FAX UNIT
(Machine Code: B383)

This manual explains the Fax Unit, as well as the following.

- EXSAF (Machine Code: A818)
- HDD (Machine Code: A841)
- PMU (Machine Code: A818)
- ISDN (Machine Code: A816)
- Handset (Machine Code: A841)
- Stamp (Machine Code: A563)

August 28, 2000
Subject to change

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

Type
Desktop type transceiver

Circuit
PSTN, PABX, ISDN (optional)

Connection
Direct couple

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

Original Size (ADF)
Maximum: A3, 11" x 17"
Minimum: B5, 5 1/2" x 8 1/2"

Scanning Method
Flat bed, with CCD

Scan Width
210 mm [8.64 ins] ± 1% (A4)
216 mm [8.5 ins] ± 1% (8.5" x 11")
256 mm [10.2 ins] ± 1% (B4)
279 mm [11.0 ins] ± 1% (11" x 17"r)
296 mm [12.2 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 PMU (page memory) is required.

Memory Capacity

ECM: 128 Kbytes

SAF:
Standard: 2 Mbytes (160 pages)

With optional memory board (EXSAF):
6 Mbytes (480 pages)

With optional HDD:
80 Mbytes (3000 pages)

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

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

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

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

Data Rate (bps)
G3:
33600/31200/28800/26400/24000/21600/19200/16800/14400/12000/9600/7200/4800/2400, 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 EXSAF required
B = Optional HDD required
C = Optional PMU required
D = Optional ISDN unit required
E = Optional STAMP unit

Video Processing Features	
Automatic image density selection	O
Contrast	O
Halftone (Basic & Error Diffusion)	O
MTF	O
Reduction before tx (B4 -> A4)	O
Reduction before tx (A3 -> B4)	O
Reduction before tx (A3 -> A4)	O
Scanning Resolution – Standard	O
Scanning Resolution – Detail	O
Scanning Resolution – Fine	C
Scanning Resolution – Superfine	C
Smoothing to 400 x 400 dpi when printing	O
JBIG compression	C

Communication Features – Automatic	
V.34 communication	O
AI short protocol	O
Automatic fallback	O
Automatic redialing (Memory tx only)	O
Confidential Reception	A
Dual Access	O
Substitute reception	O

Communication Features - User Selectable	
90° Image Rotation before tx	O
Action as a transfer broadcaster	A
AI Redial (last ten numbers)	O
Answering machine interface	X
Authorized Reception	O
Automatic dialing (pulse or DTMF)	O
Auto Document	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	A
Confidential Transmission	O
Direct Fax Number Entry	O
Economy Transmission	O
Fax on demand	X
Forwarding	A
Free Polling	O
Groups (9 groups)	O
Group Transfer Station	A
Hold	X
ID Transmission	O
Immediate Redialing	O
Immediate transmission	O
Keystroke Programs	O
Length Reduction	O
Memory transmission	O
Multi-step Transfer	A
Next Transfer Station	X
Non-standard original size transmission	O
OMR	X
On Hook Dial	O
Ordering Toner	X
Page Count	O

Communication Features - User Selectable	
Page separation mark	O
Parallel memory transmission	O
Personal Codes	O
Personal Codes with Conf. ID	X
Partial Image Area Scanning	X
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
Resolutions available for reception Standard Detail Fine (16 x 15.4 l/mm only) Superfine	 O O C C
Restricted Access	O
Secured Polling	O
Secured Polling with Stored ID Override	O
Secure Transmission	X
Send Later	O
SEP/SUB/PWD	O
Silent ringing detection	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-step Transfer	X
Two in one	O
Voice Request (immed. tx only)	X

Communication Features - Service Selectable	
AI Short Protocol	O
Auto-reduction override option	O

Communication Features - Service Selectable	
Busy tone detection	O
Cable Equalizer	O
PSTN	O
ISDN	D
Closed Network (rx)	O
Continuous Polling Reception	O
Dedicated tx parameters	O
ECM	O
EFC	X
Inch-mm conversion before tx	O
mm-inch selection when printing	O
Page retransmission times	O
Protection against wrong conn.	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	A
Counters	O
Daylight Saving Time	O
Destination Check	X
Direct entry of names	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
Manual service call	O
Memory Lock	A
Modifying a memory file (tx)	O
Multi Sort Document Reception	A
Own telephone number	O
Energy Saver	O
Print density control	X

Other User Features	
Printing a memory file	SP mode
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
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
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	A
Error Report	O
Fax On Demand Report	X
Memory Storage Report	O
Polling Clear Report	O
Polling Reserve Report	O
Polling Result Report	O
Power Failure Report	O
Journal	O
Toner Cassette Order Form	X
Transfer Result Report	A
Transmission Result Report	O

Reports - User-initiated	
Authorized Reception List	O
Charge Control Report	X
File List	O
Forwarding List	A
Group List	O
Hard Disk File List	X
Personal Code List	O
Keystroke Program List	O

Reports - User-initiated	
Quick Dial/Function Key Label	O
Quick Dial List	O
Specified Cassette Selection List	X
Speed Dial List	O
TCR/Journal	O
Transmission Status Report	X
User Function List	X
User Parameter List	O

Service Mode Features	
Back-to-back test	O
Bit switch programming	O
Buzzer test	O
Cable equalizer	O
Comm. parameter display	O
Counter check	O
Country code	O
DTMF tone test	O
Echo countermeasure	O
Effective term of service calls	O
Error code display	O
Excessive jam alarm	O
File Transfer	O
Hard Disk Utilities (Format etc.)	A and B
LCD contrast adjustment	SP mode
Line error mark	X
Memory file printout (all files)	O
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

Service Mode Features	
ROM version display (FCU and Modem)	O
Serial number	O
Service monitor report	O
Service station number	O
Software Download	O
Software Upload	O
Modem Software Download	O
SRAM data backup and restore	O
System parameter list	O
Technical data on the Journal	O

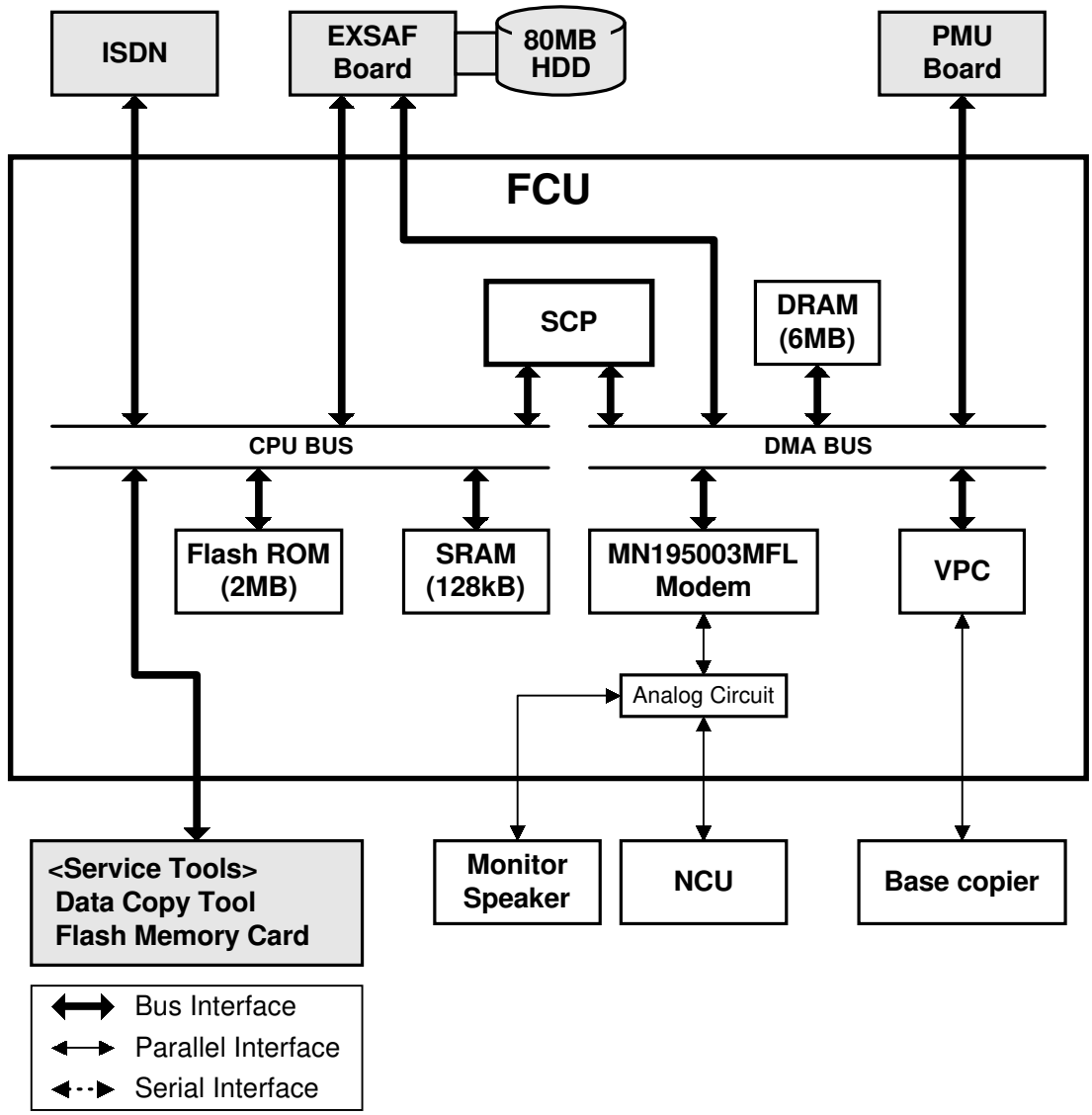
1.2.2 CAPABILITIES OF PROGRAMMABLE ITEMS

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 memory board (EXSAF)
Maximum number of memory files	200	1000
Maximum number of destinations per file	200	1000
Maximum number of destinations overall	500	2000
Maximum number of pages overall	160	480 (HDD: 3000)
Number of Quick Dials	56	56
Number of Speed Dials	100	1000
Number of Groups	9	30
Maximum number of destinations per Group	200	200
Maximum number of destinations dialed from the ten-key pad overall	100	1000
Maximum number of programs	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	200	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



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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 NCU switches the analog line between the fax unit and the optional external telephone.

Fax Options

1. ISDN unit: This allows the fax unit to communicate over an ISDN (Integrated Services Digital Network) line.
2. EXSAF board: This expands the SAF memory capacity to hold up to 6MB of received data or data for transmission. Also, some additional features become available. In addition, this expands the system's SRAM capacity to hold programmed telephone numbers, communication records, etc.
3. PMU board: This expands the page memory capacity to 4MB to enable 400 dpi communications. Also, JBIG compression becomes available.
4. Hard Disk: This expands the SAF memory capacity to 80MB. The EXSAF is required to install this option.

1.3.2 POWER DISTRIBUTION AND CONTROL

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

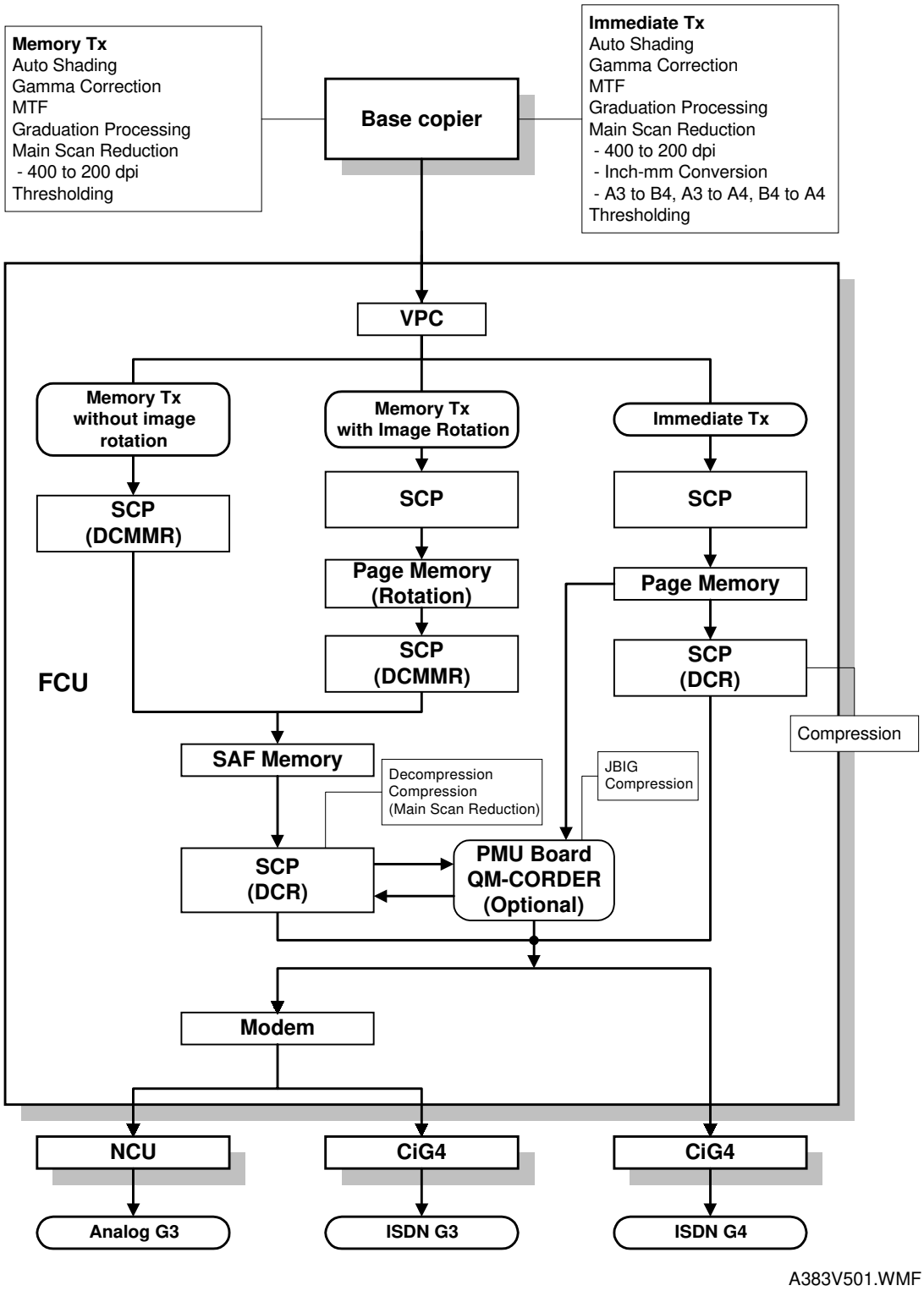
1.3.3 MEMORY BACK-UP

The system parameters and programmed items in the SRAM on the FCU and the EXSAF 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 EXSAF 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 mainframe's scanner scans the original at the selected resolution in inch format. The mainframe processes the data and transfers it to the FCU.

NOTE: When scanning a fax original, the mainframe 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+raw format to store it in the SAF memory. If image rotation is possible, 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 mainframe's scanner scans the original at the resolution agreed with the receiving terminal. The mainframe video processes the data and transfers it to the FCU.

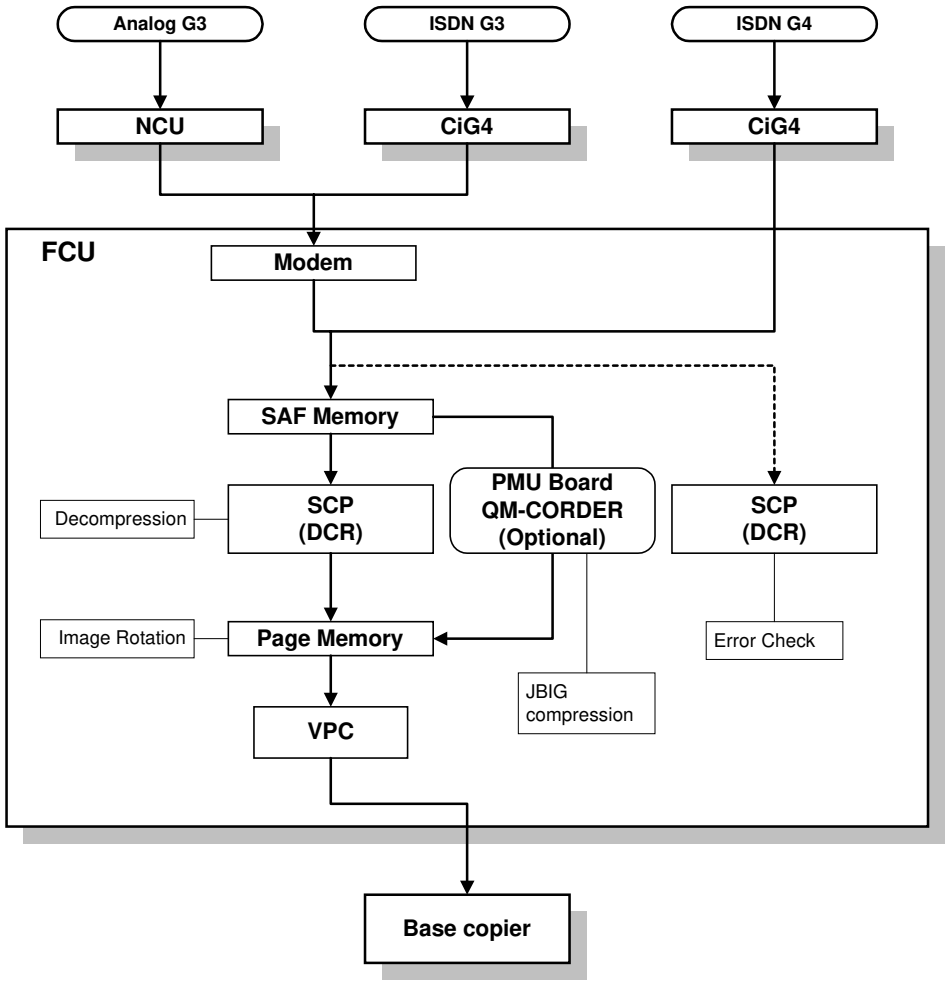
NOTE: When scanning a fax original, the mainframe uses the MTF and thresholding parameter settings programmed in the fax unit's scanner bit switches, not the copier's SP modes.

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:** With memory transmission, if the receiver has JBIG compression, the data goes from the SCP (DCR) to the PMU for JBIG compression. Then either the NCU or CiG4 (ISDN unit) transmits the data to the line.
- **Immediate transmission:** With immediate transmission, if the receiver has JBIG compression, the data goes from the page memory to the PMU for JBIG compression. Then either the NCU or CiG4 (optional) transmits the data to the line.

1.4.2 RECEPTION



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First, the FCU stores the data from either an analog line or an ISDN line to the SAF memory. (The data goes in parallel to the SCP, and is checked for error lines/frames.)

The FCU then decompresses the data and transfers it to page memory. If image rotation is possible, the image is rotated in the page memory. The data is transferred to the mainframe.

JBIG Reception

When the machine receives data compressed with JBIG, the data is sent to PMU for decompression. Then the data is stored in the page memory, and transferred to the mainframe.

2. DETAILED SECTION

2.1 SERVICE CALL CONDITIONS

The fax unit makes an automatic service call when an SC code other than the following is informed from the base copier.

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
480A30	1st SC code - High byte (BCD)	09	9AA from 900 to 999
480A31	1st SC code - Low byte (BCD)	AA	
480A32	2nd SC code - High byte (BCD)	FF	Not programmed
480A33	2nd SC code - Low byte (BCD)	FF	
480A34	3rd SC code - High byte (BCD)	FF	Not programmed
480A35	3rd SC code - Low byte (BCD)	FF	
480A36	4th SC code - High byte (BCD)	FF	Not programmed
480A37	4th SC code - Low byte (BCD)	FF	
480A38	5th SC code - High byte (BCD)	FF	Not programmed
480A39	5th SC code - Low byte (BCD)	FF	
480A3A	6th SC code - High byte (BCD)	FF	Not programmed
480A3B	6th SC code - Low byte (BCD)	FF	
480A3C	7th SC code - High byte (BCD)	FF	Not programmed
480A3D	7th SC code - Low byte (BCD)	FF	
480A3E	8th SC code - High byte (BCD)	FF	Not programmed
480A3F	8th SC code - Low byte (BCD)	FF	
480A40	9th SC code - High byte (BCD)	FF	Not programmed
480A41	9th SC code - Low byte (BCD)	FF	
480A42	10th SC code - High byte (BCD)	FF	Not programmed
480A43	10th SC code - Low byte (BCD)	FF	
480A44	11th SC code - High byte (BCD)	FF	Not programmed
480A45	11th SC code - Low byte (BCD)	FF	
480A46	12th SC code - High byte (BCD)	FF	Not programmed
480A47	12th SC code - Low byte (BCD)	FF	
480A48	13th SC code - High byte (BCD)	FF	Not programmed
480A49	13th SC code - Low byte (BCD)	FF	
480A4A	14th SC code - High byte (BCD)	FF	Not programmed
480A4B	14th SC code - Low byte (BCD)	FF	
480A4C	15th SC code - High byte (BCD)	FF	Not programmed
480A4D	15th SC code - Low byte (BCD)	FF	
480A4E	16th SC code - High byte (BCD)	FF	Not programmed
480A4F	16th SC code - Low byte (BCD)	FF	
480A50	17th SC code - High byte (BCD)	FF	Not programmed
480A51	17th SC code - Low byte (BCD)	FF	

Address (H)	Definition	Default	SC code
480A52	18th SC code - High byte (BCD)	FF	Not programmed
480A53	18th SC code - Low byte (BCD)	FF	
480A54	19th SC code - High byte (BCD)	FF	Not programmed
480A55	19th SC code - Low byte (BCD)	FF	
480A56	20th SC code - High byte (BCD)	FF	Not programmed
480A57	20th SC code - Low byte (BCD)	FF	

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

Wild Cards

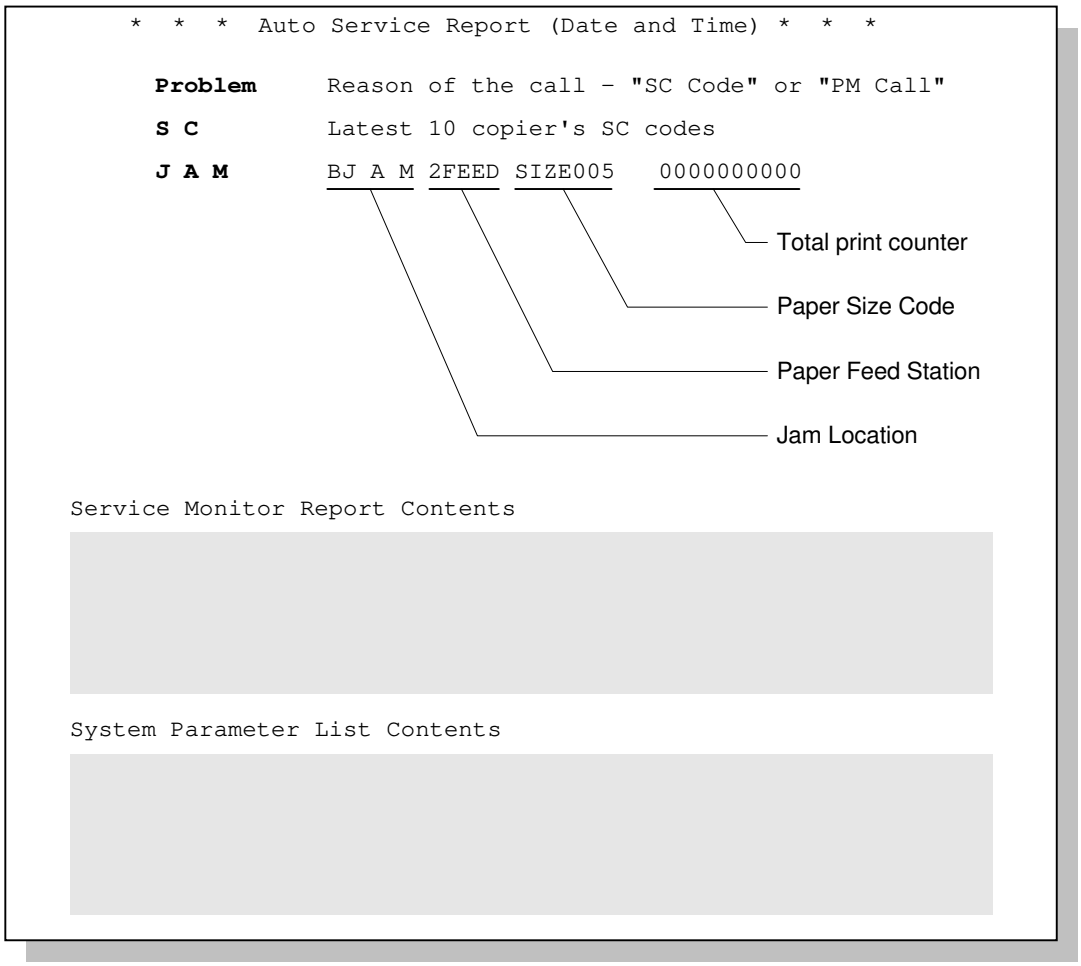
This function allows 'A' or 'a', to be used as a wild card instead of numbers from 0 to 9. For example, '1AA' or '1aa' means all the SC codes from 100 to 199, and '39A' or '39a' means all the SC codes from 390 to 399.

The fax unit cannot make an automatic service call when a Fax SC code condition has occurred. Refer to Troubleshooting 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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Paper Size Code Table			
Code	**Size**	**Code**	**Size**
005	A4 sideways	038	8.5 x 11" sideways
014	B5 sideways	160	11 x 17" lengthwise
031	Non-standard	164	8.5 x 14" lengthwise
132	A3 lengthwise	166	8.5 x 11" lengthwise
133	A4 lengthwise	172	5.5 x 8.5" lengthwise
134	A5 lengthwise		
141	B4 lengthwise		
142	B5 lengthwise		
159	Non-standard		

2.1.1 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 month(s) (BCD) 00: Periodic Service Call Disabled		480379
Date and time of the next call		
	Year: last two digits of the year (BCD)	48037A
	Month: 01 through 12 (BCD)	48037B
	Day: 01 through 31 (BCD)	48037C
	Hour: 00 through 23 (BCD)	48037D

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.

2.1.2 PM CALL

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

2.1.3 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).

	Address (H)
Year: last two digits of the year (BCD)	480383
Month: 01 through 12 (BCD)	480384
Day: 01 through 31 (BCD)	480385

2.2 SCANNING FEATURES

2.2.1 PARALLEL MEMORY TRANSMISSION

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

NOTE: This function is only usable when sending an original from the ADF.

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

	Normal memory tx	Parallel memory tx
File Reserve Report	if automatic report printout is enabled.	Not printed.
If the other terminal is busy	Tries to resend the message later.	Continues scanning the document into memory, and tries to resend it later.
If transmission failed	Tries to resend the remaining pages later.	Tries to resend the remaining pages later.
If memory overflows during scanning	Stops scanning and erases all the scanned pages from memory, or sends all the scanned pages (user's choice).	Stops scanning and hangs up the communication when memory overflow is detected. Then erases all the scanned pages from memory without notifying the user.
If a document jam occurred during scanning	Stops scanning and deletes all the scanned pages from memory.	Stops scanning and hangs up the communication when a document jam is detected.
How and when the scanned message is erased from memory	The complete message is erased after all the pages have been sent.	Same as memory transmission.
Memory threshold to start scanning into memory	Depends on the setting of communication switch 0D. Default setting - 24kB	Depends on the setting of system switch 10. Default setting - 384 kB
Meaning of the stamp mark	Successfully stored.	Successfully stored.
Batch numbering (P. x/x)	Enabled	Not available unless the number of pages is programmed manually.
Including a sample of the image on reports	Possible	Possible

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

- Send later transmission
- Broadcasting
- Transmission of an Auto Document only
- Transfer request transmission
- When Image Rotation before Tx is enabled, and an A4 sideways or 8.5 x 11" sideways original is detected
- If the other terminal is busy
- If the external telephone connected to the machine is in use
- When communication switch 0A, bit 0 is set to 1, and the machine is using memory transmission when redialing
- When remaining memory space is less than the threshold for parallel memory transmission (default = 384 kB)
- When the original is located on the exposure glass

When using G4 transmission, parallel memory transmission is normally disabled, because transmission using G4 is much faster than scanning. As a result, G4 transmission using parallel memory transmission takes about twice as long as normal memory transmission (using an ITU-T #1 test chart).

If the document contains pages with complicated images or it is a photo document using halftone, parallel memory transmission may be faster than normal memory transmission. If the user commonly sends this type of fax message, enable parallel memory transmission for G4 transmission by changing system switch 11, bit 7 to 1.

Cross Reference

Parallel memory tx (G3) On/Off - User parameter 07, bit 2
Parallel memory tx (G4) On/Off - System switch 11, bit 7
Memory threshold for enabling parallel memory tx - System switch 10, bits 0 to 7
Point of resumption of memory transmission upon redialing - Communication switch 0A, bit 0

2.2.2 SUB-SCAN LENGTH CORRECTION USING ADF

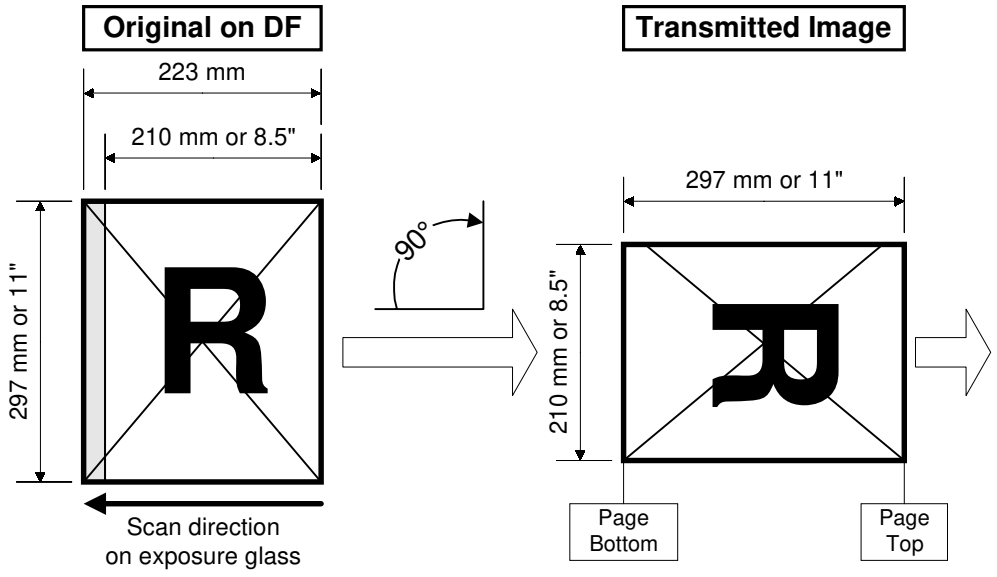
The ADF informs the FCU of the original length. If the length data is incorrect or the original is skewed, the machine corrects the sub-scan length to a standard paper length.

The correction algorithm is follows.

