FAX UNIT
(Machine Code: B404)

SERVICE MANUAL

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

- Handset (Machine Code: B433)

February 20th, 2001
Subject to change.

Lithium Batteries

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

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1. INSTALLATION

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) If there is a gas leak, do not use the telephone in the vicinity of the leak to report it.

⚠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.**

1.1 INSTALLATION REQUIREMENTS

1.1.1 ENVIRONMENT

Refer to the base copier's service manual.

1.1.2 MACHINE LEVEL

Refer to the base copier's service manual.

1.1.3 MINIMUM SPACE REQUIREMENTS

Refer to the base copier's service manual.

1.1.4 POWER REQUIREMENTS

Refer to the base copier's service manual.

1.2 FAX UNIT

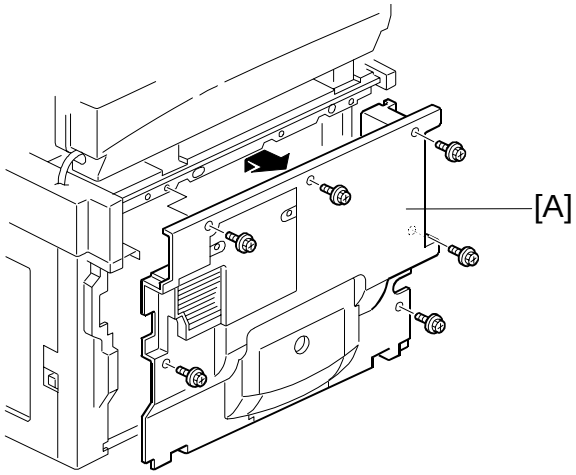
1.2.1 ACCESSORY CHECK

No.	Description	Q'ty
1	Fax unit	1
2	Stamp cartridge	1
3	Main switch cover	1
4	SG3 decal	1
5	Mylars	2
6	Operation manual – Basic	1
7	Operation manual – Advanced	1
8	Operation panel	1
9	Function key	1
10	Copy key	1
11	FCU-PSU relay cable	1
12	Telephone cable (only for N. America)	1
13	Handset bracket (only for N. America)	1
14	Screw	5

1.2.2 INSTALLATION PROCEDURE

⚠CAUTION

1. **If there is a printer option in the machine, print out all data in the printer buffer.**
2. **If a printer option is already installed, remove it first, then install the fax option. After that, re-install the printer option in the machine.**
3. **Turn off the main switch and disconnect the power cord and the printer network cable.**



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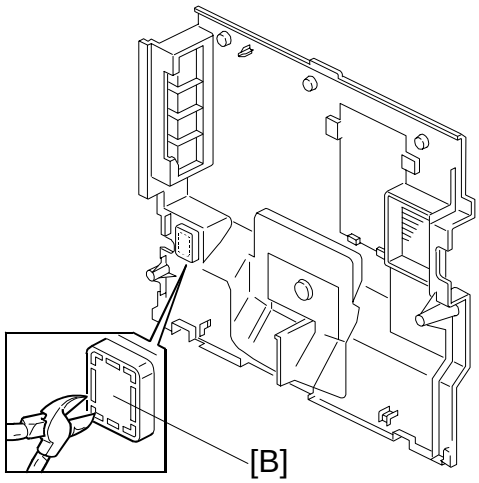

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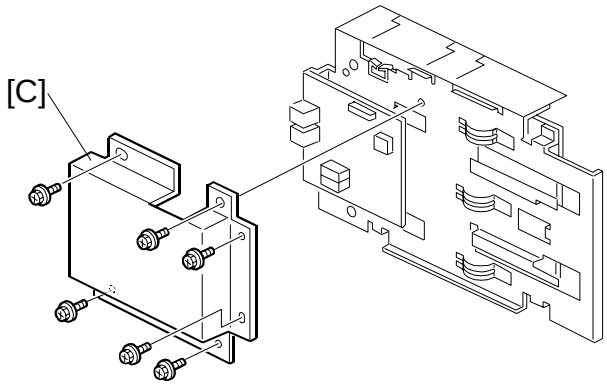

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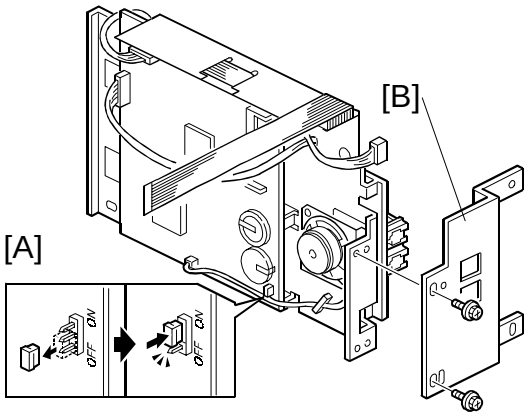
1. Remove the rear cover [A] (6 screws).
2. Cut away the small window [B] on the rear cover as shown.
3. Remove the NCU cover [C] from the fax unit.
   NOTE: European and Asian models only

4. Connect the following pins on switch TB1 on the FCU and TB1 – TB3 on the NCU. After that, replace the NCU cover.
   NOTE: European and Asian models only
   Individual Switch Settings:

Country	FCU	NCU		
	TB1	TB1	TB2	TB3
CTR21, Israel	2-5	2-3	OFF	ON
Poland	2-5	2-3	ON	OFF
Australia	2-5	1-2	OFF	ON
New Zealand	2-5	1-2	ON	OFF
Malaysia, South Africa	3-4	1-2	OFF	ON
Asia and others	3-4	1-2	ON	OFF

NOTE: It is necessary to change the country code in both system switch 0F and NCU parameter CC (service function 08-0).



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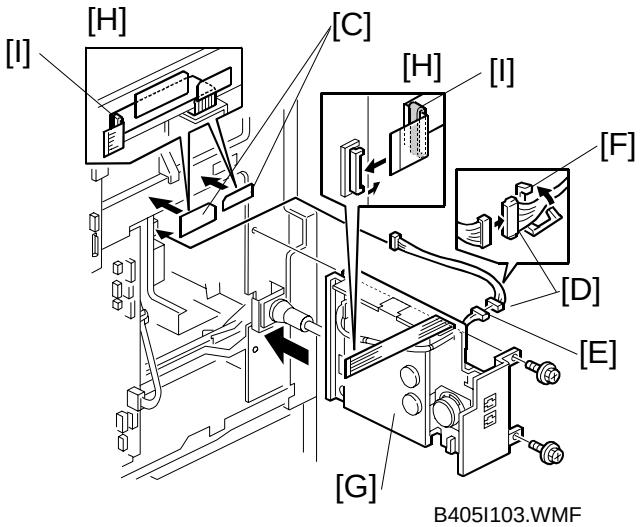

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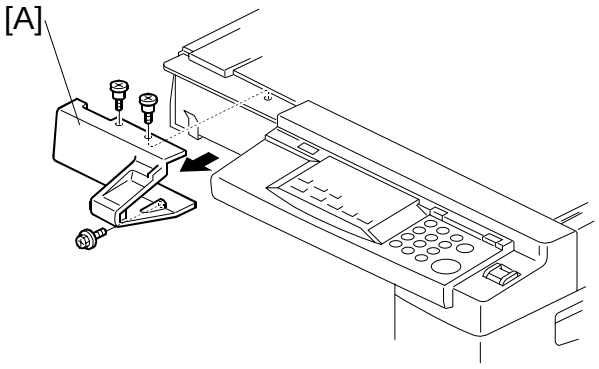
5. Change the battery switch [A] on the FCU to ON as shown.
6. Attach the bracket [B] (2 screws) as shown.
7. Attach the two mylars [C] to the rear bracket of the mainframe as shown.
8. Connect the relay cable [D] to the PSU first, then connect it to the FCU-PSU cable [E], then secure cable [D] with clamp [F], then install the fax unit [G] (2 screws).
9. Run the flat cable [H] through between the mylars and the rear bracket of the mainframe, then connect the flat cable [H] to the BiCU.
   NOTE: If the printer option will be installed at the same time, run the flat cable [H] through the core [I] (contained in the printer option) as shown.
10. Replace the rear cover.



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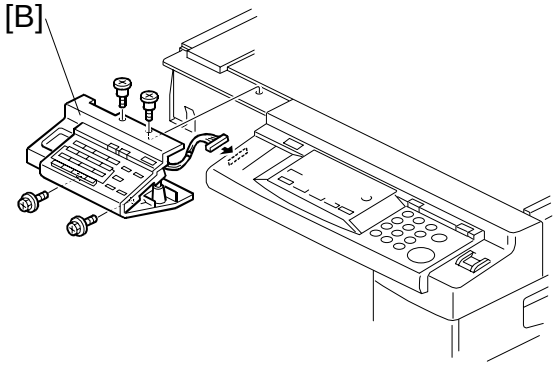

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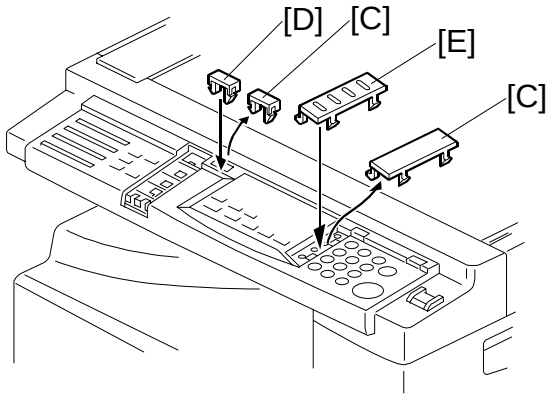

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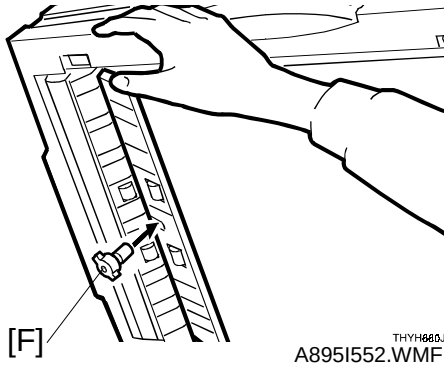

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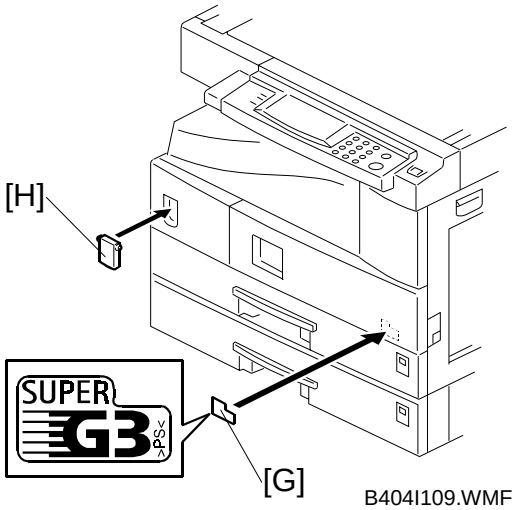
11. Remove the operation panel cover [A] (3 screws).
12. Install the fax operation panel [B] (4 screws).
13. Remove the small covers [C], then attach the copy key [D] and function keys [E] as shown.
14. If the ADF/ARDF has been installed, install the stamp cartridge [F] as shown.
15. Attach the super G3 decal [G] and cover [H] to the front cover as shown.
16. Connect the telephone line to the “LINE” jack at the rear of the machine.



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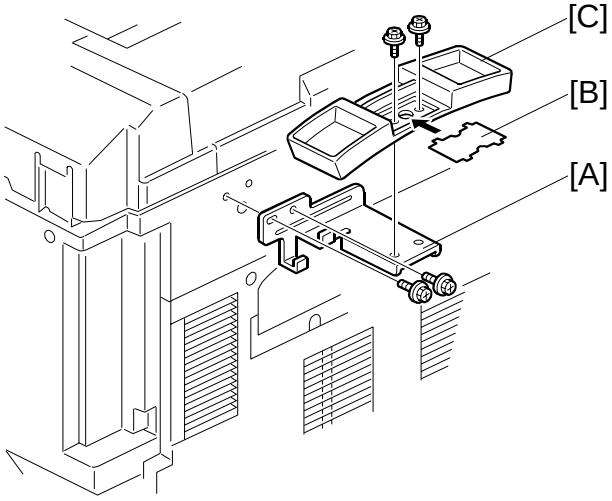
17. Plug in the machine and turn on the main power switch.
    NOTE: The copier must be connected to a properly-grounded socket outlet.
18. Press the “Facsimile” key. At this time, the display shows: Call Service FAX SC1201 Data should be initialized.
    NOTE: This is not a functional problem. The machine 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 on the FCU has been turned on.
19. Press “OK” to initialize the fax unit.
20. Be sure to set the clock. (Date and time ☛ Operation Manual Advanced Features / 5. Facsimile User Tools)
21. Program items required for fax communication.

1.3 HANDSET

1.3.1 ACCESSORY CHECK

No.	Description	Q'ty
1	Handset	1
2	Screw M3x12	2
3	Screw M3x8	2
4	Handset manual	1

1.3.2 INSTALLATION PROCEDURE



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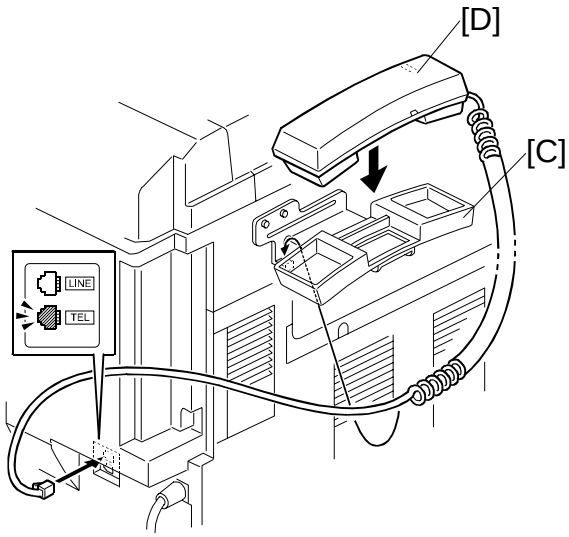

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1. Attach the bracket [A] enclosed with the fax unit (2 screws) as shown.
2. Remove the label [B] from the handset cradle [C]. Attach the cradle [B] to the bracket [A] (2 screws), then replace the label [B].
3. Install the handset [D] on the cradle [C], then connect the cable to the "TEL" jack at the rear of the machine.

2. PREVENTIVE MAINTENANCE

2.1 SPECIAL TOOLS AND LUBRICANTS

- Flash Memory Card – 4MB (P/N: A2309352)
- Card Case (P/N: A2309351)

2.2 PM TABLE

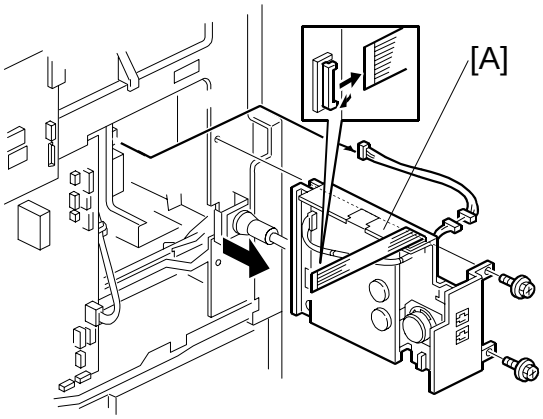
No PM necessary for the fax option.

