brother

FACSIMILE EQUIPMENT
SERVICE MANUAL

MODEL: FAX1170/1270/1570MC
FAX1010/1020/1030/1030Plus
MFC1770/1870MC/1970MC

PREFACE

This publication is a Service Manual covering the specifications, construction, theory of operation, and maintenance of the Brother facsimile equipment. It includes information required for field troubleshooting and repair—disassembly, reassembly, and adjustment—so that service personnel will be able to understand equipment function, to rapidly repair the equipment and order any necessary spare parts.

To perform appropriate maintenance so that the facsimile equipment is always in best condition for the customer, the service personnel must adequately understand and apply this manual.

This manual is made up of six chapters and appendices.

This manual describes the model and its versions to be destined for major countries. The specifications and functions are subject to change depending upon each destination.

CHAPTER I.

GENERAL DESCRIPTION

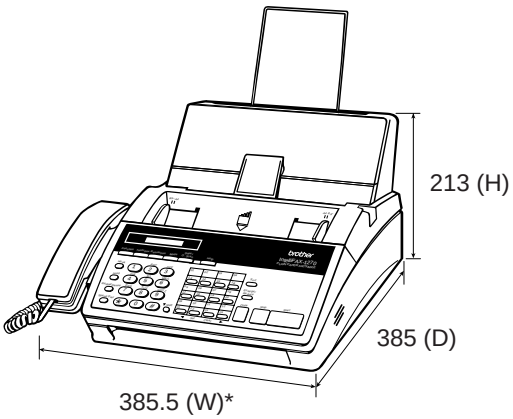
CONTENTS

1. EQUIPMENT OUTLINE

1.1 External Appearance and Weight

The figure below shows the equipment appearance and approximate dimensions.

(Unit: mm)

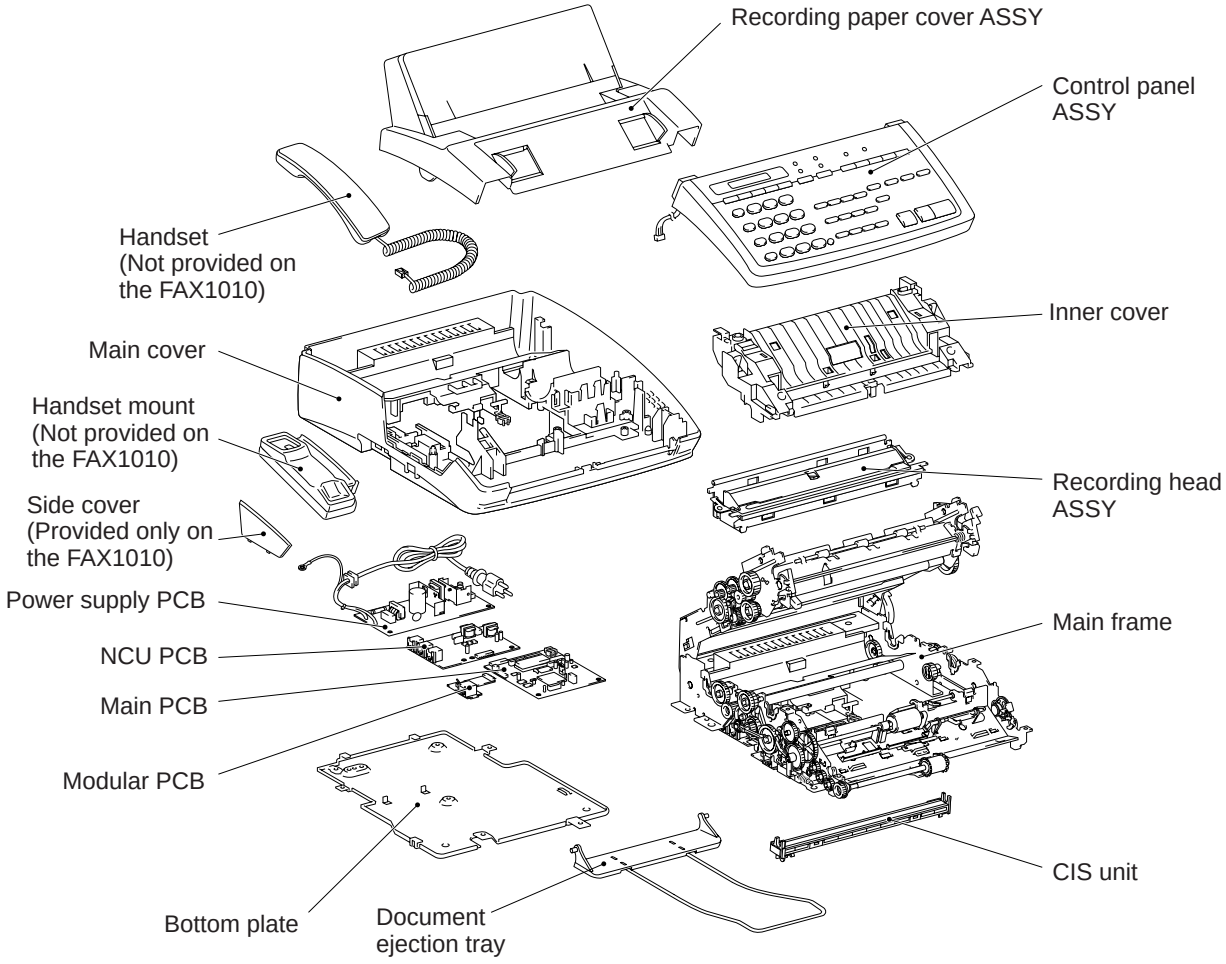


* 317 mm for FAX1010 which has no handset mount

Weight:	Machine proper	FAX1010:	Approx. 5.0 kg (excluding a ribbon cartridge)
		Other models:	Approx. 5.2 kg (excluding a ribbon cartridge)
	In package	FAX1010:	Approx. 8.7 kg
		Other models:	Approx. 8.9 kg

1.2 Components

The equipment consists of the following major components:



2. SPECIFICATIONS

Model	FAX1170	FAX1270	FAX1570MC
Color	Gray (1395)	White (1397)	White (1397)
Modem Speed	9600 bps	9600 bps	14400 bps
CCITT Group	G3	G3	G3
Coding Method	MH	MH	MH
Transmission Speed	15 sec.	15 sec.	9 sec.
Input/Output Width	8.5"/8.5"	8.5"/8.5"	8.5"/8.5"
ADF Capacity (pages)	20	20	20
Recording Paper Loadable	200 sheets	200 sheets	200 sheets
Paper Size	Letter/Legal/A4	Letter/Legal/A4	Letter/Legal/A4
Ribbon Life (Letter-size print)	450 pages	450 pages	450 pages
Handset	Yes	Yes	Yes
LCD Size	16 x 1	16 x 1	16 x 1
On-screen Programming	Yes	Yes	Yes
Gray Scale	64 by Dithered	64 by Dithered	64 by E/D
Smoothing	Yes	Yes	Yes
One-touch Dial	12 x 2	12 x 2	12 x 2
Speed Dial	26	36	100
Telephone Index	Yes	Yes	Yes
Multi-resolution Transmission	Yes	Yes	Yes
FAX/TEL Switch	Yes	Yes	Yes
Distinctive Ringing	Yes	Yes	Yes
Next Fax-reservation	Yes	Yes	Yes
Help	Yes	Yes	Yes
TAD Interface	Yes	Yes	Yes
Coverpage	Yes, Super	Yes, Super	Yes, Super
Polling Type	Sim/Del/Seq	Sim/Del/Seq	Sim/Del/Seq
Receive Password (password plus)	Yes	Yes	Yes
Delayed Transmission	3, timers	3, timers	3, timers
Call Reservation	Yes	Yes	Yes
Call-back Message	Yes	Yes	Yes
Speaker Phone	Monitor	Monitor	Yes, Full-duplex
Activity Report	Yes	Yes	Yes
Transmission Verification Report	Yes	Yes	Yes
Page Memory	512 KB (20 pages)	512 KB (20 pages)	1 MB (50 pages)
Out-of-paper Reception	Yes	Yes	Yes
Quick Scan	Yes	Yes	Yes
Super Quick Scan	No	No	No
Broadcasting	Yes	Yes	Yes
ECM	Yes	Yes	Yes
Multi-transmission	Yes	Yes	Yes
Multi-copying w/Sorting	Yes	Yes	Yes
Enlargement/Reduction Ratio	Yes (50-150%)	Yes (50-150%)	Yes (50-150%)
TAD Type	No	No	DSP
OGM	No	No	Yes
ICM Recording Time	No	No	Yes, 30 min.
FAX Forwarding/Paging	No	Yes	Yes
FAX Retrieval	No	Yes	Yes
PCI (Missing link)	Ready	Ready	Ready
Message Center	No	No	Yes
Caller ID	Yes	Yes	Yes
Fax-/Voice-on-demand	No	No	Voice-on-demand
Mail Box	No	No	Yes
Remote Control	Yes	Yes	Yes
Toll Saver	No	No	Yes
Memo/2-Way Recording	No	No	Yes
Auto Reduction	Yes	Yes	Yes
Confidential Mailbox	No	No	No
Optional Memory	No	No	No

Model	FAX1010	FAX1020	FAX1030/1030Plus
Color	White (1138)	White (1138)	White (1138)
Modem Speed	9600 bps	9600 bps	14400 bps
CCITT Group	G3	G3	G3
Coding Method	MH	MH	MH
Transmission Speed	15 sec.	15 sec.	10 sec.
Input/Output Width	A4/A4	A4/A4	A4/A4
ADF Capacity (pages)	20	20	20
Recording Paper Loadable	200 sheets	200 sheets	200 sheets
Paper Size	Letter/Legal/A4	Letter/Legal/A4	Letter/Legal/A4
Ribbon Life (A4-size print)	420 pages	420 pages	420 pages
Handset	No	Yes	Yes
LCD Size	16 x 1	16 x 1	16 x 1
On-screen Programming	Yes	Yes	Yes
Gray Scale	64 by Dithered	64 by Dithered	64 by E/D
Smoothing	Yes	Yes	Yes
One-touch Dial	12 x 2	12 x 2	12 x 2
Speed Dial	36	36	100
Telephone Index	Yes (Not Super)	Yes (Not Super)	Yes (Not Super)
Multi-resolution Transmission	Yes	Yes	Yes
FAX/TEL Switch	Yes	Yes	Yes
Distinctive Ringing	Yes	Yes	Yes
Next Fax-reservation	Yes	Yes	Yes
Help	Yes, Simple	Yes, Simple	Yes, Simple
TAD Interface	Yes	Yes	Yes
Coverpage	Yes, Super	Yes, Super	Yes, Super
Polling Type	Std/Sec/Del/Seq	Std/Sec/Del/Seq	Std/Sec/Del/Seq
Receive Password (password plus)	Yes	Yes	Yes
Delayed Transmission	3, timers	3, timers	3, timers
Call Reservation	Yes	Yes	Yes
Call-back Message	Yes	Yes	Yes
Speaker Phone	Monitor	Monitor	Yes, Full-duplex
Activity Report	Yes	Yes	Yes
Transmission Verification Report	Yes	Yes	Yes
Page Memory	512 KB (20 pages)	512 KB (20 pages)	1 MB (50 pages)
Out-of-paper Reception	Yes (20 pages)	Yes (20 pages)	Yes (50 pages)
Quick Scan	Yes (18 pages)	Yes (18 pages)	Yes (18 pages)
Super Quick Scan	No	No	No
Broadcasting	Yes, 60 locations	Yes, 60 locations	Yes, 124 locations
ECM	Yes	Yes	Yes
Multi-transmission	Yes	Yes	Yes
Multi-copying w/Sorting	Yes	Yes	Yes
Enlargement/Reduction Ratio	Yes (50-150%)	Yes (50-150%)	Yes (50-150%)
TAD Type	No	No	DSP
OGM	No	No	Yes
ICM Recording Time	No	No	Yes, 30 min.
FAX Forwarding/Paging	Yes/No	Yes/No	Yes
FAX Retrieval	Yes	Yes	Yes
PCI (Missing link)	Ready	Ready	Ready
Message Center	No	No	Yes
Caller ID	UK, Sw., Holland (Ready for France)	UK, Sw., Holland (Ready for France)	UK, Sw., Holland (Ready for France)
Fax-/Voice-on-demand	No	No	Voice-on-demand
Mail Box	No	No	Yes, 5
Remote Control	Yes	Yes	Yes
Toll Saver	No	No	Yes
Memo/2-Way Recording	No	No	Yes
Auto Reduction	Yes	Yes	Yes
Confidential Mailbox	No	No	No
Optional Memory	No	No	No

Model	MFC1770	MFC1870MC	MFC1970MC
Color	White (1138)	White (1138)	White (1138)
Modem Speed	9600 bps	14400 bps	14400 bps
CCITT Group	G3	G3	G3
Coding Method	MH	MH	MH
Transmission Speed	15 sec.	9 sec.	9 sec.
Input/Output Width	8.5"/8.5"	8.5"/8.5"	8.5"/8.5"
ADF Capacity (pages)	20	20	20
Recording Paper Loadable	200 sheets	200 sheets	200 sheets
Paper Size	Letter/Legal/A4	Letter/Legal/A4	Letter/Legal/A4
Ribbon Life (Letter-size print)	450 pages	450 pages	450 pages
Handset	Yes	Yes	Yes
LCD Size	16 x 1	16 x 1	16 x 1
On-screen Programming	Yes	Yes	Yes
Gray Scale	64 by Dithered	64 by Dithered	64 by E/D
Smoothing	Yes	Yes	Yes
One-touch Dial	12 x 2	12 x 2	12 x 2
Speed Dial	36	36	100
Telephone Index	Yes	Yes	Yes
Multi-resolution Transmission	Yes	Yes	Yes
FAX/TEL Switch	Yes	Yes	Yes
Distinctive Ringing	Yes	Yes	Yes
Next Fax-reservation	Yes	Yes	Yes
Help	Yes	Yes	Yes
TAD Interface	Yes	Yes	Yes
Coverpage	Yes, Super	Yes, Super	Yes, Super
Polling Type	Sim/Del/Seq	Sim/Del/Seq	Sim/Del/Seq
Receive Password (password plus)	Yes	Yes	Yes
Delayed Transmission	3, timers	3, timers	3, timers
Call Reservation	Yes	Yes	Yes
Call-back Message	Yes	Yes	Yes
Speaker Phone	Monitor	Yes, Full-duplex	Yes, Full-duplex
Activity Report	Yes	Yes	Yes
Transmission Verification Report	Yes	Yes	Yes
Page Memory	512 KB (20 pages)	512 KB (20 pages)	1 MB (50 pages)
Out-of-paper Reception	Yes	Yes	Yes
Quick Scan	Yes	Yes	Yes
Super Quick Scan	No	No	No
Broadcasting	Yes	Yes	Yes
ECM	Yes	Yes	Yes
Multi-transmission	Yes	Yes	Yes
Multi-copying w/Sorting	Yes	Yes	Yes
Enlargement/Reduction Ratio	Yes (50-150%)	Yes (50-150%)	Yes (50-150%)
TAD Type	No	DSP	DSP
OGM	No	Yes	Yes
ICM Recording Time	No	Yes, 15 min.	Yes, 30 min.
FAX Forwarding/Paging	Yes	Yes	Yes
FAX Retrieval	Yes	Yes	Yes
PCI (Missing link)	Included (MFL3)	Included (MFL3)	Included (MFL3)
Message Center	No	Yes	Yes
Caller ID	Yes	Yes	Yes
Fax-/Voice-on-demand	No	Voice-on-demand	Voice-on-demand
Mail Box	No	Yes	Yes
Remote Control	Yes	Yes	Yes
Toll Saver	No	Yes	Yes
Memo/2-Way Recording	No	Yes	Yes
Auto Reduction	Yes	Yes	Yes
Confidential Mailbox	No	No	No
Optional Memory	No	No	No

CHAPTER II.

INSTALLATION

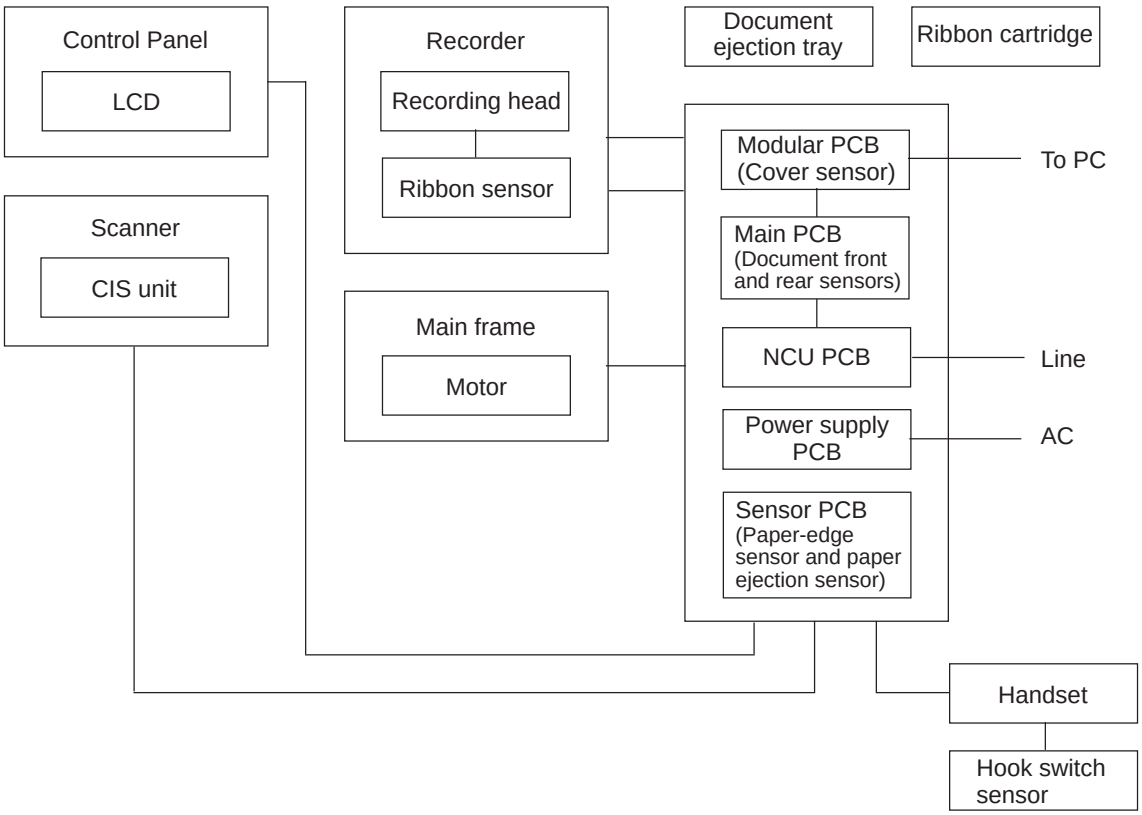
CHAPTER III.

THEORY OF OPERATION

CONTENTS

1. OVERVIEW

1.1 Functional Block Diagram



2. MECHANISMS

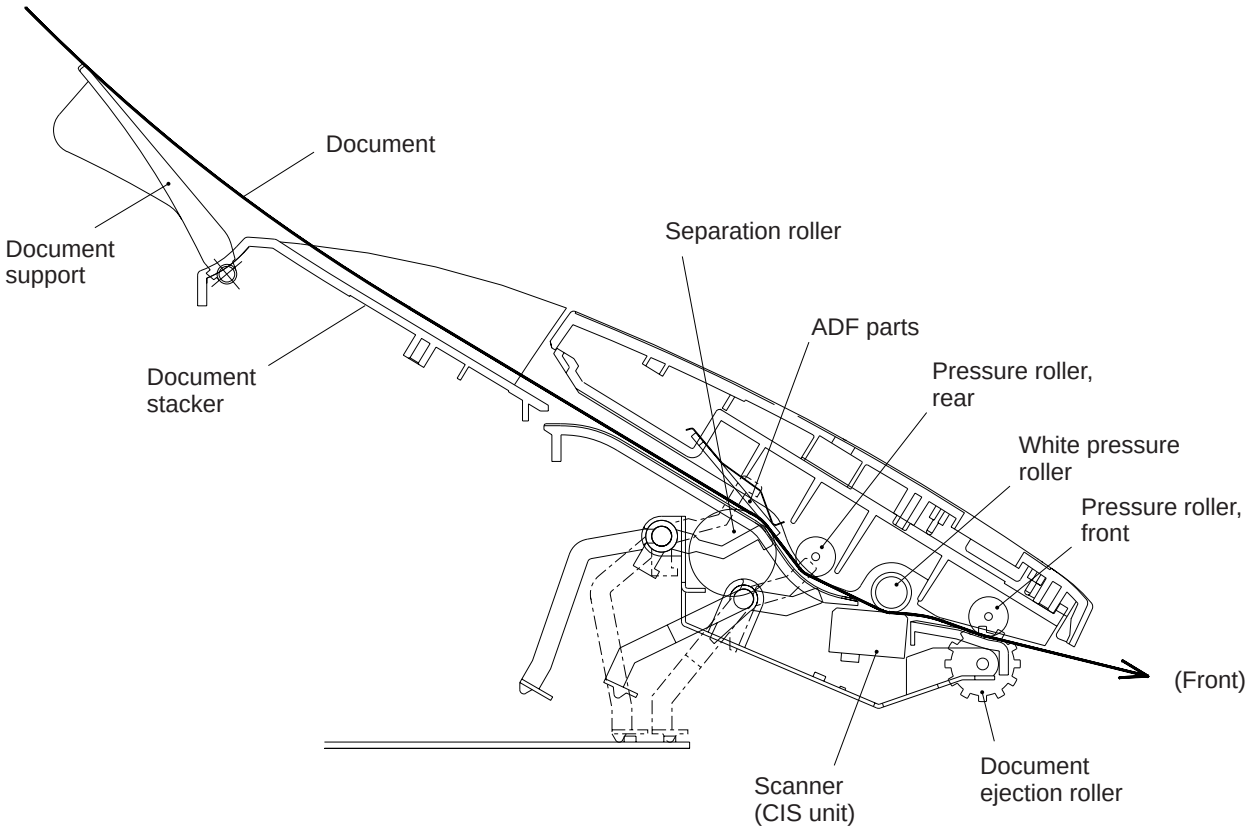
The equipment is classified into the following mechanisms:

- Transmitting Mechanism — Feeding and scanning documents
- Receiving Mechanism — Feeding paper and printing data
- Power Transmission Mechanism — Switching the power transmission route
- Sensors and Actuators

2.1 Transmitting Mechanism (Feeding and scanning documents)

The transmitting mechanism consists of the document stacker, automatic document feeder (ADF), document feeding related rollers, scanner, and document sensors. (For details about the sensors, refer to Section 2.4.)

For the drive power source, refer to Section 2.3.



2.1.1 Automatic document feeder (ADF)

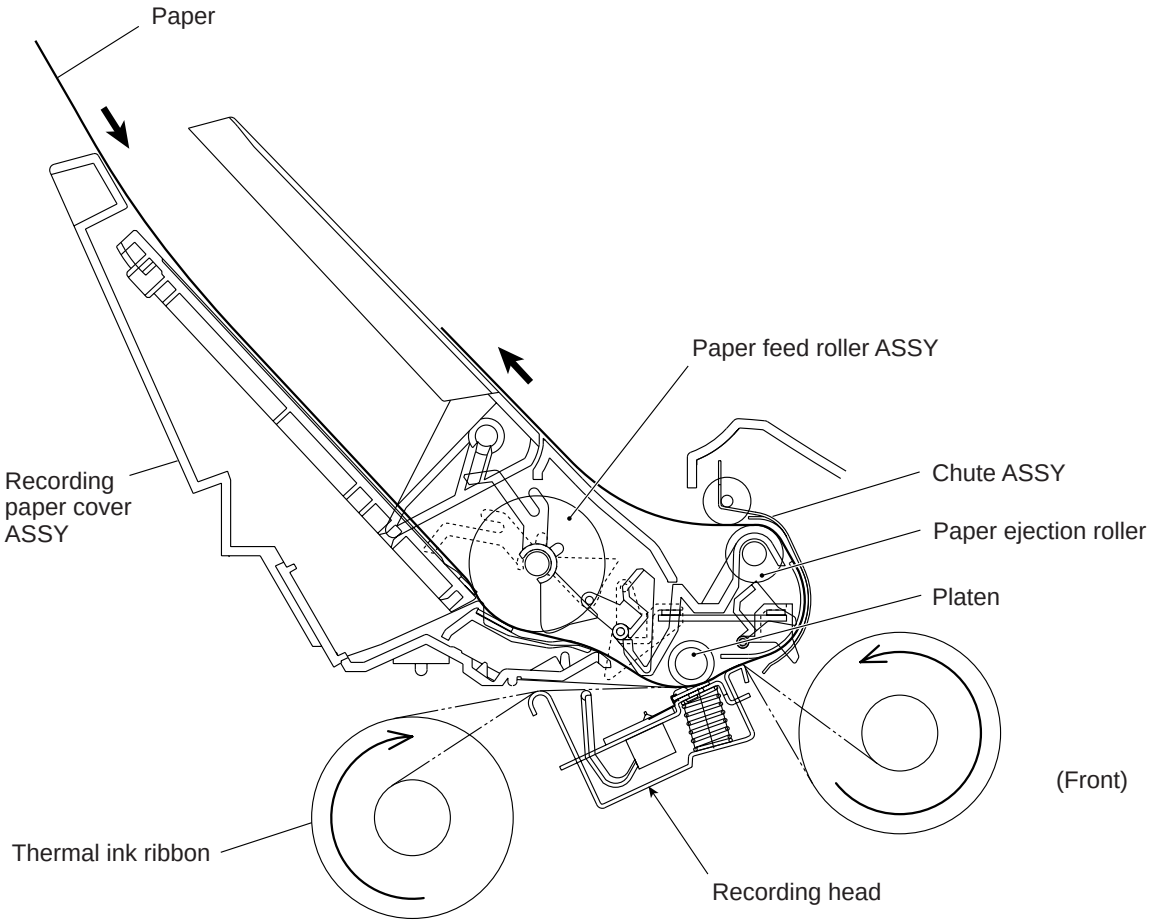
If the operator sets documents on the stacker and starts the transmitting operation, the ADF (consisting of the separation roller and ADF parts) feeds those documents into the equipment, starting from the bottom sheet to the top, page by page. Each document advances to the scanner, and then it is fed with the white pressure roller and document ejection roller.

2.1.2 Scanner

The scanner uses a contact image sensor (CIS) unit which consists of an LED array illuminating documents, a self-focus lens array collecting the reflected light, a CIS PCB carrying out photoelectric conversion to output picture element data, and a cover glass on which a document advances. When the document passes between the white pressure roller and the cover glass, it is scanned.

2.2 Receiving Mechanism (Feeding paper and printing data)

The receiving mechanism consists of the recording paper cover ASSY, paper feed roller ASSY, platen, thermal recording head, paper ejection roller, and sensors. (For details about the sensors, refer to Section 2.4.)



STEP 1: In the paper feeding mode

If the equipment receives data, the control electronics activates the solenoid and rotates the motor counterclockwise to drive the paper feed roller (and paper ejection roller). This pulls in a sheet of paper and feeds it until its leading edge reaches the point just before the printing position.

STEP 2: In the recording (platen drive & ribbon take-up) mode

The control electronics deactivates the solenoid and rotates the motor clockwise to drive the platen gear and the ribbon take-up gear as well as the paper ejection roller. This feeds the paper up to the printing position where the thermal recording head prints, as well as feeding the thermal ink ribbon.

STEP 3: In the paper ejecting mode

The same operation as for STEP 1 takes place so as to eject the paper.

2.3 Power Transmission Mechanism

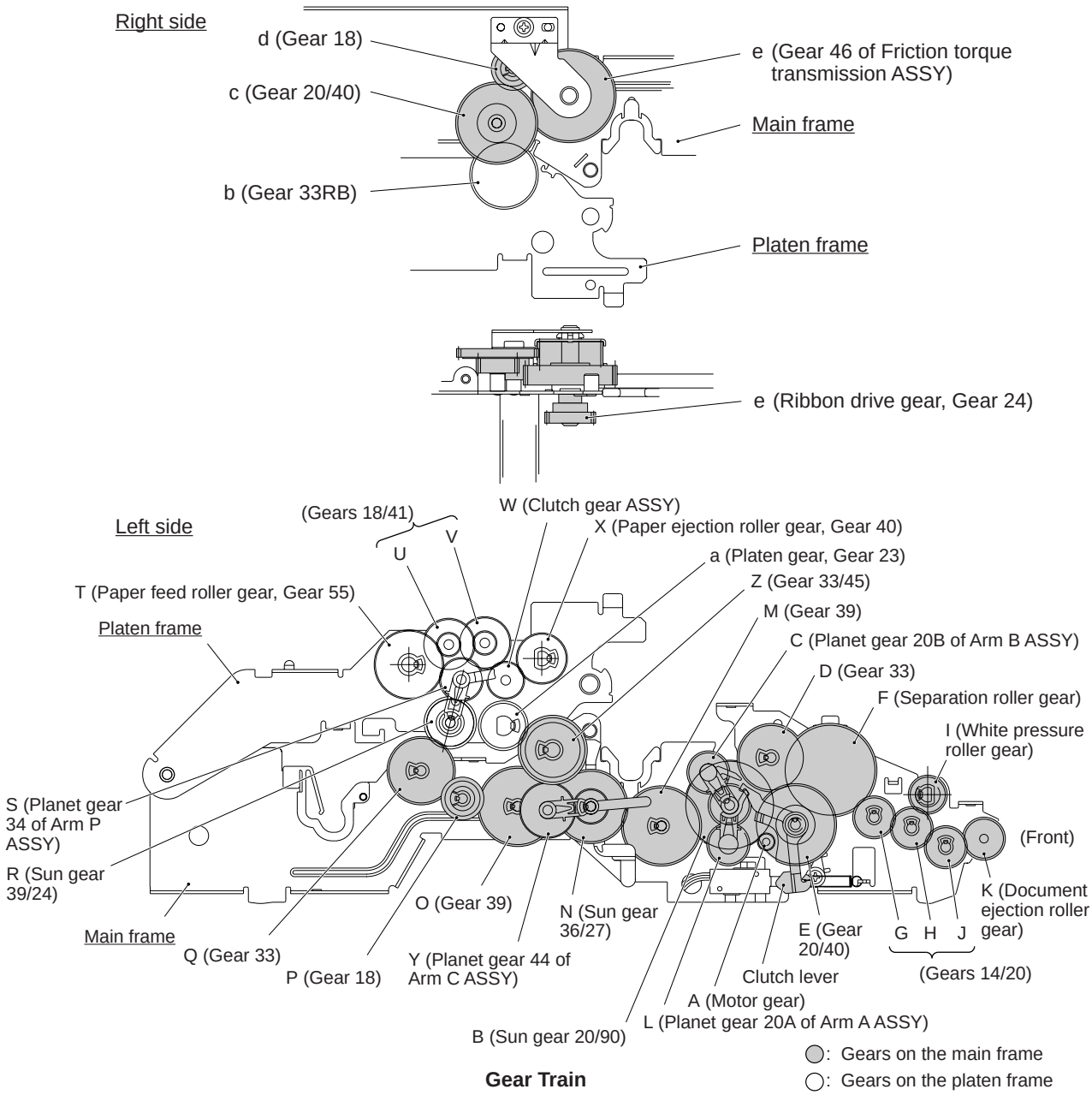
The equipment has a single drive motor whose power transmission route can be switched by the planetary gear systems and the solenoid. This switching allows the equipment to function in four operation modes (scanning, paper feeding/ejecting, recording, and copying modes). For the details about the planetary gear systems, refer to Subsection 2.3.2.

2.3.1 Structure of the gear train

At the left side of the equipment, the rotational torque of the motor on the main frame is transmitted to the gears on the main frame and then to the gears on the platen frame. These gears drive the document feeding/ejecting related rollers, paper feeding/ejecting related rollers, and the platen.

If the platen gear ("a" in the figure below) on the left end of the platen shaft rotates, the gear 33RB ("b") on the right end also rotates. This way, the rotational torque is transmitted to the gears on the right side of the equipment.

At the right side of the equipment, the rotational torque is further transmitted via the friction torque transmission ASSY to the ribbon drive gear ("e") which drives the ribbon take-up gear in the ribbon cartridge.



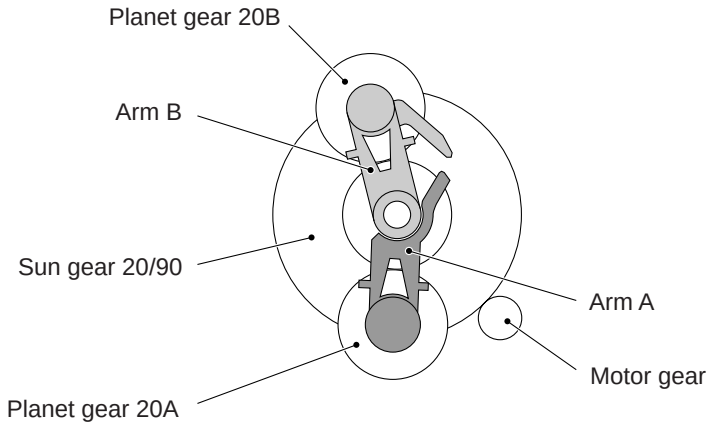
Gear Train

2.3.2 Description of planetary gear system

The equipment uses the following three planetary gear systems:

- Sun gear 20/90 ("B" in the figure given on the previous page) and its planet gears
- Sun gear 36/27 ("N") and its planet gear
- Sun gear 39/24 ("R") and its planet gear

This section describes the planetary gear system of the sun gear 20/90 ("B"). It consists of the sun gear 20/90, two planet gears 20, arm A, and arm B, as shown below.



Planetary Gear System

If the motor rotates, the sun gear 20/90 rotates so that the rotational torque is transmitted to the engagement between the sun gear and the planet gears 20. Since the arms and planet gears are so designed that the moment of the arms is less than that of the planet gears, the arms turn around the center shaft in the same direction as the sun gear 20/90.

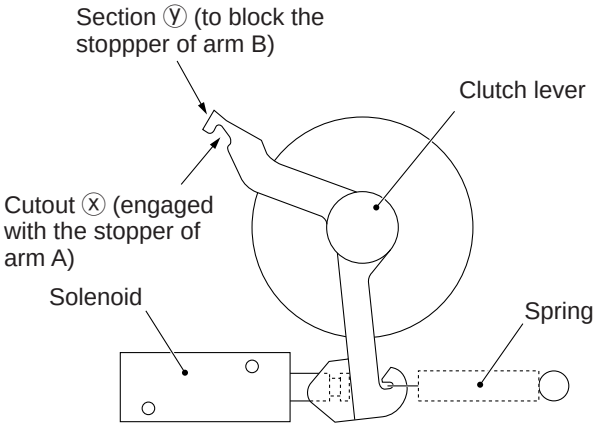
If the planet gear(s) becomes engaged with any other gear so that the arm cannot turn furthermore, the rotational torque of the sun gear 20/90 is transmitted to that planet gear. Accordingly, the planet gear starts rotation in the opposite direction of the sun gear 20/90.

2.3.3 Power transmission for four operation modes

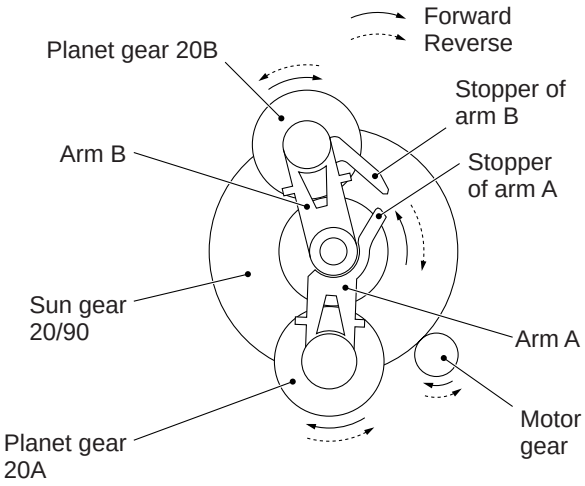
Depending upon the solenoid ON/OFF state and the motor rotation direction, the planetary gear train switches the power transmission route for the four operation modes.

Solenoid ON/OFF state

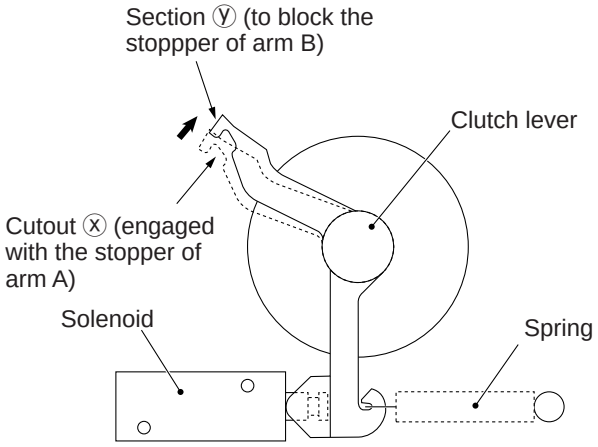
Solenoid: OFF



Motor rotation direction



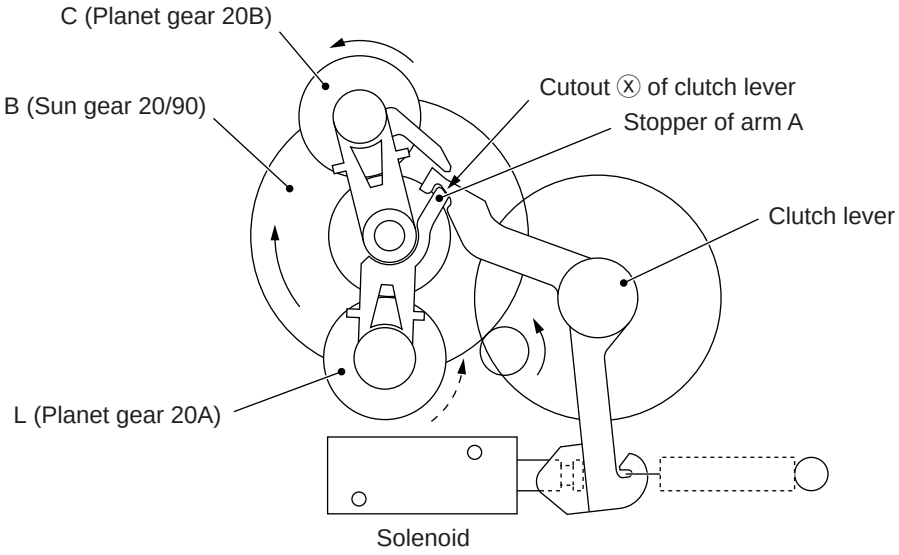
Solenoid: ON



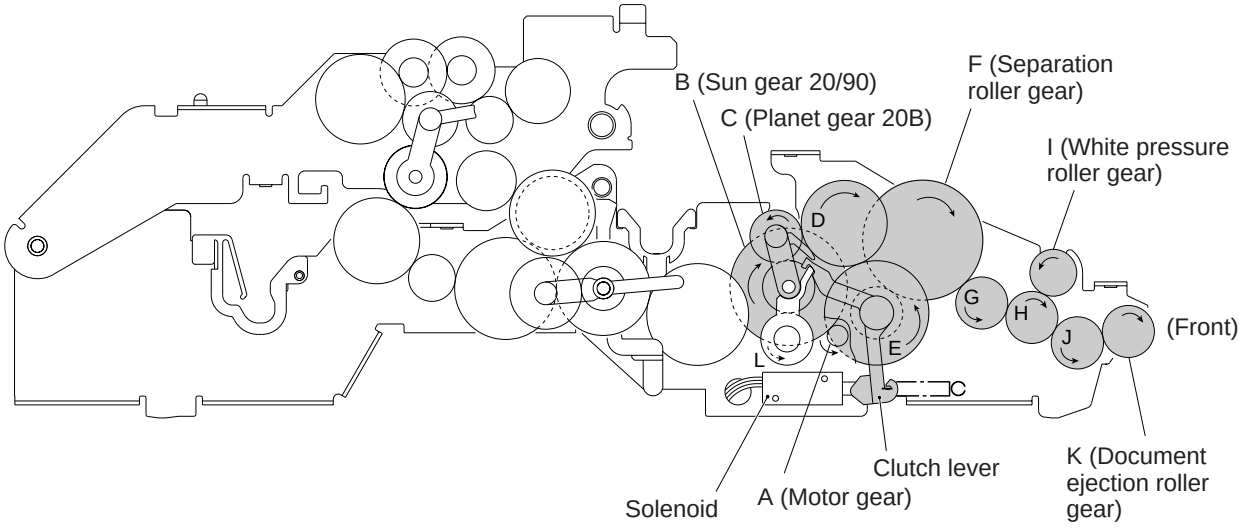
[1] Scanning mode (Solenoid: OFF, Motor rotation: Reverse)

In the scanning mode, the control electronics deactivates the solenoid. When the motor rotates in the reverse direction, the clutch lever turns counterclockwise with the spring so that its cutout ⓧ becomes engaged with the stopper of arm A. Once arm A is locked, the planet gear 20A ("L") will not be engaged with any other gear but simply idle.

The motor's rotational torque turns the sun gear 20/90 ("B") clockwise so that the planet gear 20B ("C") transmits the torque to the separation roller gear ("F"), white pressure roller gear ("I") and document ejection roller gear ("K") via the several gears.



Arm A Locked by Cutout ⓧ of Clutch Lever

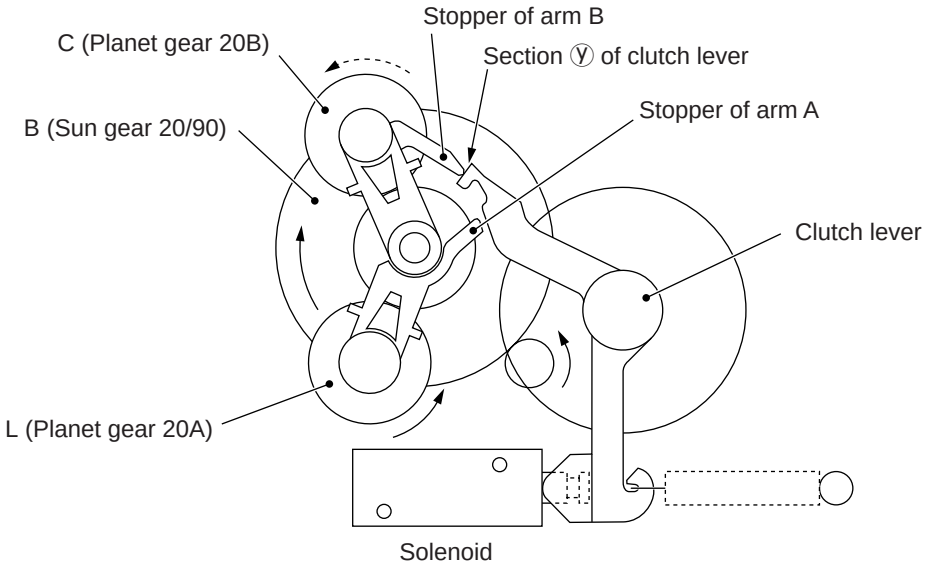


Active Gears

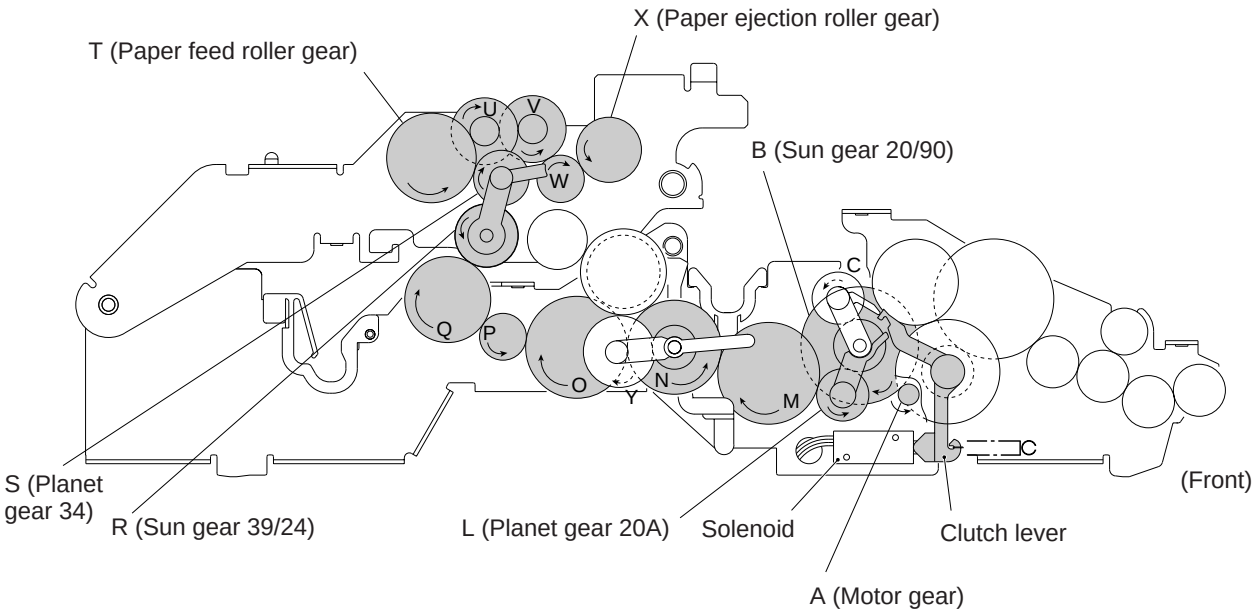
[2] Paper feeding/ejecting mode (Solenoid: ON, Motor rotation: Reverse)

In the paper feeding/ejecting mode, the control electronics activates the solenoid to release the stopper of arm A. When the motor rotates in the reverse direction, the sun gear 20/90 ("B") rotates clockwise so that the planet gear 20A ("L") transmits the torque via the gear 39 ("M") and other gears to the paper feed roller gear ("T") and paper ejection roller gear ("X").

Since the stopper of arm B is blocked by the section ⓨ of the clutch lever, the planet gear 20B ("C") is merely idle without engaging with any other gear.



Arm B Blocked by Section ⓨ of Clutch Lever



Active Gears

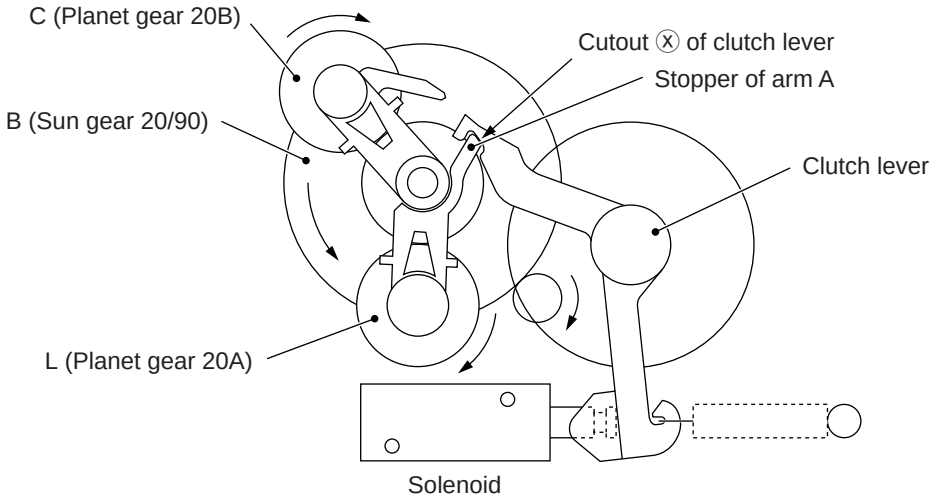
[3] Recording mode (Solenoid: OFF, Motor rotation: Forward)

In the recording mode, the control electronics deactivates the solenoid. When the motor rotates in the forward direction, the clutch lever turns counterclockwise with the spring so that its cutout ⓧ becomes engaged with the stopper of arm A. Once arm A is locked, the planet gear 20A ("L") will not be engaged with any other gear but simply idle.

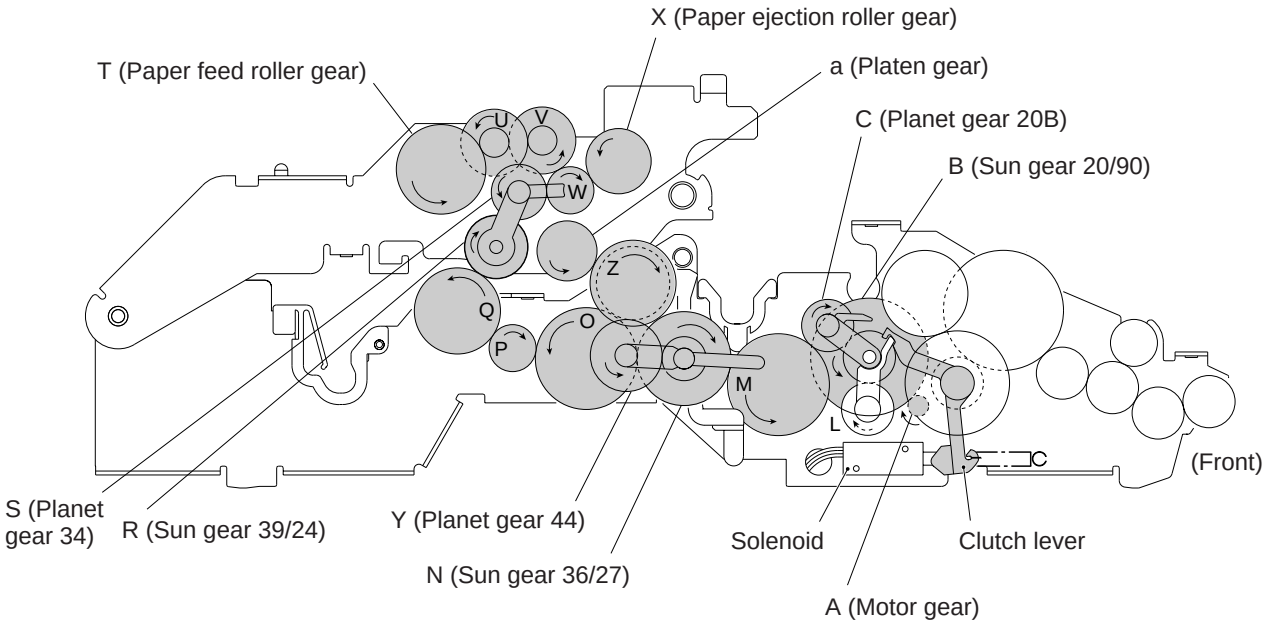
The motor's rotational torque turns the sun gear 20/90 ("B") counterclockwise so that the planet gear 20B ("C") transmits the torque via the gear 39 ("M") and other gears to the platen gear ("a") as well as the paper ejection roller gear ("X").

The platen advances recording paper and its paper movement rotates the paper feed roller. Consequently, the paper feed roller shaft rotates faster than the paper feed roller gear ("T").

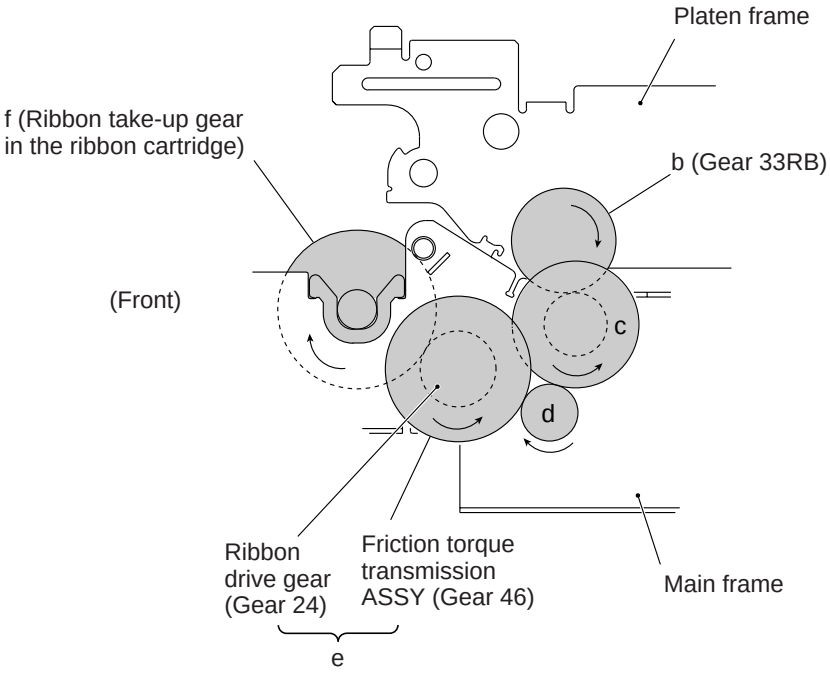
If the platen gear ("a" in the figure below) on the left end of the platen shaft rotates, the gear 33RB ("b") on the right end also rotates so as to drive the friction torque transmission ASSY and ribbon drive gear ("e") that rotates the ribbon take-up gear ("f") in the ribbon cartridge, as shown on the next page.



Arm A Locked by Cutout ⓧ of Clutch Lever



Active Gears on the Left Side

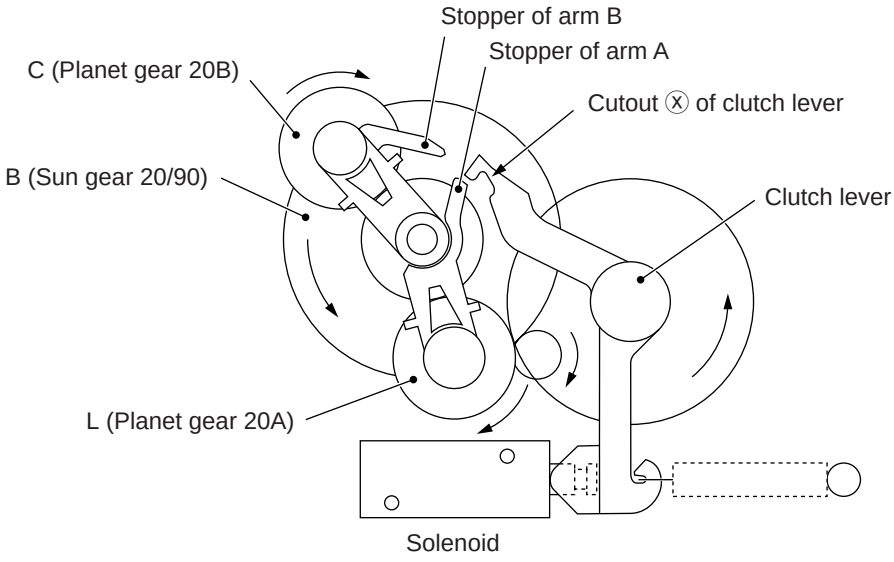


Active Gears on the Right Side

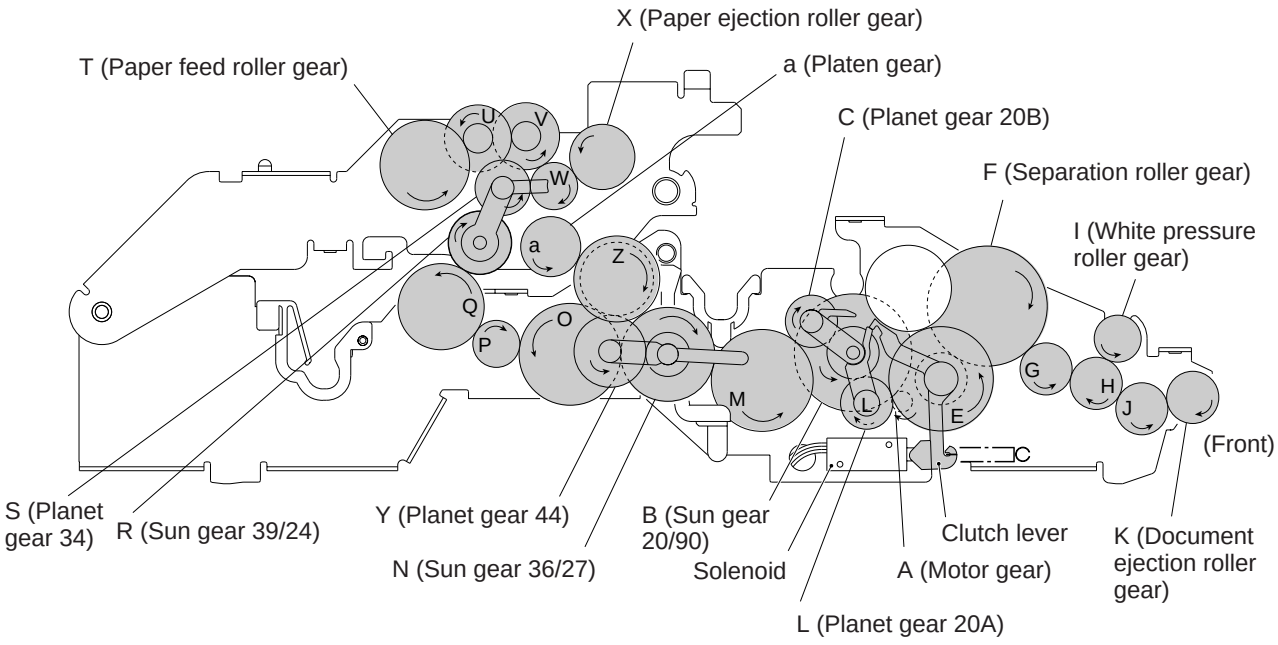
[4] Copying mode (Solenoid: ON, Motor rotation: Forward)

The control electronics activates the solenoid to release the stopper of arm A from the clutch lever. When the motor rotates in the forward direction, the sun gear 20/90 ("B") rotates counterclockwise so that the planet gear 20A ("L") transmits the torque to the document scanner mechanism (e.g., the separation roller gear ("F"), white pressure roller gear ("I") and document ejection roller gear ("K")) and the planet gear 20B ("C") transmits the torque to the recording mechanism (e.g., the platen gear ("a"), paper feed roller gear ("T"), and paper ejection roller gear ("X")).

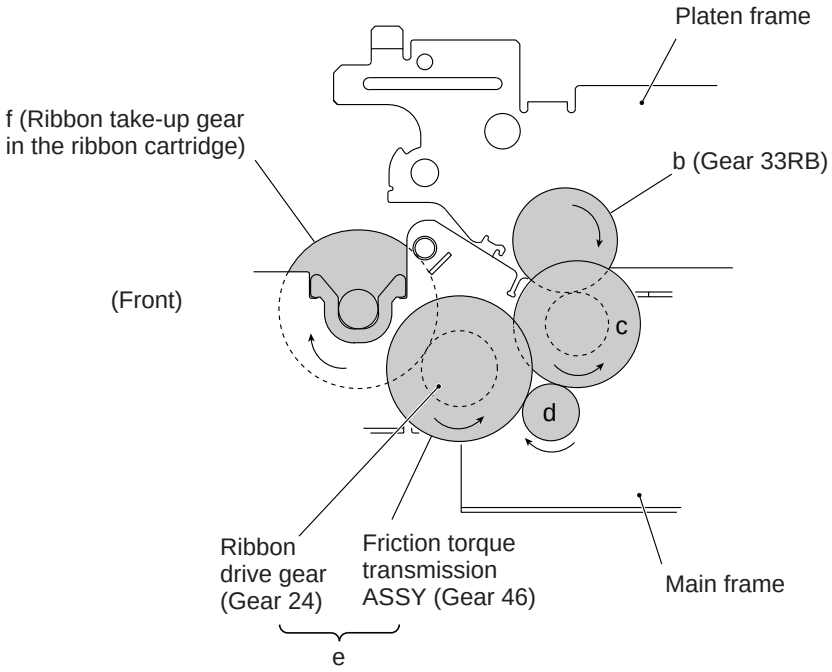
If the platen gear ("a" in the figure below) on the left end of the platen shaft rotates, the gear 33RB ("b") on the right end also rotates so as to drive the friction torque transmission ASSY and ribbon drive gear ("e") that rotates the ribbon take-up gear ("f") in the ribbon cartridge, as shown on the next page.



Arm A Released from Coutout ⓧ of Clutch Lever



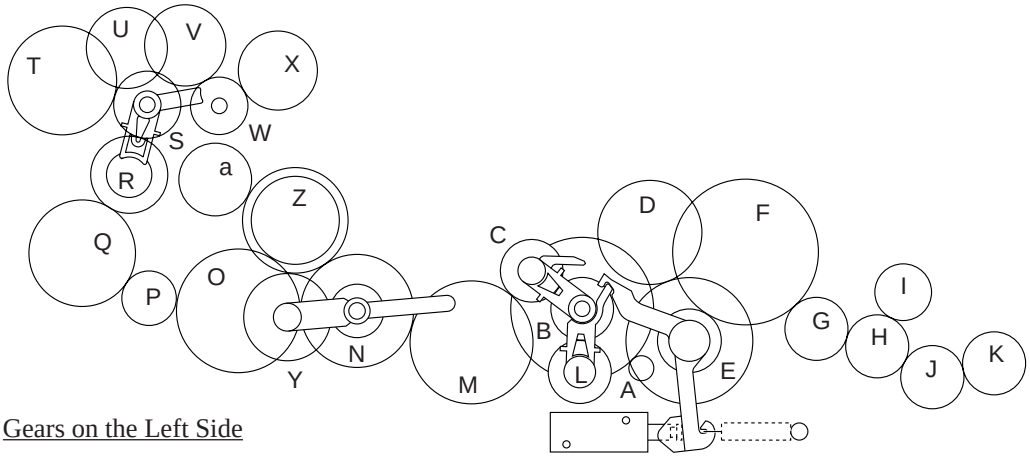
Active Gears on the Left Side



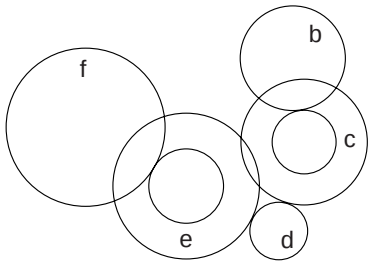
Active Gears on the Right Side

2.3.4 Power transmission route

Rotation of the motor gear is transmitted as shown below.



Gears on the Left Side



Gears on the Right Side

A: Motor gear
B: Sun gear 20/90
C: Planet gear 20B
D: Gear 33
E: Gear 20/40
F: Separation roller gear
G: Gear 14/20
H: Gear 14/20
I: White pressure roller gear
J: Gear 14/20
K: Document ejection roller gear
L: Planet gear 20A
M: Gear 39
N: Sun gear 36/27
O: Gear 39
P: Gear 18
Q: Gear 33
R: Sun gear 39/24
S: Planet gear 34
T: Paper feed roller gear
U: Gear 18/41
V: Gear 18/41
W: Clutch gear
X: Paper ejection roller gear, Gear 40
Y: Planet gear 44
Z: Gear 33/45
a: Platen gear, Gear 23
b: Gear 33RB
c: Gear 20/40
d: Gear 18
e: Friction torque transmission ASSY (Gear 46) and ribbon drive gear (Gear 24)
f: Ribbon take-up gear in the ribbon cartridge

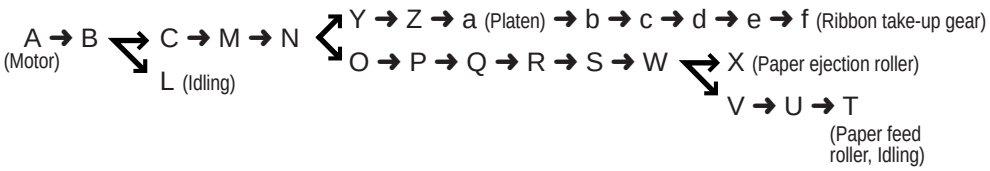
[1] Scanning Mode (Solenoid: OFF, Motor rotation: reverse)

A ➜ B (Motor) ⇄ C ➜ D ➜ E ➜ F ➜ G ➜ H (Separation roller) ⇄ I (White pressure roller) / J ➜ K (Document ejection roller)
B ⇄ L (Idling)

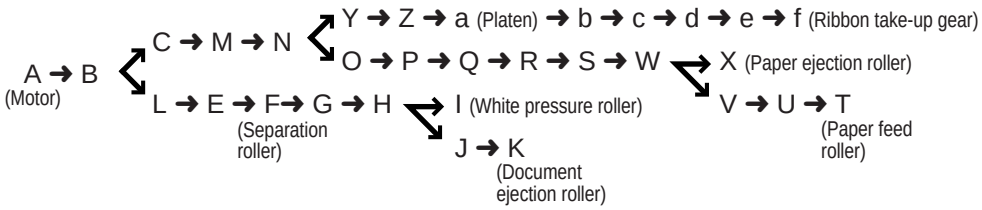
[2] Paper Feeding/Ejecting Mode (Solenoid: ON, Motor rotation: reverse)

A ➜ B (Motor) ⇄ C (Idling) / L ➜ M ➜ N ⇄ O ➜ P ➜ Q ➜ R ➜ S ➜ T ➜ U ➜ V ➜ W ➜ X
N ⇄ Y (Idling)
T: (Paper feed roller)
X: (Paper ejection roller)

[3] Recording Mode (Solenoid: OFF, Motor rotation: forward)



[4] Copying Mode (Solenoid: ON, Motor rotation: forward)



2.4 Sensors and Actuators

This equipment has four photosensors and three mechanical switches (two for the FAX1010) as described below.

