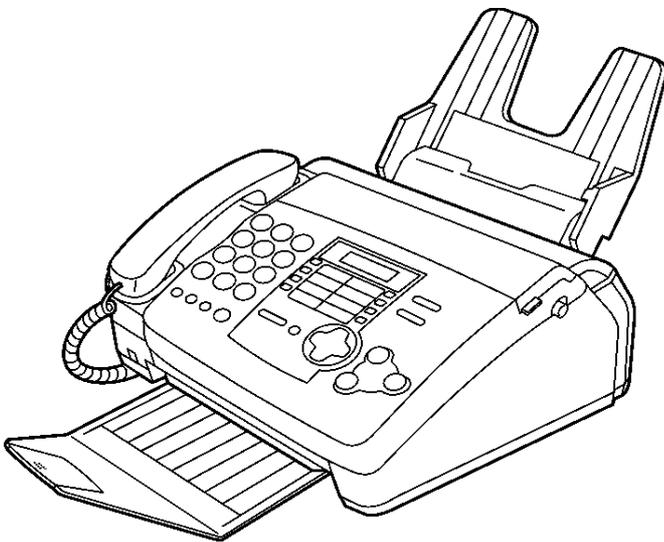


Service Manual

Compact Plain Paper FAX

KX-FHD301

(for U.S.A.)



WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

When you note the serial number, write down all 11 digits. The serial number may be found on the bottom of the unit.

Panasonic

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1 INTRODUCTION

1.1. SAFETY PRECAUTIONS

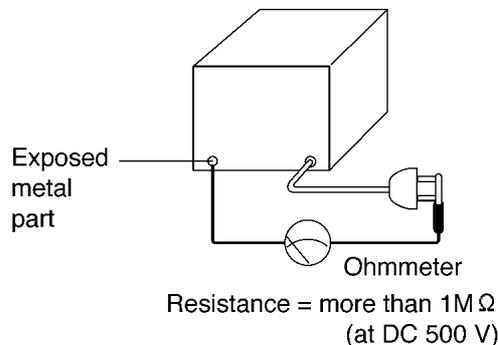
1. Before servicing, unplug the AC power cord to prevent an electric shock.
2. When replacing parts, use only the manufacturer's recommended components.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to perform the following insulation resistance test to prevent the customer from being exposed to shock hazards.

1.2. INSULATION RESISTANCE TEST

1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metal cabinet part (screw heads, control shafts, bottom frame, etc.).

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard.



1.3. FOR SERVICE TECHNICIANS

ICs and LSIs are vulnerable to static electricity.

When repairing, the following precautions will help prevent recurring malfunctions.

1. Cover the plastic part's boxes with aluminum foil.
2. Ground the soldering irons.
3. Use a conductive mat on the worktable.
4. Do not touch the IC or LSI pins with bare fingers.

1.4. BATTERY CAUTION

CAUTION

Danger of explosion if the battery is replaced incorrectly. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to following caution:

Disposal of lithium batteries should be performed by permitted, professional disposal firms knowledgeable in state government federal and local hazardous materials and hazardous waste transportation and disposal requirements.

A battery continues to have no transportation limitations as long as it is separated to prevent short circuits and packed in strong packaging.

Commercial firms that dispose of any quantity of lithium cells should have a mechanism in place to account for their ultimate disposition. This is a good practice for all types of commercial or industrial waste.

Recommend Type Number:

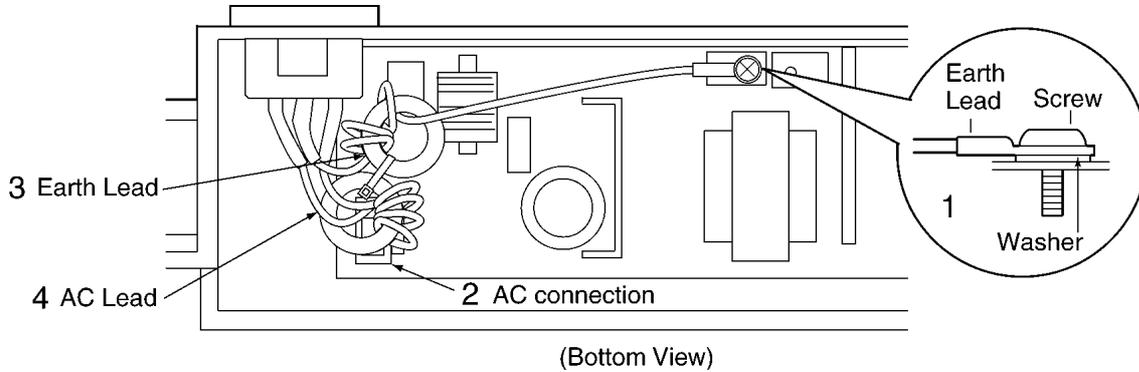
CR2032 (BAT501) Manufactured by MATSUSHITA

CR2032 (BAT501) Manufactured by SONY

1.5. AC CAUTION

For safety, before closing the lower cabinet, please make sure of the following precautions.

1. The earth lead is fixed with the screw.
2. The AC connector is connected properly.
3. Wrap the earth lead around the core 3 times.
4. Wrap the AC lead around the core 2 times.

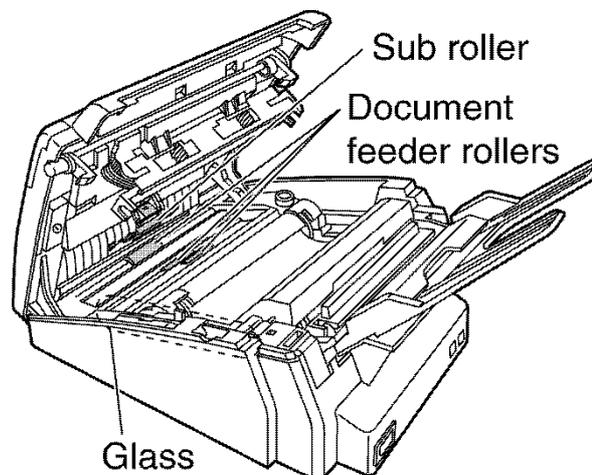


1.6. PERSONAL SAFETY PRECAUTIONS

1.6.1. MOVING SECTIONS OF THE UNIT

Be careful not to let your hair, clothes, fingers, accessories, etc., become caught in any moving sections of the unit.

The moving sections of the unit are the rollers and a gear. There is a separation roller and a document feed roller which are rotated by the document feed motor. A gear rotates the two rollers. Be careful not to touch them with your hands, especially when the unit is operating.

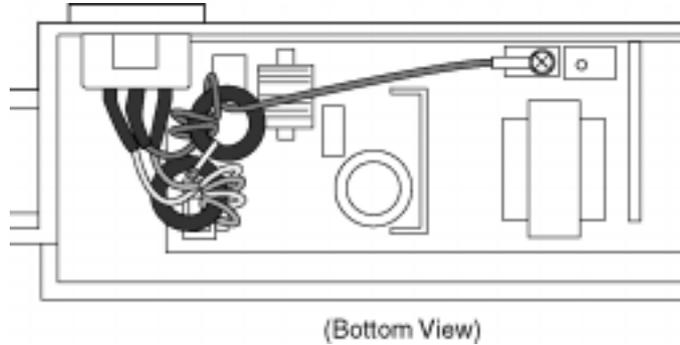


1.6.2. LIVE ELECTRICAL SECTIONS

All the electrical sections of the unit supplied with AC power by the AC power cord are live. Never disassemble the unit for service with the AC power supply plugged in.

CAUTION:

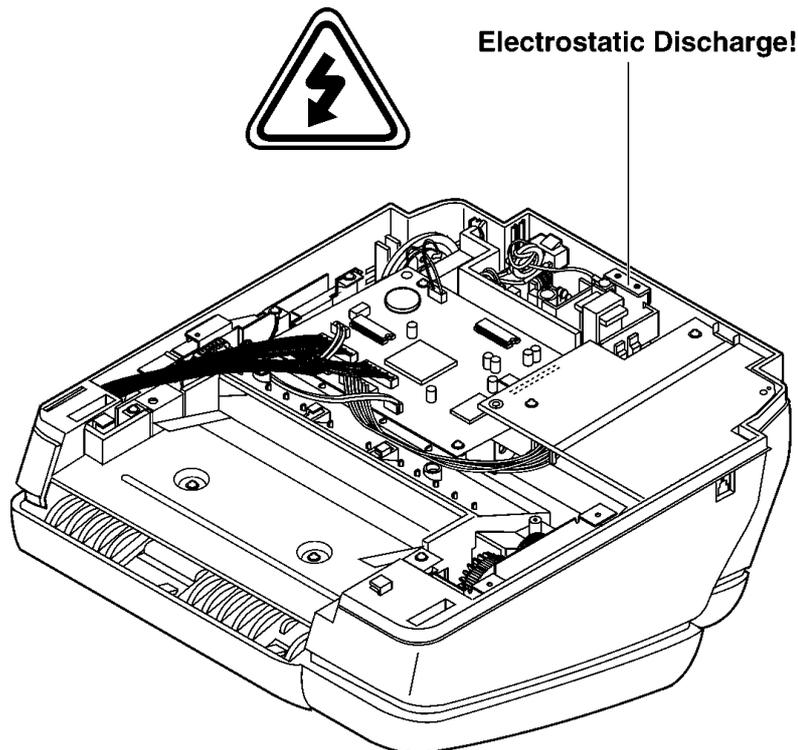
AC voltage is supplied to the primary side of the power supply unit. Therefore, always unplug the AC power cord before disassembling for service.



1.7. SERVICE PRECAUTIONS

1.7.1. PRECAUTIONS TO PREVENT DAMAGE FROM STATIC ELECTRICITY

Electrical charges accumulate on a person. For instance, clothes rubbing together can damage electric elements or change their electrical characteristics. In order to prevent static electricity, touch a metallic part that is grounded to release the static electricity. Never touch the electrical sections such as the power supply unit, etc.



1.8. FEATURES

General

- Help function

Please refer to **WHEN YOU DON'T KNOW HOW TO OPERATE THE UNIT, USE THE HELP FUNCTION.**(P.26) to print below features.

Display:

- QUICK SET UP
 - FEATURE LIST
 - DIRECTORY
 - FAX SND/RCV
 - COPIER
 - Q and A
 - ERRORS
 - REPORTS
 - CALLER ID
- LCD (Liquid Crystal Display) readout
 - TAM (Telephone answering machine) interface

Plain Paper Facsimile Machine

- 15 second transmission speed *
- Letter / Legal / A4, G3 compatible
- Automatic document feeder (15 sheets)
- Fax pager call
- Quick scan
- Resolution: Standard, Fine/Photo, Super fine (64 level)
- Broad cast with Navigator
- 150-sheet paper capacity (20 lb.)
- Automatic fax/phone switching
- Distinctive ring detection **

* The 15 second speed is based upon the ITU-T No. 1 Test Chart on the condition that memory transmission is performed.

** Subscription to distinctive ring services is required.

Large Memory... Performed by DRAM

Approx. 28 pages of memory reception

Approx. 25 pages of memory transmission

Integrated Telephone System

- On-hook dialing
- Monitor speaker
- Voice muting
- Redialing function
- 100-Station telephone directory with Navigator
- Caller ID compatible***
- ***Feature requires a subscription to caller identification services offered by certain local telephone companies for a fee. You and your caller(s) must be in areas that provide caller identification services, and compatible equipment must be used by both telephone companies. Feature not available when the unit is connected to a PBX system.

Enhanced Copier Function

- Multi-copy function (up to 99 copies)
- Enlargement and reduction
- Collate
- 64-Level halftone

1.9. SPECIFICATIONS

Applicable Lines:	Public Switched Telephone Network
Document Size:	Max. 216 mm (8 1/2") in width Max. 600 mm (23 5/8") in length
Effective Scanning Width:	208 mm (8 3/16")
Recording Paper Size:	Letter: 216x279 mm (8 1/2"x11") Legal: 216x356 mm (8 1/2"x14") A4: 210x297 mm (8 1/4"x11 11/16")
Effective Printing Width:	208 mm (8 3/16")
Transmission Time*:	Approx. 15 s/page (Original mode)**
Scanning Density:	Horizontal: 8 pels/mm (203 pels/inch) Vertical: 3.85 lines/mm (98 lines/inch)—STANDARD mode 7.7 lines/mm (196 lines/inch)—FINE / PHOTO mode 15.4 lines/mm (392 lines/inch)—SUPER FINE Mode
Halftone Level:	64-level
Scanner Type:	Contact Image Sensor (CIS)
Printer Type:	Thermal Transfer on Plain Paper
Data Compression System:	Modified Huffman (MH), Modified READ (MR)
Modem Speed:	9,600/7,200/4,800/2,400 bps; Automatic Fallback
Operating Environment:	5—35°C (41—95°F), 20—80 % RH (Relative Humidity)
Dimensions (HxWxD):	143x325x308 mm (5 5/8" x 12 13/16" x 12 1/8")
Mass (Weight):	Approx. 4.1 kg (9 lb.)
Power Consumption:	Standby: Approx. 3.5 W Transmission: Approx. 14 W Reception: Approx. 42 W (When receiving a 20% black document) Copy: Approx. 42 W (When copying a 20% black document) Maximum: Approx. 135 W (When copying a 100% black document)
Power Supply:	120 V AC, 60 Hz
Memory Capacity:	Approx. 25 pages memory transmission Approx. 28 pages memory reception (Based on ITU-T No. 1 Test Chart in standard resolution.)

* Transmission speed depends upon the contents of the pages, resolution, telephone line conditions and capability of the other party's machine.

** The 15 second speed is based upon the ITU-T No. 1 Test Chart and original mode. (Refer to **TEST CHART (P.8)**.) If the capability of the other party's machine is inferior to your unit, the transmission time may be longer.

Note:

- Any details given in these instructions are subject to change without notice.
- The pictures and illustrations in these instructions may vary slightly from the actual product.

Design and specifications are subject to change without notice.

1.10. OPTIONAL ACCESSORIES

The included film cartridge is 10 meters (32 1/2') long. We recommend that you buy full size replacement film cartridge - 100 meters (328') continuous use of your unit. For best results, use genuine Panasonic replacement film Model No. KX-FA65.

Model No.	Description	Specifications
KX-FA65	Film cartridge	216 mm x 100 m (8 1/2"x328')

Note:

The ink film is not reusable. Do not rewind and use the ink film again.

1.11. TEST CHART

1.11.1. ITU-T No.1 TEST CHART



THE SLEREXE COMPANY LIMITED

SAPORS LANE - BOOLE - DORSET - BH 25 8 ER

TELEPHONE BOOLE (945 13) 51617 - TELEX 123456

Our Ref. 350/PJC/EAC

18th January, 1972.

Dr. P.N. Cundall,
Mining Surveys Ltd.,
Holroyd Road,
Reading,
Berks.

Dear Pete,

Permit me to introduce you to the facility of facsimile transmission.

In facsimile a photocell is caused to perform a raster scan over the subject copy. The variations of print density on the document cause the photocell to generate an analogous electrical video signal. This signal is used to modulate a carrier, which is transmitted to a remote destination over a radio or cable communications link.

At the remote terminal, demodulation reconstructs the video signal, which is used to modulate the density of print produced by a printing device. This device is scanning in a raster scan synchronised with that at the transmitting terminal. As a result, a facsimile copy of the subject document is produced.

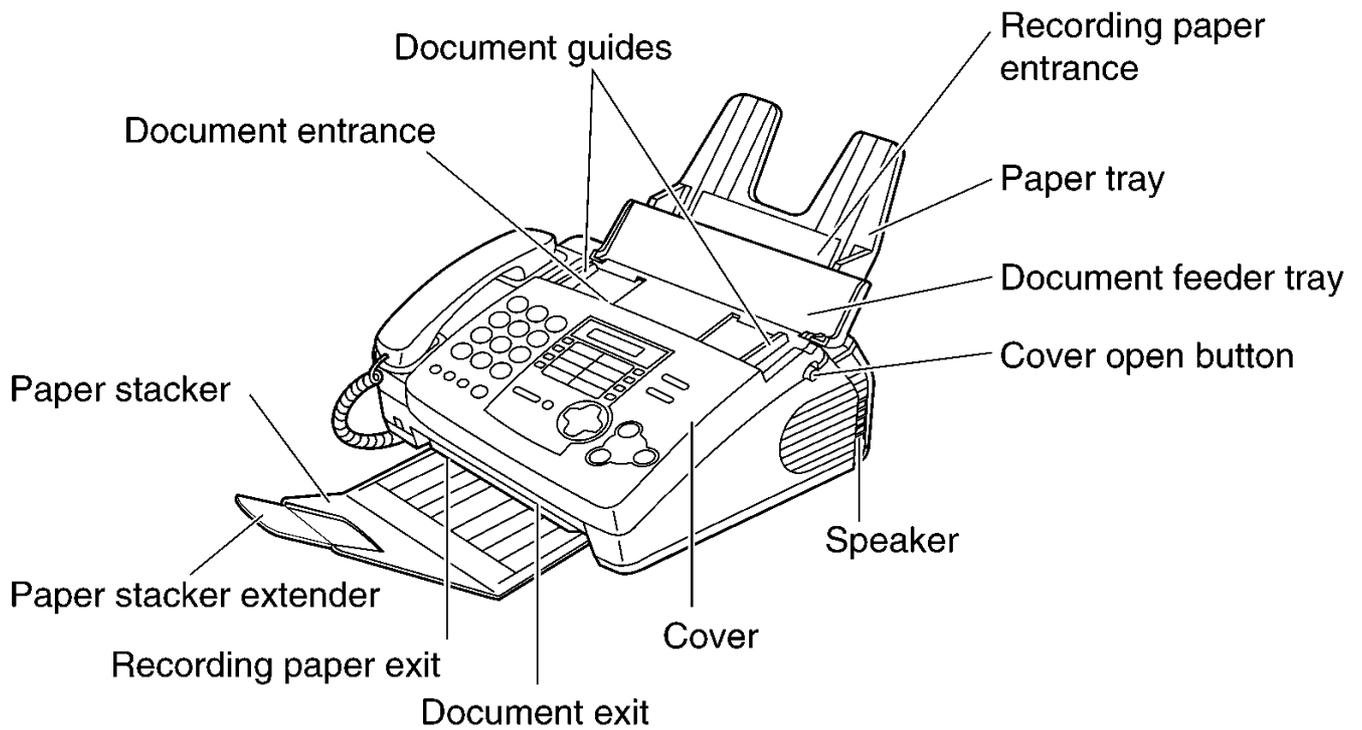
Probably you have uses for this facility in your organisation.