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) 216mm (LT short edge length) See the note below the table.
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)

NOTE: Depends on the settings of scanner switch 0C bit 6

Length Correction Enabled (Default setting)



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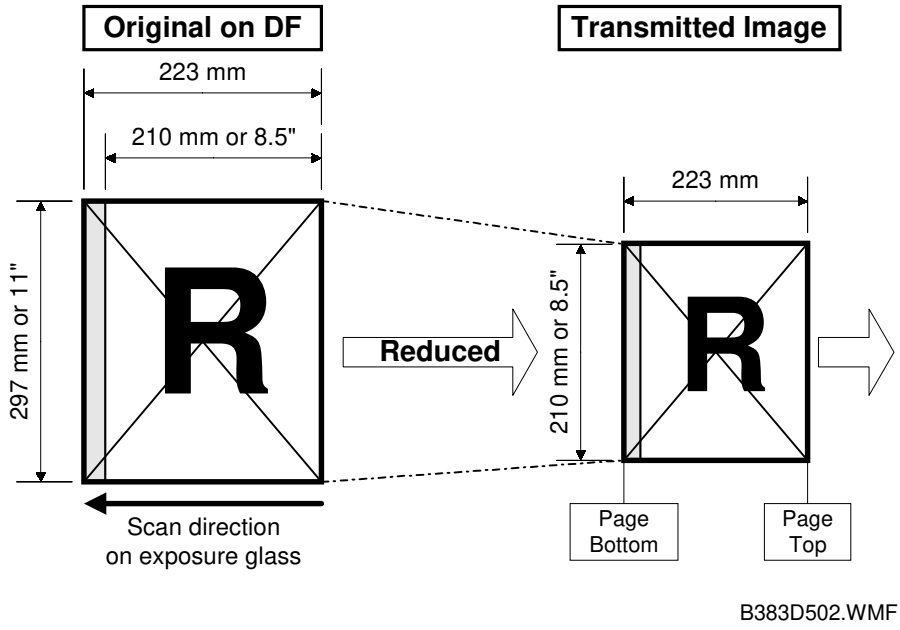
When this feature is enabled, in the above example, the gray part of the original is not scanned. However this allows the machine to rotate the image before transmission in order to avoid unintentional reduction.

Length Correction Disabled

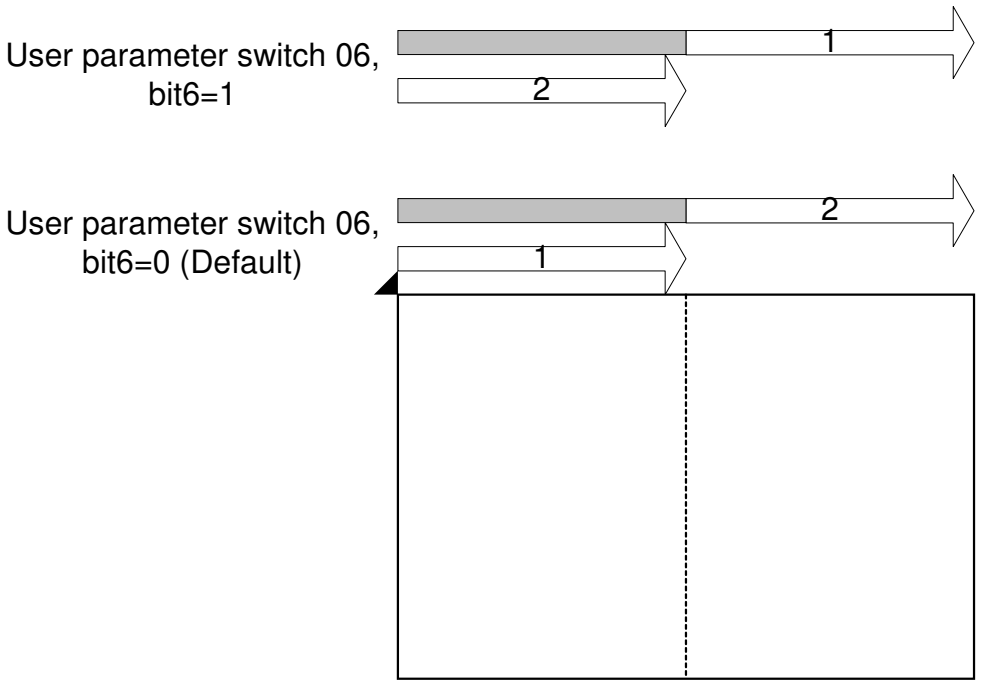


In the above example, this feature is disabled. An unintentional reduction may occur if the receiving machine cannot print on paper with a width of 297mm. However, with length-correction disabled, the machine sends the entire image.

Cross Reference

- Image rotation before transmission – section 2.2.4.
- Sub-scan length correction on/off – Scanner switch 0C, bit 7
- Default setting is 0. (Sub-scan length correction is enabled)
- Setting A4 or LT size when sub-scan length correction is on.
  – Scanner switch 0C bit 6. Default setting is 1. (Recognize as A4 or LT size)

2.2.3 PAGE SPLIT TRANSMISSION (BOOK TRANSMISSION)



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This function allows a B4, A4/8.5 x 11", or A3/11 x 17" size book original to be sent as two separate pages.

When this function is selected, the machine scans the original twice and transmits the pages in the same sequence they were scanned.

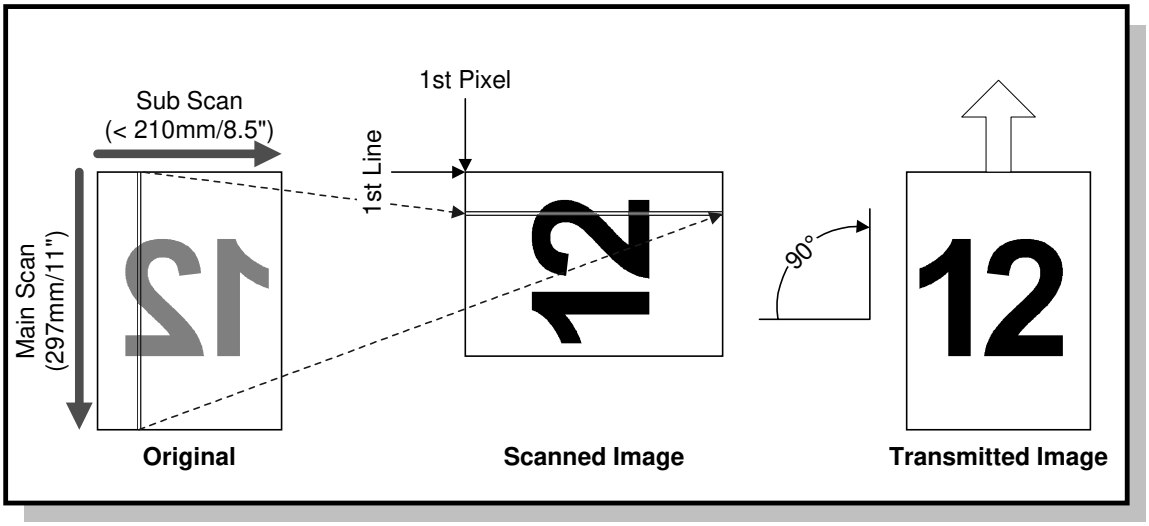
With the default setting, the left page is sent first, then the right page is sent. If the setting is changed, the order is reversed.

Cross Reference

- Scanning start page – User parameter switch 06, bit6
- Default setting is 0. (Start scan from the left)

NOTE: 1) Memory transmission is used whenever this function is selected.
2) This function is only possible when sending a book original from the exposure glass.
3) If this function is used for an A3 or 11 x 17" original, the pages may be transmitted in a lengthwise direction, depending on the setting of "Image Rotation before Transmission" (see the next page).

2.2.4 IMAGE ROTATION BEFORE TRANSMISSION



B383D504.WMF

A4 or 8.5 x 11” sideways

This function avoids the unintentional reduction of an A4 or 8.5 x 11” sideways original. When the machine detects a sideways A4 or 8.5 x 11" original in the ADF or on the exposure glass, the fax unit rotates the scanned image clockwise by 90 degrees before transmission, as shown above.

A5 or HLT lengthwise

This function avoids a blank space in the main scan direction. When the machine detects an A5 or HLT original placed lengthwise in the ADF or on the exposure glass, the fax unit rotates the scanned image clockwise by 90 degrees before transmission, as shown above.

NOTE: 1) Even if Parallel Memory Transmission is enabled, the machine uses normal memory transmission to send an A4 or 8.5 x 11" sideways original.
2) If the machine carries out this function while printing, the machine stops printing until scanning is completed.
3) The machine determines if it will rotate the image after the paper size is determined.
4) This feature is not performed during parallel memory transmission.
5) In Book mode, the machine determines image rotation for each page scanned.
In ADF mode, the machine determines image rotation for the first page. If it is rotated, the machine will check each page. If the first page need not be rotated, the machine will not check the rest of the pages.

Cross Reference

- Image rotation before Tx A3 or 11” width original on/off
  - Scanner switch 0F, bit 0 (Default setting is enabled)
- Image rotation before Tx A5 or HLT width original on/off
  - Scanner switch 0F, bit 2 (Default setting is disabled)
- Small size original detection
  - Scanner switch 0C, bits 1 and 2
  (Default setting is “Depends on the setting of the base copier.”)

2.3 PRINTING FEATURES

2.3.1 PAPER SIZE SELECTION

This section explains how the FCU selects the appropriate paper size for printing a received fax image. Refer to the 'Paper Size Selection Priorities' tables at the end of this section for how the appropriate paper size is actually selected.

WIDTH PRIORITY AND LENGTH PRIORITY

When 'Width Priority' is selected, a paper size of the same width as the received fax image has a higher priority. The fax image may be printed on several pages.

When 'Length Priority' is selected, a paper size that has enough length to print the received fax image has higher priority. The fax image is printed on one sheet of paper, but the printed fax may have wide margins on the left and right.

Cross Reference

- Paper selection priority - Printer switch 0E, bit 0 (Default: Width)

IMAGE ROTATION BEFORE PRINTING

If the machine has the same size paper as the received fax image size, but in sideways orientation, the fax unit rotates the image by 90 degrees clockwise, and prints it sideways.

This feature is only possible when the received fax image is one of the following sizes: A4 lengthwise, 8.5 x 11" lengthwise, B5 lengthwise

NOTE: This function can not be disabled.

SUB-SCAN REDUCTION AND PAGE SEPARATION

Sub-scan Reduction Disabled

When Sub-scan Reduction is disabled, the received fax image is printed unreduced.

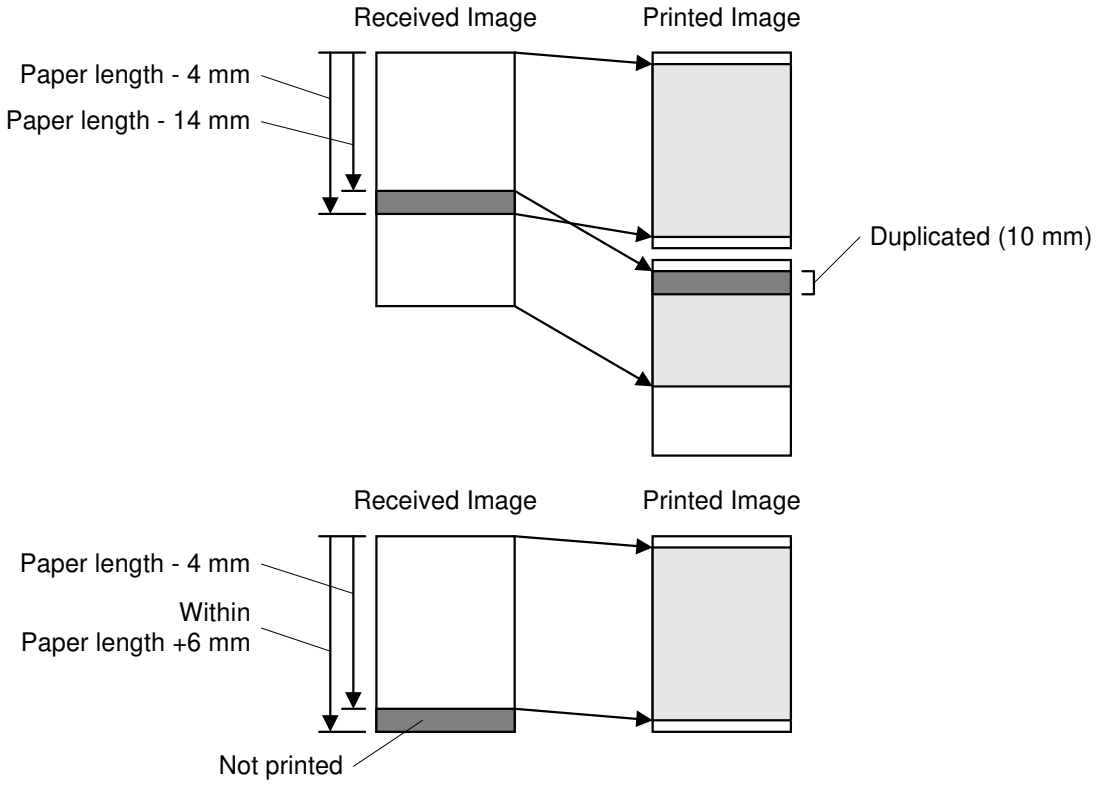
If the image is longer than the paper length + 6 mm, the image is separated onto two pages (see the top drawing below).

If the image is shorter than the paper length + 6 mm but longer than the paper length - 4 mm, the part of the image after paper length - 4 mm will be lost (see the bottom drawing below).

NOTE: The page separation threshold is adjustable between 0 and 15 mm (the default is paper length + 6 mm). Refer to Printer Switch 03, bits 4 to 7 for more details.

The 2 mm gaps at the leading and trailing edges depend on the leading and trailing edge margin settings.

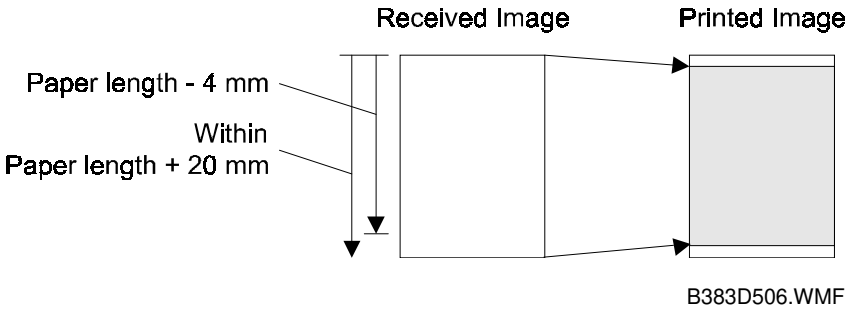
The 10 mm image duplication can be adjusted or disabled.



B383D505.WMF

Sub-scan Reduction Enabled

When Sub-scan Reduction is enabled, the received fax image is reduced in the page memory to fit on the selected paper, if the received image length is between [paper length - 4 mm] and [paper length + 20 mm]. See the drawing below.

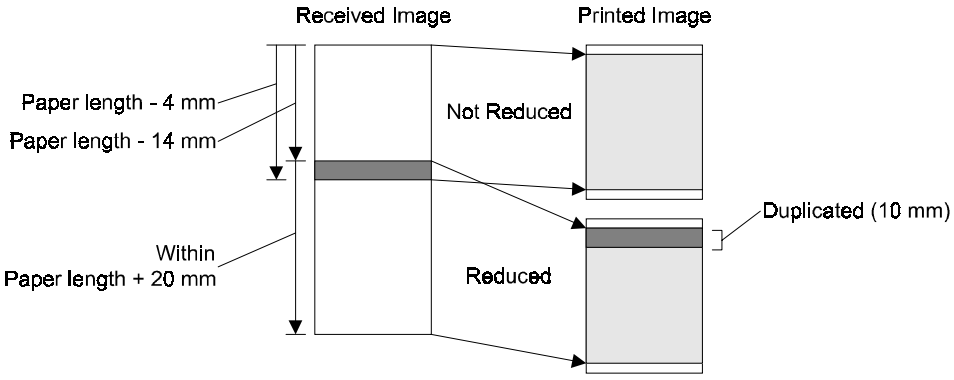


B383D506.WMF

NOTE: The upper limit (page length + 20 mm) is adjustable between 0 and 155 mm. Refer to Printer Switch 04, bits 0 to 4 for more details.

If the FCU detects that the image must be separated into more than one page after reduction, what happens to the data depends on the Reduction Rate Equalization setting (Printer Switch 0E, bit 7).

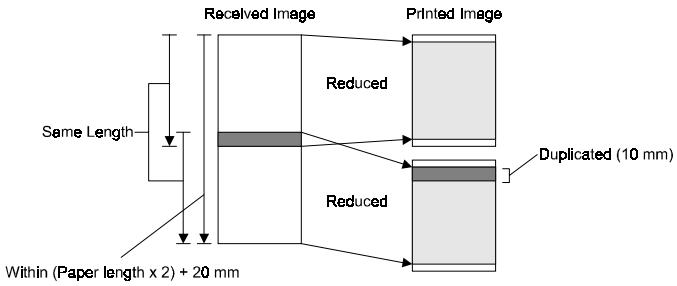
- Reduction Rate Equalization Off (Example Diagram: Two-page Printout) -



B383D509.WMF

1. The data up to [page length - 4 mm] will be printed on page 1, without reduction.
2. The last 10 mm of this data will be repeated at the top of the next page (this length can be can be adjusted or repetition can be switched off).
3. The remaining data will be printed on page 2, with reduction, if it is within [paper length + 20 mm].
4. If it is longer than this, page separation is done again. Data up to [page length - 4 mm] will be printed on page 2, without reduction.
5. The process for page 3 and subsequent pages will repeat from step 2.

- Reduction Rate Equalization On (Example Diagram: Two-page Printout) -



B383D508.WMF

1. The machine determines how many pages will be needed to print the message, taking the following into account:
   The final page (n) is such that the received image length is within (paper length x n) + 20 mm
   The data must be reduced to fit on pages of length (paper length - 4 mm), with an equal reduction rate for each page
   The last 10 mm of the previous page will be repeated at the top of the next page (this length can be adjusted or repetition can be disabled).
2. The machine prints all the pages, at the same reduction rate.

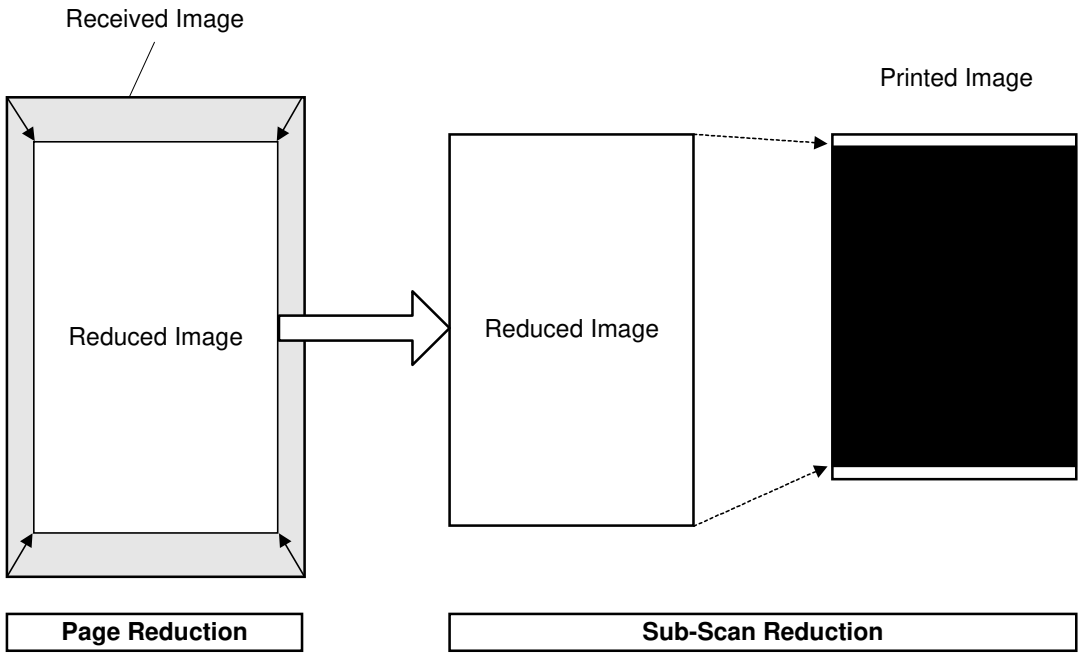
If the customer does not want to receive a fax message on separate pages, page separation can be disabled. However, once it has been disabled, the machine does not print the received fax message until a paper size which can hold the received fax image on one page is set in a cassette. Keep page separation enabled if the customer expects to receive fax messages longer than the installed paper.

Cross Reference

Parameter	Switch	Default Setting
Reduction in sub-scan direction on/off	Printer Switch 03, bit 0	Enabled (except Germany)
Equalizing reduction rate among separated pages	Printer Switch 0E, bit 7	Enabled
Page separation threshold when reduction is disabled	Printer Switch 03, bits 4-7	6 mm
Page separation threshold when reduction is enabled	Printer Switch 04, bits 0-4	20 mm
Page separation on/off	Printer Switch 0E, bit 2	Enabled
Page separation mark on/off	Printer Switch 00, bit 0	Enabled
Image duplication with page separation, on/off	Printer Switch 00, bit 1	Enabled
Length of the repeated image on the next page	Printer Switch 04, bits 5-6	10 mm

PAGE REDUCTION

This function allows a received fax image to be printed on paper with less width than the fax image.



B383D507.WMF

First, the received image is reduced by a fixed reduction rate in the main and sub-scan directions. The available reduction rates are as follows:

- 84% - A3 to B4 reduction
- 82% - B4 to A4 lengthwise reduction

Then, the reduced image is further reduced (if necessary) in the sub-scan direction so that it can be printed on one page. However, if the FCU detects that the image does not fit on one page after sub-scan reduction, the FCU cancels the page reduction, but uses normal sub-scan reduction on the received fax image.

NOTE: 1) Sub-scan reduction is automatically enabled when Page Reduction is enabled.
2) A3 to A4 reduction is not available.

Cross Reference

- Page reduction on/off - User parameter 10 (0A), bit 3 (Default: Disabled)

Examples

1. When printing a B4 size fax image on 8.5" x 11" lengthwise paper
   - Fax image size: 256 x 364 mm (10.7 x 14.3")
   - Paper size: 216 x 279 mm (8.5 x 11")
   - Reduction rate used: 82%
   - Page separation threshold: 20 mm

The received image is printed on one 8.5 x 11" sheet, because the image length after page reduction (364 mm x 82% = 298.5 mm) is shorter than the paper length (279 mm) plus 20 mm.

2. When printing a non-standard size (256 x 400 mm) fax image on 8.5 x 11" lengthwise paper
   - Fax image size: 256 x 400 mm (10.7 x 15.7")
   - Paper size: 216 x 279 mm (8.5 x 11")
   - Reduction rate used: 82%
   - Page separation threshold: 20 mm

The received fax image is printed on two 8.5 x 11" sheets after page separation and image rotation, because the image length after page reduction (400 mm x 82% = 328 mm) is longer than the paper length (279 mm) plus 20 mm.

Refer to the “Paper Size Selection Priorities” table later in this chapter.

TWO IN ONE

This function allows two small pages to be printed on one sheet of paper. However, this function only works when the machine does not have the following size of paper in the cassette.

- The same size of paper as the received image
- The paper which has the same width and sufficient length

Cross Reference

- Two in one on/off - User parameter 10 (0A), bit 1 (Default: Disabled)

2.3.2 PAPER SIZE SELECTION PRIORITIES

Page Reduction	Disabled
Reduction in Sub-scan Direction	Disabled
Page Separation Threshold	
Width or Length Priority	Width

: Image Rotation
: Half of the page is blank
: Page Reduction

Paper Select Priorities	Received Image Size										
	A3	B4	A4	A4	B5	A5	11x17"	8.5x14"	8.5x11"	8.5x11"	F/F4
1	A3	B4	A4	A4	B5	A5	11x17"	8.5x14"	8.5x11"	8.5x11"	F/F4
2	11x17"	A3	A4	A4	B5	8.5x11"	A3	A4	8.5x11"	8.5x11"	8.5x14"
3	A4	11x17"	F/F4	8.5x11"	B4	8.5x11"	A4	A4	A4	A3	A4
4	A4	B5	8.5x14"	8.5x11"	A4	A4	A4	8.5x11"	A4	11x17"	A4
5	8.5x11"	B5	A3	A3	A4	A4	8.5x11"	8.5x11"	F/F4	A4	8.5x11"
6	8.5x11"	A4	8.5x11"	F/F4	8.5x11"	F/F4	8.5x11"	F/F4	8.5x14"	A4	8.5x11"
7	F/F4	A4	8.5x11"	11x17"	8.5x11"	8.5x14"	F/F4	B4	A3	F/F4	B4
8	B4	8.5x11"	B4	B4	F/F4	B5	B4	A3	B4	B4	A3
9	8.5x14"	8.5x11"	11x17"	8.5x14"	A3	B5	8.5x14"	11x17"	11x17"	8.5x14"	11x17"
10		F/F4	A5		11x17"	A3		A5	A5		A5
11		8.5x14"	B5		8.5x14"	B4		B5	B5		B5
12			B5			11x17"		B5	B5		B5

Lengthwise

Sideways

A693D510.WMF

Page Reduction	Disabled
Reduction in Sub-scan Direction	Enabled
Page Separation Threshold	20 mm
Width or Length Priority	Width

: Image Rotation
: Half of the page is blank
: Page Reduction

Paper Select Priorities	Received Image Size										
	A3	B4	A4	A4	B5	A5	11x17"	8.5x14"	8.5x11"	8.5x11"	F/F4
1	A3	B4	A4	A4	B5	A5	A3	8.5x14"	8.5x11"	A4	F/F4
2	11x17"	A3	A4	A4	B5	8.5x11"	11x17"	A4	8.5x11"	A4	8.5x14"
3	A4	11x17"	F/F4	8.5x11"	B4	8.5x11"	A4	A4	A4	8.5x11"	A4
4	A4	B5	8.5x14"	8.5x11"	A4	A4	A4	8.5x11"	A4	8.5x11"	A4
5	8.5x11"	B5	A3	A3	A4	A4	8.5x11"	8.5x11"	F/F4	A3	8.5x11"
6	8.5x11"	A4	8.5x11"	F/F4	8.5x11"	F/F4	8.5x11"	F/F4	8.5x14"	F/F4	8.5x11"
7	F/F4	A4	8.5x11"	11x17"	8.5x11"	8.5x14"	F/F4	B4	A3	11x17"	B4
8	B4	8.5x11"	B4	B4	F/F4	B5	B4	A3	B4	B4	A3
9	8.5x14"	8.5x11"	11x17"	8.5x14"	A3	B5	8.5x14"	11x17"	11x17"	8.5x14"	11x17"
10		F/F4	A5		11x17"	A3		A5	A5		A5
11		8.5x14"	B5		8.5x14"	B4		B5	B5		B5
12			B5			11x17"		B5	B5		B5

Lengthwise

Sideways

B383D511.WMF

Page Reduction	Disabled
Reduction in Sub-scan Direction	Disabled
Page Separation Threshold	
Width or Length Priority	Length

: Image Rotation

: Half of the page is blank

: Page Reduction

Paper Select Priorities	Received Image Size										
	A3	B4	A4	A4	B5	A5	11x17"	8.5x14"	8.5x11"	8.5x11"	F/F4
1	A3	B4	A4	A4	B5	A5	11x17"	8.5x14"	8.5x11"	8.5x11"	F/F4
2	11x17"	A3	A4	A4	B5	8.5x11"	A3	B4	8.5x11"	8.5x11"	8.5x14"
3	A4	11x17"	F/F4	8.5x11"	B4	8.5x11"	A4	A3	A4	F/F4	B4
4	A4	B5	8.5x14"	8.5x11"	A4	A4	A4	11x17"	A4	A3	A3
5	8.5x11"	B5	A3	A3	A4	A4	8.5x11"	A4	F/F4	11x17"	11x17"
6	8.5x11"	A4	B4	F/F4	8.5x11"	F/F4	8.5x11"	A4	8.5x14"	B4	A4
7	F/F4	A4	11x17"	11x17"	8.5x11"	8.5x14"	F/F4	8.5x11"	A3	8.5x14"	A4
8	B4	8.5x11"	8.5x11"	B4	F/F4	B5	B4	8.5x11"	B4	A4	8.5x11"
9	8.5x14"	8.5x11"	8.5x11"	8.5x14"	A3	B5	8.5x14"	F/F4	11x17"	A4	8.5x11"
10		F/F4	A5		11x17"	A3		A5	A5		A5
11		8.5x14"	B5		8.5x14"	B4		B5	B5		B5
12			B5			11x17"		B5	B5		B5

Lengthwise

Sideways

B383D512.WMF

Page Reduction	Disabled
Reduction in Sub-scan Direction	Enabled
Page Separation Threshold	20 mm
Width or Length Priority	Length

: Image Rotation

: Half of the page is blank

: Page Reduction

Paper Select Priorities	Received Image Size										
	A3	B4	A4	A4	B5	A5	11x17"	8.5x14"	8.5x11"	8.5x11"	F/F4
1	A3	B4	A4	A4	B5	A5	A3	8.5x14"	8.5x11"	A4	F/F4
2	11x17"	A3	A4	A4	B5	8.5x11"	11x17"	B4	8.5x11"	A4	8.5x14"
3	A4	11x17"	F/F4	8.5x11"	B4	8.5x11"	A4	A3	A4	8.5x11"	B4
4	A4	B5	8.5x14"	8.5x11"	A4	A4	A4	11x17"	A4	8.5x11"	A3
5	8.5x11"	B5	A3	A3	A4	A4	8.5x11"	A4	F/F4	A3	11x17"
6	8.5x11"	A4	B4	F/F4	8.5x11"	F/F4	8.5x11"	A4	8.5x14"	F/F4	A4
7	F/F4	A4	11x17"	11x17"	8.5x11"	8.5x14"	F/F4	8.5x11"	A3	11x17"	A4
8	B4	8.5x11"	8.5x11"	B4	F/F4	B5	B4	8.5x11"	B4	B4	8.5x11"
9	8.5x14"	8.5x11"	8.5x11"	8.5x14"	A3	B5	8.5x14"	F/F4	11x17"	8.5x14"	8.5x11"
10		F/F4	A5		11x17"	A3		A5	A5		A5
11		8.5x14"	B5		8.5x14"	B4		B5	B5		B5
12			B5			11x17"		B5	B5		B5

Lengthwise

Sideways

B383D513.WMF

Page Reduction	Enabled
Reduction in Sub-scan Direction	Enabled
Page Separation Threshold	20 mm
Width or Length Priority	Width

