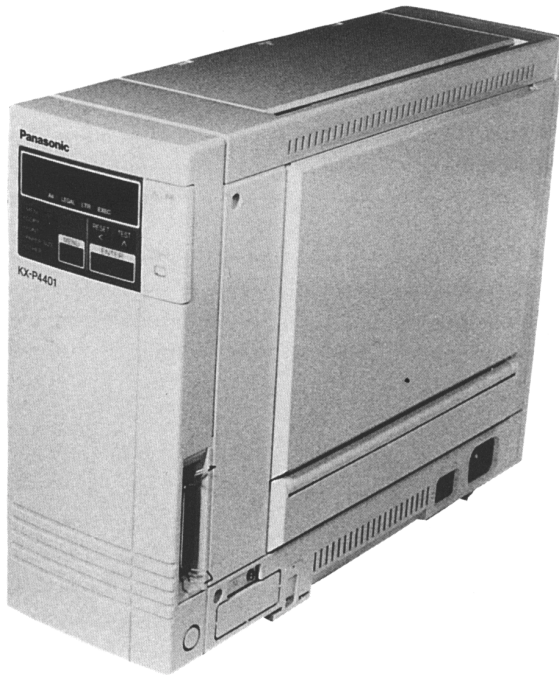


# Service Manual

Page Printer

## KX-P4401



SD

**SPECIFICATIONS/ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ**  
**OPERATOR CONTROLS AND INDICATORS/ОРГАНЫ УПРАВЛЕНИЯ И ИНДИКАТОРЫ**  
**COMPONENT IDENTIFICATION/РАСПОЛОЖЕНИЕ БЛОКОВ И УЗЛОВ ПРИНТЕРА**  
**PRINT PROCESS/ПРОЦЕСС ПЕЧАТИ**  
**BLOCK DIAGRAM/БЛОК СХЕМА**  
**EXPLANATION OF CONNECTORS/ОПИСАНИЕ РАЗЪЕМОВ**  
**COMPONENT REFERENCE GUIDE/ФУНКЦИОНАЛЬНОЕ НАЗНАЧЕНИЯ ВЫВОДОВ МИКРОСХЕМ**  
**SCHEMATIC DIAGRAM/ПРИНЦИПИАЛЬНАЯ СХЕМА**  
**ADJUSTMENT OF PRINT POSITION CALIBRATION/НАСТРОЙКА РАЗМЕЩЕНИЯ СТРАНИЦЫ ПРИ ВЫВОДЕ**  
**НА ПЕЧАТЬ**  
**PREVENTATIVE MAINTENANCE/ПРОФИЛАКТИЧЕСКОЕ ОБСЛУЖИВАНИЕ**  
**TROUBLESHOOTING/НЕИСПРАВНОСТИ И МЕТОДЫ ИХ УСТРАНЕНИЯ**  
**SPECIAL TOOL/СПЕЦИАЛЬНЫЕ ИНСТРУМЕНТЫ И ПРИСПОСОБЛЕНИЯ ДЛЯ РЕМОНТА**  
**REPLACEMENT PARTS LIST/СПИСОК ЗАПАСНЫХ ЧАСТЕЙ**

# Panasonic

## 1.1 Specifications

Printer	Printing Method	Electrophotographic LED array	
	Print Speed	4 pages per minute (ppm) maximum (Letter size paper, text mode, 5% image area, all originals)	
	Resolution	300 dots per inch (dpi)	
	Paper Feed	1 Multi purpose manual feed up to 100 sheets of paper	
	Paper Output	Face down; Up to 50 sheets of paper [75g/m <sup>2</sup> (20 lb.)]	
	Software Emulation	Panasonic LP (HP Laserjet Series III)	
	Font	Bitmap Font	Courier 10 :Upright, Italic, Bold Courier 12 :Upright, Italic, Bold Courier 15 :Upright, Italic Courier 16.66 :Upright, Italic Courier 20 :Upright Century PS :Upright, Italic, Bold
		All Fonts are available in Portrait and Landscape	
	Outline Font	CG Times	:Upright, Italic, Bold, Bold Italic
		Univers	:Upright, Italic, Bold, Bold Italic
	RAM Buffer	1MB (Expandable to a maximum of 2MB with optional 1MB RAM Board, 3MB with optional 2MB RAM Board and 5MB with optional 4MB RAM Board)	
	Operating Environment	10 to 32.5°C {50 to 90.5°F} 20 to 80 % RH	
	Storage Environment	0 to 35°C {32 to 95°F} 10 to 80 % RH	
	Warm Up Time	Approx. 1.5 minutes	
	Dimensions	127 (W) x 381 (D) x 297 (H) mm {5.0" x 15.0" x 11.7"}	
	Mass {Weight}	Approx. 6.3 kg { 13.9 lb. }	
	Voltage	220~240V ± 10 %, 5A	
	Frequency	50/60Hz	
	Power Consumption	600 watts ( Maximum, printing with fuser on ) 30 watts ( Minimum, standby mode with fuser off )	
	Density Control	Variable	
	Fusing System	Heat and Pressure Rollers	
	Photoreceptor	Organic Photoconductor ( OPC )	
	Development Process	Two-component, magnetic brush, dry toner process	
	Toner Replenishment	80g Cartridge	
	Consumables/Life	Toner 1,600 pages average (5.0% image area with repetitive printing of 10 pages) Drum 6,000 pages average (5.0% image area with repetitive printing of 10 pages)	

Paper *	Basic Weight	Regular paper using the multi manual feed Face down; 60 to 120 g/m <sup>2</sup> (16 to 32 pounds)
	Thickness	3.7 to 7.5 mils (1 mil=1/1000")
	Moisture Content	4% to 6%
	Smoothness	100 to 300 Sheffield
	Acid Content	5.5 PH minimum
	Fusing Compatibility	Must not scorch, melt, offset material, or release hazardous emissions when heated to 392 F (200°C) for 0.1 second
	Grain	Long grain
	Cut Edge Conditions	Cut with sharp blades, no paper dust
	Ash Content	Not to exceed 10%
	Curl	No allowable curl toward side to be imaged (printed)
	Packing	Polylaminated moisture proof ream wrap
	Paper Size	Letter : 8.5" x 11" ( 216 x 279 mm )
		Legal : 8.5" x 14" ( 216 x 356 mm )
		A4 : 8.27" x 11.7" ( 210 x 297 mm )
		Executive : 7.25" x 10.5" ( 184.1 x 266.7 mm )

★ Types of paper to avoid.

1. Extremely smooth or shiny paper or paper that is highly textured.
2. Coated paper.
3. Letterhead imprinted with low temperature or thermography. These materials may transfer onto the fusing roller and cause damage. Any pre-printed paper should use inks compatible with 392 F (200°C) for 0.1 second.
4. Damaged or wrinkled paper, or paper with irregularities such as tabs, staples, etc.
5. Multipart forms or carbonless paper.
6. Paper with a cotton and/or fiber content over 20%.

Interface	General	Centronics compatible parallel
	Data Transfer Speed	1,000 cps minimum
	Synchronization	External STROBE pulse
	Logic Level	TTL
	Handshaking	BUSY and $\overline{\text{ACK}}$ signals
	Connector Type	57-30360 ( AMPHENOL ) or equivalent
	Cable	Use a shielded cable 6.6 feet ( 2 meters ) or less in length
Options, Accessories and Supplies	KX-PEM1	2MB RAM Expansion Board
	KX-PEM2	4MB RAM Expansion Board
	KX-PEM3	1MB RAM Expansion Board
	KX-P455	Toner Kit ( 1,600 pages life )
	KX-PDM6	Drum Unit ( 6,000 pages life )
	KX-PPSU3	PostScript™ Upgrade Kit

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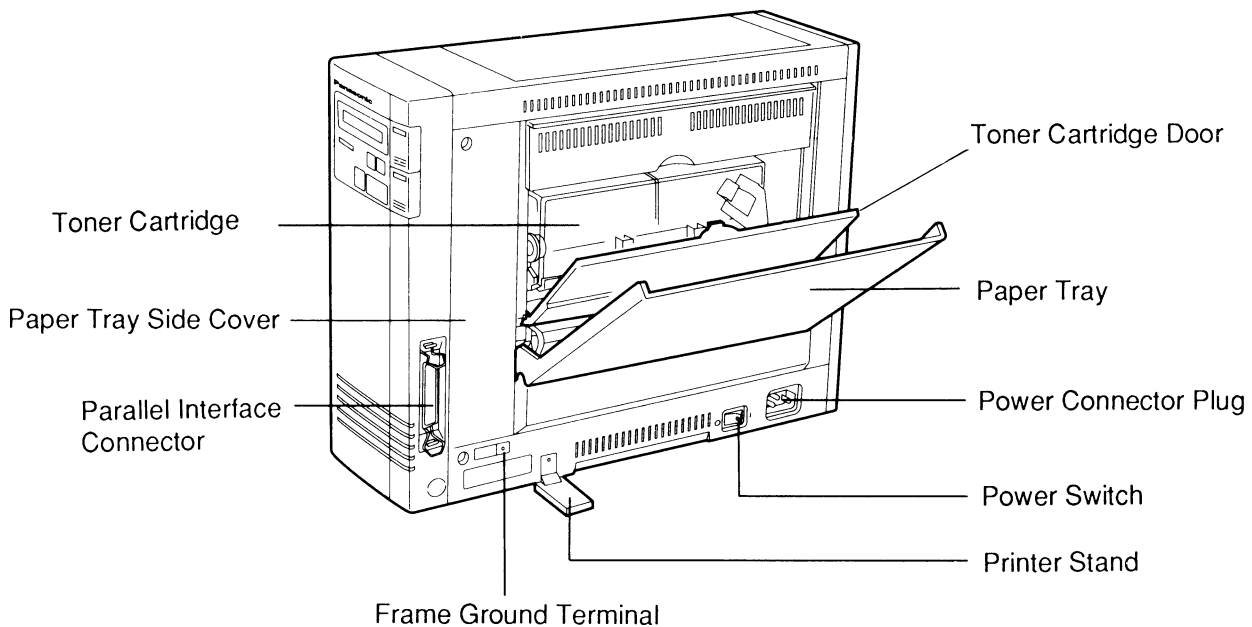
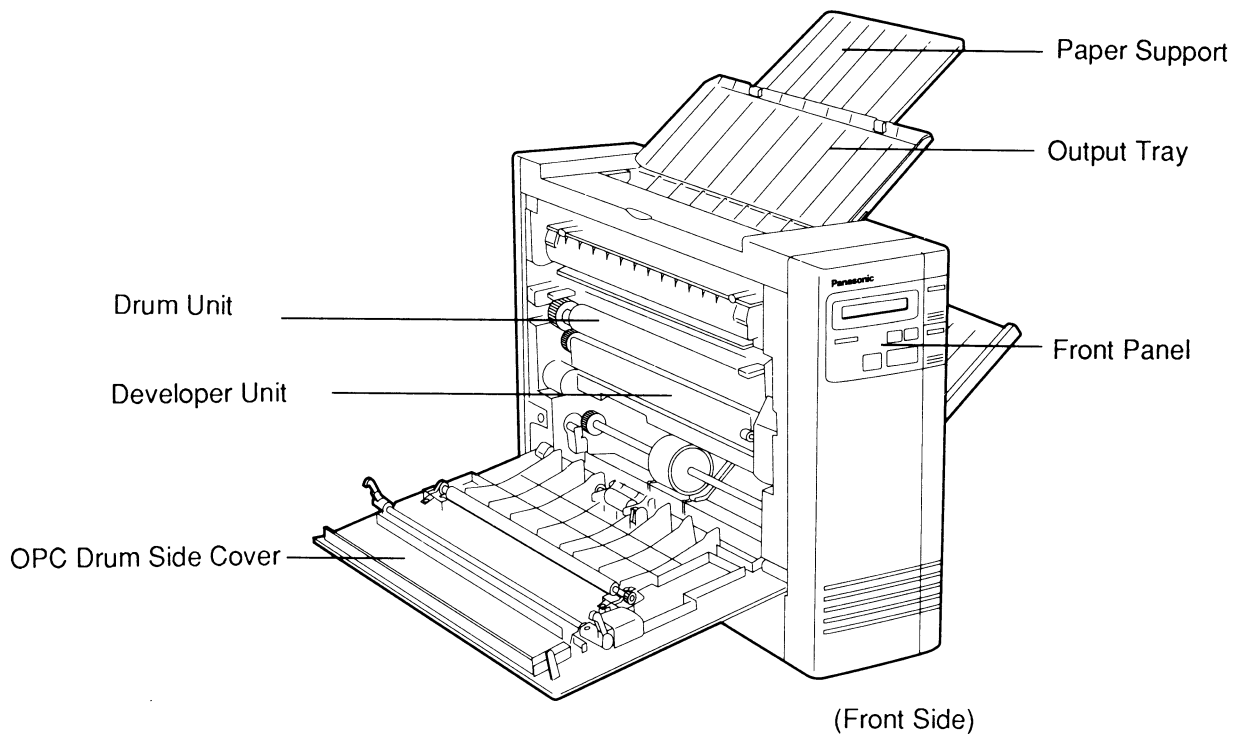
*IntelliFont*

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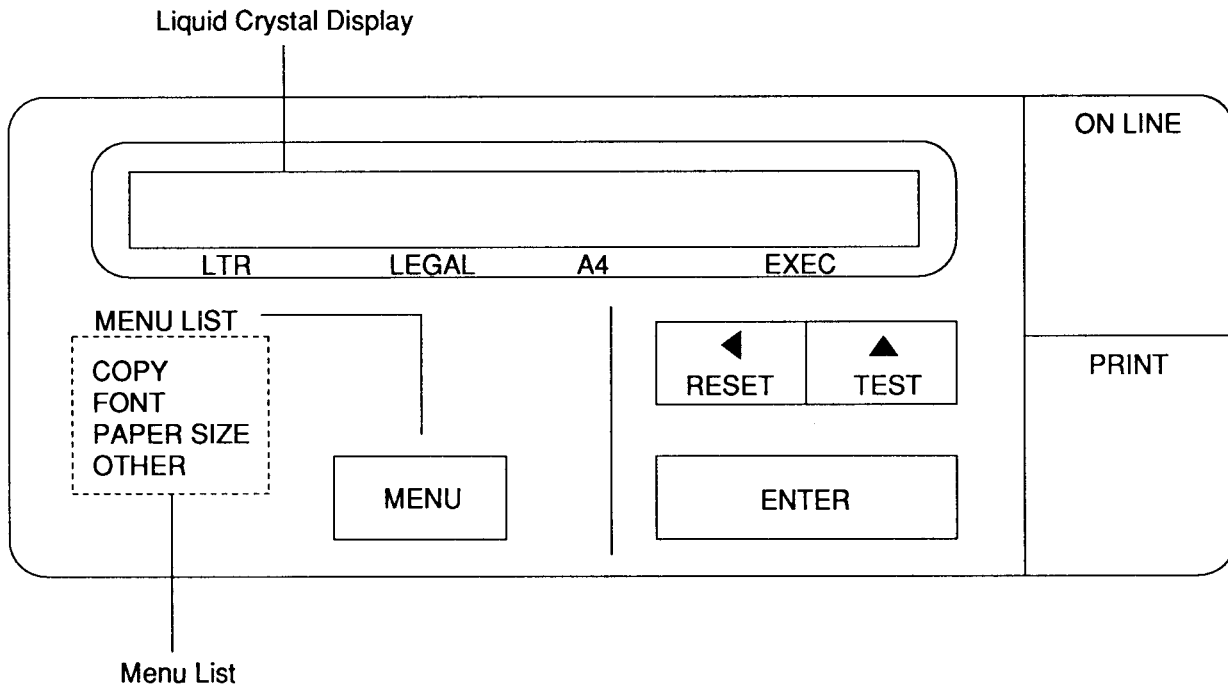
## 1.2 Operator Controls/Indicators

### 1.2.1 Controls

The controls are shown in the following illustration.



## 1.2.2 Control Panel Description



### 1. Liquid Crystal Display

This prompts the user with messages and step-by-step instructions. In case of incorrect operations, the display will immediately indicate the appropriate error messages so you may take corrective action.

### 2. MENU List

This lists the menus available in MENU mode.

### 3. MENU key

This key allows you to enter and exit MENU mode. MENU mode has the following six main menus:

- (a) COPY
- (b) FONT
- (c) PAPER SIZE
- (d) OTHER

#### (a) COPY

Selects the following modes.

- \*NUM OF COPY : Used to select the number of copies printed for each document sent to the printer.  
Used if the host software does not allow multiple copies of a document.
- \*VERIFY : Prints one page of a document before printing out all pages.

## (b) FONT

This menu allows you to select a default font, ZERO CHARACTER and FONT GROUP. The default font can be selected from RESIDENT or, if downloaded fonts are present, SOFT FONT.

- RESIDENT : Selects one of the built-in fonts  
ZERO CHARACTER : Selects the zero character "0", the zero slash character "Ø" or the zero point character "θ" for the selected font  
FONT GROUP : Selects the available fonts by groups. Three groups are available  
SOFT FONT : Selects the font permanently saved in the printer's RAM

	Font Group		
	1	2	3
Courier 10	A	A	A
Courier 10 Bold	A	A	A
Courier 10 Italic	A	A	A
Courier 12	A	A	A
Courier 12 Bold	A	A	A
Courier 12 Italic	A	A	A
Courier 15	A	A	-
Courier 15 Italic	A	A	-
Courier 17*	A	A	A
Courier 17* Italic	A	A	-
Courier 20	A	A	-
Century PS	A	-	-
Century PS Bold	A	-	-
Century PS Italic	A	-	-
CG Times PS	A	A	A
CG Times PS Italic	A	A	A
CG Times PS Bold	A	A	A
CG Times PS Bold Italic	A	A	A
Univers PS	A	A	A
Univers PS Italic	A	A	A
Univers PS Bold	A	A	A
Univers PS Bold Italic	A	A	A

\* Courier 17 is actually 16.66 CPI.

A=active  
"- "=not active

## (c) PAPER SIZE

This menu determines the format (portrait and landscape). Setting the operation, paper size, origin X and Y, lines per inch, page length and width, top, bottom, left and right margins completes formatting of the page.

## (d) OTHER

Use this menu to select the following functions.

PWR ON START PRT      The printer's status and current settings are printed upon power-on.

POWER SAVE              Reduces power supplied to the printer if data has not been received within the set time.

HEX DUMP	Prints in hexadecimal form all data received from the computer (Function codes for the printer: CR, LF, HT, etc. are not executed).
DATA TIME OUT	Automatically prints the remaining data when the computer does not send data to the printer during a preset time (minimum 10 seconds/maximum 399 seconds). Factory default setting: 30 seconds.
AUTO CONTINUE	Automatically goes ON LINE in approximately 10 seconds when an error condition, which can be recovered by the ON LINE key occurs.
DENSITY	Adjust the print density by selecting MEDIUM, DARK or LIGHT.
PERMANENT SAVE	The status set through the front panel key operation is stored as user default settings and remains even if the power is turned off.
LANGUAGE	Selects the display language. The display language set through the front panel key operation is stored as a default setting and remains if the power is turned off.
PAGE PROTECTION	Reserves memory to process an entire page (in memory) composed with very dense or complex graphics and text before printing the page. This setting assures complete printing.

#### 4. ◀ RESET key

If you press this key for less than 2 seconds, this key reverses the item on the display to the previous selection. When you enter a numerical value, the key allows you to move to the next numerical column. If you press this key for more than 2 seconds, this key allows you to enter the RESET operation.

#### 5. ENTER key

This key selects the modes or values shown on the display through the menu mode and makes the desired selection operational.

#### 6. ▲ TEST key

If you press this key for less than 2 seconds, this key advances the item on the display to the next selection. When you enter a numerical value, the key increases the current digit by 1. If you press this key for more than 2 seconds, this key allows you to enter the TEST operation.

#### 7. PRINT key

This key prints all remaining data in the printer. Data remains in the print buffer when a print start is not initiated. For example, when a FF (Form Feed) command is not included at the end of the data stream sent from the computer, data will remain in the print buffer.

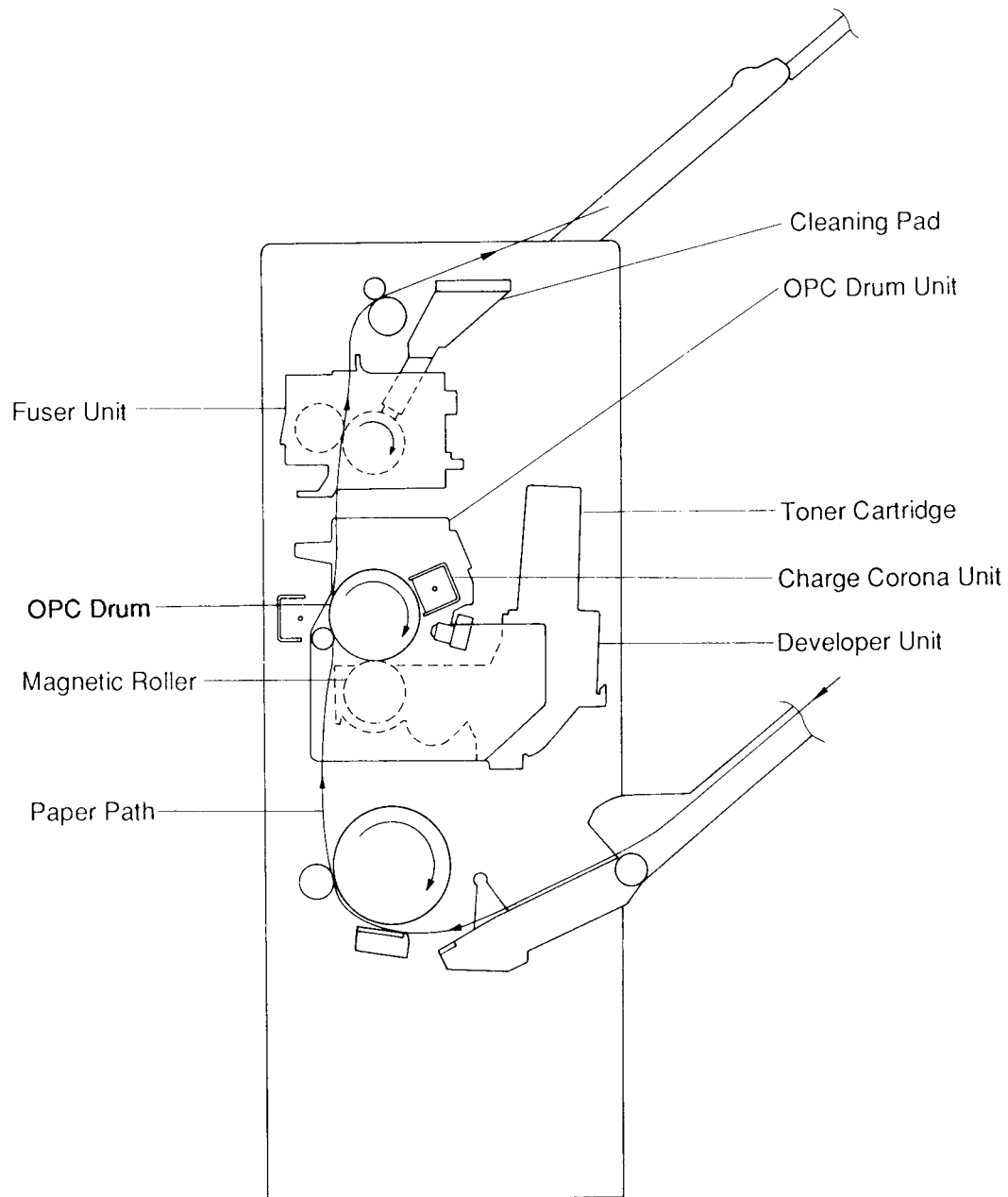
#### 8. ON LINE key

This key opens and closes the communication line with the computer. When the display shows "ON LINE", the printer is ready to receive data from the computer. While the printer is receiving data from the computer, "ON LINE" will blink on the printer's display. When the display shows "OFF LINE", the printer can no longer receive data.

