RICOH

FACSIMILE

RICOH FAX77/80/85

FIELD SERVICE MANUAL

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Appendix A. Glossary

SECTION 1

INSTALLATION

SECTION 1. INSTALLATION

1-1. Specifications

Type	Desktop transceiver
Circuit	PSTN, PABX
Connection	Direct couple
Document size	Length: 105 - 600 mm [4.13 - 23.6 ins] Up to 14 m [46 ft] after bit switch adjustment Width: 148 - 216 mm [5.8 - 8.5 ins] Thickness: 0.05 to 0.15 mm [2 to 6 mils]
Document feed	Automatic feed, face down
ADF capacity	30 (using 55 kg paper)
Scanning method	Flat bed, with CCD
Maximum scan width	216 +/- 1 mm [8.5 +/- 0.04 ins]
Scan resolution	Main scan: 8 dots/mm [203 dpi] Sub scan: Standard - 3.85 lines/mm [98 lpi] Detail - 7.7 lines/mm [196 lpi] Fine - 15.4 lines/mm [392 lpi]

Memory capacity	ECM: FAX77 - Nothing FAX80/85 - 128 kbytes (double buffer) SAF: FAX77 - Nothing FAX80 - 128 kbytes, shared with ECM FAX85 - 0.5 Mbyte (Optional: FAX85 - extra 0.5 M SAF)
Compression	FAX77 - MH, MR FAX80/85 - MH, MR, EFC, MMR (only for storage in SAF memory)
Modulation	V.29, V.27ter, V.21, AM-PM-VSB, QAM
Protocol	Groups 2 and 3; autocompatibility Group 3 with ECM also available (FAX80/85 only)
Data rate	9600/7200/4800/2400 bps; automatic fallback
Transmission time	FAX77 - 20 s (G3 standard) FAX80 -14 s (G3 ECM) FAX85 - 13 s (G3 ECM with memory) for a CCITT #1 test document (Slerex letter) using standard resolution
Printing system	Thermal printing, automatic cutter
Paper size	216 mm (A4) x 100 m [8.5 ins x 328 ft]
Maximum printout width	210 mm [8.3 ins]

Maximum printer resolution	Main scan - 8 dots/mm [203 lpi] Sub scan - 15.4 lines/mm [392 lpi]		
Power supply	220 - 240V; 50 Hz		
Power consumption (W) (excluding options)		CCITT #1 chart	50% black chart
	Standby:	23 +/- 5 W	23 +/- 5 W
	Transmit:	40 +/- 5 W	51 +/- 5 W
	Receive:	37 +/- 5 W	56 +/- 5 W
	Copying:	48 +/- 7 W	140 +/- 7 W
Operating environment	Temperature: 17 - 28 degC [63 - 82 degF] Humidity: 30 - 85 %Rh		
Dimensions (W x D x H)	325 x 388 x 174 (mm) 12.8 x 15.3 x 6.9 (inches) Excluding trays, sub document table, and options		
Weight	9 kg [20 lbs]		

1-2. Features

Equipment	Machine			Default		
	FAX77	FAX80	FAX85	FAX77	FAX80	FAX85
Built-in handset	x	x	x			
Connection for external tel.	o	o	o			
Telephone set	x	x	x		KEY	
Cabinet	x	x	x		o = Used	
ADF (capacity using 55 kg paper)	30	30	30		x = Not used	
Manual feed for thick originals	o	o	o			
Monitor speaker	o	o	o			
Microphone	x	o	o			
Speakerphone	x	x	x			
Stamp	x	x	x			
Remaining memory indicator	x	x	o			
Cutter	o	o	o			
Answering machine connection	x	x	x			
Two printer rolls	x	x	x			

Video Processing Features	Machine			Default		
	FAX77	FAX80	FAX85	FAX77	FAX80	FAX85
Contrast (Light, Normal, Dark)	o	o	o			
Resolution (Std, Dtl, Fine)	o	o	o			
Halftone	o	o	o			
MTF (selectable by service)	o	o	o	On	On	On
Reduction	x	x	x			
Smoothing - 8 x 3.85 to 8 x 7.7	o	o	o			
- 8 x 7.7 to 8 x 15.4	o	o	o	Not used in W. Germany		

Note: 8 x 7.7 to 8 x 15.4 smoothing is only done if the tx side scanned in 8 x 15.4 resolution and informed this in the set-up protocol.

Communication Features - Auto	Machine			Default		
	FAX77	FAX80	FAX85	FAX77	FAX80	FAX85
Scanning while receiving	x	x	x			
Redialling - basic transmission	o	o	o	Two redials		
- memory mode	x	o	o	Four redials		
G2, G3 compatibility	o	o	o			
Automatic fallback	o	o	o			
Confidential reception	x	x	o	Not used in W. Germany		
Substitute reception	x	o	o	Not used in W. Germany		
Page retransmission	x	o	o			

Communication Features - User Selectable	Machine FAX77	FAX80	FAX85	Default FAX77	FAX80	FAX85
Auto/Manual reception	o	o	o	Auto	Auto	Auto
Auto dialling (pulse or DTMF)	o	o	o			
On hook dial	x	x	x			
Speed Dial	30	100	100			
Quick Dial Keys	15	30	30			
Keystroke programs (See Note 1)	15	30	30			
Groups	7	7	7			
- max no of addresses/group	100	100	100			
- max no of full tel nos in all groups	10	10	10			
Alternative destination	o	o	o			
Department code	o	o	o			
Batch numbering	o	o	o			
Turnaround polling	o	o	o			
Immediate redial (last 10 numbers)	o	o	o			
Auto-answer delay time	x	x	x			
Hold	x	x	x			
Voice Request	o	o	o			
ECM	x	o	o	-	On	On
Automatic Voice Message	x	o	o			

Communication Features - Service Selectable	Machine FAX77	FAX80	FAX85	Default FAX77	FAX80	FAX85	
Page retransmission	x	o	o				
Closed network	o	o	o	Off	Off	Off	
MV1200 compatibility	x	o	o	-	Off	Off	
Short preamble	o	o	o	Off	Off	Off	
Well log (tx and rx)	o	o	o	-	Tx - No Rx - Yes		
Protection against bad connections	o	o	o	x	x	x	
EFC	x	o	o	-	o	o	(W. Ger = X)
PSTN access through PBX	o	o	o	x	x	x	
Polling ID code security	x	x	x				
EFC disabling option	x	x	x				
Auto-reduction override option	x	x	x				
Resol'n stepdown override option (W. Germany)	o	o	o	On	On	On	
Conf'l password override option	x	x	o	Not used in W. Germany			

Special Communication Functions	Machine FAX77	FAX80	FAX85	Default FAX77	FAX80	FAX85
Transmission from memory	x	o	o			
- immediate	x	o	o			
- send later	x	x	o			
- max no of addresses/file	-	1	100			
- max no of files	-	1	100			
- max no of addresses over all files	-	1	300	See Note 2 (p. 1-12).		
Send Later (one message stored in ADF)	o	o	o			

Special Communication Features (Continued)	Machine FAX77	FAX80	FAX85	Default FAX77	FAX80	FAX85
Confidential Transmission	o	o	o	Not used in W. Germany		
- immediate	o	o	o			
- send later	x	x	x			
- broadcasting	x	x	x			
- remote password override	o	o	o			
Transfer Request	o	o	o	Not used in W. Germany		
- max no of broadcasters	1	1	1			
- max no of end receivers	30	30	30			
- time designatable	x	x	x			
Action as a Transfer Broadcaster	x	x	x			
Polling Transmission	o	o	o			
- free/secured option	o	o	o			
- stored ID override	o	o	o			
- from memory	x	x	x			
Polling Reception	o	o	o			
- free/secured option	o	o	o			
- stored ID override	o	o	o			
- poll later: max no of files	8	8	8			
: max addresses/file	100	100	100			
: max addresses overall	300	300	300	See Note 2 (p 1-12).		
Batch transmission	x	x	x			
Forwarding	x	x	o			
Authorized reception	o	o	o			
Notify	x	x	x			

Other Features	Machine			Default			
	FAX77	FAX80	FAX85	FAX77	FAX80	FAX85	
Multicopy: max 9 copies/original	x	x	o	-	-	x	
Copy mode	o	o	o				
Printing out a memory file	x	x	o				

Reports - Automatic	Machine			Default			
	FAX77	FAX80	FAX85	FAX77	FAX80	FAX85	
Jorrnal (optional)	o	o	o	On	On	On	
Transmission Report (optional)	o	o	o	On	On	On	(Off in Asia)
Error Report (optioal)	o	o	o	On	On	On	
Transfer Result Report	o	o	o				
Polling File List (optional)	o	o	o	On	On	On	
New File Report (optional)	x	x	o	-	-	On	
Power Failure Report	x	o	o				
Memory Trans Report (optional)	x	o	o	-	On	On	
Telephone List (after programming)	x	x	x				

Reports - User	Machine			Default		
	FAX77	FAX80	FAX85	FAX77	FAX80	FAX85
Journal	o	o	o			
Telephone List (includes Group List)	o	o	o			
Polling File List	o	o	o			
SAF File List	x	x	o			
Authorized Reception List	o	o	o			
Program List	o	o	o			

Reports - Service	Machine			Default		
	FAX77	FAX80	FAX85	FAX77	FAX80	FAX85
Auto Service Call	x	x	x			
System Report	o	o	o			
Memory Dump	o	o	o			
Servie Report	o	o	o			

Programming - User	Machine			Default		
	FAX77	FAX80	FAX85	FAX77	FAX80	FAX85
Clock	o	o	o			
Auto/Manual Receive setting	o	o	o	Auto	Auto	Auto
Tx/Rx page, sheet feed counter display	o	o	o			
Batch number, department code on/off	o	o	o	On	On	On
Speaker volume adjustment	o	o	o			
Voice Message recording, playback, on/off	x	o	o	-	Off	Off
Transmission Report on/off	o	o	o	On	On	On (Off in Asia)
Quick Dial/Group programming	o	o	o			
Polling ID code	o	o	o			
RTI/TTI/CSI	o	o	o	Italy/W. Ger.: CSI = Service mode		
Direct entry of labels and identifiers	o	o	o			
Polling file clearance	o	o	o			
Memory file clearance	x	x	o			
Own telephone number	o	o	o			
Telephone line type (Italy/W. Ger./Univ: Service)	o	o	o	Pulse (Except Asia)		
TTI on/off	o	o	o	On	On	On
ECM on/off	x	o	o	-	On	On
Password	x	x	o			
Addresses for Authorized Reception, on/off	o	o	o	Off	Off	Off
Forwarding on/off, tel. number	x	x	o	-	-	Off
Rx mode switching timer	o	o	o			
Substitute reception on/off (not used in W. Ger.)	x	o	x	-	Off	-
Keystroke programs	o	o	o			

Service Mode and System Tests	Machine			Default		
	FAX77	FAX80	FAX85	FAX77	FAX80	FAX85
LCD brightness (by RAM address)	o	o	o			
Dedicated Tx Parameters	o	o	o			
Printout of all memory files	x	x	o			
Bit switches	o	o	o			
RAM rewriting - to local fax only	o	o	o			
Error code display	o	o	o			
Thermal head parameters	o	o	o			
Serial number programming	o	o	o			
NCU parameters	o	o	o			
Modem/DTMF tone tests	o	o	o			
Operation panel test	o	o	o			
Xenon lamp lighting	o	o	o			
Sensor initialization	o	o	o			
Back-to-back test	o	o	o			
Buzzer test	o	o	o			
Line condition check	o	o	o			
Printer test patterns	o	o	o			
Protocol dump list	o	o	o			
Maximum address limitation	o	o	o			
ADF/printer mechanism tests	o	o	o			

Notes

1. The keystroke programs are stored in Quick Dial Keys, so the no. of programmed Quick Dial Keys plus the no. of programs cannot exceed 30.
2. The no. of addresses programmed for polling rx and for memory tx, when combined, cannot exceed 300.

1-3. Installation Requirements

1-3-1. Environment

Temperature range: 17 to 28 degrees C [63 to 82 degrees F]

Humidity range: 30 to 85 %Rh - no condensation

Ventilation: Room air should turn over at least three times per hour

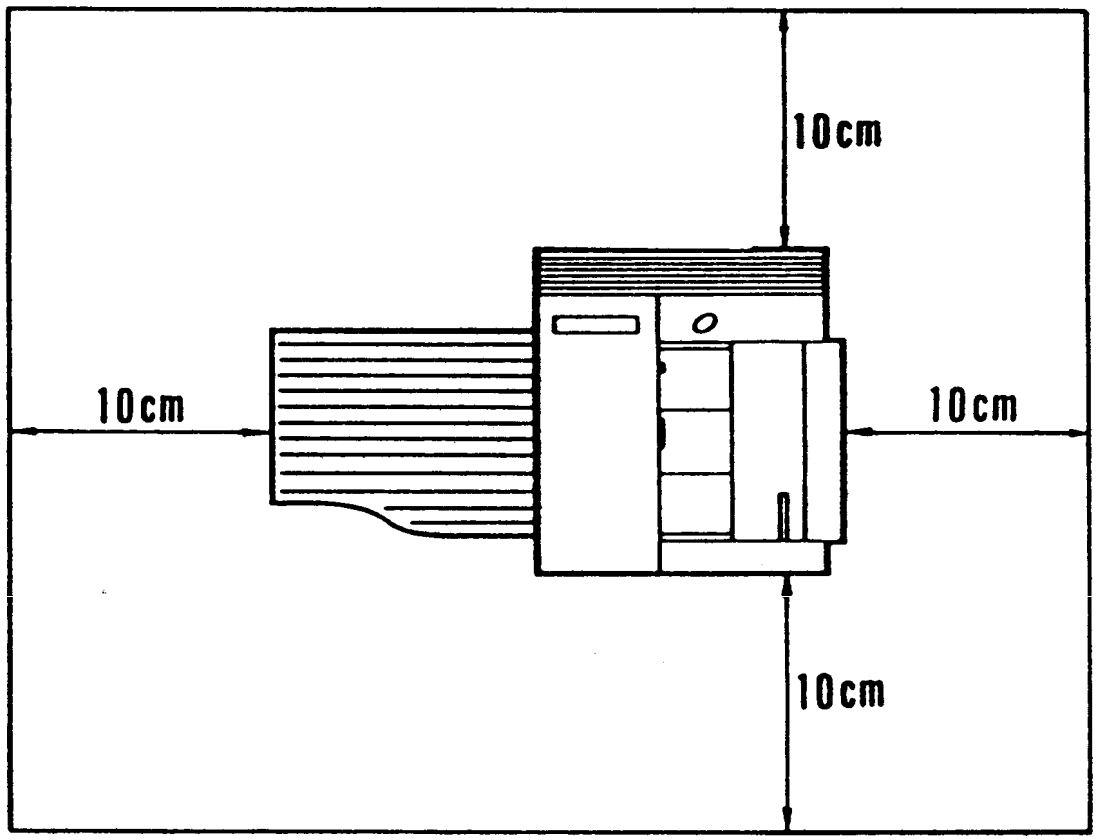
Ambient dust: Less than 0.15 mg/m^3 [4 x 10^{-3} oz/yd^3]

Avoid placing the machine where it will be exposed to corrosive gases.9

Place the machine on a strong and level base.

Place the machine where it will be:
- Not subject to direct sunlight
- Not subject to strong vibration
- Condensation free
- Away from other electronic equipment, to avoid interference
- Away from heaters and air conditioners, to avoid sudden temperature changes.

1-3-2. Minimum Space Requirements



1-3-3. Power Requirements

Voltage

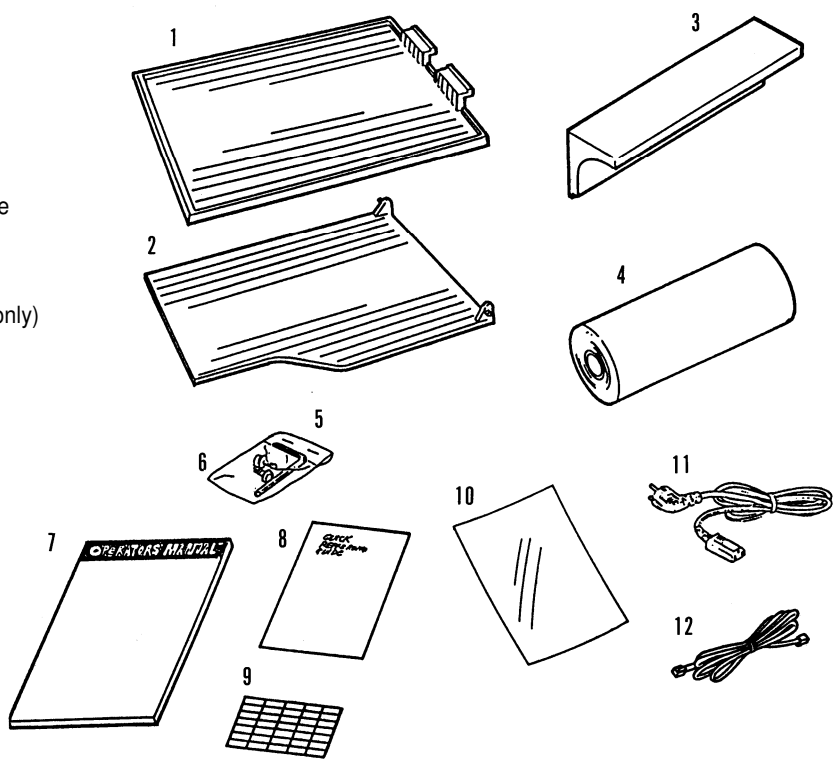
- 220 - 240 V, 50 Hz, capable of supplying more than 10 A.

Power Outlet

- Must be properly grounded
- If possible, do not connect other equipment to the same outlet.
- Insert the plug securely.

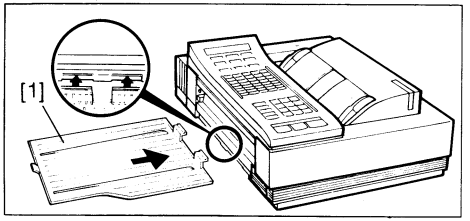
1-4. Accessory Check List

1. Copy Tray
2. Document Tray
3. Sub Document Table
4. Thermal Paper (30 m)
5. Allen Key
6. Allen Screws (2 pcs)
7. Operation Manual
8. Quick Reference Guide
9. Quick Dial Labels
10. NECR
11. Power Cord
12. Telephone Line (U.K. only)

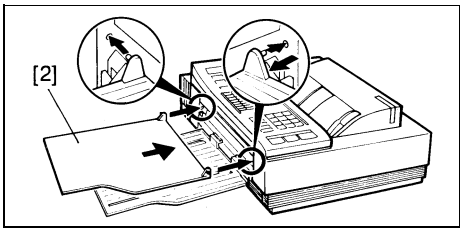


1-5. Installation Procedure

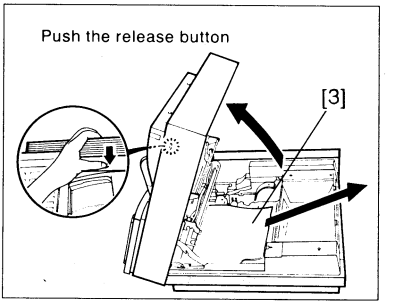
1. Attach the copy tray [1].

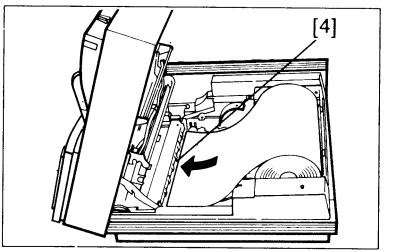


2. Attach the document tray [2].



3. Install the thermal paper roll.
   i) Open the printer.
   ii) Remove the protective paper [3] from the thermal head.
   iii) Install the roll.
   iv) Pull out the leading edge about 8 ins and feed it between the guid plates [4] under the green line.



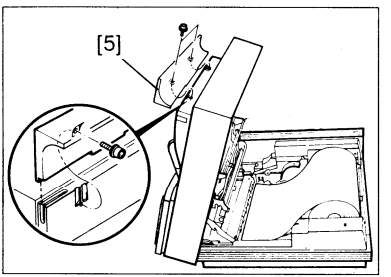


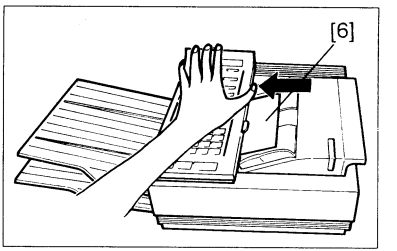
4. Attach the sub document tray [5] (2 screws).

5. Close the printer.

6. Open the scanner and remove the protective sheet of paper [6] from the ADF.

7. Do the quality checks in section 5-1.





1-6. Initial Programming

1. Date and Time - Function 50

    1. Make sure that the machine is in standby mode.
    2. Press Function, enter 50, then press Yes.
    3. Type the date at the keypad.
    4. Change the month.
       Example: Change JAN to MAY.
       Press # four times. Press * to come back if you go too far.

       If the month is correct, press Clear to move the cursor.
    5. Type in the date and time at the keypad. If the display is correct, press Function.

2. Telephone Line Type - Function 81

    This must match the dialling method accepted by the exchange, or the machine will not be able to dial.

    1. Make sure that the unit is in standby mode.
       Note: German, Italian, and Universal versions - Enter the service mode. Press 1, 2, 3, *, 0, and # simultaneously.
    2. Press Function, enter 81, then press Yes. The top line of the display shows the present setting.
    3. To select tone dialling, press 1. To select pulse dialling, press 2.
    4. Press Function if the setting is correct.

    Note: If using pulse dial and the local exchange cannot handle 20 pps dialling, set bit 7 of bit switch 10 to 1 (see page 2-17 for how to program bit switches).

3. RTI, TTI, and CSI - Functions 63, 64, and 65

These three labels identify your terminal at the other end.

RTI (Remote Terminal Identification): This is displayed on the operation panel at the other end during communication.
TTI (Transmit Terminal Identification): This printed at the other end on the top of each page that you send.
CSI (Called Subscriber Identification): This is used instead of the RTI during communication with another maker's machine.

- RTI (Function 63) -

1. Make sure that the machine is in standby mode.
2. Press Function, enter 63, and press Yes.
3. Type in the RTI:

- FAX77 -

Letters - Quick Dial keys and Speed Dial key
Each key can be used to enter one of two characters, using Speed Dial key as shift key.
Exampe : 'P' - Press Speed Dial then Press Quick Dial 01
See the Table of Letters with Quick Dial keys on the next page.
Numbers - Ten-key pad
Space - Pause/Redial key
Symbols and punctuation - Press # consecutively until the required symbol appears. Press * if you go past the required symbol. Then press Clear to move the cursor.

You cannot move the cursor backwards.

- FAX80/85 -

Letters - Quick Dial keys Numbers - Ten-key pad

'.' (Period) - Quick Dial 27 '-' - Quick Dial 28

Space - Quick Dial 29

Symbols and punctuation - Press # consecutively until the required symbol appears. Press * if you go past the required symbol. Then press Clear to move the cursor.

You cannot move the cursor backwards.

Note: The RTI can have up to 20 characters.

4. Press Function when it is finished.

- Table of Letter with Quick Dial keys -

key	Normal	Shift	Key	Normal	Shift
01	A	P	09	I	X
02	B	Q	10	J	Y
03	C	R	11	K	Z
04	D	S	12	L	.
05	E	T	13	M	-
06	F	U	14	N	,
07	G	V	15	O	&
08	H	W			

- TTI (Function 64) -

1. Make sure that the machine is in standby mode.
2. Press Function, enter 64, and press Yes.
3. Type in the TTI in the same way as the RTI.

   Note: The TTI can have up to 32 characters.

- CSI (Function 65) -

1. Make sure that the machine is in standby mode.
   Note: German and Italian versions - Enter the service mode. Press 1, 2, 3, *, 0, and # together.
2. Press Function, enter 65, and press Yes.
3. Type in the fax terminal's telephone number at the ten-key pad.

   Note: The CSI can have up to 20 characters (numbers and spaces only).
4. At the end of the CSI, press #, then Yes, then Function.

4. Polling ID Code - Function 62

This is necessary for closed network, secured polling, and transfer request. All terminals in these types of communication must have the same ID code or the communication will fail.

1. Make sure that the machine is in standby mode.
2. Press Function, enter 62, and press Yes.
3. Type in the polling ID code. Do not use 0000 or FFFF.
4. Press Yes, then Function.