3. REMOVAL AND REPLACEMENT

3.1 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.**

3.2 FCU



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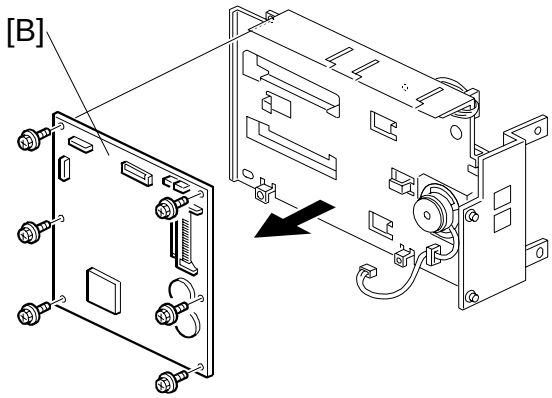

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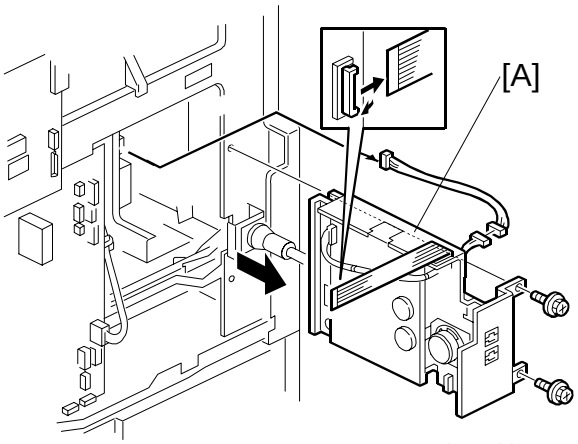
[A]: Fax unit (🔩 2, ✋ 2)

[B]: FCU (🔩 6, ✋ 2)

3.3 NCU



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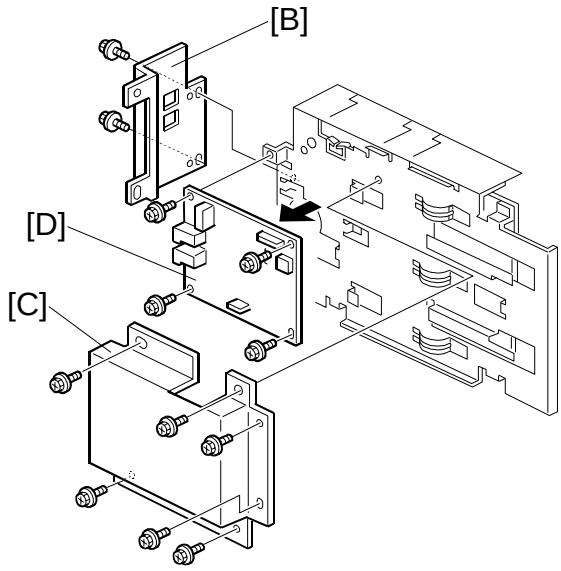

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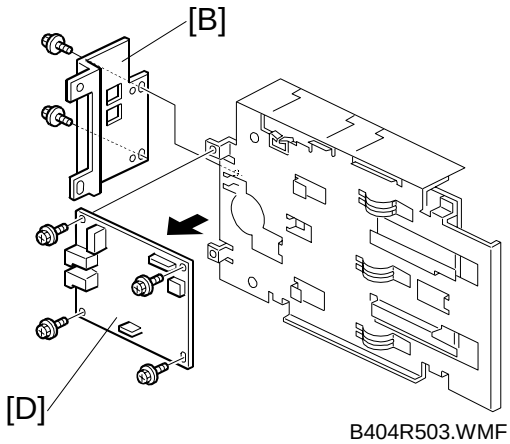

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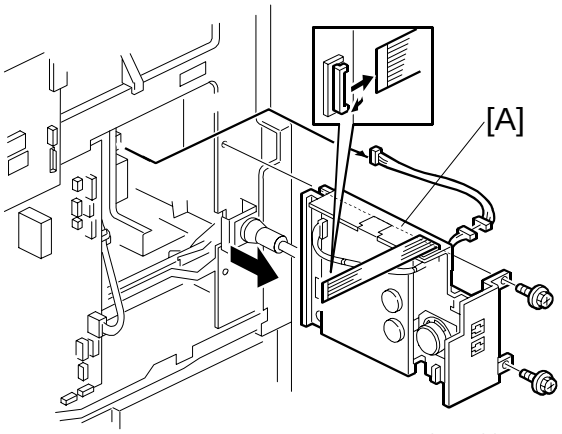
[A]: Fax unit (☞ 2, 🖑 2)

[B]: Bracket (☞ 2)

[C]: NCU cover (☞ 6) (European and Asian models only)

[D]: NCU (☞ 4, 🖑 1)

3.4 SPEAKER



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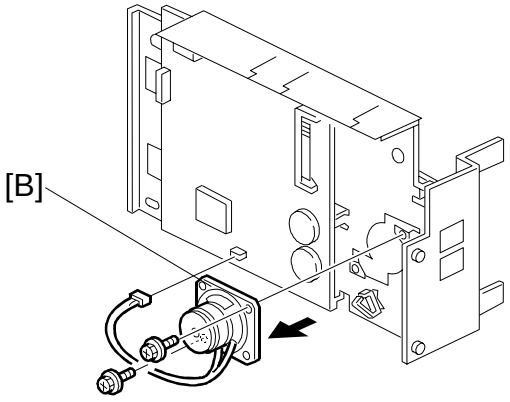

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[A]: Fax unit (2, 2)

[B]: Speaker (2, 1)

4. TROUBLESHOOTING

4.1 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
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
0-14	Non-standard post message response code received	• Check the FCU - NCU connectors. • Incompatible or defective remote terminal; try sending to another machine. • Noisy line: resend. • Try adjusting the tx level and/or cable equalizer settings. • Replace the NCU or FCU. **Cross reference** • See error code 0-08.

Code	Meaning	Suggested Cause/Action
0-15	The other terminal is not capable of specific functions.	The other terminal is not capable of accepting the following functions, or the other terminal's memory is full. • Confidential rx • Transfer function • SEP/SUB/PWD/SID
0-16	CFR or FTT not detected after modem training in confidential or transfer mode	• Check the line connection. • Check the FCU - NCU connectors. • Replace the NCU or FCU. • Try adjusting the tx level and/or cable equalizer settings. • The other end may have disconnected, or it may be defective; try calling another machine. • If the rx signal level is too low, there may be a line problem. **Cross reference** • See error code 0-08.
0-17	Communication was interrupted by pressing the Stop key.	If the Stop key was not pressed and this error keeps occurring, replace the operation panel.
0-20	Facsimile data not received within 6 s of retraining	• Check the line connection. • Check the FCU - NCU connectors. • Replace the NCU or FCU. • Check for line problems. • Try calling another fax machine. • Try adjusting the reconstruction time for the first line and/or rx cable equalizer setting. **Cross reference** • Reconstruction time - G3 Switch 0A, bit 6 • Rx cable equalizer - G3 Switch 07 (PSTN)
0-21	EOL signal (end-of-line) from the other end not received within 5 s of the previous EOL signal	• Check the connections between the FCU, NCU, & line. • Check for line noise or other line problems. • Replace the NCU or FCU. • The remote machine may be defective or may have disconnected. **Cross reference** • Maximum interval between EOLs and between ECM frames - G3 Bit Switch 0A, bit 4

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

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

Code	Meaning	Suggested Cause/Action
0-87	The control channel started after an unsuccessful primary channel.	• The receiving terminal restarted the control channel because data reception in the primary channel was not successful. • This does not result in an error communication.
0-88	The line was disconnected because PPR was transmitted/received 9 (default) times within the same ECM frame.	• Try using a lower data rate at the start. • Try adjusting the cable equalizer setting.
2-10	The modem cannot enter tx mode	• Replace the FCU.
2-11	Only one V.21 connection flag was received	• Replace the FCU.
2-12	Modem clock irregularity	• Replace the FCU.
2-13	Modem initialization error	• Turn off the machine, then turn it back on. • Update the modem ROM. • Replace the FCU.
2-20	Abnormal coding/decoding (cpu not ready)	• Replace the FCU.
2-50	The machine resets itself for a fatal FCU system error	• If this is frequent, update the ROM, or replace the FCU.
2-51	The machine resets itself because of a fatal communication error	• If this is frequent, update the ROM, or replace the FCU.
3-30	Mismatched specifications (rx capability)	• Check the receive capabilities requested from the other terminal.
4-01	Line current was cut	• Check the line connector. • Check the connection between FCU and NCU. • Check for line problems. • Replace the FCU or the NCU.
4-10	Communication failed because of an ID Code mismatch (Closed Network) or Tel. No./CSI mismatch (Protection against Wrong Connections)	• Get the ID Codes the same and/or the CSIs programmed correctly, then resend. • The machine at the other end may be defective.
5-00	Data construction not possible	• Replace the FCU.
5-01	Data reconstruction not possible	
5-10	DCR timer expired	
5-20	Storage impossible because of a lack of memory	• Temporary memory shortage. • Test the SAF memory. • Replace the FCU board
5-21	Memory overflow	

Code	Meaning	Suggested Cause/Action
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 board.
5-24	Memory overflow after the second page of a scanned document	• Try using a lower resolution setting. • Wait for the messages which are currently in the memory to be sent or delete some files from memory.
5-25	SAF file access error	• Replace the FCU board.
6-00	G3 ECM - T1 time out during reception of facsimile data	• Try adjusting the rx cable equalizer. • Replace the FCU or NCU.
6-01	G3 ECM - no V.21 signal was received	
6-02	G3 ECM - EOR was received	
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.

Code	Meaning	Suggested Cause/Action
6-21	V.21 flag detected during high speed modem communication	• The other terminal may be defective or incompatible.
6-22	The machine resets the sequence because of an abnormal handshake in the V.34 control channel	• Check for line noise. • If the same error occurs frequently, replace the FCU. • Defective remote terminal.
6-99	V.21 signal not stopped within 6 s	• Replace the FCU.
9-61	Memory overflow occurs during reception	Check the SAF.
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. • Expand SAF memory.
22-02	Tx or rx job stalled due to line disconnection at the other end	• The job started normally but did not finish normally; data may or may not have been received fully. • Restart the machine.
22-04	The machine cannot store received data in the SAF	• Update the ROM • Replace the FCU.
23-00	Data read timeout during construction	• Restart the machine. • Replace the FCU
25-00	The machine software resets itself after a fatal transmission error occurred	• Update the ROM • Replace the FCU.
F0-xx	V.34 modem error	• Replace the FCU.

4.2 FAX SC CODES

4.2.1 OVERVIEW

If bit 7 of System Switch 1F is at the default setting, when the FCU detects a Fax SC Code condition other than SC1201, it resets itself automatically. This initializes the FCU without erasing files in the SAF memory or resetting the switches.

NOTE: For details on Fax SC Code 1201, refer to the following section.

If bit 7 of System Switch 1F is changed to “1”, when the FCU detects any Fax SC Code condition (not only SC1201), 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.

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

4.2.2 SC1201

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

The possible causes are:

- SRAM backup battery defect, or TB3 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

4.2.3 FAX SC CODE TABLE

SC Code	Description	Suggested Action	Sys Switch 1F bit 7 = 0	Sys Switch 1F bit 7 = 1
1102	Handshake error with BiCU at start-up	Initialize the fax unit. (See section 4.2.1.for the initialization procedure)	Automatic reset	SC Code display
1111	Command TX/RX error to/from the BiCU			
1112	Base copier's engine was reset			
1120	Interface module error			
1201	Unrecoverable FCU - SRAM error	Refer to section 4.2.2.	SC Code display	
1301	Original size error	Check the scanner mechanism.	Automatic reset	
1302	Scanner parameter error	Initialize the fax unit.		
1303	Software error	Initialize the fax unit.		
1304				
1305				
1306				
1308				
1313				
1314				
1316				
1318				
1323				
1324				
1326				
1328				
1334				
1338				
1401	Command timeout error - after scanning	Initialize the fax unit.		
1402	Software error	Initialize the fax unit.		
1403				
1404				
1405	Command timeout error - during storage	Check the connection for the FCU.		
1406	Command timeout error - original feed out	Initialize the fax unit.		
1410	Software error	Initialize the fax unit.		
1601				

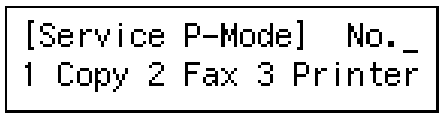
5. SERVICE TABLES

5.1 SERVICE LEVEL FUNCTIONS

5.1.1 HOW TO ENTER AND EXIT SERVICE MODE

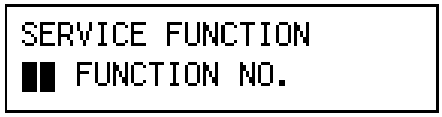
To Enter Fax Service Mode:

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



B404M501.BMP

3. Press 2 to enter the fax service mode.



B404M502.BMP

To Exit Fax Service Mode:

Press 'CANCEL' key to exit the service mode.

5.1.2 FUNCTION NO.

(1) 01. BIT SW

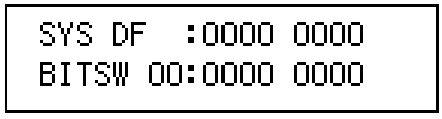
1. Enter the fax service mode.
2. Press [0] [1], then 'OK'.
   [0] — SYSTEM
   [1] — SCANNER
   [2] — PLOTTER
   [3] — COMMUNI
   [4] — G3

B404M503.BMP

B404M504.BMP

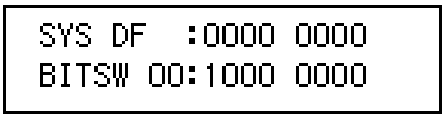
Example

1. Press [0]
2. Scroll through the bit switches.
   To increment the bit switch number:
   Press '→'
   To decrement the bit switch number:
   Press '←'



B404M505.BMP

3. Adjust the bit switch.
   Example: To change the value of bit 7, press [7].

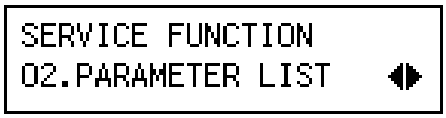


B404M506.BMP

4. To adjust more bit switches, go to step 2.
   To finish, press 'OK' then 'CANCEL'.
5. Exit the service mode.

(2) 02. PARAMETER LIST

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



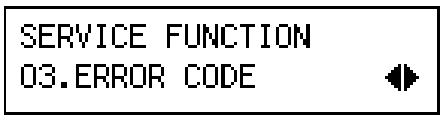
B404M507.BMP

3. Press 'OK'.
4. Press ⓜ.

B404M508.BMP

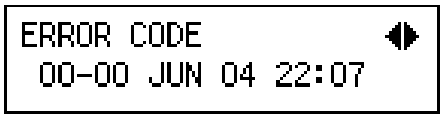
(3) 03. ERROR CODE

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



B404M509.BMP

3. Press 'OK'.
4. Scroll through the error codes with the arrow keys



B404M510.BMP

(4) 04. SERVICE REPORT

1. Enter the fax service mode.
2. Press [0] [4].

B404M511.BMP

3. Press 'OK'.
4. Press ⓜ.

B404M512.BMP

(5) 05. PROTOCOL DUMP

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

B404M513.BMP

3. Press 'OK'.
4. Select '1–COMMUNICATION' or 'ALL–COMMUNICATIONS with the arrow keys, then press 'OK'.
5. Press ◈.

B404M514.BMP

B404M515.BMP

B404M516.BMP

(6) 06. MEMORY

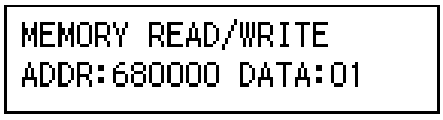
1. Enter the fax service mode.
2. Press [0] [6].

B404M517.BMP

3. Press 'OK'.
4. Select 0 or 1.

B404M518.BMP

0.–MEM.R/W:
Enter the RAM address and value.



B404M519.BMP

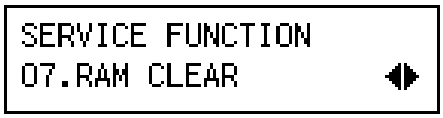
1.–MEM.DUMP:
Enter the start address and end address. Then press ◈.

B404M520.BMP

Service Tables

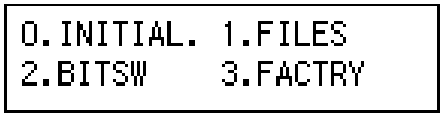
(7) 07. RAM CLEAR

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



B404M521.BMP

3. Press 'OK'.
4. Select 0, 1, 2, or 3. Then press [Start].



B404M522.BMP

0.–INITIAL:
Initializes the data in the SRAM, files in the SAF memory and the clock.

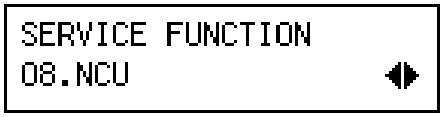
1.–FILES:
Erase all files stored in the SAF memory.

2.–BITSW:
Reset the bit switches and user parameters.

3.–FACTRY:
Initialize the data in the SRAM and files in the SAF memory.

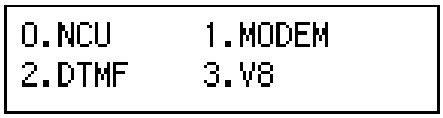
(8) 08. NCU

1. Enter the fax service mode.
2. Press [0] [8].



B404M527.BMP

3. Press 'OK'.
4. Select an item from the menu, then press [Start].



B404M528.BMP

0.–NCU:
NCU parameters

1.–MODEM:
MODEM test

B404M533.BMP

2.–DTMF:
DTMF test

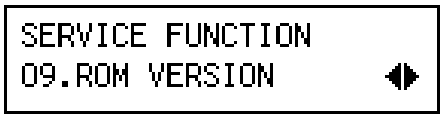
3.–V8:
V8 test

4.–V34:
V34 test

5.–DP:
Dial pulse test

(9) 09. ROM VERSION

1. Enter the fax service mode.
2. Press [0] [9].



B404M536.BMP

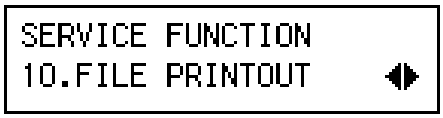
3. Press 'OK'.

The ROM version is displayed.

B404M537.BMP

(10) 10. FILE PRINTOUT

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



B404M538.BMP

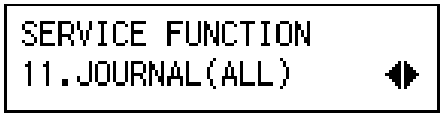
3. Press 'OK'.
4. Press 'Start'. All files in the SAF are printed.

B404M539.BMP

Service Tables

(11) 11. JOURNAL (ALL)

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



B404M540.BMP

3. Press 'OK', then press ⓢ.

B404M541.BMP

(12) 12. RAM TEST

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

B404M542.BMP

3. Press 'OK'.

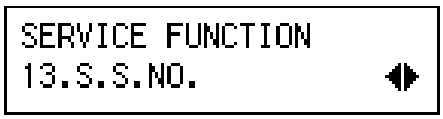
B404M543.BMP

4. Press [0].
5. Select 0 or 1, then press ⓞ.
   0.–SRAM TEST
   1.–DRAM TEST

B404M544.BMP

(13) 13. S.S. NUMBER

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



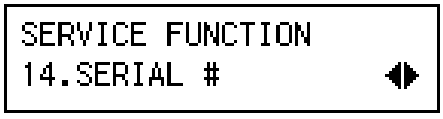
B404M547.BMP

3. Press 'OK'.
4. Enter the fax number of the service station that will receive Automatic Service Calls from the machine.
5. Press 'OK'.

