TOSHIBA

SERVICE MANUAL

FAX BOARD
GD-1370

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GENERAL PRECAUTIONS REGARDING THE SERVICE FOR GD-1370

The installation and service shall be done by a qualified service technician.

1. **Transportation/Installation**
   - The equipment is quite heavy, therefore pay full attention when handling / transporting / installing it.
   - Be sure not to hold the movable parts or units (e.g. the control panel, ADU or DF) when transporting the equipment.
   - The equipment must be grounded for safety.
   - Select a suitable place for installation. Avoid excessive heat, high humidity, dust, vibration and direct sunlight.
   - Provide proper ventilation since the equipment emits a slight amount of ozone.
   - To insure adequate working space for the copying operation, keep a minimum clearance of 30 cm (11.8") on the left, 80 cm (32") on the right and 20 cm (7.9") on the rear.
   - The equipment shall be installed near the socket outlet and shall be easily accessible.
   - Be sure to fix and plug in the power cable securely after the installation so that no one trips over it.
   - When the equipment is used after the option is removed, be sure to install the parts or the covers which have been taken off so that the inside of the equipment is not exposed.
   - Do not use an ozone generator near the MFP. Or, place any ozone generator as far away from the MFP as possible.
   - Do not use an ultrasonic humidifier near the MFP.
     Components such as chlorinate and mineral will be atomized by an ultrasonic humidifier and they will adhere to electric parts and optical parts in the MFP. This could cause malfunctions. When you find it, explain its risk to your customer.

2. **General Precautions at Service**
   - Be sure to turn the power OFF and unplug the power cable during service (except for the service should be done with the power turned ON).
   - After the power cable is disconnected, an electric charge may remain in the boards of the equipment. Therefore, be sure to disconnect or connect the connectors when about 1 minute (e.g.: the time for taking off the rear cover) has passed after the power cable is disconnected.
   - The fuse could be in the neutral. The mains supply shall be disconnected to de-energize the phase conductors.
   - Unplug the power cable and clean the area around the prongs of the plug and socket outlet once a year or more. A fire may occur when dust lies on this area.
   - When the parts are disassembled, reassembly is the reverse of disassembly unless otherwise noted in this manual or other related documents. Be careful not to install small parts such as screws, washers, pins, E-rings, star washers, harnesses in the wrong places.
   - Basically, the equipment should not be operated with any parts removed or disassembled.
   - The PC board must be stored in an anti-electrostatic bag and handled carefully using an antistatic wrist strap since the ICs on it may be damaged due to static electricity.

     Caution:
     Before using the antistatic wrist strap, unplug the power cable of the equipment and make sure that there are no charged objects which are not insulated in the vicinity.

- Be sure not to touch high-temperature sections such as the fuser unit, damp heater and areas around them.
- Be sure not to touch high-voltage sections such as the chargers, transfer belt, 2nd transfer roller, developer, high-voltage transformer, and power supply unit. Especially, the board of these components should not be touched since the electric charge may remain in the capacitors, etc. on them even after the power is turned OFF.
- Make sure that the equipment will not operate before touching potentially dangerous places (e.g. rotating/operating sections such as gears, belts pulleys and fans).
- Be careful when removing the covers since there might be the parts with very sharp edges underneath.
- When servicing the equipment with the power turned ON, be sure not to touch live sections and rotating/operating sections.
- Use designated jigs and tools.
- Use recommended measuring instruments or equivalents.
- Return the equipment to the original state and check the operation when the service is finished.
- Be very careful to treat the touch panel gently and never hit it. Breaking the surface could cause malfunctions.
- Do not leave plastic bags where children can get at them. This may cause an accident such as suffocation if a child puts his/her head into a bag. Plastic bags of options or service parts must be brought back.
- There is a risk of an electric shock or fire resulting from the damage to the harness covering or conduction blockage. To avoid this, be sure to wire the harness in the same way as that before disassembling when the equipment is assembled/disassembled.

3. General operations
- Check the procedures and perform them as described in the Service Manual.
- Make sure you do not lose your balance.
- Avoid exposure to your skin and wear protective gloves as needed.

4. Important Service Parts for Safety

The breaker, door switch, fuse, thermostat, thermofuse, thermistor, batteries, IC-RAMs including lithium batteries, etc. are particularly important for safety. Be sure to handle/install them properly. If these parts are short-circuited and their functions become ineffective, they may result in fatal accidents such as explosion or fire. Avoid short-circuiting and do not use parts not recommended by Toshiba Tec Corporation.

5. Cautionary Labels

During servicing, be sure to check the rating plate and cautionary labels such as “Unplug the power cable during service”, “CAUTION. HOT”, “CAUTION. HIGH VOLTAGE”, “CAUTION. LASER BEAM”, etc. to see if there is any dirt on their surface and if they are properly stuck to the equipment.

6. Disposal of the Equipment, Supplies and Packing Materials

Regarding the recovery and disposal of the equipment, supplies, packing materials, follow the relevant local regulations or rules.

7. Batteries and IC RAMs including lithium batteries etc.

CAUTION:

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE RELEVANT LOCAL REGULATIONS OR RULES.

CONTENTS

1. SPECIFICATIONS AND OUTLINE OF SYSTEM

1.1 Fax Options

The fax function can be used by installing a fax board in the SYS board of the equipment. Up to 2 boards can be installed in the equipment. The secondary board can be used as the 2nd line.

Notes:

Enabling or disabling of the installation of the secondary board and the available size of an original and recording paper and scanning direction vary depending on the specifications of the equipment to install.

1.2 Specifications

[A] Main system

Type		Desktop type transceiver
Operation	Transmission	Manual, Automatic
	Reception	Manual, Automatic (Including automatic calling to a facsimile communication network)

[B] Scanning system

Scanning density (The values in [ ] are at the rotation transmission.)	Horizontal direction	16 lines/mm, 8 lines/mm [15.4 lines/mm, 7.7 lines/mm, 3.85 lines/mm]		
	Vertical direction	15.4 lines/mm, 7.7 lines/mm, 3.85 lines/mm [16 lines/mm, 8 lines/mm]		
Combination (The values in [ ] are at the rotation transmission.)	Ultra Fine	16 x 15.4 lines/mm [15.4 x 16 lines/mm]		
	Fine	8 x 7.7 lines/mm [7.7 x 8 lines/mm]		
	Normal	8 x 3.85 lines/mm [3.85 x 8 lines/mm]		
Effective scanning area (mm)		Original size	A	B
		A4	210	206
		B4	364	360
		A3	420	416
		FOLIO	330	326
		LT	216	212
		LG	355.6	351.6
		LD	431.8	427.8

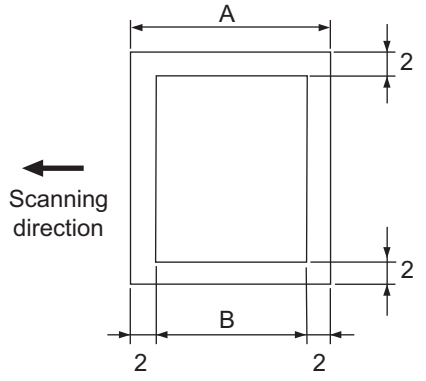


Fig. 1-1

[C] Transmission system

Communication mode		G3 mode ECM (Error Correction Mode)	
Circuit carrier link equalization function		Embedded	
Output level		-16 dBm to -8 dBm	
Input level		-43 dBm to 0 dBm	
Specification of the communication mode		G3 mode	ECM
	Horizontal scanning density	8 lines/mm 300 dpi (reception only) 16 lines/mm	Same as on the left
	Vertical scanning density	3.85 lines/mm 7.7 lines/mm 300 dpi (reception only) 15.4 lines/mm	Same as on the left
	Encoding system	MH/MR	MH/MR/MMR/JBIG
	Transmission speed (image signal) and modulation method	14.4 k /12 k /9600/7200/4800/2400 bps Conformance to V.17/V.29/V.27 ter	33.6 k / 31.2 k /28.8 k / 19.2 k / 16.8 k / 14.4 k /12 k / 9600/7200/4800/ 2400 bps
	Control signal	300 bps V.21	2400/1200/600/300 bps V.34 / V.8 / V.21
	Transmission control procedure	Conformance to T.30	Same as on the left

[D] Recording paper

Recording system	Electrophotographic recording system
Horizontal scanning density (recording system)	24 lines/mm (96 lines/mm with the smoothing processing) [23.1 lines/mm (92.4 lines/mm with the smoothing processing)]
Vertical scanning density (recording system)	23.1 lines/mm [24 lines/mm]

1.3 Features

- **High-speed transmission**
  33.6 kbps high-speed modem
  JBIG encoding system

- **Dual access**
  By using the memory for transmission and reception, the following operations in which two actions are performed at the same time become possible.
  (1) Memory input during memory transmission
  (2) Memory input during memory reception
  (3) Copying during memory transmission
  (4) Reception of incoming call during copying
  (5) Reception of incoming call during memory output
  (6) Reception of incoming call during list output

- **Gradation**
  256 tones, error diffusion method

- **Memory communication function**
  Delayed transmission, multi transmission, memory reception and ECM communication can be performed when image data are stored in the memory.

- **Smoothing**
  The smoothing process is applied to the received images so that they are changed from 8 x 3.85, 8 x 7.7, 8 x 15.4 or 16 x 15.4 to 24 x 92.4 lines/mm (equivalent to 600 x 2400 dpi), then printed out.

- **Duplex transmission (when a DF is installed)**
  Duplex transmission is possible.

- **Duplex printing**
  Duplex printing of received data is possible.

- **Fax data file storage capacity**
  1 GB (sum of transmission and reception)

  Notes:
  For hard disks, GB means 1 billion bytes.

- **Multi-address transmission function**
  Data can be sent to multiple addresses (*) in sequence in a single operation.
  * Up to a total of 400 destinations of addresses which are entered by direct dialing and selected from single and group addresses registered in the address book

- **Memory reception function**
  When the available recording paper has run out or a paper misfeed has occurred, the memory receives and stores the data.
- **Auto-dialing function**
  - Delayed dialing
    Data are transmitted automatically to the number set at the specified time.
  - Redialing
    When the recipient's machine is busy during the automatic dialing, the equipment keeps dialing at a fixed interval for a specified number of times.

- **Incoming call sound and printing completion sound**
  The fax data arrival or the completion of the fax data reception can be notified by means of a sound.

- **List output**
  The data such as Phone book number information, Function list, Transmission journal and Reception journal can be printed out.

- **Energy Saver**
  Data can be received during the Super Sleep mode.

- **Mailbox transmission**
  Relay station mailbox transmission and mailbox transmission/reception using the mailbox are possible.

- **Drawer selection**
  A drawer to use for printing received fax images can be selected.

1.4 Accessories and Parts

The following accessories and parts come with the fax board.

Modular cable (2 m)	1 pc.
Unpacking/Setup Instructions	1 set

1.5 Layout of PC Boards

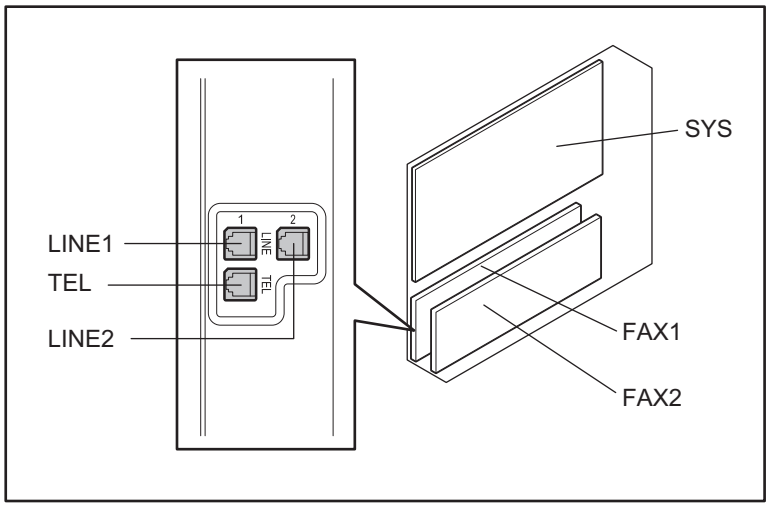


Fig. 1-2

Symbol	Name	Function
FAX1	Fax board	Fax modem for 1st line
FAX2	MDM board	Fax modem for 2nd line
LINE1	LINE1 connector	For connecting the cable for line1
LINE2	LINE2 connector	For connecting the cable for line2
TEL	TEL connector	For connecting an external telephone (EU: N/A)

2. RECEIVED IMAGE AND RECORDING PAPER SIZE

2.1 Recording Paper Selection and Print Condition Determination Algorithm

A received image is evaluated in the following order and then printed.

1. Recording paper selection algorithm
   - If recording paper whose size is the same as the one for the received image is not available, this algorithm determines on which size of recording paper the output should be made.
2. Print condition determination algorithm
   - This algorithm determines how the received image is to be printed on the recording paper.