Yours sincerely,

P.J. CROSS
Group Leader - Facsimile Research

1.12. LOCATION OF CONTROLS

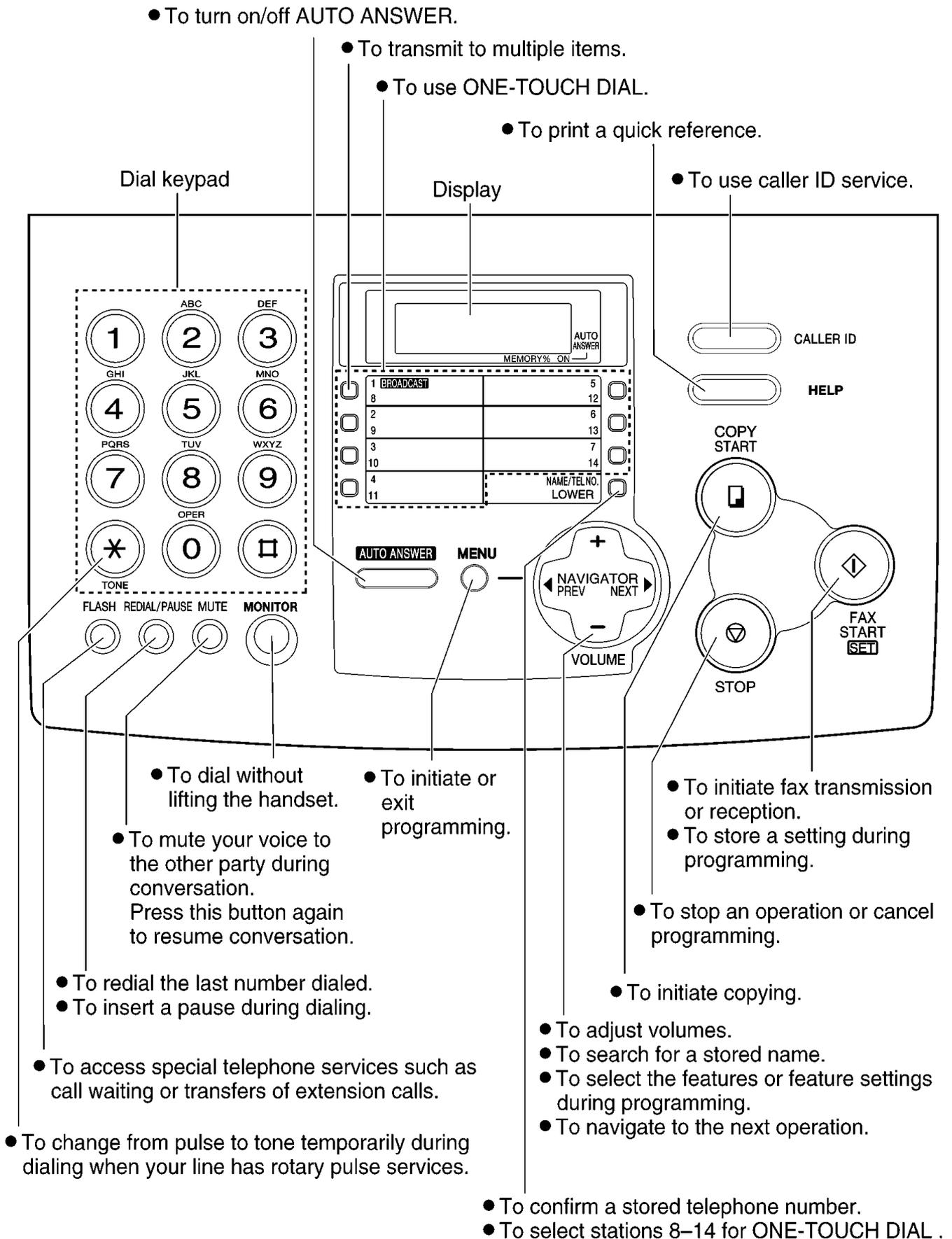
1.12.1. OVERVIEW



Note:

- The document and recording paper will be ejected from the front of the unit. Install the unit on a desk or floor with a smooth surface and do not place anything in front of the unit.

1.12.2. CONTROL PANEL



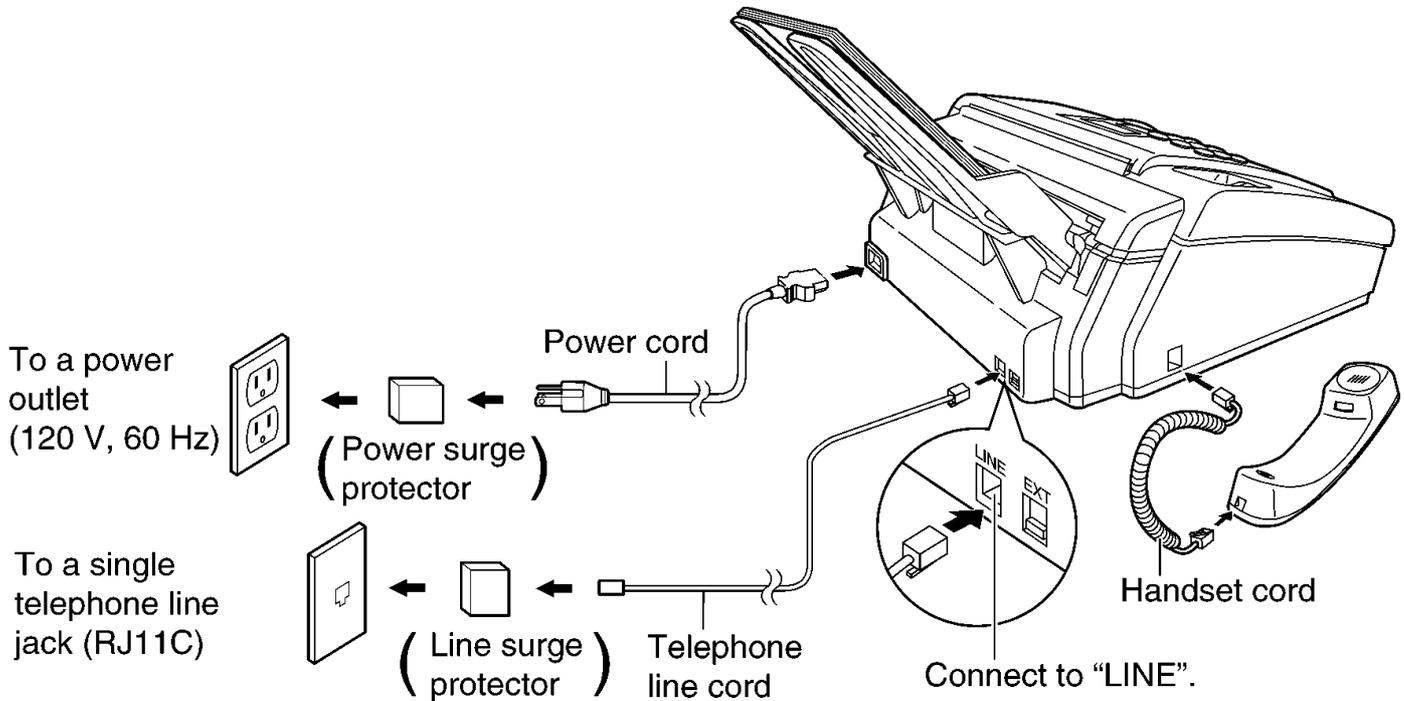
1.13. CONNECTIONS

(1) Connect the handset cord.

(2) Connect the telephone line cord.

(3) Connect the power cord.

- When the power is turned on for the first time, the unit will print some basic information.



Caution:

When you operate this product, the power outlet should be near the product and easily accessible.

Note:

- For additional equipment protection, we recommend the use of a surge protector. The following types are available; TELESPIKE BLOK MODEL TSB (TRIPPE MFG. CO.), SPIKE BLOK MODEL SK6-0 (TRIPPE MFG. CO.), SUPER MAX (PANAMAX) or MP1 (ITW LINX).

The warranty does not cover damage due to power line surges or lightning.

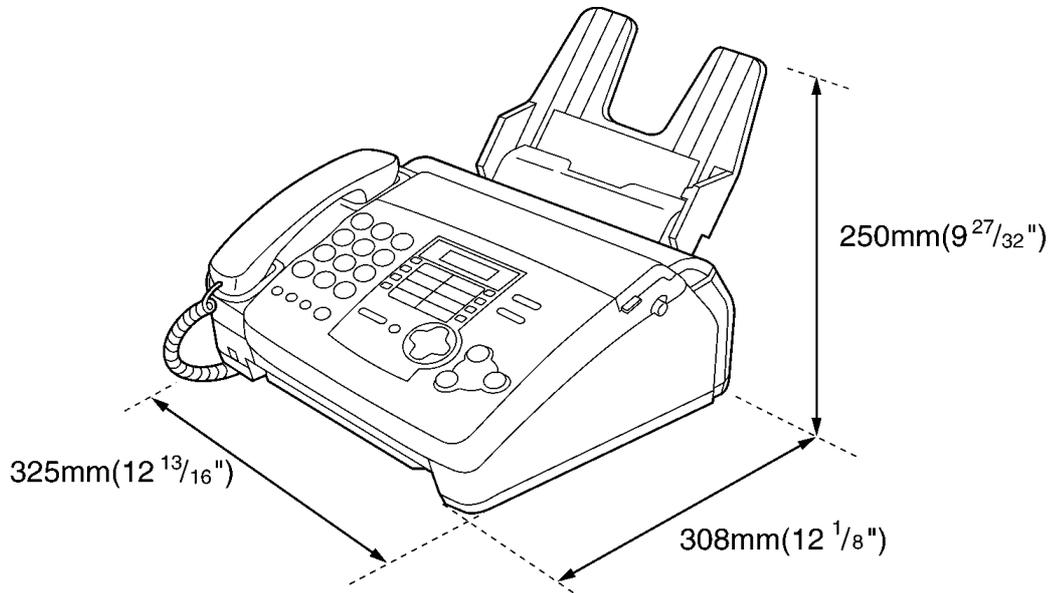
- If you want to connect an answering machine to the unit, see **TAM INTERFACE SECTION** (P.165).

1.14. INSTALLATION

1.14.1. INSTALLATION SPACE

The space required to install the unit is shown below.

The dimensions given are necessary for the unit to operate efficiently.



Note:

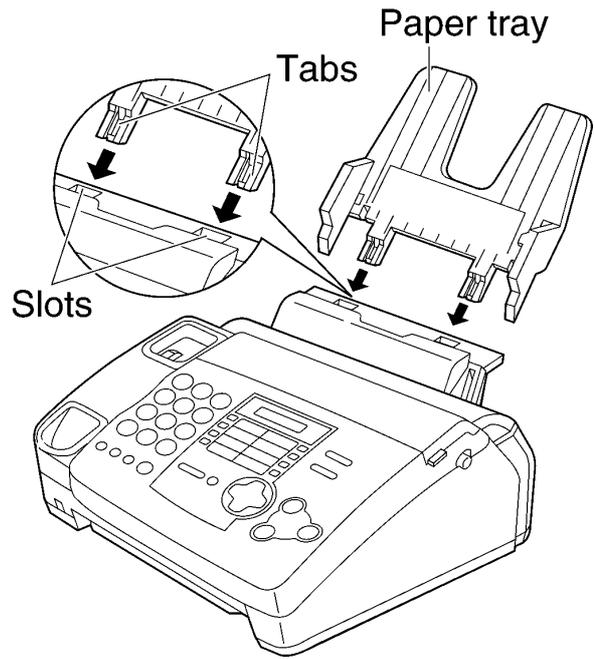
- Avoid excessive heat or humidity.
- Use the unit within the following ranges of temperature and humidity.
- Ambient temperature: 5°C to 35°C
- Relative humidity: 20% to 80% (without condensation)
- Power cord length should be less than 5 meters (16.4 feet). Using a longer cord may reduce the voltage or cause malfunctions.
- Avoid direct sunlight.
- Do not install near devices which contain magnets or generate magnetic fields.
- Do not subject the unit to strong physical shock or vibration.
- Keep the unit clean. Dust accumulation can prevent the unit from functioning properly.
- To protect the unit from damage, hold both sides when you move it.

1.14.2. INSTALLING THE PAPER TRAY

Insert two tabs on the paper tray into one slots on the back of the unit.

Note:

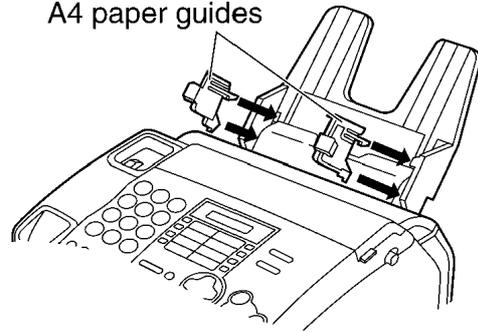
- Do not place the unit in areas where the paper tray may be obstructed by a wall, etc.



To use A4 size paper

When using A4 size paper, you need to install the A4 paper guides to the paper tray.

A4 paper guides

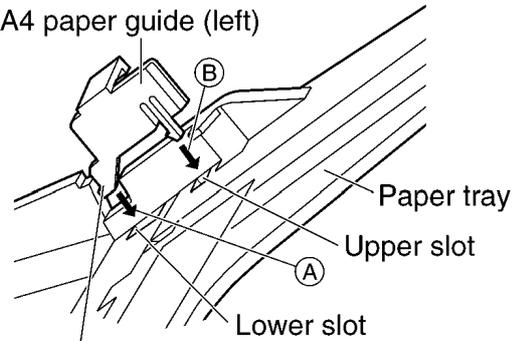


(1)

- [A] Insert the bottom tab on the A4 paper guide (left) into the lower slot.
- [B] Press the guide into the upper slot.

- If the A4 paper guide cannot be installed, make sure the paper tray has been installed correctly.

A4 paper guide (left)



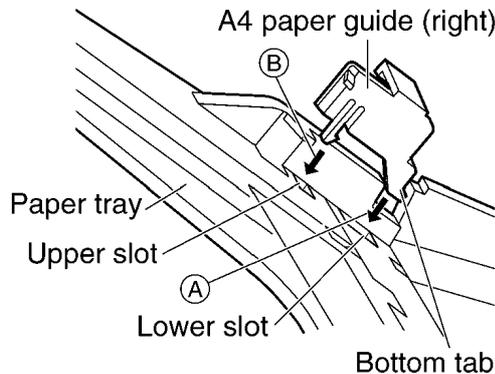
(2)

- [A] Insert the bottom tab on the A4 paper guide (right) into the lower slot.
- [B] Press the guide into the upper slot.

Note:

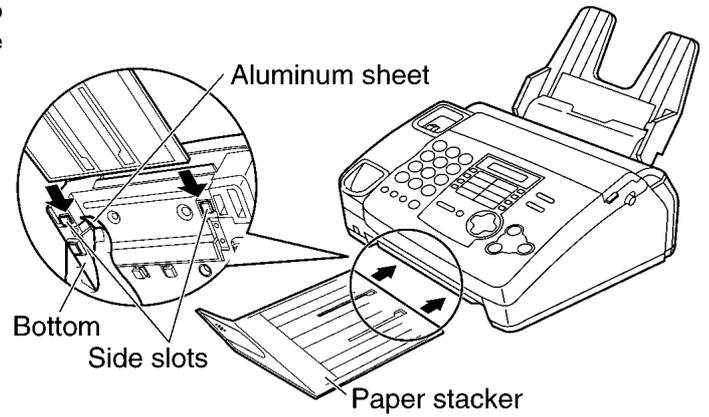
- When you remove the paper tray, be sure to take off A4 paper guides first, in order not to damage them.

A4 paper guide (right)

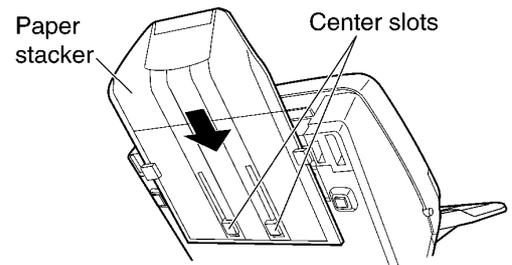


1.14.3. INSTALL THE PAPER STACKER

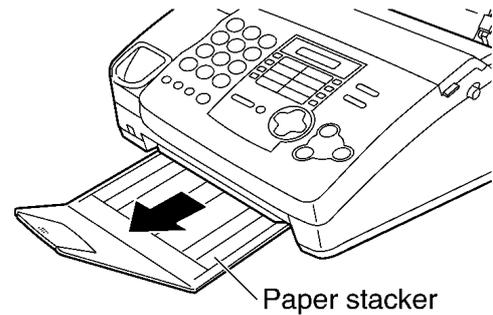
- (1) Lift the front of the unit and hold the aluminum sheet up to prevent it being bent by the paper stacker while inserting the paper stacker into the side slots.



- (2) Confirm that the paper stacker is locked into the center slots and slide back.

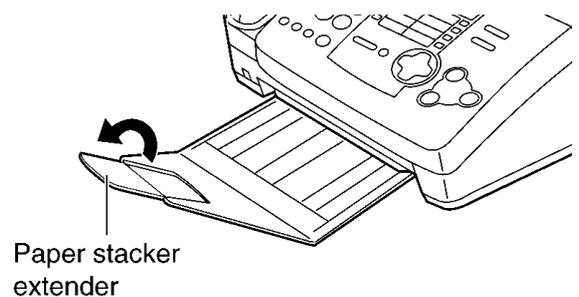
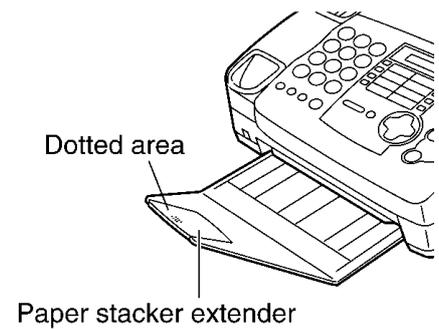


- (3) Slide the paper stacker forward until it stops.



To use Legal Size Paper

Press the dotted area on the paper stacker extender and open the paper stacker extender.



1.14.4. INSTALLING THE RECORDING PAPER

Letter*, legal** or A4*** size recording paper can be loaded. The unit can hold up to 150 sheets of 75 g/m² (20lb.) paper. You may use 60 g/m² to 90 g/m² (16 lb. to 24 lb.) paper. Set the recording paper size (code #016 on **PROGRAM MODE TABLE (P.65)**) according to the paper size you use, after connecting the unit.

*Letter=216 mm × 279 mm (8 1/2" × 11")

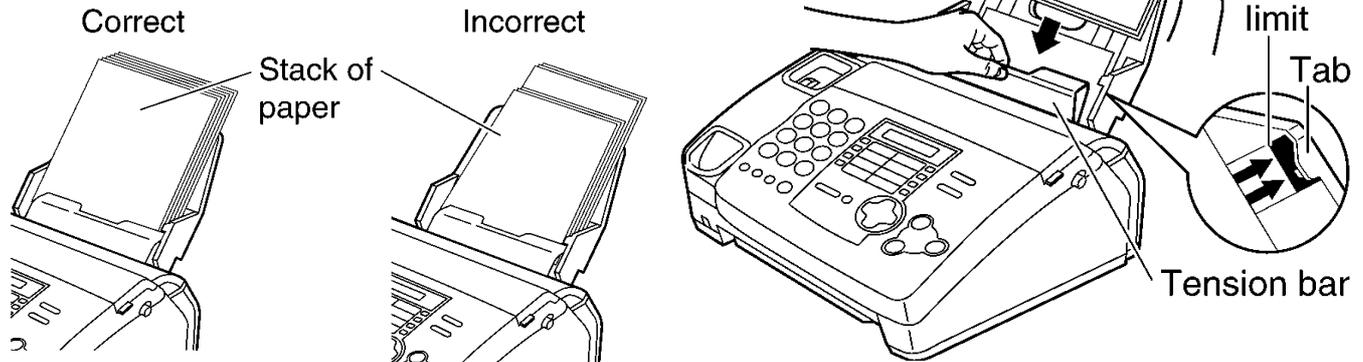
**Legal=216 mm × 356 mm (8 1/2" × 14")

***A4=210 mm × 297 mm (8 1/4" × 11 11/16")

To use A4 size paper, install the A4 paper guides to the paper tray. Refer to **INSTALLING THE PAPER TRAY (P.14)**.