B404M548.BMP

(14) 14. SERIAL #

1. Enter the fax service mode.
2. Press [1] [4].



B404M549.BMP

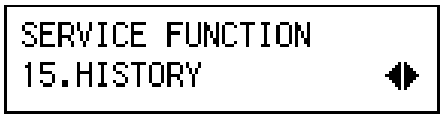
3. Press 'OK'.
4. Enter the fax unit's serial number, then press 'OK'.

B404M550.BMP

(15) 15. HISTORY

These functions are for designer use only. However, list 2 (Operation History) may be useful.

1. Enter the fax service mode.
2. Press 1 5.



B404M551.BMP

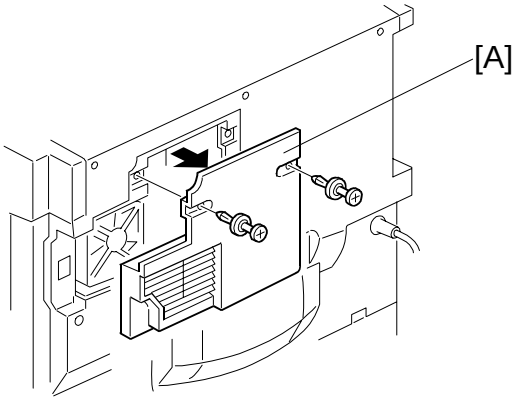
3. Press 'OK'.
4. Press the number, then press ◇.
   02.–OPERATION HISTORY

B404M552.BMP

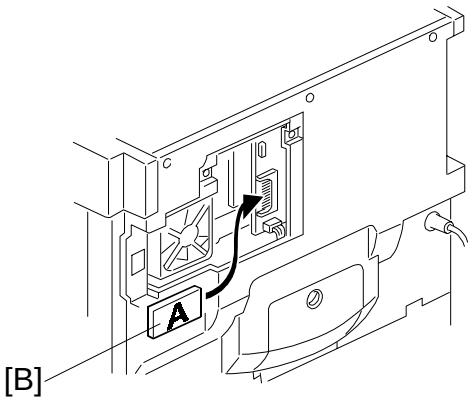
Service Tables

5.2 DATA TRANSFER

5.2.1 FAX SOFTWARE DOWNLOAD



B039R934.WMF



B039R935.WMF

1. Turn off the main switch.
2. Remove the small rear cover [A].
3. Connect the IC card [B] that contains the firmware to the BiCU.
4. While holding the 'Tone' key down, turn on the main switch.
5. The machine goes to fax soft download mode automatically.

B404M553.BMP

B404M554.BMP

6. Press 'OK'.

B404M555.BMP

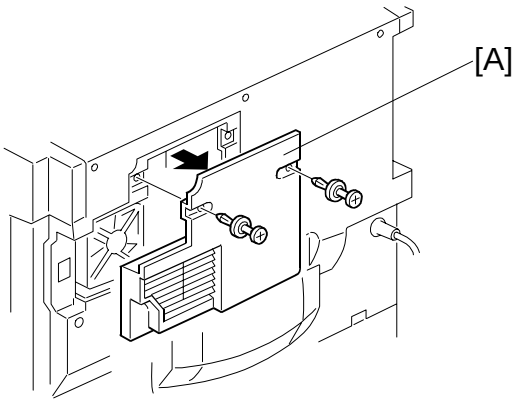
B404M556.BMP

7. Turn off the main switch and disconnect the IC card.

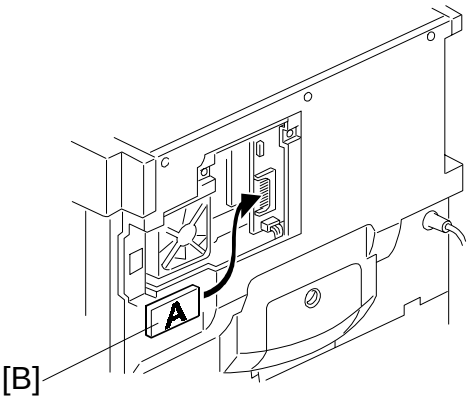
B404M557.BMP

If the download fails, an SC code (SC 695) appears. Retry the procedure.

5.2.2 FAX SRAM DOWNLOAD



B039R934.WMF



B039R935.WMF

1. Turn off the main switch.
2. Remove the small rear cover [A].
3. Connect the IC card [B] that contains the required SRAM data to the BiCU.
4. While holding the ‘Tone’ key down, turn on the main switch.
5. Select “FAX SRAM Download” using the arrow key .

B404M564.BMP

6. Press ‘OK’.

B404M565.BMP

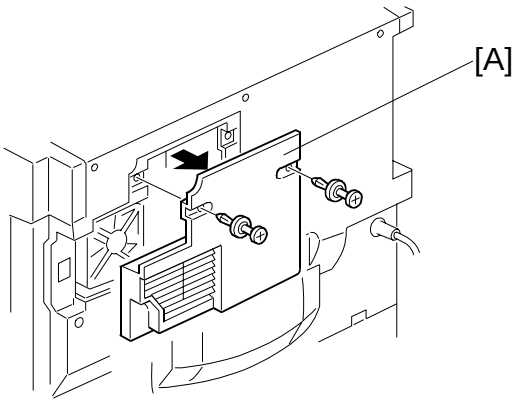
B404M556.BMP

7. Turn off the main switch and disconnect the IC card.

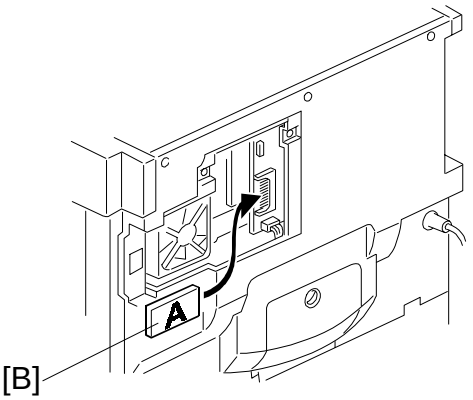
B404M566.BMP

Service Tables

5.2.3 FAX SRAM UPLOAD



B039R934.WMF



B039R935.WMF

1. Turn off the main switch.
2. Remove the small rear cover [A].
3. Connect a blank IC card [B] to the BiCU.

4. While holding the 'Tone' key down, turn on the main switch.
5. Select "FAX SRAM Upload" using the arrow keys.

B404M560.BMP

6. Press 'OK'.

B404M561.BMP

B404M562.BMP

7. Turn off the main switch and disconnect the IC card.

B404M563.BMP

5.3 BIT SWITCHES

⚠WARNING

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

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

5.3.1 SYSTEM SWITCHES

<table>
<tr><th colspan="3">System Switch 00</th></tr>
<tr><th>No</th><th>FUNCTION</th><th>COMMENTS</th></tr>
<tr><td>0-1</td><td>Not used</td><td>Do not change the settings.</td></tr>
<tr><td rowspan="4">2</td><td>Technical data printout on the Journal
0: Disabled
1: Enabled</td><td>1: Instead of the personal name, the following data are listed on the Journal for each G3 communication.</td></tr>
<tr><td colspan="2">e.g. 0000 32V34 288/264 L01000304
(1) (2)(3) (4) (5) (6) (7)(8)
(1): EQM value (Line quality data). The left hand figure is the high byte and the right hand figure is the low byte. A larger number means more errors.
(2): Symbol rate (V.34 only)
(3): Final modem type used
(4): Starting data rate (for example, 288 means 28.8 kbps)
(5): Final data rate
(6): Rx level (refer to the note after this table for how to read the rx level)
(7): Total number of error lines that occurred during non-ECM reception.
(8): Total number of burst error lines that occurred during non-ECM reception.
Note:
EQM and rx level are fixed at "FFFF" in tx mode.
The seventh and eighth numbers are fixed at "00" for transmission records and ECM reception records.</td></tr>
<tr><td colspan="2">Rx level calculation

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

The four-digit hexadecimal value (N) after "L" indicates the rx level.
The <u>high</u> byte is given first, followed by the <u>low</u> byte. Divide the decimal value of N by -16 to get the rx level.

In the above example, the decimal value of N (= 0100 [H]) is 256.
So, the actual rx level is 256/-16 = -16 dB</td></tr>
<tr><td>3</td><td>Not used</td><td>Do not change the setting.</td></tr>
<tr><td>4</td><td>Line error mark on the received page
0: Disabled
1: Enabled</td><td>If this bit is 1, a mark will be printed on the left edge of the page at any place where a line error occurred in the data. Such errors are caused by a noisy line for example.</td></tr>
</table>

System Switch 00		
No	**FUNCTION**	**COMMENTS**
5	G3 communication parameter display **0:** Disabled **1:** Enabled	This is a fault-finding aid. The LCD shows the key parameters (see the next page). This is normally disabled because it cancels the CSI display for the user. Be sure to reset this bit to 0 after testing.
6	Protocol dump list output 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. The setting of system switch 09 bit 6 determines the types of communication that the list is printed after.
7	Not used	Do not change the setting.

G3 Communication Parameters

Modem rate	336: 33600 bps 168: 16800 bps 312: 31200 bps 144: 14400 bps 288: 28800 bps 120: 12000 bps 264: 26400 bps 96: 9600 bps 240: 24000 bps 72: 7200 bps 216: 21600 bps 48: 4800 bps 192: 19200 bps 24: 2400 bps
Resolution	S: Standard (8 x 3.85 dots/mm) D: Detail (8 x 7.7 dots/mm) F: Fine (8 x 15.4 dots/mm) 21: Standard (200 x 100 dpi) 22: Detail (200 x 200 dpi)
Compression mode	MMR: MMR compression MR: MR compression MH: MH compression
Communication mode	ECM: With ECM NML: With no ECM
Width and reduction	A4: A4 (8.3”), no reduction B4: B4 (10.1”), no reduction A3: A3 (11.7”), no reduction
I/O rate	0: 0 ms/line 10: 10 ms/line 25: 2.5 ms/line 20: 20 ms/line 5: 5 ms/line 40: 40 ms/line **Note:** “40” is displayed while receiving a fax message using AI short protocol.

System Switch 01 - Not used (Do not change the factory settings.)

System Switch 02		
No	**FUNCTION**	**COMMENTS**
0	SAF memory capacity **0:** 2 MB **1:** 4 MB	Before changing this bit, make sure that the remaining SAF memory is 100%. After changing this bit, be sure to turn off the machine and turn back it on again. When this bit set to 1, fine mode is not selectable.
1	Not used	Do not change the setting.
2	Communication stall failsafe **0:** Disabled **1:** Enabled	If enabled, the machine cuts the connection in one hour if a communication error has occurred but the connection is still established.
3-5	Not used	Do not change the settings.
6 **7**	Memory read/write by RDS **Bit 7 6 Setting** 0 0 Always disabled 0 1 User selectable 1 0 User selectable 1 1 Always enabled	**(0,0):** All RDS systems are always locked out. **(0,1), (1,0):** Normally, RDS systems are locked out, but the user can temporarily switch RDS on to allow RDS operations to take place. RDS will automatically be locked out again after a certain time, which is stored in System Switch 03. Note that if an RDS operation takes place, RDS will not switch off until this time limit has expired. **(1,1):** At any time, an RDS system can access the machine.

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

System Switch 04		
No	**FUNCTION**	**COMMENTS**
0-2	Not used	Do not change the settings.
3	Printing dedicated tx parameters on Quick/Speed Dial Lists **0:** Disabled **1:** Enabled	**1:** Each Quick/Speed dial number on the list is printed with the dedicated tx parameters (8 bytes each). The last 10 bytes of data are the programmed dedicated tx parameters; 32 bytes of data are printed (the other 22 bytes have no use for service technicians).
4	Not used	Do not change the setting.
5	Memory file transfer operation **0:** User level **1:** Service level	If the machine is unable to print fax messages due to a mechanical problem, change this bit to 0 to transfer all messages in the memory (including confidential rx messages) to an another terminal. Always reset this bit to 1 after transfer. However, this bit can be left at 0, if the customer's key-operators want to transfer the files themselves. This machine does not support the confidential rx. **Procedure** 1. Enter service mode and change this bit to 0. 2. Exit the service mode. 3. Enter the key-operator mode, and select 'Key-operator settings'. 4. Choose '03' and specify a destination for the machine to transfer all the files to. 5. Press 'Start'. 6. After the machine transfers the memory files, enter the service mode and reset this bit to 1. Otherwise, anybody who knows how to enter the key-operator mode can transfer confidential messages.
6	G3 CSI/G4 Terminal ID programming level **0:** User level **1:** Service level	**1:** The CSI and Terminal ID can only be programmed by a technician (in the user tools). The Terminal ID can only be programmed if a Group 4 option is installed. This machine does not have a Group 4 option.
7	Telephone line type programming mode **0:** User level **1:** Service level	**1:** Telephone line type selection (choosing tone dial or pulse dial) can only be programmed by a technician (in the user tools).

System Switch 05		
No	**FUNCTION**	**COMMENTS**
0-1	Not used	Do not change the settings.
2	Display of both RTI and CSI on the LCD **0:** Disabled **1:** Enabled	**1:** An RTI will be displayed until phase B of the protocol sequence, and a CSI will be displayed after phase C.
3-7	Not used	Do not change the settings.

System Switch 06 - 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	Not used	Do not change the setting.
1	Inclusion of communications on the Journal when no image data was exchanged. **0:** Disabled **1:** Enabled	**0:** Communications that reached phase C (message tx/rx) of the T.30 protocol are listed on the Journal. **1:** Communications that reached phase A (call setup) of T.30 protocol are listed on the Journal. This will include telephone calls.
2	Automatic error report printout **0:** Disabled **1:** Enabled	**0:** Error reports will not be printed. **1:** Error reports will be printed automatically after failed communications.
3	Printing of the error code on the error report **0:** No **1:** Yes	**1:** Error codes are printed on the error reports.
4	Not used	Do not change the 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	Conditions for printing the protocol dump list **0:** Print for all communications **1:** Print only when there is a communication error	This switch becomes effective only when system switch 00 bit 6 is set to 1. **1:** Set this bit to 1 when you wish to print a protocol dump list only for communications with errors.
7	Priority given to various types of remote terminal ID when printing reports **0:** RTI > CSI > Dial label > Tel. number **1:** Dial label > Tel. number > RTI > CSI	This bit determines which set of priorities the machine uses when listing remote terminal names on reports. In G4 communication, G4_TID (Terminal ID) is used instead of RTI or CSI. **Dial Label:** The name stored, by the user, for the Quick/Speed Dial number. This machine does not have a Group 4 option.

System Switch 0A		
No	**FUNCTION**	**COMMENTS**
0-3	Not used	Do not change the settings.
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.
6-7	Not used	Do not change the settings.

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

System Switch 0E		
No	**FUNCTION**	**COMMENTS**
0-2	Not used	Do not change the settings.
3	Action when the external handset goes off-hook **0:** Manual tx and rx operation **1:** Memory tx and rx operation (the display remains the same)	**0:** Manual tx and rx are possible while the external handset is off-hook. 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.
4-7	Not used	Do not change the settings.

System Switch 0F		
No	**FUNCTION**	**COMMENTS**
0 to 7	Country code for functional settings (Hex) 00: France 11: USA 01: Germany 12: Asia 02: UK 13: Japan 03: Italy 14: Hong Kong 04: Austria 15: South Africa 05: Belgium 16: Australia 06: Denmark 17: New Zealand 07: Finland 18: Singapore 08: Ireland 19: Malaysia 09: Norway 1A: China 0A: Sweden 1B: Taiwan 0B: Switz. 1C: Korea 0C: Portugal 20: Turkey 0D: Holland 21: Greece 0E: Spain 22: Hungary 0F: Israel 23: Czech 10: Not used 24: Poland	This country code determines the factory settings of bit switches and RAM addresses. However, it has no effect on the NCU parameter settings and communication parameter RAM addresses. **Cross reference** NCU country code: Function 08, parameter C.C.

System Switch 10		
No	**FUNCTION**	**COMMENTS**
0 to 7	Threshold memory level for parallel memory transmission	Threshold = N x 128 kbytes + 256 kbytes N can be between 00 - FF(H) Default setting: 02(H) = 512 kbytes

System Switch 11		
No	**FUNCTION**	**COMMENTS**
0	TTI printing position **0:** Superimposed on the page data **1:** Printed before the data leading edge	Change this bit to 1 if the TTI overprints information that the customer considers to be important (G3 transmissions).
1-7	Not used	Do not change the settings.

System Switch 12		
No	**FUNCTION**	**COMMENTS**
0 to 7	TTI printing position in the main scan direction	TTI/CIL: 08 to 64 (BCD) mm Input even numbers only. This setting determines the print start position for the TTI and CIL from the left edge of the paper. If the TTI is moved too far to the right, it may overwrite the file number which is on the top right of the page. This machine does not have a Group 4 option.

System Switch 13 - Not used (do not change the settings)
System Switch 14 - Not used (do not change the settings)

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

System Switch 16 - Not used (do not change the settings)

System Switch 17		
No	**FUNCTION**	**COMMENTS**
1-5	Not used	Do not change the settings.
6	Memory Lock function **0:** Disabled **1:** Enabled	Change this bit to “1” when the customer requests.
7	Not used	Do not change the setting.

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

System Switch 19		
No	**FUNCTION**	**COMMENTS**
0-6	Not used	Do not change the setting.
7	Special Original mode **0:** Disabled **1:** Enabled	**1:** If the customer frequently wishes to transmit a form or letterhead which has a colored or printed background, change this bit to “1”. “Special Original” can be selected in addition to the “Text” and “Photo” modes. When this mode is selected, the “Text” and “Photo” LEDs are both lit. **Cross reference** ❑ Type of special original mode – Scanner switch 00 bit 0.

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

System Switch 1D		
No	**FUNCTION**	**COMMENTS**
0	RTI/CSI display during communication **0:** Enabled **1:** Disabled	If enabled, the machine displays the RTI/CSI on the LCD panel during communication.
1-7	Not used	Do not change the settings.

