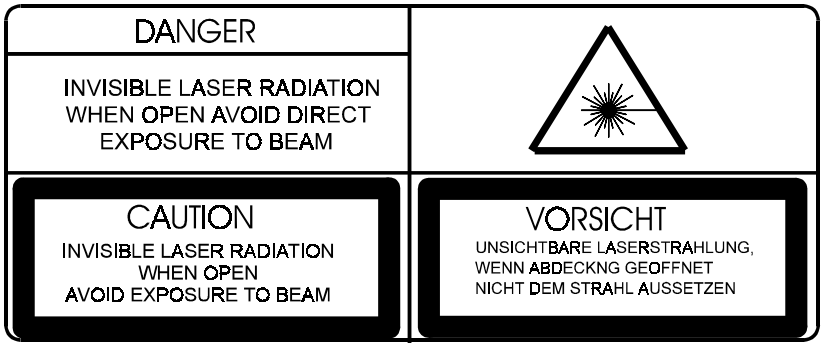
FR4

RICOH FAX4800L

SERVICE MANUAL

July 6th, 1998
Subject to change

Important Safety Notices



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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.**

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

Type
Desktop type transceiver

Circuit
PSTN, PABX, ISDN (optional)

Connection
Direct couple

Document Size
Length:
105 - 420 mm [4.1 - 16.5 ins]
Up to 1.2 m [47.2 ins], manually assisted
Up to 14 m [46 ft] after service adjustment
Width:
148 - 304 mm [5.8 - 12.0 ins]
Thickness:
0.05 to 0.2 mm [2 to 8 mils]
(equivalent to 50 - 80 g/m^2)

Document Feed
Automatic feed, face down

ADF Capacity
50 sheets (using Letter size 20 lb paper or A4 size 80 g/m^2 paper)
25 sheets (using Legal/Double Letter size 20 lb paper or B4/A3 size 80 g/m^2 paper)

Scanning Method
Flat bed, with CCD

Scan Width
219.5 mm [8.64 ins] ± 1% (A4/Letter)
260.1 mm [10.2 ins] ± 1% (B4)
308.9 mm [12.2 ins] ± 1% (A3/Double Letter)

Scan Resolutions
Main scan: 200 dpi
Sub scan:
Standard - 100 lpi
Detail - 200 lpi
Fine - 400 lpi

Memory Capacity
ECM: 128 kbytes

SAF:
Standard: 1.5 Mbytes: 126 pages
With 2 Mbyte option: 294 pages
With 4 Mbyte option: 462 pages
With 80 Mbyte HDD option: 1200 pages
With 80 Mbyte HDD plus Function Upgrade Card: 3000 pages
Measured using ITU-T #1 test document (Slerexe letter)

Compression
MH, MR, MMR, SSC
JBIG (G3 interface option required)
SAF storage for memory tx: MMR and raw data

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

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

Data Rate (bps)
G3:
33600/31200/28800/26400/24000/21600/19200/16800/14400/12000/9600/7200/4800/2400
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 s at 28800 bps;
Measured with G3 ECM using memory for an ITU-T #1 test document (Slerexe letter) at standard resolution
G4 (option): 3 s at 64 kbps;
Measured with an ITU-T #1 test document (Slerexe letter) at standard resolution

Printing System
Laser printing, plain paper, dry toner

Paper Size and Capacity
Standard Cassette: 250 sheets
USA: Letter, Legal
Europe: A4, A5 sideways
Asia: A4, A5 sideways, F/F4
100 Sheet Cassette (Optional): 100 sheets
USA: Letter, Legal
Europe: A4, A5 sideways
Asia: A4, A5 sideways, F, F4
Paper Feed Unit (Optional): 500 sheets
USA: Letter, Legal
Europe: A4, A5 sideways
Asia: A4, A5 sideways, F/F4
Note: Up to two PFUs can be installed.

Maximum Printing Width
208 mm [8.2 ins] (Letter)
202 mm [8.0 ins] (A4)

Print Resolutions
Fax and Copy Mode:
Main scan: 400 dpi
Sub scan: 400 dpi
Printer Mode: 300 x 300 dpi

Power Supply
USA: 115 ± 20 Vac, 50 ± 1 Hz
Europe/Asia: 187 - 276 Vac, 60 ± 1 Hz

Power Consumption (Base Machine Only)
Standby:
Minimum 2 W (see Note)
Normal 30 W
Transmitting: 60 W
Receiving: 220 W (Maximum: 900 W)
Copying: 300 W (Maximum: 950 W)

Note: 2W mode is not available if one of the following options is installed.
- Printer interface unit
- G4
- RS232C interface

Operating Environment
Temperature: 17 - 28°C [63 - 82°F]
Humidity: 40 - 70 %Rh

Dimensions (W x D x H)
475 x 520 x 260 mm [18.7 x 20.5 x 10.2 ins]
Excluding handset, trays, and optional units

Weight
Approx. 19 kg [50.9 lbs]
Excluding CTM, handset, trays, and optional units

1.2 FEATURES

1.2.1 FEATURES LIST

KEY:
O = Used, X = Not Used,
A = With optional memory 2M/4M only
B = With optional memory 80M (HDD) only
C = With optional function upgrade card only
D = With optional Fax On Demand kit only
E = With optional 100 sheet cassette only
F = With optional paper feed unit only
G = With optional counter only
H = With optional handset only (US only)
I = With optional printer interface unit only
J = With optional G4 kit only

Equipment	
ADF	O
Book scan	X
Built-in handset	X
Bypass feed: 1 sheet	O
Cabinet	X
Counter	G
Cutter	X
Handset	H
Hard disk	B
Manual feed mechanism (ADF)	X
Marker (Stamp)	O
Monitor speaker	O
Optional cassette: 100 sheets	E
Optional Fax On Demand kit	D
Optional paper feed unit (up to 2 units)	F
Optional printer interface	I

Video Processing Features	
Contrast	O
Halftone (Basic & Error Diffusion)	O

Video Processing Features	
MTF	O
Reduction before tx (B4 -> A4)	O
Reduction before tx (A3 -> B4)	O
Reduction before tx (A3 -> A4)	O
Scanning Resolution - Standard	O
Scanning Resolution - Detail	O
Scanning Resolution - Fine	O
Scanning Resolution - Superfine	X
Smoothing to 400 x 400 dpi when printing	O

Communication Features - Auto	
Automatic fallback	O
Automatic redialing	O
Confidential reception	O
Dual Access	O
Substitute reception	O

Communication Features - User Selectable	
Action as a transfer broadcaster	O
AI Redial (last ten numbers)	O
Answering machine interface	X
Authorized Reception	O
Auto-answer delay time	X
Auto dialing (pulse or DTMF)	O
Auto Document	O
Auto image density selection	X
Auto paper size selection	X
Automatic Voice Message	X
Batch Transmission (max 6 files)	O
Broadcasting	O
Chain Dialing	O
Communication Result Display	X
Confidential ID Override	O
Confidential Reception	O
Confidential Transmission	O
Direct Fax Number Entry	O
Economy Transmission	O
Fax on demand	D
Forwarding	O

Communication Features - User Selectable	
Free Polling	O
Groups (7 groups)	O
Group Transfer Station	O
Hold	X
ID Transmission	O
Immediate Redialing	O
Immediate transmission	O
Keystroke Programs	O
Length Reduction	X
Memory transmission	O
Multi-step Transfer	O
Next Transfer Station	X
OMR	O
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	C
Polling Reception	O
Polling Transmission	O
Polling tx file lifetime in the SAF	O
Quick Dial (Standard: 64 stations)	O
Reception modes (Fax, Tel, Auto)	O
Remote control features	X
Remote Transfer	O
Restricted Access	O
Secured Polling	O
Secured Polling with Stored ID Override	O
Secure Transmission	X
Send Later	O
Silent ringing detection	X
Speed Dial (Standard: 100 stations)	O
Telephone Directory	O
Tonal Signal Transmission	O
Transfer Request	O
Transmission Deadline (TRD)	O
Turnaround Polling	X

Communication Features - User Selectable	
Two-step Transfer	X
Two in one	O
Voice Request (immed. tx only)	X

Communication Features - Service Selectable	
AI Short Protocol	O
Auto-reduction override option	O
Busy tone detection	O
Cable Equalizer PSTN ISDN	 O J
Closed Network (tx and rx)	O
Continuous Polling Reception	O
Dedicated tx parameters	O
ECM	O
EFC	X
Inch-mm conversion before transmission	O
mm-inch conversion when printing	O
Page retransmission times	O
Protection against wrong conn.	O
Resolutions available for reception 200 x 100 dpi 200 x 200 dpi 200 x 400 dpi 400 x 400 dpi	 O O X X
Resol'n stepdown override option	X
Short Preamble	X
Well log	O

Other User Features	
Area code prefix	X
Automatic service call	Service
Center mark	O
Checkered mark	O
Clearing a memory file	O
Clearing a polling file	O
Clock	O
Confidential ID	O

Other User Features	
Copy editing (Erase Center/Margin)	X
Copy mode	O
Copy Mode Restriction	O
Counters	O
Daylight Saving Time	O
Destination Check	X
Direct entry of names	O
File Retention Time	O
File Retransmission	O
Function Programs	O
Hard Disk Filing System	B, C
ID Code	O
Label Insertion (“From xxx”)	O
Language Selection	O
LCD contrast control	Service
Memory Lock	O
Memory Lock ID	O
Modifying a memory file	X
Multi Sort Document Reception	O
Multicopy mode	O
Own telephone number	O
Energy Saver (Night Timer and standby mode)	O
Print density control	O
Printing a memory file	O
RDS on/off	O
Reception Mode Switching Timer	X
Reception time printing	O
Reduction/Enlargement	X
Remaining memory indicator	O
Remote ID	O
Reverse Order Printing	O
RTI, TTI, CSI	O
Secure ID	X
Service Report Transmission	O
Speaker volume control	O
Specified Cassette Selection	F
Substitute reception on/off	O
Telephone line type	O
Toner Saving Mode	O
TTI/CIL on/off	O
User Function Keys (5 keys)	O
User Parameters	O

Other User Features	
Wild Cards	O

Reports - Automatic	
Charge Control Report	X
Communication Failure Report	O
Confidential File Report	O
Error Report	O
Fax On Demand Report	D
Memory Storage Report	O
Mode Change Report	X
Polling Clear Report	O
Polling Reserve Report	O
Polling Result Report	O
Power Failure Report	O
TCR (Journal)	O
Toner Cassette Order Form	X
Transfer Result Report	O
Transmission Result Report	O

Reports - User-initiated	
Authorized Reception List	O
Charge Control Report	X
File List	O
Forwarding List	O
Group List	O
Hard Disk File List	B, C
Personal Code List	O
Program List	O
Quick Dial List	O
Specified Cassette Selection List	F
Speed Dial List	O
TCR	O
Transmission Status Report	X
User Function List	O
User Parameter List	O

Service Mode Features	
Auto Paper Select test	X
Back-to-back test	O
Bit switch programming	O
Book mode test	X
Buzzer test	O
Cable equalizer	O

Service Mode Features	
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	O
Hard Disk Utilities (Format etc.)	B
LCD contrast adjustment	O
Line error mark	O
Memory file printout (all files)	O
Modem test	O
NCU parameters	O
Operation panel test	O
Periodic service call	O
PM Call	O
Printer mechanism test	O
Printer test patterns	O
Programmable attenuation	X
Protocol dump list	O
RAM display/rewrite	O
RAM dump	O
RAM test	O
Ringer test	O
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 TCR	O
Thermal head parameters	X
Transmission Status Report	X
User data transfer	O

1.2.2 CAPABILITIES OF PROGRAMMABLE ITEMS

The following table shows how the capability of each programmable item changes after the optional function upgrade card is installed.

Item	Standard	With function upgrade card
Maximum number of memory files plus polling rx files	200	1000
Maximum number of memory files	200	1000
Maximum number of destinations per file	200	1000
Maximum number of destinations overall	500	2000
Maximum number of pages overall	1200	3000
Number of Quick Dials	64	64
Number of Speed Dials	100	1000
Number of Groups	9	30
Maximum number of destinations per Group	200	200
Maximum number of destinations dialed from the ten-key pad overall	100	1000
Maximum number of programs	64 (programmed in 64 Quick Dial keys)	164 (programmed in 64 Quick Dial keys plus 100 Speed Dial codes)
Maximum number of destinations per program	200	200
Maximum number of destinations used for all programs	300	2000
Maximum number of Auto Documents	64 (programmed in 64 Quick Dial keys)	164 (programmed in 64 Quick Dial keys plus 100 Speed Dial codes)
Maximum number of communication records for the TCR (Journal) stored in the memory	256	1000
Maximum number of addresses specified for features such as Authorized Reception and Specified Cassette Selection	30	50
Maximum number of personal codes	50	500

1.2.3 POSSIBLE COMBINATIONS OF OPTIONAL EQUIPMENT

The following table shows which items of optional equipment can be or cannot be installed at the same time.
"4" in the table indicates that the two items of optional equipment can be installed at the same time.
"**X**" in the table indicates that the two items of optional equipment cannot be installed at the same time.

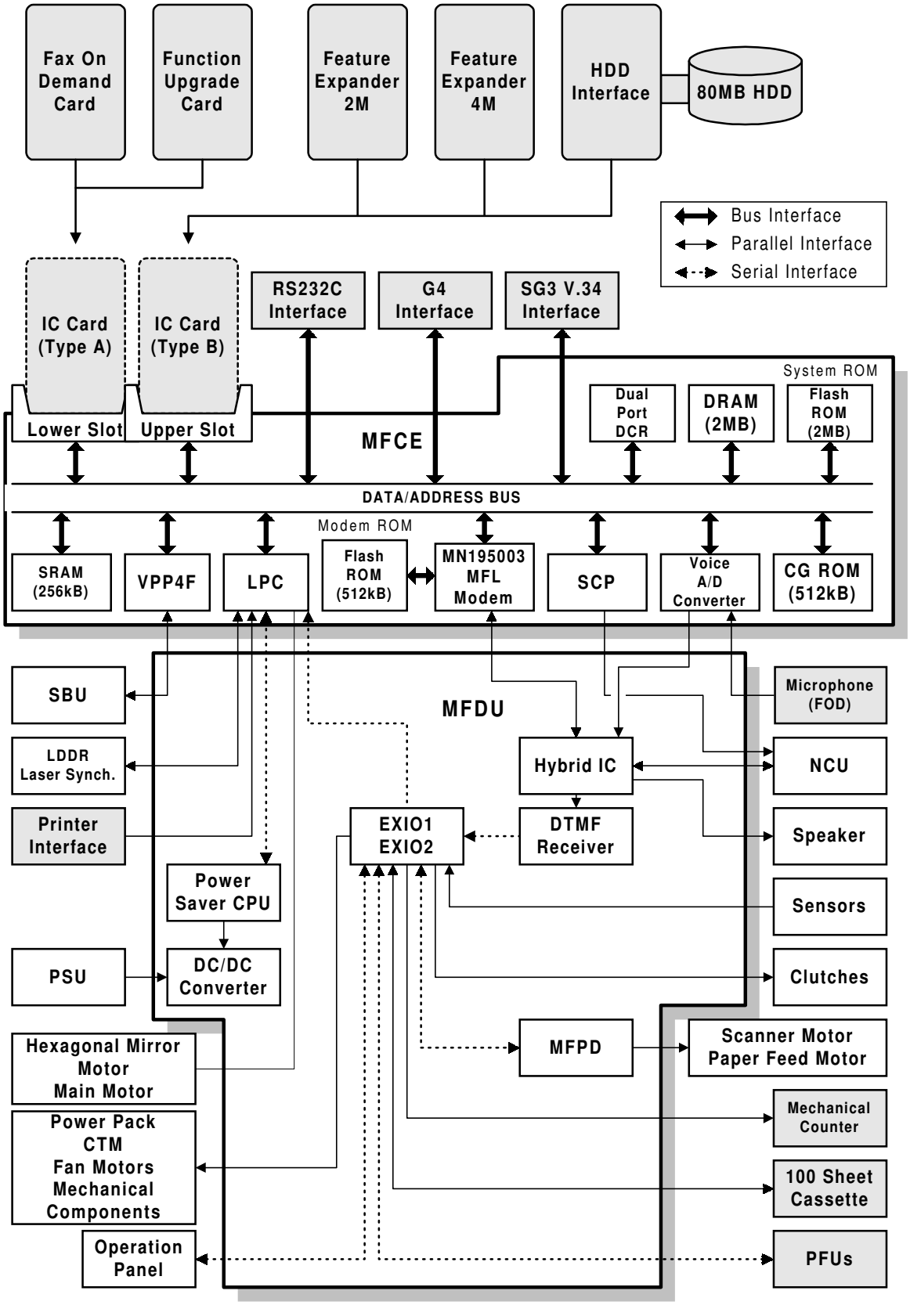
IC Cards

Option/Equipment	IC Card Slot	A	B	C	D	E
A: Feature Expander 2M/4M	Upper Slot		**X**	4	4	4
B: Feature Expander 80M (HDD)		**X**		4	4	4
C: Function Upgrade Card	Lower Slot	4	4		**X**	**X**
D: Fax On Demand (FOD) Card		4	4	**X**		**X**
E: Flash/SRAM Data Copy Tool (Service Tool)		4	4	**X**	**X**	

Other

	A	B	C	D	E	F
A: Paper Feed Unit Type F	4	**X**	4	4	4	4
B: Paper Feed Unit Type S	**X**	4	4	4	4	4
C: 100 Sheet Cassette	**4**	4		4	4	4
D: Printer Interface	4	4	4		4	4
E: G4 Unit	4	4	4	4		**X**
F: G3 Unit	4	4	4	4	**X**	

1.3 OVERALL MACHINE CONTROL



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The MFCE contains most of the logical components for overall system control, and direct interfaces to the IC cards, an RS232C interface, a G4 interface (CiG4-SV) and a optional G3 interface (SG3-V.34).
The MFDU has interfaces to the power supply, sensors, drive components, and optional equipment.
The RS232C interface may not be available in some models.

There are two cpus in the machine: the main cpu (SCP) on the MFCE and the energy saver cpu on the MFDU. In energy saver mode, the main CPU switches off and the energy saver CPU takes over.

The 2 MB (16Mbit) flash ROM contains the system software, which can be updated through an IC card slot or from the remote control center using RDS.
The CGROM (Character Generation ROM) contains all the character fonts used on the display and in reports.

The Panasonic MN195003MFL modem is used for all the communications (V.34, V.17, V.29, V.27ter., and V.21). The 512kB flash ROM contains the modem program.

The 2 MB DRAM is used for the SAF memory, ECM buffer memory, work area, and page memory. The SAF memory can be extended by 2, 4, or 80 MB with an IC memory card or a hard disk.

The 256 kB SRAM contains the user and system parameters. This can be upgraded by 512 kB with the function upgrade card. These SRAMs are battery backed-up.

* The SRAMs in the IC cards are battery backed up, in case the the machine is turned off or the machine goes into the 2-watt energy saver. However, the data in these SRAMs are not guaranteed if the card is disconnected from the machine. Whenever the Fax On Demand card or Function Upgrade Card needs to be removed for using the service tool, follow the instructions in section 4-1 to avoid any data loss.

2. DETAILED SECTION DESCRIPTIONS

2.1 SEP/SUB CODING

Overview.

ITU-T introduced the following protocol signals in the T.30 recommendation in 1996. These signals enable confidential transmission and secured polling between machines produced by different manufacturers.

SEP (Selective Polling): This signal informs the other terminal of the polling ID to enable secured (ID) polling.
Up to 20 digits or characters can be sent in a SEP frame.

PWD (Password): This signal informs the other terminal of the password to enable extra security.
Up to 20 digits or characters can be sent in a PWD frame.

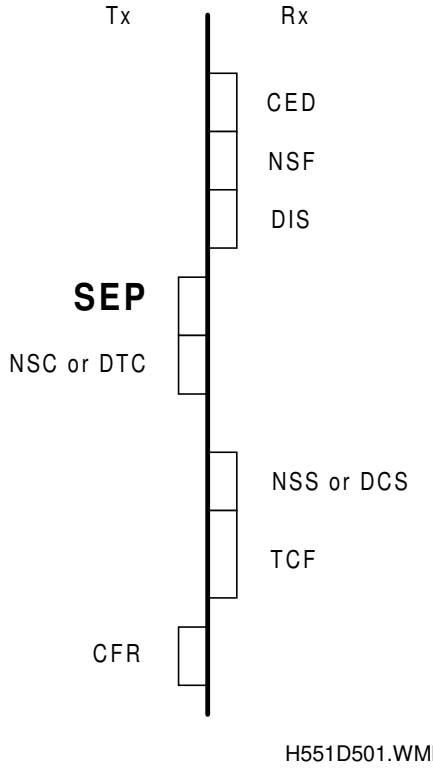
SUB (Sub-address): This signal informs a sub-address of a destination. Some fax servers use this information to route a received fax message to a specific address in the local network.
Up to 20 digits or characters can be sent in a SUB frame.

SID (Sender ID): This signal informs the other terminal of the sender ID to identify the transmitter.
Up to 20 digits or characters can be sent in a SID frame.

The ITU-T recommendation only clarifies the requirements for the transmitting terminal, and does not specify the requirements for the receiving terminal. How the receiving terminal treats these signals varies with receiver terminal and manufacturer.

NOTE: This machine is not capable of receiving PWD and SID codes. If the machine receives one of these frames, the machine ignores it.

2.1.1 SELECTIVE POLLING (SEP/PWD)



SEP Signal:
When the Rx terminal receives the SEP signal with the NSC or DTC signal, the Rx terminal switches over to secured polling transmission using the SEP ID. The SEP (Selective polling) signal must contain four digits as an ID.

The Rx terminal automatically disconnects the line when any of the following conditions occurs (error code 0-15).

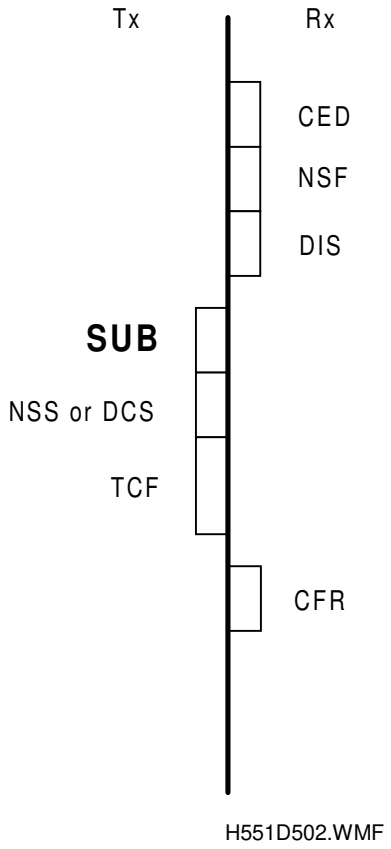
- When the SEP ID is other than four digits.
- When anything other than numbers is included in the ID.

The communication becomes free polling when the SEP ID programmed is 0000.

PWD Signal:
When the PWD (password) signal is transmitted together with the SEP signal, the PWD programmed is used as an ID code for stored ID override.

NOTE: This machine is not capable of receiving PWD signal.

2.1.2 SUB-ADDRESS (SUB/SID)



SUB Signal:
The SUB (sub-address) signal transmitted from the Tx terminal contains a confidential ID. A stored message can be printed using the SUB ID as confidential ID override.

The SUB ID must contain four digits. The receiving terminal automatically disconnects the line when any of the following conditions occurs (error code 0-15).

- When the SUB ID is other than four digits.
- When anything other than numbers is included in the ID.
- When a confidential ID is not programmed in the Rx terminal and when the transmitted SUB ID is 0000.

A stored message can be printed using the (normal) confidential ID stored in the machine when the SUB ID sent from the transmitter is 0000.

NOTE: This machine is not capable of receiving SID signal.

2.2 JBIG COMPRESSION

JBIG (Joint Bi-Level Image Coding Expert Group) is a working group which consists of members of ITU-T and ISO. The JBIG compression method allows data compression of approximately 1.2 to 1.3 times the MMR method in text mode, and 2 to 10 times in halftone mode.

JBIG compression is only available in the optional G3 unit.

JBIG compression is disabled when any of the following conditions occurs.

- When JBIG compression is turned off by communication bit switch 00.
- When ECM is turned off by communication bit switch 01.
- When the receiving terminal does not have the JBIG feature.
- When the receiving terminal does not have the ECM feature.

There are two modes for JBIG compression;

- Standard mode: the transmitted data block consists of 128 lines.
- Optional mode: the transmitted data block consists of one page (transmission speed with this mode is faster).

This machine supports both modes for transmission and reception. Which mode to use for communication is determined during handshaking.

Cross reference: Section 4.2 Bit switches

Communication bit switch 00 bit 5: JBIG reception mode
0: Standard mode only 1: Standard mode and optional mode (default)

Communication bit switch 00 bit 6: Priority of JBIG mode used for transmission
0: Standard mode 1: Optional mode (default)

Please note that transmission speed with the optional mode is faster.

Data Compression

JBIG compressed data is called the Bi-level Image Entity (BIE).
The BIE consists of a header frame (BIH: Bi-level Image Header) and compressed data frame (BID: Bi-level Image Data).
The BIH frame contains information such as main scan width (pixels), sub scan length, and compression mode (standard/optional) used.
The BID frame contains the actual data.

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2.3 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 message regardless of RTI and CSI. When this is set to 1 (default setting), the following bit switch works in combination with the user parameter setting.

System bit switch 11 bit 6:
Conditions for memory reception if no RTI or CSI is received.
0: Memory reception is available only when RTI or CSI is received.
1: Memory reception is always available unless there is a mechanical (printer) error.

The default setting is set to 1.
The default setting means that if the printer is working, all messages will be received, regardless of the user parameter setting. But the user can decide whether or not to print messages that have no RTI or CSI. 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.

This switch has been added from the LFO model.

2.4 LINE TYPE CHANGE

When the machine is initially used only with the PSTN, the line type programmed with phone numbers in Quick Dials and the Speed Dials is stored as PSTN G3. Later, if the line connection is changed so that G3 is to be used only with the ISDN, the communication port for all stored Quick and Speed Dials must be changed to ISDN G3.
This feature allows the communication mode and port to be changed for all stored numbers at once.

Procedure:

1) Change the data in the following RAM addresses.
   4B5846(H) - Current line type setting.
   4B5847(H) - Line type to be used after this procedure.
   NOTE: The default setting for the above addresses are FF(H).
2) Turn the main switch off and on.
   Then, the machine checks all phone numbers stored in Quick Dials, Speed Dials, AI Redial, and Forwarding Stations. If the communication mode and the port setting for a number is the same as specified for the “current setting” in the above address, the machine changes these to the new setting.
3) After this procedure, the data programmed automatically returns to FF(H).

Setting:

Bit 0 and 1: Communication mode

Bit 1	Bit 0	Setting
0	0	G3
0	1	G4
1	0	Not used

Bit 2 to 4: Communication port

Bit 4	Bit 3	Bit 2	Setting
0	0	0	PSTN1 (Standard G3)
0	0	1	PSTN2 (Optional G3 unit)
0	1	1	ISDN
1	0	0	Any available port

(This setting can be used only when an optional G3 or G4 unit is installed in the machine.)
Other settings - Not used

Bit 5 to 7: Not used

Example:

If you wish to change the port setting from PSTN G3 to ISDN G3,
change the data to 00(H) (0000 0000) in the address 4B5846(H)
change the data to 0C(H) (00001100) in the address 4B5847(H)

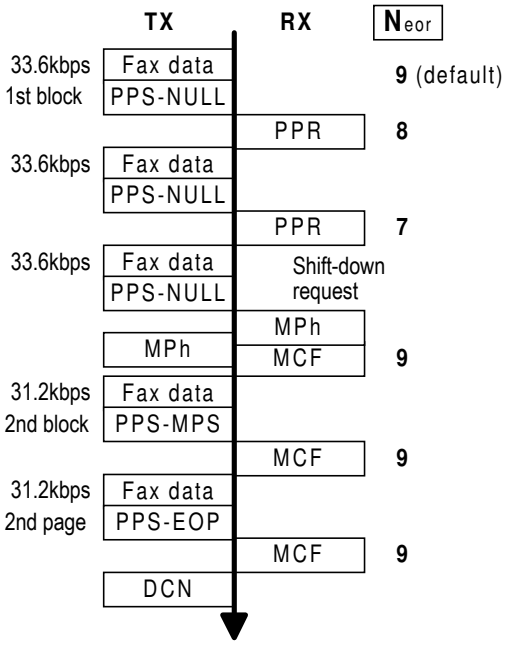
NOTE: Do not use this procedure if there are any files stored in the memory awaiting transmission.

2.5 V.8/V.34 PROTOCOL

NOTE: 1) Please refer to the V.8/V.34 Training Manual for overall information about V.8/V.34 protocol.
2) This section explains only functions that are specific to this machine.
3) ANSam length has been changed from 3.2 s to 3.7 s for this model (from June, 1998).