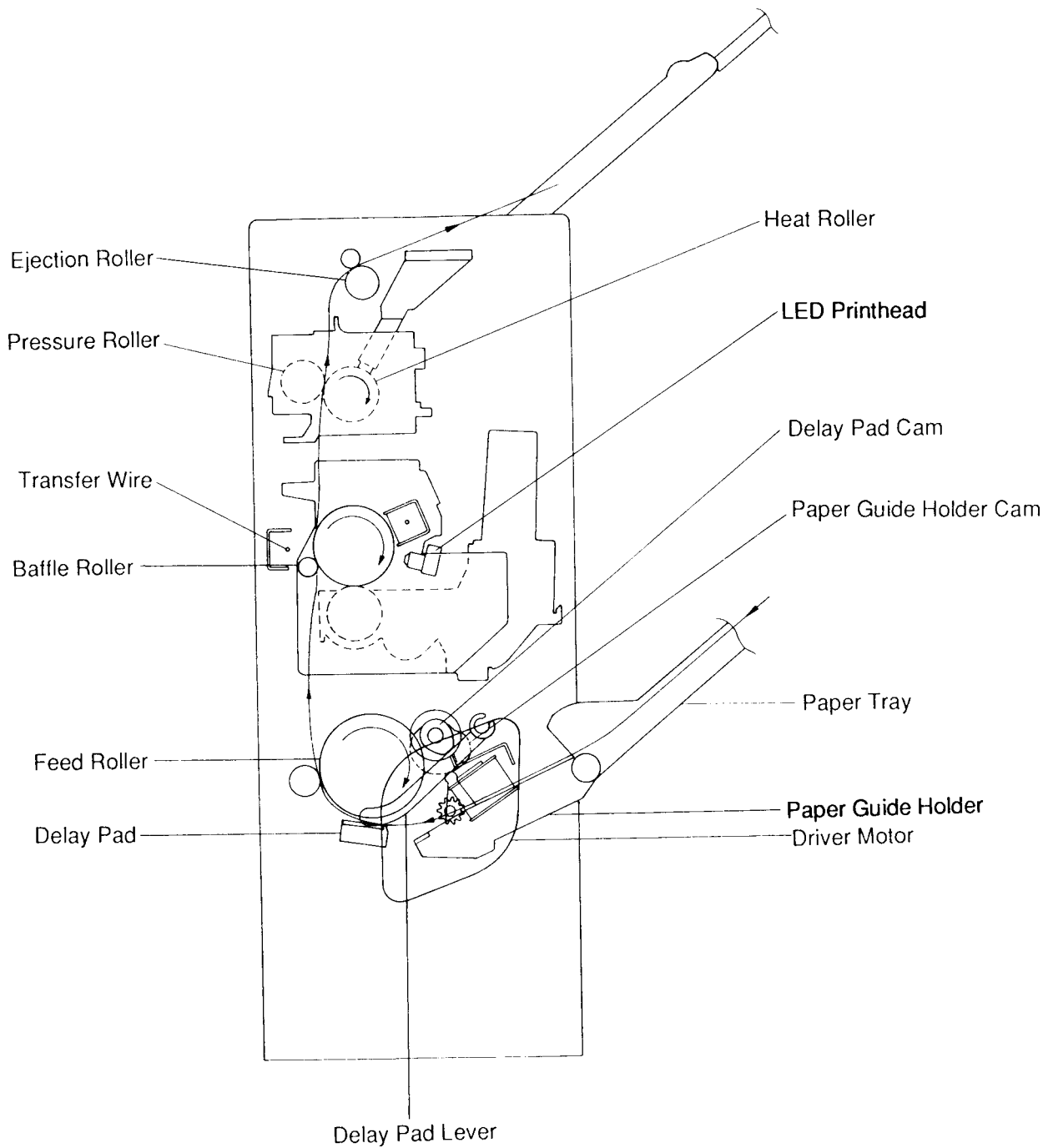


## 1.3 Component Identification

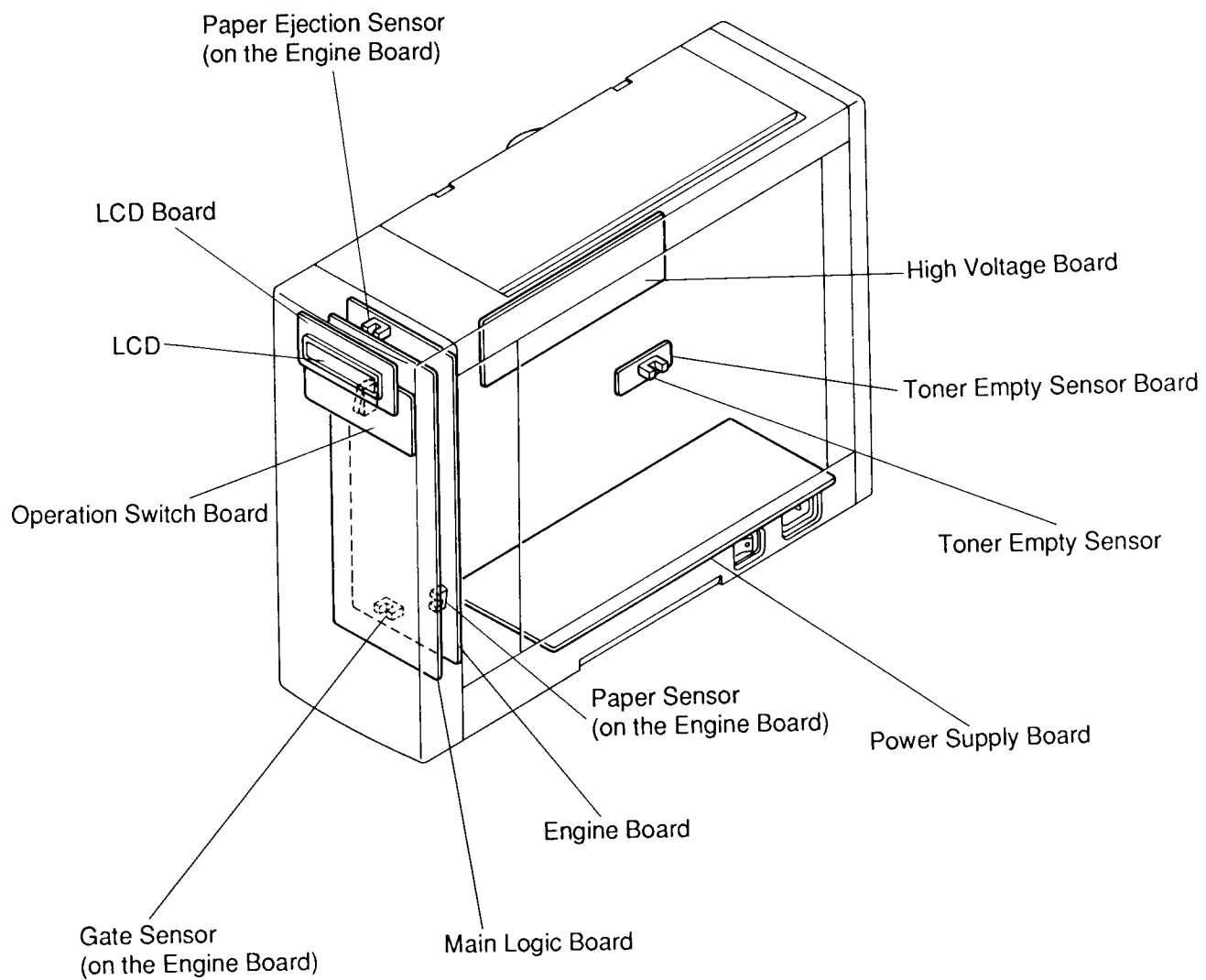
### 1.3.1 OPC Drum Unit ( consumable ), Fuser Unit, Developer Unit and Cleaning Pad



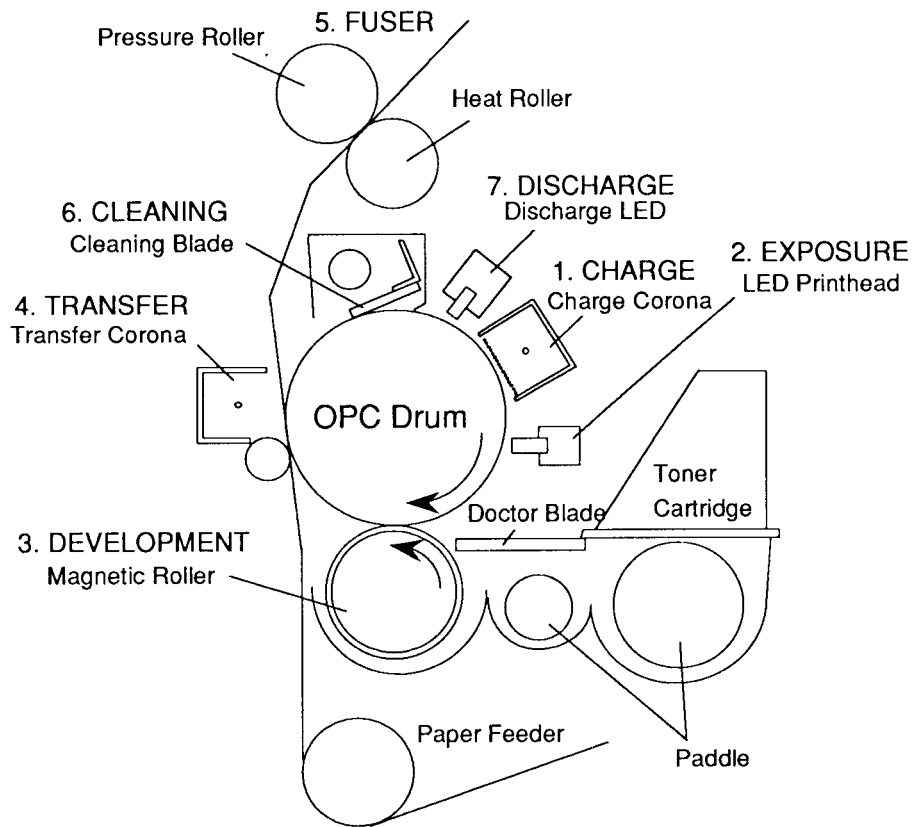
1.3.2 Mechanical Parts, Motor and Solenoid



### 1.3.3 Control, Engine, High Voltage, Sensor, LCD and Power Supply Boards



## 1.4 Print Process



### 1. Charge

In the dark, the charge corona applies a high, uniform negative charge to the surface of the organic photoconductor (OPC) drum. The charge level is approximately -700VDC and remains because the OPC drum has a high electrical resistance in the dark.

### 2. Exposure

The LED light beam is focused on the drum after passing through the self-focus lens located in the Printhead. Where the LED light beam is applied, the negative charge on the drum dissipates, and where the LED is not applied, the negative charge remains. A latent, electrical image is formed on the drum corresponding to the original image.

### 3. Development

The developer on the magnetic roller is a mixture of a fine grain toner (consisting of highly resistant resin and carbon-black) and a carrier (consisting of Magnetite). The toner is negatively charged and the carrier is positively charged. This combination forms a brush effect on the magnetic roller. Where the magnetic brush lightly touches the drum, the negatively charged toner is attracted to the latent image on the drum. The latent image is then converted to a visible image on the drum. A bias voltage of -580VDC is applied to the magnetic brush to achieve maximum print quality.

### 4. Transfer

As the paper is fed between the drum and the transfer corona, a high positive charge is applied to the back-side of the paper. The negative toner particles are then attracted from the drum surface to the paper. After transfer, the paper is separated from the drum surface by the curvature of the drum.

## **5. Fusing**

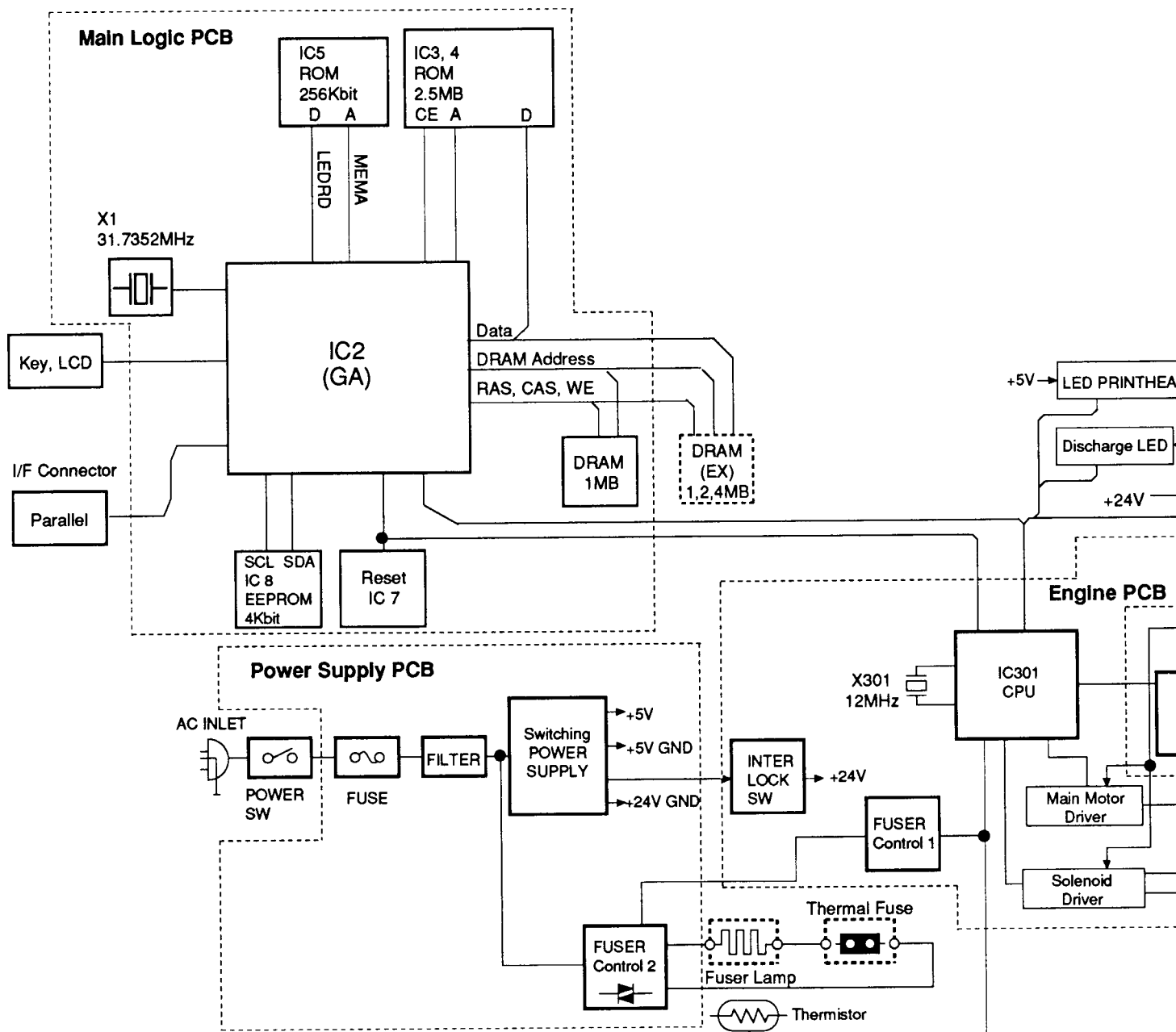
After separation, the paper passes through the fuser rollers and is subjected to heat and pressure. The fusing temperature is approximately 150°C (302°F), and the pressure is approximately 0.10kg/cm (1.0N/cm). This bonds, or fuses, the toner into the paper.

## **6. Cleaning**

After transfer, some toner remains on the drum surface. A cleaning blade scrapes the drum surface, and the remaining toner is sent to the toner disposal area via the spiral roller.

## **7. Discharge**

The discharge LED neutralizes the entire surface of the drum and discharges the surface of the drum in preparation for the next print cycle.



## 5.7 Explanation of Connectors

### CN201

Pin No.	Signal Name	Description	Direction
A1	NCBSY	Engine I/F Command Data Busy	OUT
A2	CXD	Engine I/F Command Data	OUT
A3	PPRDY	Printer(Engine) Power Ready	IN
A4	+5VGND	-----	---
A5	NVCLK	Video Clock	OUT
A6	+5VGND	-----	---
A7	NVDO	Video Signal	OUT
A8	NSTR	LED Strobe	OUT
A9	LA	LED Latch	OUT
A10	NRST	Reset	OUT
A11	+5V	-----	IN
A12	+5V	-----	IN
A13	+5VGND	-----	---
A14	+5VGND	-----	---
B1	NPRINT	Engine I/F Print	OUT
B2	NSBSY	Engine I/F Status Data Busy	IN
B3	NTOP	Top of Page	IN
B4	+5VGND	-----	---
B5	CCLK	Engine I/F Clock	IN/OUT
B6	+5VGND	-----	---
B7	SXD	Engine I/F Status Data	IN
B8	N.C.	No Connection	---
B9	NPRDY	Printer(Engine) Ready	IN
B10	NEND	End of Page	IN
B11	+5V	-----	IN
B12	+5V	-----	IN
B13	+5VGND	-----	---
B14	+5VGND	-----	---

### CN202

Pin No.	Signal Name	Description	Direction
+5V	+5V	-----	OUT
NKS0	NKS0	Key Scan Data 0	IN
NKS1	NKS1	Key Scan Data 1	IN
NSC0	NSC0	LCD Data/Key Scan	OUT
NSC1	NSC1	LCD Data/Key Scan	OUT
NSC2	NSC2	LCD Data/Key Scan	OUT
LCDEN	LCDEN	LCD Enable	OUT
LCDA1	LCDA1	LCD Address 1	OUT
NSC3	NSC3	LCD Data	OUT
+5VGND	+5VGND	-----	---

**CN203**

Pin No.	Signal Name	Description	Direction
1	NSTB	Centronics Strobe	IN
2	DATA1	Centronics Data 1	IN
3	DATA2	Centronics Data 2	IN
4	DATA3	Centronics Data 3	IN
5	DATA4	Centronics Data 4	IN
6	DATA5	Centronics Data 5	IN
7	DATA6	Centronics Data 6	IN
8	DATA7	Centronics Data 7	IN
9	DATA8	Centronics Data 8	IN
10	NACK	Centronics Acknowledge	OUT
11	BUSY	Centronics Busy	OUT
12	PO	Centronics Paper out	OUT
13	SLCT	Centronics Select	OUT
14	NC	No Connection	---
15	NC	No Connection	---
16	SG	Signal Ground	---
17	FG	Frame Ground	---
18	+5VRES	Through Resistor	OUT
19	RETURN	Signal Ground	---
20	RETURN	Signal Ground	---
21	RETURN	Signal Ground	---
22	RETURN	Signal Ground	---
23	RETURN	Signal Ground	---
24	RETURN	Signal Ground	---
25	RETURN	Signal Ground	---
26	RETURN	Signal Ground	---
27	RETURN	Signal Ground	---
28	RETURN	Signal Ground	---
29	RETURN	Signal Ground	---
30	RETURN	Signal Ground	---
31	NPRIME	Centronics Prim	IN
32	NERROR	Centronics Error	OUT
33	SG	Signal Ground	---
34	NC	No Connection	---
35	NC	No Connection	---
36	NC	No Connection	---



**CN204**

Pin No.	Signal Name	Description	Direction
A1	DA9	DRAM Address 9	OUT
A2	DA7	DRAM Address 7	OUT
A3	DA5	DRAM Address 5	OUT
A4	DA3	DRAM Address 3	OUT
A5	DA1	DRAM Address 1	OUT
A6	Vcc	-----	---
A7	Vcc	-----	---
A8	Vcc	-----	---
A9	Vcc	-----	---
A10	NRAS2	DRAM RAS 2	OUT
A11	NCASH	DRAM CAS High	OUT
A12	NCASL	DRAM CAS Low	OUT
A13	+5VGND	-----	---
A14	+5VGND	-----	---
A15	DD15	DRAM Data 15	IN/OUT
A16	DD13	DRAM Data 13	IN/OUT
A17	DD11	DRAM Data 11	IN/OUT
A18	DD9	DRAM Data 9	IN/OUT
A19	DD7	DRAM Data 7	IN/OUT
A20	DD5	DRAM Data 5	IN/OUT
A21	DD3	DRAM Data 3	IN/OUT
A22	DD1	DRAM Data 1	IN/OUT
A23	+5VGND	-----	---
A24	+5VGND	-----	---
A25	+5VGND	-----	---
B1	DA8	DRAM Address 8	OUT
B2	DA6	DRAM Address 6	OUT
B3	DA4	DRAM Address 4	OUT
B4	DA2	DRAM Address 2	OUT
B5	DA0	DRAM Address 0	OUT
B6	Vcc	-----	---
B7	Vcc	-----	---
B8	Vcc	-----	---
B9	NRAS1	DRAM RAS1	OUT
B10	NRAMWR	DRAM Write	OUT
B11	NRAS1	DRAM RAS 1	OUT
B12	NC	No Connection	---
B13	+5VGND	-----	---
B14	+5VGND	-----	---
B15	DD14	DRAM Data 14	IN/OUT
B16	DD12	DRAM Data 12	IN/OUT
B17	DD10	DRAM Data 10	IN/OUT
B18	DD8	DRAM Data 8	IN/OUT
B19	DD6	DRAM Data 6	IN/OUT
B20	DD4	DRAM Data 4	IN/OUT
B21	DD2	DRAM Data 2	IN/OUT
B22	DD0	DRAM Data 0	IN/OUT
B23	NOE	DRAM Read	OUT
B24	+5VGND	-----	---
B25	+5VGND	-----	---