: Image Rotation

: Half of the page is blank

: Page Reduction

Paper Select Priorities	Received Image Size: A3	B4	A4	A4	B5	A5	11x17"	8.5x14"	8.5x11"	8.5x11"	F/F4
1	A3	B4	A4	A4	B5	A5	A3	8.5x14"	8.5x11"	A4	F/F4
2	11x17"	A4	A4	A4	B5	8.5x11"	11x17"	A4	8.5x11"	A4	8.5x14"
3	B4	A4	F/F4	8.5x11"	B4	8.5x11"	B4	A4	A4	8.5x11"	A4
4	A4	F/F4	8.5x14"	8.5x11"	A4	A4	A4	8.5x11"	A4	8.5x11"	A4
5	A4	8.5x14"	A3	A3	A4	A4	A4	8.5x11"	F/F4	A3	8.5x11"
6	8.5x11"	A3	8.5x11"	F/F4	8.5x11"	F/F4	8.5x11"	F/F4	8.5x14"	F/F4	8.5x11"
7	8.5x11"	11x17"	8.5x11"	11x17"	8.5x11"	8.5x14"	8.5x11"	B4	A3	11x17"	B4
8	F/F4	B5	B4	B4	F/F4	B5	F/F4	A3	B4	B4	A3
9	8.5x14"	B5	11x17"	8.5x14"	A3	B5	8.5x14"	11x17"	11x17"	8.5x14"	11x17"
10		8.5x11"	A5		11x17"	A3		A5	A5		A5
11		8.5x11"	B5		8.5x14"	B4		B5	B5		B5
12			B5			11x17"		B5	B5		B5

Lengthwise

Sideways

B383D514.WMF

Page Reduction	Enabled
Reduction in Sub-scan Direction	Enabled
Page Separation Threshold	20 mm
Width or Length Priority	Length

: Image Rotation

: Half of the page is blank

: Page Reduction

Paper Select Priorities	Received Image Size										
	A3	B4	A4	A4	B5	A5	11x17"	8.5x14"	8.5x11"	8.5x11"	F/F4
1	A3	B4	A4	A4	B5	A5	A3	8.5x14"	8.5x11"	A4	F/F4
2	11x17"	A4	A4	A4	B5	8.5x11"	11x17"	B4	8.5x11"	A4	8.5x14"
3	B4	A4	F/F4	8.5x11"	B4	8.5x11"	B4	A3	A4	8.5x11"	B4
4	A4	F/F4	8.5x14"	8.5x11"	A4	A4	A4	11x17"	A4	8.5x11"	A3
5	A4	8.5x14"	A3	A3	A4	A4	A4	A4	F/F4	A3	11x17"
6	8.5x11"	A3	B4	F/F4	8.5x11"	F/F4	8.5x11"	A4	8.5x14"	F/F4	A4
7	8.5x11"	11x17"	11x17"	11x17"	8.5x11"	8.5x14"	8.5x11"	8.5x11"	A3	11x17"	A4
8	F/F4	B5	8.5x11"	B4	F/F4	B5	F/F4	8.5x11"	B4	B4	8.5x11"
9	8.5x14"	B5	8.5x11"	8.5x14"	A3	B5	8.5x14"	F/F4	11x17"	8.5x14"	8.5x11"
10		8.5x11"	A5		11x17"	A3		A5	A5		A5
11		8.5x11"	B5		8.5x14"	B4		B5	B5		B5
12			B5			11x17"		B5	B5		B5

Lengthwise

Sideways

B383D515.WMF

2.3.3 JUST SIZE PRINTING

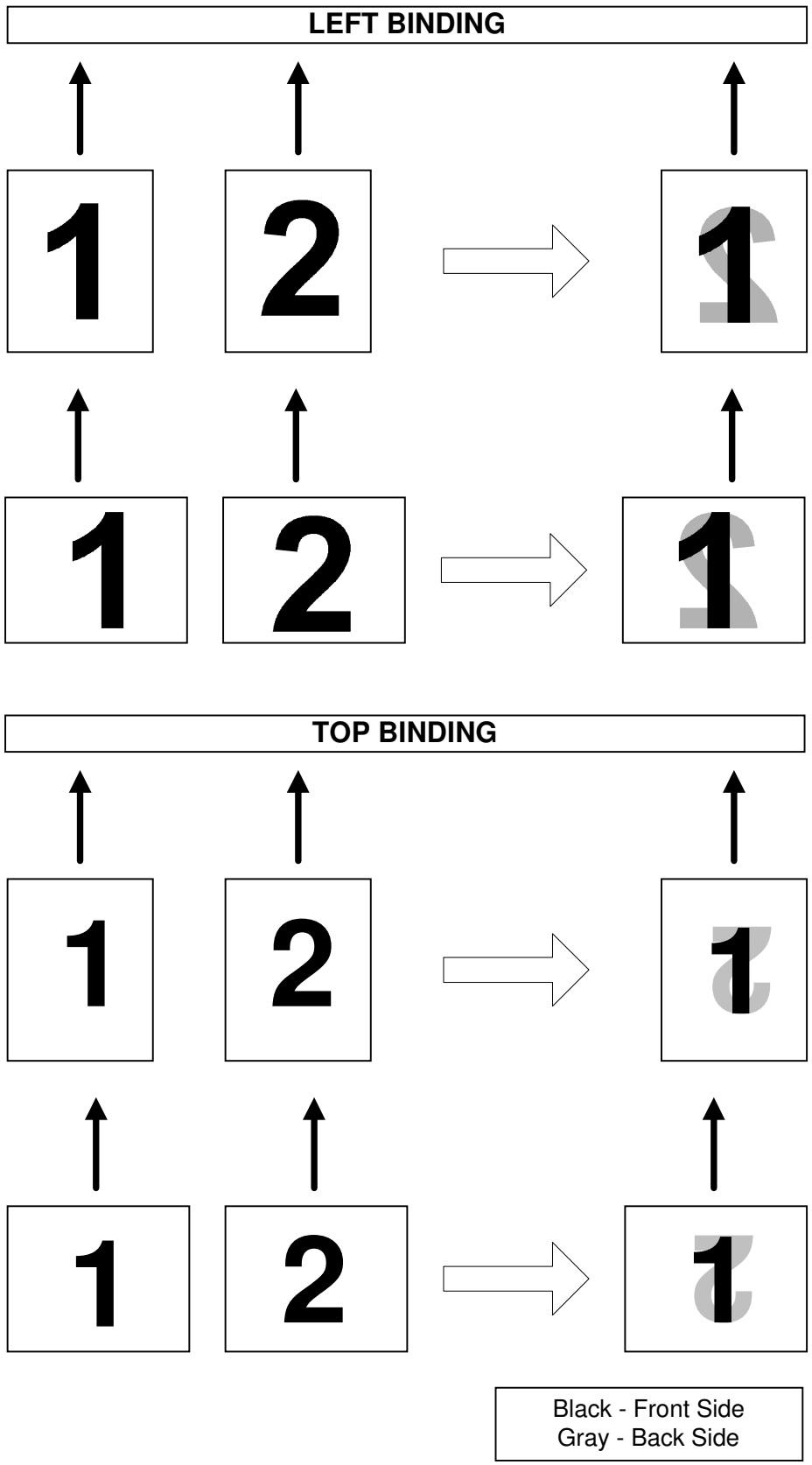
This function restricts the machine so that it can only print a received message on paper with the highest priority paper size.

NOTE:
1) Example:
   A: The machine has A4 (lengthwise) and B4.
   B: The A4 paper tray is empty
   C: The machine receives an A4 (lengthwise) size message.
   When just size printing is disabled, the machine prints the received image on B4 paper. When just size printing is enabled, the machine will not print on B4 paper. If the machine has A4 (sideways), the machine prints using image rotation.
2) When the paper tray with the highest priority paper size is empty, the machine displays 'Paper designated to print Fax/lists are empty. Refill -- size'.
3) When both page reduction and just size printing are enabled, page reduction is given priority

Cross Reference

- Just size printing on/off – User parameter switch 05, bit5
  Default setting is 0: Just size printing is disabled
- Just size printing while a paper cassette is opened – Printer switch 06, bit 1
  Default setting is 0: Printing will not start

2.3.4 TWO-SIDED (DUPLEX) PRINTING



B383D517.WMF

When duplex printing is enabled in fax mode, the machine prints two consecutive pages, which must be the same size and direction, onto both sides of the page. Duplex printing can utilize both Left Binding and Top Binding, selected by a bit switch.

LEFT BINDING

As shown in the above diagram, the printed results of both sides are in the same direction.

TOP BINDING

As shown in the above diagram, the printed results of both sides are in the reverse direction.

NOTE: 1) The optional duplex unit and EXSAF card are required to enable duplex printing.
2) The machine starts printing after all pages have been received.

Cross Reference

- Duplex printing on/off for specific senders - Key operator mode 07
- Duplex printing on/off for all received fax messages - Printer Switch 0F, bit 2
- Wait time when duplex unit is in use - Printer Switch 0F, bits 6 and 7
- Bind direction - Printer Switch 0F, bits 3

2.4 FAX COMMUNICATION FEATURES

2.4.1 SEP/SUB/PWD

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

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

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

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

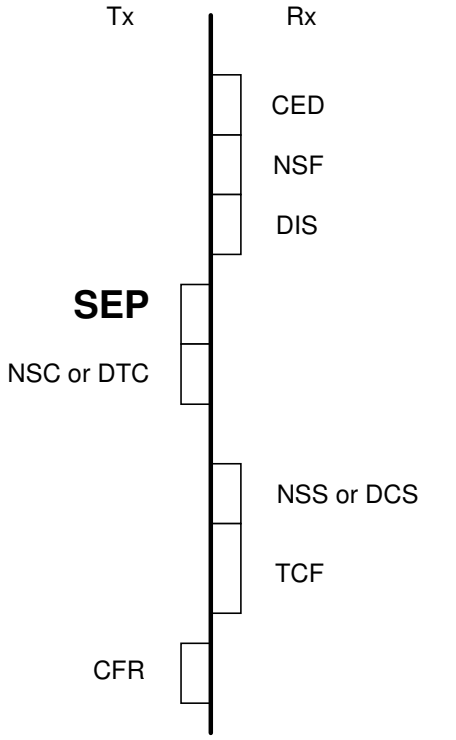
SID (Sender ID): This signal informs the other terminal of the sender ID to identify the transmitter.
Up to 20 digits or characters can be sent in a SID frame.

NOTE: SID is not available with this machine.

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

This machine is capable of sending SEP, SUB and PWD codes in transmission or for polling reception, but it is not capable of receiving these codes. If the machine receives one of these frames, the machine ignores it.

Selective Polling (SEP/PWD)



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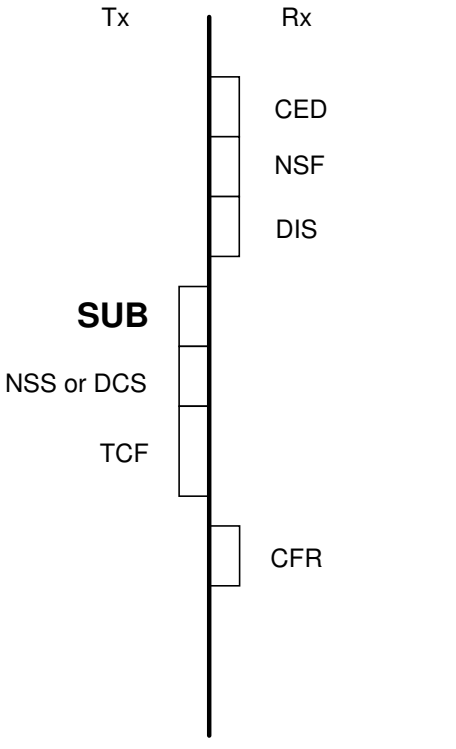
Sub-address (SUB)



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2.4.2 JBIG COMPRESSION

JBIG (Joint Bi-Level Image Coding Expert Group) is a working group which consists of members of ITU-T T.82 and ISO11544. The JBIG compression method allows data compression of approximately 1.2 to 1.3 times the MMR method in text mode, and 2 to 10 times in halftone mode.

The optional PMU board is required for JBIG compression.

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

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

There are two modes for JBIG compression.

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

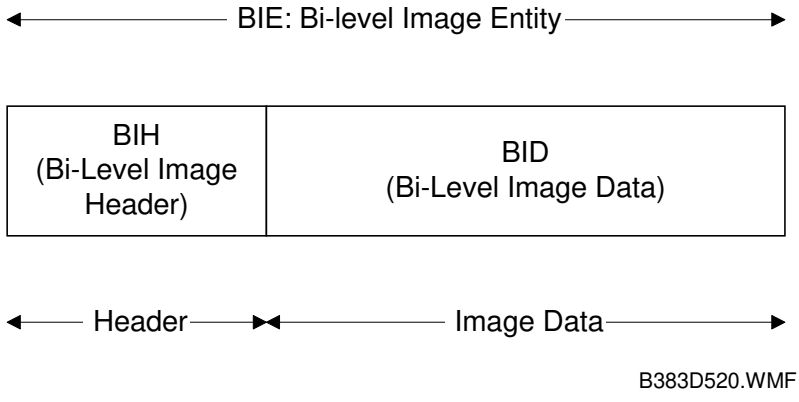
This machine supports both modes for transmission and reception. The mode used is determined during handshaking.

Cross reference: Section 4.2 Bit switches

- JBIG reception mode : Communication bit switch 00 bit 5
  0: Standard mode only 1: Standard mode and optional mode (default)
- Priority of JBIG mode used for transmission: Communication bit switch 00 bit 6
  0: Standard mode 1: Optional mode (default)

Data Compression

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



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2.4.3 TRANSFER BROADCASTING

This machine uses a new algorithm to identify the requester's fax number to send back the transfer result report. Previously, the transfer result report did not sometimes reach the requester with the old algorithm.
In a transfer broadcasting operation, the transfer requester informs its own fax number to the transfer station. The transfer station uses that number to identify the requester's fax number, which the transfer station must dial to send the transfer result report back to the requester.
Transmission of the transfer result report and selection of the number to dial depends on the following three settings.

Setting	Switch
Conditions required for transfer result report transmission	Communication switch 0B bit 3 0: Always 1: Only if there is an error
Action when there is no fax number in the programmed Quick/Speed dials which matches the requester's own fax number	Communication switch 0B bit 5 0: Transfer is cancelled 1: Transfer is continued
Number of digits compared to find the requester's fax number from the programmed Quick/Speed dials.	Communication switch 0C bits 0 to 4 (default setting = 5 digits)

The requester's fax number format is normally as follows.
[International access code] [Country code] [Area code] - [Local tel. no.]
A pause (“-”) must be programmed between area code and local tel. no.

Before the machine transfers the message, the machine compares the last few digits of the requester's own fax number with all the programmed Quick/Speed Dials as shown in the following diagram. Starting from Quick Dial 01 to the end of the Speed Dial codes. (The default setting for the number of digits compared is 5; see the above table.)

If the machine finds a number in which the compared digits match those of the requester's own fax number, the machine chooses the number as the destination for sending the report back. However, depending on the number of digits compared, the machine may choose the wrong destination, as shown in the example diagram on the next page.

Note that the machine does not compare the following:

- Pause (“-”)
- ISDN sub-address (“/aaaa”, “aaaa” is a sub-address number)

With a G4 transfer request, the G4 and G3 own fax numbers are informed from the requester, then the machine compares the G4 number first, and the G3 number second.

Example

Requester's Own Fax No.
0111201-2223456

No. of digits to compare	Result
4	Q01
5	Q05
6	Q05
7	Q05
8	Q08
9	Q08
10	Q08
11	S07
12	No match
13	No match

Q01	071-441-3456
Q02	020-4773456
Q03	020-4776666
Q04	00-81454771748
Q05	2223456
Q06	00-4961969063456
Q07	0569723456
Q08	201-2223456
Q09	00-31204564569
Q10	013453456
Q56	0875558888

S00	1223456
S01	5413654
S02	00-4126567878
S03	0454771748
S04	0634558989
S05	07474125899
S06	00-85226356541
S07	00-12012223456
S08	02212301564
S09	6524555
S99	00-496158756452
S100	2223456
S999	0454771759

With
Function Upgrade Card

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In the above example:

- If the requester is within the same area, Quick Dial 05 or Quick Dial 08 is the correct destination, depending on the required dialing method for numbers in the same country or area. The machine selects Quick Dial 05 if it compares from 5 to 7 digits, and selects Quick Dial 08 if it compares from 8 to 10 digits.
- If the requester is in another country, Speed Dial 07 is the correct destination. The machine selects this number if it compares 11 digits. Any setting higher than this will result in no match, due to the different international access codes at the start of the numbers.
- If the machine compares less than 4 digits, it selects Quick Dial 01.
- If the number of digits to compare is set to zero, the machine sends the report to the first Quick or Speed Dial number programmed in.

Note that the result can be changed depending on the locations where the candidates are programmed. For example, if “00-1-2012223456” is programmed in Quick Dial 01, the machine always selects this number for sending back the report, even if the transfer request is from within the same country.

When programming the machine to act as a Transfer Station, the combination of the communication switch 0C setting (number of digits) and the programmed location of the requester's fax number has to be considered carefully.

If the machine can not find the destination for the report, it either:

- Stops the transfer operation and prints a report locally (if bit 5 of communication switch 0B is 0).
- Or, continues the transfer operation and prints a result report locally after finishing all the transfer operations (if bit 5 of communication switch 0B is 1).

Cross Reference to other parameters

ID code programming - Key operator mode
Use of economy transmission during a transfer operation to end receivers
- Communication switch 0B, bit 0
Use of economy transmission during a transfer operation to next transfer stations
- Communication switch 0B, bit 1
Use of label insertion for the end receivers in a transfer operation
- Communication switch 0B, bit 2
Printout of the message when acting as a transfer station
- Communication switch 0B, bit 4

2.4.4 V.8/V.34 PROTOCOL

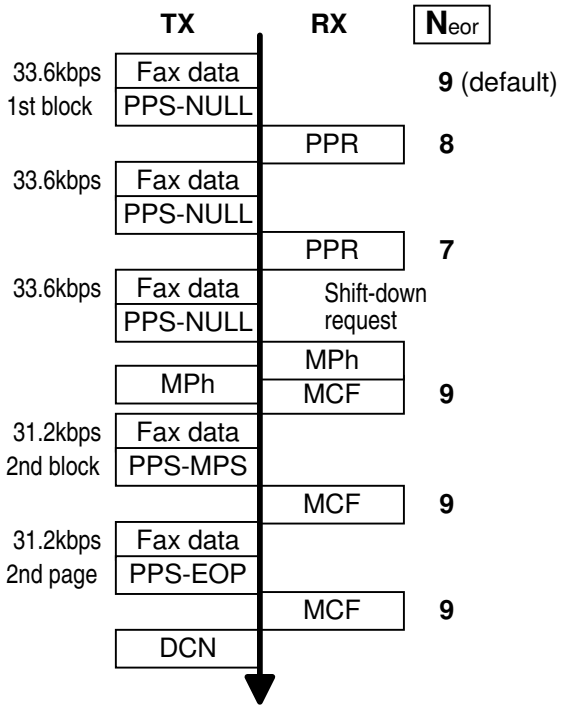
NOTE: 1) Refer to "V.8/V.34 Training Manual" for overall information about V.8/V.34 protocol.
2) This section explains machine specific functions only.

V.8 in Manual Reception

This machine starts V.8 procedure in order to make V.34 communication enabled in manual reception, though some other fax machines do not.
Refer to "V.8/V.34 Training Manual – section 3.1" for detailed procedures.

Shift-down Conditions

One-step Shift-Down from Receiving Terminal



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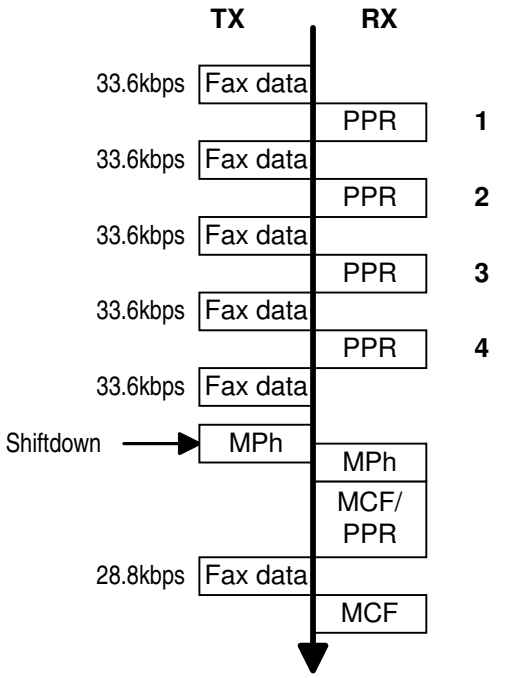
NOTE: The receiving terminal must be this machine.

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

N eor : Number of frame re-transmissions remaining until the Tx terminal sends DCN to terminate the communication. This is fixed at "9", not adjustable.

Two-step Shift-down from Sending Terminal



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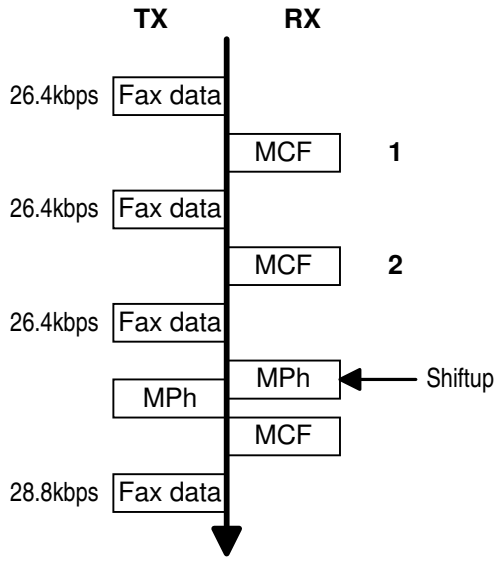
NOTE: The sender terminal must be this machine.

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

One-step Shift-up from Receiving Terminal



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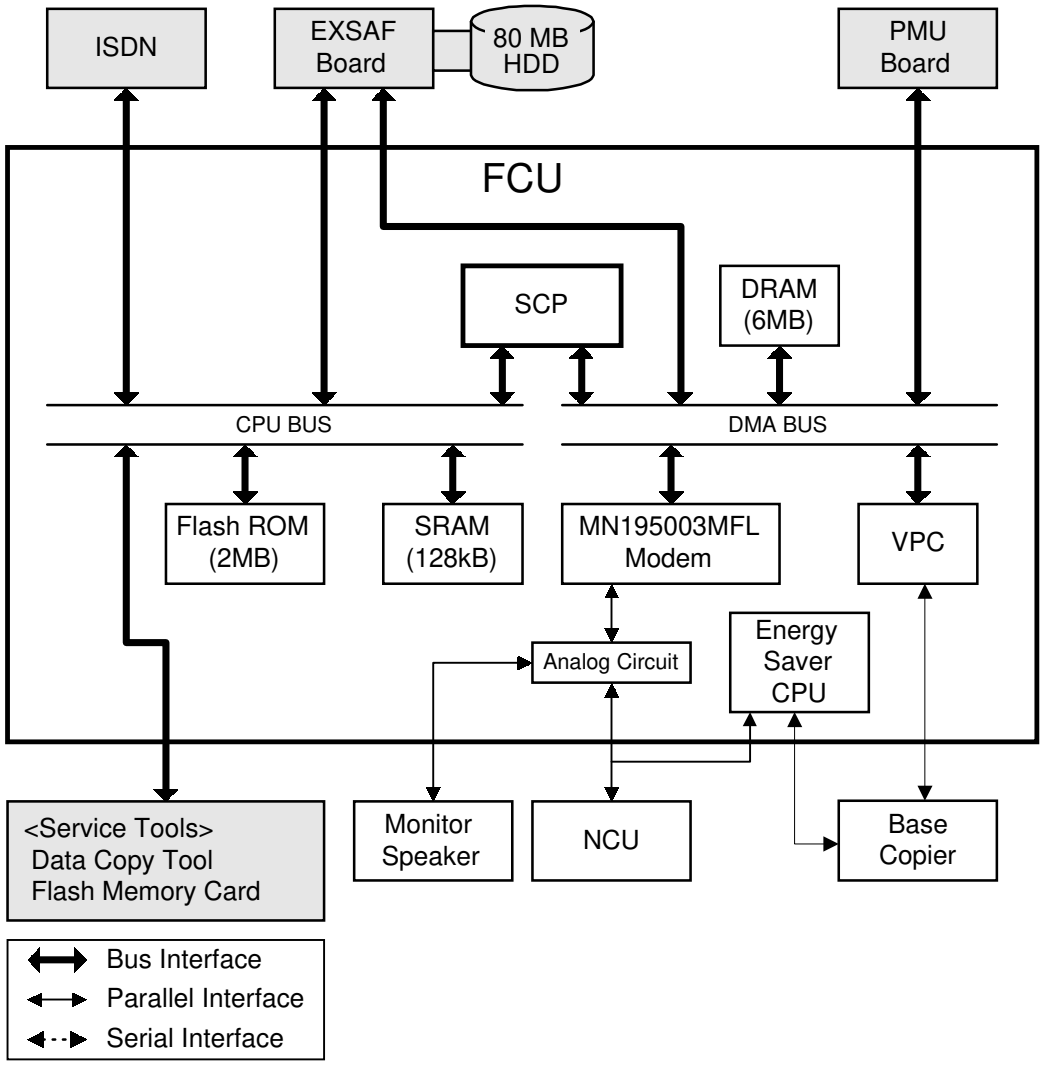
NOTE: The receiving terminal must be this machine.

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

2.5 PCBS

2.5.1 FCU



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

SCP (System Control Processor)

- CPU
- Data compression and reconstruction (DCR)
- MMR + raw data compression for SAF storage (DCMMR)
- DMA control
- Clock generation
- DRAM backup control
- Ringing signal/tone detection

VPC

- Video and command interface to the base copier

Modem (Matsushita: MN195003MFL)

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

Energy Saver CPU

- Power distribution control in energy saver mode

ROM

- 2MB (16 Mbit) flash ROM for system software storage

DRAM

- The 6 MB of DRAM is shared between SAF Memory (2 MB), ECM Buffer (128 KB), Page Memory (2 MB), Working Memory (384 kB), and Line buffer etc (512 kB). The remaining 1 MB of memory is not used.
- The 2 MB of SAF memory is backed up by the rechargeable battery.

SRAM

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

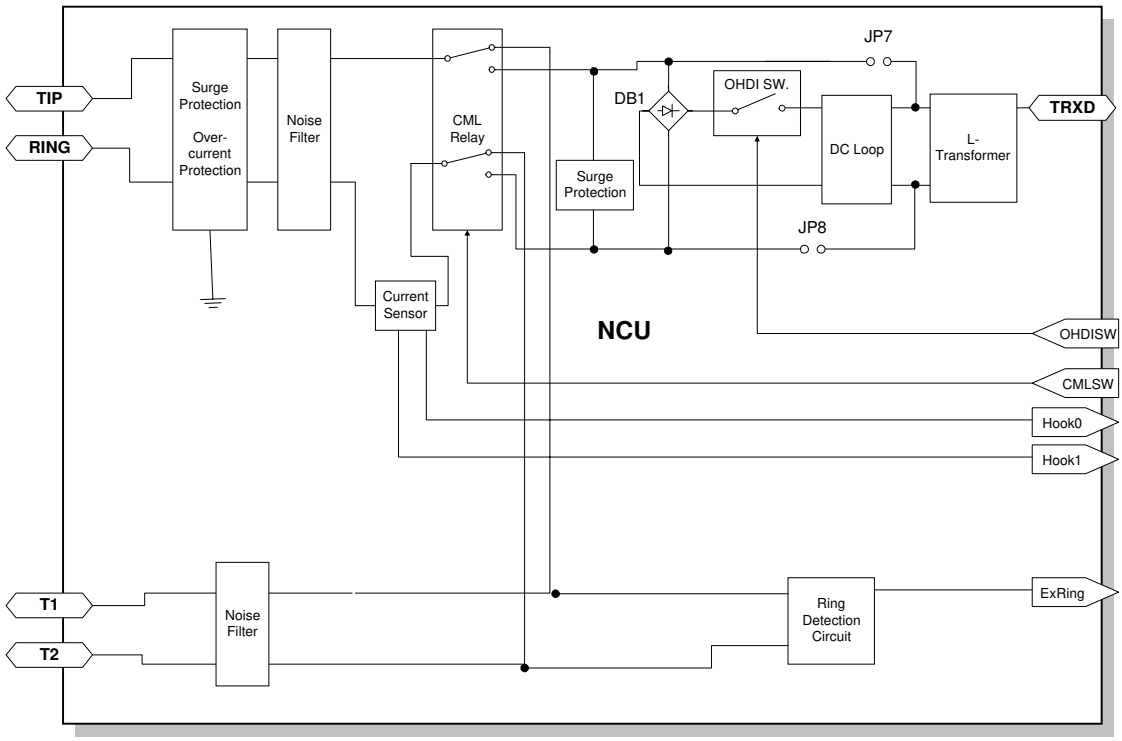
Oscillators

- 42.20545MHz oscillator for system clock generation
- 32.768MHz oscillator for the real time clock. This is backed up by the lithium battery.
- 24.192MHz oscillator for the MN195003MFL modem

Jumpers, Switches, and Test Points

Item	Description
SW1	Switches the SRAM backup battery on/off
SW2	Reset switch
SW3	Switches the data transfer direction

2.5.2 NCU (US)



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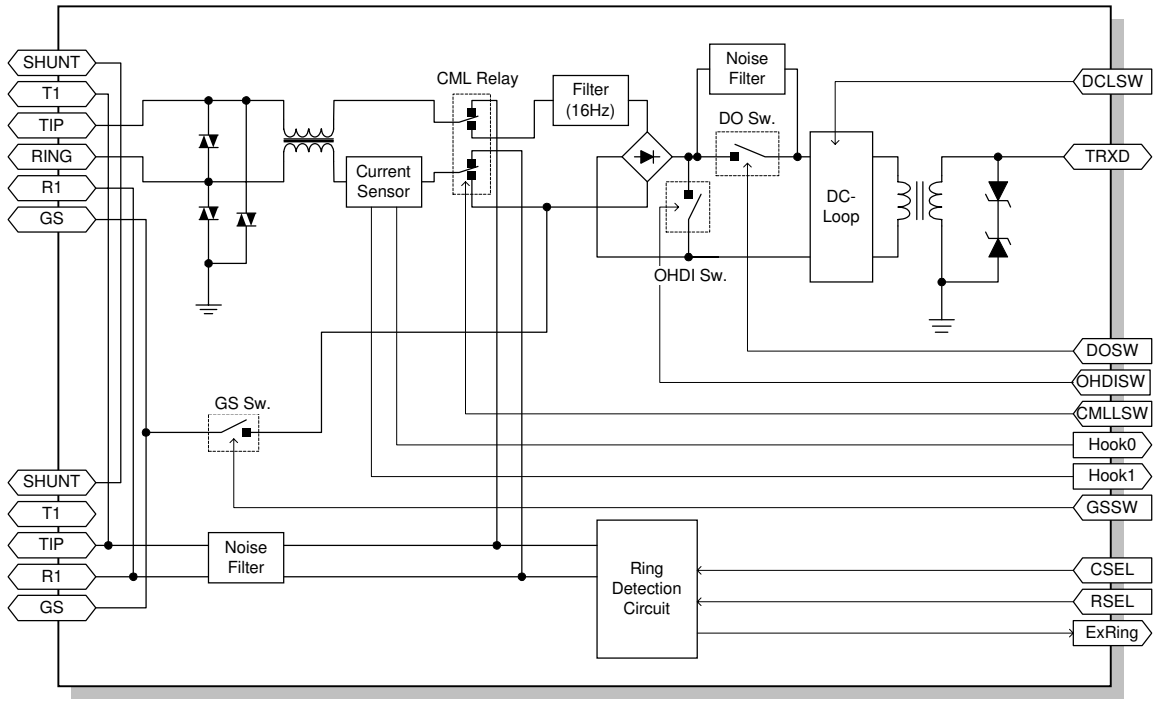
Jumpers

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 NCU (EUROPE/ASIA)



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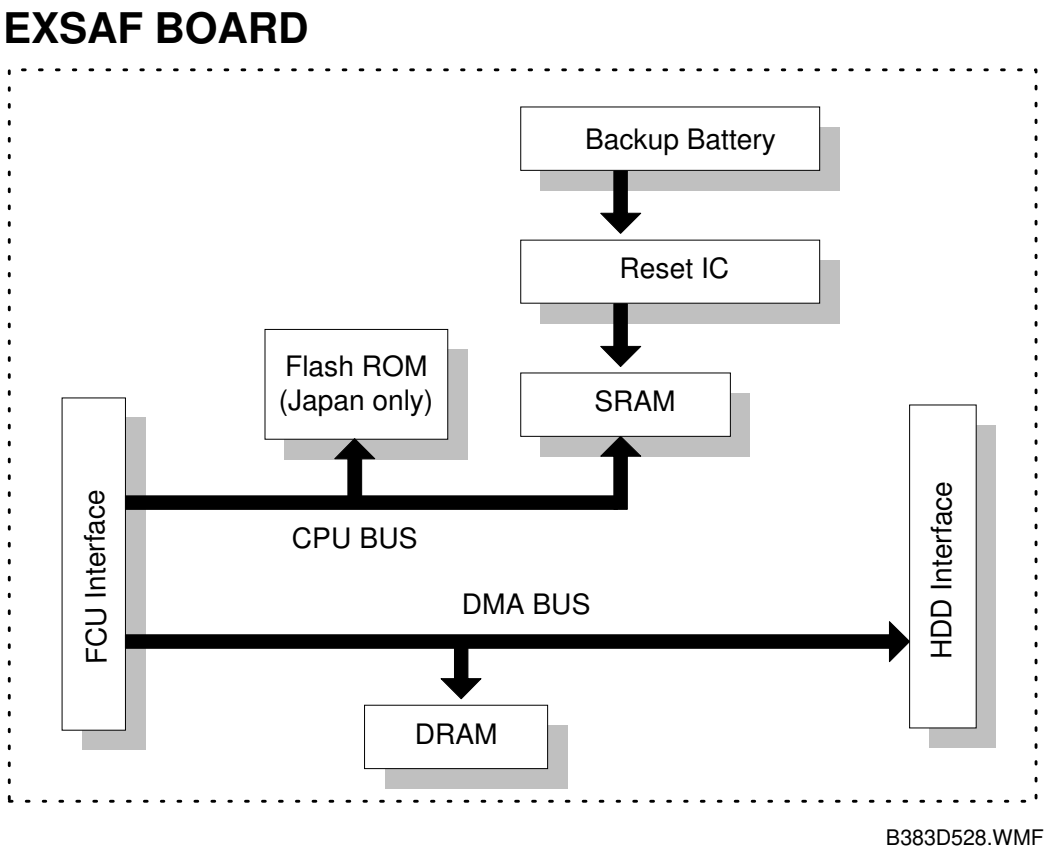
Control Signals and Jumpers

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

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

2.5.4 EXSAF BOARD



The EXSAF board expands the SAF memory capacity to hold up to 6 MB, and some additional features become available. In addition, this expands the SRAM capacity. This board also serves as the HDD interface.

