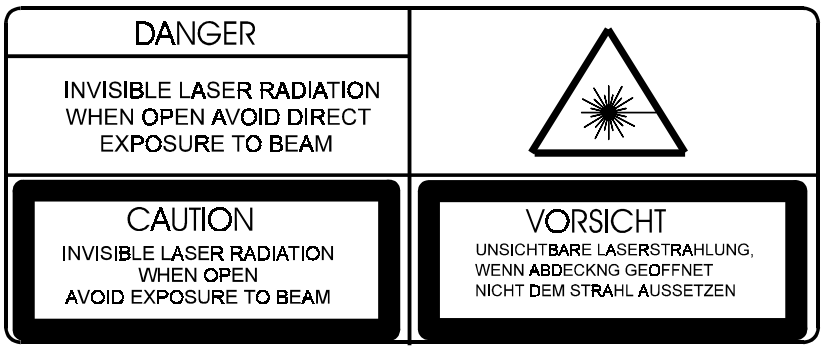
MODEL S4
(Machine Code: H535/H536/H537)
SERVICE MANUAL

29 September, 2000
Subject to change

Important Safety Notices



Laser Safety

⚠WARNING FOR LASER UNIT

This machine contains a laser beam generator. Laser beams can cause permanent eye damage. Do not open the laser unit or look along the laser beam path while the main power is on.

Lithium Batteries (Memory Back-up)

⚠CAUTION

The danger of explosion exists if a battery of this type is incorrectly replaced.
Replace only with the same or an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.

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1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

Type
Desktop transceiver

Circuit
PSTN, PABX

Connection
Direct couple

Document Size
Length:
105 - 364 mm [4.1 - 14.3 inches]
Up to 1.2 m [47.2 inches], manually assisted
Width:
148 - 218 mm [5.8 - 8.5 inches]
Thickness:
0.05 to 0.2 mm [2 to 8 mils]
(equivalent to 50 - 90 g/m^2)

Document Feed
Automatic feed, face down

ADF Capacity
50 sheets (using LT size 20 lb. paper)
40 sheets (using A4 size 80 g/m^2)
15 sheets (using LG size 20 lb. paper)

Scanning Method
Contact image sensor, with LED lamp

Maximum Scan Width
216 mm [8.5 inches] ± 0.25%
(Effective scan width: 210 mm)

Scan Resolutions
Main scan: 8 dots/mm [203 dpi]
Sub scan:
Standard - 3.85 lines/mm [98 dpi]
Detail - 7.7 lines/mm [196 dpi]
Fine - 15.4 lines/mm [392 dpi]

Memory Capacity
ECM: 128 Kbytes
SAF:
Standard: 2 MB (160 pages/ITU-T #1)
With 2 MB option: (320 pages)
With 4 MB option: (480 pages)

Compression
MH, MR, MMR, JBIG

Protocol
Group 3 with ECM
Group 4 (ISDN G4 option required)

Modulation
V.34, V.33 (Ricoh mode only),
V.17 (TCM), V.29 (QAM), V.27ter (PHM), V.21 (FM)

Data Rate (BPS)
G3:
33,600/31,200/28,800/26,400/24,000/
21,600/19,200/16,800/14,400/12,000/
9600/7200/4800/2400
G4 (option):
64 kbps/56 kbps

I/O Rate
With ECM: 0 ms/line
Without ECM: 2.5, 5, 10, 20, or 40 ms/line

Transmission Time
G3: 3 seconds at 28,800 bps;
Measured with G3 ECM using memory for an ITU-T #1 test document (Slerexe letter) at standard resolution
G4 (option): 3 seconds at 64 kbps
Measured with an ITU-T #1 test document (Slerexe letter) at detail resolution

Printing System
Laser printing, plain paper, dry toner

Printing Time
10 ppm for letter, or A4 size paper

Paper Size and Capacity
Standard Cassette: 250 sheets
USA/Asia: Letter, Legal, A4, A5 sideways, F4
Europe: A4
By-pass Feeder (Optional):
100 sheets: Letter, Legal, A4, A5 sideways, F4
Paper Feed Unit (Optional):
500 sheets: Letter, Legal, A4, A5 sideways, F4

Paper Weight
16 lb. (60 g/m$^{2)}$ to 24 lb. (90 g/m^2)

Maximum Printing Width
212 mm [8.3 inches] (Letter)
206 mm [8.1 inches] (A4)

Print Resolutions
Fax and Copy Mode:
Main scan: 16 dots/mm [406 dpi]
Sub scan: 15.4 lines/mm [392 lpi]

NIC/PDU (Optional)
Connectivity:
- NIC -
Local area network
Ethernet 100baseTX/10baseT
- PDU -
PSTN, PABX
- E-mail File Format -
Single/multi-part
MIME conversion
Image: TIFF-F (MH) format
DCX format (Rx only)

Protocol (supported by TCP/IP)
TX: IETF RFC821 SMTP
RX: IETF RFC1725 POP3
IETF RFC821 SMTP

Transmission Speed (PDU)
Max. 33,600bps (V.34)
Reception Speed (PDU)
Max. 56,000bps (V.90)
(depending on the provider settings)

Power Supply
USA: 115 ± 20 Vac, 60 ± 3 Hz
Europe/Asia: 220 - 240 ±15% Vac, 50/60 ± 3 Hz

Power Consumption (Base Machine Only)
Standby: Minimum 2 W; Normal 30 W
Transmit: 50 W
Receive: 350 W
Copying: 300 W

Operating Environment
Temperature: 15 - 25°C [59 - 77°F]
Humidity: 30 - 70 %Rh

Dimensions (W x D x H)
420 x 732 x 343 mm
[16.5 x 28.8 x 13.5 inches]
Including trays (Maximum dimensions)

Weight
Approx. 13 kg [28.7 lbs.]
Including cartridge and trays.

NOTE: 1) The ISDN G4 unit is a standard component for the S4-I.
2) The NIC unit is a standard component for the S4-L

1.2 FEATURES

KEY: O = Used, X = Not Used
A = With optional memory only
B = With optional by-pass feeder only
C = With optional handset only
D = With optional counter only
E = With optional paper feed unit only
F = With optional G4 unit only
G = With optional NIC only
H = With optional PDU only

Equipment	
ADF	O
Book scan	X
By-pass feed (optional)	O
Cassette (optional)	O
Optional paper feed unit	E
Cabinet	X
Mechanical counter	D
Cutter	X
Handset	C
Hard disk	X
Manual feed mechanism	X
Marker (Stamp)	O
Monitor speaker	O
Optional memory	O
Optional printer interface	X

Video Processing Features	
Automatic image density	O
Contrast	X
Halftone (Basic & Error diffusion)	O
MTF	O
Reduction before TX	X
Scanning resolution	O
Smoothing to 16 x 15.4 l/mm	O

Communication Features - Auto	
AI short protocol	O
Automatic fallback	O
Automatic redialing	O
Confidential reception	O
JBIG compression	O
Dual access	O

Communication Features - Auto	
Resolutions available for reception	
Fine	X
Super fine	X
Substitute reception	O
V.34 communication	O

Communication Features - User Selectable	
Action as a transfer broadcaster	X
AI Redial (last ten numbers)	O
Answering machine interface	X
Authorized Reception	O
Auto dialing (pulse or DTMF)	O
Auto document	O
Automatic voice message	X
Backup transmission	O
Batch transmission (max 50 files)	O
Broadcasting	O
Chain dialing	O
Communication result display	X
Confidential ID override	O
Confidential transmission	O
Direct fax number entry	O
Economy transmission	X
Fax on demand	X
Forwarding	O
Groups (7 groups)	O
Hold	X
ID transmission	O
Immediate redialing	O
Immediate transmission	O
ISDN	F
Keystroke programs	O
Memory transmission	O
Multi-step transfer	X
OMR	X
On hook dial	O
Ordering toner	X
Page count	O
Page separation mark	O
Parallel memory transmission	O
Personal codes	O
Personal codes with conf. ID	O
Partial image area scanning	X

Communication Features - User Selectable	
Polling reception	O
Polling transmission	O
Polling tx file lifetime in the SAF	X
PWD (tx only)	O
Quick dial (30 stations)	O
Reception modes (Fax, Tel)	O
Remote control features	X
Remote transfer	X
Restricted access	O
Secured polling reception	O
Secured polling reception with Stored ID override	O
Send later	O
SEP (tx only)	O
SID (tx only)	O
Silent ringing detection	X
Specified Image area	X
Speed dial (100 stations)	O
SUB	O
Telephone directory	O
Tonal signal transmission	O
Transfer request	O
Transmission deadline (TRD)	X
Turnaround polling	X
Two-step transfer	X
Two in one	X
Voice request (immediate TX only)	X

Communication Features - Service Selectable	
AI short protocol	O
Auto-reduction override option	O
Busy tone detection	O
Cable equalizer	O
Closed network (TX and RX)	O
Continuous polling reception	O
Dedicated TX parameters	O
ECM	O
EFC	X
Inch-mm conversion	O
JBIG compression	O
Page retransmission times	O
Protection against bad connections	O
Short preamble	X

Other User Features	
Automatic service call	Service
Auto start initial setup	O
Blank document detection	O
Center mark	O
Checkered mark	O
Clearing a memory file	O
Clearing a polling file	O
Clock	O
Confidential ID	O
Copy mode	O
Copy mode restriction	X
Counters	O
Daylight saving time	O
Destination check	X
Direct entry of names	O
Energy saver (Night timer and standby mode)	O
File retention time	X
File retransmission	X
File destination change	O
Function programs	O
ID code	O
Internet fax (LAN type)	G
Internet fax (Dial up type)	H
Label insertion (“From xxx”)	O
LAN fax	G
Language selection	O
LCD back light	O
LCD contrast control	X
Memory lock	O
Modifying a memory file	X
Multi-sort document reception	X
Multi-copy mode (up to 99)	O
Own telephone number	O
PC scanner	X
PC fax	G
PC print	G
Print density control	X
Printing a memory file	O
Printing a quick dial sheet	O
Program from redial memory	O
Quick dial label printing	O
RDS on/off	O
Reception mode switching timer	X
Reception time printing	O
Remaining memory indicator	O
Remote ID	X
Reverse order printing	O

Other User Features	
RTI, TTI, CSI	O
Service report transmission	O
Speaker volume control	O
Specified cassette selection	E
Status indicator	O
Substitute reception on/off	O
Switch quick dial layout	O
Telephone line type	O
Toner saving mode	X
User function keys (4 keys)	O
User parameters	O
Wild cards	O

Reports - Automatic	
Charge control report	X
Communication failure report	O
Communication result report	O
Confidential file report	O
Error report	O
File clear report	X
File reserve report	X
Journal	O
Power failure report	O
Toner cassette order form	X
Transfer result report	O
Transmission result report	O

Reports - User-initiated	
Charge control report	X
File list	O
Group list	O
Help list	O
Journal	O
Personal code list	O
Program list	O
Programmed special numbers list	O
Quick dial/User function list	O
Speed dial list	O
Transmission status report	X
User parameter list	O

Service Mode Features	
Back-to-back test	X
Bit switch programming	O
Book mode test	X

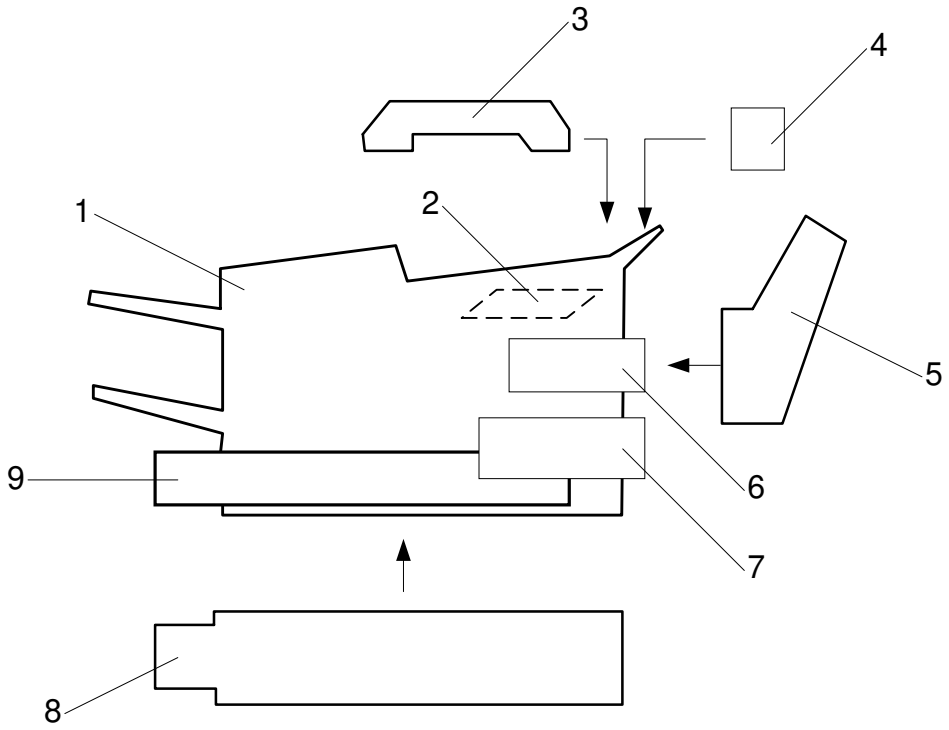
Service Mode Features	
Cable equalizer	O
Comm. Parameter display	O
Counter check	O
Country code	O
DTMF tone test	O
Echo countermeasure	O
Effective term of service calls	O
Error code display	O
Excessive jam alarm	O
File transfer (all files)	O
LCD contrast adjustment	X
Line error mark	O
Memory file printout (all files)	O
Modem software download	X
Modem test	O
NCU parameters	O
Operation panel test	O
Periodic service call	O
Ping test	G
PM call	O
Printer mechanism test	O
Printer test patterns	O
Programmable attenuation	X
Protocol dump list	O
Protocol dump list (LAN)	O
RAM display/rewrite	O
RAM dump	O
RAM test	O
RDS	O
Ringer test	X
Scanner lamp test	O
Scanner mechanism test	O
Sensor initialization	X
Serial number	O
Service monitor report	O
Service station number	O
Software upload/download	O
SRAM data download	O
System parameter list	O
Technical data on the Journal	O
Thermal head parameters	X

Memory Files

Maximum number of files: 100
Maximum number of stations/file: 140
Maximum number of stations: 300

1.3 COMPONENT LAYOUT

1.3.1 SYSTEM COMPONENTS



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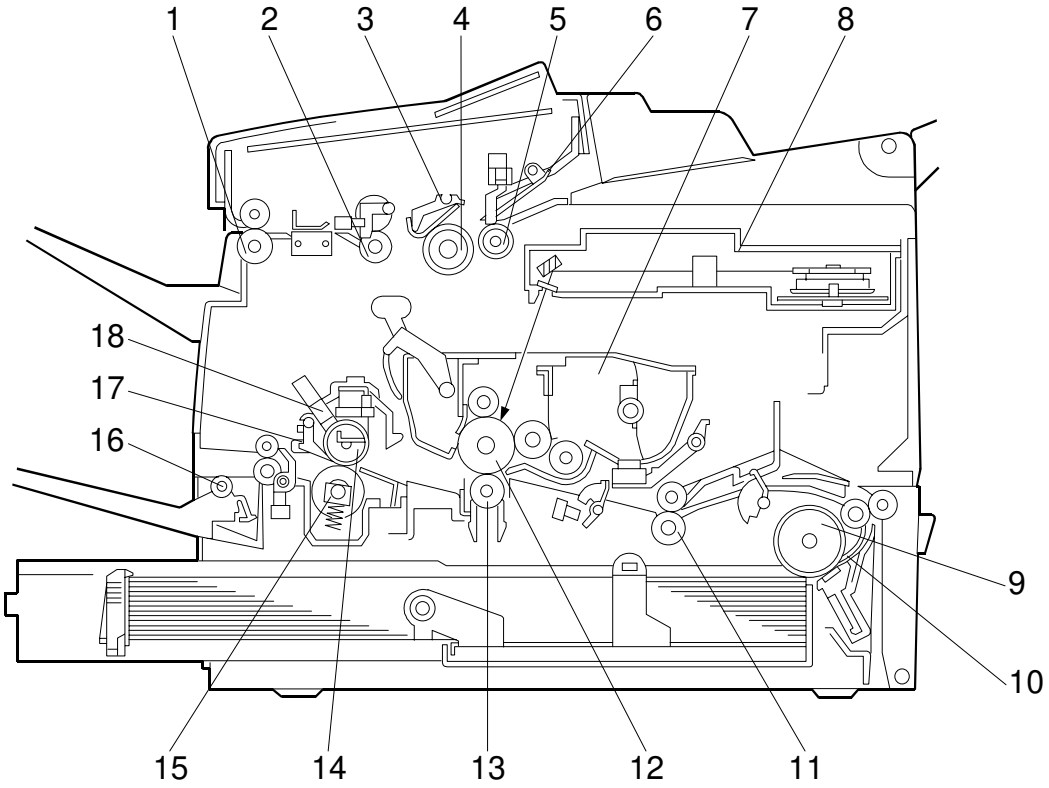
No.	Item	Common with	Remarks
1	Main unit		
2	NIC option or PDU option		Install either the NIC or the PDU
3	Handset	Schmidt 3	US only
4	Mechanical counter option		
5	By-pass feeder option	Schmidt 3	
6	Memory option	Schmidt 3	2 or 4 Mbytes of memory
7	ISDN option	Schmidt 3	The machine cannot contain both the ISDN and the PDU option
8	Paper feed unit	Schmidt 3	
9	Universal cassette or Standard cassette		USA/Asia: Universal cassette Europe: Standard cassette (A4 size only)

1.3.2 MECHANICAL COMPONENTS



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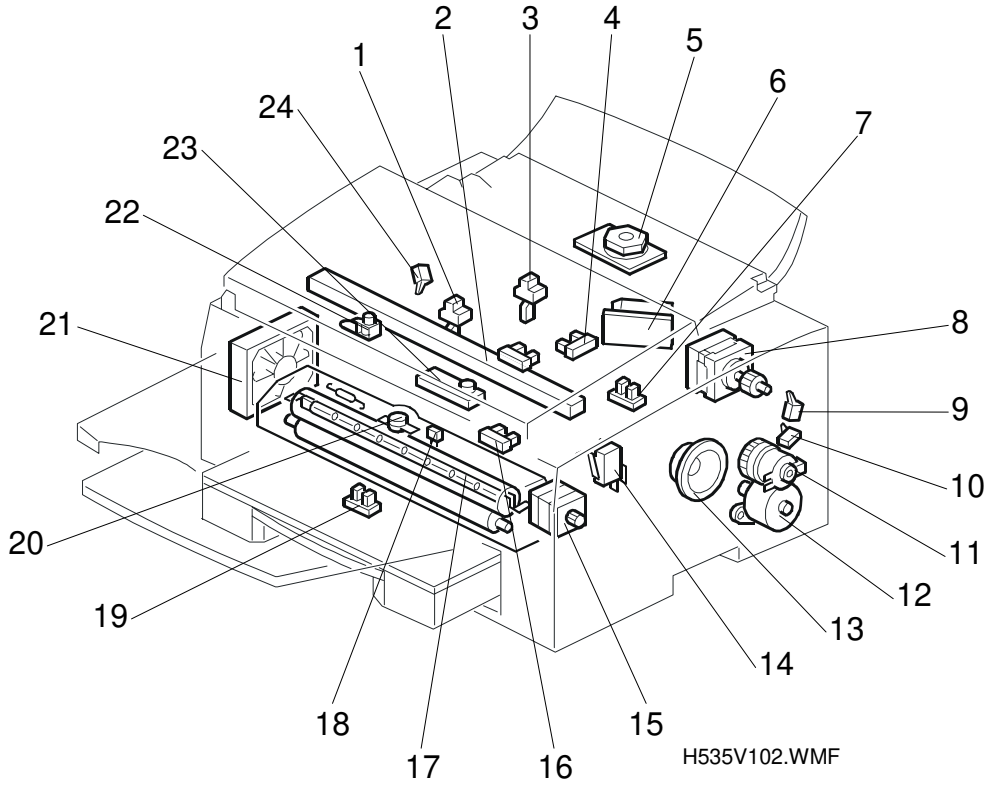
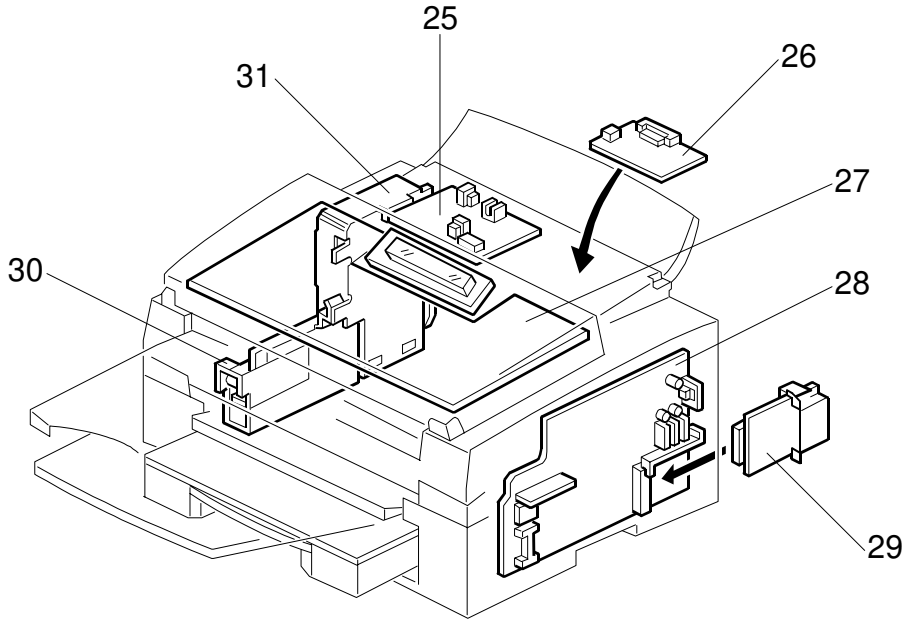
No.	Name	Description
1	R2 Roller	Feeds the document through the scanner.
2	R1 Roller	Feeds the document through the scanner.
3	Separation Pad	Allows one page into the scanner.
4	Document Feed Roller	Feeds the document into the scanner.
5	Pick-up Roller	Picks up document pages from the document table one at a time.
6	Pressure Plate	Applies pressure against the pick-up roller.
7	All-in-One Cartridge	Consists of the toner cartridge, cleaning unit, used toner tank, charge brush roller, application roller, development roller and OPC drum.
8	Laser Unit	Consists of the LDDR (Laser Diode Driver), focusing lens, hexagonal mirror motor, and other laser optic components.
9	Paper Feed Roller	Picks up the top sheet of paper from the stack in the cassette, and feeds it into the printer.
10	Separation Pad	Allows one sheet of paper into the printer.
11	Registration Roller	Carries out the registration process.
12	OPC Drum	The latent image is written to this organic photoconductor drum.

No.	Name	Description
13	Transfer Roller	Applies a charge to the paper to pull the toner off the drum and onto the copy paper.
14	Hot Roller	Heat from this roller fuses the toner to the copy paper.
15	Pressure Roller	Applies pressure to the paper during the fusing process.
16	Paper Feed-out Rollers	Feed the paper out of the printer.
17	Hot Roller Strippers	Take the paper off the hot roller after fusing.
18	Cleaning Pad	Cleans the surface of the hot roller and spreads silicone oil on it.

1.3.3 ELECTRICAL COMPONENTS





1. PCBs

No.	Name	Description
2	CIS (Contact Image Sensor)	This sensor converts the light reflected from the document into an analog video signal.
6	LDDR (Laser Diode Driver)	This board drives the laser diode.
25	NCU (Network Control Unit)	This board contains relays and switches for interfacing the machine with the network and the handset.
26	NIC (Network Interface Card) or PDU (PSTN Dial-up Unit)	This allows the machine to be connected to a LAN. Only one of these two boards can be installed in the machine at the same time.
27	OPU (Operation Panel Unit)	This board controls the operation panel.
28	FCU (Facsimile Control Unit)	This board controls the machine. It contains the main CPU, flash ROM, system RAM, etc.
29	G4 Interface (SiG4 option)	This is an interface for the machine and an ISDN network.
30	Power Pack	Supplies high voltage to the charge brush roller, transfer roller and development rollers.
31	PSU (Power Supply Unit)	This board supplies power to the machine, and switches the fusing lamp on/off.

2. Motors

No.	Name	Description
5	Polygon Mirror Motor	This high-speed dc motor drives the hexagonal mirror in the laser printer optics.
8	Main Motor	This stepper motor drives the All-in-One cartridge and the fusing unit.
12	Paper Feed Motor	This stepper motor drives the registration roller and the paper feed mechanisms in the cassettes.
15	Scanner Motor	This stepper motor drives the scanner.
21	Cooling Fan Motor	Cools the interior of the machine.

3. Sensors

No.	Name	Description
1	Scan Line Sensor	Detects when a page is approaching the auto shading position.
3	Document Sensor	Detects the presence of a document in the feeder.
4	Paper End Sensor	Detects when the paper in the cassette has run out.
7	Paper Edge Sensor	Detects when the paper has passed the paper feed components.
9	Rear Upper Cover Switch	Detects whether the rear upper cover is open or closed.
10	Rear Lower Cover Switch	Detects whether the rear lower cover is open or closed.
16	Registration Sensor	Detects when paper reaches the registration roller.

No.	Name	Description
24	Paper Cassette Sensor	Detects whether the paper cassette is installed or not.
19	Fusing Exit Sensor	Detects when the paper feeds out of the printer.
23	Toner End Sensor	Detects when the toner has run out.

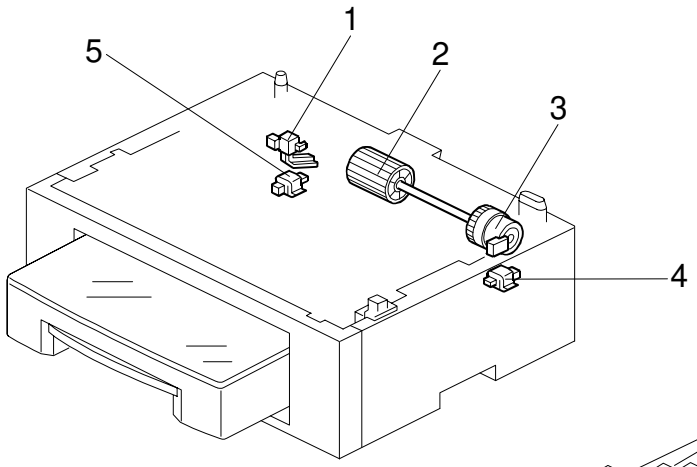
4. Interlock Switches

No.	Name	Description
14	Interlock Switch	If the top cover is open, this switch interrupt the +5VLD power supply for the laser diode and the +24VD power supply for the power pack, motors, and other components.

5. Others

No.	Name	Description
11	Paper Feed Clutch	Transfers drive from the paper feed motor to the paper feed roller.
13	Monitor Speaker	Allows the user to hear the telephone line condition.
17	Fusing Lamp	The heat from this lamp fuses the toner to the paper.
18	Thermistor	Monitors the temperature on the hot roller surface.
20	Thermostat	Interrupts the ac power supply for the fusing lamp if the thermostat temperature exceeds 400°C.
22	Stamp Solenoid	This turns on to stamp the document.

6. Optional Paper Feed Unit and Multi Purpose Feeder



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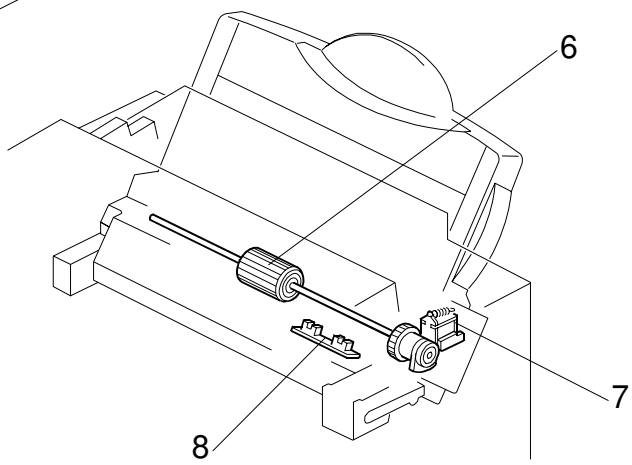

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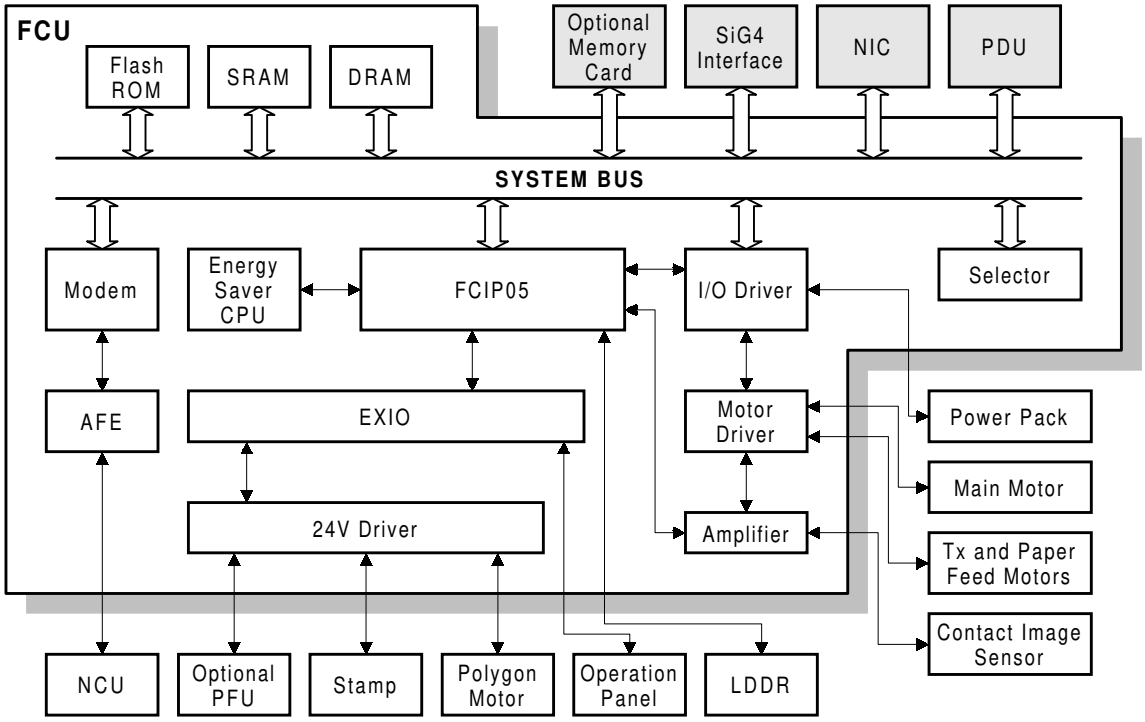
No	Name	Description
1	Paper End Sensor (Paper Feed Unit)	Detects when the paper in the cassette has run out.
2	Paper Feed Roller (Paper Feed Unit)	Picks up the top sheet of paper from the stack in the cassette, and feeds it into the printer.
3	Paper Feed Clutch (Paper Feed Unit)	Transfers drive from the paper feed motor in the mainframe to the paper feed roller in the cassette.
4	Cassette Switch (Paper Feed Unit)	Detects whether the cassette is installed or not.
5	Rear Cover Switch (Paper Feed Unit)	Detects whether the rear cover is open or closed.
6	Paper Feed Roller (By-pass Feeder)	Picks up the top sheet of paper from the stack in the feeder, and feeds it into the printer.
7	Paper Feed Solenoid (By-pass Feeder)	Transfers drive from the paper feed motor in the mainframe to the paper feed roller in the feeder.
8	Paper End Sensor and Paper Width Sensor (By-pass Feeder)	Paper end sensor: Detects when the paper in the feeder has run out. Paper width sensor: Detects the paper width installed in the feeder.

1.4 OVERALL MACHINE CONTROL



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The FCU (Facsimile Control Unit) contains logical components for overall system control, and direct interfaces to the optional memory card and the G4 card (SiG4).

There are two CPUs in the machine: the main CPU (FCIP05) and the energy saver CPU. The FCIP05 contains components such as the 8-bit CPU (RU8), DIP (Digital Image Processor), LIF (Laser Interface), DCR (Data Compression and Reconstruction), and DMA Controller.

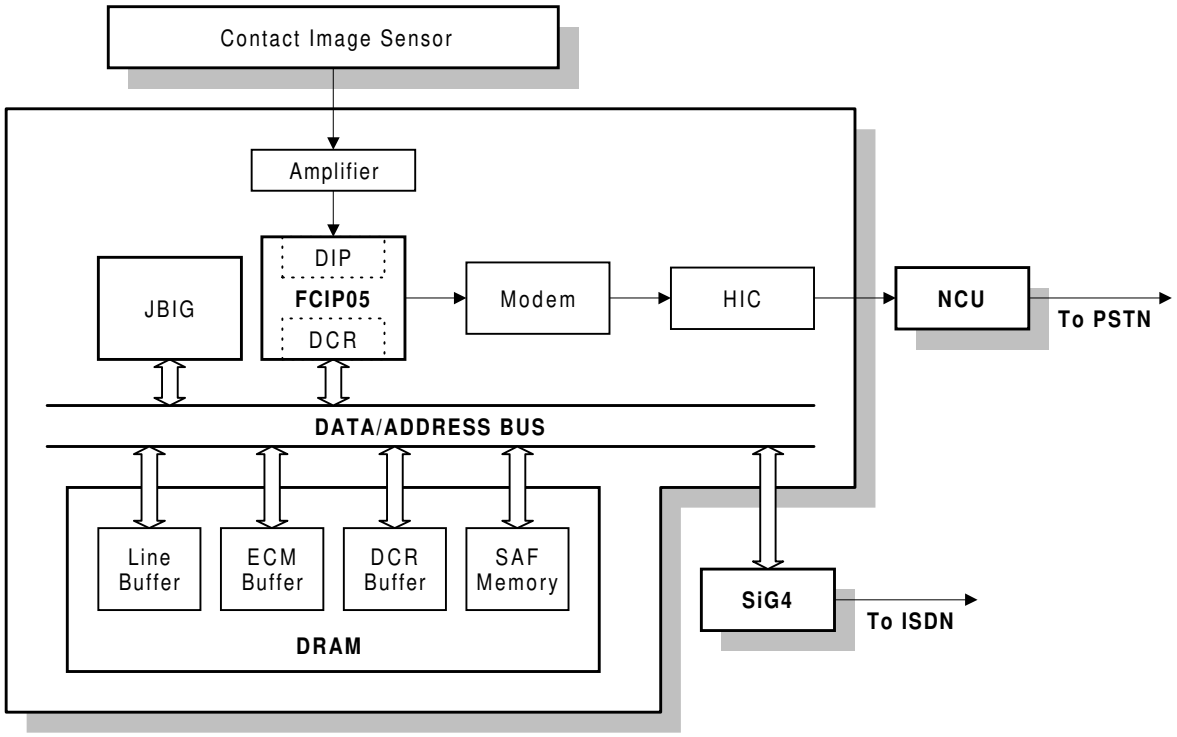
In energy saver mode, the main CPU switches off and the energy saver CPU takes over.

Shaded items in the above diagram are options.

- Memory card: For an optional memory card, or for inserting a flash memory card to download firmware.
- SiG4: ISDN interface
- NIC: Ethernet card for internet fax and network scanning
- PDU: Card for internet fax, by direct dial-up to an ISP (Internet Service Provider), not using a LAN

1.5 VIDEO DATA PATH

1.5.1 TRANSMISSION



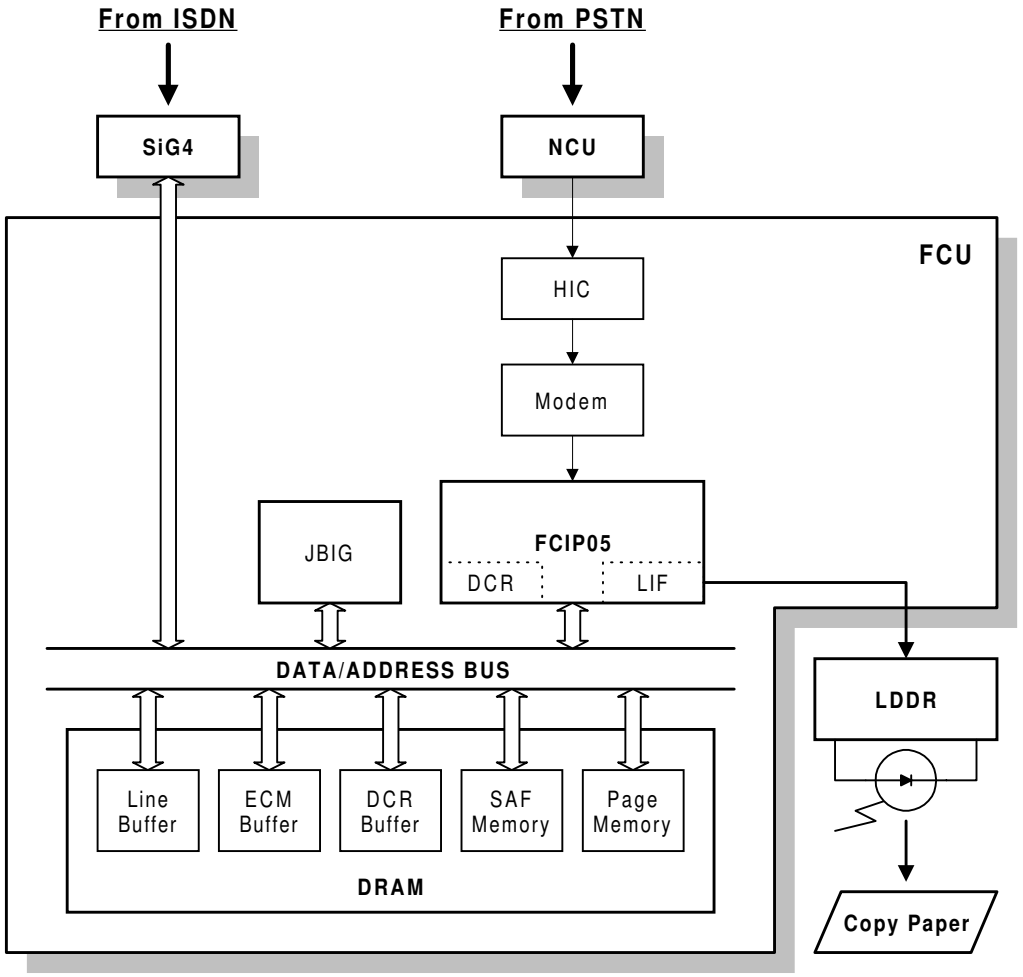
H535V509.WMF

Immediate Transmission:
Scanned data from the contact image sensor passes to the DIP in the FCIP05. After analog/digital video processing, the DCR compresses the data for transmission (the JBIG LSI does this if JBIG compression will be used). The compressed data passes through the DCR buffer, then to the ECM memory before entering the telephone line through the modem.

Memory Transmission:
First, the scanned data is stored in the SAF memory after compression in the DCR. At the time of transmission, the DCR decompresses the data from the SAF memory, then compresses it again for transmission (the JBIG LSI does this if JBIG compression will be used). The compressed data passes through the DCR buffer, then to the ECM memory before entering the telephone line through the modem. During G4 transmission (also for G3 ISDN), the compressed data from the DCR buffer passes through the SiG4 board. JBIG is not used for ISDN transmission.

Parallel Memory Transmission:
This feature allows the machine to scan a document into the SAF memory and send the same document simultaneously.
The machine stores the processed video data in the SAF memory and sends the data through the modem at the same time.

1.5.2 RECEPTION



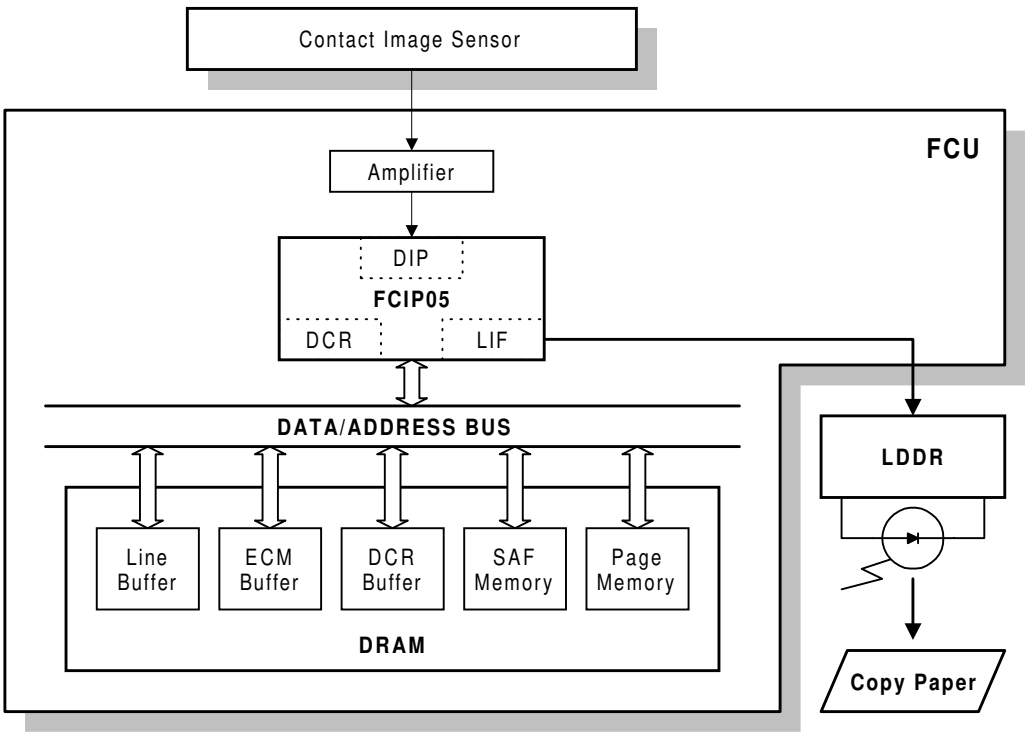
H535V510.WMF

Data from the line passes to the modem through the NCU and hybrid integrated circuit (HIC). After the modem demodulates the data, it passes through the ECM memory, DCR buffer, then to the DCR (or the JBIG LSI), which decompresses it into raster image data. At the same time, the compressed data passes to the SAF memory as a backup in case of mechanical problems during printing (if substitute reception is enabled).

During G4 reception (also for G3 ISDN), data from the ISDN line passes to the DCR for decompression. JBIG is not used for ISDN reception.

The raster image data then passes to the page memory for printing. After a page of data has been stored in the page memory, the data is sent to the LDDR through the LIF.

1.5.3 COPYING



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Single copy

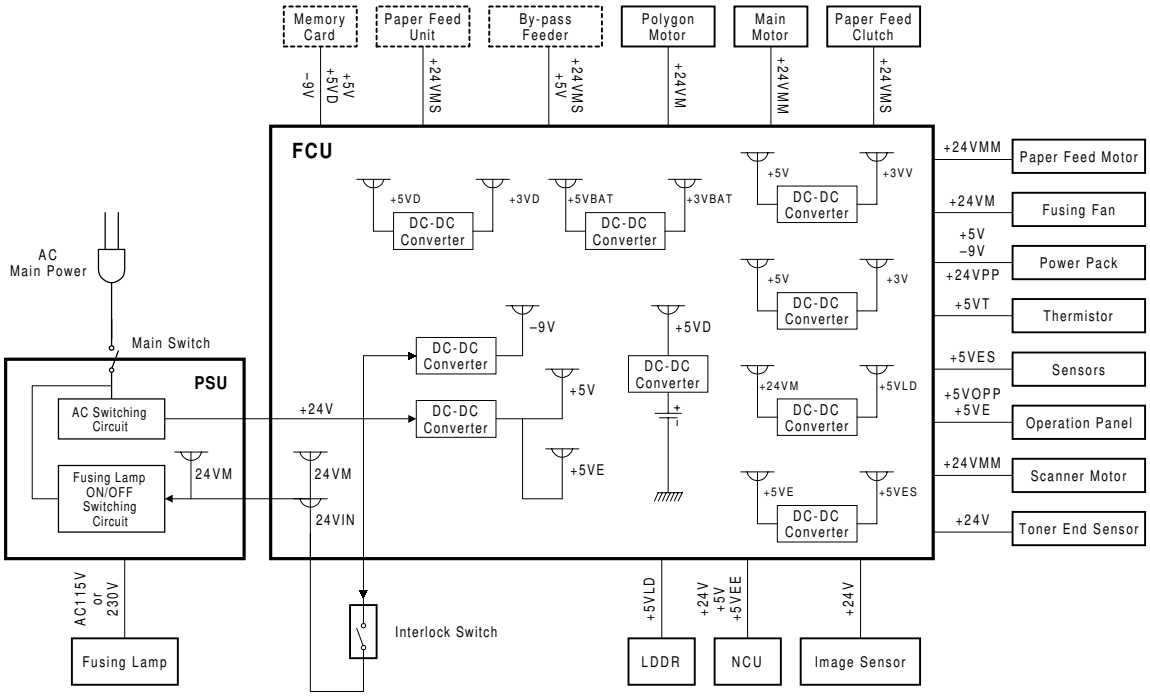
The scanned data passes to the page memory after video processing in the DIP. After a page of data has been stored in the page memory, the data is sent to the LDDR through the LIF.

Multi-page copy

The scanned data passes to the SAF memory after video processing (DIP) and compression (DCR). After a page of data has been stored in the SAF memory, the data passes to the DCR again for decompression, and then it passes to the page memory for printing.

1.6 POWER DISTRIBUTION

1.6.1 DISTRIBUTION DIAGRAM



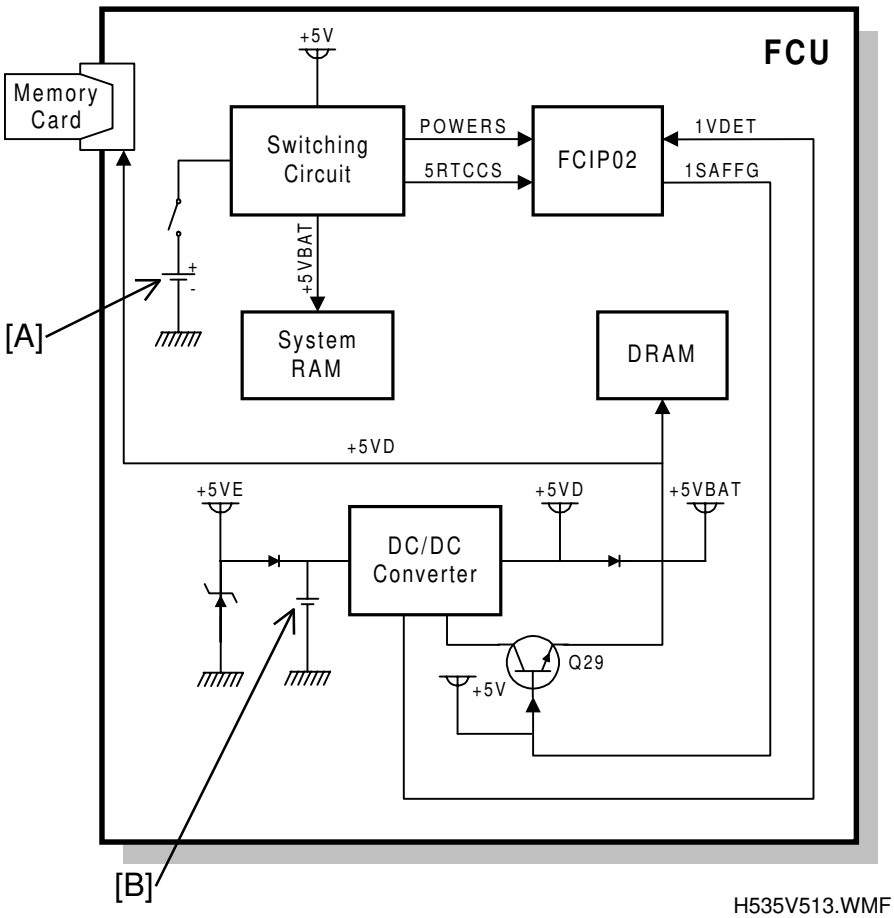
H535V515.WMF

The PSU supplies +24V dc power to the FCU. The FCU converts the +24 V to the following supplies.

+24V	Normally on when the main switch is.
+24VD	This is interrupted if the top cover interlock switch opens.
+24VIN	Supplies +24V to the fusing unit on/off switching circuit. It is interrupted if the top cover interlock switch opens.
+24VMM	For the scanner, paper feed, and main motors.
+24VPP	For the power pack.
+5V	Normally on when the main switch is.
+5VBAT	Supplies back up power to the system RAM on the FCU to back up the programmed data. A lithium battery generates +5VBAT.
+5VD	Supplies back up power for the DRAM and the optional memory card on the FCU. It can back up stored data for one hour after the power is switched off. A rechargeable battery on the FCU generates +5VD.
+5VE	Detects an activation signal from the NCU, SiG4 (G4 Unit), NIC, PDU, document feeder, or operation panel when the machine is in energy saving mode.
+5VES	Detects activation signals from sensors when the machine is in energy saving mode.
+5VLD	Supplies the laser diode. It is interrupted if the top cover interlock switch opens.
+5VT	For the thermistor.

+5VV	This is a more stable power supply than +5V. It is used for the contact image sensor.
+3V	For the FCIP05 internal circuits.
+3VBAT	For backing up the internal SRAM in the FCIP05
+3VD	For backing up the internal DRAM in the FCIP05
+3VV	For the FCIP05 A/D converter.
–9V	For the image sensor and power pack.

1.6.2 MEMORY BACK-UP CIRCUIT



The +5VBAT supply from the lithium battery [A] backs up the system RAM, which contains system parameters, programmed telephone numbers, and the real time clock in the main CPU. The 5RTCCS signal tells the main CPU whether the back-up power (+5VBAT) is coming from the battery or from the +5V power supply.

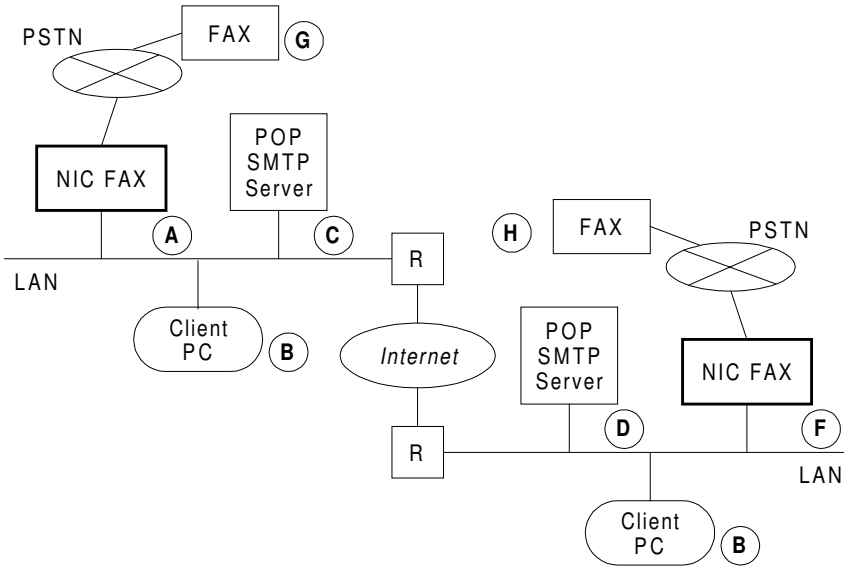
A rechargeable lithium battery [B] and the DC/DC converter on the FCU back up the DRAM (SAF memory) for one hour, if there is data in the SAF memory and the power is switched off. While the main power is on, the +5VE supply recharges the battery. The battery recharges in 5 or 6 days.

The battery [B] generates about 3 volts (max. 3.2 volts). The DC/DC converter raises this voltage to 5 volts so it can be used as the +5VD supply for the SAF backup. The CPU monitors the voltage of the +5VD supply with the 1VDET signal. When the battery has run down, and the voltage is lower than 4.4 volts, the CPU stops the DC/DC converter by dropping 1SAFFG to low and the machine stops backing up the memory.

NOTE: There is a battery switch for battery [A] but not for battery [B].

1.7 INTERNET FAX

1.7.1 INTERNET FAX WITH THE NIC FAX KIT



H535V520.WMF

Internet Fax (Paper to Paper)

This is for sending and receiving fax message through the Internet.

Document Flow

NIC Fax: **A** → SMTP Server: **C** → <<Internet>> → POP Server: **D** → NIC Fax: **F**

Internet Fax (Paper to PC)

Sending fax messages directly to a client PC through the Internet.

Document Flow

NIC Fax: **A** → SMTP Server: **C** → <<Internet>> → POP Server: **D** → Client PC: **E**

Transfer Request through the Internet

A fax message can be transferred over the Internet and then forwarded to a G3 facsimile machine, using the NIC fax as a transfer station.

Document Flow

NIC Fax: **A** → SMTP Server: **C** → <<Internet>> → POP Server: **D** → NIC Fax: **F** → <<PSTN>> → Standard Fax Machines: **H**

Forwarding

The NIC fax routes incoming fax messages to client PCs on the same network, based on the contents of the RTI or TSI, In this way, a message from a certain sender can always be forwarded to a certain location.

Document Flow

Standard Fax Machine: **G** → NIC Fax: **A** → SMTP/POP Server: **C** → Client PC: **B**

Auto-routing

The NIC fax routes incoming fax messages to client PCs on the same network, based on the code included in the SUB signal.

Document Flow

Standard Fax Machine: **G** → NIC Fax: **A** → SMTP/POP Server: **C** → Client PC: **B**

Paper to PC (Convenient 200-dpi Scanning)

The NIC fax sends the scanned image to the client PC as an image file attached to an e-mail message.

Document Flow

NIC Fax: **A** → SMTP/POP Server: **C** → Client PC: **B**

LAN Fax with the Fax Driver

The LAN fax feature allows a client PC to send a G3 fax message to the NIC fax over the LAN. The NIC fax will then send the fax message to the destination, which could be either a PSTN G3 fax or an e-mail address.

Document Flow

- Client PC: **B** → NIC Fax: **A** → Standard Fax Machine: **G**
  If the optional G4 unit is installed, the fax message can be sent through the ISDN line from the client PC.
- Only the fax driver must be installed in the client PC. PC fax software and the IC COM redirector utility are not needed.

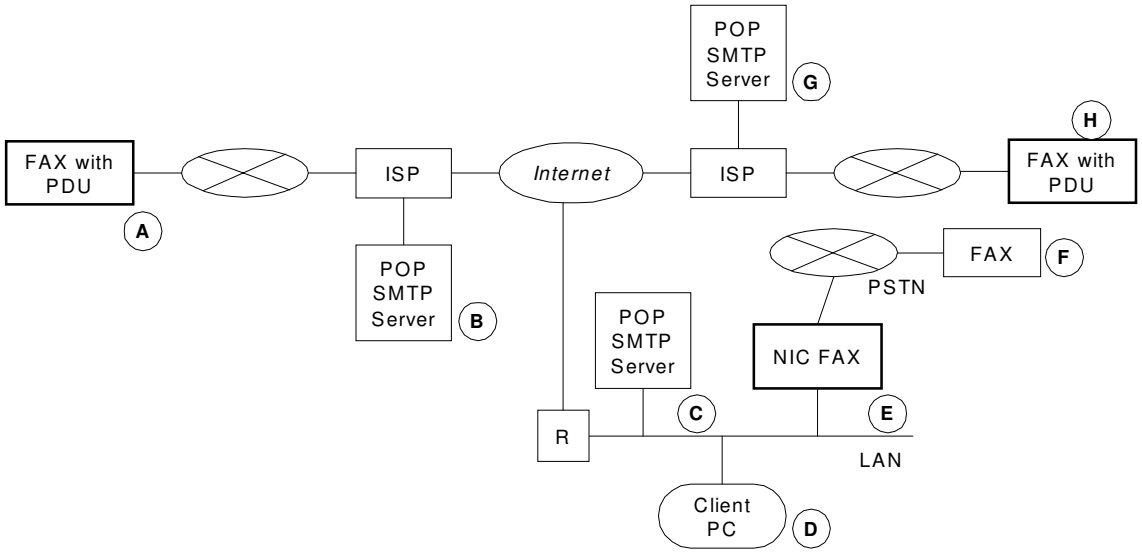
PC to Paper with the Fax Driver

This provides a convenient but low-resolution LAN printer. The feature is also known as “Convenient Printing”. The standard printing resolution is 200 dpi, but if the optional 2-MB memory is installed, the printing resolution will be 400 dpi.

Document Flow

Client PC: **B** → NIC Fax: **A**

1.7.2 INTERNET FAX WITH THE PDU KIT



H535V524.WMF

Internet Fax (Paper to Paper)

Sending and receiving fax messages through the ISP and the Internet.

Document flow

Fax with PDU:

1. [**A**]→PSTN→ISP/SMTP Server [**B**] → Internet→POP Server [**C**] → NIC fax [**E**]

Fax with PDU:

1. [**A**] → PSTN→ISP/SMTP Server [**B**] → Internet → ISP POP Server [**G**] → PSTN → FAX with PDU [**H**]
2. NIC fax [**E**] → SMTP Server [**C**] → Internet → ISP POP Server [**B**] → PSTN → Fax with PDU [**H**]

Internet Fax (Paper to PC)

Sends fax messages directly to PCs over the Internet (using an ISP).

Document flow

1. FAX with PDU [**A**] → PSTN → ISP/SMTP Server [**B**] → Internet → POP Server [**C**] → Client PC [**D**]

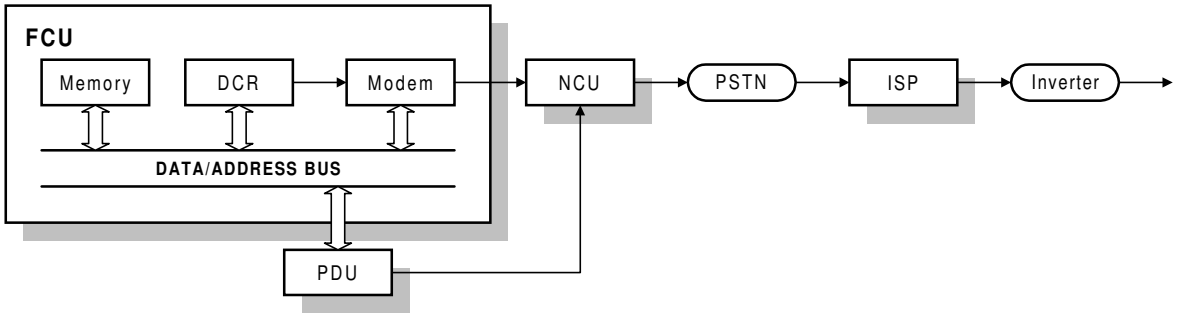
Transfer request through the ISP and the Internet

Transfers fax messages over the Internet and then forwards them to standard G3 fax machines using the NIC fax as a transfer station.

Document Flow

1. FAX with PDU [**A**] → PSTN → ISP SMTP Server [**B**] → Internet → POP Server [**C**] → NIC FAX [**E**] → PSTN → Standard fax machine [**F**]

PDU Circuit Diagram



H535V522.WMF

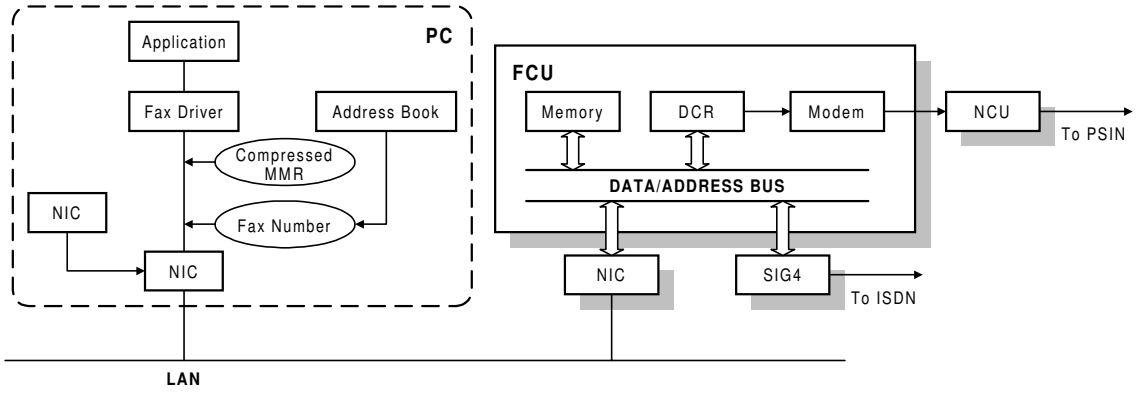
Scanned images are stored in memory.

Image data is compressed to MH data.

During transmission, the FCU detects a dial tone and then dials the telephone number for the ISP. After connecting to the ISP, the NCU changes the data line relay from the FCU to the PDU. This connects the PDU to the PSTN line.

The PDU then sends the PPP commands to the ISP and can then connect to the ISP.

1.7.3 LAN FAX WITH THE FAX DRIVER



H535V521.WMF

The fax driver makes print data from an application, then compresses the print data into MMR data. PJL commands are added to the compressed data and the destination telephone number and the line selection are included in the PJL commands. The telephone number can be taken from an address book application.

The fax driver uses MDP (Multi Direct Print) and TCP/IP protocol to transfer the print (MMR) data to the machine. The machine then stores this data in the temporary memory.

Print data is transferred using the same method as memory transmission. (See Memory Transmission in Section 1-5-1)

The default resolution is 200dpi. When either the optional 2MB or 4MB of memory is installed, 400-dpi resolution is available. The 400-dpi resolution is selectable without the optional memory, however, even if you select it the printer resolution will be 200 dpi. The optional memory MUST be installed to obtain the 400-dpi resolution.

