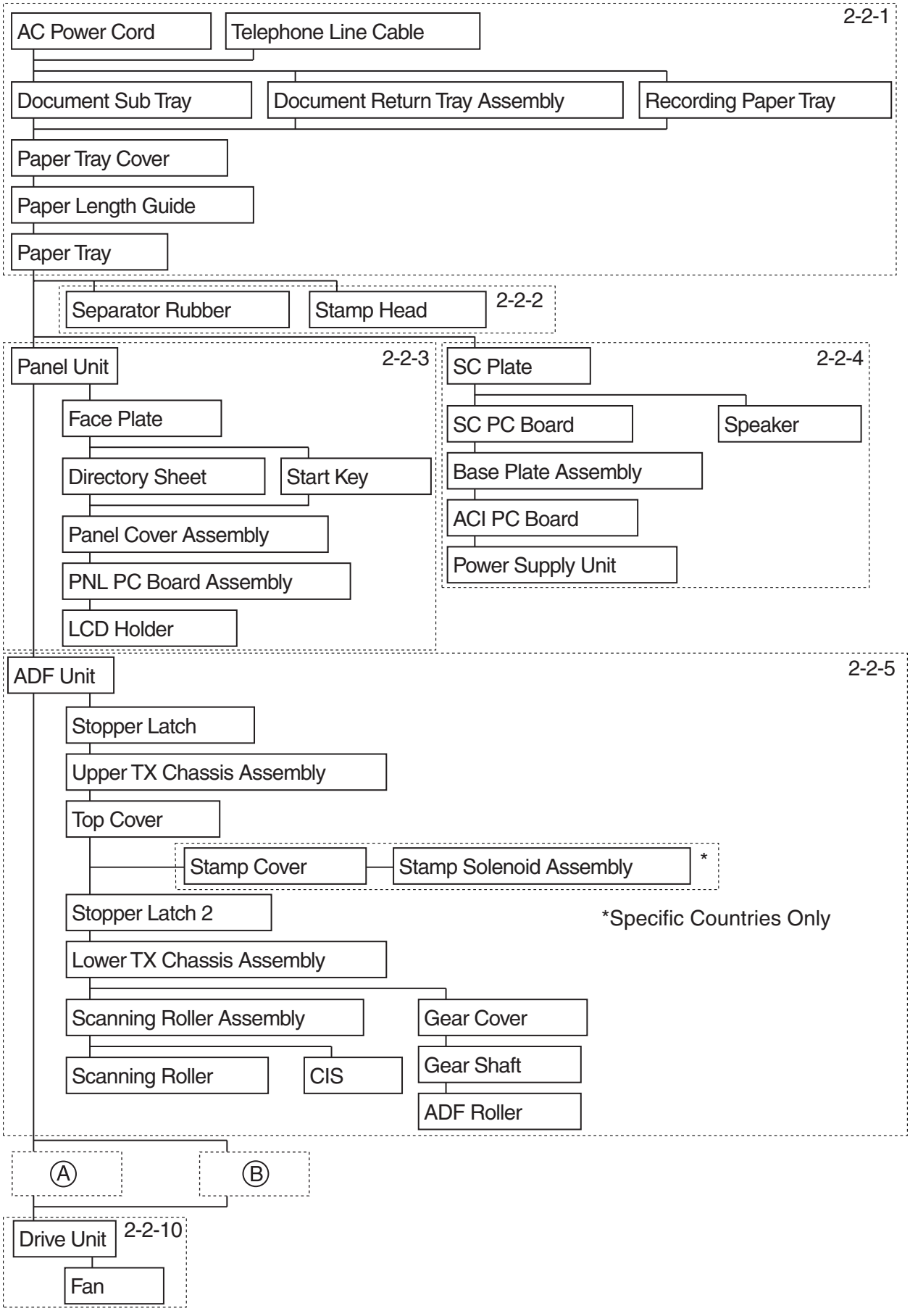


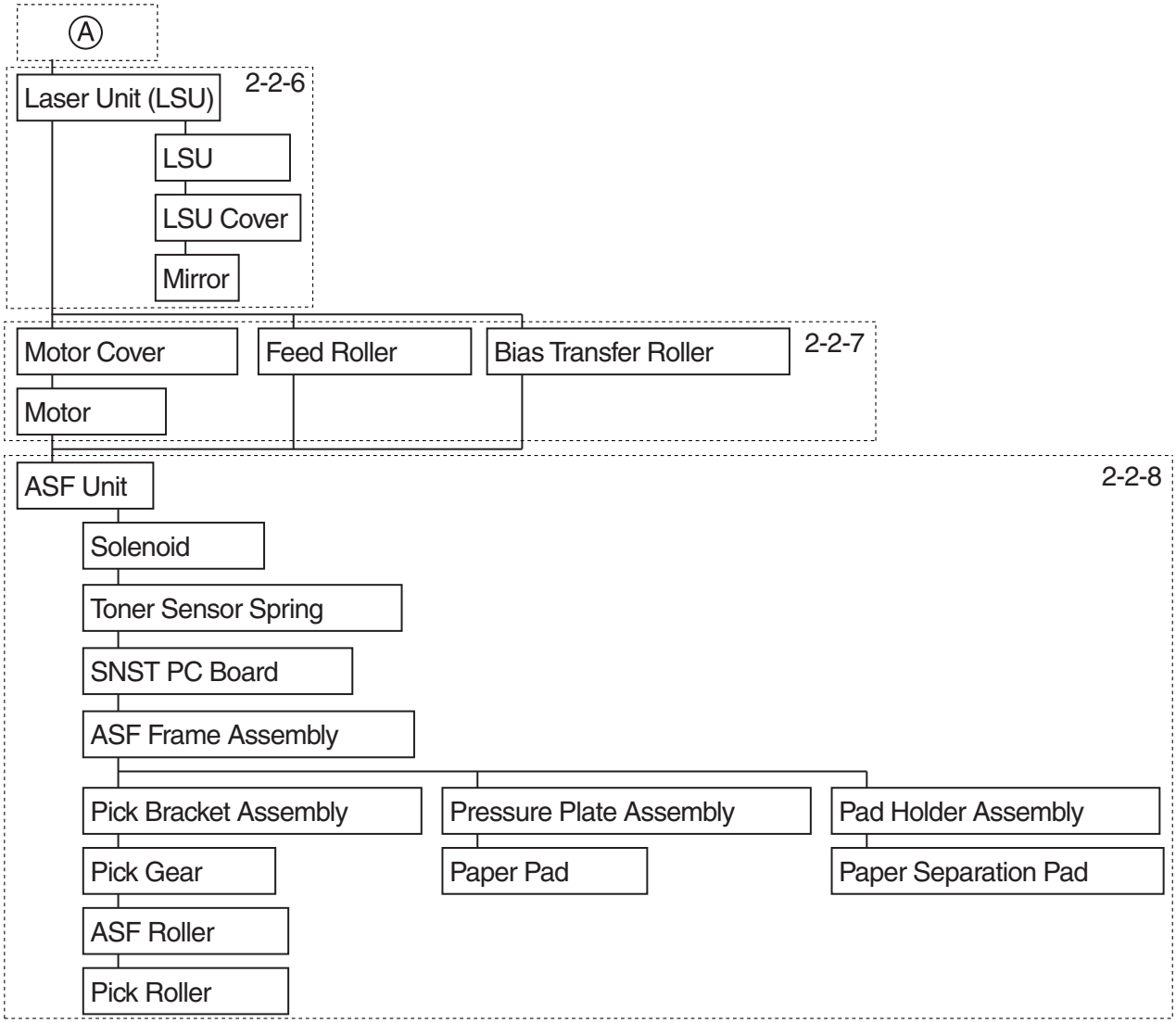
1.4. Control Panel

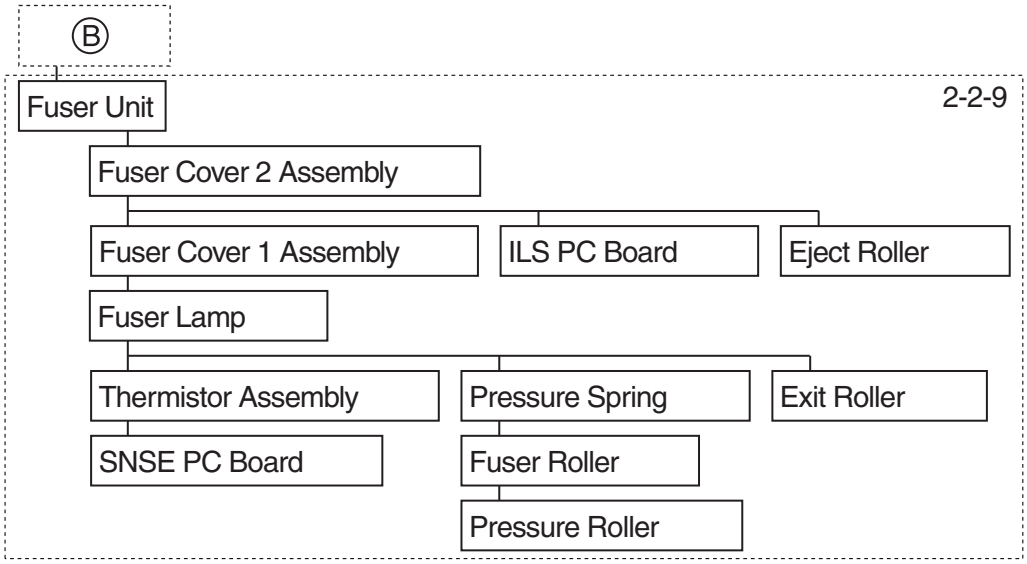


2 Disassembly Instructions

2.1. General Disassembly Flowchart

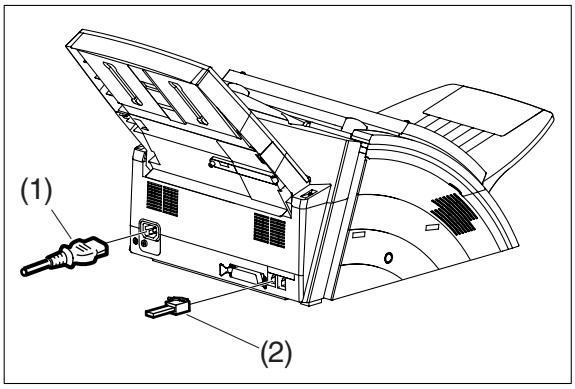



Ⓐ
Laser Unit (LSU)
2-2-6
LSU
LSU Cover
Mirror
Motor Cover
Feed Roller
Bias Transfer Roller
2-2-7
Motor
ASF Unit
2-2-8
Solenoid
Toner Sensor Spring
SNST PC Board
ASF Frame Assembly
Pick Bracket Assembly
Pressure Plate Assembly
Pad Holder Assembly
Pick Gear
Paper Pad
Paper Separation Pad
ASF Roller
Pick Roller

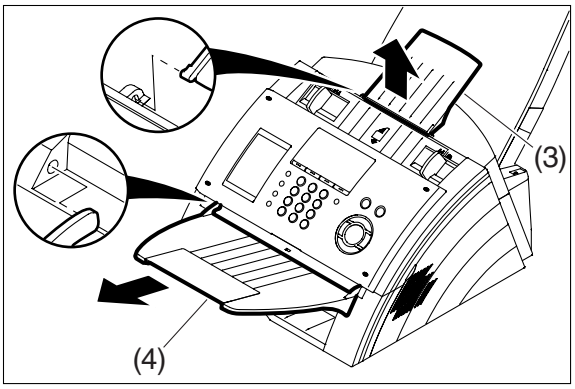

Ⓑ
Fuser Unit
2-2-9
Fuser Cover 2 Assembly
Fuser Cover 1 Assembly
ILS PC Board
Eject Roller
Fuser Lamp
Thermistor Assembly
Pressure Spring
Exit Roller
SNSE PC Board
Fuser Roller
Pressure Roller

2.2. Disassembly Instructions

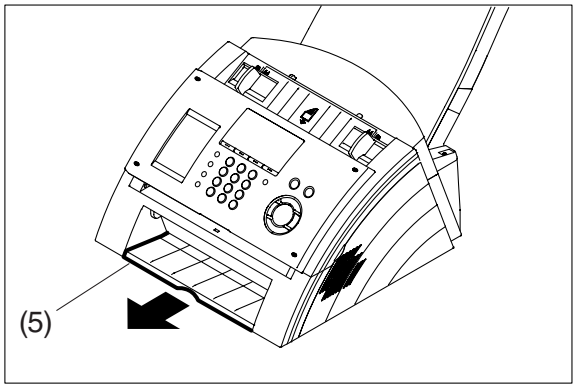
2.2.1. AC Power Cord, Telephone Line Cable, Document Sub Tray, Document Return Tray Assembly, Recording Paper Tray, Paper Tray Cover, Paper Length Guide, Paper Tray



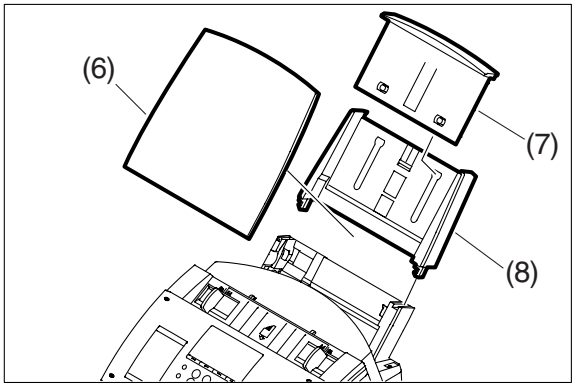
(1) Disconnect the **AC Power Cord**.
(2) Disconnect the **Telephone Line Cable**.



(3) Remove the **Document Sub Tray**.
(4) Remove the **Document Return Tray Assembly**.

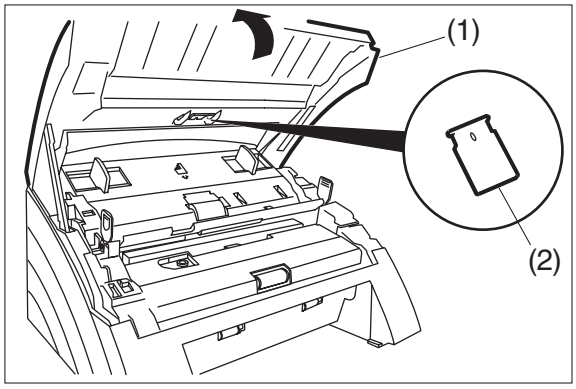


(5) Remove the **Recording Paper Tray**.

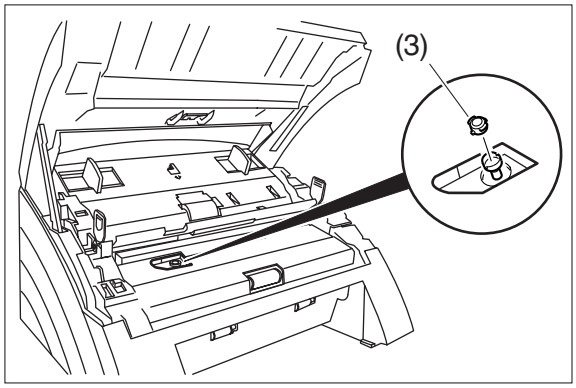


(6) Remove the **Paper Tray Cover**.
(7) Remove the **Paper Length Guide**.
(8) Remove the **Paper Tray**.

2.2.2. Separator Rubber, Stamp Head

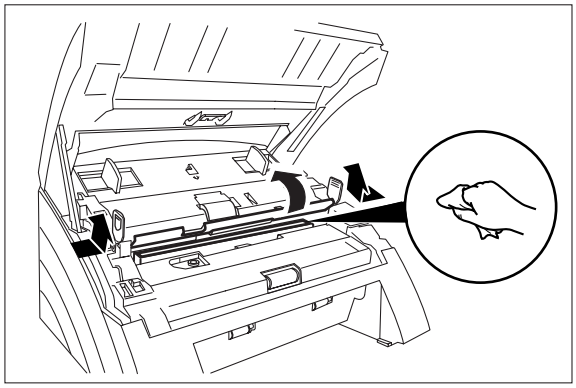


(1) Open the **Control Panel Unit**.
(2) Remove the **Separator Rubber**.



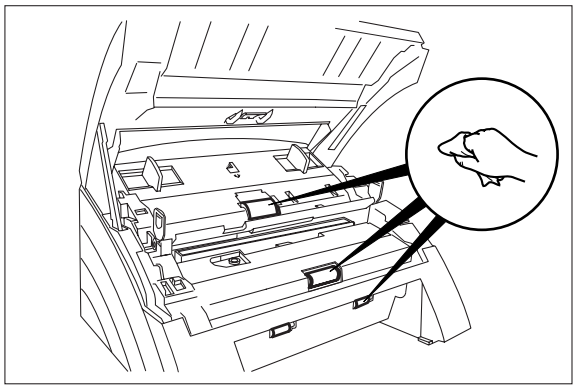
<Specific Countries Only>

(3) Remove the **Stamp Head**.



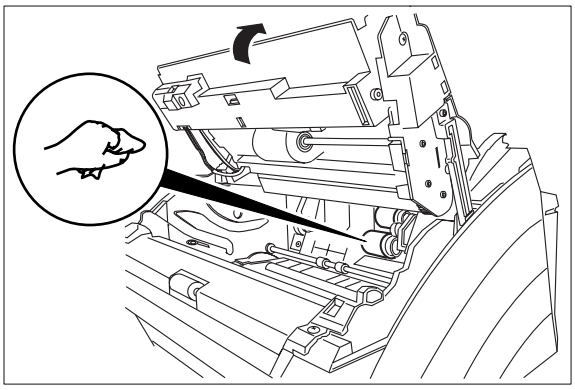
<Cleaning Scanning Glass>

(1) Clean the **Scanning Glass** with a soft cloth, saturated with isopropyl alcohol.



<Cleaning ADF Roller, Eject Roller and Exit Roller>

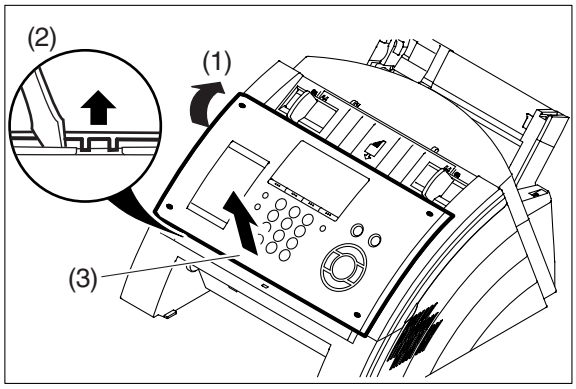
(2) Clean the **ADF Roller**, **Eject Roller**, **Exit Roller** with a soft cloth, saturated with isopropyl alcohol.



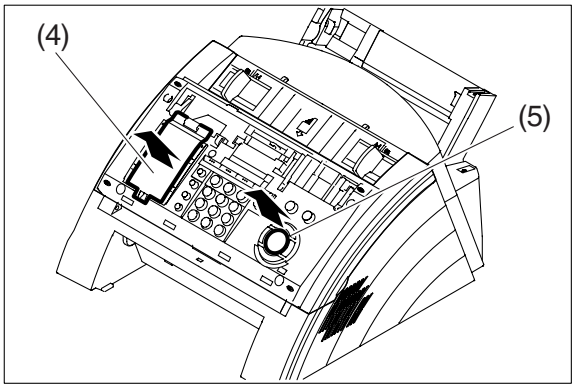
<Cleaning ASF Roller, Pick Roller>

(3) Remove the **Toner Cartridge Assembly**.
(4) Lift the Lower TX Chassis Assembly.
(5) Clean the **ASF Roller** and **Pick Roller** with a soft cloth, saturated with isopropyl alcohol.

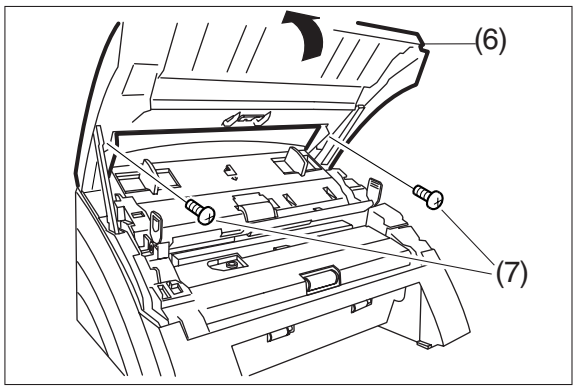
2.2.3. Face Plate, Directory Sheet, Start Key, Panel Cover Assembly, PNL PC Board Assembly, LCD Holder



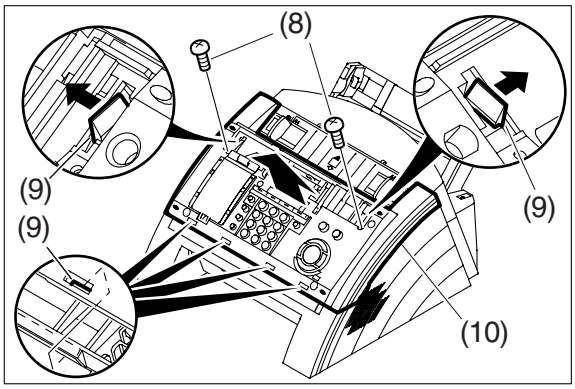
(1) Open the **Control Panel Unit**.
(2) Release **2 Latch Hooks** on the **Face Plate** using **a Straight Edge Screwdriver**.
(3) Remove the **Face Plate**.



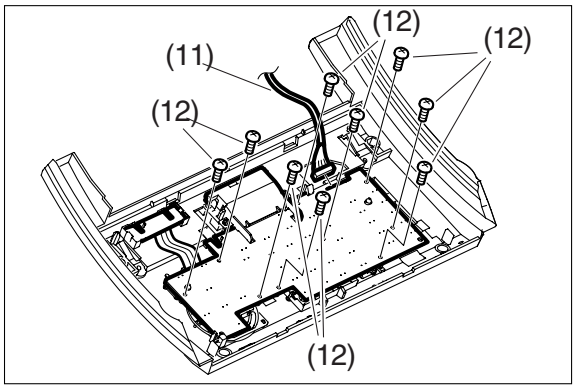
(4) Remove the **Directory Sheet**.
(5) Remove the **Start Key**.



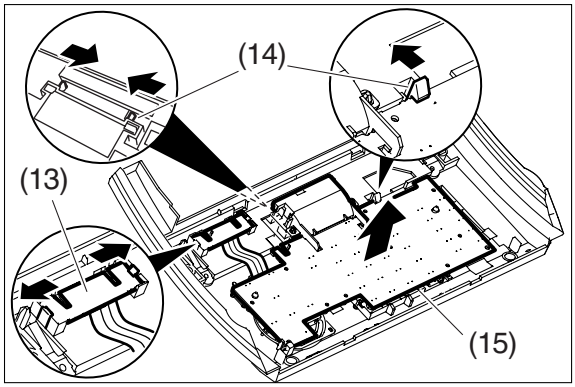
(6) Open the **Panel Cover Assembly**.
(7) 2 **Screws** (19).



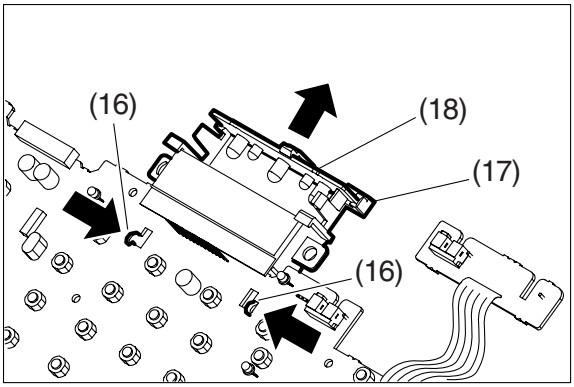
(8) 2 **Screws** (19).
(9) Release 6 **Latch Hooks**.
(10) Remove the **Panel Cover Assembly**.



(11) Disconnect the **PNL Harness** on the PNL PC Board.
(12) 9 **Screws** (7B).



(13) Remove **Sensor PC Board** releasing 2 Latch Hooks.
(14) Release 3 **Latch Hooks**.
(15) Remove the **PNL PC Board Assembly**.

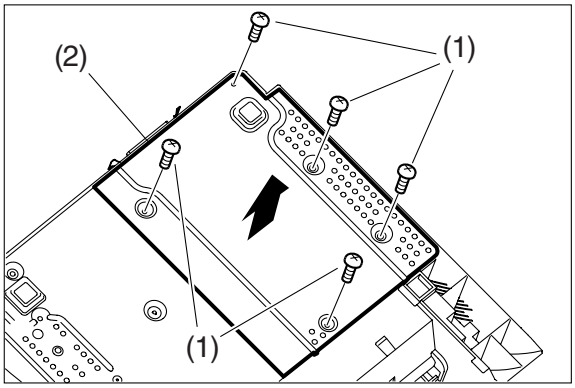


(16) Release 2 **Latch Hooks**.
(17) Remove the **LCD Holder**.
(18) Remove the **PNL PCB**.

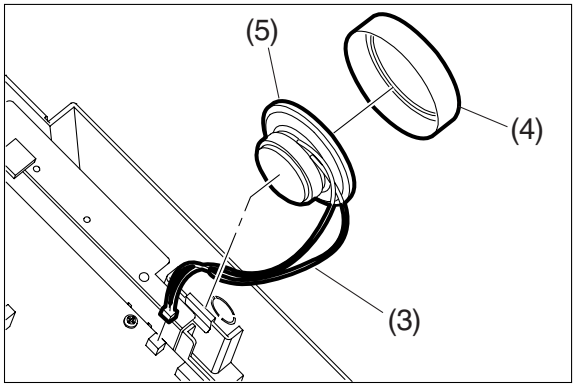
Note: Before installing the new PNL PCB

- Remove the protective plastic film from the LCD.
- Snap off the Sensor PCB from the upper right corner of the PNL PCB.
- Snap off the protective connector cover.

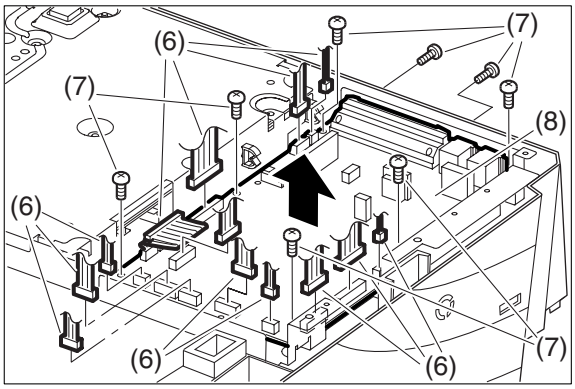
2.2.4. SC Plate, Speaker, SC PC Board, Base Plate Assembly, ACI PC Board, Power Supply Unit



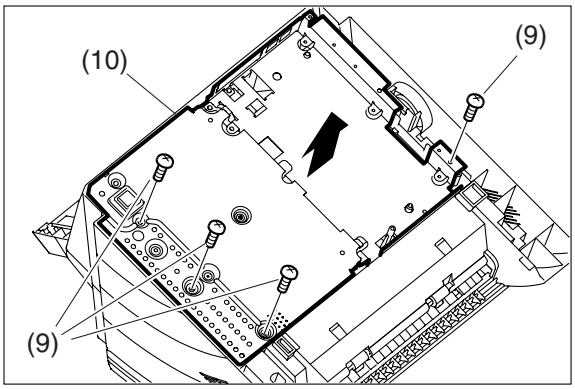
(1) 5 **Screws** (19).
(2) Remove the **SC Plate**.



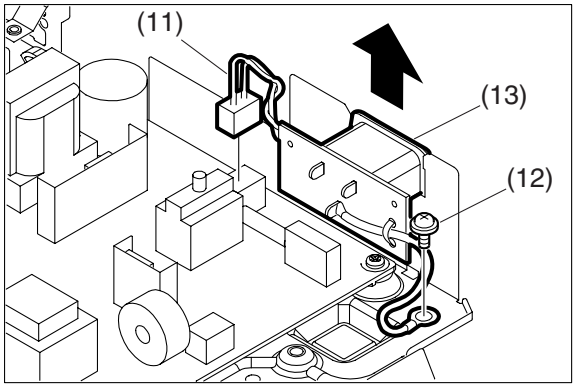
(3) Disconnect the **SPK Harness** on the SC PC Board (CN2).
(4) Remove the **Speaker Bracket**.
(5) Remove the **Speaker**.



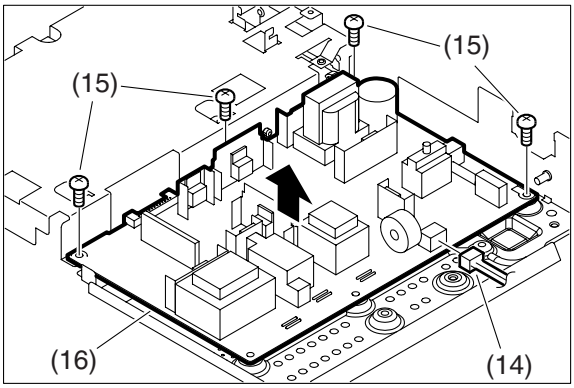
(6) Disconnect all **Connectors** on the SC PC Board.
Note:
CN 4 and 6 (Orange) cannot be removed (soldered).
Remove CN103 (White) from the Power Supply Unit.
(7) 6 **Screws** (19) and 2 **Screws** on Centronics I/F Connector.
(8) Remove the **SC PC Board**.
Note:
When re-installing the SC PC Board, be careful of the position of the Sensor



(9) 4 **Screws** (19).
(10) Remove the **Base Plate Assembly**.

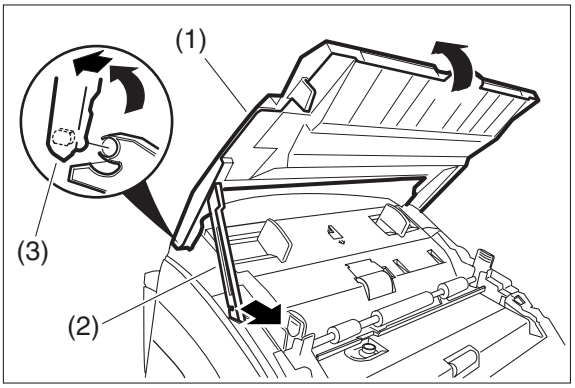


(11) Disconnect the **ACI Connector** on the Power Unit (CN101).
(12) 1 **Screw** (35).
(13) Remove the **ACI PC Board**.

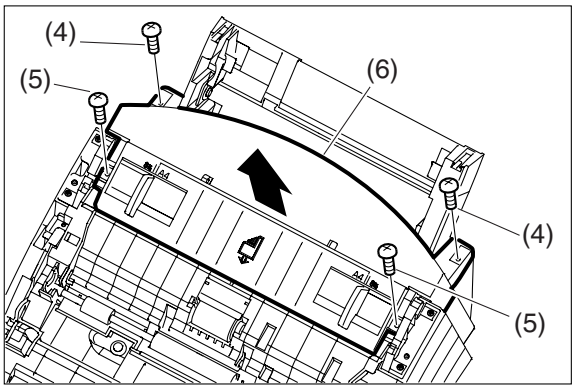


(14) Disconnect the **HEAT1 Harness** on the Power Supply Unit (CN102).
(15) 4 **Screws** (62).
(16) Remove the **Power Supply Unit**.

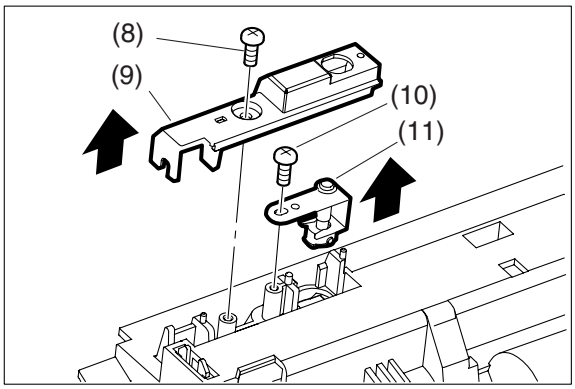
2.2.5. Stopper Latch, Upper TX Chassis Assembly, Top Cover, Stopper Latch 2, Lower TX Chassis Assembly, Stamp Cover, Solenoid Assembly, Scanning Roller Assembly, Scanning Roller, CIS Assembly, Gear Cover, Gear Shaft, ADF Roller



(1) Open the Upper TX Chassis Assembly.
(2) Remove the **Stopper Latch**.
(3) Remove the **Upper TX Chassis Assembly**.

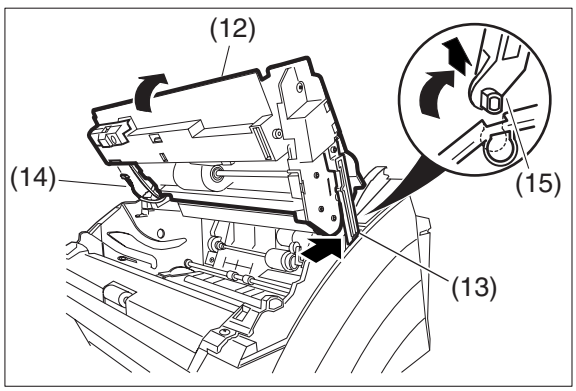


(4) 2 **Silver Screws** (B1).
(5) 2 **Screws** (19).
(6) Remove the **Top Cover**.

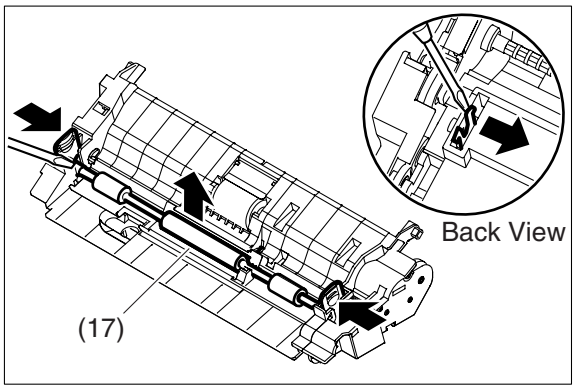


<Specific Countries Only>

(7) Open the **Lower TX Chassis Assembly**.
(8) 1 **Screw** (19).
(9) Remove the **Stamp Cover**.
(10) 1 **Screw** (19).
(11) Remove the **Stamp Solenoid Assembly**.



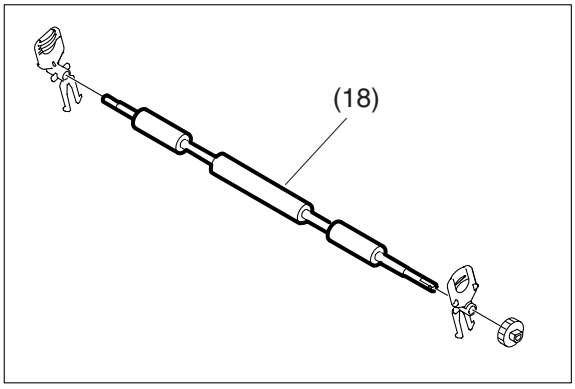
(12) Open the **Lower TX Chassis Assembly**.
(13) Remove the **Stopper Latch 2**.
(14) Disconnect the **CIS Harness**.
(15) Remove the **Lower TX Chassis Assembly**.



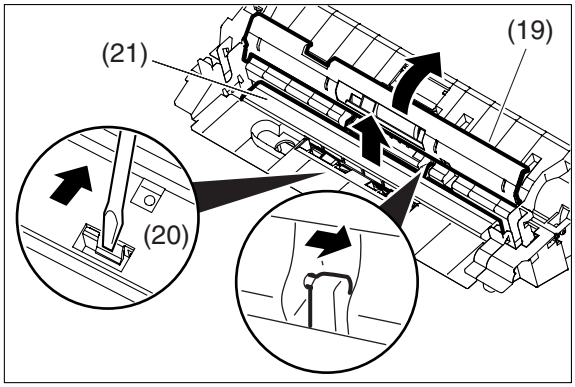
(16) Release the **Latch Hooks** with the Screw driver.

Note:
For B4 Units (non-USA), release the Latch Hooks from the back side.

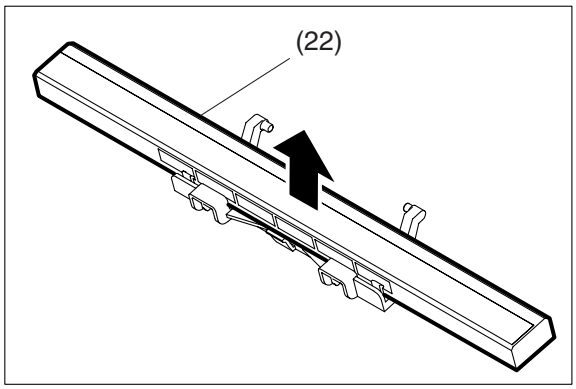
(17) Remove the **Scanning Roller Assembly**.



(18) Remove the **Scanning Roller**.

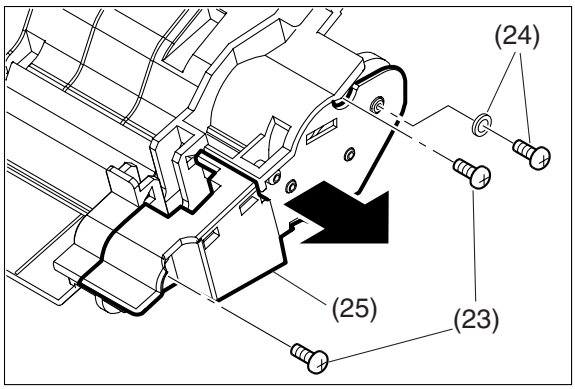


(19) Lift the **White Guide**.
(20) Release the **Latch Hooks**.
(21) Remove the **CIS Holder** with the CIS Assembly.

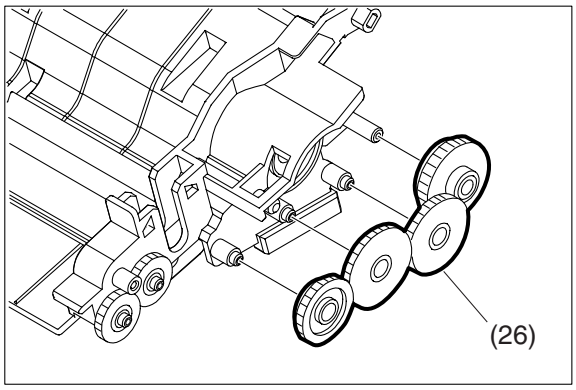


(22) Remove the **CIS Assembly**.

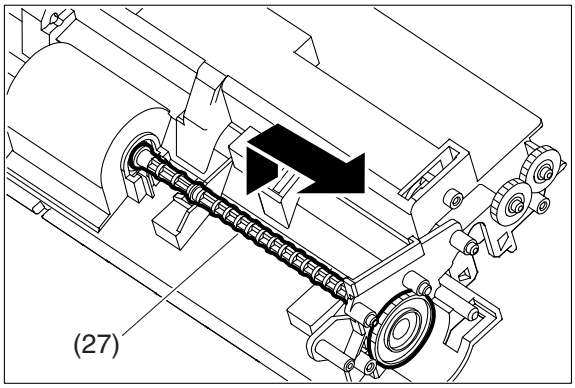
Note:
When re-installing, make sure to install the CIS Assembly into the CIS Holder first, before re-attaching it to the Lower TX Chassis Assembly.



(23) 2 **Screws** (19).
(24) 1 **Screw** (7B) and 1 **Washer** (G4).
(25) Remove the **Gear Cover**.

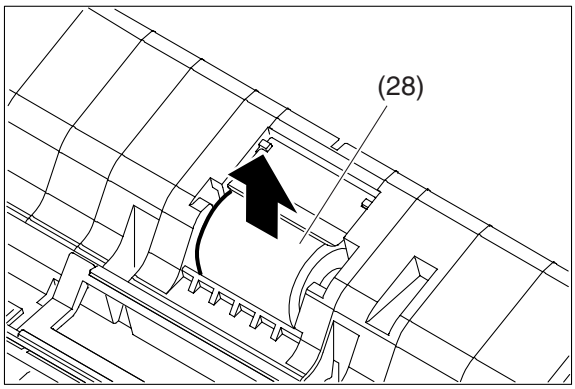


(26) Remove **B51C16 F Gear**, **C18C43 F Gear**, **C41 F Gear** and **C34D19 F Gear**.



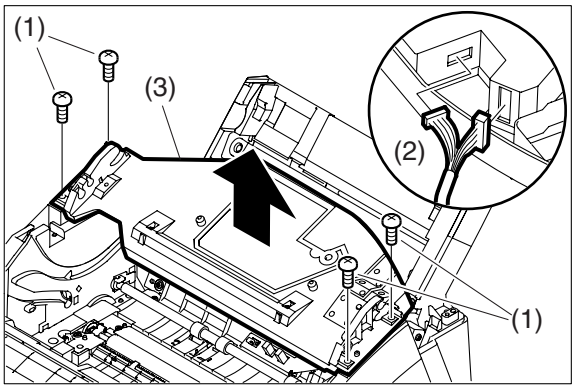
(27) Remove the **Gear Shaft**.

Note:
Lift by the center of the Shaft, and move it towards the right side.

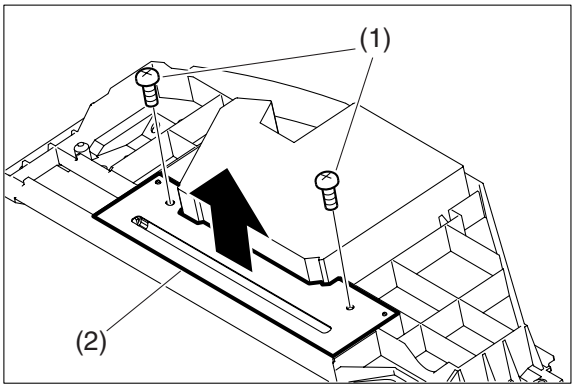


(28) Remove the **ADF Roller**.

2.2.6. Laser Unit (LSU)

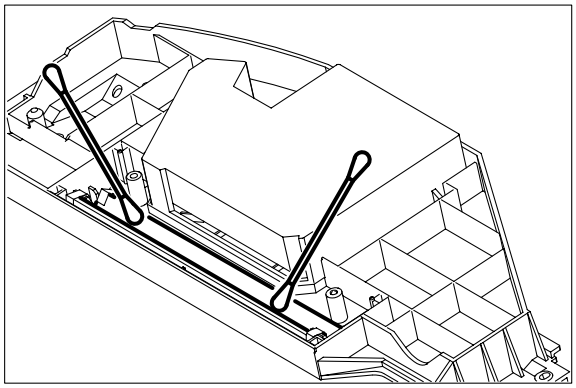


(1) 4 **Black Screws** (G2).
(2) Disconnect the **LSU Harness**.
Note:
Note the Harness routing to the PC Board for re-installation purposes.
(3) Remove the **LSU**.



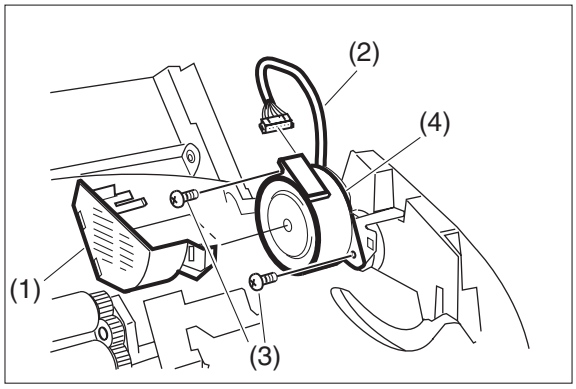
<Cleaning Mirror>

(1) 2 **Screws** (19).
(2) Remove the **LSU Cover**.

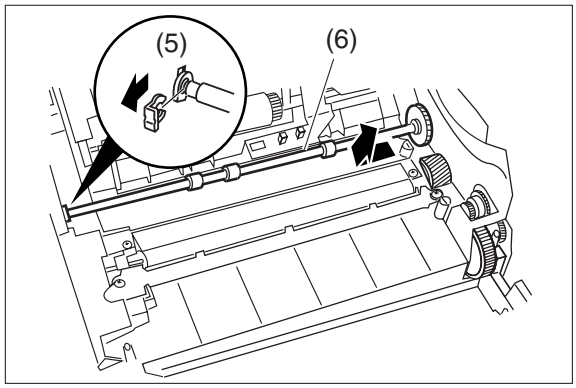


(3) Clean the **Mirrors** with a soft cloth, saturated with isopropyl alcohol.

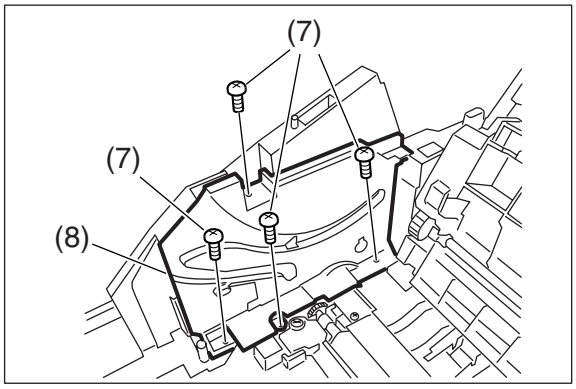
2.2.7. Motor, Left Toner Cartridge Rail, Feed Roller, Bias Transfer Roller



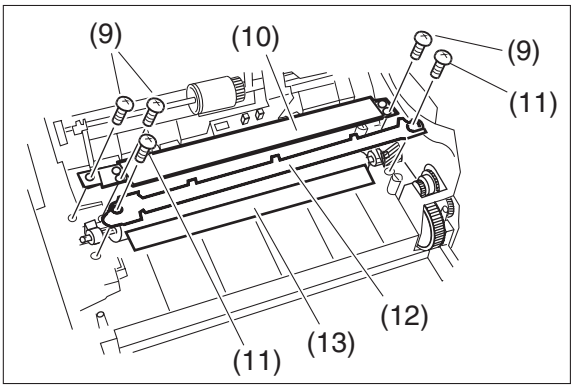
(1) Remove **Motor Cover** releasing 3 Hooks.
(2) Disconnect the **MOT Harness**.
Note:
Note the Harness routing to the PC Board for re-installation purposes.
(3) 2 **Screws** (19).
(4) Remove the **Motor**.



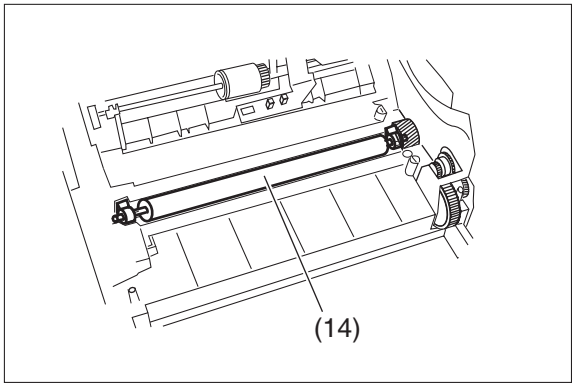
(5) Remove the **Snap Ring** (B9).
(6) Remove the **Feed Roller**.
Note:
Lift the right side of the Feed Roller pushing towards the left.



(7) 4 **Screws** (19).
(8) Remove the **Left Toner Cartridge Rail**.



(9) 3 **Screws** (19).
(10) Remove the **BTR Guide**.
(11) 2 **Screws** (19).
(12) Remove the **Plate Holder**
(13) Remove the **Discharge Plate**

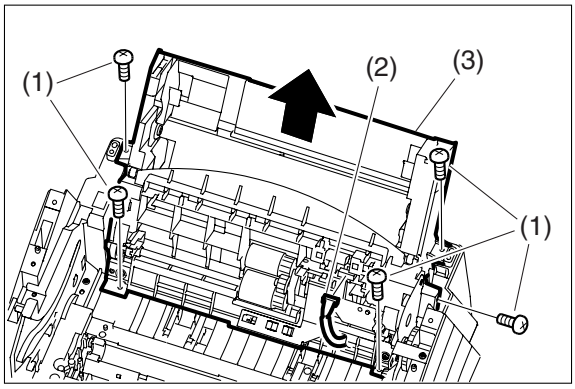


(14) Remove the **Bias Transfer Roller**

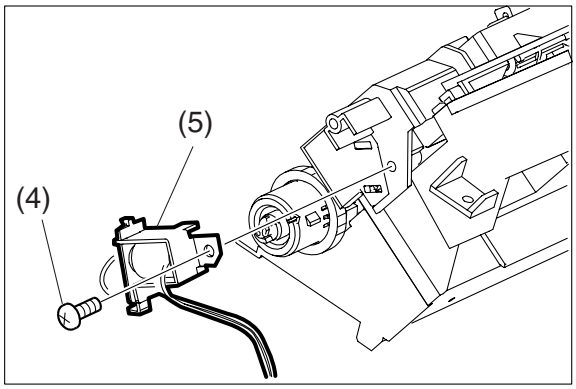
Caution:

- Do not Touch the surface of the Bias Roller. Clean the Bias Transfer Roller only with a dry cloth.
- When cleaning or replacing the Bias Transfer Roller, clean both sides of the Transfer Guide with isopropyl alcohol.

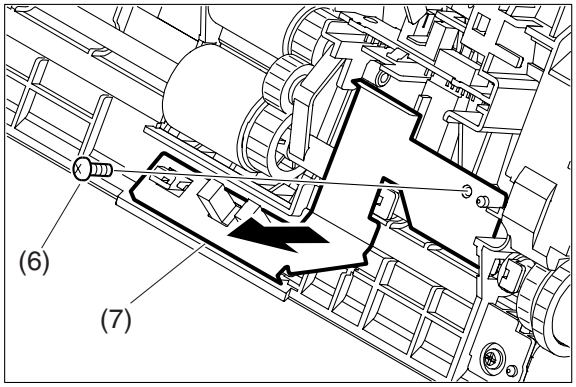
2.2.8. Solenoid, Toner Sensor Spring, SNST PC Board, ASF Frame Assembly, Pick Bracket Assembly, Pick Gear, ASF Roller, Pick Roller, Pressure Plate, Pad Holder



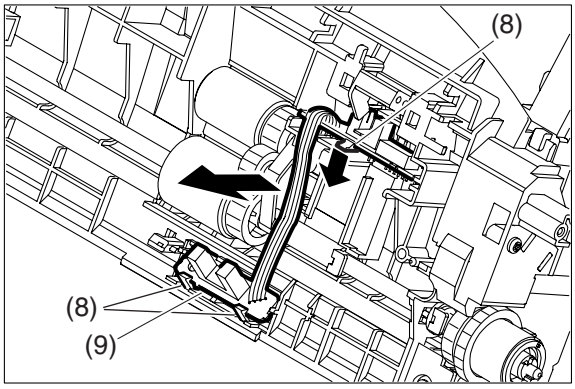
(1) 5 **Screws** (19).
(2) Disconnect the **SNST Harness**.
(3) Remove the **ASF Unit**.



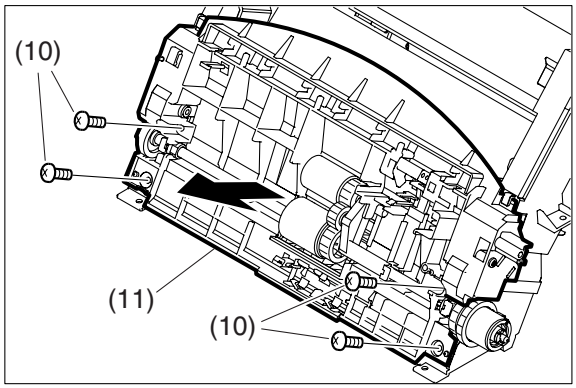
(4) 1 **Screw** (19).
(5) Remove the **Solenoid**.
Note:
Note the Harness routing to the PC Board for re-installation purposes.



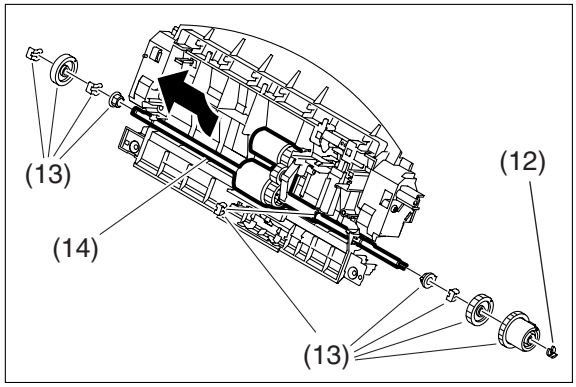
(6) 1 **Screw** (19).
(7) Remove the **Toner Sensor Spring**.



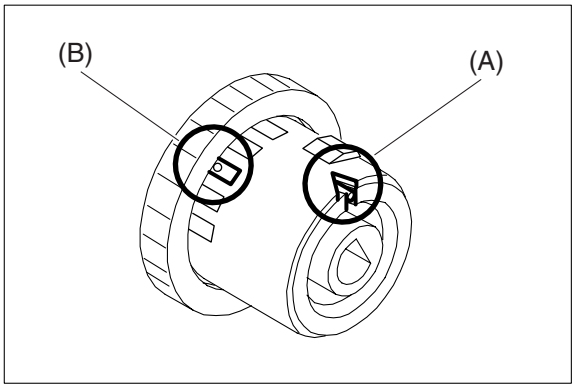
(8) Release 3 **Latch Hooks**.
(9) Remove the **SNST PC Board**.



(10) 4 **Screws** (19).
(11) Remove the **ASF Frame Assembly**.

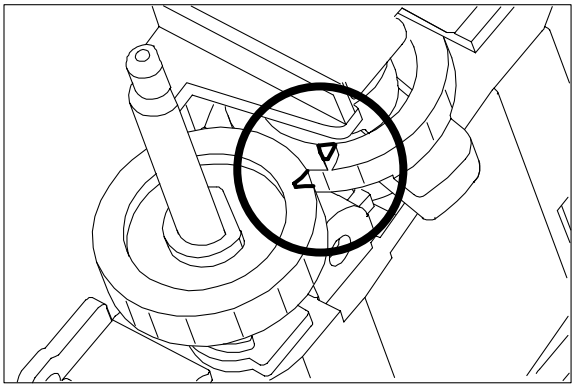


(12) Remove the **Snap Ring** (G3).
(13) Remove 4 **Snap Rings** (B9), **Clutch Assembly**, 2 **Cam Gears**, **Bushing**, **P6L5 Conductor Bushing**
(14) Remove the **Pick Bracket Assembly**.

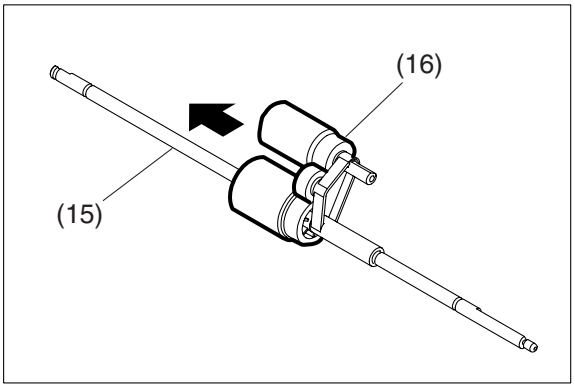


Note:
Re-assemble the Clutch Assembly and follow the instructions below to properly align it.

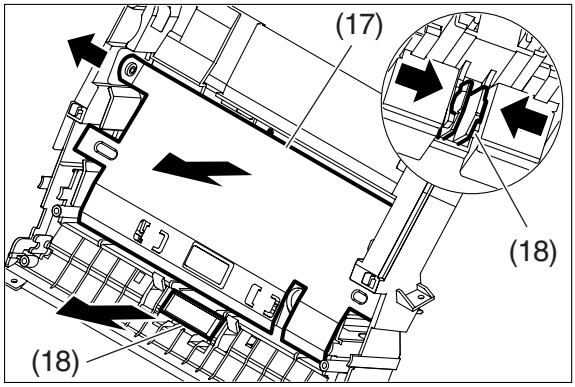
Slowly pull out the F Gear D34 and select one of the five notches (B) on the Clutch Case that will align the triangular notches (A) of the Clutch Drum [Black] and Clutch Case [White]



Note:
To synchronize the Cam Gears, when re-installing the Cam Gears, make sure that the alignment pointers of the Cam Gears are properly placed into the notches of the Cams on both sides.

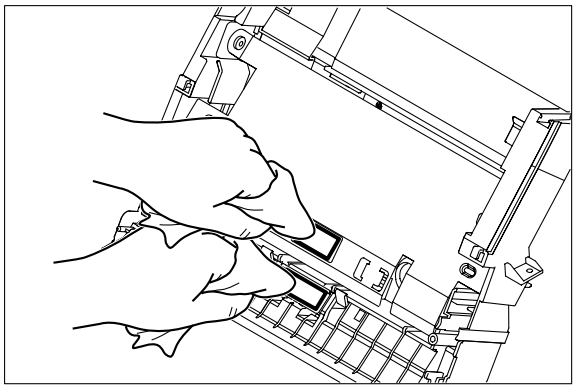


(15) Remove the **ASF Shaft**.
(16) Remove the **Pick Gear**, **ASF Roller** and **Pick Roller**.



(17) Remove the **Pressure Plate Assembly**.
(18) Remove **Pad Holder**.

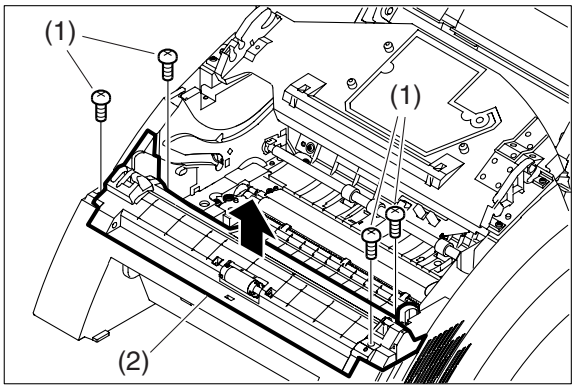
Note:
When re-installing the Pad Holder, be careful not to damage the Separation Pad Plate.



<Cleaning Paper Pad, Paper Separation Pad>

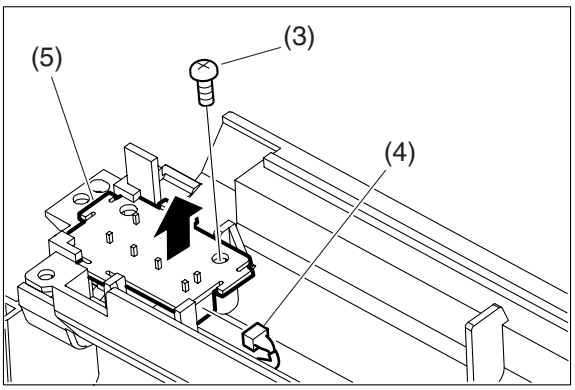
(1) Clean the **Paper Pad** and **Paper Separation Pad** with a soft cloth, saturated with isopropyl alcohol.

2.2.9. Fuser Cover 2 Assembly, ILS PC Board, Eject Roller, Fuser Cover Assembly, Fuser Lamp, Thermistor Assembly, SNSE PC Board, Thermistor Assembly, Pressure Spring, Fuser Roller, Pressure Roller, Exit Roller

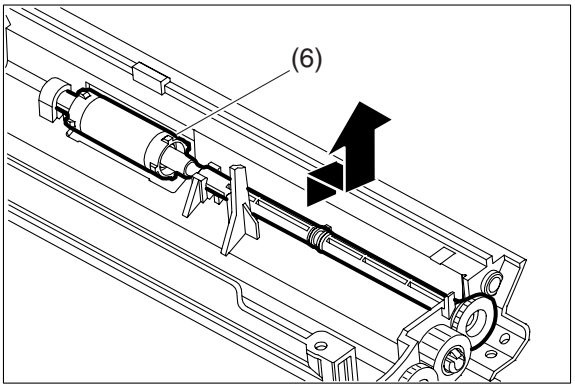


Note:
Disconnect the ILS PC Board Connector CN11 on the SC PC Board before proceeding to the next step.

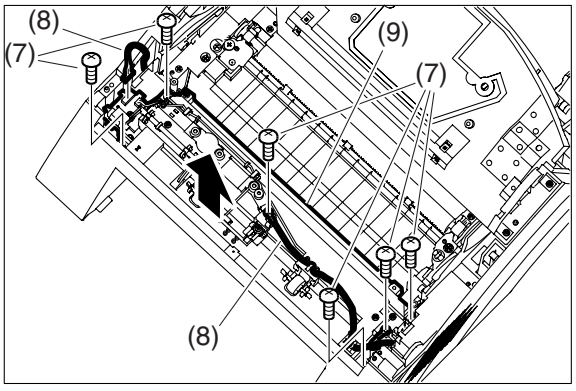
(1) 4 **Screws** (19).
(2) Remove the **Fuser Cover 2 Assembly**.



(3) 1 **Screw** (19).
(4) Disconnect the **ILS Harness**.
(5) Remove the **ILS PC Board**.



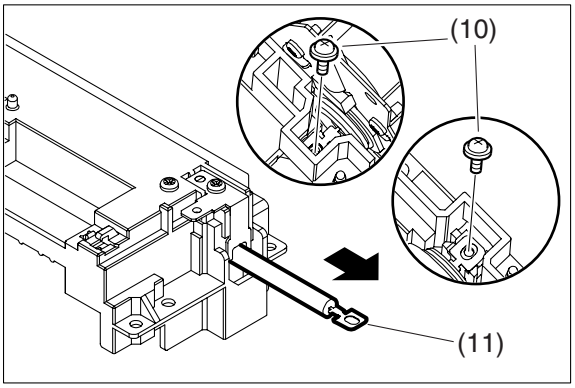
(6) Remove the **Eject Roller**.



(7) 6 **Screws** (19).
(8) Disconnect **HEAT1 Harness** and **SNSE Harness**.

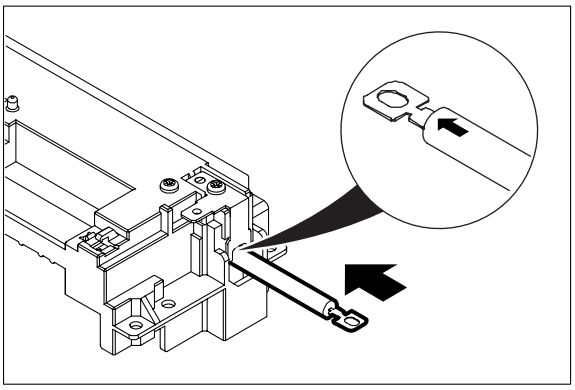
Note:
Note the Harness routing to the PC Board for re-installation purposes.

(9) Remove the **Fuser Cover Assembly**.

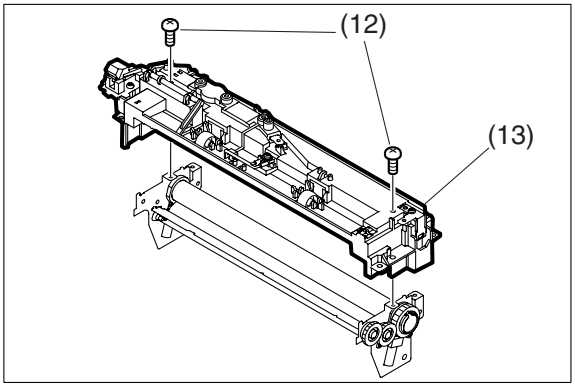


(10) 2 **Screws** (23).
(11) Remove the **Fuser Lamp**.

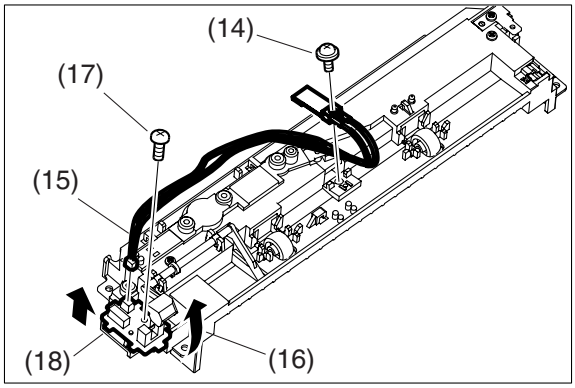
Caution:
Do not Touch the glass portion of the Fuser Lamp with bare hands. Grease from finger prints will shorten its life cycle, use isopropyl alcohol to clean finger prints.



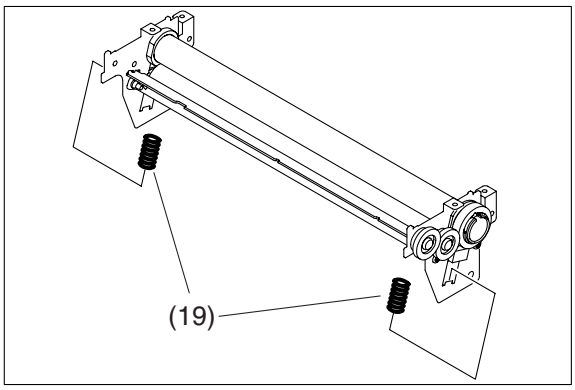
Note:
When re-installing the Fuser Lamp, insert the end of the Lamp with the arrow mark first.



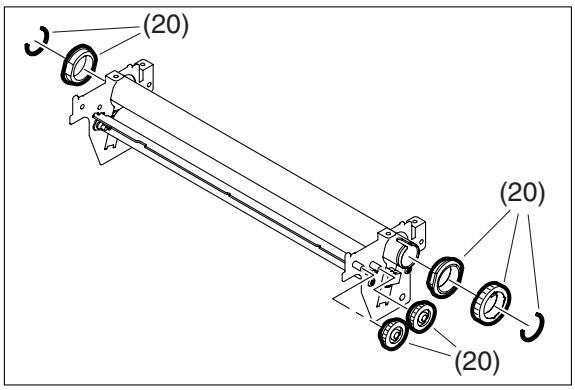
(12) 2 **Screws** (19).
(13) Remove the **Fuser Cover Assembly**.



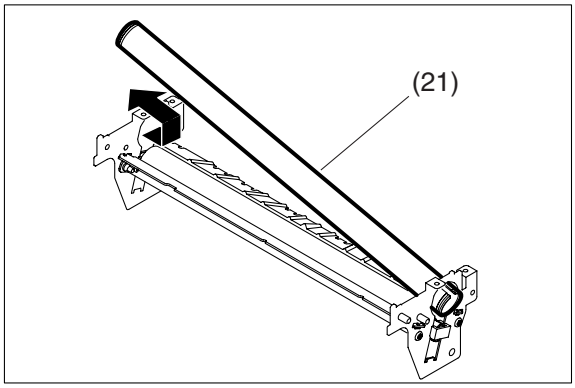
(14) 1 **Screw** (4B).
(15) Disconnect and remove the **Thermistor Assembly**.
(16) Lift the **Paper Exit Actuator**.
(17) 1 **Screw** (19).
(18) Remove the **SNSE PC Board**.



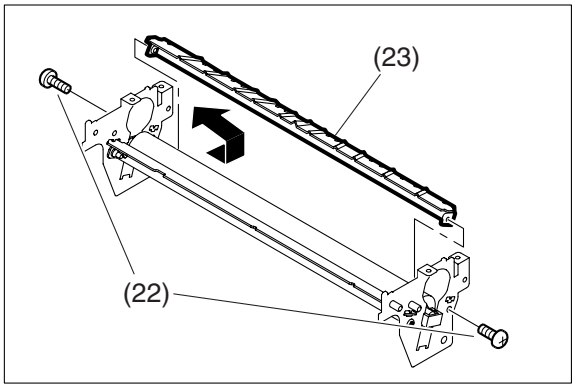
(19) Remove the **Pressure Springs**.



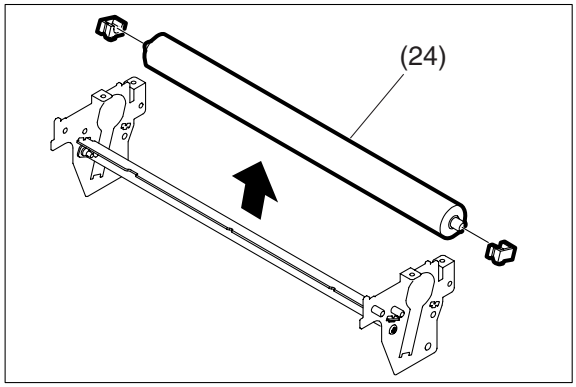
(20) Remove the 2 **C-Rings**, 2 **P17L6.8 Bushings** (318), **E24 Drive Gear** and 2 **D16E17 F Gears**,



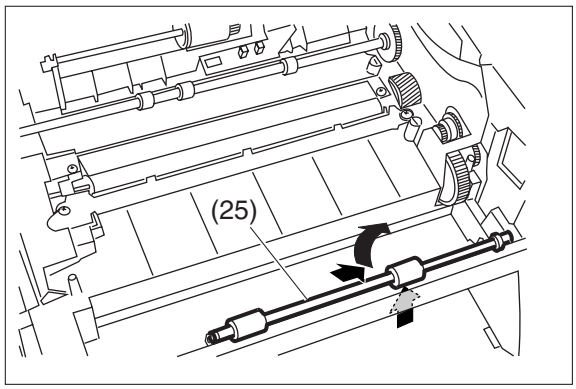
(21) Remove the **Fuser Roller**.



(22) 2 **Screws** (19).
(23) Remove the **Rear Paper Guide**.

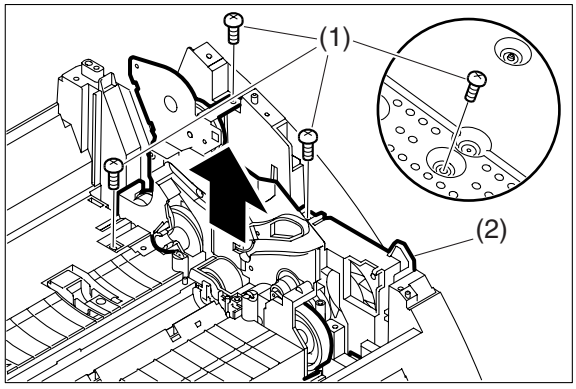


(24) Remove the **Pressure Roller**.

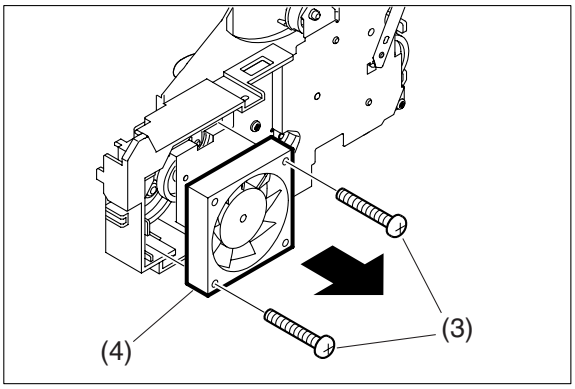


(25) Remove the **Exit Roller**.