2.5.1 DATA RATE CHANGE PROCEDURE

Shift-down Request from Receiving Terminal



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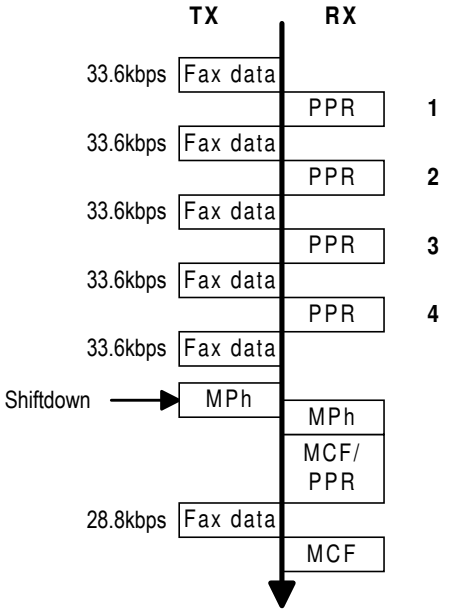
- Neor: Number of frame re-transmission until the Tx terminal sends DCN to terminal the communication. This number is fixed at “9”, not adjustable.

If this machine has sent two PPRs for one ECM block, it will request one step shift-down to the sender terminal in the next control channel.

Shift-down Request from Sending Terminal



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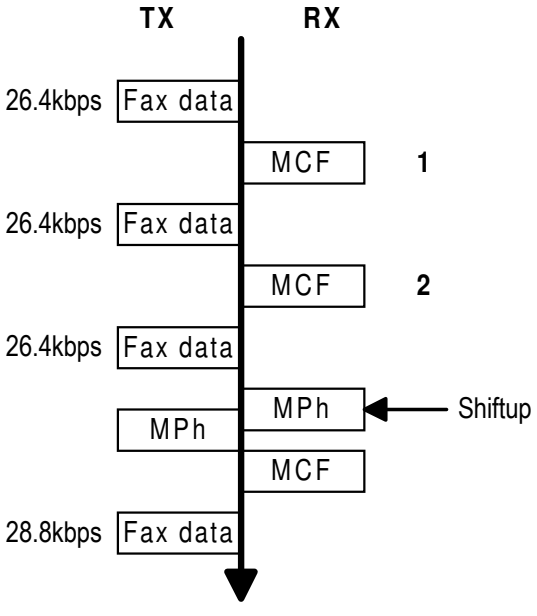
If this machine has received four PPRs for one ECM block, it will request two step shift-down to the receiving terminal in the next control channel.

Shift-up Request from Receiving Terminal



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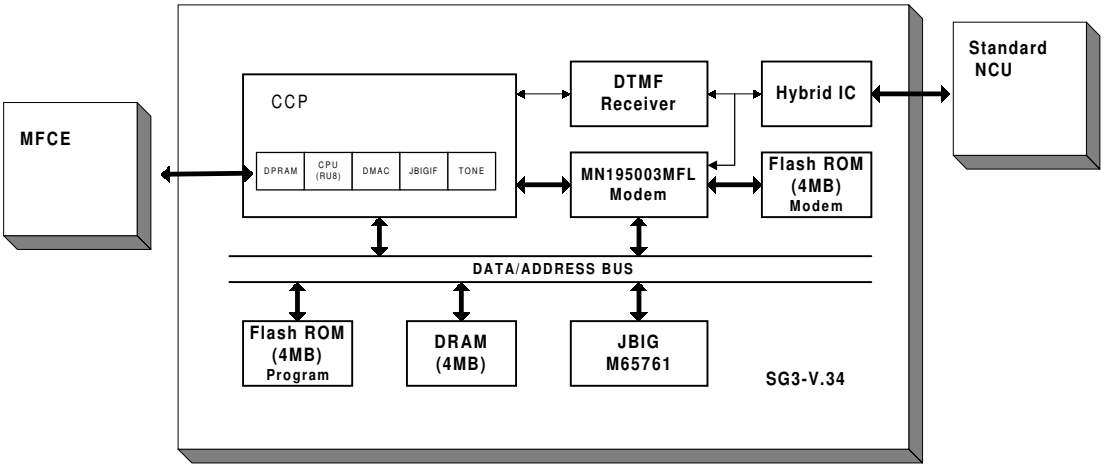
If this machine has sent two consecutive MCFs and when it detects line condition to be good, it will request one step shift-up to the sender terminal in the next control channel.

2.6 SG3-V.34 BOARD



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The SG3-V.34 board enables full dual G3 communication with the standard NCU. The CCP (Communication Control Processor) contains a CPU, and it controls the entire board.

1. CCP (Communication Control Processor)
   - CPU (RU8)
   - DPRAM (Dual Port RAM): Handshaking with the MFCE is done through this block.
   - DMA controller
   - JBIG interface
2. ROM
   - 512kB (4 Mbit) flash ROM for the system program
   - 512kB (4 Mbit) flash ROM for the modem program
     Both programs can be updated using the Flash/SRAM data copy board.
3. DRAM
   - 512kB DRAM shared between the line buffer, ECM buffer, and working RAM.
4. Modem
   - A Panasonic MN195003MFL modem is used.
5. JBIG LSI
   - JBIG compression LSI
6. DTMF Receiver

3. INSTALLATION

3.1 INSTALLING THE MACHINE

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

Refer to section 2.4.5. of the FX4 service manual for how to set up the NCU hardware in 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
PSTN access code (RAM address 4800DB)	Function 06
PSTN access method (RAM address 4800CD)	Function 06
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 480401)	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

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.

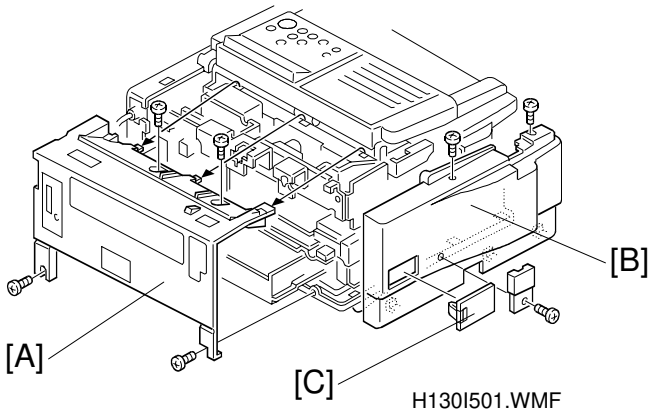
NOTE:
- Refer to the Operator's Manual for the user installable options.
- For the Function Upgrade Card and Fax On Demand Card, be sure to read section 3.3.9. after installation.

3.3.1 HARD DISK UNIT (80MB)

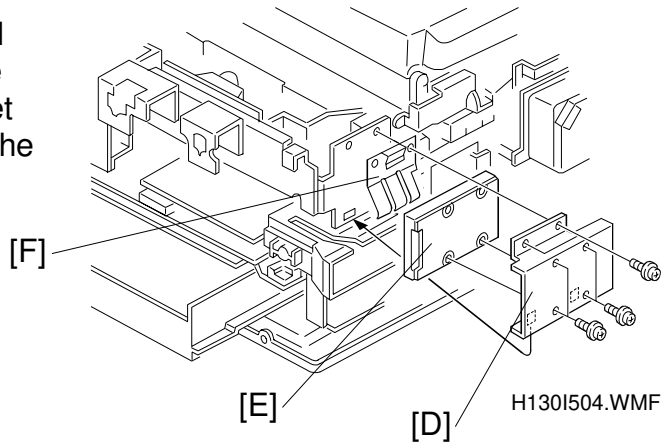
NOTE: If the optional G3 unit is also to be installed, install this option before installing the G3 unit.

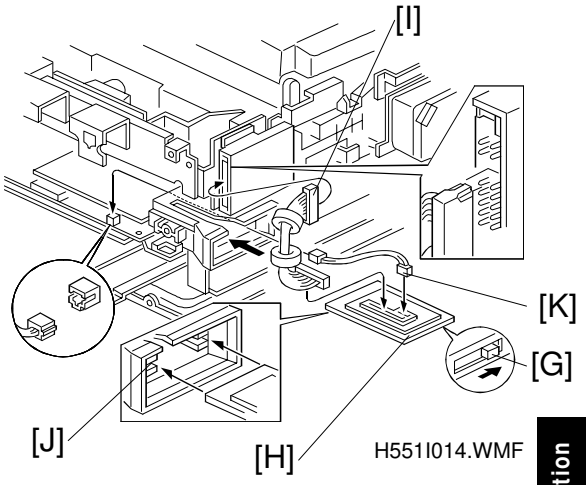
Installation Procedure

1. Remove the rear cover [A] (4 screws), left cover [B] (3 screws and the connector cover), and the IC card slot cover [C].



2. Attach the bracket [D] to the hard disk unit [E] (4 screws). Hook the grounding plate [F] on the bracket and secure the hard disk unit to the machine (2 screws).





3. Turn on the battery switch [G] on the hard disk interface card [H].

4. Connect the harness [I] to the hard disk interface card [H] and to the hard disk unit.
   Then insert the hard disk interface card into the upper card slot [J].
   NOTE: Do not connect the harness [K] at this time.

5. Turn on the main switch and enter the service mode. Then do the following:
   - Set system bit switch 05 bit 4 to "1", system bit switch 00 bit 1 to “1”, then exit the service mode. The machine then does the RAM reset level 3.
   - Enter service function 16 and select “0” (INITIALIZE) to initialize the hard disk.

   If “OK” is displayed, exit the service mode and turn off the main switch.

6. Connect the harness [K] (2 pins) from the hard disk interface card to CN73 on the FDU.

7. Put back the rear cover and the left cover. Turn on the main switch and enter the service mode.
   Print the memory dump list (service function 06) of the following addresses and data.

70001E(H) - 50(H)	700022(H) - 00(H)
70001F(H) - 00(H)	700023(H) - 00(H)
700020(H) - FF(H)	700024(H) - 00(H)
700021(H) - FF(H)	700025(H) - 80(H)

   If any of these addresses contain a different value, format the hard disk (service function 16).

End of Procedure

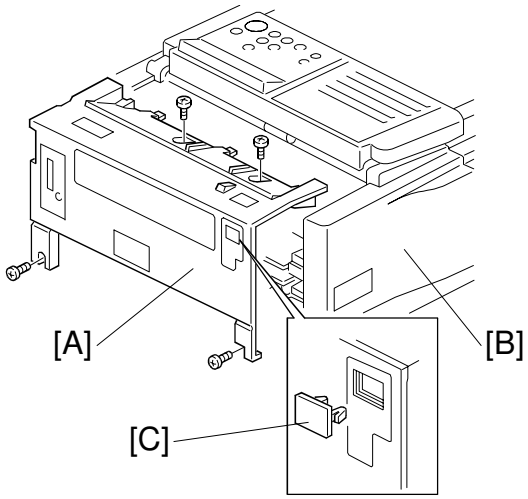
⚠CAUTION

The hard disk interface card contains a lithium battery. 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.

3.3.2 ISDN G4 INTERFACE

Installation Procedure

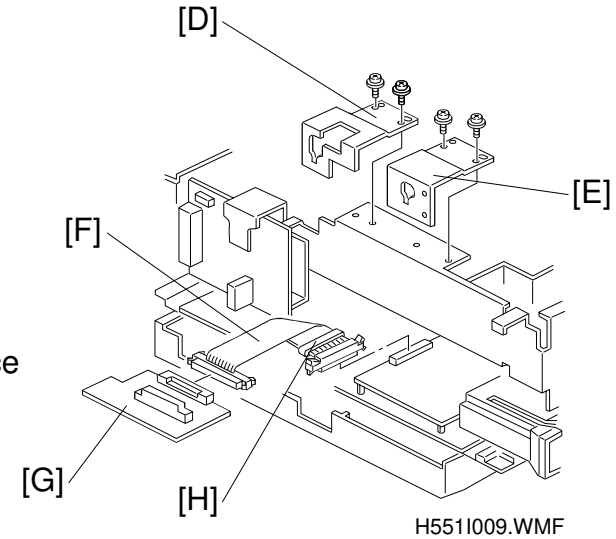
1. Remove the rear cover [A] (4 screws), and the left cover [B] (3 screws and the PFU connector cover. Then remove the small cover [C] from the rear cover as shown.



H143I501.WMF

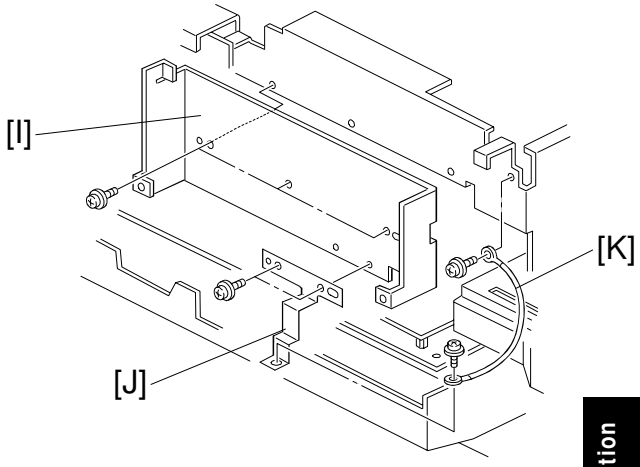
2. Remove the PIF brackets [D] and [E]. Bend the flat cable [F] as shown and connect it to the FCE (CN4) and the G4 interface board [G].

   NOTE: Make sure that the core [H] is placed by the FCE as shown. Make sure that the ▼ marks face each other at each end.



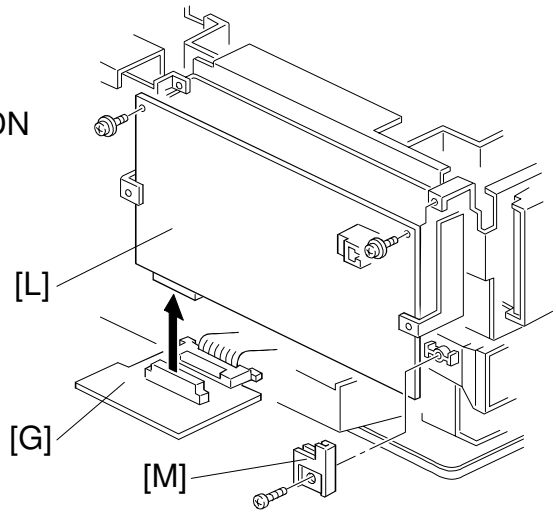
H551I009.WMF

3. Attach the inner bracket [I] (3 screws), grounding plate [J] (3 screws), and the ground wire [K] as shown.



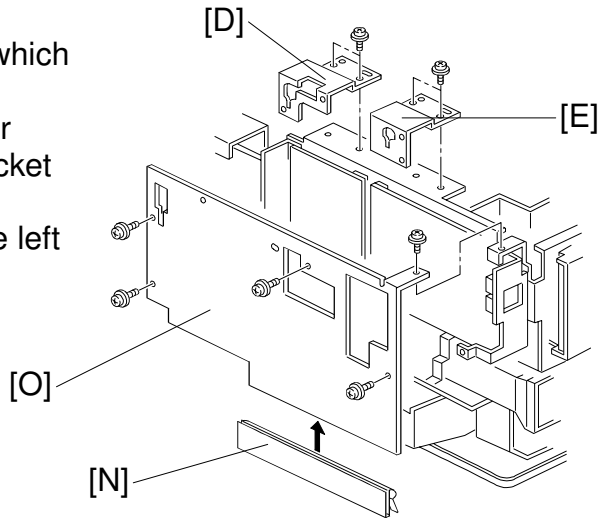
H551I010.WMF

4. Connect the ISDN board [L] to the G4 interface board [G]. Then, secure the ISDN board to the machine with 2 screws and the support holder [M] (1 tapping screw).



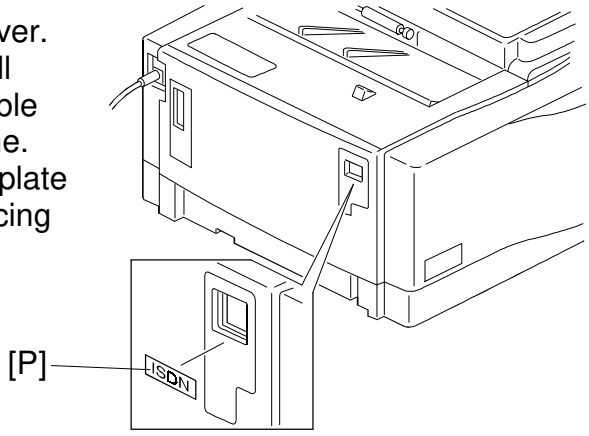
H551I011.WMF

5. Replace the PIF brackets [D] and [E] which were removed in step 2.
   Attach the ground plate [N] to the outer bracket [O]. Then attach the outer bracket to the machine (5 screws).
   NOTE: Align the ground plate with the left edge of the outer bracket.



H551I005.WMF

6. Put back the rear cover and the left cover. Attach the “ISDN” decal [P] to the small cover as shown. Connect the ISDN cable so that the core is closer to the machine.
   NOTE: Make sure that the grounding plate does not come off when replacing the rear cover.



H551I013.WMF

7. Plug in the machine and turn on the main switch.
   Set Communication Bit Switch 16 bit 2 to “1.” Then turn the machine off and on to enable the ISDN unit.
8. Input the initial settings with user function 61 and service function 17.
   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
   - System bit switch 18 bits 0 and 1: Default communication line for transmission

Bit 1	Bit 0	Setting
0	0	PSTN 1 or PSTN 2 (Default setting)
0	1	PSTN 1 (Standard G3 Unit)
1	0	PSTN 2 (Optional G3 Unit must be installed)
1	1	ISDN (Optional G4 Unit)

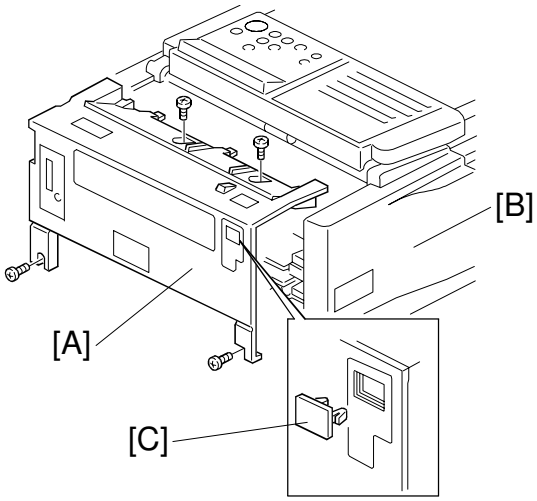
   NOTE: Make sure that you input the following subscriber numbers when you connect the machine under the US National ISDN network.
   - Subscriber number: G4 Subscriber No.1 (Main)/ G3 Subscriber No.1 (Main)
   - SPID Number: G4 Subscriber No.2 (Sub)/ G3 Subscriber No.2 (Sub)

End of Procedure

3.3.3 G3 INTERFACE

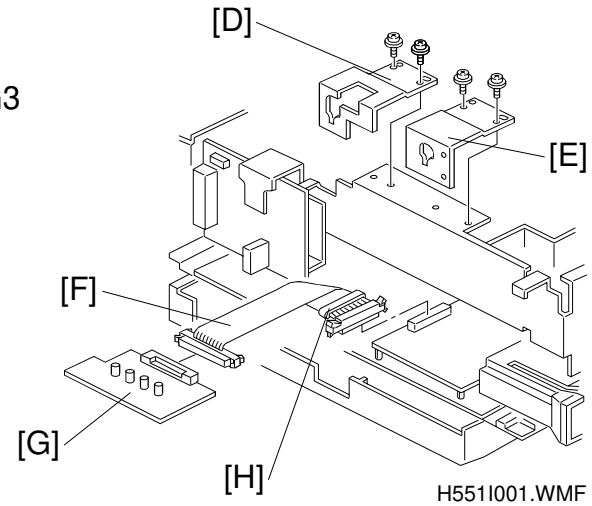
Installation Procedure

1. Remove the rear cover [A] (4 screws), and the left cover [B] (3 screws) and the PFU connector cover. Then, remove the small cover [C] from the rear cover as shown.



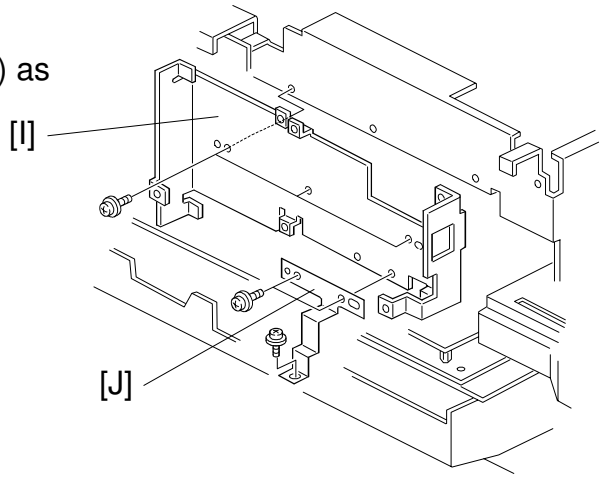
H143I501.WMF

2. Remove the PIF brackets [D] and [E]. Bend the flat cable [F] as shown and connect it to the FCE (CN4) and the G3 interface board [G].
   NOTE: Make sure that the core [H] is placed by the FCE as shown. Make sure that the ▼ marks face each other at each end.



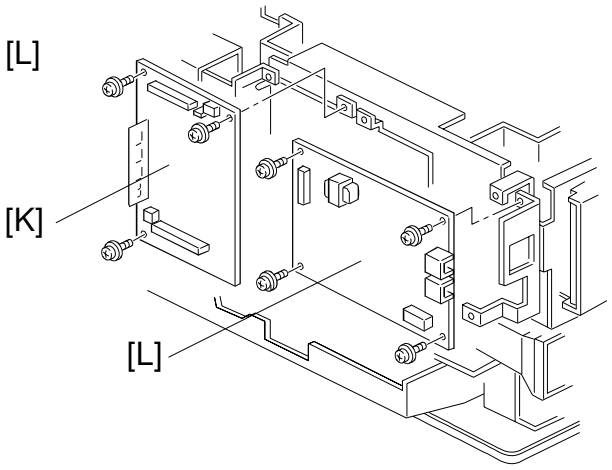
H551I001.WMF

3. Attach the inner bracket [I] (3 screws) and the grounding plate [J] (3 screws) as shown.



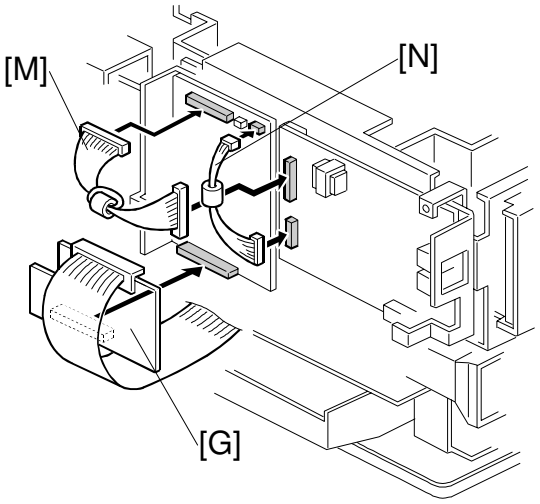
H551I002.WMF

4. Secure the SG3 (V.34) board [K] (3 screws) and the optional NCU board [L] (4 screws).



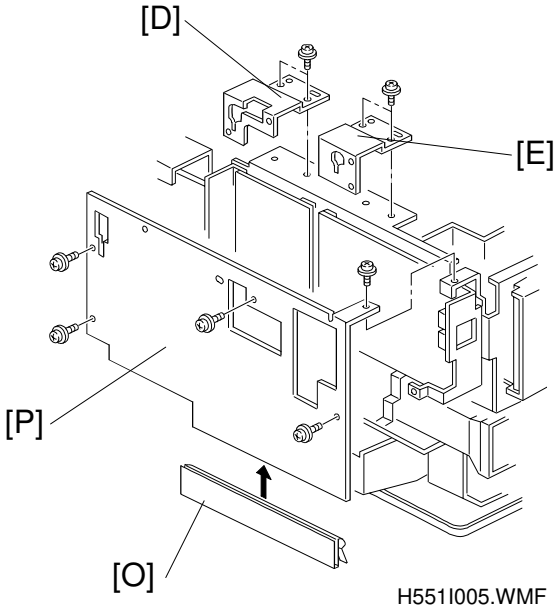
H551I003.WMF

5. Connect the harness [M] and [N] between the SG3 (V.34) board and the optional NCU board.
   Also connect the G3 interface board [G] to the SG3 (V.34) board.
   NOTE: The harness [N] is not used in the USA models.
   The core is not installed on the harness [M] in the USA models.



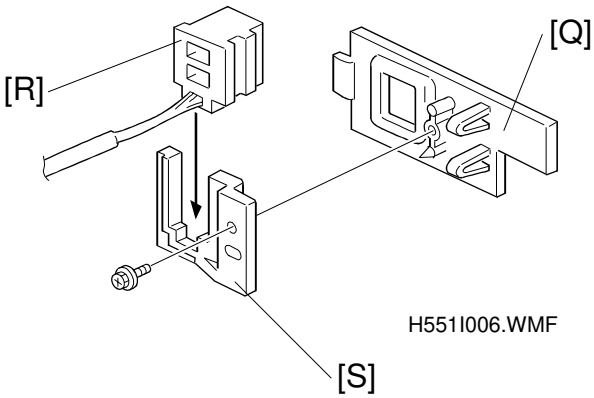
H551I507.WMF

6. Replace the PIF brackets [D] and [E] which were removed in step 2.
   Attach the grounding plate [O] to the outer bracket [P]. Then attach the outer bracket to the machine.
   Align the grounding plate with the left edge of the outer bracket.



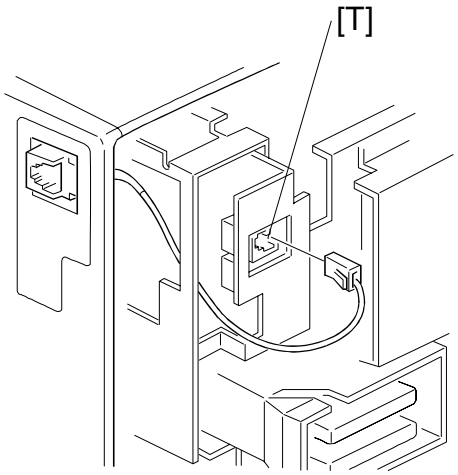
H551I005.WMF

7. Remove the small cover [Q] from the rear cover. Set the phone line harness [R] in the bracket [S]. Then attach it to the small cover [Q] (1 tapping screw).



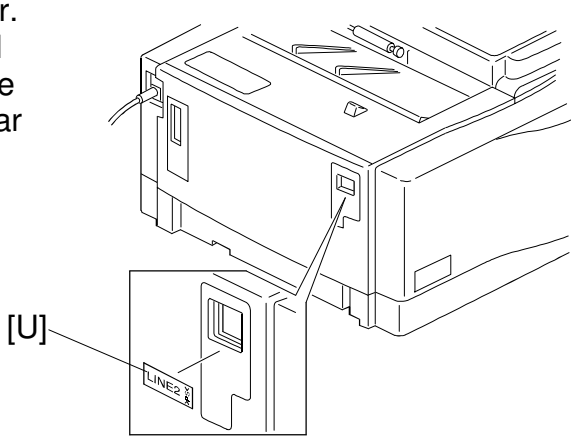
H551I006.WMF

8. Put back the small cover and connect the phone line harness to the connector [T] as shown.



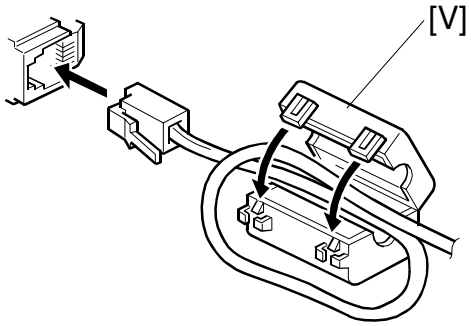
H551I007.WMF

9. Put back the rear cover and the left cover. Attach the “Line 2” decal [U] on the small cover. Make sure that the grounding plate does not come off when replacing the rear cover.



H551I008.WMF

10. Wrap the phone line around the core [V] as shown and connect it to the machine.
    NOTE: Make sure that the core is placed near the machine.



H551I504.WMF

11. Plug in the machine and turn on the main switch.
    Set Communication Bit Switch 16 bit 1 to "1." Then turn the machine off and on to enable the optional G3 unit.

12. Input the optional G3 CSI by user function 61.
    Make the following settings if necessary.
    - Default communication line for transmission:
      System Bit Switch 18 bit 0 and 1

Bit 1	Bit 0	Setting
0	0	PSTN 1 or PSTN 2 (Default setting)
0	1	PSTN 1 (Standard G3 Unit)
1	0	PSTN 2 (Optional G3 Unit)
1	1	ISDN (Optional G4 unit must be installed)

    - PSTN 2 (optional G3) access code (RAM address 4800D7).
    - PSTN 2 (optional G3) access method (RAM address 4800CD)

End of Procedure

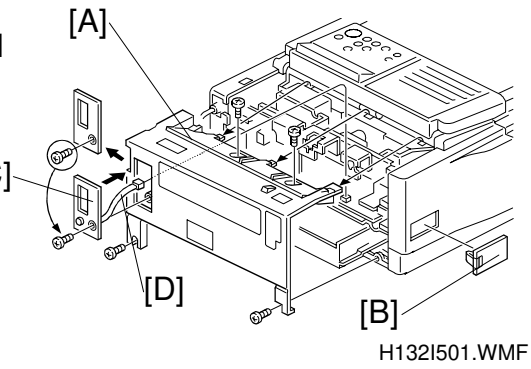
3.3.4 FAX ON DEMAND

NOTE: Do the procedures in the section 3.3.9 after installation.