**CN301 (Power Supply)**

Pin No.	Signal Name & Description	Direction
1	+24V	In
2	+24VGND	-
3	FSRCTL	Out
4	+5V	In
5	+5VL	In
6	+5VGND	-
7	+5VGNDL	-

**CN302 (Main Motor)**

Pin No.	Signal Name & Description	Direction
1	+24V (2)	Out
2	+24V (2)	Out
3	NMB	Out
4	NMNB	Out
5	NMNA	Out
6	NMA	Out

**CN303 (Paper Feed Solenoid)**

Pin No.	Signal Name & Description	Direction
1	+24V (1)	Out
2	NPFCNT	Out

**CN304 (High Voltage Unit)**

Pin No.	Signal Name & Description	Direction
1	+24V (2)	Out
2	NCUCNT	Out
3	NCUDIR	Out
4	NDEVCNT	Out
5	NTUCNT	Out
6	+24VGND	-

**CN305 (Controller Board)**

Pin No.	Signal Name & Description	Direction
A1	NCBSY	In
A2	CXD	In
A3	PPRDY	Out
A4	+5VGND	-
A5	NVCLK	In
A6	+5VGND	-
A7	NVDO	In
A8	NSTR	In
A9	LA	In
A10	NRST	In
A11	+5V	Out
A12	+5V	Out
A13	+5VGND	-
A14	+5VGND	-
B1	NPRINT	In
B2	NSBSY	Out
B3	NTOP	Out
B4	+5VGND	-
B5	CCLK	In/Out
B6	+5VGND	-
B7	SXD	Out
B8	PURGE	Out
B9	NPRDY	Out
B10	NEND	Out
B11	+5V	Out
B12	+5V	Out
B13	+5VGND	-
B14	+5VGND	-

**CN306 (LED Printhead)**

Pin No.	Signal Name & Description	Direction
1	NLA	Out
2	VDD	Out
3	STR	Out
4	VCLK	Out
5	+5VL	Out
6	+5VGNDL	Out
7	+5VL	-
8	+5VGNDL	-

**CN307 (Toner Empty Sensor)**

Pin No.	Signal Name & Description	Direction
1	TONER	In
2	+5VS	Out
3	+5VGND	-

**CN308 (Toner Full Sensor)**

Pin No.	Signal Name & Description	Direction
1	+5VGND	-
2	+5VS	Out
3	OPCFULL	In

**CN310 ( Discharge )**

Pin No.	Signal Name & Description	Direction
1	+24 V ( 1 )	Out
2	NERSCNT	In

**CN309 ( Thermistor )**

Pin No.	Signal Name & Description	Direction
1	+5V	Out
2	TH	In

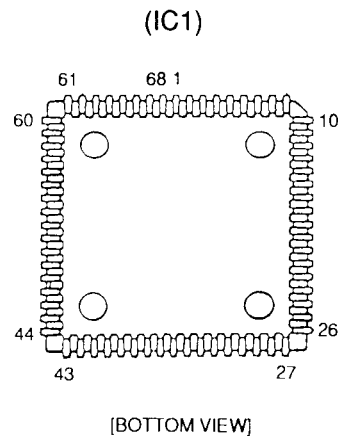
**CN401 ( LCD )**

Pin No.	Signal Name & Description	Direction
1	+5V	In
2	NKS0	In
3	NKS1	In
4	NSC0	Out
5	NSC1	Out
6	NSC2	Out
7	LCDEN	In
8	LCDA1	In
9	NSC3	Out
10	+5VGND	-

**CN404, 501 ( Operation Switch )**

Pin No.	Signal Name & Description	Direction
1	NSC2	Out
2	NSC1	Out
3	NSC0	Out
4	NKS1	In
5	NKS0	In

## 5.8 Component Reference Guide



Pin No.	Symbol	In/Out	Function
1	HOLDA	OUT	Hold Acknowledge
2	HBE	OUT	High Byte Enable
3	VCCIO	---	+5V
4	SPC	IN/OUT	N.C.
5	ADS	OUT	Address Strobe
6	DDIN	OUT	Data Direction
7	PFS	---	N.C.
8	ST3	OUT	Bus Cycle Status
9	ST2	OUT	Bus Cycle Status
10	VSSIO	---	Ground
11	ST1	OUT	Bus Cycle Status
12	ST0	OUT	N.C.
13	ILO	OUT	N.C.
14	NMI	IN	Non Maskable Interrupt
15	INT	IN	Interrupt
16	U/S	OUT	N.C.
17	BPU	OUT	BPU Cycle
18	RESERVED	---	N.C.
19	RESERVED	---	N.C.
20	VCCL	---	+5V
21	A23	OUT	Address Bus
22	A22	OUT	Address Bus

Pin No.	Symbol	In/Out	Function
23	A21	OUT	Address Bus
24	A20	OUT	Address Bus
25	A19	OUT	Address Bus
26	VSSHAD	---	Ground
27	A18	OUT	Address Bus
28	A17	OUT	Address Bus
29	A16	OUT	Address Bus
30	VCCAD	---	Ground
31	AD15	IN/OUT	Address & Data Bus
32	AD14	IN/OUT	Address & Data Bus
33	AD13	IN/OUT	Address & Data Bus
34	AD12	IN/OUT	Address & Data Bus
35	AD11	IN/OUT	Address & Data Bus
36	AD10	IN/OUT	Address & Data Bus
37	AD9	IN/OUT	Address & Data Bus
38	AD8	IN/OUT	Address & Data Bus
39	VSSLAD	---	Ground
40	AD7	IN/OUT	Address & Data Bus
41	AD6	IN/OUT	Address & Data Bus
42	AD5	IN/OUT	Address & Data Bus
43	AD4	IN/OUT	Address & Data Bus
44	AD3	IN/OUT	Address & Data Bus
45	AD2	IN/OUT	Address & Data Bus
46	AD1	IN/OUT	Address & Data Bus
47	AD0	IN/OUT	Address & Data Bus
48	PHI1	OUT	N.C.
49	FCLK	OUT	N.C.
50	PH12	OUT	N.C.
51	VCCFCLK	---	+5V
52	VSSFCLK	---	Ground
53	DBE	OUT	Data Buffer Enable
54	VCCCTTL	---	+5V
55	CTTL	OUT	System Clock
56	VSSNTSO	---	Ground
57	RD	OUT	Read Strobe
58	WR	OUT	Write Strobe
59	TSO	OUT	Timing Status
60	OSCOUT	OUT	N.C.
61	RST1	IN	Reset
62	OSCIN	IN	Clock
63	VSSL	---	Ground
64	CWAIT	IN	Continuous Wait
65	WAIT2	IN	Wait State
66	WAIT1	IN	Wait State
67	RSTO	OUT	Reset Strobe
68	HOLD	IN	Hold

(IC2)

Pin No.	Symbol	In/Out	Function
1	AD12	IN/OUT	Address & Data Bus
2	AD13	IN/OUT	Address & Data Bus
3	VSS	---	Ground
4	AD14	IN/OUT	Address & Data Bus
5	AD15	IN/OUT	Address & Data Bus
6	A16	IN	Address Bus
7	A17	IN	Address Bus
8	A18	IN	Address Bus
9	A19	IN	Address Bus
10	VDD	---	+5V
11	A20	IN	Address Bus
12	A21	IN	Address Bus
13	A22	IN	Address Bus
14	A23	IN	Address Bus
15	VSS	---	Ground
16	NCWAIT	OUT	Continuous Wait
17	NWAIT2	OUT	Wait State
18	NWAIT1	OUT	Wait State
19	NHOLD	OUT	Hold
20	NBPU	IN	BPU Cycle
21	NINT	OUT	Interrupt
22	ST1	IN	Bus Cycle Status
23	ST2	IN	Bus Cycle Status
24	ST3	IN	Bus Cycle Status
25	SRRY	IN	IO Interrupt
26	VSS	---	Ground
27	VDD	---	+5V
28	NDDIN	IN	Data direction
29	NADS	IN	Address Strobe
30	NHBE	IN	High Byte Enable
31	NHOLDA	IN	Hold Acknowledge
32	MEMA11	OUT	LED ROM Address
33	MEMA10	OUT	LED ROM Address
34	MEMA9	OUT	LED ROM Address
35	MEMA8	OUT	LED ROM Address
36	MEMA7	OUT	LED ROM Address
37	MEMA6	OUT	LED ROM Address
38	VSS	---	Ground
39	NRSBE	OUT	IO Bus Enable
40	MEMA5	OUT	LED ROM Address
41	MEMA4	OUT	LED ROM Address
42	MEMA3	OUT	LED ROM Address
43	VDD	---	+5V
44	MEMA2	OUT	LED ROM Address
45	MEMA1	OUT	LED ROM Address
46	ROMD8	IN	LED ROM Data
47	ROMD7	IN	LED ROM Data
48	ROMD6	IN	LED ROM Data
49	ROMD5	IN	LED ROM Data
50	VSS	---	Ground
51	ROMD4	IN	LED ROM Data
52	ROMD3	IN	LED ROM Data

Pin No.	Symbol	In/Out	Function
53	ROMD2	IN	LED ROM Data
54	ROMD1	IN	LED ROM Data
55	TD0	OUT	TEST Port
56	NERR	OUT	Centronics Error
57	NPRIME	IN	Centronics Prime
58	NRSCTR	OUT	IO Control Out
59	NSCE	OUT	IO Chip Enable
60	VSS	---	Ground
61	VDD	---	+5V
62	SLCT	OUT	Centronics Select
63	PO	OUT	Centronics Paper Out
64	BUSY	OUT	Centronics Busy
65	NACK	OUT	Centronics Acknowledge
66	TESTDATI	IN	Test Port
67	TESTDATO	OUT	Test Port
68	REFCLK	IN/OUT	Refresh Clock
69	NHSYNCT	IN	Test Port
70	CTRD7	IN	Centronics Data
71	VCLKC	IN	Test Port
72	VSS	---	Ground
73	CTRD6	IN	Centronics Data
74	CTRD5	IN	Centronics Data
75	CTRD4	IN	Centronics Data
76	CTRD3	IN	Centronics Data
77	CTRD2	IN	Centronics Data
78	CTRD1	IN	Centronics Data
79	VDD	---	+5V
80	CTRD0	IN	Centronics Data
81	XTST	IN	Test Port
82	NSTB	IN	Centronics Strobe
83	NRST	IN	Reset
84	REFTST	IN	Test Port
85	VSS	---	Ground
86	OSCDOTI	IN	Reserved
87	OSCDOTO	IN/OUT	Reserved
88	XMM	IN	Test Port
89	VCLKSEL	IN	Reserved
90	EEPSK	OUT	EEPROM Serial Clock
91	EEPDAT	IN/OUT	EEPROM Data IN/OUT
92	LA	OUT	LED Latch
93	NSTR	OUT	LED Strobe
94	NSD	OUT	Video Signal
95	NEND	IN	End of Page
96	VSS	---	Ground
97	VDD	---	+5V
98	NENRY	IN	Engine Ready
99	SSCKIN	IN/OUT	Engine I/F Clock
100	NVCLK	OUT	Video Clock
101	PWRY	IN	Engine Power Ready
102	SSDOUT	OUT	Engine I/F Command Data
103	NCONRQ	OUT	Engine I/F Command Data Busy
104	SSDIN	IN	Engine I/F Status Data

Pin No.	Symbol	In/Out	Function
105	NTOP	IN	Top of Page
106	NENGRQ	IN	Engine I/F Status Data Busy
107	VSS	---	Ground
108	VDGTEST	IN	Test Port
109	NPRNPRQ	OUT	Engine I/F Print
110	LCDA1	OUT	LCD Address
111	LCDEN	OUT	LCD Enable
112	NKEY1	IN	Key Scan Data
113	NKEY0	IN	Key Scan Data
114	VDD	---	+5V
115	NSC3	OUT	LCD Data/Key Scan
116	NSC2	OUT	LCD Data/Key Scan
117	NSC1	OUT	LCD Data/Key Scan
118	NSC0	OUT	LCD Data/Key Scan
119	VSS	---	Ground
120	NROMOE	OUT	ROM Data Output Enable
121	NROM1	OUT	ROM Chip Select
122	NROM2	OUT	ROM Chip Select
123	A15	OUT	ROM Address Bus
124	A14	OUT	ROM Address Bus
125	A13	OUT	ROM Address Bus
126	A12	OUT	ROM Address Bus
127	A11	OUT	ROM Address Bus
128	A10	OUT	ROM Address Bus
129	A9	OUT	ROM Address Bus
130	VSS	---	Ground
131	VDD	---	+5V
132	A8	OUT	ROM Address Bus
133	A7	OUT	ROM Address Bus
134	A6	OUT	ROM Address Bus
135	A5	OUT	ROM Address Bus
136	A4	OUT	ROM Address Bus
137	A3	OUT	ROM Address Bus
138	A2	OUT	ROM Address Bus
139	A1	OUT	ROM Address Bus
140	NTROM	OUT	Test Port
141	NOE	OUT	DRAM Output Enable
142	VSS	---	Ground
143	DRMD0	IN/OUT	DRAM Data Bus
144	DRMD1	IN/OUT	DRAM Data Bus
145	DRMD2	IN/OUT	DRAM Data Bus
146	DRMD3	IN/OUT	DRAM Data Bus
147	VDD	---	+5V
148	DRMD4	IN/OUT	DRAM Data Bus
149	DRMD5	IN/OUT	DRAM Data Bus
150	DRMD6	IN/OUT	DRAM Data Bus
151	DRMD7	IN/OUT	DRAM Data Bus
152	DRMD8	IN/OUT	DRAM Data Bus
153	DRMD9	IN/OUT	DRAM Data Bus
154	VSS	---	Ground
155	DRMD10	IN/OUT	DRAM Data Bus
156	DRMD11	IN/OUT	DRAM Data Bus

Pin No.	Symbol	In/Out	Function
157	DRMD12	IN/OUT	DRAM Data Bus
158	DRMD13	IN/OUT	DRAM Data Bus
159	DRMD14	IN/OUT	DRAM Data Bus
160	DRMD15	IN/OUT	DRAM Data Bus
161	NSTDRA2	OUT	DRAM RAS
162	NSTDRA1	OUT	DRAM RAS
163	N4400	IN	Test Port
164	VSS	---	Ground
165	VDD	---	+5V
166	NWE	OUT	RAM Write Enable
167	NOPRAS1	OUT	Option DRAM RAS
168	NOPRAS2	OUT	Option DRAM RAS
169			N.C.
170	NCASL	OUT	DRAM CAS Low
171	NCASU	OUT	DRAM CAS High
172	DRA0	OUT	DRAM Address Bus
173	DRA1	OUT	DRAM Address Bus
174	DRA2	OUT	DRAM Address Bus
175			N.C.
176	VSS	---	Ground
177	DRA3	---	DRAM Address Bus
178	DRA4	OUT	DRAM Address Bus
179	DRA5	OUT	DRAM Address Bus
180	DRA6	OUT	DRAM Address Bus
181	DRA7	OUT	DRAM Address Bus
182	DRA8	OUT	DRAM Address Bus
183	VDD	---	+5V
184	DRA9	OUT	DRAM Address Bus
185	NSTDRA5	OUT	DRAM RAS
186	NTSO	IN	TEST Port
187	NWR	IN	Write Strobe
188	NRD	IN	Read Strobe
189	VSS	---	Ground
190	TESTCK3	IN	Test Port
191	TESTCK2	IN	Test Port
192	TESTCK1	IN	Test Port
193	CTTL	IN	System Clock
194	NDBE	IN	Data Buffer Enable
495	AD0	IN/OUT	Address & Data Bus
496	AD1	IN/OUT	Address & Data Bus
197	AD2	IN/OUT	Address & Data Bus
198	AD3	IN/OUT	Address & Data Bus
199	AD4	IN/OUT	Address & Data Bus
200	VSS	---	Ground
201	VDD	---	+5V
202	AD5	IN/OUT	Address & Data Bus
203	AD6	IN/OUT	Address & Data Bus
204	AD7	IN/OUT	Address & Data Bus
205	AD8	IN/OUT	Address & Data Bus
206	AD9	IN/OUT	Address & Data Bus
207	AD10	IN/OUT	Address & Data Bus
208	AD11	IN/OUT	Address & Data Bus

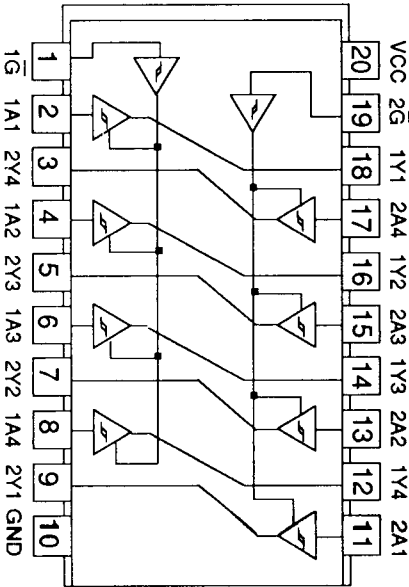
IC3, 4

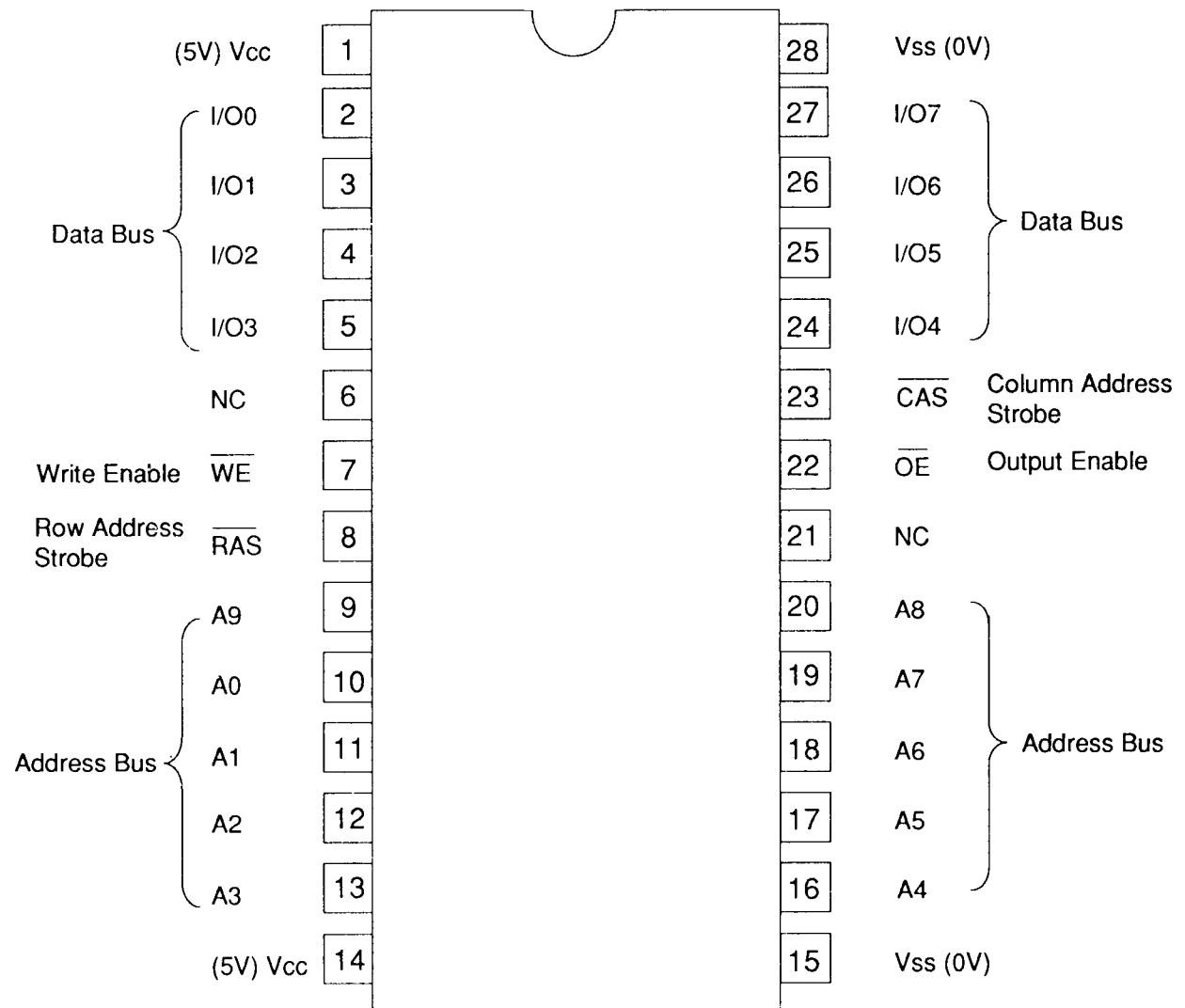
Pin No.	Symbol	In/Out	Function
1	A18	IN	Address Bus
2	A17	IN	Address Bus
3	A7	IN	Address Bus
4	A6	IN	Address Bus
5	A5	IN	Address Bus
6	A4	IN	Address Bus
7	A3	IN	Address Bus
8	A2	IN	Address Bus
9	A1	IN	Address Bus
10	A0	IN	Address Bus
11	CE	IN	Chip Enable
12	Vss	IN	Ground
13	OE	IN	Output Enable
14	D0	OUT	Data Bus
15	D8	OUT	Data Bus
16	D1	OUT	Data Bus
17	D9	OUT	Data Bus
18	D2	OUT	Data Bus
19	D10	OUT	Data Bus
20	D3	OUT	Data Bus
21	D11	OUT	Data Bus
22	Vcc	IN	+5V Power Supply
23	D4	OUT	Data Bus
24	D12	OUT	Data Bus
25	D5	OUT	Data Bus
26	D13	OUT	Data Bus
27	D6	OUT	Data Bus
28	D14	OUT	Data Bus
29	D7	OUT	Data Bus
30	D15	OUT	Data Bus
31	Vss	IN	Ground
32	BYTE/Vpp	IN	Word/Byte Selector
33	A16	IN	Address Bus
34	A15	IN	Address Bus
35	A14	IN	Address Bus
36	A13	IN	Address Bus
37	A12	IN	Address Bus
38	A11	IN	Address Bus
39	A10	IN	Address Bus
40	A9	IN	Address Bus
41	A8	IN	Address Bus
42	A19	IN	Address Bus