2.2.10. Fan

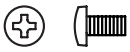
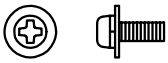
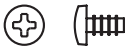
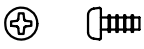
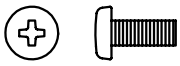


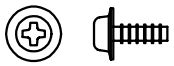
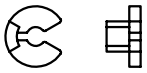
(1) 3 **Screws** (19) and 1 **Screw** (19) from the Base Plate Assembly.
(2) Remove the **Drive Unit**.



(3) 2 **Screws** (A3).
(4) Remove the **Fan**.

2.3. Screw Identification Template

Ref No.	Part No.	Figure	Remark
16	XYN3+8J		Screw
19	XTB3+8J		Screw
21	XTB3+6F		Screw
23	XYN3+F8		Screw
35	XYN4+F6		Screw
36	XYN3+F6		Screw
62	XTB3+6J		Screw
1Y	XTB3+10J		Screw
4B	XYN3+J10		Screw
5W	XUC3		E-Ring
5Y	XUC4		E-Ring
6I	XUC5		E-Ring
7B	XTB26+6J		Screw
A3	XTB3+20J		Screw
B1	DZPB000007		Silver Screw
B4	XTB3+8JK		Screw
B5	XSB4+10BN		Screw
B9	DZJM000171		Snap Ring

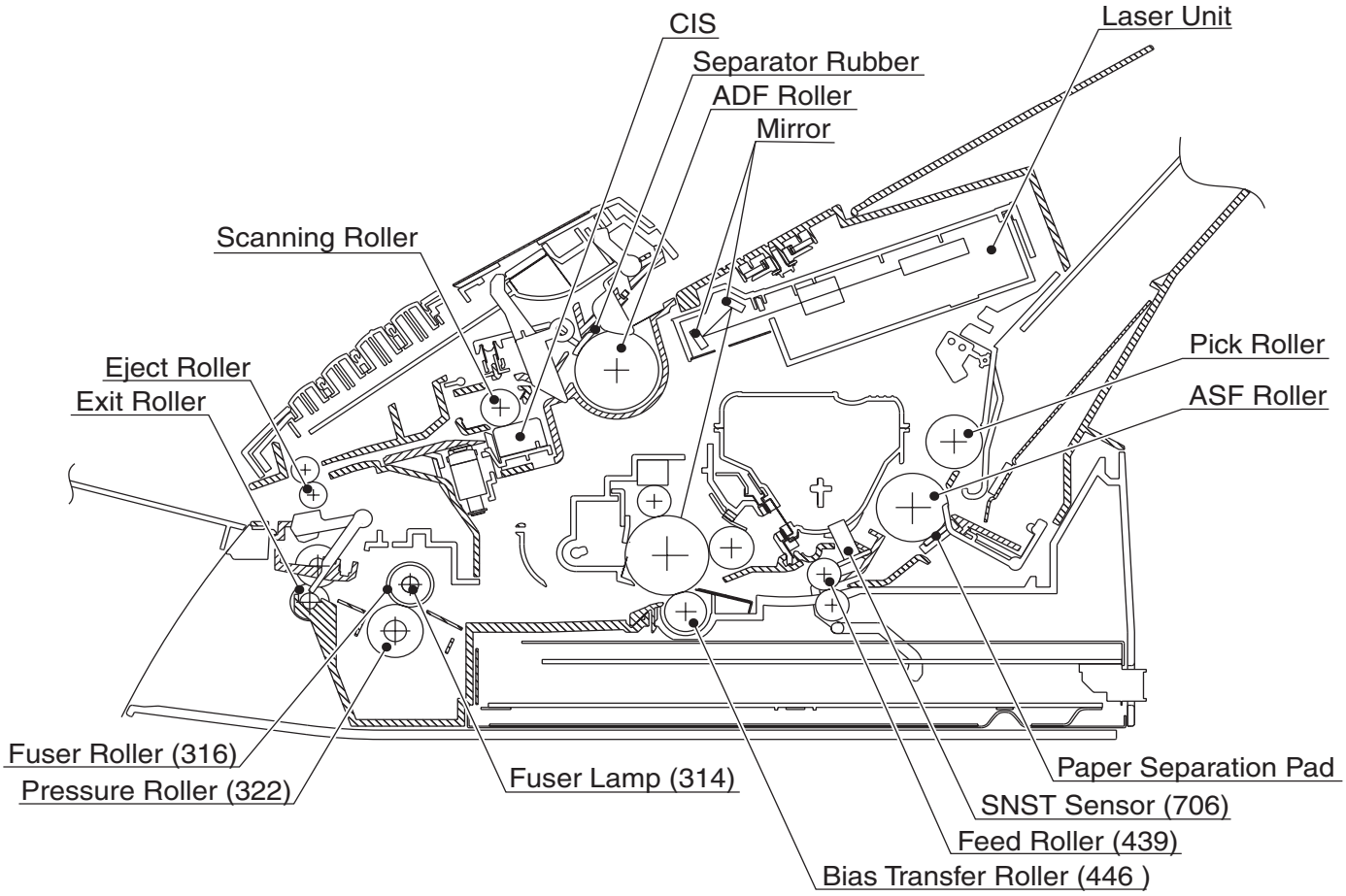
Ref No.	Part No.	Figure	Remark
C8	XTW3+8SFC		Screw
G2	XTB3+12JZ		Black Screw
G3	FFPFJ0041		Snap Ring
G4	DZKP00023		Washer

3 Check Points

3.1. Required Tools

No.	Tool	No.	Tool
1	Soft Cloth	6	Tweezer
2	Isopropyl Alcohol	7	Pliers
3	Phillips Screwdriver (#1 and #2)	8	Cotton Swab
4	Stubby Phillips Screwdriver (#2)	9	Brush
5	Blade-tip Screwdriver (3/32 in)	10	Molykote EM-50L Grease (**Parts No. EM-50L**)

3.2. Periodic Check Points



3.3. Periodic Maintenance Check List

The chart outlined below is the general guideline for maintenance. The environmental conditions and actual use will vary these factors. The chart below is for reference only.

	Mechanical Parts	Replacement	
		Cycle	Procedure
Receiver Unit	ASF Roller	70,000 sheets	Refer to ch 2.2.8.
	Bias Transfer Roller		Refer to ch 2.2.7.
	Fuser Roller		Refer to ch 2.2.9.
	Pressure Roller		Refer to ch 2.2.9.
Transmitter Unit	ADF Roller	70,000 sheets	Refer to ch 2.2.5.
	Separator Rubber		Refer to ch 2.2.2.
	Scanning Roller		Refer to ch 2.2.5.

Note

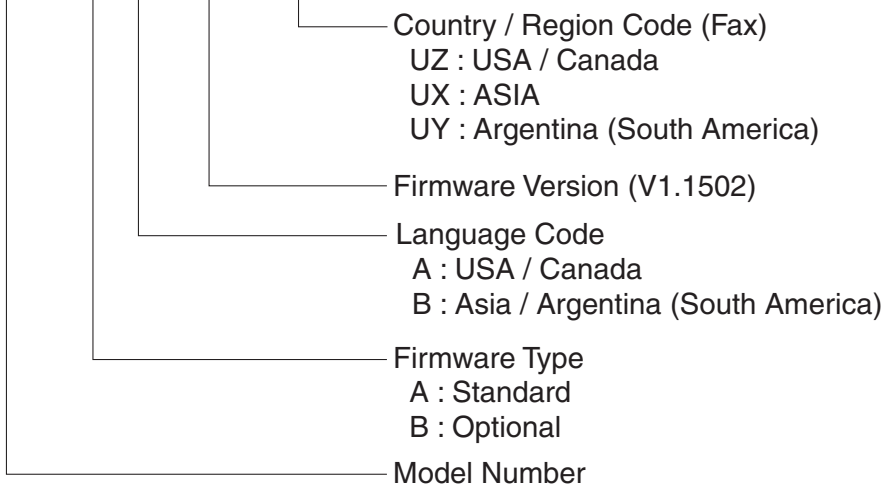
The number of pages is based on the ITU-T Image No. 1 test chart at Multi-Copy mode.
Operation environment 68°F (20°C), 50% RH.

3.4. Updating the Firmware

Unlike other machines with removable EPROM (Erasable Programmable ROM), this machine is equipped with a F-ROM (Flash ROM) and an IEEE1284 Parallel Port as a standard. The F-ROM offers the flexibility of quick and easy firmware updates. The firmware of the machine can be updated from the PC via its Parallel Port. To update the firmware, please refer to Chapter 5.1.9. Service Mode 9.

3.4.1. Firmware Version

HOST : DP-500F A A V1xxxx UZ



3.5. Glossary of Electrical Abbreviations

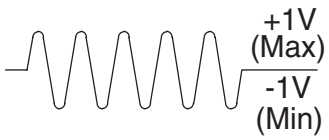
Glossary of Electrical Abbreviations	
Signal Name	**Description**
+24V	+24 VDC Power Supply
+24VD	+24 VDC Power Supply
+24VM	+24 VDC Power Supply (Motors)
+3.3V	+3.3 VDC Power Supply
+5V	+5 VDC Power Supply
+5VP	+5 VDC Pilot Power Supply (Sleep Mode)
+5VSE	+5 VDC Power Supply (Exit Sensor)
+5VST	+5 VDC Power Supply (Toner Sensor)
-5V	-5 VDC Power Supply
A	Motor Pulse
A0	Picture Signal
AGND	Ground
APLED1	LED Enable Signal (Document Detect)
APLED2	LED Enable Signal (Document Detect)
A_	Motor Pulse
B	Motor Pulse
Black (L)	AC Power Supply
BPNT	Read Point Detection Signal
BUSY	Peripheral Busy (Peripheral→Host)
BWLED1	Power Supply for LED
BWLED2	LED Enable Signal (B4 Width)
BZCLK	Buzzer Signal
B_	Motor Pulse
CLK	Picture Element Clock
DATA0	Data Signal
DATA1	Data Signal
DATA2	Data Signal
DATA3	Data Signal
DATA4	Data Signal
DATA5	Data Signal
DATA6	Data Signal
DATA7	Data Signal
DB0	Data Signal
DB1	Data Signal
DB2	Data Signal
DB3	Data Signal
DB4	Data Signal
DB5	Data Signal
DB6	Data Signal
DB7	Data Signal

Glossary of Electrical Abbreviations	
Signal Name	**Description**
DGND	Ground
DRCK	Development +AC Clock
E	Data Read/Write Enable Signal
FG	Ground
GLED	GND for LED
GND	Ground
L+5V	Laser Circuit +5 VDC Power Supply
L1	Line Signal
L2	Line Signal
LED1	Ground
LEDCT1	Ground
MGND	Ground
MIC (-)	Handset Microphone
MIC (+)	Handset Microphone
nACK	Peripheral Clock / Data Transfer Acknowledge (Peripheral→Host)
nADF1	ADF Roller Clutch Control Signal
nAPNT	Original Detect Signal (Read Point Detect)
nAUTOFD	Host Busy (Host→Peripheral)
nB4WID	B4 Width Detect Signal
nBLCNT	Power Supply for LED
nESEN	Paper Exit Signal
nFAULT	Data Available / Error Condition (Peripheral→Host)
nFNRDT	Fan Ready Signal
nHSYNC	Horizontal Synchronous Signal
nINIT	Reserve Request / Initialize (Host→Peripheral)
nLDEN	Laser Control
nMPOFF	Energy Saver Mode Control Signal
nREADY	Polygon Motor Ready Signal
nSELIN	IEEE1284 Active (Host→Peripheral)
nSSR	Fuser Lamp Control Signal
nSTART	Polygon Motor Rotation Signal
nSTAMPON	Stamp Control Signal (Specific Countries only)
nSTB	Host Clock / Data Transfer Strobe (Host→Peripheral)
nS/H	Sample Hold Signal
nVIDEO	Laser Control
pCR0	Charge Control DC Output
pCR1	Charge Control DC Output
PNLRD	Reception Signal
PNLRST	Panel Reset Signal
PNLSD	Transmission Signal

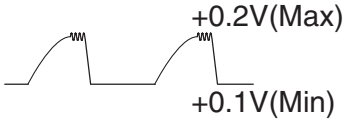
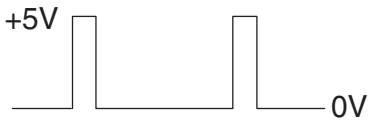
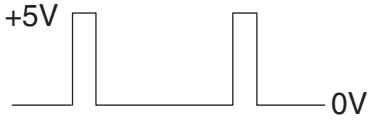
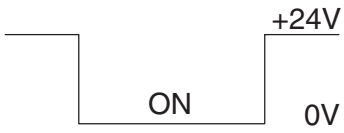
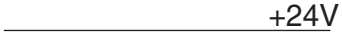
Glossary of Electrical Abbreviations	
Signal Name	**Description**
pPCHK1	Paper Detection Signal
PE	Acknowledge Data Request / Paper Empty Condition (Peripheral→Host)
PLH	+5V Pull Up
pSPKOT	Monitor Signal
pTR0	Transfer Control Cleaning Output
PWSAVE	Energy Saver Mode Transport Signal
R/W	Data Read/Write Select Signal
RCV (-)	Handset Receiver
RCV (+)	Handset Receiver
RS	Register Select Signal
SELECT	Select Signal (Peripheral→Host)
SI	Line Synchronizing Signal
T1	External Telephone Line Signal
T2	External Telephone Line Signal
TH1	Thermistor Output Signal
TH2	Thermistor Output Signal
TONER	Remaining Toner Level Signal
TSENCNT	Toner Sensor LED Control Signal
TSENCNT [GND]	Ground
V5	+5 VDC Power Supply
VLED	+24 VDC Power Supply
VDD	+5 VDC Power Supply
VSS	Ground
WAKUP	Energy Saver Mode Enable
White (N)	AC Power Supply

3.6. SC PC Board

CN2

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN2-1	pSPKOT	SPEAKER		Monitor Signal
CN2-2	GND	SPEAKER		Ground

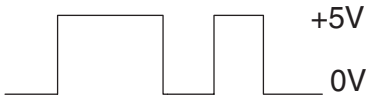
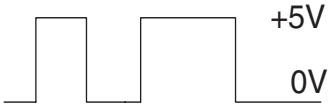
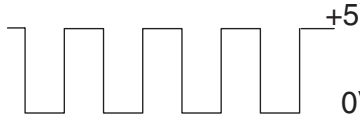
CN3

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN3-1	A0	CIS		Picture Signal
CN3-2	AGND	CIS		Ground
CN3-3	+5V	CIS		+5 VDC Power Supply
CN3-4	SI	CIS		Line Synchronizing Signal
CN3-5	CLK	CIS		Picture Element Clock
CN3-6	GLED	CIS		GND for LED
CN3-7	VLED	CIS		+24 VDC Power Supply

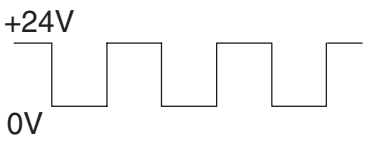
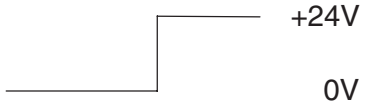
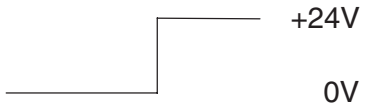
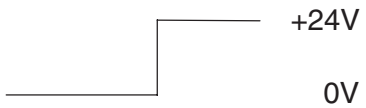
CN4

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN4-1	+24V	POWER SUPPLY UNIT CN103-1	+24V	+24 VDC Power Supply
CN4-2	+24V	POWER SUPPLY UNIT CN103-2	+24V	+24 VDC Power Supply
CN4-3	GND	POWER SUPPLY UNIT CN103-3	0V	Ground
CN4-4	GND	POWER SUPPLY UNIT CN103-4	0V	Ground
CN4-5	GND	POWER SUPPLY UNIT CN103-5	0V	Ground
CN4-6	+3.3V	POWER SUPPLY UNIT CN103-6	+3.3V	+3.3 VDC Power Supply
CN4-7	+5V	POWER SUPPLY UNIT CN103-7	+5V	+5 VDC Power Supply
CN4-8	-5V	POWER SUPPLY UNIT CN103-8	-5V	-5 VDC Power Supply
CN4-9	+5VP	POWER SUPPLY UNIT CN103-9	+5V	+5 VDC Pilot Power Supply, that provides power to the active components during the Sleep Mode.
CN4-10	nMPOFF	POWER SUPPLY UNIT CN103-10	+6～7V 0V (Energy Saver Mode)	Energy Saver Mode Control Signal
CN4-11	nSSR	POWER SUPPLY UNIT CN103-11	Fuser Lamp ON	Fuser Lamp Control Signal

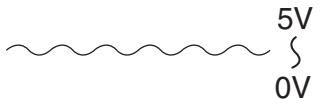
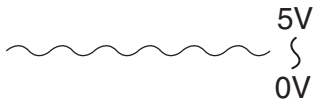
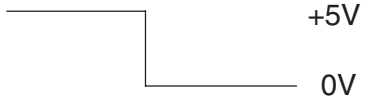
CN5

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN5-1	GND	PNL PCB CN51-1		Ground
CN5-2	+5V	PNL PCB CN51-2		+5 VDC Power Supply
CN5-3	+5VP	PNL PCB CN51-3		+5 VDC Pilot Power Supply, that provides power to the active components during the Sleep Mode.
CN5-4	GND	PNL PCB CN51-4		Ground
CN5-5	PNLSD	PNL PCB CN51-5		Transmission Signal
CN5-6	PNLRD	PNL PCB CN51-6		Reception Signal
CN5-7	PWSAVE	PNL PCB CN51-7		Energy Saver Mode Transport Signal
CN5-8	WAKUP	PNL PCB CN51-8		Energy Saver Mode Enable H: Enable L: Disable
CN5-9	PNLRST	PNL PCB CN51-9		Panel Reset Signal H: Reset L: Not Reset
CN5-10	BZCLK	PNL PCB CN51-10		Buzzer Signal
CN5-11	BPNT	PNL PCB CN51-11		Read Point Detection Signal L: Detect

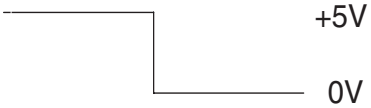
CN6

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN6-1	+24VM	POWER SUPPLY UNIT CN103-12		+24 VDC Power Supply (Motors)
CN6-2	DRCK	POWER SUPPLY UNIT CN103-13		Development +AC Clock
CN6-3	pCR0	POWER SUPPLY UNIT CN103-14		Charge Control DC Output
CN6-4	pCR1	POWER SUPPLY UNIT CN103-15		Charge Control DC Output
CN6-5	pTR0	POWER SUPPLY UNIT CN103-16		Transfer Control Cleaning Output

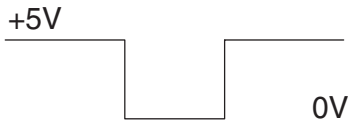
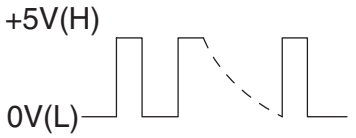
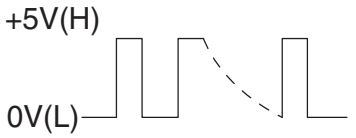
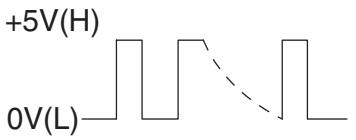
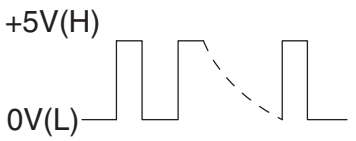
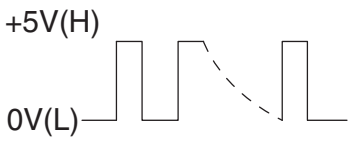
CN7

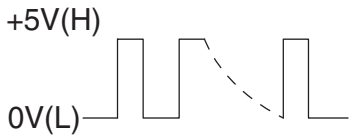
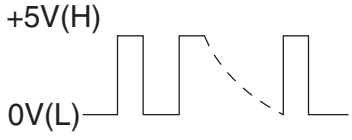
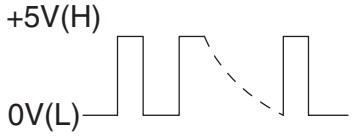
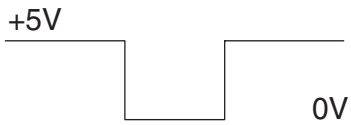
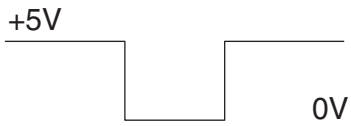
SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN7-1	TH1	SNSE PCB CN77-1		Thermistor Output Signal
CN7-2	TH2	SNSE PCB CN77-2		Thermistor Output Signal
CN7-3	+5VSE	SNSE PCB CN77-3		+5 VDC Power Supply (Exit Sensor)
CN7-4	nESEN	SNSE PCB CN77-4		Paper Exit Signal
CN7-5	GND	SNSE PCB CN77-5		Ground

CN8

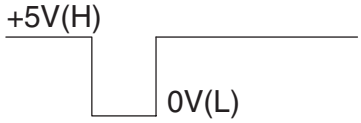
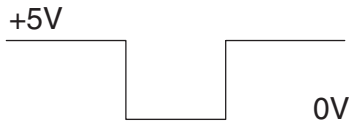
SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN8-1	+24V	Fan		+24 VDC Power Supply
CN8-2	N.C.	Fan		Not Used
CN8-3	nFNRDT	Fan		Fan Ready Signal H: Not Ready L: Ready
CN8-4	MGND	Fan		Ground

CN9

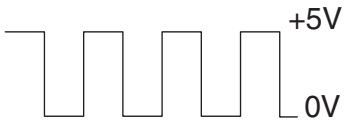
SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN9-1	nSTB	CENTRONICS I/F		Host Clock / Data Transfer Strobe (Host→Peripheral)
CN9-2	DATA0	CENTRONICS I/F		Data Signal
CN9-3	DATA1	CENTRONICS I/F		Data Signal
CN9-4	DATA2	CENTRONICS I/F		Data Signal
CN9-5	DATA3	CENTRONICS I/F		Data Signal
CN9-6	DATA4	CENTRONICS I/F		Data Signal

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN9-7	DATA5	CENTRONICS I/F		Data Signal
CN9-8	DATA6	CENTRONICS I/F		Data Signal
CN9-9	DATA7	CENTRONICS I/F		Data Signal
CN9-10	nACK	CENTRONICS I/F		Peripheral Clock / Data Transfer Acknowledge (Peripheral→Host)
CN9-11	BUSY	CENTRONICS I/F		Peripheral Busy (Peripheral→Host)
CN9-12	PE	CENTRONICS I/F		Acknowledge Data Request / Paper Empty Condition (Peripheral→Host)
CN9-13	SELECT	CENTRONICS I/F		Select Signal (Peripheral→Host)
CN9-14	nAUTOFD	CENTRONICS I/F		Host Busy (Host→Peripheral)
CN9-15	Not Used	CENTRONICS I/F		Not Used
CN9-16	GND	CENTRONICS I/F		Ground
CN9-17	FG	CENTRONICS I/F		Ground
CN9-18	PLH	CENTRONICS I/F		+5V Pull Up

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN9-19	GND	CENTRONICS I/F	0V	Ground
CN9-20	GND	CENTRONICS I/F	0V	Ground
CN9-21	GND	CENTRONICS I/F	0V	Ground
CN9-22	GND	CENTRONICS I/F	0V	Ground
CN9-23	GND	CENTRONICS I/F	0V	Ground
CN9-24	GND	CENTRONICS I/F	0V	Ground
CN9-25	GND	CENTRONICS I/F	0V	Ground
CN9-26	GND	CENTRONICS I/F	0V	Ground
CN9-27	GND	CENTRONICS I/F	0V	Ground
CN9-28	GND	CENTRONICS I/F	0V	Ground
CN9-29	GND	CENTRONICS I/F	0V	Ground
CN9-30	GND	CENTRONICS I/F	0V	Ground

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN9-31	nINIT	CENTRONICS I/F		Reverse Request / Initialize (Host→Peripheral)
CN9-32	nFAULT	CENTRONICS I/F		Data Available / Error Condition (Peripheral→Host)
CN9-33	Not Used	CENTRONICS I/F		Not Used
CN9-34	Not Used	CENTRONICS I/F		Not Used
CN9-35	Not Used	CENTRONICS I/F		Not Used
CN9-36	nSELIN	CENTRONICS I/F		IEEE1284 Active (Host→Peripheral)

CN10

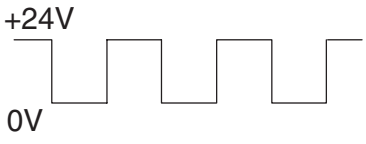
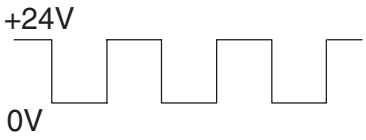
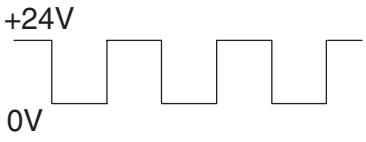
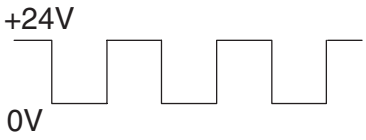
SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN10-1	CLK	LSU POLYGON		Polygon Motor Clock
CN10-2	nREADY	LSU POLYGON		Polygon Motor Ready Signal
CN10-3	nSTART	LSU POLYGON		Polygon Motor Rotation Signal
CN10-4	GND	LSU POLYGON		Ground
CN10-5	+24VM	LSU POLYGON		+24 VDC Power Supply (Motors)

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN10-6	DGND	LSU LASER-1	0V	Ground
CN10-7	nS/H	LSU LASER-2	+5V 0V	Sample Hold Signal
CN10-8	nVIDEO	LSU LASER-3	+5V 0V	Laser Control
CN10-9	nLDEN	LSU LASER-4	+5V (H) 0V (L)	Laser Control
CN10-10	DGND	LSU LASER-5	0V	Ground
CN10-11	L+5V	LSU LASER-6	+5V	Laser Circuit +5 VDC Power Supply
CN10-12	DGND	LSU LASER-7	0V	Ground
CN10-13	nHSYNC	LSU LASER-8	+5V 0V	Horizontal Synchronous Signal

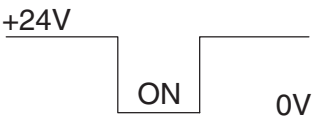
CN11

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN11-1	+24V	ILS PCB CN73-1	+24V	+24 VDC Power Supply
CN11-3	+24VD	ILS PCB CN73-3	+24V	+24 VDC Power Supply

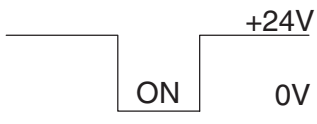
CN12

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN12-1	A	MOTOR		Motor Pulse
CN12-2	+24VM	MOTOR		+24 VDC Power Supply (Motors)
CN12-3	A_	MOTOR		Motor Pulse
CN12-4	B	MOTOR		Motor Pulse
CN12-5	+24VM	MOTOR		+24 VDC Power Supply (Motors)
CN12-4	B_	MOTOR		Motor Pulse

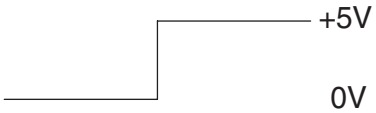
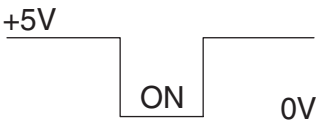
CN13 (Specific Countries Only)

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN13-1	+24V	Stamp Solenoid		+24 VDC Power Supply
CN13-2	nSTAMPON	Stamp Solenoid		Stamp Control Signal (Specific Countries only)

CN14

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN14-1	+24V	PAPER CLUTCH		+24 VDC Power Supply
CN14-2	nADF1	PAPER CLUTCH		ADF Roller Clutch Control Signal

CN15

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN15-1	pPCHK1	SNST PCB CN81-1		Paper Detection Signal
CN15-2	GND	SNST PCB CN81-2		Ground
CN15-3	GND	SNST PCB CN81-3		Ground
CN15-4	TSENCNT	SNST PCB CN81-4		Toner Sensor LED Control Signal
CN15-5	TONER	SNST PCB CN81-5	Approx.+2VDC	Remaining Toner Level Signal
CN15-6	+5V	SNST PCB CN81-6		+5 VDC Power Supply

CN16

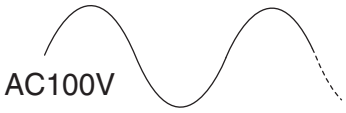
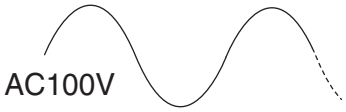
SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN16-3	T1	External Telephone		External Telephone Line Signal
CN16-4	T2	External Telephone		External Telephone Line Signal

CN17

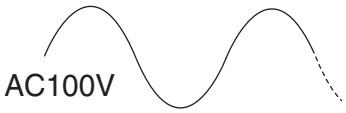
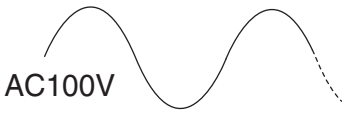
SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN17-3	L2	Telephone Line		Line Signal
CN17-4	L1	Telephone Line		Line Signal

3.7. Power Supply Unit

CN101

PS Unit Pin No.	Signal Name	Destination	Signal Waveform	Function
CN101-1	Black (L)	ACI PC Board		AC Power Supply
CN101-2	N.C.			Not Used
CN101-3	White (N)	ACI PC Board		AC Power Supply

CN102

PS Unit Pin No.	Signal Name	Destination	Signal Waveform	Function
CN102-1	Black (L)	Thermostat Thermal Fuse		AC Power Supply
CN102-2	N.C.			Not Used
CN102-3	White (N)	Fuser Lamp		AC Power Supply

CN103

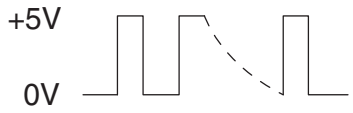
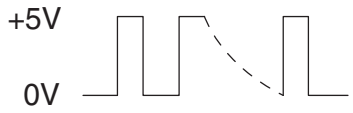
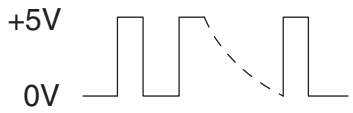
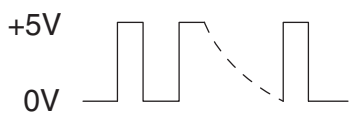
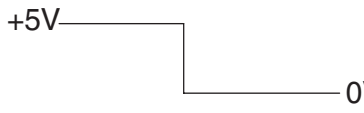
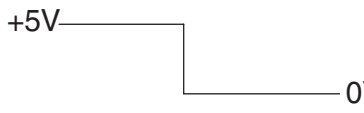
Refer to SC PC Board CN4 and CN6.

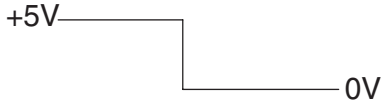
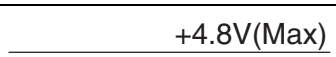
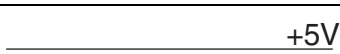
3.8. PNL PC Board

CN50

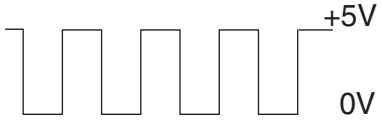
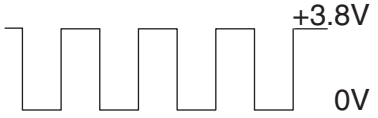
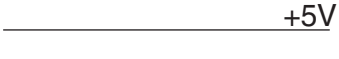
Refer to SC PC Board CN5.

LCD

PNL PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
LCD-1	DB7	LCD Module-1		Data Signal
LCD-2	DB6	LCD Module-2		Data Signal
LCD-3	DB5	LCD Module-3		Data Signal
LCD-4	DB4	LCD Module-4		Data Signal
LCD-5	DB3	LCD Module-5		Data Signal
LCD-6	DB2	LCD Module-6		Data Signal
LCD-7	DB1	LCD Module-7		Data Signal
LCD-8	DB0	LCD Module-8		Data Signal
LCD-9	E	LCD Module-9		Data Read/Write Enable Signal H: Enable L: Disable
LCD-10	R/W	LCD Module-10		Data Read/Write Select Signal H: Read L: Write

PNL PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
LCD-11	RS	LCD Module-11		Register Select Signal H: Data Register L: Instruction Register
LCD-12	V5	LCD Module-12		Power Supply for LCD
LCD-13	VDD	LCD Module-13		+5 VDC Power Supply
LCD-14	VSS	LCD Module-14		Ground

SENSOR

PNL PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
SENSOR-1	APLED1	SENSOR-1		LED Enable Signal (Document Detect)
SENSOR-2	APLED2	SENSOR-2		LED Enable Signal (Document Detect)
SENSOR-3	nB4WID	SENSOR-3		B4 Width Detect Signal
SENSOR-4	GND	SENSOR-4		Ground
SENSOR-5	nAPNT	SENSOR-5		Original Detect Signal (Read Point Detect)
SENSOR-6	BWLED2	SENSOR-6		LED Enable Signal (B4 Width)
SENSOR-7	BWLED1	SENSOR-7		Power Supply for LED

LED

PNL PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
LED-1	+5V	LED-1		+5 VDC Power Supply
LED-2	LEDCT1	LED-2		Ground
LED-3	LED1	LED-3		Ground
LED-4	nBLCNT	LED-4		Power Supply for LED

3.9. SNSE PC Board

CN76

SNSE PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN76-1	TH1	Thermistor Assembly		Thermistor Output Signal
CN76-2	TH2	Thermistor Assembly		Thermistor Output Signal

CN77

Refer to SC PC Board CN7.

3.10. ILS PC Board

CN73

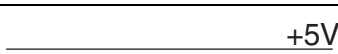
Refer to SC PC Board CN11.

3.11. SNST PC Board

CN81

Refer to SC PC Board CN15.

JP1

SNST PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
JP1-1	TONER	TONER SENSOR		Remaining Toner Level Signal
JP1-2	TSENCNT [GND]	TONER SENSOR		Ground
JP1-3	+5VST	TONER SENSOR		+5 VDC Power Supply (Toner Sensor)
JP1-4	GND	TONER SENSOR		Ground

3.12. ACI PC Board

Refer to Power Supply Unit CN101.

3.13. SRU PC Board (Optional)

CN90

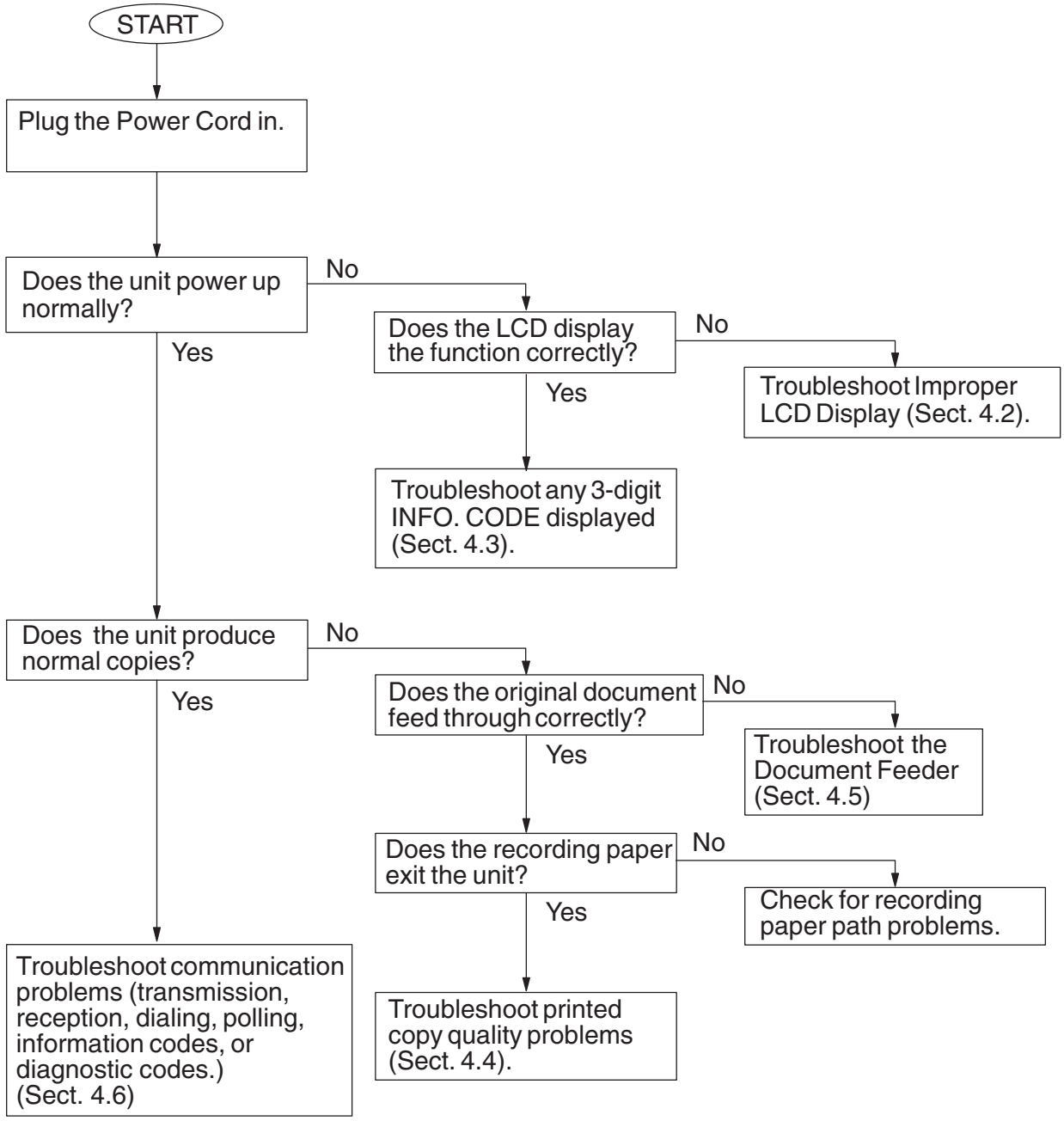
Refer to SC PC Board CN16.

CN91

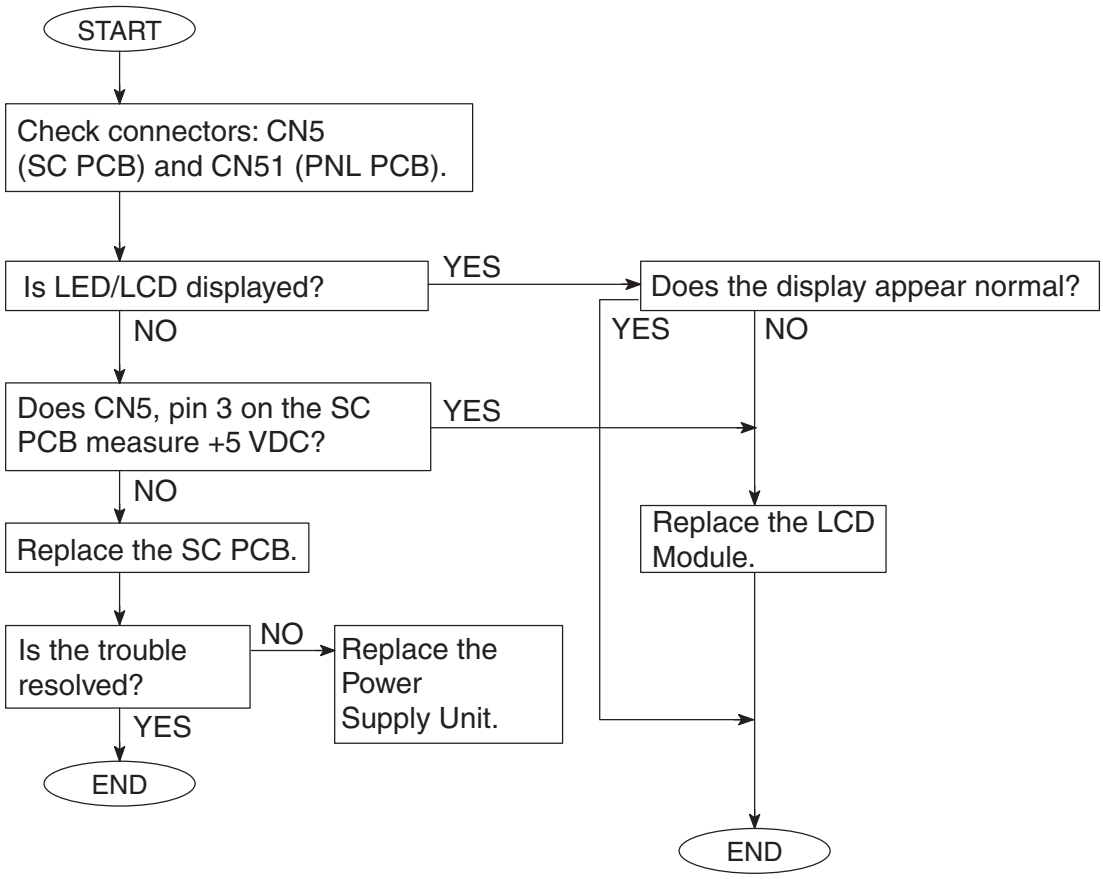
SRU PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN91-1	MIC (+)	Telephone Handset CN		Handset Microphone
CN91-2	RCV (+)	Telephone Handset CN		Handset Receiver
CN91-3	RCV (-)	Telephone Handset CN		Handset Receiver
CN91-4	MIC (-)	Telephone Handset CN		Handset Microphone

4 Troubleshooting

4.1. Initial Troubleshooting Flowchart



4.2. Improper LCD Display

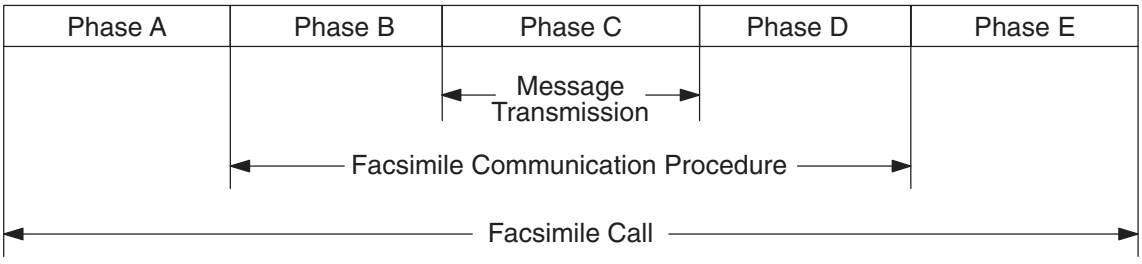


4.3. Information Codes (INFO. CODES)

The 3-digit information codes display to show the unit's status. These codes also print on the journal. The following table indicates appropriate sections for troubleshooting.

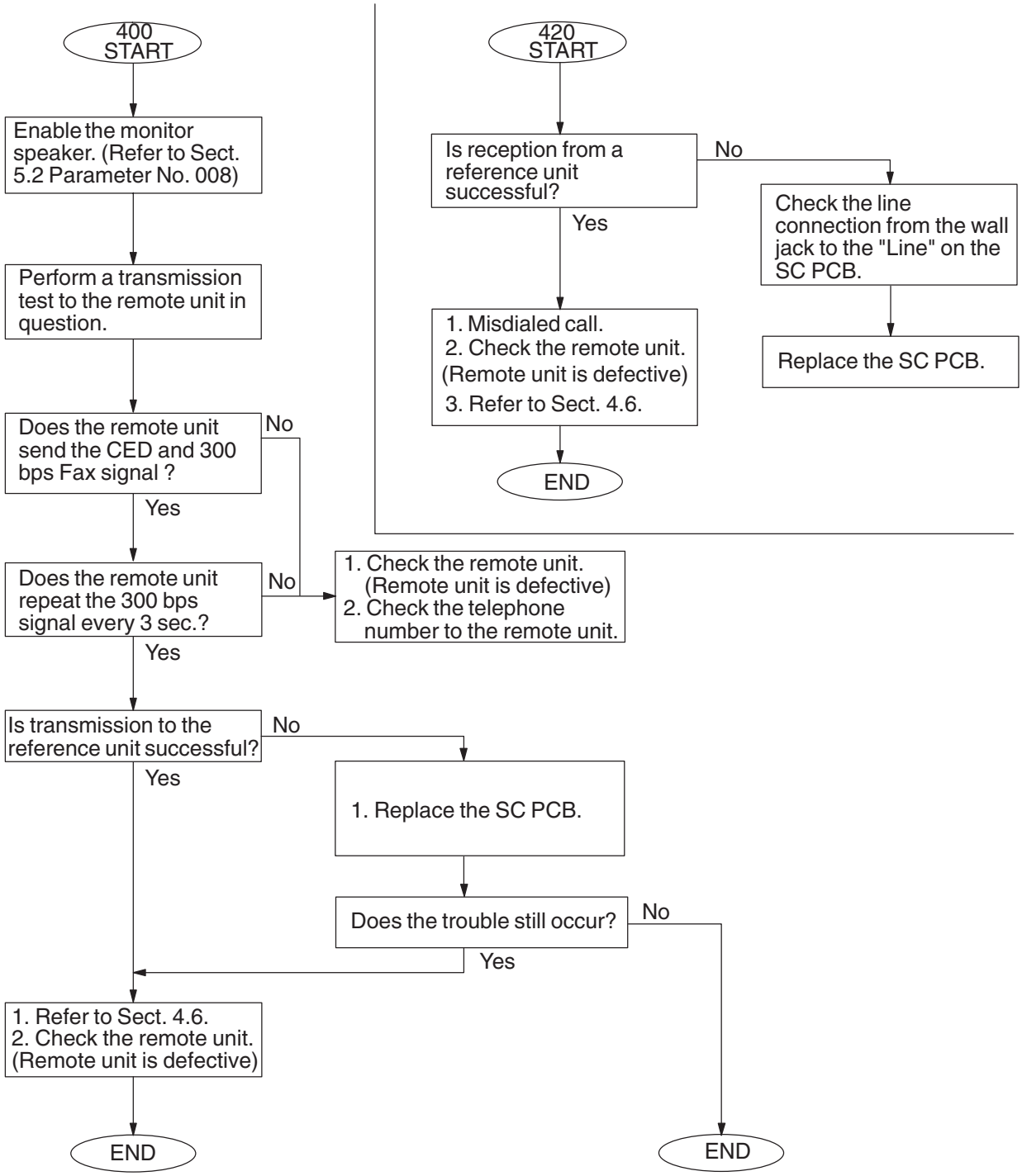
Code	Explanation	Phase	Section
001, 007	Recording paper jam	C, D	4.3.8.
010	No recording paper	B, C	4.3.9.
030	Document misfeeding	B	4.3.10.
031	Document too long	C	4.3.10.
400	Transmission error	B	4.3.1.
401	Transmission error	B	4.3.2.
402	Transmission error	B	4.3.2.
403	Polling reception error	B	4.3.12.
404	Transmission error	B	4.3.3.
405	Transmission error	B	4.3.3.
407	Transmission error	D	4.3.3.
408	Transmission error	D	4.3.5.
409	Transmission error	D	4.3.5.
411	Polling reception error	B	4.3.12.
414	Polling reception error	B	4.3.12.
415	Remote side mis-operation	B	4.3.12.
416	Reception error	D	4.3.4.
417	Reception error	C	4.3.5.
418	Reception error	C	4.3.5.
420	Reception error	B	4.3.1.
422	Transmission error	B	4.3.2.
434	Signal noise level too high	B	4.3.6.
459	Reception error	C	4.3.7.
490	Reception error	C	4.3.5.
494	Reception error	C	4.3.7.
495	Reception error	C	4.3.7.
630	Remote unit Busy	B	4.3.11.
634	No busy tone detected	B	--
800 - 962	Advanced Communication error	--	--

Phase

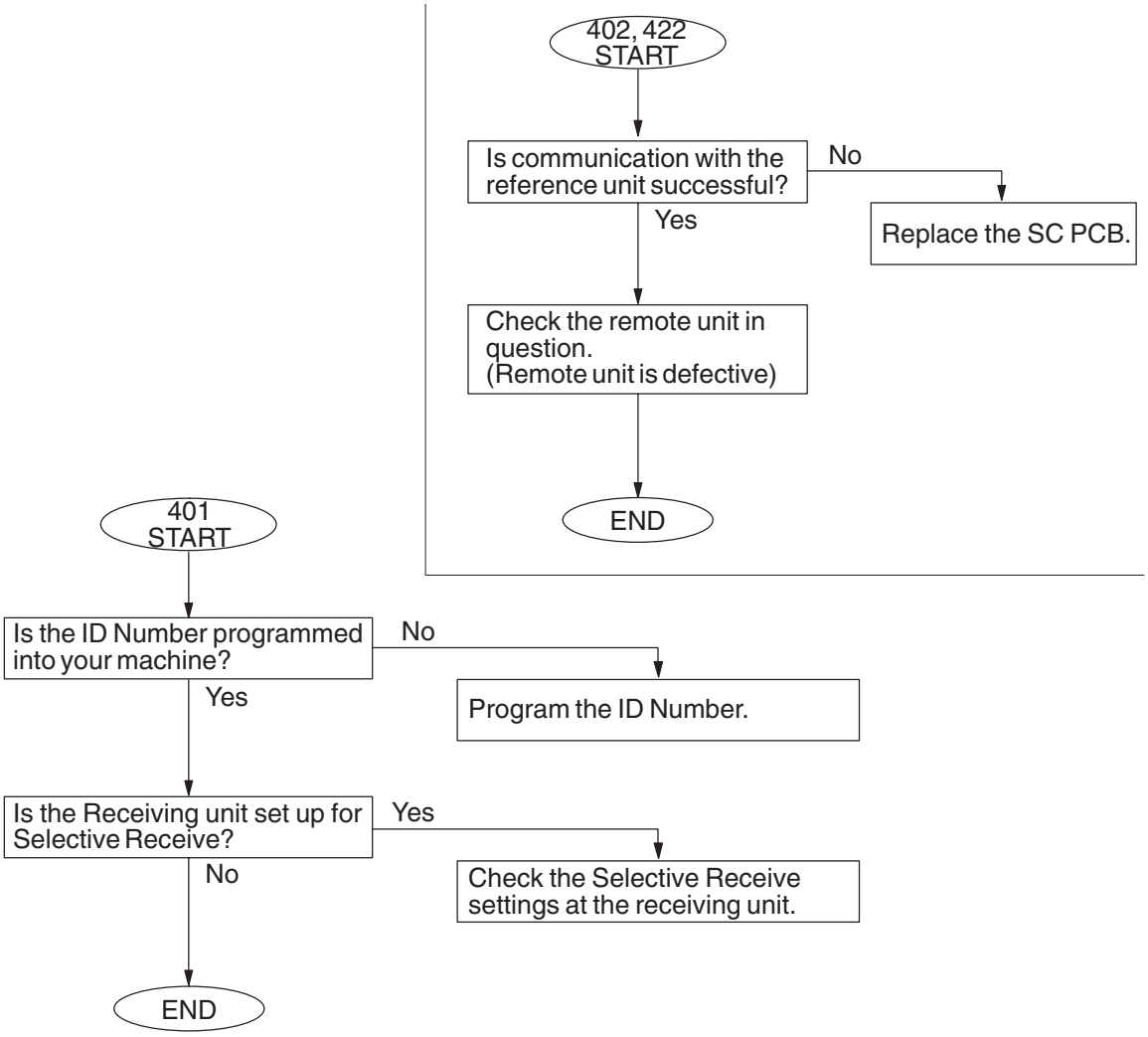


Phase A : Call establishment
Phase B : Pre-message procedure
Phase C : Message transmission
Phase D : Post-message procedure
Phase E : Call release

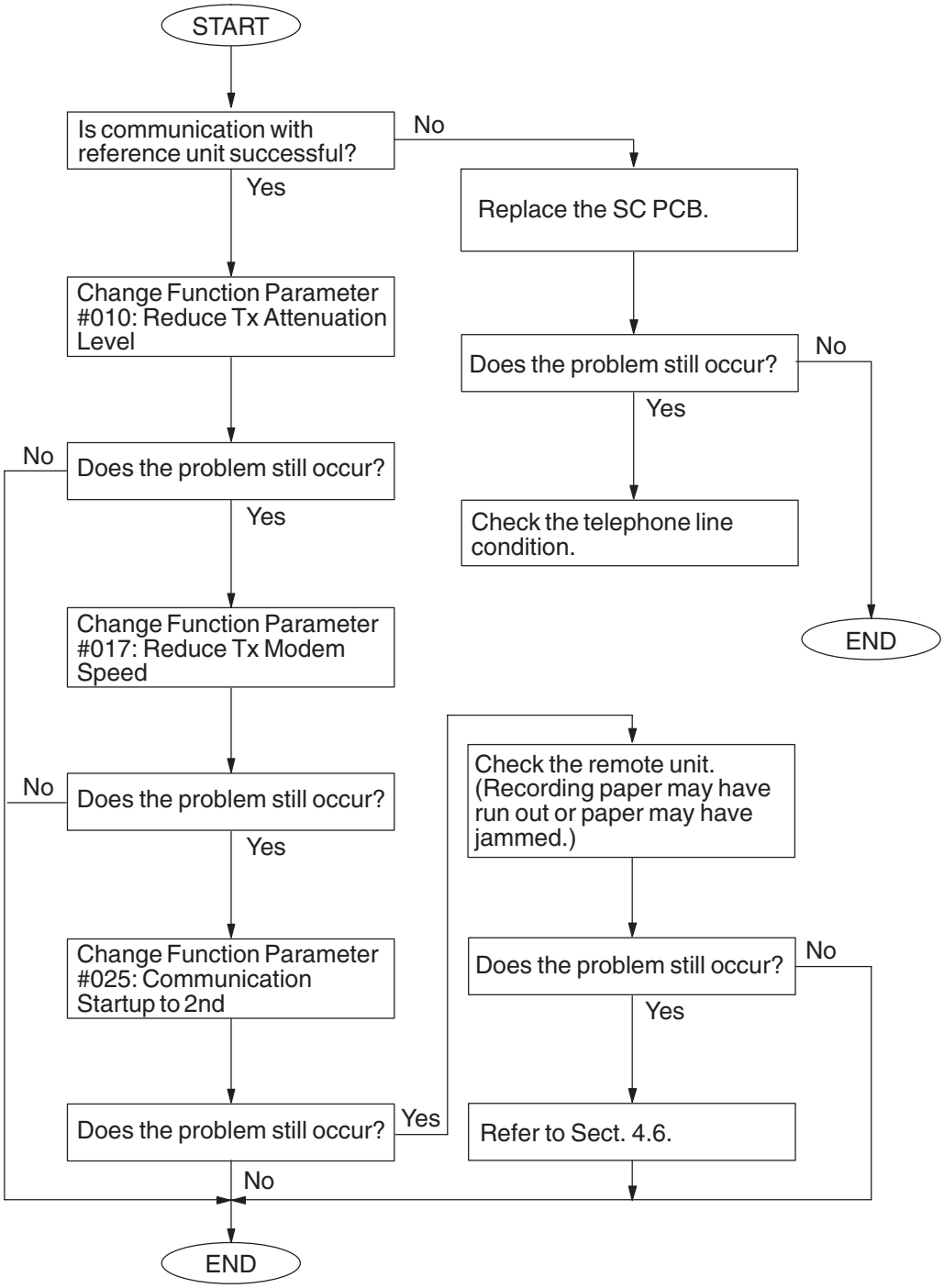
4.3.1. Information Codes: 400, 420



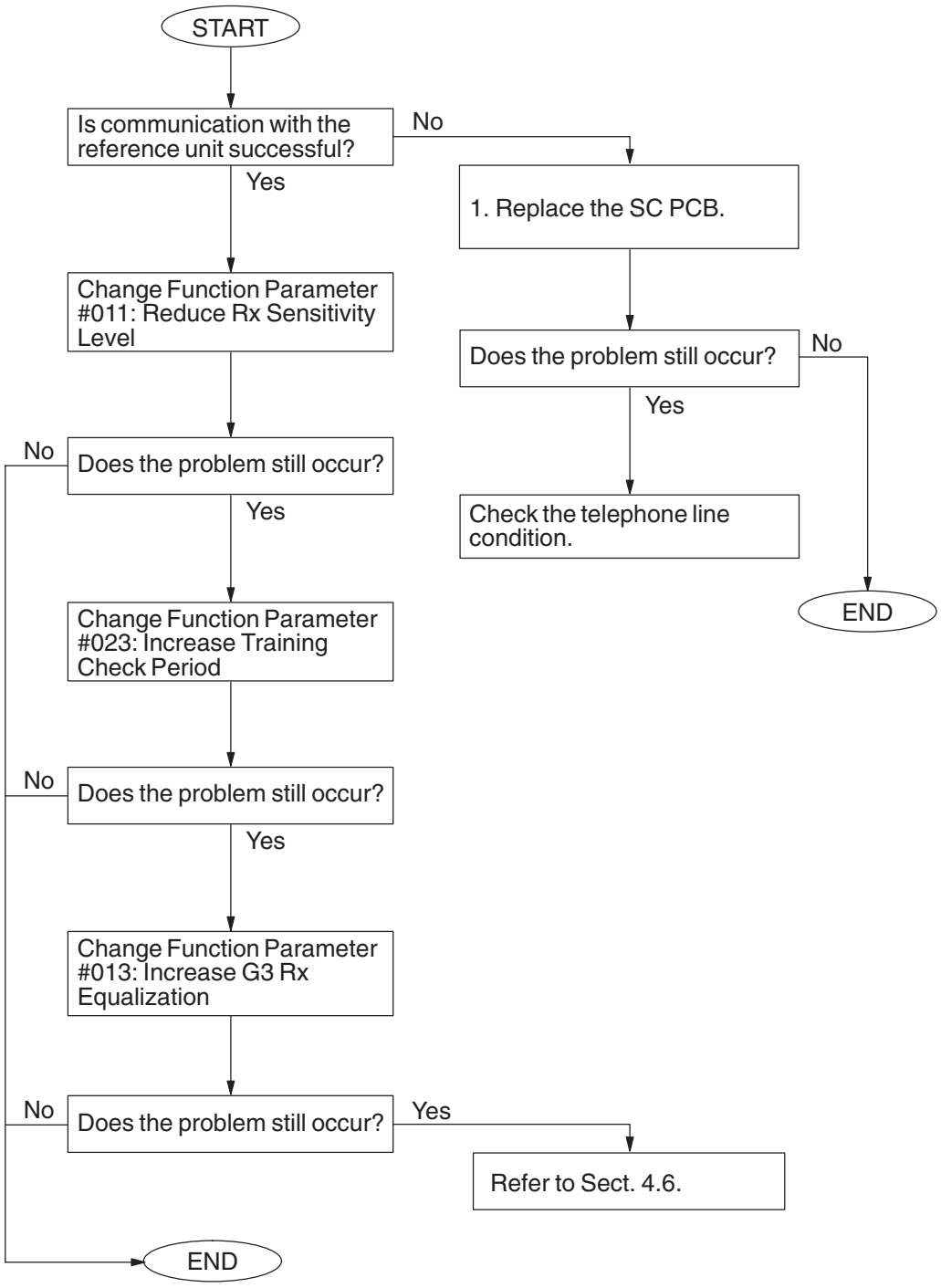
4.3.2. Information Codes: 401, 402, 422



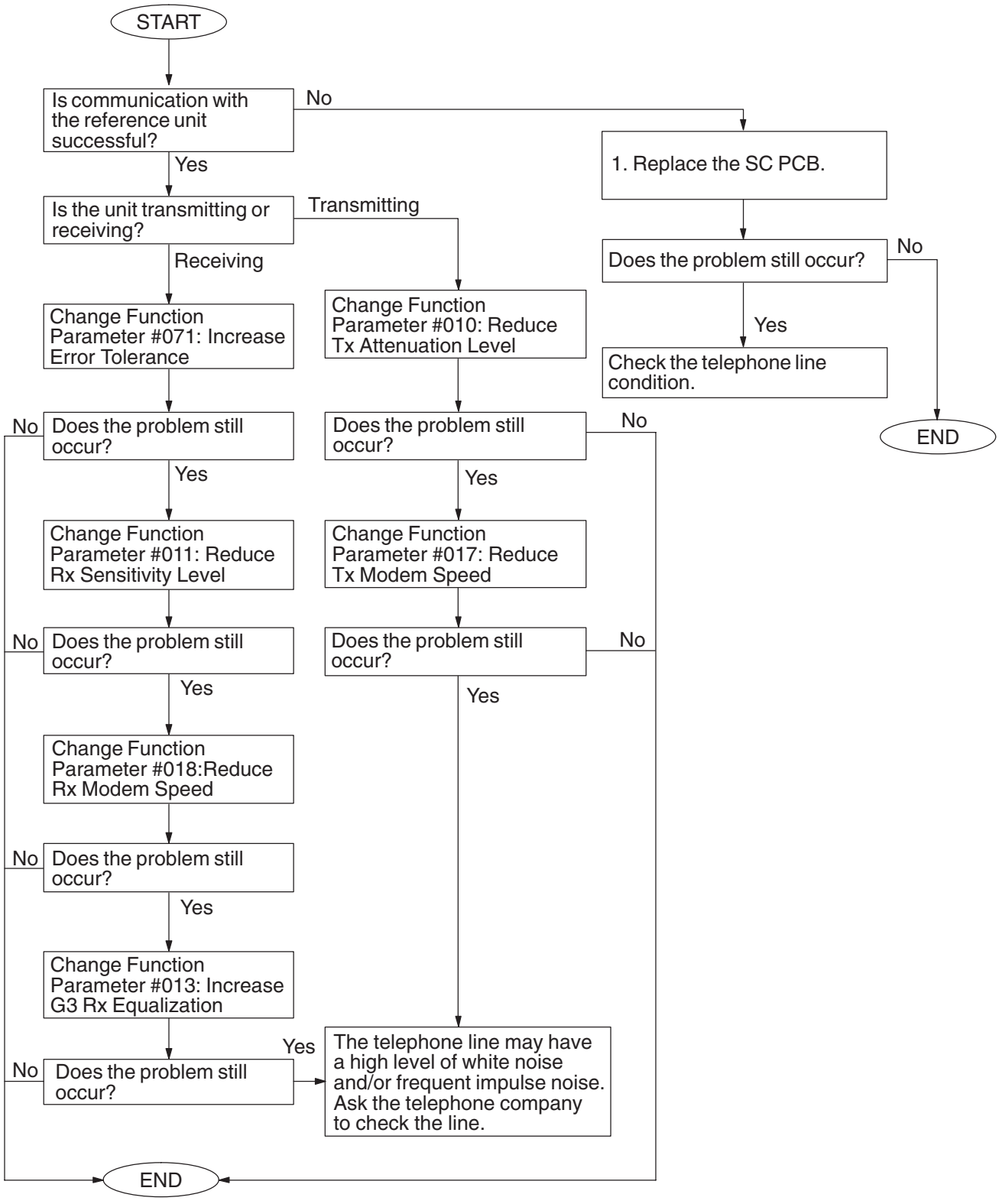
4.3.3. Information Codes: 404, 405, 407



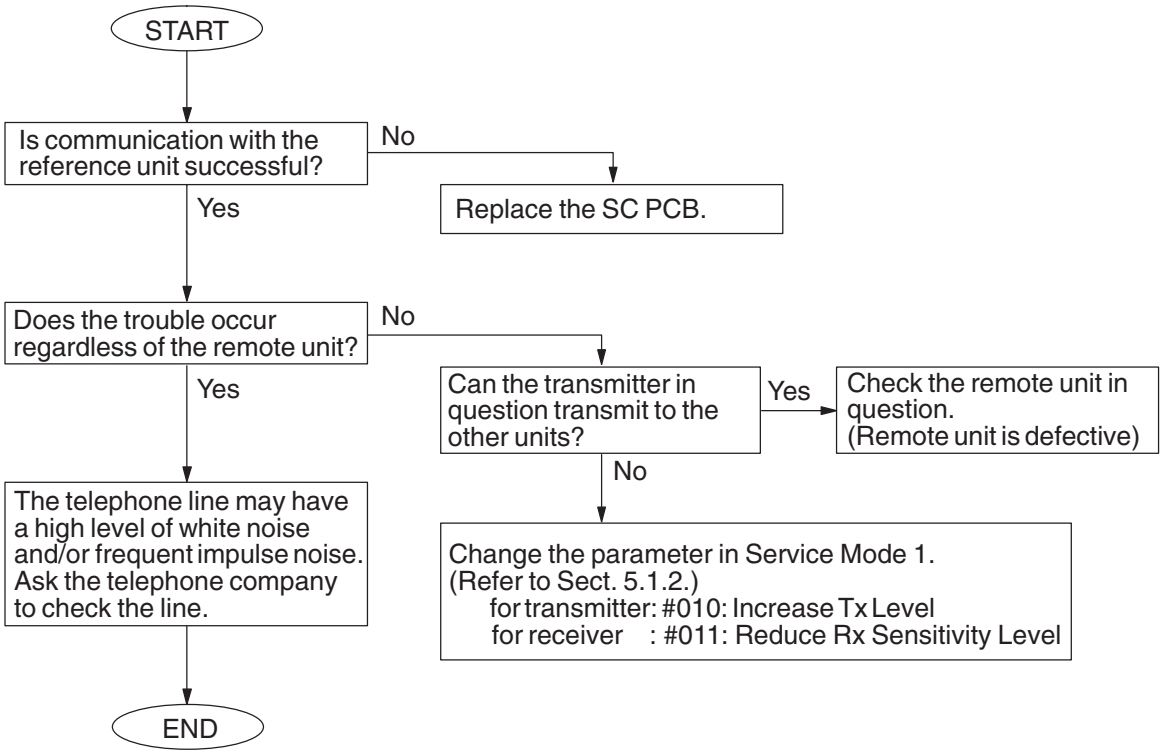
4.3.4. Information Code: 416



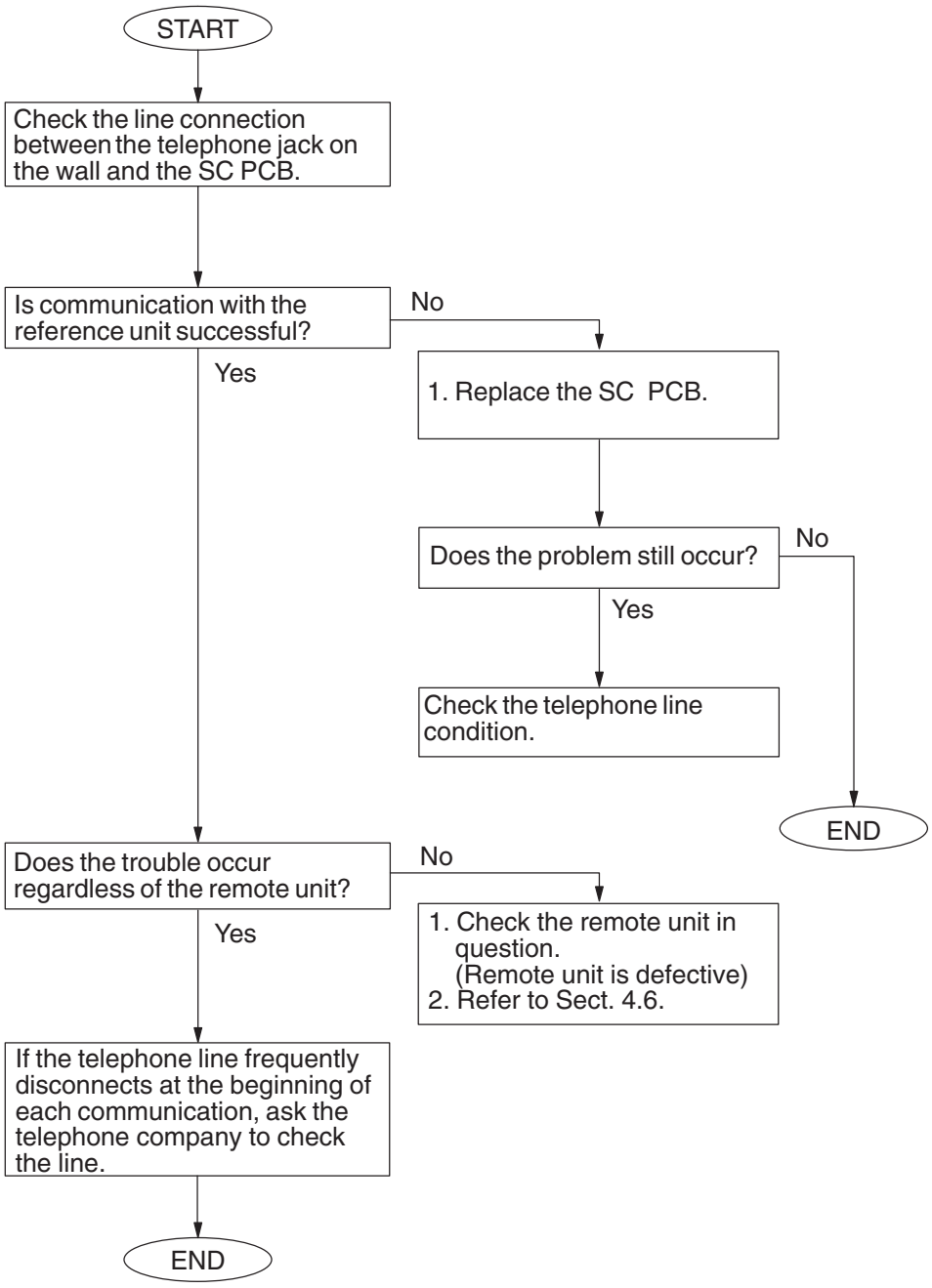
4.3.5. Information Codes: 408, 409, 417, 418, 490