Memory Extension

When you add the 2MB or 4 MB of additional memory to the LAN Fax with Fax Driver, if you specify Fax & Print, 2.6 MB of addition memory is allocated for printing. The other 1.4 MB (or 3.4 MB) is allocated for storing files in memory.

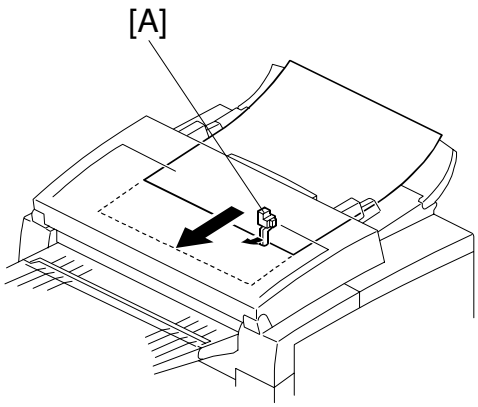
Note: When you select “Fax” only, even if you have added optional memory, you cannot print at 400 dpi. 400-dpi printing is only available for “Fax and Print” (selected from the user tools menu).

2. DETAILED SECTION DESCRIPTIONS

2.1 SCANNER

2.1.1 MECHANISMS

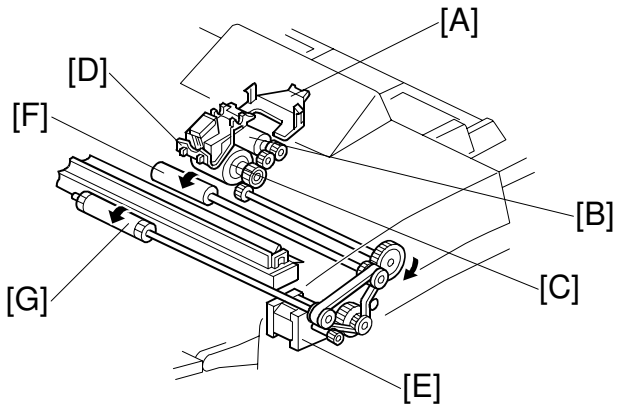
Document Detection



H535D103.WMF

The document sensor [A] detects a document when it is placed in the ADF.

Pick-up and Separation and Drive Mechanism



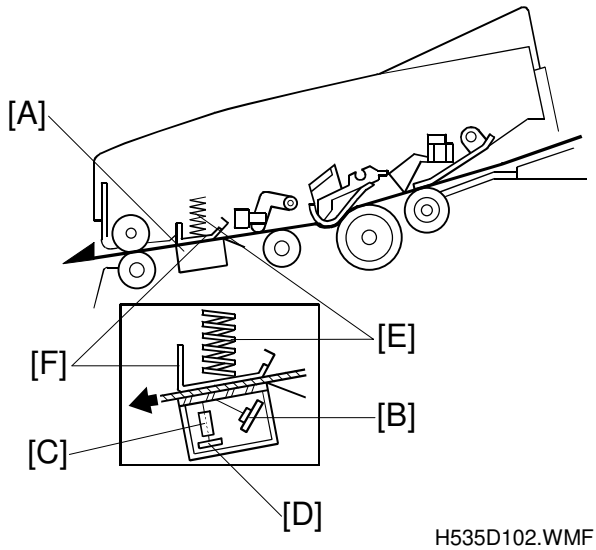
H535D101.WMF

The pressure plate [A] aligns the leading edges of the pages of the document. When the machine starts feeding the document, the mechanical clutch in the ADF roller unit lifts up the pick-up roller [B] to feed the bottom sheet of the document.

Then, the feed roller [C] feeds the sheet into the scanner. The separation pad [D] prevents the feed roller from feeding more than one sheet at a time.

The scanner motor [E] drives the pick-up roller [B], feed roller [C], R1 roller [F], and R2 roller [G].

Image Scanning



The image sensor [A] consists of a row of 1728 photosensitive elements (width 216 mm). The document reflects light from the LED array [B] onto the rod lens array [C], which focuses it onto the image sensor [D].

Because of the short optical path inside the contact image sensor, the focal depth is much shorter than for a CCD type scanner.

Consequently, the pressure spring [E] pushes the white plate [F] so that the document surface always touches the exposure glass at the scan line.

The image sensor assembly is factory adjusted, so it does not require adjustment or replacement in the field.

The image sensor scans the original one line at a time, and outputs an analog signal for each line. The voltage from each element depends on the intensity of the light reflected from the original onto the element. The light intensity depends on the darkness of the document from the area that was reflected.

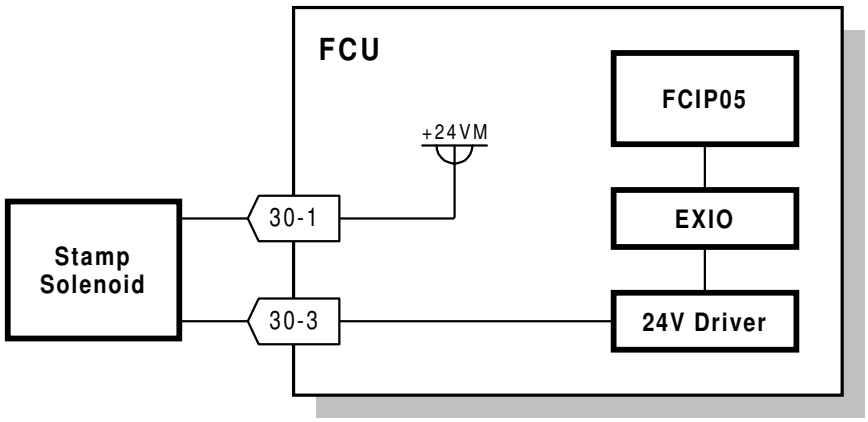
The white plate [F] must be clean, because the machine scans it every page to calibrate the white level (auto shading).

Scan Speed

The scanning speed for each resolution is as shown below.

Resolution	Scan Speed (A4)
Standard - Memory Tx	1.9 s
Standard - Immediate Tx	3.8 s
Detail	3.8 s
Fine	7.5 s

Stamping



H535D570.WMF

The machine stops the document at the stamping position after the page is transmitted (immediate transmission) or scanned into memory (memory reception) successfully.

The machine drops the signal at CN30-3 to activate the stamp solenoid. Then the original is fed out of the sensor.

2.1.2 JAM CONDITIONS

The main CPU detects a document jam if one of the following conditions occurs.

Jam Condition	Description	Error Code
Non-feed	The feed mechanism attempts to feed the paper once every second for a maximum of 6 seconds. If the scan line sensor does not detect the document within 6 seconds, the monitor displays an error message.	1-00
Incorrect sensor conditions	The scan line sensor turns on while the document sensor is off.	
Maximum document length exceeded	The scan line sensor does not turn off after the maximum document length has fed through it. This occurs at the following times: Memory Tx – Standard resolution: 11 s Memory Tx – Standard resolution: 23 s Detail resolution: 23 s Fine resolution: 46 s (all these times are for a 1.2-m long document).	1-01
Cover open	While the ADF is working, the ADF cover is opened.	No error code
Error during feed-out	The scanner motor reverses when the final page of the document feeds out of the scanner and/or when removing a jammed document. This error occurs when placing a document into the feeder while the motor is rotating.	No error code

2.1.3 RESOLUTION UNIT CONVERSION

mm-inch Conversion

This machine's scanner is designed in mm resolution units. However, the other terminal may have an inch-based printer. The machine can convert the scanned data into inch-format for transmission.
The following table shows the actual transmitted data resolution units in various cases.
Please note that other models (such as FX4 and FR4) convert from inches to mm units whereas this machine converts from mm to inches.

G3 Immediate and Memory Transmission

Receiving terminal's resolution units		inch	mm	inch/mm
Mm-inch conversion (Comm switch 14 bit 0)	On	inch	mm	mm
	Off	mm	mm	mm

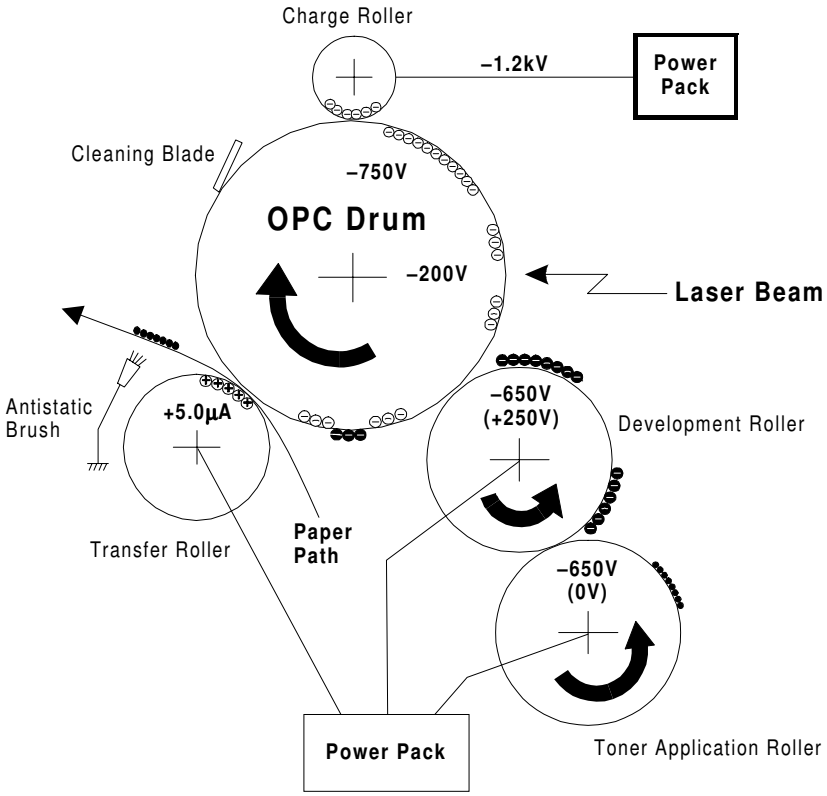
G4 Transmission

When the above switch is off (Communication Switch 14 bit 0, the default setting is off) the machine transmits the data in mm-format without conversion while informing the other terminal that it is an inch-based transmission.

Cross Reference
Inch to mm conversion (mm to inch): Communication Switch 14, bits 0 and 1

2.2 PRINTING

2.2.1 PRINTING PROCESS - OVERVIEW

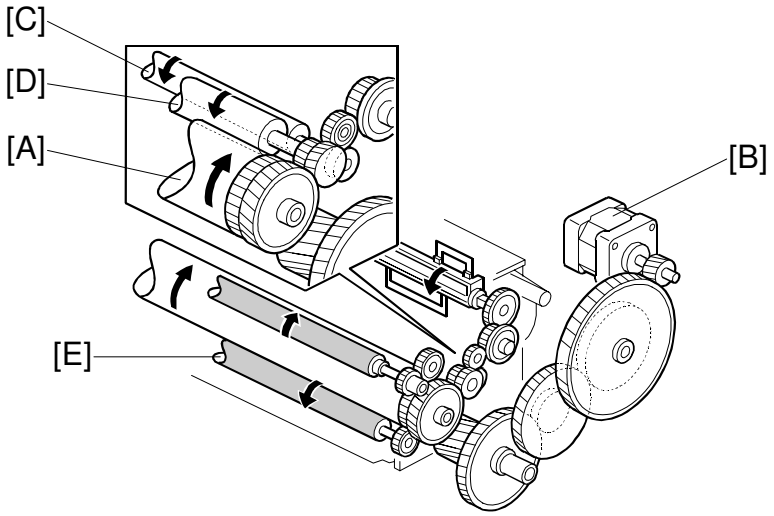


H535D521.WMF

This machine uses a “write-to-black” system, with negative toner.

- The charge roller gives the drum surface an approximate negative charge of –750 V.
- The exposed area on the drum drops to about –200 V.
- The development roller carries toner to the latent image on the drum surface.
  The bias voltages are as follows:
  Toner application roller
  During printing: –650 V, Before, after, and between pages: 0 V
  Development roller
  During printing: –400 V, Before, after, and between pages: +250 V
- The transfer roller pulls the toner from the drum onto the paper.
  A constant current of +5.0 µA is applied. The anti-static brush helps to separate the paper from the drum.
- The cleaning blade removes any toner remaining on the drum after the image transfers to the paper.
- This machine does not use a quenching lamp.

2.2.2 OPC DRUM

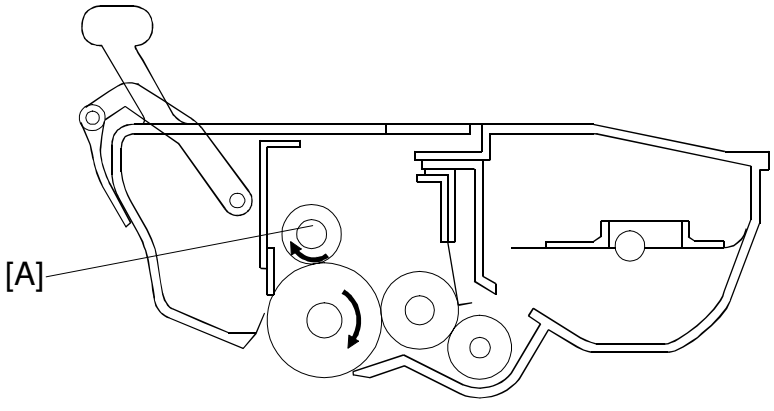


H535D504.WMF

The cartridge contains an organic photo-conductor drum [A]. The diameter of the drum is 24 mm. The main motor [B] drives it through a gear train. The same gear train also drives the toner application roller [C], development roller [D], and transfer roller [E].

The drum, development roller, fresh and used toner tanks, and cleaning mechanism are all included in the cartridge, which is known as the “All-in-One” cartridge.

2.2.3 CHARGE

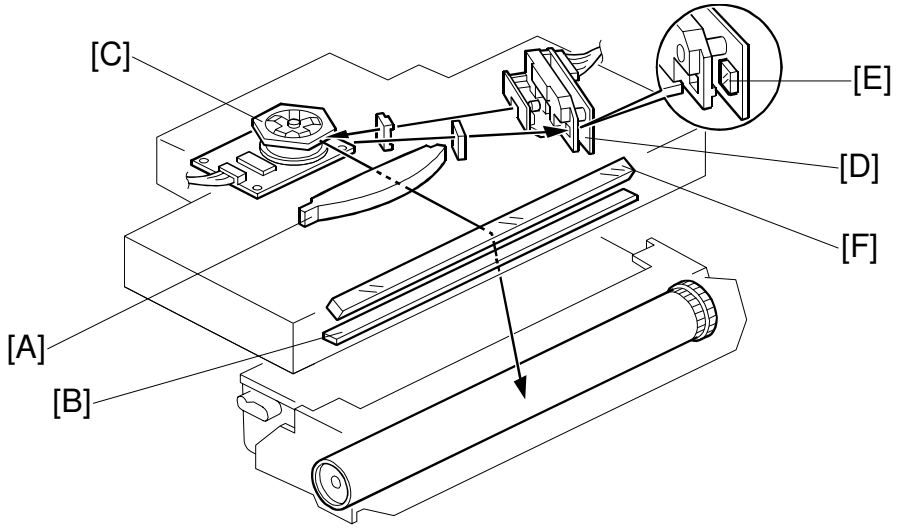


H535D517.WMF

The cartridge contains a charge brush roller [A]. The diameter of the roller is 12 mm. The charge brush roller does not generate ozone. The power pack applies a constant voltage of about –1.2 kV. The charge brush roller gives the drum surface a negative charge (–750 V).

2.2.4 LASER EXPOSURE

Overview



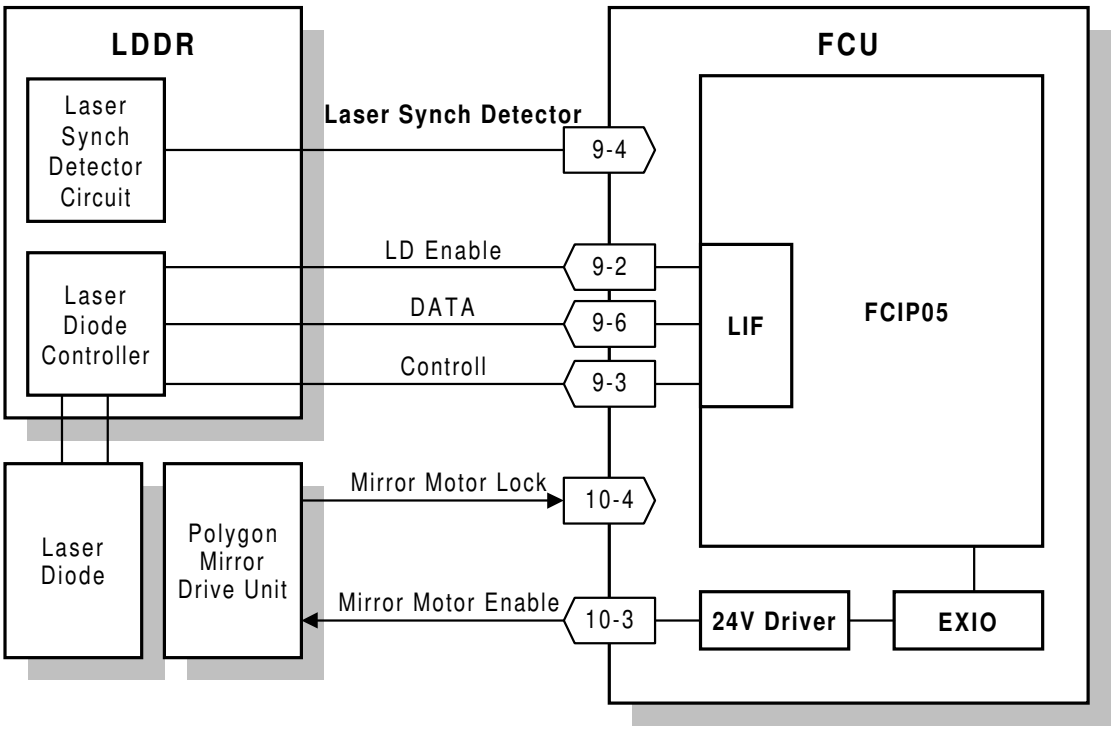
H535D605.WMF

- The focusing lens [A] is a double torroidal lens that has a barrel torroidal surface on both sides.
- The shield glass [B] prevents toner and dust from entering the laser optics area.
- Mirror motor [C] speed: 10086.2069 rpm (16 dots/mm)
- The strength of the beam emitted from the LD unit [D] is 4 mW with a wavelength of 780 nm. The photo transistor [E] inside the LD unit synchronizes the laser main scan.
- The mirror [F] reflects the laser beam onto the drum.

The charge on the exposed areas of the drum drops to about -200V while non-exposed areas remain at around –750 V.

As a mechanical safety feature, a shutter slides to block the laser beam path whenever the upper unit is opened.

Block Diagram



H535D606.WMF

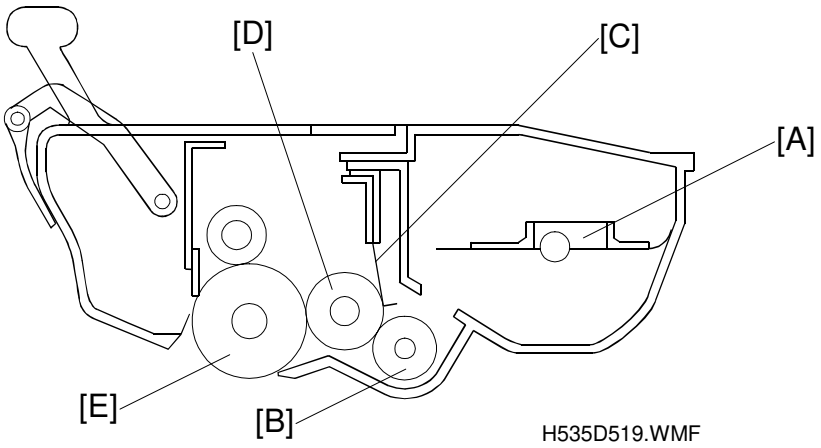
The LIF (Laser Interface) circuit inside the FCIP05 monitors and controls the laser diode timing (FCU CN9-3), and transfers data for printing to the laser diode (FCU CN9-6).

Error Conditions

LD Failure:
The machine detects LD failure when it does not detect the laser synchronization signal within 10 ms of the LD ready signal. When this occurs, the machine warns the customer with the Call Service indicator (error code 9-20).

Mirror Motor Failure:
The machine detects a mirror motor error when the FCU CN10-4 signal does not go low within 10 seconds of the polygon mirror motor turning on.
The machine also detects a mirror motor error when the FCU CN10-4 signal goes back to high for 3 seconds or more during mirror motor operation. When either of these errors occurs, the machine warns the customer with the Call Service indicator (error code 9-23).

2.2.5 TONER SUPPLY



This machine uses mono-component toner, composed of resin and ferrite. The toner mixing bar [A] stirs and carries toner to the toner application roller [B]. The toner application roller supplies toner to the development roller [C].

The main motor drives the toner supply mechanism through a gear train.

Since the toner tank and the development unit are combined in one unit, the initial toner supply mode is not required for this machine.

Cartridge Detection

This machine does not have a cartridge detection mechanism. It detects a cartridge using the output from the toner end sensor.

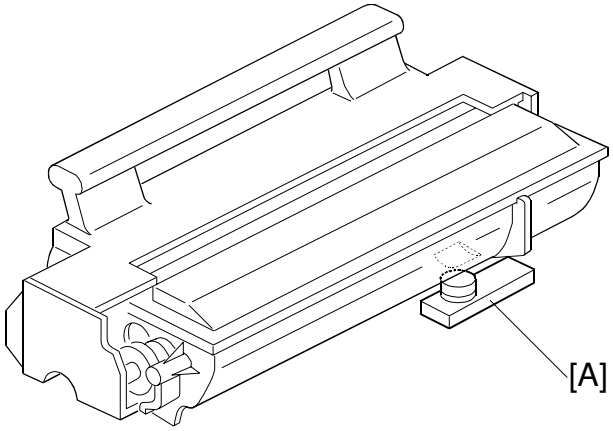
At the following times, the toner end sensor detects whether a cartridge is installed in the machine.

- At power-up.
- When the machine comes back to normal mode from the level 2 Energy Saver Mode.
- After opening and then closing the cover.

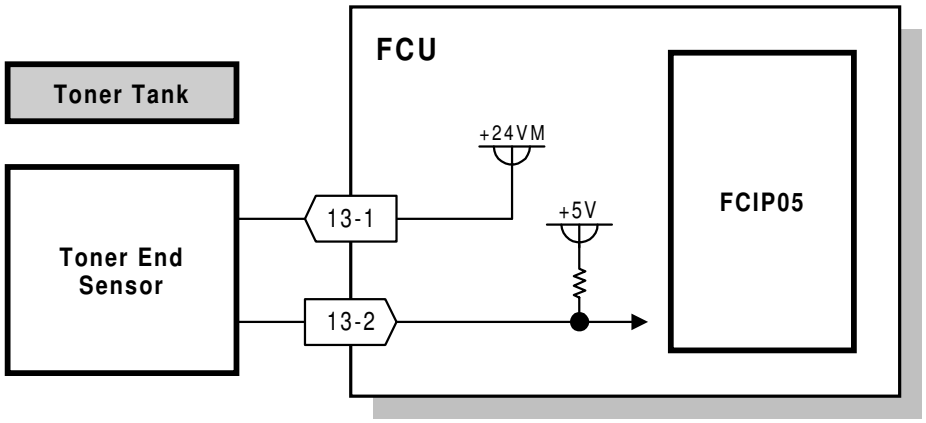
Toner End Detection

The toner end sensor [A] below the toner tank detects toner near-end.

While the main motor rotates, the machine detects toner end by the voltage output from the toner end sensor. The voltage from the sensor is close to 5 V when the toner tank is full and decreases as the toner is used up.



H535D516.WMF



H535D507.WMF

Toner near-end condition:
When the CPU detects a low output (below a certain threshold) from the toner end sensor for a few seconds, the CPU starts to blink the Add Toner indicator (LED). This is the toner near-end condition.

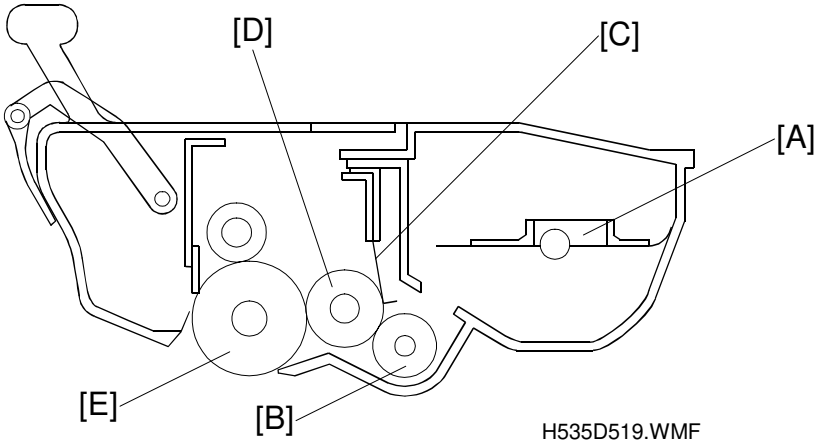
Toner end condition:
After toner near-end is detected, the machine can print 100 more sheets, then the CPU disables printing (this is the toner end condition).

The machine clears the toner near-end or toner end condition when the power is switched off and back on or when the cover is opened and closed, if the output from the toner end sensor goes back high again.

NOTE: If the toner end sensor is accidentally disconnected, the machine cannot detect if the cartridge is installed. The machine assumes that there is still toner, even if the toner tank is empty.

2.2.6 DEVELOPMENT

Overview



The toner supply bar [A] stirs and carries toner to the toner application roller [B]. The toner application roller is a sponge-like structure that carries toner to the development roller [D]. As the development roller [D] turns past the toner metering blade [C], only a thin coating of negatively charged toner particles stays adhered.

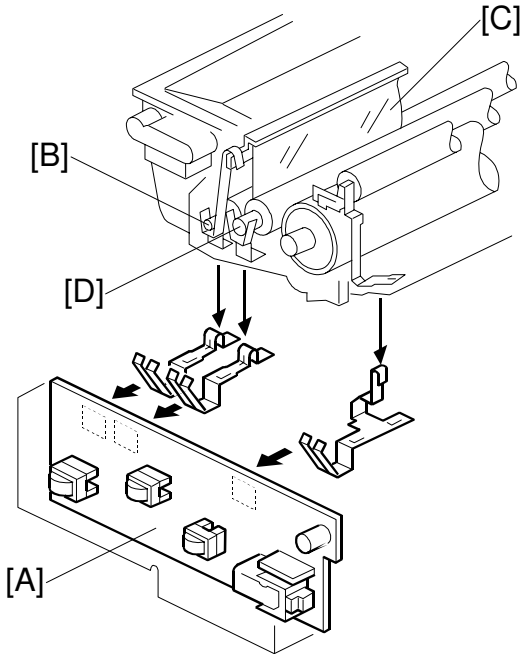
During printing, the power pack applies a bias voltage of –650 V to the toner application roller and another bias voltage of –400 V to the development roller. The potential difference between these two rollers carries the toner from the toner application roller to the development roller.

The exposed area on the drum [E] is at –200 V. The development roller applies toner to the latent image areas as they turn past the drum.

The development roller is made of soft rubber, so it does not damage the surface of the drum.

Development Bias

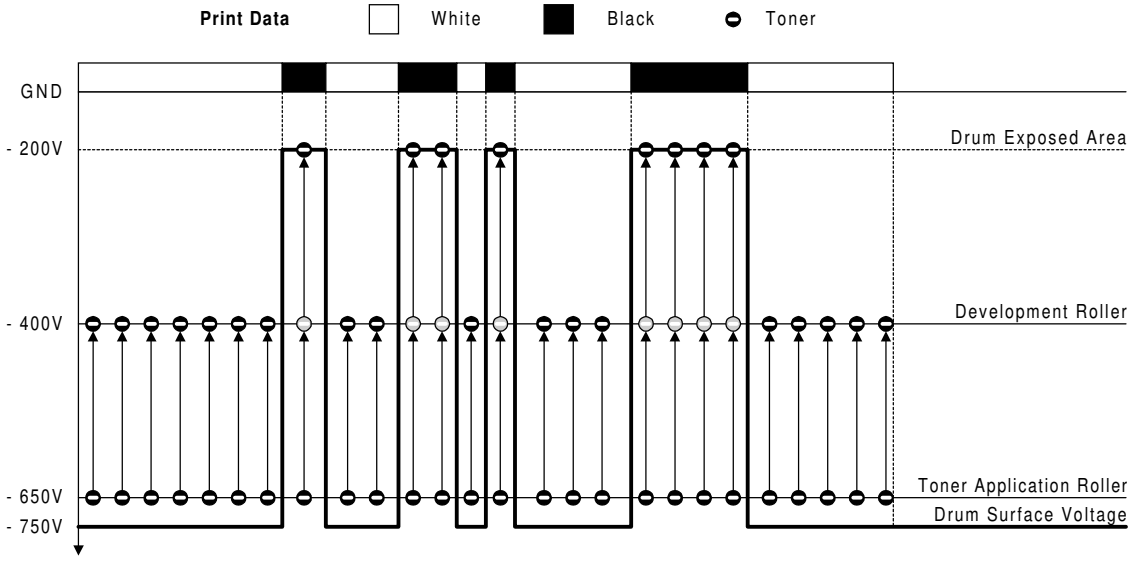
The power pack [A] applies one voltage to the toner application roller [B] and toner metering blade [C], and a different voltage to the development roller [D].



H535D518.WMF

Bias Control (During Printing)

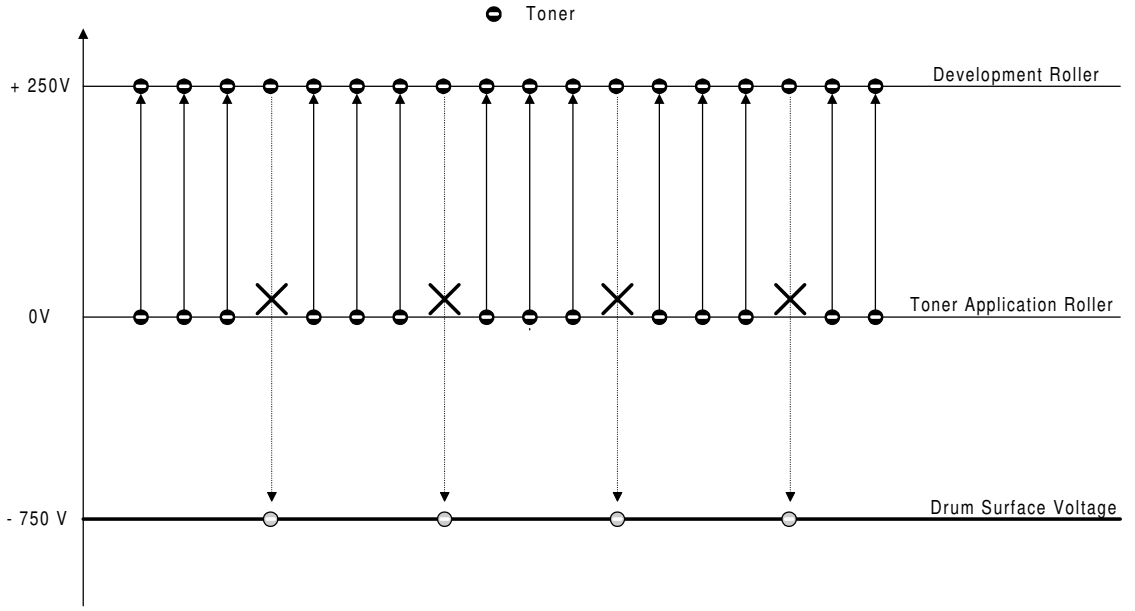
The power pack applies a charge of –650 V to the toner application roller, and -400V to the development roller. Toner transfers from the toner application roller to the development roller and on to the laser-exposed areas on the drum as shown below.



H535D531.WMF

Bias Control (After Each Page)

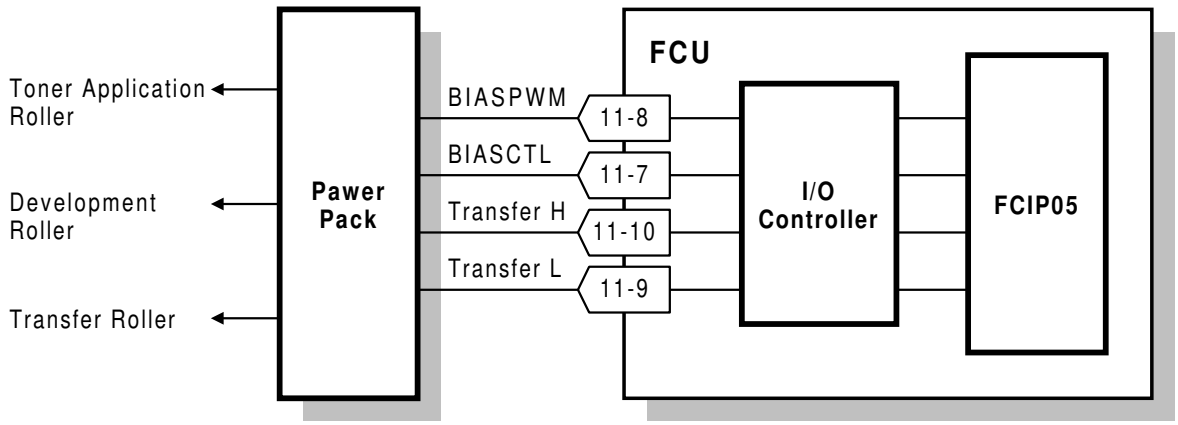
At the start and the end of any print process (including the transfer roller cleaning mode), the power pack applies 0 V to the toner application roller, and +250 V to the development roller. This is to prevent toner from transferring to the drum until the latent image on the drum arrives at the development roller.



H535D533.WMF

Note that the voltage difference between the toner application and development rollers is kept the same as for printing, at 250 V. This keeps the same amount of toner on the development roller at all times during the print run.

Bias Control Circuit



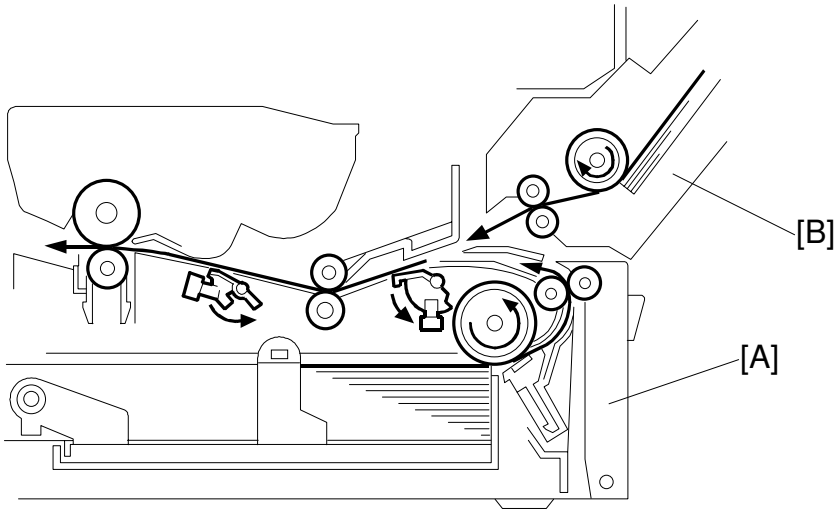
H535D509.WMF

The CPU controls the voltages to the toner application and development rollers through the I/O Driver, using the BIASCTL and BIASPWM signals as shown in the following table.

In	BIASCTL	Low	High	Low	High
	BIASPWM	Pulse On	Pulse On	Pulse Off	Pulse Off
Out	Toner Application Roller	–650 V	0 V	Off	Off
	Development Roller	–400 V	+250 V	Off	Off

2.2.7 PAPER FEED

Overview



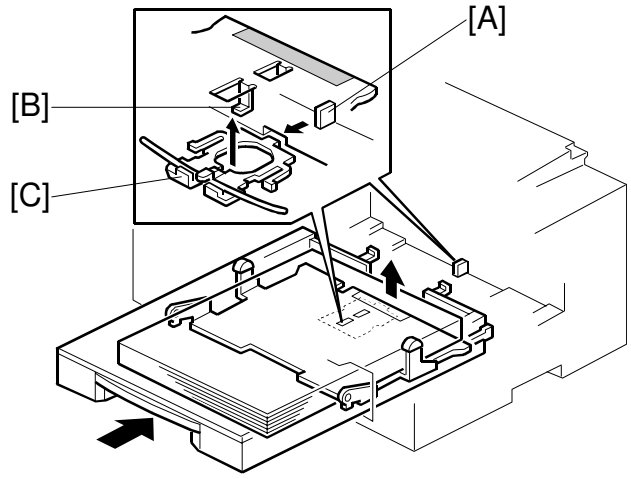
H535D511.WMF

The standard cassette [A] holds 250 sheets.

An optional paper feed unit, which holds up to 500 sheets, is available (only one of these can be installed). An optional by-pass feeder [B] is also available.

Paper Lift Mechanism

Standard Cassette

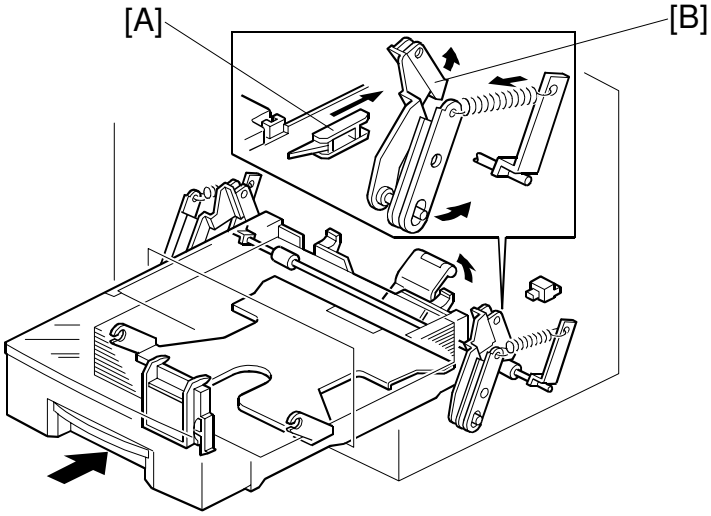


H535D525.WMF

After loading the paper and closing the cassette, the projection [A] pushes the slide lock [B] off the bottom hook [C].

Once the slide lock comes off, a spring pushes up the bottom plate.

Optional Paper Feed Unit

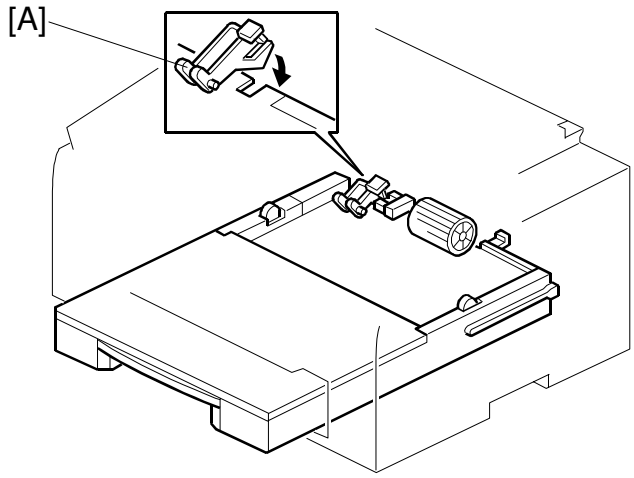


H535D513.WMF

After loading the paper and closing the cassette, the projection [A] pushes the lever [B], and then the springs raise the bottom plate.

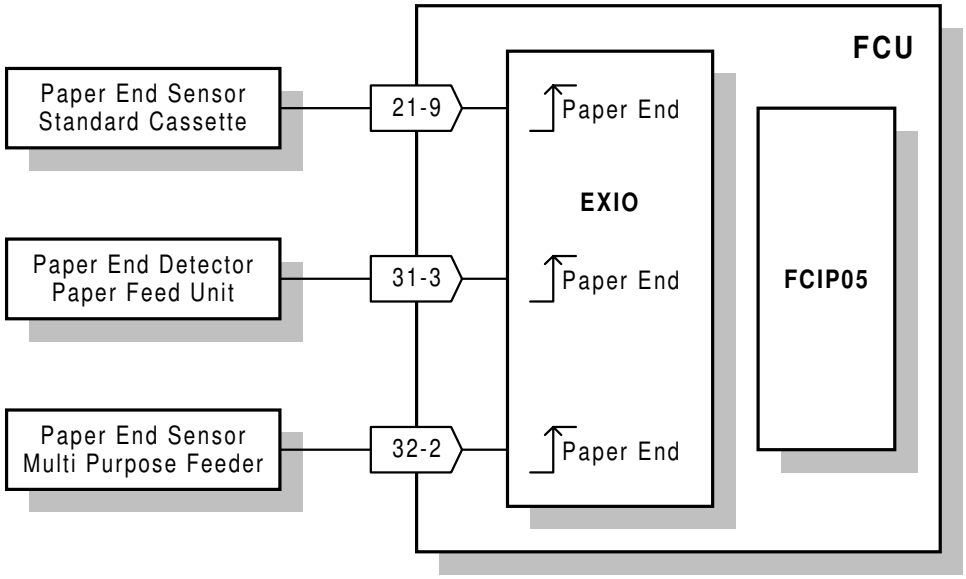
Paper End Detection

Standard Cassette/Optional Paper Feed Unit/Optional By-pass Feeder



H535D527.WMF

When the cassette runs out of paper, the paper end sensor actuator [A] drops through a slot in the bottom plate.



H535D659.WMF

Pick-up and Separation

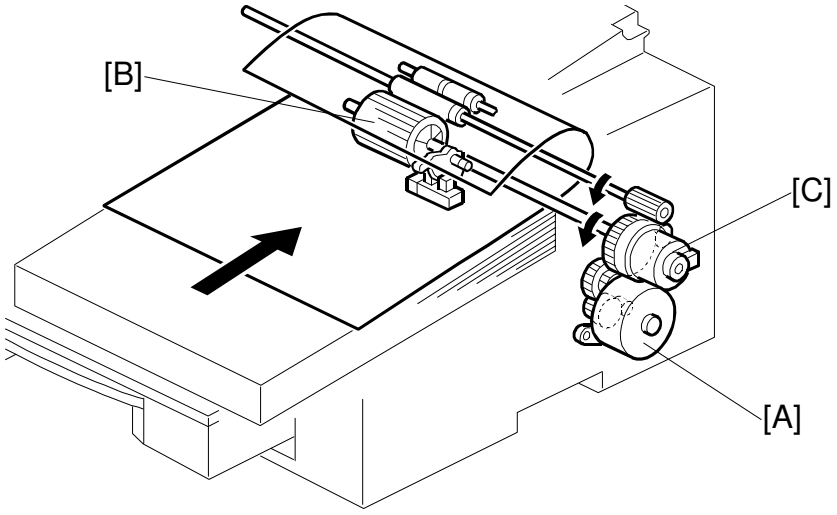
Standard Cassette and Optional Paper Feed Unit

The pick-up and separation mechanism is a separation pad type. The separation pad and the paper feed roller allow only one sheet to feed.

The paper feed motor in the mainframe starts to rotate when the printer is ready for printing.

Drive Mechanism

Standard Cassette

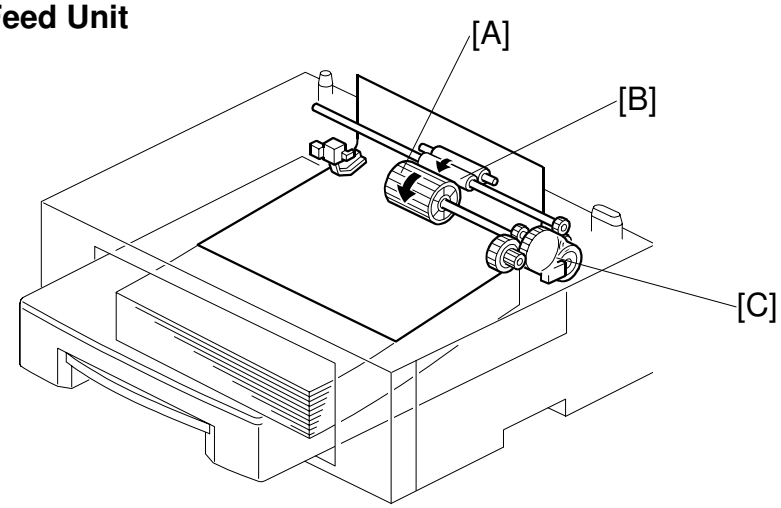


H535D522.WMF

The paper feed motor [A] drives the paper feed mechanism. When using the standard cassette, the paper feed motor turns clockwise; driving the paper feed roller [B], as shown in the diagram.

The clutch [C] only allows the paper feed roller to turn once for each sheet of paper.

Optional Paper Feed Unit

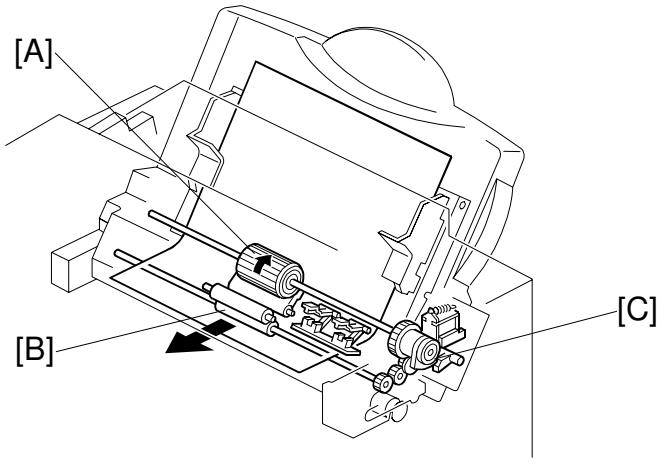


H535D508.WMF

The paper feed motor in the mainframe drives the paper feed mechanism through a gear train. When the optional paper feed unit is used, the paper feed motor turns counter-clockwise, driving the paper feed roller [A] and the transport roller [B], as shown.

The paper feed clutch [C] in the optional paper feed unit ensures that the paper feed roller rotates only once for each sheet of paper.

Optional By-pass Feeder



H535D515.WMF

The paper feed mechanism is driven from the paper feed motor in the mainframe through a gear train. When the machine feeds a sheet of paper from the by-pass unit, the paper feed motor in the mainframe turns counter-clockwise to drive the paper feed roller [A] and the transport roller [B] as shown in the diagram.

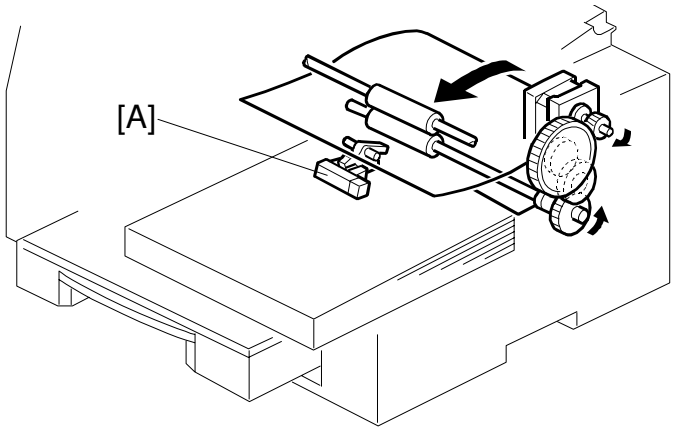
The paper feed solenoid operates the clutch [C] in the optional by-pass unit to ensure that the paper feed roller rotates only once for each sheet of paper.

Paper Feed Priority

If there is an optional paper feed unit and/or by-pass feeder installed in the machine, deciding paper feed priority is in accordance with the following rules:

- If the machine has an optional by-pass feeder and all of the cassettes contain paper of the same size, the machine uses the optional paper feed unit first, the standard cassette second, and the by-pass feeder third.
- The by-pass feeder can be set to print only from a PC by a user parameter switch adjustment.

2.2.8 REGISTRATION



H535D523.WMF

When the paper edge sensor [A] turns on, the machine slows the paper feed motor.

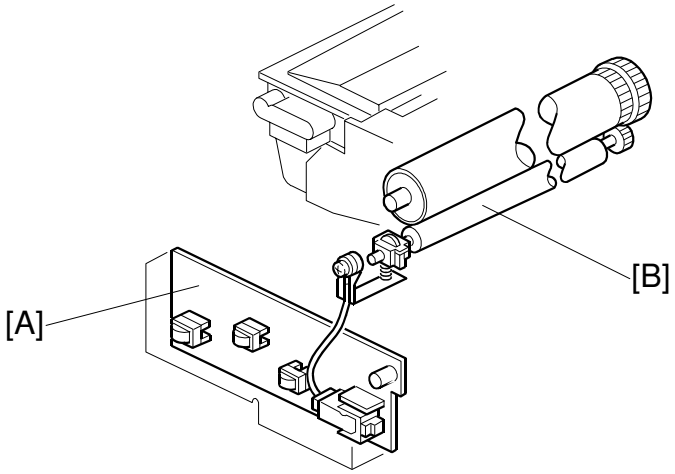
Then, a certain time after the paper's leading edge turns on the registration sensor; the machine starts to write the latent image to the drum.

When the paper edge sensor turns off, the machine speeds up the paper feed motor to feed the next page and stops the laser.

Jam Detection

	Condition	Error Code
Standard Cassette	When the paper edge sensor does not turn on within 2.6 seconds of the paper jam timing signal.	9-07
	When the registration sensor is not turned on within 5.5 seconds after the paper edge sensor turns on. When the paper edge sensor does not turn off within 9.47 seconds after the registration sensor turns on.	9-84
Any Paper Feed Station	When the fusing exit sensor does not turn on within 5.0 seconds after the registration sensor turns on	9-08
	When the registration sensor does not turn off within 4.8 seconds after the paper edge sensor turned off. When the fusing exit sensor does not turn off within 5.0 seconds after the registration sensor turns off.	9-09
Optional Paper Feed Unit	When the paper edge sensor does not turn on within 2.6 seconds after the paper feed clutch turns on.	9-50
	When the registration sensor does not turn on within 5.5 seconds after the paper edge sensor turns on. When the paper edge sensor does not turn off within 9.47 seconds after the registration sensor turns on.	9-51
Optional By-pass Feeder	When the paper edge sensor does not turn on within 2.6 seconds after the paper feed solenoid turns on.	9-82
	When the registration sensor does not turn on within 5.5 seconds after the paper edge sensor turns on. When the paper edge sensor does not turn off within 9.47 seconds after the registration sensor turns on.	9-83

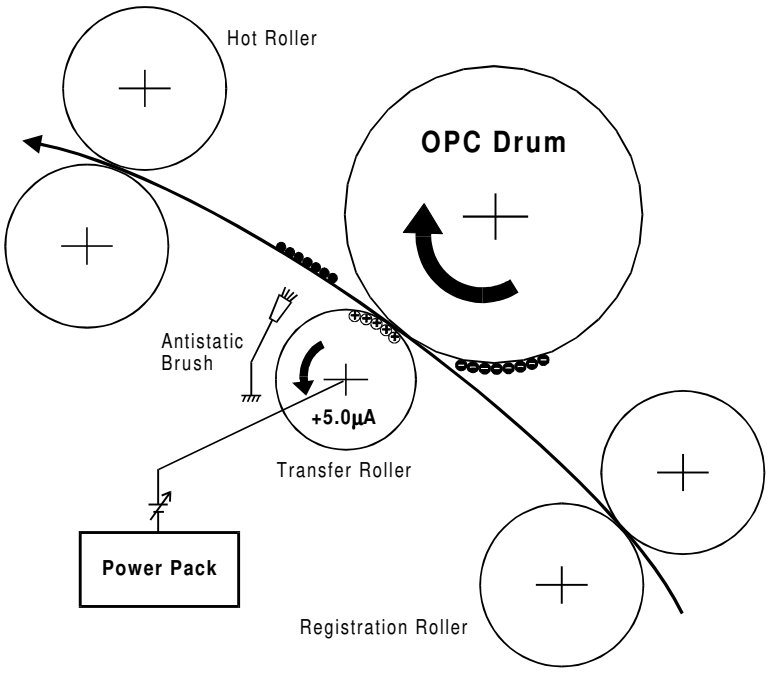
2.2.9 TRANSFER AND SEPARATION



H535D526.WMF

Instead of using a transfer corona wire, this machine uses a transfer roller, which touches the drum surface.

The power pack [A] applies a constant current of +5.0 μA to the transfer roller [B]. The positively-charged transfer roller pulls negatively charged toner off the drum. The anti-static brush and the curvature of the drum help the paper to drop away from the drum.



H535D536.WMF

Cleaning Mode

If the paper is smaller than the printed image, or if a paper jam occurs during printing, toner may transfer to the roller surface. To prevent this, the transfer roller is cleaned before the next printing run.

While the machine is cleaning the transfer roller, the power pack supplies –1,200 V to the transfer roller, and charges the drum to –750 V. The negatively charged toner on the transfer roller transfers back to the drum.

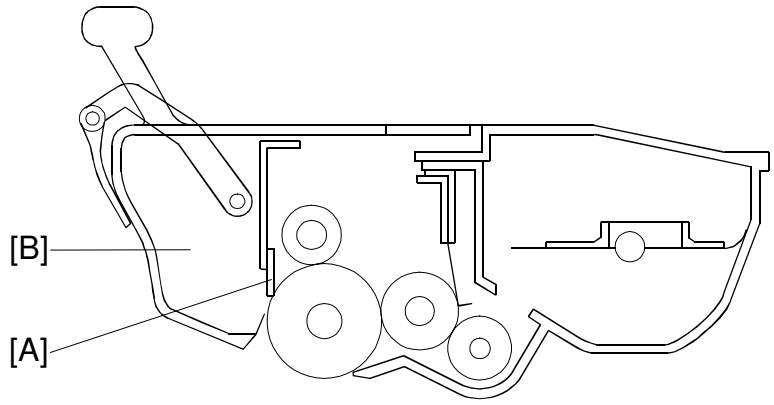
The machine cleans the transfer roller under the following conditions:

- At power on (when the fusing temperature reaches half of the standby temperature).
- When the cover is opened and then closed during the printing process.
- After clearing a printer jam.
- When the paper is smaller than the printed image.

The CPU controls the transfer roller voltage through the power pack using the following signals.

In	THTRG (11-10)	Low	High	Low	High
	TLPWM (11-9)	Pulse Off	Pulse On	Pulse On	Pulse Off
Out	Transfer Roller	+5.0 µA	–1,200 V	—	Off

2.2.10 CLEANING



H535D519.WMF

The cartridge contains the cleaning unit and the used toner tank.

The cleaning blade [A] removes any toner remaining on the drum after the image is transferred to the paper, and then brings the toner into the used toner tank [B].

There is no used toner overflow detection mechanism because the used toner tank is large enough for the lifetime of the cartridge.

2.2.11 FUSING

Fusing Lamp Control

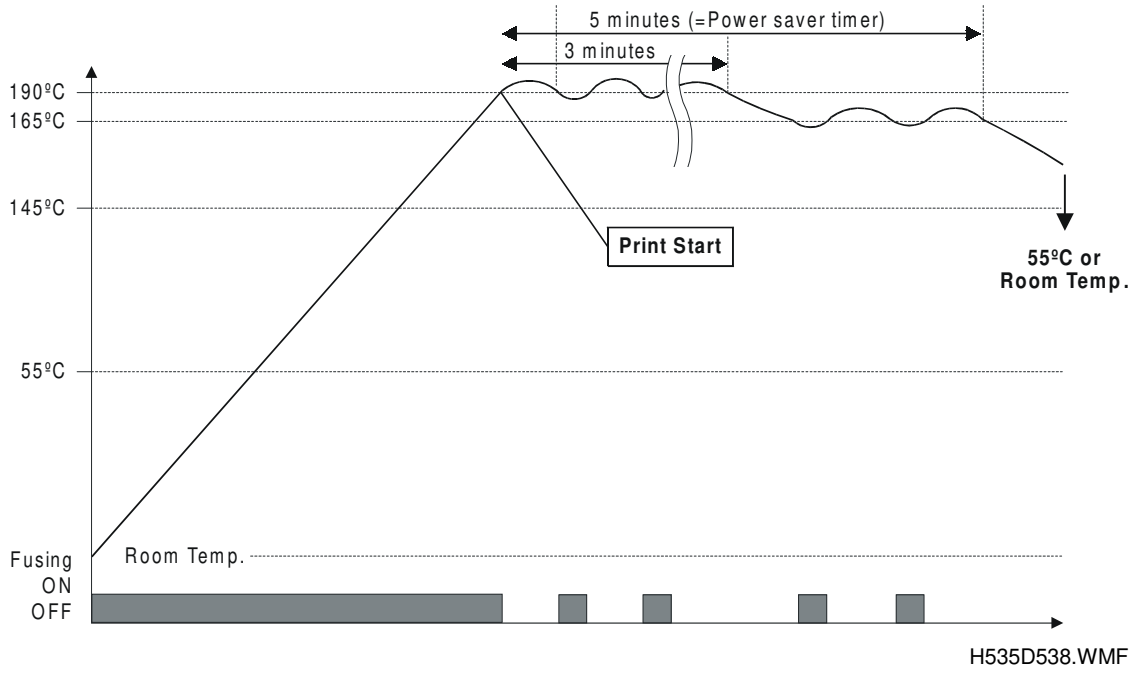
During printing, the machine keeps the fusing temperature at 190°C. If the printing operation continues for more than 3 minutes; the machine keeps the fusing temperature at 165°C.

When the Energy Saver Key is pressed or the energy saver timer expires, the machine goes into an energy saver mode. In Level 2 Energy Saver Mode (Energy Saving Standby), the fusing lamp shuts off. For Energy Saver Mode Level 1 (Fax Standby), the machine keeps the fusing temperature at 55°C.

Cross Reference
Energy Saver Modes: Section 2-3

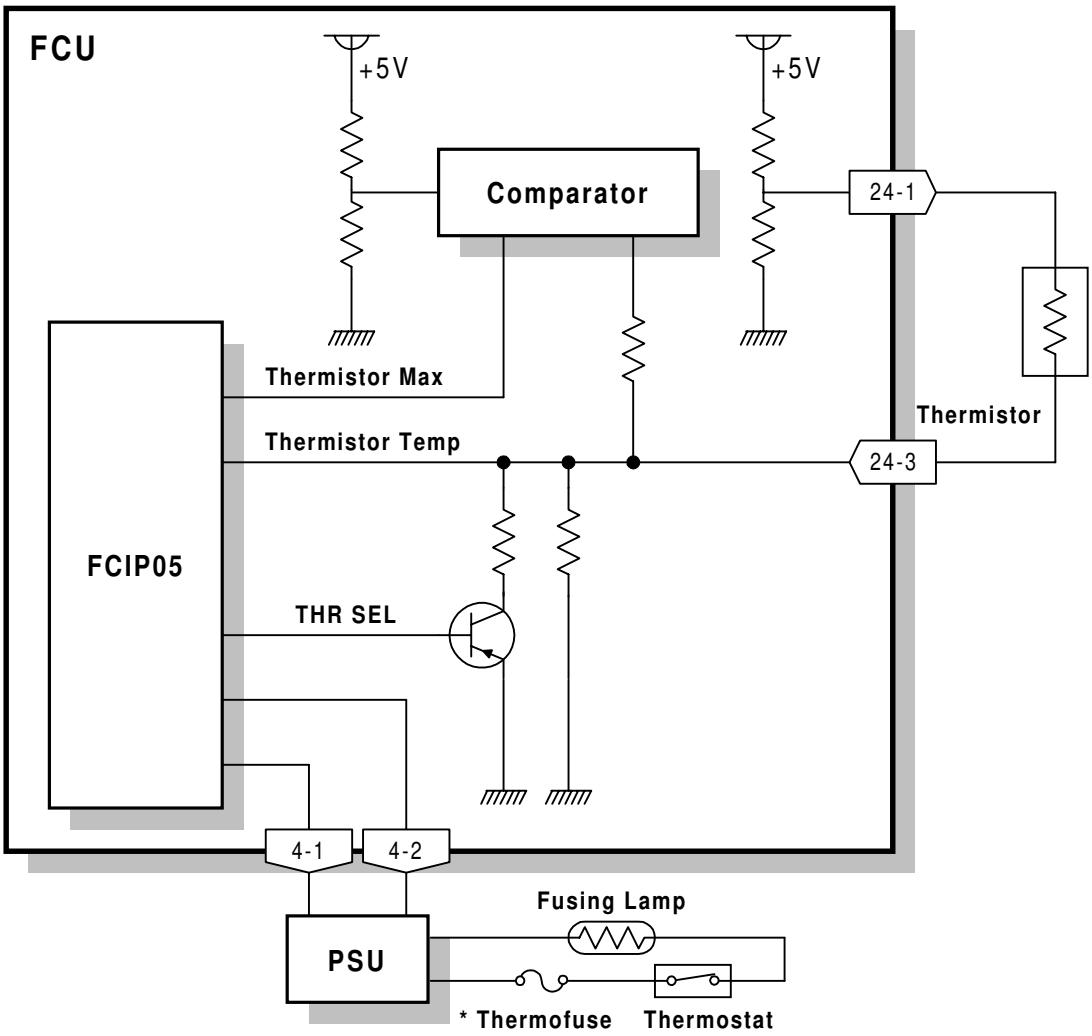
Points to Note:

- Standby temperature: Room temperature (Energy Saving Standby), 80°C if users select 'Fax Standby' Energy Save Mode.
- Printing temperature: 190°C, falling back to 165°C after 3 minutes
  If the initial lamp temperature is over 120°C before printing, the printing temperature is 165°C.
- Thermistor maximum: 250°C (monitored by a comparator)
- Thermostat maximum: 150°C (the temperature of the hot roller would be about 400°C)
- Thermofuse maximum: 169°C (the temperature of the hot roller would be about 400°C). – The thermofuse is not used in USA models.