IC5

Pin No.	Symbol	In/Out	Function
1	Vpp	IN	Program Voltage
2	A12	IN	Address Bus
3	A7	IN	Address Bus
4	A6	IN	Address Bus
5	A5	IN	Address Bus
6	A4	IN	Address Bus
7	A3	IN	Address Bus
8	A2	IN	Address Bus
9	A1	IN	Address Bus
10	A0	IN	Address Bus
11	D0	OUT	Data Bus
12	D1	OUT	Data Bus
13	D2	OUT	Data Bus
14	Vss	IN	Ground
15	D3	OUT	Data Bus
16	D4	OUT	Data Bus
17	D5	OUT	Data Bus
18	D6	OUT	Data Bus
19	D7	OUT	Data Bus
20	CE	IN	Chip Enable
21	A10	IN	Address Bus
22	OE	IN	Output Enable
23	A11	IN	Address Bus
24	A9	IN	Address Bus
25	A8	IN	Address Bus
26	A13	IN	Address Bus
27	A14	IN	Address Bus
28	Vcc	IN	+5V Power Supply

IC9, 10



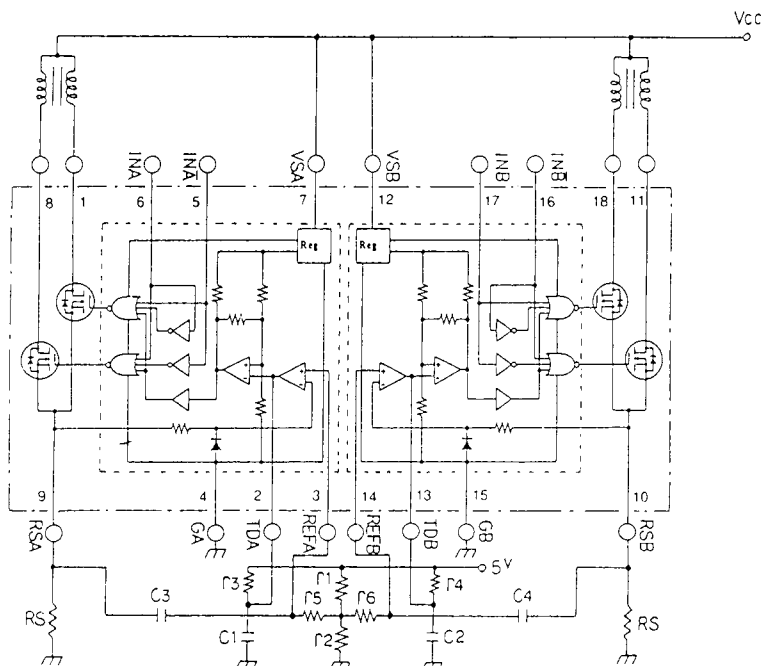


NC : Not Connected

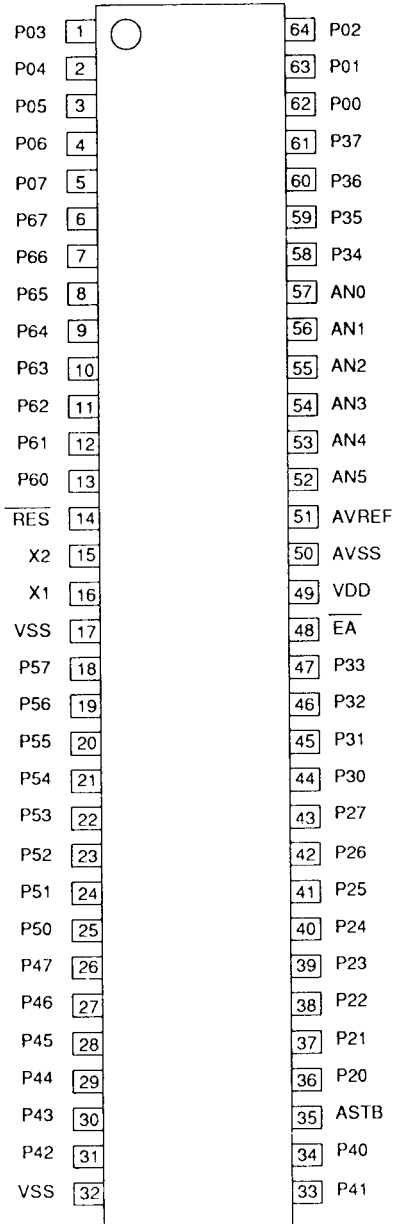


Pin No.	Symbol	In/Out	Function
1	W	IN	Write
2	D0	IN	Data Bus
3	D1	IN	Data Bus
4	D2	IN	Data Bus
5	D3	IN	Data Bus
6	D4	IN	Data Bus
7	D5	IN	Data Bus
8	D6	IN	Data Bus
9	D7	IN	Data Bus
10	EF	OUT	Empty Flag
11	FF	OUT	Full Flag
12	HF	OUT	Half - Full Flag
13	RSIX	IN	Read Serial In Expansion
14	GND	IN	Ground
15	FL/DIR	IN	First Load / Direction
16	RSOX/AEF	OUT	Read Serial Out Expansion Almost - Empty /Almost - Full Flag
17	SOC	IN	Serial Output Clock
18	SO	OUT	Serial Output
19	RS	IN	Reset
20	D8	IN	Data Bus
21	D9	IN	Data Bus
22	D10	IN	Data Bus
23	D11	IN	Data Bus
24	D12	IN	Data Bus
25	D13	IN	Data Bus
26	D14	IN	Data Bus
27	D15	IN	Data Bus
28	Vcc	IN	+5V Power Supply

Diagram of a 18-pin connector. It features a rectangular body with two circular mounting holes at the top. Below the body, there are 18 pins arranged in a single row, numbered 1 to 18 from left to right.



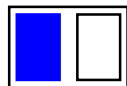
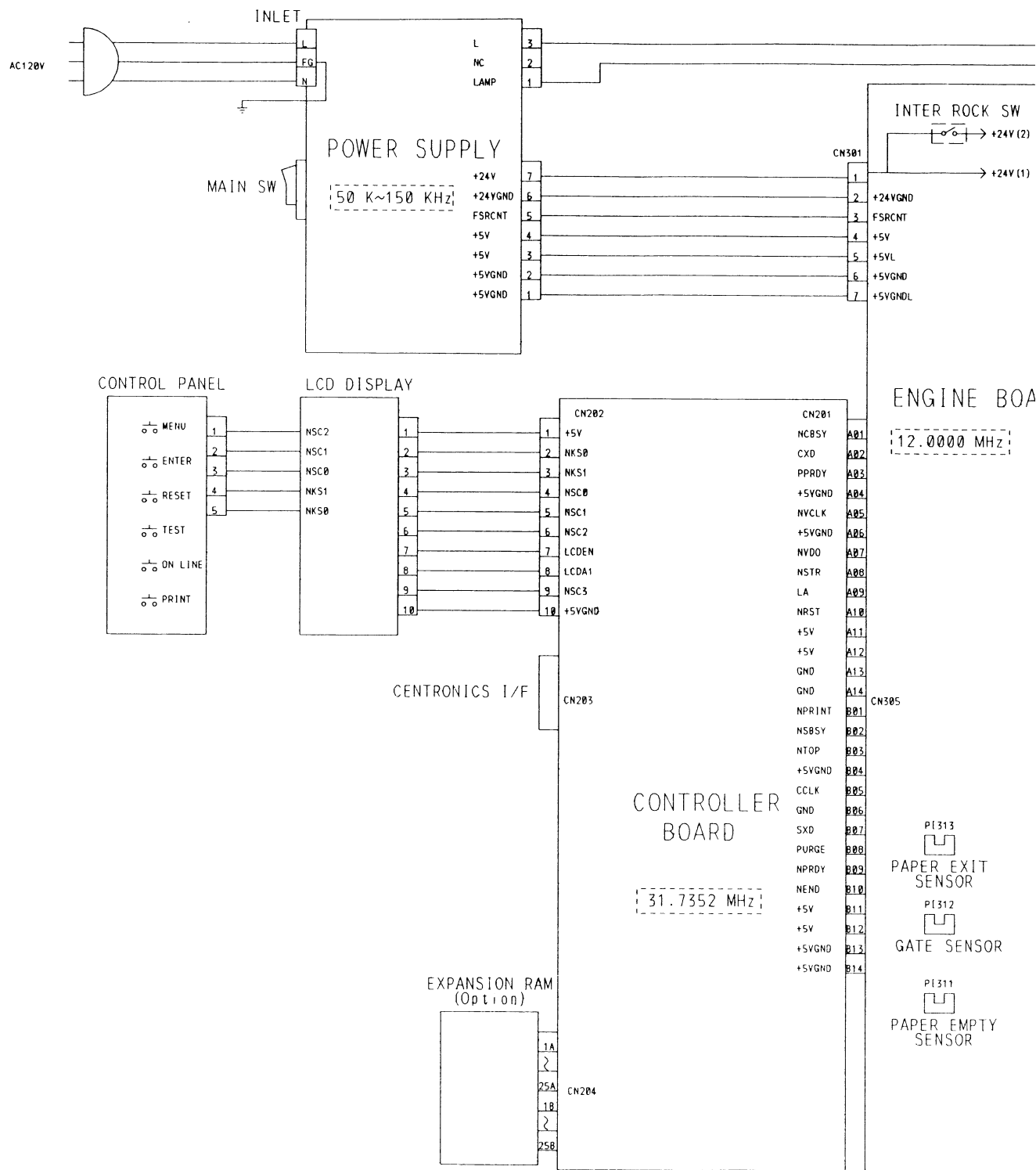
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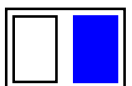
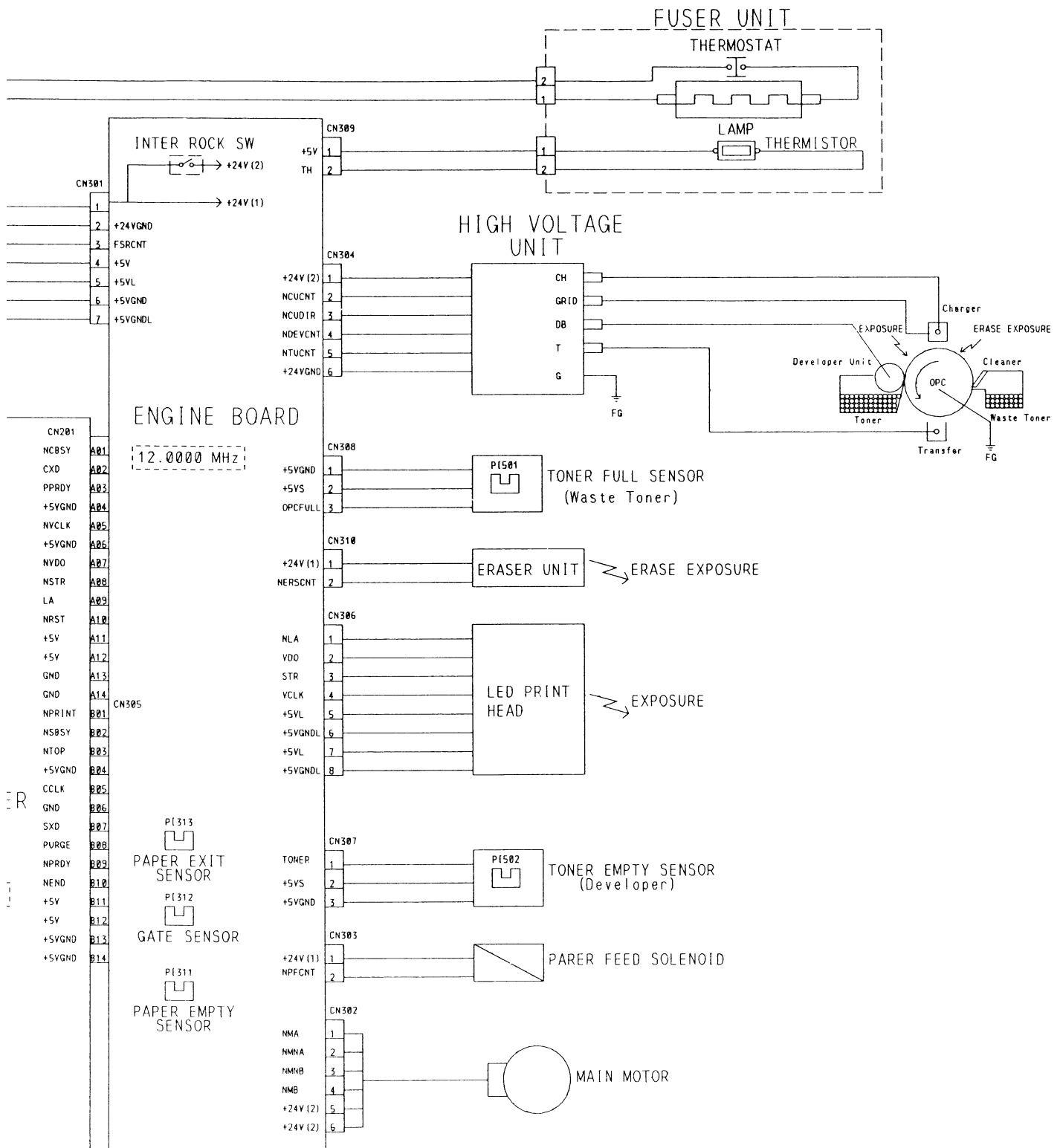


Pin No.	Symbol	In/Out	Function
1	P03	OUT	NA (Main Motor)
2	P04	OUT	PFCNT
3	P05	OUT	FSRCNT
4	P06	OUT	ERSCNT
5	P07	-	N.C
6	P67	-	N.C
7	P66	-	N.C
8	P65	-	N.C
9	P64	-	N.C
10	P63	OUT	CUDIR (Charger Direction)
11	P62	OUT	CUCNT (Charger Control)
12	P61	OUT	TUCNT (Transfer Control)
13	P60	OUT	DEVCNT (Developer Control)
14	RES	IN	Chip Reset
15	X2	-	Crystal
16	X1	IN	Crystal
17	VSS	-	Ground
18	P57	-	N.C
19	P56	-	N.C
20	P55	-	N.C
21	P54	-	N.C
22	P53	-	N.C
23	P52	-	N.C
24	P51	-	N.C
25	P50	-	N.C
26	P47	-	N.C
27	P46	-	N.C
28	P45	-	N.C
29	P44	-	N.C
30	P43	-	N.C
31	P42	-	N.C
32	VSS	-	Ground
33	P41	-	N.C
34	P40	-	N.C
35	ASTB	-	N.C
36	P20	IN	+5V
37	P21	IN	+5V
38	P22	IN	DOPEN(DOOR OPEN)
39	P23	IN	NGATE
40	P24	IN	NPRINT
41	P25	IN	NCBSY
42	P26	IN	NEXIT
43	P27	IN	NCXD
44	P30	OUT	NSBSY
45	P31	OUT	NTOP
46	P32	IN/OUT	CCLK
47	P33	OUT	NSXD
48	EA	IN	+5V
49	VDD	-	+5V Supply
50	AVSS	-	GND for A/D converter
51	AVREF	-	Reference Voltage for A/D Converter
52	AN5	IN	GND
53	AN4	IN	GND
54	AN3	IN	TONER
55	AN2	IN	PE (PAPER EMPTY)
56	AN1	IN	OPCFULL
57	AN0	IN	TH (THERMISTOR)
58	P34	OUT	NEND
59	P35	OUT	NPREADY
60	P36	OUT	PURGE
61	P37	OUT	MMCTL
62	P00	OUT	A (Main Motor)
63	P01	OUT	NB (Main Motor)
64	P02	OUT	B (Main Motor)

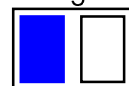
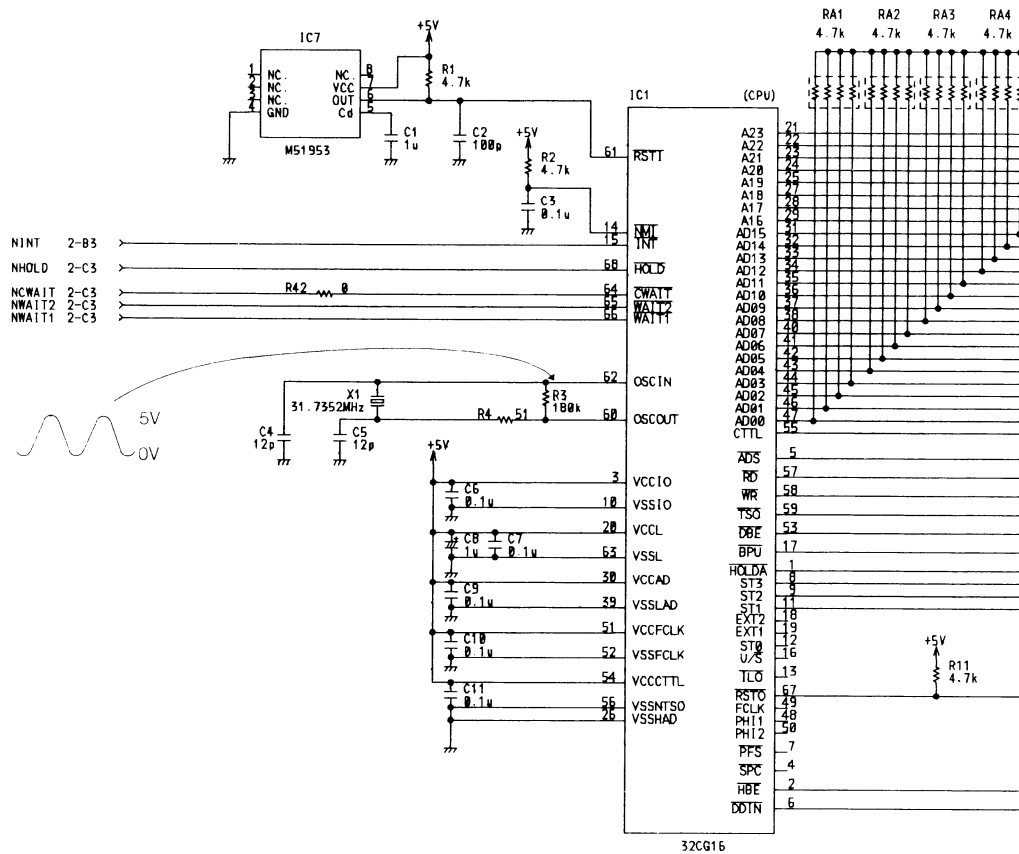
5.9 Schematic Diagram