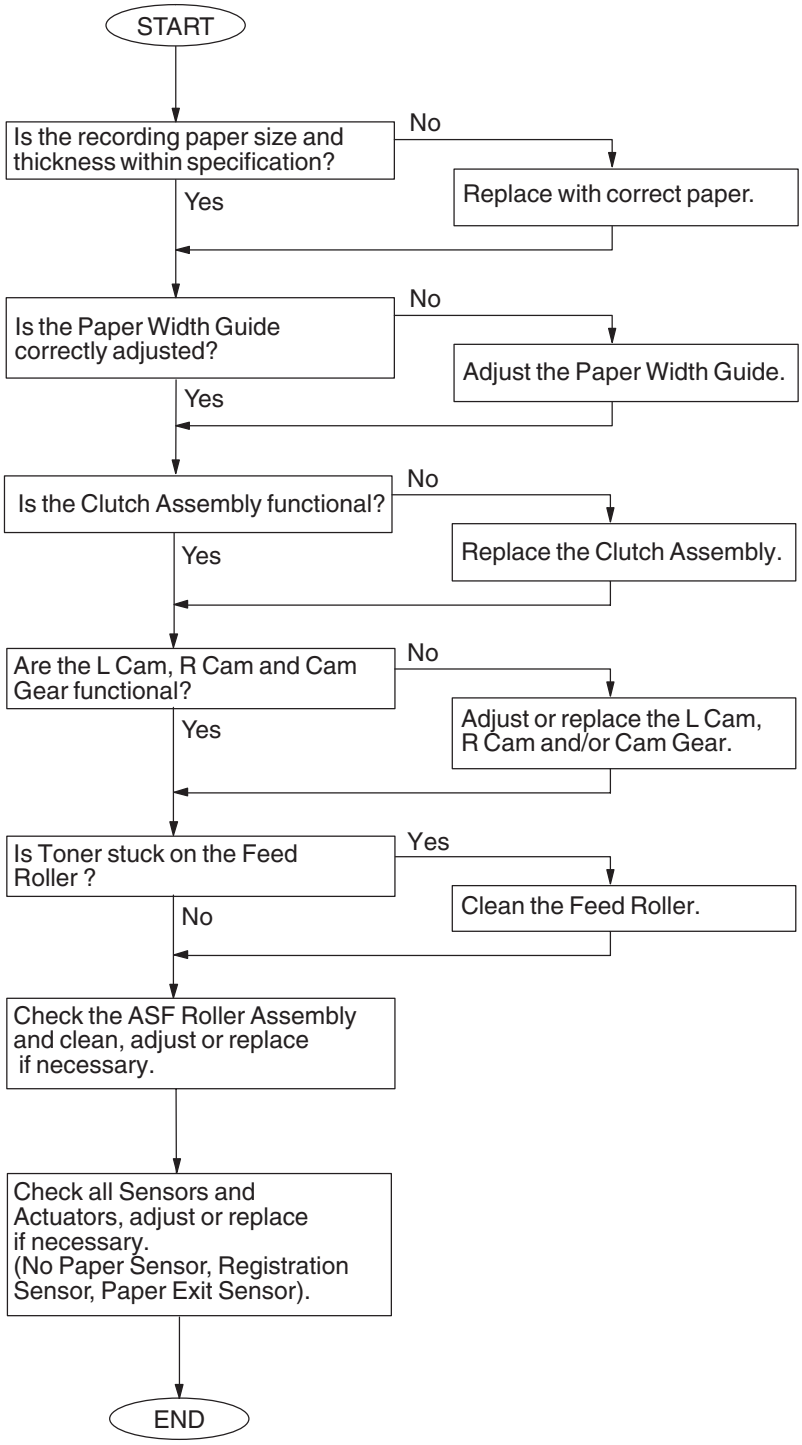
4.3.6. Information Code: 434



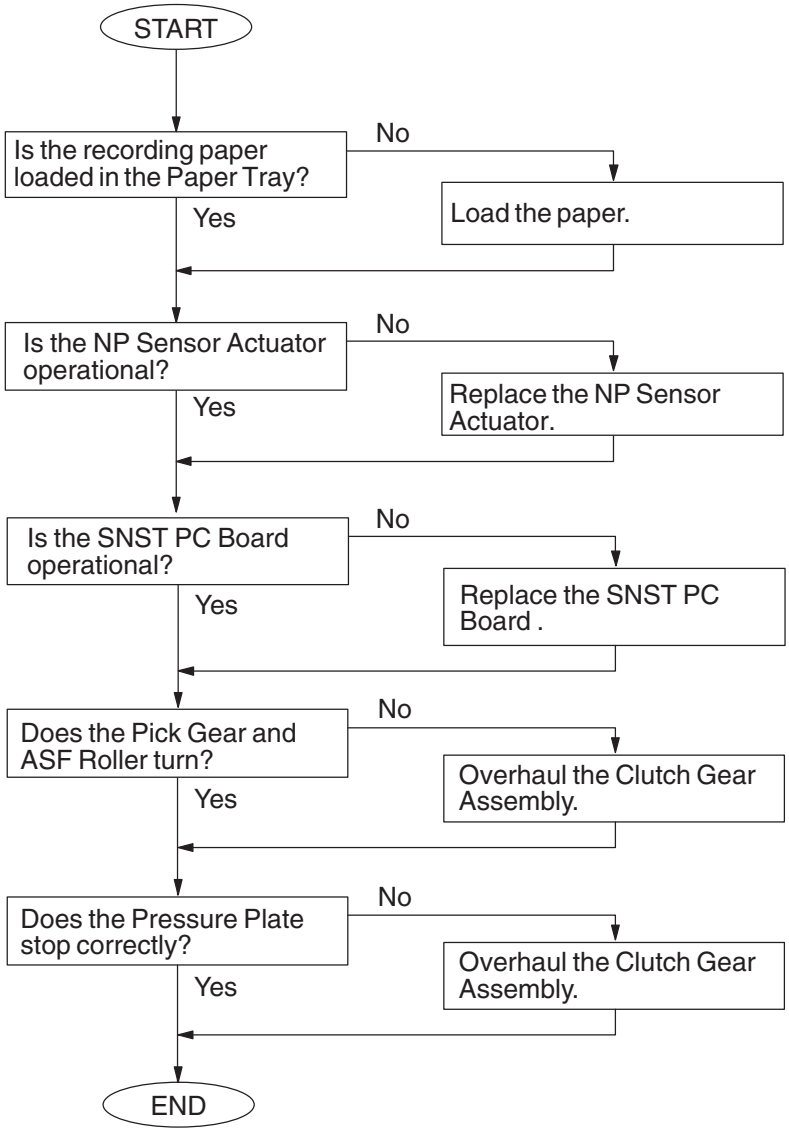
4.3.7. Information Codes: 459, 494, 495



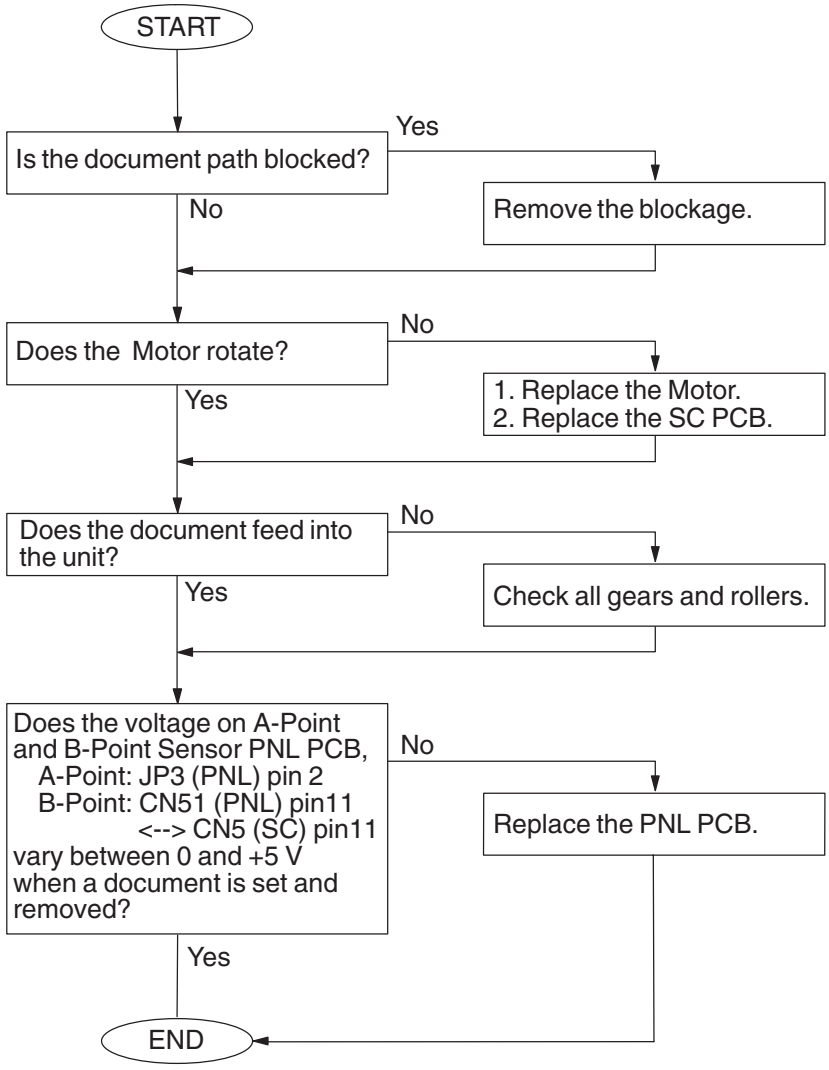
4.3.8. Information Codes: 001, 007 (Recording Paper Jam)



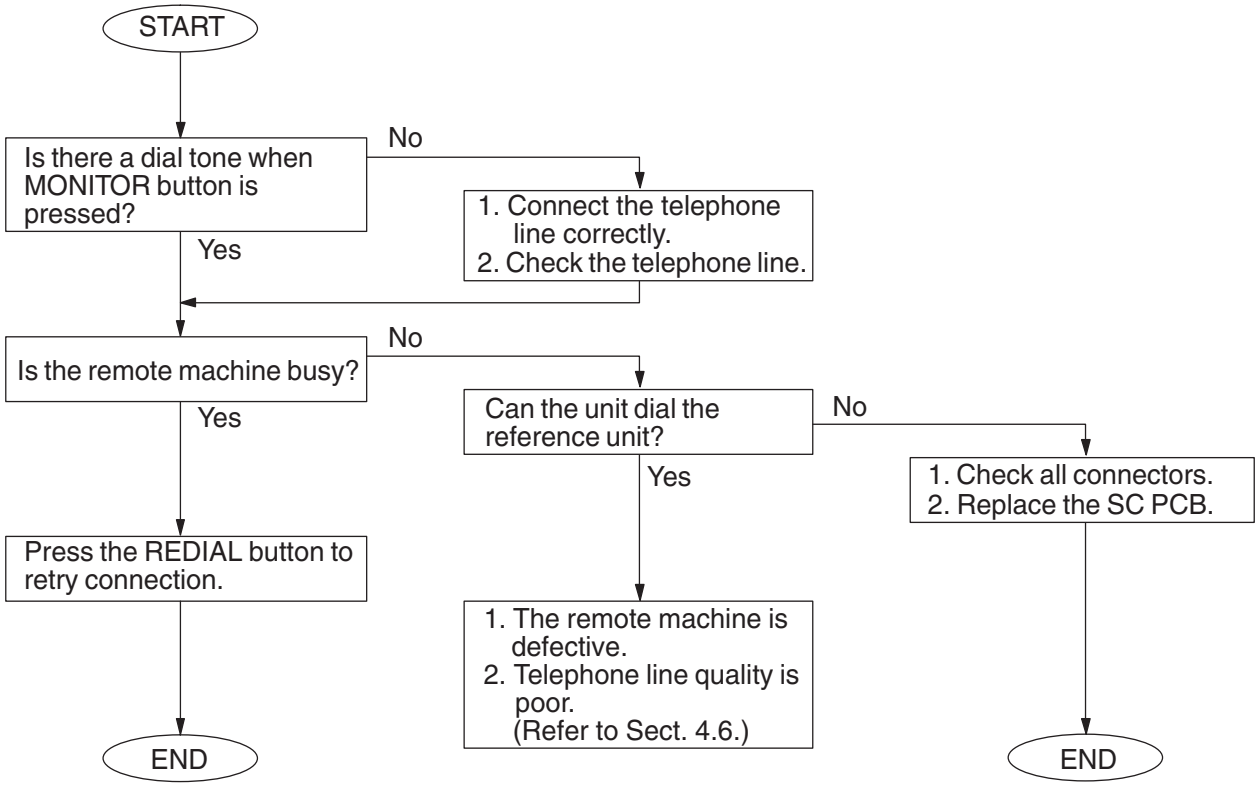
4.3.9. Information Code: 010 (No Recording Paper)



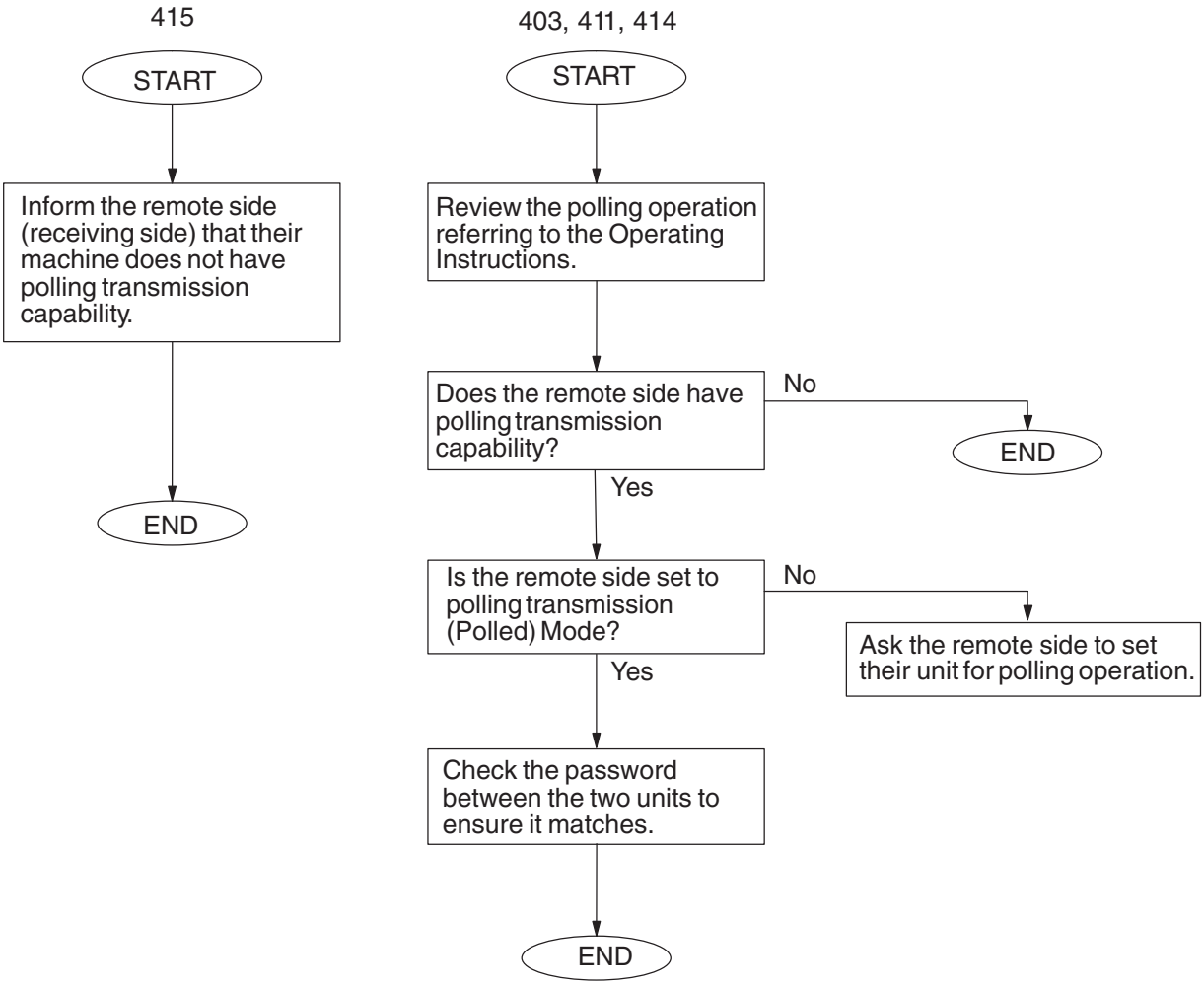
4.3.10. Information Codes: 030, 031 (Document Jam)



4.3.11. Information Code: 630 (Dialing Error)



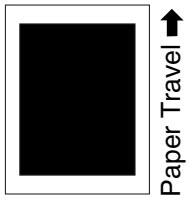
4.3.12. Information Codes: 403, 411, 414, 415 (Polling Operator Trouble)

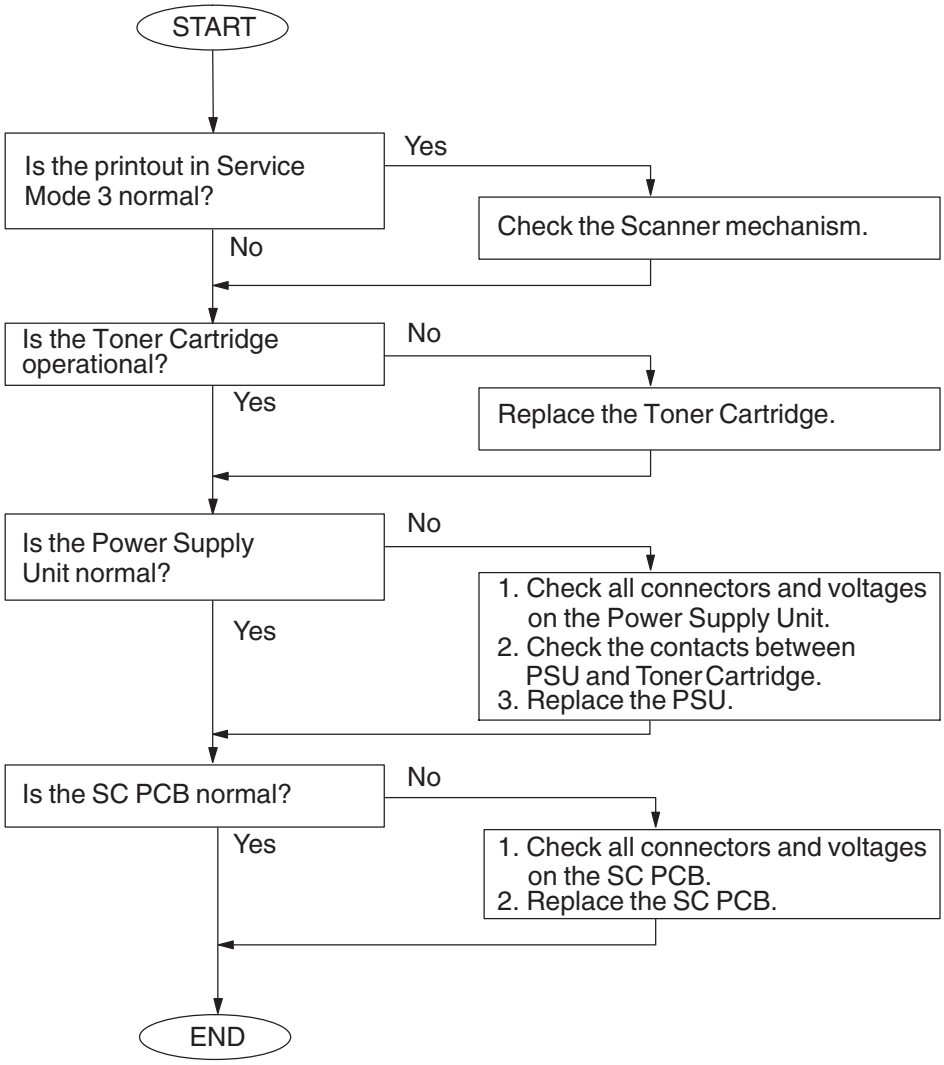


Polling communication with 4-digit password is not an ITU-T Standard feature.
If the transmitter and receiver are of different manufacturers, polling communication with password ***may not*** be possible.

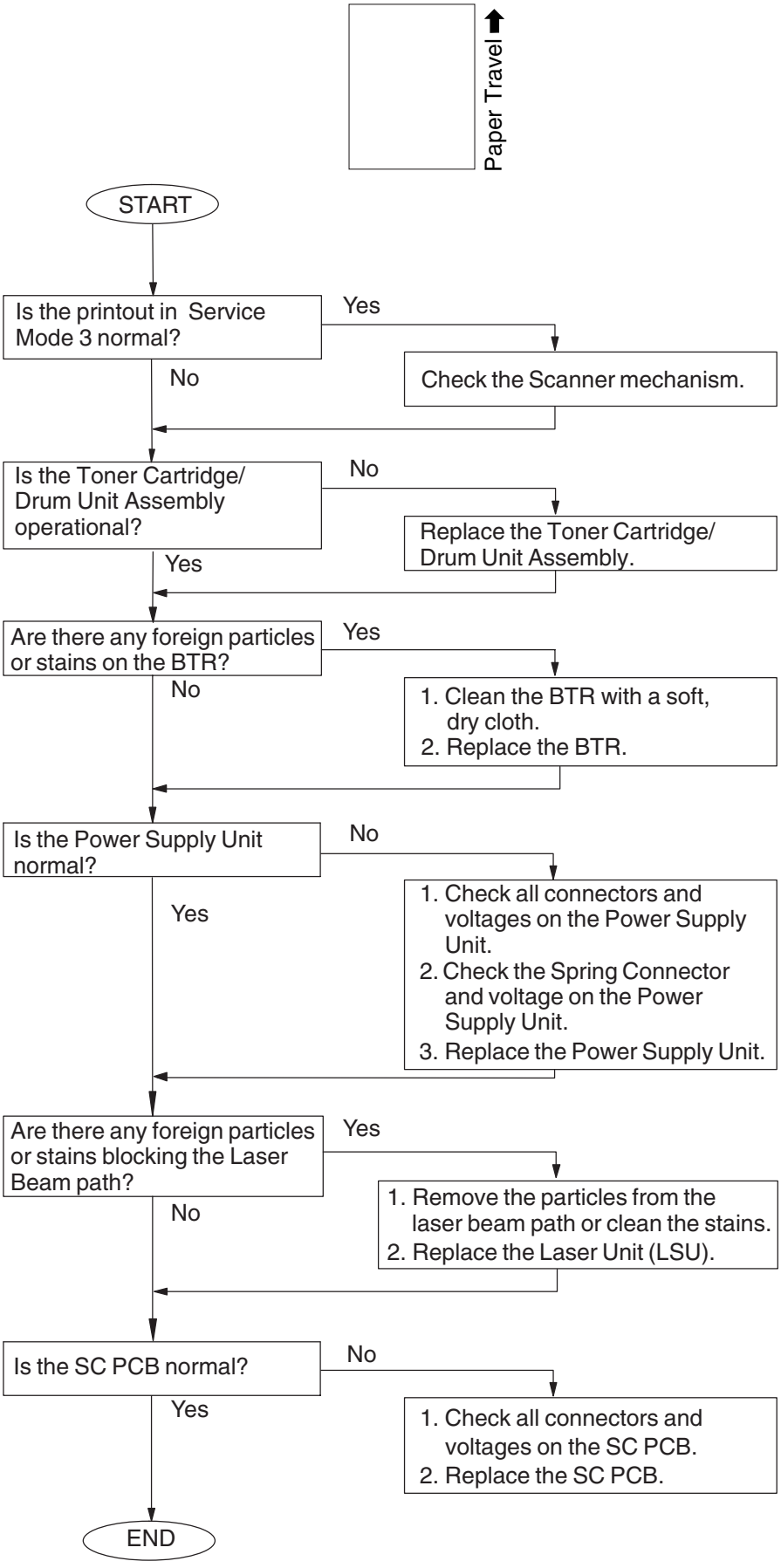
4.4. Printed Copy Quality Problems

4.4.1. Black Copy

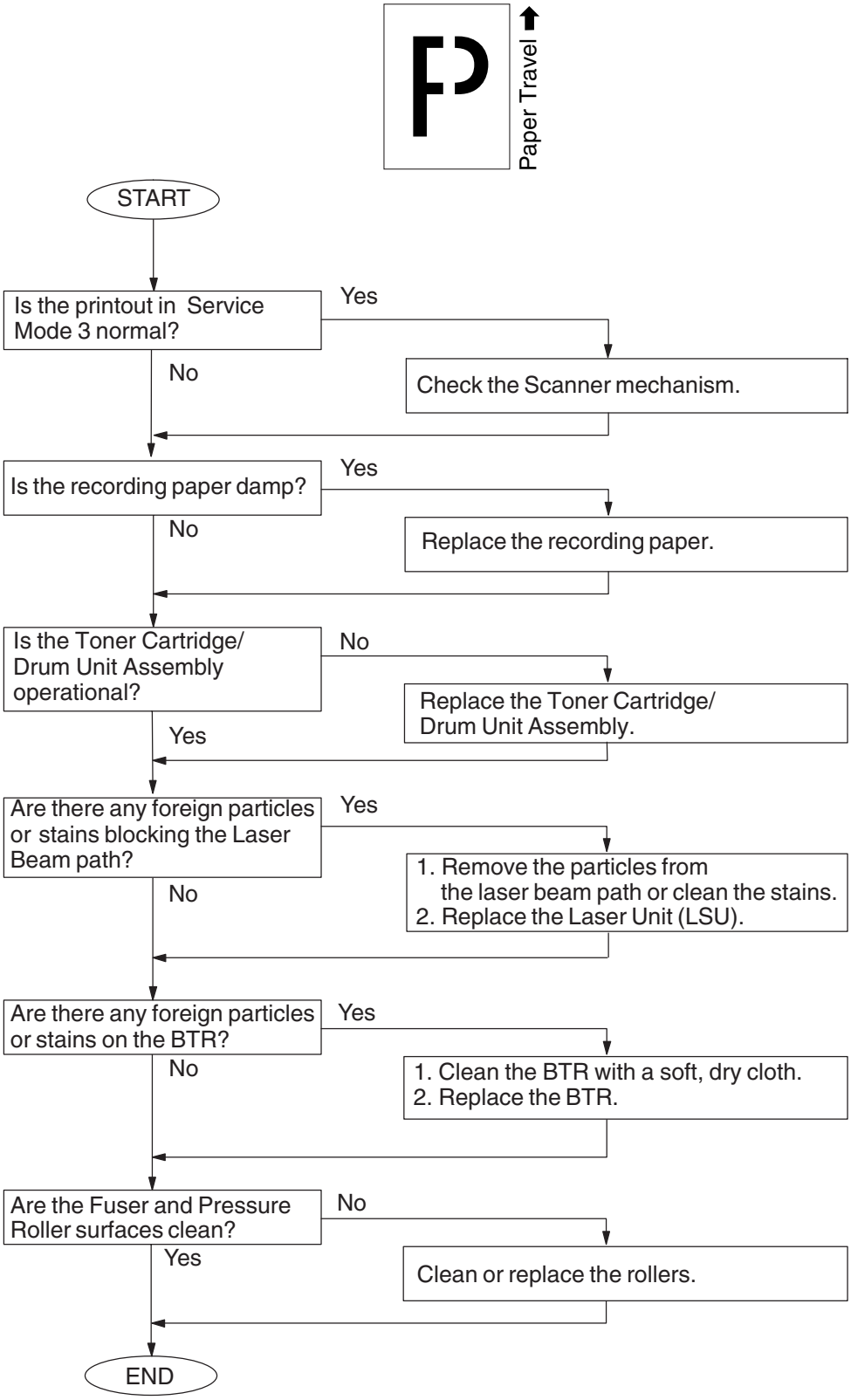




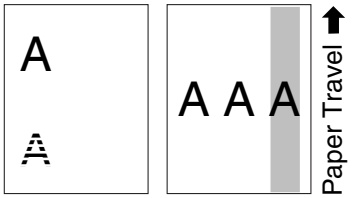
4.4.2. Blank Copy

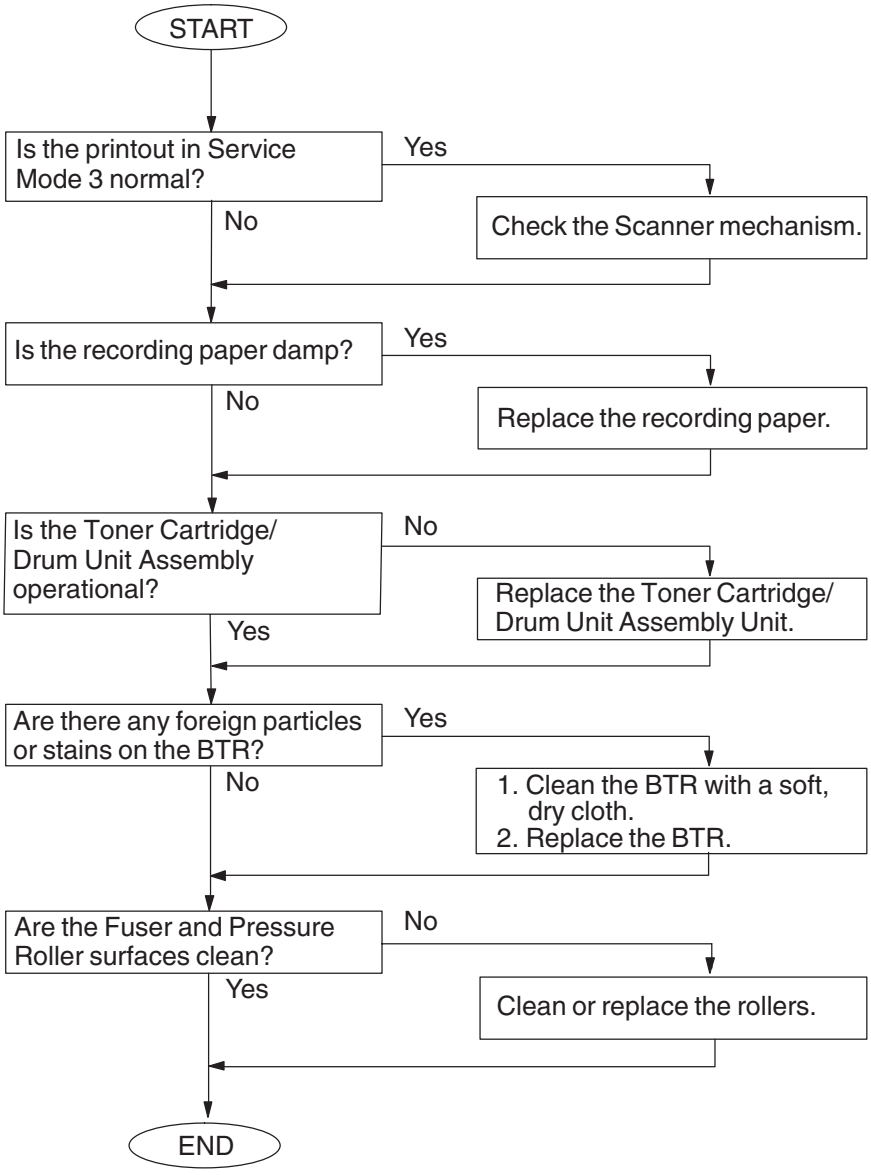


4.4.3. Vertical White Lines

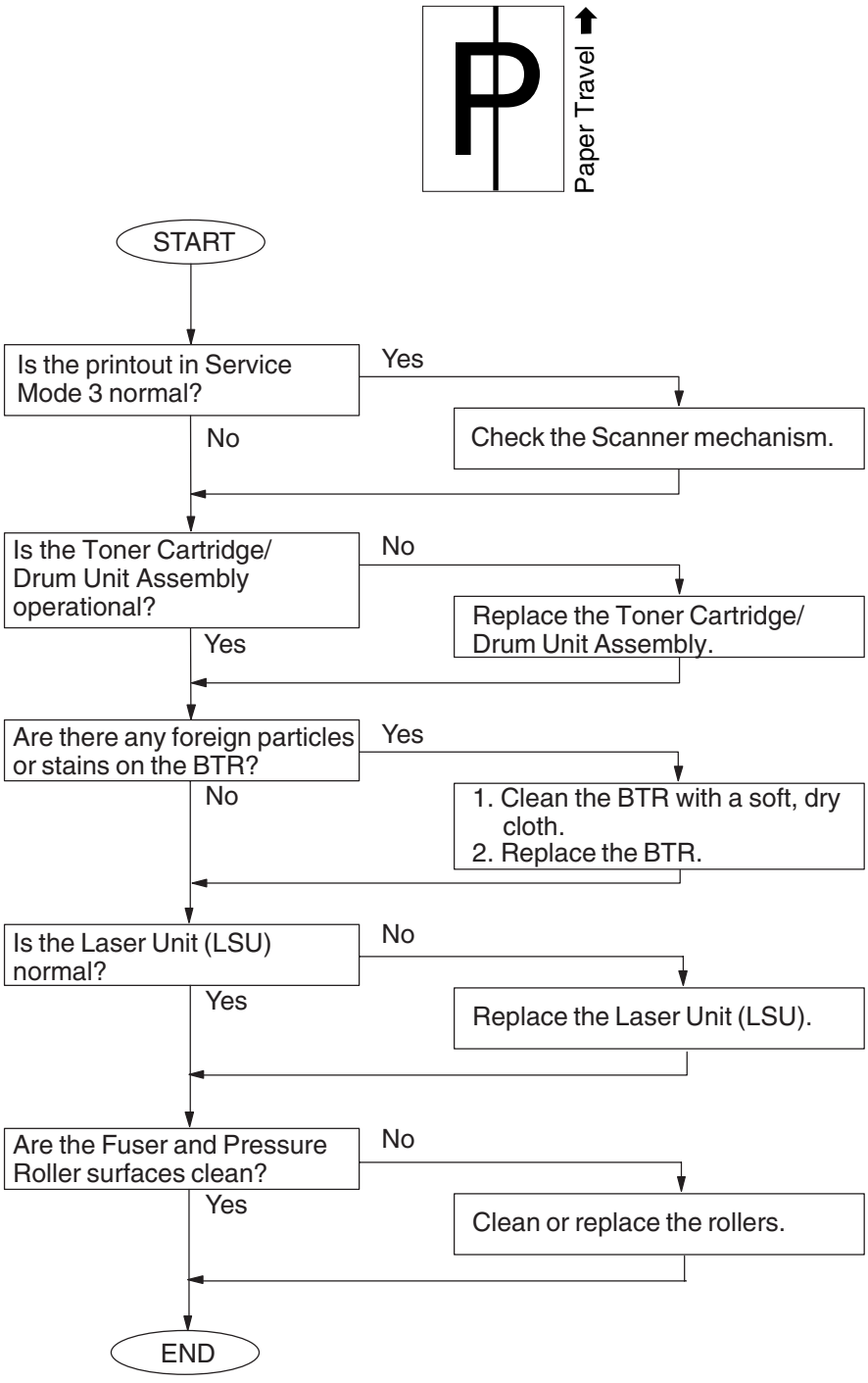


4.4.4. Ghost Images

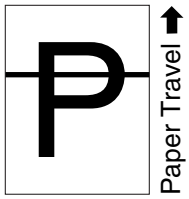


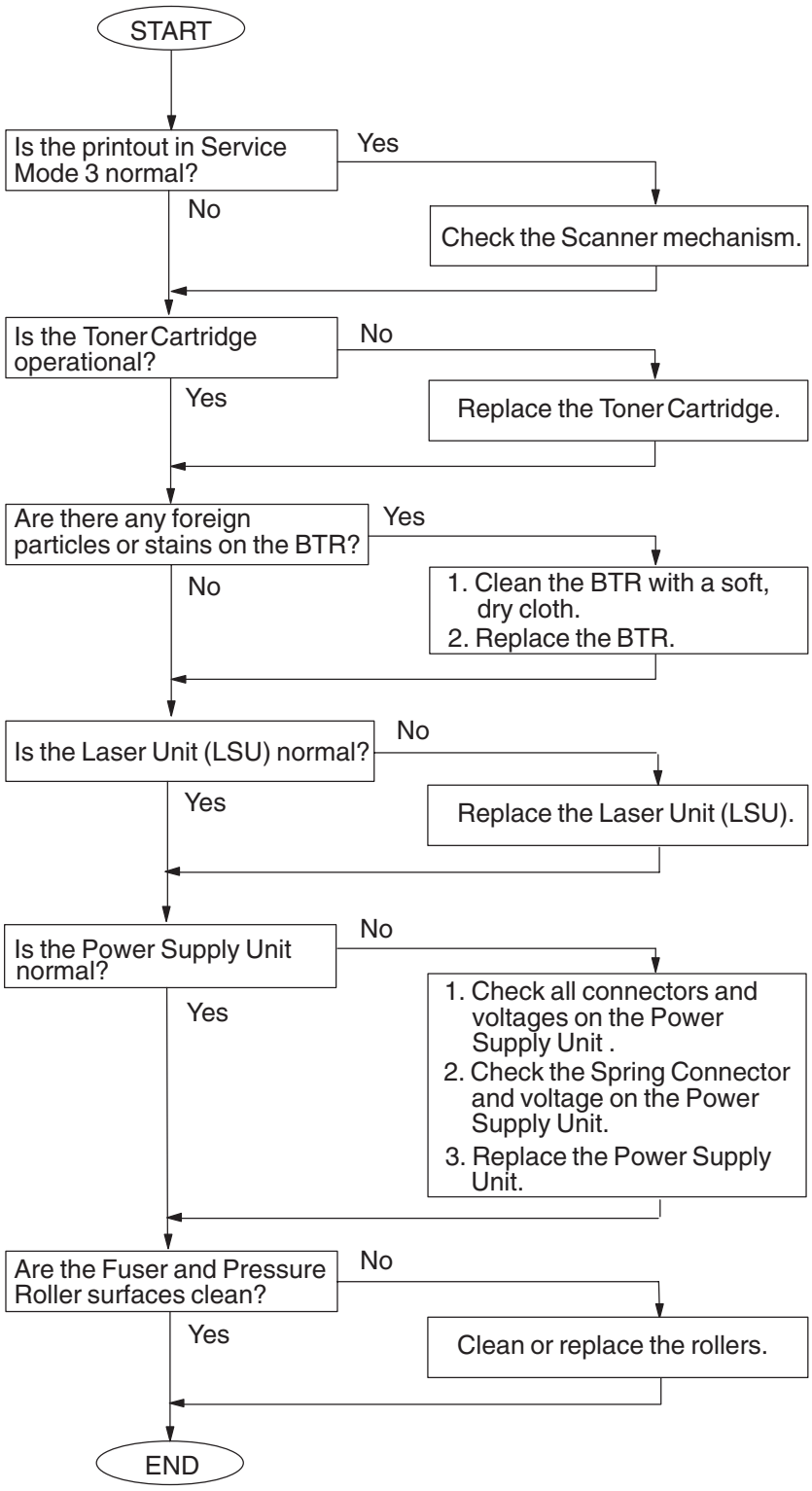


4.4.5. Vertical Dark Lines

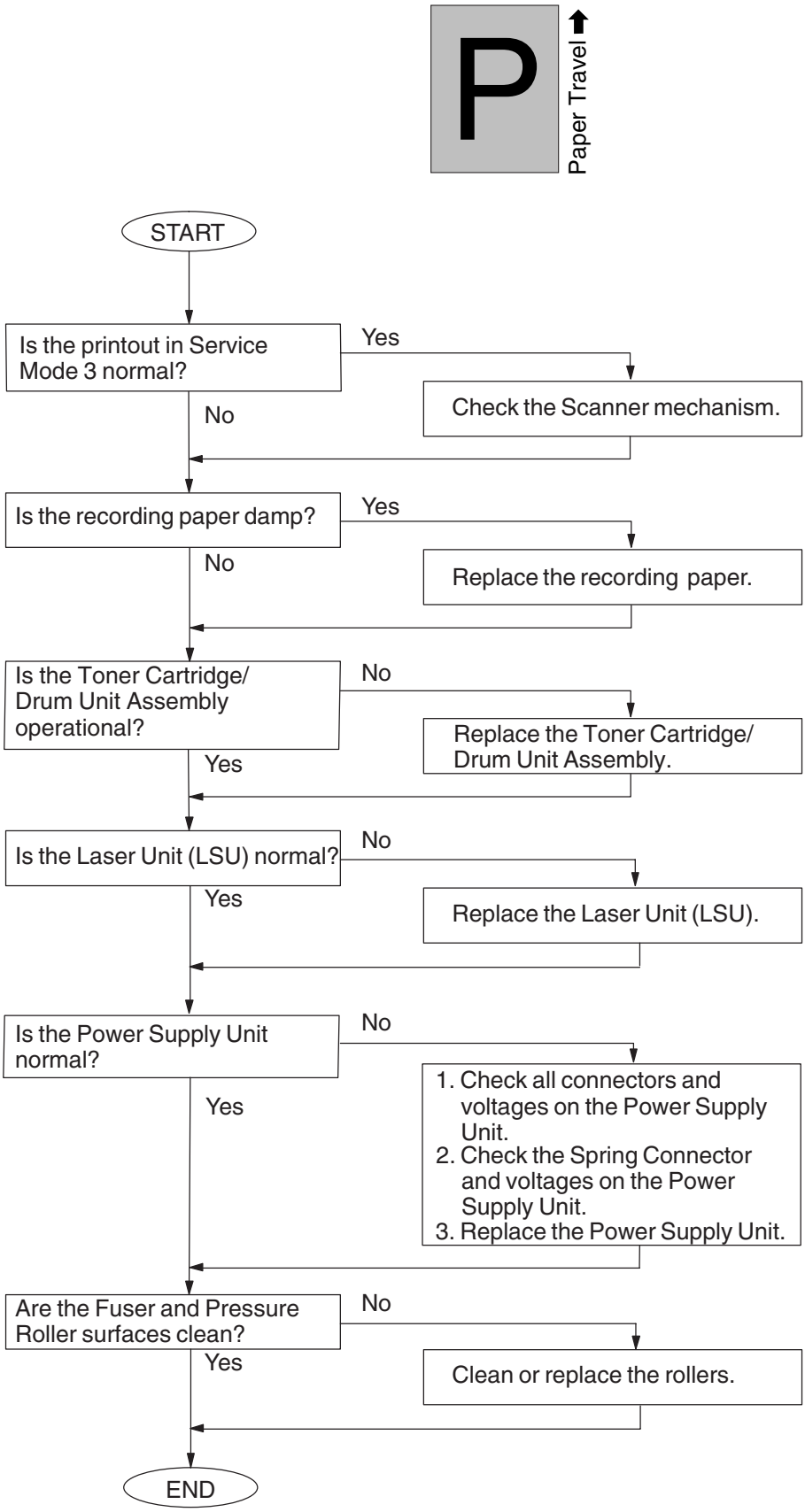


4.4.6. Horizontal Dark Lines

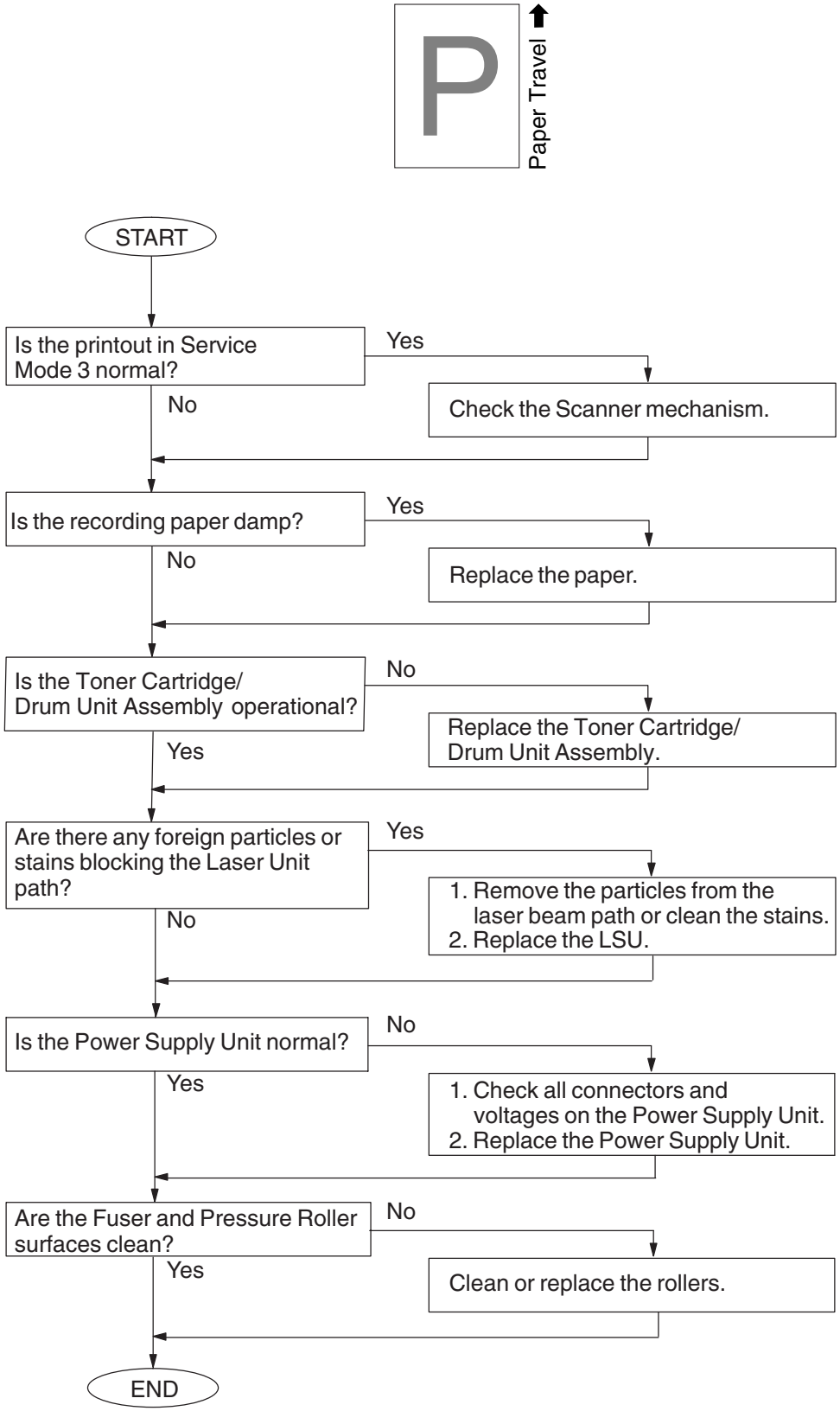




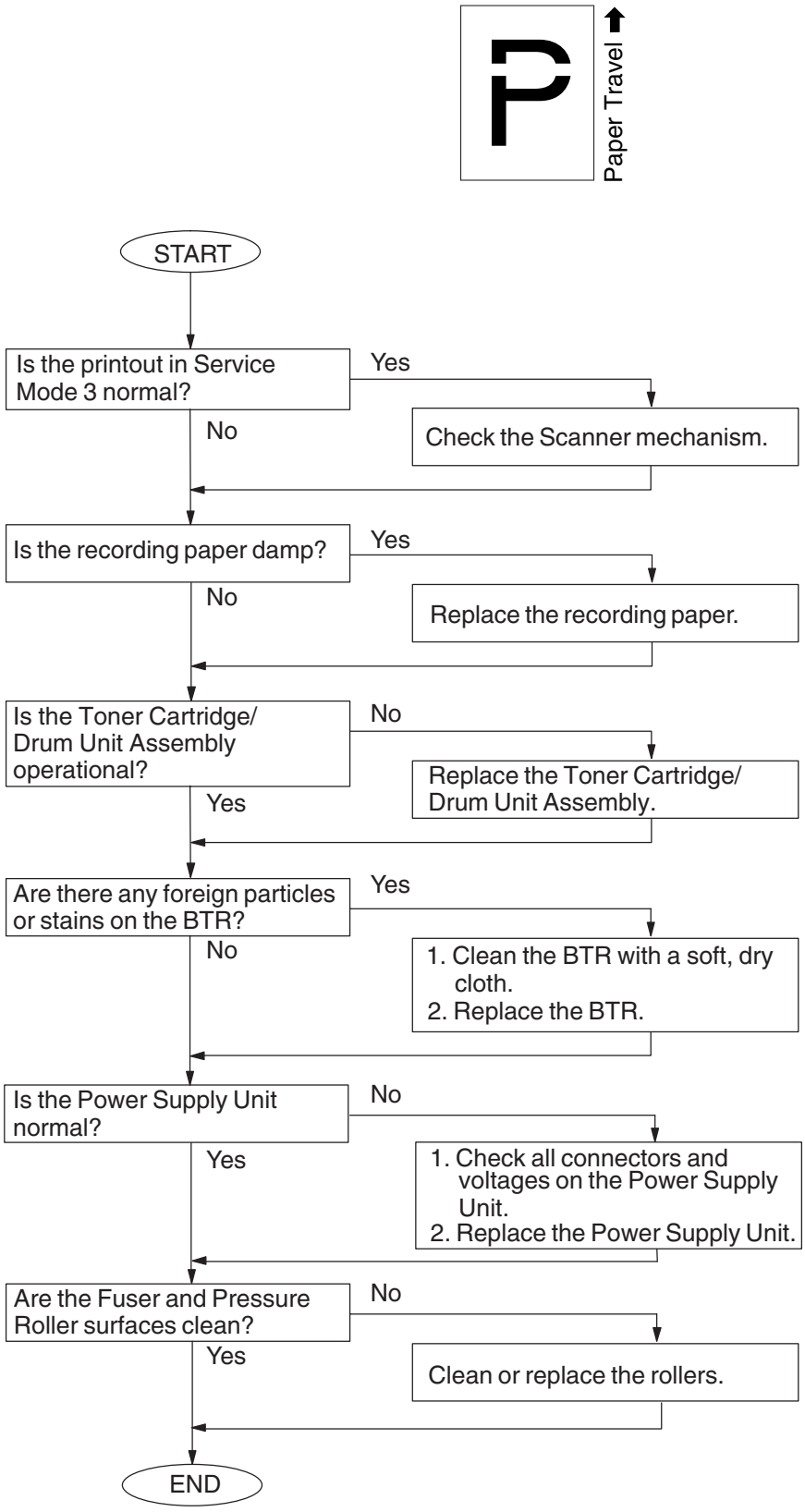
4.4.7. Dark Background



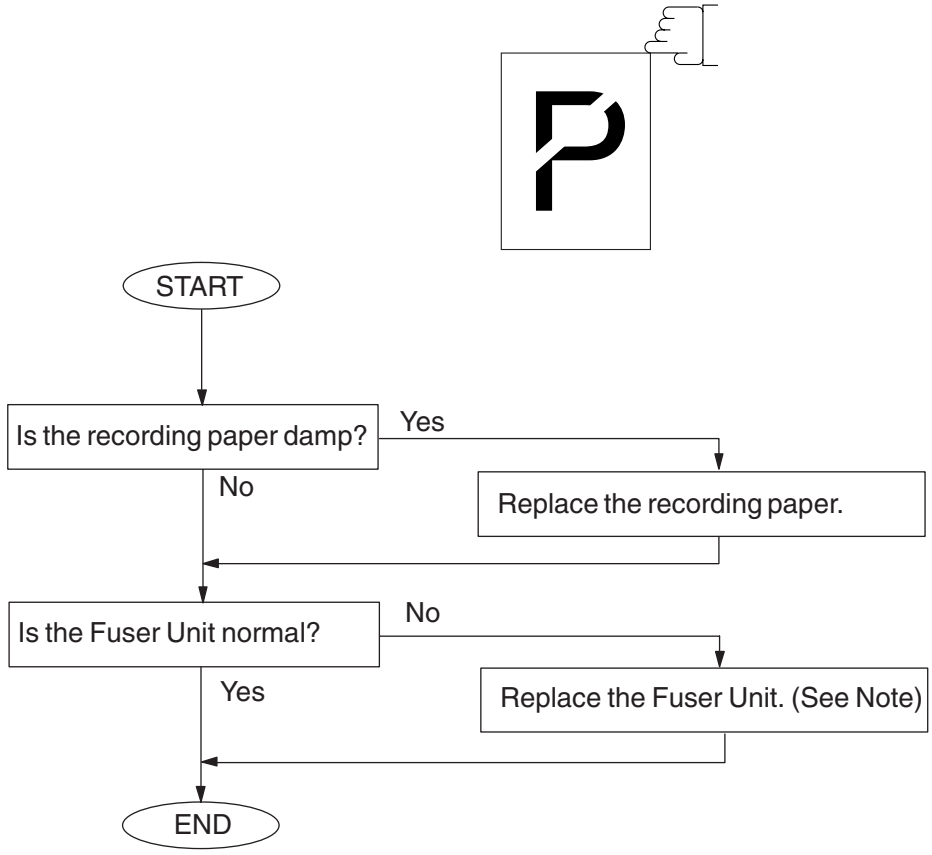
4.4.8. Light Print



4.4.9. Horizontal White Lines

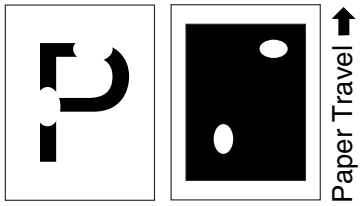


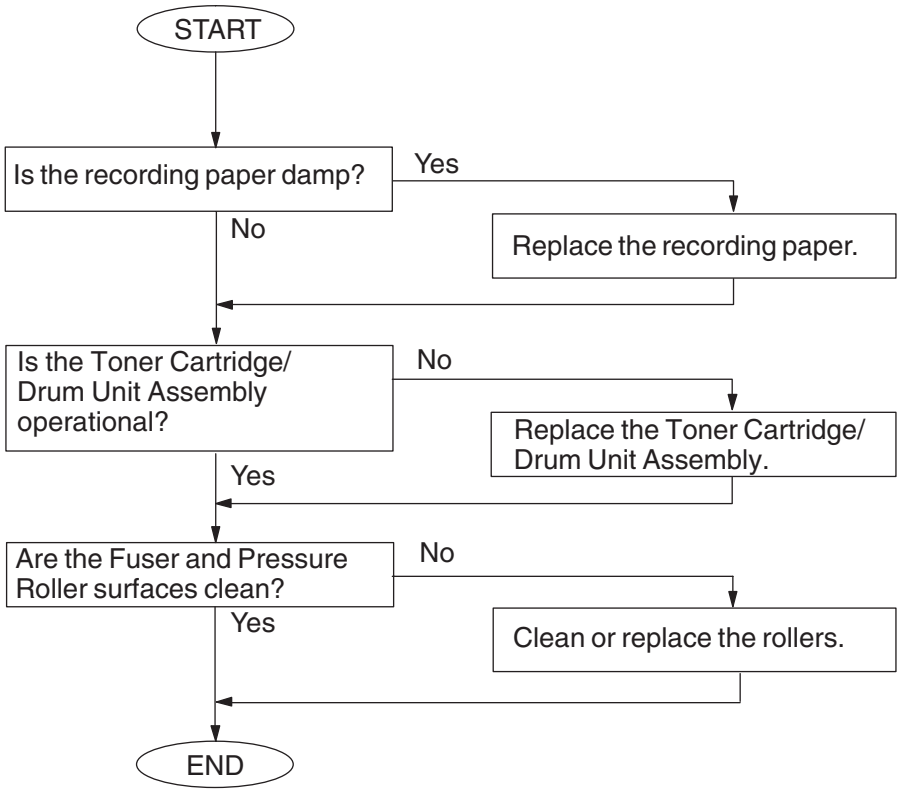
4.4.10. Improper Fusing (Printed image does not bond to the paper)



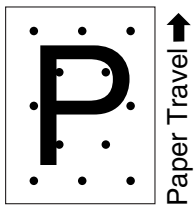
Note:
Replace the entire Fuser Unit when the Thermostat and / or the Thermistor turn into an open-circuit.