System Switch 1E		
No	**FUNCTION**	**COMMENTS**
0	Communication after the Journal data storage area has become full **0:** Possible **1:** Impossible	This setting is effective only when Automatic Journal printout is enabled. **0:** If the buffer memory of the communication records for the Journal is full, fax communications are still possible. But the machine will overwrite the oldest communication records. **1:** If the buffer memory of the communication records for the Journal has become full, fax communications will become impossible, to prevent overwriting the communication records before the machine prints them out. **Cross Reference** ❑ Automatic Journal output - User switch 03 bit 7 ❑ Number of communication records for the Journal: 100 records
1	Action when the SAF memory has become full during scanning **0:** The current page is erased. **1:** The entire file is erased.	**0:** If the SAF memory becomes full during scanning, the successfully scanned pages are transmitted. **1:** If the SAF memory becomes full during scanning, the file is erased and no pages are transmitted. 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	Not used	Do not change the setting.
4	Action when authorized reception is enabled but authorized RTIs/CSIs are **not yet** programmed: **0**: All fax reception is disabled **1**: Faxes can be received if the sender has an RTI or CSI	This determines how the machine behaves if authorized reception is enabled but the user has stored no acceptable sender RTIs or CSIs. 0: The machine will not be able to receive any fax messages. 1: Messages from senders that include an RTI or CSI will be received.

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. 1: The machine always displays the telephone number.
6-7	Not used	Do not change the settings.

System Switch 1F		
No	**FUNCTION**	**COMMENTS**
0	Not used	Do not change the settings.
1	Report printout after an original jam during SAF storage or if the SAF memory fills up **0:** Enabled **1:** Disabled	**0:** When an original jams, or the SAF memory overflows during scanning, a report will be printed. Change this bit to "1" if the customer does not want to have a report in these cases. Memory tx – Memory storage report Parallel memory tx – Transmission result report
2	Not used	Do not change the settings.
3	Received fax print start timing (G3 reception) **0:** After receiving each page **1:** After receiving all pages	**0:** The machine prints each page immediately after the machine receives it. **1:** The machine prints the complete message after the machine receives all the pages in the memory.
4-6	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, 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"

5.3.2 SCANNER SWITCHES

Scanner Switch 00		
No	**FUNCTION**	**COMMENTS**
0	Type of special original mode **0:** Monotone background **1:** Colored background	This setting determines the scanner parameters used for special original mode. **0:** This setting is for originals with random background of constant density, such as seen on banknotes (faxing banknotes is not recommended!). **1:** This setting is for originals with background of constant density, such as those made on coloured paper. This switch becomes effective only when system switch 19 bit 7 is set to 1.
1-6	Not used	Do not change the settings.
7	Photo mode operation 0: Photo mode 1: Text/Photo mode	This determines how photo mode actually operates. If 0 is selected it will operate the same as photo mode. This only affects scanning in fax mode.

Scanner Switch 01		
No	**FUNCTION**	**COMMENTS**
0 to 5	Scan density step value (Text mode)	When scan density is adjusted manually away from the Normal setting, the threshold value for binary picture processing changes for each step from the value specified by Scanner Switch 02, by the amount programmed here. For example, with the default setting (05), the threshold value changes as follows. +2 (Darkest) : 20 (= 25 - 5) +1 : 25 (= 30 - 5) 0 (Normal) : 30 (Scanner Switch 02 setting) -1 : 35 (= 30 + 5) -2 (Lightest) : 40 (= 35 + 5) The value can be between 00 and 3F(H) [= 63 (D)]. For a darker threshold, input a lower value.
6-7	Not used.	Do not change the settings.

Scanner Switch 02		
No	**FUNCTION**	**COMMENTS**
0 to 5	Binary picture processing: Threshold for Text mode - Normal setting (center position)	This setting determines the threshold value for binary picture processing in Text mode (when the scan density setting is at the center). The value can be between 01 and 3F. For a darker threshold, input a lower value. Default setting: 1E (H) = 30 (D)
6-7	Not used.	Do not change the settings.

Scanner Switch 03 - Not used (do not change the settings)
Scanner Switch 04 - Not used (do not change the settings)
Scanner Switch 05 - Not used (do not change the settings)

Scanner Switch 06		
No	**FUNCTION**	**COMMENTS**
0 to 3	MTF filter level (Text mode)	The value can be between 0 (Off) and F. For a weaker threshold, input a lower value. Default setting: 7 This setting is independent from the threshold specified by copier SP mode.
4 to 7	MTF filter level (Photo mode)	The value can be between 0 (Off) and F. For a weaker threshold, input a lower value. Default setting: 7 This setting is independent from the threshold specified by copier SP mode. This affects only when bit7 = 1 of scanner switch 00 and select the photo mode.

Scanner Switch 07		
No	**FUNCTION**	**COMMENTS**
0 to 2	Smoothing filter level (Photo mode)	The value can be between 0 (Off) and 7. For a weaker threshold, input a lower value. Default setting: 2 This setting is independent from the threshold setting specified by the copier's SP mode. This affects only when bit7 = 0 of scanner switch 00 and select the photo mode..
3	Not used	Do not change the settings.
4-6	White line erase	Select the strength for the white line erase function. The value can be between 0 (Off) and 5. For a weaker level, input a lower value. This affects only when text/photo mode is selected.
7	Not used	Do not change the settings.

Scanner Switch 08 - Not used (do not change the settings)
Scanner Switch 09 - Not used (do not change the settings)
Scanner Switch 0A - Not used (do not change the settings)

Scanner Switch 0B		
No	**FUNCTION**	**COMMENTS**
0 to 3	Scan margin setting (right and left margin in book scan and in ADF mode)	The setting can be between 0 and F (H) (unit 0.5 mm).
4 to 7	Scan margin setting (Top and bottom margin in book scan and in ADF mode)	The setting can be between 0 and F (H) (unit 0.5 mm).

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 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/HLT ▯ (LEF) 1 0 A5/HLT ▭ (SEF) 1 1 No original	When both bits are set to "0", the machine recognizes an original size depending on copier's service mode.
3-5	Not used	Do not change the settings.
6	Scan width used for a document set in the ADF when the width is less than 230 mm. **0**: A4 (210 mm), **1**: LT (216 mm)	This bit is set at "1" when the country code is set to the US.
7	Not used	Do not change the setting.

Scanner Switch 0D		
No	**FUNCTION**	**COMMENTS**
0 **1**	Scan magnification ratio fine tuning (Main scan direction) $\begin{pmatrix}0\\0\end{pmatrix}$= 0%, $\begin{pmatrix}1\\0\end{pmatrix}$=−1.5%, $\begin{pmatrix}0\\1\end{pmatrix}$=+1.5%, $\begin{pmatrix}1\\1\end{pmatrix}$=Do not use this setting The actual magnification ratio is the sum of the SP mode setting of copier and this setting.	
2 **3**	Scan magnification ratio fine tuning (Sub scan direction) $\begin{pmatrix}0\\0\end{pmatrix}$=0%, $\begin{pmatrix}1\\0\end{pmatrix}$=−1.5%, $\begin{pmatrix}0\\1\end{pmatrix}$=+1.5%, $\begin{pmatrix}1\\1\end{pmatrix}$=Do not use this setting The actual magnification ratio is the sum of the SP mode setting of copier and this setting.	
4-6	Not used	Do not change the settings.
7	Scan width for A5 SEF or B5 SEF 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:** For immediate tx or parallel memory tx, the wait time for the next page is 10 s.
1	Scan resolution unit (except standard resolution in book scan mode) **0:** mm **1:** inches	This bit determines which resolution unit will be used for scanning a fax message. Default setting: mm
2	ADF jam alarm display time **0:** 60 s **1:** 30 s	The bit is only effective when bit 0 of scanner bit switch 0C is '0'. This bit determines how long the machine displays the ADF jam alarm after a jam occurred.
3-7	Not used	Do not change the settings.

Scanner Switch 0F		
No	**FUNCTION**	**COMMENTS**
0	Image rotation before transmission (A4/LT LEF) **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) LEF images (297 mm width in the protocol) will be transmitted as A4 (LT) SEF images (216 mm width in the protocol).
1	Not used	Do not change the setting.
2	Image rotation before transmission (A5/HLT SEF) **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) SEF images will be transmitted as A4 (LT) width images (216 mm width in the protocol).
3-7	Not used	Do not change the settings.

5.3.3 PLOTTER SWITCHES

Plotter Switch 00		
No	**FUNCTION**	**COMMENTS**
0	Page separation mark **0:** Disabled **1:** Enabled	**0:** No marks are printed. **1**: If a received page has to be printed out on two sheets, an asterisk inside square brackets is printed at the bottom right hand corner of the first sheet, and a "2" inside a small box is printed at the top right hand corner of the second sheet. This helps the user to identify pages that have been split.
1	Repetition of data when the received page is longer than the printer paper **0:** Disabled **1:** Enabled	**0:** The next page continues from where the previous page left off. **1:** The final few mm of the previous page are repeated at the top of the next page. The amount of repeated data depends on printer switch 04, bits 5 and 6.
2	Prints the date and time on received fax messages **0:** Disabled **1:** Enabled	This switch is only effective when user parameter 02 - bit 2 (printing the received date and time on received fax messages) is enabled. **1:** The machine prints the received and printed date and time at the bottom of each received page.
3-7	Not used	Do not change the settings.

Plotter Switch 01		
No	**FUNCTION**	**COMMENTS**
0-2	Not used	Do not change the settings.
3 **4**	Maximum print width used in the setup protocol $\binom{0}{0}$ = Not used $\binom{1}{0}$ = 297 mm / 11.7 inch $\binom{0}{1}$ = 254 mm / 10.1 inch $\binom{1}{1}$ = 216 mm / 8.5 inch	
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

Plotter 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	
4-7	Not used	Do not change the settings.

Plotter Switch 03		
No	**FUNCTION**	**COMMENTS**
0	Length reduction of received data **0:** Disabled **1:** Enabled	**0:** Incoming pages are printed without length reduction. (Page separation threshold: Printer Switch 03, bits 4 to 7) **1:** Incoming page length is reduced when printing. (Maximum reducible length: Printer Switches 04, bits 0 to 4)
1-3	Not used	Do not change the settings.

Plotter Switch 03	
4 to 7	Page separation threshold (with reduction disabled with switch 03-0 above) If the incoming page is up to x mm longer than the length of copy paper, the excess portion will not be printed. If the incoming page is more than x mm longer than the length of copy paper, the excess portion will be printed on the next page. The value of x is determined by these four bits. Hex value of bits 4 to 7 x (mm) 0 0 1 1 and so on until F 15 Default setting: 6 mm **Cross reference** Length reduction On/Off: Printer Switch 03, Bit 0

Plotter Switch 04		
No	**FUNCTION**	**COMMENTS**
0 to 4	Maximum reducible length when length reduction is enabled with switch 03-0 above. <Maximum reducible length> = <Paper length> + (N x 5mm) 'N' is the decimal value of the binary setting of bits 0 to 4. Bit 4 3 2 1 0 Setting 0 0 0 0 0 0 mm 0 0 0 0 1 5 mm 0 0 1 0 0 20 mm (default setting) 1 1 1 1 1 155 mm For A5 sideways and B5 sideways paper <Maximum reducible length> = <Paper length> + 0.75 x (N x 5mm)	
5 6	Length of the duplicated image on the next page, when page separation has taken place. $\binom{0}{0}$=4 mm $\binom{1}{0}$=10 mm $\binom{0}{1}$=15 mm $\binom{1}{1}$=Not used	
7	Not used.	Do not change the setting.

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

Plotter 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.	**Cross reference** Just size printing on/off – User switch 05, bit 5
1-7	Not used.	Do not change the settings.

Plotter Switch 07		
No	**FUNCTION**	**COMMENTS**
0-3	Not used.	Do not change the settings.
4	List of destinations in the Communication Failure Report for broadcasting **0**: All destinations **1**: Only destinations where communication failure occurred	**1:** Only destinations where communication failure occurred are printed on the Communication Failure Report.
5-7	Not used.	Do not change the settings.

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

Plotter Switch 0E		
No	**FUNCTION**	**COMMENTS**
0	Paper size selection priority **0:** Width **1:** Length	**0:** A paper size that has the same width as the received data is selected first. **1:** A paper size which has enough length to print all the received lines without reduction is selected first.
1	Paper size selected for printing A4 width fax data **0:** 8 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.

Plotter Switch 0E		
2	Page separation **0:** Enabled **1:** Disabled	**1:** If all paper sizes in the machine require page separation to print a received fax message, the machine does not print the message (Substitute Reception is used). After a larger size of paper is set in a cassette, the machine automatically prints the fax message.
3 to 4	Printing the sample image on reports **Bit 4 Bit 3 Setting** 0 0 The upper half only 0 1 50% reduction in sub-scan only 1 0 Same size 1 1 Not used	"Same size" means the sample image is printed at 100%, even if page separation occurs. User Parameter Switch 19 bit 4 must be set to "0" to enable this switch.
5-6	Not used	Do not change the settings.
7	Equalizing the reduction ratio among separated pages (Page Separation) **0:** Enabled **1:** Disabled	**0:** When page separation has taken place, all the pages are reduced with the same reduction ratio. **1:** Only the last page is reduced to fit the selected paper size when page separation has taken place. Other pages are printed without reduction.

Plotter Switch 0F		
No	**FUNCTION**	**COMMENTS**
0 to 1	Smoothing for received fax images **Bit 1 Bit 0 Setting** 0 0 Disabled 0 1 Disabled if the sender used halftone 1 0 Enabled 1 1 Not used	**(0, 0):** Smoothing is always disabled. **(0, 1):** Smoothing is disabled only when half-tone mode was selected by the transmitting side.
2-3	Not used	Do not change the settings.
4	Printing fax messages in user code mode. **0:** Enabled **1:** Disabled	**1:** The machine holds the received fax messages until the machine exits the restricted access mode (user code or key counter). If the machine enters the restricted access mode again while printing fax messages, it stops printing until it exits the mode again.
5-7	Not used	Do not change the settings.

5.3.4 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. (1, 1): Not used in this machine, because it does not support JBIG.
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. (1, 1): Not used in this machine, because it does not support JBIG.
4-7	Not used	Do not change the settings.

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. JBIG is not used in this machine.
1	Not used	Do not change the setting.
2 to 3	Wrong connection prevention method **Bit 3** **Bit 2** **Setting** 0 0 None 0 1 8 digit CSI 1 0 4 digit CSI 1 1 CSI/RTI	**(0,1) -** The machine will disconnect the line without sending a fax message if the last 8 digits of the received CSI do not match the last 8 digits of the dialed telephone number. This does not work when manually dialed. **(1,0) -** The same as above, except that only the last 4 digits are compared. **(1,1) -** The machine will disconnect the line without sending a fax message, if the other end does not identify itself with an RTI or CSI. **(0,0) -** Nothing is checked; transmission will always go ahead. **Note:** This function does not work when dialing is done from the external telephone.
4-5	Not used	Do not change the setting.

Communication Switch 01		
No	**FUNCTION**	**COMMENTS**
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 200 dpi 400 dpi** **3.85 l/mm 7.7 l/mm 15.4 l/mm** Low settings 6 12 24 High settings 12 24 48
1	Acceptable total error line ratio **0:** 5% **1:** 10%	If the error line ratio for a page exceeds the acceptable ratio, RTN will be sent to the other end.
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.
4-5	Mistaken Auto Service Call prevention **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.
6-7	Not used	Do not change the settings.

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

Communication Switch 04 - Not used (do not change the settings)
Communication Switch 05 - Not used (do not change the settings)
Communication Switch 06 - Not used (do not change the settings)
Communication Switch 07 - Not used (do not change the settings)
Communication Switch 08 - Not used (do not change the settings)
Communication Switch 09 - Not used (do not change the settings)

Communication Switch 0A		
No	**FUNCTION**	**COMMENTS**
0	Point of resumption of memory transmission upon redialing **0:** From the error page **1:** From page 1	**0:** The transmission begins from the page where transmission failed the previous time. **1:** Transmission begins from the first page, using normal memory transmission.
1-7	Not used	Do not change the settings.

Communication Switch 0B - Not used (do not change the settings)
Communication Switch 0C - Not used (do not change the settings)

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

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

Communication Switch 0F - Not used (do not change the settings)

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

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

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

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

Communication Switch 14		
No	**FUNCTION**	**COMMENTS**
0	Inch-to-mm conversion during transmission **0:** Disabled **1:** Enabled	**0:** In immediate transmission, data scanned in inch format are transmitted without conversion. In memory transmission, data stored in the SAF memory in mm format are transmitted without conversion. **Note:** When storing the scanned data into SAF memory, the fax unit always converts the data into mm format. **1:** The machine converts the scanned data or stored data in the SAF memory to the format which was specified in the set-up protocol (DIS/NSF) before transmission.
1-5	Not used	Do not change the factory settings.
6 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	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 one of these bits 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.)
1		
2		
3		
4		
5		
6		
7		

Communication Switch 1F		
No	**FUNCTION**	**COMMENTS**
0	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.
1		
2-7	Not used	Do not change the settings.

5.3.5 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.
3-7	Not used	Do not change the settings.