For best results, only use inkjet paper such as **Hammermill® Jet Print**. If you use other types of paper, the print quality may be affected.

- (1) Fan the stack of paper to prevent a paper jam.
- (2) Pull the tension bar forward and hold open while inserting the paper.
 - The height of the stack of the paper should not exceed the upper limit of the paper tray, otherwise the paper may jam or multi-feed.
 - The paper should not be over the tab.
 - If the paper is not inserted correctly, readjust the paper, or the paper may jam.



Note for recording paper:

- Avoid paper with a cotton and/or fiber content that is over 20%, such as letterhead paper or paper used for resumes.
- Do not use different types or thicknesses of paper at the same time. This may cause a paper jam.
- Avoid extremely smooth or shiny paper that is highly textured.
- Avoid paper that is coated, damaged or wrinkled.

Note:

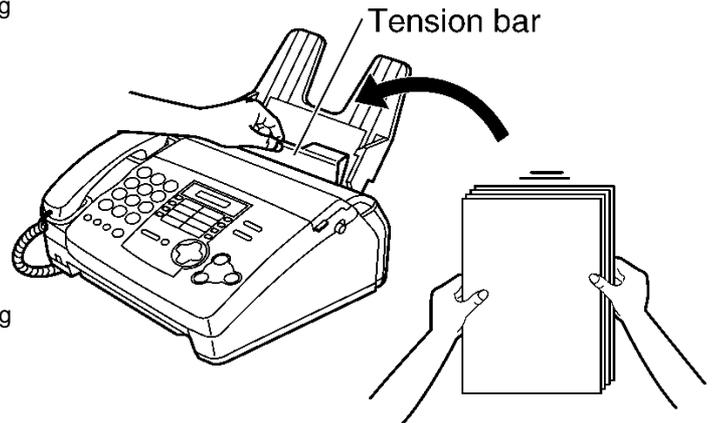
- Avoid double-sided printing
- Do not use paper printed from this unit for double-sided printing with other copiers or printers, or the paper may jam.
- Do not reinsert the ejected paper into the recording paper exit.
- Some paper only accepts print on one side. Try using the other side of paper if you are not happy with the print quality.

Trademarks:

- Hammermill® is a registered trademark of INTERNATIONAL PAPER in the United States and/or other countries.

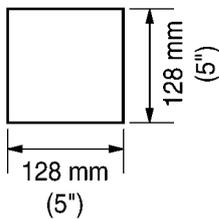
1.14.5. ADDING PAPER TO THE PAPER TRAY

- (1) Pull the tension bar forward and hold open while removing all of the installed paper.
- (2) Add paper to the removed paper and straighten.
- (3) Fan the stack of paper.
- (4) Pull the tension bar forward and hold open while inserting the paper.

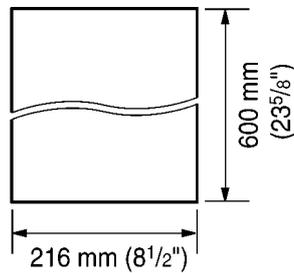


1.14.6. DOCUMENTS THE UNIT CAN FEED

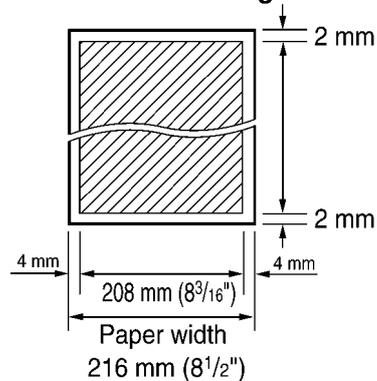
Minimum size



Maximum size



Effective scanning area



Document weight

Single sheet:
45 g/m² to 90 g/m²
(12 lb. to 24 lb.)

Multiple sheets:
60 g/m² to 75 g/m²
(16 lb. to 20 lb.)

Note:

- Remove chips, staples or other similar fasteners objects.
- Check that ink, paste or correction fluid has dried.
- Do not send the following types of documents. Use copies for fax transmission.
 - Chemically treated paper such as carbon or carbon less duplicating paper
 - Electrostatically charged paper
 - Heavily curled, creased or torn paper
 - Paper with a coated surface
 - Paper with a faint image
 - Paper with printing on the opposite side that can be seen through the front (e.g. newspaper)
- To transmit the document(s) whose width is less than the letter size (216 mm) or A4 size (210 mm), we recommend using a copier machine. Copy the original document on to a letter size paper, then transmit the copied document.

To transmit more than 15 pages at a time

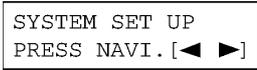
- Insert the first 15 pages of the document. Add the other pages (15 at a time) before the last page is fed into the unit.

1.14.7. SETTING YOUR LOGO

The logo can be your company, division or name.

- (1) Press **MENU** .

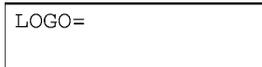
Display:



- (2) Press **Left Arrow** or **Right Arrow** until the following is displayed.



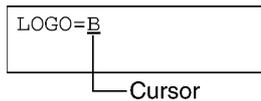
- (3) Press **SET** .



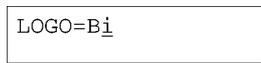
- (4) Enter your logo, up to 30 characters, by using the dial keypad.

Example: Bill

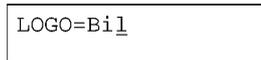
- a. Press **2** twice.



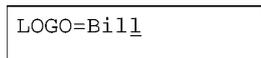
- b. Press **4** six times.



- c. Press **5** six times.



- d. Press **Right Arrow** to move the cursor to the next space and press **5** six times.



- (5) Press **SET** .

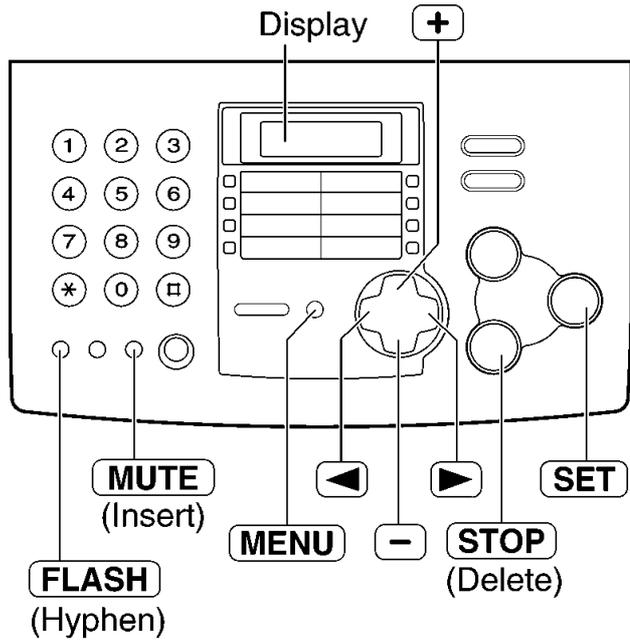
• The next feature will be displayed.



- (6) Press **MENU** .

Note:

• You can enter your logo by pressing **+** or **-** in step (4). In this case, press **Right Arrow** to move the cursor.



To correct a mistake

- Press **Left Arrow** or **Right Arrow** to move the cursor to the incorrect character, and make the correction.

To delete a character

- Move the cursor to the character you want to delete and press **STOP** .

To insert a character

1. Press **Left Arrow** or **Right Arrow** to move the cursor to the position to the right of where you want to insert the character.
2. Press **MUTE** (Insert) to insert a space and enter the character.

1.14.7.1. TO SELECT CHARACTERS WITH THE DIAL KEYPAD

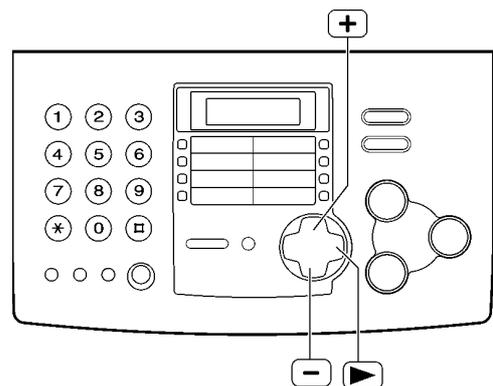
Pressing the dial keys will select a character as shown below.

Keys	Characters
①	1 [] { } + - / = , . _ ` : ; ?
②	A B C a b c 2
③	D E F d e f 3
④	G H I g h i 4
⑤	J K L j k l 5
⑥	M N O m n o 6
⑦	P Q R S p q r s 7
⑧	T U V t u v 8
⑨	W X Y Z w x y z 9
⑩	0 () < > ! " # \$ % & ¥ * @ ^ ' →
FLASH	Hyphen button (To insert a hyphen.)
MUTE	Insert button (To insert one character or one space.)
STOP	Delete button (To delete a character.)
	▶ key (To move the cursor to the right.) To enter another character using the same number key, move the cursor to the next space.
	◀ key (To move the cursor to the left.)

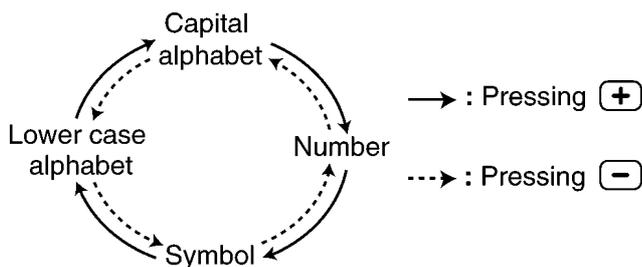
1.14.7.2. TO SELECT CHARACTERS USING or

Instead of pressing the dial keys, you can select characters using or .

- Press or until the desired character is displayed.
- Press to move the cursor to the next space.
· The character displayed in step 1 is inserted.
- Return to step 1 to enter the next character.



Display order of characters



1.14.8. REPLACING THE FILM CARTRIDGE

When the unit detects the end of the film, the following message will be displayed.

Display:

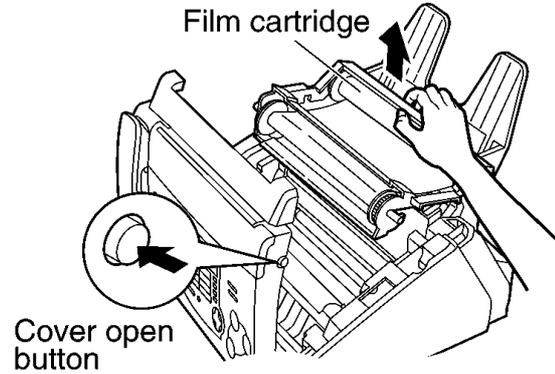


The film is empty. Install a new film cartridge. The following is available for replacement:

Model No. KX-FA65: film cartridge (prints about 330 letter size pages)

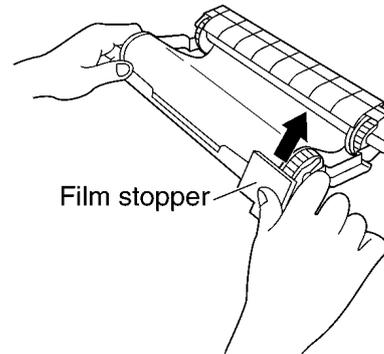
Refer to **OPTIONAL ACCESSORIES**.(P.7)

(1) Open the cover by pressing the cover open button.

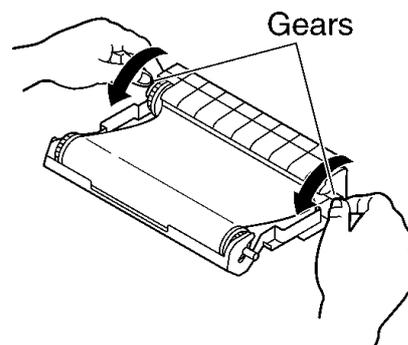
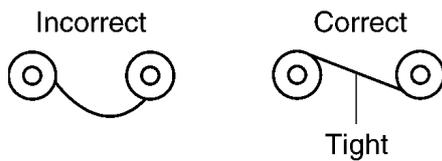


(2) Remove the used film cartridge.

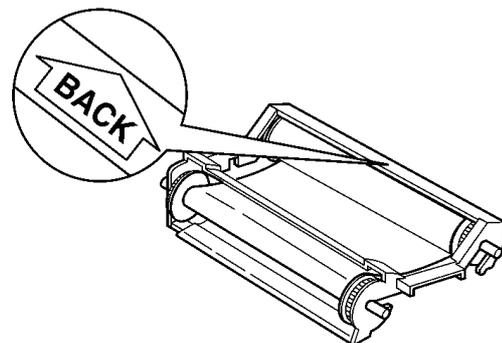
(3) Remove the film stopper from the new film cartridge by pressing it up.



(4) If the film is slack, tighten it by winding the gears.



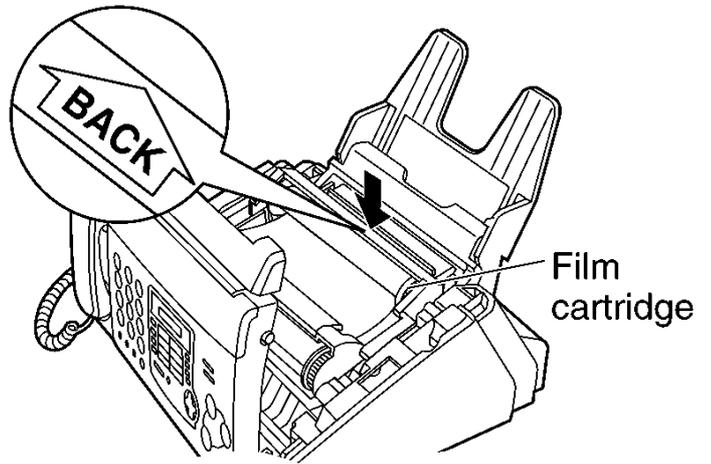
(5) Turn the film cartridge over so that the "BACK" is facing up.



- (6) Insert the new film cartridge by first placing the front of the cartridge into the unit and then lowering the "BACK" of the cartridge into place.
- (7) Close the cover securely by pushing down on the dotted area at both ends.
 - The unit will check that there is no slack on the film. The following message will be displayed.

Display:

PLEASE WAIT



1.15. MAINTENANCE ITEMS AND COMPONENT LOCATIONS

1.15.1. OUTLINE

MAINTENANCE AND REPAIRS ARE PERFORMED USING THE FOLLOWING STEPS.

1. Periodic maintenance

Inspect the equipment periodically and if necessary, clean any contaminated parts.

2. Check for breakdowns

Look for problems and consider how they arose.

If the equipment can be still used, perform copying, self testing or communication testing.

3. Check equipment

Perform copying, self testing and communication testing to determine if the problem originates from the transmitter, receiver or the telephone line.

4. Determine causes

Determine the causes of the equipment problem by troubleshooting.

5. Equipment repairs

Repair or replace the defective parts and take appropriate measures at this stage to ensure that the problem will not recur.

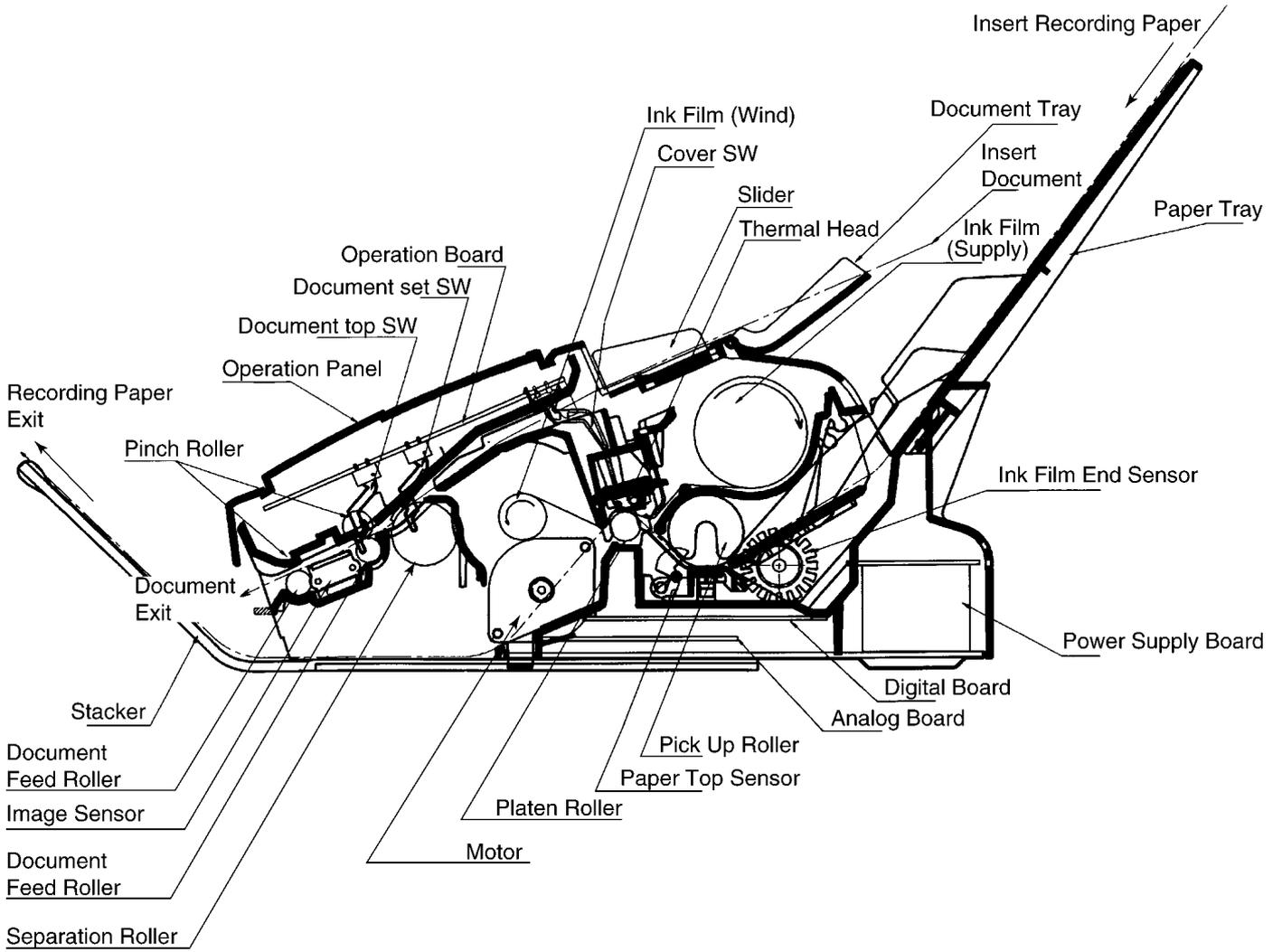
6. Confirm normal operation of the equipment

After completing the repairs, conduct copying, self testing and communication testing to confirm that the equipment operates normally.

7. Record keeping

Make a record of the measures taken to rectify the problem for future reference.