DRAM

- 4MB DRAM for SAF expansion.

SRAM

- 512KB SRAM for programmable area expansion.

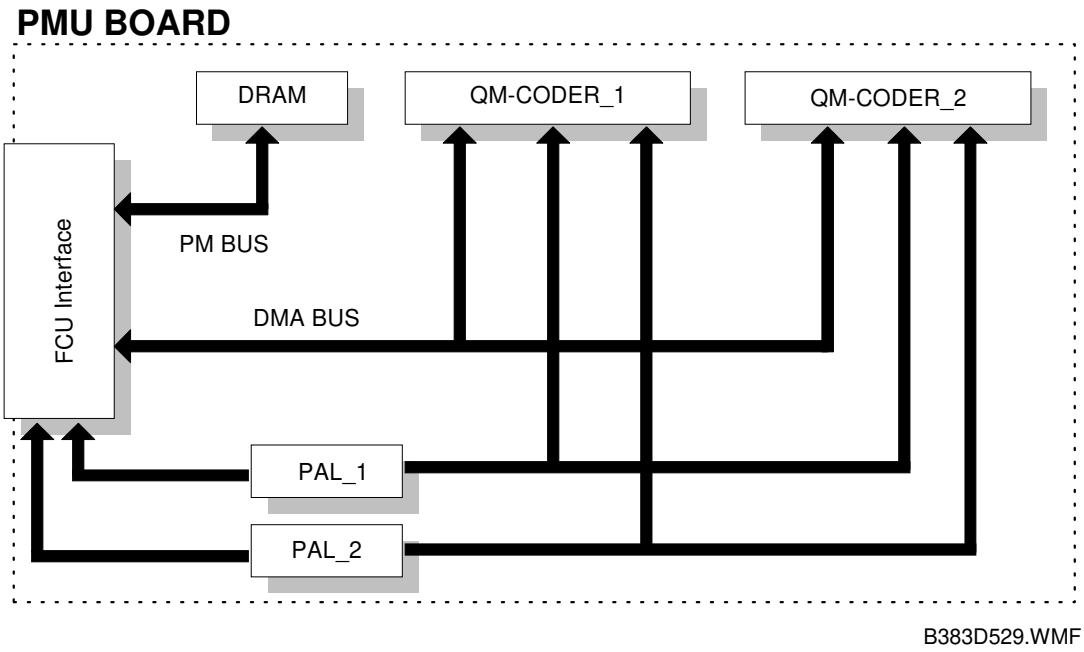
Lithium battery

- Backs up the SRAM.

Jumpers, Switches, and Test Points

Item	Description
SW1	Switches the backup battery on/off

2.5.5 PMU BOARD



The PMU board expands the page memory capacity to 4MB. Also, 400dpi resolution and JBIG compression become available.

DRAM

- 2MB DRAM for page memory expansion.

QM Coder

- 2 QM coders for JBIG compression.

PAL (PALCE16V8H-15PC)

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

3. INSTALLATION

3.1 FAX UNIT (B383)

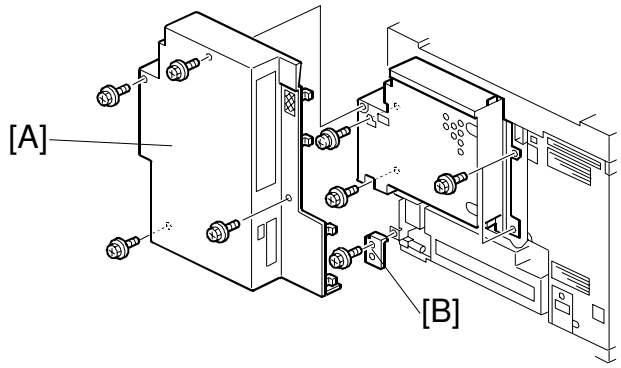
NOTE: 1) Never install telephone wiring during a lightning storm.
2) Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
3) Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
4) Use caution when installing or modifying telephone lines.
5) Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
6) Do not use the telephone to report a gas leak in the vicinity of the leak.

⚠CAUTION

1. **Before installing the fax unit, switch off the main power and operation switches, and disconnect the power cord.**
2. **The fax unit contains a lithium battery. The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.**

3.1.1 INSTALLATION PROCEDURE

NOTE: To install the fax unit, an I/F unit is required in addition.



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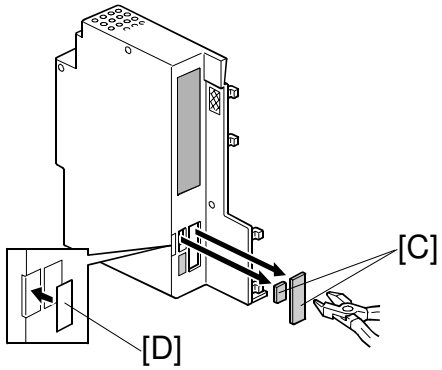
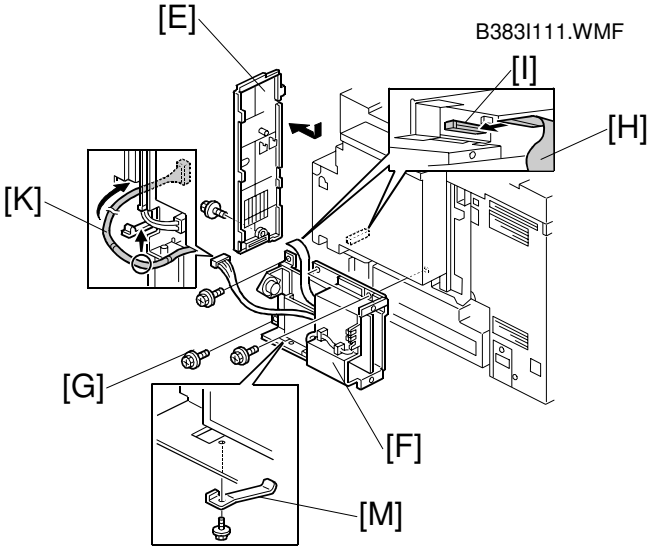
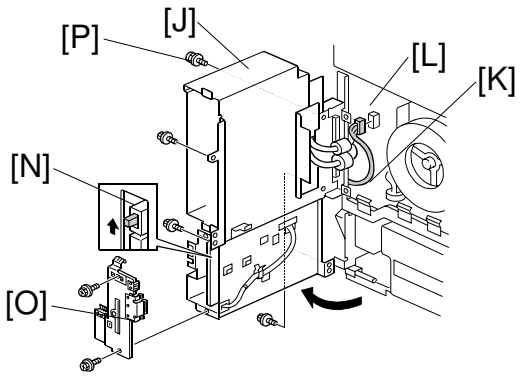


B383I112.WMF



B383I101.WMF

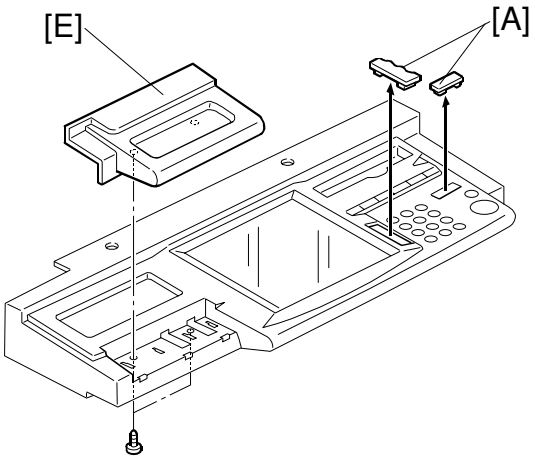


B383I102.WMF

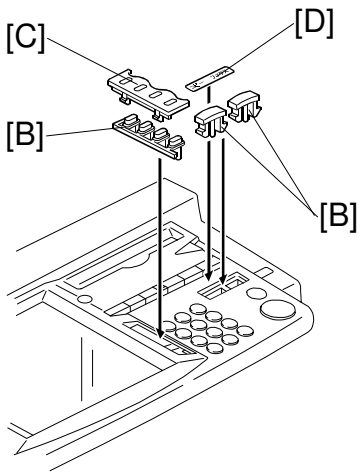
⚠CAUTION

Unplug the copier power cord before starting the following procedure.

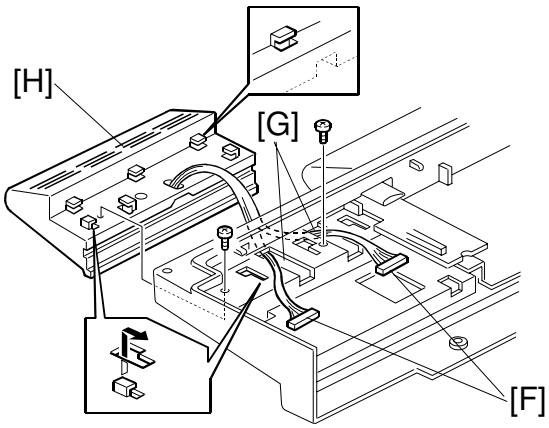
1. Remove the I/F unit cover [A] (4 screws) and the cover bracket [B] (1 screw).
2. Cut off and remove the caps [C] and attach the TEL/LINE label [D].
3. Remove the right rear cover [E] (1 screw).
4. Install the fax unit [F] (3 M3x6 screws and 1 M4x6 screw [G]).
5. Connect the flat cable [H] to the BUSSW board [I].
6. Remove 4 screws and swing out the I/F unit [J].
7. Clamp and route the harness [K] as shown, then connect it to the I/O control board [L].
8. Attach the spring plate [M] (1 screw) as shown.
9. Turn on the battery switch (SW1) [N] on the FCU and install the bracket [O] (2 screws).
10. Secure the I/F unit (3 screws and 1 screw with washer [P]).
11. Reinstall the I/F unit cover (4 screws).



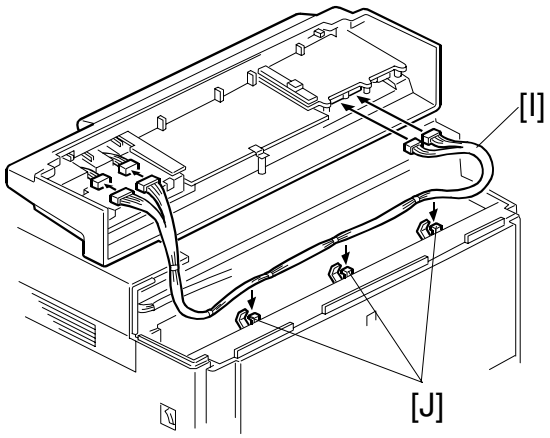
B383I105.WMF



B383I106.WMF

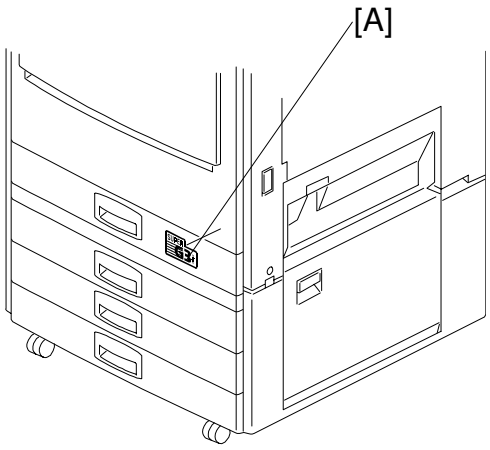


B383I107.WMF

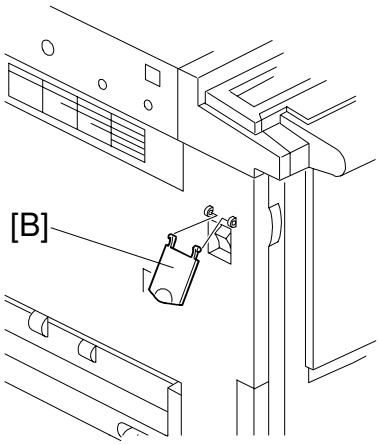


B383I108.WMF

12. Remove the caps [A] with a small-bladed screw driver.
13. Install the key tops [B], cover [C], and attach Copy/Fax label [D].
14. Open the front cover. Then remove the operation panel and the left cover [E] (2 screws each).
15. Put the fax operation panel harnesses [F] through the cut-outs [G] and install the fax operation panel [H] (2 screws).
16. Connect the intermediate harness [I] to the operation panel board and to the harness of the fax operation panel board.
17. Secure the intermediate harness with the clamps [J].
18. Reinstall the operation panel.



B383I109.WMF



B383I110.WMF

19. Attach the “Super G3” label [A] on the front cover.
20. Install the main switch cover [B].
21. Connect the telephone line to the “LINE” jack at the rear of the machine.
22. Plug in the machine and turn on the main switch.
    NOTE: The copier must be connected to a properly - grounded socket outlet.
23. Press the “Facsimile” key and check that 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.
24. Press “Yes” to initialize the fax unit.
25. 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, attach the label.

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

    NOTE: Be sure to set the clock (date and time).
26. Program the serial number into the fax unit. The serial number can be found on the serial number label attached to the fax unit.

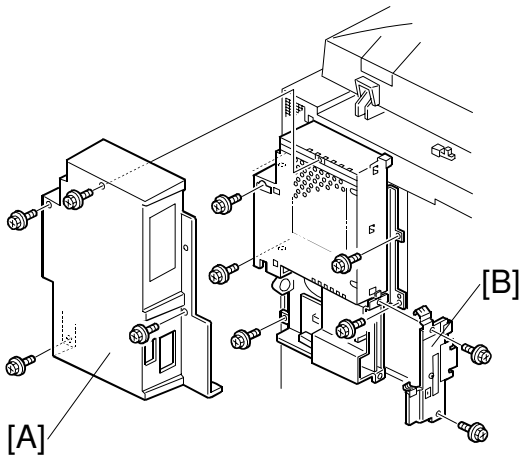
3.2 ISDN UNIT (A816)

3.2.1 INSTALLATION PROCEDURE

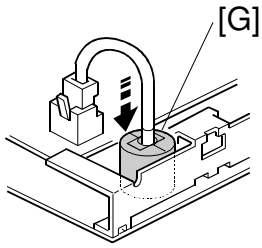
⚠CAUTION

Before installing an optional unit, do the following:

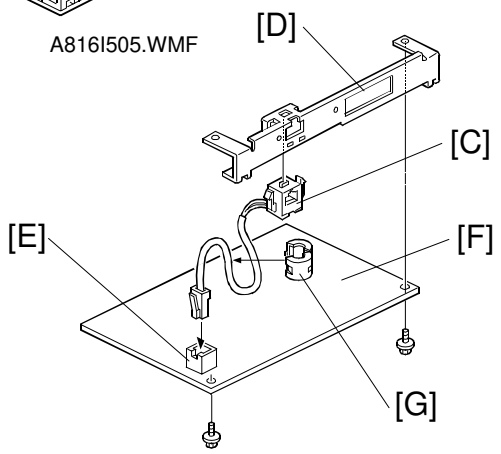
1. **Print out all messages stored in the memory.**
2. **Be sure to check that the memory indicator shows "100%" in standby mode.**
3. **Print out the lists of user-programmed items and the system parameter list.**
4. **Switch off the main switch, and disconnect the power cord and the telephone line.**



A816I510.WMF



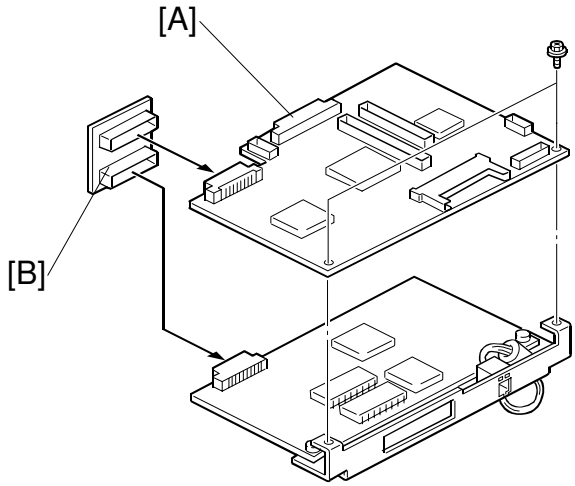
A816I505.WMF



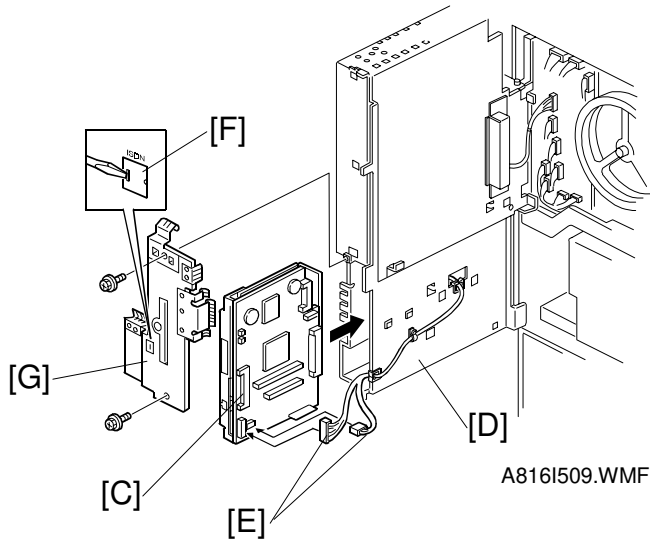
A816I501.WMF

NOTE: To use this option, a fax unit is required in addition.

1. Remove the I/F unit cover [A] (4 screws) and the left-side cover [B] (2 screws), then slide the FCU out from the fax unit.
2. Clip the ISDN modular jack [C] to the bracket [D], then connect the cable to the connector [E] on the CiG4 board [F].
3. Attach the bracket [D] to the CiG4 board [F] (2 screws), then attach the metal core [G] to the cable as shown. Be sure to slide the metal core [G] in between the bracket and the CiG4 board as shown.

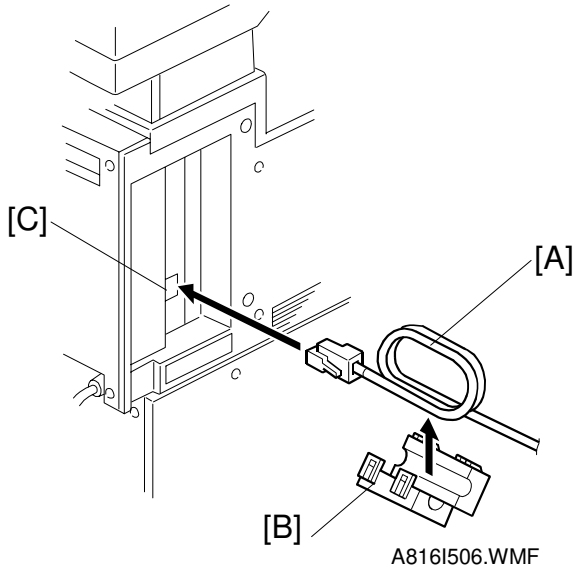


A816I502.WMF



A816I509.WMF

4. Attach the FCU [A] to the bracket (2 screws), then connect FCU and CiG4 using the relay board [B].
5. Insert the FCU/CiG4 assembly [C] into the fax unit [D] (2 connectors [E]).
6. Open the ISDN modular jack window [F] on the left-side cover [G], then install the cover onto the fax unit.
7. Reassemble the machine.



8. Attach the contained 'G4' label to 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.)
   - F1: Start Manual Rx
   - F2: Tx File Status
   - F3: TEL Mode
   - F4: G3/G4 Communication Mode Selection
   - F5: Not programmed
9. Affix FCC/IC approval label on the machine around ISDN jack (This step is only for US/CANADA).
10. Make two turns on the ISDN cable [A] and attach the metal core [B] so that the cable goes into the core three times. Then, connect the cable to the ISDN jack [C]. If an analog telephone line has been removed before installation, re-connect it to the FCU.
11. Plug in the machine and turn on the main switch. Then enter the service mode.
12. Print the system parameter list and ensure that "G4" is listed as an option.
13. 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.

3.3 EXSAF BOARD (A818-10)

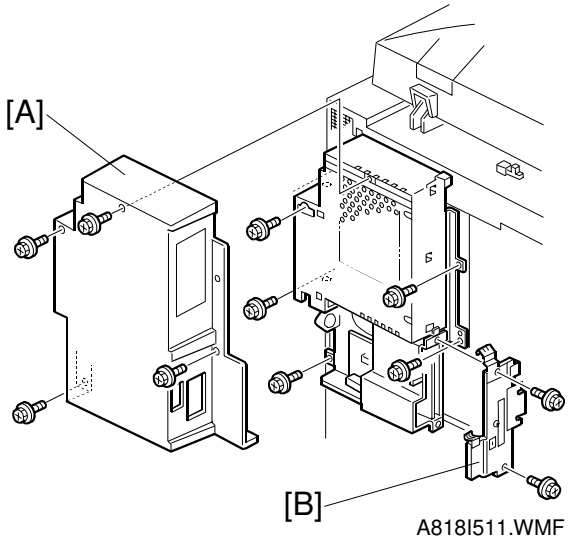
3.3.1 INSTALLATION PROCEDURE

⚠CAUTION

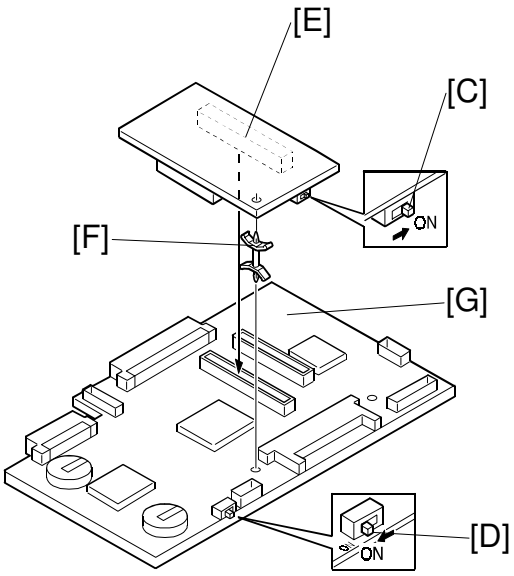
Before installing this option, do the following:

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: To use this option, a fax unit is required in addition.



A818I511.WMF



A818I500.WMF

1. Remove the I/F unit cover [A] (4 screws), and the left-side cover [B] (2 screws).
2. Remove the FCU board (2 or 3 connectors).
3. Turn on the battery switch [C] on the EXSAF board, as shown.
   NOTE: If installing the FCU board at the same time, be sure to turn on the FCU board battery switch [D].
4. Install the EXSAF board [E] and spacer [F] onto the FCU board [G], as shown.
5. Replace the FCU/EXSAF assembly into the fax unit (2 or 3 connectors).
6. Reassemble the machine.
7. Plug in the machine and turn on the main switch.
8. Press the 'Facsimile' key and ensure the facsimile LED lights. At this time, the following message appear:
   "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 EXSAF 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 "EXSAF" is listed as an option Also check that the memory indicator shows "100%" in standby mode.
12. Connect the telephone cable to the NCU.

3.4 PMU BOARD (A818-12)

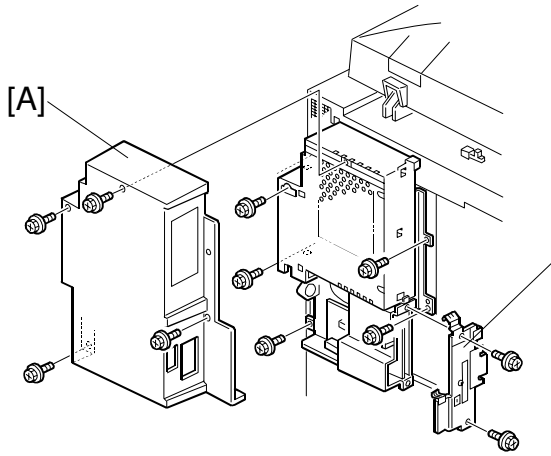
3.4.1 INSTALLATION PROCEDURE

⚠CAUTION

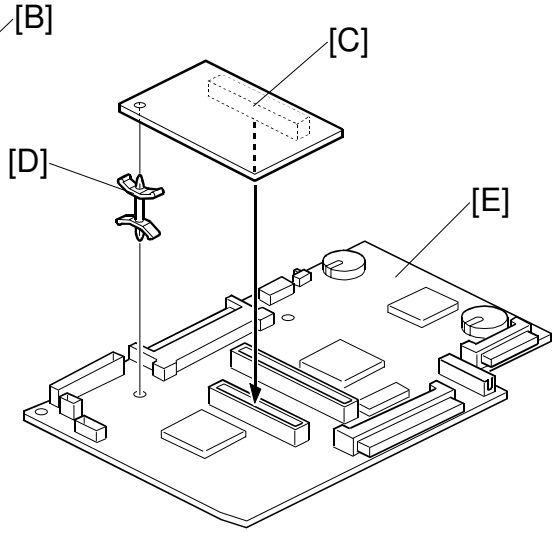
Before installing an optional unit, do the following:

1. **Print out all messages stored in the memory.**
2. **Be sure to check that 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.**

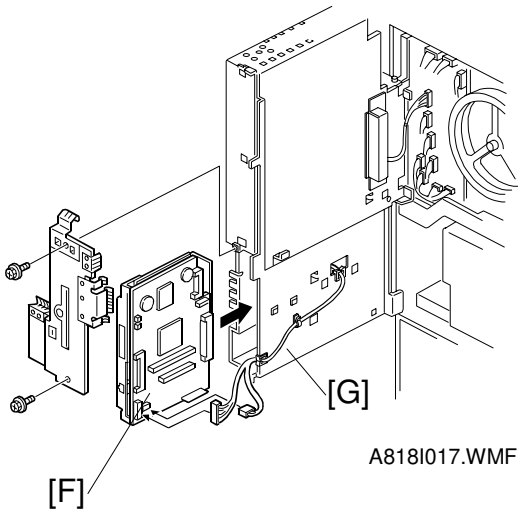
NOTE: To use this option, a fax unit is required in addition.



A818I511.WMF



A818I509.WMF



A818I017.WMF

1. Remove the I/F unit cover [A] (4 screws) and the left-side cover [B] (2 screws).
2. Remove the FCU board.
3. Connect the PMU board [C] and the double locking spacer [D] onto the FCU board [E], as shown.
4. Make sure that the battery switch (SW1) is turned on. Then, insert the FCU/ PMU assembly [F] into the fax unit [G].
5. Reassemble the machine.
6. Connect the telephone cable, then plug in the machine and turn on the main switch.
7. Print the system parameter list and make sure that “PMU” is listed as an option.