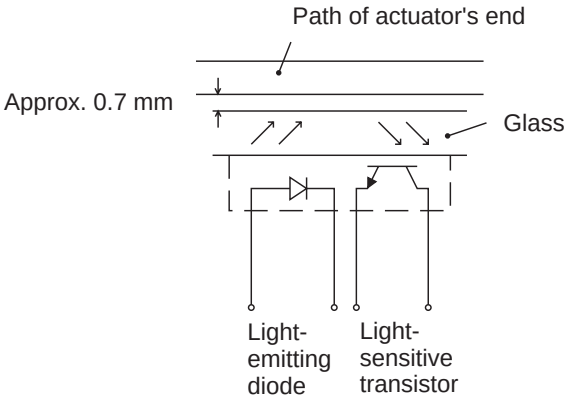
Sensor name	Type	Located on
Document front sensor	Photosensor (PH1)	Main PCB
Document rear sensor	Photosensor (PH2)	Main PCB
Paper ejection sensor	Photosensor (PH1)	Sensor PCB
Paper-edge sensor	Photosensor (PH2)	Sensor PCB
Cover sensor	Mechanical switch (SW1)	Modular PCB
Ribbon sensor	Mechanical switch (SW1)	Recording head
Hook switch sensor*	Mechanical switch (SW1)	Hook switch PCB

- Document front sensor which detects the presence of documents.
- Document rear sensor which detects the leading and trailing edges of pages to tell the control circuitry when the leading edge of a new page has reached the starting position and when the scan for that page is over.
- Paper ejection sensor which detects whether a paper jam has occurred.
- Paper-edge sensor which detects the leading and trailing edges of paper and the presence of paper as well as detecting whether the paper front cover is closed.

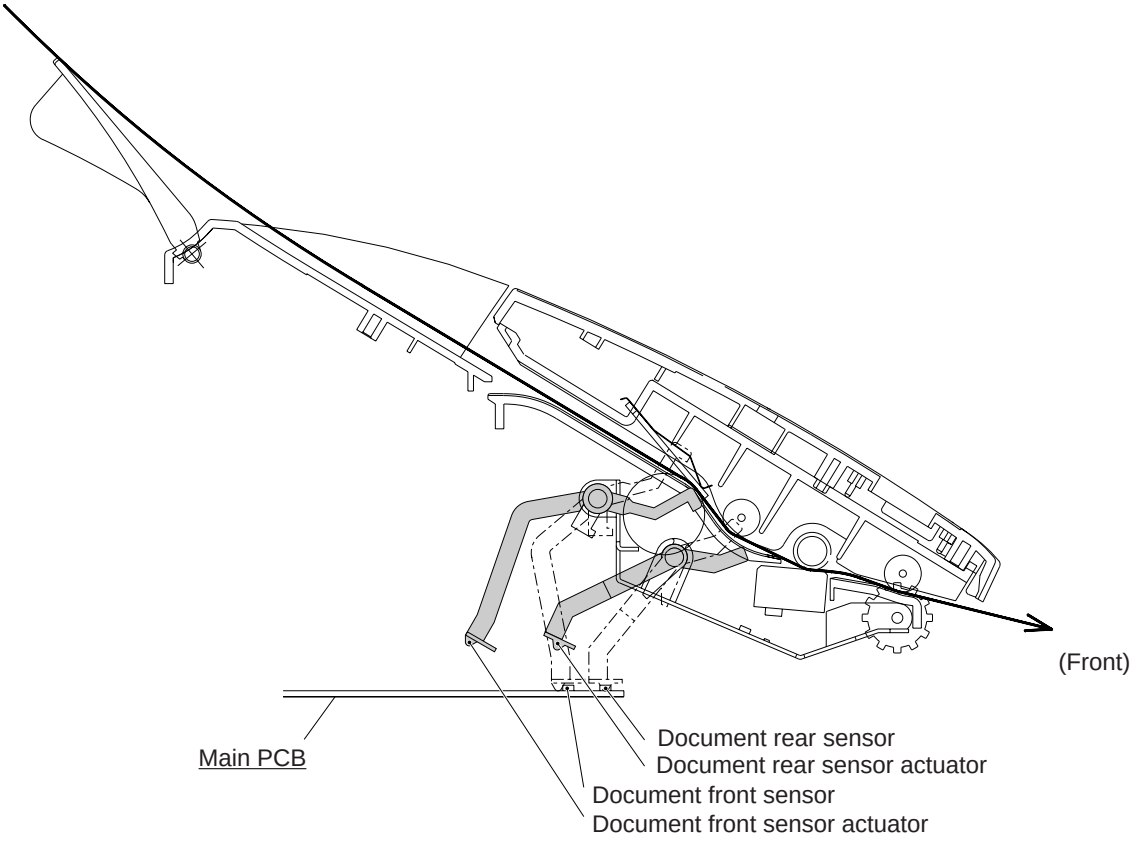
These photosensors are of a reflection type consisting of a light-emitting diode and a light-sensitive transistor. Each of them has an actuator separately arranged (see the next page), except that the paper-edge sensor has two actuators for sensing the paper and the paper front cover. When an actuator is not activated, its white end lies in the path of light issued from the light-emitting diode and reflects its light so that the reflected light enters the light-sensitive transistor. If a document or paper comes in so as to activate the actuator, the actuator's white end goes out of the light path and no reflected light enters the light-sensitive transistor. This way, the sensor detects the presence of documents or paper.

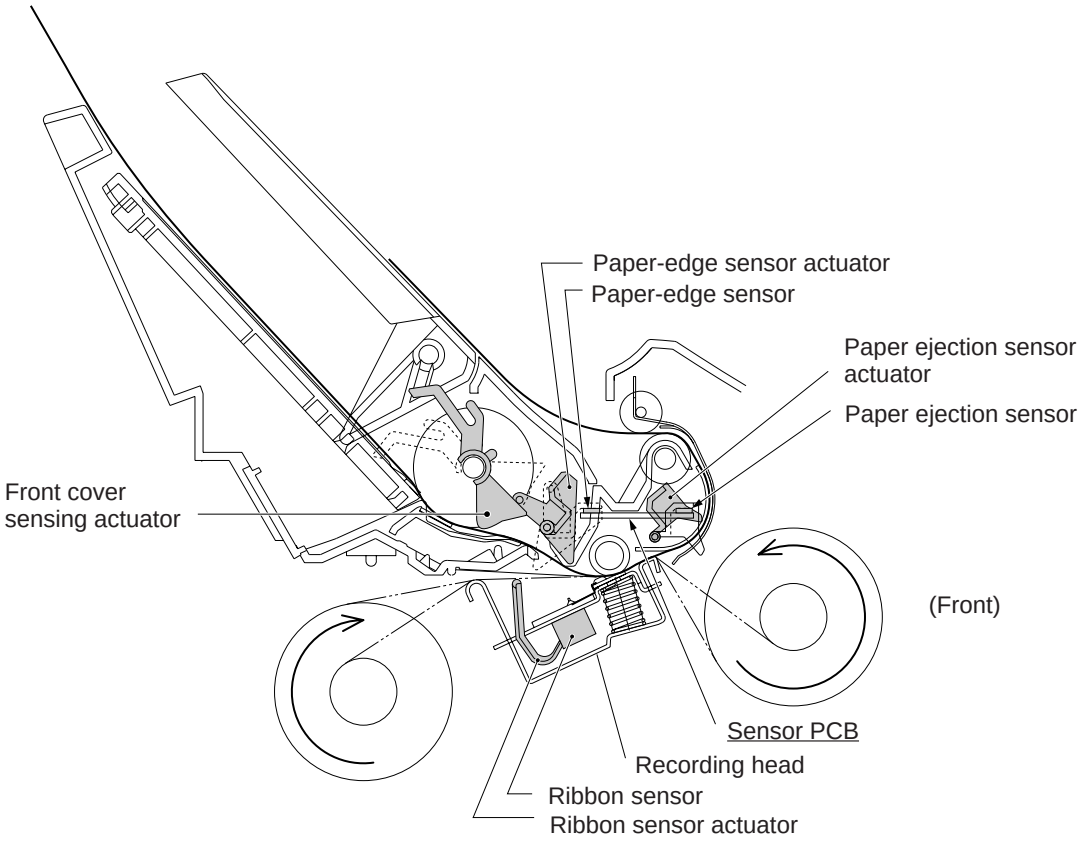
- Cover sensor which detects whether the recording paper cover ASSY is closed.
- Ribbon sensor which detects whether the ink ribbon is loaded.
- Hook switch sensor* which detects whether the handset is placed on the handset mount.

The cover sensor has an actuator separately arranged (see page III-18). If the actuator is activated, its lower end releases the cover sensor lever so that the sensor signals the detection.

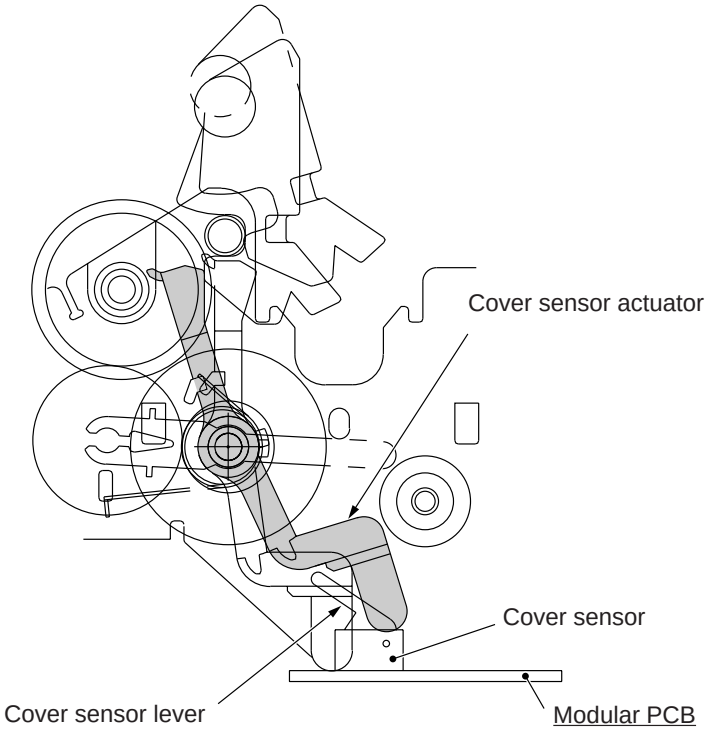


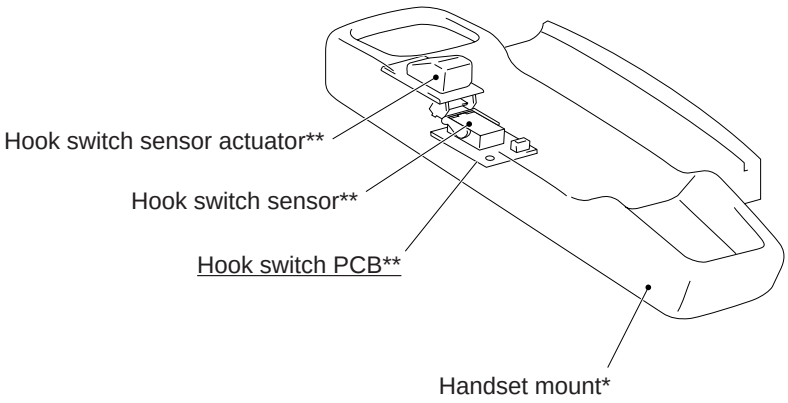
* Not provided on the FAX1010





Location of Sensors and Actuators (1)





Location of Sensors and Actuators (2)

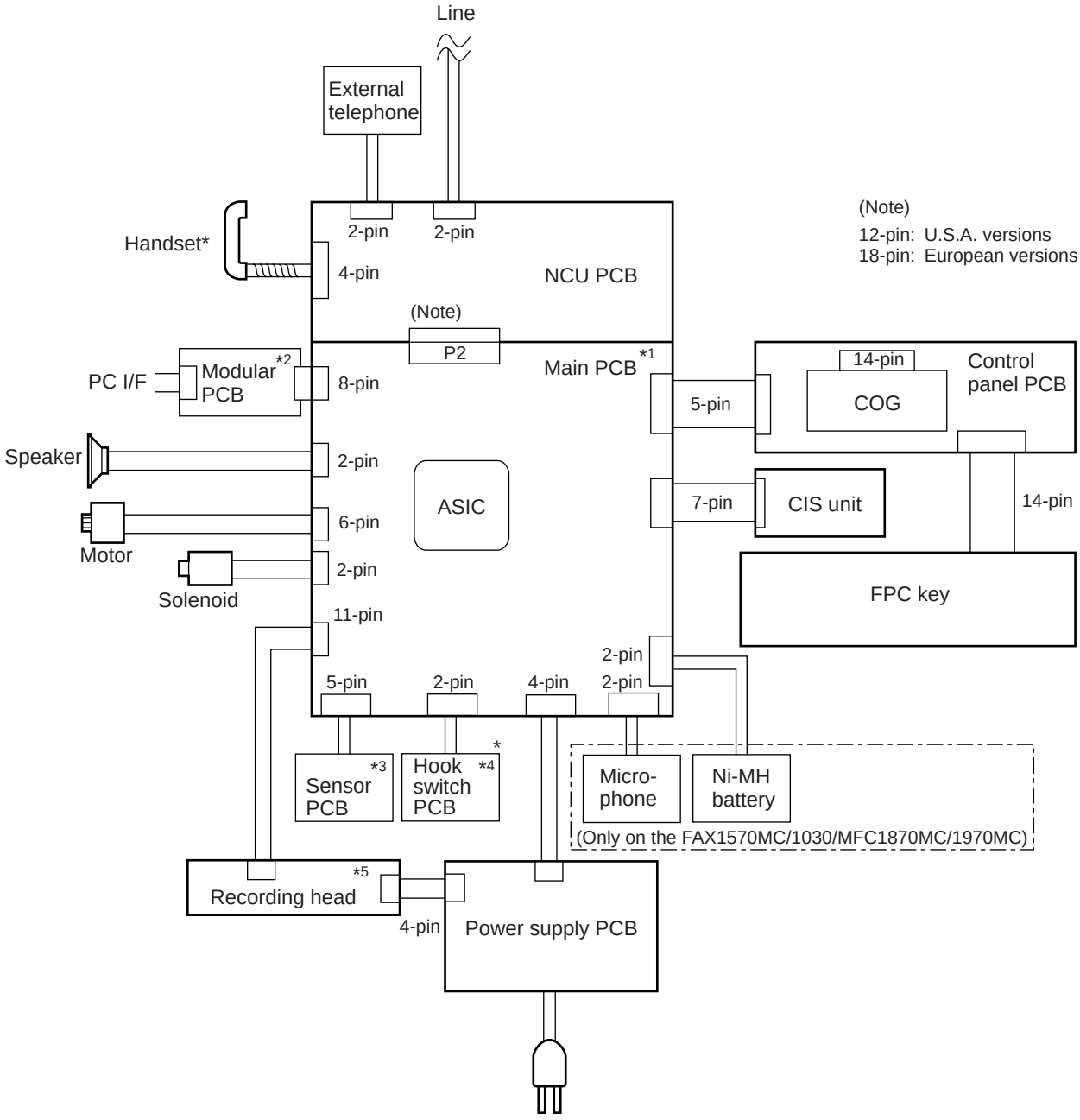
* Not provided on the FAX1010

** Not provided on the FAX1010 or those versions equipped with a Binatone handset

3. CONTROL ELECTRONICS

3.1 Configuration

The hardware configuration of the facsimile equipment is shown below.



*1 On the main PCB are these sensors:
- Document front sensor (PH1)
- Document rear sensor (PH2)

*2 On the modular PCB is the cover sensor.

*3 On the sensor PCB are these sensors:
- Paper ejection sensor (PH1)
- Paper-edge sensor (PH2)

4 On the hook switch PCB is the hook switch sensor (SW1).

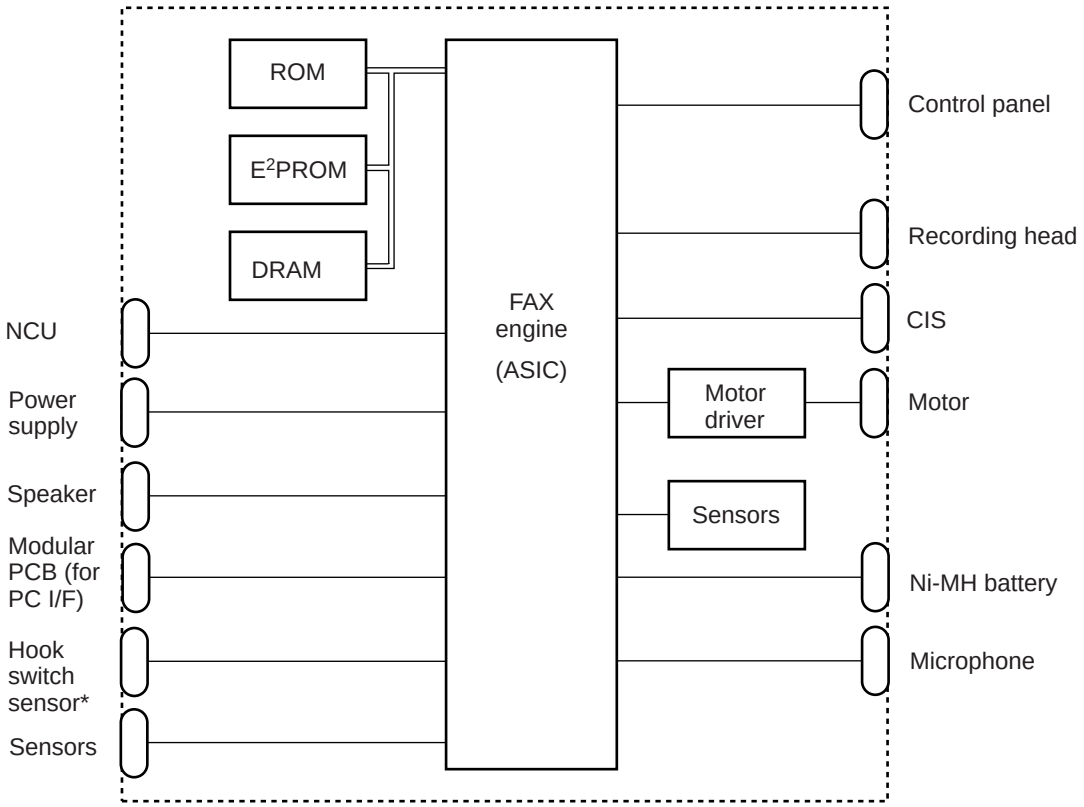
*5 On the recording head is the ribbon sensor (SW1).

* Not provided on the FAX1010

Configuration of Facsimile Equipment

3.2 Main PCB

The main PCB, which is the nucleus controlling the entire operation of the equipment, consists of a FAX engine (ASIC), memories, MODEM, motor drive circuitry, sensor detection circuitry, and analog circuits for scanning, recording, and power transmission shifting.

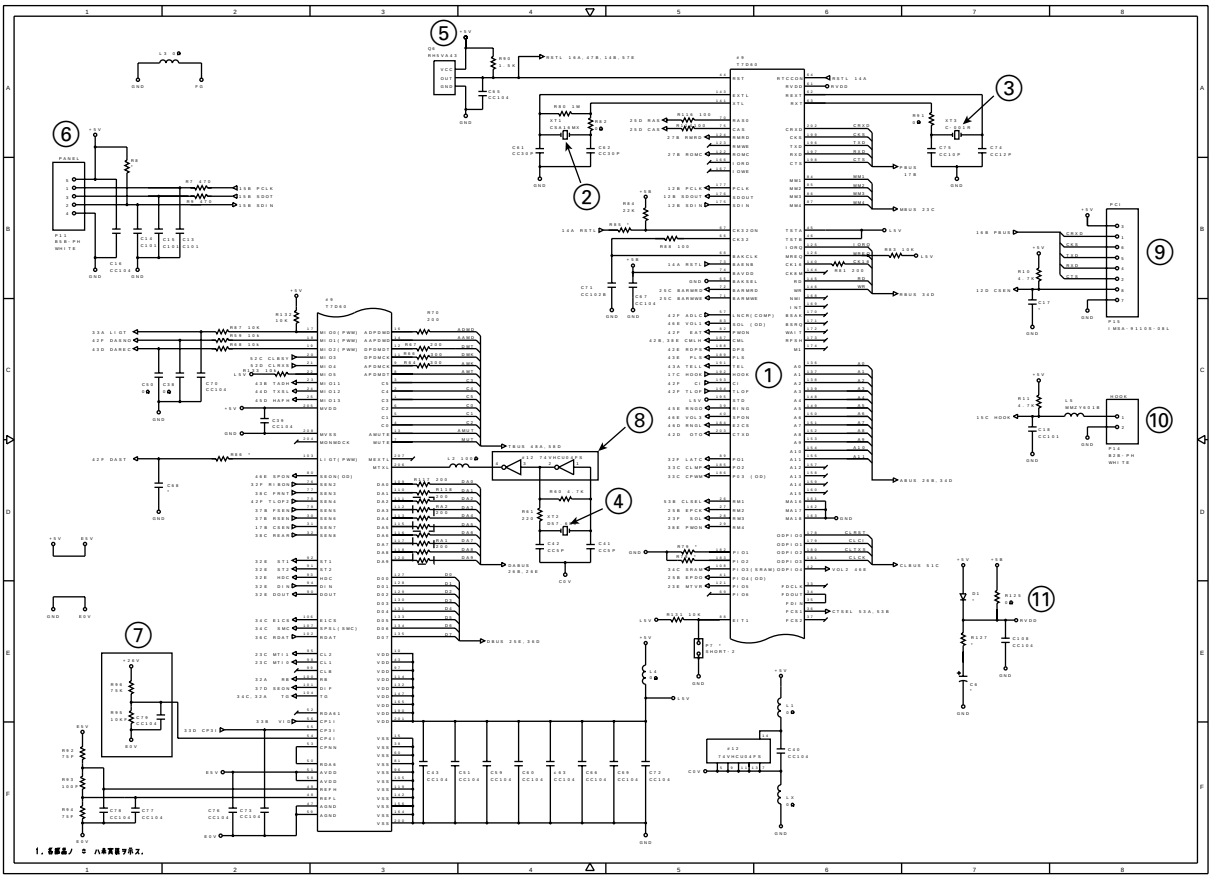


E^{2}PROM: Electrically Erasable Programmable Read-only Memory
DRAM: Dynamic Random Access Memory

** Not provided on the FAX1010 or those versions equipped with a Binatone handset

Block Diagram of Main PCB

On the following pages, the main PCB circuit diagrams are described on the basis of the FAX1570MC/1030/MFC1870MC/1970MC.



Main PCB Circuit Diagram 1/5

① FAX engine (ASIC) which integrates a CPU, digital portion of MODEM and gate array for managing the I/Os, memories, and drivers.

② XT1, oscillator for the CPU.

③ XT3, oscillator for the calendar clock.

④ XT2, oscillator for the MODEM.

⑤ Reset IC which turns on at the powering-on sequence and at any of the reset operations.

⑥ Connector for the control panel

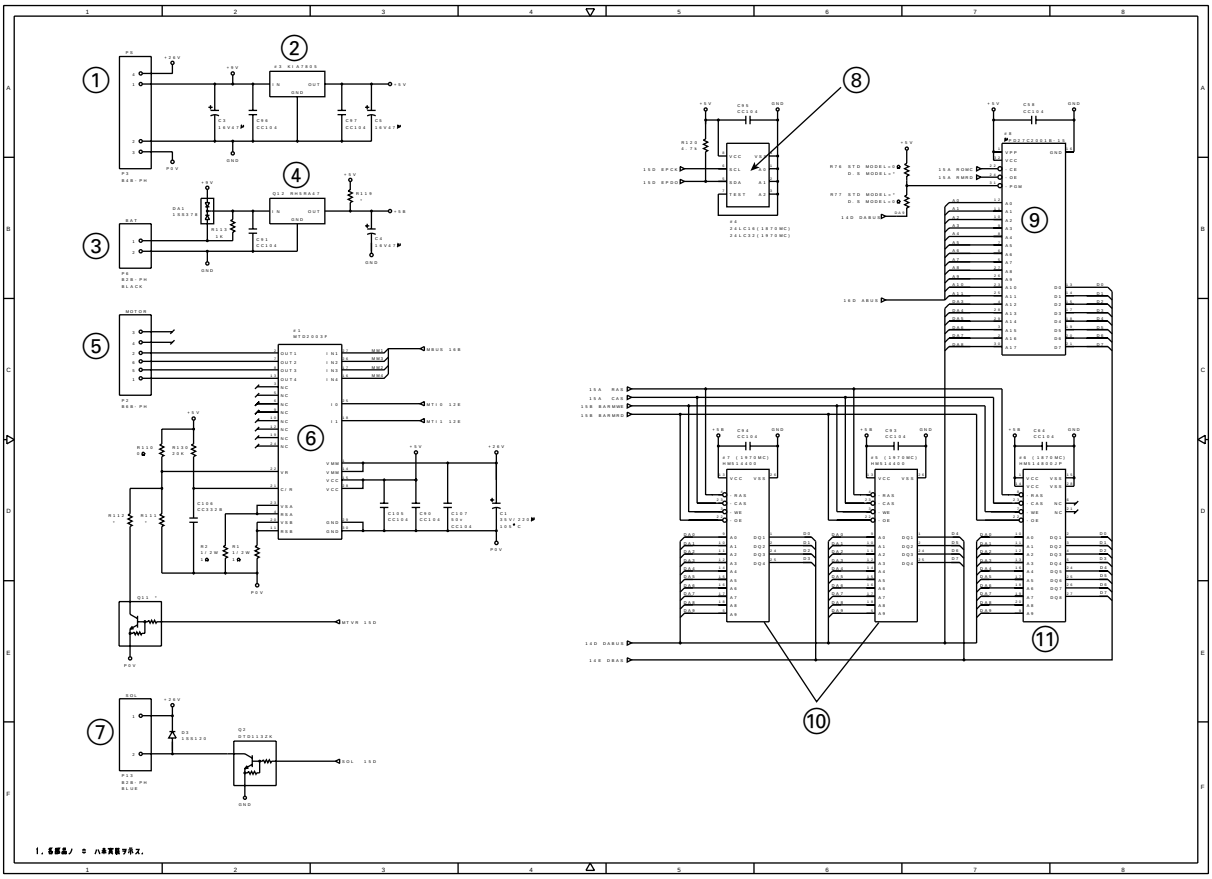
⑦ Recording head drive voltage detector

⑧ Inverters

⑨ Connector for the modular PCB

⑩ Connector for the hook switch PCB

⑪ Backup circuit for the calendar clock



Main PCB Circuit Diagram 2/5

① Connector for the power supply PCB which supplies 25V and 8V.

② 3-terminal regulator which eliminates unstabilized components of the +8V source to generate stabilized +5V source.

③ Connector for the Ni-MH battery which supplies approx. 5V.
(Provided on the FAX1570MC/1030/MFC1870MC/1970MC)

④ 3-terminal regulator which generates +5B source from +8V to back up the DRAM (that stores received data).
(Provided on the FAX1570MC/1030/MFC1870MC/1970MC)

⑤ Connector for the motor

⑥ Motor driver

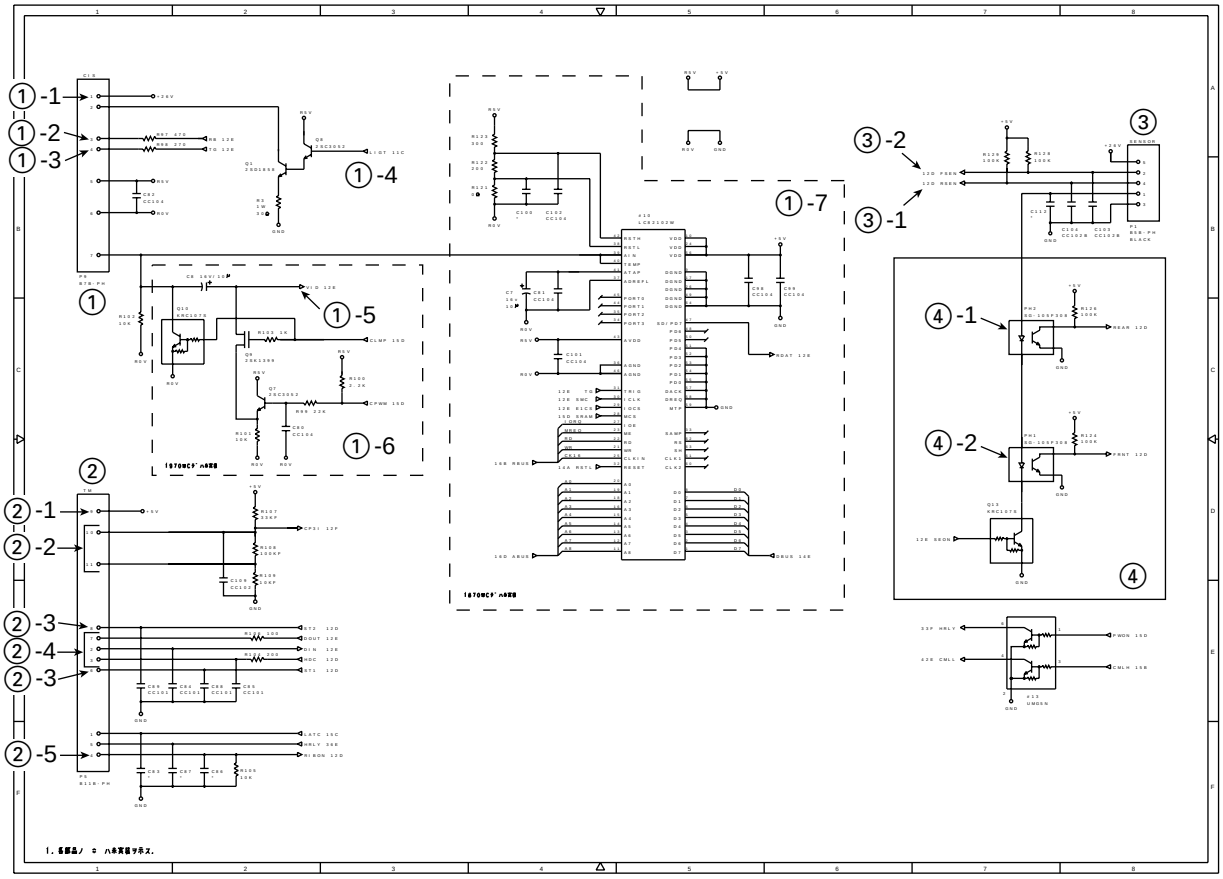
⑦ Connector for the clutch solenoid (that switches the power transmission).

⑧ E^2PROM (32-kilobit for the FAX1570MC/1030/MFC1970MC, 16-kilobit for other models.)

⑨ ROM (2-megabit. Note that the qualification machines for demonstration have a 4-megabit ROM.)

⑩ DRAMs (1-megabyte, two 4-megabit chips) provided on the FAX1570MC/1030/MFC1970MC.

⑪ DRAM (512-kilobyte) provided on the MFC1870MC. The FAX1170/1270/1010/1020/MFC1770 has its equivalent DRAM on location #7.



Main PCB Circuit Diagram 3/5

① Connector for the CIS

①-1: Power for the CIS LED array

①-2: Clock output

①-3: Trigger signal output. One shot of this signal triggers a line of scan.

①-4 LED control signal output circuit which controls the intensity of the CIS LED array.

①-5: Input of video data (VID) to the FAX engine

①-6: Clamp circuitry that gives the bias level to the amplifier of the VID input circuit according to the CLMP and CPWM signals issued by the CPU (that monitors the current video data input) for compensating the DC component of video signals for the next scan line.
Working with the FAX engine, this circuitry carries out the standard scanning. (This circuitry is provided on the FAX1170/1270/1010/1020/MFC1770/1870MC.)

①-7 SANYO LSI that carries out the high-quality scanning. (Provided on the FAX1570MC/1030/MFC1970MC)

② Connector for the thermal recording head

②-1: Power 5V for the thermal recording head

②-2: Thermister signals which are normalized by the resistor network and fed to the FAX engine

②-3: Strobe signals

②-4: Data signals

②-5: Ribbon sensor signal

③ Connector for the sensor PCB

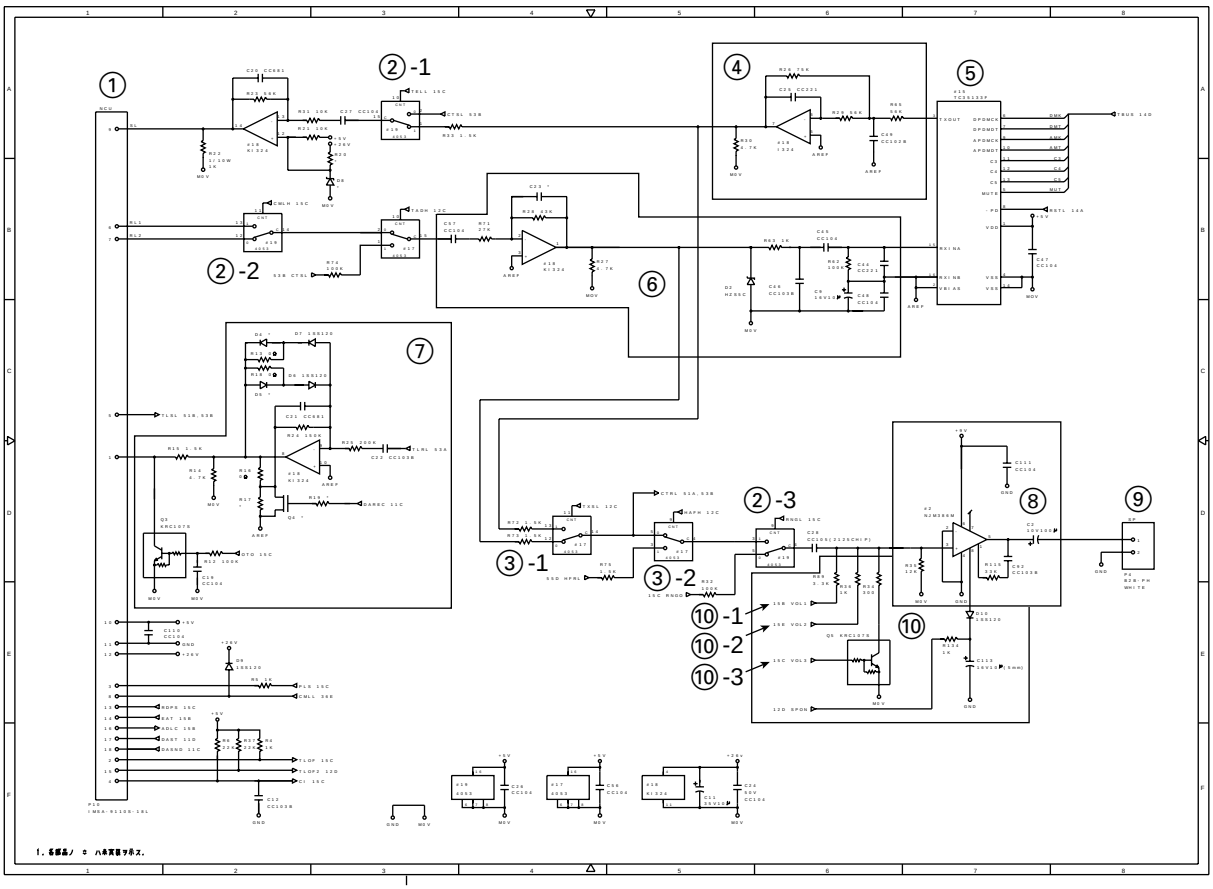
③-1: Paper-edge sensor signal

③-2: Paper ejection sensor signal

④ Document front and rear sensor circuitry that is active only while the SEON signal is on.

④-1:PH2, document rear sensor

④-2:PH1, document front sensor



Main PCB Circuit Diagram 4/5

① Connector for the NCU

② Analog signal selectors

②-1: Selects either input signals from the handset or those from the MODEM.

②-2: Selects either RL1 or RL2 signals inputted from the communications network.

②-3: Selects either sound signals (e.g., alarm beeps, key clicks and ringer sounds) generated by the FAX engine or signals selected by ②-2.

③ Voice switching analog selectors

③-1: Switches between the output line and input line for monitoring. When switched to the output line, this selector allows FAX sending operation to be monitored; when switched to the input line, it allows received voices to be monitored.

③-2: Selects either voice signals inputted from the communications network or recorded voice signals inputted from the microphone or handset through the MODEM.

④ Amplifier circuit for signals outputted from the MODEM.

⑤ Analog front end IC which processes the analog I/O signals from/to the MODEM.

⑥ Amplifier & shaper circuit for signals inputted from the communications network.

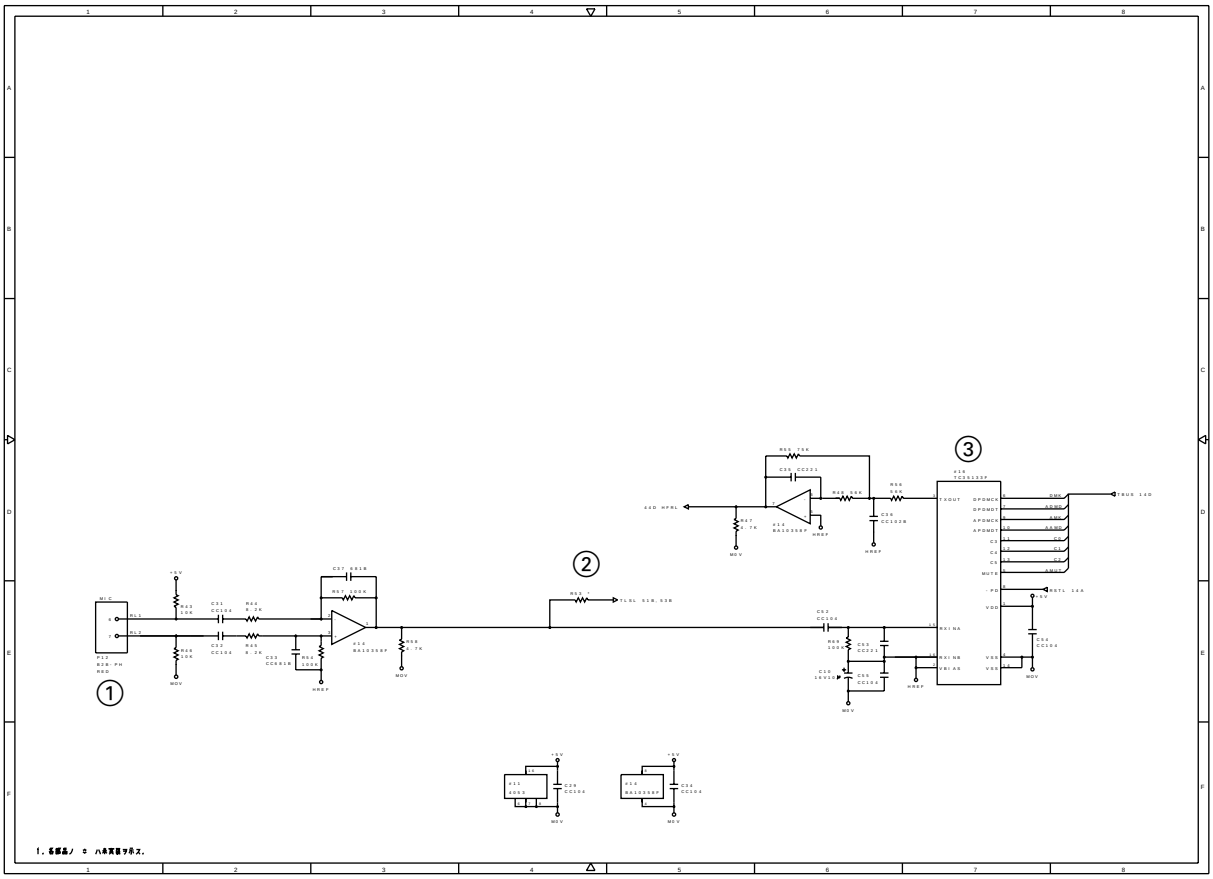
⑦ Telephone circuit for transmitting signals.

⑧ Speaker amplifier circuit which amplifies sounds issued from the above analog signal selector ②-3 and feeds them to the speaker.

⑨ Connector for the speaker

⑩ Speaker volume control circuit

⑩-1: VOL1	OFF	ON	ON	
⑩-2: VOL2	OFF	OFF	ON	
⑩-3: VOL3	OFF	OFF	ON	
Speaker volume	High	Medium	Low	(ON: Closed OFF: Opened)



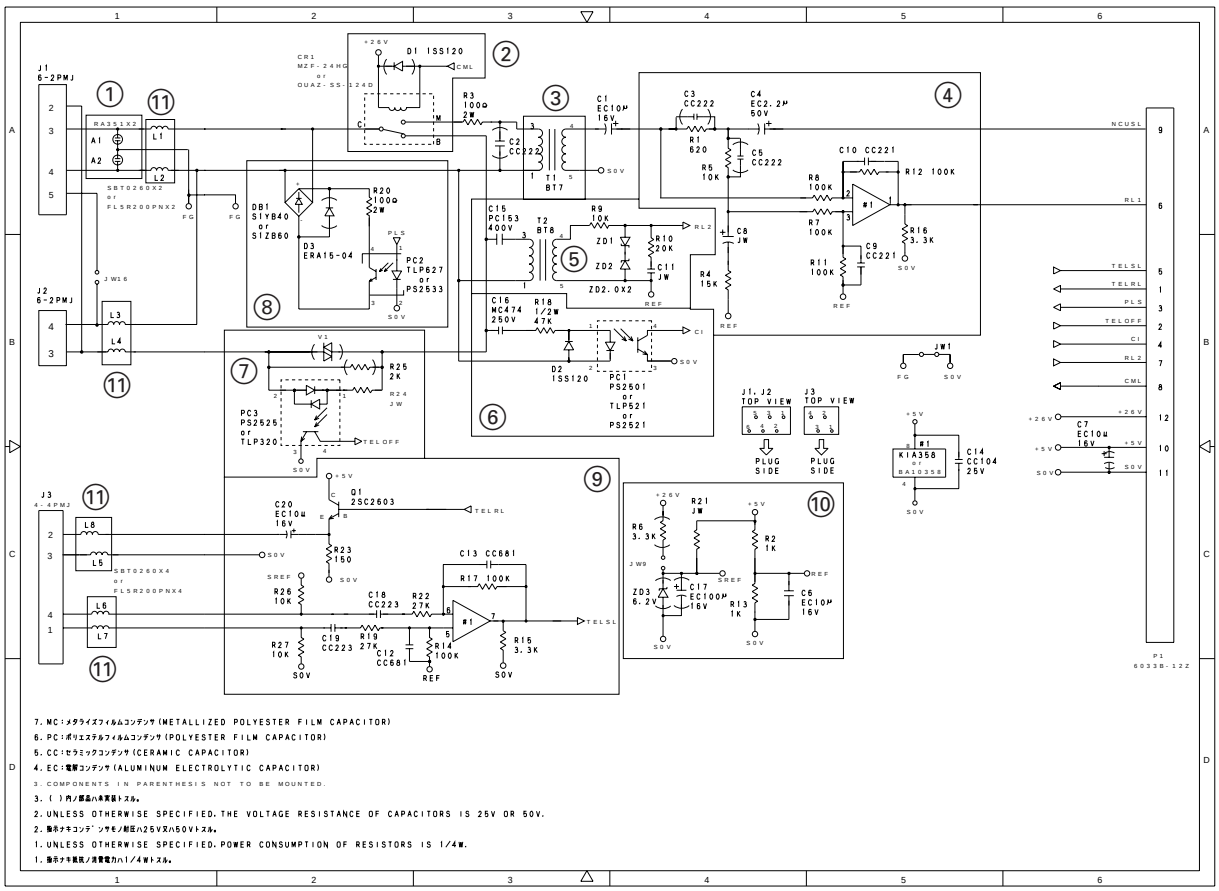
Main PCB Circuit Diagram 5/5

① Connector for the microphone
② Voice signal amplifier circuit
③ Analog portion of MODEM

} These are provided on the FAX1570MC/ 1030/MFC1870MC/1970MC.

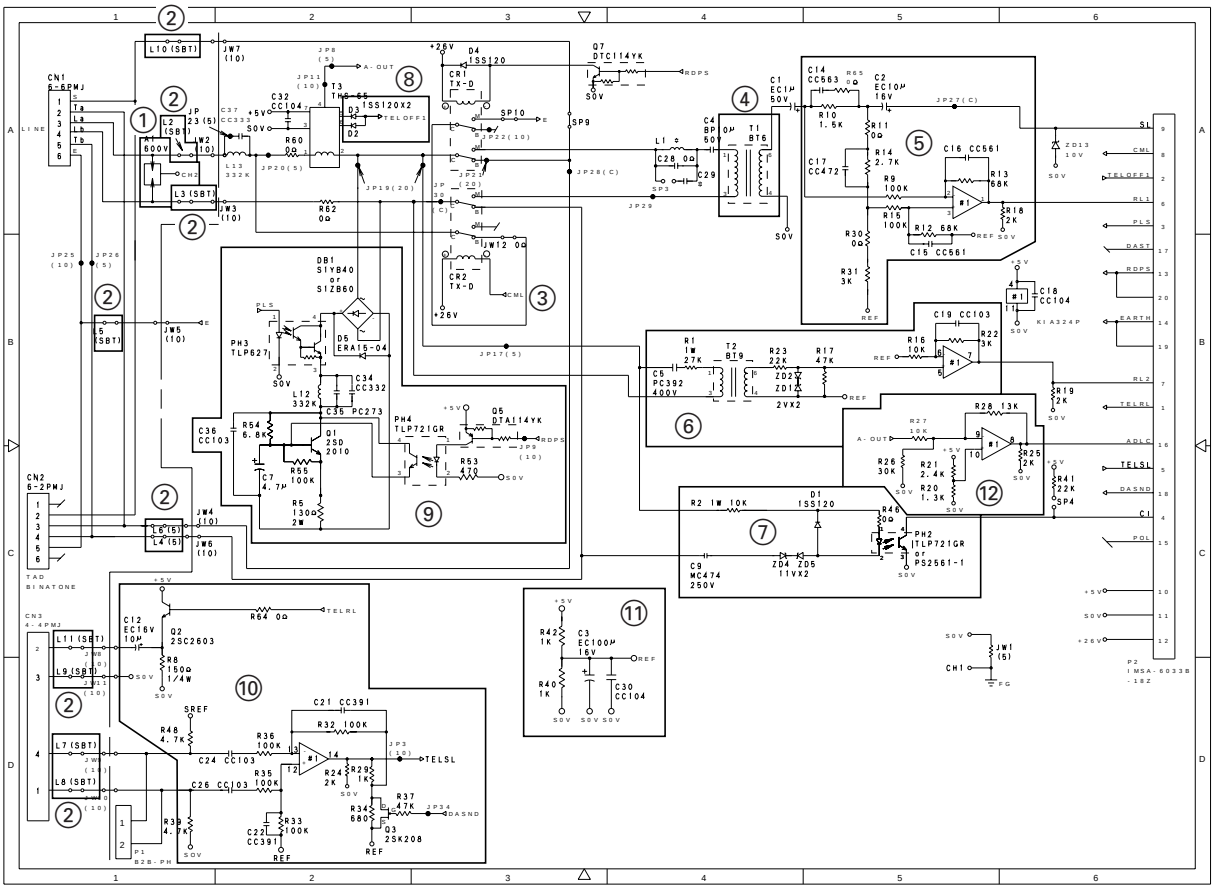
3.3 NCU PCB

The NCU PCB switches the communications line to telephone or built-in MODEM, under the control of the main PCB.



NCU PCB Circuit Diagram (U.S.A. versions)

① Surge absorbers
② Line relay (CML relay)
③ Line transformer
④ Circuit related to the line transformer
⑤ High-impedance transformer circuit
⑥ Calling signal detector
⑦ Loop current detector
⑧ Dial pulse generator
⑨ Telephone circuit
⑩ Reference voltage generation circuit for the operational amplifiers in ④ and ⑨
⑪ Noise filters (provided on the FAX1570MC/MFC1870MC/1970MC)



NCU PCB Circuit Diagram (European versions)

① Surge absorber
② Noise filters
③ Line relay (CML relay)
④ Line transformer
⑤ Circuit related to the line transformer
⑥ High-impedance transformer circuit
⑦ Calling signal detector
⑧ Loop current detector
⑨ Dial pulse generator & DC current loop circuit
⑩ Telephone circuit
⑪ Reference voltage generation circuit for the operational amplifier in ⑤.
⑫ Line current detection input circuit

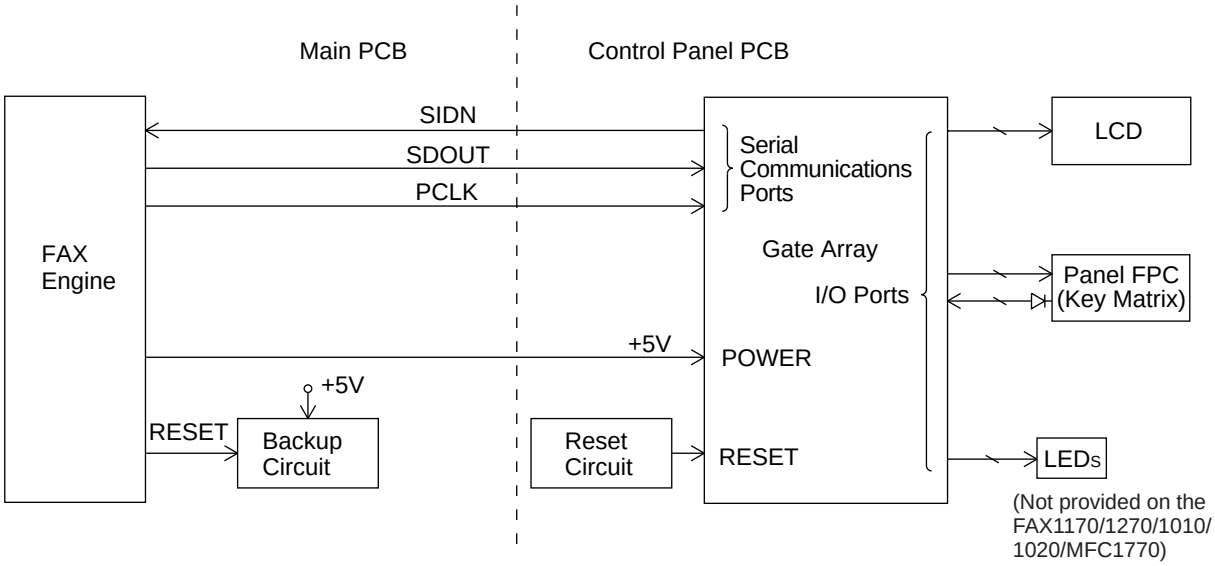
3.4 Control Panel PCB

The control panel PCB and the main PCB communicate with each other by serially transmitting commands and data.

The control panel unit consists of a gate array, an LCD and LEDs (not provided on the FAX1170/1270/1010/1020/MFC1770), which are controlled by the gate array according to commands issued from the FAX engine on the main PCB.

The calendar clock is backed up by the backup circuit on the main PCB.

The panel FPC is a flexible keyboard PCB which integrates the key matrix having rubber keytops.



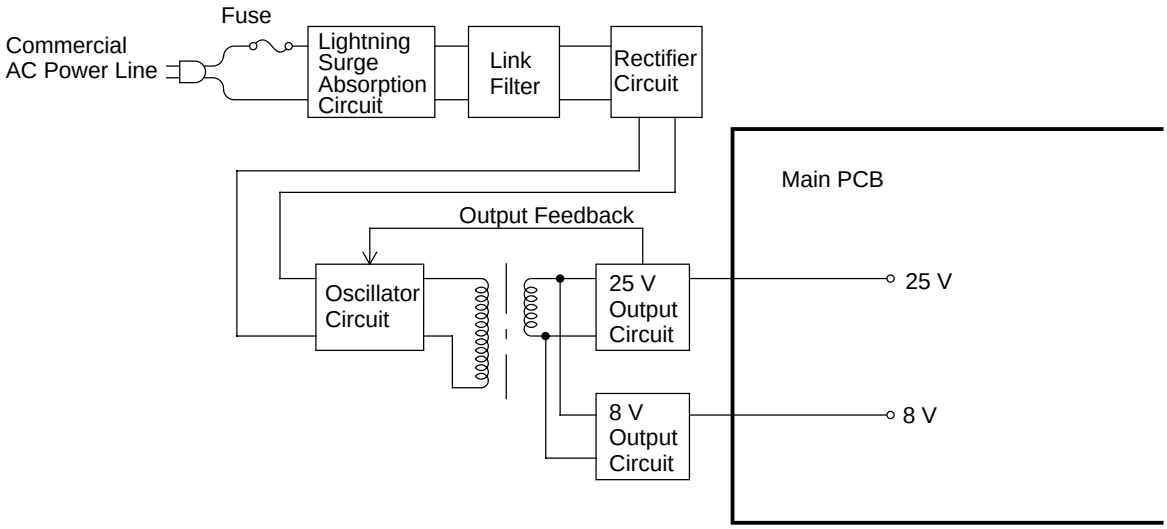
Control Panel PCB and its Related Circuit

3.5 Power Supply PCB

The power supply uses the switching regulation system to generate DC power (+25V and +8V) from a commercial AC power supply.

The +25V source is stabilized and fed to the motor and solenoid for feeding documents and recording paper, the main PCB, and also fed to the CIS LED array.

The +8V source is not stabilized and fed to the speaker. It is also fed to the main PCB where the 3-terminal regulator eliminates unstabilized components of the +8V source to generate stabilized +5V source. The +5V source is fed to the logic, control panel, recording head, and sensors.



Power Supply Circuit

CHAPTER IV.

DISASSEMBLY/REASSEMBLY AND LUBRICATION

CONTENTS

1. DISASSEMBLY/REASSEMBLY

■ Safety Precautions

To prevent the creation of secondary problems by mishandling, observe the following precautions during maintenance work.

(1) Always turn off the power before replacing parts or units. When having access to the power supply, be sure to unplug the power cord from the power outlet.

(2) Be careful not to lose screws, washers, or other parts removed for parts replacement.

(3) When using soldering irons and other heat-generating tools, take care not to damage the resin parts such as wires, PCBs, and covers.

(4) Before handling the PCBs, touch a metal portion of the equipment to discharge static electricity; otherwise, the electronic parts may be damaged due to the electricity charged in your body.

(5) When transporting PCBs, be sure to wrap them in conductive sheets such as aluminum foil.

(6) Be sure to reinsert self-tapping screws correctly, if removed.

(7) Tighten screws to the torque values listed on the next page.

(8) When connecting or disconnecting cable connectors, hold the connector bodies not the cables. If the connector has a lock, always slide the connector lock to unlock it.

(9) Before reassembly, apply the specified lubricant to the specified points. (Refer to Section 2 in this chapter.)

(10) After repairs, check not only the repaired portion but also that the connectors and other related portions function properly before operation checks.

Tightening Torque List

Location	Screw type	Q'ty	Tightening torque (kgf•cm)
Recording head ASSY	Screw, cup S 3x6	2	7 ±2
Recording paper cover ASSY	Taptite, cup S 3x8	2	7 ±2
Chute ASSY	Taptite, cup S 3x8	2	5 ±2
Paper feed chute	Taptite, cup S 3x8	2	5 ±2
Panel rear cover	Taptite, cup B 3x8	4	4 ±2
Inner cover	Taptite, cup S 3x8	4	5 ±2
CIS holders R and L	Taptite, cup B 3x8	2	4 ±1
Handset mount	Taptite, cup B 3x8	2	5 ±2
Bottom plate (main frame)	Screw, cup S 3x6	2	7 ±2
Main frame	Taptite, cup B 3x8	4	5 ±2
Motor	Screw, pan (washer) 3x6DB	1	7 ±2
Friction holder (Friction torque transmission ASSY)	Screw, cup S 3x6	1	7 ±2
Bottom plate	Taptite, cup B 3x8	6	5 ±2

■ Preparation

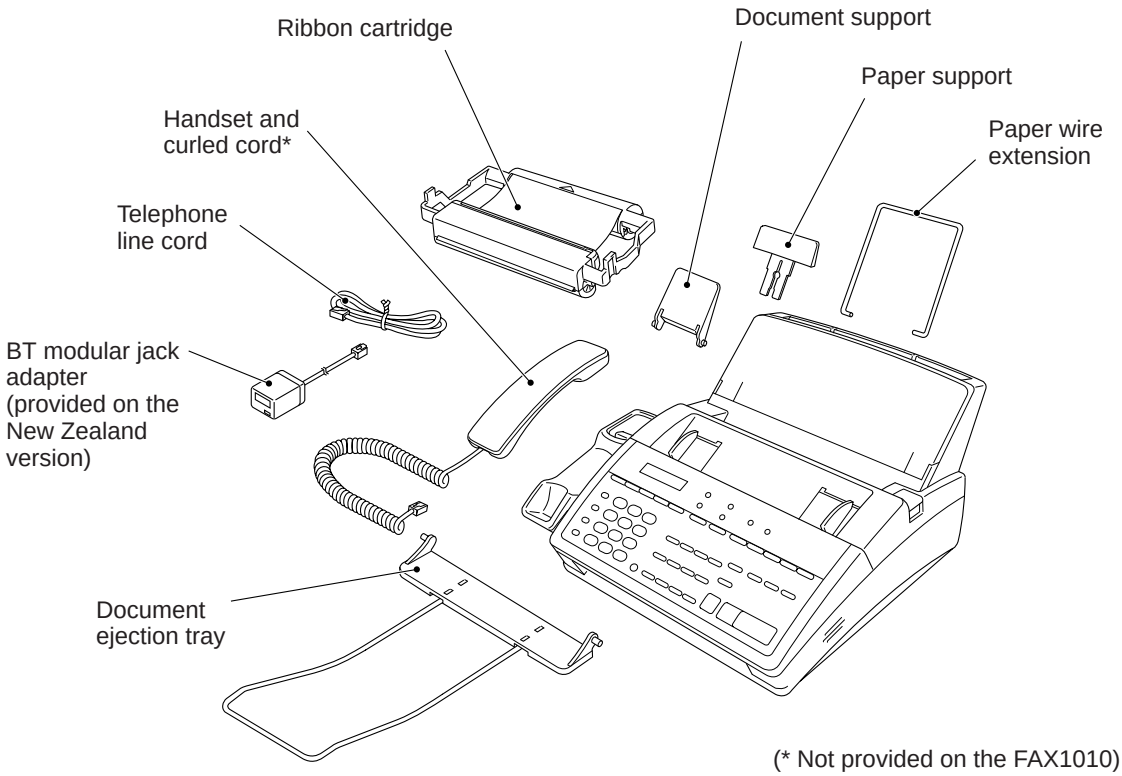
Prior to proceeding to the disassembly procedure,

(1) Unplug

- the modular jack of the telephone line,
- the modular jack of the curled cord (and remove the handset),
- the BT modular jack adapter if mounted, and
- the modular jack of an external telephone set if mounted. (Not shown below.)

(2) Remove

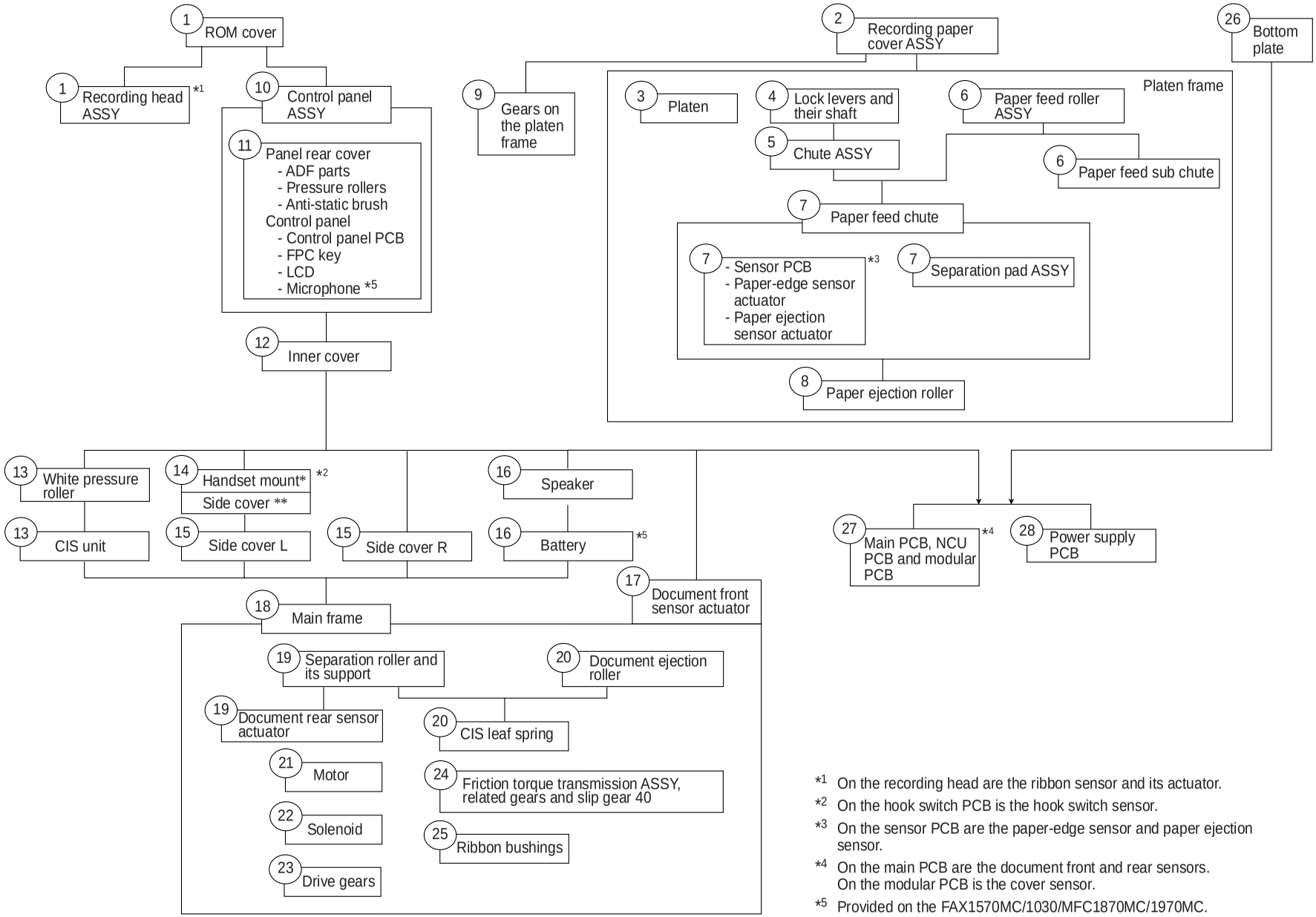
- the paper wire extension,
- the paper support,
- the document support,
- the document ejection tray, and
- the ribbon cartridge.