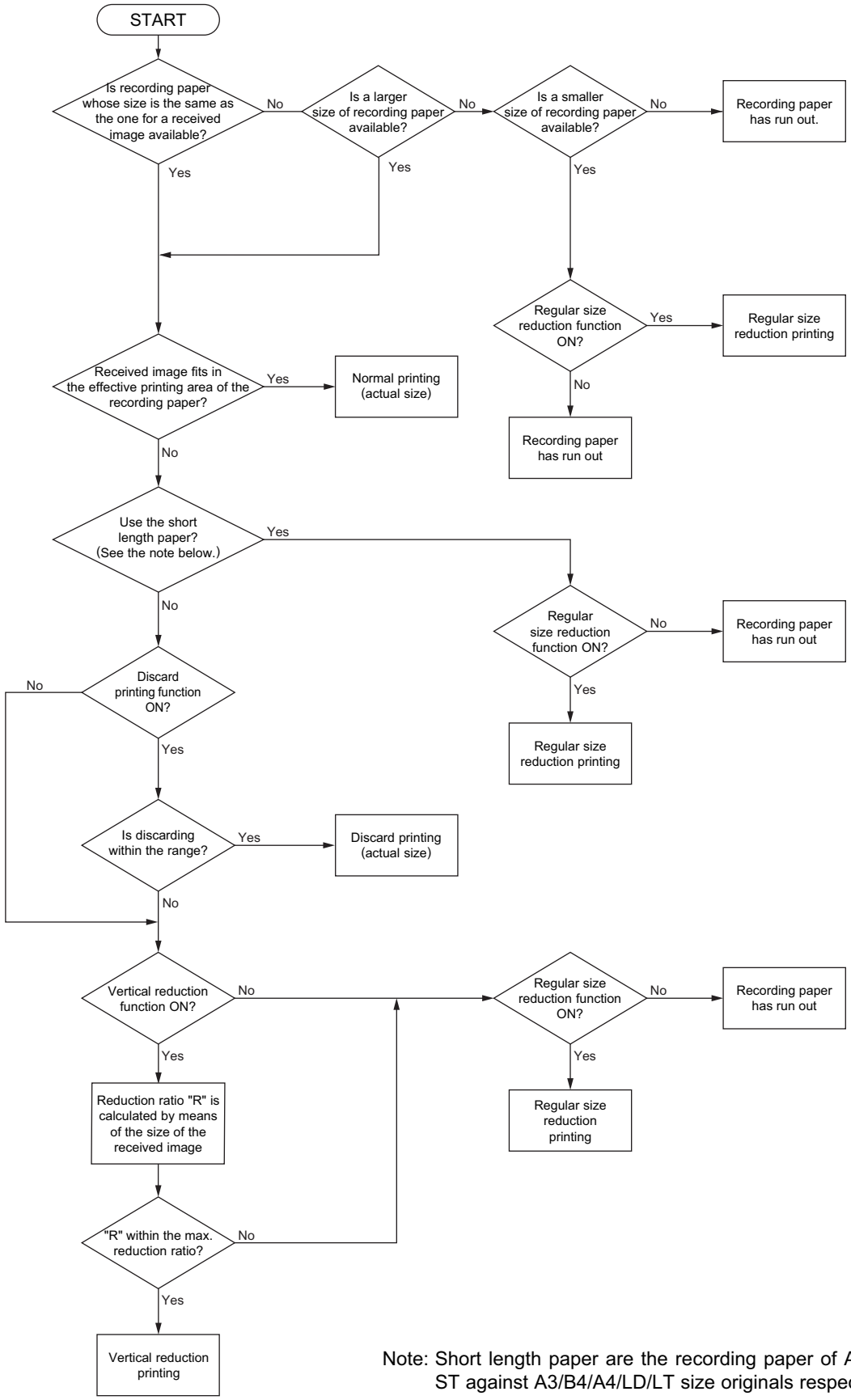
2.1.1 Recording paper selection algorithm

It is possible to distinguish the size of each received image (A3, B4, A4, B5, A5, FOLIO, LD, LG, LT, ST, COMP). Basically, printing is performed on the recording paper whose size is the same as the one for the received image. If such recording paper is not available, a larger one is selected. If neither of them is available, recording paper is selected according to the setting in FS-13-517 (Regular reduction printing).

2.1.2 Print condition determination algorithm

If the length of the received image is longer than the effective printing area of the recording paper, printing is performed in the priority order of; discard > vertical reduction > regular size reduction > split. (For details, see the Discard / Vertical reduction / Regular size reduction / Split printing flow chart.)

Discard / Vertical reduction / Regular size reduction / Split printing flow chart



Note: Short length paper are the recording paper of A4/B5/A5/LT/ ST against A3/B4/A4/LD/LT size originals respectively.

Fig. 2-1

1. Discard printing (FS-13-378 (Rear-end discard printing))
   The trailing edge of the received image is cut off by the length specified in the parameter to print the image in one page in its actual size.
   - Images which exceed the effective printing area length will be discarded.

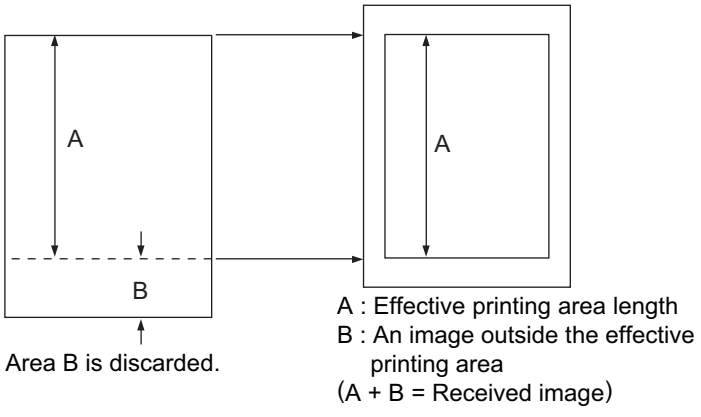


Fig. 2-2

Notes:
Adjust the discard parameter and vertical reduction parameter so that an image will not be discarded depending on the data to be received.

2. Vertical reduction printing (FS-13-377 (Reduced printing in vertical direction), FS-13-379 (Maximum reduction ratio in vertical direction))
   The received image is reduced to 75% or 90% only in the vertical direction.

3. Regular size reduction printing (FS-13-517 (Regular reduction printing))
   The received image is reduced by “regular to regular” to print it in one page. The combination of regular size reduction is as below.

A3 → B4	A3 → A4	B4 → A4	B4 → B5
A4 → B5	A4 → A5	B5 → A5	LD → COMP
LD → LT	COMP → LT	LT → ST	

Example 1:
When the length of the received image is within the effective printing area of paper whose size is the same as that for the received image; however, the same or a larger size of recording paper has run out

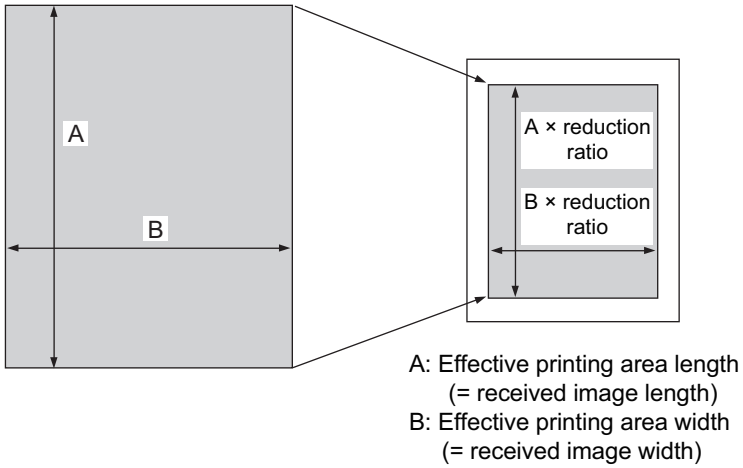


Fig. 2-3

Example 2:
When the received image cannot be printed in one page even if both discarding and vertical reduction have been applied. This example explains the case of applying the “B4 to A4” or “A3 to A4” reduction since reception of an image has been performed during A4 size selection as its width B is A4, but its length A has still exceeded the effective printing area even if 75% vertical reduction has been applied.

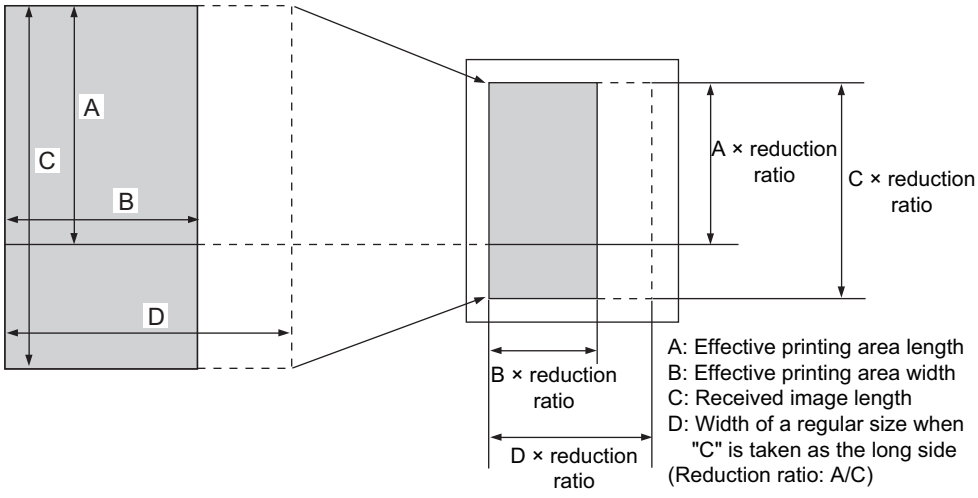


Fig. 2-4

4. Split printing
When the received image cannot be printed on one page with the largest size of paper set in an MFP even if vertical reduction is applied, the image reduced is printed by dividing it into two pages.

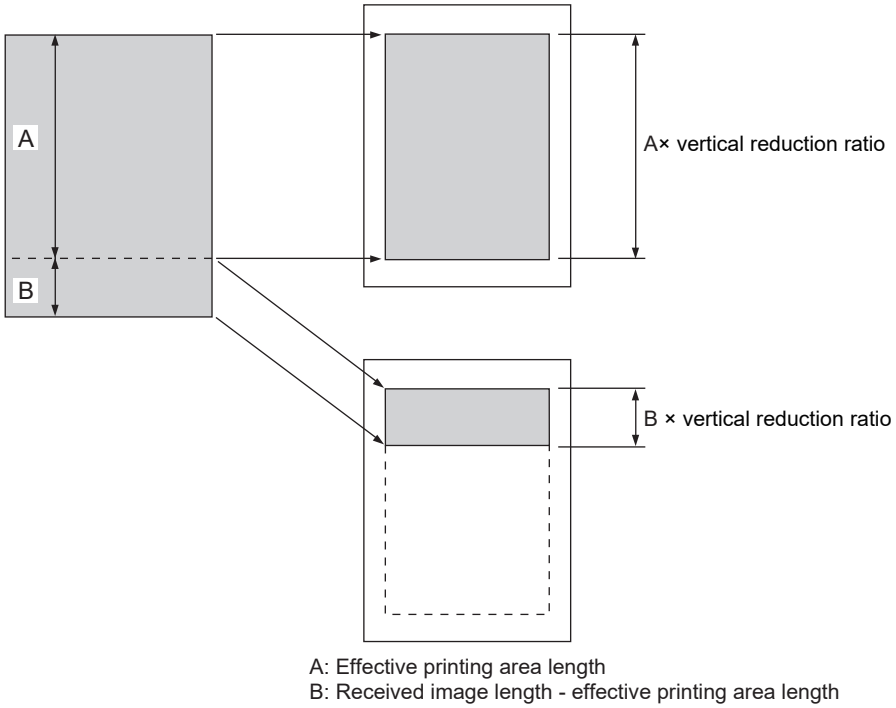


Fig. 2-5

2.2 Received Image Size and Recording Paper to be Selected

When FS-13-377 (Reduced printing in vertical direction) is enabled, recording paper is selected in the following priority order.

1. Recording paper with the same size and direction as those for the received image
2. Recording paper with the same size and different direction from those for the received image
3. Recording paper with a larger size and the same direction as those for the received image

2.2.1 Table of the recording paper selection mode

For the recording paper size to be selected and the priority when FS-13-377 (Reduced printing in vertical direction) is enabled, see the table below.

Priority \ Size of Original being Received	A3	B4	A4	A4-R	B5/B5-R	A5/A5-R	FOLIO
1	A3	B4	A4	A4-R	B5	A5-R	FOLIO
2	B4 *	A3	A4-R	A4-R	B5-R	A4-R	B4
3	A4-R *	A4-R *	A3	FOLIO	B4	A4	A3
4	A4 *	A4 *	FOLIO	B4	A4	FOLIO	A4-R *
5	FOLIO *	FOLIO *	B4	A3	A4-R	B5	A4 *
6		B5-R *	B5 *	B5-R *	A3	B5-R	B5-R *
7		B5 *	B5-R *	B5 *	FOLIO	B4	B5 *
8			A5-R *	A5-R *	A5-R *	A3	

The left-hand side indicates the width in a horizontal direction.
* Only when regular size reduction is enabled.

Size of Original being Received / Priority	Ledger	Legal	Letter	Letter	Statement	COMP	Legal**
1	Ledger	Legal	Letter	Letter	Statement	COMP	Legal**
2	COMP*	COMP	Letter	Letter	Letter	Ledger	Letter**
3	Letter*	Ledger	Ledger	Legal	Letter	Letter	Letter**
4	Letter*	Letter*	Legal	COMP	Legal	Letter	COMP**
5	Legal*	Letter*	COMP	Ledger	COMP	Legal	Ledger**
6			Statement*	Statement*	Ledger		

The left-hand side indicates the width in a horizontal direction.
* When regular size reduction is enabled.
** When vertical reduction printing is enabled.

2.2.2 Others

Adjust the discard parameter and vertical reduction parameter so that an image will not be discarded depending on the data to be received.

2.3 Energy Saving Mode

The fuser unit, main power and power supply for the control panel can be shut off during the ready state in a specified period such as night time, using the weekly timer function of the equipment. When a fax is received in the Energy Saving mode, the equipment recovers from the mode and starts printing.
The setting of the Energy Saving mode and time (start and end time) are made on the USER FUNCTIONS screen. (The default setting is made by the weekly timer function of the equipment.)

Energy Saving Mode	How to enter the mode	Timer setting
Auto Power Save Mode	Automatically	This can be set in the User Functions screen.
Sleep Mode*	Automatically or by pressing the [ENERGY SAVER] button	This can be set in the User Functions screen.
Super Sleep Mode*	Automatically or by pressing the [ENERGY SAVER] button	This can be set in the User Functions screen.

* The equipment is shifted to the Sleep or Super Sleep mode depending on the installed options or the conditions of the functions used.

2.4 Memory Reception

The received fax data are stored once in the HDD (memory reception). Then they are printed after the reception process is finished.
The memory reception can be performed up to 1 GB* at a maximum or done so until the HDD becomes full.