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

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

G3 Switch 03		
No	**FUNCTION**	**COMMENTS**
0	DIS detection number (Echo countermeasure) **0:** 1 **1:** 2	**0:** The machine will hang up if it receives the same DIS frame twice. **1:** Before sending DCS, the machine will wait for the second DIS which is caused by echo on the line.
1	V.8 protocol in manual reception **0:** Disabled **1:** Enabled	**0:** The machine sends CED instead of ANSam when starting a manual reception. **1:** The machine sends ANSam during manual reception.
2	V.8 protocol **0:** Disabled **1:** Enabled	**0:** V.8/V.34 communications will not be possible. **Note:** Do not set to 0 unless the line condition is always bad enough to slow down the data rate to 14.4 kbps or lower.
3	ECM frame size **0:** 256 bytes **1:** 64 bytes	Keep this bit at “0” in most cases.
4	CTC transmission conditions **0:** After one PPR signal received **1:** After four PPR signals received (ITU-T standard)	**0:** When using ECM in non-standard (NSF/NSS) mode, the machine sends a CTC to drop back the modem rate after receiving a PPR, if the following condition is met in communications at 14.4, 12.0, 9.6, and 7.2 kbps. $\sqrt{N_{Transmit}} \leq N_{Resend}$ $N_{Transmit}$- 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	V.8 protocol in manual transmission **0:** Disabled **1:** Enabled	**1:** The machine detects either ANSam or CED during manual transmission.
7	Not used	Do not change the setting.

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

G3 Switch 05		
No	**FUNCTION**	**COMMENTS**
0 to 3	Initial Tx modem rate **Bit 3 2 1 0 Setting (bps)** 0 0 0 1 2.4 k 0 0 1 0 4.8 k 0 0 1 1 7.2 k 0 1 0 0 9.6 k 0 1 0 1 12.0 k 0 1 1 0 14.4 k 0 1 1 1 16.8 k 1 0 0 0 19.2 k 1 0 0 1 21.6 k 1 0 1 0 24.0 k 1 0 1 1 26.4 k 1 1 0 0 28.8 k 1 1 0 1 31.2 k 1 1 1 0 33.6 k Other settings - Not used	These bits set the initial starting modem rate for transmission. Use the dedicated transmission parameters if you need to change this for specific receivers. If a modem rate of 14.4 kbps or slower is selected, V.8 protocol should be disabled manually. **Cross reference** V.8 protocol on/off - G3 switch 03, bit 2
4 to 5	Initial modem type for 9.6 k or 7.2 kbps. **Bit 5 Bit 4 Setting** 0 0 V.29 0 1 V.17 1 0 V.34 1 1 Not used	These bits set the initial modem type for 9.6 and 7.2 kbps, if the initial modem rate is set at these speeds.
6-7	Not used	Do not change the settings.

G3 Switch 06		
No	**FUNCTION**	**COMMENTS**
0 to 3	Initial Rx modem rate **Bit 3 2 1 0 Setting (bps)** 0 0 0 1 2.4 k 0 0 1 0 4.8 k 0 0 1 1 7.2 k 0 1 0 0 9.6 k 0 1 0 1 12.0 k 0 1 1 0 14.4 k 0 1 1 1 16.8 k 1 0 0 0 19.2 k 1 0 0 1 21.6 k 1 0 1 0 24.0 k 1 0 1 1 26.4 k 1 1 0 0 28.8 k 1 1 0 1 31.2 k 1 1 1 0 33.6 k Other settings - Not used	These bits set the initial starting modem rate for reception. Use a lower setting if high speeds pose problems during reception. If a modem rate of 14.4 kbps or slower is selected, V.8 protocol should be disabled manually. **Cross reference** V.8 protocol on/off - G3 switch 03, bit 2
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, bit 2

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)	This function should only be turned on in environments where reception signal levels tend to be low.
6-7	Not used	Do not change the settings.

G3 Switch 08		
	FUNCTION	**COMMENTS**
0 **1**	PABX cable equalizer (tx mode) **Bit 1 Bit 0 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Use the dedicated transmission parameters if you need to change this for specific receivers. Also, try using the cable equalizer if one or more of the following symptoms occurs: • Communication error • Modem rate fallback occurs frequently. **Note:** This setting is ineffective in V.34 communications.
2 **3**	PABX cable equalizer (rx mode) **Bit 3 Bit 2 Setting** 0 0 None 0 1 Low 1 0 Medium 1 1 High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Also, try using the cable equalizer if one or more of the following symptoms occurs: • Communication error with error codes such as 0-20, 0-23, etc. • Modem rate fallback occurs frequently. **Note:** This setting is ineffective in V.34 communications.
4	PABX external cable equalizer (V.17, V.8 rx mode) **0:** Disabled **1:** Enabled	Set this bit to 0 when line quality is good. (e.g. for a digital PABX)
5	PABX external cable equalizer (V.34 rx mode) **0:** Disabled **1:** Enabled	Set this bit to 0 when line quality is good. (e.g. for a digital PABX) The V.34 modem rate may decrease if the equalizer is over-corrected.
6-7	Not used	Do not change these settings.

G3 Switch 09 - 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	Reception carrier drop operation. **0:** Continue reception **1:** Disconnect the line	This bit decides what the machine does when there is a carrier drop in the image data.
3	Not used	Do not change the setting.
4	Maximum allowable frame interval during image data reception. **0:** 5 s **1:** 13 s	This bit set the maximum interval between EOL (end-of-line) signals and the maximum interval between ECM frames from the other end. Try using a longer setting if error code 0-21 is frequent.
5	Not used	Do not change the 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 Switch 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.
2-7	Not used	Do not change the settings.

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

G3 Switch 0E		
No	**FUNCTION**	**COMMENTS**
0 to 7	CNG transmission OFF interval To input a value more than 3 s, use bits 3 to 0, and keep bits 4 to 7 at 0 3000 + 50 x N ms To input a value less than 3 s, use bits 4 to 7, and keep bits 0 to 3 at 1 3000 – 50 x N ms	Examples. 3100 ms: 50 x 2 = 100 Bits 4 to 7 must be 0 Bits 0 to 3 must be 2(H) So, enter 02H 2800 ms: 50 x 4 = 200 Bits 0 to 3 must be F(H) Bits 4 to 7 must be 4(H) So, enter 4FH

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 communication that had an error, change this bit to "1".
1	Alarm when the handset is off-hook at the end of communication **0**: Disabled **1**: Enabled	If the customer wants to hear an alarm if the handset is off-hook at the end of fax communication, change this bit to "1".
2-7	Not used	Do not change the settings.

5.4 NCU PARAMETERS

The following tables give the RAM addresses and the parameter calculation units that the machine uses for ringing signal detection and automatic dialing. The factory settings for each country are also given. Most of these must be changed by RAM read/write (Function 06-0), but some can be changed using NCU Parameter programming (Function 08-0); if Function 08-0 can be used, this will be indicated in the Remarks column. The RAM is programmed in hex code unless (BCD) is included in the Unit column.

Address	Function	Unit	Remarks
680400	Country code for NCU parameters	Use the Hex value to program the country code directly into this address, or use the decimal value to program it using Function 08-0 (parameter C.C.).	
680401	Line current detection time	20 ms	Line current detection is disabled. Line current is not detected if 680401 contains FF.
680402	Line current wait time		
680403	Line current drop detect time		

Country	Decimal	Hex
France	00	00
Germany	01	01
UK	02	02
Italy	03	03
Austria	04	04
Belgium	05	05
Denmark	06	06
Finland	07	07
Ireland	08	08
Norway	09	09
Sweden	10	0A
Switzerland	11	0B
Portugal	12	0C
Holland	13	0D
Spain	14	0E
Israel	15	0F
USA	17	11
Asia	18	12
Hong Kong	20	14
South Africa	21	15
Australia	22	16
New Zealand	23	17
Singapore	24	18
Malaysia	25	19
China	26	1A
Taiwan	27	1B
Korea	28	1C
Greece	33	21
Hungary	34	22
Czech	35	23
Poland	36	24

Address	Function	Unit	Remarks
680404	PSTN dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled. See Note 9
680405	PSTN dial tone frequency upper limit (low byte)		
680406	PSTN dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled. See Note 9
680407	PSTN dial tone frequency lower limit (low byte)		
680408	PSTN dial tone detection time	20 ms	If 680408 contains FF(H), the machine pauses for the pause time (address 68040D / 68040E). Italy: See Note 2, 9
680409	PSTN dial tone reset time (LOW)		
68040A	PSTN dial tone reset time (HIGH)		
68040B	PSTN dial tone continuous tone time		
68040C	PSTN dial tone permissible drop time		
68040D	PSTN wait interval (LOW)		See Note 9
68040E	PSTN wait interval (HIGH)		
68040F	PSTN ring-back tone detection time	20 ms	Detection is disabled if this contains FF.
680410	PSTN ring-back tone off detection time	20 ms	
680411	PSTN detection time for silent period after ring-back tone detected (LOW)	20 ms	
680412	PSTN detection time for silent period after ring-back tone detected (HIGH)	20 ms	
680413	PSTN busy tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680414	PSTN busy tone frequency upper limit (low byte)		
680415	PSTN busy tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680416	PSTN busy tone frequency lower limit (low byte)		
680417	PABX dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680418	PABX dial tone frequency upper limit (low byte)		
680419	PABX dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
68041A	PABX dial tone frequency lower limit (low byte)		

Address	Function	Unit	Remarks
68041B	PABX dial tone detection time	20 ms	If 68041B contains FF, the machine pauses for the pause time (680420 / 680421).
68041C	PABX dial tone reset time (LOW)		
68041D	PABX dial tone reset time (HIGH)		
68041E	PABX dial tone continuous tone time		
68041F	PABX dial tone permissible drop time		
680420	PABX wait interval (LOW)		
680421	PABX wait interval (HIGH)		
680422	PABX ringback tone detection time	20 ms	If both addresses contain FF(H), tone detection is disabled.
680423	PABX ringback tone off detection time	20 ms	
680424	PABX detection time for silent period after ringback tone detected (LOW)	20 ms	If both addresses contain FF(H), tone detection is disabled.
680425	PABX detection time for silent period after ringback tone detected (HIGH)	20 ms	
680426	PABX busy tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680427	PABX busy tone frequency upper limit (low byte)		
680428	PABX busy tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680429	PABX busy tone frequency lower limit (low byte)		
68042A	Busy tone ON time: range 1	20 ms	
68042B	Busy tone OFF time: range 1		
68042C	Busy tone ON time: range 2		
68042D	Busy tone OFF time: range 2		
68042E	Busy tone ON time: range 3		
68042F	Busy tone OFF time: range 3		
680430	Busy tone ON time: range 4		
680431	Busy tone OFF time: range 4		
680432	Busy tone continuous tone detection time		
680433	Busy tone signal state time tolerance for all ranges, and number of cycles required for detection (a setting of 4 cycles means that ON-OFF-ON or OFF-ON-OFF must be detected twice). Tolerance (±) Bit 1 0 0 0 75% Bits 2 and 3 must always 0 1 50% be kept at 0. 1 0 25% 1 1 12.5% Bits 7, 6, 5, 4 - number of cycles required for cadence detection		

Address	Function	Unit	Remarks
680434	International dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680435	International dial tone frequency upper limit (low byte)		
680436	International dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680437	International dial tone frequency lower limit (low byte)		
680438	International dial tone detection time	20 ms	If 680438 contains FF, the machine pauses for the pause time (68043D / 68043E). Belgium: See Note 2.
680439	International dial tone reset time (LOW)		
68043A	International dial tone reset time (HIGH)		
68043B	International dial tone continuous tone time		
68043C	International dial tone permissible drop time		
68043D	International dial wait interval (LOW)		
68043E	International dial wait interval (HIGH)		
68043F	Country dial tone upper frequency limit (HIGH)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680440	Country dial tone upper frequency limit (LOW)		
680441	Country dial tone lower frequency limit (HIGH)		If both addresses contain FF(H), tone detection is disabled.
680442	Country dial tone lower frequency limit (LOW)		

Address	Function	Unit	Remarks
680443	Country dial tone detection time	20 ms	If 680443 contains FF, the machine pauses for the pause time (680448 / 680449).
680444	Country dial tone reset time (LOW)		
680445	Country dial tone reset time (HIGH)		
680446	Country dial tone continuous tone time		
680447	Country dial tone permissible drop time		
680448	Country dial wait interval (LOW)		
680449	Country dial wait interval (HIGH)		
68044A	Time between opening or closing the DO relay and opening the OHDI relay	1 ms	See Notes 3, 6, 8 and 9. Function 08-0 (parameter 11).
68044B	Break time for pulse dialing	1 ms	See Note 3 and 9. Function 08-0 (parameter 12).
68044C	Make time for pulse dialing	1 ms	See Note 3 and 9. Function 08-0 (parameter 13).
68044D	Time between final OHDI relay closure and DO relay opening or closing	1 ms	See Notes 6, 8 and 9. Function 08-0 (parameter 14). This parameter is only valid in Europe.
68044E	Minimum pause between dialed digits (pulse dial mode)	20 ms	See Note 3 and 8. Function 08-0 (parameter 15). See Note 9
68044F	Time waited when a pause is entered at the operation panel		Function 08-0 (parameter 16). See Note 9
680450	DTMF tone on time	1 ms	Function 08-0 (parameter 17). See Note 9
680451	DTMF tone off time		Function 08-0 (parameter 18). See Note 9
680452	Tone attenuation level of DTMF signals while dialing	-dBm x 0.5	Function 08-0 (parameter 19). See Note 5 and 9.
680453	Tone attenuation value difference between high frequency tone and low frequency tone in DTMF signals	-dBm x 0.5	Function 08-0 (parameter 20). The setting must be less than –5dBm, and should not exceed the setting at 680452h above. See Note 5 and 9.
680454	PSTN: DTMF tone attenuation level after dialling	-dBm x 0.5	Function 08-0 (parameter 21). See Note 5.
680455	ISDN: DTMF tone attenuation level after dialling	-dBm x 0.5	See Note 5
680456	Not used		Do not change the settings.

Address	Function	Unit	Remarks
680457	Time between 68044Dh (NCU parameter 14) and 68044Eh (NCU parameter 15)	1 ms	This parameter takes effect when the country code is set to France.
680458	Not used		Do not change the setting.
680459	Grounding time (ground start mode)	20 ms	The Gs relay is closed for this interval.
68045A	Break time (flash start mode)	1 ms	The OHDI relay is open for this interval.
68045B	International dial access code (High)	BCD	For a code of 100: 68045B - F1 68045C - 00
68045C	International dial access code (Low)		
68045D	PSTN access pause time	20 ms	This time is waited for each pause input after the PSTN access code. If this address contains FF[H], the pause time stored in address 68044F is used. Do not set a number more than 7 in the UK.
68045E	Progress tone detection level, and cadence detection enable flags	Bit 7 Bit 6 Bit 5 dBm 0 0 0 -25.0 0 0 1 -35.0 0 1 0 -30.0 1 0 0 -40.0 1 1 0 -49.0 Bits 2, 0 - See Note 2.	
68045F to 680464	Not used		Do not change the settings.
680465	Long distance call prefix (HIGH)	BCD	For a code of 0: 680465 - FF 680466 - F0
680466	Long distance call prefix (LOW)	BCD	
680467 to 680471	Not used		Do not change the settings.

Address	Function	Unit	Remarks
680472	Acceptable ringing signal frequency: range 1, upper limit	1000/ N (Hz).	Function 08-0 (parameter 02). See Note 9.
680473	Acceptable ringing signal frequency: range 1, lower limit		Function 08-0 (parameter 03). See Note 9.
680474	Acceptable ringing signal frequency: range 2, upper limit		Function 08-0 (parameter 04). See Note 9.
680475	Acceptable ringing signal frequency: range 2, lower limit		Function 08-0 (parameter 05). See Note 9.
680476	Number or rings until a call is detected	1	Function 08-0 (parameter 06). The setting must not be zero. See Note 9.
680477	Minimum required length of the first ring	20 ms	See Note 4. Function 08-0 (parameter 07). See Note 9.
680478	Minimum required length of the second and subsequent rings	20 ms	Function 08-0 (parameter 08). See Note 9.
680479	Ringing signal detection reset time (LOW)	20 ms	Function 08-0 (parameter 09). See Note 9.
68047A	Ringing signal detection reset time (HIGH)		Function 08-0 (parameter 10). See Note 9.
68047B to 680480	Not used		Do not change the settings.
680481	Interval between dialing the last digit and switching the Oh relay over to the external telephone when dialing from the operation panel in handset mode.	20 ms	Factory setting: 500 ms
680482	Bits 0 and 1 - Handset off-hook detection time **Bit1 0 Setting** 0 0 200 ms 0 1 800 ms Other Not used Bits 2 and 3 - Handset on-hook detection time **Bit3 2 Setting** 0 0 200 ms 0 1 800 ms Other Not used Bits 4 to 7 - Not used		

Service Tables

Address	Function	Unit	Remarks
680483 to 6804A0	Not used		Do not change the settings.
6804A1	Acceptable CED detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6804A2	Acceptable CED detection frequency upper limit (low byte)		
6804A3	Acceptable CED detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6804A4	Acceptable CED detection frequency lower limit (low byte)		
6804A5	CED detection time	20 ms ± 20 ms	Factory setting: 200 ms
6804A6	Acceptable CNG detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6804A7	Acceptable CNG detection frequency upper limit (low byte)		
6804A8	Acceptable CNG detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6804A9	Acceptable CNG detection frequency lower limit (low byte)		
6804AA	Not used		Do not change the setting.
6804AB	CNG on time	20 ms	Factory setting: 500 ms
6804AC	CNG off time	20 ms	Factory setting: 200 ms
6804AD	Number of CNG cycles required for detection		The data is coded in the same way as address 680433.
6804AE	Not used		Do not change the settings.
6804AF	Acceptable AI short protocol tone (800Hz) detection frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
6804B0	Acceptable AI short protocol tone (800Hz) detection frequency upper limit (low byte)		
6804B1	Acceptable AI short protocol tone (800Hz) detection frequency lower limit (high byte)	Hz(BCD)	If both addresses contain FF(H), tone detection is disabled.
6804B2	Acceptable AI short protocol tone (800Hz) detection frequency lower limit (low byte)		
6804B3	Detection time for 800 Hz AI short protocol tone	20 ms	Factory setting: 360 ms
6804B4	PSTN: Tx level from the modem	- dBm	Function 08-0 (parameter 01). See Note 9.
6804B5	PSTN: 1100 Hz tone transmission level	- N 6804B4 - 0.5N 6804B5 (dB) See Note 7.	
6804B6	PSTN: 2100 Hz tone transmission level	- N6804B4 - 0.5N 6804B6 (dB) See Note 7.	