5. Fax Terminal's Telephone Number - Function 80

This must be programmed for Transfer Request to work.

1. Make sure that the machine is in standby mode.
2. Press Function, enter 80, and press Yes.
3. Type in the fax terminal's telephone number at the keypad in the following order.
   i) International dial access code
   ii) Country code
   iii) Area code
   iv) Press Pause/Redial
   v) Telephone number

   Press No if you made a mistake.
4. To store, press Yes, then Function.

6. Password - Function 84

In the FAX85, this password is used to print confidential messages.

1. Make sure that the machine is in standby mode.
2. Press Function, enter 84, and press Yes.
3. Press # immediately.
4. Enter the present password (for a new machine, type 0000).
   Press No if you make a mistake.
5. Press Yes.
6. Enter the new password, then press Yes.

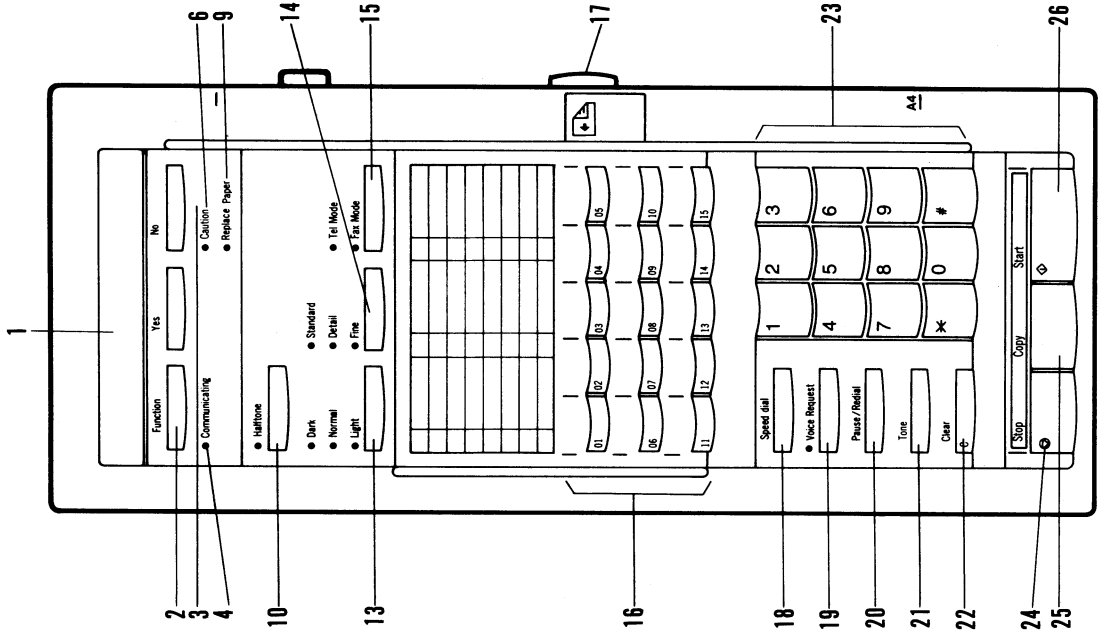
SECTION 2

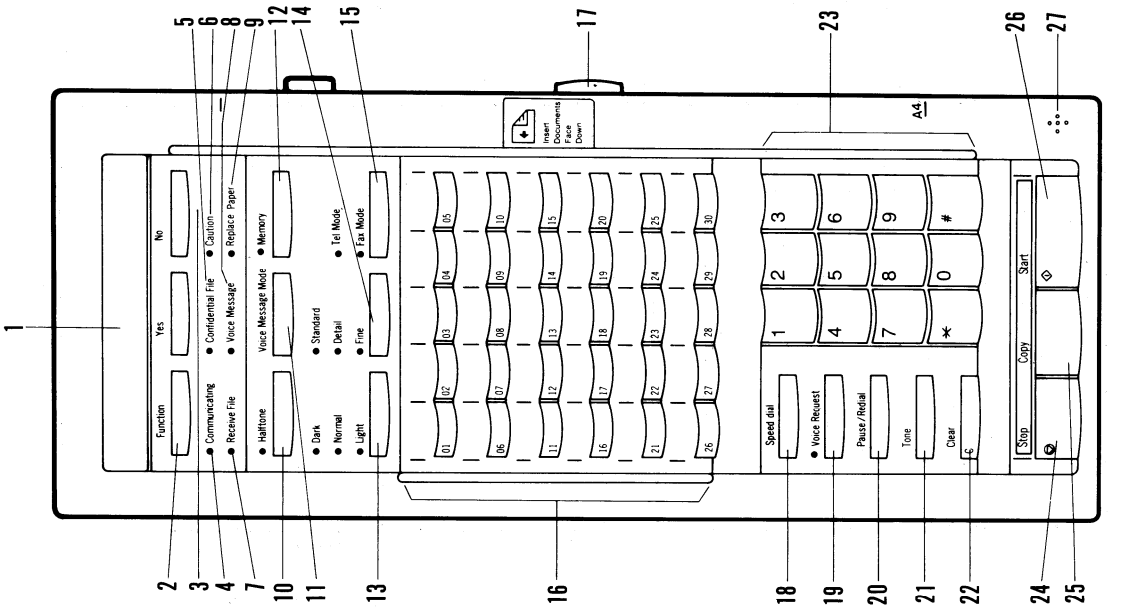
PROGRAMMING, TESTING, AND PRINTING REPORTS

SECTION 2. PROGRAMMING, TESTING, AND PRINTING REPORTS

2-1. Operation Panel

- FAX77 -




Function
Yes
No
Communicating
Confidential File
Caution
Receive File
Voice Message
Replace Paper
Halftone
Voice Message Mode
Memory
Dark
Standard
Tel Mode
Normal
Detail
Fax Mode
Light
Fine
Insert Documents Face Down
A4
Speed dial
Voice Request
Pause/Redial
Tone
Clear
Stop
Copy
Start
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27

1. Character Display
Displays prompts, warnings, and selected modes.

2. Function Key
Press this key to use one of the functions on the function list, and to return the machine to standby while or after using a function.

3. Yes/No Keys
Use these to answer questions on the character display.

4. Communicating Indicator
Lights when a message is being transmitted or received.

5. Confidential File Indicator (FAX85 only)
Lights when a confidential message has been received and stored into memory.

6. Caution Indicator
Lights when the machine has a problem. Seethe character display for more information.

7. Receive File Indicator (FAX80/85 only)
Lights when an incoming message was received into memory because the printer was jammed or out of paper.

8. Voice Message Indicator (FAX80/85 only)
This is lit when voice message has been switched on.

9. Replace Paper Indicator
Blinks when the paper roll is almost empty and remains lit when it is empty.

10. Halftone Indicator and Key
If you are transmitting a photograph, press this key to light the Halftone indicator.

11. Voice Message Mode Key (FAX80/85 only)
Press this key when you want to program, play back, or switch voice message on/off.

12. Memory Indicator and Key (FAX80/85 only)
Press the key when you want to make a memory transmission.

13. Contrast Indicators and Key
The lamp that is lit indicates the current setting. Press the key if you want to change the setting.

14. Resolution Indicators and Key
The lamp that is lit indicates the current setting. Press the key if you want to change the setting.

15. Reception Mode Indicators and Key
The indicator that is lit shows which mode has been selected. Press the key to change the mode.

16. Quick Dial Keys
You can program each of these keys to dial a number, or enter a set of numbers and features, with just one touch. You can also use these keys to input and edit labels such as the RTI.

17. Manual Document Feed Button
If you wish to feed thinner or thicker documents than usual, press this button while feeding in the document.

18. Speed Dial Key
Press this key to change the mode of the ten key pad and use a Speed Dial Code.

19. Voice Request Indicator and Key
Press this key during communication if you want to talk to the other end. If On Hook Dial is enabled by bit switch, press this key to use the On Hook Dial Feature.

20. Pause/Redial Key
When entering a telephone number at the ten key pad, press this key when you need to enter a pause. Also, press this key when you wish to redial one of the last ten numbers that were dialled.

21. Tone Key
Use this key to gain access to remote facilities, such as banking services.

22. Clear Key
This is used during programming to shift the cursor or to clear the last character entered, depending on the mode in use.

23. Ten Key Pad
Acts as a telephone ten-key pad. Also used for entering other numbers, such as Speed Dial Codes.

24. Stop Key
Press to stop the machine during communication and return it to standby.

25. Copy Key
Press to copy the document that is now in the feeder.

26. Start Key
Press to start transmission

27. Microphone (FAX80/85 only)
Speak into this microphone when you record a voice message.

2-2. User Level Programming

1. Function List

To select a function, press the Function key, then enter the number at the ten key pad, then press Yes.

No	Function	Details
50	Clock adjustment	See page 1-19 for full details.
51	Tx/Rx page counter	Tx/Rx pages only. Press Function after viewing.
52	Scan/Print page counter	Includes pages scanned/printed in copy mode. Press Function after viewing.
53	Page count on/off	Turns on/off the PAGES:00 KPAD/N prompt. Press 1 to turn it on, or 2 to turn it off.
54	Department code on/off	Turns on/off the DEPT CODE0000 KPAD/N prompt. Press 1 to turn it on, or 2 to turn it off.
55	Volume adjustment	Adjusts monitors for on hook dial, transmission, and reception. Press # to raise the volume, * to lower, and Yes when it is correct.
56	Transmission report on/off	Press 1 to turn it on, or 2 to turn it off.

No	Function	Details
57	Authorized reception on/off	Authorized reception restricts the machines that can send fax messages to this machine. The acceptable senders are programmed using Function 85. This is a good way to prevent junk fax mail. Press 1 to turn it on, or 2 to turn it off.
58	Forwarding on/off (FAX85 only)	Forwarding sends any received messages (except substitute or confidential receptions) on to another terminal. Press 1 to turn it on, or 2 to turn it off.
59	Substitute reception on/off (FAX80 only)	If your printer is out of paper or jammed and you are expecting a message longer than about 9 pages, you can turn off substitute reception and ask the other end to resend the message. Press 1 to turn it on, or 2 to turn it off. If it is switched on, ECM is automatically switched off.
60	Programming Quick Dial and Speed Dial	Press the key or enter the code that you want to program. Then enter the number, then press Yes. Each Quick Dial Key can have either a) a remote fax number and a remote telephone number b) a keystroke program and a remote telephone number. Each Quick Dial Key can also have a label.
61	Programming Group Dial	Enter the Group number that you want to program. Give it a label. Then store the required numbers in the group. (To store a Speed Dial Code, press Speed Dial then enter the code, then press Yes. To store a Quick Dial Key, press the key then Yes.)

No	Function	Details
62	Programming the Polling ID	See page 1-21 for details.
63	Programming the RTI	See page 1-20 for details.
64	Programming the TTI	See page 1-20 for details.
65	Programming the CSI	See page 1-21 for details. In Italy and W. Germany, this is a service function.
66	Clearing polling files	Enter the file number. Then press Clear.
67	Clearing memory files (FAX85 only)	Enter the file number. Then press Clear.
68	Reception mode switching timer	This is a timer that automatically switches the machine between Auto and Manual Receive modes For each day of the week, two timers can be programmed (for example, from Auto to Manual at 8 am, and back to Auto at 5 pm). Press # until the required day is displayed. To set the timers, press Clear to move the cursor, type in the time at the ten key pad, and press # to change PM to AM or vice versa. You can also enable/disable the timer with function 68.
69	Not used	

No	Function	Details
70	Printing the Journal	Press Copy to print information on recent communications made by the machine.
71	Printing the Telephone Lists	There are three lists: Quick Dial, Speed Dial, and Group Dial. Press Yes or No when the name of each list is displayed. Then press Copy for the lists.
72	Printing the Polling File List	Press Copy for a list of polling files still waiting for execution.
73	Printing the Program List	Press Copy for information on all stored keystroke programs.
74	Printing the SAF File List (FAX85)	Press Copy for a list of all files stored in the memory.
75	Printing the contents of a memory file (FAX85 only)	Type the number of the file you want to see, then press Copy. In the service mode, this function will print out all stored files (see page 2-17).
76	Printing a confidential message (FAX85 only)	Enter the password then press Copy.
77	Multicopying (FAX85 only)	Place the original in the feeder, type in how many copies you need, then press Copy. This function is disabled in a new machine.
78	Printing the Authorized Reception List	Press Copy to print a list of terminals that the machine accepts fax messages from.

No	Function	Details
80	Programming the machine's telephone number	See page 1-22 for details.
81	Telephone line type selection	See page 1-19 for details. In Italian, German, and Universal versions, this is a service function.
82	Switching TTI on/off	Switch this off if you want the other end to receive exact copies of the original, without the TTI at the top of the page. Press 1 to turn it on and 2 to turn it off.
83	Switching ECM tx on/off (FAX80/85 only)	Press 1 to turn it on and 2 to turn it off.
84	Password (FAX85 only)	See page 1-22 for details.
85	Programming Authorized Reception	Type in the RTI or CSI of the fax terminals that can send fax messages to this machine. Press Yes to store the RTI/CSI. Up to 30 terminals can be stored. For non-Ricoh terminals, the CSI must be stored; for Ricoh terminals, the RTI must be stored. See the Journal for the correct RTI or CSI to store.
86	Programming the Forwarding terminal telephone number (FAX85 only)	Type in the number, then press Yes.

2. Others

1. Keystroke Programs

To store a program, do the following.

1. Place a document in the feeder (unless you are programming a polling reception program).
2. Select all required features (such as Confidential), and remote terminal numbers as normal.
3. Press the Quick Dial key that you wish to store the program in. Do not press a key that already has a number or program stored in it.
4. Press Yes, then press Stop.

2. Voice Message (FAX80/85 only)

The voice message is used to warn a caller from a telephone that they have connected to a fax.

- Recording a Voice Message -

Press Voice Message. Then press 1. Press Start when you are ready to record. Speak into the microphone on the operation panel. Press Stop when you have finished.

- Playing Back a Voice Message -

Press Voice Message. Then press 2 then Start.

- Switching Voice Message On/Off -

Press Voice Message, then 3. To switch the message on press 1, or to switch it off, press 2. Press Voice Message to return to standby.

- Editing a Voice Message -

Just record the new message as explained above.

2-3. Service Level Functions

1. Function List

No	Function	Explanation
60	Dedicated Transmission Parameters	Destinations programmed as Quick Dial Keys or Speed Dial Codes can be given dedicated parameters (such as tx level) that will override the machine's settings when sending to that address. Consult technical services before changing any of these settings. See page 2-14.
75	Printing all memory files	All files in the memory, including confidential receptions will be printed. This is only available in the FAX85. See page 2-17.
90	Bit switch programming	Use this function to change a bit switch setting. See page 2-17.
91	Display and edit RAM data	Use this to display the contents of a RAM address, and to change it if necessary. This function cannot be used to rewrite remote terminal RAM. See page 2-18.
92	System report	This report lists information such as NCU parameters and bit switch settings. See page 2-19.

No	Function	Explanation
93	RAM printout	Use this to print a table of RAM address contents. See page 2-19.
94	Error code display and service report printout	The most recent 32 error codes can be displayed. The service report lists the most recent 32 error codes and gives information on the 10 most recent communications that experienced errors. See page 2-20.
95	Serial number programming	When installing the unit, use this function to program the machine's serial number. See page 2-20.
96	Test Mode	Use this to enter the system test mode. See page 2-22.
97	Programming the thermal head pulse width and size	Use this function whenever you install a new thermal head or SRAM board. See page 2-21.
98	Programming NCU parameters	Use this to adjust NCU parameters for ringing detection and dialling. See page 2-21.
99	Maximum address limitation	

ENTERING SERVICE MODE

1. Install JP14 on the NCU (this step may not be necessary outside W. Germany).
2. Press 1, 2, 3, *, 0, and # simultaneously.

EXITING SERVICE MODE

Remove JP14 from the NCU (this step is optional outside W. Germany).
Also, the machine automatically exits service mode immediately after you finish a function, unless you used the function for less than 5 minutes. In that case, the machine will remain in service mode for 5 minutes after you entered service mode.

Another way to enter service mode is to switch the machine off, wait a few seconds, then switch back on while holding the Stop key down.

3. Dedicated Transmission Parameters - Function 60

Each fax number programmed as a Quick Dial Key or Speed Dial Code has three tx parameter bytes that can be programmed. The bytes are explained after the procedure.

Procedure

1. Enter the service mode. See page 2-13.
2. Press the Function key, enter 60 at the keypad, then press Yes.
3. To program for a Quick Dial Key: Press the required Quick Dial Key (press No if you pressed the wrong key). Then press Yes.
   To program for a Speed Dial Code: Press the Speed Dial key, then enter the two-digit code at the keypad (press No if you make a mistake). Then press Yes.
4. The display now shows the settings for byte no. 1. The second line shows the current settings of tx parameter byte number 1. Bit 7 is at the left end of the display, and bit 0 is at the right.
5. To change the setting of a bit, press the key on the ten key pad that corresponds to that bit. For example, to change bit 3, press 3.
6. If the settings of tx parameter byte number 1 are correct, press Yes.
7. The settings of byte number 2 are now displayed. Repeat steps 4, 5, and 6 for this byte.
8. The setting of byte number 3 is now displayed. If the setting is correct, go to step 10.
9. Take the required T1 time, convert it into seconds, and divide it by 2.56. Enter this value at the ten key pad. You cannot enter 0 or a number higher than 255.

10. Press Yes.

11. Either:
    To program parameters for another address, go back to step 3.
    To return to standby, press Function.

- Bit Assignment -

Byte number 1

Bits 0 and 1 - Initial modem rate

Bit 1	0	Rate (bps)
0	0	9600
0	1	7200
1	0	4800
1	1	2400

Bits 2 to 5 - Tx level

Bit 2	3	4	5	Level (- dB)
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4

and so on until

1	1	1	1	15

Bit 6 - Not used

Bit 7 - Dedicated Parameters Disable/Enable
0: Disabled - transmissions to this remote terminal will use the parameters specified by the bit switches.
1: Enabled - the dedicated parameters in bytes 1 to 3 will be used.

Byte number 2

Bit 0 - DIS detection
0: First
1: Second (first DIS is ignored)

Bit 1 - ECM transmission 0: Disabled 1: Enabled

Bits 2 to 4 - Not used

Bits 5 and 6 - Compression methods available, and priority

Bit 6 5 Methods
0 0 MH/MR; MR priority
0 1 MH/MR; MR priority
1 0 MH only
1 1 Not used

Bit 7 - Short preamble
0: Disabled 1: Enabled

Byte number 3

CCITI T1 time, in seconds, divided by 2.56.

4. Printing All Memory Files - Function 75

1. Enter the service mode. See page 2-13.

2. Press the Function key, enter 75, then press Yes.

3. Press #, then Yes.

4. Press Copy.

All files in the memory, including confidential messages, will be printed. The memory will not be erased. To clear a confidential file which has an unknown password, you must switch the machine off to clear all files from the memory.

5. Bit Switch Programming - Function 90

The bit switches are explained in section 2-5. Consult technical services before changing a bit switch.

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

1. Enter the service mode. See page 2-13.

2. Press the Function key, enter 90, then press Yes.

3. The settings of bit switch 0 should be displayed. The top line shows the factory settings, and the bottom line shows the current settings. Bit 0 is at the right end of the display, and bit 7 is at the left.

4. Make your changes.

   Press # to go to the next bit switch, or press * to go back. Hold down #/* for fast motion.
   Example: For bit switch 1, press # once.

   Press the key on the ten key pad that corresponds to the bit that you want to change.
   Example: Change the setting of bit 6; press 6.

5. Either:
   Change more bit switches using step 4.
   Press Function to return to standby.

6. RAM Data Display and Rewrite - Function 91

Caution: Consult technical services before changing the contents of a RAM address.

1. Enter the service mode. See page 2-13.

2. Press the Function key, enter 91, then press Yes.

3. Type in the address that you wish to see (0 to 9 at the ten key pad, A to F at the Quick Dial keypad). You cannot view data in any address higher than 7FFF.

Continued on the next page.

4. Type in the data. The machine automatically prevents you from changing non-rewritable areas.

5. Either:
   See another address; go to step 3.
   Press Function to return to standby.

7. Printing the System Report - Function 92

1. Enter the service mode. See page 2-13.

2. Press the Function key, enter 92, then press Copy.

8. RAM Printout - Function 93

1. Enter the service mode. See page 2-13.

2. Press the Function key, enter 93, then press Yes.

3. Type in the start and end addresses of the address range that you need. Use the ten key pad (0 to 9) and the Quick Dial keypad (A to F).
   You cannot print data from an address higher than 7FFF.

4. Press Copy.

9. Displaying Error Codes and Printing the Service Report - Function 94

1. Enter the service mode. See page 2-13.

2. Press the Function key, enter 94.

3. Either:
   To see the error codes on the display, press Yes. Go to step 4.
   To print the service report, press No. Go to step 5.

4. The most recent error code is now displayed, and the time and date the error happened. At any time, press No to go to step 5. To see the next most recent error code, press #. Press # consecutively to display more error codes (up to 32 can be displayed). When there are no more, the second line of the display is blank; either press # to return to standby or press No to go to step 5.

5. Press Copy to print the service report.

10. Programming the Serial Number - Function 95

1. Enter the service mode. See page 2-13.

2. Press the Function key, enter 95, then press Yes.

3. Type in the machine's serial number at the keypad (use numbers 0 to 9 and letters A to Z only). Up to ten digits can be entered. Press No if you make a mistake.
   If a number is already programmed, press Yes to store it, or press Clear to erase and reprogram it.

4. Press Yes to store the number.

11. Programming the Thermal Head Size and Pulse Width - Function 97

1. Enter the service mode. See page 2-13.

2. Press the Function key, enter 97, then press Yes.

3. Enter the parameter written on the thermal head. For example, if the label says 0.79 ms, type 079 at the keypad. The cursor moves automatically to the width setting. Do not adjust this value.

4. Press Function to return to standby.

12. Programming the NCU Parameters - Function 98

The NCU parameters are explained on page 2-64.

CAUTION: Consult technical services before adjusting any of these parameters.

1. Enter the service mode. See page 2-13.

2. Press the Function key, enter 98, then press Yes.

3. To change the value of the displayed parameter, type in the new value at the keypad.

4. To display another parameter, press Yes until the desired parameter is displayed.

5. After you have finished programming, press Function to return to standby.

2-4. Test Mode

1. Entering and Exiting Test Mode

ENTERING TEST MODE
Do the following procedure.
1. Install NCU jumper JP14 (this may not be necessary outside W. Germany).
2. Press 1, 2, 3, *, 0, and # simultaneously.
3. Press the Function key, enter 96, then press Yes.

The following test mode menu is displayed.

ADF-1 DT-2 FL-3 LD-4
MDM-5 DI-6 CK-7 SN-8

EXITING TEST MODE
Remove NCU jumper JP14 (this is optional outside W. Germany). Also, the machine automatically exits test mode immediately after you finish function 96, unless you used the function for less than 5 minutes. In that case, the machine remains in test mode for 5 minutes after you entered test mode. To use another service function, you must re-enter service mode.

Another way to enter test mode is to switch the machine off, wait a few seconds, then switch back on while holding the Stop key down. Then do step 3 as given above.

2. ADF Mechanism Test

1. Enter the test mode. See page 2-22.

2. Place a document in the ADF.

3. From the test mode menu, press 1. The document will be fed.

3. DTMF Tone Test

1. Enter the test mode. See page 2-22.

2. From the test mode menu, press 2.

3. Either:
   To test a dual tone, press 1. Go to step 4.
   To test a single tone, press 2. Go to step 7.

4. Press the key corresponding to the tone you want to test (0 to 9, #, or *). Then press Start.

5. Press Stop when you have finished with the tone.

6. Either:
   To test another dual tone, go to step 4.
   Press Stop to return to standby.

Continued on the next page

7. Press the key corresponding to the tone you want to test. See below.

697 Hz - Press 1	1209 Hz - Press 5
770 Hz - Press 2	1336 Hz - Press 6
852 Hz - Press 3	1477 Hz - Press 7
941 Hz - Press 4	1633 Hz - Press 8

8. Press Start.

9. Press Stop when you have finished with the tone.

10. Either:
    To test another single tone, go to step 7.
    Press Stop to return to standby.

4. Xenon Lamp Lighting

1. Enter the test mode. See page 2-22.

2. From the test mode menu, press 3. The xenon lamp will light and remain on for 5 minutes. Press Stop at any time to return to standby.