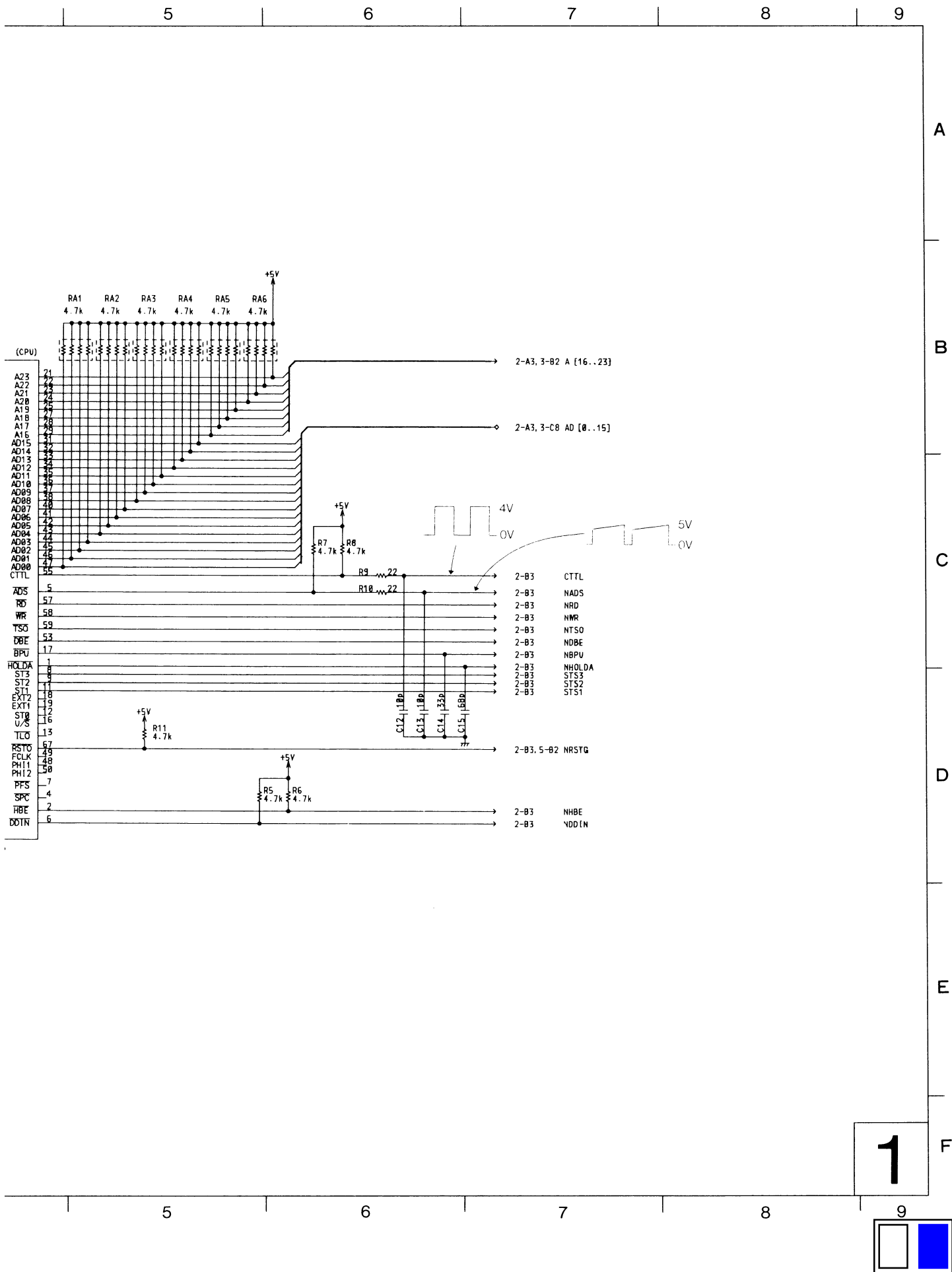
5.9.1 Connection Diagram



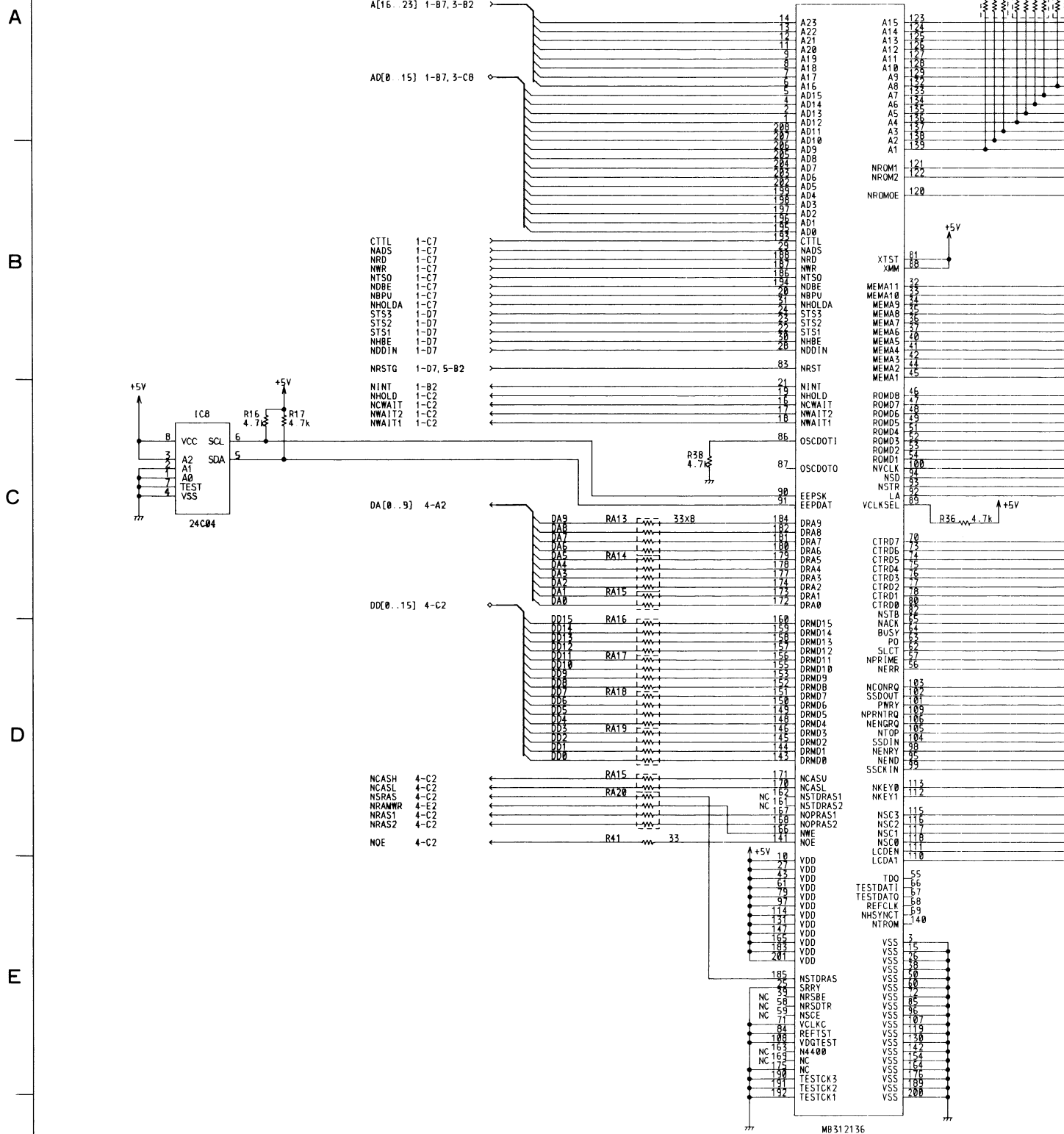


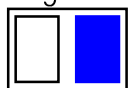
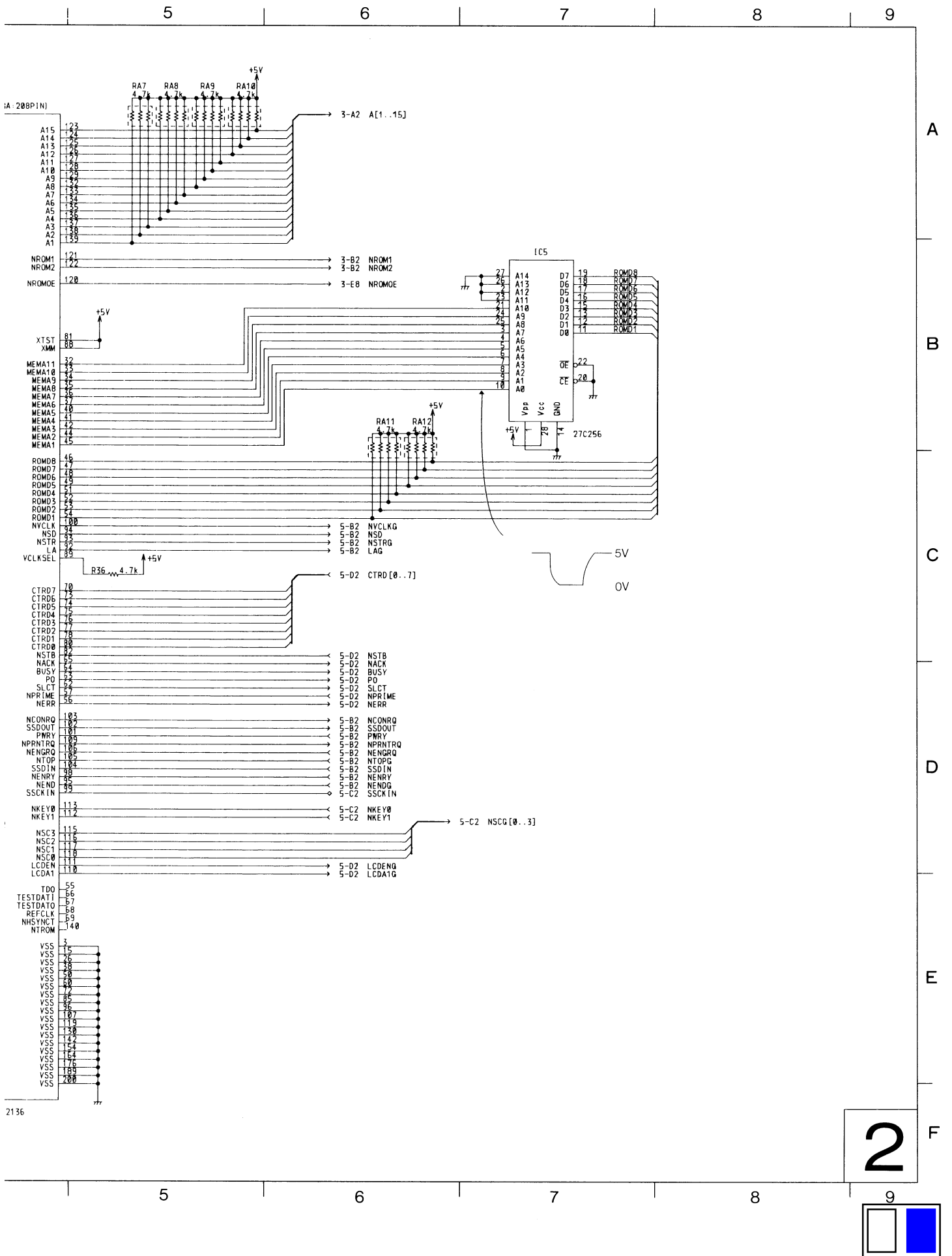
# CPU Circuit





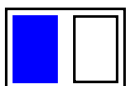
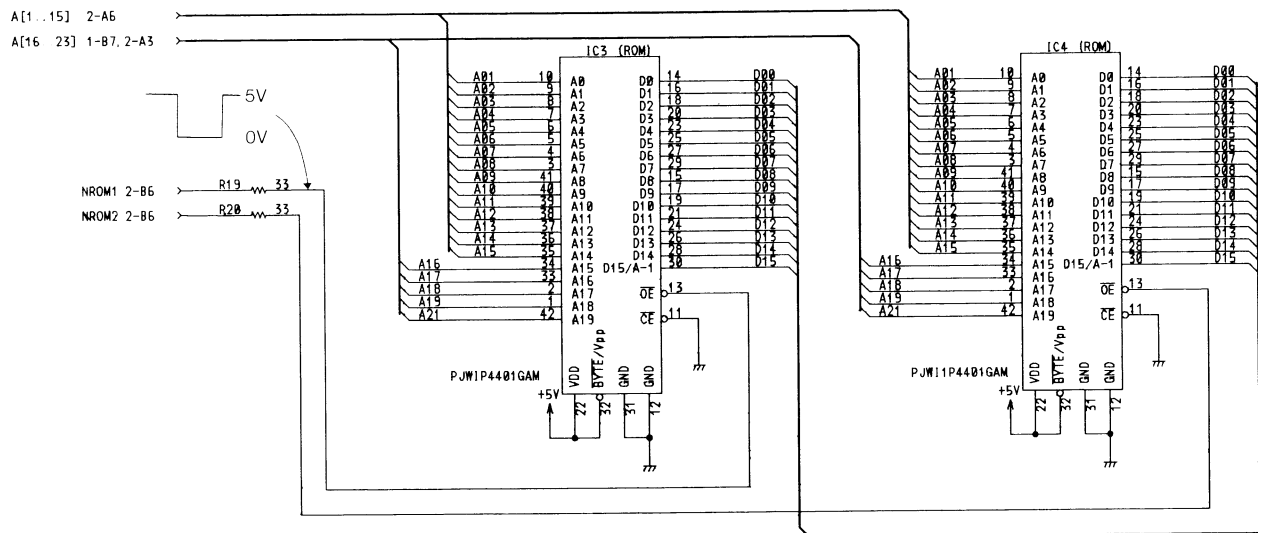
# Gate Array Circuit

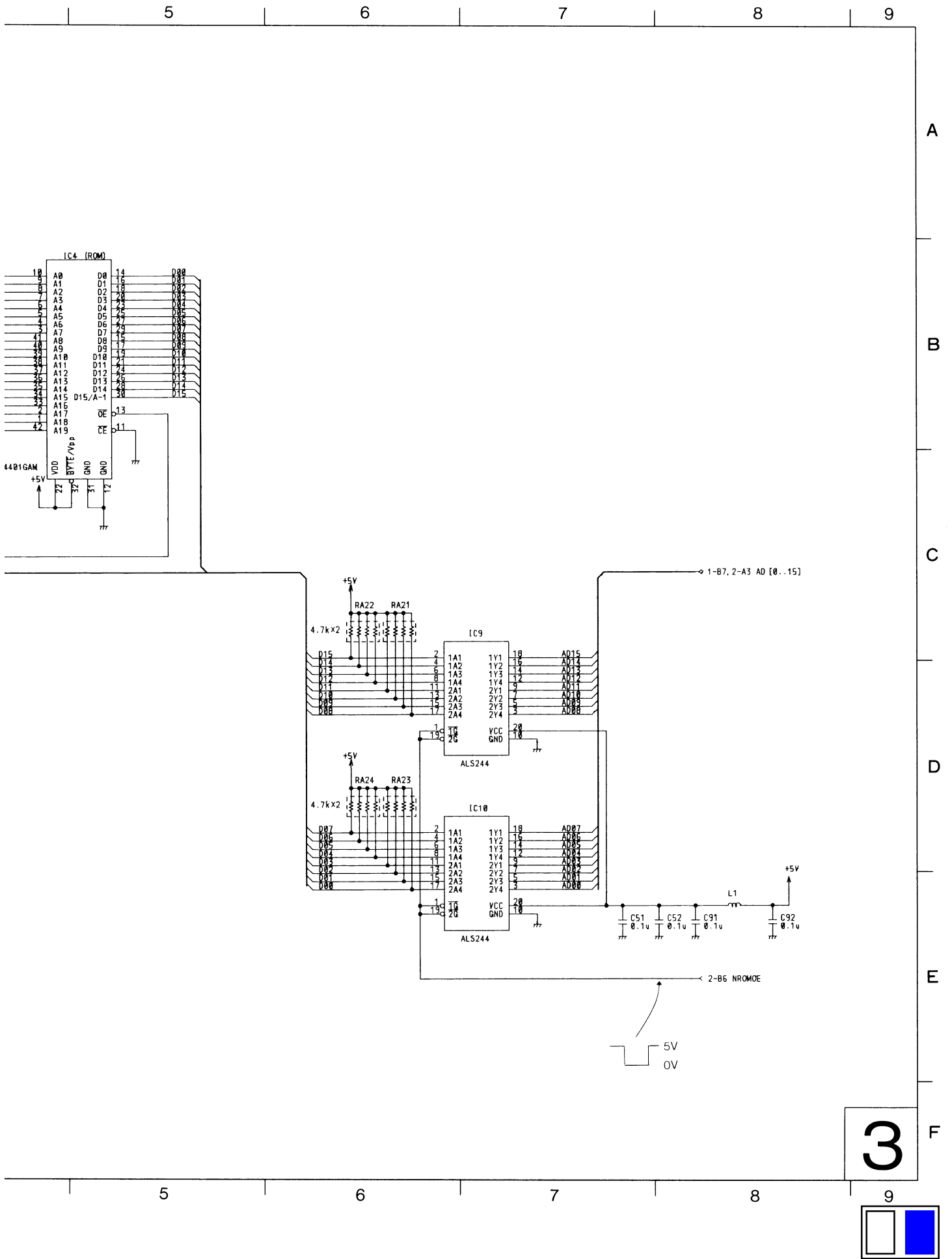




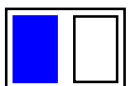
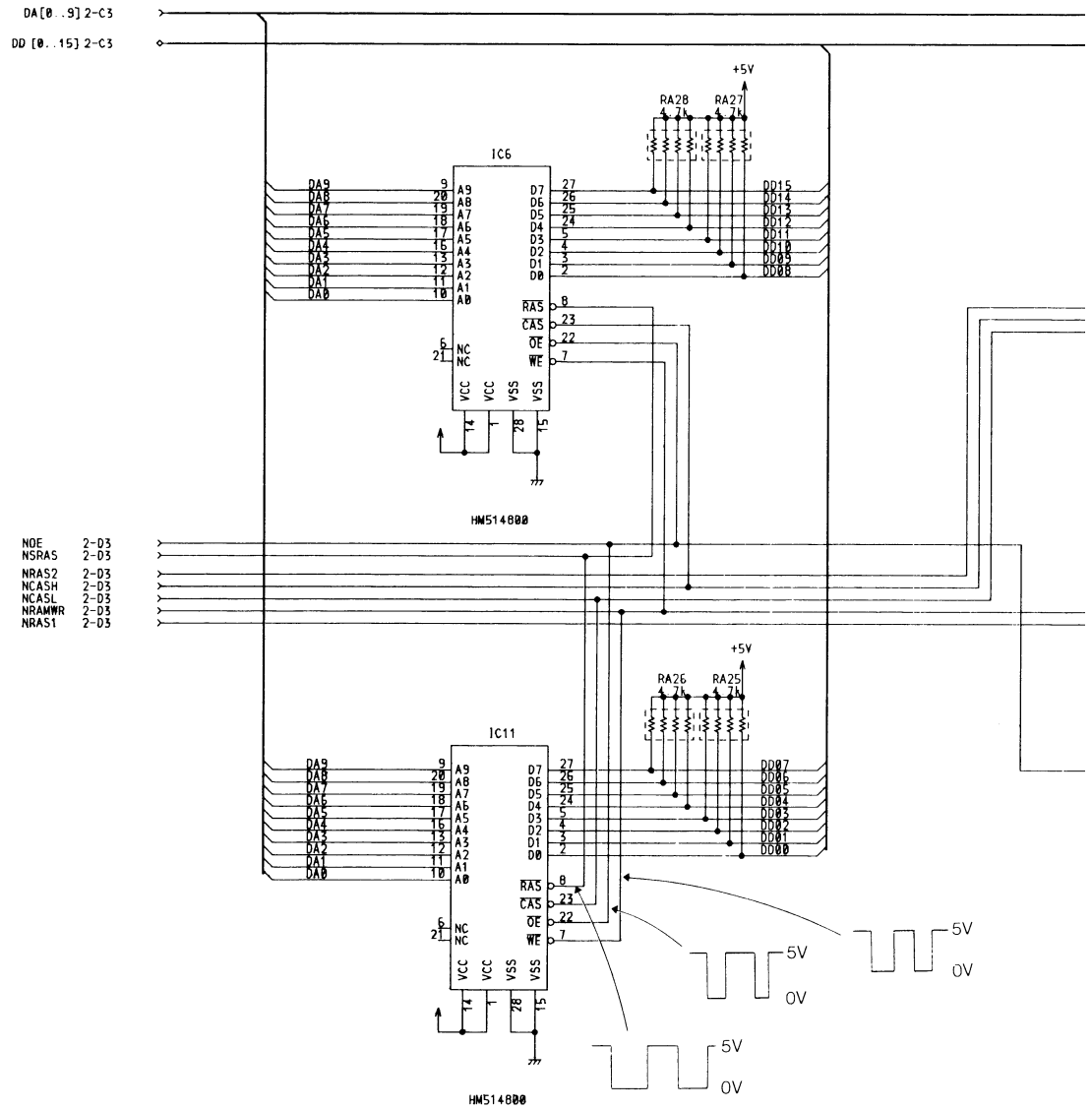


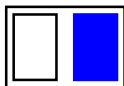
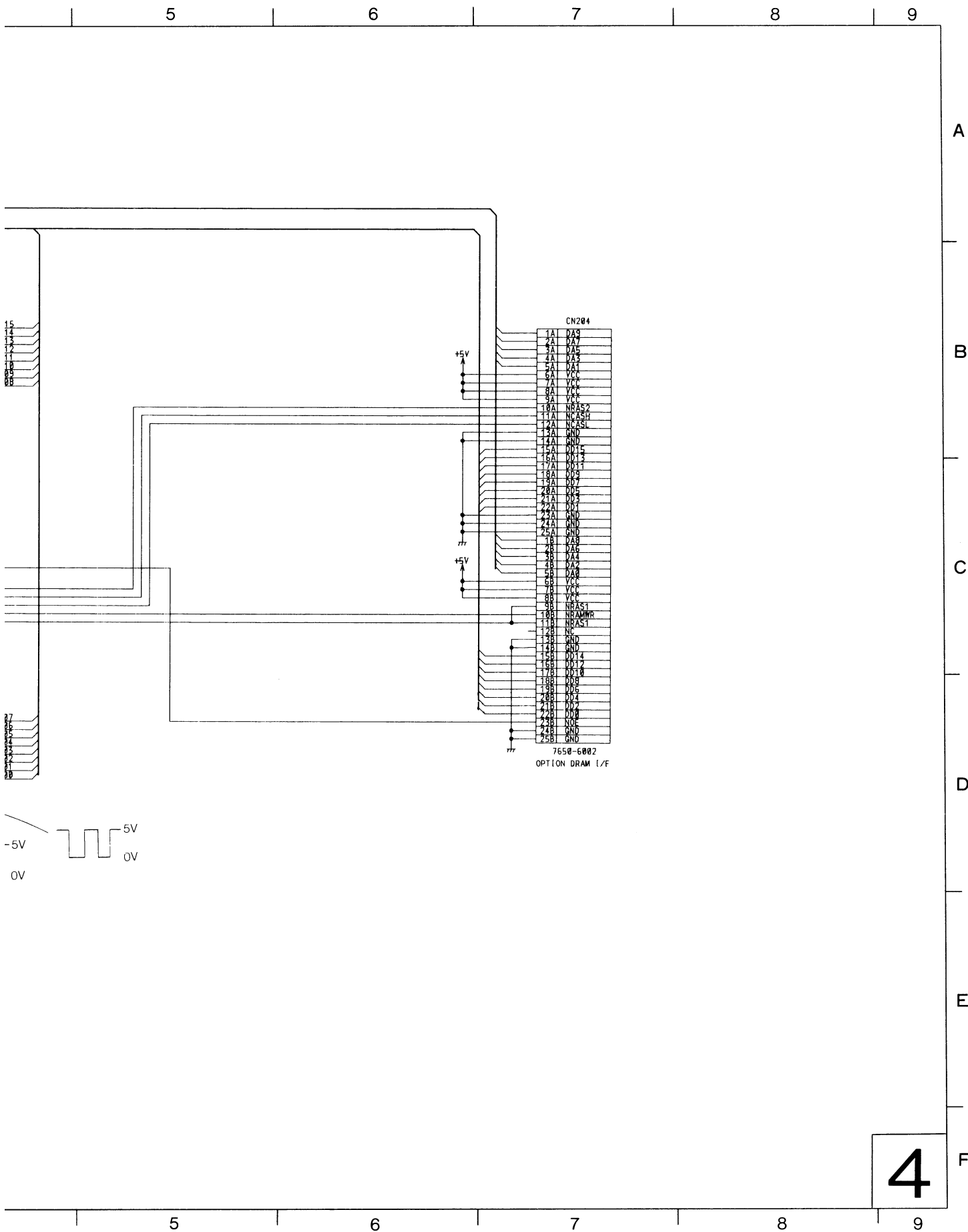
# ROM Circuit



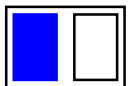
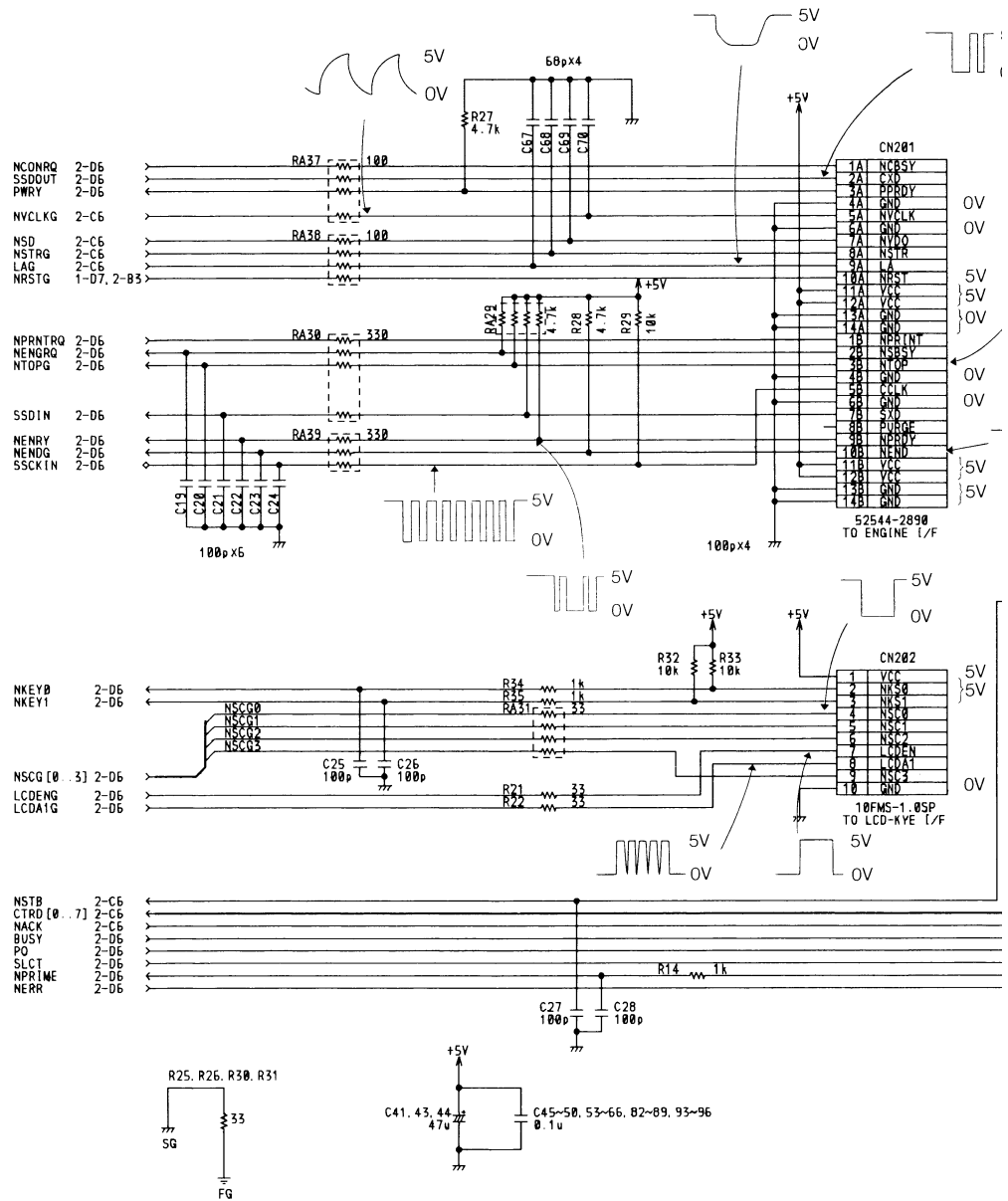