H535D538.WMF

Fusing Control



H535D662.WMF

There is no thermofuse in USA and Asia models.

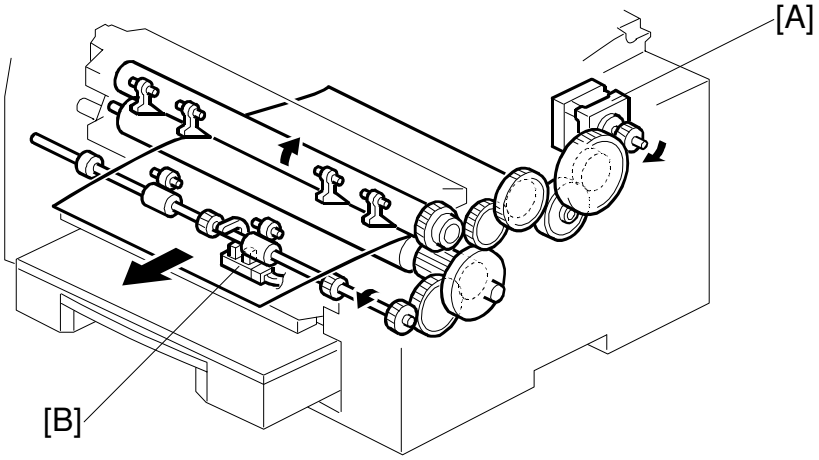
During normal operation, the CPU controls the fusing lamp based on input from the thermistor using the above circuit.

When the machine is turned on, or when it comes back from the Level 2 Energy Saver Mode, it checks whether the thermistor circuit is intact by using the THR SEL signal on the FCU. If the thermistor is connected properly, the machine begins normal operation. If it is not, it generates an Auto Service Call (error code 9-22, sub-code 09).

As a backup safety measure, when the temperature of the hot roller reaches approximately 400 °C, the thermostat and/or thermofuse open.

The machine turns on the cooling fan when the fusing temperature reaches 60°C and shuts it off when the fusing temperature drops below 60°C.

Fusing Unit Drive



H535D524.WMF

The main motor [A] drives the fusing unit through a gear train. The fusing exit sensor [B] detects when the paper is fed out of the unit.

After opening the upper unit, the gear train frees up, making it easy to remove jammed paper.

Jam Detection - Paper Feed Out

The machine detects a paper jam when the fusing exit sensor does not turn off within 5.0 seconds after the registration sensor turns off (Error Code 9-09).

This is the same for all cassettes.

Fusing Unit Service Call Conditions

	Conditions	Error Code (9-22)
At power on	If there is a problem with the thermistor. (Also for when the machine returns to Normal Mode from Energy Saver Mode Level 2.)	Sub-code 09
	If the machine detects that the jumpers 29 to 32 settings on the FCU are wrong. [The status of the jumpers determines the model type (USA, Europe/Asia, Japan)]	Sub-code 0B
Standby mode	If the fusing temperature stays below 45°C for more than 36 seconds after entering Energy Saver Mode Level 1 or when in Standby Mode.	Sub-code 05
Warm-up	If the fusing temperature takes more than 60 seconds to reach 145°C from the standby temperature.	Sub-code 02
Energy saver mode	If the fusing temperature stays above 110°C for more than 36 seconds after entering Energy Saver Mode Level 1.	Sub-code 0A
During printing	If the fusing temperature is above 195°C for more than 180 seconds.	Sub-code 01
	If the fusing temperature is below 145°C for more than 180 seconds.	Sub-code 06
	If the fusing temperature is below 140°C for more than 1 second.	Sub-code 07
After printing	If the fusing temperature takes more than 20 minutes to return to 100°C when the machine goes into Energy Saver Mode Level 2.	Sub-code 03
	Either: If the fusing temperature takes more than 20 minutes to go down to below 100°C when the machine goes into the Energy Saver Mode Level 1.	Sub-code 04
At any time	If the fusing temperature reaches 250°C.	Sub-code 08

2.3 SYSTEM FEATURES

2.3.1 ENERGY SAVER MODES

This machine has two energy saver modes: Level 1 (Fax standby) and Level 2 (Energy saving standby). The setting depends on the User Parameter Switch 05 bit 6 setting.

In normal mode (during operation) or energy saver mode level 1, the main CPU monitors and controls the machine. The fusing lamp is maintained at the standby temperature (55°C).

In energy saver mode level 2, the main CPU and dc power supplies are shut down. The energy saver CPU monitors the Energy Saver key, incoming calls, the document sensor, and the NIC card. When the Energy Saver CPU detects activity at one of these, it activates the +5V supply to start up the main CPU aåÇ≠çíÜÉê power supplies.

	Normal	Level 1	Level 2
Main CPU	ON	ON	OFF
Energy Saver CPU	OFF	OFF	ON
LCD/LED	ON	OFF	OFF
Energy Saver LED	OFF	ON	ON
+5V Power Supply	ON	ON	OFF
+24VM Power Supply	ON	ON	OFF
Fusing Lamp	ON	55°C	OFF

When the energy saver timer expires, the machine automatically goes into energy saver mode.

When the fusing temperature does not fall below a certain threshold, the machine does not enter energy saver mode level 2.

Cross Reference
Energy saver timer initial setting: System Switch 0B, Bits 2 and 3
(1 minute, 3 minutes, 5 minutes, or Unlimited: Timer disabled)

Going to Energy Saver Mode Level 2

The machine will not go into Level 2 energy saver mode if one of the following conditions exists:

- A TX or RX file is stored in the memory.
- SAF memory not empty
- Mechanical error(s)
- The NCU is off-hook
- A cover opens
- No paper cassette
- When the fusing temperature does not fall below a certain threshold

Manual Wake Up Conditions

While the machine is in Energy Saver Mode, either the Energy Saver CPU (Level 2) or the main CPU (Level 1) monitors signals from the following:

- Energy Saver key
- Document sensor
- Covers
- Paper cassettes
- Off-hook detector on the NCU
- Activation signals from the G4 unit, NIC or PDU option

When the CPU detects a signal from one of these, it wakes up all the components and the machine enters normal operating mode, even during the Night Timer period.

After the operation, the machine returns to energy saver mode.

2.3.2 AUTOMATIC SERVICE CALLS

Service Call Conditions

The machine makes an automatic service call when one of the following conditions occurs.

Service Call Conditions	Error Code	Sub-code 8004B1(H)
Laser diode failure	9-20	21
Fusing lamp failure	9-22	01 to 0B
Polygon mirror motor failure	9-23	31 or 32
Power pack failure	9-29	51 to 59
Excessive jams in the scanner	None	None
Excessive jams in the printer	None	None
The PM counter has reached the threshold (60,000 prints)	None	None
The PM interval has expired	None	None

Cross Reference
Service station number: Service Function 13
Troubleshooting: Chapter 7

2.3.3 PAGE SEPARATION AND DATA REDUCTION

Incoming pages that are only slightly longer than the copy paper may be reduced in the sub-scan direction. Whether or not this happens depends on the settings of printer switches 04 and 05.

Reduction Enabled

If bit 0 of printer switch 03 is at 1 (Enabled), the data will be reduced in the page memory to fit on the copy paper. However, data will only be reduced if the length of the incoming page is ± 5 mm shorter than a certain maximum length. The maximum reducible incoming page length depends on the copy paper size and the reduction ratio stored for that paper size in printer switches 04 and 05.

Each paper size can be programmed with a separate reduction ratio. In each of the two bit switches, there is one bit for each possible paper size. The combination of the bit settings determines the ratio for that paper size.

Bit No.	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Switch No.	Not used	Not used	Legal	F4	A4	Letter	Not used	A5 sideways
SW 04	0: 4/3		1: 4/3		0: 8/7		1: 12/11	
SW 05	0:		0:		1:		1:	

The following table shows the maximum reducible incoming page length for each copy paper size. All lengths are in millimeters. The factory setting of the reduction ratio is 4/3.

Paper Type	Printable Page Length	Maximum Reducible Incoming Page Length		
		Ratio = 4/3	Ratio = 8/7	Ratio = 12/11
A5 Sideways	147.8 mm	190.1 mm	162.9 mm	155.3 mm
Letter	279.2 mm	365.2 mm	313.0 mm	298.7 mm
A4	296.9 mm	388.8 mm	333.2 mm	318.2 mm
F4	330.1 mm	402.0 mm	371.2 mm	354.3 mm
Legal	355.6 mm	402.0 mm	400.3 mm	382.1 mm

Incoming pages that are longer than the maximum length will not be reduced, but will print on two pages and be treated in accordance with the setting of bit 1 of printer switch 00. If this bit is 1, the bottom few lines of the page will continue from where the first page left off. If it is 0, the next page continues from where the previous page left off.

Reduction Disabled

If bit 0 of printer switch 03 is at 0 (Disabled), the data will not be reduced. In addition, if the incoming page is up to x mm longer than the copy paper, the excess portion will not print. The setting of bits 4 to 7 of printer switch 03 determine the value of x, somewhere between 0 to 15 mm.

Hex value	Value of X
0	0
0	1
and so on until	
F	15

Messages more than x mm longer than the copy paper will print out on two pages in accordance with the setting of bit 1 of printer switch 00, as explained earlier.

2.3.4 MEMORY RECEPTION CONDITIONS

User parameter switch 05 bit 1 allows the user to select how to treat an incoming message that is without RTI or CSI.

User parameter switch 05 Bit 1:
Memory reception if no RTI or CSI received 0: Possible, 1: Impossible

If 0 is selected, the machine receives all messages regardless of RTI and CSI.

If 1 is selected (this is the default setting), the user parameter setting works in combination with the following bit switch.

System Bit Switch 11 Bit 6:
Conditions for memory reception if no RTI or CSI is received.
0: Impossible; memory reception is possible only after receiving the RTI or CSI.
1: Memory reception is possible if there is no mechanical (printer) error.

The default setting is 1. The default setting means that if the printer is working, it will receive all messages, even if there is no RTI/CSI (despite the user parameter setting). However, when there is a mechanical error in the printer, the machine rejects such a message because no trace of the sender will be stored in the machine.

2.3.5 BLANK SHEET DETECTION

When the machine scans the document for transmission, it counts the black pixels. If the number of black pixels is below a certain threshold, the machine displays an error message (BLANK DOCUMENT).

Immediate transmission

When the machine detects one or more blank pages, the LCD displays an error message for 20 seconds after transmission.

Memory transmission

When the machine detects one or more blank pages, the LCD displays an error message for 20 seconds after completing memory storage.

The setting of the following RAM address determines when the machine displays the “blank paper detected” error message.

800858 Error display condition

01H: If the first page is blank (default setting)
02H: If all the pages are blank
03H: If at least one of the pages is blank

Cross Reference
Section 4.5 Service RAM Address

2.3.6 PARALLEL MEMORY TRANSMISSION

Using memory transmission, the machine starts dialing after the document has been completely scanned. Using Parallel Memory Transmission, the machine starts dialing at the same time the machine starts scanning. If the document has multiple pages, the machine scans them into memory and sends at the same time.

The following table shows the differences between normal memory transmission and parallel memory transmission.

	Memory Tx	**Parallel Memory Tx**
File Reserve Report	Printed, if automatic report printout is enabled	Not printed.
If the other terminal is busy	Resends the message later.	Continues scanning the document into memory and tries to re-send later.
If transmission failed	Resends the remaining pages later.	Resends the remaining pages later.
If memory overflows during scanning	Stops scanning and erases all the scanned pages from the memory, if the user agrees to erase them.	Stops scanning and hangs up the communication when the memory overflow is detected. Then erases all the scanned pages from the memory without notice.
If a document jam occurred during scanning	Stops scanning and erases all the scanned pages from the memory.	Stops scanning and hangs up the communication when a document jam is detected. Erases all scanned pages from memory
How and when the scanned message is erased from the memory.	The complete message is erased after all the pages have been sent.	The complete message is erased after all the pages have been sent.
Meaning of the stamp mark	Successfully stored.	Successfully stored.
Total page numbering (P. x/x)	Enabled	Not available unless the number of pages is programmed manually.

In the following cases, the machine uses normal memory transmission even if parallel memory transmission is enabled.

- Send later
- Broadcasting
- Transmission of an Auto Document only
- Transfer request
- If the other terminal is busy
- When remaining memory space is less than the threshold (default setting: 256 kb)

Using G4 transmission, parallel memory transmission is normally disabled because the transmission speed using G4 is much faster than the scanning speed.

However, if a user is concerned about the time taken for the whole operation (scanning the document in, followed by transmission), that user should use parallel memory transmission instead of the normal memory transmission. The user will then spend less time by the machine, but the communication cost will be higher, because scanning and transmission will be done at the same time, and the transmission circuits will have to wait for the next page to be scanned in (this will be particularly noticeable if the document has complicated images or when transmitting a photo in halftone mode).

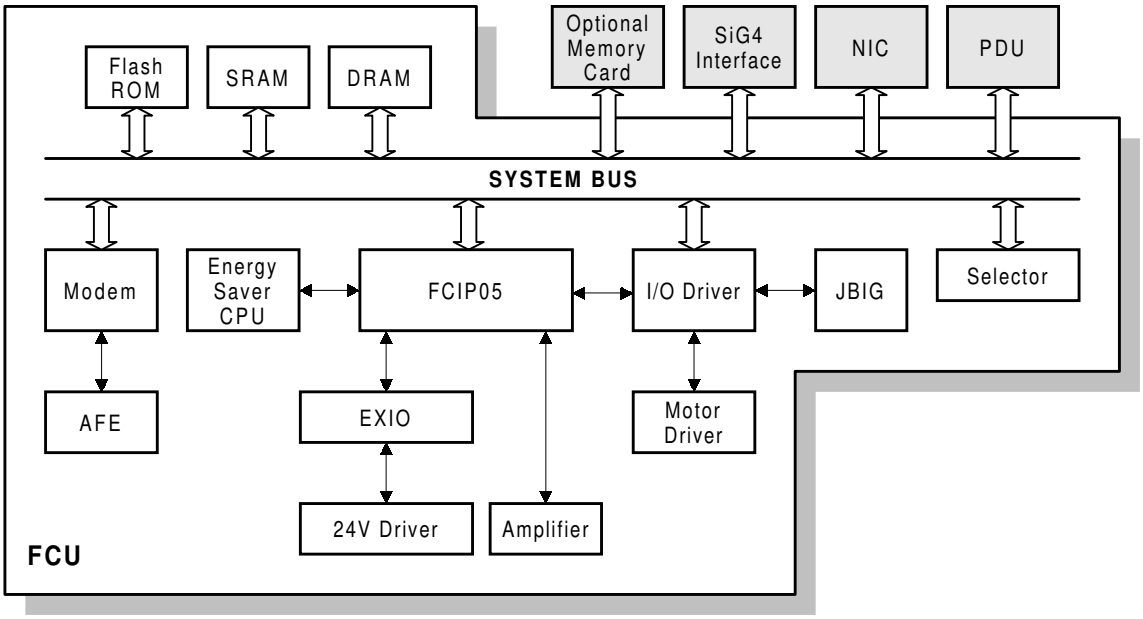
To enable parallel memory transmission for G4 transmission, change system bit switch 11, bit 7 to “1.”

Cross Reference

Parallel memory Tx (G3) On/Off:	User parameter 07, bit 2
Parallel memory Tx (G4) On/Off:	System switch 11, bit 7
Memory threshold for enabling parallel memory Tx:	System switch 10

2.4 PCBs

2.4.1 FCU



H535D541.WMF

The FCU (Facsimile Control Unit) board contains the FCIP05 (Facsimile Control and Image Processor), DRAM, SRAM, Flash ROM, and video processing memory, and it controls the entire system.

FCIP05

- CPU
- Data compression and reconstruction (DCR)
- Digital image processor
- Laser interface
- DMA controller
- Clock generation
- Stepper motor control
- DRAM backup control
- Fusing lamp control

ROM

- 4MB (32 Mbits) flash ROM for system software storage

DRAM

- 4 MB DRAM shared between the Line Buffer (96 KB), ECM Buffer (128 KB), Page Memory (672 KB), System RAM (128KB), SAF memory (2 MB), and Working DRAM

SRAM

- 256 KB SRAM for system and user parameter storage, backed up by the battery on the FCU

Modem (Rockwell R288F)

- V.21, V.27ter, V.29, V.17, V.33 (Ricoh mode only), and V.34 modems

Energy Saver CPU

- 4-bit CPU for controlling the machine during energy saver mode.

I/O Driver

- Power pack and main motor control
- Parallel to serial conversion of motor control signals
- Parallel to serial conversion of JBIG data

JBIG LSI

- JBIG Compression LSI

Oscillators

- OSC1: 32.768 kHz oscillator for the real time clock. The battery on the FCU backs this up
- OSC2: 29.952 MHz oscillator for system, scanner and printer clock generation
- OSC3: 28.224 MHz oscillator for the R288F modem clock
- OSC4: 16 MHz oscillator for the I/O Driver and JBIG LSI clock
- OSC5: 8.00 MHz oscillator for the Energy Saver CPU clock

EXIO (Expand I/O)

- Serial interface to the operation panel and optional paper feed units
- Parallel interface to the motors, clutches, sensors, and other electrical components

Switch

Item	Description
SW1	Switches the backup battery on/off

Analog circuit with HIC (AFE - Analog Front End)

- 2-4 wire switching
- Filters and amplifiers
- Monitor speaker driver

Selector

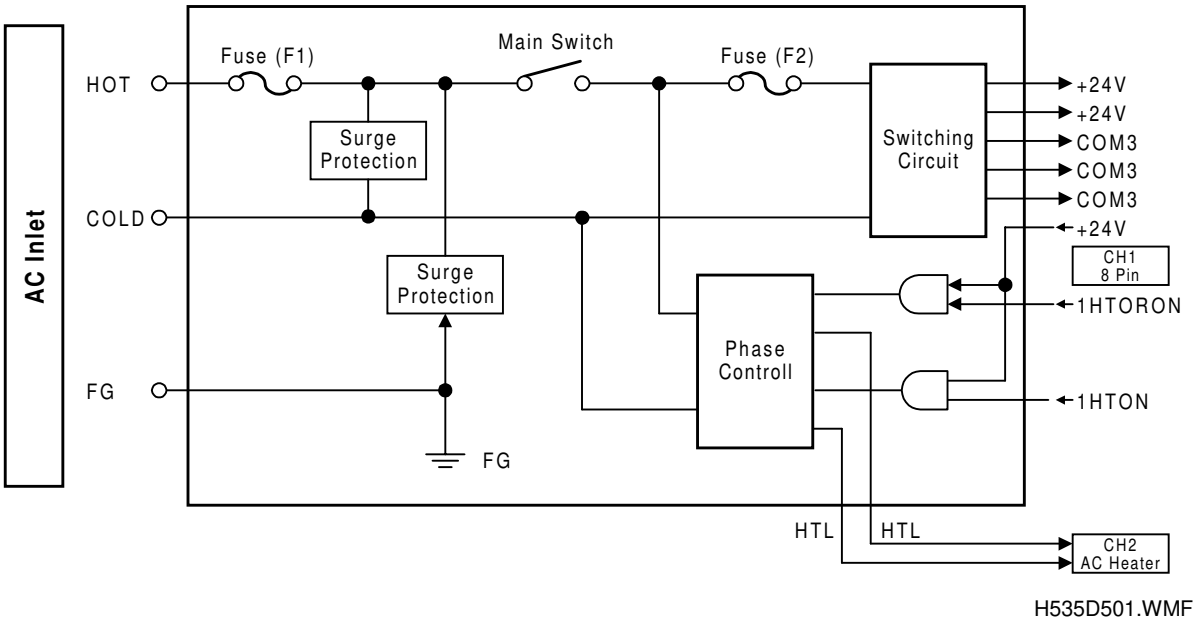
- Selection of the SiG4 interface or NIC/PDU option

Jumpers

- The following jumper settings determine the model type.

Jumper	USA	Europe/Asia	Japan
JP 29	Short	Open	Short
JP 30	Open	Short	Short
JP 31	Open	Short	Open
JP 32	Short	Open	Open

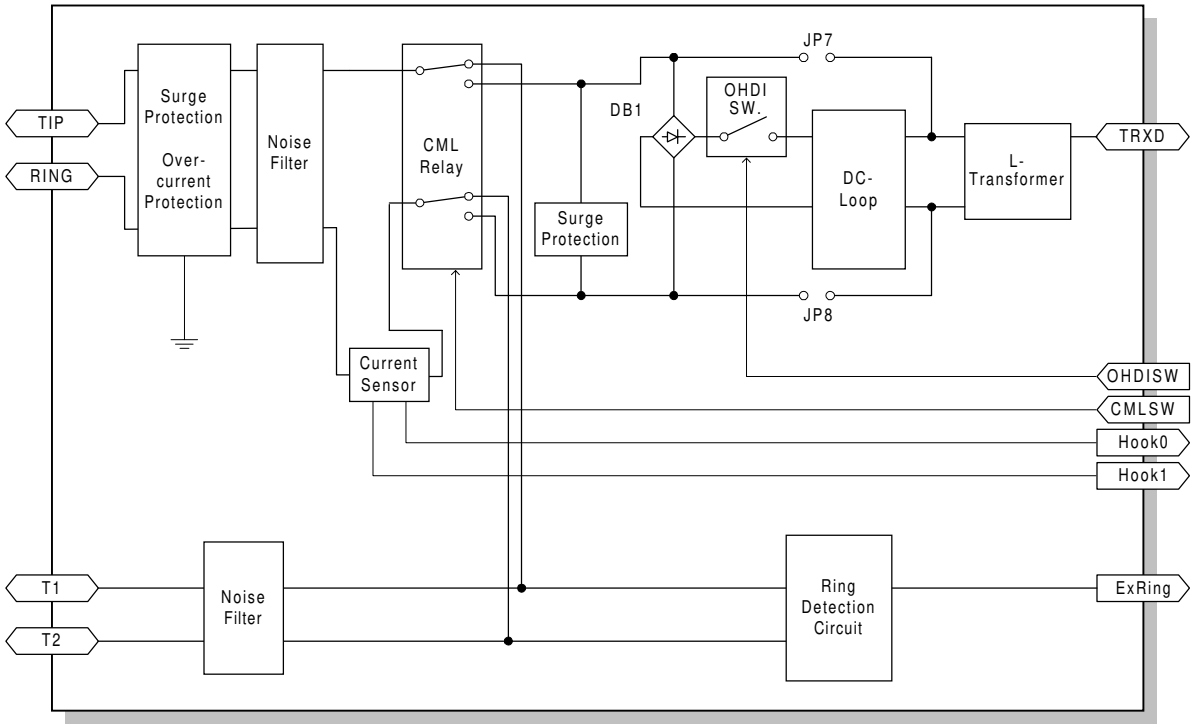
2.4.2 PSU



H535D501.WMF

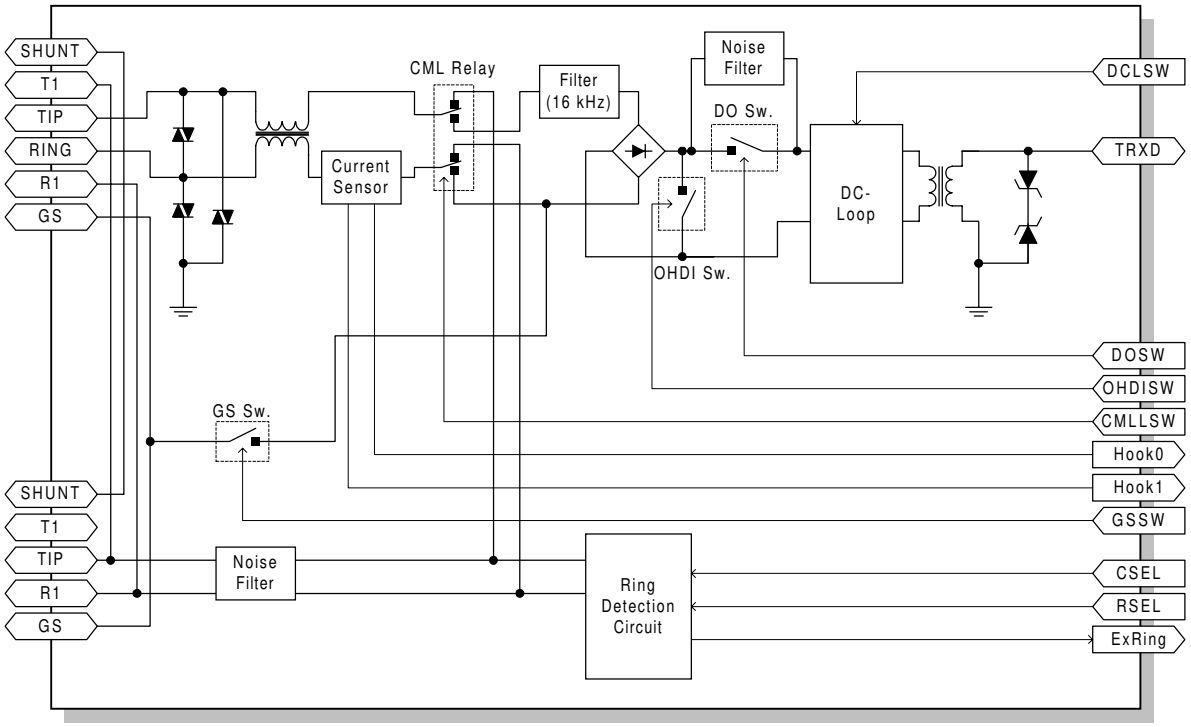
- +24Vdc generation
- Fusing lamp ac power supply and control

2.4.3 NCU (USA)



H535D505.WMF

2.4.4 NCU (EUROPE/ASIA)



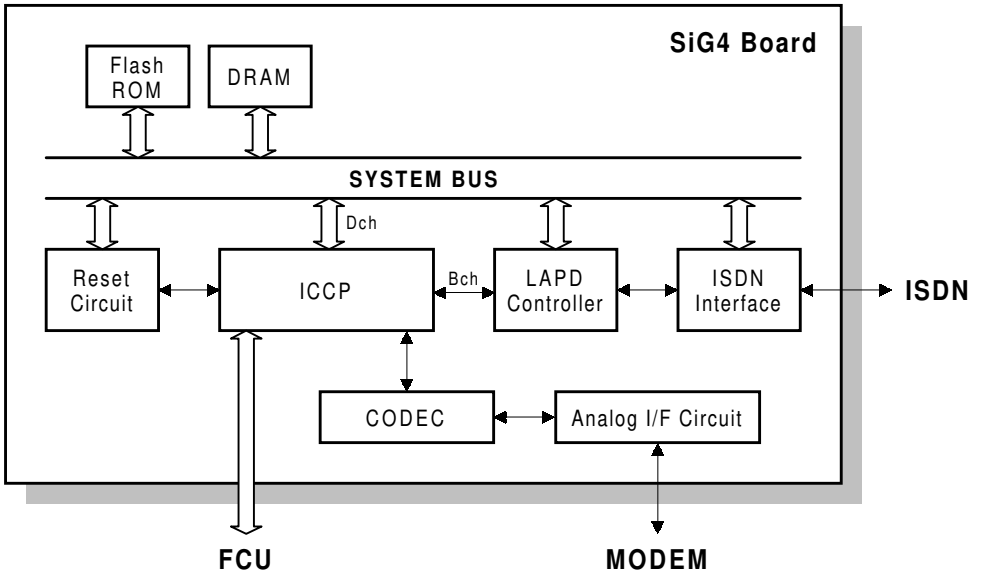
H535D506.WMF

Control Signals

	CSEL1	RSEL
Country	CN2-5	CN1-13
CTR21	H	H
Australia	H	H
South Africa	H	H
Malaysia	H	H
Hong Kong	L	L
New Zealand	L	L
Singapore	L	L
Asia	L	L
	L: Low, H: High	

CTR21 (Common Technical Regulation 21):
France, Germany, UK, Italy, Austria, Belgium, Denmark, Finland, Ireland, Norway, Sweden, Switzerland, Portugal, Holland, Spain, Israel, Greece

2.4.5 SIG4 (STANDARD ISDN G4)



H535D500.WMF

The SiG4 (Standard ISDN G4) board contains ICCP (ISDN Communication Control Processor), Flash ROM, DRAM, LAPD controller, CODEC, ISDN interface and analog interface. The ICCP controls the entire board.

ICCP

- 16 bit CPU which controls the entire board
- HDLC control
- Channel select for B channel interface control

CODEC

- A/D, D/A converter for ISDN G3 communication

LAPD Controller

- ISDN layer 1 and LAPD control

ROM

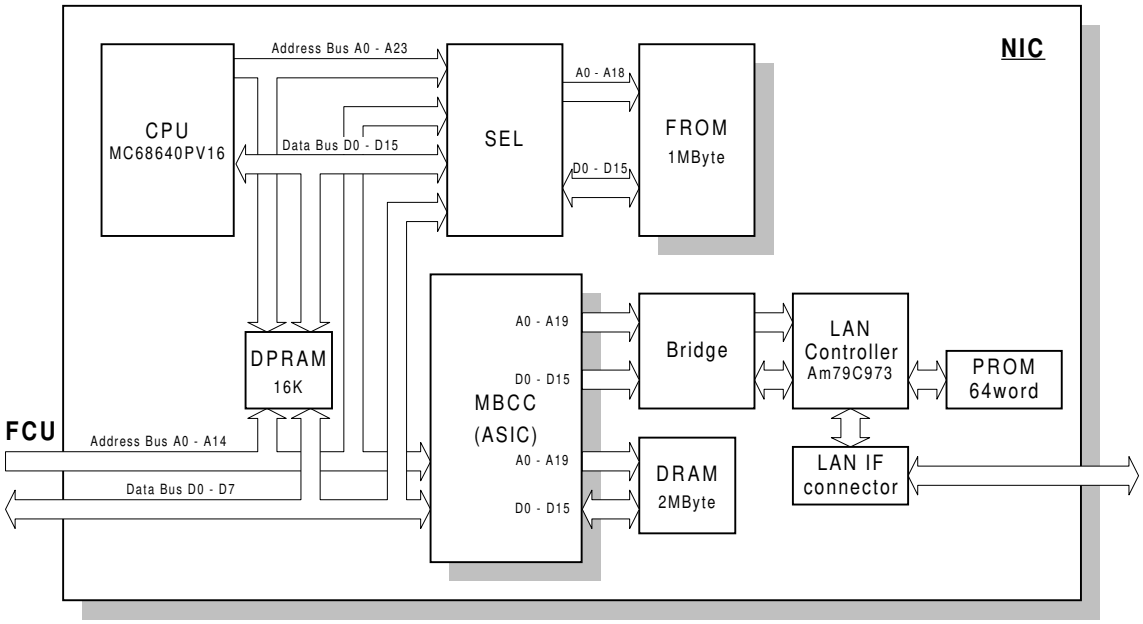
- 512 KB (4 Mbit) Flash ROM for system software storage

DRAM

- 2MB (16 Mbit) DRAM used

The Flash ROM program can be updated using a flash memory card and the flash memory copy tool.

2.4.6 NIC BOARD



H535D617.WMF

The NIC controls protocols for communication with a LAN and for handshaking with the FCU. The NIC automatically detects whether the network type is 100base-Tx or 10base-T. The NIC also converts data to MIME format for e-mail.

The machine supplies stand-by DC power during energy saver mode.

- CPU (MC68340): 32-bit CPU to control the NIC board.
- DRAM: 1-MB DRAM for main memory.
- DPRAM: 16-kB DPRAM (Dual Port RAM) for the data buffer between the FCU and NIC board.
- FROM: 1-MB Flash ROM for the software. It can be updated by IC Card.
- EEPROM: 128-bytes EEPROM for the MAC address and the other LAN parameters.
- LAN Controller (Am79C973): LAN interface
- MBCC: MBCC (Multi Bus Control Chip) is an interface between CPU and LAN controller/data modem.
- SEL: Bus selector circuit for writing Flash ROM data.

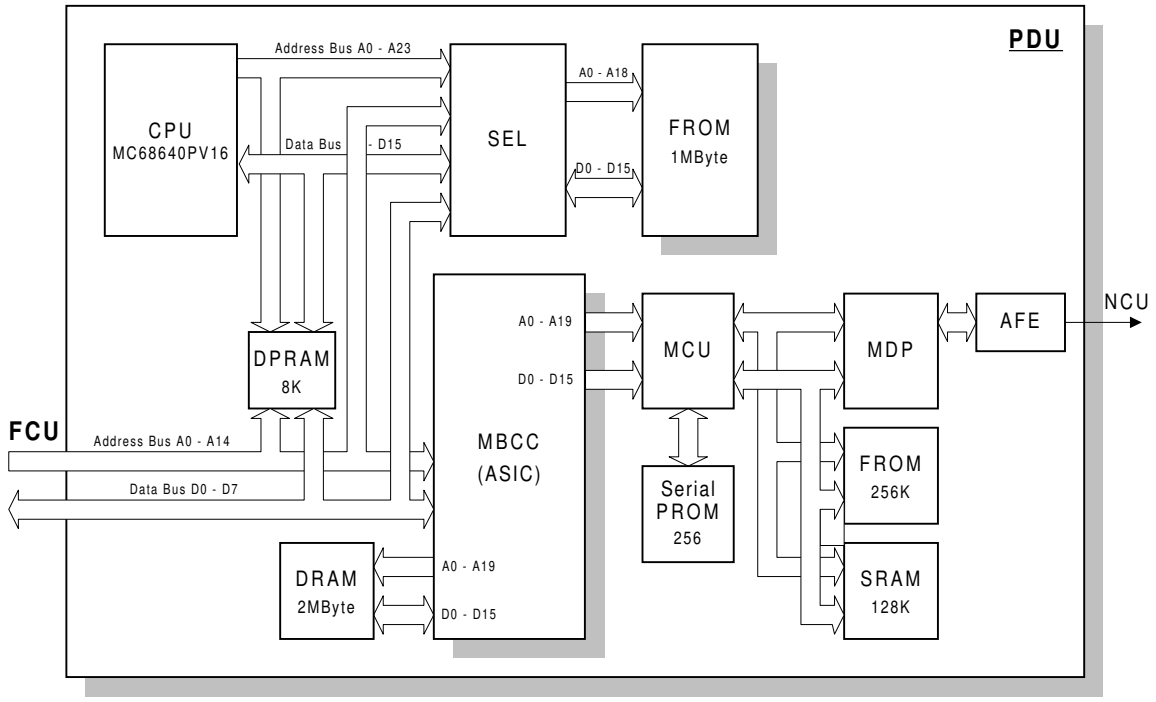
LED Array

	Lit	Not lit
LED1	The NIC board is working normally	The NIC board is not working normally
LED2	100base-TX	10base-T
LED3	Full duplex mode	Half duplex mode
LED4	Connected to a LAN	Not connected to a LAN

Signal Table

Pin Address	Signal	Remarks	Pin Address	Signal	Remarks
A1	N.C.	Not connected	B1	PRGMOD	Program mode
A2	N.C.	Not connected	B2	COM1	GND
A3	COM1	GND	B3	COM1	GND
A4	COM1	GND	B4	N.C.	Not connected
A5	COM1	GND	B5	COM2.	Analog GND
A6	N.C.	Not connected	B6	COM2.	Analog GND
A7	N.C.	Not connected	B7	COM2.	Analog GND
A8	D0	Data Bus	B8	D1	Data Bus
A9	D2		B9	D3	
A10	D4		B10	D5	
A11	D6		B11	D7	
A12	COM1	GND	B12	COM1	GND
A13	A0	Address Bus	B13	A1	Address Bus
A14	A2		B14	A3	
A15	A4		B15	A5	
A16	A6		B16	A7	
A17	A8		B17	A9	
A18	A10		B18	NETCSB	Chip select
A19	COM1	GND	B19	N.C.	Not connected
A20	+5VE	+5VE	B20	N.C.	Not connected
A21	+5VE	+5VE	B21	N.C.	Not connected
A22	COM1	GND	B22	COM1	GND
A23	RDB	Read	B23	WRB	Write
A24	COM1	GND	B24	A12	Address Bus
A25	COM1	GND	B25	COM1	GND
A26	N.C.	Not connected	B26	A11	Address Bus
A27	+5VE	+5VE	B27	NICENBL	Enable
A28	+5VE	+5VE	B28	WAKEOUTB	Wake up
A29	NETINB	Interrupt	B29	A13	Address Bus
A30	COM1	GND	B30	COM1	GND

2.4.7 PDU BOARD



H535D618.WMF

The PDU controls protocols for communication with an Internet Service Provider and for handshaking with the FCU. The PDU also converts data to MIME format for e-mail.

The machine supplies stand-by dc power during energy saver mode.

- CPU (MC68340): 32-bit CPU to control the PDU board.
- DRAM: 1-MB DRAM for main memory.
- DPRAM: 16-kB DPRAM (Dual Port RAM) for the data buffer between the FCU and PDU board.
- FROM: 1-MB Flash ROM for the software. It can be up-dated by IC Card.
- MCU: MCU (Modem Controller Unit) to control the MDP
- MDP: MDP (Modem Data Pump) contains A/D, D/A converter, and modem
- FROM: 256-kB Flash ROM for the MCU software
- SRAM: 128-kB SRAM for the transmission and reception data buffer and working memory for the MCU
- Serial PROM: 256-bytes serial EEPROM for the modem parameters
- AFE: AFE (Analog Front End) for 2-4 wire switching, filters, and amplifiers.
- MBCC: MBCC (Multi Bus Control Chip) is an interface between CPU and LAN controller/data modem.
- SEL: Bus selector circuit for writing Flash ROM data.

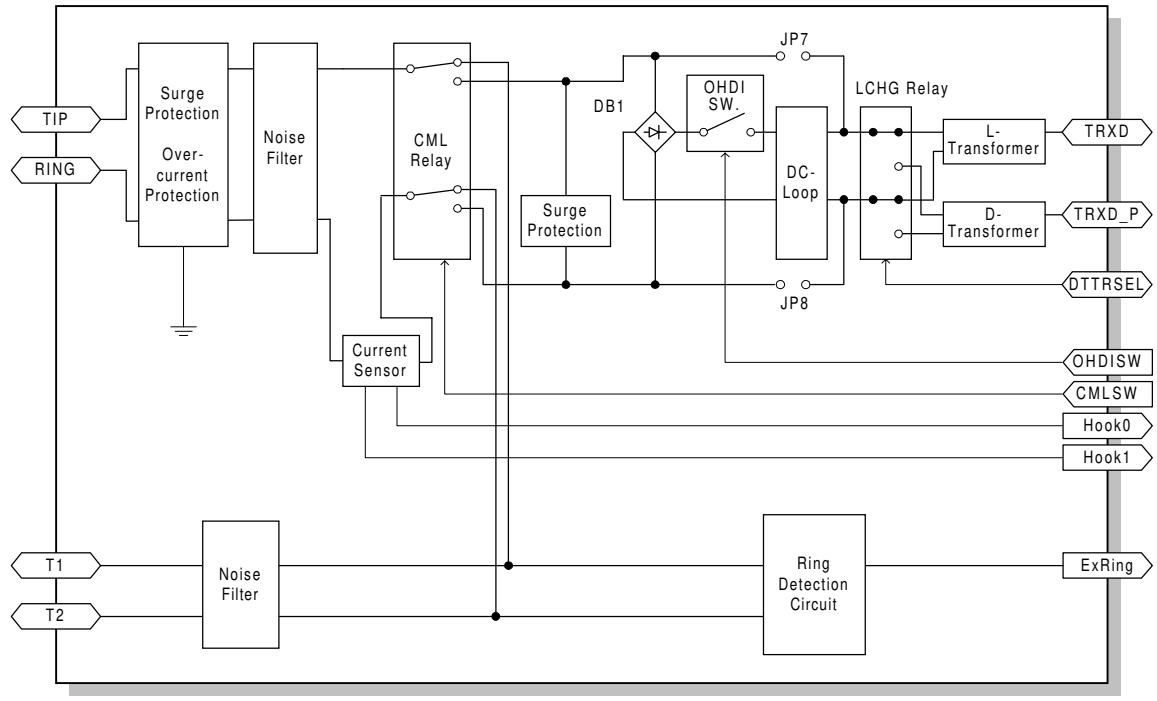
Switches

Item	Description
SW1	Reset switch
SW3, SW4	Not installed
SW2, SW5	Both ON for Australia

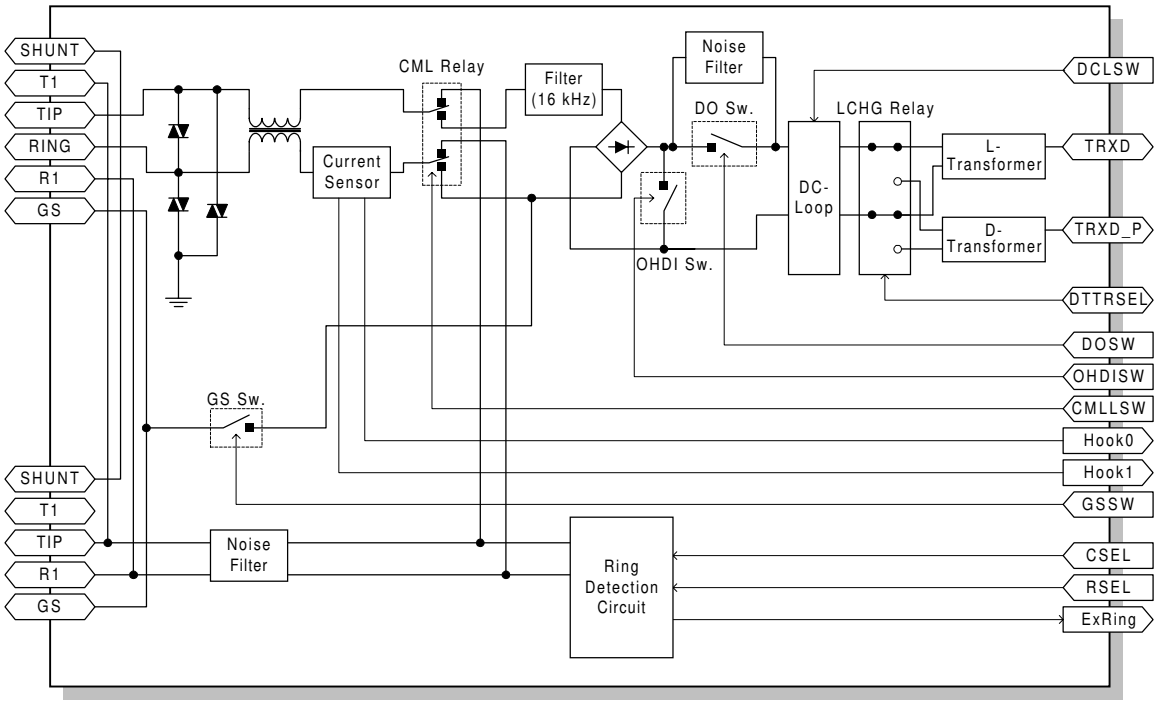
Signal Table

Pin Address	Signal	Remarks	Pin Address	Signal	Remarks
A1	N.C.	Not connected	B1	PRGMOD	Program mode
A2	N.C.	Not connected	B2	COM1	GND
A3	COM1	GND	B3	COM1	GND
A4	COM1	GND	B4	N.C.	Not connected
A5	COM1	GND	B5	COM2.	Analog GND
A6	+5VA	+5V	B6	COM2.	Analog GND
A7	–5V	–5V	B7	COM2.	Analog GND
A8	D0	Data Bus	B8	D1	Data Bus
A9	D2		B9	D3	
A10	D4		B10	D5	
A11	D6		B11	D7	
A12	COM1	GND	B12	COM1	GND
A13	A0	Address Bus	B13	A1	Address Bus
A14	A2		B14	A3	
A15	A4		B15	A5	
A16	A6		B16	A7	
A17	A8		B17	A9	
A18	A10		B18	NETCSB	Chip select
A19	COM1	GND	B19	N.C.	Not connected
A20	+5VE	+5VE	B20	+5VA	+5V
A21	+5VE	+5VE	B21	+5VA	+5V
A22	COM1	GND	B22	COM1	GND
A23	RDB	Read	B23	WRB	Write
A24	COM1	GND	B24	A12	Address Bus
A25	COM1	GND	B25	COM1	GND
A26	DTTRSELB	Line select	B26	A11	Address Bus
A27	+5VE	+5VE	B27	NICENBL	Enable
A28	+5VE	+5VE	B28	WAKEOUTB	Wake up
A29	NETINB	Interrupt	B29	N.C.	Not connected
A30	COM1	GND	B30	COM1	GND

2.4.8 NCU FOR PDU



H535D555.WMF



H535D556.WMF

The LCHG relay determines whether input to the NCU comes from the FCU (TRXD) or from the optional PDU board (TRXD_P).

The DTTRSEL signal from the PDU board controls this relay.

3. INSTALLATION

3.1 INSTALLING THE MACHINE

Refer to the Operator's Manual for information about the installation environment and instructions on how to install and set up the machine.

Refer to section 2.4. for the set up information for the NCU hardware for each country.

3.2 INITIAL PROGRAMMING

Items to Program (Service Level)	Function No.
Country code (NCU parameter 00)	Function 08
Country code (System switch 0F)	Function 01
Protocol requirements (G3 switch 0B)	Function 01
Machine's serial number	Function 14
Service station's fax number	Function 13
PM call (System switch 01- bit 0)	Function 01
Periodic service call (RAM address 800DA1)	Function 06

Items to Program (User Administrator Level)	Function No.
Clock	Function 91
Initial programming items	Function 61
On/off switches	Function 62
Display/report language	Function 93
Fusing power control during energy saver mode (User parameter switch 05 - bit 6)	Function 63
PSTN access code (Also in RAM address 8000EB)	Function 61
PABX access method (User parameter switch 13 - bit 0, 1. (Also in RAM address 8000DA)	Function 63

3.3 INSTALLING OPTIONAL UNITS

⚠CAUTION

Do the following before installing an optional unit:

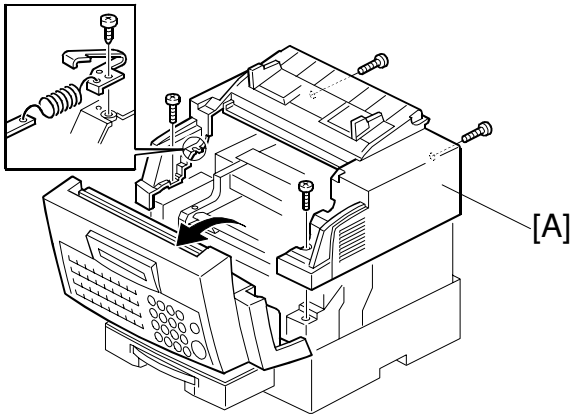
1. **Print out all messages stored in the memory.**
2. **Print out the lists of user-programmed items and the system parameter list.**
3. **Turn off the main switch, and disconnect the power plug.**

NOTE: Refer to the Operator's Manual for the user installable options.

3.3.1 NIC FAX KIT TYPE 210

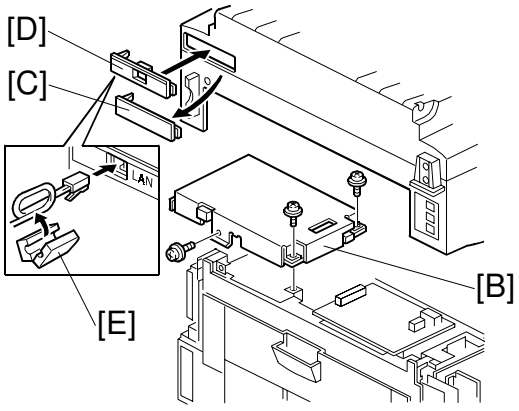
Installation Procedure

1. Remove the top cover [A] (4 screws, 1 screw with spring plate).
   NOTE: Be careful not to damage the bottom part of the top cover with the scanner cover after removing the spring plate.



H535R500.WMF

2. Attach the LAN board [B] (3 screws).
3. Remove the LAN cover [C] from the top cover and attach the LAN cover [D] to the top cover.
4. Replace the top cover.
5. Loop the network interface cable and attach the ferrite core [E].
6. Attach the network interface cable to the jack on the board. Then connect the other end of the network interface cable to the network.
7. Plug in the machine and turn on the main switch. Print the system parameter list and make sure that "NICF" is included as an option on the list.



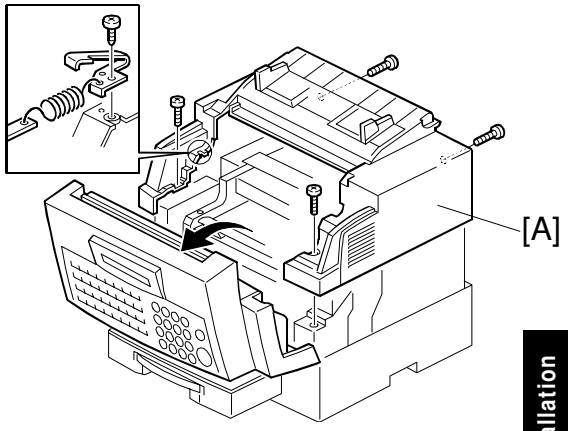
H535I502.WMF

End of Procedure

3.3.2 PDU KIT TYPE 210

Installation Procedure

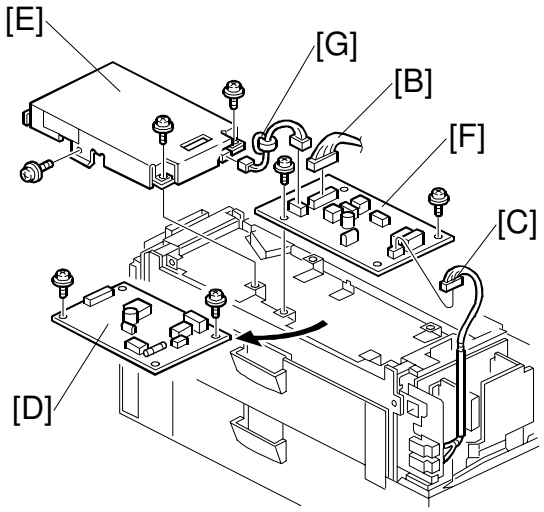
1. Remove the top cover [A] (4 screws, 1 screw with spring plate).
   NOTE: Be careful not to damage the bottom part of the top cover with the scanner cover after removing the spring plate.



H535I506.WMF

For the USA model, do steps 2 and 3.

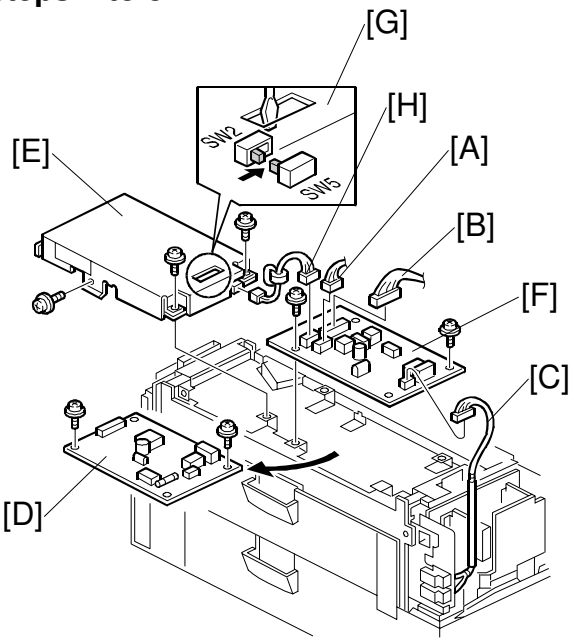
2. Disconnect the harnesses [B] and [C] from the NCU board [D]. Remove the NCU board [D] (2 screws).
3. Attach the PDU board [E] (3 screws) and the NCU board for the PDU [F] (2 screws). Connect the PDU harness [G] to the PDU and NCU. Then connect the harnesses [B] and [C] to the NCU.



H535I511.WMF

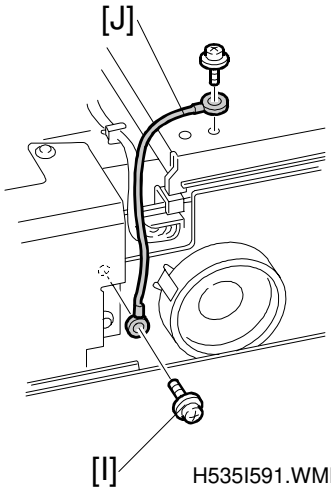
For the European and Asian models, do steps 4 to 8.

4. Disconnect the harnesses [A], [B] and [C] from the NCU board. Remove the NCU board [D] (2 screws).
5. Attach the PDU board [E] (3 screws) and the NCU board for the PDU [F] (2 screws).
   NOTE: Australia Only:
   Before attaching the PDU board, change DIP switches 2 and 5 [G] to ON.
6. Connect the PDU harness [H] to the PDU and the NCU (the blue connector on the NCU). Then connect the harnesses [A], [B] and [C] to the NCU.



H535R512.WMF

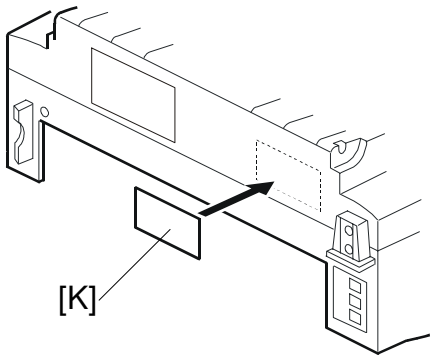
7. Remove the screw [I] from the shield plate.
8. Secure the grounding wire [J] to the shield plate and the PDU.



H535I591.WMF

9. Replace the top cover.
10. Attach the FCC label [K] to the top cover. (USA only)
11. Plug in the machine and turn on the main switch. Print the system parameter list and make sure that “PDU” is included as an option on the list.

End of Procedure

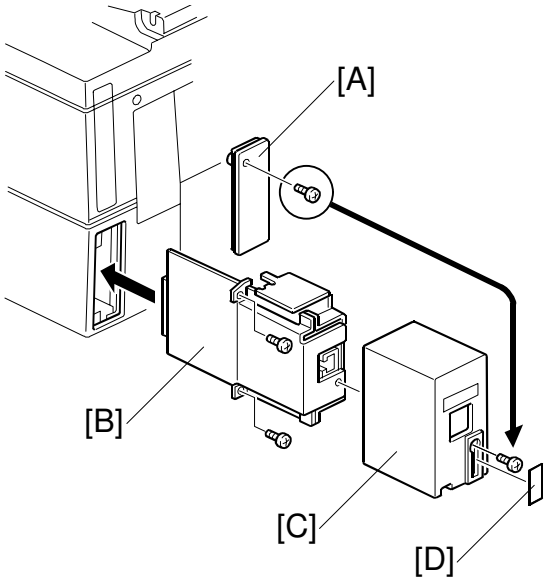


H535I593.WMF

3.3.3 ISDN INTERFACE UNIT TYPE 190 (SIG4)

Installation Procedure

1. Remove the G4 cover [A] (1 screw).
2. Insert the ISDN board [B] firmly into the slot and secure the board (2 screws).
3. Attach the G4 unit cover [C] with the screw which was removed in step 1.
4. Place the cover mylar [D] on top of the screw and slot as shown.
5. **This step is necessary only in the U.S. and Canada.**
   Place the FCC/IC approval label next to the ISDN connector.
6. Connect the ISDN cable. Plug in the power cord and turn on the main switch.
7. Set Communication Bit Switch 16 bit 2 to “1.” Then turn the machine off and on to enable the ISDN unit.
   Print the system parameter list and make sure that “SIG4” is listed as an option on the list.



H535I613.WMF

8. Input the initial settings with user functions 61, 64, and service function 16.
   Make sure that you input the following subscriber numbers:
   G4 Subscriber 1 (G4_SN1/DN1) and ISDN G3 Subscriber 1 (IG3_SN1/DN1).
   When you connect the machine to the US National ISDN network, make sure that you also input the SPID (Service Profile ID Number).
   Please refer to the ISDN option service manual for details.

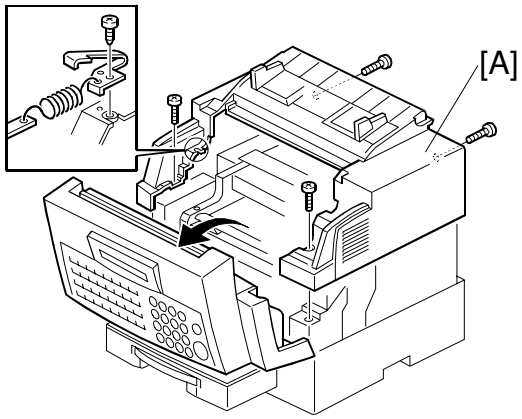
   Make the following settings if necessary.
   - System bit switch 0A bit 1: Default communication mode
     Bit 1 0: G3 1: G4
   - System bit switch 0A bit 6: Line used for G3 transmission
     Bit 6 0: PSTN 1: ISDN
   - System bit switch 0A bit 7: Line used when the machine falls back to G3 from G4
     Bit 7 0: PSTN 1: ISDN

End of Procedure

3.3.4 MECHANICAL COUNTER TYPE 210

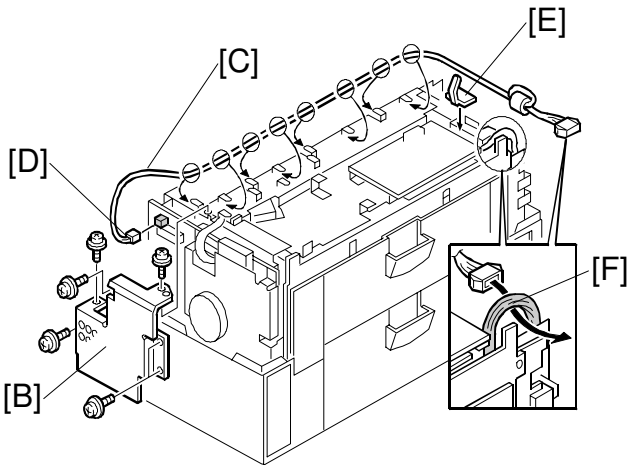
Installation Procedure

1. Remove the top cover [A] (4 screws, 1 screw with spring plate).
   NOTE: Be careful not to damage the bottom part of the top cover with the scanner cover after removing the spring plate.



H535I506.WMF

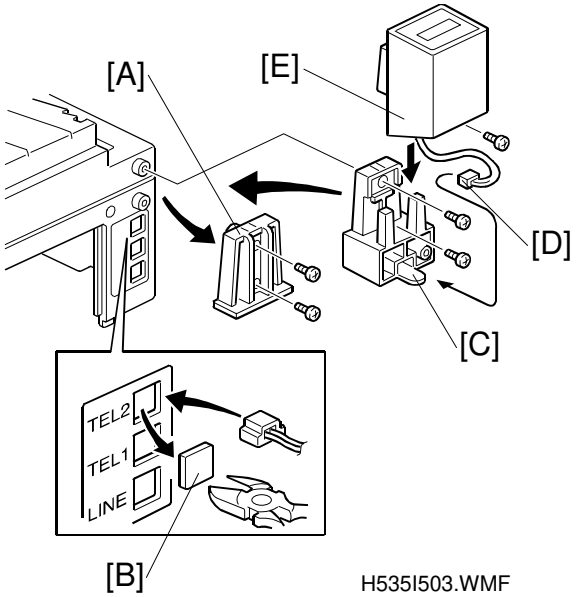
2. Remove the front FCU shield plate [B] (6 screws). Connect the counter cable [C] to the FCU [D] (CN48).
   Then secure the cable through cable holders as shown.
3. Attach the cable clamp [E] to the NCU bracket and secure the counter cable in order to avoid touching the NCU board and the NCU cable.
4. Pass the counter cable underneath the cables [F] for the PSU and the NCU as shown above.



H535I505.WMF

5. Then replace the front FCU shield plate that was removed in step 2.

6. **This step is required only for the USA model.**
   Remove the handset bracket [A] from the top cover (2 screws).
7. Cut off the TEL2 cover [B].
8. Attach the counter bracket [C] to the top cover (2 screws: for USA models, use the screws that were removed in step 6).
9. Thread the cable [D] through the opening in the counter bracket and the TEL2 cover opening, then secure the mechanical counter [E] to the bracket (1 screw).

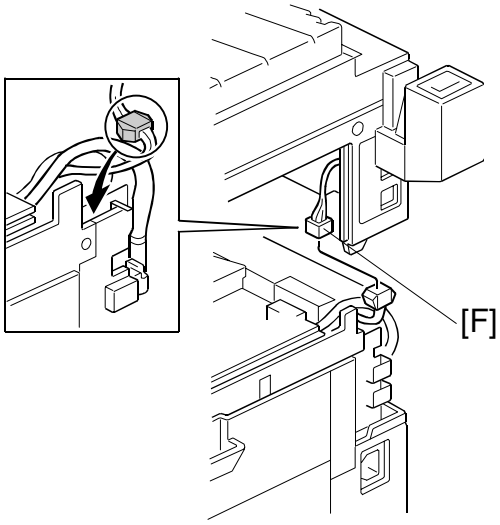


H535I503.WMF

10. Connect the counter cable [F] and place the connector into the recess under the PSU cable as shown. Then replace the top cover.