1.15.2. MAINTENANCE CHECK ITEMS/COMPONENT LOCATIONS



1.15.2.1. MAINTENANCE LIST

NO.	OPERATION	CHECK	REMARKS
1	Document Path	Remove any foreign matter such as paper.	—
2	Rollers	If the roller is dirty, clean it with a damp cloth then dry thoroughly.	Refer to MAINTENANCE (P.25).
3	Platen Roller	If the platen is dirty, clean it with a damp cloth then dry thoroughly. Remove the paper and film cartridge before cleaning.	—
4	Thermal Head	If the thermal head is dirty, clean the printing surface with a cloth moistened with denatured alcohol (alcohol without water), then dry thoroughly.	Refer to MAINTENANCE (P.25).
5	Sensors	Hook switch (SW401), Paper top sensor (PS502), Film end sensor (PS501), Cover switch (SW338), Document top switch (SW337), Document set switch (SW336). Confirm the operation of the sensors.	See MAINTENANCE CHECK ITEMS/COMPONENT LOCATIONS (P.23) and HOW TO REMOVE THE ANALOG, DIGITAL AND POWER SUPPLY BOARDS AND AC INLET (P.112).
6	Glass	If the glass is dirty, clean them with a dry soft cloth.	Refer to MAINTENANCE (P.25).
7	Abnormal, wear and tear or loose parts	Replace the part. Check if the screws are tight on all parts.	—

1.15.2.2. MAINTENANCE CYCLE

No.	Item	Cleaning Cycle	Replacement	
			Cycle	Procedure
1	Separation Roller (Ref. No. 174)	3 months	7 years* (31,500 documents)	Refer to HOW TO REMOVE THE SEPARATION ROLLER (P.115).
2	Separation Rubber (Ref. No. 21)	3 months	7 years (31,500 documents)	Refer to MAINTENANCE CHECK ITEMS/COMPONENT LOCATIONS (P.23).
3	Feed Rollers (Ref. No. 102)	3 months	7 years (31,500 documents)	Refer to DISASSEMBLY INSTRUCTIONS (P.105).
4	Thermal Head (Ref. No. 41)	3 months	7 years (31,500 documents)	Refer to HOW TO REMOVE THE THERMAL HEAD (P.110).
5	Platen Roller (Ref. No. 96)	3 months	7 years (31,500 documents)	Refer to HOW TO REMOVE THE PLATEN ROLLER (P.111).
6	Pickup Roller (Ref. No. 134)	3 months	7 years (31,500 documents)	Refer to HOW TO REMOVE THE PICKUP ROLLER (P.117).

* These values are standard and may vary depending on usage conditions.

1.15.3. MAINTENANCE

1.15.3.1. CLEANING THE DOCUMENT FEEDER

If misfeeding occurs frequently or if dirty patterns or black bands appear on a copied or transmitted document, clean the document feeder.

1. Disconnect the power cord and the telephone line cord.

2. Open the cover by pressing the cover open button.

3. Clean the document feeder rollers, sub roller and rubber flap with a cloth moistened with isopropyl rubbing alcohol, and let all parts dry thoroughly.

4. Clean the white plate and glass with a soft dry cloth.

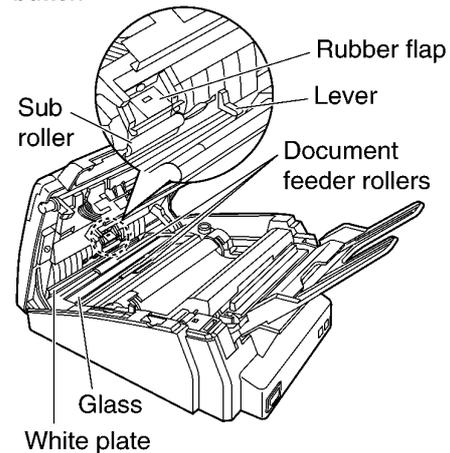
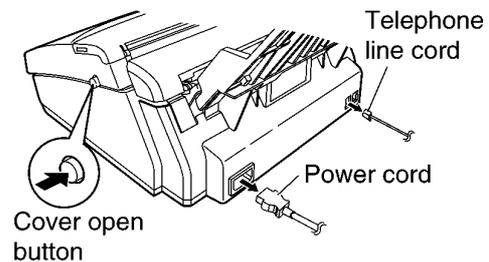
- Do not touch the lever.

5. Close the cover securely by pushing down on the dotted area at both ends.

6. Connect the power cord and the telephone line cord.

Caution:

- Do not use paper products, such as paper towels or tissues, to clean the inside of the unit.



1.15.3.2. CLEANING THE THERMAL HEAD AND SILVER BAR

If dirty patterns or black or white bands appear on a copied or received document, clean the thermal head and silver bar.

1. Disconnect the power cord and the telephone line cord.

2. Open the cover by pressing the cover open button.

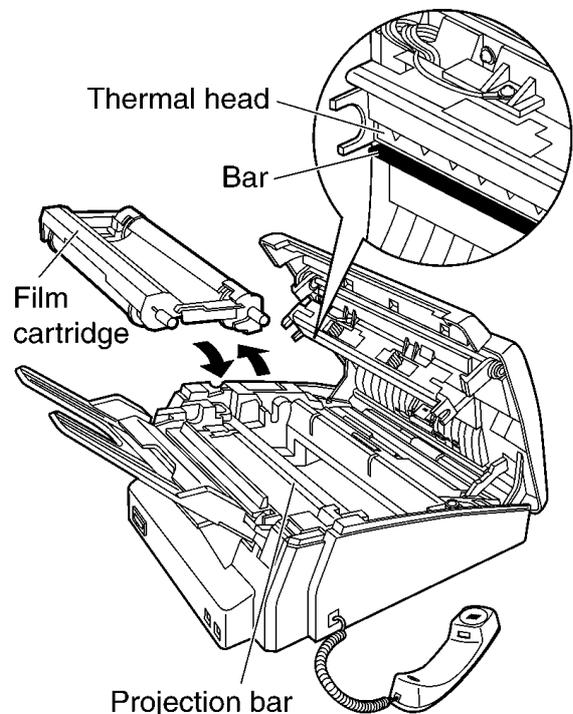
3. Clean the thermal head and silver bar with a cloth moistened with isopropyl rubbing alcohol, and let it dry thoroughly.

4. Close the back cover securely by pushing down on the dotted area at both ends.

5. Connect the power cord and the telephone line cord.

Caution:

- To prevent a malfunction due to static electricity, do not use a dry cloth and do not touch the thermal head directly with your fingers.



1.15.3.3. CLEANING THE PICKUP ROLLER

Refer to HOW TO REMOVE THE PICKUP ROLLER.(P.117)

2 TROUBLESHOOTING GUIDE

2.1. TROUBLESHOOTING SUMMARY

2.1.1. TROUBLESHOOTING

After confirming the problem by asking the user, troubleshoot according to the instructions and observe the following precautions.

2.1.2. PRECAUTIONS

1. If there is a problem with the print quality or the paper feed, first check if the installation space and the print paper meets the specifications, the paper selection lever/paper thickness lever is set correctly, and the paper is set correctly without any slack.
2. Before troubleshooting, first check that the connectors and cables are connected correctly (not loose).
If the problem occurs randomly, check it very carefully.
3. When connecting the AC power cord with the unit and checking the operation, exercise utmost care when handling electric parts in order to avoid electric shocks and short-circuits.
4. After troubleshooting, double check that you have not forgotten any connectors, left any loose screws, etc.
5. Always test to verify that the unit is working normally.

2.1.3. WHEN YOU DON'T KNOW HOW TO OPERATE THE UNIT, USE THE HELP FUNCTION

• How to use:

1. press **HELP** .
2. press **◀** or **▶** until the desired item is displayed.
3. press **SET** .

2.2. USER RECOVERABLE ERRORS

If the unit detects a problem, one or more of the following messages will appear on the display.

DISPLAY MESSAGE	CAUSE AND REMEDY
CALL SERVICE	• There is something wrong with the unit.
CHECK DOCUMENT	• The document was not fed into the unit properly. Reinsert the document. If misfeeding occurs frequently, clean the document feeder rollers and try again. (Refer to and DOCUMENT JAMS (P.28).)
CHECK FILM	• The film cartridge is not installed. Install it.
CHECK MEMORY	• Memory (telephone numbers, parameters, etc.) has been erased. Re-program.
CHECK PAPER	<ul style="list-style-type: none"> • The recording paper is not installed or the unit has run out of paper. Install paper and press [SET] to clear the message. • The recording paper is not fed into the unit properly. Reinstall paper and press [SET] to clear the message. • The recording paper has jammed near the recording paper entrance. Clear the jammed paper and press [SET] to clear the message. Do not install folded or heavily curled paper. (Refer to RECORDING PAPER JAM (P.29).)
COVER OPEN	• The cover is open. Close it.
DIRECTORY FULL	• There is no space to store new items in the NAVIGATOR directory. Erase unnecessary items.
FAX IN MEMORY	• The unit has a document in memory. See the other displayed message instructions to print out the document.
FAX MEMORY FULL	<ul style="list-style-type: none"> • The memory is full of received documents due to a lack of recording paper or a recording paper jam. Install paper or clear the jammed paper. • When performing memory transmission, the document being stored exceeds the memory capacity of the unit. Transmit the entire document manually.
FILM EMPTY	<ul style="list-style-type: none"> • The film is empty. Replace the film cartridge with a new one. • The film is slack. Tighten it and install again.
MEMORY FULL	• When making a copy, the document being stored exceeds the memory capacity of the unit. Press [STOP] to clear the message. Divide the document into sections.
MODEM ERROR	• There is something wrong with the modem circuit.
NO FAX REPLY	• The other party's fax machine is busy or has run out of recording paper. Try again.
PAPER JAMMED	<ul style="list-style-type: none"> • A recording paper jam occurred. Clean the jammed paper. [If the printout jams, please refer to RECORDING PAPER JAM (P.29).]
PLEASE WAIT	• The unit is checking that there is no slack on the ink film. Wait for a while.
REDIAL TIME OUT	• The other party's fax machine is busy or has run out of recording paper. Try again.
REMOVE DOCUMENT	<ul style="list-style-type: none"> • The document is jammed. Remove the jammed document. • Attempted to transmit a document longer than 600 mm (23 5/8"). Press the [STOP] to remove the document. Divide the document into two or more sheets and try again. • [Alternately, turn off service code #559 to enable sending of documents longer than 600 mm] (Refer to DOCUMENT JAMS (P.28).)
TRANSMIT ERROR	• A transmission error occurred. Try again.
UNIT OVERHEATED	• The unit is too hot. Let the unit cool down.

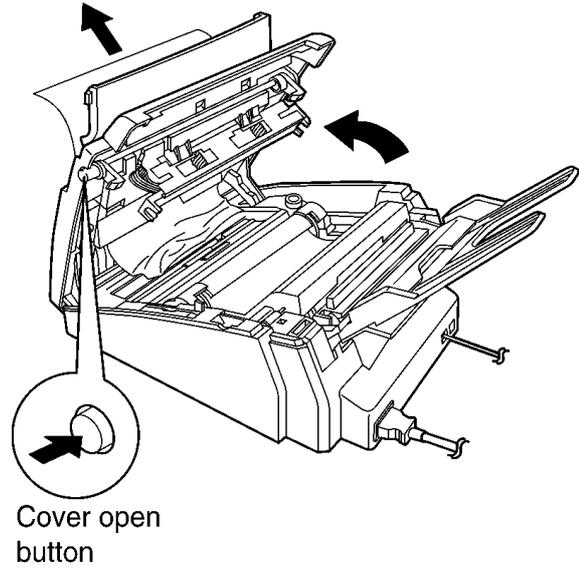
Note:

The explanations given in the [] are for servicemen only.

2.2.1. DOCUMENT JAMS

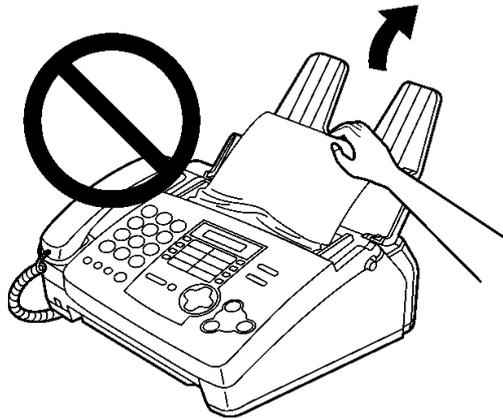
If the unit does not release the document during feeding, remove the jammed document as follows.

- (1) Open the cover by pressing the cover open button.
- (2) Remove the jammed document carefully.
- (3) Close the cover securely by pushing down on the dotted area at both ends.



Note:

- Do not pull out the jammed paper forcibly before opening the cover.



2.2.2. RECORDING PAPER JAM

If the unit does not eject any recording paper during reception or copying, the recording paper has jammed. Remove the jammed paper following this section.

2.2.2.1. WHEN PAPER HAS JAMMED UNDER THE FILM CARTRIDGE

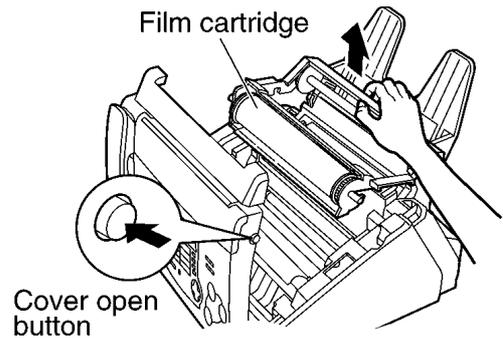
The display will show the following message.

Display:

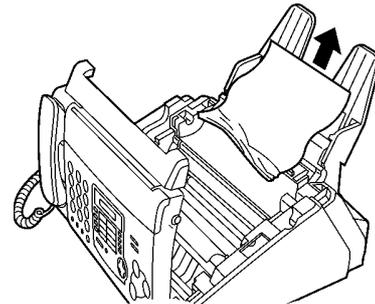
PAPER JAMMED

Remove the jammed paper as follows.

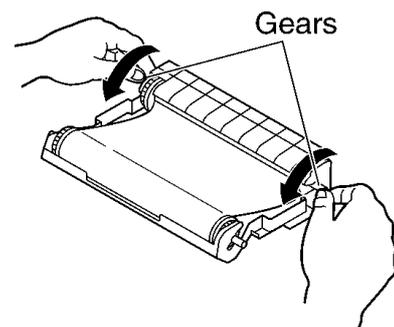
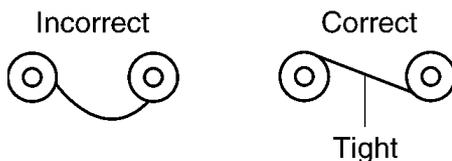
- (1) Open the cover by pressing the cover open button.
- (2) Remove the film cartridge.



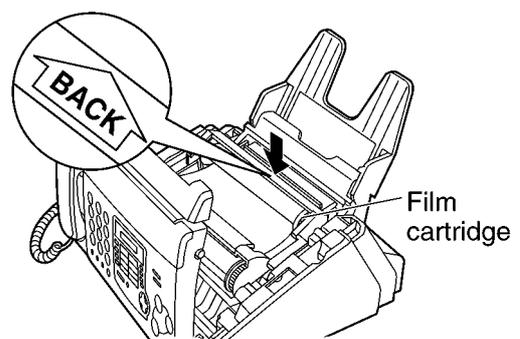
- (3) Remove the jammed recording paper.



- (4) If the film is slack, turn the film cartridge over and tighten it by winding the gears.



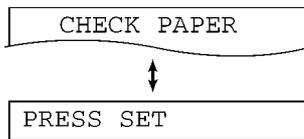
- (5) Turn the film cartridge over so that the "BACK" is facing up.
- (6) Replace the film cartridge by first placing the front of the cartridge into the unit and then lowering the "BACK" of the cartridge into place.
- (7) Close the cover securely by pushing down on the dotted area at both ends.



2.2.2.2. WHEN PAPER HAS JAMMED NEAR THE RECORDING PAPER ENTRANCE

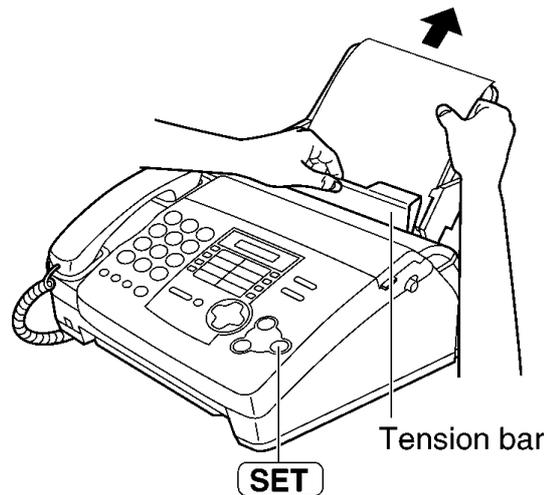
The display will show the following message.

Display:



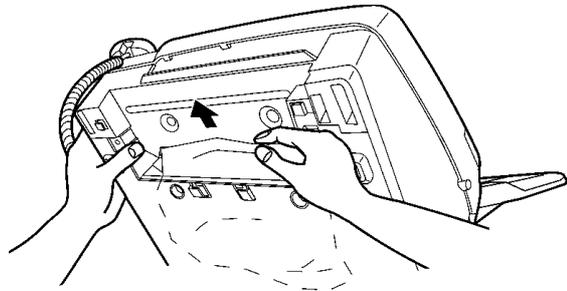
Remove the jammed paper as follows.

- (1) Pull the tension bar forward and hold open while pulling out the jammed recording paper from the recording paper entrance.
- (2) Press **SET** to clear the message.



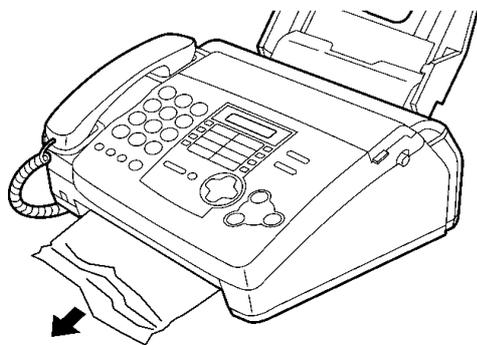
2.2.2.3. WHEN PAPER HAS NOT BEEN EJECTED AND NO ERROR MESSAGES ARE SHOWN ON THE DISPLAY

- (1) Tilt the unit up and pull the jammed recording paper out of the recording paper exit.



- (2) Remove the jammed recording paper from the recording paper exit.

• If you cannot remove the jammed paper, remove it by following the **WHEN PAPER HAS JAMMED UNDER THE FILM CARTRIDGE** (P.29).