* Including the transmission data

3. DIALING/COMMUNICATION CONTROL

3.1 Circuit Connection and Procedure to Change Mode

3.1.1 Dial call-up transmission to a telephone circuit

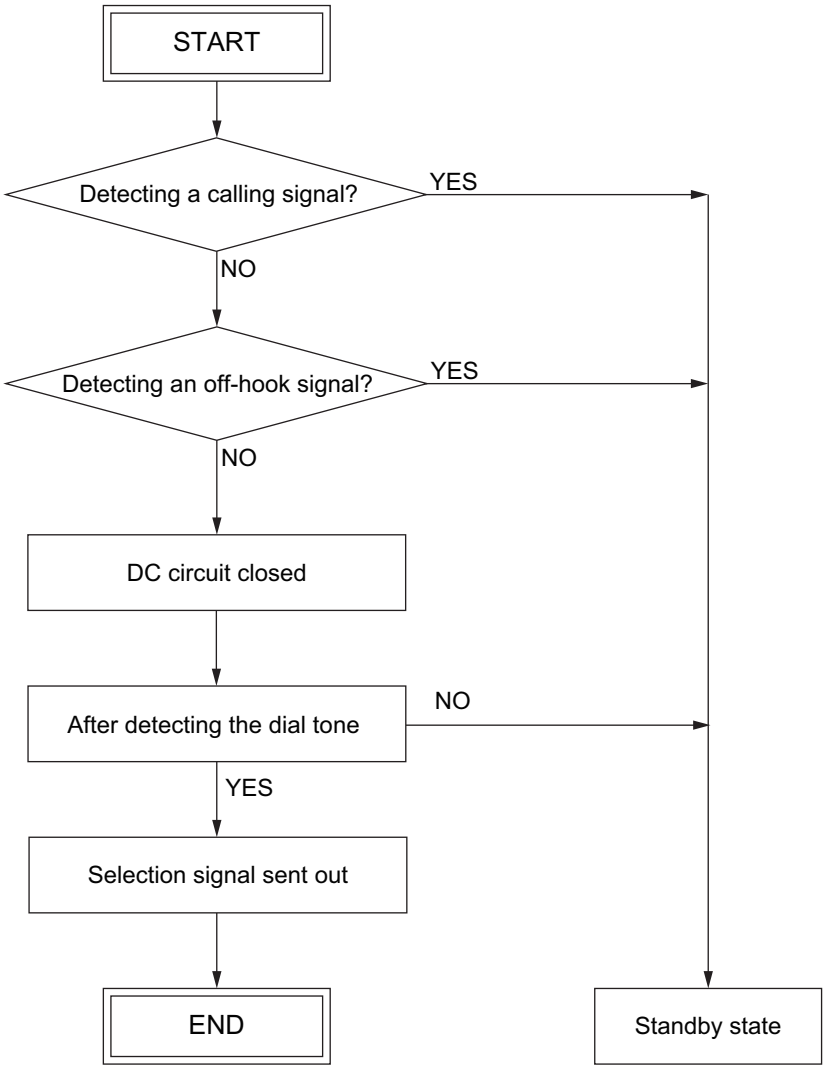


Fig. 3-1

3.1.2 Lines to be used and communication mode

The equipment supports two types of the communication modes. There is no limitation in the combinations with the lines to be used.

	Communication mode	
	ECM	G3
Telephone line	○	○

3.1.3 Procedure to select the transmission mode

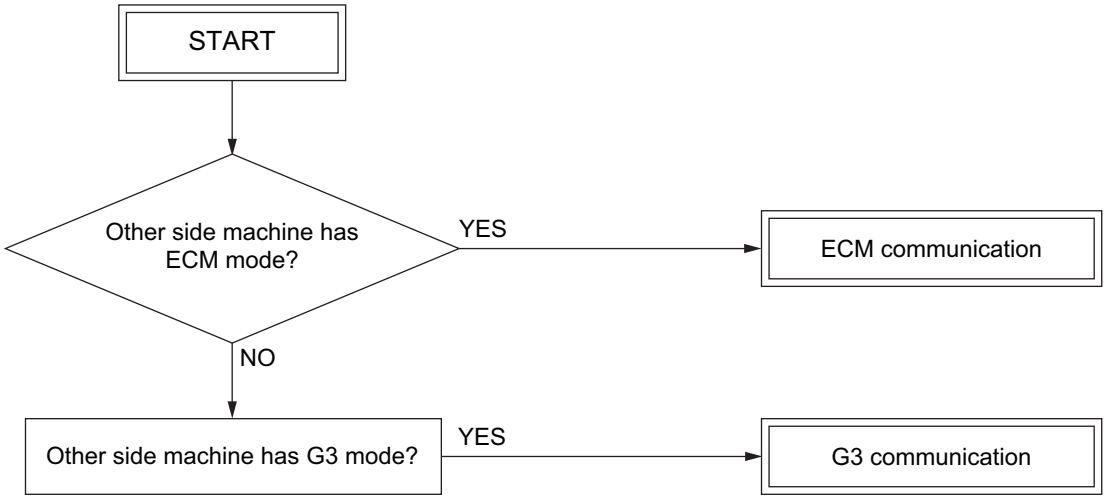


Fig. 3-2

3.2 Signaling System Diagram and Signal Forms

3.2.1 Circuit control signals

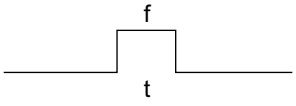
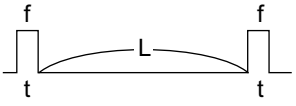
The following circuit control signals are used in the binary and tonal procedures.

- Circuit control signals

CED	Called station identification Indicates that the sender is a fax machine in the automatic called mode. (*1)
CNG	Calling tone Indicates that the sender is a fax machine in the automatic calling mode. (*1)

*1 : This signal can be sent manually.

- Signal form

Signal name	Signal form	Signal form
CED		f: 2100 ±15 Hz t: 2.6 - 4.0 sec.
CNG		f: 1100 ±38 Hz t: 0.5 sec ±15% (L: 3 sec.)

3.2.2 Communication with the binary signals

In the G3 modes, communication is performed with the binary procedure as follows.

(1) Frame structure of binary signals
Each binary signal frame is comprised of the following sequence and fields. However, some binary signals do not have the FIF field inserted.

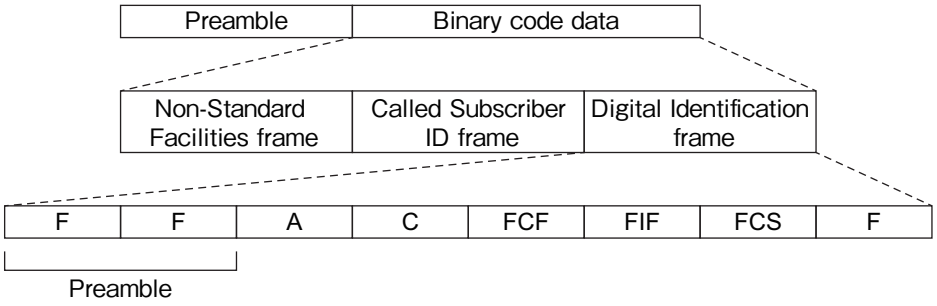


Fig. 3-3

(2) Outline of the fields
- Explanation of the symbols
  F: Flag sequence
  Indicates the start or end of a frame. Also establishes the frame synchronization.
  A: Address field
  Informs the address.
  C: Control field
  Informs if this frame is the last one in this procedure.
  FCF: FAX control field
  Informs the type of the binary signal.
  FIF: FAX information field
  Informs FAX information such as the functions. (Non-mandatory)
  FCS: Frame check sequence
  Checks if there was any error in the transmission from A to FIF.

- Values of F, A and C

	bit No.							
	b_1	b_2	b_3	b_4	b_5	b_6	b_7	b_8
F	0	1	1	1	1	1	1	0
A	1	1	1	1	1	1	1	1
C	1	1	0	0	x	0	0	0

* When this frame is the last frame, X = 1.

(3) FCF

- Binary signals and functions for FCF

NSF	Non-Standard Facility Informs that the receiving station (machine) has a non-standard facility.
NSC	Non-Standard Facility Command Commands to transmit using the non-standard facility which is selected corresponding to NSF (i.e., Polling etc.).
NSS	Non-Standard Facility Setup Commands to transmit using the non-standard facility which is selected corresponding to NSF or NSC.
CSI	Called Subscriber Identification Provides the telephone number of the called station. Used to check the identity of the called station.
CIG	Calling Subscriber Identification Provides the telephone number of the calling station. Used to check the identity of the calling station (Polling, etc.).
TSI	Transmitting Station Identification Provides the telephone number of transmitting station. Used to check the identity of the transmitting station.
DIS	Digital Identification Signal Informs that the receiving station (machine) has a standard facility (G3/G2).
DTC	Digital Transmit Command Commands to transmit using the standard facility which is selected corresponding to DIS (i.e., Polling, etc.).
DCS	Digital Command Signal Commands to transmit using the standard facility which is selected corresponding to DIS or DTC.
SUB	Sub-address Indicates that the FIF information is a sub-address in the domain on the call-in side.
SEP	Select Polling Indicates that the FIF information is a sub-address for the polling mode.
PWD	Password Indicates that the FIF information is a password for the polling mode in a reception. Indicates that the FIF information is a password for transmission in a transmission.
CFR	Confirmation of Reception Informs that the FAX is ready to receive data.
FTT	Failure to Train Informs that the TCF signal has not received correctly and requests the re-training.
EOM	End of Message Informs that the 1st page has been transmitted and there is the next page; commands to return to the beginning of the phase B.
MPS	Multi-page Signal Informs that the 1st page has been transmitted and there is the next page; commands to return to the beginning of the phase C.
EOP	End of Procedure Informs that a document has been transmitted and there is no more pages.
MCF	Message Confirmation A reply to MPS, EOM or EOP; informing that image signals have been received correctly and the Fax Unit is ready to receive data.
RTN	Retrain Negative Informs that a document has not been received correctly; requests for the retraining or phase synchronization to receive the next page.
PIP	Procedure Interrupt Positive Informs that the image signals have been received correctly and requests the operator's reply by telephone or to return to the beginning of the phase B to continue the communication (i.e., CALL Request, etc.).
PIN	Procedure Interrupt Negative Informs that the image signals have not been received correctly and requests for operator's reply by telephone or to return to the beginning of the phase B to continue the communication.

PRI-EOM	Procedure Interrupt EOM Command similar to EOM. Operation by an operator is necessary.
PRI-MPS	Procedure Interrupt MPS Command similar to MPS. Operation by an operator is necessary.
PRI-EOP	Procedure Interrupt EOP Command similar to EOP. Operation by an operator is necessary.
DCN	Disconnect Commands to disconnect the FAX line and to connect the telephone line. Reply from the other side is not necessary.
RR	Receive Ready Informs that the FAX is ready to receive documents and requests for data to set the reception mode. (ECM mode)
RNR	Receive Not Ready Informs that the Fax Unit is not in the receivable state. (ECM mode)
PPR	Partial Page Request Informs that a part of page (ECM block) has not been received correctly and specifies the frame data (binary signal) which need to be corrected in the FIF information.
PPS	Partial Page Signal Informs that a part of page (ECM block) or one page has been transmitted. (ECM mode)
CTC	Continue to Correct Replies to the 4th PPR which requests to correct the image signal; informs that the transmitting station will continue to correct the frame data. (ECM mode)
CTR	Response for Continue to Correct Replies to CTC and informs that the receiving station has received and accepted the CTC. (ECM mode)
EOR	End of Retransmission Informs that the transmitting station has completed the correction of the error frame data (binary signal) of the previous ECM block. (ECM mode)
ERR	Response for End Retransmission Replies to EOR and requests to transmit the image signal of the next ECM block. (ECM mode)
RTP	Retrain Positive Informs that the message has been received completely and that the subsequent message can be continued after receiving the synchronization signal and CFR signal.
CRP	Command Repeat Requests to resend all the commands including optional frames because the preceding command has been received incorrectly.

- Value of the binary signals

Binary signal	Format							
	b_1	b_2	b_3	b_4	b_5	b_6	b_7	b_8
NSF	0	0	0	0	0	1	0	0
NSC	1	0	0	0	0	1	0	0
NSS	X	1	0	0	0	1	0	0
CSI	0	0	0	0	0	0	1	0
CIG	1	0	0	0	0	0	1	0
TSI	X	1	0	0	0	0	1	0
DIS	0	0	0	0	0	0	0	1
DTC	1	0	0	0	0	0	0	1
DCS	X	1	0	0	0	0	0	1
SUB	X	1	0	0	0	0	1	1
SEP	1	0	0	0	0	1	0	1
PWD (Rx)	1	0	0	0	0	0	1	1
PWD (Tx)	X	1	0	0	0	1	0	1
CFR	X	0	1	0	0	0	0	1
FTT	X	0	1	0	0	0	1	0
EOM	X	1	1	1	0	0	0	1
MPS	X	1	1	1	0	0	1	0
EOP	X	1	1	1	0	1	0	0
MCF	X	0	1	1	0	0	0	1
RTN	X	0	1	1	0	0	1	0
PIP	X	0	1	1	0	1	0	1
PIN	X	0	1	1	0	1	0	0
PRI-EOM	X	1	1	1	1	0	0	1
PRI-MPS	X	1	1	1	1	0	1	0
PRI-EOP	X	1	1	1	1	1	0	0
DCN	X	1	0	1	1	1	1	1
RR	X	1	1	1	0	1	1	0
RNR	X	0	1	1	0	1	1	1
PPR	X	0	1	1	1	1	0	1
PPS	X	1	1	1	1	1	0	1
CTC	X	1	0	0	1	0	0	0
CTR	X	0	1	0	0	0	1	1
EOR	X	1	1	1	0	0	1	1
ERR	X	0	1	1	1	0	0	0
RTP	X	0	1	1	0	0	1	1
CRP	X	1	0	1	1	1	0	0

The value for X is “1” for the station which received DIS.
The value for X is “0” for the station which received a response signal regarding DIS.

