FAX UNIT

(Machine Code: A874)

This manual explains the fax unit, as well as the following.

- EXFUNC board - Fax Function Expander (Machine Code: A892)
- Handset (Machine Code: A646)
- PCFE board - PC Fax Expander (Machine Code: B368)
- ISDN kit (Machine Code: A816)
- Stamp (Machine Code: A813)
- (EXMEM board – Expansion Memory)

January 14th, 2000
Subject to change.

Lithium Batteries

⚠CAUTION
The danger of explosion exists if batteries on the FCU and EXFUNC boards are incorrectly replaced. **Replace only with the same or an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.**

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1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

Type
Desktop type transceiver

Circuit
PSTN, PABX, ISDN

Connection
Direct couple

Original Size (Book)
Maximum Length: 432 mm [17 ins]
Maximum Width: 297 mm [11.7 ins]

Original Size (ADF)
Length: 128 – 432 mm [5.0 – 47.2 ins]
Width: 105 – 297 mm [4.1 – 11.7 ins]
Thickness: 40 – 128 g/m^2 [10 – 34 lbs]

Scanning Method
Flat bed, with CCD

Scan Width
210 mm [8.3 ins] ± 1% (A4)
216 mm [8.5 ins] ± 1% (8.5" x 11")
256 mm [10.1 ins] ± 1% (B4)
279 mm [11.0 ins] ± 1% (11" x 17")
297 mm [11.7 ins] ± 1% (A3)

Resolutions
8 x 3.85 lines/mm (G3 only)
8 x 7.7 lines/mm (G3 only)
8 x 15.4 lines/mm (G3 only)
16 x 15.4 lines/mm (G3 only)
200 x 100 dpi
200 x 200 dpi
400 x 400 dpi

Note:
To use the 8 x 15.4 lines/mm, 16 x 15.4 lines/mm and 400 x 400 dpi resolutions, an optional EXMEM board is required.

Memory Capacity

ECM: 128 Kbytes

SAF:
Standard: 2 Mbytes (160 pages)

With optional memory board (EXFUNC + EXMEM) :
30 Mbytes (3000 pages)

Measured using an ITU-T #1 test document (Slerexe letter)

Compression
MH, MR, MMR
JBIG (EXFUNC is required)
(MMR only with ECM and G4)
SAF storage for memory tx: MMR and/or raw data

Protocol
Group 3 with ECM
Group 4 (ISDN unit required)

Modulation
V.34, V.33, V.17 (TCM), V.29 (QAM), V.27ter (PHM), V.8, V.21 (FM)

Data Rate (bps)
G3:
33600/31200/28800/26400/24000/21600/19200/16800/14400/12000/9600/7200/4800/2400, Automatic fallback
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 8 x 3.85 l/mm resolution
G4 (option): 3 s at 64 kbps; Measured with an ITU-T #1 test document (Slerexe letter) at 200 x 200 dpi resolution

1.2 FEATURES

1.2.1 FEATURES LIST

KEY:
O = Used, X = Not Used,
A = Optional EXMEM board required
B = Optional EXFUNC board required
C = Optional PCFE board required
D = Optional ISDN unit required
E = Optional STAMP unit required

Video Processing Features	
Automatic image density selection	O
Contrast	O
Halftone (Basic & Error Diffusion)	O
JBIG compression	B
MTF	O
Reduction before tx	O
Scanning Resolution – Standard	O
Scanning Resolution – Detail	O
Scanning Resolution – Fine	A
Scanning Resolution – Superfine	A
Smoothing to 400 x 400 dpi when printing	O

Communication Features – Automatic	
Automatic fallback	O
Automatic redialing (Memory tx only)	O
Dual Access	O
Length Reduction	O
Resolutions available for reception Detail Fine Superfine	 O A A
Substitute reception	O
V34 communication	O

Communication Features - User Selectable	
90° Image Rotation before tx	O
Action as a transfer broadcaster	X
AI Redial (last ten numbers)	O
Answering machine interface	X
Authorized Reception	O
Auto Document	O
Automatic dialing (pulse or DTMF)	O
Automatic Voice Message	X
Batch Transmission	O
Book Original tx	O
Broadcasting	O
Chain Dialing	O
Communication Record Display	O
Confidential ID Override	O
Confidential Reception	O
Confidential Transmission	O
Create Margin Transmission	O
Direct Fax Number Entry	O
Economy Transmission	O
Fax on demand	X
Forwarding	O
Free Polling	O
Groups (Standard: 9 groups)	O
Hold	X
ID Transmission	O
Immediate Redialing	O
Immediate Transmission	O
ISDN	D
Keystroke Programs	O
Memory transmission	O
Multi-step Transfer	O
Non-standard original size transmission	O
OMR	X
On Hook Dial	O
Ordering Toner	X
Page Count	O
Page separation mark	O
Parallel memory transmission	O

Communication Features - User Selectable	
Partial Image Area Scanning	X
Personal Codes	O
Polling Reception	O
Polling Transmission	O
Polling tx file lifetime in the SAF	O
Quick Dial (Standard: 56 stations)	O
Reception modes (Fax, Tel)	O
Remote control features	X
Remote Transfer	X
Restricted Access	O
Secured Polling	O
Secured Polling with Stored ID Override	O
Send Later	O
SEP/SUB/PWD/SID	O
Silent ringing detection	X
Specified Image area	X
Speed Dial (Standard: 100 stations)	O
Stamp	E
Telephone Directory	O
Tonal Signal Transmission	O
Transfer Request	O
Transmission Deadline (TRD)	X
Turnaround Polling	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	O
Closed Network	O
Continuous Polling Reception	O
Dedicated tx parameters	O
ECM	O
EFC	X
Inch-mm conversion before tx	O
Length Reduction	O
Page retransmission times	O

Communication Features - Service Selectable	
Protection against wrong connection	O
Short Preamble	X

Other User Features	
Area code prefix	X
Center mark	O
Checkered mark	O
Clearing a memory file	O
Clearing a polling file	O
Clock	O
Confidential ID	O
Counters	O
Daylight Saving Time	O
Destination Check	X
Direct entry of names	O
Energy Saver	O
File Retention Time	O
File Retransmission	O
Function Programs (F1 – F5)	O
Hard Disk Filing System	X
ID Code	O
Label Insertion ("To xxx")	O
Language Selection	SP mode
Memory Lock	O
Modifying a memory file (tx)	O
Multi Sort Document Reception	X
Own telephone number	O
Print density control	X
RDS on/off	O
Reception Mode Switching Timer	X
Reception time printing	O
Remaining memory indicator	O
Reverse Order Printing	O
RTI, TTI, CSI	O
Service Report Transmission	O
Speaker volume control	O
Specified Cassette Selection	O
Substitute reception on/off	O
Telephone line type	O
Toner Saving Mode	X
TTI/CIL on/off	O

Other User Features	
User Function Keys (5 keys)	O
User Parameters	O
Wild Cards	O

Reports - Automatic	
Charge Control Report	X
Communication Failure Report	O
Confidential File Report	O
Error Report	O
Fax On Demand Report	X
File Clear Report	O
File Reserve Report	O
Journal	O
Polling Result Report	O
Power Failure Report	O
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	X
Journal	O
Personal Code List	O
Program List	O
Quick Dial Label	O
Quick Dial List	O
Specified Cassette Selection List	X
Speed Dial List	O
Transmission Status Report	X
User Function List	X
User Parameter List	O

Service Mode Features	
Back-to-back test	X
Bit switch programming	O
Cable equalizer	O
Comm. parameter display	O
Counter check	SP mode

Service Mode Features	
Country code	O
DTMF tone test	O
Echo countermeasure	O
Effective term of service calls	O
Error code display	O
Excessive jam alarm	O
File Transfer (all files)	O
LCD contrast adjustment	SP mode
Line error mark	O
Memory file printout (all files)	O
Modem Software Download	X
Modem test (includeV.34 / V.8)	O
NCU parameters	O
Periodic service call	O
PM Call	O
Printing all communication records kept in memory	O
Protocol dump list	O
RAM display/rewrite	O
RAM dump	O
RAM test	O
RDS - RAM read/write - Dial data transfer (Quick/Speed) - Software transfer	 O O O
Ringer test	O
ROM version display (FCU)	SP mode
Serial number	O
Service monitor report	O
Service station number	O
Software Upload/Download	O
SRAM data backup/restore	O
System parameter list	O
Technical data on the Journal	O

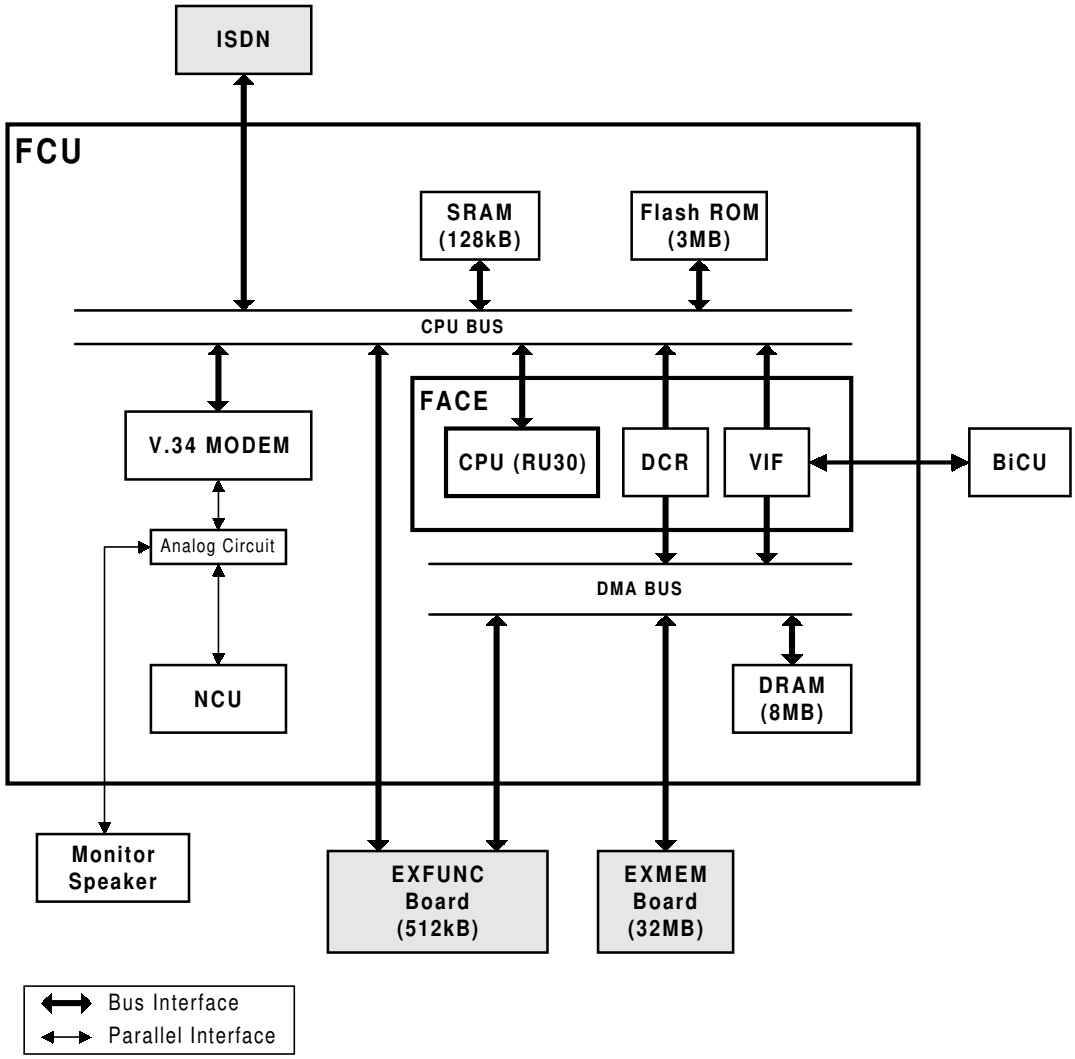
1.2.2 CAPABILITIES OF PROGRAMMABLE ITEMS

The following table shows how the capabilities of each programmable item will change after the optional function upgrade card is installed.

Item	Standard	With optional boards (EXFUNC + EXMEM)
Maximum number of memory files	200	1000
Maximum number of destinations per file	256	500
Maximum number of destinations overall	300	2000
Maximum number of pages overall	400	3000
Number of Quick Dials	56	56
Number of Speed Dials	100	1000
Number of Groups	9	30
Maximum number of destinations per Group	256	500
Maximum number of destinations dialed from the ten-key pad overall	100	1000
Maximum number of programs	56 (programmed in 56 Quick Dial keys)	56 (programmed in 56 Quick Dial keys)
Maximum number of Auto Documents	6 (programmed in 6 Quick Dial keys)	18 (programmed in 18 Quick Dial keys)
Maximum number of communication records for the Journal stored in the memory	100	900
Maximum number of addresses specified for features such as Authorized Reception and Specified Cassette Selection	30	50
Maximum number of user function keys	5	5
Maximum number of personal codes	20	50

1.3 OVERALL MACHINE CONTROL

1.3.1 SYSTEM CONTROL



A874V500.WMF

The basic fax unit consists of two PCBs: an FCU and an NCU.
The FCU controls all the fax communications and fax features, in cooperation with the base copier's main board, the BiCU. The NCU switches the analog line between the fax unit and the external telephone.

Fax Options

1. EXFUNC board: JBIG compression becomes available. In addition, this expands the system's SRAM capacity to hold programmed telephone numbers, communication records, etc.
2. PC fax expander: Class 2 fax communication from a PC and local printing from a PC fax application become available (PC fax application required). Also, local scanning from the machine’s scanner using TWAIN API becomes available (CFM Twain driver required).
3. ISDN unit: This allows the fax unit to communicate over an ISDN (Integrated Services Digital Network) line.
4. EXMEM board: This expands the SAF memory capacity. Also, this expands the page memory capacity to enable 400 dpi communications.)

1.3.2 POWER DISTRIBUTION AND CONTROL

The FCU power is supplied from the base copier's BiCU (+24V, +12V, -12V, and +5V). Refer to the base copier's service manual for details.

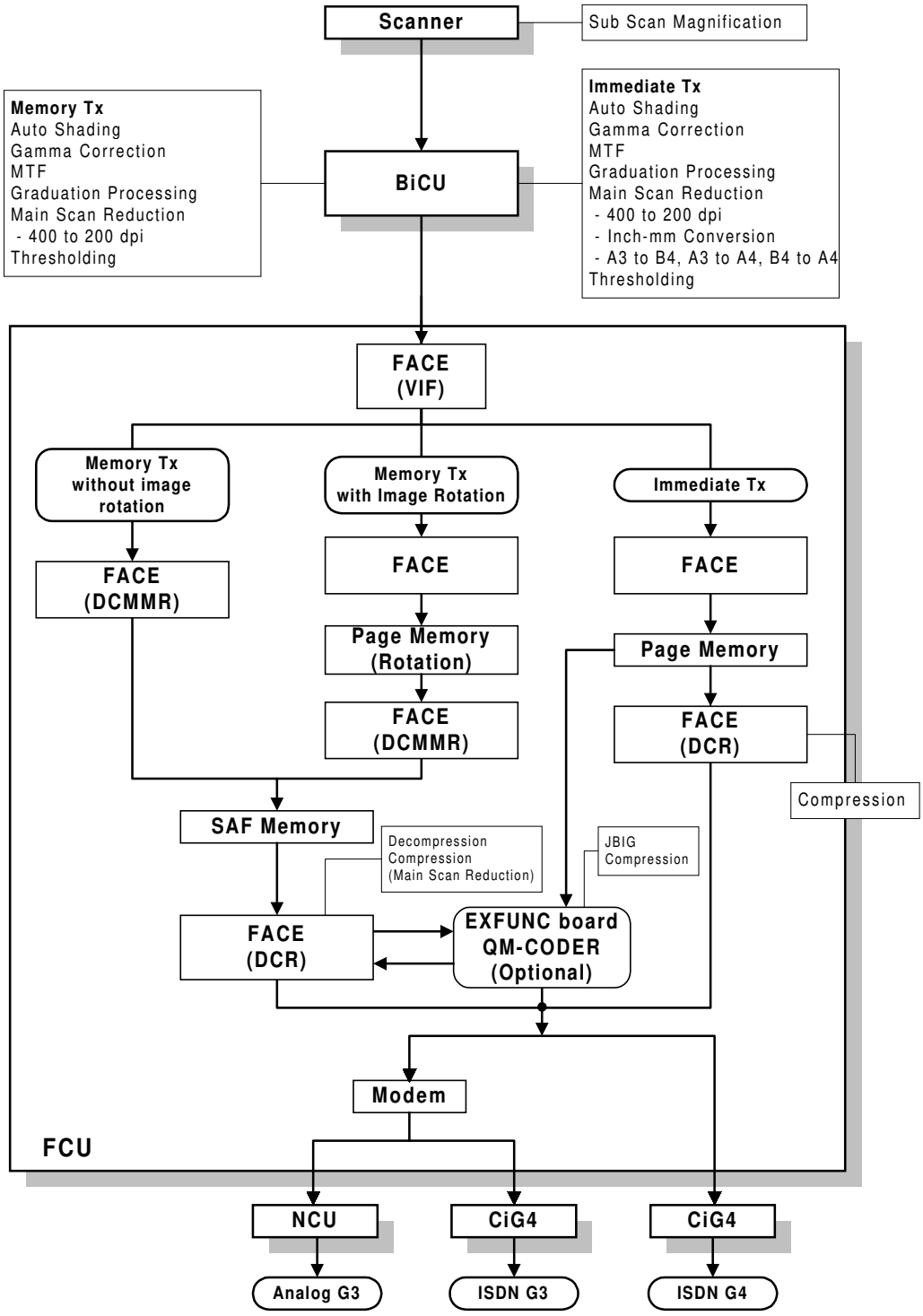
1.3.3 MEMORY BACK-UP

The system parameters and programmed items in the SRAM on the FCU and the EXFUNC board are backed up by batteries (long-term backup), in case the base copier's main switch is turned off.

The SAF memory (DRAM) on the FCU and the EXMEM board are backed up by rechargeable batteries for 1 hour.

1.4 VIDEO DATA PATH

1.4.1 TRANSMISSION



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Memory Transmission and Parallel Memory Transmission

The base copier's scanner scans the original at the selected resolution in inch format. The BiCU processes the data and transfers it to the FCU.

NOTE: When scanning a fax original, the BiCU uses the MTF and thresholding parameter settings programmed in the fax unit's scanner bit switches, not the copier's SP modes.

Then, the FCU converts the data to mm format, and compresses the data in MMR or raw format to store it in the SAF memory. If image rotation will be done, the image is rotated in page memory before compression.

At the time of transmission, the FCU decompresses the stored data, then re-compresses and/or reduces the data if necessary for transmission. Either the NCU or CiG4 (optional) transmits the data to the line.

Immediate Transmission

The base copier's scanner scans the original at the resolution agreed with the receiving terminal. The BiCU video processes the data and transfers it to the FCU.

NOTE: When scanning a fax original, the BiCU uses the MTF and thresholding parameter settings programmed in the fax unit's scanner bit switches, not the copier's SP modes.

Then the FCU stores the data in page memory, and compresses the data for transmission. Either the NCU or CiG4 (optional) transmits the data to the line.

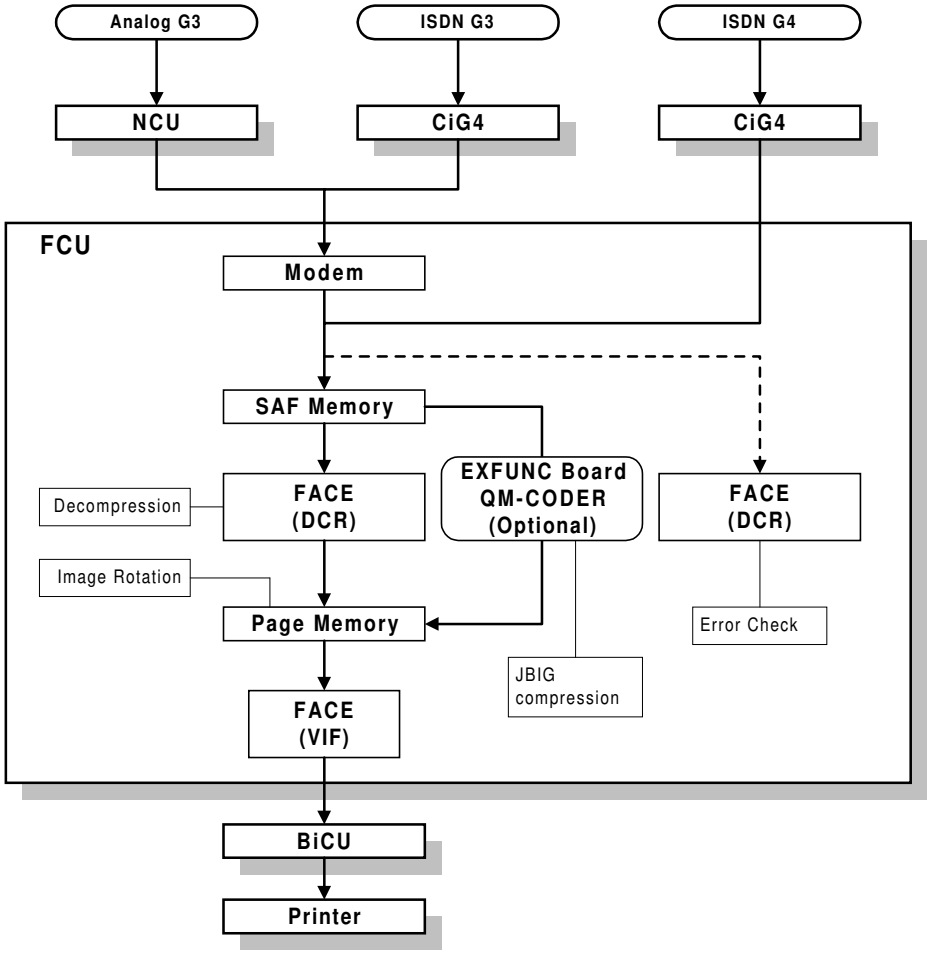
JBIG Transmission

- **Memory transmission:** If the receiver has JBIG compression, the data goes from the FACE (DCR) to the EXFUNC board for JBIG compression. Then either the NCU or CiG4 (ISDN G3) transmits the data to the line.
- **Immediate transmission:** If the receiver has JBIG compression, the data goes from the page memory to the EXFUNC board for JBIG compression. Then either the NCU or CiG4 (ISDN G3) transmits the data to the line.

Adjustments

- Line used for G3 transmissions (PSTN or ISDN): System switch 0A bit 6

1.4.2 RECEPTION



A874V502.WMF

First, the FCU stores the incoming data from either an analog line or an ISDN line to the SAF memory. (The data goes to the FACE at the same time, and is checked for error lines/frames.)

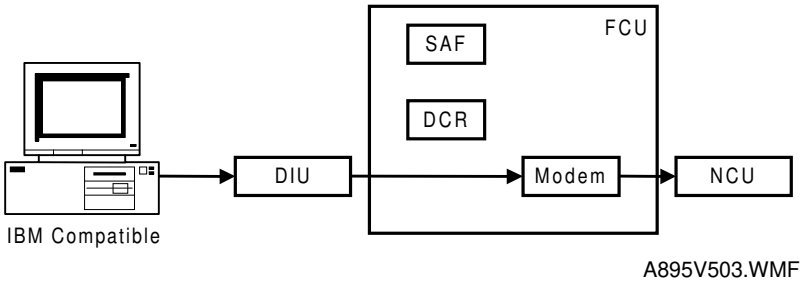
The FCU then decompresses the data and transfers it to page memory. If image rotation will be done, the image is rotated in the page memory. The data is transferred to the BiCU.

JBIG Reception

When data compressed with JBIG comes in on PSTN, the data is sent to the EXFUNC board for decompression. Then the data is stored in the page memory, and transferred to the BiCU.

1.4.3 PC FAX COMMUNICATION

Direct transmission

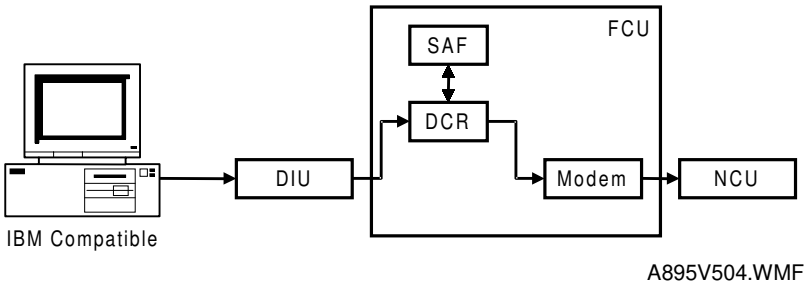


A895V503.WMF

The host computer sends commands and image data to the machine through the DIU during transmission.

NOTE: 1) Group dials programmed in the machine cannot be used.
2) T.30 optional protocols (e.g., BFT) are not supported by class 2 fax communication.
3) ISDN G4 numbers programmed in quick or speed dials cannot be used.
4) If ISDN is selected for G3 communication (system switch 0A, bit 6), the G3 numbers must have been programmed in quick or speed dials.

Memory transmission

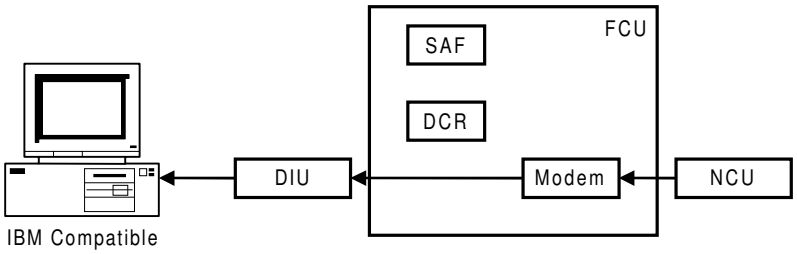


A895V504.WMF

The host computer sends destination number(s) and image data to the machine through the DIU during transmission. The machine stores the image in the SAF memory, then makes a fax transmission.

NOTE: 1) If the memory overflows while storing the first page into SAF memory, the machine does not start the transmission.
2) If the memory overflows while storing the second or subsequent page into SAF memory, the machine transmits all the successfully stored pages.
3) When fax numbers programmed in the machine's quick or speed dials are specified using the PC fax application, all the specified numbers must have been programmed in the fax machine.
4) T.30 optional protocols (e.g., BFT) are not supported by class 2 fax communication.

Direct reception

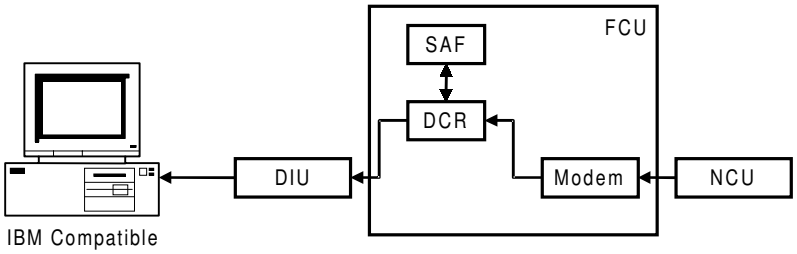


A895V505.WMF

The machine transfers received image data directly to the host PC without storing it into SAF memory.

NOTE: 1) If the host PC is not ready to receive a fax message, the machine receives the message into SAF memory.
2) Even if the SAF memory is full, the machine starts fax reception. However, the machine will not continue reception if the host computer is not ready to receive a message.
3) The “Number of rings to answer” parameter in the PC fax application must not exceed 4.

Memory reception



A895V506.WMF

The machine receives a fax message in the SAF memory, then transfers data to the host computer after the reception has finished. The machine prints the received message after transferring data to the host if user parameter 21 – bits 1 and 2 are set to “1: Print”.

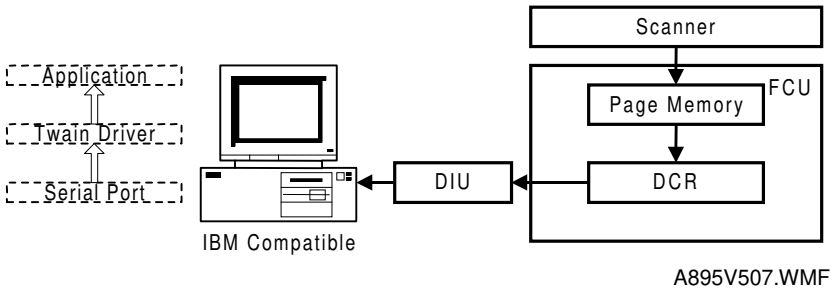
NOTE: 1) If an error occurs due to cable disconnection, the PC fax application must be restarted to receive the message.
2) Memory reception is not possible when forwarding is enabled.
3) Manual reception from the PC fax application is not supported.
4) The “Number of rings to answer” parameter in the PC fax application must not exceed 4.

Adjustments

- PC transmission mode (direct or memory): User parameter 20 (14H), bit 0
- Line for PC memory transmission (PSTN/ISDN G4): User parameter 20 (14H), bit 5
- PC fax reception mode (direct/memory): User parameter 21 (15H), bits 1 and 2

1.4.4 SCANNING AND PRINTING

SCANNING

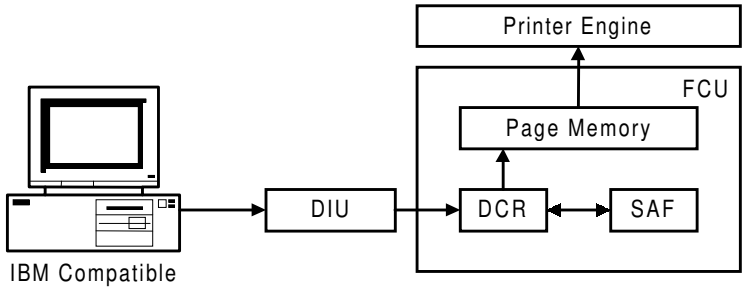


A895V507.WMF

The machine scans an original into page memory, then transfers the data to the host PC. The data is sent to the application through the CFM Twain driver.

NOTE: The maximum resolution is 200 x 200 dpi.

PRINTING



A895V508.WMF

The machine receives print data into SAF memory as fax image data, then prints it after all the data has been transferred from the host PC.
The destination number “0000” informed from the host PC identifies a print job.

NOTE: 1) If SAF memory runs out while receiving print data, the machine prints up to the successfully received data.
2) The machine cannot receive print data while printing a message from the SAF memory. The data will be received after printing.
3) If a fax destination is specified together with the print destination “0000”, the destinations specified after “0000” will be delayed until the machine prints all pages in the message.

2. DETAILED SECTION DESCRIPTIONS

2.1 AUTOMATIC SERVICE CALLS

2.1.1 SERVICE CALL CONDITIONS

The fax unit makes an automatic service call when the base copier's BiCU generates any SC code except for those stored in the following RAM.

NOTE: The service station's fax number has to be programmed in advance, or the machine cannot make a service call.

Exceptions

Address (H)	Definition	Default	SC code
680DC8	1st SC code - High byte (BCD)	03	329 Laser beam pitch adjustment error
680DC9	1st SC code - Low byte (BCD)	29	
680DCA	2nd SC code - High byte (BCD)	03	361 Hard disk drive error 2
680DCB	2nd SC code - Low byte (BCD)	61	
680DCC	3rd SC code - High byte (BCD)	03	365 Image storage address error
680DCD	3rd SC code - Low byte (BCD)	65	
680DCE	4th SC code - High byte (BCD)	05	548 Fusing unit installation error
680DCF	4th SC code - Low byte (BCD)	48	
680DD0	5th SC code - High byte (BCD)	06	630 CSS communication error Japan only
680DD1	5th SC code - Low byte (BCD)	30	
680DD2	6th SC code - High byte (BCD)	09	9AA From 900 to 999
680DD3	6th SC code - Low byte (BCD)	AA	
680DD4 to 680DEF	7th SC code - High byte (BCD) to 20th SC code - Low byte (BCD)	FF(H)	Not Programmed

To add additional SC codes, program them in the blank addresses.