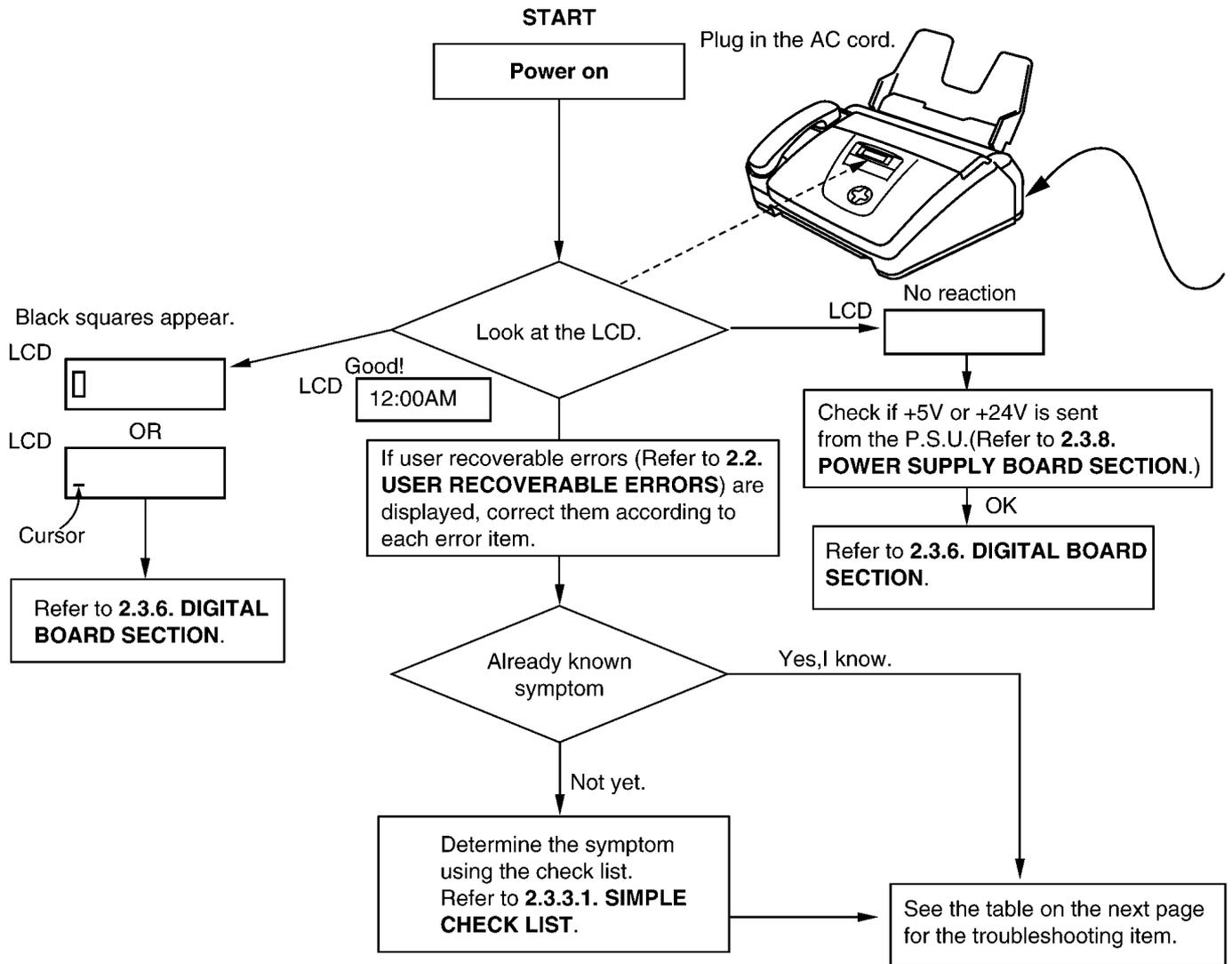
2.3. TROUBLESHOOTING DETAILS

2.3.1. OUTLINE

Troubleshooting is for recovering quality and reliability by determining the broken component and replacing, adjusting or cleaning it as required. First, determine the problem then decide the troubleshooting method. If you have difficulty finding the broken part, determine which board is broken. (For example: the Digital PCB, Analog PCB, etc.) The claim tag from a customer or dealer may use different expressions for the same problem, as they are not a technician or engineer. Using your experience, test the problem area corresponding to the claim. Also, returns from a customer or dealer often have a claim tag. For these cases as well, you need to determine the problem. Test the unit using the simple check list on **SIMPLE CHECK LIST(P.32)**. Difficult problems may be hard to determine, so repeated testing is necessary.

2.3.2. STARTING TROUBLESHOOTING

Determine the symptom and the troubleshooting method.



CROSS REFERENCE:

SIMPLE CHECK LIST(P.32)

DIGITAL BOARD SECTION(P.67)

POWER SUPPLY BOARD SECTION(P.79)

2.3.3. TROUBLESHOOTING ITEMS TABLE

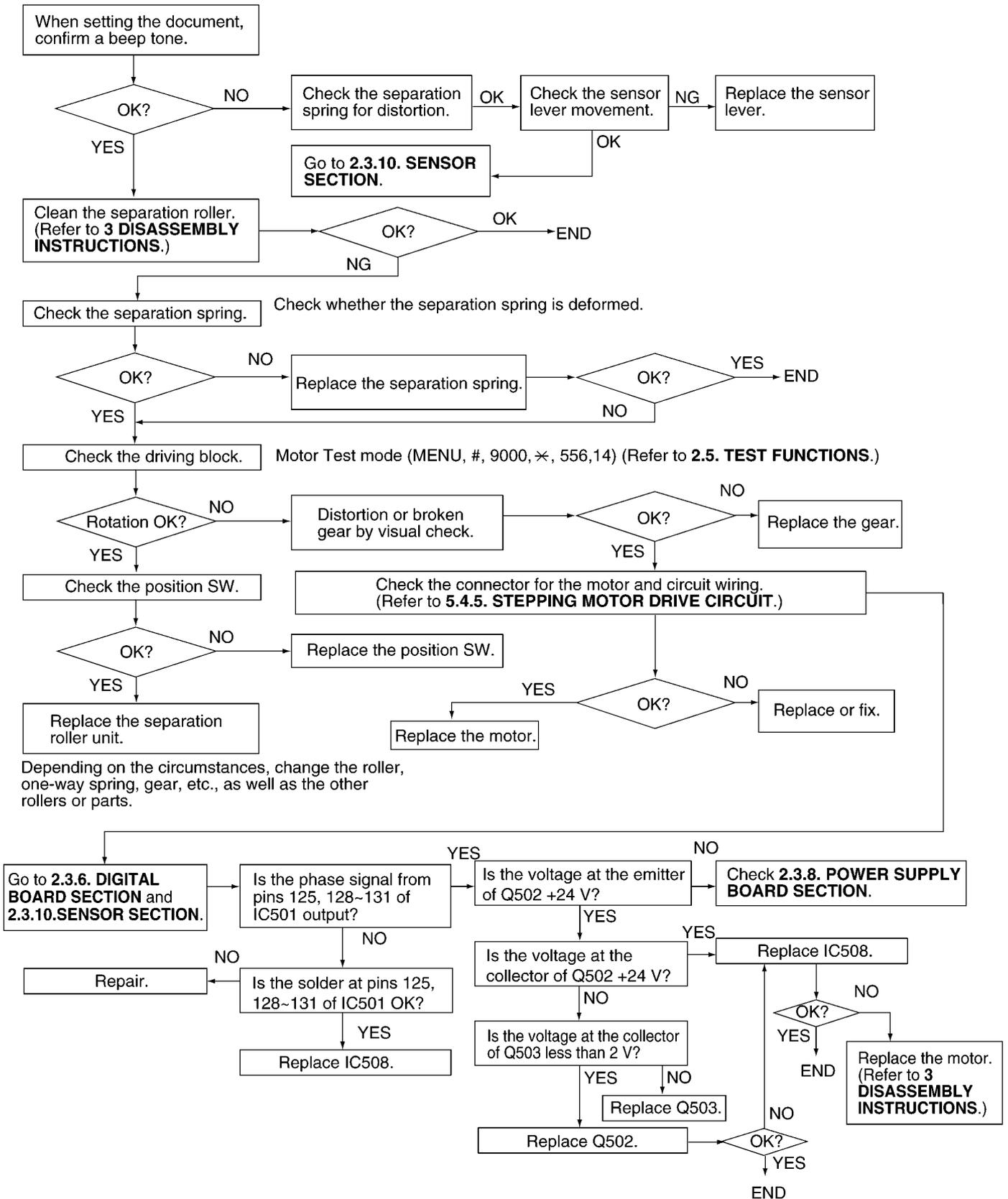
ITEM	SYMPTOM	REFERENCE
ADF (Auto Document Feeder)	The document does not feed. Document jam Multiple feed Skew	See ADF (Auto Document Feed) SECTION (P.33)
Recording paper feed	The recording paper does not feed. Paper jam Multiple feed and skew	See ADF (Auto Document Feed) SECTION (P.33)
Printing	The sent fax data is skewed. The received fax data is skewed. The received or copied data is expanded. A blank page is received. Black or white vertical line Black or white lateral line An abnormal image is printed	See ADF (Auto Document Feed) SECTION (P.33)
Communication FAX, TEL (analog board)	Cannot communicate by fax. An error code is displayed.	See COMMUNICATION SECTION (P.46)
	Cannot talk. The DTMF tone doesn't work. The handset / monitor doesn't work, etc.	See ANALOG BOARD SECTION (P.76)
Operation panel	Keys are not accepted.	See OPERATION PANEL SECTION (P.82)
Sensor	If the electric circuit is the cause, the error message corresponding to the sensor will be displayed.	See SENSOR SECTION (P.83)

2.3.3.1. SIMPLE CHECK LIST

SERIAL NO.		DATE	
FUNCTION		JUDGEMENT	REFERENCE
FAX operation	Transmission	OK / NG	
	Receiving	OK / NG	
Copy operation		OK / NG	
Telephone operation	Handset transceiver / receiver	OK / NG	
	MONITOR sound	OK / NG	
	Ringer sound	OK / NG	
	Dial operation	OK / NG	
	Volume operation	OK / NG	
	VOX detection	OK / NG	Service code #815 (Refer to TEST FUNCTIONS (P.99))
Operation Panel	Key check	OK / NG	Service code #561 (Refer to TEST FUNCTIONS (P.99))
	LED check	OK / NG	Service code #557 (Refer to TEST FUNCTIONS (P.99))
	LCD check	OK / NG	Service code #558 (Refer to TEST FUNCTIONS (P.99))
Sensor	Sensor check	OK / NG	Service code #815 (Refer to TEST FUNCTIONS (P.99))
Clock	Display changing	OK / NG	Is the time kept correctly? Check with another clock.
EXT-TAM	Handset transceiver / receiver	OK / NG	
	Remote control	OK / NG	

2.3.4. ADF (Auto Document Feed) SECTION

2.3.4.1. NO DOCUMENT FEED



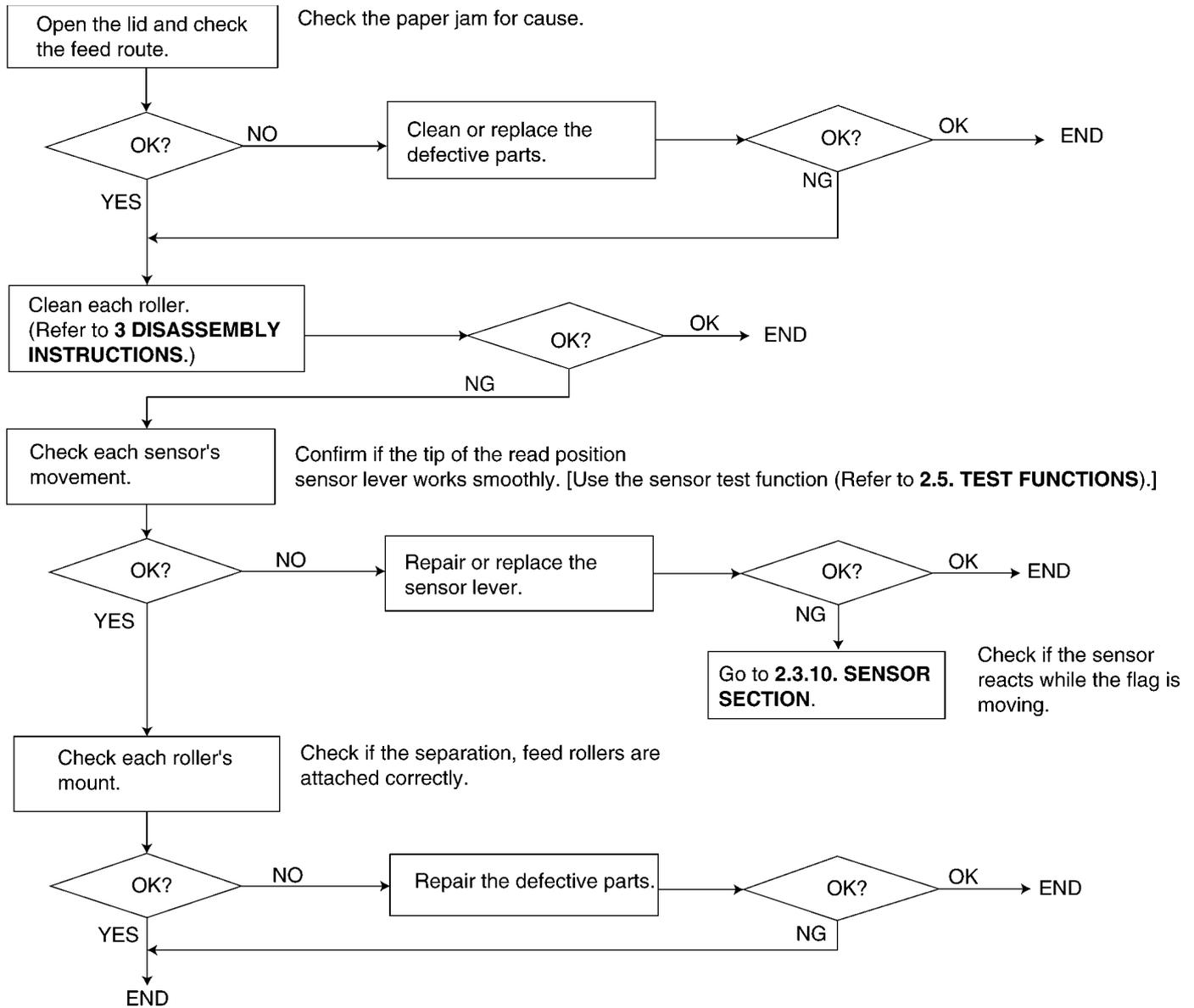
CROSS REFERENCE:

- DIGITAL BOARD SECTION(P.67)
- POWER SUPPLY BOARD SECTION(P.79)
- SENSOR SECTION(P.83)

TEST FUNCTIONS(P.99)

- DISASSEMBLY INSTRUCTIONS(P.105)
- STEPPING MOTOR DRIVE CIRCUIT(P.137)

2.3.4.2. DOCUMENT JAM



CROSS REFERENCE:

SENSOR SECTION(P.83)

DISASSEMBLY INSTRUCTIONS(P.105)

2.3.4.3. MULTIPLE FEED

• When using thick paper etc., sometimes the document will not be fed.

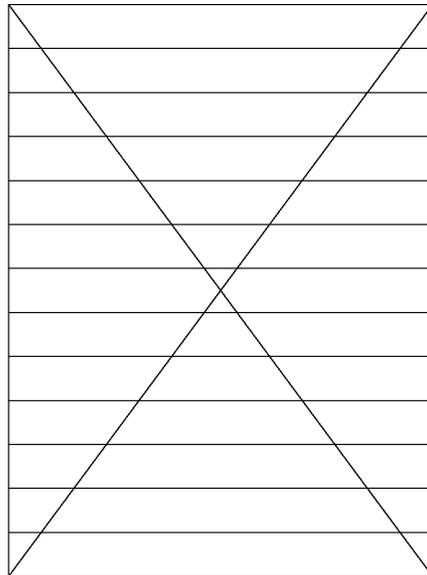
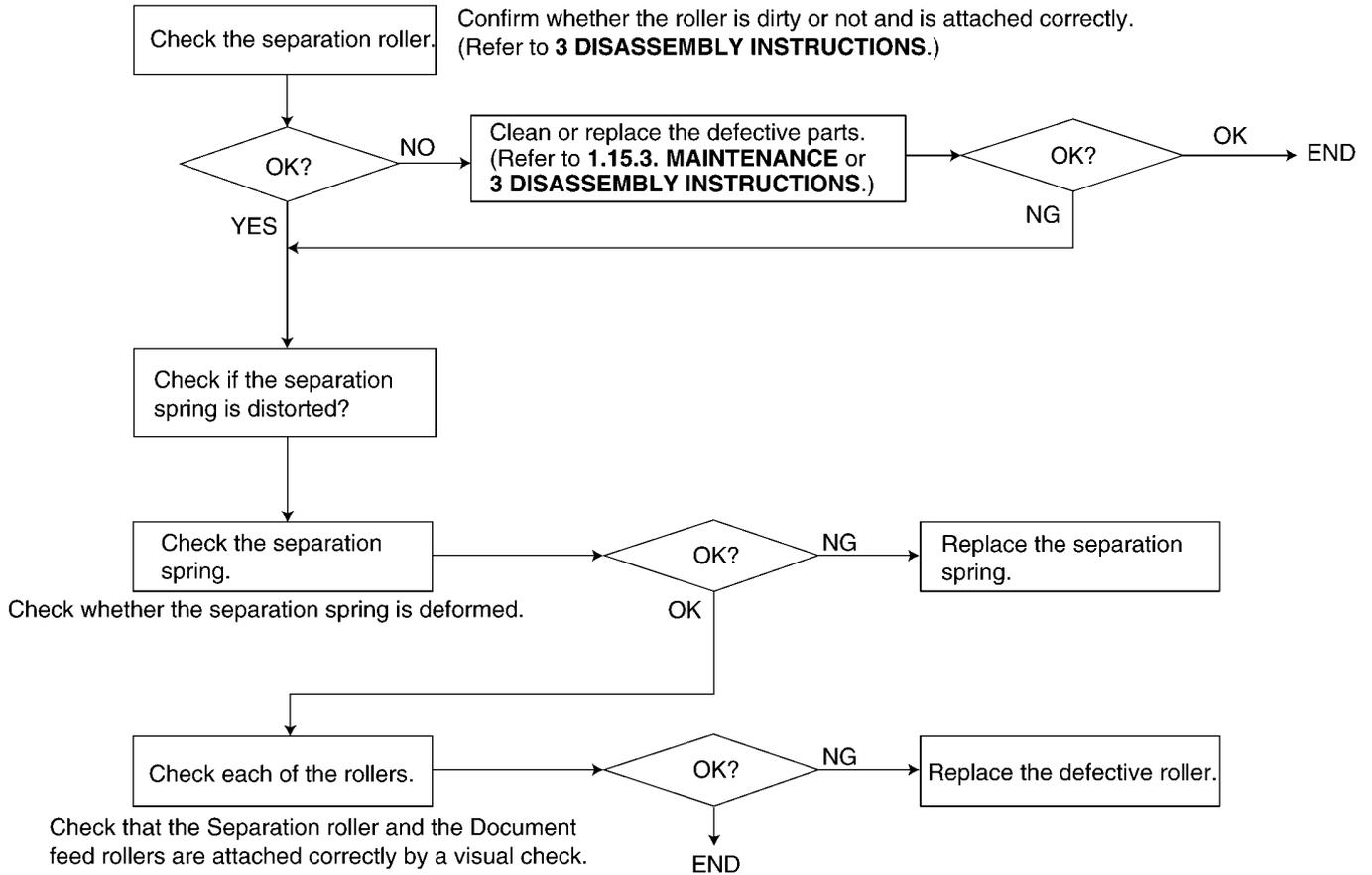


Fig. B

CROSS REFERENCE:

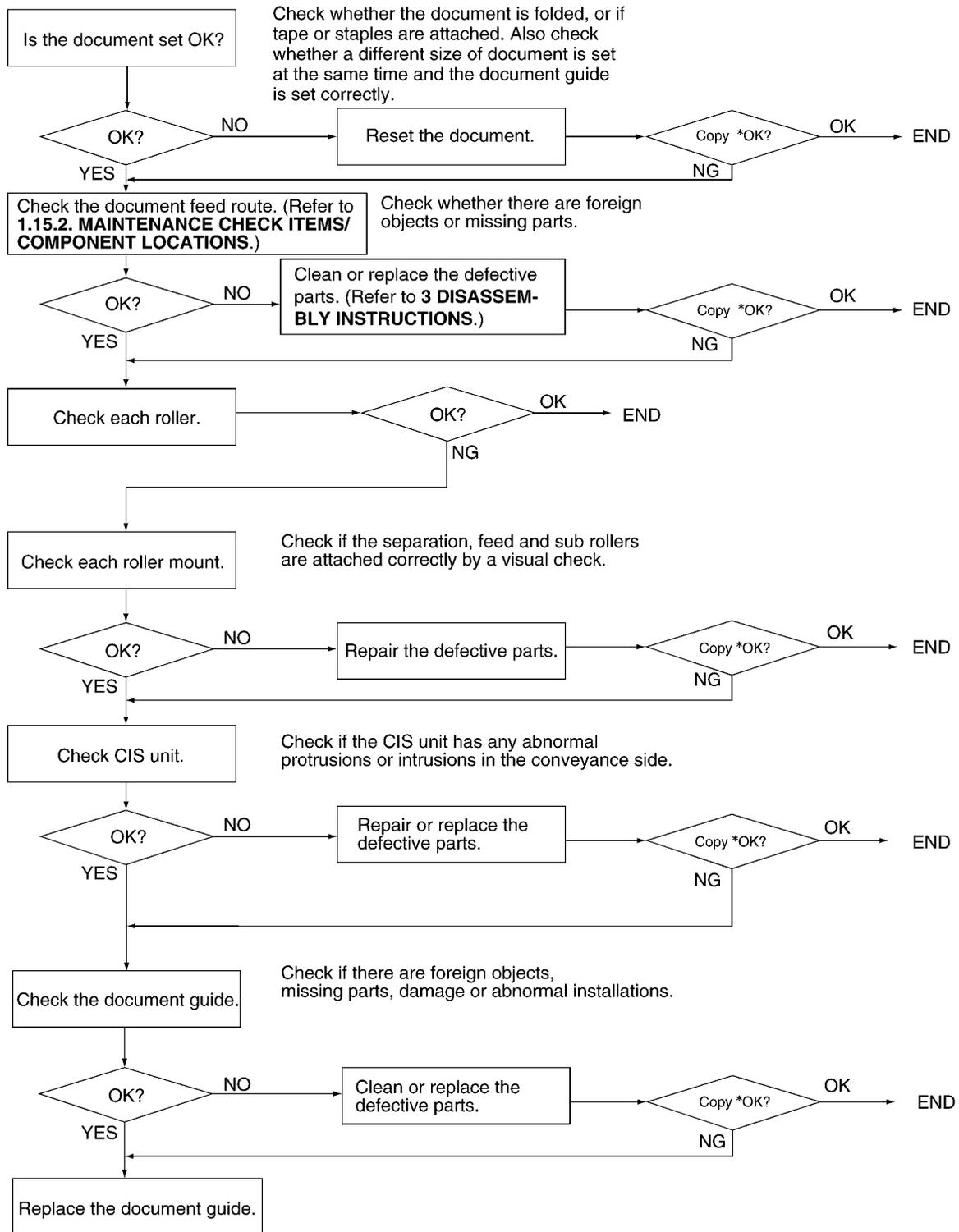
MAINTENANCE(P.25)

DISASSEMBLY INSTRUCTIONS(P.105)

Note:

When confirming if the characters are extended or distorted, or if the feed problem is occurred, use this test chart format (Fig. B).

2.3.4.4. SKEW



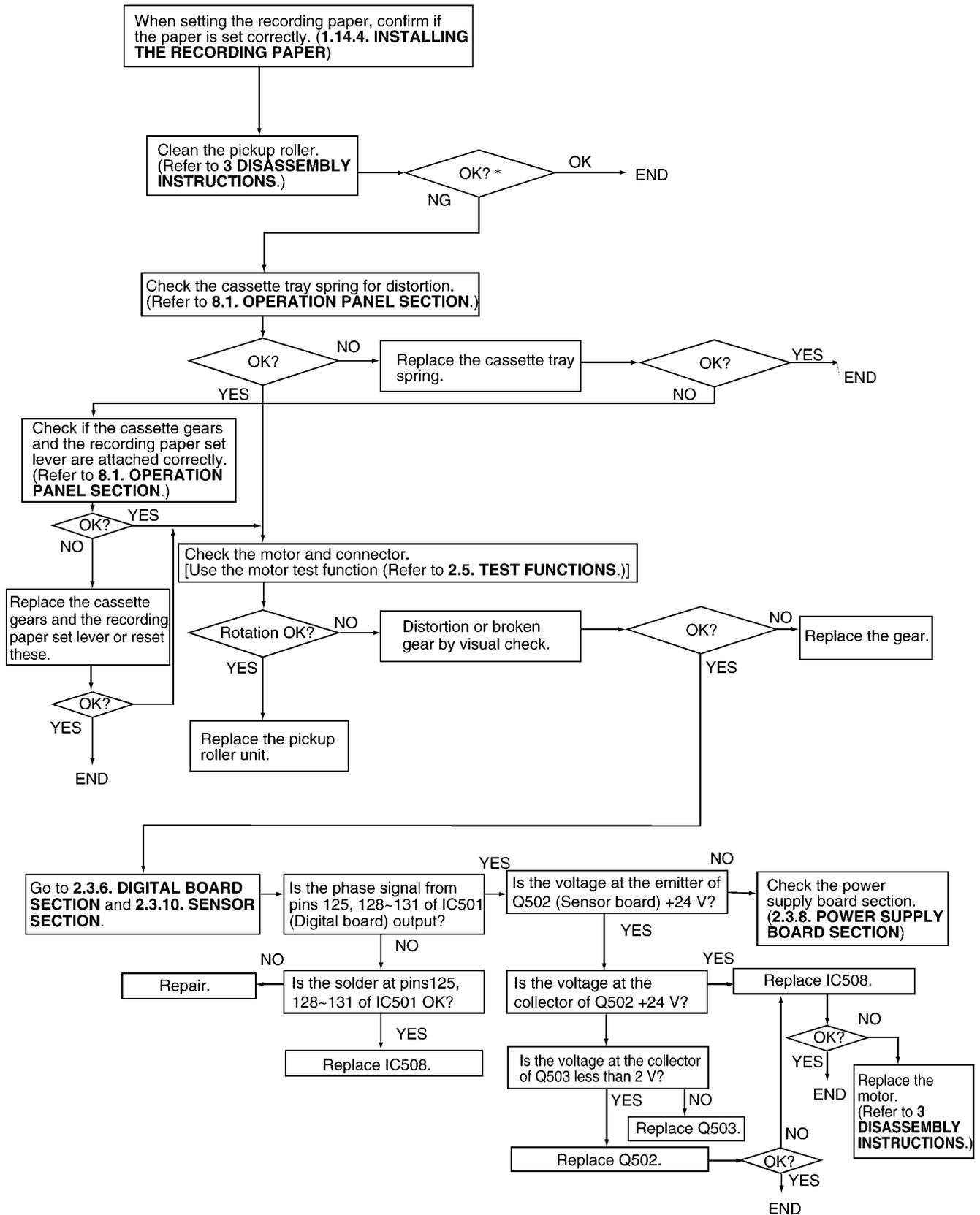
* We recommend making a copy of the Fig. B document in **MULTIPLE FEED** (P.35) and using it.

CROSS REFERENCE:

MAINTENANCE CHECK ITEMS/COMPONENT LOCATIONS(P.23)

DISASSEMBLY INSTRUCTIONS(P.105)

2.3.4.5. THE RECORDING PAPER DOES NOT FEED



* We recommend making a copy of the Fig. B document in **MULTIPLE FEED** (P.35) and using it.

CROSS REFERENCE:

INSTALLING THE RECORDING PAPER(P.16)

DIGITAL BOARD SECTION(P.67)

POWER SUPPLY BOARD SECTION(P.79)

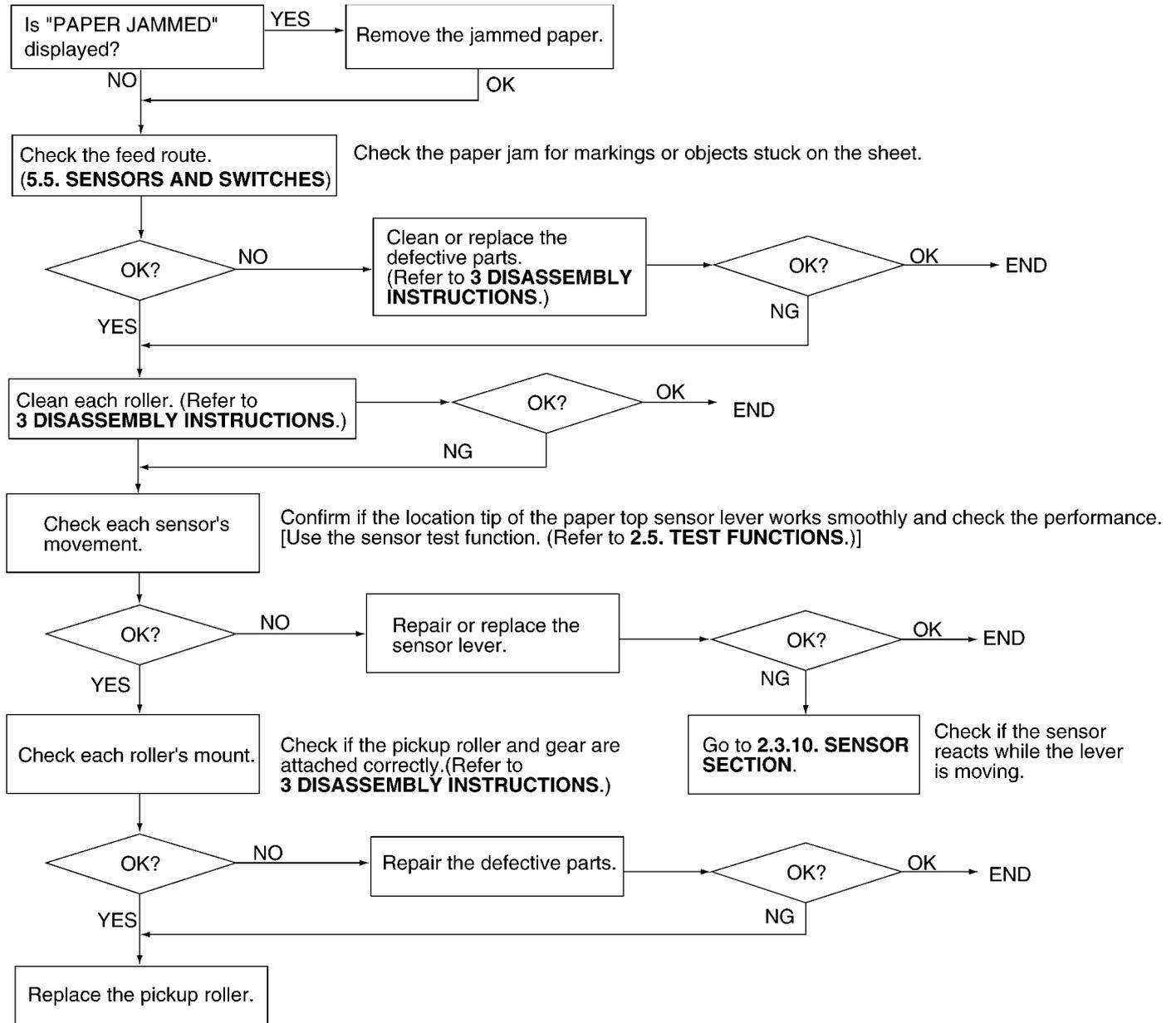
SENSOR SECTION(P.83)

TEST FUNCTIONS(P.99)

DISASSEMBLY INSTRUCTIONS(P.105)

OPERATION PANEL SECTION(P.174)

2.3.4.6. PAPER JAM



CROSS REFERENCE:

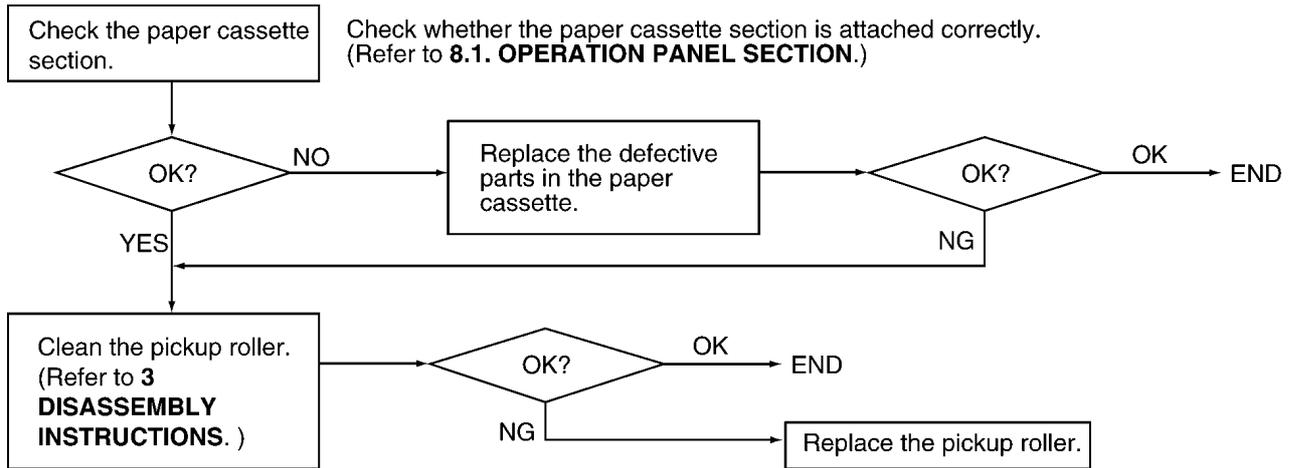
SENSOR SECTION(P.83)

TEST FUNCTIONS(P.99)

DISASSEMBLY INSTRUCTIONS(P.105)

SENSORS AND SWITCHES(P.146)

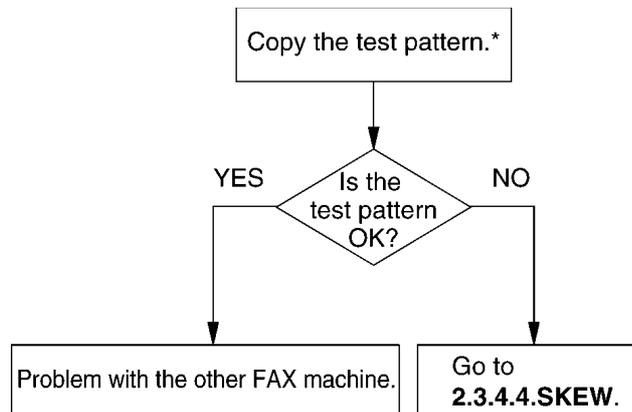
2.3.4.7. MULTIPLE FEED AND SKEW



CROSS REFERENCE:

DISASSEMBLY INSTRUCTIONS(P.105)
OPERATION PANEL SECTION(P.174)

2.3.4.8. THE SENT FAX DATA IS SKEWED

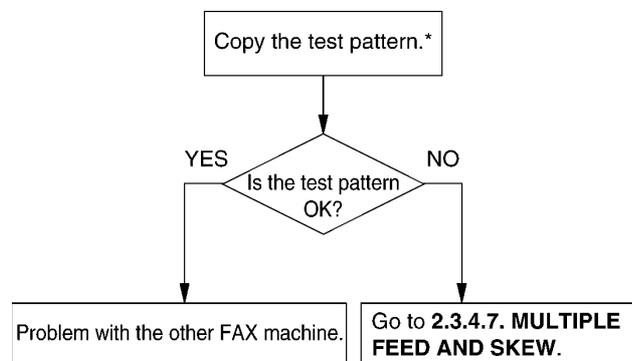


* We recommend making a copy of the Fig. B document in **MULTIPLE FEED**(P.35) and using it.

CROSS REFERENCE:

SKEW(P.36)

2.3.4.9. THE RECEIVED FAX DATA IS SKEWED

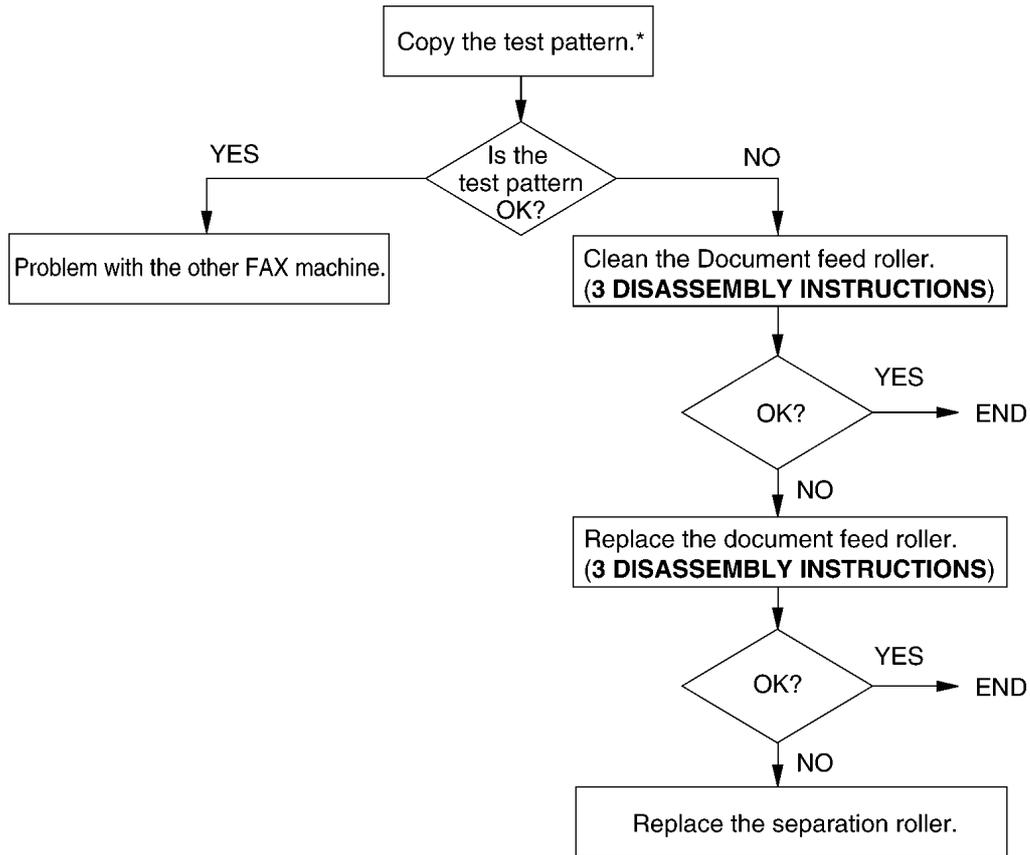


* We recommend making a copy of the Fig. B document in **MULTIPLE FEED**(P.35) and using it.