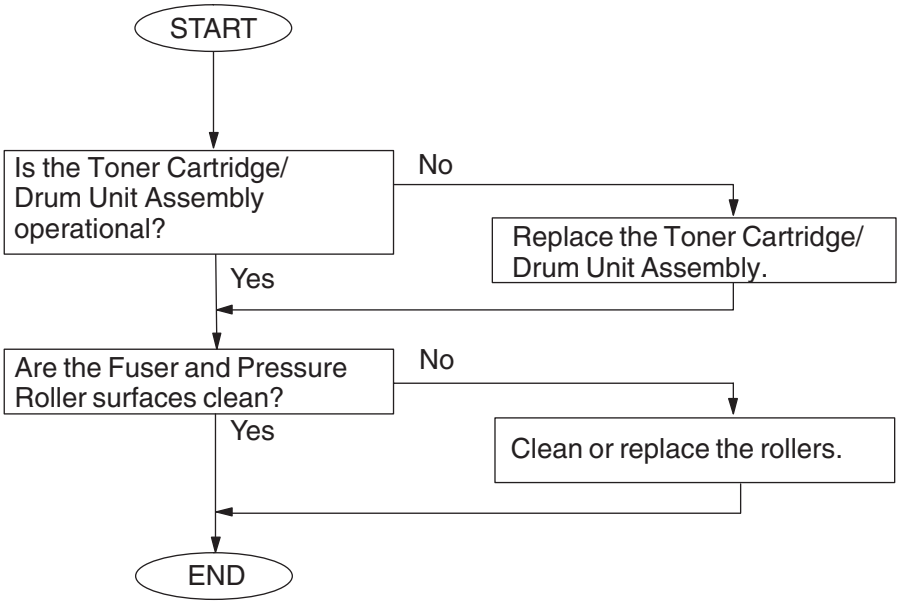
4.4.11. Voids in Solid Areas



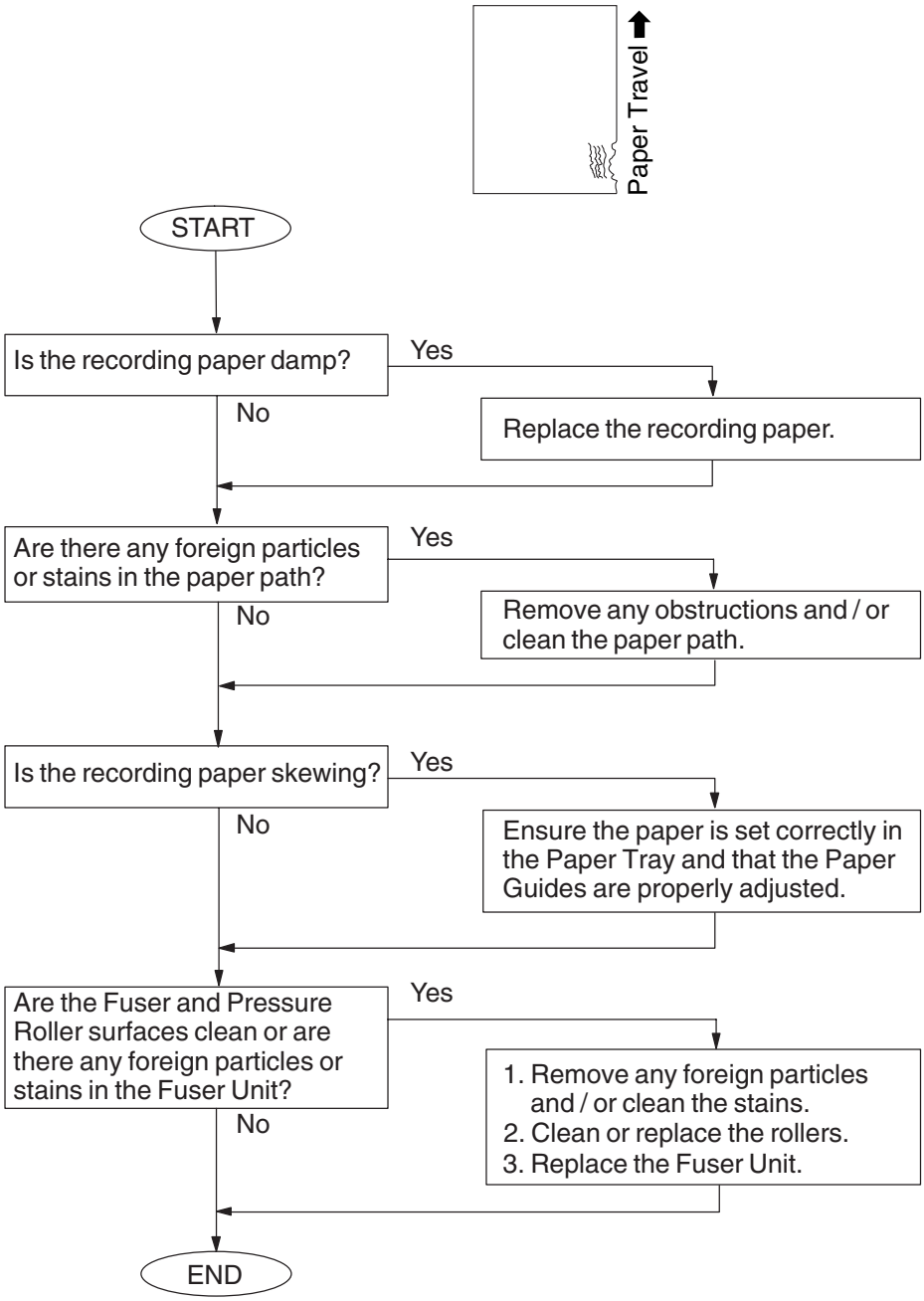


4.4.12. Black Dots

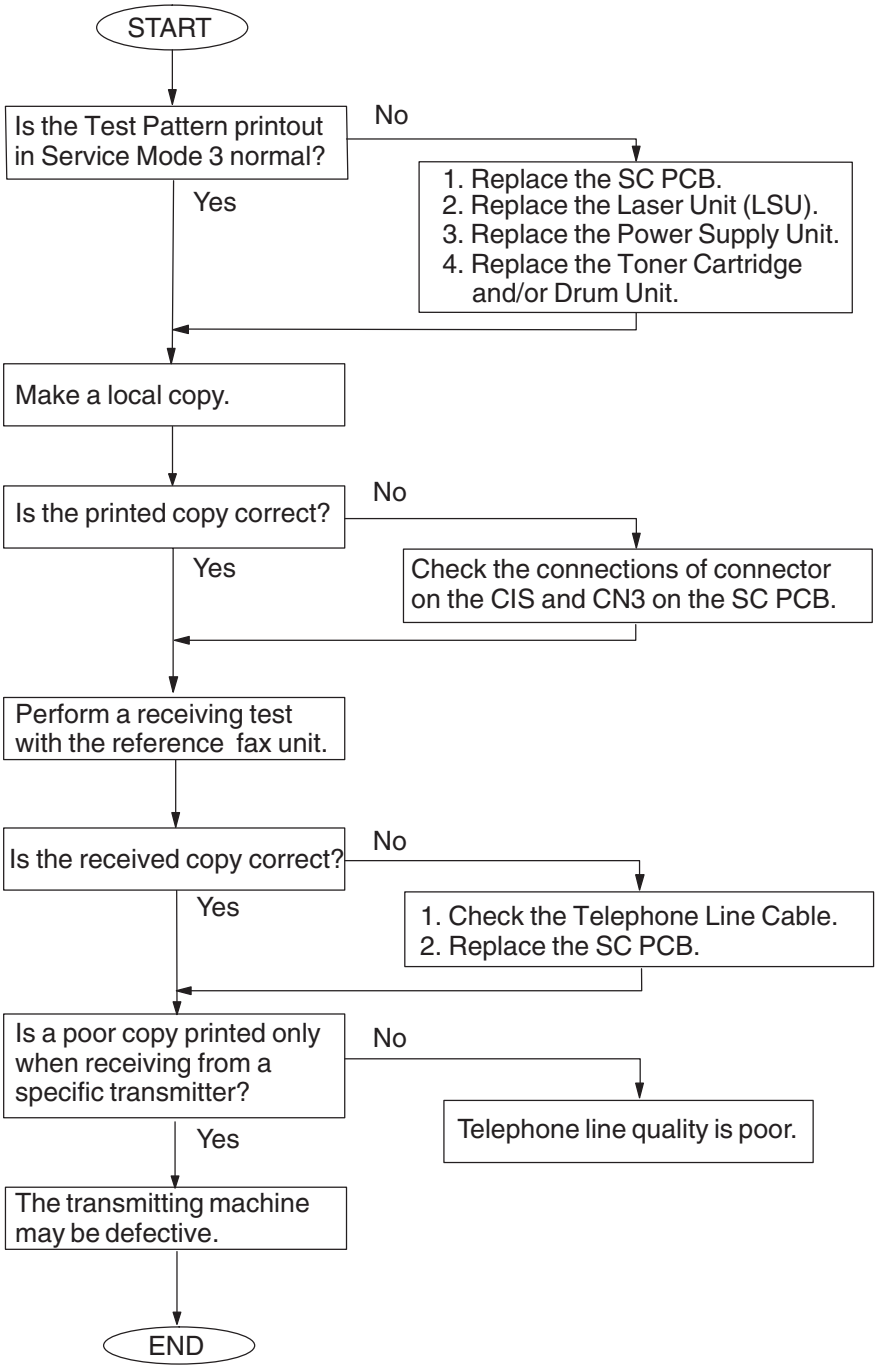




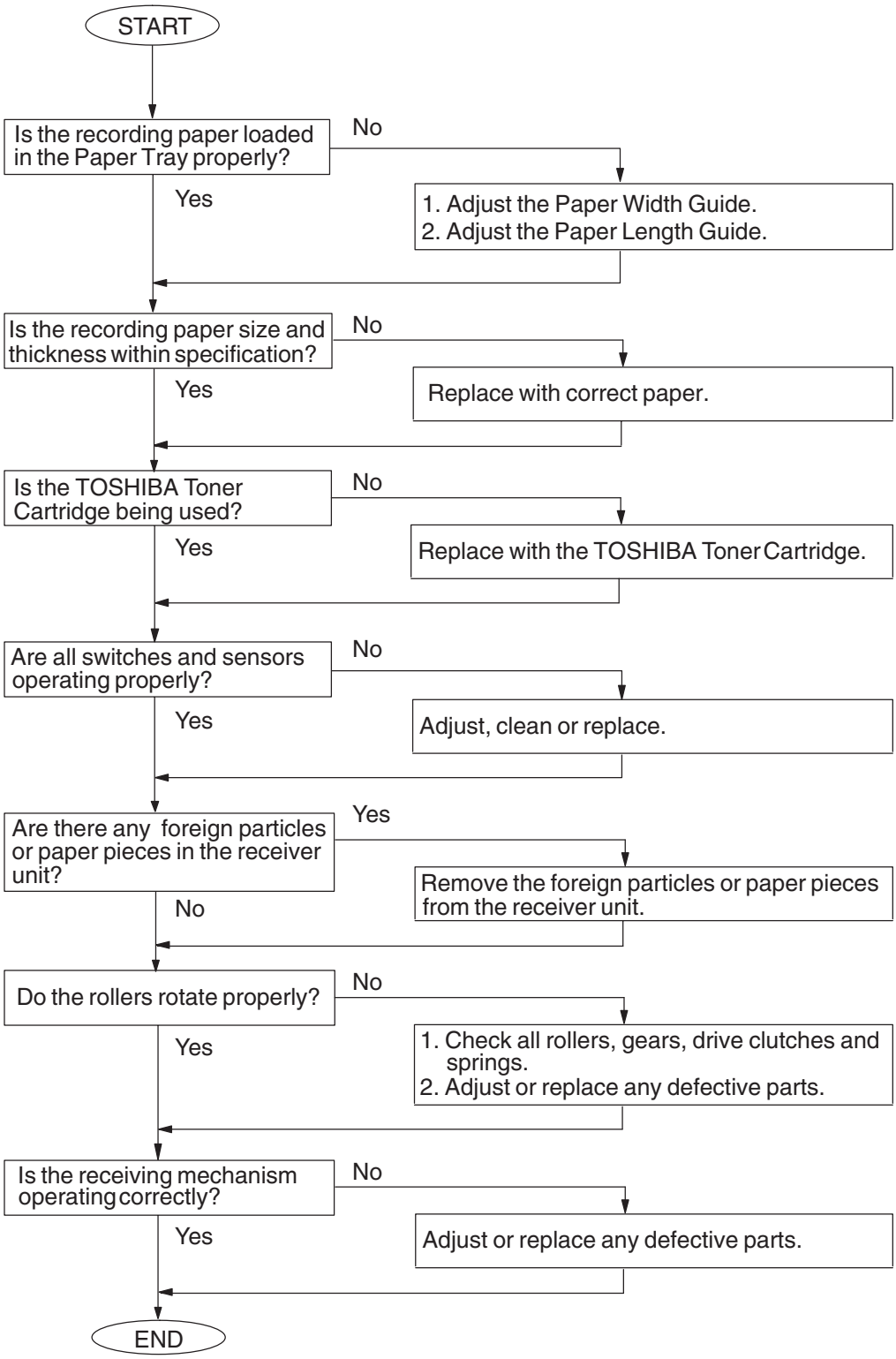
4.4.13. Recording Paper Creases



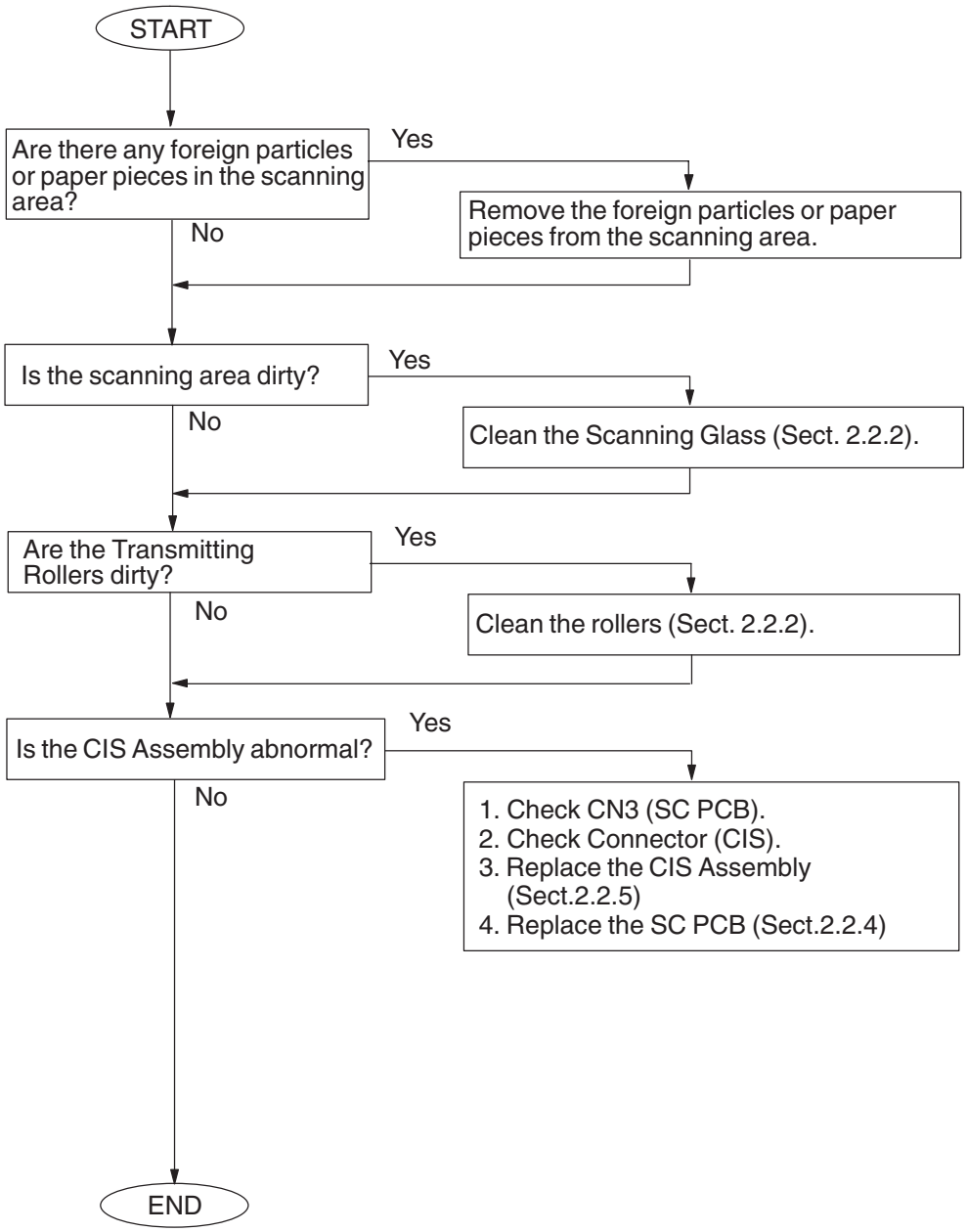
4.4.14. Poor Printed Copy Quality



4.4.15. Abnormal Printing

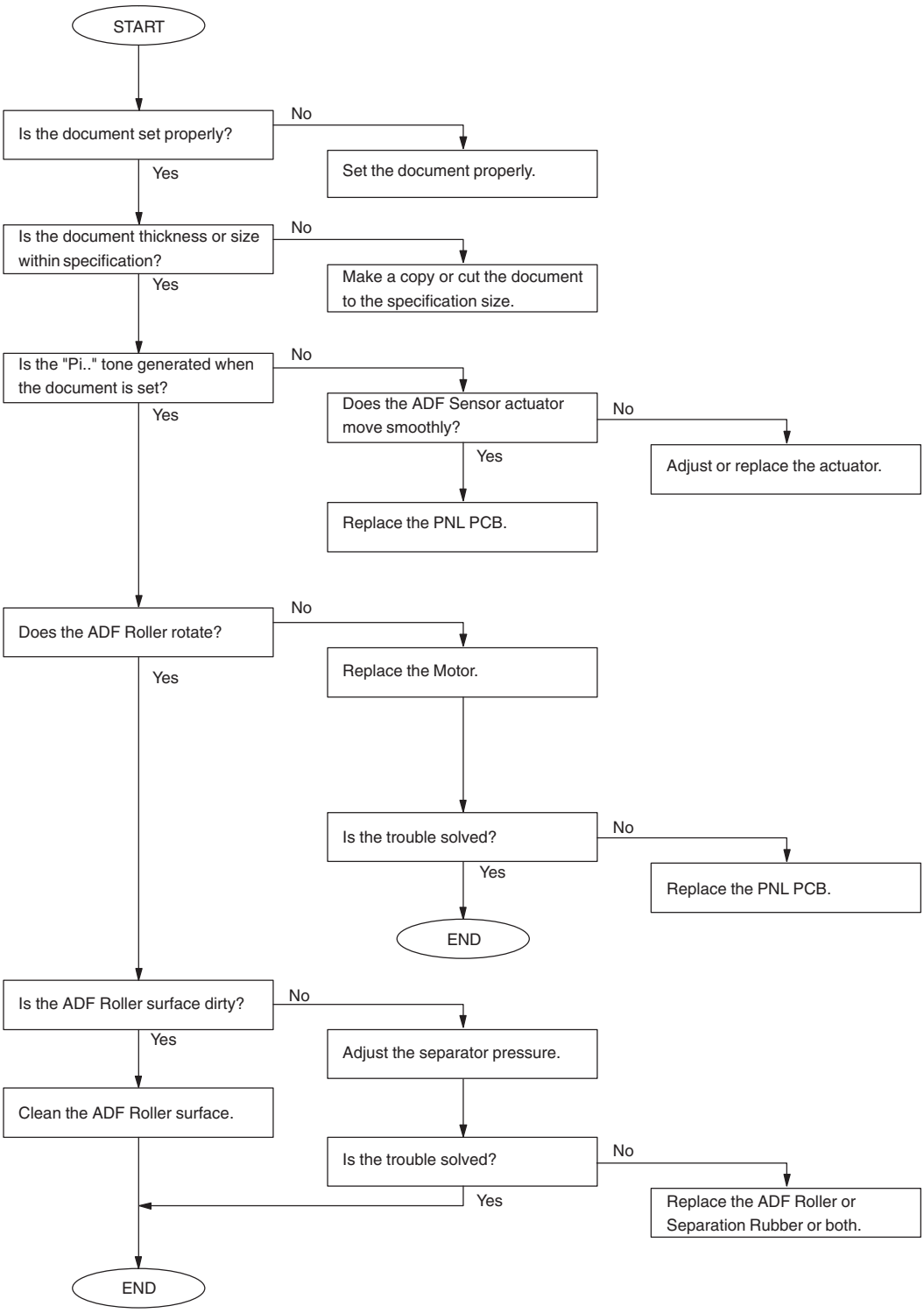


4.4.16. Scanned Copy Quality Problems

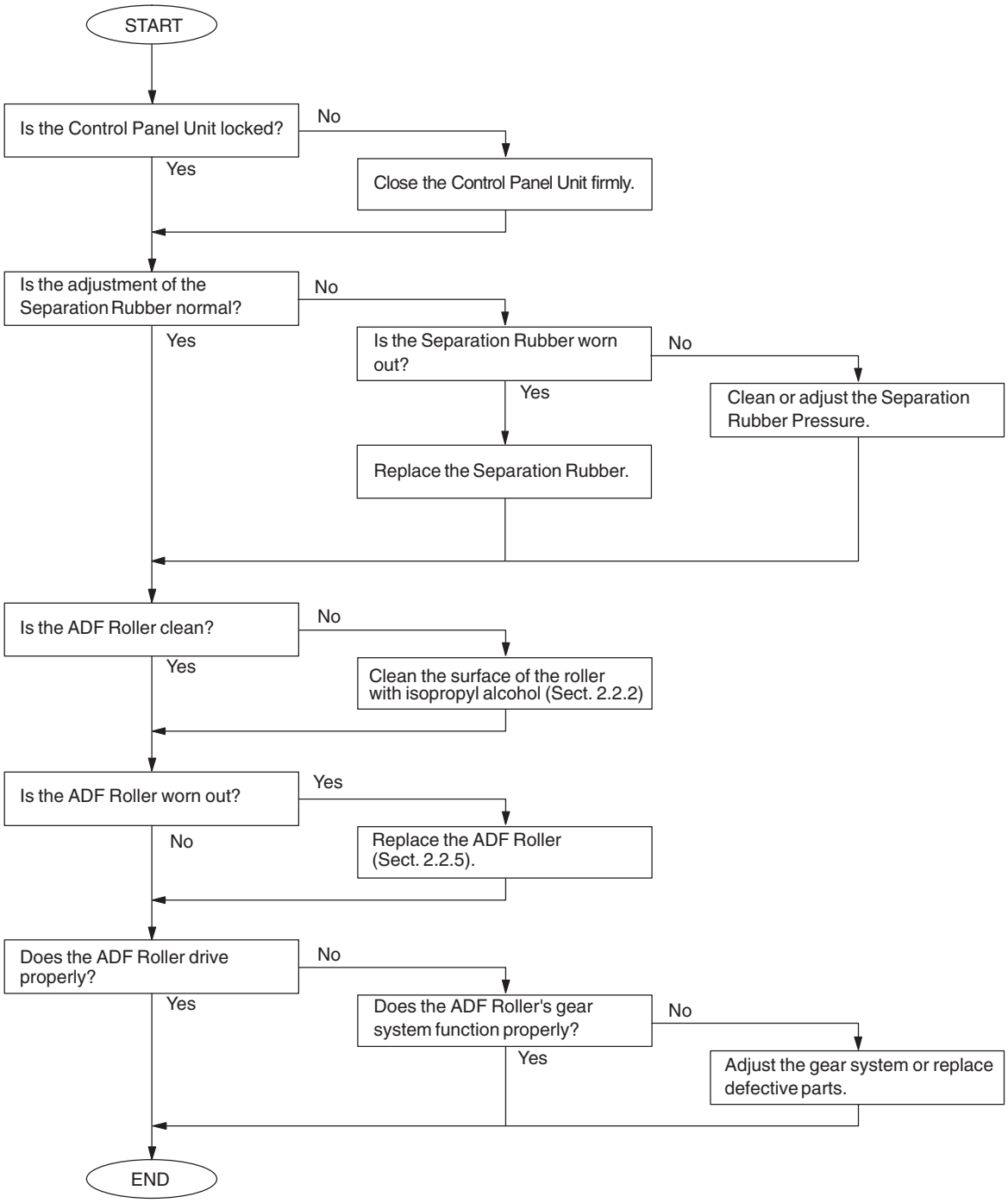


4.5. Document Feeder (ADF)

4.5.1. No Document Feed

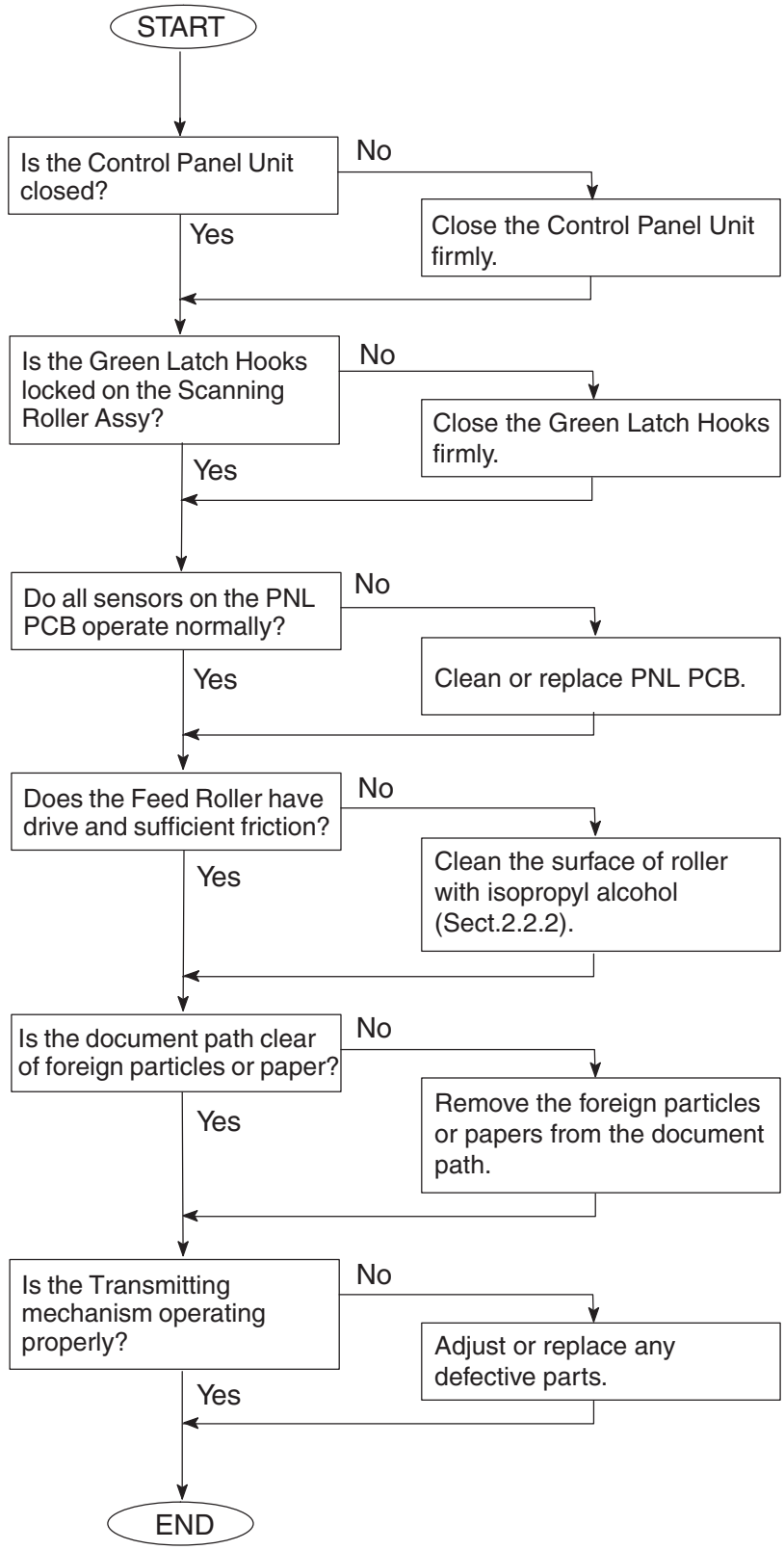


4.5.2. Document does not feed or Multiple feeds



4.5.3. Document Jam (030) or Skew

Copy Mode Sample

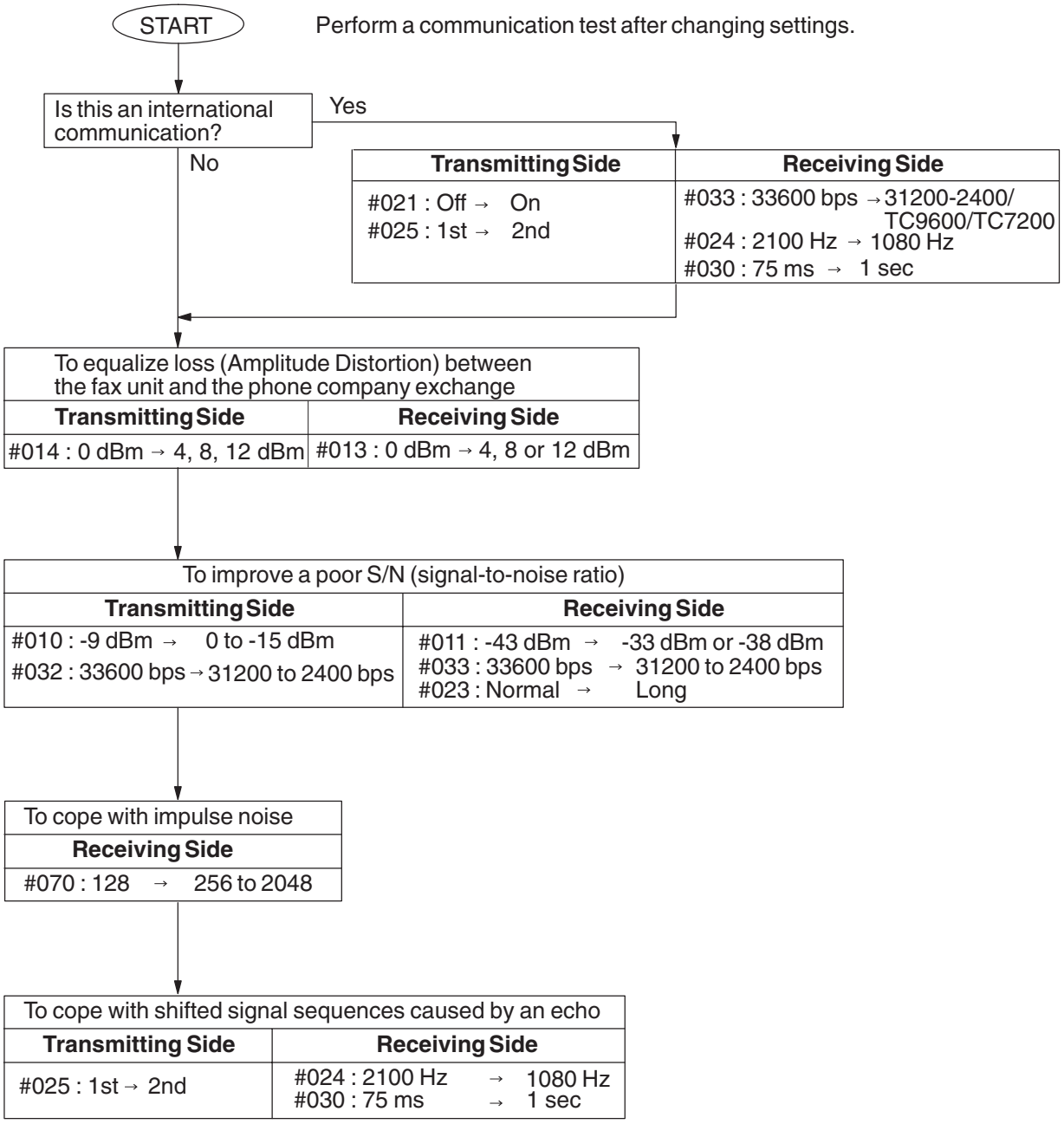


4.6. Communications

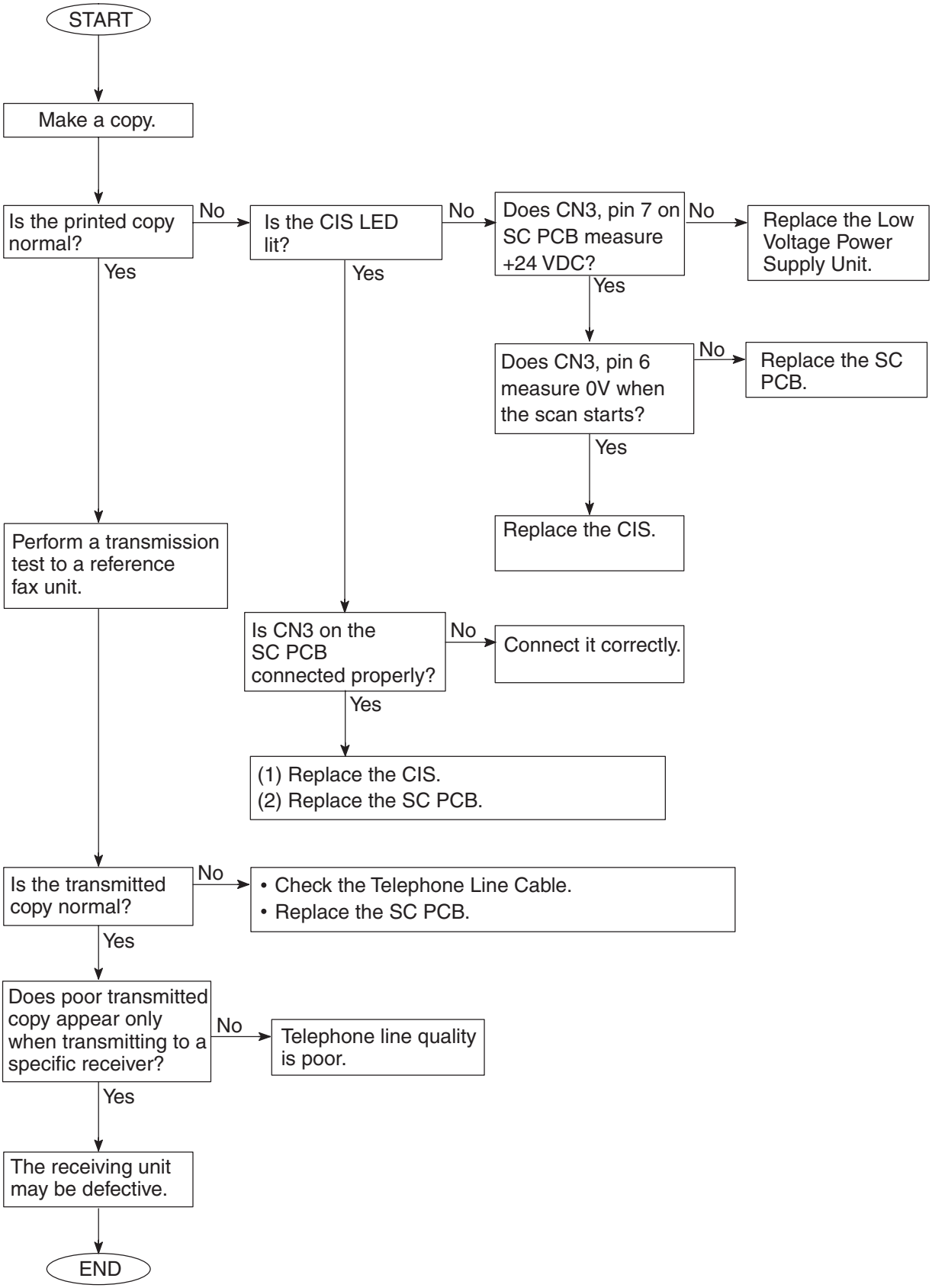
This section explains general troubleshooting procedures for the 400 series of Information Codes. These errors are primarily caused by poor telephone line quality (loss, noise, echo, etc.). This unit is furnished with Service Mode 1 to assist in troubleshooting line quality problems.

It is suggested that both the transmitting unit and receiving unit be adjusted. This section gives relevant parameters in Service Mode 1 for the transmitting and receiving sides. If no improvement is realized after the parameters are adjusted, it is recommended that the parameters be returned to the default settings.

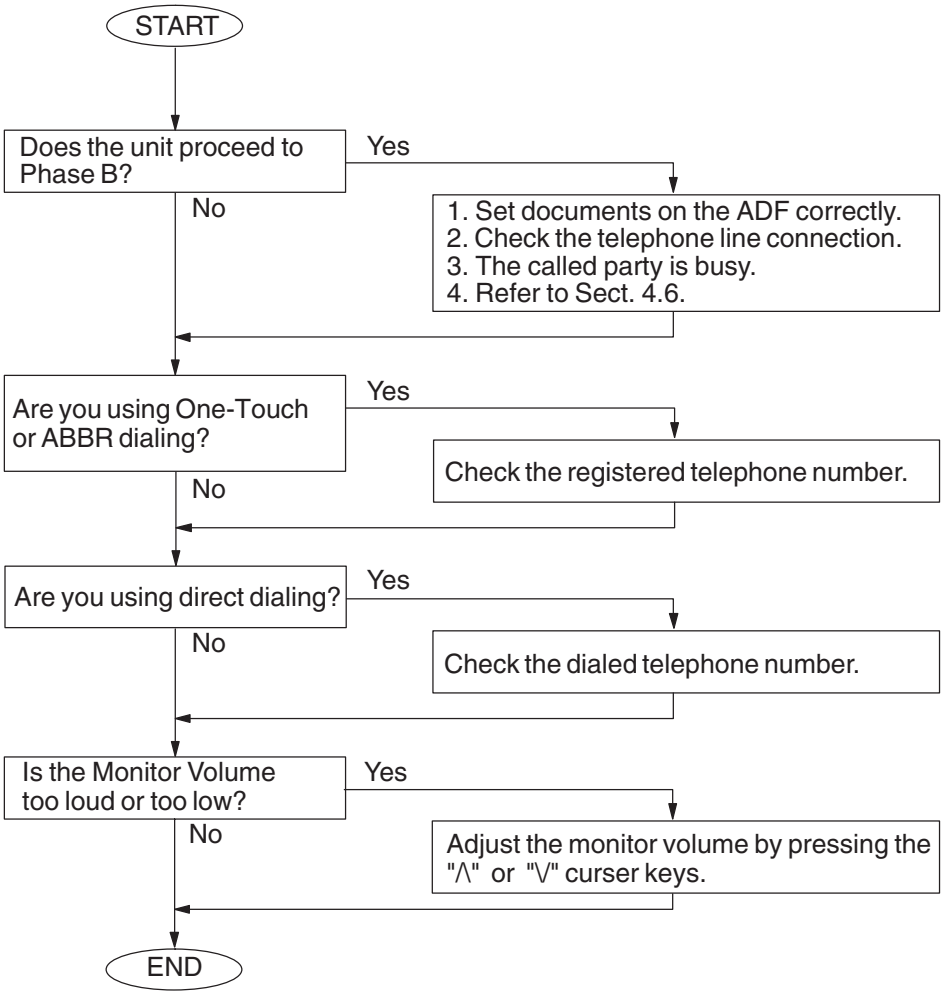
4.6.1. Communication Trouble



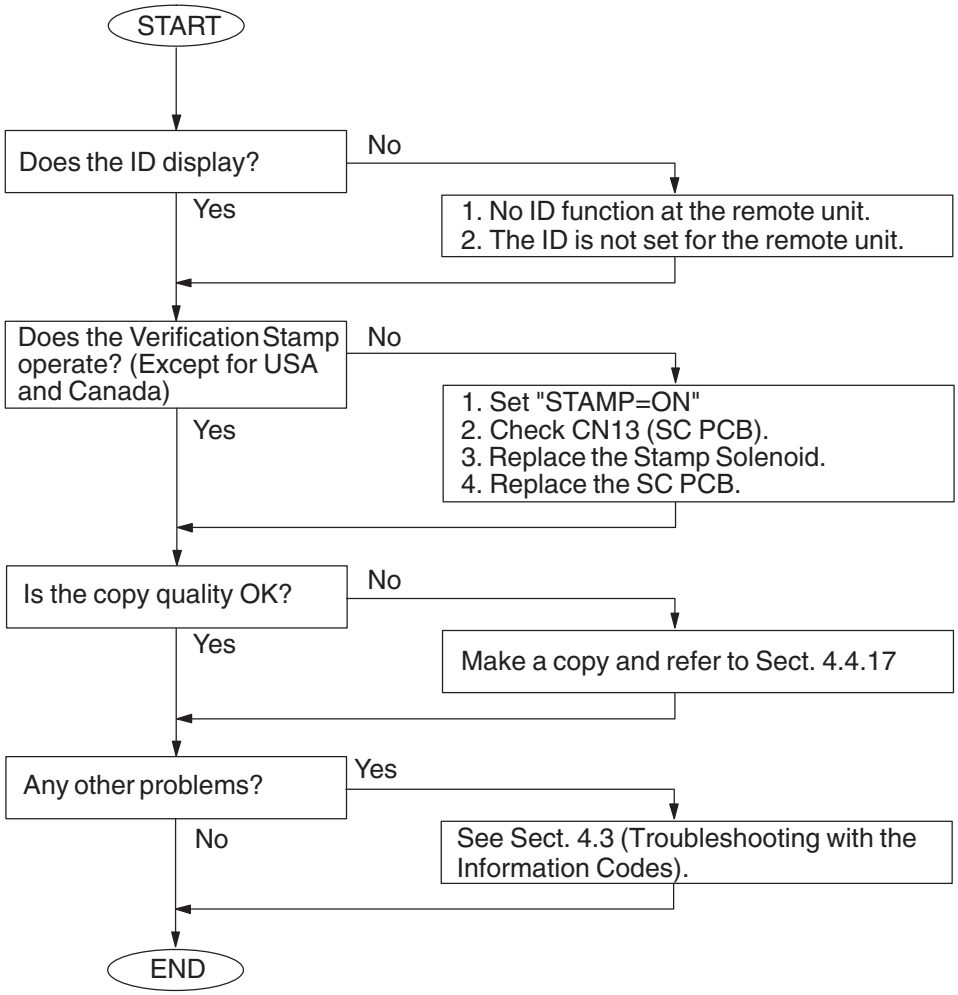
4.6.2. Poor Transmitted Copy Quality



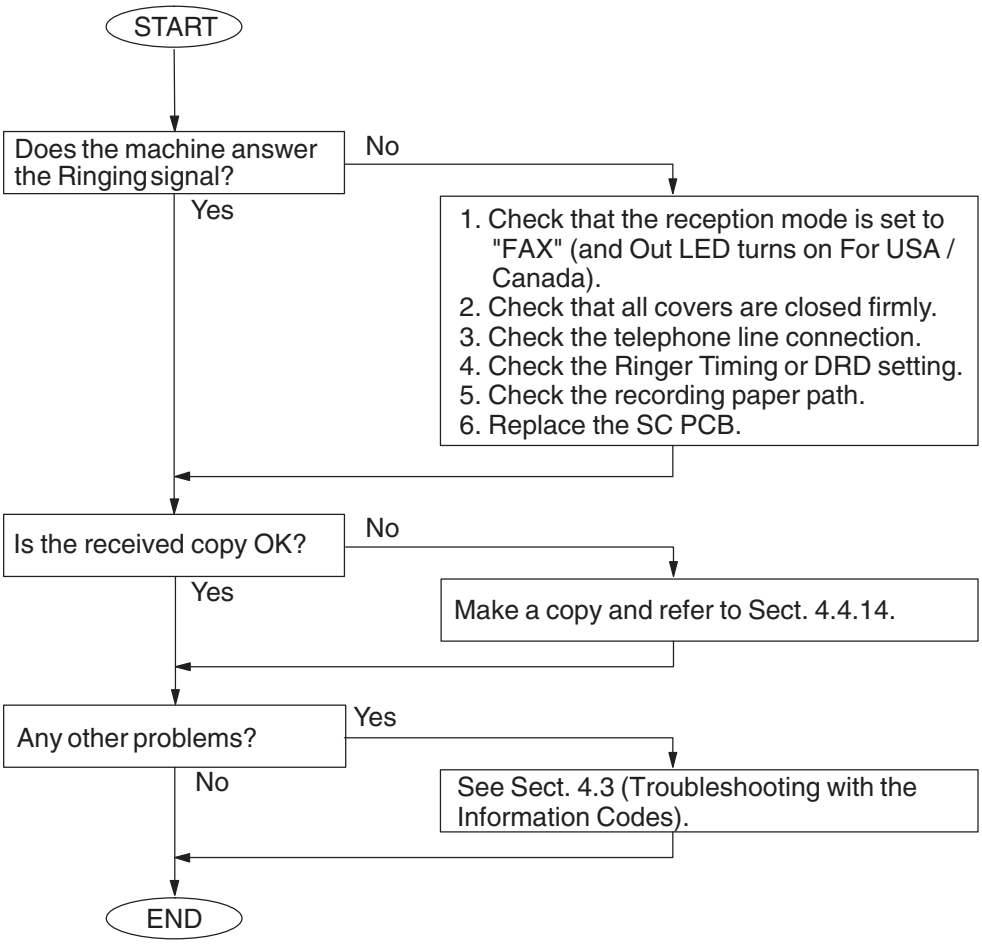
4.6.3. Dialing Problems



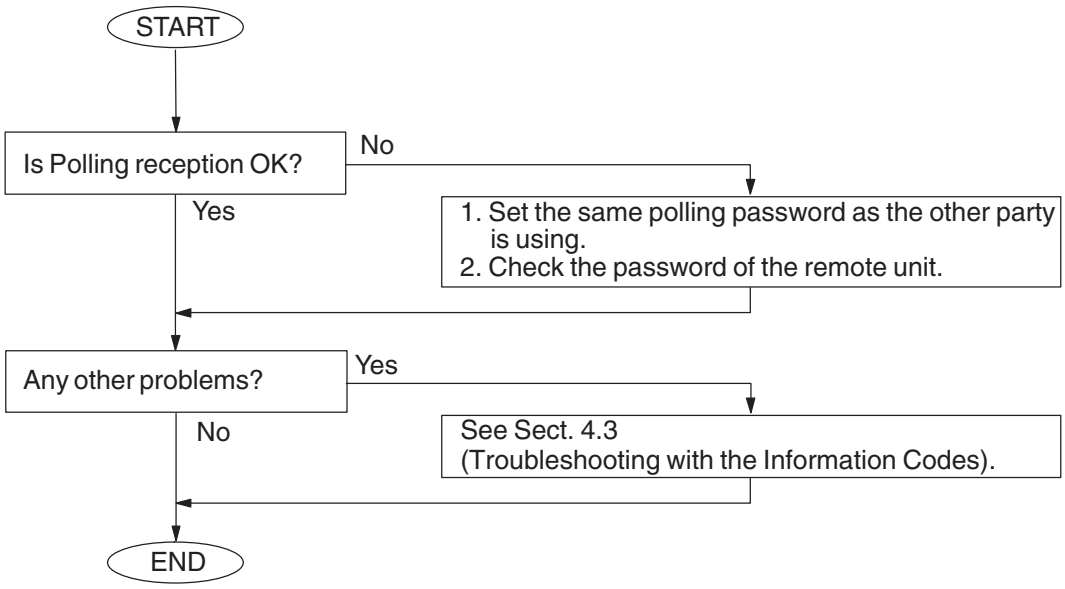
4.6.4. Transmission Problems



4.6.5. Reception Problems



4.6.6. Polling Problems



4.7. Information Codes Table (For Facsimile)

Fax Information Codes				
Code	**Mode**	**Phase**	**Description of Problem**	**Cause**
001	RCV COPY	C, D	Leading edge of the recording paper fails to reach the Timing Sensor.	Recording paper jam. Timing Sensor abnormal.
007	RCV COPY	C, D	1.Leading edge of the recording paper fails to reach the Paper Exit Sensor. 2.Recording paper has not completely passed the Paper Exit Sensor.	Recording paper jam. Paper Exit Sensor abnormal.
010	RCV COPY	B, C	No recording paper.	No recording paper or paper is not set properly. No Paper Sensor is defective.
012	RCV	C, D	The length of the received document is over 2 meter (78.7in).	
021	STANDBY RX COPY	B, C, D	Thermistor is abnormal. Fuser Control is abnormal. Fan is abnormal.	Defective SC PCB. Defective Fuser Unit, Power Supply Unit. Defective Fan.
030	XMT	B	Read Point Sensor does not go ON within 10 seconds after the document starts feeding.	Document is not set properly. Defective Read Point Sensor.
031	XMT COPY	C	Transmitting document was longer than 2 meter (or 78.7 in).	The document may jam. Defective Read Point Sensor.
041	STANDBY RX COPY	B, C, D	Out of toner.	No toner. Defective Toner Sensor.
043	STANDBY RX COPY	B, C, D	Low toner.	Toner is getting low. Defective Toner Sensor.
044	RCV COPY	-	OPC Drum Unit maintenance.	Reached the number of regulation for printing.
045	STANBY	-	No Toner Cartridge.	Toner cartridge has not been installed. Defective Toner Sensor (Cartridge Sensor).
046	STANDBY RX COPY	-	Time to replace Drum Unit.	Drum use rate is reached 100%. (Approx. 12,000 to 20,000 pages)
051	RCV COPY	-	Motor abnormal.	Connector not properly connected. Defective Motor. Defective SC PCB.
054	STANDBY RX COPY	-	HSYNC abnormal. Motor abnormal.	Defective Laser Unit.
061	-	A	ADF Cover is open.	Cover is not firmly closed. Connectors are not firmly connected.
212	XMT RCV	A-E	Interface error occurred between the CPU and modem.	Modem is defective. (SC PCB) Software problem occurred. (SC PCB)

Fax Information Codes				
Code	**Mode**	**Phase**	**Description of Problem**	**Cause**
301	XMT RCV		System fault.	Software problem occurred. (SC PCB)
331	XMT	C	8-minutes timer error. (Germany only)	
400	XMT	B	T1 timer (35±5 sec.) elapsed without detecting 300 bps signal.	Wrong number is dialed and the START button is pushed. Telephone line is disconnected while dialing. SC PCB (Modem) is defective. Receiver is defective. (It may only be transmitting CED)
401	XMT	B	DCN was returned from receiver while transmitter is waiting for CFR or FTT.	Your machine's ID Number is not programmed. Possible incompatibility or incorrect Password.
402	XMT	B	DCN was returned from receiver while transmitter is waiting for NSF/DIS.	Receiver working in non-CCITT mode only. (Possible incompatibility)
403	RCV (Polling)	B	Transmitter had no polling function.	"POLLED=ON" (polling XMT ready) is not set at the transmitter. Document to be transmitted is not placed at the transmitter.
404	XMT	B	Transmitter sent NSS (or DCS) followed by TCF three times, but the receiver did not respond. (CFR or FTT is usually returned)	Receiver is defective. (Modem, etc.) SC PCB is defective. Receiver disconnects line during first NSS (or DCS) is transmitted.
405	XMT	B	Transmitter received FTT after it transmitted TCF at 2400bps. Received RTN after communicating at 2400 bps.	Line quality is poor. (TCF is damaged due to line noise) Receiver is defective. (Modem, etc.) SC PCB is defective.
407	XMT	D	Transmitter received no response after it transmitted post message, such as EOP, MPS, EOM, etc...or received DCN.	Receiver is defective. (No paper, paper jamming, etc.) Receiver ceased receiving because of excessive error. (Line quality is poor) SC PCB (Modem) is defective.
408	XMT	D	Transmitter received RTN after it transmitted EOP, MPS, or EOM.	Receiver receives data with error. (Line quality is poor) Receiver is defective. (Modem, etc.) SC PCB is defective.
409	XMT	D	Transmitter receives PIN after it transmitted a post message, such as EOP, MPS, EOM, etc.	Receiver receives data with error due to poor line quality, and receiving operator requests voice contact. Receiver is defective. (Modem, etc.) SC PCB is defective.
410	RCV	D	Received DCN while waiting for post command. (EOP, MPS, EOM, etc.)	Interface or line is faulty. Transmitter is defective.
411	RCV (Polling)	B	Received DCN after transmitting NSC.	Transmitter is not ready for polling communication. Password does not match between transmitter and receiver.

Fax Information Codes				
Code	**Mode**	**Phase**	**Description of Problem**	**Cause**
412	G3 RX	B, D	No response within 12 seconds in NSS/DCS/MPS wait state. (After transmitting FTT)	Transmitter is defective. SC PCB is defective.
414	RCV (Polling)	B	No response received after transmitting 3rd NSC.	Password does not match between transmitter and receiver. Transmitter is defective. (No original, document jam, etc.)
415	XMT (Polling)	B	Remote side attempted to receive message from your machine in polling communication.	Inform the remote side that your machine does not have the polling transmission feature.
416	RCV	D	Receiver did not detect post command, such as EOP, MPS, EOM, etc.	Transmitter is defective. Line quality is poor. (RTC signal is distorted due to line noise) SC PCB is defective.
417	RCV	C	Receiver returned RTN in response to post message.	Line quality is poor. (There are excessive errors in received data) SC PCB is defective.
418	RCV	C	Receiver transmitted PIN in response to PRI-Q from transmitter. (Transmitting operator requests voice contact)	Line quality is poor. (There are excessive errors in received data) SC PCB is defective.
420	RCV	B	T1 timer (35 sec.) elapsed without detecting 300 bps signal.	There is wrong incoming call.(non-facsimile communication) Transmitter is defective. SC PCB is defective.
421	RCV	B	Busy Tone is detected after sending NSF Signal.	Remote station disconnected the line. Wrong number is dialed.
422	XMT	B	Content of NSF (or DIS) or NSC (or DTC) was invalid.	There is an incompatibility.
427	G3 RCV	B	DCN received to NSF/CSI/DIS transmitted.	The interface is incompatible.
433	XMT RCV	B, D	T.30 Protocol abnormal.	Defective remote station.
434	XMT or RCV	B	CD (response from Modem) did not turn OFF within 180 sec. after receiver detected FLAG signal.	Remote unit is defective. SC PCB is defective.
436	G3 RX	C	DCN received after transmitting FTT.	Transmitter is defective or incompatible. Line quality is poor.
456	RCV	B	Received relay transfer request or confidential document to distribute to an end receiving station or all confidential mailboxes are used.	
459	RCV	C	Failed training in Phase C.	Line quality is poor. (Training signal is distorted due to line noise) SC PCB is defective.
490	RCV	C	Sum of error lines exceeded the limit (Function Parameter No. 70) of 64 lines.	Line quality is poor. SC PCB is defective.

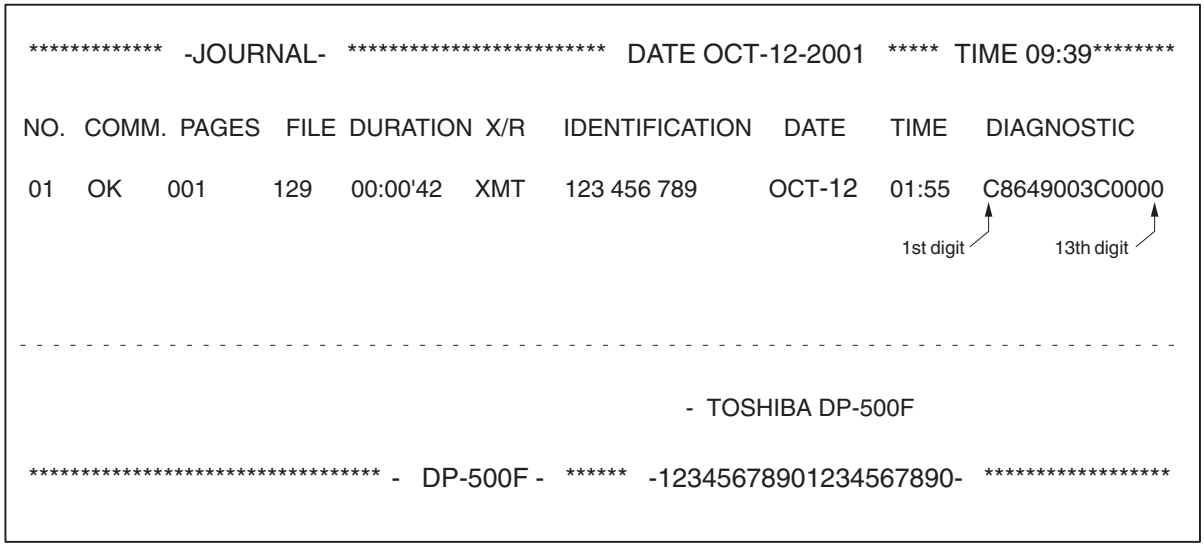
Fax Information Codes				
Code	**Mode**	**Phase**	**Description of Problem**	**Cause**
494	RCV	C	Interval between two EOLs was more than 10 sec. when receiver received message data.	Transmitter is defective. Line quality is poor. (EOL is damaged due to line noise) SC PCB is defective.
495	XMT RCV	C	During reception, CD turned OFF or continued ON for long time. During communication, lost loop - current.	Line is disconnected. Transmitter is defective. SC PCB is defective.
496	XMT	C	CS of modem is not able to turn ON.	SC PCB is defective.
501	XMT/ RCV(V.34)	B	Remote unit does not have compatible Modem.	
502	XMT/ RCV(V.34)	B, C, D	During reception, CD turned OFF or continued ON for long time. During communication, lost loop - current.	Line is disconnected. Transmitter is defective. SC PCB is defective.
503	XMT/ RCV(V.34)	B, C, D	CS of modem is not able to turn ON during training.	SC PCB is defective. Line is disconnected.
504	RCV/V.34 (Polling)	B	Polling is rejected from the remote station.	No polling original is set.
505	XMT/V.34 (Polling)	B	Polling XMT is rejected.	No polling original is set.
540	XMT ECM	B	No response after transmitting 3rd CTC or DCN received.	Incompatible interface.
541	XMT ECM	D	No response after transmitting 3rd EOR or received DCN.	Line is faulty. SC PCB abnormal.
542	XMT ECM	D	No response to the 3rd RR transmitted or received DCN.	Remote unit is abnormal.
543	XMT ECM	D	T5 timer (60 sec.) elapsed without MCF.	Remote unit is abnormal.
544	XMT ECM	D	Stopped Transmission after EOR Transmission.	Line is faulty. SC PCB abnormal.
550	RCV ECM	C	Timer between frames in phase C has elapsed.	Defective remote station.
554	RCV ECM	D	Transmitted ERR after receiving EOR.	Faulty line.
555	RCV ECM	D	Transmitted PIN after receiving EOR.	Faulty line and Operator Call requested by RX side.
570	RCV	B	Password or machine code did not match during remote diagnostic communication.	
571	XMT	B	Remote unit did not have the remote diagnostic function.	
580	XMT	B	Sub-address transmission to a unit that has their DIS bit 49 (NSF bit 155) OFF.	Sub-address transmission to a unit that has no Sub-address function.
581	XMT	B	Sub-address Password transmission to a unit that has their DIS bit 50 (NSF bit 156) OFF.	Sub-address transmission to a unit that has no Sub-address function.

Fax Information Codes				
Code	**Mode**	**Phase**	**Description of Problem**	**Cause**
601	XMT		ADF Door was opened during ADF transmission.	
623	XMT	A	No original was in the ADF. (Built-in dialer engaged)	Operator removed the original from the ADF after dialing was completed. Original was not set properly in the ADF.
630	XMT or RCV (Polling)	B	Redial count over.	No dial tone detected. Sensor dial tone is not detected. (country dependent) Busy tone is detected. (country dependent) T1 timer (35±5 sec.) elapsed without a signal from the receiver.
631	XMT	A	"STOP" button was pressed during Auto Dialing.	
634	XMT		Redial count over with no response or busy tone was not detected. **Note:** U.S.A. and Canadian models will redial only once if a busy tone is not detected.	Line Cable unplugged. Wrong number. SC PCB is abnormal
638	XMT		Power turned off with applicable data in memory or during communication.	Power switched off. Power failure occurred.
741	XMT, Polling		Unable to dial	Deleted the registered station name before dialing with Timer Controlled Communications, etc.
800	Relay Comm.		The machine was requested to relay a document but has no Relay Hub capability.	
816	Conf. Polled		"The received Polling Password did not match. The machine does not have Confidential Comm. capability."	
870	MEM XMT Multi-Copy		Memory overflow occurred while storing documents into memory.	
880	-	-	File Access Error.	
884	-	-	File Access Error.	
887	-	-	Power Failure.	

4.8. Diagnostic Codes (For Facsimile)

The 13-digit Diagnostic Code is provided for the service engineer to analyze how the communication was performed. The code is recorded on the Journal.

Journal Example



1st Digit: Manufacturer Code

-: Not used/defined

Fax Diagnostic Codes				
Data	**Definition**			
	Manufacturer Code			
0	-			
1	Casio			
2	Canon			
3	Sanyo			
4	Sharp			
5	Tamura			
6	Toshiba			
7	NEC			
8	Oki			
9	Hitachi			
A	Xerox			
B	Fujitsu			
C	Matsushita			
D	Mitsubishi			
E	Murata			
F	Ricoh			

2nd Digit
-: Not used/defined

Fax Diagnostic Codes				
Data	**Definition**			
	ID (TSI, CSI, CIG)	**RTN**	**DCN**	**STOP Button**
0	-	-	-	-
1	Received	-	-	-
2	-	Received	-	-
3	Received	Received	-	-
4	-	-	Received	-
5	Received	-	Received	-
6	-	Received	Received	-
7	Received	Received	Received	-
8	-	-	-	Pressed
9	Received	-	-	Pressed
A	-	Received	-	Pressed
B	Received	Received	-	Pressed
C	-	-	Received	Pressed
D	Received	-	Received	Pressed
E	-	Received	Received	Pressed
F	Received	Received	Received	Pressed

3rd Digit
-: Not used/defined

Fax Diagnostic Codes				
Data	**Definition**			
	Resolution (dpi)	**Paper Width**		
0	-	A4		
1	S-Fine	A4		
2	400 x 400	A4		
3	300 x 300	A4		
4	-	B4		
5	S-Fine	B4		
6	400 x 400	B4		
7	300 x 300	B4		
8	-	-		
9	-	-		
A	-	-		
B	-	-		
C	-	A3		
D	S-Fine	A3		
E	400 x 400	A3		
F	300 x 300	A3		

4th Digit
-: Not used/defined

Fax Diagnostic Codes				
Data	**Definition**			
	Scanning Rate	**Resolution**		
0	20 ms/line	Std		
1	5 ms/line	Std		
2	10 ms/line	Std		
3	-	Std		
4	40 ms/line	Std		
5	-	Std		
6	-	Std		
7	0 ms/line	Std		
8	20 ms/line	Fine		
9	5 ms/line	Fine		
A	10 ms/line	Fine		
B	-	Fine		
C	40 ms/line	Fine		
D	-	Fine		
E	-	Fine		
F	0 ms/line	Fine		

5th Digit
-: Not used/defined

Fax Diagnostic Codes				
Data	**Definition**			
	Deferred Comm.	**Dialing/RCV**	**Memory/ Non-Memory**	
0	-	Manual Communication	Non-Memory	
1	Used	Manual Communication	Non-Memory	
2	-	Auto Dialing	Non-Memory	
3	Used	Auto Dialing	Non-Memory	
4	-	Auto RCV	Non-Memory	
5	Used	Auto RCV	Non-Memory	
6	-	Remote RCV	Non-Memory	
7	Used	Remote RCV	Non-Memory	
8	-	Manual Communication	Memory	
9	Used	Manual Communication	Memory	
A	-	Auto Dialing	Memory	
B	Used	Auto Dialing	Memory	
C	-	Auto RCV	Memory	
D	Used	Auto RCV	Memory	
E	-	Remote RCV	Memory	
F	Used	Remote RCV	Memory	

6th Digit
-: Not used/defined

Fax Diagnostic Codes				
Data	**Definition**			
	Polling	**XMT/RCV**		
0	-	RCV		
1	Yes	RCV		
2	-	XMT		
3	Yes	XMT		
4	-	RCV		
5	Yes	RCV		
6	-	XMT		
7	Yes	XMT		
8	-	RCV		
9	Yes	RCV		
A	-	XMT		
B	Yes	XMT		
C	-	RCV		
D	Yes	RCV		
E	-	XMT		
F	Yes	XMT		

7th Digit
-: Not used/defined

Fax Diagnostic Codes				
Data	**Definition**			
	Sub-Address Comm.	**Turnaround Polling**		
0	-	-		
1	Yes	-		
2	-	-		
3	Yes	-		
4	-	-		
5	Yes	-		
6	-	-		
7	Yes	-		
8	-	Yes		
9	Yes	Yes		
A	-	Yes		
B	Yes	Yes		
C	-	Yes		
D	Yes	Yes		
E	-	Yes		
F	Yes	Yes		

8th Digit
-: Not used/defined

Fax Diagnostic Codes				
Data	**Definition**			
	Advanced Comm.			
0	-			
1	Report XMT			
2	Check & Call			
3	-			
4	Memory Transfer			
5	Remote Diagnostic			
6	-			
7	-			
8	-			
9	Report XMT			
A	Check & Call			
B	-			
C	Memory Transfer			
D	-			
E	-			
F	-			

9th Digit
-: Not used/defined

Fax Diagnostic Codes				
Data	**Definition**			
	Short Protocol	**Standard/ Non-Standard**		
0	-	Standard		
1	-	Standard		
2	-	Standard		
3	-	Standard		
4	-	Standard		
5	-	Standard		
6	-	Standard		
7	-	Standard		
8	-	Non-Standard		
9	B	Non-Standard		
A	-	Non-Standard		
B	D	Non-Standard		
C	-	Non-Standard		
D	B	Non-Standard		
E	-	Non-Standard		
F	D	Non-Standard		

10th Digit
-: Not used/defined

Fax Diagnostic Codes				
Data	**Definition**			
	Coding	**ECM**		
0	MH	-		
1	MR	-		
2	MMR	-		
3	-	-		
4	-	-		
5	-	-		
6	-	-		
7	-	-		
8	MH	Yes		
9	MR	Yes		
A	MMR	Yes		
B	-	Yes		
C	-	Yes		
D	-	Yes		
E	-	Yes		
F	-	Yes		

11th Digit
-: Not used/defined

Fax Diagnostic Codes				
Data	**Definition**			
	Symbol Rate (V.34)	**V.34**		
0	-	-		
1	-	-		
2	-	-		
3	-	-		
4	-	-		
5	-	-		
6	-	-		
7	-	-		
8	2400 sr	Yes		
9	-	Yes		
A	2800 sr	Yes		
B	3000 sr	Yes		
C	3200 sr	Yes		
D	3429 sr	Yes		
E	-	Yes		
F	-	Yes		

12th Digit
-: Not used/defined

Fax Diagnostic Codes				
Data	**Definition**			
	Modem Speed	**Modem Speed (V.34)**		
0	2400 bps	-		
1	4800 bps	2400 bps		
2	7200 bps	4800 bps		
3	9600 bps	7200 bps		
4	TC 7200 bps	9600 bps		
5	TC 9600 bps	12000 bps		
6	12000 bps	14400 bps		
7	14400 bps	16800 bps		
8	-	19200 bps		
9	-	21600 bps		
A	-	24000 bps		
B	-	26400 bps		
C	-	28800 bps		
D	-	31200 bps		
E	-	33600 bps		
F	-	-		

13th Digit
-: Not used/defined

Fax Diagnostic Codes				
Data	**Definition**			
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

5 Service Modes

5.1. Service Modes (For Facsimile)

5.1.1. Service Mode Table

The following service modes are provided to assist you in setting operational functions of the unit and determining the condition of the unit.

No.	Service Mode	Description
1	Function Parameter Setting	Allows changes to the function parameters (the home position, etc.).
2	RAM Edit Mode	Factory use only.
3	Print Parameter List / Reports	Prints the Function Parameter List, Page Memory Test, Printer Report, All Document File, Protocol Trace, Toner Order Form and Drum Unit Order Form.
4	Modem Tests	Generates various binary, tonal and DTMF signals, by the modem.
5	Diagnostic	Performs various hardware tests.
6	RAM Initialization	Initialize RAM and restore the default value of the function parameters.
7	LBP Service Mode	Changes the Printer Parameters.
8	Check & Call	Allows input of information for Service Alert Report, Maintenance Alert Report, Toner Order Form and Drum Unit Order Form.
9	System Maintenance	Used for Firmware Update and Sending a Received File during a fatal printer error.

5.1.2. Service Mode 1 (Function Parameter Setting)

Use the following procedure to change the function parameters.

Service Mode 1		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	OCT-12 10:58 00%
2	Press “FUNCTION” and then “7”.	SET MODE (1-8)
3	Press “MONITOR” four times, then press “*”.	SERVICE MODE
4	Press “1”.	ENTER PARAM. #_
5	Enter the Function Parameter Number or press “V” or “/\ “ to select the desired parameter. Ex: Changing the "ALARM STATUS" -- Enter "001" and press [SET].	ALARM STATUS ?
6	Press “START”.	Timer
7	Enter the new setting value. Ex: Enter "3" for Constant.	Const.
8	Press “START”. The new value will be stored and the next parameter will be displayed.	STOP COMM.JRNL?
9	Repeat steps 4 through 7 to change other Function Parameters or Press “STOP” twice to return to standby.	OCT-12 10:58 00%

Note:

The following buttons provide these functions in the Service Mode:

“START” : The new setting value is stored in the machine.

“V” : Scroll the function parameter number down.

“/\” : Scroll the function parameter number up.

Function Parameter Table			
No.	**Parameter**	**Selections**	**Function**
000	MON/TEL DIAL	1 = Monitor 2 = TEL/DIAL	Selects whether the machine starts to TX automatically during On-Hook dialing. **Monitor** : Start to TX after pressing START **TEL/DIAL** : Start to TX automatically
001	ALARM STATUS	1 = OFF 2 = Timer (6 sec.) 3 = Constant	Selects the No Paper or No Toner alarm status. **OFF** : Alarm is disabled. **Timer** : Alarm will shut off after 6 seconds. **Constant** : Alarm will not stop until "STOP" is pressed or the error is cleared/corrected.
002	STOP COMM. JRNL	1 = Off 2 = On	Selects whether the machine prompts to print the COMM. Journal when the printout condition is set to INC and STOP is pressed during communication.
003	Not Used		
004	NUMERIC ID SET	1 = Off (will not accept) 2 = On (accepts)	Selects whether the machine accepts and allows to set or change the Numeric ID.
005	Not Used		
006	ID DISPLAY	1 = Number (Numeric ID) 2 = Chara (Character ID)	Selects the priority of displaying the ID.
007	JNL COLUMN	1 = Preset station name 2 = Received ID	Selects the contents of the ID to display on the Journal.
008	MONITOR	1 = Off 2 = On	Selects whether the Monitor is ON/OFF for monitoring fax signals. **(FOR SERVICE USE ONLY)**
009	DC LOOP	1 = Off (Normal) 2 = On (Off Hook)	Selects a false Off Hook state for back to back communication test.
010	TX LEVEL	00 = 0 dBm ~ 15 = -15 dBm	Selects the TX signal output level, 0 to -15 dBm in 1 dBm steps. (Refer to Chapter 4.3.)
011	RX LEVEL	1 = -43 dBm 2 = -38 dBm 3 = -33 dBm 4 = -48 dBm	Selects the receiving sensitivity of -33/-38/-43/-48 dBm.
012	DTMF LEVEL	00 = 0 dBm ~ 15 = -15 dBm	Selects the DTMF output level, 0 to -15 dBm in 1 dBm steps.
013	G3 RX EQL	1 = 0 dB 2 = 4 dB 3 = 8 dB 4 = 12 dB	Selects the cable equalizer for G3 reception mode, 0dB, 4dB, 8dB or 12dB.
014	G3 TX EQL	1 = 0 dB 2 = 4 dB 3 = 8 dB 4 = 12 dB	Selects the cable equalizer for G3 transmission mode, 0dB, 4dB, 8dB or 12dB.
015 ~ 016	Not Used		

Function Parameter Table			
No.	**Parameter**	**Selections**	**Function**
017	TX START	1 = 2400 bps 2 = 4800 bps 3 = 7200 bps 4 = 9600 bps 5 = TC7200 bps 6 = TC9600 bps 7 = 12000 bps 8 = 14400 bps	Selects the transmission modem start speed, 14400/12000/TC9600/TC7200/9600/7200/4800/2400 bps. **Note:** This parameter is applicable only when communicating with regular G3 machines. When communicating with Super G3 (V.34) machines, use Parameter No. 32.
018	RX START	1 = 2400 bps 2 = 4800 bps 3 = 7200 bps 4 = 9600 bps 5 = TC7200 bps 6 = TC9600 bps 7 = 12000 bps 8 = 14400 bps	Selects the reception modem start speed, 14400/12000/TC9600/TC7200/9600/7200/4800/2400 bps. **Note:** This parameter is applicable only when communicating with regular G3 machines. When communicating with Super G3 (V.34) machines, use Parameter No. 33.
019	ITU-T V.34	1 = Off 2 = On 3 = Select	Selects whether the ITU-T V.34 is Off, On or Select. **Select**: Select whether the ITU-T V.34 is Off or On, when entering Phone Book Dialing Numbers or Manual Number Dialing.
020	ITU-T ECM	1 = Off (Invalid) 2 = On (Valid)	Select the ECM mode.
021	EP TONE	1 = Off (without EP Tone) 2 = On (with EP Tone)	Selects whether to add the echo protect tone on V.29 mode. (Used when Echo Suppression is disabled.) **On** : Add **Off** : Do not add
022	SIGNAL INTERVAL	1 = 100 ms 2 = 200 ms 3 = 500 ms	Selects the time interval between the receiving signal and the transmitting signal.
023	TCF CHECK	1 = Normal (Short) 2 = Long	Selects the TCF check interval Long/Short
024	CED FREQUENCY	1 = 1080 Hz (non ITU-T) 2 = 2100 Hz	Selects the CED frequency 2100/1080 Hz
025	COMM. START-UP	1 = 1'st response 2 = 2'nd response	Selects the communication start-up condition (XMT and Polling). (Used when Echo Suppression is disabled.)
026	NON-STANDARD	1 = Off (Invalid) 2 = On (Valid)	Selects own mode (Panafax mode).
027	SHORT PROTOCOL B	1 = Off (Invalid) 2 = On (Valid)	Selects the short protocol mode.
028	SHORT PROTOCOL D	1 = Off (Invalid) 2 = On (Valid)	Selects the short protocol mode. When activated, it allows the machine to automatically store the modem speed for each Auto Dial Number.
029	REMOTE DIAGNOSTICS	1 = Off (will not accept) 2 = On (accepts)	Selects whether the machine accepts Remote Diagnostics from the service station.
030	CED & 300 bps	1 = 75 ms 2 = 1 sec	Selects the pause interval between the CED and the 300 bps signal. (Used when Echo Suppression is disabled.)
031	RTC = EOLx12	1 = Off (EOLx6) 2 = On (EOLx12)	Selects the RTC signal, EOLx6 or EOLx12.

Function Parameter Table			
No.	**Parameter**	**Selections**	**Function**
032	V34 TX START	2400-33600bps	Selects the transmission modem start speed for V.34 communication, 33600-2400 bps.
033	V34 RX START	2400-33600bps	Selects the receiving modem start speed for V.34 communication, 33600-2400 bps.
034	V34 TX Symbol Rate	2400-3429sr	Selects the transmission symbol rate for V.34, 3429/ 3200/3000/2800/2400 sr. Press “V” or “/\ “ to select the symbol rate.
035	V34 RX Symbol Rate	2400-3429sr	Selects receiving symbol rate for V.34, 3429/3429/ 3200/3000/2800/2400 sr. Press “V” or “/\ “ to select the symbol rate.
036	Not Used		
037	PROTOCOL DISPLAY	1 = Off (not displayed) 2 = On (displayed)	Selects whether to display the modem speed during communication. (Press “V” or “/\ “ to display)
038	Not Used		
039	FLASH TIME	5 = 50 ms ~ 100 = 1000 ms	Selects the pause interval before activating the Flash key.
040	E/F TIME (Except for USA and Canada)	5 = 50 ms ~ 100 = 1000 ms	Selects the pause interval before activating the Flash key.
041	PAUSE TIME	1 = 1 sec. ~ 10 = 10 sec.	Selects the pause interval from 1 sec. ~ 10 sec. for dialing through a switchboard or for international calls.
042	Not Used		
043	REDIAL INTERVAL	0 = no waiting ~ 15 = 15 minutes	Selects the redial interval from 0 to 15 minutes in 1 minute steps.
044	REDIAL COUNT	0 = no redial ~ 15 = 15 times	Selects the redial count from 0 to 15 times in 1 step intervals. **Note:** In order to comply with the requirements TBR21 in the EC countries, do not select 15 times.
045	RING DETECT COUNT	1 = 1 ring ~ 9 = 9 rings	Selects the ring detection count from 1 to 9 rings in 1 ring step intervals.
046	ON-HOOK TIME	0 = 0 sec. ~ 90 = 90 sec.	Selects the on-hook time between sequential communication calls in 1 second step intervals.
047	RESPONSE WAIT	1 = 1 sec. ~ 90 = 90 sec.	Selects the waiting interval for the response after completing the dialing.
048 049	Not Used		
050	RING DETECT MODE	1 = Normal 2 = Rough	Selects the quality of ringer detection. Use if the line signal is out of regulation, set to "Rough" so that the unit may detect the ringing signals.
051	Not Used		
052	PULSE RATE	1 = 10 pps 2 = 20 pps	Selects the dial pulse rate 10/20 pps.

Function Parameter Table			
No.	**Parameter**	**Selections**	**Function**
053 054	Not Used		
055	BUSY TONE CHECK	1 = Off 2 = On	Selects whether to detect the Busy Tone.
056	DIAL TONE CHECK (Except for USA and Canada)	1 = Off 2 = On	Selects whether to detect dial tone before dialing the telephone number.
057	DC LOOP CHECK (Except for USA and Canada)	1 = Off (will not check) 2 = On (checks)	Selects whether the unit checks the DC Loop during communication.
058	COMM.JRNL +IMAGE	1 = Off (without image) 2 = On (with image)	Selects whether the machine prints the COMM. Journal with image.
059	Not Used		
060	VERSION	Indicates the Host software version.	
061	TX/RX//PRT/ CPY COUNTER	TX/RX/PRT/CPY	Displays the transmitted, received, total printed and copied document count.
062	PRINT COUNTER	1 = Off 2 = On	Selects whether to print in the Fax Parameter List, the counter information that is displayed in the Function Parameter No. 61.
063	Not Used		
064	SILENT DETECTION TIME OUT	01 = 1 sec. ~ 60 = 60 sec.	Select silent detection timeout time (TAM I/F).
065	SILENT INTEGRATION TIME	01 = 1 sec. ~ 10 = 10 sec.	Select ring detection integration time (TAM I/F).
066	RING COUNT (TAM)	01 = 1 sec. ~ 99 = 99 sec.	Select ring detection count 1 to 99 times in one step intervals on TAM I/F mode.
067 068 069	Not Used		
070	LINE ERROR	1 = 128 lines 2 = 256 lines 3 = 512 lines 4 = 1024 lines 5 = 2048 lines 6 = Off (will not disconnect line)	1. Selects the line disconnect condition during reception. If the number of line errors exceed this setting, the unit will disconnect the line. 2. Selects the transmit condition of RTP/PIP or RTN/ PIN. (Available if No.73 Error Detect is set to "LINES") (See Note 1)
071	TOTAL ERROR	1 = 5% 2 = 10% 3 = 15% 4 = 20%	Selects the transmit condition of RTP/PIP or RTN/ PIN. (Available if No.73 Error Detect is set to "RATE".) (See Note 2)
072	CONTINUOUS ERROR	1 = Off (unlimited) 2 = 3 lines/STD 3 = 6 lines/STD 4 = 12 lines/STD	Selects the continuous total error criteria of Off/3/6 or 12 lines in Standard mode. If continuous total error exceeds this setting, the unit will transmit RTN/PIN. (Available if No.73 Error Detect is set to "RATE".)

Function Parameter Table			
No.	**Parameter**	**Selections**	**Function**
073	ERROR DETECT	1 = Lines 2 = Rate	Selects the error detect condition Lines/Rate.
074	RTN RECEIVE	1 = Disconnect 2 = Continue	Selects whether to disconnect the phone line or continue when "RTN" is received.
075	CODING	1 = MH (MH only) 2 = MR (MH or MR) 3 = MMR (MH or MR or MMR)	Selects the coding scheme.
076	Not Used		
077	RX JAM LENGTH	1 = Off (unlimited) 2 = 2 m 3 = 8 m	Selects the maximum length of a received document that can be printed.
078 079	Not Used		
080	DOC. TOP FEED	-5.0 mm ~ +5.0 mm	Adjusts the distance between the scanning sensor ON position and the scanning start position.
081	DOC. END FEED	-5.0 mm ~ +5.0 mm	Adjusts the distance between the scanning sensor OFF position and the scanning end position.
082	JAM LENGTH	1 = 1 m 2 = 2 m 3 = 8 m 4 = Unlimited	Selects the maximum length of the original that can be scanned.
083	Not Used		
084	LINE AS NO PAPER	1 = Ring (ring) 2 = Busy (keep line busy)	Selects whether to ring or send a busy tone to the remote station when the recording paper runs out or the unit cannot receive because of any trouble.
085	Not Used		
086	REDUCTION FINE	1 = Off 2 = On	Selects whether the resolution is preset to Fine, when sending with reduction B4→A4. (For B4 Scanning Model only)
087	DARKER LEVEL	0 = Lightest Contrast ~ 15 = Darkest Contrast	Selects the contrast level. 0← →15 Lightest← →Darkest
088	NORMAL LEVEL		
089	LIGHTER LEVEL		
090	PRINT DENSITY	1 = Normal 2 = Darker	Print Density sometimes gets light at low Humidity condition. In this case, selects “2:Darker”. (Except for U.S.A. and Canada)
091	Not Used		
092	SMOOTHING	1 = Off 2 = On	Selects whether the smoothing function is available.
093 ~ 129	Not Used		
130	BUSY-ACK TIMING	• In Busy • After Busy • While Busy	Selects the signal timing between the BUSY and ACK signal in Printer Interface Mode.
131	CMD RCV GRD TIMER	1 min. ~ 15 min.	Selects the Guard Timer between each GDI Command in Printer Interface Mode.

Function Parameter Table			
No.	**Parameter**	**Selections**	**Function**
132	PRT DATA TIMER	1 min. ~ 15 min.	Selects the Guard Timer between each GDI Data Frame in Printer Interface Mode.
133	COLLATION (PRT)	1 = Off 2 = On 3 = Auto	Selects the Print Collation in Printer Interface Mode. When “Auto” is selected, print collation will operate according to the setting in Fax Parameter #65.
134	COLLATION (PC I/F)	1 = Off 2 = On 3 = Auto	Selects the Print Collation in PC Interface Mode. When “Auto” is selected, print collation will operate according to the setting in Fax Parameter #65.
135 ~ 199	Not Used		

Note 1: Function Parameter No. 070 (Line Error)-Transmit condition of RTP/PIP or RTN/PIN

Signal	**Setting**					
	1:128	**2:256**	**3:512**	**4:1024**	**5:2048**	**6:Off**
MCF/PIP	0-31	0-63	0-127	0-255	0-511	Always
RTP/PIP	32-63	64-127	128-255	256-511	512-1023	-
RTN/PIN	64-127	128-255	256-511	512-1023	1024-2047	-

Note 2: Function Parameter No. 071 (Total Error)-Transmit condition of RTP/PIP or RTN/PIN

Signal	**Setting**			
	1:5%	**2:10%**	**3:15%**	**4:20%**
MCF/PIP	0-2	0-4	0-7	0-9
RTP/PIP	3-4	5-9	8-14	10-19
RTN/PIN	5-	10-	15-	20-

Note 3: The default setting of parameters depends on the country’s specifications or regulations. Print the Function Parameter List to confirm the default settings.

5.1.3. Service Mode 3 (Printout of Lists, Reports and Test Results)

From this Service Mode you can print the Function Parameter List, Page Memory Test, Printer Report, All Document File, Protocol Trace and the Toner Order Form.

5.1.3.1. Function Parameter List

A list of all Function Parameters can be printed by the following procedure.