5. Operation Panel Test

1. Enter the test mode. See page 2-22.

2. From the test mode menu, press 4. The operation panel LEDs will light up for 8 minutes. Press Stop at any time to return to standby.

6. Modem Test

1. Enter the test mode. See page 2-22.

2. From the test mode menu, press 5.

3. Either:
   To test a G3 signal, press 1. Go to step 4.
   To test a G2 signal, press 2. Go to step 8.
   To test a frequency, press 3. Go to step 12.

4. Press the key that corresponds to the signal you want to test.

9600 bps - Press 1	2400 bps - Press 4
7200 bps - Press 2	300 bps - Press 5
4800 bps - Press 3	

5. Press Start.

6. When you have finished with this signal, press Stop.

Continued on the next page

7. Either:
   Test another G3 signal. Go to step 4.
   Press Stop to return to standby.

8. Press the key that corresponds to the G2 modem signal you want to test.
   All white - Press 1 All black - Press 2
   Repeating sequence: alternate black and white bits - Press 3
   Repeating sequence: four white bits then one black bit - Press 4
   Repeating sequence: one white bit then four black bits - Press 5
   6 - Not used

9. Press Start.

10. When you have finished with this signal, press Stop.

11. Either:
   Test another G2 signal. Go to step 8.
   Press Stop to return to standby.

12. Press the key that corresponds to the signal you want to test.
   2100 Hz - Press 1 1500 Hz - Press 4
   1850 Hz - Press 2 1100 Hz - Press 5
   1650 Hz - Press 3 462 Hz - Press 6

13. Press Start.

14. When you have finished with this signal, press Stop.

15. Either:
   Test another signal. Go to step 12.
   Press Stop to return to standby.

7. Buzzer Test

1. Enter the test mode. See page 2-22.

2. From the test mode menu, press 7. The buzzer will emit a tone for 8 minutes. Press Function or Stop at any time to return to standby.

8. Sensor Initialization

1. FAX85: If possible, print out any messages received into the memory.

2. Switch the power off.

3. Cover all the printer sensors with paper.

4. Switch the power back on.

5. Enter the test mode (see page 2-22).

6. Press 8.

   If NG is displayed with a sensor name next to it, replace that sensor, then repeat the initialization procedure.

9. Printer Tests

1. For these tests, you do not need to enter service mode or test mode.

2. Press the Copy key, then immediately after, press a key from 1 to 4, depending on the required test. Do not release the keys until the printer has started.

   1 - Thin vertical lines
   2 - Thick vertical stripes
   3 - Pattern
   4 - Dense diagonal stripe pattern

10. Line Condition Check

1. Enter the test mode. See page 2-22.

2. From the test mode menu, press 6. The Di relay will close, and sounds from the line can be heard at the monitor speaker. Press Function or Stop at any time to return to standby.

11. Back to Back Test

1. Connect the machine to another fax terminal back to back (connect them directly, without using an exchange or any type of switching device).

2. Set bit 0 of bit switch 0 to 1.

3. Place the other fax machine in back to back mode. For example, if it is another FAX77, FAX80 or FAX85, set bit 0 of bit switch 0 to 1. See the machine's field service manual for details.

4. Place a document in the feeder of one of the machines and press Start on that machine.

5. Press Start on the other machine.

6. Check that the document is transmitted correctly.

7. Repeat the test, but send the document from the other machine.

8. After testing, reset bit 0 of bit switch 0 to 0. Also, reset the other machine to normal operating mode.

2-5. Bit Switches

1. Factory Settings

The factory settings are shown in hexadecimal format. The first digit gives the settings of bits 7 to 4, with bit 7 as the most significant bit; the second digit gives the settings of bits 3 to 0, with bit 3 as the most significant bit. For example, a setting of 34 means that bits 5, 4, and 2 are set to 1, and the rest are at 0.

FAX80

Bit Sw.	W. Ger Hex	U. K. Hex	Italy Hex	Spain Hex	France Hex	**Sweden** Hex	Asia Hex	Univ. Hex
0	20	00	00	00	00	00	00	00
1	02	02	02	02	02	02	02	02
2	10	10	10	10	10	10	10	10
3	06	05	06	06	06	06	06	06
4	36	36	36	36	36	36	34	36
5	40	00	00	00	00	00	00	00
6	17	00	00	00	00	00	00	00
7	00	00	00	00	00	00	00	00
8	22	22	22	22	22	22	00	22
9	52	52	52	52	52	52	52	52
A	00	00	00	00	00	00	00	00
B	10	10	10	10	10	10	01	10
C	0C	0C	0C	0C	0C	0C	09	0C
D	80	00	00	00	00	00	00	00
E	1F	00	18	10	10	10	00	10
F	01	02	03	0E	00	0A	12	02

Continued on the next page

FAX80 - Continued

Bit Sw.	W. Ger Hex	U. K. Hex	Italy Hex	Spain Hex	France Hex	Sweden Hex	Asia **Hex**	Univ. Hex
10	CC	CC	CC	CC	CC	CC	8C	CC
11	FF	FF	FF	FF	FF	FF	FF	FF
12	A0	80	80	80	80	80	80	80
13	10	10	10	10	10	10	10	10
14	01	01	01	01	01	01	01	01
15	04	04	04	04	04	04	44	04

FAX85

Bit Sw.	W. Ger Hex	U. K. Hex	Italy Hex	Spain Hex	France Hex	Sweden Hex	Asia Hex	Univ. Hex
0	20	00	00	00	00	00	00	00
1	02	02	02	02	02	02	02	02
2	10	10	10	10	10	10	10	10
3	06	05	06	06	06	06	06	06
4	36	36	36	36	36	36	34	36
5	40	00	00	00	00	00	00	00
6	17	00	00	00	00	00	00	00
7	00	00	00	00	00	00	00	00
8	22	22	22	22	22	22	00	22
9	52	42	42	42	42	42	40	42
A	00	00	00	00	00	00	00	00
B	10	10	10	10	10	10	01	10
C	0C	0C	0C	0C	0C	0C	09	0C
D	80	00	00	00	00	00	00	00
E	1F	00	18	10	10	10	00	10
F	01	02	03	0E	00	0A	12	02

Continued on the next page.

FAX85 - Continued

Bit Sw.	W. Ger Hex	U. K. Hex	Italy Hex	Spain Hex	France **Hex**	Sweden Hex	Asia Hex	Univ. **Hex**
10	CC	CC	CC	CC	CC	CC	8C	CC
11	FF	FF	FF	FF	FF	FF	FF	FF
12	A0	80	80	80	80	80	80	80
13	10	10	10	10	10	10	10	10
14	00	00	00	00	00	00	00	00
15	04	04	04	04	04	04	44	04

FAX77

Bit Sw.	W. Ger Hex	U.K. Hex	Italy Hex	Spain Hex	France **Hex**	**Sweden** Hex	Asia Hex	Univ. Hex
0	20	00	00	00	00	00	00	00
1	02	02	02	02	02	02	02	02
2	14	14	14	14	14	14	14	14
3	06	05	06	06	06	06	06	06
4	36	36	36	36	36	36	34	36
5	40	40	40	40	40	40	40	40
6	17	00	00	00	00	00	00	00
7	00	00	00	00	00	00	00	00
8	26	26	26	26	26	26	04	26
9	52	52	52	52	52	52	50	52
A	00	00	00	00	00	00	00	00
B	10	10	10	10	10	10	01	10
C	0C	0C	0C	0C	0C	0C	09	0C
D	80	00	00	00	00	00	00	00
E	1F	00	18	10	10	10	00	10
F	01	02	03	0E	00	0A	12	02

Continued on the next page.

FAX77 - Continued

Bit Sw.	W. Ger Hex	U. K. Hex	Italy Hex	Spain Hex	France Hex	Sweden Hex	Asia **Hex**	Univ. Hex
10	CC	CC	CC	CC	CC	CC	8C	CC
11	FF	FF	FF	FF	FF	FF	FF	FF
12	80	80	80	80	80	80	80	80
13	10	10	10	10	10	10	10	10
14	01	01	01	01	01	01	01	01
15	04	04	04	04	04	04	44	04

2. Bit Switch Tables

Bit Switch 0

BIT	FUNCTION	DATA	COMMENTS
0	Back to back configuration	0: Disabled 1: Enabled	To connect two machines directly without using a regular telephone company line, set this bit to 1, place a document in one machine, and press Start on both machines. Do not dial a number. After the test, reset this bit to 0.
1	Memory read/write request	0: Accepted 1: Not accepted	When this bit is 0, a remote control system can read or write RAM data such as TTI, RTI, and Bit Switches. The requester must know the RAM addresses of this machine to make any changes. When this bit is 1, all requesters are locked out.
2	Action when other end does not respond to DIS after three tries	0: The buzzer sounds 1: DCN sent	0: The buzzer warns that communication has failed. The user must pick up the handset and press Stop. 1: No user intervention is needed. Also, when in auto receive mode and if the speaker is switched off, the user will not be able to talk to the sender before reception.
3	Running a Keystroke Program	0: Press the program key to run the program. 1: Press the key then the Start key to run the program.	Note that if this bit is 0, the user must press Stop immediately after programming a Keystroke Program, or the program will start immediately. This is an Austrian PTT requirement.

Continued on the next page

BIT	FUNCTION	DATA	COMMENTS
4	Short preamble (tx mode)	0: Disabled 1: Enabled	If this is enabled, the preamble before each protocol frame when sending to a Ricoh terminal will be reduced from 1 s to 0.2 s.
5	Indication of Fine mode resolution in NSF	0: Enable 1: Disabled	0: If the user selects Fine resolution, the machineinforms the other end in the NSF signal.
6	Not used		Do not change the factory setting.
7	Communication parameter display	0: Disabled 1: Enabled	This is a fault-finding aid. The LCD shows the key parameters (see below). This is normally disabled because it cancels the RTI/CSI display for the user.

96	S	2D	AN	DCS	10M
Modem rate	Resolution	Coding	Size and reduction	Mode	I/O Rate
96: 9600 bps	S: Standard	1D: MH	A: A4 width [8.5"]	DCS: CCITT G3	0M: 0 ms/line
72: 7200 bps	D: Detail	2D: MR	N: No reduction	NSS: Ricoh G3	5M: 5 ms/line
48: 4800 bps	F: Fine	1E: EFC + MH			10M: 10 ms/line
24: 2400 bps		2E: EFC + MR			20M: 20 ms/line
		1C: MH + ECM			40M: 40 ms/line
		2C: MR + ECM			

Bit Switch 1

BIT	FUNCTION	DATA	COMMENTS
	Default reception mode		
0	Bit 1 Bit 0	Setting	These bits state the default reception mode setting. The reception mode returns to this setting when power is switched on.
	0 0	Manual	
1	0 1	Not Used	
	1 0	Automatic	
	1 1	Automatic	
	Default resolution		
2	Bit 3 Bit 2	Setting	These bits state the default resolution setting. The machine's resolution returns to this setting when power is switched on and when the machine returns to standby after transmission.
	0 0	Standard	
3	0 1	Detail	
	1 0	Fine	
	1 1	Fine	
	Default contrast		
4	Bit 5 Bit 4	Setting	These bits state the default contrast setting. The machine's contrast returns to this setting when power is switched on and when the machine returns to standby after transmission.
	0 0	Normal	
5	0 1	Lighten	
	1 0	Darken	
	1 1	Darken	
6	Halftone default set- 0: Off 1: On ting		1: Halftone will be enabled when the machine is in standby mode. The user must press the Halftone key to switch halftone off if halftone mode is not required.
7	Not used		Do not change the factory setting.

BIT	FUNCTION	DATA	COMMENTS
0 1	Initial Tx modem rate Bit 1 Bit 0 Setting 0 0 9600 bps 0 1 7200 bps 1 0 4800 bps 1 1 2400 bps		These bits set the initial starting modem rate for transmission. The rate may fall back to a slower rate depending on line conditions and the remote terminal.
2	ECM in tx mode	0: Enabled 1: Disabled	The setting of this bit is changed by Function 83.
3	Modem rate fallback method used with CTC	0: Ricoh non-standard 1: CCITT standard	0: This can also be used for transmitting to another maker's machine. The modem rate will fall back after CTC sooner than the CCITT standard if the line is very bad, unless the modem rate is already 2400 or 4800 bps. 1: The modem rate will fall back after CTC when the maximum number of attempts to send the page have been made.
4	Halftone with ECM	0: Impossible 1: Possible	0: If halftone is selected, ECM cannot be used. Also, halftone cannot be selected during a transmission using ECM. 1: Halftone and ECM can be used together.

Continued on the next page

BIT	FUNCTION	DATA	COMMENTS
	Coding type (tx mode)		
5	Bit 6 Bit 5 Setting 0 0 MH and MR		(0,0), (0,1) - The machine will send MR data. If the other end cannot receive MR data, MH data will be sent.
6	0 1 MH and MR 1 0 MH only 1 1 Not used		(1,0) - The machine will send MH coded data only.
7	Recognition of remote terminal's paper length	0: Unlimited length assumed 1: Limit specified by the other end is recognized	0: The unit always assumes the other end has no rx paper length limit (paper roll), and ignores the paper length limit in the protocol from the other end. 1: Use this setting if the unit often sends to machines that use cut paper. For example, if the receiver specifies A4 paper in the protocol but the local machine is sending a B4-length page, the local machine will send MPS when it has sent an A4 length of data. The other end will feed another sheet of copy paper and the local machine will send the remaining data.

Bit Switch 3

BIT	FUNCTION	DATA	COMMENTS
	Transmission level from modem		
0	Bit 0	0: 0 1: -8dB	The tx modem level is the sum of the values specified by these four bits, which control attenuation in the Analog Front End IC on the FCU.
1	Bit 1	0: 0 1: -4dB	
2	Bit 2	0: 0 1: -2dB	
3	Bit 3	0: 0 1: -1dB	
	Bad connection prevention method		
4	Bit 5 Bit 4	Setting	(0,1), (1,1) - The machine will not transmit if the other end does not send an RTI or CSI to identify itself. (1,0) - The machine will not send if the received CSI is not the same as the telephone number dialled. This does not work when dialling with the handset. (0,0) - Nothing is checked; transmission will always take place.
	0 0	None	
5	0 1	RTI/CSI non-reception	
	1 0	CSI check	
	1 1	RTI/CSI non reception	
	Cable equalizer (tx mode)		
6	Bit 7 Bit 6	Setting	Adjust these bits if there is signal loss because of the length of wire between the modem and the telephone exchange.
	0 0	0	
7	0 1	1.8 km [2.9 miles]	
	1 0	3.6 km [5.8 miles]	
	1 1	7.2 km [11.5 miles]	

Bit Switch 4

BIT	FUNCTION	DATA	COMMENTS
0	Hang-up on receiving a negative receipt signal (PIN or RTN)	0: No 1: Yes	If this bit is 0, the next page will be sent even if a negative receipt signal is received. If this bit is 1, the machine will send DCN and hang up if it receives a negative receipt signal. This bit is ignored for memory transmission; page retransmission will be done according to the settings of bits 4 and 5. It is also ignored if ECM is being used.
1	Echo countermeasure	0: Enabled 1: Disabled	If the setting is 1, the machine will hang up if it receives the same signal twice. If the setting is 0, the machine will ignore echoes from the line.
2	CNG signal transmission in manual tx mode	0: Enabled 1: Disabled	CNG (calling tone) is normally used by auto-dial machines to alert a manual machine operator that an auto-transmit machine is on the line waiting to transmit. This tone is not needed for manual operation (full number dialling).
3	DIS detection times	0: 1 1: 2	The machine will send DCS (G3 set-up signal) if it receives DIS. If echoes are frequent, setting this bit to 1 will allow the machine to wait for the second DIS before sending DCS.
4 5	Number of page retransmissions Bit 5 Bit 4 No. of Times 0 0 0 0 1 1 1 0 2 1 1 3		These bits are effective for all machines. If the distant end returns a negative receipt signal, the machine will try to resend the page from memory.

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Bit Switch 4 - Continued

BIT	FUNCTION	DATA	COMMENTS
6	Calls listed on the Journal	0: Only calls that communicated page data 1: All calls except for telephone calls	0: Only those calls that involved the exchange of data will be listed on the Journal. If the call was terminated before page data was sent, the call will not be listed. 1: All calls will be listed except for telephone conversations made using the on-hook dial feature.
7	Not used		Do not change the factory setting.

Bit Switch 5

BIT	FUNCTION	DATA	COMMENTS
0	Display priority between RTI and CSI	0: RTI 1: CSI	This determines whether the remote terminal's RTI or CSI will be displayed on the LCD during transmission. If the bit is 0, RTI is given priority over CSI when transmitting to a Ricoh machine. RTI is received in the NSF(C) frame. If this bit is 1, CSI will be given priority.
1	RTI and CSI display method	0: Decided by bit 0 1: Displays both frames	0: Either RTI or CSI will be displayed on the LCD, in accordance with bit 0. 1: The LCD will display the identifier with priority (see bit 0) for about 6 s, then the other one for the rest of the transmission.
2	Data printout timing during ECM reception	0: Each data frame is printed as it is received 1: No data is printed until a complete block is received	0: Data is printed as it comes in. 1: No data is printed until a complete block has been received into the ECM buffer memory. Unless halftone is being used, one page of video data will fit into one block.
3	Not used		Do not change the factory setting.
4	Response detection timer after sending back PPR in ECM rx mode	0: 4s 1: 6s	After sending back PPR, the tx side will either continue to correct error data at the same speed and send data immediately, or it will send CTC, then send data at a different rate. The reply to PPR must be detected within a certain time. If the line is bad, the start of the signal may not be detected, so set this bit to 1 if the line is bad.

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Bit Switch 5 - Continued

BIT	FUNCTION	DATA	COMMENTS
5	Not used		Do not change the factory setting.
6	EFC in tx mode	0: Enabled 1: Disabled	Estimated Fillbit Control (EFC) only works if the other end has EFC. It works with MH or MR data compression.
7	Not used		Do not change the factory setting.

Bit Switch 6

BIT	FUNCTION	DATA	COMMENTS
0	Confidential transmission	0: Enabled 1: Disabled	Used in W. Germany only.
1	Transfer request	0: Enabled 1: Disabled	Used in W. Germany only.
2	Eight-minute close	0: Disabled 1: Enabled	If this bit is at 1, the machine will cut the line after a transmission has lasted for 8 minutes. Used in W. Germany only.
3	Printout of image data sample on memory tx reports even if transmission was unsuccessful	0: Disabled 1: Enabled	For the user's reference, a sample of the message sent from memory is printed at the bottom of the memory transmission report if the transmission fails. If this bit is 1, the sample will also be printed if the transmission succeeds. This bit is ignored if bit 7 of bit switch 13 is 1.
4	Not used		Do not change the factory setting.
5	Not used		Do not change the factory setting.
6	Not used		Do not change the factory setting.
7	Fallback on receiving a negative receipt signal	0: No 1: Yes	If this bit is 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.

Bit Switch 7

BIT	FUNCTION	DATA	COMMENTS
0	Error count method 0: Bit 1 1: Bits 2-6		
1	Quality criterion - line error counter decrement during G3 reception	0: Decremented by 1 every time 10 consecutive good lines are received. 1: Disabled	0: This quality control function is enabled. Data errors caused by a noisy line or defective machine are counted. If the count reaches 10, the machine sends RTN to the other end in reply to the post message command. As 10 good lines cause the count to decrement, RTN will occur only in bad conditions. 1: The counter will not decrement; frequent RTNs may occur. Line error counting is not done if ECM is being used.
2 3	Error line threshold Bit 3 2 0 0 0 1 1 0 1 1	Value 3 (6) 4 (8) 5 (10) 6 (12)	If there are more error lines in the received page than the threshold specified by these bits, the page is rejected. Values in parenthesis are for Detail resolution. The error line counter is decremented by one every time an error-free line is received.

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BIT	FUNCTION	DATA	COMMENTS
4 5 6	Error line ratio Bit 6 5 4 Value 0 0 0 5% 0 0 1 6% 0 1 0 7% 0 1 1 8% 1 0 0 9% 1 0 1 10%		The value is the number of error lines divided by the number of total lines, expressed as a percentage.
7	Reconstruction time for the first line	0: 6 s 1: 10 s	When the other end sending data 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. If this occurs, set this bit to 1 to give the sending machine more time to start sending page data.

BIT	FUNCTION	DATA	COMMENTS
0	Not used		Do not change the factory setting.
1	Printout of received pages if ECM is used (non-memory reception)	0: Page printed only as far as the defective data. 1: The whole page is printed, except for the errors.	0: If there is an error, the data after that error will not be printed. 1: The complete page will be printed, except for the frames which contain errors.
2	ECM in rx mode	0: Enabled 1: Disabled	This bit is not changed by Function 83, however, if the user switches Function 59 on, this bit will automatically reset to 1. In the FAX80, this bit and bit 4 of bit switch 9 must not both be zero.
3 4	Initial Rx modem rate Bit 4 Bit 3 Setting 0 0 9600 bps 0 1 7200 bps 1 0 4800 bps 1 1 2400 bps		The setting of these bits is used to inform the sending machine of the initial starting modem rate for the machine in rx mode. If 9600 bps presents a problem during rx, use a lower setting.

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BIT	FUNCTION	DATA	COMMENTS
5	Training error tolerance values	0: Asia, Japan, U.S.A. 1: Europe	This bit determines which set of tolerance values to use (see bits 6 and 7).
	Training error tolerance		
6 7	Bit 7 Bit 6 Setting 0 0 14 0 1 9 1 0 4 1 1 1		If the machine detects more errors during training than the number set by these bits, training fails and the machine will send FTT. The data will be resent at a lower rate. The settings for Asia, Japan, and the U.S.A. are different (15, 10, 2, and 0).

Bit Switch 9

BIT	FUNCTION	DATA	COMMENTS
0	Not used		Do not change the factory setting.
1	Black line in the image in G2 mode (Austria only)	0: Included 1: Deleted	If this bit is 1, the black line on the left side of the image (used for synchronization) will be cut out.
2	Not used		Do not change the factory setting.
3	Transmission of Group Identification (GI) signal in receive mode	0: Enabled 1: Disabled	0: The machine informs the transmitter that it can receive G2 messages. 1: The machine indicates that it cannot receive in G2 mode. Caution: If this bit is 1 and if bit 1 of bit switch A is also 1, the machine cannot send out any signals.
4	Substitute reception	0: Enabled 1: Disabled	In W. Germany, this bit must be 1. This bit is changed by Function 59 in the FAX80. If this bit is 0, bit 2 of bit switch 8 must be 1.
5	Not used		Do not change the factory setting.
6	Condition for SAF memory reception	0: The SAF can receive with or without the detection of RTI or CSI. 1: The SAF can only receive if CSI or RTI has been detected.	0: The SAF can store pages from the other end even if the other end did not send an RTI or CSI. Some users do not bother to program these identifiers, so this bit must be at 0 to receive messages from these users into memory. 1: If the machine does not receive an RTI or CSI from the other end, reception into memory is impossible.
7	Not used		Do not change the factory setting.

Bit Switch A

BIT	FUNCTION	DATA	COMMENTS
0	Not used		Do not change the factory setting.
1	G2 test (DIS signal disabled)	0: Normal operation 1: G2 test	Caution: Do not set this bit to 1 and bit 3 of bit switch 9 to 1 at the same time, or the machine will not be able to send out any signals.
2	MV1200 compatibility	0: Disabled 1: Enabled	Set this bit to 1 if the user needs to communicate with a Panafax MV1200.
3	FTZ requirements	0: Off 1: On	For use only in W. Germany. Other countries: Do not change the factory setting.
4	Not used		Do not change the factory setting.
5	Not used		Do not change the factory setting.
6 7	Cable equalizer (rx mode) Bit 7 Bit 6 Setting 0 0 0 0 1 1.8 km [2.9 miles] 1 0 3.6 km [5.8 miles] 1 1 7.2 km [11.5 miles]		Adjust these bits if there is signal loss because of the length of wire between the modem and the telephone exchange.

Bit Switch B

BIT	FUNCTION	DATA	COMMENTS
0	Transmission report	0: Enabled 1: Disabled	This has the same effect as Function 56.
1	Error report	0: Enabled 1: Disabled	The error report is printed if an error occurred during communication. It contains an error code.
2	Automatic Journal output	0: After every 35 communications 1: Disabled	The Journal informs the user about recent communications, including the date, time, duration, other party name, and result. If this bit is 0, it is automatically printed after every 35 communications. If it is 1, it is only printed if the user executes Function 70.
3	Journal memory clear after output	0: Disabled 1: Enabled	1: Journal data is cleared from memory after printing using Function 70.
4	Printout of RTI/CSI on received messages	0: Disabled 1: Enabled	1: The other end's RTI or CSI will be printed on the top of received pages at this end.
5	Clearing the report memory and the counters	1: Clear the reports and counters	To clear the memory areas holding the counters and report data, set this bit to 1, then press Function. The memory will be reset to the factory settings and this bit will reset to 0. The affected areas are as follows: Tx/Rx/Scan/Print counters, Journal, Service Report, Error Report, error code memory.