(* Not provided on the FAX1010)

■ How to Access the Object Component

- On the next page is a disassembly order flow which helps you access the object component. To remove the separation roller, for example, first find it on the flow and learn its number (⑲ in this case). You need to remove parts numbered ①, ⑩, ⑫, ⑬, ⑭, ⑮, ⑯, ⑰, and ⑱ so as to access the separation roller.
- Unless otherwise specified, the disassembled parts or components should be reassembled in the reverse order of removal.

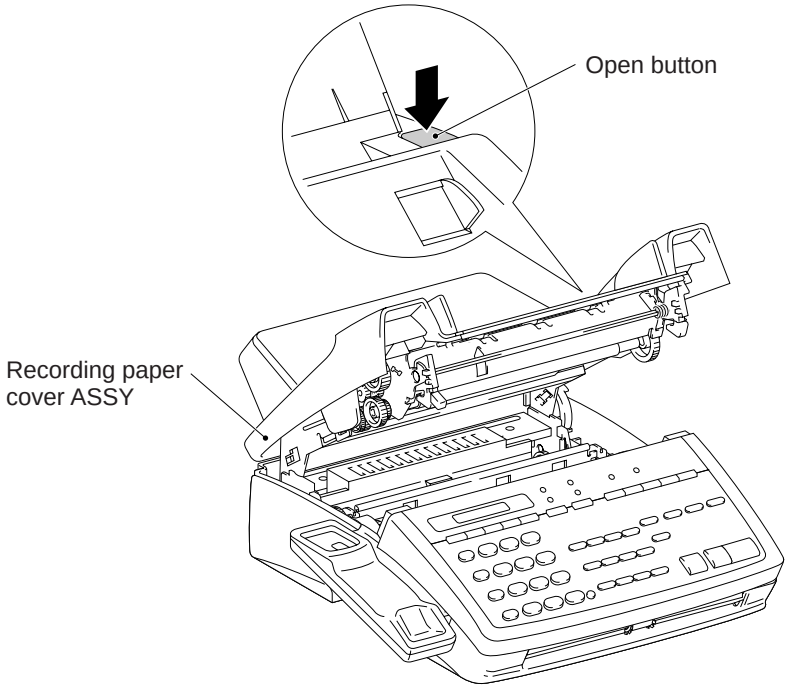


* For models except the FAX1010
**For the FAX1010

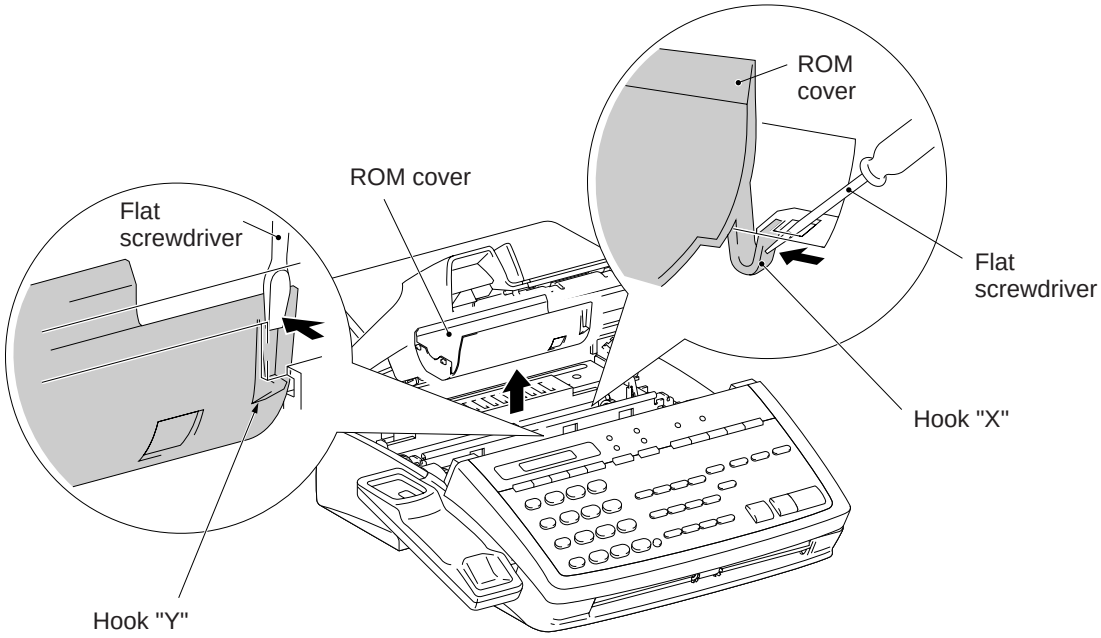
*1 On the recording head are the ribbon sensor and its actuator.
*2 On the hook switch PCB is the hook switch sensor.
*3 On the sensor PCB are the paper-edge sensor and paper ejection sensor.
*4 On the main PCB are the document front and rear sensors. On the modular PCB is the cover sensor.
*5 Provided on the FAX1570MC/1030/MFC1870MC/1970MC.

1.1 Recording Head ASSY

(1) Push the open button and fully open the recording paper cover ASSY.



(2) As shown below, insert the tip of a flat screwdriver into the square hole and release the hook "x" of the ROM cover, lift up the ROM cover slightly, and then release the hook "y" to take out the ROM cover.



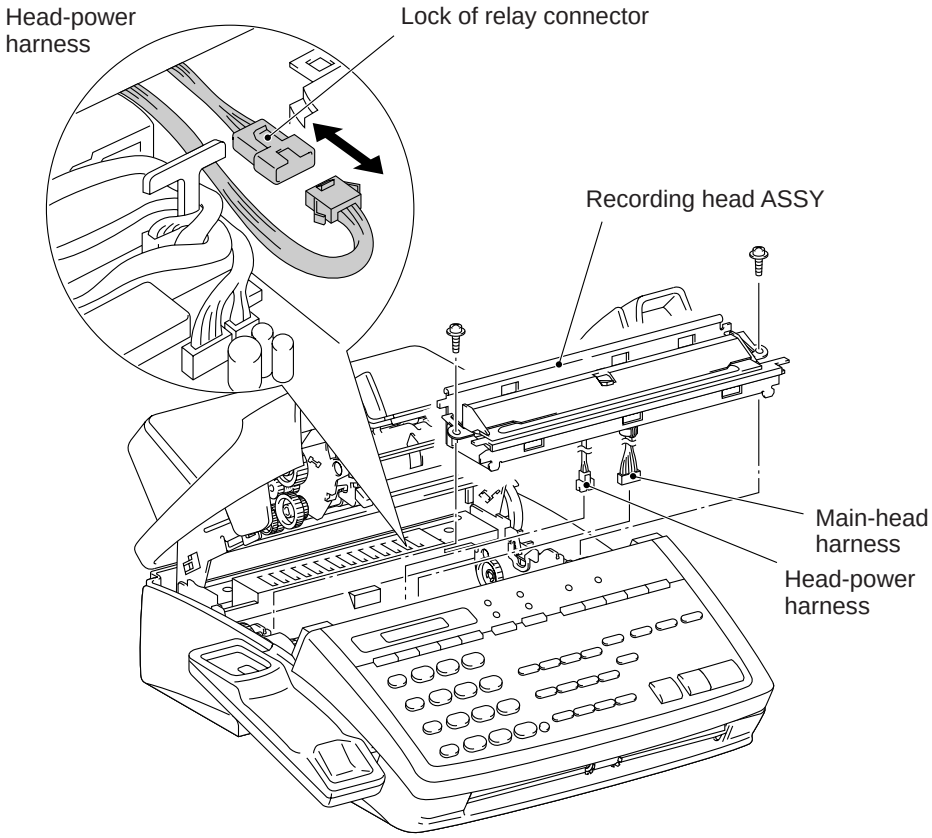
(3) Remove the two screws from the recording head ASSY.

(4) Disconnect the relay connector of the head-power harness.

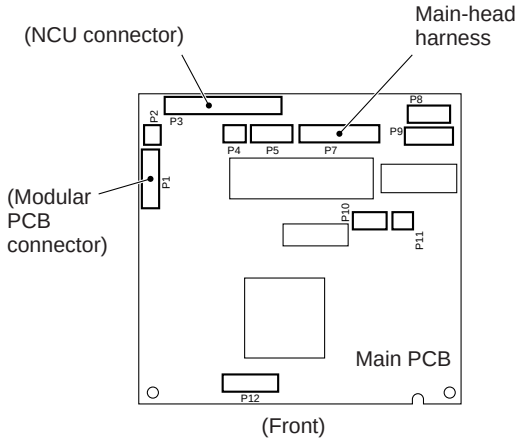
NOTE: To disconnect the relay connector, push the lock of the relay connector to release.

(5) Disconnect the main-head harness from the main PCB.

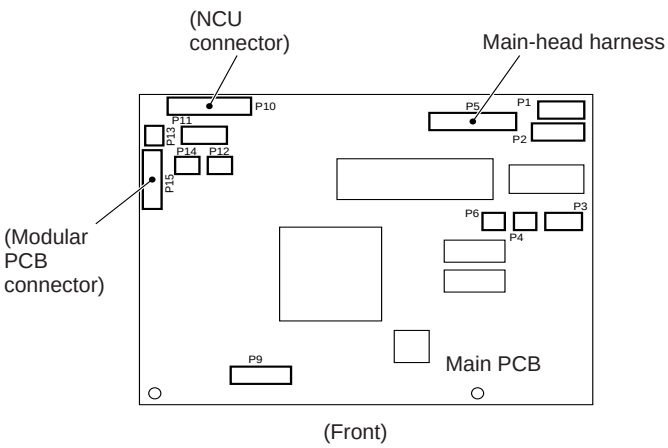
(6) Lift up the recording head ASSY.



FAX1170/1270/1010/1020/MFC1770



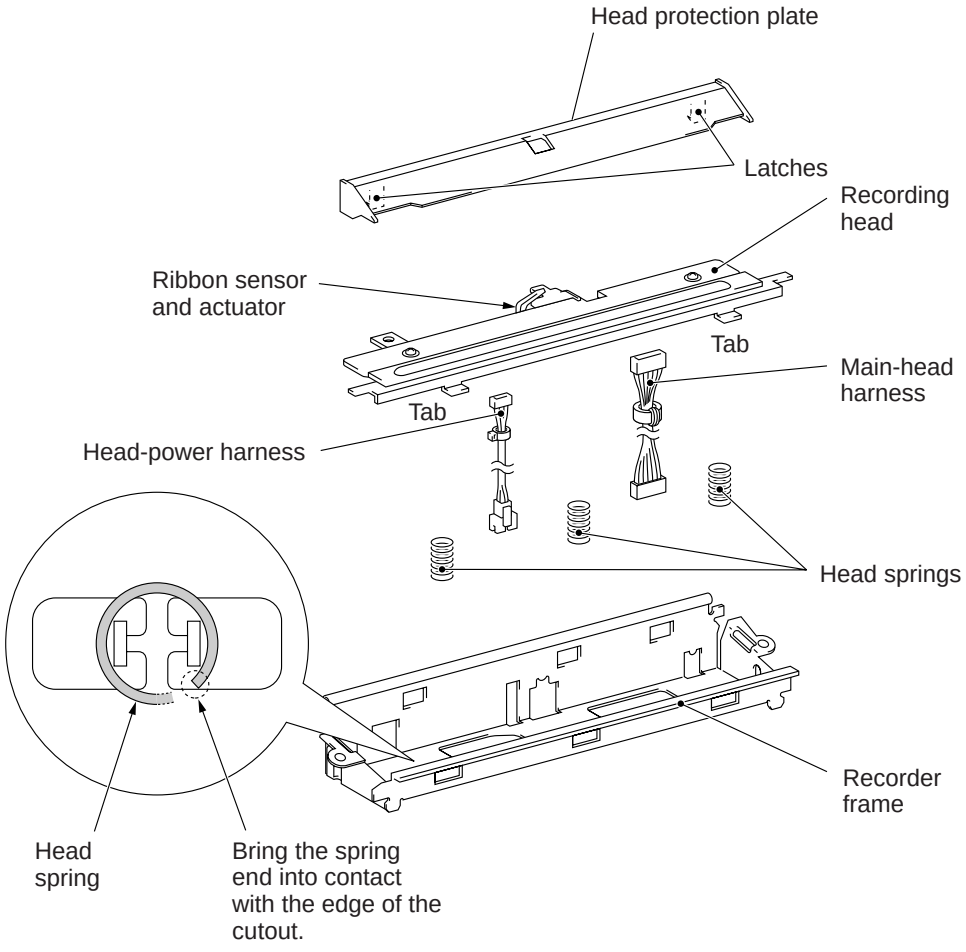
FAX1570MC/1030/MFC1870MC/1970MC



(7) To disassemble the recording head ASSY, follow the steps below.

1) Remove the head protection plate by unhooking the two latches.
2) Turn the recording head ASSY upside down and release the head-power harness from the adhesive tape.
3) Place the recording head ASSY rightside up.
4) Push down both ends of the recording head and move it to the rear to release the tabs from the cutouts provided in the recorder frame as shown below.

NOTE: Take care not to lose the three springs placed under the recording head.



■ Reassembling Notes

- When reinstalling the recording head, make sure that the three head springs are set into place; that is, each spring end is in contact with the edge of the cutout as illustrated above.
- Be sure to tape the head-power harness onto the bottom of the recorder frame.
- When reinstalling the recording head ASSY, put the two harnesses under the center beam of the main frame as shown in Section 1.29.
- After installation, check the routing of the main-head harness and head-power harness, referring to Section 1.29.

1.2 Recording Paper Cover ASSY

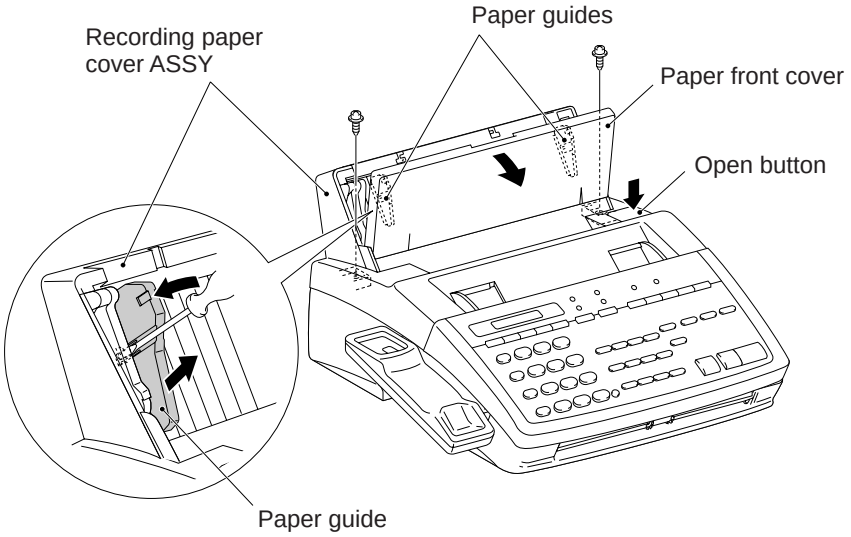
(1) Pull the paper front cover towards you.

(2) To remove the A4 paper guides, insert the tip of a flat screwdriver as shown below and twist it to release two latches of each paper guide from the recording paper cover.

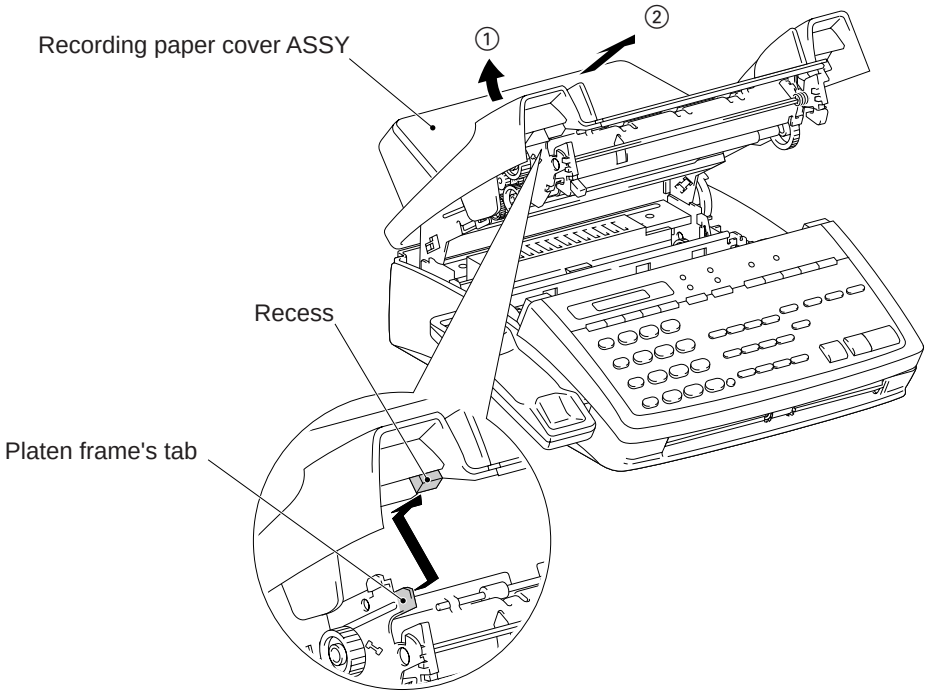
NOTE: Once removed, those paper guides will become unusable and new parts will have to be put back in.

(3) Remove the two screws.

(4) Push the open button and open the recording paper cover ASSY.



(5) Lift up the rear of the recording paper cover ASSY and take it out to the front.



■ Reassembling Notes

- When reinstalling the recording paper cover ASSY, first fit the recesses provided on the right and left insides of the recording paper cover ASSY over the tabs of the platen frame, and then put the rear of the recording paper cover ASSY into place.

1.3 Platen

(1) At the left end of the platen, remove the platen gear (Gear 23) by pulling its pawl outwards and then remove the bushing.

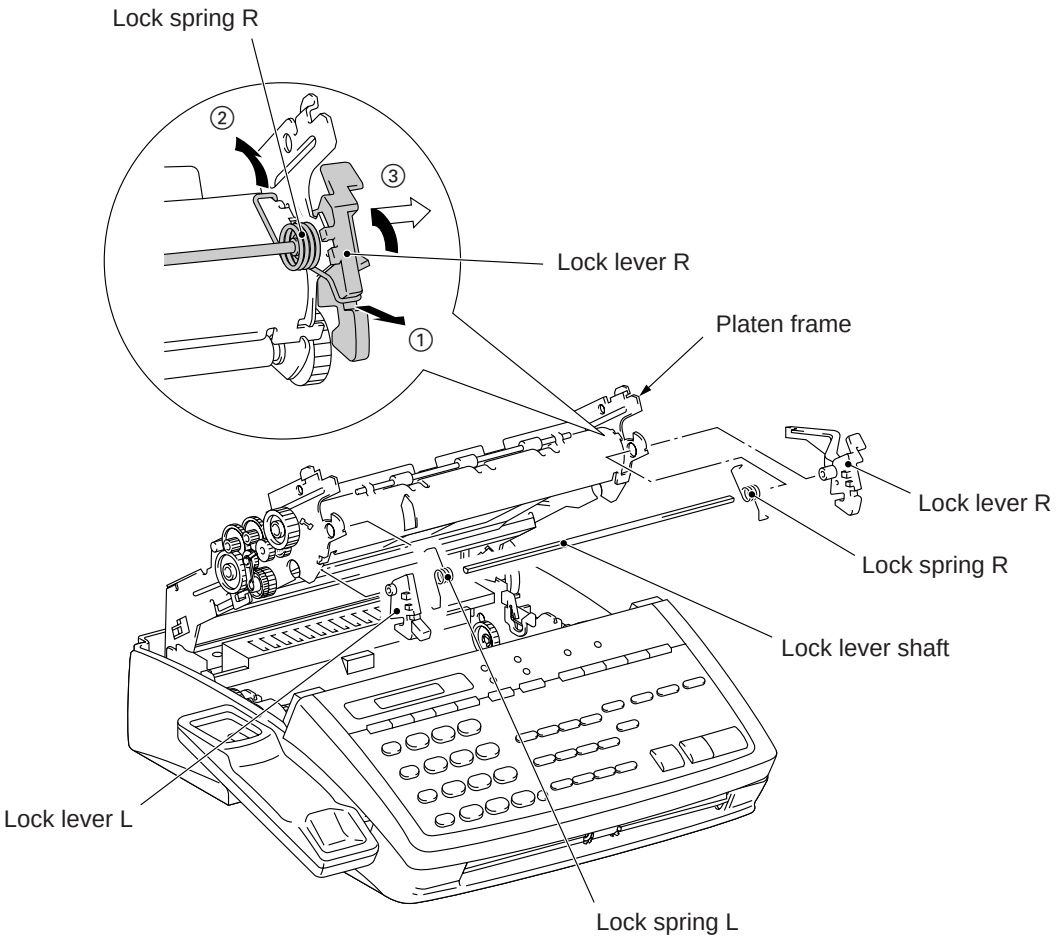
(2) At the right end, remove the gear 33RB by pulling its pawl outwards and then remove the bushing.

(3) Move the platen to the left to take out the right end from the platen frame and then take it out to the right.

1.4 Lock Levers and Their Shaft

(1) At each end of the lock lever shaft, release the lock spring from the lock lever and the platen frame.

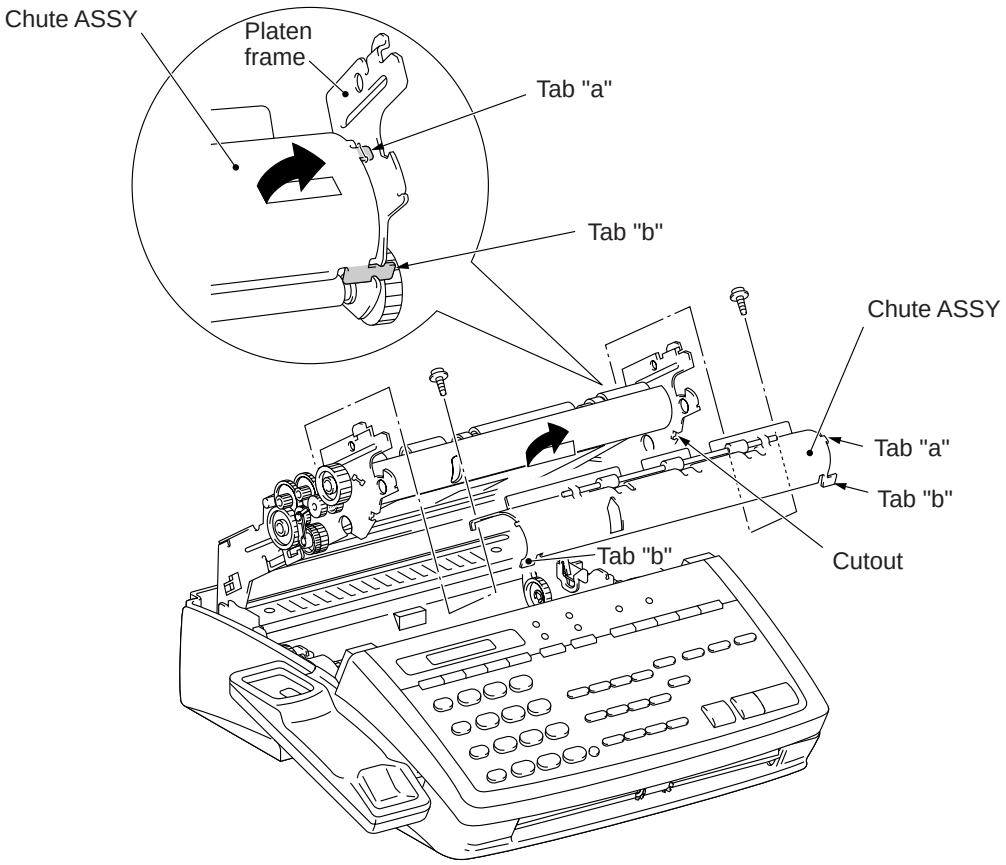
(2) Turn the lock lever R clockwise (when viewed from the right side) and pull it out from the shaft. Then, the lock lever L, lock springs, and lock lever shaft also come off.



1.5 Chute ASSY

(1) Remove the two screws.

(2) Move the chute ASSY to the left to release tab "a" from the platen frame, pull the chute ASSY towards you, and take it out.

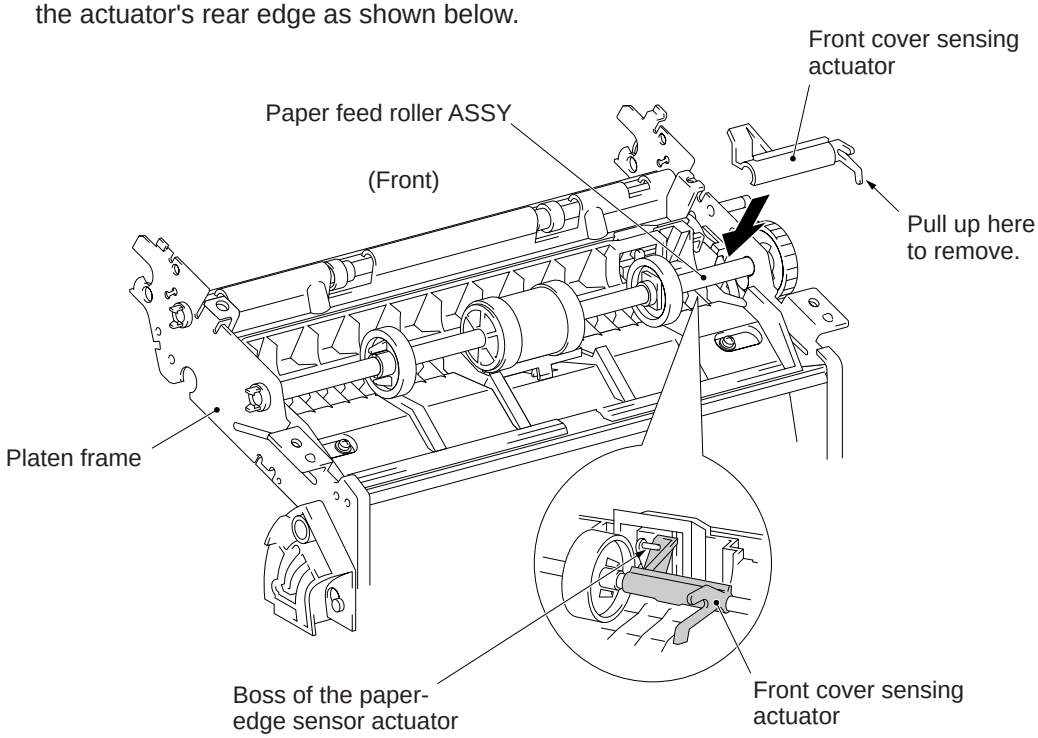


■ **Reassembling Notes**

- First fit tabs "b" provided on the chute ASSY into the cutouts in the platen frame, turn the chute ASSY to the rear, and then move it to the right.

1.6 Paper Feed Roller ASSY and Paper Feed Sub Chute

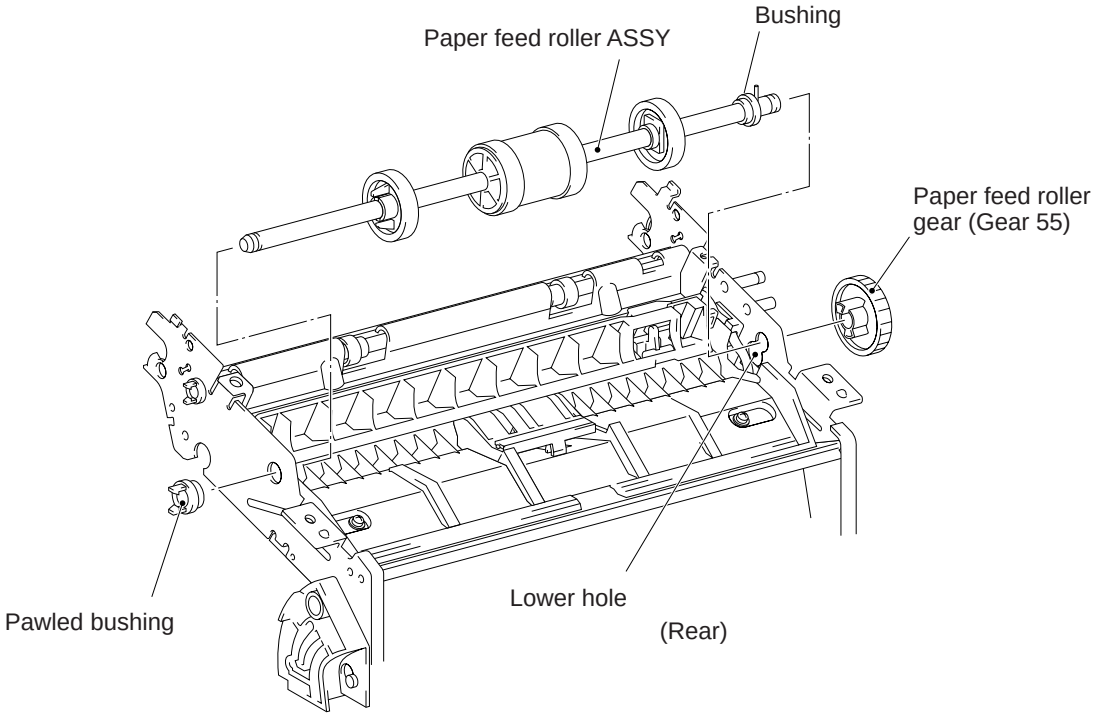
(1) Remove the front cover sensing actuator from the paper feed roller shaft by pulling up the actuator's rear edge as shown below.



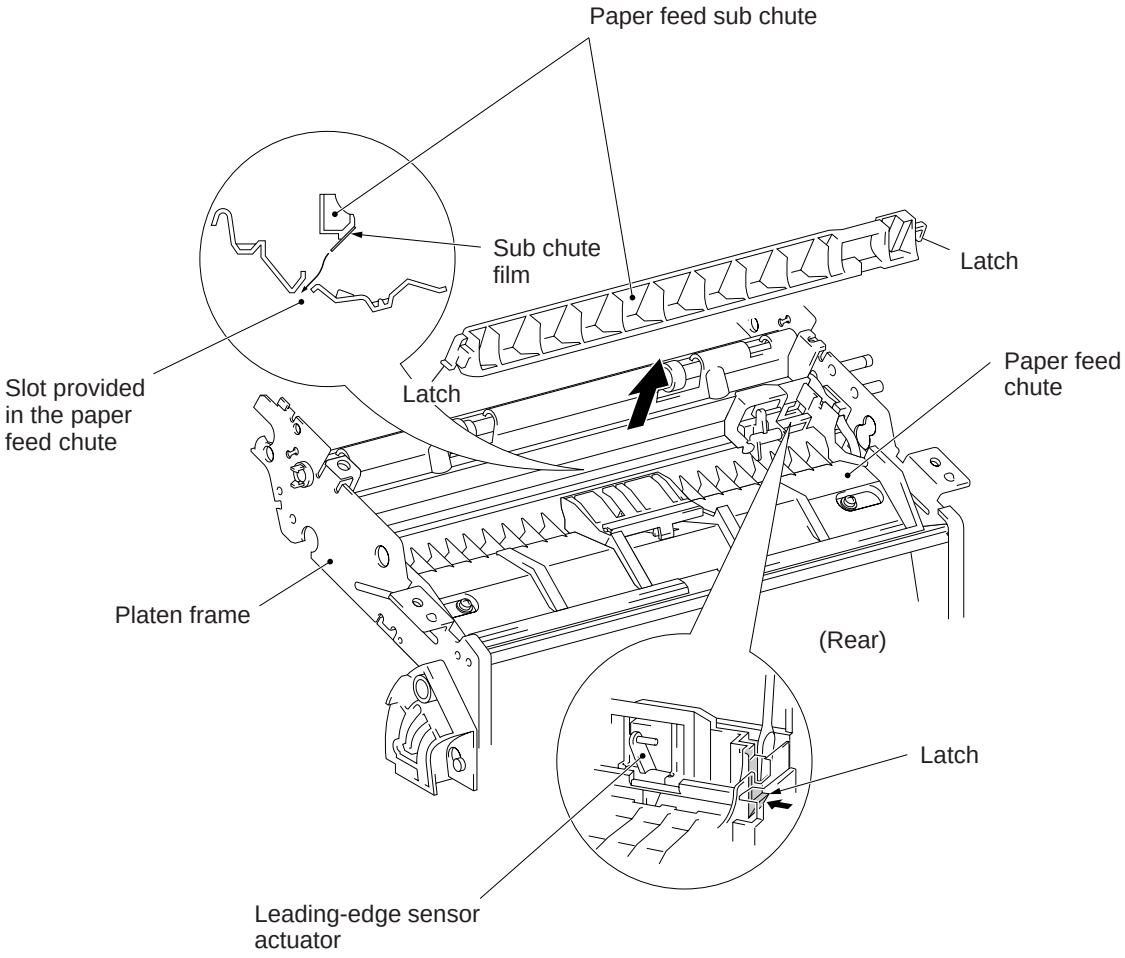
(2) At the left end of the paper feed roller ASSY (when viewed from the rear), remove the bushing by pulling its pawls outwards.

(3) At the right end, remove the paper feed roller gear (Gear 55) by pulling its pawl outwards.

Next, pull the paper feed roller shaft to the right until the left end of the shaft comes out of the main frame and then tilt the shaft to the right so that the bushing-fixed end can pass through the lower hole, and take it out to the left.



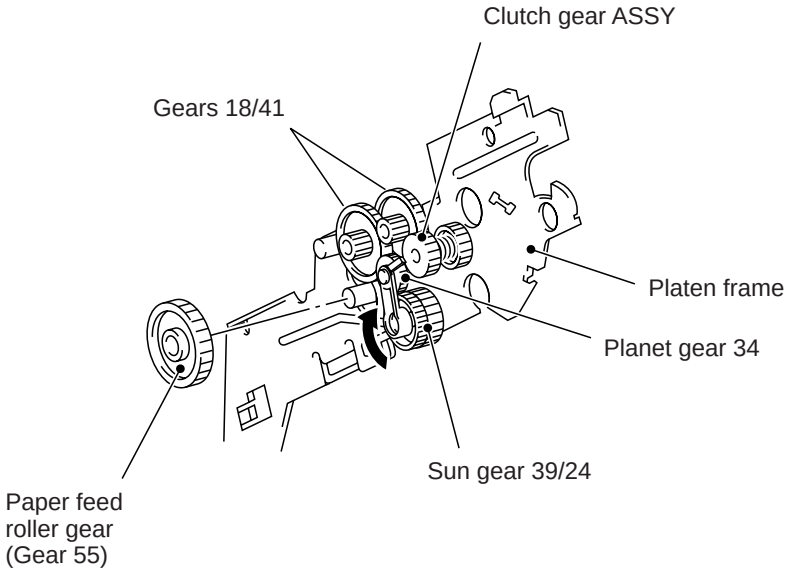
(4) At the either end of the paper feed sub chute, release the latch from the paper feed chute with a flat screwdriver as illustrated below, and then pull up the paper feed sub chute.



■ **Reassembling Notes**

- When setting the paper feed sub chute, push the paper-edge sensor actuator into the home position.
- Set the paper feed sub chute so that the sub chute film comes into the slot provided in the paper feed chute.

- When setting the paper feed roller ASSY at the left side of the platen frame, turn up the planet gear 34 of the arm P ASSY so that the planet gear 34 comes above the sun gear 39/24 and becomes engaged with the paper feed roller gear (Gear 55), as illustrated below.



- When setting the front cover sensing actuator onto the paper feed roller shaft, make sure that it supports the boss of the paper-edge sensor actuator as shown on the previous page.

1.7 Paper Feed Chute, Sensor PCB, and Paper-edge and Paper Ejection Sensor Actuators

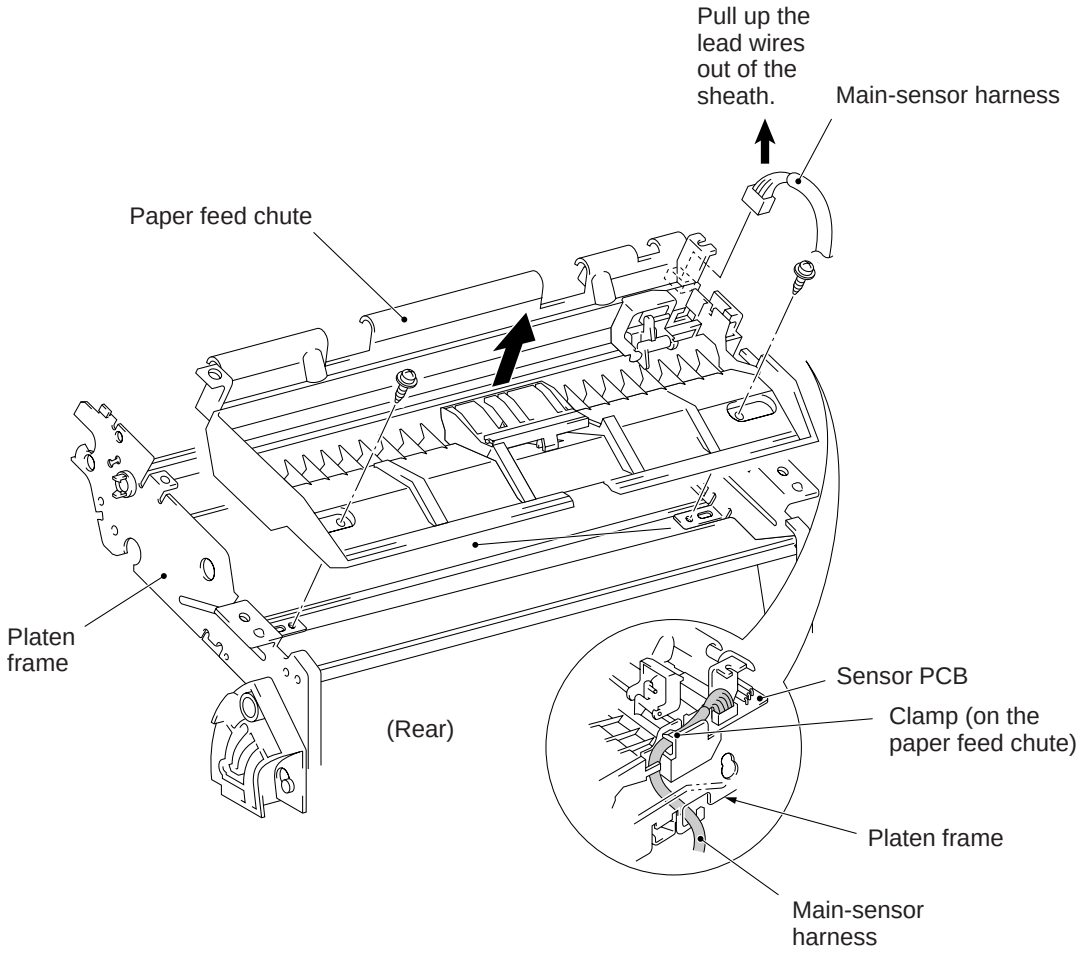
(1) Remove the two screws.

(2) Remove the sensor PCB by releasing the two latches.

(3) Disconnect the main-sensor harness from the sensor PCB.

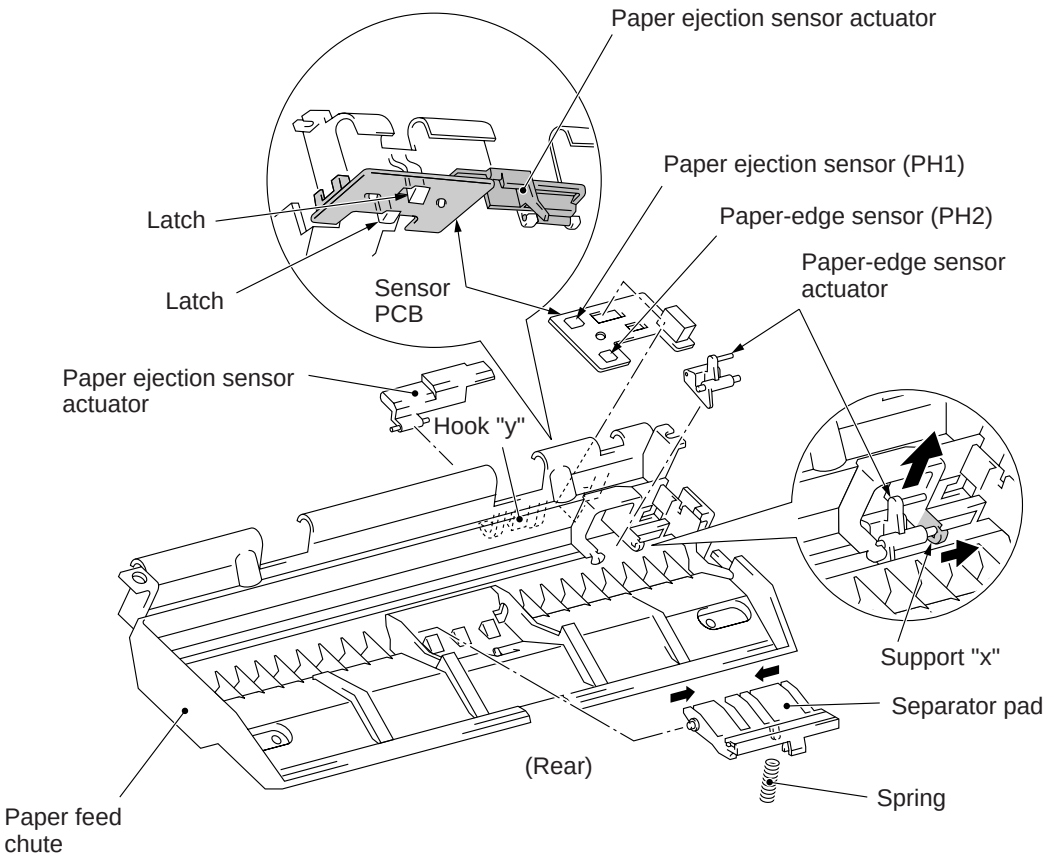
(4) Pull up the lead wires of the main-sensor harness out of the sheath, and then take out those wires (not the sheathed section) from the clamp of the paper feed chute.

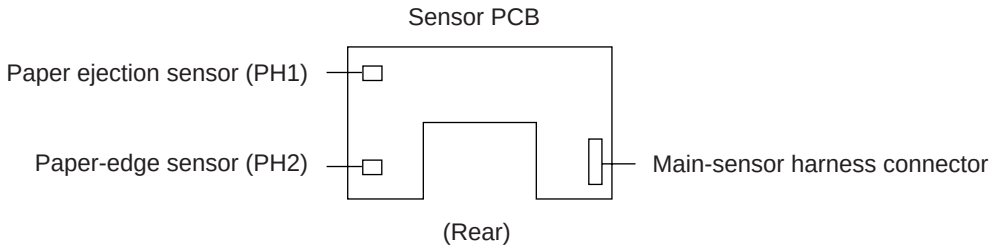
(5) Take out the paper feed chute.



(6) Remove the paper-edge sensor actuator by pulling the support "x" outwards.

(7) Remove the paper ejection sensor actuator by pushing the hook "y" from the rear of the paper feed chute.





(8) Pull up the separator pad while squeezing it to the right or left. The spring also comes off.

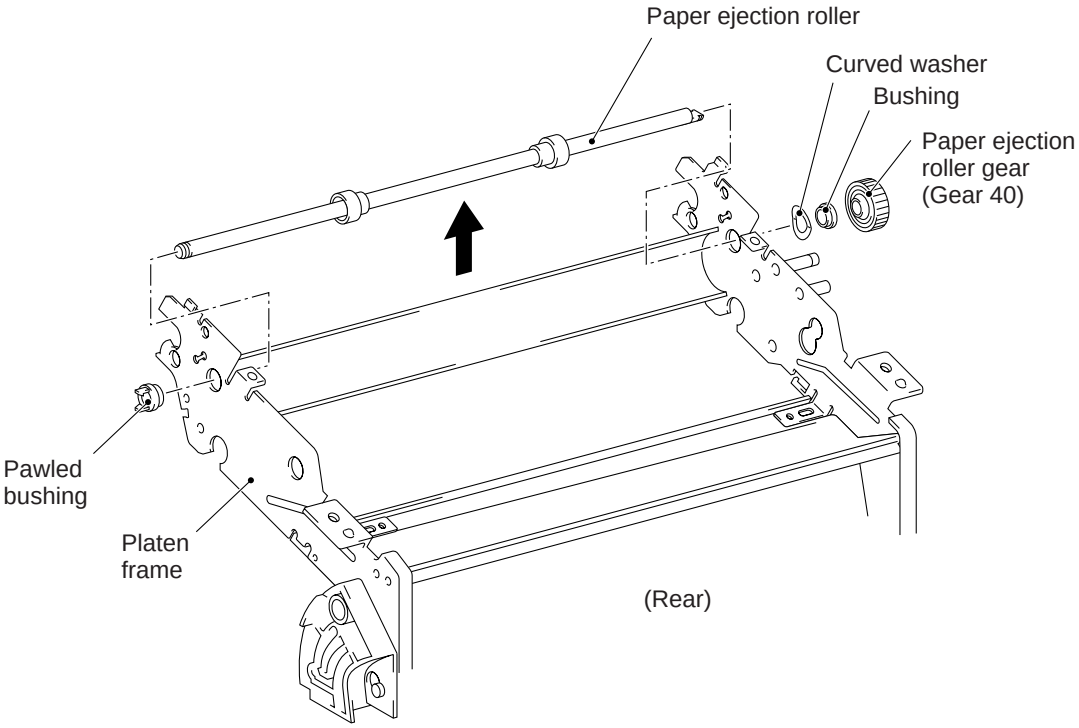
■ Reassembling Notes

- Make sure that the paper ejection sensor actuator is set on the sensor PCB.
- As illustrated on the previous page, route the main-sensor harness through the cutout of the platen frame. When routing it through the clamp of the paper feed chute, first put the lead wires only into the clamp and then pull up the vinyl sheath.

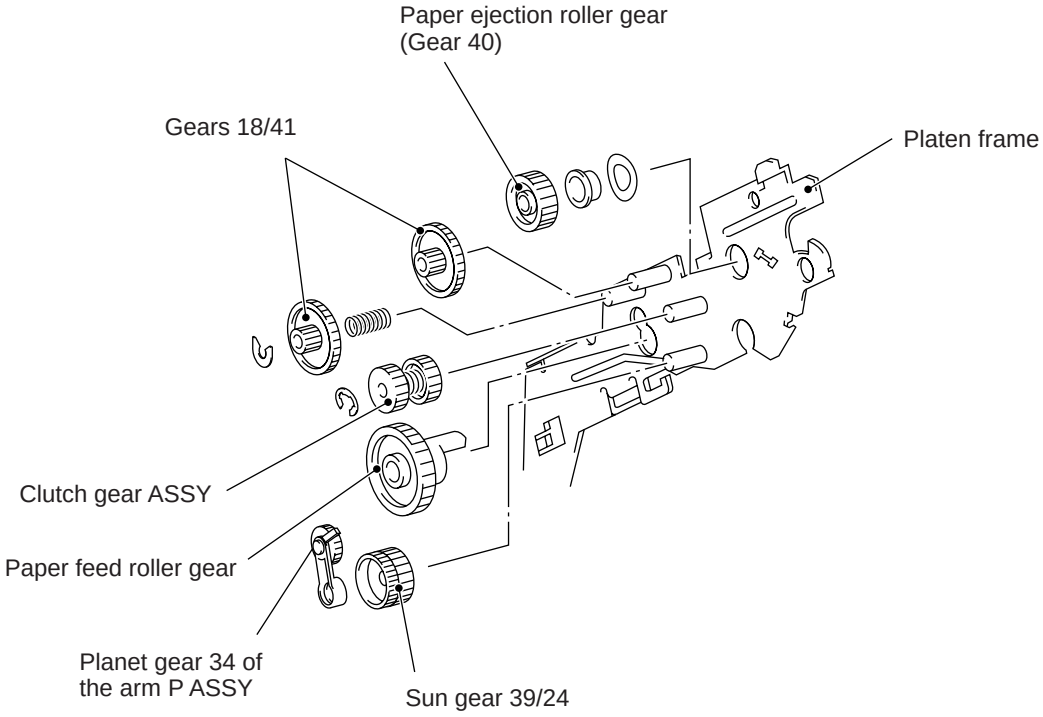
1.8 Paper Ejection Roller

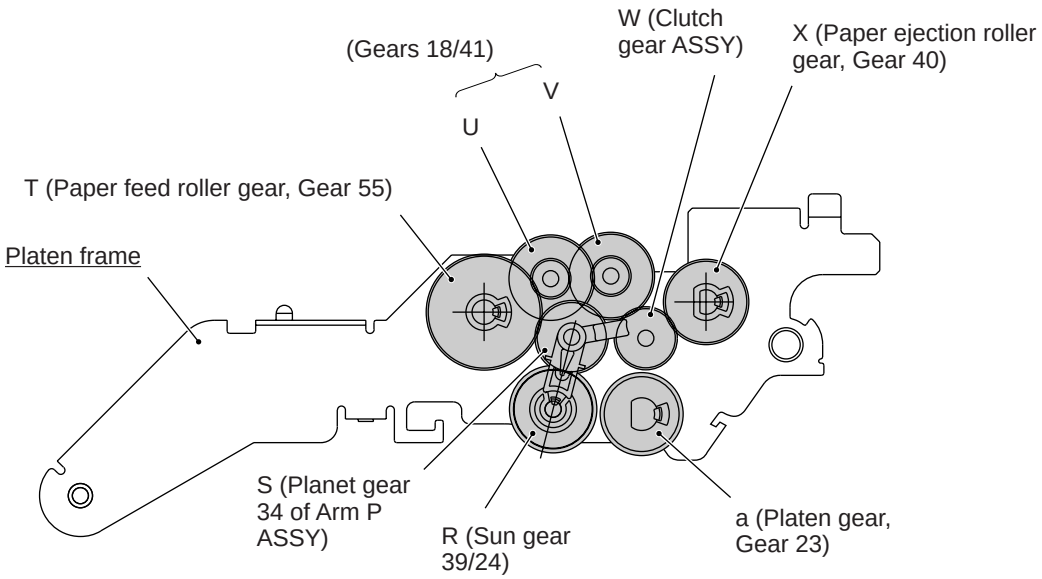
(1) At the left end of the paper ejection roller (when viewed from the rear), remove the bushing by pulling its pawls outwards.

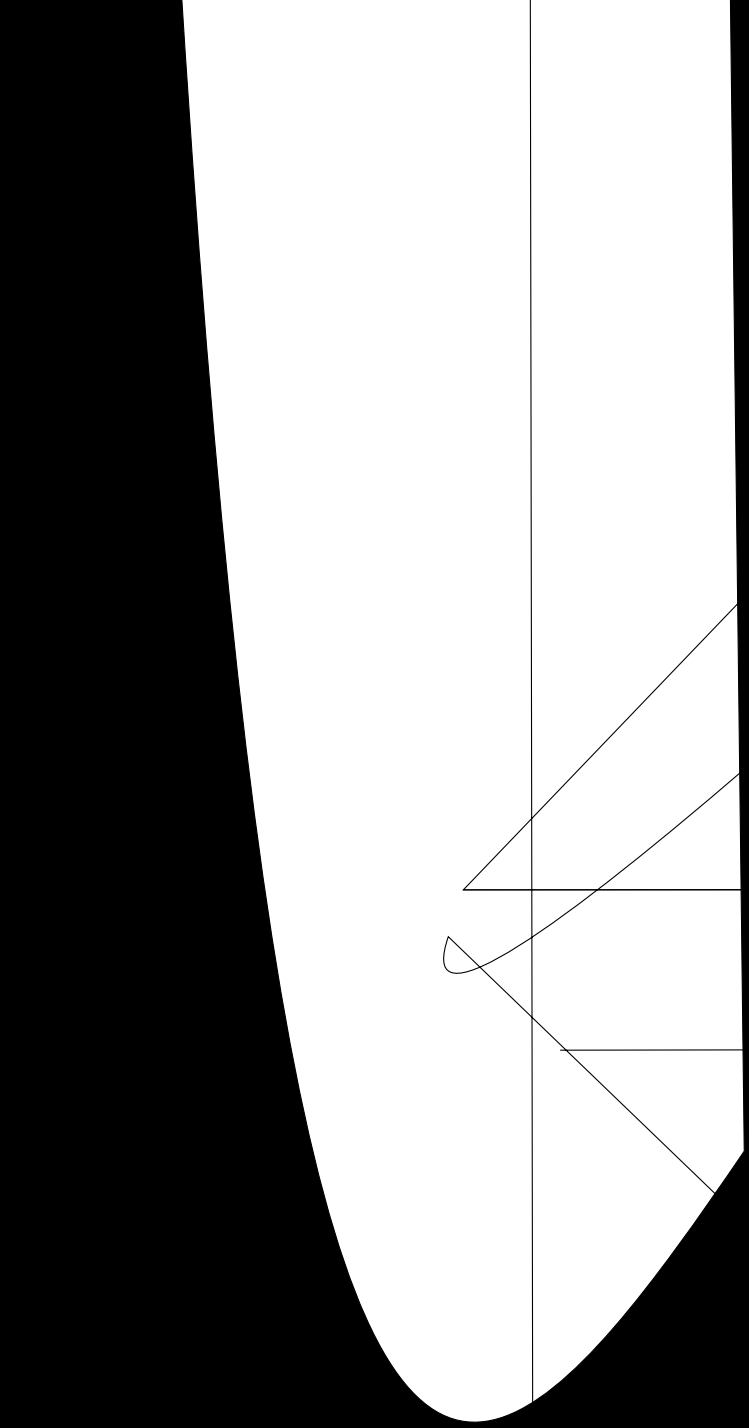
(2) At the right end, remove the paper ejection roller gear (Gear 40) by pulling its pawl outwards. Next, take out the paper ejection roller together with the bushing and the curved washer.



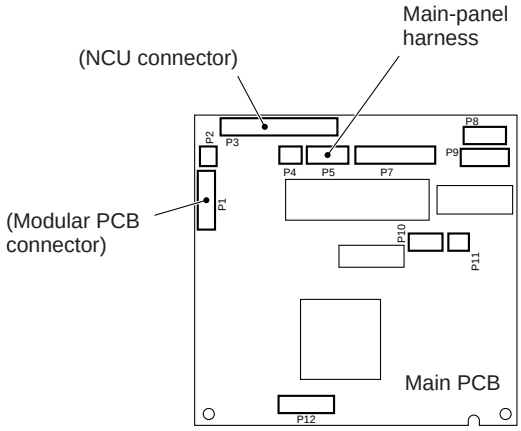
1.9 Gears on the Platen Frame





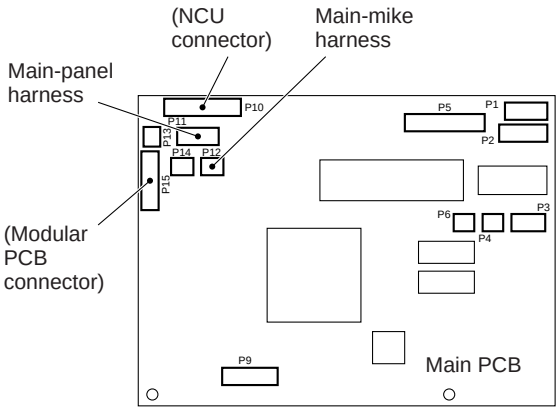


FAX1170/1270/1010/1020/MFC1770



(Front)

FAX1570MC/1030/MFC1870MC/1970MC



(Front)

■ Reassembling Notes

- After installation, check the routing of the main-panel harness and the main-mike harness (only for the FAX1570MC/1030/MFC1870MC/1970MC), referring to Section 1.29.

1.11 Panel Rear Cover and Control Panel

(1) Place the control panel ASSY upside down.

(2) Remove the ADF parts, the pressure rollers and anti-static brush from the panel rear cover. Once removed, the ADF parts will become unusable and new parts should have to be put back in.

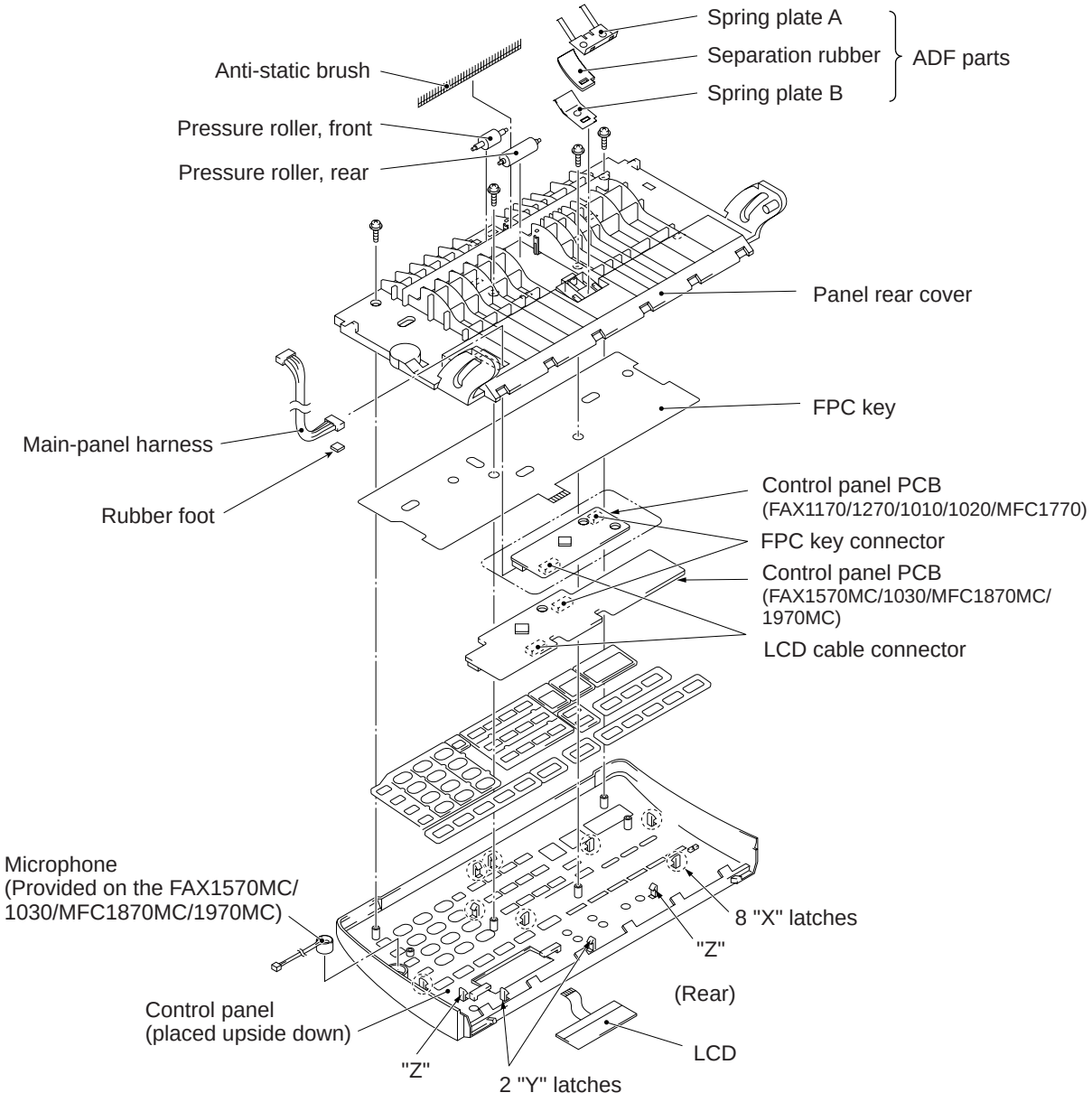
(3) Remove the four screws from the panel rear cover.

(4) Insert the tip of a flat screwdriver between the front edge of the panel rear cover and the control panel, then unhook the panel rear cover from the eight "X" latches provided on the control panel. Lift up the panel rear cover.

(5) To disconnect the main-panel harness from the control panel PCB, take off the rubber foot. Once removed, the rubber foot will become unusable and new parts should have to be put back in.

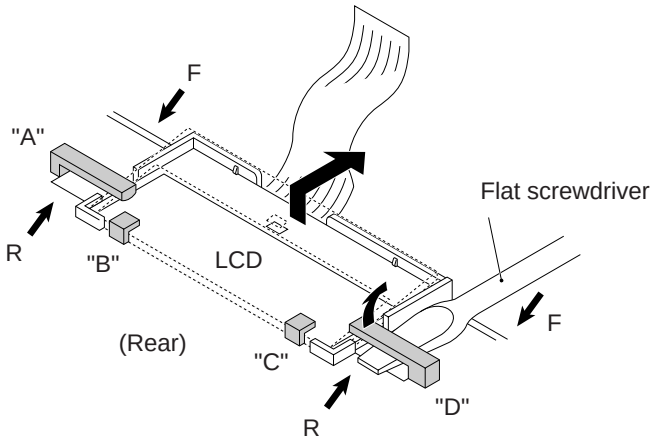
(6) To take out the control panel PCB and the FPC key, unhook the PCB from the two latches ("Y" on the FAX1170/1270/1010/1020/MFC1770, "Z" on the FAX1570MC/1030/MFC1870MC/1970MC) on the control panel. Unlock the LCD cable connector and disconnect the LCD flat cable.

(7) To separate the FPC key from the control panel PCB, unlock the FPC key connector and disconnect the FPC key.



(8) To take out the LCD, remove the control panel PCB and the FPC key in step (6). As shown below, insert the tip of a flat screwdriver under clamp "D" in the direction of arrow F and push up clamp "D" slightly to release the LCD from clamp "C." In the same way, insert the screwdriver under clamp "A" to release the LCD from clamp "B."

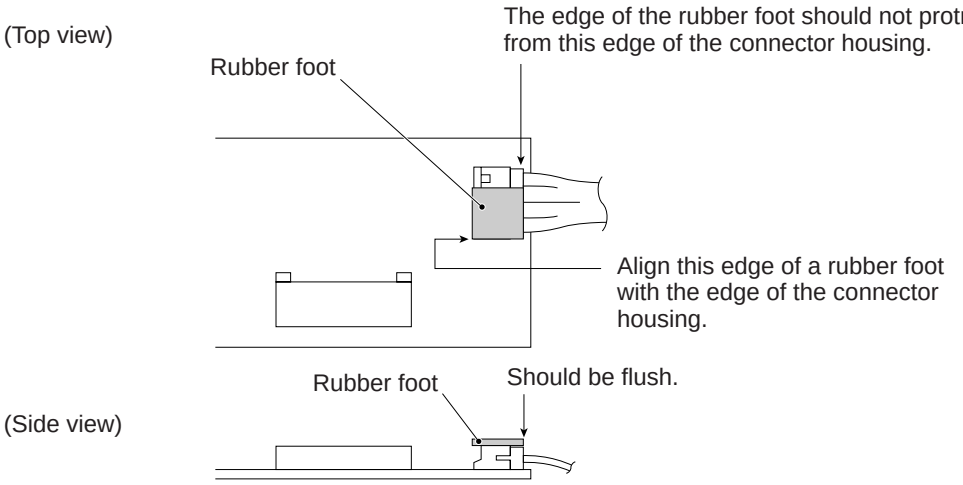
Then push out the LCD with your fingers in the direction of arrow R.



■ Reassembling Notes

- To put the LCD back into place, insert the tip of a flat screwdriver under clamp "D" (see the above illustration) in the direction of arrow R, push up clamp "D" slightly, and then put the right edge of the LCD under clamp "D." In the same way, insert the screwdriver under clamp "A" to put the left edge of the LCD under clamp "A."

  Then push the LCD into place with your fingers in the direction of arrow F.
- When handling the LCD, take care not to scratch or damage the panel sheet. Replace it if scratched or damaged.
- A new LCD is covered with a protection sheet. Before installing it, remove the protection sheet.
- After connecting the main-panel harness to the control panel PCB, be sure to attach a new rubber foot on the top of the connector as shown below.