(4) FIF

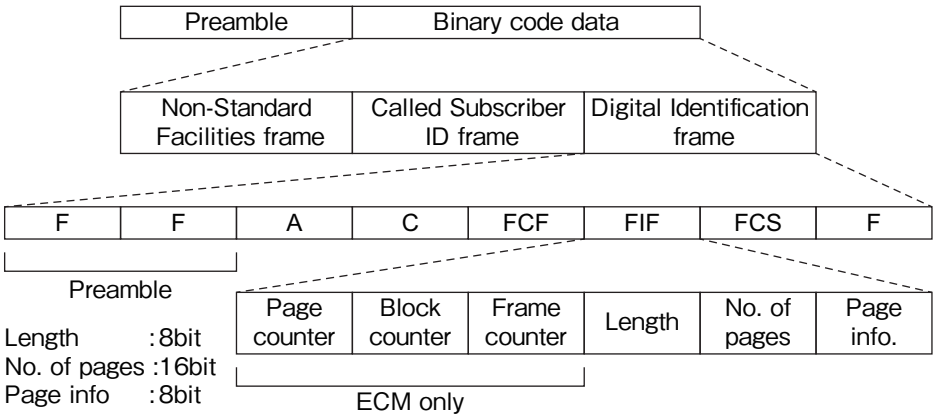


Fig. 3-4

- Page info.

bit No.	Explanation
1	0: Front side / 1: Back side
2	Reserved (“0” is set)
3	Reserved (“0” is set)
4	Reserved (“0” is set)
5	Reserved (“0” is set)
6	Reserved (“0” is set)
7	Reserved (“0” is set)
8	Expansion bit (“0” is set)

(5) Binary procedure

- Transmission and reception in the G3 modes

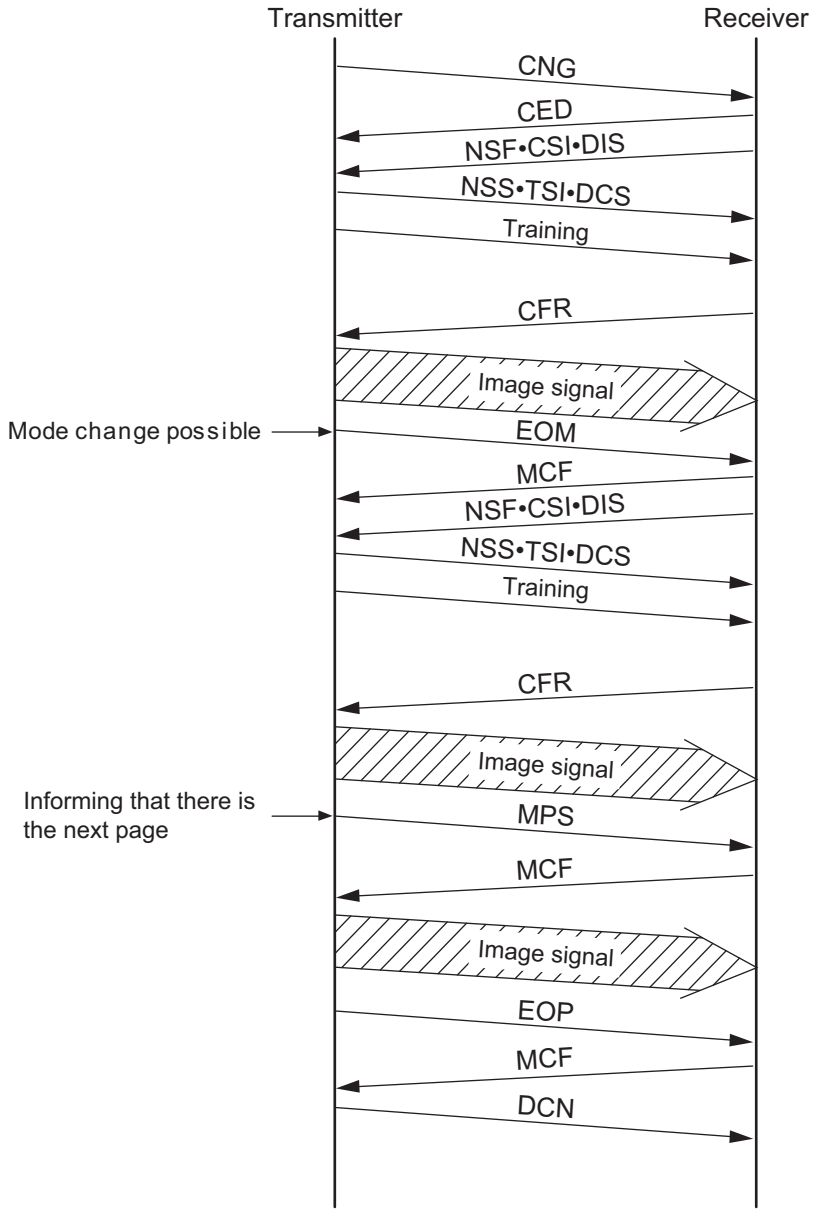


Fig. 3-5

- Transmission and reception in the ECM mode
  ECM (Error Correction Mode) conforms to T.30.
  When an error has occurred to the received image data, the receiving station informs the sending station of the occurrence of the error, and the sending station sends the image data again.

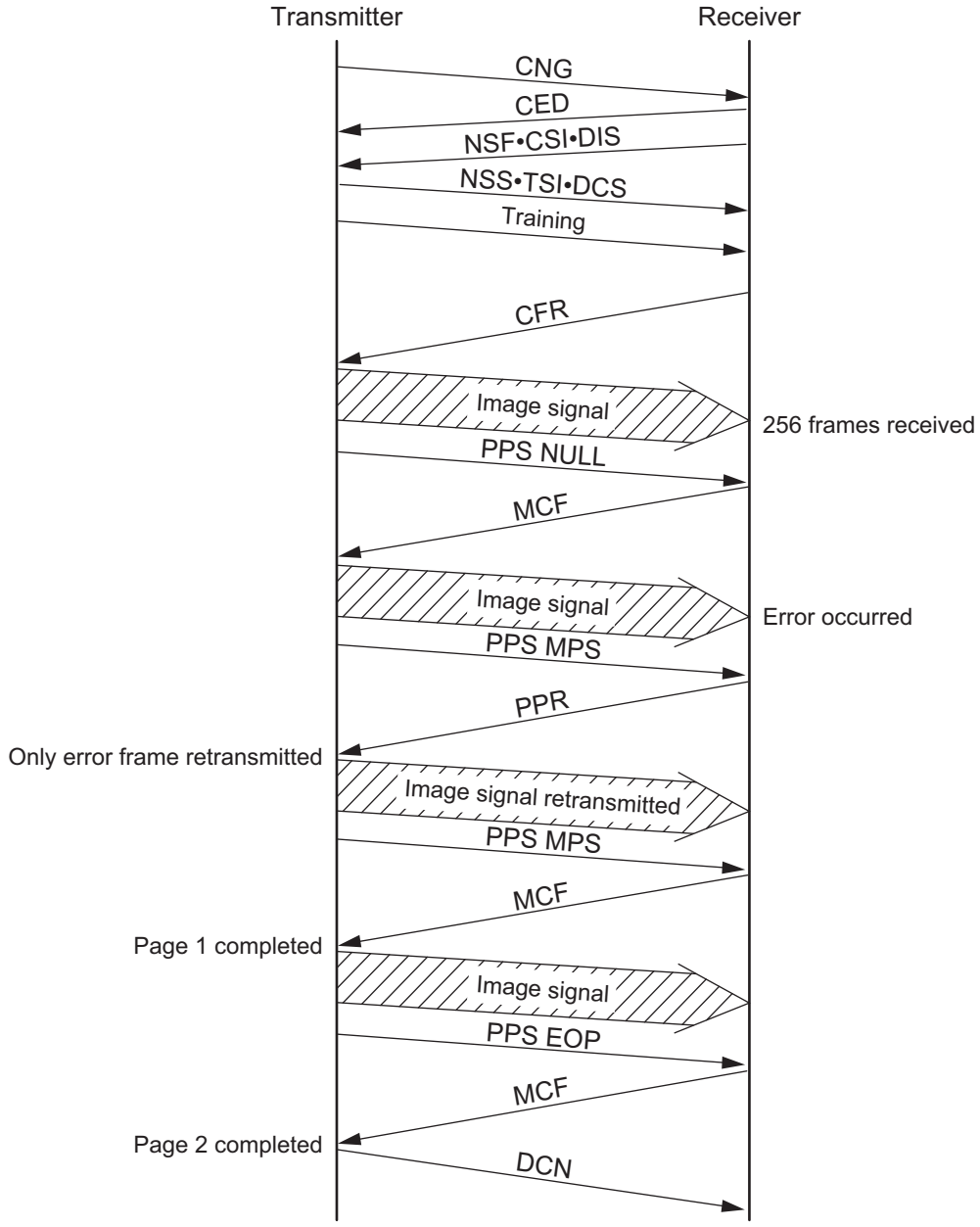


Fig. 3-6

- Cancellation during the transmission
  If [Stop] is pressed during the direct transmission or memory input, the display to confirm the cancellation appears. The communication is finished normally regardless of the presence/absence of the next page or mode changes by pressing [Stop].
  If [Stop] is pressed anytime except during the transmission of the image data, DCN is forcibly sent to terminate the communication.
  Press [Job Status], and select the transmission job to cancel, then press [Delete] on the LCD display to cancel the memory transmission or polling transmission.

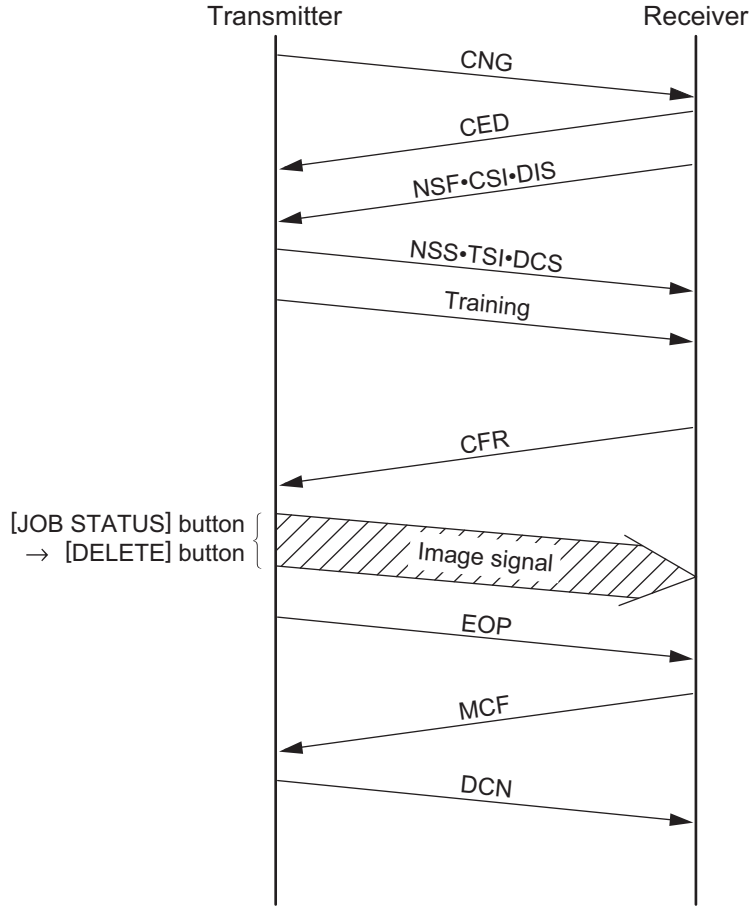


Fig. 3-7

3.2.3 V.8/V.34 communication sequence

1. Outline
   - V.8 is performed as a startup procedure to switch to V.34. V.8 can connect an existing facsimile machine to the equipment using a data modem or other V-series modems. The V.34 modem has a modem circuit previously recommended, allowing it to be also connected to the existing modems while they are upper compatible.

   - New technologies such as the pre-emphasis technology (*1) and the probing technology (*2) are fully used. The pre-emphasis technology (*1) not only speeds up the modulation, but also gains the S/N ratio. The probing technology examines the line characteristics and optimizes the modem for the line conditions. Therefore, not only do these technologies speed up the transmission momentarily, but also the overall speed of the process during the data transmission is increased.

   - For V.8 and the pre/post-fax transmission for V.34, the procedure is speeded up by the full duplex communication.

   - Following 14 types of the image transmission speed (*3) are available.
     33.6 kbps / 31.2 kbps / 28.8 kbps / 26.4 kbps / 24.0 kbps / 21.6 kbps / 19.2 kbps / 16.8 kbps / 14.4 kbps / 12.0 kbps / 9.6 kbps / 7.2 kbps / 4.8 kbps / 2.4 kbps

   - The modulating speed (baud rate) (*4) can be selected from 2,400, 3,000, 3,200 symbol/sec (mandatory), or 2,800, 3,429 symbol/sec (option). The data rate can be set more accurately than the conventional modem.

     *1 A signal is sent while raising the output level in the high-frequency band in which the noise is relatively loud.
     *2 Tone signal called “Probing Tone” is sent for the receiver to examine the line characteristics of the line.
     *3 In the ITU-T Recommendation, it is described as “data rate”. “Image transmission speed” is the same as “data rate”.
     *4 In the ITU-T Recommendation, it is described as “symbol speed”. The “Symbol rate”, “Modulating speed”, and “Baud rate” are the same thing.

   Remarks:
   - ECM is used in the V.34 procedure. If the setting for the ECM transmission/reception of the user data is set to “Not performed”, the V.8 procedure is not performed and the procedure is not switched to V.34. V.17 or lower is selected in this case.
   - See 🕮 P. 3-20 “- Late start” to move to the V. 8/V.34 procedure after starting with the V.21 procedure.
   - After the V.34 procedure is started, the fallback for the V.34 procedure is performed. However, the fallback for the V.17 mode or lower mode is not performed.