CROSS REFERENCE:

MULTIPLE FEED AND SKEW(P.39)

2.3.4.10. RECEIVED OR COPIED DATA IS EXPANDED

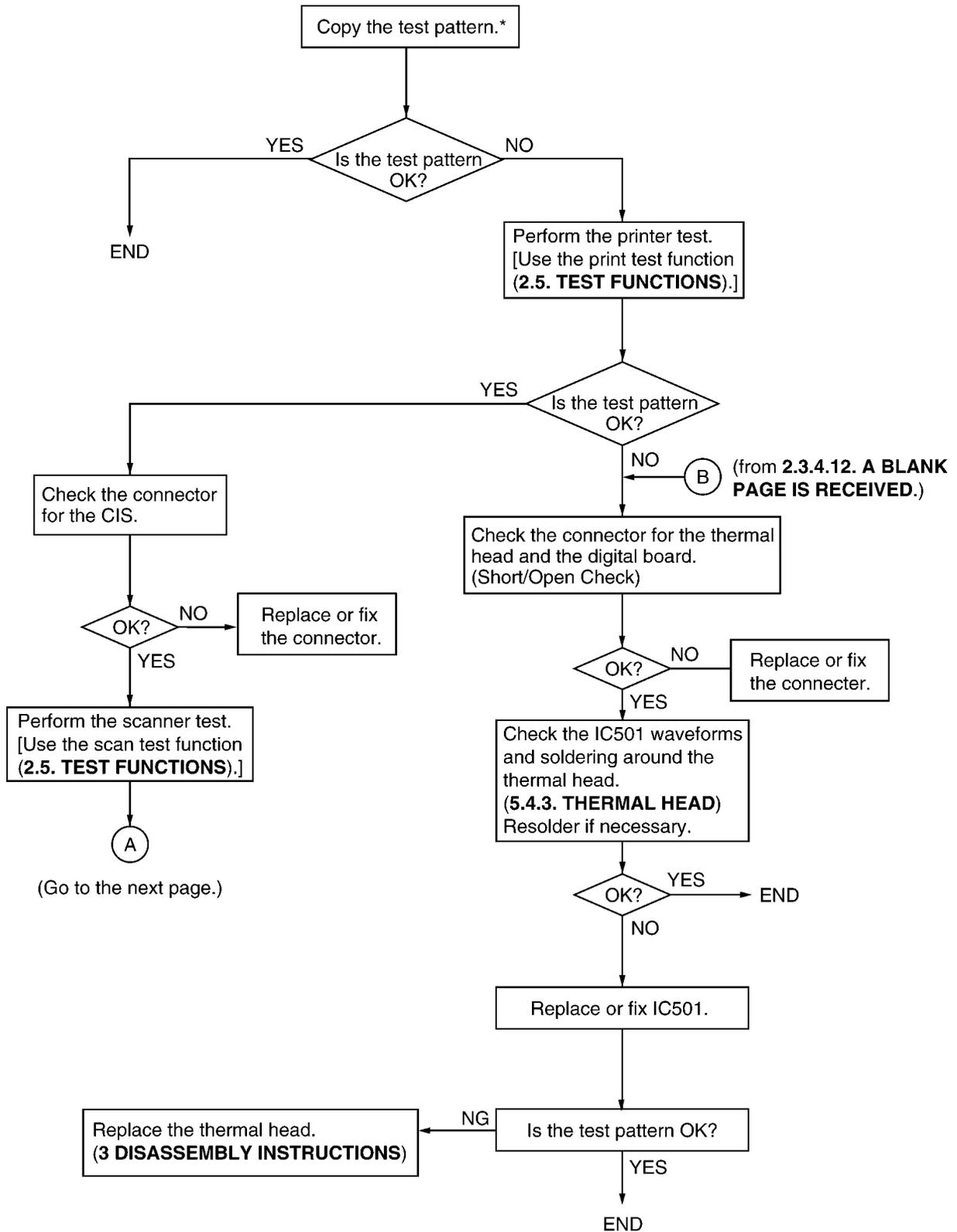


* We recommend making a copy of the Fig. B document in **MULTIPLE FEED**(P.35) and using it.

CROSS REFERENCE:

DISASSEMBLY INSTRUCTIONS(P.105)

2.3.4.11. A BLANK PAGE IS COPIED



* We recommend making a copy of the Fig. B document in **MULTIPLE FEED** (P.35) and using it.

CROSS REFERENCE:

- A BLANK PAGE IS RECEIVED**(P.43)
- TEST FUNCTIONS**(P.99)
- DISASSEMBLY INSTRUCTIONS**(P.105)
- THERMAL HEAD**(P.134)

(From the previous)

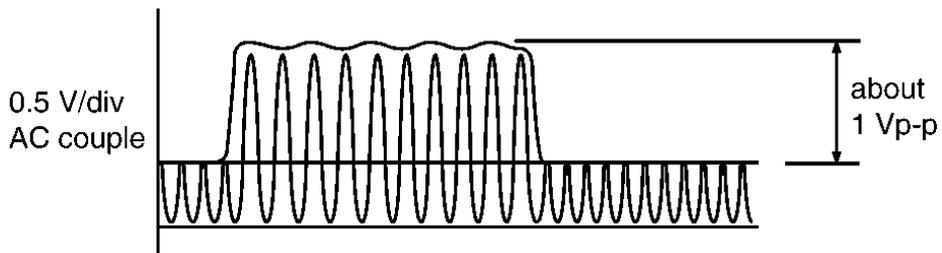
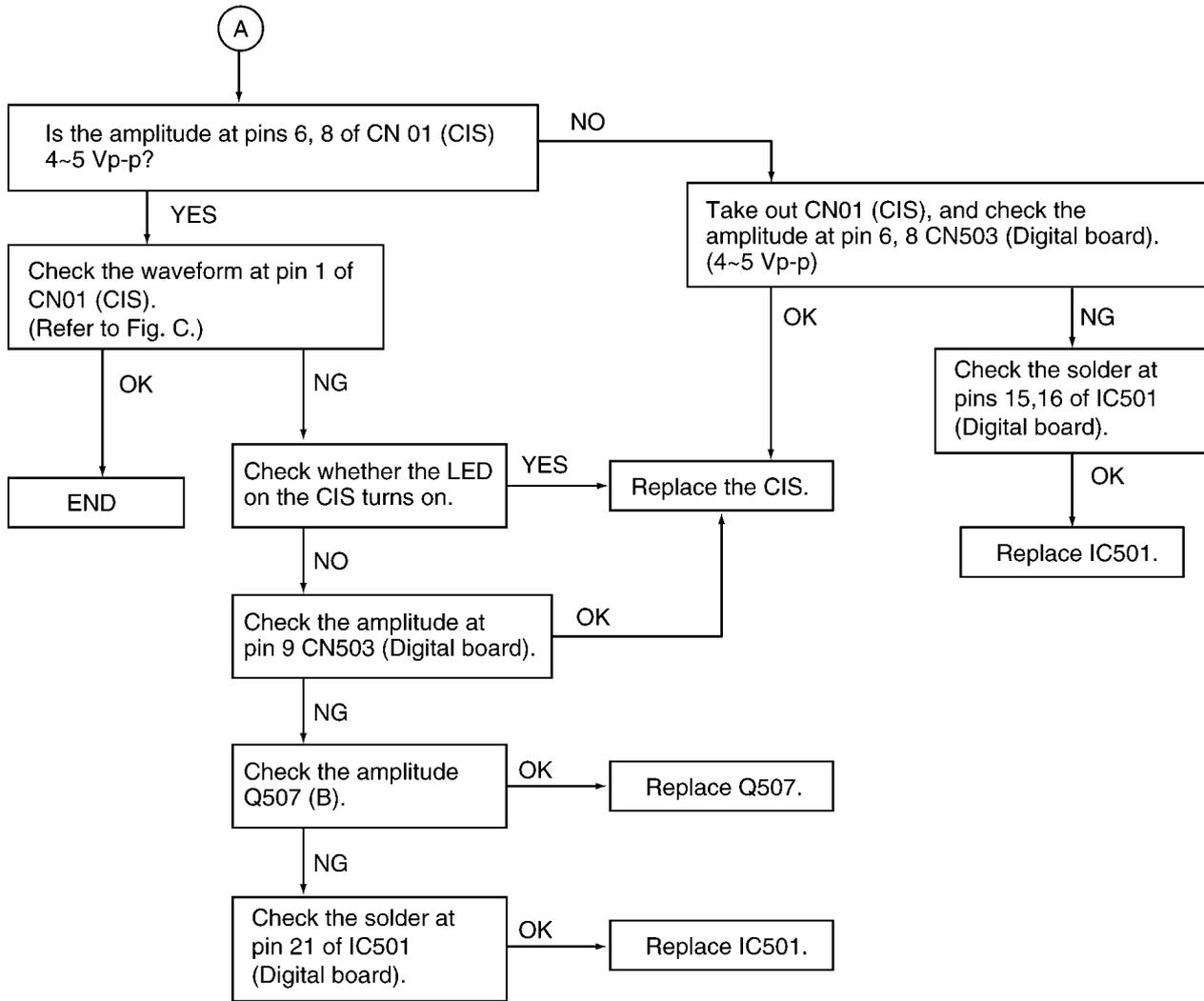
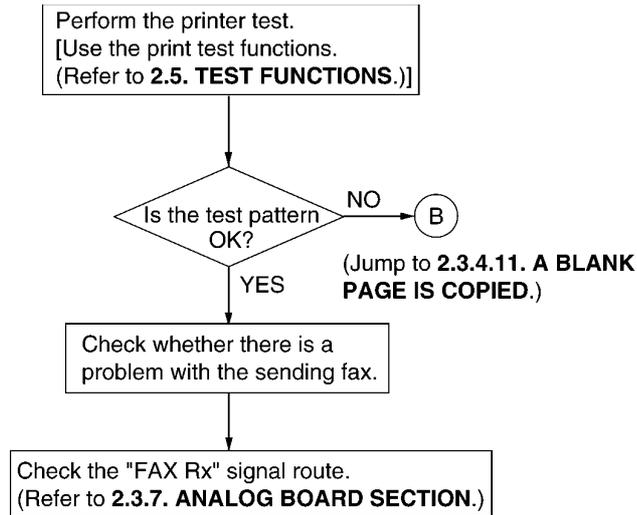


Fig. C

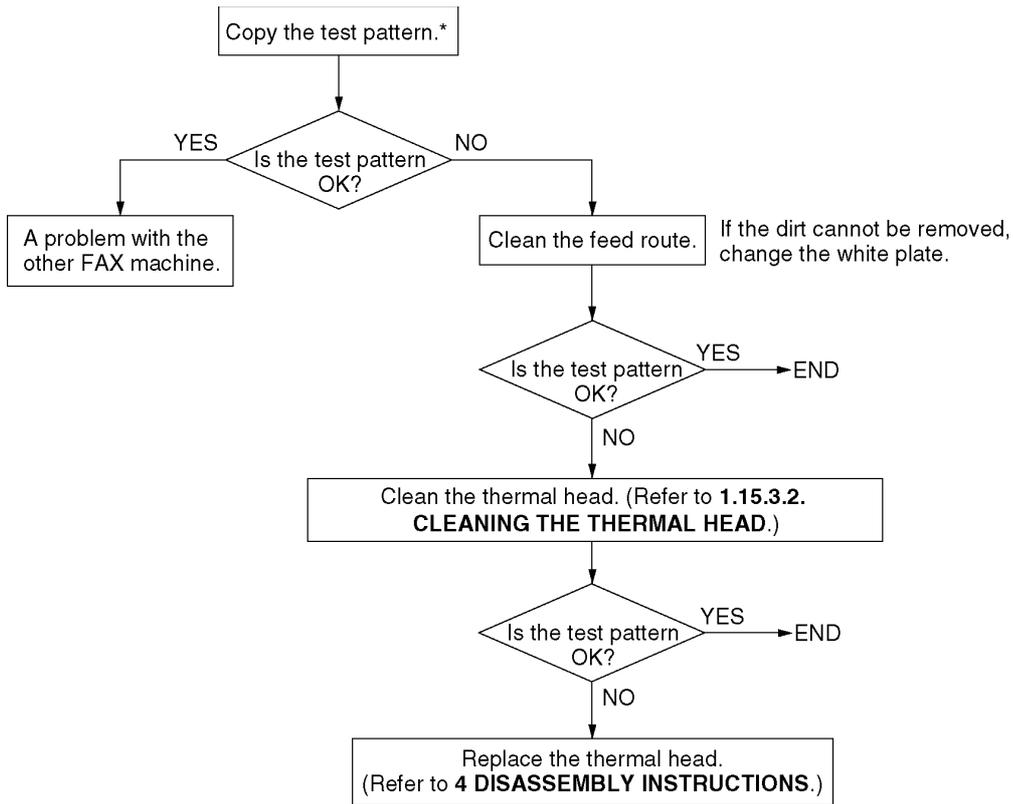
2.3.4.12. A BLANK PAGE IS RECEIVED



CROSS REFERENCE:

- A BLANK PAGE IS COPIED(P.41)
- ANALOG BOARD SECTION(P.76)
- TEST FUNCTIONS(P.99)

2.3.4.13. BLACK OR WHITE VERTICAL LINE

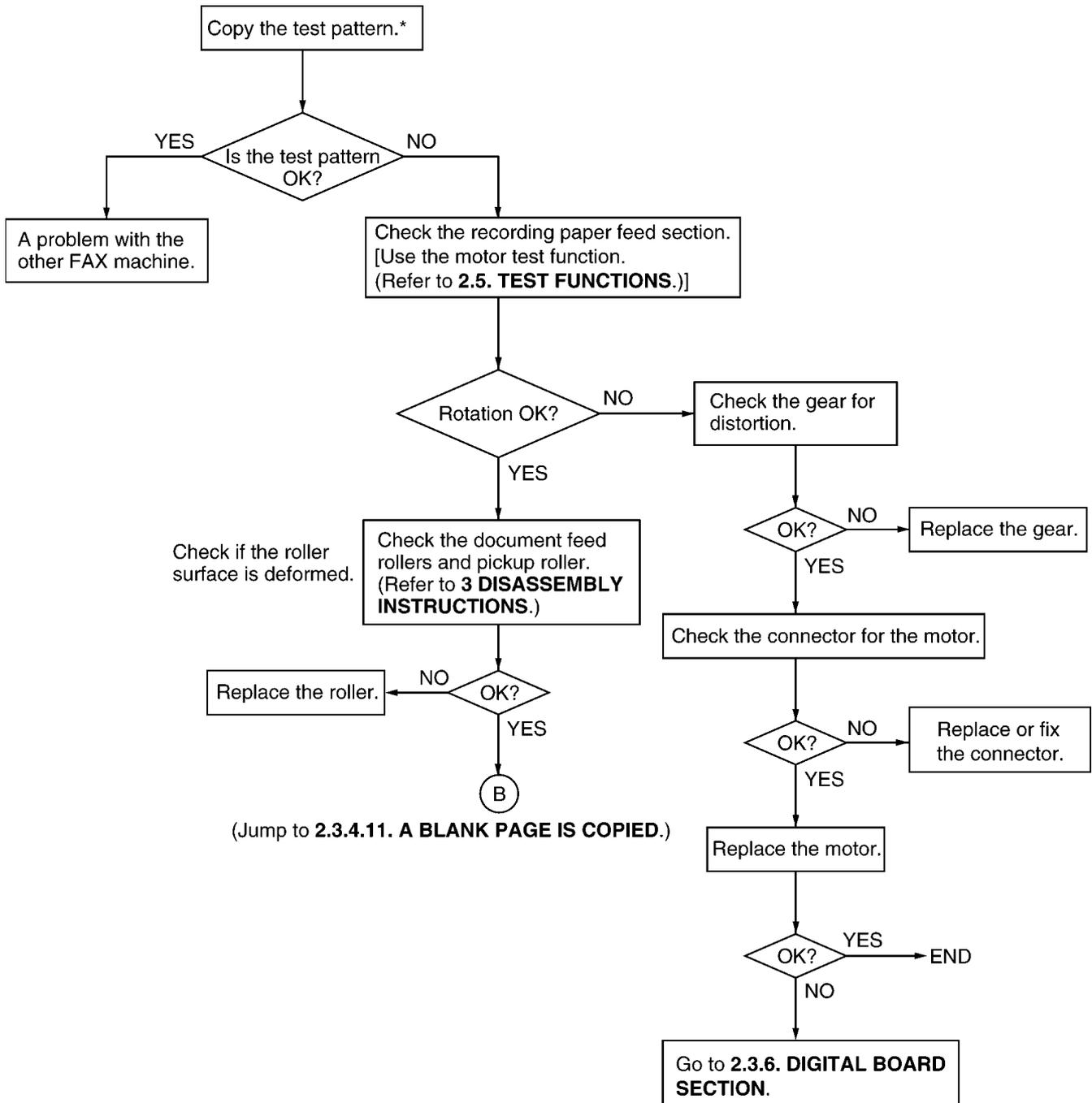


* We recommend making a copy of the Fig. B document in **MULTIPLE FEED** (P.35) and using it.

CROSS REFERENCE:

- CLEANING THE THERMAL HEAD AND SILVER BAR(P.25)
- MULTIPLE FEED(P.35)
- DISASSEMBLY INSTRUCTIONS(P.105)

2.3.4.14. BLACK OR WHITE LATERAL LINE ON PRINT OUT

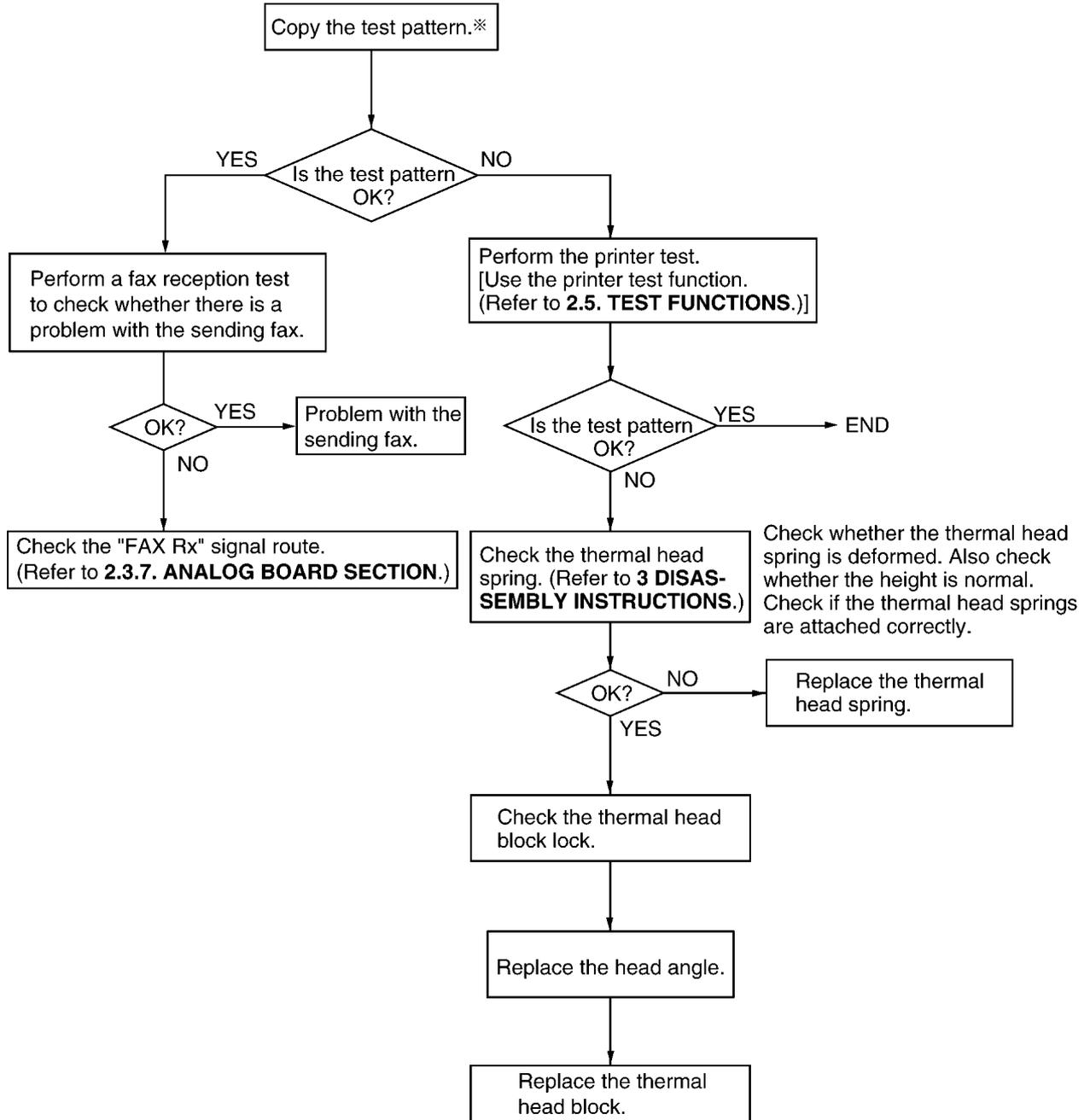


* We recommend making a copy of the Fig. B document in **MULTIPLE FEED**(P.35) and using it.