Wild Cards

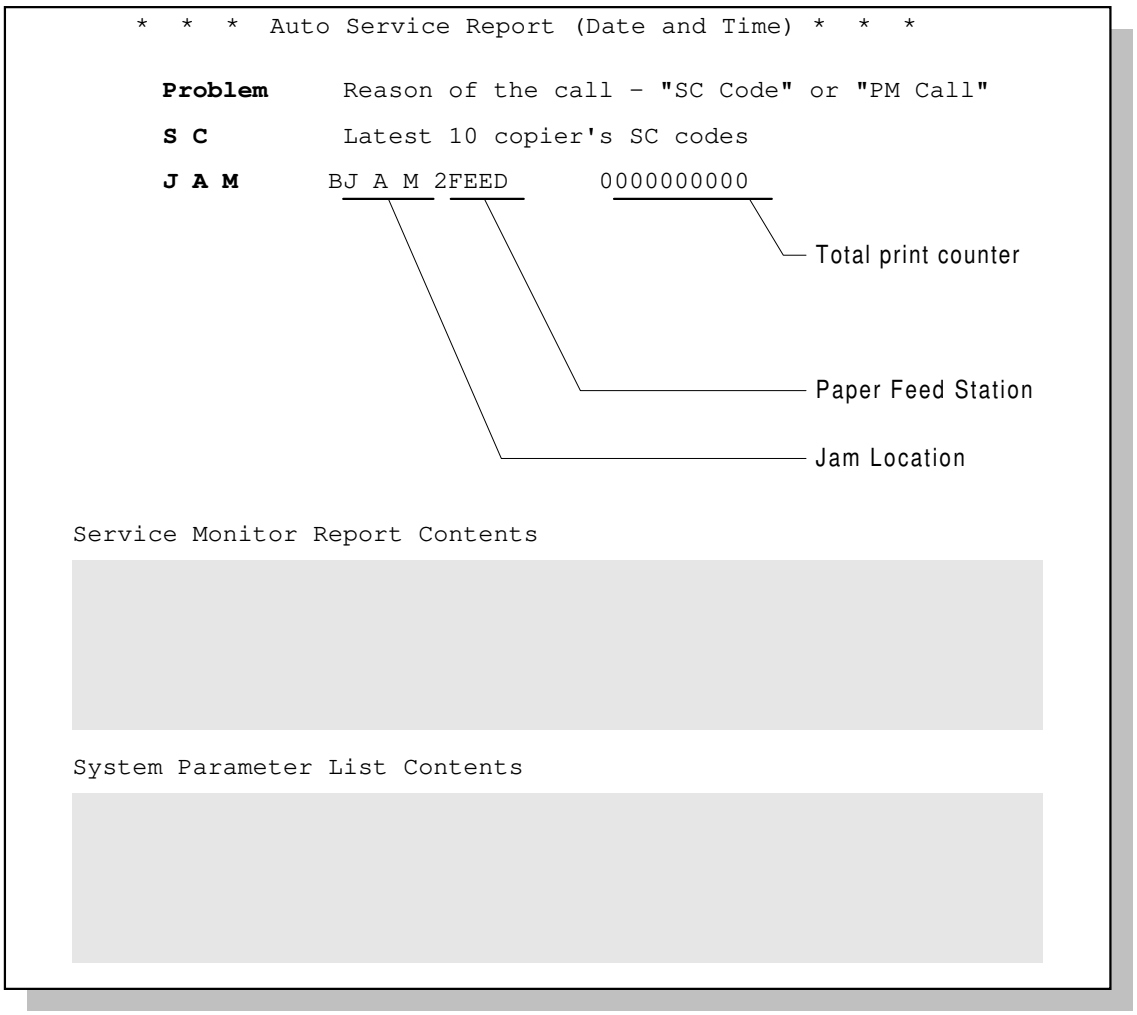
This function allows "A" or "a", to be used as a wild card instead of numbers from 0 to 9. For example, "1AA" or "1aa" means all the SC codes from 100 to 199, and "39A" or "39a" means all the SC codes from 390 to 399.

The fax unit cannot make an automatic service call when a Fax SC code condition has occurred. Refer to the Troubleshooting section for Fax SC code details.

Manual Service Call

If the service station needs a report, the user can make a service call manually, by changing bit 7 of User Parameter 14 (0E) to "1".

A sample auto service report



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2.1.2 PERIODIC SERVICE CALL

The periodic service call notifies the service station of the machine's condition. The call is made at a time interval programmed in the following RAM addresses:

Parameters		Address (H)
Call interval: 01 through 15 months (BCD) 00: Periodic service call disabled		**6803A1**
Date and time of the next call	Day: 01 through 31 (BCD)	**6803A4**
	Hour: 01 through 24 (BCD)	**6803A5**

To change these settings after programming, change the call interval. The machine then automatically changes the remaining parameters by referring to the interval and the current date and time.

2.1.3 PM CALL

If PM alarm is enabled with the base copier's SP mode and PM call is enabled with system switch 01, the machine will make an automatic service call when the base copier's PM counter reaches the PM interval.

Cross reference

- PM service call on/off: System switch 01, bit 0
- PM alarm setting: SP mode 5-501 (default: 150K)

2.1.4 EFFECTIVE TERM OF SERVICE CALLS

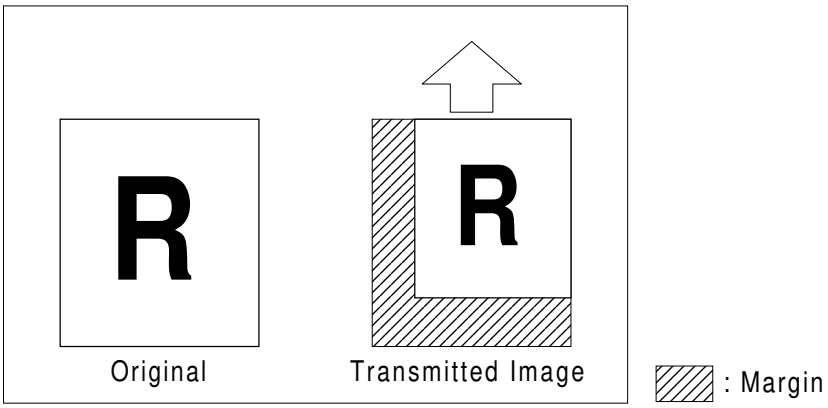
If a time limit for the effectiveness of service calls is programmed, the machine stops making automatic service calls after the time limit.

Program the time limit at the following addresses. This function is disabled when all of these addresses are 00(H).

Parameters	Address (H)
Year: last two digits of the year (BCD)	**6803AB**
Month: 01 through 12 (BCD)	**6803AC**
Day: 01 through 31 (BCD)	**6803AD**

2.2 SCANNING FEATURES

2.2.1 CREATE MARGIN TRANSMISSION



A874D501.WMF

When this function is enabled, the scanner is able to reduce the image of the original. This allows the person at the other end to file the printout without losing any of the data to punch holes.

The machine adds a margin to the bottom and left borders of the image so that the transmitted page is the same size as the original.

Cross reference

- Reduction ratio - System switch 06 bits 0 to 7
  Default setting is 93% (71 to 99%)

NOTE: 1) This function is only possible during memory transmission.
2) “Create margin transmission” and “Image rotation before transmission” are not compatible. (Create margin transmission is given priority)
3) The sample image on reports is also reduced and contains the margin.
4) Both the main and sub scan directions use the same magnification ratio.

2.3 PRINTING FEATURES

2.3.1 REDUCTION FOR JOURNAL PRINTING

The machine reduces the size of the journal and adds a margin to the bottom and left edges of the journal.
This function allows the customer to add punch holes without losing any part of the image.

Cross Reference

- Reduction for journal printing on/off - Printer switch 07 bit 0
  Default setting is 0 (Disabled)

2.3.2 JOURNAL LINE TYPE SORT PRINTING

When an optional G4 unit is installed, the machine can print the journal arranged by type of fax line.

Cross Reference

- Journal arrangement by fax line on/off - User parameter switch 19 (13H) bit 1
  Default setting is 0 (Disabled)

2.3.3 PRINTING LISTS & REPORTS ON A5/HLT SIZE PAPER

This function allows the customer to print lists & reports on A5/HLT size paper under the following conditions.

Conditions:

- User parameter switch 19 (13H) bit 5 = 1 (enables the function)
- There is A5/HLT size paper in the machine
- No more than 58 lines on the list/report
- The report/list is only one page (not multi-page)

NOTE: Under these conditions, the following lists/reports will be printed out on A5/HLT size paper.

- Auto Document List
- ✻ Communication Failure Report
- Confidential file Report
- Error Report
- Group Dial List
- Immediate TX Result Report
- Keystroke Program List
- ✻ Memory Storage Report
- ✻ Memory TX Result Report
- Personal Code List
- Poling RX Reserve Report
- Polling RX Result Report
- ✻ Polling Transmission Clear Report
- Power Failure Report
- Quick Dial List
- Sender/Authorized Reception List
- Sender/Forwarding List
- Specified Sender List
- Speed Dial List
- ✻ Transfer Result Report
- TX File List

✻ : When printing these 5 reports, A5/HLT cannot be used if a sample of the image is included in the report (user parameter switch 04 bit 7).

2.3.4 REDUCTION OF THE SAMPLE IMAGE ON REPORTS

This function reduces the sample image on reports to 50%.

Cross Reference

- Reduction of sample image on reports on/off - User parameter switch 19 (13H) bit 4
  The default setting is 1 (Enabled)

NOTE: When the value of user parameter switch 19 (13H) bit 4 is 0, the machine uses the setting of printer switch 0E bits 3 and 4

Printer switch 0E bits 3 and 4

Bit 4	Bit 3	Settings
0	0	The upper half only, no reduction
0	1	50% reduction in sub scan only
1	0	Same size (no reduction, output separated in to two pages)
1	1	Not used

The diagram shows the protocol used by this model acting as the transmitting terminal.

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 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.
   68E8E4 (H) - Current line type setting.
   68E8E5(H) – New line type setting.

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:

These settings can be used only when an optional G3 and/or G4 unit is installed in the machine.

Bit 0 and 1: Communication mode

Bit	1	0	Setting
	0	0	G3
	0	1	G4

Other settings - Not used

Bit 2 to 4: Communication port

Bit	4	3	2	Setting
	0	0	0	PSTN
	0	1	1	ISDN

Other settings - Not used

Bit 5 to 7: Not used

Allowable settings are as follows:

	7	6	5	4	3	2	1	0	Setting
00H	0	0	0	0	0	0	0	0	G3 (PSTN)
0DH	0	0	0	0	1	1	0	1	G4 (ISDN)

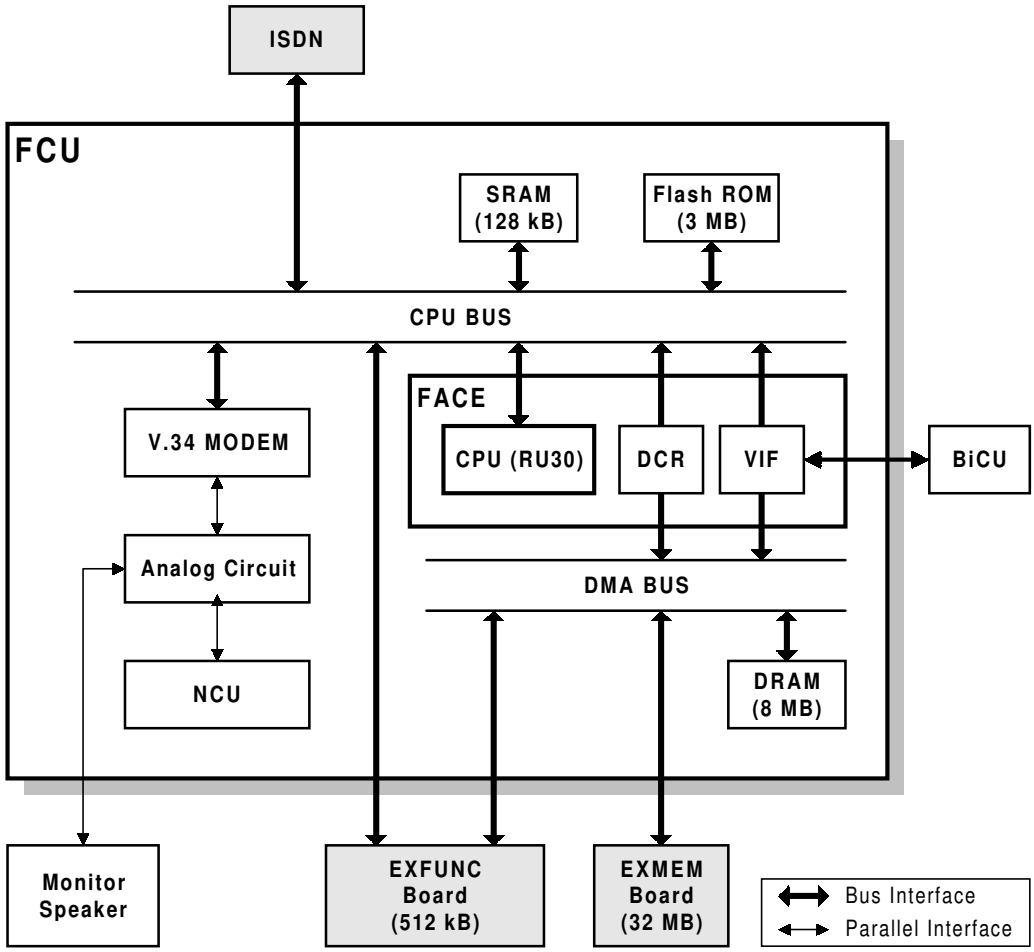
Example:

If you wish to change the port setting from PSTN to ISDN,
1. Change the data in address 68E8E4(H) to 00(H) (0000 0000)
2. Change the data in address 68E8E5(H) to 0D(H) (00001101)

NOTE: 1) Do not use this procedure if there are any files stored in the memory awaiting transmission.
2) Quick/Speed Dial addresses containing an F-code (i.e., for communications that will use SEP/SUB/PWD/SID) cannot be converted to ISDN G4.

2.5 PCBS

2.5.1 FCU



A874D502.WMF

The FCU (Facsimile Control Unit) controls fax communications, the video interface to the base copier's engine, and all the fax options.

FACE (Fax Application Control Engine)

- CPU
- Data compression and reconstruction (DCR)
- DMA control
- Clock generation
- DRAM backup control
- Ringing signal/tone detection
- Video and command interface to the BiCU (VIF)

Modem (Rockwell R288F)

- V.34, V33, V17, V.29, V.27ter, V.21, and V.8

ROM

- 3MB (16 Mbit) flash ROM for system software storage

DRAM

- The 8 MB of DRAM is shared between SAF memory, ECM buffer, page memory, working memory, line buffer, and so on.
- The SAF memory (2MB) is backed up by a rechargeable battery.

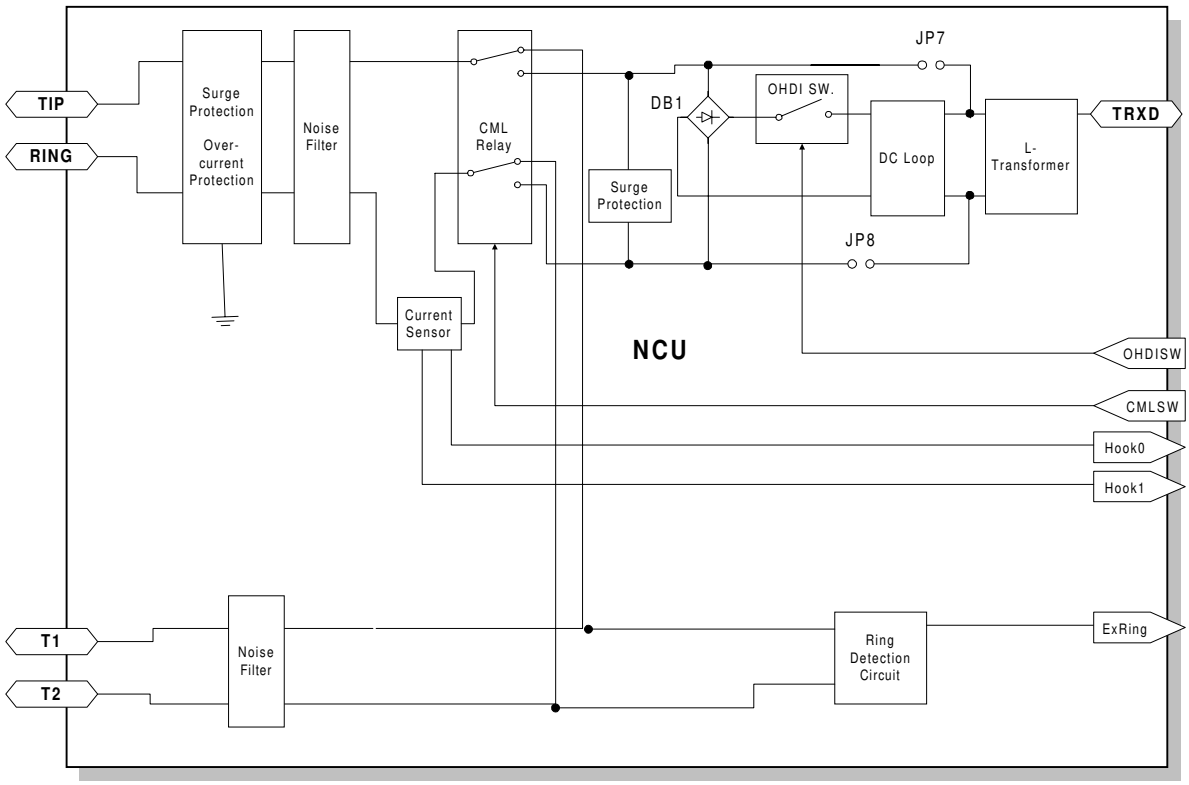
SRAM

- The 128 KB SRAM for system and user parameter storage is backed up by a lithium battery.

Switches

Item	Description
SW1	Switches the SRAM backup battery on/off
SW2	Reset switch, to reboot the FCU board
SW3	Determines which firmware the machine boots from. If the switch is OFF, the firmware on the FCU inside the machine is used. If the switch is ON, the firmware on the flash memory card or external FCU is used.

2.5.2 NCU (US)

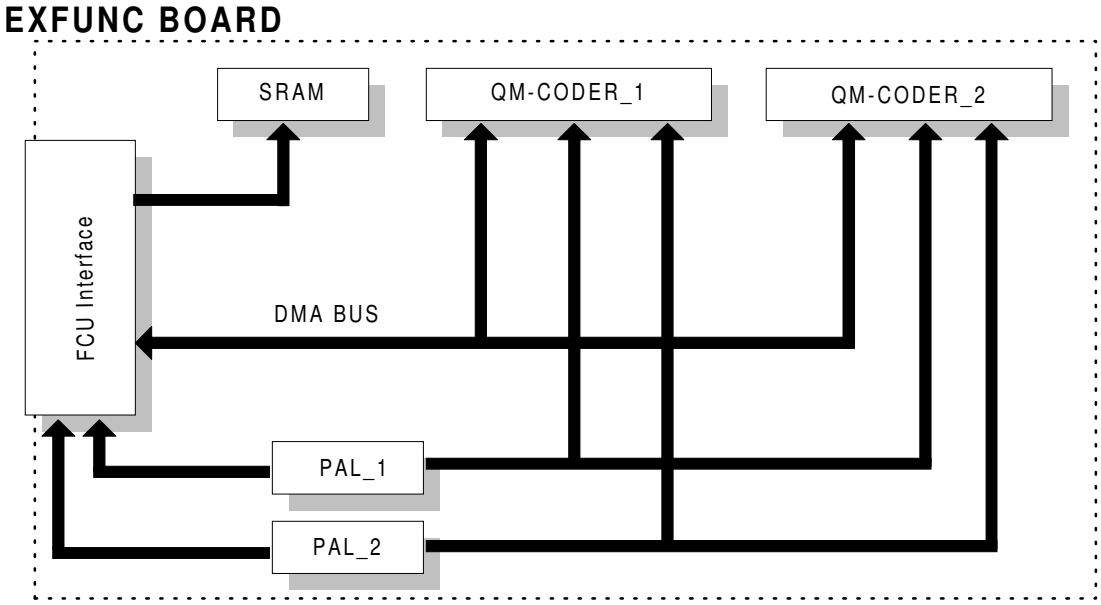


A874D503.WMF

Jumpers

Item	Description
JP7	These jumpers should be shorted when the machine is connected to a dry line.
JP8	
DB1	Also remove DB1 when the machine is connected to a dry line.

2.5.3 EXFUNC BOARD



A874D505.WMF

The EXFUNC board allows JBIG compression and some additional features become available. In addition, this board expands the SRAM capacity.

QM Coder

- 2 QM coders for JBIG compression and decompression.

PAL (PALCE16V8H-15PC)

- 2 PALs make a strobe control signal. This is used for DMA selection.

SRAM

- 512KB SRAM for telephone numbers and other user parameters.

Lithium battery

- Backs up the SRAM.

Switches

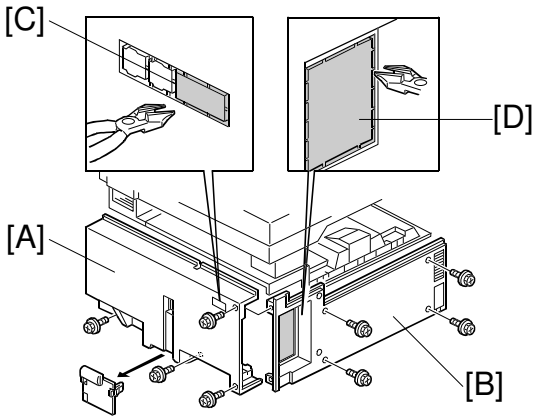
Item	Description
SW1	Switches the backup battery on/off

3. INSTALLATION

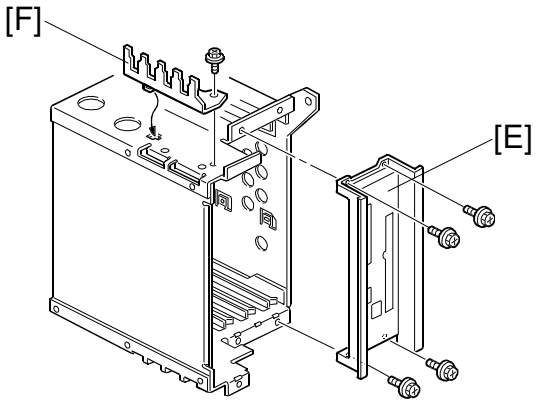
3.1 INSTALLATION PROCEDURE

3.1.1 FAX UNIT

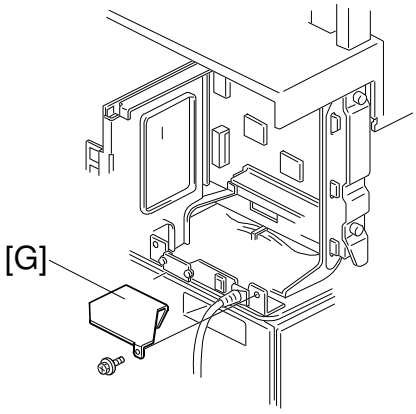
NOTE: To install the fax unit, the Expansion Box Type 450e is required. The following procedure is written on the premise that the Expansion Box has not been installed.



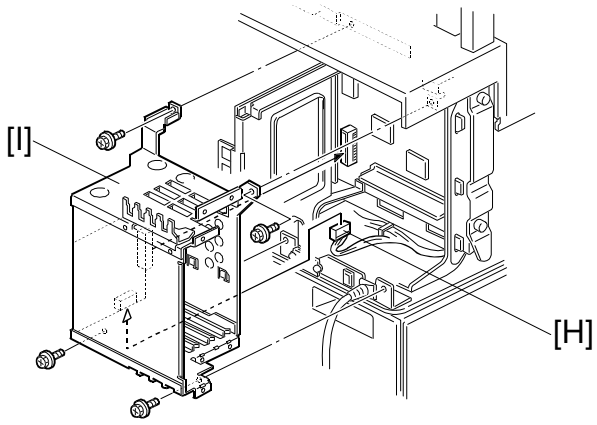
A874I503.WMF



A874I001.WMF

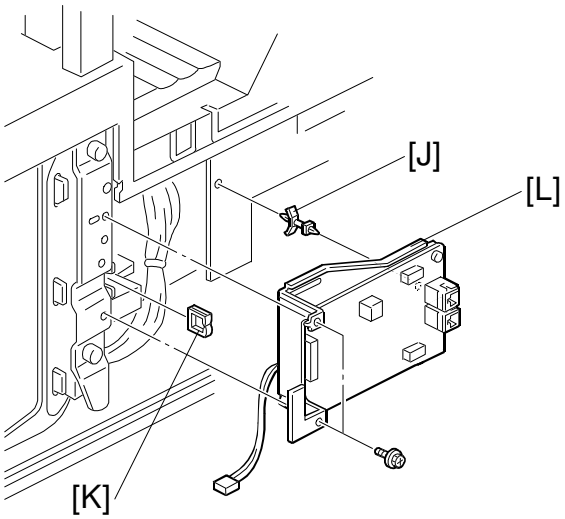


A693I121.WMF



A874I002.WMF

1. Remove the rear cover [A] (4 screws) and the left side cover [B] (4 screws).
2. Cut away the covers [C] and [D], as shown.
3. Remove the expansion box cover [E], then install the bracket [F] (1 screw) as shown.
   NOTE: The bracket [F] is contained in the fax unit.
4. Remove the bracket [G] as shown.
5. Connect the harness [H] to CN355 on the expansion box, then install the expansion box [I] (4 screws) so that the CN350 fits in CN304 [L] on the BiCU.
   NOTE: Use a magnetic screwdriver so as not to drop any screws inside the machine.



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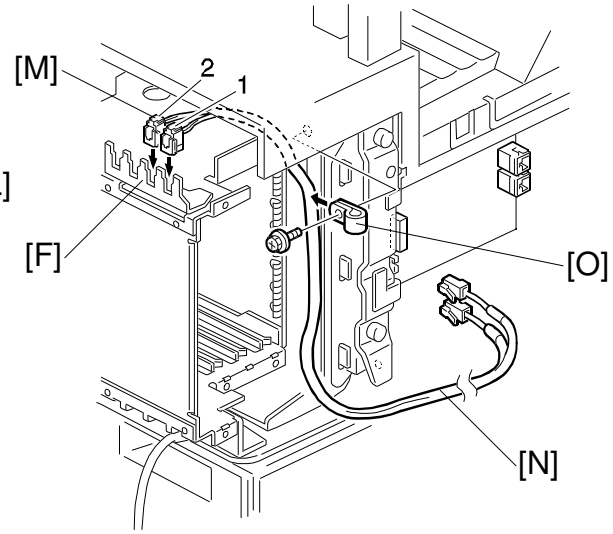
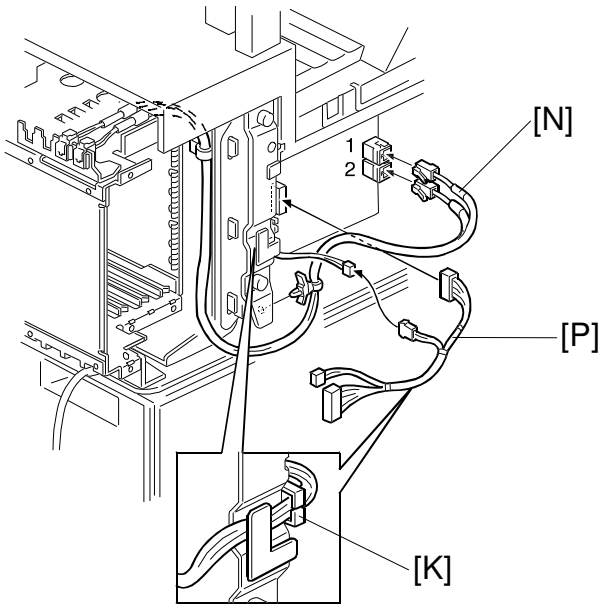
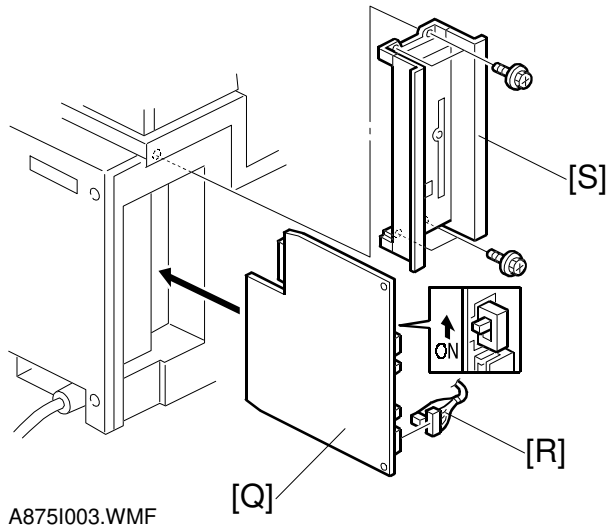


A874I501.WMF

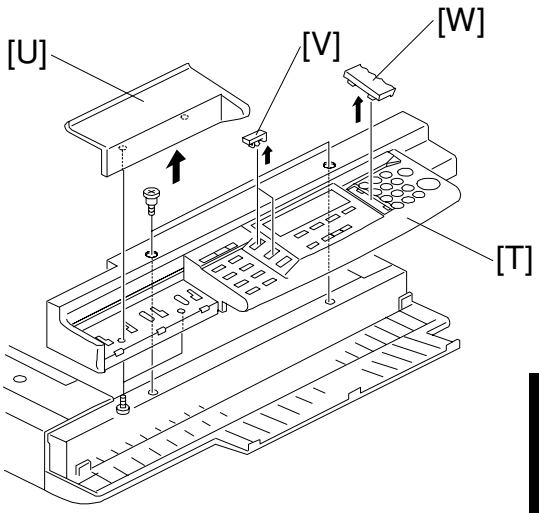


A874I502.WMF

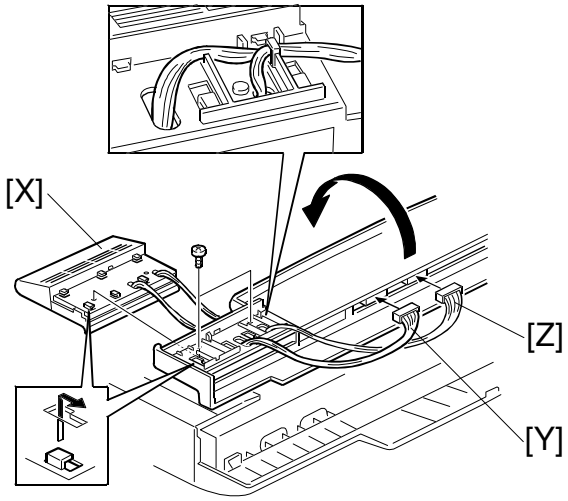
6. Set the locking support [J] and the edge saddle [K], then install the NCU/Speaker assembly [L] (2 screws).
7. Set the modular jacks [M] to the bracket [F] as indicated on the bracket. Then run the modular cable [N] through the clamp [O] and attach the clamp [O] onto the machine as shown.
8. Connect the modular cable [N] and the harness [P] to the NCU. Then the harness [P] must run through the edge saddle [K] as shown.