3.5 HARD DISK (A841-11)

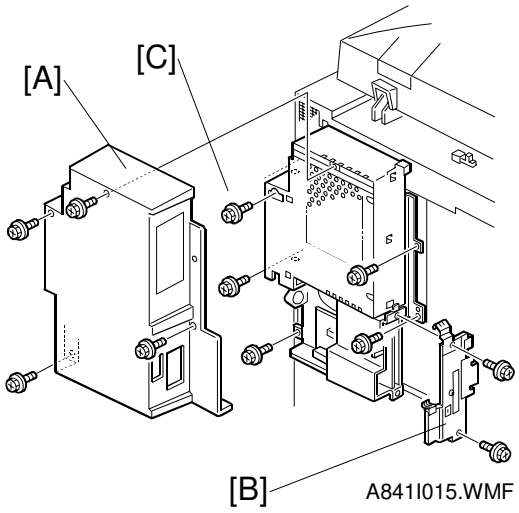
3.5.1 INSTALLAITON PROCEDURE

⚠CAUTION

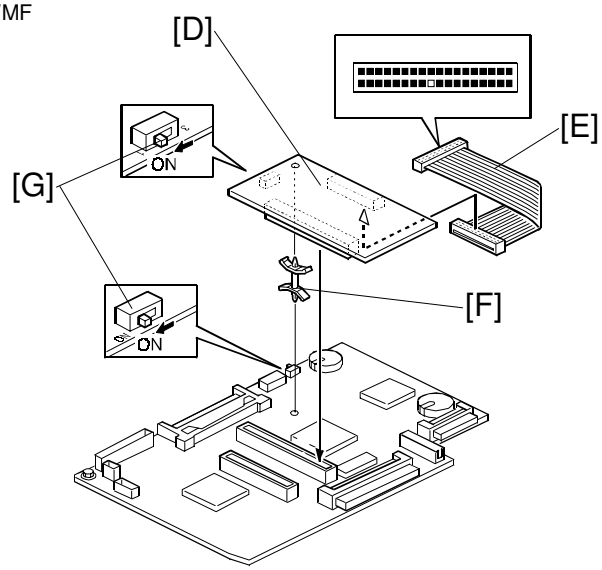
Before installing an optional unit, do the following:

1. **Print out all messages stored in the memory.**
2. **Be sure to check that 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: To install this option, an EXSAF board is required in addition.

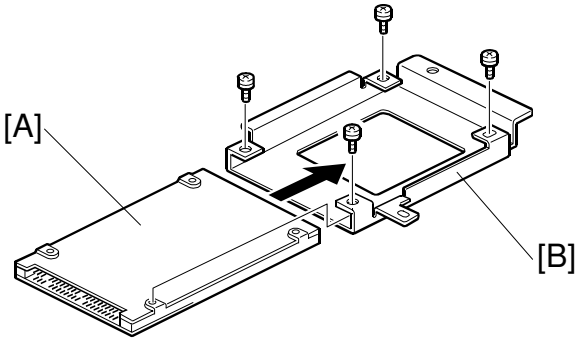


A841I015.WMF

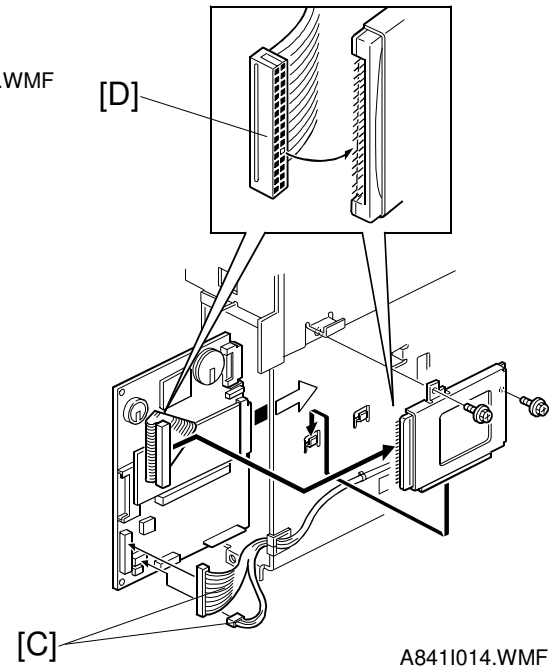


A841I503.WMF

1. Remove the I/F unit cover [A] (4 screws) and the left-side cover [B] (2 screws).
2. Remove 5 screws securing the I/F unit and fax unit. (The screw [C] is the grounding screw.)
3. Slide the FCU board out from the fax unit (2 or 3 connectors).
4. Remove the EXSAF board [D] if it is already installed on the FCU board.
5. Connect the harness [E] to the EXSAF board.
6. Make sure that the spacer [F] is installed on the FCU board, then reinstall the EXSAF board.
7. Make sure that the battery switches [G] on both FCU and EXSAF boards are turned on.



A841I019.WMF

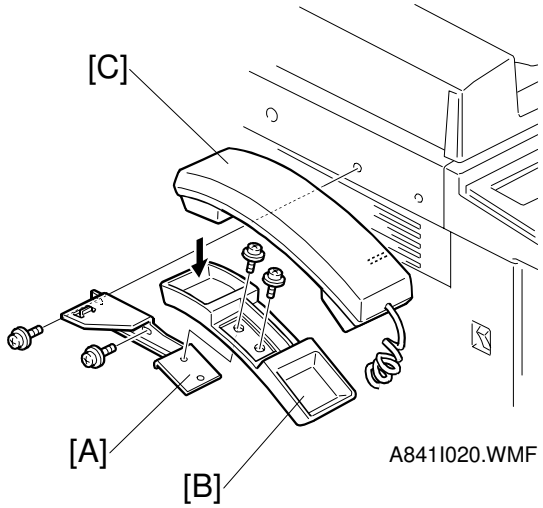


A841I014.WMF

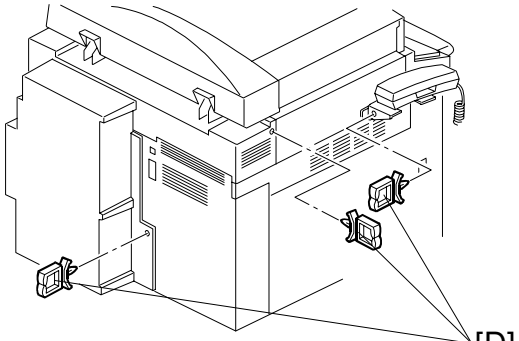
8. Install the hard disk drive [A] on the bracket [B] (4 screws).
9. Slide the FCU board into the fax unit and connect the connectors [C] to the FCU board and connector [D] to the hard disk drive so that no hole part meets with the portion where no pin is located as shown.
10. Secure the hard disk drive (2 screws).
11. Reassemble the machine.
12. Plug in the machine and turn on the main power switch.
13. Enter the service mode, and set bit 4 of system switch 05 to “1”.
14. Exit the service mode, turn off the machine, then turn the machine back on.
15. Enter the service mode, and initialize the memory files (function 07: RAM clear -2. files)
16. Print the system parameter list and make sure that “HD” is listed as an option. Also check that the memory indicator shows “100%” in standby mode.

3.6 HANDSET (A841-13)

3.6.1 INSTALLATION PROCEDURE



A841I020.WMF



A841I021.WMF

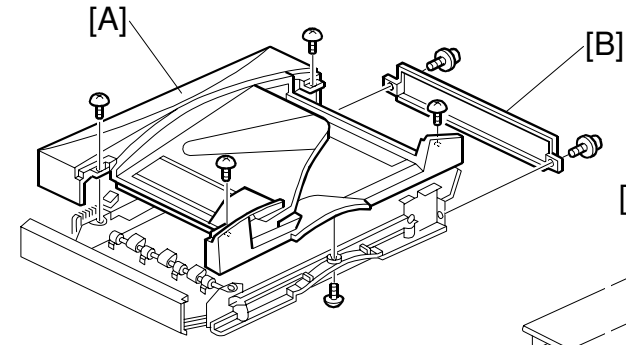
⚠CAUTION

Unplug the copier power cord before starting the following procedure.

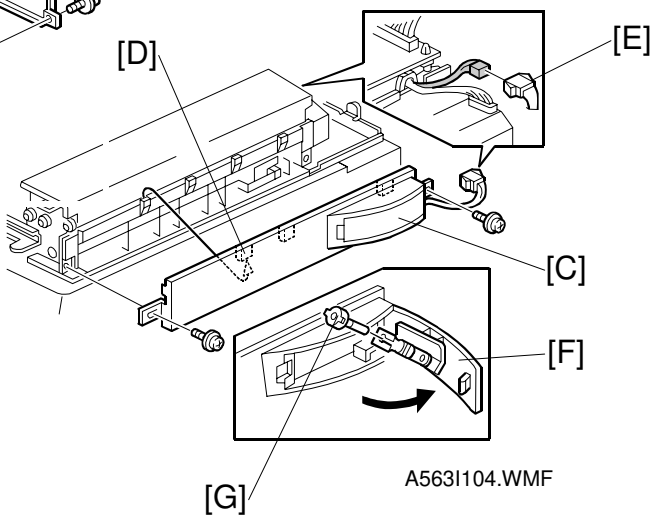
1. Attach the bracket [A] to the copier (2 screws, M4x12).
2. Attach the handset cradle [B] to the bracket (2 screws, M3x8).
3. Install the handset [C] on the cradle as shown.
4. Install the clamps [D] and run the handset cable through the clamps, then connect it to the “TEL” jack of the fax unit.

3.7 FAX STAMP (A563-17)

3.7.1 INSTALLATION



A563I103.WMF



A563I104.WMF

⚠CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove the upper rear cover [A] (7 screws).
2. Remove the right cover [B] (2 screws).
3. Install the stamp unit [C] so that the cutout [D] in the stamp unit is properly hooked on the ARDF as shown (2 screws removed at step 2 and 1 connector [E]).
4. Open the holder [F] and install the stamper [G].
5. Turn on DIPSW 4 on the ARDF main board.

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.)

- F1: Start manual Rx
- F2: Tx result display
- F3: TEL mode
- F4: Not programmed
- F5: Stamper on/off

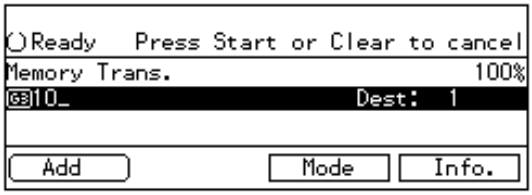
4. SERVICE TABLES

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 the fax standby mode.



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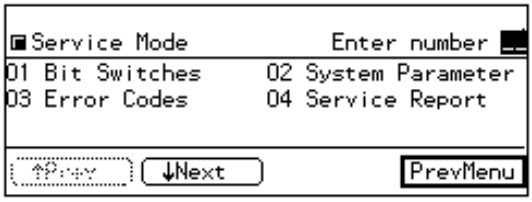
2. Press # 1 0 7, then hold down C/⊗ for more than 3 seconds.
   The SP mode main menu appears.



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To Exit Fax Service Mode:

1. Press 'OK' or 'PrevMenu' until the SP mode main menu appears.
2. Press the [PrevMenu] 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

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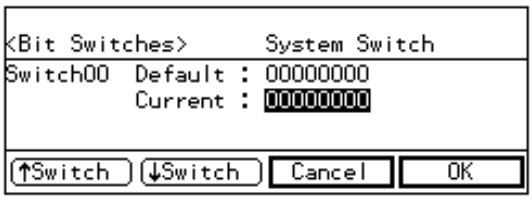
NOTE: An optional G4 interface is required to access the G4 internal and G4 parameter bit switches.

Example:

1. Press [1]



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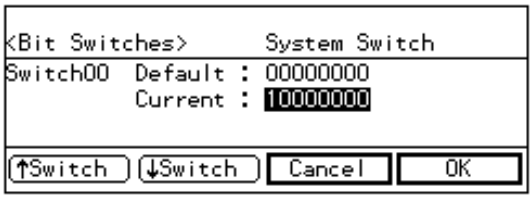
2. Scroll through the bit switches.
   To increment the bit switch number: press '↓ Switch'.
   To decrement the bit switch number: press '↑ Switch'.
   Example:
   To display bit switch 03: Press '↓ Switch' 3 times.

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'.



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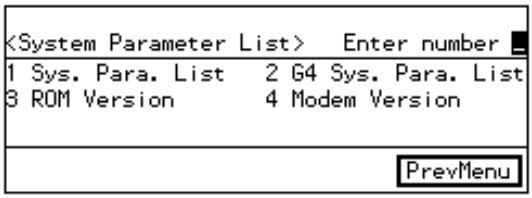
5. Exit the service mode.

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]



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3. Press one of the following numbers, as required:
   [1] – G3 system parameter list
   [2] – G4 system parameter list
   NOTE: An optional G4 interface is required to print the G4 system parameter list.
4. Press [◇]
5. Exit the service mode.

4.1.4 FCU ROM VERSION DISPLAY (FUNCTION 02)

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

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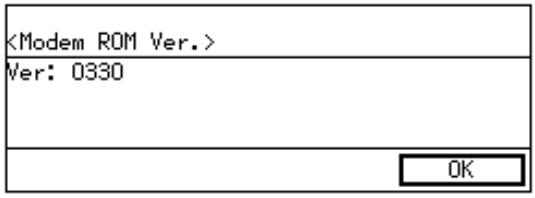
3. Exit the service mode.

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 4



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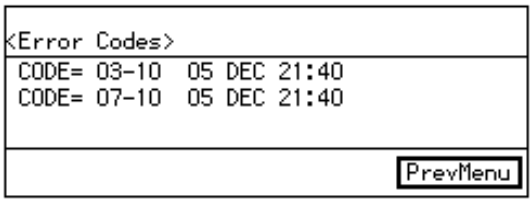
3. Exit the service mode.

Service Tables

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.



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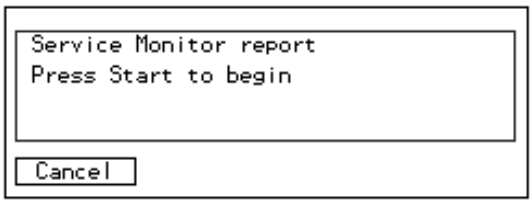
4.1.7 SERVICE MONITOR REPORT (FUNCTION 04)

1. Enter the fax service mode.
2. Press 0 4 then ◇



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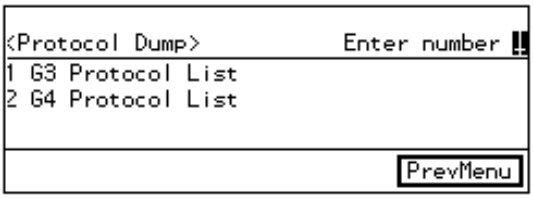
3. Exit the service mode.

4.1.8 G3 PROTOCOL DUMP LIST (FUNCTION 05)

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



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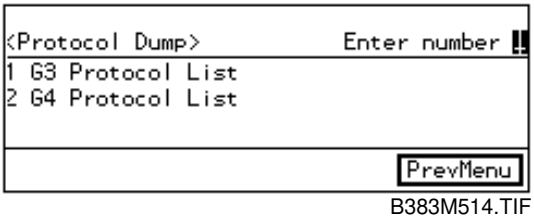
3. Press [1] then [◇]
4. Exit the service mode.

NOTE: Refer to the Troubleshooting section for details of the codes listed on the V.34 protocol dump list.

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]



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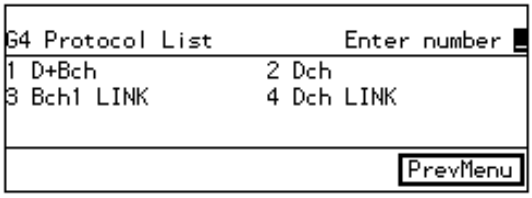
3. Press [2]
4. Press one of the following numbers as required:
   - [1] – D + Bch
   - [2] – Dch
   - [3] – Bch1 Link
   - [4] – Dch Link

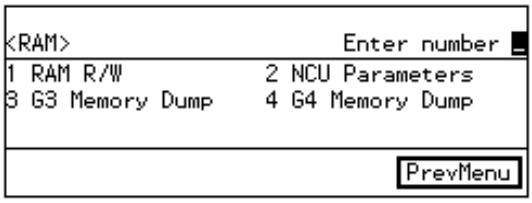


B383M516.TIF

5. Exit the service mode.

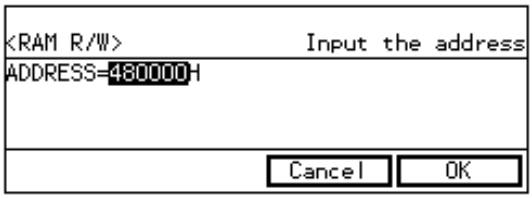
4.1.10 RAM DISPLAY AND REWRITE (FUNCTION 06)

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



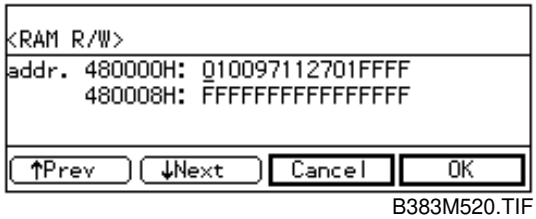
B383M517.TIF

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



B383M519.TIF

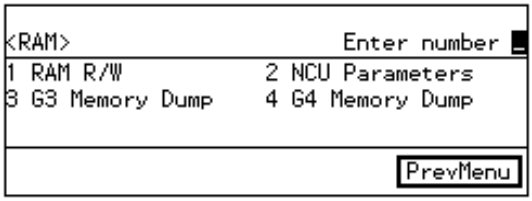
5. Move the cursor to the target address using the arrow keys, then enter a new value.
6. To scroll through the RAM addresses: press Prev. or Next.
   To jump to an another address: press OK, and go back to step 4.
7. Exit the service mode.



B383M520.TIF

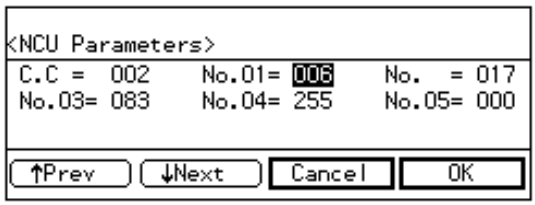
4.1.11 NCU PARAMETERS (FUNCTION 06)

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



B383M517.TIF

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



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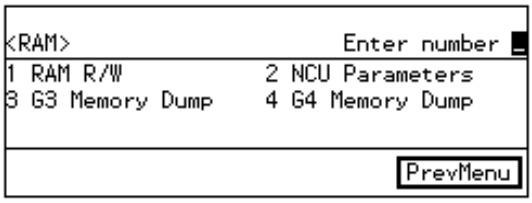
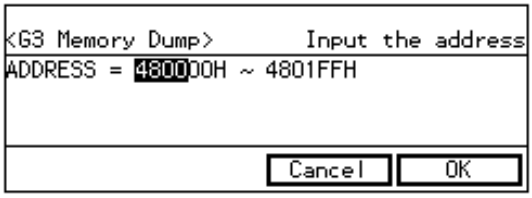
4.1.12 RAM DUMP (FUNCTION 06)

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



B383M517.TIF

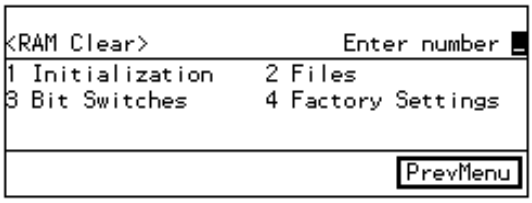
4. An optional G4 interface is required to print the G4 memory dump list.
5. Enter the first four digits of the start and end addresses, then press [◇]
   Example: Start at 480000, end at 4801FF
   [4] [8] [0] [0] [4] [8] [0] [1] [◇]
6. Exit the service mode.



B383M523.TIF

4.1.13 RAM CLEAR (FUNCTION 07)

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



B383M526.TIF

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

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

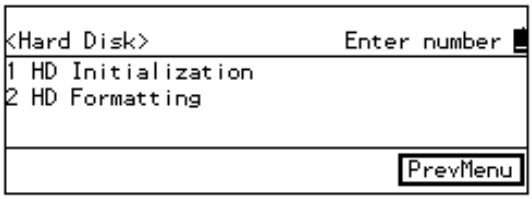
- Hold down the “Speed Dial” key for more than 10 s, while the machine is in facsimile mode. This initializes the fax unit only.
- Remove the rear cover, and press SW2 on the FCU. This initializes the fax unit only.
- Turn off the main power and operation switches and turn them back on. This initializes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

4.1.14 HARD DISK (FUNCTION 08)

NOTE: To access this function, the hard disk option must be installed, and System Switch 05, bit 4 must be set to 1.

1. Enter the fax service mode.
2. Press 0 8
3. Press one of the following numbers, as required, then press ◇
   1 – Erases everything stored on the hard disk
   2 – Low level hard disk formatting (requires over 50 min.)

   NOTE: If there is an error during the test, the machine displays 'NG'.



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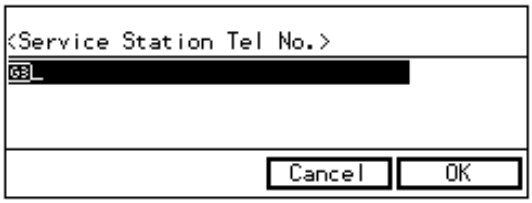
4. Make sure that OK is displayed after the process, then exit the service mode.

4.1.15 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.
4. Press OK.
5. Exit the service mode.

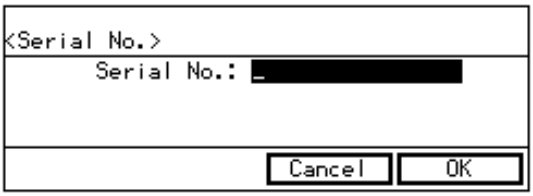


B383M527.TIF

Service Tables

4.1.16 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.



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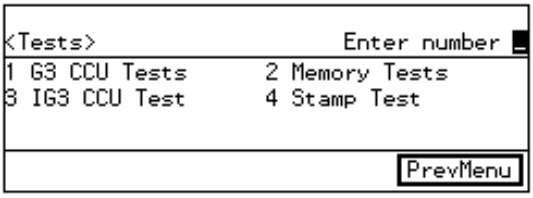
4.1.17 MODEM TEST (FUNCTION 11)

NOTE: Refer to section 4.1.18 for V.8 and V.34 tests.

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



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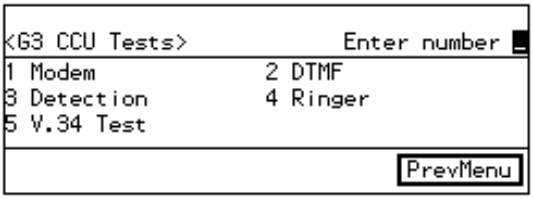
3. Press one of the following numbers:
   1 – Modem test (analog line)
   3 – Modem test (ISDN line)
   NOTE: An optional ISDN interface is required to test a modem on an ISDN line.



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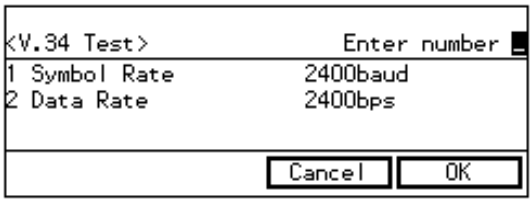
4. Press 1
5. Choose a modem signal type at the keypad, then press ◇. To stop, press C/◇.
6. Exit the service mode.

4.1.18 V.34 MODEM TEST (FUNCTION 11)

1. Enter the service mode.
2. Press [1] [1] then [1]
3. Press [5].



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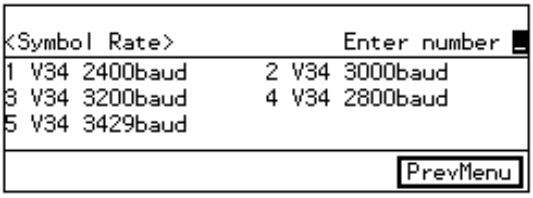
4. Press a symbol rate and a data rate, then press OK.
   [1] – Select a symbol rate
   [2] – Select a data rate



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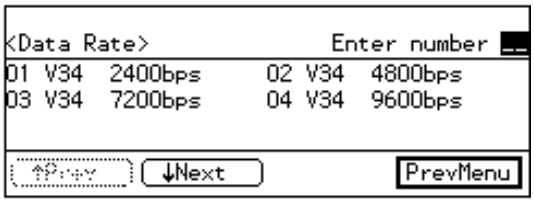
5. Press “Start” to start the test.
   To stop the test, press “Stop”.
6. Exit the service mode.

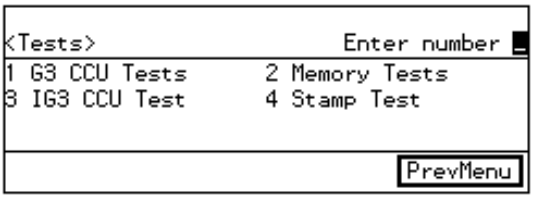


B383M542.TIF

Service Tables

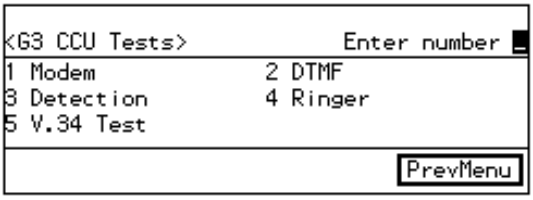
4.1.19 DTMF TEST (FUNCTION 11)

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



B383M529.TIF

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



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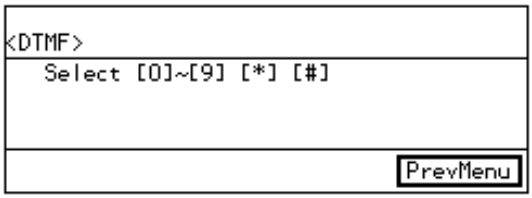
6. Choose a DTMF signal type at the keypad, then press ◇
   To stop the test, press C/⊘



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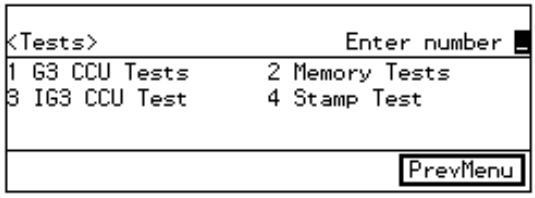
4.1.20 MODEM SIGNAL DETECTION TEST (FUNCTION 11)

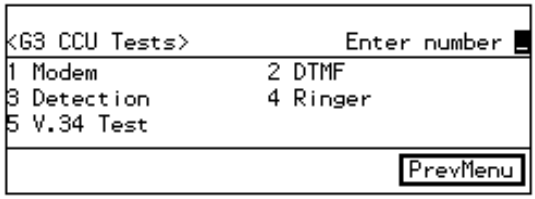
NOTE: V.8 and V.34 signal detection tests are not available.

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



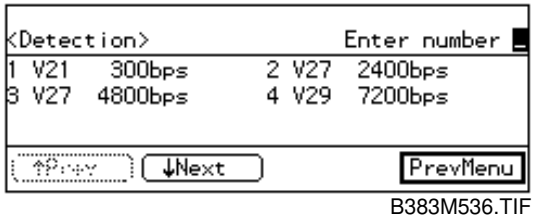
B383M529.TIF

3. Press one of the following numbers, as required:
   1 – Modem signal detection test (analog line)
   3 – Modem signal detection test (digital [ISDN] line)
   NOTE: An optional G4 interface is required to test a modem signal on an ISDN line.



B383M530.TIF

4. Press 3
5. Choose the modem signal type to be detected at the keypad, then press ◇. To stop the test, press C/⊘
6. Exit the service mode.



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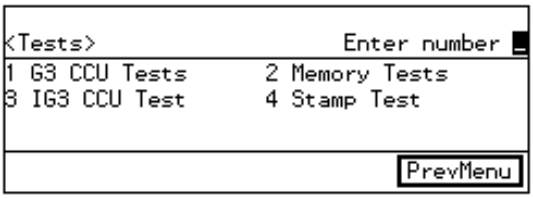
Service Tables

4.1.21 RINGER TEST (FUNCTION 11)

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



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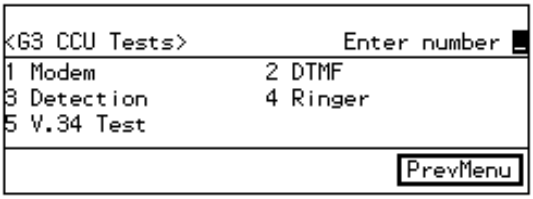
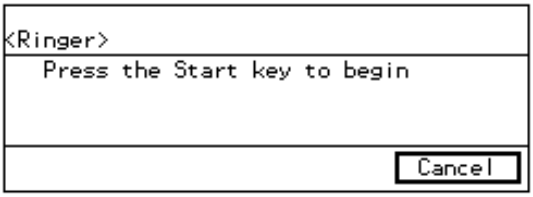
3. Press 1



B383M530.TIF

4. Press 4 then ◇
   To stop the test, press C/⊘
5. Exit the service mode.

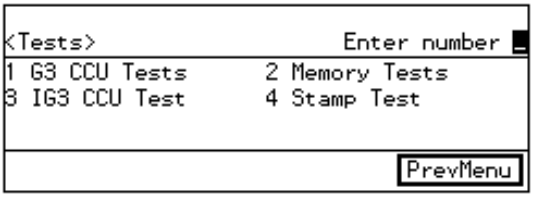


B383M539.TIF

4.1.22 STAMP TEST (FUNCTION 11)

NOTE: An optional stamp unit is required to use this function.

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



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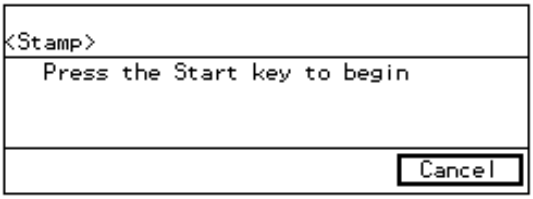
3. Press 4 then ◇
   To stop the test, press C/⊘
4. Exit the service mode.



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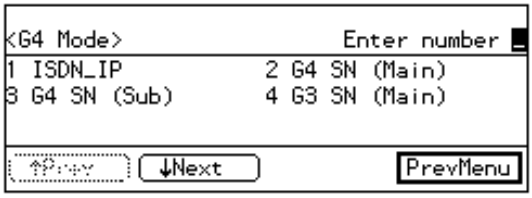
4.1.23 G4 PARAMETER PROGRAMMING (FUNCTION 12)

NOTE: An optional G4 interface is required to access this function.

1. Enter the fax service mode.
2. Press [1] [2]
3. Press one of the following numbers, as required:
   [1]–ISDN IP (International Prefix)
   [2]–G4 SN (Subscriber Number) Main
   [3]–G4 SN (Subscriber Number) Sub
   [4]–ISDN G3 SN (Subscriber Number) Main
   [5]–ISDN G3 SN (Subscriber Number) Sub
   [6]–G4 Subaddress
   [7]–ISDN G3 Subaddress



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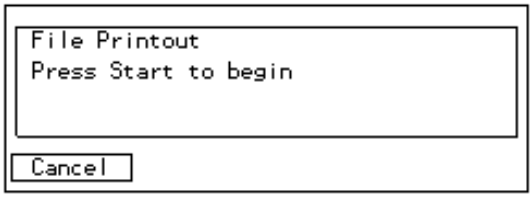
4. Program the selected item.
5. Exit the service mode.

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

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.



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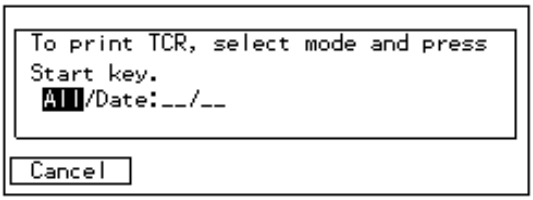
NOTE: Do not use this function, unless the customer is having trouble printing confidential messages or recovering from a memory lock status.