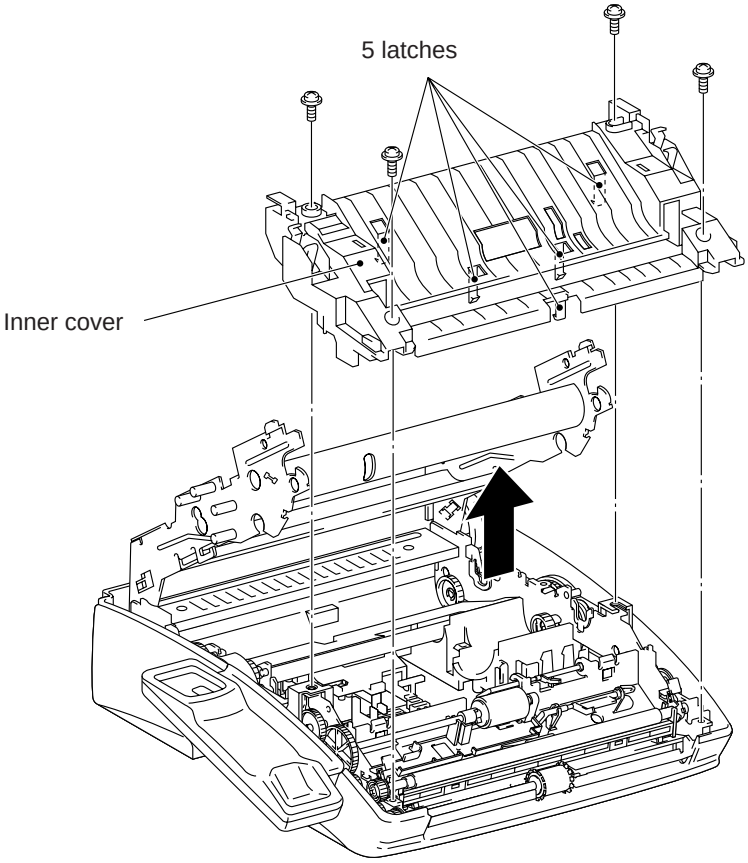


- When setting the panel rear cover onto the control panel, pass the main-panel harness and main-mike harness (provided on the FAX1570MC/1030/MFC1870MC/1970MC) through the cutout provided in the panel rear cover.

1.12 Inner Cover

(1) Remove the four screws.

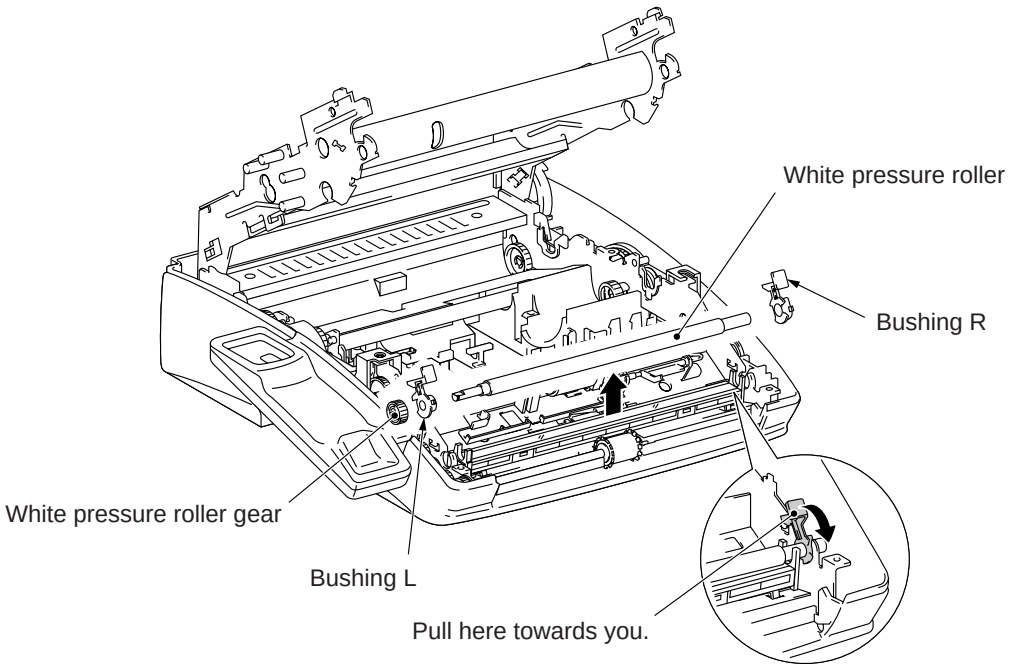
(2) While lifting up the inner cover, release the five latches with the tip of a flat screwdriver.



1.13 White Pressure Roller and CIS Unit

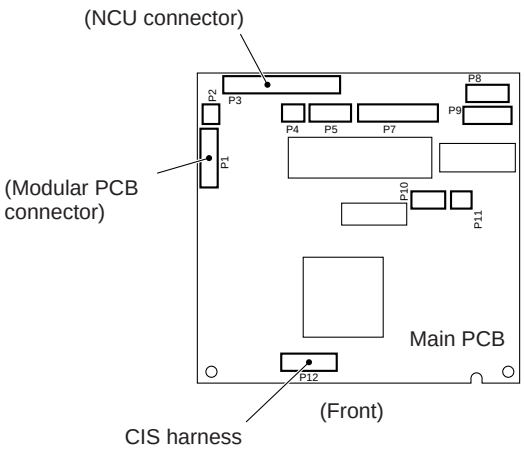
(1) Swing the tabs of the bushings R and L towards you to the release position, and then lift them up together with the white pressure roller and its gear.

To remove the bushing L, take off the white pressure gear by pulling its pawl outwards.

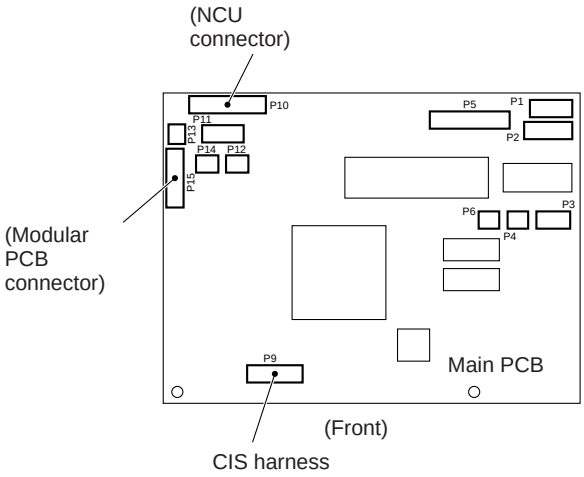


(2) Disconnect the CIS harness from the main PCB.

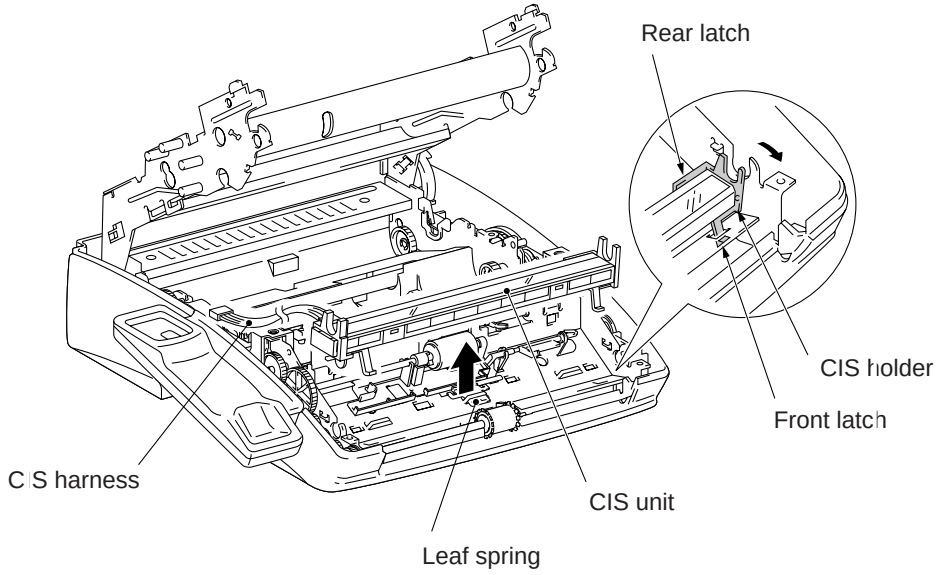
FAX1170/1270/1010/1020/MFC1770



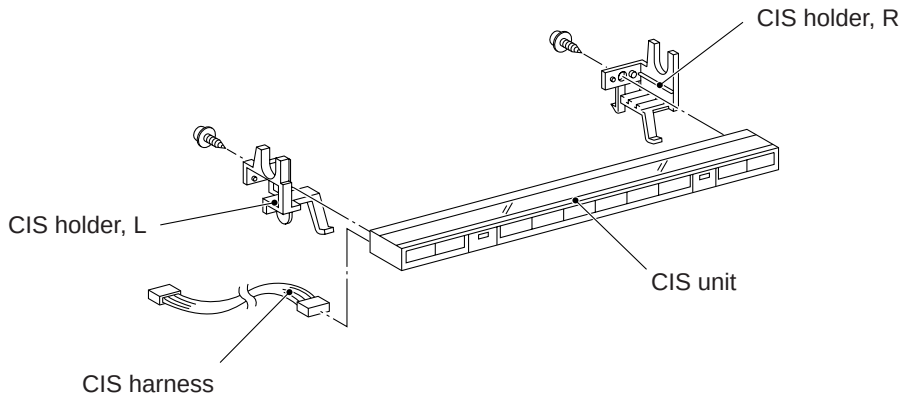
FAX1570MC/1030/MFC1870MC/1970MC



(3) Tilt the CIS unit towards you to release the rear latches from the main frame, and the CIS unit comes off.



(4) Remove the CIS holders R and L as shown below.



■ Reassembling Notes

- When reinstalling the CIS unit, pass the CIS harness through the cutout provided in the main frame.

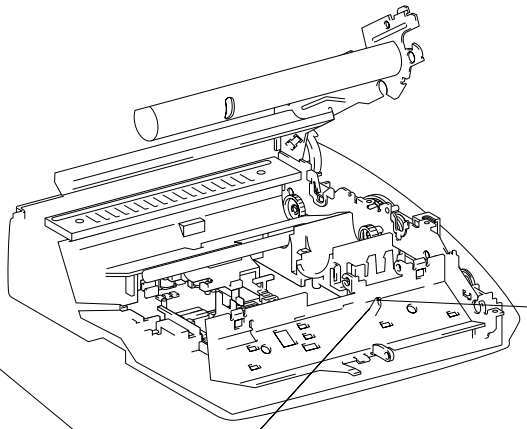
  First, hook the front latches of the CIS holders in the main frame while pressing the CIS unit against the leaf spring and then hook the rear latches.

1.14 Handset Mount (for models except the FAX1010)
Side Cover (for the FAX1010)

(1) Disconnect the hook switch harness* from the main PCB.

(2) Remove the two screws from the handset mount* or the side cover**.

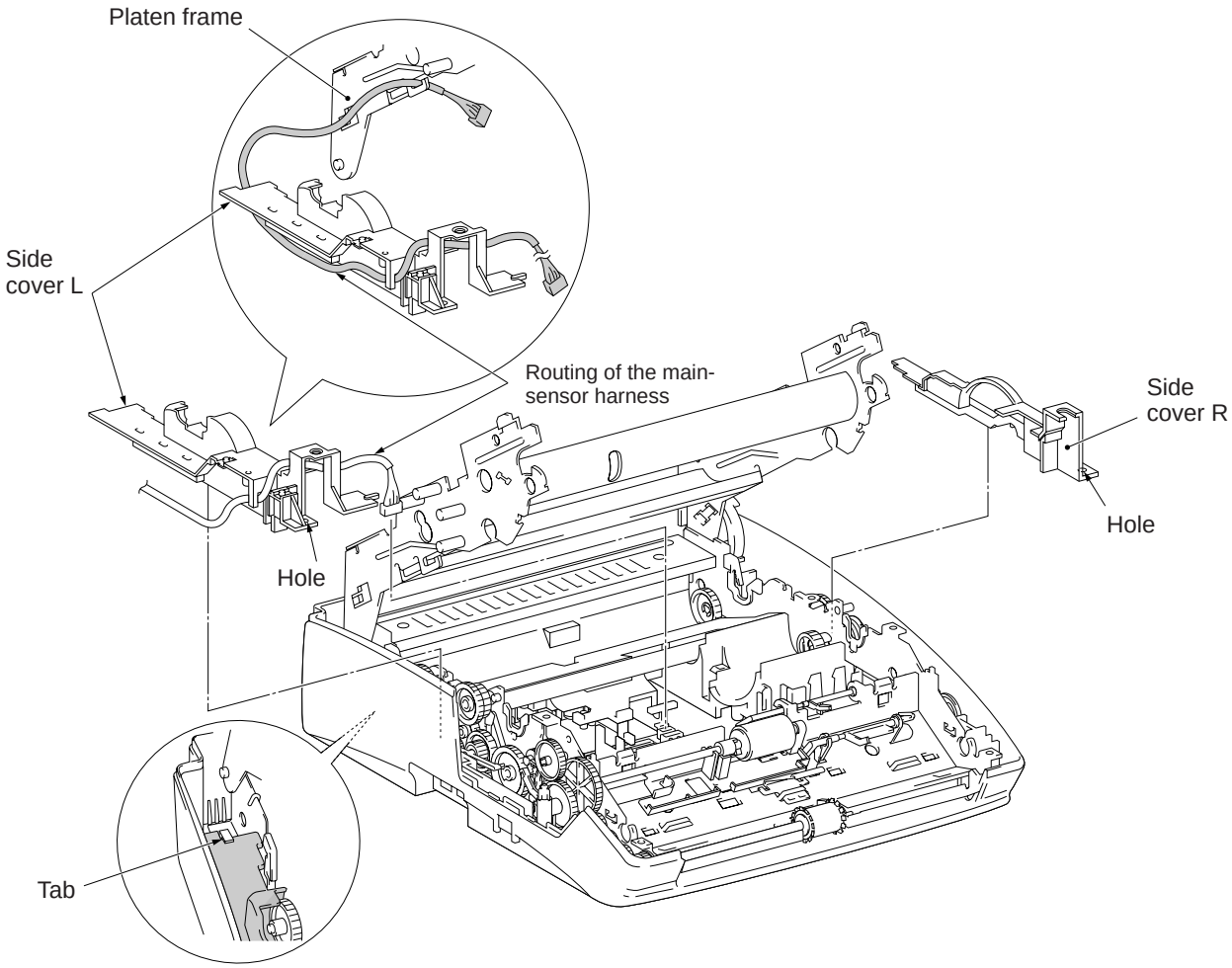
(3) Twist the handset mount* or the side cover** so that it tilts over to the left and its upper end works out of the bosses provided on the side cover L.



1.15 Side Covers R and L

(1) Lift up the front of the side cover R and take it out.

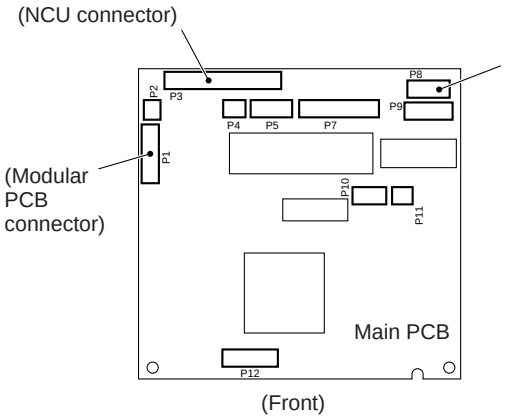
(2) Disconnect the main-sensor harness from the main PCB, and then lift up the front of the side cover L and take it out together with the main-sensor harness.



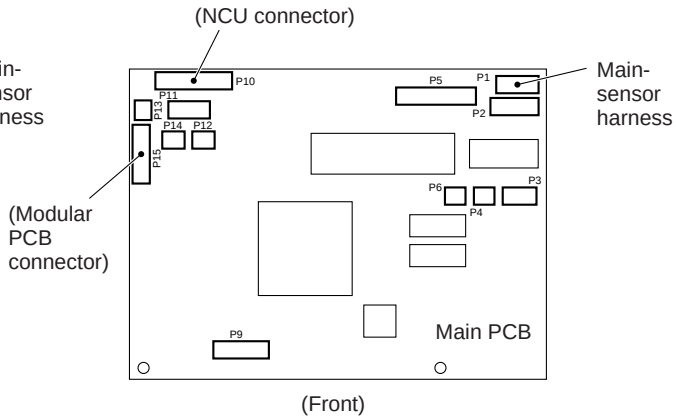
■ Reassembling Notes

- Before putting back the side cover L, route the main-sensor harness as illustrated above.
- When setting the side covers, put each rear edge under the tab and fit each hole over the boss provided on the main cover.
- After installation, check the routing of the main-sensor harness, referring to Section 1.29.

FAX1170/1270/1010/1020/MFC1770



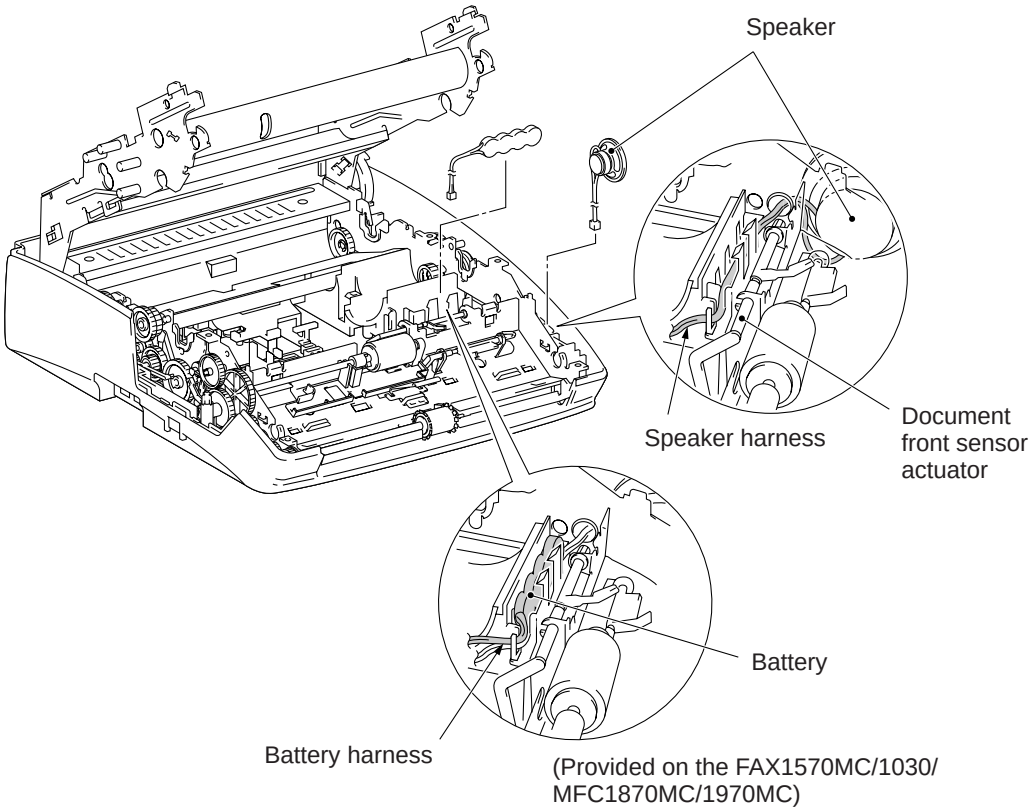
FAX1570MC/1030/MFC1870MC/1970MC



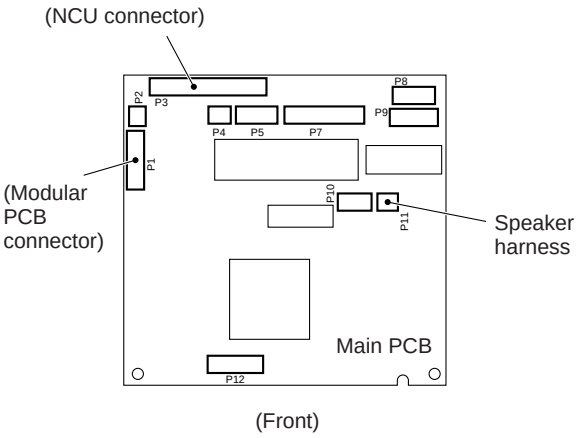
1.16 Speaker and Battery

(1) Disconnect the speaker harness from the main PCB, and pull up the speaker.

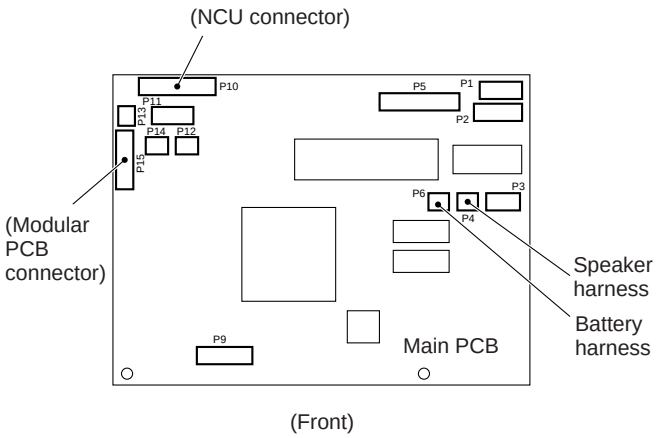
(2) For the FAX1570MC/1030/MFC1870MC/1970MC, disconnect the battery harness from the main PCB and pull up the battery.



FAX1170/1270/1010/1020/MFC1770



FAX1570MC/1030/MFC1870MC/1970MC



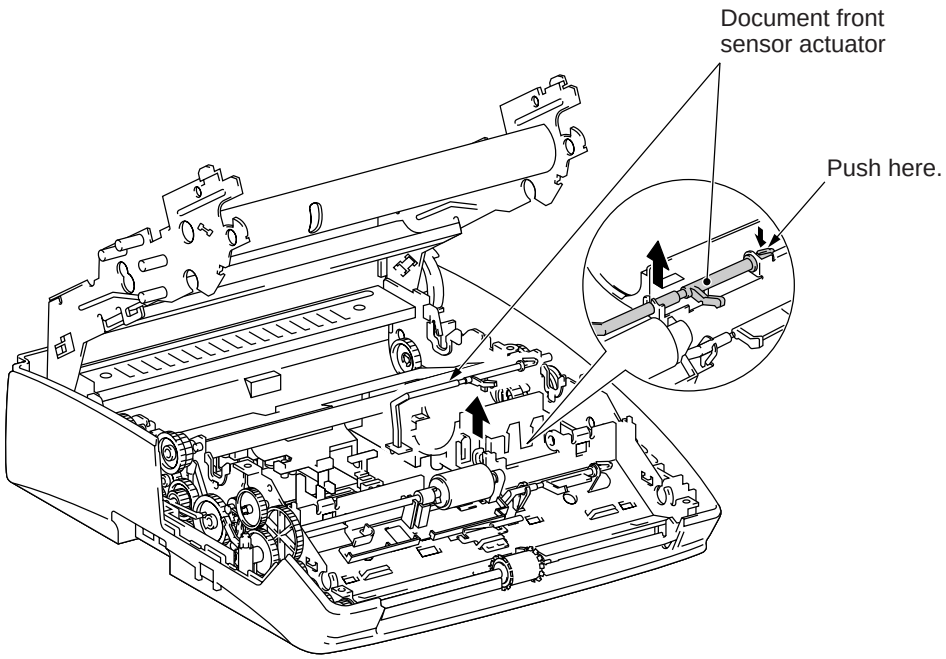
■ Reassembling Notes

- Route the speaker harness and the battery harness through the hole provided in the main frame and through the groove on the main cover, and then hook them on the T-shaped boss (refer to Section 1.29).

  If either of these harnesses is loose, it will interfere with the document front sensor actuator, resulting a sensing error.

1.17 Document Front Sensor Actuator

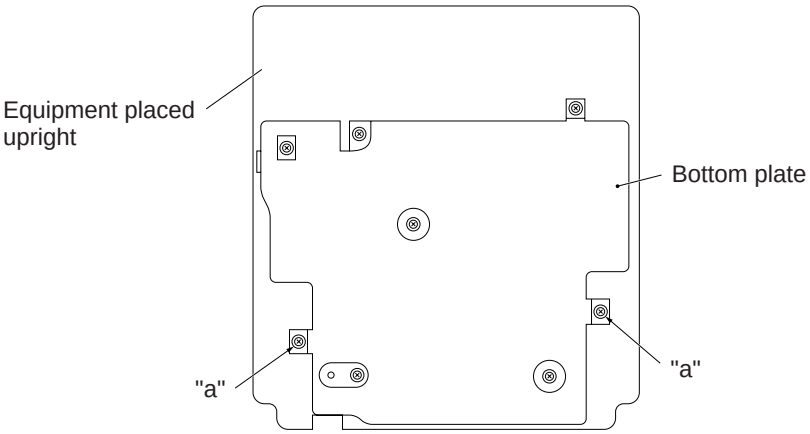
(1) As shown below, push down the latch of the right end of the document front sensor actuator to release it from the hole provided in the main frame, move it to the left, and then lift it up.



1.18 Main Frame

(1) Place the machine upright as shown below.

(2) Remove two screws "a" from the bottom plate.



(3) Place the machine rightside up.

(4) Disconnect the following four harnesses from the main PCB:

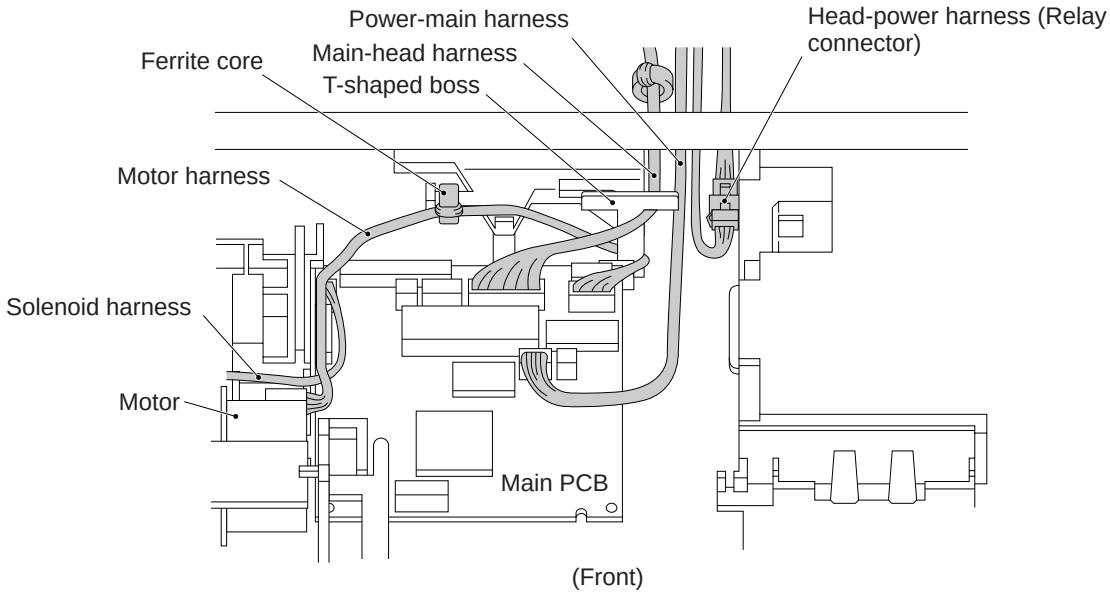
- Solenoid harness (2-pin)
- Motor harness (6-pin)
- Power-main harness (4-pin)
- Main-head harness (11-pin)

NOTE: Unhook the motor harness and its ferrite core from the bosses provided on the main cover.

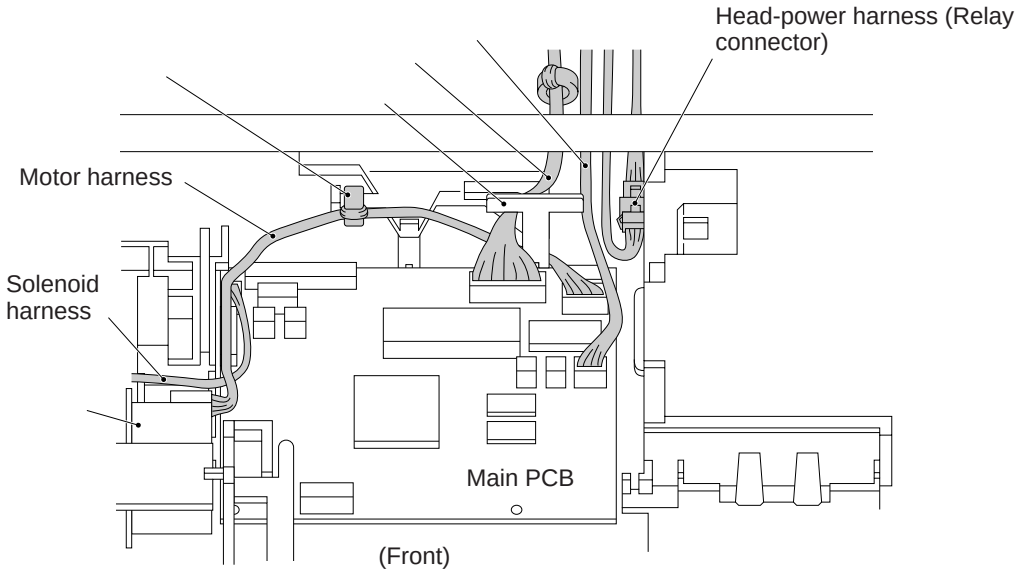
(5) Disconnect the relay connector of the head-power harness.

NOTE: To disconnect the relay connector, push the lock of the relay connector to release.

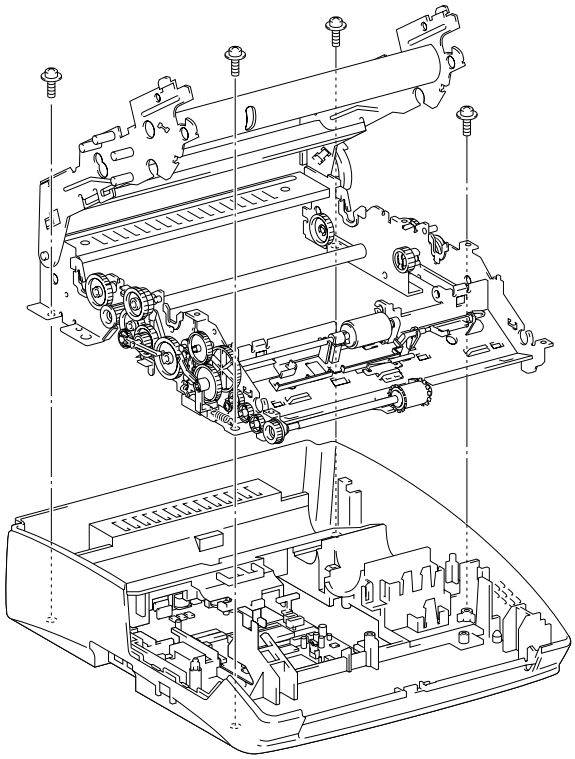
FAX1170/1270/1010/1020/MFC1770



FAX1570MC/1030/MFC1870MC/1970MC



(6) Remove four screws "b" and lift up the main frame."b"Main coverMain frame

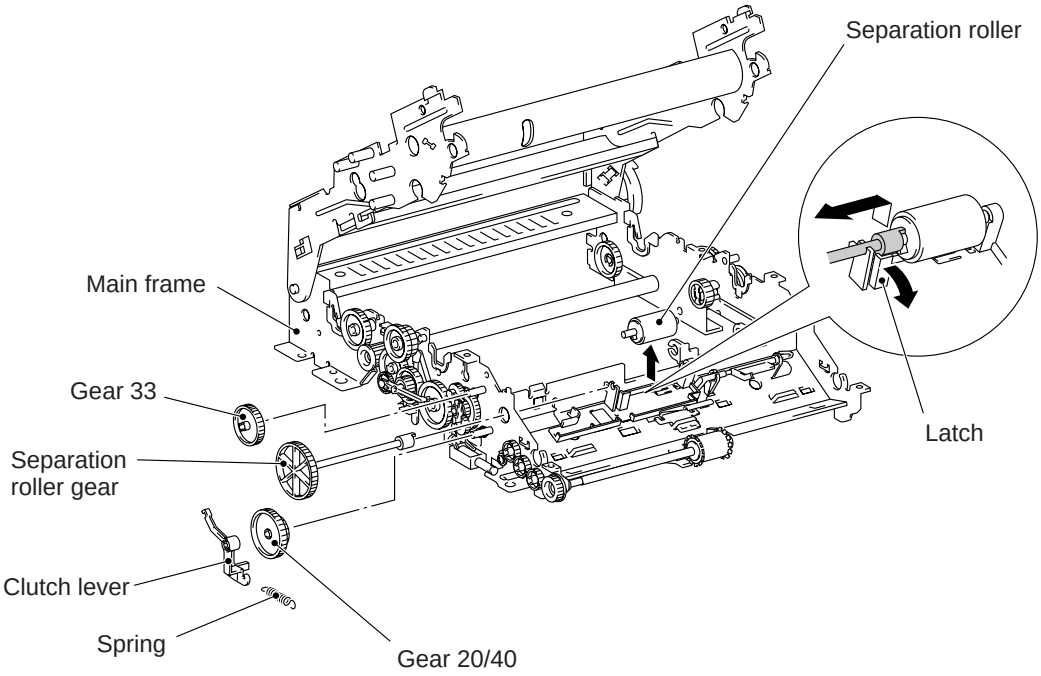


1.19 Separation Roller, its Support, and Document Rear Sensor Actuator

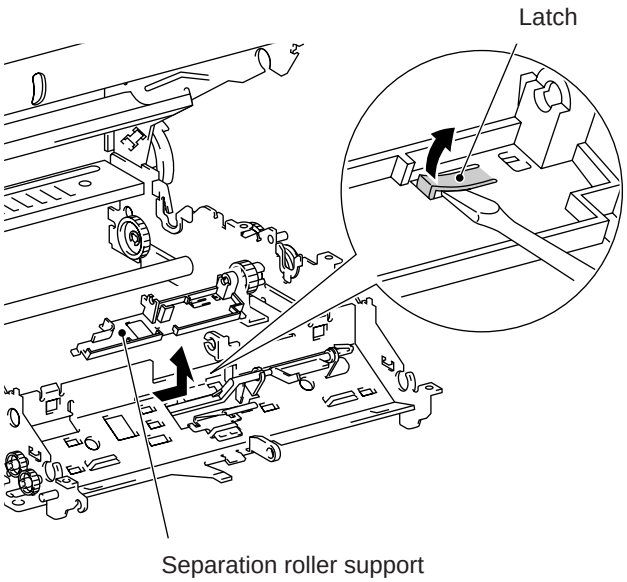
(1) At the left side of the main frame, remove the spring and pull out the clutch lever by pulling its pawl outwards.

(2) Remove the gear 20/40, and then remove the gear 33 by pulling its pawl outwards.

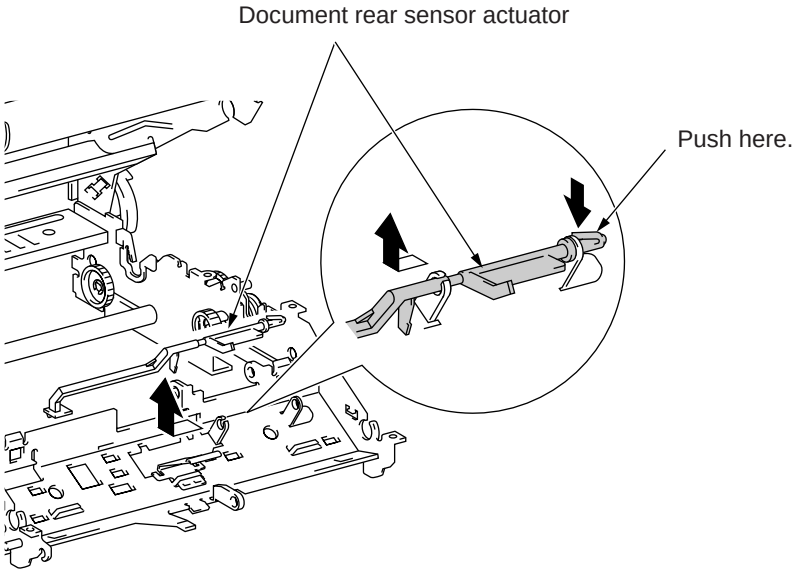
(3) Pull the latch towards you and pull out the separation roller gear to the left, and the separation roller comes off.



(4) As shown below, release the latch with the tip of a flat screwdriver and slide the separation roller support to the right and lift it up.

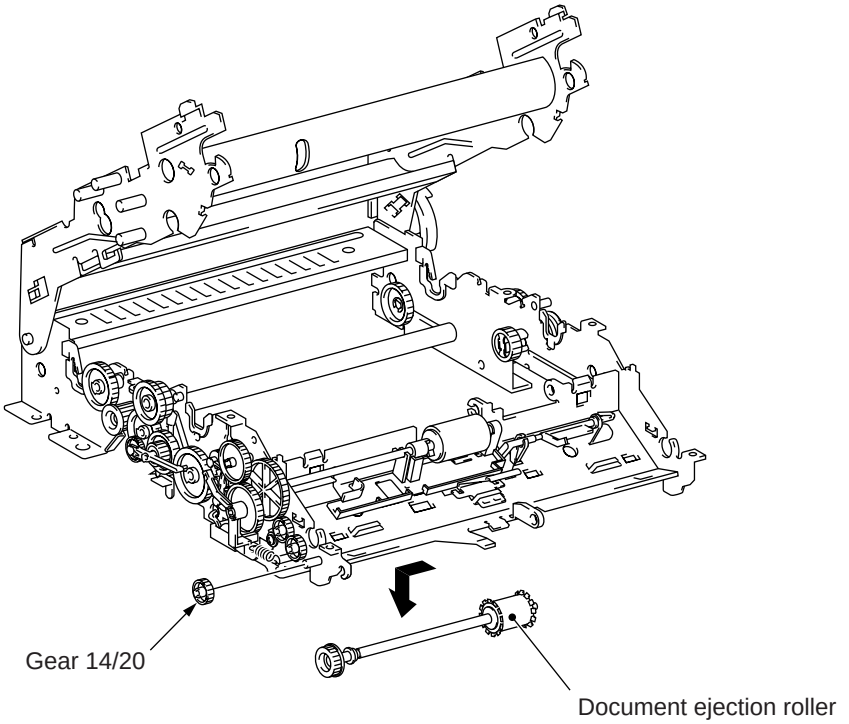


(5) To remove the document rear sensor actuator, push down the latch of its right end to release it from the hole provided in the main frame, move it to the left, and then take it out.

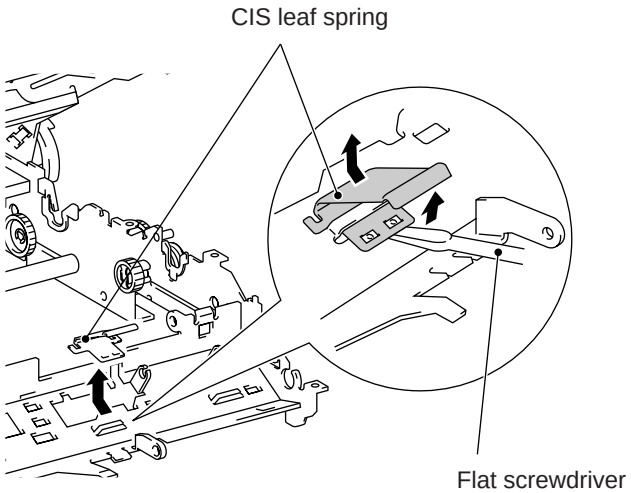


1.20 Document Ejection Roller and CIS Leaf Spring

(1) To remove the document ejection roller, pull out the gear 14/20 by pulling its pawl outwards. Next, move the document ejection roller to the left and take it out downwards.

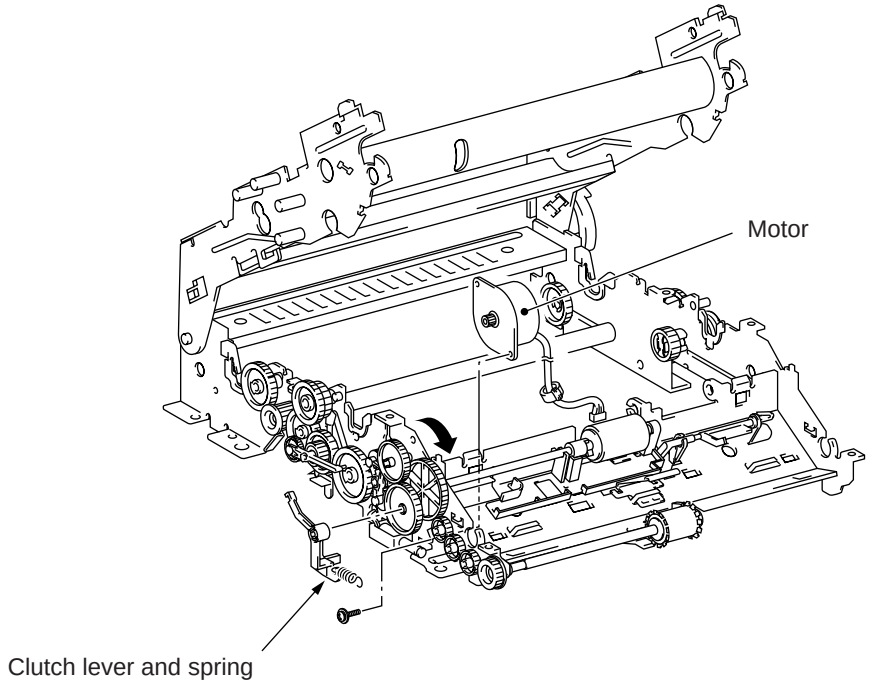


(2) To remove the CIS leaf spring, pull up its lower end with the tip of a flat screwdriver and move it in the direction of the arrow shown below.



1.21 Motor

(1) To remove the motor, at the left side of the main frame, unhook the spring and then pull out the clutch lever by pulling its pawl outwards. Next, remove the screw and turn the motor clockwise when viewed from the left.



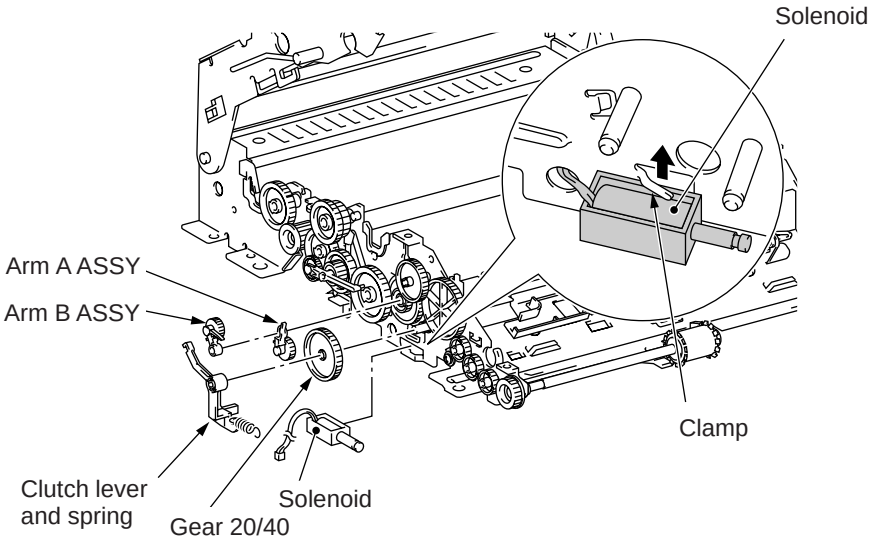
1.22 Solenoid

(1) At the left side of the main frame, remove the spring and pull out the clutch lever by pulling its pawl outwards.

(2) Remove the gear 20/40.

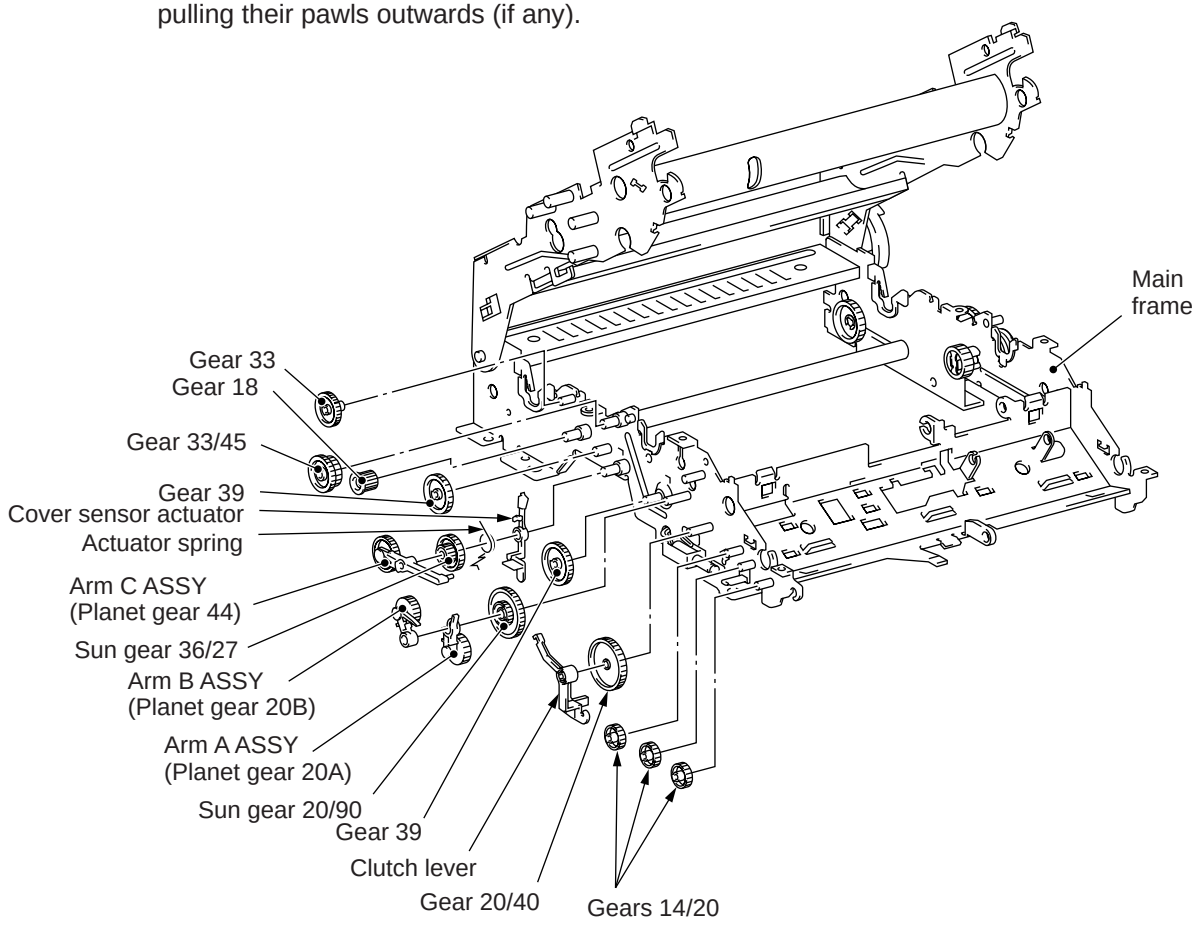
(3) Remove the arm B ASSY and arm A ASSY by pulling the arm B's pawl outwards.

(4) Push up the clamp and remove the solenoid.



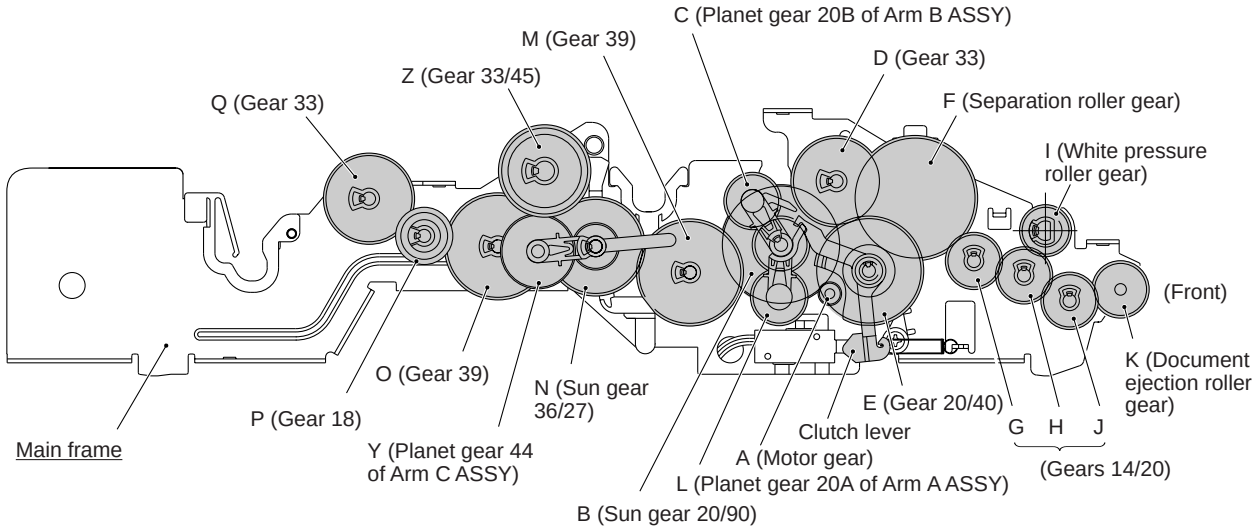
1.23 Drive Gears

(1) At the left side of the main frame, remove the clutch lever, gears, and arm ASSYs, by pulling their pawls outwards (if any).



■ **Reassembling Notes**

- If you have disassembled the above gear train, reassemble it referring to the illustration below.

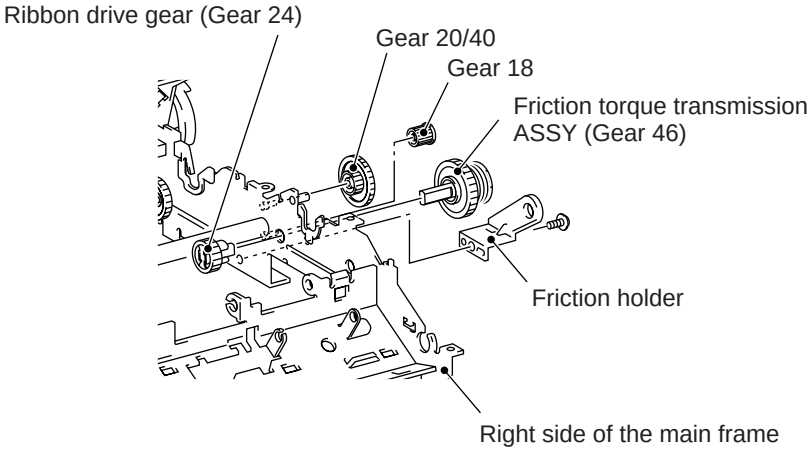


1.24 Friction Torque Transmission ASSY, its Related Gears, and Slip Gear 40

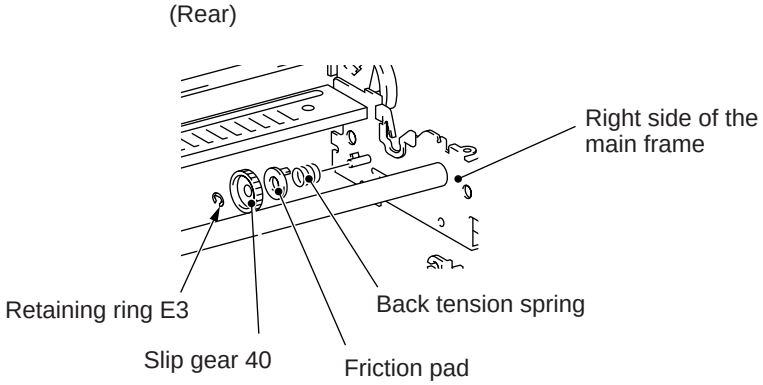
(1) At the right side of the main frame, remove the ribbon drive gear (Gear 24) by pulling its two pawls outwards.

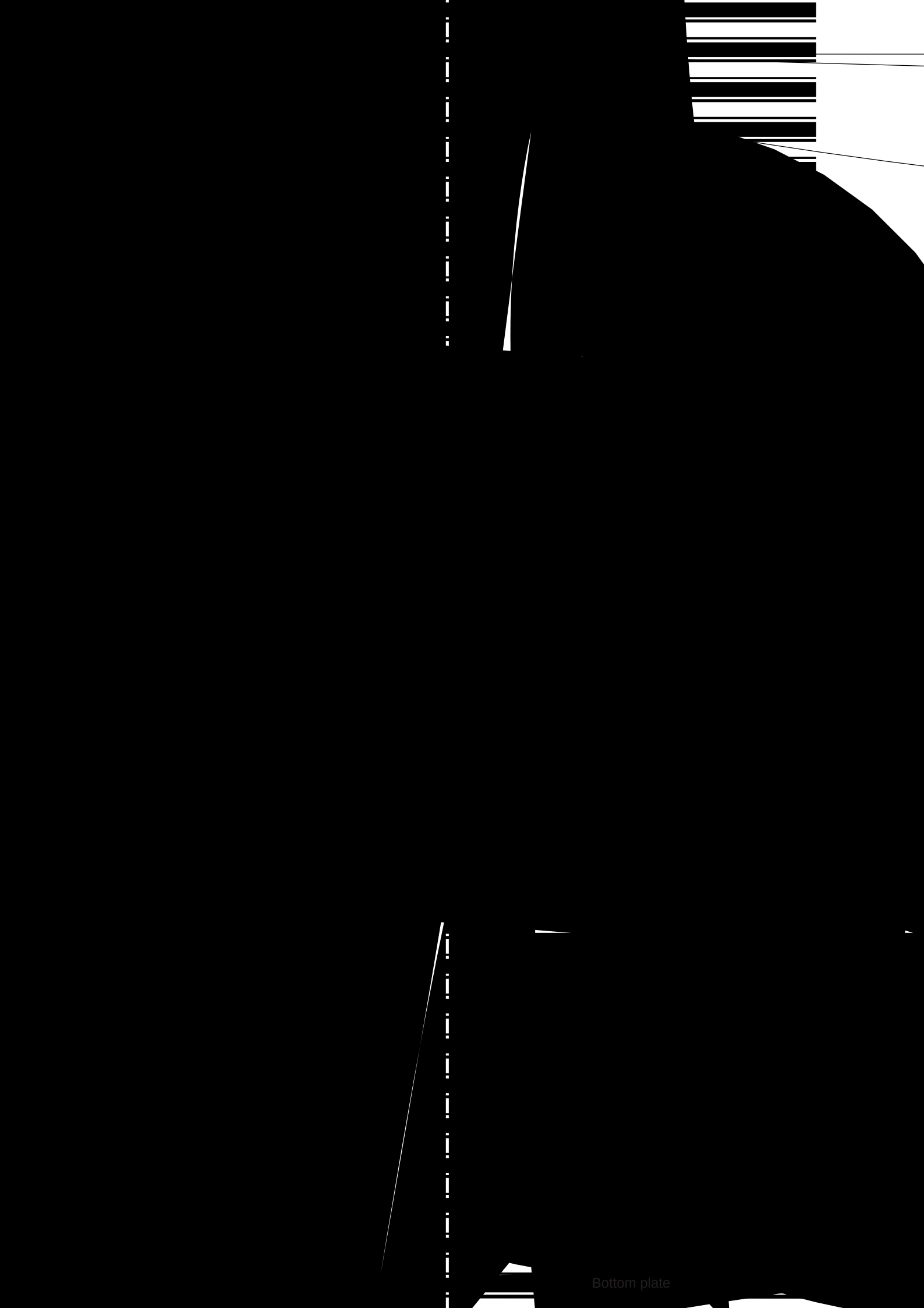
(2) Remove the screw and take off the friction holder.

(3) Remove the gear 18 by pulling its pawl outwards and then take off the gear 20/24 and the friction torque transmission ASSY (Gear 46).



(4) At the inside of the right rear side of the main frame, remove the retaining ring E3 and then take out the slip gear 40, friction pad, and back tension spring.




Bottom plate

1.27 Main PCB, NCU PCB and Modular PCB

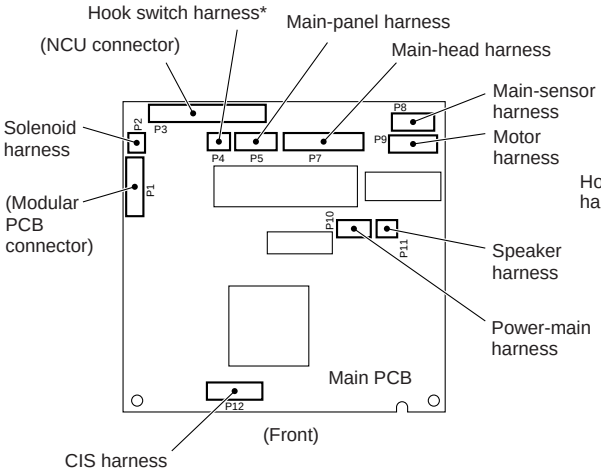
(1) Place the machine rightside up.

(2) Disconnect the following harnesses from the main PCB:

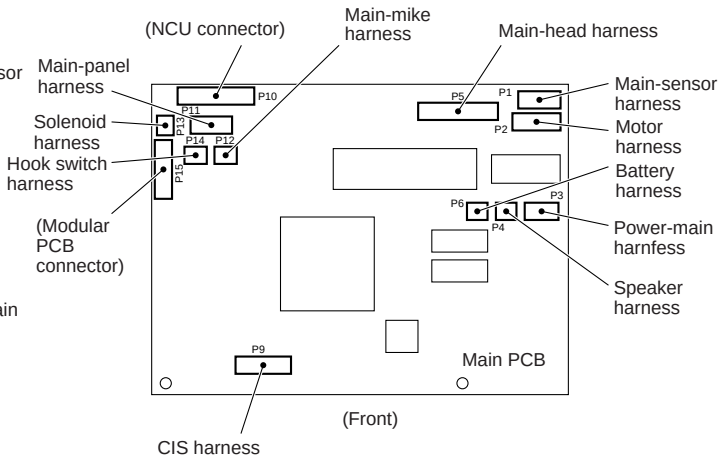
- Solenoid harness (2-pin)
- Hook switch harness (2-pin)*
- Main-panel harness (5-pin)
- Main-head harness (11-pin)
- Main-sensor harness (5-pin)
- Motor harness (6-pin)
- Power-main harness (4-pin)
- Speaker harness (2-pin)
- CIS harness (7-pin)
- Main-mike harness (2-pin)
- Battery harness (2-pin)

} For the FAX1570MC/1030/MFC1870MC/1970MC

FAX1170/1270/1010/1020/MFC1770



FAX1570MC/1030/MFC1870MC/1970MC



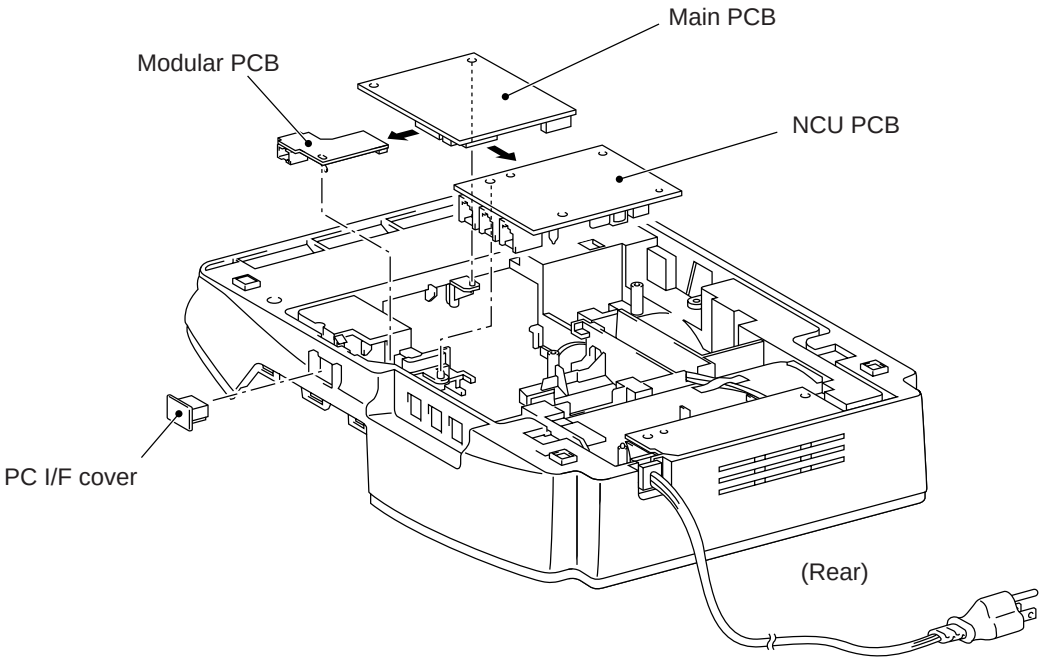
* Not provided on the FAX1010 or those versions equipped with a Binatone handset

(3) Turn the machine upside down.

(4) Unhook the modular PCB from the latches, slightly lift up front edge of the main PCB, and then take out the main PCB together with the modular PCB and NCU PCB.

(5) Remove the PC I/F cover.

(6) Disconnect the modular PCB and NCU PCB from the main PCB.



1.28 Power Supply PCB

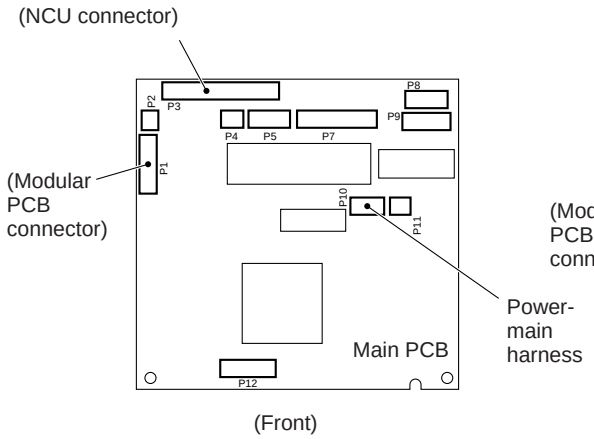
(1) Place the machine rightside up.

(2) Disconnect the power-main harness from the main PCB.

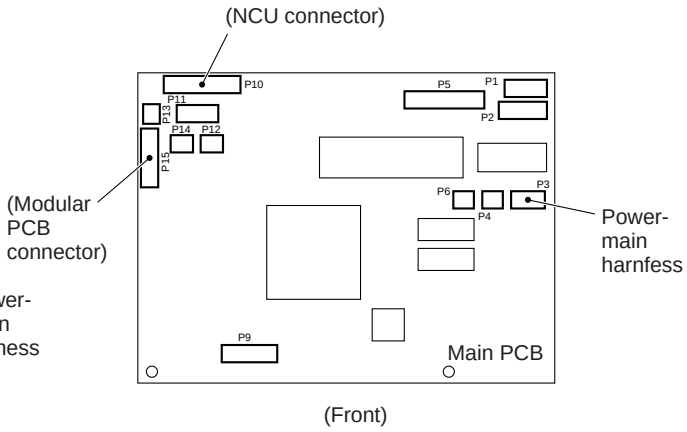
(3) Disconnect the relay connector of the head-power harness.

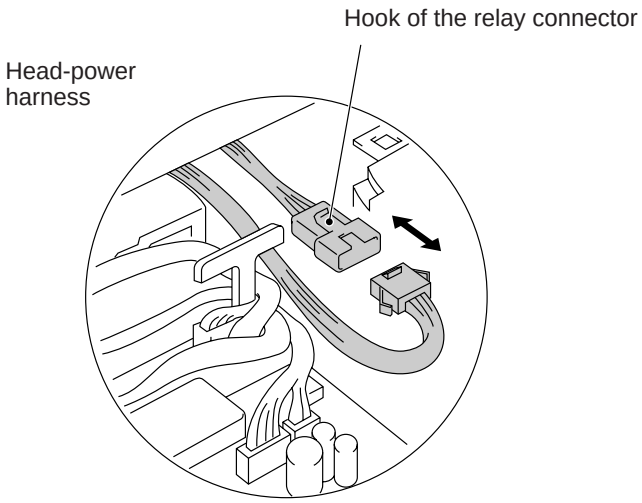
NOTE: To disconnect the relay connector, push the lock of the relay connector to release.