Installation Procedure

1. Remove the rear cover [A] (4 screws), and the IC card slot cover [B].

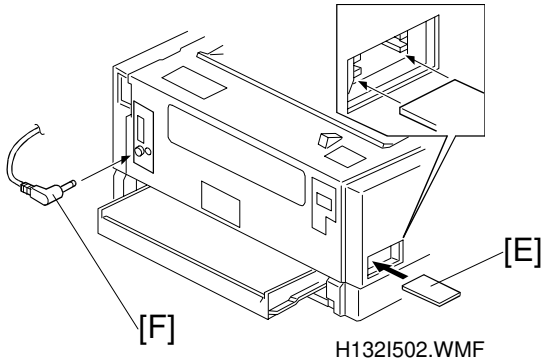
2. Remove the NCU cover (1 screw) and replace it with the cover for the Fax on Demand option [C], then connect the harness [D] to CN7 on the FCE as shown.



H132I501.WMF

3. Install the battery on the IC card and turn on the battery switch.

4. Install the IC card [E] into the lower slot, and put back the rear cover [A]. Then, connect the microphone socket [F] to the NCU cover as shown.



H132I502.WMF

5. Plug in the machine and turn on the main switch. Then do the following.
   - Print the system parameter list and make sure that "FOD" is listed as an option on the list.
   - Check that the functions related to the Fax on Demand feature can be accessed.
     (Please refer to the operator's manual.)

End of Procedure

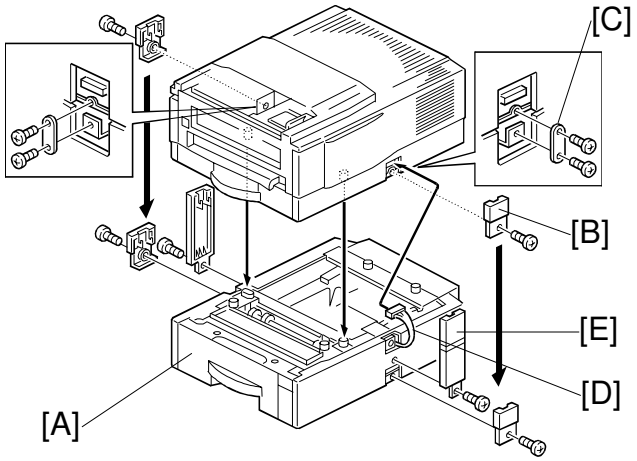
⚠CAUTION

The IC card contains a lithium battery. 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.

3.3.5 PAPER FEED UNIT (FRONT FLOW)

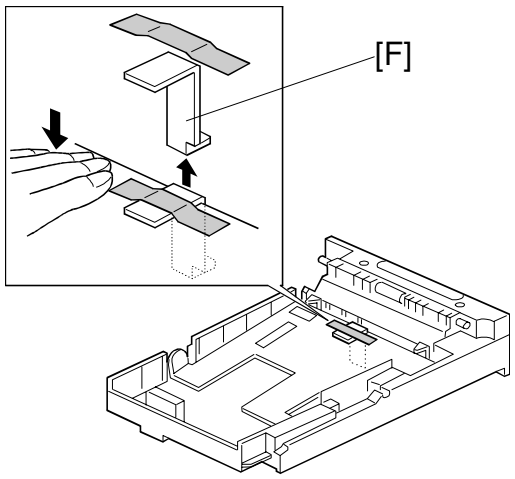
Installation Procedure

1. Put the machine on the paper feed unit [A], and remove the connector cover [B] (1 screw).
2. Secure the machine and the paper feed unit with the bracket [C] (2 screws). Then connect the harness [D] to the machine.
3. Install the harness cover [E] (1 screw), and replace the connector cover [B] (which was removed in step 1).



H110I502.WMF

4. Remove the bottom plate holder bracket [F] as shown.
5. Load the paper and turn on the machine. Make a test print using the paper feed unit.



H110I503.WMF

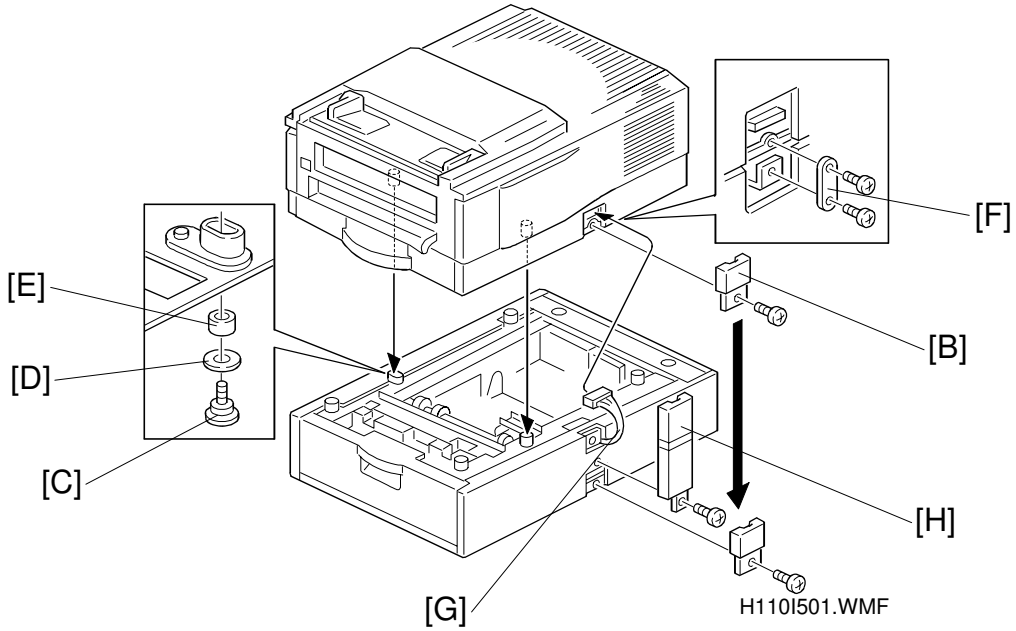
End of Procedure

3.3.6 PAPER FEED UNIT (SIDE FLOW)

Installation Procedure

1. Put the machine on the paper feed unit [A], and remove the connector cover [B] (1 screw).
2. Secure the machine and the paper feed unit at the front side with the panel screw [C], spacer [D], and the collar [E].
   NOTE: This step is not required for the H515 models.
3. Secure the rear side with the bracket [F] (2 screws). Then connect the harness [G] to the machine.
4. Install the harness cover [H] (1 screw), and replace the connector cover [B] (which was removed in step 1).
5. Load the paper and turn on the machine.
   Make a test print using the paper feed unit.

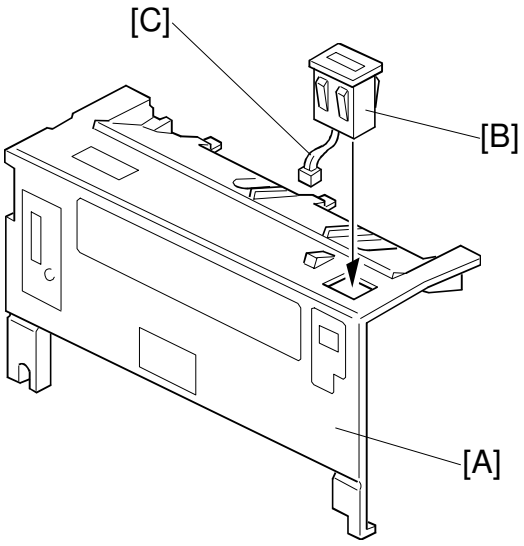
End of Procedure



3.3.7 COUNTER

Installation Procedure

1. Remove the rear cover [A] and the small cover.
2. Install the counter [B] as shown.
3. Connect the harness [C] to the FDU interface harness, then put back the rear cover [A].
4. Plug in the machine and turn on the main switch.
5. Make some copies and check whether the counter works or not. If it doesn't, check the harness connection from the counter to the FDU.



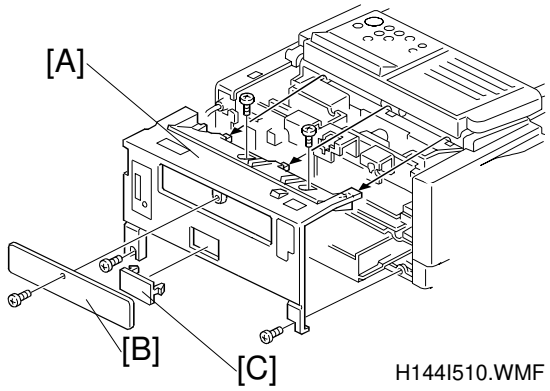
H165I505.WMF

End of Procedure

3.3.8 PRINTER UNIT

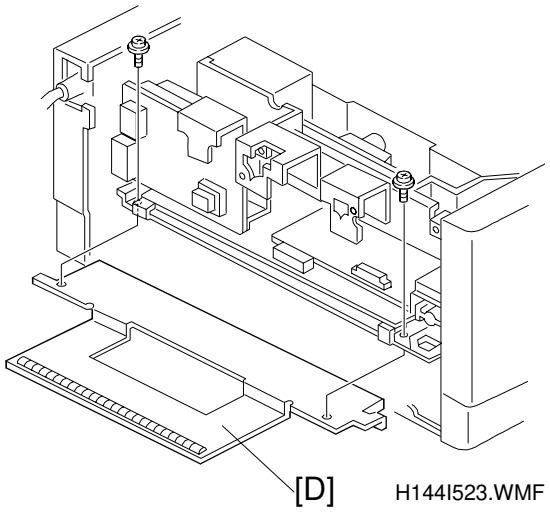
Installation Procedure

1. Remove the cassette cover from the rear cover [A].
   NOTE: The cassette cover is not installed in the Europe models.
2. Remove the rear cover [A] (2 screws) and two small covers [B] (1 screw) and [C].



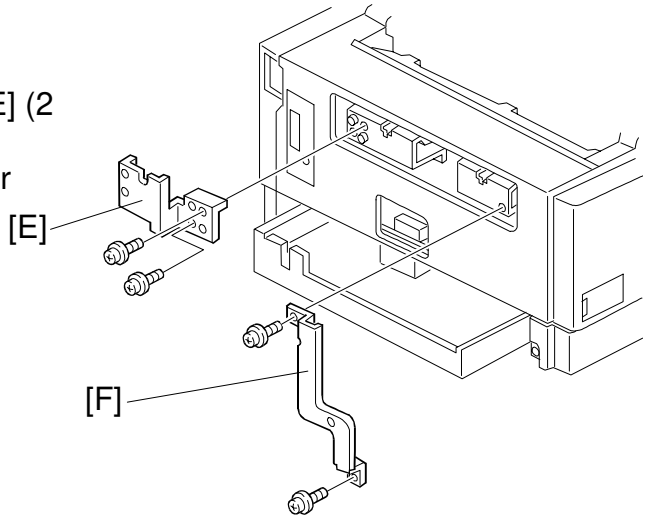
H144I510.WMF

3. Attach the grounding plate [D] to the machine (2 screws).



H144I523.WMF

4. Put the rear cover back on the machine (1 screw at the lower left corner), and install two brackets [E] (2 screws) and [F] (2 screws - one of these screws also secures the rear cover) as shown.

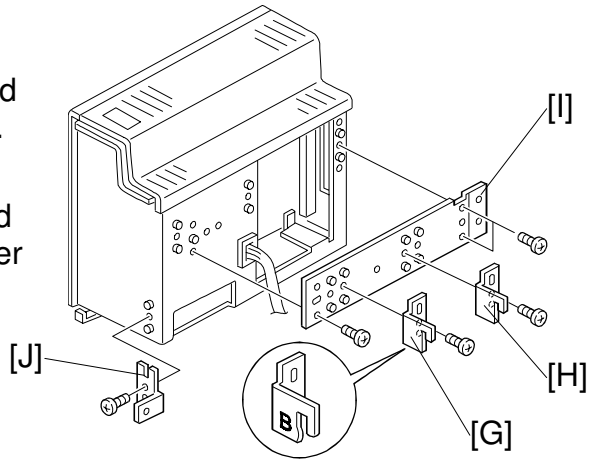


H144I513.WMF

5. Attach the brackets [G] and [H] onto the bracket plate [I] (2 screws).
   NOTE: For the brackets [G] and [H], used the ones which have "B" marked.

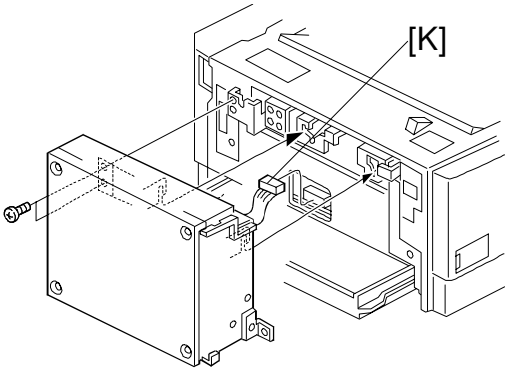
6. Attach the bracket plate [I] (4 screws) and the side bracket [J] (1 screw) to the Printer Interface Unit.

7. Remove the side covers of the Printer Interface Unit.



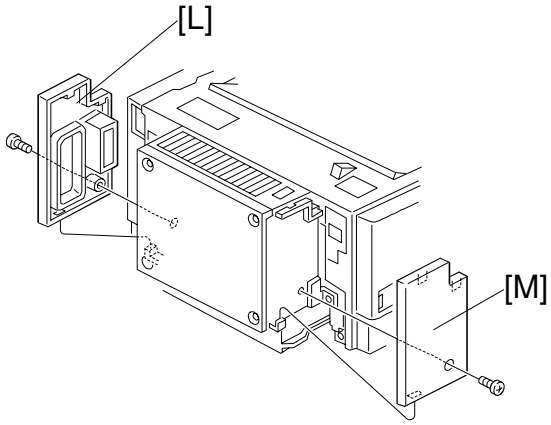
H144I565.WMF

8. Connect the harness [K] to the FDU through the lower window in the rear cover. Hook the Printer Interface Unit onto the machine by the brackets [G] and [H], then secure the unit (2 screws). Do not tighten the screw at the side bracket [J].



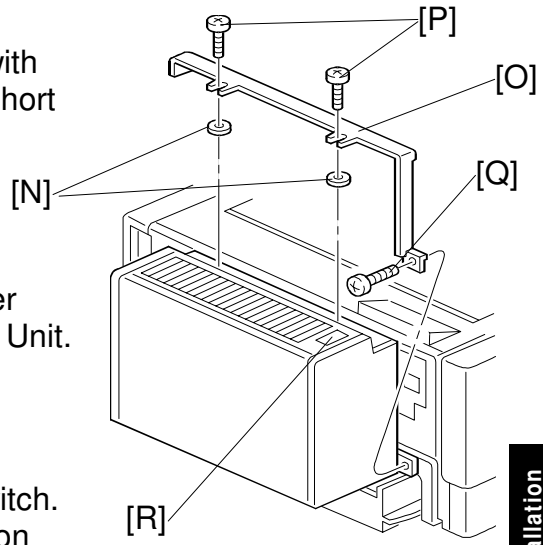
H144I566.WMF

9. Put back the side covers [L] and [M].



H144I567.WMF

10. Place the spacer [N] on top of the Printer Interface Unit and secure the top cover [O] with two long screws [P] (M3 x 10 mm) and one short screw [Q] (M3 x 6 mm).



H144I541.WMF

11. Attach a core at both ends of a parallel printer cable, then connect it to the Printer Interface Unit.

12. Plug in the machine and turn on the main switch. Check if the On Line indicator on the operation panel is lit. If not, check the harness connection from the Printer Interface Unit to the FDU.

13. Print a status sheet by pressing the button [R] at the top of the printer interface unit.

End of Procedure

3.3.9 DATA PROTECTION

Important notice for the Function Upgrade Card and Fax On Demand Card:

The Function Upgrade Card holds data that has been programmed, and the Fax On Demand card holds the voice messages that have been recorded.

⚠CAUTION

The following procedure must be avoided because it erases all the data stored in the card.

1. Turning off the machine with the card installed.
2. Disconnecting the card.
3. Turning on the machine without the card installed.

To prevent accidental data erasure, change the System Bit Switch 16 - bit 0 to “1” whenever a new card is installed.

When this bit switch is enabled, the machine will not start up unless one of the following cards is detected at power up, so that the machine will not reinitialize itself to a “without-the-card” configuration.

- Function Upgrade Card
- Fax On Demand Card
- FCE Data Copy Tool (Service Tool)

4. SERVICE TABLES AND PROCEDURES

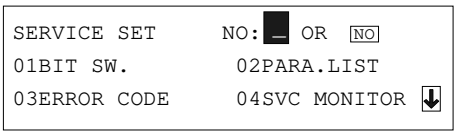
4.1 SERVICE LEVEL FUNCTIONS

In this section, frequently used keys are referred to with the following symbols.

Start key	Stop key
Function - Function key	
Yes - Yes key	No - No key
Up arrow key	Down arrow key
Right arrow key	Left arrow key

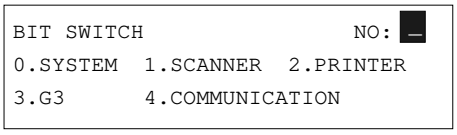
4.1.1 BIT SWITCH PROGRAMMING (FUNCTION 01)

1. Function then immediately Yes



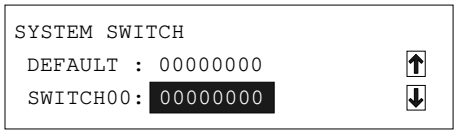
H515M501.WMF

2.



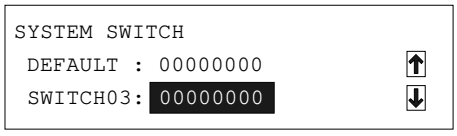
H515M502.WMF

3. To see the system bit switches:
   To see the scanner switches:
   To see the printer switches:
   To see the G3 switches:
   To see the communication switches:
   Example: Press



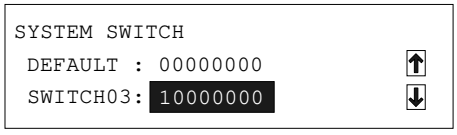
H515M503.WMF

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



H515M504.WMF

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



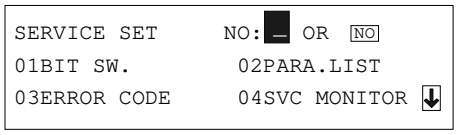
H515M505.WMF

6. Either:
   - Adjust more bit switches - go to step 4.
   - Finish - Yes Function

Service Tables

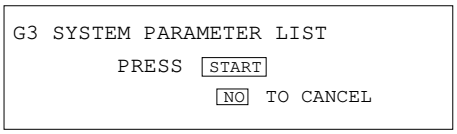
4.1.2 GROUP 3 SYSTEM PARAMETER LIST (FUNCTION 02)

1. Function □ □ □ □ □ □
   then immediately Yes



H515M501.WMF

2. □ □



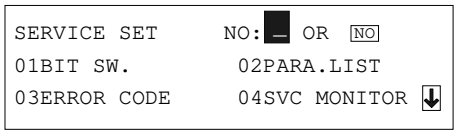
H515M506.WMF

3. ◇
Refer to the following table for the meaning of each counter in the list.

Name	Meaning	Name	Meaning
SCN	Scanned page counter	PRT	Printed page counter
TX	Transmitted page counter	RX	Received page counter
PM	PM counter	PM Default	Default setting for the PM service call interval
PCU	Printed page counter using the current master drum	COPY	Copied page counter
ADF	Scanned page counter using the ADF	TONER	Printed page counter using the current CTM
MAIN Cassette	Paper feed counter (Standard cassette)	Cassette 2	Paper feed counter (First paper feed unit)
Cassette 3	Paper feed counter (Second paper feed unit)	OPEN Cassette	Paper feed counter (100 sheet cassette)
BY-PASS	Paper feed counter (By-pass feeder)	DOC. JAM	Document jam counter
COPY JAM	Paper jam counter (total)	EJECT JAM	Fusing exit jam counter
PAPER JAM	Paper jam counter (Jams at the registration area)	MAIN CST JAM	Paper jam counter (Standard cassette)
CST 2 JAM	Paper jam counter (First paper feed unit)	CST 3 JAM	Paper jam counter (Second paper feed unit)
OPEN CST JAM	Paper jam counter (100-sheet cassette)	BY-PASS JAM	Paper jam counter (By-pass feeder)
PRN	Printed page counter from the PC printer interface	PPC1	Reserved for future use.
PPC2	Reserved for future use.	PPC3	Reserved for future use.
PPC4	Reserved for future use.		

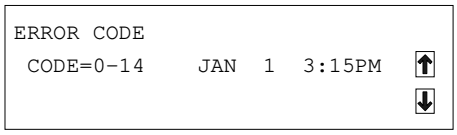
4.1.3 ERROR CODE DISPLAY (FUNCTION 03)

1. Function □ □ □ □ □ □ ,
   then immediately Yes



H515M501.WMF

2. □ □

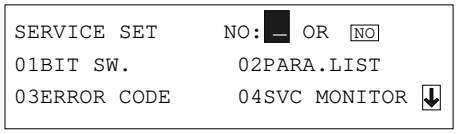


H515M507.WMF

3. Either:
   Scroll through the error codes - ▲ or ▼
   Finish - Yes Function

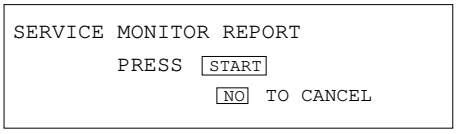
4.1.4 SERVICE MONITOR REPORT (FUNCTION 04)

1. Function □ □ □ □ □ □
   then immediately Yes



H515M501.WMF

2. □ □

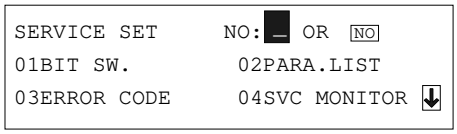


H515M508.WMF

3. ◇

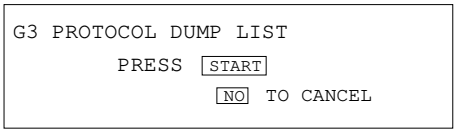
4.1.5 GROUP 3 PROTOCOL DUMP (FUNCTION 05)

1. Function □ □ □ □ □ □
   then immediately Yes



H515M501.WMF

2. □ □



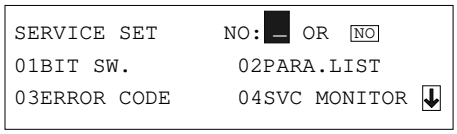
H515M509.WMF

3. ◇

Service Tables

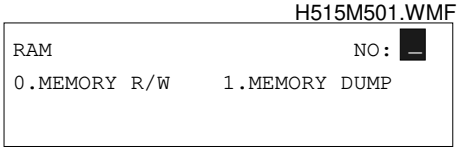
4.1.6 RAM DISPLAY/REWRITE (FUNCTION 06)

1. Function □ □ □ □ □ □
   then immediately Yes



H515M501.WMF

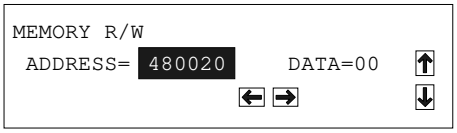
2. □ □



H515M510.WMF

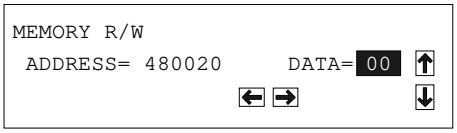
3. □

4. Input the address that you wish to see.
   Example: Address 480020 □
   □ □ □ □ □ □



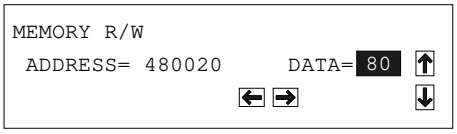
H515M512.WMF

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



H515M513.WMF

6. Type in the new data.
   Example: 80, press □ □

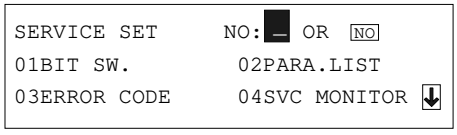


H515M514.WMF

7. Either:
   - View the previous address - press ▲.
   - View the next address - press ▼ .
   - Finish - Yes Function

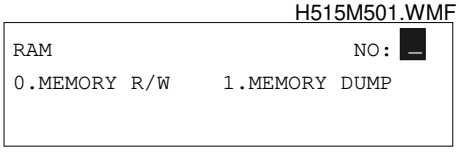
4.1.7 RAM DUMP (FUNCTION 06)

1. Function □ □ □ □ □ □ □ □ □
   then immediately Yes.



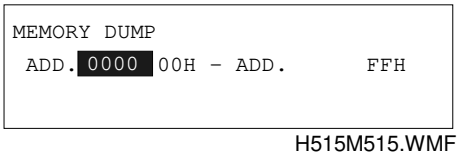
H515M501.WMF

2. □ □



H515M510.WMF

3. □



H515M515.WMF

4. Enter the first four digits of the start and end addresses.
   Example: Start at 480000, end at 4801FF.
5. [Start]

```
MEMORY DUMP
 ADD. 480000H - ADD. 4800FFH
```

H515M516.WMF

4.1.8 COUNTER DISPLAY/REWRITE (FUNCTION 07)

1. [Function] [ ] [ ] [ ] [ ] [ ] [ ]
   then immediately [Yes]

```
COUNTER R/W                    NO: _
0.COUNTER          1.PM COUNTER
2.CTM COUNTER      3.PCU COUNTER
```

H515M517.WMF

2. [ ] [ ]

```
COUNTER R/W                    NO: _
0.COUNTER          1.PM COUNTER
2.CTM COUNTER      3.PCU COUNTER
```

H515M517.WMF

3. Either:
   Check the transmitted, received, scanned and printed page counters, and the printer and scanner jam counters - press [ ]
   Check the PM counter - press [ ]
   Check the CTM counter - press [ ] Check the OPU counter - press [ ]
   Example: Press [ ]

```
COUNTER
   TX : 000000   SCN: 000000
   RX : 000000   PRT: 000000
```

H515M518.WMF

4. To change the contents of a counter, input the new value, then press [Yes].
5. To finish: [Yes] [Function]

Service Tables

4.1.9 MODEM TEST (FUNCTION 08)

1. Function □ □ □ □ □ □
   then immediately Yes

```
SERVICE SET      NO:_ OR NO
01BIT SW.         02PARA.LIST
03ERROR CODE      04SVC MONITOR ↓
```

H515M501.WMF

2. □ □

```
NCU                          NO:_
0.MODEM           1.DTMF
2.NCU PARA                     ↓
```

H515M519.WMF

3. □

```
MODEM TEST
      NO.01=V21   300BPS       ↑
          PRESS "START"        ↓
```

H515M520.WMF

4. Scroll through the available tests using ▲ or ▼ .
5. To start a test: ◇
6. To stop the test: ▽
7. To finish: No Function

4.1.10 DTMF TONE TEST (FUNCTION 08)

1. Function □ □ □ □ □ □
   then immediately Yes

```
SERVICE SET      NO:_ OR NO
01BIT SW.         02PARA.LIST
03ERROR CODE      04SVC MONITOR ↓
```

H515M501.WMF

2. □ □

```
NCU                          NO:_
0.MODEM           1.DTMF
2.NCU PARA                     ↓
```

H515M519.WMF

3. □

```
DTMF TEST
      NO.01=TONE [0]           ↑
          PRESS "START"        ↓
```

H515M521.WMF

4. Scroll through the available tests using ▲ or ▼ .
5. To start a test: ◇
6. To stop the test: ▽
7. To finish: No Function

4.1.11 NCU PARAMETERS (FUNCTION 08)

1. Function □ □ □ □ □ □
   then immediately Yes

```
SERVICE SET      NO:_ OR NO
01BIT SW.         02PARA.LIST
03ERROR CODE      04SVC MONITOR ↓
```

H515M501.WMF

2. □ □

```
NCU                          NO:_
0.MODEM           1.DTMF
2.NCU PARA                    ↓
```

H515M519.WMF

3. □

```
NCU PARAMETER SET
       C.C =019               ↑
      PRESS "YES/NO"          ↓
```

H515M522.WMF

4. Scroll through the parameters using ▲ or ▼. If you want to change a value, enter the new value at the keypad, then press Yes .
5. To finish : No Function.

NOTE: Parameter CC is the Country Code, Parameter 01 is the Tx level. Refer to section 4.3 for full details on NCU parameters.