4.1.25 JOURNAL (TCR) 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 200 records, without the optional EXSAF board, or 900 records, with the EXSAF board.
   Specify a date - The machine prints all communication records after the specified date.



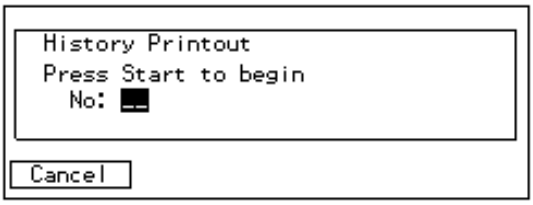
B383M562.TIF

4. Exit the service mode.

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 one of the following numbers, as required, then press [◇]
   [1] – Engine interface
   [2] – Mailbox usage
   [3] – Operation trace
   [4] – Print log
   [5] – SC history
   [6] – File storage
   [7] – Scanner
   [8] – Job and SAF file creation
   [9] – Data reconstruction



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4. Exit the service mode.

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 - Modem ROM download from a flash memory card
- Section 6.5.1 - SRAM backup to a flash memory card
- Section 6.3.3 - SRAM restore from a flash memory card
- Section 6.3.2 – SRAM restore from FCU

4.2 BIT SWITCHES

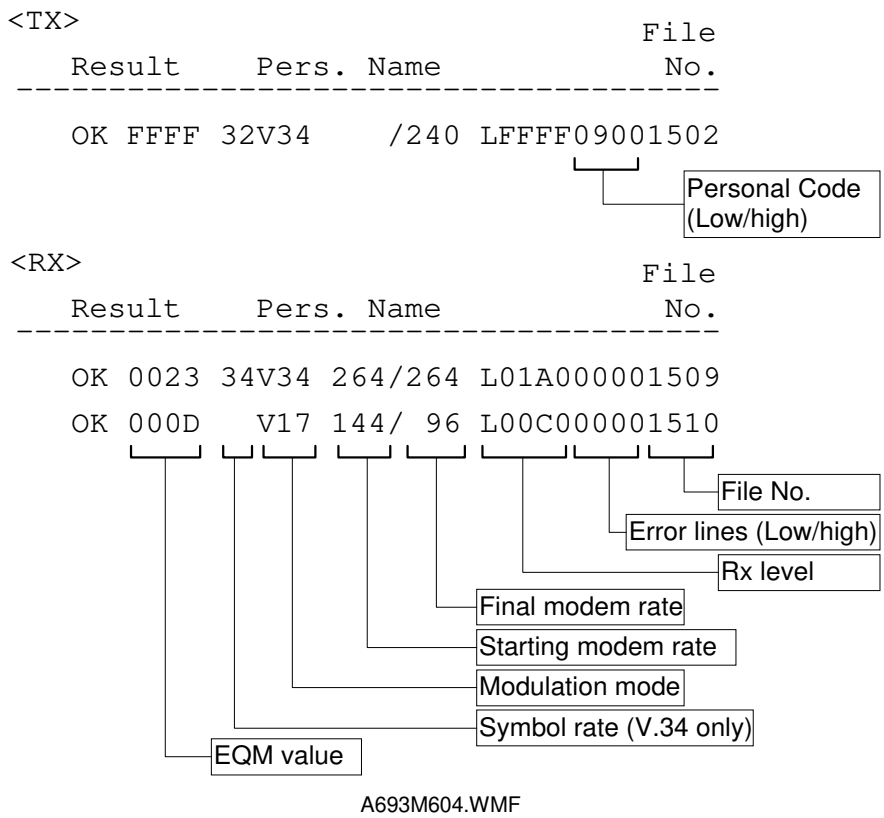
⚠WARNING

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

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

4.2.1 SYSTEM SWITCHES

System Switch 00		
No	**FUNCTION**	**COMMENTS**
0	Not used.	Do not change the settings.
1	Technical data (optional) printout on TCR/Journal **0:** Disabled **1:** Enabled	**1:** Instead of the personal name, the following data are listed on the TCR/Journal for each G3 communication. If enabled, bits 2 and 3 settings are ignored.



A693M604.WMF

Notes:
The error lines field is not used.
EQM and Rx level are fixed at "FFFF" in TX mode.
Symbol rate is printed only for V.34 communications.

System Switch 00		
No	**FUNCTION**	**COMMENTS**
2	Technical data (standard) printout on TCR/Journal **0:** Disabled **1:** Enabled	**1**: Instead of the personal name, the following data are listed on the TCR for each G3 communication.
	e.g. 32 V34 288 M 01 00 03 04 **First number:** Symbol rate (V.34 only) **Second number:** Final modem type used **Third number:** Final data rate (for example, 288 means 28.8 kbps) **Fourth:** M means modem EQM / L means Rx level **Fifth and sixth numbers:** Line quality data. Either a measure of the error rate or the rx level is printed, depending on the bit 3 setting below. (An M on the report indicates that it is error rate, and an L indicates Rx level.) The left hand figure is the low byte and the right hand figure is the high byte (refer to the following note for how to read the rx level). If it is a measure of the error rate; a larger number means more errors. **Seventh number (rx mode only):** Total number of error lines that occurred during non-ECM reception. **Eighth number (rx mode only):** Total number of burst error lines that occurred during non-ECM reception. The fifth and sixth numbers are fixed at 00 for transmission records and ECM reception records.	
	Rx level calculation **Example:** 32 V34 288 **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	
3	Line quality data output method **0:** Measure of error rate (during image data transmission only) **1:** Rx level	This bit determines the data type to be printed on the TCR (Journal) when technical data printout is enabled by bit 2 above.
4	Not used	Do not change the setting.
5	G3/G4 Communication parameter display **0:** Disabled **1:** Enabled	This is a fault-finding aid. The LCD shows the key parameters (see the next 2 pages). This is normally disabled because it cancels the CSI display for the user. Be sure to reset this bit to 0 after testing.
6	Protocol dump list output after each communication **0:** Off **1:** On	This is only used for communication troubleshooting. It shows the content of the transmitted facsimile protocol signals. Always reset this bit to 0 after finishing testing.

System Switch 00		
No	**FUNCTION**	**COMMENTS**
7	Amount of protocol dump data in one protocol dump list printout operation **0:** Up to the limit of the memory area for protocol dumping **1:** Last communication only	Change this bit to 1 if you want to have a protocol dump list of the last communication only.

G3 Communication Parameters

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 per mm) D: Detail (8 x 7.7 dots per mm) F: Fine (8 x 15.4 dots per mm) SF: Superfine (16 x 15.4 dots per mm) - optional PMU board required. 21: Standard (200 x 100 dpi) 22: Detail (200 x 200 dpi) 44: Superfine (400 x 400 dpi) - optional PMU board required.
Compression mode	MMR: MMR compression MR: MR compression MH: MH compression JBO: JBIG compression (Optional mode) – optional PMU board required JBB: JBIG compression (Basic mode) – optional PMU board required
Communication mode	ECM: With ECM SSC: Using SSC EFC: Using EFC NML: With no ECM, SSC, or EFC
Width and reduction	A4: A4 (8.3”), no reduction B4: B4 (10.1”), no reduction A3: A3 (11.7”), no reduction
I/O rate	0: 0 ms/line 25: 2.5 ms/line 5: 5 ms/line 10: 10 ms/line 20: 20 ms/line 40: 40 ms/line **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) – optional PMU board required
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: Enabled, 1: Disabled (Smoothing is disabled in halftone mode.) Bit 2 - CIL printing 0: Enabled, 1: Disabled Bit 3 - Not used Bit 4 - mm/inch conversion 0: Disabled, 1: Enabled Bit 5 - Engine type 0: mm, 1: inch Bit 6 - Resolution unit 0: mm, 1: inch

System Switch 01		
No	**FUNCTION**	**COMMENTS**
0	Automatic Service Call **0:** Disabled **1:** Enabled	This bit switch determines whether the machine will send an Auto Service Call to the service station when it is time for PM. **Cross reference** Auto service calls: Section 2.1
1-7	Not used	Do not change the settings.

System Switch 02		
No	**FUNCTION**	**COMMENTS**
0 to 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 setting.
6 7	Memory read/write by RDS **Bit 7 6 Setting** 0 0 Always disabled 0 1 User selectable 1 0 User selectable 1 1 Always enabled	**(0,0):** All RDS systems are always locked out. **(0,1), (1,0):** Normally, RDS systems are locked out, but the user can temporarily switch RDS on to allow RDS operations to take place. RDS will automatically be locked out again after a certain time, which is stored in System Switch 03 (see below). Note that if an RDS operation takes place, RDS will not switch off until this time limit has expired. **(1,1):** At any time, an RDS system can access the machine.

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

System Switch 04		
No	**FUNCTION**	**COMMENTS**
0 to 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 first 8 bytes of data are the programmed dedicated tx parameters, even though 32 bytes of data are printed (the other 24 bytes have no use in the field).
4	Not used	Do not change the setting.

System Switch 04		
No	**FUNCTION**	**COMMENTS**
5	Memory file transfer operation **0:** Service level **1:** User level	If the machine is unable to print fax messages due to a mechanical problem, change this bit to 1 to transfer all messages in the memory (including confidential rx messages) to an another terminal. Always reset this bit to zero after transfer. However, this bit can be left at 1, if the customer's key-operator wants to transfer the files himself. **Procedure** 1. Enter service mode and change this bit to 1. 2. Exit the service mode. 3. Enter the key-operator mode, and select 'Key-operator settings'. 4. Choose '04' and specify a destination for the machine to transfer all the files to. 5. Press 'OK'. 6. After the machine transfers the memory files, enter the service mode and reset this bit to 0. 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 using a service function. The Terminal ID can only be programmed if a Group 4 option is installed.
7	Telephone line type programming mode **0:** User level **1:** Service level	**1:** Telephone line type selection (tone dial or pulse dial) can only be programmed using a service function.

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

System Switch 06 - Not used (Do not change the factory settings.)
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 TCR when no image data was exchanged. **0:** Disabled **1:** Enabled	**0:** Communications which reached phase C (message tx/rx) of the T.30 protocol are listed on the TCR (Journal). **1:** Communications which reached phase A (call setup) of T.30 protocol are listed on the TCR (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 setting.
5	Power failure report **0:** Disabled **1:** Enabled	**1:** A power failure report will be automatically printed after the power is switched on if a fax message disappeared from the memory when the power was turned off last.
6	Not used	Do not change the setting.
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 **1** **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 transmisison.

System Switch 0A		
No	**FUNCTION**	**COMMENTS**
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 **1** **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. But, 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 **to** **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 10: Canada 01: Germany 11: USA 02: UK 12: Asia 03: Italy 13: Japan 04: Austria 14: Hong Kong 05: Belgium 15: South Africa 06: Denmark 16: Australia 07: Finland 17: New Zealand 08: Ireland 18: Singapore 09: Norway 19: Malaysia 0A: Sweden 1A: China 0B: Switz. 1B: Taiwan 0C: Portugal 20: Turkey 0D: Holland 21: Greece 0E: Spain 0F: Israel	This country code determines the factory settings of bit switches and RAM addresses. However, it has no effect on the NCU parameter settings and communication parameter RAM addresses. **Cross reference** NCU country code: Function 06, parameter C.C.

System Switch 10		
No	**FUNCTION**	**COMMENTS**
0 to 7	Threshold memory level for parallel memory transmission	Threshold = N x 64 kbytes + 256 kbytes N can be between 00 - FF(H) Default setting: 02(H) = 384 kbytes

System Switch 11		
No	**FUNCTION**	**COMMENTS**
0	TTI printing position **0:** Printed before the data leading edge **1:** Superimposed on the page data	Change this bit to 1 if the TTI overprints information that the customer considers to be important (G3 transmissions).
1	TSI (G3) or CIL (G4) printing position **0:** Printed before the data leading edge **1:** Superimposed on the page data	Change this bit to 1 if the TSI (G3) or CIL (G4) overprints information that the customer considers to be important.
2 to 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)	08 to 92 (BCD) mm. Input even numbers only. This setting determines the print start position for the TTI and CIL from the left edge of the paper. If the TTI is moved too far to the right, it may 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		
No	**FUNCTION**	**COMMENTS**
0	Action when JBIG files and MH/MR/MMR files are mixed in batch transmission **0**: JBIG files are transmitted separately **1**: Transmitted in one batch	**0**: JBIG files are transmitted separately from MH/MR/MMR files. **1**: JBIG files are converted into MH, MR, or MMR format, and transmitted in one batch together with MH/MR/MMR files.
1 to 5	Not used	Do not change the settings.
6	File no. print in TTI **0**: Enabled **1**: Disabled	**1:** File number will not be printed in TTI. (G3 only)
7	Page no. print in TTI **0**: Enabled **1**: Disabled	**1:** Page number will not be printed in TTI. (G3 only)

System Switch 15		
No	**FUNCTION**	**COMMENTS**
0	Not used	Do not change the setting.
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	DRAM backup during Night mode **0**: Disabled **1**: Enabled	**1:** The machine backs up the DRAM even in the Night mode.
3 to 7	Not used	Do not change the settings.

System Switch 16 - 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 (in the fax application) **000** (Min.: OFF)-**111** (Max.) Default setting – 011	
3 to 7	Not used	Do not change the settings.

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

System Switch 1E		
No	**FUNCTION**	**COMMENTS**
0	Communication after the TCR (Journal) data storage area has become full **0:** Possible **1:** Impossible	This setting is effective only when Automatic TCR (Journal) printout is enabled. **0:** If the buffer memory of the communication records for the TCR (Journal) is full, fax communications are still possible. But the machine will overwrite the oldest communication records. **1:** If the buffer memory of the communication records for the TCR (Journal) has become full, fax communications will become impossible, to prevent overwriting the communication records before the machine prints them out. **Cross Reference** ❑ Automatic TCR (Journal) output - User switch 03, bit 7 ❑ Number of communication records for TCR (Journal): 200 records (without EXSAF board) 900 records (with EXSAF board)
1	Action when the SAF memory has become full during scanning **0:** The page is erased. **1:** The 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. Not applicable to 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 in the following conditions: Receive messages only from senders whose RTI/CSIs are programmed AND Authorized addresses are **not** programmed **0**: Authorized reception is automatically disabled **1**: Authorized reception is enabled	If authorized reception is enabled in this condition, the machine will not receive any fax messages. If customer intends to do so, change this bit to “1” before enabling Authorized Reception. Otherwise, keep this bit to “0 (default setting)” so that the customer will not mistakenly set up the machine not to receive any fax messages.

System Switch 1E		
No	**FUNCTION**	**COMMENTS**
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 priority. 1: The machine always displays the telephone number.
6	Not used	Do not change the setting
7	RAM initialization after the optional EXSAF board is installed or removed **0:** Enabled **1:** Disabled	When the machine detects that an EXSAF has been installed or removed, the machine shows the following message on the display for the customer. *"CAUTION! Adding/Removing EXSAF board results in data loss. Turn off the main switch and replace the card to cancel. If you want 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 EXSAF 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 (see Installation – EXSAF). To avoid losing data, the user must switch off immediately and put the 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 board back in, then switches back on. No data is lost.

System Switch 1F		
No	**FUNCTION**	**COMMENTS**
0	Not used	Do not change the setting.
1	Report printout after an original jam during SAF storage or if the SAF memory is full **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 report in these cases. Memory tx – Memory storage report Parallel memory tx – Transmission result report
2	Not used	Do not change the setting.
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 to 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, SC1202, SC1207, SC1802, SC1811 and SC1815, 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

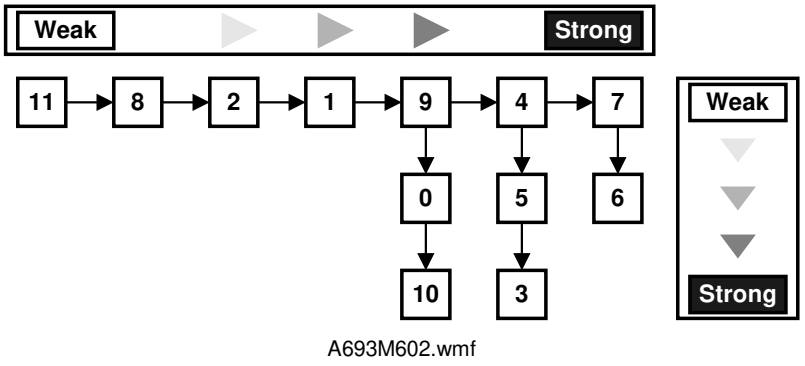
Scanner Switch 00		
No	**FUNCTION**	**COMMENTS**
0 to 7	Not used	Do not change the settings.

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 settings (20), the threshold value changes as follows. +3 (Darkest) : 68 (= 88 – 20) +2 : 88 (= 108 – 20) +1 : 108 (= 128 - 20) 0 (Normal) : 128 (Scanner Switch 02 setting) -1 : 148 (= 128 + 20) -2 : 168 (= 148 + 20) -3 (Lightest) : 188 (= 168 + 20) The value can be between 00 and 1F (H) [= 31(D)]. For a darker threshold, input a lower value.
5 to 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 00 and FF. For a darker threshold, input a lower value.

Scanner Switch 03- Not used (do not change the settings)

Scanner Switch 04		
No	**FUNCTION**	**COMMENTS**
0 to 3	Dirty background elimination level (Text mode)	This setting determines the threshold value for dirty background in text mode. The value can be between 00 and 0F. For a stronger threshold, input a higher value.
4 to 7	Not used	Do not change the settings.

Scanner Switch 05		
No	**FUNCTION**	**COMMENTS**
0 to 3	MTF setting (Text mode) The value can be between 0 and 11. Refer to the following diagram for details.  A693M602.wmf	
4 to 7	Not used	Do not change the settings.

Scanner Switch 06		
No	**FUNCTION**	**COMMENTS**
0 to 3	MTF setting (Text/Photo mode)	The value can be between 0 and 11. Refer to Scanner Switch 05 for details.
4 to 7	Not used	Do not change the settings.

Scanner Switch 07		
No	**FUNCTION**	**COMMENTS**
0 to 3	MTF setting (Photo mode)	The value can be between 0 and 11. Refer to the diagram on the previous page for details.
4 to 7	Not used	Do not change the settings.

Scanner Switch 08		
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).	
4 to 6	Scan margin setting (bottom margin in ADF mode) The setting can be between 0 and 7 (H) (in mm).	
7	Not used	Do not change the setting.

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

Scanner Switch 0C		
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 base copier's setting.
3 to 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. Refer to Sub Scan Length Correction using ADF in section 2.
7	Original length adjustment for A4/LT LEF originals in ADF scan mode **0**: Enable **1**: Disable	**0:** An original of 193 to 223 mm length is regarded as A4 or LT depending on the setting of bit 6 above. **1:** Original length data from the ADF sensor is used. Refer to Sub Scan Length Correction using ADF in section 2.

Scanner Switch 0D		
No	**FUNCTION**	**COMMENTS**
0 **1**	Scan magnification ratio fine tuning (Main scan direction) $\begin{matrix}F0I\\G_{H0K}^{J}\end{matrix} = 0\%, \begin{matrix}F1I\\G_{H0K}^{J}\end{matrix} = -0.5\%, \begin{matrix}F0I\\G_{H1K}^{J}\end{matrix} = +0.5\%, \begin{matrix}F1I\\G_{H1K}^{J}\end{matrix} =$ Do not use this setting The actual magnification ratio is the sum of the base copier's SP mode setting and this setting.	
2 **3**	Scan magnification ratio fine tuning (Sub scan direction) $\begin{matrix}F0I\\G_{H0K}^{J}\end{matrix} = 0\%, \begin{matrix}F1I\\G_{H0K}^{J}\end{matrix} = -1.0\%, \begin{matrix}F0I\\G_{H1K}^{J}\end{matrix} = +1.0\%, \begin{matrix}F1I\\G_{H1K}^{J}\end{matrix} =$ Do not use this setting The actual magnification ratio is the sum of the base copier's SP mode setting and this setting.	
4 **to** **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, 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 to 4	Not used	Do not change the settings.
5	Monotone background original Mode **0**: Disable **1**: Enable	Change this bit when the customer requires.
6 to 7	Not used	Do not change the settings.

Scanner Switch 0F		
No	**FUNCTION**	**COMMENTS**
0	Image rotation before transmission (A4/LT size) **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 setting
2	Image rotation before transmission (A5/HLT size) **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 to 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 printed at the top of the next page. See Sub Scan Reduction and Page Separation in section 2 for details.
2	Prints date and time data 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 to 7	Not used	Do not change the settings.

Printer Switch 01		
No	**FUNCTION**	**COMMENTS**
0 1 2	Not used	Do not change the settings.
3 4	Maximum print width used in the setup protocol $\begin{matrix}F0\\G\\H0K\end{matrix}^{J} = Not\ used$ $\begin{matrix}F1\\G\\H0K\end{matrix}^{J} = \begin{matrix}297mm\\11.7inch\end{matrix}$ $\begin{matrix}F0\\G\\H1K\end{matrix}^{J} = \begin{matrix}254mm\\10.1inch\end{matrix}$ $\begin{matrix}F1\\G\\H1K\end{matrix}^{J} = \begin{matrix}216mm\\8.5inch\end{matrix}$	
5 6	Not used	Do not change the settings.
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 table on the next page for how the machine chooses the paper width used in the setup protocol (NSF/DIS). **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

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

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 the 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 to 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. **Cross reference** Page separation threshold: Printer Sw. 03, bits 4 to 7. **1:** Incoming page length is reduced when printing. **Cross reference** Maximum reducible length: Printer Switches 04, bits 0 to 4 Page separation and data reduction: Section 2
1 **2** **3**	Not used	Do not change the settings
4 **to** **7**	Page separation threshold (with reduction disabled in switch 03-0 above) If the incoming page is up to x mm longer than the 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** Page separation and data reduction: section 2 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 in 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)	
5 6	Length of the duplicated image on the next page, when page separation has taken place. $\begin{matrix}0\\0\end{matrix} = 4$ mm, $\begin{matrix}1\\0\end{matrix} = 10$ mm, $\begin{matrix}0\\1\end{matrix}$ 20 mm, $\begin{matrix}1\\1\end{matrix}$ 40 mm	
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 to 7	Not used.	Do not change the settings.

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

Printer Switch 0E		
No	**FUNCTION**	**COMMENTS**
0	Paper size selection priority **0:** Width **1:** Length	**0:** A paper size which 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 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" 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 document image on reports **Bit 4 Bit 3 Setting** 0 0 The upper half only 0 1 50% reduction of sub scan 1 0 Same size 1 1 Not used	"Same size" means the document image is printed at 100%, even if page separation occurs.
5 to 6	Not used	Do not change the settings.
7	Equalizing the reduction rate 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 the page separation has taken place. Other pages are printed without reduction.

Printer Switches 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 manufacturer's fax machines frequently.
2	Duplex printing **0:** Disabled **1:** Enabled	**1:** The machine always prints received fax messages in duplex printing mode. **Cross Reference** "Duplex Printing" in chapter 2
3	Binding direction for Duplex Printing **0**: Left binding **1**: Top binding	**Cross Reference** "Duplex Printing" in chapter 2
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 using user codes or key counter. If the machine enters the restricted access mode again while printing fax messages, the machine stops printing until the machine exits the mode again. **Cross reference** User code mode on/off – SP Mode 5-401
5	Not used	Do not change the setting.
6 **7**	Wait timer for Duplex Print Mode. $\begin{matrix}F0\\G\\H0\end{matrix}\begin{matrix}\\J\\K\end{matrix} = \text{No limit}$ $\begin{matrix}F1\\G\\H0\end{matrix}\begin{matrix}\\J\\K\end{matrix} = 1\text{ mm.}$, $\begin{matrix}F0\\G\\H1\end{matrix}\begin{matrix}\\J\\K\end{matrix} = 3\text{ mm.}$, $\begin{matrix}F1\\G\\H1\end{matrix}\begin{matrix}\\J\\K\end{matrix} 10\text{ mm.}$ 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. If 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 setting.
5	Setting of JBIG compression method: Reception **0**: Only basic **1**: Basic and Optional	Change the setting when communication problems occur using JBIG compression.
6	Setting of JBIG compression method: transmission **0**: Basic priority **1**: Optional 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 to 5	Not used	Do not change the settings.
6 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 3.85 l/mm** **200 dpi 7.7 l/mm** **400 dpi 15.4 l/mm** Low settings 3 6 12 High settings 6 12 24
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.
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 to 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 SW 06 -Not used (do not change the settings)

Communication Switch 07		
No	**FUNCTION**	**COMMENTS**
0	Fallback from G4 to G3 if the other terminal is not a G4 terminal **0:** Disabled **1:** Enabled	Also see system switch 0A bit 7. Refer to the ISDN G4 option service manual (G4 Internal Switches 17, 18, 1A, 1B, and 1C) for the CPS code set (Cause Value set) to determine G4 to G3 fallback.
1 to 3	Not used	Do not change the settings.
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 type of exchanger.
5	Not used	Do not change the setting
6	Usage the ISDN line of an outer line or extension line **0:**Outer line **1:**Extension line	When use the ISDN extension line, program the extension access number (communication switch 08), then change this bit to 1.
7	Not used	Do not change the setting.

Communication Switch 08		
No	**FUNCTION**	**COMMENTS**
0 to 7	Program the ISDN extension access number	When use the ISDN extension line, program the extension access number, then change communication switch 07 bit 6 to 1. The value can be between 00 and 99 (BCD). If the value is set to FF (BCD), it means that no number is programmed. Do not use any setting other than listed above.

Communication SW 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 to 6	Not used	Do not change the settings.
7	Emergency calls using 999 **0:** Enabled **1:** Disabled	If this bit is at 1, the machine will not allow you to dial 999 at the auto-dialer. This is a PTT requirement in the UK and some other countries.

Communication Switch 0B		
No	**FUNCTION**	**COMMENTS**
0	Use of Economy Transmission during a Transfer operation to end receivers **0:** Disabled **1:** Enabled	These bits determine whether the machine uses the Economy Transmission feature when it is carrying out a Transfer operation as a Transfer Station.
1	Use of Economy Transmission during a Transfer operation to the Next Transfer Stations **0:** Disabled **1:** Enabled	
2	Use of Label Insertion for the End Receivers in a Transfer operation **0:** Disabled **1:** Enabled	This bit determines whether the machine uses the Label Insertion feature when it is carrying out a Transfer operation as a Transfer Station.
3	Conditions required for Transfer Result Report transmission **0:** Always transmitted **1:** Only transmitted if there was an error	**0:** When acting as a Transfer Station, the machine will always send a Transfer Result Report back to the Requesting Station after completing the Transfer Request, even if there were no problems. **1:** The machine will only send back a Transfer Result Report if there were errors during communication so that one or more of the End Receivers could not be contacted.
4	Printout of the message when acting as a Transfer Station **0:** Disabled **1:** Enabled	When the machine is acting as a Transfer Station, this bit determines whether the machine prints the fax message coming in from the Requesting Terminal.

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 to 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 to 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 - FF (Hex) times **Note:** CTR21 requirements prohibit changing this switch.

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 **Note:** CTR21 requirements prohibit charging this switch

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 to 5	Not used	Do not change the factory settings.
6 7	Available unit of resolution in which fax messages are received **Bit 7 Bit 6 Unit** 0 0 mm 0 1 inch 1 0 mm and inch (default) 1 1 Not used	For the best performance, do not change the factory settings. The setting determined by these bits is informed to the transmitting terminal in the pre-message protocol exchange (in the DIS/NSF frames).

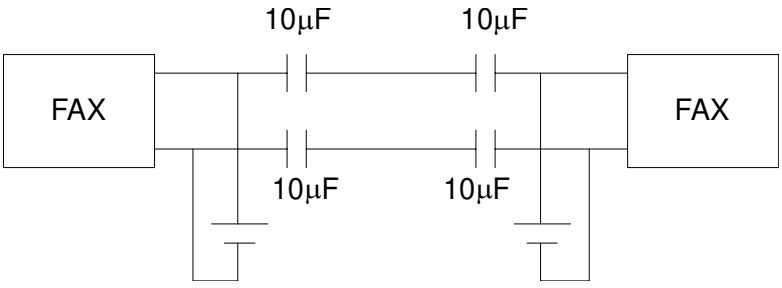
Communication Switch 15 - Not used (do not change the settings)
Communication Switch 16 - Not used (do not change the settings)
Communication Switch 17 - Not used (do not change the settings)
Communication Switch 18 - Not used (do not change the settings)
Communication Switch 19 - Not used (do not change the settings)
Communication Switch 1A - Not used (do not change the settings)
Communication Switch 1B - Not used (do not change the settings)
Communication Switch 1C - Not used (do not change the settings)
Communication Switch 1D - Not used (do not change the settings)

Communication Switch 1E		
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 **to** **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.



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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 to 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 to 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 in manual reception.
2	V.8 protocol **0:** Disabled **1:** Enabled	**0:** V.8/V.34 communications will not be possible. **Note:** Do not change this setting unless the line condition is always bad enough to slow down the data rate below 14.4kbps.
3	ECM frame size **0:** 256 bytes **1:** 64 bytes	Keep this bit at "0" in most cases.
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. $\sqrt{\mathrm{N}\ Trnasmit} \leq \mathrm{N}\ Resend$ $N_{Transmit}$- 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 to 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 to 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 slower than 14.4 kbps 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 Not used 1 1 Not used	These bits set the initial modem type for 9.6 and 7.2 kbps, if the initial modem rate is set at these speeds.
6 to 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 slower than 14.4 kbps is selected, V.8 protocol should be disabled manually. **Cross reference** V.8 protocol on/off - G3 switch 03, bit2
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”.
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 to 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 intervals between each EOL signal (end-of-line) or intervals between each ECM frame from the other end. Try using a longer setting if error code 0-21 is frequent.
5	Not used	Do not change the setting.
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 setting.

G3 SW 0B - Not used (do not change the settings)

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

G3 SW 0D - Not used (do not change the settings)

G3 Switch 0E			
No	**FUNCTION**		**COMMENTS**
0 **1**	CNG interval adjustment **Bit 1** **Bit 0** **Setting** 0 0 3.0sec 0 1 2.9sec 1 0 2.8sec 1 1 2.7sec		
2 to 7	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 to 7	Not used	Do not change the settings.

4.3 NCU PARAMETERS

The following tables give the RAM addresses and units of calculation of the parameters that the machine uses for ringing signal detection and automatic dialing. 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.

NOTE: CTR21 requirements prohibit changing the shaded items below.