# Memory Circuit



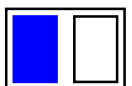


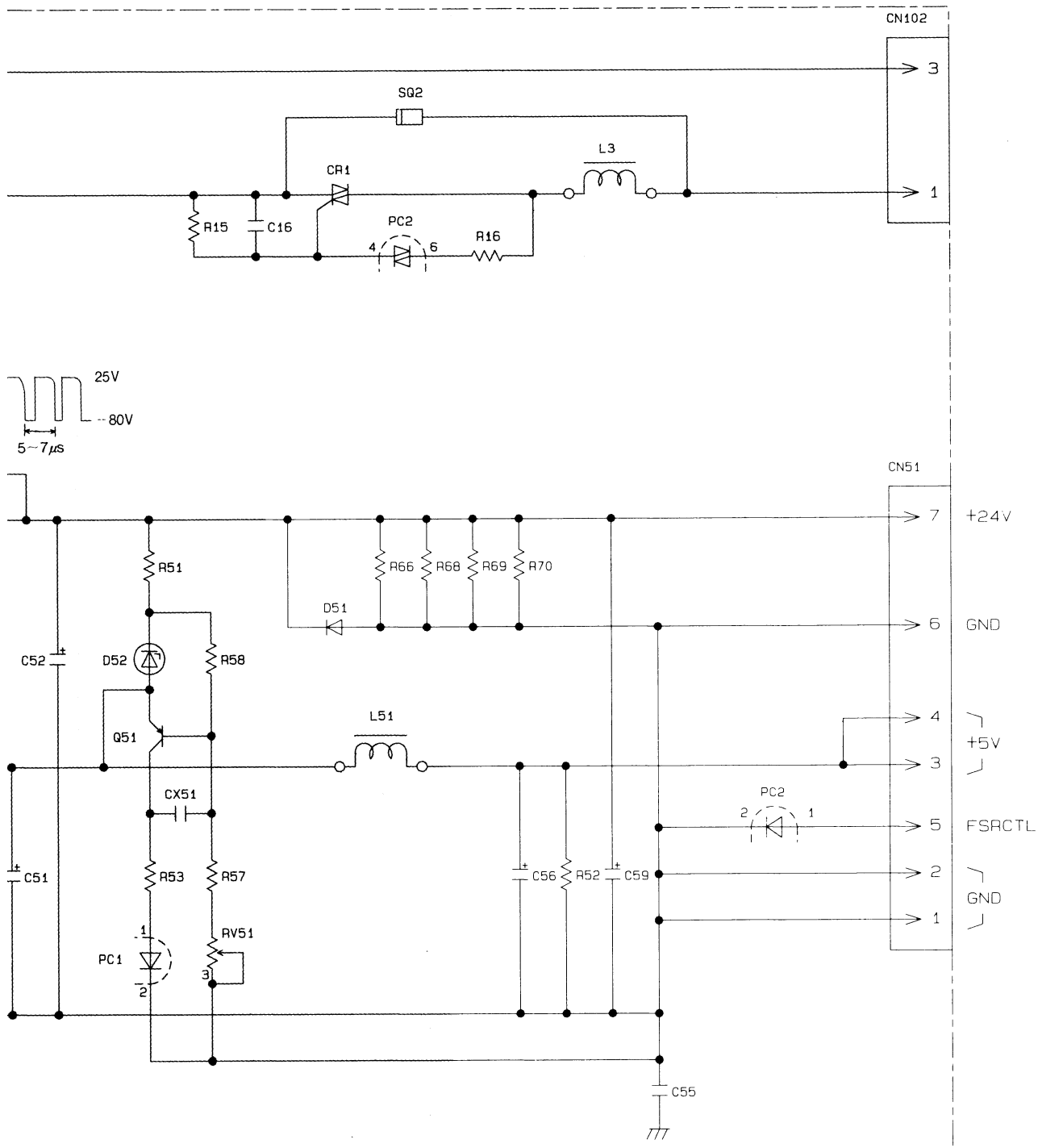
# Connector Circuit





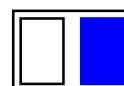
### 5.9.3 Power Supply Board Circuit





### Important Safety Notice

The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazard. When servicing it is essential that only manufacture's specified parts be used for the critical components in the shaded area of the schematic.

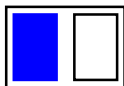
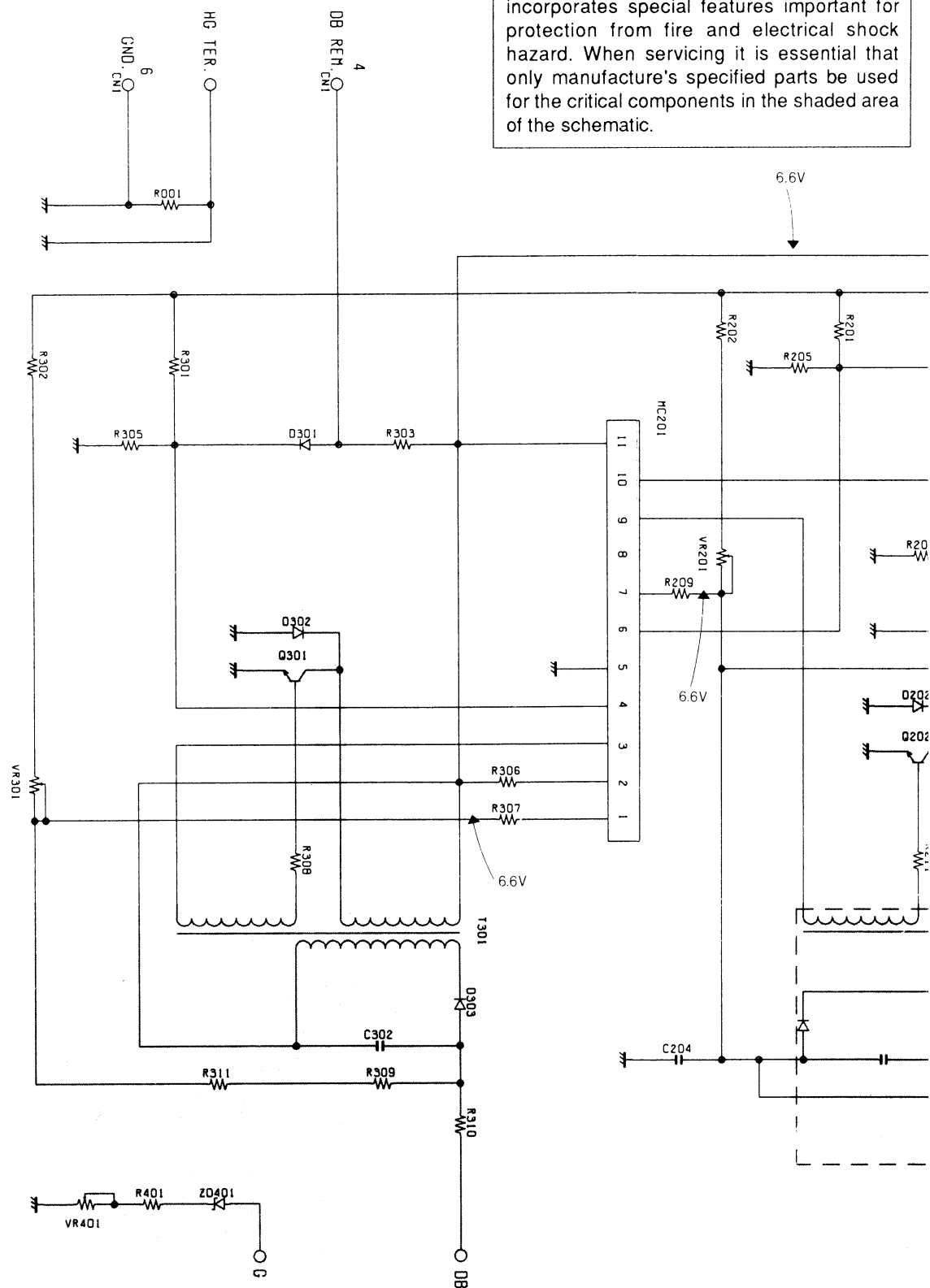




5.9.4 High Voltage Board Circuit

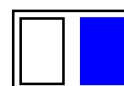
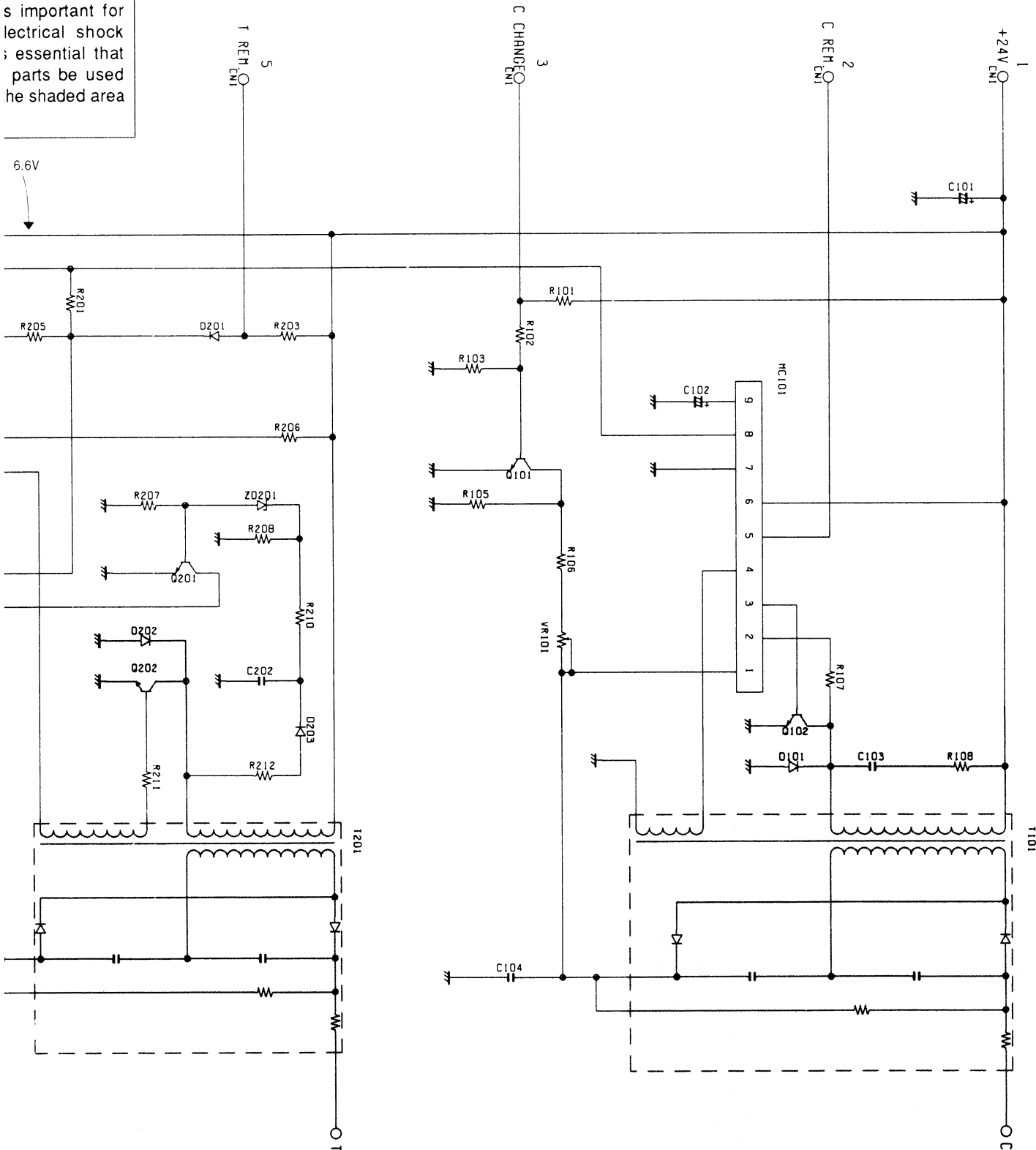
**Important Safety Notice**

The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazard. When servicing it is essential that only manufacture's specified parts be used for the critical components in the shaded area of the schematic.

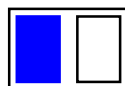
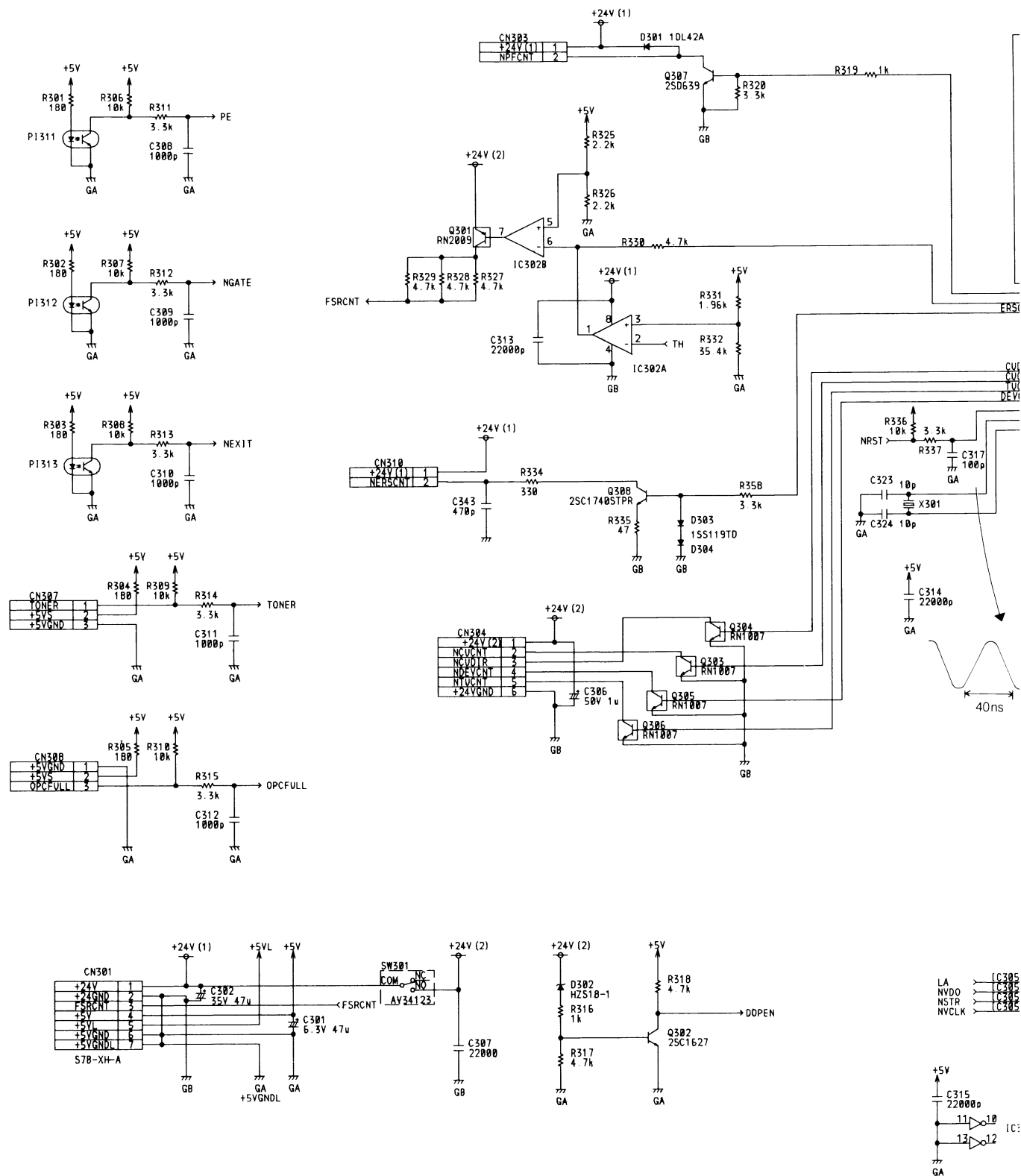


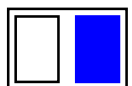
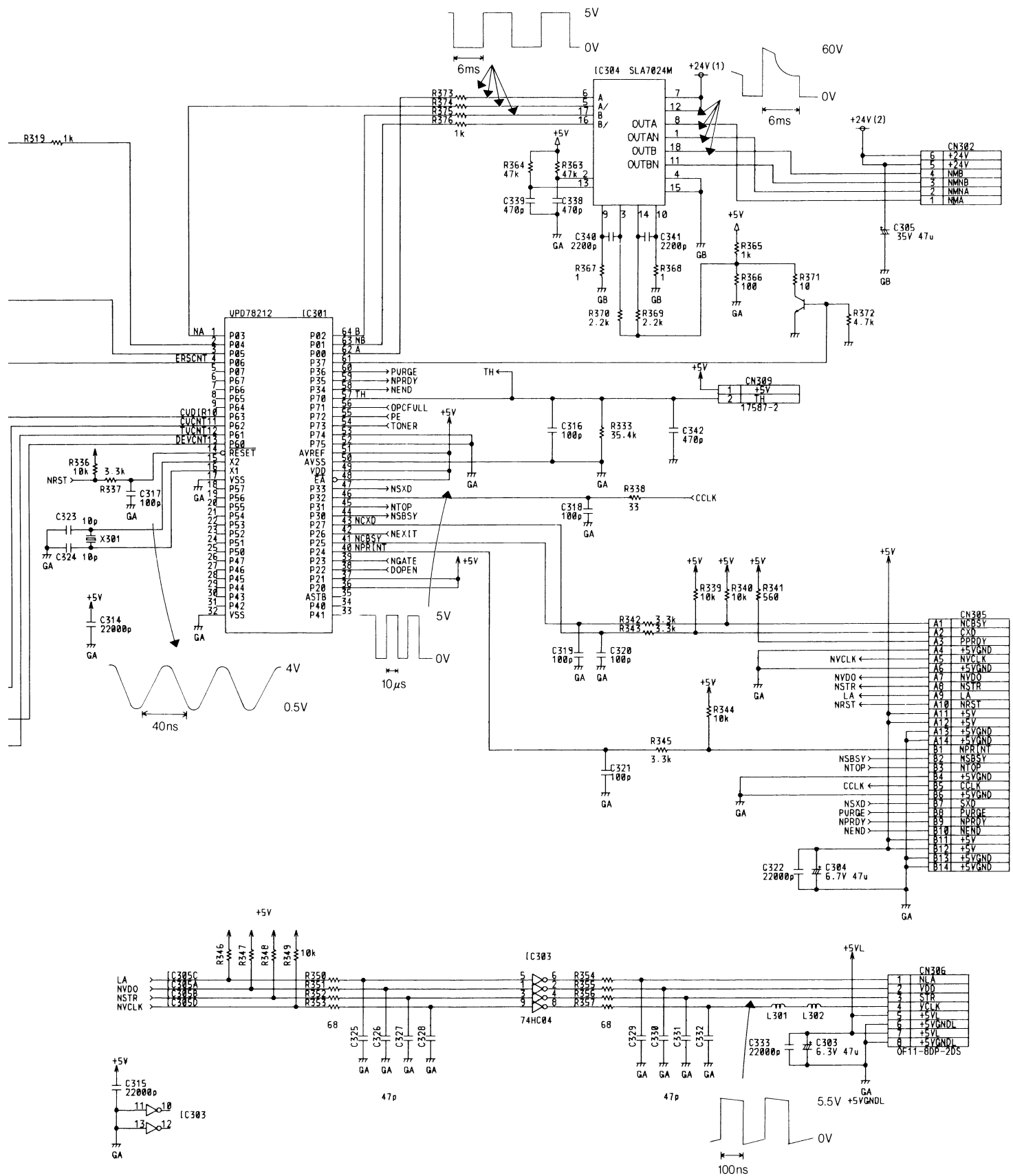
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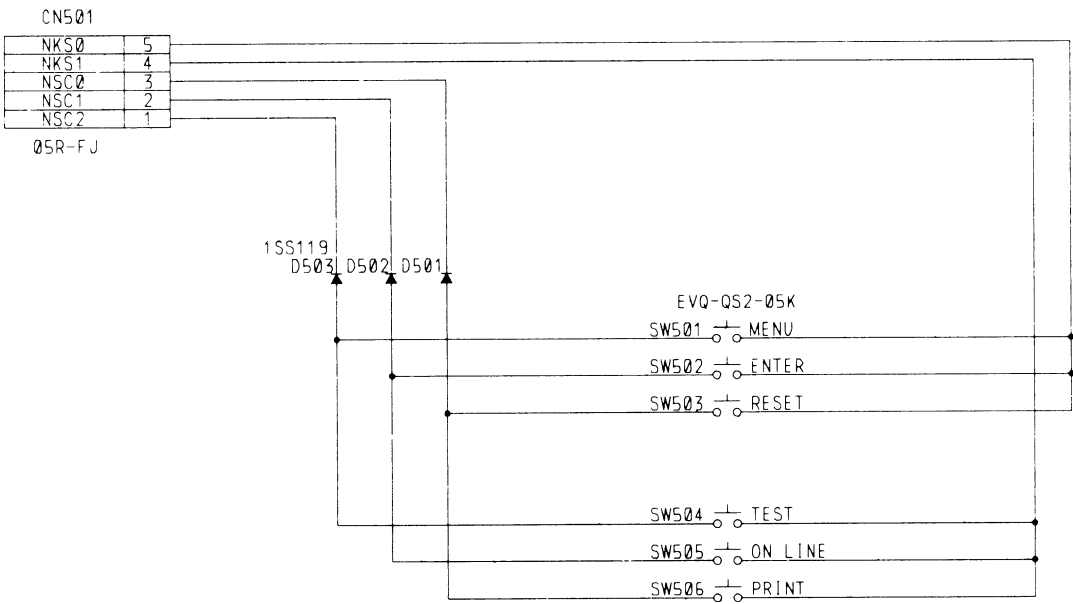
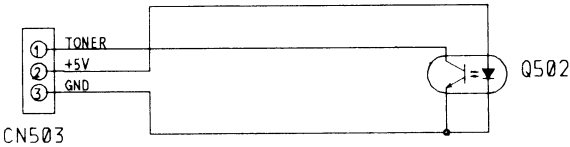
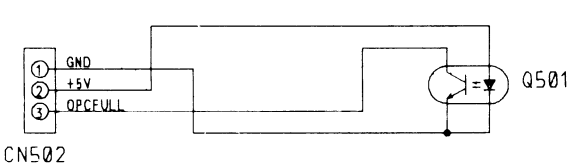
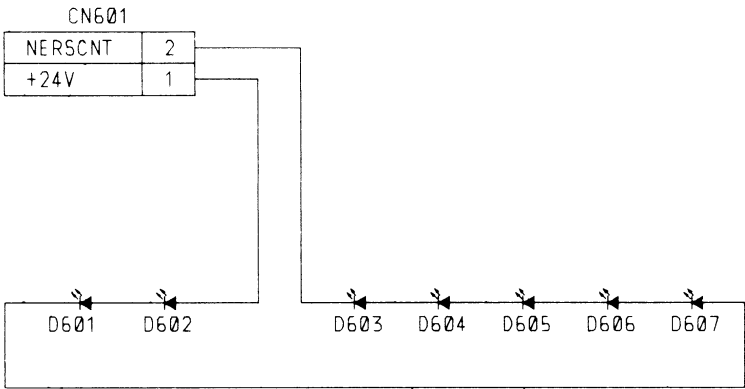


