

# SHARP SERVICE MANUAL

No. 00ZFO2970USME



## FACSIMILE

### MODEL FO-2970M

SELECTION CODE	DESTINATION
U	U.S.A.

Chapters 1, 3, 7 and 8 of this manual are omitted because they are partly common to the FO-2950MU. Please refer to previous service manual UX-4000MU/FO-2950MU/C (00ZUX4000USME) for these chapters.

#### Difference between FO-2970MU and FO-2950MU

	FO-2970MU	FO-2950MU
Control PWB	DCEKC182PSCZZ	DCEKC388NSCZZ
TEL/LIU PWB	DCEKL259CSC01	DCEKL222CSC01
Modem speed	33,600 bps	14,400 bps

#### CAUTION

This laser facsimile is a class 1 laser product that complies with 21CFR 1040.10 and 1040.11 of the CDRH or IEC60825-1 standard. This means that this machine does not produce a hazardous laser radiation. The use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

This laser radiation is not a danger to the skin, but when an exact focusing of the laser beam is achieved on the eyes retina, there is danger of spot damage to the retina.

The following cautions must be observed to avoid exposure of the laser beam to your eyes at the time of servicing.

- 1) When a problem in the laser optical unit has occurred, the whole optical unit must be exchanged as a unit, not an individual part.
- 2) Do not look into the machine with the main switch turned on after removing the toner/developer unit and drum cartridge.
- 3) Do not look into the laser beam exposure slit of the laser optical unit with the connector connected when removing and installing the optical system.
- 4) The cover of Laser Printer Unit contains the safety interlock switch.

Do not defeat the safety interlock by inserting wedges or other items into the switch slot.

Laser Wave Length : 780 ±15 nm  
 Laser Pulse Times : (13.95 ± 3 μs)/7mm  
 Laser Output Power : 0.4 mW ± 0.05mW

Parts marked with "△" is important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

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**PARTS GUIDE**

## CHAPTER 1. GENERAL DESCRIPTION

### [1] Specifications

#### • GENERAL

<b>Automatic dialing</b>	Rapid Key Dialing: 20 numbers Speed Dialing: 100 numbers	<b>Effective Scanning width</b>	8.3" (210 mm) max.
<b>Memory size*</b>	4 MB (approx. 300 pages)	<b>Effective Printing width</b>	8.0" (208 mm) max.
<b>Modem speed</b>	33,600 bps (max.) Automatic fallback to lower speeds.	<b>Reception modes</b>	Fax/Tel/A.M.
<b>Transmission time*</b>	Approx. 3 seconds	<b>Scanning speed</b>	8 ppm (letter paper)
<b>Toner cartridge yield (4% page coverage, letter paper)</b>	<b>Initial starter cartridge</b> (included with fax machine): Approx. 1,875 pages <b>Replacement cartridge (FO-29ND):</b> Approx. 3,750 pages	<b>Full Dual Access</b>	Yes
<b>Drum cartridge yield</b>	<b>Initial starter cartridge</b> (included with fax machine): 20,000 pages (avg.) <b>Replacement cartridge (FO-29DR):</b> 20,000 pages (avg.)	<b>Copy function</b>	Single/Multi/Sort (99 copies/page)
<b>Scanning resolution</b>	<b>Fax/copy:</b> <b>Horizontal:</b> 203 pels/inch (8 pels/mm) <b>Vertical:</b> Standard: 98 lines/inch (3.85 lines/mm) Fine /Halftone: 196 lines/inch (7.7 lines/mm) Super fine: 391 lines/inch (15.4 lines/mm) <b>PC:</b> Enhanced 600 dpi	<b>Power requirements</b>	120 V AC, 60 Hz
<b>Automatic document feeder</b>	20 pages max. (20-lb. letter paper)	<b>Operating temperature</b>	50 - 86°F (10 - 30°C)
<b>Halftone (grayscale)</b>	64 levels (PC scan: 256 levels)	<b>Humidity</b>	20 to 85% RH
<b>Paper tray capacity</b>	200 sheets (20-lb. letter paper)	<b>Power consumption</b>	Standby: 8.1 W Maximum: 650 W
<b>Compression scheme</b>	MMR, MR, MH, Sharp (H2)	<b>Dimensions</b>	Width: 15.2" (386 mm) Depth: 15.7" (398 mm) Height: 6.7" (169 mm)
<b>Applicable telephone line</b>	Public switched telephone network	<b>Weight</b>	Approx. 13.8 lbs. (6.3kg)
<b>Compatibility</b>	ITU-T (CCITT) G3 mode		
<b>Printing resolution</b>	<b>Horizontal:</b> 406 lines/inch (16 lines/mm) <b>Vertical:</b> 391 lines/inch (15.4 lines/mm) <b>PC Printing:</b> 600 dpi (enhanced 1,800 dpi)		
<b>Input document size</b>	Automatic feeding: Width: 5.8 to 8.5" (148 to 216mm) Length: 5.5 to 11" (140 to 279mm) Manual feeding: Width: 5.8 to 8.5" (148 to 216mm) Length: 5.5 to 39.4" mm (140 to 1,000mm)		

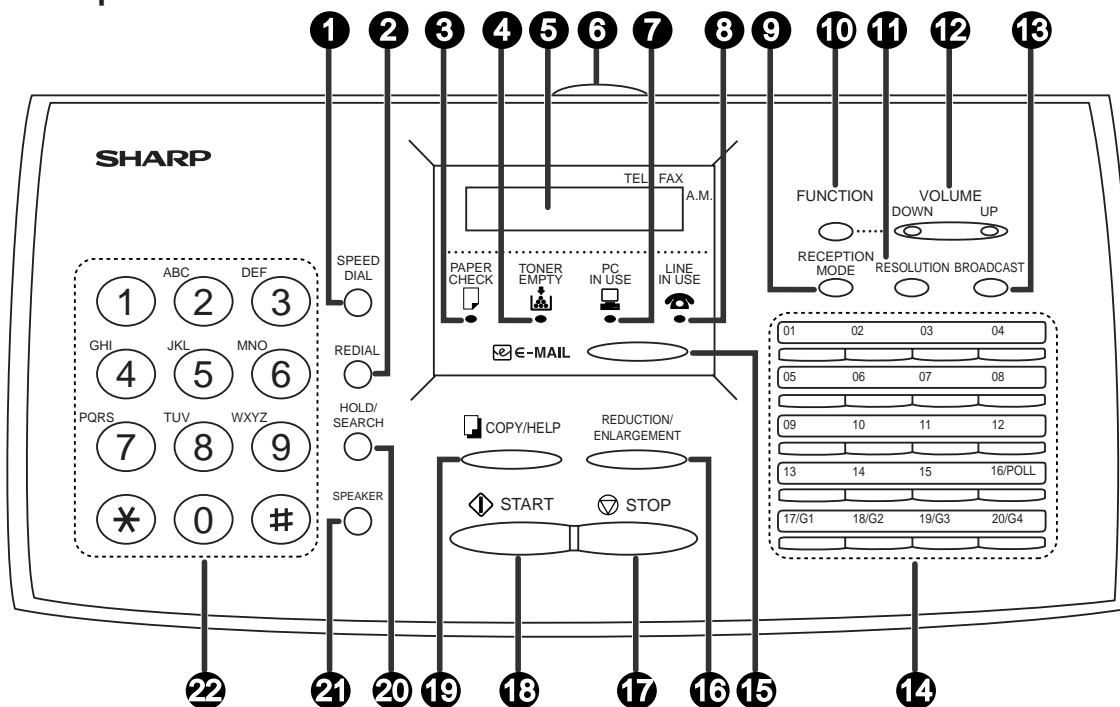
\* Based on ITU-T Test Chart #1 at standard resolution in Sharp special mode, excluding time for protocol signals (i.e., ITU-T phase C time only).

#### Important:

- This facsimile machine is not designed for use on a line which has call waiting, call forwarding, or certain other special services offered by your telephone company. If you attempt to use the fax machine in conjunction with any of these services, you may experience errors during transmission and reception of facsimile messages.
- This facsimile machine is not compatible with digital telephone systems.

As a part of our policy of continuous improvement, SHARP reserves the right to make design and specification changes for product improvement without prior notice. The performance specifications figures indicated are nominal values of production units. There may be some deviations from these values in individual units.

## [2] Operation panel



- 1 SPEED DIAL key**  
Press this key to dial a fax or voice number using an abbreviated 2 digit Speed Dial number.
- 2 REDIAL key**  
Press this key to automatically redial the last number dialed.
- 3 PAPER CHECK indicator**  
This lights when the paper tray is out of paper, the paper has jammed, the printer compartment cover is open, or a paper size error has occurred.
- 4 TONER EMPTY indicator**  
This blinks when the toner cartridge nears empty and lights steadily when the toner cartridge needs replacement.
- 5 Display**  
This displays messages and prompts during operation and programming.
- 6 Panel release**  
Grasp this release and pull toward you to open the operation panel.
- 7 PC IN USE light**  
This blinks when data is being sent to or from the computer connected to the fax machine.
- 8 LINE IN USE light**  
This lights when the fax machine is using the telephone line.
- 9 RECEPTION MODE key**  
Press this key to select the reception mode. An arrow in the display will point to the currently selected reception mode.
- 10 FUNCTION key**  
Press this key to select special functions and settings.
- 11 RESOLUTION Keys**  
Press this key to adjust the resolution for faxing or copying.
- 12 VOLUME (UP/DOWN) keys**  
Press these keys to adjust the volume of the speaker when the **SPEAKER** key has been pressed, the volume of the handset when the handset is lifted, or the volume of the ringer at all other times. The keys can also be used to scroll through **FUNCTION** key settings.
- 13 BROADCAST key**  
Press this key to send a document to a group of receiving fax machines.
- 14 Rapid Dial Keys**  
Press one of these keys to dial a fax number automatically, or send a document as an E-mail attachment to a preset E-mail address.
- 15 E-MAIL key**  
Press this key to send a document as an E-mail attachment. After you press the key, your specified E-mail program will open to let you enter the E-mail address, a subject, and a message if desired.
- 16 REDUCTION/ENLARGEMENT key**  
Press this key to select an enlargement or reduction setting when making a copy of a document.
- 17 STOP key**  
Press this key to cancel an operation before it is completed.
- 18 START key**  
Press this key to begin transmission when using Speed Dialing, Direct Keypad Dialing, or Normal Dialing.
- 19 COPY/HELP key**  
When a document is in the feeder, press this key to make a copy of a document. At any other time, press this key to print out the Help List, a quick reference guide to the operation of your fax machine.
- 20 HOLD/SEARCH key**  
When dialing, press this key to search for an auto-dial fax number. During a phone conversation, press this key to put the other party on hold.
- 21 SPEAKER key**  
Press this key to listen to the line and fax tones through the speaker when faxing a document.  
Note: **this is not a speakerphone**. You must pick up the handset to talk with the other party.
- 22 Number Keys**  
Use these keys to dial numbers, and enter numbers and letters when storing auto-dial numbers.

# CHAPTER 2. ADJUSTMENTS

## [1] Adjustments

### General

Since the following adjustments and settings are provided for this model, make adjustments and/or setup as necessary.

### 1. Adjustments

#### Adjustments of output voltage (FACTORY ONLY)

1. Install the power supply unit in the machine.
2. Set the recording paper and document.
3. When the document is loaded, power is supplied to the output lines.  
Confirm that outputs are within the limits below.

Output	Voltage limits
+5V	4.75V~5.25V
+24VH	23.04V~24.96V
+24V*	23.04V~24.96V

#### Output voltage settings

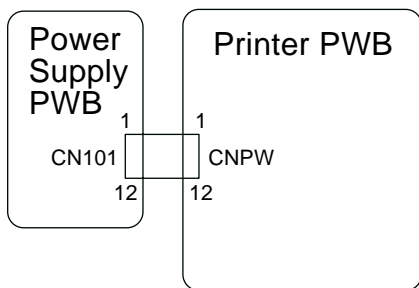


Fig. 1

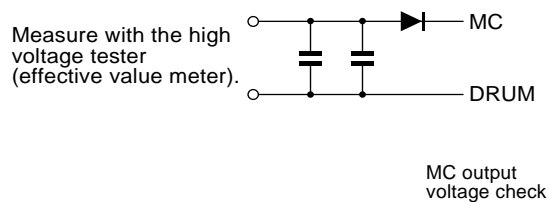
Connector PIN No.	CNPW
1	+5V
2	DG
3	DG
4	+24VH
5	MG
6	MG
7	+24VS
8	PWRLY-
9	HLON-
10	+24V
11	+24V
12	ZC

## 2. High voltage power adjustments

The high voltage power adjustments are composed of the MC output voltage adjustment and the DC bias output voltage adjustment. Either adjustment is performed with the diag function. (MAIN CHG ADJUST MODE)

### ① MC output voltage adjustment

In the measurement circuit shown below, adjust VR1 to be -1050V ~ -1200V (aim at -1100V)



- Capacitor: 1000pF/3KV (VCKYQY3FB102K)
- Diode: SHV-03 (VHDSHV03///-1)

VR1 (MC output voltage adjustment volume)

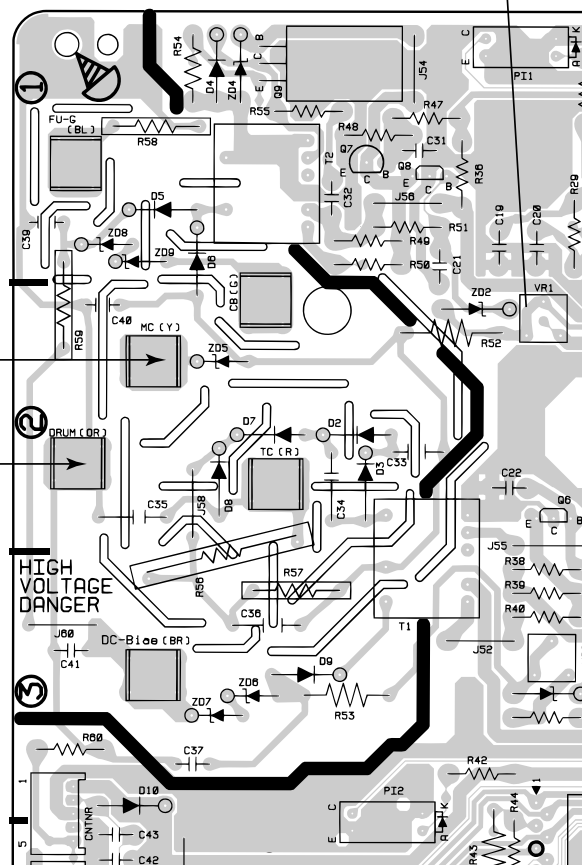


Fig.2

② DC bias output voltage adjustment

Adjust VR2 so that the output voltage is  $-310V \pm 5V$   
 For measurement, use the high voltage tester (effective value meter).

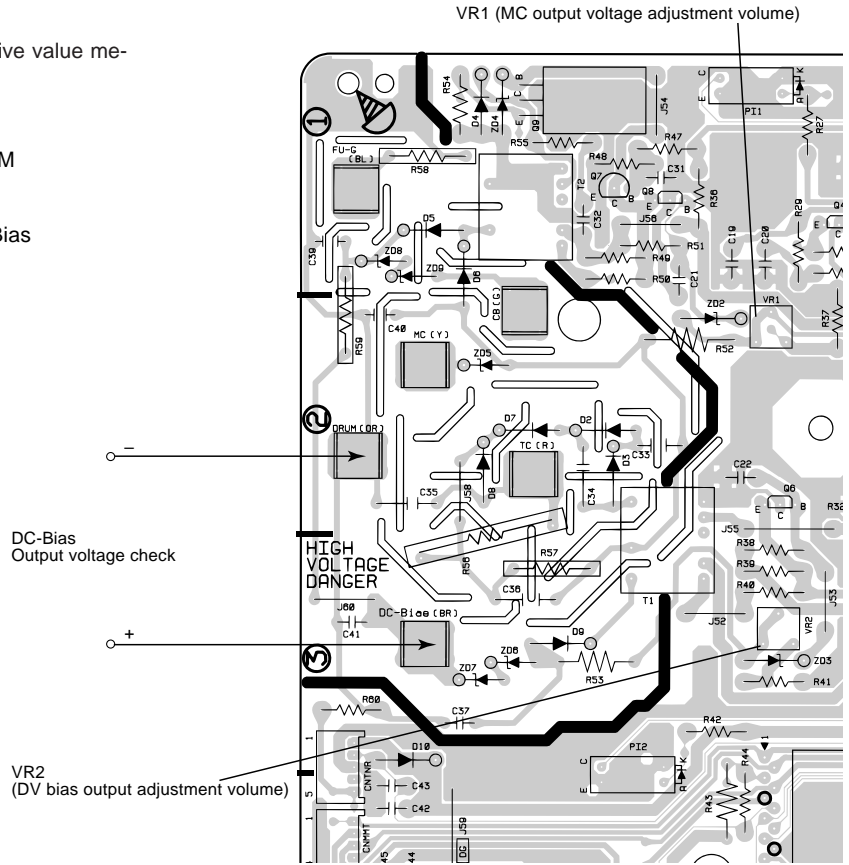
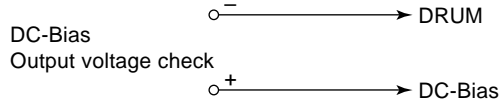


Fig.3

③ Transfer charger voltage check

After MC output voltage adjustment and DC bias output voltage adjustment, check transfer charger voltage.  
 Check that the output voltage is  $+3200V \sim +3700V$ .  
 For measurement, use a high voltage tester (effective value meter).

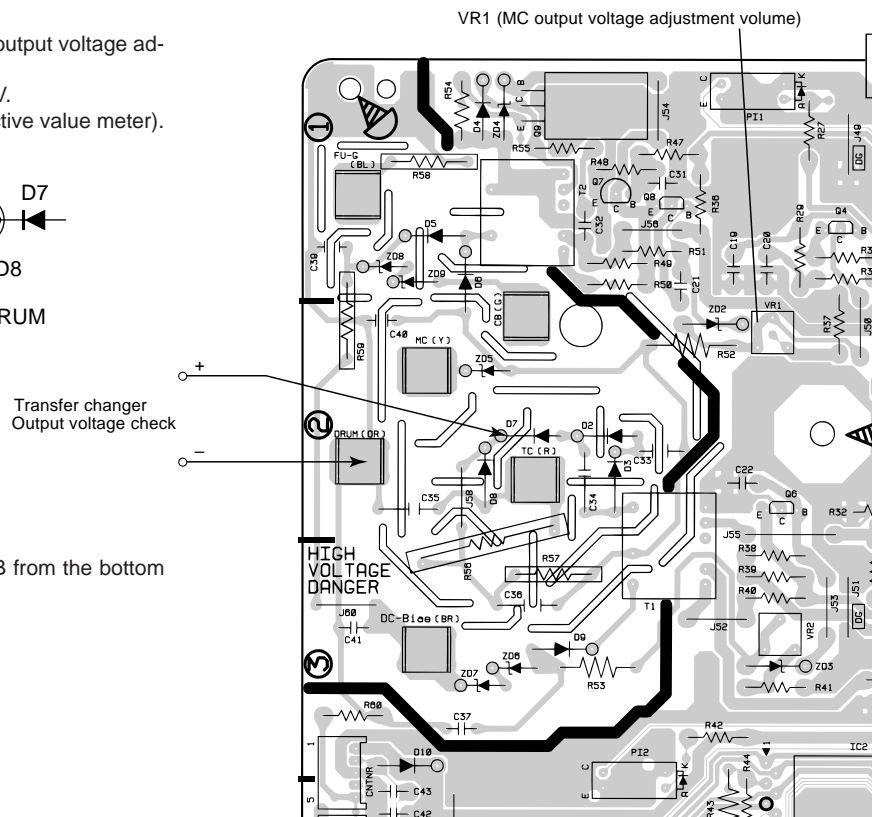
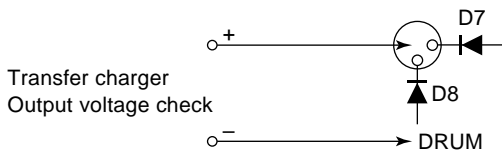


Fig.4

**Note:** For measurement, do not remove Printer PWB from the bottom plate.



## [2] Diagnostics and service soft switches

### 1. Operating procedure

Two kinds of diagnoses are supported.

#### 1-1. Fax diagnosis

This diagnosis is concerned with the main body of fax which is used for production and service support.

##### Entering the diagnostic mode

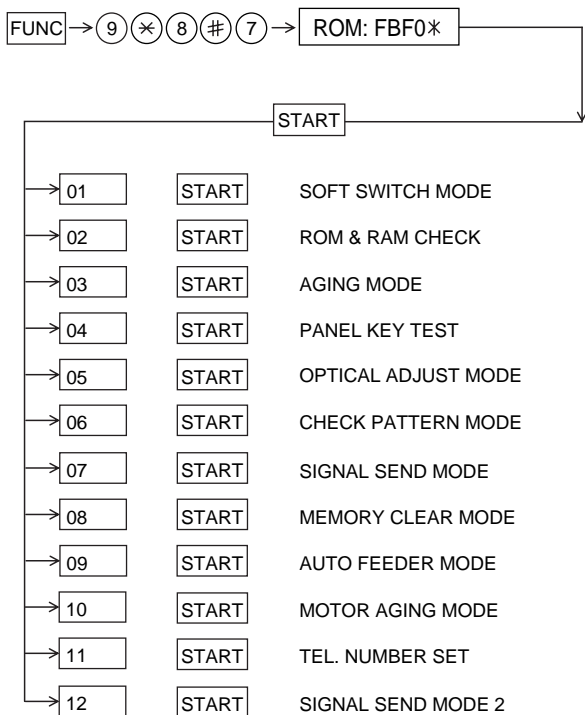
Press **FUNC** → **9** → **\*** → **8** → **#** → **7**, and the following display will appear.

```
DIAG MODE
ROM: FBF0*
```

Then press the **START** key. Select the desired item with the **\*** key and the **#** key or select with the rapid key.

Enter the mode with the **START** key.

(Diag •specifications)



#### 1-2. Print diagnosis

This diagnosis is concerned with the print which is used for production and service support.

##### Entering the diagnostic mode

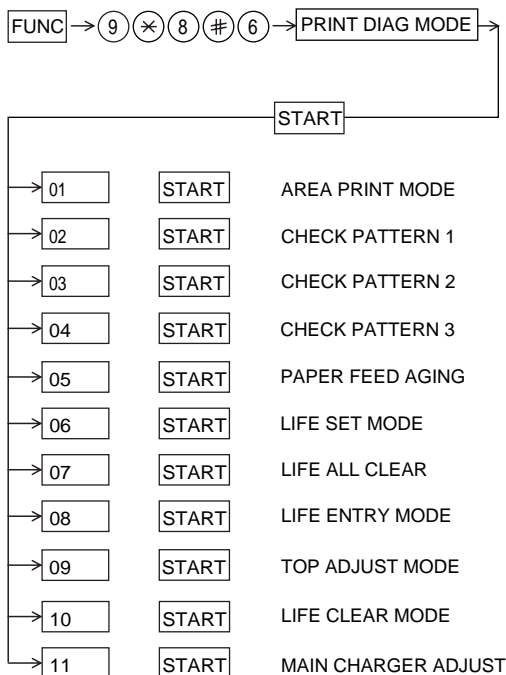
Press **FUNC** → **9** → **\*** → **8** → **#** → **6**, and the following display will appear.

```
PRINT DIAG MODE
PRESS START KEY
```

Then press the **START** key. Select the desired item with the **\*** key and the **#** key or select with the rapid key.

Enter the mode with the **START** key.

(Diag •specifications)



##### Memory clear when power is turned on

Pressing the **START** and **STOP** keys, turn on the main power, and the following message will be displayed.

```
MEMORY CLEAR?
YES: START
```

Press **START** key, the memory will be cleared to be ready for operation. Press **COPY** key, the memory will be cleared to be ready for process check.

If press the other keys, it will continue ready for operation as it is.

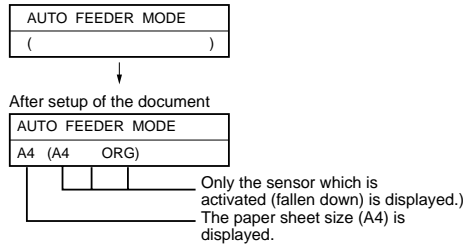




**9) Auto feeder mode**

The auto feed function can be checked by inserting and discharging the document. (After entering this mode, when a document is placed in the machine and the START key is pressed, the operation will start.)

After this mode is activated, the document size A4(A4 ) and sensor information A4(A4 ORG) are displayed when the document sensor is turned.



**10) Motor aging mode**

Regardless of the presence or absence of a document, the transmission system motor will continue to run until the STOP key is pressed. When the START key is pressed after this mode has been selected, the motor will run at the STANDARD mode speed. Then, when the image quality is changed using the RESOLUTION key, the motor will run at the speed used for that image quality.

(When HALF-TONE is selected, the motor will run at the FINE modespeed.)

**11) TEL. number set**

The function is used to simplify the registration of FAX/TEL No. during aging.

- ① The diagnosis mode is activated. If anything is not registered in the Rapid number 01 or any program or group is registered, it will pass the diagnosis without doing anything.
- ② The FAX number (including the substitutive destination) of the Rapid number 01 is copied to the Rapid numbers 02 thru 19.
- ③ FAX number of the Rapid number 01 is copied to SPEED key numbers 00 thru 99.
- ④ If any chain dial is not set in the Rapid number 01, the Rapid numbers 01 thru 19 and SPEED key numbers 00 thru 10 are registered in the group number 04. If any chain dial is set, the group will be not produced but the chain dial setting alone of the Rapid number 01 will be reset. (In all others except the Rapid number 01, the chain dials will be continuously set as they are.)

Rapid key	RXX	XX	: Rapid number
SPEED key	SXX	XX	: Speed key number

(12th and subsequential letters of the destination name registered in the Rapid number 01 will be discarded.)

**12) Signal Send Mode 2**

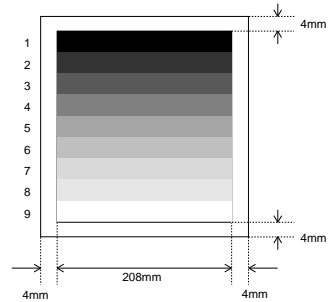
The signals concerned with V.34 & V.8 are checked. After this mode is activated, press the START key, and the signals will be sent in the following sequence. It can be used to check the modem.

- [ 1] No signals (CML-ON)
- [ 2] 33600bps (V.34)
- [ 3] 31200bps (V.34)
- [ 4] 28800bps (V.34)
- [ 5] 26400bps (V.34)
- [ 6] 24000bps (V.34)
- [ 7] 21600bps (V.34)
- [ 8] 19200bps (V.34)
- [ 9] 16800bps (V.34)
- [10] 14400bps (V.34)
- [11] 12000bps (V.34)
- [12] 9600bps (V.34)
- [13] 7200bps (V.34)
- [14] 4800bps (V.34)
- [15] 2400bps (V.34)
- [16] 0-300bps (V.21)
- [17] ANsam (V.8)
- [18] END

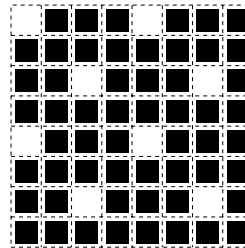
**2-2. Print diagnosis**

**Rapid key 01: Area print mode**

The effective printing area frame is printed in the specified sheet size.

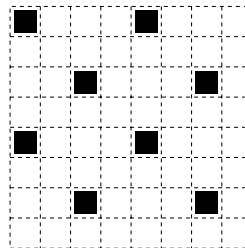


- 1. [Full black pattern]
- 2. [Intermediate tone 2 pattern]



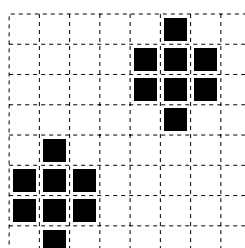
The left pattern is repeated.

- 3. [Intermediate tone 1 pattern]



The left pattern is repeated.

- 4. [Mesh point pattern]



The left pattern is repeated.

- 5. [Longitudinal strip 2 pattern]  
Black 2 dot and white 2 dot are repeated in line.
- 6. [Lateral strip 2 pattern]  
Black 2 line and white 2 line are repeated.
- 7. [Longitudinal strip 1 pattern]  
Black 1 dot and white 1 dot are repeated in line.
- 8. [Lateral strip 1 pattern]  
Black 1 line and white 1 line are repeated.
- 9. [Full White pattern]

**Rapid key 02: Check pattern 1**

The lateral stripe 2 pattern is printed on one sheet. (Black 2 line and white 2 line are repeated.)

**Rapid key 03: Check pattern 2**

The lateral stripe 2 pattern is printed on multiple pages. Press the STOP key to end the printing.

**Rapid key 04: Check pattern 3**

The intermediate tone 1 is printed on one sheet.

### Rapid key 05: Paper feed aging

The mode is used for aging related to the printing. In this mode, the following modes are provided.

- ① Blank paper aging mode (ALL WHITE AGING)
- ② Whole black print aging mode (ALL BLACK AGING)
- ③ 4% printing aging mode (4% AGING)

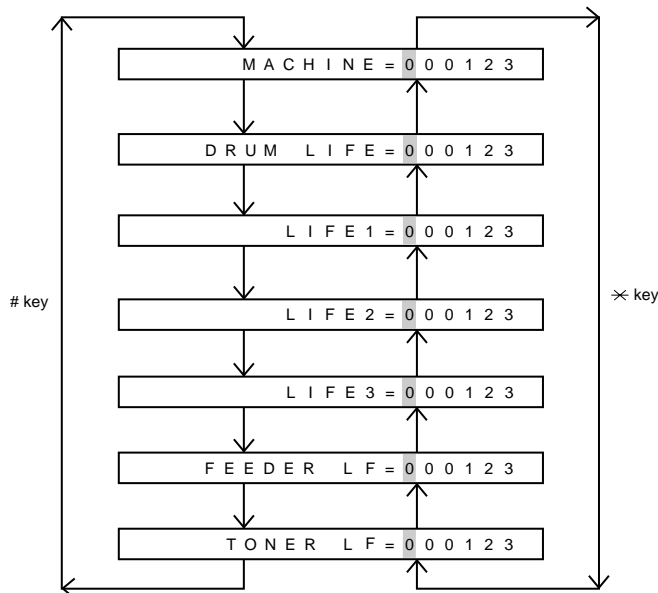
After selecting the paper-feed aging mode in the print diagnosis mode, input the number of each mode above with the ten-key, and the mode will be executed. The detailed specifications of each mode are described as follows. Here, the operation in each mode is stopped only when the STOP key is pressed by the operator or a printing-impossible error occurs.

- Blank paper aging mode (ALL WHITE AGING)  
In the mode, printing is continued in the whole white (white paper) printing pattern until the STOP key is pressed by the operator. (In the printing area)
- Whole black printing aging mode (ALL BLACK AGING)  
In the mode, printing is continued in the whole black (whole black) printing pattern until the STOP key is pressed by the operator. (In the printing area)

### Rapid key 06: Life set mode

The mode is used to set the life counter of the printer and the counter of the auto feeder at desired values. For setting, proceed with the following procedure.

- ① When the life counter setting mode is selected, the following will be displayed.



The cursor blinks at the top data.

Seven counters can be selected with the "#" and "x" keys.

- ② In the state ①, input a desired setting number of 6 digits with the ten-key.
- ③ After input of 6 digits, shift to another counter with the "#" and "x" keys as necessary. When all necessary counters are completely input, press the START key.
- ④ "STORED" will be displayed with the set values stored into the memory. For checking, retry this mode.

Note:

This counter indicates the printer use conditions such as numbers of printed pages from the beginning of use. In the normal memory clear condition, the counter will not be reset.

In conditions including damaged memory contents caused by repairing the panel, this counter should be reset or cleared in addition to the ordinary memory clear.

### Rapid key 07: Life all clear

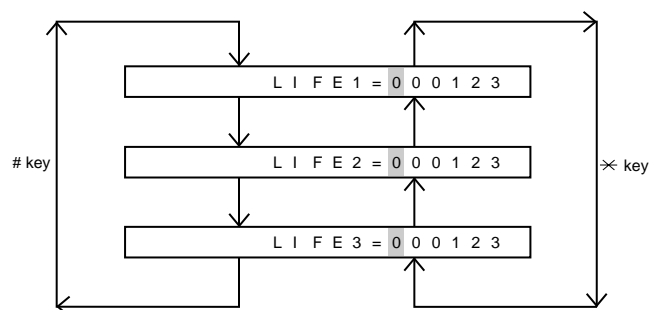
The mode is used to clear the life counter of the printer of the counter of the auto feeder.

Note: The counter shows the operational state of the printer (e.g. how many sheets have been printed since start of use?). The ordinary memory does not reset the counter. Accordingly, it is necessary to reset this counter in addition to the ordinary memory clear if the content in the memory on the control PWB is broken because of PWB repair, etc. (In the production stage, it is necessary to execute this in the last process.)

### Rapid key 08: Life entry mode (For Serviceman temporary counter)

The mode is used to set a desired value for the judgment value (alarm judgment counter value) of the general purpose life counters 1 thru 3 of the printer. If the life of a consumable part (developer, imprinter, etc) is set, the model which has the error display and RMS function will inform RMS when the counter reaches the set value. For setting, proceed with the following procedure.

- ① When the life counter entry mode is selected, the following will be displayed.



The cursor blinks at the top data.

Three counters can be selected with the "#" and "x" keys.

- ② In the state ①, input a desired setting number of 6 digits with the ten-key.
- ③ After input of 6 digits, shift to another counter with the "#" and "x" keys as necessary. When all necessary counters are completely input, press the START key.
- ④ "STORED" will be displayed with the set values stored into the memory. For checking, retry this mode.

Note: The counter shows the operational state of the printer (how many sheets have been printed since start of use? and others). The ordinary memory does not reset the counter. Accordingly, it is necessary to reset the counter or do the clear process in addition to the ordinary memory clear if the content in the memory on the control PWB is broken because of PWB repair, etc. (In the production stage, it is necessary to execute this in the last process.)

### Rapid key 9: Top adjust mode

Adjust the top margin for printing on a page. You can enter any value from 0 to 99 using the ten-key keypad.

The standard (initial) value is 50.

When the setting is increased, the print start position will be moved closer to the beginning of page.

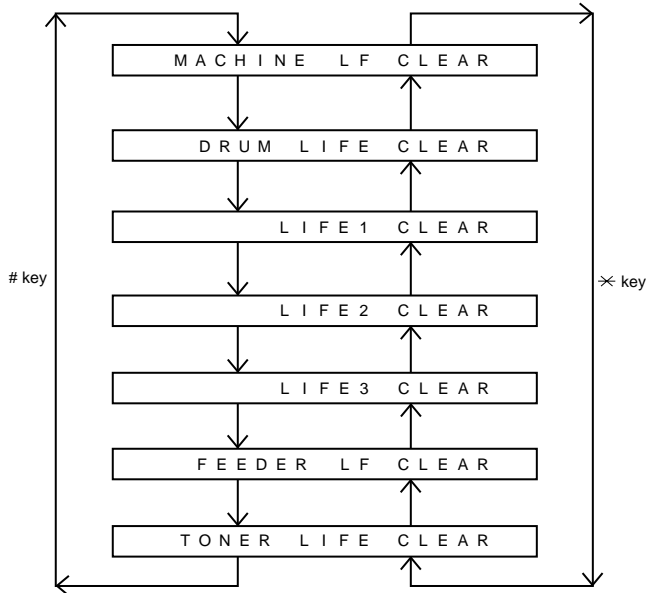
When the setting is decreased, the print start position will be moved further away from the beginning of page.

**Rapid key 10: Life clear mode**

The mode is used to respectively clear the life counter of the printer and the counter of the auto feeder. For setting, proceed with the following procedure.

- ① When the life counter clearing mode is selected, the following will be displayed.

Seven counters can be selected with the "#" and "×" keys.



- ② In the state of ①, select the counter value you want to clear using the "#" key or the "×" key, and then press the START key.

- ③ "CLEARED" will be displayed, and the counter value will be cleared. After clearing the counter value, another counter value can be cleared using the # or × key, if desired. Press the STOP key to exit from the mode.

**Note:** The counter shows the operational state of the printer (how many sheets have been printed since start of use? and others). The ordinary memory does not reset the counter. Accordingly, it is necessary to reset the counter or do the clear process in addition to the ordinary memory clear if the content in the memory on the control PWB is broken because of PWB repair, etc. (In the production stage, it is necessary to execute this in the last process.)

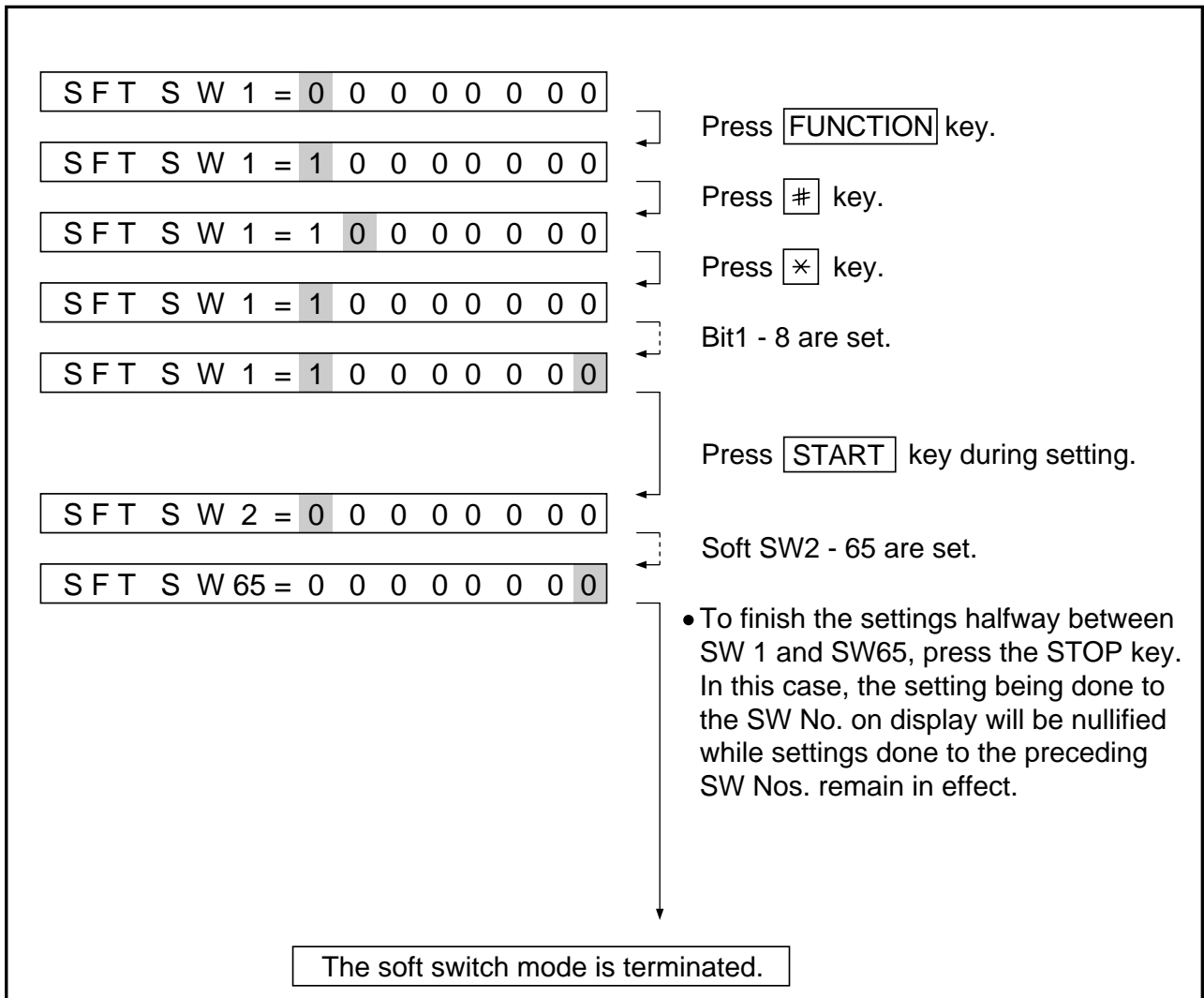
**Rapid key 11: Main charger adjust**

This mode is used to control voltage of main charger.

### 3. How to make soft switch setting

To enter the soft switch mode, make the following key entries in sequence.

Press **FUNCTION** **9** **\*** **8** **#** **7** **START** **01** **START**



## 4. Soft switch description

## • Soft switch

SW NO.	DATA NO.	ITEM	Switch setting and function				Initial setting	Remarks				
			1		0							
SW1	1	Recall interval	Binary input				8	4	2	1	0 1 0 1 OPTION Set to 01~15	
	2		No. =				1	2	3	4		
	3						0	1	0	1		(5 x 60 sec = 5 min)
	4											
	5	Recall times	Binary input				8	4	2	1	0 0 1 0 OPTION Set to 0~10	
	6		No. =				5	6	7	8		
	7						0	0	1	0		(Twice)
	8											
SW2	1	Dial mode	Pulse		Tone		0	OPTION				
	2	Reception mode	Auto		Manual		1	Recep key				
	3	ECM mode	No		Yes		0	OPTION				
	4	CNG detection in stand-by mode	No		Yes		0	OPTION				
	5	Polling security	On		Off		0	FUNC +3				
	6	Automatic cover sheet	No		Yes		1	OPTION				
	7	Junk fax function in manual reception	Yes		No		0					
	8	Anti junk fax function	Yes		No		0	OPTION				
SW3	1	Number of rings for auto receive	Binary input				8	4	2	1	0 1 0 0 OPTION	
	2		No. =				1	2	3	4		
	3						0	1	0	0		(4 times)
	4											
	5	Automatic switching manual to auto receive mode (0: OFF)	Binary input				8	4	2	1	0 0 0 0	
	6		No. =				5	6	7	8		
	7						0	0	0	0		(off)
	8											
SW4	1	Communication results printout (transaction report)	Error	Err/Tmr/Mem	Send only	No print	Always	0 0 1 OPTION				
	2		No. 1	0	0	0	1		1			
	3		No. 2	0	0	1	0		1			
	3	No. 3	1	0	0	0	0	1				
	4	Delay timer before line connect in auto dial	3 sec			0 sec		0				
	5	Delay timer of after line connect in auto dial	3.6 sec	3.0 sec	1.7 sec	3.0 sec	0 1					
	6		No. 5	1	1	0		0				
	6	No. 6	1	0	1	0	1					
7	Number of CNG detect (STAND-BY mode)	1 pulse	2 pulses	3 pulses	4 pulses	0 1						
8		No. 7	0	0	1		0					
8	No. 8	0	1	0	0	1						
SW5	1	Time format	24-hours		12-hours		0					
	2	Date format	Month-Day-Year		Day-Month-Year		1					
	3	Sender's information transmit	Off		On		0					
	4	Footer print	On		Off		0					
	5	Reserved					0					
	6	Substitute reception	Off		On		0					
	7	Substitute reception conditions	Reception disable without TSI		Reception enable without TSI		0					
	8	CSI transmission	Off		On		0					

SW NO.	DATA NO.	ITEM	Switch setting and function							Initial setting	Remarks		
			1			0							
SW6	1	H2 mode	No			Yes				0			
	2	MH fixed	Yes			No (depends on remote machine)				0			
	3	Reserved								0			
	4	Reserved								0			
	5	Modem speed (DCS data reception speed)			V.17		V. 29		V. 27ter		1		
	6		No. 5	1	1	1	1	0	0	0			0
	7		No. 6	0	0	0	0	0	0	0			0
	8		No. 7	0	1	0	1	0	1	1			0
		No. 8	0	0	1	1	1	1	0	0			
SW7	1	Reception speed fixed			NO	V. 17- 14400 bps	V. 29- 9600 bps	V. 27 ter- 4800 bps		0	When 14400 bps modem used, setting to 14400 bps is ignored.		
	2		No. 1	0	1	0	1						
			No. 2	0	1	1	0						
	3	DIS receive acknowledgement during G3 transmission	Twice			0				0			
	4	Non modulated carrier for V.29 transmission mode	On			Off				0			
	5	EOL detect timer	25 sec			13 sec				0			
	6	Protocol monitor	On			Off				0			
	7	Line monitor	On			Off				0			
8	Length limitation of copy/send/receive	No limit			Copy/Send:1m Receive:1.5 m				0				
SW8	1	Digital line equalization setting (Reception)			0 Km	1.8 Km	3.6 Km	7.2 Km		0			
	2		No. 1	0	0	1	1						
			No. 2	0	1	0	1						
	3	Dial pausing (sec/pause)	2sec			4sec				1			
	4	Signal transmission level	Binary input		16	8	4	2	1	0			
	5		No. =	4	5	6	7	8					
	6			0	1	0	0	1	(-9 dBm)				
	7												
8									1				
SW9	1	CED tone signal interval			75 ms	500 ms	750 ms	1000 ms		0			
	2		No. 1	0	0	1	1						
			No. 2	0	1	0	1						
	3	Equalizer freeze control (MODEM)	On			Off				0			
	4	Equalizer freeze conditions	All			7200 bps				0			
	5	CED detection time	500 ms			1000 ms				0			
	6	Reserved								0			
	7	Reserved								0			
8	Busy tone detection (after auto dial)	Yes			No				1				
SW10	1	Reserved								0			
	2	Reserved								0			
	3	CI off detection timer (Distinctive ring setting off only)			1200 ms	1000 ms	700 ms	350 ms		0			
	4		No. 3	0	1	0	1						
		No. 4	0	0	1	1			1				
	5	Distinctive ringing setting Factory setting : OFF	OFF	STD	RING1	RING2	RING3	RING4	RING5	0	OPTION RING4/RING5 Canada Only		
	6		No. 5	0	0	1	0	1	0			1	
	7		No. 6	0	0	0	1	1	0			0	
8	No. 7		0	0	0	0	0	1	1				
	No. 8	0	1	0	0	0	0	0	0				

SW NO.	DATA NO.	ITEM	Switch setting and function					Initial setting	Remarks
			1		0				
SW11	1	End buzzer		3 sec	1 sec	No Beep	No Beep	0	OPTION
	2		No. 1	0	0	1	1		
			No. 2	0	1	0	1		
	3	Communication error treatment in RTN sending mode (reception)	No communication error		Communication error			0	
	4	CNG transmission after auto dialing	No		Yes			0	
	5	Error criterion	10 ~ 20 %		5 ~ 10 %			0	
	6	Pulse to tone change by ✕ key	On		Off			0	
	7	CNG transmission in manual transmission	No		Yes			0	
	8	Reserved						0	
SW12	1	DTMF signal transmission level (Low)	Binary input 16 8 4 2 1					0	
	2		No. = 1 2 3 4 5						
	3		0 1 1 0 0 (-6 dBm)						
	4								
	5								
	6	Reserved						0	
	7	Reserved						0	
	8	Reserved						0	
SW13	1	DTMF signal transmission level (High)	Binary input 16 8 4 2 1					0	
	2		No. = 1 2 3 4 5						
	3		0 1 0 0 0 (-4 dBm)						
	4								
	5								
	6	Reserved						0	
	7	Reserved						0	
	8	Reserved						0	
SW14	1	Reserved						0	
	2	Reserved						0	
	3	Reserved						0	
	4	Reserved						1	
	5	Reserved						1	
	6	Reserved						0	
	7	Reserved						0	
	8	Reserved						0	
SW15	1	Reserved						0	
	2	Reserved						0	
	3	Reserved						0	
	4	Reserved						0	
	5	Reserved						0	
	6	Reserved						0	
	7	Reserved						0	
	8	Reserved						0	



SW NO.	DATA NO.	ITEM	Switch setting and function				Initial setting	Remarks	
			1		0				
SW16	1	Reserved					1		
	2	Reserved					0		
	3	Reserved					0		
	4	Reserved					0		
	5	Reserved					1		
	6	Reserved					0		
	7	Reserved					0		
	8	Reserved					0		
SW17	1	Speaker volume (3 stages)		High	High	Middle	Low	1	Using Volume key
			No. 1	0	0	1	1		
	2	Hand-set receiver volume (3 stages)		High	High	Middle	Low	0	Using Volume key
			No. 2	0	1	0	1		
	3	Ringer volume (4 stages)		Off	High	Middle	Low	1	Using Volume key
			No. 3	0	0	1	1		
	4	Key volume		Off	High	Low	Low	0	
			No. 4	0	1	0	1		
5	Density adjustment (when Fine/STD mode)		Normal	Faint	Deep	Deep (when Dark mode)	1		
		No. 5	0	0	1	1			
6	Density adjustment (when Half-tone mode)		Normal	Faint	Deep	Deep (when Dark mode)	0		
		No. 6	0	1	0	1			
7	Reserved						0		
		No. 7	0	0	1	1			
8	Reserved						0		
		No. 8	0	1	0	1			
SW18	1	Reserved					1		
	2	Auto reception in PC I/F mode	FAX	PC			1	FUNC + #	
	3	Summer time setting	No	Yes			1	FUNC + 3	
	4	Sender's phone number setting	Cannot change	Change allowed			0		
	5	Polling key	Yes	No			0	OPTION	
	6	Activity report print	Automatic printout	No printout when memory full			0	OPTION	
	7	Total communication hours and pages print	Off	On			0		
	8	Line density selection	Fine	Standard			0	OPTION	
SW19	1	Density adjustment (when Fine/STD mode)		Normal	Faint	Deep	Deep (when Dark mode)	0	
			No. 1	0	0	1	1		
	2	Density adjustment (when Half-tone mode)		Normal	Faint	Deep	Deep (when Dark mode)	0	
			No. 2	0	1	0	1		
	3	Reserved						0	
			No. 3	0	0	1	1		
	4	Reserved						0	
			No. 4	0	1	0	1		
5	Reserved						0		
6	Reserved						0		
7	Reserved						1		
8	Reserved						0		
SW20	1	Reserved					0		
	2	Reserved					0		
	3	Reserved					0		
	4	Reserved					0		
	5	Reserved					0		
	6	Reserved					0		
	7	F.A.S.T (RMS) mode	On	Off			1		
	8	Quick on-line	Yes	No			1	OPTION	

SW NO.	DATA NO.	ITEM	Switch setting and function					Initial setting	Remarks	
			1		0					
SW21	1	Reserved						0		
	2	Reserved						0		
	3	Reserved						1		
	4	Reserved						0		
	5	Reserved						0		
	6	Reserved						0		
	7	Reserved						0		
	8	Reserved						0		
SW22	1	Reserved						0		
	2	Reserved						0		
	3	Reserved						0		
	4	Reserved						0		
	5	Reserved						0		
	6	Reserved						0		
	7	Reserved						0		
	8	Reserved						0		
SW23	1	Automatic reduce of receive	Auto		100%			1	OPTION	
	2	Cut off mode (COPY mode)	Continue		Cut-off			0	OPTION	
	3	Paper set size		Letter	Legal	A4	Letter	0	OPTION	
			No. 3	0	0	1	1			
	4		No. 4	0	1	0	1	0		
	5	Reserved						0		
	6	Reserved						0		
	7	Reserved						0		
8	Reserved						0			
SW24	1	DTMF detection time		50 ms	80 ms	100 ms	120 ms	0		
			No. 1	0	0	1	1			
	2		No. 2	0	1	0	1	0		
	3	Protection remote reception (5 × ×) detect	Yes		No			0	OPTION	
	4	Reserved						0		
	5	Remote operation code figures by external tel (0 ~ 9)	Binary input	8	4	2	1	0	OPTION	
	6		No. =	5	6	7	8	(Data No.)	1	
	7		EX	0	1	0	1	0		
8		eg.	5	×	×		1			
SW25	1	Busy tone detection ON/OFF time (Shorter duration)	350ms		150 ms			0		
	2	Busy tone detection ON/OFF time (Longer duration)		650 ms	900 ms	2700 ms	900 ms	0		
			No. 2	0	0	1	1			
	3		No. 3	0	1	0	1	1		
	4	Busy tone continuous sound detect time	10 sec		5 sec			1		
	5	Busy tone detect continuation sound detect	No		Yes			0		
	6	Busy tone detect intermittent sound detect	No		Yes			0		
	7	Busy tone detection pulse number		2 pulses	4 pulses	6 pulses	10 pulses	0		
No. 7			0	0	1	1				
8		No. 8	0	1	0	1	1			
SW26	1	TAD connect	Yes		No			0	Recep key	
	2	Fax switching when A.M. full	Yes		No			0	OPTION	
	3	Selection time of quiet detection		30 sec	40 sec	50 sec	60 sec	0		
			No. 3	0	0	1	1			
	4		No. 4	0	1	0	1	1		
	5	Number of CNG detect (AM mode)		1 pulse	2 pulses	3 pulses	4 pulses	0		
			No. 5	0	0	1	1			
	6		No. 6	0	1	0	1	1		
7	Reserved						0			
8	Reserved						1			

SW NO.	DATA NO.	ITEM	Switch setting and function				Initial setting	Remarks					
			1		0								
SW27	1	Quiet detect time	Binary input				8	4	2	1	0	OPTION	
	2		No. =				1	2	3	4			
	3						0	1	0	0			(4 sec)
	4												
	5	Quiet detect start timing	Binary input				8	4	2	1	0		
	6		No. =				5	6	7	8	1		
	7						0	1	0	1	(5 sec)	0	
	8										1		
SW28	1	Reserved								0			
	2	Reserved								0			
	3	Reserved								0			
	4	Reserved								0			
	5	Reserved								0			
	6	Reserved								0			
	7	Reserved								0			
	8	Reserved								0			
SW29	1	Reserved								0			
	2	Reserved								0			
	3	Reserved								0			
	4	Reserved								0			
	5	Reserved								0			
	6	Reserved								0			
	7	Reserved								0			
	8	Reserved								0			
SW30	1	Reserved								0			
	2	Reserved								0			
	3	Reserved								0			
	4	Reserved								0			
	5	Reserved								0			
	6	Reserved								0			
	7	Reserved								0			
	8	Reserved								0			
SW31	1	Reserved								0			
	2	Reserved								0			
	3	Reserved								0			
	4	Reserved								0			
	5	Reserved								0			
	6	Reserved								0			
	7	Reserved								0			
	8	Reserved								0			

SW NO.	DATA NO.	ITEM	Switch setting and function		Initial setting	Remarks
			1	0		
SW32	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	
SW33	1	Reserved			0	
	2	Reserved			1	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	
SW34	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			1	
	6	Reserved			1	
	7	Reserved			0	
	8	Reserved			1	
SW35	1	Reserved			1	
	2	Reserved			1	
	3	Reserved			0	
	4	Reserved			1	
	5	Reserved			1	
	6	Reserved			1	
	7	Reserved			0	
	8	Reserved			1	
SW36	1	Reserved			1	
	2	Reserved			1	
	3	Reserved			1	
	4	Reserved			1	
	5	Reserved			1	
	6	Reserved			1	
	7	Reserved			0	
	8	Reserved			0	
SW37	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	
SW38	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	

SW NO.	DATA NO.	ITEM	Switch setting and function		Initial setting	Remarks
			1	0		
SW39	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	
SW40	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	
SW41	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	
SW42	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	
SW43	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	
SW44	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	
SW45	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	

SW NO.	DATA NO.	ITEM	Switch setting and function		Initial setting	Remarks
			1	0		
SW46	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	
SW47	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	
SW48	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	
SW49	1	Reserved			1	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	
SW50	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	
SW51	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	
SW52	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			1	
	5	Reserved			1	
	6	Reserved			0	
	7	Reserved			1	
	8	Reserved			0	

SW NO.	DATA NO.	ITEM	Switch setting and function		Initial setting	Remarks
			1	0		
SW53	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			1	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			1	
	8	Reserved			1	
SW54	1	V.34 mode sending speed	Sending speed = 2400 (bps) x N		1	
	2		Example:		1	
	3		2400 (bps) x 12 = 28800 (bps)		1	
	4		2400 (bps) is set for N = 0. 33600 (bps) is set for N = 15.		0	
	5	V.34 mode receiving speed	Receiving speed = 2400 (bps) x N		1	
	6		Example:		1	
	7		2400 (bps) x 12 = 28800 (bps)		1	
	8		2400 (bps) is set for N = 0. 33600 (bps) is set for N = 15.		0	
SW55	1	V.34 mode function in case of manual communication	On	Off	1	
	2	V.34 mode function	On	Off	1	
	3	V.34 control channel communication speed	2400 bps	1200 bps	0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	
SW56	1	Reserved			0	
	2	Reserved			1	
	3	Reserved			1	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	
SW57	1	Reserved			1	
	2	Reserved			1	
	3	Reserved			1	
	4	Reserved			1	
	5	Reserved			1	
	6	Reserved			1	
	7	Reserved			0	
	8	Reserved			0	
SW58	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	
SW59	1	Reserved			1	
	2	Reserved			1	
	3	Reserved			1	
	4	Reserved			1	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	

SW NO.	DATA NO.	ITEM	Switch setting and function		Initial setting	Remarks
			1	0		
SW60	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			1	
	4	Reserved			0	
	5	Reserved			1	
	6	Reserved			1	
	7	Reserved			1	
	8	Reserved			1	
SW61	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			1	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			0	
SW62	1	Reserved			1	
	2	Reserved			0	
	3	Reserved			0	
	4	Reserved			1	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			1	
	8	Reserved			1	
SW63	1	Reserved			0	
	2	Reserved			1	
	3	Reserved			0	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			1	
	7	Reserved			1	
	8	Reserved			0	
SW64	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			1	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			1	
SW65	1	Reserved			0	
	2	Reserved			0	
	3	Reserved			1	
	4	Reserved			0	
	5	Reserved			0	
	6	Reserved			0	
	7	Reserved			0	
	8	Reserved			1	



## • Soft switch function description

### SW1 No. 1 ~ No. 4 Recall interval

Choice is made for a recall interval for speed, rapid dial numbers, ten key +START and search + START. Use a binary number to program this. If set to 0 accidentally, 1 will be assumed.