11. Plug in the machine and turn on the main switch. Make some copies and check whether the counter works.

End of Procedure



H535I504.WMF

4. SERVICE TABLES AND PROCEDURES

4.1 SERVICE LEVEL FUNCTIONS

In this section, the following symbols refer to frequently used keys:
- Start key
- Stop key
- User Tools key
- Right arrow key
- Left arrow key

4.1.1 SERVICE LEVEL FUNCTION LIST

Level 1	Level 2	Level 3	Functions
01.BIT SW	0.SYSTEM	—	Bit switches are displayed and can be edited.
	1.SCANER	—	
	2.PLOTTER	—	
	3.COMMUNI.	—	
	4.G3	—	
02.PARAMETER LIST	—	—	The system parameter list is printed.
03.ERROR CODE	—	—	The last 64 Error codes are displayed.
04.SERVICE REPORT	—	—	The service monitor report is printed.
05.PROTOCOL DUMP	1-COMMUNICATION	—	The protocol dump list for the most recent G3 communication is printed.
	ALL-COMMUNICATIONS	—	The entire contents of the protocol dump list memory are printed.
06.MEMORY	0.MEM.R/W	—	RAM data are displayed and can be edited.
	1.MEM.DUMP	—	A RAM data dump list is printed.
07.COUNTER R/W	0.COUNTER	0.TX	Counters are displayed and can be edited.
		1.RX	
		2.SCAN	
		3.PRINT	
		4.SCAN JAM	
		5.PRT JAM	
	1.PM	—	
	2.TONER	—	
08.NCU	0.NCU	—	NCU parameters are displayed and can be edited.
	1.MODEM	—	Modem signal and tones can be sent out for use during the PTT approval tests.
	2.DTMF	—	
	3.V8	—	

Service Tables

Level 1	Level 2	Level 3	Functions
08.NCU	4.V34	—	Modem signal and tones can be sent out for use during the PTT approval tests.
	5.DP	—	
09.OP.PANEL	LED/LCD	—	LED and LCD display test.
10.SCANNER	0.LAMP	—	Lights the LED array in the scanner.
	1.ADF	—	ADF test
11.PRINTER	0.PATTERN	—	Print test patterns.
	1.AGING	—	Printer mechanism test (free run test)
	2.WORD	—-	Designer use only
12.RAM TEST	0.TEST	0.SRAM	Memory test
		1.DRAM	
		2.SAFCARD	
	1.COPY	0.M->R	Software download/upload
		1.M<-R	
		2.M->S	RAM data back up/restore
		3.M<-S	
		4.SIG4 (Option)	Option board software download
		5.NICF/PDU (Option)	
13.S.S.NO.	—	—	Service station number
14.SERIAL#	—	—	Serial number
15.G4 (Option)	0.G4_ISW	—	G4 bit switches are displayed and can be edited.
	1.G4_PSW	—	
	2.G4_DUMP1	—	G4 protocol dump lists are printed.
	3.G4_DUMP2	—	
	4.MODEM/DTMF	—	For use during PTT approval tests
16.LAN (Option)	0.LAN SW	—	LAN and DU (Dial Up) bit switches are displayed and can be edited
	1.DU SW	—	
	2.LINK	—	LAN test
	3.LOOP	—	
	4.LOG DMP	—	A LAN communication log is printed.
	5.PING/MODEM	—	LAN test PING is for the NIC MODEM is used only for PTT approval tests.
17.JBIG	—	—	For use during PTT approval tests

4.1.2 ENTERING THE SERVICE FUNCTION MODE

1. Press User Tools

2. Press # 1 0 7 ◈

```
User Tools Main Menu
1.Program / Delete<>
```

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

4.1.3 EXITING THE SERVICE MODE

1. Press User Tools

4.2 SERVICE FUNCTION OPERATION

4.2.1 BIT SWITCH PROGRAMMING (FUNCTION 01)

1. User Tools (#) (1) (0) (7) (◈)

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. (0) (1) "OK" key
   _it 7 is on the left, and bit 0 on the right.

```
0. SYSTEM 1. SCANNER
2. PLOTTER 3. COMM
```

3. To see the system bit switches: (0)
   To see the scanner switches: (1)
   To see the printer switches: (2)
   To see the communication switches: (3)
   To see the G3 switches: (4)
   Example: Press (3)
   _it 7 is on the left, and bit 0 on the right.

```
COM DF  :  0000 0000
BITSW 00:  0000 0000
```

4. Scroll through the bit switches.
   Increment bit switch: ▶
   Decrement bit switch: ◀
   Example: Display bit switch 3: ▶ x 3

```
COM DF  :  0000 0000
BITSW 03:  0000 0000
```

5. Adjust the bit switch.
   Example: To change the value of bit 7, press (7)
6. Either:
   - Adjust more bit switches - go to step 4.
   - Finish : "OK" User Tools

4.2.2 SYSTEM PARAMETER LIST (FUNCTION 02)

The format of the list is as follows:

1. User Tools (#) (1) (0) (7) (◈)

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. (0) (2) "OK"

```
                  START
PARAMETER LIST
```

3. Finish: User Tools

4.2.3 ERROR CODE DISPLAY (FUNCTION 03)

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 0 3 "OK"
3. Either:
   Scroll through the error codes using ▶ or ◀
   Finish: User Tools

```
ERROR CODE          <>
1-01 JAN 01 17:30
```

4.2.4 SERVICE MONITOR REPORT (FUNCTION 04)

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 0 4 "OK"
3. Finish: User Tools

```
                    START
SERVICE REPORT
```


4.2.5 GROUP 3 PROTOCOL DUMP (FUNCTION 05)

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 0 5 "OK"
3. To select the type of list (the most recent communication or all that is stored in the log): ◀ or ▶

```
PROTOCOL DUMP
1-COMMUNICATION    <>
```

4. "OK"
5. Finish: User Tools

```
                    START
PROTOCOL DUMP
```

4.2.6 RAM DISPLAY/REWRITE (FUNCTION 06)

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 0 6 "OK"

```
0.MEM.R/W 1.MEM.DUMP
```

3. 0

```
MEMORY READ/WRITE
ADDR:000000 DATA:00
```

4. Input the address that you wish to see.
   Example: Address 800020 (8) (0) (0) (0) (2) (0)
   NOTE: If you wish to move the cursor, press ▶.

```
MEMORY READ/WRITE
ADDR:800020 DATA:88
```

5. If you wish to change the data, move the cursor to the data field: press ▶

```
ADDRESS = 800020
DATA    = 80
```

6. Type in the new data.
   Example: 80, press (8) (0)
   NOTE: If you wish to move the cursor, press ▶.
7. Either:
   - View more addresses - go to step 4.
   - Finish: User Tools

4.2.7 RAM DUMP (FUNCTION 06)

1. User Tools (#) (1) (0) (7) ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. (0) (6) "OK"

```
0-MEM.R/W 1-MEM.DUMP
```

3. (1)

```
ADD.000000 - 0000FF
PRESS START TO PRINT
```

4. Enter the first four digits of the start and end addresses. For example, enter "8000" for the start address 800000(H), and enter 8001 for the end address 8001FF(H). Then, press "Start" to print the dump list.

```
ADD.800000 - 8001FF
PRESS START TO PRINT
```

5. Finish: User Tools

4.2.8 COUNTER DISPLAY/REWRITE (FUNCTION 07)

1. User Tools (#) (1) (0) (7) ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. (0) (7) "OK"

```
0.COUNTER 1.PM
2.TONER
```

3. Check the transmitted, received, scanned and printed page counters, and the printer and scanner jam counters - press (0).

```
0.TX      1.RX
2.SCAN    3.PRINT
```

   - To see the Tx counter: (0)
   - To see the Rx counter: (1)

```
TX COUNTER   :012345
```

- To see the Scanner counter: ②
- To see the Printer counter: ③
- To see the Scanner Jam counter: ④
- To see the Printer Jam counter: ⑤

Example: press ⓪

Check the PM counter - press ①

```
PM COUNTER    :001234
```

Check the TONER counter - press ②
This is the number of prints made with the current cartridge.

```
TONER COUNTER:001234
```

4. To change the contents of a counter, input the new value, then press "OK".
5. To finish: User Tools

4.2.9 NCU PARAMETERS (FUNCTION 08)

1. User Tools ⓗ ① ⓪ ⑦ ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. ⓪ ⑧ "OK"

```
0.NCU      1.MODEM
2.DTMF     3.V8
```

3. ⓪

```
NCU PARAMETER   KPAD
 NO.04 =005
```

OK Scroll through the parameters using ▶ or ◀ .
If you want to change a value, enter the new value at the keypad, then press "OK".
Example: Set NCU parameter 04 to 005.
▶ ▶ ▶ ▶ ⓪ ⓪ ⑤ "OK"

5. To finish: User Tools.

NOTE: 1) Parameter CC is the Country Code, Parameter 01 is the TX level. Refer to section 4.4 for full details on NCU parameters.
2) If you change the NCU country code and exit the service mode, the bit switch country code (system switch 0F) will automatically be changed to the same country code.
3) If you do a factory reset (RAM Reset Level 1), the settings are all reset to the settings for Japan. You must set the NCU country code to the correct value, but first you must set system switch 15 bit 2 to 1, or you will not be able to change the NCU country code.

4.2.10 MODEM TEST (FUNCTION 08)

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 0 8 "OK"

```
0.NCU      1.MODEM
2.DTMF     3.V8
```

3. 1

```
MODEM TEST      START
 V21   800 Hz
```

4. Scroll through the available tests using ▶ or ◀. Then press "OK"
5. To start the test: ◈. To stop the test: ▽
6. To finish: User Tools

4.2.11 DTMF TONE TEST (FUNCTION 08)

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 0 8 "OK"

```
0.NCU      1.MODEM
2.DTMF     3.V8
```

3. 2

```
DTMF TEST       START
 TONE 0
```

4. Scroll through the available tests using ▶ or ◀. Then press "OK"
5. To start the test: ◈. To stop the test: ▽
6. To finish: User Tools

4.2.12 V.8 MODEM TEST (FUNCTION 08)

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 0 8 "OK"

```
0-NCU      1-MODEM
2-DTMF     3-V8
```

3. 3

```
V8 TEST         START
 ANSam
```

4. To start the test: ◈. To stop the test: ▽
5. To finish: User Tools

4.2.13 V.34 MODEM TEST (FUNCTION 08)

1. [User Tools] # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 0 8 "OK"

```
0.NCU     1.MODEM
2.DTMF    3.V8
```

3. 4

```
V34 TEST
 SYMB. :2400SYM/S <>
```

4. Scroll through the available symbol rate tests using ▶ or ◀. Then press "OK".

```
2400SYM/S
 DATA : 2400BPS   <>
```

5. Scroll through the available data rate tests for the selected symbol rate using ▶ or ◀. Then press "OK".
6. To stop the test: ▽
7. To finish: [User Tools]

4.2.14 DIAL PULSE TEST (FUNCTION 08)

1. [User Tools] # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 0 8 "OK"

```
0.NCU      1.MODEM
2.DTMF     3.DETECT
```

3. 5

```
DIAL PULSE      START
 DP 0
```

4. ◈
5. To stop: ▽
6. To finish: [User Tools]

4.2.15 OPERATION PANEL TEST (FUNCTION 09)

1. [User Tools] # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 0 9 "OK"

```
LED/LCD TEST    START
```

3. ◈
4. To stop the test, press ▽
5. To finish: [User Tools]

4.2.16 LED ARRAY TEST (FUNCTION 10)

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 1 0 "OK"

```
0.LAMP    1.ADF
```

3. 0
   The signal peak of the CIS is displayed on the bottom line. It should change when the lamp starts.

```
LAMP TEST      START
 PEAK :0D
```

4. ◈
5. To stop the test, press ▽
6. To finish: User Tools

4.2.17 ADF TEST (FUNCTION 10)

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 1 0 "OK"

```
0.LAMP   1.ADF
```

3. 1

```
ADF TEST  START
```

4. Place a document in the feeder, then press ◈.
5. To stop the test, press ▽
6. Finish: User Tools

4.2.18 PRINTER TEST PATTERNS (FUNCTION 11)

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 1 1 "OK"

```
0.PATTERN 1.AGING
2.WORD
```

3. 0
4. Scroll through the available tests using ▷ or ◁

5. "OK"
6. ◈
   A test pattern is printed.
7. To finish: User Tools

```
PATTERN          START
 VERTICAL
```

4.2.19 PRINTER AGING TEST - FREE RUN (FUNCTION 11)

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 1 1 "OK"

```
0.PATTERN 1.AGING
2.WORD
```

3. 1
4. ◈

```
AGING TEST       START
```

5. To stop the test, press ▽
6. To finish: User Tools

NOTE: Make sure that there is some paper in the cassette before starting the test.

4.2.20 RAM TESTS (FUNCTION 12)

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 1 2 "OK"

```
0.TEST     1.COPY
```

3. 0

```
0.SRAM       1.DRAM
2.SAFCARD
```

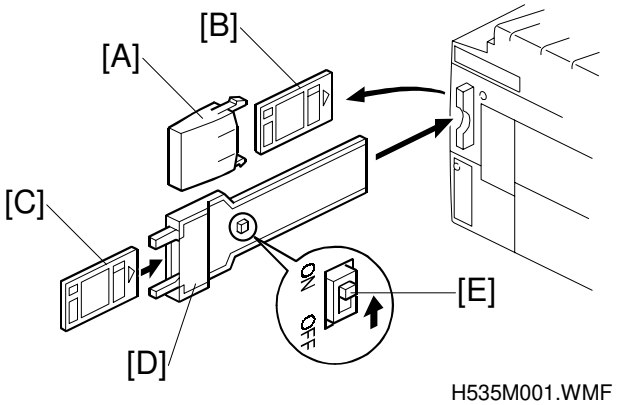
4. Either:
   Test the SRAM: Press 0 ◈
   Test the DRAM: Press 1 ◈
   Test the SAF card: Press 2 ◈

   If the test is successful, the display shows "OK!!".
   If the test is unsuccessful, the display shows "ADDRESS=".
5. To finish: User Tools.

4.2.21 SOFTWARE DOWNLOAD (FUNCTION 12)

This function copies software from an external flash memory card to the flash ROM on the FCU inside the machine.
The software copy tool (P/N: H5479352) must be used for this procedure.

1. Turn off the machine.
2. Remove the IC card cover [A].
   Remove the optional memory card [B] if it is installed.
   Connect the flash memory card [C] with the software copy tool [D].
   Then, insert the copy tool into the IC card slot as shown.
   NOTE: The switch on the copy tool [E] must be at the **ON** position.



H535M001.WMF

3. Turn on the machine.
4. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

5. 1 2 "OK"

```
0.TEST    1.COPY
```

6. 1

```
0.M->R    1.M<-R
2.M->S    3.M<-S
```

7. 1

```
COPY ROM       START
 MACHINE <- BOARD
```

8. ◈

```
WRITING BANK0
 MACHINE <- BOARD
```

9. If the software downloads successfully, the display shows **"OK"**.
   If the software download fails, the display shows **"NG"**.
   The download should take about 5 minutes.
10. To finish, press User Tools.

```
OK!!
 MACHINE <- BOARD
```

11. Turn off the machine and disconnect the copy tool. Then turn the machine back on.
12. Print out the system parameter list and check the ROM version on it.

Software Copy Tool

The following table shows the switch settings for each procedure using the software copy tool.

Program Items	Switch Settings
Software download	On
Software upload	Off
SRAM data upload	Off
SRAM data download	Off
ISDN G4 software download	Off
NICF/PDU download	Off

4.2.22 SOFTWARE UPLOAD (FUNCTION 12)

This function copies software from the FCU inside the machine to an external memory card.

1. Turn off the machine.
2. Connect the Flash memory card and the software copy tool as shown in the previous section.
   NOTE: The switch [D] on the tool must be at the **OFF** position.
3. Turn on the machine.
4. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

5. 1 2 "OK"

```
0.TEST    1.COPY
```

6. 1

```
0.M->R    1.M<-R
2.M->S    3.M<-S
```

7. 0 ◈
   If the software uploads successfully, the display shows **"OK"**.

```
OK!!
 MACHINE -> BOARD
```

   If the software upload fails, the display shows **"NG"**.

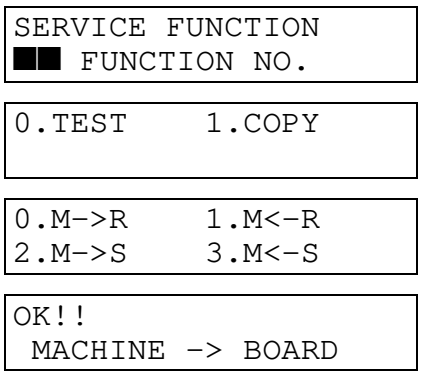
```
NG!!
 MACHINE -> BOARD
```

8. Finish: User Tools
9. Turn off the machine and disconnect the tool. Then turn the machine back on again.

4.2.23 SRAM DATA UPLOAD (FUNCTION 12)

This function copies all the data stored in the SRAM on the FCU inside the machine to the flash memory card. Use this to save programmed settings before replacing a damaged FCU.

1. Turn off the machine.
2. Connect the flash memory card and the software copy tool as shown in section 4.2.21.
   k l qbW The switch on the copy tool must be at the **OFF** position.
3. Turn on the machine.
4. User Tools # 1 0 7 ◈
5. 1 2 "OK"
6. 1
7. 2 ◈
   If the SRAM data uploads successfully, the display shows **"OK"**.
   If the software download fails, the display shows **"NG"**.
8. Finish : User Tools
9. Turn off the machine and disconnect the tool. Then turn the machine back on.



4.2.24 SRAM DATA DOWNLOAD

This function copies the data stored in an external flash memory card to the FCU inside the machine. Use this after replacing a damaged FCU to copy any previously programmed settings back to the machine.

1. Turn off the machine.
2. Connect the flash memory card and the software copy tool as shown in section 4.2.21.
   kl qbW The switch on the copy tool must be at the **OFF** position.
3. Turn on the machine.
4. User Tools # 1 0 7 ◈
5. 1 2 "OK"
6. 1
7. 3 ◈
   If the SRAM data downloads successfully, the display shows **"OK"**.
   If the software download fails, the display shows **"NG"**.
10. Finish: User Tools
11. Turn off the machine and disconnect the tool. Then turn the machine back on.

```
FUNCTION KPAD/NEXT>
■■SERVICE FUNCTIONS
```

```
0.TEST     1.COPY
```

```
0.M->R     1.M<-R
2.M->S     3.M<-S
```

```
OK!!
 MACHINE <- BOARD
```

4.2.25 ISDN G4 SOFTWARE DOWNLOAD

This procedure copies the G4 software from the flash memory card to the flash ROM on the optional ISDN G4 board.

1. Turn off the machine.
2. Connect the flash memory card and the software copy tool as shown in section 4.2.21.
   k l qbW The switch [D] on the tool must be at the **OFF** position.
3. Turn on the machine.

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

4. User Tools # 1 0 7 ◈
5. 1 2 "OK"

```
0.TEST    1.COPY
```

6. 1

```
0.M->R    1.M<-R
2.M->S    3.M->S
```

7. 4 ◈
   If the G4 program data downloads successfully, the display shows **"OK"**.
   If the software download fails, the display shows **"NG"**.

```
OK!!
 MACHINE <- BOARD
```

8. Finish: User Tools
9. Turn off the machine and disconnect the tool. Then turn the machine back on.

4.2.26 NICF/PDU SOFTWARE DOWNLOAD

This procedure copies the NICF or PDU software from the flash memory card to the flash ROM on the optional NICF or PDU board.

1. Turn off the machine.
2. Connect the flash memory card and the software copy tool as shown in section 4.2.21.
   k l qbW The switch [D] on the tool must be at the **OFF** position.
3. Turn on the machine.
4. [User Tools] # 1 0 7 ◈
5. 1 2 "OK"
6. 1
7. 5 ◈
   If the G4 program data downloads successfully, the display shows **"OK"**.
   If the software download fails, the display shows **"NG"**.
8. Finish: [User Tools]
9. Turn off the machine and disconnect the tool. Then turn the machine back on.

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

```
0.TEST    1.COPY
```

```
0.M->R    1.M<-R
2.M->S    3.M->S
```

```
OK!!
 MACHINE <- BOARD
```


4.2.27 SERVICE STATION FAX NUMBER (FUNCTION 13)

1. [User Tools] # 1 0 7 ◈
2. 1 3 "OK"
3. Input the telephone number of the service station that will receive Auto Service calls from this machine.

   To erase the telephone number: press "Clear"
4. If the display is correct: "OK" [User Tools]

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

```
S.S. NO.          KPAD
■■■■■■■■■■■■■■■■■■■■
```

```
S.S. NO.            OK
212-5555■■■■■■■■■■
```

RAM address 80025B determines whether this is a PSTN or ISDN number
00: G3 PSTN, 01: G4 ISDN

4.2.28 SERIAL NUMBER (FUNCTION 14)

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 1 4 "OK"

```
SERIAL #[ABC]
■■■■■■■■■■■■■
```

3. Enter the serial number at the keypad.
   To correct a mistake: "Clear"
4. If the display is correct: "OK"

```
SERIAL #[ABC]      OK
RICOH 1234567■■■
```

5. Finish: User Tools

4.2.29 G4 PARAMETERS (FUNCTION 15)

This function will appear only if the ISDN option has been installed.

G4 Internal Switch Programming

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 1 5 "OK" key

```
0.G4_ISW   1.G4_PSW
2.G4_DMP1  3.G4_DMP2
```

3. 0
   _it 7 is on the left, and bit 0 on the right.

```
ISW DF  :  0001 0001
BITSW 00:  0001 0001
```

4. Scroll through the bit switches.
   Increment bit switch: ▶
   Decrement bit switch: ◀
   Example: Display bit switch 3: ▶ x 3

```
ISW DF  :  0000 0000
BITSW 03:  0000 0000
```

5. Adjust the bit switch.
   Example: To change the value of bit 7,
   press 7

```
ISW DF  :  0000 0000
BITSW 03:  1000 0000
```

6. Either:
   - Adjust more bit switches - go to step 4.
   - Finish : "OK" User Tools

G4 Parameter Switch Programming

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 1 5 "OK" key

```
0.G4_ISW   1.G4_PSW
2.G4_DMP1  3.G4_DMP2
```

3. ①
   _it 7 is on the left, and bit 0 on the right.

```
PSW DF  :  0000 0000
BITSW 00:  0000 0000
```

4. Scroll through the bit switches.
   Increment bit switch: ▶
   Decrement bit switch: ◀
   Example: Display bit switch 3: ▶ x 3

```
PSW DF  :  0000 0000
BITSW 03:  0000 0000
```

5. Adjust the bit switch.
   Example: To change the value of bit 7, press ⑦

```
PSW DF  :  0000 0000
BITSW 03:  1000 0000
```

6. Either:
   - Adjust more bit switches - go to step 4.
   - Finish : "OK" [User Tools]

Printing a G4 Memory Dump

Use this function to print the D-ch. Layer 1 dump list.

1. [User Tools] # ① ⓪ ⑦ ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. ① ⑤ "OK" key

```
0.G4_ISW   1.G4_PSW
2.G4_DMP1  3.G4_DMP2
```

3. ②

```
ADD.000000 - 0000FF
PRESS START TO PRINT
```

4. Input the range of addresses that you wish to print.
   Example: Addresses 07EB00 to 07ECFF.
   Input ⓪ ⑦ □ □ ⓪ ⑦ □ □ ◈.

Layer 1 memory dump information is stored in the following address: 07EB00(H) to 07ECFF(H).

Printing G4 Protocol Dump List

1. [User Tools] # ① ⓪ ⑦ ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. ① ⑤ "OK" key

```
0.G4_ISW   1.G4_PSW
2.G4_DMP1  3.G4_DMP2
```

3. ③

```
G4_DMP2
 CODE 0: D+BCH1   <>
```

4. Either:
   - Print a protocol dump list for the D channel and B channel 1: ◈
   - Print a protocol dump list for the D channel and B channel 2: ▶ ◈
     G4 Dump “D+BCH1”, “D+BCH2”:
     Up to 2 kbytes of data can be stored. When the data exceeds this limit, it is overwritten (the oldest data is overwritten first; also see G4 internal switch 03 bit 0).
     D+BCH2 data is logged only when there is dual communication.
   - To print a protocol dump list for the D channel: ▶ x 2 ◈
     Up to 2 kbytes of data can be stored.
   - To print a protocol dump list for the B channel 1 link layer: ▶ x 3 ◈
   - To print a protocol dump list for the B channel 2 link layer: ▶ x 4 ◈
   - To print a protocol dump list for the D channel link layer: ▶ x 5 ◈

Modem/DTMF Tone Tests

This is used only for PTT approval tests.

4.2.30 LAN PARAMETERS (FUNCTION 16)

This function will appear if the NIC or PDU option has been installed.

LAN Bit Switch Programming

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 1 6 “OK” key

```
0.LAN SW  1.DU SW
2.LINK    3.LOOP
```

3. 0
   _it 7 is on the left, and bit 0 on the right.

```
LAN DF  :  0000 0001
BITSW 00:  0000 0001
```

4. Scroll through the bit switches.
   Increment bit switch: ▶
   Decrement bit switch: ◀
   Example: Display bit switch 3: ▶ x 3

```
LAN DF  :  0000 0000
BITSW 03:  0000 0000
```

5. Adjust the bit switch.
   Example: To change the value of bit 7, press 7

```
LAN DF  :  0000 0000
BITSW 03:  1000 0000
```

6. Either:
   - Adjust more bit switches - go to step 4.
   - Finish : “OK” User Tools

DU Bit Switch Programming

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 1 6 "OK" key

```
0.LAN SW  1.DU SW
2.LINK    3.LOOP
```

3. 1
   _it 7 is on the left, and bit 0 on the right.

```
DU DF   :  0000 0000
BITSW 00:  0000 0000
```

4. Scroll through the bit switches.
   Increment bit switch: ▶
   Decrement bit switch: ◀
   Example: Display bit switch 3: ▶ x 3

```
DU DF   :  0000 0000
BITSW 03:  0000 0000
```

5. Adjust the bit switch.
   Example: To change the value of bit 7, press 7

```
DU DF   :  0000 0000
BITSW 03:  1000 0000
```

6. Either:
   - Adjust more bit switches - go to step 4.
   - Finish: "OK" User Tools

Link Check

This test checks the connection from the terminal to the hub. See section 7.9.1 for more information on this test.

NOTE: Do not use this function if the PDU option is installed.

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 1 6 "OK" key

```
0.LAN SW  1.DU SW
2.LINK    3.LOOP
```

3. 2

```
LINK CHECK      START
```

4. To start a test: ◈
   If the test is successful, the display shows "OK!!".
   If the test is unsuccessful, the display shows "NG!!"
5. Finish : User Tools

Loop Back Test

This test checks the connection between the FCU and the NIC or PDU board. See section 7.9.2 for more information on this test.

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 1 6 "OK" key

```
0.LAN SW  1.DU SW
2.LINK    3.LOOP
```

3. 3

```
LOOP BACK       START

```

4. To start a test: ◈
   If the test is successful, the display shows "RESULT CODE=0000".
   If the test is unsuccessful, the display shows an error code.
   For example: RESULT CODE=000E
5. Finish : User Tools

Log Dump List Printing

A log of the communications between the machine and the server is printed. See section 7.9.4 for more information on this.

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 1 6 "OK" key

```
0.LAN SW  1.DU SW
2.LINK    3.LOOP
```

3. 4

```
                START
LOG DUMP
```

4. ◈
5. Finish : User Tools

PING/MODEM Test

This function depends on which option is installed: NIC or PDU.

NIC option: PING
PDU option: MODEM

PING Test

This tests the connections to the servers. See section 7.9.3 for more information on this test.

1. User Tools # 1 0 7 ◈

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

2. 1 6 "OK" key

```
0.LAN SW  1.DU SW
2.LINK    3.LOOP
```

3. ⑤

PING	START

4. ◈
5. To start a test: ◈
   If the test is successful, the display shows “RESULT CODE=0000”.
   If the test is unsuccessful, the display shows an error code.
   For example: RESULT CODE=1061
6. Finish : User Tools

MODEM TEST

This is used only for PTT approval tests.

4.2.31 JBIG

This is used only for PTT approval tests.

4.2.32 ACCESSING THE INITIAL SETTING PROCEDURE

When the machine is switched on for the first time after installation, an initial setting procedure appears. With this procedure, the user can program the initial setting items more easily. However, the initial setting procedure does not appear again. If you need to use this procedure again and do not need to display the country code, do the following.

1. Press the resolution key, ① key and ⓪ key all at the same time.
2. After the display shows “Programmed”, turn off the machine.
   Then the machine will show the initial setting procedure when the machine is turned on again.

For the European and Asian models, the country selection appears in the start-up initial setting procedure. Country selection does not appear again even if the above reset is done. Therefore, if you need to display the country selection procedure utilize this procedure.

CAUTION: THIS PROCEDURE WILL ERASE ALL RAM DATA.

1. Press the resolution key, ① key and ⑨ key all at the same time.

```
FACTORY ADJUST.
Set Originals
```

2. ⑨

```
RAM CLEAR
 0-2
```

3. ①

```
                    START
FIRST CLEAR
```

4. ◇
   The machine resets automatically.

```
FACTORY ADJUST.
Set Originals
```

5. ②

```
PTT / COUNTRY-CODE
 0-1
```

6. ①

```
                  KPAD/OK
COUNTRY = 0(USA)
```

7. ① or ② “OK” key

```
PTT / COUNTRY-CODE
 0-1
```

   ⓪: for USA
   ①: for Europe
   ②: for Asia
   ③: for Japan

8. “Cancel” key

```
FACTORY ADJUST.
Set Originals
```

9. ⑨

```
RAM CLEAR
 0-2
```

10. ② ◇
    The machine resets automatically, then the start up initial setting procedure is appeared.
11. Turn off the machine. The initial setting procedure will appear when the machine is turned on again.

4.3 BIT SWITCHES

⚠WARNING
Do not adjust bit switches described as "Not used", as this may cause the machine to malfunction or to operate in a manner that is unacceptable under local regulations. Such bits are only for use in other areas, such as Japan.

NOTE: 1) This manual does not list default settings for bit switches. Refer to the System Parameter List.
2) Any changes from the Schmidt 3 are shaded.

4.3.1 SYSTEM SWITCHES

System Switch 00		
No.	**FUNCTION**	**COMMENTS**
0-1	**RAM Reset** **Bit 1 0 Reset Level** 0 0 No reset 0 1 Reset Level 2 1 0 Reset Level 3 1 1 Not used	**Reset Level 3:** Erases all image data files stored in the SAF memory and communication files (e.g. substitute RX files). This is the recommended setting when the SAF requires clearing. **Reset Level 2:** This level erases the following items in addition to those erased by Reset Level 3: own telephone number, bit switches (excluding country code), RTI/TTI/CSI, report data, programmed telephone numbers (Quick/Speed/Groups, service station, etc.), NCU parameters, and personal codes. The NCU country code is also set to the same as the bit switch country code (System Bit Switch 0F). After erasing, the machine automatically changes these two bits back to 0. **No reset:** Normal operation **Cross-reference** **RAM Reset Level 1 (Factory reset):** Change the RAM address data from 800005(H) to FF(H), then turn the machine off and on. In addition to those items erased by Reset Level 2, the clock, country code (the default country code is Japan), scan margin settings and print registration settings are erased. To adjust the country code, you must first set system switch 15 bit 2 to 1.

Service Tables

System Switch 00		
No.	**FUNCTION**	**COMMENTS**
2	Technical data printout on Journal **0:** Disabled **1:** Enabled	**1:** Instead of a personal code, the Journal lists the following data for each analog G3 communication. E.g. 32 V34 288 M 01 00 03 02 **First number:** Symbol rate (V.34 only) Second number: Final modem type used **Third number:** Final date rate (for example, 288 means 28.8 KBPS) **Fourth number:** M means modem EQM./L means RX level. **Fifth and sixth number:** Line quality data. This is either a measurement of the error rate or the RX level, depending on the bit 3 setting below. (An M on the report indicates that it is error rate, and an L indicates RX level.) The left-hand figure is the high byte and the right-hand figure is the low byte (refer to the note after this table for how to read the RX level). If it measures the error rate, a larger number means more errors. **Seventh number (RX mode only):** Total number of error lines that occurred during non-ECM reception. **Eighth number (RX mode only):** Total number of burst error lines that occurred during non-ECM reception. The seventh and eighth numbers are fixed at 00 for transmission records and ECM reception records.
3	Line quality data output method **0:** Error rate measurement during image data transmission **1:** Rx level	This bit determines the data type printed in the Journal when bit 2 (above) enables a technical data printout.
4	Line error marks **0:** Disabled **1:** Enabled	If this bit is 1, a mark will be printed on the left edge of the page at any place where a line error occurred in the data. A noisy line causes such errors, for example.
5	Communication parameter display **0:** Disabled **1:** Enabled	This is a faultfinding aid. The LCD shows the key parameters (see the next page). This is normally disabled because it cancels the CSI display for the user. Be sure to reset this bit to 0 after testing.
6	Protocol dump list output **0:** Disabled **1:** Enabled	This is used for communication troubleshooting. It shows the content of the transmitted facsimile protocol signals. Always reset this bit to 0 after testing. The setting of system switch 09 bit 6 determines the types of communication that the list is printed after.
7	Not used	Do not change the setting.

How to calculate the RX level listed on the Journal (when bit 2 of system switch 00 is set to 1)

Example: 32 V34 288 **L 01 00** 00 00

The four-digit hexadecimal values (N) after L indicates the RX level.
The high byte is given first, followed by the low byte. Divide the decimal value of N by -16 to get the RX level.

In this above example, the decimal value of N (=0100[H]) is 256.
So, the actual RX level is 256/-16 = -16 dB.

G3 Communication Parameters

Mode	DCS: ITU-T standard NSS: Non-standard G3
Modem rate	336: 33600 BPS 168: 16800 BPS 312: 31200 BPS 144: 14400 BPS 288: 28800 BPS 120: 12000 BPS 264: 26400 BPS 96: 9600 BPS 240: 24000 BPS 72: 7200 BPS 216: 21600 BPS 48: 4800 BPS 192: 19200 BPS 24: 2400 BPS
Communication mode	ECM: With ECM NML: With no ECM
Compression mode	MMR: MMR compression MR: MR compression MH: MH compression JBO: JBIG optional compression JBB: JBIG standard compression
Resolution	F: Fine, transmitted at 8 x 15.4 dots per mm D: Detail, transmitted at 8 x 7.7 dots per mm S: Standard, transmitted at 8 x 3.85 dots per mm 21: Standard (200 x 100 dpi) 22: Detail (200 x 200 dpi)
I/O rate	0: 0 ms/line 10: 10 ms/line 25: 2.5 ms/line 20: 20 ms/line 5: 5 ms/line 40: 40 ms/line “40” is displayed while receiving a fax message using AI short protocol.
Width and reduction	A4: A4 (8.3"), no reduction B4: B4 (10.1") no reduction

G4 Communication Parameters

Compression mode	MMR: MMR compression MR: MR compression MH: MH compression
Resolution	21: Standard (200 x 100 dpi) 22: Detail (200 x 200 dpi) 24: Fine (200 x 400 dpi)

Width and reduction	A4: A4 (8.3"), no reduction B4: B4 (10.1"), no reduction (tx only) A3: A3 (11.7"), no reduction (tx only)
Transfer	T: Transfer, - : Other
Confidential	C: Confidential, - : Other
Other parameters	The following information is shown in 6-bit format. Bit 1 is the first bit from the left, and bit 6 is at the right end. Bit 1 - Smoothing 0: Enabled, 1: Disabled (Smoothing is disabled in halftone mode.) Bit 2 - CIL printing 0: Enabled, 1: Disabled Bit 3 - Not used Bit 4 - mm/inch conversion 0: Disabled, 1: Enabled Bit 5 - Engine type 0: mm, 1: inch Bit 6 - Resolution unit 0: mm, 1: inch

System Switch 01		
No.	**FUNCTION**	**COMMENTS**
0	PM call **0:** Disabled **1:** Enabled	This bit switch determines whether the machine will send an Auto Service Call to the service station when it is time for PM.
1	Auto service call **0:** Disabled **1:** Enabled	This bit switch determines whether the machine will send an Auto Service Call to the service station when a fatal error occurs. This bit is changed to 0 (disabled) automatically when the machine called a not fax machine or a wrong fax machine. **Cross-reference** Communication Switch 02 bits 4 and 5 - Wrong connection prevention method (Service station)
2-7	Not used	Do not change these settings.

System Switch 02		
No.	**FUNCTION**	**COMMENTS**
0	Memory file transfer **0:** Disabled **1:** Enabled	**1:** All messages in the memory (including confidential RX messages) are sent to the fax number that is stored as the service station. Always reset this bit to zero after transfer. **Cross-reference** Service station number: Function 13
1	Not used	Do not change the setting.
2	Scan Router connection **0:** Disabled **1:** Enabled	Set this bit to 1 when you wish to use this machine as a network scanner using Scan Router. The NIC fax card must be installed before Scan Router can be used.
3	Not used	Do not change the setting.

System Switch 02		
No.	**FUNCTION**	**COMMENTS**
4	Automatic reset (during communication) **0:** Disabled **1:** Enabled	**1:** Standard G3 unit - The machine automatically returns to standby mode when a page takes more than a certain time to send (the default setting is 60 minutes). This timer can be adjusted with RAM addresses 8003B5 and 8003B6. When the optional G4 unit is installed - While the machine is in standby mode, it resets the optional G4 unit hardware at a certain interval (the default setting is 15 min). This timer can be adjusted with RAM addresses 8003B7 and 8003B8. For communication, when this timer expires after the communication is finished, the machine resets the optional G4 unit hardware. **Cross-reference** Service RAM Addresses, section 4.6.
5	Not used	Do not change the setting.
6-7	**Memory read/write by RDS** **Bit 7 6 Setting** 0 0 Always disabled 0 1 User selectable 1 0 User selectable 1 1 Always enabled	**(0,0):** All RDS systems are always locked out. **(0,1), (1,0):** Normally, RDS systems are locked out, but the user can temporarily switch RDS on to allow RDS operations to take place. RDS will automatically be locked out again after a certain time, which is stored in System Switch 03 (see below). Note that if an RDS operation takes place, RDS will not switch off until this time limit has expired. **(1,1):** At any time, an RDS system can access the machine.

System Switch 03		
No.	**FUNCTION**	**COMMENTS**
0-7	Length of time that RDS is temporarily switched on when bits 6 and 7 of System Switch 02 are set to "User selectable"	00 - 99 hours (BCD). This data is only valid if bits 6 and 7 of System Switch 02 are set to "User selectable". The default setting is 24 hours.

System Switch 04		
No.	**FUNCTION**	**COMMENTS**
0-2	Not used	Do not change these settings.
3	Dedicated transmission parameter programming **0:** Disabled **1:** Enabled	Set this bit to 1 before changing any dedicated transmission parameters.
4	Inclusion of the Start key in Keystroke Programs **0:** Not needed **1:** Needed	**0:** The user does not need to press the Start key when operating a keystroke program.
5	Replacement level for the maintenance kits **0:** User **1:** Service	**0:** The machine asks the user to replace the parts in the ADF maintenance kit after 30,000 scans with the ADF. After the user replaces the parts, the machine asks the user if they have been replaced or not. After the user answers yes, the user has to reset the PAD counter using the key operator tools. The replacement counter is programmed at the following addresses: ADF kit counter: 8002CA to 8002CD(H) Refer to section 4.6 for more details. **1:** The machine will not ask the user to replace the maintenance kits.
6	CSI programming level **0:** User level **1:** Service level	**1:** Only a service function can program the CSI.
7	Telephone line type programming mode **0:** User level **1:** Service level	**1:** Only a service function can program the telephone line type selection.

System Switch 05		
No.	**FUNCTION**	**COMMENTS**
0-1	Not used	Do not change the setting.
2	Display of both RTI and CSI on the LCD **0:** Disabled **1:** Enabled	**1:** Both RTI and CSI will be displayed alternately on the LCD.
3-7	Not used	Do not change these settings.

System Switch 06		
No.	**FUNCTION**	**COMMENTS**
0	Use of the Stop key during memory transmission **0:** Disabled **1:** Enabled	**1:** The Stop key can be used to halt memory transmissions. However, users might accidentally cancel another person's memory transmission in progress.
1-3	Not used	Do not change these settings.
4	Use of the Stop key during memory transmission **0:** Disabled **1:** Enabled	**1:** The Stop key can be used to halt memory transmissions. After pressing the Stop key, a message (STOP & CLR FILE?) appears on the LCD.
5	Not used	Do not change this setting.
6-7	Not used	Do not change these settings.

System Switch 07 - Not used (do not change any of these settings)
System Switch 08 - Not used (do not change any of these settings)

System Switch 09		
No.	**FUNCTION**	**COMMENTS**
0	Addition of part of the image data from confidential transmissions on the transmission result report **0:** Disabled **1:** Enabled	If this feature is enabled, the top half of the first page of confidential messages will be printed on transmission result reports.
1	Inclusion of communications in the Journal when no image data was exchanged. **0:** Disabled **1:** Enabled	**0:** The Journal lists communications that reached phase C (message TX/RX) of the T.30 protocol. **1:** The Journal lists communications that reached phase A (call setup) of T.30 protocol. This includes telephone calls.
2	Automatic error report printout **0:** Disabled **1:** Enabled	**0:** Error reports are not printed. **1:** Error reports will print automatically after all failed communications, excluding polling reception and immediate transmissions.
3	Print error code on error report **0:** No **1:** Yes	**1:** Error codes are printed on the error reports.
4	Not used	Do not change the setting.
5	Power failure report **0:** Disabled **1:** Enabled	**1:** A power failure report automatically prints after the power is switched on if a fax message disappears from memory when the power was turned off last.
6	Conditions for printing the protocol dump list **0:** Print for all communications **1:** Print only when there is a communication error	This switch becomes effective only when system switch 00 bit 6 is set to 1. **1:** Set this bit to 1 when you wish to print a protocol dump list only for communications with errors.

System Switch 09		
No.	**FUNCTION**	**COMMENTS**
7	Priority given to various types of remote terminal ID when printing reports **0:** RTI > CSI > Dial label > Tel. Number **1:** Dial label > Tel. number > RTI > CSI	This bit determines which set of priorities the machine uses when listing remote terminal names on reports. Dial Label: The name stored with the Quick/Speed Dial number by the user.

System Switch 0A		
No.	**FUNCTION**	**COMMENTS**
0	Not used	Do not change these settings
1	Default communication mode **0:** G3 **1:** G4	These bits determine the machine's standby default communication mode if a G4 option has been installed.
2	Not used	Do not change these settings.
3	Continuous polling reception **0:** Disabled **1:** Enabled	This feature allows a series of stations to be polled in a continuous cycle.
4	Dialing on the ten-key pad when the handset is off-hook **0:** Disabled **1:** Enabled	**1:** The user can dial on the ten-key pad when the handset is off-hook. This switch cannot be used in the S4-I.
5	On-hook dial **0:** Disabled **1:** Enabled	**0:** On-hook dial is disabled. This switch cannot be used in the S4-I.
6	Line used for G3 transmission **0:** PSTN **1:** ISDN	If an ISDN kit has been installed, this bit determines whether G3 transmissions go out over the PSTN or the ISDN.
7	Line used when the machine falls back to G3 from G4 if the other end is not a G4 machine **0:** PSTN **1:** ISDN	This bit switch has no effect if Communication Switch 07 bit 0 is set to 0.

System Switch 0B		
No.	**FUNCTION**	**COMMENTS**
0-1	Automatic reset timer **Bit 1 0 Timer setting** 0 0 1 minute 0 1 3 minutes 1 0 5 minutes 1 1 No limit	**(1, 1):** Automatic reset is disabled. **(Other):** The machine returns to standby mode when the timer expires after the last operation.
2-3	Energy Saver mode timer **Bit 3 2 Time Limit** 0 0 1 minute 0 1 3 minutes 1 0 5 minutes 1 1 No limit	**(1, 1):** Automatic Energy Saver mode is disabled. **(Other):** The machine goes into Energy Saver Mode when the timer expires after the last operation. **Cross-reference** Energy Saver modes: Section 2.3.1
4-6	Not used	Do not change these settings.

System Switch 0B		
No.	**FUNCTION**	**COMMENTS**
7	Keys to be pressed to exit the energy saver mode **0:** Only the energy saver key **1:** Any key	**1:** Any key can be pressed to exit the energy saver mode

System Switch 0C - Not used (do not change any of these settings)
System Switch 0D - Not used (do not change any of these settings)
System Switch 0E - Not used (do not change any of these settings)

System Switch 0F		
No.	**FUNCTION**	**COMMENTS**
0-7	Country code for functional settings (Hex) 00: France 01: Germany 02: UK 03: Italy 04: Austria 05: Belgium 06: Denmark 07: Finland 08: Ireland 09: Norway 0A: Sweden 0B: Swiss. 0C: Portugal 0D: Holland 0E: Spain 0F: Israel 10: Not used 11: USA 12: Asia 13: Japan 14: Hong Kong 15: South Africa 16: Australia 17: New Zealand 18: Singapore 19: Malaysia 20: Turkey 21: Greece	This country code determines the factory settings of bit switches and RAM addresses. However, it has no effect on the NCU parameter settings and communication parameter RAM addresses. **Cross-reference** NCU country code: Function 08, parameter CC. The bit switch country code will automatically be changed to the same country code with the NCU country code when you change the NCU country code and exit the service mode. **Note:** If RAM reset level 1 is done, this bit switch resets to 13 (Japan). You will have to set system switch 15 bit 2 to 1 before trying to change the NCU country code.

System Switch 10		
No.	**FUNCTION**	**COMMENTS**
0-7	Threshold memory level for parallel memory transmission	Threshold mount = N x 64 Kbytes N can be between 00 - FF(H) Default setting: 04(H) = 256 Kbytes

System Switch 11		
No.	**FUNCTION**	**COMMENTS**
0	TTI printing position **0:** Superimposed on the page data **1:** Printed before the data leading edge	Change this bit to 1 if the TTI overprints information that the customer considers important (G3 transmissions).
1	CIL printing position **0:** Printed before the data leading edge **1:** Superimposed on the page data	Change this bit to 1 if the CIL overprints information that the customer considers important (G4 transmissions).
2-5	Not used	Do not change these settings.
6	Memory reception if no RTI or CSI received **0:** Reception disabled **1:** Reception enabled only when there is no problem with the printer mechanism	This switch setting is dependent on user parameter switch 05 bit 1. This Sw U.P.05 bit 1 -- 0 : Reception always enabled 0 1 : Reception disabled 1 1 : Reception enabled only there is no problem with the printer mechanism
7	Use of parallel memory transmission with G4 transmission **0:** Disabled **1:** Enabled	This bit determines whether parallel transmission can be used with a G4 transmission or not.

System Switch 12		
No.	**FUNCTION**	**COMMENTS**
0-7	TTI printing position in the main scan direction	08 to 92 (BCD) mm. Only input even numbers. This setting determines the TTI print start position from the left edge of the paper. If the TTI is too far to the right, the file number, which is on the top right of the page, may obscure it.

System Switch 13 - Not used (do not change any of these settings)
System Switch 14 - Not used (do not change any of these settings)

System Switch 15		
No.	**FUNCTION**	**COMMENTS**
0	Not used	Do not change this setting.
1	Programming with European characters **0:** Disabled **1:** Enabled	**1:** The user can program with European characters (e.g. "**ä**", "**å**") for the TTI, Quick Dial labels, etc.

System Switch 15		
No.	**FUNCTION**	**COMMENTS**
2	Change NCU country code **0:** Disabled **1:** Enabled	**0:** The machine does not display “c.c.” in the service mode 08: NCU, 0: NCU PARA menu.
3-7	Not used	Do not change these settings.

System Switch 16 - Not used (do not change any of these settings)

System Switch 17		
No.	**FUNCTION**	**COMMENTS**
0	Not used	Do not change the setting.
1	Direct fax number entry **0:** Disabled **1:** Enabled	**0:** The user must place the original on the ADF before dialing.
2-4	Not used	Do not change these settings.
5	Inclusion of the Yes key when Quick Dials are continuously selected for destinations **0:** Not needed **1:** Needed	**1:** The user must press the Yes key after each Quick Dial key. This is to prevent the user from selecting incorrect destinations.
6	Notify user when the communication is complete **0:** Not notify **1:** Notify	**1:** The machine notifies the user with a beeper when the communication is complete.
7	Not used	Do not change this setting.

System Switch 18 - Not used (do not change any of these settings)

System Switch 19		
No.	**FUNCTION**	**COMMENTS**
0-6	Not used	Do not change these settings
7	Not used	Do not change the setting.

System Switch 1A - Not used (do not change any of these settings)
System Switch 1B - Not used (do not change any of these settings)
System Switch 1C - Not used (do not change any of these settings)
System Switch 1D - Not used (do not change any of these settings)
System Switch 1E - Not used (do not change any of these settings)
System Switch 1F - Not used (do not change any of these settings)

4.3.2 SCANNER SWITCHES

Scanner Switch 00		
No.	**FUNCTION**	**COMMENTS**
0-1	Not used	Do not change these settings.
2-3	Maximum transmittable document length **Bit 3 2 Setting** 0 0 600 mm 0 1 1,200 mm 1 0 Not used 1 1 Not used	If the user wants to send very long documents such as well logs, select the higher setting.
4	OR processing in immediate TX and copying (Standard resolution) **0:** Disabled **1:** Enabled	**0:** The machine scans the document in 3.85 line/mm steps, then transmits or makes copies. **1:** The machine scans the document in 7.7 line/mm steps. Each pair of lines goes through OR processing before transmission or copy making. Toner may be used up earlier if OR processing is enabled.
5	Not used	Do not change the setting.
6-7	Not used	Do not change these settings.

Scanner Switch 01 - Not used (do not change any of these settings)
Scanner Switch 02 - Not used (do not change any of these settings)
Scanner Switch 03 - Not used (do not change any of these settings)
Scanner Switch 04 - Not used (do not change any of these settings)
Scanner Switch 05 - Not used (do not change any of these settings)
Scanner Switch 06 - Not used (do not change any of these settings)
Scanner Switch 07 - Not used (do not change any of these settings)
Scanner Switch 08 - Not used (do not change any of these settings)
Scanner Switch 09 - Not used (do not change any of these settings)
Scanner Switch 0A - Not used (do not change any of these settings)
Scanner Switch 0B - Not used (do not change any of these settings)
Scanner Switch 0C - Not used (do not change any of these settings)
Scanner Switch 0D - Not used (do not change any of these settings)
Scanner Switch 0E - Not used (do not change any of these settings)
Scanner Switch 0F - Not used (do not change any of these settings)

4.3.3 PRINTER SWITCHES

Printer Switch 00		
No.	**FUNCTION**	**COMMENTS**
0	Page separation mark **0:** Disabled **1:** Enabled	**0:** No marks printed. **1**: If an incoming fax requires two sheets to print, the machine prints an "x" inside a small box at the bottom right hand corner of the first sheet. Then, it prints a "2" inside a small box at the top right hand corner of the second sheet. This helps the user identify pages that have been split up.
1	Repetition of data when the received page is longer than the printer paper **0:** Disabled **1:** Enabled	**0:** The next page continues from where the previous page left off. **1:** The final few mm of the previous page are printed at the top of the next page. See section 2.3.3 for details.
2-7	Not used	Do not change the settings.

Printer Switch 01		
No.	**FUNCTION**	**COMMENTS**
0	Reset the fusing unit failure **0:** Off **1:** On (Clear)	When a fusing error occurs, set this bit to 1 after fixing the problem. The machine then resets the fusing error. Switch the machine off/on and this bit will reset itself to 0.
1-7	Not used	Do not change the settings.

Printer Switch 02		
No.	**FUNCTION**	**COMMENTS**
0	Paper Feed Priority **0:** Paper feed unit >> By-pass feeder >> Standard cassette **1:** Paper feed unit >> Standard cassette >> By-pass feeder	This bit determines which set of priorities the machine uses for feeding the paper when all the cassettes contain the same paper size.
2-7	Not used	Do not change these settings.

<table>
<tr><th colspan="3">Printer Switch 03</th></tr>
<tr><th>No.</th><th>FUNCTION</th><th>COMMENTS</th></tr>
<tr><td>0</td><td>Reduce the length of received data
0: Disabled 1: Enabled</td><td>0: Incoming pages are printed without length reduction.
Cross-reference
Page separation threshold: Printer Switch. 03, bits 4 to 7.
1: Incoming pages are reduced in the lengthwise direction when printing.
Cross-reference
Reduction ratio: Printer Switches 04/05
Page separation and data reduction: section 2-3-3</td></tr>
<tr><td>1-3</td><td>Not used</td><td>Do not change these settings.</td></tr>
<tr><td>4-7</td><td colspan="2">Page separation threshold (with reduction disabled in switch 03 bit 0 above)

If the incoming page is up to x mm longer than the copy paper, the excess portion will not print. If the incoming page is more than x mm longer than the copy paper, the excess portion will print on the next page.
These four bits determine the value of x.

Hex value of bits 4 to 7 x (mm)
0 0
1 1
and so on until
F 15

Cross-reference
Page separation and data reduction: section 2-3-3
Length reduction On/Off: Printer Switch 03, Bit 0</td></tr>
</table>

Printer Switch 05		
No.	**FUNCTION**	**COMMENTS**
0-7	Reduction ratios used for different paper sizes (with reduction enabled in switch 03-bit 0 above) If reduction is enabled, the data will be reduced in the lengthwise direction before printing. These switches determine the maximum reduction ratio for each paper size. **Cross-reference** Page separation and data reduction: section 2.3.3. Switch 04/05 Paper used Bit0 A5 sideways Bit1 Not used Bit2 LT Bit3 A4 Bit4 F Bit5 LG Bit6 Not used Bit7 Not used SW04 SW05 Reduction Ratio 1 0 4/3 0 1 8/7 1 0 12/11	

Printer Switch 06 - Not used (do not change any of these settings)
Printer Switch 07 - Not used (do not change any of these settings)
Printer Switch 08 - Not used (do not change any of these settings)
Printer Switch 09 - Not used (do not change any of these settings)
Printer Switch 0A - Not used (do not change any of these settings)
Printer Switch 0B - Not used (do not change any of these settings)
Printer Switch 0C - Not used (do not change any of these settings)
Printer Switch 0D - Not used (do not change any of these settings)
Printer Switch 0E - Not used (do not change any of these settings)
Printer Switch 0F - Not used (do not change any of these settings)

4.3.4 COMMUNICATION SWITCHES

Communication Switch 00		
No.	**FUNCTION**	**COMMENTS**
0-1	Compression modes available in receive mode **Bit 1 0 Modes** 0 0 MH only 0 1 MH/MR 1 0 MH/MR/MMR 1 1 Not used	These bits determine the compression capabilities declared in phase B (handshaking) of T.30 protocol.
2-3	Compression modes available in transmit mode **Bit 3 2 Modes** 0 0 MH only 0 1 MH/MR 1 0 MH/MR/MMR 1 1 Not used	These bits determine the compression capabilities used in the transmission and declared in phase B (handshaking) of T.30 protocol.
4	Not used	Do not change these settings.
5	JBIG reception mode **0:** Standard mode only **1:** Standard and optional mode (default)	If this bit is 0, JBIG optional mode is switched off for reception. Change the setting when communication problems occur using the JBIG compression.
6	Priority for JBIG mode used for transmission **0:** Standard mode **1:** Optional mode (default)	This bit determines the priority for the compression mode used for JBIG transmission. Change the setting when communication problems occur using the JBIG compression.
7	Closed network (reception) **0:** Disabled **1:** Enabled	**1:** Reception will not go ahead if the ID code of the other terminal does not match the ID code of this terminal. This function is only available in NSF/NSS mode.

Communication Switch 01		
No.	**FUNCTION**	**COMMENTS**
0	ECM **0:** Disabled **1:** Enabled	If this bit is 0, ECM is switched off for all communications.
1	Not used	Do not change this setting.

Communication Switch 01		
No.	**FUNCTION**	**COMMENTS**
2-3	Wrong connection prevention method Bit 3 2 Setting 0 0 None 0 1 8 digit CSI 1 0 4 digit CSI 1 1 CSI/RTI	(01): The machine will not transmit if the last 8 digits of the received CSI do not match the last 8 digits of the dialed telephone number. This does not work for manual dialing. (10): The same as above, except that only the last 4 digits are compared. (11): The machine will not transmit if the other end does not identify itself with an RTI or CSI. (00): Nothing is checked; transmission will always go ahead. **Note:** When enabling wrong connection prevention, disable AI short protocol (set G3 switch 02 bit 6 to 0).
4	Operator call if no response is received in reply to NSF/DIS **0:** Disabled **1:** Enabled	Set this bit to 1 if the user expects to receive telephone calls at the same number that the machine is connected to. The machine will then alert the user if a phone call comes in.
5	Not used	Do not change this setting.
6-7	Maximum printable page length available **Bit 7 6 Setting** 0 0 No limit 0 1 B4 1 0 A4 1 1 Not used	The receiving terminal informs the transmitting terminal of the setting determined by these bits in the pre-message protocol exchange (in the DIS/NSF) frames.

Communication Switch 02		
No.	**FUNCTION**	**COMMENTS**
0	Burst error threshold **0:** Low **1:** High	If the received page has more consecutive error lines than the threshold, the machine sends a negative response. The low and high threshold values depend on the sub-scan resolution, and are as follows. **Resolution Standard Detail** Low settings 6 12 High settings 12 24 This bit is ignored if ECM is in use.
1	Acceptable total error line ratio **0:** 5% **1:** 10%	If the error line ratio of a page exceeds the acceptable ratio, RTN will be sent to the other end. This bit is ignored if ECM is in use.

Communication Switch 02		
No.	**FUNCTION**	**COMMENTS**
2	Treatment of pages received with errors during G3 reception **0:** Deleted from memory without printing **1:** Printed	**0:** Pages received with errors are not printed.
3	Hang-up decision after receiving a negative code (RTN or PIN) during G3 immediate transmission **0:** No hang-up **1:** Hang-up	**0:** Sends the next page even if RTN or PIN is received. **1:** The machine will send DCN and hang up if it receives RTN or PIN. This bit is ignored for memory transmissions or if ECM is being used.
4-5	Wrong connection prevention method (Auto Service Call) Bit 3 2 Setting 0 0 None 0 1 8 digit CSI 1 0 4 digit CSI 1 1 CSI/RTI	(01) - The machine will not transmit if the last 8 digits of the received CSI do not match the last 8 digits of the dialed telephone number. (10) - The same as above, except that only the last 4 digits are compared. (11) - The machine will not transmit if the other end does not identify itself with an RTI or CSI. (00) - Nothing is checked; transmission will always go ahead. **Note:** When enabling wrong connection prevention, disable AI short protocol (set G3 switch 02 bit 6 to 0) in the service station.
6-7	Not used	Do not change these settings.

Communication Switch 03		
No	**FUNCTION**	**COMMENTS**
0-7	Maximum number of page retransmission in a G3 memory transmission	00 - FF (Hex) times. This bit is ignored if ECM is in use.

Communication Switch 04 - Not used (do not change any of these settings)
Communication Switch 05 - Not used (do not change any of these settings)

Communication Switch 06		
No.	**FUNCTION**	**COMMENTS**
0	Dialing requirements: Germany **0:** Disabled **1:** Enabled	This function automatically sets these switches to the required settings for each country after selecting a country code (System Switch 0F).
1	Dialing requirements: Austria **0:** Disabled **1:** Enabled	
2	Dialing requirements: Norway **0:** Disabled **1:** Enabled	
3	Dialing requirements: Denmark **0:** Disabled **1:** Enabled	
4	Dialing requirements: France **0:** Disabled **1:** Enabled	
5	Dialing requirements: Switzerland **0:** Disabled **1:** Enabled	
6	Dialing requirements: USA **0:** Disabled **1:** Enabled	
7	Not used	Do not change these settings.

Communication Switch 07		
No.	**FUNCTION**	**COMMENTS**
0	Fallback from G4 to G3 if the other terminal is not a G4 terminal **0:** Disabled **1:** Enabled	Also see System Switch 0A bit 7. Refer to the ISDN G4 option service manual (G4 Internal Switches 17, 18, 1A, 1B, and 1C) for the CPS code set (Cause Value set) to determine G4 to G3 fallback.
1	Not used	Do not change this setting.
2	Not used	Do not change this setting.
3	Fallback from G4 to G3 reflected in programmed Quick/Speed dials **0:** Fallback enabled (Default) **1:** Always start with G4	**0:** If a communication falls back from G4 to G3, the machine will always start transmission with G3 from the next communication. **1:** The machine will always start to transmit with G4.
4	Fallback from G4 to G3 when G4 communication fails on the ISDN B-channel **0:** Fallback disabled (Default) **1:** Fallback enabled	**1:** Enable this switch only when G4 communication errors occur because the exchanger connects G4 calls to the PSTN. This problem only occurs with some types of exchanger.
5-7	Not used	Do not change these settings.

Communication Switch 08 - Not used (do not change any of these settings)
Communication Switch 09 - Not used (do not change any of these settings)

Communication Switch 0A		
No.	**FUNCTION**	**COMMENTS**
0	Memory transmission resumption point for redialing **0:** From the error page **1:** From page 1	**0:** The transmission begins from the page where transmission failed the previous time. **1:** Transmission begins from the first page.
1	Transfer received mail to the computer that is running Scan Router **0:** Disabled **1:** Enabled	This bit switch determines whether the machine will transfer all received e-mails to the computer that is running Scan Router.
2-6	Not used	Do not change these settings.
7	Emergency calls using 999 **0:** Enabled **1:** Disabled	If this bit is at 1, the machine will not allow you to dial 999 at the auto-dialer. (Only for Hong Kong)

Communication Switch 0B - Not used (do not change any of these settings)
Communication Switch 0C - Not used (do not change any of these settings)

Communication Switch 0D		
No.	**FUNCTION**	**COMMENTS**
0-7	The available memory threshold, below which ringing detection (and therefore reception into memory) is disabled	00 to FF (Hex), unit = 2 KB (e.g. 0C(H) = 24 KB) One page is about 24 KB. The machine refers to this setting before each fax reception. If the remaining memory is below this threshold, the machine cannot receive fax messages. If this setting remains at 0, the machine will detect ringing signals and enter receive mode even if there is no available memory. This will result in communication failure.