Service Tables

4.1.12 V.34 MODEM TEST (FUNCTION 08)

1. Function □ □ □ □ □
   then immediately Yes

```
SERVICE SET      NO:_ OR NO
01BIT SW.         02PARA.LIST
03ERROR CODE      04SVC MONITOR
```

H515M501.WMF

2. □ □

```
NCU                          NO:_
0.MODEM          1.DTMF
2.NCU PARA
```

H515M519.WMF

3. □

```
V34 MODEM SYMBOL RATE        NO._
1.2400BPS        2.3000BPS
3.3200BPS        4.2800BPS
```

H551M508.WMF

4. Select the symbol rate, then press Yes

```
V34 MODEM SYMBOL-DATA RATE
  NO.01= 2400BPS - 2400BPS
         PRESS "START"
```

H551M514.WMF

5. Select the data rate using ▲ or ▼ ,
   press ◇ to start the test
6. To stop : ▽
7. To finish: No Function

4.1.13 V.8 MODEM TEST (FUNCTION 08)

1. Function □ □ □ □ □
   then immediately Yes

```
SERVICE SET      NO:_ OR NO
01BIT SW.         02PARA.LIST
03ERROR CODE      04SVC MONITOR
```

H515M501.WMF

2. □ □

```
NCU                          NO:_
0.MODEM          1.DTMF
2.NCU PARA
```

H515M519.WMF

3. □

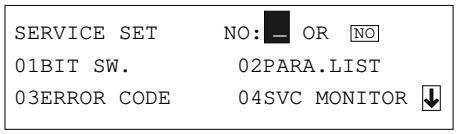
```
V8 MODEM TEST
      NO.01=V8 ANSam
          PRESS "START"
```

H551M509.WMF

4. Press ◇ to start the test
5. To stop : ▽
6. To finish: No Function

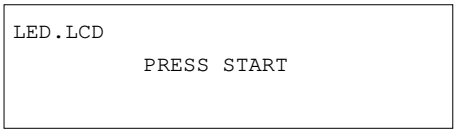
4.1.14 OPERATION PANEL TEST (FUNCTION 09)

1. Function □ □ □ □ □ □
   then immediately Yes



H515M501.WMF

2. □ □

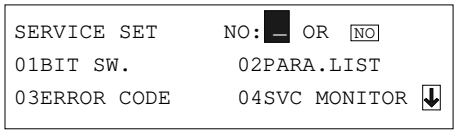


H515M525.WMF

3. To start the test, press ◇.
   The screen should turn black.
4. To stop the test, press ▽
5. To finish: No Function

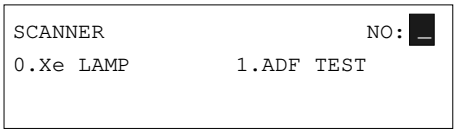
4.1.15 XENON LAMP TEST (FUNCTION 10)

1. Function □ □ □ □ □ □
   then immediately Yes



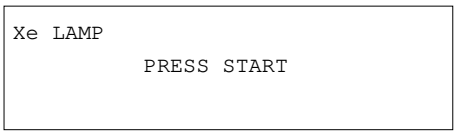
H515M501.WMF

2. □ □



H515M526.WMF

3. □



H515M527.WMF

4. To start the test, press ◇
5. To stop the test, press ▽
6. To finish: No Function

Service Tables

4.1.16 ADF TEST (FUNCTION 10)

1. Function □ □ □ □ □ □
   then immediately Yes

```
SERVICE SET      NO:_ OR NO
01BIT SW.         02PARA.LIST
03ERROR CODE      04SVC MONITOR ↓
```

H515M501.WMF

2. □ □

```
SCANNER                    NO:_
0.Xe LAMP          1.ADF TEST
```

H515M526.WMF

3. □

```
ADF TEST
          PRESS START
```

H515M528.WMF

4. Place a document in the feeder, then press ◇.
5. To stop the test, press ▽.
6. Finish: No Function

4.1.17 PRINTER TEST PATTERNS (FUNCTION 11)

1. Function □ □ □ □ □ □
   then immediately Yes

```
SERVICE SET      NO:_ OR NO
01BIT SW.         02PARA.LIST
03ERROR CODE      04SVC MONITOR ↓
```

H515M501.WMF

2. □ □

```
PRINTER                    NO:_
0.PATTERN          1.AGING TEST
```

H515M529.WMF

3. □

```
PATTERN                ENTER CODE
 CODE:_
        NO TO CANCEL  SCROLL ↑↓
```

H515M530.WMF

4. Press a key from □ to □.

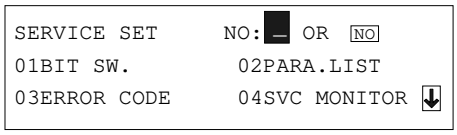
```
PATTERN
 CODE: 0  VERTICAL              ↑
          PRESS START           ↓
```

H515M531.WMF

5. Press ◇.
   A test pattern is printed.
6. To finish: No Function

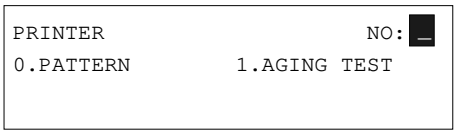
4.1.18 SCANNER AND PRINTER MECHANISM TEST - FREE RUN (FUNCTION 11)

1. Function □ □ □ □ □ □
   then immediately Yes



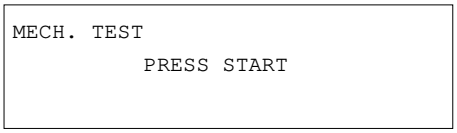
H515M501.WMF

2. □ □



H515M529.WMF

3. □

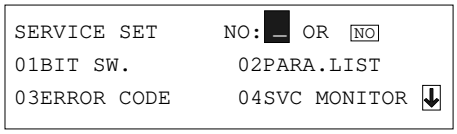


H515M532.WMF

4. To start the free run, press ◇ .
5. To stop the test, press ▽ .
6. To finish: No

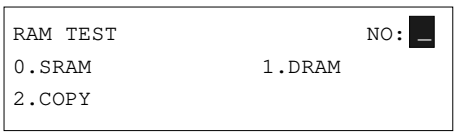
4.1.19 RAM TESTS (FUNCTION 12)

1. Function □ □ □ □ □ □
   then immediately Yes



H515M501.WMF

2. □ □



H515M533.WMF

3. Either:
   Test the SRAM: Press □ ◇
   Test the DRAM: Press □ ◇
   If test is successful, the display shows "OK!!".
   If test is unsuccessful, the display shows "ADDRESS=".
4. To finish:
   No Function

Service Tables

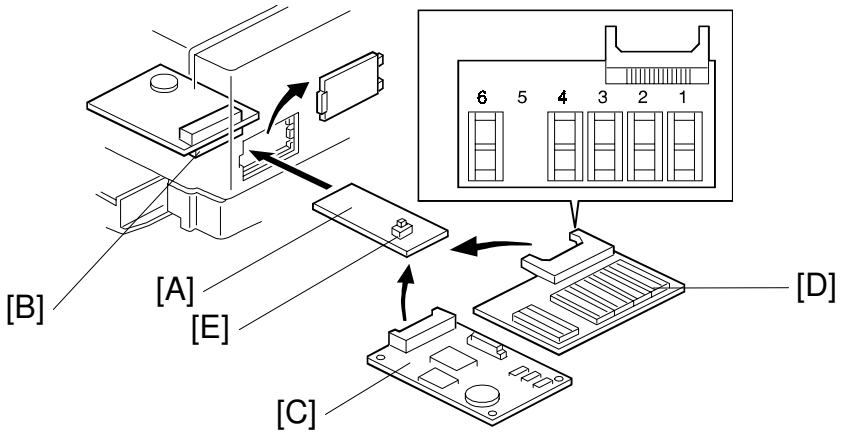
4.1.20 SOFTWARE DOWNLOAD (FUNCTION 12)

Instead of replacing EPROMs to update the machine's software, use this procedure to update the software in the machine's Flash ROM.
This procedure copies software from an external medium to the Flash ROM on the machine's MFCE. The external medium for the new software can be an MFCE or an EPROM board.

NOTE: Both H5159100 and A1939353 data copy tools can be used for this model. Both H5159500 and A1939351 data copy boards can be used for this model.

1. Turn off the machine.
2. Insert the data copy tool [A] into the **lower** IC card slot [B], then connect the MFCE [C] or data copy board [D] with new software to the opposite side of the tool.

⚠CAUTION
If the machine has an optional Function Upgrade card or an optional Fax On Demand card, follow the instructions in section 4.1.26. Otherwise, the programmed data in the IC card may all be erased.



H515M551.WMF

NOTE: The switch [E] on the tool [A] must be at the **ON** position.

NOTE: The data copy board uses four 4Mbit EPROMs. Each EPROM must meet the following specifications.
Size: 4 Mbits Data width: 8 bits
Number of pins: 32 Access speed: Faster than 150 ns
Socket 1: ROM0, D15 - D8
Socket 2: ROM1, D15 - D8
Socket 3: ROM0, D7 - D0
Socket 4, ROM1, D7 - D0
NOTE: The assigned ROM sockets are the same for both H5159500 and A1939351 data copy boards.

3. Turn on the machine.

4. Function □ □ □ □ □ □
   then immediately Yes

```
SERVICE SET      NO:_ OR NO
01BIT SW.         02PARA.LIST
03ERROR CODE      04SVC MONITOR ↓
```

H515M501.WMF

5. □ □

```
RAM TEST                    NO:_
0.SRAM              1.DRAM
2.COPY
```

H515M533.WMF

6. □

```
COPY                        NO:_
0.ROM COPY          1.RAM COPY
2.MDM ROM
```

H515M534.WMF

7. □

```
COPY
 FLASH ROM  -> MACHINE
         PRESS START
```

H515M535.WMF

8. ◇
   If the software download is successful, the display shows "**OK**".
   If the software download fails, the display shows "**NG**".
9. To finish, press No Function.
10. Turn off the machine, disconnect the tool, then turn the machine back on.
11. Print out the system parameter list and check the ROM version.

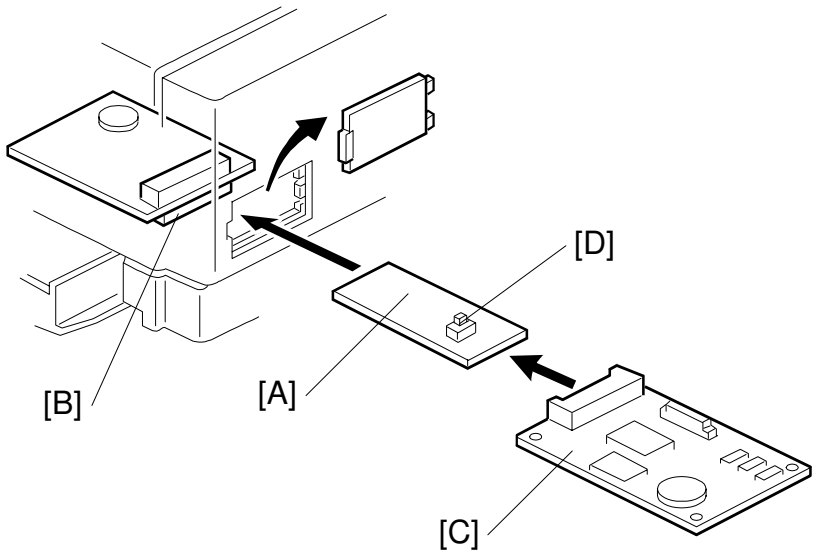
4.1.21 SOFTWARE UPLOAD (FUNCTION 12)

This procedure copies the software from the machine's built-in MFCE to an external MFCE.

1. Turn off the machine.
2. Insert the data copy tool [A] into the **lower** IC card slot [B], then connect the external MFCE [C] to the opposite side of the tool.

⚠CAUTION

If the machine has an optional Function Upgrade card or an optional Fax On Demand card, follow the instructions in section 4.1.26. Otherwise, the programmed data in the IC card may all be erased.



H515M552.WMF

NOTE: The switch [D] on the tool must be at the **OFF** position.

3. Turn on the machine.
4. Function □ □ □ □ □ □ □
   then immediately Yes

```
SERVICE SET      NO:_ OR NO
01BIT SW.         02PARA.LIST
03ERROR CODE      04SVC MONITOR ↓
```

H515M501.WMF

5. □ □

```
RAM TEST                    NO:_
0.SRAM              1.DRAM
2.COPY
```

H515M533.WMF

6.

```
COPY                              NO:
0.ROM COPY          1.RAM COPY
2.MDM ROM
```

H515M534.WMF

7.

```
COPY
 MACHINE  -> FLASH ROM
          PRESS START
```

H515M536.WMF

8.
   If the software is successfully uploaded, the display shows "**OK**".
   If the software upload fails, the display shows "**NG**".

9. Finish : [No] [Function]

10. Turn off the machine, disconnect the tool, then turn the machine on again.

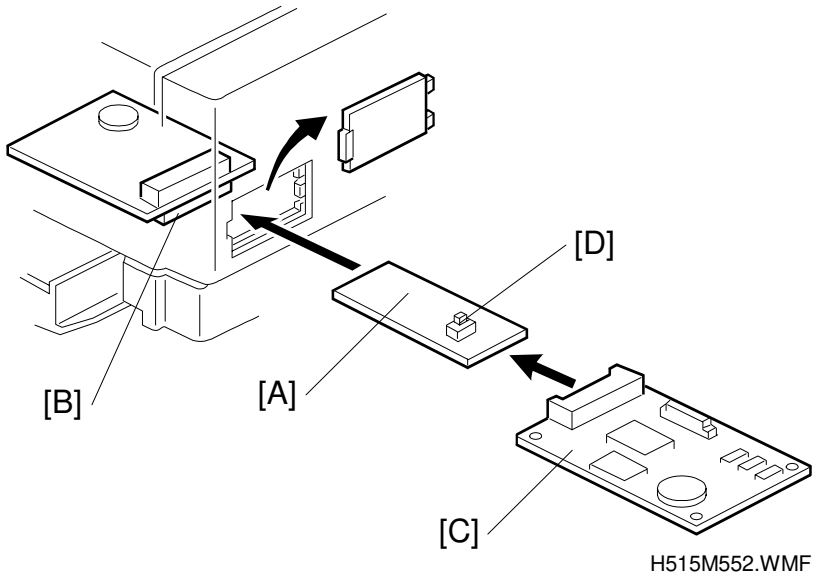
4.1.22 SRAM DATA DOWNLOAD (FUNCTION 12)

This procedure copies all the data stored in the SRAM on an external MFCE to the machine's MFCE. Use this after replacing a damaged MFCE to save any previous settings that were programmed in the damaged MFCE.

1. Turn off the machine.
2. Insert the data copy tool [A] into the **lower** IC card slot [B], then connect the damaged MFCE [C] to the opposite side of the tool.

⚠CAUTION

If the machine has an optional Function Upgrade card or an optional Fax On Demand card, follow the instructions in section 4.1.26. Otherwise, the programmed data in the IC card may all be erased.



H515M552.WMF

NOTE: The switch [D] on the tool must be at the **OFF** position.

3. Turn on the machine.
4. Function □ □ □ □ □ □
   then immediately Yes

```
SERVICE SET      NO:_ OR NO
01BIT SW.          02PARA.LIST
03ERROR CODE       04SVC MONITOR ↓
```

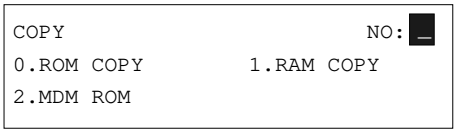
H515M501.WMF

5. □ □

```
RAM TEST                    NO:_
0.SRAM              1.DRAM
2.COPY
```

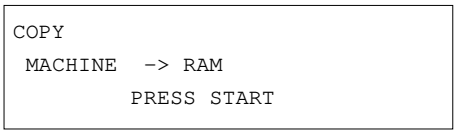
H515M533.WMF

6.



H515M534.WMF

7.
If the SRAM data is successfully downloaded, the display shows "**OK**".
If the SRAM download fails, the display shows "**NG**".



H515M537.WMF

8. Finish : No Function
9. Turn off the machine, disconnect the tool, then turn the machine back on.

Service Tables

4.1.23 MODEM SOFTWARE DOWNLOAD (FUNCTION 12)

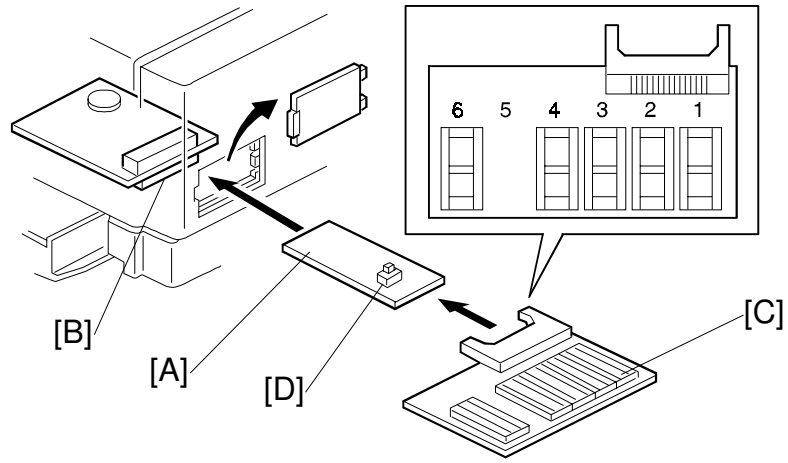
This procedure copies the V.34 standard modem software from the data copy board to the internal MFCE modem Flash ROM.

NOTE: An external MFCE cannot be used for this procedure.

1. Turn off the machine.
2. Insert the data copy tool [A] into the **lower** IC card slot [B], then connect the data copy board [C] to the opposite side of the tool.

⚠CAUTION

If the machine has an optional Function Upgrade card or an optional Fax On Demand card, follow the instructions in section 4.1.26. Otherwise, the programmed data in the IC card may all be erased.



H551M501.WMF

NOTE: Insert the EPROM (4 Mbits) with the V.34 software in the **socket 6**. The switch [D] on the tool must be at the **OFF** position.

3. Turn on the machine.
4. Function □ □ □ □ □ □ then immediately Yes

```
SERVICE SET      NO:_ OR NO
01BIT SW.         02PARA.LIST
03ERROR CODE      04SVC MONITOR ↓
```

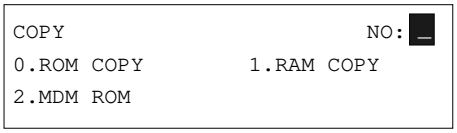
H515M501.WMF

5. □ □

```
RAM TEST                    NO:_
0.SRAM              1.DRAM
2.COPY
```

H515M533.WMF

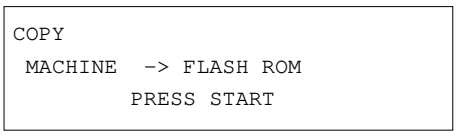
6.



H515M534.WMF

7.

NOTE: It becomes when an optional G3 unit is installed.



H515M536.WMF

8.
   If the software is successfully uploaded, the display shows "**OK**".
   If the software upload fails, the display shows "**NG**".
9. Finish : No Function
10. Turn off the machine, disconnect the tool, then turn the machine on again.

Service Tables

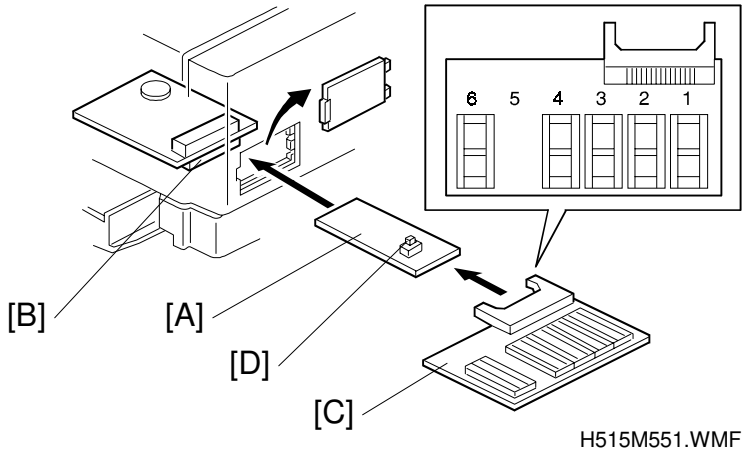
4.1.24 OPTIONAL G3 BOARD SOFTWARE DOWNLOAD

This procedure copies the optional G3 board software from the data copy board to the optional G3 board program Flash ROM.

NOTE: The optional G3 board must be installed in order to do this procedure. An external MFCE cannot be used for this procedure.

1. Turn off the machine.
2. Insert the data copy tool [A] into the **lower** IC card slot [B], then connect the data copy board [C] to the opposite side of the tool.

⚠CAUTION
If the machine has an optional Function Upgrade card or an optional Fax On Demand card, follow the instructions in section 4.1.26. Otherwise, the programmed data in the IC card may all be erased.



H515M551.WMF

NOTE: Insert the EPROM (4 Mbits) with the V.34 software in **socket 6**. The switch [D] on the tool must be at the **OFF** position.

3. Turn on the machine.
4. Function □ □ □ □ □ □ □
   then immediately Yes

```
SERVICE SET      NO:_ OR NO
01BIT SW.         02PARA.LIST
03ERROR CODE      04SVC MONITOR ↓
```
H515M501.WMF

5. □ □

```
RAM TEST                      NO:_
0.SRAM              1.DRAM
2.COPY
```
H515M533.WMF

6.

```
COPY                              NO: _
0.ROM COPY              1.RAM COPY
2.SG3 ROM               3.MDM ROM
```

H515M534.WMF

7.

```
COPY
 MACHINE  -> FLASH ROM
          PRESS START
```

H515M536.WMF

8.
   If the software is successfully uploaded, the display shows "**OK**".
   If the software upload fails, the display shows "**NG**".

9. Finish : [No] [Function]

10. Turn off the machine, disconnect the tool, then turn the machine on again.

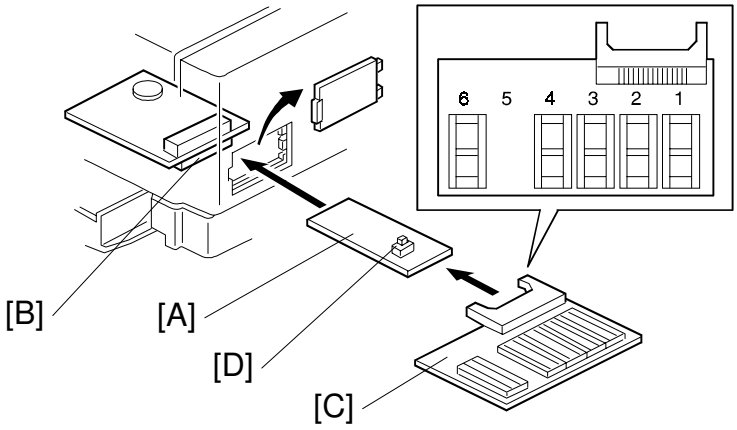
4.1.25 OPTIONAL G3 BOARD MODEM SOFTWARE DOWNLOAD

This procedure copies the optional G3 board modem software from the data copy board to the optional G3 board modem Flash ROM.

NOTE: The optional G3 board must be installed in order to do this procedure. An external MFCE cannot be used for this procedure.

1. Turn off the machine.
2. Insert the data copy tool [A] into the **lower** IC card slot [B], then connect the data copy board [C] to the opposite side of the tool.

⚠CAUTION
If the machine has an optional Function Upgrade card or an optional Fax On Demand card, follow the instructions in section 4.1.26. Otherwise, the programmed data in the IC card may all be erased.



H515M551.WMF

NOTE: Insert the EPROM (4 Mbits) with the V.34 software in the **socket 6**. The switch [D] on the tool must be at the **OFF** position.

3. Turn on the machine.

4. Function □ □ □ □ □ □ □
   then immediately Yes

```
SERVICE SET      NO:_ OR NO
01BIT SW.         02PARA.LIST
03ERROR CODE      04SVC MONITOR ↓
```
H515M501.WMF

5. □ □

```
RAM TEST                    NO:_
0.SRAM              1.DRAM
2.COPY
```
H515M533.WMF

6.

```
COPY                              NO: _
0.ROM COPY              1.RAM COPY
2.SG3 ROM               3.MDM ROM
```

H515M548.WMF

7.

```
COPY
 MACHINE  -> FLASH ROM
          PRESS START
```

H515M536.WMF

8.
   If the software is successfully uploaded, the display shows "**OK**".
   If the software upload fails, the display shows "**NG**".
9. Finish : [No] [Function]
10. Turn off the machine, disconnect the tool, then turn the machine on again.

4.1.26 SAVING DATA PROGRAMMED IN IC CARDS

If the machine has an optional Function Upgrade Card or Fax On Demand Card, the card has to be removed from the IC card slot before doing one of the following procedures:

- Downloading/uploading software
- Replacing the MFCE
- Replacing the MFDU or other components

Also in this case, System Switch 16 - bit 0 should have been set to 1 as explained in section 3.3.9, to prevent the data inside the IC card from being initialized accidentally.

So, do the following procedures to prevent data from being erased from the card.

NOTE: The data in the SAF memory card or hard disk will be erased if the card or the hard disk interface is removed from the machine.

When downloading/uploading software

1. Make sure that System Switch 16 - bit 0 is set to 1, and that the battery switch on the IC card is turned on.
2. Turn off the machine, and remove the IC card.
3. Connect the data copy tool and data copy board or MFCE, and do the required procedure as explained in section 4.1.20 to 4.1.25.
4. After the downloading/uploading operation has been finished, turn off the machine and disconnect the data copy tool.
5. Put back the IC card as it originally was, then turn on the machine.
6. Make sure that all the programmed data in the IC cards can still be used.

⚠CAUTION
If the machine is turned on without the card being put back in the lower IC card slot, the machine recognizes that the card has been removed and all the data programmed in the card will not be accessable any more.

When replacing the MFCE

When replacing the a defective MFCE, the new MFCE installed in the machine must have the same SRAM data as the defective MFCE had, before the IC card is put back.

1. Make sure that System Switch 16 - bit 0 is set to 1, and that the battery switch on the IC card is turned on.
2. Turn off the machine, remove the IC card, and replace the MFCE.
   Do not turn on the machine at this point.

3. Connect the data copy tool and the defective MFCE as explained in section 4.1.22, then turn on the machine.
4. Copy the SRAM data from the defective MFCE outside to the new MFCE inside, as explained in section 4.1.22.
5. After the SRAM data has been copied successfully, turn off the machine and disconnect the tool.
6. Put back the IC card in its original position, and turn on the machine.

NOTE: If the machine is accidentally turned on without the IC card at this point, go back to step 3 again.

7. Make sure that all the programmed data in the IC cards can still be used.

When replacing the MFDU or other components

When the MFCE must be removed to access or remove other components inside the machine, follow the procedure below.

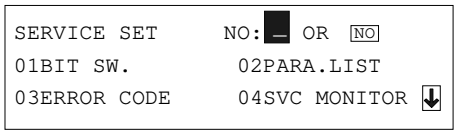
1. Make sure that System Switch 16 - bit 0 is set to 1, and that the battery switch on the IC card is turned on.
2. Turn off the machine, remove the IC card, and replace the required components inside the machine.
4. After replacement has been completed, put back the MFCE and the IC card as they originally were, then turn on the machine.
5. Make sure that all the programmed data in the IC cards can still be used.

⚠CAUTION

If the machine is turned on without the card being put back in the lower IC card slot, the machine recognizes that the card has been removed and all the data programmed in the card will not be accessable any more.

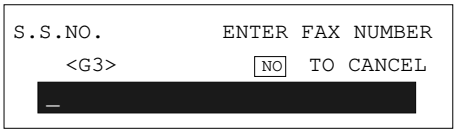
4.1.27 SERVICE STATION FAX NUMBER (FUNCTION 13)

1. Function 0 0 0 0 0 0
   then immediately Yes



H515M501.WMF

2. 0 0



H515M538.WMF

3. Input the telephone number of the service station that will receive Auto Service calls from this machine.

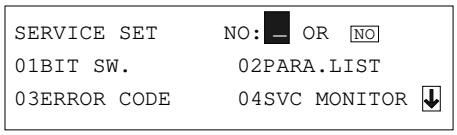
   To use a G4 number, press the “G4” key.
   To erase the telephone number: press No

4. If the display is correct: Yes Function

Cross Reference
Using a User Function Key as ISDN Sub address Input
- Function 36, Code No = 10

4.1.28 SERIAL NUMBER (FUNCTION 14)

1. Function 0 0 0 0 0 0
   then immediately Yes

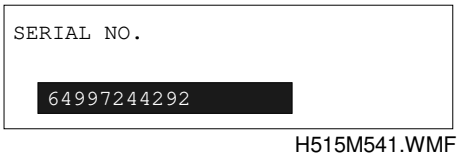


H515M501.WMF

2. 0 0

H515M540.WMF

3. Enter the machine's serial number at the keypad.
   To correct a mistake: No



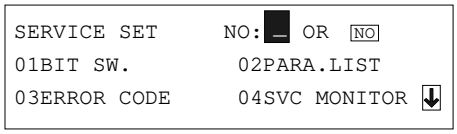
H515M541.WMF

4. If the display is correct: Yes Function

4.1.29 HARD DISK INITIALIZATION (FUNCTION 16)

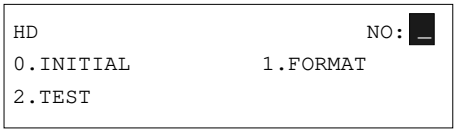
NOTE: Do this procedure when installing the hard disk unit.

1. Function □ □ □ □ □ □
   then immediately Yes



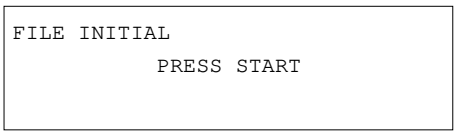
H515M501.WMF

2. □ □



H515M543.WMF

3. □



H515M544.WMF

4. Start
   If the initialization was completed without error, **OK!!** will be displayed.
   If there was an error, **NG!!** will be displayed.