### SW1 No. 5 ~ No. 8 Recall times

Choice is made as to how many recall times should be made. Use a binary number to program this.

### SW2 No. 1 Dial mode

Switch the type according to the telephone circuit connected to the facsimile.

0: TONE DIAL

1: PULSE DIAL

### SW2 No. 2 Reception mode

Auto/manual receiving mode is set.

### SW2 No. 3 ECM mode

Used to determine ECM mode function. Refer to the following table.

SW2- No. 3 ECM mode		0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
SW6- No. 2 MH fixed		0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
Compression method	ECM MMR mode	Yes	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No
	ECM MR mode	Yes	No	Yes	No	Yes	No	Yes	No	No	No	No	No	No	No	No	No
	ECM MMH mode	Yes	Yes	No	No	Yes	Yes	No	No	No	No	No	No	No	No	No	No
	ECM MH mode	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No
	MR mode	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
	MH mode	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

(Depending on remote machine)

### SW2 No. 4 CNG detection in stand-by mode

The CNG signal detection function during stand-by stops.

0: Yes

1: No

### SW2 No. 5 Polling security

This switch is employed to enable or disable the polling operation using the ID code verification function, in order to prevent unauthorized polling operation.

### SW2 No. 6 Automatic cover sheet

When "0" (=YES) is selected, the cover sheet is automatically sent after transmission of the original to notify the receiver of the number of original sheets transmitted.

### SW2 No. 7 Junk fax function in manual reception

It is set whether JUNK-FAX is functioned in the manual receiving mode or not.

### SW2 No. 8 Anti junk fax function

This function is used to receive data from a specific remote machine (station registered in entry mode). It is the function that refused a reception in the case that TSI of remote machine matched with fax number of the station registered.

0: No

1: Yes

### SW3 No. 1 ~ No. 4 Number of rings for auto receive

When the machine is set in the auto receive mode, the number of rings before answering can be selected. It may be set from one to nine rings using a binary number. If the soft switch was set to 1, a direct connection is made to the facsimile. If it was set to 0 accidentally, receive ring is set to 1. If it was above 9, receive rings are set to 9.

### SW3 No. 5 ~ No. 8 Automatic switching manual to auto receive mode (0: OFF)

This setting allows machine to switch from manual to Auto Receive mode. Setting this number to 0 forces machine to stay in Manual receive mode. Entering the binary number 0 forces the machine to remain in the manual answer mode. If a number between 1 and 9 is entered, the machine will go into the answer mode after the given number of rings. However, it can be used as an ordinary telephone if the handset is taken off the hook before this programmed number is finished. If entry of a number above 9 by accident, it will be set to 9. In this case, it must be corrected to the proper number.

### SW4 No. 1 ~ No. 3 Communication results printout (transaction report)

Every communication, the result can be output. As usual, it is set to print the timer sending communication error alone. If No.1 : 1 No.2 : 1 No.3 : 0 are set, printing is always on (printed ever if it is normally ended).

000 : Error, timer and memory sending/receiving

010 : Sending

110 : Continuous printing

100 : Not printed

001 : Communication error

### SW4 No. 4 Delay timer before line connect in auto dial

Delay time between the dial key input and line connection under the auto dial mode.

### SW4 No. 5, No. 6 Delay timer of after line connect in auto dial

Delay time between the line connection and dial data output under the auto-dial mode.

### SW4 No. 7, No. 8 Number of CNG detect (STAND-BY mode)

Used for detection of CNG in 1 to 4 pulses.

### SW5 No. 1 Time format

When this switch is set to "0", time is displayed in 12-hour system.

When set to "1", 24-hour system.

**SW5 No. 2 Date format**

Used to select date display/print formats.

- 0: DAY-Month-Year
- 1: Month-DAY-Year

**SW5 No. 3 Sender's information transmit**

When it is set at 0, sender's name, sending page number and so on are automatically printed in the recording paper on the receiving side during transmission. Thus, the sender can be known on the receiving side.

- 0: Applied
- 1: Not applied

**SW5 No. 4 Footer print**

When set to "1", the date of reception, the sender machine No., and the page No. are automatically recorded at the end of reception.

**SW5 No. 5 Reserved**

Set to "0".

**SW5 No. 6 Substitute reception**

Selection of substitute reception in the case of recording paper exhausted or paper jam. If set to "NO", auto receive is disabled even when the receive memory is ready to receive.

Substitute reception is not performed even during receive operation.

**SW5 No. 7 Substitute reception conditions**

Selection of substitute reception according to existence of TEL number from transmitting side. Initial setting allows substitute reception without CSI. If set to "no", the receiver cannot receive any documents

**SW5 No. 8 CSI transmission**

CSI signal contains the sender's phone number registered in the machine. If this switch is set to "1", no sender's name will be printed at the receiving side.

**SW6 No. 1 H2 mode**

Used to determine reception of H2 mode (15 sec transmission mode). When set to OFF, H2 mode reception is inhibited even though the transmitting machine has H2 mode function.

**SW6 No. 2 MH fixed**

Normally set to allow automatic selection of MH and MR mode according to the remote side.

If set to 1, the mode is fixed to MH and is useful if the remote side is a MH only unit ; or a lot of image distortion is met due to a bad line.

**SW6 No. 3, No. 4 Reserved**

Set to "0".

**SW6 No. 5 ~ No. 8 Modem speed (DCS data reception speed)**

Used to determine the initial modem speed. The default is 14400BPS(V.17). It may be necessary to program it to a slower speed when frequent line fallback is encountered, in order to save the time required for the fallback procedure.

**SW7 No. 1, No. 2 Reception speed fixed**

The transferable speed of modem in the receiving mode is set.

**SW7 No. 3 DIS receive acknowledgement during G3 transmission**

Used to make a choice of whether reception of NSF (DIS) is acknowledged after receiving two NSFs (DISs) or receiving one NSF (two DISs). It may be useful for overseas communication to avoid an echo suppression problem, if set to 1.

**SW7 No. 4 Non modulated carrier for V.29 transmission mode**

Though transmission of a non-modulated carrier is not required for transmission by the V29 modem according to the CCITT Recommendation, it may be permitted to send a non-modulated carrier before the image signal to avoid an echo suppression problem.

It may be useful for overseas communication to avoid an echo suppression problem, if set to 1.

**SW7 No. 5 EOL detect timer**

25 seconds or 13 seconds are selected for the detection timer of EOL (end of line). This is effective against communication trouble on a specific type of long EOL.

- 0: 13 seconds
- 1: 25 seconds

**SW7 No. 6 Protocol monitor**

Normally set to "0". If set to "1", communication can be checked, in case of troubles, without using a G3 tester or other tools.

When communication FSK data transmission or reception is made, the data is taken into buffer. When communication is finished, the data analyzed and printed out. When data is received with the line monitor (SW7-No.7) set to "1" the reception level is also printed out.

**SW7 No. 7 Line monitor**

Normally set to "0". If set to "1", the transmission speed and the reception level are displayed on the LCD. Used for line tests.

**SW7 No. 8 Length limitation of copy/send/receive**

Used to set the maximum page length.

To avoid possible paper jam, the page length is normally limited to 1m for copy or transmit, and 1.5 meters for receive.

It is possible to set it to "No limit" to transmit/receive a long document, such as a computer print form, etc. (In this case, the receiver/transmitter must also be set to no limit.)

**SW8 No. 1, No. 2 Digital line equalization setting (Reception)**

The specific line equalizer is inserted.

No. 1	No. 2	
0	0	The line equalizer built in the modem is turned off.
0	1	Line equalizer corresponding to 1.8 km
1	0	Line equalizer corresponding to 3.6 km
0	1	Line equalizer corresponding to 7.2 km

**SW8 No. 3 Dial pausing (sec/pause)**

Pauses can be inserted between telephone numbers of direct dial connection. Selection of 4 sec or 2 sec pause is available.

**SW8 No. 4 ~ No. 8 Signal transmission level**

Used to control the signal transmission level in the range of -0dB to -31dB.

**SW9 No. 1, No. 2 CED tone signal interval**

For international communication, the 2100Hz CED tone may act as an echo suppresser switch, causing a communication problem. Though this soft switch is normally set to "00", it should be change the time between CED tone and DIS signal from 75ms to 1000ms to eliminate the communication problem caused by echo.

**SW9 No. 3 Equalizer freeze control (MODEM)**

This switch is used to perform reception operation by fixing the equalizer control of modem for the line which is always in an unfavorable state and picture cannot be received. Usually, the control is executed according to the state of line where the equalizer setting is changed always.

**SW9 No. 4 Equalizer freeze conditions**

Setting which specifies SW9 No.3 control only in condition of 7200bps modem speed.

**SW9 No. 5 CED detection time**

The detection time of the CED signal from the called side in the auto calling mode is set.

**SW9 No. 6, No. 7 Reserved**

Set to "0".

**SW9 No. 8 Busy tone detection (after auto dial)**

this is used to set busy tone detection in auto dialing.

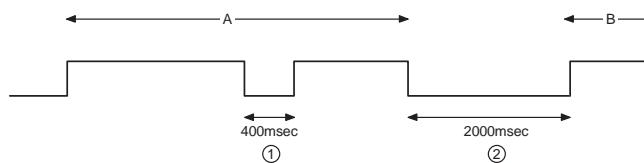
**SW10 No.1, No. 2 Reserved**

Set to "0".

**SW10 No. 3, No. 4 CI off detection timer (Distinctive ring setting off only)**

Set the minimum time period of CI signal interruption which affords to be judged as a CI OFF section with 50ms steps.

(Example)



- 01 : 700ms (CI interruption>700ms:Judged as a CI OFF section)  
The section ① is not judged as a CI OFF section, the CI signal A is counted as one signal.  
The section ② is judged as a CI OFF section, the CI signal B is considered as the second signal.
- 11: 350ms (CI interruption>350ms: Judged as a CI OFF section)  
The section ① is judged as a CI OFF section, and the CI signal A is counted as two signals.  
The section ② is judged as a CI OFF section, and the CI signal B is considered as the third signal.

**SW10 No. 5 ~ No. 8 Distinctive ringing Factory setting : OFF**

When the ringing setting is turned off, all of the CI signal are received. When any of the standard, and ring patterns 1 through 4 or 5 is selected for the ringing setting, only the selected CI signal is received.

CI signal patterns

The CI signal patterns consists of the standard pattern, and ring patterns 1 through 9. The standard pattern is the conventional one.

STANDARD	2S	4S
	2S	2S
	1.5S	3S
	1S	4S
	1.5S 0.5S	0.5S 4S
RING PATTERN 1 for USA	0.8S 0.8S	0.4S 4S
RING PATTERN 2 for USA	0.3S 1S 0.3S	0.2S 0.2S 4S
RING PATTERN 3 for USA	0.4S 0.4S 0.8S	0.2S 0.2S 4S
RING PATTERN 4 for USA	1S 1S	1S 3S
RING PATTERN 1 for CANADA	1S 1S	0.5S 3.5S
RING PATTERN 2 for CANADA	0.5S 1S 0.5S	0.5S 0.5S 3S
RING PATTERN 3 for CANADA	0.5S 0.5S 1S	0.5S 0.5S 3S
RING PATTERN 4 for CANADA	0.25S 0.25S 0.25S	0.2S 0.2S 4.8S
RING PATTERN 5 for CANADA	0.25S 0.25S	0.2S 5.3S

**SW11 No. 1, No. 2 End buzzer**

The sounding length of the buzzer for normal end of operation set.

**SW11 No. 3 Communication error treatment in RTN setting mode (reception)**

Used to determine communication error treatment when RTN is sent by occurrence of a received image error in G3 reception. When it is set to "1", communication error is judged as no error.

**SW11 No. 4 CNG transmission after auto dialing**

When set to "0", this model allows CNG transmission by pressing the Start key in the key pad dialing mode. When set to "1", CNG transmission in the key pad dialing mode cannot be performed. In either case. CNG transmission can be performed in the auto dial mode.

**SW11 No. 5 Error criterion**

Used to select error criterion for sending back RTN when receiving image data.

**SW11 No. 6 Pulse to tone change by ☒**

When setting to 1, the mode is changed by pressing the ☒ key from the pulse dial mode to the tone dial mode.

**SW11 No. 7 CNG transmission in manual transmission**

CNG signal sending ON/OFF in case of manual transmission is set.

**SW11 No. 8 Reserved**

Set to "0".

**SW12 No. 1 ~ No. 5 DTMF signal transmission level (Low)**

The transmission level of DTMF signal is adjusted. (lower frequency)

00000 : 0 dBm

↓

11111 : -15.5 dBm

**SW12 No. 6 ~ No. 8 Reserved**

Set to "0".

**SW13 No. 1 ~ No. 5 DTMF signal transmission level (High)**

The transmission level of DTMF signal is adjusted. (higher frequency)

00000 : 0 dBm

↓

11111 : -15.5 dBm

**SW13 No. 6 ~ No. 8 Reserved**

Set to "0".

**SW14 No. 1 ~ No. 3 Reserved**

Set to "0".

**SW14 No. 4 , No. 5 Reserved**

Set to "1".

**SW14 No. 6 ~ No. 8 Reserved**

Set to "0".

**SW15 No.1 ~ No. 8 Reserved**

Set to "0".

**SW16 No. 1 Reserved**

Set to "1".

**SW16 No. 2 ~ No. 4 Reserved**

Set to "0".

**SW16 No. 5 Reserved**

Set to "1".

**SW16 No. 6 ~ No. 8 Reserved**

Set to "0".

**SW17 No. 1, No. 2 Speaker volume (3 stages)**

Used to adjust sound volume from a speaker.

**SW17 No. 3, No. 4 Hand-set receiver volume (3 stages)**

Used to adjust sound volume from a handset receiver volume.

**SW17 No. 5, No. 6 Ringer volume (4 stages)**

Used to adjust ringing volume.

**SW17 No. 7, No. 8 Key volume**

Key buzzer volume:

The sound volume of key inputting buzzer and other buzzers is set.

**SW18 No. 1 Reserved**

Set to "1".

**SW18 No. 2 Auto reception in PC I/F mode**

Automatic receiving of I/F mode:

Which receives the call is determined.

**SW18 No. 3 Summer time setting**

The day light saving function ON/OFF is set.

**SW18 No. 4 Sender's phone number setting**

Whether the registered sender's phone number can be changed or not is selected. If it is set at 1, the phone number of the sender can not be registered or changed. Set 1 in order to prevent careless change of the sender's phone number.

0: Change allowed

1: Cannot change

**SW18 No. 5 Polling key**

If this switch is set to 1, the last of Rapid key works as polling key.

**SW18 No. 6 Activity report print**

Whether the communication record table is automatically printed or not, it is selected if the number of communication data is excessive. Regardless of the setting of this selection, communication record table can be printed at all times by operating the keys.

FUNCTION + "2" + "#" + "START"

When the communication record table is printed, the memorized content of the data sent and received up to now will be all cleared (erased). If No (non-printing) is set, the oldest data will be erased when the number of memorized items is excessive.

0: No (first data lost when memory is full)

1: YES (when memory is full)

**SW18 No. 7 Total communication hours and pages print**

Whether the total time of communication and total number of sheets are recorded in the communication record table or not is selected.

0: Recorded.

1: Not recorded.

**SW18 No. 8 Line density selection**

Used to set the transmission mode which is automatically selected when the Resolution Key is not pressed. In the copy mode, however, the fine mode is automatically selected unless the Resolution key is manually set to another mode.

**SW19 No. 1, No. 2 Density adjustment (when Fine/STD mode)**

This is used for density adjustment in fine/standard mode. Adjust the density according to that of frequently used original.

Set to "Dark" for darker reading (either in the auto or the dark mode) of light original. Set to "Light" for lighter reading (either in the auto or the dark mode) of dark original.

Set to "Dark only in dark mode" for darker reading only in the dark mode.

**SW19 No. 3, No. 4 Density adjustment (when Half-tone mode)**

This is used for density adjustment in the half tone. Setting procedures are the same as SW19 No. 1, No. 2.

**SW19 No. 5, No. 6 Reserved**

Set to "0".

**SW19 No. 7 Reserved**

Set to "1".

**SW19 No. 8 Reserved**

Set to "0".

**SW20 No. 1 ~ No. 6 Reserved**

Set to "0".

**SW20 No. 7 F.A.S.T (RMS) mode**

Used to determine a function of remote maintenance system (F.A.S.T).

**SW20 No. 8 Quick on-line**

It is selected whether auto dial call is activated in the memory input mode when one document is completely read or when all pages are completely read.

**SW21 No. 1, No. 2 Reserved**

Set to "0".

**SW21 No. 3 Reserved**

Set to "1".

**SW21 No. 4 ~ No. 8 Reserved**

Set to "0".

**SW22 No.1 ~ No. 8 Reserved**

Set to "0".

**SW23 No. 1 Automatic reduce of receive**

If set to 1, it is reduced automatically.

**SW23 No. 2 Cut off mode (COPY mode)**

When in copy, if the scanned data is out of the range of recording, the operator has one of the choices below using the switch

1: Continue: Data is printed onto the next page with the last 20mm also printed at the beginning of the next page

0: Cut off. Data scanned out of the limit is cut off (a page is printed.)

**SW23 No. 3, No. 4 Paper set size**

At present a size of the record paper.

00: LETTER

01: LEGAL

10: A4

**SW23 No. 5 ~ No. 8 Reserved**

Set to "0".

**SW24 No. 1, No. 2 DTMF detection time**

Used to set detect time of DTMF (Dual Tone Multi Frequency) used in remote reception (5 × ×). The longer the detection time is, the error detection is caused by noises.

**SW24 No. 3 Protection remote reception (5 × ×) detect**

Used to set the function of remote reception (5 × ×). When set to "1", the remote reception function is disabled.

**SW24 No. 4 Reserved**

Set to "0".

**SW24 No. 5 ~ No. 8 Remote operation code figures by external tel (0 ~ 9)**

Remote operation codes can be changed from 0 through 9. if set to greater than 9, it defaults to 9. The "5 × ×" is not changed.

**SW25 No. 1 Busy tone detection ON/OFF time (Shorter duration)**

The initial value of detection is set according to electric condition.  
The set value is changed according to the local switch board. (Erroneous detection of sound is reduced.)

Normally the upper limit is set to 900msec. and the lower limit to 150msec.  
If erroneous detection is caused by sound, etc., adjust the detection range.

The lower limit can be set in the range of 350msec to 150msec.

**SW25 No. 2, No. 3 Busy tone detection ON/OFF time (Longer duration)**

Similarly to SW-25 No.1, the set value can be varied.  
The upper limit can be set in the range of 650msec to 2700msec.

**SW25 No. 4 Busy tone continuous sound detect time**

Set detecting time busy tone for 5 seconds or as is PTT.

**SW25 No. 5 Busy tone detect continuation sound detect**

Used to select detection of the continuous sound of certain frequency.

**SW25 No. 6 Busy tone detect intermittent sound detect**

Used to select detection of the intermittent sound of certain frequency.

**SW25 No. 7, No. 8 Busy tone detection pulse number**

Used to set detection of Busy tone intermittent sounds.

**SW26 No. 1 TAD connect**

When connecting the answering machine to the extension telephone jack.

**SW26 No. 2 Fax switching when A.M. full**

If the answering machine's memory (tape) is full and there is no response, the machine automatically switches to Fax reception.

**SW26 No. 3, No. 4 Selection time of quiet detection**

The switch which sets the time from the start of detection function to the end of the function.

**SW26 No. 5, No. 6 Number of CNG detect (AM mode)**

Used for detection of CNG in 1 to 4 pulses.

**SW26 No. 7, Reserved**

Set to "0".

**SW26 No. 8, Reserved**

Set to "1".

**SW27 No. 1 ~ No. 4 Quiet detect time**

When an answering machine is connected, if a no sound status is detected for a certain period of time, the machine judges it as a transmission from a facsimile machine and automatically switches to the FAX mode.

**SW27 No. 5 ~ No. 8 Quiet detect start timing**

Inserts a pause before commencing quiet detection.

0000: 0 seconds

1111 : 15 seconds

**SW28 No. 1 ~ No. 8 Reserved**

Set to "0".

**SW29 No. 1 ~ No. 8 Reserved**

Set to "0".

**SW30 No. 1 ~ No. 8 Reserved**

Set to "0".

**SW31 No. 1 ~ No. 8 Reserved**

Set to "0".

**SW32 No. 1 ~ No. 8 Reserved**

Set to "0".

**SW33 No. 1 Reserved**

Set to "0".

**SW33 No. 2 Reserved**

Set to "1".

**SW33 No. 3 ~ No. 8 Reserved**

Set to "0".

**SW34 No. 1 ~ No. 4 Reserved**

Set to "0".

**SW34 No. 5, No. 6 Reserved**

Set to "1".

**SW34 No. 7 Reserved**

Set to "0".

**SW34 No. 8 Reserved**

Set to "1".

**SW35 No. 1, No. 2 Reserved**

Set to "1".

**SW35 No. 3 Reserved**

Set to "0".

**SW35 No. 4 ~ No. 6 Reserved**

Set to "1".

**SW35 No. 7 Reserved**

Set to "0".

**SW35 No. 8 Reserved**

Set to "1".

**SW36 No. 1 ~ No. 6 Reserved**

Set to "1".

**SW36 No. 7, No. 8 Reserved**

Set to "0".

**SW37 No. 1 ~ No. 8 Reserved**

Set to "0".

**SW38 No. 1 ~ No.8 Reserved**

Set to "0".

**SW39 No. 1 ~ No.8 Reserved**

Set to "0".

**SW40 No. 1 ~ No.8 Reserved**

Set to "0".

**SW41 No. 1 ~ No.8 Reserved**

Set to "0".

**SW42 No. 1 ~ No.8 Reserved**

Set to "0".

**SW43 No. 1 ~ No.8 Reserved**

Set to "0".

**SW44 No. 1 ~ No.8 Reserved**

Set to "0".

**SW45 No. 1 ~ No.8 Reserved**

Set to "0".

**SW46 No. 1 ~ No.8 Reserved**

Set to "0".

**SW47 No. 1 ~ No.8 Reserved**

Set to "0".

**SW48 No. 1 ~ No.8 Reserved**

Set to "0".

**SW49 No. 1 Reserved**

Set to "1".



**SW49 No. 2 ~ No.8 Reserved**

Set to "0".

**SW50 No. 1 ~ No.8 Reserved**

Set to "0".

**SW51 No. 1 ~ No.8 Reserved**

Set to "0".

**SW52 No. 1 ~ No.3 Reserved**

Set to "0".

**SW52 No. 4, No. 5 Reserved**

Set to "1".

**SW52 No. 6 Reserved**

Set to "0".

**SW52 No. 7 Reserved**

Set to "1".

**SW52 No. 8 Reserved**

Set to "0".

**SW53 No. 1, No. 2 Reserved**

Set to "0".

**SW53 No. 3 Reserved**

Set to "1".

**SW53 No. 4 ~ No. 6 Reserved**

Set to "0".

**SW53 No. 7, No. 8 Reserved**

Set to "1".

**SW54 No. 1 ~ No. 4 V.34 mode sending speed**

Used to determine the initial modem speed when communication method is V.34 sending mode.

**SW54 No. 5 ~ No. 8 V.34 mode receiving speed**

Used to determine the initial modem speed when communication method is V.34 reception mode.

**SW55 No. 1 V.34 mode function in case of manual communication**

Used to select whether the V.34 mode is made valid when automatically transmitting/receiving.

**SW55 No. 2 V.34 mode function**

Used to select the V.34 mode for communication when set to "1", communication method is V.34 mode.

**SW55 No. 3 V.34 control channel communication speed**

Used to select the control channel communication speed for V.34 mode.

**SW55 No. 4 ~ No. 8 Reserved**

Set to "0".

**SW56 No. 1 Reserved**

Set to "0".

**SW56 No. 2, No. 3 Reserved**

Set to "1".

**SW56 No. 4 ~ No. 8 Reserved**

Set to "0".

**SW57 No. 1 ~ No. 6 Reserved**

Set to "1".

**SW57 No. 7, No. 8 Reserved**

Set to "0".

**SW58 No. 1 ~ No. 8 Reserved**

Set to "0".

**SW59 No. 1 ~ No. 4 Reserved**

Set to "1".

**SW59 No. 5 ~ No. 8 Reserved**

Set to "0".

**SW60 No. 1, No. 2 Reserved**

Set to "0".

**SW60 No. 3 Reserved**

Set to "1".

**SW60 No. 4 Reserved**

Set to "0".

**SW60 No. 5 ~ No. 8 Reserved**

Set to "1".

**SW61 No. 1 ~ No. 4 Reserved**

Set to "0".

**SW61 No. 5 Reserved**

Set to "1".

**SW61 No. 6 ~ No. 8 Reserved**

Set to "0".

**SW62 No. 1 Reserved**

Set to "1".

**SW62 No. 2, No. 3 Reserved**

Set to "0".

**SW62 No. 4 Reserved**

Set to "1".

**SW62 No. 5, No. 6 Reserved**

Set to "0".

**SW62 No. 7, No. 8 Reserved**

Set to "1".

**SW63 No. 1 Reserved**

Set to "0".

**SW63 No. 2 Reserved**

Set to "1".

**SW63 No. 3 ~ No. 5 Reserved**

Set to "0".

**SW63 No. 6, No. 7 Reserved**

Set to "1".

**SW63 No. 8 Reserved**

Set to "0".

**SW64 No. 1, No. 2 Reserved**

Set to "0".

**SW64 No. 3 Reserved**

Set to "1".

**SW64 No. 4 ~ No. 7 Reserved**

Set to "0".

**SW64 No. 8 Reserved**

Set to "1".

**SW65 No. 1, No. 2 Reserved**

Set to "0".

**SW65 No. 3 Reserved**

Set to "1".

**SW65 No. 4 ~ No. 7 Reserved**

Set to "0".

**SW65 No. 8 Reserved**

Set to "1".

### [3] Troubleshooting

#### 1. Fax troubleshooting

Refer to the following actions to troubleshoot any of the problems mentioned in 1-4.

- [1] A communication error occurs.
- [2] Image distortion produced.
- [3] Unable to do overseas communication.
- [4] Communication speed slow due to FALLBACK.
  - Increase the transmission level SOFT SWITCH 8-4, 5, 6, 7, 8  
May be used in case [1] [2] [3].
  - Decrease the transmission level SOFT SWITCH 8-4, 5, 6, 7, 8  
May be used in case [3].

- Apply line equalization SOFT SWITCH 8-1, 2  
May be used in all cases.
- Slow down the transmission speed SOFT SWITCH 6-5, 6, 7, 8  
May be used in case [2] [3].
- Replace the LIU PWB.  
May be used in all cases.
- Replace the control PWB.  
May be used in all cases.

\* If transmission problems still exist on the machine, use the following format and check the related matters.

TO: \_\_\_\_\_ ATT: \_\_\_\_\_ Ref.No.: \_\_\_\_\_  
 CC: \_\_\_\_\_ ATT: \_\_\_\_\_ Date: \_\_\_\_\_  
 FM: \_\_\_\_\_ Dept: \_\_\_\_\_  
 \_\_\_\_\_ Sign: \_\_\_\_\_

***** Facsimile communication problem *****		Ref.No.: _____																					
From: Mr. _____ Fax Tel No.: _____		Date: _____																					
Our customer	Name _____	Tel No. _____																					
	Address _____	Fax No. _____																					
	Contact person _____	Model name _____																					
Other party	Name _____	Tel No. _____																					
	Address _____	Fax No. _____																					
	Contact person _____	Model name _____																					
Problem mode	Line: Domestic / international _____ Mode: G3 _____ Phase: A. B. C. D. _____																						
	Reception / Transmission _____	Automatic reception / Manual reception _____ Automatic dialing / Manual dialing / Others _____																					
Frequency: _____ %	ROM version: _____																						
Confirmation item			Please mark problem with an X No problem is: 0																				
			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">A1</td><td style="width: 5%;">A2</td><td style="width: 5%;">B1</td><td style="width: 5%;">B2</td><td style="width: 5%;">C1</td><td style="width: 5%;">C2</td><td style="width: 5%;">D1</td><td style="width: 5%;">D2</td><td style="width: 5%;">E1</td><td style="width: 5%;">E2</td> </tr> <tr> <td style="height: 20px;"></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2										
	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2													
		Transmission level setting is ( ) dB at our customer																					
		Transmission level ( ) dBm Reception level ( ) dBm By level meter at B1 and B2																					
Comment																							
Countermeasure																							

\*\*\*\* Please attach the G3 data and activity report on problem. \*\*\*\*

**[4] Error code table****1. Communication error code table****G3 Transmission**

Code	Final received signal	Error Condition (Receiver side)
0	Incomplete signal frame	Cannot recognize bit stream after flag
1	NSF, DIS	Cannot recognize DCS signal by echo etc. Cannot recognize NSS signal (FIF code etc)
2	CFR	Disconnects line during reception (carrier missing etc)
3	FTT	Disconnects line by fallback
4	MCF	Disconnects line during reception of multi page Cannot recognize NSS, DCS signal in the case of mode change
5	PIP or PIN	The line is hung up without replying to telephone request from the receiving party.
6	RTN or RTP	Cannot recognize NSS, DCS signal after transmit RTN or RTP signal.
7	No signal or DCN	No response on receiver side or DCN signal received* (transmitter side)
8	–	Owing to error in some page the error could not be corrected although the specified number of error retransmission was attempted.
11	–	Error occurred after or while reception by the remote (receiving) machine was revealed to be impossible.
12	–	Error occurred just after fallback.
13	–	Error occurred after a response to retransmission end command was received.

**G3 Reception**

Code	Final received signal	Error Condition (Receiver side)
0	Incomplete signal frame	Cannot recognize bit stream after flag
1	NSS, DCS	Cannot recognize CFR or FTT signal Disconnects line during transmission (line error)
2	NSC, DTC	Cannot recognize NSS signal (FIF code etc)
3	EOP	Cannot recognize MCF, PIP, PIN, RTN, RTP signal
4	EOM	Cannot recognize MCF, PIP, PIN, RTN, RTP signal in the case of mode change
5	MPS	The line is hung up without replying to communication request.
6	PR1-Q	Cannot recognize PIP, PIN signal in the case of TALK request
7	No signal or DCN	No response in transmitter (cannot recognize DIS signal) or DCN signal received* (receiver side)
8	–	Error occurred upon completion of reception of all pages.
9	–	Error occurred when mode was changed or Transmission/Reception switching was performed.
10	–	Error occurred during partial page or physical page reception.
11	–	Error occurred after or during inquiry from the remote (transmitting) machine as to whether reception is possible or not.
12	–	Error occurred during or just after fallback.
13	–	Error occurred after the retransmission end command was received.
14	–	Error occurred after the voice communication command was received.



**Super G3 mode**

Error Code	Transmission Errors	Reception Errors
E-16	Same as E-0	Same as E-0
E-17	Same as E-1	Same as E-1
E-18	Same as E-2	Same as E-2
E-19	–	Same as E-8
E-20	Same as E-4	Same as E-9
E-21	–	Same as E-10
E-22	–	–
E-23	Same as E-7	Same as E-7
E-24	Same as E-8	–
E-25	Same as E-11	Same as E-11
E-26	Same as E-12	Same as E-12
E-27	Same as E-13	Same as E-13
E-28	–	Same as E-14
E-29	Error occurred during handshaking for super G3 mode	
E-30		
E-31		

**<Reference> Details of E-29 ~ 31**

E-29	Handshaking error in V.8 negotiation procedure
E-30	Handshaking error in V.34 line probing procedure
E-31	Handshaking error in V.34 HDX training procedure

**2. Service call error message**

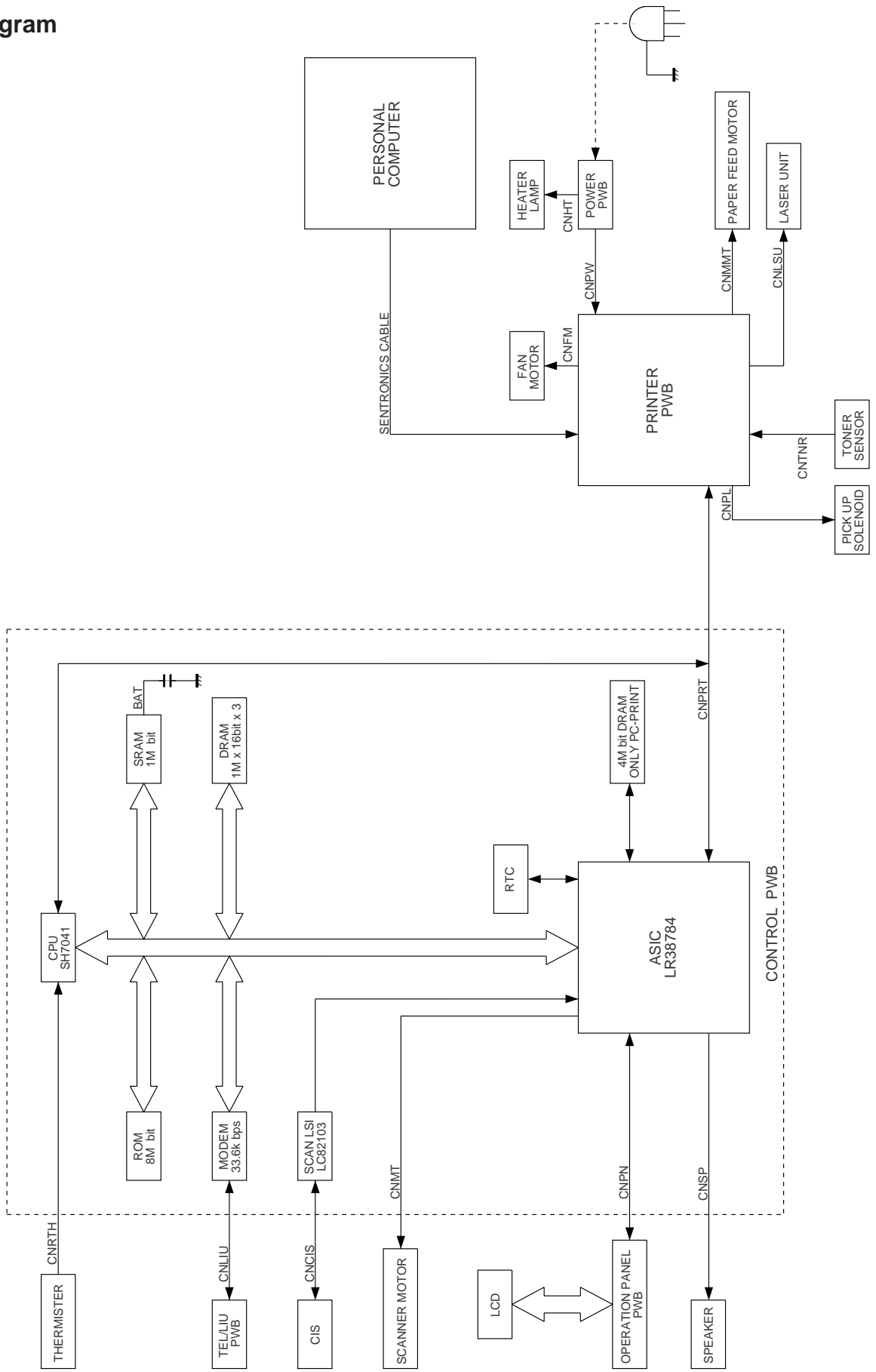
The following service call errors may occur in FO-2970MU.

	Message	Description
1	POLYGON ERROR	Cause: When the recognition of the laser beam detection signal (HSYNC) is impossible after the printing is started. [HSYNC interruption is usually done once every 846.7 $\mu$ S for PC printing and once every 1298.7524 $\mu$ S for other printing (copying, reception and list).]
2	HEATER ERROR	Cause: When the disconnection of the thermistor is counted 8 times (80ms).
3	HEATER HIGH ERROR	Cause: When the temperature of the heater lamp exceeds 188°C during 200 ms.
4	HEATER LOW ERROR	Cause: When the temperature does not exceed 97°C within 15 seconds after the heater lamp is ON, or it is less than 97°C even while printing.

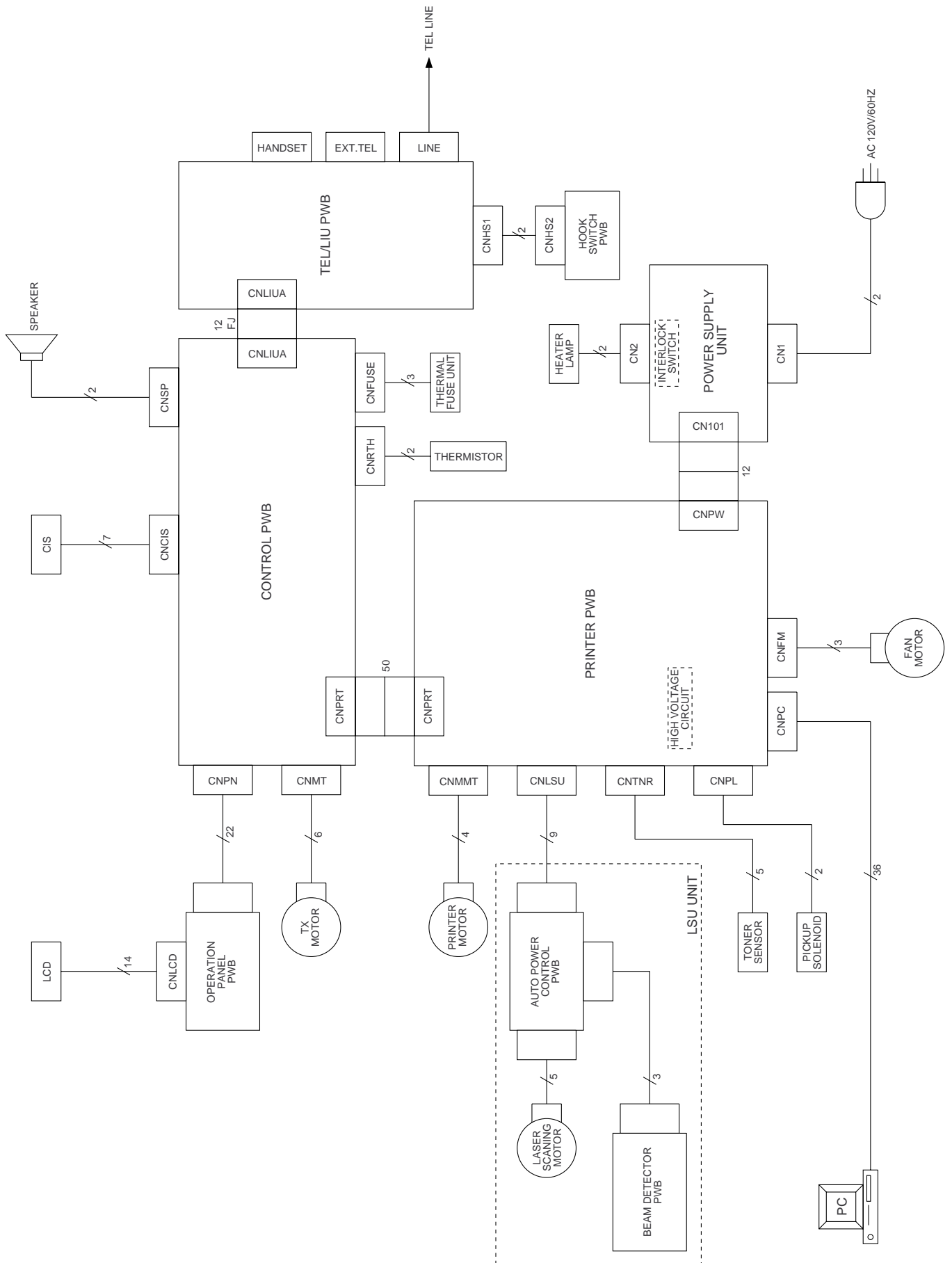
Only the power on and off can be restored when the service error occurs.

# CHAPTER 4. DIAGRAMS

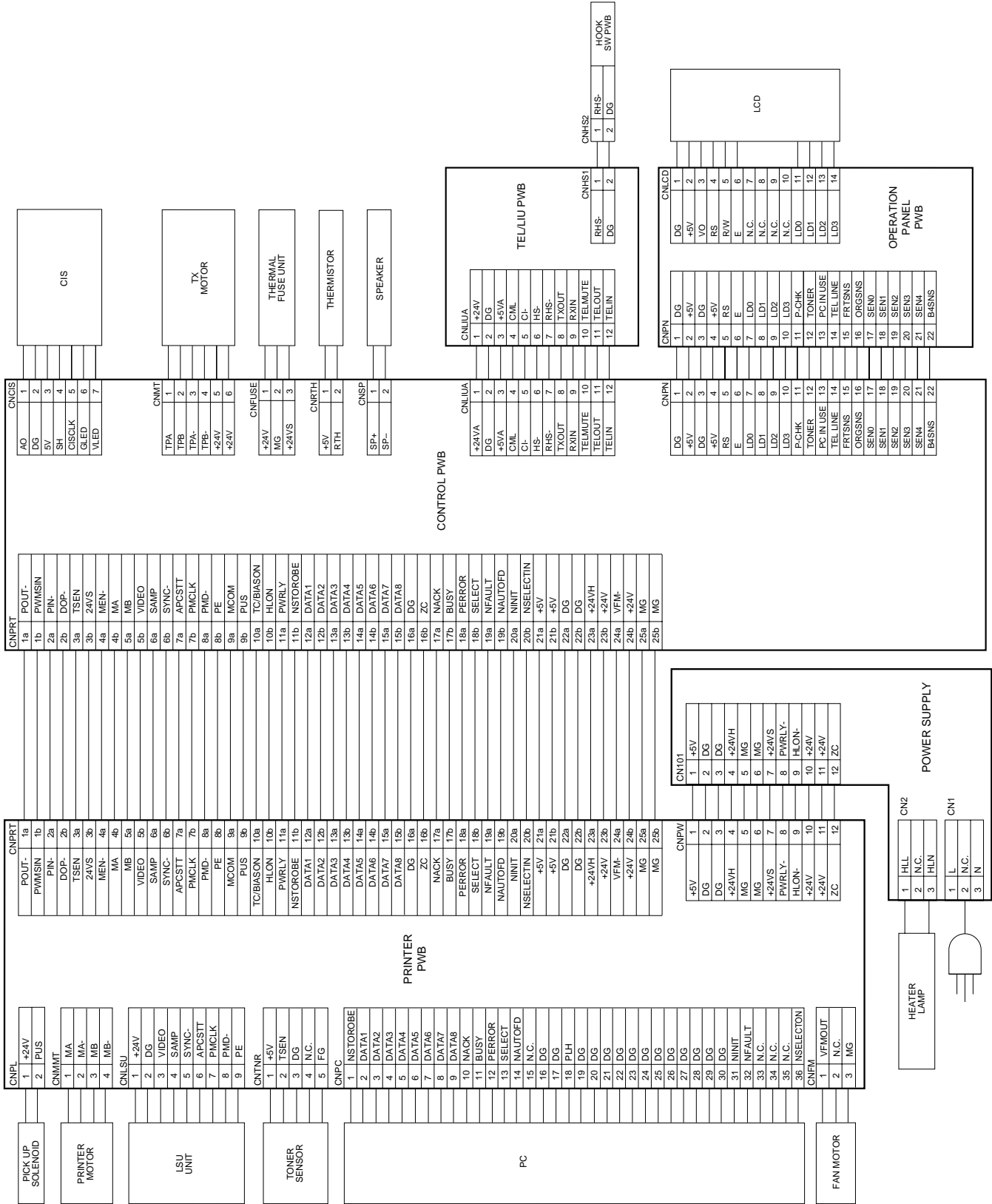
## [1] Block diagram



[2] Wiring diagram



[3] Point- to-point diagram and connector signal name



## CHAPTER 5. CIRCUIT DESCRIPTION

### [1] Circuit description

#### 1. General description

The compact design of the control PWB is obtained by using Risc Processor (CPU) in the main control section and high density printing of surface mounting parts. Each PWB is independent according to its function as shown in Fig. 1.