Service Mode 3 - Function Parameter List		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	OCT-12 10:58 00%
2	Press “FUNCTION” and then “7”.	SET MODE (1-8)
3	Press “MONITOR” four times, then press “*”.	SERVICE MODE
4	Press “3”.	FUNC. PARAM LIST
5	Press “START”.	* PRINTING *
6	After printing is completed, the unit returns to the display in step 3.	SERVICE MODE
7	Press “STOP” to return to standby.	OCT-12 10:58 00%

Function Parameter List (Sample)

```
************* -FUNCTION PARAMETER- ************* DATE OCT-12-2001 ***** TIME 00:01 ***P.01

000  MON/TEL DIAL:[Monitor] Monitor          050  RING DET MODE:[Normal] Normal
001  ALARM STATUS:[Timer] Timer              051  ----------
002  STOP COMM.JRNL:[On] On                  052  PULSE RATE:[10pps] 10pps
003  ----------                              053  ----------
004  NUMERIC ID SET:[On] On                  054  ----------
005  ----------                              055  BUSY TONE CHECK:[On] On
006  ID DISPLAY:[Chara] Chara                056  ----------
007  JNL COLUMN:[Station] Station            057  ----------
008  MONITOR:[Off] Off                       058  COMM. JRNL +IMAGE:[On] On
009  DC LOOP:[Off] Off                       059  ----------

010  TX LEVEL:[-11dBm] -11dBm                060  VERSION:  eSTUDIO50F AAV1xxxxUZ
011  RX LEVEL:[-43dBm] -43dBm                061  TX/RX/PRT/CPY:000080/000168/000003/000007
012  DTMF LEVEL:[-5dBm] -5dBm                062  PRINT COUNTER:[Off] Off
013  G3 RX EQL:[0dB] 0dB                     063  ----------
014  G3 TX EQL:[0dB] 0dB                     064  SILENT T.OUT:[60] 60
015  ---------                               065  SILENT INTERVAL:[5sec] 5sec
016  ---------                               066  RING COUNT (TAM):[8] 8
017  TX START:[14400bps  ] 14400bps          067  ----------
018  RX START:[14400bps  ] 14400bps          068  ----------
019  ITU-T V.34:[On] On                      069  ----------

020  ITU-T ECM:[On] On                       070  LINE ERROR:[128] 128
021  EP TONE:[Off] Off                       071  TOTAL ERROR:[10] 10
022  SIG. INTERVAL:[500ms] 500ms             072  CONTI. ERROR:[Off] Off
023  TCF CHECK:[Normal] Normal               073  ERROR DETECT:[Rate] Rate
024  CED FREQ.:[2100Hz] 2100Hz               074  RTN RECEIVE:[Discon] Discon
025  COMM. START-UP:[1'st] 1'st              075  CODING:[MMR] MMR
026  NON-STANDARD:[On] On                    076  ----------
027  SHORT PROTOCOL B:[On] On                077  RX JAM LENGTH:[OFF] OFF
028  SHORT PROTOCOL D:[On] On                078  ----------
029  REMOTE DIAG.:[On] On                    079  ----------

030  CED & 300bps:[75ms] 75ms                080  DOC TOP FEED:[0.0mm]  0.0mm
031  RTC=EQL x 12:[Off] Off                  081  DOC END FEED:[0.0mm]  0.0mm
032  V34TX START:[33600bps] 33600bps         082  JAM LENGTH:[ 2 m] 2 m
033  V34RX START:[33600bps] 33600bps         083  ----------
034  V34 TX SR:[3429sr] 3429sr               084  LINE AS NOPAPER:[Ring] Ring
035  V34 RX SR:[3429sr] 3429sr               085  ----------
036  ---------                               086  ----------
037  PROTOCOL DISPLAY:[Off] Off              087  DARKER LEVEL:[4] 4
038  ---------                               088  NORMAL LEVEL:[8] 8
039  FLASH TIME:[500] 500ms                  089  LIGHTER LEVEL:[12] 12

040  ---------                               090  ----------
041  PAUSE TIME:[3sec] 3sec                  091  ----------
042  ---------                               092  SMOOTHING:[On] On
043  REDIAL INTERVAL:[3min] 3min             093  ----------
044  REDIAL COUNT:[5] 5                      094  ----------
045  RING DET. COUNT:[2] 2                   095  ----------
046  ON-HOOK TIME:[5sec] 5sec                096  ----------
047  RESPONSE WAIT:[55sec] 55sec             097  ----------
048  ---------                               098  ----------
049  ---------                               099  ----------

   Note:The power must be reset for the new parameter settings to take effect.

                                                          -TOSHIBA DP-500F-

******************************** -DP-500F- ******** -12345678901234567890- ******************
```

Function Parameter List (Sample)

```
************* -FUNCTION PARAMETER- ************* DATE OCT-12-2001 ***** TIME 00:01 ***P.02

100 ----------                              150 ----------
101 ----------                              151 ----------
102 ----------                              152 ----------
103 ----------                              153 ----------
104 ----------                              154 ----------
105 ----------                              155 ----------
106 ----------                              156 ----------
107 ----------                              157 ----------
108 ----------                              158 ----------
109 ----------                              159 ----------

110 ----------                              160 ----------
111 ----------                              161 ----------
112 ----------                              162 ----------
113 ----------                              163 ----------
114 ----------                              164 ----------
115 ----------                              165 ----------
116 ----------                              166 ----------
117 ----------                              167 ----------
118 ----------                              168 ----------
119 ----------                              169 ----------

120 ----------                              170 ----------
121 ----------                              171 ----------
122 ----------                              172 ----------
123 ----------                              173 ----------
124 ----------                              174 ----------
125 ----------                              175 ----------
126 ----------                              176 ----------
127 ----------                              177 ----------
128 ----------                              178 ----------
129 ----------                              179 ----------

130 BUSY-ACK TIMING:[In Busy] In Busy       180 ----------
131 CMD RCV GRD TIMER:[3min] 3min           181 ----------
132 PRT DATA TIMER:[3min] 3min              182 ----------
133 COLLATION(PRT):[Off] Off                183 ----------
134 COLLATION (PC):[Auto] Auto              184 ----------
135 ----------                              185 ----------
136 ----------                              186 ----------
137 ----------                              187 ----------
138 ----------                              188 ----------
139 ----------                              189 ----------

140 ----------                              190 ----------
141 ----------                              191 ----------
142 ----------                              192 ----------
143 ----------                              193 ----------
144 ----------                              194 ----------
145 ----------                              195 ----------
146 ----------                              196 ----------
147 ----------                              197 ----------
148 ----------                              198 ----------
149 ----------                              199 ----------

   Note:The power must be reset for the new parameter settings to take effect.

                                                        -TOSHIBA DP-500F-

****************************** -DP-500F- ****** -12345678901234567890- ******************
```

Note:

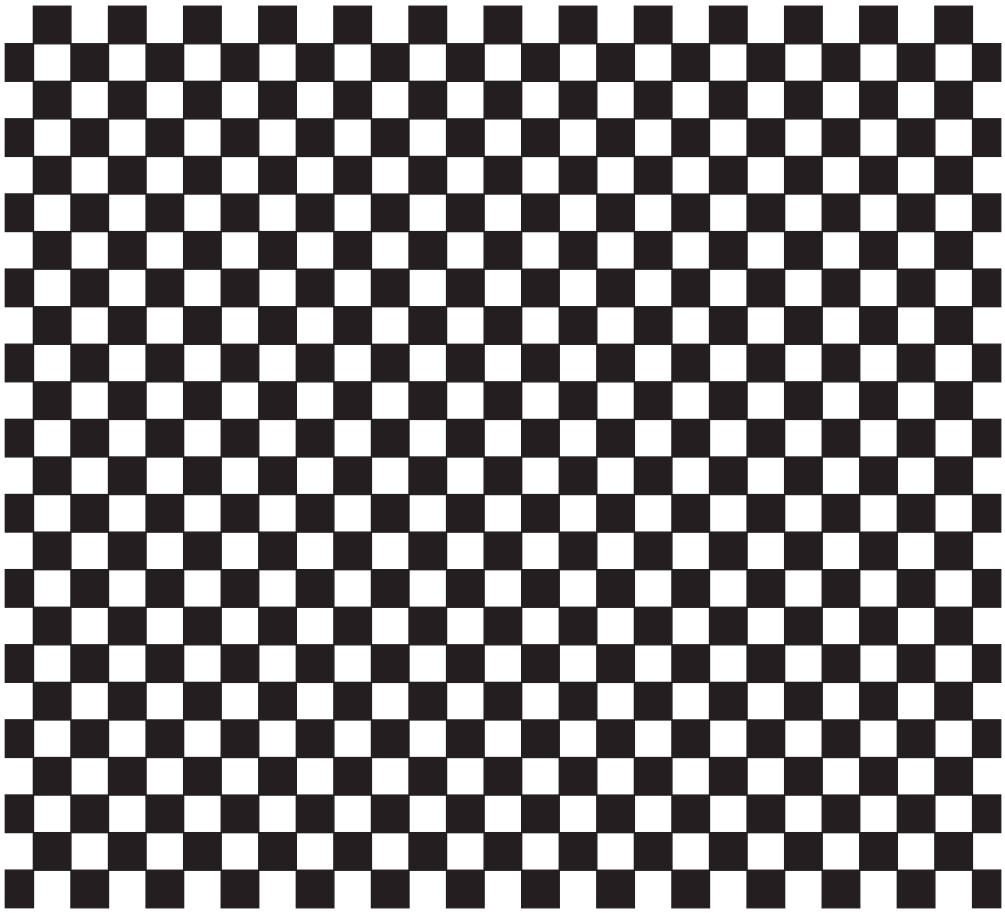
1. [ ] - Factory Default
2. The contents of the Function Parameter List may vary depending on the country's regulations.
3. " * " mark will be shown on the left side of number when setting was changed from default.

5.1.3.2. Page Memory Test

A test pattern prints out for checking the page memory (IC120 and IC121 on the SC PCB) and the printer mechanism using the following procedure.

Service Mode 3 - Page Memory Test		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	OCT-12 10:58 00%
2	Press “FUNCTION” and then “7”.	SET MODE (1-8)
3	Press “MONITOR” four times, then press “*”.	SERVICE MODE
4	Press “3”.	FUNC. PARAM LIST
5	Press “3” or use “V” or “/\ “ to scroll to the desired printout.	PAGE MEMORY TEST
6	Press “START”.	* PRINTING *
7	After printing is completed, the unit returns to the display in step 3.	SERVICE MODE
8	Press “STOP” to return to standby.	OCT-12 10:58 00%

OCT-12-2001 10:55
VERSION: eSTUDIO50F AAV1xxxxUZ
MEMORY SIZE: (1MB)
TX/RX/PRT/CPY:000017/000005/000036/000007
SHIPMENT SET



5.1.3.3. Printer Report

All printer errors are logged on the Printer Report which can be printed by the following procedure.

Service Mode 3 - Printer Report		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	OCT-12 10:58 00%
2	Press “FUNCTION” and then “7”.	SET MODE (1-8)
3	Press “MONITOR” four times, then press “*”.	SERVICE MODE
4	Press “3”.	FUNC. PARAM LIST
5	Press “4” or use “V” or “Λ “ to scroll to the desired printout.	PRINTER REPORT
6	Press “START”.	* PRINTING *
7	After printing is completed, the unit returns to the display in step 3.	SERVICE MODE
8	Press “STOP” to return to standby.	OCT-12 10:58 00%

```
**************-PRINTER REPORT-******************** DATE OCT-12-2001 ***** TIME 11:43********


             LAST PRINT ERROR      : OCT-11-2001 15:38 NO.001-12

             CUSTOMER ID           : 1234567890123456

             FAX ROM VERSION       : eSTUDIO50F AAV1xxxxUZ

             TRANSMIT COUNTER      : 000017
             RECEIVE COUNTER       : 000005
             COPY COUNTER          : 000007
             PRINT COUNTER         : 000044
             DRUM UNIT USAGE       : 10%

             PRINT ERROR           :  1.OCT-11-2001 15:38 NO.001-12
                                      2.OCT-10-2001 10:48 NO.001-11
                                      3.OCT-09-2001 15:23 NO.004-36
                                                          -TOSHIBA DP-500F-
*************************-DP-500F-****** ********-12345678901234567890-*******************
```

1. Printer Error Code Table

Error Code	Description of Problems	Cause
00	No problem detected.	
11	Timing Sensor did not turn ON within a certain period of time.	1. Recording Paper misfeeding, Paper Feed Roller defective. 2. Drive Clutch defective. 3. Timing Sensor defective.
14	Timing Sensor did not turn OFF within a certain period of time.	1. Recording Paper Jam. 2. Timing Sensor defective. 3. Incorrect paper size setting.
15	Paper Exit Sensor did not turn ON within a certain period of time.	1. Recording Paper Jam. 2. Paper Exit Sensor defective.
16	Paper Exit Sensor did not turn OFF within a certain period of time.	1. Recording Paper Jam. 2. Paper Exit Sensor defective.
17	Timing Sensor detected paper while initializing the unit.	1. Recording Paper jammed in the unit. 2. Timing Sensor defective.
18	Paper Exit Sensor detected paper while initializing the unit.	1. Recording Paper jammed in the unit. 2. Paper Exit Sensor defective.
22	The temperature of the Fuser Roller remained low even after the circuit was activated.	1. Fuser Unit defective. 2. SC PCB defective. 3. Power Supply Unit defective.
23	Abnormally high Fuser Roller temperature after the circuit was de-activated.	1. Fuser Unit defective. 2. SC PCB defective. 3. Power Supply Unit defective.
24	The temperature of the Fuser Roller was not controlled within a certain margin.	1. Fuser Unit defective. 2. SC PCB defective. 3. Power Supply Unit defective.
25	Thermistor open. (See Note)	1. Thermistor defective (Fuser Unit). 2. SC PCB defective.
26	Thermistor detected temperature over 365°F (185°C). (See Note)	1. Thermistor defective (Fuser Unit). 2. SC PCB defective. 3. Power Supply Unit defective.
31	The Tetragon Motor did not reach a constant speed of 18,818 rpm (400 dpi) or 12,268 rpm (600 dpi) within a specified period of time.	1. LSU defective.
32	The Tetragon Motor did not maintain a constant speed of 18,818 rpm (400 dpi) or 12,268 rpm (600 dpi).	1. LSU defective.
36	HSYNC signal abnormal.	1. LSU defective. 2. SC PCB defective.
41	Fan rotation abnormal.	1. Fan defective. 2. SC PCB defective.
54	A/D Converter error.	1. SC PCB defective.
61	Unit detected “No Toner Cartridge”.	1. Toner Cartridge not installed. 2. Toner Sensor defective.
63	Unit detected “Printer Door Open”.	1. Printer door is not closed. 2. ILS PCB defective.
65	Unit detected “Out of Paper”.	1. The Paper Tray is empty. 2. Paper Detect Sensor defective.
81	No response from the LP Controller.	1. SC PCB defective.

Error Code	Description of Problems	Cause
82	Illegal response from the LP Controller	1. SC PCB defective.

Note:

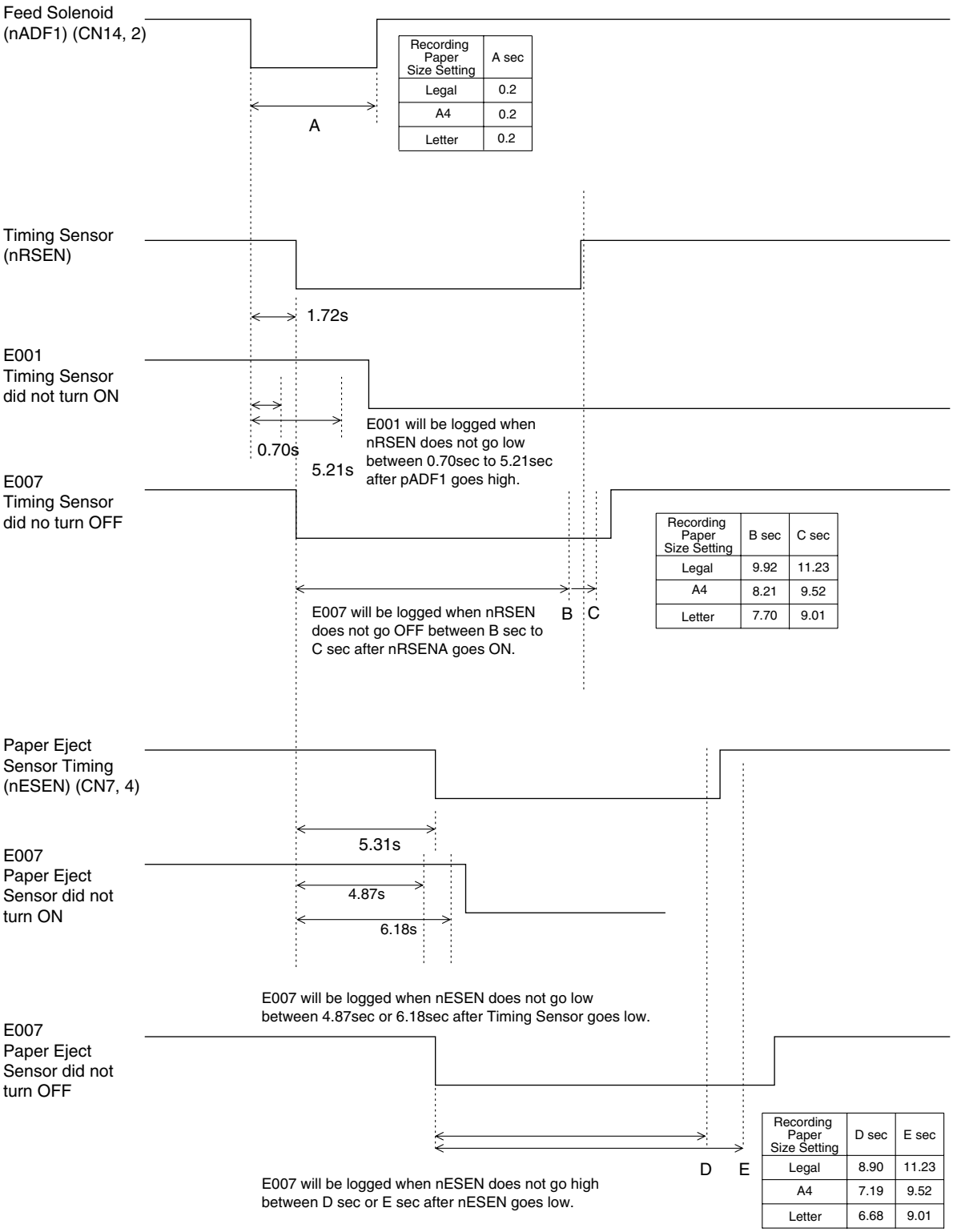
If an 021 series Error Code occurs, 021-25 (Thermistor Open) or 021-26 (Thermistor detected temperature over 365°F (185°C), a pre-programmed recovery safety software is activated to protect the unit and the service personnel during abnormal increase in temperature.

Once activated, disabling the Fuser Lamp and preventing it from turning ON again.

In order to reset this circuit, please follow the procedure below.

1) Reset the LBP Fuser by using Service Mode 7-1-2 (Section 5.1.7.) and Power OFF/ON.
2) Replace the Thermistor or Fuser Unit. If the problem persists.
3) Replace the SC PCB.

2. **Printer Error Detail Explanation**
Recording Paper Jam Detection

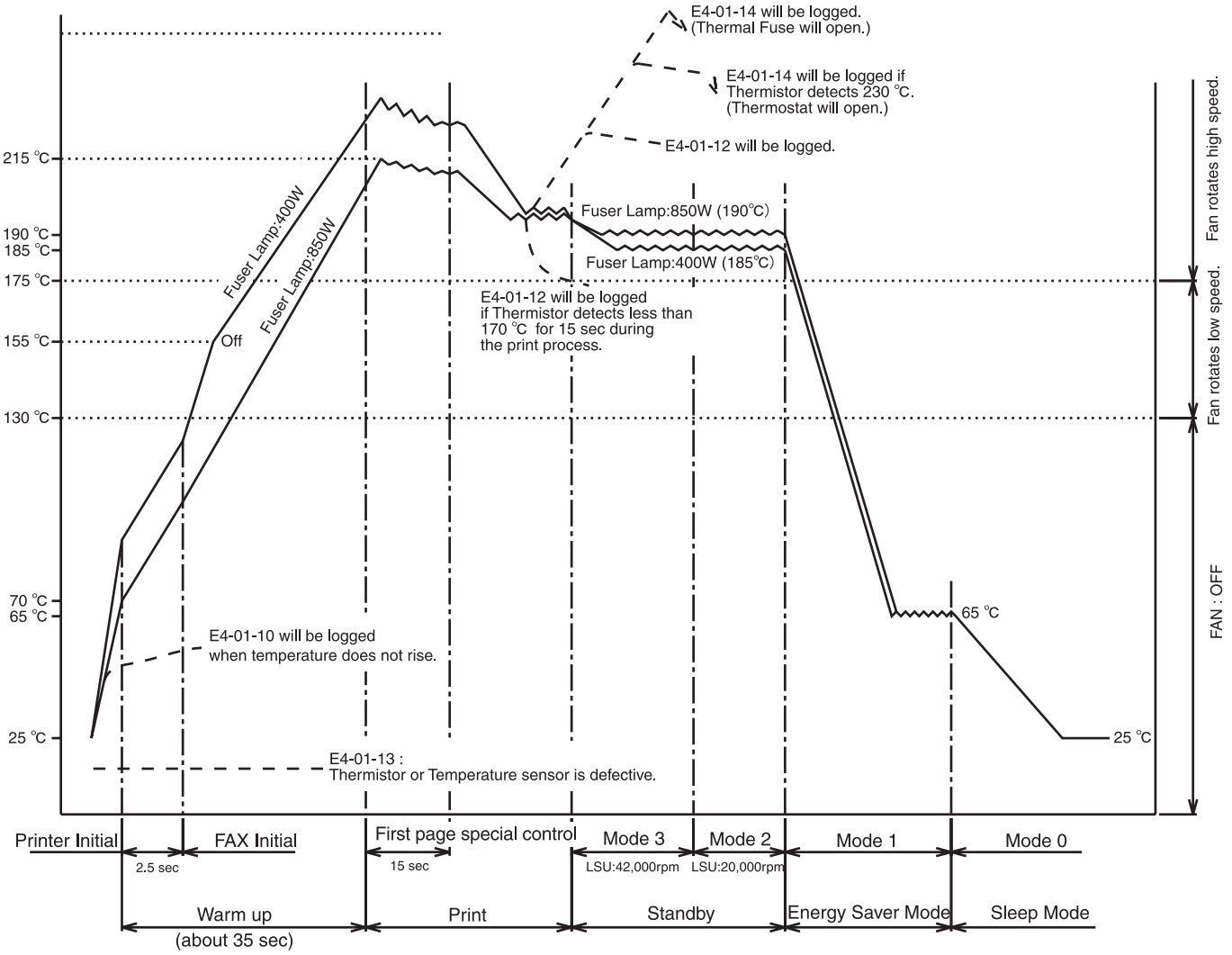


Recording Paper Size Setting	A sec
Legal	0.2
A4	0.2
Letter	0.2

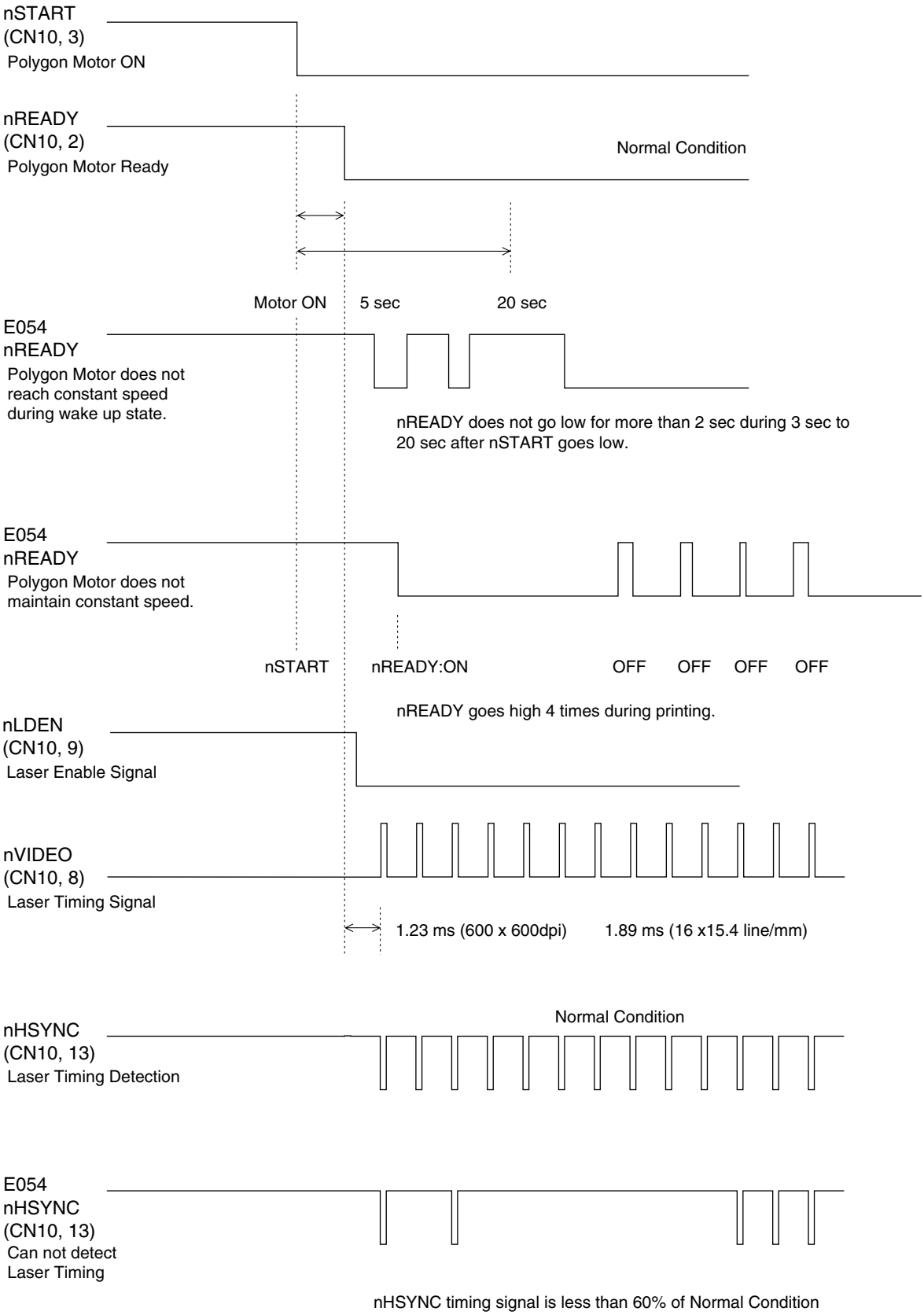
Recording Paper Size Setting	B sec	C sec
Legal	9.92	11.23
A4	8.21	9.52
Letter	7.70	9.01

Recording Paper Size Setting	D sec	E sec
Legal	8.90	11.23
A4	7.19	9.52
Letter	6.68	9.01

Fuser Error Detection

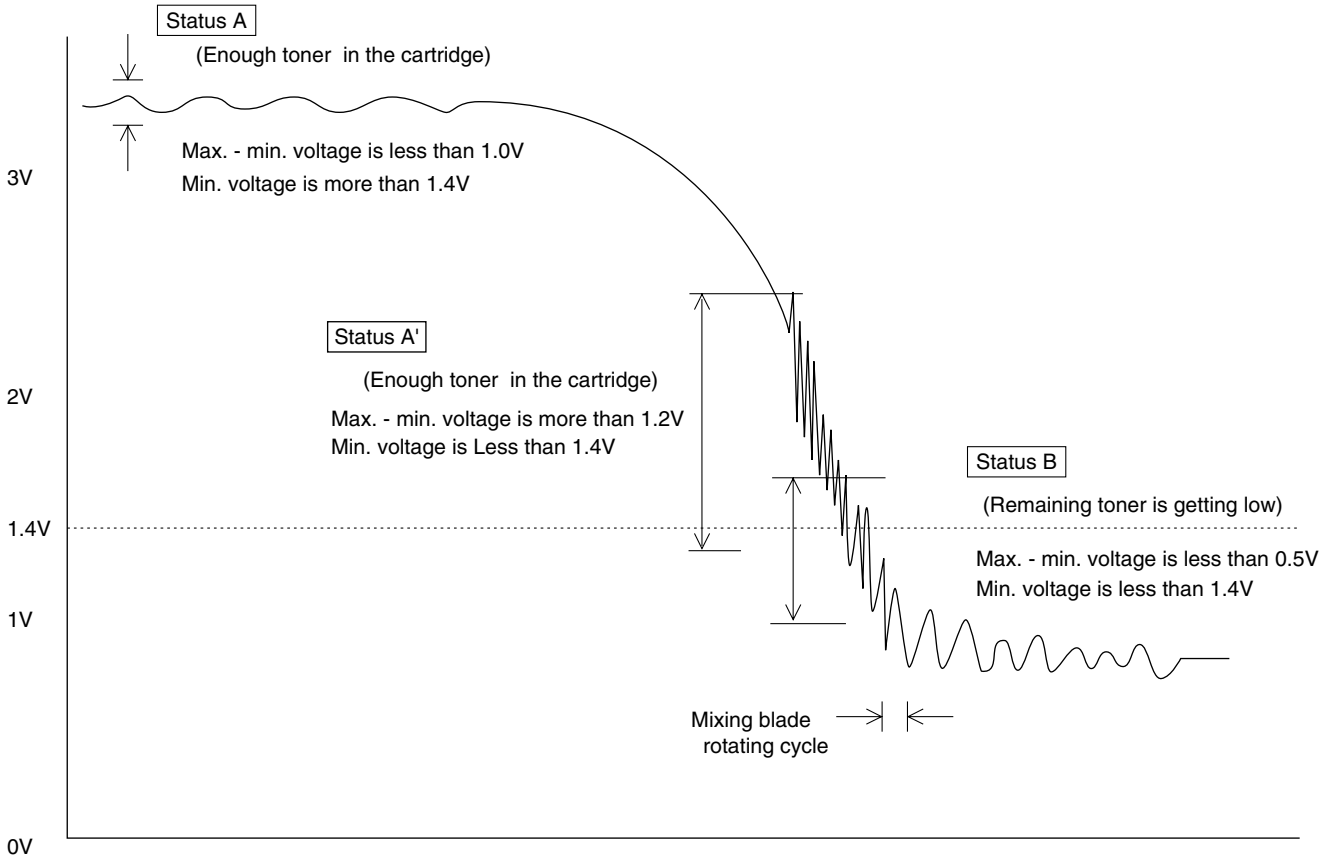


Laser Unit (LSU) Error Detection



Out of Toner Detection

Toner Sensor Output Signal



Toner Sensor output may change when the mixing blade passes above the Toner Sensor. Therefore the output signal has a max. voltage and min. voltage during mixing blade rotation cycle (4.75 sec.).

E043

If the unit detects Status B, 10 times during printing, the machine recognizes that the remaining toner is low and the display shows "TONER LOW".

E041

After detecting E043 and the LBP Print Available Counter Value reaches "0" (after 100 pages are printed), the unit logs E041 (OUT OF TONER).

5.1.3.4. All Document Files

Print the document files from the Memory.

Service Mode 3 - All Document Files		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	OCT-12 10:58 00%
2	Press “FUNCTION” and then “7”.	SET MODE (1-8)
3	Press “MONITOR” four times, then press “*”.	SERVICE MODE
4	Press “3”.	FUNC. PARAM LIST
5	Press “5” or use “V” or “/\ “ to scroll to the desired printout.	ALL DOC. FILE
6	Press “START”.	* PRINTING *
7	After printing is completed, the unit returns to the display in step 3.	SERVICE MODE
8	Press “STOP” to return to standby.	OCT-12 10:58 00%

5.1.3.5. Protocol Trace

Print a Protocol Trace Report for the previous communication.

Service Mode 3 - Protocol Trace		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	OCT-12 10:58 00%
2	Press “FUNCTION” and then “7”.	SET MODE (1-8)
3	Press “MONITOR” four times, then press “*”.	SERVICE MODE
4	Press “3”.	FUNC. PARAM LIST
5	Press “6” or use “V” or “/\ “ to scroll to the desired printout.	PROTOCOL TRACE
6	Press “START”.	* PRINTING *
7	After printing is completed, the unit returns to the display in step 3.	SERVICE MODE
8	Press “STOP” to return to standby.	OCT-12 10:58 00%

```
*************** PROTOCOL LOG. REPORT ****************** DATE OCT-12-2001 ***** TIME 11:55 *******


              STATUS        : 420
              MODE          :        (STANDARD)
              SPEED         :        0MS/L

              LOCAL CAPA.   : NSF 00 00 79 00 00 00 16 0F 09 13
                                  00 10 00 1A 95 C1 D0 F8 80 41
                              CSI 30 39 38 37 36 35 34 33 32 31
                                  30 39 38 37 36 35 34 33 32 31
                              DIS 20 EE F8 C4 80 15
              COMMAND LOG.
              REMOTE        :
              LOCAL         : NSF   CSI   DIS   NSF   CSI   DIS   NSF   CSI
               ---------------------------------------------------------------
              REMOTE        :
              LOCAL         : DIS   NSF   CSI   DIS   NSF   CSI   DIS   DCN
               ---------------------------------------------------------------
              REMOTE        :
              LOCAL         :
               ---------------------------------------------------------------
              REMOTE        :
              LOCAL         :
                                                          -TOSHIBA DP-500F-

***************************-DP-500F-********************-12345678901234567890-*****************
```

5.1.3.6. Toner Cartridge / Drum Order Form

The Toner Cartridge and Drum Unit Order Forms can be printed out manually by the following procedure.

Service Mode 3 - Toner Cartridge Order Form		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	OCT-12 10:58 00%
2	Press “FUNCTION” and then “7”.	SET MODE (1-8)
3	Press “MONITOR” four times, then press “*”.	SERVICE MODE
4	Press “3”.	FUNC. PARAM LIST
5	Press “7” or use “V” or “/\ “ to scroll to the desired printout.	SUPPLY FORMS
6	Press “START”.	* PRINTING *
7	After printing is completed, the unit returns to the display in step 3.	SERVICE MODE
8	Press “STOP” to return to standby.	OCT-12 10:58 00%

****
> TONER CARTRIDGE ORDER FORM <
****

**** The toner supply in your machine is running low **** ***(1)***

To order a replacement Cartridge from your Authorized Dealer

TOSHIBA Corp. ***(2)***

by Phone: 1 201 111 5555 ***(3)***
by Fax: 1 201 111 4444 ***(4)***

Thank you for your order.

Customer Name and Address
=========================

Ship to:______________________	Bill to:______________________
______________________	______________________
______________________	______________________
Attention:______________________	Attention:______________________
Phone No.:______________________	Phone No.:______________________
Customer ID: ABC COMPANY ***(5)***	P.O. No.(if required):______________________
Toner Cartridge: PS-ZT500F ***(6)***	Serial No.:______________________

Quantity Required:

[ ]

______________________	______________________ / /
Print your name and title	Signature & Date

Explanation of Contents

(1) Low Toner Message (Fixed)	"The toner supply in your machine is running low"
(2) Dealer Name	Up to 25 digits
(3) Order Tel #	Up to 36 digits
(4) Order Fax #	Up to 36 digits
(5) Customer ID	Up to 16 characters (User Identification Code)
(6) Toner Cartridge #	PS-TZ500F(for 6,000 Sheets Yields)

****
> DRUM UNIT ORDER FORM <
****

**** It is time to replace the Drum Unit **** ***(1)***

To order a replacement Drum Unit from your Authorized Dealer

TOSHIBA Corp. ***(2)***

by Phone: 1 201 111 5555 ***(3)***
by Fax: 1 201 111 4444 ***(4)***

Thank you for your order.

Customer Name and Address
==========

Ship to:_____ Bill to:_____

_____ _____

_____ _____

Attention:_____ Attention:_____

Phone No.:_____ Phone No.:_____

Customer ID: ABC COMPANY ***(5)*** P.O. No.(if required):_____

Drum Unit: PS-PU500F***(6)*** Serial No.:_____

Quantity Required:

_____ _____ / /

Print your name and title Signature & Date

Explanation of Contents

(1) Replace Drum Message	“It is time to replace the Drum Unit”
(2) Dealer Name	Up to 25 digits
(3) Order Tel #	Up to 36 digits
(4) Order Fax #	Up to 36 digits
(5) Customer ID	Up to 16 characters (User Identification Code)
(6) Drum Unit #	PS-PU500F

5.1.4. Service Mode 4 (Modem Test)

5.1.4.1. Binary Signal

This Service Mode is used to check the binary signal output. Signals can be output to the line using the following procedure.

Service Mode 4 - Binary Signal		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	OCT-12 10:58 00%
2	Press “FUNCTION” and then “7”.	SET MODE (1-8)
3	Press “MONITOR” four times, then press “*”.	SERVICE MODE
4	Press “4”.	SIGNAL TEST
5	Press “START”.	IDLE (ENTER 1-9)
6	Enter the signal number (1-9) to select the binary signal.	300bps
7	Press "CLEAR" to end the signal generation. To select another signal, repeat step 6.	IDLE (ENTER 1-9)
8	Press "STOP" twice to return to standby.	OCT-12 10:58 00%

Binary Signal Table

Number	Signals
1	V21 300bps
2	V27ter 2400bps
3	V27ter 4800bps
4	V29 7200bps
5	V29 9600bps
6	V17 TC7200bps
7	V17 TC9600bps
8	V33 12000bps
9	V33 14400bps

5.1.4.2. Tonal Signal

This Service Mode is used to check the tonal signal output. Signals can be output to the line using the following procedure.

Service Mode 4 - Tonal Signal		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	OCT-12 10:58 00%
2	Press “FUNCTION” and then “7”.	SET MODE (1-8)
3	Press “MONITOR” four times, then press “*”.	SERVICE MODE
4	Press “4”.	SIGNAL TEST
5	Press “2” or use “V” or “/\ “ to scroll to the desired Modem Test.	TONAL TEST
6	Press “START”.	IDLE (ENTER 1-7)
7	Enter the signal number (1-7) to select the binary signal.	1080Hz
8	Press "CLEAR" to end the signal generation. To select another signal, repeat step 6.	IDLE (ENTER 1-7)
9	Press "STOP" twice to return to standby.	OCT-12 10:58 00%

Tonal Signal Table

Number	Signals
1	462 Hz
2	1080 Hz
3	1100 Hz
4	1300 Hz
5	1650 Hz
6	1850 Hz
7	2100 Hz

5.1.4.3. DTMF Signal

This Service Mode is used to check the DTMF (Dual Tone Multi Frequency) signal output.
The DTMF signal can be generated using the following procedure.

Service Mode 4 - DTMF Signal		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	OCT-12 10:58 00%
2	Press “FUNCTION” and then “7”.	SET MODE (1-8)
3	Press “MONITOR” four times, then press “*”.	SERVICE MODE
4	Press “4”.	SIGNAL TEST
5	Press “3” or use “V” or “/\ “ to scroll to the desired Modem Test.	DTMF TEST
6	Press “SET”.	SINGLE
7a	Press "START" for DTMF Single Tone Generation.	ENTER (1-8)
8a	Enter the signal number (1-8) to select the DTMF signal.	697 Hz
7b	Press "2" and "START" for Dual Tone Generation.	ENTER (0-#)
8b	Enter the signal number (0-#) to select the DTMF Dual tone.	(0)
9	Press "CLEAR" to end the signal generation. To select another signal, repeat step 7a or 7b.	7a SINGLE 7b DUAL
10	Press "STOP" twice to return to standby.	OCT-12 10:58 00%

DTMF Single Tone Table

Number	DTMF Signal Tones
1	697 Hz
2	770 Hz
3	852 Hz
4	941 Hz
5	1209 Hz
6	1336 Hz
7	1477 Hz
8	1633 Hz

DTMF Dual Tone Table

Number	DTMF Dual Tones
0	941 Hz + 1336 Hz
1	697 Hz + 1209 Hz
2	697 Hz + 1336 Hz
3	697 Hz + 1477 Hz
4	770 Hz + 1209 Hz
5	770 Hz + 1336 Hz
6	770 Hz + 1477 Hz
7	852 Hz + 1209 Hz
8	852 Hz + 1336 Hz
9	852 Hz + 1477 Hz
*	941 Hz + 1209 Hz
#	941 Hz + 1477 Hz

5.1.4.4. Binary Signal (V.34)

This Service Mode is used to check the binary signal output. Signals can be output to the line using the following procedure. (V.34)

Service Mode 4 - Binary Signal		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	OCT-12 10:58 00%
2	Press “FUNCTION” and then “7”.	SET MODE (1-8)
3	Press “MONITOR” four times, then press “*”.	SERVICE MODE
4	Press “4”.	SIGNAL TEST
5	Press “5” or use “V” or “/\ “ to scroll to the desired Modem Test.	V.34 MODEM TEST
6	Press “START”.	ENTER NO._
7	Enter the signal number (01-61) and press [START] to select the binary signal.	V34 2400s 2400b.
8	Press "CLEAR" to end the signal generation. To select another signal, repeat step 7.	ENTER NO._
9	Press "STOP" twice to return to standby.	OCT-12 10:58 00%

Binary Signal Table

Number	Signals	Number	Signals	Number	Signals
01	V34 2400 sr 2400 bps	22	V34 3000 sr 9600 bps	43	V34 3429 sr 4800 bps
02	V34 2400 sr 4800 bps	23	V34 3000 sr 12000 bps	44	V34 3429 sr 7200 bps
03	V34 2400 sr 7200 bps	24	V34 3000 sr 14400 bps	45	V34 3429 sr 9600 bps
04	V34 2400 sr 9600 bps	25	V34 3000 sr 16800 bps	46	V34 3429 sr 12000 bps
05	V34 2400 sr 12000 bps	26	V34 3000 sr 19200 bps	47	V34 3429 sr 14400 bps
06	V34 2400 sr 14400 bps	27	V34 3000 sr 21600 bps	48	V34 3429 sr 16800 bps
07	V34 2400 sr 16800 bps	28	V34 3000 sr 24000 bps	49	V34 3429 sr 19200 bps
08	V34 2400 sr 19200 bps	29	V34 3000 sr 26400 bps	50	V34 3429 sr 21600 bps
09	V34 2400 sr 21600 bps	30	V34 3000 sr 28800 bps	51	V34 3429 sr 24000 bps
10	V34 2800 sr 4800 bps	31	V34 3200 sr 4800 bps	52	V34 3429 sr 26400 bps
11	V34 2800 sr 7200 bps	32	V34 3200 sr 7200 bps	53	V34 3429 sr 28800 bps
12	V34 2800 sr 9600 bps	33	V34 3200 sr 9600 bps	54	V34 3429 sr 31200 bps
13	V34 2800 sr 12000 bps	34	V34 3200 sr 12000 bps	55	V34 3429 sr 33600 bps
14	V34 2800 sr 14400 bps	35	V34 3200 sr 14400 bps	56	ANSam
15	V34 2800 sr 16800 bps	36	V34 3200 sr 16800 bps	57	CM
16	V34 2800 sr 19200 bps	37	V34 3200 sr 19200 bps	58	JM
17	V34 2800 sr 21600 bps	38	V34 3200 sr 21600 bps	59	INFO0c & TONEB
18	V34 2800 sr 24000 bps	39	V34 3200 sr 24000 bps	60	INFO0c & TONEA
19	V34 2800 sr 26400 bps	40	V34 3200 sr 26400 bps	61	PPh & AC & ALT
20	V34 3000 sr 4800 bps	41	V34 3200 sr 28800 bps		
21	V34 3000 sr 7200 bps	42	V34 3200 sr 31200 bps		

5.1.5. Service Mode 5 (Diagnostic)

5.1.5.1. Scanner LED Test

This Service Mode is used to check the LED of the CIS Scanner.
Use the following procedure to initiate the test.

Service Mode 5		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	OCT-12 10:58 00%
2	Press “FUNCTION” and then “7”.	SET MODE (1-8)
3	Press “MONITOR” four times, then press “*”.	SERVICE MODE
4	Press “5”.	SCANNER LED TEST
5	Press “START”. The Scanner will be active.	* CHECK NOW *
6	Press "STOP" twice to return to standby.	OCT-12 10:58 00%

5.1.5.2. LCD / LED Test

This Service Mode is used to check the LCD and LEDs on the Control Panel.
Use the following procedure to initiate the test.

Service Mode 5		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	OCT-12 10:58 00%
2	Press “FUNCTION” and then “7”.	SET MODE (1-8)
3	Press “MONITOR” four times, then press “*”.	SERVICE MODE
4	Press “5”.	SCANNER LED TEST
5	Press “2” or use “V” or “/\ “ to select the LCD / LED Test mode.	LCD/LED TEST
6	Press “START”. 1) LCDs display as shown at right. 2) All LEDs will be lit.	* CHECK NOW * ■■■■■■■■■■■■■
7	Press "STOP" twice to return to standby.	OCT-12 10:58 00%

5.1.5.3. Shading Adjust

This Service Mode is used to adjust shading of the CIS Scanner, when the CIS Unit is replaced or the Scanning Image is dirty.

Service Mode 5		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	OCT-12 10:58 00%
2	Press “FUNCTION” and then “7”.	SET MODE (1-8)
3	Press “MONITOR” four times, then press “*”.	SERVICE MODE
4	Press “5”.	SCANNER LED TEST
5	Press “6” or use “V” or “/\ “ to select the Adjust Shading mode.	ADJUST SHADING
6	Set the White 10 inches (254 mm) wide blank original in the ADF. Cut a Letter sheet of paper to make a 10 inch sheet.	ADJUST SHADING
7	Press “START”.	* CHECK NOW *
8	The original feed into the scanner and exit out when the adjustment is completed.	ADJUST SHADING
9	Press “STOP” twice to return to standby.	OCT-12 10:58 00%

5.1.6. Service Mode 6 (RAM Initialization)

Initializes the RAM and restores the Function Parameters to their default values.

Note:
This operation should be performed when the unit is first installed.

Service Mode 6		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	OCT-12 10:58 00%
2	Press “FUNCTION” and then “7”.	SET MODE (1-8)
3	Press “MONITOR” four times, then press “*”.	SERVICE MODE
4	Press “6”.	*RAM INITIALIZE*
5	Press “V” or “/\ “ to select the initialization mode.	LOGO/ID/PSWD CLR
6	Press “START”.	*INITIALIZE NOW*
7	Return to step 3 and press “STOP” to return to standby.	OCT-12 10:58 00%

RAM Initialization Table

No.	Initialize Mode	Description
99	SHIPMENT SET (A)	Deletes all setting information, except parameter number 80 and 81, then set default values. (See Note)
98	SHIPMENT SET (B)	Deletes all setting information, except parameter number 61, 80 and 81, then set default values. (See Note)
1#	MANUFACTURE SET	Factory use only. DO NOT USE IN THE FIELD.
16	LBP LOG CLEAR	Clears the Printer Error Log.
15	LOGO/ID/PSWD CLR	Clears the Logo, ID, Polling Password.
14	ALL JOB CLEAR	Clears all Jobs stored in Flash Memory.
13	PROG. DIAL CLEAR	Clears the Program keys.
12	AUTO DIAL CLEAR	Clears the One-touch, ABBR Numbers and Phone Books.
11	JOURNAL CLEAR	Clears the Journal contents.
*	PARAMETER INIT.	Restores the Fax and Function Parameters to default values.

Note:
Shipment Set does not affect the Drum Usage Counter. To clear the Drum Usage Counter press [FUNCTION] [7] [8] [SET] [2] [SET] [1] [1].

5.1.7. Service Mode 7 (LBP Service Mode)

This Service Mode is used to change printer parameters and verify printer information.
Use the following procedure to change printer parameter.

Service Mode 7		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	OCT-12 10:58 00%
2	Press “FUNCTION” and then “7”.	SET MODE (1-8)
3	Press “MONITOR” four times, then press “*”.	SERVICE MODE
4	Press “7”.	SET LBP PARAM.
5	1) Press "START" for printer parameter settings. 2) Press "2" and "START" to get the printer information. Ex: Enter "START" for printer parameter settings.	PRINTER COUNTER
6	Press "3" and “START”. Then enter the number of pages. Ex: Enter "50" and press "START".	OUT OF TONER
7	Press "STOP" twice to return to standby.	OCT-12 10:58 00%

Sub-Code		Parameter Name		Description
1	SET LBP PARAM.	1	PRINTER COUNTER	Displays and resets the Printer and Paper Tray counters.
		2	LBP FUSER RESET	Clears the LBP Fuser Error.
		3	OUT OF TONER	Sets the number of pages to print after low toner is detected.
2	DISP. LBP INFO.	\/ /\	PRINT AVAILABLE	Shows the remaining number of allowable printable pages after low toner has been detected (Counter Only).
		\/ /\	LBP MEM. CAPACITY	Shows the Page Memory Capacity.

5.1.8. Service Mode 8 (Check & Call)

5.1.8.1. Overview

This feature enables the Authorized Servicing Dealers to manage and improve the Fax machine maintenance to their customers by alerting them of equipment problems. It also can be used as a Supply Sales Tool by alerting the Dealer that the unit is running Low on Toner or the Drum Unit life expectancy has been reached. The function overview is as follows:

1. The machine's printer error information is stored in the Printer Report.
2. The printer report can be manually printed when required.
3. When printer errors occurs, the unit can automatically transmit the Service Alert Report to the pre-registered telephone number.
4. When the unit detects Low Toner or the Drum Unit life expectancy has been reached, it can automatically transmit the Maintenance Alert Report to the pre-registered telephone number.
5. When the unit detects Low Toner or the Drum Unit life expectancy has been reached, it can automatically print out the Toner Order or Drum Unit Order Form with pre-registered order information.

5.1.8.2. Printer Reports

• Conditions under which a report can be printed or transmitted

1. Manual print
   The Printer Report can be printed by Service Mode 3. (See Sect. 5.1.3.1.)
2. Automatic transmission/printout
3. Service Alert Report
   When the unit detects an Emergency Printer Error, the unit will immediately transmit the Service Alert Report to the
   pre-registered telephone number or email address. However, the unit will not transmit the Service Alert Report if it finds the same error within the same date in the error log.
4. Maintenance Alert Report
   When the unit detects Low Toner or the Drum Unit life expectancy has been reached, the unit can automatically transmit the Maintenance Alert Report to the pre-registered telephone number or email address. Refer to the Printer Error Code Table.
5. Toner Cartridge Order Form or the Drum Unit Order Form
   When the unit detects Low Toner or the Drum Unit life expectancy has been reached, the unit can automatically print the Toner Order or the Drum Unit Order Form with the pre-registered order information.

Note:

The Service and Maintenance Alert Reports are managed in the same manner as the normal memory transmission (Retry, Incomplete, File List, Display while it is transmitting, Journal).

• Printer Error Code Table

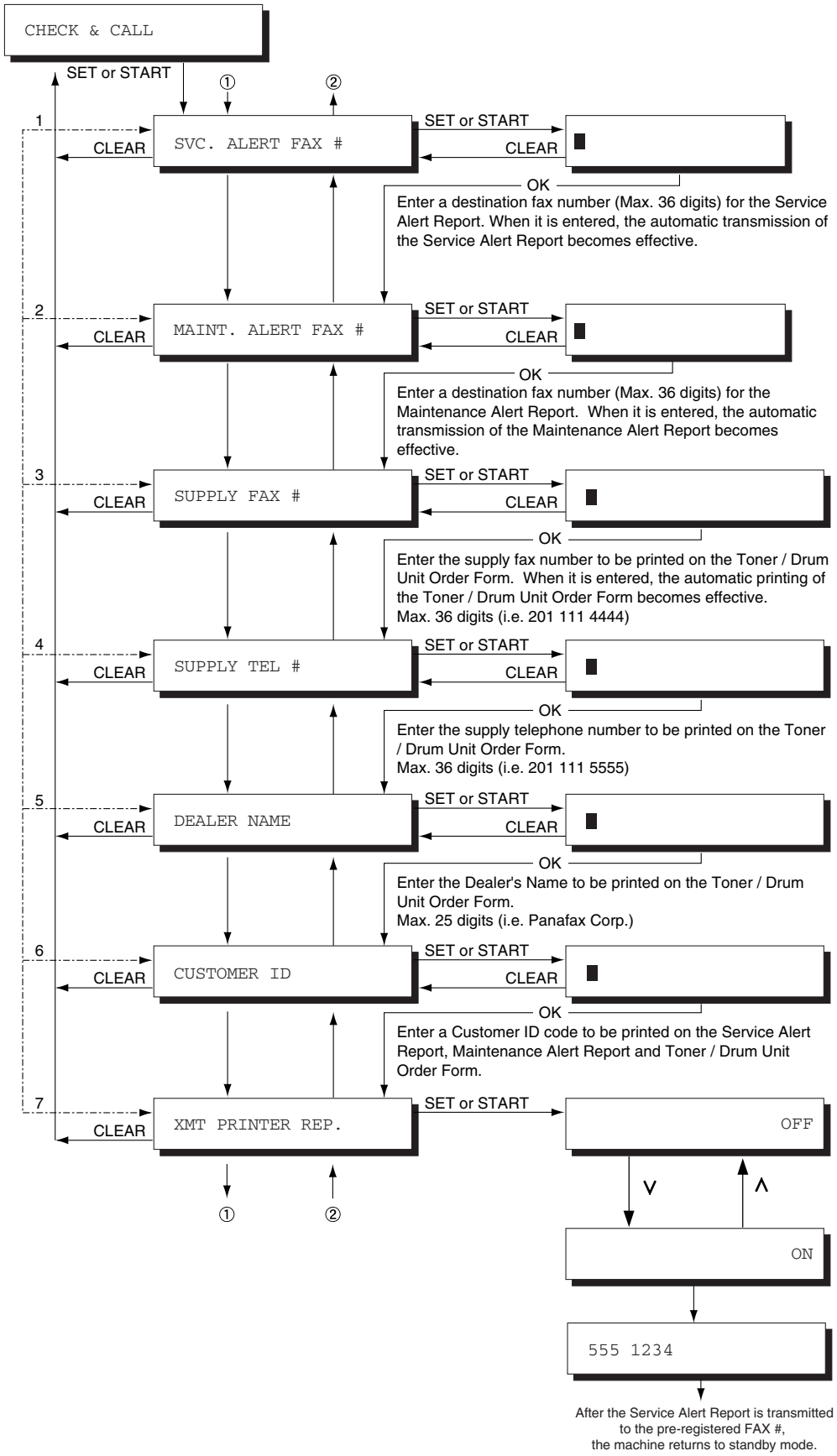
Info. Code	Printer Error Code	LED/LCD	Log Only	Tx Report	Condition	Content of Error
001	11	JAM	O		R/C	Paper Jam.
007	14-18	JAM	O		R/C	Paper Exit Error.
010	00	NO PAPER			R/C	No Paper in Paper Tray
021	22-26		O	S	R/C	Fuser Problem / LP Thermistor disconnected Problem
041	00	TONER	O		S/R/C	No Toner
043	00	TONER	O	M	S/R/C	Low Toner Warning
044	00	REPLACE DRUM	O	M	S/R/C	Warning to replace OPC Drum Unit

Info. Code	Printer Error Code	LED/LCD	Log Only	Tx Report	Condition	Content of Error
045	61	TONER			S	No Toner Cartridge
051	54-55	PRINTER ERR	O	S	R/C	Printer Error, Motor Error A/D Circuit Error
054	31,32,36		O	S	R/C	LSU Problem

Note:

1. Tx Report: S = Service Alert Report, M = Maintenance Alert Report
2. Condition : R = Receive Mode, C = Copy Mode, S = Standby Mode, T = Transmit Mode

5.1.8.3. Setting Operation



Note

1. **Service Alert Report**
   To enable the automatic transmission of Service Alert Report, enter the destination fax telephone number or the email address in the “SERVICE ALERT (FAX #)” field. When a printer error occurs, the Service Alert Report is transmitted to the designated number automatically. A blank entry in this field, disables the Automatic transmission of the Service Alert Report.
2. **Maintenance Alert Report**
   To enable the automatic transmission of Maintenance Alert Report, enter the destination fax telephone number in the “MAINT. ALERT (FAX #)” field. When a printer error occurs, the Maintenance Alert Report is transmitted to the designated number automatically. A blank entry in this field, disables the Automatic transmission of the Maintenance Alert Report.
3. **Toner Cartridge Order Form**
   To enable the automatic printout of the Toner Cartridge Order Form, enter the destination fax telephone numbers in the “Order FAX #” field. When a low toner error occurs, the Toner Order Form is printed automatically.
4. **Drum Unit Order Form**
   To enable the automatic printout of the Drum Unit Order Form, enter the destination fax telephone numbers in the “Order FAX #” field. When the usage rate reaches 100% (Approx. 12,000-20,000 page prints), the Drum Unit Order Form is printed automatically.
5. **SERVICE ALERT FAX #**, this would be the fax telephone number for the Dealer's Service Department.
   MAINT. ALERT FAX #, this could be the fax telephone number for the Dealer's Supply Sales Desk.
   ORDER FAX #, this could be the fax telephone number for the Dealer's Supply Sales Desk.
   ORDER TEL #, this could be the voice telephone number for the Dealer's Supply Sales Desk.
   DEALER NAME, this name is printed on the Toner Order Form.
   CUSTOMER ID, to identify your customer, enter up to 16 characters user code in this field. This name will be printed on the Service Alert Report, Maintenance Alert Report and Toner Order Form.

5.1.8.4. SERVICE ALERT REPORT FORMAT

```
************************************************ DATE OCT-12-2001 ***** TIME 12:14 ********

                              ***************************
                              >   SERVICE ALERT REPORT   <
                              ***************************

                                (1)             (2) (3)
            LAST PRINT ERROR : 10-12-01 12:10  No.999-00

            CUSTOMER ID      : ABC COMPANY (4)

            FAX ROM VERSION  : eSTUDIO50F AAV1xxxxUZ (5)

            TRANSMIT COUNTER : 999999 (6)
            RECEIVE COUNTER  : 999999
            COPY COUNTER     : 999999
            PRINT COUNTER    : 999999
            DRUM UNIT USAGE  : 10%    (7)

            PRINT ERROR      :  10-12-01 12:10  No.999-00   (8)
                             :  10-11-01 10:15  No.999-00
                             :  10-10-01 13:48  No.999-00
                             :           "
                             :           "
                             :           "
                             :           "
                             :           "
                             :           "
                             :           "
                             :           "
                             :           "
                             :           "
                             :           "
                             :           "
                             :           "
                             :           "
                             :           "
                             :           "
                             :           "
                             :           "
                             :           "
                             :           "
                             :           "
                             :           "
                             :  10-09-01 17:10  No.999-00
                             :  10-09-01 12:10  No.999-00
                             :  10-09-01 08:10  No.999-00

                                                          -LOGO TOSHIBA           -

********************************** -CHARACTER ID   - ***** -31415926535897932384-***********
```

Explanation of Contents

(1) Date & Time when a problem occurred

(2) Information Code

(3) Printer Error Code — Refer to Service Manual

(4) Customer ID — Up to 16 characters (User Identification Code)

(5) Fax ROM Version

(6) Transmission / Reception / Copy / Print Counters

(7) Drum Usage (%)

(8) Print Error — Last 30 records (Latest on top)

5.1.8.5. MAINTENANCE ALERT REPORT FORMAT

```
************************************************** DATE OCT-12-2001 ***** TIME 12:14 ********

                                  ****************************
                                  > MAINTENANCE ALERT REPORT <
                                  ****************************


              LAST PRINT ERROR : MACHINE IS RUNNING OUT OF TONER (1)

              CUSTOMER ID      : ABC COMPANY (2)

              FAX ROM VERSION  : eSTUDIO50F AAV1xxxxUZ (3)

              TRANSMIT COUNTER : 999999 (4)
              RECEIVE COUNTER  : 999999
              COPY COUNTER     : 999999
              PRINT COUNTER    : 999999
              DRUM UNIT USAGE  : 10%    (5)




                                                          -LOGO TOSHIBA           -

*********************************** -CHARACTER ID   - ***** -31415926535897932384-***********
```

Explanation of Contents

(1) Low Toner Message (Fixed) — "MACHINE IS RUNNING OUT OF TONER"
Replace Drum Unit Massage (Fixed) — "TIME TO REPLACE DRUM UNIT"

(2) Customer ID — Up to 16 characters (User Identification Code)

(3) Fax ROM Version

(4) Transmission / Reception / Copy / Print Counters

(5) Drum Usage (%)

```
*************************************
>    TONER CARTRIDGE ORDER FORM     <
*************************************

**** The toner supply in your machine is running low ****  (1)
To order a replacement Cartridge from your Authorized Dealer

TOSHIBA Corp.   (2)

by Phone:  1 201 111 5555 (3)
by Fax:    1 201 111 4444 (4)

Thank you for your order.

Customer Name and Address
=========================

Ship to:____________________________    Bill to:___________________________________
____________________________________    ___________________________________________
____________________________________    ___________________________________________
Attention:__________________________    Attention:_________________________________
Phone No.:__________________________    Phone No.:_________________________________
Customer ID: ABC COMPANY (5)            P.O. No.(if required):_____________________
Toner Cartridge: PS-ZT500F  (6)         Serial No.:________________________________

Quantity Required:
[      ]

_______________________________________    ____________________________/____/______
Print your name and title                  Signature & Date
```

Explanation of Contents

(1) Low Toner Message (Fixed)	"The toner supply in your machine is running low"
(2) Dealer Name	Up to 25 digits
(3) Order Tel #	Up to 36 digits
(4) Order Fax #	Up to 36 digits
(5) Customer ID	Up to 16 characters (User Identification Code)
(6) Toner Cartridge #	*UG-3222 (for 3,000 Sheets Yields) (*Determined by Country) UG-3221 (H) (for 6,000 Sheets Yields)

****
> DRUM UNIT ORDER FORM <
****

**** It is time to replace the Drum Unit **** ***(1)***

To order a replacement Drum Unit from your Authorized Dealer

TOSHIBA Corp. ***(2)***

by Phone: 1 201 111 5555 ***(3)***
by Fax: 1 201 111 4444 ***(4)***

Thank you for your order.

Customer Name and Address
========================

Ship to: ____________________ Bill to: ____________________

____________________ ____________________

____________________ ____________________

Attention: ____________________ Attention: ____________________

Phone No.: ____________________ Phone No.: ____________________

Customer ID: ABC COMPANY ***(5)*** P.O. No.(if required): ____________________

Drum Unit: PS-PU500F***(6)*** Serial No.: ____________________

Quantity Required:

[ ]

____________________ ______________ / /
Print your name and title Signature & Date

Explanation of Contents

(1) Replace Drum Message	"It is time to replace the Drum Unit"
(2) Dealer Name	Up to 25 digits
(3) Order Tel #	Up to 36 digits
(4) Order Fax #	Up to 36 digits
(5) Customer ID	Up to 16 characters (User Identification Code)
(6) Drum Unit #	UG-3220

5.1.9. Service Mode 9 (System Maintenance)

5.1.9.1. Overview

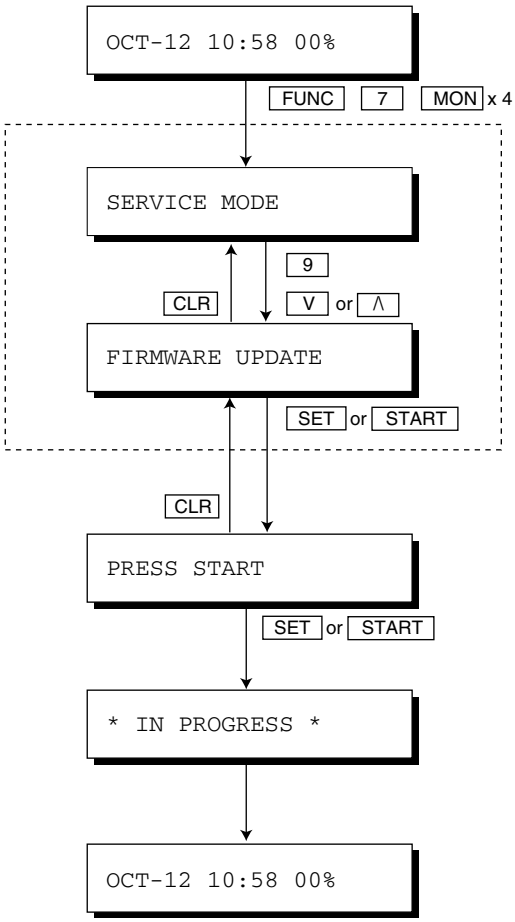
This Service Mode is used to maintain and/or update the firmware of the machine. Use the following procedure for System Maintenance.

Service Mode 9		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	OCT-12 10:58 00%
2	Press “FUNCTION” and then “7”.	SET MODE (1-8)
3	Press “MONITOR” four times, then press “*****”.	SERVICE MODE
4	Press “9”. Use “V” or “/\“ to scroll to the desired maintenance task.	FIRMWARE UPDATE
5	Press “SET” and “START” .	* IN PROGRESS *
6	After completed, the machine returns to Standby.	OCT-12 10:58 00%

System Maintenance Table

No.	Maintenance Mode	Description
1	FIRMWARE UPDATE	Updates the firmware in the machine with the Master Firmware from the PC. After the firmware is updated, the machine reboots automatically and returns to standby.
2	SEND RECEIVED FILE	Transfers documents from memory to another fax machine during a fatal printer error.

5.1.9.2. Firmware Update



Press "START" to start Updating the firmware code from the PC via IEEE1284 Parallel Port.

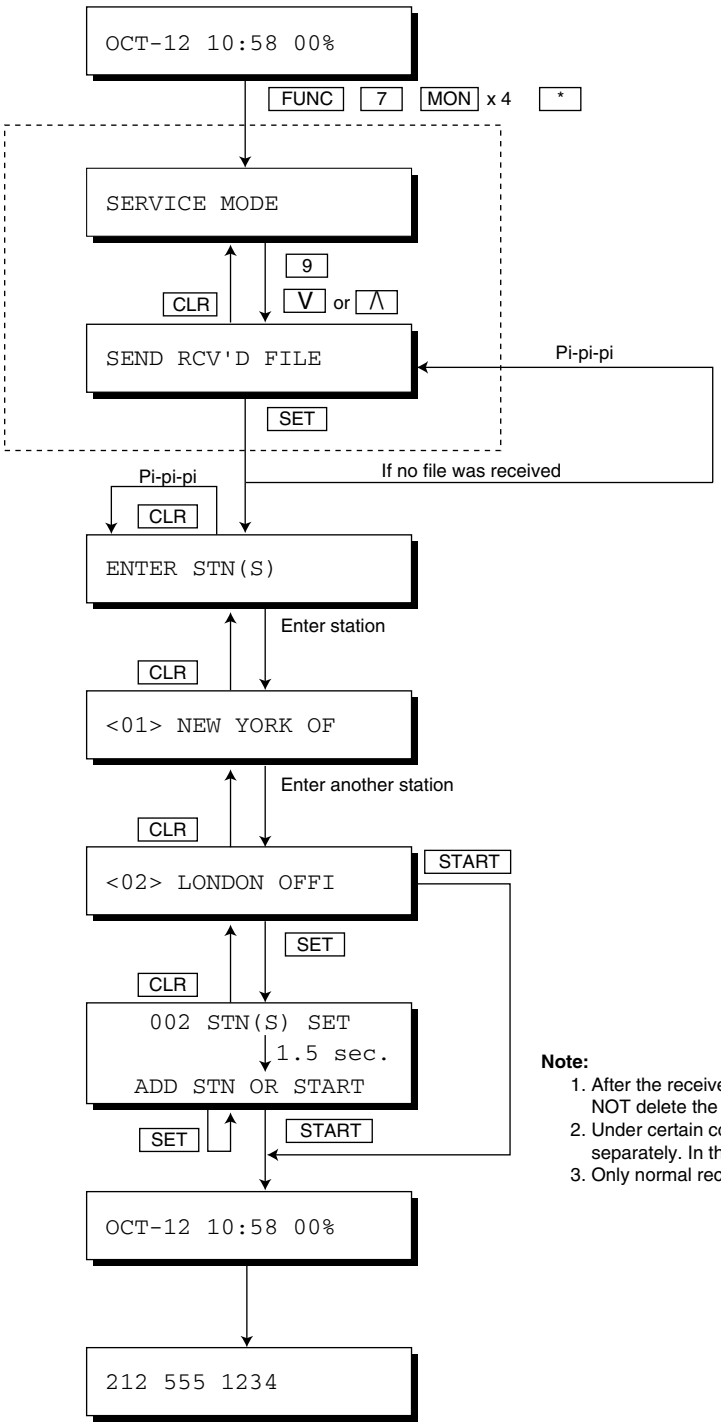
Note: PC Operation, refer to the Operating Instructions of Firmware Update Utility.

The machine starts Updating the firmware from the PC and the progress can be observed by the scanner LED.
- Erasing - LED turns on
- Programming - LED blinking
- Completion - LED goes OFF
- Incomplete - LED stays ON

The machine reboots automatically after successfully updating the Firmware and returns to standby.

5.1.9.3. Send Received File

This function is the relief mode which makes it possible to retrieve memory received documents during a fatal printer error by transferring the documents to another fax machine.



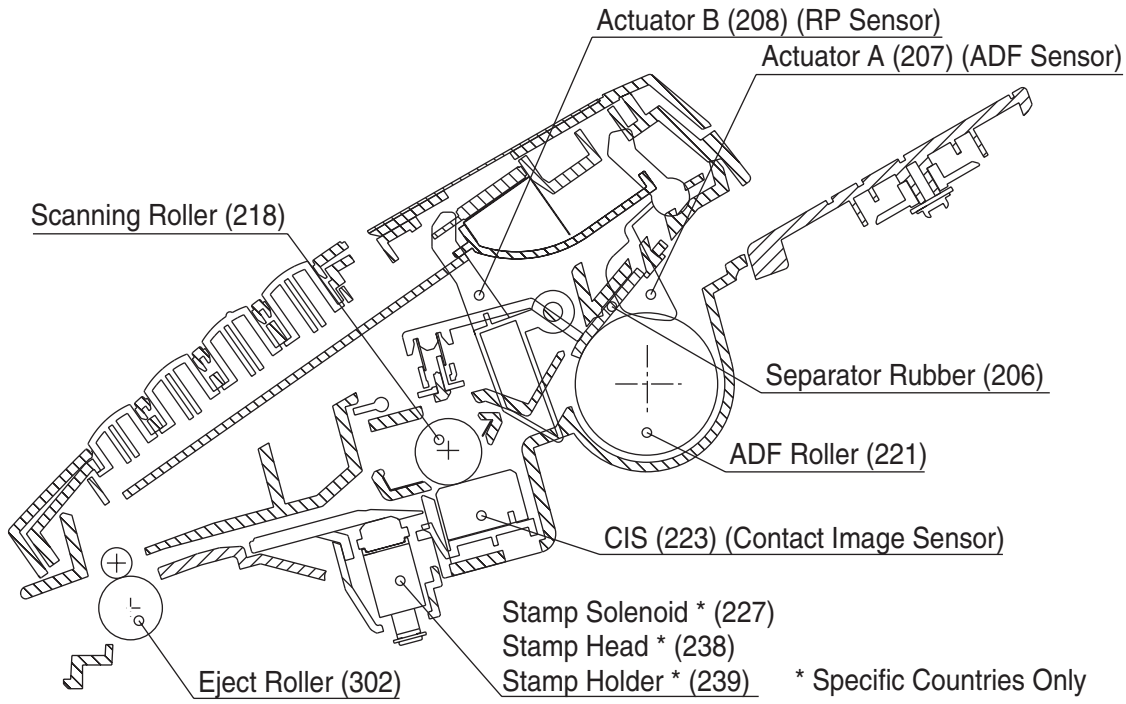
Note:

1. After the received document file is successfully transmitted, unit will NOT delete the file automatically.
2. Under certain conditions there could be two (2) received files stored separately. In this case, transmission will be made separately.
3. Only normal received document will be transmitted.

6 System Description

6.1. Mechanical Operation

6.1.1. Transmit Mechanism



ADF Mechanism

The ADF (Automatic Document Feeder) automatically feeds paper into the unit, and consists of ADF Roller and Separation Rubber. Each document is placed face-down on the **Top Cover** (117) before being fed into the unit.

- The **ADF Roller** (221) feeds individual pages into the scanning area.
- The **Separator Rubber** (206) separates documents placed on the ADF, preventing multiple feeding.

The DP-500F utilizes a CIS (223). The LED Array of CIS turns ON when the Read Point Sensor (Actuator B) is activated by the document leading edge.

Transmit Mechanism Drive System

This system feeds documents through the transmitting mechanism, and consists of rollers, gears and a stepper motor.

- The **Transmit Motor** (501), a stepper motor, controlled by the CPU, drives the ADF Roller (221), Scanning Roller (218) and Eject Roller (302).
  The speed is based on the density of the picture information.
- The **Scanning Roller** (218) feeds the document to the scanning point.
- The **Eject Roller** (302) feeds and ejects the document out of the machine.