Continued on the next page

Bit Switch B - Continued

BIT	FUNCTION	DATA	COMMENTS
6	Partial RAM reset	1: Clear the memory	This affects all areas of RAM except the following: RTI, TTI, CSI, own telephone number, Quick Dial, Speed Dial, Bit Switches. To reset all other RAM areas to their factory settings, set this bit to 1, then press Function. The memory will be cleared and this bit will reset to 0.
7	Total RAM reset	1: Reset all RAM addresses	This affects all areas of RAM except the thermal head pulse width and sensor threshold values. To reset the RAM to its factory settings, set this bit to 1, then press Function. The memory will be cleared and this bit will reset to 0.

Bit Switch C

BIT	FUNCTION	DATA	COMMENTS
0 1	Maximum transmittable document length Bit 1 Bit 0 Settings 0 0 600 mm [23.6"] 0 1 1.2 m [47.2"] 1 0 14 m [46'] 1 1 Not used		If the user wants to send very long documents such as well logs, use the 46' setting.
2	Minimum printout length	0: 75 mm [3"] 1: 150 mm [5.9"]	If the received document is shorter than specified by this setting, the printer feeds out the difference, giving a blank space at the bottom of the message.
3	Not used		Do not change the factory setting.
4	MTF	0: Enabled 1: Disabled	MTF (Modulation Transfer Function) is a digital video processing technique which ensures that fine details such as thin lines or complex characters in the original are reproduced on the copy. This helps when sending Chinese characters, but is not necessary for most business communications using Roman letters.
5	Not used		Do not change the factory setting.
6	Printer cover switch	0: Enabled 1: Disabled	If this bit is 1, the status of the cover switch has no effect on machine operation.
7	Monitor speaker during video data tx and rx	0: Off 1: On	Used for testing. Set this bit to 1 to hear the fax data signal.

Bit Switch D

BIT	FUNCTION	DATA	COMMENTS
0	TTI date and time transmission	0: Enabled 1: Disabled	If this bit is 0, the date and time will be printed on the pages at the other end, (and in copy mode if bit 4 is 1).
1	TTI transmission	0: Enabled 1: Disabled	If this bit is 0, the TTI will be printed at the top of pages sent to the other end (and in copy mode if bit 4 is 1).
2	TTI page number transmission	0: Enabled 1: Disabled	If this bit is 0, pages sent to the other end will have a page number on the top right of the page. (So will copies if bit 4 is 1.)
3	TTI print start position	0: 24 mm [1"] 1: 48 mm [2"]	The setting determines the distance of the time/date information from the scan start position.
4	TTI in copy mode	0: Not used 1: Used	0: The copy will be a faithful reproduction of the original. 1: The machine will print the TTI at the top of copies made in copy mode.
5	Page numbering in multicopy mode	0: Enabled 1: Disabled	0: Page numbers will be printed on copies made using multicopy mode.
6	Not used		Do not change the factory setting.
7	Reduction override prompt	0: Disabled 1: Enabled	This is for use in W. Germany (FTZ requirement). If this bit is 1, the machine will ask the user before sending a document whether auto-reduction is acceptable.

Bit Switch E

BIT	FUNCTION	DATA	COMMENTS
0	Function 59 (Substitute reception on/of)	0: Enabled 1: Disabled	1: Function 59 cannot be used.
1	Function 84 (Confidential password)	0: Enabled 1: Disabled	1: Function 84 cannot be used.
2	Functions 58 and 86 (Forwarding)	0: Enabled 1: Disabled	1: Functions 58 and 86 cannot be used.
3	CSI programming (Function 65)	0: User level 1: Service level	
4	Telephone line type (Function 81)	0: User level 1: Service level	
5	Closed network (rx mode only) based on reception of RTI or CSI	0: Disabled 1: Enabled	If this bit is 1, the machine will not receive from a machine that does not send an RTI or CSI to identify itself. This way, the user will always be able to tell who sends messages.
6	Closed network (rx mode) based on Polling ID	0: Disabled 1: Enabled	If this bit is 1, the machine will not receive from a machine that has a different Polling ID code. This function is not reliable when communicating with a non-Ricoh machine.
7	Closed network (tx mode) based on Polling ID	0: Disabled 1: Enabled	If this bit is 1, the machine will not send to a machine that has a different Polling ID code. This function is not reliable when communicating with a non-Ricoh machine.

BIT	FUNCTION	DATA	COMMENTS
	Country code		
0	Bit 4 3 2 1 0	Country	Set these bits in accordance with the country of installation.
	0 0 0 0 0	France	
1	0 0 0 0 1	W. Germany	
	0 0 0 1 0	U. K.	
2	0 0 0 1 1	Italy	
	0 0 1 0 0	Austria	
3	0 0 1 0 1	Belgium	
	0 0 1 1 0	Denmark	
4	0 0 1 1 1	Finland	
	0 1 0 0 0	Ireland	
	0 1 0 0 1	Norway	
	0 1 0 1 0	Sweden	
	0 1 0 1 1	Switzerland	
	0 1 1 0 0	Portugal	
	0 1 1 0 1	Netherlands	
	0 1 1 1 0	Spain	
	0 1 1 1 1	Israel	
	1 0 0 0 1	U. S. A./Canada	
	1 0 0 1 0	Asia	
	1 0 0 1 1	Japan	

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BIT	FUNCTION	DATA	COMMENTS
5	Not used		Do not change the factory setting.
	PSTN access method through PABX		
6	Bit 7 Bit 6	Setting	Set these bits to match the type of signals accepted by the PABX.
	0 0	No PABX	
7	0 1	Loop start	
	1 0	Ground start	
	1 1	Flash start	

BIT	FUNCTION	DATA	COMMENTS
0 1	Pulse dialling 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 dialled. Do not change the factory settings.
2	Not used		Do not change the factory setting.
3	Not used		Do not change the factory setting.
4	Not used		Do not change the factory setting.
5	Redialling after the CCITT T1 timer ran out	0: Enabled 1: Disabled	1: The number will not be redialled if the CCITT T1 timer ran out during dialling. The T1 timer starts at the end of dialling.
6	Fax terminal's dialling method	0: Tone 1: Pulse	This bit is changed by Function 81.
7	Fax terminal's dial pulse rate	0: 20 pps 1: 10 pps	Program this bit if bit 6 is at 1. Select 10 pps if the local exchange cannot handle 20 pps dialling.

BIT	FUNCTION	DATA	COMMENTS
	PSTN access number		
	Access No.	Hex value of bit switch 11	Program this bit switch if the machine is behind a PABX. The access number is the number the user must dial to get an outside line. If the machine detects the access number at the start of a telephone number, it will connect with the PABX, pause for a few seconds, then dial the number. Example: If the access number for the PABX is 0, the bit switch must be F0. To do this, set bits 0 to 3 at 0, and bits 4 to 7 at 1. If there is no PABX, set all bits to 1.
	0	F0	
	↓	↓	
	9	F9	
	00	00	
	↓	↓	
	99	99	

Bit Switch 12

BIT	FUNCTION	DATA	COMMENTS
0	ADF or cutter test mode	1: Enabled	To test the ADF, place a document in the feeder and press Copy. The document will be fed through the scanner. To test the cutter, press the Copy key without placing a document in the ADF. The printer will feed a small amount of paper and cut it off.
1	Not used		Do not change the factory setting.
2	Dialing on the operation panel when the handset picked up and a document is in the feeder	0: Enabled 1: Disabled	0: If the user picks up the handset, then dials using the machine's operation panel and connects with the oter end, and if the user then presses keys on the operation panel during communication, dial tones will be sent through to the other end.
3	Quick Dial Label display during dialing	0: Enabled 1: Disabled	0: The label programmed into the quick dial key will be shown on the LCD during dialing.
4	Use of Stop key when dialing on the machine's operation panel with the handset picked up	0: Enabled 1: Disabled	0: If Stop key is pressed, the machine immediately stops dialing. 1: If Stop key is pressed, the machine stops at the end of dialing.

Continued on the next page.

Bit Switch 12

BIT	FUNCTION	DATA	COMMENTS
5	On hook check when user picks up the hand set and dials the machine's operation panel	0: Disabled 1: Enabled	1: The handset hook switch status is checked after each digit, to check whether the user has hung up or not.
6	Not used		Do not change the factory setting.
7	On Hook Dial	0: Enabled 1: Disabled	If this bit is 0, the On Hook Dial feature is available. The user can make telephone calls by pressing the Voice Request key then dialling the number.

Bit Switch 13

BIT	FUNCTION	DATA	COMMENTS
0 1	Not used		Do not change the factory settings.
2	Not used		Do not change the factory setting.
3	Halftone dither matrix	0: 64 level matrix 1: 16 level matrix	The software contains two different dither matrixes for halftone processing. This bit determines which one is used.
4	Smoothing of received images	0: Disabled 1: Enabled	If this is 1, faxes received in standard mode will be smoothed to detail mode before printout. Faxes received in detail mode will be smoothed to fine mode if the tx side indicates that the message was scanned using fine mode, even if this bit is 0.
5	Near-end indication	0: Enabled 1: Disabled	The machine tells how much paper is left on a roll by counting how much paper is used up. When 90% of the roll has been used, the Replace Paper indicator blinks to warn the user that the roll is almost empty. If this bit is 1, this function is disabled.
6	Action when copy count reaches 30 in copy mode	0: Machine stops for 40 s after every page 1: Machine continues copying normally	Continuous copying could cause thermal head burnout, so this bit should be kept at 0. This bit is not effective for reception.
7	Result report	0: Enabled 1: Disabled	0: A Polling File List or Memory Transmission Report is printed whether the communication was successful or not. 1: When polling or memory transmission has been completed successfully, no Polling File List or Memory Transmission Report is printed. However, the report is printed if the communication failed.

Bit Switch 14

BIT	FUNCTION	DATA	COMMENTS
0	New file report printout after storing	0: Enabled 1: Disabled	This report gives information about the file just stored, for the user's reference.
1	Printout of image data sample on error reports for failed memory transmissions	0: Enabled 1: Disabled	0: A sample of the message sent from memory can be printed at the bottom of the error report as a reference if transmission failed. This bit is ignored if bit 1 of bit switch B is 1.
2	Action when rx errors occur during memory reception (if PIN or RTN were received)	0: Data is erased 1: Data is kept	0: If there are errors during memory reception, the message will be erased from the memory, and the user will have to ask the sender to resend the message. 1: If there are errors during memory reception, the message will be stored in memory, complete with errors.
3	Multicopy mode (FAX85 only)	0: Disabled 1: Enabled	If this bit is at 0, Function 77 cannot be used.
4	Not used		Do not change the factory setting.
5	Erasing incoming fax messages from memory immediately after printing	0: Yes 1: No	Fax messages are stored into memory at the same time as printing so that data will not be lost if a printer fault develops during printing If this bit is 0, the message will be automatically cleared from memory immediately after printing. If this bit is 1, the message will not be cleared from memory; the user must clear the message using Function 67.

Continued on the next page.

BIT	FUNCTION	DATA	COMMENTS
6	SAF file list output after memory file clearance	0: Enabled 1: Disabled	The SAF file list tells the user what messages are stored in the memory. It is only used with FAX85.
7	Substitute reception file forwarding	1: Forward the files	If the machine has a mechanical problem and the user wants to print the files but the problem cannot be cleared immediately, set this bit to 1. The files will all be sent to the forwarding terminal programmed by RAM address (FAX80) or with Function 86 (FAX85). If there is more than one file, all the files will be sent but the line will be cut after sending each file. After forwarding all files, the bit will be reset to 0 automatically. Confidential files are also forwarded. This function is not the same as the forwarding feature of the FAX85 (Function 58). In Function 58, all incoming messages are automatically forwarded to the terminal programmed with Function 86. Substitute and confidential receptions are not forwarded.

Bit Switch 15

BIT	FUNCTION	DATA	COMMENTS
0	Action if wrong password is entered when printing a confidential file (FAX85 only)	O: Nothing is printed 1: The first page is printed	O: Nothing is printed if the user enters the wrong password when trying to print a confidential file with Function 76. 1: If the user enters the wrong password, only the first page will be printed. This could only be useful if the first page of received fax messages is always a cover sheet, informing of who the sender is and who the fax is intended for; that person can then be informed that a confidential message has arrived.
1	Remaining memory space display units	O: % 1: S	O: The remaining memory space is displayed as a percentage. 1: The approximate number of pages that can be stored in the remaining memory is displayed.
2	Katakana characters	0: Enabled 1: Disabled	If a customer requires Japanese Katakana characters, set this bit to O.
3	Not used		Do not change the factory setting.
4	Not used		Do not change the factory setting.
5	Not used		Do not change the factory setting.
6	Error code listing on error reports	O: Disabled 1: Enabled	If this bit is 1, error codes will not be printed on error reports. To see the error codes, use service function 94 (Service Report or Error Code Display).
7	Protocol dump list output	O: Disabled 1: Enabled	This is only used for communication troubleshooting. It shows the content of the transmitted facsimile protocol signals. Always reset this bit to O after finishing testing.

Bit Switches 16 to 1F are not used in this machine.

2-6. NCU Parameters

No	Description	Formula	Remarks
00	Acceptable ringing signal frequency: Range 1, upper limit	1,000,000/655N (Hz)	
01	Acceptable ringing signal frequency: Range 1, lower limit	1,000,000/655N (Hz)	
02	Acceptable ringing signal frequency: Range 2, upper limit	1,000,000/655N (Hz)	
03	Acceptable ringing signal frequency: Range 2, lower limit	1,000,000/655N (Hz)	
04	Number of rings until a call is detected	N (rings)	
05	Minimum required length of the first ring	N x 20 (ms)	Note 2
06	Minimum required length of the second and subsequent rings	N x 20 (ms)	
07	Reset time	N x 40 (ms)	
08	Time between closing the Ds relay and opening the Di relay (Europe/Asia only)	N (ms)	Note 1
09	Pulse dial relay (PC2), break time	N (ms)	Note 1

No	Description	Formula	Remarks
10	Pulse dial relay (PC2) make time	N (ms)	Note 1
11	Time between the final closure of the Di relay and the opening of the Ds relay (Europe/Asia only)	N (ms)	Note 1
12	Pause between dialled digits (pulse dial mode)	N x 20 (ms)	Note 1
13	Time waited when a pause is entered at the operation panel	N x 20 (ms)	
14	DTMF tone length	N (ms)	
15	Time between dial digits (DTMF dial mode)	N (ms)	
16	DTMF tone transmission level	3-N (dBm)	Note 3

Notes

1. Pulse dial timing parameters (08 to 12) are the values for a dial rate of 10 pps. If 20 pps is used, the machine adjusts these parameters; times for parameters 08 to 11 will be half those for 10 pps, and the time for parameter 12 will be 3/4 of that for 10 pps.

2. The cpu may not detect the first ring until parameter 05 + ringing signal wavelength x (1 to 2.5).

3. N must be between 0 and 15.

2-7. Useful RAM Addresses

Redialling

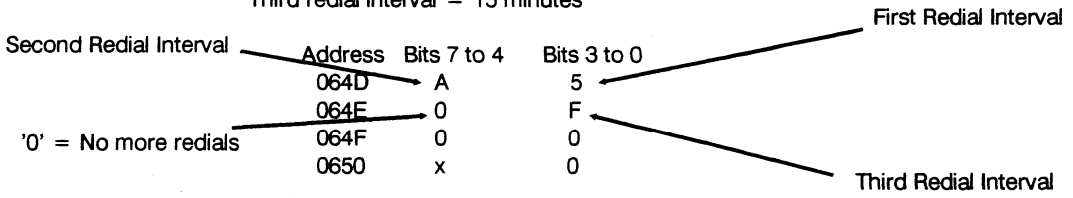
Basic Transmission

060F - Maximum number of total dialling attempts to the same destination (max. 99)
0610 - Redial interval (unit = 1 minute, max = 255 minutes [FF])

Memory Transmission

If the message was transmitted from memory (either the 128k memory or the SAF memory), up to 7 redial attempts are possible. The redial interval can be set from 1 to 15 minutes and can be different for each redial interval. The intervals are programmed in hexadecimal code using RAM addresses 064D to 0650.

Example: Number of redials = 3
First redial interval = 5 minutes
Second redial interval = 10 minutes
Third redial interval = 15 minutes



Address	Bits 7 to 4	Bits 3 to 0
064D	A	5
064E	0	F
064F	0	0
0650	x	0

x = Don't care

Confidential Password

2A3D and 2A3E

Contrast thresholds

0217 - Light
0218 - Normal
0219 - Dark
The value can be from 01 to 0F. Higher values make the image paler.

Speaker volume in voice message mode

The speaker volume in voice message mode is controlled with RAM address 0227, bits 2 and 3 as follows.

Bit 3 2
0 0 High
0 1 Medium low
1 0 Medium high
1 1 Low

The speaker is enabled or disabled in voice message mode with bit 4 of RAM address 0227 (0: Disabled, 1: Enabled).

Substitute reception file forwarding address (FAX80)

The following RAM addresses contain the destination for forwarding the file stored in the 128k memory if the printer does not work and cannot be repaired quickly. Program these RAM addresses, then set bit 7 of bit switch 14 to 1. The message will be forwarded.

2198 - Number of digits in the telephone number (including pauses) - hexadecimal code

2199 to 21B8 - Telephone number; the first digit is stored in address 2199, the second in 219A, and so on. Up to 32 digits can be stored. Program the number in hexadecimal ASCII codes. The corresponding codes for each digit are as follows.
0: 30, 1: 31, 2: 32, 3: 33, 4: 34, 5: 35, 6: 36, 7: 37, 8: 38, 9: 39, Pause: 2D

Operation panel LCD brightness adjustment

Adjust RAM address 0224 until the brightness is acceptable. There are eight possible settings. They are as follows, starting with the darkest setting and going up in order of increasing brightness.
40, 50, 60, 70, 00, 10, 20, 30
The factory setting is 00.

Buzzer volume

0223

SECTION 3

REMOVAL AND ADJUSTMENTS

SECTION 3. REMOVAL AND ADJUSTMENT

Important note for the FAX85

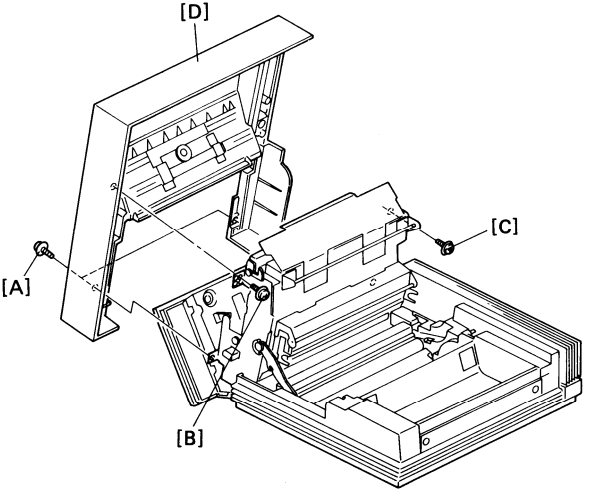
Before switching the power off, if possible, print all messages received into memory, and print a SAF File List.

After switching the power back on, the user must reprogram files for memory transmission that were erased, and also must contact the senders of messages that were received into memory and erased (see the SAF File List).

3-1 .Covers

3-1-1. Top Cover

1. Remove the document and copy trays.
2. Open the scanner.
3. Remove 2 screws [A].
4. Open the printer.
5. Remove 2 screws [B], [C].
6. Take off the cover [D].



3-1-2. Front Cover

1. Open the printer.

2. Lift out the roller [E].

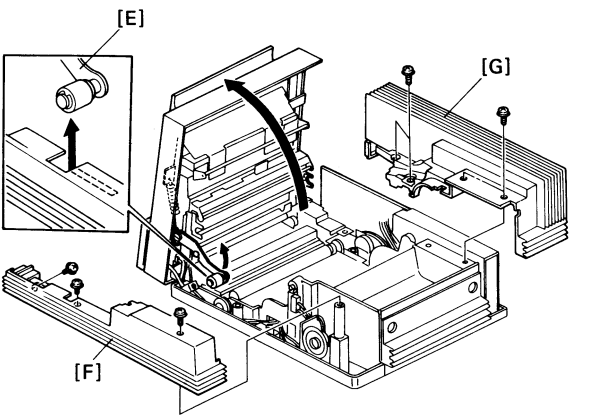
3. Remove the cover [F] (3 screws)

Caution: Do not damage the cable at the front left side of the machine.

3-1-3. Rear Cover

1. Open the printer.

2. Remove the cover [G] (4 screws).

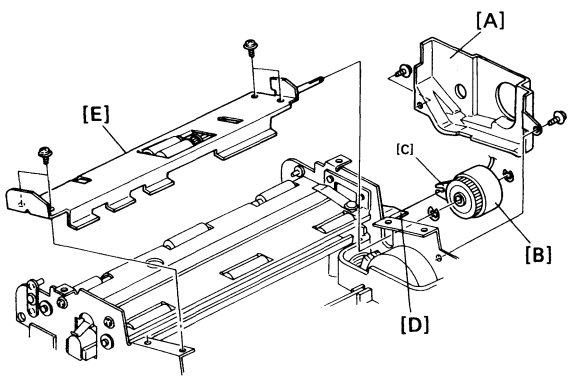


3-2. Scanner

3-2-1. ADF Clutch

1. Remove the top and rear covers (see section 3-1).
2. Remove cover [A] (2 screws).
3. Remove the ADF clutch [B] (1 E-ring).
4. Bring the cable back through the machine from the FCU.

Cautions:
- Place stopper [C] astride bracket [D] as shown, so that rotation of the clutch body will be prevented.
- Keep the ADF clutch harness away from gears and timing belts.



3-2-2. Pick-up and Feed Rollers

1. Remove the ADF clutch (see section 3-2-1).

2. Remove the lower ADF guide plate [E] (4 screws); see the diagram on the previous page.

3. Remove E-rings and bushings [F].

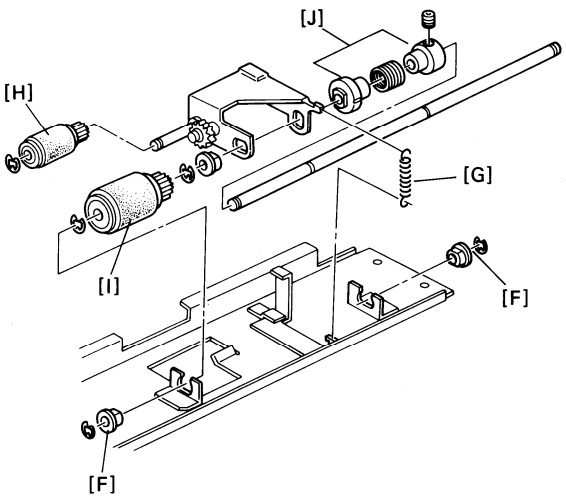
4. Remove spning [G].

5. Remove the pick-up roller [H] (1 E-ring) and feed roller [I] (1 E-ring).

6. If it is necessary to disassemble the one-way clutch [J], see the diagram.

7. Reassemble the machine.

Caution: Do not touch the rubber surface of the new rollers, or document feed problems will occur sooner than normal.



3-2-3. Separation Roller

1. Open the scanner.

2. Remove the operation panel [A] (2 connectors, 3 screws - one of which is grounded).

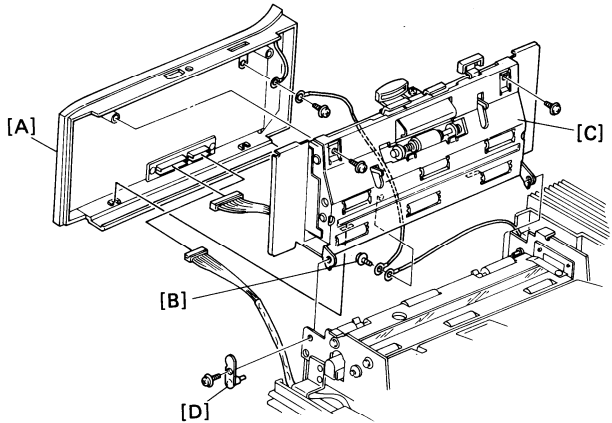
Note: Lift up the operation panel from the part that hangs down just above the document feed-out area, and ease the operation panel off over the manual feed button.