Communication Switch 0E		
No.	**FUNCTION**	**COMMENTS**
0-7	Minimum interval between automatic dialing attempts	06 to FF (Hex), unit = 2 s (e.g., 06(H) = 12 s) This value is the minimum time that the machine waits before it dials the next destination.

Communication Switch 0F - Not used (do not change any of these settings)

Communication Switch 10		
No.	**FUNCTION**	**COMMENTS**
0-7	Memory transmission: Maximum number of dialing attempts to the same destination	01 - FE (Hex) times

Communication Switch 11		
No.	**FUNCTION**	**COMMENTS**
0-7	Immediate transmission: Maximum number of dialing attempts to the same destination	01 - FE (Hex) times

Communication Switch 12		
No.	**FUNCTION**	**COMMENTS**
0-7	Memory transmission: Interval between dialing attempts to the same destination	00 - FF (Hex) minutes

Communication Switch 13		
No.	**FUNCTION**	**COMMENTS**
0-7	Immediate transmission: Interval between dialing attempts to the same destination	00 - FF (Hex) minutes

Communication Switch 14		
No.	**FUNCTION**	**COMMENTS**
0	mm-to-inch conversion during transmission **0:** Disabled (default) **1:** Enabled	**0:** Transmitting is always done in mm format. **1:** If the other end only has inch-based resolution for printing, the machine converts the scanned data to inch-format before transmission. Other models use inch-based scanning. In these models, this setting is 'inch-to-mm conversion during transmission'.
1-2	Not used	Do not change these settings.
3	Not used	Do not change this setting.

Communication Switch 14		
No.	**FUNCTION**	**COMMENTS**
4	Positive response timing when substitute reception is disabled **0:** When the fusing exit sensor turns on **1:** When all image data are stored in the memory	**0:** The data is not stored in the SAF memory. The machine sends the positive response to the other end when the leading edge of the paper turns on the fusing exit sensor. This informs the other end of successful reception after the received image data has already been printed. **1:** The incoming data is stored in the SAF memory. The machine sends the positive response to the other end when all received image data have been stored in the SAF memory. This sends the positive response earlier than when this bit switch is set to 0, but the page has not been printed yet. The data goes to SAF, like for substitute reception. However, it is different from substitute reception, as follows: • The machine rejects all incoming ringing signals when the printer is out of order. • The received image data are stored in the memory even if no RTI/CSI is received.
5	Not used	Do not change this setting.
6-7	Available unit of resolution in which fax messages are received **Bit 7 6 Unit** 0 0 mm 0 1 inch 1 0 mm and inch (default) 1 1 Not used	For best performance, do not change the factory settings. The settings determined by these bits are transmitted to the transmitting terminal in the pre-message protocol exchange (in the DIS/NSF frames).

Communication Switch 15		
No.	**FUNCTION**	**COMMENTS**
0-1	Available resolution for receiving fax messages **Bit 0 1:** 200 x 100/8 x 3.85 **Bit 1 1:** 200 x 200/8 x 7.7	For best performance, do not change the factory settings. The settings determined by these bits are transmitted to the transmitting terminal in the pre-message protocol exchange (in the DIS/NSF frames).
2-7	Not used	Do not change these settings.

Communication Switch 16		
No.	**FUNCTION**	**COMMENTS**
0	Standard G3 unit **0:** Disabled **1:** Enabled	Set this bit to 0 if the user wants to use only the ISDN line with the option G4 unit, even for G3 communications. Also, if this bit is set to 1, on hook dials will use the ISDN line, not the PSTN. **Note:** If the optional G4 unit is not installed, but this bit is changed to 'disabled', no documents can be transmitted.
1	Not used	Do not change this setting.
2	Optional G4 unit **0:** Not installed **1:** Installed	**1:** Change this bit to 1 after installing the optional G4 unit.
3-5	Not used	Do not change these settings.
6	ISDN G3 Reception **0:** Enabled **1:** Disabled	**1:** Disables ISDN G3 reception
7	Not used	Do not change these settings.

Communication Switch 17		
No.	**FUNCTION**	**COMMENTS**
0	SEP (selective polling) reception **0:** Disabled **1:** Enabled	**0:** Disables the SEP (selective polling) signal reception.
1	SUB reception **0:** Disabled **1:** Enabled	**0:** Confidential reception to another maker's machine using the SUB (Sub-address) signal is disabled.
2	Not used	Do not change the setting.
3	ISDN Multiple Subscriber Number (MSN) routing **0:** Disabled **1:** Enabled	**0:** Incoming data is routed in accordance with the settings in the terminal adapter **1:** Incoming data is routed to the machine that has the same ID as the one in the protocol accompanying the data. The ID that is used depends on the setting of bit 3. **Note:** ISDN MSN routing requires the G4 and NIC options.
4	ID for the ISDN dial-in routing function **0:** Subscriber number **1:** Subaddress	This switch determines which ID is used for MSN routing when bit 3 is set to 1.
5-6	Not used	Do not change these settings.
7	Action when there is no personal code that matches the received SUB code **0:** Disconnect the line **1:** Receive the message (using normal reception mode)	Change this setting upon customer request.

Communication Switch 18 - Not used (do not change any of these settings)
Communication Switch 19 - Not used (do not change any of these settings)

Communication Switch 1A		
No.	**FUNCTION**	**COMMENTS**
0-7	Number of FTP transfers to the computer that is running Scan Router	This setting determines how many times the machine will contact the Scan Router server if there are errors during the communication. 00: 1 01 - FE: 2 - 254 times FF: No limit The default setting is 6 times.

Communication Switch 1B		
No.	**FUNCTION**	**COMMENTS**
0-7	Extension access code (0 to 7) to turn V.8 protocol On/Off **0:** On **1:** Off	If the PABX does not support the V.8/V.34 protocol procedure, set the appropriate bit to "1" to disable V.8. **Example:** If "0" is the PSTN access code, set bit 0 to 1. When the machine detects "0" as the first dialed number, it automatically disables V.8 protocol. (Alternatively, if "3" is the PSTN access code, set bit 3 to 1.)

Communication Switch 1C		
No.	**FUNCTION**	**COMMENTS**
0-1	Extension access code (8 and 9) to turn V.8 protocol On/Off **0:** On **1:** Off	Refer to communication switch 1B. **Example:** If "8" is the PSTN access code, set bit 0 to 1. When the machine detects "8" as the first dialed number, it automatically disables V.8 protocol. (If "9" is the PSTN access code, use bit 1.)
2-7	Not used	Do not change these settings.

Communication Switch 1D - Not used (do not change any of these settings)
Communication Switch 1E - Not used (do not change any of these settings)
Communication Switch 1F - Not used (do not change any of these settings)

4.3.5 G3 SWITCHES

G3 Switch 00		
No.	**FUNCTION**	**COMMENTS**
0-1	Monitor speaker during communication (TX and RX) **Bit 1 0 Setting** 0 0 Disabled 0 1 Up to Phase B 1 0 All the time 1 1 Not used	**(0, 0):** The monitor speaker is not in use throughout communication. **(0, 1):** The monitor speaker is on up to phase B in the T.30 protocol. **(1, 0):** Used for testing. The monitor speaker is on throughout communication. Make sure that you reset these bits after testing.
2	Monitor speaker during memory transmission **0:** Disabled **1:** Enabled	**1:** The monitor speaker is in use during memory transmission.
3-7	Not used	Do not change these settings.

G3 Switch 01		
No.	**FUNCTION**	**COMMENTS**
0-3	Not used	Do not change these settings.
4	DIS frame length **0:** No limit **1:** 4 bytes	**1:** Only the first 4 bytes in the DIS frame will transmit (set to 1 if there are communication problems with PC-based faxes, which cannot receive extended DIS frames).
5	Not used	Do not change this setting.
6	CED/ANSam emission **0:** Enabled **1:** Disabled	Do not change these settings, unless the any communication problem is caused by the CED/ANSam (V.34) transmission.
7	Not used	Do not change this setting.

G3 Switch 02		
No.	**FUNCTION**	**COMMENTS**
0	G3 protocol mode used **0:** Standard and non-standard **1:** Standard only	**1:** Disables NSF/NSS signals (these are in non-standard mode communication).
1-4	Not used	Do not change these settings.
5	Use of modem rate history when dialing using Quick/Speed dials **0:** Disabled **1:** Enabled	**0:** Communications using Quick/Speed dials always start with the highest modem rate. **1:** The machine uses the modem rate history for communications with the same machine when determining the most suitable rate for the current communication.
6	AI short protocol (transmission and reception) **0:** Disabled **1:** Enabled	Refer to Appendix B in the Group 3 Facsimile Manual for details about AI Short Protocol.
7	Not used	Do not change this setting.

G3 Switch 03		
No.	**FUNCTION**	**COMMENTS**
0	DIS detection number (Echo countermeasure) **0:** 1 **1:** 2	**0:** The machine will hang up if it receives the same DIS frame twice. **1:** Before sending DCS, the machine waits for the second DIS, caused by echo on the line.
1	Not used	Do not change this setting.
2	V.8 protocol **0:** Disabled **1:** Enabled	**0:** V.8/V.34 communications will not be possible. **Note:** Do not change this setting unless the line condition is so poor the data rate slows to 14.4 kbps or lower.
3	ECM frame size **0:** 256 bytes **1:** 64 bytes	**1:** The machine transmits with a frame size of 64 bytes. Set this bit to 1 when the other terminal only has a 64 byte frame size.
4	CTC transmission conditions **0:** Ricoh mode (PPR x 1) **1:** ITU-T mode (PPR x 4)	When using ECM, the machine will choose a slower modem rate after receiving PPR once (Ricoh mode) or four times (ITU-T mode). This bit is ineffective in V.34 communications.
5	Modem rate for the next page after receiving a negative code (RTN or PIN) **0:** No change **1:** Fallback	**1:** The TX modem rate of the machine will fall back before sending the next page if it receives a negative code. This bit is ignored if ECM is in use.
6	Not used	Do not change this setting.
7	Polarity change after DIS/NSF detection **0:** Disabled **1:** Enabled	This bit should be set to ”1” only to deal with communication problems caused by certain types of exchanger.

G3 Switch 04		
No.	**FUNCTION**	**COMMENTS**
0-3	Training error detection threshold	0 - F (Hex): 0 - 15 bits If the number of error bits in the received TCF is below this threshold, the machine informs the sender that the training was successful.
4-7	Not used	Do not change these settings.

G3 Switch 05		
No.	**FUNCTION**	**COMMENTS**
0-3	Initial TX modem rate **Bit 3 2 1 0 Setting (BPS)** 0 0 0 1 2.4 k 0 0 1 0 4.8 k 0 0 1 1 7.2 k 0 1 0 0 9.6 k 0 1 0 1 12.0 k 0 1 1 0 14.4 k 0 1 1 1 16.8 k 1 0 0 0 19.2 k 1 0 0 1 21.6 k 1 0 1 0 24.0 k 1 0 1 1 26.8 k 1 1 0 0 28.8 k 1 1 0 1 31.2 k 1 1 1 0 33.6 k Other settings - Not used	These bits set the initial starting modem rate for transmission. Use the dedicated transmission parameters if you need to change this for specific receivers.
4-5	Initial modem type for 9.6 k or 7.2 KBPS **Bit 5 Bit 4 Setting** 0 0 V.29 0 1 V.17 1 0 Not used 1 1 Not used	These bits set the initial modem type for 9.6 k and 7.2 kbps, if the initial modem rate is set at these speeds.
6-7	Not used	Do not change these settings.

G3 Switch 06		
No.	**FUNCTION**	**COMMENTS**
0-3	Initial RX modem rate **Bit 3 2 1 0 Setting (BPS)** 0 0 0 1 2.4 k 0 0 1 0 4.8 k 0 0 1 1 7.2 k 0 1 0 0 9.6 k 0 1 0 1 12.0k 0 1 1 0 14.4k 0 1 1 1 16.8 k 1 0 0 0 19.2 k 1 0 0 1 21.6 k 1 0 1 0 24.0 k 1 0 1 1 26.8 k 1 1 0 0 28.8 k 1 1 0 1 31.2 k 1 1 1 0 33.6 k Other settings - Not used	The settings of these bits inform the transmitting terminal of the available modem rate for the receiving machine. Use a lower setting if high speeds pose problems during reception.

G3 Switch 06		
No.	**FUNCTION**	**COMMENTS**
4-7	Modem types available for reception **Bit 7 6 5 4 Setting** 0 0 0 1 V.27ter 0 0 1 0 V.27ter, V.29 0 0 1 1 V.27ter, V.29, V.33 0 1 0 0 V.27ter, V.29, V.33, V17 0 1 0 1 V.27ter, V.29, V.33, V.17, V.34 Other settings - Not used	The settings of these bits inform the transmitting terminal of the available modem type for the receiving machine. V.33 is an exclusive Ricoh mode (NSF).

G3 Switch 07		
No.	**FUNCTION**	**COMMENTS**
0-1	PSTN cable equalizer (TX mode) **Bit 1 0 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Use the dedicated transmission parameters if you need to change this for specific receivers. Also, try using the cable equalizer if one or more of the following symptoms occurs: • Communication error • Modem rate fallback occurs frequently. **Note:** This setting is ineffective in V.34 communications.
2-3	PSTN cable equalizer (RX mode) **Bit 3 2 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Also, try using the cable equalizer if one or more of the following symptoms occurs: • Communication error with error codes such as 0-20, 0-23, etc. • Modem rate fallback occurs frequently. **Note:** This setting is ineffective in V.34 communications.
4	PSTN external cable equalizer (V.27ter, V.29, V.33/V.17, V.8 rx mode) **0:** Disabled **1:** Enabled	Keep this bit at “1” in most cases.

G3 Switch 07		
No.	**FUNCTION**	**COMMENTS**
5	PSTN external cable equalizer (V.34 rx mode) **0:** Disabled **1:** Enabled	Set this bit to 0 when the line quality is good. (e.g. digital PABX) The V.34 modem rate may decrease from equalizer over correction.
6-7	Not used	Do not change these settings.

G3 Switch 08 - Not used (do not change any of these settings)

G3 Switch 09		
No.	**FUNCTION**	**COMMENTS**
0-1	ISDN cable equalizer (tx mode) **Bit 1 0 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Use the dedicated transmission parameters for specific receivers. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error • Modem rate fallback occurs frequently.
2-3	ISDN cable equalizer (rx mode) **Bit 3 2 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error with error codes such as 0-20, 0-23, etc. • Modem rate fallback occurs frequently.
4	ISDN external equalizer for V.27ter, V.29, V.33/V.17, V.8 (Rx mode) **0:** Disabled **1:** Enabled	**1:** Keep this bit at “1” in most cases.
5	ISDN external equalizer for V.34 (Rx mode) **0:** Disabled **1:** Enabled	**1:** Keep this bit at “1” in most cases.
6-7	Not used	Do not change these settings.

G3 Switch 0A		
No.	**FUNCTION**	**COMMENTS**
0-1	Non-ECM rx: Maximum allowable carrier drop during image data reception **Bit 1 0 Value (ms)** 0 0 200 0 1 400 1 0 800 1 1 Not used	If the carrier drop is longer than this setting, the machine detects that a carrier drop has occurred. The machine's action after this depends on bit 2. Try using a longer setting if error code 0-22 is frequent.
2	Non-ECM rx: When a carrier drop is detected, the image data reception is: **0:** Continued **1:** Stopped	This bit switch determines whether the machine will continue receiving image data when a carrier drop is detected. Try changing this bit switch to 0 if error code 0-22 is frequent. If the bit switch is 0: If the carrier drop continues until the T2 timer runs out (Default 6.0 seconds), the protocol steps down to V.21. If the bit switch is 1: if a carrier drop is detected for more than the setting of bit 0-1 reception stops and the machine sends DCN.
3	Not used	Do not change this setting.
4	Maximum allowable frame interval during image data reception. **0:** 5 s **1:** 13 s	This bit determines the maximum interval between each EOL signal (end-of-line) or between each ECM frame from the other end. Try using a longer setting if error code 0-21 is frequent.
5	Not used	Do not change this setting.
6	Reconstruction time for the first line in receive mode **0:** 6 s **1:** 12 s	When a computer controls the sending terminal, there may be a delay in receiving page data after the local machine accepts set-up data and sends CFR. If this occurs, set this bit to 1 to give the sending machine more time to send data. Refer to error code 0-20.
7	Not used	Do not change this setting.

G3 Switch 0B		
No.	**FUNCTION**	**COMMENTS**
0	Protocol requirements: Europe **0:** Disabled **1:** Enabled	Program these bit switches manually to match local requirements.
1	Protocol requirements: Spain **0:** Disabled **1:** Enabled	
2	Protocol requirements: Germany **0:** Disabled **1:** Enabled	
3	Protocol requirements: France **0:** Disabled **1:** Enabled	
4	PTT requirements: Germany **0:** Disabled **1:** Enabled	
5	PTT requirements: France **0:** Disabled **1:** Enabled	
6-7	Not used	Do not change these settings.

G3 Switch 0C		
No.	**FUNCTION**	**COMMENTS**
0	Pulse dialing method **Bit 1 0 Setting** 0 0 Normal (P=N) 0 1 Oslo (P=10 - N) 1 0 Sweden (N+1) 1 1 Not used	P = Number of pulses sent out, N = Number dialed.
2-7	Not used	Do not change these settings.

G3 Switch 0D - Not used (do not change these settings)
G3 Switch 0E - Not used (do not change these settings)
G3 Switch 0F - Not used (do not change these settings)

4.3.6 G4 INTERNAL SWITCHES

G4 Internal Switch 00		
No.	**FUNCTION**	**COMMENTS**
0-7	Country code Bit 4 3 2 1 0 Country 0 0 0 0 1 Germany (1TR6 mode) 0 0 0 1 0 Universal (Europe Euro ISDN) 1 0 0 0 1 USA **Note:** In Germany, use the Universal setting for the Euro ISDN lines.	

G4 Internal Switch 01 - Not used (do not change these settings)
G4 Internal Switch 02 - Not used (do not change these settings)

G4 Internal Switch 03		
No.	**FUNCTION**	**COMMENTS**
0	Amount of protocol dump data in one protocol dump list **0:** Last communication only **1:** Up to the limit of the memory area for protocol dumping	Change this bit to 0 if you want to have a protocol dump list of the last communication only. This bit is only effective for the dump list D + Bch1.
1-7	Not used	Do not change these settings.

G4 Internal Switch 05		
No.	**FUNCTION**	**COMMENTS**
0-2	Not used	Do not change these settings.
3	Auto data rate change for transmission (64 kbps to 56 kbps) **0:** On **1:** Off	**0:** The machine automatically changes the transmission data rate from 64 kbps to 56 kbps after 3 s if the other end did not accept the call. This is to cope with 56 kbps networks in the USA. Normally, keep this bit at 0.
4	Auto data rate change for reception (64 kbps to 56 kbps) **0:** Off **1:** On	**1:** The machine automatically changes the reception data after 6 s. Change this bit to 1 only when there is a communication error where the other terminal informs 64 kbps in the SETUP signal although it is actually 56 kbps.
5-7	Not used	Do not change these settings.

G4 Internal Switch 05		
No.	**FUNCTION**	**COMMENTS**
0-1	Not used	Do not change these settings.
2	Protocol ID check **0:** Yes **1:** No	The Protocol ID is in the CR packet.
3-7	Not used	Do not change these settings.

G4 Internal Switch 06 - Not used (do not change these settings)
G4 Internal Switch 07 - Not used (do not change these settings)
G4 Internal Switch 08 - Not used (do not change these settings)
G4 Internal Switch 09 - Not used (do not change these settings)
G4 Internal Switch 0A - Not used (do not change these settings)
G4 Internal Switch 0B - Not used (do not change these settings)
G4 Internal Switch 0C - Not used (do not change these settings)
G4 Internal Switch 0D - Not used (do not change these settings)
G4 Internal Switch 0E - Not used (do not change these settings)
G4 Internal Switch 0F - Not used (do not change these settings)

G4 Internal Switch 10 (Dch. Layer 1)		
No.	**FUNCTION**	**COMMENTS**
0-5	Not used	Do not change these settings.
6	INFO1 signal resend **0:** Resend **1:** No resend	**0:** Some DSUs may not reply to the INFO1 signal with INFO2, if there is noise in the INFO1 signal accidentally. Try changing this bit to 0, to resend INFO1 before the machine displays “CHECK INTERFACE”.
7	Not used	Do not change these settings.

G4 Internal Switch 10 (Dch. Layer 2)		
No.	**FUNCTION**	**COMMENTS**
0	Not used	Do not change these settings.
1	Type of TEI used **0:** Dynamic TEI **1:** Static TEI	This is normally fixed at 0. However, some networks may require this bit to be set at 1 (see below). In this case, you may have to change the values of bits 2 to 7.
2-7	Static TEI value	Store the lowest bit of the TEI at bit 7 and the highest bit of the TEI at bit 2. **Example:** If the static TEI is 011000, set bits 3 and 4 to 1 and bits 2, 5, 6, and 7 to 0.

G4 Internal Switch 12 - Not used (do not change these settings)

G4 Internal Switch 13: D channel layer 3 (Attachment IE in S: SETUP)		
No.	**FUNCTION**	**COMMENTS**
0	Not used	Do not change these settings.
1	Information transfer capability shift down to retry transmission **0:** Shift down procedure disabled (Default) **1:** Shift down and retry the call	**1:** The machine changes the ISDN G3 information transfer capability informed in the [SETUP] signal to “Speech” from “3.1 kHz audio” or to “3.1 kHz audio” from “Speech” automatically and retries the transmission. The information transfer capability used in the first try is determined by the setting of G4 internal bit switch 14 bit 0. This switch is effective with some types of exchangers and T/As where they only accept calls with information transfer capability “Speech”.
2	Attachment of calling ID and subaddress **0:** No **1:** Yes	Normally, this bit should be at 0, because most networks add the calling ID and subaddress to the SETUP signal to the receiver. However, some networks may require the machine to add this ID (and/or subaddress). Only in this case should this bit be at 1.
3	Attachment of the Lower Layer Capabilities **0:** No **1:** Yes	This bit determines whether Lower Layer Capabilities are informed in the [SETUP] signal. Keep this bit at 0 in most cases.
4	Attachment of the Higher Layer Capabilities **0:** Yes **1:** No	This bit determines whether Higher Layer Capabilities are informed in the [SETUP] signal or not. Keep this bit at 0 in most cases.
5	Attachment of the channel information element (CONN) **0:** No **1:** Yes	Keep this bit at 0 in most cases.
6	Attachment of the Higher Layer Capabilities for ISDN G3 transmission **0:** Same as the bit 4 setting **1:** Not attached	This bit determines whether Higher Layer Capabilities are informed in the [SETUP] signal for ISDN G3 transmission. This switch is effective in coping with communication problems with some types of T/A and PBX that do not respond to Higher Layer Capability “G3”. When this bit is set to 0, the setting depends on the setting of bit 4. Keep this bit at 1 in most cases.

G4 Internal Switch 13: D channel layer 3 (Attachment IE in S: SETUP)		
No.	**FUNCTION**	**COMMENTS**
7	Condition for fallback from G4 to G3 **0:** Refer to the CPS code setting **1:** Fallback in response to any CPS code	**0:** Fallback occurs when a CPS code is the same as the CPS code settings specified by G4 internal switches 17, 18, 1A, 1B, and 1C. If you wish to enable fallback when any CPS code is detected, set this bit to "1". This switch is effective in coping with fallback problems where the CPS code does not match those specified in the ITU-T recommendation.

G4 Internal Switch 14: D channel layer 3 (Selection IE in S: SETUP)		
No.	**FUNCTION**	**COMMENTS**
0	ISDN G3 information transfer capability **0:** 3.1 kHz audio **1:** Speech	In tx mode, this determines the information transfer capability informed in the [SETUP] message. In rx mode, this determines the information transfer capability that the machine can use to receive a call. Set this bit to 1 if the ISDN does not support 3.1 kHz audio.
1-2	Not used	Do not change these settings.
3-4	Channel selection in [SETUP] in tx mode Bit 4 3 Setting 0 0 Any channel 0 1 B1 channel 1 0 B2 channel 1 1 Not used	**Any channel:** When this is informed to the exchanger, the exchanger will select either B1 or B2.
5	Called ID mapping **0:** Called party number **1:** Keypad facility	**0:** Called ID is mapped to the called party number. **1:** Called ID is mapped to the keypad facility. Note that the subaddress in not mapped. On the 5ESS network (USA), set it to 1.
6	Numbering plan for the called party number **0:** Unknown **1:** E.164	**E.164:** This may be used in Sweden if an AXE10 exchanger is fitted with old software, and in Australia. **Unknown:** This is the normal setting.
7	Subaddress coding type **0:** IA5 (NSAP) **1:** BCD (ISO8348)	This is normally kept at 0. However, some networks require this bit to be at 1.

G4 Internal Switch 15: D channel layer 3 (Judgement R: MSG)		
No.	**FUNCTION**	**COMMENTS**
0	Action when receiving [SETUP] signal containing no called subaddress **0:** A reply is sent **1:** No reply is sent	This bit depends on user requirements. If it is at 1, communication will be halted if the other terminal has not input the subaddress.
1-4	Not used	Do not change the settings
5	Global call reference **0:** Ignored **1:** Global call number is used	Global call reference means 'call reference value = 0'. This bit determines how to deal with such an incoming call if received from the network. Keep this bit at 1 in Germany 1TR6.
6-7	Not used	Do not change these settings.

G4 Internal Switch 16: D channel layer 3 (Approval)		
No.	**FUNCTION**	**COMMENTS**
0-1	Answer delay time Bit 1 0 Setting 0 0 No delay 0 1 1.0 s delayed (1TR6) 1 0 0.5 s delayed 1 1 Not used	In some countries, a time delay to answer a call is required. Otherwise, use this switch as follows: If the machine is connected to the same bus from the DSU as a model K200 is connected, the machine receives most of the calls because the response time to a call is faster than the K200. If the customer wants the K200 to receive most of the calls, adjust the response time using these bits. If the customer does not want one machine to receive most of the calls, use subaddresses to identify each terminal.
2	Action when receiving [SETUP] signal containing user-specific called party subaddress **0:** Ignores the call **1:** Receives the call	Normally, the 3rd octet of called party subaddress information in the [SETUP] signal is set to NSAP. However, some networks may add “user-specific” subaddress to the [SETUP] signal, and the result of this is that the machine won't answer the call if a subaddress is specified. So, change this bit to 1 to let the machine receive the call if the machine is connected to such a network.
3-4	Not used	Do not change these settings.
5	Indicated bearer capabilities **0:** 56 kbps **1:** 64 kbps	**1:** 64 kbps calling is indicated in the Bearer Capabilities, but communication is at 56 k. Use this bit if the machine is connected to a network which does not accept a 56 kbps data transfer rate as a bearer capability.
6	Not used	Do not change these settings.

G4 Internal Switch 16: D channel layer 3 (Approval)		
No.	**FUNCTION**	**COMMENTS**
7	Transfer capabilities (SI) informed in 1TR6 ISDN G3 transmission **0:** G3 Fax **1:** Analog	This bit determines whether transfer capabilities informed in the Service Indicator for 1TR6 ISDN G3 transmission. This switch is effective in coping with communication problems with some types of T/A and PBXs. Normally keep this bit at 1 in Germany 1TR6.

G4 Internal Switch 17: CPS Code Used for G4 to G3 Fallback - 1		
No.	**FUNCTION**	**COMMENTS**
0-6	Condition for fallback from G4 to G3 Bits 0 to 6 of bit switch 17 contain a CPS code, and bits 0 to 6 of bit switch 18 contain another CPS code. If a CPS code is received which is the same as either of these, communication will fall back from ISDN G4 mode to ISDN G3 mode. The CPS codes must be the same as those specified in table 4-13 of ITU-T recommendation Q.931. Examples: Bit 6 5 4 3 2 1 0 1 0 0 0 0 0 1 CPS code 65 1 0 1 1 0 0 0 CPS code 88 For the codes in bits 0 to 6 of bit switches 17 and 18 to be recognized, bit 7 of bit switch 17 must be 1. Also, bit 0 of the Communication Switch 07 must be at 0, or Fallback from G4 to G3 will be disabled.	
7	This bit determines whether fallback from G4 to G3 occurs on receipt of one of the CPS codes programmed in bit switch 17 or 18, or on receipt of a certain standard code. **0:** Fallback occurs on receipt of any of the following CPS codes: Universal (Euro ISDN) - #3, #18, #57, #58, # 63, # 65, #79, #88, and #127 Germany 1TR6 mode - #3, #53, #58, and #90 Others - #3, #65, and #88 **1:** Fallback from G4 to G3 occurs on receipt any of above CPS codes or one of the CPS codes programmed in bit switch 17, 18, 1A, 1B, or 1C	

G4 Internal Switch 18: CPS Code Used for G4 to G3 Fallback - 2		
No.	**FUNCTION**	**COMMENTS**
0-6	Condition for fallback from G4 to G3 See the explanation for bits 0 to 6 of bit switch 17	
7	This bit helps to choose the CPS code set for G4 to G3 fallback. **0:** Fallback occurs on receipt of the CPS code set, which is specified by the country code setting. **1:** Fallback occurs on receipt of the Universal CPS code set (#3, #18, #57, #58, # 63, # 65, #79, #88, and #127) even if another country code is programmed. If bit switch 17 bit 7 is “1”, fallback occurs on receipt of the Universal CPS code set or one of the CPS codes programmed in bit switches 17, 18, 1A, 1B, or 1C.	

G4 to G3 fallback

Bit 0 of Communication Switch 07 must be at 0, or fallback from G4 to G3 will be disabled.

The CPS codes for which fallback occurs are decided as follows.

- G4 bit switch 17, bit 7 - If set to “0”, fallback occurs on receipt of a code from a set that depends on the country code. If set to ”1”, fallback occurs for the 5 CPS codes programmed in bits 0 to 6 of G4 bit switches 17, 18, 1A, 1B, and 1C, in addition to the country code set.
  Note that if G4 bit switch 18, bit 7 is set to “1”, the CPS code set that is used is always the Universal set, regardless of the country code setting.

G4 Internal Switch 19		
No.	**FUNCTION**	**COMMENTS**
0	Permanence of the link **0:** Set/released each LAPD call **1:** Permanent	Keep this at 1 in the USA. In other areas, this bit is normally 0, depending on network requirements.
1	Channel used in ISDN L2 (64k) mode **0:** B1 **1:** B2	When making an IDSN L2 back-to-back test, you can select either the B1 or B2 channel with this bit switch.
2-7	Not used	Do not change the factory settings.

G4 Internal Switch 1A: CPS Code Used for G4 to G3 Fallback - 3		
No.	**FUNCTION**	**COMMENTS**
0-6	Condition for fallback from G4 to G3 See the explanation for bits 0 to 6 of bit switch 17.	
7	Not used	Do not change this setting.

G4 Internal Switch 1B: CPS Code Used for G4 to G3 Fallback - 4		
No.	**FUNCTION**	**COMMENTS**
0-6	Condition for fallback from G4 to G3 See the explanation for bits 0 to 6 of bit switch 17.	
7	Not used	Do not change this setting.

G4 Internal Switch 1C: CPS Code Used for G4 to G3 Fallback - 5		
No.	**FUNCTION**	**COMMENTS**
0-6	Condition for fallback from G4 to G3 See the explanation for bits 0 to 6 of bit switch 17.	
7	Not used	Do not change this setting.

G4 Internal Switch 1D - Not used (do not change these settings)
G4 Internal Switch 1E - Not used (do not change these settings)
G4 Internal Switch 1F - Not used (do not change these settings)

4.3.7 G4 PARAMETER SWITCHES

G4 Parameter Switch 00		
No.	**FUNCTION**	**COMMENTS**
0-2	Network type Bit 2 1 0 Type x 0 0 Circuit switched ISDN Other settings: Not used	Do not change the default setting.
3-7	Not used	Do not change the default settings.

G4 Parameter Switch 01		
No.	**FUNCTION**	**COMMENTS**
0	Voice coding **0:** μ law **1:** A law	**0:** This setting is used in USA. **1:** This setting is used in Europe and Asia.
1	Action when [SETUP] signal without HLC is received **0:** Respond to the call **1:** Not respond to the call	If there are several TEs on the same bus and the machine responds to calls for another TE, the call may be without HLC information. Identify the type of calling terminal and change this bit to 1 if the caller is not a fax machine.
2-6	Not used	Do not change these settings.
7	Signal attenuation for G3 fax signals received from ISDN line (-6dB) **0:** Off **1:** On	**0:** If an analog signal comes over digital line, the signal level after decoding by the TE is theoretically the same as the level at the entrance to the digital line. However, this sometimes causes the received signal level to be too high at the received end. In this case, set this bit to 1 to adjust the attenuation level.

G4 Parameter Switch 02		
No.	**FUNCTION**	**COMMENTS**
0-1	Data rate (kbps) Bit 1 0 Setting 0 0 64 kbps 0 1 56 kbps	Other settings: Not used
2-7	Not used	Do not change these settings.

G4 Parameter Switch 03 - Not used (do not change these settings)
G4 Parameter Switch 04 - Not used (do not change these settings)

G4 Parameter Switch 05		
No.	**FUNCTION**	**COMMENTS**
0-3	Not used	Do not change these settings.
4	B-channel T3 timer **0:** 30s **1:** 57s	**1:** This switch is useful when used in combination with the Communication Bit SW 07 bit 4. This is to cope with communication problems where G4 communication fails on the ISDN B-channel. Normally keep this bit at 1.
5-7	Not used	Do not change these settings.

G4 Parameter Switch 06		
No.	**FUNCTION**	**COMMENTS**
0	Layer 3 protocol **0:** ISO8208 **1:** T.70NULL	Set this bit to match the type of layer 3 signaling used by the ISDN. The dedicated parameters have the same setting for specific destinations. Normally keep this bit at 0.
1-7	Not used	Do not change these settings.

G4 Parameter Switch 07		
No.	**FUNCTION**	**COMMENTS**
0-3	Packet size Bit 3 2 1 0 Value 0 1 1 1 128 1 0 0 0 256 1 0 0 1 512 1 0 1 0 1024 1 0 1 1 2048	This value is sent in the CR packet. This value must match the value stored in the other terminal, or communication will stop (CI will be returned). If the other end returns CI, check the value of the packet window size with the other party. Note that this value must be the same as the value programmed for the transport block size (G4 Parameter Switch 0B, bits 0 to 3). Normally, do not change the default setting.
4-7	Not used	Do not change these settings.

G4 Parameter Switch 08		
No.	**FUNCTION**	**COMMENTS**
0-3	Packet window size Bit 3 2 1 0 Value 0 0 0 1 1 0 0 1 0 2 and so on until 1 1 1 1 15	This is the maximum number of unacknowledged packets that the machine can send out before having to pause and wait for an acknowledgement from the other end. Normally this should be kept at 7.
4-7	Not used	Do not change these settings.

G4 Parameter Switch 09 - Not used (do not change these settings)
G4 Parameter Switch 0A - Not used (do not change these settings)

G4 Parameter Switch 0B		
No.	**FUNCTION**	**COMMENTS**
0-3	Transport block size Bit 3 2 1 0 Value 0 1 1 1 128 1 0 0 0 256 1 0 0 1 512 1 0 1 0 1024 1 0 1 1 2048	This value must match the value set in the other terminal. Note that this value must be the same as the value programmed for the packet size (G4 Parameter Switch 7, bits 0 to 3). Also, the transport block size is limited by the amount of memory in the remote terminal. Normally, do not change the default setting.
4-7	Not used	Do not change these settings.

G4 Parameter Switch 0C - Not used (do not change these settings)

G4 Parameter Switch 0D		
No.	**FUNCTION**	**COMMENTS**
0-1	Back-to-back test mode Bit 1 0 Setting 0 0 Off 1 0 ISDN L2 test mode (TE mode) Other settings - Not used	When doing a back-to-back test or doing a demonstration without a line simulator, use these bits to set up one of the machines in TE mode, and the other in NT mode Please note that this machine can only be set to TE mode. After the test, return both bits to 0. See "Back-to-back Testing" in the Troubleshooting section for full details.
2-7	Not used	Do not change these settings.

G4 Parameter Switch 0E - Not used (do not change these settings)
G4 Parameter Switch 0F - Not used (do not change these settings)

4.3.8 DU SWITCHES

DU Switch 00 - Not used (do not change these settings)
DU Switch 01 - Not used (do not change these settings)
DU Switch 02 - Not used (do not change these settings)
DU Switch 03 - Not used (do not change these settings)
DU Switch 04 - Not used (do not change these settings)
DU Switch 05 - Not used (do not change these settings)
DU Switch 06 - Not used (do not change these settings)
DU Switch 07 - Not used (do not change these settings)

DU Switch 08		
No.	**FUNCTION**	**COMMENTS**
0	PDU data modem automode function (tx and rx) **0:** Enabled **1:** Disabled	**0:** Communication with the ISP starts at the setting determined by bits 6 and 7. There will be fallback to a lower setting if communication fails. **1:** Communication with the ISP is only done at the setting determined by bits 6 and 7. There is no fallback if communication fails. Despite this, setting bit 0 to 1 (automode disabled) can help solve problems with connecting to ISPs that can only communicate using V.32bis or lower modem parameters. However, this machine can fallback from V.90 to V.34 if the ISP does not have V.90, so in this case there will appear to be no difference from the 'enabled' setting.
1	V.90 during transmission **0:** Enabled **1:** Disabled	If automode (bit 0) is disabled, e-mail transmission uses the parameters specified by bits 6 and 7. However, if bit 1 is at 1 (no V.90 for tx), transmission (SMTP) will use V.34 if bits 6 and 7 specify V.90. Bit 1 has no effect if bits 6 and 7 do not specify V.90. Reception is also not affected. Set this bit to 1 if you wish to use V.34 for transmissions, even though V.90 is possible.

DU Switch 08		
No.	**FUNCTION**	**COMMENTS**
2	Type of modem used after a V.90 error occurs **0:** V.90 **1:** V.34	If this is set to 1: When error code 11-37, 11-41, or 11-42 occurs, the next communication with the ISP will start at V.34. The settings of bits 6 and 7 are not changed. The setting returns to V.90 if one of the following occurs: • The machine power is switched off/on • Bits 6 and 7 are also changed to V.34, then changed back to V.90 after the communication Set this to 1 if error codes 11-37, 11-41, or 11-42 occur frequently.
3	V.90 reception speed restrictions **0:** Disabled **1:** Enabled	If the modem type is set to V.90, the upper speed limit for V.90 reception depends on DU switch 0A bits 0 to 2. If bit 3 is at 0, DU switch 0A bits 0 to 2 are ignored at the start of modem training. Modem training starts at 56K. Set this to 1 if error codes 11-37, 11-41, or 11-42 occur frequently during V.90 reception, set this bit to 1 and set DU switch 0A bits 0 to 2 to a lower speed. The initial modem speed is limited to 40K.
4	Not used	Do not change the setting.
5	V.90 data modem coding **0:** μ law **1:** A law	This setting depends on the type of exchanger used at the ISP. **0:** This setting is mainly used in USA. **1:** This setting is mainly used in Europe and Asia.
6-7	Initial data modem rate **Bit 7 6 Setting** 0 0 V.32 0 1 V.32bis 1 0 V.34 1 1 V.90	Refer to the description for bit 0.

Service Tables

DU Switch 09		
No.	**FUNCTION**	**COMMENTS**
0-1	Error correction capability informed to the ISP **Bit 1 0 Setting** 0 0 No error correction 0 1 Either MNP4 or no error correction 1 0 Either V.42 or no error correction 1 1 Either V.42, MNP4, or no error correction	These bits determine the error correction mode capability that is notified to the provider's modem. This setting depends on the equipment installed at the ISP. Use these bits to solve communication problems with the ISP.
2-3	Compression capability informed to the ISP **Bit 3 2 Setting** 0 0 No compression 0 1 Either MNP5 or no compression 1 0 Either V.42bis or no compression 1 1 Either V.42bis, MNP5, or no compression	These bits determine the data compression mode capability that is notified to the provider's modem. This setting depends on the equipment installed at the ISP. Use these bits to solve communication problems with the ISP.
4-7	Data modem Tx level **Bit 7 6 5 4 Setting (dBm)** 0 0 0 0 0 0 0 0 1 -1 : 1 1 1 1 -15	These bits determine the Tx level for the data modem communication. If the communication with the Internet Service Provider often contains errors, the signal level may be inappropriate. Adjust this setting until the results are better.

DU Switch 0A		
No.	**FUNCTION**	**COMMENTS**
0-2	Upper data rate limit for V.90 reception **Bit 2 1 0 Setting (bps)** 0 0 0 40000 0 0 1 38667 0 1 0 37333 0 1 1 36000 1 0 0 34667 1 0 1 33333 1 1 0 32000 1 1 1 30667	This switch only works if DU switch 08 bit 3 is 1 and if DU switch 08 bits 6 and 7 indicate V.90. If error codes 11-37 (V.90 training failure), 11-41 (V.90 succeeded but PPP negotiation failed), or 11-42 occur often during reception, set DU switch 08 bit 3 to 1, and select a lower rate with these three bits.
3-7	Not used	Do not change these settings.

DU Switch 0B - Not used (do not change these settings)
DU Switch 0C - Not used (do not change these settings)
DU Switch 0D - Not used (do not change these settings)
DU Switch 0E - Not used (do not change these settings)
DU Switch 0F - Not used (do not change these settings)

4.3.9 LAN SWITCHES

LAN Switch 00:Protocol		
No.	**FUNCTION**	**COMMENTS**
0	LAN protocol dump list **0:** Disabled **1:** Enabled	The LAN commands between the NIC fax and servers or client PCs (POP, SMTP, and AT) are stored in the memory, and they can be printed out using service function 20-4 (LAN - log dump).
1-5	Not used	Do not change these settings.
6	FTP protocol **0:** Enabled **1:** Disabled	FTP (File Transfer Protocol) is used for communication with the computer that is running Scan Router. Set this bit switch to 0 to use this machine with Scan Router.
7	SNMP protocol **0:** Enabled **1:** Disabled	SNMP (Simple Network Management Protocol) is used by network status monitoring utilities.

LAN Switch 01: E-mail Transmission		
No.	**FUNCTION**	**COMMENTS**
0	Not used	Do not change these settings.
1	Compression modes for TIFF-F **0:** TIFF-F(MH) standard mode **1:** T.4-MH mode	RTC is added to the end of the image data when bit 1 is set to “1”. When calling certain types of non-standard models, this bit may need to be at 1 for successful communication.
2	Inclusion on the Journal of the number of e-mail addresses in a broadcast **0:** Disabled **1:** Enabled	This bit is effective only when user parameter switch 06, bit 0 is set to “1”.
3-4	Not used	Do not change these settings.
5-7	Maximum number of broadcast destinations **Bit 7 6 5 Setting** 0 0 0 250 0 0 1 150 0 1 0 100 0 1 1 50 1 0 0 30 1 0 1 10 1 1 0 5 1 1 1 0 (Disabled)	The maximum number of broadcast destinations also depends on the SMTP server.

Service Tables

LAN Switch 02: E-mail Reception		
No.	**FUNCTION**	**COMMENTS**
0	Text e-mail header **0:** Disabled **1:** Printed	The header appears as follows: ********** E-mail INFORMATION ********** From: xxxxx Subject: xxxxxxxxxx **********
1	Action when printing a fax image file attached to an error report e-mail **0:** Print the first page only **1:** Print all pages	Note that the text part of the error report e-mail is always printed out completely, regardless of the setting of this bit.
2-7	Not used	Do not change these settings.

LAN Switch 03: Transfer Request		
No.	**FUNCTION**	**COMMENTS**
0	Printout of the message when the machine is acting as a transfer station **0:** Disabled **1:** Enabled	**1:** After broadcasting, the machine prints out the file.
1	Transfer result report transmission **0:** Always transmitted **1:** Only transmitted if an error occurs	**1:** The machine will only sends back a transfer result report if there were errors during communication.
2	Action taken if there is a syntax error in one or more of the destination addresses **0:** Transfers to correct destinations **1:** All destinations aborted	**1:** When a programmed end receiver destination is not a valid e-mail address or otherwise incorrect, the machine does not transfer to any destinations.
3	Polling ID required for transfer **0:** Polling ID required **1:** Polling ID not required	**0:** If the polling ID does not match the other terminal's, the machine will not execute the transfer. **1:** The machine does not check the polling ID.
4-7	Not used	Do not change these settings.

LAN Switch 04: Autorouting and Forwarding		
No.	**FUNCTION**	**COMMENTS**
0-2	Not used	Do not change these settings.
3	Which RTI/CSI is passed on to the receiving PC in the e-mail subject during autorouting and forwarding **0:** Received in the e-mail from the sender **1:** Stored in the receiving machine	This determines which RTI/CSI appears in the subject of the received e-mail at the destination PC.
4-7	Not used	Do not change these settings.

LAN Switch 05: Utility Software		
No.	**FUNCTION**	**COMMENTS**
0	Programmed data editing and deleting with NIC Fax Monitor (a PC utility) **0:** Disabled **1:** Enabled	If this bit is changed, the machine must be turned off and on to make the new setting effective. **0:** The utility cannot be used to change the programmed data (Quick Dials/Speed Dials/Personal codes/ Forwarding address) **1:** Programmed data can be changed, but only in administrator mode.
1	Restore all Quick/Speed dial data with NIC Fax Monitor (a PC utility) **0:** Disabled **1:** Enabled	**0:** The utility cannot restore the Quick/Speed dial data if there is some data in the machine. **1:** The utility can restore all Quick/Speed dial data even if there is some data in the machine. Any data present will be overwritten.
2-7	Not used	Do not change these settings.

LAN Switch 06: LAN Fax Transmission		
No.	**FUNCTION**	**COMMENTS**
0	CSI transmission (LAN Fax) **0:** Programmed CSI **1:** Dial ATD number	**1:** The machine uses the 'own telephone number' programmed in the PC fax application. 'ATD' is an AT command. The fax application on the PC sends AT commands to NIC fax for faxing. "ATD" is used for sending the dial number.
1	Treatment of files if there is a printer error (PC printing) **0:** Store the file in the in SAF **1:** Send an error/busy signal to the PC	**0:** If a printer error/busy condition occurs, the machine stores the data in SAF. After recovery, the machine prints the data.

LAN Switch 06: LAN Fax Transmission		
No.	**FUNCTION**	**COMMENTS**
2	Treatment of files with errors (LAN Fax) **0:** Send the good data (before the errors) **1:** Delete the file	An error during PC fax communication indicates a SAF memory overflow or PC-fax disconnection during communication.
3	Treatment of files with errors (PC printing) **0:** Print the file without the error pages **1:** Delete the file	An error during PC fax printing indicates a SAF memory overflow or PC-fax disconnection during printing.
4	Batch transmission **0:** Disabled **1:** Enabled	**1:** User parameter switch 06 bit 0 must also be enabled to perform this function
5-7	Not used	Do not change these settings.

LAN Switch 07		
No.	**FUNCTION**	**COMMENTS**
0-1	Attached file width (Tx) **Bit 1 0 Setting** 0 0 A3, B4, A4, LT, DLT 0 1 B4, A4, LT 1 0 A4, LT 1 1 Not used	If the document is larger than this setting, the machine automatically reduces it.
2-3	Transmission attached file resolution **Bit 1 0 Setting** 0 0 400 x 400, 200 x 400, 200 x 200, 200 x 100 0 1 200 x 200, 200 x 100 1 0 200 x 200 1 1 Not used	If the user selects a higher resolution than enabled with this setting, the machine automatically converts the file to the highest resolution that is currently enabled.
4-7	Not used	Do not change these settings.

LAN Switch 08		
No.	**FUNCTION**	**COMMENTS**
0-7	Amount of remaining memory below which e-mail reception from the server is disabled	00 to FF (Hex), unit 2 Kbytes (e.g., 0C (H) = 24 Kbytes)

LAN Switch 09		
No.	**FUNCTION**	**COMMENTS**
0-7	Amount of remaining memory below which LAN fax communication is disabled	00 to FF (Hex), unit 2 Kbytes (e.g., 0C (H) = 24 Kbytes)

LAN Switch 0A		
No.	**FUNCTION**	**COMMENTS**
0-3	Minimum interval between accessing the server for sending	01 to 0F (Hex), unit 2 s This is the minimum interval between transmissions.
4-7	E-mail transmission: Maximum number of sending attempts to the same destination	01 ~ 0F(Hex) times Interval between accessing server attempts while re-sending.

LAN Switch 0B		
No.	**FUNCTION**	**COMMENTS**
0	Acceptance of 16-bit text data (e-mail) without generating an error report **0:** Enabled **1:** Disabled	**0:** Japanese text is 16-bit. If this is received by a non-Japanese system, it will appear as garbage, but no error will be generated. **1:** When the machine receives 8-bit text data, it rejects the data and replies with an error e-mail notification.
1	Command time-out for LAN fax transmission **0:** 30 seconds **1:** 60 seconds	If the data end AT command is not received from the PC application within this duration, the machine times out.
2	LAST command sending to the POP server **0:** Enabled **1:** Disabled	The LAST command is sent to the POP server by the machine during POP procedures. The reply from the server tells the machine which e-mail to start receiving from. If POP server responds abnormally, set the bit to 0: The machine will receive the most recent e-mail first. **1:** The machine will always receive from the first e-mail on the list in the server. This will be necessary if the POP server still contains old e-mail that cannot be deleted.
3	Deciphering of e-mail described as Quoted-Printable **0:** One-byte codes **1:** Two-byte codes	This bit is only effective if the encoding type is Quoted-Printable. When this bit is set to 0, the e-mail is deciphered as one-byte codes (suitable for some European non-ASCII characters). When this bit is set to 1, it is deciphered as Shift-JIS code (for Japanese text). If Japanese text is received with this bit at 0, it will be deciphered as one-byte code and will appear to be a string of non-ASCII European characters.

LAN Switch 0B		
No.	**FUNCTION**	**COMMENTS**
4	When receiving mail with an unsupported type of header from the POP server **0:** An error notice mail will be sent back to the server **1:** Only the mail header will be printed (no error)	When the NIC fax receives an unsupported document type, it sends an error notice mail back to the POP server. If the mail does not have the correct 'from address', the server sends an error mail back to the NIC fax again. Then, if the error mail has an unsupported header type, the NIC fax will: 0: Send another error notice mail to the server 1: Print the mail header only
5	When the mail server closes the TCP/IP connection immediately after sending the QUIT command 0: Error 1: No error	0: If the mail server forces the TCP/IP connection to close after sending the QUIT command, the machine determines that there is a disconnection error. Try changing this bit switch to 1 if error code 10-63 or 10-82 is frequent.
6-7	Not used	Do not change these settings.

LAN Switch 0C		
No.	**FUNCTION**	**COMMENTS**
0-1	Compression mode for FTP transfer **Bit 1 0 Setting** 0 0 MH 0 1 MR 1 0 MMR 1 1 Not used	These bits determine the compression mode for the FTP transfer.
2-3	Not used	Do not change these settings.
4-5	Interval of checking addresses stored in Scan Router **Bit 5 4 Setting** 0 0 1 min. 0 1 3 min. 1 0 10 min. 1 1 No checking	To check whether the user has stored new addresses on the server, the machine should connect periodically to the computer that is running Scan Router and get the newest user's addresses. If the user wants to change the interval of connection to Scan Router or if the user doesn't need to check the addresses at the Scan Router computer, change the setting.
6-7	Not used	Do not change these settings.

LAN Switch 0D - Not used (Do not change the factory settings.)
LAN Switch 0E - Not used (Do not change the factory settings.)

LAN Switch 0F		
No.	**FUNCTION**	**COMMENTS**
0	DELE command at a socket time-out **0:** Sent **1:** Not sent	Normally, when the POP server sends EOF, the machine sends back DELE to delete the mail from the server. However, a POP server may start sending FF bytes part way through the communication if the mail size is over 1 Gbyte. It will not send EOF, so the machine will not send DELE to the server to delete the mail. To avoid this problem, set this bit to 0. Then, when a socket time-out occurs (see bit 1) during receiving an e-mail message from the POP server, and if no EOF has been received, the machine sends the DELE command to the POP server in order to delete the e-mail message.
1	Socket time-out **0:** 180 s **1:** 60 s	This bit determines the socket time-out that is used when bit 0 is set to 0. If the socket timeout setting at the POP server is less than 180 s, you must set t his bit to 1, or it will have no effect (the POP server will disconnect before the machine can send a DELE command).
2-7	Not used	Do not change these settings.

4.4 NCU PARAMETERS

The following tables give the RAM addresses and the parameter calculation units that the machine uses for ringing signal detection and automatic dialing. The factory settings for each country are also given. The RAM read/write (Function 06) must change most of these, but NCU Parameter programming (Function 08) can change some others; if Function 08 is in use, the Remarks column indicates it. The RAM is in hex code unless (BCD) is included in the Unit column.

<table>
<tr><th>Address</th><th>Function</th><th>Unit</th><th>Remarks</th></tr>
<tr><td>907000</td><td>Country code for NCU parameters</td><td colspan="2">Use the Hex value to program the country code directly into this address, or use the decimal value to program it using Function 08 (parameter C.C.).

<table>
<tr><th>Country</th><th>Decimal</th><th>Hex</th></tr>
<tr><td>France</td><td>00</td><td>00</td></tr>
<tr><td>Germany</td><td>01</td><td>01</td></tr>
<tr><td>UK</td><td>02</td><td>02</td></tr>
<tr><td>Italy</td><td>03</td><td>03</td></tr>
<tr><td>Austria</td><td>04</td><td>04</td></tr>
<tr><td>Belgium</td><td>05</td><td>05</td></tr>
<tr><td>Denmark</td><td>06</td><td>06</td></tr>
<tr><td>Finland</td><td>07</td><td>07</td></tr>
<tr><td>Ireland</td><td>08</td><td>08</td></tr>
<tr><td>Norway</td><td>09</td><td>09</td></tr>
<tr><td>Sweden</td><td>10</td><td>0A</td></tr>
<tr><td>Switzerland</td><td>11</td><td>0B</td></tr>
<tr><td>Portugal</td><td>12</td><td>0C</td></tr>
<tr><td>Holland</td><td>13</td><td>0D</td></tr>
<tr><td>Spain</td><td>14</td><td>0E</td></tr>
<tr><td>Israel</td><td>15</td><td>0F</td></tr>
<tr><td>USA</td><td>17</td><td>11</td></tr>
<tr><td>Asia</td><td>18</td><td>12</td></tr>
<tr><td>Japan</td><td>19</td><td>13</td></tr>
<tr><td>Hong Kong</td><td>20</td><td>14</td></tr>
<tr><td>South Africa</td><td>21</td><td>15</td></tr>
<tr><td>Australia</td><td>22</td><td>16</td></tr>
<tr><td>New Zealand</td><td>23</td><td>17</td></tr>
<tr><td>Singapore</td><td>24</td><td>18</td></tr>
<tr><td>Malaysia</td><td>25</td><td>19</td></tr>
<tr><td>Turkey</td><td>32</td><td>20</td></tr>
<tr><td>Greek</td><td>33</td><td>21</td></tr>
</table></td></tr>
<tr><td>907001</td><td>Line current detection time</td><td rowspan="3">20 ms</td><td rowspan="3">Line current is not detected if 907001 contains FF.</td></tr>
<tr><td>907002</td><td>Line current wait time</td></tr>
<tr><td>907003</td><td>Line current drop detect time</td></tr>
<tr><td>907004</td><td>PSTN dial tone frequency upper limit (high byte)</td><td rowspan="2">Hz (BCD)</td><td rowspan="2">If both addresses contain FF (H), tone detection is disabled.</td></tr>
<tr><td>907005</td><td>PSTN dial tone frequency upper limit (low byte)</td></tr>
</table>

Address	Function	Unit	Remarks
907006	PSTN dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF (H), tone detection is disabled.
907007	PSTN dial tone frequency lower limit (low byte)		
907008	PSTN dial tone detection time	20 ms	If 907008 contains FF (H), the machine pauses for the pause time (address 90700D/90700E). See Note 3 (Italy).
907009	PSTN dial tone reset time (low)		
90700A	PSTN dial tone reset time (high)		
90700B	PSTN dial tone continuous tone time		
90700C	PSTN dial tone permissible drop time		
90700D	PSTN wait interval (low)		
90700E	PSTN wait interval (high)		
90700F	PSTN ring-back tone detection time	20 ms	Detection is disabled if this contains FF (H).
907010	PSTN ring-back tone off detection time	20 ms	
907011	PSTN detection time for the silent period after ring-back tone detected (low)	20 ms	
907012	PSTN detection time for the silent period after ring-back tone detected (high)	20 ms	
907013	PSTN busy tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF (H), tone detection is disabled.
907014	PSTN busy tone frequency upper limit (low byte)		
907015	PSTN busy tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF (H), tone detection is disabled.
907016	PSTN busy tone frequency lower limit (low byte)		
907017	PABX dial tone frequency range (high byte)	Hz (BCD)	If both addresses contain FF (H), tone detection is disabled.
907018	PABX dial tone frequency range (low byte)		
907019	PABX dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF (H), tone detection is disabled.
90701A	PABX dial tone frequency lower limit (low byte)		
90701B	PABX dial tone detection time	20 ms	If 90701B contains FF, the machine pauses for the pause time (907020/907021).
90701C	PABX dial tone reset time (low)		
90701D	PABX dial tone reset time (high)		
90701E	PABX dial tone continuous tone time		
90701F	PABX dial tone permissible drop time		
907020	PABX wait interval (high)		
907021	PABX wait interval (low)		

Address	Function	Unit	Remarks
907022	PABX ring-back tone detection time	20 ms	If both addresses contain FF (H), tone detection is disabled.
907023	PABX ring-back tone off detection time	20 ms	
907024	PABX detection time for the silent period after ring-back tone detected (low)	20 ms	If both addresses contain FF (H), tone detection is disabled.
907025	PABX detection time for the silent period after ring-back tone detected (high)	20 ms	If both addresses contain FF (H), tone detection is disabled.
907026	PABX busy tone frequency upper (high byte)	Hz (BCD)	If both addresses contain FF (H), tone detection is disabled.
907027	PABX busy tone frequency lower (low byte)		
907028	PABX busy tone frequency lower (high byte)	Hz (BCD)	If both addresses contain FF (H), tone detection is disabled.
907029	PABX busy tone frequency lower (low byte)		
90702A	Busy tone ON time: range 1	20 ms	
90702B	Busy tone OFF time: range 1		
90702C	Busy tone ON time: range 2		
90702D	Busy tone OFF time: range 2		
90702E	Busy tone ON time: range 3		
90702F	Busy tone OFF time: range 3		
907030	Busy tone ON time: range 4		
907031	Busy tone OFF time: range 4		
907032	Busy tone-continuous tone detection time		
907033	Busy tone signal state time tolerance for all ranges, and number of cycles required for detection (a setting of 4 cycles means that ON-OFF-ON or OFF-ON-OFF must be detected twice). Tolerance (±) Bit 1 0 0 0 75% Bits 2 and 3 must always be kept at 0. 0 1 50% 1 0 25% 1 1 12.5% Bits 7, 6, 5, 4 - number of cycles required for cadence detection		
907034	International dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF (H), tone detection is disabled.
907035	International dial tone frequency upper limit (low byte)		
907036	International dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF (H), tone detection is disabled.
907037	International dial tone frequency lower limit (low byte)		

Address	Function	Unit	Remarks
907038	International dial tone detection time	20 ms	If 907038 contains FF, the machine pauses for the pause time (90703D/90703E). See Note 4 (Belgium).
907039	International dial tone reset time (low)		
90703A	International dial tone reset time (high)		
90703B	International dial tone continuous tone time		
90703C	International dial tone permissible drop time		
90703D	International dial wait interval (low)		
90703E	International dial wait interval (high)		
90703F	Country dial tone upper frequency limit (high)	Hz (BCD)	If both addresses contain FF (H), tone detection is disabled.
907040	Country dial tone upper frequency limit (low)		
907041	Country dial tone lower frequency limit (high)		If both addresses contain FF (H), tone detection is disabled.
907042	Country dial tone lower frequency limit (low)		
907043	Country dial tone detection time	20 ms	If 907043 contains FF, the machine pauses for the pause time (907048/907049).
907044	Country dial tone reset time (low)		
907045	Country dial tone reset time (high)		
907046	Country dial tone continuous tone time		
907047	Country dial tone permissible drop time		
907048	Country dial wait interval (low)		
907049	Country dial wait interval (high)	20 ms	
90704A	Time between opening or closing the Ds relay and opening the Di relay	1 ms	See Notes 5, 8, and 9. Function 08 (parameter 11).
90704B	Break time for pulse dialing	1 ms	See Note 4. Function 08 (parameter 12).
90704C	Make time for pulse dialing	1 ms	See Note 4. Function 08 (parameter 13).
90704D	Time between final Di relay closure and Ds relay opening or closing	1 ms	See Notes 5, 8, and 9. Function 08 (parameter 14).
90704E	Minimum pause between dialed digits (pulse dial mode)	20 ms	See Note 5 and 9. Function 08 (parameter 15).
90704F	Time waited when a pause is entered at the operation panel		Function 08 (parameter 16). See Note 5.
907050	DTMF tone on time	1 ms	Function 08 (parameter 17).
907051	DTMF tone off time		Function 08 (parameter 18).