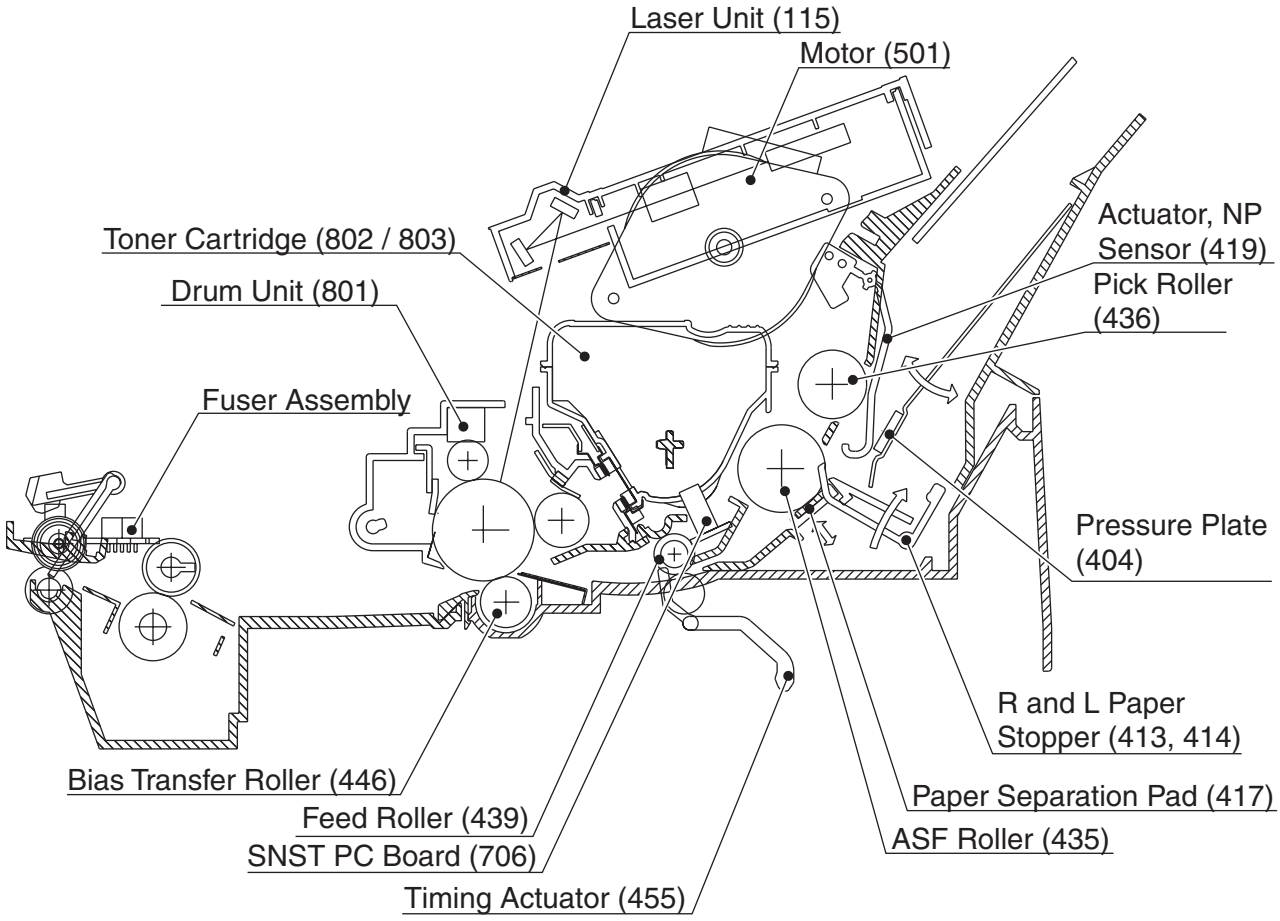
Transmit Mechanism Sensors

The **ADF Sensor** on the PNL PCB (703), activated by **Actuator A** (207), detects the presence of documents on the ADF Tray and multiple pages.
The **RP (Read Point) Sensor** on the PNL PCB (703), activated by **Actuator B** (208), detects the lead and trail edges of the document, controlling the reading position. The CPU determines that a document is jammed if Actuator B is not tripped within a specified time after the ADF Roller starts feeding, and disengages the ADF Roller by reversing the Transmit Motor direction.

Verification Stamp Unit

The Verification Stamp Unit (Specific Countries Only) stamps an “X” mark on the front of the document after the document is successfully transmitted or stored. It consists of the **Stamp Head** (238), **Stamp Holder** (239) and **Stamp Solenoid** (227).

6.1.2. Receive Mechanism

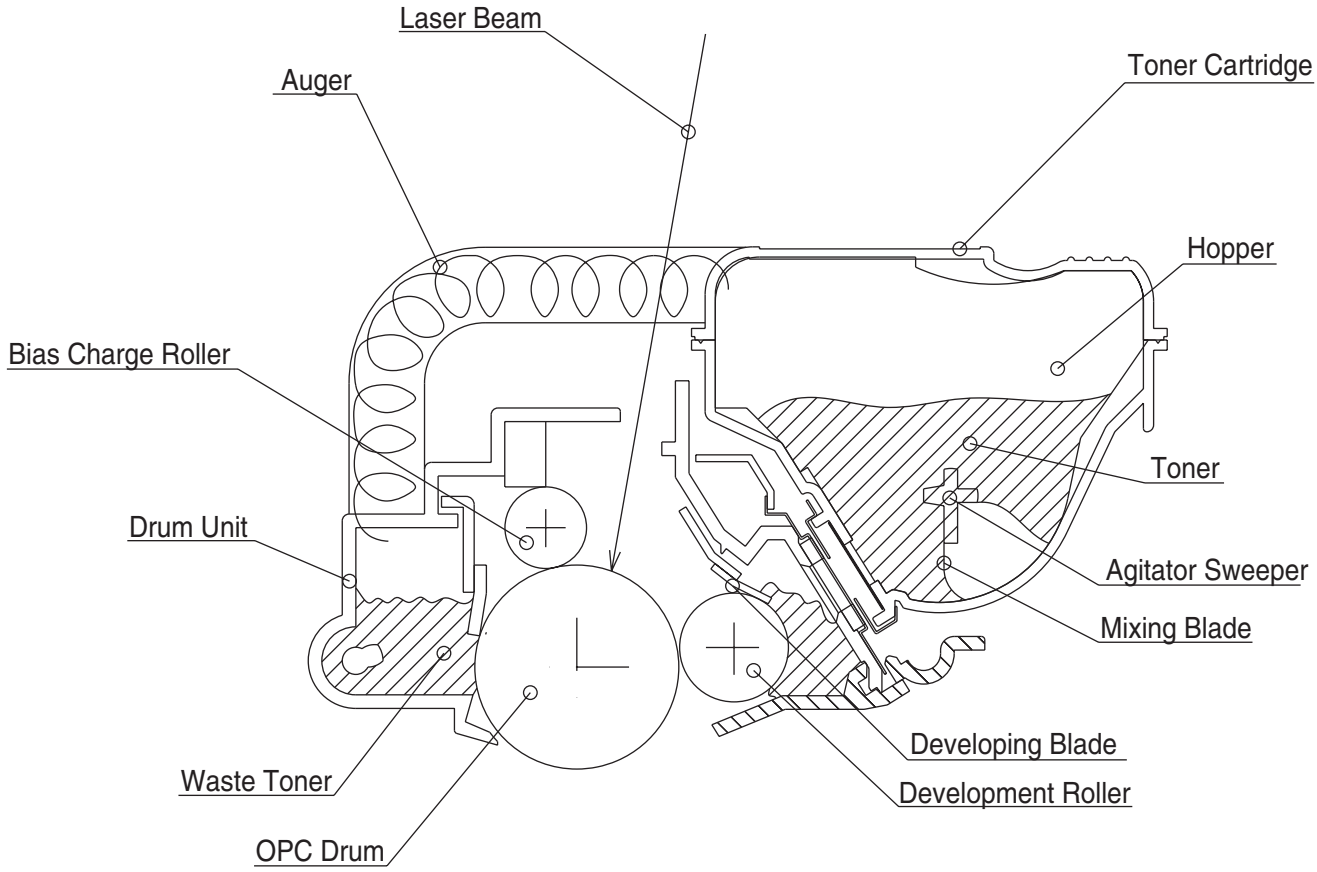


Paper Feed Operation of ASF (Auto Sheet Feeder)

One sheet of Recording Paper at the time is fed with the rotation of the **Motor** (501) and the feed roller which is controlled by the **Clutch Assembly** (424, 425, 426, 427 and 460) and the **Solenoid** (431).
The **Pressure Plate** (404) moves up, the top sheet of paper is fed in with the **Pick Roller** (436).
The **Paper Separation Pad** (417) ensures that the **ASF Roller** (435) feeds only one sheet of paper at the time.
The **Pressure Plate** (404) moves down and the **R and L Paper Stoppers** (413, 414) rotate clockwise as shown in the illustration above, stopping the remaining papers in the Paper Tray, then the **Paper Separation Pad** (417) moves down completing the paper feed operation cycle.

The **Paper Separation Pad** (417) and the **Pressure Plate** (404) move down to reduce drag on the recording paper during the paper feed operation and to minimize paper dust from occurring.
The paper is transported by the **Feed Roller** (439) to the Drum Unit. The actual printing process starts at a specified time after the **Timing Actuator** (455) (Registration Sensor) is activated and stops at a specified period of time after the trailing edge clears the **Timing Actuator** (455).

6.1.3. Printing Mechanism



The Printing Mechanism consists of the Laser Unit (LSU), OPC (Organic Photo Conductor) Drum, and various other parts which ensure the normal feeding of recording paper. These components and their functions are as follows:

Printing Process Operation

Charge

In the dark, the Bias Charge Roller (BCR) applies a high, uniform negative charge to the surface of the OPC Drum. The surface potential is approximately -560 VDC and remains because the drum has a high electric resistance in the dark.

Exposure

A portion of the laser beam is deflected to the timing sensor [Beam Detection (BD) Sensor], which controls the start timing of scanning on the OPC Drum. The CPU also uses the timing sensor to detect abnormal signals. The light beam from the laser diode is modulated by the digital signal (nVIDEO) and converted to parallel light waves by the collimator lens. The beam is then directed to the rotating polygon mirror, where it is reflected to the f-θ lens and then focused onto the OPC Drum surface. The laser beam moves across the surface of the OPC Drum in the scanning direction. Where the laser beam is applied, the negative charge on the drum dissipates, and where the laser is not applied, the negative charge remains. This action forms a latent, electrostatic image on the OPC Drum, corresponding to the original image.

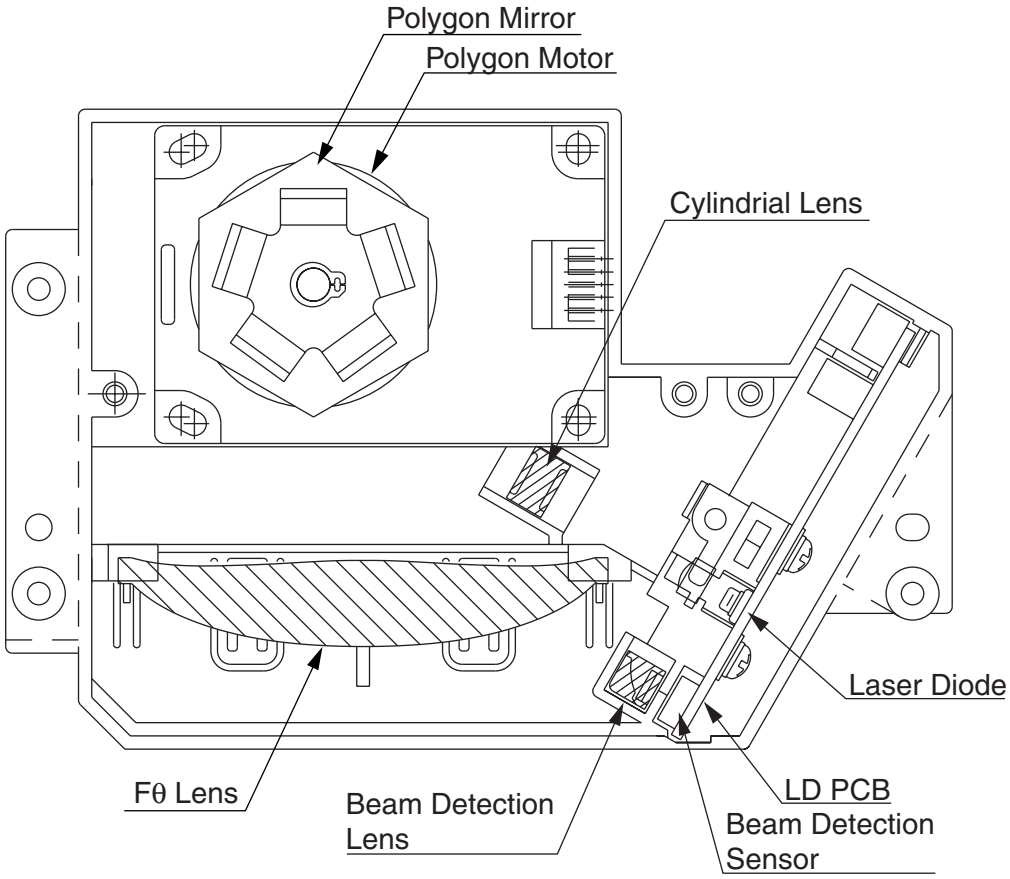
Development

This development process uses a conventional method, where toner coats a Development Roller and transfers to the latent image on the OPC Drum. In the Toner Cartridge, the (mono-component) toner is

negatively charged by the friction between the rotating Development Roller (Mag Roller) and the Developing Blade. This combination and the rotation of the Mixing Blade transfers the toner from the reservoir and forms a brush effect on the Mag roller. Where the magnetic brush lightly touches the OPC Drum, the negatively charged toner is attracted to the latent image on the drum, forming a mirror image of the original on the drum. Any remaining toner is removed from the Mag Roller by the Developing Blade and is recycled back into the toner reservoir. A bias voltage of approximately 1.65 kVACp-p at 1.87 kHz, riding on a -430 VDC bias is applied to the magnetic brush to achieve maximum print quality.

The **Toner Level Sensor**, an optical sensor, detects the remaining quantity of toner in the Toner Cartridge. When the display shows “LOW TONER”, there is still enough toner left in the cartridge to print 100 pages (based on ITU-T Image No.1). When the toner runs out, the display will show: “OUT OF TONER & INFO CODE 041” and the machine is disabled from printing any copies.
The **Drum Unit** consists of OPC Drum, Bias Charge Roller, Development Roller, Developing Blade, Cleaning Blade and an Auger. The Toner Cartridge consists of Toner hopper and Toner Waste Box.
The **OPC Drum** is an aluminum cylinder coated with an OPC (Organic Photo Conductor) sensitive material. This surface is photoelectric (retains the charge in the dark and releases the charge in the light). The potential differences on the surface (a static latent image) form a printed image. The **Bias Charge Roller** provides a uniform charge on the OPC Drum surface. The **Development Roller** supplies toner to the drum by rotating over the magnet. The **Developing Blade** evens the toner on the Development Roller surface and also charges the toner by friction. The **Cleaning Blade** cleans by scraping the remaining toner off the OPC Drum surface after transfer.

6.1.4. Laser Unit



Laser

A 5 mW Laser Diode, with a wave length of 780 nm (±20 nm), provides a modulated beam controlled by nVIDEO. The beam power on the drum surface is approximately 0.20 mW, and is controlled by the monitor circuit.

Collimator Lens

This lens converges and focuses the laser beam, converting it to parallel light.

Aperture

This controls the size of the laser beam.

Polygon Mirror and Motor

The polygon scanner consists of a 6-sided mirror, directly driven by a polygon motor, revolving at 15,867 rpm (400 dpi) or 16,235 rpm (600 dpi). Scanning speed for 400 dpi and 600 dpi are controlled by motor clock supplied from LPC PCB. Motor clock for 400 dpi is 1,588 Hz and 600 dpi is 1,624 Hz. The laser beam is reflected against these mirrors and swept over the recorded width in the scanning direction. This unit features a stable line scanning speed, a precision mirror reflection angle, a reflection free surface, and instant start.

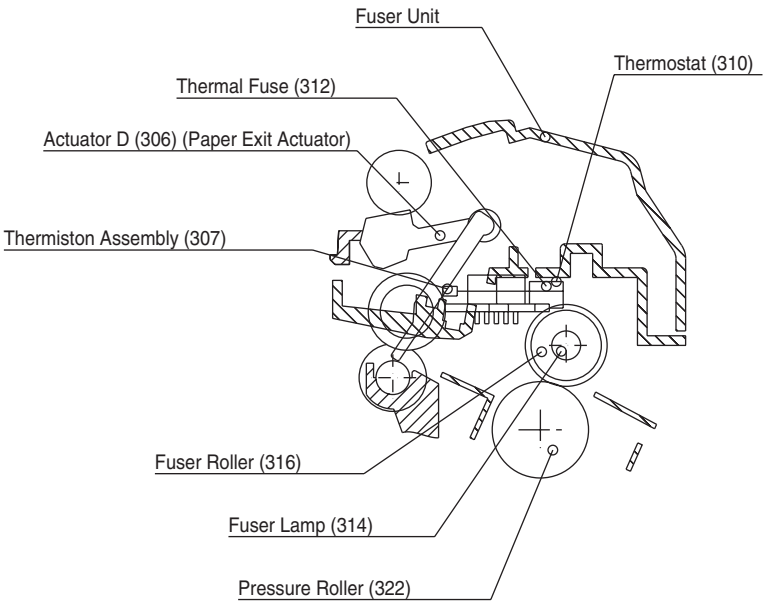
Beam Detection (BD) Lens and Beam Detection (BD) Sensor

The BD Lens receives the reflected light from the Polygon Mirror and redirects it into the BD Sensor, which converts the laser beam into electrical signals and sets the start timing for the scanning line.

f-θ Lens

This amorphous plastic, molded lens is designed to provide parallel laser light across the surface of the drum, providing a constant scanning speed.

6.1.5. Finishing and Paper Exit



Fuser Unit

The Fuser Unit, consisting of the Fuser Lamp, Fuser Roller, Pressure Roller, Thermistor, and Thermostat, bonds the toner into the paper using heat and pressure.

Fuser Lamp (314)

Located in the Fuser Roller is a Halogen lamp that serves as the heat source for the Fuser Roller.

Fuser Roller (316)

A Teflon coated roller supplies the heat for bonding the toner to the paper. The temperature of the surface is kept constant at approximately 160°C (±5°C) or (320°F) / 155°C (±5°C) or (311°F) / 150°C (±5°C) or (302°F).

Pressure Roller (322)

This converted PFA tube Silicon Rubber Roller applies pressure to the Fuser Roller, assisting in bonding the toner to the paper.

Thermistor Assembly (307)

The Thermistor, a heat sensitive resistor, in contact with the Fuser Roller, monitors the surface temperature. The temperature detected is used to control the ON/OFF switching of the Fuser Lamp. It also acts as the primary overheat prevention device. A comparator circuit on the SC PC Board acts as a secondary overheat protection and becomes active at approximately 170°C (338°F).

Thermostat (310)

A Thermostatic Fuse, part of the power line for the Fuser Lamp, provides an extra overheat protection by opening when the surrounding temperature reaches approximately 150°C (302°F). If the primary and secondary overheat protection does not halt the rise in temperature, the thermostat opens, removing power from the Fuser Lamp. When the Thermostat opens, it must be replaced.

SNSE PC Board (704) [Paper Exit Sensor]

This sensor detects the presence of printed paper at the exit. If no paper passes, or if paper is over the sensor too long, a “RECORDING PAPER JAM” message is displayed. When paper passes over the sensor, the output is Low (Low Active).

Thermal Fuse (312)

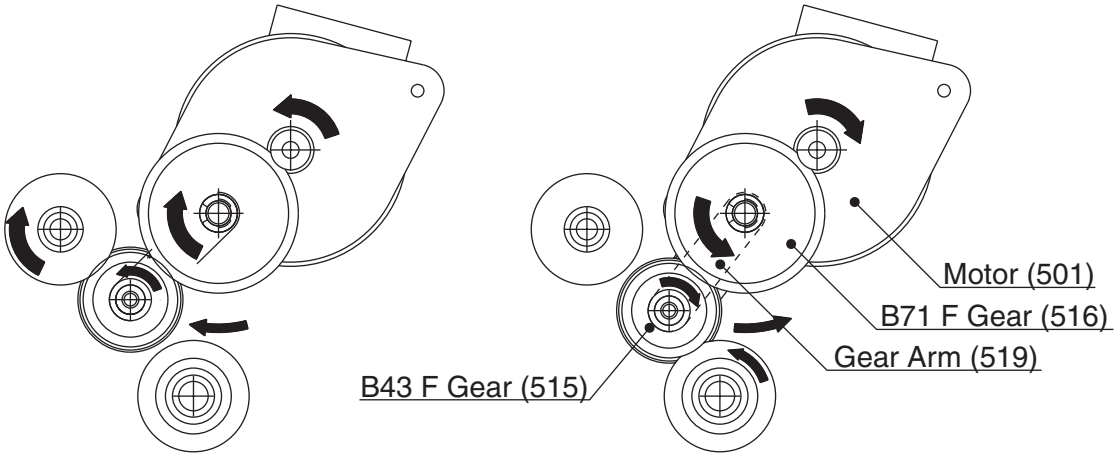
It is placed in series with the Thermostat on the power line of the Fuser Lamp and performs the tertiary overheating prevention (in case the Thermostat fails) by opening when the surrounding temperature reaches approximately 152°C (305.6°F).

Covers and Enclosures

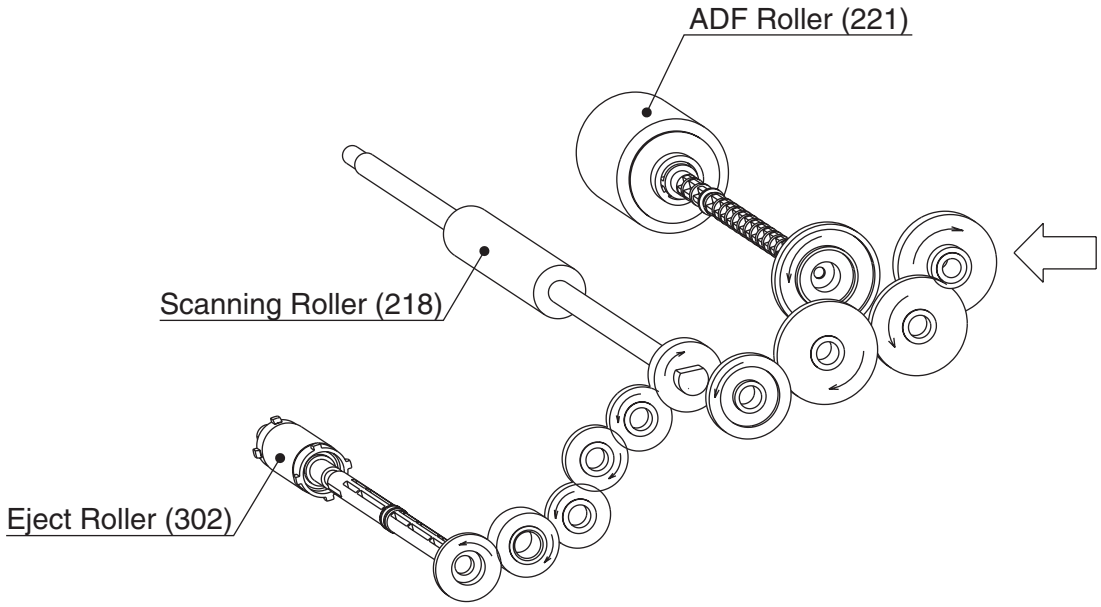
The **Top Cover** (117) contains the **R and L Document Guides** (119 and 120), which adjust to the paper width to properly feed the original documents. The **Main Frame** (601) has a **Speaker** (612) mounted inside. It also contains the **Recording Paper Tray** (605), used to support all size document.

6.1.6. Drive System

This drive mechanism controls both **Scanning** and **Printing** with a single **Motor** (501).
The directional rotation of the **Motor** (501), the **Gear Arm** (519) and **B43 F Gear** (515) control either the **Eject Roller** (302) or the **Scanning Roller** (218).



When the Motor rotates clockwise, the system drives the Printer mechanism.
When the Motor rotates counter-clockwise, the system drives the Scanner mechanism.



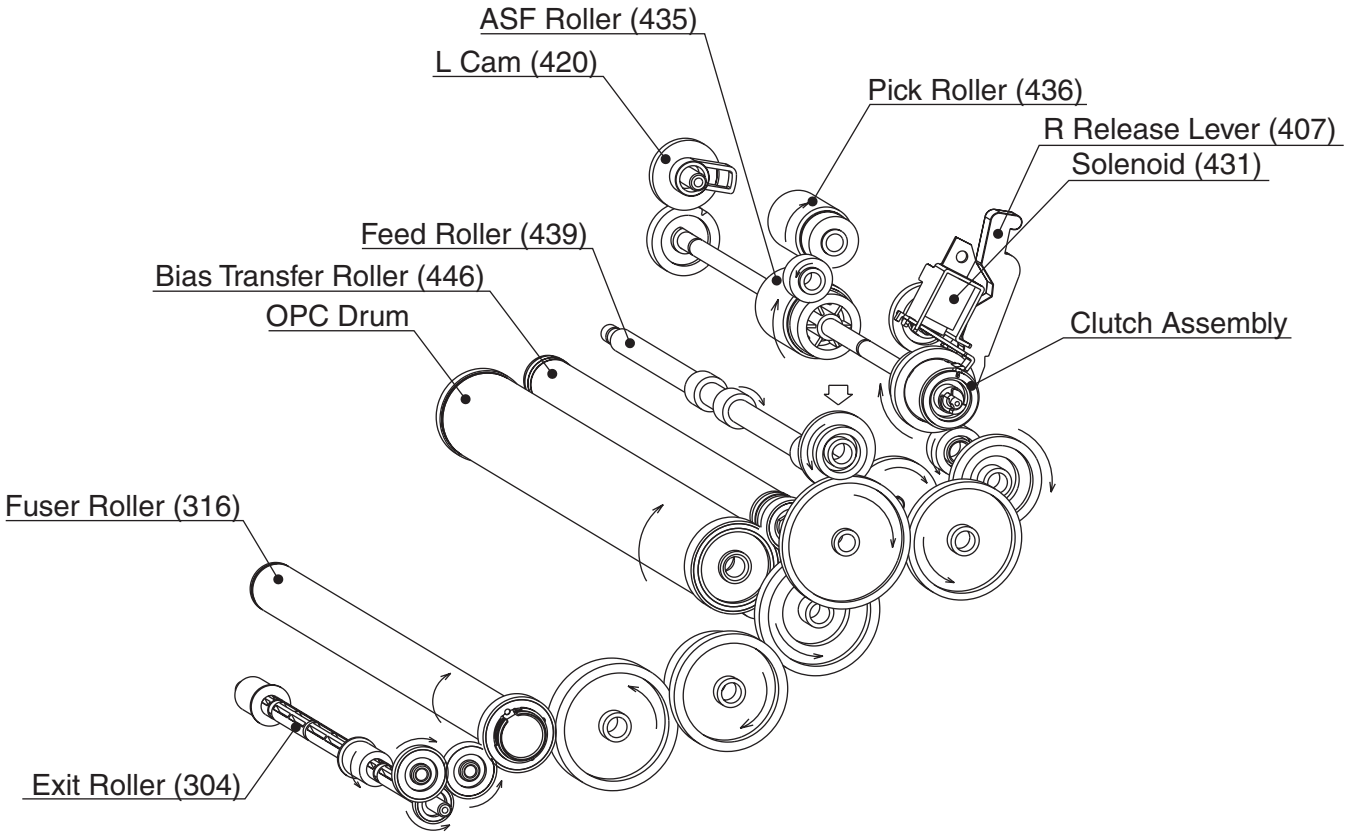
Scanner Gear Train

The rotation of the motor is transferred to the Gear indicated with an arrow, then transferred to **ADF Roller** (221), **Scanning Roller** (218) and **Eject Roller** (302).

Printing Gear Train

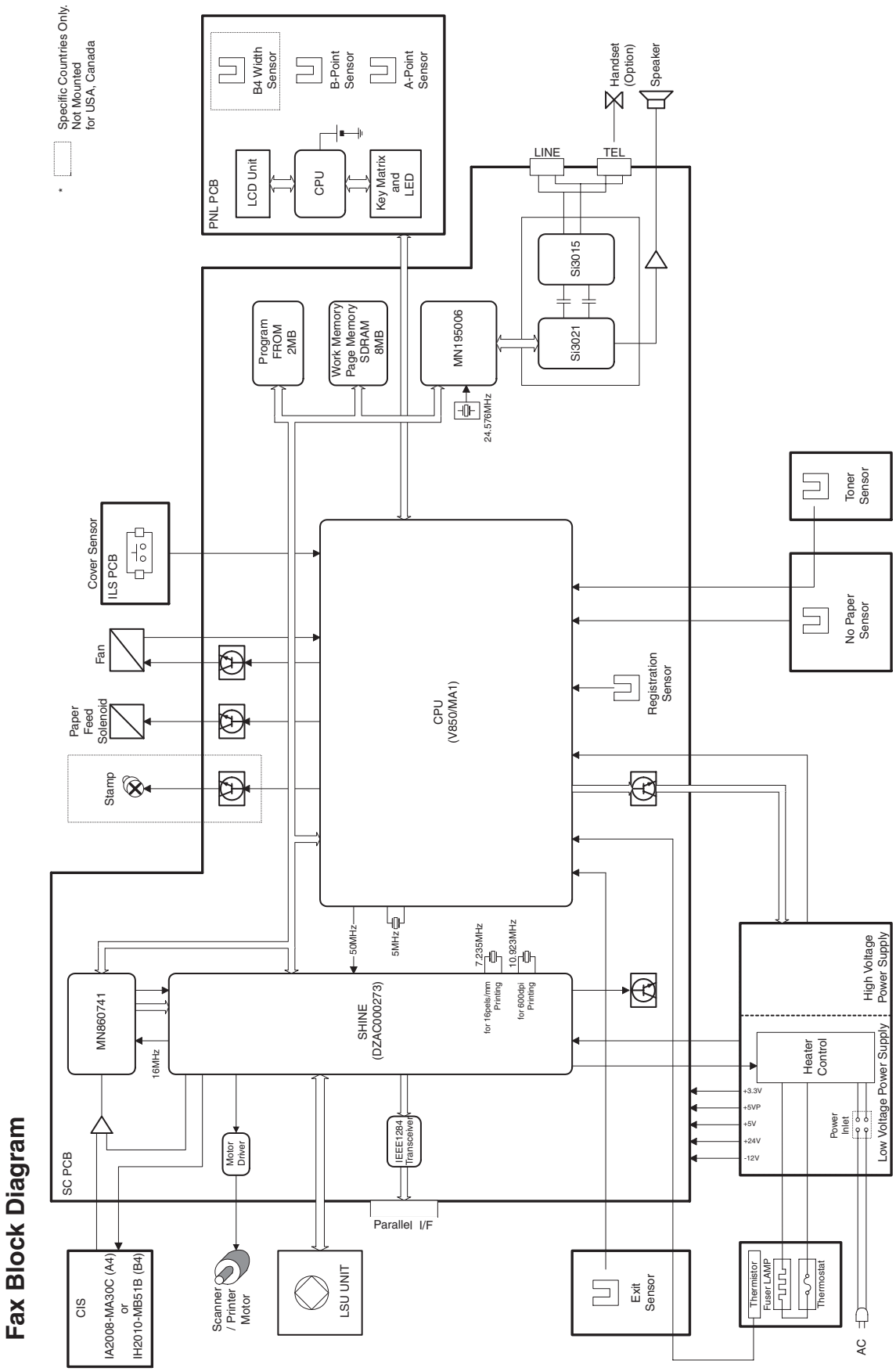
The rotation of the motor is transferred to the Gear indicated with an arrow, then transferred to two separate blocks.

1. The ASF block feeds one sheet of paper at a time, which is controlled by a **Solenoid** (431) and **Clutch Assembly**. The **Pressure Plate** (404) is moved up and down with both sides of the **Cam** (420) and **R Release Lever** (407).
2. The Processing and the Fusing blocks are driven with the Gears, the **Feed Roller** (439), **Bias Transfer Roller** (446), **Fuser Roller** (316), **Exit Roller** (304) and the **OPC Drum**.



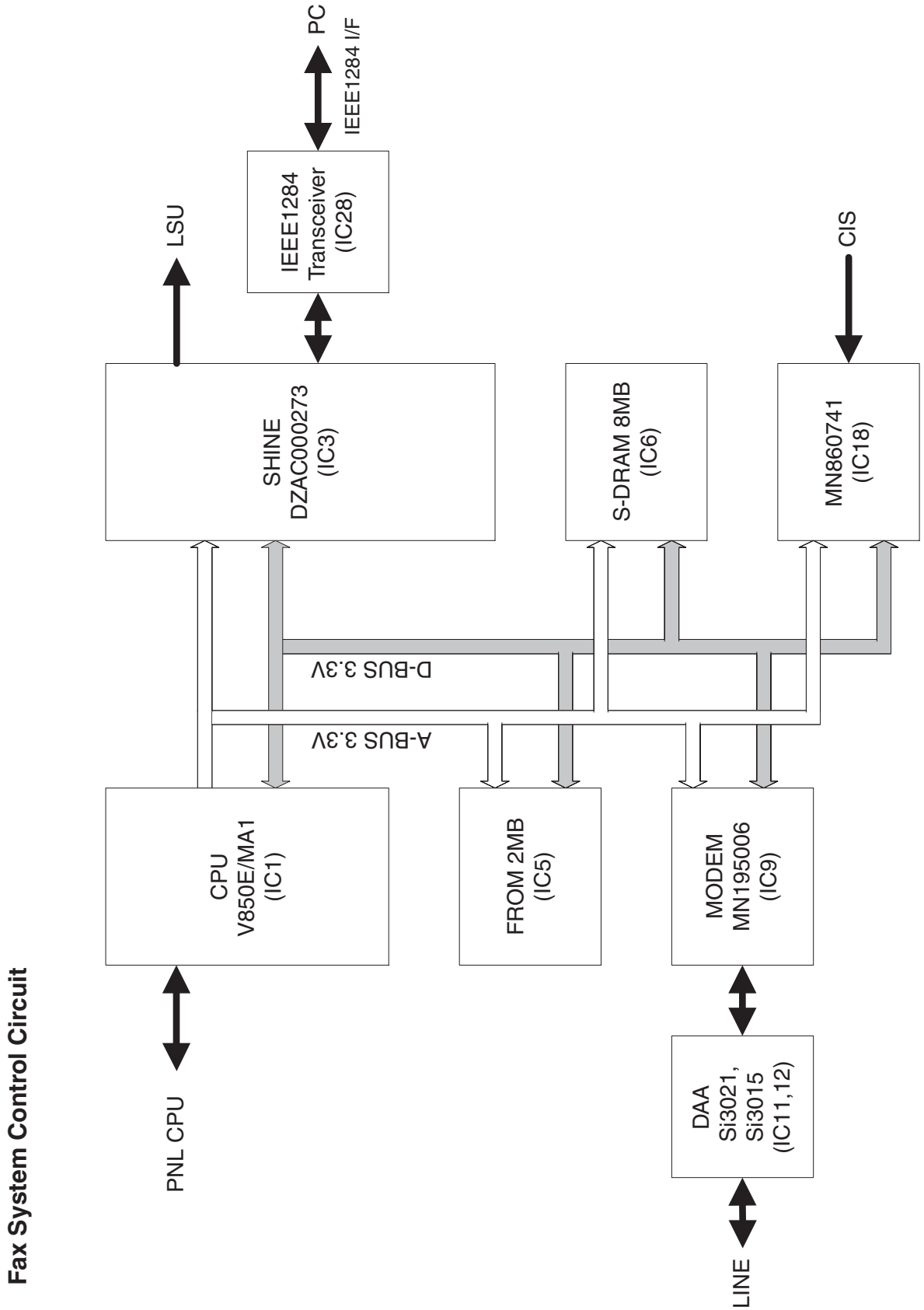
6.2. Electrical Circuit Explanation

6.2.1. Fax Block Diagram



6.2.2. Fax System Control Circuit

The System Control Block consists of the following IC that control the general Fax functions.



1. **System CPU**

The System CPU (V850E/MA1) is a 32-bit RISC (Reduced Instruction Set Computer) type of CPU and DMA Control, Serial Communication Port, Timer Control, Interrupt Control, DRAM Control, and I/O Port are integrated into Single (1) Chip. Mask ROM (128k byte) is already installed and it controls the Real Time OS, High Speed managing Task and Boot Programming.

- **DMA Control**
  It has a 4ch DMA Control and is used to transfer data between the following devices.
  Image Data Memory (DRAM) ①③ Image Data Memory (DRAM)
- **Serial Communication Port**
  It has a 2ch Serial Communication Port and is used to interface the following devices.
  CPU ①③ Panel Unit (Panel CPU)
- **Timer Control**
  It is used to program the standard timer, the creation of the charge AC frequency.
- **Interrupt Control**
  It controls receipt & transfer to CPU the interrupt from SHINE, Modem.
- **S-DRAM Control**
  It generates S-DRAM Control Signal and Refresh Control when the power is ON.
- **I/O Port**
  It is used to control lines, reset control around LSI, and so on.

2. **Integrated Gate Array (SHINE)**

DZAC000273 (SHINE) is a Highly Integrated Gate Array which provides the function of System Control, Scanning Control, Recording Data Control, LP Engine Control, PC Interface.

- **2-1. System Control Block**

  •DMA Control
  It is used to transfer data between the following devices.
  Scanning Control LSI (MN860741) ③ Memory (S-DRAM) : Scanning Route
  Memory (S-DRAM) ③ LP : Recording Route
  PC ①③ Memory (S-DRAM) : PC I/F Route
  Memory (S-DRAM) ①③ Memory (S-DRAM) : Editing Route

  •S-DRAM Control
  It generates S-DRAM Control Signal. It shares S-DRAM with the CPU by using the Bus Hold Mode function of the CPU.

  •System Control Signals Generation
  It generates various system control signals for the CPU assistance.

- **2-2. Scanning Control Block**

  •CIS Control Signal Generation
  It generates CIS control signals.
  CIS stands for Contact Image Sensor, which is compact scanning Device.

  •Black Shading Correction
  To suppress dispersion of CIS pixel elements, it compares with a black signal (LED is off) as a base level, it corrects analog data level by controlling values of external resistors.

•Scanning LSI Control Signal Generation

It generates control signals for a scanning LSI (MN860741). A reduction of sub scan is proceeded with this block.

•Scanning Data Transfer Control Circuit

The Scanning Image data (Binary or Multi-level Gray Scale) form Scanning LSI (MN860741) are Serial. This Circuit converts the Serial Image data to the Parallel Image data, and transfers to the Memory through DMA controller. It is used for processing the data such as masking the data, reversing the data etc.

•Motor control

SMA7027M (IC26), which generates control pulse signals of a motor which is used for scanning and recording.

• 2-3. Recording Data Control Block

•Reduction / Enlargement Control Circuit

This circuit is used to process the received data to fit on the recording paper, according to the Fax Parameter Settings.

•Image Range Isolation Circuit

It identifies the halftone picture range and controls smoothing, Binary Gray Scale Conversion, and Laser pulse width control to eliminate blocking of the recording picture which has undergone error diffusion or other process.

•Picture Quality Correction Circuit (Smoothing)

When the receiving data (8 dot/mm x 7.7, 15.4 line/mm) is converted to 16 dot/mm x 15.4 line/mm resolution, the current printed data and 15 surrounding printed data are sent to the Smoothing ROM through 16 bit line and the ROM sends smoothed dot data. As a result of this operation, the distorted curved lines are smoothed.

•Binary Gray Scale Conversion

The signal of a binary-level image such as copying is converted into a multiple-value (64-scale) image signal for multiple-value recording.

A maximum of 5-by-5 pixels around an area is referred to in layers for conversion into multiple-value signal.

•Laser Pulse Width Control

After smoothing, the SHINE controls Laser pulse width by the software setting of the print quality.

•Gray-Level Enhancement

This control function allows expressing higher-level scales than using a recorded signal, by reducing line density into 1/2 or 1/3 on the original after binary-to-multiple value conversion. This capability increases reproduction of gray scale images such as photographs.

•Synchronization Control Circuit

This circuit is used to synchronize the output of the recorded data with the horizontal synchronizing output signal from the printer for each line.

• **2-4. LP Engine Control Block**

•High Voltage Development Clock Control
It generates control pulse signals with a High Voltage Supply.

•LSU Control
It generates control pulse signals and control a LSU Scan Motor such as observing abnormal rotation, etc. It also controls Laser output signals for synchronizing horizontal lines.

•Fuser Control
It controls on/off of Fuser heater with a Low Voltage Power Supply.

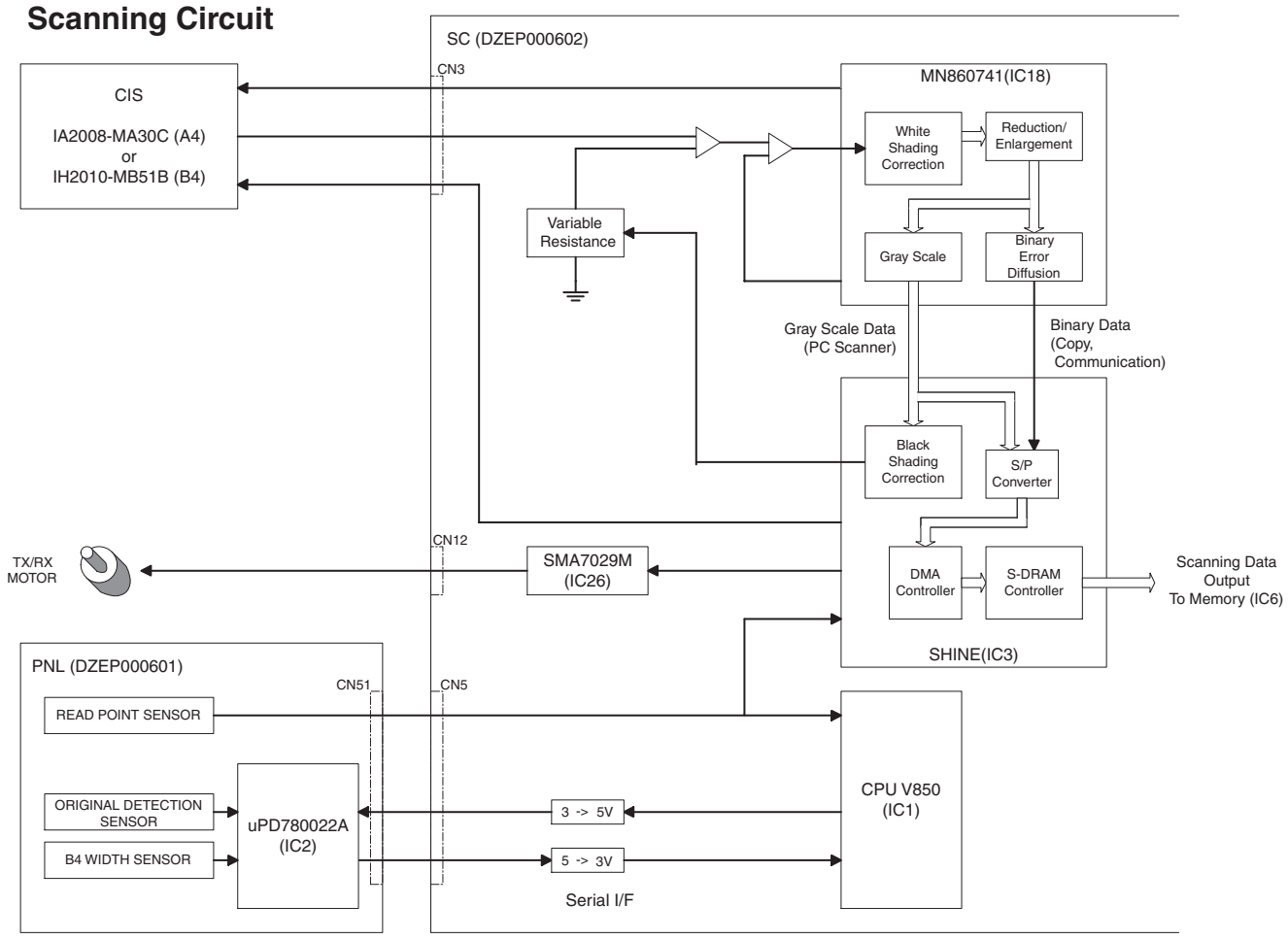
• **2-5. PC Interface Block**

•IEEE1284
It proceeds handshaking conforms to IEEE1284 requirement and transfers data, such as a receiving data from PC (Printer Interface) or a transmit scanned data to PC (PC Scanner).
It is complied with Compatibility Mode, Nibble Mode, Byte Mode, ECP Mode.

3. **System Memory**
This system consists of the following memories.

•**F-ROM (IC5) → F-ROM (2MB)** for programming and data backup.
The program is downloaded from PC via IEEE1284 parallel port.
•**S-DRAM (IC6) → Work RAM, Page Memory, Line Memory, Image Data Memory, Buffer (8MB)** for transmission and reception. During an electrical power failure, the image data is not backed up.

6.2.3. Scanning Circuit



1. **Scanning LSI**
   MN860741 (IC18) is a Scanning LSI which generates Shading Correction, MTF Correction, Reduction/ Enlargement, and Gray Scale Error Diffusion. The Image Signal is converted to binary signal and transported.
2. **TX/RX Motor Drive Circuit**
   Single Motor is used for TX/RX, which is controlled by Motor Drive Chip SMA7029M (IC26).

6.2.4. Sleep Mode

This function reduces the power consumption in standby mode. During Sleep Mode, power is supplied only to the Energy Saver Lamp to keep it at a steady ON condition and to the circuit that monitors incoming Ringing signals. The power is recovered only when an incoming Ringing signal is detected, a Document is detected by the Original Sensor is actuated or the Energy Saver key is depressed.

Sleep Mode Availability

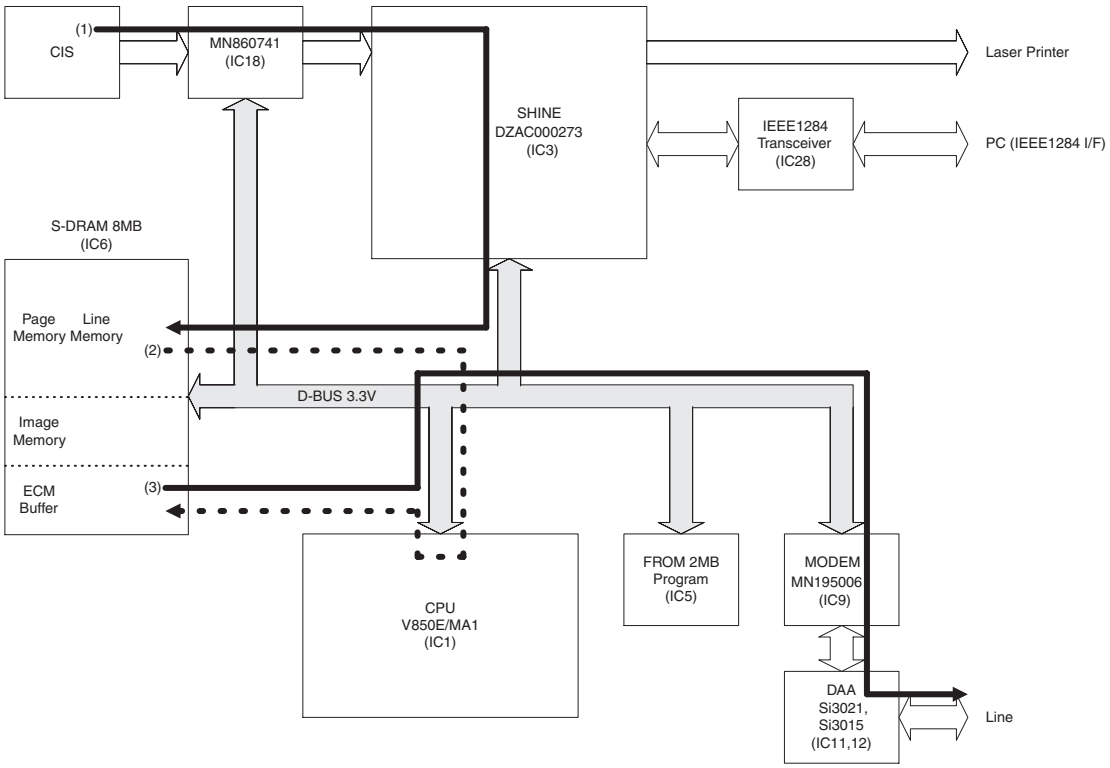
No.	Items	Sleep Mode	Remarks
1	When Image Data is in Memory	No	

Recovers from Sleep Mode

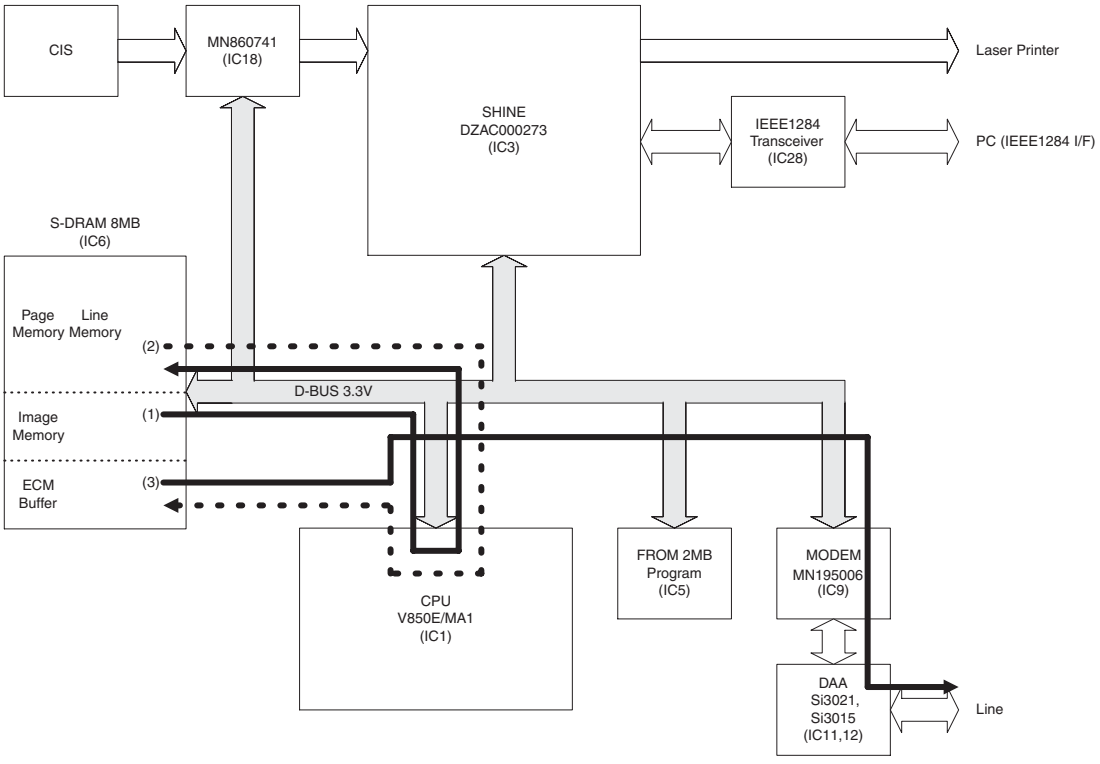
No.	Items	Recovers from Sleep Mode	Remarks
1	When Energy Saver key is pressed	Yes	
2	Self Maintenace Timer	Yes	To keep smooth contact between Scanning Roller and Glass, the Roller will be rotated for a few seconds once a day at the set hour.
3	Original Sensor is actuated	Yes	
4	Ringing signal is detected	Yes	Not 1300Hz detection
5	Off-Hook (Handset)	Yes	Not detected in case of Line Voltage is too low.
6	Off-Hook (External Telephone)	Yes	Not detected in case of Line Voltage is too low and/or some kind of Telephone.
7	When printing from a PC	No	