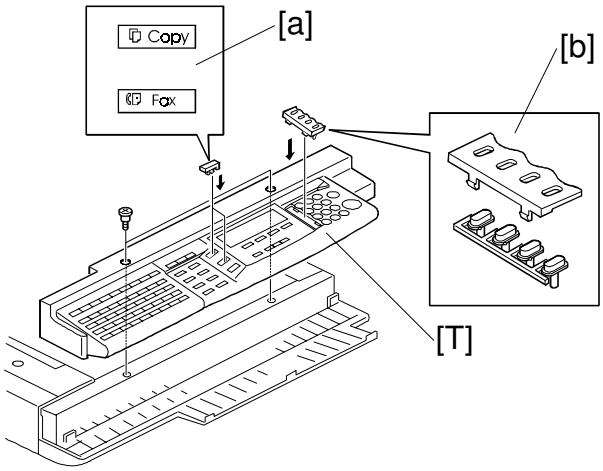
A875I003.WMF



A693I507.WMF

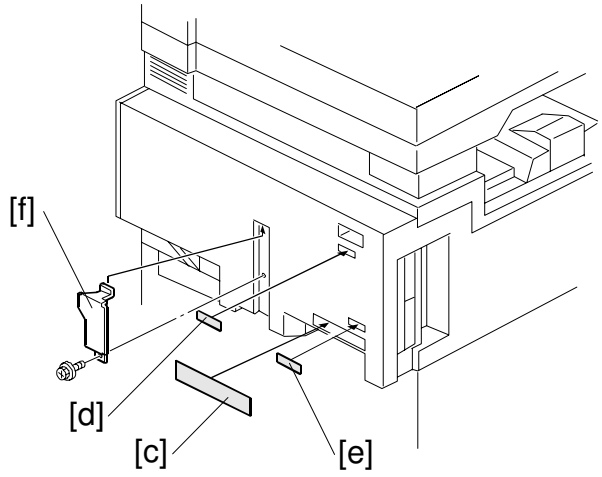


A693I508.WMF

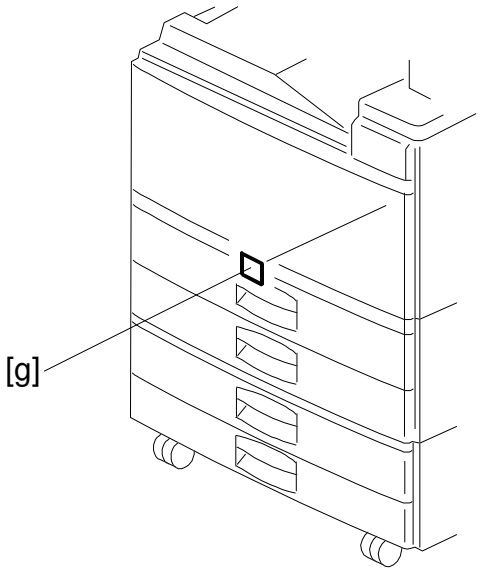


A693I509.WMF

9. Replace the left side cover (4 screws) and the rear cover (4 screws). Then turn on the battery switch (SW1) on the FCU [Q] then insert it into the right-most slot of the expansion box. Connect the harnesses [R] to the FCU [Q] (CN328 and CN330). After that install the bracket [S] (4 screws) as shown.
10. Remove the operation panel [T], then remove parts [U], [V], and [W].
11. Install part [X], then connect the harnesses [Y] and [Z] to the operation panel as shown.
12. Replace the operation panel [T], then install the parts [a] and [b] as shown.



A693I516.WMF



A693I511.WMF

13. Affix the serial number label [c], the LINE/TEL label [d] and the appropriate approval label [e] on the rear cover. Then install the bracket [f].
14. Affix the Super G3 label [g] on the front cover.
15. Connect the telephone line to the “LINE” jack at the rear of the machine.
16. Plug in the machine and turn on the main switch.
17. Press the ‘Fax’ key and check the facsimile LED lights.
    At this time, the display reads: SC1201 - Functional problem with the fax. Data should be initialized.
    NOTE: This is not a functional problem. The machine shows this message only when the fax unit is first installed. If the same message appears at the next power-on, check whether the battery switch (SW1) on the FCU has been turned on.
18. Press “Yes” to initialize the fax unit.

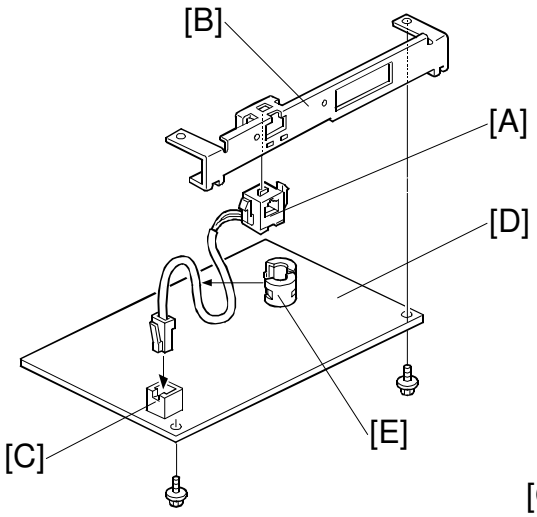
19. Set up and program the items required for fax communications as shown below. If the user function keys (F1, F2, F3, F4, and F5) need to be programmed, affix the blank labels above the proper keys.

    The default settings of the user function keys are as follows:
    - F1: Start Manual Rx
    - F2: TEL Mode
    - F3: Tx File Status
    - F4: Not programmed
    - F5: Not programmed

    NOTE: Be sure to set the clock (date and time).

20. Program the serial number into the fax unit (service function 10). The serial number can be found on the serial number label (attached to the machine in step 13).

3.1.2 ISDN UNIT



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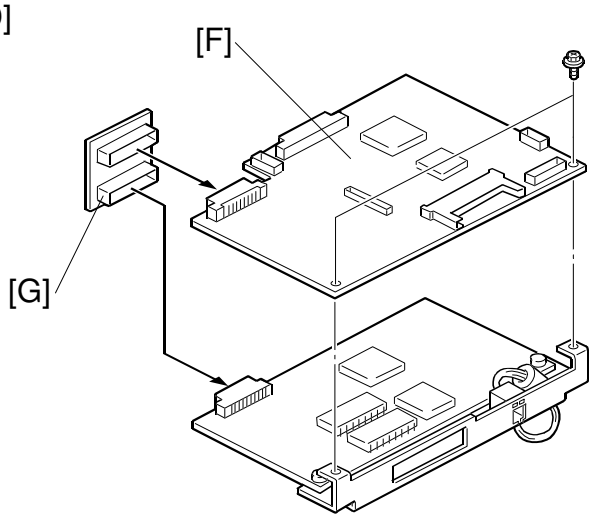
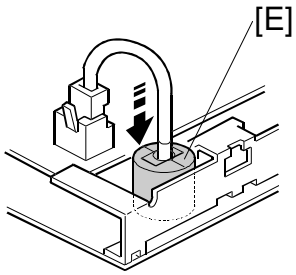
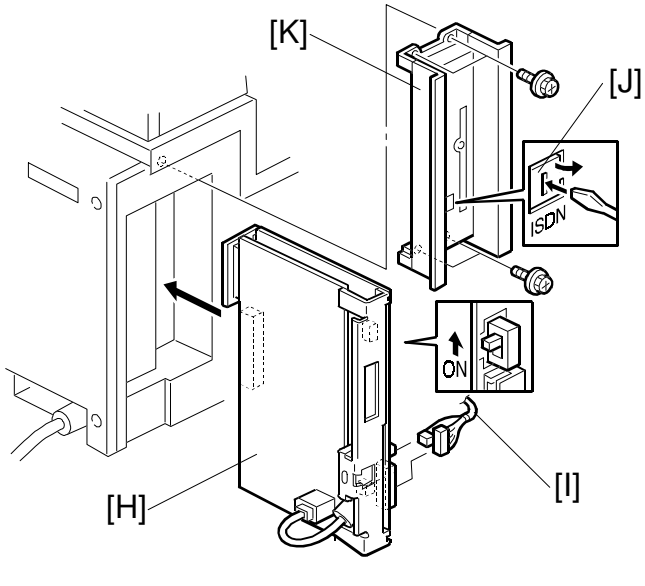


A816I507.WMF

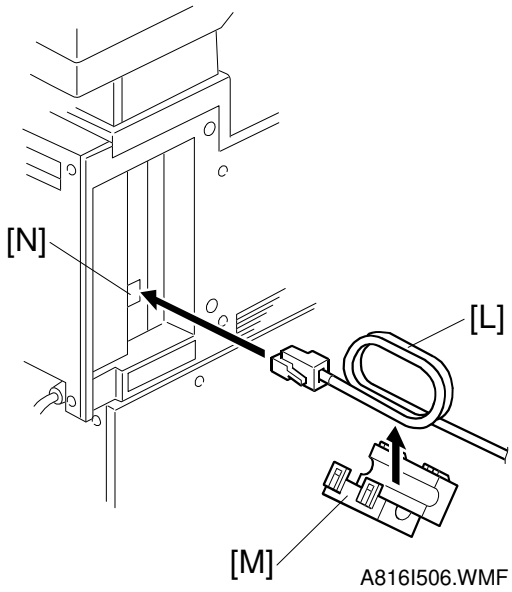


A816I505.WMF

1. Remove the FCU from the expansion box.
2. Clip the ISDN modular jack [A] to the bracket [B], then connect the cable to the connector [C] on the CiG4 board [D].
3. Attach the bracket [B] to the CiG4 board [D] (2 screws), then set the metal core [E] on the cable as shown. Be sure to slide the metal core [E] in between the bracket and the CiG4 board as shown.
4. Attach the FCU [F] to the bracket (2 screws), then connect FCU and CiG4 using the relay board [G].



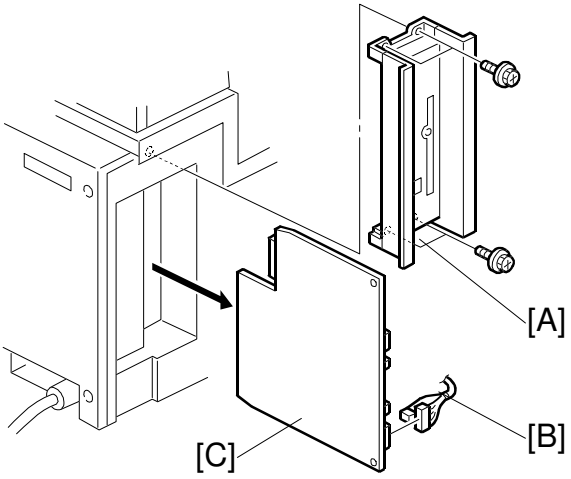
A816I508.WMF



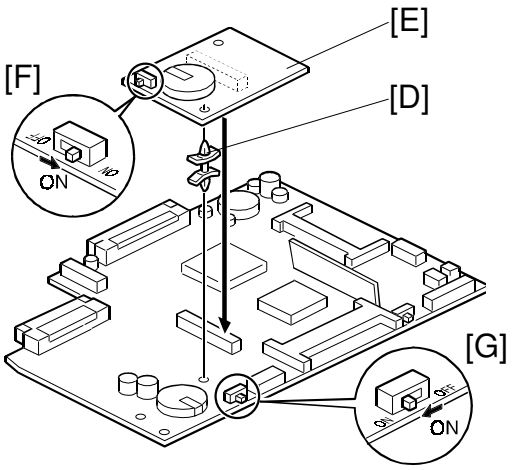
A816I506.WMF

5. Insert the FCU/CiG4 assembly [H] into the expansion box, connect the harness [I], and then slide the assembly into the box to the bottom.
6. Open the ISDN modular jack window [J] on the bracket [K], then install the bracket [K] onto the application rack.
7. Affix the contained 'G4' label onto the function key (F4) space.
   After G4 unit installation, this key is dedicated to switching between G3 and G4 communication modes. (note the user function key assignment, below)
   Function keys with G4 unit
   - F1: Start Manual Rx
   - F2: Tx File Status
   - F3: TEL Mode
   - F4: G3/G4 Communication Mode Selection
   - F5: Not programmed
8. Make two turns on the ISDN cable [L] and attach the metal core [M] so that the cable goes into the core three times. Then, connect the cable to the ISDN jack [N]. If an analog telephone line has been removed before installation, re-connect it to the NCU.
9. Plug in the machine and turn on the main switch. Then enter the service mode.
10. Set bit 2 of communication switch 16 to "1." Then turn the machine off and on. After that enter the service mode again.
    NOTE: This procedure is for A283/A284 models only.
11. Print the system parameter list and ensure that "G4" is listed as an option.
12. Set up and program the items required for ISDN communications.
    After setting up the ISDN parameters, be sure to turn the main switch off and on.

3.1.3 FAX FUNCTION



A892I511.WMF



A892I512.WMF

⚠CAUTION

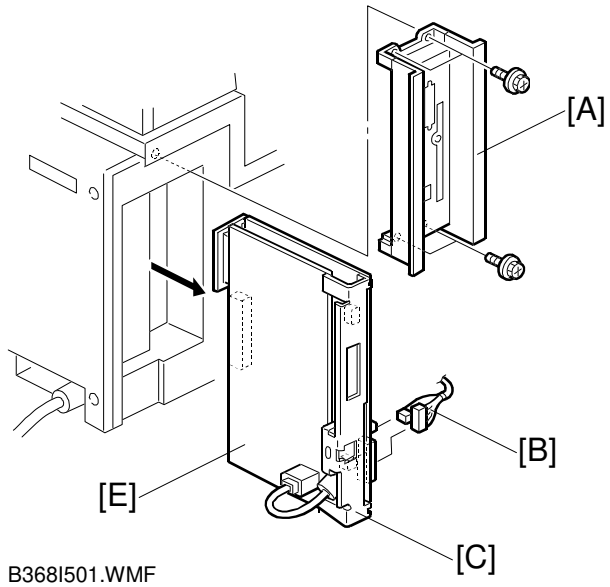
Before installing this option, do the following:

1. **Print out all messages stored in the memory, the lists of user-programmed items, and the system parameter list.**
2. **If there is a printer option in the machine, print out all data in the printer buffer.**
3. **Turn off the main switch and disconnect the power cord, the telephone line, and the STP cable.**

1. Remove the bracket [A] and disconnect the harness [B] as shown.
2. Remove the FCU assembly [C] as shown.
3. Install the locking support [D].
4. Install the FAX function upgrade board [E].
5. Turn on the battery switch [F].
   NOTE: If installing the FAX unit at the same time, be sure to turn on the FCU board battery switch [G].
6. Re-install the FCU assembly into the expansion box.

7. Plug in the machine and turn on the main switch.
8. Press the “Fax” key and ensure the Fax LED lights.
   At this time, the following message appears;
   “SC1207 - Adding FAX Feature Expander causes data loss. Turn main power switch off remove it to avoid loss. To continue press “Yes”.
9. Press “Yes” to initialize the SRAM.
   NOTE: Whenever installing the FAX FUNCTION UPGRADE board at the first time, the machine displays SC1207, but this is not a problem.
10. Enter the service mode, and set bit 7 of system switch 1E to “1”.
11. Print the system parameter list and make sure that “EXFUNC” is listed as an option. Also check that the memory indicator shows “100%” in standby mode.
12. Connect the telephone cable to the NCU.

3.1.4 PC-FAX EXPANDER TYPE 450E



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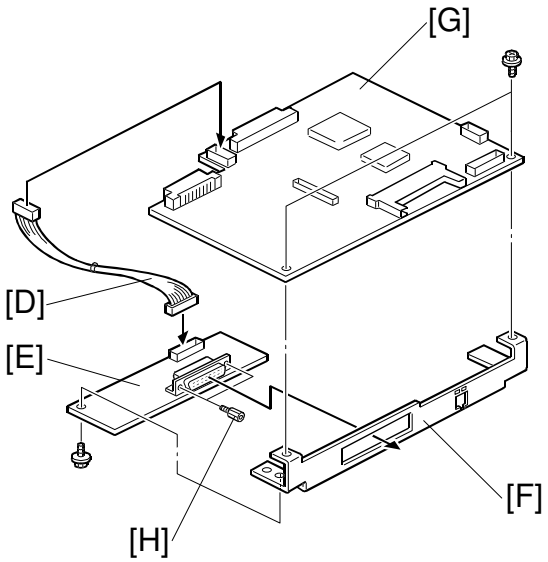


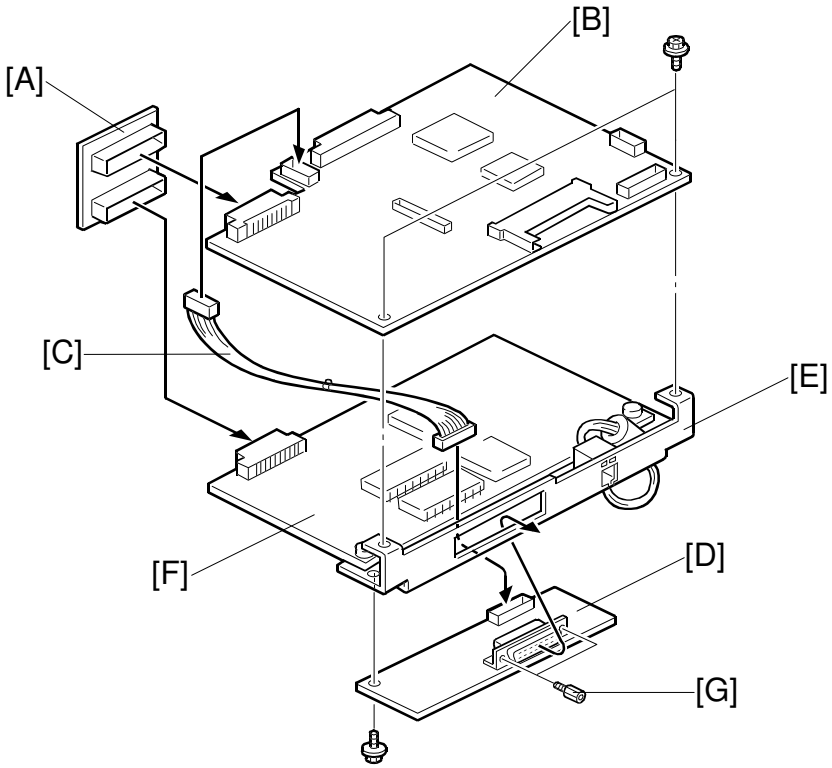
B368I502.WMF

1. Remove the bracket [A] (4 screws) and disconnect the harness [B], then remove the FCU assembly [C] from the expansion box.
   NOTE: If the ISDN unit was already installed, go to “with the ISDN unit” section on the next page.

- **Without the ISDN unit**

2. Connect the harness [D] to the DIU [E] (RS232C interface).
   NOTE: The **white connector** must be connected to the DIU board.
3. Attach the bracket [F] enclosed in the PC-Fax Expander to the DIU [E] (2 screws).
4. Attach the FCU [G] to the bracket [F] (2 screws).
5. Connect the harness [D] to the CN326 on the FCU [G] as shown.
   NOTE: The **blue connector** must be connected to the FCU board.
6. Remove 2 hexagonal screws [H] from the DIU [G].

Go to step 7 on page 3-12.

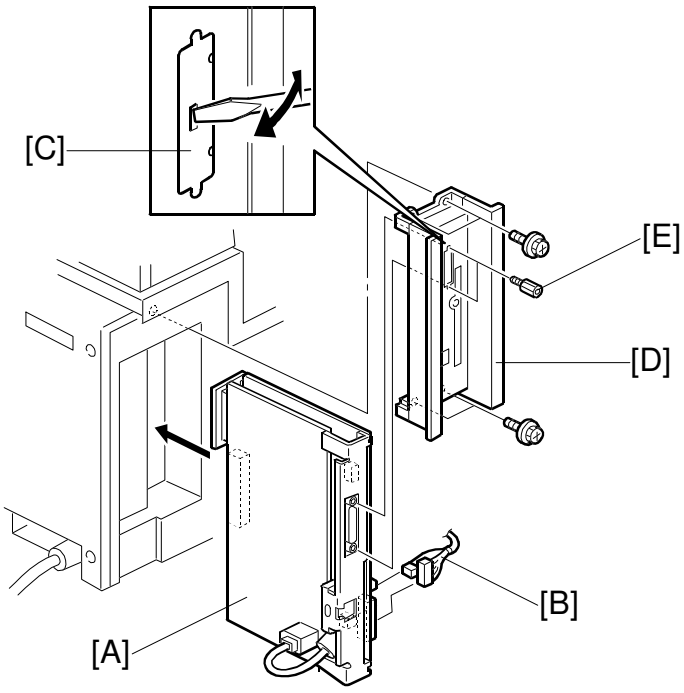


B368I503.WMF

- **With the ISDN unit**

NOTE: The bracket which is contained in the PC-Fax Expander is not used.

2. Disconnect the interface board [A], then remove the FCU [B] from the assembly as shown.
3. Connect the harness [C] to the DIU [D], then attach the DIU [D] to the bracket [E] as shown.
   NOTE: The **white connector** must be connected to the DIU board.
4. Make sure that the harness [C] is between the ISDN board [F] and the FCU [B], then replace the FCU [B] as shown.
5. Connect the harness [C] to the CN326 on the FCU [B], then replace the interface board [A] as shown.
   NOTE: Make sure not to pinch the harness [C] between the FCU [B] and the interface board [A] when connecting it.
   The **blue connector** must be connected to the FCU board.
6. Remove the 2 hexagonal screws [G] from the DIU [D].



B368I504.WMF

7. Insert the FCU and DIU assembly [A] into the expansion box; connect the harness [B] and slide the assembly into bottom of the box.
8. Open the RS232C connector window [C] on the bracket [D], then replace the bracket [D] onto the expansion box.
9. Tighten the 2 hexagonal screws [E] as shown.
10. Plug in the machine and turn on the main switch.
11. Enter the service mode, and set bit 0 of system switch 1C to “1”, then turn off and on the main switch.
12. Print the system parameter list. If “TR29” appears in the “option” section of the system parameter list, go head. Otherwise, check the cable connection.
13. Follow the instructions in the Operator’s manual to connect the machine to a host computer and how to set up the machine and the computer, if required.
    NOTE: 1) A “Straight – through” shielded serial cable is required, but it is not enclosed.
    2) One end of the serial cable must have DB25 male connection to connect to the DIU.

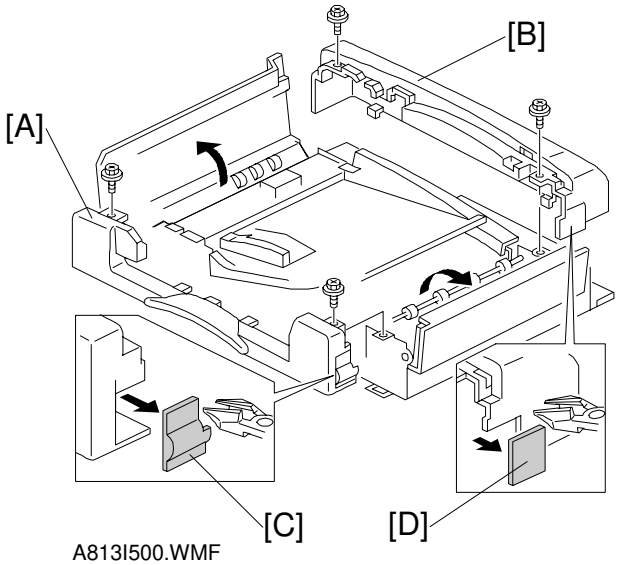
3.1.5 STAMP UNIT

⚠CAUTION

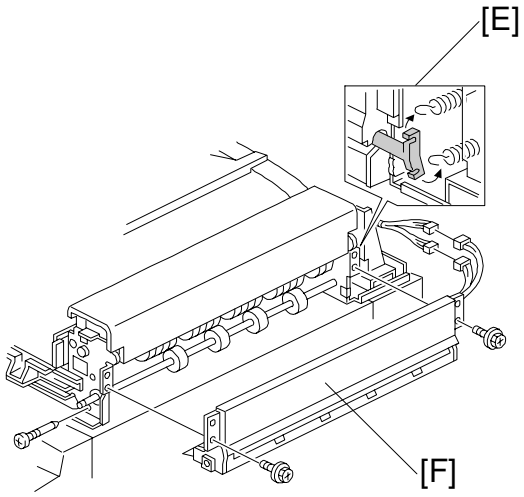
Before installing an optional unit, do the following:

1. **Print out all messages stored in the memory.**
2. **Be sure to check the memory indicator shows "100%" in standby mode.**
3. **Print out the lists of user-programmed items and the system parameter list.**
4. **Switch off the main switch, and disconnect the power cord and the telephone line.**

NOTE: A document feeder and a fax unit are required to use this option.



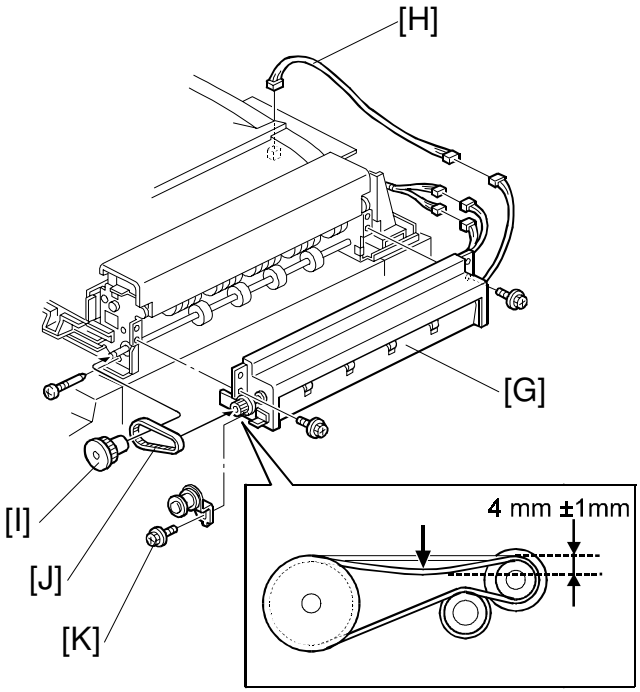
A813I500.WMF



A813I501.WMF

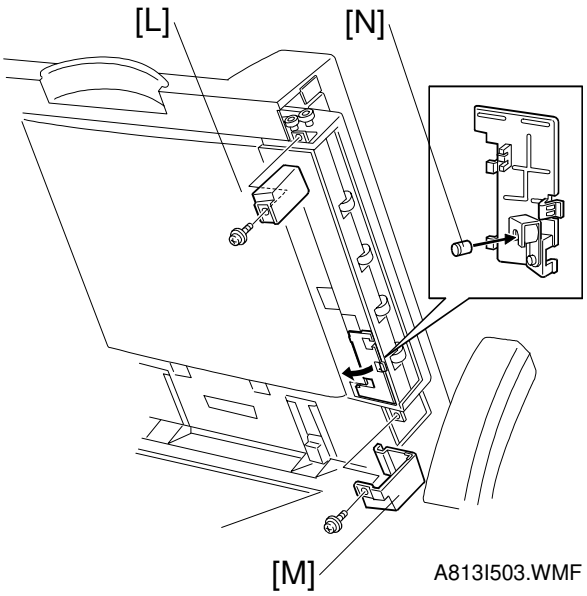
1. Remove the ADF front [A] (2 screws) and rear [B] (2 screws) covers.
2. Cut away the covers [C] and [D], as shown.
3. Remove two springs [E] and the cover [F] (3 screws, 2 harnesses).

4. Install the stamp unit [G] (3 screws, 3 harnesses) as shown. Then connect the harness [H] to CN270 on the DF control board.
5. Install the pulley [I], then loop the timing belt [J] as shown.
   NOTE: Before installing the pulley, first loosen the idler gear screw [K]
6. Adjust the tension of the timing belt, as shown in the callout. Then tighten the idler gear screw [K].
7. Turn on the DIP switch 4 on the DF control board.
8. Replace the ADF front (2 screws) and rear (2 screws) covers.

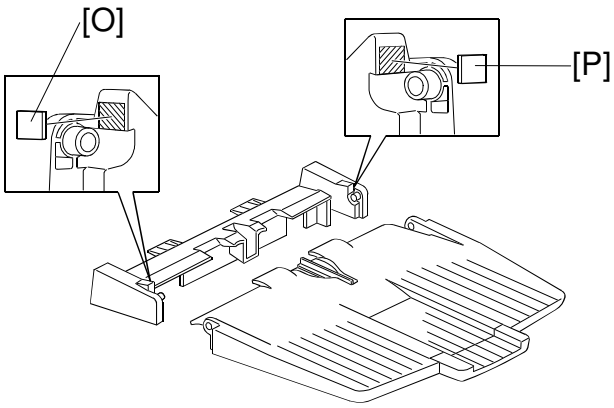


A813I502.WMF

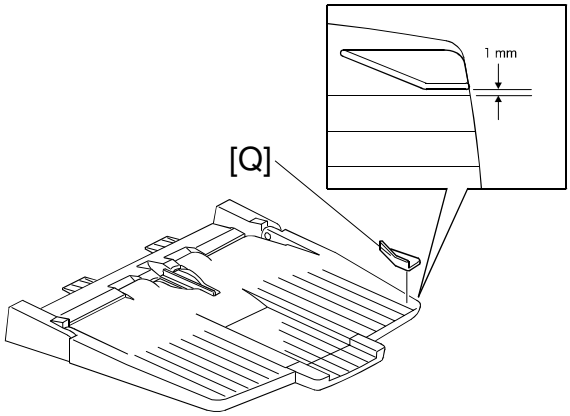
9. Lift up the document feeder and install the covers [L] (1 screw) and [M] (1 screw).
10. Install the stamper [N] into the stamp unit.



A813I503.WMF



A813I504.WMF

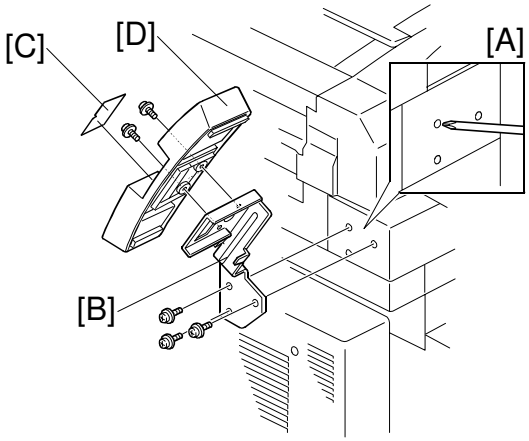


A813I505.WMF

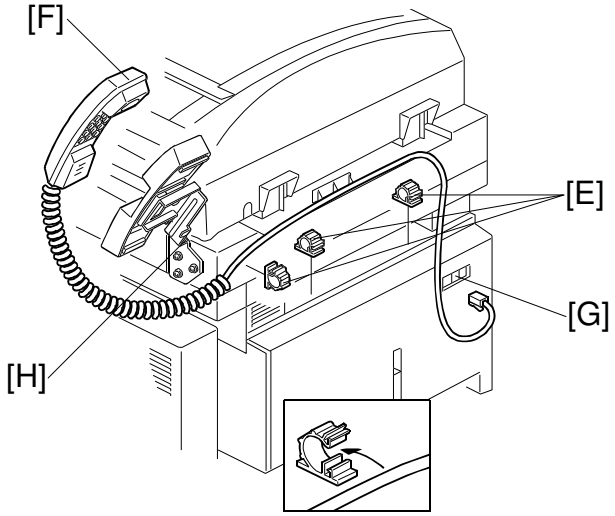
11. Affix the spacers [O] and [P] to the ADF external tray holder, as shown.
12. Affix the guide [Q] to the tray, as shown.
    NOTE: ADF external tray is included in the ADF, not in this option.
13. Change the “ADF original ejection” setting to the “ADF External Tray” using system setting in the “User Tools” menu.
    After the stamp unit has been installed, the F5 key is dedicated to switching the stamper on and off. (note the user function key assignment, below)
    Function keys with Stamp unit
    - F1 Start Manual Rx
    - F2 Tx File Status
    - F3 TEL Mode
    - F4 Not programmed
    - F5 Stamper on/off

    NOTE: Stamp is not possible if “ADF Tray” is selected.

3.1.6 HANDSET



A644I501.WMF



A644I503.WMF

1. Prick the screw holes on the right side of scanner rear cover as shown in [A].
2. Install the bracket [B] (3 screws).
   NOTE: The screws are self-threading.
3. Remove the label [C] from the handset cradle [D]. Install the cradle on the bracket [B] (2 screws), then replace the label [C].
4. Affix the wire clamps [E], as shown.
5. Install the handset [F] as shown. Run the handset cable through the clamps [E], then connect it to the “TEL” jack [G] at the rear of the machine.
6. Hook the curled cord onto the hook [H] of the bracket.

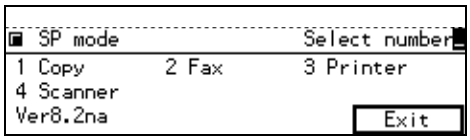
4. SERVICE TABLES

4.1 SERVICE LEVEL FUNCTIONS

4.1.1 HOW TO ENTER AND EXIT THE FAX SERVICE MODE

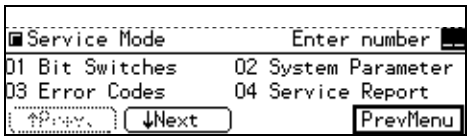
To Enter Fax Service Mode:

1. Ensure that the machine is in standby mode.
2. Press ⊡ ① ⓪ ⑦, then hold down C/© for more than 3 seconds.
   The SP mode main menu appears.