FAX1170/1270/1010/1020/MFC1770



FAX1570MC/1030/MFC1870MC/1970MC

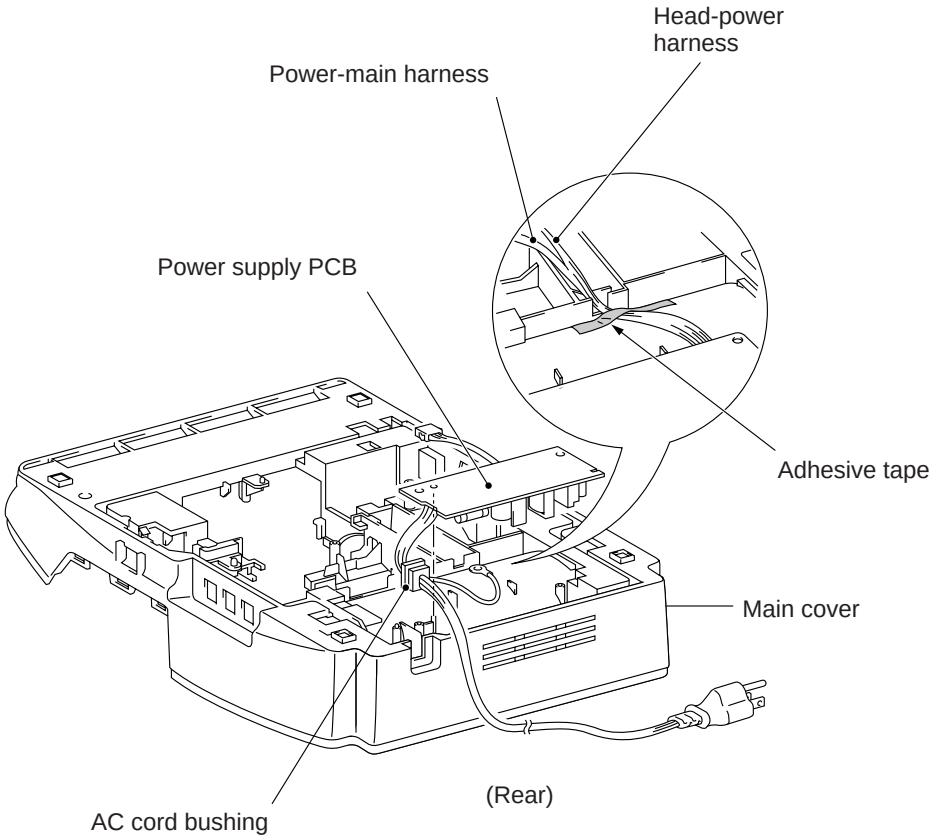




(4) Turn the machine upside down.

(5) Remove the adhesive tape to release the power-main harness and the head-power harness.

(6) Lift up the power supply PCB and pull out the AC cord bushing from the main cover.

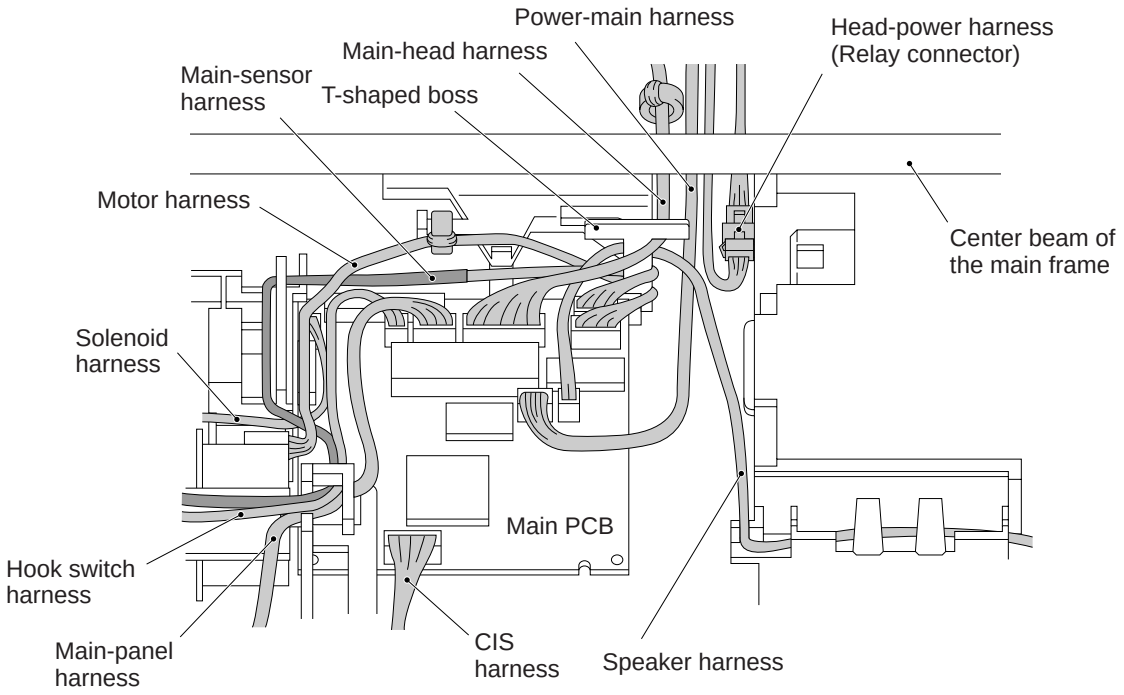


■ Reassembling Notes

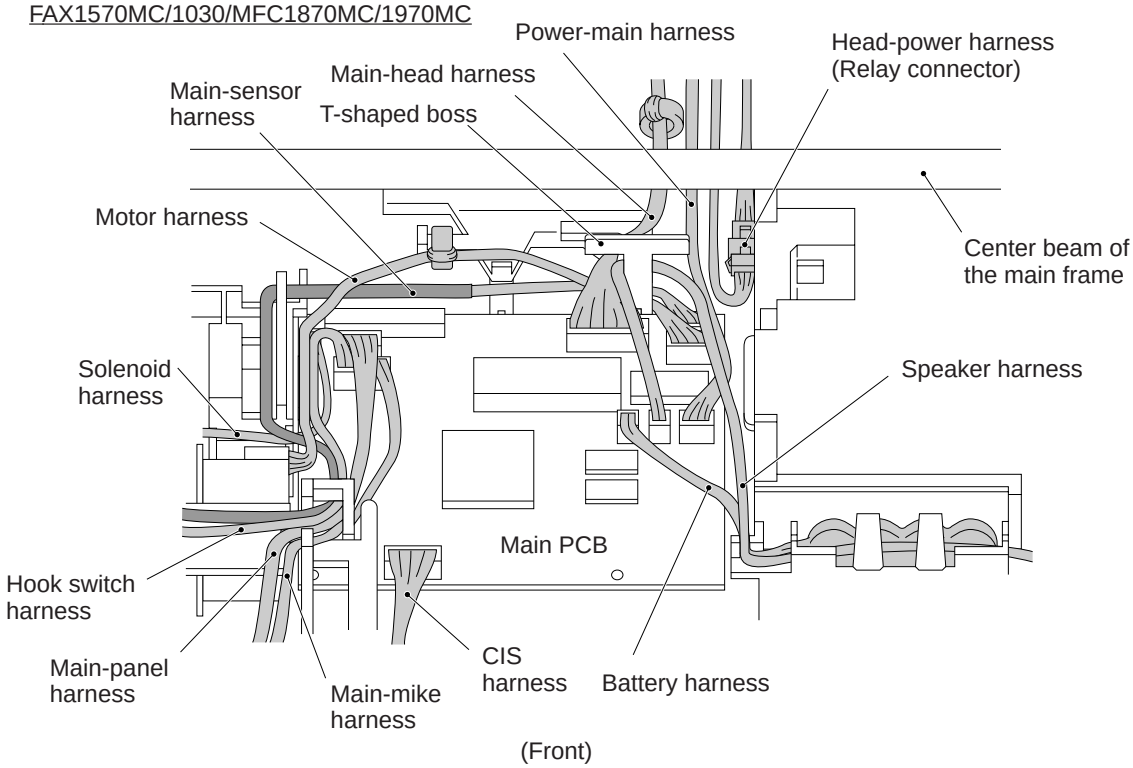
- When reinstalling the main PCB, make sure that the harnesses are routed on the main cover as illustrated in Section 1.29.

1.29 Harness Routing

FAX1170/1270/1010/1020/MFC1770



FAX1570MC/1030/MFC1870MC/1970MC



2. LUBRICATION

Apply the specified lubricants to the lubrication points as shown below.

Molykote EM-30L

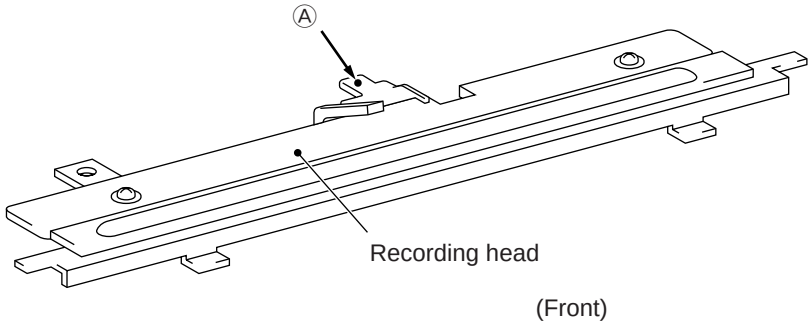
For points Ⓐ, apply a rice-sized pinch of grease (6 mm^3).

For points Ⓑ, apply a bean-sized pinch of grease (12 mm^3).

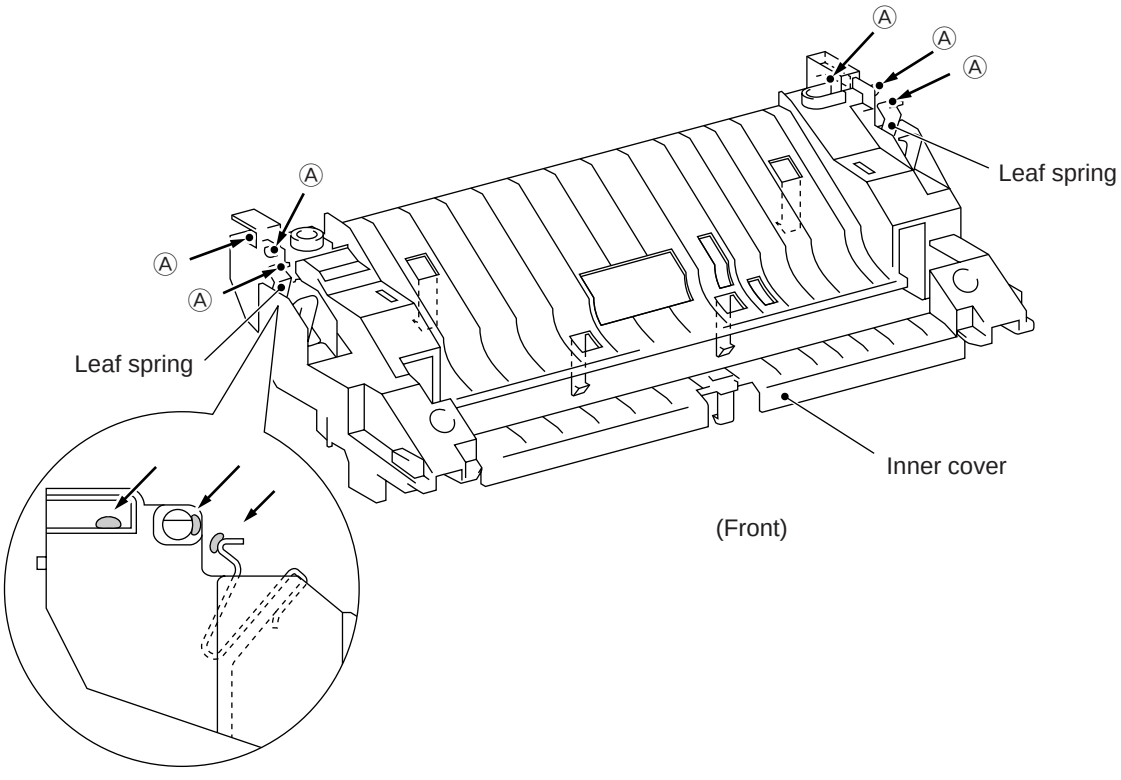
Floil GE-334C

For points Ⓕ, apply half of a rice-sized pinch of grease (3 mm^3).

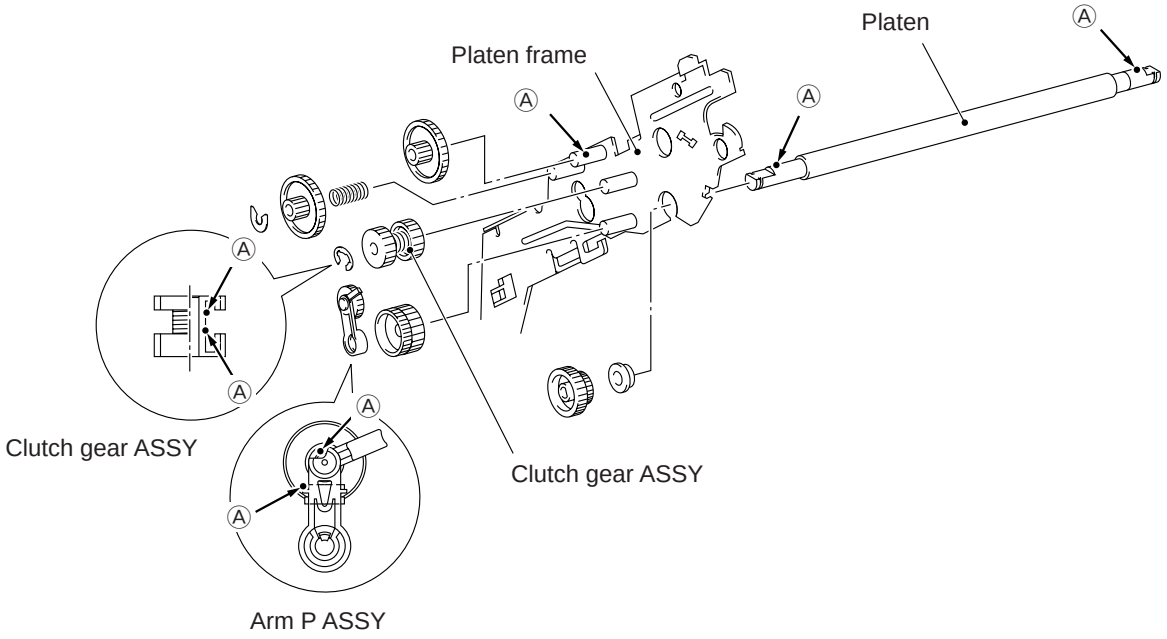
[1] Recording head



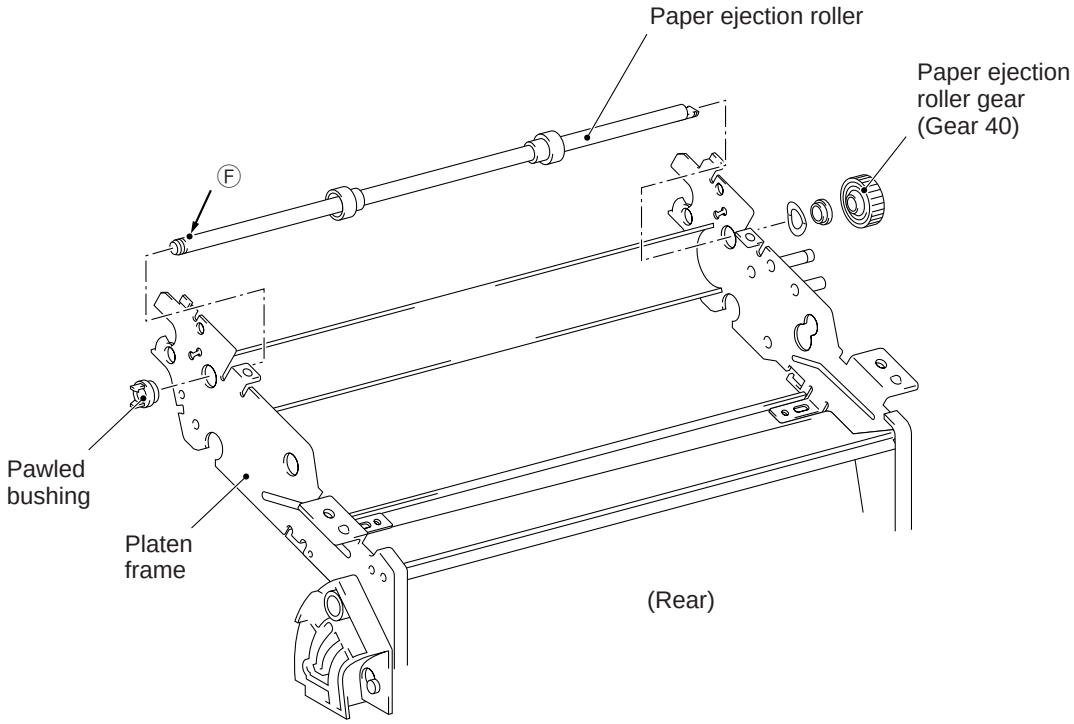
[2] Inner cover



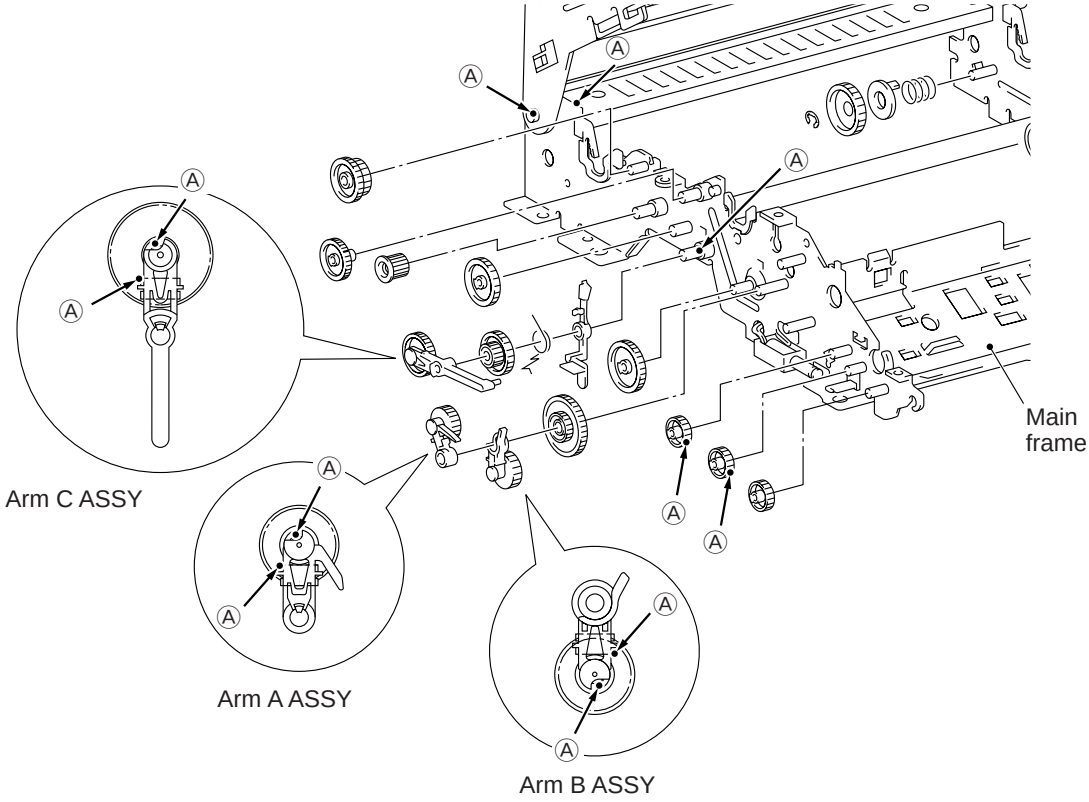
[3] Gears at the left side of the platen frame



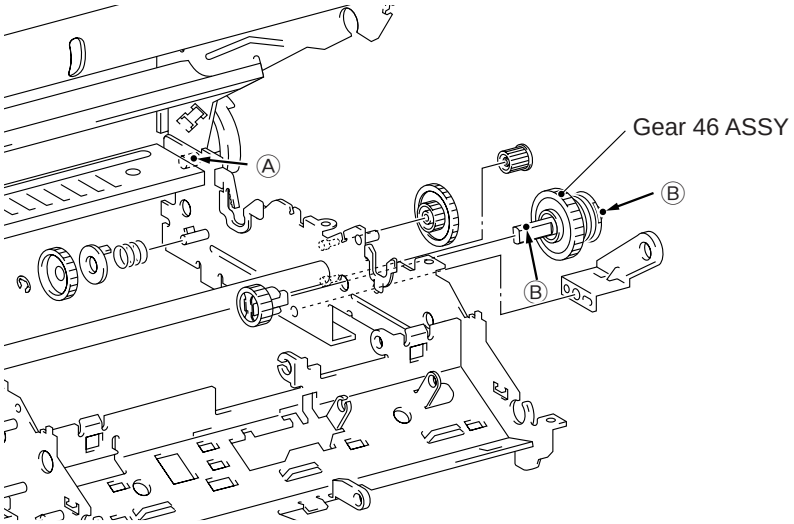
[4] Paper ejection roller



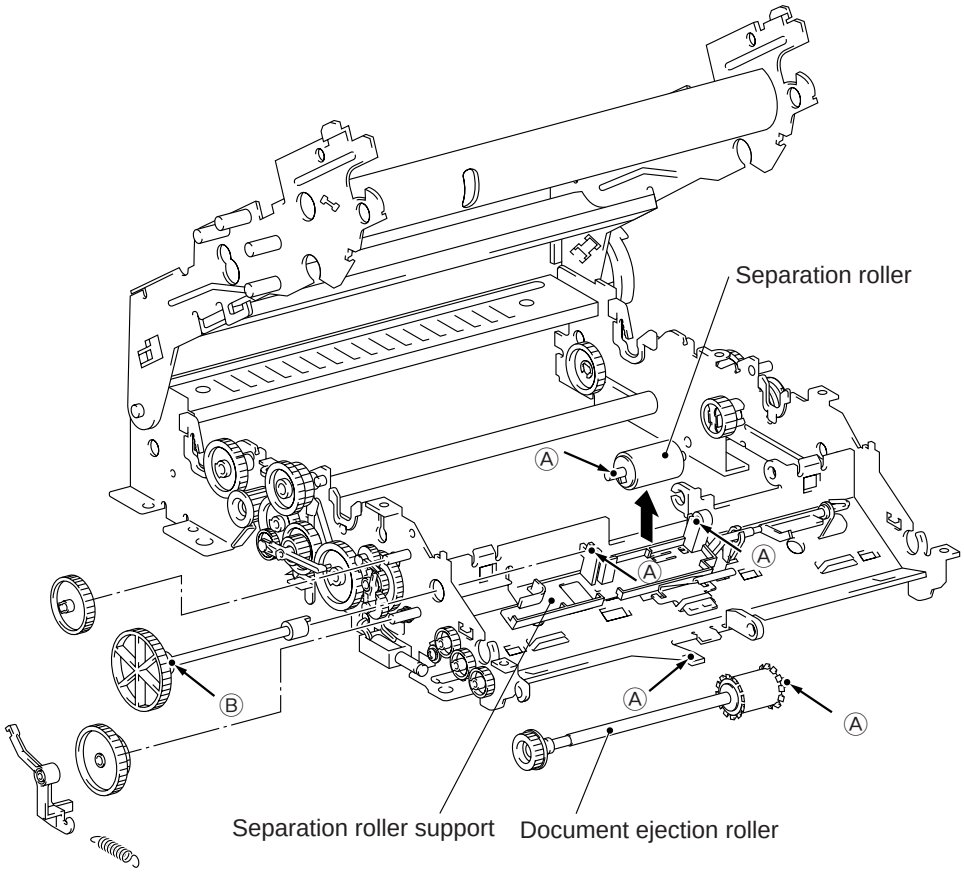
[5] Gears at the left side of the main frame



[6] Friction torque transmission ASSY at the right side of the main frame



[7] Separation roller and document ejection roller



CHAPTER V.

MAINTENANCE MODE

CONTENTS

1. ENTRY INTO THE MAINTENANCE MODE

To make the facsimile equipment enter the maintenance mode, press the [Function], [*], [2], [8], [6], and [4] keys in this order.

⟵ Within 2 seconds ⟶

The equipment beeps for approx. one second and displays " ▮▮ MAINTENANCE ▮ｱ▮ " on the LCD, indicating that it is placed in the initial maintenance mode, a mode in which the equipment is ready to accept entry from the keys.

To select one of the maintenance-mode functions listed in Section 2, enter the corresponding 2-digit function code with the numerical keys on the control panel. (The details of each maintenance-mode function are described in Section 3.)

NOTES:
- Pressing the [9] key twice in the initial maintenance mode restores the equipment to the standby state.
- Pressing the [Stop] button after entering only one digit restores the equipment to the initial maintenance mode.
- If an invalid function code is entered, the equipment resumes the initial maintenance mode.
- The " ｱ " in the " ▮▮ MAINTENANCE ▮ｱ▮ " is used for checking LCDs in the factory.

2. LIST OF MAINTENANCE-MODE FUNCTIONS

Maintenance-mode Functions

Function Code	Function	Reference Subsection (Page)
01	E^2PROM Parameter Initialization	3.1 (V-4)
02	————	——
03	————	——
04	————	——
05	Printout of Scanning Compensation Data	3.2 (V-5)
06	————	——
07	————	——
08	ADF* Performance Test	3.3 (V-7)
09	Test Pattern 1	3.4 (V-8)
10	Firmware Switch Setting	3.5 (V-9)
11	Printout of Firmware Switch Data	3.5 (V-47)
12	————	——
13	Operational Check of Control Panel PCB (Check of Keys and Buttons)	3.6 (V-48)
14	————	——
15	————	——
32	Sensor Operational Check	3.7 (V-50)
55	CIS Scanner Area Setting	3.8 (V-51)
82	Equipment Error Code Indication	3.9 (V-51)
91	E^2PROM Parameter Initialization (except the telephone number storage area)	3.1 (V-4)

* ADF: Automatic document feeder

IMPORTANT

Basically, the maintenance-mode functions listed on the previous page should be accessed by service personnel only. However, you may allow end users to access some of these under the guidance of service personnel (e.g., by telephone).

The user-accessible functions (codes 10, 11, 82, and 91) are shaded in the above table. Function code 10 accesses the firmware switches WSW01 to WSW34, each of which has eight selectors. You should not allow end users to access all of those selectors, but you may allow them to access user-accessible selectors which are shaded in the firmware switch tables in Subsection 3.5.

The service personnel should instruct end users to follow the procedure given below.

(1) Press the [Function] key and the [Mode] key in this order.

The LCD clears the current display.

NOTE: The [Mode] key is inoperable during standby for redialing and timer.

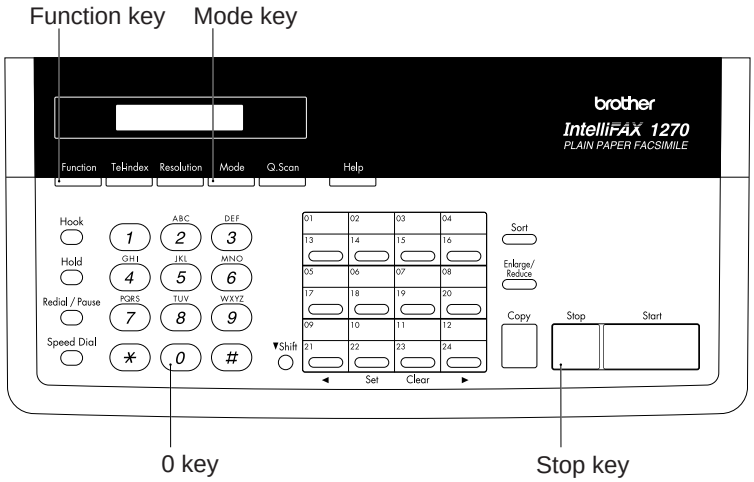
(2) Press the [0] key.

(3) Enter the desired function code (10, 11, 82, or 91) with the numerical keys.

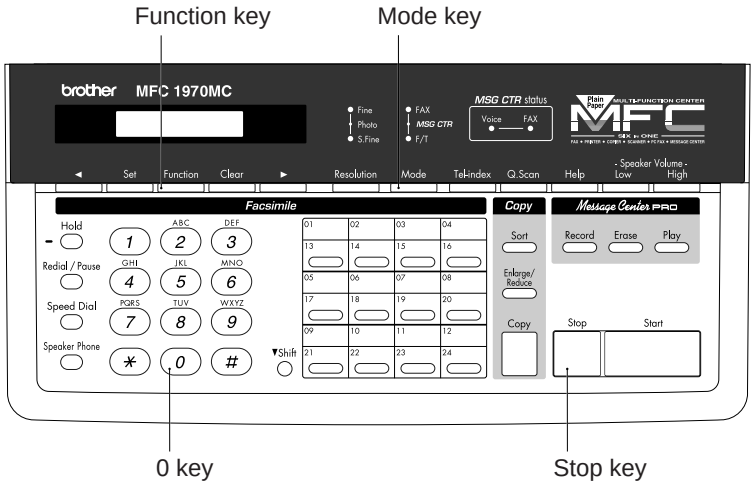
For function code 10, access the desired firmware switch according to the operating procedure described in Subsection 3.5.

(4) To make the equipment return to the standby state, press the [Stop] key.

FAX1170/1270/1010/1020/MFC1770



FAX1570MC/1030/MFC1870MC/1970MC



3 DETAILED DESCRIPTION OF MAINTENANCE-MODE FUNCTIONS

3.1 E²PROM Parameter Initialization

■ Function

The equipment initializes the parameters, user switches, and firmware switches registered in the E²PROM, to the initial values. Entering the function code 01 initializes all of the E²PROM areas, but entering 91 does not initialize some areas, as listed below.

Data item \ Function code	01	91
Maintenance-mode functions User switches Firmware switches Remote activation code Activity report Distinctive ringing patterns registered (only for the U.S.A. versions)	All of these will be initialized.	These will be initialized.
Station ID data Outside line number Telephone function registration One-touch dialing Speed dialing		These will not be initialized.

■ Operating Procedure

(1) Press the [0] and [1] keys (or the [9] and [1] keys according to your need) in this order in the initial maintenance mode.

The "PARAMETER INIT" will appear on the LCD.

(2) Upon completion of parameter initialization, the equipment returns to the initial maintenance mode.

3.2 Printout of Scanning Compensation Data

■ Function

The equipment prints out the white and black level data for scanning compensation.

■ Operating Procedure

Do not start this function merely after powering on the equipment but start it after carrying out a sequence of scanning operation. Unless the equipment has carried out any scanning operation, this function cannot print out correct scanning compensation data. This is because the equipment initializes white and black level data and takes in the scanning compensation reference data at the start of scanning operation.

(1) Press the 0 and 5 keys in this order in the initial maintenance mode.
The "WHITE LEVEL 1" will appear on the LCD.

(2) The equipment prints out the scanning compensation data list containing the following:

MFC1970MC

a) 2-value quantized white level data (208 bytes)
b) 2-value quantized black level data (1 byte)
c) Photo-mode white level data (208 bytes)
d) Photo-mode black level data (1 byte)
e) Compensation coefficient for background color (1 byte)
f) Initial LED light intensity value (1 byte)
g) LED light intensity value, 2-value quantized LED light intensity value, and photo-mode LED light intensity value (3 bytes)
h) 2-value quantized A/D reference value and photo-mode A/D reference value (2 bytes)
i) LED light intensity value on the platen and documents (2 bytes)
j) Threshold value on the platen (1 byte)

Other models

a) White level data (208 bytes)
b) Black level data (1 byte)
c) Clamp PWM value (1 byte)
d) Compensation data for background color (1 byte)
e) Initial LED light intensity value (1 byte)
f) LED light intensity value (1 byte)
g) LED light intensity value on the platen and documents (2 bytes)
h) Threshold value on the platen (1 byte)

(3) Upon completion of recording of the compensation data list, the equipment returns to the initial maintenance mode.

NOTE: If any data is abnormal, its code will be printed in inline style, as shown on the next page.

```
5F00 : DD DE E3 DF E6 EB F4 EA  ED EF E8 F0 F4 FB FC FB
5F10 : F6 F4 ED EB F3 FD F9 F6  EC ED EB F2 F3 F9 F1 E9
5F20 : E8 E9 E4 E6 E8 E6 E8 E6  E4 E0 E1 E0 D8 D7 D2 D8
5F30 : D7 D4 D1 D8 D6 D5 D1 C7  CC C5 C9 C8 48 29 2B 27
5F40 : 23 25 21 27 22 24 25 24  22 26 25 24 25 25 25 23
5F50 : 22 27 25 25 22 24 25 26  24 23 24 22 22 21 24 21
5F60 : 24 22 22 28 28 38 31 3F  3E 23 25 25 22 20 2B 44
5F70 : 29 34 25 24 23 20 20 24  23 29 23 2A 28 2A 25 86
5F80 : CF DB D5 CB D5 DC D7 D1  D3 D3 D0 CF D0 D7 D7 D5
5F90 : D5 DB DE E1 E4 E0 DE D4  D6 DF DE E0 E5 E9 EA E7
5FA0 : E3 E4 E4 DA DF DC DD D5  D5 DC DC E0 DC DA D7 CE
5FB0 : CB D1 D3 D6 D2 CF D1 CC  D1 D1 D2 CD CC D0 CD CB
5FC0 : CC D4 DB DD DF DD D9 D9  E1 E3 EF EF E8 E7 E8 D0

5F00 : 11

5F00 : 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00
5F10 : 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00
5F20 : 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00
5F30 : 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00
5F40 : 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00
5F50 : 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00
5F60 : 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00
5F70 : 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00
5F80 : 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00
5F90 : 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00
5FA0 : 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00
5FB0 : 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00
5FC0 : 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00

5F00 : 11

5F00 : 00

5F00 : C0

5F00 : C0 C0 AC

5F00 : 3B 34

5F00 : 00 00

5F00 : FF
```

Scanning Compensation Data List (MFC1970MC)

```
5F00 : 27 34 35 34 34 36 37 34  33 34 34 35 35 38 3A 38
5F10 : 37 36 34 34 36 37 38 37  35 36 36 37 37 38 39 36
5F20 : 34 33 33 35 34 34 35 33  33 32 31 31 33 34 36 35
5F30 : 35 34 36 37 38 37 37 34  34 33 33 34 35 38 36 34
5F40 : 34 33 32 31 35 36 34 32  30 30 32 33 09 09 06 06
5F50 : 06 30 32 35 05 06 07 05  05 05 06 06 06 06 05 07
5F60 : 06 04 05 04 06 05 08 08  06 06 05 06 05 05 05 04
5F70 : 04 04 05 05 05 05 05 04  04 04 05 05 05 06 04 04
5F80 : 04 04 04 04 05 04 04 04  04 04 04 05 06 05 04 04
5F90 : 05 05 04 05 05 05 05 23  2D 30 31 33 35 34 33 32
5FA0 : 33 33 35 34 34 32 32 2F  31 33 34 36 34 33 32 31
5FB0 : 32 32 31 33 32 32 33 32  32 32 33 31 32 32 30 30
5FC0 : 30 31 34 35 33 32 30 2F  30 30 30 30 30 2F 2F 30

5F00 : 02

5F00 : 98

5F00 : 00

5F00 : C0

5F00 : C0

5F00 : 00 00

5F00 : FF
```

Scanning Compensation Data List (Other models)

3.3 ADF Performance Test

■ Function

The equipment counts the documents fed by the automatic document feeder (ADF) and displays the count on the LCD for checking the ADF performance.

■ Operating Procedure

(1) Set documents. (Allowable up to the ADF capacity.)

The "DOC. READY" will appear on the LCD.

(2) Press the [0] and [8] keys in this order.

The equipment

i) copies the 1st document and displays "COPY P.01 STD" on the LCD,

ii) feeds in and out the 2nd through 4th documents while counting without copying them as the LCD shows the corresponding count,

iii) copies the 5th document and displays "COPY P.05 STD" on the LCD,

iv) feeds in and out the 6th through 9th documents while counting without copying them as the LCD shows the corresponding count, and

v) copies the 10th document and displays "COPY P.10 STD" on the LCD.

(3) Upon completion of feeding in and out all of the documents, the final count appears on the LCD.

(4) Press the [Stop] key to return the equipment to the initial maintenance mode.

3.4 Test Pattern 1

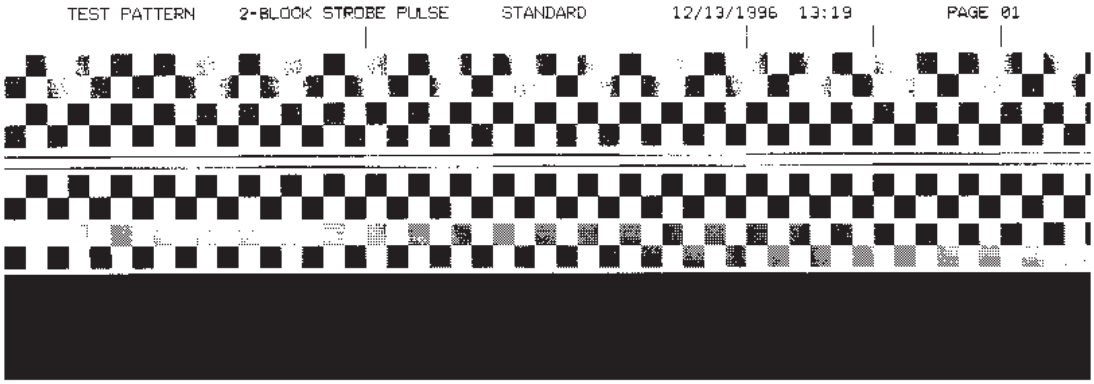
■ Function

This function, much like the copying function, prints out test pattern 1 to allow the service personnel to check for record data missing or print quality.

■ Operating Procedure

Press the [0] and [9] keys in this order in the initial maintenance mode.

The figure below shows test pattern 1.



Test Pattern 1

3.5 Firmware Switch Setting and Printout

[A] Firmware switch setting

■ Function

The facsimile equipment incorporates the following firmware switch functions (WSW01 through WSW34) which may be activated with the procedures using the control panel keys and buttons.

The firmware switches have been set at the factory in conformity to the communications standards and codes of each country. Do not disturb them unless necessary. Some firmware switches may not be applicable in some versions. The firmware switch data list indicates "Not used." for those inapplicable switches.

Firmware Switches (WSW01 through WSW34)

WSW No.	Function	Reference Page
WSW01	Dial pulse setting	V-11
WSW02	Tone signal setting	V-12
WSW03	PABX mode setting	V-13
WSW04	TRANSFER facility setting	V-15
WSW05	1st dial tone and busy tone detection	V-16
WSW06	PAUSE key setting and 2nd dial tone detection	V-18
WSW07	Dial tone setting 1	V-20
WSW08	Dial tone setting 2	V-21
WSW09	Protocol definition 1	V-22
WSW10	Protocol definition 2	V-23
WSW11	Busy tone setting	V-24
WSW12	Signal detection condition setting	V-25
WSW13	Modem setting	V-26
WSW14	AUTO ANS facility setting	V-27
WSW15	REDIAL facility setting	V-28
WSW16	Function setting 1	V-29
WSW17	Function setting 2	V-30
WSW18	Function setting 3	V-31
WSW19	Transmission speed setting	V-32
WSW20	Overseas communications mode setting	V-33
WSW21	TAD setting 1	V-34
WSW22	Copy resolution setting	V-34
WSW23	Communications setting	V-35
WSW24	TAD setting 2	V-36
WSW25	TAD setting 3	V-37
WSW26	Function setting 4	V-38
WSW27	Function setting 5	V-39
WSW28	Function setting 6	V-40
WSW29	Function setting 7	V-41
WSW30	Function setting 8	V-42
WSW31	Function setting 9	V-43
WSW32	Function setting 10	V-44
WSW33	Function setting 11	V-45
WSW34	Function setting 12	V-46

■ Operating Procedure

(1) Press the [1] and [0] keys in this order in the initial maintenance mode.

The equipment displays the "WSW00" on the LCD and becomes ready to accept a firmware switch number.

(2) Enter the desired number from the firmware switch numbers (01 through 34).

The following appears on the LCD:

WSWXX = 0 0 0 0 0 0 0 0

(3) Use the [◀] and [▶] keys to move the cursor to the selector position to be modified.

(4) Enter the desired number using the [0] and [1] keys.

(5) Press the [Set] key. This operation saves the newly entered selector values onto the E^2PROM and readies the equipment for accepting a firmware switch number.

(6) Repeat steps (2) through (5) until the modification for the desired firmware switches is completed.

(7) Press the [Set] or [Stop] key to return the equipment to the initial maintenance mode.

NOTES:
- To cancel this operation and return the equipment to the initial maintenance mode during the above procedure, press the [Stop] key.
- If there is a pause of more than one minute after a single-digit number is entered for double-digit firmware switch numbers, the equipment will automatically return to the initial maintenance mode.

■ Note

The user-accessible selectors of the firmware switches are shaded in the tables given on the following pages.

■ Detailed Description for the Firmware Switches

WSW01 (Dial pulse setting)

Selector No.	Function	Setting and Specifications
1 2	Dial pulse generation mode	No. 1 2 0 0 : N 0 1 : N+1 1 0 : 10-N 1 1 : N
3 4	Break time length in pulse dialing	No. 3 4 0 0 : 60 ms 0 1 : 67 ms 1 0 : 40 ms (for 16 PPS) 1 1 : 64 ms (at 106-ms intervals)
5 6	Inter-digit pause	No. 5 6 0 0 : 800 ms 0 1 : 850 ms 1 0 : 950 ms 1 1 : 600 ms
7	Switching between pulse (DP) and tone (PB) dialing, by the function switch	0: Yes 1: No
8	Default dialing mode, pulse (DP) or tone (PB) dialing	0: PB 1: DP

- **Selectors 1 and 2: Dial pulse generation mode**

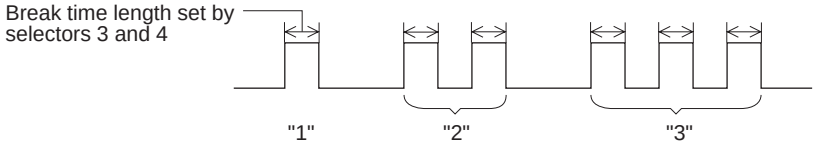
  These selectors set the number of pulses to be generated in pulse dialing.

  N: Dialing "N" generates "N" pulses. (Dialing "0" generates 10 pulses.)
  N + 1: Dialing "N" generates "N + 1" pulses.
  10 - N: Dialing "N" generates "10 - N" pulses.

- **Selectors 3 and 4: Break time length in pulse dialing**

  These selectors set the break time length in pulse dialing.

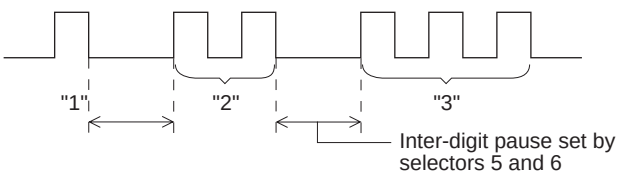
  (Example: If "1," "2," and "3" are dialled when N is set by selectors 1 and 2.)



- **Selectors 5 and 6: Inter-digit pause**

  These selectors set the inter-digit pause in pulse dialing.

  (Example: If "1," "2," and "3" are dialled when N is set by selectors 1 and 2.)



- **Selector 7: Switching between pulse (DP) and tone (PB) dialing, by the function switch**

  This selector determines whether or not the dialing mode may be switched between the pulse (DP) and tone (PB) dialing by using the function switch.

- **Selector 8: Default dialing mode, pulse (DP) or tone (PB) dialing**

  This selector sets the default dialing mode (pulse dialing or tone dialing) which may be changed by the function switch. If the user switches it with the function switch when selector 7 is set to "0," the setting specified by this selector will be also switched automatically.

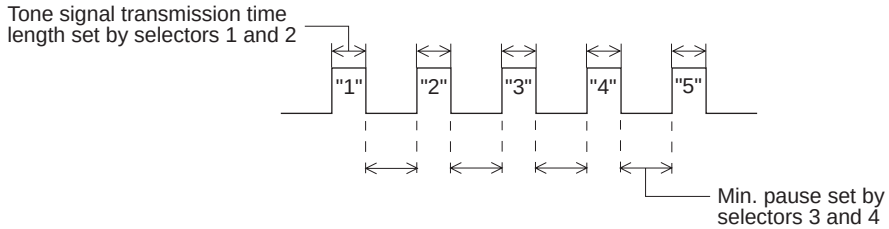
WSW02 (Tone signal setting)

Selector No.	Function	Setting and Specifications
1 2	Tone signal transmission time length	No. 1 2 0 0 : 70 ms 0 1 : 80 ms 1 0 : 90 ms 1 1 : 100 ms
3 4	Min. pause in tone dialing	No. 3 4 0 0 : 70 ms 0 1 : 80 ms 1 0 : 90 ms 1 1 : 140 ms
5 | 8	Attenuator for pseudo ring backtone to the line (selectable in the range of 0-15 dB)	0: 0 dB 1: 8 dB 0: 0 dB 1: 4 dB 0: 0 dB 1: 2 dB 0: 0 dB 1: 1 dB

- **Selectors 1 through 4: Tone signal transmission time length and Min. pause in tone dialing**

  These selectors set the tone signal transmission time length and minimum pause in tone dialing.

  (Example: If "1," "2," "3," "4," and "5" are dialled.)



- **Selectors 5 through 8: Attenuator for pseudo ring backtone to the line**

  These selectors are used to adjust the sound level of beep generated as a ring backtone in the F/T mode or as a signal during remote control operation or at the start of ICM recording.

  Setting two or more selectors to "1" produces addition of attenuation assigned to each selector.

  This setting will be limited if selector 8 of WSW23 is set to "0."

WSW03 (PABX* mode setting)

Selector No.	Function	Setting and Specifications
1	CNG detection when sharing a modular wall socket with a telephone	0: A 1: B
2 | 4	Min. detection time length of PABX* dial tone, required for starting dialing	No. 2 3 4 0 0 0 : 50 ms 0 0 1 : 210 ms 0 1 0 : 500 ms 0 1 1 : 800 ms 1 0 0 : 900 ms 1 0 1 : 1.5 sec. 1 1 0 : 2.0 sec. 1 1 1 : 2.5 sec.
5	CNG detection when sharing a modular wall socket with a telephone	0: A 1: B
6 7	Dial tone detection in PABX*	No. 6 7 0 0 : No detection (3.5 sec. WAIT) 0 1 : No detection (5 sec. WAIT) 1 0 : No detection (7 sec. WAIT) 1 1 : Detection (Frequency only)
8	"R" key function	0: 1st dial tone detection add 1: No 1st dial tone detection

* PABX: Private automatic branch exchange

NOTE: Selectors 2 through 4 and 6 through 8 are not applicable where no PABX is installed.

- **Selectors 1 and 5: CNG detection when sharing a modular wall socket with a telephone**

  These selectors determine whether or not the equipment detects a CNG signal when a line is connected to a telephone sharing a modular wall socket with the equipment. If these selectors are set to "0,0," the equipment does not detect CNG. If set to other selector values, the equipment interprets CNG as an effective signal upon detection of CNG signals by the number of cycles specified by these selectors and then starts FAX reception.

Selector No.1	Selector No. 5	Cycle
0 (A)	0 (A)	No detection
0 (A)	1 (B)	One cycle
1 (B)	0 (A)	1.5 cycles
1 (B)	1 (B)	2 cycles

- **Selectors 2 through 4: Min. detection time length of PABX dial tone, required for starting dialing**

  Upon detection of the PABX dial tone for the time length set by these selectors, the equipment starts dialing.

  These selectors are effective only when both selectors 6 and 7 are set to "1" (Detection).

- **Selectors 6 and 7: Dial tone detection in PABX**

  These selectors activate or deactivate the dial tone detection function which detects a dial tone when a line is connected to the PABX.

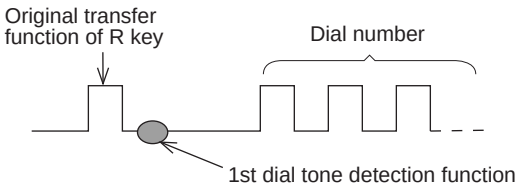
  Setting both of these selectors to "1" activates the dial tone detection function so that the equipment starts dialing upon detection of a dial tone when a line is connected.

  Other setting combinations deactivate the dial tone detection function so that the equipment starts dialing after the specified WAIT (3.5, 5.0, or 7.0 sec.) without detection of a dial tone when a line is connected.

- **Selector 8: "R" key function**

  This selector determines whether or not the 1st dial tone detection function (specified by selectors 1 through 3 of WSW05) is added to the R key.

  If this selector is set to "0," pressing the R key automatically activates the 1st dial tone detection function when the PABX and the automatic calling are selected by using the function switch. If you press the R key and a dial number in succession, the equipment will automatically carry out the 1st dial tone detection function following the original transfer function as shown below.



WSW04 (TRANSFER facility setting)

Selector No.	Function	Setting and Specifications
1	Earth function in transfer facility	0: Provided 1: Not provided
2 3	Dual tone detection frequency in ICM recording	No. 2 3 0 0 : 350 or 440 Hz (A) 0 1 : 440 or 480 Hz (B) 1 x : 480 or 620 Hz (C)
4	Tone detection sensitivity in ICM recording	0: OFF 1: High
5 6	Earth time length for earth function	No. 5 6 0 0 : 200 ms 0 1 : 300 ms 1 0 : 500 ms 1 1 : 700 ms
7 8	Break time length for flash function	No. 7 8 0 0 : 80 ms 0 1 : 110 ms 1 0 : 250 ms 1 1 : 500 ms

NOTE: Selectors 1 and 5 through 8 are not applicable in those countries where no transfer facility is supported.

- **Selector 1: Earth function in transfer facility**

  This selector determines whether or not the earth function is added to the transfer setting menu to be accessed by the function switch.

- **Selectors 2 and 3: Dual tone detection frequency in ICM recording**

  If the equipment detects either of the frequencies set by these selectors in ICM recording, it will disconnect the line. For example, if these selectors are set to "0, 0," the equipment will disconnect the line upon detection of 350 Hz or 440 Hz.

- **Selector 4: Tone detection sensitivity in ICM recording**

  Setting this selector to "1" increases the tone detection sensitivity in ICM recording.

- **Selectors 5 and 6: Earth time length for earth function**

  These selectors set the short-circuiting time length of the telephone line (La or Lb) to ground.

  This setting is effective only when the earth function is selected for the R key by using the function switch.

- **Selectors 7 and 8: Break time length for flash function**

  These selectors set the break time length.

  This setting is effective only when the flash function is selected for the R key by using the function switch.

WSW05 (1st dial tone and busy tone detection)

Selector No.	Function	Setting and Specifications
1 | 3	1st dial tone detection	No. 1 2 3 0 0 0 : 3.5 sec. WAIT 0 0 1 : 7.0 sec. WAIT 0 1 0 : 10.5 sec. WAIT 0 1 1 : 14.0 sec. WAIT 1 0 0 : 17.5 sec. WAIT 1 0 1 : 21.0 sec. WAIT 1 1 0 : 24.5 sec. WAIT 1 1 1 : Detection (Without WAIT)
4	Max. pause time allowable for remote ID code detection	0: 2 seconds 1: 1 second
5 6	Busy tone detection in automatic sending mode	No. 5 6 0 0 : No detection 0 1 : Detection only after dialing 1 0 : No detection 1 1 : Detection before and after dialing
7	Busy tone detection in automatic receiving mode	0: Yes 1: No
8	Not used.	

NOTE: Selectors 5 through 7 are not applicable in those countries where no busy tone detection is supported, e.g., U.S.A.

- **Selectors 1 through 3: 1st dial tone detection**

  These selectors activate or deactivate the 1st dial tone detection function which detects the 1st dial tone issued from the PSTN when a line is connected to the PSTN.

  Setting all of these selectors to "1" activates the dial tone detection function so that the equipment starts dialing upon detection of a dial tone when a line is connected. (However, in those countries which support no dial tone detection function, e.g., in the U.S.A., setting these selectors to "1" makes the equipment start dialing after a WAIT of 3.5 seconds.) For the detecting conditions of the 1st dial tone, refer to WSW07 and WSW08.

  Other setting combinations deactivate the dial tone detection function so that the equipment starts dialing after the specified WAIT (3.5, 7.0, 10.5, 14.0, 17.5, 21.0, or 24.5 seconds) without detection of a dial tone when a line is connected to the PSTN.

- **Selector 4: Max. pause time allowable for remote ID code detection**

  This selector sets the maximum pause time allowable for detecting the second digit of a remote ID code after detection of the first digit in remote reception.

  If selector 4 is set to "0" (2 seconds), for instance, only a remote ID code whose second digit is detected within 2 seconds after detection of the first digit will become effective so as to activate the remote function.

- **Selectors 5 and 6: Busy tone detection in automatic sending mode**

  These selectors determine whether or not the equipment automatically disconnects a line upon detection of a busy tone in automatic sending mode.

  Setting selector 6 to "0" ignores a busy tone so that the equipment does not disconnect the line.

  Setting selectors 5 and 6 to "0" and "1," respectively, makes the equipment detect a busy tone only after dialing and disconnect the line.

  Setting both of selectors 5 and 6 to "1" makes the equipment detect a busy tone before and after dialing and then disconnect the line.

- **Selector 7: Busy tone detection in automatic receiving mode**

  This selector determines whether or not the equipment automatically disconnects a line upon detection of a busy tone in automatic receiving mode.

WSW06 (PAUSE key setting and 2nd dial tone detection)

Selector No.	Function	Setting and Specifications
1 | 3	PAUSE key setting and 2nd dial tone detection	No. 1 2 3 0 0 0 : No pause 0 0 1 : 3.5 sec. WAIT 0 1 0 : 7 sec. WAIT 0 1 1 : 10.5 sec. WAIT 1 0 0 : 14 sec. WAIT 1 0 1 : 17.5 sec. WAIT 1 1 0 : 2nd dial tone detection only in pulse dialing (DP) system 1 1 1 : 2nd dial tone detection both in DP and push-button (PB) dialing systems
4 | 6	Detection of international tone	No. 4 5 6 0 0 0 : 50 ms 0 0 1 : 210 ms 0 1 0 : 500 ms 0 1 1 : 800 ms 1 0 0 : 900 ms 1 0 1 : 1.5 sec. 1 1 0 : 2.0 sec. 1 1 1 : 2.5 sec.
7	No. of dial tone detection times	0: Once 1: Twice
8	2nd dial tone interrupt detecting time	0: 30 ms 1: 50 ms

NOTE: Selectors 4 through 8 are not applicable in those countries where no dial tone detection is supported, e.g., U.S.A.

- **Selectors 1 through 3: PAUSE key setting and 2nd dial tone detection**

Selectors 1 2 3

0 0 0	No WAIT is inserted even if the PAUSE key is pressed.
0 0 1 0 1 0 0 1 1 1 0 0 1 0 1	Pressing the PAUSE key inserts WAIT in pulse dialing, as defined in the above table. If the PAUSE key is pressed repeatedly, the equipment beeps a refusal sound and refuses the entry. In hook-up dialing, however, the equipment allows repeated pressing with an acceptance sound, but inserts WAIT only for the first pressing.
1 1 0 1 1 1	Each time the PAUSE key is pressed, the equipment detects a 2nd dial tone. If no 2nd dial tone is inputted within the specified time, the equipment disconnects the line in automatic dialing, or it starts transmitting the dial signal if given after depression of the PAUSE key in hook-up dialing. (In those countries where no dial tone detection function is supported, setting these selectors to "1, 1, 0" or "1, 1, 1" inserts a WAIT of 3.5 seconds.)

- **Selectors 4 through 6: Detection of international tone**

  Upon detection of the 2nd dial tone for the time length specified by these selectors, the equipment starts dialing.

  This setting is effective only when the 2nd dial tone detection function is activated by selectors 1 through 3 (Setting 1, 1, 0 or 1, 1, 1).

  This function does not apply in those countries where no dial tone detection function is supported.

- **Selector 7: No. of dial tone detection times**

  This selector sets the number of dial tone detection times required for starting dialing.

- **Selector 8: 2nd dial tone interrupt detecting time**

  This selector sets the allowable time length of an interrupt which should not be interpreted as an interrupt in the 2nd tone dialing.

WSW07 (Dial tone setting 1)

Selector No.	Function	Setting and Specifications
1 2	Frequency band range	No. 1 2 0 0 : Narrows by 10 Hz 0 1 : Initial value 1 X : Widens by 10 Hz
3	Line current detection	0: No 1: Yes
4 | 6	2nd dial tone detection level (Z = 600 Ω)	No. 4 5 6 0 0 0 : -21 dBm 0 0 1 : -24 dBm 0 1 0 : -27 dBm 0 1 1 : -30 dBm 1 0 0 : -33 dBm 1 0 1 : -36 dBm 1 1 0 : -39 dBm 1 1 1 : -42 dBm
7	1st dial tone interrupt detecting time	0: 30 ms 1: 50 ms
8	Not used.	

NOTE: The WSW07 is not applicable in those countries where no dial tone or line current detection is supported, e.g., U.S.A.

- **Selectors 1 and 2: Frequency band range**

  These selectors set the frequency band for the 1st dial tone and the busy tone (before dialing) to be detected.

  This setting is effective only when selectors 1 through 3 of WSW05 are set to "1, 1, 1."

- **Selector 3: Line current detection**

  This selector determines whether or not the equipment should detect a line current before starting dialing.

- **Selectors 4 through 6: 2nd dial tone detection level**

  These selectors set the detection level of the 2nd dial tone.

- **Selector 7: 1st dial tone interrupt detecting time**

  This selector sets the allowable time length of an interrupt which should not be interpreted as an interrupt in the 1st dial tone dialing.

WSW08 (Dial tone setting 2)

Selector No.	Function	Setting and Specifications
1 | 3	1st dial tone detection time length	No. 1 2 3 0 0 0 : 50 ms 0 0 1 : 210 ms 0 1 0 : 500 ms 0 1 1 : 800 ms 1 0 0 : 900 ms 1 0 1 : 1.5 sec. 1 1 0 : 2.0 sec. 1 1 1 : 2.5 sec.
4 5	Time-out length for 1st and 2nd dial tone detection	No. 4 5 0 0 : 10 sec. 0 1 : 20 sec. 1 0 : 6 sec. (in the U.S.A versions) 15 sec. (in other versions) 1 1 : 30 sec.
6 | 8	Detection level of 1st dial tone and busy tone before dialing	No. 6 7 8 0 0 0 : -21 dBm 0 0 1 : -24 dBm 0 1 0 : -27 dBm 0 1 1 : -30 dBm 1 0 0 : -33 dBm 1 0 1 : -36 dBm 1 1 0 : -39 dBm 1 1 1 : -42 dBm

NOTE: The WSW08 is not applicable in those countries where no dial tone or line current detection is supported, e.g., U.S.A.

- **Selectors 1 through 3: 1st dial tone detection time length**

  Upon detection of the 1st dial tone for the time length set by these selectors, the equipment starts dialing.

  This setting is effective only when selectors 1 through 3 of WSW05 are set to "1, 1, 1."

- **Selectors 4 and 5: Time-out length for 1st and 2nd dial tone detection**

  These selectors set the time-out length for the 1st and 2nd dial tone detection so that the equipment waits dial tone input for the specified time length and disconnects itself from the line when no dial tone is inputted.

WSW09 (Protocol definition 1)

Selector No.	Function	Setting and Specifications
1	Frame length selection	0: 256 octets 1: 64 octets
2	Use of non-standard commands	0: Allowed 1: Prohibited
3 | 4	No. of retries	No. 3 4 0 0 : 4 times 0 1 : 3 times 1 0 : 2 times 1 1 : 1 time
5	T5 timer	0: 300 sec. 1: 60 sec.
6	T1 timer	0: 35 sec. 1: 40 sec.
7 8	Elapsed time for time-out control for no response from the called station in automatic sending mode	No. 7 8 0 0 : 50 sec. 0 1 : 70 sec. 1 0 : 90 sec. 1 1 : 35 sec.

NOTE: Selectors 1 through 5 are not applicable in those models which do not support ECM.

- **Selector 1: Frame length selection**

  Usually a single frame consists of 256 octets (1 octet = 8 bits). For communications lines with higher bit error rate, however, set selector 1 to "1" so that the facsimile equipment can divide a message into 64-octet frames.

  Remarks: The error correction mode (ECM) is a facsimile transmission manner in which the equipment divides a message into frames for transmission so that if any data error occurs on the transmission line, the equipment retransmits only those frames containing the error data.

- **Selector 2: Use of non-standard commands**

  If this selector is set to "0," the equipment may use non-standard commands (the machine's native-mode commands, e.g., NSF, NSC, and NSS) for communications. If it is set to "1," the equipment will use standard commands only.

- **Selectors 3 and 4: No. of retries**

  These selectors set the number of retries in each specified modem transmission speed.

- **Selector 5: T5 timer**

  This selector sets the time length for the T5 timer.

- **Selector 6: T1 timer**

  This selector sets the time length for the T1 timer.

- **Selectors 7 and 8: Elapsed time for time-out control**

  If the equipment receives no response (no G3 command) from the called terminal in automatic sending during the time set by these selectors, it disconnects the line.

WSW10 (Protocol definition 2)

Selector No.	Function	Setting and Specifications
1	Switching of DPS, following the CML ON/OFF	0: No 1: Yes
2	Time length from transmission of the last dial digit to CML ON	0: 100 ms 1: 50 ms
3	Time length from CML ON to CNG transmission	0: 2 sec. 1: 4 sec.
4	Time length from CML ON to CED transmission (except for facsimile-to-telephone switching)	0: 0.5 sec. 1: 2 sec.
5 6	No. of training retries	No. 5 6 0 0 : 1 time 0 1 : 2 times 1 0 : 3 times 1 1 : 4 times
7 8	Not used.	

- **Selector 1: Switching of DPS, following the CML ON/OFF**

  Setting this selector to "1" automatically switches DPS following the CML ON/OFF operation. This function is provided to conform to the Swedish standard.

- **Selector 2: Time length from transmission of the last dial digit to CML ON**

  This selector sets the time length from when the equipment transmits the last dial digit until the CML relay comes on.

- **Selector 3: Time length from CML ON to CNG transmission**

  This selector sets the time length until the equipment transmits a CNG after it turns on the CML relay.

- **Selector 4: Time length from CML ON to CED transmission**

  This selector sets the time length until the equipment transmits a CED after it turns on the CML relay. This setting does not apply to switching between facsimile and telephone.

- **Selectors 5 and 6: No. of training retries**

  These selectors set the number of training retries to be repeated before automatic fallback.

WSW11 (Busy tone setting)

Selector No.	Function	Setting and Specifications
1 2	Frequency band range	No. 1 2 0 0 : Narrows by 10 Hz 0 1 : Initial value 1 x : Widens by 10 Hz
3	Not used.	
4	ON/OFF time length ranges (More than one setting allowed)	1: 400-600/400-600 ms
5		1: 175-440/175-440 ms
6		1: 700-800/700-800 ms
7		1: 110-410/320-550 ms
8		1: 100-660/100-660 ms

NOTE: The WSW11 is not applicable in those countries where no busy tone detection is supported, e.g., U.S.A.

The setting of WSW11 is effective only when selectors 5 and 6 of WSW05 are set to "0, 1" or "1, 1" (Busy tone detection).

- **Selectors 1 and 2: Frequency band range**

  These selectors set the frequency band for busy tone to be detected.

- **Selectors 4 through 8: ON/OFF time length ranges**

  These selectors set the ON and OFF time length ranges for busy tone to be detected. If more than one selector is set to "1," the ranges become wider. For example, if selectors 4 and 5 are set to "1," the ON and OFF time length ranges are from 175 to 600 ms.