Service Tables

4.1.30 HARD DISK FORMATTING (FUNCTION 16)

NOTE: This procedure is not necessary at hard disk installation.

1. Function □ □ □ □ □ □
   then immediately Yes

```
SERVICE SET      NO:_ OR NO
01BIT SW.         02PARA.LIST
03ERROR CODE      04SVC MONITOR ↓
```

H515M501.WMF

2. □ □

```
HD                              NO:_
0.INITIAL          1.FORMAT
2.TEST
```

H515M543.WMF

3. □

```
HD FORMAT
            PRESS START
```

H515M545.WMF

4. ◇
   Formatting the hard disk takes more than 30 minutes.
   If the format was completed without error, **OK!!** will be displayed.
   If there was an error, **NG!!** will be displayed.

4.1.31 HARD DISK TEST (FUNCTION 16)

1. Function □ □ □ □ □ □
   then immediately Yes

```
SERVICE SET      NO:_ OR NO
01BIT SW.         02PARA.LIST
03ERROR CODE      04SVC MONITOR ↓
```

H515M501.WMF

2. □ □ □

```
HD                              NO:_
0.INITIAL          1.FORMAT
2.TEST
```

H515M543.WMF

3. □

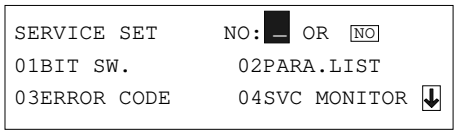
```
HD TEST
            PRESS START
```

H515M546.WMF

4. ◇
   If the test was completed without error, **OK!!** will be displayed.
   If there was an error, **NG!!** will be displayed.

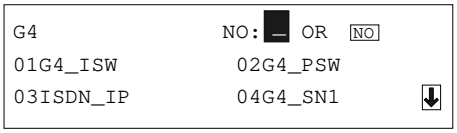
4.1.32 G4 PARAMETER PROGRAMMING (FUNCTION 17)

1. Function □ □ □ □ □ □
   then immediately Yes



H515M501.WMF

2. □ □



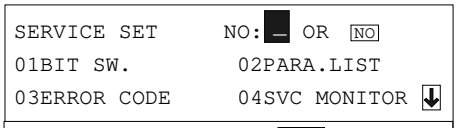
H515M547.WMF

Refer to the service manual for the ISDN G4 option for further details of the G4 parameter programming procedures.

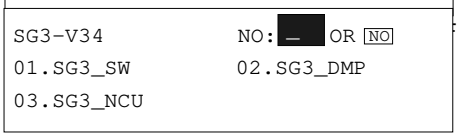
4.1.33 OPTIONAL G3 BIT SWITCHES (FUNCTION 18)

NOTE: G3 bit switch settings for the optional G3 NCU can be programmed separately from the standard NCU.

1. Function □ □ □ □ □ □
   then immediately Yes

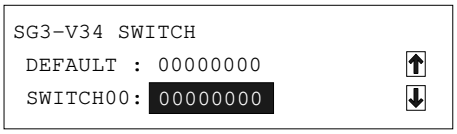


2. □ □



H551M510.WMF

3. □ □



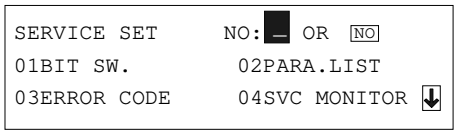
H551M511.WMF

4. Scroll through the bit switches using ▲ or ▼ and adjust the switch.

Service Tables

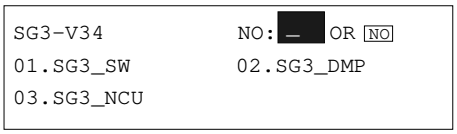
4.1.34 OPTIONAL G3 RAM DUMP (FUNCTION 18)

1. Function □ □ □ □ □ □
   then immediately Yes



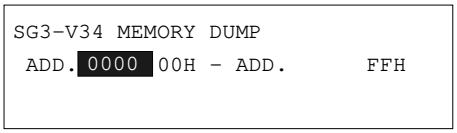
H515M501.WMF

2. □ □



H551M510.WMF

3. □ □



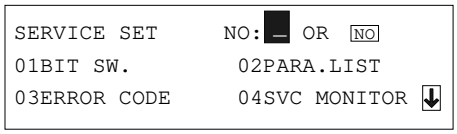
H551M512.WMF

4. Enter the first four digits of the start and end addresses.
5. ◇

4.1.35 OPTIONAL G3 MODEM TEST (FUNCTION 18)

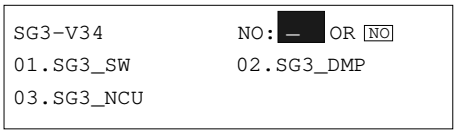
NOTE: The speaker cannot be used for this test.

1. Function □ □ □ □ □ □
   then immediately Yes



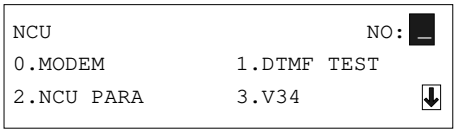
H515M501.WMF

2. □ □



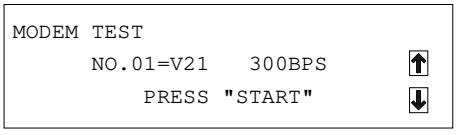
H551M510.WMF

3. □ □



H551M513.WMF

4. □



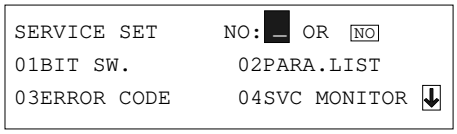
H515M520.WMF

5. Scroll through the available tests using ▲ or ▼ .
6. To start a test: ◇
7. To stop the test: ▽
8. To finish: No Function

4.1.36 OPTIONAL G3 DTMF TONE TEST (FUNCTION 18)

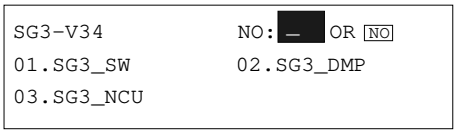
NOTE: The speaker cannot be used for this test.

1. Function □ □ □ □ □ □
   then immediately Yes



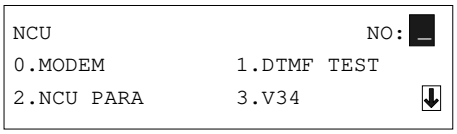
H515M501.WMF

2. □ □



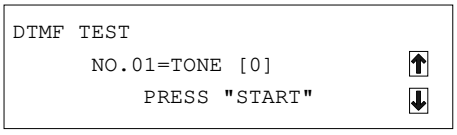
H551M510.WMF

3. □ □



H551M513.WMF

4. □

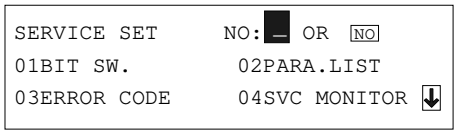


H515M521.WMF

5. Scroll through the available tests using ▲ or ▼ .
6. To start a test: ◇
7. To stop the test: ▽
8. To finish: No Function

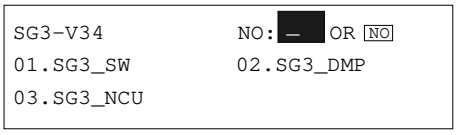
4.1.37 OPTIONAL G3 NCU PARAMETERS (FUNCTION 18)

1. Function □ □ □ □ □ □
   then immediately Yes



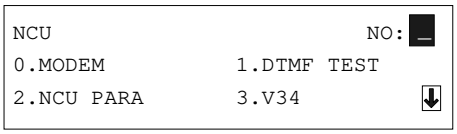
H515M501.WMF

2. □ □



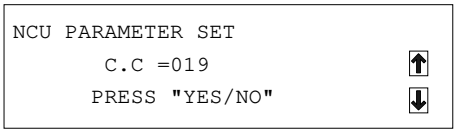
H551M510.WMF

3. □ □



H551M513.WMF

4. □

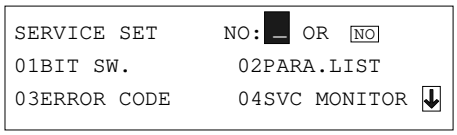


H515M522.WMF

5. Scroll through the parameters using ▲ or ▼ . If you want to change a value, enter the new value at the keypad, then press Yes .
6. To finish : No Function.
7. Parameter CC is the Country Code, Parameter 01 is the Tx level. Refer to section 4.3 for full details on NCU parameters.

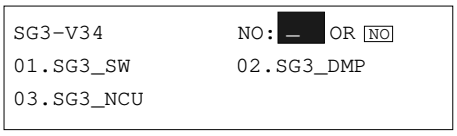
4.1.38 OPTIONAL G3 V.34 MODEM TEST (FUNCTION 18)

1. Function □ □ □ □ □ then immediately Yes



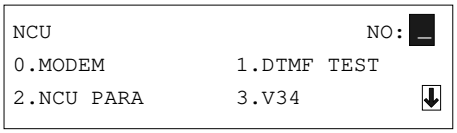
H515M501.WMF

2. □ □



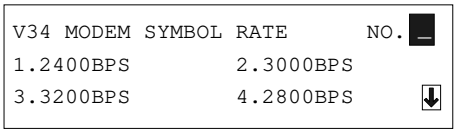
H551M510.WMF

3. □ □



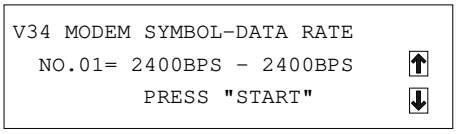
H551M513.WMF

4. □



H551M508.WMF

5. Select the symbol rate, then press Yes



H551M514.WMF

6. Select the data rate using ▲ or ▼ , press ◇ to start the test
7. To stop : ▽
8. To finish: No Function

4.1.39 OPTIONAL G3 V.8 MODEM TEST (FUNCTION 18)

1. Function □ □ □ □ □
   then immediately Yes

```
SERVICE SET      NO:_ OR NO
01BIT SW.         02PARA.LIST
03ERROR CODE      04SVC MONITOR ↓
```

H515M501.WMF

2. □ □

```
SG3-V34          NO:__ OR NO
01.SG3_SW        02.SG3_DMP
03.SG3_NCU
```

H551M510.WMF

3. □ □

```
NCU                          NO:_
0.MODEM          1.DTMF TEST
2.NCU PARA       3.V34           ↓
```

H551M513.WMF

4. □

```
V8 MODEM TEST
      NO.01=V8 ANSam             ↑
          PRESS "START"          ↓
```

H551M509.WMF

5. Press ◇ to start the test
6. To stop : ▽
7. To finish: No Function

4.1.40 PRINTING CONFIDENTIAL FILES

If the customer forgot the confidential ID number, print the confidential messages which has been received in the machine's memory using the following procedure.

1. Function □ □.
2. Enter □ □ □ □ as confidential ID, then press Yes. The machine will print all the confidential messages in the memory.

4.2 BIT SWITCHES

⚠WARNING

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

NOTE: Default settings for bit switches are not listed in this manual. Refer to the System Parameter List printed by the machine.

The switches that has been changed from the previous model (FX4) are shaded.

4.2.1 SYSTEM SWITCHES

System Switch 00

No	FUNCTION	COMMENTS
0	RAM Reset	**Reset Level 3:** Erases all image data files stored in the SAF memory and communication files (e.g. polling rx file). This setting is recommended for use when it is necessary to clear the SAF. Always use this reset level after the software has been updated by a remote diagnostics system. (This reset is not necessary after local software update.) **Reset Level 2:** In addition to those items erased by Reset Level 3, the following items are erased: own telephone number, bit switches, RTI/TTI/CSI, report data, programmed telephone numbers (Quick/Speed/ Groups, service station, etc.), NCU parameters, personal codes. After erasing, the machine changes these two bits back to 0 automatically. No reset: Normal operation **Cross reference** **RAM Reset Level 1 (Factory reset):** Change the data in RAM address 480005(H) to FF(H), then turn the machine off and on. In addition to those items erased by Reset Level 2, the clock and scan/print registration settings are erased.
1	**Bit 1 Bit 0 Reset Level** 0 0 No reset 0 1 Reset Level 2 1 0 Reset Level 3 1 1 Not used	

System Switch 00		
No	**FUNCTION**	**COMMENTS**
2	Technical data printout on TCR (Journal) **0:** Disabled **1:** Enabled	1: Instead of the personal code, the following data are listed on the TCR for each analog G3 communication. e.g. 32 V34 288 M 01 03 00 02 (1) (2) (3) (4) (5) (6) (7) (8) 1) First number**:** Symbol rate used (for example, 32 means 3200 bps) 2) Second number: Used modem type 3) Third number: Final modem rate (for example, 288 means 28.8 kbps) 4) Letter M or L: An M indicates that is error rate, and an L indicates Rx level. This is selected by the bit 3 setting below. 5-6) Fifth and sixth numbers: Line quality data. If an error rate is selected (when "M" is indicated), a larger number means more errors. If Rx level is selected (when "L" is indicated), the left hand figure is the high byte and the right hand figure is the low byte. 7) Seventh number (rx mode only): Total number of error lines that occurred during non-ECM reception. 8) 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.
	How to calculate the rx level listed on the Journal **Example:** 32 V34 288 **L <u>01</u> <u>A0</u>** 00 00 The four-digit hexadecimal value (N) after "L" indicates the rx level. The <u>high</u> byte is given first, followed by the <u>low</u> byte. Divide the decimal value of N by -16 to get the rx level. In the above example, the decimal value of N (= 01A0 [H]) is 416. So, the actual rx level is 416/-16 = -26 dB	
3	Line quality data output method **0:** Measure of error rate (during image data transmission only) **1:** Rx level	This bit determines the data type to be printed on the Journal when technical data printout is enabled by bit 2 above.
4	Line error marks on received pages **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. Such errors are caused by a noisy line, for example.

System Switch 00		
No	**FUNCTION**	**COMMENTS**
5	G3/G4 Communication parameter display **0:** Disabled **1:** Enabled	This is a fault-finding aid. The LCD shows the key parameters (see the next 2 pages). 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 after each communication **0:** Off **1:** On	This is only used for communication troubleshooting. It shows the content of the transmitted facsimile protocol signals. Always reset this bit to 0 after finishing testing.
7	Amount of protocol dump data in one protocol dump list printout operation **0:** Up to the limit of the memory area for protocol dumping **1:** Last communication only	Change this bit to 1 if you want to have a protocol dump list of the last communication only.

G3 Communication Parameters

Mode	DCS: ITU-T standard	NSS: Non-standard G3
Modem rate	336: 33,600 bps 312: 31,200 bps 288: 28,800 bps 264: 26,400 bps 240: 24,000 bps 216: 21,600 bps 192: 19,200 bps	168: 16,800 bps 144: 14400 bps 120: 12000 bps 96: 9600 bps 72: 7200 bps 48: 4800 bps 24: 2400 bps
Resolution	S: Standard (8 x 3.85 dots per mm) D: Detail (8 x 7.7 dots per mm) F: Fine (8 x 15.4 dots per mm) 21: Standard (200 x 100 dpi) 22: Detail (200 x 200 dpi)	
Compression mode	MMR: MMR compression MR: MR compression MH: MH compression JBO: JBIG (optional) compression JBB: JBIG (standard) compression	
Communication mode	ECM: With ECM SSC: Using SSC EFC: Using EFC NML: With no ECM, SSC, or EFC	
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)	
I/O rate	0: 0 ms/line 25: 2.5 ms/line 5: 5 ms/line 10: 10 ms/line 20: 20 ms/line 40: 40 ms/line	

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 - 1: 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.
1-7	Not used	Do not change the 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 which is programmed as the service station. Always reset this bit to zero after transfer. **Cross reference** Service station number programming: Function 13
1-3	Not used	Do not change the settings.
4	Automatic reset (during communication) **0:** Disabled **1:** Enabled	**1:** Machine automatically returns to the standby mode when a communication of one page exceeds a timer (default setting is 60 min). This timer could be adjusted by the RAM settings (RAM address 480378 and 480379). When the optional G3 or G4 unit is installed, the machine resets the optional G3 or G4 unit every period of this timer (default setting is 15 min). This timer could be adjusted by the RAM settings (RAM address 48037A and 48037B). When this timer expires during communication, the machine resets the optional G3 or G4 unit immediately after the communication is finished. **Cross reference** Service RAM Addresses, section 4.5.
5	Not used	Do not change the settings.
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 to 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 **1** **2**	LCD contrast **Bit 2 1 0 Contrast** 0 0 0 Brightest 0 0 1 ↓ ↓ ↓ 1 1 0 ↓ 1 1 1 Darkest	Use these bit switches to adjust the contrast of the LCD on the operation panel.
3	Dedicated transmission parameter programming **0:** Disabled **1:** Enabled	This bit must be set 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	Drum replacement level **0:** User **1:** Service	**0:** The machine asks the user to replace the drum at 30,000 print intervals (default interval). After the user replaces the drum, the machine asks the user if the drum has been replaced or not. If the user answers yes, the machine resets the OPC counter to zero. The drum replacement interval is programmed at addresses 4803D2 to 4803D5(H). Refer to section 4.5 for more details. **1:** The machine will not ask the user to replace the drum.
6	G3 CSI/G4 Terminal ID programming level **0:** User level **1:** Service level	**1:** The CSI and Terminal ID can only be programmed using a service function. The Terminal ID can only be programmed if a Group 4 option is installed.
7	Telephone line type programming mode **0:** User level **1:** Service level	**1:** Telephone line type selection (tone dial or pulse dial) can only be programmed using a service function.

System Switch 05		
No	**FUNCTION**	**COMMENTS**
0-1	Not used	Do not change the settings.
2	Display of both RTI and CSI on the LCD **0:** Disabled **1:** Enabled	**1:** An RTI will be displayed until phase B of the protocol sequence, and a CSI will be displayed after phase C.
3	Not used	Do not change the settings.
4	Hard disk option **0:** Not installed **1:** Installed	Change this bit to 1 when installing the hard disk option.
5-7	Not used	Do not change the settings.

System Switch 06		
No	**FUNCTION**	**COMMENTS**
0	Use of the Stop key during memory transmission **0:** Disabled **1:** Enabled	**1:** Memory transmissions can be stopped by pressing the Stop key. However, users might accidentally cancel another person's memory transmission in progress.
1-4	Not used	Do not change the settings.
5	PC Fax Expander option **0:** Not installed **1:** Installed	Change this bit to 1 when installing the PC Fax Expander option.
6	Not used	Do not change the settings.
7	On-screen function list **0:** Disabled **1:** Enabled	If this feature is enabled, the most frequently used function numbers will be displayed for quick reference whenever the user presses the Function key.

System Switch 07		
No	**FUNCTION**	**COMMENTS**
0 to 7	Date of monthly Fax On Demand report printout	00 - 31 (BCD). [00 (BCD) - 1st day of the month (default setting)] [01 - 31 (BCD) - Programmed day of the month] This setting is only valid if bit 1 of User Parameter 04 is set to "1" (monthly FOD report printout enabled).

System Switch 08		
No	**FUNCTION**	**COMMENTS**
0 to 7	Time of monthly Fax On Demand report printout	00 - 23 hours (BCD). 00 (BCD) - 0 am (default setting) 01 (BCD) - 1 am ↓ 23 (BCD) - 11 pm This setting is only valid if bit 1 of User Parameter 04 is set to "1" (monthly FOD report printout enabled).

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 on the Journal (TCR) when no image data was exchanged. **0:** Disabled **1:** Enabled	**0:** Communications which reached phase C (message Tx/Rx) of the T.30 protocol are listed on the Journal (TCR). **1:** Communications which reached phase A (call setup) of T.30 protocol are listed on the Journal. This will include telephone calls.
2	Automatic error report printout **0:** Disabled **1:** Enabled	**0:** Error reports will not be printed. **1:** Error reports will be printed automatically after failed communications.
3	Printing of the error code on the error report **0:** No **1:** Yes	**1:** Error codes are printed on the error reports.
4	Listing of Confidential IDs on the Personal Code List **0:** Disabled **1:** Enabled	**1:** Confidential IDs registered with Personal Codes by the users will appear on the Personal Code List.
5	Power failure report **0:** Disabled **1:** Enabled	**1:** A power failure report will be automatically printed after the power is switched on if a fax message disappeared from the memory when the power was turned off last.
6	Not used	Do not change the settings.
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	Keep this bit at 0.
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 the 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 external telephone is off-hook **0:** Disabled **1:** Enabled	**0:** Prevents dialing from the ten-key pad while the external telephone is off-hook. Use this setting when the external telephone is not by the machine or a wireless telephone is connected as an external telephone. **1:** The user can dial on the machine's ten-key pad when the handset is off-hook.
5	On hook dial **0:** Disabled **1:** Enabled	**0:** On hook dial is disabled.
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 Bit 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 the standby mode when the timer expires after the last operation.
2 **3**	Energy Saver mode timer **Bit 3 Bit 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 an Energy Saver mode when the timer expires after the last operation.
4-7	Not used	Do not change the settings.

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

System Switch 0F		
No	**FUNCTION**	**COMMENTS**
0 to 7	Country code for functional settings (Hex) 00: France 10: Canada 01: Germany 11: USA 02: UK 12: Asia 03: Italy 13: Japan 04: Austria 14: Hong Kong 05: Belgium 15: South Africa 06: Denmark 16: Australia 07: Finland 17: New Zealand 08: Ireland 18: Singapore 09: Norway 19: Malaysia 0A: Sweden 1A: China 0B: Swiss 1B: Taiwan 0C: Portugal 20: Turkey 0D: Holland 21: Greece 0E: Spain 0F: Israel	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 C.C.

System Switch 10		
No	**FUNCTION**	**COMMENTS**
0 to 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 to be 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 to be important (G4 transmissions).
2	Label Insertion position **0:** Left end **1:** Right end	Change this bit to 1 if the inserted label overprints information that the customer considers to be important.
3-5	Not used	Do not change the factory settings.

System Switch 11		
No	**FUNCTION**	**COMMENTS**
6	Conditions for memory reception if no RTI or CSI is received	0: Memory reception is available only when the machine receives RTI or CSI. 1: Memory reception is always available unless there is a printer (mechanical) error. If there is a printer error, memory reception becomes available only when the machine receives RTI or CSI. This function becomes effective in combination with the user parameter switch 05 bit 1.
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. Refer to section 2.3.3 for details.

System Switch 12		
No	**FUNCTION**	**COMMENTS**
0 **to** **7**	TTI/CIL printing position in the main scan direction CIL: Command Information Line (Group 4)	08 to 92 (BCD) mm. Input even numbers only. This setting determines the print start position for the TTI and CIL from the left edge of the paper. If the TTI is moved too far to the right, it may interfere with the file number which is on the top right of the page. On an A4 page, if the CIL is moved over by more than 60 mm, it may overwrite the page number.

System Switch 13		
No	**FUNCTION**	**COMMENTS**
0 **1**	Remaining memory threshold for activating the hard disk filing system **Bit 1 Bit 0 Threshold** 0 0 25% 0 1 50% (default) 1 0 75% 1 1 Not used	If the remaining hard disk space is below the threshold value, the hard disk filing system cannot be used. Adjust the threshold value to meet the customer's requirements.
2	Not used	Do not change the factory settings
3 **4**	Files that can be stored in the hard disk filing system **Bit 1 Bit 0 Files** 0 0 All files 0 1 Received files only 1 0 Transmitted files only 1 1 Not used	The default setting is (0 0). Change the settings to limit the files that can be stored in the hard disk filing system.
5-7	Not used	Do not change the factory settings

System Switch 14		
No	**FUNCTION**	**COMMENTS**
0 to 7	Wait time between pages in printer mode (with an optional printer interface unit)	05 to 64 (H) (5 to 100s) - This setting determines the machine's wait time between pages in printer mode. A longer setting forces the fax machine to wait until the end of printer interface output before printing any incoming fax message. A shorter setting allows the fax machine to print incoming fax messages while printing from a computer. If the controller takes more than the specified time to process a page of data from the host computer, the fax machine releases the printer resources for fax output. Default setting: 0A(H) = 10 s

System Switch 15 - Not used (do not change the settings)

System Switch 16		
No	**FUNCTION**	**COMMENTS**
0	Function Upgrade Card or Fax On Demand Card **0:** Not installed **1:** Installed	Change this bit to 1 after installing a Function Upgrade Card or a Fax On Demand Card in the machine's lower IC card slot. **0:** When either a Function Upgrade Card or a Fax On Demand Card is installed in the machine's lower IC card slot before power-off, all the data in these cards will be initialized if the machine does not detect the card at the next power-on. **1:** When either a Function Upgrade Card or a Fax On Demand Card is installed in the machine's lower IC card slot before power-off, the machine does not start up unless the machine detects the IC card or the data copy tool at the next power-on. This prevents the data inside the card from being initialized while replacing PCBs or downloading software.
1-7	Not used.	Do not change the default setting.

System Switch 17		
No	**FUNCTION**	**COMMENTS**
0	Not used.	Do not change the default setting.
1	Dialing without inserting a document in the ADF **0:** Disabled **1:** Enabled	**0:** Prevents dialing when a document is not placed in the ADF.
2-7	Not used.	Do not change the default setting.

System Switch 18		
No	**FUNCTION**	**COMMENTS**
0 **1**	Default communication line for transmission **Bit 1 Bit 0 Setting** 0 0 PSTN 1 or PSTN 2 0 1 PSTN 1 (Standard G3) 1 0 PSTN 2 (Optional G3 unit) 1 1 ISDN (G4 unit required)	These bits determine the machine's standby default transmission line if an optional G3 or G4 unit has been installed.
2-7	Not used	Do not change the settings.

System Switch 19 - Not used (do not change the settings)
System Switch 1A - Not used (do not change the settings)
System Switch 1B - Not used (do not change the settings)
System Switch 1C - Not used (do not change the settings)
System Switch 1D - Not used (do not change the settings)
System Switch 1E - Not used (do not change the settings)
System Switch 1F - Not used (do not change the settings)

4.2.2 SCANNER SWITCHES

Scanner Switch 00		
No	**FUNCTION**	**COMMENTS**
0	MTF **0:** Disabled **1:** Enabled	
1	Text/photo separation in halftone mode **0:** Disabled **1:** Enabled	Normally keep this bit at 1 to get a good halftone quality.
2 **3**	Maximum transmittable document length **Bit 3 2 Setting** 0 0 600 mm 0 1 1200 mm 1 0 14 m 1 1 Not used	If the user wants to send very long documents such as well logs, select 14 m or a higher setting.
4	OR processing for 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 is OR processed before transmission or making copies. Toner may be used up earlier if OR processing is enabled.
5	OR processing for immediate tx and copying (Detail resolution) **0:** Disabled **1:** Enabled	**0:** The machine scans the document in 7.7 line/mm steps, then transmits or makes copies. **1:** The machine scans the document in 15.4 line/mm steps. Each pair of lines is OR processed before transmission or making copies. Toner may be used up earlier if OR processing is enabled.
6-7	Not used	Do not change the settings.

Scanner Switch 01 - Not used (do not change the settings)

Scanner Switch 02		
No	**FUNCTION**	**COMMENTS**
0 **to** **7**	Contrast threshold with halftone disabled - Normal setting	The value can be between 00 to FF. For a darker threshold, input a lower value. Default setting - 0E(H)

Scanner Switch 03		
No	**FUNCTION**	**COMMENTS**
0 **to** **7**	Contrast threshold with halftone disabled - Lighten setting	The value can be between 00 to 0F. For a darker threshold, input a lower value. Default setting - 10(H)

Scanner Switch 04		
No	**FUNCTION**	**COMMENTS**
0 to 7	Contrast threshold with halftone disabled - Darken setting	The value can be between 00 to 0F. For a darker threshold, input a lower value. Default setting - 0C(H)

Scanner Switch 05		
No	**FUNCTION**	**COMMENTS**
0 to 7	Contrast threshold with halftone enabled - Normal setting	The value can be between 00 to 0F. For a darker threshold, input a lower value. Default setting - 09(H)

Scanner Switch 06		
No	**FUNCTION**	**COMMENTS**
0 to 7	Contrast threshold with halftone enabled - Lighten setting	The value can be between 00 to 0F. For a darker threshold, input a lower value. Default setting - 0D(H)

Scanner Switch 07		
No	**FUNCTION**	**COMMENTS**
0 to 7	Contrast threshold with halftone enabled - Darken setting	The value can be between 00 to 0F. For a darker threshold, input a lower value. Default setting - 02(H)

Scanner Switch 08		
No	**FUNCTION**	**COMMENTS**
0 to 7	Contrast threshold for text areas when halftone is enabled	The value can be between 00 to 0F. This setting is ignored if Scanner Switch 00 bit 1 is at 0. Default setting - 08H

Scanner Switch 09 - Not used (do not change the settings)
Scanner Switch 0A - Not used (do not change the settings)
Scanner Switch 0B - Not used (do not change the settings)
Scanner Switch 0C - Not used (do not change the settings)
Scanner Switch 0D - Not used (do not change the settings)
Scanner Switch 0E - Not used (do not change the settings)
Scanner Switch 0F - Not used (do not change the settings)

4.2.3 PRINTER SWITCHES

Printer Switch 00		
No	**FUNCTION**	**COMMENTS**
0	Page separation mark **0:** Disabled **1:** Enabled	**0:** No marks are printed. **1**: If a received page has to be printed out on two sheets, an "x" inside a small box is printed at the bottom right hand corner of the first sheet, and a "2" inside a small box is printed at the top right hand corner of the second sheet. This helps the user to 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 2.2.12 for details.
2	Not used	Do not change the settings.
3	Cleaning mode after bypass feed **0:** Disabled **1:** After each page is fed from the bypass feed slot	**0:** Cleaning mode is not done at all if bypass feed is used. **1:** Cleaning mode is done every time after a sheet of paper is fed from the bypass feed slot.
4-6	Not used	Do not change the settings.
7	mm-inch conversion when printing **0:** Disabled **1:** Enabled	**0:** Printing is always done in inch format. **1:** If the other end has scanned the document in mm format, the machine converts the data to inch format before printing. Refer to section 2.2.13 for details.