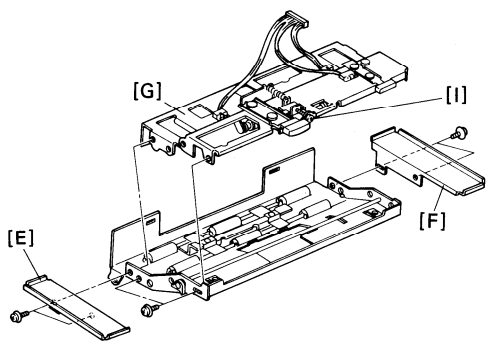
3. Remove ground wire [B] (1 screw).

4. Take off the upper ADF guide plate [C] (1 screw [D]).

5. Remove brackets [E] and [F] (8 screws).

6. Ease out the separation roller assembly [G].





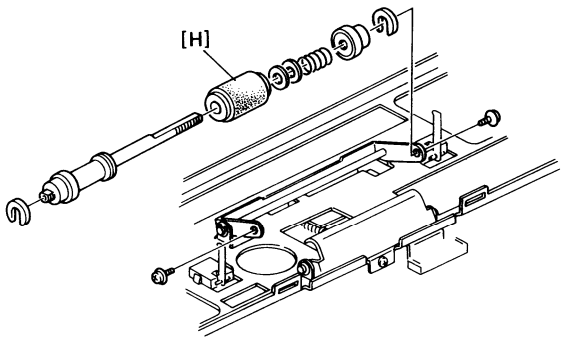
7. Remove the separation roller [H] (2 screws).

Caution: The diagram shows the roller disassembled. There is normally no need to disassemble the roller.

8. Reassemble the machine.

Caution: Do not touch the rubber surface of the new roller, or document feed problems will occur sooner than normal.

Note: When putting back the operation panel, pull down the part of the cover that hangs above the document feed-out area so that the pegs on the inside of the cover fit into the slots in the bracket above the document feed-out area.



- Separation Pressure Adjustment -

Double Feed Problems: Reduce separation pressure by turning the screw [I] anti-clockwise.

Non-feed Problems: Increase separation pressure by turning the screw [I] clockwise.

The use of the separation roller spacers will be informed later by Ricoh Technical Bulletin.

3-2-4. Tx Motor

1. Remove the top and rear covers (see section 3-1).

2. Remove the ADF clutch cover (see section 3-2-1; remove cover [A]).

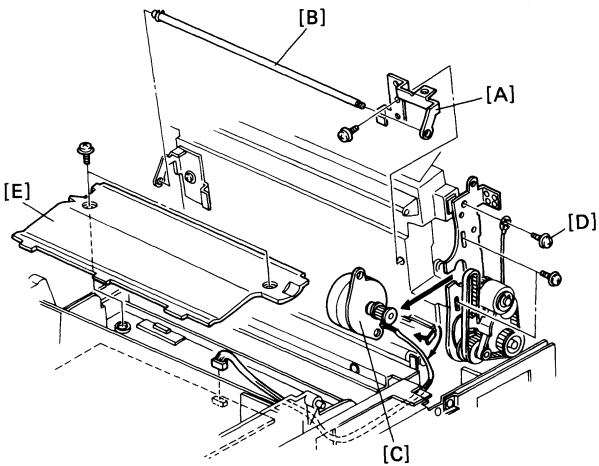
3. Remove the thermal head (see section 3-3-2).

5. Remove the rear thermal head support bracket [A] (1 screw) and rod [B].

6. Remove the tx motor [C] (2 screws). Remove the screw [D] holding the drive gear bracket, and bend the bracket out slightly to ease out the motor.

7. Remove the paper roll and take off the FCU cover [E] (2 screws). Bring the cable back through the machine from the FCU.

8. On reassembly, before replacing the ADF clutch cover, adjust the timing belts as shown on the following page.



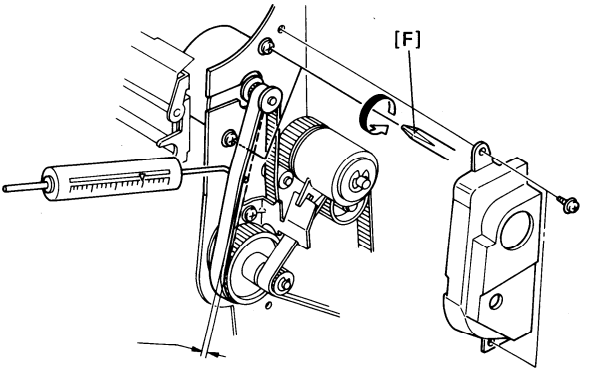
- Timing Belt Tension Adjustments -

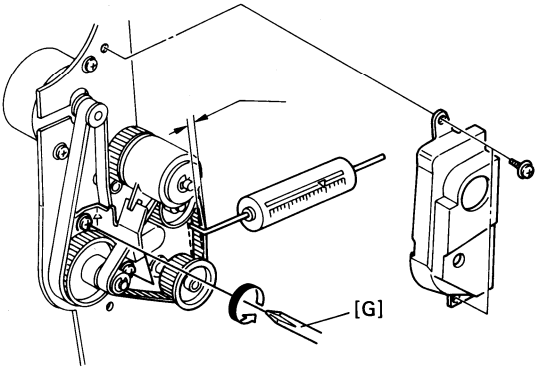
i) Loosen the tx motor securing screws [F].

ii) Adjust the position of the timing belt tensioner until the belt tension is between 1.1 and 1.8 lbs when the belt is pulled out by 0.2 inches.

iii) Loosen the timing belt tensioner [G].

iv) Adjust the position of the timing belt tensioner until the belt tension is between 0.7 and 1.1 lbs when the belt is pulled out by 0.2 inches.





3-2-5. Xenon Lamp

1. Remove the top and rear covers (see section 3-1).

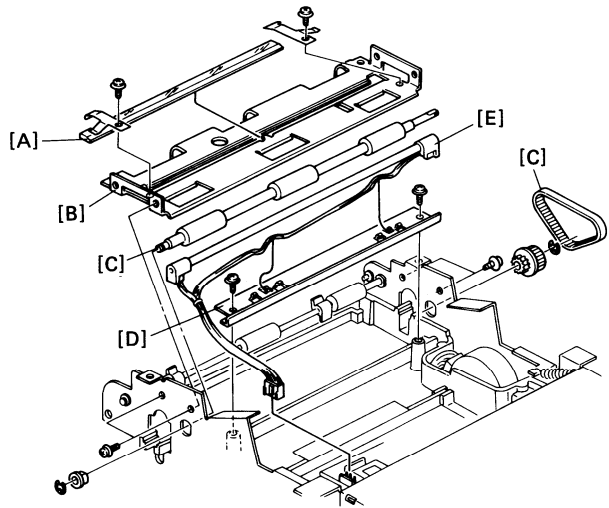
2. Remove the ADF clutch (see section 3-2-1) and the lower ADF guide plate (see section 3-2-2; remove plate [E]).

3. Remove the exposure glass holders [A] (2 screws) and the exposure glass.

Caution: Keep the exposure glass in a safe place.

4. Remove the lower scanner guide plate [B] (4 screws).

5. Remove the R1 roller [C] (2 E-rings) and the timing belt.



6. Free the xenon lamp harness from the harness clamps and remove the harness holder plate [D] (2 screws).

7. Remove the xenon lamp [E] (1 connector).

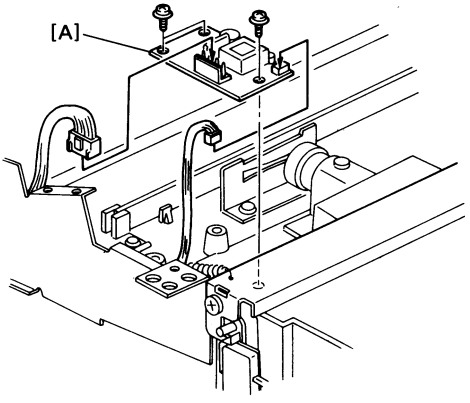
Reassembly

- Test the new xenon lamp before reassembling the machine.
- Clean the exposure glass with a soft cloth before putting it back. Do not get fingerprints on the exposure glass.
- Check the tx motor timing belt tensions after reassembling the machine (see page 3-9).

3-2-6. Xenon Lamp Driver

1. Remove the top cover (see section 3-1-1).

2. Remove the xenon lamp driver [A] (3 screws, 2 connectors).



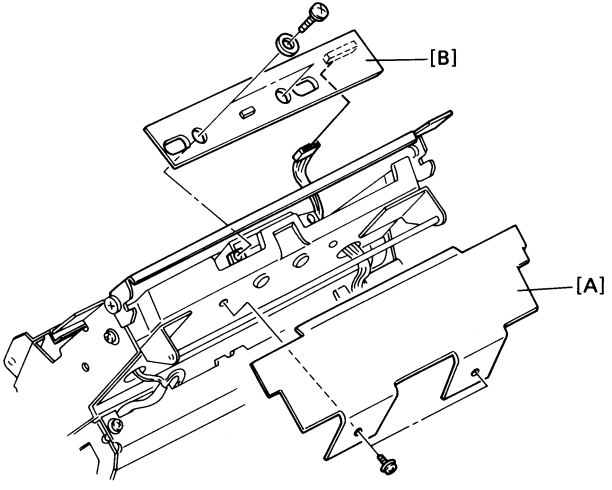
3-2-7. SBU

1. Remove the top cover (see section 3-1-1).

2. Remove the SBU cover [A] (2 screws).

3. Remove the SBU [B] (2 screws, 1 connector).

4. After installing a new SBU, do the adjustments on the following pages.



After installing a new SBU, adjust the scanner. Perform each of the following procedures in sequence.

- Tools Required -

- Scan line test chart and 8 line/mm test pattern - P/N H0539500
- Test lead - P/N H0419002
- SBU adjustment knobs - P/N H0539501
- Allen wrench

- Preparation -

1. Remove the top cover (see section 3-1-1).

2. Remove the SBU cover (2 screws). See the previous page.

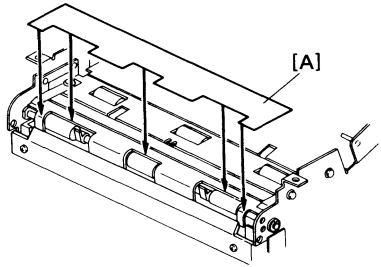
3. Set the oscilloscope scale to 0.2 V/unit (vertical) and 0.5 ms/unit (horizontal).

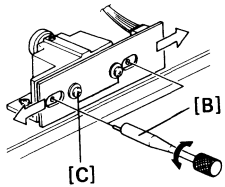
4. Connect the oscilloscope probe to XVIDEO (pin 1 - blue wire) and the ground to GND (pin 4 - black wire) on the test lead.

5. Clean the white pressure plate with a soft cloth and alcohol.

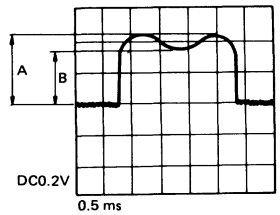
6. Light the xenon lamp (see page 2-24).

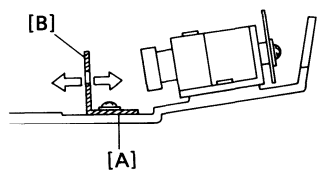
Step	Item	Procedure
1	Alignment	1. Access the SBU as explained in "Preparation" above. 2. Set the oscilloscope scale to 0.2 V/unit (vertical) and 0.5 ms/unit (horizontal). 3. Connect the oscilloscope probe to XVIDEO (pin 1 - blue wire) and the ground to GND (pin 4 - black wire) on the test lead. 4. Light the xenon lamp (see page 2-24). 5. Place the scan line test chart [A] on the exposure glass as shown. 6. Fit the adjustment knobs [B] through the slots in the SBU as shown. 7. Loosen the SBU securing screws [C]. 8. Turn the adjustment knobs until the scanner is aligned. 9. Carefully tighten the SBU securing screws.



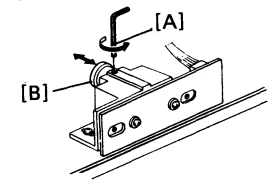


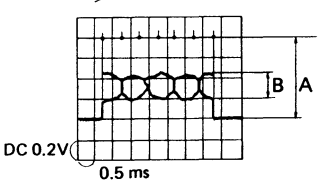
Step	Item	Procedure
2	Flatness	In the oscilloscope waveform, (A-B)/A must be less than 0.25. If it is not, do the following. 1. Access the SBU as explained in "Preparation" above. 2. Set the oscilloscope scale to 0.2 V/unit (vertical) and 0.5 ms/unit (horizontal). 3. Connect the oscilloscope probe to XVIDEO (pin 1 - blue wire) and the ground to GND (pin 4 - black wire) on the test lead. 4. Light the xenon lamp (see page 2-24). 5. Remove any test charts that are on the exposure glass. 6. Loosen the shading plate securing screws [A]. 7. Move the shading plate [B] back and forth until the waveform meets the requirements. 8. Tighten the shading plate securing screws.



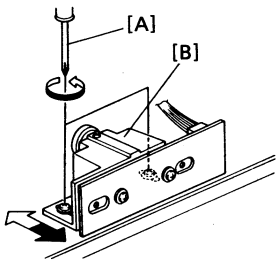


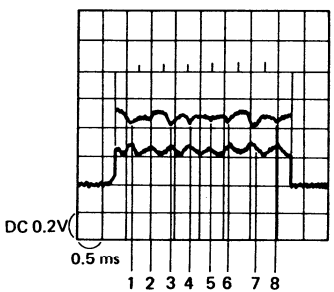
Step	Item	Procedure
3	Check	If the waveform has irregular patches, the lens, mirror, exposure glass, white pressure plate, or CCD may be dirty. If the waveform level is lower at the ends than in the middle, the xenon lamp may be wearing out. If the waveform has sharp peaks or dropouts, the CCD may be defective.
4	Focusing (MTF)	1. Access the SBU as explained in “Preparation” above. 2. Set the oscilloscope scale to 0.2 V/unit (vertical) and 0.5 ms/unit (horizontal). 3. Connect the oscilloscope probe to XVIDEO (pin 1 - blue wire) and the ground to GND (pin 4 - black wire) on the test lead. 4. Light the xenon lamp (see page 2-24). 5. Place the 8 line/mm test pattern on the exposure glass. 6. Loosen the lens securing screw [A] (Allen screw). 7. Move the lens block back [B] and forth until B is maximized (see the diagram opposite). 8. Tighten the lens securing screw.



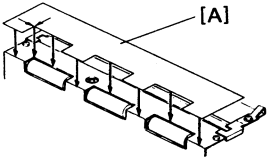


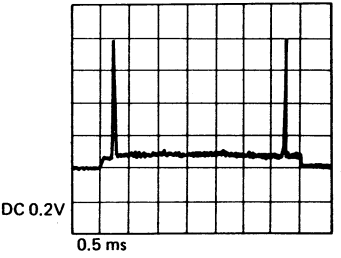
Step	Item	Procedure
5	Reduction rate	1. Access the SBU as explained in "Preparation" above. 2. Set the oscilloscope scale to 0.2 V/unit (vertical) and 0.5 ms/unit (horizontal). 3. Connect the oscilloscope probe to XVIDEO (pin 1 - blue wire) and the ground to GND (pin 4 - black wire) on the test lead. 4. Light the xenon lamp (see page 2-24). 5. Place the 8 line/mm test pattern on the exposure glass. 6. Loosen the lens block securing screws [A]. 7. Move the lens block [B] back and forth until the signal has 8 or fewer crosspoints. 8. Tighten the lens block securing screws. Note: Tighten each screw little by little alternately.



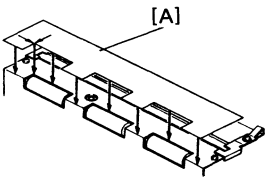


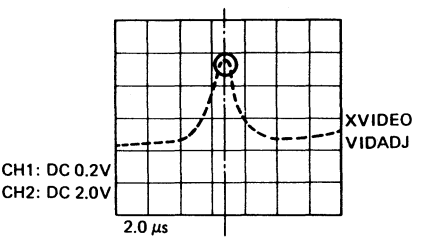
Step	Item	Procedure
6	Scan line	1. Access the SBU as explained in "Preparation" above. 2. Set the oscilloscope scale to 0.2 V/unit (vertical) and 0.5 ms/unit (horizontal). 3. Connect the oscilloscope probe to XVIDEO (pin 1 - blue wire) and the ground to GND (pin 4 - black wire) on the test lead. 4. Light the xenon lamp (see page 2-24). 5. Place the scan line test chart [A] on the exposure glass as shown. 6. Loosen the SBU securing screws (see procedure 1). 7. Adjust the waveform with the adjusting knobs until the waveform is as shown on the right.





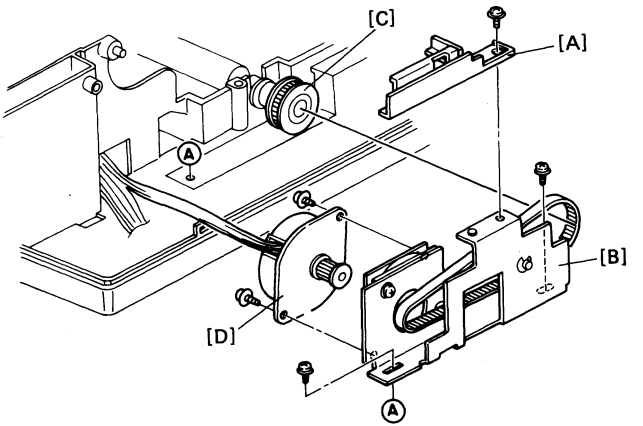
Step	Item	Procedure
7	Scan start position	1. Access the SBU as explained in “Preparation” above. 2. Set the oscilloscope scale to 0.2 V/unit (vertical) and 0.5 ms/unit (horizontal). 3. Light the xenon lamp (see p. 2-24). 4. Place the scan line test chart [A] on the exposure glass as shown. 5. Connect the oscilloscope to the test lead as follows: Channel 1 to XVIDEO (pin 1 - blue wire), channel 2 to VIDADJ (pin 2 - red wire), and connect up the ground to pin 4 (black wire). 6. Set the oscilloscope scales as follows: Vertical - CH1 0.2 V/unit, CH2 2 V/unit; Horizontal - 2 µs/unit. 7. Gently tap the SBU until the waveform is as shown on the right. The peak of XVIDEO must be within 4 bits of the peak of VIDADJ. 8. Reset the oscilloscope to the Original settings and repeat procedure 6 (scan line) on the previous page. It may be necessary to recheck procedures 6 and 7 until the scan line is perfectly positioned. 9. Tighten the SBU securing screws.





3-3-1. Rx Motor

1. Open the upper unit.
2. Remove the rear cover (see section 3-1-3).
3. Remove the NCU and PSU - see section 3-4.
4. Remove the harness guide [A] (1 screw).
5. Remove the rx motor assembly [B] (2 screws). It may be necessary to remove the allen screw holding gear [C] to free the timing belt.
6. Remove the rx motor [D] (2 screws, 1 connector).



- Timing Belt Tension Adjustment -

On reassembly, adjust the tension of the rx motor timing belts as follows.

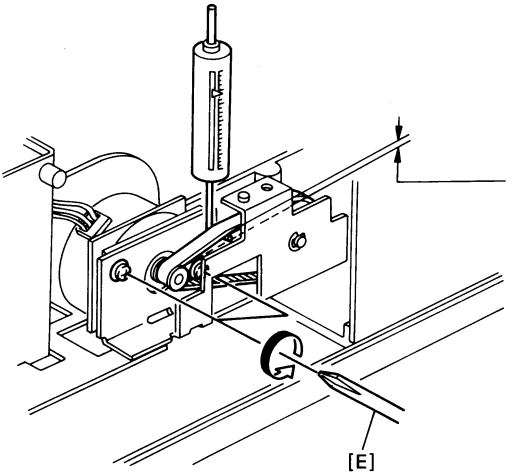
i) Loosen the two screws [E] (see the diagram on the previous page).

ii) Adjust the position of the timing belt tensioner until the belt tension is 125 +/- 20 grams when the belt is pulled out by 1 mm. Tighten screws [E].

iii) Loosen the two screws holding the rx motor assembly [B].

iv) Adjust the position of the timing belt tensioner until the belt tension is 125 +/- 20 grams when the belt is pulled out by 2 mm.

7. Reassemble the machine.



3-3-2. Thermal Head

1. Open the upper unit.

2. Remove plate [A] (2 screws).

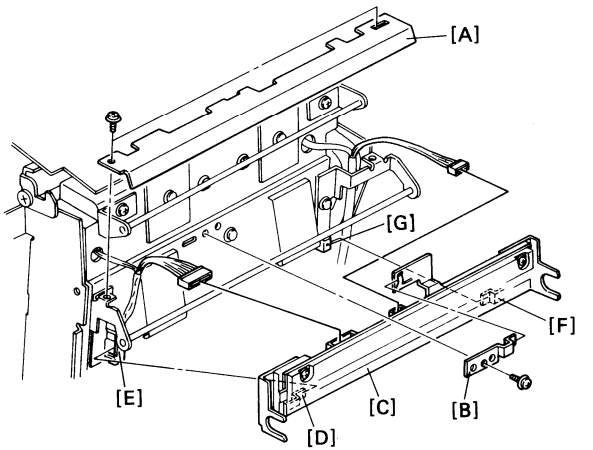
3. Remove plate [B] (1 screw).

4. Remove the thermal head [C] (2 connectors).

5. Install the new thermal head.

Cautions: • Do not touch the heating elements.

• Check that the thermal head is properly positioned and that the springs pushing the head against the platen roller are in position.



6. Reassemble the machine.

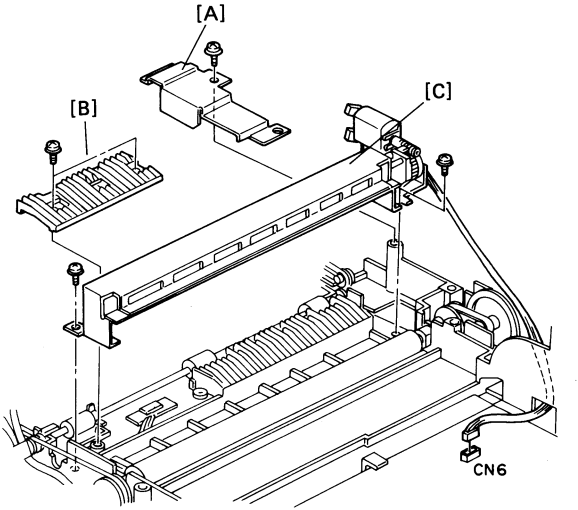
   When replacing the thermal head, fit pin [D] into slot [E] at the front, then fit pin [F] into slot [G] at the rear.

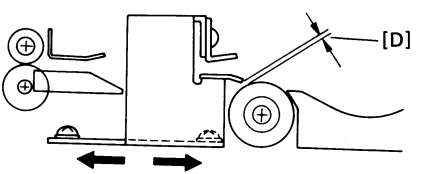
   When replacing plate [B], the pegs on the plate must fit into the indents on the main body.

7. Program the pulse width and thermal head size (Function 97).

3-3-3. Cutter

1. Remove the cover on the left side of the machine above the copy exit (2 screws). This allows the upper unit to be opened a little more.
2. Open the upper unit.
3. Remove the rear cover (see section 3-1-3).
4. Remove plate [A] (1 screw).
5. Remove the sensor cover [B] (2 screws).
6. Remove the cutter [C] (1 connector, 2 screws)
7. Install the new cutter. The clearance [D] between the cutter and the platen roller must be 0.3 mm. Loosen the screws removed in step 6 and move the cutter back and forth to adjust the clearance.
8. Reassemble.





3-4. PCBs

3-4-1. FCU

Note for FCU replacement:
FAX 85 - If possible, print all messages received into memory, and print a SAF File List.