#### 2. PWB configuration

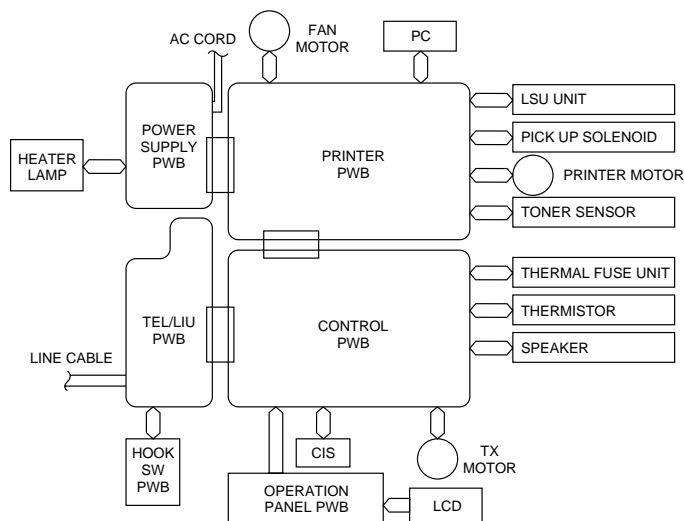


Fig. 1

#### (1) Control PWB

The control PWB controls peripheral PWBs, mechanical parts, transmission, and performs overall control of the unit.

This machine employs a 1-chip modem (FM336) which is installed on the control PWB.

#### (2) TEL/LIU and Hook SW PWB

This PWB controls connection of the telephone line to the unit.

#### (3) Power supply PWB

This PWB provides voltages of +5V, VREG and +24V to the another PWB.

#### (4) Panel PWB

The panel PWB allows input of the operation keys.

#### (5) Printer PWB

This PWB controls the printer mechanical parts.

This PWB employs 8 bit CPU that is installed on printer PWB.

This CPU control a printer mechanical parts.

#### (6) LCD PWB

This PWB controls the LCD display.

### 3. Operational description

Operational descriptions are given below:

- Transmission operation

When a document is loaded in stand-by mode, the state of the document sensor is sensed via the ASIC (IC15).

If the sensor signal was on, the motor is started to bring the document into the standby position. With depression of the START key in the off-hook state, transmission takes place.

Then, the procedure is sent out from the modem and the motor is rotated to move the document down to the scan line. In the scan processor, the signal scanned by the CIS is sent to the internal image processor and the AD converter to convert the analog signal into binary data. This binary data is transferred from the scan processor to the image buffer within the RAM and encoded and stored in the transmit buffer of the RAM. The data is then converted from parallel to serial form by the modem where the serial data is modulated and sent onto the line.

- Receive operation

There are two ways of starting reception, manual and automatic.

Depression of the START key in the off-hook mode in the case of manual receive mode, or CI signal detection by the LIU in the automatic receive mode.

First, the CPU(SH2) controls the procedure signals from the modem to be ready to receive data. When the program goes into phase C, the serial data from the modem is converted to parallel form in the modem interface of the 1 fax CPU(SH2) which is stored in the receive buffer of the RAM. The data in the receive buffer is decoded software-wise to reproduce it as binary image data in the image buffer. The data is DMA transferred to the recording processor within the ASIC (IC15) and sent to the LSU on printer PWB.

CPU (SH2) and ASIC (IC15) control printing data, LSU, main motor, high-voltage circuit, heater control and fan motor.

- Copy operation

To make a copy on this facsimile, the COPY key is pressed when the machine is in stand-by with a document on the document table and the telephone set is in the on-hook state.

First, depression of the COPY key advances the document to the scan line. Similar to the transmitting operation, the image signal from the CIS is converted to a binary signal in the DMA mode via the reading processor which is then sent to the image buffer of the RAM. Next, the data is transferred to the ASIC in the DMA mode to send the image data to the printer PWB in order to print. The copying takes place as the operation is repeated.

## [2] Circuit description of control PWB

### 1. General description

Fig. 2 shows the functional blocks of the control PWB, which is composed of 5 blocks.

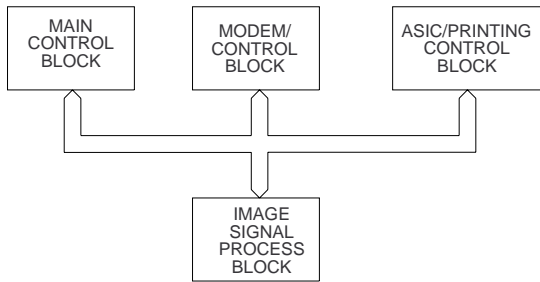


Fig. 2 Control PWB functional block diagram

### 2. Description of each block

#### (1) Main control block

The main control block is composed of HITACHI CPU (SH2), ROMX1 (8M bit), SRAMX1 (1M bit), DRAMX3 (16M bit). Devices are connected to the bus to control the whole unit.

#### 1) SH7041 (IC5) : pin-144 QFP

The CPU Integrated Facsimile Controllers.

SH7041, contains an internal 32 bit microprocessor with an external 16 bit address space and dedicated circuitry optimized for facsimile image processing and facsimile machine control and monitoring.

#### 2) M27C800-90F1 (IC14): pin-42 DIP (ROM)

EPROM of 8M bit equipped with software for the main CPU.

#### 3) W24010S-70LET (IC1): pin-32 SOP (RAM)

Line memory for the main CPU system RAM area and coding/decoding process. Used as the transmission buffer.

Memory of recorded data such as daily report and auto dials. When the power is turned off, this memory is backed up by the lithium battery.

#### 4) MSM5118165D (IC11, IC13, IC22): pin-42 SOJ (DRAM)

Image memory for recording process.

- Memory for recording pixel data at without paper.

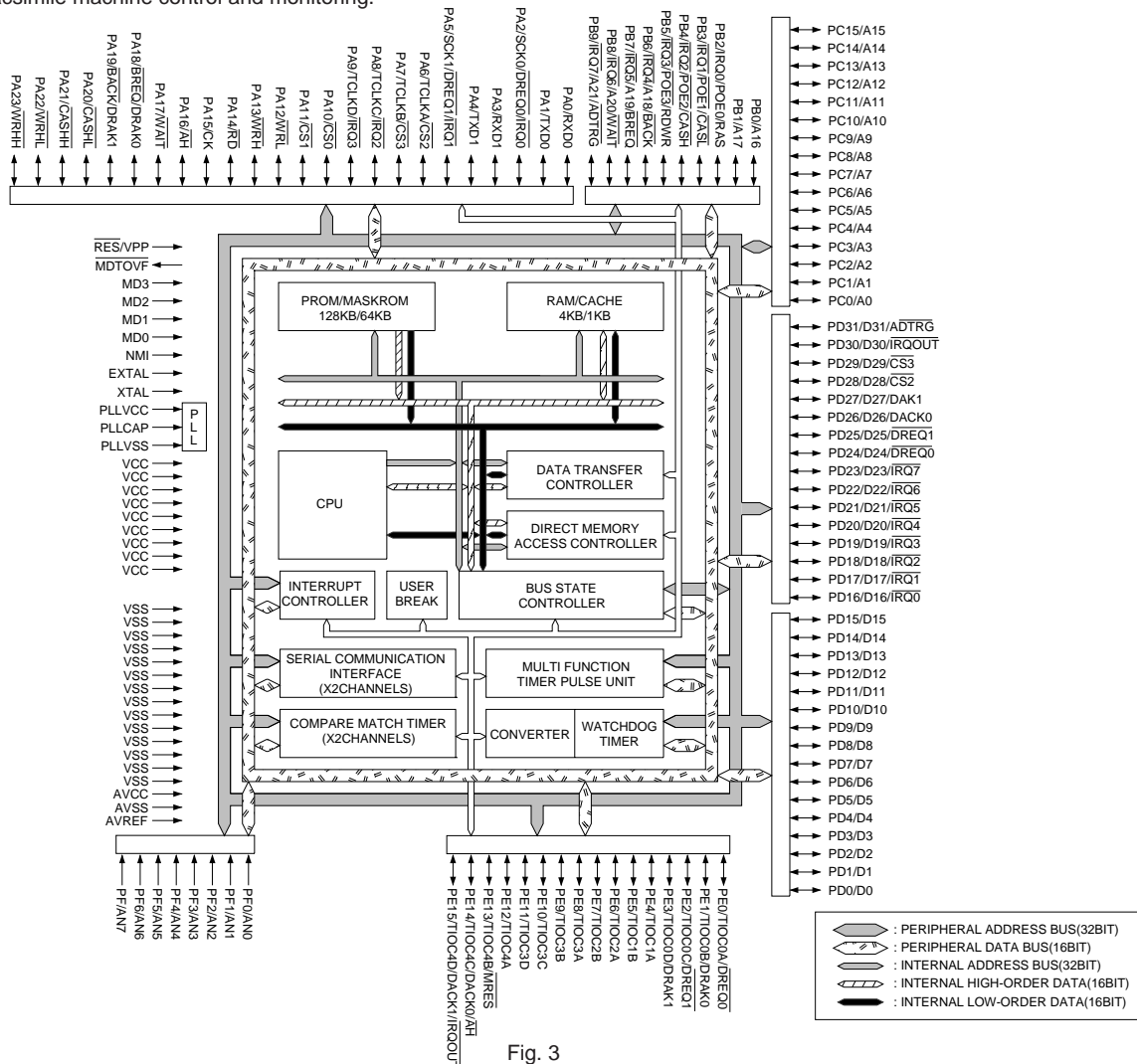


Fig. 3

**SH7041 (IC5) Terminal descriptions**

Classification	Code	Terminal No.	I/O	Name	Function
Power	Vcc	12,26,40, 63,77,85, 99,112,135	I	Power	Connect Vcc terminals with the power source for all systems. If any open terminal remained, operation is impossible.
	Vss	6,14,28, 35,42,55, 61,71,79, 87,93,117, 129,141	I	Ground	Connect to the ground. Connect Vss terminals with the ground for all systems. If any open terminal remained, operation is impossible.
	Vpp		I	Program power source	Connected with the power source (Vcc) for normal operation. In case of PROM mode, apply 12.5 V.
Clock	PLL Vcc	104	I	PLL power	Power source for the built-in PLL oscillator.
	PLL Vss	106	I	PLL ground	Ground for the built-in PLL oscillator.
	PLLCAP	105	I	PLL capacity	External capacity terminal for the built-in PLL oscillator.
	EXTAL	96	I	External clock	Connected with the crystal oscillator. By EXTAL terminal the external clock can be input.
	XTAL	94	I	Crystal	Connected with the crystal oscillator.
	CK	107	O	System clock	Supplied to peripheral devices.
System control	$\overline{\text{RES}}$	108	I	Power-on-reset	When impressing low level onto this terminal, power-on-reset condition is attained.
	$\overline{\text{MRES}}$	144	I	Manual reset	When applying low level to this terminal, manual reset condition is obtained.
	$\overline{\text{WDTOVF}}$	44	O	Watch dog timer overflow	Overflow output signal from WDT.
	$\overline{\text{BREQ}}$	33,38	I	Bus right demand	Low level obtained when external device demands to release the bus right.
	$\overline{\text{BACK}}$	30,37	O	Bus right demand acknowledge	Shows that the bus right has been released to the external device. The device outputting signal BREQ can acknowledge the pass right gained by receiving signal BACK.
Operation mode control	MD0~MD3	95,97 102,103	I	Mode setting	The terminal to determine operation modes. Do not change the input value during operation.
Interrupt	NMI	98	I	Non-maskable interrupt	Non-maskable interruption demand terminal. Receiving on either leading edge or trailing edge can be selected.
	$\overline{\text{IRQ0}} \sim \overline{\text{IRQ7}}$	31,32,34 37~39 41,51,52 64~69 70,72 132,136	I	Interruption demand 0 to 7	Maskable interruption demand terminal. Level input and edge input can be selected.
	$\overline{\text{IRQOUT}}$	5,46	O	Interruption demand output	Shows that the interrupt factor has occurred. During bus release, interrupt occurred can be known.
Address bus	A0~A21	7~11,13, 15~24,25, 27,29,30, 37~39,41	O	Address bus	Outputs address.

(Continuing)

## SH7041 (IC5) Terminal descriptions

Classification	Code	Terminal No.	I/O	Name	Function
Data bus	D0 ~ D15 (QFP-112) D0 ~ D31 (QFP-144)	45,46 56~60, 62,64~70 72~76,78 80~84 86,88~92	O	Data bus	Bilateral data bus for 16 bit (Pin plate QFP-112 ) or 32 bit (Pin plate QFP-144).
Bus control	$\overline{CS0}\text{--}\overline{CS3}$	49,50,53 54,56,57	O	Chip select 0 to 3	Chip select signals for external memory or device.
	$\overline{RD}$	43	O	Read-out	Shows reading-out from the external device.
	$\overline{WRH}$	47	O	Higher side writing	Shows writing in higher 8 bits (bits 15 to 8).
	$\overline{WRL}$	48	O	Lower side writing	Shows writing in lower 8 bits (bits 7 to 0).
	$\overline{WAIT}$	39,101	I	Wait	To insert wait cycle into the bus cycle when accessing external space.
	$\overline{RAS}$	31	O	Low address strobe	Timing signal for low address strobe of DRAM.
	$\overline{CASH}$	34	O	Higher column address strobe	Timing signal for column address strobe of DRAM. It is output when accessing higher eight bits of data.
	$\overline{CASL}$	32	O	Lower column address strobe	Timing signal for column address strobe of DRAM.
	RDWR	36	O	DRAM read/write	Strobe signal for DRAM writing.
	$\overline{AH}$	2,100	O	Address hold	Address hold timing signal for the device using multiplex bus of address/data.
	$\overline{WRHH}$ (QFP-144)	1	O	HH writing	Shows writing of bits 31 to 24 of external data.
	$\overline{WRHL}$ (QFP-144)	3	O	HL writing	Shows writing of bits 23 to 16 of external data.
	$\overline{CASHH}$ (QFP-144)	4	O	HH column address strobe	Timing signal for column address strobe of DRAM. It is output when accessing bits 31 to 24 of data.
	$\overline{CASHL}$ (QFP-144)	29	O	HL column address strobe	Timing signal for column address strobe of DRAM. It is output when accessing bits 23 to 16 of data.
Multi function timer pulse unit	TCLKA TCLKB TCLKC TCLKD	51~54	I	MTU timer clock input	External clock input terminal for MTU counter.
	TIOC0A TIOC0B TIOC0C TIOC0D	109~111, 113	I/O	MTU input capture/ output conveyer (Channel 0)	Channel 0 terminal for inputting Input Capture/outputting Output Conveyer/outputting PWM.
	TIOC1A TIOC1B	114,115	I/O	MTU input capture/ output conveyer (Channel 1)	Channel 1 terminal for inputting Input Capture/outputting Output Conveyer/outputting PWM.
	TIOC2A TIOC1B	116,117	I/O	MTU input capture/ output conveyer (Channel 2)	Channel 2 terminal for inputting Input Capture/outputting Output Conveyer/outputting PWM.
	TIOC3A TIOC3B TIOC3C TIOC3D	138~140,	I/O	MTU input capture/ output conveyer (Channel 3)	Channel 3 terminal for inputting Input Capture/outputting Output Conveyer/outputting PWM.
	TIOC4A TIOC4B TIOC4C TIOC4D	2,5,143,144	I/O	MTU input capture/ output conveyer (Channel 4)	Channel 4 terminal for inputting Input Capture/outputting Output Conveyer/outputting PWM.
	Direct memory access control (DMAC)	$\overline{DREQ0}$ , $\overline{DREQ1}$	60,62,109, 111,132,136	I	DMA transfer demand (Channels 0 and 1)
DRAK0, DRAK1		2,30,33,110, 113	O	DREQ demand acceptance (Channels 0 and 1)	Outputs sampling acceptance of external DMA transfer demand input.
DACK0, DACK1		5,58,59	O	DMA transfer strobe (Channels 0 and 1)	Outputs strobe to external I/O of external DMA transfer demand.

(Continuing)



**SH7041 (IC5) Terminal descriptions**

Classification	Code	Terminal No.	I/O	Name	Function
Serial communication interface (SCI)	TxD0, TxD1	131, 134	O	Transmitting data (Channels 0 and 1)	Output terminal for transmitting data of SC10 to 1.
	RxD0, RxD1	130, 133	I	Receiving data (Channels 0 and 1)	Input terminal for receiving data of SC10 to 1.
	SCK0, SCK1	132, 136	I/O	Serial clock (Channels 0 and 1)	Input/output terminal for clock of SC10 to 1.
A/D converter	AVcc	128	I	Analog power source	Vcc potential is connected by analog power source.
	AVss	124	I	Analog ground	Vss potential is connected by analog power source.
	AVref (QFP-144)	127	I	Analog reference power source	Input terminal for analog reference power source.
	AN0~AN7	118~123, 125,126	I	Analog input	Analog signal input terminal.
	ADTRG	41,45	I	A/D conversion trigger input	External trigger input to start A/D conversion.
I/O port	$\overline{POE0}$ ~ $\overline{POE3}$	31,32,34,36	I	Port output enable	Input terminal to enable general port to control driving of port terminal in case of setting output.
	PA0~PA15 (QFP-112) PA0~PA23 (QFP-144)	1,3,4,33,43, 47~54,100, 101,107, 130~134,136	I/O	General port	General input/output port terminal to specify input/output by every bit.
	PB0~PB9	25,27,31,32, 34,36~39,41	I/O	General port	General input/output port terminal to specify input/output by every bit.
	PC0~PC15	45,46,57~60,	I/O	General port	General input/output port terminal to specify input/output by every bit.
	PD0~PD15 (QFP-112) PD0~PD31 (QFP-144)	62,64~70,72, 73~76,78, 80~84,86, 88~92	I/O	General port	General input/output port terminal to specify input/output by every bit.
	PE0~PE15	2,5,109~111, 113~116 137~140 142~144	I/O	General port	General input port terminal to specify input/output by every bit.
	PF0~PF7	118~123, 125,126	I	General port	General input port terminal.

**(2) Panel control block**

The following controls are performed by the Gate array (LR38784).

- Operation panel key scanning
- Operation panel LCD display

**(3) ASIC/Printing control block****1) ASIC [LR38784A 208pin (embedded gate array) functions(IC15)**

- ① Mapper  
Mapping can connect the modem and image handing LSI to a domain of CS2 (Chip Select 2).
- ② Real-time-clock interface  
This interface has the clock-synchronous type serial transfer mode and can write and read to the CLOCK IC (SM8578BV or NJU6355).
- ③ Image handing LSI interface  
This interface has parallel or serial transfer mode with the image handing LSI.
- ④ GDI ASIC  
This function GDI i/f for PC printing only.
- ⑤ IEEE1284  
This function IEEE 1284 i/f for PC scanning and PC fax.
- ⑥ Sending motor control  
This function outputs the sending motor control signals of 2 or 1-2 phase excitation to the motor driver.
- ⑦ Buzzer and Ringer control  
This function outputs a buzzer (1042Hz) or a ringer (controlled signal) signal.
- ⑧ Laser signal control  
This function controls to output laser beam.
- ⑨ Protection circuits  
LR38784A has protection circuits for a pick-up-solenoid and a heater.

**LR38784A (IC15) Terminal description**

Pin No.	I/O	Signal name
1	–	GND
2	–	GND
3	I	LCPD3
4	I	LCPD4
5	I	LCDREQ
6	TO	LEDDV4
7	TO	LEDDV3
8	TO	LEDDV2
9	TO	LEDDV1
10	TO	RS
11	O	LCDACKZ
12	TO	E
13	IOR	LD3
14	–	GND
15	IOR	LD2
16	IOR	LD1
17	IOR	LD0
18	IU	SEN4Z
19	IU	SEN3Z
20	IU	SEN2Z
21	IU	SEN1Z
22	IU	SEN0Z
23	I	FRSNS
24	I	ORGSNS
25	I	B4SNS
26	I	MDMINTZ
27	O	MDMRDZ
28	O	MDMWRZ
29	O	MDMCSZ
30	O	MDMRSTZ
31	–	GND
32	IS	CK16M
33	O	OE3Z
34	O	WE3Z
35	O	BZOUT
36	I	LCINT
37	O	LCRDZ
38	O	LCWRZ
39	I	SD
40	I	SDE
41	I	SDCK
42	ID	MTST
43	I	DACK0Z
44	I	DACK1Z
45	I	DRAK0

## LR38784A (IC15) Terminal description

Pin No.	I/O	Signal name
46	I	DRAK1
47	O	DREQ0Z
48	O	DREQ1Z
49	–	GND
50	IS	SHCK
51	–	GND
52	–	GND
53	–	VDD
54	–	VDD
55	O	RESET2Z
56	O	USOUT
57	O2M	INT1Z
58	O	INT2Z
59	O2M	INT3Z
60	O2M	INT4Z
61	O	INT5Z
62	I	RDZ
63	I	WRHZ
64	I	WRLZ
65	I	CS2Z
66	I	CSIZ
67	IS	WDOVFZ
68	O	RTCIO
69	O	RTCCE
70	–	GND
71	O	RTCCK
72	IOR	RTC DT
73	ID	TEST1
74	IU	CASHZ
75	IU	CASLZ
76	IU	RASZ
77	IU	RDWRZ
78	O	BREQZ
79	I	BACKZ
80	IOR	PD0
81	IOR	PD1
82	IOR	PD2
83	IOR	PD3
84	–	GND
85	OR	PA9
86	OR	PA0
87	I	LCPD0
88	I	LCPD1
89	I	LCPD2
90	OR	PA1
91	OR	PA2

Pin No.	I/O	Signal name
92	OR	PA3
93	OR	PA4
94	OR	PA5
95	–	GND
96	OR	PA6
97	OR	PA7
98	OR	PA8
99	IOR	PD4
100	IOR	PD5
101	IOR	PD6
102	IOR	PD7
103	–	VDD
104	–	VDD
105	–	GND
106	–	GND
107	OSC3M	PEPCKO
108	OSCI	PEPCKI
109	IU	EXINT1Z
110	IS	RESETZ
111	O	PCASZ
112	O	PWRZ
113	O	PRASZ
114	O	TPA
115	O	TPB
116	O	TPAZ
117	O	TPBZ
118	–	GND
119	O	OE1Z
120	O	WE1Z
121	O	OE2Z
122	O	WE2Z
123	O	CASLOZ
124	O	RASOZ
125	O	CASHOZ
126	–	GND
127	O	PWRLY
128	O	HLON
129	O	TC_BIASON
130	O	PUS
131	O	MCON
132	I	PE
133	O	PMDZ
134	O	APCSTT
135	ICS	SYNCZ
136	O	SMAP
137	–	GND

## LR38784A (IC15) Terminal description

Pin No.	I/O	Signal name
138	–	VDD
139	IOR	MA
140	IOR	MB
141	I	DOPZ
142	I	PINZ
143	I	POUTZ
144	I	XBPSTB
145	IO12MR	BPBD7
146	O	VIDEO
147	–	GND
148	IO12MR	BPBD6
149	IO12MR	BPBD5
150	IO12MR	BPBD4
151	–	GND
152	IO12MR	BPBD3
153	IO12MR	BPBD2
154	IO12MR	BPBD1
155	–	GND
156	–	GND
157	–	VDD
158	–	VDD
159	IO12MR	BPBD0
160	I	XBPAF
161	O12M	XBPOACK
162	O12M	BPOBY
163	I	XPINI
164	–	GND
165	O12M	BPOPE
166	O12M	BPOSE
167	O12M	XBPOFT
168	I	XPSEI
169	–	GND
170	–	VDD
171	IS	PRTCLK
172	IOR	D0
173	IOR	D1
174	IOR	D2
175	IOR	D3
176	IOR	D4
177	IOR	D5
178	IOR	D6
179	IOR	D7
180	–	GND
181	IOR	D8
182	IOR	D9
183	IOR	D10

Pin No.	I/O	Signal name
184	IOR	D11
185	IOR	D12
186	IOR	D13
187	IOR	D14
188	IOR	D15
189	–	GND
190	I	A21
191	I	A20
192	I	A13
193	I	A12
194	I	A11
195	IOR	A10
196	IOR	A9
197	IOR	A8
198	IOR	A7
199	IOR	A6
200	–	GND
201	IOR	A5
202	IOR	A4
203	IOR	A3
204	IOR	A2
205	IOR	A1
206	I	A0
207	–	VDD
208	–	VDD

## 2) Printing control (PCU)

The CPU and ASIC control printing.

### 1. Blockdiagram

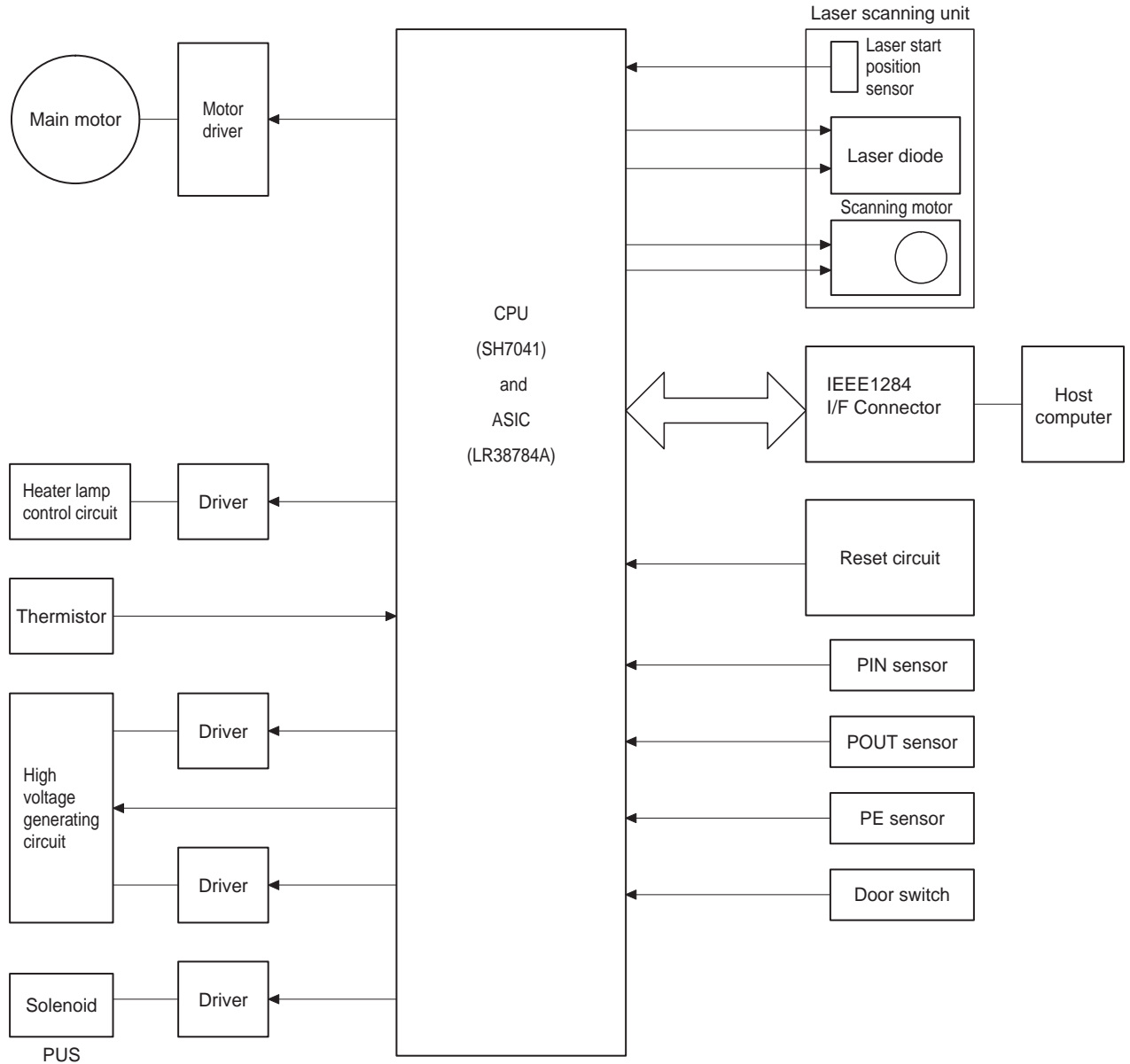


Fig. 4

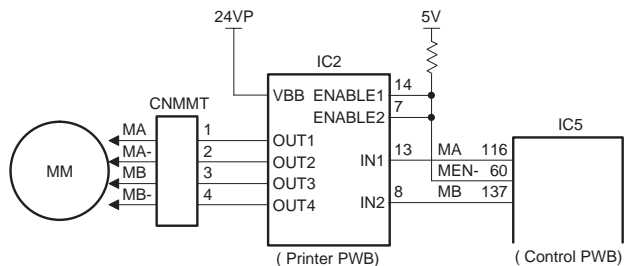
The PCU controls the following functions and items:

- ① Rotation of the main motor (pulse motor)
- ② High voltage output
- ③ Fusing temperature
- ④ Optical system (polygon motor/ laser APC circuit start)
- ⑤ 400/600DPI resolution automatic selection
- ⑥ Temperature correction of fusing temperature and high voltage output

### 3) Unit control

#### a. Main motor drive circuit

This machine uses the 4-phase pulse motor, and is driven by the following pulses and the circuit



(Drive waveform)

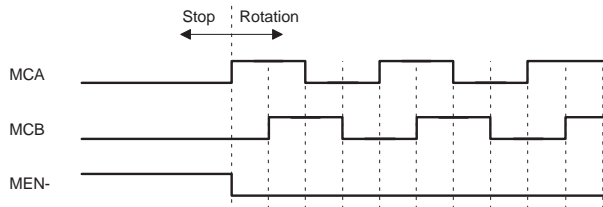


Fig. 5

#### b. Paper feed controller

Basically, the feed roller is rotated 1.5 times.

If interval between PUS and PIN is within 0.5 sec., it is rotated 1 time.

The procedure of clutch control

- ① Timer is cleared by PUS ON according to clutch control demand.
- ② PUS OFF 100 ms after PUS ON
- ③ PUS ON again 450 ms after the procedure ① above.
- ④ If paper is remained in PIN 500 ms after the procedure ①, the third PUS ON is stopped.
- ⑤ PUS OFF 1.25s after the procedure ①. Clutch control demand OFF if additional control is cancelled.
- ⑥ PUS ON again 1.534s after the procedure ①.
- ⑦ PUS OFF 2.334s after the procedure ①.
- ⑧ Clutch control demand OFF 3.366s after the procedure ①.

If the paper is not fed normally and the paper in detector signal (PIN\_) is not outputted even with the above operation, the PCU judges it as a paper jam display is made.

The paper in detector signal (PIN\_) is used for the top margin control signal in addition to jam detection.

The diagram below shows timings of clutch operation.

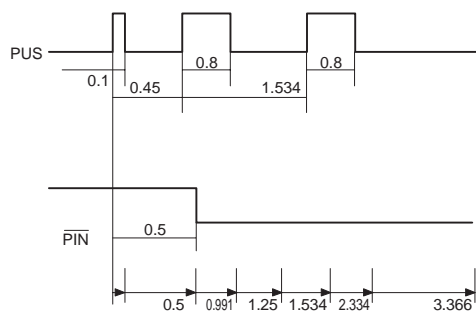


Fig. 6

#### c. Electrical connection

In the paper feed and transportation system, drive parts and sensors are connected as shown in the figure below.

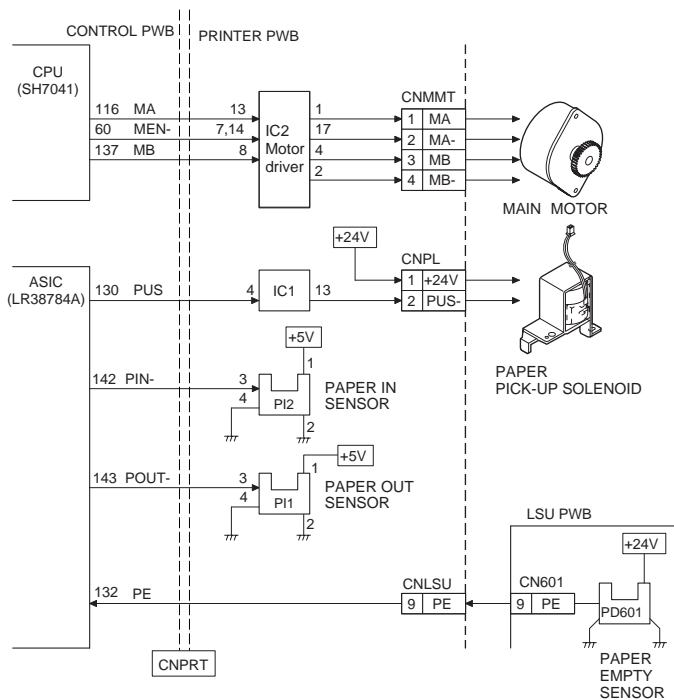


Fig. 7

- The main motor, which is the drive source for the paper feed and transportation system, is a 4-phase stepping motor in 2-phase excitement bipolar system, The step angle is 7.5°.
- The pick-up solenoid operates on 24V to turn on/off paper feed.
- There are following kinds of sensors.

#### Paper empty sensor (Transmission photo transistor) :

The paper empty sensor is positioned on the LSU PWB, and is used to detect presence of paper on the multi-purpose paper tray.

#### Paper in sensor: (Transmission photo transistor):

This sensor is used to detect the paper feed timing of the next paper (in prefeed) and to make synchronization between paper transport and image forming on the drum. This sensor is also used to detect paper jams.

#### Paper out sensor: (Transmission photo transistor):

This sensor senses paper exit, and paper jam.

#### d. High voltage unit control

The high voltage unit outputs the following voltages:

- Main charger voltage (DC-950V + AC600V peak to peak)
- Transfer charger voltage (DC+2100V + AC600V peak to peak)
- Developing bias voltage (DC-390V)

The following signals are outputted from the CPU (ASIC) to control the above voltages.

##### • MCON

This signal is to turn on/off the main charger.

When this signal is outputted, Q7 is driven to the high impedance state. Then Q9 conducts to drive transformer T2.

As a result, the main charger voltage is outputted to the secondary side of the transformer.

##### • TC/BIASON

This signal is to turn on/off the transfer charger and the developing bias voltage.

When this signal is outputted, Q3 is driven to the high impedance state. Then Q5 is conducted to drive T1 to output the transfer charger voltage and developing bias voltage to the secondary side of the transformer.

##### • PWMSIN

This signal is to control the main charger voltage and the transfer charger voltage. The PWM pulse of 295.28Hz is outputted.

This pulse waveform adds the AC component to the main charger voltage and the transfer charger voltage.

By changing the pulse duty of this signal, the main charger voltage and the transfer charger voltage are controlled (during temperature correction operation).

When the pulse duty of this signal is changed, the collector currents of Q4 and Q8 are changed. Therefore, the base current of Q9 and the drive current of transformer T2 are changed to change the main charger voltage and the transfer charger voltage.

R29, R31, C19, and C20 from a filter circuit which dulls the waveform of PWMSIN signal.

#### e. Electrical connection

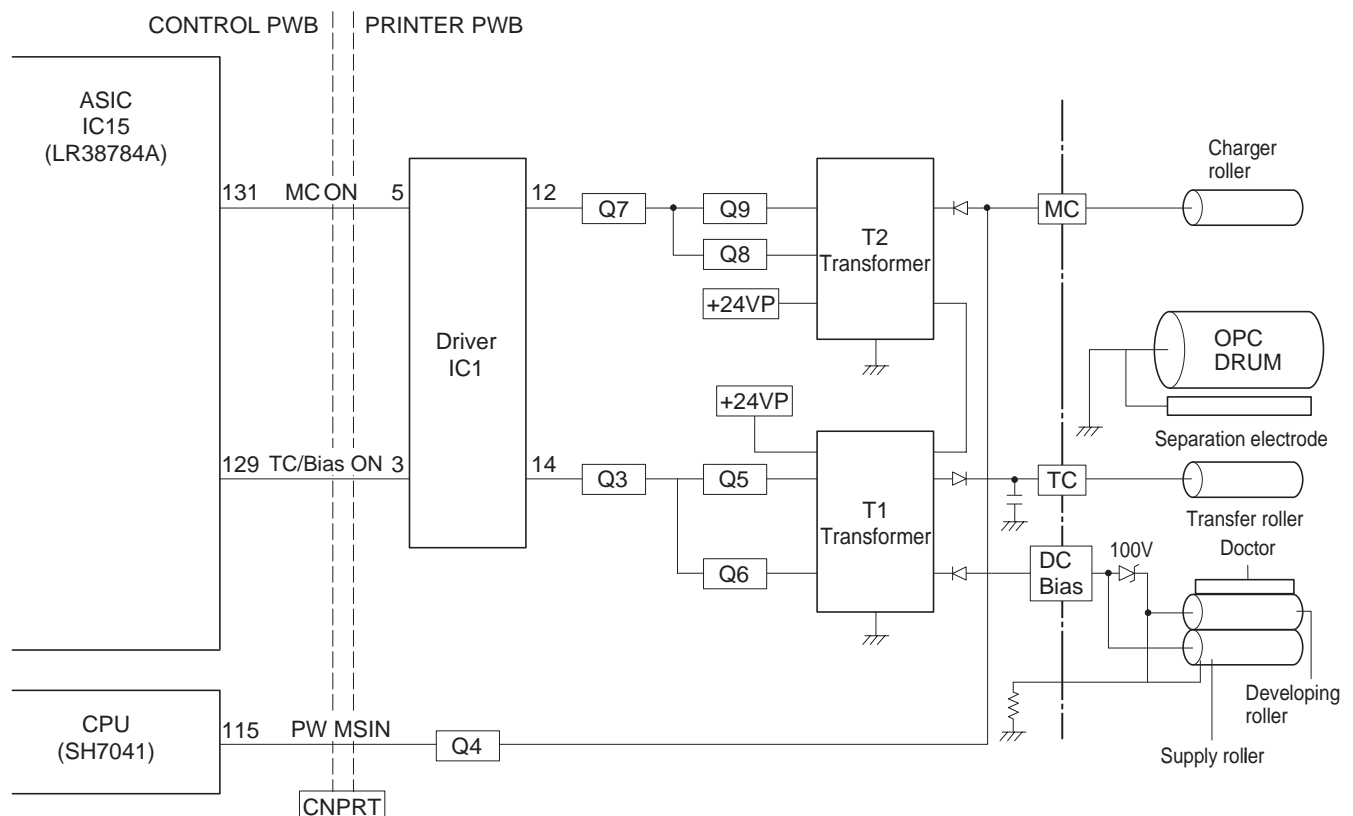


Fig. 8

## f. Laser scanning unit

This unit controls the laser beam power and laser beam scanning.

The control is performed with the signals inputted outputted to or from the CPU and ASIC.

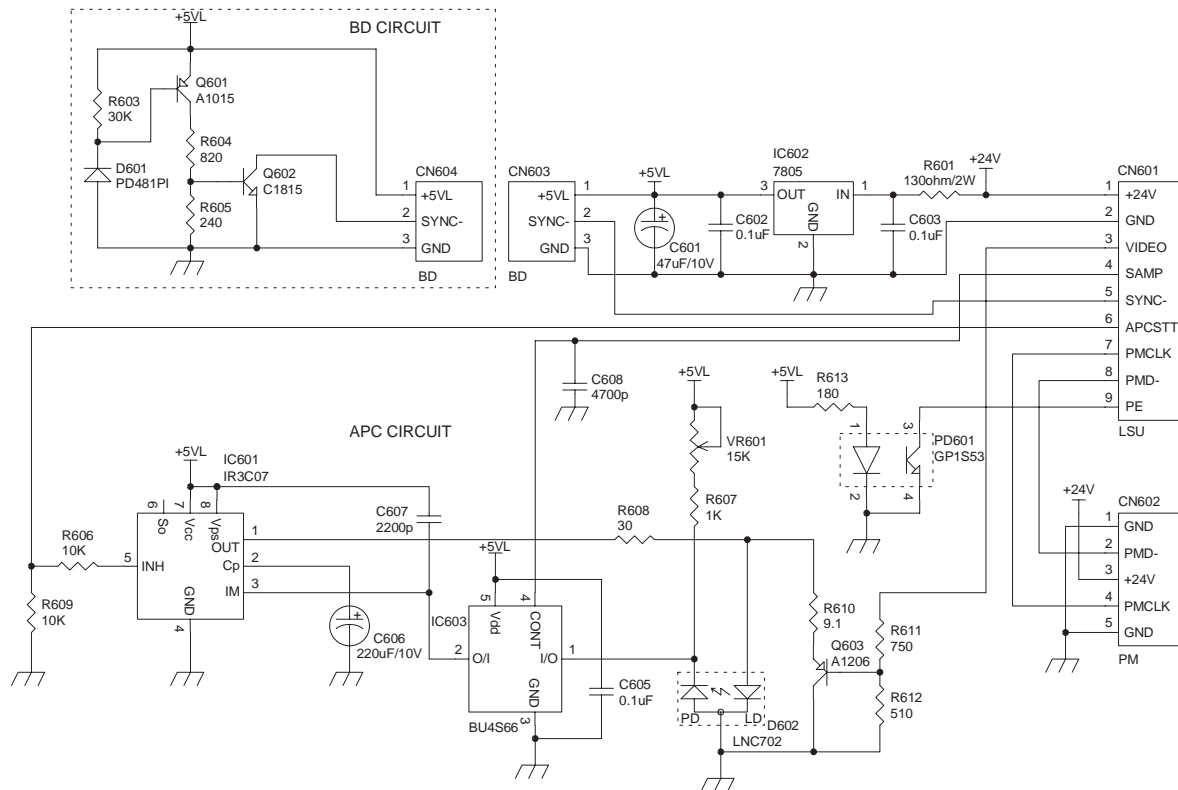


Fig. 9

### 1) Signal functions

#### PMCLK

Clock signal for driving the scanning (polygon) motor. (1.18KHz/770Hz)

#### PMD

Scanning motor ON/OFF signal.

#### APCSTT

Used to start the laser beam generation circuit.

#### SYNC

This signal is outputted when the laser beam scanned by the laser beam sensor signal is sensed by sensor (Photo diode D601).

Used for the left margin control.

#### VIDEO

This signal is used to control the laser diode emitting.

Not only when the laser beam is emitted to perform the LEND process, but also when the laser beam is emitted as image data, ASIC controls and the signal is outputted from video terminal.

### 2) Laser beam power control

The laser beam power is controlled in the laser emitting unit PWB.

This circuit functions to keep the laser beam output power at a constant level.

The laser beam output is monitored with photo diode D602 for monitor. When the laser beam output rises above the specified value, the impedance of photo diode D602 is decreased to decrease the monitor input (3PIN) voltage of the laser diode control IC (IC601).

Then the laser diode (LTO28GS) drive voltage is decreased to decrease the laser beam output to the specified level.

When the laser beam output is decreased below the specified level, the contrary operation are performed.



### 3) Starting operation

Warm-up operation of laser scanning is described below.

The operation is made when the cover is closed from the open state, and is made before starting printing.

The PMCLK signal is the clock signal for scanner motor speed control. It is rectangular waveform of 1.18kHz.

- ① The PMD\_signal is to turn on/off the scanner motor. When this signal is outputted, the scanner motor is operated.
- ② After 2 sec of starting the scanner motor, the laser power control signal APCSTT and the laser diode ON signal VIDEO (LEND) are outputted to output laser beams.
- ③ After 0.5sec from outputting the VIDEO (LEND) signal and turning on the laser diode, the LEND process operation is started.

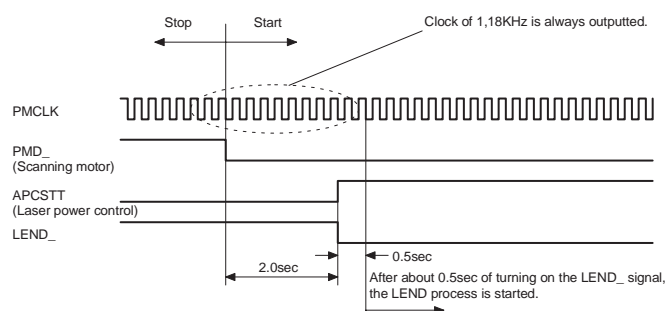


Fig. 10

### 4) LEND process operation

The LEND process operation means outputting the HSYNC (HSYNC\_) signal for left margin control.

To control the left margin, the scanning position of the scanning mirror on the virtual area of the left side out of the margin must be precisely detected when the scanning motor reaches the stable rpm. Therefore, the dummy laser beam must be outputted to detect the position.

The laser beam scanning position is detected by the laser beam sensor, and the SYNC signal is outputted.

The dummy laser beam is outputted for every scanning of one line only when the scanning position of the scanning mirror is outside the left area of virtual paper. (The laser is forcibly turned on by the PCU when the laser beam scanned by the scanning mirror come in front of the laser beam sensor (left margin reference).)

**Note:** The laser beam is not outputted continuously during printing operation of one paper. It repeated ON and OFF for every scanning of one line.

The laser beam is outputted only when the LEND process for controlling the print left margin is made and when the print image is drawn on the photoconductor.

### • Laser control signal

LEND signal is controlled based on HSYNC signal.

For simultaneous APC control, SAMP signal is also controlled.

These timings are made by ASIC. The line-end-off section is set by the register.

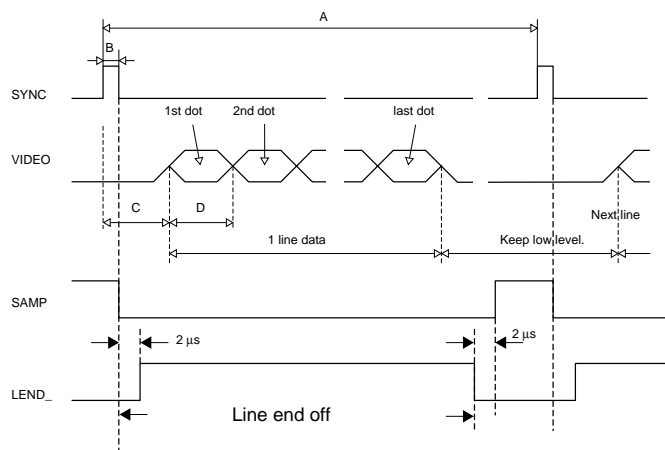


Fig. 11

- ① When the LEND\_ signal is on, the dummy laser beam is outputted, and the scanned laser beam is detected by the laser beam sensor to output the SYNC signal. When the SYNC signal is outputted, the CPU detects the scanning position.
- ② At the rising of the SYNC signal, the CPU turns off the LEND\_ signal. By this, the dummy laser beam is turned off. When the CPU detects the scanning position with the SYNC signal, the dummy laser beam becomes unnecessary.
- ③ The draw signal Video\_ is made from the DDATA\_ signal of one line outputted from the ASIC. When it is outputted, the laser beam is turned on off accordingly. This corresponds to the making of latent electrostatic images on the photoconductor drum.
- ④ When making of latent electrostatic images for one line is completed, the CPU turns on the LEND\_ signal before the output timing of the SYNC.

Procedures ①~④ are repeated.

Resolution	Time				
	A	B	C	D	Line end off
600dpi	846.7μs	3 ~ 10μSec	(29.97μSec)	(84.3nSec)	510μs
406.4x 391.16dpi	1298.7524μs	4.6 ~ 15.3μSec	(45.971μSec)	(190.907nSec)	720μs

### 5) Automatic acknowledgment of resolution

The CPU control 600dpi/400dpi when starting the LEND process.

When the scanner motor rotation is stabilized, the SYNC interval is judged.

## g. Electrical connection

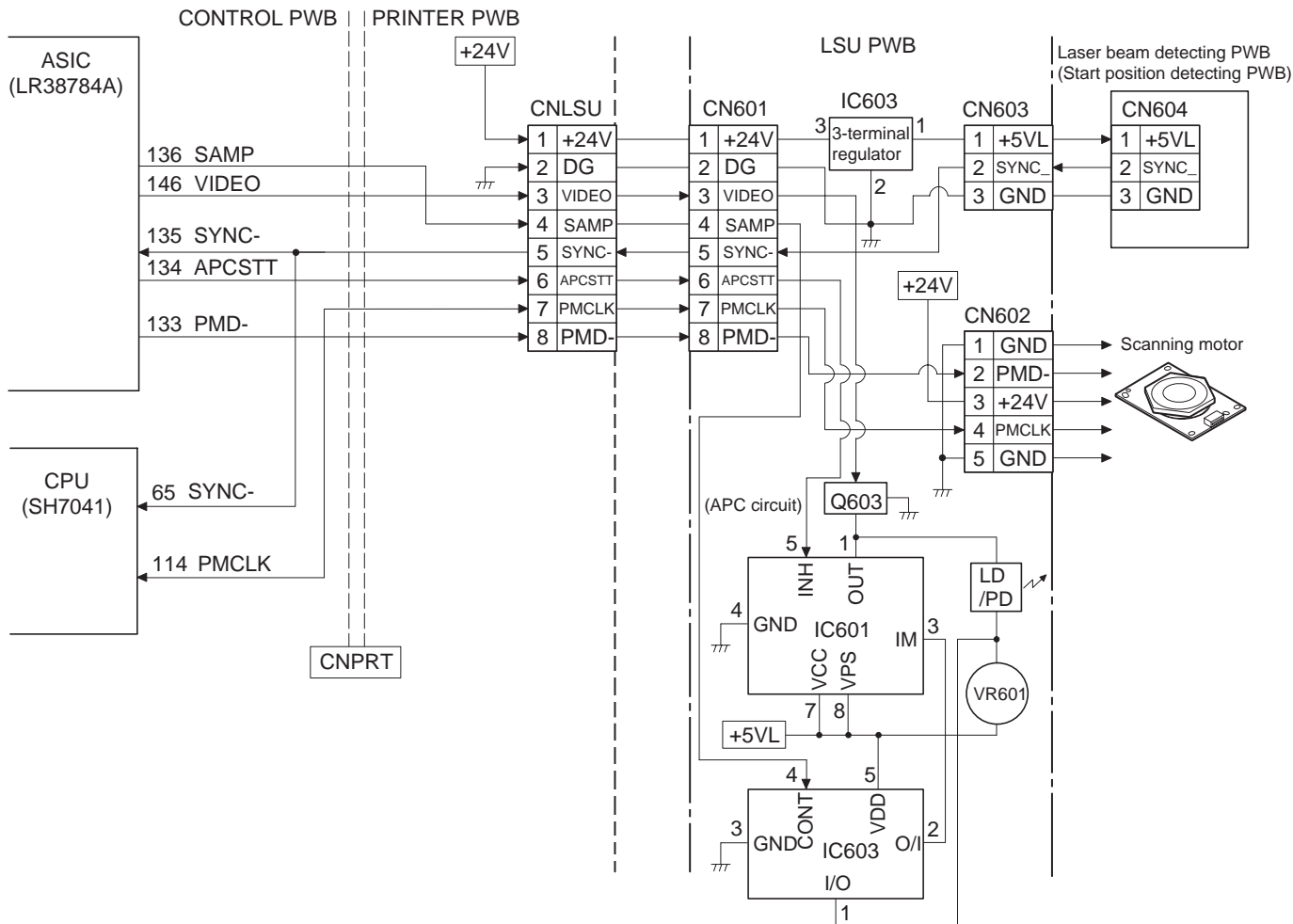


Fig. 12

The laser diode control board is driven in synchronization with the VIDEO signal sent from the CPU board.