A874M501.BMP

3. Press 2 to enter the fax service mode.



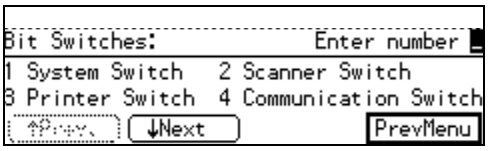
A874M502.BMP

To Exit Fax Service Mode:

1. Press ⊡ or "PrevMenu" until the SP mode main menu appears.
2. Press the ⊡ key.

4.1.2 BIT SWITCH PROGRAMMING (FUNCTION 01)

1. Enter the fax service mode.
2. Press 0 1.
3. Press one of the following numbers, as required:
   - 1 – System bit switches
   - 2 – Scanner bit switches
   - 3 – Printer bit switches
   - 4 – Communication bit switches
   - 5 – G3 bit switches
   - 6 – G4 internal switches
   - 7 – G4 parameter switches



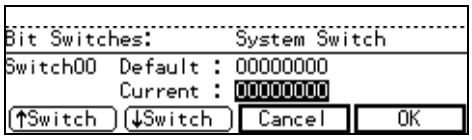
A874M503.BMP

NOTE: An optional G4 interface is required to access the G4 internal and G4 parameter bit switches.

Service Tables

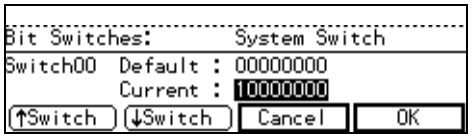
Example:

1. Press [1].
2. Scroll through the bit switches.
   To increment the bit switch number:
   press "↓ Switch".
   To decrement the bit switch number:
   press "↑ Switch".
   Example:
   To display bit switch 03:
   Press "↓ Switch" 3 times.



A874M504.BMP

3. Adjust the bit switch.
   Example:
   To change the value of bit 7, press 7.
4. To adjust more bit switches, go to step 2.
   To finish, press "OK" then "PrevMenu".



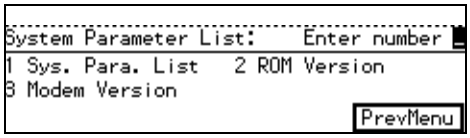
A874M505.BMP

5. Exit the service mode.

NOTE: After changing any of the G4 bit switches, be sure to turn the main power switch off and back on to activate the new settings.

4.1.3 SYSTEM PARAMETER LISTS (FUNCTION 02)

1. Enter the fax service mode.
2. Press [0] [2].
3. Press [1].
4. Press ⓐ.
5. Exit the service mode.



A874M506.BMP

NOTE: Pages 5 and 6 of the system parameter list are for designer use only. However some information may be useful for service technicians. See the next page.

- An example of the system parameter list (pages 5 and 6) -

```
      *  *  *  SYSTEM PARAMETER LIST (Date and Time) *  *  *
                                                          1)TTI 1
                                                          2)TTI 2

                And later is information for a design.


REST ENTRY DATA
    TMP DIAL:1005  One key:30  Speed key:1000  PRG JOB:32  PRG DIAL:2000
    Rest Job file:1003(max:1004)  Rest Dial file:2002(max:2002)
Resouece
    Free:0x0FFEFDFF  Bad:0x0000001D  CCU:0x00   [P1|XX|XX|XX|S|p|H]
SAF CAPACITY
    100%(Rest block:0x1E00)
Receive
    Now status          0x00 OK



CCU TX ERROR
```

```
      *  *  *  SYSTEM PARAMETER LIST (Date and Time) *  *  *
                                                          1)TTI 1
                                                          2)TTI 2

Task Status
    ID  TASK   PRI STS       ISP          START       SP          PC
    00  idle   20  RDY       0x00800A5E  0x00004530  0x00800A5E  0x00004530
    01   :      :   :             :           :           :           :
```

A874M600.WMF

REST ENTRY DATA

TEMP DIAL: Remaining number of destinations that can be programmed at the ten-key pad.

One key: Remaining number of destinations that can be programmed as Quick Dials

Speed key: Remaining number of destinations that can be programmed as Speed Dials

PRG JOB: Remaining number of keystroke programs that can be programmed

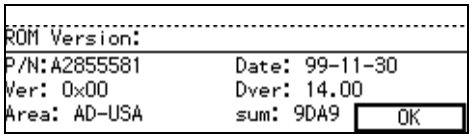
PRG DIAL: Remaining number of destinations that can be used in keystroke programs.

Rest Job file: Number of remaining job files that can be used.

Rest Dial file: Number of remaining destinations that can be used.

4.1.4 FCU ROM VERSION DISPLAY (FUNCTION 02)

1. Enter the fax service mode.
2. Press 0 2 then 2.



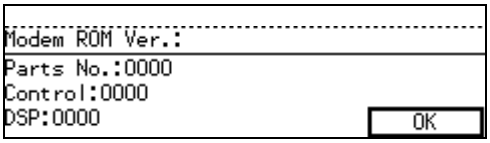
A874M507.BMP

3. Exit the service mode.

NOTE: The check-sum value displayed is calculated in 16-bit little endian format.

4.1.5 MODEM PROGRAM VERSION DISPLAY (FUNCTION 02)

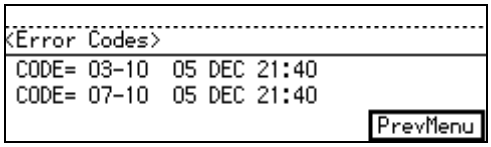
1. Enter the fax service mode.
2. Press 0 2 then 3.
3. Exit the service mode.



A874M508.BMP

4.1.6 ERROR CODE DISPLAY (FUNCTION 03)

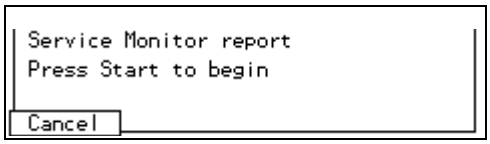
1. Enter the fax service mode.
2. Press 0 3.
3. Press either Prev. or Next to scroll through the error codes.
4. Exit the service mode.



A874M009.TIF

4.1.7 SERVICE MONITOR REPORT (FUNCTION 04)

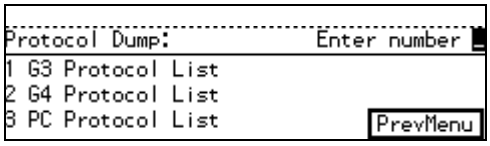
1. Enter the fax service mode.
2. Press 0 4 then Start.
3. Exit the service mode.



A874M510.BMP

4.1.8 G3 PROTOCOL DUMP LIST (FUNCTION 05)

1. Enter the fax service mode.
2. Press [0] [5].
3. Press [1] then ◇.
4. Exit the service mode.

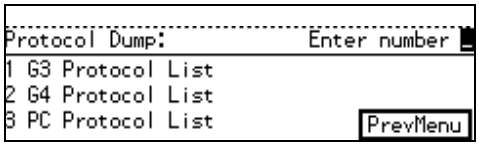


A874M511.BMP

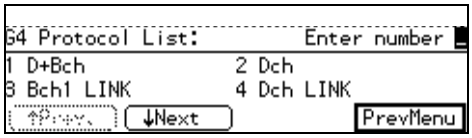
4.1.9 G4 PROTOCOL DUMP LIST (FUNCTION 05)

NOTE: An optional G4 interface is required to print the G4 protocol dump list.

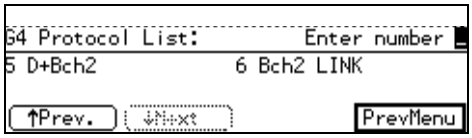
1. Enter the fax service mode.
2. Press [0] [5].
3. Press [2].
4. Press one of the following numbers as required:
   - [1] – D + Bch
   - [2] – Dch
   - [3] – Bch1 Link
   - [4] – Dch Link
   - [5] – D + Bch2
   - [6] – Bch1 Link
5. Exit the service mode.



A874M511.BMP



A874M512.BMP



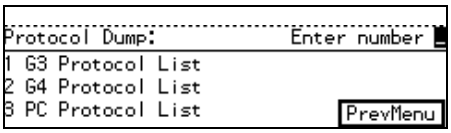
A874M513.BMP

Service Tables

4.1.10 PC PROTOCOL DUMPLIST (FUNCTION 05)

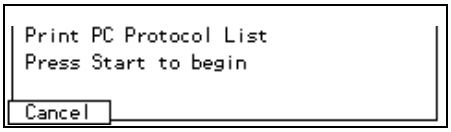
NOTE: An optional PC fax expander board (PCFE) is required to print the PC protocol dump list.

1. Enter the fax service mode.
2. Press [0] [5].



A874M511.BMP

3. Press [3] then ⓚ.

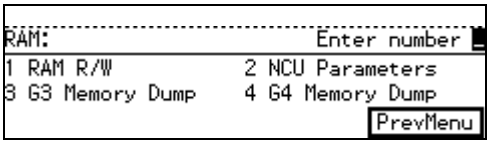


A874M514.BMP

4. Exit the service mode.

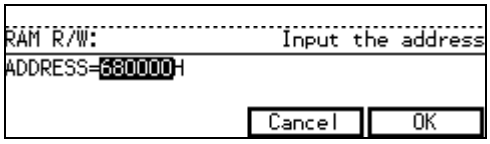
4.1.11 RAM DISPLAY AND REWRITE (FUNCTION 06)

1. Enter the fax service mode.
2. Press [0] [6].
3. Press [1].



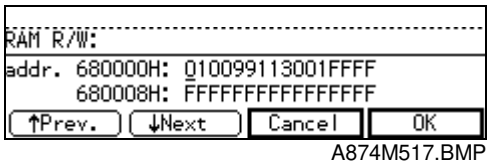
A874M515.BMP

4. Enter the start address of the RAM area to be displayed, then press “OK”.



A874M516.BMP

5. Move the cursor to the target address using the arrow keys, then enter a new value (0-9: Ten-key pad, A-F: Quick Dial keys).
6. To scroll through the RAM addresses: Press “Prev”. or “Next”.
   To jump to an another address: Press “OK”, and go back to step 3.

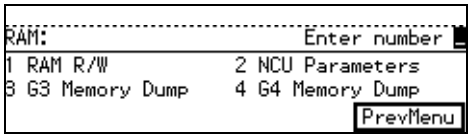


A874M517.BMP

7. Exit the service mode.

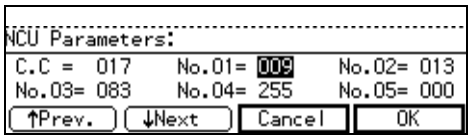
4.1.12 NCU PARAMETERS (FUNCTION 06)

1. Enter the fax service mode.
2. Press [0] [6].
3. Press [2].



A874M515.BMP

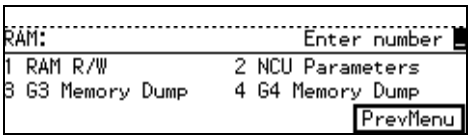
4. Move the cursor to the target parameter using the arrow keys, then enter a new value at the ten-key pad.
5. Exit the service mode.



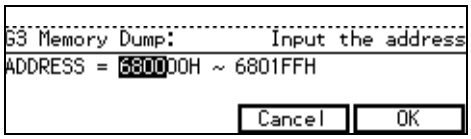
A874M518.BMP

4.1.13 RAM DUMP (FUNCTION 06)

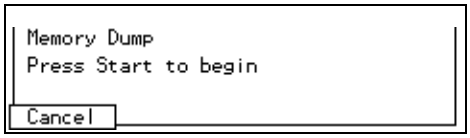
1. Enter the fax service mode.
2. Press [0] [6].
3. Press one of the following numbers as required:
   [3] – G3 memory dump list
   [4] – G4 memory dump list
   NOTE: An optional G4 interface is required to print the G4 memory dump list.
4. Enter the first four digits of the start and end addresses, then press “OK”
   Example: Start at 680000, end at 6801FF
   [6] [8] [0] [0] [6] [8] [0] [1] “OK”
5. Press ⓕ.
6. Exit the service mode.



A874M515.BMP



A874M519.BMP

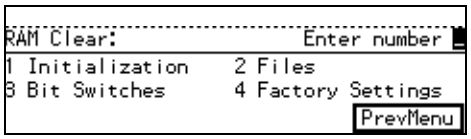


A874M520.BMP

Service Tables

4.1.14 RAM CLEAR (FUNCTION 07)

1. Enter the fax service mode.
2. Press [0] [7].



A874M521.BMP

3. Press one of the following numbers, as required:
   [1] Initializes the bit switches and user parameters, user data in the SRAM, files in the SAF memory, and the clock.
   [2] Erases all the files stored in the SAF memory.
   [3] Resets the bit switches and user parameters.
   [4] Initializes the bit switches and user parameters, user data in the SRAM, and files in the SAF memory.
4. The machine automatically returns to standby mode after self-initialization.

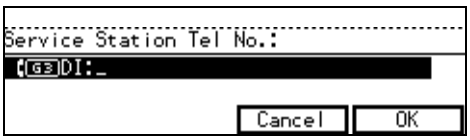
4.1.15 FCU REBOOT

To initialize the fax unit without erasing files or resetting the bit switches, do one of the following:

- Hold down the “Speed Dial” key for more than 10 s, while the machine is in facsimile mode. This initializes the fax unit only.
- Remove the rear cover and press SW2 on the FCU. This initializes the fax unit only.
- Turn off the main power and operation switches and turn them back on. This initializes the whole machine.
- Hold down the # and ☒ keys for more than 10 s. This initializes the whole machine.

4.1.16 SERVICE STATION FAX NUMBER (FUNCTION 09)

1. Enter the fax service mode.
2. Press [0] [9].
3. Enter the fax number of the service station that will receive Automatic Service Calls from this machine. To use a G4 number, press the “F4” key.

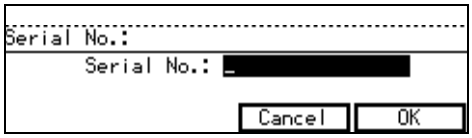


A874M522.BMP

4. Press “OK”.
5. Exit the service mode.

4.1.17 SERIAL NUMBER (FUNCTION 10)

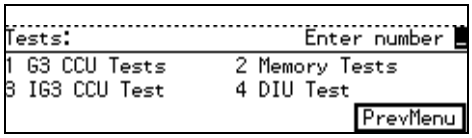
1. Enter the fax service mode.
2. Press [1] [0].
3. Enter the fax unit's serial number at the keypad, then press "OK".
4. Exit the service mode.



A874M523.BMP

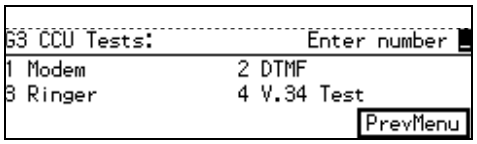
4.1.18 MODEM TEST (FUNCTION 11)

1. Enter the fax service mode.
2. Press [1] [1].



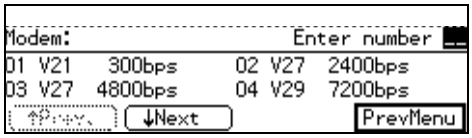
A874M524.BMP

3. Press one of the following numbers:
   [1] – Modem test (analog line)
   [3] – Modem test (ISDN line [IG3 CCU])
   NOTE: An optional ISDN interface is required to test a modem on an ISDN line.



A874M525.BMP

4. Press [1] (Modem).
5. Choose a modem signal type at the keypad, then press ⓐ.
   To stop, press ⓒ.
6. Exit the service mode.

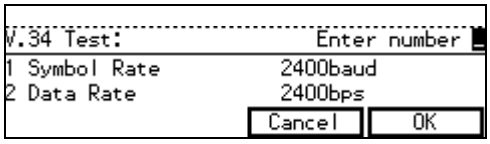


A874M526.BMP

Service Tables

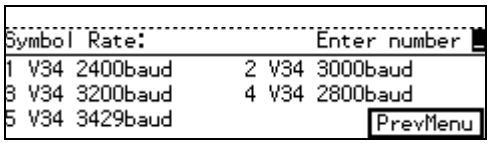
4.1.19 V.34 MODEM TEST (FUNCTION 11)

1. Enter the service mode.
2. Press 1 1 then press one of the following numbers:
   1 – Modem test (analog line)
   3 – Modem test (ISDN line [IG3 CCU])
   NOTE: An optional ISDN interface is required to test a modem on an ISDN line.
3. Press one of the following numbers:
   4 – Modem test (analog line) is selected
   3 – Modem test (ISDN line [IG3 CCU]) is selected
   NOTE: An optional ISDN interface is required to test a modem on an ISDN line.



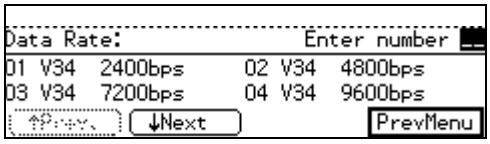
A874M527.BMP

4. Select a symbol rate and a data rate, then press OK.
   1 – Select a symbol rate



A874M528.BMP

   2 – Select a data rate

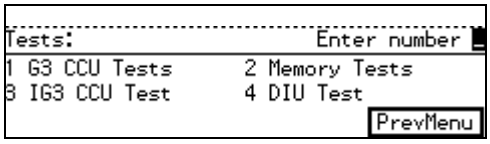


A874M529.BMP

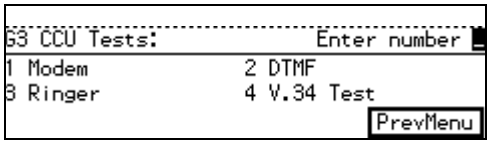
5. Press ◈ to start the test.
   To stop the test, press C/©.
6. Exit the service mode.

4.1.20 DTMF TEST (FUNCTION 11)

1. Enter the fax service mode.
2. Press 1 1.
3. Press one of the following numbers:
   1 – DTMF test (analog line)
   3 – DTMF test (ISDN line)
   NOTE: A G4 interface is required to test DTMF tones on an ISDN line.
4. Press 2.

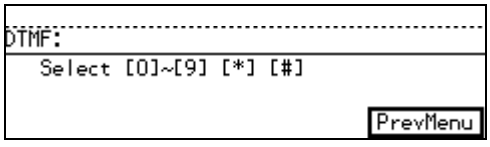


A874M524.BMP



A874M525.BMP

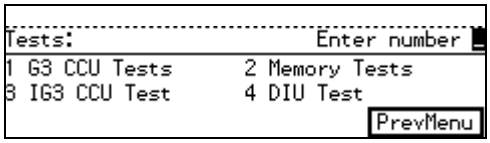
5. Choose a DTMF signal type at the keypad, then press ◈.
   To stop the test, press C/©.



A874M530.BMP

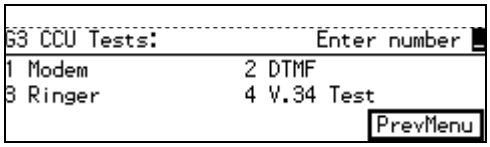
4.1.21 RINGER TEST (FUNCTION 11)

1. Enter the fax service mode.
2. Press [1] [1].



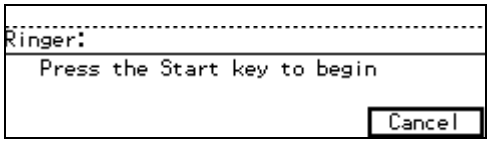
A874M524.BMP

3. Press [1].



A874M525.BMP

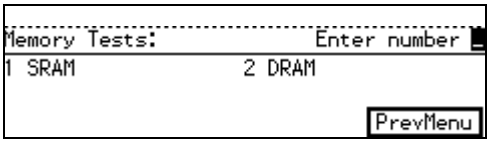
4. Press [3] then (Start). To stop the test, press (C/C).
5. Exit the service mode.



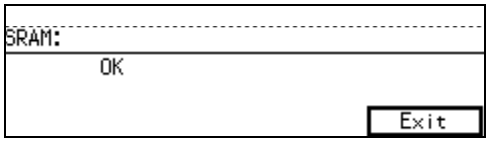
A874M531.BMP

4.1.22 MEMORY TEST (FUNCTION 11)

1. Enter the fax service mode.
2. Press [1] [1].
3. Press [2].
4. Press one of the following numbers:
   [1] – SRAM test
   [2] – DRAM test
5. Press (Start) to start the test.
   To stop the test, press (C/C).
   If the test is successful, the display shows "OK".
   If the test is unsuccessful, the display shows "NG".
6. Exit the service mode.



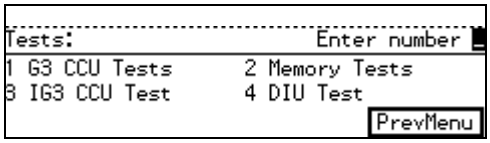
A874M532.BMP



A874M533.BMP

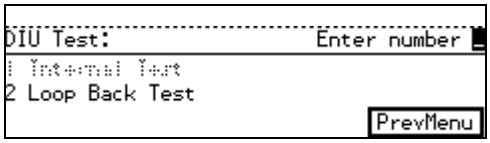
4.1.23 DIU TEST (FUNCTION 11)

1. Enter the fax service mode.
2. Press [1] [1].



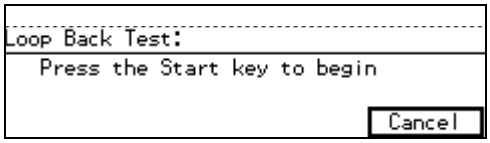
A874M524.BMP

3. Press [4].



A874M534.BMP

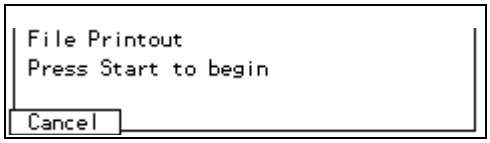
4. Press [2] then ⓢ.
   To stop the test, press ⓒ.
5. Exit the service mode.



A874M535.BMP

4.1.24 FILE PRINTOUT (FUNCTION 13)

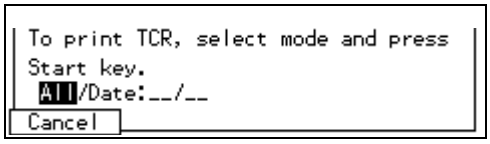
1. Enter the fax service mode.
2. Press [1] [3] then ⓢ.
   The machine prints all the files stored in the SAF memory, including confidential messages.
   NOTE: Do not use this function, unless the customer is having trouble printing confidential messages or recovering files stored using the memory lock feature.



A874M536.BMP

4.1.25 JOURNAL PRINTOUT (FUNCTION 14)

1. Enter the fax service mode.
2. Press [1] [4].
3. Either:
   Choose All - The machine prints all the communication records on the report. The maximum is 100 records, or 900 records if the optional EXFUNC board is installed.
   Specify a date - The machine prints all communication records after the specified date.
4. Press ⓘ.
5. Exit the service mode.

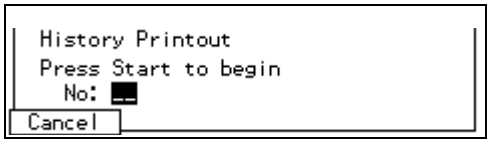


A874M537.BMP

4.1.26 USAGE LOG PRINTOUT (FUNCTION 15)

The following functions are for designer use only. However, list 5 (SC history) may be useful.

1. Enter the fax service mode.
2. Press [1] [5].
3. Press the number, then press ⓘ.
   [5] – SC history
4. Exit the service mode.



A874M538.BMP

4.1.27 DATA TRANSFER (FUNCTION 16)

This function allows ROM and SRAM data transfer between the FCU inside the machine and an external flash memory card or FCU. Refer to the following sections for details.

- Section 6.4.1 - FCU ROM download from a flash memory card
- Section 6.4.2 - FCU ROM upload to a flash memory card
- Section 6.4.3 - SRAM backup to a flash memory card
- Section 6.3.3 - SRAM restore from a flash memory card backup
- Section 6.3.2 – SRAM restore from FCU

4.2 BIT SWITCHES

⚠WARNING

Do not adjust a bit switch or use a setting 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 have been changed from previous model (NAD) is marked "*".

4.2.1 SYSTEM SWITCHES

<table>
<tr><th colspan="3">System Switch 00</th></tr>
<tr><th>No</th><th>FUNCTION</th><th>COMMENTS</th></tr>
<tr><td>0-1</td><td>Not used</td><td>Do not change the settings.</td></tr>
<tr><td rowspan="4">2</td><td>Technical data printout on the Journal
0: Disabled
1: Enabled</td><td>1: Instead of the personal name, the following data are listed on the Journal for each G3 communication.</td></tr>
<tr><td colspan="2">e.g. 0000 32V34 288/264 L0100 03 04
(1) (2)(3) (4) (5) (6) (7) (8)
(1): EQM value (Line quality data). A larger number means more errors.
(2): Symbol rate (V.34 only)
(3): Final modem type used
(4): Starting data rate (for example, 288 means 28.8 kbps)
(5): Final data rate
(6): Rx revel (refer to the note after this table for how to read the rx level)
(7): Total number of error lines that occurred during non-ECM reception.
(8): Total number of burst error lines that occurred during non-ECM reception.
Note:
EQM and rx level are fixed at "FFFF" in tx mode.
The seventh and eighth numbers are fixed at "00" for transmission records and ECM reception records.</td></tr>
<tr><td colspan="2">Rx level calculation

Example: 0000 32 V34 288/264 L <u>01</u> <u>00</u> 03 04

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 (= 0100 [H]) is 256.
So, the actual rx level is 256/-16 = -16 dB</td></tr>
<tr><td>3</td><td>Not used</td><td>Do not change the setting.</td></tr>
</table>

System Switch 00		
No	**FUNCTION**	**COMMENTS**
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.
5	G3/G4 communication parameter display **0:** Disabled **1:** Enabled	This is a fault-finding aid. The LCD shows the key parameters (see below). 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. If system switch 09 bit 6 is at "1", the list is only printed if there was an error during the communication.
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. If bit 6 is turned on, the machine prints a protocol dump list for the last communication only, regardless of this bit setting. If system switch 09 bit 6 is at "1", the list is only printed if there was an error during the communication.

G3 Communication Parameters

Modem rate	336: 33600 bps 168: 16800 bps 312: 31200 bps 144: 14400 bps 288: 28800 bps 120: 12000 bps 264: 26400 bps 96: 9600 bps 240: 24000 bps 72: 7200 bps 216: 21600 bps 48: 4800 bps 192: 19200 bps 24: 2400 bps
Resolution	S: Standard (8 x 3.85 dots/mm) D: Detail (8 x 7.7 dots/mm) F: Fine (8 x 15.4 dots/mm) SF: Superfine (16 x 15.4 dots/mm) 21: Standard (200 x 100 dpi) 22: Detail (200 x 200 dpi) 44: Superfine (400 x 400 dpi)
Compression mode	MMR: MMR compression MR: MR compression MH: MH compression JBO: JBIG compression (Optional mode) JBB: JBIG compression (Basic mode)
Communication mode	ECM: With ECM NML: With no ECM

Width and reduction	A4: A4 (8.3"), no reduction B4: B4 (10.1"), no reduction A3: A3 (11.7"), no reduction
I/O rate	0: 0 ms/line 10: 10 ms/line 25: 2.5 ms/line 20: 20 ms/line 5: 5 ms/line 40: 40 ms/line **Note:** "40" is displayed while receiving a fax message using AI short protocol.

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) 44: Superfine (400 x 400 dpi)
Width and reduction	A4: A4 (8.3"), no reduction B4: B4 (10.1"), no reduction A3: A3 (11.7"), no reduction
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: Off, 1: On (Smoothing is disabled in halftone mode.) Bit 2 - CIL printing 0: On, 1: Off Bit 3 - Not used Bit 4 - mm/inch conversion 0: Off, 1: On Bit 5 - Engine type 0: mm, 1: inches Bit 6 - Document resolution unit 0: mm, 1: inches

System Switch 01		
No	**FUNCTION**	**COMMENTS**
0	Automatic Service Call at PM **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. **Cross reference** Auto service calls: Section 2.1
1-7	Not used	Do not change the settings.

System Switch 02		
No	**FUNCTION**	**COMMENTS**
0-3	Not used	Do not change the settings.
4	File retention time **0:** Depends on User Parameter 24 [18(H)] **1:** No limit	**1:** A file that had a communication error will not be erased unless the communication is successful.
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. 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 setting is only valid if bits 6 and 7 of System Switch 02 are set to “User selectable”. The default setting is 24 hours.

System Switch 04		
No	**FUNCTION**	**COMMENTS**
0-2	Not used	Do not change the settings.
3	Printing dedicated tx parameters on Quick/Speed Dial Lists **0:** Disabled **1:** Enabled	**1:** Each Quick/Speed dial number on the list is printed with the dedicated tx parameters (8 bytes each). The last 10 bytes of data are the programmed dedicated tx parameters; 32 bytes of data are printed (the other 22 bytes have no use for service technicians).
4	Not used	Do not change the settings.

System Switch 04		
No	**FUNCTION**	**COMMENTS**
5	Memory file transfer operation **0:** User level **1:** Service level	If the machine is unable to print fax messages due to a mechanical problem, change this bit to 0 to transfer all messages in the memory (including confidential rx messages) to an another terminal. Always reset this bit to 1 after transfer. However, this bit can be left at 0, if the customer's key-operators want to transfer the files themselves. **Procedure** 1. Enter service mode and change this bit to 0. 2. Exit the service mode. 3. Enter the user tools, and select "Key-operator settings". 4. Choose "03" and specify a destination for the machine to transfer all the files to. 5. Press "Start". 6. After the machine transfers the memory files, enter the service mode and reset this bit to 1. Otherwise, anybody who knows how to enter the key-operator mode can transfer confidential messages.
6	G3 CSI/G4 Terminal ID programming level **0:** User level **1:** Service level	**1:** The CSI and Terminal ID can only be programmed by a technician (in the user tools). 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 (choosing tone dial or pulse dial) can only be programmed by a technician (in the user tools).

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.
3-7	Not used	Do not change the settings.

System Switch 06 *		
No	**FUNCTION**	**COMMENTS**
0 to 7	Margin setting for Create Margin Transmission	71 to 99 (BCD) %. This setting determines the reduction ratio when the user uses the Create Margin Transmission feature. Default setting:1001 0011 (93%)

System Switch 07 - Not used (Do not change the factory settings.)
System Switch 08 - Not used (Do not change the factory settings.)

System Switch 09		
No	**FUNCTION**	**COMMENTS**
0	Addition of 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 when no image data was exchanged. **0:** Disabled **1:** Enabled	**0:** Communications that reached phase C (message tx/rx) of the T.30 protocol are listed on the Journal. **1:** Communications that 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	Not used	Do not change the settings.
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	Conditions for printing the protocol dump list **0:** Print for all communications **1:** Print only when there is a communication error	This switch becomes effective only when system switch 00 bit 6 is set to 1. **1:** Set this bit to 1 when you wish to print a protocol dump list only for communications with errors.
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. In G4 communication, G4_TID (Terminal ID) is used instead of RTI or CSI. **Dial Label:** The name stored, by the user, for the Quick/Speed Dial number.

System Switch 0A		
No	**FUNCTION**	**COMMENTS**
0-2	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. This will continue until the polling reception file is erased. The dialing interval is the same as memory transmission.
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 if 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 unit 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 - Not used (Do not change the factory 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		
No	**FUNCTION**	**COMMENTS**
0-2	Not used	Do not change the settings.
3	Action when the external handset goes off-hook **0:** Manual tx and rx operation **1:** Memory tx and rx operation (the display remains the same)	**0:** Manual tx and rx are possible while the external handset is off-hook. However, memory tx is not possible. **1:** The display stays in standby mode even when the external handset is used, so that other people can use the machine for memory tx operation. Note that manual tx and rx are not possible with this setting.
4-7	Not used	Do not change the settings.

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

System Switch 10		
No	**FUNCTION**	**COMMENTS**
0 to 7	Threshold memory level for parallel memory transmission	Threshold = N x 128 kbytes + 256 kbytes N can be between 00 - FF(H) Default setting: 02(H) = 512 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	TSI (G3) or CIL/TID (G4) printing position **0:** Superimposed on the page data **1:** Printed before the data leading edge	Change this bit to 1 if the TSI (G3) or CIL/TID (G4) overprints information that the customer considers to be important. G4: Europe model only
2	Not used	Do not change the factory settings.
3 *	TTI used for broadcasting **0:** The TTIs selected for each Quick/Speed dial are used **1:** The same TTI is used for all destinations	**1:** The TTI (TTI_1 or TTI_2) which is selected with user switch 01 bit 6 is used for all destinations during broadcasting.