CROSS REFERENCE:

- A BLANK PAGE IS COPIED**(P.41)
- DIGITAL BOARD SECTION**(P.67)
- TEST FUNCTIONS**(P.99)
- DISASSEMBLY INSTRUCTIONS**(P.105)

2.3.4.15. AN ABNORMAL IMAGE IS PRINTED



* We recommend making a copy of the Fig. B document in **MULTIPLE FEED** (P.35) and using it.

CROSS REFERENCE:

ANALOG BOARD SECTION(P.76)

TEST FUNCTIONS(P.99)

DISASSEMBLY INSTRUCTIONS(P.105)

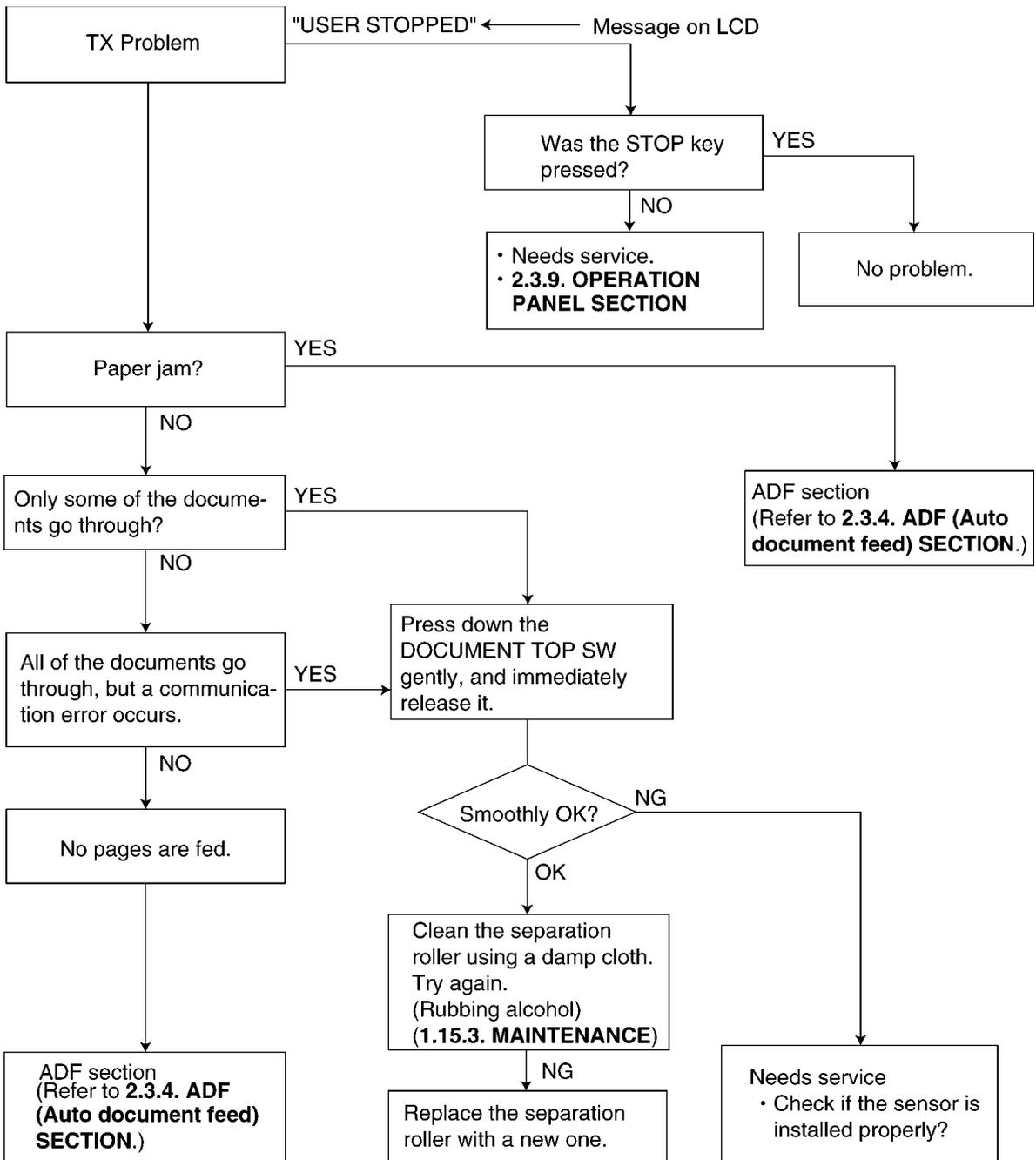
2.3.5. COMMUNICATION SECTION

Find the problem in the table shown below, and refer to the corresponding troubleshooting procedure in **DEFECTIVE FACSIMILE SECTION P.47.**

No.	Symptom	Content	Possible cause
1	The paper is not fed properly when faxing. (Nor in the copy mode.)	Troubleshooting	Problem with the feeding mechanism.
2	The fax usually transmits successfully but sometimes fails. (The unit can copy documents.)	Troubleshooting	Problem with the service line or with the receiver's fax.
3	The fax usually receives successfully but sometimes fails. (The unit can copy documents.)	Troubleshooting	Problem with the service line or with the transmitter's fax.
4	The fax completely fails to transmit or receive. (The unit can copy documents.)	Troubleshooting	Problem with the electric circuit.
5	The fax fails either to transmit or receive when making a long distance or an international call. (The unit can copy documents.)	Detailed description of the possible causes (Similar to troubleshooting items No.2 and No.3.)	Problem with the service line.
6	The fax image is poor when transmitting or receiving during a long distance or an international call.		
7	No.1-No.5	The troubleshooting procedure for each error code will be printed on the communication result report.	

2.3.5.1. DEFECTIVE FACSIMILE SECTION

2.3.5.1.1. TRANSMIT PROBLEM



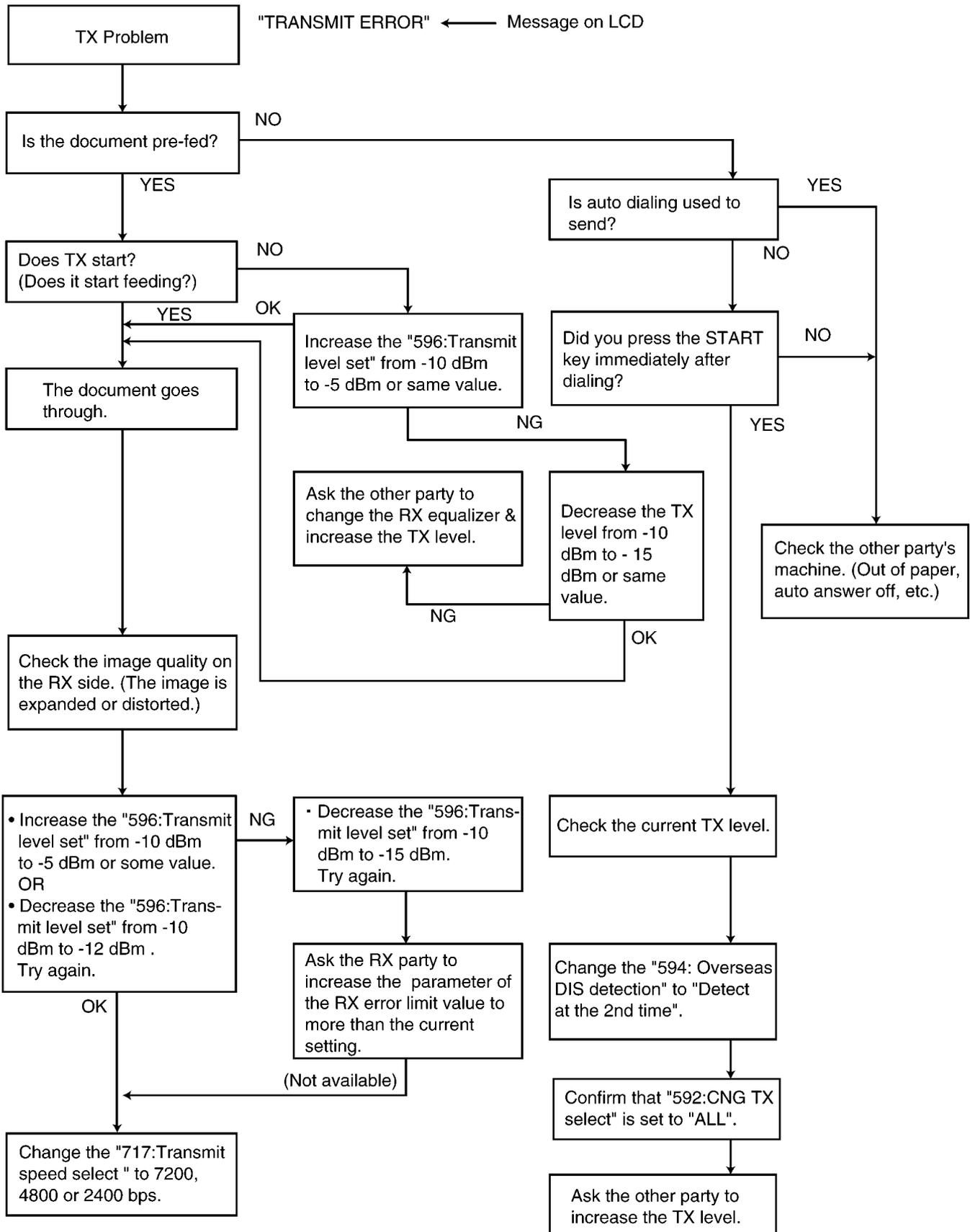
CROSS REFERENCE:

MAINTENANCE(P.25)

ADF (Auto Document Feed) SECTION(P.33)

OPERATION PANEL SECTION(P.82)

2.3.5.1.2. SOMETIME THERE IS A TRANSMIT PROBLEM

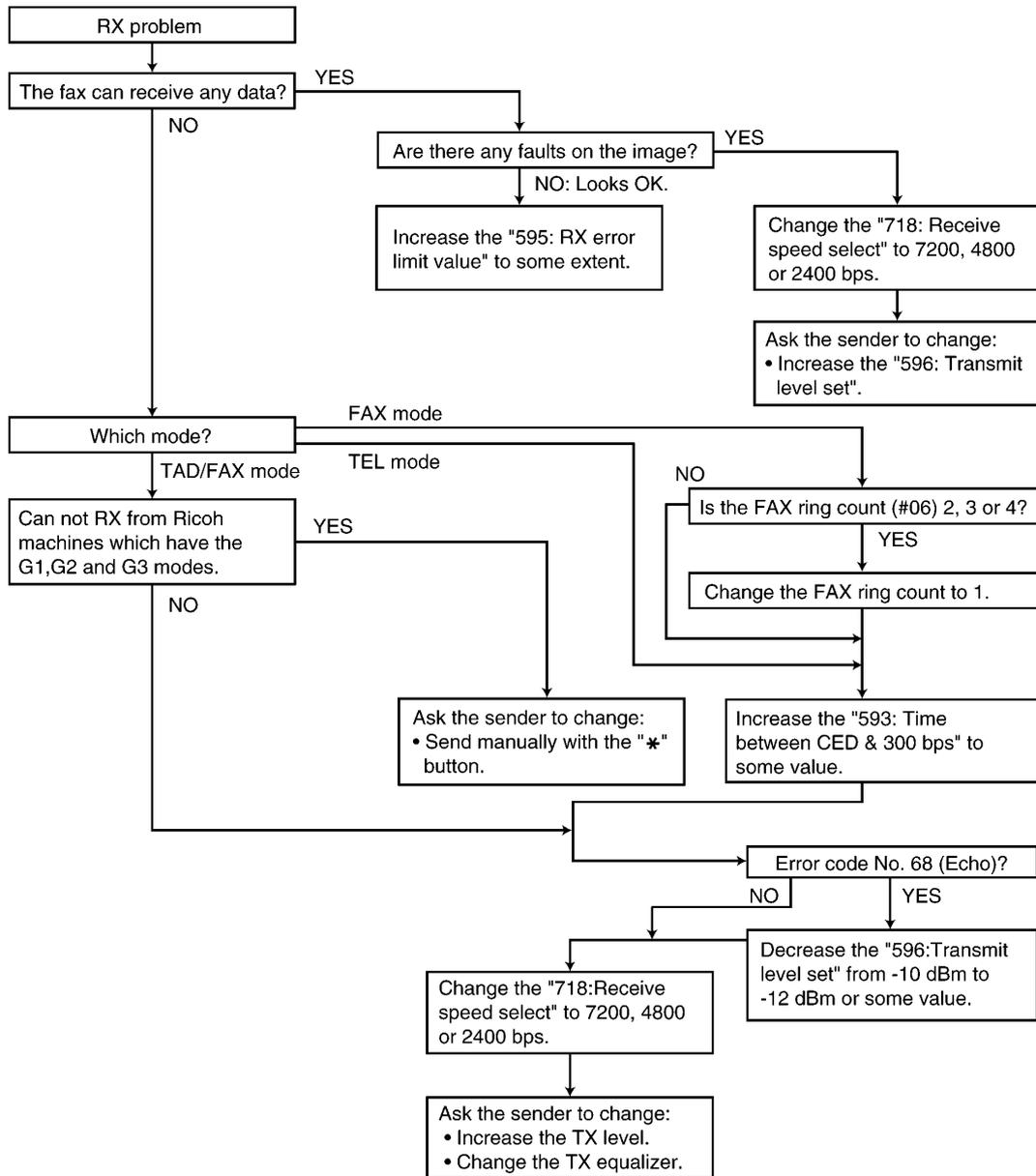


Note:

"596: Transmit level set" represents a service code. (Refer to **SERVICE FUNCTION TABLE**(P.89).)

2.3.5.1.3. RECEIVE PROBLEM

First confirm whether the recording paper is installed properly or not before starting troubleshooting. (Refer to "Remarks".)



Note:

"596: Transmit level set" represents a service code. (Refer to **SERVICE FUNCTION TABLE**(P.89).)

Remarks:

Regarding the reception problem, we have investigated the conceivable causes in the flow chart except for the software-related errors. However, some troubles may occur due to the software-related problems such as "OUT OF PAPER" when the fax switches to the memory receiving mode and the memory capacity becomes full of the unprintable data. In this case, error messages [MEMORY FULL] and its main cause, for example "CHECK PAPER" are displayed on the LCD. Once you solve the main problem, [MEMORY FULL] will be cancelled and the reception problem will be resolved.

LCD display messages indicating the error causes are shown below.

CHECK PAPER

COVER OPEN

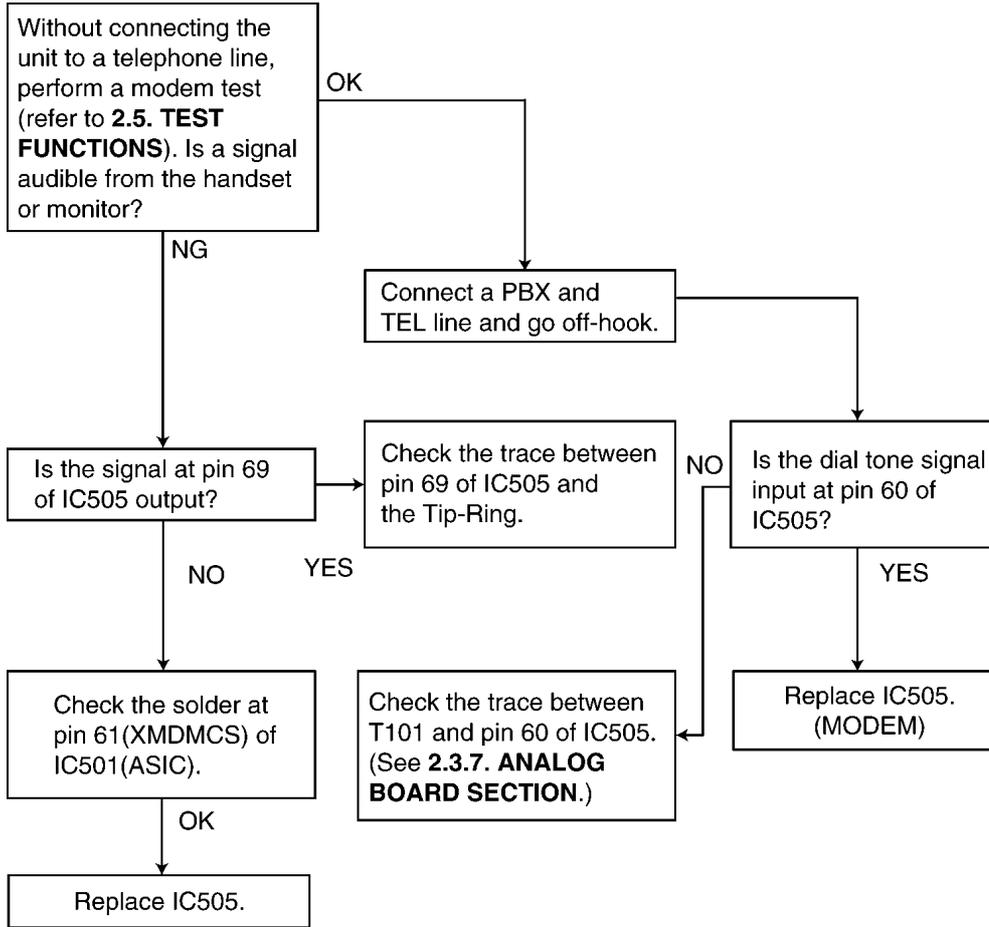
UNIT OVERHEATED (COVER OPEN, etc.)...Reset the unit.

PAPER JAMMED

CHECK FILM

Please refer to **USER RECOVERABLE ERRORS** (P.27) for the above items. If it turns out to be a hardware deformity, please check each sensor. (Refer to **TEST FUNCTIONS** (P.99).)

2.3.5.1.4. THE UNIT CAN COPY, BUT CANNOT TRANSMIT/RECEIVE



CROSS REFERENCE:

- ANALOG BOARD SECTION(P.76)**
- TEST FUNCTIONS(P.99)**

2.3.5.1.5. THE UNIT CAN COPY, BUT CANNOT EITHER TRANSMIT/RECEIVE LONG DISTANCE OR INTERNATIONAL COMMUNICATIONS

The following two causes can be considered for this symptom.

Cause 1:

The other party is executing automatic dialing, the call has been received by this unit, and the CED or DIS signal response time is too long. (In most cases, this unit detects the CNG signal and can respond to CED or DIS.) (According to the ITU-T standard, the communication procedure is cancelled when there is no response from the other party within 35 sec, so that the other party releases the line.)

(Response Time)