Address	Function	Unit	Remarks
480400	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).	
480401	Line current detection time	20 ms	Line current detection is disabled. Line current is not detected if 480401 contains FF.
480402	Line current wait time		
480403	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
Turkey	32	20
Greece	33	21

Address	Function	Unit	Remarks
480404	PSTN dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(F), tone detection is disabled.
480405	PSTN dial tone frequency upper limit (low byte)		
480406	PSTN dial tone frequency lower limit (high byte)	Hz (BCD)	
480407	PSTN dial tone frequency lower limit (low byte)		
480408	PSTN dial tone detection time	20 ms	If 480408 contains FF, the machine pauses for the pause time (address 48040D / 48040E). See Note 3 (Italy).
480409	PSTN dial tone reset time (LOW)		
48040A	PSTN dial tone reset time (HIGH)		
48040B	PSTN dial tone continuous tone time		
48040C	PSTN dial tone permissible drop time		
48040D	PSTN wait interval (LOW)		
48040E	PSTN wait interval (HIGH)		
48040F	PSTN ringback tone detection time	20 ms	Detection is disabled if this contains FF.
480410	PSTN ringback tone off detection time	20 ms	
480411	PSTN detection time for silent period after ringback tone detected (LOW)	20 ms	
480412	PSTN detection time for silent period after ringback tone detected (HIGH)	20 ms	
480413	PSTN busy tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(F), tone detection is disabled.
480414	PSTN busy tone frequency upper limit (low byte)		
480415	PSTN busy tone frequency lower limit (high byte)	Hz (BCD)	
480416	PSTN busy tone frequency lower limit (low byte)		
480417	PABX dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(F), tone detection is disabled.
480418	PABX dial tone frequency upper limit (low byte)		
480419	PABX dial tone frequency lower limit (high byte)	Hz (BCD)	
48041A	PABX dial tone frequency lower limit (low byte)		
48041B	PABX dial tone detection time	20 ms	If 48041B contains FF, the machine pauses for the pause time (480420 / 480421).

Address	Function	Unit	Remarks
48041C	PABX dial tone reset time (LOW)	20 ms	
48041D	PABX dial tone reset time (HIGH)	20 ms	
48041E	PABX dial tone continuous tone time	20 ms	
48041F	PABX dial tone permissible drop time	20 ms	
480420	PABX wait interval (HIGH)	20 ms	
480421	PABX wait interval (LOW)	20 ms	
480422	PABX ringback tone detection time	20 ms	Detection is disabled if this contains FF.
480423	PABX ringback tone off detection time	20 ms	
480424	PABX detection time for silent period after ringback tone detected (LOW)	20 ms	
480425	PABX detection time for silent period after ringback tone detected (HIGH)	20 ms	
480426	PABX busy tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(F), tone detection is disabled.
480427	PABX busy tone frequency upper limit (low byte)		
480428	PABX busy tone frequency lower limit (high byte)	Hz (BCD)	
480429	PABX busy tone frequency lower limit (low byte)		
48042A	Busy tone ON time: range 1	20 ms	
48042B	Busy tone OFF time: range 1	20 ms	
48042C	Busy tone ON time: range 2	20 ms	
48042D	Busy tone OFF time: range 2	20 ms	
48042E	Busy tone ON time: range 3	20 ms	
48042F	Busy tone OFF time: range 3	20 ms	
480430	Busy tone ON time: range 4	20 ms	
480431	Busy tone OFF time: range 4	20 ms	
480432	Busy tone continuous tone detection time	20 ms	

Address	Function	Unit	Remarks
480433	Busy tone signal state time tolerance for all ranges, and number of cycles required for detection (a setting of 4 cycles means that ON-OFF-ON or OFF-ON-OFF must be detected twice). Bits 7 and 6 – number of cycles required for cadence detection in tx Bit 7 6 0 0 2 times 0 1 3 times 1 0 4 times 1 1 5 times Bits 5 and 4 - number of cycles required for cadence detection in rx Bit 5 4 0 0 2 times 0 1 3 times 1 0 4 times 1 1 5 times Bits 3 and 2 - Not used. Keep these bits at 0. Bits 1 and 0 - Tolerance (±) Bit 1 0 0 0 75% 0 1 50% 1 0 25% 1 1 12.5%		
480434	International dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(F), tone detection is disabled.
480435	International dial tone frequency upper limit (low byte)		
480436	International dial tone frequency lower limit (high byte)	Hz (BCD)	
480437	International dial tone frequency lower limit (low byte)		
480438	International dial tone detection time	20 ms	If 480438 contains FF, the machine pauses for the pause time (48043D / 48043E). See Note 3 (Belgium).
480439	International dial tone reset time (LOW)	20 ms	
48043A	International dial tone reset time (HIGH)	20 ms	
48043B	International dial tone continuous tone time	20 ms	
48043C	International dial tone permissible drop time	20 ms	
48043D	International dial wait interval (HIGH)	20 ms	
48043E	International dial wait interval (LOW)	20 ms	
48043F	Country dial tone upper frequency limit (HIGH)	Hz (BCD)	If both addresses contain FF(F), tone detection is disabled.
480440	Country dial tone upper frequency limit (LOW)		

Address	Function	Unit	Remarks
480441	Country dial tone lower frequency limit (HIGH)	Hz(BCD)	
480442	Country dial tone lower frequency limit (LOW)		
480443	Country dial tone detection time	20 ms	If 480443 contains FF, the machine pauses for the pause time (480448 / 480449).
480444	Country dial tone reset time (LOW)		
480445	Country dial tone reset time (HIGH)		
480446	Country dial tone continuous tone time		
480447	Country dial tone permissible drop time		
480448	Country dial wait interval (LOW)		
480449	Country dial wait interval (HIGH)		
48044A	Time between opening or closing the DO relay and opening the OHDI relay	1 ms	See Notes 4 and 7. Function 06-2 (parameter 11).
48044B	Break time for pulse dialling	1 ms	See Note 4. Function 06-2 (parameter 12).
48044C	Make time for pulse dialling	1 ms	See Note 4. Function 06-2 (parameter 13).
48044D	Time between final OHDI relay closure and DO relay opening or closing	1 ms	See Note 7. Function 06-2 (parameter 14). This parameter is only valid in Europe.
48044E	Minimum pause between dialled digits (pulse dial mode)	20 ms	See Note 4. Function 06-2 (parameter 15).
48044F	Time waited when a pause is entered at the operation panel		Function 06-2 (parameter 16).
480450	DTMF tone on time	1 ms	Function 06-2 (parameter 17).
480451	DTMF tone off time		Function 06-2 (parameter 18).
480452	Tone attenuation level of DTMF signals while dialing	-dBm x 0.5 -3.5	Function 06-2 (parameter 19). See Note 6.

Address	Function	Unit	Remarks
480453	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 480452h above. See Note 6.
480454	PSTN: DTMF tone attenuation level after dialling	-dBm x 0.5 –3.5	Function 06-2 (parameter 21). See Note 6.
480455	ISDN: DTMF tone attenuation level after dialling	-dBm x 0.5	See Note 6
480456	Not used		Do not change the settings.
480457	Time between 48044Dh (NCU parameter 14) and 48044Eh (NCU parameter 15)	1 ms	This parameter takes effect when the country code is set to France.
480458	Not used		Do not change the setting.
480459	Grounding time (ground start mode)	20 ms	The Gs relay is closed for this interval.
48045A	Break time (flash start mode)	1 ms	The OHDI relay is open for this interval.
48045B	International dial access code (High)	BCD	For a code of 100: 48045B - F1 48045C - 00
48045C	International dial access code (Low)		
48045D	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 48044F is used. Do not set the number more than 7 in the UK.
48045E	Bits 7 to 5 - Progress tone detection level Bit 7 Bit 6 Bit 5 dBm 0 0 0 -25.0 0 0 1 -35.0 0 1 0 -30.0 0 1 1 -36.0 1 0 0 -40.0 1 1 0 -49.0 Bits 2 and 0 - see Note 3.		

Address	Function	Unit	Remarks
48045F	Bit 7 and 6 - Not used Bit 5 - Polarity change detection in rx (1: Enabled) Bit 4 - Polarity change detection in tx (1: Enabled) Bits 3 to 0 - Not used		Detection time is 500 ms in both tx and rx. See Note 8.
480460 to 480464	Not used		Do not change the settings.
480465	Long distance call prefix (HIGH)	BCD	For a code of 0: 480465 - FF 480466 - F0
480466	Long distance call prefix (LOW)	BCD	
480467 to 480471	Not used		Do not change the settings.
480472	Acceptable ringing signal frequency: range 1, upper limit	1000/ N (Hz).	Function 06-2 (parameter 02).
480473	Acceptable ringing signal frequency: range 1, lower limit		Function 06-2 (parameter 03).
480474	Acceptable ringing signal frequency: range 2, upper limit		Function 06-2 (parameter 04).
480475	Acceptable ringing signal frequency: range 2, lower limit		Function 06-2 (parameter 05).
480476	Number or rings until a call is detected	1	Function 06-2 (parameter 06). The setting must not be zero (0).
480477	Minimum required length of the first ring	20 ms	See Note 5. Function 06-2 (parameter 07).
480478	Minimum required length of the second and subsequent rings	20 ms	Function 06-2 (parameter 06-2).
480479	Ringing signal detection reset time (LOW)	20 ms	Function 06-2 (parameter 09).
48047A	Ringing signal detection reset time (HIGH)		Function 06-2 (parameter 10).
48047B to 480480	Not used		Do not change the settings.
480481	Interval between dialing the last digit and switching the Oh relay over to the external telephone when dialing from the operation panel in handset mode.	20 ms	Factory setting: 500 ms

Address	Function	Unit	Remarks
480482	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		
480483 to 4804A0	Not used		Do not change the settings.
4804A1	Acceptable CED detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF(F), tone detection is disabled.
4804A2	Acceptable CED detection frequency upper limit (low byte)		
4804A3	Acceptable CED detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF(F), tone detection is disabled.
4804A4	Acceptable CED detection frequency lower limit (low byte)		
4804A5	CED detection time	20 ms ± 20 ms	Factory setting: 200 ms
4804A6	Acceptable CNG detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF(F), tone detection is disabled.
4804A7	Acceptable CNG detection frequency upper limit (low byte)		
4804A8	Acceptable CNG detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF(F), tone detection is disabled.
4804A9	Acceptable CNG detection frequency lower limit (low byte)		
4804AA	Not used		Do not change the setting.
4804AB	CNG on time	20 ms	Factory setting: 500 ms
4804AC	CNG off time	20 ms	Factory setting: 200 ms

Address	Function	Unit	Remarks
4804AD	CNG On/Off time tolerance, and number of cycles required for detection (a setting of 4 cycles means that ON-OFF-ON or OFF-ON-OFF must be detected twice). Bits 7, 6, 5, 4 - number of cycles required for cadence detection Bits 3 and 2 - OFF time tolerance (±) Bit 3 2 OFF time tolerance 0 0 75% 0 1 50% 1 0 25% 1 1 12.5% Bits 1 and 0 – ON time tolerance (±) Bit 1 0 ON time tolerance 0 0 75% 0 1 50% 1 0 25% 1 1 12.5%		
4804AE	Not used		Do not change the settings.
4804AF	Acceptable AI short protocol tone (800Hz) detection frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(F), tone detection is disabled.
4804B0	Acceptable AI short protocol tone (800Hz) detection frequency upper limit (low byte)		If both addresses contain FF(F), tone detection is disabled.
4804B1	Acceptable AI short protocol tone (800Hz) detection frequency lower limit (high byte)	Hz(BCD)	If both addresses contain FF(F), tone detection is disabled.
4804B2	Acceptable AI short protocol tone (800Hz) detection frequency lower limit (low byte)		If both addresses contain FF(F), tone detection is disabled.
4804B3	Detection time for 800 Hz AI short protocol tone	20 ms	Factory setting: 360 ms
4804B4	PSTN: Tx level from the modem	- dBm	Function 06-2 (parameter 01).
4804B5	PSTN: 1100 Hz tone transmission level	- N 4804B4 - 0.5N 4804B5 (dB) See Note 8.	
4804B6	PSTN: 2100 Hz tone transmission level	- N4804B4 - 0.5N 4804B6 (dB) See Note 8.	
4804BA	ISDN: Tx level from the modem	- dBm	The setting must be between -12dBm and -15dBm.
4804BB	ISDN: 1100 Hz tone transmission level	- N 4804BA - 0.5N 4804BB (dB)	
4804BC	ISDN: 2100 Hz tone transmission level	- N 4804BA - 0.5N 4804BC (dB)	

Service Tables

Address	Function	Unit	Remarks
4804BD	Modem turn-on/off level (incoming signal detection level) **Turn-on level** 00 (H): -33dBm 01 – 0A (H): -38 dBm 0B – 14 (H): -43 dBm 15 – 1F (H): -48 dBm **Turn-off level** The turn-off level is automatically set at "turn-on level minus 3 dBm".		
4804BE to 4804C6	Not used		Do not change the settings.
4804C7	Bits 0 to 3 – Not used. Bit 4 – V.34 protocol dump **0:** Simple, **1:** Detailed (default) Bits 5 to 7 – Not used.		
4804C8 to 4804D9	Not used		Do not change the settings.
4804DA	T.30 T1 timer	1 s	

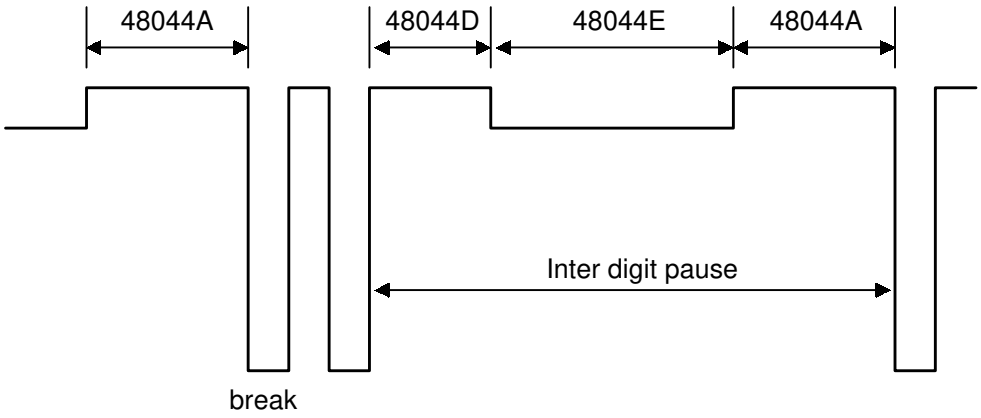
NOTES

1. If a setting is not required, store FF in the address.
2. In Europe, if the country code is not specified, set it to UK (02).
3. Italy and Belgium only

   RAM address 48045E: 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.
   480408 (if bit 0 = 1) or 480438 (if bit 2 = 1): tolerance for on or off state duration (%), and number of cycles required for detection, coded as in address 480433.
   48040B (if bit 0 = 1) or 48043B (if bit 2 = 1): on time, hex code (unit = 20 ms)
   48040C (if bit 0 = 1) or 48043C(if bit 2 = 1): off time, hex code (unit = 20 ms)
4. Pulse dial parameters (addresses 48044A to 48044F) are the values for 10 pps. If 20 pps is used, the machine automatically compensates.
5. The first ring may not be detected until 1 to 2.5 wavelengths after the time specified by this parameter.

6. The calculated level must be between 0 and 10.
   The attenuation levels calculated from RAM data are:
   High frequency tone: - 0.5 x N**480452/480454** – 3.5 dBm
   - 0.5 x N**480455** dBm
   Low frequency tone: - 0.5 x (N**480452/480454** + N**480453**) –3.5 dBm
   - 0.5 x (N**480455** + N**480453**) dBm
   Note: N**480452**, for example, means the value stored in address 480452(H)
7. 48044A: Europe - Between Ds opening and Di opening, France - Between Ds closing and Di opening
   48044D: Europe - Between Ds closing and Di closing, France - Between Ds opening and Di closing
8. Tone signals which frequency is lower than 1500Hz (e.g., 800Hz tone for AI short protocol) refer to the setting at 4804B5h. Tones which frequency is higher than 1500Hz refer to the setting at 4804B6h.
9. Polarity change detection in transmission starts after dialing has been finished in automatic dialing mode, or after Start key is pressed in manual dialing mode. Polarity change detection in reception should be enabled in Spain.
10. The actual inter-digit pause (pulse dial mode) is the sum of the periods specified by the RAM addresses 48044A, 48044D, and 48044E.



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, then press 'User Tools'.
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 6.
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
CCITT T1 time (for PSTN G3 mode) If the connection time to a particular terminal is longer than the NCU parameter setting , adjust this byte. The T1 time is the value stored in this byte (in hex code), multiplied by 1 second. **Range:** 1 to 127 s (01h to 7Fh) 00h or FFh - The local NCU parameter factory setting is used. Do not program a value between 80h and FEh.

Switch 02		
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. When 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.

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 slower than 14.4 kbps, Switch 04 bit 4 must be changed to 0. **Note:** Do not use settings other than listed on the left.
4 to 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.
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.
4	V.8 protocol **0**: Disabled **1**: Enabled	If transmissions to a specific destination always end at a lower modem rate (lower than 14,400 bps), disable V.8 protocol so as not to use V.34 protocol. **0:** V.34 communication will not be possible.

Switch 04		
No	**FUNCTION**	**COMMENTS**
5	Compression modes available in transmit mode **0:** MH only **1:** All available compression modes	This bit determines the capabilities that are informed to the other terminal during transmission.
6 **7**	ECM during transmission **Bit 7 Bit 6 Setting** 0 0 Disabled 0 1 Enabled 1 0 Not used 1 1 Disabled	For example, if ECM is switched on but is not wanted when sending to a particular terminal, use the (0, 0) setting. Note that V.8/V.34 protocol and JBIG compression are automatically disabled if ECM is disabled.

Switch 05 - 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	When disabled, the G4 parameter switch 2 (bits 0 and 1) setting is used.
4 **to** **7**	Not used	Do not change the settings.

Switch 06 - Optional ISDN G4 kit required		
No	**FUNCTION**	**COMMENTS**
0 **to** **3**	Link Modules **Bits 3 2 1 0 Setting** 0 0 0 0 Modulo 8 0 0 0 1 Modulo 128 1 1 1 1 Disabled	When disabled, the G4 parameter switch 3 (bit 0) setting is used.
4 **to** **7**	Not used	Do not change the settings.

Switch 07 - 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	When disabled, the G4 parameter switch 6 (bit 0) setting is used.
4 **to** **7**	Packet modules **Bits 3 2 1 0 Setting** 0 0 0 0 Modulo 9 0 0 0 1 Modulo 128 1 1 1 1 Disabled	When disabled, the G4 parameter switch 6 (bit 4) setting is used.

Switch 08 - Not used

4.5 SERVICE RAM ADDRESSES

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

011000 to 011007(H) – ROM name (ASCII)
011009 to 011012(H) – ROM part number (ASCII)
011017 to 011020(H) – ROM version number (ASCII)
011022 to 01102A(H) – ROM release date (ASCII)

480001 to 480004(H) - ROM version (Read only)
480001(H) - Revision number (BCD)
480002(H) - Year (BCD)
480003(H) - Month (BCD)
480004(H) - Day (BCD)

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

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

480020 to 48003F(H) - System bit switches
480040 to 48004F(H) - Scanner bit switches
480050 to 48005F(H) - Printer bit switches
480060 to 48007F(H) - Communication bit switches
480080 to 48008F(H) - G3 bit switches

4800A0(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

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

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

4800A1(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

Bit	4	3	Setting
	0	0	Text
	0	1	Text/ Photo
	1	0	Photo

Bit 5: TTI print home position 0: Disabled, 1: Enabled
Bit 6: Not used
Bit 7: Settings return to home position after scanning 0: Disabled, 1: Enabled

4800A2(H) - User parameter switch 02 (SWUSR_02)
Bit 0: Forwarding mark printing on forwarded messages 0: Disabled, 1: Enabled
Bit 1: Center mark printing on received copies 0: Disabled, 1: Enabled
Bit 2: Reception time printing 0: Disabled, 1: Enabled
Bit 3: TSI print on received messages 0: Disabled, 1: Enabled
Bit 4: Checkered mark printing 0: Disabled, 1: Enabled
Bit 5: CIL printing (G4) 0: Disabled, 1: Enabled
Bit 6: TID printing (G4) 0: Disabled, 1: Enabled
Bit 7: Not used

4800A3(H) - User parameter switch 03 (SWUSR_03: Automatic report printout)
Bit 0: Transmission result report (memory transmissions) 0: Off, 1: On
Bit 1: Not used
Bit 2: Memory storage report 0: Off, 1: On
Bit 3: Polling reserve report (polling reception) 0: Off, 1: On
Bit 4: Polling result report (polling reception) 0: Off, 1: On
Bit 5: Transmission result report (immediate transmissions) 0: Off, 1: On
Bit 6: Polling clear report 0: Off, 1: On
Bit 7: Journal (TCR) 0: Off, 1: On

4800A4(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

4800A5(H) - User parameter switch 05 (SWUSR_05)
Bit 0: Substitute reception when the base copier is in SC condition 0: Off, 1: On
Bits 1 and 2: Condition for substitute rx when the machine cannot print messages (Paper end, Toner end, and Jam in 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 code 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

4800A6(H) - User parameter switch 06 (SWUSR_06)
Bit 0: Not used
Bit 1: G3/G4 LED home position 0: G3, 1: G4
Bit 2 to 4: Not used
Bit 5: Quick dial label print format
0: Suitable for white paper, 1: Suitable for transparent paper
Bit 6: Scan sequence in Book transmission
0: Left to right, 1: Right to left
Bit 7: Not used

4800A7(H) - User parameter switch 07 (SWUSR_07)
Bits 0 and 1: Not used
Bit 2: Parallel memory transmission 0: Off, 1: On
Bits 3 and 7: Not used

4800A8(H) - User parameter switch 08 (SWUSR_08)
Bit 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.

4800A9(H) - User parameter switch 09 (SWUSR_09)
Bit 0: Reverse printing 0: Off, 1: On (optional 3 bin sorter unit is required)
Bits 1 to 7: Not used

4800AA(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

4800AB(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

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

Bits 0 and 1: PSTN access method from behind a PABX

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

Bits 2 to 7: Not used

4800AE(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: Reset when function changed 0: Off, 1: On
Bits 4 to 6: Not used
Bit 7: Manual service call (system parameter list tx) 0: Off, 1: On

4800AF(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
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

4800B0(H) – User parameter switch 16 (SWUSR_10)

Bits 0 and 1: Not used
Bit 2: Paper size selection priority for 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

4800B1(H) – Function settings (SWUSR_11)
Bits 0 and 1: Not used
Bit 2: Necessity of "Add" button to add a destination for broadcasting
0: Yes (users have to press "Add" after selecting a destination)
1: No (selected destination is added without pressing "Add" button
Bits 3 to 7: Not used

4800B2(H) - User parameter switch 18 (SWUSR_12)
Bits 0 and 1: Fax print color home position

Bit 1	0	Setting
0	1	Black
1	0	Magenta
1	1	Cyan

Bits 2 and 3: Not used
Bits 4 and 5: 2nd color chioice

Bit 5	4	Setting
0	0	Never
0	1	Black
1	0	Magenta
1	1	Cyan

Bits 6 and 7: Not used

4800B8(H) - User parameter switch 24 (SWUSR_18)
Bits 0 and 1: File retention time

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

Bits 2 to 7: Not used

4800B9(H) - Function settings (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.
Bits 5 and 6: Not used
Bit 7: Daylight saving time 0: Disabled, 1: Enabled

4800BA(H) - Fucntion settings (SWUSR_1A)
Bit 0: Not used
Bit 1: Dialing type 0: Pulse dialing (10 pps), 1: Tone (DTMF) dialing
Bits 2 to 7: Not used

4800BB(H) - PSTN access number from behind PABX (SWUSR_1B)

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

4800C0 to 4800CF(H) - G4 Parameter Switches
(Refer to the ISDN G4 option service manual for details.)

4800D0 to 4800EF(H) - G4 Internal Switches
(Refer to the ISDN G4 option service manual for details.)

4800F0 to 480103(H) - RTI (Max. 20 characters - ASCII) - See the following note.
480104 to 480117(H) - CSI (Max. 20 characters - ASCII)
480118 to 800137(H) - TTI (Max. 32 characters - ASCII) - See the following note.
480138(H) - Number of CSI characters (Hex)

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

480139 to 480147(H) - Service station's fax number (Service mode 09)
See 48018F(H) for the type of network used for this number**.**

480157 to 480165(H) - Own fax number (PSTN)
480166 to 480174(H) - Own fax number (ISDN G4)
480175 to 480183(H) - Own fax number (ISDN G3)

480184(H) - ID code (low - Hex)
480185(H) - ID code (high - Hex)

480186(H) - Confidential ID (low - BCD)
480187(H) - Confidential ID (high - BCD)

480188(H) - Memory lock ID (low - Hex)
480189(H) - Memory lock ID (high - Hex)

48018F(H) - Network type used for the service station number
00(H) - G3 (PSTN)
01(H) - G4 (ISDN)

480198 to 48019F(H) - Last power off time (Read only)
480198(H) - 01(H) - 24-hour clock, 00(H) - 12-hour clock (AM), 02(H) - 12-hour clock (PM)
480199(H) - Year (BCD)
48019A(H) - Month (BCD)
48019B(H) - Day (BCD)
48019C(H) - Hour
48019D(H) - Minute
48019E(H) - Second
48019F(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ... , 06: Sunday

4801AC(H) - Optional equipment (Read only – Do not change the setting)

Bit 0: PMU 0: Not installed, 1: Installed
Bit 1: Not used
Bit 2: Not used
Bit 3: EXSAF 0: Not installed, 1: Installed
Bit 4: Hard disk 0: Not installed, 1: Installed
Bit 5: Not used
Bit 6: ISDN unit 0: Not installed, 1: Installed
Bit 7: Not used

4801AE(H) - Optional equipment (Read only – Do not change the setting)

Bit 0: Paper Tray 0: Not installed, 1: Installed
Bits 1 to 7: Not used

4801AF(H) - Optional equipment (Read only – Do not change the setting)

Bit 0: Not used
Bit 1: Not used
Bit 2: ARDF 0: Not installed, 1: Installed
Bit 3: Stamp 0: Not installed, 1: Installed
Bits 4 to 7: Not used

4801C4 to 4801C6(H) - Rx counter (the format is the same as for the tx counter)

4802AE to 4802C5(H) - G4 terminal ID (ASCII - Max. 24 characters)

4802C6 to 4802D9(H) - ISDN G3 CSI (ASCII - Max. 20 digits)

4802DA(H) - Number of digits programmed in the ISDN G3 CSI (Hex)

4802DB to 4802DE(H) - ISDN IP

4802DF to 4802E2(H) - ISDN G3 sub-address

4802E3 to 4802E6(H) - ISDN G4 sub-address

4802E7 to 4802EB(H) - CiG4 board ROM information

4802E7(H) - Suffix
4802E8(H) - Version (BCD)
4802E9(H) - Year (BCD)
4802EA(H) - Month (BCD)
4802EB(H) - Day (BCD)

480300(H) - Number of copies for multi-sort document reception

480356(H) - Time for economy transmission (hour in 24h clock format - BCD)
480357(H) - Time for economy transmission (minute - BCD)

480372(H) - Transmission monitor volume 00 - 07(H)
480373(H) - Reception monitor volume 00 - 07(H)
480374(H) - On-hook monitor volume 00 - 07(H)
480375(H) - Dialing monitor volume 00 - 07(H)
480376(H) - Buzzer volume 00 - 07(H)

480379 to 48037D(H) - Periodic service call parameters (Refer to section 2.1.2 for details)

480383 to 480385(H) - Effective term of automatic service calls (Refer to section 2.1.3 for details)

48038C to 48038D(H) – Modem ROM information
48038C(H) – Modem ROM version (Low)
48038D(H) – Modem ROM version (High)
48038E(H) – Modem ROM checksum value (Low)
48038F(H) – Modem ROM checksum value (High)

480400 to 4804DA(H) - NCU parameters (Refer to section 4.3 for details)

480A30 to 480A57(H) - SC codes NOT for automatic service call

If the fax unit receives an SC code from the copier engine other than programmed in these addresses, the fax unit sends an automatic service call report to the programmed service station.
Program a SC code in four-digit BCD format as shown in the example below.
Example 1: SC code '192'
Address (High) - 01(BCD)
Address (Low) - 92 (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
480A30	09	480A31	AA	9AA
480A32	FF	480A33	FF	Not programmed
480A34	FF	480A35	FF	Not programmed
480A36	FF	480A37	FF	Not programmed
480A38	FF	480A39	FF	Not programmed
480A3A	FF	480A3B	FF	Not programmed
480A3C to 480A56	FF(H)	480A3D to 480A57	FF(H)	Not Programmed

480A58 to 480AD6(H) – Fax operation log data

Each of the following counters uses 4 bytes. The data is stored in hexadecimal format as shown in the example below.

480A58 to 480A5B(H) – Total number of transmissions

Example 1

The counter value is 00 01 01 85 (Hex) = 65,925 (decimal), when the data is stored as follows:

- 480A58 – 85(H)
- 480A59 – 01(H)
- 480A5A – 01(H)
- 480A5B – 00(H)

480A5C to 480A5F(H) – Total number of receptions
480A60 to 480A63(H) – Number of transmitted pages
480A64 to 480A67(H) – Number of received pages
480A68 to 480A6B(H) – Number of G3/IG3 transmissions
480A6C to 480A6F(H) – Number of G4 transmissions
480A70 to 480A73(H) – Number of G3/IG3 receptions
480A74 to 480A77(H) – Number of G4 receptions

Each of the following counters uses 2 bytes. The data is stored in hexadecimal format as shown in the example below.

480A78 to 480A79(H) – Number of pages scanned at 8 x 3.85 l/mm

Example 2

The counter value is 01 85 (Hex) = 389 (decimal), when the data is stored as follows:

- 480A78 – 85(H)
- 480A79 – 01(H)

480A7A to 480A7B(H) – Number of pages scanned at 8 x 7.7 l/mm
480A7C to 480A7D(H) – Number of pages scanned at 8 x 15.4 l/mm
480A7E to 480A7F(H) – Number of pages scanned at 16 x 15.4 l/mm
480A80 to 480A81(H) – Number of pages scanned at 200 x 100 dpi
480A82 to 480A83(H) – Number of pages scanned at 200 x 200 dpi
480A84 to 480A85(H) – Number of pages scanned at 200 x 400 dpi
480A86 to 480A87(H) – Number of pages scanned at 400 x 400 dpi

Each of the following counters uses 4 bytes. The data is stored in hexadecimal format as shown in example 1 above.

480A88 to 480A8B(H) – Total number of scanned pages
480A8C to 480A8F(H) – Number of scanned pages of A4 width
480A90 to 480A93(H) – Number of scanned pages of B4 width
480A94 to 480A97(H) – Number of scanned pages of A3 width
480A98 to 480A9B(H) – Number of scanned pages in Text mode
480A9C to 480A9F(H) – Number of scanned pages in Photo mode

480AA0 to 480AA3(H) – Number of scanned pages in Text/Photo mode
480AA4 to 480AA7(H) – Number of scanned pages in Special Original mode
480AA8 to 480AAB(H) – Total number of transmission jobs
480AAC to 480AAF(H) – Total number of memory transmissions

Each of the following counters uses 2 bytes. The data is stored in hexadecimal format as shown in example 2 above.