System Switch 11		
No	**FUNCTION**	**COMMENTS**
4 *	Type of TTI used for transmission using the ten-key pad **0:** TTI_1 **1:** TTI_2	**1:** The machine uses TTI_2 when the user dials the destination using the ten-key pad. It is also used for polling transmission and manual transmission using the handset.
5-6	Not used	Do not change the factory settings.
7	Use of parallel memory transmission with G4 transmission **0:** Disabled **1:** Enabled	This determines whether parallel transmission can be used with a G4 transmission or not. Note that this bit is only effective if Parallel Memory transmission is enabled (User Parameter 07 - bit 2).

System Switch 12		
No	**FUNCTION**	**COMMENTS**
0 to 7	TTI/CIL printing position in the main scan direction CIL: Command Information Line (Group 4)	TTI/CIL: 08 to 64 (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 overwrite 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 - Not used (do not change the settings)
System Switch 14 - Not used (do not change the settings)

System Switch 15		
No	**FUNCTION**	**COMMENTS**
0	Not used	Do not change the settings.
1	Going into the Night mode automatically **0**: Enabled **1**: Disabled	**1:** The machine will restart from the Energy Saver mode quickly, because the +5V power supply is active even in the Energy Saver mode.
2	Protocol dump data backup **0**: Disabled **1**: Enabled	**1:** The machine backs up the protocol dump data for approximately one hour when the main switch is turned off, in the same way as image data.
3-7	Not used	Do not change the settings.

System Switch 16		
No	**FUNCTION**	**COMMENTS**
0 *	Parallel Broadcasting **0**: Disabled **1**: Enabled	**1:** When the G4 unit is installed, the machine sends messages simultaneously using both available ports (PSTN/ISDN) during broadcasting.
1-7	Not used	Do not change the settings.

System Switch 17 - Not used (do not change the settings)
System Switch 18 - Not used (do not change the settings)

System Switch 19		
No	**FUNCTION**	**COMMENTS**
0 to 2	Key acknowledgement tone volume adjustment **000** (Min.: OFF)-**111** (Max.) Default setting – 011	This controls the volume of this tone when the machine is in fax mode (it has no effect on the tone when the machine is in copier or printer mode).
3-6	Not used	Do not change the settings.
7	Special Original mode **0:** Disabled **1:** Enabled	**1:** If the customer frequently wishes to transmit a form or letterhead which has a colored or printed background, change this bit to “1”. “Special Original” can be selected in addition to the “Text”, “Text/Photo” and “Photo” modes. **Cross reference** ❑ Type of special original mode – Scanner switch 00 bit 0.

System Switch 1A - Not used (do not change the settings)
System Switch 1B - Not used (do not change the settings)

System Switch 1C		
No	**FUNCTION**	**COMMENTS**
0	PC-Fax Expander option **0:** Not installed **1:** Installed	Change this bit to 1 when installing the PC-Fax Expander.
1	To omit the PSTN access code during a PC-Fax transmission **0:** Disabled **1:** Enabled	**1:** The machine does not dial the PSTN access code programmed in the PC-Fax application during PC-Fax memory transmission. This function becomes effective only when the PC fax application dials using a Quick/Speed/Group Dial stored in the fax machine. The machine will not omit dialing the PSTN access code when a destination number is programmed manually.
2	Not used	Do not change the settings.
3	Deleting the file when an error occurs during PC data storage to the SAF **0:** Not cleared **1:** Cleared	This function is effective for PC memory transmission. **0:** The pages stored in the SAF will be transmitted from the machine. **1:** All data is cleared when an error occurs. However, if the SAF memory becomes full during data storage, the setting of system bit switch 1E bit 1 determines how data is treated. This function is also effective for PC printing using the PCFE option for the fax board.
4	Resolution unit used for PC-Fax communication **0:** mm **1:** inches	This bit determines the resolution unit used for PC fax communication. This is because the PC fax application cannot automatically adjust the resolution unit. This setting is also effective for PC scanning using the PCFE option for the fax board.
5-6	Not used	Do not change the settings.
7	PC protocol dump list output after each PC communication **0:** Off **1:** On	**1:** This is only used for PC communication troubleshooting. ❑ Communications between the DIU (PCFE board) and a host PC are logged on the PC dump list. If system switch 09 bit 6 is at “1”, the list is only printed if there was an error during the communication. ❑ PC scan and PC print jobs using the PCFE option for the fax board are printed on the Journal. ❑ The Data-in LED turns on while data is coming in and going out to the PC. Be sure to reset this bit to “0” after a test.

System Switch 1D - Not used (do not change the settings)

System Switch 1E		
No	**FUNCTION**	**COMMENTS**
0	Communication after the Journal data storage area has become full **0:** Impossible **1:** Possible	This setting is effective only when Automatic Journal printout is enabled but the machine cannot print the report (e.g., no paper). **0:** If the buffer memory of the communication records for the Journal has become full, fax communications will become impossible, to prevent overwriting the communication records before the machine prints them out. **1:** If the buffer memory of the communication records for the Journal is full, fax communications are still possible. But the machine will overwrite the oldest communication records. **Cross Reference** ❑ Automatic Journal output - User switch 03 bit 7 ❑ Number of communication records for the Journal: 100 records (standard) 900 records (with the EXFUNC board installed)
1	Action when the SAF memory has become full during scanning **0:** The current page is erased. **1:** The entire file is erased.	**0:** If the SAF memory becomes full during scanning, the successfully scanned pages are transmitted. **1:** If the SAF memory becomes full during scanning, the file is erased and no pages are transmitted. This bit switch is ignored for parallel memory transmission.
2	RTI/CSI display priority 0: RTI 1: CSI	This bit determines which identifier, RTI or CSI, is displayed on the LCD while the machine is communicating in G3 non-standard mode.
3	File No. printing **0**: Enabled **1**: Disabled	**1:** File numbers are not printed on any reports.
4	Action when authorized reception is enabled but authorized RTIs/CSIs are **not yet** programmed **0**: All fax reception is disabled **1**: Faxes can be received if the sender has an RTI or CSI	If authorized reception is enabled but the user has stored no acceptable sender RTIs or CSIs, the machine will not be able to receive any fax messages. If the customer wishes to receive messages from any sender that includes an RTI or CSI, and to block messages from senders that do not include an RTI or CSI, change this bit to “1”, then enable Authorized Reception. Otherwise, keep this bit at “0 (default setting)”.
5	Address display priority in the AI redial mode **0:** RTI/CSI **1:** Telephone number	**0:** When the machine has both RTI/CSI and the telephone number information, the machine displays RTI/CSI. **1:** The machine always displays the telephone number.

System Switch 1E		
No	**FUNCTION**	**COMMENTS**
6	Not used	Do not change the settings
7	RAM initialization after the optional EXFUNC board is installed or removed **0:** Enabled **1:** Disabled	When the machine detects that an EXFUNC board has been installed or removed, the machine shows the following message on the display for the customer. *"Adding/Removing FAX Feature Expander causes data loss. Turn Main Power Switch off and remove/replace it to avoid loss. To continue, press Yes."* If Yes is pressed, the machine initializes the RAM to the "with" or "without card" configuration. However, changing this bit to "1" disables this initialization, even if Yes is pressed. Change this bit to 1 after installing the EXFUNC board. **0:** When the above message is displayed, the machine initializes the RAM if Yes is pressed. The amount of data lost depends on whether the board is in or out. To avoid losing data, the user must switch off immediately and put the EXFUNC board back in. **1:** When the above message is displayed, the machine does not initialize the RAM even if Yes is pressed. However, the fax unit cannot be used until the user switches off, puts the EXFUNC board back in, then switches back on. No data is lost.

System Switch 1F		
No	**FUNCTION**	**COMMENTS**
0	Not used	Do not change the settings.
1	Report printout after an original jam during SAF storage or if the SAF memory fills up **0:** Enabled **1:** Disabled	**0:** When an original jams, or the SAF memory overflows during scanning, a report will be printed. Change this bit to "1" if the customer does not want to have a report in these cases. Memory tx – Memory storage report Parallel memory tx – Transmission result report
2	Not used	Do not change the settings.
3	Received fax print start timing (G3 reception) **0:** After receiving each page **1:** After receiving all pages	**0:** The machine prints each page immediately after the machine receives it. **1:** The machine prints the complete message after the machine receives all the pages in the memory.
4	Received fax print start timing (G4 reception) **0:** After receiving each page **1:** After receiving all pages	
5-6	Not used	Do not change the factory settings.
7	Action when a fax SC has occurred **0:** Automatic reset **1:** SC code display	**0:** When the fax unit detects a fax SC code other than SC1201 and SC1207, the fax unit automatically resets itself. **1:** When the fax unit detects any fax SC code, the fax unit displays the SC code and stops. **Cross Reference** Fax SC codes - See "Troubleshooting"

4.2.2 SCANNER SWITCHES

Scanner Switch 00		
No	**FUNCTION**	**COMMENTS**
0	Type of special original mode **0:** Monotone background **1:** Colored background	This setting determines the scanner parameters used for special original mode. **0:** This setting is for originals with random background of constant density, such as seen on banknotes (faxing banknotes is not recommended!). **1:** This setting is for originals with background of constant density, such as those made on coloured paper. This switch becomes effective only when system switch 19 bit 7 is set to 1.
1-3	Not used	Do not change the settings.
4	OR processing (Text mode) **0:** Disabled **1:** Enabled	**1:** Each pair of scan lines goes through OR processing before transmission.
5-7	Not used	Do not change the settings.

Scanner Switch 01		
No	**FUNCTION**	**COMMENTS**
0 to 4	Scan density step value (Text mode)	When scan density is adjusted manually away from the Normal setting, the threshold value for binary picture processing changes for each step from the value specified by Scanner Switch 02, by the amount programmed here. For example, with the default setting (14), the threshold value changes as follows. +3 (Darkest) : 77 (= 91 – 14) +2 : 91 (= 105 – 14) +1 : 105 (= 119 – 14) 0 (Normal) : 119 (Scanner Switch 02 setting) -1 : 133 (= 119 + 14) -2 : 147 (= 133 + 14) -3 (Lightest) : 161 (= 147 + 14) The value can be between 00 and 1F(H) [= 31(D)]. For smaller steps, input a lower value.
5-7	Not used	Do not change the settings.

Scanner Switch 02		
No	**FUNCTION**	**COMMENTS**
0 to 7	Binary picture processing: Threshold for Text mode - Normal setting (center position)	This setting determines the threshold value for binary picture processing in Text mode (when the scan density setting is at the center). The value can be between 01 and FF. For a darker threshold, input a lower value. Default setting: 77(H) = 119(D)

Scanner Switch 03		
No	**FUNCTION**	**COMMENTS**
0 to 7	Binary picture processing: Threshold for Photo and Text/Photo mode - Normal setting (center position)	This setting determines the threshold value for binary picture processing in Text/Photo mode (when the scan density setting is at the center). The value can be between 01 and FF. For a darker threshold, input a lower value. Default setting: 23(H) = 35(D)

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

Scanner Switch 06		
No	**FUNCTION**	**COMMENTS**
0 to 3	MTF filter level (Text mode)	The value can be between 0(Off) and F. For a weaker threshold, input a lower value. Default setting: 6 This setting is independent from the threshold specified by the copier SP modes.
4 to 7	MTF filter level (Text/Photo mode)	The value can be between 0(Off) and F. For a weaker threshold, input a lower value. Default setting: 6 This setting is independent from the threshold specified by the copier SP modes.

Scanner Switch 07		
No	**FUNCTION**	**COMMENTS**
0 to 2	Smoothing filter level (Photo mode)	The value can be between 0(Off) and 7. For a weaker threshold, input a lower value. Default setting: 2 This setting is independent from the threshold setting specified by the copier SP modes.
3-7	Not used	Do not change the settings.

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

Scanner Switch 0A		
No	**FUNCTION**	**COMMENTS**
0 to 2	Independent dot erase level (Text modes)	The value can be between 0 (Off) and 4. For a higher threshold, input a higher value (larger dots are erased). Default setting: 2 This setting is independent from the threshold setting specified by the copier SP modes.
3-7	Not used	Do not change the settings.

Scanner Switch 0B *		
No	**FUNCTION**	**COMMENTS**
0 to 3	Scan margin setting (top and bottom margin in book scan mode, and top margin in ADF mode) The setting can be between 0 and F (H) (in mm). Default setting: 3 mm	
4-7	Not used	Do not change the settings.

Scanner Switch 0C		
No	**FUNCTION**	**COMMENTS**
0	Action when an original jam has occurred while scanning the original into memory for memory tx **0:** Continues scanning after recovery **1:** Stops scanning and erases all scanned pages for that job	This bit is only effective when parallel memory tx is disabled (user parameter 07 - bit 2). If parallel memory tx is enabled, the machine always erases the scanned pages when an original jam occurs. The machine then asks the user to retry from the first page, even if the parallel memory tx is not actually used. **0:** The machine displays a message asking the user to put the jammed page back into the original stack, and continues scanning. The message is displayed for the time period specified by scanner switch 0E, bit 2. **1:** The machine erases all the scanned pages and asks the user to retry from the first page.
1 to 2	Setting when an original size cannot be recognized **Bit 2 1 Setting** 0 0 Depending on the copier's setting 0 1 A5 ▯ 1 0 A5 ▭ 1 1 No original	When both bits are set to "0", the machine recognizes an original size depending on SP4-303 in copier service mode.
3-5	Not used	Do not change the settings.
6	Scan width used for a document set in the ADF when the width is less than 230 mm. **0**: A4 (210 mm) **1**: LT (216 mm)	This bit is set at "1" when the country code is set to the US.
7	Sub-scan length correction using ADF **0:** Enabled **1:** Dsabled	**0:** The machine regards originals as following table. **1:** The original length data from the ADF sensor is used.

- **Scanner Switch 0C bit 6 = 0**

Before sub-scan length correction	After sub-scan length correction
Under 135mm	128mm (B6 short edge length)
136mm – 157mm	148mm (A5 short edge length)
158mm – 192mm	182mm (B6 long edge length)
193mm – 223mm	210mm (A4 short edge length)
248mm – 266mm	257mm (B5 long edge length)
267mm – 287mm	279mm (LT long edge length)
288mm – 307mm	297mm (A4 long edge length)
355mm – 374mm	364mm (B4 long edge length)
410mm – 425mm	420mm (A3 long edge length)
Over 426mm	432mm (DLT long edge length)

- **Scanner Switch 0C bit 6 = 1**

Before sub-scan length correction	After sub-scan length correction
Under 146mm	140mm (HLT short edge length)
158mm – 192mm	182mm (B6 long edge length)
193mm – 223mm	216mm (LT short edge length)
248mm – 266mm	257mm (B5 long edge length)
267mm – 287mm	279mm (LT long edge length)
288mm – 307mm	297mm (A4 long edge length)
346mm – 366mm	356mm (LG long edge length)
Over 418mm	432mm (DLT long edge length)

Scanner Switch 0D		
No	**FUNCTION**	**COMMENTS**
0 **1**	Scan magnification ratio fine tuning (main scan direction) $\binom{0}{0}=0\%, \binom{1}{0}=-1.5\%, \binom{0}{1}=+1.5\%, \binom{1}{1}$=Do not use this setting The actual magnification ratio is the sum of the SP mode 4-008 setting and this setting.	
2 **3**	Scan magnification ratio fine tuning (sub scan direction) $\binom{0}{0}=0\%, \binom{1}{0}=-1.5\%, \binom{0}{1}=+1.5\%, \binom{1}{1}$=Do not use this setting The actual magnification ratio is the sum of the SP mode 4-101 setting and this setting.	
4-6	Not used	Do not change the settings.
7	Scan width for A5 lengthwise or B5 lengthwise originals **0:** 210 mm (8.5") **1:** Original width	**0:** The machine scans the original as 210 mm (8.5") width. The transmitted image has a blank area on the right. **1:** The machine scans 148 mm (A5) or 182 mm (B5) and centers the scanned data on a 216 mm width transmitted image.

Scanner Switch 0E		
No	**FUNCTION**	**COMMENTS**
0	Wait time for the next page when scanning a book original into memory **0:** 60 s **1:** 30 s	This bit determines how long the machine waits for the next page when scanning a book original for memory transmission. If this timer expires, the machine transmits all the pages scanned so far as one document. **Note:** In immediate tx or parallel memory tx, the wait time for the next page is 10 s.
1	Scan resolution unit (except standard resolution in book scan mode) **0:** mm **1:** inches	This bit determines which resolution unit will be used for scanning a fax message. Default setting: mm
2	ADF jam alarm display time **0:** 60 s **1:** 30 s	The bit is only effective when bit 0 of scanner bit switch 0C is “0”. This bit determines how long the machine displays the ADF jam alarm after a jam occurred.
3-7	Not used	Do not change the settings.

Scanner Switch 0F		
No	**FUNCTION**	**COMMENTS**
0	Image rotation before transmission (A4/LT sideways) **0:** Disabled **1:** Enabled	This bit determines whether the machine rotates the scanned image by 90 degrees before transmission. If this bit is set at 1, A4 (LT) sideways images (297 mm width in the protocol) will be transmitted as A4 (LT) lengthwise images (216 mm width in the protocol). Refer to Image Rotation Before Transmission in chapter 2 for more details.
1	Not used	Do not change the settings
2	Image rotation before transmission (A5/HLT lengthwise) **0:** Disabled **1:** Enabled	This bit determines whether the machine rotates the scanned image by 90 degrees before transmission. If this bit is set at “1”, A5 (HLT) lengthwise images will be transmitted as A4 (LT) width images (216 mm width in the protocol). Refer to Image Rotation Before Transmission in chapter 2 for more details.
3-7	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 asterisk inside square brackets 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.
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 repeated at the top of the next page. The amount of repeated data depends on printer switch 04, bits 5 and 6. See Sub Scan Reduction and Page Separation in section 2 for details.
2	Prints the date and time on received fax messages **0:** Disabled **1:** Enabled	This switch is only effective when user parameter 02 - bit 2 (printing the received date and time on received fax messages) is enabled. **1:** The machine prints the received and printed date and time at the bottom of each received page.
3-7	Not used	Do not change the settings.

Printer Switch 01		
No	**FUNCTION**	**COMMENTS**
0-2	Not used	Do not change the settings.
3 **4**	Maximum print width used in the setup protocol $\begin{pmatrix}0\\0\end{pmatrix}$ = Do not use this setting $\begin{pmatrix}1\\0\end{pmatrix}$ = A3 $\begin{pmatrix}0\\1\end{pmatrix}$ = B4 $\begin{pmatrix}1\\1\end{pmatrix}$ = A4 These bits are only effective when bit 7 of printer switch 01 is "1".	
5	Not used	Do not change the settings.
6	Table selection of received message width. **0:** Table 1 **1:** Table 2	When bit 7 is set to 1, this bit determines which table the machine uses to choose the paper width from. The paper width will be informed in the setup protocol (NSF/DIS).
7	Received message width restriction in the protocol signal to the sender **0:** Disabled **1:** Enabled	**0:** The machine informs the transmitting machine of the print width depending on the paper size available from the paper feed stations. Refer to the tables on the next page. **1:** The machine informs the transmitting machine of the fixed paper width which is specified by bits 3 and 4 above.

Relationship between available paper sizes and printer width used in the setup protocol

- **Table 1 (Printer Switch 01 bit 6 = 0)**

Available Paper Size	Printer width used in the Protocol (NSF/DIS)
A4 or 8.5" x 11"	297 mm width
B5	256 mm width
A5 or 8.5" x 5.5"	216 mm width
No paper available (Paper end)	216 mm width

- **Table 2 (Printer Switch 01 bit 6 = 1)**

Available Paper Size	Printer width used in the Protocol (NSF/DIS)
A3 or DTL	297 mm width
B4	256 mm width
Others	216 mm width

Printer Switch 02		
No	**FUNCTION**	**COMMENTS**
0	1st paper feed station usage for fax printing **0:** Enabled **1:** Disabled	**0:** The paper feed station can be used to print fax messages and reports. **1**: The specified paper feed station will not be used for printing fax messages and reports. **Note:** Do not disable usage for a paper feed station which has been specified by User Parameter Switch 0F (15), or which is used for the Specified Cassette Selection feature.
1	2nd paper feed station usage for fax printing **0:** Enabled **1:** Disabled	
2	3rd paper feed station usage for fax printing **0:** Enabled **1:** Disabled	
3	4th paper feed station usage for fax printing **0:** Enabled **1:** Disabled	
4	LCT usage for fax printing **0:** Enabled **1:** Disabled	
5-7	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. (Page separation threshold: Printer Switch 03, bits 4 to 7) **1:** Incoming page length is reduced when printing. (Maximum reducible length: Printer Switches 04, bits 0 to 4)
1-3	Not used	Do not change the settings
4 to 7	Page separation threshold (with reduction disabled with switch 03-0 above) If the incoming page is up to x mm longer than the length of copy paper, the excess portion will not be printed. If the incoming page is more than x mm longer than the length of 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 Default setting: 6 mm **Cross reference** Length reduction On/Off: Printer Switch 03, Bit 0	

Printer Switch 04		
No	**FUNCTION**	**COMMENTS**
0 to 4	Maximum reducible length when length reduction is enabled with switch 03-0 above. <Maximum reducible length> = <Paper length> + (N x 5mm) “N” is the decimal value of the binary setting of bits 0 to 4. Bit 4 3 2 1 0 Setting 0 0 0 0 0 0 mm 0 0 0 0 1 5 mm 0 0 1 0 0 20 mm (default setting) 1 1 1 1 1 155 mm For A5 sideways and B5 sideways paper <Maximum reducible length> = <Paper length> + 0.75 x (N x 5mm)	

Service Tables

Printer Switch 04		
No	**FUNCTION**	**COMMENTS**
5 **6**	Length of the duplicated image on the next page, when page separation has taken place. $\binom{0}{0}$=4 mm, $\binom{1}{0}$=10 mm, $\binom{0}{1}$=15 mm, $\binom{1}{1}$=Not used	
7	Not used.	Do not change the setting.

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

Printer Switch 06		
No	**FUNCTION**	**COMMENTS**
0	Printing while a paper cassette is pulled out, when the Just Size Printing feature is enabled. **0**: Printing will not start **1**: Printing will start if another cassette has a suitable size of paper, based on the paper size selection priority tables.	Refer to Just Size Printing in section 2 for details. **Cross reference** Just size printing on/off – User switch 05, bit 5
1-7	Not used.	Do not change the settings.

Printer Switch 07 *		
No	**FUNCTION**	**COMMENTS**
0	Reduction for Journal printing **0:** Off **1:** On	**1:** The Journal is reduced to 91% to ensure that there is enough space in the left margin for punch holes or staples.
2-3	Not used.	Do not change the settings.
4	List of destinations in the Communication Failure Report for broadcasting **0**: All destinations **1**: Only destinations where communication failure occurred	**1:** Only destinations where communication failure occurred are printed on the Communication Failure Report.
5-7	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		
No	**FUNCTION**	**COMMENTS**
0	Paper size selection priority **0:** Width **1:** Length	**0:** A paper size that has the same width as the received data is selected first. **1:** A paper size which has enough length to print all the received lines without reduction is selected first.
1	Paper size selected for printing A4 width fax data **0:** 8.5" x 11" size **1:** A4 size	This switch determines which paper size is selected for printing A4 width fax data, when the machine has both A4 and 8.5" x 11" size paper.
2	Page separation **0:** Enabled **1:** Disabled	**1:** If all paper sizes in the machine require page separation to print a received fax message, the machine does not print the message (Substitute Reception is used). After a larger size of paper is set in a cassette, the machine automatically prints the fax message.
3 to 4	Printing the sample image on reports **Bit 4 Bit 3 Setting** 0 0 The upper half only 0 1 50% reduction in sub-scan only 1 0 Same size 1 1 Not used	"Same size" means the sample image is printed at 100%, even if page separation occurs. User Parameter Switch 19 (13H) bit 4 must be set to "0" to enable this switch. Refer to Detailed Section Descriptions for more on this feature.
5-6	Not used	Do not change the settings.
7	Equalizing the reduction ratio among separated pages (Page Separation) **0:** Enabled **1:** Disabled	**0:** When page separation has taken place, all the pages are reduced with the same reduction ratio. **1:** Only the last page is reduced to fit the selected paper size when page separation has taken place. Other pages are printed without reduction.

Printer Switch 0F		
No	**FUNCTION**	**COMMENTS**
0 to 1	Smoothing feature **Bit 1 Bit 0 Setting** 0 0 Disabled 0 1 Disabled 1 0 Enabled 1 1 Not used	**(0, 0) (0, 1):** Disable smoothing if the machine receives halftone images from other manufacturers fax machines frequently.
2	Duplex printing **0:** Disabled **1:** Enabled	**1:** The machine always prints received fax messages in duplex printing mode:
3	Binding direction for Duplex printing **0:** Left binding **1:** Top binding	

Printer Switch 0F		
No	**FUNCTION**	**COMMENTS**
4	Printing fax messages in user code mode **0:** Enabled **1:** Disabled	**1:** The machine holds the received fax messages until the machine exits the restricted access mode (user code or key counter). If the machine enters the restricted access mode again while printing fax messages, the machine stops printing the machine exits the mode again.
5	Not used	Do not change the setting.
6 to 7	Wait timer for duplex printing $\begin{pmatrix}0\\0\end{pmatrix}$ = No limit, $\begin{pmatrix}1\\0\end{pmatrix}$ = 1 min., $\begin{pmatrix}0\\1\end{pmatrix}$ = 3 min., $\begin{pmatrix}1\\1\end{pmatrix}$ = 10 min. If the duplex unit is already being used for a copy or print job when the fax unit is going to print a fax message in duplex mode, the fax unit waits until the duplex unit becomes available. The time that the fax unit will wait can be specified, as shown above. It the timer expires, the message is printed on single sides.	

4.2.4 COMMUNICATION SWITCHES

Communication Switch 00		
No	**FUNCTION**	**COMMENTS**
0 to 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 to 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 compression method: Reception **0**: Only basic supported **1**: Basic and optional both supported	Change the setting when communication problems occur using JBIG compression.
6	JBIG compression method: Transmission **0**: Basic mode priority **1**: Optional mode priority	Change the setting when communication problems occur using 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 set to 0, ECM is switched off for all communications. In addition, V.8 protocol and JBIG compression are switched off automatically.
1	Not used	Do not change the setting.
2 to 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 disconnect the line without sending a fax message, 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 when manually dialed. **(1,0) -** The same as above, except that only the last 4 digits are compared. **(1,1) -** The machine will disconnect the line without sending a fax message, if the other end does not identify itself with an RTI or CSI. **(0,0) -** Nothing is checked; transmission will always go ahead. **Note:** This function does not work when dialing is done from the external telephone.
4-5	Not used	Do not change the setting.
6 to 7	Maximum printable page length available **Bit 7 6 Setting** 0 0 No limit 0 1 B4 (364 mm) 1 0 A4 (297 mm) 1 1 A3 (432 mm)	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 400 dpi** **3.85 l/mm 7.7 l/mm 15.4 l/mm** Low settings 6 12 24 High settings 12 24 48
1	Acceptable total error line ratio **0:** 5% **1:** 10%	If the error line ratio for a page exceeds the acceptable ratio, RTN will be sent to the other end.

Communication Switch 02		
No	**FUNCTION**	**COMMENTS**
2	Treatment of pages received with errors during G3 reception **0:** Deleted from memory without printing **1:** Printed	**0:** Pages received with errors are not printed.
3	Hang-up decision 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.
4-6	Not used	Do not change the settings.
7	Method of total error rate calculation **0:** Normal method **1:** French PTT requirement	**0:** Error rate is calculated by dividing the number of total lines by the number of error lines. **1:** Error rate is calculated by dividing the number of total plus error lines by the number of error lines.

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 the 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	Dialing requirements: USA **0:** Disabled **1:** Enabled	
7	Carrier drop display **0:** Disabled **1:** Enabled	This is an European PTT requirement. This bit is available only for the European models.

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) that determines G4 to G3 fallback.
1	Not used	Do not change the settings.
2	Not used	Do not change the settings.
3 *	Fallback from G4 to G3 reflected in programmed Quick/Speed dials **0:** Fallback enabled **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 **1:** Fallback enabled	**1:** Enable this switch only when G4 communication errors occur because the exchanger connects G4 calls to the PSTN. This problem occurs with some types of exchanger.
5	Not used	Do not change the settings.
6	Not used	Do not change the settings.
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, using normal memory transmission.
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, meaning 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.

Communication Switch 0B		
No	**FUNCTION**	**COMMENTS**
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.
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
5-7	Not used	Do not change the settings.

Communication Switch 0D		
No	**FUNCTION**	**COMMENTS**
0 to 7	The available memory threshold, below which ringing detection (and therefore reception into memory) is disabled	00 to FF (Hex), unit = 4 kbytes (e.g., 06(H) = 24 kbytes) One page is about 24 kbytes. The machine refers to this setting before each fax reception. If the amount of remaining memory is below this threshold, the machine cannot receive any fax messages. If this setting is kept at 0, the machine will detect ringing signals and go into receive mode even if there is no memory available. 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 - Not used (do not change the settings.)

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

Communication Switch 11 - Not used (do not change the settings.)

Communication Switch 12		
No	**FUNCTION**	**COMMENTS**
0 to 7	Memory transmission: Interval between dialing attempts to the same destination	01 - FF (Hex) minutes

Communication Switch 13 - Not used (do not change the settings.)

Communication Switch 14		
No	**FUNCTION**	**COMMENTS**
0	Inch-to-mm conversion during transmission **0:** Disabled **1:** Enabled	**0:** In immediate transmission, data scanned in inch format are transmitted without conversion. In memory transmission, data stored in the SAF memory in mm format are transmitted without conversion. **Note:** When storing the scanned data into SAF memory, the fax unit always converts the data into mm format. **1:** The machine converts the scanned data or stored data in the SAF memory to the format which was specified in the set-up protocol (DIS/NSF) before transmission.
1-5	Not used	Do not change the factory settings.
6 to 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 - Not used (do not change the settings)

Communication Switch 16 *		
No	**FUNCTION**	**COMMENTS**
0-1	Not used	Do not change the settings.
2	Optional ISDN unit **0:** Not installed **1:** Installed	Change this bit to 1 when installing the optional ISDN unit.
3-5	Not used	Do not change the settings.
6	ISDN Dual communication **0:** Enabled **1:** Disabled	**1:** The machine uses only one B channel for communication. This enables a customer to occupy another B channel for other purposes such as internet communication.
7	Not used	Do not change the settings.

Communication Switch 17 *		
No	**FUNCTION**	**COMMENTS**
0	SEP reception **0:** Disabled **1:** Enabled	**0:** Polling transmission to another maker's machine using the SEP (Selective Polling) signal is disabled.
1	SUB reception **0:** Disabled **1:** Enabled	**0:** Confidential reception to another maker's machine using the SUB (Sub-address) signal is disabled.
2-7	Not used	Do not change the settings.

Communication Switch 18 *		
No	**FUNCTION**	**COMMENTS**
0	Memory Lock for PSTN **0:** Disabled **1:** Enabled	Change this bit to 1 when the customer requires.
1	Not used	Do not change the setting.
2	Memory Lock for ISDN **0:** Disabled **1:** Enabled	Change this bit to 1 when the customer requires. This function requires an optional G4 unit.
3-7	Not used	Do not change the settings.

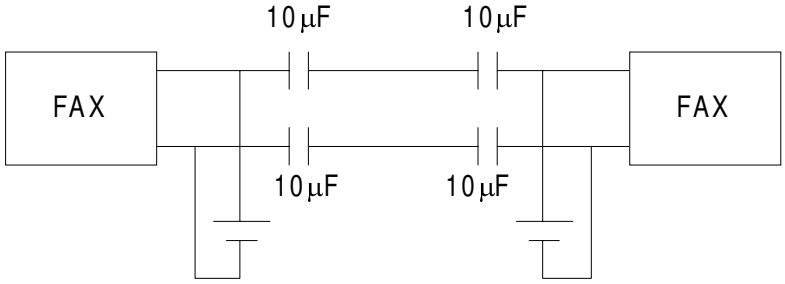
Communication Switch 19 - Not used (do not change the settings)
Communication Switch 1A - Not used (do not change the settings)
Communication Switch 1B - Not used (do not change the settings)
Communication Switch 1C - Not used (do not change the settings)
Communication Switch 1D - Not used (do not change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

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

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

4.2.5 G3 SWITCHES

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.