Address	Function	Unit	Remarks
907052	Tone attenuation level of DTMF signals while dialing (high frequency group)	- N x 0.5 - 3.5 (dBm)	Function 08 (parameter 19). See Note 7.
907053	Tone attenuation value difference between high frequency tone and low frequency tone in DTMF signals	- N x 0.5 (dBm)	Function 08 (parameter 20). See Note 7.
907054	PSTN: DTMF tone attenuation level after dialing (high frequency group)	- N x 0.5 - 3.5 (dBm)	Function 08 (parameter 21). See Note 7.
907055 to 907058	Not used		Do not change these settings.
907059	Grounding time (ground start mode)	20 ms	The Gs relay remains closed for this interval.
90705A	Break time (flash start mode)	1 ms	The OHDI relay is open for this interval.
90705B 90705C	International dial access code	BCD	For a code of 100: 90705B - F1 90705C - 00
90705D	PSTN access pause time	20 ms	It waits this amount of time for each pause input after the PSTN access code. Up to 7 of these can be input. If this address contains FF [H], the pause time stored in address 90704F is used.
90705E	Progress tone detection level, and cadence detection enable flags	Bit 7 6 5 dBm 0 0 0 -25.0 0 0 1 -35.0 0 1 0 -30.0 1 0 0 -40.0 1 1 0 -49.0 Bits 2, 0 - See Note 4.	
90705F to 907064	Not used		Do not change these settings.
907065	Inter-city dial prefix (high)	BCD	For a code of 0:
907066	Inter-city dial prefix (low)	BCD	907065 - FF 907066 - F0
907067	Not used		Do not change these settings.

Address	Function	Unit	Remarks
907068	CED detection parameter for PDU Bits 3 to 0: CED detection time 0: Follows the G3 standard CED detection time. 1 – F: CED detection time (Unit: 20ms) Bits 7 to 4: Acceptable CED detection extension frequency 0: Follows the G3 standard acceptable CED frequency detection rang. 1 – F: Frequency range extension (Unit: 100Hz) Example: If the standard acceptable CED detection frequency range is from 2200Hz to 2000Hz, when this RAM address is set to 21(H): Frequency range: 2400Hz to 1800Hz Time: 20ms		
907069	Distinctive ring	Hex	00(H): OFF, 01(H): ON
90706A	Distinctive ring minimum off time	1 ms	
90706B	Distinctive ring maximum one cycle time	20 ms ± 20 ms	
907072	Acceptable ringing signal frequency: range 1, upper limit	1,000/N (Hz)	Function 08 (parameter 02).
907073	Acceptable ringing signal frequency: range 1, lower limit		Function 08 (parameter 03).
907074	Acceptable ringing signal frequency: range 2, upper limit		Function 08 (parameter 04).
907075	Acceptable ringing signal frequency: range 2, lower limit		Function 08 (parameter 05).
907076	Number or rings until a call is detected	1	Function 08 (parameter 06).
907077	Minimum required length of the first ring	20 ms	See Note 6. Function 09 (parameter 07).
907078	Minimum required length of the second and subsequent rings	20 ms	Function 08 (parameter 08).
907079	Ringing signal detection reset time (low)	20 ms	Function 08 (parameter 09).
90707A	Ringing signal detection reset time (high)		Function 08 (parameter 10).
90707B to 907080	Not used		Do not change these settings.
907081	Interval between dialing the last digit and switching the Oh relay over to the external telephone when dialing from the operation panel in handset mode.	20 ms	Factory setting: 500 ms

Address	Function	Unit	Remarks
907082	Bits 0 and 1 - Handset off-hook detection time Bit 1 0 Setting 0 0 200 ms 0 1 800 ms Other Not used Bits 2 and 3 - Handset on-hook detection time Bit 3 2 Setting 0 0 200 ms 0 1 800 ms Other Not used Bits 4 to 7 - Not used		
9070A1	Acceptable CED detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF (H), tone detection is disabled.
9070A2	Acceptable CED detection upper frequency upper limit (low byte)		
9070A3	Acceptable CED detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF (H), tone detection is disabled.
9070A4	Acceptable CED detection upper frequency lower limit (low byte)		
9070A5	CED detection time	20 ms ± 20 ms	Factory setting: 200 ms
9070A6	Acceptable CNG detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF (H), tone detection is disabled.
9070A7	Acceptable CNG detection upper frequency upper limit (low byte)		
9070A8	Acceptable CNG detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF (H), tone detection is disabled.
9070A9	Acceptable CNG detection upper frequency lower limit (low byte)		
9070AA	Not used		Do not change these settings.
9070AB	CNG on time	20 ms	Factory setting: 500 ms
9070AC	CNG off time	20 ms	Factory setting: 200 ms
9070AD	Number of CNG cycles required for detection		The data is coded in the same way as address 907033. Factory setting: 23(H)
9070AE	Not used		Do not change this setting.
9070AF	Acceptable AI short protocol tone (800Hz) detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF (H), tone detection is disabled.
9070B0	Acceptable AI short protocol tone (800Hz) detection upper frequency upper limit (low byte)		

Address	Function	Unit	Remarks
9070B1	Acceptable AI short protocol tone (800Hz) detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF (H), tone detection is disabled.
9070B2	Acceptable AI short protocol tone (800Hz) detection upper frequency lower limit (low byte)		
9070B3	Detection time for 800 Hz AI short protocol tone	20 ms	Factory setting: 360 ms
9070B4	PSTN: Tx level from the modem	- N - 3 (dBm)	Function 08 (parameter 01).
9070B5	PSTN: 1,100 Hz tone transmission level	- N 9070B4 - 0.5N 9070B5 - 3.5 (dBm)	
9070B6	PSTN: 2,100 Hz tone transmission level	- N 9070B4 - 0.5N 9070B6 - 3 (dBm)	
9070B7	PABX: Tx level from the modem	- dBm	
9070B8	PABX: 1,100 Hz tone transmission level	- N 9070B7 - 0.5N 9070B8 (dB)	
9070B9	PABX: 2100 Hz tone transmission level	- N 9070B7 - 0.5N 9070B9 (dB)	
9070BA to 9070BC	Not used		Do not change these settings.
9070BD	Modem turn-on level (incoming signal detection level)	- 37 - 0.5N (dBm)	
9070DA	T.30 T1 timer	1 s	
9070E0 bit 3	Maximum wait time for post message	0: 12 s 1: 30 s	1: Maximum wait time for post message (EOP/EOM/MPS) can be changed to 30 s. Change this bit to “1” if communication errors occur frequently during V.17 reception.

NOTES:

1. If you change the NCU country code and exit the service mode, the bit switch country code (System Bit Switch 0F) will automatically be changed to the same country code.
2. If a setting is unnecessary, store FF in the address.
3. In, Europe, if the country code is not specified, set it to UK (02).
4. Italy and Belgium only
   RAM address 90705E: the lower four bits have the following meaning.
   Bit 2 1: International dial tone cadence detection enabled (Belgium)
   Bit 1: Not used
   Bit 0 1: PSTN dial tone cadence detection enabled (Italy)

   If bit 0 or bit 2 is set to 1, the functions of the following RAM addresses change.
   907008 (if bit 0 = 1) or 907038 (if bit 2 = 1): tolerance for on or off state duration (%), and number of cycles required for detection, coded as in address 907033.
   90700B (if bit 0 = 1) or 90703B (if bit 2 = 1): on time, hex code (unit = 20 ms)
   90700C (if bit 0 = 1) or 90703C(if bit 2 = 1): off time, hex code (unit = 20 ms)
5. Pulse dial parameters (addresses 90704A to 90704F) are the values for 10 PPS. If 20 PPS is used, the machine automatically compensates.
6. The first ring may remain undetected until 1 to 2.5 wavelengths after the time specified by this parameter.
7. The calculated level must be between 0 and 10.
   The attenuation levels calculated from RAM data are:
   High frequency tone: - 0.5 x N907052/907054 dBm
   Low frequency tone: - 0.5 x (N907052/907054 + N907053) dBm
   Note: N907052, for example, means the value stored in address 907052(H)
8. 90704A: Europe - Between Ds opening and Di opening, France - Between Ds closing and Di opening
   90704D: Europe - Between Ds closing and Di closing, France - Between Ds opening and Di closing
9. The actual inter-digit pause (pulse dial mode) is the sum of the periods specified by the RAM addresses 90704A, 90704D, and 90704E.

4.5 DEDICATED TRANSMISSION PARAMETERS

Each Quick Dial Key and Speed Dial Code has four bytes of programmable parameters allocated to it. If transmissions to a particular machine often experience problems, store that terminal's fax number as a Quick Dial or Speed Dial, and adjust the parameters allocated to that number.

The programming procedure will be explained first. Then, the four bytes will be described.

4.5.1 PROGRAMMING PROCEDURE

1. Set bit 3 of System Bit Switch 04 to 1.
2. Either use the programming Quick Dial number or Speed Dial number.

   Example: Change the Parameters in Quick Dial 10.

3. User Tools "OK" "OK"
4. Press the Quick Dial key 10.
5. Press "OK" four times.
6. The settings for Tx Parameter 01 are now displayed. Press a number from 0 to 7 corresponding to the bit that you wish to change.

   Example: Change bit 7 to 1: Press 7

7. To scroll through the parameter bytes, either:
   Select the next byte:
   or
   Select the previous byte:
   until the correct byte is displayed. Then go back to step 6.
8. After the setting is changed, press "OK".
9. To finish, press User Tools.
10. After finishing, reset bit 3 of System Bit Switch 04 to 0.

4.5.2 PARAMETERS

The initial settings of the following parameters are all FF (H) - all the parameters are disabled.

Switch 01
FUNCTION AND COMMENTS
ITU-T T1 time If the connection time to a particular terminal is longer than the NCU parameter setting, adjust this byte. The T1 time is the value stored in this byte (in hex code), multiplied by 1 second. **Range:** 1 to 127 s (01h to 7Fh) 00h or FFh - The local NCU parameter factory setting is used. Do not program a value between 80h and FEh.

Switch 02		
No.	**FUNCTION**	**COMMENTS**
0-1	TX level **Bit 3 2 1 0 Setting (dBm)** 0 0 0 0 0 0 0 0 1 -1 : 1 1 1 1 -15	If communication with a particular remote terminal often contains errors, the signal level may be inappropriate. Adjust the TX level for communications with that terminal until the results are better.
4	TX level setting **0:** Enabled **1:** Disabled (bits 0 to 4 must all be at 1 to disable)	**0:** When enabling the TX level setting, change this bit to 0, then change the settings of bits 0 through 3 above. **1:** When disabling the TX level setting, change all of the bits 0 through 4 to 1.
5-6	Cable equalizer **Bit 6 5 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange when calling the number stored in this Quick/Speed Dial. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error with error codes such as 0-20, 0-23, etc. • Modem rate fallback occurs frequently.
7	Cable equalizer setting **0:** Enabled **1:** Disabled (bits 5 to 7 must all be at 1 to disable)	**0:** When enabling the cable equalizer setting, change this bit to 0, then change the settings of bits 5 and 6 above. **1:** When disabling the cable equalizer setting, change all of the bits 5, 6 and 7 to 1.

Switch 03		
No.	**FUNCTION**	**COMMENTS**
0-3	Initial TX modem rate **Bit 3 2 1 0 Setting (bps)** 0 0 0 0 Not used 0 0 0 1 2,400 0 0 1 0 4,800 0 0 1 1 7,200 0 1 0 0 9,600 0 1 0 1 12 000 0 1 1 0 14,400 : 1 1 0 1 31,200 1 1 1 0 33,600 1 1 1 1 Setting disabled	If training with a particular remote terminal always takes too long, the initial modem rate may be too high. Reduce the initial TX modem rate using these bits.
4-5	Not used	Do not change these settings.
6	AI short protocol **0:** Disabled **1:** Enabled	**0:** AI short protocol is disabled for transmission
7	Not used	Do not change these settings.

Switch 04		
No.	**FUNCTION**	**COMMENTS**
0-1	mm-inch conversion before tx **Bit 1 0 Setting** 0 0 mm-inch conversion available 0 1 mm only 1 0 Not used 1 1 Disabled	The machine uses inch-based resolutions for scanning. If ”inch only” is selected, the printed copy may be slightly distorted at the other end if that machine uses mm-based resolutions.
2-3	DIS/NSF detection method **Bit 3 2 Setting** 0 0 First DIS or NSF 0 1 Second DIS or NSF 1 0 First DIS or NSF 1 1 Setting disabled	**(0, 1):** Use this setting if echoes on the line are interfering with the set-up protocol at the start of transmission. The machine will then wait for the second DIS or NSF before sending DCS or NSS.
4	V.8 protocol **0:** Disabled **1:** Enabled	If transmissions to a specific destination always end at a low modem rate (lower than 14,400 bps), disable V.8 protocol so that V.34 protocol will not be used. **0:** V.34 communication will not be possible.
5	Compression modes available in transmit mode **0:** MH only **1:** All available compression modes	This bit determines the capabilities that are informed to the other terminal during transmission.

Switch 04		
No.	**FUNCTION**	**COMMENTS**
6-7	ECM during transmission **Bit 7 6 Setting** 0 0 Disabled 0 1 Enabled 1 0 Disabled 1 1 Setting disabled	For example, if ECM is switched on but is not wanted when sending to a particular terminal, use the (0, 0) setting.

Switches 05 to 05 - Not used (do not change the settings)
Switches 05 to 06 - Not used (do not change the settings)
Switches 05 to 07 - Not used (do not change the settings)
Switches 05 to 08 - Not used (do not change the settings)

Switch 09 (Optional ISDN G4 unit required)		
No.	**FUNCTION**	**COMMENTS**
0-3	Layer 3 protocol **Bit 3 2 1 0 Setting** 0 0 0 0 ISO 8208 0 0 0 1 T.70 NULL 1 1 1 1 Disabled	When disabled, the setting of G4 parameter switch 6 (bit 0) setting is used.
4-7	Not used	Do not change the settings.

Switch 10 (Optional ISDN G4 unit required)		
No.	**FUNCTION**	**COMMENTS**
0	Attachment of the Higher Layer Capabilities **0:** Yes **1:** No	This bit determines whether Higher Layer Capabilities are informed in the [SETUP] signal or not.
1	Not used	Do not change the settings.
2	ISDN G3 information transfer capability **0:** 3.1 kHz audio **1:** Speech	In tx mode, this determines the information transfer capability informed in the [SETUP] message. In rx mode, this determines the information transfer capability that the machine can use to receive a call. Set this bit to 1 if the ISDN does not support 3.1 kHz audio.
3-7	Not used	Do not change the settings.

4.6 SERVICE RAM ADDRESSES

⚠CAUTION

Do not change settings marked as "Not used" or "Read only."

800001 to 800004(H) - ROM version (Read only)

800001(H) - Revision number (BCD)
800002(H) - Year (BCD)
800003(H) - Month (BCD)
800004(H) - Day (BCD)

800005(H) - RAM Reset Level 1

Change the data at this address to FF (H), then switch the machine off and on to reset all the system settings.

CAUTION: Before using this RAM, print the settings of all the system parameters (System Parameter List).

The country code will be reset to Japan when RAM reset level 1 is done. To restore the NCU country code using service function 08 (NCU parameters), first set system switch 15 bit 2 to 1.

800006 to 800015(H) - Machine's serial number (16 digits - ASCII)

800016(H) – Language code
800017(H) - Total program checksum (low)
800018(H) - Total program checksum (high)
800019(H) - Boot program checksum (low)
80001A(H) - Boot program checksum (high)
80001B(H) - Main program checksum (low)
80001C(H) - Main program checksum (high)

80001D(H) - RDS program update counter (hex)

800020 to 80003F(H) - System bit switches
800040 to 80004F(H) - Scanner bit switches
800050 to 80005F(H) - Printer bit switches
800060 to 80007F(H) - Communication bit switches
800080 to 80008F(H) - G3 bit switches
8000A0 to 8000AF(H) - LAN bit switches
8000B0 to 8000BF(H) - DU bit switches

8000D0(H) - User parameter switch 00

Bit 0: Stamp home position 0: Disabled, 1: Enabled
Bit 1 to 3: Not used
Bits 4 and 5: Scanning resolution home position

Bit 5	4	Setting
0	0	Standard
0	1	Detail
1	0	Fine
1	1	Halftone

Bit 6: Transmission mode home position 0: Memory TX, 1: Immediate TX
Bit 7: Not used

8000D1(H) - User parameter switch 01

Bits 0 to 2: Not used
Bit 3: Main cassette — 0: Standard A4 size cassette, 1: Universal cassette
Bits 4 to 6: Not used
Bit 7: Settings return to home position after transmission — 0: Disabled, 1: Enabled

8000D2(H) - User parameter switch 02

Bit 0: Forwarding mark printing on forwarded messages — 0: Disabled, 1: Enabled
Bit 1: Center mark printing on received copies — 0: Disabled, 1: Enabled
Bit 2: Reception time printing — 0: Disabled, 1: Enabled
Bit 3: TSI included in transmitted messages — 0: Disabled, 1: Enabled
Bit 4: Checkered mark printing — 0: Disabled, 1: Enabled
Bit 5: CIL printing (G4) — 0: Disabled, 1: Enabled
Bit 6: TID printing (G4) — 0: Disabled, 1: Enabled
Bit 7: Not used

8000D3(H) - User parameter switch 03 (Automatic report printout)

Bit 0: Transmission result report (memory transmissions) — 0: Off, 1: On
Bit 1: Not used
Bit 2: Memory storage report — 0: Off, 1: On
Bit 3: Polling reserve report (polling reception) — 0: Off, 1: On
Bit 4: Polling result report (polling reception) — 0: Off, 1: On
Bit 5: Transmission result report (immediate transmissions) — 0: Off, 1: On
Bit 6: Polling clear report — 0: Off, 1: On
Bit 7: Journal — 0: Off, 1: On

8000D4(H) - User parameter switch 04

Bit 0: Confidential reception report — 0: Off, 1: On
Bits 1 to 6: Not used
Bit 7: Includes a sample image on reports — 0: Off, 1: On

8000D5(H) - User parameter switch 05

Bit 0: Substitute reception — 0: Off, 1: On
Bit 1: Memory reception if no RTI or CSI received — 0: Possible, 1: Impossible
Bits 2 to 3: Not used
Bit 4: Restricted access — 0: Off, 1: On
Bit5: Not used
Bit 6: Fusing lamp control during energy saver mode — 0: Lamp off, 1: Stand-by temperature
Bit 7: Not used (keep this bit at 0.)

8000D6(H) - User parameter switch 06

Bit 0: TTI — 0: Off, 1: On
Bit 1: Not used
Bit 2: Closed network for transmission — 0: Off, 1: On
Bit 3: Not used
Bit 4: Batch transmission — 0: Off, 1: On
Bit 5: Not used
Bit 6: ISDN SPID programming (used only in the USA) — 0: Off, 1: On
Bit 7: Back up transmission — 0: Off, 1: On

8000D7(H) - User parameter switch 07

Bits 0 to 1: Not used
Bit 2: Parallel memory transmission 0: Off, 1: On
Bit 3: Not used
Bit 4: Use of ∗ key for tonal signals 0: Off, 1: On
Bits 5 to 7: Not used

8000D8(H) - User parameter switch 08

Bits 0 and 1: Multi-copy reception

Bit 1	0	Setting
X	0	Disabled
0	1	Faxes from senders whose RTIs/CSIs are specified for this feature are multicopied (the number of copies depends on another user setting).
1	1	Faxes from senders whose RTIs/CSIs are not specified for this feature are multicopied (the number of copies depends on another user setting).

Bits 2 and 3: Authorized reception

Bit 3	2	Setting
X	0	Disabled
0	1	Faxes from senders whose RTIs/CSIs are specified for this feature are accepted.
1	1	Faxes from senders whose RTIs/CSIs are not specified for this feature are accepted.

Bits 4 and 5: Specified cassette selection (optional cassette required)

Bit 5	4	Setting
X	0	Disabled
0	1	Faxes from senders whose RTIs/CSIs are specified for this feature are printed to the paper in a specified cassette.
1	1	Faxes from senders whose RTIs/CSIs are not specified for this feature are printed to the paper in a specified cassette.

Bits 6 and 7: Forwarding (optional memory card required)

Bit 7	6	Setting
X	0	Disabled
0	1	Faxes from senders whose RTIs/CSIs are specified for this feature are forwarded.
1	1	Faxes from senders whose RTIs/CSIs are not specified for this feature are forwarded.

8000D9(H) - User parameter switch 09

Bits 0 and 1: Memory lock

Bit 1	0	Setting
X	0	Disabled
0	1	Faxes from senders whose RTIs/CSIs are specified for this feature are kept in the memory until a memory lock ID is entered.
1	1	Faxes from senders whose RTIs/CSIs are not specified for this feature are kept in the memory until a memory lock ID is entered.

Bits 2 to 7: Not used

8000DA(H) - User parameter switch 10 (SWusr_0A)

Bit 0: Reverse order printing 0: Disabled, 1: Enabled
Bit 1: 2 in 1 0: Disabled, 1: Enabled
Bits 2 to 6: Not used
Bit 7: Halftone type 0: Error diffusion, 1: Dither

8000DB(H) - User parameter switch 11 (SWusr_0B)
Bit 0: Not used
Bit 1: Method of transmitting numbers after the “Tone” mark over an ISDN line
0: UUI, 1: Tone
Bit 2: Blank sheet detection 0: Disabled, 1: Enabled
Bits 3 to 5: Not used
Bit 6: Printout of messages received while acting as a forwarding station
0: Off, 1: On
Bit 7: Polling Standby duration 0: Once, 1: No limit

8000DC(H) - User parameter switch 12 (SWusr_0C)
Bit 0 to 6: Not used
Bit 7: Copy operation 0: Possible, 1: Prohibited

8000DD(H) - User parameter switch 13 (SWusr_0D)
Bits 0 and 1: PSTN access method from behind a PABX

Bit 1	0	Setting
0	0	PSTN
0	1	Loop start
1	0	Ground start
1	1	Flash start

Bits 2 to 5: Not used
Bit 6: Action when the received Higher Layer Capabilities is Tel or Bearer Capabilities is Speech (This switch is not listed on the User Parameter List.)
0: Do not respond to the call
1: Respond to the call
Bit 7: Not used

8000DE(H) – User parameter switch 14 (SWusr_0E)
Bits 0 to 1: Not used
Bit 2: TTI using LAN Fax 0: Off, 1: On
Bits 3 to 7: Not used

8000E0(H) – User parameter switch 16 (SWusr_10)
Bits 0 and 1: Leave messages on POP server after receiving them

Bit 1	0	Setting
0	0	No
0	1	Save all
1	0	Save errors only
1	1	Not used

Bit 2: Not used
Bit 3: Error mail notification to the sender 0: On, 1: Off
Bit 4: Receive E-mail when the Night Timer is effect 0: On, 1: Off
Bits 5 to 7: Not used

8000E1(H) – User parameter switch 17 (SWusr_11)
Bit 0: SMTP reception 0: Off, 1: On
Bit 1: Route documents received with SMTP 0: Off, 1: On
Bit 2: Respond to requests of the receipt confirmation 0: Off, 1: On
Bits 3 to 7: Not used

8000E4(H) – User parameter switch 20 (SWusr_14)
Bit 0: Part of optional memory using for page memory 0: Off, 1: On
Bits 1 to 7: Not used

8000E9(H) – Key operator settings (SWusr_19)

Bit 0: Night timer 0: Disabled, 1: Enabled
Bits 1 to 3: Not used
Bit 4: RDS operation 0: Not acceptable
1: Acceptable for the limit specified by system switch 03
Bits 5 and 6: Not used
Bit 7: Daylight saving time 0: Disabled, 1: Enabled

8000EA(H) - Key operator settings (SWusr_1A)

Bit 0: Not used
Bit 1: Dialing type 0: Pulse dialing (10 PPS), 1: Tone (DTMF) dialing
Bits 2 to 7: Not used

8000EB(H) - PSTN access number for loop start (SWusr_1B)

Access number	Hex value to program (BCD)
0	F0
↓	↓
0	F0
00	00
↓	↓
99	99

800100 to 80010F(H) - G4 Parameter switches
800110 to 80011F(H) - G4 Internal switches

800130 to 800143(H) - RTI (Max. 20 characters - ASCII) - **See the following note**
800198 to 8001AB(H) - CSI (Max. 20 characters - ASCII)
8001C0 to 8001D3(H) - ISDN G3 CSI (Max. 20 characters - ASCII)
800158 to 800177(H) - TTI (Max. 32 characters - ASCII) - **See the following note**
8001D4(H) - Number of CSI characters (Hex)
8001D6(H) - Number of ISDN G3 CSI characters (Hex)

Note: If the number of characters are less than the maximum (20 for RTI, 32 for TTI), add a stop code (FF[H]) after the last character.

8001D7 to 8001E5(H) - Service station's fax number (Service function 13)

8001F5 to 800203(H) - Own fax number (PSTN)
800204 to 800212(H) - Own fax number (ISDN G4)
800213 to 800221(H) - ISDN G3 Subscriber Number 1
800222 to 800230(H) - ISDN G3 Subscriber Number 2
800231 to 80023F(H) - G4 Subscriber Number 1
800240 to 80024E(H) - G4 Subscriber Number 2

80024F(H) - ID code (low - BCD)
800250(H) - ID code (high - BCD)

800251(H) - Confidential ID (low - BCD)
800252(H) - Confidential ID (high - BCD)

800253(H) - Memory lock ID (low - BCD)
800254(H) - Memory lock ID (high - BCD)

80025B(H) - Network type used for the service station number
00(H) - G3 (PSTN)
01(H) - G4 (ISDN)

800826 to 800827(H) - Scanning top margin adjustment
800828 to 800829 (H) - Scanning bottom margin adjustment
Refer to section 6.12 for details.

80027E to 800285(H) - Last power off time (Read only)
80027E(H) - Clock
00(H) - 12-hour clock (AM)
01(H) - 24-hour clock
02(H) - 12-hour clock (PM)
80027F(H) - Year (BCD)
800280(H) - Month (BCD)
800281(H) - Day (BCD)
800282(H) - Hour
800283(H) - Minute
800284(H) - Second
800285(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ……., 06: Sunday

800292(H) to 800295(H) - Optional equipment (Read only)
800292(H)
01(H) – Option Memory
800293(H)
40(H) – G4 unit
800294(H)
04(H) – JBIG (standard)
40(H) – NIC option
800295(H)
02(H) – PDU option

Bit 4: By-pass feeder
Bit 5: Paper feed unit
The following counters are on the System Parameter List. The names used on the system parameter list are in brackets.

800297(H) – Keyboard layout
01(H) – ABCDEF
02(H) – QWERTY
03(H) – AZERTY
04(H) – QWERTZ

80029E to 8002A1(H) – Internet Fax TX counter (MAIL TX)

8002A2 to 8002A5(H) – Internet Fax RX counter (MAIL RX)

8002A6 to 8002A9(H) – LAN Fax counter

8002AA to 8002AD(H) - TX counter (TX)

Address	High	Low
8002AA(H)	Tens digit	Unit digit
8002AB(H)	Thousands digit	Hundreds digit
8002AC(H)	Hundred thousands digit	Ten thousands digit
8002AD(H)	Ten millions digit	Millions digit

Note: The following counters have the same data format as above.

8002AE to 8002B1(H) - RX counter (RX)

8002B2 to 8002B5(H) - Scan counter (SCN)

8002B6 to 8002B9(H) - Print counter (PRT)

8002BE to 8002C1(H) - ADF counter

8002CA to 8002CD(H) - ADF Pad counter (ADF PAD)

8002DA to 8002DD(H) - Paper feed counter: standard cassette (MAIN CASSETTE)

8002DE to 8002E1(H) - Paper feed counter: optional paper feed (CASSETTE 2)

8002E6 to 8002E9(H) - Paper feed counter: optional by-pass feeder (BY-PASS)

8002F2 to 8002F5(H) - Scanner total jam counter (DOC. JAM)

8002F6 to 8002F9(H) - Printer total jam counter (COPY JAM)

8002FA to 8002FD(H) - Paper jam counter: standard cassette (MAIN CST JAM)

8002FE to 8002F1(H) - Paper jam counter: optional paper feed (CST 2 JAM)

800306 to 800309(H) - Paper jam counter: optional by-pass feeder (BY-PASS JAM)

800312 to 800315(H) - Fusing exit jam counter (EJECT JAM)

800316 to 800319(H) - Registration jam counter (PAPER JAM)

80031A to 80031D(H) - PM counter (PM)

80031E to 800321(H) - PM call interval: default 30,000 (PM DEFAULT)

800322 to 800325(H) - Copy counter (COPY)

80033A to 800349(H) - Excessive jam call parameters

Parameters		Address (H)		Initial Setting	Sys. Para. List
		ADF	Printer		
DEC (1 - 255; 0 = Disabled)		800342	800346	10 (H)	X
CALL (3 – 15; 0 = Disabled)		800343	800347	06(H)	Y
CLR	(Low)	800344	800348	30(H)	—
	(High)	800345	800349	00(H)	

Counters	Address (H)		Sys. Para. List
	ADF	Printer	
JAM: Jam counter used to place a service call	80033A	80033E	Z
NO-JAM1: Counter used for JAM counter decrement	80033B	80033F	—
NO-JAM2: Counter used for clearing the JAM counter	80034C (Low)	800340 (Low)	—
	80034D (High)	800341 (High)	

80037C to 800387(H) - G4 NSC code

800388 to 8003BF(H) - G4 terminal ID (ASCII - Max. 24 characters)

8003A0 to 8003A3(H) - ISDN IP

8003A4 to 8003A7(H) - ISDN G3 sub-address

8003A8 to 8003AB(H) - ISDN G4 sub-address

8003AC(H) - SiG4 board ROM Suffix
8003AD(H) - SiG4 ROM Version
8003AE to 8003B0(H) - SiG4 ROM Information
8003AE(H) - Year (BCD)
8003AF(H) - Month (BCD)
8003B0(H) - Day (BCD)

8003B1 to 8003B2(H) - Modem ROM version (FCU)

800438(H) - Excessive jam alarm
Bit 3: Scanner excessive jam alarm 1: An alarm has occurred
Bit 4: Printer excessive jam alarm 1: An alarm has occurred
Either or both of these bits will change to 1 when an excessive jam alarm occurs. Reset each bit to 0 when you have solved the problem. The machine will not be able to detect excessive jams in future if you do not reset these bits.

800449(H) - Print top margin (standard cassette: factory mode)
80044A(H) - Print top margin (optional paper feed unit: factory mode)
80044E(H) - Print top margin (optional multi-purpose feeder: factory mode)

800455(H) - Print left margin (standard cassette: factory mode)
800456(H) - Print left margin (optional paper feed unit: factory mode)
80045A(H) - Print left margin (optional multi-purpose feeder: factory mode)

80045F(H) - Print top margin (standard cassette: user function mode)
800460(H) - Print top margin (optional paper feed unit: user function mode)
800464(H) - Print top margin (optional multi-purpose feeder: user function mode)

800468(H) - Print left margin (standard cassette: user function mode)
800469(H) - Print left margin (optional paper feed unit: user function mode)
80046D(H) - Print left margin (optional multi-purpose feeder: user function mode)
Refer to section 6.12 for details about these parameters.

8004B1(H) - Details of the service call (hardware error)
0X(H): Fusing unit failure
21(H): Laser power is out of the specified range
3X(H): Polygonal mirror motor failure
5X(H): Power pack failure

When a service call was caused by a fusing lamp failure (codes 0X):
After fixing the problem, set printer switch 01 bit 0 to 1 and turn the power off/on. The machine resets this bit to 0, and restarts the machine to clear the service call.

When a service call occurred because of a different hardware failure:
If the problem remains after restarting the machine (power off/on), fix the hardware problem. The service call condition clears after power up.

800D20 to 800D49(H) - Night timer period
800D20 to 800D22(H) - Setting #1 for Monday
800D23 to 800D25(H) - Setting #2 for Monday
800D26 to 800D28(H) - Setting #1 for Tuesday
800D29 to 800D2B(H) - Setting #2 for Tuesday
800D2C to 800D2E(H) - Setting #1 for Wednesday
800D2F to 800D31(H) - Setting #2 for Wednesday
800D32 to 800D34(H) - Setting #1 for Thursday
800D35 to 800D37(H) - Setting #2 for Thursday
800D38 to 800D3A(H) - Setting #1 for Friday
800D3B to 800D3D(H) - Setting #2 for Friday
800D3E to 800D40(H) - Setting #1 for Saturday
800D41 to 800D43(H) - Setting #2 for Saturday
800D44 to 800D46(H) - Setting #1 for Sunday
800D47 to 800D49(H) - Setting #2 for Sunday

Program format
First byte - Hour (BCD)
Second byte - Minute (BCD)
Third byte - 00(H): Timer start time, 01(H): Timer end time

800D76 to 800D7D(H) - Last RDS operation (Read only)
800D76(H) - Clock
00(H): 12-hour clock (AM)
01(H): 24-hour clock
02(H): 12-hour clock (PM)
800D77(H) - Year (BCD)
800D78(H) - Month (BCD)
800D79(H) - Day (BCD)
800D7A(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ... , 06: Sunday
800D7B(H) - Hour
800D7C(H) - Minute
800D7D(H) - Second

800D1F(H) - Daylight savings time setting

800D90(H) - Transmission monitor volume 00 - 07(H)
800D91(H) - Reception monitor volume 00 - 07(H)
800D92(H) - On-hook monitor volume 00 - 07(H)
800D93(H) - Dial monitor volume 00 - 07(H)
800D94(H) - Buzzer volume 00 - 07(H)
800D95(H) - Key acknowledgment tone volume 00 - 07(H)

802FB9 to 8031B8(H) - Latest 64 error codes (Read only)
One error record consists of 8 bytes of data.

First error record start address – 802FB9(H)
Second error record start address – 802FC1(H)
Third error record start address – 802FC9(H)
: : :
64th error record start address – 8031B1(H)

The format is as follows:
1st byte - Minute (BCD)
2nd byte - Hour (BCD)
3rd byte - Day (BCD)
4th byte - Month (BCD)
5th byte - Error code (low) [If the error code is 1-23, 23 is stored here.
6th byte - Error code (high) [If the error code is 1-23, 01 is stored here.
7th byte - Communication line used
00(H): PSTN, 0C(H): ISDN G3, 0D(H): ISDN G4, 40(H): NIC or PDU

8078E1 to 808038(H) - Latest 20 error communication records

One error communication record consists of 94 bytes. The format is as follows:

1st byte - Header

Bit 0: Communication result	0: OK, 1: NG
Bit 1: Document jam	1: Occurred
Bit 2: Power down	1: Occurred
Bit 3: Not used	
Bit 4: Technical data printout instead of personal codes	0: No, 1: Yes
Bit 5: Type of technical data	0: Rx level, 1: Measure of error rate
Bit 6: Error report	0: Not printed, 1: Printed
Bit 7: Data validity	0: Not valid, 1: Valid

2nd byte - Not used

3rd to 7th bytes - Date and time when the communication started
- 3rd byte - Year (BCD)
- 4th byte - Month (BCD)
- 5th byte - Day (BCD)
- 6th byte - Hour (BCD)
- 7th byte - Minute (BCD)

8th and 9th bytes - Communication time
- 8th byte - Minutes (BCD)
- 9th byte - Seconds (BCD)

10th byte - Not used

11th and 12th bytes - Number of pages transmitted or received
- 11th byte - Low byte (Hex)
- 12th byte - High byte (Hex)

13th and 14th bytes - Personal code or number of total/burst error lines
- If bit 4 of the 1st byte is 0:
  - 13th byte - Personal code (low - BCD)
  - 14th byte - Personal code (high - BCD)
- If bit 4 of the 1st byte is 1:
  - 13th byte - Number of total error lines (Hex)
  - 14th byte - Number of burst error lines (Hex)

15th byte - File number (low - Hex)
16th byte - File number (high - Hex)

17th and 18th bytes – Destination File ID number (for system work area)

19th byte – Communication result

20th and 21st bytes - Rx level or measure of error rate
- If bit 5 of the 1st byte is 0:
  - 20th byte - Rx level (low - Hex)
  - 21st byte - Rx level (high - Hex)
- If bit 4 of the 1st byte is 1:
  - 20th byte - Measure of error rate (low - Hex)
  - 21st byte - Measure of error rate (high - Hex)

22nd byte - Final modem rate
Bits 0 to 3: Final modem speed

Bit 3	2	1	0	Setting
0	0	0	1	2.4 k
0	0	1	0	4.8k
0	0	1	1	7.2k
0	1	0	0	9.6k
0	1	0	1	12.0k
0	1	1	0	14.4k
0	1	1	1	16.8k
1	0	0	0	19.2k
1	0	0	1	21.6k
1	0	1	0	24.0k
1	0	1	1	26.4k
1	1	0	0	28.8k
1	1	0	1	31.2
1	1	1	0	33.6k

Other settings - Not used

Bits 4 to 7: Final modem type

Bit 7	6	5	4	Setting
0	0	0	1	V.27ter
0	0	1	0	V.27ter, V.29
0	0	1	1	Not used
0	1	0	0	V.27ter, V.29, V.17
0	1	0	1	V.27ter, V29, V.17, V.34

Other settings - Not used

23rd to 25th byte - Not used

26th to 49th byte - Remote terminal's ID (RTI, TSI or CSI) (ASCII)

50th byte - Communication mode #1
Bits 0 - 1: Resolution used

Bit 1	0	Setting
0	0	Standard
1	0	Detail
1	1	Fine

Bit 2: Communication Protocol 0: G3, 1: G4
Bit 3: ECM 0: Off, 1: On
Bits 4 to 7: Communication mode used

Bit 7	6	5	4	Setting
0	0	0	0	Normal
0	0	0	1	Confidential
0	0	1	0	Polling
0	0	1	1	Transfer
0	1	0	0	Forwarding
0	1	0	1	Automatic Service Call
0	1	1	1	Transfer using DTMF/UUI

51st byte - Communication mode #2

Bit 0: Tx or Rx	0: Tx, 1: Rx
Bit 1: Reduction in Tx	0: Not reduced, 1: Reduced
Bit 2: Batch transmission	0: Not used, 1: Used
Bit 3: Send later transmission	0: Not used, 1: Used
Bit 4: Transmission from	0: ADF, 1: Memory

Bit 5-7: Not used

52nd and 53rd bytes - Not used

54th byte - Number of errors during communication (Hex)

55th to 94th byte - 1st error code and page number where the error occurred
- 55th byte - Page number where the error occurred (low - Hex)
- 56th byte - Page number where the error occurred (high - Hex)
- 57th byte - Error code (low - BCD)
- 58th byte - Error code (high - BCD)

59th to 62nd byte – 2nd error code and page number where the error occurred
63rd to 66th byte – 3rdh error code and page number where the error occurred
67th to 70th byte - 4th error code and page number where the error occurred
71st to 74th byte - 5th error code and page number where the error occurred
75th to 78th byte - 6th error code and page number where the error occurred
79th to 82nd byte - 7th error code and page number where the error occurred
83rd to 86th byte - 8th error code and page number where the error occurred
87th to 90th byte - 9th error code and page number where the error occurred
91st to 94th byte - 10th error code and page number where the error occurred

81108C to 8120CB(H) - Dedicated tx parameters for Quick Dial 01 - 30 and Speed Dial D#00 - #99.

Each set of destination data consists of 32 bytes. Last 8bytes (23rd to 32nd bytes) are used.

81108C to 8110AB(H) - Dedicated tx parameters for Quick 01
8110AC to 8110CB(H) - Dedicated tx parameters for Quick 02
8110CC to 8110EB(H) - Dedicated tx parameters for Quick 03
:
81142C to 81144B(H) - Dedicated tx parameters for Quick 30
81144C to 81146B(H) - Dedicated tx parameters for Speed #00
81146C to 81148B(H) - Dedicated tx parameters for Speed #01
81148C to 8114AB(H) - Dedicated tx parameters for Speed #03
:
8120AC to 8120CB(H) - Dedicated tx parameters for Speed #99

5. PREVENTIVE MAINTENANCE

5.1 SPECIAL TOOLS AND LUBRICANTS

- Flash/SRAM data copy tool (P/N: H5479352)
- Flash ROM Memory Card (P/N: A2309352)

5.2 PM TABLE

Scanner/ADF **C: Clean, R: Replace**

Item	30K	60K	90K	Notes
CIS Glass	C (user)	C (user)	C (user)	Soft cloth and water
White Shading Plate	C (user)	C (user)	C (user)	Soft cloth and water
ADF Feed Roller Assembly	C (user)	R	C (user)	Soft cloth and water
ADF Separation Pad	R (user)	R (user)	R (user)	ADF Maintenance Kit

Printer

Item	30K	60K	90K	Notes
Separation Pad	C (user)	R	C (user)	Soft cloth and water
Fusing Thermistor		R		
Hot Roller Strippers		R		There are 4 of these
Hot Roller		R		
Pressure Roller (Fusing)		R		
Transfer Roller		R		
Cleaning Pad	R (user) Replaced after installing a new cartridge.			A cleaning pad is included with the cartridge.

Paper Feed Unit (Optional)

Item	30K	60K	90K	Notes
Feed Roller	C (user)	C	C (user)	Soft cloth and water
Friction Pad	C (user)	R	C (user)	Soft cloth and water

By-pass Feeder (Optional)

Item	30K	Notes
Feed Roller	C (user)	Soft cloth and water
Friction Pad	C (user)	Soft cloth and water

NOTE: The expected life of the by-pass feeder is 60K.

6. REPLACEMENT AND ADJUSTMENT

⚠WARNING

The machine contains a laser beam generator. Laser beams can cause permanent eye damage. Do not open the laser unit or look along the laser beam path while the main power is on.

⚠CAUTION

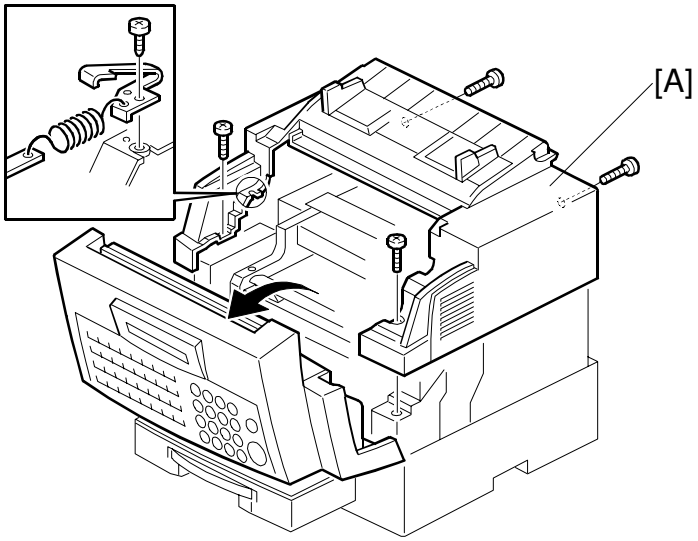
Before disassembly, be sure to print all message files in the SAF memory. Then, turn off the main switch and disconnect the power cord for safety.

⚠WARNING

Lithium Battery: The danger of explosion exists if a battery of this type is incorrectly replaced. Only replace with the same or equivalent lithium battery recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.

6.1 EXTERIOR

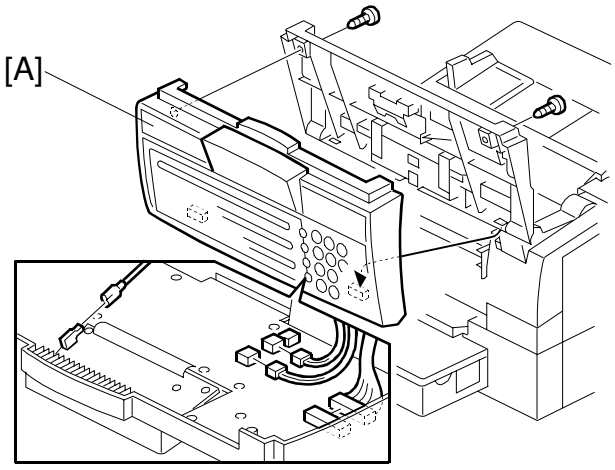
6.1.1 TOP COVER



H535R514.WMF

A: Top Cover (5 screws, 1 spring plate)

6.1.2 OPERATION PANEL

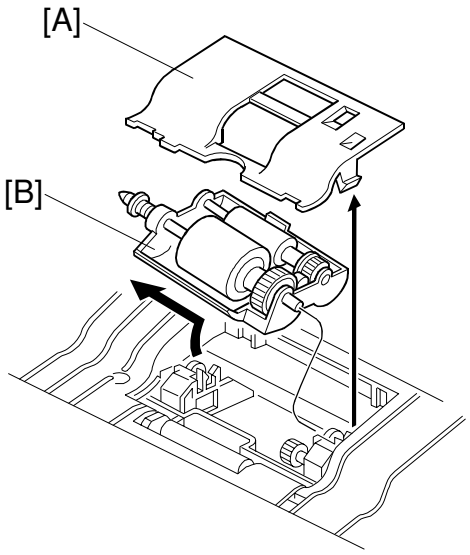


H535R101.WMF

A: Operation Panel (2 screws, 3 connectors, 1 grounding wire, and 2 hooks)

6.2 ADF

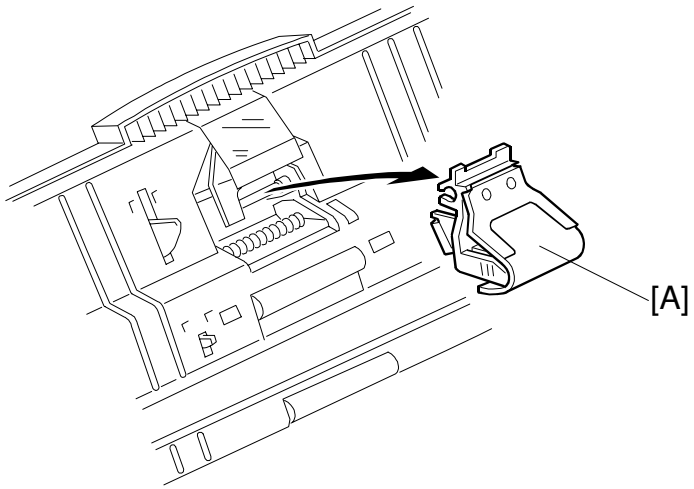
6.2.1 FEED ROLLER ASSEMBLY



H535R104.WMF

A: ADF Roller Cover (2 hooks)
B: Feed Roller Assembly

6.2.2 SEPARATION PAD

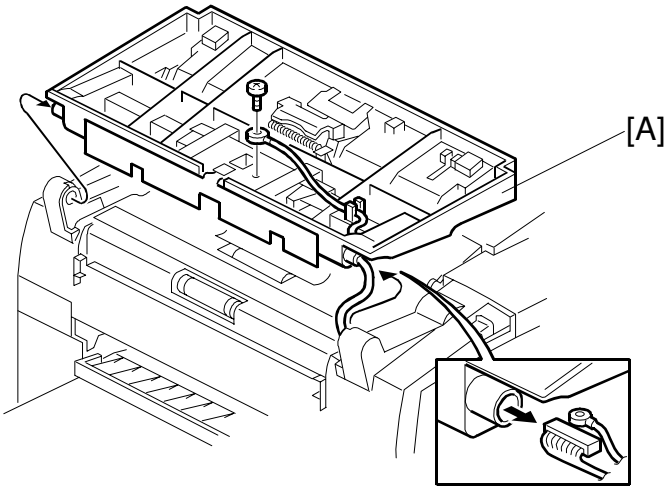


H535R103.WMF

A: Separation Pad

6.3 SCANNER

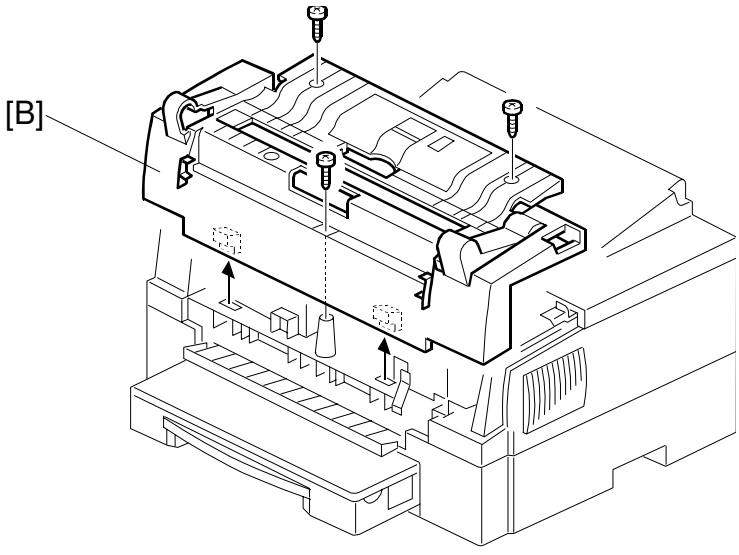
6.3.1 SCANNER UNIT ASSEMBLY



H535R102.WMF

First, remove the top cover and the operation panel (refer to section 6.1.1 and 6.1.2).

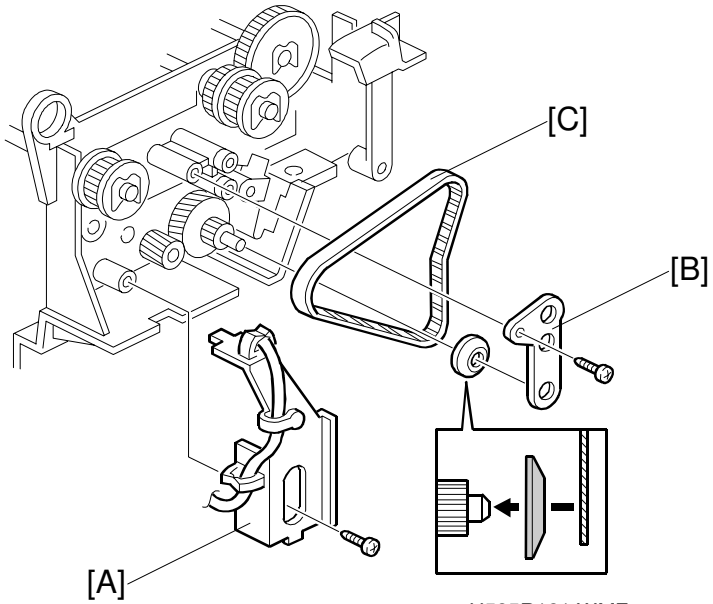
A: ADF Upper Unit (1 screw with grounding wire)



H535R105.WMF

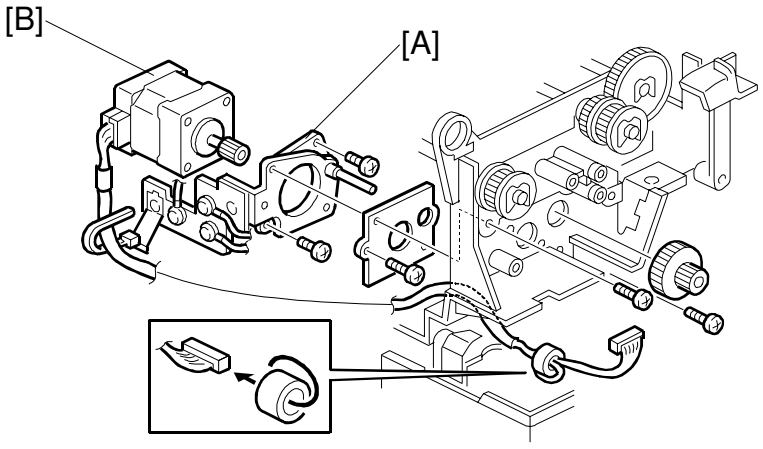
B: Scanner Cover (3 screws and 2 hooks)

6.3.2 SCANNER MOTOR



H535R121.WMF

A: Cable Holder (1 screw)
B: Scanner Belt Bracket (1 screw)
C: Scanner Belt

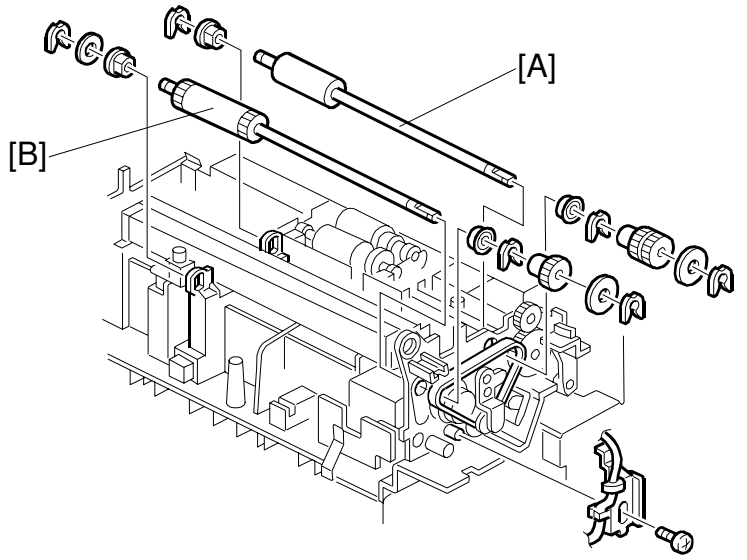


H535R122.WMF

First, remove the FCU board (refer to section 6.7.4).

A: Scanner Motor Assembly
B: Scanner Motor

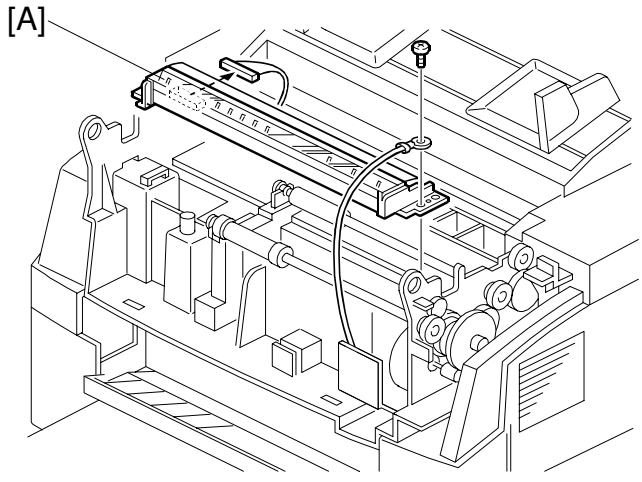
6.3.3 R1/R2 ROLLERS



H535R131.WMF

A: R1 Roller (3 plastic clips, 2 bushings, 1 belt stopper, 1 gear)
B: R2 Roller (3 plastic clips, 2 bushings, 1 belt stopper, 1 gear)

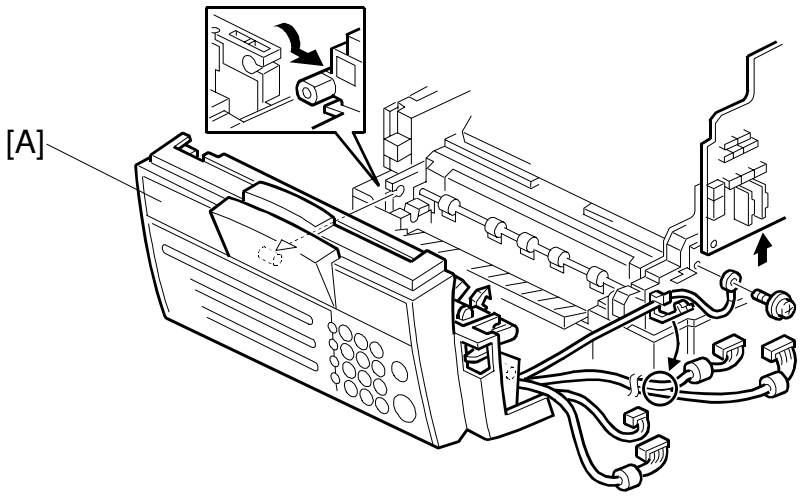
6.3.4 CONTACT IMAGE SENSOR ASSEMBLY



H535R520.WMF

A: Contact Image Sensor Assembly (1 screw, 1 connector with grounding wire)

6.3.5 SCANNER UNIT



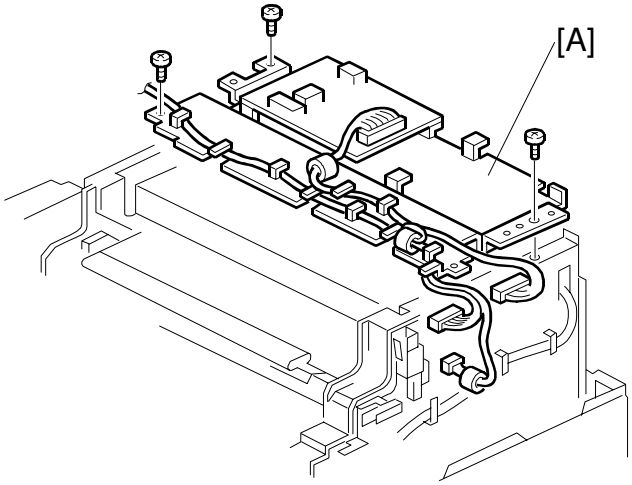
H535R106.WMF

First, remove the top cover and the FCU (refer to section 6.1.1 and 6.7.4).

A: Scanner Unit (2 hooks, 4 connectors, 1 screw with grounding wire)

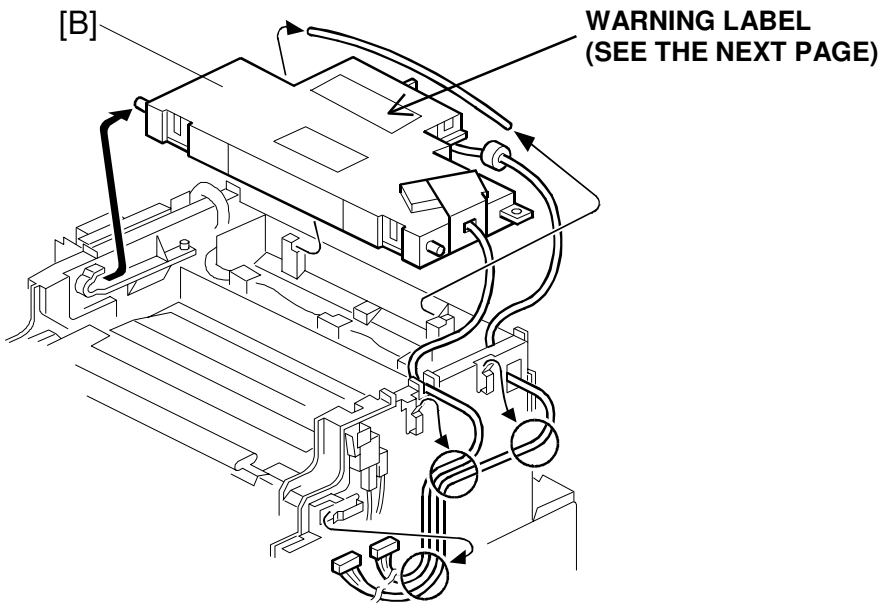
6.4 LASER PRINTING COMPONENTS

6.4.1 LASER UNIT



H535R109.WMF

First, remove the top cover and the FCU (refer to section 6.1.1 and 6.7.1), then lift the NCU bracket [A] (3 screws).

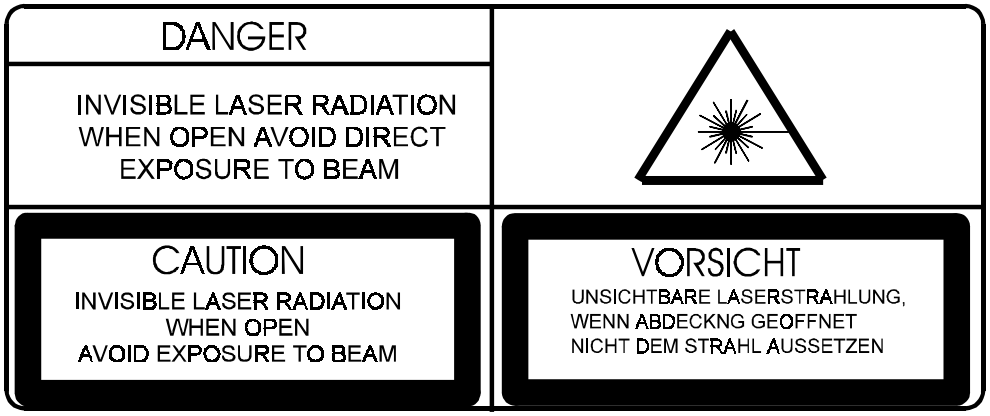


H535R110.WMF

B: Laser Unit (2 connectors, 1 spring rod)

⚠WARNING

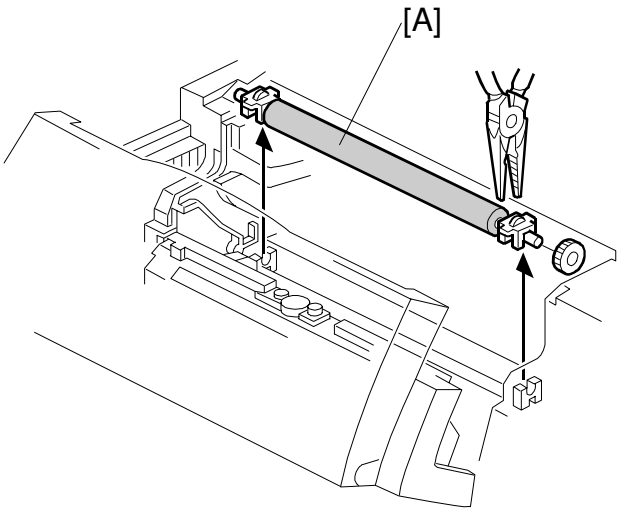
Laser beams can cause permanent eye damage. Do not open the laser unit or look along the laser beam path while the main power is on.