WSW12 (Signal detection condition setting)

Selector No.	Function	Setting and Specifications
1 2	Min. OFF time length of calling signal (Ci)	No. 1 2 0 0 : 300 ms 0 1 : 500 ms 1 0 : 700 ms 1 1 : 900 ms
3 4	Max. OFF time length of calling signal (Ci)	No. 3 4 0 0 : 6 sec. 0 1 : 7 sec. 1 0 : 9 sec. 1 1 : 11 sec.
5 6	Detecting time setting	No. 5 6 0 0 : 800 ms (1000 ms*) 0 1 : 200 ms 1 0 : 250 ms 1 1 : 150 ms
7	Delay	0: Yes 1: No
8	Not used.	

* 1000 ms in Chinese or Hong Kong versions.

- **Selectors 1 through 4: Min. and max. OFF time length of calling signal (Ci)**

  If the equipment detects the OFF state of calling signal (Ci) for a time length which is greater than the value set by selectors 1 and 2 and less than the value set by selectors 3 and 4, it interprets the Ci signal as OFF.

- **Selectors 5 and 6: Detecting time setting**

  These selectors set the time length required to make the equipment acknowledge itself to be called. That is, if the equipment continuously detects calling signals with the frequency set by selectors 1 through 4 of WSW14 during the time length set by these selectors 5 and 6, it acknowledges the call.

- **Selector 7: Delay**

  Setting this selector to "0" allows the equipment to insert a 900 ms WAIT after acknowledgement of the call until the equipment turns on the CML relay to start receiving operation.

WSW13 (Modem setting)

Selector No.	Function	Setting and Specifications
1 2	Cable equalizer	No. 1 2 0 0 : 0 km 0 1 : 1.8 km 1 0 : 3.6 km 1 1 : 5.6 km
3 4	Reception level	No. 3 4 0 0 : -43 dBm 0 1 : -47 dBm 1 0 : -49 dBm 1 1 : -51 dBm
5 | 8	Modem attenuator	0: 0 dB 1: 8 dB 0: 0 dB 1: 4 dB 0: 0 dB 1: 2 dB 0: 0 dB 1: 1 dB

The modem should be adjusted according to the user's line conditions.

- **Selectors 1 and 2: Cable equalizer**

  These selectors are used to improve the pass-band characteristics of analogue signals on a line. (Attenuation in the high-band frequency is greater than in the low-band frequency.)

  Set these selectors according to the distance from the telephone switchboard to the facsimile equipment.

- **Selectors 3 and 4: Reception level**

  These selectors set the optimum receive signal level.

- **Selectors 5 through 8: Modem attenuator**

  These selectors are used to adjust the transmitting level of the modem when the reception level at the remote station is improper due to line loss. This function applies for G3 protocol signals.

  Setting two or more selectors to "1" produces addition of attenuation assigned to each selector.

  This setting will be limited if selector 8 of WSW23 is set to "0."

WSW14 (AUTO ANS facility setting)

Selector No.	Function	Setting and Specifications
1 2	Frequency band selection (Lower limit)	No. 1 2 0 0 : 13 Hz 0 1 : 15 Hz 1 0 : 23 Hz 1 1 : 20 Hz
3 4	Frequency band selection (Upper limit)	No. 3 4 0 0 : 30 Hz 0 1 : 55 Hz 1 X : 70 Hz
5 | 8	No. of rings in AUTO ANS mode	No. 5 6 7 8 0 0 0 0 : Fixed to once 0 0 0 1 : Fixed to 2 times 0 0 1 0 : Fixed to 3 times 0 0 1 1 : Fixed to 4 times 0 1 0 0 : 1 to 2 times 0 1 0 1 : 1 to 3 times 0 1 1 0 : 1 to 4 times 0 1 1 1 : 1 to 5 times 1 0 0 0 : 2 to 3 times 1 0 0 1 : 2 to 4 times 1 0 1 0 : 2 to 5 times 1 0 1 1 : 2 to 6 times 1 1 0 0 : 1 to 10 times 1 1 0 1 : 2 to 10 times 1 1 1 0 : 3 to 5 times 1 1 1 1 : 4 to 10 times

- **Selectors 1 through 4: Frequency band selection**

  These selectors are used to select the frequency band of calling signals for activating the AUTO ANS facility.

- **Selectors 5 through 8: No. of rings in AUTO ANS mode**

  These selectors set the number of rings to initiate the AUTO ANS facility.

WSW15 (REDIAL facility setting)

Selector No.	Function	Setting and Specifications
1 2	Selection of redial interval	No. 1 2 0 0 : 5 minutes 0 1 : 1 minute 1 0 : 2 minutes 1 1 : 3 minutes
3 | 6	No. of redialings	No. 3 4 5 6 0 0 0 0 : 16 times 0 0 0 1 : 1 time 0 0 1 0 : 2 times 0 0 1 1 : 3 times | | 1 1 1 1 : 15 times
7 8	Not used.	

- **Selectors 1 through 6: Selection of redial interval and No. of redialings**

  The equipment redials by the number of times set by selectors 3 through 6 at intervals set by selectors 1 and 2.

WSW16 (Function setting 1)

Selector No.	Function	Setting and Specifications
1	Not used.	
2	CCITT superfine recommendation	0: OFF 1: ON
3	Remote reception	0: Only from the connected external telephone 1: From all telephones connected
4 5	Not used.	
6	Exclusive line mode	0: OFF 1: ON
7	Max. document length limitation	0: 400 cm 1: 90 cm
8	STOP key pressed during reception	0: Not functional 1: Functional

- **Selector 2: CCITT superfine recommendation**

  If this selector is set to "1," the equipment communicates in CCITT recommended superfine mode (15.4 lines/mm). If it is set to "0," it communicates in native superfine mode.

- **Selector 3: Remote reception**

  Setting this selector to "0" allows the facsimile equipment to receive data from the directly connected external telephone only. Setting it to "1" allows the equipment to receive data from all telephones sharing a modular wall socket with the equipment, as well as from the directly connected external telephone.

  If any of the following problems occurs frequently, set this selector to "0":

  - Dialing from any of the telephones sharing a modular wall socket starts the facsimile equipment.
  - Picking up the handset for any telephones sharing a modular wall socket while the equipment is in receiving operation disrupts the received image due to the superimposed noise.

- **Selector 6: Exclusive line mode**

  Setting this selector to "1" connects the equipment to the exclusive line, which enables transmission merely by pressing the Start key without dialing operation at both the calling and called terminals.

- **Selector 7: Max. document length limitation**

  This selector is used to select the maximum length of a document to be sent.

- **Selector 8: STOP key pressed during reception**

  If this selector is set to "1," pressing the STOP key can stop the current receiving operation. The received data will be lost.

WSW17 (Function setting 2)

Selector No.	Function	Setting and Specifications
1 2	Off-hook alarm	No. 1 2 0 0 : No alarm 0 1 : Always valid 1 X : Valid except when 'call reservation' is selected.
3	Power failure report output	0: ON 1: OFF
4	Calendar clock/prompt alternate display	0: NO 1: YES
5	Calendar clock type	0: U.S.A. type 1: European type
6	Error indication in activity report	0: NO 1: YES
7	Non-ring reception	0: OFF 1: ON
8	Not used.	

- **Selectors 1 and 2: Off-hook alarm**

  These selectors activate or deactivate the alarm function which sounds an alarm when the communication is completed with the handset being off the hook.

- **Selector 3: Power failure report output**

  This selector determines whether or not the equipment outputs a power failure report when the power comes back on.

- **Selector 4: Calendar clock/prompt alternate display**

  If this selector is set to "1," the calendar clock and the prompt "INSERT DOCUMENT" appear alternately on the LCD while the equipment is on standby; if it is set to "0," only the calendar clock appears.

- **Selector 5: Calendar clock type**

  If this selector is set to "0" (U.S.A.), the MM/DD/YY hh:mm format applies; if it is set to "1" (Europe), the DD/MM/YY hh:mm format applies: DD is the day, MM is the month, YY is the last two digits of the year, hh is the hour, and mm is the minute.

- **Selector 6: Error indication in activity report**

  This selector determines whether or not a communications error code will be printed in the activity report.

- **Selector 7: Non-ring reception**

  Setting this selector to "1" makes the equipment receive calls without ringer sound if the ring delay is set to 0.

WSW18 (Function setting 3)

Selector No.	Function	Setting and Specifications
1	CCD manufacturer setting	Fixed to 1.
2 3	Detection enabled time for CNG and no tone	No. 2 3 0 0 : 40 sec. 0 1 : 0 sec. (No detection) 1 0 : 5 sec. 1 1 : 80 sec.
4 5	Not used.	
6	Registration of station ID	0: Permitted 1: Prohibited
7 8	Tone sound monitoring	No. 7 8 0 X : No monitoring 1 0 : Up to phase B at the calling station only 1 1 : All transmission phases both at the calling and called stations

- **Selector 1: CCD manufacturer setting**

  Reserved for future variation of CCD.

- **Selectors 2 and 3: Detection enabled time for CNG and no tone**

  After the line is connected via the external telephone, the equipment can detect a CNG signal or no tone for the time length specified by these selectors. The setting specified by these selectors becomes effective only when selector 8 of WSW20 is set to "1."

- **Selector 6: Registration of station ID**

  Setting this selector to "0" permits the registration of station ID for Austrian and Czecho versions.

- **Selectors 7 and 8: Tone sound monitoring**

  These selectors sets monitoring specifications of the tone sound inputted from the line.

WSW19 (Transmission speed setting)

Selector No.	Function	Setting and Specifications
1 | 3	First transmission speed choice for fallback	No. 1 2 3 / No. 4 5 6 0 0 0 : 2,400 bps 0 0 1 : 4,800 bps 0 1 0 : 7,200 bps 0 1 1 : 9,600 bps 1 0 0 : 12,000 bps * 1 0 1 : 14,400 bps * 1 1 0 : 14,400 bps * 1 1 1 : 14,400 bps *
4 | 6	Last transmission speed choice for fallback	
7	Not used.	
8	V. 17 mode	0: Permitted 1: Prohibited

* In those models with a maximum of 9600 bps capability, selection of 12,000 bps or 14,400 bps will still only produce a set speed automatically reduced to 9600 bps.

- **Selectors 1 through 6: First and last choices of transmission speed for fallback**

  These selectors are used to set the MODEM speed range. With the first transmission speed choice specified by selectors 1 through 3, the equipment attempts to synchronize the data transmission via the MODEM. If the synchronization fails, the equipment automatically steps down to the next lowest speed and attempts to synchronize the data transmission again. The equipment repeats this sequence while stepping down the transmission speed to the last choice specified by selectors 4 through 6.

  If the MODEM always falls back to a low transmission speed (e.g., 4,800 bps), set the first transmission speed choice to the lower one (e.g., modify it from 12,000 bps to 7,200 bps) in order to deactivate the high-speed MODEM function and reduce the training time for shorter transmission time.

  Generally, to save the transmission time, set the last transmission speed choice to a higher one.

WSW20 (Overseas communications mode setting)

Selector No.	Function	Setting and Specifications
1	EP* tone prefix	0: OFF 1: ON
2	Overseas communications mode (Reception)	0: 2100 Hz 1: 1100 Hz
3	Overseas communications mode (Transmission)	0: OFF 1: Ignores DIS once.
4 5	Min. time length from reception of CFR to start of transmission of video signals	No. 4 5 0 0 : 100 ms 0 1 : 200 ms 1 0 : 300 ms 1 1 : 400 ms
6 7	Chattering elimination for CNG detection	No. 6 7 0 0 : A (During CNG ON and OFF) 0 1 : B (During CNG OFF only) 1 X : C (No elimination)
8	CNG detection on/off	0: OFF 1: ON

* EP: Echo protection

- **Selector 1: EP tone prefix**

  Setting this selector to "1" makes the equipment transmit a 1700 Hz echo protection (EP) tone immediately preceding training in V.29 modulation system to prevent omission of training signals.

  Prefixing an EP tone is effective when the equipment fails to transmit at the V.29 modem speed and always has to fall back to 4800 bps transmission.

- **Selectors 2 and 3: Overseas communications mode**

  These selectors should be used if the facsimile equipment malfunctions in overseas communications. According to the communications error state, select the signal specifications.

  Setting selector 2 to "1" allows the equipment to use 1100 Hz CED signal instead of 2100 Hz in receiving operation. This prevents malfunctions resulting from echoes, since the 1100 Hz signal does not disable the echo suppressor (ES) while the 2100 Hz signal does.

  Setting selector 3 to "1" allows the equipment to ignore a DIS signal sent from the called station once in sending operation. This operation suppresses echoes since the first DIS signal immediately follows a 2100 Hz CED (which disables the ES) so that it is likely to be affected by echoes in the disabled ES state. However, such a disabled ES state will be removed soon so that the second and the following DIS signals are not susceptible to data distortion due to echoes. Note that some models when called may cause error by receiving a self-outputted DIS.

- **Selector 8: CNG detection on/off**

  If this selector is set to "1," the equipment detects a CNG signal according to the condition preset by selectors 2 and 4 of WSW18 after a line is connected. If it is set to "0," the equipment detects a CNG signal as long as a line is connected.

WSW21 (TAD setting 1)

Selector No.	Function	Setting and Specifications
1 | 5	Max. waiting time for voice signal	No. 1 2 3 4 5 0 0 0 0 0 : No detection 0 0 0 0 1 : 1 sec. 0 0 0 1 0 : 2 sec. 0 0 0 1 1 : 3 sec. | | 0 1 0 0 0 : 8 sec. | | 1 1 1 1 1 : 31 sec.
6 7	Two-way recording	No. 6 7 0 0 : For U.S.A. (A) 0 1 : Except for U.S.A. (B) 1 0 : Without beep (C) 1 1 : OFF (D)
8	Erasure of message stored in the memory after the message transfer	0: YES 1: NO

- **Selectors 1 through 5: Max. waiting time for voice signal**

  In the TAD mode, the equipment waits for voice signal for the time length specified by these selectors before it automatically shifts to the facsimile message receive mode or disconnects the line.

- **Selectors 6 and 7: Two-way recording (For those models equipped with a built-in TAD)**

  These selectors select the specifications of the two-way recording feature.

- **Selector 8: Erasure of message (For those models equipped with a built-in TAD)**

  Setting this selector to "0" will erase the message recorded in the memory after the document retrieval feature transfers the message.

WSW22 (Copy resolution setting)

Selector No.	Function	Setting and Specifications
1 | 3	Not used.	
4	Copy resolution	0: Fine 1: Superfine
5 | 8	Not used.	

- **Selector 4: Copy resolution**

  This selector determines whether the resolution for multi-copy should be Fine or Superfine.

WSW23 (Communications setting)

Selector No.	Function	Setting and Specifications
1	Starting point of training check (TCF)	0: From the head of a series of zeros 1: From any arbitrary point
2 3	Allowable training error rate	No. 2 3 0 0 : 0% 0 1 : 0.5% 1 0 : 1% 1 1 : 2%
4 5	Decoding error rate for transmission of RTN	No. 4 5 0 0 : 16% 0 1 : 14% 1 0 : 10% 1 1 : 8%
6	Issue of RTN at the occurrence of a pagination error	0: YES 1: NO
7	Not used.	
8	Limitation of attenuation level	0: YES 1: NO

- **Selector 1: Starting point of training check (TCF)**

  At the training phase of receiving operation, the called station detects for 1.0 second a training check (TCF) command, a series of zeros which is sent from the calling station for 1.5 seconds to verify training and give the first indication of the acceptability of the line.

  This selector sets the starting point from which the called station should start counting those zeros. If this selector is set to "0," the called station starts counting zeros 100 ms after the head of a series of zeros is detected.

  If it is set to "1," the called station starts counting zeros upon detection of 10-ms successive zeros 50 ms after the head of a series of zeros is detected. In this case, if the detection of 10-ms successive zeros is too late, the data counting period will become less than 1.0 second, making the called station judge the line condition unacceptable.

- **Selectors 2 and 3: Allowable training error rate**

  The called station checks a series of zeros gathered in training (as described in Selector 1) according to the allowable training error rate set by these selectors. If the called station judges the line condition to be accepted, it responds with CFR; if not, it responds with FTT.

- **Selectors 4 and 5: Decoding error rate for transmission of RTN**

  The facsimile equipment checks the actual decoding errors and then transmits an RTN according to the decoding error rate (Number of lines containing an error per page ÷ Total number of lines per page) set by these selectors.

- **Selector 6: Issue of RTN at the occurrence of a pagination error**

  If this selector is set to "0," the facsimile equipment transmits an RTN when a pagination error occurs due to recording lag relative to receiving.

- **Selector 8: Limitation of attenuation level**

  Setting this selector to "0" limits the transmitting level of the modem to 10 dB.

  This setting has priority over the settings selected by WSW02 (selectors 5 through 8) and WSW13 (selectors 5 through 8).

WSW24 (TAD setting 2)

Selector No.	Function	Setting and Specifications
1 2	Maximum OGM recording time	No. 1 2 0 0 : 15 sec. 0 1 : 20 sec. 1 0 : 30 sec. 1 1 : 50 sec.
3 4	Time length from CML ON to start of pseud ring backtone transmission	No. 3 4 0 0 : 4 sec. 0 1 : 3 sec. 1 0 : 2 sec. 1 1 : 1 sec.
5 | 8	Attenuator for playback of ICM/OGM to the line (Selectable from the range of 0-15 dB)	0: 0 dB 1: 8 dB 0: 0 dB 1: 4 dB 0: 0 dB 1: 2 dB 0: 0 dB 1: 1 dB

- **Selectors 1 and 2: Maximum OGM recording time (For those models equipped with a built-in TAD)**

  These selectors set the allowable maximum recording time for an OGM.

- **Selectors 3 and 4: Time length from CML ON to start of pseud ring backtone transmission**

  These selectors set the length of time from CML-ON up to the start of pseud ring backtone transmission.

  In those versions which have an OGM facility instead of pseud ring backtone, these selectors set the length of time from CML-ON up to the start of OGM transmission.

- **Selectors 5 through 8: Attenuator for playback of ICM/OGM to the line (For those models equipped with a built-in TAD)**

  Setting two or more selectors to "1" produces addition of attenuation assigned to each selector.

  This setting will not be limited by selector 8 of WSW23.

WSW25 (TAD setting 3)

Selector No.	Function	Setting and Specifications
1 | 4	Not used.	
5 | 7	Pause between paging number and PIN	No. 5 6 7 0 0 0 : 2 sec. 0 0 1 : 4 sec. 0 1 0 : 6 sec. 0 1 1 : 8 sec. 1 0 0 : 10 sec. 1 0 1 : 12 sec. 1 1 0 : 14 sec. 1 1 1 : 16 sec.
8	Automatic shift to facsimile message receive mode in ICM recording mode	0: YES 1: NO

- **Selectors 5 and 7: Pause between paging number and PIN (For those models equipped with a built-in TAD)**

  These selectors set the pause time between a telephone number being paged and PIN (private identification number) for the paging feature.

- **Selector 8: Automatic shift to facsimile message receive mode in ICM recording mode (For those models equipped with a built-in TAD)**

  If this selector is set to "0," the equipment automatically shifts to the facsimile message receive mode after recording an ICM. If it is set to "1," the equipment automatically disconnects the line after the waiting time has passed.

WSW26 (Function setting 4)

Selector No.	Function	Setting and Specifications
1	Application of DC wetting pulse	0: OFF 1: ON
2	Overvoltage limiter at the applying time of a wetting pulse	0: ON 1: OFF
3	Not used.	
4 5	No. of CNG cycles to be detected (when the line is connected via the external telephone except in the external TAD mode)	No. 4 5 0 0 : No detection (A) 0 1 : 1 (B) 1 0 : 1.5 (C) 1 1 : 2 (D)
6 7	No. of CNG cycles to be detected (when the line is connected via the external telephone in the external TAD mode or via the facsimile equipment in F/T mode)	No. 6 7 0 0 : 0.5 (A) 0 1 : 1 (B) 1 0 : 1.5 (C) 1 1 : 2 (D)
8	FAX reception after the time-out of pseudo ring backtones in F/T mode	0: YES 1: NO

- **Selectors 1 and 2: Application of DC wetting pulse and overvoltage limiter**

  These selectors take effect only when the UK version of the facsimile equipment is set up for the British Telecom's caller ID service or its equivalent.

  Selector 2 takes effect only when selector 1 is set to "1."

- **Selectors 4 and 5: No. of CNG cycles to be detected**

  The equipment interprets a CNG as an effective signal if it detects a CNG signal by the number of cycles specified by these selectors when the line is connected via the external telephone except in the external TAD mode.

- **Selectors 6 and 7: No. of CNG cycles to be detected (For those models not equipped with a built-in TAD)**

  The equipment interprets a CNG as an effective signal if it detects a CNG signal by the number of cycles specified by these selectors when the line is connected via the external telephone in the external TAD mode or via the facsimile equipment in F/T mode.

- **Selector 8: FAX reception after the time-out of pseudo ring backtones in F/T mode**

  If this selector is set to "0," the equipment enters the facsimile receive mode after issuing pseudo ring backtones. If it is set to "1," the equipment disconnects the line after issuing pseudo ring backtones.

WSW27 (Function setting 5)

Selector No.	Function	Setting and Specifications
1	Not used.	
2	Ringer OFF setting	0: YES 1: NO
3	Automatic playback of OGM at the start time of OGM ON mode	0: NO 1: YES
4	Detection of distinctive ringing pattern	0: NO 1: YES
5	Automatic erasure of voice alarm	0: YES 1: NO
6 | 8	Not used.	

- **Selector 2: Ringer OFF setting**

  This selector determines whether or not the ringer can be set to OFF.

- **Selector 3: Automatic playback of OGM at the start time of OGM ON mode (For those models equipped with a built-in TAD)**

  This selector determines whether or not the equipment automatically plays back an OGM the moment it switches to the OGM ON mode in the MC mode.

- **Selector 4: Detection of distinctive ringing pattern**

  If this selector is set to "0," the equipment detects only the number of rings; if it is set to "1," the equipment detects the number of rings and the ringing time length to compare the detected ringing pattern with the registered distinctive one.

- **Selector 5: Automatic erasure of voice alarm**

  This selector determines whether or not the voice alarm should be erased from the memory after it is issued.

WSW28 (Function setting 6)

Selector No.	Function	Setting and Specifications
1 | 3	Transmission level of DTMF high-band frequency signal	No. 1 2 3 0 0 0 : 0 dB 0 0 1 : +1 dB 0 1 0 : +2 dB 0 1 1 : +3 dB 1 0 0 : 0 dB 1 0 1 : –1 dB 1 1 0 : –2 dB 1 1 1 : –3 dB
4 | 6	Transmission level of DTMF low-band frequency signal	No. 4 5 6 0 0 0 : 0 dB 0 0 1 : +1 dB 0 1 0 : +2 dB 0 1 1 : +3 dB 1 0 0 : 0 dB 1 0 1 : –1 dB 1 1 0 : –2 dB 1 1 1 : –3 dB
7 8	Not used.	

- **Selectors 1 through 6: Transmission level of DTMF high-/low-band frequency signal**

  These selectors are intended for the manufacturer who tests the equipment for the Standard. Never access them.

WSW29 (Function setting 7)

Selector No.	Function	Setting and Specifications
1 | 3	Compression threshold level for voice signals inputted via the network in the built-in TAD operation	No. 1 2 3 0 0 0 : -47.0 dBm (A) 0 0 1 : -48.5 dBm (B) 0 1 0 : -50.0 dBm (C) 0 1 1 : -51.5 dBm (D) 1 0 0 : -53.0 dBm (E) 1 0 1 : -54.5 dBm (F) 1 1 0 : -56.0 dBm (G) 1 1 1 : OFF (H)
4 | 6	Compression threshold level for voice signals inputted via the handset in the built-in TAD operation	No. 4 5 6 0 0 0 : -44.0 dBm (A) 0 0 1 : -45.5 dBm (B) 0 1 0 : -47.0 dBm (C) 0 1 1 : -48.5 dBm (D) 1 0 0 : -50.0 dBm (E) 1 0 1 : -51.5 dBm (F) 1 1 0 : -53.0 dBm (G) 1 1 1 : OFF (H)
7	Automatic dialing by caller IDs stored in the memory	0: Yes 1: No
8	Not used.	

- **Selectors 1 through 6: Compression threshold level for signals inputted via the network/ handset in the built-in TAD operation (For those models equipped with a built-in TAD)**

  If voice signals inputted via the network or handset are below the level specified by these selectors, the TAD interprets those received voice signals as no signal, compressing the recording time.

- **Selector 7: Automatic dialing by caller IDs stored in the memory (For those models equipped with a built-in TAD)**

  This selector determines whether or not the automatic dialing function by caller IDs stored in the memory (see the Note below) can be accessed.

  If it is set to "0," caller IDs stored in the memory can be called up on the LCD by the user function 6-7 and then pressing the Start key when the desired caller ID is displayed dials the caller automatically.

  (Note: The equipment can store a maximum of the latest 30 incoming caller IDs together with the reception date and time in the memory.)

WSW30 (Function setting 8)

Selector No.	Function	Setting and Specifications
1 | 3	Detection level of dial tone or busy tone for the built-in TAD operation	No. 1 2 3 0 0 0 : -38.0 dBm (A) 0 0 1 : -39.5 dBm (B) 0 1 0 : -41.0 dBm (C) 0 1 1 : -42.5 dBm (D) 1 0 0 : -44.0 dBm (E) 1 0 1 : -45.5 dBm (F) 1 1 0 : -47.0 dBm (G) 1 1 1 : -48.5 dBm (H)
4	Not used.	
5	Speaker output level	0: Higher 1: Lower
6	Not used.	
7 8	Recording intensity control	No. 7 8 0 0 : A 0 1 : B 1 0 : C 1 1 : D

- **Selectors 1 through 3: Detection level of dial tone or busy tone for built-in TAD operation (For those models equipped with a built-in TAD)**

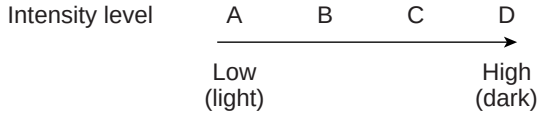
  If dial tone or busy tone inputted during ICM recording is below the level specified by these selectors, the TAD stops recording and disconnects the line.

- **Selector 5: Speaker output level (For those models equipped with a built-in TAD)**

  This selector determines the speaker output level when the speaker volume switch is set to HIGH or LOW, as listed below.

Selector 5 of WSW30 / Speaker Volume Switch Position	0 (Higher)	1 (Lower)
HIGH	High	Medium-High
LOW	Medium-Low	Low

- **Selectors 7 and 8: Recording intensity control**



WSW31 (Function setting 9)

Selector No.	Function	Setting and Specifications
1	Not used.	
2	Default reduction rate for failure of automatic reduction during recording	0: 100% 1: 50%
3 4	Not used.	
5	Minimum short-OFF duration in distinctive ringing	0: 130 ms 1: 90 ms
6 | 8	Not used.	

- **Selector 2: Default reduction rate for failure of automatic reduction during recording**

  This selector sets the default reduction rate to be applied if the automatic reduction function fails to record one-page data sent from the calling station in a single page of the current recording paper.

  If it is set to "0," the equipment records one-page data at full size (100%) without reduction; if it is set to "1," the equipment records it at half size (50%).

- **Selector 5: Minimum short-OFF duration in distinctive ringing**

  The ringer pattern consists of short and long rings, e.g., short-short-long rings. This selector sets the minimum OFF duration following a short ring in order to avoid missing ringer tones in distinctive ringing.

  If this selector is set to "1," when the short-OFF duration is a minimum of 90 ms long, then the equipment will interpret the short-OFF as OFF.

WSW32 (Function setting 10)

Selector No.	Function	Setting and Specifications
1 | 4	Not used.	
5 6	Default resolution	No. 5 6 0 0 : Standard 0 1 : Fine 1 0 : Super fine 1 1 : Photo
7 8	Default contrast	No. 7 8 0 X : Automatic 1 0 : Super light 1 1 : Super dark

- **Selectors 5 and 6: Default resolution**

  These selectors set the default resolution which applies when the equipment is powered up or completes a transaction.

- **Selectors 7 and 8: Default contrast**

  These selectors set the default contrast which applies when the equipment is powered up or completes a transaction.

WSW33 (Function setting 11)

Selector No.	Function	Setting and Specifications
1 | 3	Detection threshold level for voice signals inputted via the network in the built-in TAD operation	No. 1 2 3 0 0 0 : -42.5 dBm (A) 0 0 1 : -44.0 dBm (B) 0 1 0 : -45.5 dBm (C) 0 1 1 : -47.0 dBm (D) 1 0 0 : -48.5 dBm (E) 1 0 1 : -50.0 dBm (F) 1 1 0 : -51.5 dBm (G) 1 1 1 : -53.0 dBm (H)
4 5	First communications speed choice for PCI	No. 4 5 0 0 : 14,400 bps 0 1 : 12,000 bps 1 0 : 9,600 bps 1 1 : 7,200 bps
6	Report output of polled transmission requests	0: YES 1: NO
7 8	Comfortable noise level	No. 7 8 0 0 : OFF 0 1 : Low (A) 1 0 : Medium (B) 1 1 : High (C)

NOTE: The WSW33 is applicable to those models equipped with a built-in TAD.

- **Selectors 1 through 3: Detection threshold level for voice signals inputted via the network in the built-in TAD operation**

  If the equipment detects voice signals exceeding the threshold level set by these selectors, it will interpret them as effective voice.

- **Selectors 4 and 5: First communications speed choice for PCI (For those models equipped with a built-in TAD)**

  These selectors are used to set the first communications speed choice with which the equipment attempts to synchronize the data transmission via the PC interface. If the synchronization fails, the equipment automatically steps down to the next lowest speed.

- **Selector 6: Report output of polled transmission requests**

  This function does not apply in the U.S.A. versions.

- **Selectors 7 and 8: Comfortable noise level**

  These selectors set the level of noise to be added during playing-back of voice signals recorded with no-signal compression.

  If they are set to "0, 0," no noise will be added.

WSW34 (Function setting 12)

Selector No.	Function	Setting and Specifications
1 | 3	Erasing time length of ICM tone recorded preceding the tone detection starting point in the case of automatic line disconnection due to no voice signal received	No. 1 2 3 0 0 0 : 0 sec. 0 0 1 : 1 sec. 0 1 0 : 2 sec. 0 1 1 : 3 sec. 1 0 0 : 4 sec. 1 0 1 : 5 sec. 1 1 0 : 6 sec. 1 1 1 : 7 sec.
4 5	No. of CNG cycles to be detected (when the line is connected via the external telephone in the external TAD mode or via the facsimile equipment in F/T or TAD mode)	No. 4 5 0 0 : 0.5 (A) 0 1 : 1 (B) 1 0 : 1.5 (C) 1 1 : 2 (D)
6 7	Number of DTMF tone signals for inhibiting the detection of CNG during external TAD operation	No. 6 7 0 0 : 3 0 1 : 2 1 0 : 1 1 1 : OFF
8	CNG detection when the external telephone is connected with a line in TAD mode	0: Only when the equipment detects itself being called 1: Always

- **Selectors 1 through 3: Erasing time length of ICM tone recorded preceding the tone detection starting point in the case of automatic line disconnection due to no voice signal received**

  If the equipment has disconnected the line after detection of disconnection tone in ICM recording, it erases tone recorded preceding the tone detection starting point for the time length set by these selectors.

- **Selectors 4 and 5: No. of CNG cycles to be detected (For those models equipped with a built-in TAD)**

  The equipment interprets a CNG as an effective signal if it detects a CNG signal by the number of cycles specified by these selectors in any of the following cases:

  - when the line is connected via the external telephone in the external TAD mode.
  - when the line is connected via the facsimile equipment in F/T or TAD mode.

- **Selectors 6 and 7: Number of DTMF tone signals for inhibiting the detection of CNG during external TAD operation**

  If the equipment receives this specified number of DTMF tone signals during external TAD operation, it will not detect CNG afterwards.

  If these selectors are set to "1, 1," the CNG detection will not be inhibited.

- **Selector 8: CNG detection when the external telephone is connected with a line in TAD mode**

  If this selector is set to "0," the equipment will detect a CNG signal only when it detects itself being called. If the external telephone is connected with a line before the equipment detects itself being called, the equipment will no longer detect a CNG signal.

  If this selector is set to "1," the equipment will detect a CNG signal every time the external telephone is connected with a line, even without detecting itself being called.

[B] Printout of firmware switch data

■ Function

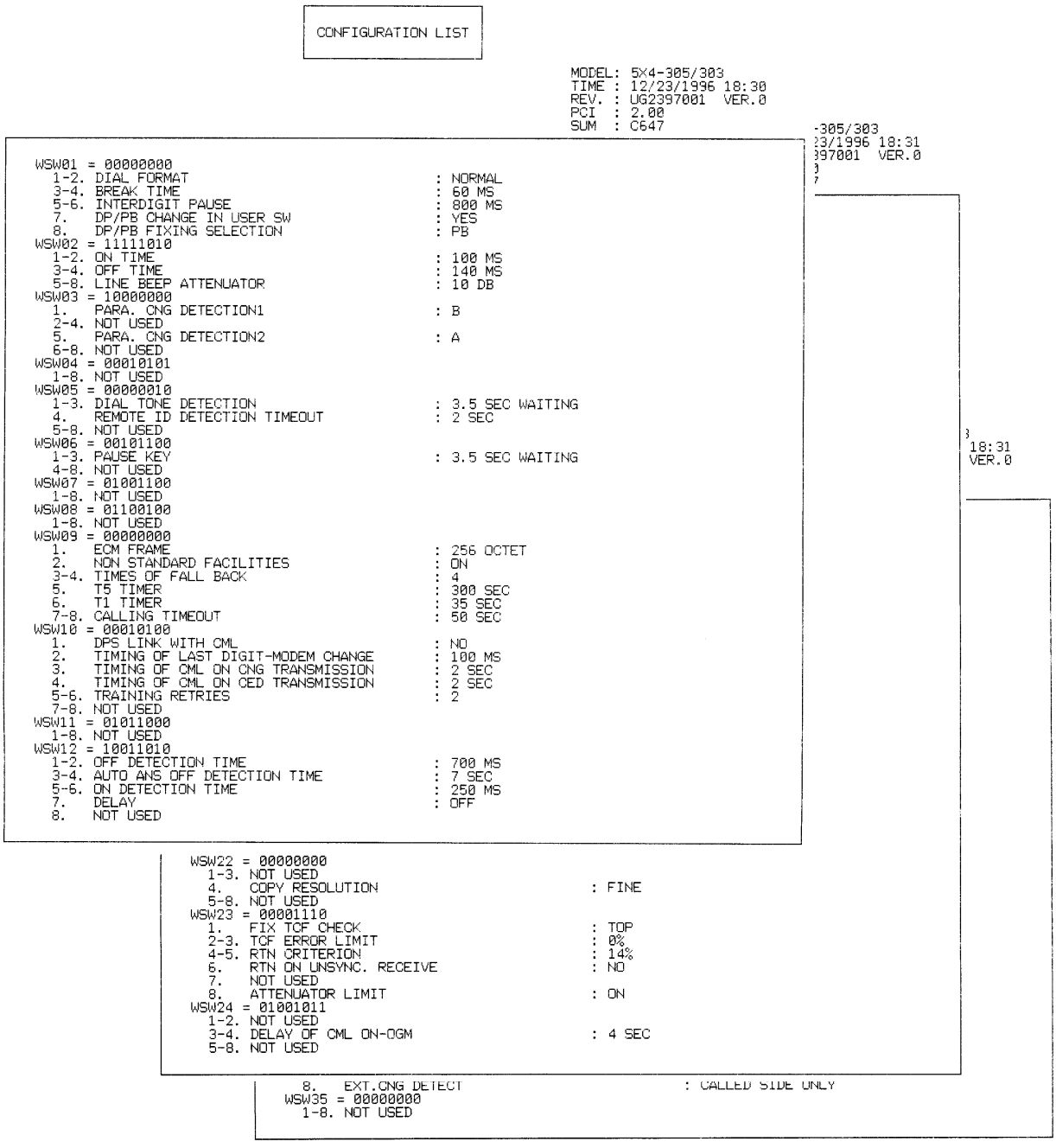
The equipment prints out the setting items and contents specified by the firmware switches.

■ Operating Procedure

(1) Press the [1] key twice in the initial maintenance mode.
The "PRINTING" will appear on the LCD.

(2) The equipment prints out the configuration list as shown in the figure below.

(3) Upon completion of printing, the equipment returns to the initial maintenance mode.



Configuration List

3.6 Operational Check of Control Panel PCB

■ Function

This function checks the control panel PCB for normal operation.

■ Operating Procedure

(1) Press the [1] and [3] keys in this order in the initial maintenance mode.

The "00 " will appear on the LCD.

(2) Press the keys and buttons in the order designated in the illustration shown below.

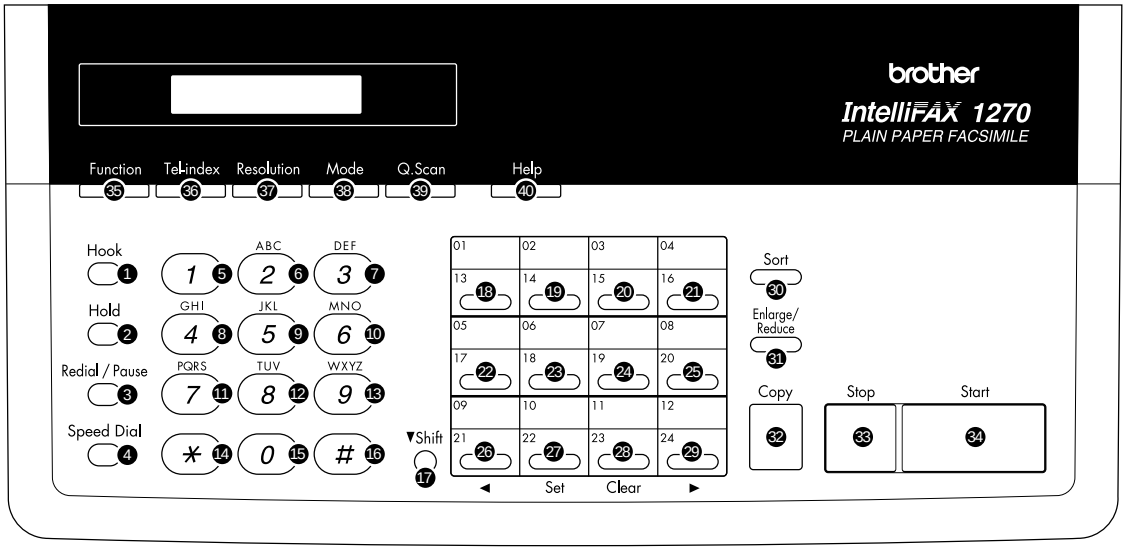
The LCD shows the corresponding number in decimal notation each time a key or button is pressed. Check that the displayed number is correct by referring to the illustration below.

If a key or button is pressed out of order, the equipment beeps and displays the "INVALID OPERATE" on the LCD. To return to the status ready to accept key & button entry for operational check, press the [Stop] key.

(3) After the last number key or button is pressed, the equipment beeps and returns to the initial maintenance mode.

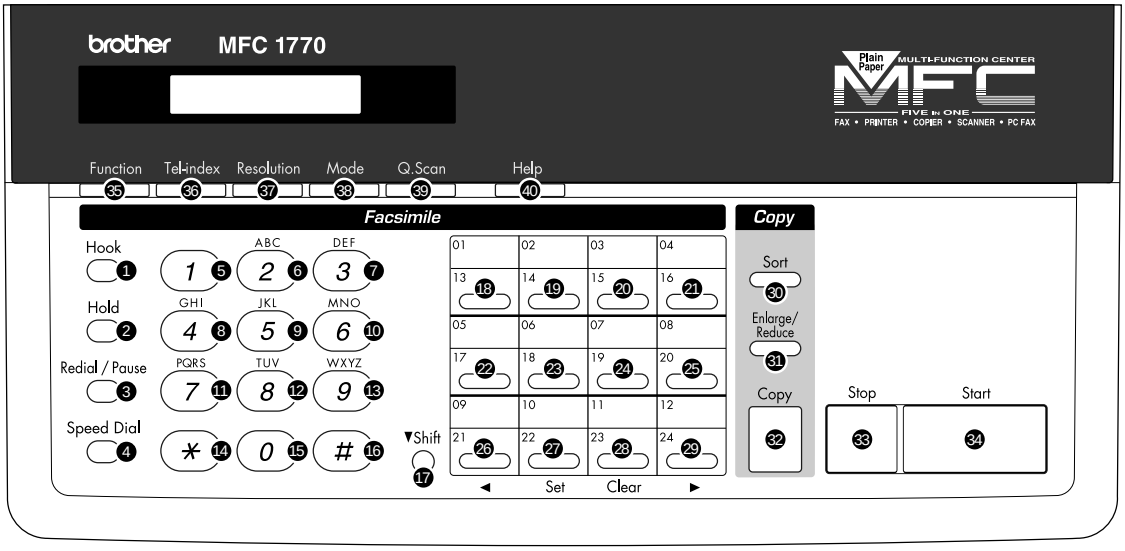
To terminate this operation, press the [Stop] key. The equipment returns to the initial maintenance mode.

FAX1170/1270/1010/1020

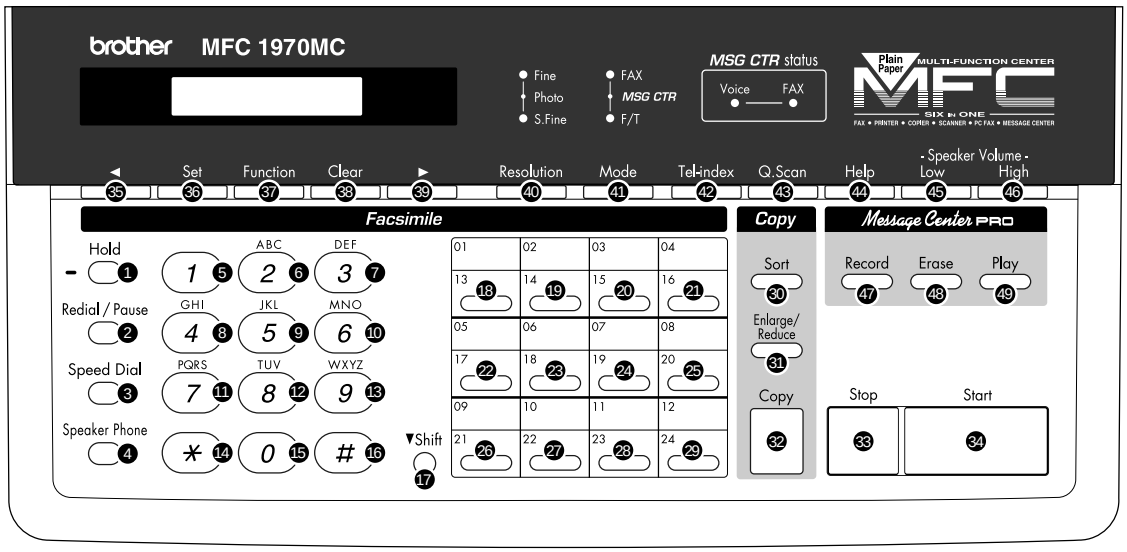


Key & Button Entry Order (1)

MFC1770



FAX1570MC/1030/MFC1870MC/1970MC



Key & Button Entry Order (2)

3.7 Sensor Operational Check

■ Function

This function allows you to check that the seven sensors (document front sensor, document rear sensor, cover sensor, paper ejection sensor, paper-edge sensor, ribbon sensor, and hook switch sensor*) operate correctly.

(* In the FAX1010 and those versions equipped with a Binatone handset, the hook switch sensor serves no function.)

In the FAX1010 and those versions equipped with a Binatone handset, the LCD shows the "FRERCJMPHRX 1" when

In this area a numeral appears, indicating the number of communications records printed out at the factory for testing.

- the document front and rear sensors detect no paper (FRE),
- the recording paper cover ASSY is closed (RC),
- the paper ejection sensor detects no paper jam (JM),
- the paper-edge sensor detects paper loaded and the paper front cover is closed (PH), and
- the ribbon sensor detects the ribbon cartridge loaded (RX).

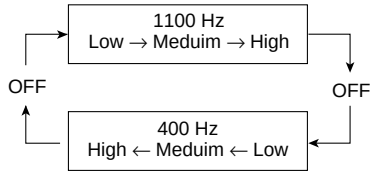
In other models, the LCD shows the "FRERCJMPHRXHK 1" when

In this area a numeral appears, indicating the number of communications records printed out at the factory for testing.

- the document front and rear sensors detect no paper (FRE),
- the recording paper cover ASSY is closed (RC),
- the paper ejection sensor detects no paper jam (JM),
- the paper-edge sensor detects paper loaded and the paper front cover is closed (PH),
- the ribbon sensor detects the ribbon cartridge loaded (RX), and
- the hook switch sensor detects the on-hook state (HK).

■ Operating Procedure

(1) Press the [3] and [2] keys in this order in the initial maintenance mode. The equipment sounds 1100 Hz and 400 Hz tones cyclically through the following volumes for testing the speaker:



In the FAX1010 and those versions equipped with a Binatone handset, the LCD shows the "FRERCJMPHRX 1" if the detecting conditions of the six sensors are as defined above.

In other models, the LCD shows the "FRERCJMPHRXHK 1" if the detecting conditions of the seven sensors are as defined above.

(2) Change the detecting conditions and check that the indication on the LCD changes as follows:

- Insert a document through the document front sensor, and the "F" of the FRE disappears.
- Insert a document through the document rear sensor, and the "E" of the FRE disappears.
- Open the recording paper cover ASSY, and the "RC" disappears.
- Jam paper at the paper outlet, and the "JM" disappears.
- Remove paper or open the paper front cover, and the "PH" disappears.
- Remove the ribbon cartridge, and the "RX" disappears.
- Lift up the handset, and the "HK" disappears. (Except for the FAX1010 and those versions equipped with a Binatone handset.)

(3) To stop this operation, press the Stop key. The equipment beeps for one second and returns to the initial maintenance mode.

3.8 CIS Scanner Area Setting

■ Function

The equipment sets the CIS scanner area and stores it into the E^2PROM. This setting operation requires the "adjusting sheet A" to be used.

■ Operating Procedure

(1) In the initial maintenance mode, set the "adjusting sheet A" on the document stacker.

(2) Press the 5 key twice.

The "SCANNER AREA SET" will appear on the LCD.

The equipment checks and sets the area to be scanned.

If no error is noted, the equipment returns to the initial maintenance mode.

If any error is noted, the "SCANNER ERROR" will appear on the LCD. To return the equipment to the initial maintenance mode, press the Stop key.

3.9 Equipment Error Code Indication

■ Function

This function displays an error code of the last error on the LCD.

■ Operating Procedure

(1) Press the 8 and 2 keys in this order in the initial maintenance mode.

The LCD shows the "MACHINE ERROR_ _" (for 2-digit error code indication) or "MACHINE ERR _ _ _ _" (for 4-digit error code indication).

(2) To stop this operation and return the equipment to the initial maintenance mode, press the Stop key.

3.10 Document Draw Adjustment

After replacement of the main PCB or CIS, or if data stored in the E^2PROM is damaged, you need to carry out this procedure by using the TC-027 chart.

■ Function

This function adjusts how much the document is drawn in, starting at the point when the document rear sensor is turned on until the leading edge of the document reaches the scanning start position.

■ Operating Procedure

(1) In the initial maintenance mode, set the TC-027 chart on the document stacker.

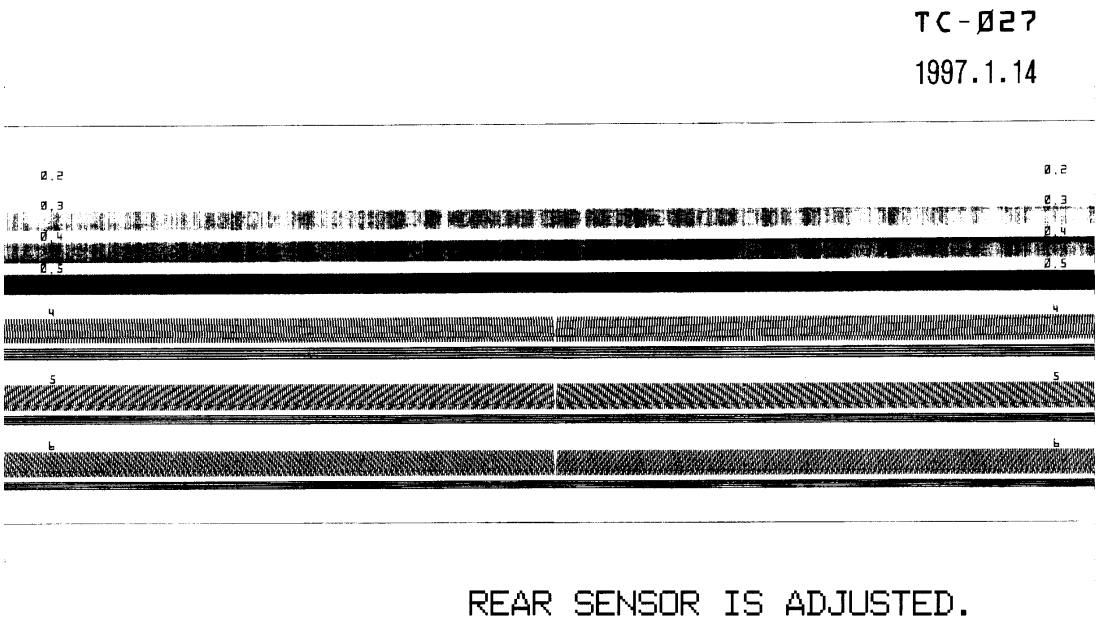
The message "DOC. READY" appears on the LCD.

(2) Press the Help key.

The equipment beeps and draws in the TC-027 chart to the scanning start position. While drawing it in, the equipment counts patterns on the chart to determine the amount of draw.

Upon completion of normal counting, the equipment shows the message "COPYING P.01" on the LCD and begins copying the TC-027 chart. The message "REAR SENSOR IS ADJUSTED." and the copied image will be printed out on recording paper as shown below.

If any error occurs during counting, the message "MACHINE ERROR AB" appears on the LCD, with no copying of the TC-027 chart onto the recording paper taking place. However, only the message "REAR SENSOR IS ADJUSTED." will be printed out.



Printout after Normal Completion of Document Draw Adjustment

CHAPTER VI.

ERROR INDICATION AND TROUBLESHOOTING

CONTENTS

1. ERROR INDICATION

To help the user or the service personnel promptly locate the cause of a problem (if any), the facsimile equipment incorporates the self-diagnostic functions which display error messages for equipment errors and communications errors.

For the communications errors, the equipment also prints out the transmission verification report and the communications list.

1.1 Equipment Errors

If an equipment error occurs, the facsimile equipment emits an audible alarm (continuous beeping) for approximately 4 seconds and shows the error message on the LCD. For the error messages, see [1] below. As one of the error messages, "MACHINE ERROR _ _" includes an error code which indicates the detailed error causes listed in [2].

To display an error code for the other latest error message or detailed message, make the equipment enter the maintenance mode and press 8 and 2 keys (for details, refer to Chapter V, Section 3.9).

[1] Error messages on the LCD

Messages on the LCD	Probable Cause
PAPER EMPTY	The paper-edge sensor detects that no recording paper is present.
PRINTER JAM	The paper ejection sensor detects that a paper jam has occurred.
COVER OPEN	The cover sensor detects that the recording paper cover ASSY is not closed.
DOCUMENT JAM	■ Document jam (1) The document length exceeds the limitation (400 or 90 cm) registered by firmware switch WSW16. (Refer to Chapter V, Section 3.5.) (Both the document front and rear sensors stay ON even after the document has been fed by the registered length.) (2) The document rear sensor detects no trailing edge of a document after the document has been fed by 400 cm. (The document rear sensor stays ON even after the document has been fed when the document front and rear sensors were OFF and ON, respectively.)

Messages on the LCD	Probable Cause
DOCUMENT JAM	■ Document loading error (1) The document rear sensor detects no leading edge of a document within 10 seconds from the start of document loading operation. (The document rear sensor stays OFF even after the document has been fed when the document front sensor was ON.) (2) The loaded document is too short. (Since the document is shorter than the distance between the document front and rear sensors, the document front sensor is turned OFF before the document rear sensor is turned ON.)
CLEAN UP SCANNER	In the scanning compensation data list printed by the maintenance-mode function No. 05, less than fifty percent of the white level data is faulty.
SCANNER ERROR	In the scanning compensation data list printed by the maintenance-mode function No. 05, fifty percent or more of the white level data is faulty.
PRINTER FAULT	The thermistor in the recording head caused a heat error.
CHANGE CARTRIDGE	The ribbon sensor detects that no ink ribbon is loaded.
MACHINE ERROR _ _	"_ _" indicates an error code. Refer to Section [2] on the following pages.

If only an alarm beep is heard without any message on the LCD when the equipment is powered up, the ROM or RAM will be defective.

[2] Error codes shown in the "MACHINE ERROR _ _" message

Error Code (Hex.)	Error factor
82	Recording paper feeding error.
87	Fails to complete the sequence of recording operation.
8A	Wrong or weak contact of the recording head connectors.
(8B	Recording head overheat.)
(A1	Recording paper cover opened.)
(A2	Document too long to scan.)
(A3	Document not detected by the document rear sensor.)
(A4	50% or more faulty of white level data.)
A5	Faulty operation of DMA0 during scanning.
A6	Faulty operation of DMA1 during scanning.
A7	One-line feeding time-out error.
A8	One-line scanning time-out error.
A9	Abnormal scanning reference voltage.
AB	Document feed-in amount measuring error.
AC	Less than 50% faulty of white level data.
B1	CODEC LSI error.
(B9	Light emission intensity error of the LED array.)
(BA	Scanning error: The left-hand black reference line which is marked on the document pressure bar for scanning width setting is not detected.)
(BB	Scanning error: The right-hand black reference line which is marked on the document pressure bar for scanning width setting is not detected.)
(BC	Scanning error: Reduction miss)
(BD	Scanning error: Enlargement miss)
(BE	Abnormal clamp BWM value)
D1	The MODEM setup bit sticks to High.
D2	CTS stays OFF or ON if the MODEM RTS is turned ON or OFF, respectively.
D3	Bit B1A of the MODEM stays OFF.
D4	Bit RX of the MODEM stays OFF.
D5	The MODEM fails to complete the command transmission sequence.
D6	No MODEM interrupt for 60 seconds.
E1	Microprocessor (MPU) error on the control panel PCB.
(E4	Out of recording paper.)
(E5	Recording paper set error.)
E6	Write error in E^2PROM.
E8	Data scanning error during transmission.
(EA	Document removed at phase B.)
F3	Voice message recording or playing-back not started.
F5	EOL not found in page memory transmission mode.
FF	Interface error of page memory command.

Error codes in parentheses do not appear in the “MACHINE ERROR _ _,” since those errors are displayed as messages described in “[1] Error messages on the LCD.” You can display those error codes in the maintenance mode (Function code 82). If an equipment error occurs during communications, they appear in the communications error lists.

Error Code (Hex.)	Error factor
(82xx	Although recording paper has been fed by 150 mm after the start of recording, the paper-edge sensor is still OFF.)
(8303	Although recording paper has been fed by 360 mm after the start of recording, the paper-edge sensor is still ON.)
(8406	Although the trailing edge of recording paper has passed out of the platen and further fed for 100 mm, the paper ejection sensor is still ON.)
(8407	Within 10 mm of paper feeding from when the paper ejection sensor went OFF, the sensor has come ON again.)
(8808	Before the paper-edge sensor goes OFF (after the paper ejection sensor came ON), the paper ejection sensor has gone OFF.)
(8809	Before the start of paper feeding, the paper-edge sensor is already ON.)
(880A	Although recording paper has been fed by 50 mm after the start of recording, the paper ejection sensor is still OFF.)
(880B	When the power is turned on or the recording paper cover ASSY is opened and closed, either of the paper-edge sensor or paper ejection sensor is ON.)
(A301	Even if a document is set, the document front sensor is OFF.)
(A302	Although a document has passed through the document front sensor, the document rear sensor is still OFF.)
(A303	When the document ejection operation has started, the document front sensor remains OFF.)
(A304	When the document ejection operation has started, the document rear sensor remains OFF.)
(A305	Although the CIS scanner area setting operation has been completed (Function code 55 in the maintenance mode), the document front sensor remains OFF.)
(A306	Although the CIS scanner area setting operation has been completed (Function code 55 in the maintenance mode), the document rear sensor remains OFF.)

NOTE: Four-digit error codes listed above are preceded by MACHINE ERR instead of MACHINE ERROR.

Error codes in parentheses do not appear in the "MACHINE ERROR _ _," since those errors are displayed as messages described in "[1] Error messages on the LCD." You can display those error codes in the maintenance mode (Function code 82). If an equipment error occurs during communications, they appear in the communications error lists.

1.2 Communications Errors

If a communications error occurs, the facsimile equipment

① emits an audible alarm (intermittent beeping) for approximately 4 seconds,
② displays the corresponding error message, and
③ prints out the transmission verification report if the equipment is in sending operation.

■ Definition of Error Codes on the Communications List

(1) Calling

Code 1	Code 2	Causes
10	08	Wrong number called.
11	01	No dial tone detected before start of dialing.
11	02	Busy tone detected before dialing.
11	03	2nd dial tone not detected.
11	05	No loop current detected. *
11	06	Busy tone detected after dialing or called.
11	07	No response from the remote station in sending.
11	10	No tone detected after dialing.
17	07	No response from the calling station in receiving.

* Available in Germany and Austria only.

(2) Command reception

Code 1	Code 2	Causes
20	01	Unable to detect a flag field.
20	02	Carrier was OFF for 200 ms or longer.
20	03	Abort detected ("1" in succession for 7 bits or more).
20	04	Overrun detected.
20	05	A frame for 3 seconds or more received.
20	06	CRC error in answerback.
20	07	Undefined command received.
20	08	Invalid command received.
20	09	Command ignored once for document setting or for dumping-out at turn-around transmission.
20	0A	T5 time-out error
20	0B	CRP received.
20	0C	EOR and NULL received.

(3) Compatibility [checking the NSF and DIS]

Code 1	Code 2	Causes
32	01	Remote terminal only with V.29 capability in 2400 or 4800 bps transmission.
32	02	Remote terminal not ready for polling.
32	10	Remote terminal not equipped with password function or its password switch OFF.
32	11	Remote terminal not equipped with or not ready for confidential mail box function.
32	12	Remote terminal not equipped with or not ready for relay broadcasting function.
32	13	No confidential mail in the remote terminal.
32	14	The available memory space of the remote terminal is less than that required for reception of the confidential or relay broadcasting instruction.

(4) Instructions received from the remote terminal [checking the NSC, DTC, NSS, and DCS]

Code 1	Code 2	Causes
40	02	Illegal coding system requested.
40	03	Illegal recording width requested.
40	05	ECM requested although not allowed.
40	06	Polled while not ready.
40	07	No document to send when polled.
40	10	Nation code or manufacturer code not coincident.
40	11	Unregistered group code entered for relay broadcasting function, or the specified number of broadcasting subscribers exceeding the limit.
40	12	Retrieval attempted when not ready for retrieval.
40	13	Polled by any other manufacturers' terminal while waiting for secure polling.
40	17	Invalid resolution selected.

(5) Command reception [checking the NSF and DIS after transmission of NSS and DCS]

Code 1	Code 2	Causes
50	01	Vertical resolution capability changed after compensation of background color.

(6) ID checking

Code 1	Code 2	Causes
63	01	Password plus "lower 4 digits of telephone number" not coincident.
63	02	Password not coincident.
63	03	Polling ID not coincident.
63	04	Entered confidential mail box ID uncoincident with the mail box ID.
63	05	Relay broadcasting ID not coincident.
63	06	Entered retrieval ID uncoincident with that of the mail box ID.

(7) DCN reception

Code 1	Code 2	Causes
74		DCN received.

(8) TCF transmission/reception

Code 1	Code 2	Causes
80	01	Fallback impossible.

(9) Signal isolation

Code 1	Code 2	Causes
90	01	Unable to detect video signals and commands within 6 seconds after CFR is transmitted.
90	02	Received PPS containing invalid page count or block count.

(10) Video signal reception

Code 1	Code 2	Causes
A0	03	Error correction sequence not terminated even at the final transmission speed for fallback.
A0	11	Receive buffer empty. (5-second time-out)
A0	12	Receive buffer full during operation except receiving into memory.
A0	13	Decoding error continued on 500 lines.
A0	14	Decoding error continued for 10 seconds.
A0	15	Time-out: Five seconds or more for one-line transmission.
A0	16	RTC not found and carrier OFF signal detected for 6 seconds.
A0	17	RTC found and command detected for 60 seconds.
A8	01	RTN, PIN, or ERR received at the calling terminal. *
A9	01	RTN, PIN, or ERR received at the called terminal. *
AA	18	Receive buffer full during receiving into memory.

* Available in Germany and Austria only.

(11) General communications-related

Code 1	Code 2	Causes
B0	01	Polarity inversion detected.
B0	02	Unable to receive the next-page data.
B0	03	Unable to receive polling even during turn-around transmission due to call reservation.
B0	04	PC interface error.

(12) Maintenance mode

Code 1	Code 2	Causes
E0	01	Failed to detect 1300 Hz signal in burn-in operation.
E0	02	Failed to detect PB signals in burn-in operation.
E0	03	Failed to detect any command from the RS-232C interface in burn-in operation.

(13) Equipment error

Code 1	Code 2	Causes
FF	_ _	Equipment error (For _ _, refer to Subsection 1.1 [2].)

2. TROUBLESHOOTING

2.1 Introduction

This section gives the service personnel some of the troubleshooting procedures to be followed if an error or malfunction occurs with the facsimile equipment. It is impossible to anticipate all of the possible problems which may occur in future and determine the troubleshooting procedures, so this section covers some sample problems. However, those samples will help service personnel pinpoint and repair other defective elements if he/she analyzes and examines them well.

2.2 Precautions

Be sure to observe the following to prevent the secondary troubles from happening:

(1) Always unplug the AC cord from the outlet when removing the covers and PCBs, adjusting the mechanisms, or conducting continuity testing with a circuit tester.

(2) When disconnecting the connectors, do not pull the lead wires but hold the connector housings.

(3)
- Before handling the PCBs, touch a metal portion of the machine to discharge static electricity charged in your body.
- When repairing the PCBs, handle them with extra care.

After repairing the defective section, be sure to check again if the repaired section works correctly. Also record the troubleshooting procedure so that it would be of use for future trouble occurrence.

2.3 Checking prior to Troubleshooting

Prior to proceeding to the troubleshooting procedures, check that:

(1) Each voltage level on AC input lines and DC lines is correct.

(2) All cables and harnesses are firmly connected.

(3) None of the fuses are blown.

2.4 Troubleshooting Procedures

[1] Control panel related

Trouble	Check:
(1) LCD shows nothing.	• Main-panel harness between the main PCB and the control panel PCB • Interfaces between the main PCB, NCU PCB and power supply PCB • Control panel PCB • Power supply PCB • Main PCB
(2) Control panel inoperative.	• Main-panel harness between the main PCB and the control panel PCB • Interfaces between the main PCB, NCU PCB and power supply PCB • Control panel PCB • FPC key • Main PCB

[2] Telephone related

Trouble	Check:
(1) No phone call can be made.	• FPC key • Control panel PCB by using the maintenance-mode function No. 13. If any defective keys are found, replace them. (Refer to Chapter V, Section 3.6, "Operational Check of Control Panel PCB.") • NCU PCB • Main PCB
(2) Speed dialing or one-touch dialing will not work.	• Ordinary dialing function (other than the speed and one-touch dialing) If it works normally, check the main PCB; if not, refer to item (1) above.
(3) Speaker silent during on-hook dialing.	• Ordinary dialing function (other than the on-hook dialing with the hook key) If it works normally, proceed to the following checks; if not, refer to item (1) above.
(4) Dial does not switch between tone and pulse.	• Main PCB

Trouble	Check:
(5) Telephone does not ring.	• Speaker • NCU PCB • Main PCB

[3] Communications related

Trouble	Check:
(1) No tone is transmitted.	• Main PCB • NCU PCB

[4] Paper/document feeding related

Trouble	Check:
(1) Neither "COPY: PRESS COPY" nor "FAX: NO. & START" message appears although documents are set.	• Sensors by using the maintenance-mode function No. 32. (Refer to Chapter V, Section 3.7, "Sensor Operational Check.") • Actuators of the document front and rear sensors • Main PCB
(2) Document not fed.	• ADF and its related sections • Drive motor and its harness • White pressure roller and its related gears • Solenoid and the planetary gear train • Main PCB
(3) Recording paper not fed.	• ADF and its related sections • Drive motor and its harness • Platen and its related gears • Solenoid and the planetary gear train • Main PCB

[5] Print-image related

If the received or sent image has any problem, first make a copy with the facsimile equipment.