A874M601.WMF

Back-to-Back Connection:
The dc power supplies should be adjusted so that the line current to the NCU is about 30mA.

G3 Switch 01		
No	**FUNCTION**	**COMMENTS**
0-3	Not used	Do not change the settings.
4	DIS frame length **0:** 10 bytes **1:** 4 bytes	**1:** The bytes in the DIS frame after the 4th byte 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 setting.
6	CED/ANSam transmission **0:** Disabled **1:** Enabled	Do not change this setting, unless the communication problem is caused by the CED/ANSam transmission.
7	Not used	Do not change the setting.

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 from 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	V.8 protocol in manual reception **0:** Disabled **1:** Enabled	**0:** The machine sends CED instead of ANSam when starting a manual reception. **1:** The machine sends ANSam during manual reception.
2	V.8 protocol **0:** Disabled **1:** Enabled	**0:** V.8/V.34 communications will not be possible. **Note:** Do not set to 0 unless the line condition is always bad enough to slow down the data rate to 14.4 kbps or lower.
3	ECM frame size **0:** 256 bytes **1:** 64 bytes	Keep this bit at “0” in most cases.

G3 Switch 03		
No	**FUNCTION**	**COMMENTS**
4	CTC transmission conditions **0:** After one PPR signal received **1:** After four PPR signals received (ITU-T standard)	**0:** When using ECM in non-standard (NSF/NSS) mode, the machine sends a CTC to drop back the modem rate after receiving a PPR, if the following condition is met in communications at 14.4, 12.0, 9.6, and 7.2 kbps. $\sqrt{N\,Transmit \leq NRe\,send}$ $N_{Transmit}$- Number of transmitted frames N_{Resend}- Number of frames to be retransmitted **1:** When using ECM, the machine sends a CTC to drop back the modem rate after receiving four PPRs. PPR, CTC: These are ECM protocol signals. This bit is not effective in V.34 communications.
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 *	V.8 protocol in manual transmission **0:** Disabled **1:** Enabled	**1:** The machine detects either ANSam or CED during manual transmission.
7	Not used	Do not change the settings.

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 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 12.0 k 0 1 1 0 14.4 k 0 1 1 1 16.8 k 1 0 0 0 19.2 k 1 0 0 1 21.6 k 1 0 1 0 24.0 k 1 0 1 1 26.4 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. If a modem rate 14.4 kbps or slower is selected, V.8 protocol should be disabled manually. **Cross reference** V.8 protocol on/off - G3 switch 03, bit2
4 to 5	Initial modem type for 9.6 k or 7.2 kbps. **Bit 5 Bit 4 Setting** 0 0 V.29 0 1 V.17 1 0 V.34 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 12.0 k 0 1 1 0 14.4 k 0 1 1 1 16.8 k 1 0 0 0 19.2 k 1 0 0 1 21.6 k 1 0 1 0 24.0 k 1 0 1 1 26.4 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 reception. Use a lower setting if high speeds pose problems during reception. If a modem rate 14.4 kbps or slower is selected, V.8 protocol should be disabled manually. **Cross reference** V.8 protocol on/off - G3 switch 03, bit2

G3 Switch 06		
No	**FUNCTION**	**COMMENTS**
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.17/V.33 0 1 0 1 V.27ter, V.29, V.17/V33, 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. If V.34 is not selected, V.8 protocol must be disabled manually. **Cross reference** V.8 protocol on/off - G3 switch 03, bit2

G3 Switch 07		
No	**FUNCTION**	**COMMENTS**
0 to 1	PSTN cable equalizer (tx mode: Internal) **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. **Note:** This setting is not effective in V.34 communications.
2 to 3	PSTN cable equalizer (rx mode: Internal) **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. **Note:** This setting is not effective in V.34 communications.
4	PSTN cable equalizer (V.8/V.17 rx mode: External) **0**: Disabled **1**: Enabled	Keep this bit at “1”.

G3 Switch 07		
No	**FUNCTION**	**COMMENTS**
5	PSTN cable equalizer (V.34 rx mode; External)	Keep this bit at “1”.
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 to 1	ISDN cable equalizer (tx mode: Internal) **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. **Note:** This setting is not effective in V.34 communications.
2 to 3	ISDN cable equalizer (rx mode: Internal) **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. **Note:** This setting is not effective in V.34 communications.
4	ISDN cable equalizer (V.8/V.17 rx mode: External) **0**: Disabled **1**: Enabled	Keep this bit at “0” in most cases.
5	ISDN cable equalizer (V.34 rx mode: External) **0**: Disabled **1**: Enabled	Keep this bit at “0” in most cases.
6-7	Not used	Do not change the settings.

G3 Switch 0A		
No	**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 interval between EOL (end-of-line) signals and the maximum interval between ECM frames from the other end. Try using a longer setting if error code 0-21 is frequent.
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	Not used	Do not change the settings.
7	DTS requirements : Germany **0:** Disabled **1:** Enabled	Change this bit manually if required.

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.
2-7	Not used	Do not change the settings.

G3 Switch 0D *		
No	**FUNCTION**	**COMMENTS**
0-1	Not used	Do not change the settings.
2 to 5	Data rate threshold during V.34 reception **Bit 5 4 3 2 Setting** 0 0 0 0 Normal 0 1 1 1 Lower by one step 1 1 1 1 Lower by two steps	The machine changes the modulation parameters in the MPh signal to lower the initial modem rate during V.34 reception. If this switch is set to "0111", the machine lowers the initial speed one step, for example, from 28,800 to 26,400 bps. This switch reduces transmission time if the machine frequently sends PPR signals during V.34 reception.
6	Not used	Do not change the settings.
7	B signal detection time for V.34 polling transmission **0:** 75 ms (default setting) **1:** 65 ms	Change this switch only when there are communication errors during V.34 polling transmission to a machine with a Panasonic modem.

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

G3 Switch 0F		
No	**FUNCTION**	**COMMENTS**
0	Alarm when an error occurred in Phase C or later **0**: Disabled **1**: Enabled	If the customer wants to hear an alarm after each error communication, change this bit to "1".
1	Alarm when the handset is off-hook at the end of communication **0**: Disabled **1**: Enabled	If the customer wants to hear an alarm if the handset is off-hook at the end of fax communication, change this bit to "1".
2-7	Not used	Do not change the settings.

4.3 NCU PARAMETERS

The following tables give the RAM addresses and the parameter calculation units that the machine uses for ringing signal detection and automatic dialing. The factory settings for each country are also given. Most of these must be changed by RAM read/write (Function 06-1), but some can be changed using NCU Parameter programming (Function 06-2); if Function 06-2 can be used, this will be indicated in the Remarks column. The RAM is programmed in hex code unless (BCD) is included in the Unit column.

Address	Function	Unit	Remarks
680400	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 06-2 (parameter 00).	
680401	Line current detection time	20 ms	Line current detection is disabled. Line current is not detected if 680401 contains FF.
680402	Line current wait time		
680403	Line current drop detect time		

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
China	26	1A
Taiwan	27	1B
Greece	33	21

Address	Function	Unit	Remarks
680404	PSTN dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680405	PSTN dial tone frequency upper limit (low byte)		
680406	PSTN dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680407	PSTN dial tone frequency lower limit (low byte)		
680408	PSTN dial tone detection time	20 ms	If 680408 contains FF(H), the machine pauses for the pause time (address 68040D / 68040E). Italy: See Note 2.
680409	PSTN dial tone reset time (LOW)		
68040A	PSTN dial tone reset time (HIGH)		
68040B	PSTN dial tone continuous tone time		
68040C	PSTN dial tone permissible drop time		
68040D	PSTN wait interval (LOW)		
68040E	PSTN wait interval (HIGH)		
68040F	PSTN ring-back tone detection time	20 ms	Detection is disabled if this contains FF.
680410	PSTN ring-back tone off detection time	20 ms	
680411	PSTN detection time for silent period after ring-back tone detected (LOW)	20 ms	
680412	PSTN detection time for silent period after ring-back tone detected (HIGH)	20 ms	
680413	PSTN busy tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680414	PSTN busy tone frequency upper limit (low byte)		
680415	PSTN busy tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680416	PSTN busy tone frequency lower limit (low byte)		
680417	PABX dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680418	PABX dial tone frequency upper limit (low byte)		
680419	PABX dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
68041A	PABX dial tone frequency lower limit (low byte)		

Address	Function	Unit	Remarks
68041B	PABX dial tone detection time	20 ms	If 68041B contains FF, the machine pauses for the pause time (680420 / 680421).
68041C	PABX dial tone reset time (LOW)		
68041D	PABX dial tone reset time (HIGH)		
68041E	PABX dial tone continuous tone time		
68041F	PABX dial tone permissible drop time		
680420	PABX wait interval (HIGH)		
680421	PABX wait interval (LOW)		
680422	PABX ringback tone detection time	20 ms	If both addresses contain FF(H), tone detection is disabled.
680423	PABX ringback tone off detection time	20 ms	
680424	PABX detection time for silent period after ringback tone detected (LOW)	20 ms	If both addresses contain FF(H), tone detection is disabled.
680425	PABX detection time for silent period after ringback tone detected (HIGH)	20 ms	
680426	PABX busy tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680427	PABX busy tone frequency upper limit (low byte)		
680428	PABX busy tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680429	PABX busy tone frequency lower limit (low byte)		
68042A	Busy tone ON time: range 1	20 ms	
68042B	Busy tone OFF time: range 1		
68042C	Busy tone ON time: range 2		
68042D	Busy tone OFF time: range 2		
68042E	Busy tone ON time: range 3		
68042F	Busy tone OFF time: range 3		
680430	Busy tone ON time: range 4		
680431	Busy tone OFF time: range 4		
680432	Busy tone continuous tone detection time		

Address	Function	Unit	Remarks
680433	Busy tone signal state time tolerance for all ranges, and number of cycles required for detection (a setting of 4 cycles means that ON-OFF-ON or OFF-ON-OFF must be detected twice). Tolerance (±) **Bit 1 0** 0 0 75% Bits 2 and 3 must always 0 1 50% be kept at 0. 1 0 25% 1 1 12.5% Bits 7, 6, 5, 4 - number of cycles required for cadence detection		
680434	International dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680435	International dial tone frequency upper limit (low byte)		
680436	International dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680437	International dial tone frequency lower limit (low byte)		
680438	International dial tone detection time	20 ms	If 680438 contains FF, the machine pauses for the pause time (68043D / 68043E). Belgium: See Note 2.
680439	International dial tone reset time (LOW)		
68043A	International dial tone reset time (HIGH)		
68043B	International dial tone continuous tone time		
68043C	International dial tone permissible drop time		
68043D	International dial wait interval (HIGH)		
68043E	International dial wait interval (LOW)		
68043F	Country dial tone upper frequency limit (HIGH)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680440	Country dial tone upper frequency limit (LOW)		
680441	Country dial tone lower frequency limit (HIGH)		If both addresses contain FF(H), tone detection is disabled.
680442	Country dial tone lower frequency limit (LOW)		

Address	Function	Unit	Remarks
680443	Country dial tone detection time	20 ms	If 680443 contains FF, the machine pauses for the pause time (680448 / 680449).
680444	Country dial tone reset time (LOW)		
680445	Country dial tone reset time (HIGH)		
680446	Country dial tone continuous tone time		
680447	Country dial tone permissible drop time		
680448	Country dial wait interval (LOW)		
680449	Country dial wait interval (HIGH)		
68044A	Time between opening or closing the DO relay and opening the OHDI relay	1 ms	See Notes 3, 6 and 8. Function 06-2 (parameter 11).
68044B	Break time for pulse dialing	1 ms	See Note 3. Function 06-2 (parameter 12).
68044C	Make time for pulse dialing	1 ms	See Note 3. Function 06-2 (parameter 13).
68044D	Time between final OHDI relay closure and DO relay opening or closing	1 ms	See Notes 3, 6 and 8. Function 06-2 (parameter 14). This parameter is only valid in Europe.
68044E	Minimum pause between dialed digits (pulse dial mode)	20 ms	See Note 3 and 8. Function 06-2 (parameter 15).
68044F	Time waited when a pause is entered at the operation panel		Function 06-2 (parameter 16). See Note 3.
680450	DTMF tone on time	1 ms	Function 06-2 (parameter 17).
680451	DTMF tone off time		Function 06-2 (parameter 18).
680452	Tone attenuation level of DTMF signals while dialing	-N x 0.5 –3.5 dBm	Function 06-2 (parameter 19). See Note 5.
680453	Tone attenuation value difference between high frequency tone and low frequency tone in DTMF signals	-dBm x 0.5	Function 06-2 (parameter 20). The setting must be less than –5dBm, and should not exceed the setting at 680452h above. See Note 5.
680454	PSTN: DTMF tone attenuation level after dialling	-N x 0.5 –3.5 dBm	Function 06-2 (parameter 21). See Note 5.

Address	Function	Unit	Remarks
680455	ISDN: DTMF tone attenuation level after dialling	-dBm x 0.5	See Note 5
680456	Not used		Do not change the settings.
680457	Time between 68044Dh (NCU parameter 14) and 68044Eh (NCU parameter 15)	1 ms	This parameter takes effect when the country code is set to France.
680458	Not used		Do not change the setting.
680459	Grounding time (ground start mode)	20 ms	The Gs relay is closed for this interval.
68045A	Break time (flash start mode)	1 ms	The OHDI relay is open for this interval.
68045B	International dial access code (High)	BCD	For a code of 100: 68045B - F1 68045C - 00
68045C	International dial access code (Low)		
68045D	PSTN access pause time	20 ms	This time is waited for each pause input after the PSTN access code. If this address contains FF[H], the pause time stored in address 68044F is used. Do not set a number more than 7 in the UK.
68045E	Progress tone detection level, and cadence detection enable flags	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 2, 0 - See Note 2.	
68045F to 680464	Not used		Do not change the settings.
680465	Long distance call prefix (HIGH)	BCD	For a code of 0: 680465 - FF 680466 - F0
680466	Long distance call prefix (LOW)	BCD	
680467 to 680471	Not used		Do not change the settings.

Service Tables

Address	Function	Unit	Remarks
680472	Acceptable ringing signal frequency: range 1, upper limit	1000/ N (Hz).	Function 06-2 (parameter 02).
680473	Acceptable ringing signal frequency: range 1, lower limit		Function 06-2 (parameter 03).
680474	Acceptable ringing signal frequency: range 2, upper limit		Function 06-2 (parameter 04).
680475	Acceptable ringing signal frequency: range 2, lower limit		Function 06-2 (parameter 05).
680476	Number or rings until a call is detected	1	Function 06-2 (parameter 06). The setting must not be zero.
680477	Minimum required length of the first ring	20 ms	See Note 4. Function 06-2 (parameter 07).
680478	Minimum required length of the second and subsequent rings	20 ms	Function 06-2 (parameter 06-2).
680479	Ringing signal detection reset time (LOW)	20 ms	Function 06-2 (parameter 09).
68047A	Ringing signal detection reset time (HIGH)		Function 06-2 (parameter 10).
68047B to 680480	Not used		Do not change the settings.
680481	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
680482	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		
680483 to 6804A0	Not used		Do not change the settings.

Address	Function	Unit	Remarks
6804A1	Acceptable CED detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6804A2	Acceptable CED detection frequency upper limit (low byte)		
6804A3	Acceptable CED detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6804A4	Acceptable CED detection frequency lower limit (low byte)		
6804A5	CED detection time	20 ms ± 20 ms	Factory setting: 200 ms
6804A6	Acceptable CNG detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6804A7	Acceptable CNG detection frequency upper limit (low byte)		
6804A8	Acceptable CNG detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6804A9	Acceptable CNG detection frequency lower limit (low byte)		
6804AA	Not used		Do not change the setting.
6804AB	CNG on time	20 ms	Factory setting: 500 ms
6804AC	CNG off time	20 ms	Factory setting: 200 ms
6804AD	Number of CNG cycles required for detection		The data is coded in the same way as address 680433.
6804AE	Not used		Do not change the settings.
6804AF	Acceptable AI short protocol tone (800Hz) detection frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
6804B0	Acceptable AI short protocol tone (800Hz) detection frequency upper limit (low byte)		
6804B1	Acceptable AI short protocol tone (800Hz) detection frequency lower limit (high byte)	Hz(BCD)	If both addresses contain FF(H), tone detection is disabled.
6804B2	Acceptable AI short protocol tone (800Hz) detection frequency lower limit (low byte)		
6804B3	Detection time for 800 Hz AI short protocol tone	20 ms	Factory setting: 360 ms
6804B4	PSTN: Tx level from the modem	-N – 3 dBm	Function 06-2 (parameter 01).
6804B5	PSTN: 1100 Hz tone transmission level	- N 6804B4 - 0.5N 6804B5 –3.5 (dB) See Note 7.	
6804B6	PSTN: 2100 Hz tone transmission level	- N6804B4 - 0.5N 6804B6 –3 (dB) See Note 7.	
6804B7	PABX: Tx level from the modem	- dBm	

Service Tables

Address	Function	Unit	Remarks
6804B8	PABX: 1100 Hz tone transmission level	- N 6804B7 - 0.5N 6804B8 (dB)	
6804B9	PABX: 2100 Hz tone transmission level	- N 6804B7 - 0.5N 6804B9 (dB)	
6804BA	ISDN: Tx level from the modem	- dBm	The setting must be between -12dBm and -15dBm.
6804BB	ISDN: 1100 Hz tone transmission level	- N 6804BA - 0.5N 6804BB (dB)	
6804BC	ISDN: 2100 Hz tone transmission level	- N 6804BA - 0.5N 6804BC (dB)	
6804BD	Modem turn-on level (incoming signal detection level)	-37-0.5N (dBm)	
6804BE to 6804C6	Not used		Do not change the settings.
6804C7	Bits 0 to 3 – Not used. Bit 4 – V.34 protocol dump **0:** Simple, **1:** Detailed (default) Bits 5 to 7 – Not used.		
6804C8 to 6804D9	Not used		Do not change the settings.
6804DA	T.30 T1 timer	1 s	
6804E0 bit 3	Maximum wait time for post message	**0:** 12 s **1:** 30 s	**1:** Maximum wait time for post message (EOP/EOM/MPS) can be changed to 30 s. Change this bit to “1” if communication errors occur frequently during V.17 reception.

NOTES

1. If a setting is not required, store FF in the address.
2. Italy and Belgium only

   RAM address 68045E: 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.
   680408 (if bit 0 = 1) or 680438 (if bit 2 = 1): tolerance for on or off state duration (%), and number of cycles required for detection, coded as in address 680433.
   68040B (if bit 0 = 1) or 68043B (if bit 2 = 1): on time, hex code (unit = 20 ms)
   68040C (if bit 0 = 1) or 68043C (if bit 2 = 1): off time, hex code (unit = 20 ms)
3. Pulse dial parameters (addresses 68044A to 68044F) 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 $N_{680452/680454}$–3.5 dBm
   – 0.5 x N_{680455} dBm
   Low frequency tone: – 0.5 x ($N_{680452/680454}$ + N_{680453}) –3.5 dBm
   – 0.5 x (N_{680455} + N_{680453}) dBm
   NOTE: N_{680452}, for example, means the value stored in address 680452(H)
6. 68044A: Europe - Between Ds opening and Di opening.
   68044D: Europe - Between Ds closing and Di closing.
7. Tone signals which frequency is lower than 1500Hz (e.g., 800Hz tone for AI short protocol) refer to the setting at 6804B5h. Tones which frequency is higher than 1500Hz refer to the setting at 6804B6h.
8. 68044A, 68044D, 68044E: The actual inter-digit pause (pulse dial mode) is the sum of the period specified by the RAM addresses 68044A, 68044D, and 68044E.

4.4 DEDICATED TRANSMISSION PARAMETERS

Each Quick Dial Key and Speed Dial Code has eight 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 eight bytes will be described.

4.4.1 PROGRAMMING PROCEDURE

1. Make sure the machine is in "Facsimile" mode. Press "User Tools" key then choose "Fax".
2. Press 1, then either choose "Registering Quick Dial" or "Registering Speed Dial".
   Example: Change the Parameters in Quick Dial 10.
3. Press Quick Dial key 10.
   NOTE: The selected Quick or Speed Dial must be programmed beforehand.
4. When the programmed dial number is displayed, press S - V - C using Quick Dial keys, then press "Start".
5. 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
6. To scroll through the parameter bytes, either:
   Select the next byte: press "↓ Switch"
   or
   Select the previous byte: press "↑ Switch" until the correct byte is displayed.
   Then go back to step 5.
7. After the setting is changed, press OK.
8. To finish, press "User Tools".

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:** 0 to 120 s (00h to 78h) FFh - The local NCU parameter factory setting is used. Do not program a value between 79h and FEh.

Switch 02		
No	**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 1 1 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. If the setting is “Disabled”, the 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. If the setting is “Disabled”, the bit switch setting is used.

Switch 03		
No	**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 1 1 1 1 Disabled 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. For the settings 14.4 or kbps slower, Switch 04 bit 4 must be changed to 0. **Note:** Do not use settings other than listed on the left. If the setting is “Disabled”, the bit switch setting is used.
4-5	Not used	Do not change the settings.
6	AI short protocol **0:** Off **1:** Disabled	Refer to Appendix B in the Group 3 Facsimile Manual for details about AI Short Protocol. If the setting is “Disabled”, the bit switch setting is used.
7	Not used	Do not change the settings.

Switch 04		
No	**FUNCTION**	**COMMENTS**
0 1	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. If the setting is “Disabled”, the bit switch setting is used.
2 to 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. If the setting is “Disabled”, the bit switch setting is used.

Switch 04		
No	**FUNCTION**	**COMMENTS**
4	V.8 protocol **0**: Off **1**: Disabled	If transmissions to a specific destination always end at a lower modem rate (14,400 bps or lower), disable V.8 protocol so as not to use V.34 protocol. **0:** V.34 communication will not be possible. If the setting is “Disabled”, the bit switch setting is used.
5	Compression modes available in transmit mode **0:** MH only **1:** Disabled	This bit determines the capabilities that are informed to the other terminal during transmission. If the setting is “Disabled”, the bit switch setting is used.
6 **7**	ECM during transmission **Bit 7 Bit 6 Setting** 0 0 Off 0 1 On 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 (0, 0) setting. Note that V.8/V.34 protocol and JBIG compression are automatically disabled if ECM is disabled. If the setting is “Disabled”, the bit switch setting is used.

Switch 05 - Not used (do not change the settings)
Switch 06 - Not used (do not change the settings)

Switch 07 - Optional ISDN G4 kit required		
No	**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	If the setting is “Disabled”, the current setting of G4 parameter switch 2 (bits 0 and 1) is used.
4-7	Not used	Do not change the settings.

Switch 08 - Optional ISDN G4 kit required		
No	**FUNCTION**	**COMMENTS**
0 **to** **3**	Link modulus **Bits 3 2 1 0 Setting** 0 0 0 0 Modulo 8 0 0 0 1 Modulo 128 1 1 1 1 Disabled	If the setting is “Disabled”, the current setting of G4 parameter switch 3 (bit 0) is used.
4-7	Not used	Do not change the settings.

Switch 09 - Optional ISDN G4 kit required		
No	**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	If the setting is “Disabled”, the current setting of G4 parameter switch 6 (bit 0) is used.
4 to 7	Packet modulus **Bits 3 2 1 0 Setting** 0 0 0 0 Modulo 8 0 0 0 1 Modulo 128 1 1 1 1 Disabled	If the setting is “Disabled”, the current setting of G4 parameter switch 6 (bit 4) is used.

Switch 0A - Not used

4.5 SERVICE RAM ADDRESSES

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

680001 to 680004(H) - ROM version (Read only)
680001(H) - Revision number (BCD)
680002(H) - Year (BCD)
680003(H) - Month (BCD)
680004(H) - Day (BCD)

680006 to 680015(H) - Machine's serial number (16 digits - ASCII)

680018(H) - Total program checksum (low)
680019(H) - Total program checksum (high)

680020 to 68003F(H) - System bit switches
680040 to 68004F(H) - Scanner bit switches
680050 to 68005F(H) - Printer bit switches
680060 to 68007F(H) - Communication bit switches
680080 to 68008F(H) - G3 bit switches

6800C0(H) - User parameter switch 00 (SWUER_00)
Bit 0: Stamp home position 0: Disabled, 1: Enabled
Bits 1 to 3: Scanning contrast home position

Bit 3	2	1	Setting
0	0	0	Automatic
0	0	1	Position 1 (Lightest)
0	1	0	Position 2
0	1	1	Position 3 (Medium)
1	0	0	Position 4
1	0	1	Position 5 (Darkest)

Bits 4 and 5: Scanning resolution home position
(This switch is not printed on the user parameter list.)

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

Bit 6: Transmission mode home position
(This switch is not printed on the user parameter list.)
0: Memory tx, 1: Immediate tx
Bit 7: Not used

6800C1(H) - User parameter switch 01 (SWUSR_01)
Bit 0: Label insertion home position 0: Disabled, 1: Enabled
Bit 1: ID transmission home position 0: Disabled, 1: Enabled
Bit 2: Automatic reduction (tx) home position 0: Disabled, 1: Enabled
Bits 3 and 4: Scanning mode LED home position
(This switch is not printed on the user parameter list.)

Bit 4	3	Setting
0	0	Text
0	1	Text/ Photo
1	0	Photo
1	1	Special Original (See the note below)

Note: The "Special Original" setting is not explained in the Operator's Manual, because it can be selected only if System Switch 19 – bit 7 is set to "1".

Bit 5: TTI print home position 0: Disabled, 1: Enabled
Bit 6: TTI used for broadcasting; the TTI selected with this switch is used for all destinations during broadcasting.
0: TTI_1, **1:** TTI_2
(This switch is not printed on the user parameter list.)

Note: System Switch 11 bit 3 must be set to "1" to enable this switch.

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

6800C2(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
(This switch is not printed on the user parameter list.)
0: Disabled, 1: Enabled
Bit 2: Reception time printing
(This switch is not printed on the user parameter list.)
0: Disabled, 1: Enabled
Bit 3: TSI print on received messages 0: Disabled, 1: Enabled
Bit 4: Checkered mark printing
(This switch is not printed on the user parameter list.)
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

6800C3(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 0: Off, 1: On

6800C4(H) - User parameter switch 04 (SWUSR_04: Automatic report printout)
Bit 0: Automatic confidential reception report output 0: Off, 1: On
Bits 1 to 6: Not used
Bit 7: Inclusion of a sample image on reports 0: Off, 1: On

6800C5(H) - User parameter switch 05 (SWUSR_05)
Bit 0: Substitute reception when the base copier is in an SC condition
0: Enabled, 1: Disabled
Bits 1 and 2: Condition for substitute rx when the machine cannot print messages (Paper end, toner end, jam, and during night mode)

Bit 2	1	Setting
0	0	The machine receives all the fax messages.
0	1	The machine receives the fax messages with RTI or CSI.
1	0	The machine receives the fax messages with the same ID code.
1	1	The machine does not receive anything.

Bit 3: Not used
Bit 4: Restricted Access using personal codes 0: Off, 1: On
Bit 5: Just size printing 0: Off, 1: On
Bit 6: Allow document with mixed paper sizes in the ADF 0: No, 1: Yes
Bit 7: Add paper display when a cassette is empty 0: Off, 1: On

6800C6(H) - User parameter switch 06 (SWUSR_06)
Bit 0: Not used
Bit 1: G3/G4 LED home position 0: G3, 1: G4
Bits 2 and 3: Not used
Bit 4: Quick dial label print format
0: Suitable for white paper, 1: Suitable for transparent paper
Bit 5: Not used
Bit 6: Scan sequence in Book transmission
0: Left page then right page, 1: Right page then left page
Bit 7: Not used

6800C7(H) - User parameter switch 07 (SWUSR_07)
Bits 0 and 1: Not used
Bit 2: Parallel memory transmission 0: Off, 1: On
Bits 3 to 7: Not used

6800C8(H) - User parameter switch 08 (SWUSR_08)
Bits 0 and 1: Not used.
Bit 2: Authorized reception
0: Only faxes from senders whose RTIs/CSIs are specified for this feature are accepted.
1: Only faxes from senders whose RTIs/CSIs are not specified for this feature are accepted.
Bits 3 to 7: Not used.

6800C9(H) - User parameter switch 09 (SWUSR_09)
Bits 0 to 7: Not used

6800CA(H) - User parameter switch 10 (SWUSR_0A)
Bit 0: Not used
Bit 1: 2 into 1 0: Off, 1: On
Bit 2: Not used
Bit 3: Page reduction 0: Off, 1: On
Bits 4 to 7: Not used

6800CB(H) - User parameter switch 11 (SWUSR_0B)
Bit 0: Not used
Bit 1: Method of transmitting numbers after the “Tone” mark over an ISDN line
0: UUI, 1: Tone
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

6800CC(H) - User parameter switch 12 (SWUSR_0C)
Bits 0 to 7: Not used

6800CD(H) - **User parameter switch 13 (SWUSR_0D)**
(This switch is not printed on the user parameter list.)
Bits 0 and 1: PSTN access method from behind a PABX

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

Bits 2 to 4: Not used
Bit 5: Action when receiving a SETUP signal containing no called number and the G4 subscriber number was programmed in this machine.
0: Respond to the call, 1: Do not respond to the call
Bit 6: Action when the received HLC (Higher Level Capabilities) is Tel or BC (Bearer Capabilities) is Speech.
0: Do not respond to the call, 1: Respond to the call
This switch determines which information transfer capabilities the machine can accept when receiving a call.
1: When the received HLC is Tel (digital telephone) or BC is Speech (voice), the machine responds to the call. In short, the machine receives every call.
This switch is useful for communication problems when the other terminal informs the above transfer capabilities although it is a fax machine.
Bit 7: Not used

6800CE(H) - User parameter switch 14 (SWUSR_0E)
Bit 0: Message printout while the machine is in Night Timer mode 0: On, 1: Off
Bit 1: Not used
Bit 2: Batch transmission 0: Off, 1: On
Bit 3: Fax mode settings, such as resolution, before a mode key (Copy/Fax/Printer /Scanner) is pressed
0: Not cleared, 1: Cleared
Bits 4 to 6: Not used
Bit 7: Manual service call (sends the system parameter list to the service station)
0: Off, 1: On

6800CF(H) - User parameter switch 15 (SWUSR_0F)
Bits 0, 1 and 2: Cassette for fax printout

Bit 2	1	0	Setting
0	0	1	1st paper feed station
0	1	0	2nd paper feed station
0	1	1	3rd paper feed station
1	0	0	4th paper feed station
1	0	1	LCT

Other settings Not used
Bits 3 and 4: Not used
Bit 5: Using the cassette specified by bits 0, 1 and 2 above only 0: On, 1: Off
Bits 6 and 7: Not used

6800D0(H) – User parameter switch 16 (SWUSR_10)
(This switch is not printed on the user parameter list.)
Bits 0 and 1: Not used
Bit 2: Paper size selection priority for an A4 size fax message when A4/LT size paper is not available.
0: A3 has priority, 1: B4 has priority
Bits 3 to 7: Not used

6800D1(H) – User parameter switch 17 (SWUSR_11)
Bits 0 and 1: Not used
Bit 2: Inclusion of the “Add” button when a sequence of Quick/Speed dials is selected for broadcasting
0:Not needed, 1: Needed
Bits 3 to 7: Not used

6800D2(H) - User parameter switch 18 (SWUSR_12)
Bit 0: TTI date 0: Off, 1: On
Bit 1: TTI sender 0: Off, 1: On
Bit 2: TTI file number 0: Off, 1: On
Bit 3: TTI page number 0: Off, 1: On
Bit 4 to 7: Not used

6800D3(H) - User parameter switch 19 (SWUSR_13)

Bit 0: Offset sort function for the fax (only using the shift tray on the 1,000 sheet finisher)
0: Disabled, 1: Enabled

Bit 1: Journal format
0: The Journal is separated into transmissions and receptions
1: The Journal is separated into PSTN and G4 (ISDN) communications

Bit 2: Action when the paper cassette that was selected by the specified cassette selection feature becomes empty.
(This switch is not printed on the user parameter list.)
0: The machine will not print any received files until paper is added.
1: The machine will use other cassettes to print received files that are not specified by this feature.