Address	Function	Unit	Remarks
6804B7	PABX: Tx level from the modem	- dBm	
6804B8	PABX: 1100 Hz tone transmission level	- N 6804B7 - 0.5N 6804B8 (dB)	
6804B9	PABX: 2100 Hz tone transmission level	- N 6804B7 - 0.5N 6804B9 (dB)	
6804BA	ISDN: Tx level from the modem	- dBm	The setting must be between -12dBm and -15dBm.
6804BB	ISDN: 1100 Hz tone transmission level	- N 6804BA - 0.5N 6804BB (dB)	
6804BC	ISDN: 2100 Hz tone transmission level	- N 6804BA - 0.5N 6804BC (dB)	
6804BD	Modem turn-on level (incoming signal detection level)	-37-0.5N (dBm)	
6804BE to 6804C6	Not used		Do not change the settings.
6804C7	Bits 0 to 3 – Not used. Bit 4 – V.34 protocol dump **0:** Simple, **1:** Detailed (default) Bits 5 to 7 – Not used.		
6804C8 to 6804D9	Not used		Do not change the settings.
6804DA	T.30 T1 timer	1 s	See Note 9.
6804E0 bit 3	Maximum wait time for post message	**0:** 12 s **1:** 30 s	**1:** Maximum wait time for post message (EOP/EOM/MPS) can be changed to 30 s. Change this bit to “1” if communication errors occur frequently during V.17 reception.

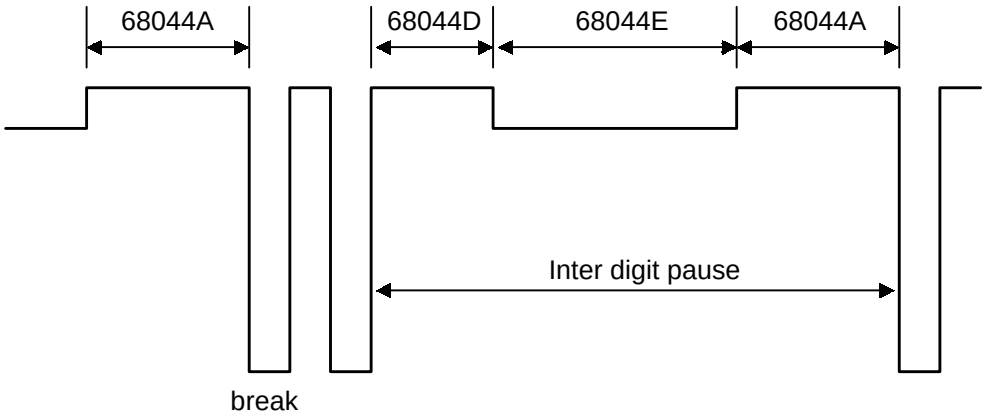
NOTES

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

   RAM address 68045E: the lower four bits have the following meaning.
   Bit 2 - 1: International dial tone cadence detection enabled (Belgium)
   Bit 1 - Not used
   Bit 0 - 1: PSTN dial tone cadence detection enabled (Italy)

   If bit 0 or bit 2 is set to 1, the functions of the following RAM addresses are changed.
   680408 (if bit 0 = 1) or 680438 (if bit 2 = 1): tolerance for on or off state duration (%), and number of cycles required for detection, coded as in address 680433.
   68040B (if bit 0 = 1) or 68043B (if bit 2 = 1): on time, hex code (unit = 20 ms)
   68040C (if bit 0 = 1) or 68043C (if bit 2 = 1): off time, hex code (unit = 20 ms)
3. Pulse dial parameters (addresses 68044A to 68044F) are the values for 10 pps. If 20 pps is used, the machine automatically compensates.
4. The first ring may not be detected until 1 to 2.5 wavelengths after the time specified by this parameter.
5. The calculated level must be between 0 and 10.
   The attenuation levels calculated from RAM data are:
   High frequency tone: - 0.5 x $N_{680452/680454}$ dBm
   Low frequency tone: - 0.5 x ($N_{680452/680454}$ + N_{680453}) dBm
   Note: N_{680452}, for example, means the value stored in address 680452(H)
6. 68044A: Europe - Between Ds opening and Di opening, France - Between Ds closing and Di opening
   68044D: Europe - Between Ds closing and Di closing, France - Between Ds opening and Di closing
7. Tone signals which frequency is lower than 1500Hz (e.g., 800Hz tone for AI short protocol) refer to the setting at 6804B5h. Tones which frequency is higher than 1500Hz refer to the setting at 6804B6h.

8. The actual inter-digit pause (pulse dial mode) is the sum of the periods specified by RAM addresses 68044A, 68044D, and 68044E.



9. For European models, these parameters should not be changed in the field. The default values of these parameters have been approved by CTR21 and/or EG201121. Therefore, a change in any one of these values would constitute a violation of these requirements.

5.5 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.

5.5.1 PROGRAMMING PROCEDURE

1. Make sure the machine is in standby mode. Press 'User Tools' key then choose '4. Fax Features'.
2. Select the "1. Program/Delete", then press "OK" key.
   Select "1. Prog. Quick dial" or "3. Prog. Speed Dial" then press "OK" key
   Example: Change the Parameters in Quick Dial 01.
3. Press Quick Dial key 01 and "OK" key.
   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" until "Programmed" displays.
8. To finish, press 'User Tools'.

5.5.2 PARAMETERS

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

Switch 01
FUNCTION AND COMMENTS
ITU-T T1 time (for PSTN G3 mode) If the connection time to a particular terminal is longer than the NCU parameter setting, adjust this byte. The T1 time is the value stored in this byte (in hex code), multiplied by 1 second. **Range:** 0 to 120 s (00h to 78h) FFh - The local NCU parameter factory setting is used. Do not program a value between 79h and FEh.

Switch 02		
No	**FUNCTION**	**COMMENTS**
0 to 4	Tx level **Bit 4 3 2 1 0 Setting** 0 0 0 0 0 0 0 0 0 0 1 -1 0 0 0 1 0 -2 0 0 0 1 1 -3 0 0 1 0 0 -4 : : 0 1 1 1 1 -15 1 1 1 1 1 Disabled	If communication with a particular remote terminal often contains errors, the signal level may be inappropriate. Adjust the Tx level for communications with that terminal until the results are better. If the setting is 'Disabled', the NCU parameter 01 setting is used. **Note:** Do not use settings other than listed on the left.
5 to 7	Cable equalizer **Bit 7 6 5 Setting** 0 0 0 None 0 0 1 Low 0 1 0 Medium 0 1 1 High 1 1 1 Disabled	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange when calling the number stored in this Quick/Speed Dial. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error with error codes such as 0-20, 0-23, etc. • Modem rate fallback occurs frequently. **Note:** Do not use settings other than listed on the left. If the setting is 'Disabled', the bit switch setting is used.

Switch 03		
No	**FUNCTION**	**COMMENTS**
0 to 3	Initial Tx modem rate **Bit 3 2 1 0 Setting (bps)** 0 0 0 0 Not used 0 0 0 1 2,400 0 0 1 0 4,800 0 0 1 1 7,200 0 1 0 0 9,600 0 1 0 1 12,000 0 1 1 0 14,400 0 1 1 1 16,800 1 0 0 0 19,200 1 0 0 1 21,600 1 0 1 0 24,000 1 0 1 1 26,400 1 1 0 0 28,800 1 1 0 1 31,200 1 1 1 0 33,600 1 1 1 1 Disabled Other settings: Not used	If training with a particular remote terminal always takes too long, the initial modem rate may be too high. Reduce the initial Tx modem rate using these bits. For the settings 14.4 or kbps slower, Switch 04 bit 4 must be changed to 0. **Note:** Do not use settings other than listed on the left. If the setting is 'Disabled', the bit switch setting is used.
4-5	Not used	Do not change the settings.
6	AI short protocol **0:** Off **1:** Disabled	Refer to Appendix B in the Group 3 Facsimile Manual for details about AI Short Protocol. If the setting is 'Disabled', the bit switch setting is used.
7	Not used	Do not change the setting.

Switch 04		
No	**FUNCTION**	**COMMENTS**
0 1	Inch-mm conversion before tx **Bit 1 Bit 0 Setting** 0 0 Inch-mm conversion available 0 1 Inch only 1 0 Not used 1 1 Disabled	The machine uses inch-based resolutions for scanning. If "inch only" is selected, the printed copy may be slightly distorted at the other end if that machine uses mm-based resolutions. If the setting is 'Disabled', the bit switch setting is used.
2 to 3	DIS/NSF detection method **Bit 3 Bit 2 Setting** 0 0 First DIS or NSF 0 1 Second DIS or NSF 1 0 Not used 1 1 Disabled	**(0, 1):** Use this setting if echoes on the line are interfering with the set-up protocol at the start of transmission. The machine will then wait for the second DIS or NSF before sending DCS or NSS. If the setting is 'Disabled', the bit switch setting is used.

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

Switch 05 - Not used (do not change the settings)
Switch 06 - Not used (do not change the settings)
Switch 07 - Not used (do not change the settings)
Switch 08 - Not used (do not change the settings)
Switch 09 - Not used (do not change the settings)
Switch 0A - Not used (do not change the settings)

5.6 SERVICE RAM ADDRESSES

⚠CAUTION

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

680001 to 680004(H) - ROM version (Read only)

680001(H) - Revision number (BCD)
680002(H) - Year (BCD)
680003(H) - Month (BCD)
680004(H) - Day (BCD)

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

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

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

6800C0(H) - User parameter switch 00 (SWUER_00)

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

Bits 1 to 3: Scanning contrast home position

Bit 3	2	1	Setting
0	0	0	Not used
0	0	1	Position 1 (Lightest)
0	1	0	Position 2
0	1	1	Position 3 (Medium)
1	0	0	Position 4
1	0	1	Position 5 (Darkest)

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

Bit 5	4	Setting
0	0	Standard
0	1	Detail
1	0	Fine
1	1	Not used

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

Bit 7: Not used

6800C1(H) - User parameter switch 01 (SWUSR_01)

Bit 0: Label insertion home position 0: Disabled, 1: Enabled
Bit 1: Not used
Bit 2: Automatic reduction (tx) home position 0: Disabled, 1: Enabled
Bits 3 and 4: Scanning mode LED home position
(This switch is not printed on the user parameter list.)

Bit 4	3	Setting
0	0	Text
0	1	Not used
1	0	Photo
1	1	Special Original (See the note below)

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

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

6800C2(H) - User parameter switch 02 (SWUSR_02)

Bit 0: Forwarding mark printing on forwarded messages 0: Disabled, 1: Enabled
Bit 1: Center mark printing on received copies
(This switch is not printed on the user parameter list.)
0: Disabled, 1: Enabled
Bit 2: Reception time printing
(This switch is not printed on the user parameter list.)
0: Disabled, 1: Enabled
Bit 3: TSI print on received messages 0: Disabled, 1: Enabled
Bit 4: Checkered mark printing
(This switch is not printed on the user parameter list.)
0: Disabled, 1: Enabled
Bits 5 and 7: Not used

6800C3(H) - User parameter switch 03 (SWUSR_03: Automatic report printout)

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

6800C4(H) - User parameter switch 04 (SWUSR_04: Automatic report printout)

Bits 0 to 6: Not used
Bit 7: Inclusion of a sample image on reports 0: Off, 1: On

6800C5(H) - User parameter switch 05 (SWUSR_05)

Bit 0: Substitute reception when the base copier is in an SC condition
0: Enabled, 1: Disabled
Bits 1 and 2: Condition for substitute rx when the machine cannot print messages (Paper end, Toner end, and Jam during night mode)

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

Bit 3: Not used
Bit 4: Restricted Access using personal codes 0: Off, 1: On
Bit 5: Just size printing 0: Off, 1: On
Bit 6: Not used
Bit 7: Add paper display when a cassette is empty 0: Off, 1: On

6800C6(H) - User parameter switch 06 (SWUSR_06)

Bit 0: Not used
Bits 1 to 3: Not used
Bit 4: Quick dial label print format
0: Suitable for white paper, 1: Suitable for transparent paper
Bits 5 to 7: Not used

6800C7(H) - User parameter switch 07 (SWUSR_07)

Bits 0 and 1: Not used
Bit 2: Parallel memory transmission 0: Off, 1: On
Bits 3 to 7: Not used

6800C8(H) - User parameter switch 08 (SWUSR_08)

Bits 0 and 1: Not used.
Bit 2: Authorized reception
0: Only faxes from senders whose RTIs/CSIs are specified for this feature are accepted.
1: Only faxes from senders whose RTIs/CSIs are not specified for this feature are accepted.
Bits 3 to 7: Not used.

6800C9(H) - User parameter switch 09 (SWUSR_09)

Bits 0 to 7: Not used

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

6800CB(H) - User parameter switch 11 (SWUSR_0B)
Bit 0: Not used
Bits 1 to 5: Not used
Bit 6: Printout of messages received while acting as a forwarding station
0: Off, 1: On
Bit 7: Not used

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

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

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

Bits 2 to 7: Not used

6800CE(H) - User parameter switch 14 (SWUSR_0E)
Bit 0: Message printout while the machine is in Night Timer mode 0: On, 1: Off
Bit 1: Maximum document length detection (Well log)
0: Double letter, 1: 1200 mm (Memory transmission)
Bit 2: Batch transmission 0: Off, 1: On
Bit 3: Setting before mode key (Copy/Fax/Printer) is pressed
0: Not cleared, 1: Cleared
Bits 4 to 6: Not used
Bit 7: Manual service call (sends the system parameter list to the service station)
0: Off, 1: On

6800CF(H) - User parameter switch 15 (SWUSR_0F)

Bits 0, 1 and 2: Cassette for fax printout

Bit 2	1	0	Setting
0	0	1	1st paper feed station
0	1	0	2nd paper feed station
0	1	1	3rd paper feed station
1	0	0	4th paper feed station
Other settings			Not used

Bits 3 and 4: Not used

Bit 5: Using the cassette specified by bits 0, 1 and 2 above only 0: On, 1: Off

Bits 6 and 7: Not used

6800D0(H) – User parameter switch 16 (SWUSR_10)

(This switch is not printed on the user parameter list.)

Bits 0 and 1: Not used

Bit 2: Paper size selection priority for an A4 size fax message when A4/LT size paper is not available.

0: A3 has priority, 1: B4 has priority

Bits 3 to 7: Not used

6800D1(H) – User parameter switch 17 (SWUSR_11)

Bits 0 and 1: Not used

Bit 2: Inclusion of the “OK” button when a sequence of Quick dials is selected for broadcasting

0:Not needed, 1: Needed

Bits 3 to 6: Not used

Bit 7: Action when the user presses the “Start” key without an original when using on hook dial or an external telephone.

0: Displays “Cannot detect original size”

1: Receives an incoming fax message

6800D2(H) - User parameter switch 18 (SWUSR_12)

Bit 0: TTI date 0: Off, 1: On

Bit 1: TTI sender 0: Off, 1: On

Bit 2: TTI file number 0: Off, 1: On

Bit 3: TTI page number 0: Off, 1: On

Bit 4 to 7: Not used

6800D3(H) - User parameter switch 19 (SWUSR_13)
Bits 0 to 2: Not used
Bit 3: 90° image rotation during B5 portrait Tx
(This switch is not printed on the user parameter list.)
0: Off, 1: On
Bit 4: Reduction of sample images on reports to 50% in the main scan and sub-scan directions. (This switch is not printed on the user parameter list.)
0: Off, 1: On
Bit 5: Use of A5 size paper for reports
(This switch is not printed on the user parameter list.)
0: Off, 1: On
Bits 6 and 7: Not used

6800D4(H) to 6800D8 - User parameter switch 20 to 24 (SWUSR_14 to 18)
Bits 0 to 7: Not used

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

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

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

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

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

680110 to 68011E(H) - Service station's fax number (Service mode 13)

68012E to 68013C(H) - Own fax number (PSTN)
680188 to 680119B(H) - RTI (Max. 20 characters - ASCII) - See the following note.
6801B0 to 6801EF(H) - TTI 1 (Max. 64 characters - ASCII) - See the following
680230 to 680243(H) - CSI (Max. 20 characters - ASCII)
68026C(H) - Number of CSI characters (Hex)
If the number of characters is less than the maximum (20 for RTI, 64 for TTI), add a stop code (FF[H]) after the last character.