2. Standard procedure

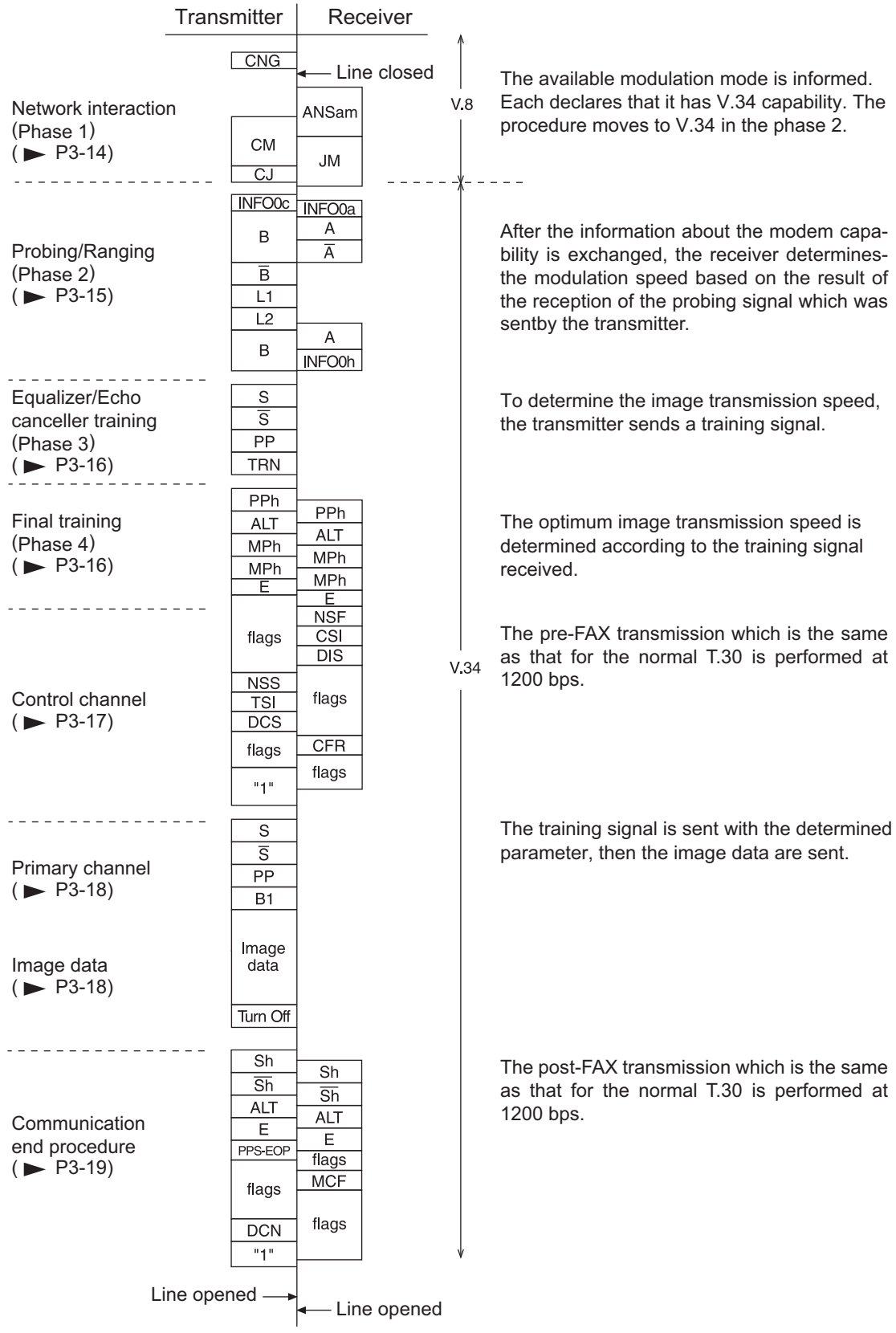


Fig. 3-8

- Network interaction (Phase 1)
  The V.8 procedure is performed as the startup procedure for the V.34 high-speed modem. In the V.8 procedure, mainly the optimum modulation method (V series modem mode) that can be operated between the transmitter and receiver is determined.

  Transmitter

Signal name	Abbreviation	Function	Remarks
Calling tone	CNG	1100 Hz tone signal specified by T.30 indicating the sender is a fax machine in the automatic calling mode	-
Call Menu signal	CM	Mainly indicates an available modulation method such as V.21, V.27ter, V.29, V.17, V.34, etc.	Modulated by V.21 (L) *1. Transmission rate: 300 bps
CM terminator	CJ	Indicates the detection of the JM signal and the termination of the CM signal.	Modulated by V.21 (L) *1. Transmission rate: 300 bps
Call Indicator signal	CI	Indicates the general communication functions. It is sent when the V.8 procedure is restarted.	For the late start only (P. 3-20) Modulated by V.21 (L) *1. Transmission rate: 300 bps

  Receiver

Signal name	Abbreviation	Function	Remarks
Answer amplitude tone	ANSam	2100 Hz tone signal amplitude-modulated to 15 Hz	Tone almost equivalent to CED of a conventional machine.
Joint Menu signal	JM	Indicates the terminal type such as a facsimile machine and informs the available modulation method corresponding to a usable one sent from CM of a transmitter.	Modulated by V.21 (H) *1. Transmission rate: 300 bps

*1 :
- V.21 (L)
  Low frequency channel defined by the V.21 recommendation 1,080±100 Hz
  (980 Hz: 1, 1,180 Hz: 0)
- V.21 (H)
  High frequency channel defined by the V.21 recommendation 1,750±100 Hz
  (1,650 Hz: 1, 1,850 Hz: 0)

- Probing/Ranging (Phase 2)
  Examines the line characteristics and sets the parameters for the modulation related items such as the modulating speed.

  Transmitter

Signal name	Abbreviation	Function	Remarks
INFO sequence	INFO0c	Informs the modem capabilities of the modulating speed and frequency transmission capability (two frequency bands (high and low) used to examine the line characteristics), and requests for adjusting.	Transmission rate: 600 bps
Tone B	B	Performs synchronization between the modems by means of a 1200 Hz tone signal.	$\overline{B}$ is a signal that shifts the phase B 180°.
Tone $\overline{B}$	$\overline{B}$		
Line probing signal L1	L1	Sends a tone signal to analyze the line characteristics by probing.	Probing is to examine the line characteristics. Tone signal between 150 Hz and 3,750 Hz in units of 150 Hz
Line probing signal L2	L2		

  Receiver

Signal name	Abbreviation	Function	Remarks
INFO sequence	INFO0a	Informs the modem capability such as the modulating speed and frequency transmission capability.	Transmission rate: 600 bps
Tone A	A	Sends a 2400 Hz tone signal to perform synchronization between the modems.	$\overline{A}$ is a signal that shifts the phase A 180°.
Tone $\overline{A}$	$\overline{A}$		
INFO sequence	INFO0h	Based on the analysis of the line probing signal sent from the transmitter, it informs the pre-emphasis filter and modulating speed to be used for the data transmission.	Transmission rate: 600 bps

- Equalizer and echo canceller training (Phase 3)
  Training (adjustment) is performed according to the parameters set in the phase 2 to optimize the filters such as an equalizer.

  Transmitter

Signal name	Abbreviation	Function	Remarks
S signal	S	Short training	$\overline{S}$ is a signal made as the result of phase transition of S.
$\overline{S}$ signal	$\overline{S}$		
PP signal	PP	Used by the modem of the receiver to train the equalizer.	
TRN signal	TRN	Used by the receiver to determine the transmission rate.	

- Final training (Phase 4)
  The settings such as the maximum value for the data rate, selection of the trellis encoder, and data rate which can be supported are made in this phase.

  Transmitter/receiver

Signal name	Abbreviation	Function	Remarks
PPh signal	PPh	Used by the modem of the other side to train the equalizer.	
ALT signal	ALT	-	
Modulation parameter	MPh	Informs the parameters used for the image transmission such as maximum data signal rate and type of the trellis coding/pre-coding.	
E sequence	E	-	20 bit sequence of “1”s in binary

- Control channel
  The conventional T.30 procedure is performed. The transmission rate is 1200 bps.

Transmitter

Signal name	Abbreviation	Function	Remarks
Flag	flags	Maintains the synchronization.	7E (H)
Non-standard facilities setting	NSS	Receives an NSF sent from the receiver. It selects the available mode from the received NSF, and specifies the mode for the reception.	
Transmitting Subscriber ID	TSI	Informs the telephone number of the transmitter.	
Digital Command Signal	DCS	Specifies the mode that can be used for the communication.	
-	1	Declares to switch to the high-speed procedure.	“1” is sent continuously.

Receiver

Signal name	Abbreviation	Function	Remarks
Non-Standard Facilities	NSF	Informs the presence of the facilities other than those recommended by ITU-T, abbreviated user names, and manufacturer codes, etc.	
Called Subscriber ID	CSI	Informs the telephone number of the receiver.	
Digital Identification Signal	DIS	Informs the standard facilities recommended by ITU-T.	
Flag	flags	Maintains the synchronization.	7E (H)
Confirmation for Reception	CFR	Informs that the training of the modem is completed, and the receiver is ready to receive the image signal.	

Remarks:
In the control channel, the frequency of the signals to be sent is different between the transmission and reception. The signal echoed back has never been misidentified as a signal sent from the other side. Therefore, this channel is not influenced by signals echoed back.

- Primary channel
  The training is performed according to the parameters set in the phase 4. The transmission rate is 1200 bps.

  Transmitter

Signal name	Abbreviation	Function	Remarks
S signal	S	Short training	$\overline{S}$ is a signal that makes a transition from phase S.
$\overline{S}$ signal	$\overline{S}$		
PP signal	PP	Used by the modem of the receiver to train the equalizer.	
B1 sequence	B1	Scrambled data frame to be sent when the startup process is completed	

- Image data
  Image data are sent.

  Transmitter

Signal name	Abbreviation	Function	Remarks
Image data	Image data	Encoded image data	
-	Turn off	-	Scrambled 1 is sent for 35 ms.

- Communication end procedure
  This procedure is to terminate the communication. The transmission rate is 1,200 bps.

  Transmitter

Signal name	Abbreviation	Function	Remarks
Sh signal	Sh	Short training	
$\overline{\text{Sh}}$ signal	$\overline{\text{Sh}}$		
ALT signal	ALT	-	
E sequence	E	-	
End of procedure signal	PPS-EOP	The transmission of one page is completed.	
Flag	flags	Maintains the synchronization.	7E (H)
Disconnection signal	DCN	Informs to disconnect the line.	

  Receiver

Signal name	Abbreviation	Function	Remarks
Sh signal	Sh	Short training	
$\overline{\text{Sh}}$ signal	$\overline{\text{Sh}}$		
ALT signal	ALT	-	
E sequence	E	-	
Flag	flags	Maintains the synchronization.	7E (H)
Message confirmation	MCF	Indicates that the image signal is received normally, and the receiver is ready to receive the next page.	

3. Example of protocol
   The signals shaded in the following figure are the most important signals in the procedure.

   - Late start
     The receiver cannot detect the CM signal while it is sending the ANSam signal. Therefore, it sends the DIS signal to inform the availability of V.8 support. The transmitter sends the CI signal that causes the receiver to send another ANSam signal which makes the receiver move to the V.8 procedure.

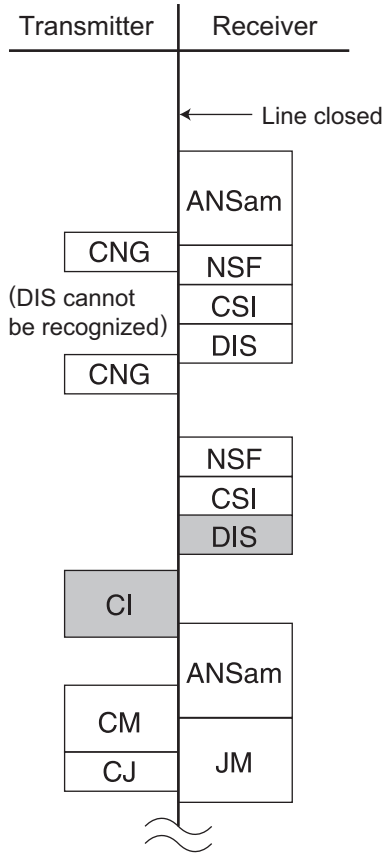


Fig. 3-9

- Multi-page sequence
  In the same manner as the T.30 procedure, the transmitter sends the PPS-MPS signal after sending the image data. The receiver sends the MCF signal and moves to the next page transmission.

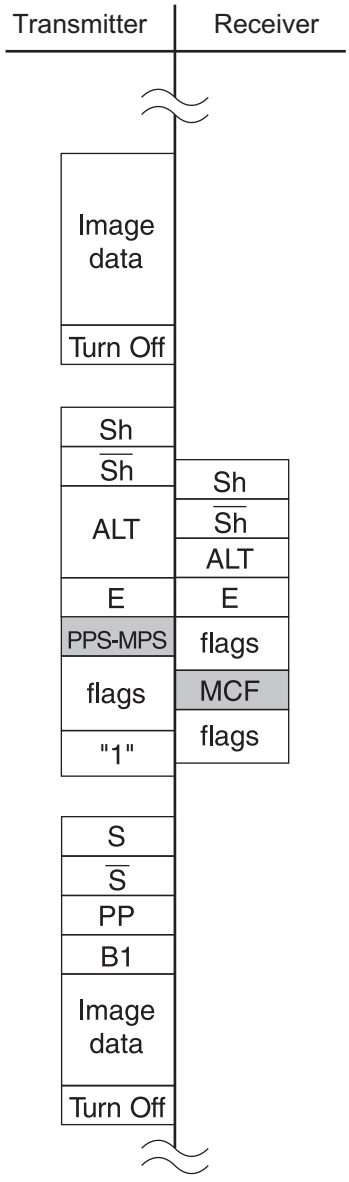


Fig. 3-10

- Mode change
  The transmitter and receiver send the PPS-EOM signal and the MCF signal respectively. Then the receiver and transmitter send the DIS signal and the DCS signal respectively to change the mode.

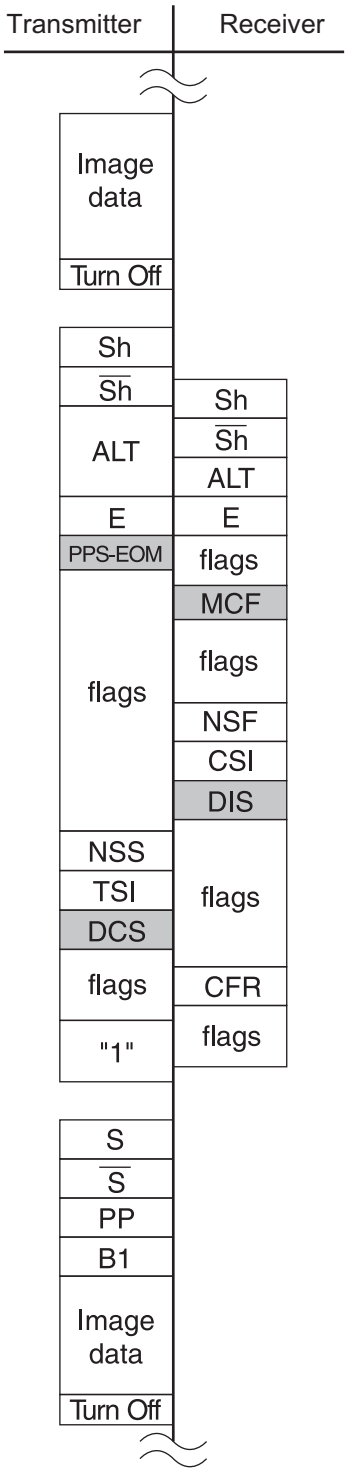


Fig. 3-11

- Change of the image transmission speed by the receiver
  The receiver sends the PPh signal responding to the Sh signal sent from the transmitter. Then, the image transmission speed is determined according to the MPh sequence sent from the both modems.