6.2.5. Signal Routing

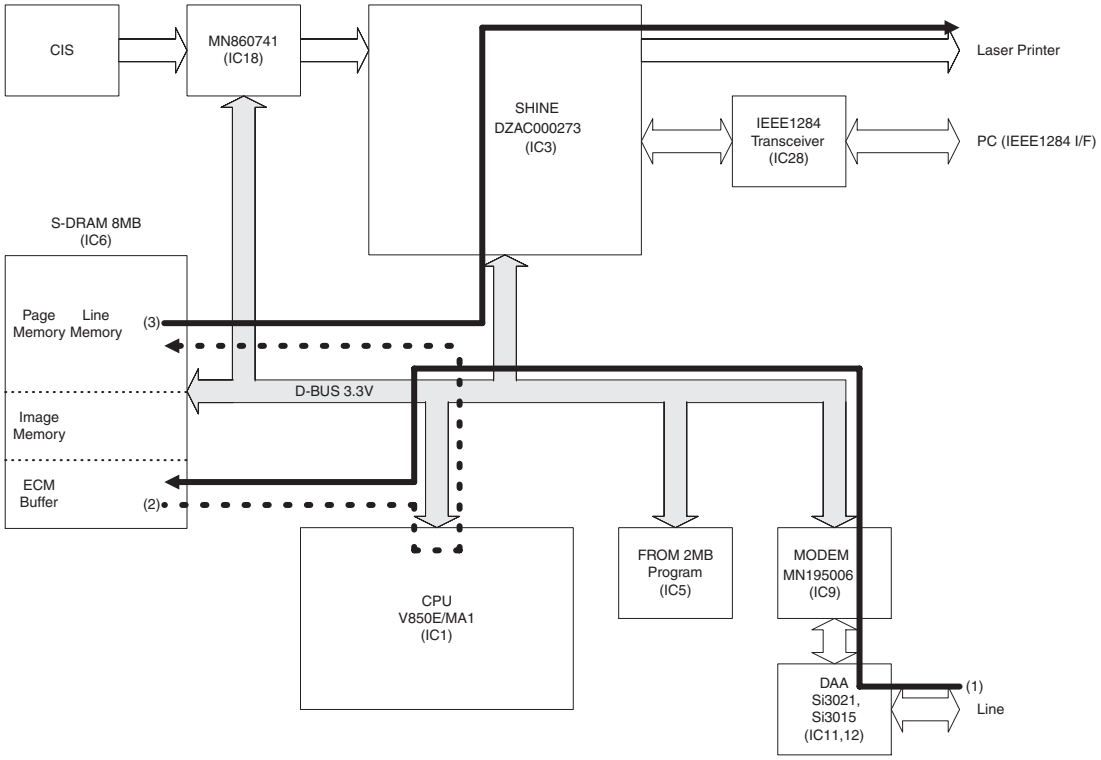
1. **ADF Transmission**



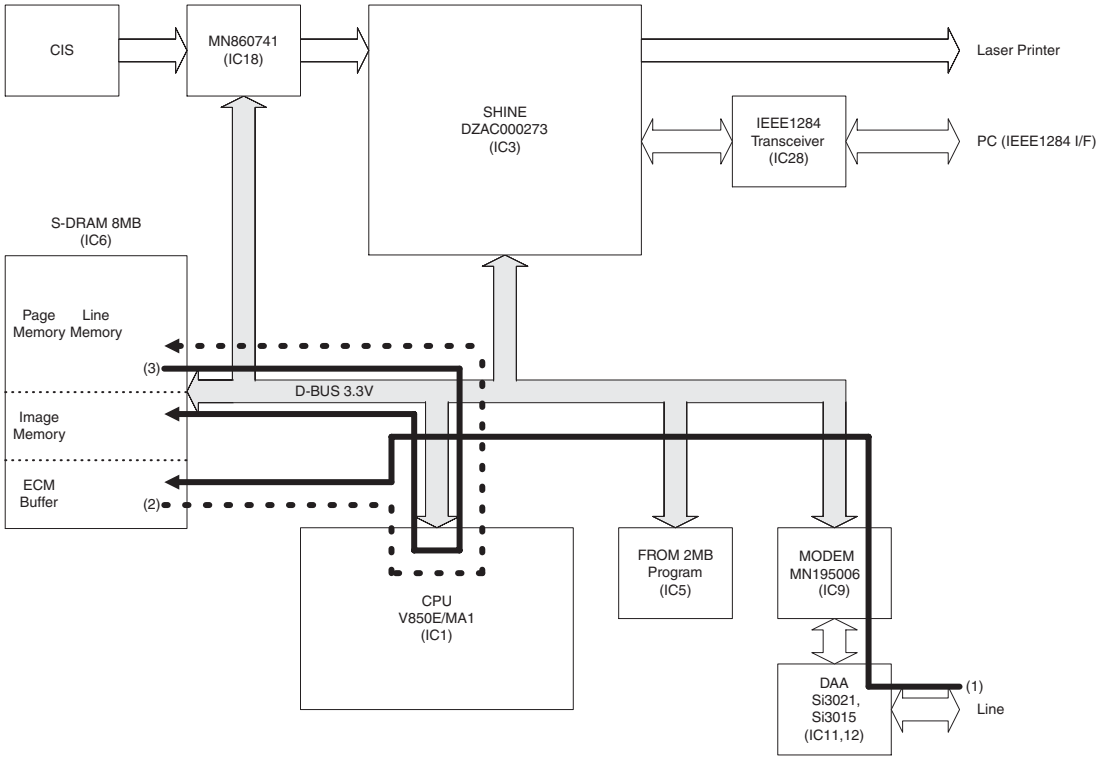
2. **Memory Transmission**



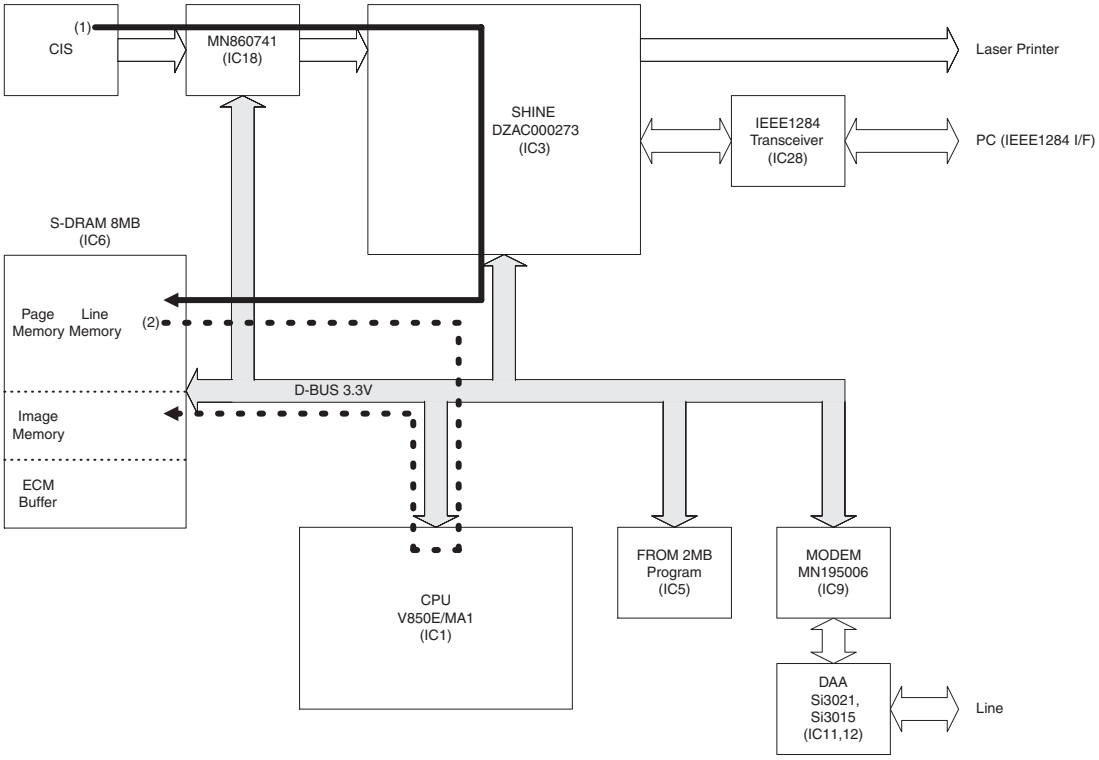
3. **Direct Reception**



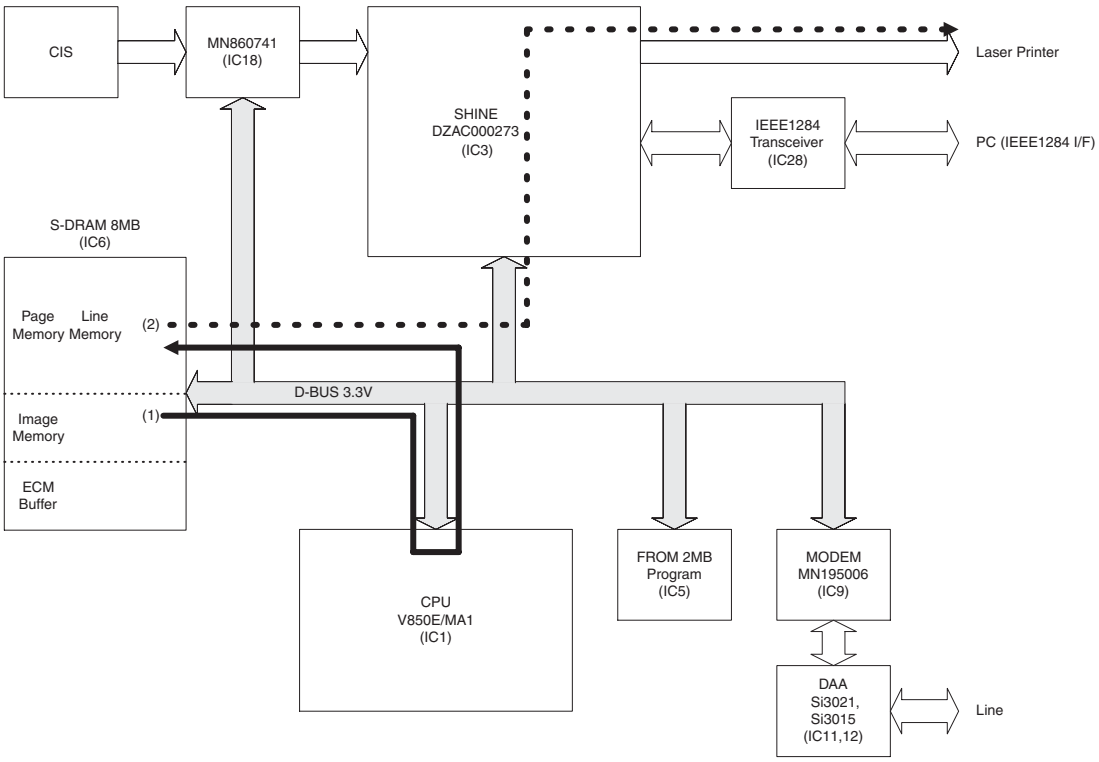
4. **Memory Reception**



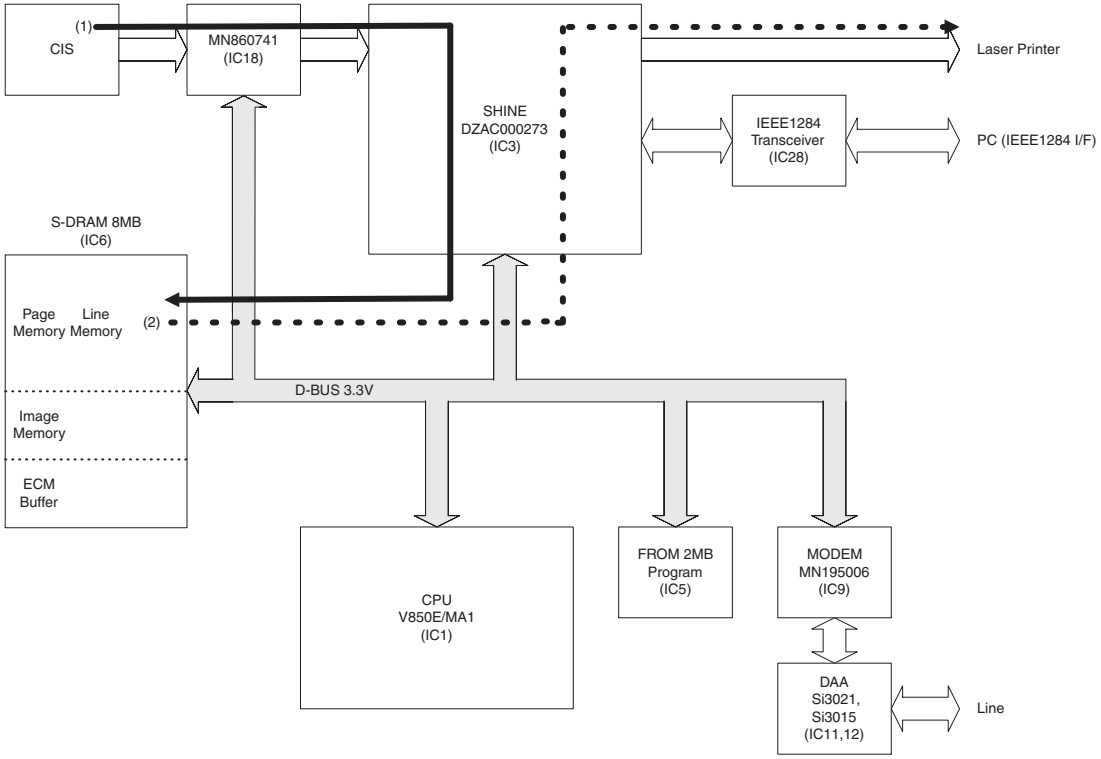
5. **Scan into Memory**



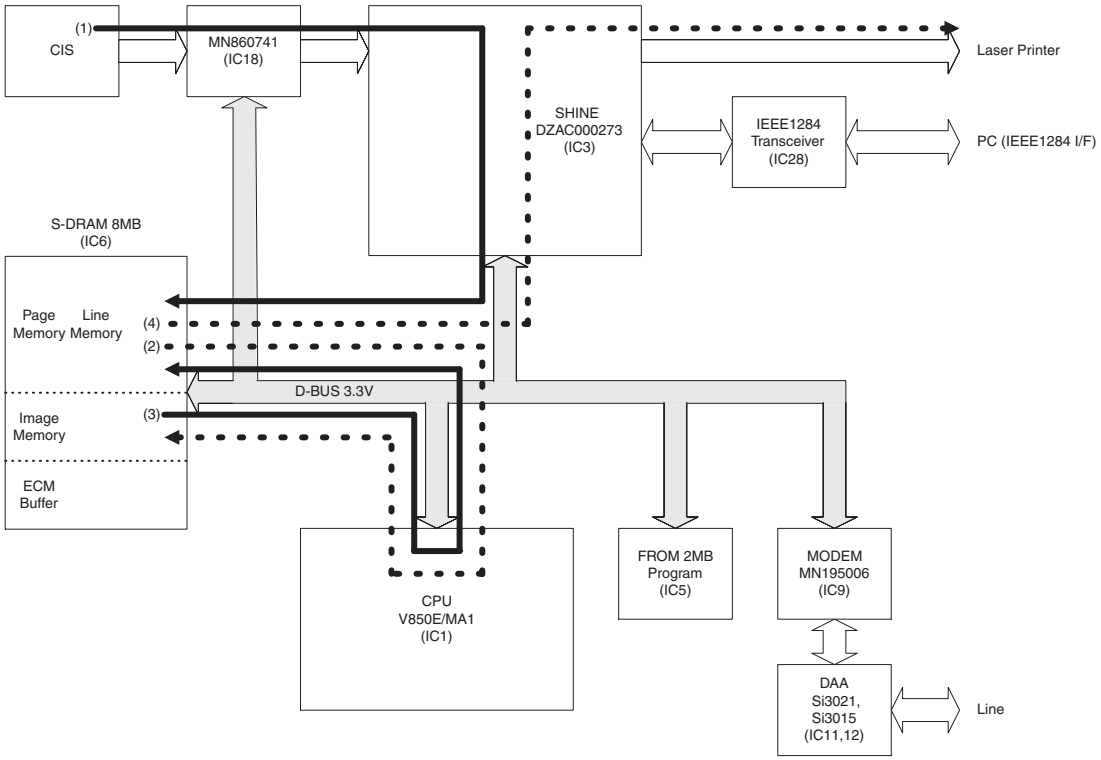
6. **File Print from Memory**



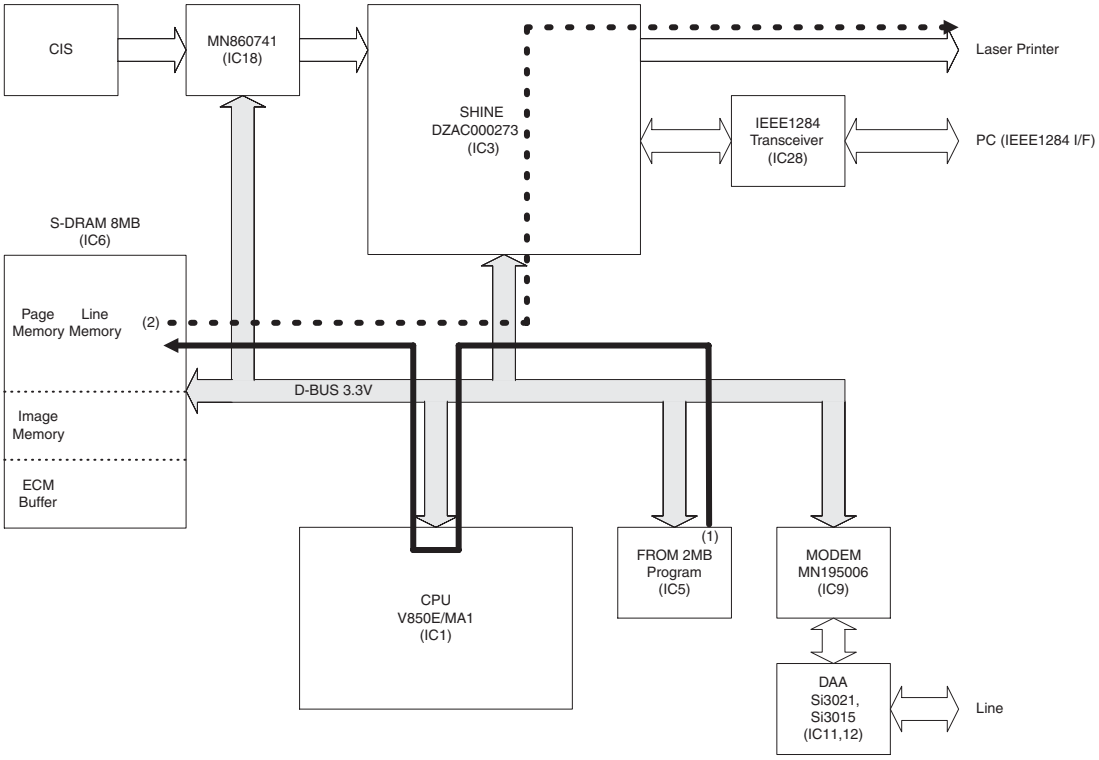
7. **Non-Sort Copy**



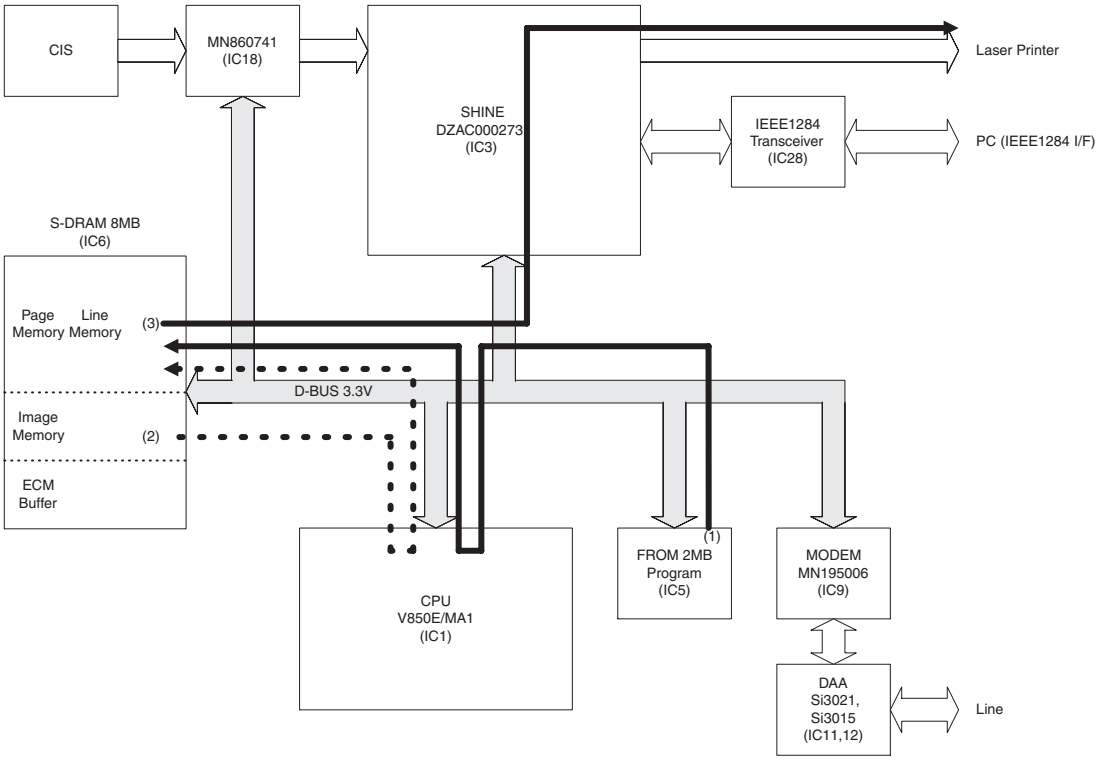
8. **Sort Copy**



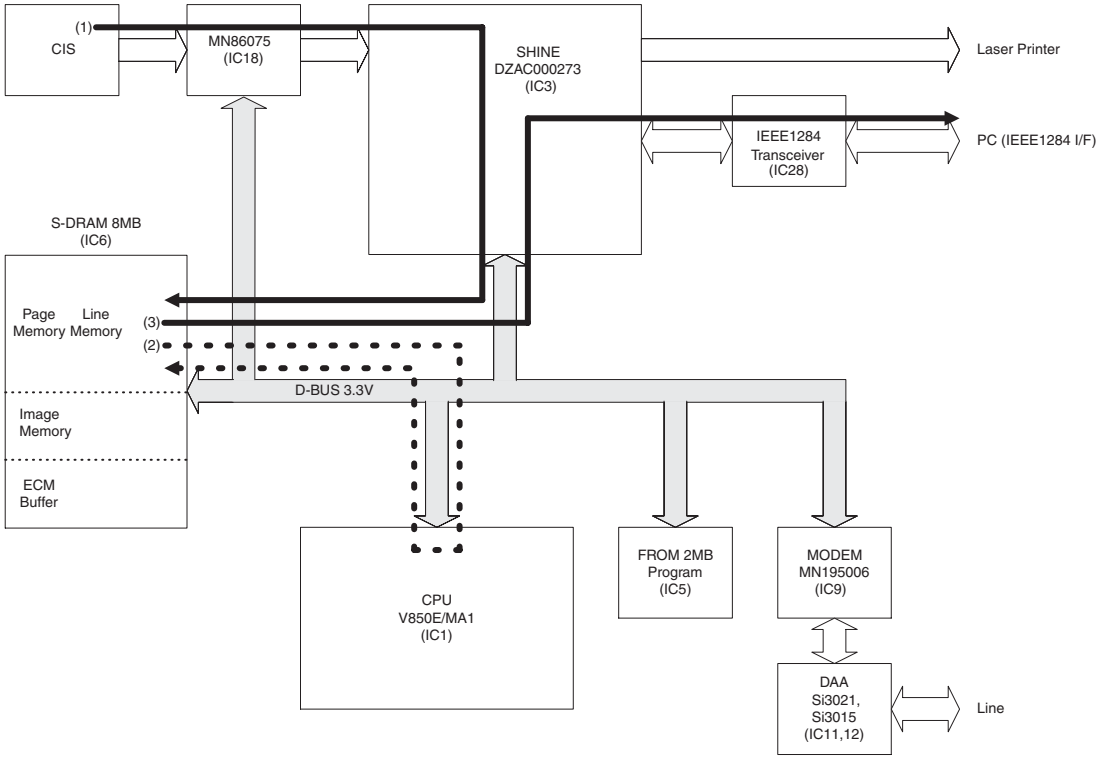
9. **Report/List Printing**



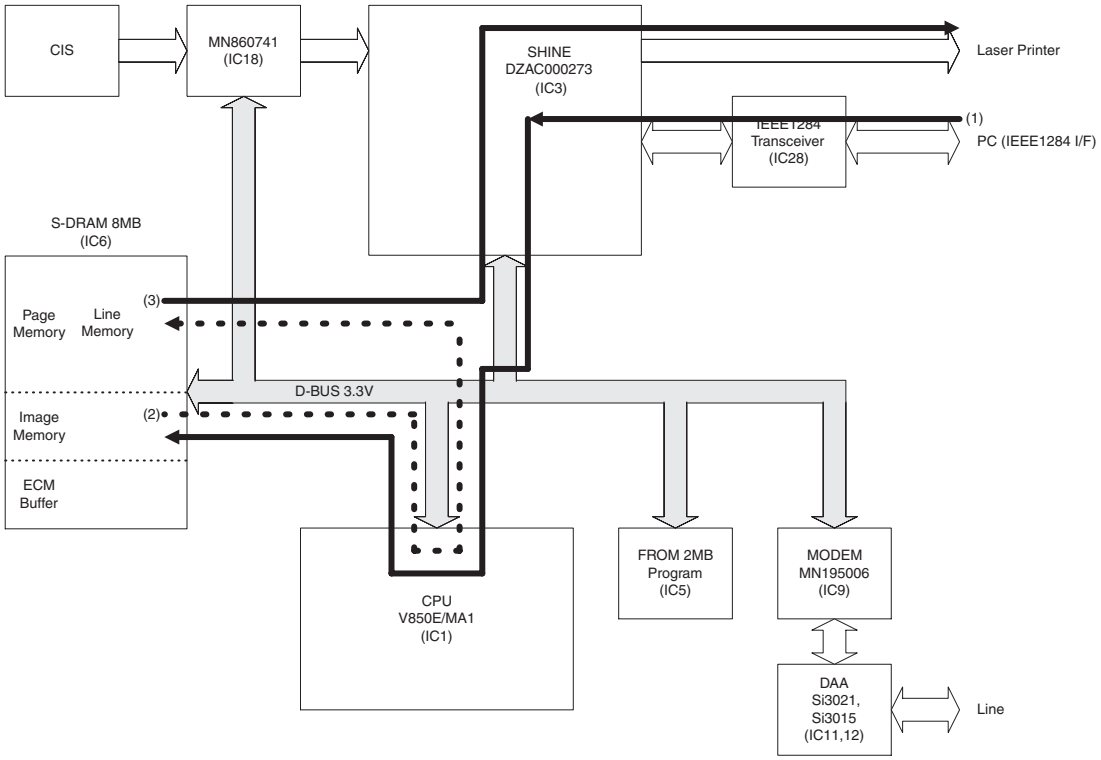
10. **Report with Image Data**



11. **PC Scanning Mode**



12. **Printer I/F**



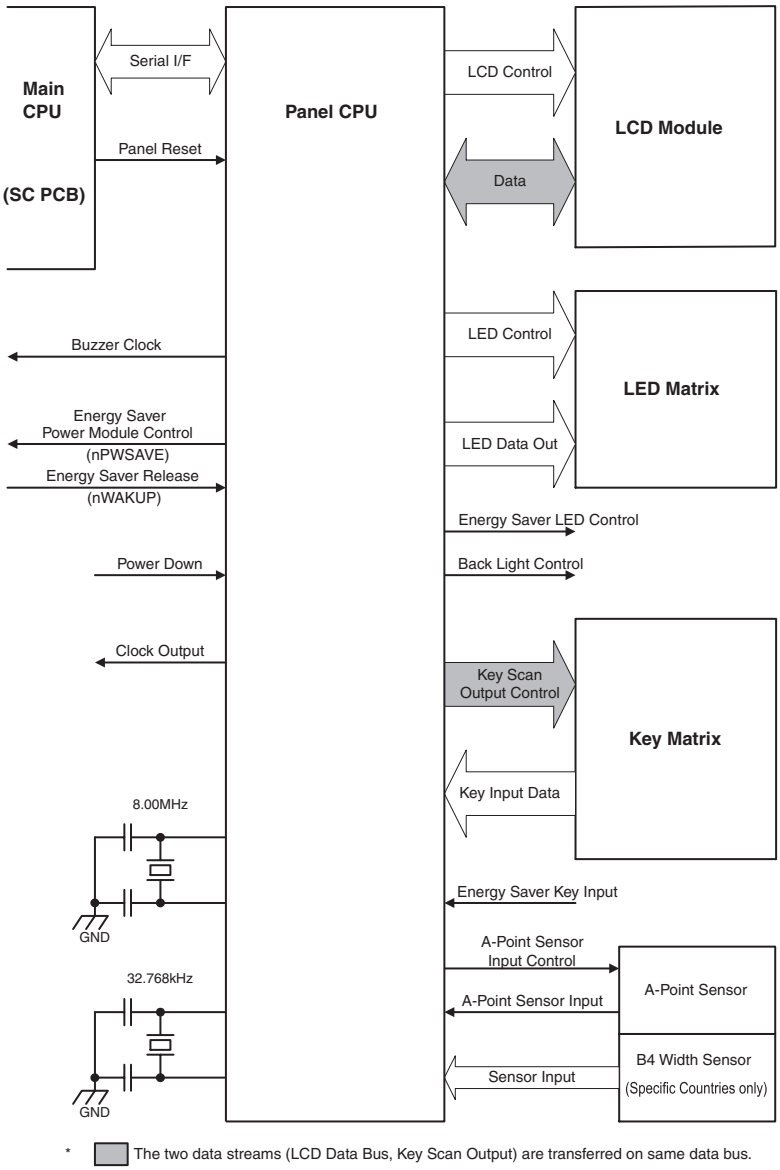
6.2.6. PNL PC Board

The PNL PC Board Assembly consists of the Panel CPU, LCD Module with BackLight, LED, A-Point Sensor, B4-Width Sensor (Specific Countries only) and Key Switches.

The Panel CPU is interfaced to the main CPU on the SC PC Board. The CPU controls LCD and LED by the command signals from the main CPU, which also detects the signals of Key Switches and Sensors.

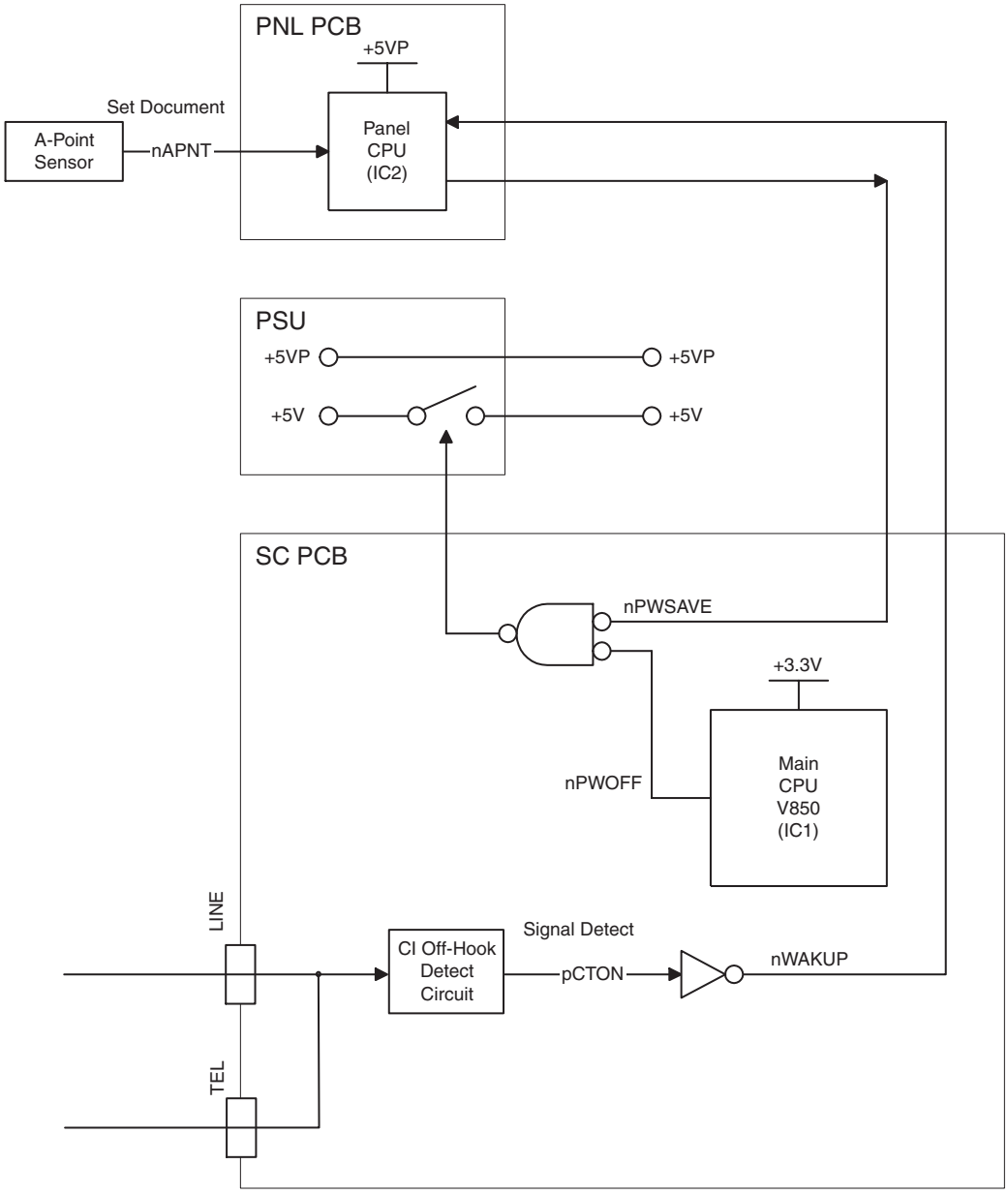
Energy Saver (Sleep Mode)

The Main Power Supply is controlled by the Energy Saver signal (nPWSAVE).
By the command signals from the Main CPU, the Panel CPU controls the Energy Saver Sleep Mode by changing the "nPWSAVE" signal level to "Low" (Enable) or "High" (Disable).
When the A-Point Sensor is triggered or the Energy Saver Key is pressed, the Panel CPU sends the command signal by itself (the Main CPU is sleeping in Sleep Mode), which in turn changes the "nPWSAVE" signal to "High" level disabling the Sleep Mode.



The machine will recover from **Sleep Mode** by the following conditions.

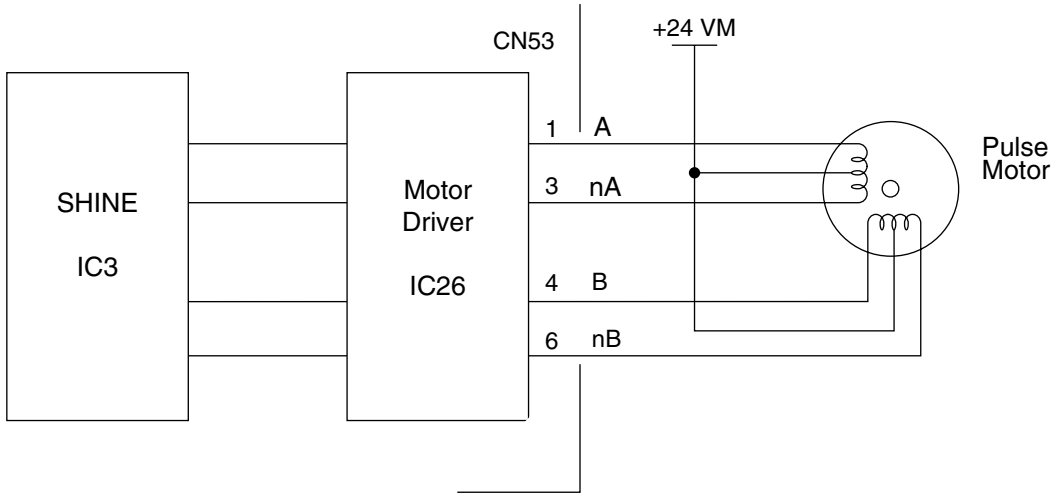
1. Press the Energy Saver Key
2. A-Point Sensor Actuated (Document is set on the ADF)
3. Ringing Signal Detected
4. Off-Hook Detected (Handset, External Telephone)



6.2.7 Laser Printer Drive Circuit

1.Motor Drive Circuit

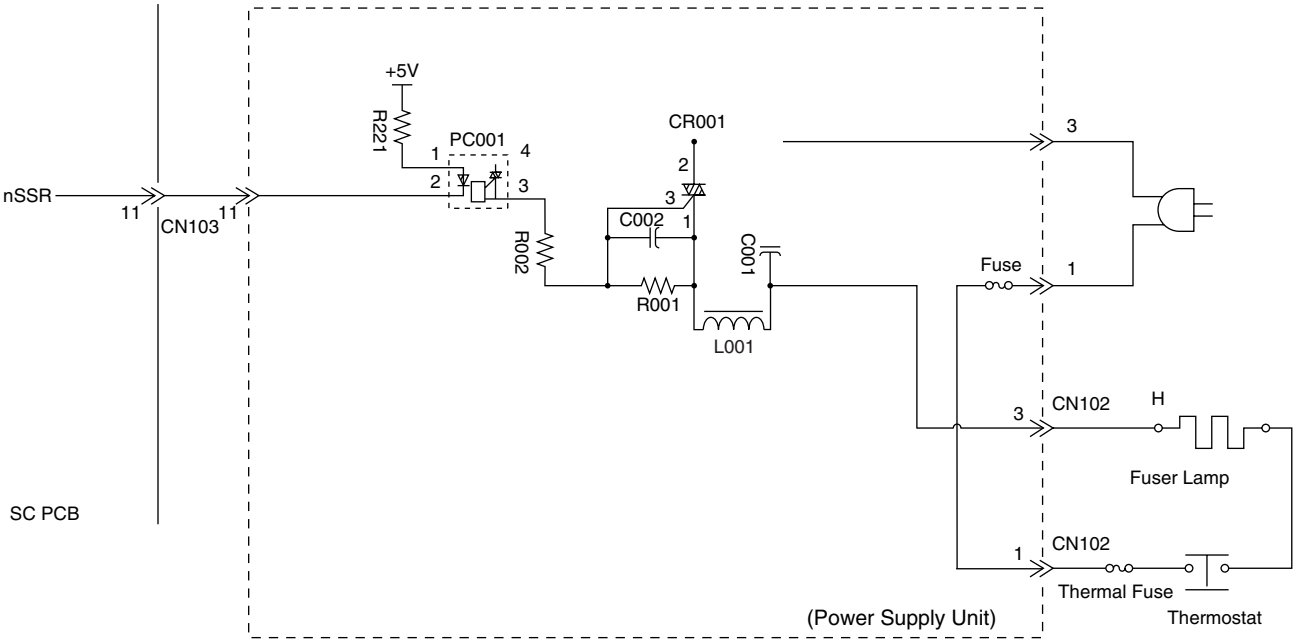
The Scanner/Printer Motor is a 4-phase uni-polar PM-type step motor. The step signals (A to nB) are transmitted to IC26 (the Chopper Drive Circuit) by SHINE(IC3). The chopper current is determined by the voltage at IC26, Pin3 and Pin13. The Motor has two speeds, Slow and Constant. The Motor is powered by a +24 VDC supply. When the interlocks are open, the +24 VDC supply is cut off and the Motor stops rotating.



Scanner / Printer Motor Drive Circuit Block Diagram

2. Fuser Lamp Drive Circuit

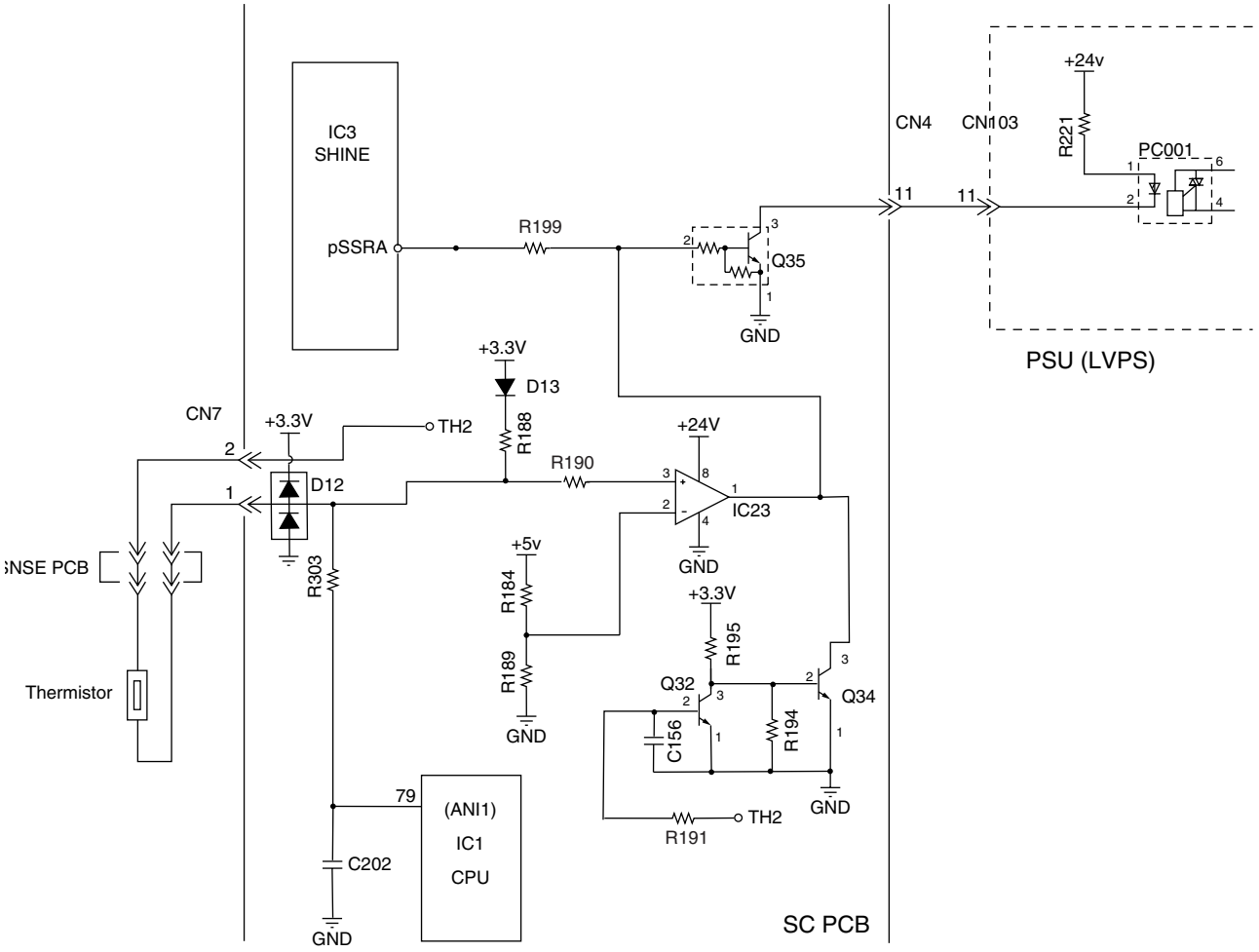
The Fuser Lamp is powered by 115 VAC. It is driven by the LVPS and controlled by the nSSR signal from the SC PC Board. When the CN103, Pin11 (nSSR) on the LVPS goes LOW, the Fuser Lamp turns ON. This lights up the PC001 LED and activates the CR001 photo-triac, and 115 VAC is sent to the Fuser Lamp. The time at which CR001 is actually activated depends on the 115 VAC sine wave. When the cross-voltage for Pin 6 and Pin 4 of PC001 is other than 0 Volts (sine wave exceeds 0 volts), PC001 inhibits the activation of the triac and turns ON the Fuser Lamp.



Fuser Lamp Drive Circuit Diagram

3. Fuser Temperature Control Circuit

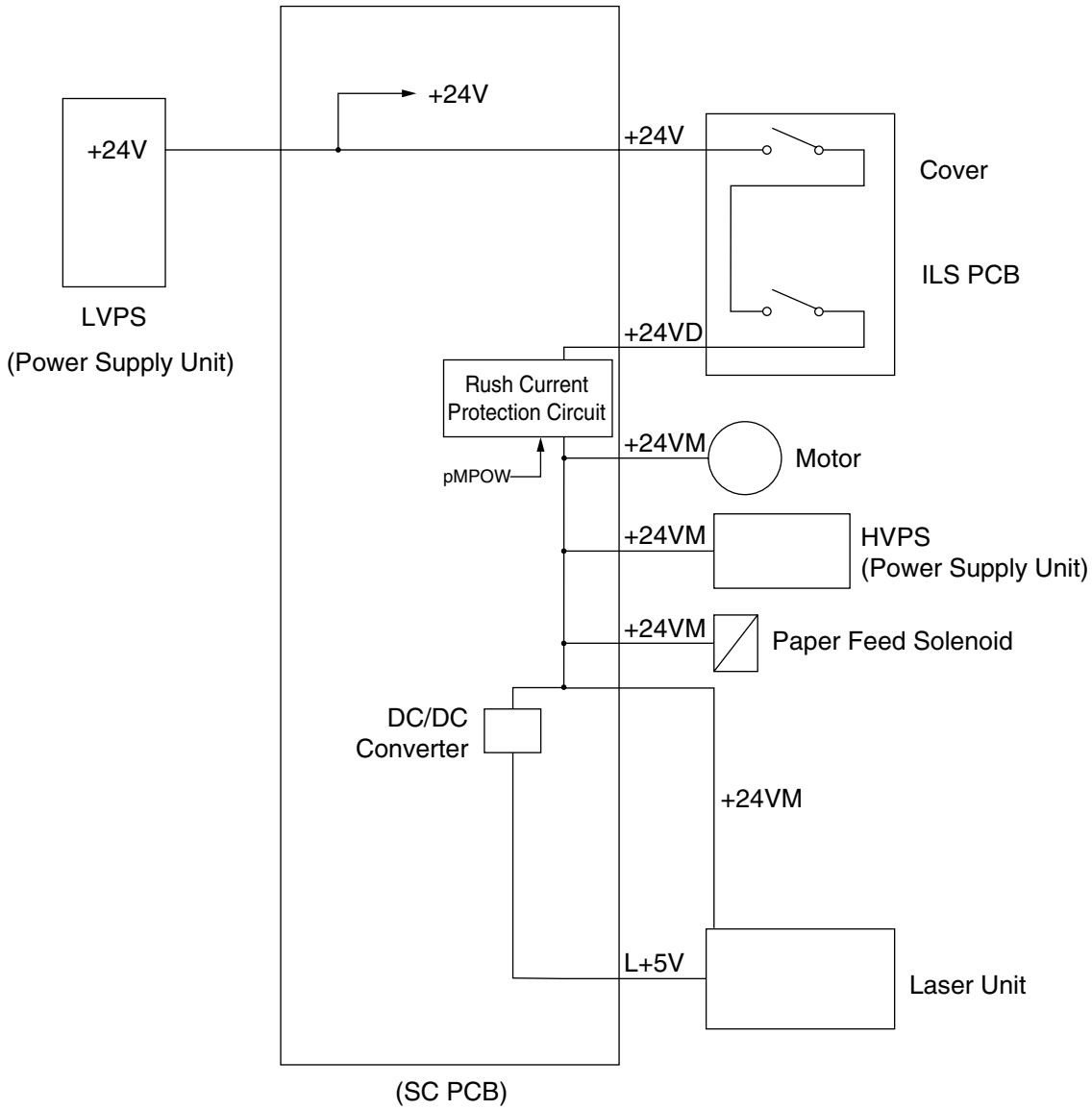
The fuser temperature is controlled by IC1 on the SC PC Board, which contains A/D (Analog/Digital) converters ANI0 to ANI7. The Fuser Temperature Control Circuit uses A/D converter, ANI1. When the PC001 drive current is transmitted from the SC PC Board to the LVPS(PSU), the Fuser Lamp turns ON. IC23 is a comparator with open output at pins 1 and 7 and is used as an abnormal temperature detection circuit. IC23, pin 1, has a high impedance when Q35 is activated, turning ON the Fuser Lamp.
An abnormal temperature is detected when the VTH voltage level becomes higher than V+, forcing IC23, pin 1 Low and deactivating Q35.
Abnormally low and high temperatures, as well as Thermistor release status, are detected by IC1 (CPU) programming.



Fuser Temperature Control Circuit Diagram

6.2.8 Interlock Safety Circuit

This safety circuit turns OFF the +24 VDC supply voltages when the Cover is opened. When the Cover is opened, the microswitch(es) on the ILS PC Board are de-actuated, turning OFF +24 VDC to the Printer Drive Circuit, the High Voltage Power Supply, and the Paper Feed Solenoid Circuits, turning OFF the +5 VDC supply voltage for the Laser Driver circuits on the Laser Unit.



Interlock Safety Circuit Block Diagram

6.2.9 Laser Unit (LSU) Control Circuit

The laser control signals are described below.

nLDEN

The LSU is activated when this output signal is LOW. If an error occurs, the nLDEN output signal level goes High and the LSU is deactivated.

nVIDEO

This is the actual Data Signal. The Laser is ON when the nVIDEO output signal level is LOW.

nHSYNC

This horizontal synchronization signal transmitted from the Beam Detection Sensor sets the horizontal position of the laser beam as it crosses the OPC Drum.

nSTART

This is the Scanner Motor Control Signal. The Scanner Motor rotates when the nSTART output signal level is LOW.

nREADY

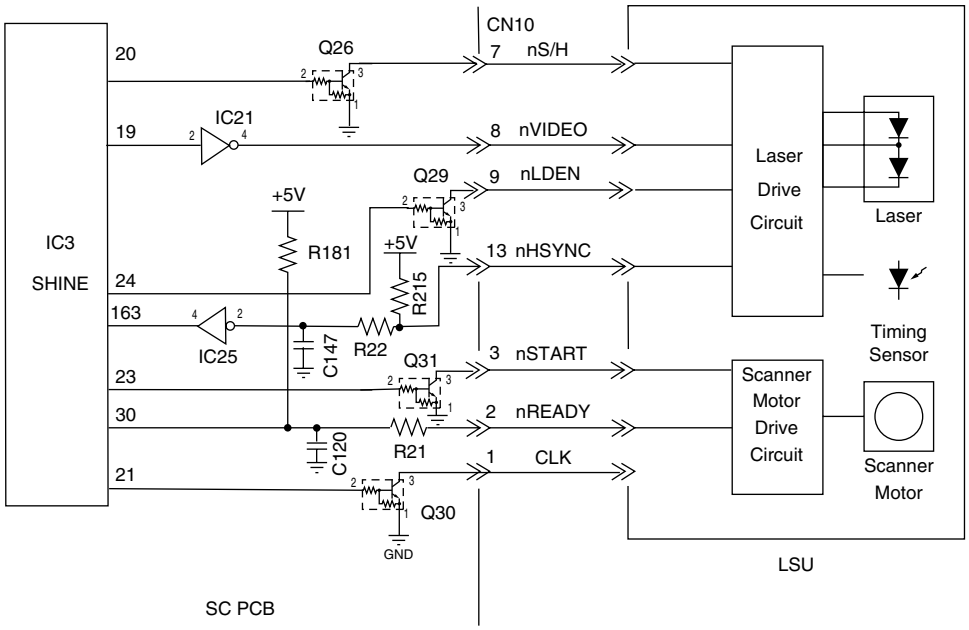
A Phased-Lock Loop (PLL) circuit keeps the Scanner Motor speed constant when the nREADY is at a Low output signal level.

CLK

This is the Scanner Motor Clock.

nS/H

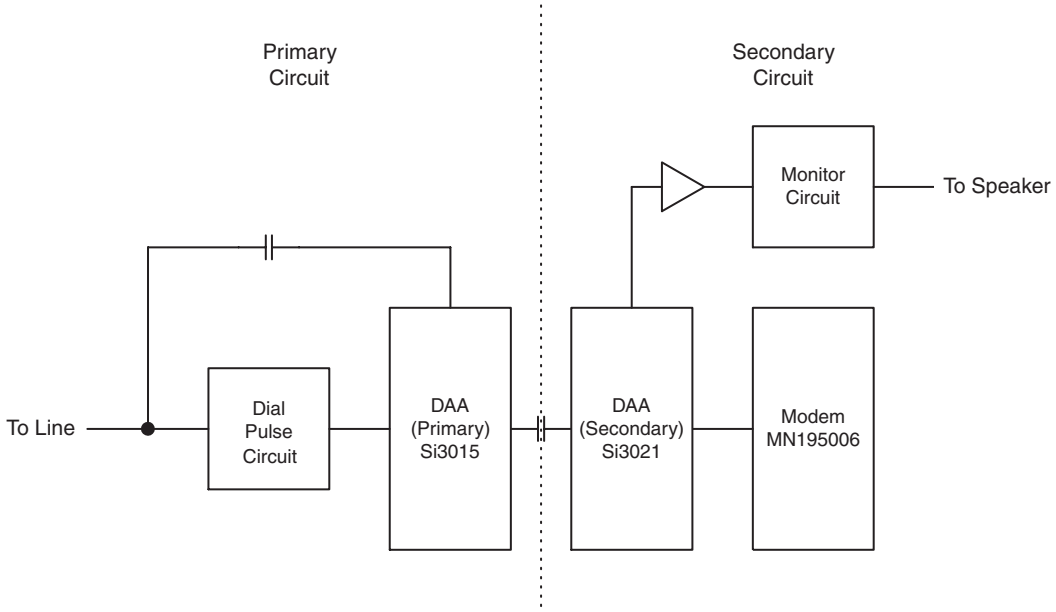
This is the Sample Hold Signal in order to adjust the Laser power. when the Laser switches on compulsorily, the Laser Power is adjusted suitable level and held until next duty cycle in order to keep the Laser Power stable .



Laser Unit Control Circuit Block Diagram

6.2.10 Modem and Peripheral Circuit

This circuit consists of Modem, DAA (Primary/Secondary) and peripheral circuit. This modem conforms to ITU-T V.34, V.33, V.17, V.29, V.27ter, V.21 channel 2 (FSK), T.4, and T.30. Modem transfers/receives data from Secondary DAA chip and serial communication. Secondary DAA chip communicates with the line through Primary DAA chip and its peripheral circuit.



Modem Circuit Block Diagram

6.2.11 Receive Signal Control Circuit

This circuit consists of operational DAA and its peripheral circuit.
Up to this time, from Primary circuit to Secondary circuit such as Hybrid circuit, Analog circuit, Analog Front End (AFE : A-D / D-A convertor) and Modem through Line transformer, and all the Received Signals to the AFE are processed with Analog signals.
However at this time, the Received Signal is converted from Analog to Digital with DAA of Primary circuit, and the Digital Signal is transferred to DAA (Si3022) of Secondary circuit as serial data. Therefore, unlike other machine, this machine has No Analog Circuit of Secondary circuit, because of the DAA (Si3022) of Secondary Circuit is able to transfer the Digital Signals directly to the Modem. Even at standby, this circuit is connected with the Line via capacitor cutting Direct Current, this means it can be detected any Signals for Ringer, CNG and DTMF remote commands.

6.2.12 Transmission Signal Control Circuit

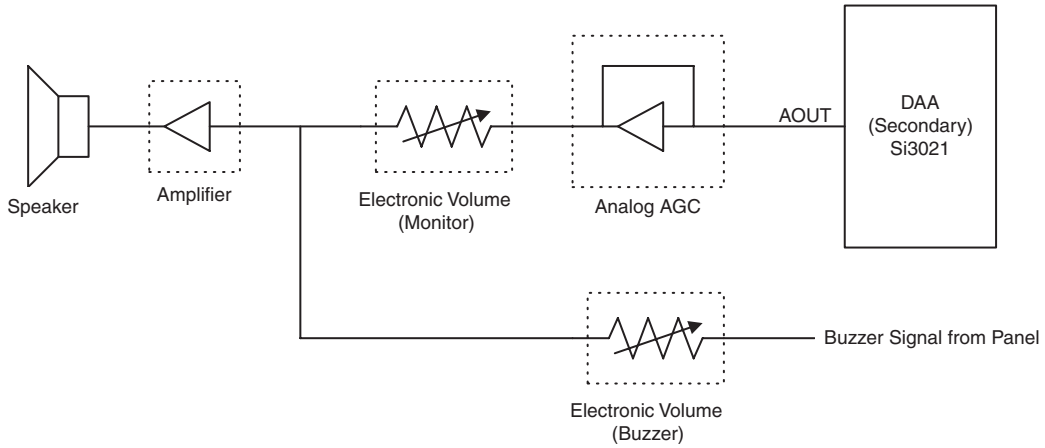
This circuit consists of operational DAA and its peripheral circuit.
As the same way as the Receiving Signal Control Circuit, Modem and DAA of Secondary Circuit are connected. The Transmit Signals are transferred as serial data to the DAA of Primary Circuit. Therefore, there is no Analog circuit, the signal level is adjusted with internal setting of Modem. It has no Hybrid circuit, because of the Modem for transmit and the Receiving Signals is connected with exclusive port. The Digital Signals transferred to Primary Circuit are converted from Digital to Analog and sends out to the LIne.

6.2.13 Line Monitor Circuit

The Line Monitor Circuit consists of an operational DAA (The secondary side chip) and its peripheral circuits.

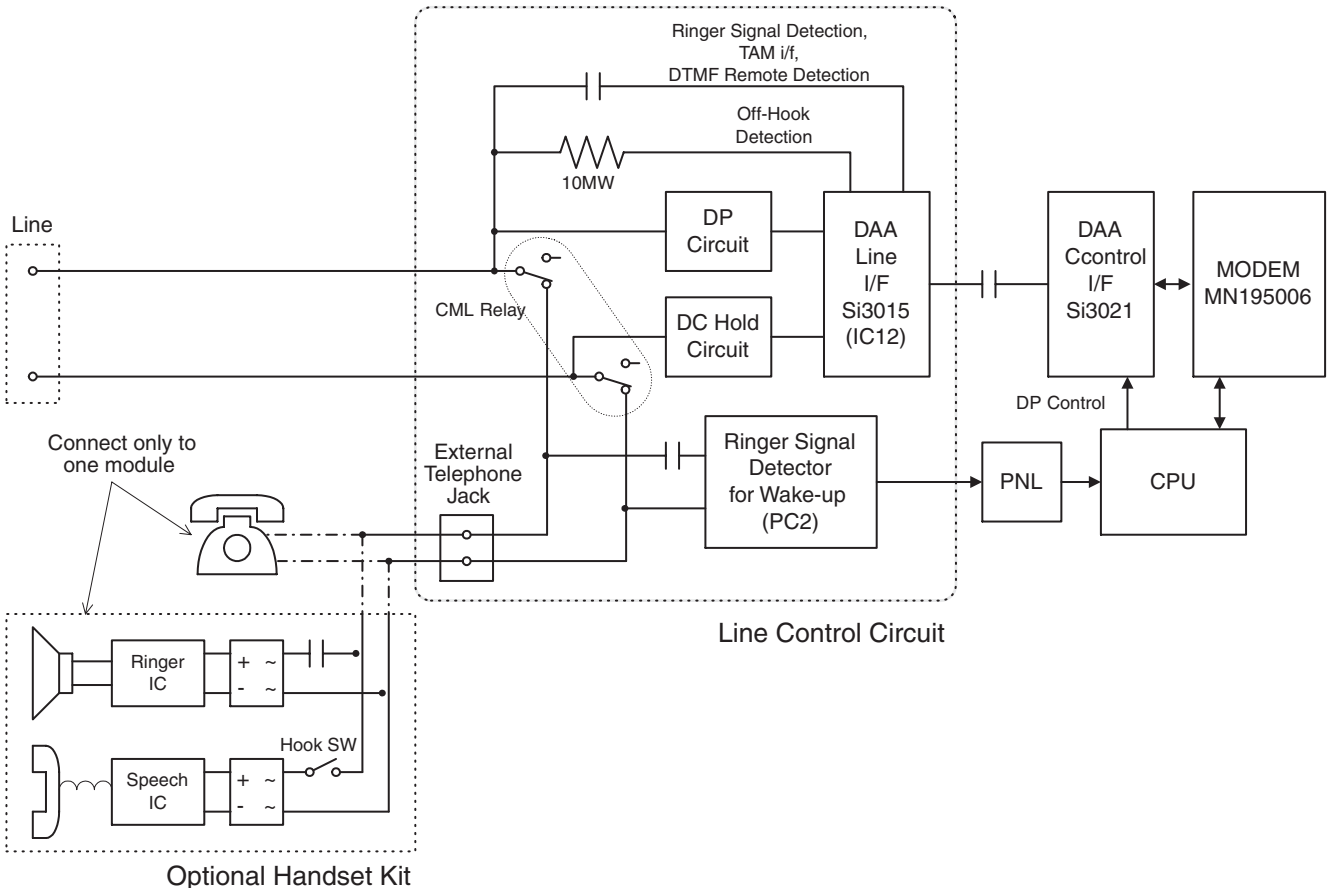
Its function is to monitor the dial tone, DTMF tone, response signals, etc. over the speaker. It also sounds the output of the key touch tones, alarm tones, etc. from the panel CPU over the speaker. The Received Signals are output from DAA of Secondary circuit, and through Analog AGC, Electronic Volume, Amplifier and over the speaker.

The monitor tone from the phone line and the buzzer tone from the panel can be adjusted from the Control Panel.



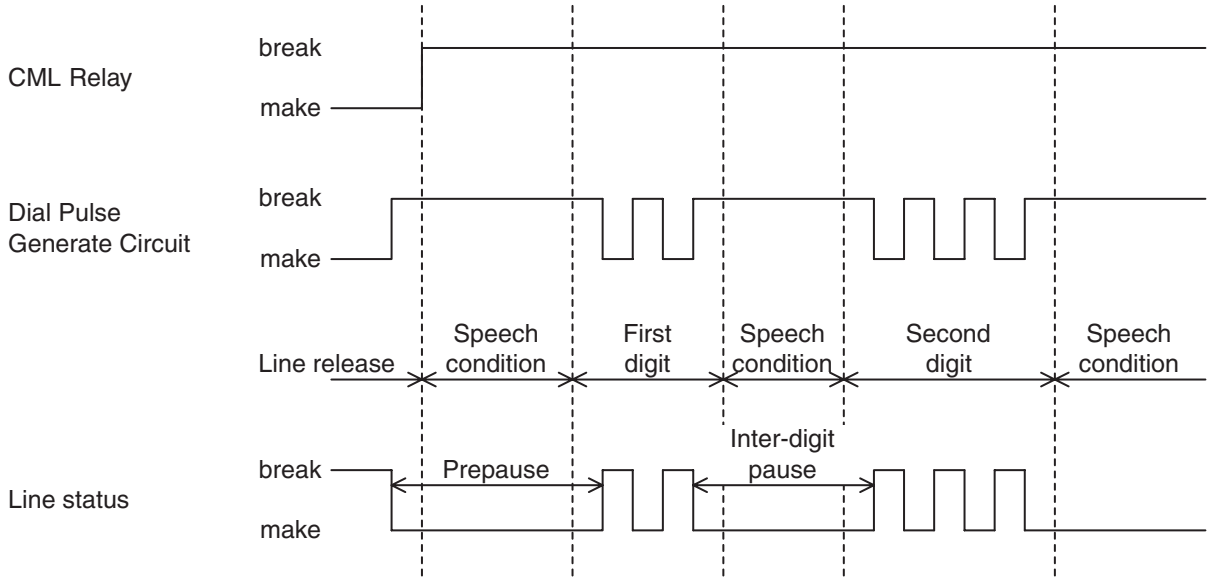
6.2.14 Line Control Circuit

The Line Control Circuit consists of CML relay, DP circuit, DAA (Direct Access Arrangement), Ring Detect Circuit for power-save and DC hold circuit. A Jack for an external telephone, which can be used for either an external telephone or an optional Handset Kit. The block diagram of the Line Control Circuit is shown below.



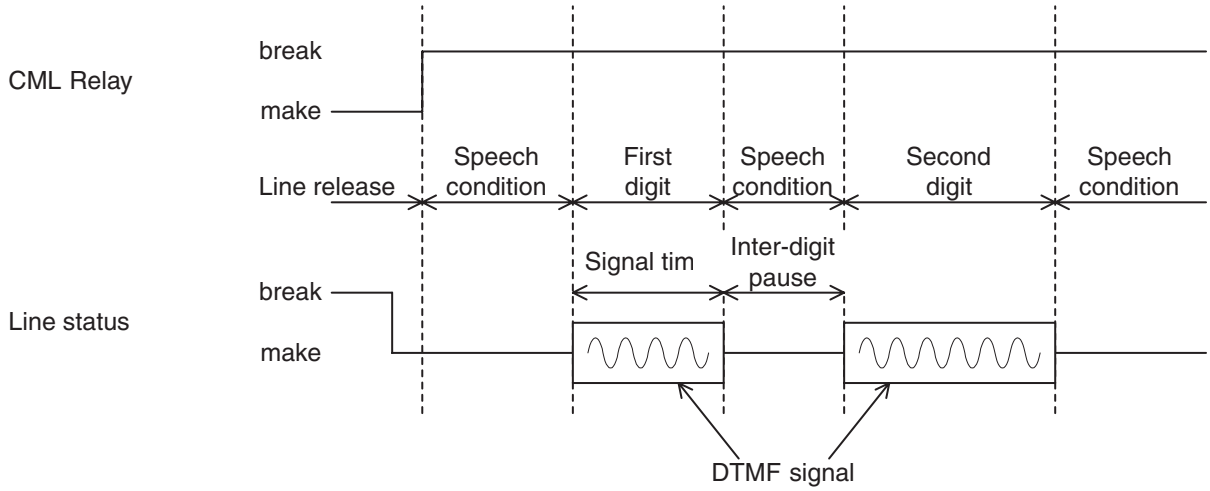
Dial Pulse Generator

The Dial Pulse Generator consists of a CML relay, a DC hold circuit, a dial pulse generate circuit and their peripheral circuits. The generator generates dial pulses. The CPU on the SC Board controls all dial pulse generation sequences. When the absence of the terminating message is confirmed by the Off-Hook detector in DAA(IC12), the CPU turns the CML relay ON and the dial pulse generate circuit ON through DAA to develop loop status (DC loop). After a few seconds, the CPU turns the PLS relay ON and OFF to generate dial pulses, making and breaking the loop. The line status during dialing is shown below.



DTMF Tone Generator

The DTMF Tone Generator is incorporated in the MODEM on the SC Board. The DTMF tone is conveyed to the telephone line using the same route as the facsimile signal. The DTMF tone selection is controlled by the CPU. Digital amplitude signal is conveyed as analog amplitude signal through D/A converter in the DAA (IC12). The line status during dialing is shown below.



Ring Detector

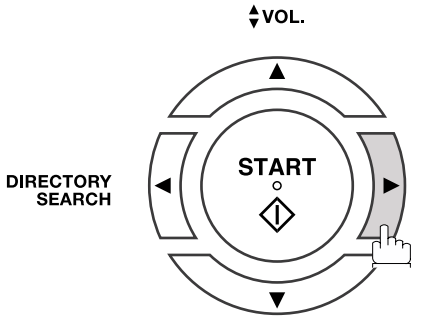
When the unit is in the Sleep Mode status, a Ringing signal is detected by a photo-coupler (PC2) in Ring Detector to cancel the power-save for waking up. Then DAA (IC12) detects the ringing signal for receive mode.

When the unit is normal operating status, DAA (IC12) detects the ringing signal immediately.

7 Installation

7.1. Function Key

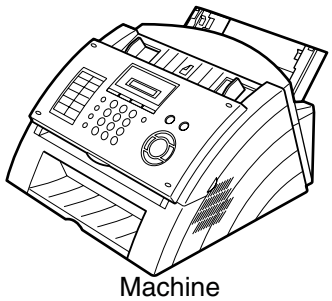
Any function can be started by first pressing [FUNCTION] and then enter the function number, or by pressing [▼] or [▲] scroll keys repeatedly until the desired function appears on the display.

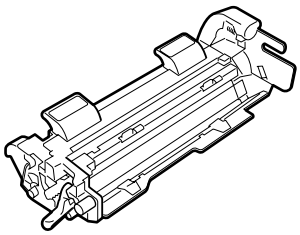


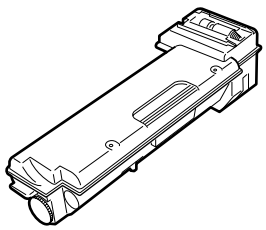
- 1 **Deferred Communication**
  - 1 = Deferred XMT
- 3 **Polling**
  - 1 = Polling
- 6 **Print List**
  - 1 = Journal (Print/View)
  - 2 = Speed Dial List
  - 3 = Program List
  - 4 = Fax Parameter List
  - 5 = Not Used
  - 6 = Individual XMT Journal
  - 7 = Directory Sheet
- 7 **Set Mode**
  - 1 = User Parameters
    - • Date & Time
    - • Company / Name
    - • Character ID
    - • ID Number (Fax Telephone Number)
  - 2 = Speed Dial Numbers
  - 3 = Program Keys
  - 4 = Fax Parameters
  - 5 - 7 = Not Used
  - 8 = Maintenance
    - • Cleaning Printer Roller
    - • Drum Unit
    - • Supply Forms
- 8 **Select Mode**
  - 1 = Communication Journal = OFF/ON/INC
  - 2 - 8 = Not Used
  - 9 = Memory XMT = OFF/ON

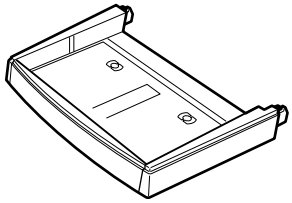
7.2. Main Unit and Accessories

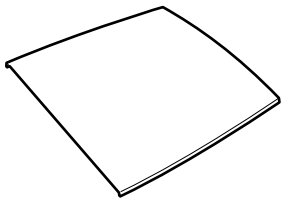
Unpack the carton and check that you have all the accessories illustrated.


Machine

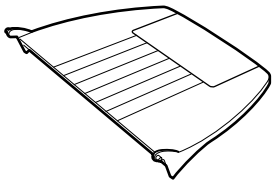

Drum Unit

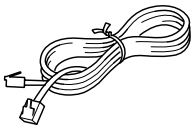

Starter Toner Cartridge

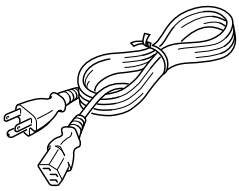

Paper Tray

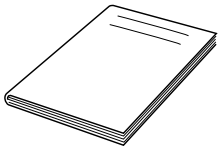

Paper Tray Cover


Document Sub Tray

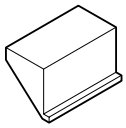

Document Return Tray


Telephone Line Cable


Power Cord


Operator's Manual


CD-ROM

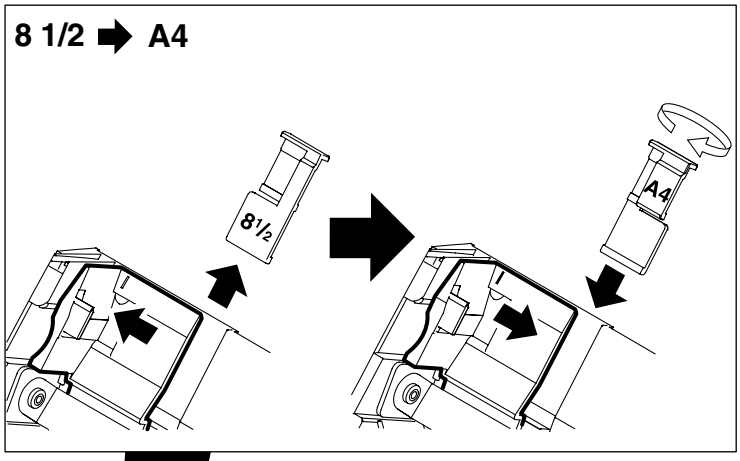

Handset Cradle Stopper

NOTE

1 Handset Cradle Stopper will be used when installing the option handset.

7.3. Installing the Accessories

Final Installed View



Paper Tray
Hook the projections into the holes on the machine and push the Tray down until it locks in place.

Paper Tray Cover

Document Sub Tray
Hook the projections into the holes on the machine.

Handset Cradle Stopper

Handset
[Available as an Option]

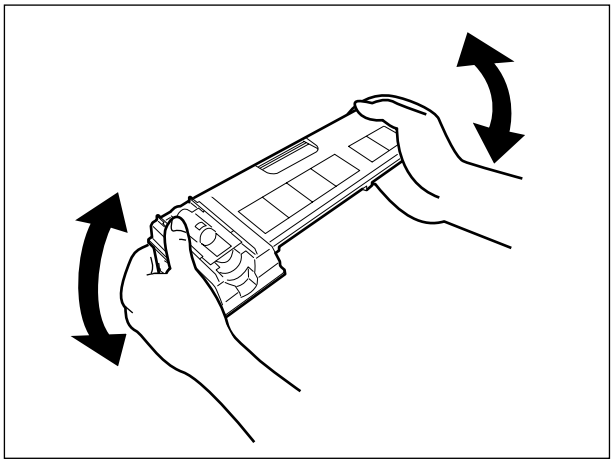
Handset Cord
[Available as an Option]

Handset Cradle *[Available as an Option]*
Hook the projections into the square holes on the machine.
Connect the cable into the TEL/HANDSET jack on the machine.

Document Return Tray
Hook the projections into the holes on the machine.

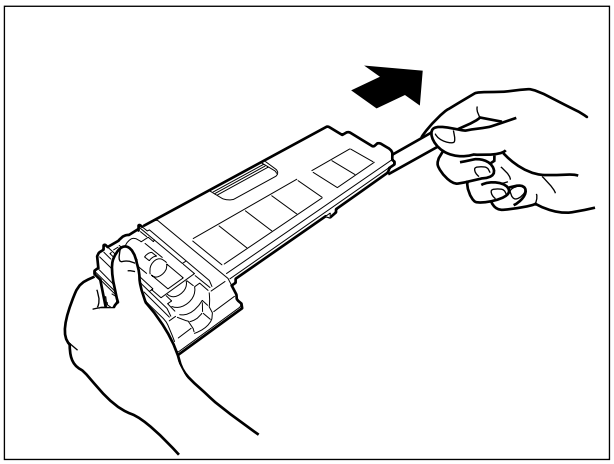
7.4. Installing the Toner Cartridge

1



Unpack the Toner Cartridge and rock it back and forth as shown for 5 or 6 times to even the toner inside.

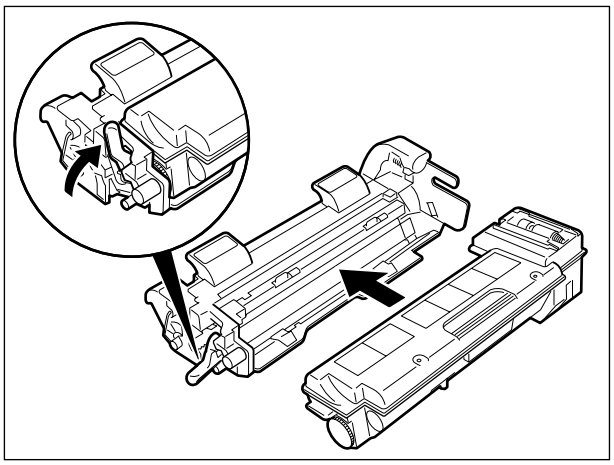
2



Remove the protective seal.

Note: Pull on the seal slowly and straight out.

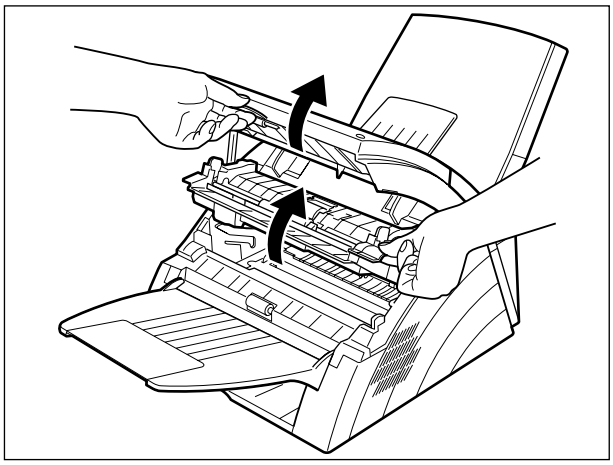
3



Slide the Toner Cartridge all the way into the Drum Unit and rotate the green lever upwards to lock the Toner Cartridge in place.

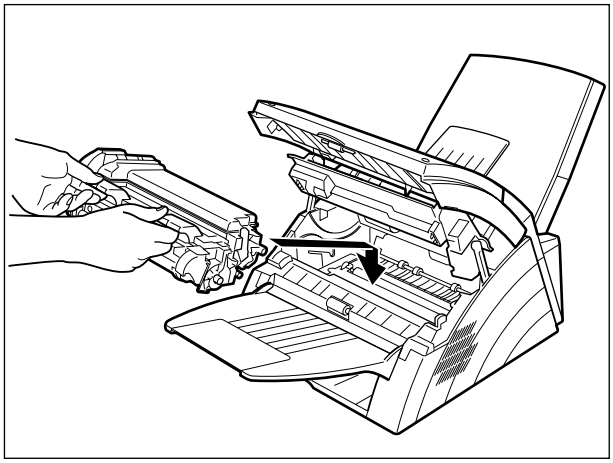
Continued on the next page...

4



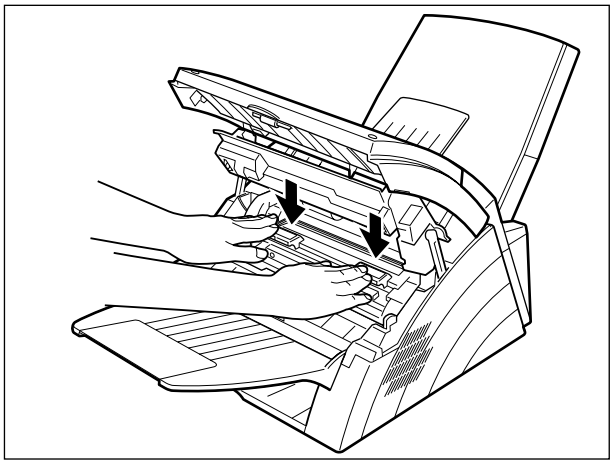
Open the ADF Door and Printer Cover.

5



Align the projections on both sides of the Drum Unit/Toner Cartridge Assembly with the grooves in the machine as shown and insert the Drum Unit/Toner Cartridge Assembly into the machine.

6



(1) Push the Drum Unit/Toner Cartridge Assembly down into the machine, snapping it in place.
(2) Close the ADF Door and Printer Cover

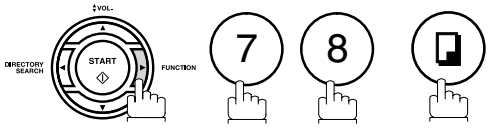
NOTE

1. *If you are replacing the Drum Unit or Toner Cartridge, it is recommended to clean the Printer Roller to maintain good printing quality. To clean the Printer Roller, follow the procedure on the next page.*
2. *When replacing the Drum Unit, press* [FUNCTION] ⑦ ⑧ [SET] ② [SET] ① ① *to reset the notification message.*
3. *Never attempt to incinerate Drum Unit or Toner Cartridge. These could cause an explosion. Do not dispose of used Drum Unit or Toner Cartridge. Your service technician will collect them.*

Cleaning the Printer Roller

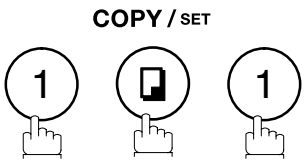
If you find toner on the back of the recording paper, the printer roller in the Fuser unit is probably dirty.

1




```
MAINTENANCE(1-3)
```

2




```
* PRINTING *
```

The machine will print out 3 Cleaning Charts.
Then, return to standby.

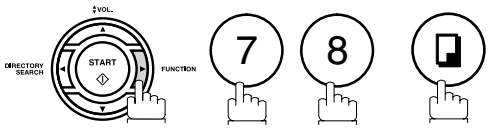
```
                <PRINTER ROLLER CLEANING CHART>

        HOW TO LOAD THE CLEANING CHARTS
        1.REMOVE THE PAPER TRAY COVER
        2.SET THESE 3 CLEANING CHARTS IN THE PAPER TRAY FACE DOWN
        3.RE-INSTALL THE PAPER TRAY COVER
        4.PRESS [FUNCTION][7][8][SET][1][SET][2]
          TO START CLEANING
        5.DISPOSE OF THE CLEANING CHARTS

        *** SET THIS END TOWARDS THE BOTTOM OF PAPER TRAY, FACE DOWN ***
```

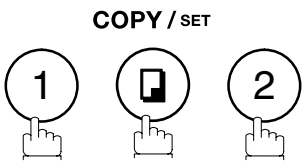
3 Load the Cleaning Charts into the Paper Tray face down.

4




```
MAINTENANCE(1-3)
```

5



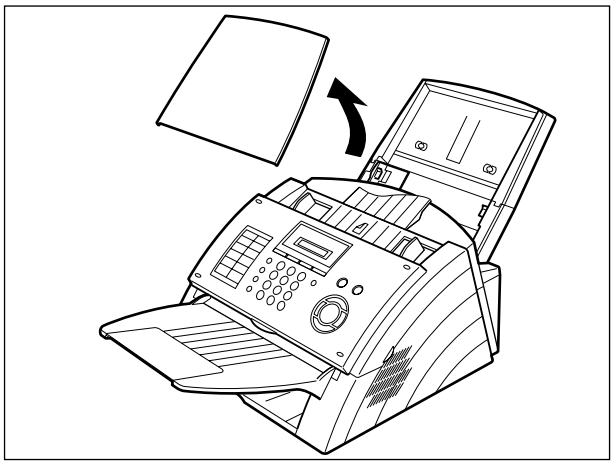

```
* CLEANING *
```

The Machine will feed out the charts and clean the printer roller.

7.5. Loading the Recording Paper

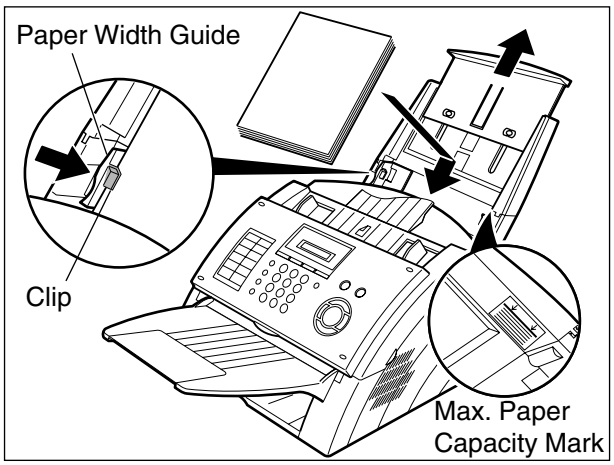
How to Load the Recording Paper

1



Remove the Paper Tray Cover.

2

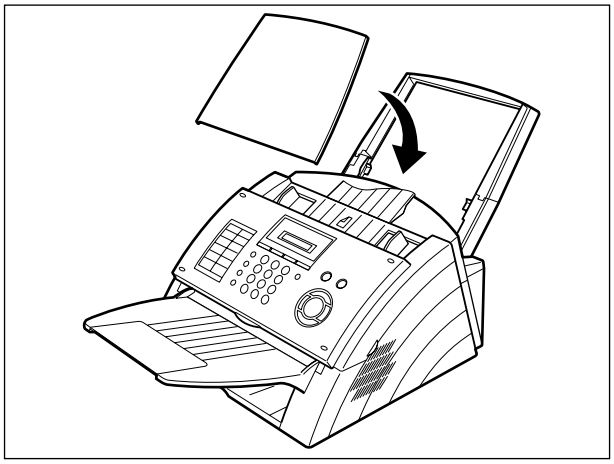


(1) Load the paper into the Paper Tray while pushing the Blue Paper Width Guide to the left.

(2) Verify that the papers are fitted squarely and firmly between the Paper Width Guide and the right side of tray. If it does not, the paper may feed into the printer incorrectly resulting in a paper jam.

Caution: Make sure that the paper is set under the Clips and that it does not exceed the Maximum Paper Capacity Mark. You can load about 150 sheets (0.59 inches) (20 lb weight).

3



Re-install the Paper Tray Cover.

The Recording Paper Size setting of the Fax Parameter No. 23 must match the paper loaded in the cassette. If you change the Recording Paper Size, please change the setting accordingly.

Paper Specifications

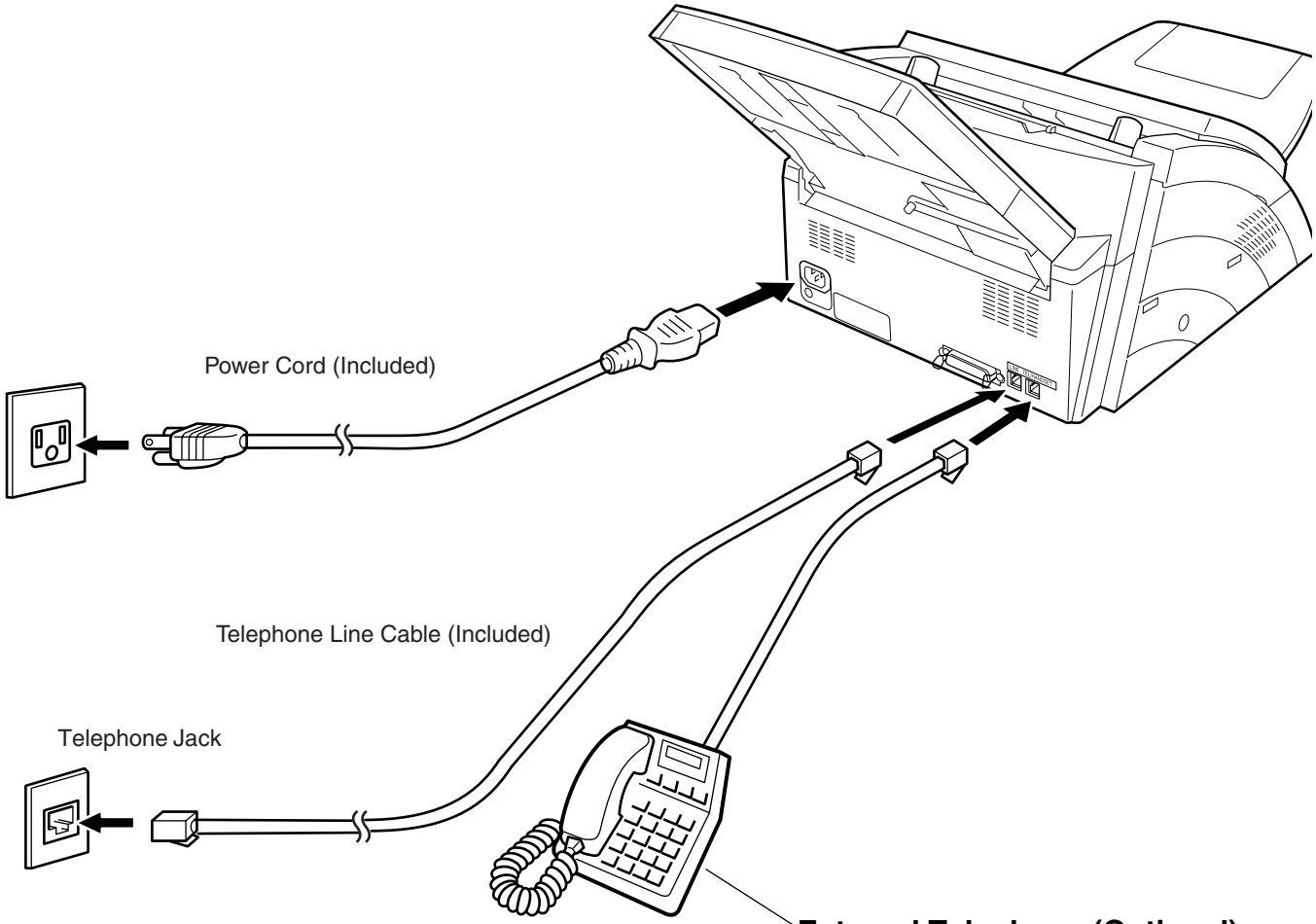
In general, most bond papers will produce excellent results. Most photocopy papers will also work very well. There are many "name" and "generic" brands of paper available. We recommend that you test various papers until you obtain the results you are looking for.

7.6. Connecting the Telephone Line Cable and Power Cord

Power Cord

Plug one end of the power cord into an ordinary 3 prong AC outlet and the other end into the receptacle on the rear of the machine.

Warning: This apparatus must be properly grounded through an ordinary 3 prong AC outlet.
Do not break off the earth (ground) prong to fit a 2 prong outlet.



External Telephone (Optional)
You can connect an additional standard single line telephone to the machine.

Telephone Line Cable

Plug one end of the telephone line cable into the "RJ-11C" telephone jack supplied by the telephone company and the other end into the LINE jack on the rear side of the machine.

NOTE

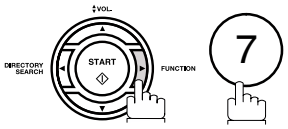
Your machine uses little power and you should keep it ON at all times. If the power is turne OFF for too long (Up to 30 minutes), the clock contents may be lost.