If the copied image is normal, the problem may be due to the remote terminal; if it is abnormal, proceed to the following checks:

Trouble	Check:
(1) Completely blank	
At the scanner	• Main PCB
At the recorder	• Main-head harness and head-power harness • Compression springs beneath the recording head • Recording head • Main PCB
(2) White vertical streaks	
At the scanner	• CIS unit
At the recorder	• Recording head
(3) All black	
At the scanner	• CIS harness • CIS unit • Main PCB
At the recorder	• Main-head harness and head-power harness • Recording head • Main PCB
(4) Black vertical streaks	
At the scanner	• CIS unit
At the recorder	• Recording head
(5) Light or dark	
At the scanner	• CIS unit • Main PCB
At the recorder	• Compression springs beneath the recording head

Trouble	Check:
(6) Faulty image registration	
At the scanner	• CIS harness • CIS unit • Main PCB
At the recorder	• Main-head harness and head-power harness • Main PCB
(7) Image distortion	
In communications	• Error code displayed (Refer to Section 1, "ERROR INDICATION" in this chapter.) • NCU PCB • Main PCB
At the scanner	• Separation roller and its related sections • White pressure roller and its related gears • Solenoid and the planetary gear train • Drive motor and its harness • Main PCB
At the recorder	• Compression springs beneath the recording head • Platen and its related gears • Solenoid and the planetary gear train • Drive motor and its harness • Main PCB

FAX1170/1270/1570MC
FAX1010/1020/1030/1030Plus
MFC1770/1870MC/1970MC

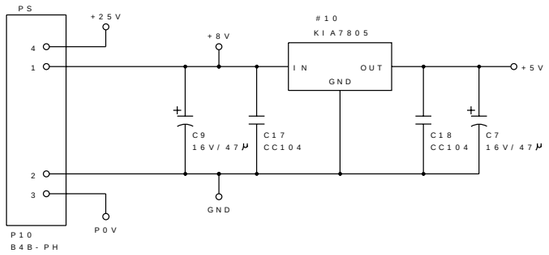
Appendices Circuit Diagrams

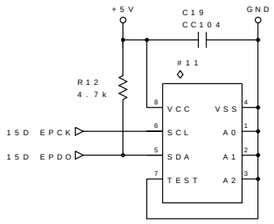
A. Main PCB
B. Network Control Unit (NCU) PCB
C. Control Panel PCB
D. Power Supply PCB

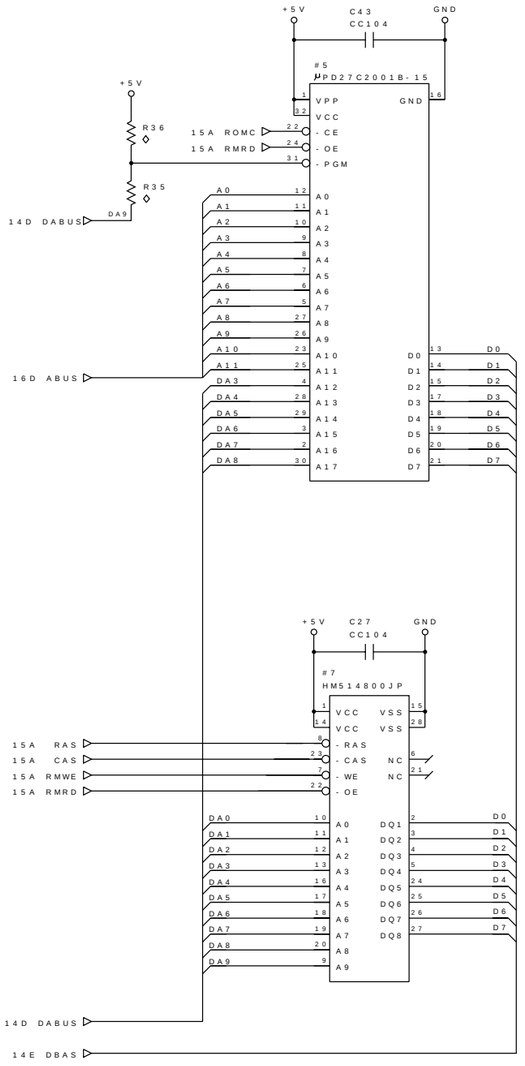
1. ※ OF EACH PART SHOWS UN-MOUNTING.
2. ◇:REFER TO UG5026000(T3 MAIN #6)

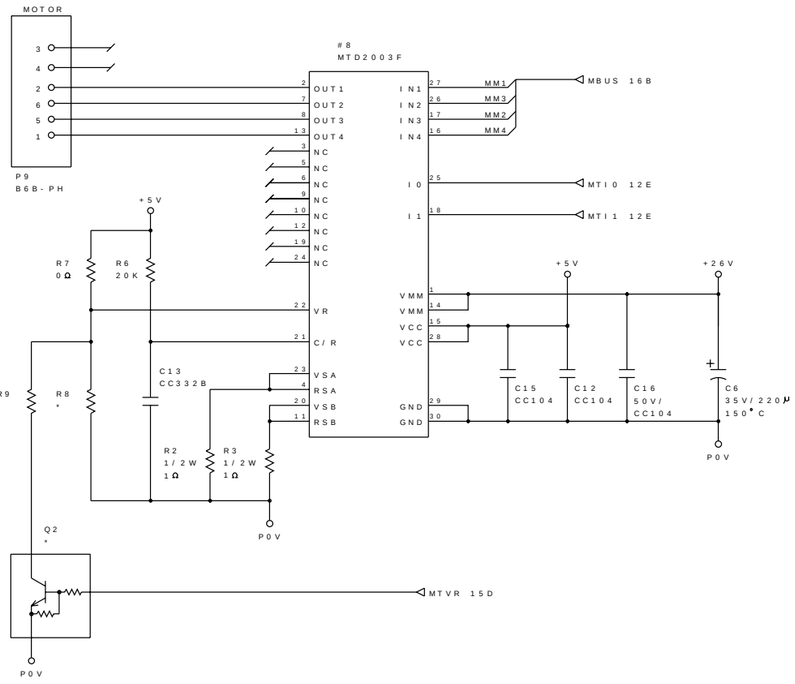
A	**MAIN 1/5 (FAX1170/1270/1010/1020/MFC1770)**

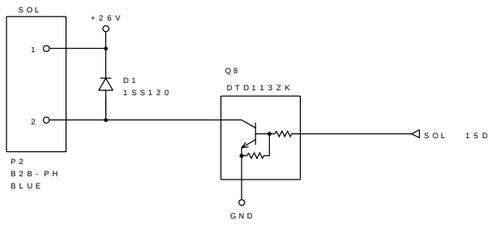
1. * OF EACH PART SHOWS UN-MOUNTING.
2. ◇:REFER TO UG5026000(T3 MAIN #6)





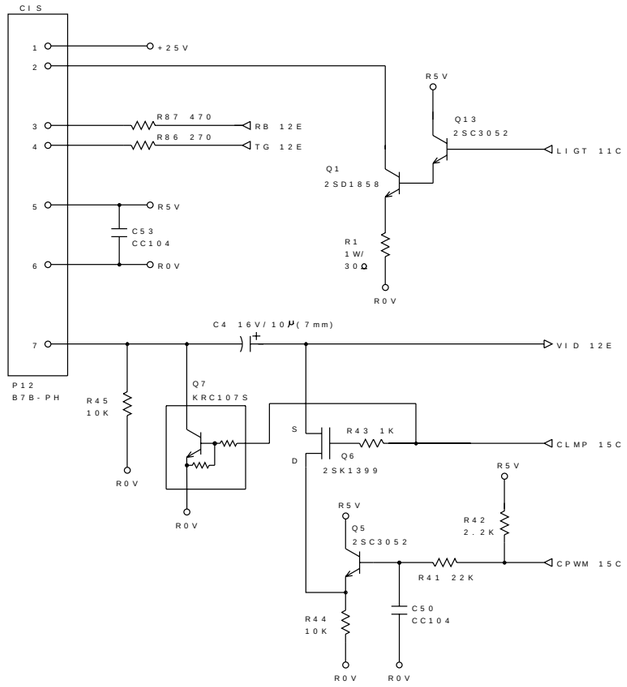


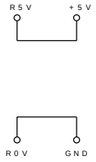


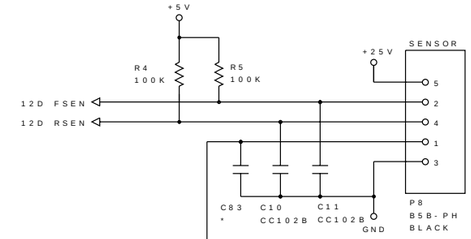


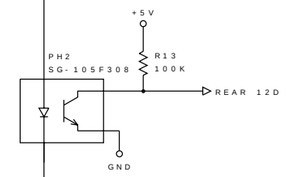
A	**MAIN 2/5 (FAX1170/1270/1010/1020/MFC1770)**

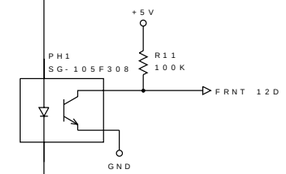
1. * OF EACH PART SHOWS UN-MOUNTING.
2. ◇:REFER TO UG5026000(T3 MAIN #6)

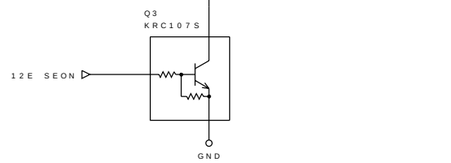


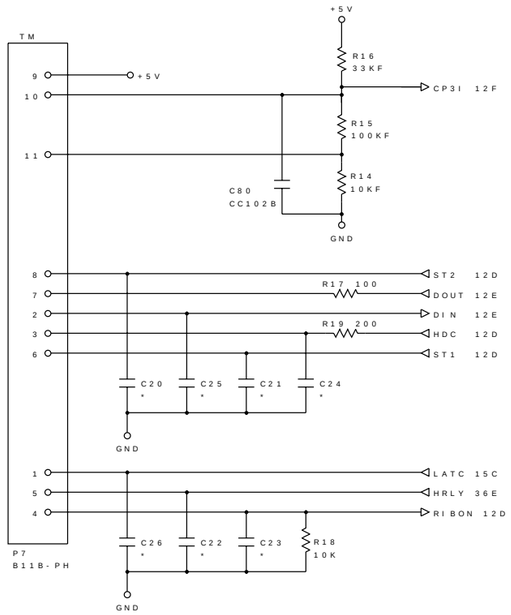


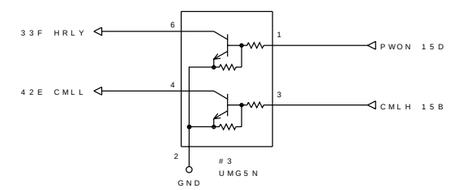






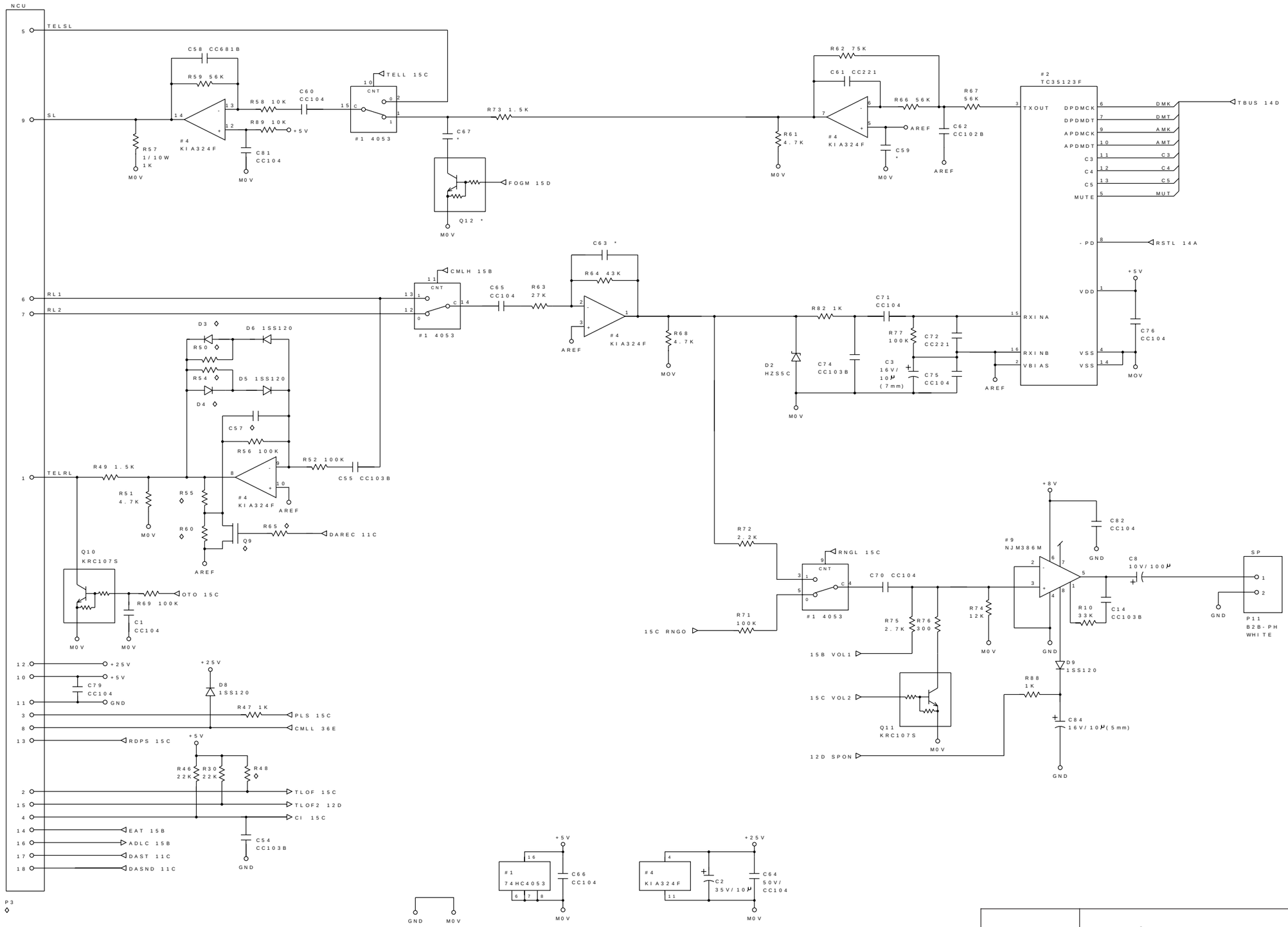






A	**MAIN 3/5 (FAX1170/1270/1010/1020/MFC1770)**

1. * OF EACH PART SHOWS UN-MOUNTING.
2. ◇:REFER TO UG5026000(T3 MAIN #6)



A	**MAIN 4/5 (FAX1170/1270/1010/1020/MFC1770)**

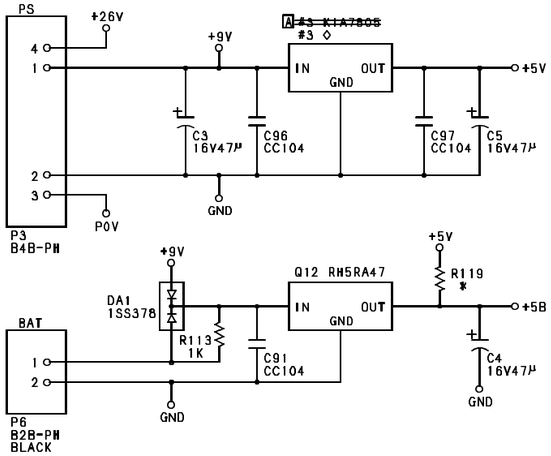
			FAX1170 FAX1270 MFC1770	FAX1010 FAX1020	FAX1170-FS FAX1270-FS MFC1770-FS				
			S.ASSY 01	S.ASSY 02	S.ASSY 41	S.ASSY SS21	S.ASSY SS22	S.ASSY SS23	
			UG5028001 Main PCB B53K285S ASSY	UG5028002 Main PCB B53K285S ASSY	UG5028041 Main PCB B53K285S ASSY	UG5059021 Main PCB B53K285 ASSY EU#	UG5059022 Main PCB B53K285 ASSY EU#	UG5059023 Main PCB B53K285 ASSY EU#	
PAGE		NO.							
1	PWM	R39	-	-	-	10KΩ	10KΩ	10KΩ	
	PWM	R40	-	-	-	10KΩ	10KΩ	10KΩ	
	PWM	R78	-	-	-	10KΩ	10KΩ	10KΩ	
	PWM	C47	-	-	-	0.1μF	0.1μF	0.1μF	
	PWM	C48	-	-	-	0.1μF	0.1μF	0.1μF	
	PWM	C73	-	-	-	0.1μF	0.1μF	0.1μF	
	BACK UP	C5	Electrolytic, C5.5B473	Electrolytic, C5.5B104	Electrolytic, C5.5B473	Electrolytic, C5.5B104	Electrolytic, C5.5B104	Electrolytic, C5.5B104	
2	2MROM	R36	0Ω	0Ω	-	0Ω	-	0Ω	
	4MROM	R35	-	-	0Ω	-	0Ω	-	
	EEPROM	#11	EEPST24C16	EEPST24C16	EEPST24C16	EEPST24C16	EEPST24C16	EEP24LC32	
4	NCU	P3	Connector 9110S-12L	Connector 9110S-12L	Connector 9110S-12L	Connector 9110S-18L	Connector 9110S-18L	Connector 9110S-18L	
	RLR	Q9	-	-	-	FET2SK208	FET2SK208	FET2SK208	
	RLR	D3	-	-	-	SID1SS120	SID1SS120	SID1SS120	
	RLR	D4	-	-	-	SID1SS120	SID1SS120	SID1SS120	
	RLR	R50	0Ω	0Ω	0Ω	-	-	-	
	RLR	R54	0Ω	0Ω	0Ω	-	-	-	
	RLR	R56	100KΩ	100KΩ	100KΩ	22KΩ	22KΩ	22KΩ	
	RLR	R55	0Ω	0Ω	0Ω	1KΩ	1KΩ	1KΩ	
	RLR	R60	-	-	-	680Ω	680Ω	680Ω	
	RLR	R65	-	-	-	47KΩ	47KΩ	47KΩ	
	RLR	C57	680pF	680pF	680pF	1800pF	1800pF	1800pF	
	TLOF	R48	1KΩ	1KΩ	1KΩ	22KΩ	22KΩ	22KΩ	

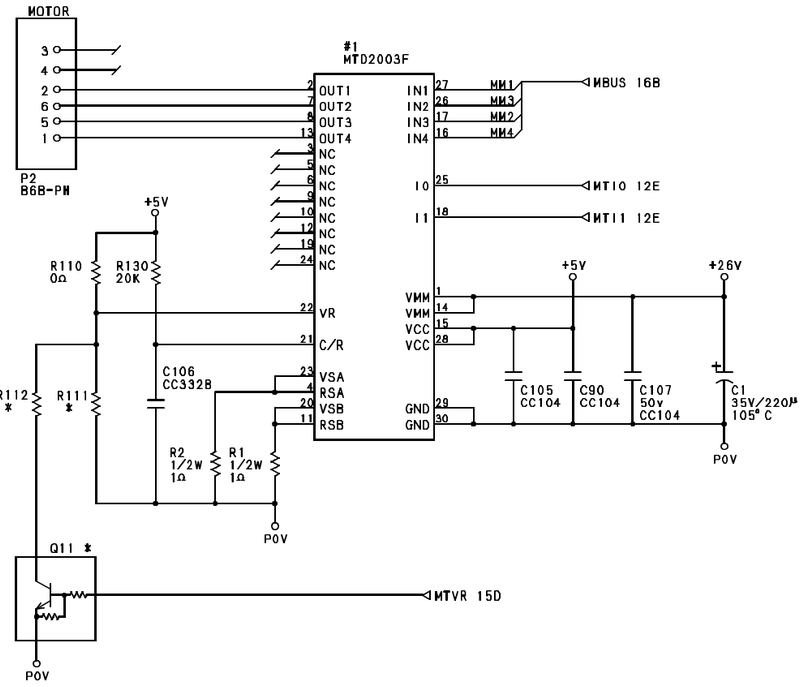
A	**MAIN 5/5** **(FAX1170/1270/1010/1020/MFC1770)**

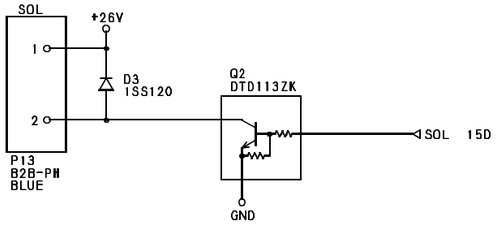
1. * OF EACH PART SHOWS UN-MOUNTING.
2. ◇:REFER TO UG5047000(T3MC MAIN #6)

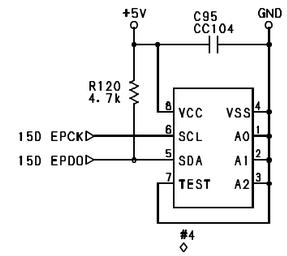
A	Main PCB 1/6 (FAX1570MC/1030/1030Plus/ MFC1870MC/1970MC)

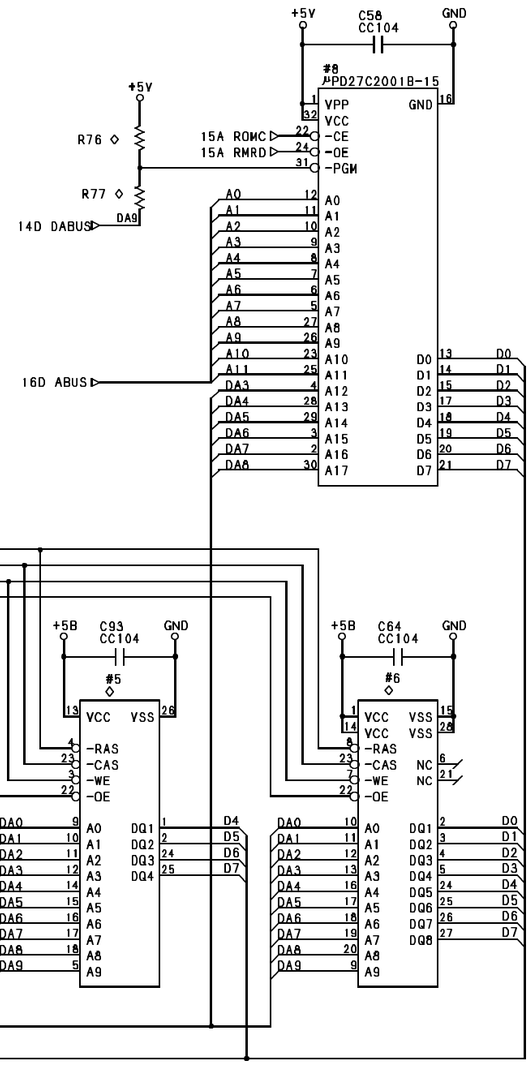
1. * OF EACH PART SHOWS UN-MOUNTING.
2. ◇:REFER TO UG5047000 (T3MC MAIN #6)





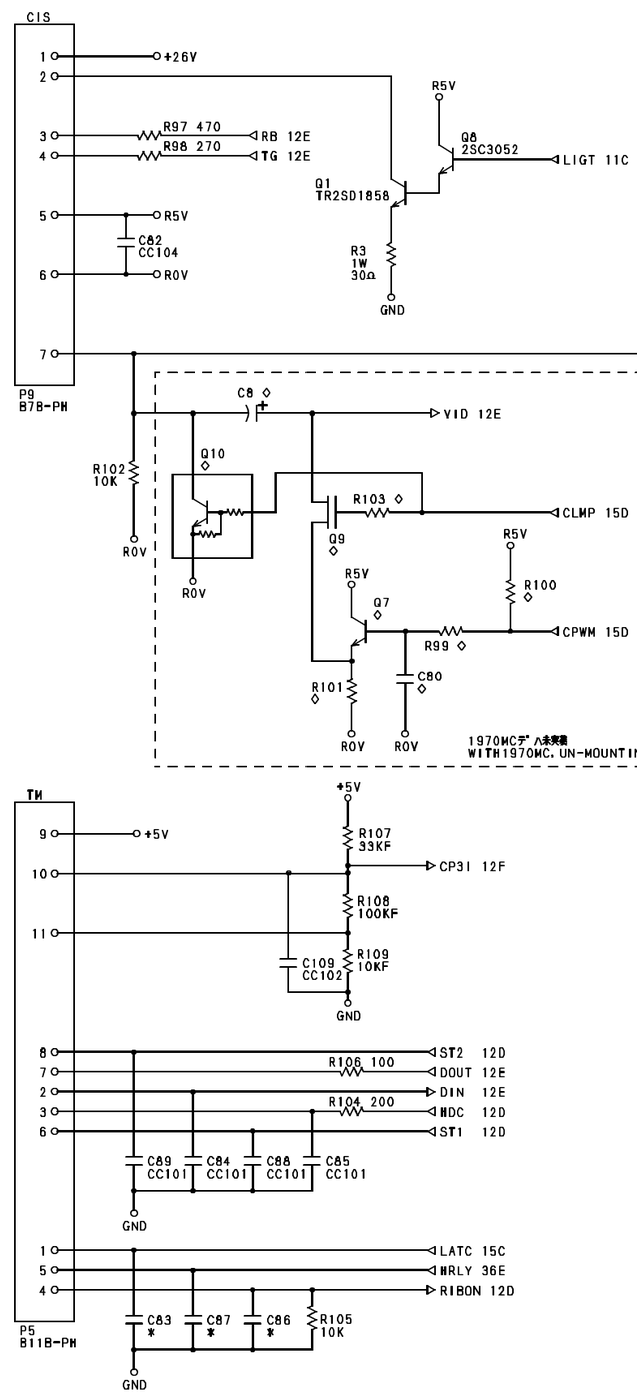


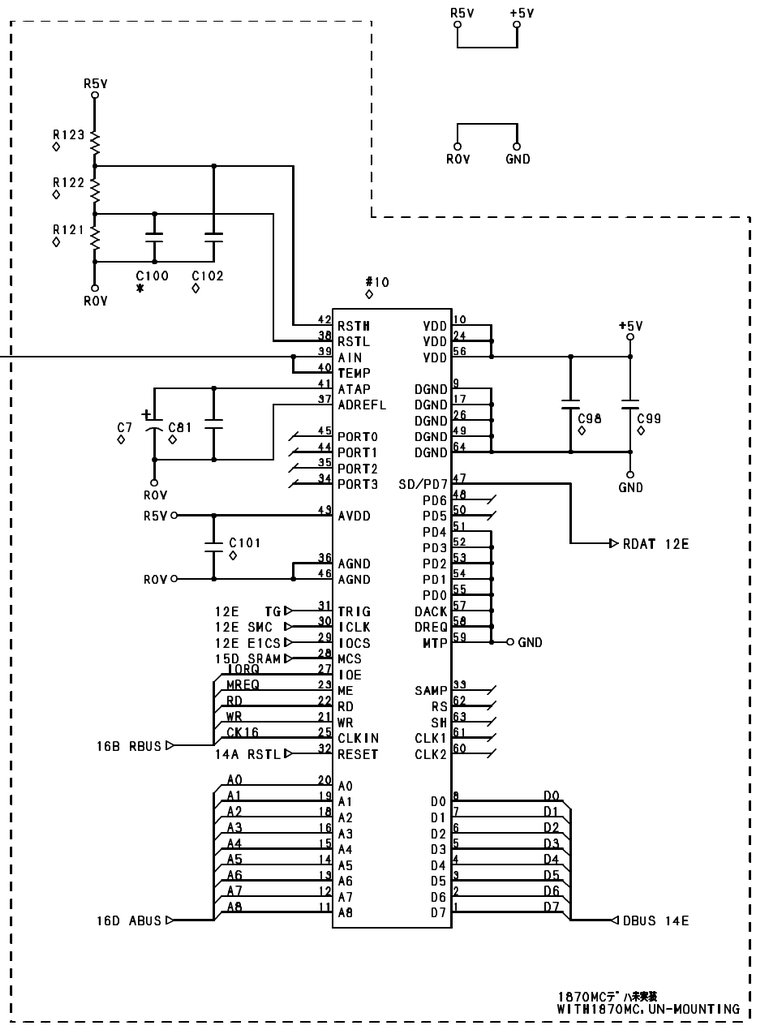


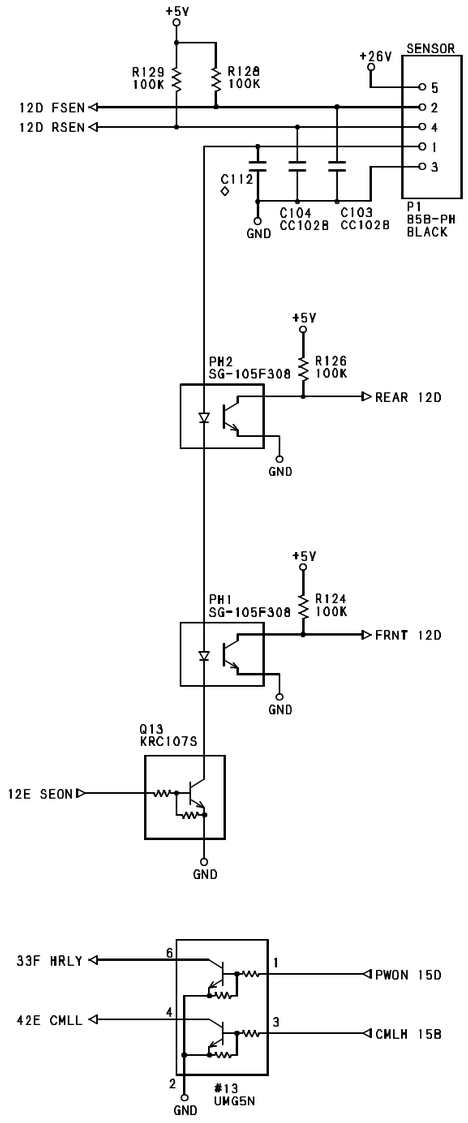


A	**Main PCB 2/6 (FAX1570MC/1030/1030Plus/ MFC1870MC/1970MC)**

1. * OF EACH PART SHOWS UN-MOUNTING.
2. ◇:REFER TO UG5047000(T3MC MAIN #6)







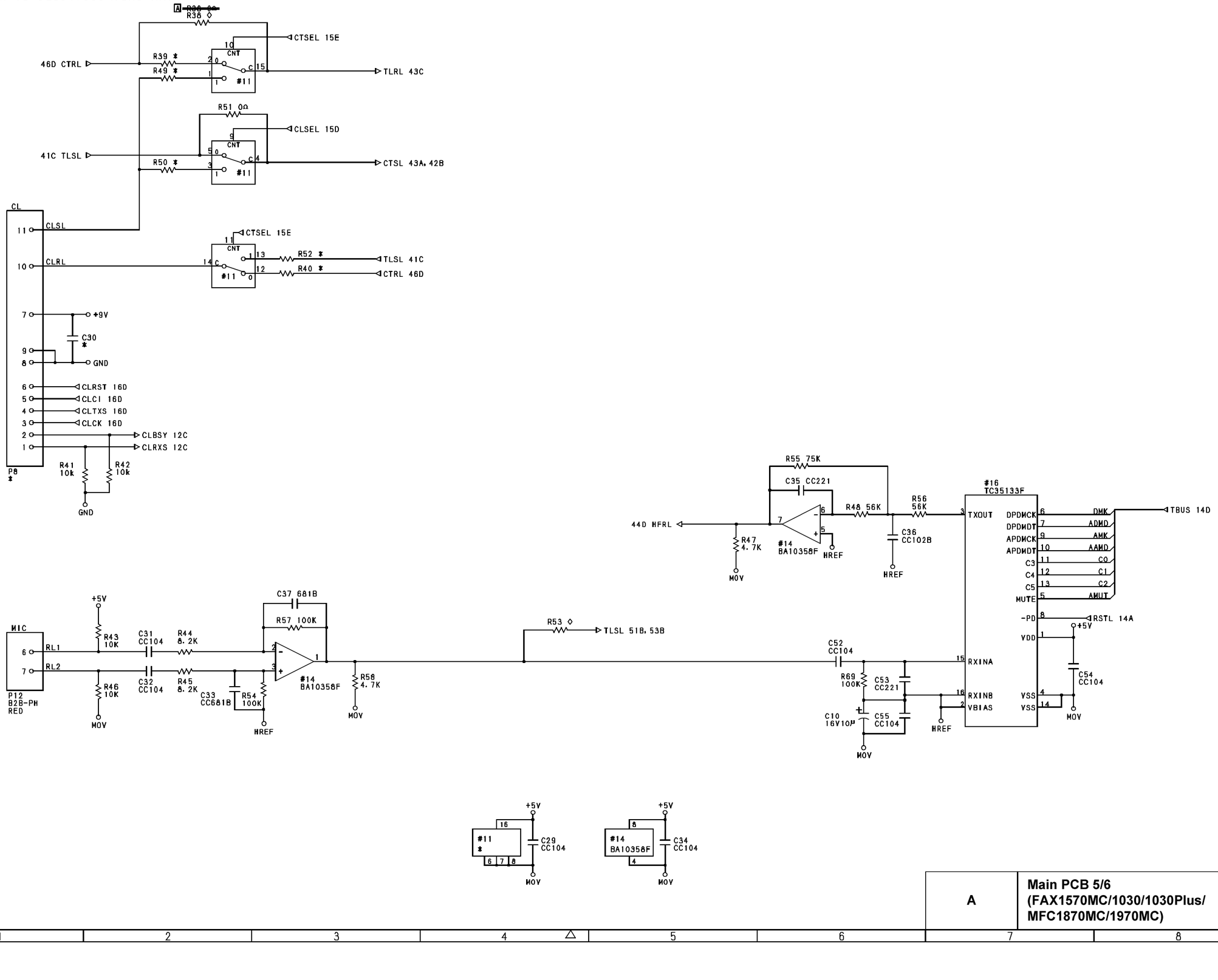
A	**Main PCB 3/6 (FAX1570MC/1030/1030Plus/ MFC1870MC/1970MC)**

1. * OF EACH PART SHOWS UN-MOUNTING.
2. ◇:REFER TO UG5047000(T3MC MAIN #6)

NCU
SL
RL1
RL2
TLSL 51B, 53B
TLRL 53A
DAREC 11C
OTO 15C
PLS 15C
CMLL 36E
RDPS 15C
EAT 15B
ADLC 15B
DAST 11D
DASND 11C
TLOF 15C
TLOF2 12D
CI 15C
P10
TELL 15C
CTSL 53B
CMLH 15C
TADH 12C
53B CTSL
TXSL 12C
CTRL 51A, 53B
HAFH 12C
RNGL 15C
55D HFRL
15C RNGO
15B VOL1
15E VOL2
15C VOL3
12D SPON
TBUS 14D
RSTL 14A
#15 TC35133F
TXOUT
DPDMCK
DPDMDT
APDMCK
APDMDT
C3
C4
C5
MUTE
-PD
VDD
RXINA
RXINB
VBIAS
VSS
#18 KI324
#19 4053
#17 4053
#2 NJM386M
SP
P4 B2B-PH WHITE
D2 HZS5C
D4 ◇
D5 ◇
D6 ◇
D7 ◇
D8 CC104
D9 1SS120
D10 1SS120
Q3 KRC107S
Q4 ◇
Q5 KRC107S
R22 1/10W 1K
R23 56K
R24 ◇
R25 ◇
R26 75K
R27 4.7K
R28 43K
R29 56K
R30 4.7K
R31 10K
R33 1.5K
R34 300
R35 12K
R36 1K
R37 22K
R44 ◇
R62 100K
R63 1K
R65 56K
R71 27K
R72 1.5K
R73 1.5K
R74 100K
R75 1.5K
R89 3.3K
R115 33K
R134 1K
C20 CC681
C21 ◇
C22 CC103B
C23 *
C25 CC221
C26 CC104
C27 CC104
C28 CC105(2125CHIP)
C44 CC221
C45 CC104
C46 CC103B
C47 CC104
C48 CC104
C49 CC102B
C56 CC104
C57 ◇ CC104
C92 CC103B
C111 CC104
C113 16V10μ
GND
MOV
AREF
+5V
+9V
+26V

A	Main PCB 4/6 (FAX1570MC/1030/1030Plus/ MFC1870MC/1970MC)

1. * OF EACH PART SHOWS UN-MOUNTING.
2. ◇:REFER TO UG5047000 (T3MC MAIN #6)



A	**Main PCB 5/6 (FAX1570MC/1030/1030Plus/ MFC1870MC/1970MC)**

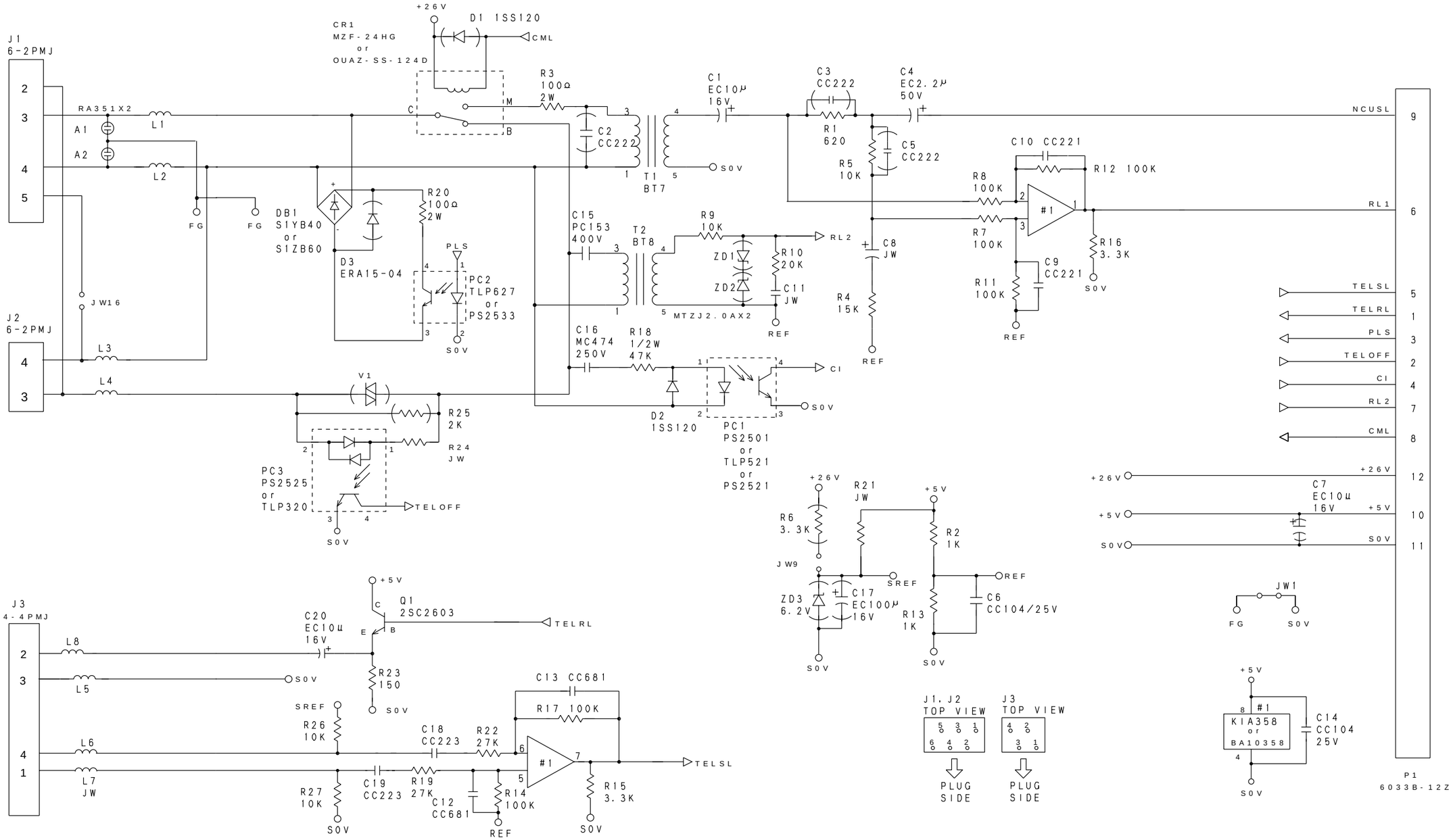
		MFC1870MC	MFC1870MC-FS	MFC1970MC FAX1570MC	MFC1970MC-FS FAX1570MC-FS						MFC1870MC	MFC1970MC FAX1570MC
		S. ASSY 11	S. ASSY 51	S. ASSY 12	S. ASSY 52	S. ASSY SS31	S. ASSY SS32	S. ASSY SS33	S. ASSY SS34	S. ASSY SS35	S. ASSY 13	S. ASSY 14
		UG5040011 メインB53K279 Sクミ1#	UG5040051 メインB53K279 Sクミ1#	UG5056012 メインB53K279 Sクミ2#	UG5056052 メインB53K279 Sクミ2#	UG5060031 メインB53K279 クミEU#	UG5060032 メインB53K279 クミEU#	UG5060033 メインB53K279 クミEU#	UG5060034 メインB53K279 クミEU#	UG5060035 メインB53K279 クミEU#	LG2228013 メイン279 Sクミ13#	LG2229014 メイン279 Sクミ14#
PAGE	NO.											
1	L3	0Ω	0Ω	0Ω	0Ω	ﾋﾞｰｽﾞ MMZY601B	ﾋﾞｰｽﾞ MMZY601B	ﾋﾞｰｽﾞ MMZY601B	ﾋﾞｰｽﾞ MMZY601B	ﾋﾞｰｽﾞ MMZY601B	0Ω	0Ω
	R86	-	-	-	-	10KΩ	10KΩ	10KΩ	10KΩ	10KΩ	-	-
	C38	0Ω	0Ω	0Ω	0Ω	CC104	CC104	CC104	CC104	CC104	0Ω	0Ω
	C50	0Ω	0Ω	0Ω	0Ω	CC104	CC104	CC104	CC104	CC104	CC104	CC104
	C68	-	-	-	-	CC104	CC104	CC104	CC104	CC104	-	-
	C114	-	-	-	-	50VCC104	50VCC104	50VCC104	50VCC104	50VCC104	-	-
2	#4	EEPST24C16	EEPST24C16	EEP24LC32A	EEP24LC32A	EEP24LC32A	EEP24LC32A	EEP24LC32A	EEP24LC32A	EEP24LC32A	EEPST24C16	EEP24LC32A
	#5	-	-	DRAMHM514400	DRAMHM514400	DRAMHM514400	DRAMHM514400	DRAMHM514400	DRAMHM514400	DRAMHM514400	-	DRAMHM514400
	#6	DRAM4800SOJ-80	DRAM4800SOJ-80	-	-	-	-	-	-	-	DRAM4800SOJ-80	-
	#7	-	-	DRAMHM514400	DRAMHM514400	DRAMHM514400	DRAMHM514400	DRAMHM514400	DRAMHM514400	DRAMHM514400	-	DRAMHM514400
	R76	0Ω	-	0Ω	-	0Ω	-	0Ω	-	0Ω	0Ω	0Ω
	R77	-	0Ω	-	0Ω	-	0Ω	-	0Ω	-	-	-
	#3	ﾚｷﾞｭﾚｰﾀ7805	ﾚｷﾞｭﾚｰﾀ7805	ﾚｷﾞｭﾚｰﾀ7805	ﾚｷﾞｭﾚｰﾀ7805	ﾚｷﾞｭﾚｰﾀ7805	ﾚｷﾞｭﾚｰﾀ7805	ﾚｷﾞｭﾚｰﾀ7805	ﾚｷﾞｭﾚｰﾀ7805	ﾚｷﾞｭﾚｰﾀ7805	VLTREGBA05T	VLTREGBA05T
3	#10	-	-	ICLC82102W	ICLC82102W	ICLC82102W	ICLC82102W	ICLC82102W	ICLC82102W	ICLC82102W	-	ICLC82102W
	Q7	TR2SD3052	TR2SD3052	-	-	-	-	-	-	-	TR2SD3052	-
	Q9	FET2SK1399	FET2SK1399	-	-	-	-	-	-	-	FET2SK1399	-
	Q10	KRC107S	KRC107S	-	-	-	-	-	-	-	KRC107S	-
	R99	22KΩ	22KΩ	-	-	-	-	-	-	-	22KΩ	-
	R100	2.2KΩ	2.2KΩ	-	-	-	-	-	-	-	2.2KΩ	-
	R101	10KΩ	10KΩ	-	-	-	-	-	-	-	10KΩ	-
	R103	1KΩ	1KΩ	-	-	-	-	-	-	-	1KΩ	-
	C8	ﾃﾞﾝC16B100	ﾃﾞﾝC16B100	-	-	-	-	-	-	-	ﾃﾞﾝC16B100	-
	C80	CC104	CC104	-	-	-	-	-	-	-	CC104	-
	R121	-	-	0Ω	0Ω	0Ω	0Ω	0Ω	0Ω	0Ω	-	0Ω
	R122	-	-	200Ω	200Ω	200Ω	200Ω	200Ω	200Ω	200Ω	-	200Ω
	R123	-	-	300Ω	300Ω	300Ω	300Ω	300Ω	300Ω	300Ω	-	300Ω
	C7	-	-	ﾃﾞﾝC16B100	ﾃﾞﾝC16B100	ﾃﾞﾝC16B100	ﾃﾞﾝC16B100	ﾃﾞﾝC16B100	ﾃﾞﾝC16B100	ﾃﾞﾝC16B100	-	ﾃﾞﾝC16B100
	C81	-	-	CC104	CC104	CC104	CC104	CC104	CC104	CC104	-	CC104
	C98	-	-	CC104	CC104	CC104	CC104	CC104	CC104	CC104	-	CC104
	C99	-	-	CC104	CC104	CC104	CC104	CC104	CC104	CC104	-	CC104
	C101	-	-	CC104	CC104	CC104	CC104	CC104	CC104	CC104	-	CC104
	C102	-	-	CC104	CC104	CC104	CC104	CC104	CC104	CC104	-	CC104
	C112	-	-	-	-	CC102B	CC102B	CC102B	CC102B	CC102B	-	-
4	Q4	-	-	-	-	FET2SK208	FET2SK208	FET2SK208	FET2SK208	FET2SK208	FET2SK208-Y	FET2SK208-Y
	P10	ｺﾈｸﾀ9110S-12L	ｺﾈｸﾀ9110S-12L	ｺﾈｸﾀ9110S-12L	ｺﾈｸﾀ9110S-12L	ｺﾈｸﾀ9110S-18L	ｺﾈｸﾀ9110S-18L	ｺﾈｸﾀ9110S-18L	ｺﾈｸﾀ9110S-18L	ｺﾈｸﾀ9110S-18L	ｺﾈｸﾀ9110S-12L	ｺﾈｸﾀ9110S-12L
	D4	-	-	-	-	SID1SS120	SID1SS120	SID1SS120	SID1SS120	SID1SS120	-	-
	D5	-	-	-	-	SID1SS120	SID1SS120	SID1SS120	SID1SS120	SID1SS120	ZDMTZJ2.0	ZDMTZJ2.0
	R4	1KΩ	1KΩ	1KΩ	1KΩ	22KΩ	22KΩ	22KΩ	22KΩ	22KΩ	1KΩ	1KΩ
	R13	0Ω	0Ω	0Ω	0Ω	-	-	-	-	-	-	-
	R16	0Ω	0Ω	0Ω	0Ω	1KΩ	1KΩ	1KΩ	1KΩ	1KΩ	8.2KΩF	8.2KΩF
	R17	-	-	-	-	680Ω	680Ω	680Ω	680Ω	680Ω	8.2KΩF	8.2KΩF
	R18	0Ω	0Ω	0Ω	0Ω	-	-	-	-	-	-	-
	R19	-	-	-	-	47KΩ	47KΩ	47KΩ	47KΩ	47KΩ	0Ω	0Ω
	R24	150KΩ	150KΩ	150KΩ	150KΩ	27KΩ	27KΩ	27KΩ	27KΩ	27KΩ	100KΩF	100KΩF
	C21	CC681B	CC681B	CC681B	CC681B	CC122B	CC122B	CC122B	CC122B	CC122B	CC102B	CC102B
	C57	CC104	CC104	CC104	CC104	CC104	CC104	CC104	CC104	CC103B	CC104	CC104
	D6	SIDISS120	SIDISS120	SIDISS120	SIDISS120	SIDISS120	SIDISS120	SIDISS120	SIDISS120	SIDISS120	ZDMTZJ2.0 *1	ZDMTZJ2.0 *1
	R25	200KΩ	200KΩ	200KΩ	200KΩ	200KΩ	200KΩ	200KΩ	200KΩ	200KΩ	160KΩF	160KΩF
	D7	SID1SS120	SID1SS120	SID1SS120	SID1SS120	SID1SS120	SID1SS120	SID1SS120	SID1SS120	SID1SS120	-	-
5	R53	-	-	-	-	-	-	0Ω	0Ω	-	-	-
	R38	0Ω	0Ω	0Ω	0Ω	0Ω	0Ω	0Ω	0Ω	0Ω	160KΩF	160KΩF

"-" SHOWS UN-MOUNTING

*1 シルクト逆向キニ，実装スルコト

*1 TO BE MOUNTED IN THE OPPOSITE DIRECTION TO THE SILK-SCREEN PRINTING DIAGRAM

A	**Main PCB 6/6 (FAX1570MC/1030/1030Plus/ MFC1870MC/1970MC)**



7. MC：メタライズフィルムコンデンサ（METALLIZED POLYESTER FILM CAPACITOR）

6. PC：ポリエステルフィルムコンデンサ（POLYESTER FILM CAPACITOR）

5. CC：セラミックコンデンサ（CERAMIC CAPACITOR）

4. EC：電解コンデンサ（ALUMINUM ELECTROLYTIC CAPACITOR）

3. COMPONENTS IN PARENTHESIS NOT TO BE MOUNTED.

3. （ ）内ノ部品ハ未実装トスル。

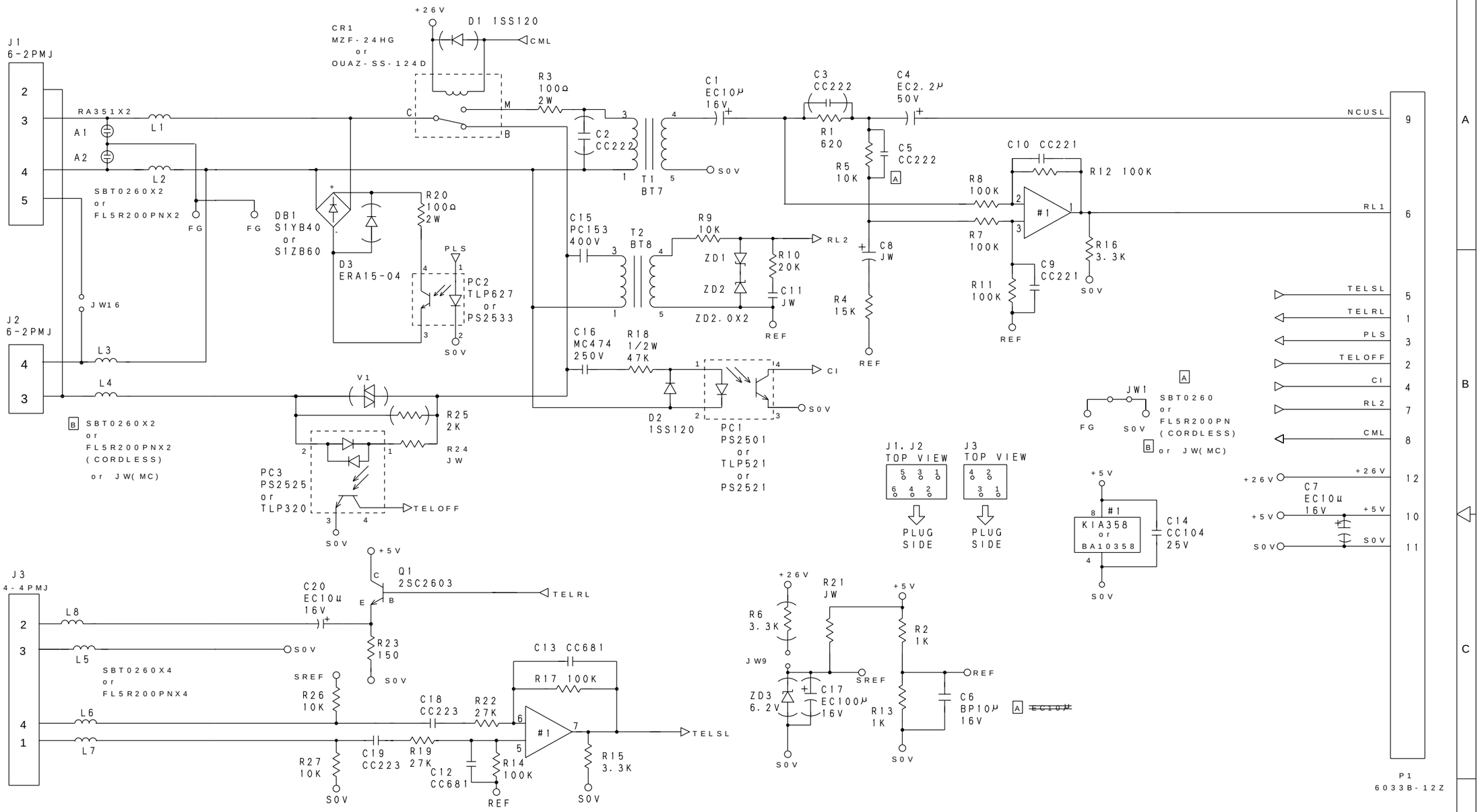
2. UNLESS OTHERWISE SPECIFIED, THE VOLTAGE RESISTANCE OF CAPACITORS IS 25V OR 50V.

2. 指示ナキコンデンサモノ耐圧ハ25V又ハ50Vトスル。

1. UNLESS OTHERWISE SPECIFIED, POWER CONSUMPTION OF RESISTORS IS 1/4W.

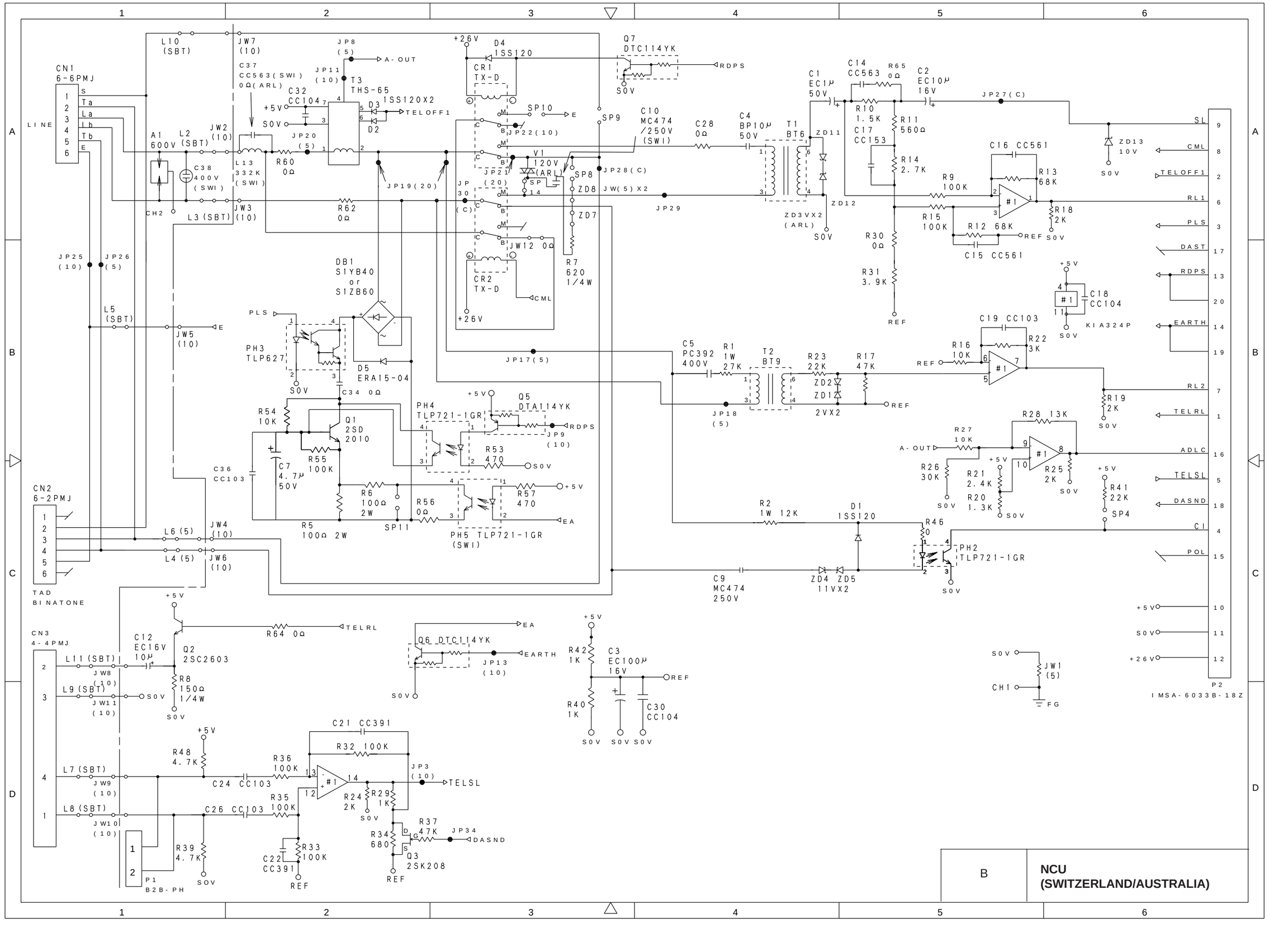
1. 指示ナキ抵抗ノ消費電力ハ1/4Wトスル。

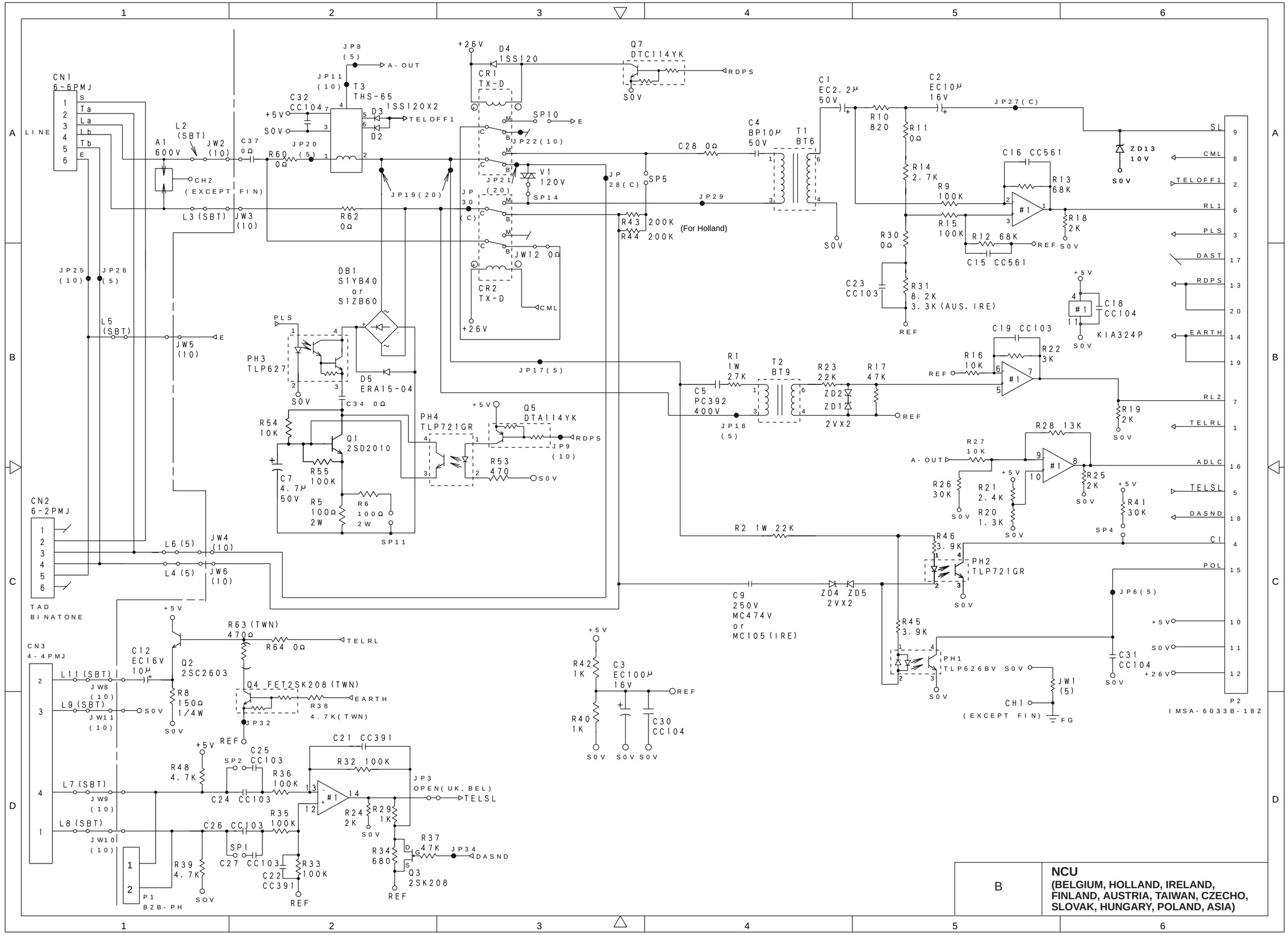
B	**NCU (FAX1170/1270/1020/MFC1770) (U.S.A., CANADA, SOUTH AMERICA, GULF, ISRAEL)**