480AB0 to 480AB1(H) – Number of send later transmissions
480AB2 to 480AB3(H) – Number of TRD transmissions
480AB4 to 480AB5(H) – Number of confidential transmissions
480AB6 to 480AB7(H) – Number of transfer request transmissions
480AB8 to 480AB9(H) – Number of transfer broadcasts
480ABA to 480ABB(H) – Number of broadcasts
480ABC to 480ABD(H) – Number of polling transmissions
480ABE to 480ABF(H) – Number of image rotation transmissions
480AC0 to 480AC1(H) – Number of label insertions
480AC2 to 480AC3(H) – Number of 2-sided original transmissions
480AC4 to 480AC5(H) – Not used
480AC6 to 480AC7(H) – Number of confidential receptions
480AC8 to 480AC9(H) – Number of memory lock receptions
480ACA to 480ACB(H) – Number of receptions from specific senders
480ACC to 480ACD(H) – Number of polling receptions

492D00 to 4931DF(H) - Dedicated tx parameters for Quick Dial 01 - 56 and Speed Dial #00 - #99.

As explained in section 4.4, each set of dedicated tx parameters consists of 8 bytes.

492D00 to 492D07(H) - Dedicated tx parameters for Quick 01
492D08 to 492D0F(H) - Dedicated tx parameters for Quick 02
492D10 to 492D17(H) - Dedicated tx parameters for Quick 03
⇩
492EB8 to 492EBF(H) - Dedicated tx parameters for Quick 56
492EC0 to 492EC7(H) - Dedicated tx parameters for Speed #00
492EC8 to 492ECFH) - Dedicated tx parameters for Speed #01
492ED0 to 492ED7(H) - Dedicated tx parameters for Speed #03
⇩
4931D8 to 4931DF(H) - Dedicated tx parameters for Speed #99

49CA00 to 49CB7F(H) - Latest 64 error codes (Read only)

One error record consists of 6 bytes of data.

First error record start address – 49CA00(H)
Second error record start address – 49CA06(H)
Third error record start address – 49CA0C(H)
:
64th error record start address – 49CB7A(H)

The format is as follows:
1st byte - Minute (BCD)
2nd byte - Hour (BCD)
3rd byte - Day (BCD)
4th byte - Month (BCD)
5th byte - Error code (low) [If the error code is 1-23, 23 is stored here.]
6th byte - Error code (high) [If the error code is 1-23, 01 is stored here.]

49F084 to 49F763(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 byte - 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 measure of 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 2: 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

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

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

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

$$\begin{pmatrix} Bit0 \\ Bit1 \end{pmatrix} = \begin{pmatrix} 1 \\ 0 \end{pmatrix} : \mathrm{P}STN \begin{pmatrix} 0 \\ 1 \end{pmatrix} : \mathrm{I}SDN$$

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

$$\begin{matrix} \left[Bit4 \right] & \left[0 \right] & \left[1 \right] & \left[0 \right] & \left[1 \right] \\ \left[Bit5 \right] & \left[0 \right] & \left[0 \right] & \left[1 \right] & \left[1 \right] \\ \left[\quad \right] = \left[\quad \right] : \text{Normal} & \left[\quad \right] : \text{Confidential} & \left[\quad \right] : \text{Polling} & \left[\quad \right] : \text{Transfer} \\ \left[Bit6 \right] & \left[0 \right] & \left[0 \right] & \left[0 \right] & \left[0 \right] \\ \left[Bit7 \right] & \left[0 \right] & \left[0 \right] & \left[0 \right] & \left[0 \right] \end{matrix}$$

$$\begin{matrix} \left[Bit4 \right] & \left[0 \right] & \left[1 \right] \\ \left[Bit5 \right] & \left[0 \right] & \left[0 \right] \\ \left[\quad \right] = \left[\quad \right] : \text{Forwarding} & \left[\quad \right] : \text{Automatic Service Callr} \\ \left[Bit6 \right] & \left[1 \right] & \left[1 \right] \\ \left[Bit7 \right] & \left[0 \right] & \left[0 \right] \end{matrix}$$

46th byte - Communication mode #2

Bit 0: Tx or Rx 0: Tx, 1: Rx
Bit 1: Reduction in Tx 0: Not reduced, 1: Reduced
Bit 2: Batch transmission 0: Not used, 1: Used
Bit 3: Send later transmission 0: Not used, 1: Used
Bit 4: Transmission from 0: ADF, 1: Memory
Bits 5 to 7: Network type used

$$\begin{pmatrix} Bit5 \\ Bit6 \\ Bit7 \end{pmatrix} = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix} : \mathrm{S}\tan dard \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix} : \mathrm{D}etail \begin{pmatrix} 1 \\ 1 \\ 0 \end{pmatrix} : Fine \begin{pmatrix} 0 \\ 0 \\ 1 \end{pmatrix} : \mathrm{S}uperfine$$

47th byte - Not used

48th byte - Number of errors duing 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)
- 51th byte - Error code (low - BCD)
- 52st byte - Error code (high - BCD)

53th 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

64A800 to 64C41F(H) - Dedicated tx parameters for Speed Dial #100 - #999, when EXSAF is installed.
As explained in Dedicated Transmission parameters in section 4, each set of dedicated tx parameters consists of 8 bytes.

64A800 to 64A807(H) - Dedicated tx parameters for Speed #100
64A808 to 64A80F(H) - Dedicated tx parameters for Speed #101
64A810 to 64A817(H) - Dedicated tx parameters for Speed #102
⇩
64C418 to 64C41F(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

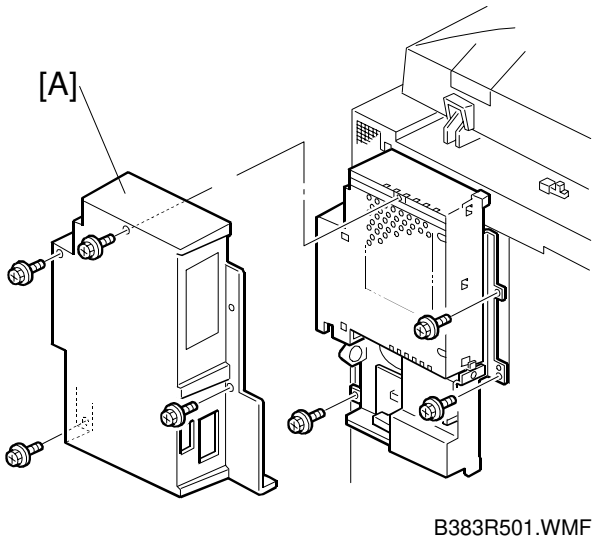
No PM necessary for the fax option.

6. REMOVAL AND REPLACEMENT

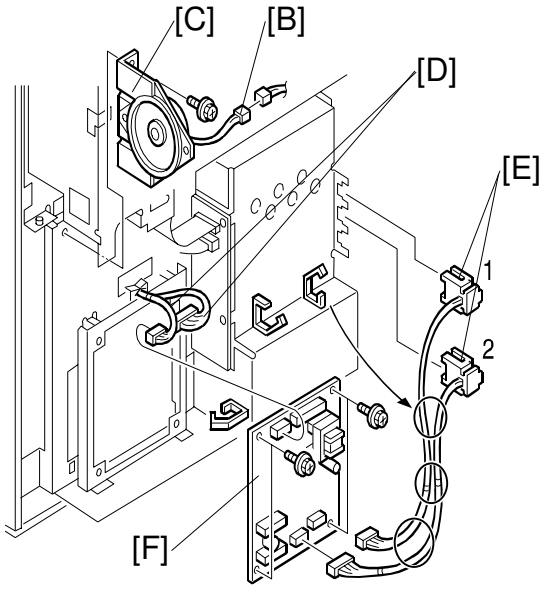
6.1 PRECAUTION

⚠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



B383R501.WMF

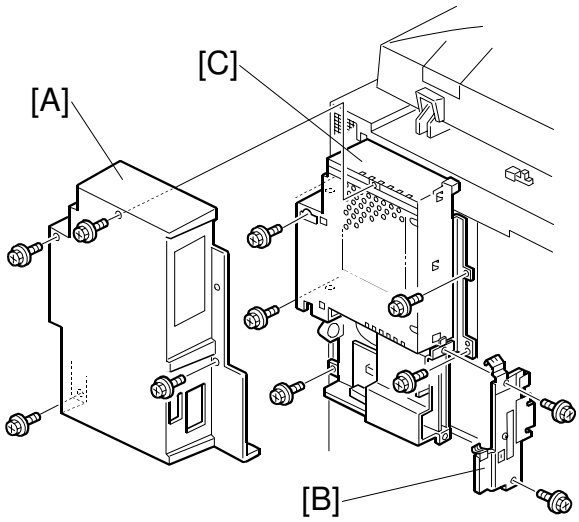


B383R502.WMF

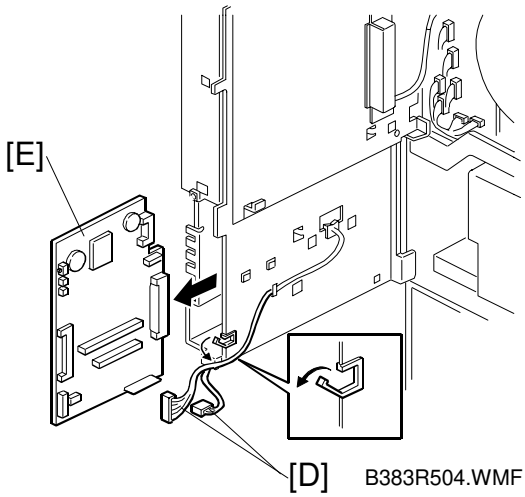
1. Remove the cover [A] (4 screws).
2. Disconnect the speaker harness [B], then remove the speaker [C] (1 screw).
3. Disconnect the harnesses [D] and [E], then remove the NCU [F] (4 screws).

6.3 FCU

6.3.1 REMOVAL



B383R503.WMF



B383R504.WMF

1. Remove the cover [A] (4 screws) and the small bracket [B] (2 screws).
2. Loosen 5 screws, then carefully pull on the right side of the Interface unit [C] so that it rotates along the left joint.
3. Disconnect the harnesses [D] then remove the FCU [E].
   - 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

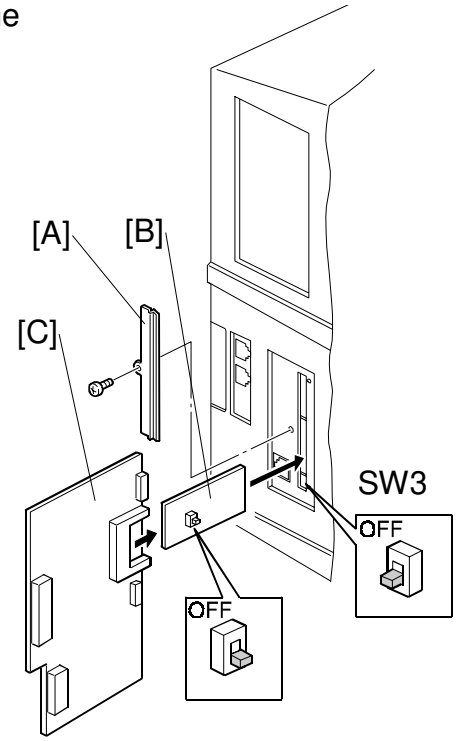
Before restoring the SRAM data, install a new FCU and initialize the SRAM on the new FCU using the following procedure.

1. Install a new FCU in the machine (see section 6.3.1)
   NOTE: Do not install the EXSAF and PMU 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. Remove the bracket [A] then connect the data copy tool [B] with the old FCU [C] to the card slot as shown.
   See the note below for the switch settings.

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



B383R507.WMF

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 on the old FCU.

6. Turn on the machine, and enter the fax service mode.
7. Press 1 6 then 2.
8. Press 1.
9. Press "#" then ◇.
10. When "Loading Completed" appears, turn off the main power switch then disconnect the tools.
11. Install the EXSAF and PMU 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

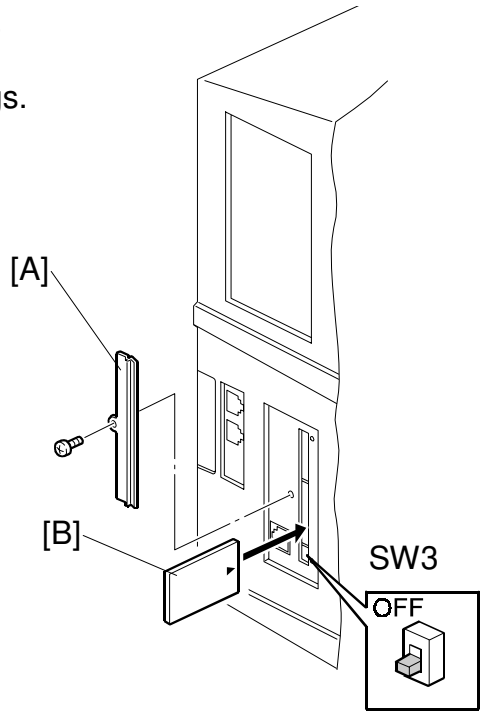
SRAM data can be copied to a flash memory card. For how to do this, refer to section 6.5.

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 EXSAF board was present; make sure that the backup of EXSAF and FCU SRAM is available, then install the EXSAF.
   If this backup is not available, restore the data from the old FCU. After restoring, connect the EXSAF to the new FCU.
5. Remove the bracket [A] then connect the flash memory card [B] to the card slot as shown.
   See the note below for the switch settings.



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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.
8. Press 3.

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

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

9. Press either of the following:
   1 – Standard SRAM only
   2 – Standard SRAM and SRAM on the EXSAF.
10. Press “S” then ◇; a confirmation message appears.
11. Press Start to restore the SRAM.
12. When “Loading Completed” appears, 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.

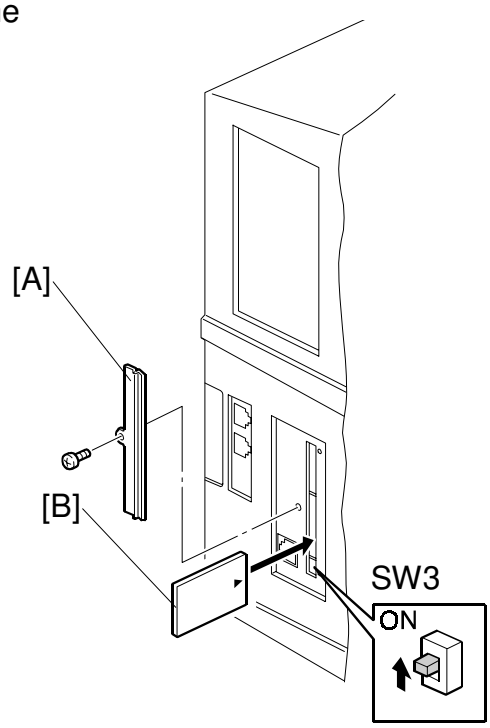
6.4 ROM UPDATE

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



B383R505.WMF

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

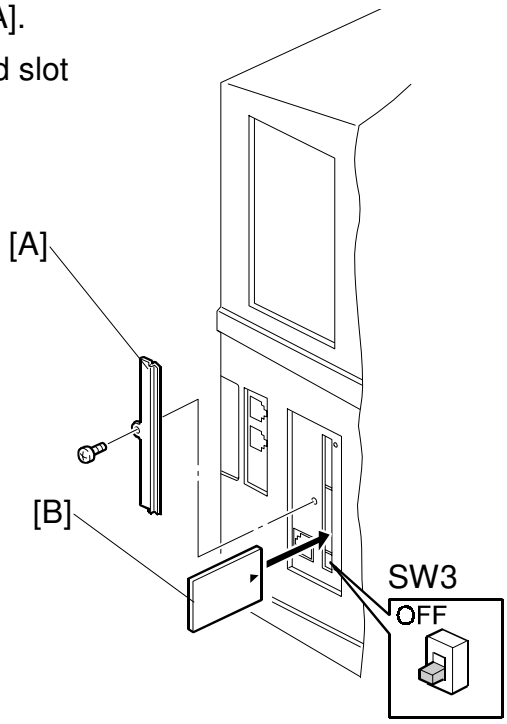
3. Turn on the machine and enter the fax service mode.
4. Press 1 6 then 1.
5. Press 1.
6. Press OK, then check the ROM version.
   If the card does not contain FCU ROM data, “Please check flash card” appears. Turn off the machine and retry the procedure with the correct card.
7. Press Start.
8. When “Loading Completed” appears, turn off the main power switch then disconnect the flash memory card.
9. Turn **OFF** the **SW3** below the card slot.
10. Turn the machine back on.
11. 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.

1. Turn off the machine and remove the cover [A].
2. Connect the flash memory card [B] to the card slot as shown.



B383R506.WMF

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

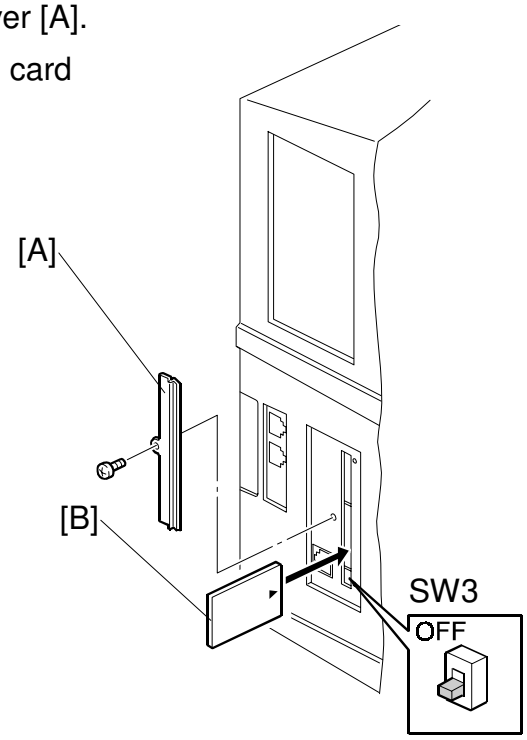
3. Turn on the machine and enter the fax service mode.
4. Press 1 6 then 1.
5. Press 2.
6. Press OK, then check the ROM version.
7. Press Start.
8. When “Loading Completed” appears, turn off the main power switch then disconnect the flash memory card.
9. Turn the machine back on.

6.4.3 MODEM ROM DOWNLOAD

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

NOTE: The flash memory card must be programmed with modem ROM data for this model as explained in section 6.6.
Do not use a flash card with data for another model.

1. Turn off the machine and remove the cover [A].
2. Connect the flash memory card [B] to the card slot as shown.



B383R506.WMF

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 3.
5. Press Start.
6. When “Loading Completed” appears, turn off the main power switch then disconnect the flash memory card.
7. Turn the machine back on. Print the system parameter list to check the new modem ROM version.

6.5 SRAM DATA BACKUP AND RESTORE

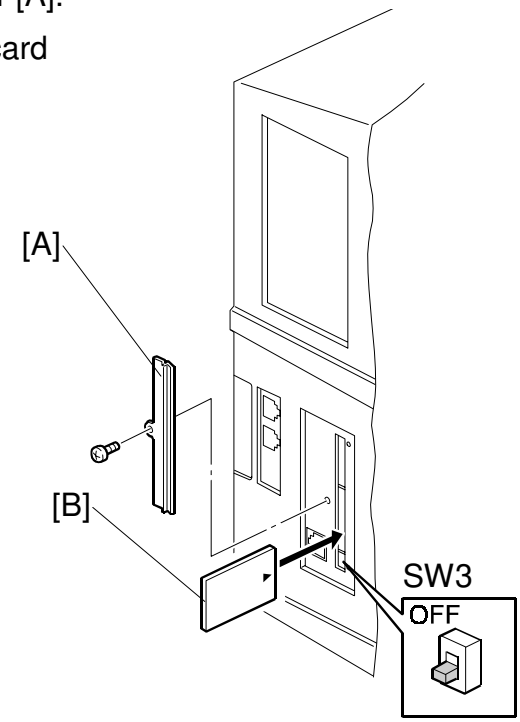
6.5.1 SRAM BACKUP TO A FLASH MEMORY CARD

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



B383R506.WMF

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.
5. Press 2.
6. Press Start.
7. When “Loading Completed” appears, 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.

6.5.2 SRAM RESTORE FROM A FLASH MEMORY CARD

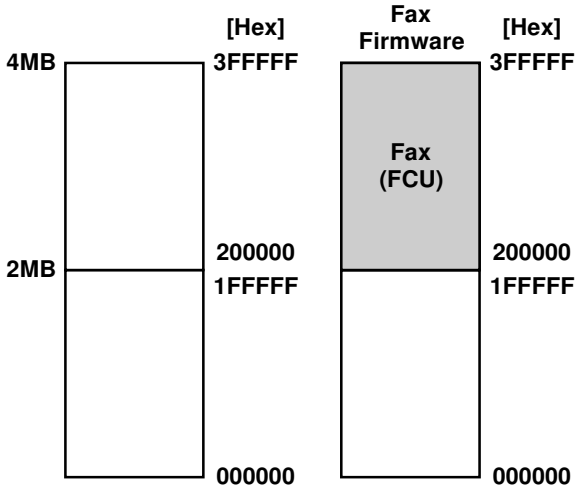
This function recovers SRAM data if the FCU is replaced or SRAM data was lost accidentally.

For how to restore the SRAM data from the backup on a flash memory card, refer to section 6.3.3 for details.

6.6 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.

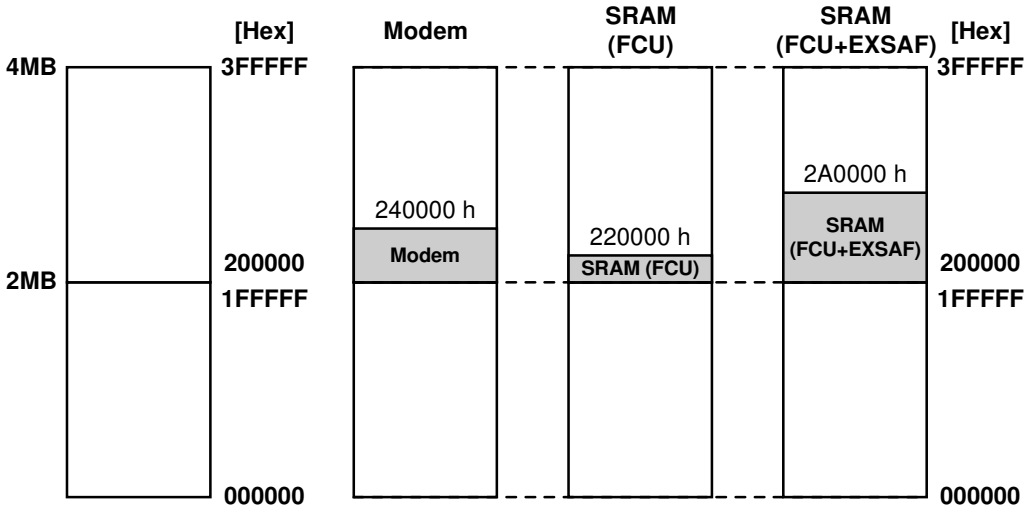
6.6.1 FCU FIRMWARE DATA



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

B383R550.WMF

6.6.2 MODEM ROM AND SRAM DATA



Start Address (Hex)	200000	200000	200000
Length (Hex)	40000	20000	A0000
Size (kB)	256	128	128 + 512

B383R551.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
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 or OPU.
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 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
0-52	Polarity changed during communication	• Check the line connection. Retry communication.
0-70	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.) • A polling tx file was not ready at the other terminal when polling rx was initiated from the calling terminal.
0-74	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	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	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	Called terminal fell back to T.30 mode, because it could not detect a CJ in response to JM. (JM timeout)	• 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.
0-80	Line was disconnected due to 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 transmitting terminal: • Try making a call at a later time. • Try using V.17 or slower modem using dedicated tx parameters. • Try increasing the tx level. • Try adjusting the cable equalizer setting. • If these errors happen at the receiving terminal: • Try adjusting the cable equalizer setting. • Try increasing the tx level. • Try using V.17 or slower modem if the same error is frequent when receiving from multiple senders.
0-81	Line was disconnected due to timeout in V.34 phase 3 – equalizer training.	
0-82	Line was disconnected due to timeout in V.34 phase 4 – control channel start-up.	
0-83	Line was disconnected due to timeout in V.34 control channel restart sequence.	
0-84	Line was disconnected due to abnormal signaling in V.34 phase 4 – control channel start-up.	• 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	Line was disconnected due to abnormal signaling in V.34 control channel restart.	• 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	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	Control channel started after 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	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 PMU board if the error is frequent.
2-24	JBIG ASIC error	• Turn off the machine, then turn it back on. • Replace the PMU 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 market error)	
2-28	JBIG data reconstruction error (Timeout)	
2-50	The machine reset itself	• 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.
3-21	A CSA was sent during ISDN G4 communication, because the Stop key was pressed	• The local operator has interrupted the communication.
3-30	Mismatched specifications (rx capability)	• Check the receive capabilities requested from the other terminal.

Code	Meaning	Suggested Cause/Action
4-00	One page took longer than 8 minutes to transmit	• Check for a bad line. • Try the communication at a lower resolution, or without halftone. • Replace the FCU.
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.
4-02	The other end cut the received page, as it was longer than the maximum limit.	• Split the page into smaller pieces, or ask the other end to change their maximum receive length setting, then resend pages.
4-10	Communication failed because of ID Code mismatch (Closed Network) or Tel. No./CSI mismatch (Protection against Wrong Connections)	• Get the ID Codes the same and/or the CSIs programmed correctly, then resend. • The machine at the other end may be defective.
5-00	Data reconstruction not possible	• Replace the FCU.
5-10	DCR timer expired	• Replace the FCU.
5-20	Storage impossible because of a lack of memory	• Temporary memory shortage. • Test the SAF memory. • Replace the FCU or optional EXSAF
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 IC memory card.
5-24	Memory overflow after the second page of a scanned document	• Try using a lower resolution setting. • Wait for the messages which are currently in the memory to be sent or delete some files from memory.
5-25	SAF file access error	• Replace the FCU, EXSAF, or the hard disk.
5-30	Mode table for the first page to be printed was not effective	• Replace the FCU, EXSAF or the hard disk.
6-01	G3 ECM - no V.21 signal was received	• Try adjusting the rx cable equalizer. • Replace the FCU or NCU.
6-02	G3 ECM - EOR was received	
6-03	G3 ECM - non-standard V.21 code received	• The other terminal may be defective.

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.
6-11	G3 ECM - printing impossible because of a missing first line in the MMR coding	• Check for problems in the printer mechanism.
6-21	V.21 flag detected during high speed modem communication	• The other terminal may be defective or incompatible.
6-99	V.21 signal not stopped within 6 s	• Replace the FCU.
9-30	HDD write error	• Turn both power switches off and on, to mark defective sectors as bad and to initialize the hard disk. • Initialize the hard disk interface (service mode 08-1). • Check the cable connections. • Format the hard disk (service mode 08-2). • Replace the hard disk interface card. • Replace the hard disk.

Code	Meaning	Suggested Cause/Action
9-31	HDD control error	• Turn both power switches off and on. • Replace the hard disk.
9-32	HDD read error	
9-33	HDD fatal error	
21-00	BiCU communication error	Check the cable connection between BiCU and FCU. Replace the BiCU or FCU.
21-01	BiCU turned off	• Check if the LED (+5V supply) on the BiCU is lit or not. Check the cable connection between BiCU and FCU. Replace the BiCU or FCU.
21-02	BiCU handshake error	• Check the cable connection between BiCU and FCU. Replace the BiCU or FCU.
22-00	Original length exceeded the maximum scan length	• Divide the original into a few pages. 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.	• Tx or rx job does not finish even after line connection. • Restart the machine.
22-03	Cache memory for HDD has become full while receiving.	• Writing data to the HDD takes too long. • Check the cable connection to the HDD. If problem persists, replace the HDD.
23-00	HDD data read timeout	• Reading data from the HDD takes too long. • Check the cable connection to the HDD. If problem persists, replace the HDD.

7.2 MODEM STATUS CODES IN V.34 PROTOCOL DUMP

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

NOTE: 1) The machine sometimes cannot print all the status codes. For example, even if code 0127 (INFOh reception) is not printed, the modem may actually have received INFOh.
2) In polling, the signals go in the opposite direction after phase 2. Also, INFO0c replaces INFO0a, and vice versa.

7.2.1 CALLING SIDE

Phase 1 (V.8)

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

Phase 2 (Line Probing)

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

Phase 3 (Equalizer Training)

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

Phase 4 and 5 (Control Channel)

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

Phase 6 (Primary Channel)

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

Control Channel (Post Message - Sh)

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

Control Channel (Post Message – PPh)

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

Control Channel Recovery (AC)

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

V.34 End

FIF	Description
00B0	Modem idle

7.2.2 CALLED SIDE

Phase 1 (V.8)

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

Phase 2 (Line Probing)

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

Phase 3 (Equalizer Training)

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

Phase 4 and 5 (Control Channel)

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

Phase 6 (Primary Channel)

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

Control Channel (Post Message - Sh)

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

Control Channel (Post Message – PPh)

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

Control Channel Recovery (AC)

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

V.34 End

FIF	Description
00B0	Modem idle

7.3 FAX SC CODES

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.
- 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 SC Code conditions.

7.3.1 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

7.3.2 SC1202

When the FCU detects an unrecoverable error in the HDD control area of the EXSAF SRAM, or if the HDD is replaced without initializing the SAF memory, the fax unit displays this SC code and stops.

To recover from this error, do the following.

1. Disconnect the HDD from the EXSAF.
2. Initialize the SAF files using service mode function 07-2.
3. Connect the HDD again.

If the problem persists, replace the EXSAF.

7.3.3 SC1207

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

The possible causes are:

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

7.3.4 SC1802/1811/1815

If file location data in the SRAM on the EXSAF or HDD itself has a serious defect, the machine displays one of these SC codes.

To recover from these errors, initialize the SAF memory using service function 08. If the problem persists, try formatting the HDD. If formatting does not have any effect, replace the EXSAF or HDD.

7.3.5 FAX SC CODE TABLE

SC Code	Description	Suggested Action	When bit 7 of System Switch 1F = 0	When bit 7 of System Switch 1F = 1
1101	Handshake error with BiCU at start-up	Initialize the fax unit. (See the previous page for the initialization procedure)	Automatic reset	SC Code display
1102				
1103				
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 the section 7.3.1.	SC Code display	
1202	EXSAF battery backup error (HD control area)	Refer to section 7.3.2.	SC Code display	
1203	Software error	Initialize the fax unit.	Automatic reset	
1204				
1205				
1206				
1207	Unrecoverable EXSAF - SRAM error	Refer to section 7.3.3.	SC Code display	
1251	Software error	Initialize the fax unit.	Automatic reset	
1252				
1253				
1290				
1301				
1302				
1303				
1304				
1305				
1306				
1307				
1308				
1401	DCMMR timed out	Initialize the fax unit, or replace the FCU.		
1402	DMA4 table creation timed out			
1501	Error in Quick Dial data storage area			
1802	HDD file table error	Refer to section 7.3.4.	SC Code display	
1811	HDD read error			
1815	HDD write error			

B383 Point to Point Diagram