7.7. Customizing Your Machine

General Description

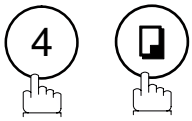
Your facsimile machine has a variety of adjustable Fax Parameters. These parameters, listed in the Parameter Table, are preset for you and do not need to be changed. If you do want to make a change, read the table carefully. Some parameters, such as the Resolution and Contrast parameters, can be temporarily changed by simple key operation just before a transmission is made. When the transmission ends, however, these parameters return to their preset values (Home position). Other parameters can only be changed by the procedure described below.

Setting the Fax Parameters

1 


```
SET MODE    (1-8)
```

2 **COPY / SET**

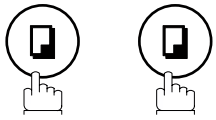



```
NO.=▮      (01-99)
```

3 Enter Fax Parameter number from the Parameter Table.
Ex: (0) (1) for **CONTRAST**

```
NO.=01     (01-99)
```

4 **COPY / SET** **COPY / SET**



```
          NORMAL<>
```

5 Enter the new setting value or press ◀ ▶.
Ex: (2) for **LIGHTER**

```
         LIGHTER<>
```

6 **COPY / SET**

```
RESOLUTION?
```

To set another parameter, press CLEAR to return to Step 3 or press STOP to return to standby.

NOTE *To scroll the Fax Parameters in Step 2, press ▼ or ▲.*

Fax Parameter Table

No.	Parameter	Setting Number	Setting	Comments
01	CONTRAST	*1	Normal	Setting the home position for the CONTRAST.
		2	Lighter	
		3	Darker	
02	RESOLUTION	*1	Standard	Setting the home position for the RESOLUTION.
		2	Fine	
		3	S-Fine	
		4	Halftone	
05	MEMORY	1	Off	Setting the home position for memory transmission/copy mode. (This setting can be temporarily changed by pressing FUNCTION, 8, 9.)
		*2	On	
06	DIALING METHOD	1	Pulse	Selecting the dialing method.
		*2	Tone	
07	HEADER PRINT	*1	Inside	Selecting the printing position of the header. **Inside** : Inside TX copy area. **Outside** : Outside TX copy area. **No print** : Header is not printed.
		2	Outside	
		3	No print	
08	HEADER FORMAT	*1	Logo, ID No.	Selecting the header format.
		2	From To	
09	RCV'D TIME PRINT	*1	Invalid	Selecting whether the machine prints the received date & time, remote ID, percentage of reduction and page number on the bottom of each received document.
		2	Valid	
10	KEY/BUZZER VOLUME	1	Off	Selecting the volume of the Key/Buzzer tone.
		*2	Soft	
		3	Loud	
12	COMM. JOURNAL	1	Off	Selecting the home position of printout mode for COMM. Journal Off/Always/Inc. only. **Off** : Does not print **Always** : Always prints **Inc. only** : Prints only when communication has failed.
		2	Always	
		*3	Inc. only	
13	AUTO JOURNAL PRINT	1	Invalid	Selecting whether the machine prints the journal automatically after every 32 transactions.
		*2	Valid	
15	IN MODE	*1	Tel	Selecting IN (attended) mode as either Telephone Mode or Fax/Tel Auto Switching Mode.
		2	Fax/Tel SW	
16	OUT MODE	*1	Fax	Selecting OUT (unattended) mode as either Fax Mode or TAM Interface Mode.
		2	TAM / Fax	
18	OPERATOR CALL TIMER	*1	20 sec.	Selecting the length of time that your machine signals (rings) for an incoming voice call in Fax/Tel Auto Switching Mode.
		2	30 sec.	
		3	40 sec.	
		4	50 sec.	
19	OGM LENGTH (TAM I/F)	1	1 sec.	Setting for the OGM length of your TAM from 1 to 60 seconds. The machine will not start to detect SILENCE until the time setting has lapsed. (Default = 20 sec.)
		---	---	
		60	60 sec.	
20	SILENT DETECTION (TAM I/F)	1	Invalid	Selecting the Silent Detection Mode.
		*2	Valid	

Continued on the next page...

Fax Parameter Table

No.	Parameter	Setting Number	Setting	Comments
22	SUBSTITUTE RCV	1	Invalid	Selecting whether the machine receives to memory when the recording paper runs out, toner runs out or the recording paper is jammed.
		*2	Valid	
23	RECORDING PAPER SIZE	1	A4	Setting the recording paper size installed in your machine.
		*2	Letter	
		3	Legal	
24	PRINT REDUCTION	1	Fixed	Selecting print reduction mode. **Fixed** :Reduce received document according to setting of Parameter No. 25. **Auto** : Reduce received document according to the length of received documents.
		*2	Auto	
25	REDUCTION RATIO	70	70%	Selecting the fixed print reduction ratio from 70% to 100%. This parameter functions only when the fixed print reduction is selected on Fax Parameter No. 24.
		----	----	
		100	100%	
26	POLLING PASSWORD		(----)	Setting a 4-digit password for secured polling. Polling password can only be operated between e-STUDIO50Fs.
32	COPY REDUCTION	1	Manual	Selecting whether the machine performs the copy reduction ratio automatically or manually. **Manual** : The machine will prompt you for the Zoom ratio (100% to 70%) when making copies. **Auto** : The machine will automatically determine the reduction ratio according to the length of the original document.
		*2	Auto	
34	ENERGY SAVER MODE	1	Off	To reduce the power consumption in standby, select either Energy-Saver or Sleep mode and specify the Delay Time (1 to 120 minutes) for the machine to enter into the selected mode. The Delay Timer setting is only available in the Energy-Saver or Sleep Modes. **Off** : The unit will remain in standby mode and consume more energy than when in Energy-Saver or Sleep modes. **Energy-Saver Mode**: Saves energy by consuming less power than when in standby mode by turning off the fuser unit after the specified time. **Sleep Mode** : This is the lowest power state that the machine enters after the specified time without actually turning off.
		2	Energy-Saver	
		*3	Sleep	
35	DAYLIGHT TIME	1	Invalid	Selecting whether the clock adjusts for Daylight Saving Time automatically. The built-in clock will advance 1 hour at 2:00 am on the first Sunday in April and fallback 1 hour at 2:00 am on the last Sunday in October.
		*2	Valid	
36	RING PATTERN DETECT (DRD) (See Note 2)	*1	Invalid	All ring patterns.
		2	Valid	Select a ring pattern for automatic answering. **1**: A Standard ring pattern. **2**: B Double ring pattern. **3**: C Triple ring pattern (Short-Short-Long). **4**: D All other triple ring patterns, except the type C described above.

Fax Parameter Table

No.	Parameter	Setting Number	Setting	Comments
38	ACCESS CODE		(----)	Enter a 4-digit Access Code to secure the machine from unauthorized use.
39	PIN CODE ACCESS	*1	None	Selecting the access method (Prefix or Suffix) to dial a number with PIN Code.
		2	Suffix	
		3	Prefix	
47	REMOTE RECEPTION	1	Invalid	Selecting whether or not the machine accepts the remote reception command.
		*2	Valid	
51	REMOTE DIAGNOSTIC	1	Invalid	Selecting whether or not the machine accepts to update the firmware or Remote Diagnostics from the remote station.
		*2	Valid	
53	SUB-ADDRESS PASSWORD		(----)	Setting a 20-digit password for secured sub-address communication.
54	FAX FORWARD	*1	Invalid	Selecting whether the machine performs Fax Forwarding to the specified destination.
		2	Valid	
58	LANGUAGE	*1	A-English	Selecting the language to be shown on the display and reports.
		2	C-French	
		3	Spanish	
63	PC-FAX RCV MODE	*1	Print	Selecting how the machine will execute the received Fax document(s). If the setting is set to either "Upload" or "Upload & Print" the machine cannot enter the Sleep Mode. **Print** : Print the received document(s). **Upload & Print** : Print the received document(s) and upload it's file. **Upload** : Upload the received document file.
		2	Upload & Print	
		3	Upload	
65	PRINT COLLATION	1	Invalid	Selecting whether the machine prints out documents in sequence.
		*2	Valid	
80	SELF MAINTENANCE TIME	00:00 - 23:00 (*12:00)		Setting the hour to activate the Scanning Roller Maintenance. The Scanning Roller will be rotated for a few seconds at the set hour. This is to keep smooth contact between the Scanning Roller and the Scanning Glass.
99	MEMORY SIZE	-	-	Displays the memory size.

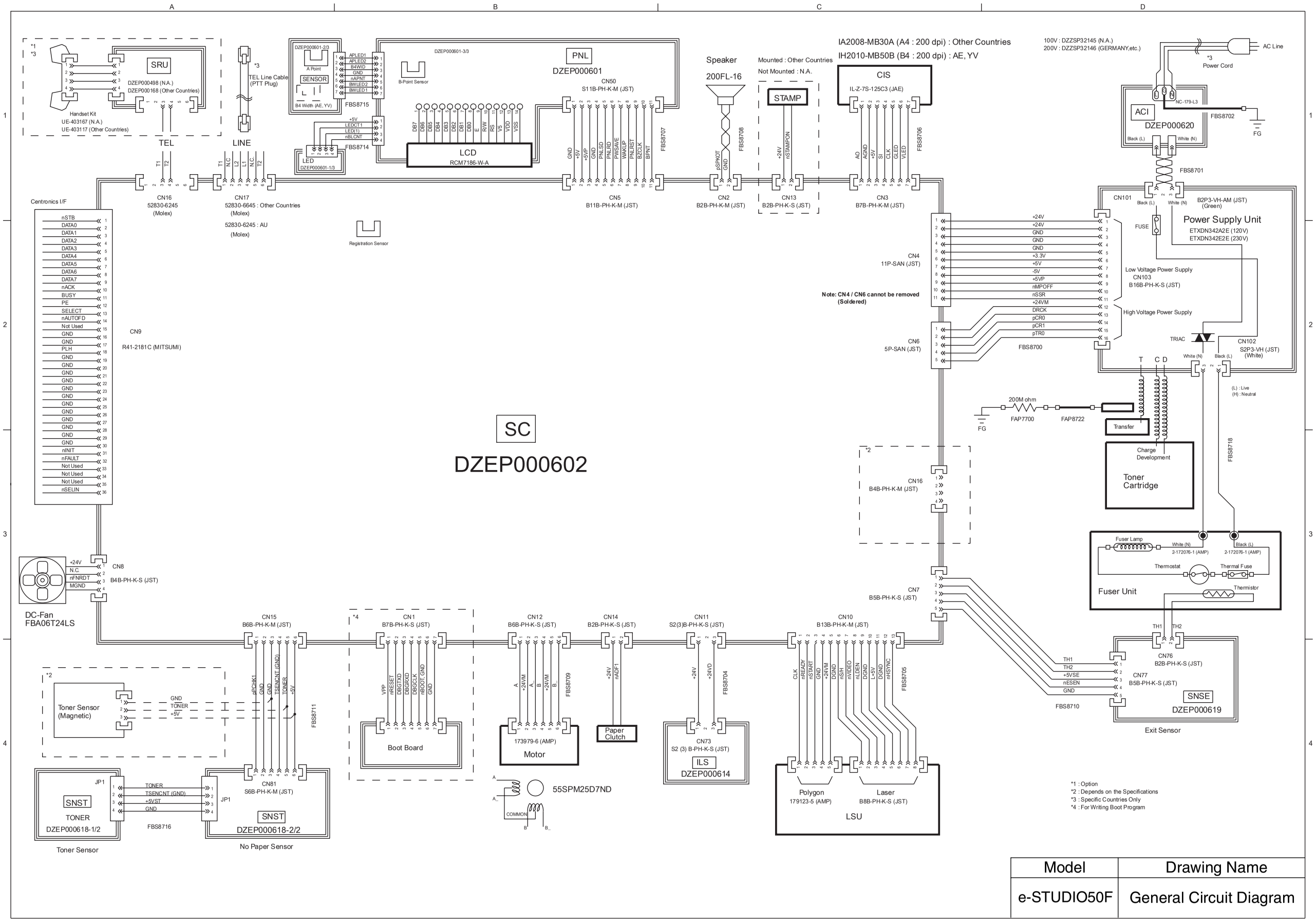
NOTE

1 The availability, contents or the factory standard setting of the Fax Parameters depends on the individual country's regulation or specification.

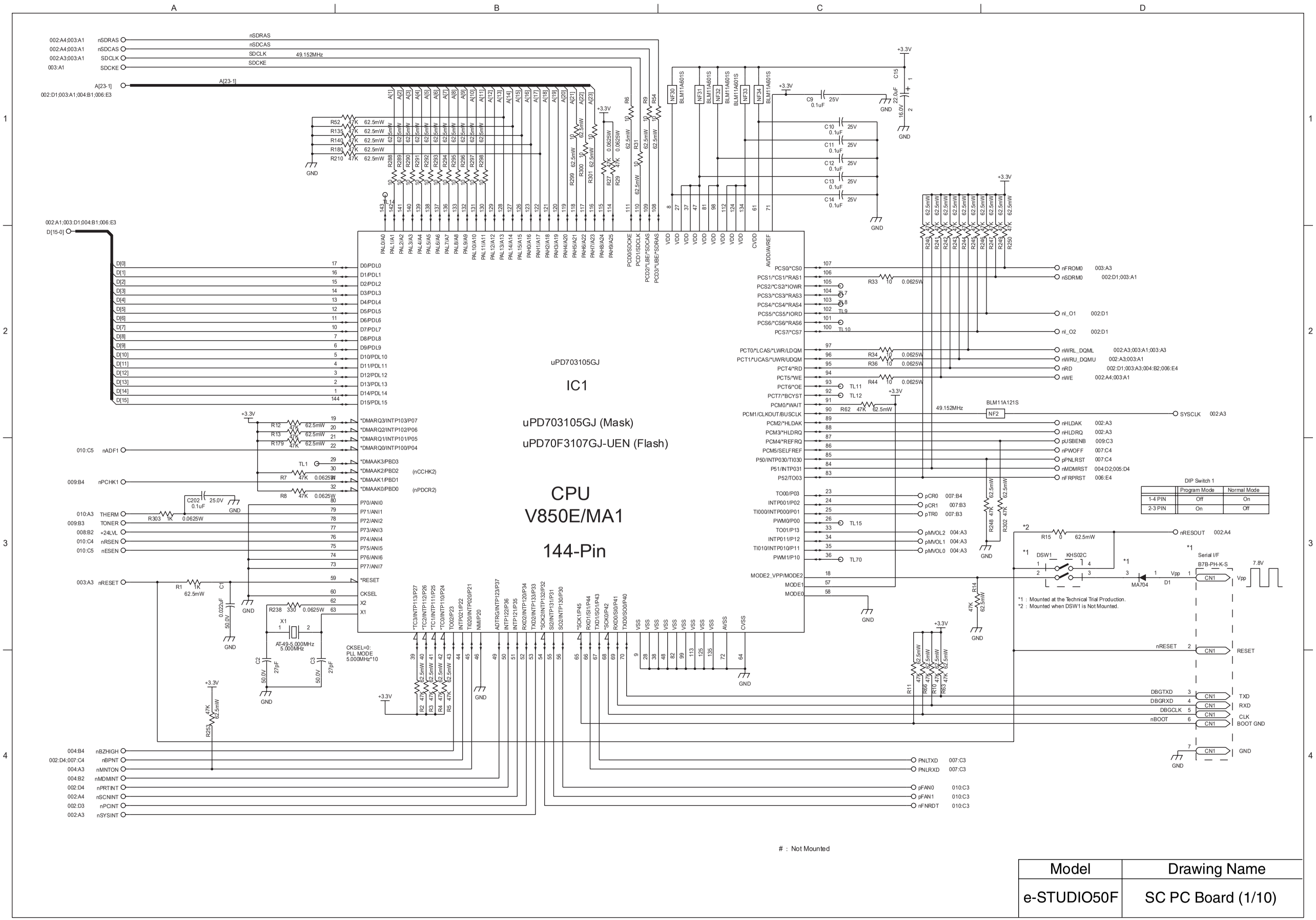
2 This parameter supports an optional telephone service "Distinctive Ring Service" provided by your local telephone company. It allows up to 4 different telephone numbers to be assigned on a single telephone line with a distinctive ring for each telephone number. By selecting the appropriate ring pattern associated with the telephone number assigned for your fax machine. It can differentiate and answer the incoming call on the fax number. All other calls on the other telephone numbers will not be answered. This optional service from your local phone company is also called Custom Ringing, Distinctive Ringing, Ident-a-call, Ident-a-ring, Personalized Ringing, RingMaster, RingMate, Selective Ringing, Smart Ring or something similar. Check with your local telephone company on the availability of this service in your area.

8 Schematic Diagram

8.1. General Circuit Diagram



8.2. SC PC Board



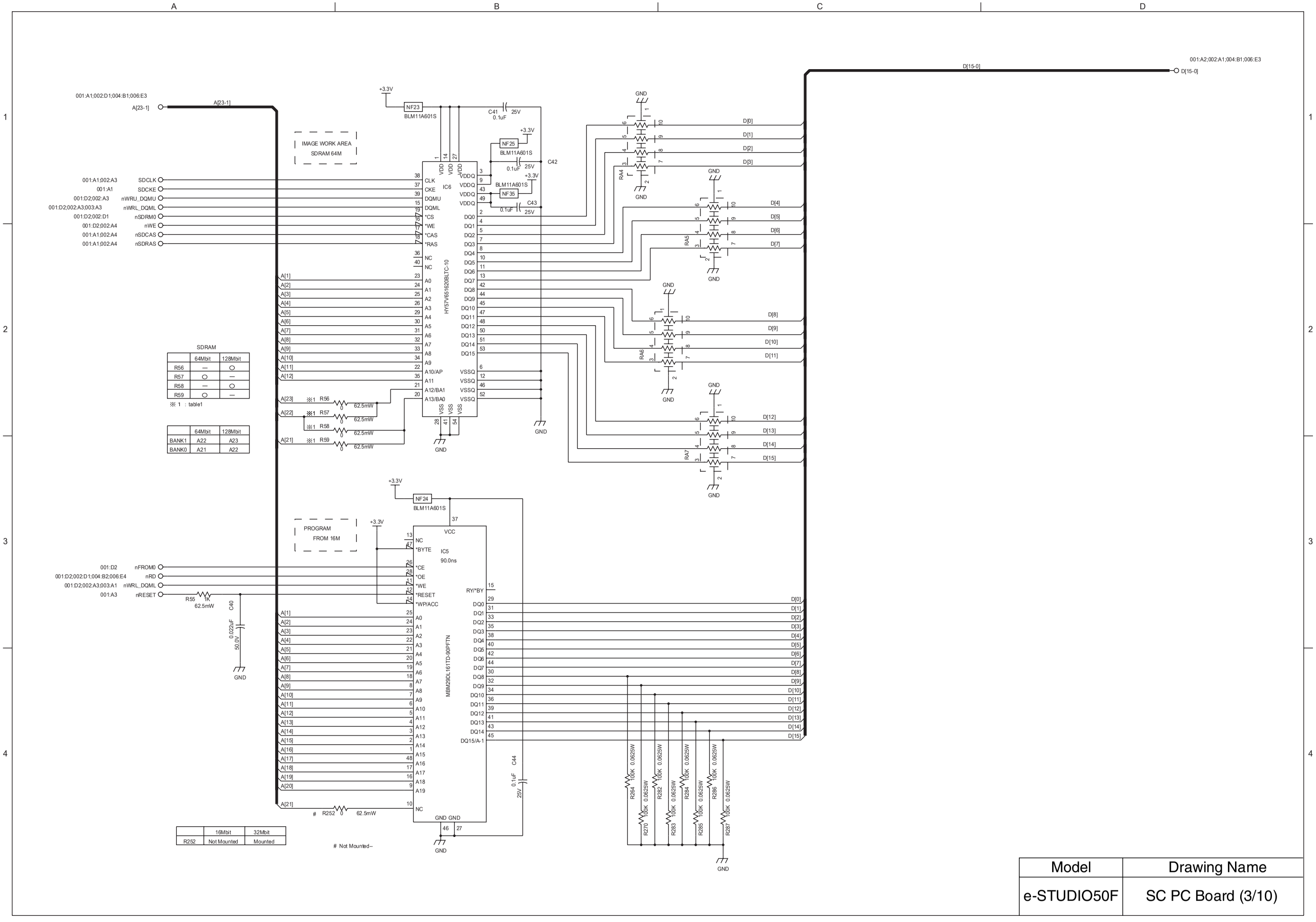
IC3

DZAC000273

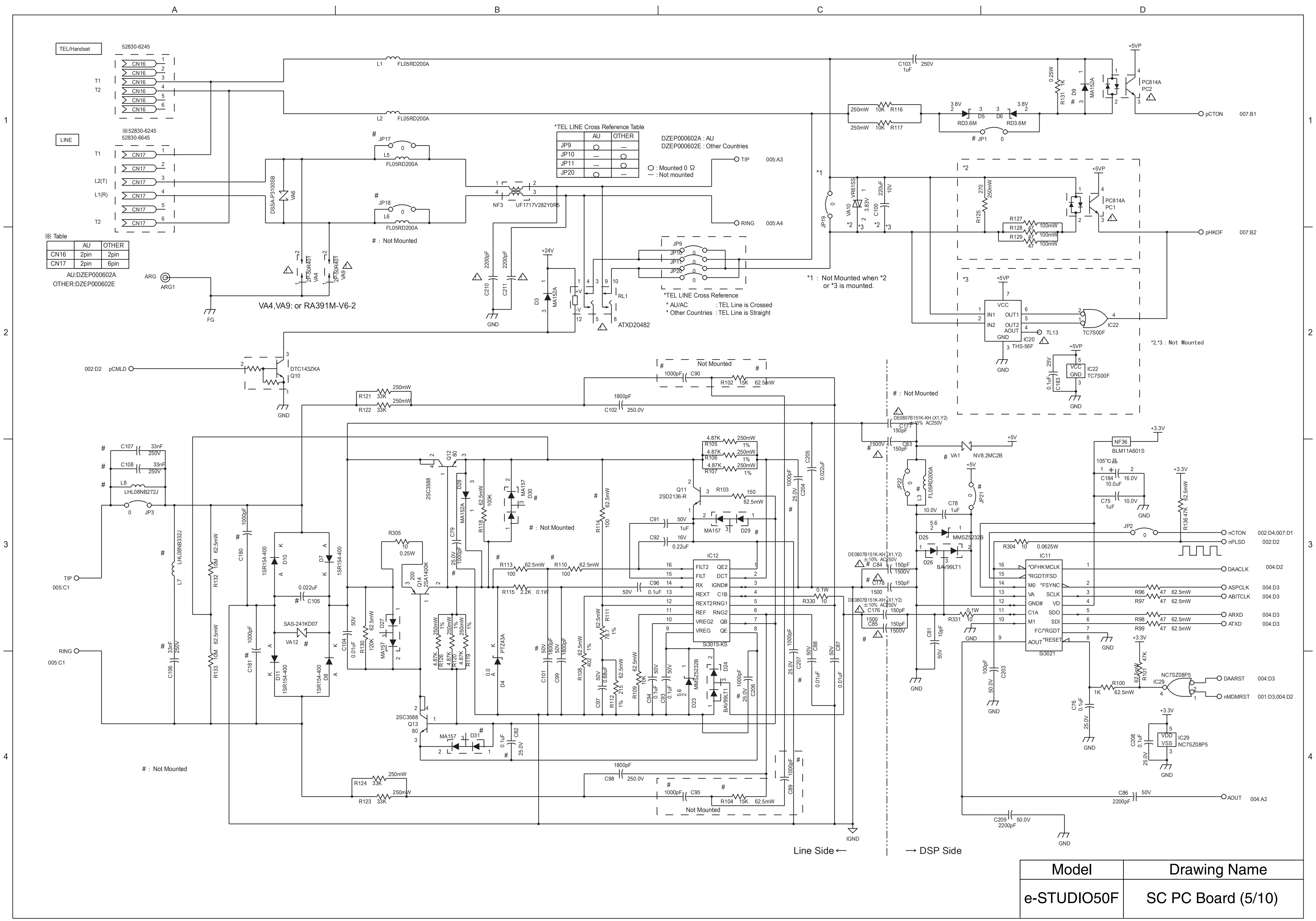
SHINE

(System Handling and Image Navigation Engine)

Model	Drawing Name
e-STUDIO50F	SC PC Board (2/10)

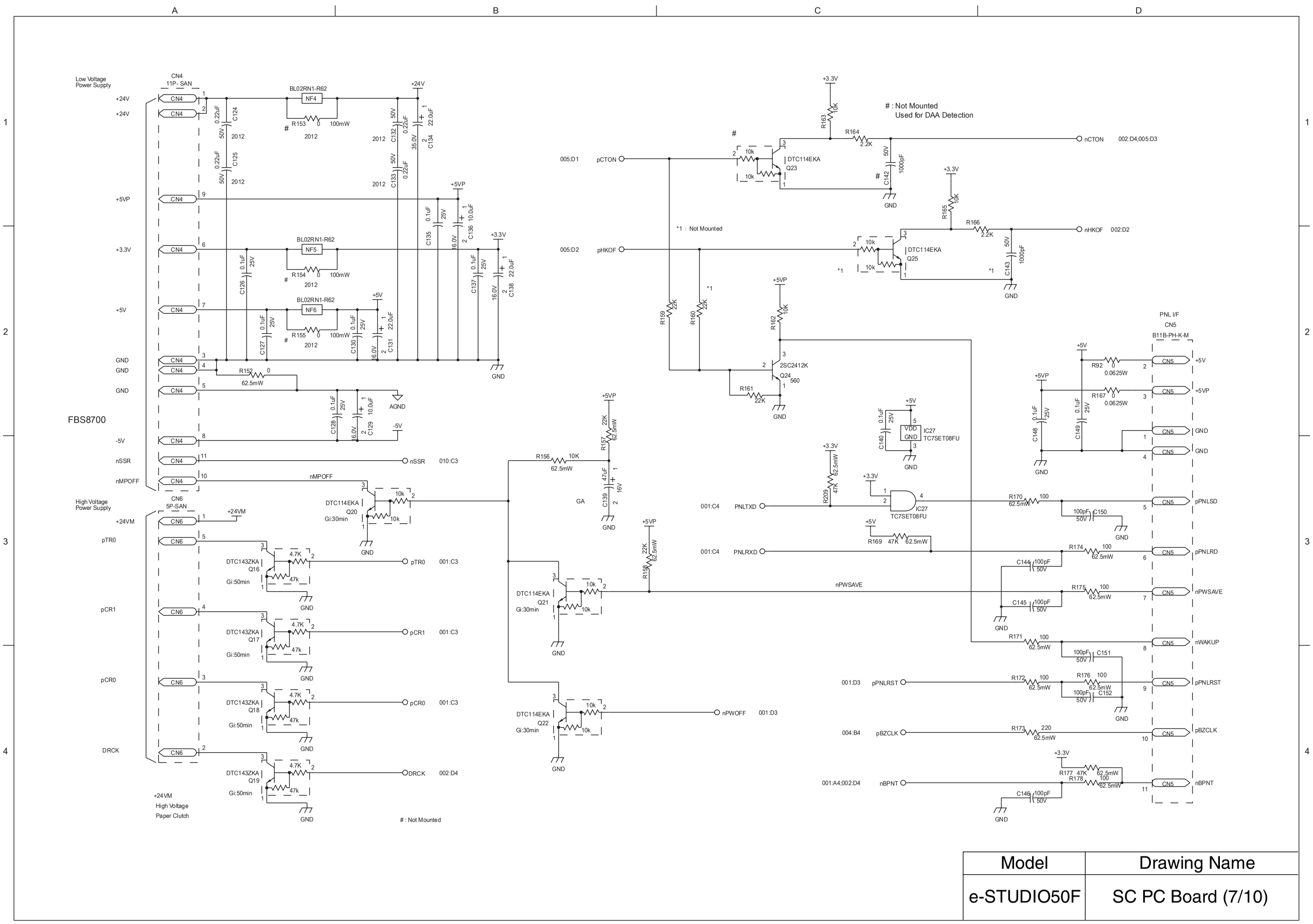

001:A1;002:D1;004:B1;006:E3
A[23-1]
IMAGE WORK AREA
SDRAM 64M
001:A1;002:A3 SDCLK
001:A1 SDCKE
001:D2;002:A3 nWRU_DQMU
001:D2;002:A3;003:A3 nWRL_DQML
001:D2;002:D1 nSDRM0
001:D2;002:A4 nWE
001:A1;002:A4 nSDCAS
001:A1;002:A4 nSDRAS
IC6
HY57V651620BLTC-10
NF23 BLM11A601S
NF25 BLM11A601S
NF35 BLM11A601S
C41 0.1uF 25V
C42 0.1uF 25V
C43 0.1uF 25V
+3.3V
GND
D[15-0]
001:A2;002:A1;004:B1;006:E3
RA4
RA5
RA6
RA7
SDRAM
64Mbit 128Mbit
R56 — ○
R57 ○ —
R58 — ○
R59 ○ —
※1 : table1
BANK1 A22 A23
BANK0 A21 A22
R56 R57 R58 R59 0 62.5mW
PROGRAM
FROM 16M
IC5
90.0ns
MBM29DL161TD-90PFTN
001:D2 nFROM0
001:D2;002:D1;004:B2;006:E4 nRD
001:D2;002:A3;003:A1 nWRL_DQML
001:A3 nRESET
R55 1K 62.5mW
C40 0.022uF 50.0V
NF24 BLM11A601S
C44 0.1uF 25V
R254 R255 R256 R284 R285 R286 R270 R283 R287 100K 0.0625W
R252 # 0 62.5mW
16Mbit 32Mbit
R252 Not Mounted Mounted
Not Mounted--
Model
e-STUDIO50F
Drawing Name
SC PC Board (3/10)

Model	Drawing Name
e-STUDIO50F	SC PC Board (4/10)

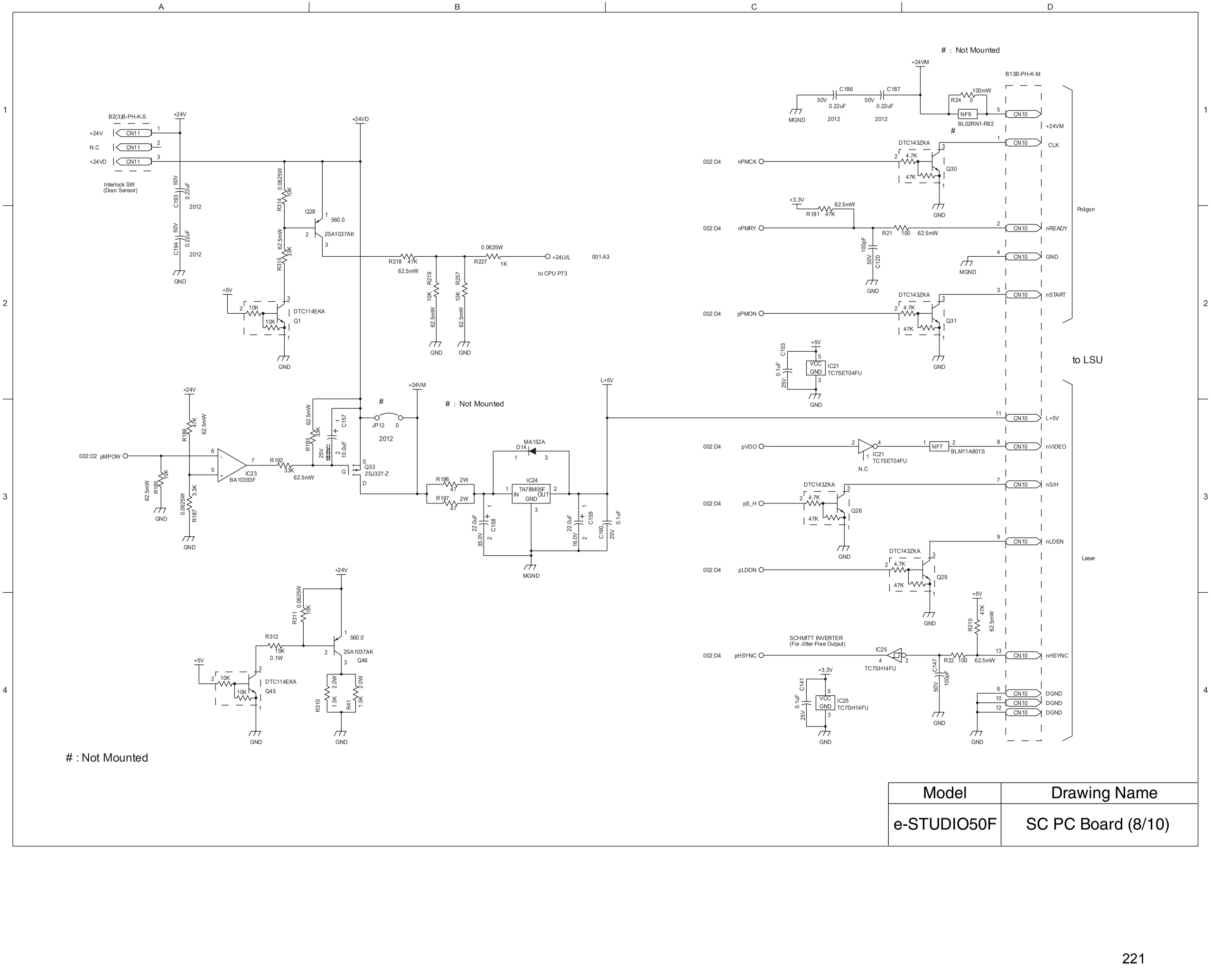


Model
Drawing Name
e-STUDIO50F
SC PC Board (5/10)
Line Side←
→ DSP Side
: Not Mounted
VA4,VA9: or RA391M-V6-2
*TEL LINE Cross Reference Table
DZEP000602A : AU
DZEP000602E : Other Countries
*1 : Not Mounted when *2 or *3 is mounted.
*2,*3 : Not Mounted
*TEL LINE Cross Reference
* AU/AC : TEL Line is Crossed
* Other Countries : TEL Line is Straight

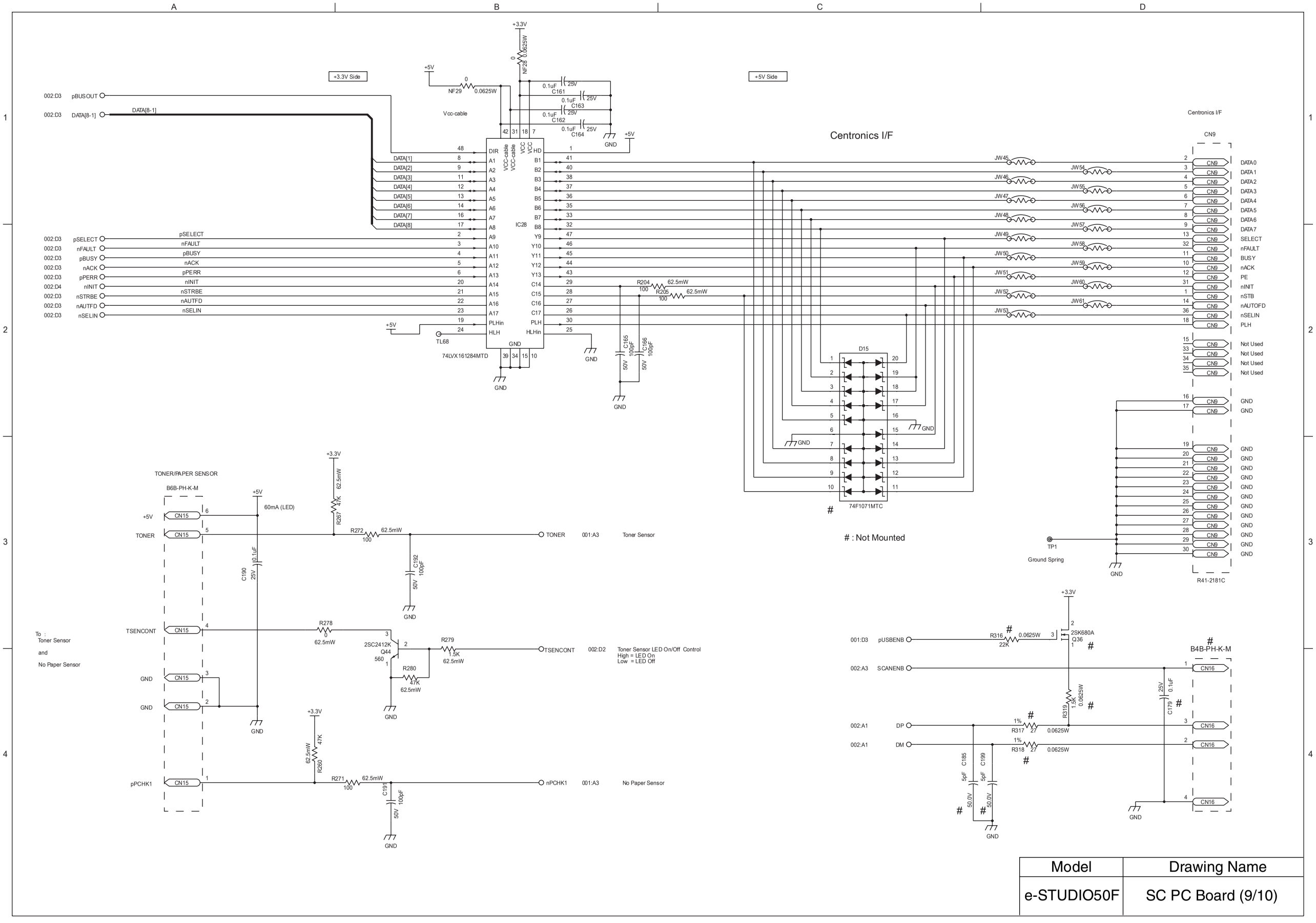
Model	Drawing Name
e-STUDIO50F	SC PC Board (6/10)



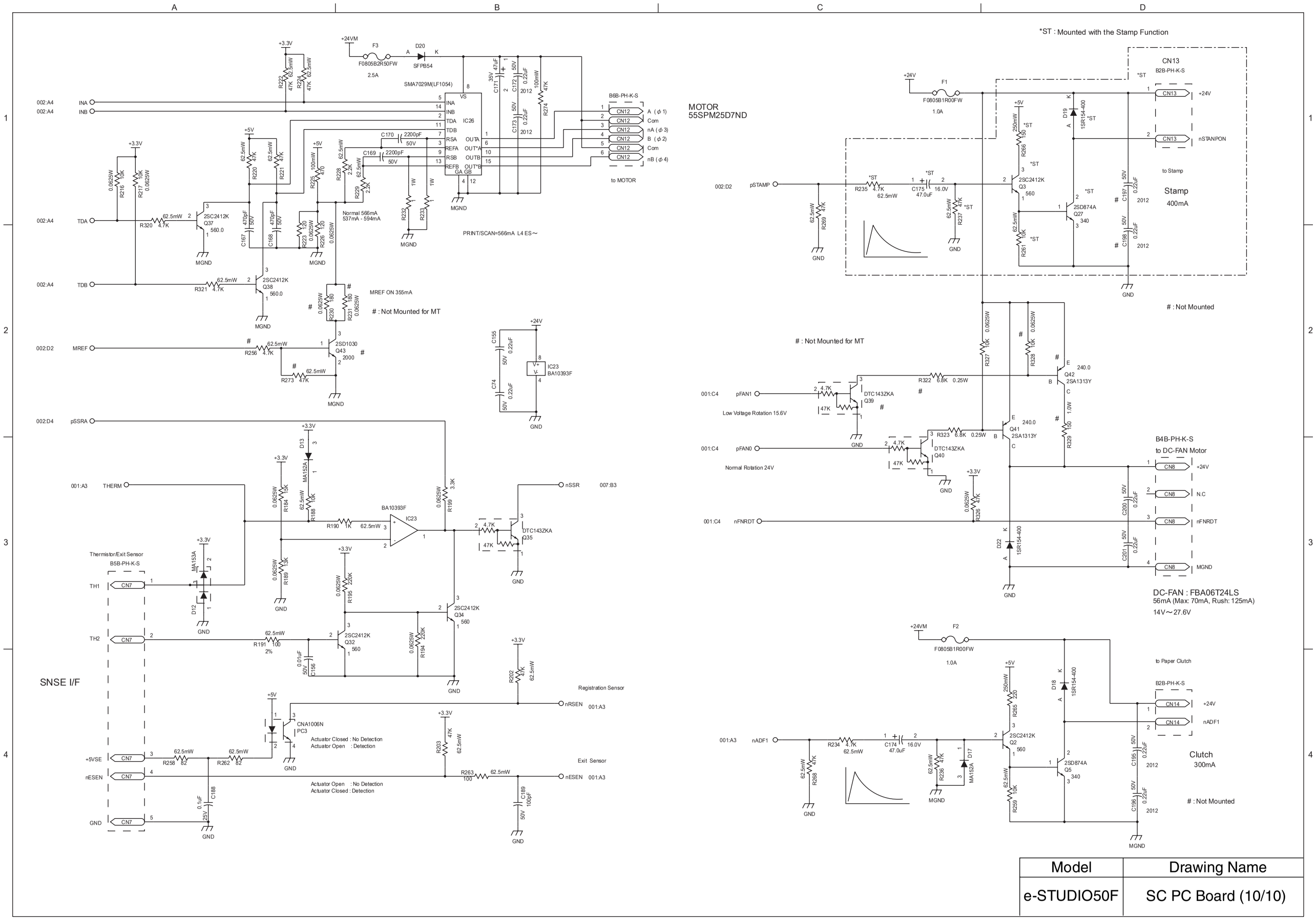
Model	Drawing Name
e-STUDIO50F	SC PC Board (7/10)



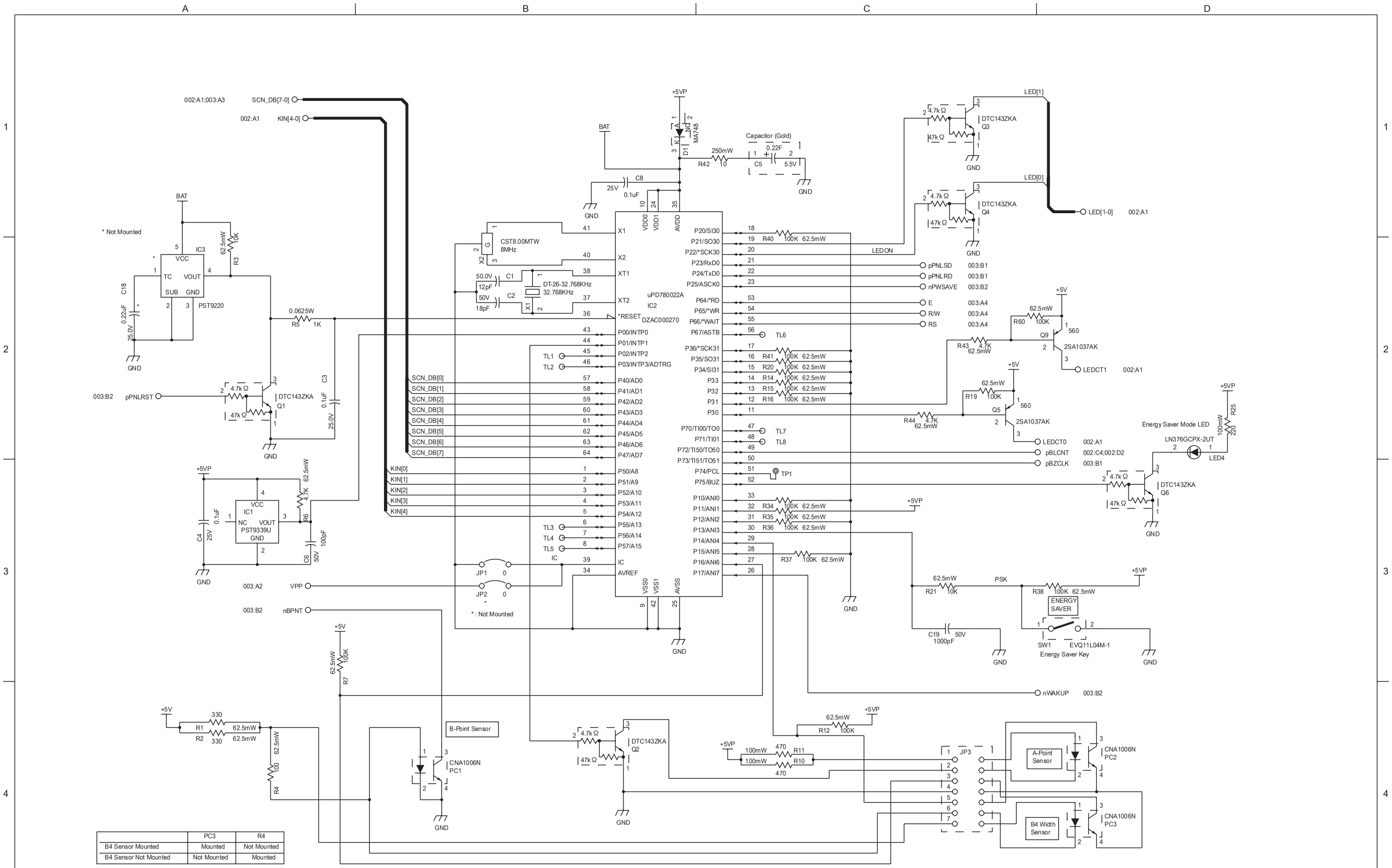
Model	Drawing Name
e-STUDIO50F	SC PC Board (8/10)



Model	Drawing Name
e-STUDIO50F	SC PC Board (9/10)


*ST : Mounted with the Stamp Function
MOTOR
55SPM25D7ND
INA
INB
TDA
TDB
MREF
pSSRA
THERM
nSSR
nFNRDT
pSTAMP
pFAN1
pFAN0
nADF1
nRSEN
nESEN
+5VSE
TH1
TH2
IC23 BA10393F
IC26
Q37 2SC2412K
Q38 2SC2412K
Q43 2SD1030
Q32 2SC2412K
Q34 2SC2412K
Q35 DTC143ZKA
Q39 DTC143ZKA
Q40 DTC143ZKA
Q41 2SA1313Y
Q42 2SA1313Y
Q3 2SC2412K
Q27 2SD874A
Q2 2SC2412K
Q5 2SD874A
PC3 CNA1006N
D12 MA153A
D13 MA152A
D17 MA152A
D18 1SR154-400
D19 1SR154-400
D22 1SR154-400
F3 F0805B2R50FW 2.5A
F1 F0805B1R00FW 1.0A
F2 F0805B1R00FW 1.0A
SFPB54
SMA7029M(LF1054)
B6B-PH-K-S
B5B-PH-K-S
B4B-PH-K-S
B2B-PH-K-S
to MOTOR
to Stamp
Stamp 400mA
to DC-FAN Motor
DC-FAN : FBA06T24LS
56mA (Max: 70mA, Rush: 125mA)
14V～27.6V
to Paper Clutch
Clutch 300mA
Normal 566mA 537mA - 594mA
PRINT/SCAN=566mA L4 ES～
MREF ON 355mA
: Not Mounted for MT
: Not Mounted
Low Voltage Rotation 15.6V
Normal Rotation 24V
SNSE I/F
Thermistor/Exit Sensor
Registration Sensor
Exit Sensor
Actuator Closed : No Detection
Actuator Open : Detection
Actuator Open : No Detection
Actuator Closed : Detection
MGND
GND
Model
e-STUDIO50F
Drawing Name
SC PC Board (10/10)

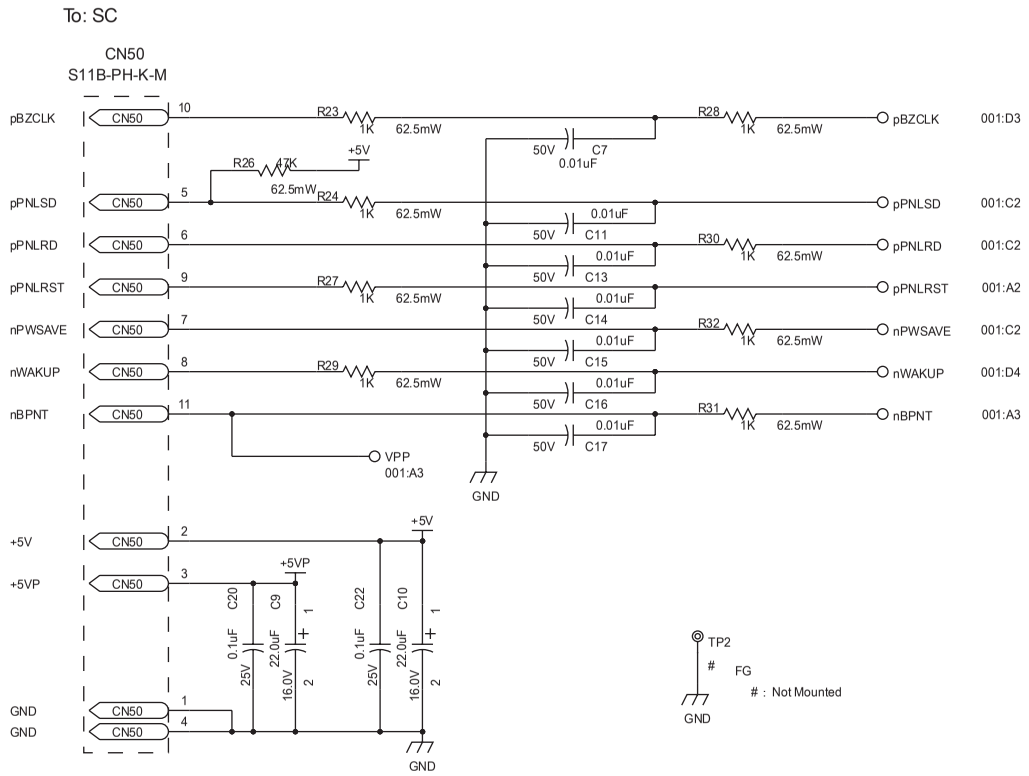
8.3. PNL PC Board



	PC3	R4
B4 Sensor Mounted	Mounted	Not Mounted
B4 Sensor Not Mounted	Not Mounted	Mounted

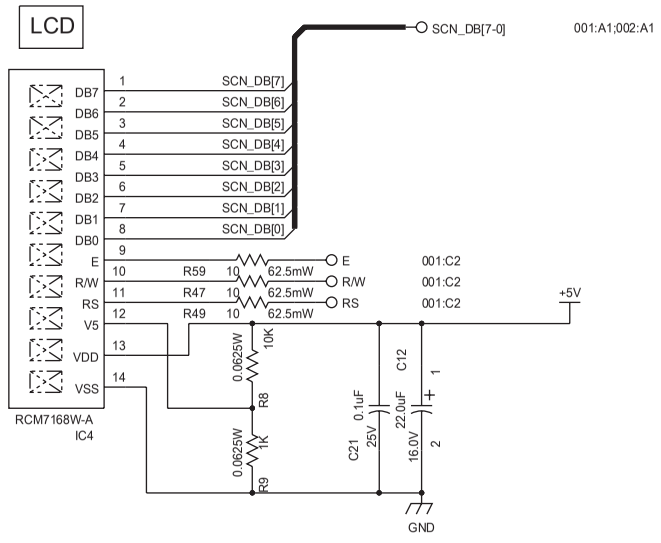
Model	Drawing Name
e-STUDIO50F	PNL PC Board (1/3)

Model	Drawing Name
e-STUDIO50F	PNL PC Board (2/3)



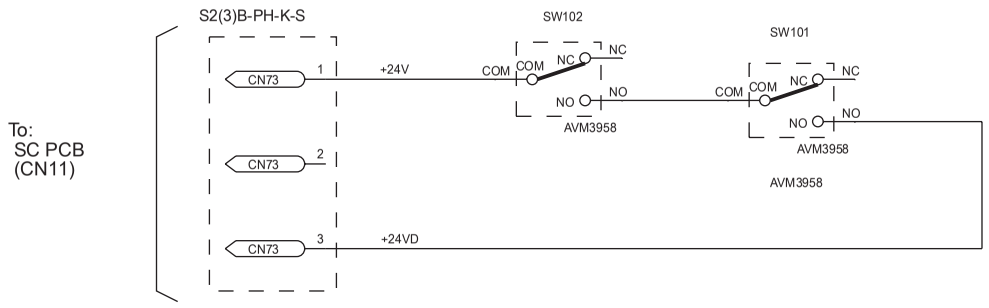
Jumper List

GND	JW2	+5VP	JW10	KIN[0]	JW30	SCN/DB[4]	JW7	RESET	JW24 0K
	JW4		JW16		JW40		JW29	BPNT	JW3 0K
	JW5		JW35		JW69		JW66		JW34
	JW6 0		JW38 0K	KIN[1]	JW37		JW80		JW79
	JW11	+5V	JW22		JW53	SCN/DB[5]	JW20	LED[0]	JW75
	JW17		JW36		JW62		JW65	LED[1]	JW57
	JW19		JW44	KIN[2]	JW64		JW71		JW59
	JW21 0		JW56	KIN[3]	JW18	SCN/DB[6]	JW26	BLCNT	JW76
	JW25		JW74	SCN/DB[0]	JW41		JW31		JW77
	JW33 0	BZCLK	JW8 0K	SCN/DB[1]	JW27	SCN/DB[7]	JW63	APNT	JW52
	JW45 0K		JW12		JW39	LEDCT1	JW43	SNSCT	JW55
	JW46 0K		JW58 0K	SCN/DB[2]	JW54		JW67	B4	JW48
	JW47	BL (R)	JW14		JW81 0K		JW73	IC	JW13
	JW49		JW72		JW82 0K	LEDCT0	JW42		JW15
	JW50 0	BL (G)	JW9	SCN/DB[3]	JW32		JW68	PNLRD	JW1 0
	JW51 0		JW28		JW70			PSK	JW23 0K
	JW60				JW78				
	JW61 0K								



Model	Drawing Name
e-STUDIO50F	PNL PC Board (3/3)

8.4. ILS PC Board



Model	Drawing Name
e-STUDIO50F	ILS PC Board (1/1)

8.5. SNST PC Board

Model	Drawing Name
e-STUDIO50F	SNST PC Board (1/1)

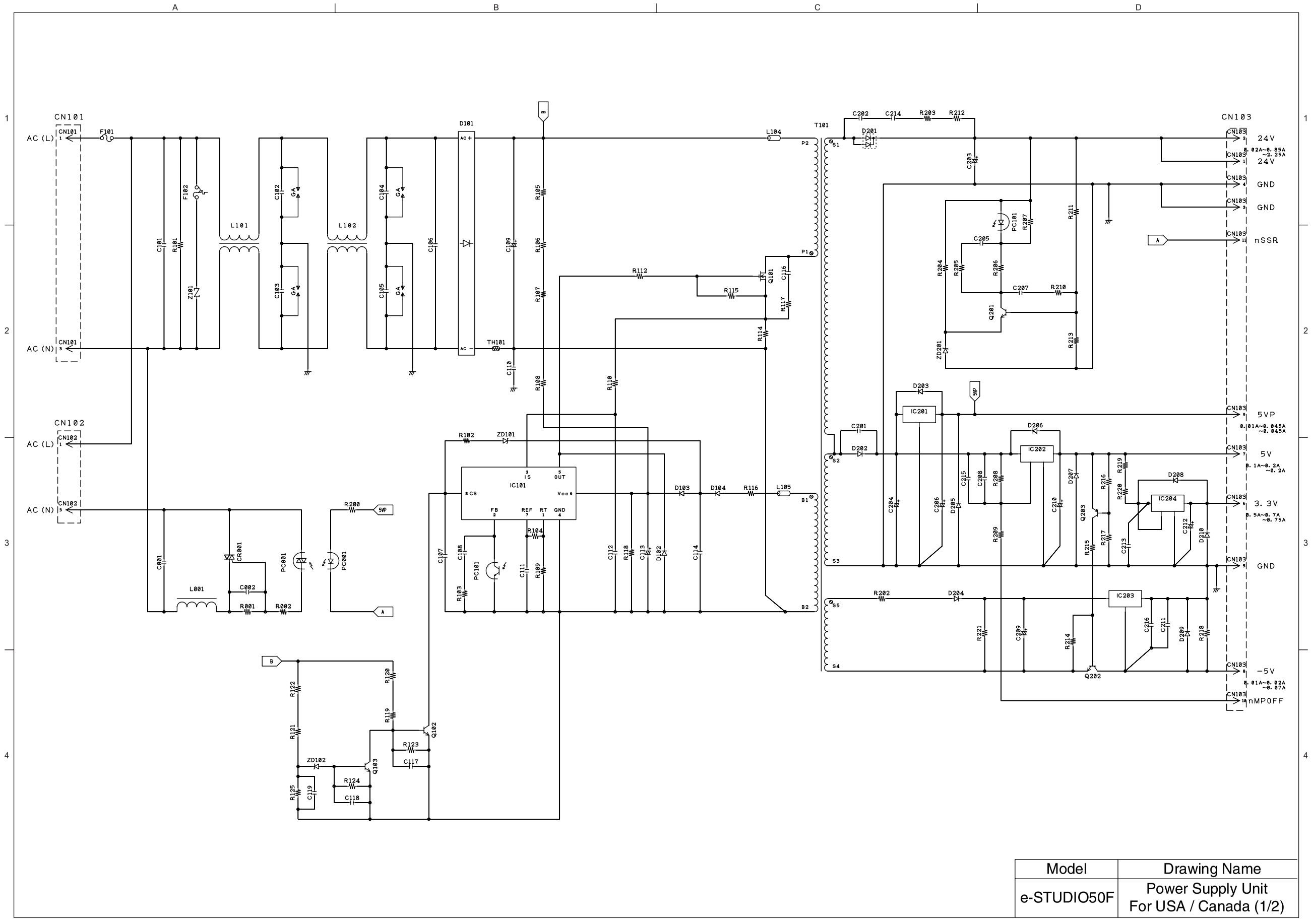
8.6. SNSE PC Board

Model	Drawing Name
e-STUDIO50F	SNSE PC Board (1/1)

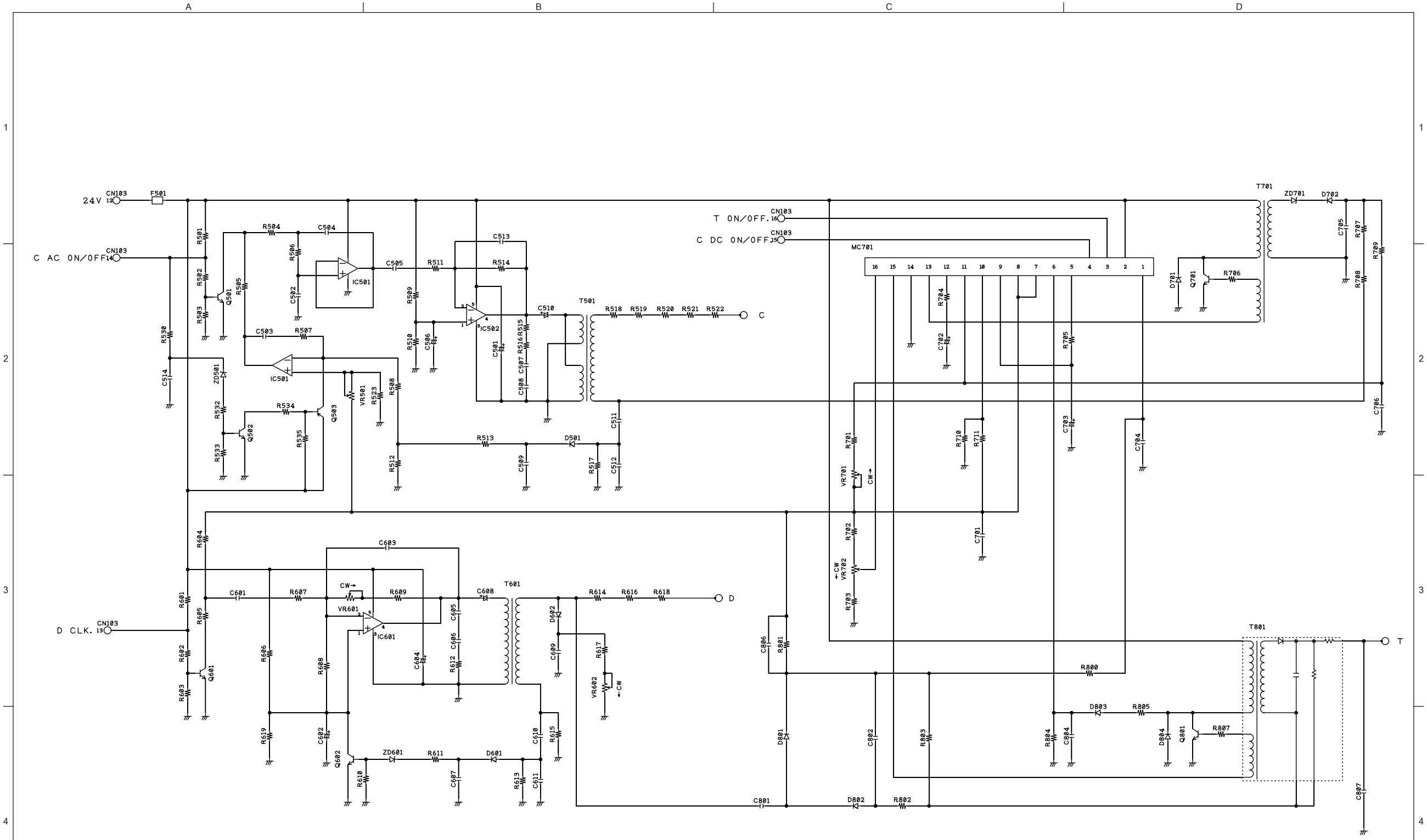
8.7. ACI PC Board

Model	Drawing Name
e-STUDIO50F	ACI PC Board (1/1)

8.8. Power Supply Unit (For USA / Canada)

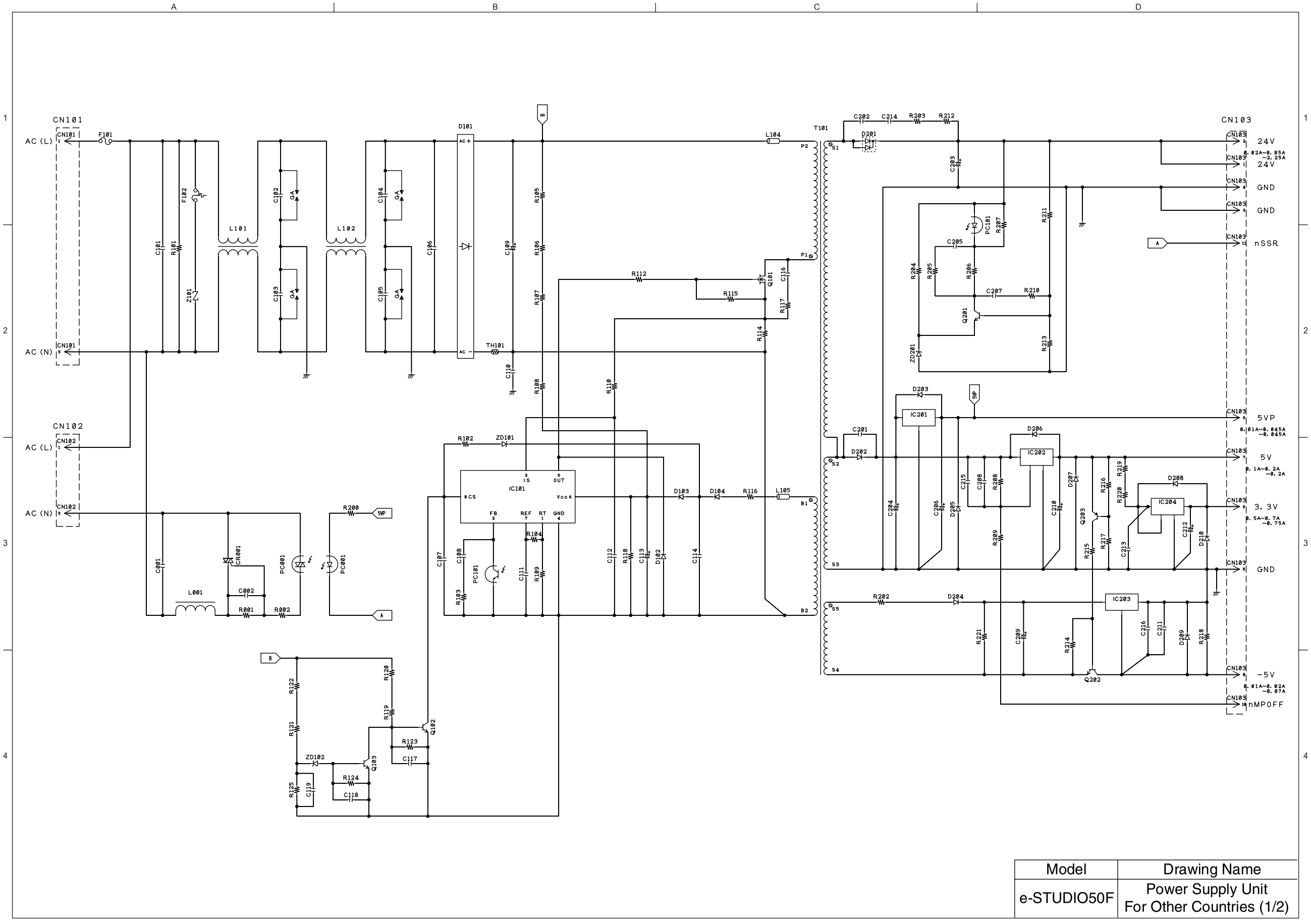


Model	Drawing Name
e-STUDIO50F	Power Supply Unit For USA / Canada (1/2)

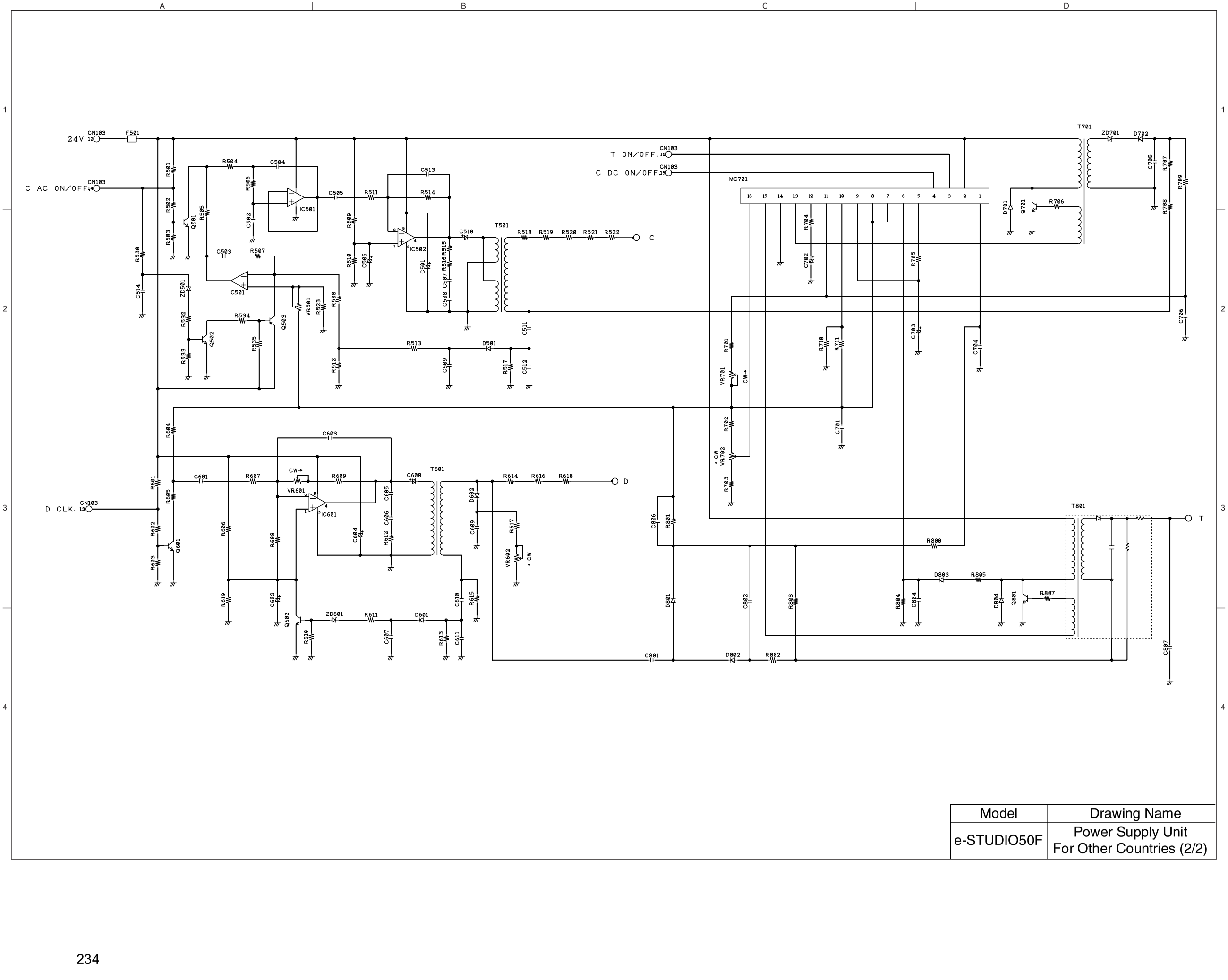


Model	Drawing Name
e-STUDIO50F	Power Supply Unit For USA / Canada (2/2)

8.9. Power Supply Unit (For Other Countries)



Model	Drawing Name
e-STUDIO50F	Power Supply Unit For Other Countries (1/2)


A
B
C
D
24V
CN103
12
F501
C AC ON/OFF
14
T ON/OFF.
16
C DC ON/OFF
15
MC701
T701
ZD701
D702
C705
R707
R709
D701
Q701
R706
R704
C702
R705
C703
C704
C706
R701
VR701
CW→
R702
← CW
VR702
R703
R710
R711
C701
R501
R502
R503
Q501
R504
C504
R505
R506
C502
IC501
C505
R511
C513
R514
R509
R510
C506
IC502
C510
T501
R518
R519
R520
R521
R522
C
C503
R507
IC501
R539
C514
ZD501
R532
R533
Q502
R534
Q503
R535
VR501
R523
R508
R512
R513
D501
C509
R517
C511
C512
R516
R515
C501
C507
C508
R604
C603
D CLK.
CN103
13
R601
R602
R603
Q601
R605
R606
C601
R607
CW→
VR601
R609
IC601
C608
T601
R614
R616
R618
D
C605
C606
C604
R612
D602
C609
R617
VR602
← CW
R619
C602
Q602
ZD601
R611
D601
C610
R615
R610
C607
R613
C611
C801
R801
D801
C802
D802
R802
R803
R800
D803
R805
R804
C804
D804
Q801
R807
T801
T
C807
Model
e-STUDIO50F
Drawing Name
Power Supply Unit
For Other Countries (2/2)

TOSHIBA

TOSHIBA TEC CORPORATION
1-1, KANDA NISHIKI-CHO, CHIYODA-KU, TOKYO, 101-8442 JAPAN