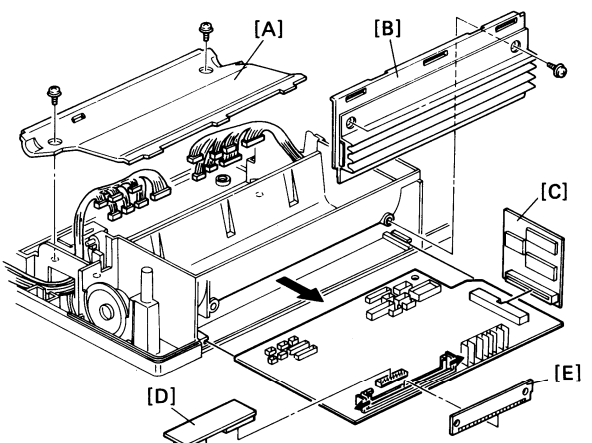
1. Open the upper unit.

2. Remove the FCU cover [A] (5 screws).

3. Remove the side cover [B].

4. Take off the modem [C], SRAM board [D], or memory (FAX85) [E].

Caution: Do not dislodge battery jumper SW1 on the SRAM Board, or the machine must be reprogrammed (see “SRAM Board” below).



Notes for FCU replacement:

- The user must reprogram the voice message.
- FAX85 - the SAF memory has been erased. The user must reprogram files for memory tx that were erased, and also must contact the senders of messages that were received into memory and erased (see the SAF File List).

3-4-2. Modem

1. Do steps 1 to 3 of the FCU removal procedure (see section 3-4-1).

2. Take off the modem [C].

3-4-3. Memory (FAX85 only)

1. Do steps 1 to 3 of the FCU removal procedure (see section 3-4-1).

2. Take off the memory board [E].

3-4-4. SRAM Board

1. If possible, do the following:

   Print a TCR, Telephone List, Polling File List, and SAF File List (FAX85 only). Give them to the user.

   Print a Service Report and a System Report. Keep these for later reference.

2. Check the records for the user to determine what RAM address or dedicated tx parameter adjustments have been made.

3. Carry out steps 1, 2, and 3 of section 3-4-1.

4. Take off the SRAM Board [D].

5. Reset the RAM on the new DRAM board: to do this, take out the battery jumper (JP1), then replace it.

6. Make sure that the battery jumper of the new SRAM Board is on, and switch off the battery jumper of the old one.

7. Install the new SRAM board.

8. Do the quality checks in section 5-1.

9. Program the thermal head size and pulse width (Function 97).

10. Reprogram any RAM addresses or dedicated tx parameters that were changed from the factory settings before the MBU failed.

11. Reprogram the items listed on the System Report.

12. Program the date and time (Function 50).

13. Instruct the user to reprogram Quick Dial, Speed Dial, Groups, Polling ID, keystroke programs, voice messages, and other user functions.

14. The user must reprogram files for memory transmission that were erased, and also must contact the senders of messages that were received into memory and erased (see the SAF File List).

    The user must also reprogram any polling files that were lost.

3-4-5. PSU

1. Open the upper unit.

2. Remove the rear cover (see section 3-1-3).

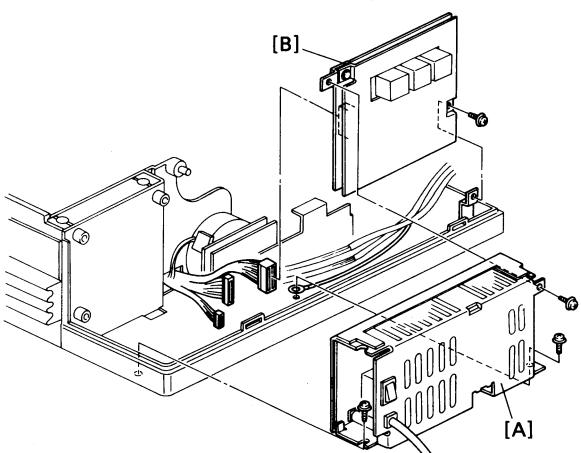
3. Remove the PSU [A] (2 connectors; 2 screws, one of which is grounded).

3-4-6. NCU

1. Open the upper unit.

2. Remove the rear cover (see section 3-1-3).

3. Remove the NCU [B] (2 screws, 1 connector).

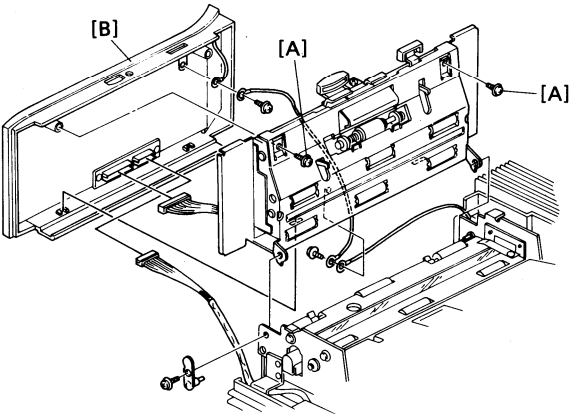


3-4-7. Operation Panel

1. Open the scanner.

2. Remove 2 screws [A].

3. Remove the operation panel [B] (2 connectors, 1 ground wire).



SECTION 4

SERVICE TABLES

SECTION 4. SERVICE TABLES

4-1. Test Points

1. NCU

TP1 - 5DISW (Di relay drive signal)

4-2. Variable Resistors

1. FCU

VC1 - Do not use

2. NCU

VR1 - Adjusts the tx level (range = 2 dB)

4-3. Dip Switches

There are no dip switches in this machine.

4-4. Jumpers

Do not use any jumpers except those explained below.

1. NCU

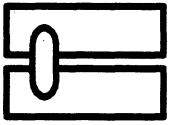
Jumper	1	2	3	4	5	6	7	8	9	10	11	12	13	16	17	18	19	20	21	22	15	14
Austria	S	O	S	S	S	1		O	O	O	S	S	S	O	O	O	O	S	O	S	O	S
Belgium	S	O	S	S	S	1		O	O	O	S	S	S	O	O	O	O	S	O	S	O	S
Denmark	S	O	O	S	O	2		O	O	O	O	S	S	O	O	O	O	S	O	S	O	S
Finland	O	O	S	S	S	1		O	O	O	O	S	S	O	S	S	O	O	S	S	O	S
W. Germany	S	O	S	S	S	1		O	O	O	S	S	O	O	S	S	O	S	O	S	O	O
Ireland	S	O	S	S	O	1		O	O	O	S	S	S	S	O	O	O	S	S	S	O	S
Italy	S	O	S	S	S	1		O	O	O	S	S	S	O	S	S	O	S	O	S	O	S
Netherlands	S	O	S	S	S	1		O	O	O	O	S	S	S	O	O	O	S	O	S	O	S
Norway	S	O	S	S	O	1		O	O	O	O	S	S	S	O	O	O	S	O	S	O	S
Portugal	S	O	O	S	O	1		O	O	O	S	S	S	O	O	O	O	S	O	S	O	S
Sweden	S	O	S	S	S	3		O	O	O	O	O	O	O	O	O	O	S	O	S	O	S
Switzerland	O	S	S	O	S	1		O	O	O	S	S	S	O	O	O	O	S	O	O	O	S
U.K.	S	O	S	S	S	1		O	O	O	S	S	S	O	S	S	O	S	O	S	O	S

S = Shorted O = Open

JP14 - Shorted: Service mode enabled Open: Service mode disabled

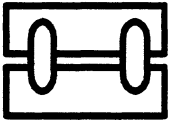
JP8 - Shorted: Test point XT2 (CN3-4) enabled

JP9 - Shorted: Test point XT1 (CN3-3) enabled

1 = 

J P 6

J P 7

3 = 

J P 6

J P 7

2 = 

JP6

JP7

4-5. Special Tools and Lubricants

Scan line test chart and 8 line/mm test pattern:	P/N H0539500
Video adjustment test lead:	P/N H0419002
SBU adjustment knobs:	P/N H0539501

SECTION 5

TROUBLESHOOTING

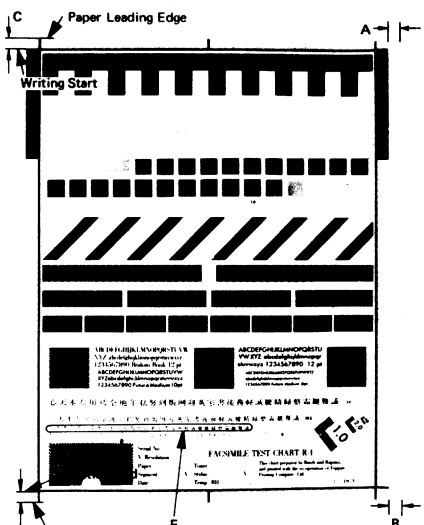
SECTION 5. TROUBLESHOOTING

5-1. Quality Checks

During troubleshooting, the quality checks in this section may help find the problem. These checks should also be done when installing a new machine, in order to discover any defects that may be present.

1. Copy Quality

The test chart shown on this page is used for the copy quality checks explained on the following pages.



1. Copy Density

Density must be equal in the left, right, and center. If it is not, adjust the shading plate position (see “Flatness” on page 3-15).

2. Skew

Copy a test chart using standard resolution.

The difference between A and B (see the diagram on page 5-1) must be as follows.
A4 [8.5” x 11.7”] or larger: Less than 1% of the document length
Smaller than A4: Less than 3% of the document length

To correct skew, see page 5-8.

3. Intelligibility

Copy a test chart using standard resolution. Check the characters in frame F (see page 5-1). No characters must be missing. If some of the characters are illegible, check and adjust the following: flatness (see page 3-15), reduction rate (see page 3-17), focusing (see page 3-16).

4. Copy Test

Make another copy. If the copy is still defective, make a printer test (see page 2-28) and check the video waveforms if necessary (see pages 3-13 to 3-19).

2. Operation Panel Display

See page 2-25.

3. Sensor Initialization

See page 2-27.

4. Mechanism Test

Check the operation of the document feed and printing mechanism. See section 5-3 (Machine Operation) if there are any problems.

5. Communication Tests

1. Call a remote unit and send 2 test charts, one in standard, and one in detail resolution. If the remote unit can accept 8 x 15.4 (Fine) resolution, also send one in Fine resolution. (Note that Fine resolution in the Ricoh FAX610 or FAX830 is 16 x 15.4 and not the same as Fine resolution in the FAX80/85.)
   Check the following: resolution selection, RTI display, voice request function.

2. Receive 2 test charts.

   Check the following: RTI display, copy quality, automatic reception function, voice request function.

5-2. Copy Quality Troubleshooting

1. Received Copies

If there is no fault in the transmitting terminal or on the line, but the copy quality is bad, either:
- Check that the printer cover is closed properly.
- Check the thermal head pulse width.
- Clean the thermal head (soft cloth, do not use water)
- Replace the thermal head or FCU.

If the output is always stretched: Check the printer mechanism and timing belts.

2. Copies made in Copy Mode

The following faults must be considered in addition to the printer faults mentioned above.

Symptom	Causes	Remedies
Blank or black copies	Scanner or PCB failure	Replace FCU or SBU.
Vertical lines	Dirty mirror, lens, exposure glass, or xenon lamp	Clean with a soft cloth
	Error bit in CCD	Replace SBU.

Symptom	Cause	Remedies
Uneven density	Scan line out of position	See page 3-14.
	Dirty mirror, lens, exposure glass, or xenon lamp	Clean with a soft cloth.
	Old xenon lamp	Replace.
Magnification	Check the reduction rate.	See page 3-17.
Blurred characters	Adjust the focusing.	See page 3-16.
	Adjust the reduction rate.	See page 3-17.
Filled-in characters	Adjust the reduction rate.	See page 3-17.
Side-to-side registration error	Adjust the scan start position.	See page 3-19.
One side darker than the other	Check the CCD waveform flatness.	See page 3-15.
Partial scanning	Scan line is out of position	See page 3-14.
Stretched output	Defective scanner timing belt	Replace.

3. Effects of line problems on copy quality

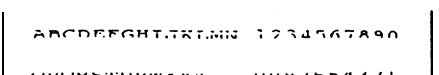
1. Missing lines; shrinkage in the sub-scan direction

- Original -

ABCDEFGHIJKLMN 1234567890

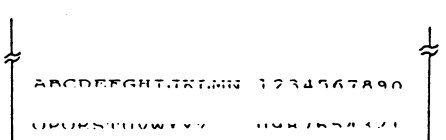
OPQRSTUVWXYZ 0987654321

- Bad Copy Sample -



2. Cut off

- Bad Copy Sample -



Some lines may be missing just before the cut off.

1. ADF/Scanner

Symptom	Action
Non-feed	1. Clean the feed and pick-up rollers (soft cloth and water). Check that the gears and spring clutches are clean and working properly. Try to cure the fault by adjusting the separation pressure (see page 3-7). If it has no effect, return the screw to its original position. 2. Are the ADF cover and upper unit shut properly? 3. Check that the following connections are not loose: PSU CN52 - FCU CN12, FCU CN9 - Printer cover switch (SB-10) Does the FCU receive + 24VA from the PSU at CN12-8 when a document is placed in the feeder? Y N Is SB-10 working? If the upper unit is closed, is FCU CN9-2 low? Y N Replace SB-10 and/or the actuator mechanism. Is FCU CN12-2 high if there is a document in the feeder? Y N Replace the FCU. Replace the PSU.

Symptom	Action
Non-feed (continued)	4. Check that the FCU CN4 - tx motor connection is not loose. Does the tx motor work? Y N Does the FCU output phase drive signals on CN4, pins 1 - 4? Y N Replace the FCU. Replace the tx motor. 5. Check that the FCU CN3 - ADF clutch connection is not loose. Does CN3-1 go low to turn on the ADF clutch and is CN3-2 always at 24V if a document is in the feeder? Y N Replace the FCU. Replace the ADF clutch.
Skew	1. Clean the rollers in the ADF/scanner Metal rollers - soft cloth and alcohol Rubber rollers - soft cloth and water 2. Replace the separation roller and or separation plate.
Jam	1. Same as for step 1 of “Skew”. 2. Check for blockages in the paper path. 3. Check the scanner drive gears and belts.

Symptom	Action
	4. Check connectors FCU CN15 - OPU CN1, OPU CN3 - (SB-2) Does the OPU receive signals from SB-2 at CN3-1? Y N Replace SB-2. Replace the OPU or the FCU.
Abnormal noise	1. Check that the machine is assembled properly. 2. Are the springs and clutches in the paper feed/pick-up mechanism clean? 3. Replace the tx motor or the FCU.
Double feed	1. Clean, lubricate, or replace the separation roller. 2. Try to cure the problem by adjusting the separation pressure screw (see page 3-7). 3. Clean or replace the separation plate.
Dirty document	1. Same as for step 1 of “Skew”.
Second page not fed in	1. Check that the following connectors are not loose: FCU CN15 - OPU CN1, OPU CN3 - trailing edge sensor (SB-0) Does the OPU receive signals from SB-0 at CN3-4? Y N Replace SB-0. Replace the OPU or the FCU.

2. Printer

Symptom	Action
Non-feed	1. Remove any debris from inside the printer. 2. Is the upper unit shut properly? 3. Check that the following connections are not loose: PSU CN52 - FCU CN12, FCU CN9 - Printer cover switch (SB-10) Does the FCU receive + 24VA from the PSU at CN12-8 when a document is placed in the feeder? Y: N Is SB-10 working? If the upper unit is closed, is FCU CN9-2 low? Y: N Replace SB-10 and/or the actuator mechanism. Is FCU CN12-2 high if there is a document in the feeder? Y: N Replace the FCU. Replace the PSU.

Symptom	Action

Non-feed (continued) 4. Check that the following connection is not loose: FCU CN13 - SB-4.
Is the Replace Paper indicator lit even though paper is present?
Y N

Go to step 5.

Initialize the sensors (see page 2-27). If a sensor is defective, replace it. Go to step 5 regardless of whether the indicator is still lit or not.

5. Does the FCU receive signals at CN13-3 from SB-4.

Y N

Replace SB-4.

Replace the FCU.

7. Check that the FCU CN11 - rx motor connection is not loose.
Does the rx motor work?
Y N

Does the FCU output phase drive signals on CN11, pins 1 - 4?

Y N

Replace the FCU.

Replace the rx motor.

8. Replace the FCU.

Symptom	Action
Jam	1. Remove any debris from inside the printer. 2. Initialize the sensors (see page 2-27). Is the jam sensor (SB-5) good? Y N Check that the following connector is not loose: FCU CN19 - SB-5 Does the FCU receive signals from the sensor at CN19-3? Y N Replace SB-5 Replace the FCU. 3. Check that the following connection is not loose: FCU CN13 - SB-4 Is the Replace Paper indicator lit even though paper is present? Y N Go to step 4. Replace SB-4. If the machine is still defective, go to step 4. 4. Does the FCU receive signals at CN13-3? Y N Replace SB-4. Replace the FCU.

Symptom	Action
Jam	5. Check that the FCU CN11 - rx motor connection is not loose. Does the rx motor work? Y N Does the FCU output phase drive signals on CN11, pins 1 - 4? Y N Replace the FCU. Replace the rx motor. 6. There may be a cutter problem. Do a paper cycle. Does the cutter work properly? If not, check the following. Check that the connector from FCU CN6 to the cutter is not loose. Does the FCU output a cutter motor drive signal on CN6-1? Y N Replace the FCU. Replace the cutter motor and/or connector. Check that the cutter sensor (SB-7) actuation mechanism works properly. Does the FCU receive signals at CN6-3 during a paper cycle? Y N Replace SB-7 and/or the connector. Replace the FCU. 7. Replace the FCU.
Abnormal noise	1. Is the cover closed properly? 2. Check that the printer mechanisms are assembled correctly. 3. Replace the rx motor or the FCU.

5-4. Error Codes

If an error code occurs, retry the communication. If the same problem occurs, try to fix the problem as suggested below. Note that error codes 4-00, 01, 02, and 10 only appear in the error code display and on the service report.

Code	Meaning	Suggested Cause/Action
0-00	DIS/NSF/GI not detected	1. Check line connection 2. Check connectors from FCU to modem and NCU. 3. Machine at other end may be incompatible. 4. Replace FCU, modem, or NCU. 5. If rx signal is weak, there may be a bad line.
0-01	DCN received unexpectedly (G3 mode)	1. Other party out of paper or has jammed printer. 2. Other party pressed Stop during communication.
0-03	Incompatible modem at other end (G3 mode)	1. The other terminal is incompatible.

Code	Meaning	Suggested Cause/Action
0-04	CFR or FTT not received after modem training (G3 mode)	1. Check line connection. 2. Check connectors from FCU to modem and NCU. 3. Try raising the tx level (use bit switch 3, or a dedicated tx parameter for that address). 4. Replace the FCU, NCU, or modem. 5. The other terminal may be faulty. 6. If rx signal is weak or defective, there may be a bad line.
0-05	Unsuccessful after modem training at 2400 bps (G3 mode)	1. Check line connection. 2. Check connectors from FCU to modem and NCU. 3. Try raising the tx level (use bit switch 3, or a dedicated tx parameter for that address). 4. Replace the NCU, FCU, or modem. 5. Check for line problems.
0-06	The other terminal did not reply to DCS (G3 mode)	1. Check line connection. 2. Check connectors from FCU to modem and NCU. 3. Try raising the tx level (use bit switch 3, or a dedicated tx parameter for that address). 4. Replace the NCU, FCU, or modem. 5. The other end may be defective or incompatible. 6. Check for line problems.

Code	Meaning	Suggested Cause/Action
0-07	Other end did not acknowledge receipt of a page (G3 mode)	1. Check line connection. 2. Check connectors from FCU to modem and NCU. 3. Replace the NCU, FCU, or modem. 4. The other end may have jammed or run out of paper. 5. The other end user disconnected the call. 6. Check for a bad line.
0-08	The other end sent RTN or PIN after receiving a page, because there were too many errors (G3 mode)	1. Check line connection. 2. Check connectors from FCU to modem and NCU. 3. Replace the NCU, FCU, or modem. 4. The other end may have jammed, or run out of paper or memory space. 5. Try adjusting the tx level (use bit switch 3 or a dedicated tx parameter for that address). 6. The other end may have a defective modem/NCU/FCU. 7. Check for line problems and noise.
0-14	Non-standard post message response code received (G3 mode)	1. Incompatible or defective remote terminal. 2. Noisy line: resend. 3. Replace the FCU or modem.
0-15	Other end does not have the confidential or transfer function (G3 mode)	1. Incompatible remote terminal. 2. Remote terminal memory full.

Code	Meaning	Suggested Cause/Action
0-16	CFR or FTT not detected after modem training in confidential or transfer mode (G3 mode)	1. Check line connection. 2. Check connectors from FCU to modem and NCU. 3. Replace the NCU, FCU, or modem. 4. Try adjusting the tx level (use bit switch 3, or a dedicated tx parameter for that address). 5. The other end may have disconnected, or it may be defective. 6. If the rx signal level is too low, there may be a line problem.
0-20	Facsimile data not received within 6 s of retraining (G3 mode)	1. Check line connection. 2. Check connectors from FCU to modem and NCU. 3. Replace the NCU, FCU, or modem. 4. Check for line problems.
0-21	End-of-line signal (EOL) from the other end not received at the correct time (G3 mode)	1. Check line connection. 2. Check connectors from FCU to modem and NCU. 3. Replace the NCU, FCU, or modem. 4. Remote machine may be defective or may have disconnected. 5. Check for line problems.
0-22	Signal from other end was interrupted for more than 0.2 s (G3 mode)	1. Check line connection. 2. Check connectors from FCU to modem and NCU. 3. Replace the NCU, FCU, or modem. 4. Defective remote terminal. 5. Check for line problems.

Code	Meaning	Suggested Cause/Action
0-23	Too many errors during reception (G3 mode)	1. Check line connection. 2. Check connectors from FCU to modem and NCU. 3. Replace the NCU, FCU, or modem. 4. Defective remote terminal. 5. Check for line problems. 6. Ask the other end to adjust their tx level.
0-50	CFR/MCF (1650 Hz) not received at the correct time (G2 mode)	1. Check line connection. 2. Check connectors from FCU to modem and NCU. 3. Replace the NCU, FCU, or modem. 4. Check for line problems. 5. Incompatible remote terminal. 6. Adjust the tx level (use bit switch 3 or a dedicated tx parameter)
0-51	CFR/MCF (1650 Hz) carrier not dropped for 6 s or more (G2 mode)	1. Check connectors from FCU to modem and NCU. 2. Replace the NCU, FCU, or modem. 3. Check for line problems. 4. Check the other terminal's CFR/MCF turn-off timing on an oscilloscope. 5. Incompatible or defective remote terminal.
0-52	Polarity change occurred, or PIS was detected but the user did not respond (G3 or G2 mode)	1. Check connectors from FCU to modem and NCU. 2. Replace FCU or buzzer if the user call tone is not working. 3. Defective Stop key.

Code	Meaning	Suggested Cause/Action
0-55	Message carrier cut for more than 0.5 s.	1. Check line connection. 2. Check connectors from FCU to modem and NCU. 3. Replace the NCU, FCU, or modem. 4. Defective remote terminal. 5. Check for line problems.
0-56	EOM signal (2100 Hz) carrier not dropped	1. Check connectors from FCU to modem and NCU. 2. Replace the NCU, FCU, or modem. 3. Check for line problems. 4. Check the CFR/MCF turn-off timing from the line on an oscilloscope. 5. Incompatible or defective remote terminal.
0-61	Facsimile data signal not received at the correct time (G2 mode)	1. Check line connection. 2. Check connectors from FCU to modem and NCU. 3. Replace the NCU, FCU, or modem. 4. Check phasing signal timing. 5. Defective or incompatible remote terminal. 6. Check for line problems.
0-62	Phasing failed (G2 mode)	1. Check line connection. 2. Check connectors from FCU to modem and NCU. 3. Replace the NCU, FCU, or modem. 4. Check phasing signal timing. 5. Defective or incompatible remote terminal. 6. Check for line problems.

Code	Meaning	Suggested Cause/Action
0-64	EOM (1100 Hz) not received at the correct time (G2 mode)	1. Check line connection. 2. Check connectors from FCU to modem and NCU. 3. Replace the NCU, FCU, or modem. 4. Check whether EOM actually comes in from the line. 5. Defective or incompatible remote terminal. 6. Check for line problems.
0-65	EOM (1100 Hz) carrier did not drop at the correct time (G2 mode)	1. Check connectors from FCU to modem and NCU. 2. Replace the NCU, FCU, or modem. 3. Check for line problems. 4. Check the EOM turn-off timing from the line on an oscilloscope. 5. Incompatible or defective remote terminal.
0-66	CFR (1100 Hz) not received at the correct time	1. Check line connection. 2. Check connectors from FCU to modem and NCU. 3. Replace the NCU, FCU, or modem. 4. Check whether CFR actually comes in from the line. 5. Defective or incompatible remote terminal. 6. Check for line problems.
0-67	CFR (1100 Hz) carrier did not drop at the correct time	1. Check connectors from FCU to modem and NCU. 2. Replace the NCU, FCU, or modem. 3. Check for line problems. 4. Check the CFR turn-off timing from the line on an oscilloscope. 5. Incompatible or defective remote terminal.