Printer Switch 01 - Not used (do not change the settings)
Printer Switch 02 - Not used (do not change the settings)

Printer Switch 03		
No	**FUNCTION**	**COMMENTS**
0	Length reduction of received data **0:** Disabled **1:** Enabled	**0:** Incoming pages are printed without length reduction. **Cross reference** Page separation threshold: Printer Sw. 03, bits 4 to 7. **1:** Incoming pages are reduced in the length direction when printing. **Cross reference** Reduction ratio: Printer Switches 04/05 Page separation and data reduction: section 2-2-12
1-3	Not used	Do not change the settings.
4 to 7	Page separation threshold (with reduction disabled in switch 03-0 above) If the incoming page is up to x mm longer than the copy paper, the excess portion will not be printed. If the incoming page is more than x mm longer than the copy paper, the excess portion will be printed on the next page. The value of x is determined by these four bits. 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 2-2-12 Length reduction On/Off: Printer Switch 03, Bit 0	

Printer Switches 04 and 05

No	FUNCTION	COMMENTS
0 to 7	Reduction ratios used for different paper sizes (with reduction enabled in switch 03-0 above) If reduction is enabled, the data will be reduced in the length direction before printing. These switches determine the maximum reduction ratio for each paper size.	

Switch 04/05	US	Europe	Asia
Bit 0	Not used	A5 sideways	A5 sideways
Bit 1	Not used	Not used	Not used
Bit 2	LT lengthwise	Not used	Not used
Bit 3	A4 lengthwise	A4 lengthwise	A4 lengthwise
Bit 4	Not used	Not used	F/F4 lengthwise
Bit 5	LG lengthwise	Not used	Not used
Bit 6	Not used	Not used	Not used
Bit 7	Not used	Not used	Not used

The available paper sizes depend on the machine's country version.

Bit 5	4	Ratio
0	0	4/3
0	1	4/3
1	0	8/7
1	1	12/11

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

4.2.4 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 MH/MR/MMR/ JBIG	These bits determine the compression capabilities to be declared in phase B (handshaking) of the 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 MH/MR/MMR/ JBIG	These bits determine the compression capabilities to be used in the transmission and to be declared in phase B (handshaking) of the T.30 protocol.
4	Not used	Do not change the 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:** Off **1:** On	If this bit is 0, ECM is switched off for all communications.
1	Not used	Do not change the settings.
2 **3**	Wrong connection prevention method **Bit 3 Bit 2 Setting** 0 0 None 0 1 8 digit CSI 1 0 4 digit CSI 1 1 CSI/RTI	**(0,1) -** 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. **(1,0) -** The same as above, except that only the last 4 digits are compared. **(1,1) -** The machine will not transmit if the other end does not identify itself with an RTI or CSI. **(0,0) -** Nothing is checked; transmission will always go ahead.

Communication Switch 01		
No	**FUNCTION**	**COMMENTS**
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 phone calls at the same number which the machine is connected to.
5	Not used	Do not change the setting.
6 **7**	Maximum printable page length available **Bit 7 Bit 6 Setting** 0 0 No limit 0 1 B4 and A4 1 0 A4 1 1 Not used	The setting determined by these bits is informed to the transmitting terminal 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 there are more consecutive error lines in the received page than the threshold, the machine will send a negative response. The Low and High threshold values depend on the sub-scan resolution, and are as follows. **Resolution 100 dpi 200 dpi** Low settings 3 6 High settings 6 12
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.
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 when a negative code (RTN or PIN) is received during G3 immediate transmission **0:** No hang-up, **1:** Hang-up	**0:** The next page will be sent 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.
4-7	Not used	Do not change the settings.

Communication Switch 03		
No	**FUNCTION**	**COMMENTS**
0 **to** **7**	Maximum number of page retransmissions in a G3 memory transmission	00 - FF (Hex) times. This setting is not used if ECM is switched on. Default setting - 03(H)

Communication Switch 04 - Not used (do not change the settings)
Communication Switch 05 - Not used (do not change the settings)

Communication Switch 06		
No	**FUNCTION**	**COMMENTS**
0	Dialing requirements: Germany **0:** Disabled **1:** Enabled	These switches are automatically set to the settings required by each country after a country code (System Switch 0F) is programmed.
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	
6-7	Not used	Do not change the 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 the setting.
2	Use of date and time provided from the network for the CIL **0:** Disabled **1:** Enabled	**0:** The date and time programmed in the receiving terminal is used in the CIL. **1:** The date and time informed in the document layer from the remote terminal (through the network) is used in the CIL
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 in Europe. **Important:** Do not enable this switch if the above switch (Com SW 07 bit 3) is also set to “1”, because the fallback to G3 would never happen.
5-7	Not used	Do not change the settings.

Communication Switch 08 - Not used (do not change the settings.)
Communication Switch 09 - Not used (do not change the settings)

Communication Switch 0A		
No	**FUNCTION**	**COMMENTS**
0	Point of resumption of memory transmission upon 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.
1-6	Not used	Do not change the 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. This is a PTT requirement in the UK and some other countries.

Communication Switch 0B		
No	**FUNCTION**	**COMMENTS**
0	Use of Economy Transmission during a Transfer operation to End Receivers **0:** Disabled **1:** Enabled	These bits determine whether the machine uses the Economy Transmission feature when it is carrying out a Transfer operation as a Transfer Station.
1	Use of Economy Transmission during a Transfer operation to the Next Transfer Stations **0:** Disabled **1:** Enabled	
2	Use of Label Insertion for the End Receivers in a Transfer operation **0:** Disabled **1:** Enabled	This bit determines whether the machine uses the Label Insertion feature when it is carrying out a Transfer operation as a Transfer Station.
3	Conditions required for Transfer Result Report transmission **0:** Always transmitted **1:** Only transmitted if there was an error	**0:** When acting as a Transfer Station, the machine will always send a Transfer Result Report back to the Requesting Station after completing the Transfer Request, even if there were no problems. **1:** The machine will only send back a Transfer Result Report if there were errors during communication so that one or more of the End Receivers could not be contacted.
4	Printout of the message when acting as a Transfer Station **0:** Disabled **1:** Enabled	When the machine is acting as a Transfer Station, this bit determines whether the machine prints the fax message coming in from the Requesting Terminal.
5	Action when there is no fax number in the programmed Quick/Speed dials which meets the requesting terminal's own fax number. **0:** Transfer is Disabled **1:** Transfer is Enabled	After the machine receives a transfer request, the machine compares the last N digits of the requesting terminal's own fax number with all the Quick/Speed dials programmed in the machine. (N is the number programmed in communication switch 0C.) **0:** If there is no matching number programmed in the machine, the machine rejects the transfer request. **1:** Even if there is no matching number programmed in the machine, the machine accepts the transfer request. The result report will be printed at the transfer terminal, but will not be sent back to the requesting terminal. Refer to section 2.3.4 for more details.
6-7	Not used	Do not change the settings.

Communication Switch 0C		
No	**FUNCTION**	**COMMENTS**
0 to 4	Number of digits compared to find the requester's fax number from the programmed Quick/Speed Dials when acting as a Transfer Station	00 - 1F (0 to 31 digits) After the machine receives a transfer request, the machine compares the own telephone number sent from the Requesting Terminal with all Quick/Speed Dials programmed in the machine, starting from Quick Dial 01 to the end of the Speed Dials. This number determines how many digits from the end of the telephone numbers the machine compares. If it is set to 00, the machine will send the report to the first Quick/Speed Dial that the machine compared. If Quick Dial 01 is programmed, the machine will send the report to Quick 01. If Quick Dial 01 through 04 are not programmed and Quick Dial 05 is programmed, the machine will send the report to Quick 05. Default setting - 05(H) = 5 digits Refer to section 2.3.4 for more details.
5-7	Not used	Do not change the settings.

Communication Switch 0D		
No	**FUNCTION**	**COMMENTS**
0 to 7	The amount of remaining memory below which ringing detection (and therefore reception into memory) is disabled	00 to FF (Hex), unit = 2 kbytes (e.g., 0C(H) = 24 kbytes) One page is about 24 kbytes. If this setting is kept at 0, the machine will detect ringing signals and go into receive mode even if there is no memory space left. This will result in communication failure.

Communication Switch 0E		
No	**FUNCTION**	**COMMENTS**
0 to 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		
No	**FUNCTION**	**COMMENTS**
0 to 7	Minimum number of times that a destination will dialed when TRD is being used	01 - FF (Hex) times

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

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

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

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

Communication Switch 14		
No	**FUNCTION**	**COMMENTS**
0	Inch-to-mm conversion during transmission **0:** Disabled (default) **1:** Enabled	**0:** Transmitting is always done in inch format. **1:** If the other end only has mm-based resolution for printing, the machine converts the scanned data to mm-format before transmission.
1	Inch/mm format informed to the other terminal during transmission **0:** Always in inch format **1:** Dependent on the other terminal (default)	**0:** The machine always informs the other terminal that the resolution is in inch format and transmits with the inch format. **1:** The machine informs the other terminal that the resolution is in mm - format and transmits with the inch format if the other end only has mm - based resolution. This setting is informed to the receiving terminal in the pre-message protocol exchange (in the DCS/NSS frames).
2-5	Not used	Do not change the factory settings.

6 **7**	Available unit of resolution in which fax messages are received **Bit 7 Bit 6 Unit** 0 0 mm 0 1 inch 1 0 mm and inch (default) 1 1 Not used	For the best performance, do not change the factory settings. The setting determined by these bits is informed to the transmitting terminal in the pre-message protocol exchange (in the DIS/NSF frames).

Communication Switch 15		
No	**FUNCTION**	**COMMENTS**
0 to 7	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 Other bits: Not used	For the best performance, do not change the factory settings. The setting determined by these bits is informed to the transmitting terminal in the pre-message protocol exchange (in the DIS/NSF frames).

Communication Switch 16		
No	**FUNCTION**	**COMMENTS**
0	Not used	Do not change the factory settings.
1	Optional G3 unit **0:** Not installed **1:** Installed	**1:** Change this bit to 1 when installing the optional G3 unit.
2	Optional G4 unit **0:** Not installed **1:** Installed	**1:** Change this bit to 1 when installing the optional G4 unit.
3-7	Not used	Do not change the factory 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 (sub-address) reception **0:** Disabled **1:** Enabled	**0:** Disables the SUB (sub-address) signal reception.
2	PWD (Password) / SID (Sender ID) reception **0:** Disabled **1:** Enabled	Keep this bit at "0." **1:** The machine automatically disconnects the line when the PWD or SID signal is received.
3-7	Not used	Do not change the factory settings.

Communication Switch 18 - Not used (do not change the settings)
Communication Switch 19 - Not used (do not change the settings)
Communication Switch 1A - Not used (do not change the settings)
Communication Switch 1B - Not used (do not change the settings)
Communication Switch 1C - Not used (do not change the settings)
Communication Switch 1D - Not used (do not change the settings)
Communication Switch 1E - Not used (do not change the settings)
Communication Switch 1F - Not used (do not change the settings)

4.2.5 G3 SWITCHES

NOTE: The G3 switches for the optional G3 unit can be programmed separately from the standard NCU.
Please refer to section 4.1.33 for instructions on how to change G3 switch settings for the optional G3 unit.

G3 Switch 00		
No	**FUNCTION**	**COMMENTS**
0 **1**	Monitor speaker during communication (tx and rx) **Bit 1** **Bit 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 disabled all through the 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 all through the 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 enabled during memory transmission.
3-6	Not used	Do not change the settings.
7	Back to back test **0:** Disabled **1:** Enabled	Set this bit to 1 when you wish to do a back to back test. **115 V model:** Be sure to connect jumpers JP5 and JP6 on the NCU before doing the test. **220 V model:** Be sure to apply dc voltage between wires L1 and L2 on the NCU. **Back-to-Back Connection:** The dc power supplies should be adjusted so that the line current to the NCU are about 30mA.

G3 Switch 01		
No	**FUNCTION**	**COMMENTS**
0-3	Not used	Do not change the settings.
4	DIS frame length **0:** 7bytes (standard NCU) 10bytes (optional G3 NCU) **1:** 4 bytes	**1:** The 5th to 7h bytes (10bytes in the optional G3 unit) in the DIS frame will not be transmitted (set to 1 if there are communication problems with PC-based faxes which cannot receive the extended DIS frames).
5	Not used	Do not change the settings.
6	CED/ANSam emission 0: Disabled 1: Enabled	Do not change this setting unless any communication problem is caused by the CED/ANSam (V.34) transmission.
7	Not used	Do not change the settings.

G3 Switch 02		
No	**FUNCTION**	**COMMENTS**
0	G3 protocol mode used **0:** Standard and non-standard **1:** Standard only	Change this bit to 1 only when the other end can only communicate with machines that send T.30-standard frames only. **1:** Disables NSF/NSS signals (these are used in non-standard mode communication)
1-4	Not used	Do not change the settings.
5	Use of modem rate history for transmission using Quick/Speed Dials **0:** Disabled **1:** Enabled	**0:** Communications using Quick/Speed Dials always start with the highest modem rate. **1:** The machine refers to 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	Short preamble **0:** Disabled **1:** Enabled	Refer to Appendix B in the Group 3 Facsimile Manual for details about Short Preamble.

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 will wait for the second DIS which is caused by echo on the line.
1	Not used	Do not change the setting.
2	Use of V.8 protocol **0:** Disabled **1:** Enabled	**0:** V.8 protocol is disabled. The machine communicates in accordance with the T.30 protocol.
3	ECM frame size **0:** 256 bytes **1:** 64 bytes	**1:** ECM reception is disabled, which enlarges the SAF memory.
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). ITU-T: New acronym for the CCITT.
5	Modem rate used for the next page after receiving a negative code (RTN or PIN) **0:** No change **1:** Fallback	**1:** The machine's tx modem rate will fall back before sending the next page if a negative code is received. This bit is ignored if ECM is being used.
6-7	Not used	Do not change the setting.

G3 Switch 04		
No	**FUNCTION**	**COMMENTS**
0 to 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 has succeeded.
4-7	Not used	Do not change the settings.

G3 Switch 05		
No	**FUNCTION**	**COMMENTS**
0 to 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 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 26.4 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 to 5	Initial modem type for 9.6 k or 7.2 kbps (transmission). **Bit 1 Bit 0 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 and 7.2 kbps, if the initial modem rate is set at these speeds.
6-7	Not used	Do not change the settings.

G3 Switch 06		
No	**FUNCTION**	**COMMENTS**
0 to 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 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 26.4 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 setting of these bits is used to inform the transmitting terminal of the available modem rate for the machine in receive mode. Use a lower setting if high speeds pose problems during reception.
4 to 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/V.17 0 1 0 1 V.27ter, V.29, V.33/V.17, V.34 Other settings – Not used	The setting of these bits is used to inform the transmitting terminal of the available modem type for the machine in receive mode.

G3 Switch 07		
No	**FUNCTION**	**COMMENTS**
0 **1**	PSTN cable equalizer (Tx mode) **Bit 1 Bit 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**	PSTN cable equalizer (Rx mode) **Bit 3 Bit 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	PSTN 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	PSTN 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 the settings.

G3 Switch 08 - Not used (do not change the settings)

G3 Switch 09		
No	**FUNCTION**	**COMMENTS**
0 **1**	ISDN cable equalizer (tx mode) **Bit 1 Bit 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 Bit 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 the settings.

G3 Switch 0A		
	FUNCTION	**COMMENTS**
0 **1**	Maximum allowable carrier drop during image data reception **Bit 1 Bit 0 Value (ms)** 0 0 200 0 1 400 1 0 800 1 1 Not used	These bits set the acceptable modem carrier drop time. Try using a longer setting if error code 0-22 is frequent.
2-3	Not used	Do not change the settings.
4	Maximum allowable frame interval during image data reception. **0:** 5 s **1:** 13 s	This bit set the maximum intervals between each EOL signal (end-of-line) or intervals between each ECM frame from the other end. Try using a longer setting if error code 0-21 is frequent.

G3 Switch 0A		
	FUNCTION	**COMMENTS**
5	Not used	Do not change the settings.
6	Reconstruction time for the first line in receive mode **0:** 6 s **1:** 12 s	When the sending terminal is controlled by a computer, there may be a delay in receiving page data after the local machine accepts set-up data and sends CFR. This is outside the T.30 recommendation. But, if this delay occurs, set this bit to 1 to give the sending machine more time to send data. Refer to error code 0-20. ITU-T T.30 recommendation: The first line should come within 5 s of CFR.
7	Not used	Do not change the settings.

G3 Switch 0B		
No	**FUNCTION**	**COMMENTS**
0	Protocol requirements: Europe **0:** Disabled **1:** Enabled	The machine does not automatically reset these bits for each country after a country code (System Switch 0F) is programmed. Change the required bits manually at installation.
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 the settings.

G3 Switch 0C		
No	**FUNCTION**	**COMMENTS**
0 **1**	Pulse dialing method **Bit 1 Bit 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 to 7	Not used	Do not change the settings.

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

4.3 NCU PARAMETERS

The following tables give the RAM addresses and units of calculation of the parameters that the machine uses for ringing signal detection and automatic dialing. Most of these must be changed by RAM read/write (Function 06), but some can be changed using NCU Parameter programming (Function 08 or 18). The RAM is programmed in hex code unless (BCD) is included in the Unit column.

NOTE: The following addresses describe settings for the standard NCU. Change the fourth digit from "6" to "7" (e.g. 480600 to 480700) for the settings for the optional G3 unit.

Address	Function	Unit	Remarks
480600	Country code for NCU parameters	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 00) **Country** — **Decimal** — **Hex** France — 00 — 00 Germany — 01 — 01 UK — 02 — 02 Italy — 03 — 03 Austria — 04 — 04 Belgium — 05 — 05 Denmark — 06 — 06 Finland — 07 — 07 Ireland — 08 — 08 Norway — 09 — 09 Sweden — 10 — 0A Switzerland — 11 — 0B Portugal — 12 — 0C Holland — 13 — 0D Spain — 14 — 0E Israel — 15 — 0F USA — 17 — 11 Asia — 18 — 12 Hong Kong — 20 — 14 South Africa — 21 — 15 Australia — 22 — 16 New Zealand — 23 — 17 Singapore — 24 — 18 Malaysia — 25 — 19	
480601	Line current detection time	20 ms	Line current is not detected if 480401 contains FF.
480602	Line current wait time		
480603	Line current drop detect time		
480604	PSTN dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(F), tone detection is disabled.
480605	PSTN dial tone frequency upper limit (low byte)		

Address	Function	Unit	Remarks
480606	PSTN dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(F), tone detection is disabled.
480607	PSTN dial tone frequency lower limit (low byte)		
480608	PSTN dial tone detection time	20 ms	If 480408 contains FF, the machine pauses for the pause time (address 48040D / 48040E) See Note 2 (Italy).
480609	PSTN dial tone reset time (LOW)		
48060A	PSTN dial tone reset time (HIGH)		
48060B	PSTN dial tone continuous tone time		
48060C	PSTN dial tone permissible drop time		
48060D	PSTN wait interval (LOW)		
48060E	PSTN wait interval (HIGH)		
48060F	PSTN ringback tone detection time	20 ms	Detection is disabled if this contains FF.
480610	PSTN ringback tone off detection time	20 ms	
480611	PSTN detection time for silent period after ringback tone detected (LOW)	20 ms	
480612	PSTN detection time for silent period after ringback tone detected (HIGH)	20 ms	
480613	PSTN busy tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(F), tone detection is disabled.
480614	PSTN busy tone frequency upper limit (low byte)		
480615	PSTN busy tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(F), tone detection is disabled.
480616	PSTN busy tone frequency lower limit (low byte)		
480617	PABX dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(F), tone detection is disabled.
480618	PABX dial tone frequency upper limit (low byte)		
480619	PABX dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(F), tone detection is disabled.
48061A	PABX dial tone frequency lower limit (low byte)		

Address	Function	Unit	Remarks
48061B	PABX dial tone detection time	20 ms	If 48041B contains FF, the machine pauses for the pause time (480420 / 480421).
48061C	PABX dial tone reset time (LOW)		
48061D	PABX dial tone reset time (HIGH)		
48061E	PABX dial tone continuous tone time		
48061F	PABX dial tone permissible drop time		
480620	PABX wait interval (HIGH)		
480621	PABX wait interval (LOW)		
480622	PABX ringback tone detection time	20 ms	Detection is disabled if this contains FF.
480623	PABX ringback tone off detection time	20 ms	
480624	PABX detection time for silent period after ringback tone detected (LOW)	20 ms	
480625	PABX detection time for silent period after ringback tone detected (HIGH)	20 ms	
480626	PABX busy tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(F), tone detection is disabled.
480627	PABX busy tone frequency upper limit (low byte)		
480628	PABX busy tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(F), tone detection is disabled.
480629	PABX busy tone frequency lower limit (low byte)		
48062A	Busy tone ON time: range 1	20 ms	
48062B	Busy tone OFF time: range 1		
48062C	Busy tone ON time: range 2		
48062D	Busy tone OFF time: range 2		
48062E	Busy tone ON time: range 3		
48062F	Busy tone OFF time: range 3		
480630	Busy tone ON time: range 4		
480631	Busy tone OFF time: range 4		
480632	Busy tone continuous tone detection time		

Address	Function	Unit	Remarks
480633	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). Bits 7, 6, 5, 4 - number of cycles required for cadence detection Bits 3 and 2 - Not used. Keep these bits at 0. Bits 1 and 0 - Tolerance (±) Bit 1 0 0 0 75% 0 1 50% 1 0 25% 1 1 12.5%		
480634	International dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(F), tone detection is disabled.
480635	International dial tone frequency upper limit (low byte)		
480636	International dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(F), tone detection is disabled.
480637	International dial tone frequency lower limit (low byte)		
480638	International dial tone detection time	20 ms	If 480438 contains FF, the machine pauses for the pause time (48043D / 48043E). See Note 2 (Belgium).
480639	International dial tone reset time (LOW)		
48063A	International dial tone reset time (HIGH)		
48063B	International dial tone continuous tone time		
48063C	International dial tone permissible drop time		
48063D	International dial wait interval (HIGH)		
48063E	International dial wait interval (LOW)		
48063F	Country dial tone upper frequency limit (HIGH)	Hz (BCD)	If both addresses contain FF(F), tone detection is disabled.
480640	Country dial tone upper frequency limit (LOW)		
480641	Country dial tone lower frequency limit (HIGH)		If both addresses contain FF(F), tone detection is disabled.

Address	Function	Unit	Remarks
480642	Country dial tone lower frequency limit (LOW)		
480643	Country dial tone detection time	20 ms	If 480443 contains FF, the machine pauses for the pause time (480448 / 480449).
480644	Country dial tone reset time (LOW)		
480645	Country dial tone reset time (HIGH)		
480646	Country dial tone continuous tone time		
480647	Country dial tone permissible drop time		
480648	Country dial wait interval (LOW)		
480649	Country dial wait interval (HIGH)		
48064A	Time between opening or closing the DO relay and opening the OHDI relay	1 ms	See Notes 3 and 6. Function 08 (parameter 11).
48064B	Break time for pulse dialling	1 ms	See Note 3. Function 08 (parameter 12).
48064C	Make time for pulse dialling	1 ms	See Note 3. Function 08 (parameter 13).
48064D	Time between final OHDI relay closure and DO relay opening or closing	1 ms	See Notes 6. Function 08 (parameter 14).
48064E	Minimum pause between dialled digits (pulse dial mode)	20 ms	See Note 3. Function 08 (parameter 15).
48064F	Time waited when a pause is entered at the operation panel		Function 08 (parameter 16).
480650	DTMF tone on time	1 ms	Function 08 (parameter 17).
480651	DTMF tone off time		Function 08 (parameter 18).
480652	Tone attenuation level of DTMF signals while dialing	-dBm x 0.5	Function 08 (parameter 19). See Note 5.
480653	Tone attenuation value difference between high frequency tone and low frequency tone in DTMF signals	-Nx0.5 (dB)	Function 08 (parameter 20). See Note 5.
480654	PSTN: DTMF tone attenuation level after dialling	-dBm x 0.5	Function 08 (parameter 21). See Note 5.
480655	ISDN: DTMF tone attenuation level after dialling	-dBm x 0.5	See Note 5
480656	Not used		Do not change the setting.
480657	Not used		Do not change the setting.
480658	Not used		Do not change the setting.
480659	Grounding time (ground start mode)	20 ms	The Gs relay is closed for this interval.

Address	Function	Unit	Remarks
48065A	Break time (flash start mode)	1 ms	The OHDI relay is open for this interval.
48065B	International dial access code (High)	BCD	For a code of 100: 48045B - F1 48045C - 00
48065C	International dial access code (Low)		
48065D	PSTN access pause time	20 ms	This time is waited 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 48044F is used.
48065E	Bits 7 to 5 - Progress tone detection level Bit 7 Bit 6 Bit 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 4 and 3 - Not used Bit 2 - International dial tone detection method 0: Detect by time parameters 1: Detect by cadence parameters (Belgium - See Note 3) Bit 1 - Not used Bit 0 - PSTN dial tone detection method 0: Detect by time parameters 1: Detect by cadence parameters (Italy - See Note 3)		
48065F	Bit 7 and 6 - Not used Bit 5 1: Polarity detection enabled for rx (detection time = 500 ms) Bit 4 1: Polarity detection enabled for tx (detection time = 500 ms) Bits 3 to 0 - Not used		
480660	Not used		Do not change the setting.
480661	Not used		Do not change the setting.
480662	Not used		Do not change the setting.
480663	Not used		Do not change the setting.
480664	Not used		Do not change the setting.
480665	Intercity dial prefix (HIGH)	BCD	For a code of 0: 480465 - FF 480466 - F0
480666	Intercity dial prefix (LOW)	BCD	
480667 to 480671	Not used		Do not change the settings.
480672	Acceptable ringing signal frequency: range 1, upper limit	1000/ N (Hz).	Function 08 (parameter 02).
480673	Acceptable ringing signal frequency: range 1, lower limit		Function 08 (parameter 03).

Address	Function	Unit	Remarks
480674	Acceptable ringing signal frequency: range 2, upper limit		Function 08 (parameter 04).
480675	Acceptable ringing signal frequency: range 2, lower limit		Function 08 (parameter 05).
480676	Number or rings until a call is detected	1	Function 08 (parameter 06).
480677	Minimum required length of the first ring	20 ms	See Note 4. Function 09 (parameter 07).
480678	Minimum required length of the second and subsequent rings	20 ms	Function 08 (parameter 08).
480679	Ringing signal detection reset time (LOW)	20 ms	Function 08 (parameter 09).
48067A	Ringing signal detection reset time (HIGH)		Function 08 (parameter 10).
48067B to 480680	Not used		Do not change the settings.
480681	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
480682	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		
480683	Bits 7 to 5 - Not used Bit 4 - DTMF detection 0: Disabled 1: Enabled Bits 3 to 0 - Not used		Do not change the setting. If bit 4 is set to 0, Fax On Demand and Transfer operation using DTMF are disabled.