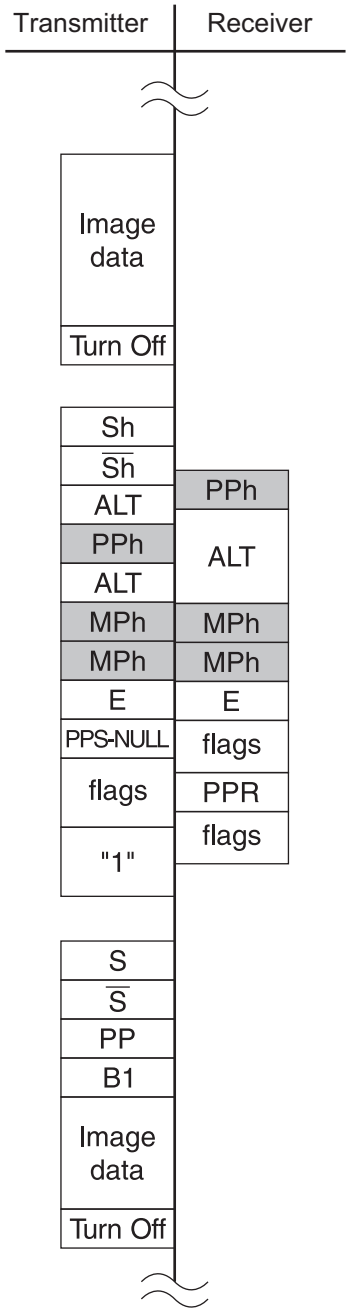


Fig. 3-12

- Change of the image transmission speed by the transmitter
  The transmitter sends the PPh signal after sending the image data. The receiver returns the PPh signal. Then, the image transmission speed is determined according to the MPh sequence sent from the both modems.

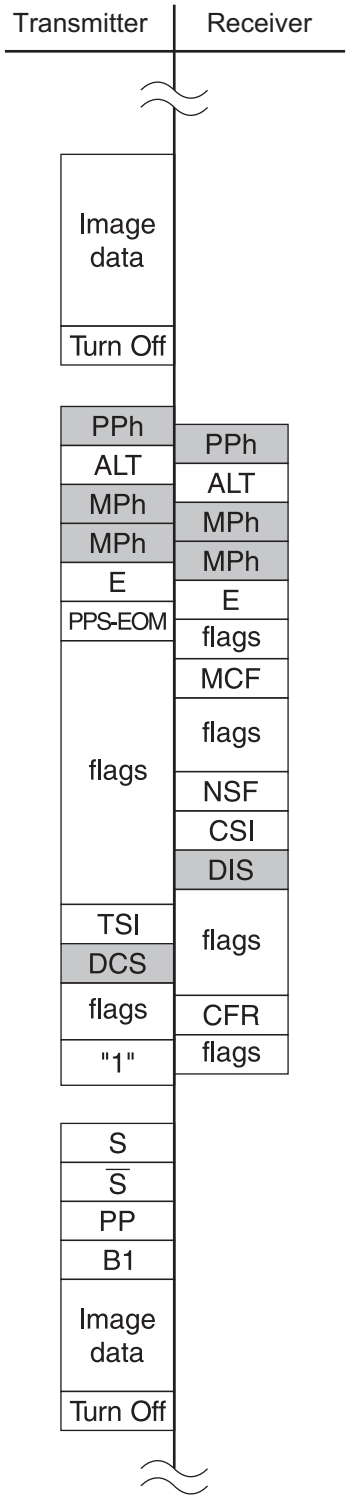


Fig. 3-13

4. INSTALLATION

4.1 Explanation to the Users

After installing the fax board, explain the following items to the users using the Operator's Manual.
In the case of the items with an * mark, actually demonstrate the operation.

Items to be explained

- Switches and control panel
  - Outline of the control panel (FAX functions)
  - After power is turned OFF, image data are kept in HDD.

- How to set originals
  - Acceptable original size and scanning width
  - How to insert originals:
    An original with multiple pages placed on the DF is scanned from the top.
  - Unacceptable originals
  - How to set the mode (image quality) and density (contrast)

- Transmission method
  - Manual transmission
  - Monitor dialing
  - Direct dialing (with the digital keys)
  - Phone book dialing
  - Delayed transmission
  - Multi transmission
  - Redialing

- Recording paper size
  - Recording paper size
  - How to change the recording paper size

- Automatic/manual reception
  - How to switch the automatic and manual reception
  - How the machine works and how to operate it when a fax is received in these modes

- Other functions
  - Memory reception (with the power kept ON)
  - How to set the power saving mode

- Polling
  - Polling operation
  - How to operate the polling reception and transmission
  - How the multi-polling reception works and how to operate it

- How to register addresses
  - How to register new addresses in the Phone book
  - How to correct and erase the contents of the Phone book
  - Group registration in the phone book for the multi-transmission or multi-polling

- How to output lists
  - How to output Transmission journal and Reception journal

5. ERROR CODES

5.1 Transmission/Reception Journal

The transmission journal is shown below. The status code list is available in the following page. For the error code list, refer to “8.2.10 Fax error” of the Service Manual of the equipment. The reception journal is output in the same form.

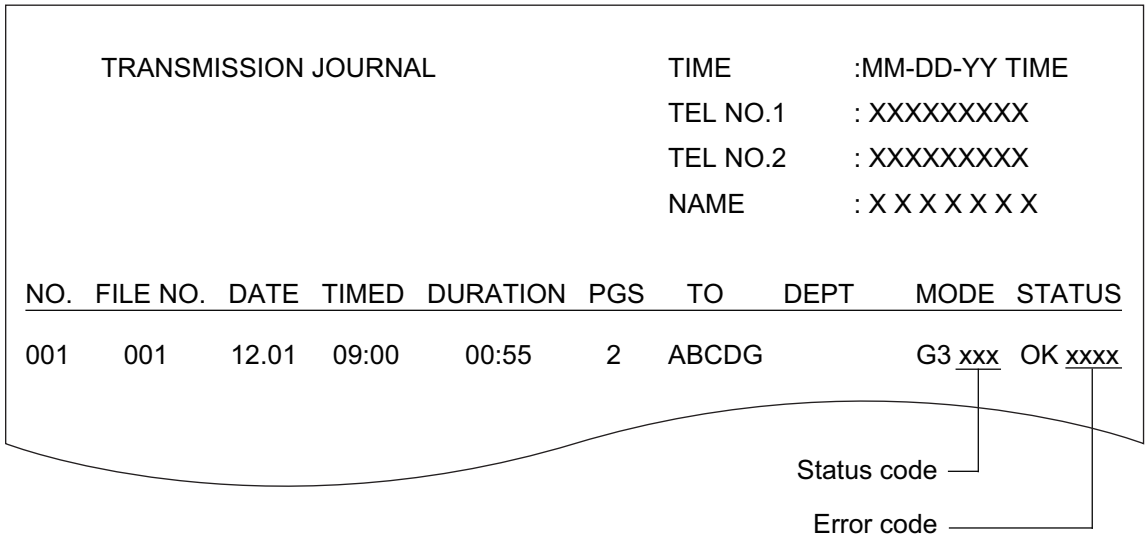
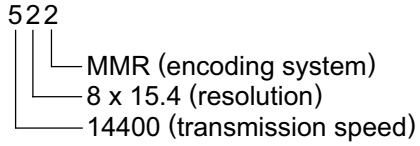


Fig.5-1

5.2 Status Code List

Mode	Transmission speed	Resolution	Encoding system
0	2400	8 x 3.85	MH
1	4800	8 x 7.7	MR
2	7200	8 x 15.4	MMR
3	9600		JBIG
4	12000	16 x 15.4	
5	14400		
6	V.34		
7			
8		300 x 300	
9			
A			
B			
C			
D			
E			
F			

[Example of the indication of a status code]



For the combination of 14400 bps, 8 x 15.4 and MMR, as shown above, a status of “522” is indicated.

6. SELF-DIAGNOSIS MODE

The fax functions can be adjusted or set by means of [FS menu].

Adjustment and function setting
The fax functions can be adjusted or set by means of [05 Adjustment Mode] or [13 FAX Function Mode] in [FS menu]. For details, see the “Self-diagnostic codes table”.

Refer to the “Self-diagnostic code list” (separate document) about how to enter the code.

7. TROUBLESHOOTING

7.1 Screening Over Telephone

Most problems end users inquire are the results of the following. Therefore, ask the nature of the trouble (in detail) first to seek the cause.

- Simple misoperation
  A trouble caused by a simple misoperation can be solved by the user alone with appropriate instructions through the telephone.

- A failure with the telephone line
  The machine condition can be checked by the user's operating sending/receiving documents to/from another facsimile.

- A failure with the recipient's machine
  The recipient's machine condition can be checked by the user's operating sending/receiving documents by using another machine.

Also, by verifying the error message in the LCD or the error code on the Journal with the user, the nature of the trouble can be confirmed. Whenever it can be obtained from the user, respond on the telephone by tracing the 📖 P. 7-3 "7.3 Recommend Flow Chart for Telephone Screening".