Code	Meaning	Suggested Cause/Action
0-68	Facsimile data signal not received at the correct time	1. Check line connection. 2. Check connectors from FCU to modem and NCU. 3. Replace the NCU, FCU, or modem. 4. Check phasing signal timing. 5. Defective or incompatible remote terminal. 6. Check for line problems.
1-00	Document jam	1. Improperly inserted document. 2. See “Mechanical Operation - Document Jam” (page 5-8).
1-01	Document length exceeded maximum	1. Divide the document into smaller pieces. 2. See “Mechanical Operation - Document Jam” (page 5-8).
1-10	Document in scanning position at power-up	1. Clear debris from the sensor actuators. 2. Check connections between the sensors and the FCU. 3. Replace defective sensor, OPU, or FCU.
1-20	Printer jam - paper did not reach exit	1. Clear debris from the paper path and sensors. 2. Copy tray is overloaded. 3. Check paper feed mechanism. 4. Check connections from the FCU to the rx motor and printer jam sensor. 5. Replace defective printer jam sensor, tx motor, or FCU.
1-21	Printer jam - paper stuck at exit	See code 1-20.

Code	Meaning	Suggested Cause/Action
1-23	Cutter jam	1. Clear debris from the paper path and sensors. 2. Check cutter mechanism. 3. Check connections from the FCU to the cutter motor and cutter sensor. 4. Replace defective cutter motor, sensor, or FCU.
1-24	Cutter was not at its initial position when the machine was switched on	1. Clear debris from the paper path and sensors. 2. Check cutter mechanism. 3. Check connections from the FCU to the cutter motor and cutter sensor. 4. Replace defective cutter motor, sensor, or FCU.
1-30	Paper ran out during printing	1. Replace paper. 2. Clear debris from the paper end sensor. 3. Re-initialize the paper end sensor (see "Test Mode - Sensor Initialization", page 2-27). 4. Check connections between the paper end sensor and the FCU. 5. Replace the paper end sensor or FCU.
1-33	Paper end was detected when the machine was switched on	See code 1-30.
1-34	Paper ended after printing a page	See code 1-30.

Code	Meaning	Suggested Cause/Action
1-71	Printer cover opened during printing	1. Check with the user whether the cover was opened during printing. 2. Check the cover lock mechanism. 3. Check the cover switch position and actuation. 4. Check connections between the cover switch and the FCU. 5. Replace the cover switch or the FCU.
2-20	Abnormal coding/decoding (cpu not ready)	1. Check the connections from the FCU to the MBU and modem. 2. Replace the FCU, MBU, or modem.
2-40	Thermal head strobe signal did not respond	1. Replace the thermal head. 2. Replace the FCU.
4-00	One page took longer than 8 minutes to transmit	1. Check for a bad line.
4-01	Line current was cut	1. Check the line connector. 2. Check the connection between the FCU and the NCU. 3. Check for line problems. 4. Replace the FCU or the NCU.
4-02	The other end cut the received page as it was longer than the maximum limit.	1. Ask the other end to change their maximum receive length setting, then resend.

Code	Meaning	Suggested Cause/Action
4-10	Communication failed due to Polling ID mismatch (Closed Network) or Tel. No./CSI mismatch (Protection against Bad Connections)	1. Get the Polling ID codes the same. 2. Resend.
5-21	Memory overflow	1. Temporary memory shortage 2. Replace the FCU, MBU, or memory board
6-01	Protocol signals cannot be received (G3 ECM)	1. Check the line connection, and check for a bad line. 2. Check connections from the FCU to the NCU and modem.
6-02	EOR received (G3 ECM)	See code 6-01.
6-05	Facsimile data frame not received, but there was no line fail (G3 ECM)	See code 6-01.
6-06	Coding/decoding error (G3 ECM)	See code 6-01.
6-08	PIP/PIN was received in reply to PPS.NULL (G3 ECM)	See code 6-01.
6-09	ERR received (G3 ECM)	See code 6-01.
6-10	Error frames still received at the other end after all communication attempts at 2400 bps (G3 ECM)	See code 6-01.

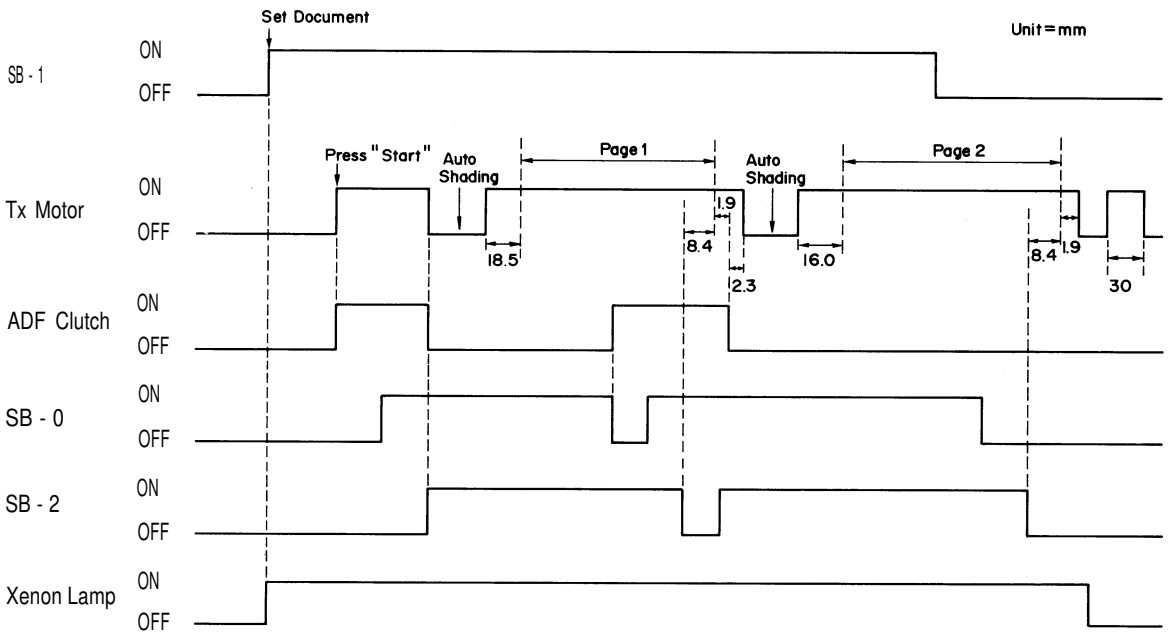
5-5. Defective Sensor Table

Sensor	Symptoms if shorted	Symptoms if open
Document sensor (SB-1)	"PAGES:00 KPAD/N", "DEPTCODE 0000 KPAD/N", or "QUICK/SPEED/KPAD" are displayed even if no document is present.	"READY SET DOCUMENT" remains displayed even if a document is present.
Scan line sensor (SB-2)	At power up, the default contrast, resolution, and reception mode indicators blink.	A document jam occurs half-way through feeding the first page.
Trailing edge sensor (SB-0)	Operation appears normal.	Tx/copying is normal until the end. However, the machine does not send an end of page signal (the other terminal does not cut the paper between pages).
Printer jam sensor (SB-5)	At power up, a paper cycle is made, then CLEAR COPY is displayed even if there is no jam.	At power up, a paper cycle is made but the paper is not cut, and CLEAR COPY is displayed.
Paper end sensor (SB-4)	At power up, a paper cycle begins even if there is no paper, but it fails and CLEAR COPY is displayed.	The Replace Paper indicator lights at power up, even if paper is present
Cutter sensor (SB-7)	At power up, a paper cycle is made, then the cutter motor rotates a few times, then CLEAR COPY is displayed.	At power up, the cutter motor starts immediately and rotates a few times.
Cover switch (SB-10)	CLOSE COVER is not displayed even if the cover is opened.	CLOSE COVER is displayed even if the cover is closed.

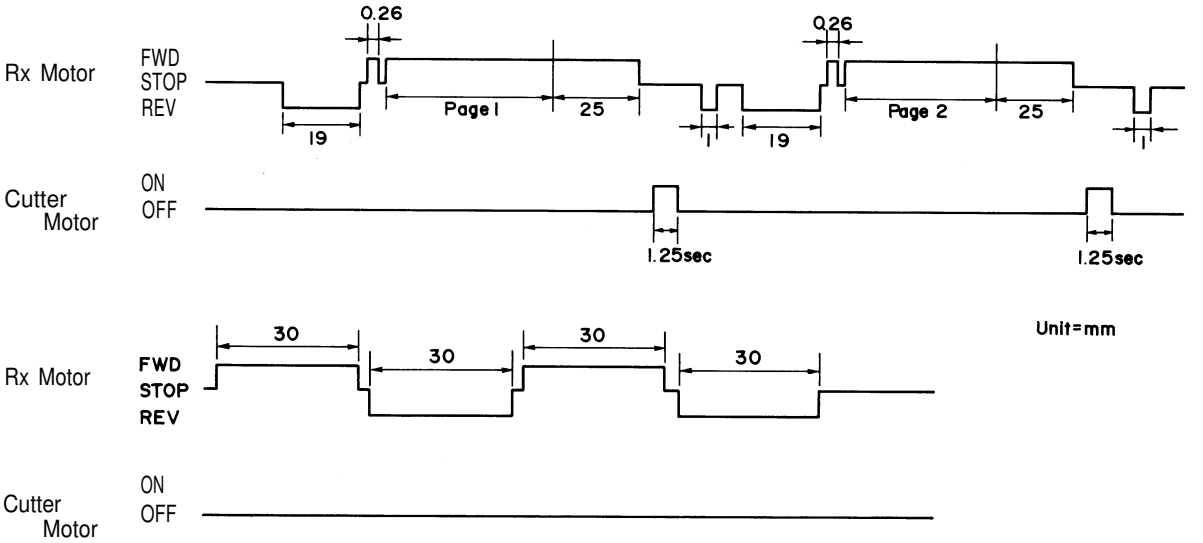
5-6. Timing Charts

1. Scanner

- TWo pages -



2. Printer


Rx Motor
FWD
STOP
REV
0.26
19
Page 1
25
1
19
0.26
Page 2
25
1
Cutter Motor
ON
OFF
1.25sec
1.25sec
Unit=mm
Rx Motor
FWD
STOP
REV
30
30
30
30
Cutter Motor
ON
OFF

SECTION 6

RICOH MEMORY OPTION TYPE 85

SECTION 6. RICOH MEMORY OPTION TYPE 85

6-1. Installation Procedure

The capacity of the Ricoh Memory Option Type 85 is 0.5 Mbyte. The FAX80 cannot be upgraded with this memory option. The installation procedure is as follows; the same procedure can be used for removal and replacement also.

1. Preparation
    1. Print out a polling file list and a memory list (Functions 72 and 74).Give these to the user.
    2. Print out any confidential or substitute reception files.
2. Installing the Memory
    1. Turn off the power, then unplug the machine.
    2. Remove the right cover (2 screws)
       - see page 3-2 for full details.
    3. Install the memory option on the FCU board.
    4. Reassemble the machine.
    5. Plug in the machine, then switch on the power while pressing Clear and 0 (zero). This clears the memory and memory-related RAM addresses.

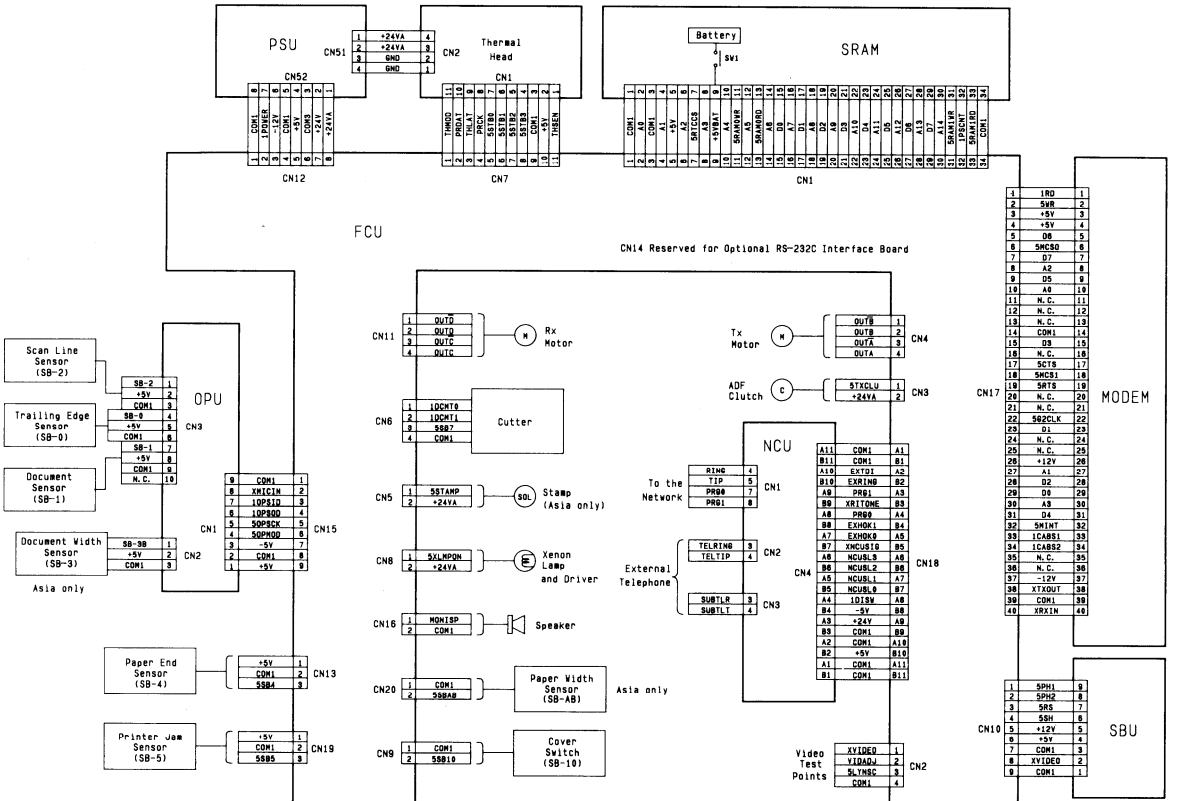
       There is no need to reprogram any bit switches, RAM addresses, or other items.

SECTION 7

ELECTRICAL DATA

SECTION 7. ELECTRICAL DATA

7-1. Point-to-point Diagram



7-2. Signal Tables

The V column contains the approximate voltage at the pin when the power is on, and the machine is in standby mode with the handset and line connected, no roll in the printer, and a document in the ADF to switch on the + 24VA supply. A blank means that voltage may vary.

1. FCU

CN1 - SRAM

Pin	Name	Function	V
1	COM1	Ground	0
2	A0	Address bus	
3	COM1	Ground	0
4	A1	Address bus	
5	+ 5V	Power supply	5
6	A2	Address bus	
7	5RTCCS	Real time clock mode 1: Battery	0
8	A3	Address bus	
9	+ 5VBAT	Voice message and real time clock backup power	5
10	A4	Address bus	
11	5RAMWR	RAM write enable	5
12	A5	Address bus	
13	5RAMRD	RAM read enable	5
14	A6	Address bus	
15	D0	Data bus	
16	A7	Address bus	
17	D1	Data bus	
18	A8	Address bus	
19	D2	Data bus	
20	A9	Address bus	
21	D3	Data bus	
22	A10	Address bus	
23	D4	Data bus	
24	A11	Address bus	
25	D5	Data bus	
26	A12	Address bus	
27	D6	Data bus	
28	A13	Address bus	
29	D7	Data bus	
30	A14	Address bus	
31	5RAMWR	RAM write enable	5
32	1PSCNT	128k memory backup 0: Capacitor 1: + 5V	5
33	5RAMRD	RAM read enable	5
34	COM1		0

CN2 - Video Signal Test Points

Pin	Name	Function	V
1	XVIDEO	Analog video	0
2	VIDADJ	Video adjustment signal	2
3	5LYNSC	Line sync (factory use)	0
4	COM1	Ground	0

CN3 - ADF Clutch

Pin	Name	Function	V
1	5TXCLU	Drive signal (active L)	24
2	+ 24VA	Power	24

CN4 - Tx Motor

Pin	Name	Function	V
1	OUTBB	Stepper motor drive phase	1
2	OUTB	Stepper motor drive phase	1
3	OUTAA	Stepper motor drive phase	0
4	OUTA	Stepper motor drive phase	0

CN5 - Not used

CN6 - Cutter

Pin	Name	Function	V
1	1DCMT0	Cutter motor drive	1
2	1DCMT1	Cutter motor drive	1
3	5SB7	SB-7 status (Standby = L)	0
4	COM1	Ground	0

CN7 - Thermal Head

Pin	Name	Function	V
1	THMOD	Not connected	
2	1PRDAT	Data signal (Black = H)	5
3	5THLAT	Latch signal (active L)	5
4	PRCK	Data transfer clock	5
5	5STB0	Strobe signal	5
6	5STB1	Strobe signal	5
7	5STB2	Strobe signal	5
8	5STB3	Strobe signal	5
9	COM1	Ground	0
10	+ 5V	Supply to thermal head	5
11	THSEN	Thermistor output	

CN8 - Xenon Lamp Driver

Pin	Name	Function	V
1	5XLMPON	Lamp drive (L = On)	0
2	+ 24VA	Power for lamp	24

CN9 - Printer Cover Sensor (SB-10)

Pin	Name	Function	V
1	COM1	Ground	0
2	5SB10	SB-10 status (H: Cover open)	0

CN10 - SBU

Pin	Name	Function	V
1	5PH1B	CCD drive clock 1	2
2	5PH2B	CCD drive clock 2	2
3	5RSB	CCD drive clock RS	2
4	5SHB	CCD drive clock SH	5
5	+ 12V	Supply to SBU	12
6	+ 5V	Supply to SBU	5
7	COM1	Ground	0
8	XVIDEO	Analog video signal	
9		Not connected	

CN11 - Rx Motor

Pin	Name	Function	V
1	OUTDB	Stepper motor drive phase 1	
2	OUTD	Stepper motor drive phase 1	
3	OUTCB	Stepper motor drive phase 0	
4	OUTC	Stepper motor drive phase 0	

CN12 - PSU

Pin	Name	Function	V
1	COM1	Ground	
2	1POWER	+ 24VA enable (On = H)	5
3		- 12V Supply from PSU	-12
4	COM1	Ground	0
5		+ 5V Supply from PSU	5
6	COM3	Ground	0
7		+ 24V Supply from PSU	24
8		+ 24VA Supply from PSU	24

CN13 - Paper End Sensor (SB-4)

Pin	Name	Function	V
1	+ 5V	Power supply	5
2	COM1	Ground	4
3	5SB4	Sensor output (analog)	1

CN14 - Reserved: RS-232C

CN15 - OPU

Pin	Name	Function	V
1	COM1	Ground	0
2	XMICIN	Signal from microphone	
3	1OPSID	OPU status data	
4	1OPSOD	OPU drive data	
5	5OPSCK	OPU data clock	5
6	5OPMOD	Chip select (H: OPP, L: OPP3)	
7	- 5V		
8	COM1		
9	+ 5V		

CN16 - Speaker

Pin	Name	Function	V
1	MONISP	Signal to speaker	0
2	COM1	Ground	0

CN17 - Modem

Pin	Name	Function	V
1	1RD	Read enable	2
2	5WR	Write enable	5
3	+ 5V	Supply from FCU	5
4	+ 5V	Supply from FCU	5
5	D6	Data bus	1.5
6	5MCS0	Chip select	5
7	D7	Data bus	
8	A2	Address bus	
9	D5	Data bus	
10	A0	Address bus	
11		Not used	
12		Not used	
13		Not used	
14	COM1	Ground	0
15	D3	Data bus	
16		Not used	
17	5CTS	Clear to send (Active L)	5
18	5MCS1	Chip select	5
19	5RTS	Ready to send	5
20, 21		Not used	
22	5G2CLK	G2 clock	
23	D1	Data bus	
24		Not used	
25		Not used	
26	+ 12V	Supply from FCU	12
27	A1	Address bus	
28	D2	Data bus	
29	D0	Data bus	
30	A3	Address bus	
31	D4	Data bus	
32	5MINT	Interrupt request	5
33	1CABS1	Cable select	0
34	1CABS2	Cable select	0
35		Not used	
36		Not used	
37	- 12V	Supply from FCU	-12
38	XTXOUT	Data for transmission	0
39	COM1	Ground	0
40	XRXIN	Received data	0

CN18 - NCU

Pin	Name	Function	V
A1	COM1	Ground	0
B1	COM1	Ground	0
A2	5EXTDI	Service mode (L: Enabled)	5
B2	EXRING	Ringing signal detector output	5
A3	PRG1	FromVariable Resistor	0
B3	XRITON	Not used	0
A4	PRG0	To Variable Resistor	0
B4	EXHOK1	Dc loop detection (active L)	5
A5	EXHOK0	Dc loop detection (active L)	5
B5	NCUSIG	Tx/Rx signal	0
A6	NCUSL0	Ds relay drive (L: On)	0
B6	NCUSL4	OH relay drive (H = Fax)	0
A7	NCUSL1	Gs relay drive (L: On)	5
B7	N.C.	Not used	5
A8	1DISW	Di switch drive (active H)	0
B8	- 5V	Not used	
A9	+ 24V	Not used	
B9	COM1	Not used	
A10	COM1	Not used	
B10	+ 5V	Power supply to NCU	5
A11	COM1	Ground	0
B11	COM1	Ground	0

CN19 - Printer Jam Sensor (SB-5)

Pin	Name	Function	V
1	+ 5V	Power supply	5
2	COM1	Ground	0
3	5SB5	Sensor output (analog)	0.2

CN20 - Paper Width Jam Sensor (SB-AB - Asia only)

Pin	Name	Function	V
1	+ 5V	Power supply	
2	COM1	Ground	
3	5SBAB	Sensor output (analog)	

2. SRAM

CN1 - FCU

See FCU CN1.

3. SBU

CN2 - FCU

See FCU CN10.

Note: The pin numbers are reversed.

4. NCU

CN1 - Network

Pin	Name	Function	V
1	L1	To/From the network	
2	L2	To/From the network	
3	T1	To/From the external phone	
4	T2	To/From the external phone	0
5	GS	Ground start terminal	0

CN2 - FCU

See FCU CN18. The pins are reversed. For example, pin A1 on the FCU is pin A11 on the NCU.

CN3 - Test Points

Pin	Name	Function	V
1	XL1	To/From the network	
2	XL2	To/From the network	
3	XTT1	To/From the external phone	
4	XTT2	To/From the external phone	0

5. OPU

CN1 - FCU

See FCU CN15.

CN2 - B4 Document Width Sensor (SB-3) - Asia only

Pin	Name	Function	V
1	5SB3B	SB-3 output (L: Paper present)	0
2	+ 5V	Supply	1
3	COM1	Ground	0

CN3 - Document (SB-1), Trailing Edge (SB-0), and Scan Line Sensors (SB-2)

Fin	Name	Function	V
1	5SB2	SB-2 output (L: Paper present)	5
2	+ 5V	supply	1
3	COM	Ground	0
4	5SB0	SB-0 output (L: Paper present)	0
5	+ 5V	supply	1
6	COM	Ground	0
7	5SB1	SB-1 output (L: Paper present)	5
8	+ 5V	supply	1
9	COM	Ground	0
10	N.C.	Not connected	

6. Xenon Lamp Driver

CN1 - FCU

See FCU CN8. The pin numbers are reversed.