5.9.5 Engine Board Circuit

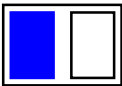
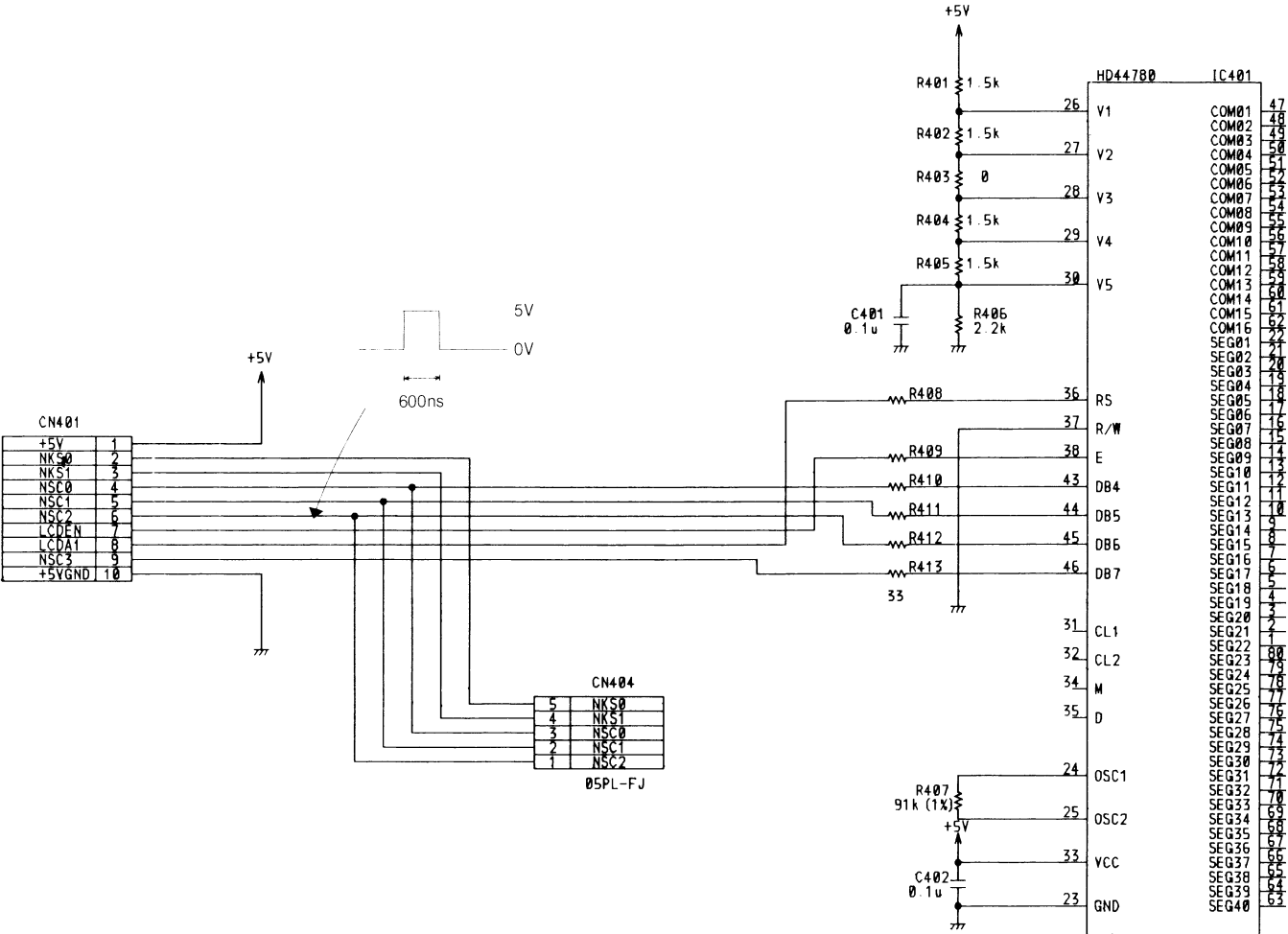


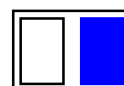
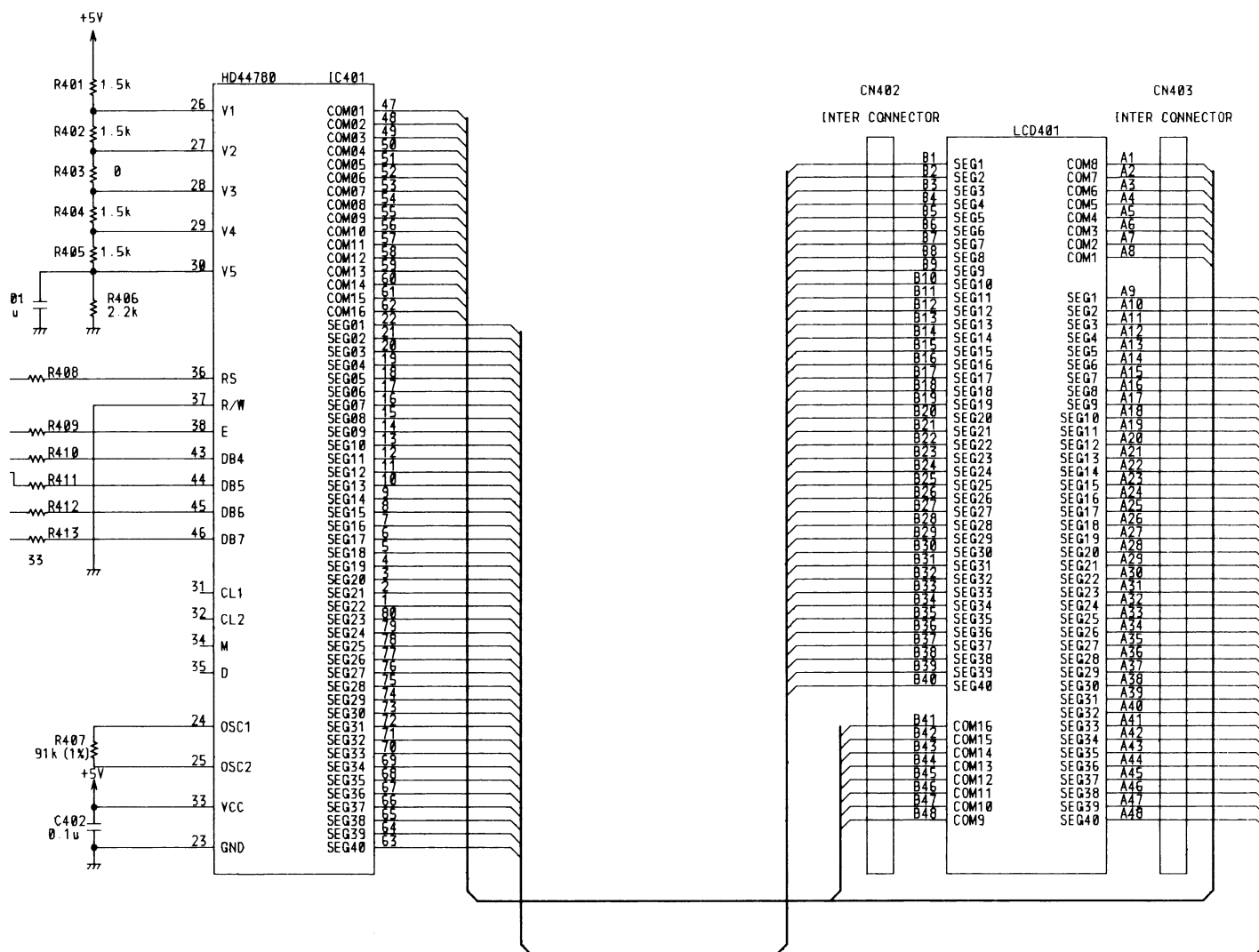


5.9.6 Discharge, Toner Disposal, Toner Empty and Operation Switch Circuits



5.9.7 LCD Board Circuit





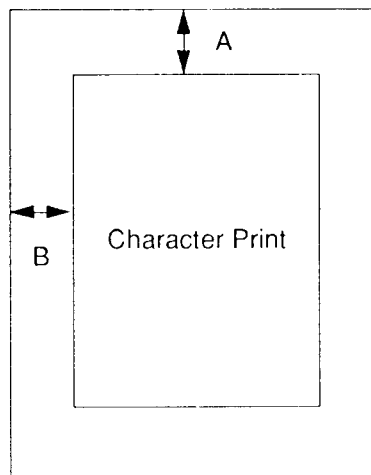
## Adjustment of Print Position Calibration

1. Enter Service Mode, press the RESET key for more than 2 seconds. Press the ENTER key to select TEST.
2. Press the ENTER key to start the CHARACTER PRINT. (To stop printing press the Enter key again.)

$$A = 4.23 \pm 2 \text{ mm}$$

$$B = 6.35 \pm 2 \text{ mm}$$

If necessary, adjust as follows.



### 7.1 Top Calibration

1. To select TOP CALIBRATION press the MENU key then the ENTER key twice.
2. Enter the number of dot rows.  
1 Dot Row = 1/300 inch
3. Press the ENTER key to save the change.

### 7.2 Left Calibration

1. To select LEFT CALIBRATION press the MENU key then the ENTER key, press the UP ARROW key then the ENTER key.

The LEFT calibration is shifted 8/300 inch by pressing the ▲ UP Arrow key.

2. Press the ENTER key to save the change.



## 8.1 General

The Preventative Maintenance ( PM ) schedule is every 2,000 impressions. Adhering to this schedule will result in increased print quality and reduced machine down time and service calls.

## 8.2 Recommended Tools

The following tools are recommended.

1. Vacuum cleaner
2. Blower brush
3. Cleaning alcohol
4. Cleaning cotton
5. Cotton swabs

## 8.3 Cleaning Recommended

1. Remove the drum unit.

### << Note >>

When the drum unit is removed, keep it covered to prevent light shock.  
Do not touch the green OPC drum surface.

2. Vacuum the inside of the machine after removing and covering the OPC Drum with the protective cap
3. Clean the feed rollers with cleaning alcohol.

### << Note >>

Do not use thinner or solvents, as they will damage rubber and plastic components.

4. Clean the corona with the blower brush.
5. Clean the surface of the LED Printhead with a cotton swab.

## 8.4 Maintenance Tables

### 8.4.1 User Maintenance

Replace these items according to the following schedule :

( x 1000 sheets )

Item \ Service	1.6	3.2	4.8	6.4	8.0	9.6	11.2	12.8	14.4	16	17.6	19.2	120
Toner Kit ( KX-P455 )													
Toner Cartridge	R	R	R	R	R	R	R	R	R	R	R	R	
Cleaning Pad	R	R	R	R	R	R	R	R	R	R	R	R	

Item \ Service	2	4	6	8	10	12	14	16	18	20	22	24	120
Drum Unit ( KX-PDM6 )			R			R			R			R	

R : Replace

The drum should be replaced when the LCD displays "CHNG DRUM U27". When replacing the drum, the surface of the LED Printhead should be cleaned with a cotton swab.

The toner and fuser cleaning pad should be replaced together. About 1,600 sheets after the toner cartridge is replaced, the LCD displays "CHNG TONER U20". After 50 more impressions, the LCD displays "TONER EMPTY U21", and the machine is disabled, until the toner cartridge is replaced.

## 8.4.2 Service Maintenance

### 8.4.2.1 Maintenance Cycle

The following table shows the service cycle of main parts.

( x 1000 sheets )

Item \ Service	18	36	54	72	90	108
Paper Feed Area						
Paper Feed Roller		C		C		C
Paper Transfer Roller		C		C		C
Transfer Wire		C		C		C
Gear		C		C		C
Delay Pad		C		C		C
Paper Ejection Area						
Paper Ejection Roller		C		C		C
Gear		C		C		C
Process Area						
Discharge LED		C		C		C
Gear		C		C		C

C : Clean R : Replace ( User replaceable )

### 8.4.2.2 Lubrication

Lubricate the following parts when they are replaced or cleaned :

Part	Lubrication Point
Fuser Unit	Drive Gear, Intermediate Gear, Gear Shaft
Main Chassis	Drive Gear, Intermediate Gear, Gear Shafts, Clamshell Pivot

Refer to the part list for locations.

### 8.4.2.3 Recommended Lubrication

Lubricate the following parts when they are replaced or cleaned :

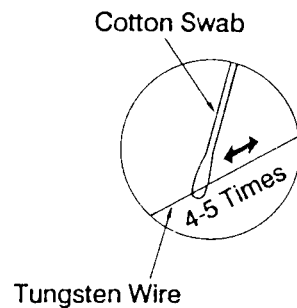
Part Number	Name	Main Part
PJOL-PG671	Grease	Plastic Gears
PJOL-948P	Oil	Pinch Roller Shaft
PJOL-HP500	Grease	Paper Ejection Roller Shaft
PJOL-K1879	Grease	Paper Feed Clutch

## 8.5 Corona Wire Cleaning

When any of the following phenomena occur, clean the corona wire with a cotton swab.

Print is non-uniform in density.  
Print has background.  
Print has black vertical line.

1. Carefully touch a cotton swab to the corona wire through the opening of the charge corona and transfer corona units.
2. Wipe the tungsten wire by gently sliding the cotton swab from end to end 4 ~ 5 times.
3. For heavy dirt, clean the Corona wire with alcohol.



## 8.6 LED Printhead Cleaning

When any of the following phenomena occur, clean the surface of the LED Printhead with a cotton swab.

Print is non-uniform in density.  
Print has white line

1. Carefully touch a cotton swab to the surface of the LED Printhead without touching the Magnetic Roller of the Developer Unit.
2. Wipe the surface of the LED Printhead by gently sliding the cotton swab from end to end 4 ~ 5 times.
3. For heavy dirt, clean the surface of the LED Printhead with alcohol.

## 9.1 Self-Diagnostic Codes

### 9.1.1 Paper Jams

LCD Display	Error Code	Possible Cause	Recovery
JAM1	J01	Gate Sensor did not sense paper.	Remove the jammed paper and then reinstall the paper.
JAM2	J01	Paper ejection sensor did not sense paper.	Remove the jammed paper and then close the OPC Drum Side Cover.
JAM3/TOP COVER	-	Paper over paper ejection sensor too long or top cover is closed.	Open the OPC Drum Side Cover and remove the jammed paper. Then, close the OPC Drum Side Cover or open the top cover.

### 9.1.2 User Errors

LCD Display	Error Code	Possible Cause	Recovery
PAPER EMPTY	U11	Paper is empty.	Load Paper in paper tray.
LOAD LGL	U14	Printer requires Legal Paper.	Load Legal paper and then set to Legal size in PAPER SIZE Menu or force printing by the ON LINE key. After that, printing starts.
LOAD LTR	U15	Printer requires Letter paper.	Load Letter paper and then set to Letter size in PAPER SIZE Menu or force printing by the ON LINE key. After that, printing starts.
LOAD EXEC	U16	Printer requires Executive paper.	Load Executive paper and then set to Executive size in PAPER SIZE Menu or force printing by the ON LINE key. After that, printing starts.
LOAD A4	U17	Printer requires A4 paper.	Load A4 paper and set to A4 size in PAPER SIZE Menu or force printing by the ON LINE key. After that, printing starts.
CHNG TONER	U20	A small amount of toner remains in the Toner cartridge. (Printing is possible.)	Change toner cartridge.

LCD Display	Error Code	Possible Cause	Recovery
TONER EMPTY	U21	Over 50 copies printed with "CHNG TONER U20" displayed. (Printing is halted.)	Change toner cartridge.
CHNG DRUM	U27	Drum unit reaches time for replacement. It is possible to print 50 sheets after "CHNG DRUM" error.	Install new drum unit.
CHK OPC/DOOR	U29	Drum unit is not installed or Door is open.	Install drum unit or Close the door.
RESEND JOB	U34	Communication error is detected in the RS-232C interface.	Press ON LINE key.
BUFFER FULL	U35	Receive buffer overflow.	Press off then on.
RAM OVER FLOW	U36	Page overflow, image overflow or download overflow has occurred.	Press ON LINE key. Set the page protection (LETTER, LEGAL or A4) through the front panel keys depending on the installed paper if optional RAM is installed.
RE-DO FORMAT	U38	FORMAT designation from FORMAT menu is not correct.	Reset FORMAT.

**Note:** When the message "LIFE OVER" appears on the display, this indicates that your printer's life has expired and its proper function is not guaranteed any longer.

### 9.1.3 Call Service Codes

LCD Display	Error Code	Possible Cause	Recovery
CALL SERVICE	E30	Fuser Temp. reaches over 392° F (200°C) or thermistor open.	None. Printer stops. (See Section 9.6.1)
CALL SERVICE	E31	Fuser Temp. is below 302° F (150°C) for 30 seconds after detecting over 302° F (150°C), Fuser temp. is below 302° F (150°C) for 120 seconds after detecting over 167° F (75°C), Fuser Temp. is below 167° F (75°C) 90 seconds after power on.	None. Printer stops. (See Section 9.6.2)
CALL SERVICE	E50	Read/Write signal cannot access standard DRAM properly.	None. Printer stops. (See Section 9.6.3)
CALL SERVICE	E51	Read/Write signal cannot access optional DRAM properly.	None. Printer stops. (See Section 9.6.4)
CALL SERVICE	E54	Checksum error in Program Rom.	None. Printer stops. (See Section 9.6.5)
CALL SERVICE	E56	Checksum error in internal font Rom.	None. Printer stops. (See Section 9.6.6)
CALL SERVICE	E62	Engine CPU error.	None. Printer stops. (See Section 9.6.7)
CALL SERVICE	E71	EEPROM check error has occurred.	None. Printer stops. (See Section 9.6.8)

When checking the Main Logic Board and Engine Board, the following Extension Cable, connector and Insulation Sheet are required :

Tool Number	Tool Name	Per Set	Remarks
PJWXP5400M	Extension Cable	1	This is the special cable for connecting the Main Logic and Engine Boards.
PJJP365Z	Terminal Connector	1	This connector must be added the connector CN201 on the Main Logic Board.
-----	Insulation Sheet	1	This testing must be performed on an insulation sheet, which should be obtained locally.

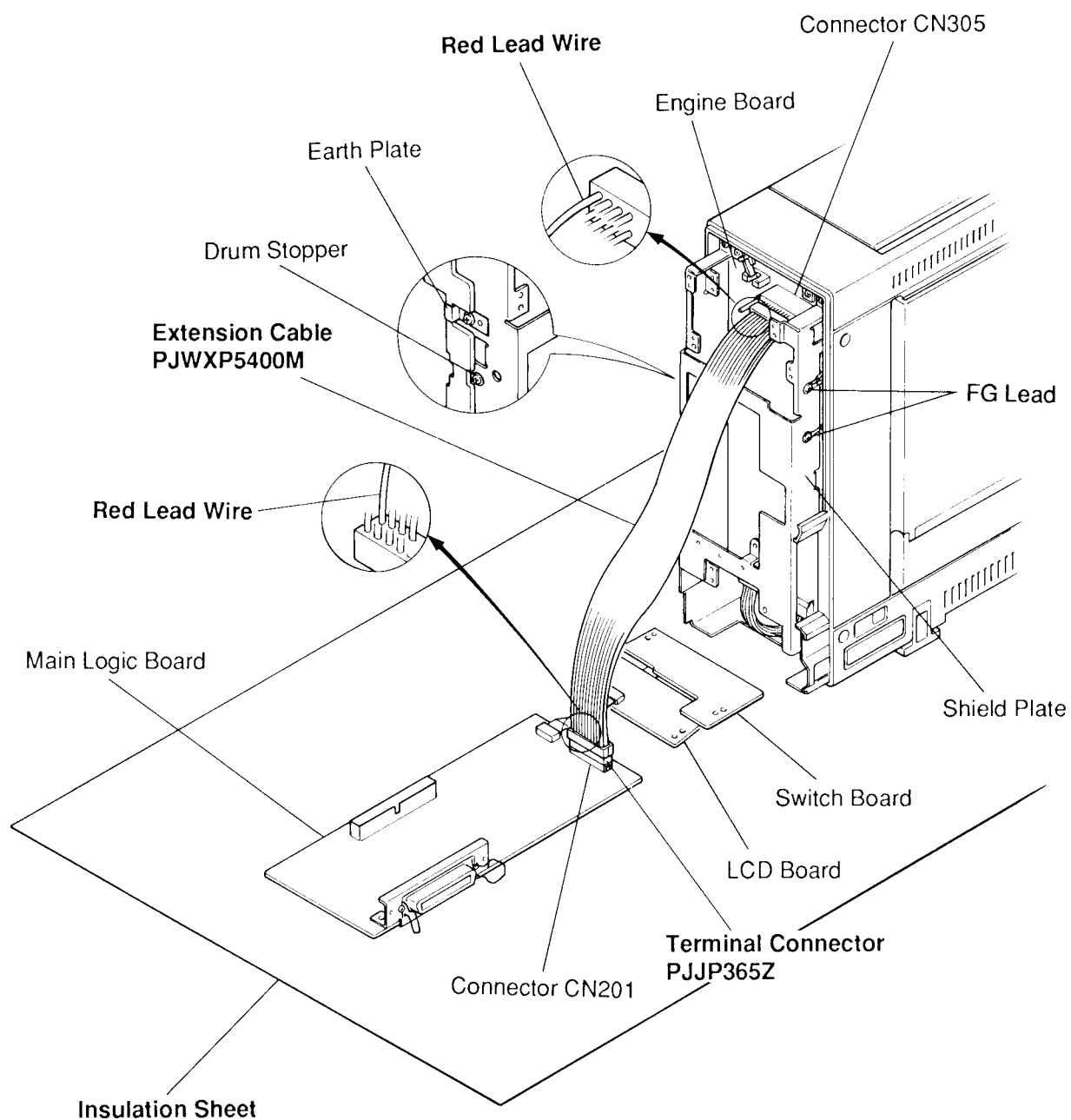
## 10.1 Set-up

The following parts must be set up as shown on Section 10.2 " Wiring Diagram " after removing from the printer.