7.2 Recommend Flow Chart for Field Service

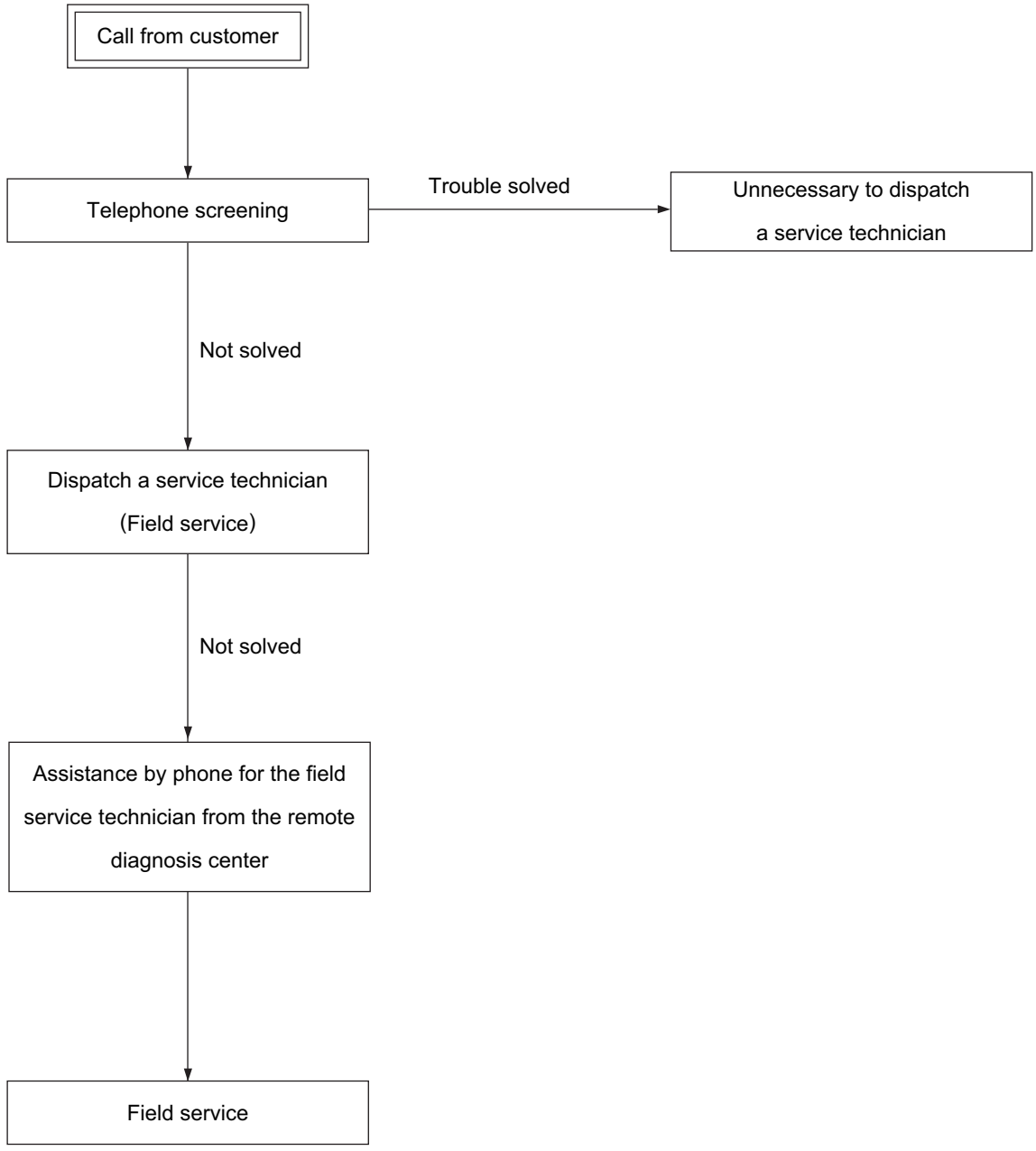


Fig. 7-1

7.3 Recommend Flow Chart for Telephone Screening

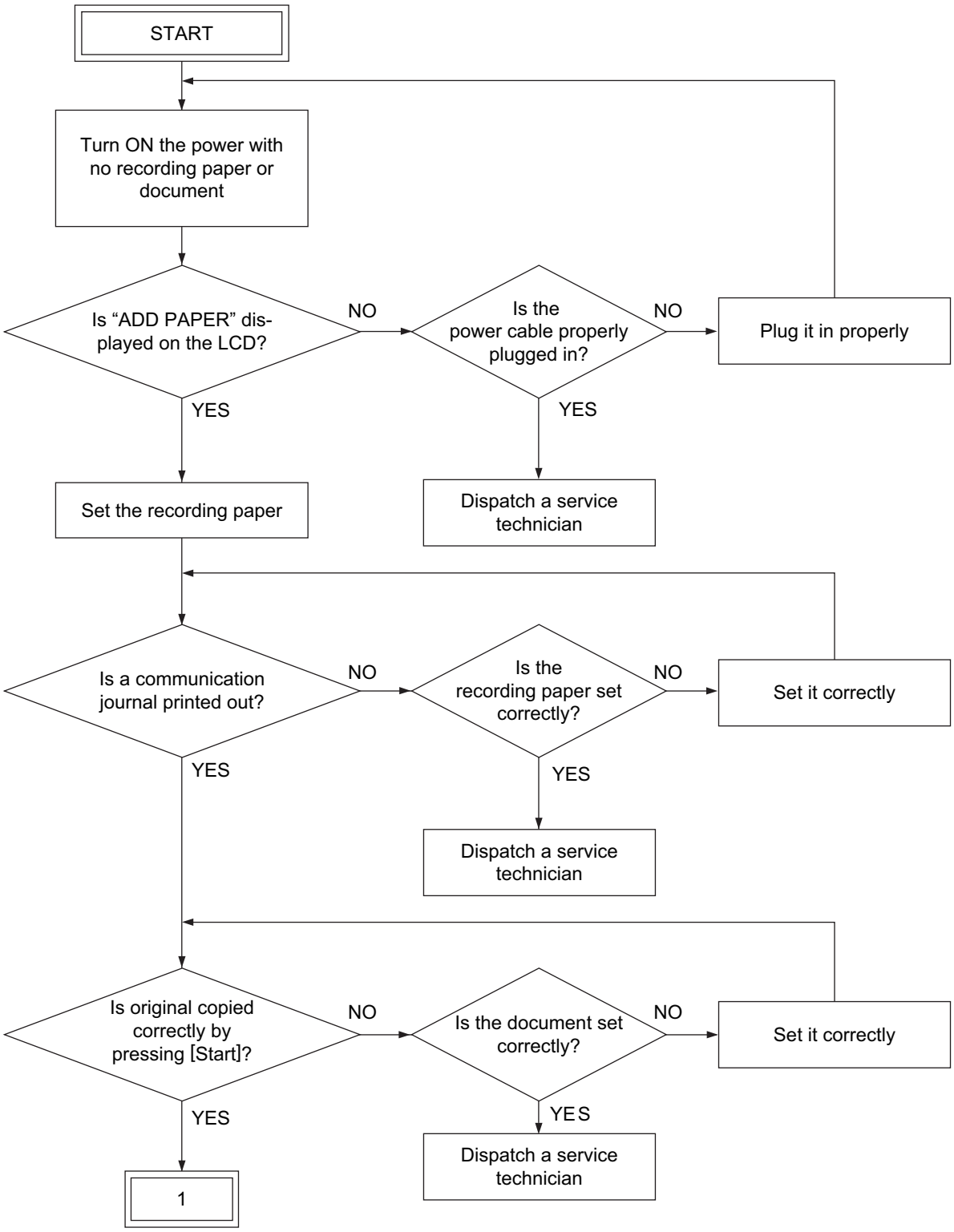


Fig. 7-2

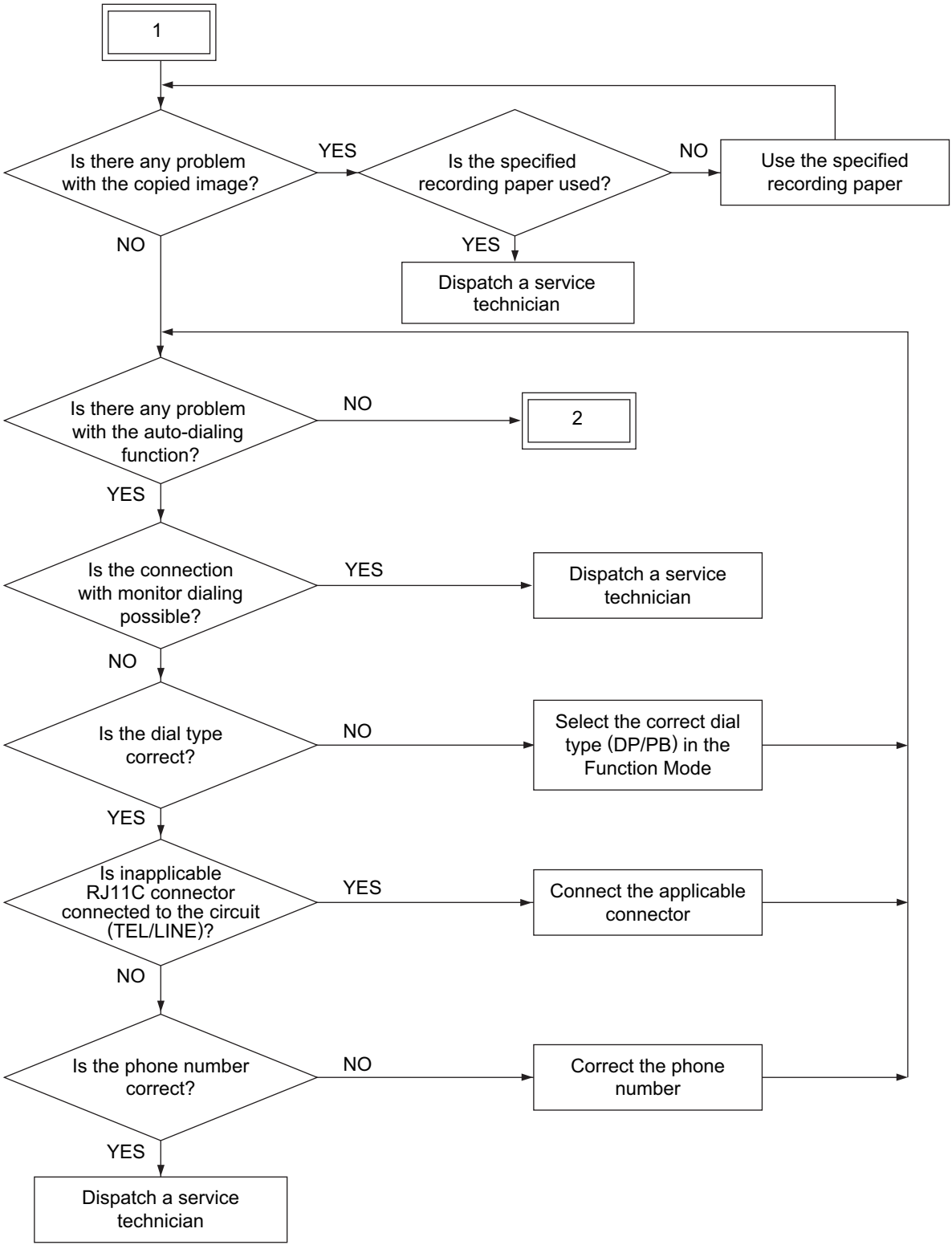


Fig. 7-3

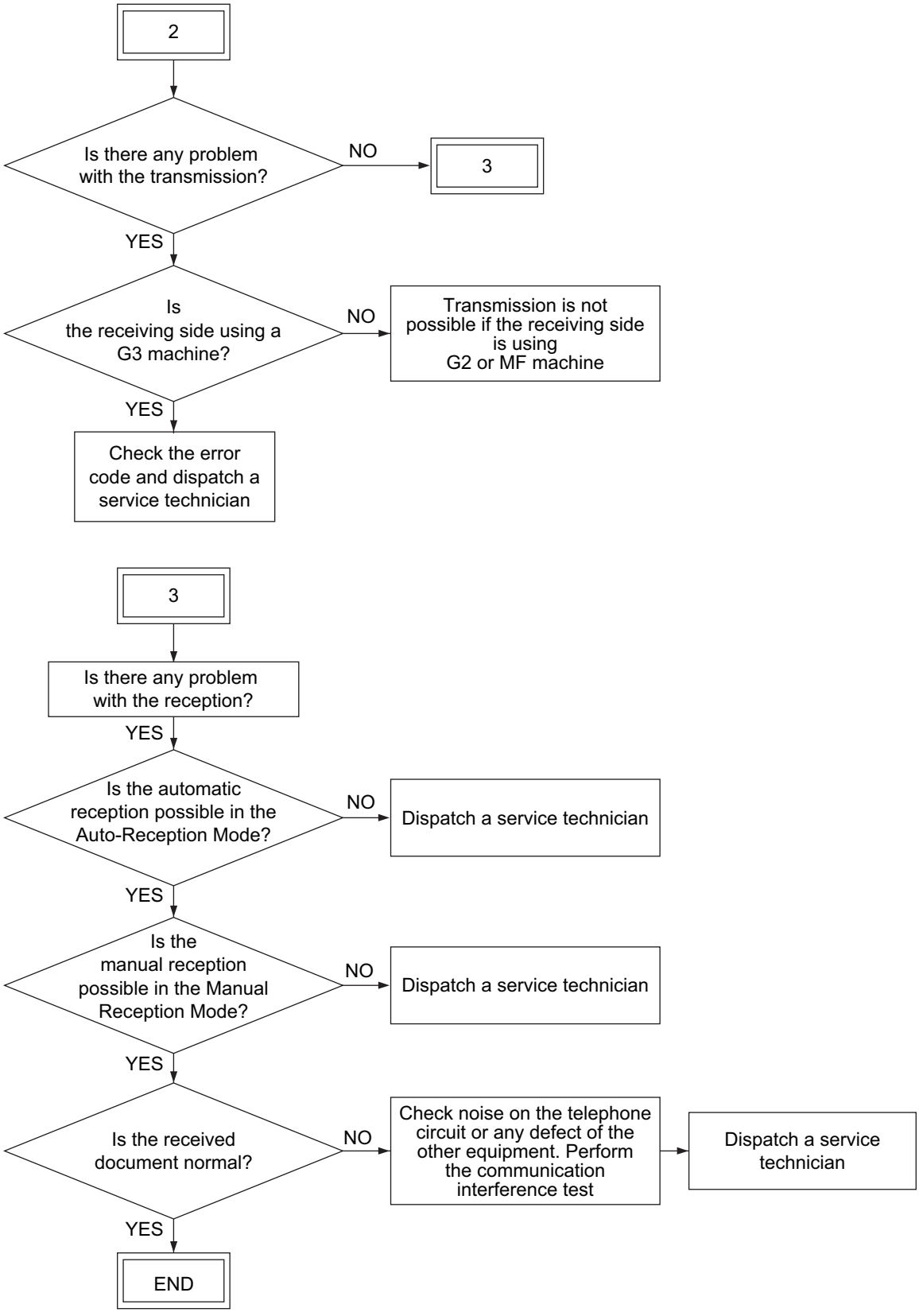


Fig. 7-4

7.4 Error Analysis Flow

7.4.1 Self-diagnosis function

Service technicians can figure out the contents of the error with the following information:

1. Display on the LCD
2. Error code on the transmission/reception journal

7.4.2 Precautions for the error analysis

Service technicians should make backup data of the address book before starting the diagnosis of the equipment. In addition, they should output the Function list by placing recording paper.
Confirm that no received data are stored in the memory by checking the Memory RX LED or the Reservation list.
Before starting the diagnosis, turn OFF the power and check the following items.

- Confirm that the power cable is properly plugged in.
- Confirm that all connectors are securely connected.

Pay full attention to avoiding an electric shock at the power section and a short circuit of the conductor pattern on the board when servicing with the power cable connected to the outlet while the cover is taken off.
When the error analysis is finished, check the following items.

- Confirm that the connectors are surely connected and the screws are tightened securely.
- The equipment is performed properly at the communication test.

Notes:

- Before replacing the parts, confirm that there is no data to be transmitted or no received document in the memory. Then turn OFF the power and unplug the power cable.
- Do not touch the terminal of the connectors. Otherwise, a poor connection may be caused.

7.5 Fault Analysis

7.5.1 Power-ON is not possible

1. Check if the power cable is plugged into an appropriate outlet (of the correct voltage).
2. Check if the rated voltages are being output from the switching power supply. When the measured voltage is not the rated value, replace the switching power supply.
3. Check if each connector between the DSP board and the SYS board is disconnected.
4. Check if each connector between the SYS board and the power supply unit is disconnected.
5. Check if each connector pin is removed or the harness is broken.
6. Check if any conductor pattern on the power supply unit and SYS board is open circuited or short circuited.
7. Replace the DSP board.
8. Replace the SYS board.

7.5.2 Original transport error for the RADF or DSDF

If an original is misfed in its transport path, remove it. If this error occurs frequently, refer to the troubleshooting of the Service Manual for the equipment.

7.5.3 Recording paper transport error

If a recording paper is misfed in its transport path, remove it. If this error occurs frequently, refer to the troubleshooting of the Service Manual for the equipment.

7.5.4 Image trouble

Check the image and refer to the troubleshooting of the Service Manual for the equipment.

7.5.5 Communication error

Perform communication over again when an error occurs since it may be a cause of the bad condition of a particular phone line at communication. If communication errors occur too many times, prepare another (operational) fax board and check the communication condition among those three fax boards, thus analyzing the troubles.

A communication error occurs between A and B.

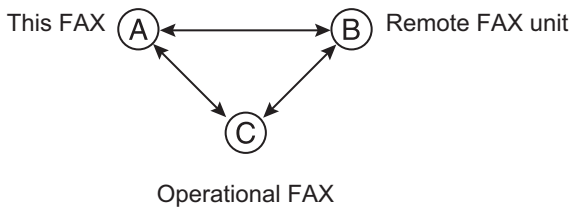


Fig. 7-5

1. If normal communications are possible between A and C, and the communication trouble occurs B and C, it can be assumed that FAX B is malfunctioning.

2. If normal communications are possible between B and C, and the communication trouble occurs A and C, it can be assumed that FAX A is malfunctioning.
   Therefore, adjust the transmission attenuator value (FS-13-325, FS-13-430).

3. If normal communications are possible between A and C and between B and C, it can be assumed that there is a problem in the line between A and B.

7.5.6 Noise is heard when monitor dialing transmission

When monitor dialing transmission by using an external telephone is attempted, a noise sometimes is heard from the speaker. If this has occurred due to the condition of the line, the noise will be able to be prevented by changing the address of the line and the setting of the data.

Notes:
Confirm that the version of the fax firmware is the latest one.

1. Enter into the FS-FAX-19 RAM EDIT MODE.

2. Select the line of which the noise has occurred.

3. Press [Address]. Enter “5600” and press [OK].

4. Press [Data]. Enter “0AF1” and press [OK].

5. Press [Set].

6. Press [Write].

7. Press [OK] on the confirmation pop-up screen.

8. Restart the MFP and confirm that the noise cannot be heard.
   If the noise is still heard, change the value to “0A71” to be entered into [Data].

Notes:
- If a problem, such as the disabling of the communication, has occurred due to the entry of a different value from that for this procedure into [Address] or [Data], correct the setting value by reattempting this.
- If the noise cannot be stopped by means of this procedure, replace the fax board of the line from which the noise has occurred.