Address	Function	Unit	Remarks
480684	Bits 7 to 5 - DTMF On detection time Bit 7 Bit 6 Bit 5 Setting 0 0 0 30 ms 0 0 1 40 ms 0 1 0 80 ms 0 1 1 140 ms Bits 4 to 2 - DTMF Off detection time Bit 4 Bit 3 Bit 2 Setting 0 0 0 30 ms 0 0 1 40 ms 0 1 0 80 ms 0 1 1 140 ms Bits 1 and 0 - Not used.		
480685 to 4806A0	Not used		Do not change the settings.
4806A1	Acceptable CED detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF(F), tone detection is disabled.
4806A2	Acceptable CED detection frequency upper limit (low byte)		
4806A3	Acceptable CED detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF(F), tone detection is disabled.
4806A4	Acceptable CED detection frequency lower limit (low byte)		
4806A5	CED detection time	20 ms ± 20 ms	Factory setting: 200 ms
4804A6	Acceptable CNG detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF(F), tone detection is disabled.
4806A7	Acceptable CNG detection frequency upper limit (low byte)		
4806A8	Acceptable CNG detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF(F), tone detection is disabled.
4806A9	Acceptable CNG detection frequency lower limit (low byte)		
4806AA	CNG detection time	20 ms ± 20 ms	Factory setting: 200 ms
4806AB	CNG on time	20 ms	Factory setting: 500 ms
4806AC	CNG off time	20 ms	Factory setting: 200 ms

Address	Function	Unit	Remarks
4806AD	CNG On/Off time tolerance, 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). Bits 7, 6, 5, 4 - number of cycles required for cadence detection Bits 3 and 2 - Not used. Keep these bit at 0. Bits 1 and 0 - Tolerance (±) Bit 1 0 ON time tolerance OFF time tolerance 0 0 150% 75% 0 1 100% 50% 1 0 50% 25% 1 1 25% 12.5%		
4806AE	Not used		Do not change the settings.
4806AF	Acceptable AI short protocol tone (800Hz) detection frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(F), tone detection is disabled.
4806B0	Acceptable AI short protocol tone (800Hz) detection frequency upper limit (low byte)		If both addresses contain FF(F), tone detection is disabled.
4806B1	Acceptable AI short protocol tone (800Hz) detection frequency lower limit (high byte)	Hz(BCD)	If both addresses contain FF(F), tone detection is disabled.
4806B2	Acceptable AI short protocol tone (800Hz) detection frequency lower limit (low byte)		If both addresses contain FF(F), tone detection is disabled.
4806B3	Detection time for 800 Hz AI short protocol tone	20 ms	Factory setting: 360 ms
4806B4	PSTN: Tx level from the modem	- dBm	Function 08 (parameter 01).
4806B5	PSTN: 1100 Hz tone transmission level	- N 4804B4 - 0.5N 4804B5 (dB)	
4806B6	PSTN: 2100 Hz tone transmission level	- N 4804B4 - 0.5N 4804B6 (dB)	
4806B7	PABX: Tx level from the modem	- dBm	
4806B8	PABX: 1100 Hz tone transmission level	- N 4804B7 - 0.5N 4804B8 (dB)	
4806B9	PABX: 2100 Hz tone transmission level	- N 4804B7 - 0.5N 4804B9 (dB)	
4806BA	ISDN: Tx level from the modem	- dBm	The setting must be between -12dBm and -15dBm.
4806BB	ISDN: 1100 Hz tone transmission level	- N 4804A - 0.5N 4804BB (dB)	
4806BC	ISDN: 2100 Hz tone transmission level	- N 4804BA - 0.5N 4804BC (dB)	
4806BD	Modem turn-on level (incoming signal detection level)	-37-0.5N (dBm)	N must be between 0 (00(H)) to 31 (1F(H)). Modem turn-off level is automatically set at -3dBm from the turn-on level.

Address	Function	Unit	Remarks
4806BE to 4806C6	Not used		Do not change the settings.
4806C7	Protocol dump list format (standard NCU) Bit 0 to 3: Not used Bit 4: Protocol dump list format 0: Simplified list 1: Complete list Bit 5 to 7: Not used		
4806C8 to 4806D9	Not used		Do not change the settings.
4806DA	T.30 T1 timer	1 s	
4806DB to 4807C6	Not used		Do not change the settings.
4807C7	Protocol dump list format (optional G3 unit) Bit 0 to 3: Not used Bit 4: Protocol dump list format 0: Simplified list 1: Complete list Bit 5 to 7: Not used		

Notes

1. If a setting is not required, store FF in the address.
2. Italy and Belgium only
   RAM address 48065E: 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 are changed.
   480608 (if bit 0 = 1) or 480638 (if bit 2 = 1): tolerance for on or off state duration (%), and number of cycles required for detection, coded as in address 480633.
   48060B (if bit 0 = 1) or 48063B (if bit 2 = 1): on time, hex code (unit = 20 ms)
   48060C (if bit 0 = 1) or 48063C(if bit 2 = 1): off time, hex code (unit = 20 ms)
3. Pulse dial parameters (addresses 48064A to 48064F) are the values for 10 pps. If 20 pps is used, the machine automatically compensates.
4. The first ring may not be detected until 1 to 2.5 wavelengths after the time specified by this parameter.
5. The calculated level must be between 0 and 10.
   The attenuation levels calculated from RAM data are:
   High frequency tone: - 0.5 x $N_{480652/480654}$ dBm
   Low frequency tone: - 0.5 x $N_{480652/480654}$ + N_{480653}) dBm
   Note: N_{480652}, for example, means the value stored in address 480652(H)
6. 480644A: Europe - Between Ds opening and Di opening, France - Between Ds closing and Di opening
   48064D: Europe - Between Ds closing and Di closing, France - Between Ds opening and Di closing

4.4 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.

4.4.1 PROGRAMMING PROCEDURE

1. Set bit 3 of System Bit Switch 04 to 1.
2. Either use Function 31 (for a Quick Dial number) or Function 32 (for a Speed Dial number)
   Example: Change the Parameters in Quick Dial 10.
3. Function □ □ Yes
4. Press Quick Dial key 10.
   NOTE: When selecting Speed Dial 10 with Function 32, press □ □ at the ten key at the ten key pad.
5. Press Yes four times.
6. The settings for byte 0 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 Yes .
9. To finish, press Function .
10. After finishing, reset bit 3 of System Bit Switch 04 to 0.

Service Tables

4.4.2 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 (for PSTN G3 mode) 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		
	FUNCTION	**COMMENTS**
0 to 4	Tx level **Bit 4 3 2 1 0 Setting** 0 0 0 0 0 0 0 0 0 0 1 -1 0 0 0 1 0 -2 0 0 0 1 1 -3 0 0 1 0 0 -4 : : 0 1 1 1 1 -15 1 1 1 11 Disabled	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. When disabled, NCU parameter 01 setting is used. **Note:** Do not use settings other than listed on the left.
5 to 7	Cable equalizer **Bit 7 6 5 Setting** 0 0 0 None 0 0 1 Low 0 1 0 Medium 0 1 1 High 1 1 1 Disabled	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. **Note:** Do not use settings other than listed on the left.

Switch 03		
	FUNCTION	**COMMENTS**
0 to 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 0 1 1 1 16,800 1 0 0 0 19,200 1 0 0 1 21,600 1 0 1 0 24,000 1 0 1 1 26,400 1 1 0 0 28,800 1 1 0 1 31,200 1 1 1 0 33.600 Other settings:Not used	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. **Note:** Do not use settings other than listed on the left.
4-7	Not used	Do not change the settings.

Switch 04		
	FUNCTION	**COMMENTS**
0	Inch-mm conversion before tx **Bit 1 Bit 0 Setting** 0 0 Inch-mm conversion available 0 1 Inch 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 Bit 2 Setting** 0 0 First DIS or NSF 0 1 Second DIS or NSF 1 0 Not used 1 1 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 sequence **0:** Disabled **1:** Enabled	If a transmission to a specific destination always end at a lower modem rate (lower than 14,400 bps), disable V.8 sequence so not to use V.34 protocol. **0:** V.34 communication will not be available

Service Tables

Switch 04		
	FUNCTION	**COMMENTS**
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.
6 **7**	ECM during transmission **Bit 7 Bit 6 Setting** 0 0 Disabled 0 1 Enabled 1 0 Not used 1 1 Disabled	For example, if ECM is switched on but is not wanted when sending to a particular terminal, use the setting of (0, 0).

Switch 05 - Optional ISDN G4 kit required		
	FUNCTION	**COMMENTS**
0 to 3	Data rate **Bits 3 2 1 0 Setting** 0 0 0 0 64 kbps 0 0 0 1 56 kbps 1 1 1 1 Disabled	When disabled, the setting of G4 parameter switch 2 (bits 0 and 1) setting is used.
4-7	Not used	Do not change the settings.

Switch 06 - Optional ISDN G4 kit required		
	FUNCTION	**COMMENTS**
0 to 3	Link Modules **Bits 3 2 1 0 Setting** 0 0 0 0 Modulo 8 0 0 0 1 Modulo 128 1 1 1 1 Disabled	When disabled, the setting of G4 parameter switch 3 (bit 0) setting is used.
4-7	Not used	Do not change the settings.

Switch 07 - Optional ISDN G4 kit required		
	FUNCTION	**COMMENTS**
0 to 3	Layer 3 protocol **Bits 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 to 7	Packet modules **Bits 3 2 1 0 Setting** 0 0 0 0 Modulo 9 0 0 0 1 Modulo 128 1 1 1 1 Disabled	When disabled, the setting of G4 parameter switch 6 (bit 4) setting is used.

Switch 08 - Not used

4.5 SERVICE RAM ADDRESSES

⚠CAUTION

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

006003 to 00600B(H) - ROM part number and suffix (ASCII)
Example: The part number is H5517210A

006003(H) - 48(H)
006004(H) - 35(H)
006005(H) - 35(H)
006006(H) - 31(H)
006007(H) - 37(H)
006008(H) - 32(H)
006009(H) - 31(H)
00600A(H) - 30(H)
00600B(H) - 41(H)

480001 to 480004(H) - ROM version (Read only)

480001(H) - Revision number (BCD)
480002(H) - Year (BCD)
480003(H) - Month (BCD)
480004(H) - Day (BCD)

480005(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) and RAM settings (RAM dump list) for scanner/printer registration settings.
Note: Initial toner supply will be carried out automatically after the reset. This should take about 90 s.

480006 to 480015(H) - Machine's serial number (16 digits - ASCII)

480018(H) - Total program checksum (low)
480019(H) - Total program checksum (high)

48001A(H) - Boot program checksum (low)
48001B(H) - Boot program checksum (high)

48001C(H) - Main program checksum (low)
48001D(H) - Main program checksum (high)

48001E(H) - RDS program update counter

480020 to 48003F(H) - System bit switches
480040 to 48004F(H) - Scanner bit switches
480050 to 48005F(H) - Printer bit switches
480060 to 48007F(H) - Communication bit switches
480080 to 48008F(H) - G3 bit switches
480090 to 48009F(H) - G3 bit switches for the optional G3 unit

4800C0(H) - User parameter switch 00 (SWUER_00)

Bit 0: Stamp home position 0: Disabled, 1: Enabled

Bits 1 and 2: Scanning contrast home position

Bit 2	1	Setting
0	0	Normal
0	1	Lighten
1	0	Darken

Bit 3: Do not adjust

Bits 4 and 5: Scanning resolution home position

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

Bit 6: Transmission mode home position 0: Memory tx, 1: Immediate tx

Bit 7: Halftone home position 0: Disabled, 1: Enabled

4800C1(H) - User parameter switch 01 (SWUSR_01)

Bits 0 to 6: Not used

Bit 7: Settings return to home position after transmission 0: Disabled, 1: Enabled

4800C2(H) - User parameter switch 02 (SWUSR_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

4800C3(H) - User parameter switch 03 (SWUSR_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 (TCR) 0: Off, 1: On

4800C4(H) - User parameter switch 04 (SWUSR04: Automatic report printout)

Bit 0: Automatic confidential reception report output 0: Off, 1: On
Bit 1: Fax On Demand report output 0: Off, 1: On
Bits 2 to 6: Not used
Bit 7: Inclusion of a sample image on reports 0: Off, 1: On

4800C5(H) - User parameter switch 05 (SWUSR_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 and 3: Not used
Bits 4 and 5: Restricted Access

Bit 5	4	Setting
0	0	Disabled
0	1	Enabled at all times
1	0	Enabled during Night Timer periods only
1	1	Not used

Bit 6: Fusing lamp control during energy saver mode
0: Lamp off, 1: Standby temperature (80 °C)
Bit 7: Not used

4800C6(H) - User parameter switch 06 (SWUSR_06)

Bit 0: TTI/CIL printing 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 (memory card required) 0: Off, 1: On
Bit 5: Partial image scanning during memory tx 0: Off, 1: On
Bits 6 to 7: Not used

4800C7(H) - User parameter switch 07 (SWUSR_07)

Bits 0 and 1: Not used
Bit 2: Parallel memory transmission 0: Off, 1: On
Bit 3: Reduction before transmission 0: Off, 1: On
Bits 4 and 5: Not used
Bits 6 and 7: Fax On Demand

Bit 7	6	Setting
0	0	Disabled
0	1	Enabled without password (Remote ID)
1	0	Enabled with password (Remote ID)
1	1	Not used

4800C8(H) - User parameter switch 08 (SWUSR_08)

Bit 0 and 1: Multi-copy reception (optional memory card required)

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

Bits 2 and 3: Authorized reception

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

Bits 4 and 5: Specified cassette selection

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

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

Bit 1	0	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.

4800C9(H) - User parameter switch 09 (SWUSR_09)

Bits 0 and 1: Memory lock (optional memory card required)

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 and 3: Hard disk filing system
(optional hard disk and the function upgrade card required)

Bit 3	2	Setting
X	0	Disabled
0	1	Faxes from senders whose RTIs/CSIs are specified are for this feature kept in the hard disk for filing.
1	1	Faxes from senders whose RTIs/CSIs are not specified for this feature are kept in the hard disk for filing.

Bits 4 to 7: Not used

4800CA(H) - User parameter switch 10 (SWUSR_0A)

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

4800CB(H) - User parameter switch 11 (SWUSR_0B)

Bit 0: Transfer request using DTMF tone signals 0: Not accepted, 1: Accepted
Bit 1: Method of transmitting numbers after the "Tone" mark over an ISDN line 0: UUI, 1: Tone
Bits 2 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

4800CC(H) - User parameter switch 12 (SWUSR_0C)

Bits 0 and 1: Not used
Bit 2: Toner saving mode 0: Disabled, 1: Enabled
Bits 3 and 4: Printout image density (Fax mode)

Bit 4	3	Setting
0	0	Normal
0	1	Lighten
1	0	Darken
1	1	Not used

Bits 5 to 6: Not used
Bit 7: Copy operation 0: Possible, 1: Prohibited

4800CD(H) - PSTN access method (SWUSR_0D)

Bits 0 and 1: PSTN access method from behind a PABX (standard G3 unit)

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

Bits 2 and 3: PSTN access method from behind a PABX for the optional G3 unit

Bit 3	2	Setting
0	0	PSTN
0	1	Loop start
1	0	Ground start
1	1	Flash start

4800D7(H) - PSTN access number for loop start (Optional G3 unit) (SWUSR_17)

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

4800D8(H) - User function 62 settings (SWUSR_18)

Bits 0 and 1: File retention time

Bit 1	0	Setting
0	0	Disabled
0	1	24 hours
1	0	Disabled
1	1	72 hours

Bits 2 to 7: Not used

4800D9(H) - User function 62 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

4800DA(H) - User function 62 settings (SWUSR_1A)

Bit 0: Not used

Bit 1: Dialing type (Standard G3 unit)
0: Pulse dialing (10 pps), 1: Tone (DTMF) dialing

Bits 2 to 4: Not used

Bit 5: Dialing type (Optional G3 unit)
0: Pulse dialing (10 pps), 1: Tone (DTMF) dialing

Bit 6 and 7: Not used

4800DB(H) - PSTN access number for loop start (Standard G3 unit) (SWUSR_1B)

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

4800F0 to 4800FF(H) - G4 Parameter Switches
(Refer to the ISDN G4 option service manual for details.)

480100 to 48011FF(H) - G4 Internal Switches
(Refer to the ISDN G4 option service manual for details.)

480120 to 480133(H) - RTI (Max. 20 characters - ASCII) - **See the following note.**
480148 to 480167(H) - TTI (Max. 32 characters - ASCII) - **See the following note.**

480188 to 48019B(H) - CSI (Max. 20 characters - ASCII)
48019C to 4801AF(H) - CSI (Max. 20 characters - ASCII) for the optional G3 unit
4801B0 to 4801C3(H) - ISDN G3 CSI (Max. 20 characters - ASCII)

4801C4(H) - Number of CSI characters (Hex)
4801C5(H) - Number of CSI characters (Hex) for the optional G3 unit
4801C6(H) - Number of CSI characters (Hex) for the ISDN G3 CSI

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.

4801C7 to 4801D5(H) - Service station's fax number (Service function 13)
See 48024C(H) for the type of network used for this number.

4801E5 to 4801F3(H) - Own fax number (PSTN/ISDN G3) (User function 61)
4801F4 to 480202(H) - Own fax number (ISDN G4) (User function 61)

480203 to 48023E(H) - ISDN subscriber numbers (Read only)
480203 - 480211(H): ISDN G3 Subscriber Number (Main)
480212 - 480220(H): ISDN G3 Subscriber Number (Sub)
480221 - 48022F(H): ISDN G4 Subscriber Number (Main)
480230 – 48023E(H): ISDN G4 Subscriber Number (Sub)

480240(H) - ID code (low - Hex)
480241(H) - ID code (high - Hex)

480242(H) - Confidential ID (low - BCD)
480243(H) - Confidential ID (high - BCD)

480244(H) - Memory lock ID (low - Hex)
480245(H) - Memory lock ID (high - Hex)

480248(H) - Remote ID (low - BCD)
480249(H) - Remote ID (high - BCD)

48024C(H) - Network type used for the service station number
00(H) - G3 (PSTN)
01(H) - G4 (ISDN)

48026C to 480273(H) - Last power off time (Read only)
48026C(H) - 01(H) - 24-hour clock, 00(H) - 12-hour clock (AM), 02(H) - 12-hour clock (PM)
48026D(H) - Year (BCD)
48026E(H) - Month (BCD)
48026F(H) - Day (BCD)
480270(H) - Hour
480271(H) - Minute
480272(H) - Second
480273(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ... , 06: Sunday

480280(H)) - Optional equipment (Read only)

Bit 0: Memory card	0: Not installed, 1: Installed
Bit 1: Hard disk	0: Not installed, 1: Installed
Bit 2: Function upgrade card	0: Not installed, 1: Installed
Bit 3: Not used	
Bit 4: 100 sheet cassette	0: Not installed, 1: Installed
Bit 5 to 7: Not used	

480281(H)) - Optional equipment (Read only)

Bit 0 Paper feed unit	0: Not installed, 1: Installed
Bit 1: 1st paper feed unit	0: Not installed, 1: Installed
Bit 2: 2nd paper feed unit	0: Not installed, 1: Installed
Bit 3: Not used:	
Bit 4: Printer interface unit	0: Not installed, 1: Installed
Bit 5: Not used	
Bit 6: ISDN G4 unit	0: Not installed, 1: Installed
Bit 7: Not used	

480282(H)) - Optional equipment (Read only)

Bit 0: Fax on demand	0: Not installed, 1: Installed
Bit 1 to 2: Not used	
Bit 3: Optional G3 unit	0: Not installed, 1: Installed
Bit 4 to 7: Not used	

480292 to 480294(H) - Tx counter

Address	High	Low
480292(H)	Tens digit	Unit digit
480293(H)	Thousands digit	Hundrets digit
480294(H)	Hundred thousands digit	Ten thousands digit

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

480296 to 480298(H) - Rx counter

48029A to 48029C(H) - Scan counter

48029E to 4802A0(H) - Print counter

4802A2 to 4802A4(H) - Printer interface output counter

4802B2 to 4802B4(H) - Paper feed counter (standard cassette)

4802B6 to 4802B8(H) - Paper feed counter (1st optional paper feed unit)

4802BA to 4802BC(H) - Paper feed counter (2nd optional paper feed unit)

4802BE to 4802C0(H) - Paper feed counter (optional 100 sheet cassette)

4802C2 to 4802C4(H) - Paper feed counter (bypass feed)

4802CA to 4802CC(H) - Scanner total jam counter

4802CE to 4802D0(H) - Printer total jam counter

4802D2 to 4802D4(H) - Paper jam counter (standard cassette)

4802D6 to 4802D8(H) - Paper jam counter (1st optional paper feed unit)

4802DA to 4802DC(H) - Paper jam counter (2nd optional paper feed unit)

4802DE to 4802E0(H) - Paper jam counter (optional 100 sheet cassette)

4802E2 to 4802E4(H) - Paper jam counter (bypass feed)

4802EA to 4802EC(H) - Fusing exit jam counter

4802EE to 4802F0(H) - Registration jam counter

4802F2 to 4802F4(H) - PM counter

4802F6 to 4802F8(H) - PM call interval (default 60,000)

4802FA to 4802FC(H) - Copy counter

4802FE to 480300(H) - OPC (drum) counter

480306 to 480308(H) - OPC (drum) replacement interval (default: 30,000 prints)
If bit 5 of system bit switch 04 is 0, the machine asks the user to replace the drum at this interval.

48030A to 48030C(H) - CTM counter

480312 to 480321(H) - Excessive jam call parameters

Parameters	Address (H)		Initial	Sys. Para.
	ADF	Printer	Settings	List
DEC (1 - 255; 0 = Disabled)	48031A	48031E	10 (H)	X
CALL (3 - 15; 0 = Disabled)	48031B	48031F	06 (H)	Y
CLR (Low)	48031C	480320	30 (H)	—
(High)	48031D	480321	00 (H)	—

Counters	Address (H)		Sys. Para.
	ADF	Printer	List
JAM: Jam counter used to place a service call	480313	480317	Z
NO-JAM1: Counter used for JAM counter decrement	480312	480316	—
NO-JAM2: Counter used for clearing the JAM counter	480314 (Low)	480318 (Low)	—
	480315 (High)	480319 (High)	

48033E to 480349(H) - G4 NSC code

48034A to 480361(H) - G4 terminal ID (ASCII - Max. 24 characters)

480362 to 480365(H) - ISDN IP

480366 to 480369(H) - ISDN G3 sub-address

48036A to 48036D(H) - ISDN G4 sub-address

48036E to 480372(H) - CiG4 board ROM information
- 48036E(H) - Suffix
- 48036F(H) - Version (BCD)
- 480370(H) - Year (BCD)
- 480371(H) - Month (BCD)
- 480372(H) - Day (BCD)

480373 to 480374(H) - Modem ROM version (standard)

480375 to 480376(H) - Optional G3 unit modem ROM version

480378 to 480379(H) - Reset timer during the communication
- 480378(H) - Low byte
- 480379(H) - High byte

The machine automatically returns to the standby mode when a page transmission exceeds this timer.
When the setting is 0000 to 04FF: The timer is set to 1 hour.
When the setting is 0500 to FFFF: The timer is set to N x 500 ms
(10.7 min to 9.1 hours)

48037A to 48037B(H) - Reset timer for the optional G3 or G4 unit
48037A(H) - Low byte
48037B(H) - High byte
The machine resets the optional G3 or G4 unit to the standby mode every period of this timer.
When the setting is 0000 to 04FF: The timer is set to 15 min.
When the setting is 0500 to FFFF: The timer is set to N x 500 ms
(10.7 min to 9.1 hours)

480387(H) - Number of copies for multi-sort document reception (User function 83)

480388(H) - Daylight saving time settings (User function 62)

480389 to 4803B2(H) - Night timer period (User function 72)
480389 to 48038B(H) - Setting #1 for Monday
48038C to 48038E(H) - Setting #2 for Monday
48038F to 480391(H) - Setting #1 for Tuesday
480392 to 480394(H) - Setting #2 for Tuesday
480395 to 480397(H) - Setting #1 for Wednesday
480398 to 48039A(H) - Setting #2 for Wednesday
48039B to 48039D(H) - Setting #1 for Thursday
48039E to 4803A0(H) - Setting #2 for Thursday
4803A1 to 4803A3(H) - Setting #1 for Friday
4803A4 to 4803A6(H) - Setting #2 for Friday
4803A7 to 4803A9(H) - Setting #1 for Saturday
4803AA to 4803AC(H) - Setting #2 for Saturday
4803AD to 4803AF(H) - Setting #1 for Sunday
4803B0 to 4803B2(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

4803DB(H) - Time for economy transmission (hour in 24h clock format - BCD)
4803DC(H) - Time for economy transmission (minute - BCD)

4803DD to 4803E4(H) - Last RDS operation (Read only)
4803DD(H) - 01(H): 24-hour clock, 00(H): 12-hour clock (AM), 02(H): 12-hour clock (PM)
4803DE(H) - Year (BCD)
4803DF1(H) - Month (BCD)
4803E0(H) - Day (BCD)
4803E1(H) - Hour
4803E2(H) - Minute
4803E3(H) - Second
4803E4(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ... , 06: Sunday

4803EC to 4803F3(H) - Last Fax On Demand report printout (Read only)
4803EC(H) - 01(H): 24-hour clock, 00(H): 12-hour clock (AM), 02(H): 12-hour clock (PM)
4803ED(H) - Year (BCD)
4803EE(H) - Month (BCD)
4803EF(H) - Day (BCD)
4803F0(H) - Hour
4803F1(H) - Minute
4803F2(H) - Second
4803F3(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ... , 06: Sunday

4803F6 to 4803F7(H) - Length (mm) of the non-scanning area from the leading edge for partial image scanning
4803F6(H) - Low byte (BCD)
4803F7(H) - High byte (BCD)
In the US, the user input value is in inch format. The machine converts this into mm format and stores the converted value here.

4803F8 to 4803F9(H) - Length (mm) of the scanning area for partial image scanning
4803F8(H) - Low byte (BCD)
4803F9(H) - High byte (BCD)

4803FA(H) - Transmission monitor volume 00 - 07(H)
4803FB(H) - Reception monitor volume 00 - 07(H)
4803FC(H) - On-hook monitor volume 00 - 07(H)
4803FE(H) - Buzzer volume 00 - 07(H)
4803FF(H) - Key acknowledgement tone volume 00 - 07(H)

480400(H) - NCU country code setting

480401 to 480405(H) - Periodic service call parameters
480401(H) - Call interval: 01 through 15 month(s) (BCD)
(00: Periodic service call disabled.)
480402(H) - Year: Last two digits of the year (BCD)
480403(H) - Month: 01 to 12 (BCD)
480404(H) - Day: 01 to 31 (BCD)
480405(H) - Hour: 00 to 23 (BCD)

48040B to 48040D(H) - Effective term of automatic service
48040B(H) - Year: Last two digits of the year (BCD)
48040C(H) - Month: 01 to 12 (BCD)
48040D(H) - Day: 01 to 31 (BCD)

480600 to 4807C7(H) - NCU parameters (Refer to section 4.3 for details)

480800(H) - Print top margin (standard cassette)
480801(H) - Print top margin (1st optional paper feed unit)
480802(H) - Print top margin (2nd optional paper feed unit)
480805(H) - Print top margin (optional 100 sheet cassette)
480806(H) - Print top margin (bypass feed)

48080B(H) - Print left margin (standard cassette)
48080C(H) - Print left margin (1st optional paper feed unit)
48080D(H) - Print top margin (2nd optional paper feed unit)
480810(H) - Print left margin (optional 100 sheet cassette)
480811(H) - Print left margin (bypass feed)

4808CD(H) - Print bottom margin (bypass feed)

NOTE: Please refer to section 5.12.3 of the FX4 service manual for how to adjust above parameters.

4808C7(H) - Fusing unit failure details
01(H) - The fusing lamp temperature stayed above 175 °C while printing.
02(H) - The fusing lamp temperature did not reach 150 °C before starting printing.
03(H) - The fusing lamp temperature did not go down to 80 °C while in standby mode (when fusing lamp OFF was selected for energy saver mode)
04(H) - The fusing lamp temperature did not go down to 80 °C while in standby mode (when fusing lamp Standby [80 °C] was selected for energy saver mode)
05(H) - The fusing lamp temperature stayed below 80 °C while in standby mode (when fusing lamp Standby [80 °C] was selected for energy saver mode)
07(H) - The fusing lamp temperature came below 140 °C during printing
08(H) - The fusing lamp temperature exceeded 250 °C
09(H) - A fusing thermistor error was detected

Note:
When a service call was caused by a fusing unit failure (codes 01 - 09):
After fixing the problem, **reset the data at this address to 00(H),** then restart the machine to clear the service call. (Refer to address 4808C9(H) for other hardware failures.)

4808C8(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.

4808C9(H) - Details of the service call (hardware error)
01(H) - The fusing lamp temperature stayed above 175 °C while printing.
02(H) - The fusing lamp temperature did not reach 150 °C before starting printing.
03(H) - The fusing lamp temperature did not go down to 80 °C while in standby mode (when fusing lamp OFF was selected for energy saver mode)
04(H) - The fusing lamp temperature did not go down to 80 °C while in standby mode (when fusing lamp Standby [80 °C] was selected for energy saver mode)
05(H) - The fusing lamp temperature stayed below 80 °C while in standby mode (when fusing lamp Standby [80 °C] was selected for energy saver mode)
07(H) - The fusing lamp temperature came below 140 °C while printing
08(H) - The fusing lamp temperature exceeded 250 °C
09(H) - A fusing thermistor error was detected
11(H) - Charge leak current was detected while the charge corona unit was activated
12(H) - Charge leak current was detected while the charge corona unit was not activated
21(H) - The laser synchronization signal was not detected during printing
31(H) - Polygonal mirror motor startup error
32(H) - Polygonal mirror motor error during printing
41(H) - Main motor startup error
42(H) - Main motor error during printing

When a service call was caused by a fusing lamp failure (codes 01 - 09):
The same code is stored at address 4808C7(H).
After fixing the problem, reset the data at address 4808C7(H) to 00(H), then restart the machine to clear the service call.

When a service call was caused by another hardware failure (codes 11 - 42):
If the problem remains after restarting the machine (power off/on), fix the hardware problem. The service call condition is cleared after power up.

4808CD(H) - Print bottom margin when bypass feeder is used.

4808E0(H) - Initial Toner Supply
Bit 3: Initial toner supply 0: Off, 1: On
Whenever the development unit is replaced, do the following procedure.

1. Make sure that the drum, CTM, and the new development unit are correctly installed.
2. Turn on the machine and change this bit to 1.
3. Turn off the machine.
4. Turn on the machine. The machine starts filling up the empty development unit hopper with new toner. (This bit is reset to zero automatically.)
5. Make test copies or test patterns to check the print quality.