H535R500.WMF

6.5 DEVELOPMENT

6.5.1 TRANSFER ROLLER



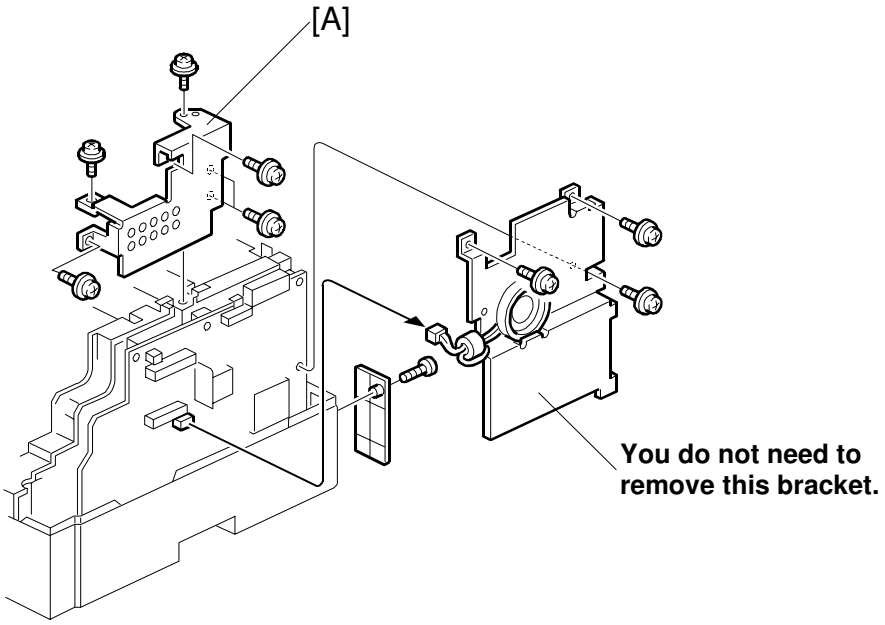
H535R525.WMF

First, open the scanner unit, then remove the cartridge.

A: Transfer Roller (1 gear, 2 clips)

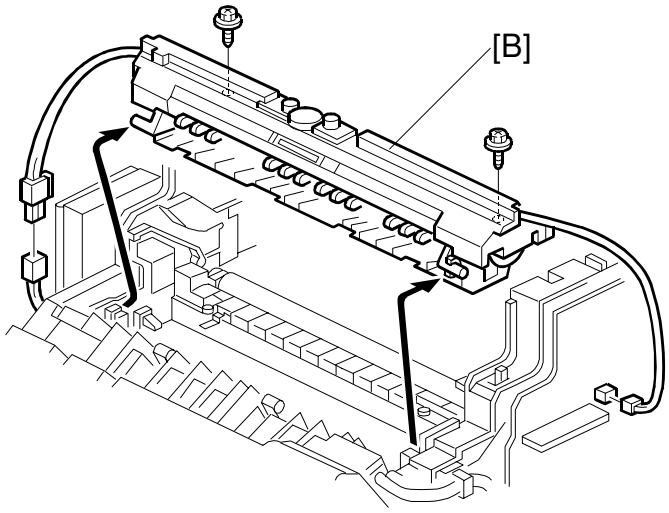
6.6 FUSING

6.6.1 FUSING UNIT



H535R107.WMF

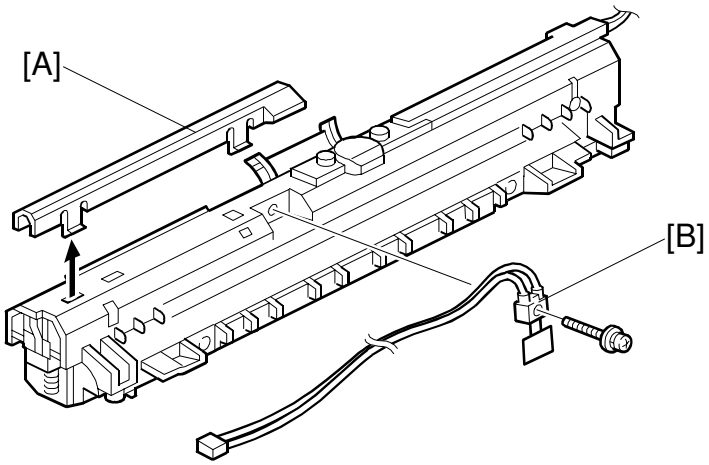
First, remove the top cover (refer to section 6.1.1), then remove the FCU cover [A].



H535R526.WMF

B: Fusing Unit (2 screws, 2 connectors)

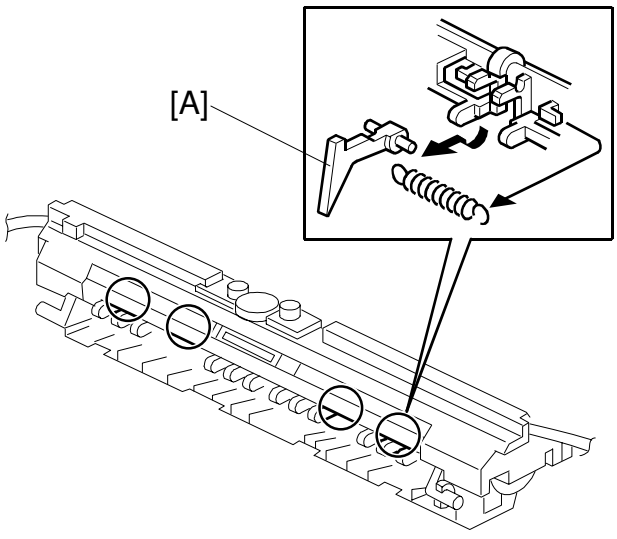
6.6.2 THERMISTOR



H535R513.WMF

A: Thermistor Cover (4 hooks)
B: Thermistor (1 screw)

6.6.3 HOT ROLLER STRIPPERS

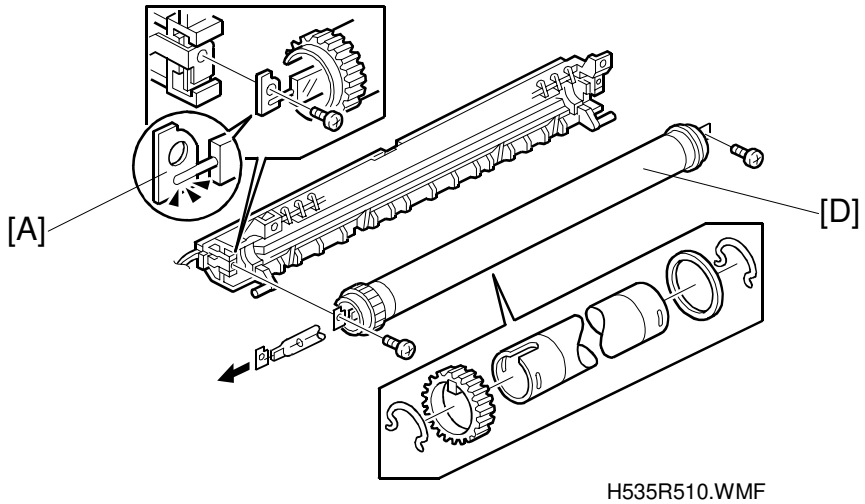


H535R528.WMF

A: Hot Roller Strippers (1 spring each)

NOTE: Be careful not to lose the springs.

6.6.4 FUSING LAMP AND HOT ROLLER

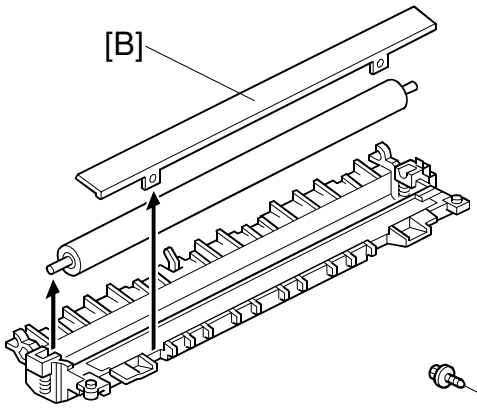


H535R510.WMF

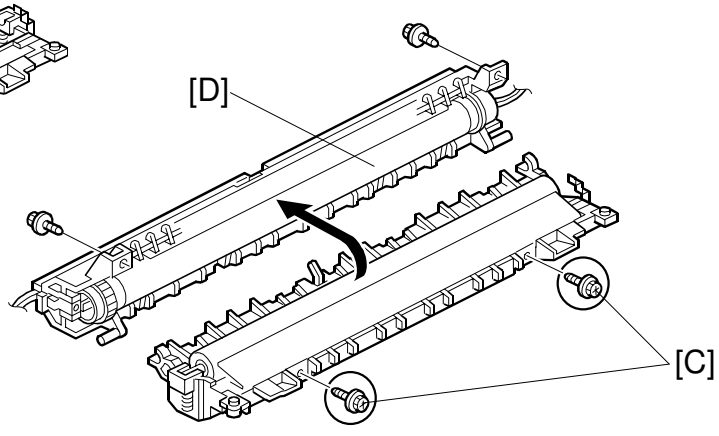
A: Fusing Lamp (2 screws)

NOTE: When installing a new fusing lamp, be sure that it is installed in the correct way around, as shown above.

⚠CAUTION
Be careful not to touch the glass surface.



H535R509.WMF

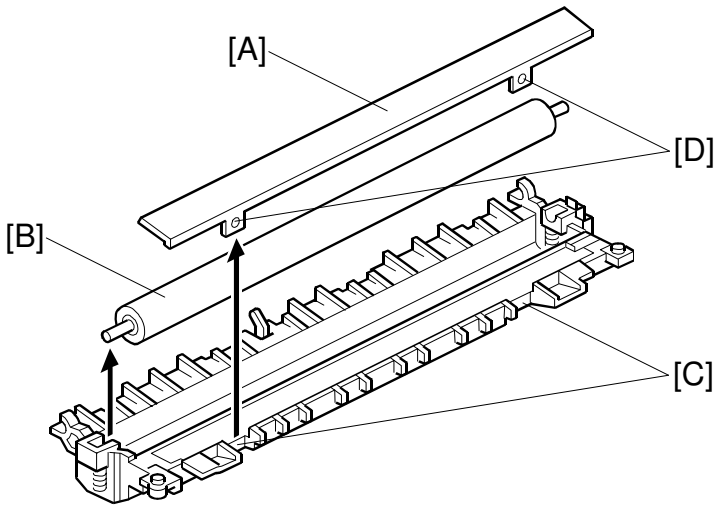


H535R512.WMF

First, remove the bracket [B] and 2 screws [C], then the fusing upper and lower units come apart.

D: Hot Roller

6.6.5 PRESSURE ROLLER



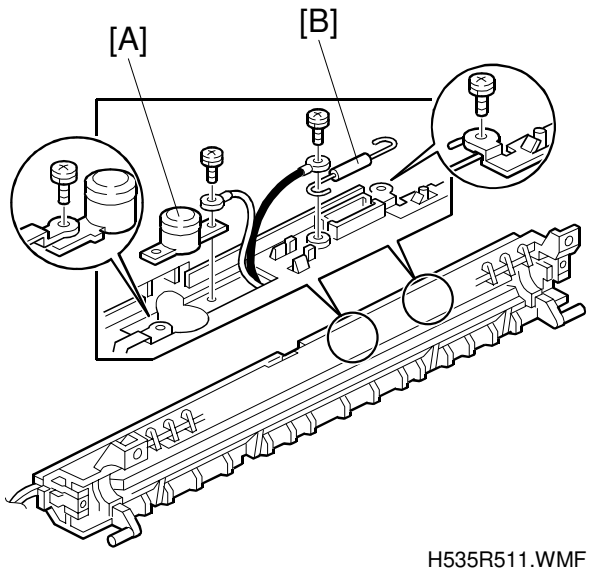
H535R509.WMF

A: Bracket (2 screws)

NOTE: Fit the projections [C] into the holes [D] when replacing this bracket.

B: Pressure Roller

6.6.6 THERMOSTAT AND THERMOFUSE

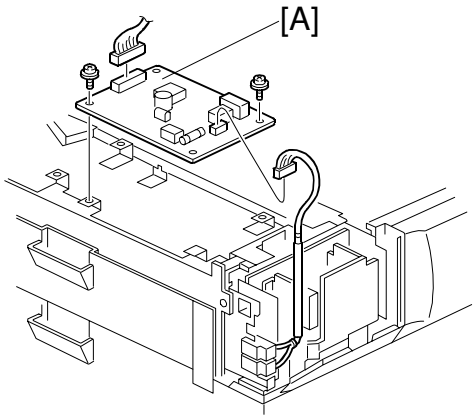


H535R511.WMF

A: Thermostat (2 screws)
B: Thermofuse (2 screws) - Europe model only

6.7 PCBS

6.7.1 NCU

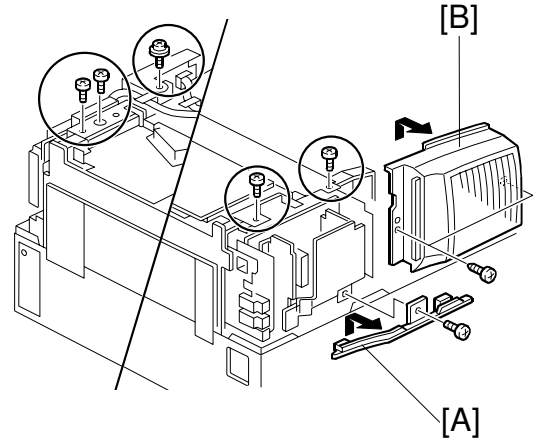


H535R111.WMF

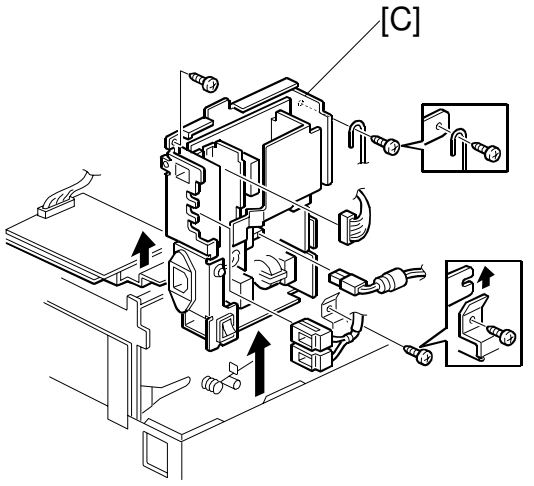
First, remove the top cover (refer to section 6.1.1).

A: NCU (2 screws, 2 connectors)

6.7.2 PSU



H535R112.WMF



H535R113.WMF

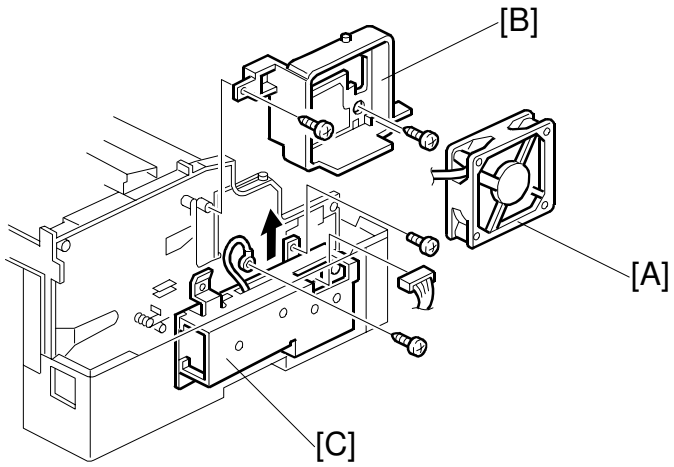
First, remove the top cover (refer to section 6.1.1).

Then remove the small cover [A] and the fan cover [B].

Loosen 5 screws.

C: PSU (3 screws, 2 connectors)

6.7.3 POWER PACK

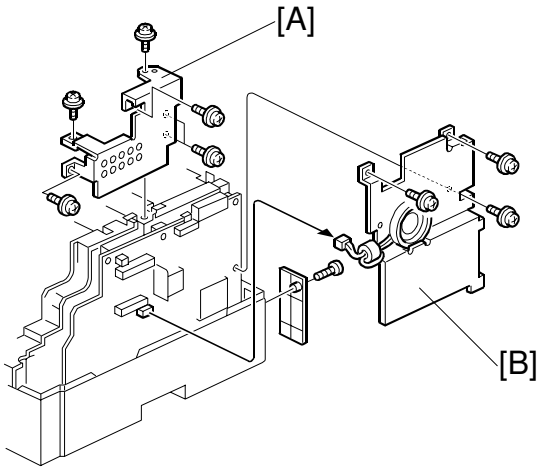


H535R932.WMF

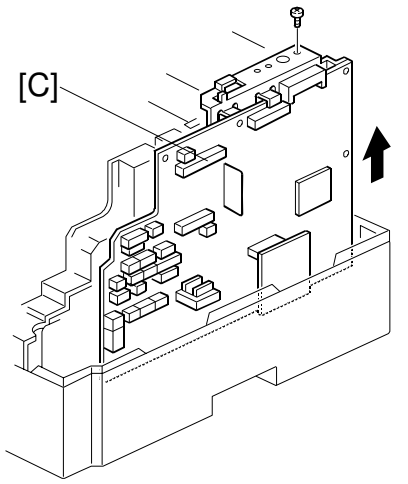
First, remove the PSU (refer to section 6.7.2).

A: Fan Motor
B: Fan Duct (2 screws)
C: Power Pack (1 screw, 1 screw with grounding wire, 1 connector)

6.7.4 FCU



H535R107.WMF



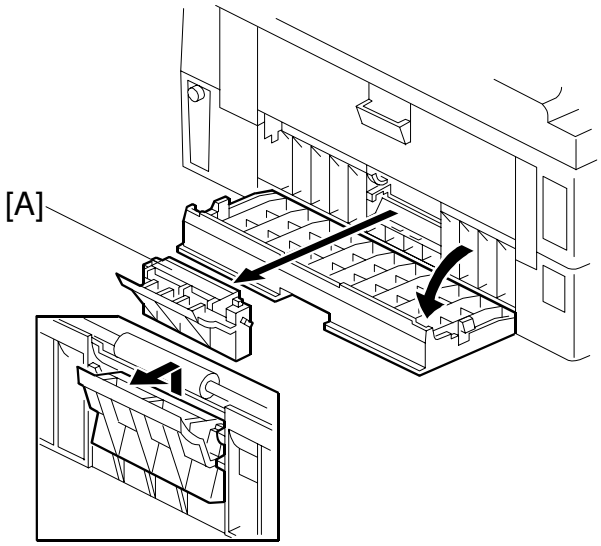
H535R108.WMF

First, remove the top cover (refer to section 6.1.1).

A: FCU Cover (6 screws)
B: Speaker Bracket (3 screws, 1 connector)
C: FCU (1 screw, 20 connectors)

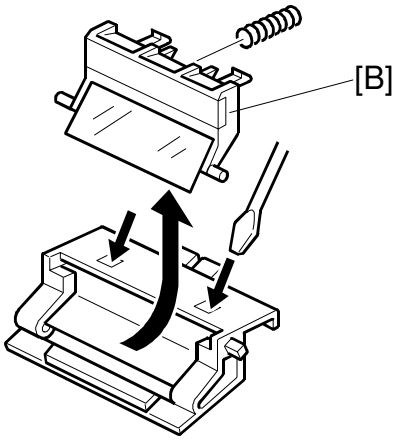
6.8 PAPER FEED

6.8.1 SEPARATION PAD



H535R507.WMF

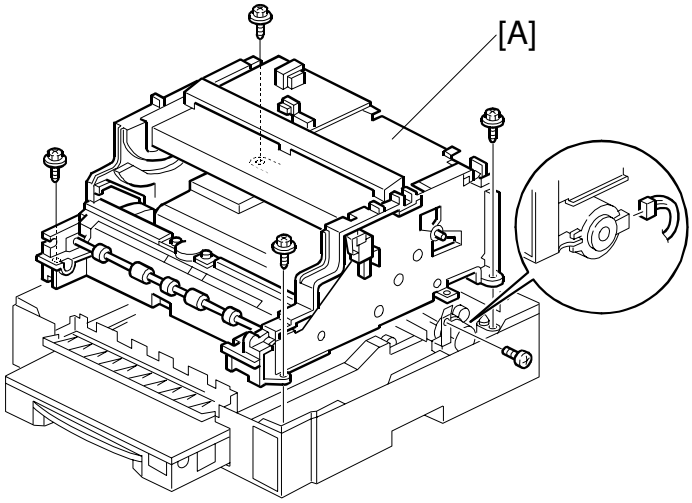
A: Separation Pad Assembly



H535R114.WMF

B: Separation Pad

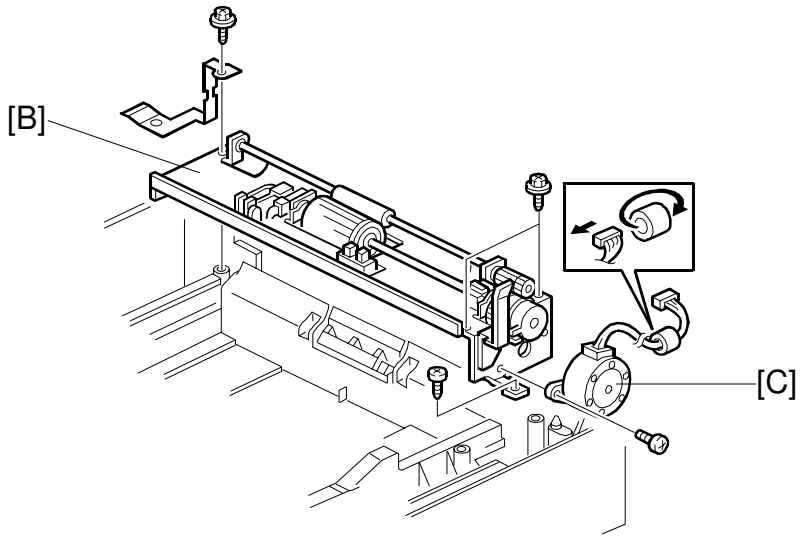
6.8.2 PAPER FEED UNIT ASSEMBLY AND PAPER FEED MOTOR



H535R132.WMF

First remove the FCU, PSU and Power Pack (refer to section 6.7).

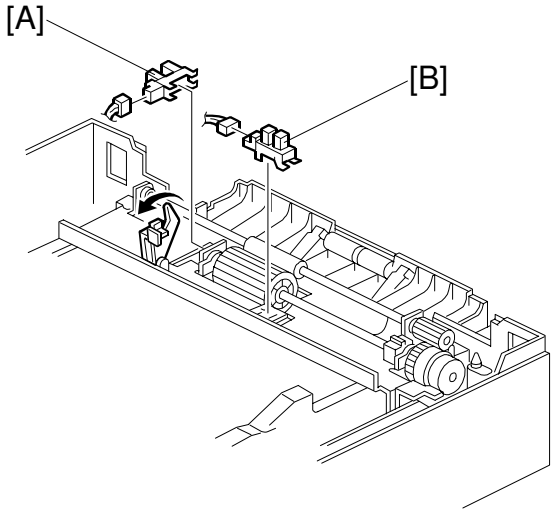
A: Main Frame (5 screws, 1 connector)



H535R133.WMF

B: Paper Feed Unit Assembly (4 screws)
C: Paper Feed Motor (1 screw)

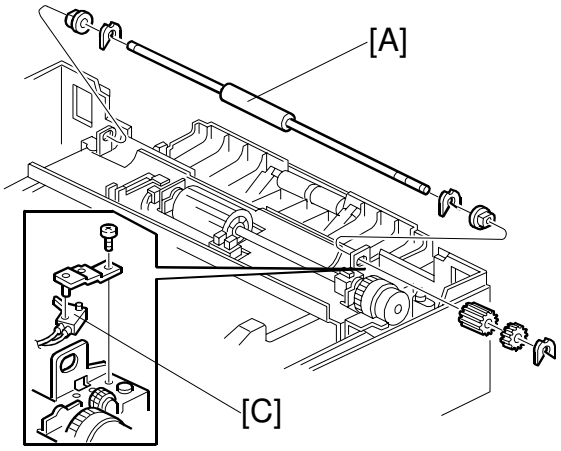
6.8.3 PAPER END SENSOR AND REGISTRATION SENSOR



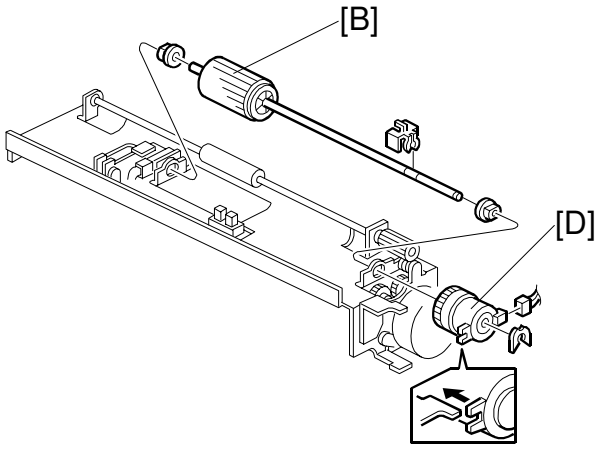
H535R533.WMF

A: Paper End Sensor (1 connector)
B: Registration Sensor (1 connector)

6.8.4 PAPER FEED ROLLER/CLUTCH AND TRANSPORT ROLLER



H535R544.WMF



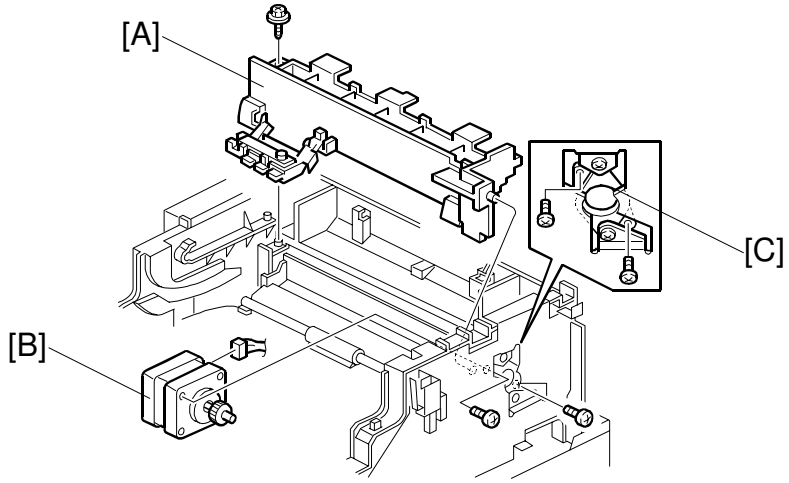
H535R536.WMF

First, remove the Paper Feed Unit Assembly (refer to section 6.8.2).

A: Transport Roller (3 plastic clips, 2 bushings, 2 gears)
B: Paper Feed Roller (1 clip, 1 bushing, 2 plastic clips)
C: Rear Cover Sensor (1 screw)
D: Paper Feed Clutch (1 E-ring, 1 connector)

6.9 OTHERS

6.9.1 MAIN MOTOR



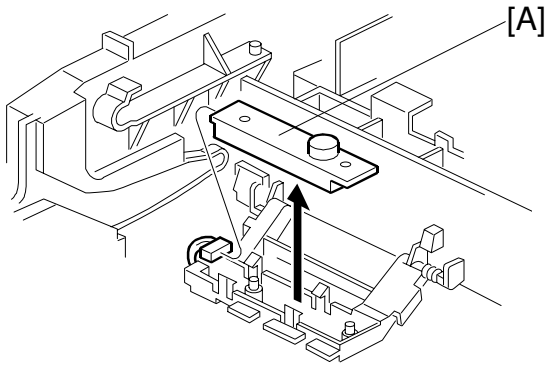
H535R537.WMF

First, remove the Top Cover (refer to section 6.1.1), then remove the Laser Unit (refer to section 6.4.1) and the FCU (refer to section 6.7.4).

A: Stay (1 screw)
B: Main Motor (2 screws)

NOTE: Do not remove the damper [C], because it is factory adjusted.

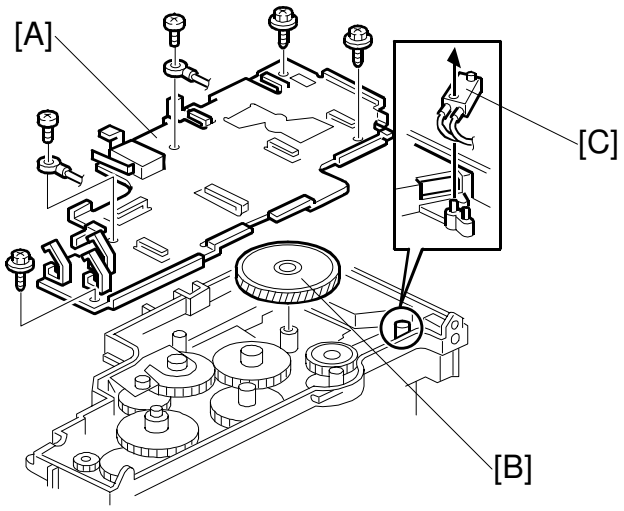
6.9.2 TONER END SENSOR



H535R541.WMF

A: Toner End Sensor

6.9.3 REGISTRATION ROLLER



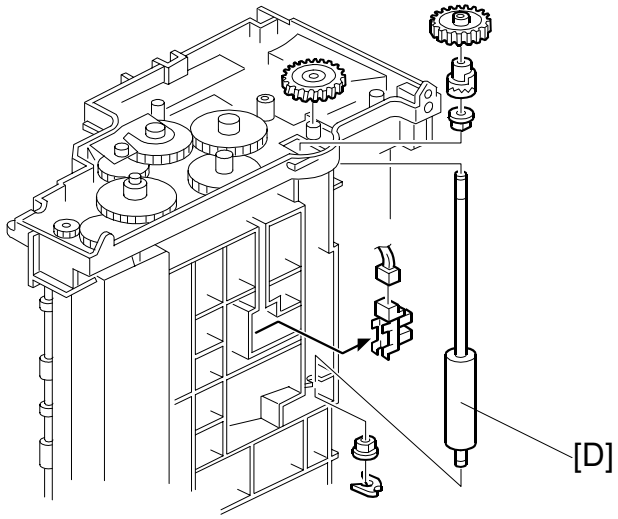
H535R134.WMF

First, remove the FCU, PSU and Power Pack (refer to section 6.7).

Then, remove the main frame (refer to section 6.8.2).

A: Right Bracket (5 screws, 2 grounding wires)

NOTE: When replacing the Right Bracket [A], do not forget to put back the coupled gear [B] and microswitch [C].



H535R539.WMF

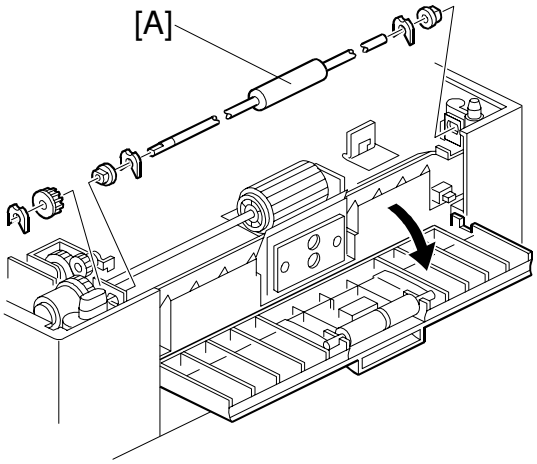
Remove the Rear Lower Cover, and then stand the Main Frame on its side, as shown.

NOTE: Do not let the gears drop while standing the Main Frame on its side.

D: Registration Roller (1 coupled gear, 1 gear, 2 bushings, 1 plastic clip, and a one-way clutch gear)

6.10 PAPER FEED UNIT (OPTIONAL)

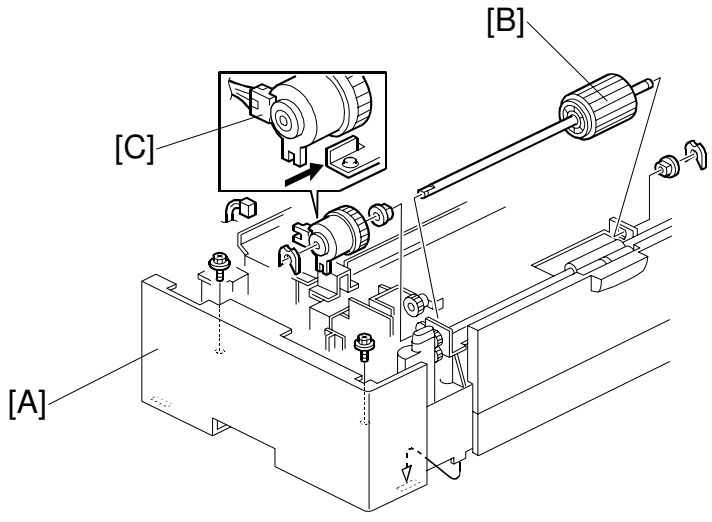
6.10.1 TRANSPORT ROLLER



H535R502.WMF

A: Transport Roller (3 plastic clips, 2 bushings, 1 gear)

6.10.2 PAPER FEED ROLLER AND PAPER FEED CLUTCH



H535R501.WMF

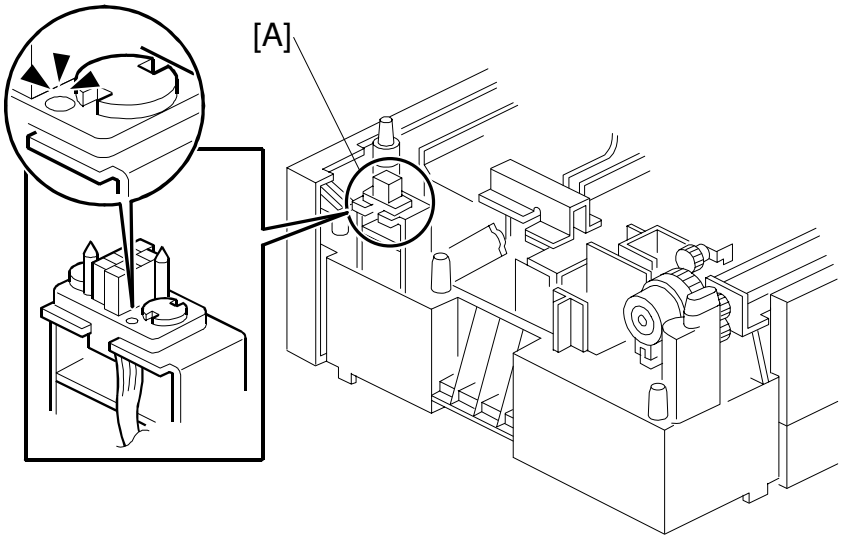
First, remove the FCU, PSU and Power Pack (refer to section 6.7).

Then, remove the main frame (refer to section 6.8.2).

A: Right Cover (2 screws)
B: Paper Feed Roller (2 plastic clips, 2 bushings)
C: Paper Feed Clutch (1 connector)

NOTE: Make sure that the paper feed roller shaft rotates clockwise when viewed from the right of the machine.

6.10.3 CONNECTOR



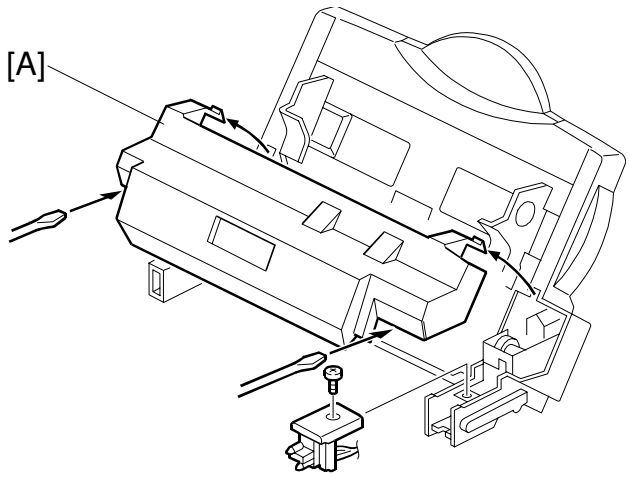
H535R503.WMF

A: Connector (2 clips)

NOTE: When installing the connector [A], the side with the small hole must face the outside of the machine.

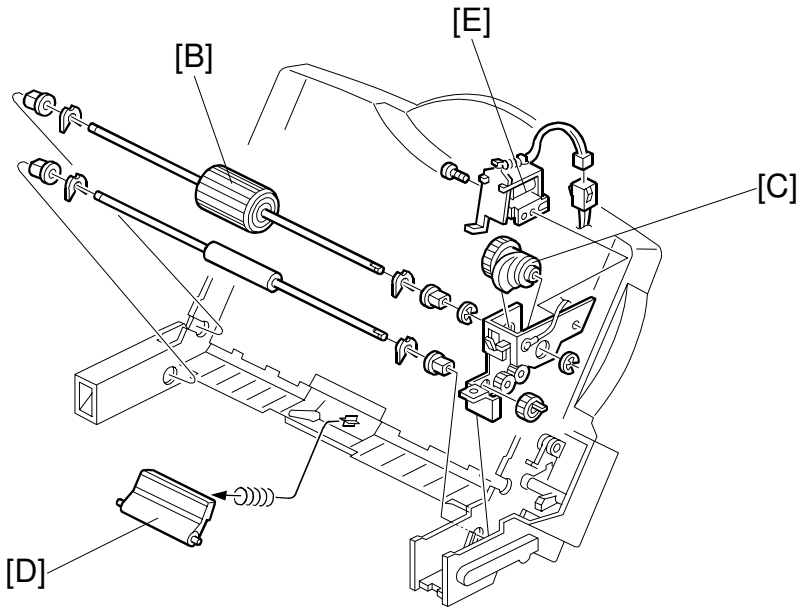
6.11 BY-PASS FEEDER (OPTIONAL)

6.11.1 PAPER FEED ROLLER, SEPARATION PAD, PAPER FEED CLUTCH AND SOLENOID



H535R504.WMF

A: Top Cover Assembly (1 screw, 6 hooks)

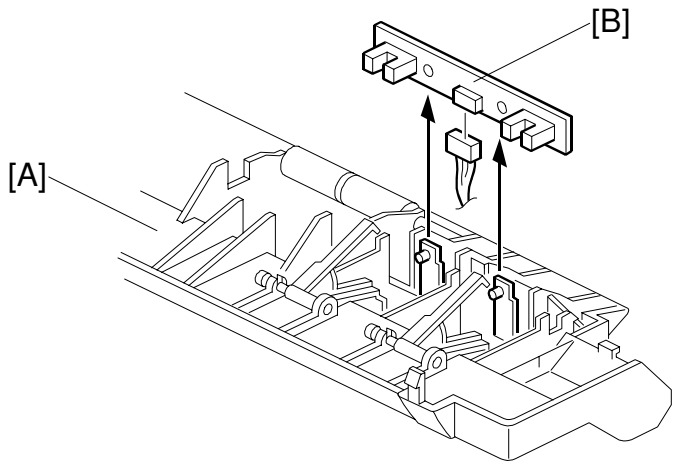


H535R506.WMF

B: Paper Feed Roller (3 plastic clips, 1 bushing, 1 E-ring)
C: Paper Feed Clutch
D: Separation Pad (1 spring)
E: Solenoid (1 screw)

NOTE: Make sure that the paper feed roller shaft rotates clockwise when viewed from the left of the machine.

6.11.2 PCB

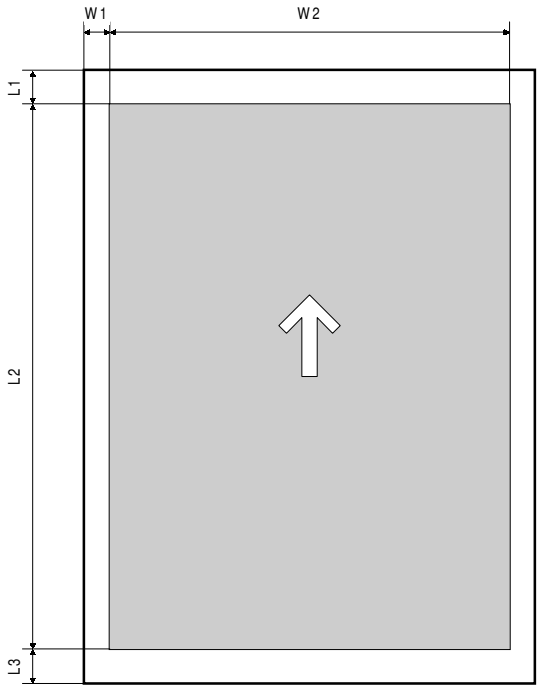


H535R505.WMF

A: Top Cover Assembly (1 screw, 6 hooks) – then turn it over
B: PCB (1 connector)

6.12 IMAGE ADJUSTMENT

6.12.1 OVERVIEW



H535R650.WMF

This section explains how to adjust the scanning and printing parameters. Among these are the margin parameters shown in the diagram below, which are named in accordance with the following table.

Parameters	Description	Adjustable by	
		Scanning	Printing
W1	Left margin	Adjustable	Adjustable
W2	Print/Scan width	Not adjustable	Not adjustable
L1	Top margin	Adjustable	Adjustable
L2	Print/Scan length	Not adjustable	Not adjustable
L3	Bottom margin	Adjustable	Not adjustable

⚠CAUTION

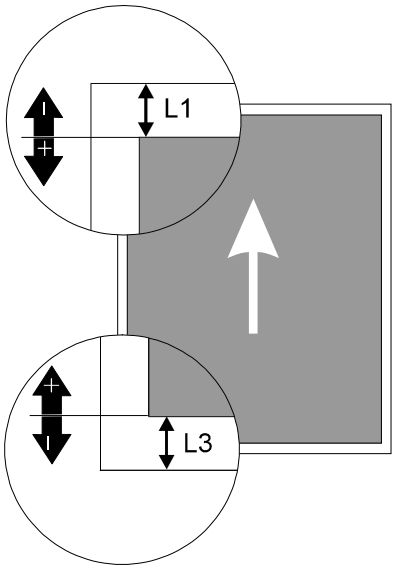
The factory settings may not be the same as the "Initial settings" described in the following procedures. The RAM reset level 0 will reset all the scan and print margin parameters to the "Initial settings."

6.12.2 SCANNER PARAMETERS

1. Contrast

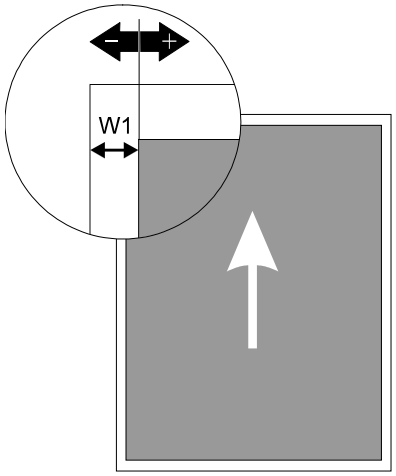
	Text Mode		Halftone Mode	
	Address	Initial Setting	Address	Initial Setting
Auto	800CE5(H)	11(H)	800CE9(H)	0B(H)

2. Margins

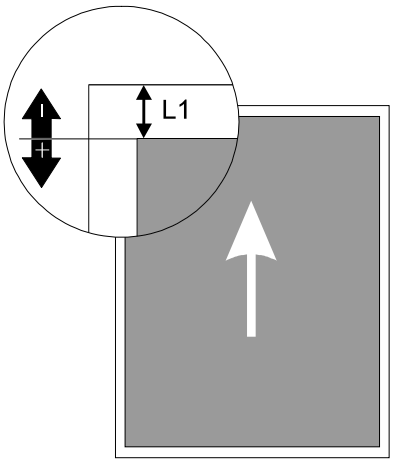
Parameter	Formula	RAM Address	Unit	Initial Setting
W1	Not adjustable			
W2	Not adjustable			
L1	 H535R651.WMF This parameter changes the number of scanner motor steps after the scan line sensor is activated. To increase the margin by x mm: **New setting = Current setting + 7.7x** To decrease the margin by x mm: **New setting = Current setting – 7.7x**	**800826(H) (low)** **800827(H) (high)**	$\frac{1}{7.7}mm$	**00AE(H)**
L2	Not adjustable			
L3	This parameter changes the number of scanner motor steps after the scan line sensor is activated. To increase the margin by x mm: **New setting = Current setting +7.7x** To decrease the margin by x mm: **New setting = Current setting –7.7x**	**800828(H) (low)** **800829(H) (high)**	$\frac{1}{7.7}mm$	**0123(H)**

6.12.3 PRINTER PARAMETERS

1. Margins (Main Scan Direction)

Parameter	Formula	RAM Address	Unit	Initial Setting
W1	 H535R648.WMF To increase the margin by x mm: **New setting = Current setting + x/0.5** To decrease the margin by x mm: **New setting = Current setting – x/0.5** When the user sets the margin in the main scan direction with a User Function, the margin is added to this setting.	Standard cassette: 800455(H) Optional paper feed unit: 800456(H) Optional by-pass feeder: 80045A(H)	0.5 mm	07(H) 07(H) 07(H)
W2	Not adjustable			

2. Margins (Sub Scan Direction)

Parameter	Formula	RAM Address	Unit	Initial Setting
L1	 H535R562.WMF To increase the margin by x mm: **New setting = Current setting + x/0.32** To decrease the margin by x mm: **New setting = Current setting – x/0.32** When the user sets the margin in the sub- scan direction with a User Function, the margin is added to this setting (unit of 0.64 mm).	Standard cassette: 800449(H) Optional paper feed unit: 80044A(H) Optional by pass feeder: 80044E(H)	0.32 mm	07(H) 07(H) 07(H)
L2	Not adjustable			
L3	Not adjustable			

6.12.4 SCANNER VIDEO PROCESSING PARAMETERS

The tables in the following pages show the video processing parameter settings for each scanning mode.
One byte of parameters is assigned for each mode (text or halftone), and they all have the same definitions as follows:

MTF/Edge Detection/Edge Enhancement

Bit No.	FUNCTION	COMMENTS
0-3	Not used	Do not change the settings.
4	MTF 0: On 1: Off	This bit is for text mode only. 0: Enhances the thickness of thin lines and dots, but also makes dust more obvious. 1: Thin lines may not reproduce clearly.
5	Edge enhancement 0: Off 1:On	This bit is for halftone mode only. 0: Suitable for photo originals. 1: Suitable for originals with photo and text. The edges of text become much sharper, but moiré might appear in photo areas.
6	Edge detection 0: On 1: Off	This bit is for halftone mode only. 0: Suitable for most photo originals. 1: The image becomes lighter, and thin lines become paler.
7	Not used	Do not change the settings.

Mode		Address	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Text	AID on	800CED(H)	0	1	0	0	0	0	0	0
Halftone	AID off	800CF5(H)	1	0	1	0	1	1	1	1

AID: Auto Image Density

NOTE: Do not change bits in the shaded part of the table.

MTF Algorithm

Bit No.	FUNCTION	COMMENTS
0-4	Not used	Do not change the settings.
5-6	MTF algorithm **Bit 6 5 Setting** 0 0 High on main and sub scan 0 1 Low on main and sub scan 1 0 High on sub scan 1 1 Low on sub scan	The ”high” setting enhances the thickness of thin lines and dots more than the “low” setting, however it also makes dust more obvious.
7	Not used	Do not change the settings.

Mode		Address	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Text	AID on	800CEE(H)	1	0	1	1	0	0	0	0
Halftone	AID off	800CF6(H)	1	0	0	1	0	0	0	0

AID: Auto Image Density

NOTE: Do not change bits in the shaded part of the table.

Background Detection Threshold

Bit No.	FUNCTION	COMMENTS
0-1	Not used	Do not change the settings.
2	Background detection threshold 0: Low 1: High	This bit is for text mode only. 0: Suitable for originals that have dark background. 1: The text thickness is enhanced, however dust becomes more obvious.
3-7	Not used	Do not change the settings.

Mode		Address	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Text	AID on	800CF0(H)	1	0	0	0	1	0	0	0
Halftone	AID off	800CF8(H)	1	0	0	0	0	0	0	0

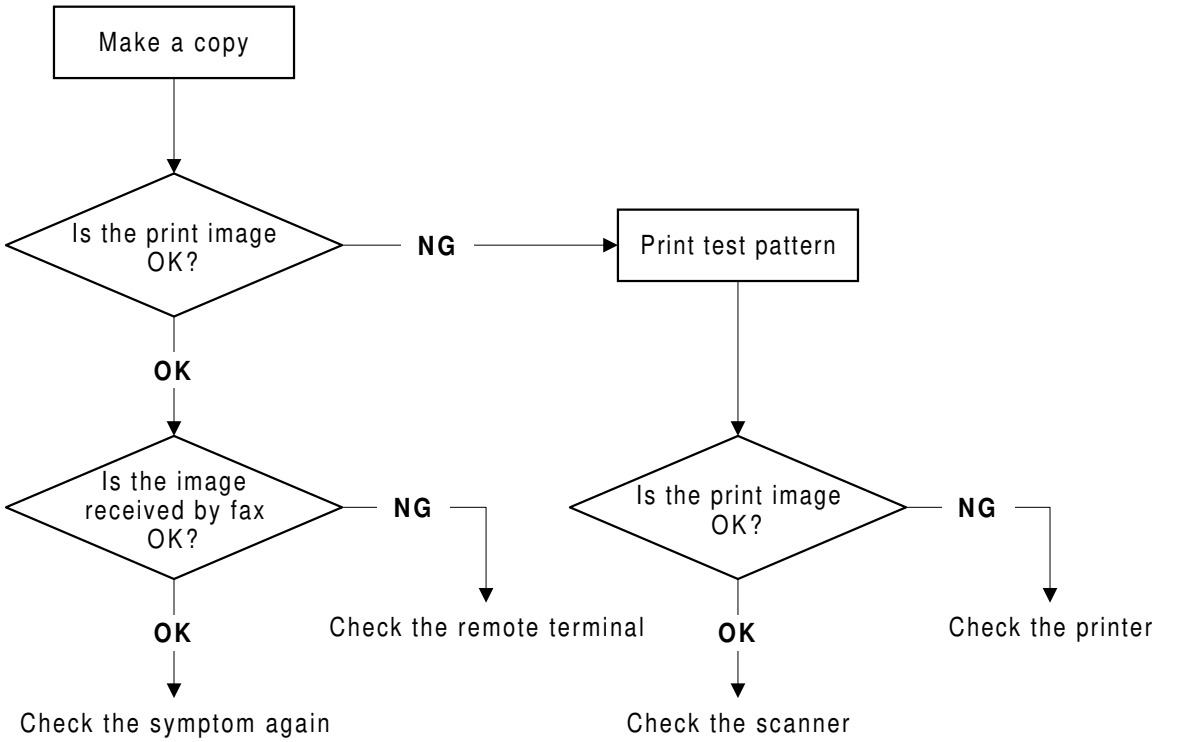
AID: Auto Image Density

NOTE: Do not change bits in the shaded part of the table.

7. TROUBLESHOOTING

7.1 COPY QUALITY TROUBLESHOOTING

If there is a copy quality problem that cannot be solved easily, try using the following troubleshooting procedures, while referring to the point-to-point diagram. The procedures may not be exhaustive, but they may help you to find the problem.



H535T501.WMF

First, distinguish whether the problem is caused by the remote terminal or by your machine. If your machine causes the problem, determine whether it is due to a scanner or printer problem.

7.1.1 BLANK COPIES

Possible Cause (Printer)

- Poor drum sensitivity.
- Laser optic components are out of position.
- The proper bias voltages are not applied to the toner application roller and/or the development roller.
- The proper current is not applied to the transfer roller.

Action:

1. Print a test pattern, and open the cover in the middle of printing.
2. Check to see if there is toner adhered to the drum surface.
   If there is, do the following. If not, go to step 3.
   - Check to see if the cartridge is correctly installed.
   - Check to see if the transfer roller is correctly positioned.
3. Check if there is toner on the surface of the development roller.
   If there is, do the following. If not, go to step 4.
   - Check to see if the laser optic components are properly positioned.
4. Check to see if the cartridge is empty. If it is, replace the cartridge.
   If not, do the following.
   - Check the connection between the FCU (CN13) and the toner end sensor
   - Replace the toner end sensor.

7.1.2 BLACK COPIES

Possible Cause (Scanner)

- The contact image sensor is defective.

Action:

1. Check the connection between the FCU (CN8) and the contact image sensor.
2. Replace the contact image sensor.

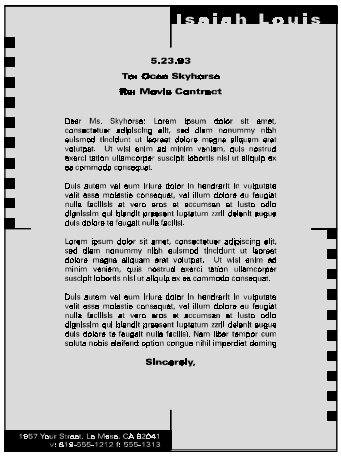
Possible Cause (Printer)

- The charge is incorrectly applied.

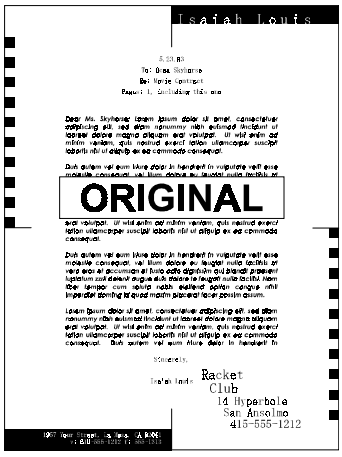
Action:

1. Check the connections between the power pack, the charge voltage terminals, and the cartridge.
   - If they are OK, go to step 2.
   - If not, fix the connections.
2. Check the connections behind the power pack.

7.1.3 DIRTY BACK GROUND



H535T502.WMF



H535T503.WMF

Possible Cause (Scanner)

- Scanner shading correction error or incorrect threshold.

Action:

1. Clean the shading white plate.
2. Adjust the scanner contrast threshold settings.

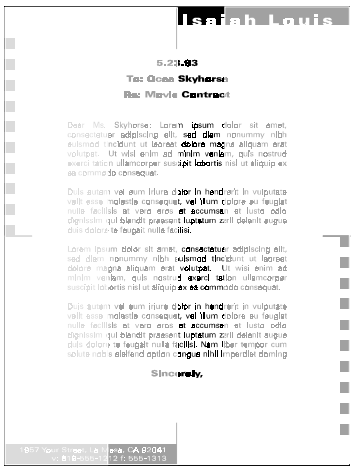
Possible Cause (Printer)

- Poor drum sensitivity.
- The charge is incorrectly applied.
- The hot roller is dirty.

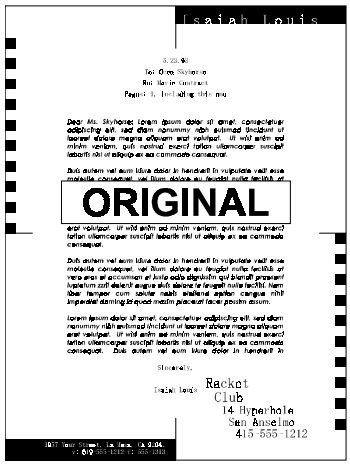
Action:

1. Try replacing the cartridge.
2. Check to see if the hot roller surface is dirty.
   - If it is, clean the roller or replace the cleaning pad.
   - If not, go to step 3.
3. Check whether all connections between the charge bias terminals and the cartridge are correct.
   - If they are, check or replace the power pack.
   - If they are not, fix the connections.

7.1.4 UNEVEN IMAGE DENSITY



H535T504.WMF



H535T503.WMF

Possible Cause (Scanner)

- Dirty exposure glass
- Partial scanner lamp defect

Action

- Clean the exposure glass of the image sensor.
- Replace the image sensor.

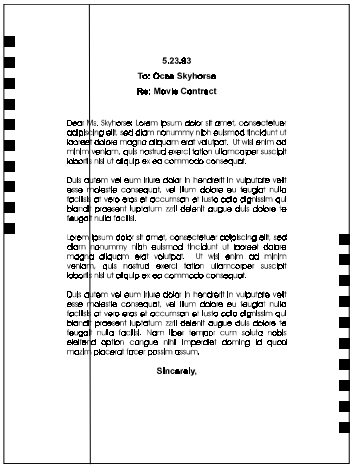
Possible Cause (Printer)

- Poor drum sensitivity.
- Dirty laser optic components.
- A deformed toner metering blade.
- Uneven toner supply in the toner hopper.

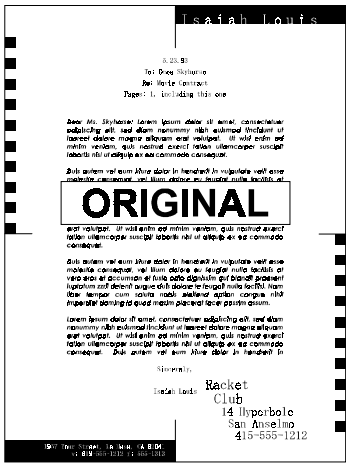
Action:

1. Print a solid black test pattern, and open the cover in the middle of printing.
2. If the image is lighter in the center of the image, the toner may be low. Replace the cartridge. If it is not, go to step 3.
3. Check to see if the toner is evenly distributed on the drum.
   - If it is not, check the cartridge and the laser optic components.
   - If it is, check if there is any dirt on the transfer roller surface.

7.1.5 VERTICAL BLACK LINES



H535T505.WMF



H535T503.WMF

Possible Cause (Scanner)

- Defective contact image sensor element(s).
- Dirt or dust on the exposure glass.
- Dirty white plate in the ADF.

Action:

1. Clean the exposure glass and the shading white plate.
2. Replace the contact image sensor.

Possible Cause (Printer)

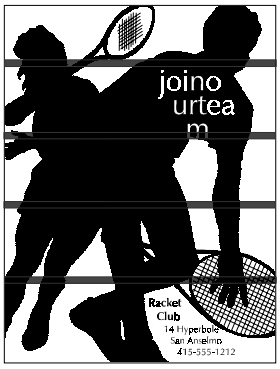
- Damaged cleaning blade.
- Dirty hot roller stripper(s).

Action:

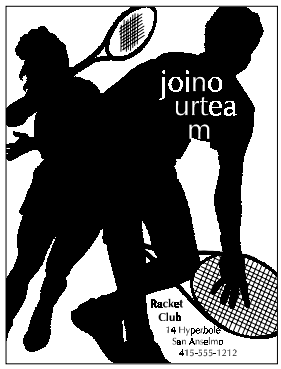
1. Replace the cartridge.
2. Clean the hot roller strippers.

Trouble-shooting

7.1.6 HORIZONTAL BLACK LINES



H535T506.WMF



H535T507.WMF

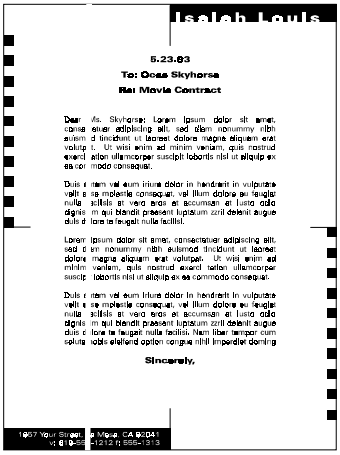
Possible Cause (Printer)

- The drum surface is scratched or damaged.

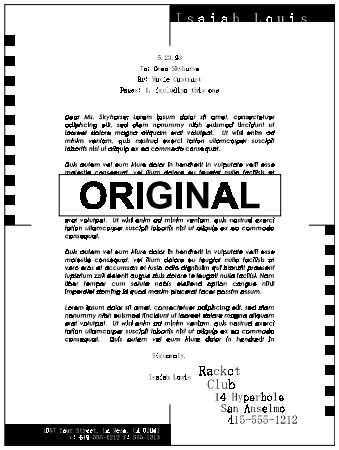
Action:

1. Check to see if the surface of the drum is damaged.
   - Change the cartridge if damaged.

7.1.7 VERTICAL WHITE LINES



H535T508.WMF



H535T503.WMF

Possible Cause (Scanner)

- Defective image sensor element(s).

Action:

- Replace the image sensor.

Possible Cause (Printer)

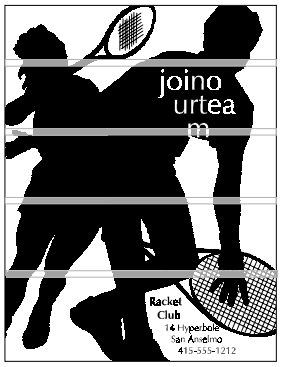
- The laser optic components are dirty.
- The hot roller stripper scrapes off toner from the print paper.
- Damaged cleaning blade.

Action:

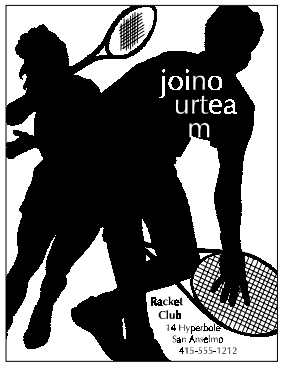
- Clean the laser optic components.
- Check the hot roller stripper mechanism. Clean the strippers and replace them if damaged.
- Replace the cartridge.

Trouble-shooting

7.1.8 HORIZONTAL WHITE LINES



H535T509.WMF



H535T507.WMF

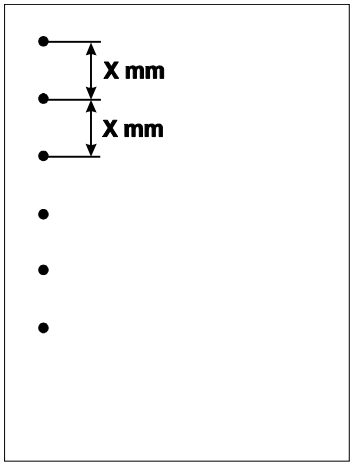
Possible Cause (Printer)

- A damaged or deformed development roller surface.
- The development bias is unstable.
- The transfer current is unstable.

Action:

1. Print a test pattern, and open the cover in the middle of printing.
2. Check to see if horizontal white lines (where toner is not adhered) appear on the drum surface or not.
   - If not, check the transfer roller surface and the transfer bias terminal connections. If they are OK, check or replace the power pack.
   - Change the cartridge.

7.1.9 BLACK DOTS/SPOTS



H535T510.WMF

Possible Cause (Scanner)

- Dust on the exposure glass.