7.6 Lists Required for a Problem in the Field

When a fax-related problem occurs, output all lists by means of [12 FAX LIST PRINT MODE] in [FS menu]. For details, refer to the Service Manual for the equipment.
It is not necessary to output these lists immediately after the problem has occurred, but they must be prepared for any kind of problems regarding the fax operation.

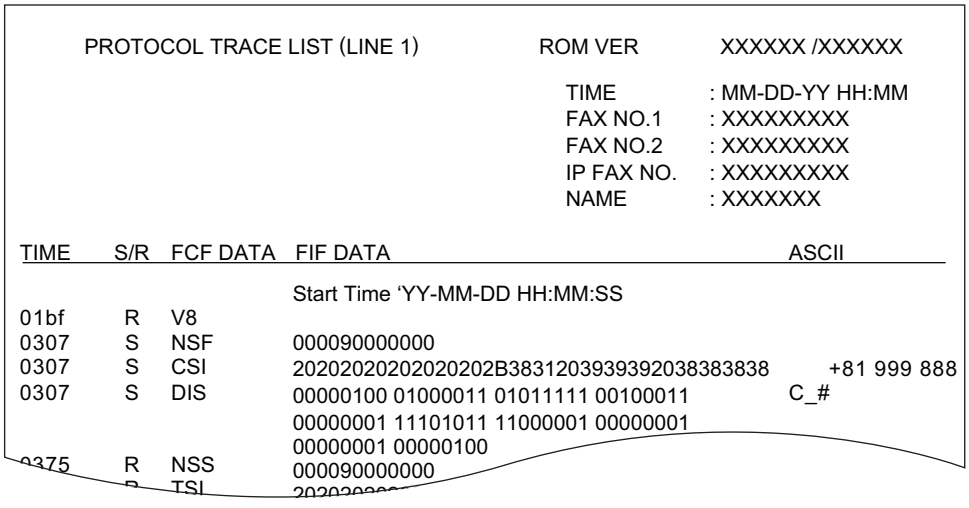
[Precaution] Disconnect the telephone line to stop the communication when a problem occurs. The only last communication is reported on the protocol trace list. Therefore, if the telephone line is not disconnected immediately after the problem has occurred, next communication might come in and be printed out instead of the communication in question. Do not turn OFF the power before printing the protocol trace list and memory dump list. Otherwise, the information will be lost.

7.6.1 Fax list print mode

For details about the list print method, refer to the Service Manual for the models with the fax unit installed.

[1] Protocol trace list (Line 1 and Line 2)

Fax protocols for the latest one communication can be obtained. (The figure below is for the Line 1. The difference in the format between the Line 1 and the Line 2 is just “LINE X” which is added to the end of the list title.)



PROTOCOL TRACE LIST (LINE 1) ROM VER XXXXXX /XXXXXX

TIME : MM-DD-YY HH:MM
FAX NO.1 : XXXXXXXXX
FAX NO.2 : XXXXXXXXX
IP FAX NO. : XXXXXXXXX
NAME : XXXXXXX

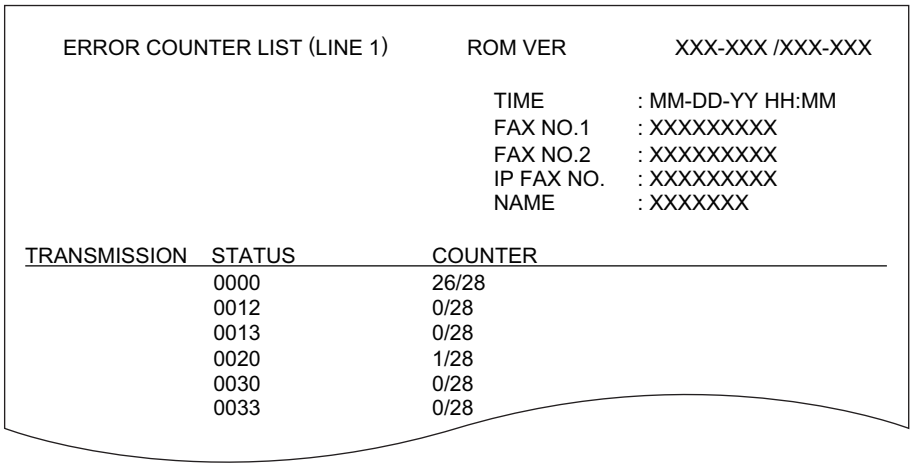
TIME	S/R	FCF DATA	FIF DATA	ASCII
			Start Time ‘YY-MM-DD HH:MM:SS	
01bf	R	V8		
0307	S	NSF	000090000000	
0307	S	CSI	20202020202020202B383120393939203838383838	+81 999 888
0307	S	DIS	00000100 01000011 01011111 00100011 00000001 11101011 11000001 00000001 00000001 00000100	C_#
0375	R	NSS	000090000000	
		TSI	202020202020	

Fig. 7-6

Item	Contents
TIME	The elapsed time from the start of the communication is displayed in hexadecimal notation. (Unit: 10 msec.)
S/R	The symbol of various signals is displayed. S: Transmission signal R: Reception signal
FCF DATA	The FCF command is displayed. (FCF: Facsimile Control Field)
FIF DATA	The content of data including FIF is displayed in the HEX, BIN or TEL format. (FIF: Facsimile Information Field) The TEL format is displayed in ASCII (hexadecimal) with right justification. The first line of FIF DATA displays the communication start time.
ASCII	FIF converted into ASCII code is displayed.

[2] Error count list (Line1 and Line 2)

The fax communication error history list can be obtained. The occurrence status of a particular error can be checked. (The figure below is for the Line 1. The difference in the format between the Line 1 and the Line 2 is just “LINE X” which is added to the end of the list title.)



ERROR COUNTER LIST (LINE 1) ROM VER XXX-XXX /XXX-XXX

TIME : MM-DD-YY HH:MM
FAX NO.1 : XXXXXXXXX
FAX NO.2 : XXXXXXXXX
IP FAX NO. : XXXXXXXXX
NAME : XXXXXXX

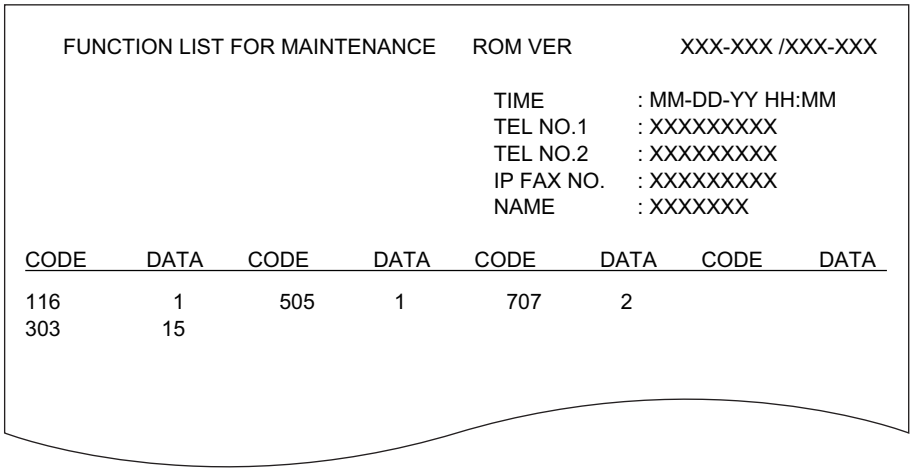
TRANSMISSION	STATUS	COUNTER
	0000	26/28
	0012	0/28
	0013	0/28
	0020	1/28
	0030	0/28
	0033	0/28

Fig. 7-7

Item	Contents
TRANSMISSION (or RECEPTION)	The communication status is displayed in TRANSMISSION or RECEPTION.
STATUS	All the fax related error codes occurring at transmission or reception are displayed irrespective of whether an error actually occurred.
COUNTER	Against the error codes displayed in STATUS, the count of the number of errors occurring at transmission or reception is displayed.

[3] Function List for Maintenance

The settings for the Self-Diagnosis Mode (13) can be output.



FUNCTION LIST FOR MAINTENANCE ROM VER XXX-XXX /XXX-XXX

TIME : MM-DD-YY HH:MM
TEL NO.1 : XXXXXXXXX
TEL NO.2 : XXXXXXXXX
IP FAX NO. : XXXXXXXXX
NAME : XXXXXXX

CODE	DATA	CODE	DATA	CODE	DATA	CODE	DATA
116	1	505	1	707	2		
303	15						

Fig. 7-8

Item	Contents
CODE	The number of the Self-Diagnosis Mode (13) is displayed.
DATA	The setting contents are displayed in the values.

7.7 Other Information Required for Error Analysis

The following information is also needed to analyze the malfunction (especially a communication error).

1. Check the circles below if they are applicable.
   - Cleared by turning ON/OFF the power.
   - Cleared by performing [FS-11 FAX CLEAR MODE] - [Custom Initialize] - [Clear Data].

   Notes:
   The image data and the job being performed are erased by this operation (including printer data other than FAX data).

   - Cleared by replacing the board.
   - Not cleared.

2. Occurrence frequency
   - Frequently (occurring daily or always)
   - Sometimes (about once a week)
   - Only once

3. When a communication error has occurred, turn ON the circuit monitor for the line 1 or 2 by performing FS-13-338, and check the condition of the fax communication with the tone from the speaker.

   Notes:
   Change the value of FS-13-338 to “0” to turn OFF the circuit monitoring function after the checking is finished.

   - Signals from the transmitter and that from the receiver clash.
     → Check the model name of the other side machine.
   - Noise has occurred on the circuit.
     → Ask the telephone (or telecommunications) company if the line condition is normal.
   - Busy tone is heard from the other side machine during the communication.
     → Ask by phone if the other side machine has any problem. If it does not, check its model name.
   - Others (describe condition): _____

4. Condition of the equipment when the problem occurred
   - Display
     Which one is being displayed on the LCD?

Home screen	Copying operation screen	Fax operation screen	Printing operation screen
Energy saver screen			

     Describe the items displayed on the LCD in detail: _____

     What is the LEDs’ status?

     MEMORY RX lamp: ON
     MAIN POWER lamp: ON

   - Condition of the equipment
     1st drawer (size =) No paper Paper present
     2nd drawer (size =) No paper Paper present
     3rd drawer (size =) Not installed No paper Paper present LCF
     4th drawer (size =) Not installed No paper Paper present LCF

- RADF/DSDF status (This information is needed for transmission error.)
  Originals have all exited.
  Abnormal (original misfeeding, etc.)
  Others (be as specific as possible): _____

- Communication conditions and status
  Transmission error

  Reception error

  ECM mode

  G3 mode
  Image errors such as stream image or interrupted image occur in the G3 mode when the noise occurs on the line. These are liable to occur since the line condition differs depending on each communication.
  If the error still persists even though the data are resent, this can sometimes be decreased by reducing the transmission speed of the sender's side.

  Communication cannot be made with a particular number. (Information of the other side machine: _____)
  If the communication is impossible with a particular number, it is considered that the other side machine has broken down or has been busy (there is no response) because the recording paper has run out and the memory is full.
  Check the condition of the other side machine. If there is no problem with the machine, check the model name since there is a possibility that particular model has caused the problem.

Original size =	A3, B4, A4, B5, A5, LD, COMP, LG, LT, ST		
Received document size =	A3, B4, A4, B5, A5, LD, COMP, LG, LT, ST		
Resolution =	NORMAL (8 x 3.85)	FINE (8 x 7.7)	U-FINE (16 or 8 x 15.4)
Total number of sheets of the communication =	Error has occurred in the st/nd/rd/th sheet out of sheets.		

- Condition of the circuit connection
  Connected directly with the public telephone circuit

  Connected via a local exchange device or the main equipment
  → Is any other device connected besides this equipment and an external telephone?
  → Does the ring tone sound normally (rings for 1 second and stops for 2 seconds)?
  (If it is not normal, reception may not be started.)

  Circuit switching device
  → Are the circuit settings (DP, PB) of the circuit switching device the same as those for this board?

  Connection via an ISDN circuit terminal adapter
  → Is the line number of the terminal adapter correct? Is it the same number as that for the fax assigned to another terminal such as a data modem?
  → Does the noise from the terminal adapter affect the line? (Connect the TA with your machine and ground it to check.)

Configuration
(Illustrate the units connected to your machine such as the telephone lines, exchange system, telephones, modems, etc.)

- Settings of the Auto Power Save and Auto Shut Off
  FS-08-9110 (Auto-clear timer setting) =
  FS-08-9111 (Auto power save mode timer setting) =
  FS-08-9112 (Auto Shut Off timer setting (Sleep mode)) =

8. PRECAUTIONS FOR INSTALLATION OF FAX BOARD

8.1 When Replacing the Fax Board

When two lines are installed, be sure to handle line 1 and 2 correctly.

- Line1: LED “OFF”
- Line2: LED “ON”

8.2 After Replacing the Fax Board

Be sure to perform memory initialization and destination setting.
Procedure

[FS-11 FAX CLEAR MODE-SETUP FAX] - Select a destination - [OK] - [OK]

* An equipment will reboot.

9. FIRMWARE UPDATING

The firmware of this fax board can be updated by [49 Firmware update mode] in [HS menu].
For details of the updating, refer to the Service Manual for the equipment.

REVISION RECORD

Ver02

Ver01<2020.03.16>	
Page	**Contents**
Trademarks	The description has been deleted.
GENERAL PRECAUTIONS REGARDING THE SERVICE FOR GD-1370	The description has been changed.
1-1	The description has been added.
1-2	The description has been deleted.
1-3	The description has been deleted.
1-4	The description has been deleted.
4-1	The description has been changed.
5-2	The description has been deleted.
7-9	The description has been corrected.
7-11	The description has been corrected.

Ver01

Ver01<2017.07.14>	
Page	**Contents**
Trademarks	The description has been deleted.
GENERAL PRECAUTIONS REGARDING THE SERVICE FOR GD-1370	The description has been deleted.
1-5	The description has been deleted.
1-6	The description has been deleted.
2-3	The description has been corrected.
2-8	The description has been deleted.
3-9	The description has been corrected.
3-10	The description has been corrected.
3-11	The description has been corrected.
3-12	The description has been corrected.
3-25	The description has been changed.
5-1	The description has been changed.
5-4	The description has been added.
7-8	The description has been added.
7-9	The description has been changed.

Ver00

Ver00<2016.03.11>	
Page	**Contents**
All	Initial release

TOSHIBA

Toshiba Tec Corporation

1-11-1, OSAKI, SHINAGAWA-KU, TOKYO, 141-8562, JAPAN