480A10(H) - Scanning top margin adjustment
480A14(H) - Scanning bottom margin adjustment (Standard)
480A16(H) - Scanning bottom margin adjustment (Detail)
480A18(H) - Scanning bottom margin adjustment (Fine)

NOTE: Please refer to section 5.12.2 of the FX4 service manual for how to adjust above parameters.

4A5EBA to 4A71F1(H) - Dedicated tx parameters for Quick Dial 01 - 64 and Speed Dial #00 - #99.
Each set of dedicated tx parameters consists of 30 bytes, only the first 8 of which are used.

4A5EBA to 4A5ED7(H) - Dedicated tx parameters for Quick 01
4A5ED8 to 4A5EF5(H) - Dedicated tx parameters for Quick 02
4A5EF6 to 4A5F13(H) - Dedicated tx parameters for Quick 03
⇩
4A661C to 4A6639(H) - Dedicated tx parameters for Quick 64
4A663A to 4A6657(H) - Dedicated tx parameters for Speed #00
4A6658 to 4A6675(H) - Dedicated tx parameters for Speed #01
4A6676 to 4A6693(H) - Dedicated tx parameters for Speed #02
⇩
4A71D4 to 4A71F1(H) - Dedicated tx parameters for Speed #99

4B5846 to 4B5847(H) - Line type change
4B5846(H) - Current line type setting
4B5847(H) - Line type to be used after the procedure

4B6606 to 4B6785(H) - Latest 64 error codes (Read only)

One error record consists of 6 bytes of data.

First error record start address – 4B6606(H)
Second error record start address – 4B660C(H)
Third error record start address – 4B6612(H)
: : :
64th error record start address – 4B6780(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.]

4B9C5E to 4BA365(H) - Latest 20 error communication records (Read only)

One error communication record consists of 90 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 - Rx level or measure of error rate
If bit 5 of the 1st byte is 0: 17th byte - Rx level (low - Hex)
18th byte - Rx level (high - Hex)
If bit 4 of the 1st byte is 1: 17th byte - Measure of error rate (low - Hex)
18th byte - Measure of error rate (high - Hex)

19th 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

20th to 22nd byte - Not used

23rd to 46th byte - Remote terminal's ID (RTI, TSI or CSI) (ASCII)

47th 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
1 0 0 0 Fax On Demand

48th 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: Not used
Bits 6 and 7: Network type used

49th byte - Not used

50th byte - Number of errors during communication (Hex)

51st to 90th byte - 1st error code and page number where the error occurred
51st byte - Page number where the error occurred (low - Hex)
52nd byte - Page number where the error occurred (high - Hex)
53rd byte - Error code (low - BCD)
54th byte - Error code (high - BCD)
55th to 58th byte - 2nd error code and page number where the error occurred
59th to 62nd byte - 3rd error code and page number where the error occurred
63rd to 66th byte - 4th error code and page number where the error occurred
67th to 70th byte - 5th error code and page number where the error occurred
71st to 74th byte - 6th error code and page number where the error occurred
75th to 78th byte - 7th error code and page number where the error occurred
79th to 82nd byte - 8th error code and page number where the error occurred
83rd to 86th byte - 9th error code and page number where the error occurred
87th to 90th byte - 10th error code and page number where the error occurred

70001E to 700025(H) - Hard disk information
If the data in these addresses do not match the following values after installing an optional hard disk, format the hard disk and check these addresses again.

70001E(H) - 50(H)
70001F(H) - 00(H)
700020(H) - FF(H)
700021(H) - FF(H)
700022(H) - 00(H)
700023(H) - 00(H)
700024(H) - 00(H)
700025(H) - 80(H)

5. PREVENTIVE MAINTENANCE

5.1 SPECIAL TOOLS AND LUBRICANTS

- Flash/SRAM data copy tool (P/N: A1939353/H5159100)
- Flash/SRAM data copy board (P/N: A1939351/H5159500)
- Scan line adjustment chart (P/N: H5159300)
- 200 dpi test chart (P/N: H0829020)
- SBU adjustment knobs (P/N: H0129300)

5.2 PM TABLE

Scanner

Item	30K	60K	90K	1 year	Notes
Exposure Glass	C (user)	C (user)	C (user)	C (user)	Soft cloth and water
R1 and R2 Rollers	C (user)	C (user)	C (user)	C (user)	Soft cloth and water
White Shading Plate	C (user)	C (user)	C (user)	C (user)	Soft cloth and water
Mirrors		C		C	
ADF Roller Ass'y	R	R	R	C (user)	P/N:H5151204
Separation Pad	R	R	R	C (user)	P/N: H5521355(USA)/ H5151355(EUR/Asia)

Printer

Item	30K	60K	90K	1 year	Notes
Paper Feed Roller				C (user)	Soft cloth and water
Registration Roller		C (user)		C (user)	Soft cloth and water
Thermistor		R			P/N: H5525015
Hot Roller Strippers		R			P/N: H5152181
Hot Roller		R			P/N: H5162110
Pressure Roller (Fusing)		R			P/N: H5162111
Cleaning Pad	R (user) Replaced when a new CTM is installed.				A cleaning pad is enclosed in the CTM.
Development Unit		R			P/N: H5159570 Transfer Roller is included.

100 Sheet Cassette (Optional)

Item	10K	30K	60K	1 year	Notes
Feed Roller				C (user)	Soft cloth and water

Paper Feed Unit (Optional)

Item	10K	30K	60K	1 year	Notes
Relay Roller	C (user)	C (user)	C (user)	C (user)	Soft cloth and water
Feed Roller				C (user)	Soft cloth and water

NOTE: C: Clean R: Replace

6. TROUBLESHOOTING

6.1 SERVICE CALL CONDITIONS

If the Call Service indicator is lit, one of the following conditions has occurred.

Symptom	Error Code	Sub-code	SC-code
Charge leak current detected while the charge corona unit was activated.	9-17	11	1-11
Charge leak current detected while the charge corona unit was not activated.	9-17	12	1-12
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	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
Hexagonal mirror motor startup error	9-23	31	3-31
Hexagonal mirror motor error while printing	9-23	32	3-32
Main motor startup error	9-24	41	4-41
Main motor error while printing	9-24	42	4-42

To find out which problem has occurred, either:

- See the Auto Service Call report that was 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.
  Or, check the sub-code stored at RAM addresses 4808C7(H) and 4808C9(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 back on.
- An SC-code is displayed on the LCD panel when the error occurs.

6.2 ERROR CODES

If an error code occurs, retry the communication. 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 on the service report.

Code	Meaning	Suggested Cause/Action
0-00	DIS/NSF not detected within 40 s of Start being pressed	Check the line connection. Check the NCU - MFDU connectors. The machine at the other end may be incompatible. Replace the NCU or MFCE. Check for DIS/NSF with an oscilloscope. If the rx signal is weak, there 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 - MFDU connectors. Try changing the tx level and/or cable equalizer settings. Replace the MFCE 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.
0-05	Unsuccessful after modem training at 2400 bps	Check the line connection. Check the NCU - MFDU connectors. Try adjusting the tx level and/or cable equalizer. Replace the MFCE 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 MFDU - NCU connectors. Try adjusting the tx level and/or cable equalizer settings. Replace the NCU or MFCE. 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 MFDU - NCU connectors. Replace the NCU or MFCE. 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 RTN or PIN after receiving a page, because there were too many errors	Check the line connection. Check the MFDU - NCU connectors. Replace the NCU or MFCE. 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/MFDU; try sending to another machine. Check for line problems and noise.
0-14	Non-standard post message response code received	Check the MFDU - NCU connectors. Incompatible or defective remote terminal; try sending to another machine. Noisy line: resend. Try adjusting the tx level and/or cable equalizer settings. Replace the NCU or MFCE. **Cross reference** See error code 0-08.
0-15	The other end does not have the confidential, transfer, or SEP/SUB/PWD function	The other terminal does not have the confidential rx or transfer function, or the other terminal does not have SEP/SUB/PWD function. The other terminal's memory is full.
0-16	CFR or FTT not detected after modem training in confidential or transfer mode	Check the line connection. Check the MFDU - NCU connectors. Replace the NCU or MFCE. Try adjusting the tx level and/or cable equalizer settings. The other end may have disconnected, or it may be defective; try calling another machine. If the rx signal level is too low, there may be a line problem. **Cross reference** See error code 0-08.
0-17	Communication was interrupted by pressing the Stop key	If the Stop key was not pressed and this error keeps occurring, replace the operation panel or OPU.

Code	Meaning	Suggested Cause/Action
0-20	Facsimile data not received within 6 s of retraining	Check the line connection. Check the MFDU - NCU connectors. Replace the NCU or MFCE. 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)
0-21	EOL signal (end-of-line) from the other end not received within 5 s of the previous EOL signal	Check the connections between the MFDU, NCU, & line. Check for line noise or other line problems. Replace the NCU or MFCE. 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 s)	Check the line connection. Check the MFDU - NCU connectors. Replace the NCU or MFCE. 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 MFDU - NCU connectors. Replace the NCU, MFDU or MFCE. 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. Check the MFDU - NCU connectors. Replace the NCU, MFDU, or MFCE.

Code	Meaning	Suggested Cause/Action
0-30	The other terminal did not reply to NSS(A) in AI short protocol mode	Check the line connection. Check the MFDU - 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 communication.
0-70	Communication mode specified in CM/JM was not available. V.8 sequence: Tx/Rx	The other terminal did not have a compatible communication mode. A polling tx file was not ready at the other terminal when polling reception was initiated from the tx terminal.
0-74	Fallback to T.30 protocol, after transmitting CI because ANSam was not detected V.8 sequence: Tx	The Tx terminal could not detect ANSam due to noise, poor line condition, etc. Check for line noise, or line connection.
0-75	Fallback to T.30 protocol, because CM was not detected. (ANSam timeout) V.8 sequence: Rx	
0-76	Fallback to T.30 protocol because JM was not detected. (CM timeout) V.8 sequence: Tx	The Tx terminal could not detect JM due to noise, poor line condition, etc. Check for line noise, or line connection.
0-77	Fallback to T.30 protocol because CJ was not detected. (JM timeout) V.8 sequence: Rx	The Tx terminal could not detect CJ due to noise, poor line condition, etc. Check for line noise, or line connection.
0-80	Line was disconnected due to timeout during line probing. V.34: line probing	Check the line connection or line noise. Check the connection between the NCU and the FDU. Increase the tx level or adjust the cable equalizer setting. Use the V.17 or slower modem (with the dedicated tx parameter).
0-81	Line was disconnected due to timeout during equalizer training. V.34: equalizer training	
0-82	Line was disconnected due to timeout during control channel start-up sequence. V.34: phase 4	
0-83	Line was disconnected due to time out during control channel restart sequence.	

0-84	Line was disconnected because error detected in control channel start-up sequence. V.34: phase 4	Check the connection between the NCU and the FDU. Replace the SG3 board, optional G3 board, or the MFCE.
0-85	Line was disconnected because error detected in control channel restart.	
0-86	Line was disconnected because the other terminal requested a data rate by MPh that was not available in the selected symbol rate.	The other terminal may be defective or incompatible.
0-87	Control channel started after unsuccessful primary channel.	The Rx terminal restarted the control channel because data reception in the primary channel was not successful.
0-88	Line was disconnected because PPR was transmitted or received 9 times (default) times within the same ECM frame.	Use a lower data rate at the start. Increase the tx level or adjust the cable equalizer setting.
1-00	Document jam	Incorrectly inserted document or unsuitable document type. Check the ADF drive components and sensors.
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
1-10	Paper at the scan line when the power was turned on.	Remove the paper. Check the scan line sensor.
1-17	Document jam in the feed-out area	Clear any debris from the sensor actuator. Check the ADF drive components and sensors.
1-20	Paper did not reach the fusing exit at the end of printing	Remove the paper. Check the printer drive components and sensors.
1-21	Paper present at the fusing exit after printing	Remove the paper. Check the printer drive components and sensors.
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 MFCE.
2-11	Only one V.21 connection flag was received	Change the MFCE.
2-12	Modem clock irregularity	Replace the MFCE.
2-20	Abnormal coding/decoding (cpu not ready)	Replace the MFCE.
2-23	JBIG compression/ reconstruction error	Check the connection between MFCE, optional SG3 and optional NCU board. Replace the optional SG3 board or the MFCE.
2-24	JBIG ASIC error	Replace the optional SG3 board or the MFCE.
2-25	JBIG data reconstruction error (BIH error)	Check the connection between MFCE, optional SG3 and optional NCU board. Replace the optional SG3 board or the MFCE.
2-26	JBIG data reconstruction error (Float marker error)	
2-27	JBIG data reconstruction error (End marker error)	
2-50	The machine reset itself	If this is frequent, replace the MFCE.
3-00	G4 interface board reset	Replace the G4 interface board or MFCE.
3-10	Disconnection during ISDN G3 communication	Check the other terminal and the ISDN line. The other terminal may dialed a wrong number.
3-11	Disconnection during ISDN G4 communication	Check the other terminal and the ISDN line.
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.
4-00	One page took longer than 8 minutes to transmit	Check for a bad line. Try the communication at a lower resolution, or without halftone. Change the MFCE.
4-01	Line current was cut	Check the line connector. Check the connection between MFDU and NCU. Check for line problems. Replace the MFDU or the NCU.
4-02	The other end cut the received page as 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 ID Code mismatch (Closed Network) or Tel. No./CSI mismatch (Protection against Wrong Connections)	Get the ID Codes the same and/or the CSIs programmed correctly, then resend. The machine at the other end may be defective.
4-80	Start mark not detected at the top of the OMR sheet	Check the ADF/scanner mechanisms. Check if a photocopy of the sheet was used. Check if a cut-off portion of the sheet was used. Check if the document guide was not adjuted correctly. Check if the sheet was dirty. Check if any adhesive tapes on the sheet.
4-81	OMR sheet placed in the ADF the wrong way	Place the sheet in the correct way.
4-82	Skew detection mark not detected	Same as 4-80.
4-83	Skew was detected before scanning the OMR data field	Check the ADF mechanisms. Check if a photocopy of the sheet was used. Check if a cut-off portion of the sheet was used. Check if any adhesive tapes on the sheet.
4-84	Guide mark not detected while scanning an OMR sheet	Same as 4-80.
4-85	Skew was detected while scanning the OMR data field	Same as 4-83
4-89	End mark not detected at the bottom of the OMR sheet	Same as 4-80.
4-90	Reduction rate in the main scan direction not acceptable while scanning an OMR sheet	Check if a reduced photocopy was used. Adjust the scanner correctly (refer to section 5.11).
5-00	Data reconstruction not possible	Replace the MFCE.
5-10	DCR timer expired	Replace the MFCE.
5-20	Storage impossible because of a lack of memory	Temporary memory shortage. Test the SAF memory. Replace the MFCE or optional IC card.
5-21	Memory overflow	
5-22	Mode table overflow after the second page of a scanned document	Wait for the messages which 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	Test the SAF memory. Ask the other end to resend the message. Replace the MFCE 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 which are currently in the memory to be sent or delete some files from memory.
5-25	SAF file access error	Replace the MFCE, the IC memory card, or the hard disk.
5-30	Mode table for the first page to be printed was not effective	Replace the MFCE, the IC memory card, the function upgrade card, or the hard disk.
6-01	G3 ECM - no V.21 signal was received	Try adjusting the rx cable equalizer. Replace the MFCE, MFDU or NCU.
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 MFDU. Check for a bad line or defective remote terminal. Replace the MFCE, MFDU or NCU.
6-05	G3 ECM - facsimile data frame not received within 18 s of CFR, but there was no line fail	Check the line connection. Check connections from the NCU to the MFDU. Check for a bad line or defective remote terminal. Replace the MFCE, MFDU 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 MFDU. 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 terminated within 6 s	Replace the MFCE.

9-07	Paper non-feed or jam at the cassette entrance	If the problem persists, replace the MFDU.
9-08	Paper jam inside the development area	If the problem persists, replace the MFDU.
9-09	Paper jam in the fusing exit area	If the problem persists, replace the MFDU.
9-10	Toner end detected	Replace the CTM.
9-12	Cover open detected during printing	Close the cover, or check the cover sensors.
9-17	Charge corona unit failure	If the problem persists, replace the MFDU.
9-20	Laser diode failure	If the problem persists, replace the MFDU.
9-22	Fusing lamp failure	If the problem persists, replace the MFDU.
9-23	Hexagonal mirror motor failure	If the problem persists, replace the MFDU.
9-24	Main motor failure	If the problem persists, replace the MFDU.
9-40	CRC error while receiveing a frame	Check and adjust the host PC's RS232C port settings. Check if a proper cable is used and connected securely. Check if the application is working correctly. If the problem persists, replace teh MFCE. **Note:** The optional RS232C interface may not be available in some countries.
9-41	Command 3rd try failed	
9-42	DCN received unexpectedly	
9-43	Unexpected frame received	
9-44	Response time over	
9-45	Frame transmission error	
9-50	Paper non-feed or jam inside the upper paper feed unit	Check if the recommended types of paper is used. Check if the paper guides are aligned to the paper correctly. Check the paper feed mechanism in the unit.
9-51	Jam at the paper exit of the upper paper feed unit.	Check if any blockage in the paper feed path. Check the paper feed mechanisms inside the unit. Check if the sensor is defective.
9-52	Paper non-feed or jam inside the lower paper feed unit	Check if the recommended types of paper is used. Check if the paper guides are aligned to the paper correctly. Check the paper feed mechanism in the unit.
9-53	Jam at the paper exit from the lower paper feed unit.	Check if any blockage in the paper feed path. Check the paper feed mechanisms inside the unit. Check if the sensor is defective.
9-80	Bypass feed - paper non-feed or jam at the entrance	Check the registration roller and sensor.
9-81	Bypass feed - paper length exceeds the maximum limit (600 mm)	Check the paper feed mechanism and sensors.

9-82	Optional 100 sheet cassette - paper non-feed or jam at the cassette entrance	Check the paper feed mechanism and sensors.
9-83	Optional 100 sheet cassette - paper length exceeds the maximum limit (600 mm)	Check the paper feed mechanism and sensors.

6.3 MODEM STATUS CODES IN V.34 PROTOCOL DUMP

The following sections explain the meaning of modem status codes which appear on the G3 protocol dump list after V.34 communications.

The machine sometimes does not print all the status codes.

In polling communication, the signals are exchanged in the opposite direction after phase 2.

6.3.1 CALLING SIDE

Phase 1 (V.8)

FIF	Description
0010	Idle
0110	Idle
0111	ANSam reception
0011	CM transmission
0112	JM reception
0012	CJ transmission
0013	Phase 1 end

Phase 2 (Line Probing)

FIF	Description
0020	Idle
0021	75 ms interval
0121	Waiting for INFO0a
0022	INFO0c transmission
0122	INFO0a reception
0123	A reception
0023	INFO0c retransmission due to missing INFO0a
0024	INFO0c retransmission due to the second INFO0a reception
0031	B transmission
0032	B bar transmission
0033	L1 transmission
0034	L2 transmission
0041	B transmission during INFOh reception.
0127	INFOh reception
0042	Phase 2 end
0043	Waiting for A due to recovery from phase 3 (control channel)

Phase 3 (Equalizer Training)

FIF	Description
0050	Idle
0051	70 ms interval
0130	Phase 3
0052	S transmission
0053	S bar transmission
0054	PP transmission
0055	TRN transmission
0056	Phase 3 end

Phase 4 and 5 (Control Channel)

FIF	Description
0060	Idle
0141	Waiting for PPh
0061	70 ms interval
0062	PPh transmission
0142	PPh reception
0063	ALT transmission
0143	ALT reception
0064	MPh transmission
0144	MPh reception
0065	E transmission
0145	E reception
0066	T.30 control signal transmission (e.g., NSS or DCS)
0151	Flag reception
0152	T.30 control signal reception (e.g., NSF, DIS or CFR)
0067	Phase 5 end

Phase 6 (Primary Channel)

FIF	Description
00A0	Idle
00A1	70 ms interval
0160	Phase 6
00A2	S transmission
00A3	S bar transmission
00A4	PP transmission
00A5	B1 transmission
00A6	Image data transmission
00A7	Phase 6 end

Control Channel (Post Message - Sh)

FIF	Description
0070	Idle
0071	70 ms interval
0141	Waiting for Sh or PPh
0072	Sh transmission
0073	Sh bar transmission
0146	Sh/Sh bar reception
0074	ALT transmission
0143	ALT reception
0075	E transmission
0076	T.30 control signal transmission (e.g., PPS-EOP)
0151	Flag reception
0152	T.30 control signal reception (e.g., MCF)
0077	End

Control Channel (Post Message – PPh)

FIF	Description
0080	Idle
0081	PPh transmission
0142	PPh reception
0082	ALT transmission
0143	ALT reception
0083	MPh transmission
0144	MPh reception
0084	E transmission
0085	T.30 control signal transmission (e.g., PPS-MPS)
0151	Flag reception
0152	T.30 control signal reception (e.g., MCF)
0086	End

Control Channel Recovery (AC)

FIF	Description
0090	Idle
0091	AC transmission
0092	PPh transmission
0142	PPh reception
0093	ALT transmission
0143	ALT reception
0094	MPh transmission
0144	MPh reception
0095	E transmission
0096	T.30 control signal transmission (e.g., PPS-EOP)
0151	Flag reception
0152	T.30 control signal reception (e.g., MCF)
0097	End

V.34 End

FIF	Description
00B0	Modem idle

6.3.2 CALLED SIDE

Phase 1 (V.8)

FIF	Description
0010	Idle
0110	Idle
0111	CM reception
0012	JM transmission
0112	CI reception
0113	CJ reception
0013	Phase 1 end

Phase 2 (Line Probing)

FIF	Description
0020	Idle
0121	Waiting for INFO0c
0021	75 ms interval
0122	INFO0c reception
0022	INFO0a transmission
0023	INFO0a retransmission due to missing INFO0c
0024	INFO0a retransmission due to the second INFO0c reception
0123	B reception
0124	B bar reception
0031	A transmission
0032	A bar transmission
0033	No signal. Waiting for L1/L2
0125	L1/L2 reception
0126	B reception
0041	A transmission
0042	INFOh transmission
0043	Phase 2 end
0044	Waiting for B due to recovery from phase 3 (control channel)

Phase 3 (Equalizer Training)

FIF	Description
0050	Idle
0131	No signal
0051	70 ms interval
0052	Waiting for S
0132	S reception
0053	Waiting for S bar
0133	S bar reception
0054	Waiting for PP
0134	PP reception
0055	Waiting for TRN
0135	TRN reception
0056	Phase 3 end

Phase 4 and 5 (Control Channel)

FIF	Description
0060	Idle
0141	No signal
0061	70 ms interval
0142	PPh reception
0062	PPh transmission
0143	ALT reception
0063	ALT transmission
0144	MPh reception
0064	MPh transmission
0145	E reception
0065	E transmission
0066	T.30 control signal transmission (e.g., NSF and DIS)
0067	Phase 5 end

Phase 6 (Primary Channel)

FIF	Description
00A0	Idle
0161	No signal
00A1	70 ms interval
0162	S reception
00A2	Waiting for S
0163	S bar reception
00A3	Waiting for S bar
0164	PP reception
00A4	Waiting for PP
0165	B1 reception
00A5	Waiting for B1
0166	Flag reception
0167	Image data reception
00A6	Waiting for image data
0168	Turn off
00A7	Phase 6 end

Control Channel (Post Message - Sh)

FIF	Description
0070	Idle
0071	70 ms interval
0041	No signal
0072	Detecting Sh and Sh bar
0146	Sh/Sh bar reception
0073	Sh transmission
0074	Sh bar transmission
0143	ALT reception
0075	ALT transmission
0145	E reception
0076	E transmission
0151	Flag reception
0152	T.30 control signal reception (e.g., PPS-EOP)
0077	T.30 control signal transmission (e.g., MCF)
0078	End

Control Channel (Post Message – PPh)

FIF	Description
0080	Idle
0142	PPh reception
0081	PPh transmission
0143	ALT reception
0082	ALT transmission
0144	MPh reception
0083	MPh transmission
0145	E reception
0084	E transmission
0151	Flag reception
0152	T.30 control signal reception (e.g., PPS-MPS)
0085	T.30 control signal transmission (e.g., MCF)
0086	End

Control Channel Recovery (AC)

FIF	Description
0090	Idle
0091	AC transmission
0147	AC reception
0142	PPh reception
0092	PPh transmission
0143	ALT reception
0093	ALT transmission
0144	MPh reception
0094	MPh transmission
0145	E reception
0095	E transmission
0151	Flag reception
0152	T.30 control signal reception (e.g., PPS-MPS)
0096	T.30 control signal transmission (e.g., MCF)
0097	End

V.34 End

FIF	Description
00B0	Modem idle

Point-to-Point Diagram
Model: FR4 (FAX4800L)

Issued on: January 30th, 1998
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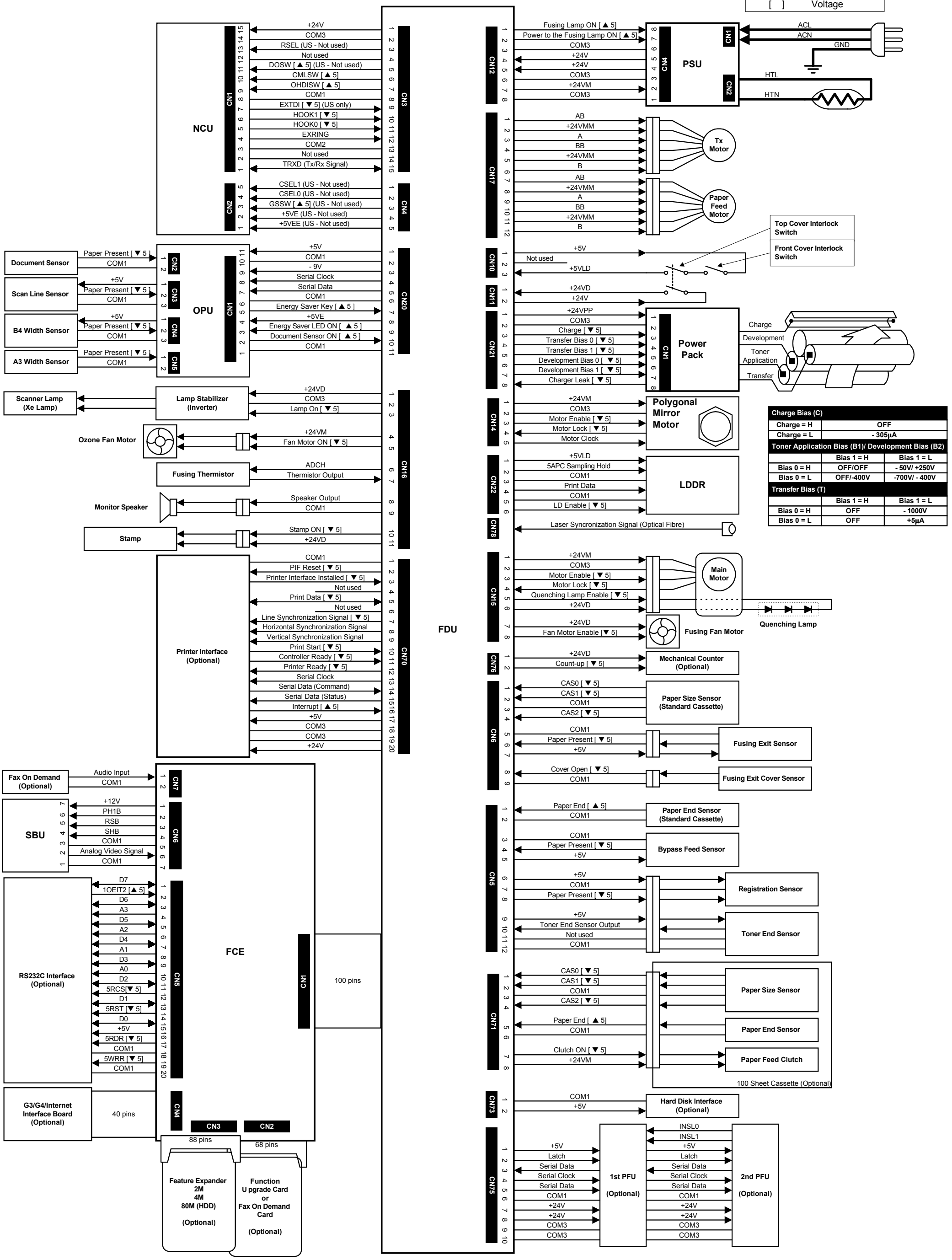
Subject to change

Symbol Table

———	AC Line
———	DC Line
⟶ ⟵	Signal Direction
▲	Active High
▼	Active Low
[ ]	Voltage



Charge Bias (C)		
Charge = H	OFF	
Charge = L	- 305µA	
Toner Application Bias (B1)/ Development Bias (B2)		
	Bias 1 = H	Bias 1 = L
Bias 0 = H	OFF/OFF	- 50V/ +250V
Bias 0 = L	OFF/-400V	-700V/ - 400V
Transfer Bias (T)		
	Bias 1 = H	Bias 1 = L
Bias 0 = H	OFF	- 1000V
Bias 0 = L	OFF	+5µA