Action:

- Clean the exposure glass.
- Try disabling MTF (See section 6-12-4).

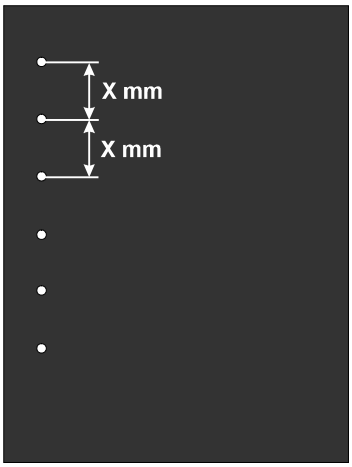
Possible Cause (Printer)

- The drum surface is damaged (this is likely if the dots appear at 75.4 mm intervals).

Action:

- Replace the cartridge.

7.1.10 WHITE SPOTS IN BLACK IMAGE AREAS



H535T511.WMF

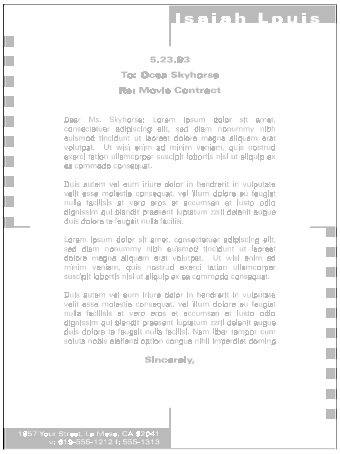
Possible Cause (Printer)

- The drum surface is damaged (this is likely if the dots appear at 75.4 mm intervals).
- The development roller surface is damaged (this is likely if the dots appear at 36.7 mm intervals).
- The toner application roller surface is damaged (this is likely if the dots appear at about 28.5 mm intervals).

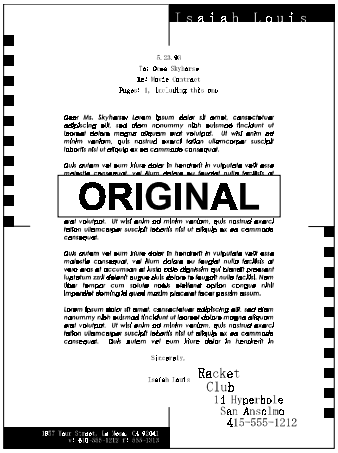
Action:

- Replace the cartridge.

7.1.11 FAINT COPIES



H535T512.WMF



H535T503.WMF

Possible Causes (Scanner)

- Dirty shading plate and/or exposure glass
- Incorrect scan threshold
- Contact image sensor (LED, sensor element) defect

Action:

- Clean the white plate in the ADF.
- Adjust the scan threshold settings (See Section 6-12-4).
- Replace the image sensor.

Possible Causes (Printer)

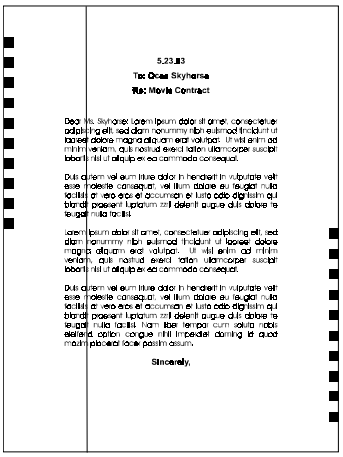
- Poor drum sensitivity.
- Dirty laser optic components.
- Incorrect development/ transfer bias
- Low toner
- Low fusing temperature

Action:

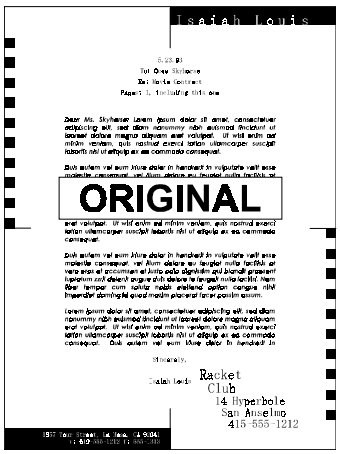
1. Print a test pattern, and open the cover in the middle of printing.
2. Check to see if the toner on the paper at the entrance of the fusing unit appears faint.
   - If it does, check or replace the fusing lamp, thermistor, and PSU.
   - If it does not, go to step 3.
3. Check to see if the toner on the drum looks faint.
   - If it does, go to step 4.
   - If it does not, check the contacts between the transfer bias terminals and power pack.
4. Check all the contacts between the development and toner application rollers' bias terminals.
   - If it does not, try replacing the cartridge.

Trouble-shooting

7.1.12 VERTICAL BLACK BAND



H535T505.WMF



H535T503.WMF

Possible Cause (Printer)

- A deformed, damaged, or incorrectly positioned toner metering blade.

Action:

- Replace the cartridge.

7.1.13 UNFUSED COPIES

Possible Cause (Printer)

- The thermistor is defective.
- The spring mechanism for the fusing pressure roller is defective.
- Incorrect toner type.
- Non-recommended paper type.

Action:

1. Check that the correct type of paper and toner are in use.
   - If it is, go to step 2.
   - If not, use recommended types of paper and toner.
2. Try replacing the fusing lamp and the hot and/or pressure roller.

7.1.14 GHOST IMAGE

Possible Cause (Printer)

- Poor drum sensitivity.
- The cleaning blade is deformed or incorrectly positioned.
- Dirty hot roller

Action:

- Replace the cartridge.
- Clean the hot roller surface and/or replace the cleaning pad.

7.1.15 TONER ON THE BACK OF THE PRINTER PAPER

Possible Cause (Printer)

- Dirty transfer roller
- Dirty fusing pressure roller

Action:

1. Check to see if the transfer roller is dirty with toner.
   - If it is, clean the roller surface by copying a sheet of white paper three times or more. (For better results, copy one sheet at a time)
   - If not, go to step 2.
2. Check to see if the fusing pressure roller is dirty with toner.
   - If it is, clean the fusing pressure roller.
   - If not, check for any other dirty rollers and clean them.

7.1.16 INCORRECTLY ALIGNED OUTPUT

Possible Cause (Scanner)

- Incorrect setting of the document guide.

Action:

- Align each side of the document with the document guides.

Possible Cause (Printer)

- Laser optics are aligned incorrectly.
- Incorrect print margin setting (main scan direction).

Action:

- Adjust the main scan print margin. (Refer to Section 6-12.)
- Check that the laser optics are aligned correctly.

7.1.17 INCORRECTLY ALIGNED OUTPUT/REDUCED IMAGE

Possible Cause:

- Incorrect print margin (sub-scan direction).
- Dirty registration roller.

Action:

- Adjust the sub-scan print margin. (Refer to Section 6-12.)
- Clean the registration roller.

7.2 MECHANICAL PROBLEMS

7.2.1 ADF/SCANNER

1. Non Feed

Possible Cause:

- Use of the incorrect document type or size.
- The operation panel is not closed properly.
- The pick-up rollers and feed belt are dirty or worn out.
- The mechanical clutch mechanism for document pick-up is defective.
- Incorrect positioning of the separation roller.
- The scanner motor is defective.

Action:

1. Check whether a correct document type is being used.
2. Check that the operation panel is closed securely.
3. If the problem remains, do the following:
   - Clean the pick-up rollers and feed belt with a soft cloth and water, and replace them if damaged.
   - Check the connection between the FCU (CN14) and the scanner motor.
   - Replace the scanner motor.

2. Jam

Possible Cause:

- Incorrect document type or size.
- The document is too long.
- The scanner rollers (pick-up, feed, R1, and R2 rollers) are dirty.
- Obstruction in the document paper path.
- The scan line sensor is defective.
- Defective scanner motor

Action:

1. Check whether a correct document type is being used, and that the document length is within the maximum limit.
2. Check for obstructions in the paper path.
3. If the problem remains, do the following.
   - Clean the rollers with a soft cloth and water, and replace them if damaged.
   - Check that the scan line sensor is working correctly.
   - Replace the scanner motor.

3. Skew

Possible Cause:

- Incorrect document type or size.
- The document guide is set incorrectly.
- The operation panel is not closed properly.
- The scanner rollers (pick-up, feed, R1, and R2 rollers) are dirty.
- Obstruction in the document paper path.
- The separation roller is out of position.

Action:

1. Check whether a correct document type is being used.
2. Check that the operation panel is closed securely and that the document guide is set properly.
3. Check for obstructions in the paper path.
4. If the problem remains, do the following.
   - Check that the separation roller is set properly. Replace it if damaged.
   - Clean the rollers with a soft cloth and water, and replace them if damaged.

4. Multi-feed

Action:

- Clean or replace the separation roller.

7.2.2 PRINTER

1. Non-feed

Possible Cause:

- Use of a non-recommended paper type.
- The paper cassette end fence is set incorrectly.
- The paper lift mechanism is not working properly.
- Malfunction in the paper feed clutch.
- The paper feed roller is set incorrectly.
- The paper feed motor is defective.
- The registration sensor and/or paper edge sensor is defective.

Action:

1. Check whether a correct paper type is being used.
2. Check that the paper cassette end fence is set correctly and check the paper lift mechanism.
3. Check that the feed clutch for the cassette is working properly.
4. Check that the paper feed roller is installed properly. Clean or replace if necessary.
5. Check the registration roller and its mechanism. Clean or replace if necessary.
6. Check that the registration sensor and paper edge sensor are working correctly.
7. If the problem remains, do the following:
   - Check the connections between the FCU (CN16) and the paper feed motor.
   - Replace the paper feed motor.

2. Paper Jam - Inside Printer

Possible Cause:

- Using a non-recommended type of paper.
- The paper end fence and/or the paper guides in the cassette are set incorrectly.
- The registration roller is dirty.
- The registration sensor and/or paper edge sensor is defective.
- Obstruction in the paper path.
- The main motor is defective.

Action:

1. Check whether a correct paper type is being used, and whether the paper end fence and guides are set correctly.
2. Check for obstructions in the paper path.
3. Check the registration roller and its mechanism. Clean or replace if necessary.
4. Check that the registration sensor and paper edge sensor are working properly.
5. If the problem remains, do the following:
   - Check the connections between the FCU (CN15) and the main motor.
   - Replace the main motor.
   - Check the FCU output of power (CN15-2, 5) and drive (CN15-1, 3, 4, 6) signals to the main motor. If signals are not output, replace the FCU.
   - Check the fusing unit drive mechanism. Check to see that the gears are installed correctly.

3. Jam - Fusing Exit

Possible Cause:

- Use of a non-recommended type of paper.
- Obstruction in the paper path.
- The registration sensor is defective.
- Malfunction in the fusing drive mechanism.
- The paper feed-out sensor is defective.
- Malfunction in the hot roller stripper(s) mechanism.
- Malfunction in the pressure mechanism in the fusing unit.

Action:

1. Check whether a correct type of paper is being used.
2. Check for obstructions in the paper path.
3. Check that the registration sensor is working correctly.
4. Check all the gears in the fusing drive mechanism.
5. Check that the fusing exit sensor is working correctly.
6. Check the hot roller strippers and the pressure mechanism in the fusing unit.

4. Skew

Possible Cause:

- Use of a non-recommended type of paper.
- Incorrect positioning of the paper guides in the paper cassette.
- The separation pad is out of position.
- The paper feed roller is worn out or damaged.
- Obstruction in the paper path.
- Malfunction in the registration mechanism.

Action:

1. Check whether a correct type of paper is being used.
2. Check that the paper guides and the end fence are set correctly.
3. Check that the separation pad is set correctly.
4. Check if the paper feed roller is installed correctly and clean. Replace if necessary.
5. Check for obstructions in the paper path.
6. Check the registration mechanism and clean or replace the rollers if necessary.

5. Multi-feed

Possible Cause:

- Use of a non-recommended type of paper.
- Incorrect positioning of the paper guides and/or end fence in the paper cassette.
- The separation pad is out of position.

Action:

1. Check whether a correct type of paper is being used.
2. Check that the paper guides and the end fence are set correctly.
3. Check that the separation pad is set correctly.

7.3 SERVICE CALL CONDITIONS

If the Call Service indicator is lit, one of the following conditions has occurred:

Symptom	Error Code	Sub-code	SC-code
Laser diode failure	9-20	21	2-21
Fusing unit failure (fusing lamp at high temperature during printing)	9-22	01	0-01
Fusing unit failure (fusing lamp not at printing temperature after warm-up)	9-22	02	0-02
Fusing unit failure (fusing lamp at high temperature in power saver mode)	9-22	03	0-03
Fusing unit failure (fusing lamp at high temperature in power saver mode)	9-22	04	0-04
Fusing unit failure (fusing lamp at low temperature in power saver mode)	9-22	05	0-05
Fusing unit failure (fusing lamp at low temperature during printing)	9-22	06	0-06
Fusing unit failure (fusing lamp at low temperature during printing)	9-22	07	0-07
Fusing unit failure (fusing lamp at an extremely high temperature)	9-22	08	0-08
Fusing unit failure (thermistor error)	9-22	09	0-09
Fusing unit failure (fusing lamp at high temperature in energy saver mode)	9-22	0A	0-0A
The machine detects that the jumpers 29 to 32 settings on the FCU are wrong.	9-22	0B	0-0B
Hexagonal mirror motor startup error	9-23	31	3-31
Hexagonal mirror motor error while printing	9-23	32	3-32
Power pack failure (development roller bias too high)	9-29	51	5-51
Power pack failure (charge brush roller bias too high)	9-29	52	5-52
Power pack failure (transfer roller bias too high)	9-29	53	5-53
Power pack failure (development roller too low)	9-29	54	5-54
Power pack failure (charge brush roller bias too low)	9-29	55	5-55
Power pack failure (transfer roller bias too low)	9-29	56	5-56
Power pack failure (incorrect bias for development and toner application rollers)	9-29	57	5-57
Power pack failure (incorrect bias for development and toner application rollers)	9-29	58	5-58
Power pack failure (incorrect bias for transfer roller)	9-29	59	5-59

To find out which problem has occurred, either:

- See the Auto Service Call report sent to the service station by the machine. This report lists a sub-code, as well as the error message; this sub-code may help you find the problem.
  Alternatively, check the sub-code stored at RAM address 8004B1(H).
- Check the error code history using service function 03.
- Try to clear the service call condition (for failures which are not related to the fusing unit): switch the power off, wait 10 seconds, then switch it back on (for fusing unit errors, set printer switch 01 bit 0 to 1 before switching the machine off)
- The LCD panel displays an SC code when the error occurs.

After each troubleshooting attempt, reset the machine and try to operate it. If the machine still does not work, continue troubleshooting.

7.4 ERROR CODES

If an error code occurs, re-send the fax or have the end user send a fax back to you as the problem dictates. If the same problem occurs, try to fix the problem as suggested below. Note that error codes 4-00, 01, 02, and 10 only appear in the error code display and the service report.

Code	Meaning	Suggested Cause/Action
0-00	DIS/NSF not detected within 40 seconds of pressing Start	Check the line connection. Check the NCU - FCU connectors. The machine at the other end may be incompatible. Replace the NCU or FCU. Check for DIS/NSF with an oscilloscope. If the RX signal is weak, it may be a bad line.
0-01	DCN received unexpectedly	The other party is out of paper or has a jammed printer. The other party pressed Stop during communication.
0-03	Incompatible modem at the other end	The other terminal is incompatible.
0-04	CFR or FTT not received after modem training	Check the line connection. Check the NCU - FCU connectors. Try changing the TX level and/or cable equalizer settings. Replace the FCU or NCU. The other terminal may be faulty; try sending to another machine. If the RX signal is weak or defective, there may be a bad line. **Cross-reference** TX level - NCU Parameter 01 (PSTN), RAM 807FB7 (PABX) Cable equalizer - G3 Switch 07 (PSTN), G3 Switch 08 (PABX) Dedicated TX parameters - Section 4-4
0-05	Unsuccessful after modem training at 2400 bps	Check the line connection. Check the NCU - FCU connectors. Try adjusting the TX level and/or cable equalizer. Replace the FCU or NCU. Check for line problems. **Cross-reference** See error code 0-04.
0-06	The other terminal did not reply to DCS	Check the line connection. Check the FCU - NCU connectors. Try adjusting the TX level and/or cable equalizer settings. Replace the NCU or FCU. The other end may be defective or incompatible; try sending to another machine. Check for line problems. **Cross-reference** See error code 0-04.

Code	Meaning	Suggested Cause/Action
0-07	No post-message response from the other end after a page was sent	Check the line connection. Check the FCU - NCU connectors. Replace the NCU or FCU. The other end may have jammed or run out of paper. The other end user may have disconnected the call. Check for a bad line. The other end may be defective; try sending to another machine.
0-08	The other end sent an RTN or PIN after receiving a page, because there were too many errors	Check the line connection. Check the FCU - NCU connectors. Replace the NCU or FCU. The other end may have jammed, or run out of paper or memory space. Try adjusting the TX level and/or cable equalizer settings. The other end may have a defective modem/NCU/FCU; try sending to another machine. Check for line problems and noise. **Cross-reference** TX level - NCU Parameter 01 (PSTN), RAM 807FB7 (PABX) Cable equalizer - G3 Switch 07 (PSTN), G3 Switch 08 (PABX) Dedicated TX parameters - Section 4-4
0-14	Non-standard post-message response code received	Check the FCU - NCU connectors. Incompatible or defective remote terminal: try sending to another machine. Noisy line: re-send. Try adjusting the TX level and/or cable equalizer settings. Replace the NCU or FCU. **Cross-reference**: See error code 0-08.
0-15	The other terminal is not capable of a certain function	The other terminal does not have the SEP or SUB function.
0-17	Pressing the Stop key interrupts communication.	If the Stop key was not pressed and this error keeps occurring, replace the operation panel or OPU.
0-20	Facsimile data not received within 6 seconds of retraining	Check the line connection. Check the FCU - NCU connectors. Replace the NCU or FCU. Check for line problems. Try calling another fax machine. Try adjusting the reconstruction time for the first line and/or RX cable equalizer setting. **Cross-reference** Reconstruction time - G3 Switch 0A, bit 6 RX cable equalizer - G3 Switch 07 (PSTN), G3 Switch 08 (PABX)

Code	Meaning	Suggested Cause/Action
0-21	EOL signal (end-of-line) from the other end not received within 5 seconds of the previous EOL signal	Check the connections between the FCU, NCU, & line. Check for line noise or other line problems. Replace the NCU or FCU. The remote machine may be defective or may have disconnected. **Cross-reference** Maximum interval between EOLs and ECM frames - G3 Bit Switch 0A, bit 4
0-22	The signal from the other end was interrupted for more than the acceptable modem carrier drop time (default: 0.2 seconds)	Check the line connection. Check the FCU - NCU connectors. Replace the NCU or FCU. Defective remote terminal. Check for line noise or other line problems. Try adjusting the acceptable modem carrier drop time. **Cross-reference** Acceptable modem carrier drop time - G3 Switch 0A, bits 0 and 1
0-23	Too many errors during reception	Check the line connection. Check the FCU - NCU connectors. Replace the NCU, FCU. Defective remote terminal. Check for line noise or other line problems. Try asking the other end to adjust their TX level. Try adjusting the RX cable equalizer setting and/or RX error criteria. **Cross-reference** RX cable equalizer - G3 Switch 07 (PSTN), G3 Switch 08 (PABX) RX error criteria - Communication Switch 02, bits 0 and 1
0-24	Printer failure occurred while the memory was full during non-ECM reception; negative response returned	There is no memory space available, or substitute reception is disabled. Try asking the user to add optional extra memory.
0-29	Data block format failure in ECM reception	Check for line noise or other line problems. Try receiving from another machine. Replace the FCU.
0-30	The other terminal did not reply to NSS(A) in AI short protocol mode	Check the line connection. Check the FCU - NCU connectors. Try adjusting the TX level and/or cable equalizer settings. The other terminal may not be compatible. **Cross-reference** Dedicated TX parameters - Section 4-4
0-52	Polarity changed during communication	Check the line connection. Retry the communication.

Code	Meaning	Suggested Cause/Action
0-70	Communication mode specified CM/JM and it was not available. (V.8 calling and called terminal)	The other terminal did not have a compatible communication mode (e.g., the other terminal was a V.34 data modem.) A polling TX file was not ready at the other terminal when the calling terminal initiated polling RX.
0-74	The calling terminal fell back to T.30 mode, because it could not detect ANSam after sending CI.	The calling terminal could not detect ANSam due to noise, etc. ANSam was too short to detect. Check the line connection and condition. Try receiving a call from another V.8/V.34 fax.
0-75	Calling terminal fell back to T.30 mode, because it could not detect CM in response to ANSam. (ANSam time out)	The terminal could not detect ANSam. Check the line connection and condition. Try receiving a call from another V.8/V.34 fax.
0-76	The calling terminal fell back to T.30 mode, because it could not detect JM in response to CM. (CM time out)	The called terminal could not detect JM due to noise, etc. Check the line connection and condition. Try making a call to another V.8/V.34 fax.
0-77	The calling terminal fell back to T.30 mode, because it could not detect CJ in response to JM. (JM time out)	The calling terminal could not detect JM due to noise, etc. A network that has narrow bandwidth cannot pass JM to the other end. Check the line connection and condition. Try receiving a call from another V.8/V.34 fax.
0-79	Called terminal detected CI while waiting for a V.21 signal.	Check for line noise or other line problems. If this error occurs, the called terminal falls back to T.30 mode.
0-80	The time out in V.34 phase 2 (line probing) disconnected the line.	The guard timer expired while starting these phases. Serious noise, narrow bandwidth, or low signal level can cause these errors. If these errors happen at the transmitting terminal: Try making a call later. Try using V.17 or a slower modem with dedicated TX parameters. Try increasing the TX revel. Try adjusting the cable equalizer setting. If these errors happen at the receiving terminal: Try adjusting the cable equalizer setting. Try increasing the TX level. Try using V.17 or a slower modem if the same error is frequent when receiving from multiple senders.
0-81	Line was disconnected due to time out in V.34 phase 3 (equalizer training).	
0-82	The time out in V.34 phase 4 (control channel start-up) disconnected the line.	
0-83	The timeout in the V.34 control channel restart sequence disconnected the line.	
0-84	Abnormal signaling in V.34 phase 4 (control channel start-up) disconnected the line.	The signal did not stop within 10 seconds. Turn off the machine, then turn it back on. If the same error is frequent, replace the FCU.

Code	Meaning	Suggested Cause/Action
0-85	Abnormal signaling in V.34 control channel restart disconnected the line.	The signal did not stop within 10 seconds. Turn off the machine, then turn it back on. If the same error is frequent, replace the FCU.
0-86	The line was disconnected because the other terminal requested a data rate using MPh that was not available in the currently selected symbol rate.	The other terminal was incompatible. Ask the other party to contact the manufacturer.
0-87	The control channel started after an unsuccessful primary channel.	The receiving terminal restarted the control channel because data reception in the primary channel was not successful. This does not result in an error communication.
0-88	The line was disconnected because PPR was transmitted/received 9 (this is the default) times within the same ECM frame.	Try using a lower data rate at the start. Try adjusting the cable equalizer setting.
1-00	Document jam	Incorrectly inserted document or unsuitable document type. Check the ADF drive components and sensors. **Cross-reference** ADF mechanical problems - Section 7-2-1
1-01	Document length exceeded the maximum	Try changing the maximum acceptable document length. Divide the document into smaller pieces. Check the ADF drive components and sensors. **Cross-reference** Max. document length - Scanner switch 00, bits 2 and 3 ADF mechanical problems - Section 7-2-1
1-10	Paper at the scan line when the power was turned on.	Remove the document. Check the scan line sensor. **Cross-reference** ADF mechanical problems - Section 7-2-1
1-17	Document jam in the feed-out area	Clear any debris from the sensor actuator. Check the ADF drive components and sensors. **Cross-reference** ADF mechanical problems - Section 7-2-1
1-20	Paper did not reach the fusing exit at the end of printing	Remove the paper. Check the printer drive components and sensors. **Cross-reference** Printer mechanical problems - Section 7-2-2

Code	Meaning	Suggested Cause/Action
1-21	Paper present at the fusing exit after printing	Remove the paper. Check the printer drive components and sensors. **Cross-reference** Printer mechanical problems - Section 7-2-2
1-30	Paper ran out during printing	Add paper in the cassette.
1-34	Paper ran out after printing	Add paper in the cassette.
1-71	The cover was opened or the cassette was pulled out during printing	Close the cover or put back the cassette.
2-10	The modem cannot enter TX mode	Replace the FCU.
2-11	Only one V.21 connection flag was received	Change the FCU.
2-12	Modem clock irregularity	Replace the FCU.
2-13	Modem initialization error	Turn off the machine, then turn it back on.
2-20	Abnormal coding/decoding (CPU not ready)	Replace the FCU.
2-23	JBIG compression/ reconstruction error	Turn off the machine, then turn it back on. Replace the FCU if the error occurs frequently.
2-24	JBIG ASIC error	
2-25	JBIG data reconstruction error (BIH) error	JBIG data error. Check the remote terminal's JBIG function. Replace the FCU if the error occurs frequently.
2-26	JBIG data reconstruction error (Float marker error)	
2-27	JBIG data reconstruction error (End marker error)	
2-28	JBIG data reconstruction error (Timeout)	
2-50	The machine reset itself	Replace the FCU.
3-00	G4 board reset	Replace the G4 board or FCU.
3-10	Disconnection during ISDN G3 communication	Check the other terminal and the ISDN line. The other terminal may have dialed a wrong number.
3-11	Disconnection during ISDN G4 communication	Check the other terminal and the ISDN line.

Code	Meaning	Suggested Cause/Action
3-20	A SAC signal was received during ISDN G4 communication	The operator at the other terminal may have interrupted the communication.
3-21	A CSA was sent during ISDN G4 communication, because the Stop key was pressed	The local operator has interrupted the communication.
3-30	Mismatched specifications (rx capability)	Check the receive capabilities requested from the other terminal.
4-01	Line current was cut	Check the line connection. Check the connection between FCU and NCU. Replace the FCU or the NCU.
4-02	The other end cut the received page, because it was longer than the maximum limit.	Split the page into smaller pieces, or ask the other end to change their maximum receive length setting, then resend.
4-10	Communication failed because of Tel. No./CSI mismatch (Protection against Wrong Connections)	Reprogram the CSIs correctly, then re-send. The machine at the other end may be defective.
5-00	Data reconstruction not possible	Replace the FCU.
5-10	DCR timer expired	Replace the FCU.
5-20	Storage impossible because of a lack of memory	Temporary memory shortage. Replace the FCU or optional memory card.
5-21	Memory overflow	
5-22	Mode table overflow after the second page of a scanned document	Wait for the messages that are currently in the memory to be sent, or delete some files from memory.
5-23	Print data error when printing a substitute RX or confidential RX message	Ask the other end to re-send the message. Replace the FCU or IC memory card.
5-24	Memory overflow after the second page of a scanned document	Try using a lower resolution setting. Wait for the messages that are currently in the memory to be sent, or delete some files from memory.
5-25	SAF file access error	Replace the FCU or IC memory card.
5-30	Mode table for the first page to be printed was not effective	Replace the FCU or IC memory card.

Code	Meaning	Suggested Cause/Action
6-00	G3 ECM - T1 time out during reception of facsimile data	Try adjusting the RX cable equalizer. Replace the FCU or NCU.
6-01	G3 ECM - no V.21 signal was received	
6-02	G3 ECM - EOR was received	
6-03	G3 ECM - non-standard V.21 code received	The other terminal may be defective.
6-04	G3 ECM - RTC not detected	Check the line connection. Check connections from the NCU to the FCU. Check for a bad line or defective remote terminal. Replace the FCU or NCU.
6-05	G3 ECM - facsimile data frame not received within 18 seconds of CFR, but there was no line fail	Check the line connection. Check connections from the NCU to the FCU. Check for a bad line or defective remote terminal. Replace the FCU or NCU. Try adjusting the RX cable equalizer **Cross-reference** RX cable equalizer - G3 Switch 07 (PSTN), G3 Switch 08 (PABX)
6-06	G3 ECM - coding/decoding error	Defective FCU. The other terminal may be defective.
6-08	G3 ECM - PIP/PIN received in reply to PPS.NULL	The other end pressed Stop during communication. The other terminal may be defective.
6-09	G3 ECM - ERR received	Check for a noisy line. Adjust the TX levels of the communicating machines. See code 6-05.
6-10	G3 ECM - error frames still received at the other end after all communication attempts at 2400 bps	Check for line noise. Adjust the TX level (use NCU parameter 01 or the dedicated TX parameter for that address). Check the line connection. Defective remote terminal.
6-11	G3 ECM - printing impossible because of a missing first line in the MMR coding	Check for problems in the printer mechanism.
6-21	V.21 flag detected during high speed modem communication	The other terminal may be defective or incompatible.
6-99	V.21 signal not stopped within 6 seconds	Replace the FCU.
9-07	Paper jam at the cassette entrance	If the problem persists, replace the FCU. **Cross-reference** Paper non-feed - Section 7-2-2
9-08	Paper jam inside the development area	If the problem persists, replace the FCU. **Cross-reference** Paper jam - Section 7-2-2

Code	Meaning	Suggested Cause/Action
9-09	Paper jam in the fusing exit area	If the problem persists, replace the FCU. **Cross-reference** Paper jam - Section 7-2-2
9-10	Toner end detected	Replace the cartridge.
9-12	Cover open detected during printing	Close the cover, or check the cover sensors.
9-20	Laser diode failure	If the problem persists, replace the FCU or LDDR.
9-22	Fusing lamp failure	If the problem persists, replace the FCU, fusing lamp, thermistor, or PSU.
9-23	Hexagonal mirror motor failure	If the problem persists, replace the FCU or polygonal mirror motor.
9-29	Power pack failure	If the problem persists, replace the power pack or PSU.
9-50	Optional cassette - paper non-feed	Check the paper feed mechanism and sensors. **Cross-reference** Printer mechanical problems – Section 7-2-2
9-51	Optional cassette - paper jam at the cassette entrance	Check the paper feed mechanism and sensors. **Cross-reference** Printer mechanical problems – Section 7-2-2
9-60	Printer error occurs during reception	If substitute reception is switched off and a paper jam or other printer error occurs, the machine will terminate the reception. Check the printer mechanism.
9-61	Memory overflow occurs during reception	Check the SAF.
9-82	Optional by-pass feeder - paper non-feed or jam at the cassette entrance	Check the paper feed mechanism and sensors. **Cross-reference** Printer mechanical problems – Section 7-2-2
9-83	Optional by-pass feeder - paper length exceeds the maximum limit (600 mm)	Check the paper feed mechanism and sensors. **Cross-reference** Printer mechanical problems – Section 7-2-2
9-84	Standard cassette – paper non-feed	Check the paper feed mechanism and sensors. **Cross-reference** Paper jam - Section 7-2-2

7.5 ERROR CODES FOR THE ISDN OPTION

The tables on the following pages show the error codes for the ISDN option.

The meaning of the numbers in the Action column is as follows.

1. Check Layer 1 signaling with a protocol analyzer to determine the cause of the problem. This may require assistance from a G4 specialist.
2. Repeat the communication. If the problem does not repeat itself, the problem was a temporary one caused by the user connecting the machine to another interface. However, if the problem remains, there is a network problem.
3. There is a network problem.
4. There is a network problem. Do the following:
   - Check the error bit rate of the network. If it is high, contact the network and ask them to improve the line.
   - Check the network speed (is it 56 or 64 kbps), and make sure that the bit switch setting is correct. You may also use the dedicated transmission parameters if this problem only occurs when dialing certain numbers.
   - Check that the user dialed the correct number.
5. There is a network problem, or a problem in the machine at the other end.
6. There is a problem in the machine at the other end; ask a technician to check it.
7. The machine at the other end is not a Group 4 fax terminal.
8. The machine is not compatible with the machine at the other end. A compatibility test is needed.

Error codes related with the errors detected by the FCU are listed in the Service Manual of the main body.

7.5.1 D-CHANNEL LAYER MANAGEMENT

Code	Probable Cause	Action
7-00	Link reset	2
7-01	Link set-up failed because of time-out.	2
7-02	Link release failed because of time-out.	2
7-03	Link set-up parameter error	2

7.5.2 D-CHANNEL, LAYER 1

Code	Probable Cause	Action
7-10	T3 timeout (layer 1 activation error)	1
7-11	No connection on the S0 interface	1
7-12	Deactivated	1

7.5.3 D-CHANNEL LINK LAYER

Code	Probable Cause	Action
7-20	At the start of link set-up, the machine received an unsolicited S (F=1).	2
7-21	At the start of link set-up, the machine received an unsolicited DM (F=1).	2
7-22	At TEI release, the machine received an unsolicited UA (F=1).	2
7-23	At the start of link set-up, the machine received an unsolicited DM (F=0).	2
7-24	At TEI release, the machine received an unsolicited UA (F=0).	2
7-25	SABME received at the start of network link set-up	No error
7-26	N200 retransmission error for SABME	2
7-27	N200 retransmission error for DISC	2
7-28	N200 retransmission error for situation enquiry (RR)	2
7-29	N(R) sequence number error	3
7-30	N(S) sequence number error	3
7-31	FRMR received	3
7-32	Non-standard frame received	3
7-33	Abnormal frame length	3
7-34	N201 error; information field N in the I frame exceeded N201	3
7-35	T201 timeout; timeout while waiting for checking	3
7-36	T202 timeout; timeout while waiting for ID assignment	3

7.5.4 D-CHANNEL NETWORK LAYER

Code	Probable Cause	Action
7-40	Insufficient mandatory information elements	3
7-41	Abnormal LI for a mandatory information element	3
7-42	T301 timeout; timeout while waiting for R:CONN	3
7-43	T303 timeout; timeout while waiting for R: CALL-PROC etc.	3
7-44	T304 timeout; timeout while waiting for R: CALL-PROC etc.	3
7-45	T305 timeout; timeout while waiting for R:REL	3
7-46	T308 timeout; timeout while waiting for R:REL-COMP	3
7-47	T310 timeout; timeout while waiting for R: ALERT etc.	3
7-48	T313 timeout; timeout while waiting for R:CONN-ACK	3
7-49	Internal error	3
7-51	Release call reference during communication	3

7.5.5 B-CHANNEL LINK LAYER

Code	Probable Cause	Action
7-60	T3 timeout; timeout while waiting for flag	4
7-61	T3 timeout; timeout while waiting for SABM during an incoming call	4
7-62	T1 timeout x N2; timeout while waiting for UA after sending SABM	5
7-63	T1 timeout x N2; timeout while waiting for a response to a transmitted S frame (P=1)	5
7-64	T1 timeout x N2; timeout while waiting for SABM or DISC after sending FRMR	5
7-65	T1 timeout x N2; timeout while waiting for a response to DISC	5
7-66	RNR x N2 (other end busy, RCB counter error)	5
7-67	Invalid (Ad) frame received	5
7-68	Invalid short frame received	5
7-69	Link reset error	5
7-70	FRMR received	5
7-71	Non-standard (Cn) frame received	5
7-72	An S or U frame having an information field was received	5
7-73	A frame longer than the maximum N1 length was received	5
7-74	An S or I frame having an N(R) error was received	5
7-75	CRC error	3

7.5.6 B-CHANNEL NETWORK LAYER

Code	Probable Cause	Action
7-80	A packet having an abnormal GFI was received	6
7-81	A packet was received that had a logical channel number different from the logical channel being used for the communication	6
7-82	A packet containing a format error was received	6
7-83	A packet containing an LI error was received	7
7-84	A CN packet was received that had a PID different from 02	7
7-85	Unsupported packet type received	7
7-86	Abnormal or unsupported facility received	7
7-87	P(s) sequence number error	6
7-88	P(r) sequence number error	6
7-89	A reset using S:RQ or R:RI occurred	6
7-90	A restart using S:RQ or R:SI occurred	6
7-91	Call set-up error; in reply to S:CR, R:CI was received to indicate rejection of the call	7
7-92	T20 timeout; timeout while waiting for an SF packet	6
7-93	T21 timeout; timeout while waiting for a CC packet	6
7-94	T22 timeout; timeout while waiting for an RF packet	6
7-95	T23 timeout; timeout while waiting for a CF packet	6
7-96	T10 timeout; timeout while waiting for the first frame	6

7.5.7 TRANSPORT LAYER

Code	Probable Cause	Action
8-00	Invalid block received	8
8-01	TCC block received	8
8-02	TBR block received	8
8-05	TCR block; block format error	8
8-06	TCR block; block size parameter LI error	8
8-07	TCR block; extended addressing LI error	8
8-08	TCR block; block size length error	8
8-10	TCA block; block format error	8
8-11	TCA block; Tx origin reference data in TCR disagreed with the address reference data in TCA	8
8-12	TCA block; octet 7 did not equal 0	8
8-13	TCA block; extended addressing LI error	8
8-14	TCA block; block size exceeded that set by TCR	8
8-15	TCA block; block size parameter LI error	8
8-20	TDT block; block format error	8
8-21	TDT block; octet 3 did not equal either 00 or 80(H)	8
8-22	TDT block; the end indicator was “Continue” even though there was no field data	8

Code	Probable Cause	Action
8-23	TDT block; an end block with no field data was received after an end indicator of “End”	8
8-26	Timeout during state 0.2	8
8-27	Timeout during state 1.1	8
8-28	Timeout during state 0.3	8

7.5.8 SESSION LAYER

Code	Probable Cause	Action
8-30	Invalid frame received	8
8-31	RSSN received	8
8-32	CSA received	8
8-34	Calling terminal identification error in CSS	8
8-35	Date and time error in CSS	8
8-36	Window size error in CSS	8
8-37	Service identification error in CSS	8
8-38	Session user data error in CSS	8
8-39	CSS rejected (new session rejected)	8
8-40	Called terminal identification error in RSSP	8
8-41	Date and time error in RSSP	8
8-42	Date and time in RSSP was not the same as that in CSS	8
8-43	Window size error in RSSP	8
8-44	Service identification error in RSSP	8
8-45	Session user data error in RSSP	8
8-47	Message synchronization error inside the CCU	8
8-48	Document task busy	8
8-50	Ti timeout; non-communication surveillance timer (T.62)	8
8-51	T2 timeout; timeout while waiting for a response (T.62)	8
8-52	T3 timeout; CSA timer timeout (T.62)	8
8-53	G4 board load timer timeout; calling side waited too long for a new session	8
8-54	G4 board load timer timeout; calling side waited too long for transport probability	8
8-55	G4 board load timer timeout; called side waited too long for S:RSSP	8
8-56	G4 board load timer timeout; document transmission surveillance timer timeout	8
8-57	G4 board load timer timeout; timeout while waiting for a user abort request after a provider fail	8

7.5.9 DOCUMENT LAYER

Code	Probable Cause	Action
8-60	T.62 coding format error (LI error)	8
8-61	A mandatory PI was absent, or the LI for a mandatory PI was 0	8
8-62	Calling/called terminal identification LI was different from that specified by F.184 (LI = 24)	8
8-63	The LI for session user data exceeded the maximum value (512)	8
8-64	The LI for CDUI was not 0	8
8-65	Checkpoint and document reference numbers LI error, or they were not in T.61 (ASCII) coding	8
8-66	The checkpoint reference number differed from the expected value	8
8-70	RDGR received	8
8-71	A non-standard PDU was received while in calling mode	8
8-72	A non-standard PDU was received while in called mode	8
8-73	Abnormal PDU received while in calling state ds1	8
8-74	15 consecutive CDCL signals received	8
8-75	Session window size control error (size not equal to 0)	8
8-76	Internal error	8

7.5.10 PRESENTATION LAYER

Code	Probable Cause	Action
8-80	X.209 coding error in session user data (LI error)	8
8-81	PV error in session user data	8
8-82	PI error in session user data	8
8-83	The capabilities in the session user data of CDS/CDC were not the same as those in RDCLP	8
8-84	X.209 coding error in the DP (LI error)	8
8-85	X.209 coding error in the SLD (document descriptor/page descriptor) (LI error)	8
8-86	SLD object type absent	8
8-87	PI error in the SLD (document descriptor/page descriptor)	8
8-88	The capabilities in the SLD (document descriptor/page descriptor) are duplicated or are not the same as those in RDCLP	8
8-89	No document descriptor at the start of the document	8
8-90	No page descriptor at the start of the page	8
8-91	Page descriptor PV error	8
8-92	X.209 coding error in the TU (LI error)	8
8-93	The TU was absent	8
8-94	PV error in the TU	8
8-95	TI error	8
8-96	X.209 coding nest level >> 8, or an LI form error	8
8-97	CDPB/CDE received while TU/TI not yet completed, or an unexpected PDU was received while analyzing an SLD	8

7.6 ERROR CODES FOR THE NIC/PDU OPTION

The tables on the following pages show the error codes for the NIC or PDU option.

Code	Meaning	Suggested Cause/Action
10-00	The NIC is reset because of a timeout during handshaking.	FCU software procedure error or abnormal e-mail data.
10-01	The user pressed the Stop key.	
10-02	Transmission test failed during the LAN testing procedures.	The NIC board may be defective.
10-03	Reception test failed during the LAN testing procedures.	The NIC board may be defective.
10-04	The NIC is not ready.	The NIC board and/or ROM on the NIC board may not be connected completely. Re-install them. If that doesn't work, replace the NIC board.
10-05	The NIC was reset because of a request from the NIC.	NIC and/or FCU software may be working incorrectly.
10-06	An abnormal command caused the NIC to reset.	FCU software may be working incorrectly.
10-07	Transmission was interrupted because the NIC was reset during tx data formatting.	The NIC was reset by an error occurring in a job elsewhere.
10-10	A file with an unsupported format was received.	The received file was not compressed using DCX or TIFF-F.
10-11	DCX encoding error	FCU hardware may be defective and/or FCU software may be working incorrectly.
10-12	DCX decoding error	Incorrect DCX data and/or FCU may be defective and/or FCU software may be working incorrectly.
10-13	TIFF-F encoding error	FCU hardware may be defective and/or FCU software may be working incorrectly.
10-14	TIFF-F decoding error	Incorrect TIFF-F data and/or FCU may be defective and/or FCU software may be working incorrectly.
10-15	E-mail reception was interrupted because the machine could not store the return address.	The e-mail will be received again after a regular interval when there are fewer temporary files. If some temporary files are deleted manually, it will be possible to create new ones.
10-16	The machine interrupted data reception from a PC during LAN fax transmission, because the address of the destination could not be stored.	The PC will receive a busy signal and the PC fax application will send the data again. If some temporary files are deleted manually, it will be possible to create new ones.
10-17	Document size and resolution of the received e-mail was over the limit.	Document size and resolution of the received e-mail was over the limit.

Code	Meaning	Suggested Cause/Action
10-20	The machine rejected an incoming e-mail for autorouting, because the ID code in the incoming e-mail did not match a personal code registered in the machine.	Ask the sender to correct the ID code, or change the setting of LAN bit switch 04 bit 0.
10-21	The machine rejected an incoming e-mail for autorouting, because an incorrect address was registered with the personal code.	Correct the address, or change the setting of LAN bit switch 04 bit 2.
10-22	The machine rejected an incoming e-mail for transfer request, because the ID code in the incoming e-mail did not match the ID code registered in the machine.	Ask the sender to correct the ID code, or change the setting of LAN bit switch 03 bit 3.
10-23	The machine rejected an incoming e-mail for transfer request, because it specified a Quick/Speed Dial that contains an incorrect address.	Correct the addresses stored in the Quick Dials, or change setting of LAN bit switch 03 bit 2.
10-30	NIC EPROM error	The EPROM on the NIC board may be defective. Replace the NIC board and/or EPROM if this error keeps appearing.
10-31	NIC memory error	The DRAM on the NIC board may be defective. Replace the NIC board if the error keeps appearing.
10-32	NIC serial module error	Replace the NIC board if the error keeps appearing.
10-33	NIC timer module error	Replace the NIC board if the error keeps appearing.
10-34	Error on the interrupt line connecting NIC to FCU	Replace the NIC board if the error keeps appearing.
10-35	Network controller error	Replace the NIC board if the error keeps appearing.
10-40	IP address not stored in the machine	Store the IP address of the machine.
10-41	IP address conflict	Change the IP address.
10-42	Abnormal TCP/IP socket procedure	The NIC board and/or NIC ROM may be defective, or the NIC software is working incorrectly.
10-43	Timeout during hand shaking	The NIC board and/or NIC ROM may be defective, or the NIC software is working incorrectly.
10-44	Sequence error during handshaking	The NIC board and/or NIC ROM may be defective, or the NIC software is working incorrectly.
10-45	IP address for DNS server not stored in the machine	Check that the DNS IP address is correct.
10-46	DNS server cannot be found	Check that the DNS IP address is correct.
10-50	Connection with the PC through a LAN was interrupted while receiving data from the PC (LAN fax transmission).	Check the power switch of the PC and reduce the traffic on the LAN.

Code	Meaning	Suggested Cause/Action
10-51	AT command sequence error during LAN fax transmission.	Unsupported PC fax software or the NIC board may be defective. Use supported PC fax software or change the NIC board. NOT USED
10-52	Unsupported AT commands were received.	Unsupported PC fax software or the NIC board may be defective. Use supported PC fax software or change the NIC board. NOT USED
10-53	Command time-out occurred while receiving data from PC fax software.	The PC fax software does not work correctly. Delete the software and reinstall it if the error keeps appearing. Otherwise, COM Redirector does not work correctly. Delete and reinstall COM Redirector if the error keeps appearing. NOT USED
10-54	Command for interrupted request was received	Caused by the user
10-60	POP server IP address not registered	Register the IP address.
10-61	POP server cannot be found	Make sure that the IP address of the POP server is correct and check the traffic on the LAN.
10-62	Logging into POP server is disabled.	Delete the user name and password of the POP server in the machine, then input it again. Otherwise, call administrator of the POP server.
10-63	Disconnection from POP server.	Check the traffic on the LAN. Otherwise, call the administrator of the POP server to check if the server is turned off.
10-64	MIME decoding error	Abnormal MIME data. Replace the NIC board if the error occurs during reception from several senders.
10-65	E-mail with unsupported type of header was received	The machine received an e-mail with a header type other than “text/plain” and “base 64”.
10-66	Received e-mail format error	Received e-mail is not in a standard format. Possible problem with the other terminal or network
10-67	The machine did not receive a response from the POP server at the expected time.	The POP server is not working properly. Call the administrator of the server.
10-70	No IP address stored for the SMTP server	Enter the IP address in the machine.
10-73	SMTP server cannot be found	Check the IP address of the SMTP server and check the traffic on the LAN.
10-74	No e-mail address is stored.	Enter the e-mail address in the machine.
10-75	The e-mail address is too long.	Delete the address and enter it again.
10-76	No destination address was entered for transmission.	Enter the address again.
10-77	Incorrect destination address	Enter the address again.
10-78	Too many destinations	Divide the broadcast into two or more operations. Use LAN switch 01 to change the maximum number of broadcast destinations to match the server’s limits.
10-79	SMTP server hard disk full	Call the administrator of the server.
10-80	SMTP server shutdown	Call the administrator of the server.
10-81	SMTP server busy	Call the administrator of the server.

Code	Meaning	Suggested Cause/Action
10-82	SMTP server turned off	Check whether the LAN is congested or if a cable has been disconnected, or call the administrator of the server.
10-83	Report format error	Abnormal software procedure
10-84	The machine did not receive a response from the SMTP server at the correct time	Abnormal SMTP server procedures. Check whether the LAN is congested or whether a cable has been disconnected, or call the administrator of the server.
10-85	Unexpected response from the SMTP server.	Abnormal SMTP server procedures. Check whether the LAN is congested or whether a cable has been disconnected, or call the administrator of the server.
10-86	Failure of memory assignment for SMTP	Turn the power off and on of the machine. If this error occurs again, change the NIC board.
10-90	No encoded line in the e-mail during transmission.	The FCU software is not working properly.
10-91	Number of encoded lines does not match the number of scanned lines in the transmission.	The FCU software is not working properly.
10-92	Value of encoded off-set does not match the scanned lines in the transmission.	The FCU software is not working properly.
10-93	Non-standard data in the e-mail.	Abnormal e-mail data. Inform this to the sender.
11-00	Error when writing program to the flash ROM.	The flash ROM on the NIC is defective. Change the NIC board.
11-01	Error in the transfer data header information	The flash card is defective.
11-02	Transfer data check sum error	The flash card is defective.
11-03	Abnormal transfer data length	The flash card is defective.
11-04	Error during erasing the flash ROM.	The flash ROM on the NIC is defective. Change the NIC board
11-05	Error during writing to the flash ROM.	The flash ROM on the NIC is defective. Change the NIC board
11-06	Check sum error while writing data.	The flash ROM on the NIC is defective. Change the NIC board
11-07	Reprogramming error	The flash ROM on the NIC or the flash card is defective. Change the NIC board
11-30	PDU: Access point tel. no. for ISP not programmed.	Program the ISP access point tel. no.
11-31	PDU: Physical layer error	Check the connection of the telephone cable.
11-33	PDU: ISP does not respond	Check the access point tel. no. for the ISP. ISP may be inspecting the servers, ask ISP to take the server maintenance information.
11-34	PDU: No response from modem	Replace the PDU.
11-35	PDU: Modem result code error	Replace the PDU.
11-36	PDU: ISP disconnected the line	The ISP may be doing maintenance work on the servers. If they have finished, try the communication again.

Code	Meaning	Suggested Cause/Action
11-37	PDU: Modem training error	The other end may be a fax machine. Check the access point telephone number of the ISP.
11-40	PDU: User confirmation error	Check the user ID and password.
11-41	PDU: No response (PPP) from the other terminal	• The ISP may be doing maintenance work on the servers. If they have finished, try the communication again. • The other terminal may be a G4 fax machine. Check the access point tel. no. for the ISP • A space character is contained in the user ID or password. Check the user ID and password (User Tools – Dial-up – User ID/User Password).
11-42	PDU: PPP negotiation error	The ISP may be doing maintenance work on the servers. If they have finished, try the communication again.
11-43	PDU: PPP Other error	Replace the PDU.
11-90	Illegal SNMP community	Check the network and other network devices.
11-91	Illegal SNMP packet	Check the network and other network devices.
11-92	Illegal SNMP packet size	Check the network and other network devices.
11-93	Illegal SNMP OID size	Check the network and other network devices.

7.7 ELECTRICAL COMPONENT DEFECTS

7.7.1 DEFECTIVE SENSOR TABLE

Sensor	Status	Symptoms if Defective
Document sensor	ON	The LCD displays “CLEAR ORIGINAL” or “DIAL FAX NO” at power-up.
	OFF	The LCD still displays “SET DOC. OR DIAL NO.” after a document is placed in the feeder.
Scan line sensor	ON	The LCD displays “CLEAR ORIGINAL” at power-up.
	OFF	The LCD displays “CLEAR ORIGINAL” soon after the start of copying.
Interlock switches	ON	There is no alarm on opening the cover, and the LCD does not display “CLOSE COVER”.
	OFF	The LCD displays “CLOSE COVER” at power-up.
Registration sensor	ON	The LCD displays “CLEAR COPY” at power-up.
Paper edge sensor	ON	The LCD displays “CLEAR COPY” at power-up.
Fusing exit sensor	ON	The LCD displays “CLEAR COPY” soon after the start of copying.
Toner end sensor	ON	The LCD displays “SET TONER” at power-up.
Paper end sensor – standard cassette	ON	The Add Paper indicator lights even if paper is remaining.
Paper end sensor – paper feed unit	ON	The Add Paper indicator on the operation panel of the lower cassette lights even if paper remains.
Paper end sensor - by-pass feeder	ON	The Add Paper indicator on the operation panel of the lower cassette lights even if paper remains.
Upper rear cover switch	ON	The LCD displays “CLOSE COVER” at power-up.
Lower rear cover switch	ON	The LCD displays “CLOSE COVER” at power-up.

7.7.2 BLOWN FUSE TABLE

The only service-replaceable fuses are the following.

Fuse	Symptoms if Defective
PSU - F1/ F2/F3	The machine does not receive power (F3 - 220V PSU only)
Thermofuse (Not installed in the US model.)	Fusing power is not supplied.

7.8 ISDN TEST FUNCTION

7.8.1 LEDS

There are four LEDs on the G4 board. These LEDs describe the status of the machine.

LED 1	LED 2	LED 3	LED 4

	O=ON, --=OFF			
Initial Settings				
Initial check (if the flash ROM is updated)	O	O	O	O
Handshaking with the FCU ready	O	O	--	--
Standby Mode				
Ready to communicate	--	--	--	--
Communication				
Layer 1 activated	--	--	--	O
Link setup	--	--	O	O
B channel 1 connected	--	O	O	O
B channel 2 connected	O	--	O	O

7.8.2 BACK-TO-BACK TEST

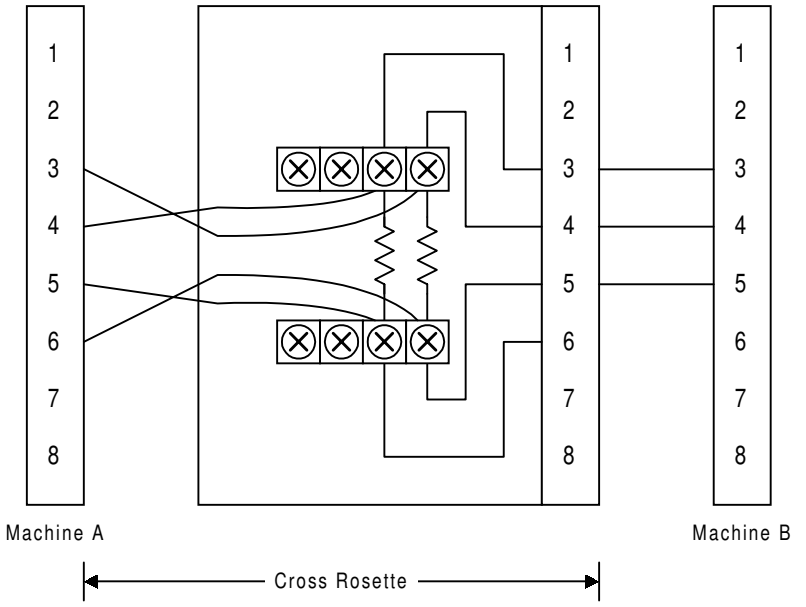
To make a back-to-back test, you need:

- Two machines, one with the CiG4 board (G4 board used in the FX4, FR4, ADAM, NAD, Stinger, and Russian) and the other with the SiG4 board (G4 board used with the Schmidt 3, S4, and Kaiser 1).
- Cross rosette

NOTE: You cannot make a back-to-back test using two SiG4 machines.

The procedure is as follows.

1. Switch off the machines
2. Connect two machines back-to-back using a cross rosette as follows.



H535T601.WMF

3. Make the following bit switch adjustments:
   - In the machine acting in NT mode (CiG4 board), set bits 0 and 1 of G4 parameter switch 0D to 1.
   - In the machine acting in TE mode (SiG4 board) set bit 0 of G4 parameter switch 0D to 0 and bit 1 to 1.
4. Reset the machines by switching them off, waiting a few seconds, then switching back on.
5. Place a document in one of the machines, dial a number, then press Start.
6. After you have finished the test, set bits 0 and 1 of G4 parameter switch 0D back to 0, then reset the machine.

k l qbW The following cannot be tested using this procedure:

- ISDN G3 communication
- Point to Multi (Like a broadcasting test, from one point to many places.)

7.9 LAN TESTS

These tests are included in service function 16 (see section 4 of this manual).

7.9.1 LINK CHECK

A machine and a hub send and receive link pulses to each other to check the connections to the LAN at regular intervals. The machine lights the green LED on the NIC board when the pulses are received successfully.

When the link check is performed, the machine checks for a link pulse. The machine indicates “OK” on the display when the link pulse is received successfully.

Check the LEDs both on the NIC board and on the hub to see if the connection through the LAN cable is active.

- During this test, the machine watches the received link pulses from the hub. To check the link pulse from the machine to the hub, check the LED on the hub.

NOTE: While the machine is on, the orange LED on the NIC board is lit if it has been initialized successfully.

7.9.2 LOOP BACK

When the loop back test is done, the FCU sends test data to the NIC board. The data is sent back to the FCU using the loop-back function of the NIC. The FCU checks if the test data is the same as the data returned from the NIC. When they are the same, the FCU indicates “RESULT = 0000’ on the display, which means that the NIC board test was successful.

NOTE: The machine does not send test data out of the machine on the LAN during the loop back test. The result is indicated even if the LAN cable is not connected to the NIC board.

When the NIC board is defective, one of the error codes in the following table will appear. In this case, re-install the NIC board and/or cable, or change them if the loop back test is still not successful.

- LOOP-BACK TEST RESULT CODES -

Code	Meaning	Code	Meaning
0000	The test finished without errors.	0008	Data delay error
0001	Defective IC network controller on the NIC board	0009	Carrier loss
0002	Test data did not meet regulations.	000A	Data is not processed at the correct time
0003	Data collision error	000B	No data received
0004	Buffer overflow while receiving data	000C	Data frame error
0005	Memory error	000D	Data overflow
0006	Memory error	000E	CRC error
0007	Received data does not reach the buffer at the correct time	000F	Receiving data buffer error

7.9.3 PING

The PING signals are sent out to the DNS, SMTP, and POP servers in that order. The NIC fax checks the responses from the servers.

When the NIC fax has received all responses from the servers, it will display “RESULT CODE = 0000” (OK) on the operation panel. If a server does not respond, a result code is displayed on the operation panel and the NIC fax will not send out the PING signal to the next server. When the address of a server is not registered, the NIC fax does not send out the PING signal to that server.

The NIC fax checks the connection to the server address using the PING function. However, it only checks the connection to the specified address. If the wrong address is registered for a server and another server is connected to the network at that address, that server will respond to the PING signal, and the result of the PING test will be OK. Therefore, the PING test alone will not guarantee successful e-mail transmission and reception if the wrong addresses are input.

However, the PING test is a good tool for checking the network connection. If an e-mail problem occurs in the field, try the PING test first.

Result Code	Server
1046	DNS
1061	POP
1073	SMTP

7.9.4 LOG DUMP

The protocol logs for communication between the POP/SMTP server and the NIC fax unit are stored in a 16-Kbyte memory inside the machine. The logs can be printed out. The log dump list shows the POP/SMTP commands and the responses from the server(s).

The NIC fax sends out POP commands to the POP server automatically, even if there is no received e-mail in the POP server. Then the POP commands and responses are stored in the memory. Therefore, if a long time passes after an error occurs, the data from the error will be lost.

7.9.5 TRUBLESHOOTING PROCEDURES

Use the following procedures to determine whether the machine or another part of the network is causing the problem.

Communication Route	Item	Action	Remarks
General LAN	1. Connection with the LAN	• Check that the LAN cable is connected to the machine. • Check that the LEDs on the hub are lit.	
	2. LAN activity	• Check that other devices connected to the LAN can communicate through the LAN.	
Between NIC Fax and PC	1. Network settings on the PC	• Check the network settings on the PC.	• Is the IP address registered in the TCP/IP properties in the network setup correct? Check the IP address with the administrator of the network.
	2. Check that PC can connect with the machine	• Use the “ping” command on the PC to contact the machine.	• At the MS-DOS prompt, type ping then the IP address of the machine, then press Enter.
	3. LAN settings in the machine	• Check the LAN parameters • Check if there is an IP address conflict with other PCs.	• Use “Network” function in User Tools key. • If there is an IP address conflict, inform the administrator.
Between machine and e-mail server	1. LAN settings in the machine	• Check the LAN parameters • Check if there is an IP address conflict with other PCs.	• Use “Network” function in User Tools key. • If there is an IP address conflict, inform the administrator.
	2. E-mail account on the server	• Make sure that the machine can log into the e-mail server. • Check that the account and password stored in the server are the same as in the machine.	• Ask the administrator to check.
	3. E-mail server	• Make sure that the client devices which have an account in the server can send/receive e-mail.	• Ask the administrator to check. • Send test e-mail with the machine’s own number as the destination. The machine receives returned e-mail when the communication is performed successfully.

Communication Route	Item	Action	Remarks
Between e-mail server and internet	1. E-mail account on the Server	• Make sure that the PC can log into the e-mail server. • Check that the account and password stored in the server are the same as in the machine.	• Ask the administrator to check.
	2. E-mail server	• Make sure that the client devices which have an account in the server can send/receive e-mail.	• Ask the administrator to check. • Send test e-mail with the machine's own number as the destination. The machine receives returned e-mail when the communication is performed successfully.
	3. Destination e-mail address	• Make sure that the e-mail address is actually used. • Check that the e-mail address contains no incorrect characters such as spaces.	
	4. Router settings	• Use the "ping" command to contact the router. • Check that other devices connected to the router can sent data over the router.	• Ask the administrator of the server to check.
	5. Error message by e-mail from the network of the destination.	• Check whether e-mail can be sent to another address on the same network, using the application e-mail software. • Check the error e-mail message.	• Inform the administrator of the LAN.
Between machine and ISP	1. Dial up setting in the machine	• Check the Access Point telephone number of the ISP. • Make sure that the machien can log into the ISP server. • Check that the user ID and log in password stored in the machine are the same as informed from ISP.	• Use "Dial-up" function in User Tools key.

Communication Route	Item	Action	Remarks
Between machine and ISP	2. LAN settings in the machine	• Check the LAN parameters • Check that the mail servers, host name, mail address and domain name stored in the machine are the same as informed from ISP.	• Use “Dial-up” function in User Tools key.
	3. E-mail account on the server	• Make sure that the machine can log into the e-mail server. • Check that the account and password stored in the machine are the same as informed from ISP.	• Use “Dial-up” function in User Tools key.
	4. E-mail server	• Make sure that the client devices which have an account in the server can send/receive e-mail.	• Send test e-mail with the machine’s own number as the destination. The machine receives returned e-mail when the communication is performed successfully.

Point-to-Point Diagram

Model: S4

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