Bit 3: 90° image rotation during B5 portrait Tx
(This switch is not printed on the user parameter list.)
0: Off, 1: On

Bit 4: Reduction of sample images on reports to 50% in the main scan and sub-scan directions. (This switch is not printed on the user parameter list.)
0: Technician adjustment (printer switch 0E bits 3 and 4), 1: 50% reduction

Bit 5: Use of A5 size paper for reports
(This switch is not printed on the user parameter list.)
0: Off, 1: On

Bits 6 and 7: Line type selection for printing out to the one-bin tray (messages coming in on other lines do not go to the one-bin tray)

Bit 7	Bit 6	Setting
0	0	Disabled
0	1	PSTN
1	0	Not used
1	1	ISDN

6800D4(H) - User parameter switch 20 (SWUSR_14)

Bit 0: PC transmission mode
0: Direct Tx, 1: Memory Tx
Bit 1: Addition of fax TTI during PC memory transmission
0: Disabled, 1: Enabled
Bit 2: Checkered mark on printouts during PC printing
0: Disabled, 1: Enabled
Bit 3 and 4: Not used
Bit 5: Communication port for PC memory transmission
(This switch is not printed on the user parameter list.)
0: PSTN (the line used depends on bit 4), 1: ISDN G4
Bits 6 and 7: Buffer threshold for PC direct transmission
Keep this bit at “0,0” in most cases.
(This switch is not printed on the user parameter list.)

Bit 7	Bit 6	setting
0	0	Minimum (default)
0	1	:
1	0	:
1	1	Maximum

6800D5(H) - User parameter switch 21 (SWUSR_15)
Bit 0: PC fax reception 0: Disabled, 1: Enabled
Bits 1 and 2: PC fax reception mode

Bit 2	Bit 1	Setting
0	0	Direct rx
0	1	Memory rx
1	0	Not used
1	1	Memory rx and print on the fax machine

Bit 3: Automatic reduction when the machine transfers data to the PC from the machine. This switch is effective only for PC memory rx.
(This switch is not printed on the user parameter list.)
0: Enabled, 1: Disabled
Bits 4 and 5: Scan density for the “Light” setting.
(This switch is effective only when a PC scanner application with the CMF-TWAIN driver is used.)

Bit 5	Bit 4	Setting
0	0	Level 1 (default)
0	1	Level 1
1	0	Level 2
Other settings		Level1

Bits 6 and 7: Scan density for the “Dark” setting.
(This switch is effective only when a PC scanner application with the CMF-TWAIN driver is used.)

Bit 7	Bit 6	Setting
0	0	Level 5 (default)
0	1	Level 4
1	0	Level 5
Other settings		Level 5

6800D6(H) - User parameter switch 22 (SWUSR_16)
Bits 0 to 7: Not used

6800D7(H) – User Parameter switch 23 (SWUSR_17)
Bits 0 to 7: Not used

6800D8(H) - User parameter switch 24 (SWUSR_18)
Bits 0 and 1: File retention time (Cross reference: System switch 02 bit 4)

Bit 1	0	Setting
0	0	File retention impossible
0	1	24 hours
1	0	File retention impossible
1	1	72 hours

Bits 2 to 7: Not used

6800D9(H) - User parameter switch 25 (SWUSR_19)
Bits 0 to 3: Not used
Bit 4: RDS operation
0: Not acceptable
1: Acceptable for the limit specified by system switch 03
Note: This bit is only effective when RDS operation can be selected by the user (see system switch 02).
Bits 5 and 6: Not used
Bit 7: Daylight saving time 0: Disabled, 1: Enabled

6800DA(H) - User parameter switch 26 (SWUSR_1A)
(This switch is not printed on the user parameter list.)
Bit 0: Not used
Bit 1: PSTN Dialing type 0: Pulse dialing (10 pps), 1: Tone (DTMF) dialing
Bits 2 to 7: Not used

6800DB(H) - User parameter switch 27 (SWUSR_1B)
PSTN-1 access code from behind a PABX
(This switch is not printed on the user parameter list.)

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

6800DC(H) to 6800DF - User parameter switch 28 to 31 (SWUSR_1C to 1F)
Bits 0 to 7: Not used

6800E0 to 6800EF(H) - G4 Parameter Switches
(Refer to the ISDN G4 option service manual for details.)

6800F0 to 68010F(H) - G4 Internal Switches
(Refer to the ISDN G4 option service manual for details.)

680110 to 68011E(H) - Service station's fax number (Service mode 09)
See 68027C(H) for the type of network used for this number**.**

68011F to 68012D(H) - Own fax PABX extension number
68012E to 68013C(H) - Own fax number (PSTN)
68013D to 68014B(H) - Own fax number (ISDN G4)
68014C to 68015A(H) - The first subscriber number (ISDN G3)
68015B to 680169(H) - The second subscriber number (ISDN G3)
68016A to 680178(H) - The first subscriber number (ISDN G4)
680179 to 680187(H) - The second subscriber number (ISDN G4)

680188 to 68019B(H) - PSTN RTI (Max. 20 characters - ASCII) - See the following note.
6801B0 to 6801EF(H) - TTI 1 (Max. 64 characters - ASCII) - See the following note.
6801F0 to 680229(H) - TTI 2 (Max. 64 characters - ASCII) - See the following note.
680230 to 680243(H) - PSTN CSI (Max. 20 characters - ASCII)
680258 to 68026B(H) - ISDN G3 CSI (Max. 20 characters - ASCII)
68026C(H) - Number of PSTN CSI characters (Hex)
68026E(H) - Number of ISDN G3 CSI characters (Hex)

NOTE: If the number of characters is less than the maximum (20 for RTI, 64 for TTI), add a stop code (FF[H]) after the last character.

680270(H) - ID code (low - Hex)
680271(H) - ID code (high - Hex)

680272(H) - Confidential ID (low - BCD)
680273(H) - Confidential ID (high - BCD)

68027C(H) - Network type used for the service station number
0 0 (H) - PSTN
0 D (H) - G4

680280 to 680287(H) - Last power off time (Read only)
680280(H) - 01(H) - 24-hour clock, 00(H) - 12-hour clock (AM), 02(H) - 12-hour clock (PM)
680281(H) - Year (BCD)
680282(H) - Month (BCD)
680283(H) - Day (BCD)
680284(H) - Hour
680285(H) - Minute
680286(H) - Second
680287(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ... , 06: Sunday

680294(H) - Optional equipment (Read only – Do not change the settings)
Bits 0 to 2: EXMEM board 0: Not installed, 1: Installed
Bit 3: Not used
Bit 4: EXFUNC board 0: Not installed, 1: Installed
Bit 5 to 7: Not used

680295(H) - Optional equipment (Read only – Do not change the settings)
Bit 0: EXFUNC board 0: Not installed, 1: Installed
Bit 1 to 4: Not used
Bit 5: Not used 0: Not installed, 1: Installed
Bit 6: ISDN unit 0: Not installed, 1: Installed
Bit 7: PC Fax Expander unit 0: Not installed, 1: Installed

680296(H) - Optional equipment (Read only – Do not change the settings)
Bit 0: Paper tray unit 0: Not installed, 1: Installed
Bit 1: Bypass Tray 0: Not installed, 1: Installed
Bit 2: LCT 0: Not installed, 1: Installed
Bit 3: Duplex unit 0: Not installed, 1: Installed
Bit 4: 1-bin sorter 0: Not installed, 1: Installed
Bit 5: Finisher 0: Not installed, 1: Installed
Bit 6: Bridge unit 0: Not installed, 1: Installed
Bit 7: Not used

680297(H) - Optional equipment (Read only – Do not change the settings)
Bit 0: Not used
Bit 1: Document feeder 0: Not installed, 1: Installed
Bit 2: Not used
Bit 3: Stamp unit
Bit 4: Copier Feature Expander
Bits 5 to 7: Not used

6802CC to 6802E3(H) - G4 terminal ID (ASCII - Max. 24 characters)
6802FD to 680300(H) - ISDN G3 sub-address
680301 to 680304(H) - ISDN G4 sub-address
680305 to 680309(H) - CiG4 board ROM information (Read only)
680305(H) - Suffix
680306(H) - Version (BCD)
680307(H) - Year (BCD)
680308(H) - Month (BCD)
680309(H) - Day (BCD)

680314 to 680319(H) - Modem ROM version (Read only)
680314(H) - Part number (low)
680315(H) - Part number (high)
680316(H) - Control (low)
680317(H) - Control (high)
680318(H) - DSP (low)
680319(H) - DSP (high)

68037E(H) - Time for economy transmission (hour in 24h clock format - BCD)
68037F(H) - Time for economy transmission (minute - BCD)

68039A(H) - Transmission monitor volume 00 - 07(H)
68039B(H) - Reception monitor volume 00 - 07(H)
68039C(H) - On-hook monitor volume 00 - 07(H)
68039D(H) - Dialing monitor volume 00 - 07(H)
68039E(H) - Buzzer volume 00 - 07(H)

6803A1 to 6803A5(H) - Periodic service call parameters

Parameters		Address (H)
Call interval: 01 through 15 month(s) (BCD) 00: Periodic service call disabled		**6803A1**
Date and time of the next call	Day: 01 through 31 (BCD)	**6803A4**
	Hour: 01 through 24 (BCD)	**6803A5**

6803AB to 6803AD(H) - Effective term of automatic service calls

Parameters	Address (H)
Year: last two digits of the year (BCD)	**6803AB**
Month: 01 through 12 (BCD)	**6803AC**
Day: 01 through 31 (BCD)	**6803AD**

680400 to 6804E0(H) - NCU parameters (Refer to section 4.3 for details)

680DC8 to 680DEF(H) - SC codes NOT for automatic service call

If the fax unit receives a copier engine SC code other than those programmed in these addresses, the fax unit sends an automatic service call report to the programmed service station.
Six SC codes have already been programmed at default, as shown in the table below. Fourteen more SC codes can be programmed, if required (if an address contains FF(H), a code is not programmed in it).
Program a SC code in four-digit BCD format as shown in the example below.
Example 1: SC code "329"
Address (High) - 03 (BCD)
Address (Low) - 29 (BCD)

Wildcard characters "a" or "A" can be used to specify a series of SC codes.
Example 2: SC code "900 to 999"
Address (High) – 09 (BCD)
Address (Low) – aa or AA (Hex)

Example 3: SC code "330 to 339"
Address (High) – 03 (BCD)
Address (Low) – 3a or 3A (Hex)

- Default settings -

High Address (H)	Data (BCD)	Low Address (L)	Data (BCD)	SC code
680DC8	03	680DC9	29	329
680DCA	03	680DCB	61	361
680DCC	03	680DCD	65	365
680DCE	05	680DCF	48	548
680DD0	06	680DD1	30	630
680DD2	09	680DD3	AA	900 to 999
680DD4 to 680DEE	FF(H)	680DD5 to 680DEF	FF(H)	Not Programmed

68849C to 688B9B(H) - Dedicated tx parameters for Quick Dial 01 - 56.
There are 32 bytes for each Quick Dial. Only the 23rd to 32nd bytes are used.
6884B2 to 6884BB(H) - Dedicated tx parameters for Quick 01
6884D2 to 6884DB(H) - Dedicated tx parameters for Quick 02
6884F2 to 6884FB(H) - Dedicated tx parameters for Quick 03
⇩
688B92 to 688B9B(H) - Dedicated tx parameters for Quick 56

688B9C to 68981B(H) - Dedicated tx parameters for Speed Dial #00 - #99.
There are 32 bytes for each Speed Dial. Only the 23rd to 32nd bytes are used.
688BB2 to 688BBB(H) - Dedicated tx parameters for Speed #00
688BD2 to 688BDB(H) - Dedicated tx parameters for Speed #01
688BF2 to 688BFB(H) - Dedicated tx parameters for Speed #02
⇩
689812 to 68981B(H) - Dedicated tx parameters for Speed #99

68E8E4 to 68E8E5(H) - Line type change (refer to section 2 for more details)
68E8E4(H) - Current line type setting
68E8E5(H) - New line type settings

69CA00 to 69CBFF(H) - Latest 64 error codes (Read only)

One error record consists of 8 bytes of data.

First error record start address – 69CA00(H)
Second error record start address – 69CA08(H)
Third error record start address – 69CA10(H)
:
64th error record start address – 69CBF8(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 (BCD) [If the error code is 1-23, 23 is stored here.]
6th byte - Error code – high (BCD) [If the error code is 1-23, 01 is stored here.]
7th byte - Communication line (Hex)
PSTN: 00(H), PABX: 02(H), ISDN G3: 0C(H), ISDN G4: 0D(H)
8th byte - Not used

69E134 to 69E813(H) - Latest 20 error communication records (Read only)

One error communication record consists of 88 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 6th bytes - Date and time when the communication started
3rd byte - Month (BCD)
4th byte - Day (BCD)
5th byte - Hour (BCD)
6th byte - Minute (BCD)

7th and 8th bytes - Communication time
7th byte - Minutes (BCD)
8th byte - Seconds (BCD)

9th and 10th bytes - Number of pages transmitted or received
9th byte - Low byte (Hex)
10th byte - High byte (Hex)

11th and 12th bytes - Personal code or number of total/burst error lines
If bit 4 of the 1st byte is 0:
11th byte - Personal code (low - BCD)
12th byte - Personal code (high - BCD)
If bit 4 of the 1st byte is 1:
11th byte - Number of total error lines (Hex)
12th byte - Number of burst error lines (Hex)

13th byte - File number (low - Hex)
14th byte - File number (high - Hex)

15th and 16th bytes - Rx level or a measure of the error rate
If bit 5 of the 1st byte is 0:
15th byte - Rx level (low - Hex)
16th byte - Rx level (high - Hex)
If bit 4 of the 1st byte is 1:
15th byte - Measure of error rate (low - Hex)
16th byte - Measure of error rate (high - Hex)

17th byte - Final modem rate
Bits 0 to 3: Final modem speed

$$\begin{pmatrix} Bit0 \\ Bit1 \\ Bit2 \\ Bit3 \end{pmatrix} = \begin{pmatrix} 1 \\ 0 \\ 0 \\ 0 \end{pmatrix} : 2.4\,\text{k} \begin{pmatrix} 0 \\ 1 \\ 0 \\ 0 \end{pmatrix} : 4.8\,\text{k} \begin{pmatrix} 1 \\ 1 \\ 0 \\ 0 \end{pmatrix} : 7.2\,\text{k} \begin{pmatrix} 0 \\ 0 \\ 1 \\ 0 \end{pmatrix} : 9.6\,\text{k} \begin{pmatrix} 1 \\ 0 \\ 1 \\ 0 \end{pmatrix} : 12.0\,\text{k} \begin{pmatrix} 0 \\ 1 \\ 1 \\ 0 \end{pmatrix} : 14.4\,\text{k} \begin{pmatrix} 1 \\ 1 \\ 1 \\ 0 \end{pmatrix} : 16.8\,\text{k}$$

$$\begin{pmatrix} Bit0 \\ Bit1 \\ Bit2 \\ Bit3 \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 1 \end{pmatrix} : 19.2\,\text{k} \begin{pmatrix} 1 \\ 0 \\ 0 \\ 1 \end{pmatrix} : 21.6\,\text{k} \begin{pmatrix} 0 \\ 1 \\ 0 \\ 1 \end{pmatrix} : 24.0\,\text{k} \begin{pmatrix} 1 \\ 1 \\ 0 \\ 1 \end{pmatrix} : 26.4\,\text{k} \begin{pmatrix} 0 \\ 0 \\ 1 \\ 1 \end{pmatrix} : 28.8\,\text{k} \begin{pmatrix} 1 \\ 0 \\ 1 \\ 1 \end{pmatrix} : 31.2\,\text{k} \begin{pmatrix} 0 \\ 1 \\ 1 \\ 1 \end{pmatrix} : 33.6\,\text{k}$$

Bits 4 to 6: Final modem type

$$\begin{pmatrix} Bit4 \\ Bit5 \\ Bit6 \\ Bit7 \end{pmatrix} = \begin{pmatrix} 1 \\ 0 \\ 0 \\ 0 \end{pmatrix} : \text{V.27ter} \begin{pmatrix} 0 \\ 1 \\ 0 \\ 0 \end{pmatrix} : \text{V.29} \begin{pmatrix} 1 \\ 1 \\ 0 \\ 0 \end{pmatrix} : \text{V.33} \begin{pmatrix} 0 \\ 0 \\ 1 \\ 0 \end{pmatrix} : \text{V.17 (Long)} \begin{pmatrix} 1 \\ 0 \\ 1 \\ 0 \end{pmatrix} : \text{V.17 (Short)}$$

$$\begin{pmatrix} Bit4 \\ Bit5 \\ Bit6 \\ Bit7 \end{pmatrix} = \begin{pmatrix} 1 \\ 0 \\ 0 \\ 1 \end{pmatrix} : \underset{2400\,baud}{V.34} \begin{pmatrix} 0 \\ 1 \\ 0 \\ 1 \end{pmatrix} : \underset{3000\,baud}{V.34} \begin{pmatrix} 1 \\ 1 \\ 0 \\ 1 \end{pmatrix} : \underset{3200\,baud}{V.34} \begin{pmatrix} 0 \\ 0 \\ 1 \\ 1 \end{pmatrix} : \underset{2800\,baud}{V.34} \begin{pmatrix} 1 \\ 0 \\ 1 \\ 1 \end{pmatrix} : \underset{3429\,baud}{V.34}$$

18th to 20th byte - Not used

21st to 44th byte - Remote terminal's ID (RTI, TSI or CSI) (ASCII)

45th byte - Communication mode #1
Bits 0 - 1: Network

$$\begin{pmatrix} Bit0 \\ Bit1 \end{pmatrix} = \begin{pmatrix} 1 \\ 0 \end{pmatrix} : \mathrm{PSTN} \begin{pmatrix} 0 \\ 1 \end{pmatrix} : \mathrm{ISDN}$$

Bit 2: Communication protocol 0: G3, 1: G4
Bit 3: ECM 0: Off, 1: On
Bits 4 to 7: Communication mode used

$$\begin{pmatrix} Bit4 \\ Bit5 \\ Bit6 \\ Bit7 \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} : \mathrm{Normal} \begin{pmatrix} 1 \\ 0 \\ 0 \\ 0 \end{pmatrix} : \begin{pmatrix} 1 \\ 1 \\ 0 \\ 0 \end{pmatrix} : \mathrm{Transfer}$$

$$\begin{pmatrix} Bit4 \\ Bit5 \\ Bit6 \\ Bit7 \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} : \mathrm{Forwarding} \begin{pmatrix} 1 \\ 0 \\ 1 \\ 0 \end{pmatrix} : \mathrm{Automatic\ service\ Call}$$

46th byte - Communication mode #2

Bit 0: Tx or Rx 0: Tx, 1: Rx
Bit 1: Reduction during 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
Bits 5 to 7: Not used

47th byte - Not used

48th byte - Number of errors during communication (Hex)

49th to 52nd byte - 1st error code and page number where the error occurred
- 49th byte - Page number where the error occurred (low - Hex)
- 50th byte - Page number where the error occurred (high - Hex)
- 51st byte - Error code (low - BCD)
- 52nd byte - Error code (high - BCD)

53rd to 56th byte - 2nd error code and page number where the error occurred
57th to 60th byte - 3rd error code and page number where the error occurred
61st to 64th byte - 4th error code and page number where the error occurred
65th to 68th byte - 5th error code and page number where the error occurred
69th to 72nd byte - 6th error code and page number where the error occurred
73rd to 76th byte - 7th error code and page number where the error occurred
77th to 80th byte - 8th error code and page number where the error occurred
81st to 84th byte - 9th error code and page number where the error occurred
85th to 88th byte - 10th error code and page number where the error occurred

7644F0 to 76B56F(H) - Dedicated tx parameters for Speed Dial #100 - #999, when the optional EXFUNC board is installed.
There are 32 bytes for each Speed Dial. Only the 23rd to 32nd bytes are used.

764506 to 76450F(H) - Dedicated tx parameters for Speed #100
764526 to 76452F(H) - Dedicated tx parameters for Speed #101
764546 to 76454F(H) - Dedicated tx parameters for Speed #102
⇩
76B566 to 76B56F(H) - Dedicated tx parameters for Speed #999

5. PREVENTIVE MAINTENANCE

5.1 SPECIAL TOOLS AND LUBRICANTS

- Flash/SRAM data copy tool (P/N: A1939353)
- Flash Memory Card – 4MB (P/N: A2309352)
- Card Case (P/N: A2309351)

5.2 PM TABLE

No PM necessary for the fax option.

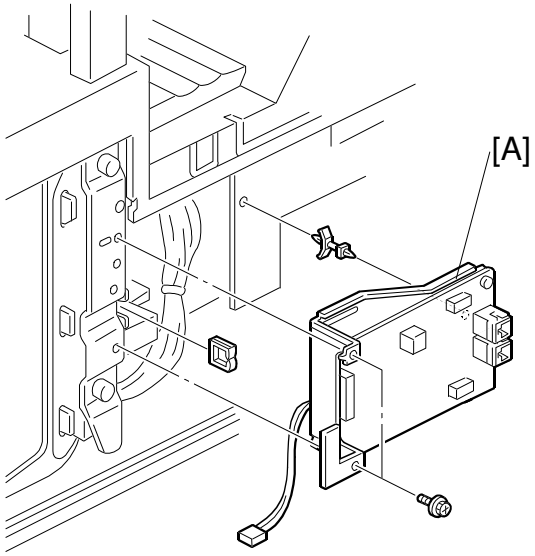
6. REMOVAL AND REPLACEMENT

6.1 PRECAUTION

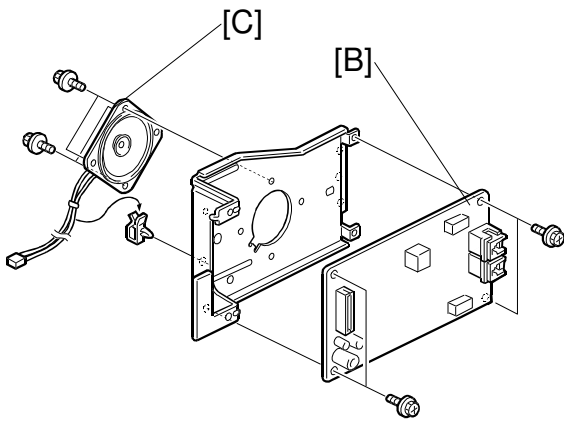
⚠CAUTION
Before starting disassembly, be sure to print all message files in the SAF memory. Then, turn off the main power switch and disconnect the power cord and telephone cable for safety.
Lithium Battery **The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.**

6.2 NCU AND SPEAKER

NOTE: If the machine has an optional finisher and/or a mailbox installed, remove it/them before starting the following procedure.



A874R501.WMF



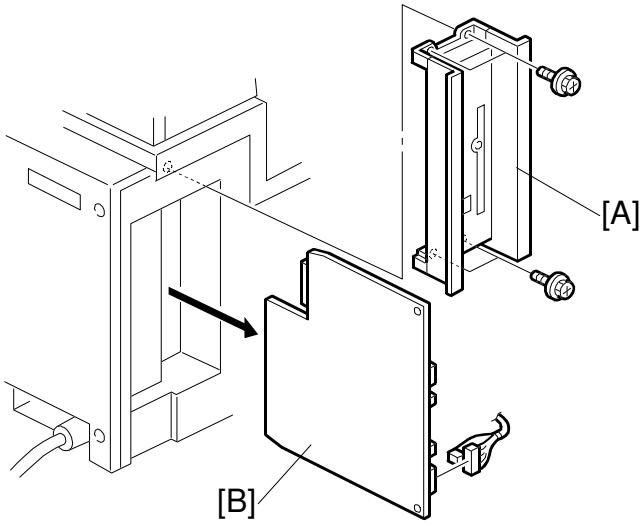
A874R502.WMF

1. Remove the rear cover and the left side cover (4 screws each).
2. Remove the NCU/speaker assembly [A] (2 screws).
3. Remove the NCU [B] (4 screws) and speaker [C] (2 screws) from the assembly.

6.3 FCU

6.3.1 REMOVAL

NOTE: If the machine has an optional finisher and/or a mailbox installed, remove it/them before starting the following procedure.



A874R503.WMF

1. Remove the rear cover and the left side cover (4 screws each).
2. Remove the FCU bracket [A] (4 screws), then the FCU [B] (2 connectors).
3. Go to one of the following procedures:
   - To restore SRAM data from the old FCU (if you do not have the latest data backup) – Go to section 6.3.2.
   - To restore SRAM data from a flash memory card backup – Go to section 6.3.3.

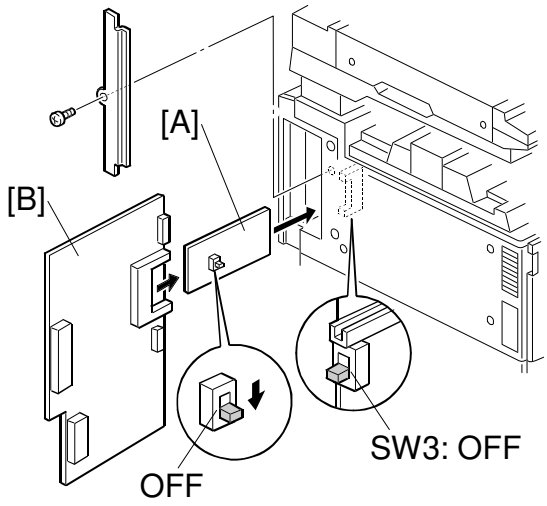
6.3.2 SRAM DATA RESTORE FROM FCU

Before restoring the SRAM data, install a new FCU and initialize the SRAM on the new FCU using the following procedure.

1. Install a new FCU in the machine (see section 6.3.1)
   NOTE: Do not install the EXFUNC and EXMEM yet, if they were present.
2. Turn on the machine. The machine displays “SC1201”.
   NOTE: The machine always displays “SC1201” the first time the FCU is installed. Please ignore it.
3. Press OK to initialize the SRAM.

Then, restore the SRAM using the following procedure.

4. Turn off the machine.
5. Connect the data copy tool [A] with the old FCU [B] to the card slot as shown. See the note below for the switch settings.

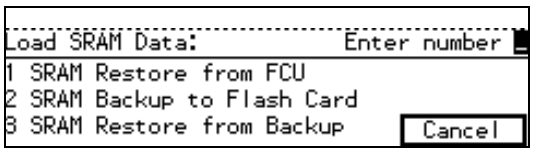


A874R506.WMF

IMPORTANT: Support the old FCU by hand from now until the end of the download procedure

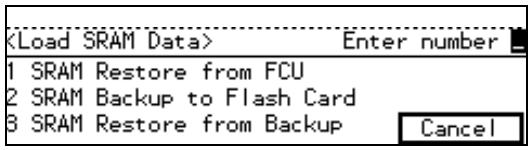
NOTE: 1) The switch on the data copy tool must be OFF.
2) SW3 below the card slot must be OFF (lower position).
3) Do not turn off the battery switch (SW1) on the old FCU.

6. Turn on the machine, and enter the fax service mode.
7. Press 1 6 then 2.



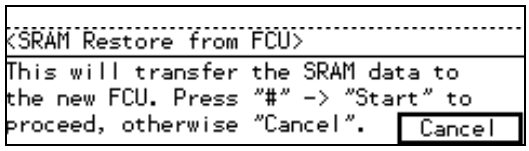
A874R511.BMP

8. Press 1.



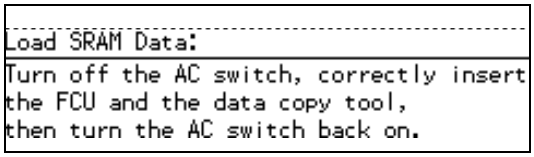
A874R512.TIF

If the switch settings are correct, the message on the right appears. Then go to the next step.



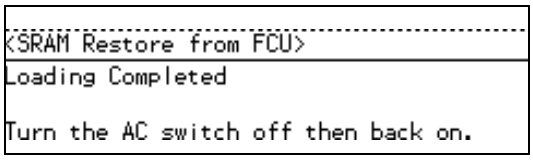
A874R513.TIF

If the one of the switch settings is wrong, or if the tool is not connected correctly, the message on the right appears. Then turn off the machine and retry the procedure.



A874R514.BMP

9. Press “#” then [◇].
   If data has been restored successfully, the message on the right appears.



A874R515.TIF

10. Turn off the main power switch then disconnect the tools.
11. Install the EXFUNC and EXMEM if they were present.
12. Turn the machine back on.
13. Print the system parameter list to check if the previous settings have been successfully recovered.

6.3.3 SRAM DATA RESTORE FROM FLASH CARD BACKUP

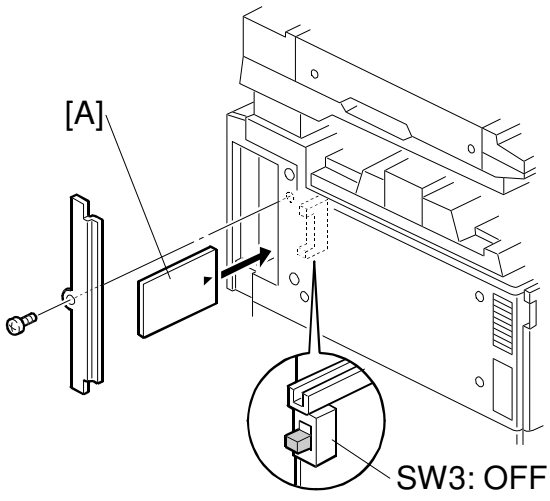
SRAM data can be copied to a flash memory card. For how to do this, refer to section 6.4.3.

Before restoring the SRAM data, install a new FCU and initialize the SRAM on the new FCU using the following procedure.

1. Install a new FCU in the machine (see section 6.3.1).
2. Turn on the machine. The machine displays “SC1201”.
   NOTE: The machine always displays “SC1201” the first time the FCU is installed. Please ignore it.
3. Press OK to initialize the SRAM.

Then, restore the SRAM using the following procedure.

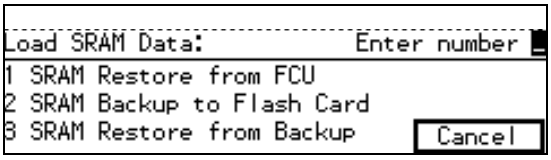
4. Turn off the machine.
   NOTE: If the EXFUNC board was present; make sure that the backup of EXFUNC and FCU SRAM is available, then install the EXFUNC.
   If this backup is not available, restore the data from the old FCU. After restoring, connect the EXSAF to the new FCU.



A874R505.WMF

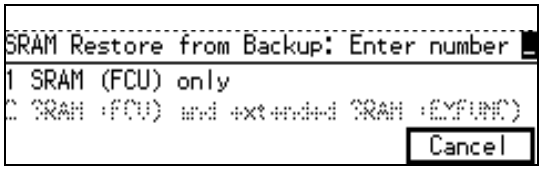
5. Connect the flash memory card [A] to the card slot as shown.
   See the note below for the switch settings.
   NOTE: 1) SW3 below the card slot must be OFF (lower position).
   2) If the switch setting is wrong, the fax function will not start up.
6. Turn on the machine, and enter the fax service mode.

7. Press [1] [6] then [2].

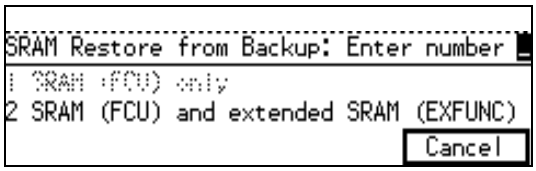


A874R511.BMP

8. Press [3].
   If the switch settings are correct, either of the messages below appears.



A874R517.BMP

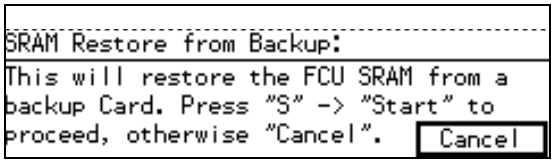


A874R516.BMP

Refer to the table below for which type of backup must be used, depending on the presence of EXFUNC.

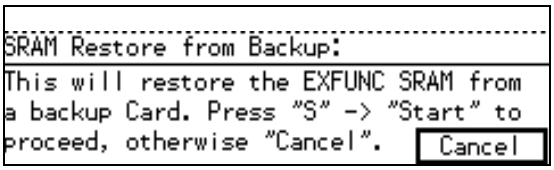
EXFUNC	Type of backup	
	FCU SRAM	FCU and EXFUNC SRAM
Not present	**OK**	**Do not use.**
Present	**Do not use.**	**OK**

9. Press either of the following:
   [1] – Standard SRAM only



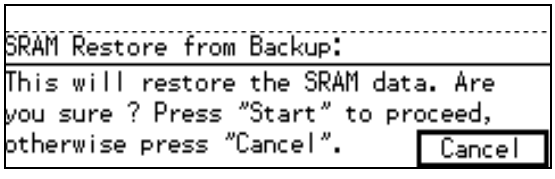
A874R518.BMP

   [2] – Standard SRAM and SRAM on the EXFUNC.