By the operation of the laser diode control board, infrared laser beams of 780nm are outputted from the laser diode and made in parallel by the collimator lens, and focused onto the scanning motor by the first cylinder lens.

The scanning mirror rotation is controlled by the scanning motor to be constant at 11811rpm (600dpi) and 8000rpm (400dpi), and the laser beam is directed to the main scanning direction.

The scanning motor is of six-surface, and six-line print is made for one rotation of the scanning motor. The laser beam reflected by the scanning mirror is directed to the curved mirror by the first reflection mirror. Before reaching the curved mirror, the laser beam enters the photo sensor on the start position detector board, making vertical synchronization and print data synchronization (generating the SYNC signal).

The curved mirror directs the laser beam to the second reflection mirror in parallel and in even interval regardless of difference in angles of incidence from the first reflection mirror. The laser beam reflected by the second reflection mirror is passed through the second cylinder lens to reach the photoconductor drum.

The second cylinder lens corrects blur of the images caused by variations in the installing angle due to the two-surface scanning mirror, providing stable laser beams to the photoconductor drum for each line.

## h. Fusing unit control

The fusing section is heated by the heater lamp (400W). The heater lamp is controlled (turned on/off) to keep the optimum temperature. The following signals are outputted by the ASIC and CPU for control.

## 1) Signal functions

## • HLON

This signal is to turn on/off the heater lamp. When this signal is outputted, photo triac PD101 turns on to turn on triac T2. Then an AC power is supplied to the heater lamp to turn on the heater lamp.

## • RTH

This is the output signal of the thermistor which detects the surface temperature of the heat roller. It is inputted to the CPU. The heater lamp is turned on/off depending on the value of RTH voltage.

## 2) Protect against overheat

Though the heater lamp ON signal (HLON) is normal, if triac PD101 and T2 are kept ON, overheat may result.

To prevent against this, temperature fuses are used.

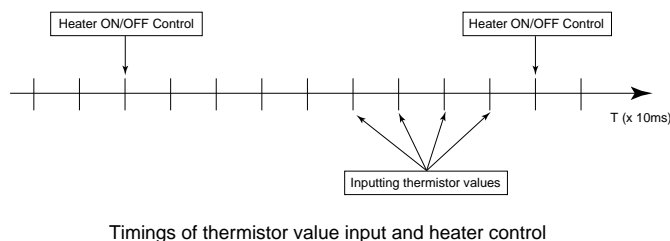
When the fusing roller surface temperature exceeds about 187 degrees C, the temperature fuse blows off to open the 12V power line which drives the power relay RY101, opening the power line for the photo triac PD101 and triac T2. Therefore, the power is not supplied to the heater lamp.

A temperature fuse is also provided in the heater lamp power line. In case of overheating, the heater lamp power line is opened directly.

## 3) Timing of temperature detection and heater control

As shown by the following timings, four values of software thermistor voltage are input as A/D conversion values. The mean value of two medians among these four is regarded as the newest thermistor value (temperature).

- The value is compared with the temperature (155°C) control value every 100 ms.
- If the value is higher than 155°C, the heater becomes OFF. If lower, the heater becomes ON.
- The heater ON timing is in accordance with the timing of Power Zero Cross interrupt.



Timings of thermistor value input and heater control

Fig. 13

## 4) Heater control (Temperature control)

Control method

### ① Base machine printing (Copy, List, Receiving)

- Temperature control is started when data to be printed are produced (or when slips are to be prepared).
- Temperature is controlled at 155 °C. (Heater OFF over 155 °C. Heater ON below 155 °C.)
- After printing, temperature is not controlled. (Heater is not turned ON.)
- Fan motor starts revolving from the beginning of temperature control and stops 120 seconds after printing is finished.

### ② PC printing

- Temperature control is started when PC starts printing.
- Temperature is controlled at 155 °C. (Heater OFF over 155 °C. Heater ON below 155 °C.)

- After printing, temperature is not controlled.
- Fan motor starts revolving from the beginning of temperature control and stops 120 seconds after printing is finished.

Temperature control is not started from the start of printing because the first copying time should be within 28 seconds.

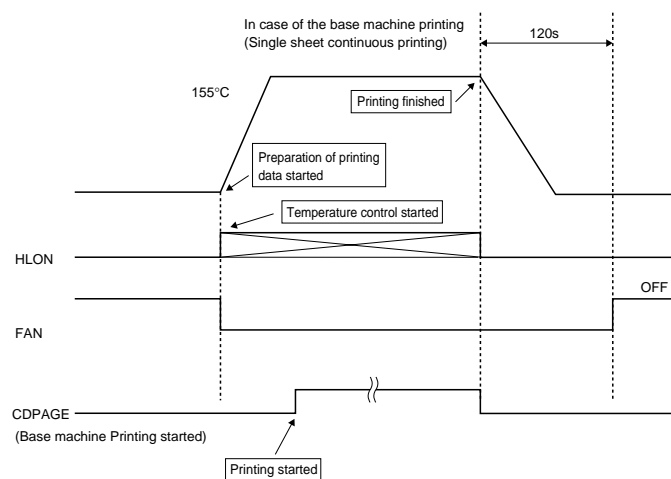
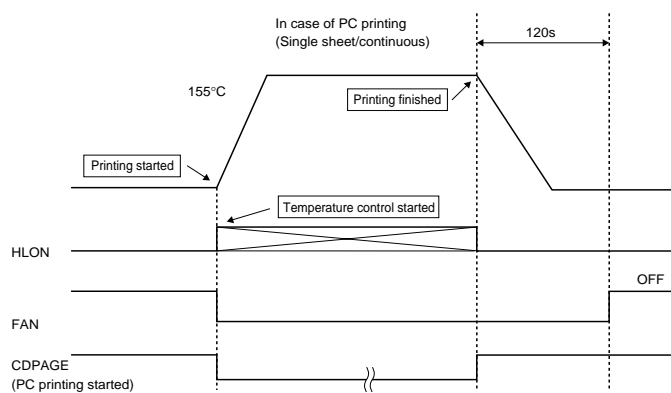


Fig. 14



The Heater ON timing is set during Zero Cross interrupt.

Fig. 15

**i. Electrical connection**

- Heater lamp: The 400W halogen lamp is used.  
This spring presses the pressure roller with a 690g pressure on one side.
- Thermistor: Thermistor of chip type with good response is used to respond to rapid heating (rapid warm-up of about 8 sec) of the heat roller.
- Temperature fuse 1 (132°C): Temperature fuse 1 is installed to the fusing cover. It blows off when the ambient temperature of the fusing cover rises abnormally (132°C).
- Temperature fuse 2 (187°C): Temperature fuse 2 is in close contact with the heat roller. It blows off when the heat roller temperature rises abnormally high (187°C).

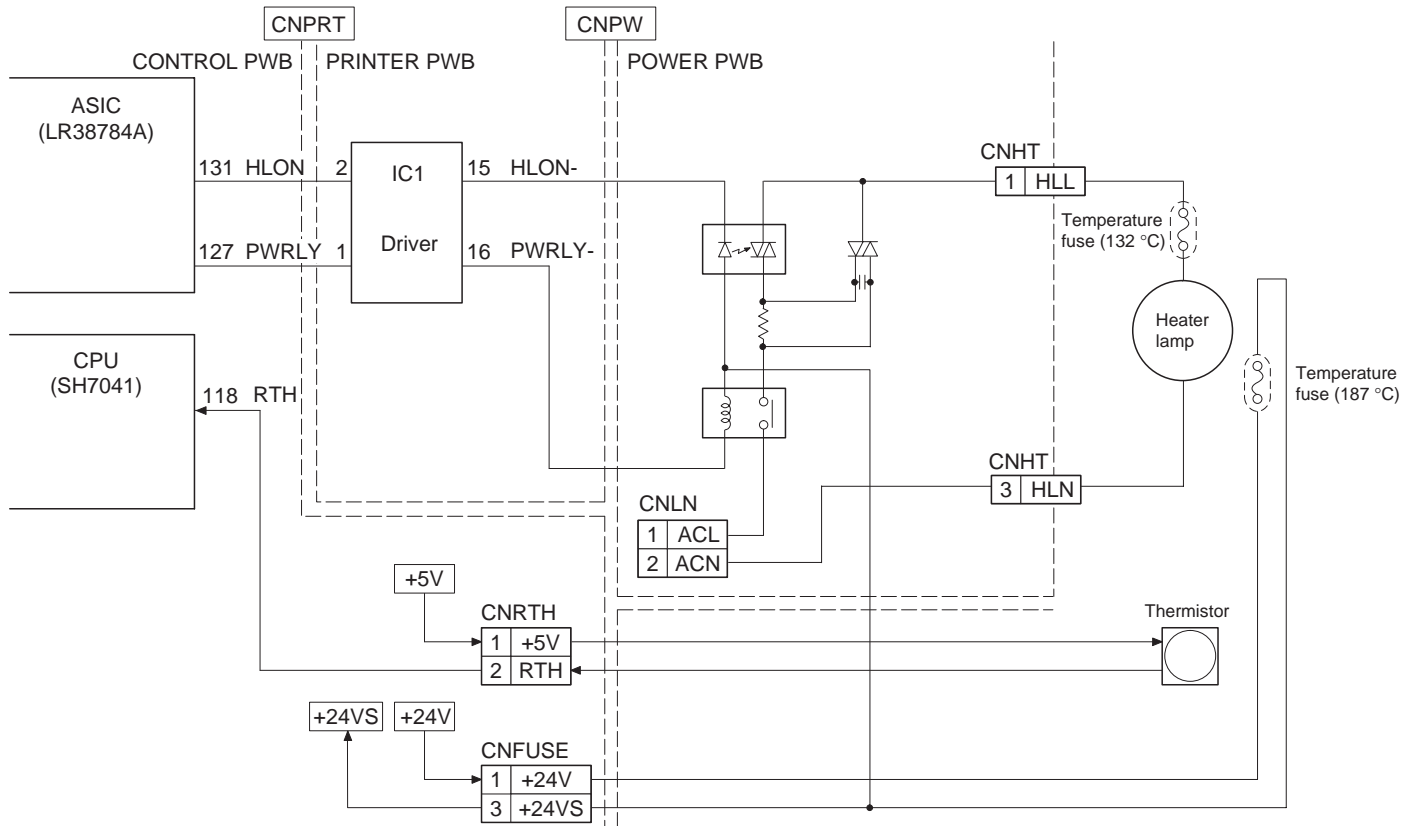


Fig. 16

- The heat roller surface temperature is maintained to the optimum level by controlling ON/OFF of the heater lamp according to the temperature data (voltage) from the thermistor. The heat roller surface temperature is controlled to 155°C. Two temperature fuses are provided to protect the heat machine from an abnormally high temperature in the fusing section. The heater lamp is lighted by the AC power.

**j. Timing chart**

- Printing process
- Pre-revolution processing
- Timing from DPAGE (internal signal of ASIC) to BIAS ON (pre-revolution processing) is specified.

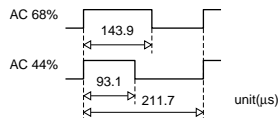
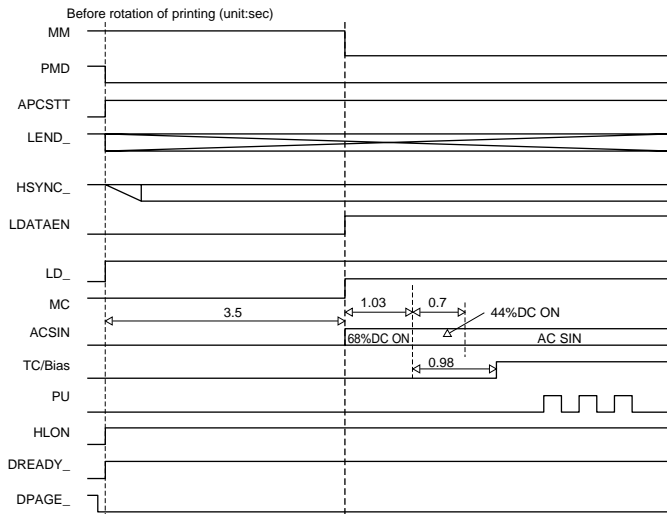


Fig. 17

Laser control becomes hard control from the movement when HSYNC interruption was permitted.

**Post-revolution processing**

Timings from POUT to motor stop (post-revolution processing for printing) are specified.

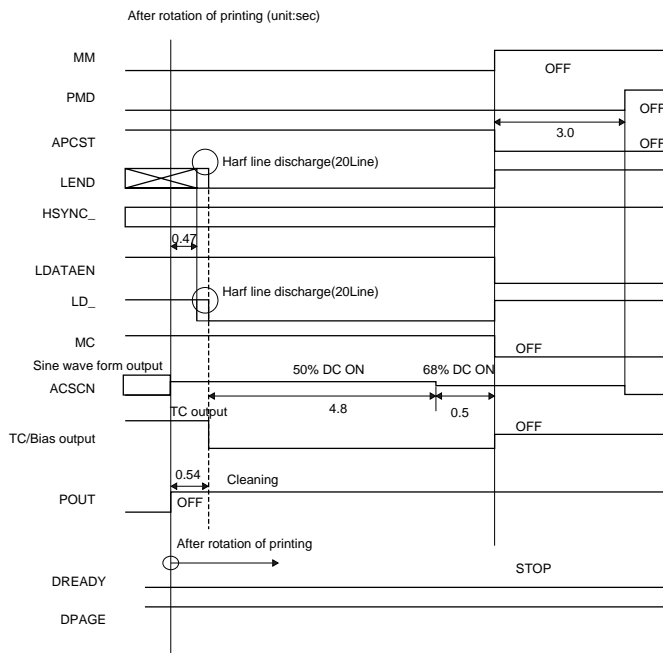


Fig. 18

**Continuous printing processing**

- \*1 Waiting according to fixing temperature (Environmental temperature)
- \*2 Top margin

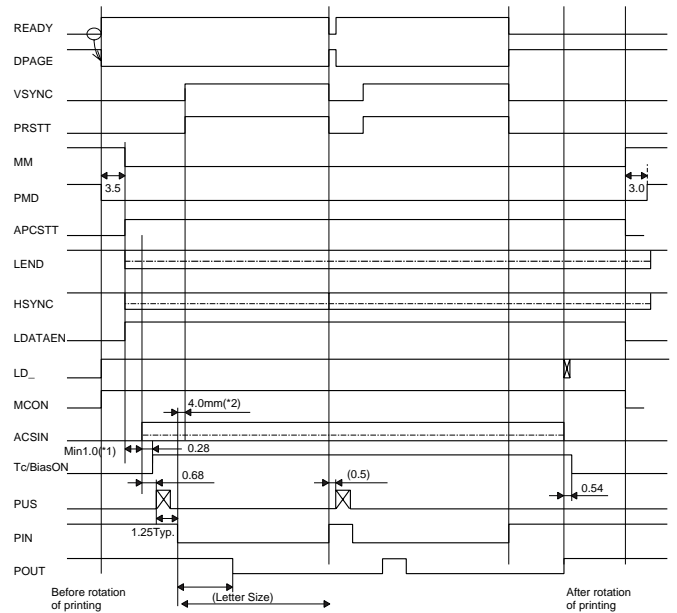


Fig. 19

**Revolution before cleaning when power is on and cover is closed**

Unit: second

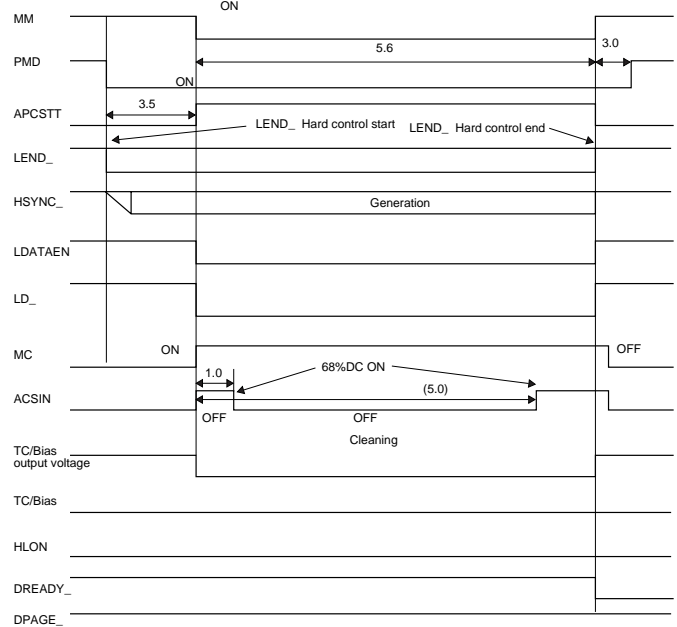


Fig. 20

### k. Top margin control

Top margin is set according to the number of lines (the number of HSYNC interrupt) from detail paper Pin On to LASER input.

The interval between Pin On and point D is 52.6747 mm.

The interval between Point D and point B is:  $27.33 \text{ (C-D)} + 8.3769 \text{ (B-C)} = 35.7069 \text{ mm}$

If top margin is 4 mm,

$52.6747 - 35.7069 + 4 = 20.9678 \text{ m}$

In case of the actual software processing, chattering of the sensor is considered to be observed for 9 msec.

The processing speed is 50 mm/sec; while chattering is being observed, paper is fed by 0.45 mm ( $9 \times 50/1000 = 0.45 \text{ mm}$ ).

In order to gain top margin of 4 mm, printing data should be processed after paper is fed by 20.5178 mm ( $20.9678 - 0.45 = 20.5178 \text{ mm}$ ) following PIN On detection.

The base machine resolution in the sub-scanning direction is 391.16 dpi; If the value 20.5178 mm is converted into the number of lines, 315.9 lines are obtained from  $391.16 \times 20.5178/25.4$ . Accordingly the software set value is considered to be based on 316 lines.

Similarly, considering from the fact that resolution of PC printing is 600 dpi, the number of lines is 484.6 lines ( $600 \times 20.5178/25.4=484.6$ ).

The software set value is based on 485 lines.

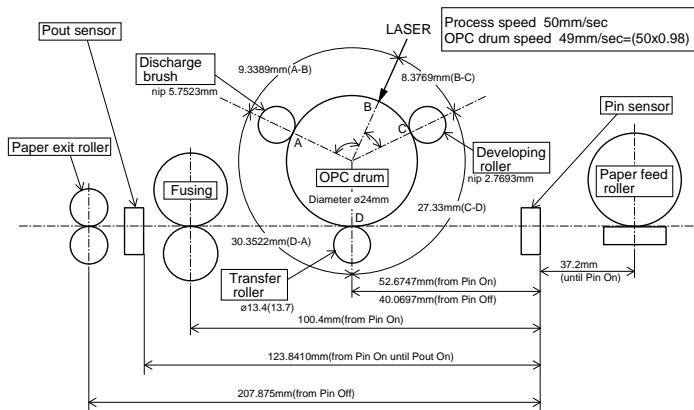


Fig. 21

## (4) MODEM control block

### 1) INTRODUCTION

Conexant's FM336 modem is a V.34 half-duplex modem. It supports Group 3 facsimile transmission/reception at speeds up to 33,600bps in the V.34 half-duplex mode. In order to optimize the modem configuration for the line conditions, this modem uses V.34 technology. It connects at an optimally selected data rate so that speeds from 2,400bps to 33,600bps can be supported.

This modem can be used on the general public telephone network using a network control unit (NCU) line termination device. This modem conforms to ITU-T V.17, V.21, V.23, V.27ter, V.29, and V.34 specifications. It also complies with V.8 and T.30 binary signaling conditions. This modem supports HDLC internally. Therefore, products using built-in error correction and the T.30 protocol do not need an external serial input/output (SIO) line on DTE. This modem can execute HDLC framing, as specified in T.30, at all data rates. Since it can perform zero insertion/deletion and CRC tasks, this allows enhanced SDLC/HDLC frame operation. The FSK flag pattern detector facilitates FSK detection during high-speed reception.

This modem features a programmable DTMF transmitter/receiver that operates in tone mode, and three programmable tone detectors. This modem is primarily suited to use in small system designs in such environments as work plants, offices, and homes because of its low power consumption and small size. This modem is packaged in a 100-pin PQFP.

### 2) FEATURES

- Two-wire, half-duplex fax modem that supports transmission/reception speeds up to 33,600bps
  - V.17, V.27ter, V.29, V.34, and V.21 2 channel
  - Short train option in V.17 and V.27ter
- Two-wire, full-duplex data modem mode
  - V.21 and V.23 (75bps TX/1,200bps RX or 1,200bps TX/75bps RX)
- PSTN session start
  - V.8 signaling
- HDLC supported at all the speeds
  - Flag sending, 0 bit insertion, ITU CRC-16 or CRC-32 calculation and sending
  - Flag detection, 0 bit deletion, ITU CRC-16 or CRC-32 checksum error detection
  - FSK flag pattern detection (during high-speed reception)
- Tone mode and function
  - Programmable single or dual tone transmission
  - DTMF reception
  - Tone detection using three programmable tone detectors
- Serial synchronous data
- Parallel synchronous data
- V.34 half-duplex and Automatic Rate Adaptation (ARA)
- TTL- and CMOS-compatible DTE interface
  - ITU-T V.24 (EIA/TIA-232-E) (data/control)
  - Microprocessor bus (data/configuration/control)
- Reception dynamic range: 0dBm ~ -43dBm (V.17, V.33, V.29, V.27ter, and V.21)
  - 9dBm ~ -43dBm (V.34 half-duplex)
- Programmable RLSD turn-on and turn-off thresholds
- Programmable transmission level: 0 ~ -15dBm
- Adjustable speaker output for monitoring communication signals
- DMA support interrupt line
- 16 byte FIFO data buffer (2) for transferring burst data, can be expanded up to 255 bytes
- NRZ1 encoding/decoding
- Diagnostic function
  - +3.3V operation (+5V input possible)
  - +5V analog signal interface
- Standard power consumption:
  - Sleep mode: 20mW
  - Normal mode: 250mW
- 100-pin PQFP package

**FM336 (IC8) Terminal description**

PIN	Signal Name	I/O Type	Interface <sup>3</sup>
1	RESERVED	–	–
2	RS2	IA	Host interface
3	RS3	IA	Host interface
4	RS4	IA	Host interface
5	/CS	IA	Host interface
6	/WR	IA	Host interface
7	/RD	IA	Host interface
8	/RDCLK	OA	DTE Serial interface
9	/RLSD	OA	DTE Serial interface
10	TDCLK	OA	DTE Serial interface
11	TXD	IA	DTE Serial interface
12	/CTS	OA	DTE Serial interface
13	VDD1	PWR	–
14	RESERVED	–	–
15	RESERVED	–	–
16	VSS	GND	–
17	NC	–	NC
18	/RESET	OA	Modem interconnect
19	SR4OUT	OA	Modem interconnect
20	NC	–	NC
21	SR4IN	IA	Modem interconnect
22	CLK_OUT	OA	Modem interconnect
23	EYESYNC	OA	Diagnosis signal
24	EYECLK	OA	Diagnosis signal
25	MAVSS	GND	–
26	MAVDD	PWR	–
27	SPKR	O(DF)	Telephone lines interface
28	TXA2	O(DD)	Telephone lines interface
29	TXA1	O(DD)	Telephone lines interface
30	VREF	MI	Modem interconnect
31	VC	MI	Modem interconnect
32	RIN	I(DA)	Telephone lines interface
33	MAVSS	AGND	–
34	/POR	LA	Modem interconnect
35	RESERVED	–	–
36	RESERVED	–	–
37	/TALK	O(DD)	Telephone lines interface
38	VDD	PWR	–
39	RESERVED	–	–
40	RESERVED	–	–
41	NC	–	NC
42	M_CNTRL_SIN	IA	Modem interconnect
43	M_CLKIN	IA	Modem interconnect
44	M_TXSIN	IA	Modem interconnect
45	M_SCK	IA	Modem interconnect
46	M_RXOUT	IA	Modem interconnect
47	M_STROBE	IA	Modem interconnect
48	RESERVED	–	–
49	OH	O(DD)	Telephone lines interface
50	VDD	PWR	–

PIN	Signal Name	I/O Type	Interface <sup>3</sup>
51	RESERVED	–	–
52	VSUB	GND	–
53	VSS	GND	–
54	NC	–	NC
55	NC	–	NC
56	SLEEP	MI	Modem interconnect
57	VDD1	PWR	–
58	RESERVED	–	–
59	RESERVED	–	–
60	NC	–	NC
61	SR1IO	MI	Modem interconnect
62	VCORE	PWR	–
63	VDD1	PWR	–
64	XTCLK	IA	DTE Serial interface
65	VSS	GND	–
66	RESERVED	–	–
67	RXD	OA	DTE Serial interface
68	/DTR	IA	DTE Serial interface
69	VDD1	PWR	–
70	IA_SLEEP	MI	Modem interconnect
71	VGG	PWR	–
72	YCLK	OA	Overhead signal
73	XCLK	OA	Overhead signal
74	EYEXY	OA	Diagnosis signal
75	/DSR	OA	DTE Serial interface
76	/RI	OA	Telephone lines interface
77	RINGD	IA	Telephone lines interface
78	/RTS	IA	DTE Serial interface
79	IRQ	OA	Host interface
80	VSS	GND	–
81	GPO0	MI	Modem interconnect
82	RESERVED	–	–
83	RESERVED	–	–
84	VDD1	PWR	–
85	XTALI/CLKIN	I	Overhead signal
86	XTALO	O	Overhead signal
87	D0	IA/OB	Host interface
88	D1	IA/OB	Host interface
89	D2	IA/OB	Host interface
90	D3	IA/OB	Host interface
91	D4	IA/OB	Host interface
92	VDD1	PWR	–
93	D5	IA/OB	Host interface
94	D6	IA/OB	Host interface
95	D7	IA/OB	Host interface
96	RS0	IA/OB	Host interface
97	RS1	IA/OB	Host interface
98	PLL VDD	PWR	–
99	VSS	GND	–
100	PLL GND	GND	–

**Notes:**

I/O types: MI = Modem interconnect  
IA, IB = Digital input      OA, OB = Digital output  
I(DA) = Analog input      O(DD), O(DF) = Analog output

NC = Not connect  
RESERVED = No external connection allowed  
Interface description: HOST = Modem control unit (Host)  
DTE = Data terminal equipment

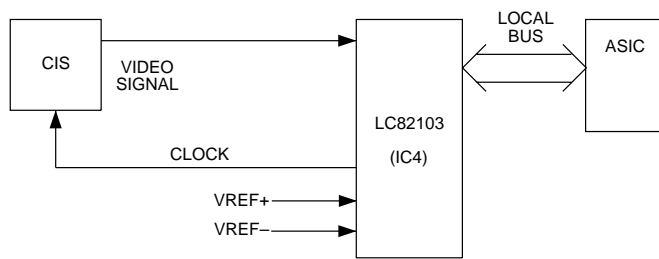
**(5) Image signal process block**

Fig. 22

The CIS is driven by the LSI (LC82103), and the output video signal from the CIS is input into the LC82103.

The ADC and buffer are provided in the LC82103, and the digital image processing is performed.

**n. Speaker amplifier**

The speaker amplifier monitors the line under the on-hook mode, outputs the buzzer sound generated from the SH7041, ringer sound, DTMF generated from the modem, and line sound.

**o. Adjustment of voice/ringer volume**

The voice/ringer volume can be adjusted by using the panel buttons "UP" and "DOWN".

- The ringer volume can be adjusted in the Stand-by mode by pressing the UP/DOWN button.
- The reception level can be adjusted by pressing the UP/DOWN button when the handset is located in the off-hook state.
- The speaker volume can be adjusted by using the speaker key.



### [3] Circuit description of TEL/LIU and Hook SW PWB

#### 1. TEL/LIU block operation description

##### (1) Block diagram

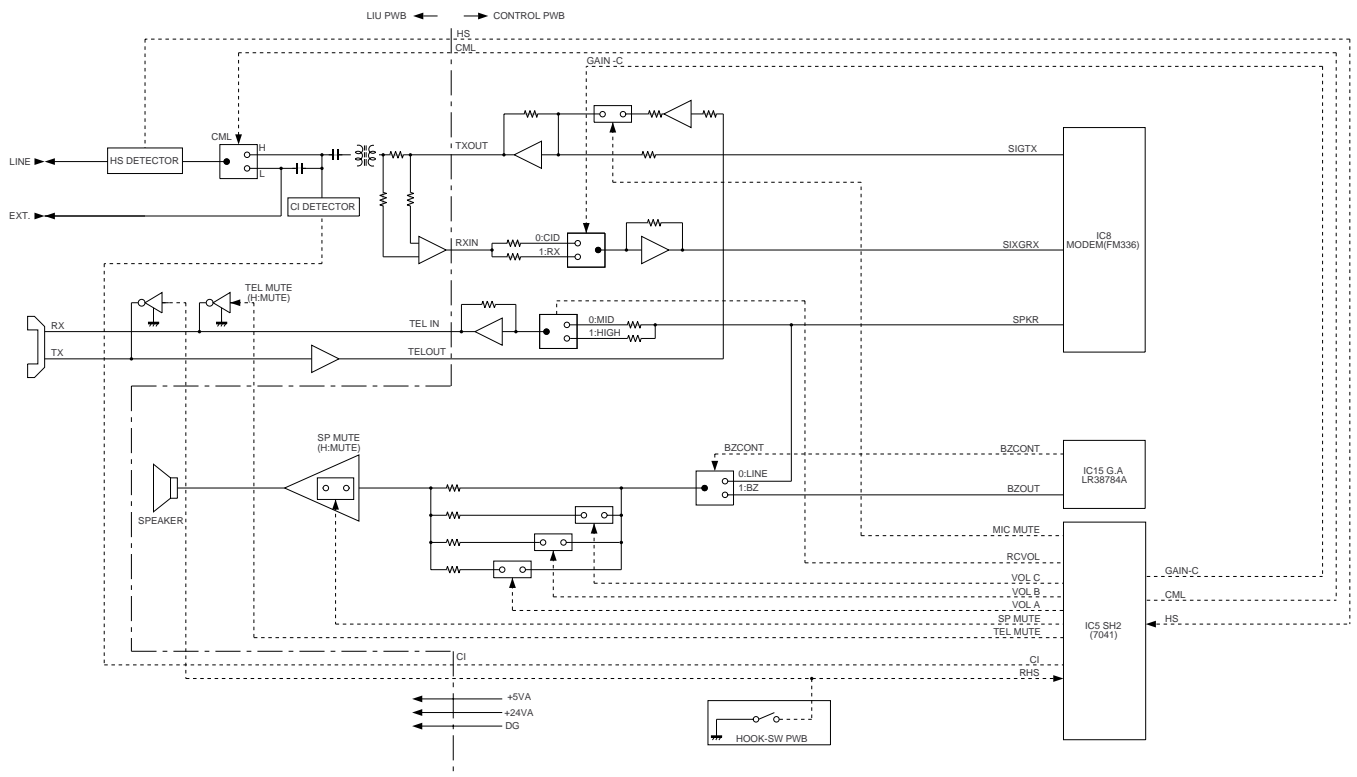


Fig. 23

##### (2) Circuit description

The TEL/LIU PWB is composed of the following 9 blocks.

1. Surge protection circuit
2. On-hook status detection circuit
3. Dial pulse generation circuit
4. CML relay
5. Matching transformer
6. Hybrid circuit
7. Signal selection
8. CI detection circuit
9. Power supply and bias circuit

##### (3) Block description

###### 1) Surge Protection circuit

This circuit protects the circuit from the surge voltage occurring on the telephone line.

- The AR1 protects the circuit from the 390V or higher line surge voltages.
- The VA1 and VA2 protect the circuit from the 470V or higher vertical surge voltage.

###### 2) On-hook status detection circuit

The on-hook status detection circuit detects the status of the hook switch (RHS) of built-in telephone, and the status of the hook of a telephone externally connected.

- The status of on-hook switch ( $\overline{RHS}$ ) is determined from the logical level of  $\overline{RHS}$  signal. ( $\overline{RHS}$  is in the hook SW PWB)

$\overline{RHS}$  LOW: ON-HOOK

$\overline{RHS}$  HIGH: OFF-HOOK

- External telephone hook status detection circuit ( $\overline{HS}$ )

This circuit comprises the photo-coupler PC1, resistors R1 and R2, Zener diodes ZD1 and ZD2.

When an external telephone is connected and enters the on-hook mode, the LED of photo-coupler PC1 emits light and the light receiving element turns on. The status signal  $\overline{HS}$  is input to the pin119 of (SH7041) (IC5: control PWB).

$\overline{HS}$  LOW: EXT. TEL OFF-HOOK

$\overline{HS}$  HIGH: EXT. TEL ON-HOOK

###### 3) Dial pulse generation circuit

The pulse dial generation circuit comprises the CML relay.

###### 4) CML relay

The CML relay switches over connection to the matching transformer T1 while the FAX or built-in telephone is being used.

## 5) Matching transformer

The matching transformer performs electrical insulation from the telephone line and impedance matching for transmitting the TEL/FAX signal.

## 6) Hybrid circuit

The hybrid circuit performs 2-wire-to-4-wire conversion using the IC1 of operational amplifier, transmits the voice transmission signal to the line, and feeds back the voice signal to the voice reception circuit as the side tone.

## 7) Signal selection

The following signals are used to control the transmission line of TEL/FAX signal. For details, refer to the signal selector matrix table.

[Control signals from output port]

Signal Name	Description																																			
CML	<u>Line connecting relay and DP generating relay</u> H: Line make L: Line break																																			
SP MUTE	<u>Speaker tone mute control signal</u> H: Muting (Power down mode) L: Muting cancel (Normal operation)																																			
TEL MUTE	<u>Handset reception mute control signal</u> H: Muting L: Muting cancel																																			
RCVOL	<u>Handset receiver volume control signal</u> <table border="1"> <thead> <tr> <th>Volume</th> <th>High</th> <th>Middle</th> <th>Low</th> </tr> </thead> <tbody> <tr> <td>RCVOL</td> <td>H</td> <td>L</td> <td>L</td> </tr> <tr> <td></td> <td></td> <td></td> <td>*</td> </tr> </tbody> </table> * Set the line driver of MODEM (FM336) to - 6 dBm	Volume	High	Middle	Low	RCVOL	H	L	L				*																							
Volume	High	Middle	Low																																	
RCVOL	H	L	L																																	
			*																																	
VOL A VOL B VOL C	<u>Speaker volume control signal</u> VRSEL1 VRSEL2 matrix <table border="1"> <thead> <tr> <th></th> <th>VOL A</th> <th>VOL B</th> <th>VOL C</th> <th>RING./ Receiving</th> <th>Buzzer</th> <th>DTMF</th> </tr> </thead> <tbody> <tr> <td></td> <td>H</td> <td>L</td> <td>L</td> <td>High</td> <td>—</td> <td>High</td> </tr> <tr> <td></td> <td>L</td> <td>H</td> <td>L</td> <td>Middle</td> <td>—</td> <td>Middle</td> </tr> <tr> <td></td> <td>L</td> <td>L</td> <td>H</td> <td>Low</td> <td>—</td> <td>Low</td> </tr> <tr> <td></td> <td>L</td> <td>L</td> <td>L</td> <td>—</td> <td>Fixed</td> <td>—</td> </tr> </tbody> </table> (The circuit is located in the control PWB.)		VOL A	VOL B	VOL C	RING./ Receiving	Buzzer	DTMF		H	L	L	High	—	High		L	H	L	Middle	—	Middle		L	L	H	Low	—	Low		L	L	L	—	Fixed	—
	VOL A	VOL B	VOL C	RING./ Receiving	Buzzer	DTMF																														
	H	L	L	High	—	High																														
	L	H	L	Middle	—	Middle																														
	L	L	H	Low	—	Low																														
	L	L	L	—	Fixed	—																														
GAIN-C	<u>Reception gain switching signal</u> L: When connected to line, 1: 1 gain H: When not connected to line, HIGH gain																																			
BZCONT	<u>Speaker output signal switching</u> H: Buzzer signal output L: When monitoring line signal																																			
MIC MUTE	<u>Handset mic mute control signal</u> H: Muting L: Muting cancel																																			

[Signals for status recognition according to input signals]

Signal Name	Function
$\overline{\text{RHS}}$ (On the HOOK-SW PWB)	H: The handset is in the on-hook state. L: The handset is in the off-hook state.
CI	Incoming call (CI) detection signal.
$\overline{\text{HS}}$	H: The handset or external telephone is in the on-hook state. L: The handset or external telephone is in the off-hook state.

[Other signals]

Signal Name	Function
TEL IN	Receiving signal from line or modem
TEL OUT	Transfer signal to line
TXOUT	Transmission (DTMF) analog signal output from modem
RXIN	Reception (DTMF, others) analog signal input into modem

No.	Signal Name (CNLIU)	No.	Signal Name (CNLIU)
1	+24V	7	$\overline{\text{RHS}}$
2	DG	8	TXOUT
3	+5VA	9	RXIN
4	CML	10	TELMUTE
5	CI	11	TELOUT
6	$\overline{\text{HS}}$	12	TELIN

No.	Signal Name (CNHS 1 and 2)	No.	Signal Name (CNHS 1 and 2)
1	$\overline{\text{RHS}}$	2	DG

## 8) CI detection circuit

The CI detection circuit detects the CI signals of 15.3 Hz to 68 Hz. A CI signal, which is provided to the photo-coupler PC2 through the C3 (0.82 uF), R3 (22 K), and ZD3 when the ring signal is inputted from the telephone line.

## 9) Power supply and bias circuits

The voltages of +5VA and +24V are supplied from the control PWB unit.

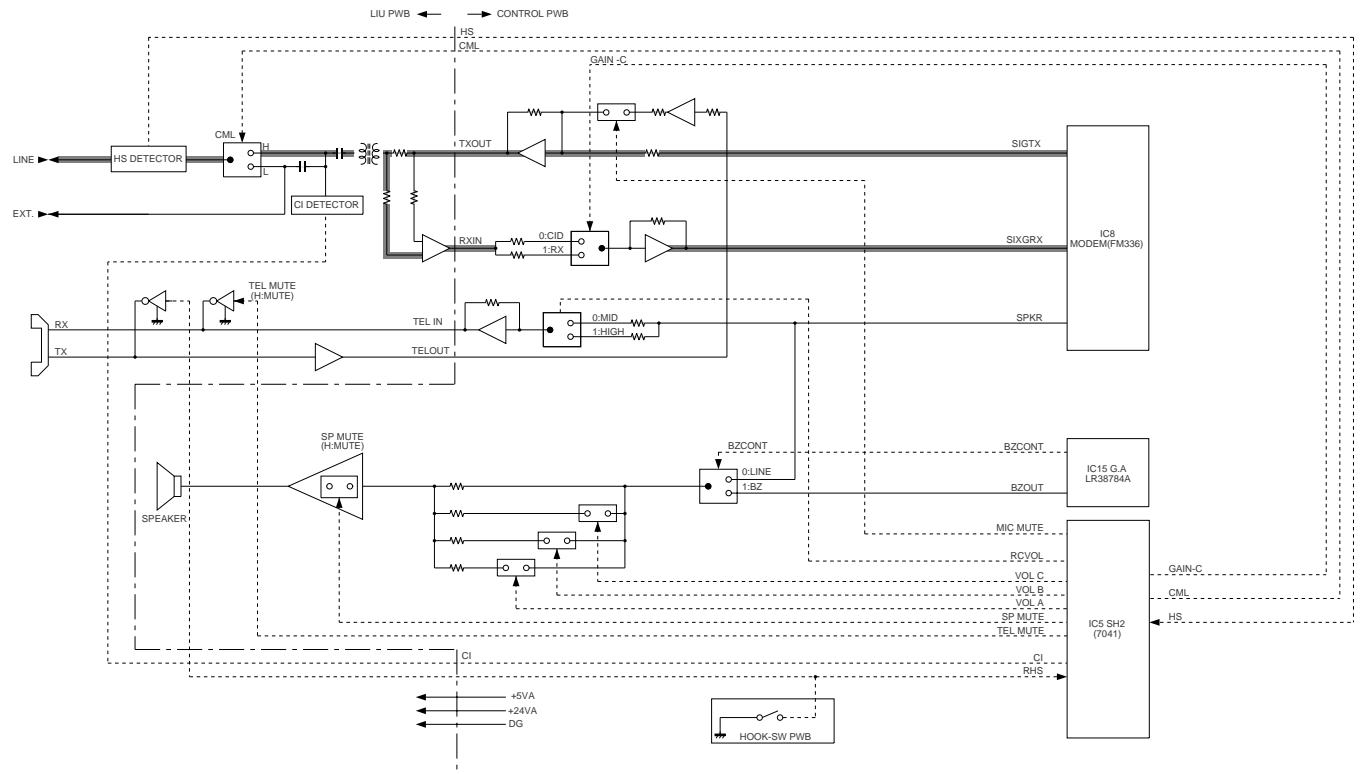
**(Example: Fax signal send)**

Fig. 24

## [4] Circuit description of power supply PWB

### 1. Noise filter circuit

The filter part removes noises generated from the power unit to avoid noise release outside and prevent external noises from entering. Excessive surge such as thunder is prevented by varistor Z1.

### 2. Rectified smoothing circuit

The rectified smoothing circuit rectifies AC input at diodes D10, 11, 12, and 13, and then smoothen it at capacitor C5 to supply DC voltage to the switching part.

### 3. Switching part

This circuit adopts the ringing choke converter system of self-excited type.

By repeating ON/OFF of MOS FETQ1, this system converts DC voltage supplied from the rectified smoothing part into high-frequency pulse, stores energy in the primary winding of transformer T1 during ON period, releases energy to the secondary winding during OFF period, and supplies power.

Frequency changes according to output load; As load increases, ON period becomes longer.

Constant voltage is controlled by applying feedback to the control circuit via photo coupler from 24 V output.

The overcurrent protective circuit detects prolonged ON period caused by excessive output load, lengthens Q1 OFF period by using the control circuit, and restricts energy stored in the primary winding of transformer T1.

Increase of the secondary output voltage 24 V is led to the overcurrent condition by turning on power zener diode D202 between 24 V output and GND.

Thus overvoltage is protected by operating the overcurrent protective circuit of the control circuit.

### 4. 24 V circuit

To supply output, transformer T1 output is rectified and smoothened with the use of diode D101 and capacitor C101. Voltage is controlled by Volume VR101.

### 5. +5 V circuit

Transformer T1 output is rectified and smoothened with the use of diode D301 and capacitor C301 to stabilize +5 V output by using 3-terminal regulator IC301.

### 6. Heater circuit

To maintain the optimal temperature, the heater lamp is controlled by HLON signal from the control panel.

This HLON signal is to switch ON/OFF the heater lamp. If this signal is input LOW, PC2 is switched ON, resulting TRIACK TRA1 ON.

Accordingly, AC power is supplied to the heater lamp to switch the heater lamp ON.

### 7. Zero cross circuit

When AC input reaches the zero cross point (0 V), PC3 is switched ON. When Q501 is switched ON, the zero cross signal is output to the control panel.

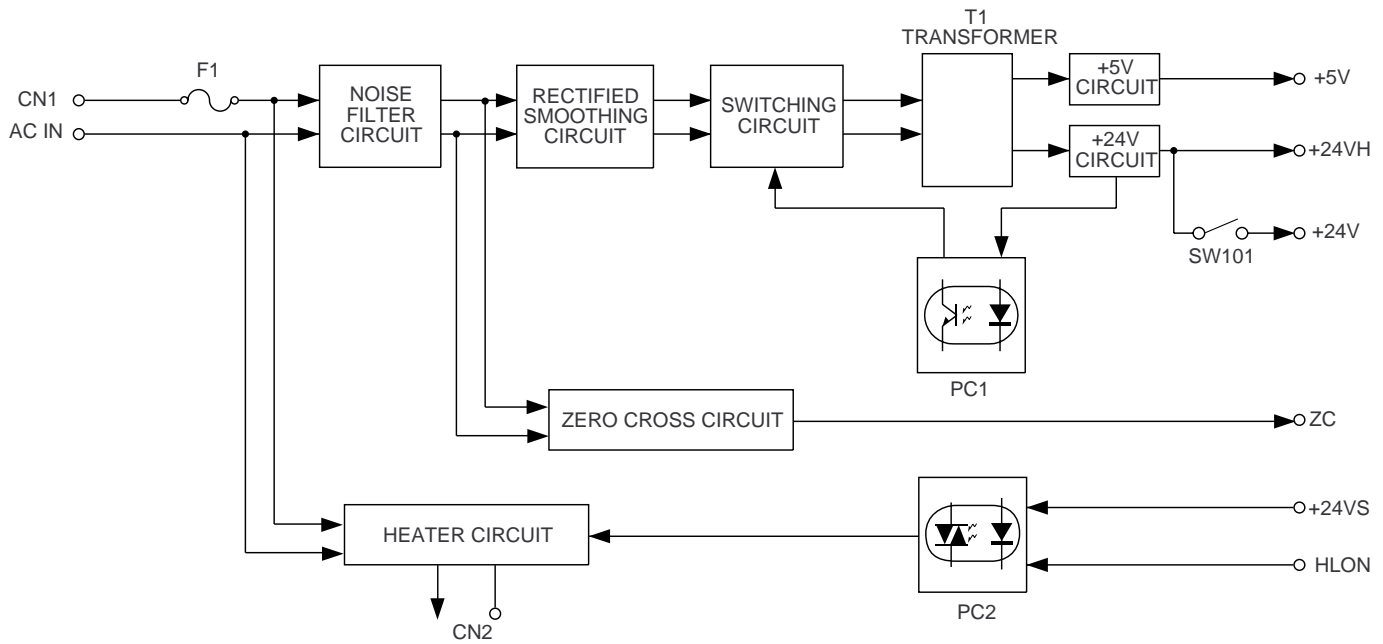


Fig. 25

## [5] Circuit description of CIS UNIT

This CIS unit picks up optical information from the document, converts it into an electrical (analog) signal and it to the control PWB.

### 1. Block diagram

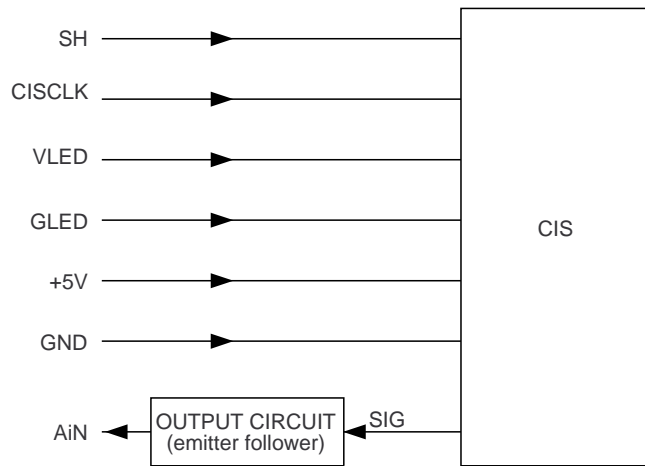


Fig. 26

### 2. Description of blocks

#### (1) CIS

The DL100-05AUJC is highly sensitive charged coupled image sensor that consists of 1728 picture elements.

Receiving two drive signal (SI,CLK) from the control PWB, the transferred photoelectric analog signal SIG is impedance converted, and the signal AiN, is supplied to the control PWB.