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

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

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

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

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

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

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

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

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

680CC8 to 680CEF(H) - SC codes NOT for automatic service call

If the fax unit receives a copier engine SC code other than those programmed in these addresses, the fax unit sends an automatic service call report to the programmed service station.
Six SC codes have already been programmed at default, as shown in the table below. Fourteen more SC codes can be programmed, if required (if an address contains FF(H), a code is not programmed in it).
Program a SC code in four-digit BCD format as shown in the example below.
Example 1: SC code '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
680DC8	01	680DC9	92	192
680DCA	09	680DCB	80	980
680DCC	09	680DCD	99	999
680DCE to 680DEE	FF(H)	680DCF to 680DEF	FF(H)	Not Programmed

687BCC to 687FCB(H) - Dedicated tx parameters for Quick Dial 01 - 32.
There are 32 bytes for each Quick Dial. Only the 23rd to 32nd bytes are used.
6884B2 to 6884BB(H) - Dedicated tx parameters for Quick 01
6884D2 to 6884DB(H) - Dedicated tx parameters for Quick 02
6884F2 to 6884FB(H) - Dedicated tx parameters for Quick 03
⇩
688892 to 68889B(H) - Dedicated tx parameters for Quick 32

687FCC to 688C4B(H) - Dedicated tx parameters for Speed Dial #00 - #99.
There are 32 bytes for each Speed Dial. Only the 23rd to 32nd bytes are used.
688BB2 to 688BBB(H) - Dedicated tx parameters for Speed #00
688BD2 to 688BDB(H) - Dedicated tx parameters for Speed #01
688BF2 to 688BFB(H) - Dedicated tx parameters for Speed #02
⇩
689812 to 68981B(H) - Dedicated tx parameters for Speed #99

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

One error record consists of 8 bytes of data.

First error record start address – 69CA00(H)
Second error record start address – 69CA08(H)
Third error record start address – 69CA10(H)
:
64th error record start address – 69CBF8(H)

The format is as follows:
1st byte - Minute (BCD)
2nd byte - Hour (BCD)
3rd byte - Day (BCD)
4th byte - Month (BCD)
5th byte - Error code – low (BCD) [If the error code is 1-23, 23 is stored here.]
6th byte - Error code – high (BCD) [If the error code is 1-23, 01 is stored here.]
7th byte - Communication line (Hex)
PSTN: 00(H), PABX: 02(H), ISDN G3: 0C(H), ISDN G4: 0D(H)
8th byte - Not used

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

One error communication record consists of 88 bytes. The format is as follows:

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

2nd byte - Not used

3rd to 6th bytes - Date and time when the communication started
- 3rd byte - Month (BCD)
- 4th byte - Day (BCD)
- 5th byte - Hour (BCD)
- 6th byte - Minute (BCD)

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

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

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

If bit 4 of the 1st byte is 1:
- 11th byte - Number of total error lines (Hex)
- 12th byte - Number of burst error lines (Hex)

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

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

If bit 4 of the 1st byte is 1:
- 15th byte - Measure of error rate (low - Hex)
- 16th byte - Measure of error rate (high - Hex)

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

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

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

Bits 4 to 6: Final modem type

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

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

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

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

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

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

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

46th byte - Communication mode #2

Bit 0: Tx or Rx	0: Tx, 1: Rx
Bit 1: Reduction during Tx	0: Not reduced, 1: Reduced
Bit 2: Batch transmission	0: Not used, 1: Used
Bit 3: Send later transmission	0: Not used, 1: Used
Bit 4: Transmission from	0: ADF, 1: Memory

Bits 5 to 7: Not used

47th byte - Not used

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

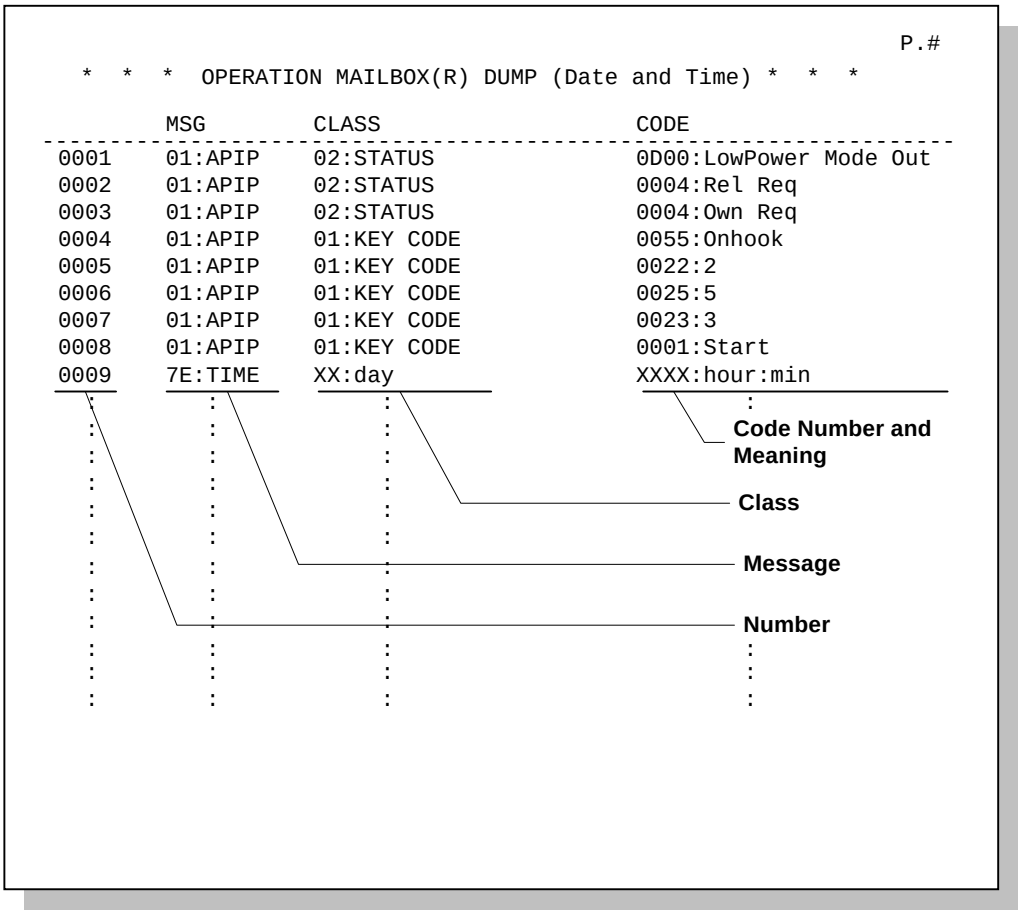
49th to 52nd byte - 1st error code and page number where the error occurred
- 49th byte - Page number where the error occurred (low - Hex)
- 50th byte - Page number where the error occurred (high - Hex)
- 51st byte - Error code (low - BCD)
- 52nd byte - Error code (high - BCD)

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

6. DETAILED SECTION DESCRIPTIONS

6.1 OPERATION DUMP LIST

The dump list contains a record of the actual operations performed by the operator (including keys that were pressed) as well as when these operations were performed. Refer to the sample below.



B404D500.WMF

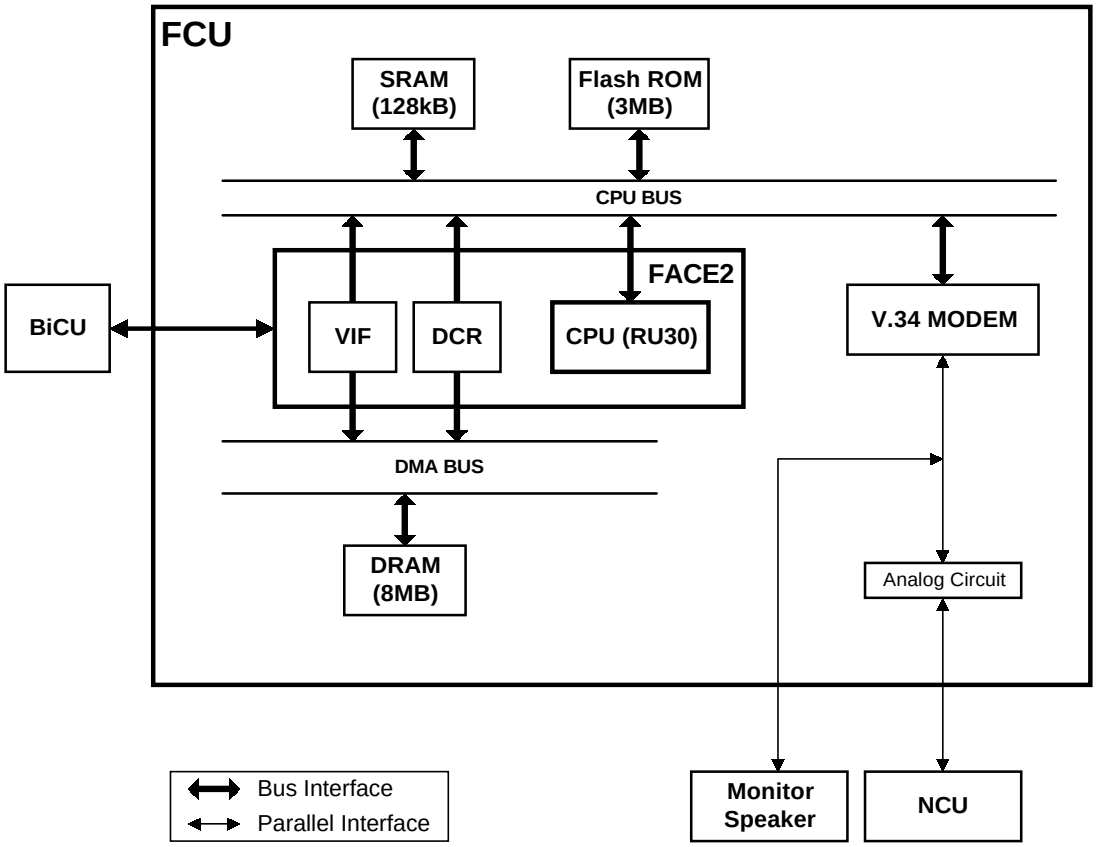
APIP indicates an operator action, which is subdivided into either KEY CODE (key operation) or STATUS (non-key operation). The operation itself is then described in the column to the far right. If the Start key was pressed, the following line starts with ‘TIME’, and the day and time of the operation are then shown in the middle and far right columns.

This feature was developed in order to provide an accurate record (evidence) of the actual operations performed by the user, which may be used to clear up cases where the machine had apparently performed a wrong operation even though the correct keys were pressed.

This list can be printed out with fax service mode 15: History (☛ 5. SERVICE TABLES).

6.2 PCBS

6.2.1 FCU



B404D535.WMF

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

FACE2

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

Modem (Rockwell R288F)

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

ROM

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

DRAM

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

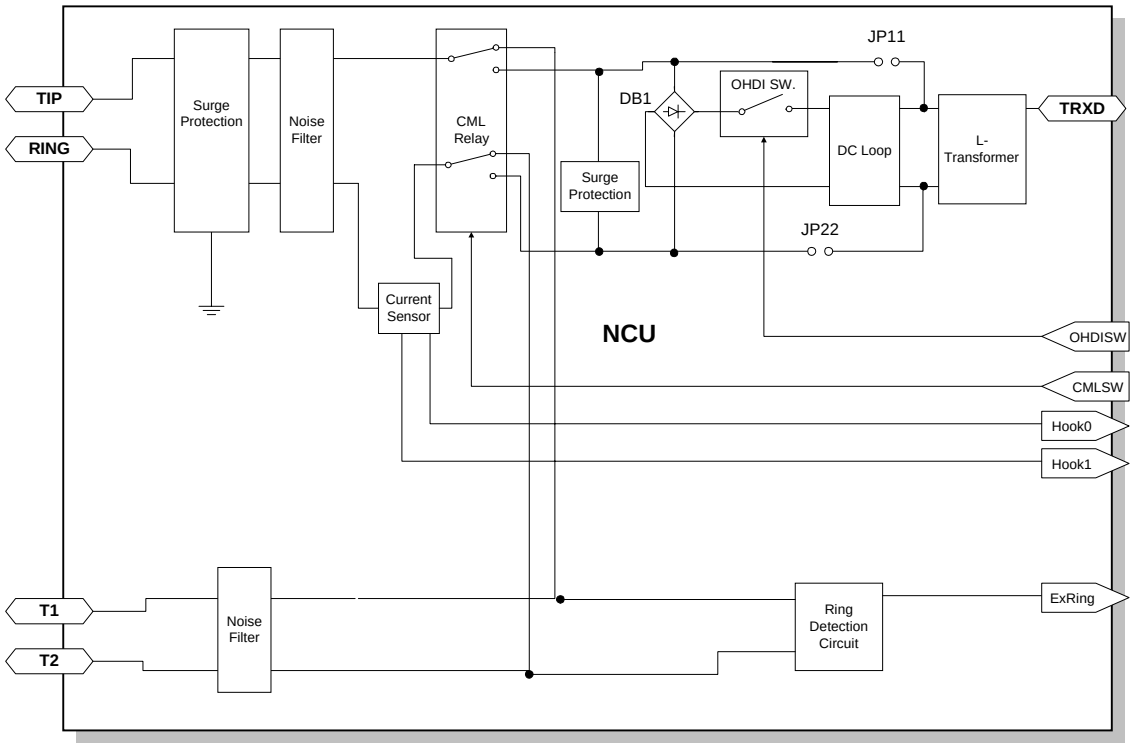
SRAM

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

Switches

Item	Description
TB1	Used to specify the country setting for Europe/Asia (see NCU Europe/Asia)
TB3	Switches the DRAM backup battery on/off

6.2.2 NCU (US)

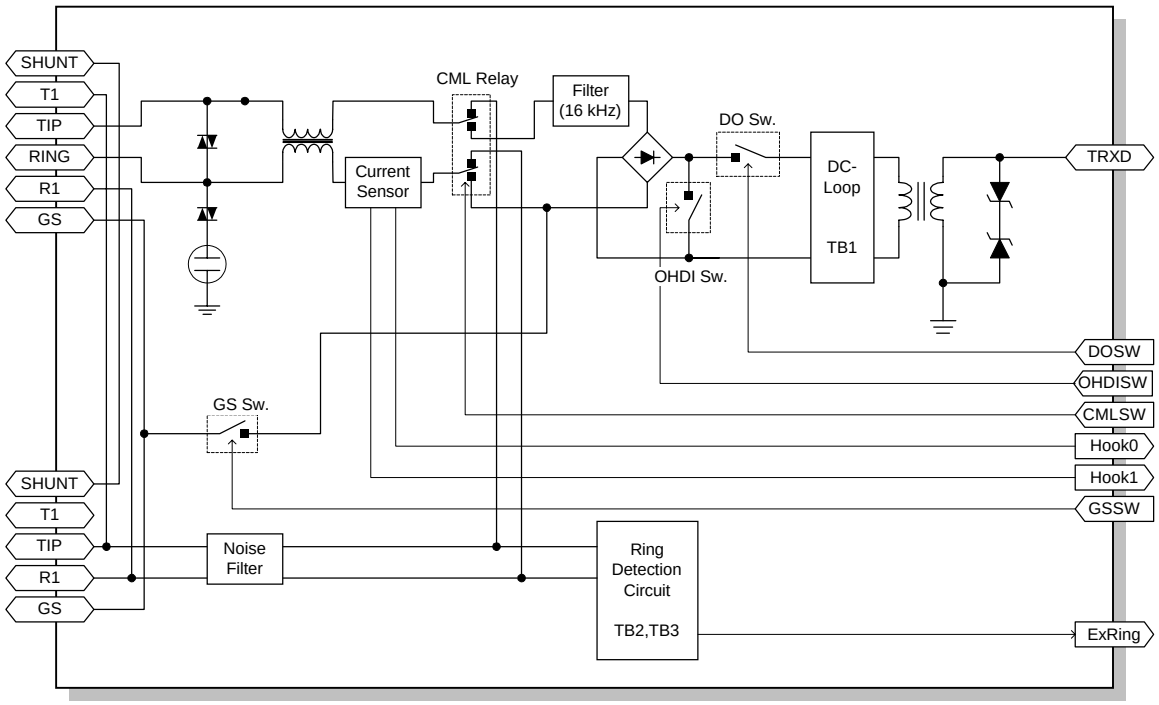


B404D536.WMF

Jumpers

Item	Description
JP11	These jumpers should be shorted when the machine is connected to a dry line.
JP22	
DB1	Also remove DB1 when the machine is connected to a dry line.

6.2.3 NCU (EUROPE/ASIA)



B404D537.WMF

Individual Switch Settings:

Country	FCU	NCU		
	TB1	TB1	TB2	TB3
CTR21, Israel	2-5	2-3	OFF	ON
Poland	2-5	2-3	ON	OFF
Australia	2-5	1-2	OFF	ON
New Zealand	2-5	1-2	ON	OFF
Malaysia, South Africa	3-4	1-2	OFF	ON
Asia and others	3-4	1-2	ON	OFF

NOTE: It is necessary to change the country code in both system switch 0F and NCU parameter CC.