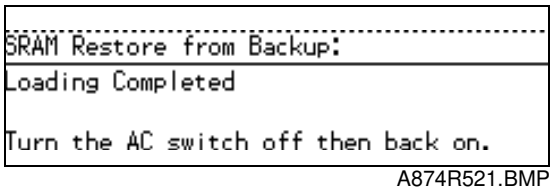
A874R519.BMP

10. Press "S" then [◇]; a confirmation message appears.



A874R520.BMP

11. Press Start to restore the SRAM.
    If data has been restored successfully, the message on the right appears.



A874R521.BMP

12. Turn off the main power switch then disconnect the card.
13. Turn the machine back on.
14. Print the system parameter list to check if the previous settings have been successfully recovered.

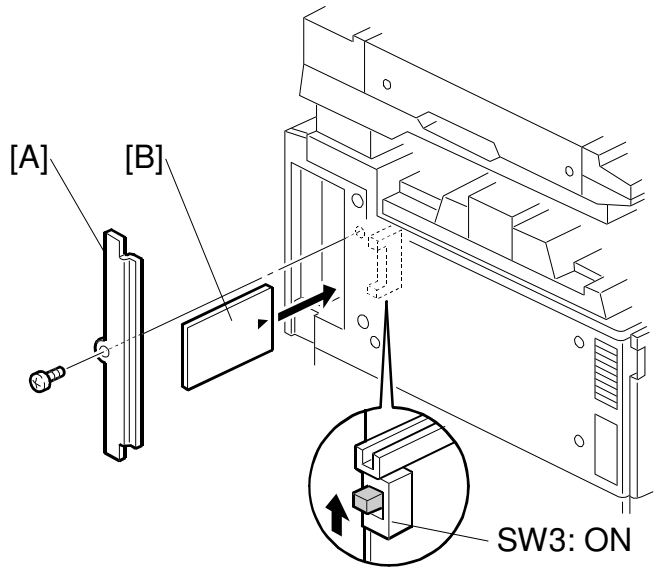
6.4 ROM UPDATE

6.4.1 FCU ROM DOWNLOAD

This function updates the FCU ROM using a flash memory card.

NOTE: The flash memory card must be programmed with FCU ROM data as explained in section 6.6.

1. Turn off the machine and remove the bracket [A].

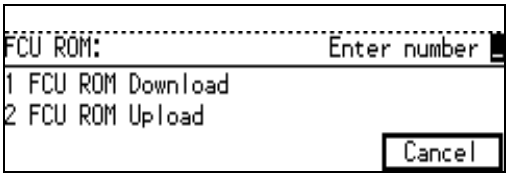


A874R504.WMF

2. Connect the flash memory card [B] to the card slot as shown.

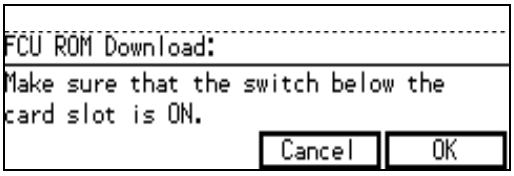
   NOTE: SW3 below the card slot must be **ON** (upper position).

3. Turn on the machine and enter the fax service mode.
4. Press 1 6 then 1.



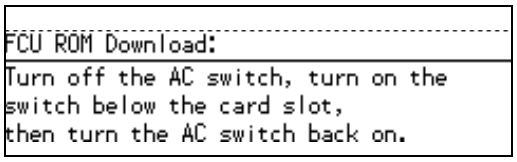
A874R522.BMP

5. Press 1.
   If the switch setting is correct, the message on the right appears. Then go to the next step.



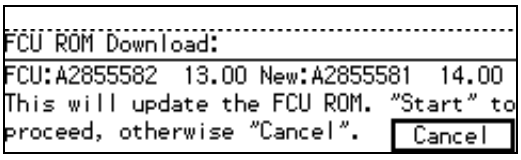
A874R523.BMP

If the switch setting is wrong, or if the tool is not connected correctly, the message on the right appears. Then turn off the machine and retry the procedure again.



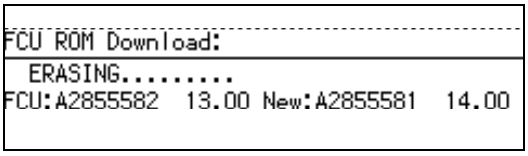
A874R524.BMP

6. Press OK, then check the ROM version.
   If the card does not contain FCU ROM data, “Please check flash card” appears. Turn off the machine and retry the procedure with the correct card.



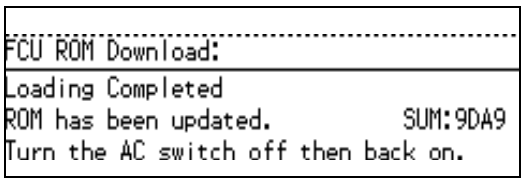
A874R525.BMP

7. Press Start.



A874R526.BMP

After the machine updates the ROM data, the message on the right appears.



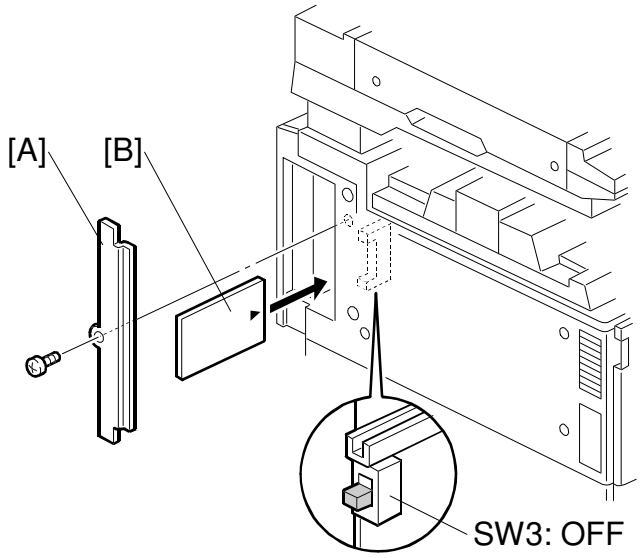
A874R527.BMP

8. Turn off the main power switch then disconnect the flash memory card.
9. Turn the machine back on.
10. Print the system parameter list to check if the new ROM version is printed.

6.4.2 FCU ROM UPLOAD

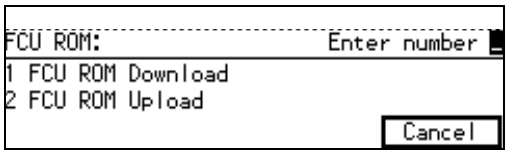
This function makes a copy of the FCU ROM inside the machine onto a flash memory card.

NOTE: This procedure erases the flash memory card completely before uploading ROM data.



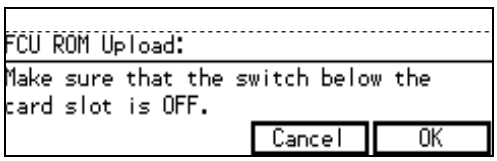
A874R505.WMF

1. Turn off the machine and remove the bracket [A].
2. Connect the flash memory card [B] to the card slot as shown.
   NOTE: SW3 below the card slot must be **OFF** (lower position).
3. Turn on the machine and enter the fax service mode.
4. Press 1 6 then 1.



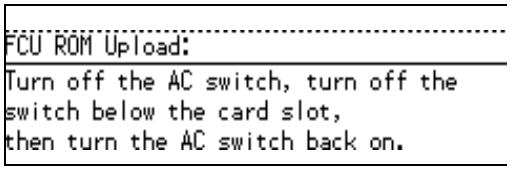
A874R522.BMP

5. Press 2.
   If the switch setting is correct, the message on the right appears. Then go to the next step.



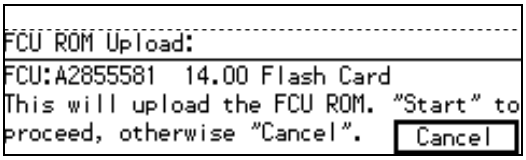
A874R528.BMP

   If the switch setting is wrong, or if the tool is not connected correctly, the message on the right appears. Then turn off the machine and retry the procedure.



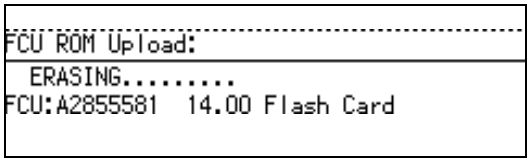
A874R532.BMP

6. Press OK, then check the ROM version.



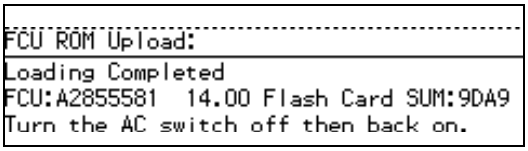
A874R529.BMP

7. Press Start.



A874R530.BMP

After the machine updates the ROM data, the message on the right appears.



A874R531.BMP

8. Turn off the main power switch then disconnect the flash memory card.
9. Turn the machine back on.

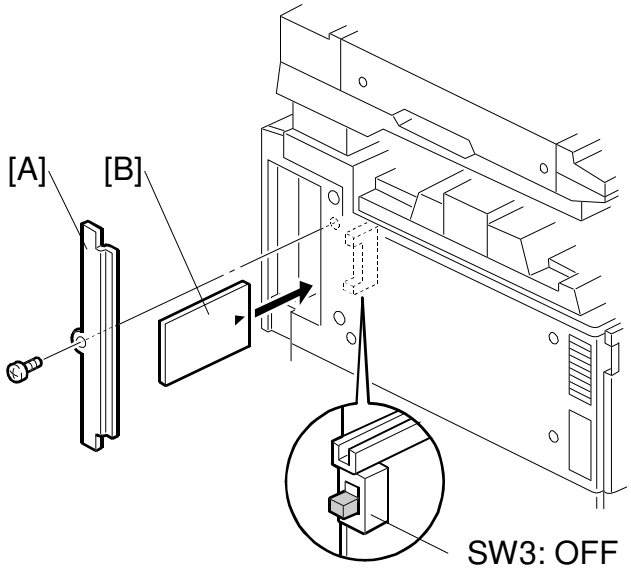
6.4.3 SRAM BACKUP TO A FLASH MEMORY CARD

This function makes a backup copy of all the fax SRAM data onto a flash memory card. If a computer based PC card writer system is available, the backup can be saved as a computer file from the flash memory card.

If the EXSAF board is not installed, this function makes a backup copy of the standard SRAM on the FCU.
If the EXSAF board is installed, this function makes a backup copy of the standard SRAM and the SRAM on the optional EXSAF board.

NOTE: This procedure erases the flash memory card completely before uploading SRAM data.

1. Turn off the machine and remove the bracket [A].



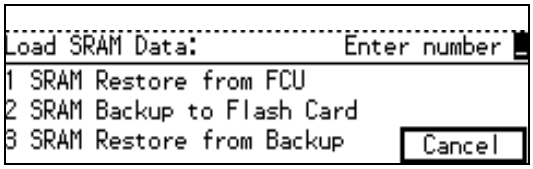
A874R505.WMF

2. Connect the flash memory card [B] to the card slot as shown.

   NOTE: SW3 below the card slot must be **OFF** (lower position).

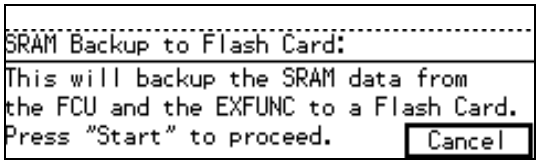
3. Turn on the machine and enter the fax service mode.

4. Press 1 6 then 2.



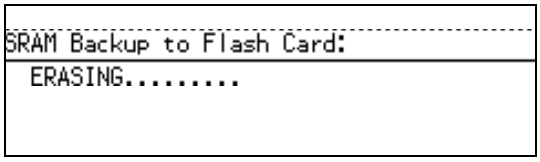
A874R511.BMP

5. Press 2.



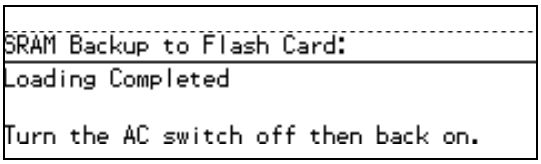
A874R533.BMP

6. Press Start.



A874R534.BMP

After the machine backs up the data to the flash card, the message on the right appears.



A874R535.BMP

7. Turn off the main power switch then disconnect the flash memory card.
8. Turn the machine back on

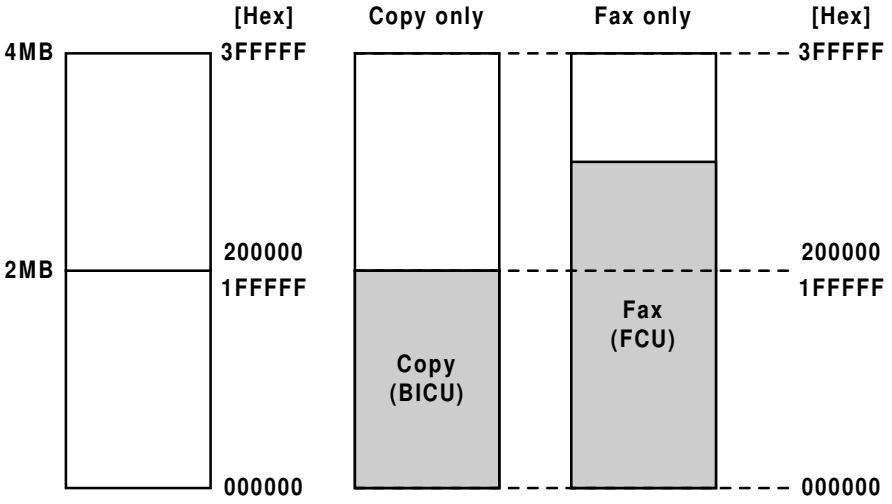
The data in the flash card can be copied to a PC for safe keeping. This data can then be uploaded from the PC to a flash memory card if the SRAM data has to be restored later.

Refer to the SwapFTL manual for details.

6.5 DATA ADDRESS RANGES ON THE CARD

The following sections show how ROM and RAM data must be programmed before downloading, or how data is uploaded onto the 4MB flash memory card.

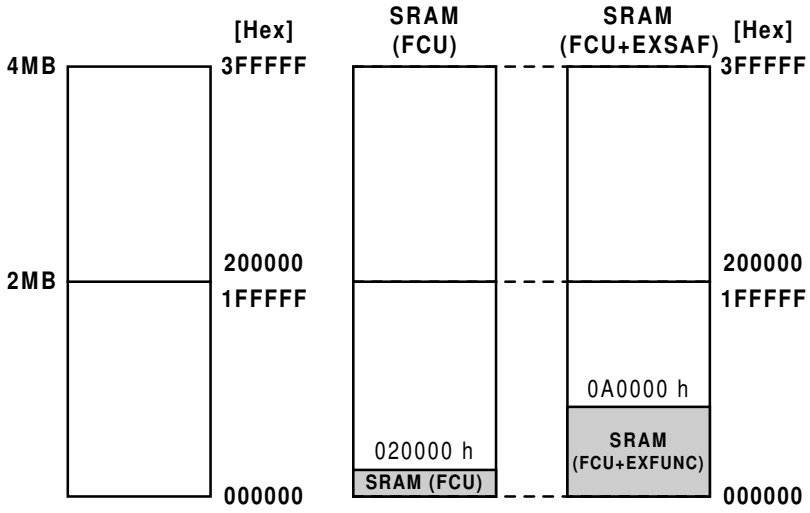
6.5.1 FCU AND BICU ROM DATA



Start Address (Hex)	0	0
Length (Hex)	200000	300000
Size (kB)	2,000 (2MB)	3,000 (3MB)

A874R550.WMF

6.5.2 MODEM ROM AND SRAM DATA



Start Address (Hex)	0	0
Length (Hex)	20000	A0000
Size (kB)	256	128+512

A874R551.WMF

7. TROUBLESHOOTING

7.1 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 some error codes appear only 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 - FCU connectors. • The machine at the other end may be incompatible. • Replace the NCU or FCU. • Check for DIS/NSF with an oscilloscope. • If the rx signal is weak, 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 - FCU connectors. • Try changing the tx level and/or cable equalizer settings. • Replace the FCU or NCU. • The other terminal may be faulty; try sending to another machine. • If the rx signal is weak or defective, there may be a bad line. **Cross reference** • Tx level - NCU Parameter 01 (PSTN) • Cable equalizer - G3 Switch 07 (PSTN) • Dedicated Tx parameters - Section 4
0-05	Unsuccessful after modem training at 2400 bps	• Check the line connection. • Check the NCU - FCU connectors. • Try adjusting the tx level and/or cable equalizer. • Replace the FCU or NCU. • Check for line problems. **Cross reference** • See error code 0-04.

Code	Meaning	Suggested Cause/Action
0-06	The other terminal did not reply to DCS	• Check the line connection. • Check the FCU - NCU connectors. • Try adjusting the tx level and/or cable equalizer settings. • Replace the NCU or FCU. • The other end may be defective or incompatible; try sending to another machine. • Check for line problems. **Cross reference** • See error code 0-04.
0-07	No post-message response from the other end after a page was sent	• Check the line connection. • Check the FCU - NCU connectors. • Replace the NCU or FCU. • The other end may have jammed or run out of paper. • The other end user may have disconnected the call. • Check for a bad line. • The other end may be defective; try sending to another machine.
0-08	The other end sent RTN or PIN after receiving a page, because there were too many errors	• Check the line connection. • Check the FCU - NCU connectors. • Replace the NCU or FCU. • The other end may have jammed, or run out of paper or memory space. • Try adjusting the tx level and/or cable equalizer settings. • The other end may have a defective modem/NCU/FCU; try sending to another machine. • Check for line problems and noise. **Cross reference** • Tx level - NCU Parameter 01 (PSTN) • Cable equalizer - G3 Switch 07 (PSTN) • Dedicated Tx parameters - Section 4
0-14	Non-standard post message response code received	• Check the FCU - NCU connectors. • Incompatible or defective remote terminal; try sending to another machine. • Noisy line: resend. • Try adjusting the tx level and/or cable equalizer settings. • Replace the NCU or FCU. **Cross reference** • See error code 0-08.

Code	Meaning	Suggested Cause/Action
0-15	The other terminal is not capable of specific functions.	The other terminal is not capable of accepting the following functions, or the other terminal's memory is full. • Confidential rx • Transfer function • SEP/SUB/PWD/SID
0-16	CFR or FTT not detected after modem training in confidential or transfer mode	• Check the line connection. • Check the FCU - NCU connectors. • Replace the NCU or FCU. • 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.
0-20	Facsimile data not received within 6 s of retraining	• Check the line connection. • Check the FCU - NCU connectors. • Replace the NCU or FCU. • Check for line problems. • Try calling another fax machine. • Try adjusting the reconstruction time for the first line and/or rx cable equalizer setting. **Cross reference** • Reconstruction time - G3 Switch 0A, bit 6 • Rx cable equalizer - G3 Switch 07 (PSTN)
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 FCU, NCU, & line. • Check for line noise or other line problems. • Replace the NCU or FCU. • The remote machine may be defective or may have disconnected. **Cross reference** • Maximum interval between EOLs and between ECM frames - G3 Bit Switch 0A, bit 4

Code	Meaning	Suggested Cause/Action
0-22	The signal from the other end was interrupted for more than the acceptable modem carrier drop time (default: 200 ms)	• Check the line connection. • Check the FCU - NCU connectors. • Replace the NCU or FCU. • Defective remote terminal. • Check for line noise or other line problems. • Try adjusting the acceptable modem carrier drop time. **Cross reference** • Acceptable modem carrier drop time - G3 Switch 0A, bits 0 and 1
0-23	Too many errors during reception	• Check the line connection. • Check the FCU - NCU connectors. • Replace the NCU or FCU. • Defective remote terminal. • Check for line noise or other line problems. • Try asking the other end to adjust their tx level. • Try adjusting the rx cable equalizer setting and/or rx error criteria. **Cross reference** • Rx cable equalizer - G3 Switch 07 (PSTN) • Rx error criteria - Communication Switch 02, bits 0 and 1
0-30	The other terminal did not reply to NSS(A) in AI short protocol mode	• Check the line connection. • Check the FCU - NCU connectors. • Try adjusting the tx level and/or cable equalizer settings. • The other terminal may not be compatible. **Cross reference** • Dedicated tx parameters - Section 4
0-32	The other terminal sent a DCS, which contained functions that the receiving machine cannot handle.	• Check the protocol dump list. • Ask the other party to contact the manufacturer.
0-52	Polarity changed during communication	• Check the line connection. Retry communication.
0-70	The communication mode specified in CM/JM was not available (V.8 calling and called terminal)	• The other terminal did not have a compatible communication mode (e.g., the other terminal was a V.34 data modem and not a fax modem.) • A polling tx file was not ready at the other terminal when polling rx was initiated from the calling terminal.
0-74	The calling terminal fell back to T.30 mode, because it could not detect ANSam after sending CI.	• The calling terminal could not detect ANSam due to noise, etc. • ANSam was too short to detect. • Check the line connection and condition. • Try making a call to another V.8/V.34 fax.

Code	Meaning	Suggested Cause/Action
0-75	The called terminal fell back to T.30 mode, because it could not detect a CM in response to ANSam (ANSam timeout).	• The terminal could not detect ANSam. • Check the line connection and condition. • Try receiving a call from another V.8/V.34 fax.
0-76	The calling terminal fell back to T.30 mode, because it could not detect a JM in response to a CM (CM timeout).	• The called terminal could not detect a CM due to noise, etc. • Check the line connection and condition. • Try making a call to another V.8/V.34 fax.
0-77	The called terminal fell back to T.30 mode, because it could not detect a CJ in response to JM (JM timeout).	• The calling terminal could not detect a JM due to noise, etc. • A network that has narrow bandwidth cannot pass JM to the other end. • Check the line connection and condition. • Try receiving a call from another V.8/V.34 fax.
0-79	The called terminal detected CI while waiting for a V.21 signal.	Check for line noise or other line problems. If this error occurs, the called terminal falls back to T.30 mode.
0-80	The line was disconnected due to a timeout in V.34 phase 2 – line probing.	• The guard timer expired while starting these phases. Serious noise, narrow bandwidth, or low signal level can cause these errors. If these errors happen at the transmitting terminal: • Try making a call at a later time. • Try using V.17 or a slower modem using dedicated tx parameters. • Try increasing the tx level. • Try adjusting the tx cable equalizer setting. If these errors happen at the receiving terminal: • Try adjusting the rx cable equalizer setting. • Try increasing the tx level. • Try using V.17 or a slower modem if the same error is frequent when receiving from multiple senders.
0-81	The line was disconnected due to a timeout in V.34 phase 3 – equalizer training.	
0-82	The line was disconnected due to a timeout in the V.34 phase 4 – control channel start-up.	
0-83	The line was disconnected due to a timeout in the V.34 control channel restart sequence.	
0-84	The line was disconnected due to abnormal signaling in V.34 phase 4 – control channel start-up.	• The signal did not stop within 10 s. • Turn off the machine, then turn it back on. • If the same error is frequent, replace the FCU.
0-85	The line was disconnected due to abnormal signaling in V.34 control channel restart.	• The signal did not stop within 10 s. • Turn off the machine, then turn it back on. • If the same error is frequent, replace the FCU.
0-86	The line was disconnected because the other terminal requested a data rate using MPh that was not available in the currently selected symbol rate.	• The other terminal was incompatible. • Ask the other party to contact the manufacturer.

Code	Meaning	Suggested Cause/Action
0-87	The control channel started after an unsuccessful primary channel.	• The receiving terminal restarted the control channel because data reception in the primary channel was not successful. • This does not result in an error communication.
0-88	The line was disconnected because PPR was transmitted/received 9 (default) times within the same ECM frame.	• Try using a lower data rate at the start. • Try adjusting the cable equalizer setting.
2-10	The modem cannot enter tx mode	• Replace the FCU.
2-11	Only one V.21 connection flag was received	• Replace the FCU.
2-12	Modem clock irregularity	• Replace the FCU.
2-13	Modem initialization error	• Turn off the machine, then turn it back on. • Update the modem ROM. • Replace the FCU.
2-20	Abnormal coding/decoding (cpu not ready)	• Replace the FCU.
2-23	JBIG compression or reconstruction error	• Turn off the machine, then turn it back on. • Replace the EXFUNC board if the error is frequent.
2-24	JBIG ASIC error	• Turn off the machine, then turn it back on. • Replace the EXFUNC board if the error is frequent.
2-25	JBIG data reconstruction error (BIH error)	• JBIG data error • Check the sender's JBIG function. • Update the FCU ROM.
2-26	JBIG data reconstruction error (Float marker error)	
2-27	JBIG data reconstruction error (End marker error)	
2-28	JBIG data reconstruction error (Timeout)	
2-50	The machine resets itself for a fatal FCU system error	• If this is frequent, update the ROM, or replace the FCU.
2-51	The machine resets itself because of a fatal communication error	• If this is frequent, update the ROM, or replace the FCU.
3-00	G4 interface board reset	• Replace the G4 interface board or FCU.
3-10	Disconnection during ISDN G3 communication	• Check the other terminal and the ISDN line. • The other terminal may have dialed a wrong number.
3-11	Disconnection during ISDN G4 communication	• Check the other terminal and the ISDN line.
3-20	A CSA signal was received during ISDN G4 communication	• The operator at the other terminal may have interrupted the communication.

Code	Meaning	Suggested Cause/Action
3-21	A CSA signal was sent during ISDN G4 communication, because the Stop key was pressed	• The local operator has interrupted the communication.
3-30	Mismatched specifications (rx capability)	• Check the receive capabilities requested from the other terminal.
4-01	Line current was cut	• Check the line connector. • Check the connection between FCU and NCU. • Check for line problems. • Replace the FCU or the NCU.
4-10	Communication failed because of an 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.
5-00	Data construction not possible	• Replace the FCU.
5-01	Data reconstruction not possible	
5-10	DCR timer expired	
5-20	Storage impossible because of a lack of memory	• Temporary memory shortage. • Test the SAF memory. • Replace the FCU or optional EXMEM board
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 FCU or optional EXMEM board.
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 FCU or EXMEM board.
6-00	G3 ECM - T1 time out during reception of facsimile data	• Try adjusting the rx cable equalizer. • Replace the FCU or NCU.
6-01	G3 ECM - no V.21 signal was received	
6-02	G3 ECM - EOR was received	

Code	Meaning	Suggested Cause/Action
6-04	G3 ECM - RTC not detected	• Check the line connection. • Check connections from the NCU to the FCU. • Check for a bad line or defective remote terminal. • Replace the FCU or NCU.
6-05	G3 ECM - facsimile data frame not received within 18 s of CFR, but there was no line fail	• Check the line connection. • Check connections from the NCU to the FCU. • Check for a bad line or defective remote terminal. • Replace the FCU or NCU. • Try adjusting the rx cable equalizer **Cross reference** • Rx cable equalizer - G3 Switch 07 (PSTN)
6-06	G3 ECM - coding/decoding error	• Defective FCU. • The other terminal may be defective.
6-08	G3 ECM - PIP/PIN received in reply to PPS.NULL	• The other end pressed Stop during communication. • The other terminal may be defective.
6-09	G3 ECM - ERR received	• Check for a noisy line. • Adjust the tx levels of the communicating machines. • See code 6-05.
6-10	G3 ECM - error frames still received at the other end after all communication attempts at 2400 bps	• Check for line noise. • Adjust the tx level (use NCU parameter 01 or the dedicated tx parameter for that address). • Check the line connection. • Defective remote terminal.
6-21	V.21 flag detected during high speed modem communication	• The other terminal may be defective or incompatible.
6-22	The machine resets the sequence because of an abnormal handshake in the V.34 control channel	• Check for line noise. • If the same error occurs frequently, replace the FCU. • Defective remote terminal.
6-99	V.21 signal not stopped within 6 s	• Replace the FCU.

Code	Meaning	Suggested Cause/Action
9-40	CRC error during PC fax communication	• Check the serial interface and cable connection between the PC. • Replace the DIU (PCFE board) or FCU.
9-41	Third failure during PC fax communication	
9-42	DCN received unexpectedly during PC fax communication	
9-43	Frame received unexpectedly during PC fax communication	
9-44	Response time over during PC fax communication	
9-45	Frame transmission error during PC fax communication	
9-61	Memory overflow occurs during reception	Check the SAF.
22-00	Original length exceeded the maximum scan length	• Divide the original into more than one page. • Check the resolution used for scanning. Lower the scan resolution if possible. • Add optional page memory.
22-01	Memory overflow while receiving	• Wait for the files in the queue to be sent. • Delete unnecessary files from memory. • Transfer the substitute reception files to an another fax machine, if the machine's printer is busy or out of order. • Add an optional SAF memory card or hard disk.
22-02	Tx or rx job stalled due to line disconnection at the other end	• The job started normally but did not finish normally; data may or may not have been received fully. • Restart the machine.
22-04	The machine cannot store received data in the SAF	• Update the ROM • Replace the FCU.
23-00	Data read timeout during construction	• Restart the machine. • Replace the FCU
24-xx		•
25-00	The machine software resets itself after a fatal transmission error occurred	• Update the ROM • Replace the FCU.
F0-xx	V.34 modem error	• Replace the FCU.

7.2 FAX SC CODES

7.2.1 OVERVIEW

When the FCU detects a Fax SC Code condition other than SC1201 and SC1207, it resets itself automatically (default setting). This initializes the FCU without erasing files in the SAF memory or resetting the switches.

NOTE: For details on Fax SC Codes 1201 and 1207, refer to the following sections.

If bit 7 of System Switch 1F is changed to “1”, when the FCU detects a Fax SC Code condition, it displays the code on the display and stops working until the fax unit is initialized using one of the following methods:

- Hold down the “#” and “*” keys for more than 10 s.
- Turn off the main power switch and turn it back on.
- Remove the rear cover, and press SW2 on the FCU.

The fax unit cannot make automatic service calls in reaction to a Fax SC Code, because the fax unit cannot make fax communications in fax SC code conditions.

7.2.2 SC1201

When the FCU detects an unrecoverable error in the SRAM, which requires a complete SRAM initialization, the fax unit displays this SC Code and stops. There is no way to recover from this error condition without a complete SRAM initialization (all the user and service programmed data will be erased).

The possible causes are:

- SRAM backup battery defect, or SW1 on the FCU is at the “OFF” position
- SRAM on the FCU has a physical defect
- Flash memory card or data copy tool connection was loose

7.2.3 SC1207

This is the same as SC1201 except the error location is the SRAM on the EXFUNC board.

The possible causes are:

- SRAM backup battery defect, or SW1 on the EXFUNC board is at the “OFF” position.
- SRAM on the EXFUNC has a physical defect.
- The EXFUNC connection was loose.

7.2.4 FAX SC CODE TABLE

SC Code	Description	Suggested Action	Sys Switch 1F bit 7 = 0	Sys Switch 1F bit 7 = 1
1102	Handshake error with BiCU at start-up	Initialize the fax unit. (See section 7.2.1.for the initialization procedure)	Automatic reset	SC Code display
1111	Command TX/RX error to/from the BiCU			
1112	Base copier's engine was reset			
1120	Interface module error			
1201	Unrecoverable FCU - SRAM error	Refer to section 7.2.2.	SC Code display	
1207	Unrecoverable EXFUNC - SRAM error	Refer to section 7.2.3.	SC Code display	
1299	Software error	Turn off and on the main switch.	Automatic reset	
1301	Original size error	Check the scanner mechanism.		
1302	Scanner parameter error	Initialize the fax unit.		
1303	Software error	Initialize the fax unit.		
1304				
1305				
1306				
1308				
1313				
1314				
1316				
1318				
1323				
1324				
1326				
1328				
1334				
1338				
1401	Command timeout error - after scanning	Initialize the fax unit.		
1402	Software error	Initialize the fax unit.		
1403				
1404				
1405	Command timeout error - during storage	Check the connection for the FCU.		
1406	Command timeout error - original feed out	Initialize the fax unit.		
1410	Software error	Initialize the fax unit.		
1601				