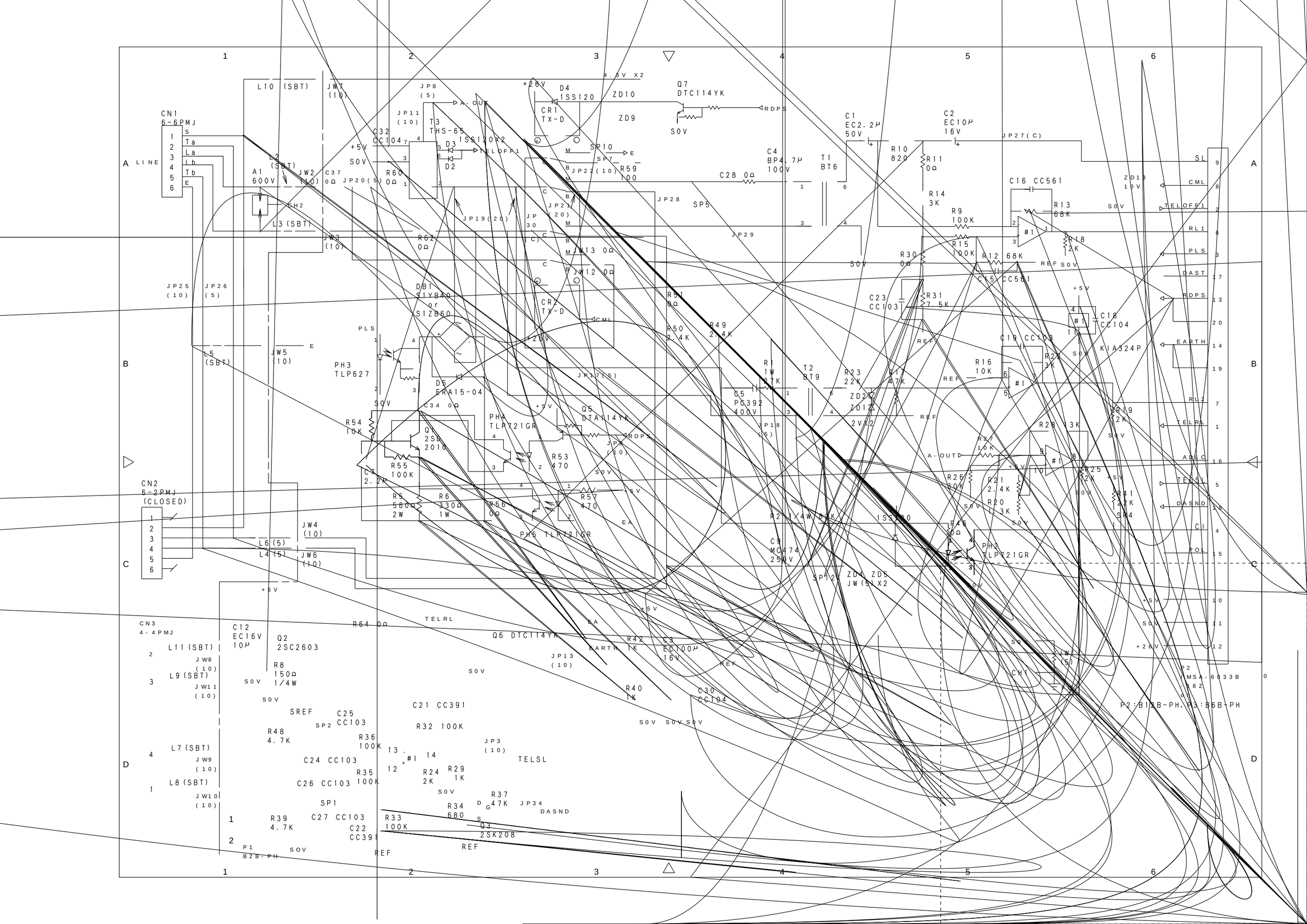
7. MC：メタライズフィルムコンデンサ（METALLIZED POLYESTER FILM CAPACITOR）
6. PC：ポリエステルフィルムコンデンサ（POLYESTER FILM CAPACITOR）
5. CC：セラミックコンデンサ（CERAMIC CAPACITOR）
4. EC：電解コンデンサ（ALUMINUM ELECTROLYTIC CAPACITOR）
3. COMPONENTS IN PARENTHESIS NOT TO BE MOUNTED.
3. （ ）内ノ部品ハ未実装トスル。
2. UNLESS OTHERWISE SPECIFIED, THE VOLTAGE RESISTANCE OF CAPACITORS IS 25V OR 50V.
2. 指示ナキコンデンサノ耐圧ハ25V又ハ50Vトスル。
1. UNLESS OTHERWISE SPECIFIED, POWER CONSUMPTION OF RESISTORS IS 1/4W.
1. 指示ナキ抵抗ノ消費電力ハ1／4Wトスル。

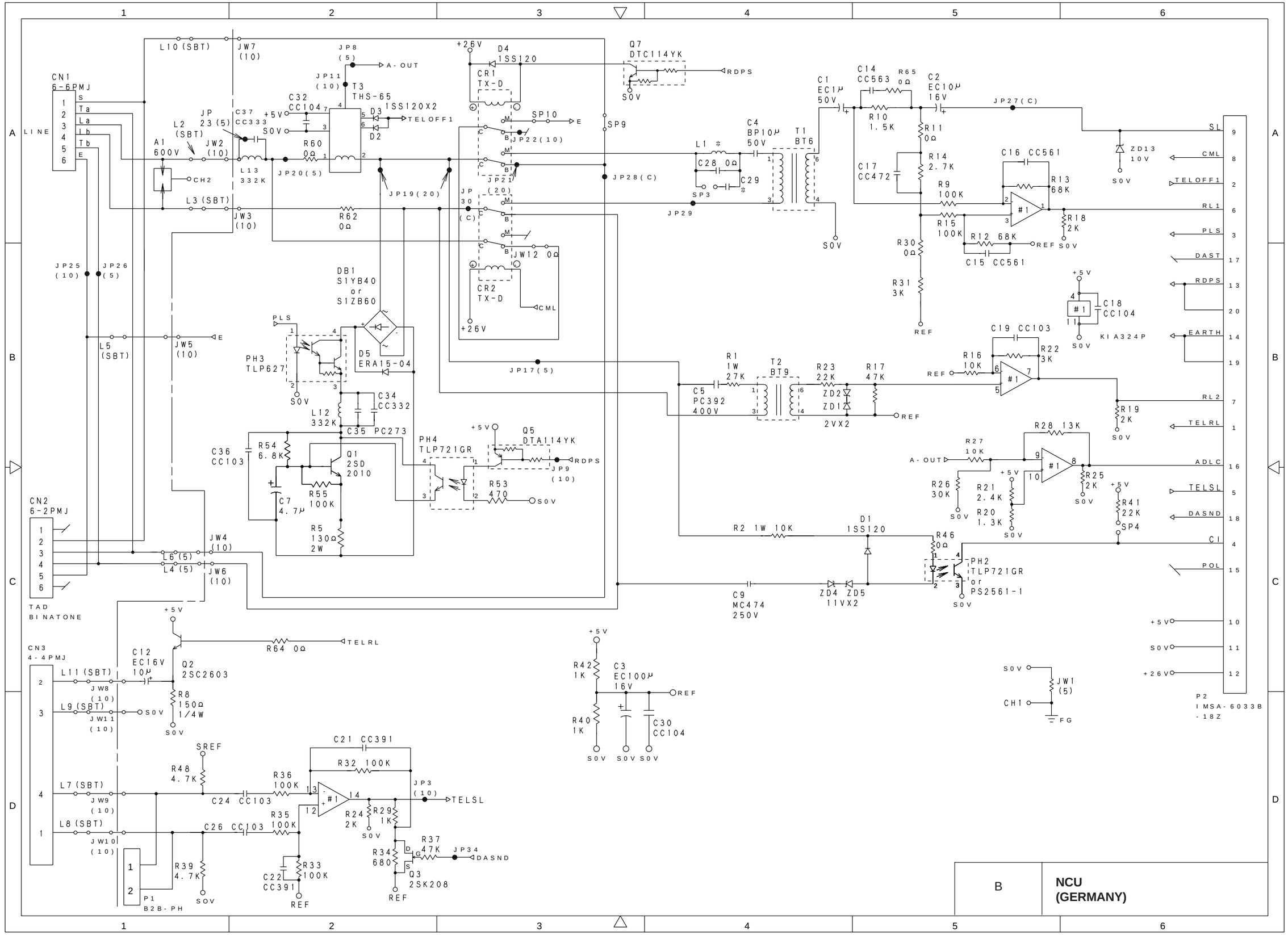
B	**NCU (FAX1570MC/MFC1870MC/1970MC) (U.S.A., CANADA, GULF)**

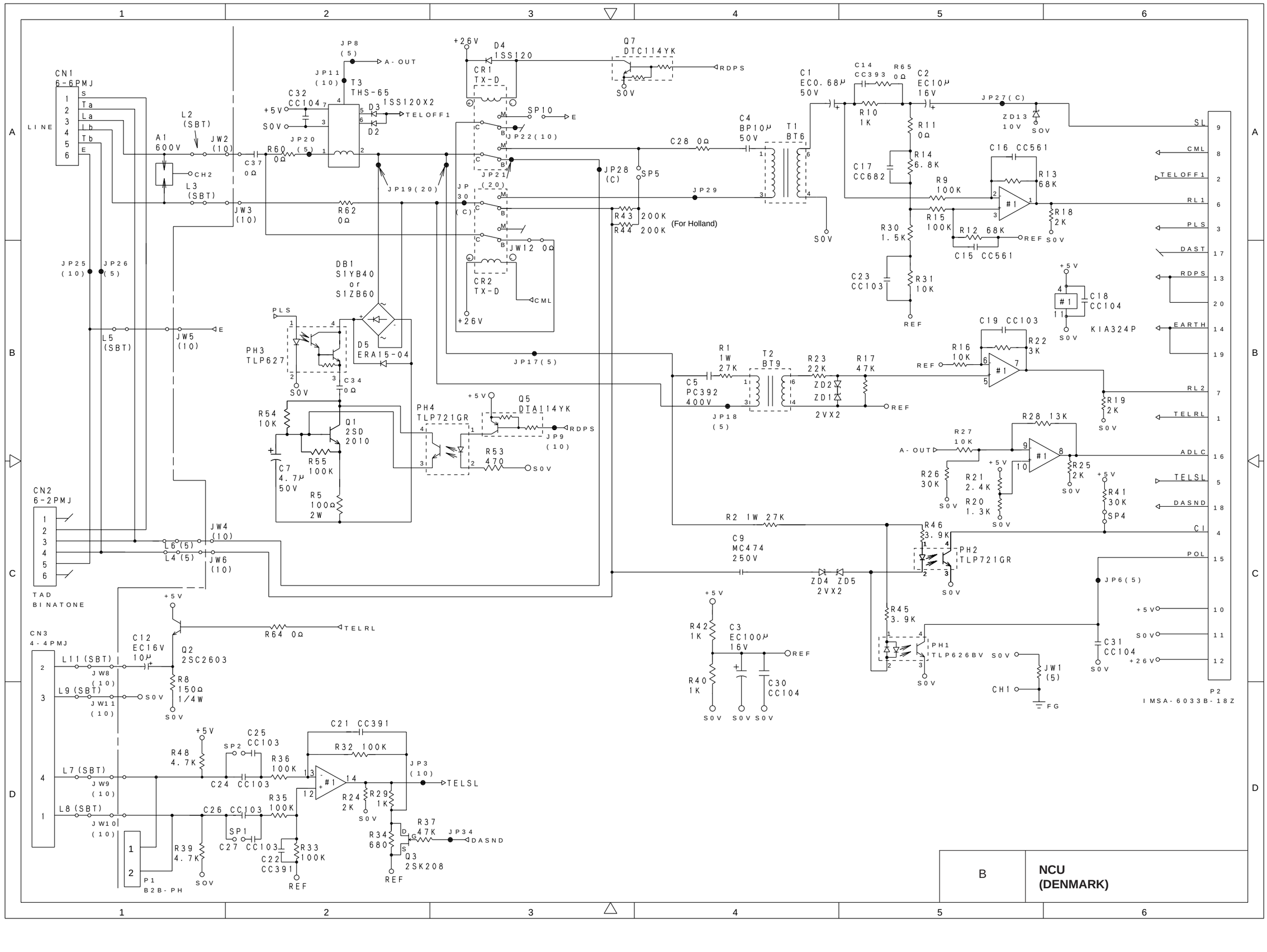

CN1
6-6PMJ
LINE
S
Ta
La
Ib
Tb
E
L10 (SBT)
JW7 (10)
JP8 (5)
A-OUT
C37 CC563(SWI) 0Ω(ARL)
JP11 (10)
T3 THS-65
C32 CC104
+5V
S0V
D3 1SS120X2
TELOFF1
D2
JP20 (5)
A1 600V
L2 (SBT)
JW2 (10)
C38 400V (SWI)
CH2
L3 (SBT)
L13 332K (SWI)
JW3 (10)
R60 0Ω
R62 0Ω
JP19(20)
+26V
D4 1SS120
CR1 TX-D
SP10
E
SP9
JP22(10)
JP21
V1 120V (ARL)
SP8
JP28(C)
ZD8
JW(5)X2
JP29
ZD7
R7 620 1/4W
JP (20) 30 (C)
JW12 0Ω
CR2 TX-D
CML
+26V
Q7 DTC114YK
RDPS
S0V
C10 MC474 /250V (SWI)
C28 0Ω
C4 BP10μ 50V
T1 BT6
ZD11
ZD12
ZD3VX2 (ARL)
S0V
C1 EC1μ 50V
C14 CC563
R65 0Ω
C2 EC10μ 16V
JP27(C)
R10 1.5K
C17 CC153
R11 560Ω
R14 2.7K
C16 CC561
R9 100K
R13 68K
R15 100K
R12 68K
REF
S0V
C15 CC561
R18 2K
ZD13 10V
R30 0Ω
R31 3.9K
REF
+5V
C18 CC104
KIA324P
S0V
C19 CC103
R16 10K
R22 3K
REF
JP25 (10)
JP26 (5)
L5 (SBT)
JW5 (10)
E
DB1 S1YB40 or S1ZB60
PLS
PH3 TLP627
D5 ERA15-04
S0V
C34 0Ω
JP17(5)
C5 PC392 400V
R1 1W 27K
T2 BT9
R23 22K
R17 47K
ZD2
ZD1
2VX2
REF
JP18 (5)
R19 12K
S0V
R54 10K
Q1 2SD 2010
C7 4.7μ 50V
R55 100K
C36 CC103
PH4 TLP721-1GR
+5V
Q5 DTA114YK
RDPS
JP9 (10)
R53 470
S0V
R6 100Ω 2W
R56 0Ω
SP11
R57 470
+5V
EA
R5 100Ω 2W
PH5 TLP721-1GR (SWI)
R28 13K
R27 10K
A-OUT
R26 30K
R21 2.4K
R20 1.3K
R25 2K
S0V
+5V
R41 22K
SP4
CN2
6-2PMJ
L6(5)
JW4 (10)
L4(5)
JW6 (10)
TAD
BINATONE
R2 1W 12K
D1 1SS120
R46 0
PH2 TLP721-1GR
C9 MC474 250V
ZD4 ZD5 11VX2
S0V
SL
CML
TELOFF1
RL1
PLS
DAST
RDPS
EARTH
RL2
TELRL
ADLC
TELSL
DASND
CI
POL
+5V
S0V
+26V
P2
IMSA-6033B-18Z
CN3
4-4PMJ
L11 (SBT)
JW8 (10)
L9 (SBT)
JW11 (10)
C12 EC16V 10μ
Q2 2SC2603
R8 150Ω 1/4W
S0V
TELRL
R64 0Ω
Q6 DTC114YK
EA
EARTH
JP13 (10)
S0V
R42 1K
C3 EC100μ 16V
REF
R40 1K
C30 CC104
S0V S0V S0V
JW1 (5)
CH1
FG
C21 CC391
R32 100K
R48 4.7K
R36 100K
L7 (SBT)
JW9 (10)
C24 CC103
JP3 (10)
TELSL
R35 100K
R24 2K
R29 1K
L8 (SBT)
JW10 (10)
C26 CC103
R37 47K
JP34
DASND
R34 680
Q3 2SK208
R39 4.7K
C22 CC391
R33 100K
REF
P1
B2B-PH
B
NCU
(SWITZERLAND/AUSTRALIA)

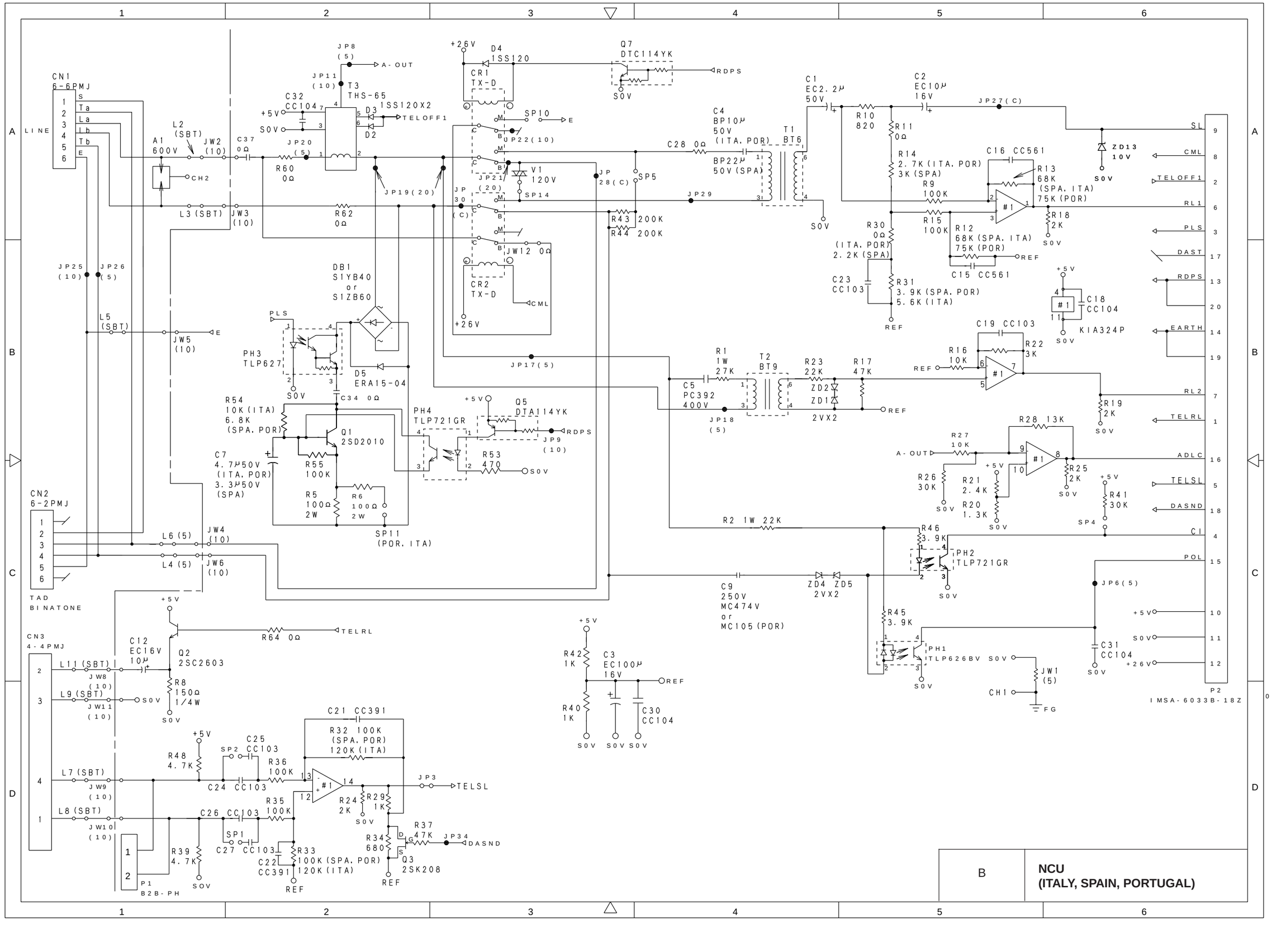

CN1
6-6PMJ
LINE
S
Ta
La
Lb
Tb
E
A1
600V
L2
(SBT)
JW2
(10)
C37
0Ω
JP20
R60
0Ω
(5)
CH2
(EXCEPT FIN)
L3(SBT)
JW3
(10)
R62
0Ω
JP8
(5)
A-OUT
JP11
(10)
T3
THS-65
C32
CC104
+5V
S0V
D3
1SS120X2
D2
TELOFF1
JP19(20)
+26V
D4
1SS120
CR1
TX-D
SP10
E
JP22(10)
JP21
V1
120V
JP
30
(C)
SP14
JW12 0Ω
CR2
TX-D
CML
+26V
Q7
DTC114YK
RDPS
S0V
JP
28(C)
SP5
C28 0Ω
JP29
R43 200K
R44 200K
(For Holland)
C4
BP10μ
50V
T1
BT6
C1
EC2.2μ
50V
C2
EC10μ
16V
JP27(C)
R10
820
R11
0Ω
R14
2.7K
R9
100K
R15
100K
R30
0Ω
C23
CC103
R31
8.2K
3.3K(AUS.IRE)
REF
C16 CC561
R13
68K
R12 68K
C15 CC561
R18
2K
ZD13
10V
SL
CML
TELOFF1
RL1
PLS
DAST
RDPS
EARTH
JP25
(10)
JP26
(5)
L5
(SBT)
JW5
(10)
E
DB1
S1YB40
or
S1ZB60
PLS
PH3
TLP627
D5
ERA15-04
C34 0Ω
JP17(5)
R54
10K
Q1
2SD2010
R55
100K
C7
4.7μ
50V
R5
100Ω
2W
R6
100Ω
2W
SP11
PH4
TLP721GR
Q5
DTA114YK
JP9
(10)
R53
470
R1
1W
27K
C5
PC392
400V
JP18
(5)
T2
BT9
R23
22K
ZD2
ZD1
2VX2
R17
47K
C19 CC103
R16
10K
R22
3K
R19
2K
RL2
TELRL
R28 13K
R27
10K
A-OUT
R26
30K
R21
2.4K
R20
1.3K
R25
2K
ADLC
TELSL
R41
30K
DASND
SP4
CI
POL
JP6(5)
C18
CC104
KIA324P
EARTH
CN2
6-2PMJ
L6(5)
JW4
(10)
L4(5)
JW6
(10)
TAD
BINATONE
R2 1W 22K
C9
250V
MC474V
or
MC105(IRE)
ZD4 ZD5
2VX2
R46
3.9K
PH2
TLP721GR
R45
3.9K
PH1
TLP626BV
JW1
(5)
CH1
(EXCEPT FIN)
FG
C31
CC104
+26V
P2
IMSA-6033B-18Z
CN3
4-4PMJ
L11(SBT)
JW8
(10)
L9(SBT)
JW11
(10)
C12
EC16V
10μ
Q2
2SC2603
R8
150Ω
1/4W
R63(TWN)
470Ω
R64 0Ω
TELRL
Q4 FET2SK208(TWN)
R38
4.7K(TWN)
EARTH
JP32
REF
R42
1K
C3
EC100μ
16V
R40
1K
C30
CC104
L7(SBT)
JW9
(10)
L8(SBT)
JW10
(10)
R48
4.7K
C25
SP2 CC103
C24 CC103
R36
100K
C21 CC391
R32 100K
JP3
OPEN(UK,BEL)
TELSL
R24
2K
R29
1K
R35
100K
C26 CC103
SP1
C27 CC103
C22
CC391
R33
100K
R39
4.7K
P1
B2B-PH
R37
47K
JP34
DASND
R34
680
Q3
2SK208
B
NCU
(BELGIUM, HOLLAND, IRELAND, FINLAND, AUSTRIA, TAIWAN, CZECHO, SLOVAK, HUNGARY, POLAND, ASIA)

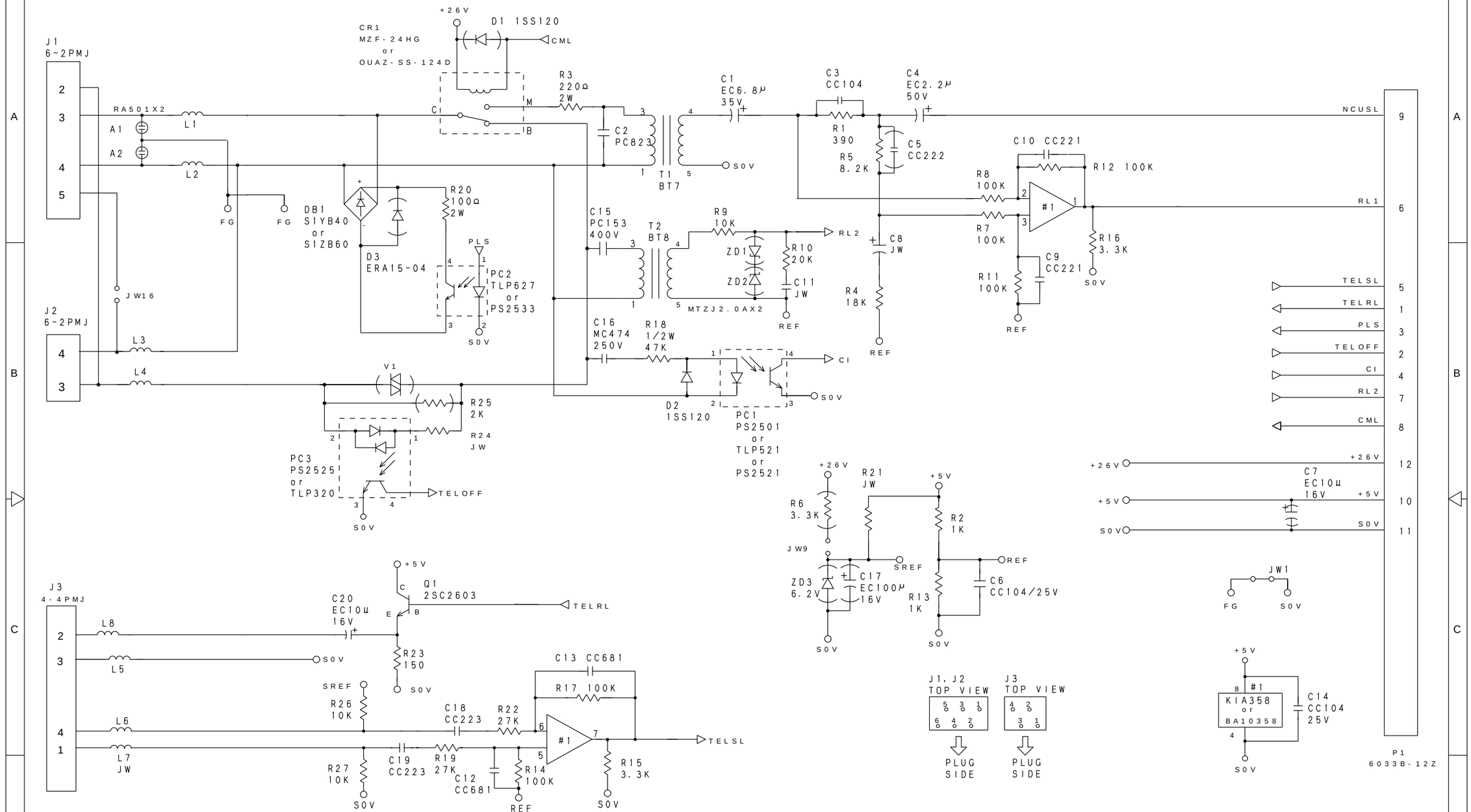
B	**NCU (U.K., NORWAY, SWEDEN)**


CN1
6-6PMJ
LINE
L10 (SBT)
JW7 (10)
L2 (SBT)
JW2 (10)
L3 (SBT)
JW3 (10)
L5 (SBT)
JW5 (10)
L11 (SBT)
JW8 (10)
L9 (SBT)
JW11 (10)
L7 (SBT)
JW9 (10)
L8 (SBT)
JW10 (10)
CN2
6-2PMJ
(CLOSED)
L6 (5)
L4 (5)
JW4 (10)
JW6 (10)
CN3
4-4PMJ
P1
B2B-PH
P2
P2:B12B-PH, P3:B6B-PH
A1
600V
SH2
D1
S1YB40
or
S1ZB60
D2
D3
ISS120X2
D4
ISS120
ZD10
ZD9
Q7
DTC114YK
CR1
TX-D
CR2
TX-D
T3
THS-65
T1
BT6
T2
BT9
C1
EC2.2μ
50V
C2
EC10μ
16V
C4
BP4.7μ
100V
C5
PC392
400V
C9
MC474
250V
C12
EC16V
10μ
C3
EC100μ
16V
C16 CC561
C15 CC561
C23
CC103
C19 CC103
C18
CC104
C30
CC104
C21 CC391
C25
CC103
C24 CC103
C26 CC103
C27 CC103
C22
CC391
C32
CC1047
C37
0Ω
C34 0Ω
C7
2.2P
C28 0Ω
R1
1W
27K
R2
1/4W
150Ω
R5
560Ω
2W
R6
330Ω
1W
R9
100K
R10
820
R11
0Ω
R12 68K
R13
68K
R14
3K
R15
100K
R16
10K
R17
47K
R18
12K
R19
12K
R20
3K
R21
2.4K
R22
3K
R23
22K
R25
12K
R26
30K
R27
10K
R28
3K
R29
1K
R30
0Ω
R31
7.5K
R32 100K
R33
100K
R34
680
R35
100K
R36
100K
R37
47K
R40
1K
R41
22K
R42
1K
R46
0Ω
R48
4.7K
R49
2.4K
R50
2.4K
R51
0Ω
R52 0Ω
R53
470
R54
10K
R55
100K
R56
0Ω
R57
470
R59
100
R62
0Ω
R64 0Ω
PH3
TLP627
PH4
TLP721GR
PH5
TLP721GR
PH6
TLP721GR
PH2
TLP721GR
Q1
2SB
2016
Q2
2SC2603
Q3
2SK208
Q5
DTA114YK
Q6 DTC114YK
KIA324P
ZD1
2V2
ZD2
2V2
ZD4 ZD5
JW(5)X2
SP1
SP2
SP3
SP4
SP5
SP7
SP10
SP12
JP8 (5)
JP11 (10)
JP20(5)
JP19(20)
JP21 (20)
JP22(10)
JP28
JP29
JP30 (C)
JP25 (10)
JP26 (5)
JP17(5)
JP5 (10)
JP18 (5)
JP13 (10)
JP3 (10)
JP34
JP27(C)
TELOFF1
RDPS
PLS
SPO
SREF
REF
EA
EARTH
TELRL
TELSL
DASND
A-OUT
CML
SL
RL1
DAST
EARTH
RL2
TELRL
ADLC
TELSV
DASND
CI
POL
ZD13
10V
+26V
+5V
S0V
4.5V X2
CH1
CH2


CN1
6-6PMJ
LINE
S
Ta
La
Lb
Tb
E
L10(SBT)
JW7
(10)
JP8
(5)
A-OUT
JP11
(10)
T3
THS-65
C32
CC104
C37
CC333
+5V
S0V
JP
23(5)
L2
(SBT)
JW2
(10)
A1
600V
CH2
L13
332K
R60
0Ω
JP20(5)
D3
1SS120X2
D2
TELOFF1
+26V
D4
1SS120
CR1
TX-D
SP10
E
JP22(10)
JP21
JP19(20)
SP9
JP28(C)
JP
30
(C)
JP
(20)
JW12 0Ω
CR2
TX-D
CML
+26V
L3(SBT)
JW3
(10)
R62
0Ω
Q7
DTC114YK
RDPS
S0V
C1
EC1μ
50V
C14
CC563
R65
0Ω
C2
EC10μ
16V
JP27(C)
R10
1.5K
R11
0Ω
C4
BP10μ
50V
T1
BT6
L1 ※
C28 0Ω
C29 ※
SP3
JP29
C17
CC472
R14
2.7K
C16 CC561
R13
68K
R9
100K
R15
100K
R12 68K
C15 CC561
R18
2K
REF
R30
0Ω
R31
3K
ZD13
10V
SL
CML
TELOFF1
RL1
PLS
DAST
RDPS
EARTH
RL2
TELRL
ADLC
TELSL
DASND
CI
POL
+5V
S0V
+26V
JP25
(10)
JP26
(5)
L5
(SBT)
JW5
(10)
E
DB1
S1YB40
or
S1ZB60
D5
ERA15-04
PH3
TLP627
PLS
S0V
JP17(5)
C34
CC332
L12
332K
C35 PC273
C36
CC103
R54
6.8K
Q1
2SD
2010
C7
4.7μ
R55
100K
R5
130Ω
2W
PH4
TLP721GR
Q5
DTA114YK
JP9
(10)
R53
470
R1
1W
27K
T2
BT9
C5
PC392
400V
R23
22K
R17
47K
ZD2
ZD1
2VX2
C18
CC104
KIA324P
C19 CC103
R16
10K
R22
3K
R19
2K
R28 13K
R27
10K
R26
30K
R21
2.4K
R20
1.3K
R25
2K
R41
22K
SP4
R2 1W 10K
D1
1SS120
R46
0Ω
PH2
TLP721GR
or
PS2561-1
C9
MC474
250V
ZD4 ZD5
11VX2
CN2
6-2PMJ
JW4
(10)
L6(5)
L4(5)
JW6
(10)
TAD
BINATONE
CN3
4-4PMJ
+5V
TELRL
R64 0Ω
C12
EC16V
10μ
Q2
2SC2603
L11(SBT)
JW8
(10)
L9(SBT)
JW11
(10)
R8
150Ω
1/4W
SREF
R48
4.7K
C24 CC103
R36
100K
C21 CC391
R32 100K
JP3
(10)
TELSL
L7(SBT)
JW9
(10)
L8(SBT)
JW10
(10)
C26 CC103
R35
100K
R24
2K
R29
1K
R37
47K
JP34
DASND
R34
680
Q3
2SK208
R33
100K
C22
CC391
R39
4.7K
P1
B2B-PH
R42
1K
C3
EC100μ
16V
C30
CC104
R40
1K
JW1
(5)
CH1
FG
P2
IMSA-6033B
-18Z
B
NCU
(GERMANY)

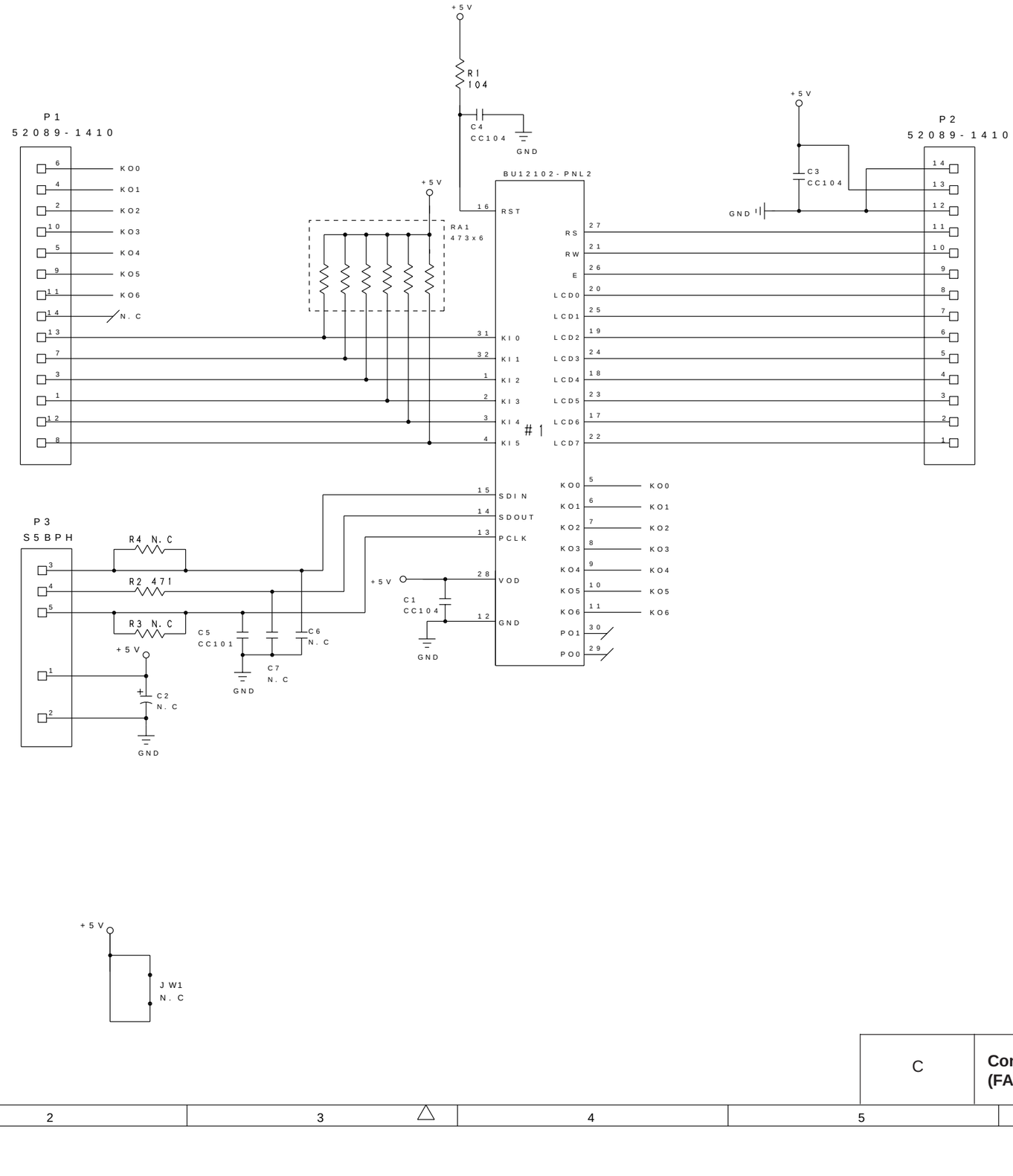

CN1
6-6PMJ
LINE
S
Ta
La
Ib
Tb
E
A1
600V
CH2
L3
(SBT)
L2
(SBT)
JW2
(10)
JW3
(10)
C37
0Ω
R60
0Ω
JP20
(5)
JP8
(5)
A-OUT
JP11
(10)
T3
THS-65
1SSI20X2
C32
CC104
+5V
S0V
D3
D2
TELOFF1
JP19(20)
+26V
D4
1SS120
CR1
TX-D
SP10
E
JP22(10)
JP21
JP
30
(20)
(C)
JW12 0Ω
CR2
TX-D
CML
+26V
Q7
DTC114YK
RDPS
S0V
JP28
(C)
SP5
C28 0Ω
JP29
R43
200K
R44
200K
(For Holland)
C4
BP10μ
50V
T1
BT6
C1
EC0.68μ
50V
C14
CC393
0Ω
R65
C2
EC10μ
16V
R10
1K
R11
0Ω
JP27(C)
ZD13
10V
S0V
C17
CC682
R14
6.8K
C16 CC561
R13
68K
R9
100K
R15
100K
R12 68K
REF
S0V
C15 CC561
R18
2K
R30
1.5K
C23
CC103
R31
10K
REF
SL
CML
TELOFF1
RL1
PLS
DAST
RDPS
EARTH
RL2
TELRL
ADLC
TELSL
DASND
CI
POL
9
8
2
6
3
17
13
20
14
19
7
1
16
5
18
4
15
JP25
(10)
JP26
(5)
L5
(SBT)
JW5
(10)
E
DB1
S1YB40
or
S1ZB60
PLS
PH3
TLP627
S0V
C34
0Ω
JP17(5)
R54
10K
Q1
2SD
2010
C7
4.7μ
50V
R55
100K
R5
100Ω
2W
PH4
TLP721GR
+5V
Q5
DTA114YK
RDPS
JP9
(10)
R53
470
S0V
R1
1W
27K
T2
BT9
C5
PC392
400V
JP18
(5)
R23
22K
ZD2
ZD1
2VX2
R17
47K
REF
C19 CC103
R16
10K
R22
3K
R19
2K
S0V
R28 13K
R27
10K
A-OUT
R26
30K
S0V
R21
2.4K
R20
1.3K
S0V
R25
2K
S0V
R41
30K
SP4
+5V
R2 1W 27K
C9
MC474
250V
ZD4 ZD5
2VX2
R46
3.9K
PH2
TLP721GR
S0V
R45
3.9K
PH1
TLP626BV
S0V
JW1
(5)
CH1
FG
JP6(5)
C31
CC104
S0V
+26V
P2
IMSA-6033B-18Z
R42
1K
C3
EC100μ
16V
REF
R40
1K
S0V
S0V
S0V
CN2
6-2PMJ
TAD
BINATONE
JW4
(10)
L6(5)
L4(5)
JW6
(10)
CN3
4-4PMJ
L11(SBT)
JW8
(10)
L9(SBT)
JW11
(10)
S0V
C12
EC16V
10μ
Q2
2SC2603
R8
150Ω
1/4W
S0V
R64 0Ω
TELRL
L7(SBT)
JW9
(10)
L8(SBT)
JW10
(10)
P1
B2B-PH
R48
4.7K
SP2
C25
CC103
C24 CC103
R36
100K
C21 CC391
R32 100K
JP3
(10)
TELSL
R24
2K
S0V
R29
1K
R35
100K
C26 CC103
SP1
C27 CC103
R33
100K
C22
CC391
REF
R39
4.7K
S0V
R34
680
R37
47K
JP34
DASND
Q3
2SK208
REF
B
NCU
(DENMARK)


CN1
6-6PMJ
LINE
S
Ta
La
Lb
Tb
E
A1
600V
CH2
L2 (SBT)
JW2 (10)
L3 (SBT)
JW3 (10)
C37 0Ω
JP20 (5)
R60 0Ω
R62 0Ω
JP8 (5)
A-OUT
JP11 (10)
T3 THS-65
C32 CC104
+5V
S0V
D3 1SS120X2
D2
TELOFF1
JP19(20)
+26V
D4 1SS120
CR1 TX-D
SP10
E
JP22(10)
V1 120V
JP21 (20)
SP14
JP 30 (C)
JW12 0Ω
CR2 TX-D
CML
+26V
Q7 DTC114YK
RDPS
S0V
C4 BP10μ 50V (ITA, POR)
BP22μ 50V (SPA)
C28 0Ω
JP 28(C)
SP5
JP29
T1 BT6
C1 EC2.2μ 50V
C2 EC10μ 16V
R10 820
R11 0Ω
JP27(C)
ZD13 10V
R14 2.7K (ITA, POR)
3K (SPA)
R9 100K
C16 CC561
R13 68K (SPA, ITA) 75K (POR)
R15 100K
R18 2K
R30 0Ω (ITA, POR) 2.2K (SPA)
R12 68K (SPA, ITA) 75K (POR)
C15 CC561
REF
C23 CC103
R31 3.9K (SPA, POR) 5.6K (ITA)
+5V
C18 CC104
KIA324P
C19 CC103
R16 10K
R22 3K
R19 2K
JP25 (10)
JP26 (5)
L5 (SBT)
JW5 (10)
E
DB1 S1YB40 or S1ZB60
PLS
PH3 TLP627
D5 ERA15-04
JP17(5)
R1 1W 27K
T2 BT9
C5 PC392 400V
JP18 (5)
R23 22K
R17 47K
ZD2
ZD1
2VX2
R54 10K (ITA) 6.8K (SPA, POR)
C34 0Ω
PH4 TLP721GR
Q5 DTA114YK
JP9 (10)
R53 470
Q1 2SD2010
C7 4.7μ50V (ITA, POR) 3.3μ50V (SPA)
R55 100K
R5 100Ω 2W
R6 100Ω 2W
SP11 (POR, ITA)
R28 13K
R27 10K
R26 30K
R21 2.4K
R20 1.3K
R25 2K
R41 30K
SP4
CN2
6-2PMJ
TAD
BINATONE
L6 (5)
JW4 (10)
L4 (5)
JW6 (10)
R2 1W 22K
R46 3.9K
PH2 TLP721GR
C9 250V MC474V or MC105 (POR)
ZD4 ZD5
2VX2
R45 3.9K
PH1 TLP626BV
JW1 (5)
CH1
FG
JP6(5)
C31 CC104
+26V
P2
IMSA-6033B-18Z
SL
CML
TELOFF1
RL1
PLS
DAST
RDPS
EARTH
RL2
TELRL
ADLC
TELSL
DASND
CI
POL
CN3
4-4PMJ
L11 (SBT)
JW8 (10)
L9 (SBT)
JW11 (10)
C12 EC16V 10μ
Q2 2SC2603
R8 150Ω 1/4W
R64 0Ω
TELRL
L7 (SBT)
JW9 (10)
L8 (SBT)
JW10 (10)
P1
B2B-PH
C21 CC391
R32 100K (SPA, POR) 120K (ITA)
R48 4.7K
SP2
C25 CC103
R36 100K
C24 CC103
JP3
TELSL
R35 100K
C26 CC103
R24 2K
R29 1K
SP1
C27 CC103
R33 100K (SPA, POR) 120K (ITA)
C22 CC391
R39 4.7K
R37 47K
JP34
DASND
R34 680
Q3 2SK208
R42 1K
C3 EC100μ 16V
R40 1K
C30 CC104
B
NCU
(ITALY, SPAIN, PORTUGAL)



7. MC：メタライズフィルムコンデンサ（METALLIZED POLYESTER FILM CAPACITOR）
6. PC：ポリエステルフィルムコンデンサ（POLYESTER FILM CAPACITOR）
5. CC：セラミックコンデンサ（CERAMIC CAPACITOR）
4. EC：電解コンデンサ（ALUMINUM ELECTROLYTIC CAPACITOR）
3. COMPONENTS IN PARENTHESIS NOT TO BE MOUNTED.
3. （ ）内ノ部品ハ未実装トスル。
2. UNLESS OTHERWISE SPECIFIED, THE VOLTAGE RESISTANCE OF CAPACITORS IS 25V OR 50V.
2. 指示ナキコンデンサモノ耐圧ハ25V又ハ50Vトスル。
1. UNLESS OTHERWISE SPECIFIED, POWER CONSUMPTION OF RESISTORS IS 1/4W.
1. 指示ナキ抵抗ノ消費電力ハ1/4Wトスル。

B	**NCU (NEW ZEALAND)**



C	**Control Panel 1/2 (FAX1170/1270/1010/1020/MFC1770)**

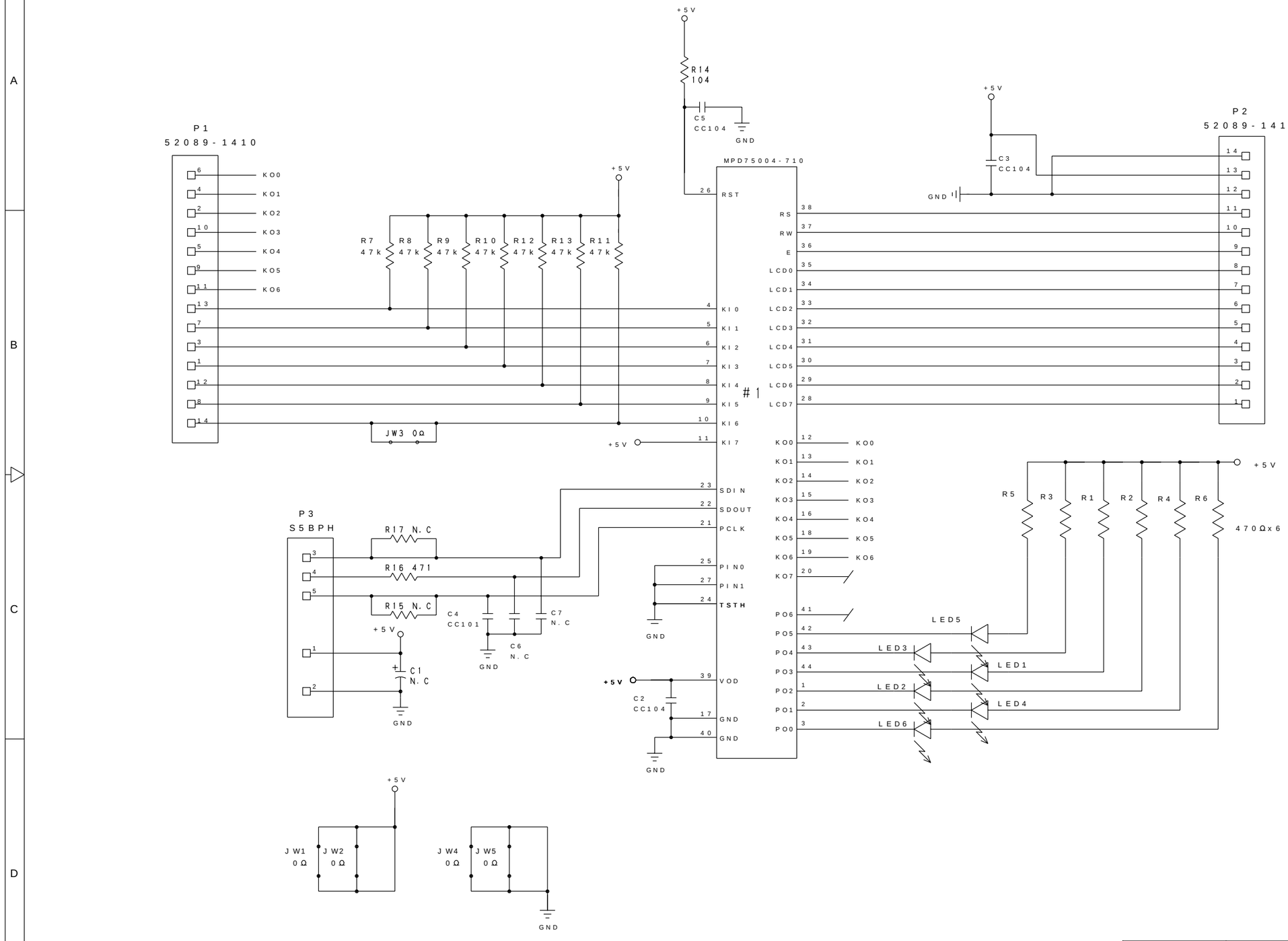
T3 PANEL KEY MATRIX REFERENCE TABLE 1

KEY NO.	KEY NAME MC(CL)	KEY COE
1	FUNCTION	0C
2	TEL-INDEX	14
3	RESOLUTION	0A
4	MODE	12
5	SUPER Q.SCAN	13
6	HELP	11
7	HOOK	24
8	10KEY-1	22
9	10KEY-2	0B
10	10KEY-3	23
11	HOLD	34
12	10KEY-4	32
13	10KEY-5	02
14	10KEY-6	33
15	REDIAL/PAUSE	04
16	10KEY-7	2A
17	10KEY-8	1A
18	10KEY-9	03
19	SPEED DIAL	1C
20	10KEY-*	2C
21	10KEY-0	2B
22	10KEY-#	1B
23	ITOUCH-1	0E
24	ITOUCH-2	26
25	ITOUCH-3	09
26	ITOUCH-4	21
27	ITOUCH-5	36
28	ITOUCH-6	06
29	ITOUCH-7	31
30	ITOUCH-8	01
31	SHIFT	16
32	←	1E
33	SET	2E
34	CLEAR	19
35	→	29
36	SORT	0D
37	ENLARGE/REDUCE	35
38	COPY	1D
39	STOP	2D
40	START	15

T3 PANEL KEY MATRIX REFERENCE TABLE 2

	KO0 P1-6P	KO1 P1-4P	KO2 P1-2P	KO3 P1-10P	KO4 P1-5P	KO5 P1-9P	KO6 P1-11P
KI0 P1-13P	30	25	6	34	26	35	29
KI1 P1-7P	13	3	4	17	8	16	12
KI2 P1-3P	18	9	5	22	10	21	14
KI3 P1-1P	15	1	2	19	7	20	11
KI4 P1-12P		36	40	38		39	37
KI5 P1-8P	28	23	31	32	24	33	27

C	**Control Panel 2/2 (FAX1170/1270/1010/1020/MFC1770)**



C	**Control Panel 1/2 (FAX1570MC/1030/MFC1870MC/ 1970MC)**

T3-MC PANEL KEY MATRIX REFERENCE TABLE 1

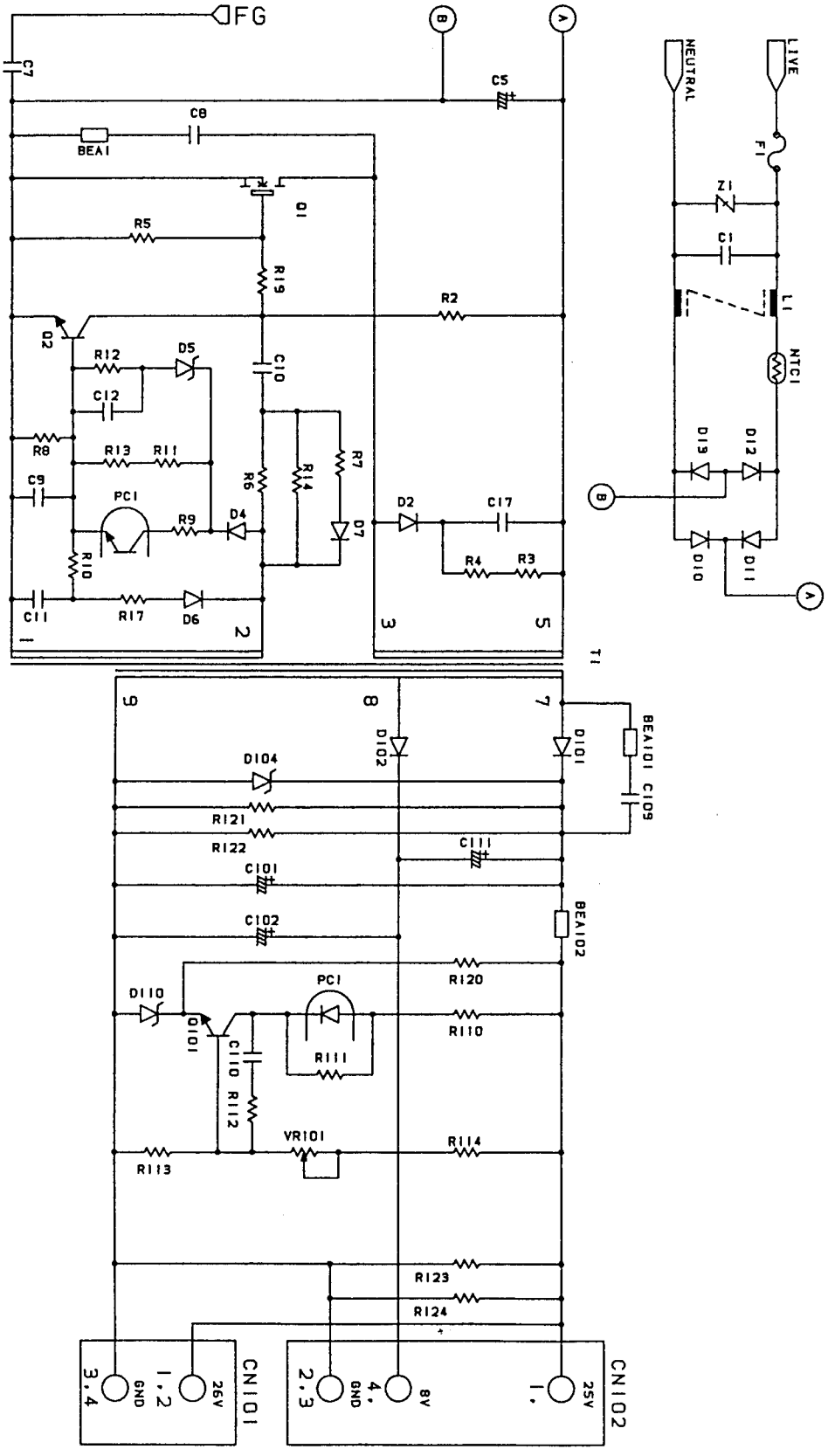
KEY NO.	KEY NAME MC(CL)	KEY COE
1	MODE	0C
2	RESOLUTION	14
3	←	0A
4	SET	12
5	→	13
6	HOOK(子機)	11
7	10KEY-1	24
8	10KEY-2	22
9	10KEY-3	0B
10	HOLD(PAUSE)	23
11	10KEY-4	34
12	10KEY-5	32
13	10KEY-6	02
14	REDIAL/PAUSE(HOLD)	33
15	10KEY-7	04
16	10KEY-8	2A
17	10KEY-9	1A
18	SPEED DIAL(HOOK)	03
19	10KEY-*	1C
20	10KEY-0	2C
21	10KEY-#	2B
22	FUNCTION	1B
23	TEL-INDEX	0E
24	HELP	26
25	1TOUCH-1	09
26	1TOUCH-2	2C
27	1TOUCH-3	2E
28	1TOUCH-4	29
29	1TOUCH-5	16
30	STOP	2D
31	COPY	2A
32	START	15
SW1	MCMODE	31
SW2	PLAY	32
SW3	ERASE	33
SW4	RECORD	34

KEY NO.	KEY NAME MC(CL)	KEY COE
317	MODE	35
38	RESOLUTION	1D
39	←	2D
40	SET	15
41	→	17
42	HOOK(子機)	0F
43	10KEY-1	27
44	10KEY-2	37
45	10KEY-3	1F
46	HOLD(PAUSE)	2F
47	10KEY-4	25
48	10KEY-5	05
49	10KEY-6	07

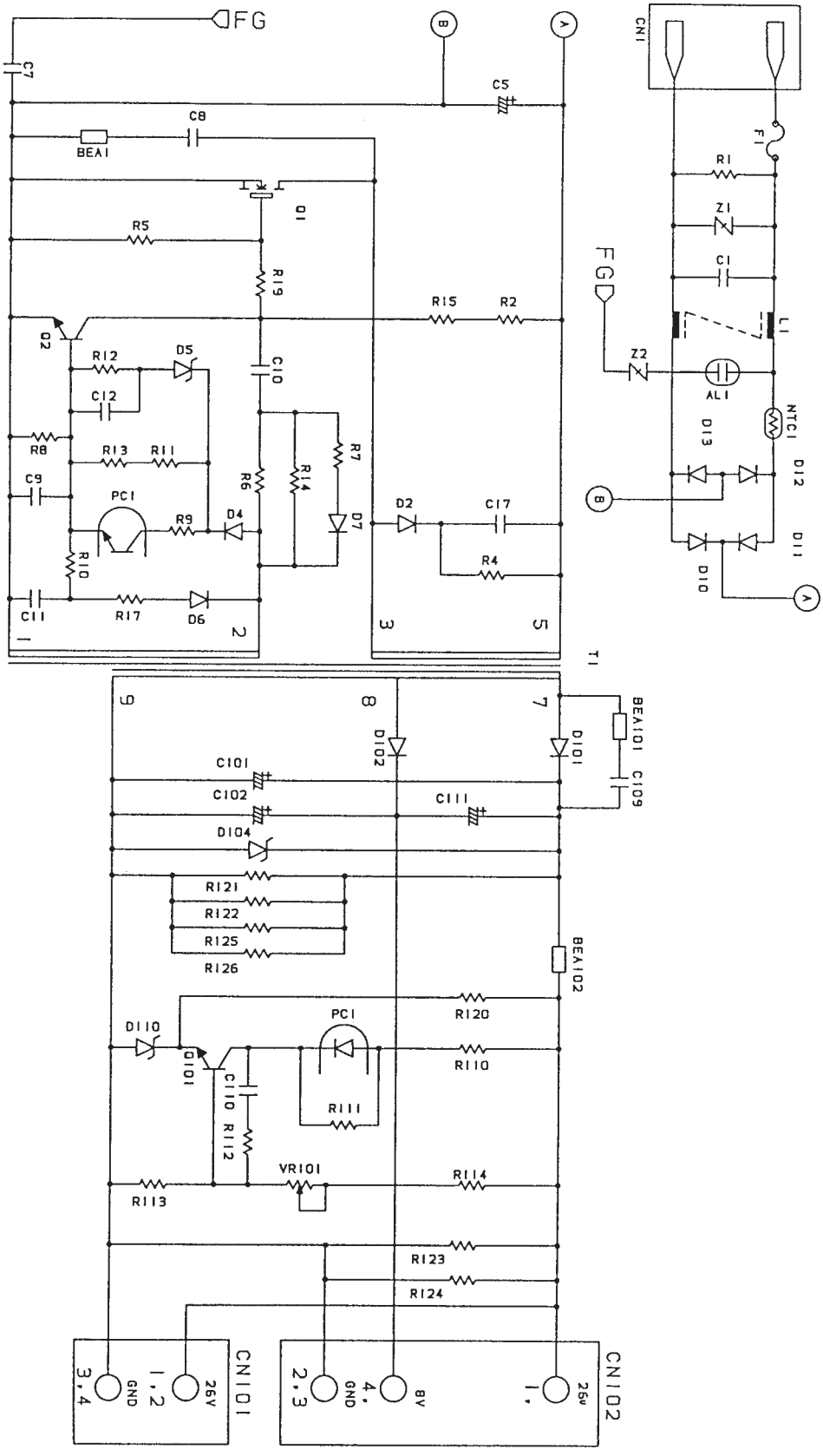
T3-MC PANEL KEY MATRIX REFERENCE TABLE 2

	KO0 P1-6P	KO1 P1-4P	KO2 P1-2P	KO3 P1-10P	KO4 P1-5P	KO5 P1-9P	KO6 P1-11P
KI0 P1-13P	30	25	6	34	26	35	29
KI1 P1-7P	13	3	4	17	8	16	12
KI2 P1-3P	18	9	5	22	10	21	14
KI3 P1-1P	15	1	2	19	7	20	11
KI4 P1-12P	48	36	40	38	47	39	37
KI5 P1-8P	28	23	31	32	24	33	27
KI6 P1-14P	49	42	41	45	43	46	44

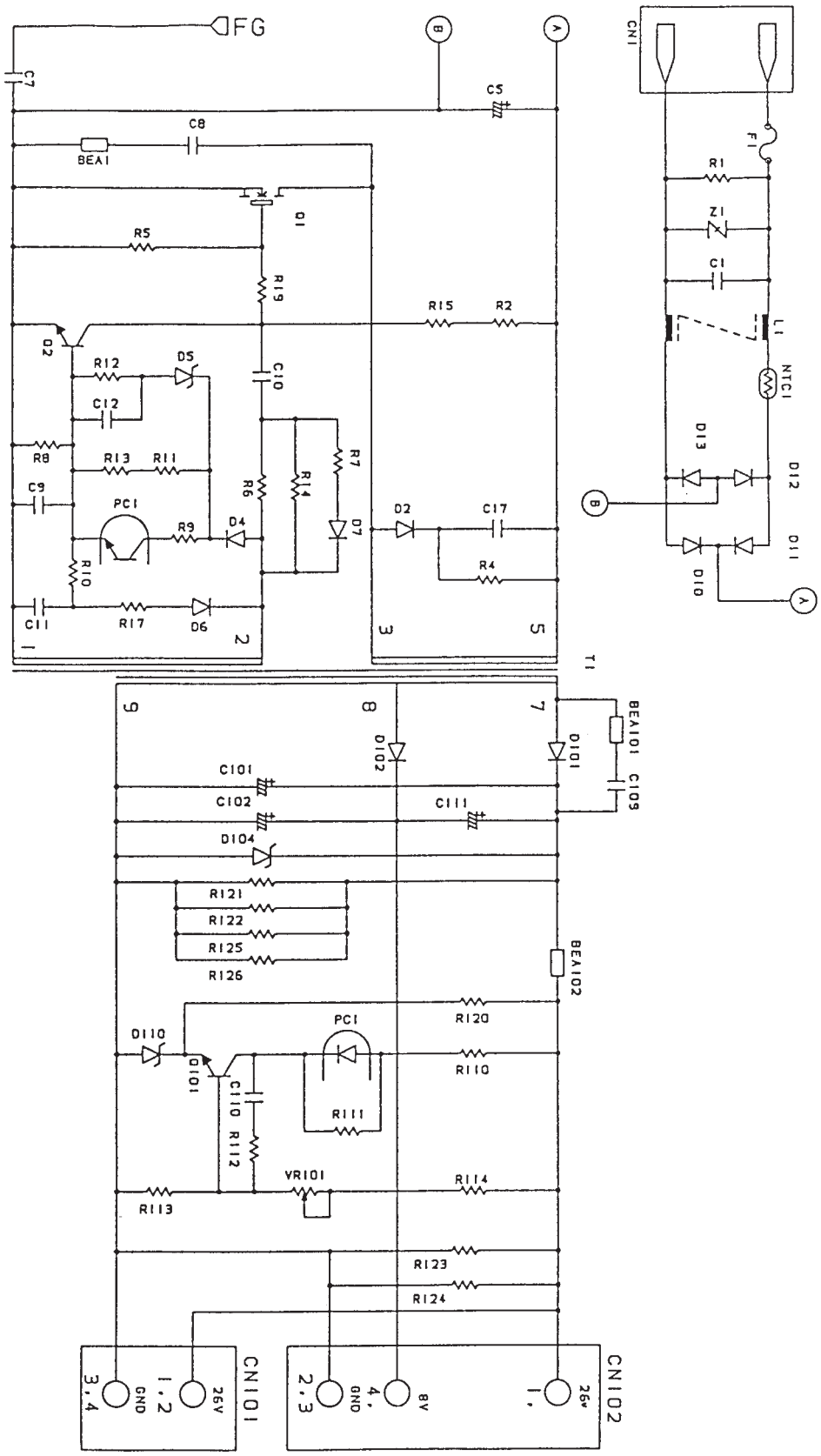
C	**Control Panel 2/2 (FAX1570MC/1030/MFC1870MC/ 1970MC)**



D	**Power Supply (100-120V)** **U.S.A., CANADA, TAIWAN**



D	**Power Supply (200-240V)** **EUROPE, SOUTH AMERICA**



D	**Power Supply (200-240V)** **GULF, ASIA, CHINA**