CN2 - Xenon Lamp

Pin	Name	Function	V
1	COM	Ground	-29
2	OUT3	Drive signal	0
3	N.C.	Not connected	
4	OUT2	Drive signal	1
5	OUT1	Drive signal	1

7. PSU

CN51 - Thermal Head

Pin	Name	Function	V
1	+ 24VA	Power to T. Head	24
2	+ 24VA	Power to T. Head	24
3	GND	Ground	0
4	GND	Ground	0

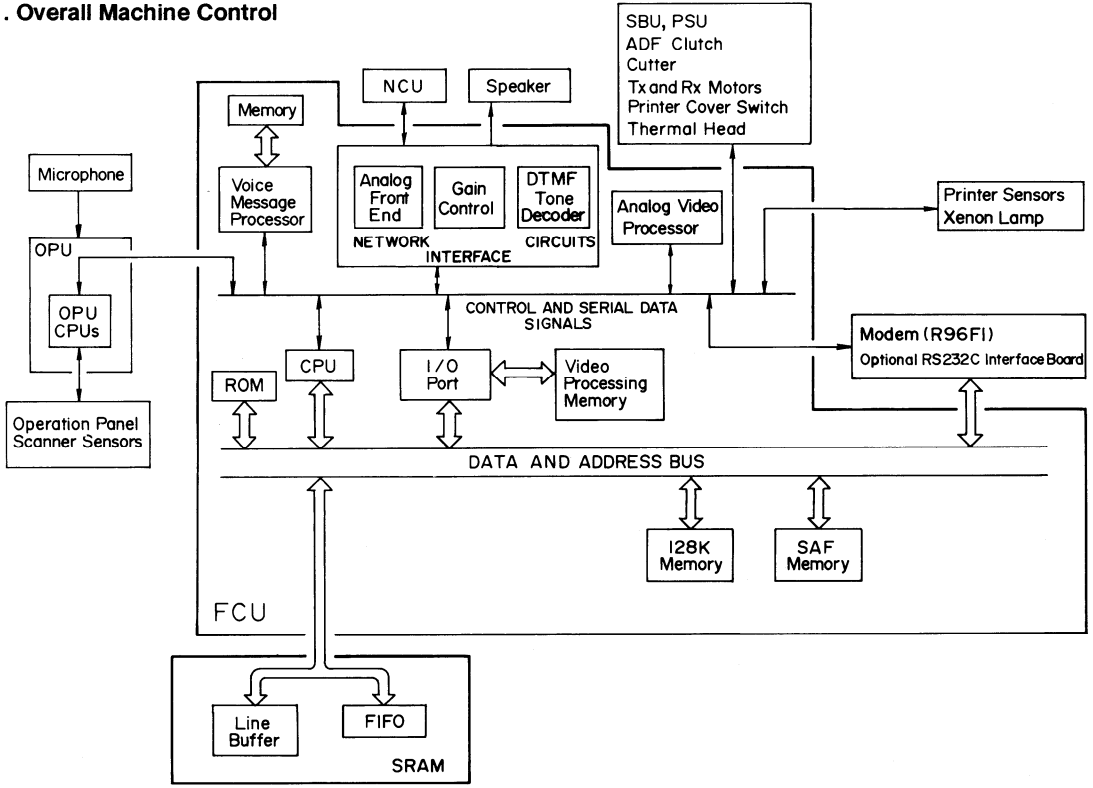
CN52 - FCU

See FCU CN12.

Note: The pin numbers have been reversed.

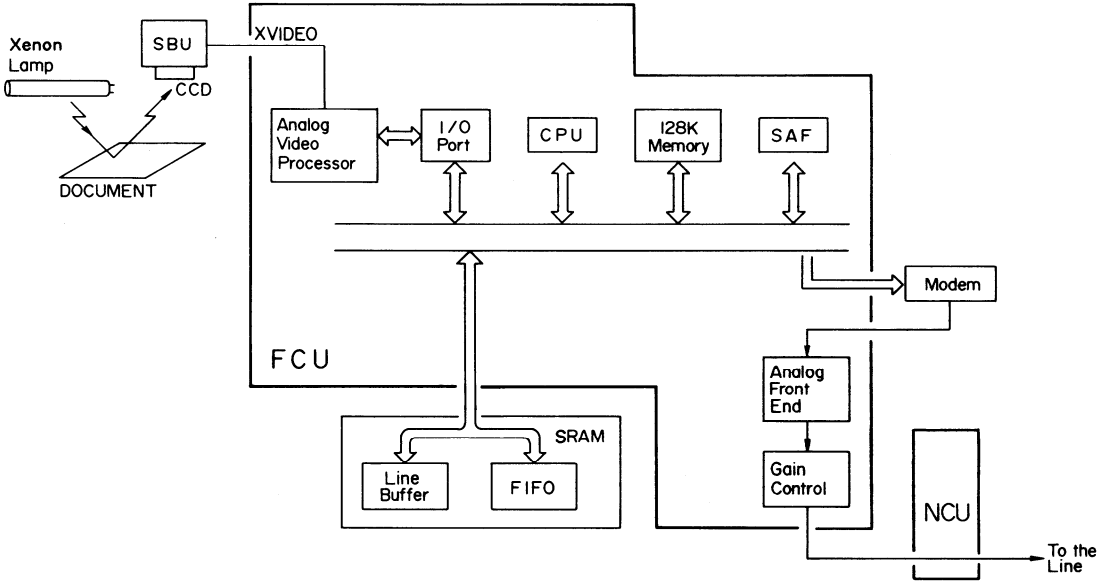
7-3. Block Diagrams

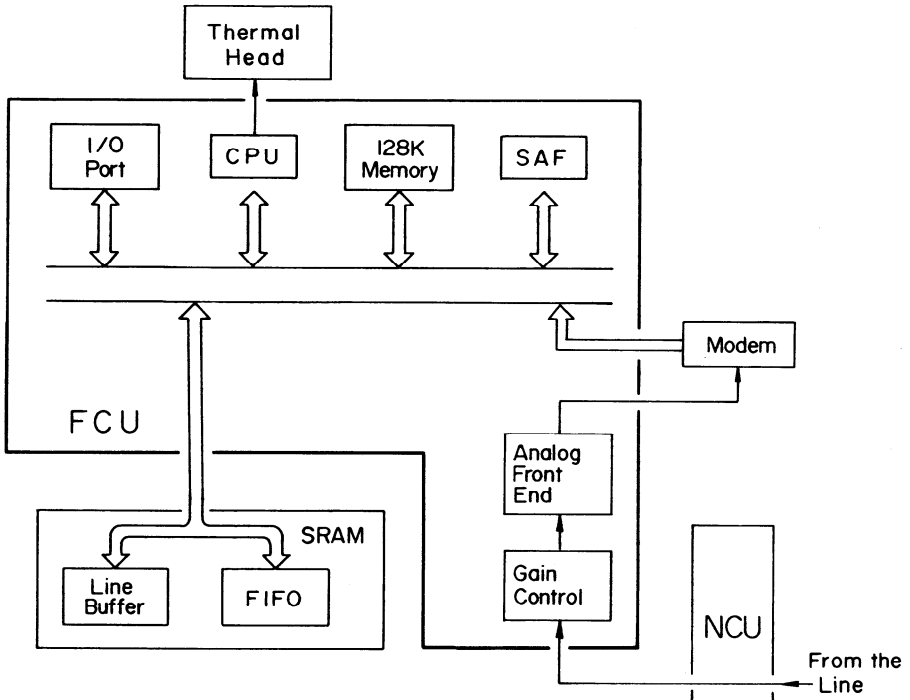
1. Overall Machine Control

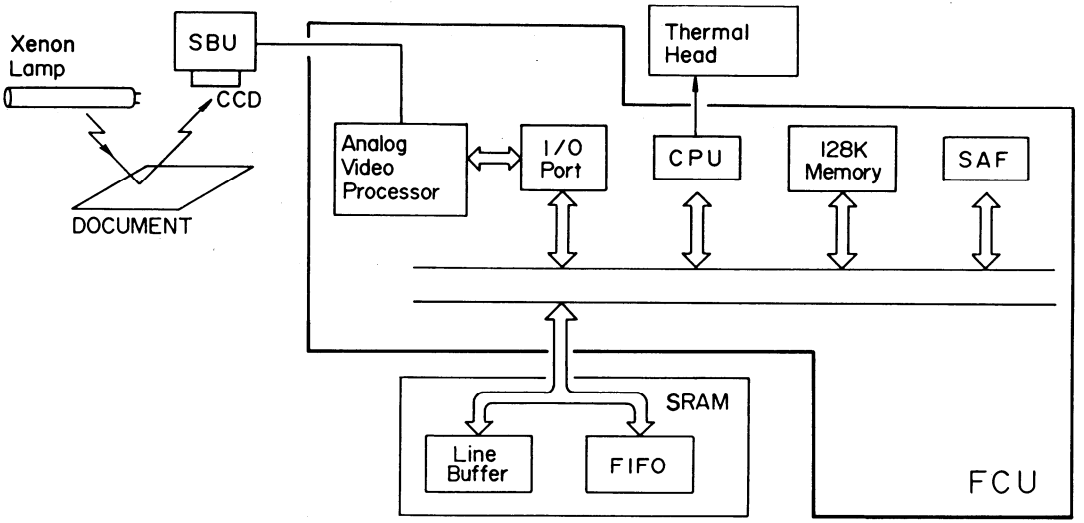


2. Video Data Path

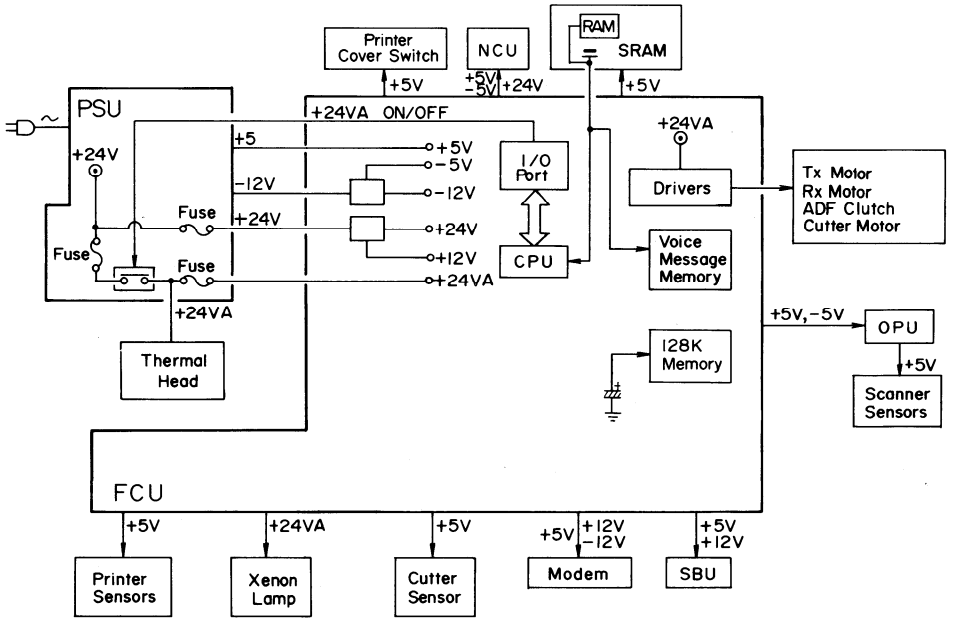
- Transmission -

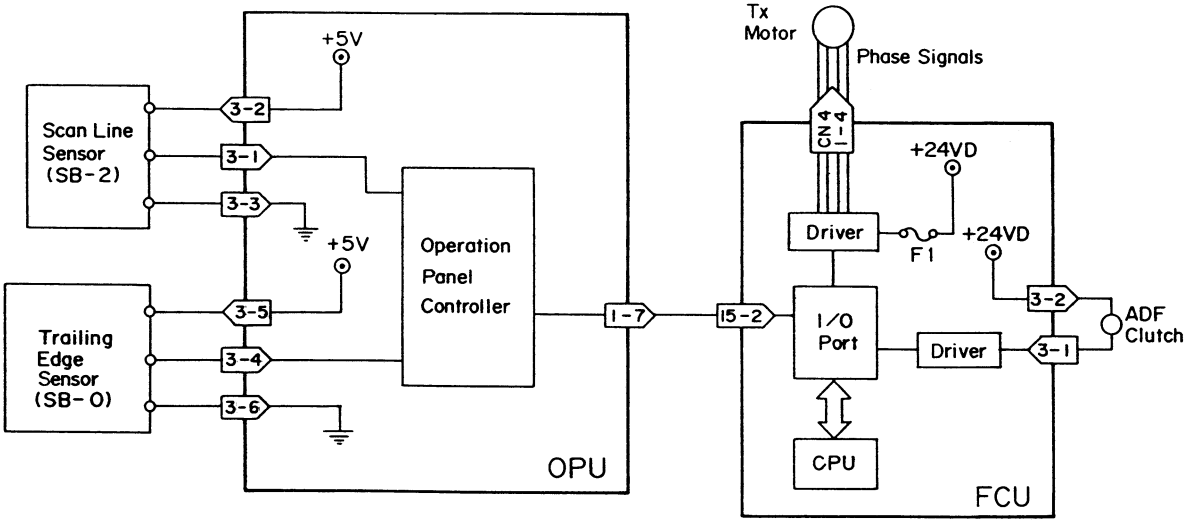



Thermal Head
I/O Port
CPU
128K Memory
SAF
Modem
FCU
Analog Front End
SRAM
Line Buffer
FIFO
Gain Control
NCU
From the Line

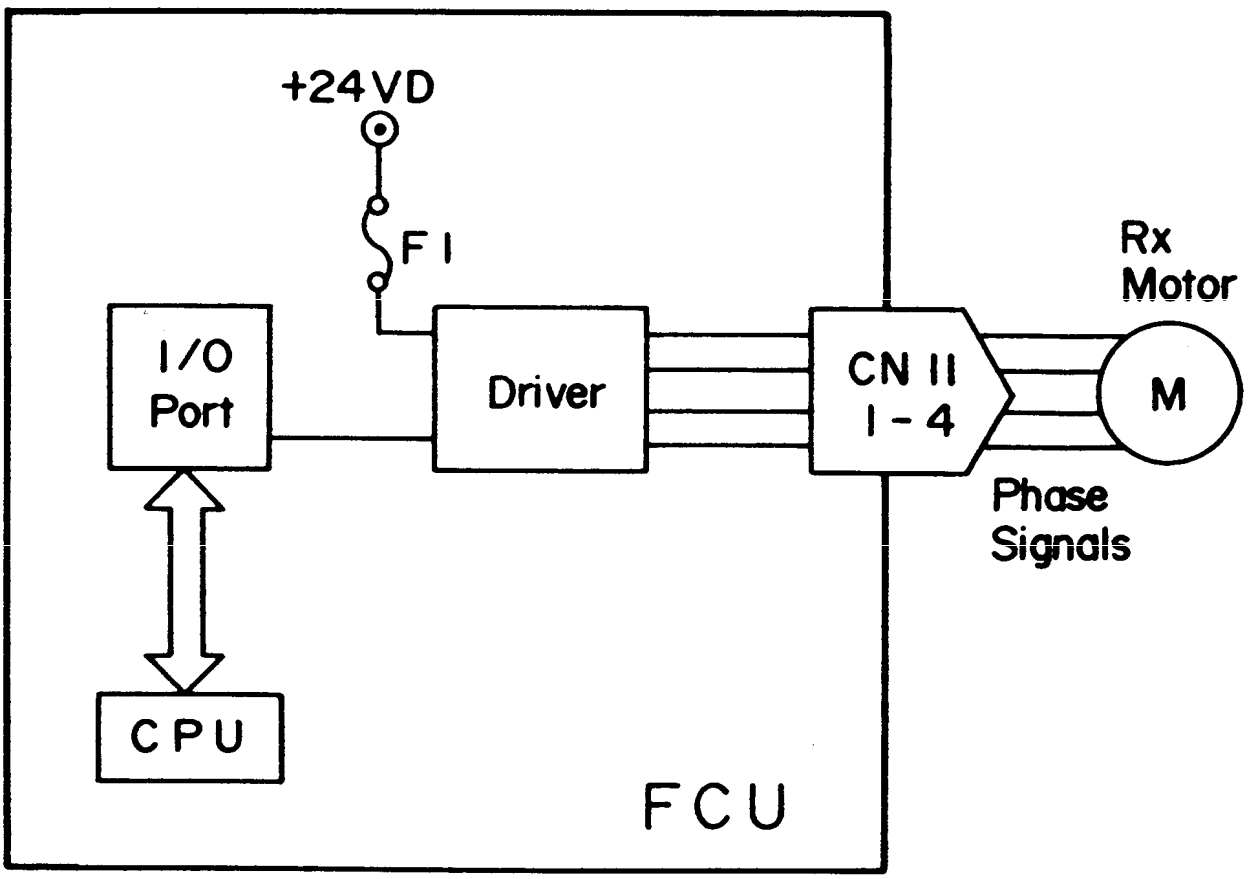

Xenon
Lamp
SBU
CCD
DOCUMENT
Analog
Video
Processor
I/O
Port
Thermal
Head
CPU
128K
Memory
SAF
SRAM
Line
Buffer
FIFO
FCU

3. Power Distribution

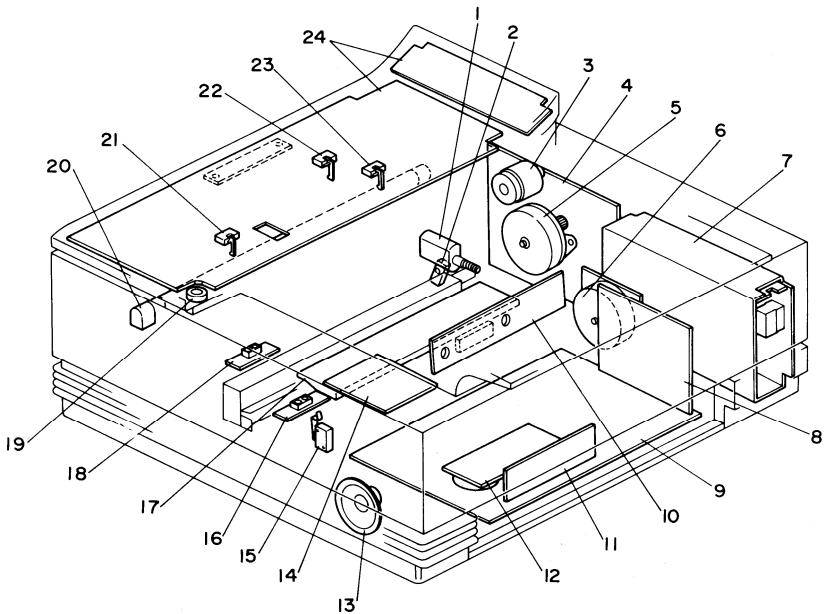



Tx
Motor
Phase Signals
CN41
+24VD
Driver
F1
+24VD
+5V
Scan Line
Sensor
(SB-2)
3-2
3-1
3-3
+5V
Operation
Panel
Controller
Trailing
Edge
Sensor
(SB-0)
3-5
3-4
3-6
1-7
15-2
I/O
Port
Driver
3-2
3-1
ADF
Clutch
CPU
OPU
FCU

5. Printer Drive



7-4. Electrical Component Layout



1. Cutter Motor
2. Cutter Sensor (SB-7)
3. ADF Clutch
4. NCU (Network Control Unit)
5. Tx Motor
6. Rx Motor
7. PSU (Power Supply Unit)
8. Modem
9. FCU (Facsimile Control Unit)
10. SBU (Scanner Board Unit)
11. Memory (FAX85 only)
12. SRAM Board
13. Speaker
14. Xenon Lamp Driver
15. Cover Switch (SB-10)
16. Paper End Sensor (SB-4)
17. Thermal Head
18. Printer Jam Sensor (SB-5)
19. Microphone
20. Xenon Lamp
21. Document Sensor (SB-1)
22. Scan Line Sensor (SB-2)
23. Trailing Edge Sensor (SB-0)
24. OPU (Operation Panel Unit)

APPENDIX

APPENDIX A. GLOSSARY

Appendix A. Glossary

ADF
Automatic Document Feeder: An assembly which automatically feeds documents into the scanner one page at a time.

CCD
Charge Coupled Device: A solid state device which converts light reflected from the document into an analog video signal.

CED
Called Station Identification: A protocol signal which informs the calling station that a fax terminal has been reached.

CCITT
Consultative Committee for International Telephone and Telegraph: A part of the U.N. which sets and governs facsimile standards.

CFR
Confirmation to Receive: A protocol signal used by the receiving terminal to tell the transmitter that modem training and set-up information was accepted.

CNG
Calling Tone: A 1100 Hz tone that is used by auto-dialling machines to alert a manual receive machine that a fax is on the line.

CSI
Called Subscriber Identification: The phone number of the fax machine. This is used for identification instead of the TTI when communicating with a non-Ricoh machine.

DCN
Disconnect: A protocol signal used by the transmitter to release the line.

DCR
Data Compression and Reconstruction: Compression reduces the volume of data being sent out, and reconstruction recreates the original data at the other end. See MH, MR, MMR, and EFC.

DCS
Digital Command Signal: A protocol signal that informs the calling station of the called terminal's capabilities.

DTMF
Dual Tone Multi Frequency: A method of dialling using tones instead of pulses.

EFC
Estimated Fillbit Control: A Ricoh-developed compression method used with MH or MR or MMR. It reduces the number of fill bits on a line, making transmission time faster.

EOM
End Of Message: A protocol signal that informs the receiver that there are more pages to follow, using different parameters.

EOP
End Of Procedure: A protocol signal that informs the receiver that this is the end of the page of data.

FCU
Facsimile Control Unit: A PCB which controls the entire machine.

FTT
Failure To Train: A protocol signal that informs the transmitter that either set-up information and/or modem training was not acceptable.

LB
Line Buffer: An area of memory where lines of video data are temporarily held before being passed on to the next process. This helps to ensure a smooth flow of data.

LCD
Liquid Crystal Display: A display on the operation panel used to inform machine status and programming prompts to the user.

LED
Light Emitting Diode: A diode that emits light; used as an indicator lamp.

LSI
Large Scale Integration: A process of making complex microchips.

MCF
Message Confirmation: A protocol signal that confirms reception of the page just sent.

MH
Modified Huffman: A compression method used to reduce the number of bits needed to represent the facsimile data. MH coding is a one-dimensional run length digital scheme of coding black and white runs.

MMR
Modified Modified Read: A modified version of MR coding (see below).

MPS
Multipage Signal: A protocol signal that informs the receiving fax that more pages are to follow using the same parameters.

MR
Modified Read: A compression method (see MH above). MR coding is a two-dimensional digital coding scheme which works by comparing a line of data with the line above it.

MTF
Modulation Transfer Function: MTF is necessary for transmitting details such as fine points, thin lines, and complex characters.

NCU
Network Control Unit: A PCB that interfaces the fax machine with the telephone line. It is sometimes called a coupler.

NSF
Non Standard Facilities: A protocol signal that informs the calling station of the called station's capabilities. It is also called Ricoh Group 3.

NSS
Non Standard Set-up: The set-up command in Ricoh protocol.

OPU
Operation Panel Unit: This PCB contains the operation panel components.

PABX
Public Access Broadcast Exchange: A switchboard found at the customer's location.

PD
Pulse Dialling: A dialling method that uses pulses; also known as Rotary Dialling.

PIN
Procedural Interrupt Negative: A protocol signal used to inform the transmitter that the previous page was not received satisfactorily due to paper running out, paper jam, or because the Stop key was pushed on the receiving fax.

PIP
Procedural Interrupt Positive: A protocol signal that confirms reception of the previous page, and indicates that the receiver operator wants to make a voice request.

PSTN
Public Switched Telephone Network: The network normally used for telephoning.

PSU
Power Supply Unit: The PCB that supplies voltages to machine components.

QAM
Quadrature Amplitude Modulation: The modulation technique which enables fax machines to transmit at 9600 and 7200 bps over the PSTN.

RTI
Remote Terminal Identification: The RTI is displayed on the other terminal's display panel to identify the local terminal during communication.

RTN
Retrain Negative: A protocol signal that informs the transmitter that the previous page was not received satisfactorily due to excessive errors.

RTP
Retrain Positive: A protocol signal that informs the transmitter that the previous page was OK but modem retraining must be done before continuing; this is normally because of poor line condition.

SAF
Store And Forward: A memory used to hold documents for transmission later or for broadcasting, to receive confidential messages, and to receive messages when the printer is jammed or out of paper.

SBU
Scanner Board Unit: This PCB contains the CCD.

SRAM
Static Random Access Memory: This PCB contains the RAM which holds system parameters such as bit switches, Quick Dial, and NCU parameters.

TCR
Transaction Confirmation Report: The TCR shows the date, time, RTI, mode, number of pages, result, department code, file number, and number of communications made by the machine.

TTI
Transmit Terminal Identification: The TTI of the sender is printed at the top of each page as it is received at the other end. It identifies the sender.