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

SPECIFICATIONS

1. GENERAL SPECIFICATIONS

Type
Desktop type transceiver

Circuit
PSTN, PABX

Connection
Direct couple

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

Original Size (ADF)
Length: 128 - 1200 mm [5.0 – 47.2 ins]
Width: 105 - 297 mm [4.1 - 11.7 ins]

Scanning Method
Flat bed, with CCD

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

Resolutions
8 x 3.85 lines/mm
8 x 7.7 lines/mm
8 x 15.4 lines/mm
200 x 100 dpi
200 x 200 dpi

Memory Capacity

ECM: 128 Kbytes

SAF:
Standard: 2 Mbytes (160 pages)
Maximum: 4 Mbytes (by bit switch adjustment; fine mode becomes unavailable)

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

Compression
MH, MR, MMR
SAF storage for memory tx: MMR and/or raw data

Protocol
Group 3 with ECM

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

Data Rate (bps)
G3:
33600/31200/28800/26400/24000/21600/19200/16800/14400/12000/9600/7200/4800/2400, Automatic fallback

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

2. FEATURES

2.1 FEATURES LIST

KEY:
O = Used, X = Not Used

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

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

Communication Features – User Selectable	
90° Image Rotation before tx	O
Action as a transfer broadcaster	X
AI Redial (last ten numbers)	O
Answering machine interface	X
Authorized Reception	O
Auto Document	O
Automatic dialing (pulse or DTMF)	O

Communication Features – User Selectable	
Automatic Voice Message	X
Batch Transmission	O
Book Original tx	X
Broadcasting	O
Chain Dialing	O
Communication Record Display	O
Confidential ID Override	X
Confidential Reception	X
Confidential Transmission	X
Direct Fax Number Entry	O
Economy Transmission	X
Fax on demand	X
Forwarding	O
Free Polling	O
Groups (Standard: 9 groups)	O
Hold	X
ID Transmission	X
Immediate Redialing	O
Immediate Transmission	O
ISDN	X
Keystroke Programs	X
Memory transmission	O
Multi-step Transfer	X
Non-standard original size transmission	O
OMR	X
On Hook Dial	O
Ordering Toner	X
Page Count	O
Page separation mark	O
Parallel memory transmission	O
Partial Image Area Scanning	X
Personal Codes	O
Personal Codes with Conf. ID	X
Polling Reception	O
Polling Transmission	X
Polling tx file lifetime in the SAF	X
Quick Dial (Standard: 32 stations)	O
Reception modes (Fax, Tel)	O
Remote control features	X
Remote Transfer	X
Restricted Access	O

Communication Features – User Selectable	
Send Later	O
SEP/SUB/PWD/SID	O
Silent ringing detection	X
Specified Image area	X
Speed Dial (100 stations)	O
Stamp	O
Telephone Directory	O
Tonal Signal Transmission	O
Transfer Request	O
Transmission Deadline (TRD)	X
Turnaround Polling	X
Two in one	X
Voice Request (immed. tx only)	X

Communication Features - Service Selectable	
AI Short Protocol	O
Auto-reduction override option	O
Busy tone detection	O
Cable Equalizer	O
Closed Network	X
Continuous Polling Reception	X
Dedicated tx parameters	O
ECM	O
EFC	X
Inch-mm conversion before tx	O
Length Reduction	O
Page retransmission times	O
Protection against wrong connection	O
Short Preamble	X

Other User Features	
Area code prefix	X
Center mark	O
Checkered mark	O
Clearing a memory file	O
Clearing a polling file	X
Clock	O
Confidential ID	X
Counters	O
Daylight Saving Time	O
Destination Check	X
Energy Saver	O

Other User Features	
File Retention Time	X
File Retransmission	X
Function Programs (F1 – F3)	O
Hard Disk Filing System	X
ID Code	O
Label Insertion ("To xxx")	O
Language Selection	O
Memory Lock	X
Multi Sort Document Reception	X
Own telephone number	O
Print density control	X
RDS on/off	O
Reception Mode Switching Timer	X
Reception time printing	O
Remaining memory indicator	O
Reverse Order Printing	X
RTI, TTI, CSI	O
Service Report Transmission	O
Speaker volume control	O
Specified Cassette Selection	X
Toner Saving Mode	X
TTI on/off	O
User Function Keys (3 keys)	O
User Parameters	O
Wild Cards	O

Reports - Automatic	
Charge Control Report	X
Communication Failure Report	O
Confidential File Report	X
Error Report	O
Fax On Demand Report	X
File Clear Report	X
File Reserve Report	O
Journal	O
Polling Result Report	O
Power Failure Report	O
Transfer Result Report	X
Transmission Result Report	O

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

Service Mode Features	
Back-to-back test	X
Bit switch programming	O
Cable equalizer	O
Comm. parameter display	O
Counter check	SP mode
Country code	O
DTMF tone test	O
Echo countermeasure	O
Effective term of service calls	O
Error code display	O
Excessive jam alarm	O
File Transfer (all files)	O

Service Mode Features	
LCD contrast adjustment	O
Line error mark	O
Memory file printout (all files)	O
Modem Software Download	X
Modem test (including V.34/V.8)	O
NCU parameters	O
Periodic service call	O
PM Call	X
Printing all communication records kept in memory	O
Protocol dump list	O
RAM display/rewrite	O
RAM dump	O
RAM test	O
RDS - RAM read/write - Dial data transfer (Quick/Speed) - Software transfer	 O O O
Ringer test	O
ROM version display (FCU)	SP mode
Serial number	O
Service monitor report	O
Service station number	O
Software Download	O
SRAM data backup/restore	O
System parameter list	O
Technical data on the Journal	O

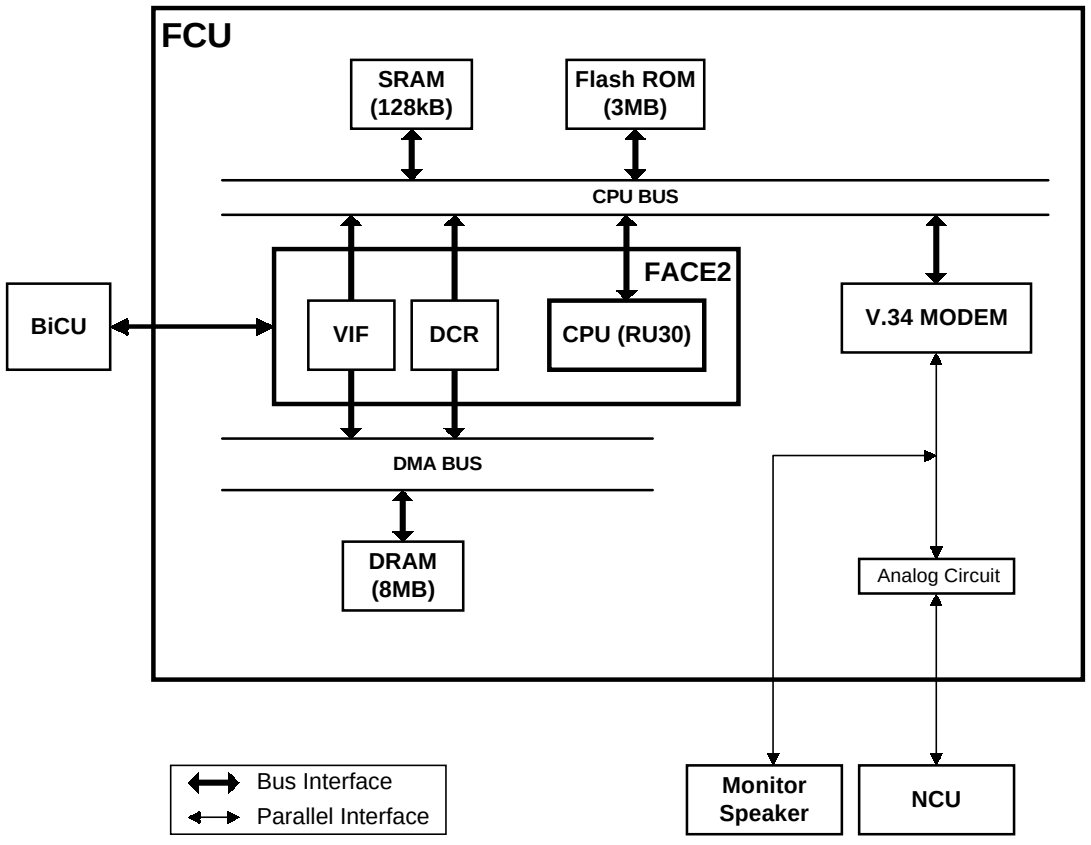
2.2 CAPABILITIES OF PROGRAMMABLE ITEMS

The following table shows the capabilities of each programmable items.

Item	Numbers
Maximum number of memory files	200
Maximum number of destinations per file	100
Maximum number of pages overall	400
Number of Quick Dials	32
Number of Speed Dials	100
Number of Groups	9
Maximum number of destinations dialed from the ten-key pad overall	100
Maximum number of communication records for the Journal stored in the memory	100
Maximum number of user function keys	3
Maximum number of personal codes	20

3. OVERALL MACHINE CONTROL

3.1 SYSTEM CONTROL



B404V500.WMF

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

3.2 POWER DISTRIBUTION

The FCU power is supplied from the PSU directly (+5V, -12V, +24V).

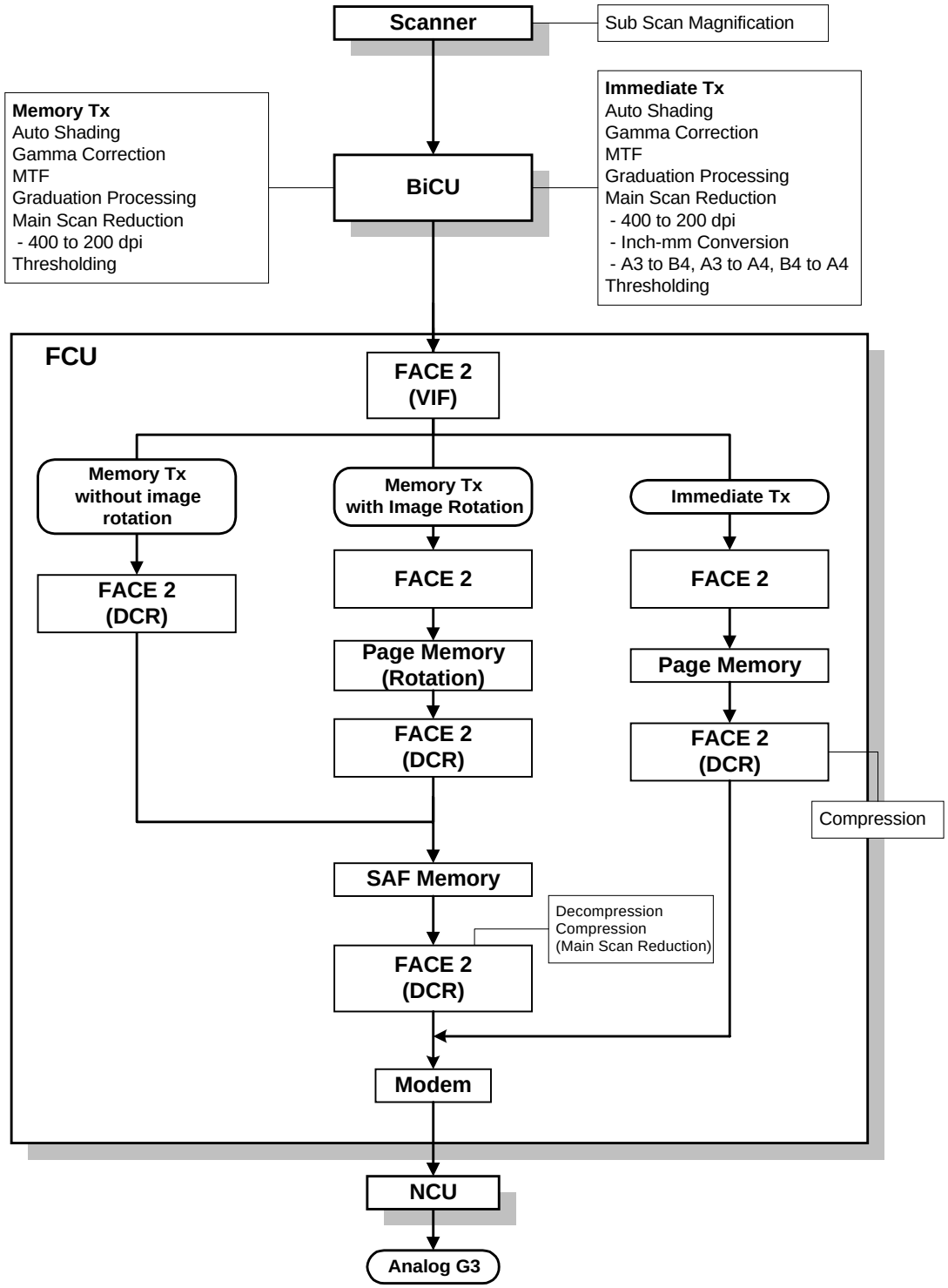
3.3 MEMORY BACK-UP

The system parameters and programmed items in the SRAM on the FCU is 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 is backed up by rechargeable batteries for 1 hour.

4. VIDEO DATA PATH

4.1 TRANSMISSION



B404V501.WMF

Spec.

Memory Transmission and Parallel Memory Transmission

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

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

Then, the FCU converts the data to mm format, and compresses the data in MMR or raw format to store it in the SAF memory. If image rotation 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. The NCU transmits the data to the line.

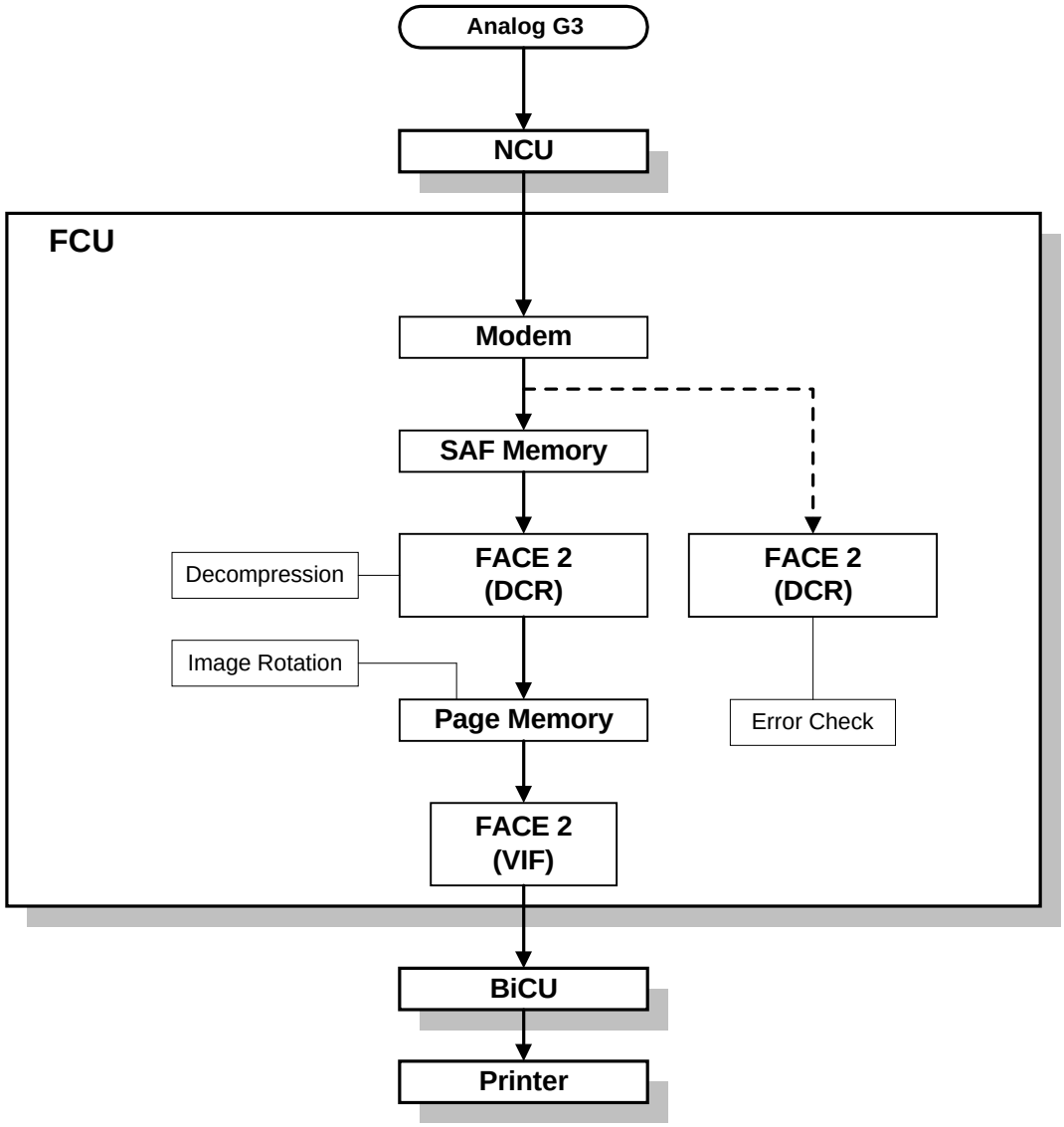
Immediate Transmission

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

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

Then the FCU stores the data in page memory, and compresses the data for transmission. The NCU transmits the data to the line.

4.2 RECEPTION

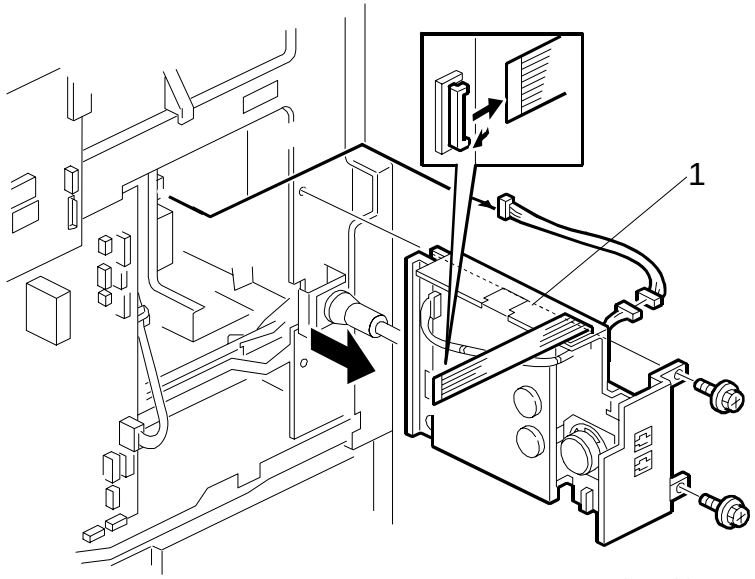


B404V502.WMF

First, the FCU stores the data from an analog line to the SAF memory. (The data goes in parallel to the FACE2, 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 then transferred to the BiCU.

5. MACHINE CONFIGURATION



B404R500.WMF

Item	Machine Code	No.	Remarks
Fax Option Type 1018	B404	1	
Handset Type 1018	B433	-	