#### (2) Waveforms

1. CLK, SI, SIG signals within the control PWB.

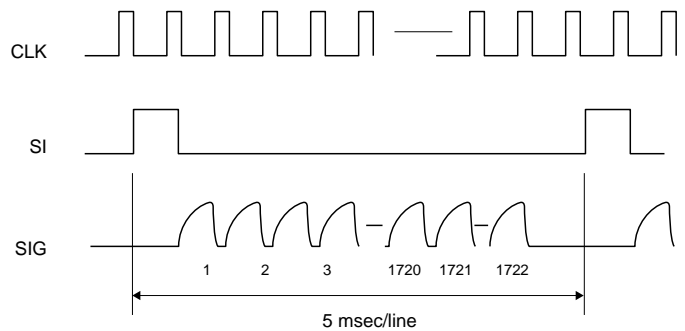


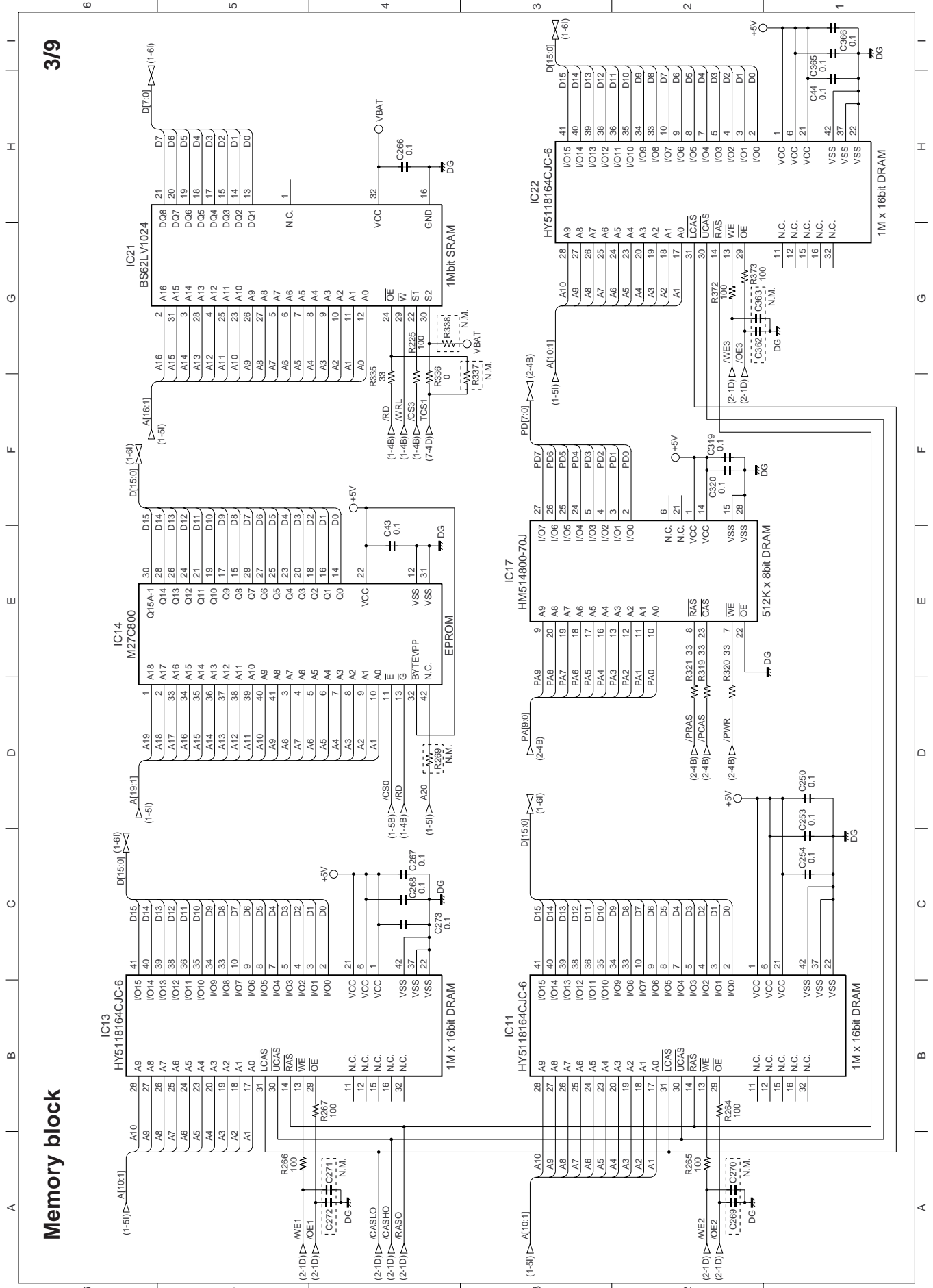
Fig. 27

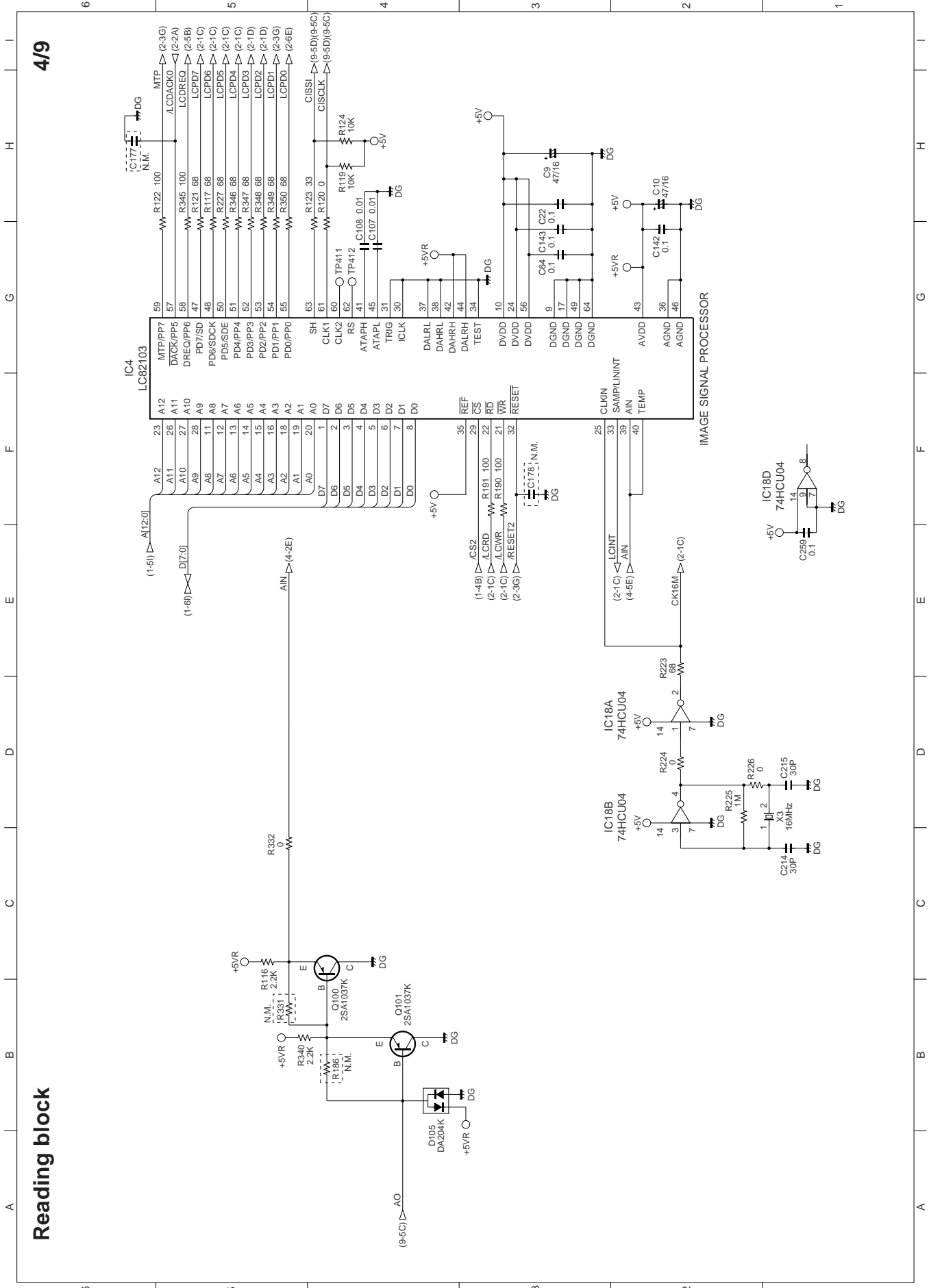




Memory block

3/9





4/9

Reading block

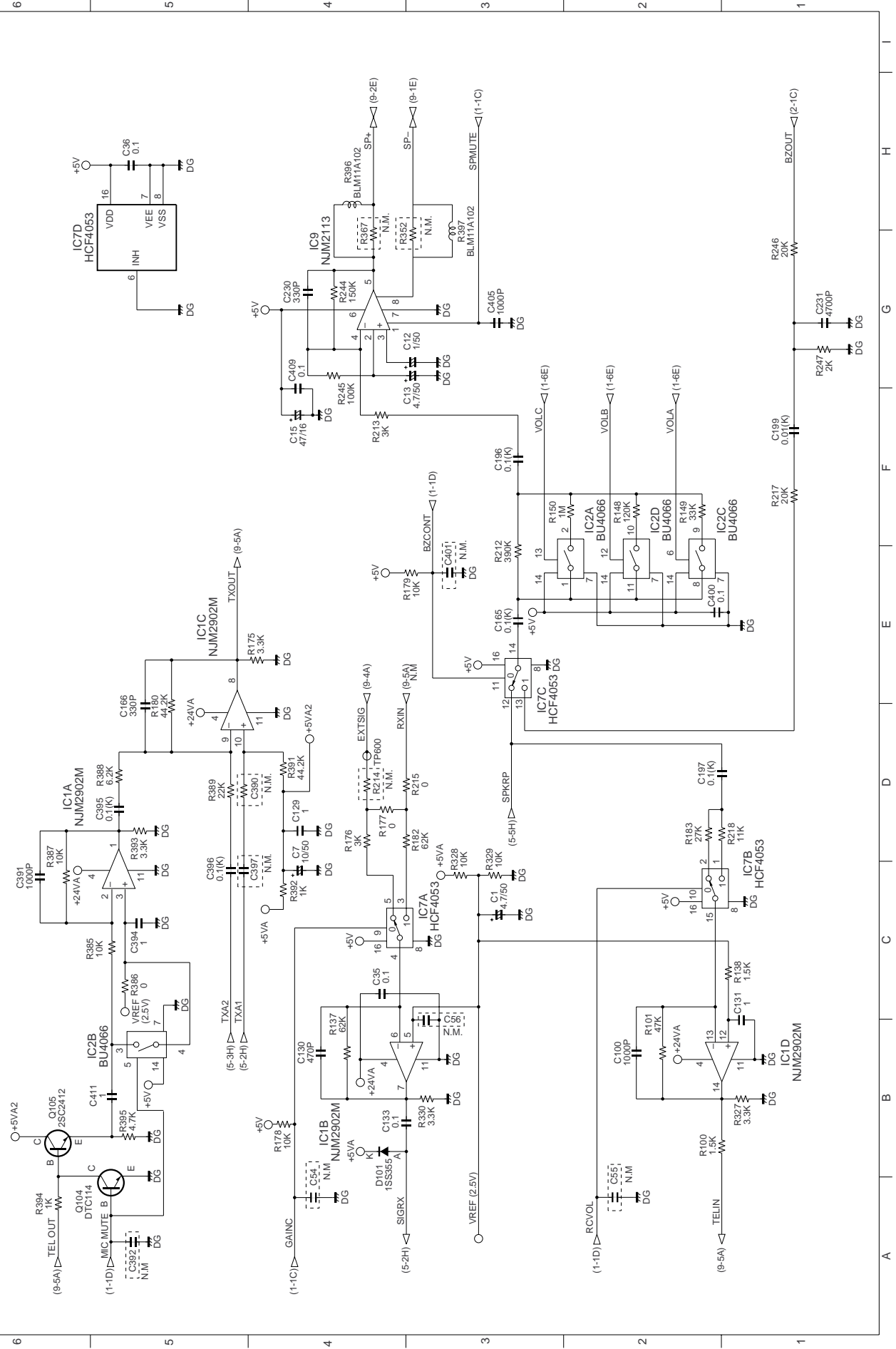
IMAGE SIGNAL PROCESSOR





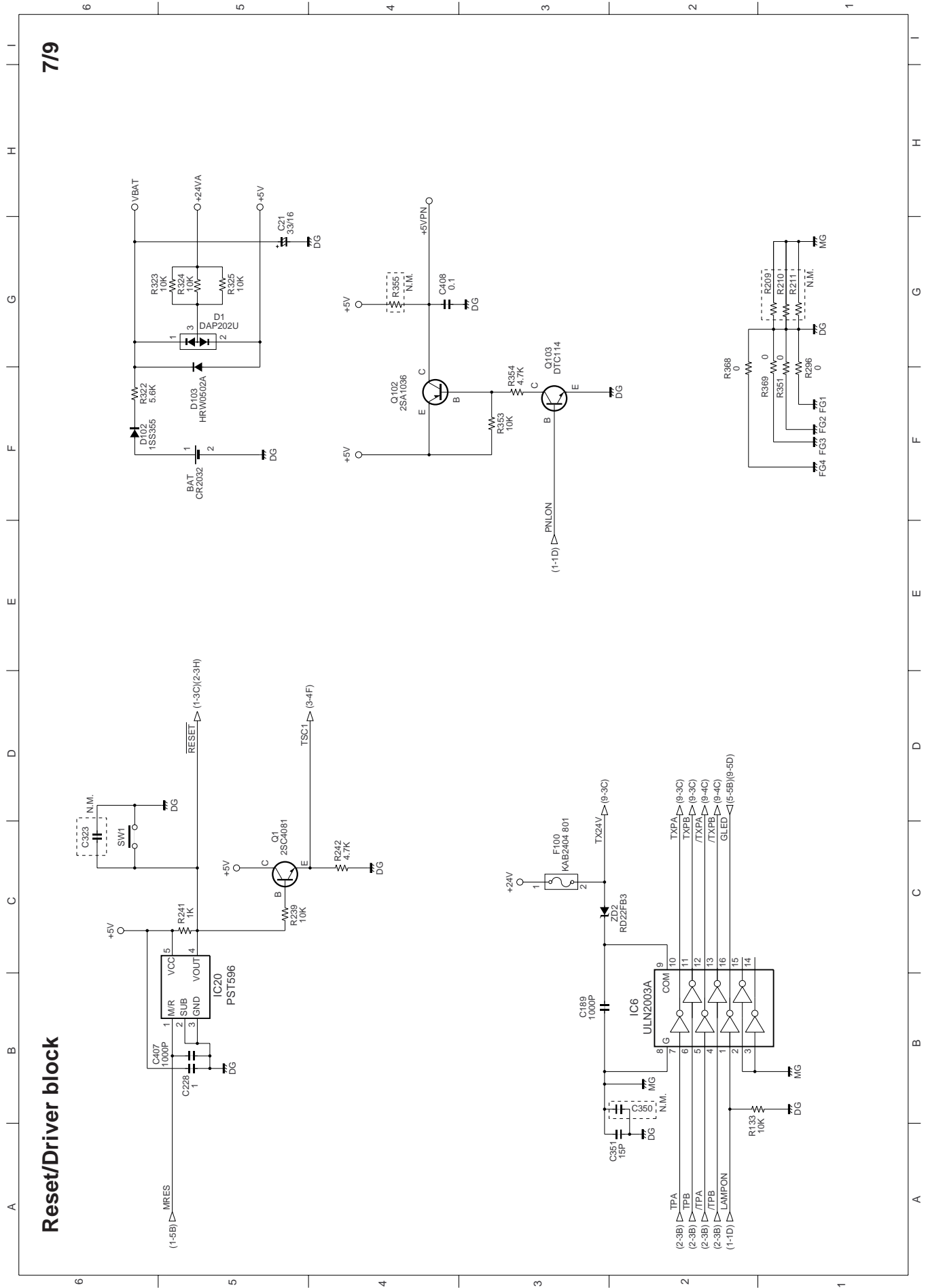
Analog block

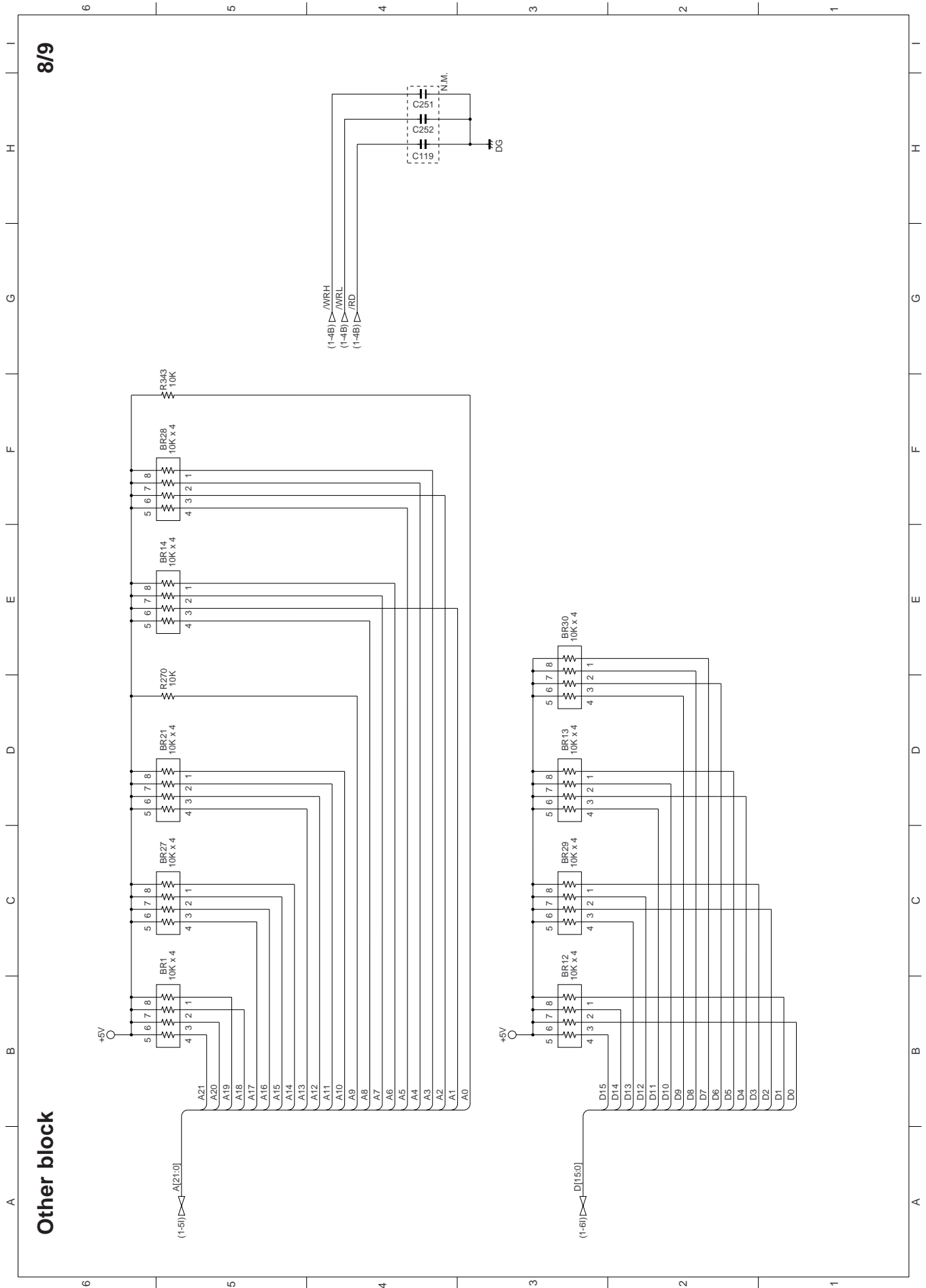
6/9



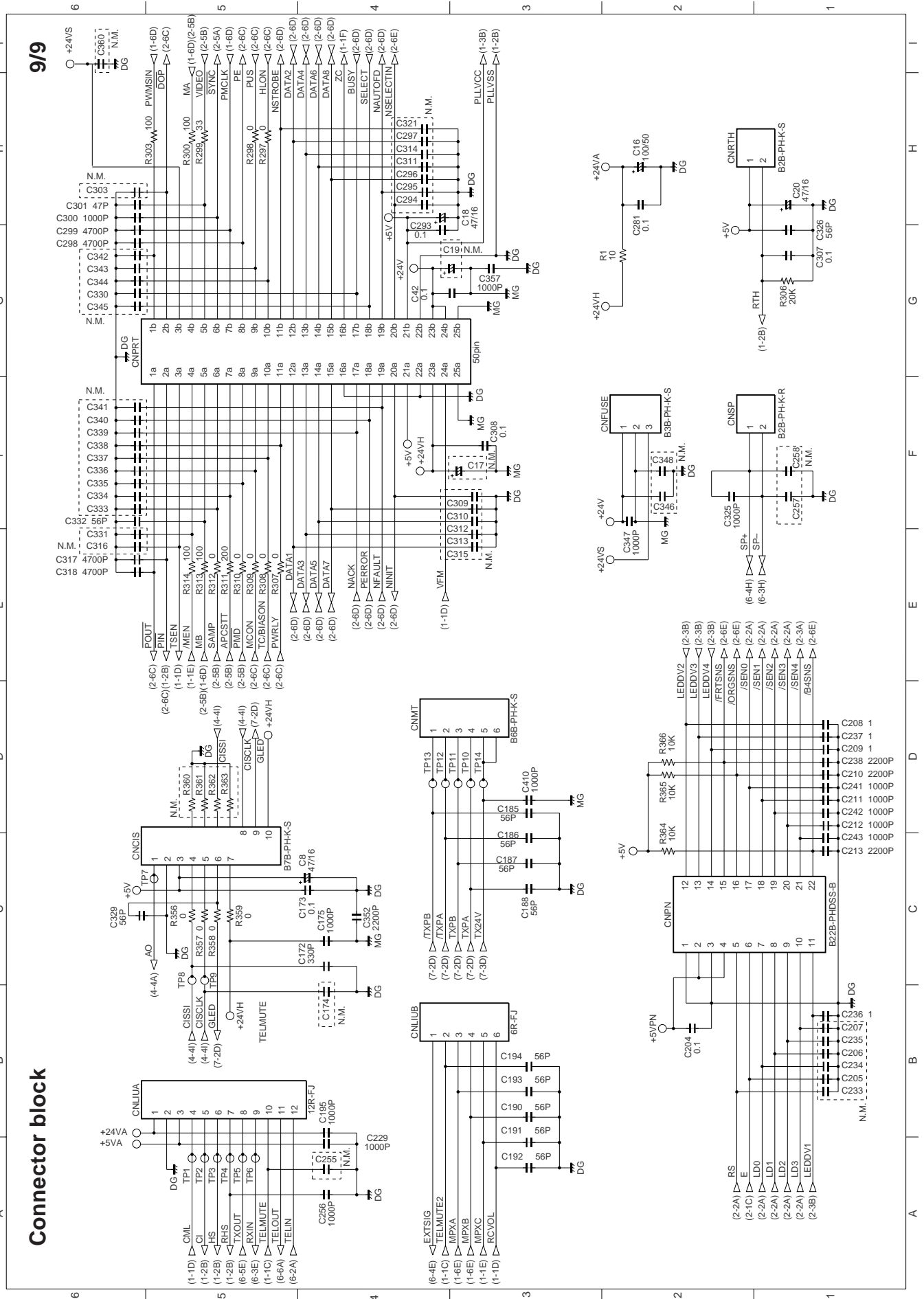
# Reset/Driver block

7/9

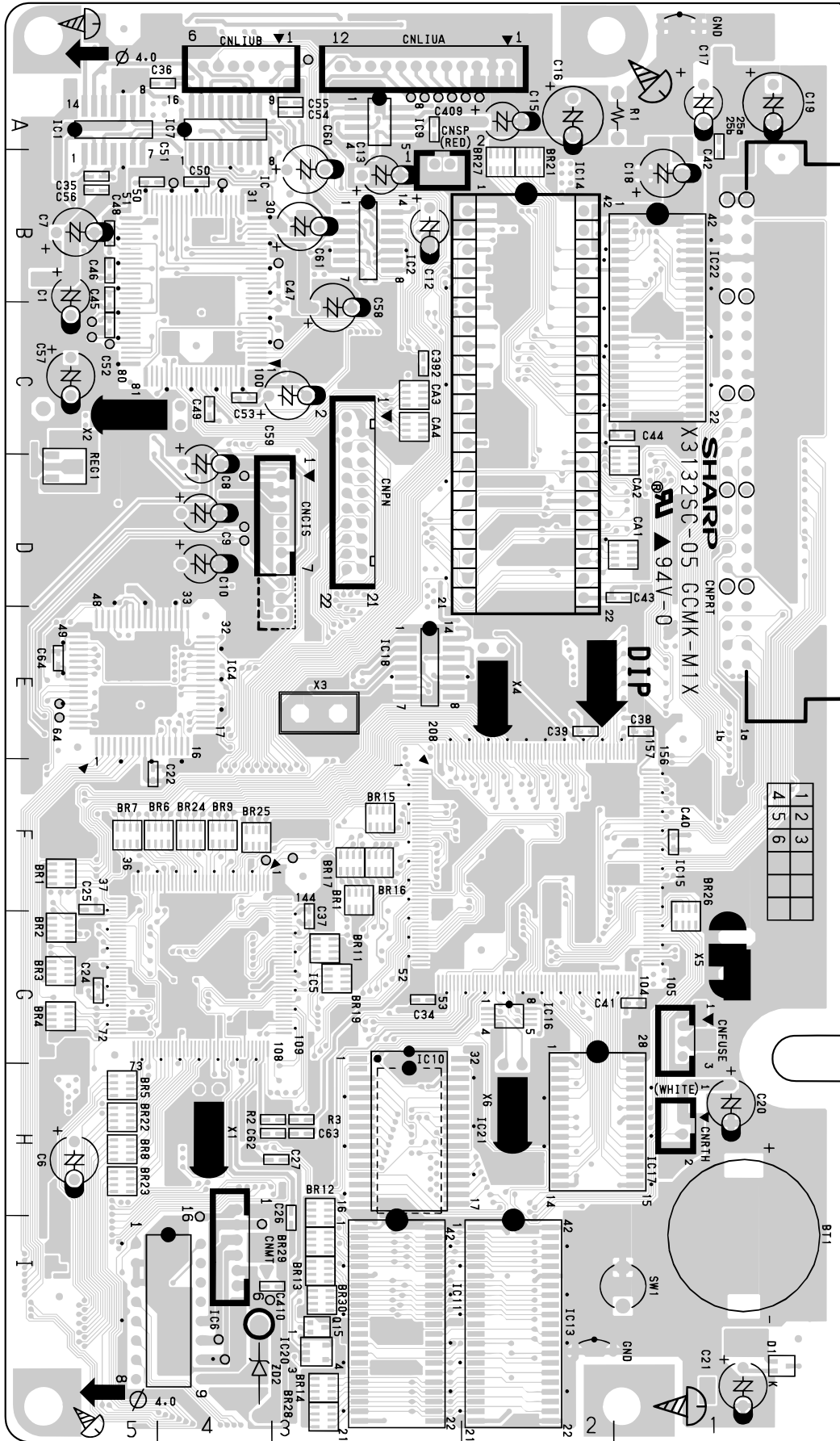




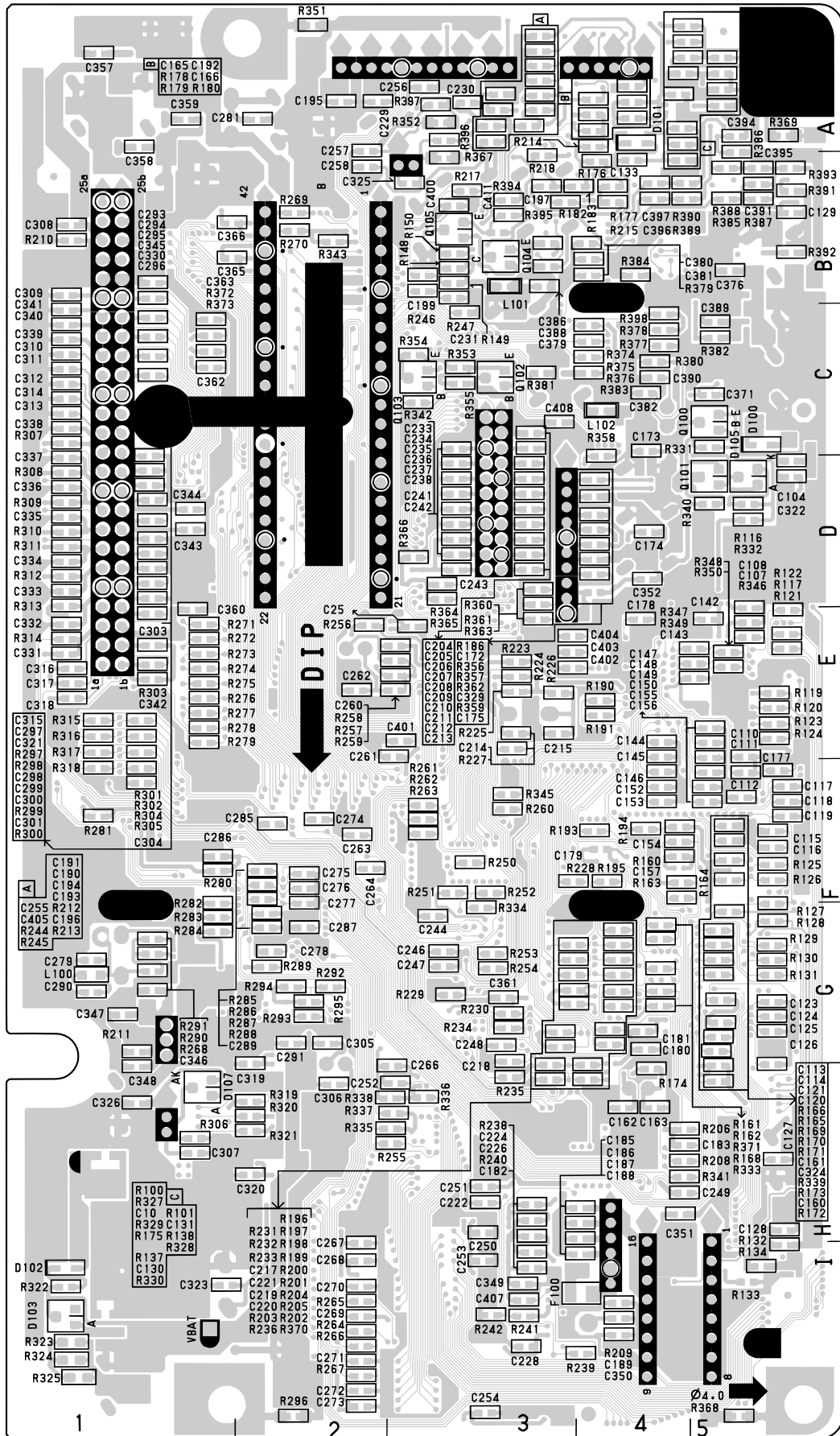
# Connector block



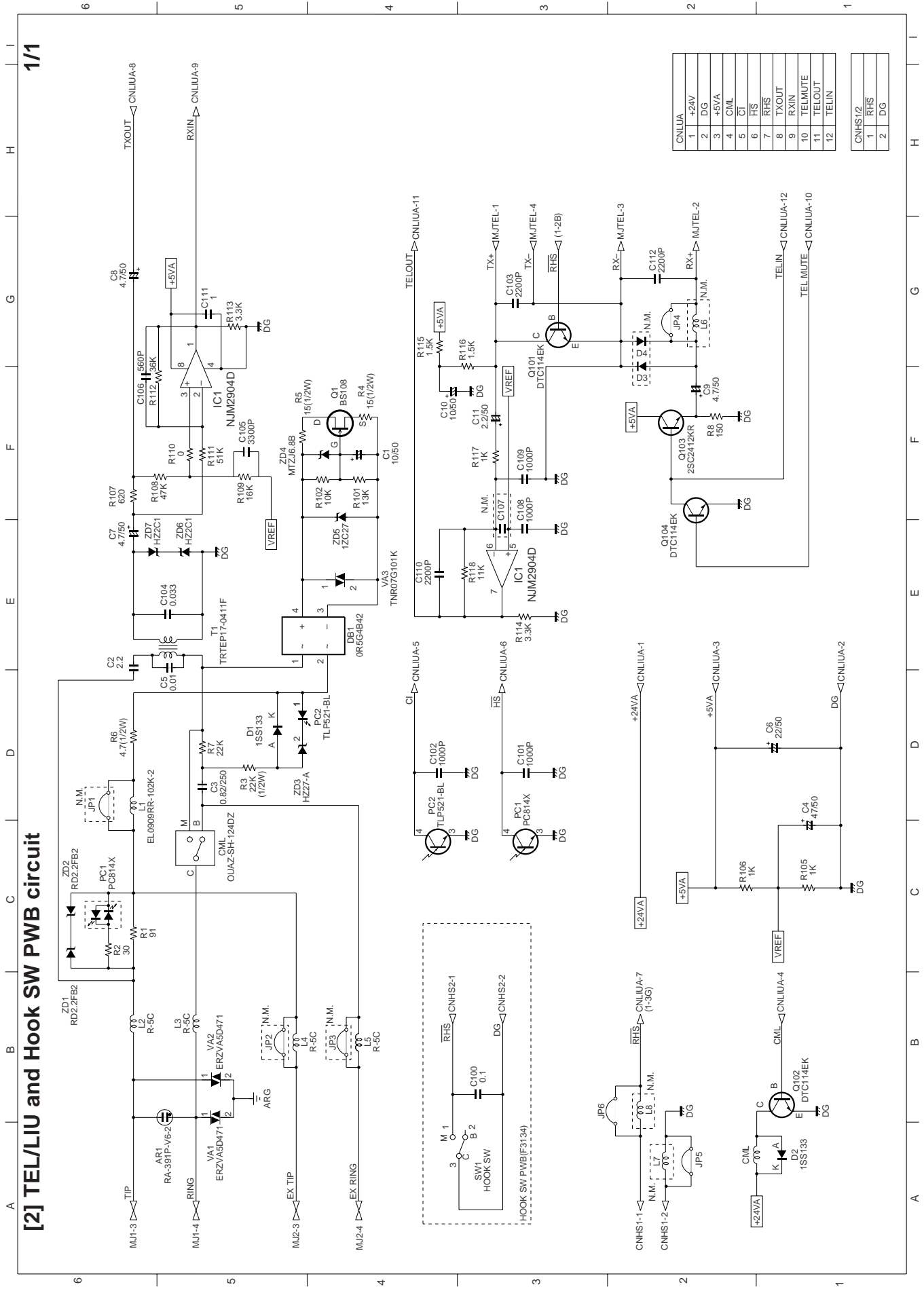
### Control PWB parts layout (Top side)



# Control PWB parts layout (Bottom side)



1/1



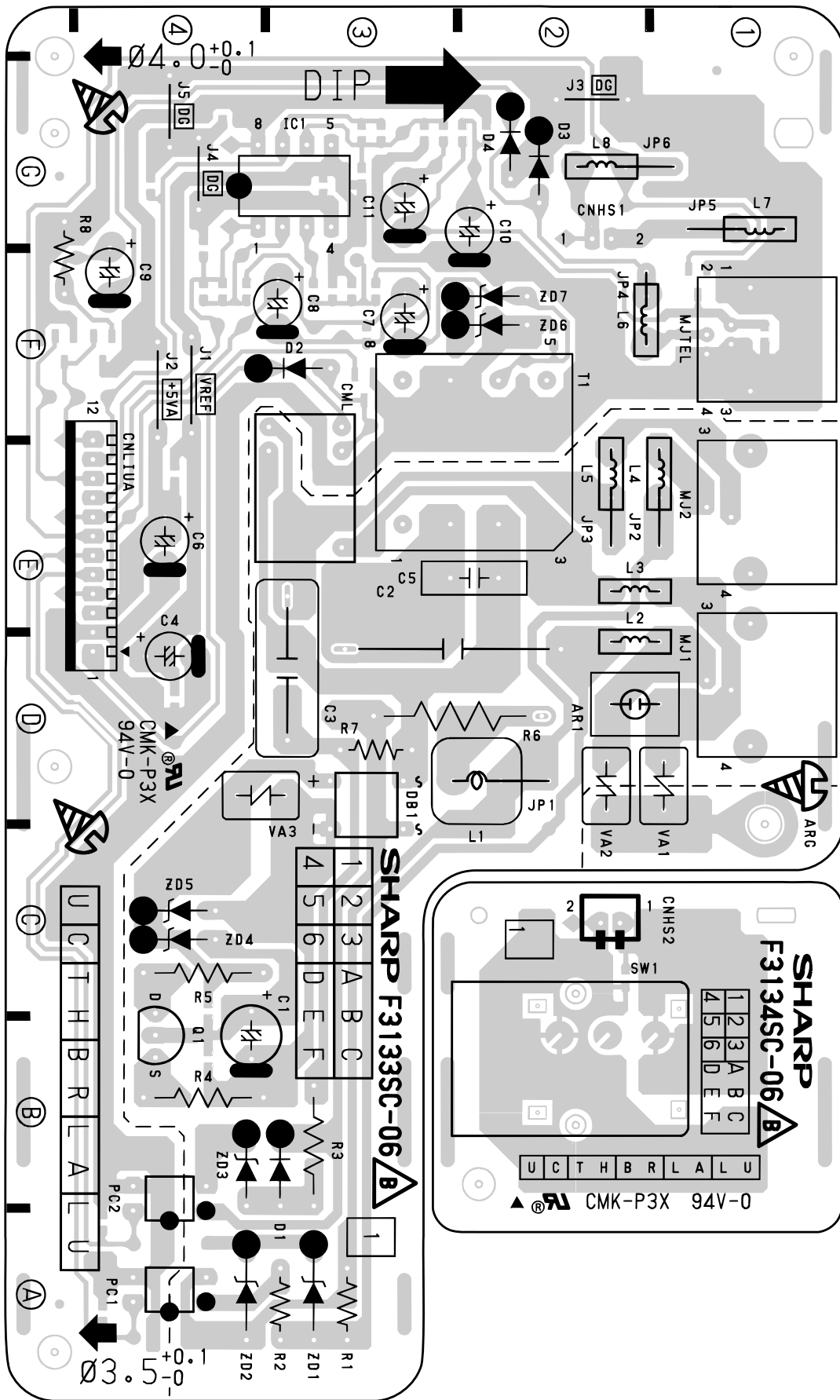
CNLIUA	1	+24V
	2	DG
	3	+5VA
	4	CML
	5	CI
	6	HS
	7	RHS
	8	TXOUT
	9	RXIN
	10	TELMUTE
	11	TELOUT
	12	TELIN

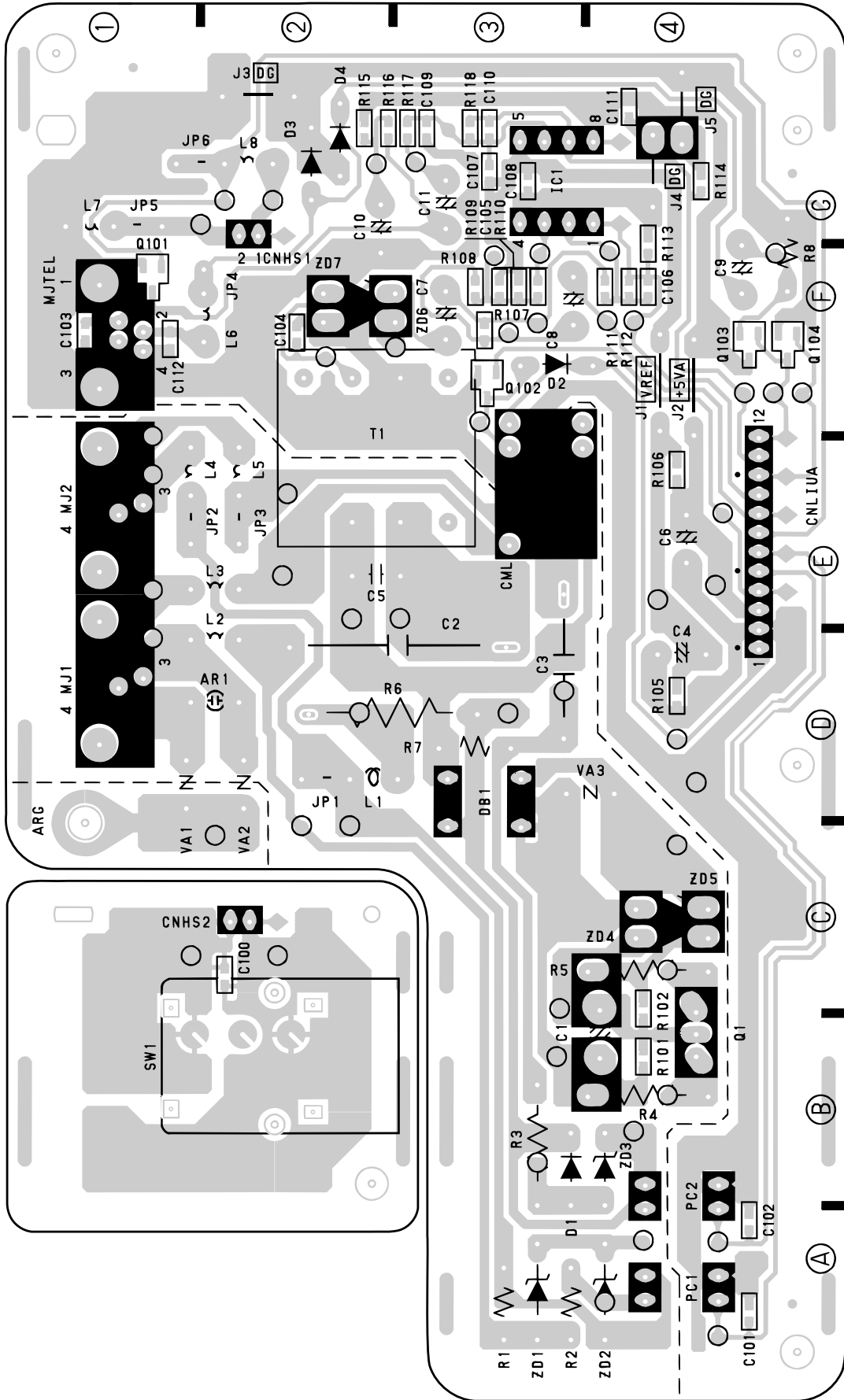
CNHST2	1	RHS
	2	DG

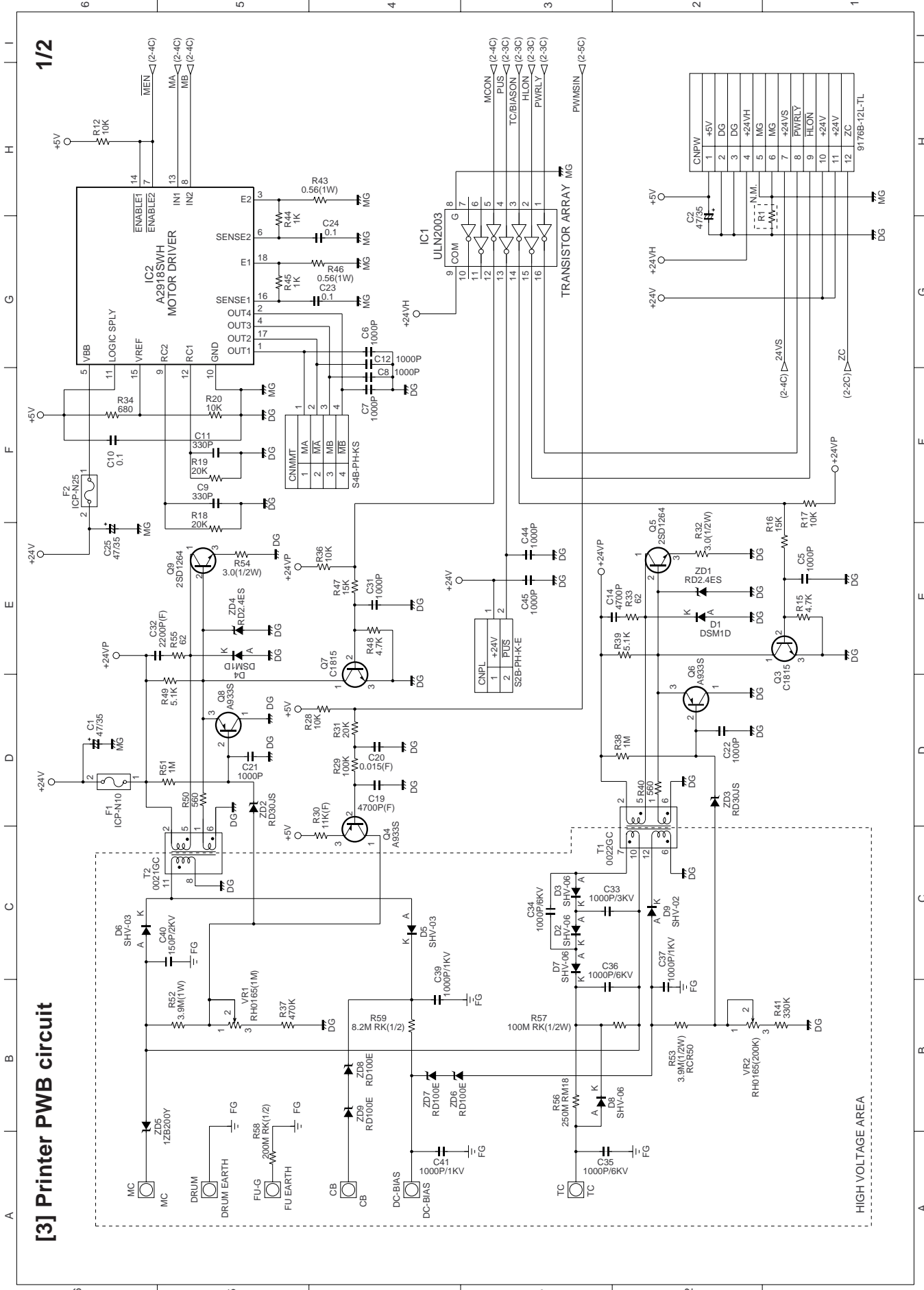


TEL/LIU and Hook SW PWB parts layout (Top side)



TEL/LIU and Hook SW PWB parts layout (Bottom side)





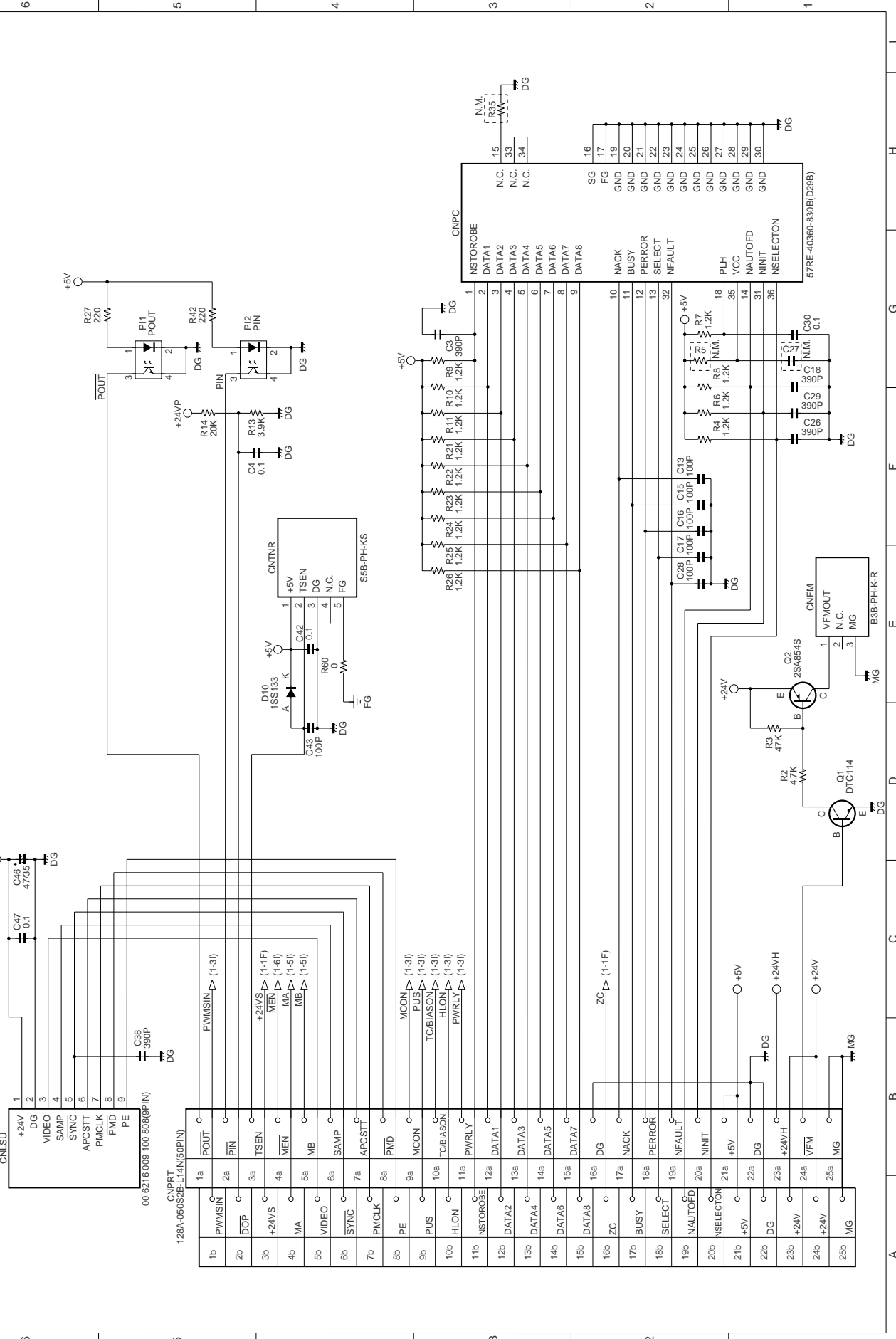
[3] Printer PWB circuit

1/2

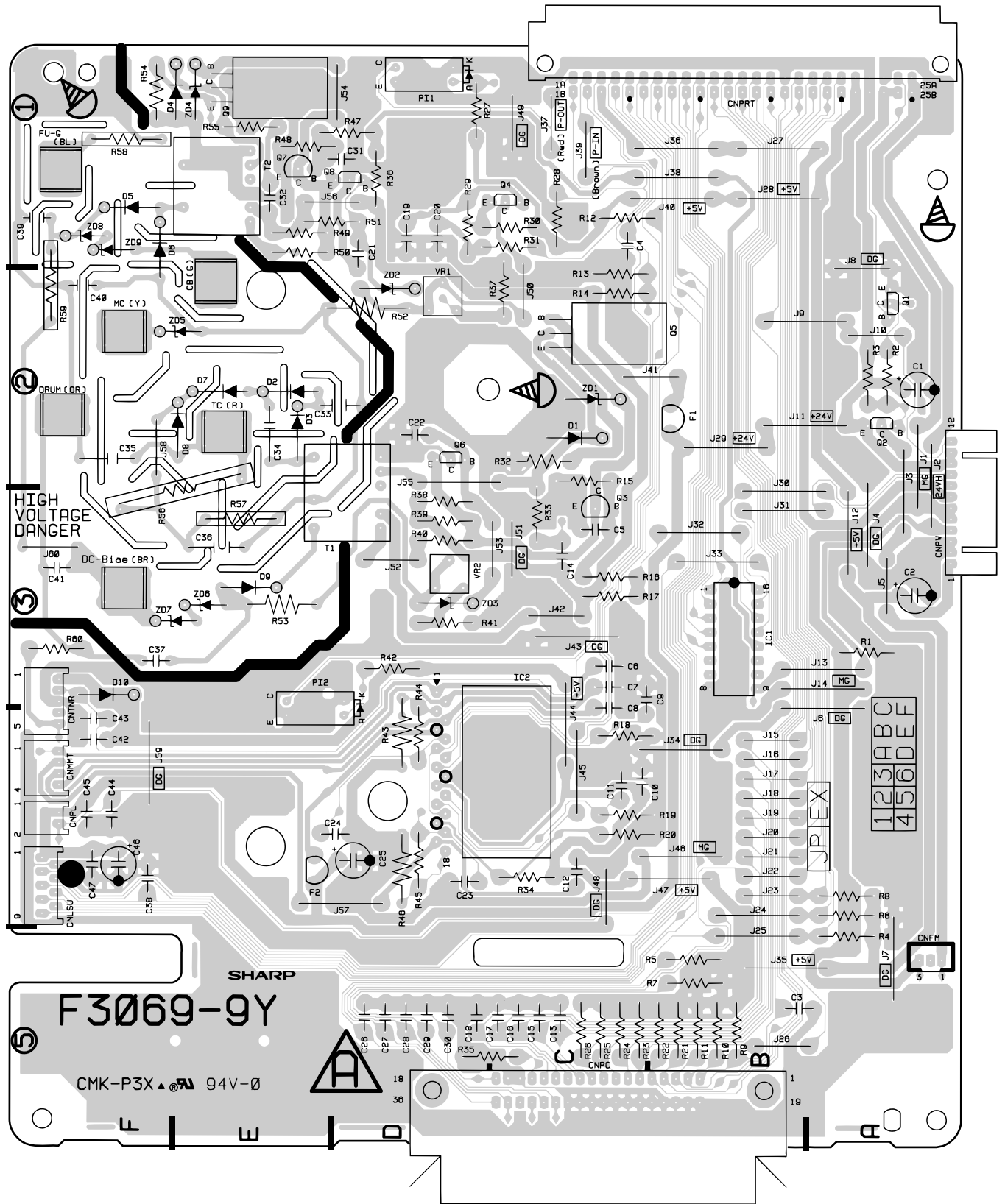
HIGH VOLTAGE AREA

Printer PWB circuit

2/2

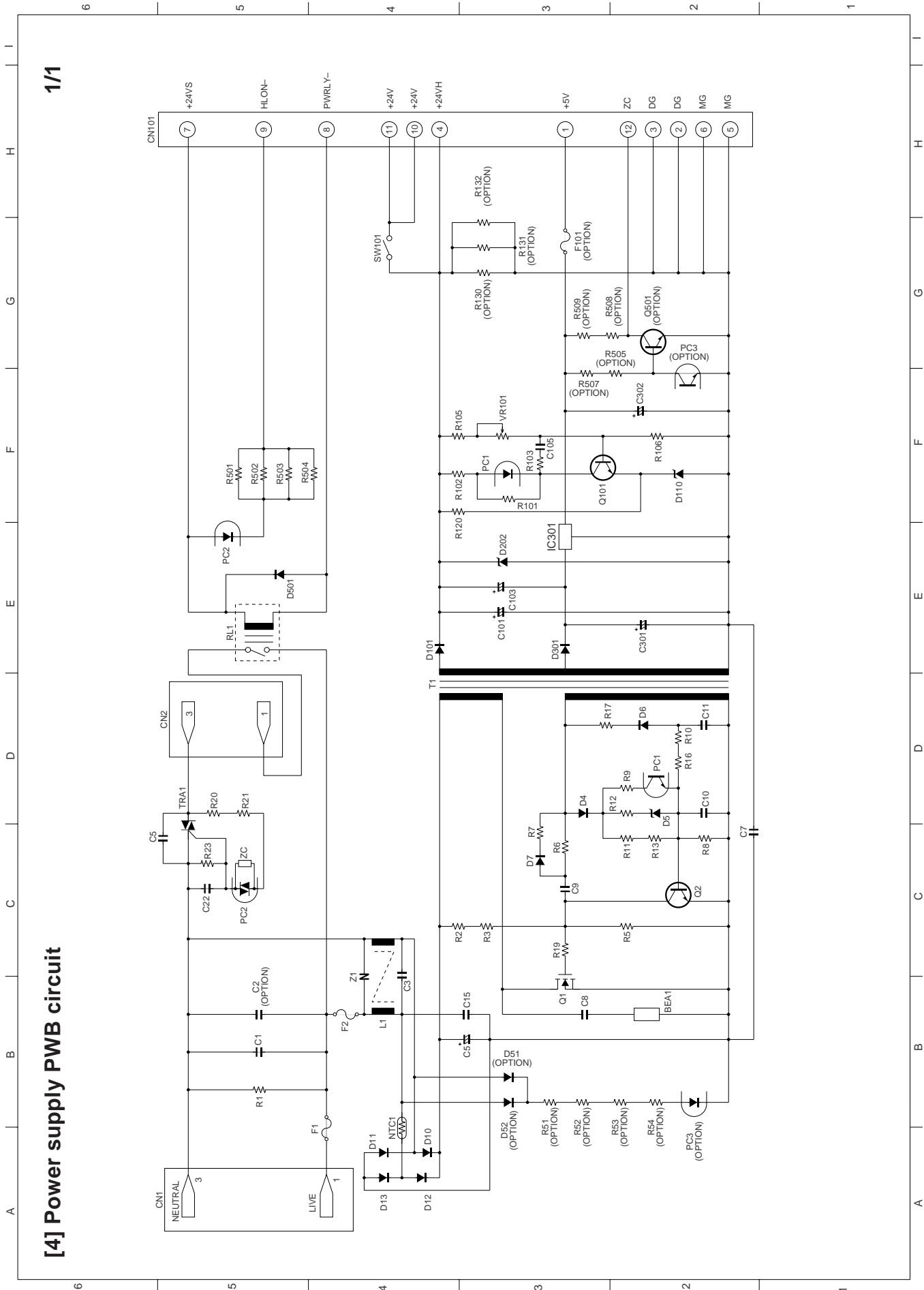


# Printer PWB parts layout

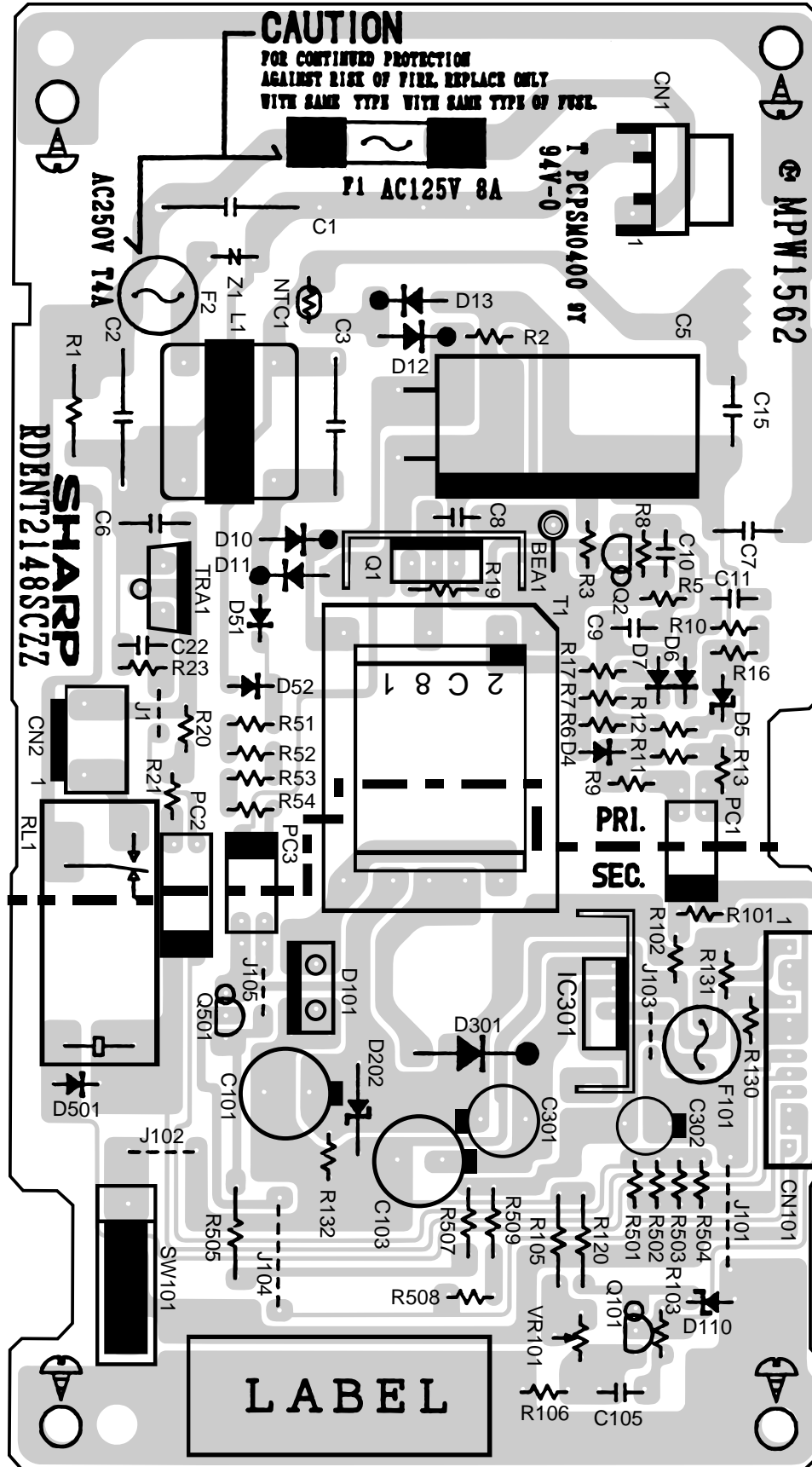


[4] Power supply PWB circuit

1/1

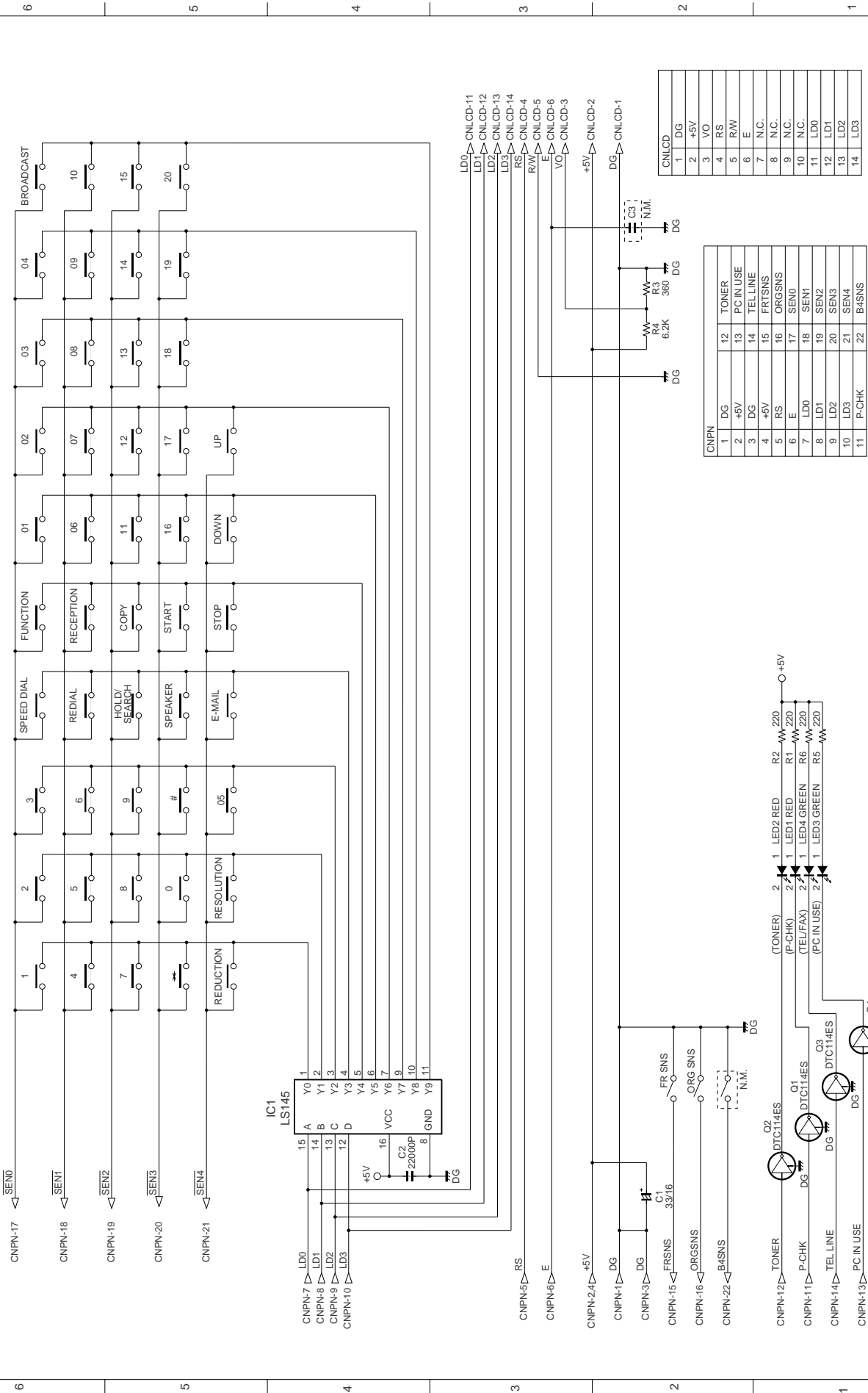


Power supply PWB parts layout



# [5] Operation panel PWB circuit

1/1



Note: Since the parts of this PWB cannot be supplied, change it as a unit.



# SHARP PARTS GUIDE

## MODEL **FO-2970M**

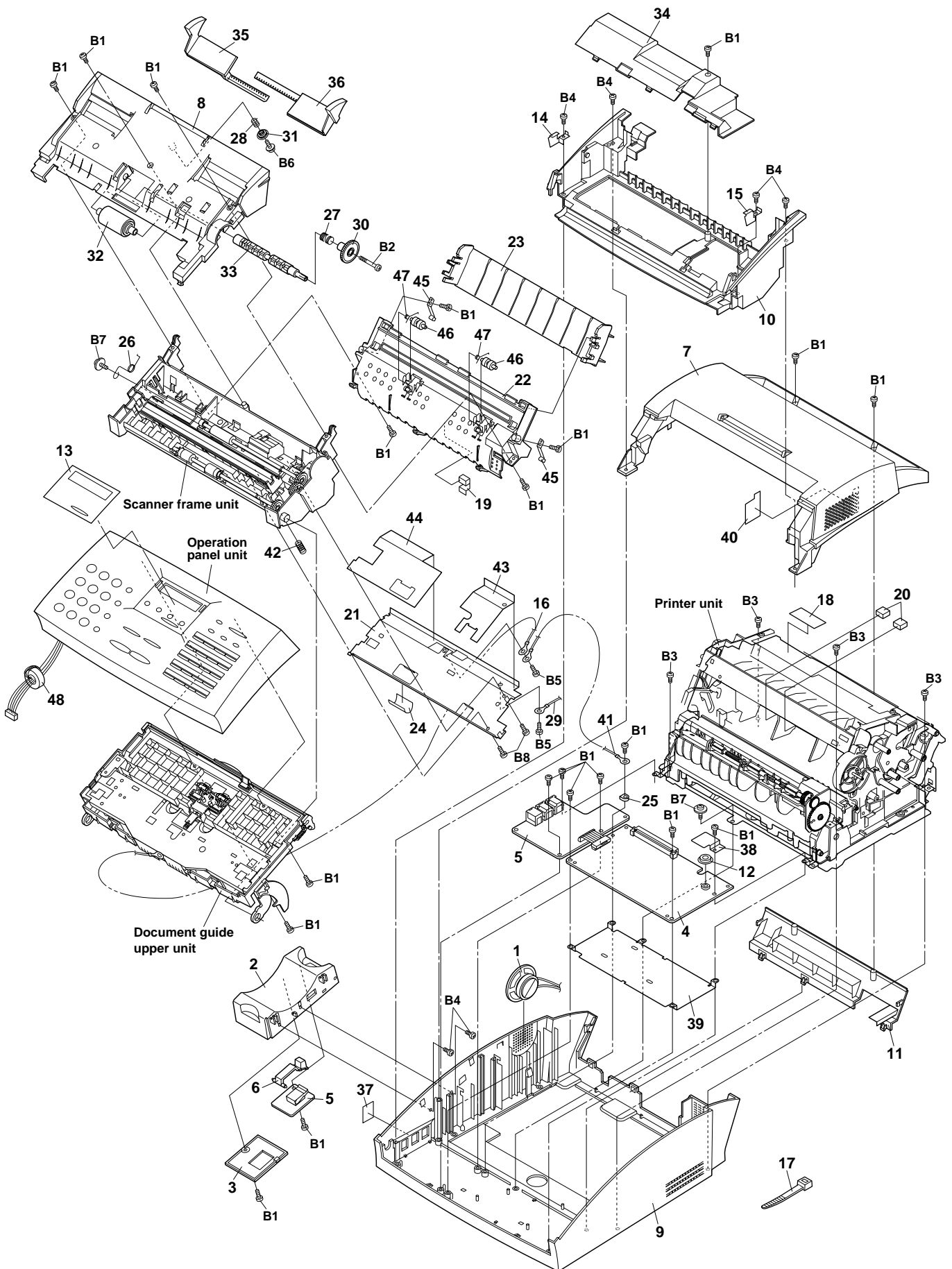
SELECTION CODE	DESTINATION
U	U.S.A.

### CONTENTS

- |   |                           |    |                                |
|---|---------------------------|----|--------------------------------|
| 1 | Cabinet, etc.             | 9  | Fusing unit                    |
| 2 | Operation panel unit      | 10 | Packing material & Accessories |
| 3 | Document guide upper unit | 11 | Control PWB unit               |
| 4 | Drive unit                | 12 | TEL/LIU and Hook SW PWB unit   |
| 5 | Scanner frame unit        | 13 | Printer PWB unit               |
| 6 | Printer frame             | 14 | Power supply PWB unit          |
| 7 | Upper frame               | 15 | Operation panel PWB unit       |
| 8 | Lower frame               | ■  | Index                          |

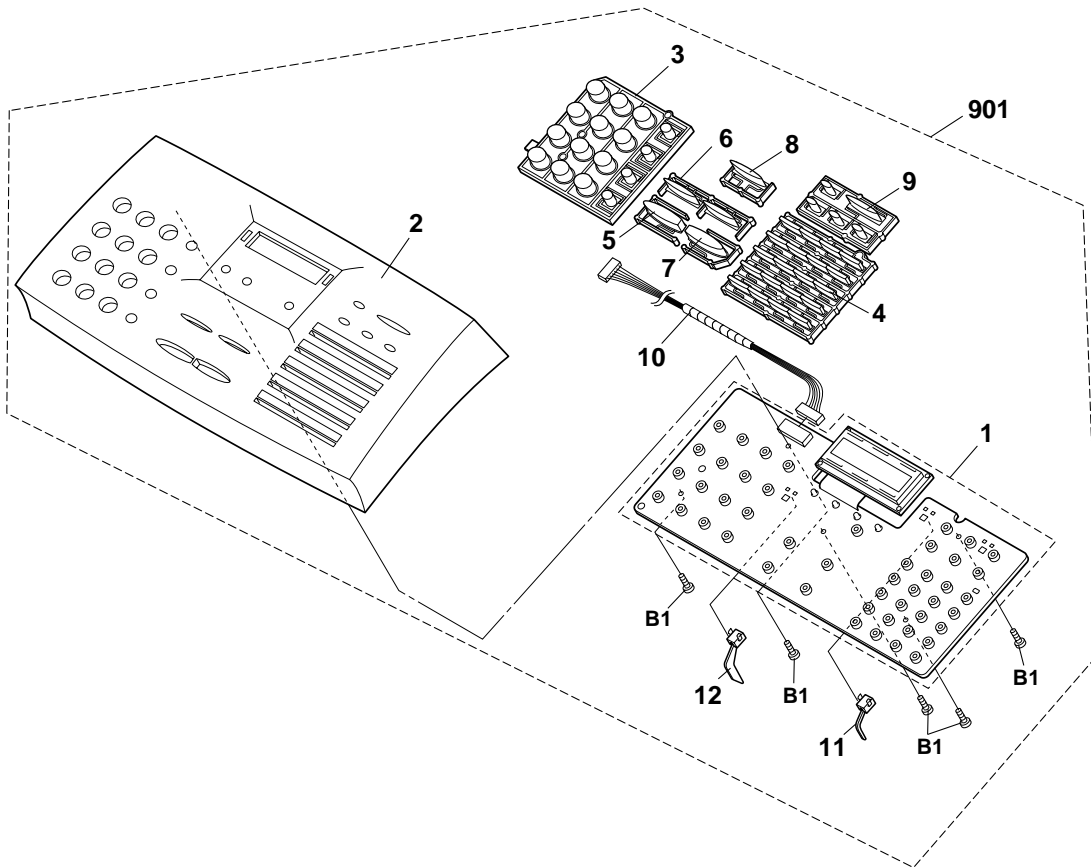
Because parts marked with "△" is indispensable for the machine safety maintenance and operation, it must be replaced with the parts specific to the product specification.

[1] Cabinet, etc.

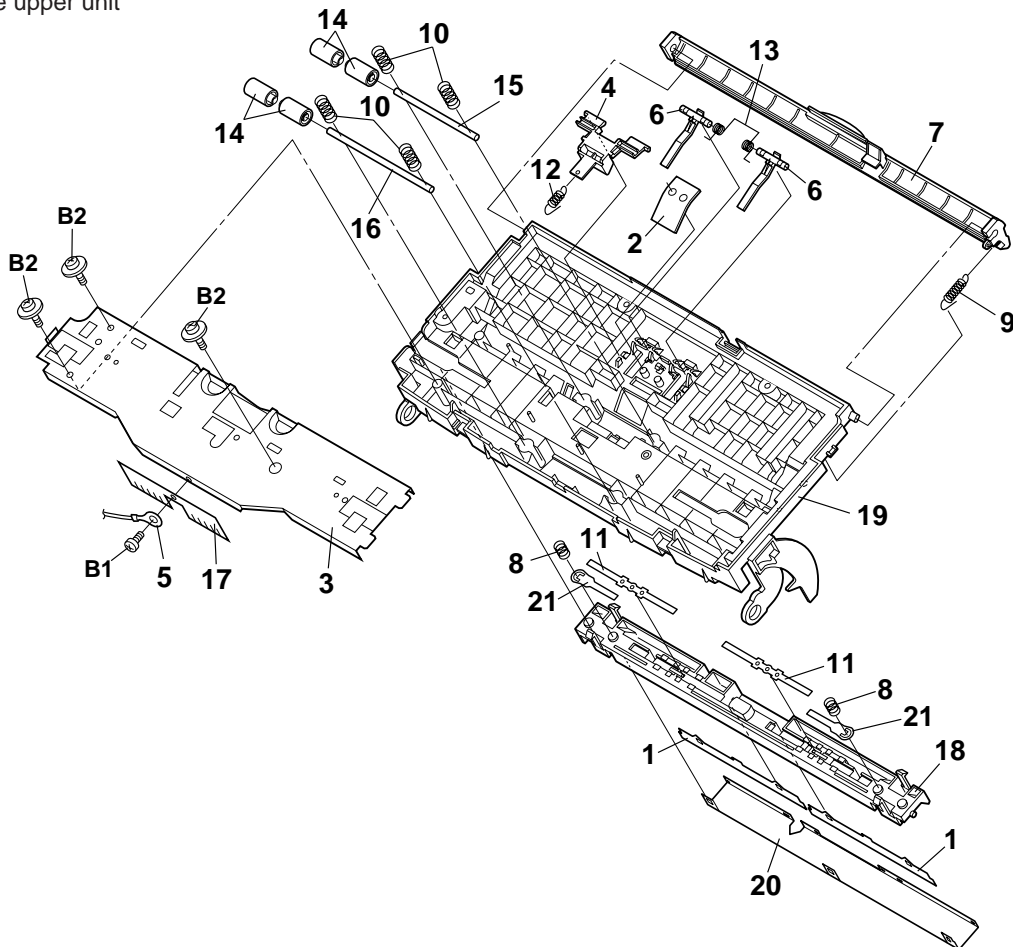




[2] Operation panel unit

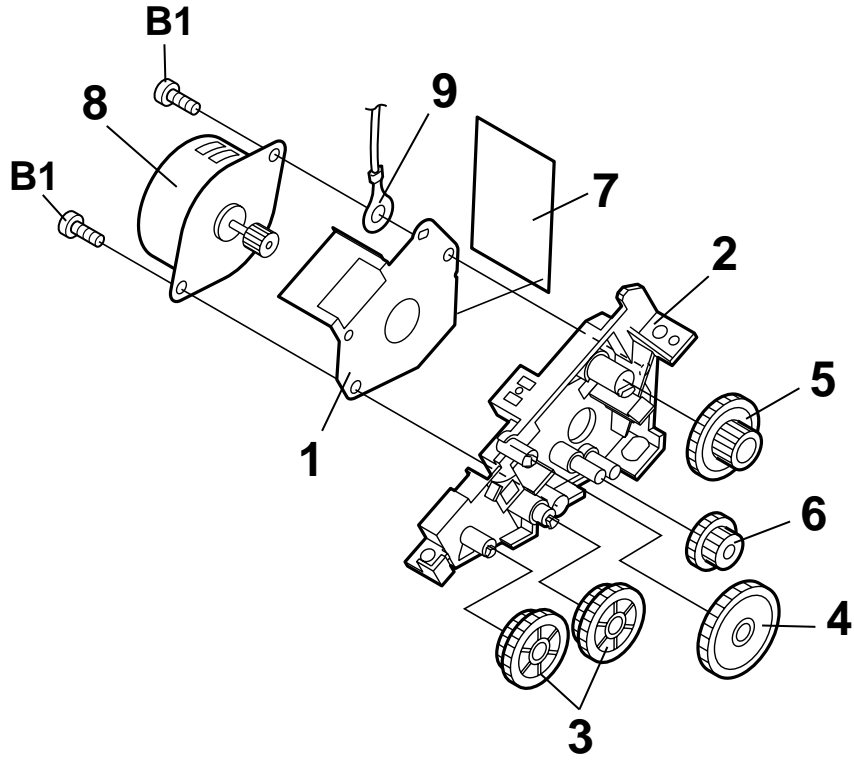


[3] Document guide upper unit

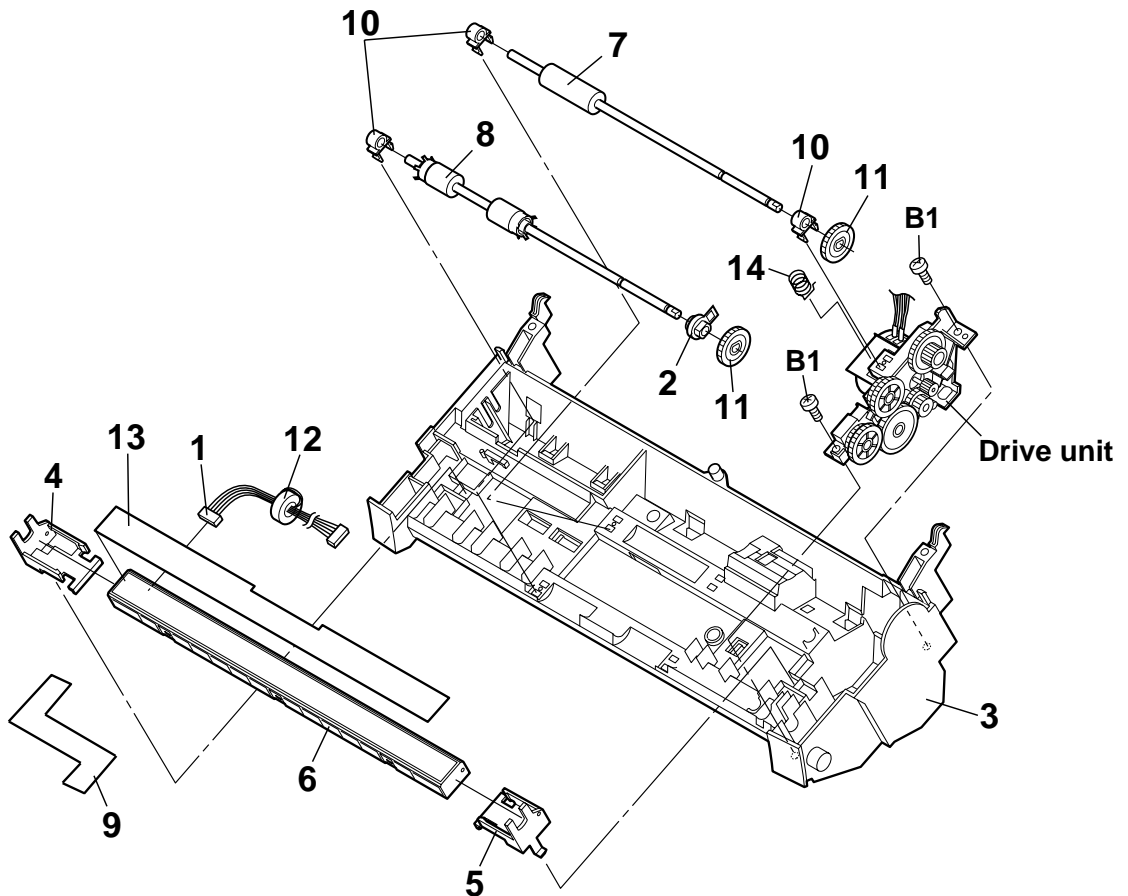




[4] Drive unit

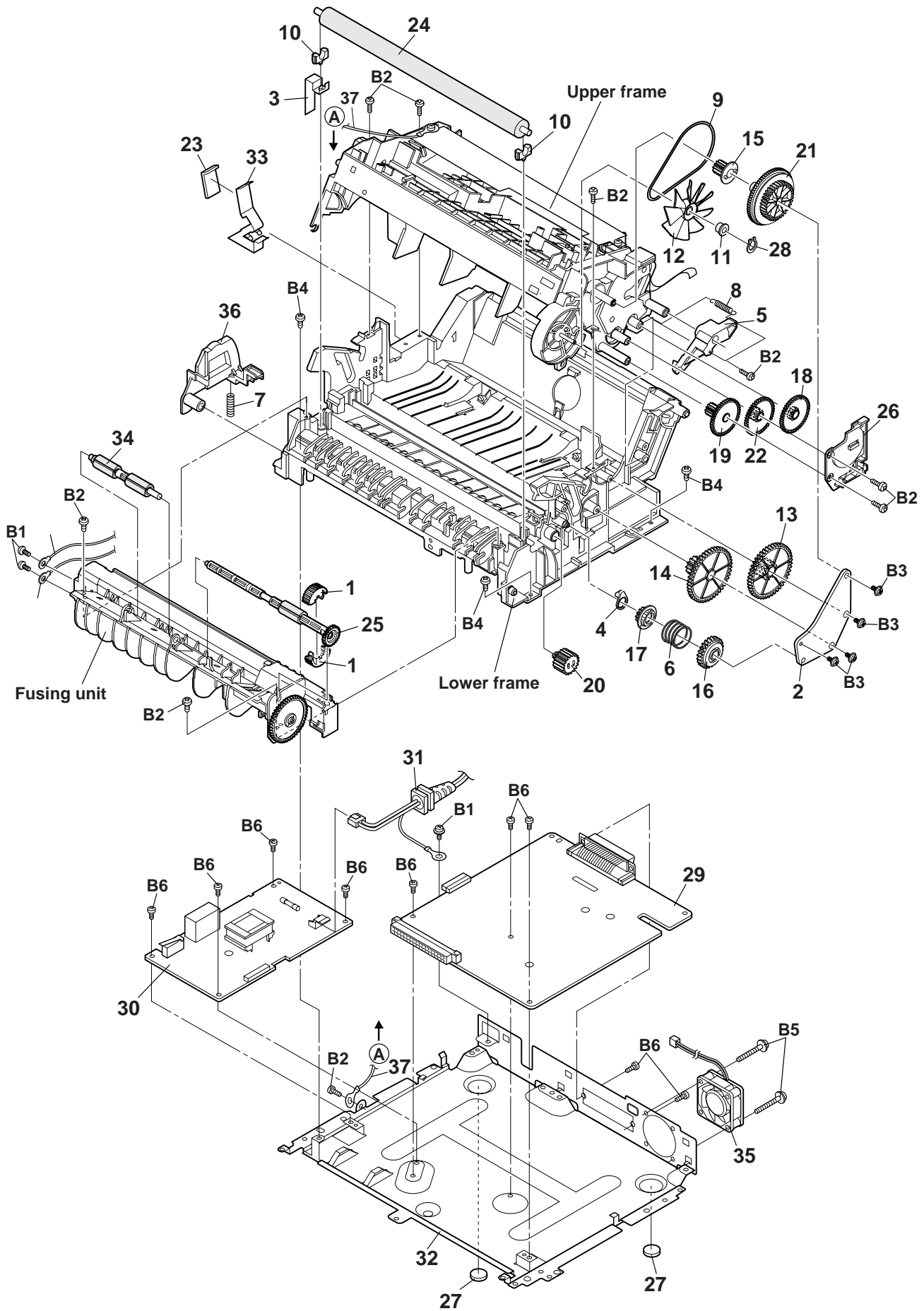


[5] Scanner frame unit





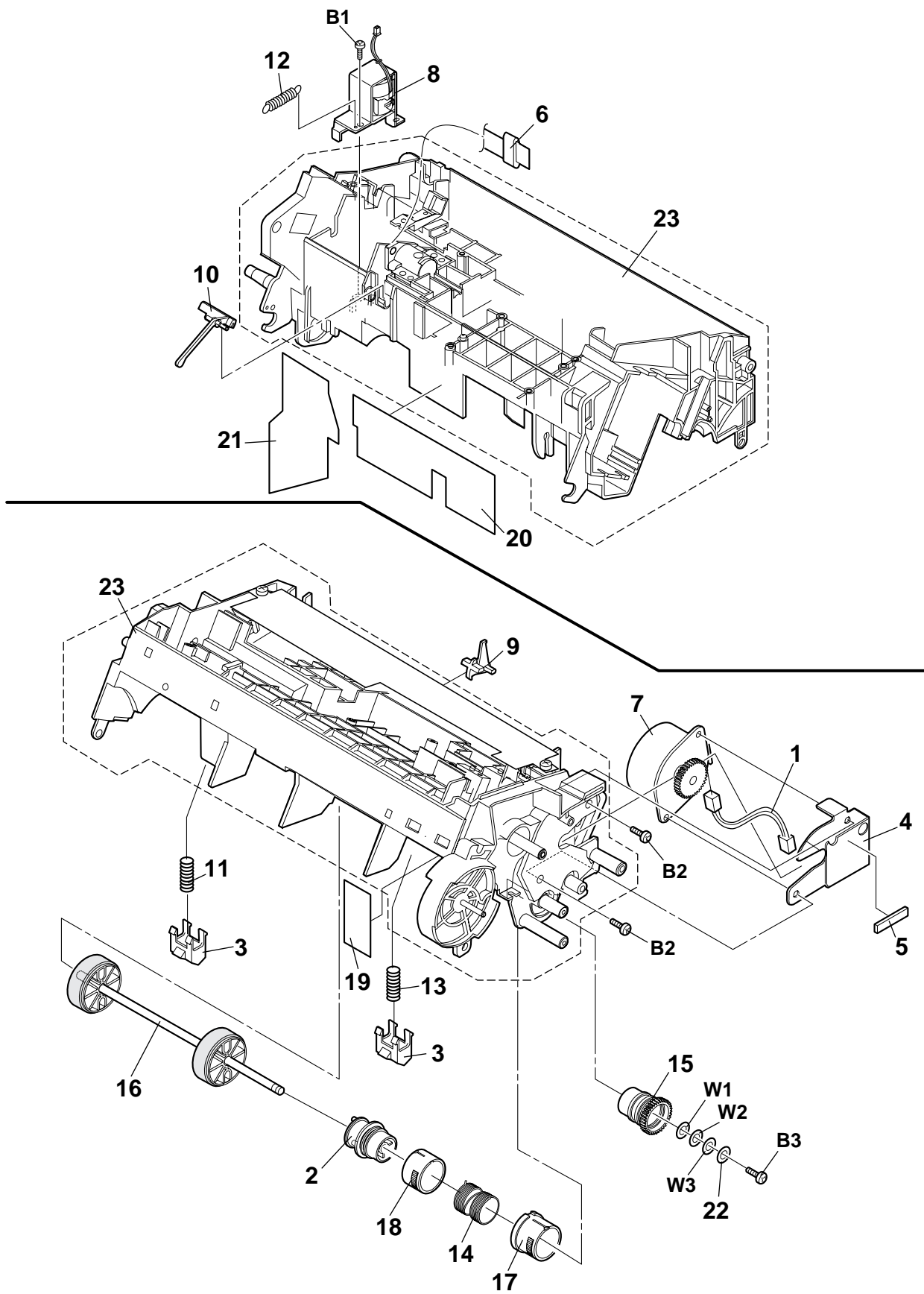
[6] Printer frame



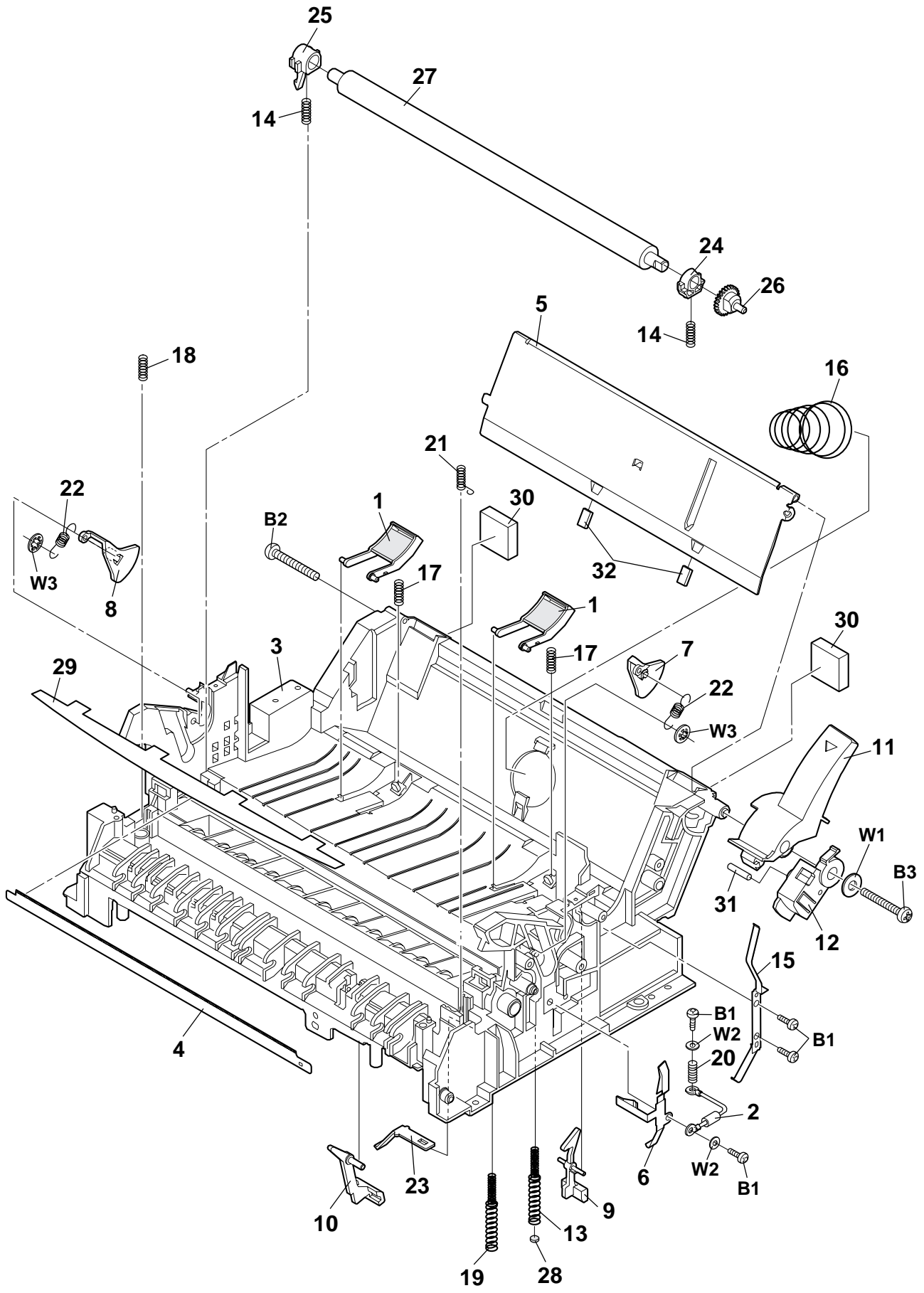




[7] Upper frame

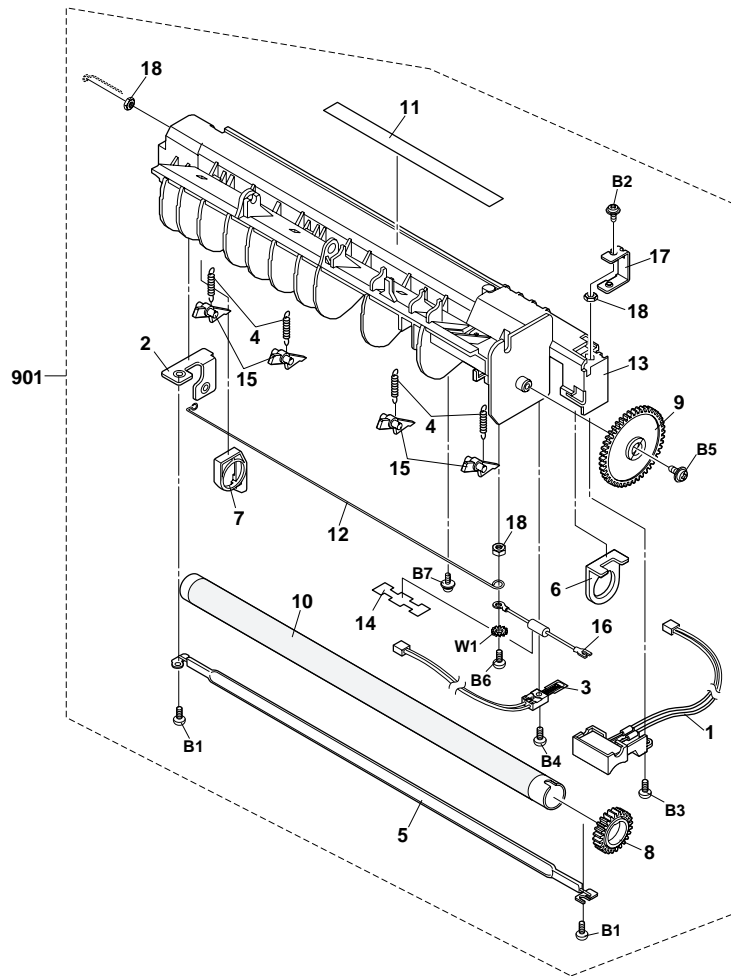






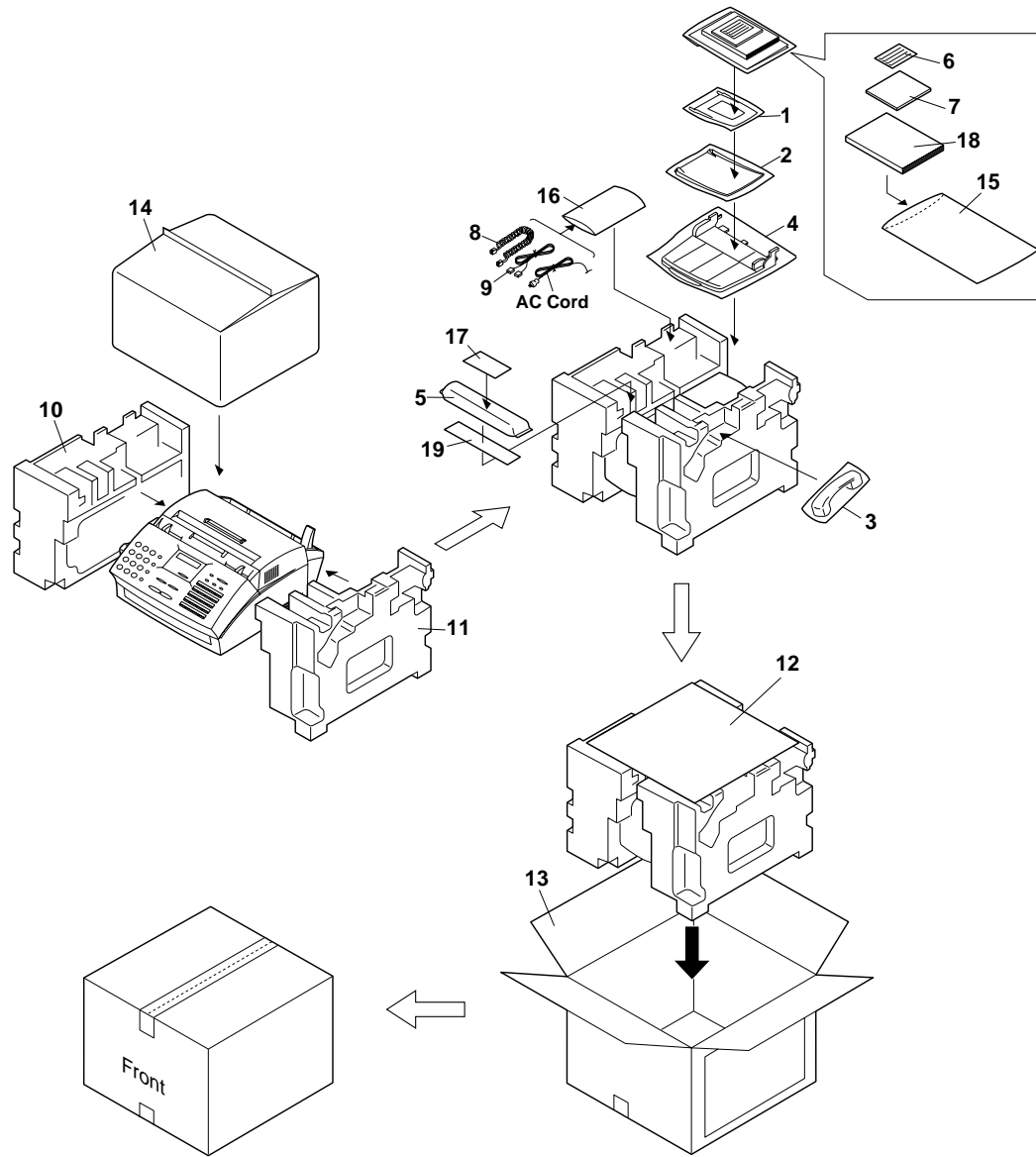


[9] Fusing unit



NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
<b>[9] Fusing unit</b>					
1	CHLDZ0040PS73	AR		E	Temperature fuse holder
2	QSLP-0030GCZZ	AD		C	Fusing AC terminal C
3	RDTCT0014GCZZ	AP		B	Thermistor
4	MSPRT0308GCZZ	AA		C	Fusing separate spring
5	RLMPU0021GCZZ	AX		B	Heater lamp
6	NBRGC0035GCZ1	AE		C	Fusing bearing R
7	NBRGP0082GCZZ	AB		C	Fusing bearing L
8	NGERH0083GCZZ	AC		C	Fusing gear(27T)
9	NGERH0174GCZZ	AD		C	Paper out idler gear
10	NROLM0108GCZ1	AV		C	Heat roller
11	TCAUH0992FCZZ	AE		D	Caution label
12	PBARM0001GCA1	AD		C	Fusing bar
13	PCOVP0091GCZZ	AW		C	Fusing cover
14	PSHEP0161GCZZ	AC		C	Fuse sheet
15	PTME-0022GCZZ	AF		C	Separate nail
16	QFS-T0005GCZZ	AQ		A	Temperature fuse
17	QSLP-0029GCZZ	AD		C	Fusing terminal
18	XNGSN30-18000	AC		C	Nut(M3)
B1	XBPSN30P05K00	AA		C	Screw(3x5)
B2	XBPSN30P06KS0	AA		C	Screw(3x6)
B3	XEBSD30P08000	AA		C	Screw(3x8)
B4	XEBSD30P10000	AA		C	Screw(3x10)
B5	XEPSD30P06X00	AA		C	Screw(3x6)
B6	LX-BZ0030GCZZ	AB		C	Screw
B7	LX-BZ3004SC0B	AA		C	Screw
W1	XWVUW30-04000	AA		C	Washer
	(Unit)				
901	DUNTW221CSC01	BL		E	Fusing unit

[10] Packing material & Accessories



NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
<b>[10] Packing material &amp; Accessories</b>					
1	CPLTP3084SC02	AF	N	C	Original document support ass'y
2	CPLTP3088SC02	AH		C	Received document tray ass'y
3	DUNTK369BSCOG	AR		E	Handset unit
4	CPLTP3085SC02	AT		C	Paper tray ass'y
5	DUNT-205CSCZA	BL		S	Toner cartridge(Initial starter cartridge)
6	TLABM311BSCZA	AE		D	Rapid key labels
7	UDSKA2024SCZA	AK		E	Sharp laser multifunction CD-ROM
8	QCNW-289ASCOG	AG		C	Handset cord
9	QCNW-290ASCZZ	AE		C	Telephone line cord
10	SPAKA315BSCZZ	AK		D	Add.,left
11	SPAKA316BSCZZ	AK		D	Add.,right
12	SPAKA317BSCZZ	AE		D	Add.
13	SPAKC229CSCCZ	AS	N	D	Packing case
14	SPAKP355BSCZZ	AE		D	Body cover
15	SSAKA2340QCZZ	AA		D	Bag,operation manual
16	SSAKA3001CCZZ	AA		D	Bag(140x360mm)
17	TCAUZ2035SCZZ	AC		D	Caution sheet
18	TINSE4147SCCZ	AZ	N	D	Operation manual
19	SPAKA266CSCZZ	AC		D	DV-pad

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
[11] Control PWB unit					
1	UBATL2049SCZZ	AF		B	Battery(CR2032T23) [BAT]
2	RR-DZ1115AFZZ	AC		C	Resistor array(10KΩx4) [BR1]
3	RR-DZ1115AFZZ	AC		C	Resistor array(10KΩx4) [BR2]
4	RR-DZ1115AFZZ	AC		C	Resistor array(10KΩx4) [BR3]
5	RR-DZ1115AFZZ	AC		C	Resistor array(10KΩx4) [BR4]
6	RR-TZ3016SCZZ	AA		C	Resistor array(33Ωx4) [BR5]
7	RR-TZ3016SCZZ	AA		C	Resistor array(33Ωx4) [BR6]
8	RR-TZ3016SCZZ	AA		C	Resistor array(33Ωx4) [BR7]
9	RR-TZ3016SCZZ	AA		C	Resistor array(33Ωx4) [BR8]
10	RR-TZ3012SCJ0	AB		C	Resistor array(100Ωx4) [BR9]
11	RR-DZ1115AFZZ	AC		C	Resistor array(10KΩx4) [BR11]
12	RR-DZ1115AFZZ	AC		C	Resistor array(10KΩx4) [BR12]
13	RR-DZ1115AFZZ	AC		C	Resistor array(10KΩx4) [BR13]
14	RR-DZ1115AFZZ	AC		C	Resistor array(10KΩx4) [BR14]
15	RR-TZ3012SC10	AB		C	Resistor array(10Ωx4) [BR15]
16	RR-TZ3017SCZZ	AC		C	Resistor array(270Ωx4) [BR16]
17	RR-TZ3018SCZZ	AC		C	Resistor array(470Ωx4) [BR17]
18	RR-DZ1115AFZZ	AC		C	Resistor array(10KΩx4) [BR18]
19	RR-DZ1115AFZZ	AC		C	Resistor array(10KΩx4) [BR19]
20	RR-DZ1115AFZZ	AC		C	Resistor array(10KΩx4) [BR21]
21	RR-TZ3016SCZZ	AA		C	Resistor array(33Ωx4) [BR22]
22	RR-TZ3016SCZZ	AA		C	Resistor array(33Ωx4) [BR23]
23	RR-TZ3016SCZZ	AA		C	Resistor array(33Ωx4) [BR24]
24	RR-TZ3012SCJ0	AB		C	Resistor array(100Ωx4) [BR25]
25	RR-TZ3018SCZZ	AC		C	Resistor array(470Ωx4) [BR26]
26	RR-DZ1115AFZZ	AC		C	Resistor array(10KΩx4) [BR27]
27	RR-DZ1115AFZZ	AC		C	Resistor array(10KΩx4) [BR28]
28	RR-DZ1115AFZZ	AC		C	Resistor array(10KΩx4) [BR29]
29	RR-DZ1115AFZZ	AC		C	Resistor array(10KΩx4) [BR30]
30	VCEAJA1HW475M	AB		C	Capacitor(50WV 4.7μF) [C1]
31	VCEAJA1HW106M	AB		C	Capacitor(50WV 10μF) [C7]
32	VCEAGA1CW476M	AB		C	Capacitor(16WV 47μF) [C8]
33	VCEAGA1CW476M	AB		C	Capacitor(16WV 47μF) [C9]
34	VCEAGA1CW476M	AB		C	Capacitor(16WV 47μF) [C10]
35	VCEAGA1HW105M	AB		C	Capacitor(50WV 1μF) [C12]
36	VCEAGA1HW475M	AA		C	Capacitor(50WV 4.7μF) [C13]
37	VCEAGA1CW476M	AB		C	Capacitor(16WV 47μF) [C15]
38	VCEAGA1HW107M	AA		C	Capacitor(50WV 100μF) [C16]
39	VCEAEA1CW476M	AA		C	Capacitor(16WV 47μF) [C18]
40	VCEAEA1CW476M	AA		C	Capacitor(16WV 47μF) [C20]
41	VCEAEA1CW336M	AB		C	Capacitor(16WV 33μF) [C21]
42	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C22]
43	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C24]
44	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C25]
45	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF) [C26]
46	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF) [C27]
47	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C34]
48	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C35]
49	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C36]
50	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C37]
51	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C38]
52	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C39]
53	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C40]
54	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C41]
55	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C42]
56	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C43]
57	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C44]
58	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C45]
59	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C46]
60	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C47]
61	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C48]
62	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C49]
63	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C50]
64	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C51]
65	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C52]
66	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C53]
67	VCEAJA1HW226M	AC	N	C	Capacitor(50WV 22μF) [C57]
68	VCEAGA1HW226M	AB		C	Capacitor(50WV 22μF) [C58]
69	VCEAGA1HW106M	AA		C	Capacitor(50WV 10μF) [C59]
70	VCEAGA1HW106M	AA		C	Capacitor(50WV 10μF) [C60]
71	VCEAGA1HW106M	AA		C	Capacitor(50WV 10μF) [C61]
72	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF) [C64]
73	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF) [C100]
74	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF) [C104]
75	VCKYCY1HB103K	AA		C	Capacitor(50WV 0.01μF) [C107]
76	VCKYCY1HB103K	AA		C	Capacitor(50WV 0.01μF) [C108]
77	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF) [C110]
78	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF) [C111]
79	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF) [C112]
80	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF) [C113]



NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
[11] Control PWB unit						
81	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C114]
82	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C115]
83	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C116]
84	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C117]
85	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C118]
86	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C120]
87	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C121]
88	VCKYCY1HB222K	AA		C	Capacitor(50WV 2200PF)	[C123]
89	VCKYCY1HB222K	AA		C	Capacitor(50WV 2200PF)	[C124]
90	VCKYCY1HB222K	AA		C	Capacitor(50WV 2200PF)	[C125]
91	VCKYCY1HB222K	AA		C	Capacitor(50WV 2200PF)	[C126]
92	VCKYCY1HB222K	AA		C	Capacitor(50WV 2200PF)	[C127]
93	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF)	[C129]
94	VCCCCY1HH471J	AA		C	Capacitor(50WV 470PF)	[C130]
95	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF)	[C131]
96	VCKYCY1CB104K	AB		C	Capacitor(16WV 0.1μF)	[C133]
97	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C142]
98	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C143]
99	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C144]
100	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C145]
101	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C146]
102	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C147]
103	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C148]
104	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C149]
105	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C150]
106	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C152]
107	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C153]
108	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C155]
109	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C156]
110	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C157]
111	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C160]
112	VCCCCY1HH270J	AA		C	Capacitor(50WV 27PF)	[C162]
113	VCCCCY1HH220J	AA		C	Capacitor(50WV 22PF)	[C163]
114	VCKYCY1CB104K	AB		C	Capacitor(16WV 0.1μF)	[C165]
115	VCCCCY1HH331J	AB		C	Capacitor(50WV 330PF)	[C166]
116	VCCCCY1HH331J	AB		C	Capacitor(50WV 330PF)	[C172]
117	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C173]
118	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C175]
119	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C179]
120	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C180]
121	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C181]
122	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C182]
123	VCKYCY1HB222K	AA		C	Capacitor(50WV 2200PF)	[C183]
124	VCCCCY1HH560J	AA		C	Capacitor(50WV 56PF)	[C185]
125	VCCCCY1HH560J	AA		C	Capacitor(50WV 56PF)	[C186]
126	VCCCCY1HH560J	AA		C	Capacitor(50WV 56PF)	[C187]
127	VCCCCY1HH560J	AA		C	Capacitor(50WV 56PF)	[C188]
128	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C189]
129	VCCCCY1HH560J	AA		C	Capacitor(50WV 56PF)	[C190]
130	VCCCCY1HH560J	AA		C	Capacitor(50WV 56PF)	[C191]
131	VCCCCY1HH560J	AA		C	Capacitor(50WV 56PF)	[C192]
132	VCCCCY1HH560J	AA		C	Capacitor(50WV 56PF)	[C193]
133	VCCCCY1HH560J	AA		C	Capacitor(50WV 56PF)	[C194]
134	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C195]
135	VCKYCY1CB104K	AB		C	Capacitor(16WV 0.1μF)	[C196]
136	VCKYCY1CB104K	AB		C	Capacitor(16WV 0.1μF)	[C197]
137	VCKYCY1HB103K	AA		C	Capacitor(50WV 0.01μF)	[C199]
138	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C204]
139	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF)	[C208]
140	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF)	[C209]
141	VCKYCY1HB222K	AA		C	Capacitor(50WV 2200PF)	[C210]
142	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C211]
143	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C212]
144	VCKYCY1HB222K	AA		C	Capacitor(50WV 2200PF)	[C213]
145	VCCCCY1HH300J	AB		C	Capacitor(50WV 30PF)	[C214]
146	VCCCCY1HH300J	AB		C	Capacitor(50WV 30PF)	[C215]
147	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C217]
148	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C221]
149	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C222]
150	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C224]
151	VCCCCY1HH471J	AA		C	Capacitor(50WV 470PF)	[C226]
152	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF)	[C228]
153	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C229]
154	VCCCCY1HH331J	AB		C	Capacitor(50WV 330PF)	[C230]
155	VCKYCY1HB472K	AA		C	Capacitor(50WV 4700PF)	[C231]
156	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF)	[C236]
157	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF)	[C237]
158	VCKYCY1HB222K	AA		C	Capacitor(50WV 2200PF)	[C238]
159	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C241]
160	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C242]

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
[11] Control PWB unit						
161	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C243]
162	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C244]
163	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C247]
164	VCCCCY1HH470J	AA		C	Capacitor(50WV 47PF)	[C249]
165	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C250]
166	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C253]
167	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C254]
168	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C256]
169	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C259]
170	VCCCCY1HH100J	AA		C	Capacitor(50WV 10PF)	[C260]
171	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C261]
172	VCCCCY1HH150J	AB		C	Capacitor(50WV 15PF)	[C262]
173	VCCCCY1HH101J	AA		C	Capacitor(50WV 100PF)	[C263]
174	VCCCCY1HH101J	AA		C	Capacitor(50WV 100PF)	[C264]
175	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C266]
176	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C267]
177	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C268]
178	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C273]
179	VCCCCY1HH101J	AA		C	Capacitor(50WV 100PF)	[C274]
180	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C275]
181	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C276]
182	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C277]
183	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C278]
184	VCCCCY1HH470J	AA		C	Capacitor(50WV 47PF)	[C279]
185	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF)	[C281]
186	VCCCCY1HH101J	AA		C	Capacitor(50WV 100PF)	[C285]
187	VCCCCY1HH471J	AA		C	Capacitor(50WV 470PF)	[C286]
188	VCCCCY1HH470J	AA		C	Capacitor(50WV 47PF)	[C287]
189	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C289]
190	VCKYCY1HB103K	AA		C	Capacitor(50WV 0.01μF)	[C290]
191	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C291]
192	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C293]
193	VCKYCY1HB472K	AA		C	Capacitor(50WV 4700PF)	[C298]
194	VCKYCY1HB472K	AA		C	Capacitor(50WV 4700PF)	[C299]
195	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C300]
196	VCCCCY1HH470J	AA		C	Capacitor(50WV 47PF)	[C301]
197	VCCCCY1HH681J	AA		C	Capacitor(50WV 680PF)	[C304]
198	VCCCCY1HH100J	AA		C	Capacitor(50WV 10PF)	[C305]
199	VCCCCY1HH100J	AA		C	Capacitor(50WV 10PF)	[C306]
200	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C307]
201	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF)	[C308]
202	VCKYCY1HB472K	AA		C	Capacitor(50WV 4700PF)	[C317]
203	VCKYCY1HB472K	AA		C	Capacitor(50WV 4700PF)	[C318]
204	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C319]
205	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C320]
206	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF)	[C322]
207	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C325]
208	VCCCCY1HH560J	AA		C	Capacitor(50WV 56PF)	[C326]
209	VCCCCY1HH560J	AA		C	Capacitor(50WV 56PF)	[C329]
210	VCCCCY1HH560J	AA		C	Capacitor(50WV 56PF)	[C332]
211	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C347]
212	VCKYCY1HB222K	AA		C	Capacitor(50WV 2200PF)	[C349]
213	VCCCCY1HH150J	AB		C	Capacitor(50WV 15PF)	[C351]
214	VCKYCY1HB222K	AA		C	Capacitor(50WV 2200PF)	[C352]
215	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C357]
216	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C358]
217	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C359]
218	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C361]
219	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C365]
220	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C366]
221	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C371]
222	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C376]
223	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C379]
224	VCKYCY1HB222K	AA		C	Capacitor(50WV 2200PF)	[C380]
225	VCKYCY1HB222K	AA		C	Capacitor(50WV 2200PF)	[C381]
226	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C382]
227	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C386]
228	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C388]
229	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C389]
230	VCCCCY1HH180J	AA		C	Capacitor(50WV 18PF)	[C390]
231	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C391]
232	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF)	[C394]
233	VCKYCY1CB104K	AB		C	Capacitor(16WV 0.1μF)	[C395]
234	VCKYCY1CB104K	AB		C	Capacitor(16WV 0.1μF)	[C396]
235	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C400]
236	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C405]
237	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C407]
238	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C408]
239	VCKYCY1EF104Z	AA		C	Capacitor(25WV 0.1μF)	[C409]
240	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C410]

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
[11] Control PWB unit						
241	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF)	[C411]
242	RC-KZ0001RCZZ	AD		C	Ceramic capacitor array(100PFx4)	[CA1]
243	RC-KZ0001RCZZ	AD		C	Ceramic capacitor array(100PFx4)	[CA2]
244	RC-KZ0001RCZZ	AD		C	Ceramic capacitor array(100PFx4)	[CA3]
245	RC-KZ0001RCZZ	AD		C	Ceramic capacitor array(100PFx4)	[CA4]
246	QCNCM7014SC0G	AB		C	Connector(7pin)	[CNCIS]
247	QCNCM7014SC0C	AA		C	Connector(3pin)	[CNFUSE]
248	QCNCW2500SC1B	AF		C	Connector(12pin)	[CNLIUA]
249	QCNCM7014SC0F	AB		C	Connector(6pin)	[CNMT]
250	QCNCM2482SC2B	AE		C	Connector(22pin)	[CNPN]
251	QCNCM2436SC5J	AB		C	Connector(50pin)	[CNPRT]
252	QCNCM7014SC0B	AD		C	Connector(2pin)	[CNRTH]
253	QCNCM2401SC0B	AA		C	Connector(2pin)	[CNSP]
254	VHDDAP202U/-1	AB		B	Diode(DAP202U)	[D1]
255	VHD1SS355//1	AB		B	Diode(1SS355)	[D100]
256	VHD1SS355//1	AB		B	Diode(1SS355)	[D101]
257	VHD1SS355//1	AB		B	Diode(1SS355)	[D102]
258	VHDHRW0502A-1	AD		B	Diode(HRW0502ATR)	[D103]
259	VHDDA204K//1	AC		B	Diode(DA204K)	[D105]
260	VHDDA204K//1	AC		B	Diode(DA204K)	[D107]
261	QFS-P2010SCZZ	AD		B	IC protector(KAB2402)	[F100]
262	VHINJM2902M-1	AF		B	IC,OPERATIONAL AMP.(NJM2902M)	[IC1]
263	VHIBU4066BCF1	AD		B	IC,ANALOG SW(BU4066)	[IC2]
264	VHILC82103/-1	BA		B	IC,IMAGE SIGNAL PROCESSOR(LC82103)	[IC4]
265	VHISH7041/28A	BE		B	IC,32bit RISC MICROPROCESSOR(SH7041)	[IC5]
266	VHIULN2003AN/	AE		B	IC,DRIVER(ULN2003A)	[IC6]
267	VHHC4053M1T	AG		B	IC,ANALOG SW(HCF4053)	[IC7]
268	VHIFM336//1	BN	N	B	IC,33600bps FAX MODEM(FM336)	[IC8]
269	VHINJM2113M-1	AG		B	IC,SPEAKER AMP(NJM2113)	[IC9]
270	VH1M16E//J-6	AZ		B	IC,1Mx16bit DRAM(HY5118164CJC-6)	[IC11]
271	VH1M16E//J-6	AZ		B	IC,1Mx16bit DRAM(HY5118164CJC-6)	[IC13]
272	QSOCZ2067SC42	AE		C	IC socket(42pin)	[IC14]
273	VHI27080FBF0A	BQ	N	B	IC,EPROM(8Mbit)	[IC14]
274	VHILR38784/-1	BD		B	IC,GATE ARRAY(LR38784A)	[IC15]
275	VHISM8578BV-1	AK		B	IC,REAL TIME CLOCK(SM8578BV)	[IC16]
276	RH-IX2129SCZZ	AY		B	IC,512Kx8bit DRAM(HM514800-70J)	[IC17]
277	VHI74HCU04S-1	AF		B	IC,INVERTER(74HCU04)	[IC18]
278	VHIPST596CMT1	AF		B	IC,SYSTEM RESET(PST596)	[IC20]
279	RH-IX2164XHZZ	AY	N	B	IC,1Mbit SRAM(BS62LV1024)	[IC21]
280	VH1M16E//J-6	AZ		B	IC,1Mx16bit DRAM(HY5118164CJC-6)	[IC22]
281	RCILZ0006GCZZ	AC		C	Coil	[L100]
282	VRS-CY1JB100J	AA		C	Resistor(1/10W 10Ω ±5%)	[L101]
283	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[L102]
284	VS2SC4081R/-1	AB		B	Transistor(2SC4081R)	[Q1]
285	VS2SA1037KS-1	AB		B	Transistor(2SA1037)	[Q100]
286	VS2SA1037KS-1	AB		B	Transistor(2SA1037)	[Q101]
287	VS2SA1036KR-1	AC		B	Transistor(2SA1036)	[Q102]
288	VSDTC114EK/-1	AB		B	Transistor(DTC114EK)	[Q103]
289	VSDTC114EK/-1	AB		B	Transistor(DTC114EK)	[Q104]
290	VS2SC2412KR-1	AD		B	Transistor(2SC2412KR)	[Q105]
291	VRD-HT2EY100J	AA		C	Resistor(1/4W 10Ω ±5%)	[R1]
292	VRS-CY1JB330J	AA		C	Resistor(1/10W 33Ω ±5%)	[R2]
293	VRS-CY1JB330J	AA		C	Resistor(1/10W 33Ω ±5%)	[R3]
294	VRS-CY1JB152J	AA		C	Resistor(1/10W 1.5KΩ ±5%)	[R100]
295	VRS-CY1JB473J	AA		C	Resistor(1/10W 47KΩ ±5%)	[R101]
296	VRS-CY1JB222J	AA		C	Resistor(1/10W 2.2KΩ ±5%)	[R116]
297	VRS-CY1JB680J	AA		C	Resistor(1/10W 68Ω ±5%)	[R117]
298	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R119]
299	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R120]
300	VRS-CY1JB680J	AA		C	Resistor(1/10W 68Ω ±5%)	[R121]
301	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R122]
302	VRS-CY1JB330J	AA		C	Resistor(1/10W 33Ω ±5%)	[R123]
303	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R124]
304	VRS-CY1JB330J	AA		C	Resistor(1/10W 33Ω ±5%)	[R125]
305	VRS-CY1JB330J	AA		C	Resistor(1/10W 33Ω ±5%)	[R126]
306	VRS-CY1JB680J	AA		C	Resistor(1/10W 68Ω ±5%)	[R127]
307	VRS-CY1JB680J	AA		C	Resistor(1/10W 68Ω ±5%)	[R128]
308	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R129]
309	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R130]
310	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R131]
311	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R132]
312	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R133]
313	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R134]
314	VRS-CY1JB623J	AA		C	Resistor(1/10W 62KΩ ±5%)	[R137]
315	VRS-CY1JB152J	AA		C	Resistor(1/10W 1.5KΩ ±5%)	[R138]
316	VRS-CY1JB124J	AA		C	Resistor(1/10W 120KΩ ±5%)	[R148]
317	VRS-CY1JB333J	AA		C	Resistor(1/10W 33KΩ ±5%)	[R149]
318	VRS-CY1JB105J	AA		C	Resistor(1/10W 1MΩ ±5%)	[R150]
319	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R160]
320	VRS-CY1JB271J	AA		C	Resistor(1/10W 270Ω ±5%)	[R161]

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
[11] Control PWB unit						
321	VRS-CY1JB271J	AA		C	Resistor(1/10W 270Ω ±5%)	[R162]
322	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R163]
323	VRS-CY1JB330J	AA		C	Resistor(1/10W 33Ω ±5%)	[R164]
324	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R165]
325	VRS-CY1JB680J	AA		C	Resistor(1/10W 68Ω ±5%)	[R166]
326	VRS-CY1JB271J	AA		C	Resistor(1/10W 270Ω ±5%)	[R168]
327	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R169]
328	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R170]
329	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R171]
330	VRS-CY1JB472J	AA		C	Resistor(1/10W 4.7KΩ ±5%)	[R172]
331	VRS-CY1JB102J	AA		C	Resistor(1/10W 1KΩ ±5%)	[R173]
332	VRS-CY1JB332J	AA		C	Resistor(1/10W 3.3KΩ ±5%)	[R174]
333	VRS-CY1JB332J	AA		C	Resistor(1/10W 3.3KΩ ±5%)	[R175]
334	VRS-CY1JB302J	AA		C	Resistor(1/10W 3KΩ ±5%)	[R176]
335	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R177]
336	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R178]
337	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R179]
338	VRSCY1JD4422F	AA	N	C	Resistor(1/10W 44.2KΩ ±1%)	[R180]
339	VRS-CY1JB623J	AA		C	Resistor(1/10W 62KΩ ±5%)	[R182]
340	VRS-CY1JB273J	AA		C	Resistor(1/10W 27KΩ ±5%)	[R183]
341	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R190]
342	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R191]
343	VRS-CY1JB271J	AA		C	Resistor(1/10W 270Ω ±5%)	[R193]
344	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R194]
345	VRS-CY1JB271J	AA		C	Resistor(1/10W 270Ω ±5%)	[R198]
346	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R199]
347	VRS-CY1JB471J	AA		C	Resistor(1/10W 470Ω ±5%)	[R200]
348	VRS-CY1JB471J	AA		C	Resistor(1/10W 470Ω ±5%)	[R201]
349	VRS-CY1JB680J	AA		C	Resistor(1/10W 68Ω ±5%)	[R202]
350	VRS-CY1JB680J	AA		C	Resistor(1/10W 68Ω ±5%)	[R203]
351	VRS-CY1JB680J	AA		C	Resistor(1/10W 68Ω ±5%)	[R204]
352	VRS-CY1JB680J	AA		C	Resistor(1/10W 68Ω ±5%)	[R205]
353	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R206]
354	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R208]
355	VRS-CY1JB394J	AA		C	Resistor(1/10W 390KΩ ±5%)	[R212]
356	VRS-CY1JB302J	AA		C	Resistor(1/10W 3KΩ ±5%)	[R213]
357	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R215]
358	VRS-CY1JB203J	AA		C	Resistor(1/10W 20KΩ ±5%)	[R217]
359	VRS-CY1JB113J	AA		C	Resistor(1/10W 11KΩ ±5%)	[R218]
360	VRS-CY1JB680J	AA		C	Resistor(1/10W 68Ω ±5%)	[R223]
361	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R224]
362	VRS-CY1JB105J	AA		C	Resistor(1/10W 1MΩ ±5%)	[R225]
363	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R226]
364	VRS-CY1JB680J	AA		C	Resistor(1/10W 68Ω ±5%)	[R227]
365	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R229]
366	VRS-CY1JB330J	AA		C	Resistor(1/10W 33Ω ±5%)	[R230]
367	VRS-CY1JB102J	AA		C	Resistor(1/10W 1KΩ ±5%)	[R231]
368	VRS-CY1JB471J	AA		C	Resistor(1/10W 470Ω ±5%)	[R232]
369	VRS-CY1JB471J	AA		C	Resistor(1/10W 470Ω ±5%)	[R233]
370	VRS-CY1JB330J	AA		C	Resistor(1/10W 33Ω ±5%)	[R234]
371	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R235]
372	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R236]
373	VRS-CY1JB201J	AA		C	Resistor(1/10W 200Ω ±5%)	[R238]
374	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R239]
375	VRS-CY1JB302J	AA		C	Resistor(1/10W 3KΩ ±5%)	[R240]
376	VRS-CY1JB102J	AA		C	Resistor(1/10W 1KΩ ±5%)	[R241]
377	VRS-CY1JB472J	AA		C	Resistor(1/10W 4.7KΩ ±5%)	[R242]
378	VRS-CY1JB154J	AA		C	Resistor(1/10W 150KΩ ±5%)	[R244]
379	VRS-CY1JB104J	AA		C	Resistor(1/10W 100KΩ ±5%)	[R245]
380	VRS-CY1JB203J	AA		C	Resistor(1/10W 20KΩ ±5%)	[R246]
381	VRS-CY1JB202J	AA		C	Resistor(1/10W 2KΩ ±5%)	[R247]
382	VRS-CY1JB471J	AA		C	Resistor(1/10W 470Ω ±5%)	[R250]
383	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R251]
384	VRS-CY1JB471J	AA		C	Resistor(1/10W 470Ω ±5%)	[R252]
385	VRS-CY1JB471J	AA		C	Resistor(1/10W 470Ω ±5%)	[R253]
386	VRS-CY1JB471J	AA		C	Resistor(1/10W 470Ω ±5%)	[R254]
387	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R255]
388	VRS-CY1JB680J	AA		C	Resistor(1/10W 68Ω ±5%)	[R256]
389	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R257]
390	VRS-CY1JB471J	AA		C	Resistor(1/10W 470Ω ±5%)	[R258]
391	VRS-CY1JB105J	AA		C	Resistor(1/10W 1MΩ ±5%)	[R259]
392	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R260]
393	VRS-CY1JB271J	AA		C	Resistor(1/10W 270Ω ±5%)	[R261]
394	VRS-CY1JB271J	AA		C	Resistor(1/10W 270Ω ±5%)	[R262]
395	VRS-CY1JB302J	AA		C	Resistor(1/10W 3KΩ ±5%)	[R263]
396	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R264]
397	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R265]
398	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R266]
399	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R267]
400	VRS-CY1JB201J	AA		C	Resistor(1/10W 200Ω ±5%)	[R268]



NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
[11] Control PWB unit						
401	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R270]
402	VRS-CY1JB470J	AA		C	Resistor(1/10W 47Ω ±5%)	[R271]
403	VRS-CY1JB470J	AA		C	Resistor(1/10W 47Ω ±5%)	[R272]
404	VRS-CY1JB470J	AA		C	Resistor(1/10W 47Ω ±5%)	[R273]
405	VRS-CY1JB470J	AA		C	Resistor(1/10W 47Ω ±5%)	[R274]
406	VRS-CY1JB470J	AA		C	Resistor(1/10W 47Ω ±5%)	[R275]
407	VRS-CY1JB470J	AA		C	Resistor(1/10W 47Ω ±5%)	[R276]
408	VRS-CY1JB470J	AA		C	Resistor(1/10W 47Ω ±5%)	[R277]
409	VRS-CY1JB470J	AA		C	Resistor(1/10W 47Ω ±5%)	[R278]
410	VRS-CY1JB470J	AA		C	Resistor(1/10W 47Ω ±5%)	[R279]
411	VRS-CY1JB102J	AA		C	Resistor(1/10W 1KΩ ±5%)	[R280]
412	VRS-CY1JB681J	AA		C	Resistor(1/10W 680Ω ±5%)	[R281]
413	VRS-CY1JB203J	AA		C	Resistor(1/10W 20KΩ ±5%)	[R282]
414	VRS-CY1JB333J	AA		C	Resistor(1/10W 33KΩ ±5%)	[R283]
415	VRS-CY1JB333J	AA		C	Resistor(1/10W 33KΩ ±5%)	[R284]
416	VRS-CY1JB330J	AA		C	Resistor(1/10W 33Ω ±5%)	[R285]
417	VRS-CY1JB330J	AA		C	Resistor(1/10W 33Ω ±5%)	[R286]
418	VRS-CY1JB330J	AA		C	Resistor(1/10W 33Ω ±5%)	[R287]
419	VRS-CY1JB392J	AA		C	Resistor(1/10W 3.9KΩ ±5%)	[R288]
420	VRS-CY1JB203J	AA		C	Resistor(1/10W 20KΩ ±5%)	[R289]
421	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R290]
422	VRS-CY1JB105J	AA		C	Resistor(1/10W 1MΩ ±5%)	[R291]
423	VRS-CY1JB472J	AA		C	Resistor(1/10W 4.7KΩ ±5%)	[R293]
424	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R294]
425	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R295]
426	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R296]
427	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R297]
428	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R298]
429	VRS-CY1JB330J	AA		C	Resistor(1/10W 33Ω ±5%)	[R299]
430	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R300]
431	VRS-CY1JB470J	AA		C	Resistor(1/10W 47Ω ±5%)	[R301]
432	VRS-CY1JB470J	AA		C	Resistor(1/10W 47Ω ±5%)	[R302]
433	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R303]
434	VRS-CY1JB470J	AA		C	Resistor(1/10W 47Ω ±5%)	[R304]
435	VRS-CY1JB470J	AA		C	Resistor(1/10W 47Ω ±5%)	[R305]
436	VRS-CY1JB203F	AA		C	Resistor(1/10W 20KΩ ±1%)	[R306]
437	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R307]
438	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R308]
439	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R309]
440	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R310]
441	VRS-CY1JB201J	AA		C	Resistor(1/10W 200Ω ±5%)	[R311]
442	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R312]
443	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R313]
444	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R314]
445	VRS-CY1JB470J	AA		C	Resistor(1/10W 47Ω ±5%)	[R315]
446	VRS-CY1JB470J	AA		C	Resistor(1/10W 47Ω ±5%)	[R316]
447	VRS-CY1JB470J	AA		C	Resistor(1/10W 47Ω ±5%)	[R317]
448	VRS-CY1JB470J	AA		C	Resistor(1/10W 47Ω ±5%)	[R318]
449	VRS-CY1JB330J	AA		C	Resistor(1/10W 33Ω ±5%)	[R319]
450	VRS-CY1JB330J	AA		C	Resistor(1/10W 33Ω ±5%)	[R320]
451	VRS-CY1JB330J	AA		C	Resistor(1/10W 33Ω ±5%)	[R321]
452	VRS-CY1JB562J	AA		C	Resistor(1/10W 5.6KΩ ±5%)	[R322]
453	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R323]
454	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R324]
455	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R325]
456	VRS-CY1JB332J	AA		C	Resistor(1/10W 3.3KΩ ±5%)	[R327]
457	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R328]
458	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R329]
459	VRS-CY1JB332J	AA		C	Resistor(1/10W 3.3KΩ ±5%)	[R330]
460	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R332]
461	VRS-CY1JB202J	AA		C	Resistor(1/10W 2KΩ ±5%)	[R333]
462	VRS-CY1JB271J	AA		C	Resistor(1/10W 270Ω ±5%)	[R334]
463	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R335]
464	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R336]
465	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R339]
466	VRS-CY1JB222J	AA		C	Resistor(1/10W 2.2KΩ ±5%)	[R340]
467	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R341]
468	VRS-CY1JB680J	AA		C	Resistor(1/10W 68Ω ±5%)	[R342]
469	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R343]
470	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R345]
471	VRS-CY1JB680J	AA		C	Resistor(1/10W 68Ω ±5%)	[R346]
472	VRS-CY1JB680J	AA		C	Resistor(1/10W 68Ω ±5%)	[R347]
473	VRS-CY1JB680J	AA		C	Resistor(1/10W 68Ω ±5%)	[R348]
474	VRS-CY1JB680J	AA		C	Resistor(1/10W 68Ω ±5%)	[R349]
475	VRS-CY1JB680J	AA		C	Resistor(1/10W 68Ω ±5%)	[R350]
476	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R351]
477	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R353]
478	VRS-CY1JB472J	AA		C	Resistor(1/10W 4.7KΩ ±5%)	[R354]
479	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R356]
480	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R357]

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
<b>[11] Control PWB unit</b>						
481	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R358]
482	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R359]
483	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R364]
484	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R365]
485	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R366]
486	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R368]
487	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R369]
488	VRS-CY1JB271J	AA		C	Resistor(1/10W 270Ω ±5%)	[R370]
489	VRS-CY1JB271J	AA		C	Resistor(1/10W 270Ω ±5%)	[R371]
490	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R372]
491	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R373]
492	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R374]
493	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R375]
494	VRS-CY1JB680J	AA		C	Resistor(1/10W 68Ω ±5%)	[R376]
495	VRS-CY1JB472J	AA		C	Resistor(1/10W 4.7KΩ ±5%)	[R377]
496	VRS-CY1JB100J	AA		C	Resistor(1/10W 10Ω ±5%)	[R378]
497	VRS-CY1JB473J	AA		C	Resistor(1/10W 47KΩ ±5%)	[R379]
498	VRS-CY1JB101J	AA		C	Resistor(1/10W 100Ω ±5%)	[R380]
499	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R381]
500	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R382]
501	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R383]
502	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R384]
503	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R385]
504	VRS-CY1JB000J	AA		C	Resistor(1/10W 0Ω ±5%)	[R386]
505	VRS-CY1JB103J	AA		C	Resistor(1/10W 10KΩ ±5%)	[R387]
506	VRS-CY1JB622J	AA		C	Resistor(1/10W 6.2KΩ ±5%)	[R388]
507	VRS-CY1JB223J	AA		C	Resistor(1/10W 22KΩ ±5%)	[R389]
508	VRSCY1JD4422F	AA	N	C	Resistor(1/10W 44.2KΩ ±1%)	[R391]
509	VRS-CY1JB102J	AA		C	Resistor(1/10W 1KΩ ±5%)	[R392]
510	VRS-CY1JB332J	AA		C	Resistor(1/10W 3.3KΩ ±5%)	[R393]
511	VRS-CY1JB102J	AA		C	Resistor(1/10W 1KΩ ±5%)	[R394]
512	VRS-CY1JB472J	AA		C	Resistor(1/10W 4.7KΩ ±5%)	[R395]
513	RCILZ2165SCZZ	AB	N	C	Coil	[R396]
514	RCILZ2165SCZZ	AB	N	C	Coil	[R397]
515	VHI62FP332P-1	AF		B	REG(XC62FP3302P)	[REG1]
516	QSW-K0005AWZZ	AC		C	Tact switch	[SW1]
517	RCRSQ2161SCZZ	AF		B	Crystal(6.912MHz)	[X1]
518	RCRSB2167SCZZ	AK		B	Crystal(28.224MHz)	[X2]
519	RCRSZ7008SCZZ	AD		B	Crystal(16MHz)	[X3]
520	RCRSQ2159SCZZ	AF		B	Crystal(20.95261MHz)	[X4]
521	RCRSZ0028GCZZ	AH		B	Crystal(35.57212371MHz)	[X5]
522	RCRSB0297AFZZ	AD		B	Crystal(32.768KHz)	[X6]
523	VHERD22FB3/-1	AC		B	Zener diode(RD22FB3)	[ZD2]
524	TLABZ3405FCZZ	AB		D	Label	
	(Unit)					
901	DCEKC182PSCZZ	CF	N	E	Control PWB unit	
<b>[12] TEL/LIU and Hook SW PWB unit</b>						
1	VHVRA391PV6-1	AE		B	Varistor(RA391PV6)	[AR1]
2	VCEAJA1HW106M	AB		C	Capacitor(50WV 10μF)	[C1]
3	RC-FZ3061SCZZ	AG	N	C	Capacitor(250WV 2.2μF)	[C2]
4	RC-FZ3024SCZZ	AG		C	Capacitor(250WV 0.82μF)	[C3]
5	VCEAGA1HW476M	AB		C	Capacitor(50WV 47μF)	[C4]
6	VCKYPA1HB103K	AA		C	Capacitor(50WV 0.01μF)	[C5]
7	VCEAGA1HW226M	AB		C	Capacitor(50WV 22μF)	[C6]
8	VCEAGA1HW475M	AA		C	Capacitor(50WV 4.7μF)	[C7]
9	VCEAGA1HW475M	AA		C	Capacitor(50WV 4.7μF)	[C8]
10	VCEAGA1HW475M	AA		C	Capacitor(50WV 4.7μF)	[C9]
11	VCEAJA1HW106M	AB		C	Capacitor(50WV 10μF)	[C10]
12	VCEAEA1HW225M	AA		C	Capacitor(50WV 2.2μF)	[C11]
13	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF)	[C100]
14	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C101]
15	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C102]
16	VCKYCY1HB222K	AA		C	Capacitor(50WV 2200PF)	[C103]
17	VCKYCY1EB333K	AB		C	Capacitor(25WV 0.033μF)	[C104]
18	VCKYCY1HB332K	AA		C	Capacitor(50WV 3300PF)	[C105]
19	VCCCCY1EH561J	AB		C	Capacitor(25WV 560PF)	[C106]
20	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C108]
21	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF)	[C109]
22	VCKYCY1HB222K	AA		C	Capacitor(50WV 2200PF)	[C110]
23	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF)	[C111]
24	VCKYCY1HB222K	AA		C	Capacitor(50WV 2200PF)	[C112]
25	RRLYD3433XHZZ	AH		B	Relay	[CML]
26	QCNCM2442SC0B	AB		C	Conector(2pin)	[CNHS1]
27	QCNCM-271ASCZZ	AC		C	HS cable	[CNHS2]
28	QCNCM2548SC1B	AH		C	Connector(12pin)	[CNLIU]

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
[12] TEL/LIU and Hook SW PWB unit						
29	VHDDSS133/-1	AA		B	Diode(1SS270)	[D1]
30	VHDDSS133/-1	AA		B	Diode(1SS270)	[D2]
31	VHDOR5G4B42-1	AF		B	Diode bridge(OR5G4B42)	[DB1]
32	VHINJM2904D-1	AG		B	IC,OPE AMP.(NJM2904D)	[IC1]
33	RCILZ2118SCZZ	AD	N	C	Coil	[L1]
34	RFILN2027XHZZ	AC		C	Coil(R-5C)	[L2]
35	RFILN2027XHZZ	AC		C	Coil(R-5C)	[L3]
36	RFILN2027XHZZ	AC		C	Coil(R-5C)	[L4]
37	RFILN2027XHZZ	AC		C	Coil(R-5C)	[L5]
38	QJAKZ2060SC0B	AD		C	Line jack	[MJ1]
39	QJAKZ2060SC0B	AD		C	Line jack	[MJ2]
40	QJAKZ2079XH0D	AD		C	Handset jack	[MJTEL]
41	VHPPC814X/-1	AE		B	Photo transistor(PC814X)	[PC1]
42	VHPTLP521-1BL	AE		B	Photo coupler(TLP521)	[PC2]
43	VSBS108///-1	AE		B	Transistor(BS108)	[Q1]
44	VSDTC114EK/-1	AB		B	Transistor(DTC114EK)	[Q101]
45	VSDTC114EK/-1	AB		B	Transistor(DTC114EK)	[Q102]
46	VS2SC2412KR-1	AD		B	Transistor(2SC2412KR)	[Q103]
47	VSDTC114EK/-1	AB		B	Transistor(DTC114EK)	[Q104]
48	VRD-HT2EY910J	AA		C	Resistor(1/4W 91Ω ±5%)	[R1]
49	VRD-HT2EY300J	AA		C	Resistor(1/4W 30Ω ±5%)	[R2]
50	VRD-HT2HY223J	AA		C	Resistor(1/2W 22KΩ ±5%)	[R3]
51	VRD-HT2HY150J	AA		C	Resistor(1/2W 15Ω ±5%)	[R4]
52	VRD-HT2HY150J	AA		C	Resistor(1/2W 15Ω ±5%)	[R5]
53	RR-HZ3011SCZZ	AC		C	Resistor(1/2W 4.7Ω)	[R6]
54	VRD-HT2EY223J	AA		C	Resistor(1/4W 22KΩ ±5%)	[R7]
55	VRD-HT2EY151J	AA		C	Resistor(1/4W 150Ω ±5%)	[R8]
56	VRS-CY1JB133J	AA		C	Resistor(1/16W 13KΩ ±5%)	[R101]
57	VRS-CY1JB103J	AA		C	Resistor(1/16W 10KΩ ±5%)	[R102]
58	VRS-CY1JB102J	AA		C	Resistor(1/16W 1KΩ ±5%)	[R105]
59	VRS-CY1JB102J	AA		C	Resistor(1/16W 1KΩ ±5%)	[R106]
60	VRS-CY1JB621J	AA		C	Resistor(1/16W 620Ω ±5%)	[R107]
61	VRS-CY1JB473J	AA		C	Resistor(1/16W 47KΩ ±5%)	[R108]
62	VRS-CY1JB163J	AA		C	Resistor(1/16W 16KΩ ±5%)	[R109]
63	VRS-CY1JB000J	AA		C	Resistor(1/16W 0Ω ±5%)	[R110]
64	VRS-CY1JB513J	AA		C	Resistor(1/16W 51KΩ ±5%)	[R111]
65	VRS-CY1JB363J	AA		C	Resistor(1/16W 36KΩ ±5%)	[R112]
66	VRS-CY1JB332J	AA		C	Resistor(1/16W 3.3KΩ ±5%)	[R113]
67	VRS-CY1JB332J	AA		C	Resistor(1/16W 3.3KΩ ±5%)	[R114]
68	VRS-CY1JB152J	AA		C	Resistor(1/16W 1.5KΩ ±5%)	[R115]
69	VRS-CY1JB152J	AA		C	Resistor(1/16W 1.5KΩ ±5%)	[R116]
70	VRS-CY1JB102J	AA		C	Resistor(1/16W 1KΩ ±5%)	[R117]
71	VRS-CY1JB113J	AA		C	Resistor(1/16W 11KΩ ±5%)	[R118]
72	QSW-Z2263XHZZ	AG		B	Hook switch	[SW1]
73	RTRNZ2163SCZZ	AH		B	Transformer(TRTEP17-0411F)	[T1]
74	VHVERZV5D471/	AC		B	Varistor(ERZV5D471)	[VA1]
75	VHVERZV5D471/	AC		B	Varistor(ERZV5D471)	[VA2]
76	VHVTN07G101-1	AB		B	Varistor(TNR07G101K)	[VA3]
77	VHERD2R2FB2-1	AD	N	B	Zener diode(RD2.2FB2)	[ZD1]
78	VHERD2R2FB2-1	AD	N	B	Zener diode(RD2.2FB2)	[ZD2]
79	VHEHZ27-1/-1	AB		B	Zener diode(HZ27)	[ZD3]
80	VHEMTZJ6R8B-1	AC		B	Zener diode(MTZJ6.8B)	[ZD4]
81	VHE1ZC27+++1	AC	N	B	Zener diode(1ZC27)	[ZD5]
82	VHEHZ2C1///-1	AA		B	Zener diode(HZ2C1)	[ZD6]
83	VHEHZ2C1///-1	AA		B	Zener diode(HZ2C1)	[ZD7]
	(Unit)					
901	DCEKL259CSC01	BG	N	E	TEL/LIU and Hook SW PWB unit	
[13] Printer PWB unit						
1	VCEAGA1VW476M	AB		C	Capacitor(35WV 47μF)	[C1]
2	VCEAGA1VW476M	AB		C	Capacitor(35WV 47μF)	[C2]
3	VCKYPA1HB391K	AA		C	Capacitor(50WV 390PF)	[C3]
4	VCTYPA1HF104Z	AC		C	Capacitor(50WV 0.1μF)	[C4]
5	VCKYPA1HB102K	AA		C	Capacitor(50WV 1000PF)	[C5]
6	VCKYPA1HB102K	AA		C	Capacitor(50WV 1000PF)	[C6]
7	VCKYPA1HB102K	AA		C	Capacitor(50WV 1000PF)	[C7]
8	VCKYPA1HB102K	AA		C	Capacitor(50WV 1000PF)	[C8]
9	VCKYPA1HB331K	AA		C	Capacitor(50WV 330PF)	[C9]
10	VCTYPA1HF104Z	AC		C	Capacitor(50WV 0.1μF)	[C10]
11	VCKYPA1HB331K	AA		C	Capacitor(50WV 330PF)	[C11]
12	VCKYPA1HB102K	AA		C	Capacitor(50WV 1000PF)	[C12]
13	VCKYPA1HB101K	AA		C	Capacitor(50WV 100PF)	[C13]
14	VCQYNA1HM472K	AA		C	Capacitor(50WV 4700PF)	[C14]
15	VCKYPA1HB101K	AA		C	Capacitor(50WV 100PF)	[C15]
16	VCKYPA1HB101K	AA		C	Capacitor(50WV 100PF)	[C16]
17	VCKYPA1HB101K	AA		C	Capacitor(50WV 100PF)	[C17]

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
[13] Printer PWB unit					
18	VCKYPA1HB391K	AA		C	Capacitor(50WV 390PF) [C18]
19	VCQYNA1HM472K	AA		C	Capacitor(50WV 4700PF) [C19]
20	VCQYNA1HM153K	AB		C	Capacitor(50WV 0.015μF) [C20]
21	VCKYPA1HB102K	AA		C	Capacitor(50WV 1000PF) [C21]
22	VCKYPA1HB102K	AA		C	Capacitor(50WV 1000PF) [C22]
23	VCTYPA1HF104Z	AC		C	Capacitor(50WV 0.1μF) [C23]
24	VCTYPA1HF104Z	AC		C	Capacitor(50WV 0.1μF) [C24]
25	VCEAGA1VW476M	AB		C	Capacitor(35WV 47μF) [C25]
26	VCKYPA1HB391K	AA		C	Capacitor(50WV 390PF) [C26]
27	VCKYPA1HB101K	AA		C	Capacitor(50WV 100PF) [C28]
28	VCKYPA1HB391K	AA		C	Capacitor(50WV 390PF) [C29]
29	VCTYPA1HF104Z	AC		C	Capacitor(50WV 0.1μF) [C30]
30	VCKYPA1HB102K	AA		C	Capacitor(50WV 1000PF) [C31]
31	VCQYNA1HM222K	AA		C	Capacitor(50WV 2200PF) [C32]
32	VCKYQY3FB102K	AD		C	Capacitor(3KWV 1000PF) [C33]
33	VCKYQY3JB102K	AD		C	Capacitor(6KWV 1000PF) [C34]
34	VCKYQY3JB102K	AD		C	Capacitor(6KWV 1000PF) [C35]
35	VCKYQY3JB102K	AD		C	Capacitor(6KWV 1000PF) [C36]
36	VCKYQY3AB102K	AC		C	Capacitor(1KWV 1000PF) [C37]
37	VCKYPA1HB391K	AA		C	Capacitor(50WV 390PF) [C38]
38	VCKYQY3AB102K	AC		C	Capacitor(1KWV 1000PF) [C39]
39	VCKYQY3DB151K	AC		C	Capacitor(2KWV 150PF) [C40]
40	VCKYQY3AB102K	AC		C	Capacitor(1KWV 1000PF) [C41]
41	VCTYPA1HF104Z	AC		C	Capacitor(50WV 0.1μF) [C42]
42	VCKYPA1HB101K	AA		C	Capacitor(50WV 100PF) [C43]
43	VCKYPA1HB102K	AA		C	Capacitor(50WV 1000PF) [C44]
44	VCKYPA1HB102K	AA		C	Capacitor(50WV 1000PF) [C45]
45	VCEAGA1VW476M	AB		C	Capacitor(35WV 47μF) [C46]
46	VCTYPA1HF104Z	AC		C	Capacitor(50WV 0.1μF) [C47]
47	QCNCM2401SC0C	AB		C	Connector(3pin) [CNFM]
48	QCNCW0053GCZZ	AD		C	Connector(9pin) [CNLSU]
49	QCNCM7022SC0D	AC		C	Connector(4pin) [CNMMT]
50	QCNCW0946FCZZ	AH		C	Connector(36pin) [CNPC]
51	QCNCM704BAF06	AC		C	Connector(2pin) [CNPL]
52	QCNCW2436SC5J	AB		C	Connector(50pin) [CNPRT]
53	QCNCM2575SC1B	AF		C	Connector(12pin) [CNPW]
54	QCNCM7022SC0E	AB		C	Connector(5pin) [CNTNR]
55	VHDDSM1D1/-1	AB		B	Diode(DSM1D) [D1]
56	VHDSHV06NK/-1	AE		B	Diode(SHV-06) [D2]
57	VHDSHV06NK/-1	AE		B	Diode(SHV-06) [D3]
58	VHDDSM1D1/-1	AB		B	Diode(DSM1D) [D4]
59	VHDSHV03///-1	AE		B	Diode(SHV-03) [D5]
60	VHDSHV03///-1	AE		B	Diode(SHV-03) [D6]
61	VHDSHV06NK/-1	AE		B	Diode(SHV-06) [D7]
62	VHDSHV06NK/-1	AE		B	Diode(SHV-06) [D8]
63	VHDSHV02///-1	AD		B	Diode(SHV-02) [D9]
64	VHDDSS133/-1	AA		B	Diode(1SS270) [D10]
65	QTANN2046SCZZ	AC		C	Terminal(N2046) [DC-BIA]
66	QTANN2046SCZZ	AC		C	Terminal(N2046) [DRUM]
67	VHVICPN10/-1	AD		C	IC protector(ICP-N10) [F1]
68	VHVICPN25/-1	AD		C	IC protector(ICP-N25) [F2]
69	QTANN2046SCZZ	AC		C	Terminal(N2046) [FU-G]
70	VHIULN2003AN/	AE		B	IC, TRANSISTOR ARRAY(ULN2003) [IC1]
71	VHIA2918SWH//	AR		B	IC, MOTOR DRIVER(A2918SWH) [IC2]
72	QTANN2046SCZZ	AC		C	Terminal(N2046) [MC]
73	VHPSG206S/-1	AG		B	Photo transistor(SG206S) [PI1]
74	VHPSG206S/-1	AG		B	Photo transistor(SG206S) [PI2]
75	VSDTC114ES/-1	AB		B	Transistor(DTC114) [Q1]
76	VS2SA854SR/-1	AC		B	Transistor(2SA854SR) [Q2]
77	VS2SC1815GR-1	AB		B	Transistor(2SC1815GR) [Q3]
78	VS2SA933SS/-1	AB		B	Transistor(2SA933S) [Q4]
79	VS2SD1264/-1	AF		B	Transistor(2SD1264) [Q5]
80	VS2SA933SS/-1	AB		B	Transistor(2SA933S) [Q6]
81	VS2SC1815GR-1	AB		B	Transistor(2SC1815GR) [Q7]
82	VS2SA933SS/-1	AB		B	Transistor(2SA933S) [Q8]
83	VS2SD1264/-1	AF		B	Transistor(2SD1264) [Q9]
84	VRD-HT2EY472J	AA		C	Resistor(1/4W 4.7KΩ ±5%) [R2]
85	VRD-HT2EY473J	AA		C	Resistor(1/4W 47KΩ ±5%) [R3]
86	VRD-HT2EY122J	AA		C	Resistor(1/4W 1.2KΩ ±5%) [R4]
87	VRD-HT2EY122J	AA		C	Resistor(1/4W 1.2KΩ ±5%) [R6]
88	VRD-HT2EY122J	AA		C	Resistor(1/4W 1.2KΩ ±5%) [R7]
89	VRD-HT2EY122J	AA		C	Resistor(1/4W 1.2KΩ ±5%) [R8]
90	VRD-HT2EY122J	AA		C	Resistor(1/4W 1.2KΩ ±5%) [R9]
91	VRD-HT2EY122J	AA		C	Resistor(1/4W 1.2KΩ ±5%) [R10]
92	VRD-HT2EY122J	AA		C	Resistor(1/4W 1.2KΩ ±5%) [R11]
93	VRD-HT2EY103J	AA		C	Resistor(1/4W 10KΩ ±5%) [R12]
94	VRD-HT2EY392J	AA		C	Resistor(1/4W 3.9KΩ ±5%) [R13]
95	VRD-HT2EY203J	AA		C	Resistor(1/4W 20KΩ ±5%) [R14]
96	VRD-HT2EY472J	AA		C	Resistor(1/4W 4.7KΩ ±5%) [R15]
97	VRD-HT2EY153J	AA		C	Resistor(1/4W 15KΩ ±5%) [R16]



NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
<b>[13] Printer PWB unit</b>						
98	VRD-HT2EY103J	AA		C	Resistor(1/4W 10KΩ ±5%)	[R17]
99	VRD-HT2EY203J	AA		C	Resistor(1/4W 20KΩ ±5%)	[R18]
100	VRD-HT2EY203J	AA		C	Resistor(1/4W 20KΩ ±5%)	[R19]
101	VRD-HT2EY103J	AA		C	Resistor(1/4W 10KΩ ±5%)	[R20]
102	VRD-HT2EY122J	AA		C	Resistor(1/4W 1.2KΩ ±5%)	[R21]
103	VRD-HT2EY122J	AA		C	Resistor(1/4W 1.2KΩ ±5%)	[R22]
104	VRD-HT2EY122J	AA		C	Resistor(1/4W 1.2KΩ ±5%)	[R23]
105	VRD-HT2EY122J	AA		C	Resistor(1/4W 1.2KΩ ±5%)	[R24]
106	VRD-HT2EY122J	AA		C	Resistor(1/4W 1.2KΩ ±5%)	[R25]
107	VRD-HT2EY122J	AA		C	Resistor(1/4W 1.2KΩ ±5%)	[R26]
108	VRD-HT2EY221J	AA		C	Resistor(1/4W 220Ω ±5%)	[R27]
109	VRD-HT2EY103J	AA		C	Resistor(1/4W 10KΩ ±5%)	[R28]
110	VRD-HT2EY104J	AA		C	Resistor(1/4W 100KΩ ±5%)	[R29]
111	VRNHT2EK1102F	AA		C	Resistor(1/4W 11.0KΩ ±1%)	[R30]
112	VRD-HT2EY203J	AA		C	Resistor(1/4W 20KΩ ±5%)	[R31]
113	VRD-HT2HY3R0J	AB		C	Resistor(1/2W 3.0Ω ±5%)	[R32]
114	VRD-HT2EY620J	AA		C	Resistor(1/4W 62Ω ±5%)	[R33]
115	VRD-HT2EY681J	AA		C	Resistor(1/4W 680Ω ±5%)	[R34]
116	VRD-HT2EY103J	AA		C	Resistor(1/4W 10KΩ ±5%)	[R36]
117	VRD-HT2EY474J	AA		C	Resistor(1/4W 470KΩ ±5%)	[R37]
118	VRD-HT2EY105J	AA		C	Resistor(1/4W 1.0MΩ ±5%)	[R38]
119	VRD-HT2EY512J	AA		C	Resistor(1/4W 5.1KΩ ±5%)	[R39]
120	VRD-HT2EY561J	AA		C	Resistor(1/4W 560Ω ±5%)	[R40]
121	VRD-HT2EY334J	AA		C	Resistor(1/4W 330KΩ ±5%)	[R41]
122	VRD-HT2EY221J	AA		C	Resistor(1/4W 220Ω ±5%)	[R42]
123	VRS-HT3AAR56J	AB		C	Resistor(1W 0.56Ω ±5%)	[R43]
124	VRD-HT2EY102J	AA		C	Resistor(1/4W 1.0KΩ ±5%)	[R44]
125	VRD-HT2EY102J	AA		C	Resistor(1/4W 1.0KΩ ±5%)	[R45]
126	VRS-HT3AAR56J	AB		C	Resistor(1W 0.56Ω ±5%)	[R46]
127	VRD-HT2EY153J	AA		C	Resistor(1/4W 15KΩ ±5%)	[R47]
128	VRD-HT2EY472J	AA		C	Resistor(1/4W 4.7KΩ ±5%)	[R48]
129	VRD-HT2EY512J	AA		C	Resistor(1/4W 5.1KΩ ±5%)	[R49]
130	VRD-HT2EY561J	AA		C	Resistor(1/4W 560Ω ±5%)	[R50]
131	VRD-HT2EY105J	AA		C	Resistor(1/4W 1.0MΩ ±5%)	[R51]
132	VRHDPT3AF395J	AD		C	Resistor(1W 3.9MΩ ±5%)	[R52]
133	VRH-PT2HF395J	AC		C	Resistor(1/2W 3.9MΩ ±5%)	[R53]
134	VRD-HT2HY3R0J	AB		C	Resistor(1/2W 3.0Ω ±5%)	[R54]
135	VRD-HT2EY620J	AA		C	Resistor(1/4W 62Ω ±5%)	[R55]
136	VRHYKU3AD257K	AH		C	Resistor(1W 250MΩ ±10%)	[R56]
137	VRHAKU2HD107J	AF		C	Resistor(1/2W 100MΩ ±5%)	[R57]
138	VRHAKU2HD207J	AF		C	Resistor(1/2W 200MΩ ±5%)	[R58]
139	VRHAKU2HD825J	AF		C	Resistor(1/2W 8.2MΩ ±5%)	[R59]
140	VRD-HT2EY000J	AA		C	Resistor(1/4W 0Ω ±5%)	[R60]
141	RTRNZ0022GCZ1	AL		B	H/V transformer(Z0022)	[T1]
142	RTRNZ0021GCZZ	AL		B	H/V transformer(Z0021)	[T2]
143	QTANN2046SCZZ	AC		C	Terminal(N2046)	[TC]
144	RVR-M1615QCZZ	AC		C	Variable resistor	[VR1]
145	RVR-M251AQCZZ	AC		C	Variable resistor	[VR2]
146	VHED2.4ESAB11	AC		B	Zener diode(RD2.4ES)	[ZD1]
147	VHERD30JSAB21	AC		B	Zener diode(RD30JS)	[ZD2]
148	VHERD30JSAB21	AC		B	Zener diode(RD30JS)	[ZD3]
149	VHED2.4ESAB11	AC		B	Zener diode(RD2.4ES)	[ZD4]
150	VHE1ZB200Y-1	AF		B	Zener diode(1ZB200Y)	[ZD5]
151	VHERD100E//-1	AC		B	Zener diode(RD100E)	[ZD6]
152	VHERD100E//-1	AC		B	Zener diode(RD100E)	[ZD7]
	(Unit)					
901	DCEK-224CSC01	BG		E	Printer PWB unit	
<b>[14] Power supply PWB unit</b>						
1	0KY0L551A0010	AE		C	Ferrite beads(BL02RN1)	[BEA1]
2	0KY0C245Q1040	AM		C	Film capacitor(250WV 0.1μF)	[C1]
3	0KY0C245Q1040	AM		C	Film capacitor(250WV 0.1μF)	[C3]
4	0KY0C344K2210	AV		C	Electrolytic capacitor(220PF)	[C5]
5	0KY0C176Q1020	AF		C	Ceramic capacitor(1000PF)	[C6]
6	0KY0C176Q1030	AN		C	Ceramic capacitor(0.01μF)	[C7]
7	0KY0C1A9R2210	AG		C	Ceramic capacitor(1KWV 220PF)	[C8]
8	0KY0C251E1030	AE		C	Film capacitor(50WV 0.01μF)	[C9]
9	0KY0C251E4720	AE		C	Film capacitor(50WV 4700PF)	[C10]
10	0KY0C151E1010	AE		C	Ceramic capacitor(50WV 100PF)	[C11]
11	0KY0C176Q1020	AF		C	Ceramic capacitor(1000PF)	[C15]
12	0KY0C162E1040	AF		C	Ceramic capacitor(50WV 0.1μF)	[C22]
13	0KY0C3A0D3310	AM		C	Electrolytic capacitor(330PF)	[C101]
14	0KY0C3A0D3310	AM		C	Electrolytic capacitor(330PF)	[C103]
15	0KY0C162E1040	AF		C	Ceramic capacitor(50WV 0.1μF)	[C105]
16	0KY0C3A0B3310	AL		C	Electrolytic capacitor(330PF)	[C301]
17	0KY0C3A0D3300	AG		C	Electrolytic capacitor(33PF)	[C302]

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
[14] Power supply PWB unit					
18	OKY0K207B0020	AK		C	Connector [CN1]
19	OKY0K251A0020	AK		C	Connector(B2P3-VH) [CN2]
20	OKY0K214L0120	AQ		C	Connector [CN101]
21	OKY0D251A0020	AD		B	Diode(1SS133) [D4]
22	OKY0D466A0600	AE		B	Zener diode(HZS9B) [D5]
23	OKY0D251A0020	AD		B	Diode(1SS133) [D6]
24	OKY0D251A0020	AD		B	Diode(1SS133) [D7]
25	OKY0D157A0060	AG		B	Diode(ERA15-06) [D10]
26	OKY0D157A0060	AG		B	Diode(ERA15-06) [D11]
27	OKY0D157A0060	AG		B	Diode(ERA15-06) [D12]
28	OKY0D157A0060	AG		B	Diode(ERA15-06) [D13]
29	OKY0D157A0060	AG		B	Diode(ERA15-06) [D51]
30	OKY0D157A0060	AG		B	Diode(ERA15-06) [D52]
31	OKY0D221B0020	AT		B	Diode(YG911S2R) [D101]
32	OKY0D466A0480	AE		B	Zener diode(HZS7A2) [D110]
33	OKY0D461A2700	AK		B	Zener diode [D202]
34	OKY0D277A0030	AP		B	Diode [D301]
35	OKY0D251A0020	AD		B	Diode(1SS133) [D501]
36	OKY0K716A8R00	AK		C	Fuse [F1]
37	OKY0K761A4R00	AQ		C	Fuse [F2]
38	OKY0W000A0050	AC		C	Fuse [F101]
39	OKY0M851A0010	AF		C	Fuse holder [FL1]
40	OKY0M851A0010	AF		C	Fuse holder [FL2]
41	OKY0MPS901200	AE		C	Heatsink [HS1]
42	OKY0MPS901200	AE		C	Heatsink [HS2]
43	OKY0H135A5R00	AV		B	IC(PQ05RD11) [IC301]
44	OKY0L114K1230	AR		C	Inductor [L1]
45	OKY0D763A4R00	AN		B	NTC thermistor(4Ω) [NTC1]
46	OKY0H719A0010	AP		B	Optical isolater(PC817B) [PC1]
47	OKY0H725A0010	AT		B	Optical isolater [PC2]
48	OKY0H719A0010	AP		B	Optical isolater(PC817B) [PC3]
49	OKY0T641A0010	AY		C	FET(2SK2638) [Q1]
50	OKY0T358A0040	AG		B	Transistor(2SC1741AS) [Q2]
51	OKY0T351A0050	AF		B	Transistor(2SC1740S) [Q101]
52	OKY0T351A0050	AF		B	Transistor(2SC1740S) [Q501]
53	OKY0R153U1050	AC		C	Resistor(1/4W 1MΩ) [R1]
54	OKY0R353U1840	AD		C	Resistor(1/4W 180KΩ) [R2]
55	OKY0R353U1840	AD		C	Resistor(1/4W 180KΩ) [R3]
56	OKY0R353U2430	AD		C	Resistor(1/4W 24KΩ) [R5]
57	OKY0R153U4710	AC		C	Resistor(1/4W 470Ω ±5%) [R6]
58	OKY0R153U1810	AC		C	Resistor(1/4W 180Ω) [R7]
59	OKY0R153U3330	AB		C	Resistor(1/4W 33KΩ) [R8]
60	OKY0R153U1010	AC		C	Resistor(1/4W 100Ω ±5%) [R9]
61	OKY0R153U3320	AC		C	Resistor(1/4W 3.3KΩ ±5%) [R10]
62	OKY0R153U5620	AC		C	Resistor(1/4W 5.6KΩ ±5%) [R11]
63	OKY0R153U1530	AC		C	Resistor(1/4W 15KΩ) [R12]
64	OKY0R153U1820	AD		C	Resistor(1/4W 1.8KΩ ±5%) [R13]
65	OKY0R153U3320	AC		C	Resistor(1/4W 3.3KΩ ±5%) [R16]
66	OKY0R153U6810	AC		C	Resistor(1/4W 680Ω) [R17]
67	OKY0R153U1000	AC		C	Resistor(1/4W 10Ω) [R19]
68	OKY0R362U1000	AG		C	Resistor(1/4W 10Ω) [R20]
69	OKY0R153U2200	AC		C	Resistor(1/4W 22Ω ±5%) [R21]
70	OKY0R362U1510	AG		C	Resistor(1/4W 22Ω ±5%) [R23]
71	OKY0R153U2230	AB		C	Resistor(1/4W 22KΩ ±5%) [R51]
72	OKY0R153U2230	AB		C	Resistor(1/4W 22KΩ ±5%) [R52]
73	OKY0R153U2730	AB		C	Resistor(1/4W 27KΩ ±5%) [R53]
74	OKY0R153U2730	AB		C	Resistor(1/4W 27KΩ ±5%) [R54]
75	OKY0R153U1020	AB		C	Resistor(1/4W 1KΩ) [R101]
76	OKY0R153U3310	AC		C	Resistor(1/4W 330Ω ±5%) [R102]
77	OKY0R153U3340	AC		C	Resistor(1/4W 330KΩ ±5%) [R103]
78	OKY0R153U1530	AC		C	Resistor(1/4W 15KΩ) [R105]
79	OKY0R353U7520	AD		C	Resistor(1/4W 7.5KΩ) [R106]
80	OKY0R153U4720	AB		C	Resistor(1/4W 4.7KΩ) [R120]
81	OKY0R153U3920	AC		C	Resistor(1/4W 3.9KΩ ±5%) [R130]
82	OKY0R153U3920	AC		C	Resistor(1/4W 3.9KΩ ±5%) [R131]
83	OKY0R153U3920	AC		C	Resistor(1/4W 3.9KΩ ±5%) [R132]
84	OKY0R153U4720	AB		C	Resistor(1/4W 4.7KΩ) [R501]
85	OKY0R153U4720	AB		C	Resistor(1/4W 4.7KΩ) [R502]
86	OKY0R153U4720	AB		C	Resistor(1/4W 4.7KΩ) [R503]
87	OKY0R153U4720	AB		C	Resistor(1/4W 4.7KΩ) [R504]
88	OKY0R153U1030	AC		C	Resistor(1/4W 10KΩ) [R505]
89	OKY0R153U1030	AC		C	Resistor(1/4W 10KΩ) [R507]
90	OKY0R153U4730	AC		C	Resistor(1/4W 47KΩ) [R508]
91	OKY0R153U4730	AC		C	Resistor(1/4W 47KΩ) [R509]
92	OKY0K309A0240	AY		B	Relay [RL1]
93	OKY0K140A0010	AU		C	Switch [SW101]
94	OKY0L200C0810	BA		B	Transformer [T1]
95	OKY0D513A6120	AV		C	Transient voltage surge suppressor [TRA1]
96	OKY0R854E5020	AK		B	Variable resistor(1/10W 5KΩ) [VR101]
97	OKY0D762A2410	AH		C	Transient voltage surge suppressor [Z1]



## Index

PARTS CODE	No.	PRICE RANK	NEW MARK	PART RANK
[C]				
CCASP2121SC08	2-901	BH	N	E
CCNW-270ASC01	1-1	AN		C
CFRM-2214SC51	7-23	BZ		E
CHLDZ0040PS73	9-1	AR		E
CPLTP0274PS51	8-1	AL		C
CPLTP3084SC02	10-1	AF	N	C
CPLTP3085SC02	10-4	AT		C
CPLTP3088SC02	10-2	AH		C
[D]				
DCEK-224CSC01	6-29	BG		E
"	13-901	BG		E
DCEK182PSCZZ	1-4	CF	N	E
"	11-901	CF	N	E
DCEKL259CSC01	1-5	BG	N	E
"	12-901	BG	N	E
DCEKP223CSC01	2-1	BF		E
"	15-901	BF		E
DHAI-0139GCZZ	7-1	AF		C
DUNT-205CSCZA	10-5	BL		S
DUNTK0152PSZZ	8-2	AE		C
DUNTK369BSCOG	10-3	AR		E
DUNTW221CSC01	9-901	BL		E
[G]				
GCABA2350SCZA	1-7	AU		D
GCABB2351SCZA	1-8	AN		C
GCABC2352SCZA	1-9	AW		D
GCABD2353SCYA	1-10	AM		D
GCASP2121SCZG	2-2	AQ	N	D
GCOVA2418SCZA	1-11	AL		D
GDAI-2074XHZZ	1-2	AK		C
GDAI-2075XHZZ	1-3	AE		C
GLEGG2075SCZZ	6-27	AK		C
[H]				
HPNLH2398SCZZ	1-13	AK		C
[J]				
JBTN-2282SCZA	2-3	AE		C
JBTN-2283SCZA	2-4	AE		C
JBTN-2284SCZZ	2-5	AC		C
JBTN-2285SCZA	2-6	AC		C
JBTN-2286SCZA	2-7	AC		C
JBTN-2287SCZZ	2-8	AC		C
JBTN-2288SCZA	2-9	AK		C
JKNBZ0004GCZZ	6-1	AC		C
[L]				
LANGA2828SCZZ	1-14	AD		C
LANGA2830SCZZ	1-15	AD		C
LANGF2827SCZZ	3-1	AD		C
LANGH2829SCZZ	1-21	AG		C
LANGR2833SCZZ	1-25	AC		C
LBNDJ2006SCZZ	1-17	AA		C
LBOSZ0058GCZ1	7-2	AE		C
LSHP2121SCZZ	5-2	AB		C
LSHZ2007HCZZ	1-12	AB		C
LFIX-0003GCZZ	7-3	AC		C
LFRM-0045GCZ1	8-3	AY		C
LFRM-2213SCZC	5-3	AQ		C
LHLDZ2180XHZZ	5-4	AC		C
LHLDZ2181XHZZ	5-5	AC		C
LPLTG2707XHZZ	3-2	AE		C
LPLTM0159GCZ1	6-2	AD		C
LPLTM0163GCZZ	8-4	AE		C
LPLTM0273GCZZ	7-4	AF		C
LPLTM0275GCZ1	8-5	AK		C
LPLTM0282GCZZ	6-3	AD		C
LPLTM3083SCZZ	6-32	AP		C
LPLTM3090SCZZ	3-3	AG		C
LPLTM3091SCZZ	4-1	AD		C
LPLTP2790XHZZ	3-4	AD		C
LPLTP3089SCZA	1-23	AD		C
LPLTP3094SCZZ	4-2	AG		C
LSTPP0022GCZZ	1-20	AD		C
LX-BZ0030GCZZ	9-B6	AB		C
LX-BZ0187FCZ1	7-B3	AA		C
LX-BZ1006LC03	1-B8	AA		C
LX-BZ2138XHZZ	1-B6	AB		C
LX-BZ2205SCZZ	1-B7	AB		C
"	3-B2	AB		C
LX-BZ2252SCZZ	6-B5	AB		C
LX-BZ3004SC0B	9-B7	AA		C

PARTS CODE	No.	PRICE RANK	NEW MARK	PART RANK
LX-WZ0017GCZZ	7-W1	AC		C
LX-WZ0018GCZZ	7-W2	AC		C
LX-WZ0019GCZZ	7-W3	AC		C
LX-WZ0044FCZZ	8-W3	AA		C
[M]				
MARMP2025SCZZ	3-6	AC		C
MLEVP0037GCZZ	6-4	AB		C
MLEVP0038GCZZ	8-7	AC		C
MLEVP0039GCZZ	8-8	AC		C
MLEVP0040GCZZ	8-9	AC		C
MLEVP0046GCZZ	7-9	AE		C
MLEVP0088GCZZ	7-10	AC		C
MLEVP0089GCZZ	8-10	AC		C
MLEVP0090GCZB	8-11	AE		C
MLEVP0091GCZZ	8-12	AC		C
MLEVP0093GCZZ	6-5	AD		C
MLEVP2330SCZZ	6-36	AE		C
MLEVP2331SCZA	3-7	AC		C
MLEVP2332SCZZ	1-6	AD		C
MSPRC0133GCA1	8-13	AB		C
MSPRC0135GCAZ	6-6	AB		C
MSPRC0149GCAZ	7-11	AA		C
MSPRC0155GCA2	8-14	AB		C
MSPRC0159GCAZ	7-12	AB		C
MSPRC0305GCZZ	8-16	AD		C
MSPRC0306GCZZ	8-17	AA		C
MSPRC0309GCZZ	8-18	AB		C
MSPRC0312GCZZ	8-19	AB		C
MSPRC0313GCZZ	8-20	AB		C
MSPRC0314GCZZ	8-21	AB		C
MSPRC0319GCZZ	7-13	AB		C
MSPRC3151SCZZ	6-7	AA		C
MSPRC3153SCZZ	3-8	AA		C
MSPRC3154SCZZ	1-47	AB		C
MSPRC3161SCZZ	1-26	AC		C
MSPRC3163SCZZ	3-9	AB		C
MSPRC3164SCZZ	3-10	AB		C
MSPRC3165SCZZ	1-27	AC		C
MSPRC3166SCZZ	1-28	AB		C
MSPRC3177SCZZ	1-42	AA		C
MSPRC3234SCZZ	5-14	AC	N	C
MSPRP0158GCAZ	8-22	AB		C
MSPRP0304GCZZ	8-23	AC		C
MSPRP3054XHfJ	1-45	AD		C
MSPRP3150SCZZ	6-33	AD		C
MSPRP3152SCZZ	3-11	AE		C
MSPRT0137GCAZ	7-14	AC		C
MSPRT0307GCZZ	6-8	AA		C
MSPRT0308GCZZ	9-4	AA		C
MSPRT3162SCZZ	3-12	AB		C
MSPRT3168SCZZ	3-13	AC		C
[N]				
NBLTH0008GCA1	6-9	AC		C
NBRGC0035GCZ1	9-6	AE		C
NBRGP0082GCZZ	9-7	AB		C
NBRGP0104GCZZ	8-24	AC		C
NBRGP0105GCZZ	8-25	AC		C
NBRGP0106GCZZ	6-10	AF		C
NBRGP0108GCZZ	6-11	AD		C
NBRGP2141XHZZ	5-10	AH		C
NFANP0005GCZZ	6-12	AE		C
NGERH0071GCZZ	6-13	AC		C
NGERH0072GCZ1	6-14	AD		C
NGERH0076GCZZ	6-15	AC		C
NGERH0077GCZZ	6-16	AC		C
NGERH0078GCZZ	6-17	AC		C
NGERH0080GCZ1	7-15	AE		C
NGERH0083GCZZ	9-8	AC		C
NGERH0094GCZZ	6-18	AC		C
NGERH0096GCZZ	6-19	AC		C
NGERH0169GCZZ	8-26	AC		C
NGERH0171GCZ1	6-20	AE		C
NGERH0172GCZZ	6-21	AH		C
NGERH0173GCZZ	6-22	AD		C
NGERH0174GCZZ	9-9	AD		C
NGERH2275XHZZ	5-11	AC		C
NGERH2277XHZZ	4-3	AC		C
NGERH2279XHZZ	4-4	AC		C
NGERH2363AXZZ	1-30	AC		C
NGERH2380XHZZ	4-5	AC		C

PARTS CODE	No.	PRICE RANK	NEW MARK	PART RANK
NGERH2395AXZZ	4-6	AD		C
NGERP2318XHZZ	1-31	AD		C
NROLM0108GCZ1	9-10	AV		C
NROLP0109GCZZ	6-24	AY		C
NROLP0112GCZZ	7-16	AR		C
NROLP2332XHZZ	1-46	AD		C
NROLP2334XHZA	3-14	AC		C
NROLP2442SCZZ	6-25	AF		C
NROLP2443SCZZ	6-34	AF		C
NROLP7046XCZZ	8-27	AX		C
NROLR2333XHZZ	1-32	AP		C
NROLR2435SCZZ	5-7	AL		C
NROLR2436SCZZ	5-8	AK		C
NSFTZ2321SCZZ	1-33	AE		C
NSFTZ2322SCZZ	3-15	AC		C
NSFTZ2323SCZZ	3-16	AC		C
[P]				
PBARM0001GCA1	9-12	AD		C
PBRS-2050SCZZ	3-17	AH		C
PCOVP0038GCAZ	8-28	AA		C
PCOVP0086GCZZ	6-26	AD		C
PCOVP0091GCZZ	9-13	AW		C
PCOVP2127SCZA	1-34	AK		D
PCUSG2136SCZZ	6-23	AD		C
PGIDM0078GCZZ	8-29	AM		C
PGIDM2583SCZZ	3-18	AK		C
PGIDM2584SCYA	1-22	AD		C
PGIDM2585SCZA	1-35	AF		C
PGIDM2586SCZA	1-36	AF		C
PGIDP2582SCZZ	3-19	AP		C
PGUMS2169SCZZ	1-19	AE		C
PMLT-0120GCZZ	8-30	AC		C
PMLT-0124GCZZ	7-5	AB		C
PPIPP0003GCZ1	7-17	AC		C
PPIPP0006GCZZ	7-18	AC		C
PRNGP0088FCZZ	6-28	AB		C
PSHEP0161GCZZ	9-14	AC		C
PSHEP0166GCZZ	7-19	AC		C
PSHEP0320GCZ1	7-20	AF		C
PSHEZ0190GCZZ	8-32	AC		C
PSHEZ0335GCZZ	7-21	AD		C
PSHEZ3497SCZZ	3-20	AE		C
PSHEZ3498SCZZ	5-13	AD		C
PSHEZ3508SCZZ	1-37	AE		C
PSHEZ3522SCZZ	1-38	AD		C
PSHEZ3528SCZZ	4-7	AC		C
PSHEZ3529SCZZ	1-43	AE		C
PSHEZ3530SCZZ	1-44	AD		C
PSHEZ3531SCZZ	1-40	AD		C
PSHEZ3534SCZZ	1-24	AC		C
PSHEZ3540SCZZ	5-9	AC		C
PSHEZ3591SCZZ	3-21	AG	N	C
PSLDM2063SCZZ	1-39	AF		C
PSPA20049GCZZ	7-22	AC		C
PTME-0022GCZZ	9-15	AF		C
[Q]				
QACCD2027XHZZ	6-31	AR		C
QCNCM2401SC0B	11-253	AA		C
QCNCM2401SC0C	13-47	AB		C
QCNCM2436SC5J	11-251	AB		C
QCNCM2442SC0B	12-26	AB		C
QCNCM2482SC2B	11-250	AE		C
QCNCM2548SC1B	12-28	AH		C
QCNCM2575SC1B	13-53	AF		C
QCNCM7014SC0B	11-252	AD		C
QCNCM7014SC0C	11-247	AA		C
QCNCM7014SC0F	11-249	AB		C
QCNCM7014SC0G	11-246	AB		C
QCNCM7022SC0D	13-49	AC		C
QCNCM7022SC0E	13-54	AB		C
QCNCM704BAF06	13-51	AC		C
QCNCW0053GCZZ	13-48	AD		C
QCNCW0946FCZZ	13-50	AH		C
QCNCW2436SC5J	13-52	AB		C
QCNCW2500SC1B	11-248	AF		C
QCNCW-268ASCZZ	2-10	AN		C
QCNCW-269ASCZZ	5-1	AG		C
QCNCW-271ASCZZ	12-27	AC		C
QCNCW-285ASCZZ	1-16	AH		C
"	3-5	AH		C

PARTS CODE	No.	PRICE RANK	NEW MARK	PART RANK
QCNW-289ASCOG	10-8	AG		C
QCNW-290ASCZZ	10-9	AE		C
QCNW-342ASCZZ	1-29	AC		C
"	4-9	AC		C
QCNW-343ASCZZ	1-41	AC		C
QCNW-387ASCZZ	6-37	AD		C
QFS-P2010SCZZ	11-261	AD	B	
QFS-T0005GCZZ	9-16	AQ	A	
QJAKZ2060SC0B	12-38	AD		C
"	12-39	AD		C
QJAKZ2079XH0D	12-40	AD		C
QSLP-0028GCZZ	8-6	AE		C
QSLP-0029GCZZ	9-17	AD		C
QSLP-0030GCZZ	9-2	AD		C
QSLP-0032GCZZ	8-15	AD		C
QSOCZ2067SC42	11-272	AE		C
QSW-K0005AWZZ	11-516	AC		C
"	15-1	AC		C
QSW-M2294XHZZ	2-12	AE		C
"	15-3	AE		C
QSW-Z2262AXZZ	2-11	AE		C
"	15-2	AE		C
QSW-Z2263XHZZ	12-72	AG	B	
QTANN2046SCZZ	13-65	AC		C
"	13-66	AC		C
"	13-69	AC		C
"	13-72	AC		C
"	13-143	AC		C
[R]				
RC-FZ3024SCZZ	12-4	AG		C
RC-FZ3061SCZZ	12-3	AG	N	C
RC-KZ0001RCZZ	11-242	AD		C
"	11-243	AD		C
"	11-244	AD		C
"	11-245	AD		C
RCILZ0006GCZZ	11-281	AC		C
RCILZ2118SCZZ	12-33	AD	N	C
RCILZ2165SCZZ	11-513	AB	N	C
"	11-514	AB	N	C
RCORF2124XHZZ	5-12	AE	B	
RCORF2125XHZZ	1-48	AE	B	
RCORF7013XCZZ	7-6	AH	B	
RCRSB0297AFZZ	11-522	AD	B	
RCRSB2167SCZZ	11-518	AK	B	
RCRSQ2159SCZZ	11-520	AF	B	
RCRSQ2161SCZZ	11-517	AF	B	
RCRSQ2008GCZZ	11-521	AH	B	
RCRSZ7008SCZZ	11-519	AD	B	
RDENT2148SCZZ	6-30	BH	E	
"	14-901	BH	E	
RDTCT0014GCZZ	9-3	AP	B	
RFILN2027XHZZ	12-34	AC		C
"	12-35	AC		C
"	12-36	AC		C
"	12-37	AC		C
RH-IX2129SCZZ	11-276	AY	B	
RH-IX2164XHZZ	11-279	AY	N	B
RLMPU0021GCZZ	9-5	AX	B	
RMOTN0039GCZZ	7-7	AZ	B	
RMOTZ2150SCZZ	4-8	AU	B	
RMOTZ2153SCZZ	6-35	AU	B	
RPLU-0004GCZZ	7-8	AN	C	
RR-DZ1115AFZZ	11-2	AC		C
"	11-3	AC		C
"	11-4	AC		C
"	11-5	AC		C
"	11-11	AC		C
"	11-12	AC		C
"	11-13	AC		C
"	11-14	AC		C
"	11-18	AC		C
"	11-19	AC		C
"	11-20	AC		C
"	11-26	AC		C
"	11-27	AC		C
"	11-28	AC		C
"	11-29	AC		C
RR-HZ3011SCZZ	12-53	AC		C
RR-TZ3012SCJ0	11-10	AB		C
"	11-24	AB		C

PARTS CODE	No.	PRICE RANK	NEW MARK	PART RANK
RR-TZ3012SC10	11-15	AB		C
RR-TZ3016SCZZ	11-6	AA		C
"	11-7	AA		C
"	11-8	AA		C
"	11-9	AA		C
"	11-21	AA		C
"	11-22	AA		C
"	11-23	AA		C
RR-TZ3017SCZZ	11-16	AC		C
RR-TZ3018SCZZ	11-17	AC		C
"	11-25	AC		C
RRLYD3433XHZZ	12-25	AH	B	
RTRNZ0021GCZZ	13-142	AL	B	
RTRNZ0022GCZ1	13-141	AL	B	
RTRNZ2163SCZZ	12-73	AH	B	
RUNTZ2057SCZZ	5-6	BE	E	
RVR-M1615QCZZ	13-144	AC		C
RVR-M251AQCZZ	13-145	AC		C
[S]				
SPAKA266CSCZZ	10-19	AC		D
SPAKA315BSCZZ	10-10	AK		D
SPAKA316BSCZZ	10-11	AK		D
SPAKA317BSCZZ	10-12	AE		D
SPAKC229CSCCZ	10-13	AS	N	D
SPAKP355BSCZZ	10-14	AE		D
SSAKA2340QCZZ	10-15	AA		D
SSAKA3001CCZZ	10-16	AA		D
[T]				
TCAUH0992FCZZ	9-11	AE		D
TCAUS2034SCZZ	1-18	AD		D
TCAUZ2035SCZZ	10-17	AC		D
TINSE4147SCCZ	10-18	AZ	N	D
TLABM311BSCZA	10-6	AE		D
TLABZ3405FCZZ	11-524	AB		D
[U]				
UBATL2049SCZZ	11-1	AF		B
UDSKA2024SCZA	10-7	AK		E
[V]				
VCCCCY1EH561J	12-19	AB		C
VCCCCY1HH100J	11-170	AA		C
"	11-198	AA		C
"	11-199	AA		C
VCCCCY1HH101J	11-173	AA		C
"	11-174	AA		C
"	11-179	AA		C
"	11-186	AA		C
VCCCCY1HH150J	11-172	AB		C
"	11-213	AB		C
VCCCCY1HH180J	11-77	AA		C
"	11-78	AA		C
"	11-79	AA		C
"	11-80	AA		C
"	11-81	AA		C
"	11-82	AA		C
"	11-83	AA		C
"	11-84	AA		C
"	11-85	AA		C
"	11-86	AA		C
"	11-87	AA		C
"	11-99	AA		C
"	11-100	AA		C
"	11-101	AA		C
"	11-102	AA		C
"	11-103	AA		C
"	11-104	AA		C
"	11-105	AA		C
"	11-106	AA		C
"	11-107	AA		C
"	11-108	AA		C
"	11-109	AA		C
"	11-180	AA		C
"	11-181	AA		C
"	11-182	AA		C
"	11-226	AA		C
"	11-230	AA		C
VCCCCY1HH220J	11-113	AA		C
VCCCCY1HH270J	11-112	AA		C
VCCCCY1HH300J	11-145	AB		C
"	11-146	AB		C
VCCCCY1HH331J	11-115	AB		C

PARTS CODE	No.	PRICE RANK	NEW MARK	PART RANK
VCCCCY1HH331J	11-116	AB		C
"	11-154	AB		C
VCCCCY1HH470J	11-164	AA		C
"	11-184	AA		C
"	11-188	AA		C
"	11-196	AA		C
VCCCCY1HH471J	11-94	AA		C
"	11-151	AA		C
"	11-187	AA		C
VCCCCY1HH560J	11-124	AA		C
"	11-125	AA		C
"	11-126	AA		C
"	11-127	AA		C
"	11-129	AA		C
"	11-130	AA		C
"	11-131	AA		C
"	11-132	AA		C
"	11-133	AA		C
"	11-208	AA		C
"	11-209	AA		C
"	11-210	AA		C
VCCCCY1HH681J	11-197	AA		C
VCEAEA1CW336M	11-41	AB		C
VCEAEA1CW476M	11-39	AA		C
"	11-40	AA		C
VCEAEA1HW225M	12-12	AA		C
VCEAGA1CW476M	11-32	AB		C
"	11-33	AB		C
"	11-34	AB		C
"	11-37	AB		C
VCEAGA1HW105M	11-35	AB		C
VCEAGA1HW106M	11-69	AA		C
"	11-70	AA		C
"	11-71	AA		C
VCEAGA1HW107M	11-38	AA		C
VCEAGA1HW226M	11-68	AB		C
"	12-7	AB		C
VCEAGA1HW475M	11-36	AA		C
"	12-8	AA		C
"	12-9	AA		C
"	12-10	AA		C
VCEAGA1HW476M	12-5	AB		C
VCEAGA1VW476M	13-1	AB		C
"	13-2	AB		C
"	13-25	AB		C
"	13-45	AB		C
VCEAJA1HW106M	11-31	AB		C
"	12-2	AB		C
"	12-11	AB		C
VCEAJA1HW226M	11-67	AC	N	C
VCEAJA1HW475M	11-30	AB		C
VCKYCY1AF105Z	11-74	AC		C
"	11-93	AC		C
"	11-95	AC		C
"	11-139	AC		C
"	11-140	AC		C
"	11-152	AC		C
"	11-156	AC		C
"	11-157	AC		C
"	11-206	AC		C
"	11-232	AC		C
"	11-241	AC		C
"	12-23	AC		C
VCKYCY1CB104K	11-96	AB		C
"	11-114	AB		C
"	11-135	AB		C
"	11-136	AB		C
"	11-233	AB		C
"	11-234	AB		C
VCKYCY1EB333K	12-17	AB		C
VCKYCY1EF104Z	11-42	AA		C
"	11-43	AA		C
"	11-44	AA		C
"	11-47	AA		C
"	11-49	AA		C
"	11-50	AA		C
"	11-51	AA		C
"	11-52	AA		C
"	11-53	AA		C
"	11-54	AA		C



PARTS CODE	No.	PRICE RANK	NEW MARK	PART RANK
VCKYCY1EF104Z	11-56	AA		C
"	11-57	AA		C
"	11-58	AA		C
"	11-59	AA		C
"	11-60	AA		C
"	11-61	AA		C
"	11-62	AA		C
"	11-63	AA		C
"	11-64	AA		C
"	11-65	AA		C
"	11-66	AA		C
"	11-72	AA		C
"	11-97	AA		C
"	11-98	AA		C
"	11-110	AA		C
"	11-111	AA		C
"	11-117	AA		C
"	11-119	AA		C
"	11-120	AA		C
"	11-121	AA		C
"	11-138	AA		C
"	11-147	AA		C
"	11-148	AA		C
"	11-150	AA		C
"	11-165	AA		C
"	11-166	AA		C
"	11-167	AA		C
"	11-169	AA		C
"	11-171	AA		C
"	11-175	AA		C
"	11-176	AA		C
"	11-177	AA		C
"	11-178	AA		C
"	11-189	AA		C
"	11-191	AA		C
"	11-192	AA		C
"	11-200	AA		C
"	11-204	AA		C
"	11-205	AA		C
"	11-219	AA		C
"	11-220	AA		C
"	11-221	AA		C
"	11-222	AA		C
"	11-223	AA		C
"	11-227	AA		C
"	11-228	AA		C
"	11-229	AA		C
"	11-235	AA		C
"	11-238	AA		C
"	11-239	AA		C
VCKYCY1HB102K	11-45	AA		C
"	11-46	AA		C
"	11-73	AA		C
"	11-118	AA		C
"	11-122	AA		C
"	11-128	AA		C
"	11-134	AA		C
"	11-142	AA		C
"	11-143	AA		C
"	11-149	AA		C
"	11-153	AA		C
"	11-159	AA		C
"	11-160	AA		C
"	11-161	AA		C
"	11-162	AA		C
"	11-163	AA		C
"	11-168	AA		C
"	11-183	AA		C
"	11-195	AA		C
"	11-207	AA		C
"	11-211	AA		C
"	11-215	AA		C
"	11-216	AA		C
"	11-217	AA		C
"	11-218	AA		C
"	11-231	AA		C
"	11-236	AA		C
"	11-237	AA		C
"	11-240	AA		C
"	12-14	AA		C

PARTS CODE	No.	PRICE RANK	NEW MARK	PART RANK
VCKYCY1HB102K	12-15	AA		C
"	12-20	AA		C
"	12-21	AA		C
VCKYCY1HB103K	11-75	AA		C
"	11-76	AA		C
"	11-137	AA		C
"	11-190	AA		C
VCKYCY1HB222K	11-88	AA		C
"	11-89	AA		C
"	11-90	AA		C
"	11-91	AA		C
"	11-92	AA		C
"	11-123	AA		C
"	11-141	AA		C
"	11-144	AA		C
"	11-158	AA		C
"	11-212	AA		C
"	11-214	AA		C
"	11-224	AA		C
"	11-225	AA		C
"	12-16	AA		C
"	12-22	AA		C
"	12-24	AA		C
VCKYCY1HB332K	12-18	AA		C
VCKYCY1HB472K	11-155	AA		C
"	11-193	AA		C
"	11-194	AA		C
"	11-202	AA		C
"	11-203	AA		C
VCKYCY1HF104Z	11-48	AA		C
"	11-55	AA		C
"	11-185	AA		C
"	11-201	AA		C
"	12-13	AA		C
VCKYPA1HB101K	13-13	AA		C
"	13-15	AA		C
"	13-16	AA		C
"	13-17	AA		C
"	13-27	AA		C
"	13-42	AA		C
VCKYPA1HB102K	13-5	AA		C
"	13-6	AA		C
"	13-7	AA		C
"	13-8	AA		C
"	13-12	AA		C
"	13-21	AA		C
"	13-22	AA		C
"	13-30	AA		C
"	13-43	AA		C
"	13-44	AA		C
VCKYPA1HB103K	12-6	AA		C
VCKYPA1HB331K	13-9	AA		C
"	13-11	AA		C
VCKYPA1HB391K	13-3	AA		C
"	13-18	AA		C
"	13-26	AA		C
"	13-28	AA		C
"	13-37	AA		C
VCKYQY3AB102K	13-36	AC		C
"	13-38	AC		C
"	13-40	AC		C
VCKYQY3DB151K	13-39	AC		C
VCKYQY3FB102K	13-32	AD		C
VCKYQY3JB102K	13-33	AD		C
"	13-34	AD		C
"	13-35	AD		C
VCQYNA1HM153K	13-20	AB		C
VCQYNA1HM222K	13-31	AA		C
VCQYNA1HM472K	13-14	AA		C
"	13-19	AA		C
VCTYPA1HF104Z	13-4	AC		C
"	13-10	AC		C
"	13-23	AC		C
"	13-24	AC		C
"	13-29	AC		C
"	13-41	AC		C
"	13-46	AC		C
VHDDAP202U/-1	11-254	AB		B
VHDDA204K/-1	11-259	AC		B
"	11-260	AC		B

PARTS CODE	No.	PRICE RANK	NEW MARK	PART RANK
VHDDSM1D1//1	13-55	AB		B
"	13-58	AB		B
VHDDSS133//1	12-29	AA		B
"	12-30	AA		B
"	13-64	AA		B
VHDHRW0502A-1	11-258	AD		B
VHDSHV02//1	13-63	AD		B
VHDSHV03//1	13-59	AE		B
"	13-60	AE		B
VHDSHV06NK/-1	13-56	AE		B
"	13-57	AE		B
"	13-61	AE		B
"	13-62	AE		B
VHD0R5G4B42-1	12-31	AF		B
VHD1SS355//1	11-255	AB		B
"	11-256	AB		B
"	11-257	AB		B
VHED2.4ESAB11	13-146	AC		B
"	13-149	AC		B
VHEHZ2C1//1	12-82	AA		B
"	12-83	AA		B
VHEHZ27-1//1	12-79	AB		B
VHEMTZJ6R8B-1	12-80	AC		B
VHERD100E//1	13-151	AC		B
"	13-152	AC		B
VHERD2R2FB2-1	12-77	AD	N	B
"	12-78	AD	N	B
VHERD22FB3/-1	11-523	AC		B
VHERD30JSAB21	13-147	AC		B
"	13-148	AC		B
VHE1ZB200Y/-1	13-150	AF		B
VHE1ZC27+++1	12-81	AC	N	B
VHIA2918SWH//	13-71	AR		B
VHIBU4066BCF1	11-263	AD		B
VHIFM336//1	11-268	BN	N	B
VHIHCF4053M1T	11-267	AG		B
VHILC82103/-1	11-264	BA		B
VHILR38784/-1	11-274	BD		B
VHINJM2113M-1	11-269	AG		B
VHINJM2902M-1	11-262	AF		B
VHINJM2904D-1	12-32	AG		B
VHIPST596CMT1	11-278	AF		B
VHISH7041/28A	11-265	BE		B
VHISM8578BV-1	11-275	AK		B
VHIULN2003AN/	11-266	AE		B
"	13-70	AE		B
VHI1M16E//J-6	11-270	AZ		B
"	11-271	AZ		B
"	11-280	AZ		B
VHI27080FBF0A	11-273	BQ	N	B
VHI62FP332P-1	11-515	AF		B
VHI74HCU04S-1	11-277	AF		B
VHPPC814X//1	12-41	AE		B
VHPSG206S//1	13-73	AG		B
"	13-74	AG		B
VHPTLP521-1BL	12-42	AE		B
VHVERZV5D471/	12-74	AC		B
"	12-75	AC		B
VHVICPN10//1	13-67	AD		C
VHVICPN25//1	13-68	AD		C
VHVRA391PV6-1	12-1	AE		B
VHVTN07G101-1	12-76	AB		B
VRD-HT2EY000J	13-140	AA		C
VRD-HT2EY100J	11-291	AA		C
VRD-HT2EY102J	13-124	AA		C
"	13-125	AA		C
VRD-HT2EY103J	13-93	AA		C
"	13-98	AA		C
"	13-101	AA		C
"	13-109	AA		C
"	13-116	AA		C
VRD-HT2EY104J	13-110	AA		C
VRD-HT2EY105J	13-118	AA		C
"	13-131	AA		C
VRD-HT2EY122J	13-86	AA		C
"	13-87	AA		C
"	13-88	AA		C
"	13-89	AA		C
"	13-90	AA		C
"	13-91	AA		C

PARTS CODE	No.	PRICE RANK	NEW MARK	PART RANK
VRD-HT2EY122J	13-92	AA		C
"	13-102	AA		C
"	13-103	AA		C
"	13-104	AA		C
"	13-105	AA		C
"	13-106	AA		C
"	13-107	AA		C
VRD-HT2EY151J	12-55	AA		C
VRD-HT2EY153J	13-97	AA		C
"	13-127	AA		C
VRD-HT2EY203J	13-95	AA		C
"	13-99	AA		C
"	13-100	AA		C
"	13-112	AA		C
VRD-HT2EY221J	13-108	AA		C
"	13-122	AA		C
VRD-HT2EY223J	12-54	AA		C
VRD-HT2EY300J	12-49	AA		C
VRD-HT2EY334J	13-121	AA		C
VRD-HT2EY392J	13-94	AA		C
VRD-HT2EY472J	13-84	AA		C
"	13-96	AA		C
"	13-128	AA		C
VRD-HT2EY473J	13-85	AA		C
VRD-HT2EY474J	13-117	AA		C
VRD-HT2EY512J	13-119	AA		C
"	13-129	AA		C
VRD-HT2EY561J	13-120	AA		C
"	13-130	AA		C
VRD-HT2EY620J	13-114	AA		C
"	13-135	AA		C
VRD-HT2EY681J	13-115	AA		C
VRD-HT2EY910J	12-48	AA		C
VRD-HT2HY150J	12-51	AA		C
"	12-52	AA		C
VRD-HT2HY223J	12-50	AA		C
VRD-HT2HY3R0J	13-113	AB		C
"	13-134	AB		C
VRH-PT2HF395J	13-133	AC		C
VRHAKU2HD107J	13-137	AF		C
VRHAKU2HD207J	13-138	AF		C
VRHAKU2HD825J	13-139	AF		C
VRHDPT3AF395J	13-132	AD		C
VRHYKU3AD257K	13-136	AH		C
VRNHT2EK1102F	13-111	AA		C
VRS-CY1JB000J	11-283	AA		C
"	11-299	AA		C
"	11-311	AA		C
"	11-313	AA		C
"	11-335	AA		C
"	11-357	AA		C
"	11-361	AA		C
"	11-363	AA		C
"	11-389	AA		C
"	11-421	AA		C
"	11-426	AA		C
"	11-427	AA		C
"	11-428	AA		C
"	11-437	AA		C
"	11-438	AA		C
"	11-439	AA		C
"	11-440	AA		C
"	11-442	AA		C
"	11-460	AA		C
"	11-463	AA		C
"	11-464	AA		C
"	11-465	AA		C
"	11-476	AA		C
"	11-479	AA		C
"	11-480	AA		C
"	11-481	AA		C
"	11-482	AA		C
"	11-486	AA		C
"	11-487	AA		C
"	11-499	AA		C
"	11-502	AA		C
"	11-504	AA		C
"	12-63	AA		C
VRS-CY1JB100J	11-282	AA		C
"	11-496	AA		C

PARTS CODE	No.	PRICE RANK	NEW MARK	PART RANK
VRS-CY1JB101J	11-301	AA		C
"	11-308	AA		C
"	11-309	AA		C
"	11-310	AA		C
"	11-319	AA		C
"	11-324	AA		C
"	11-327	AA		C
"	11-328	AA		C
"	11-329	AA		C
"	11-341	AA		C
"	11-342	AA		C
"	11-346	AA		C
"	11-354	AA		C
"	11-387	AA		C
"	11-392	AA		C
"	11-396	AA		C
"	11-397	AA		C
"	11-398	AA		C
"	11-399	AA		C
"	11-430	AA		C
"	11-433	AA		C
"	11-443	AA		C
"	11-444	AA		C
"	11-467	AA		C
"	11-470	AA		C
"	11-490	AA		C
"	11-491	AA		C
"	11-492	AA		C
"	11-493	AA		C
"	11-498	AA		C
VRS-CY1JB102J	11-331	AA		C
"	11-367	AA		C
"	11-376	AA		C
"	11-411	AA		C
"	11-509	AA		C
"	11-511	AA		C
"	12-58	AA		C
"	12-59	AA		C
"	12-70	AA		C
VRS-CY1JB103J	11-298	AA		C
"	11-303	AA		C
"	11-312	AA		C
"	11-322	AA		C
"	11-336	AA		C
"	11-337	AA		C
"	11-344	AA		C
"	11-353	AA		C
"	11-365	AA		C
"	11-371	AA		C
"	11-372	AA		C
"	11-374	AA		C
"	11-383	AA		C
"	11-401	AA		C
"	11-424	AA		C
"	11-425	AA		C
"	11-453	AA		C
"	11-454	AA		C
"	11-455	AA		C
"	11-457	AA		C
"	11-458	AA		C
"	11-469	AA		C
"	11-477	AA		C
"	11-483	AA		C
"	11-484	AA		C
"	11-485	AA		C
"	11-500	AA		C
"	11-501	AA		C
"	11-503	AA		C
"	11-505	AA		C
"	12-57	AA		C
VRS-CY1JB104J	11-379	AA		C
VRS-CY1JB105J	11-318	AA		C
"	11-362	AA		C
"	11-391	AA		C
"	11-422	AA		C
VRS-CY1JB113J	11-359	AA		C
"	12-71	AA		C
VRS-CY1JB124J	11-316	AA		C
VRS-CY1JB133J	12-56	AA		C
VRS-CY1JB152J	11-294	AA		C

PARTS CODE	No.	PRICE RANK	NEW MARK	PART RANK
VRS-CY1JB152J	11-315	AA		C
"	12-68	AA		C
"	12-69	AA		C
VRS-CY1JB154J	11-378	AA		C
VRS-CY1JB163J	12-62	AA		C
VRS-CY1JB201J	11-373	AA		C
"	11-400	AA		C
"	11-441	AA		C
VRS-CY1JB202J	11-381	AA		C
"	11-461	AA		C
VRS-CY1JB203F	11-436	AA		C
VRS-CY1JB203J	11-358	AA		C
"	11-380	AA		C
"	11-413	AA		C
"	11-420	AA		C
VRS-CY1JB222J	11-296	AA		C
"	11-466	AA		C
VRS-CY1JB223J	11-507	AA		C
VRS-CY1JB271J	11-320	AA		C
"	11-321	AA		C
"	11-326	AA		C
"	11-343	AA		C
"	11-345	AA		C
"	11-393	AA		C
"	11-394	AA		C
"	11-462	AA		C
"	11-488	AA		C
"	11-489	AA		C
VRS-CY1JB273J	11-340	AA		C
VRS-CY1JB302J	11-334	AA		C
"	11-356	AA		C
"	11-375	AA		C
"	11-395	AA		C
VRS-CY1JB330J	11-292	AA		C
"	11-293	AA		C
"	11-302	AA		C
"	11-304	AA		C
"	11-305	AA		C
"	11-323	AA		C
"	11-366	AA		C
"	11-370	AA		C
"	11-416	AA		C
"	11-417	AA		C
"	11-418	AA		C
"	11-429	AA		C
"	11-449	AA		C
"	11-450	AA		C
"	11-451	AA		C
VRS-CY1JB332J	11-332	AA		C
"	11-333	AA		C
"	11-456	AA		C
"	11-459	AA		C
"	11-510	AA		C
"	12-66	AA		C
"	12-67	AA		C
VRS-CY1JB333J	11-317	AA		C
"	11-414	AA		C
"	11-415	AA		C
VRS-CY1JB363J	12-65	AA		C
VRS-CY1JB392J	11-419	AA		C
VRS-CY1JB394J	11-355	AA		C
VRS-CY1JB470J	11-402	AA		C
"	11-403	AA		C
"	11-404	AA		C
"	11-405	AA		C
"	11-406	AA		C
"	11-407	AA		C
"	11-408	AA		C
"	11-409	AA		C
"	11-410	AA		C
"	11-431	AA		C
"	11-432	AA		C
"	11-434	AA		C
"	11-435	AA		C
"	11-445	AA		C
"	11-446	AA		C
"	11-447	AA		C
"	11-448	AA		C
VRS-CY1JB471J	11-347	AA		C
"	11-348	AA		C





**CAUTION FOR BATTERY REPLACEMENT**

- (Danish)                   ADVARSEL !  
Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.  
Udskiftning må kun ske med batteri  
af samme fabrikat og type.  
Levér det brugte batteri tilbage til leverandoren.
- (English)                   Caution !  
Danger of explosion if battery is incorrectly replaced.  
Replace only with the same or equivalent type  
recommended by the equipment manufacturer.  
Discard used batteries according to manufacturer's instructions.
- (Finnish)                   VAROITUS  
Paristo voi räjähtää, jos se on virheellisesti asennettu.  
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan  
tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden  
mukaisesti.
- (French)                   ATTENTION  
Il y a danger d'explosion s' il y a remplacement incorrect  
de la batterie. Remplacer uniquement avec une batterie du  
même type ou d'un type recommandé par le constructeur.  
Mettre au rebut les batteries usagées conformément aux  
instructions du fabricant.
- (Swedish)                   VARNING  
Explosionsfare vid felaktigt batteribyte.  
Använd samma batterityp eller en ekvivalent  
typ som rekommenderas av apparattillverkaren.  
Kassera använt batteri enligt fabrikantens  
instruktion.
- (German)                   Achtung  
Explosionsgefahr bei Verwendung inkorrektter Batterien.  
Als Ersatzbatterien dürfen nur Batterien vom gleichen Typ oder  
vom Hersteller empfohlene Batterien verwendet werden.  
Entsorgung der gebrauchten Batterien nur nach den vom  
Hersteller angegebenen Anweisungen.

# SHARP

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