Parts required to be removed	Reference Section
Control Cover	Section 6.2.1 " Covers "
LCD and Switch Boards	Section 6.5 " LCD and Switch Boards "
Main Logic Board	Section 6.6 " Main Logic Board "
Earth Plate attached to the Main Logic Board Shield Plate	
Shield Plate for the Main Logic Board	
Drum Stopper	

## 10.2 Wiring Diagram

**Caution :** This wiring diagram must be set up on an Insulation Sheet.

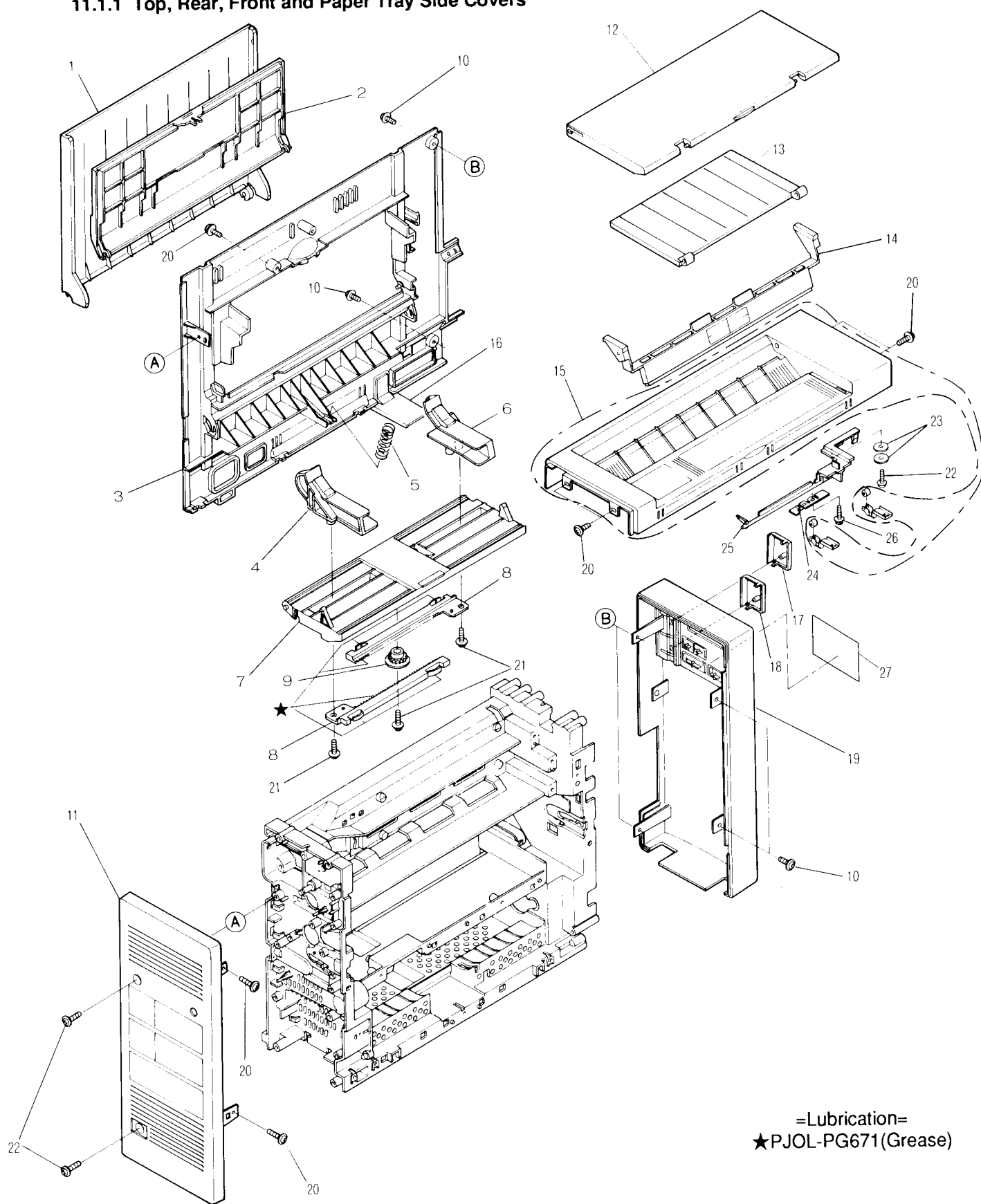




# 11. Replacement Parts List

## 11.1 Covers

### 11.1.1 Top, Rear, Front and Paper Tray Side Covers



=Lubrication=  
★PJOL-PG671(Grease)

**Note :**

## 1. RTL (Retention Time Limited)

The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependent on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

## 2. All capacitor values are in microfarads unless otherwise noted.

3. Components identified by  $\Delta$  mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

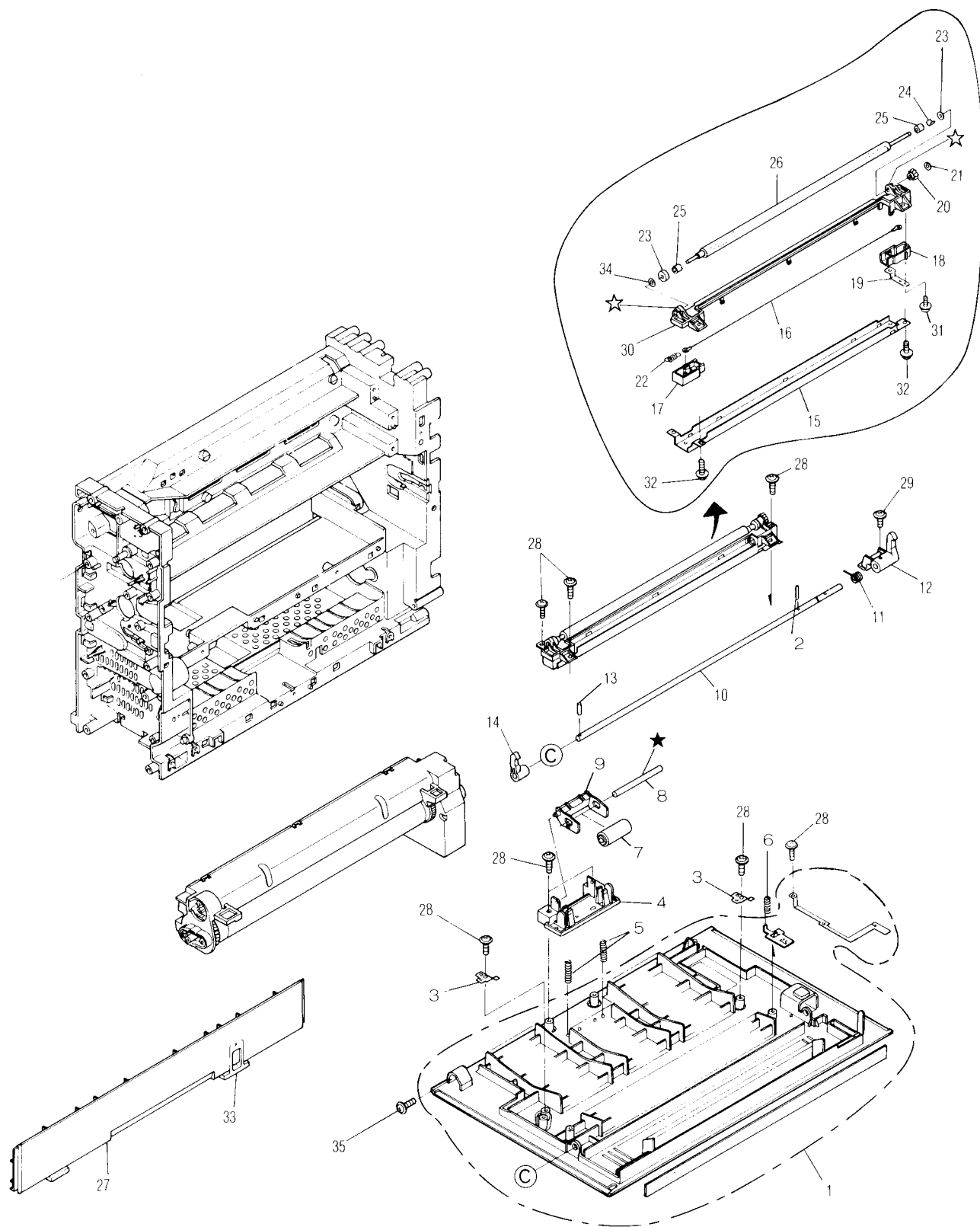
## 4. The S mark is for service standard parts and may differ from production parts.

Country Code	Country	Country Code	Country	Country Code	Country
U	United Kingdom	ET	Italy	SW	Switzerland
G	Germany	NE	Holland	NS	Indonesia
Z	New Zealand	V	Belgium	Y	Sweden
F	France				

**Top, Paper Tray Side, Rear and Front Covers**

Ref.No.	Part No.	Part Name and Description	Per Set	Remarks
1	PJKK135Y	Paper Tray	1	
2	PJYKP5400M	Toner Cartridge Door Assembly	1	
3	PJYK4P5400M	Paper Tray Side Cover Assembly	1	
4	PJYEP5400M	Left Paper Guide Assembly	1	
5	PJDS5362Z	Paper Tray Spring	1	
6	PJYE1P5400M	Right Paper Guide Assembly	1	
7	PJYE2P5400M	Paper Guide Holder Assembly	1	
8	PJDG50328Z	Paper Guide Rack	2	
9	PJDG50133Z	Paper Guide Pulley	1	
10	XTW3+8L	Screw 3 X 8	4	
11	PJYK6P4401G	Rear Cover Assembly [G,SW]	1	
	PJYK6P4401Y	Rear Cover Assembly [Y]	1	
	PJYK6P4401U	Rear Cover Assembly	1	
12	PJKK137Z	Output Tray	1	
13	PJKK138Z	Paper Support	1	
14	PJZE3P5400M	Cleaning Pad Assembly	1	
15	PJYK3P5400M	Top Cover Assembly	1	
16	PJZE4P5400M	Printer Supporter	1	
17	PJBC38X	ON LINE Key	1	
18	PJBC39X	PRINT Key	1	
19	PJYPP4401G	Front Cover Assembly	1	
20	XTW3+10S	Screw 3 X 8	7	
21	XTW3+U10S	Screw 3 X 10	3	
22	XTW3+12S	Screw 3 X 12	3	
23	XWG3D12	Washer	2	
24	PJHM534Z	Ejection Sensor Bracket	1	
25	PJHR9762Z	Ejection Sensor Arm	1	
26	XTW3+8S	Screw 3 X 8	1	
27	PJGK178Y	Switch Sheet	1	

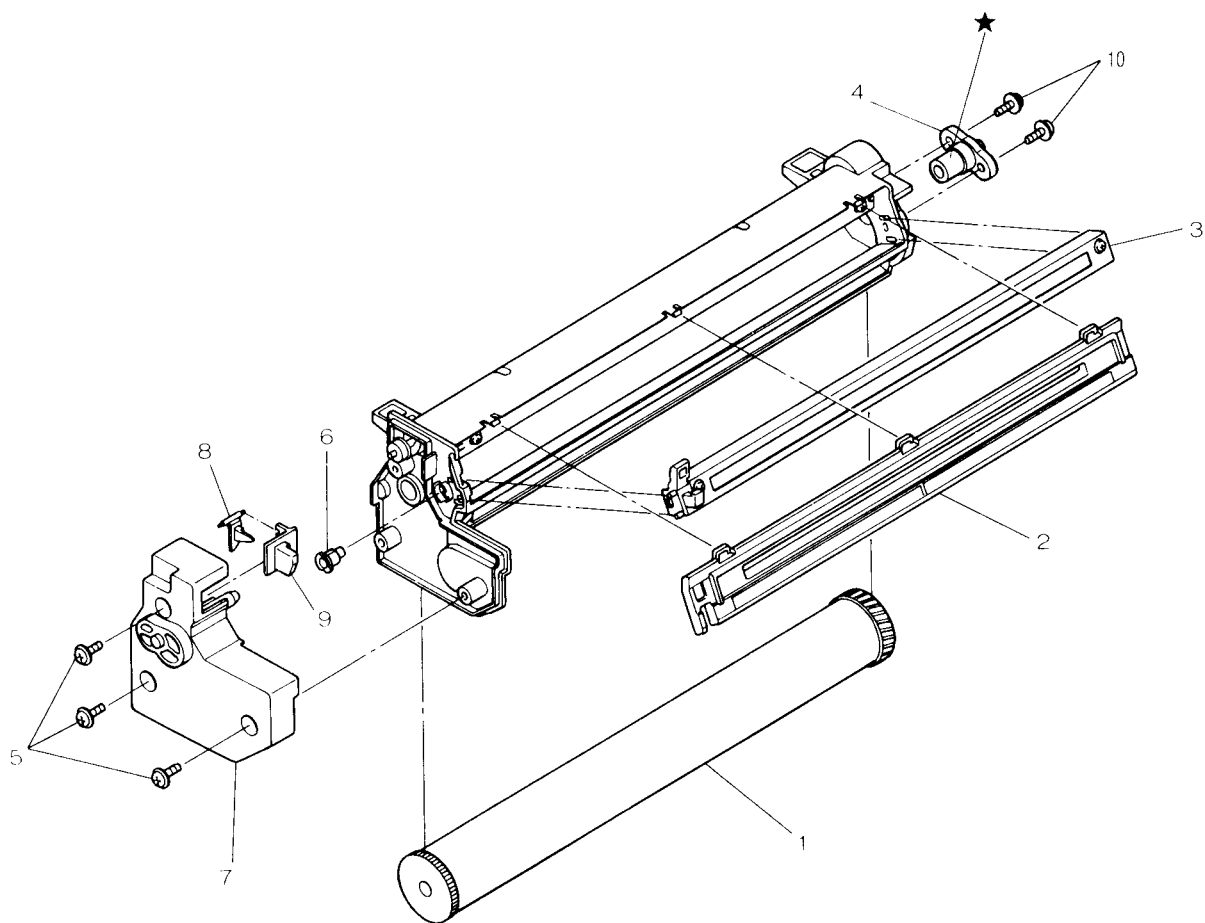
## 11.1.2 OPC Drum Side and Lower OPC Drum Side Covers, Baffle Roller, Transfer Wire



=Lubrication=  
 ★PJOL-948P (OIL)  
 ☆PJOL-PG671 (Grease)

Ref.No.	Part No.	Part Name and Description	Per Set	Remarks
1	PJYK1P5400M	OPC Drum Side Cover Assembly	1	
2	XPL2A8WVW	Pin	1	
3	PJUS214Z	Earth Spring	2	
4	PJHR9764Z	Pinch Roller Bracket	1	
5	PJDS3162Z	Pinch Roller Spring	2	
6	PJDS3121Z	Spring	1	
7	PJDR155Z	Pinch Roller	1	
8	PJDF9321Z	Pinch Roller Shaft	1	
9	PJHR9763Z	Pinch Roller Holder	1	
10	PJDF9335Z	Cover Hook Shaft	1	
11	PJDS7102Y	Cover Spring	1	
12	PJKX5001Z	Cover Hook, Right	1	
13	XPJ2A10ZW	Pin	1	
14	PJKX5002Z	Cover Hook, Left	1	
15	PJMC192Z	Transfer Wire Frame	1	
16	PJDZ34Z	Transfer Wire	1	
17	PJMX160Y	Transfer Wire Bracket, Left	1	
18	PJMX159Z	Transfer Wire Bracket, Right	1	
19	PJHM535Z	Spring	1	
20	PJDG50349Z	Baffle Roller Gear	1	
21	PJNW212Z	Plastic Ring	1	
22	PJDS2023Z	Transfer Wire Spring	1	
23	PJDR120Y	Roller	2	
24	PJHR423Z	Spacer	1	
25	PJDJ03150CZ	Bushing	2	
26	PJDR204Z	Baffle Roller	1	
27	PJKE188Y	Lower OPC Drum Side Cover	1	
28	XTW3+8S	Screw 3 X 8	8	
29	XYN3+F8	Screw 3 X 8	1	
30	PJMX162Z	Transfer Wire Frame Cover	1	
31	PJHE5082Z	Screw	1	
32	XTW26+6P	Screw 2.6 X 6	2	
33	PJZE4P5400M	Printer Supporter	1	
34	PJNW310Z	Plastic Ring	1	
35	XTW3+U8S	Screw 3 X 8	1	

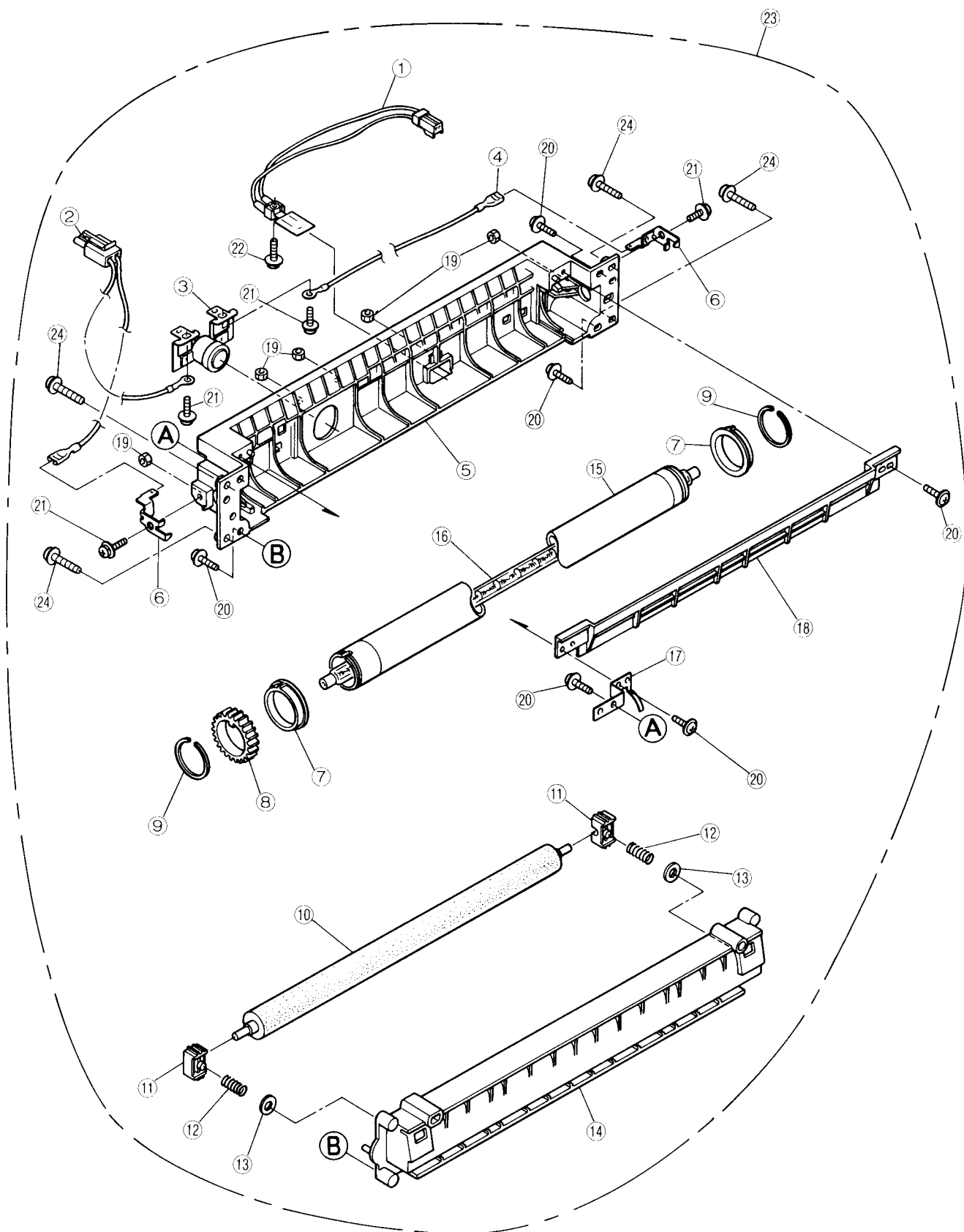
## 11.2 Drum Unit ( Consumables )



=Lubrication=  
★PJOL-PG671(Grease)

Ref.No.	Part No.	Part Name and Description	Per Set	Remarks
1	PJDD9304Z	Drum	1	
2	PJYK5P5400M	OPC Drum Cover Assembly	1	
3	PJWEP5400M	Charge Corona Assembly	1	
4	PJDF9338Z	Bushing	1	
5	XTW3+U10S	Screw 3 X 10	3	
6	PJHR9447Z	Drum Stopper	1	
7	PJYK2P5400M	Drum Cover Assembly	1	
8	PJHR9767X	Sensor Lever	1	
9	PJHR9766X	Sensor Cap	1	
10	XTW3+8S	Screw 3 X 8	2	

## 11.3 Fuser Unit

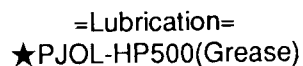


**Fuser Unit**

Ref.No.	Part No.	Part Name and Description	Per Set	Remarks
1	PJRT117Z	Thermistor Assembly	1	
2	PJJS915Z	Connector	1	
3	PJSE3Z	Thermal Fuse	1	
4	PJJT286Z	Fuser Cable	1	
5	PJKE191Z	Fuser Unit Base	1	
6	PJUS211Z	Terminal	2	
7	PJDJ20021RZ	Heat Roller Bushing	2	
8	PJDG50348Z	Fuser Gear	1	
9	PJHE6043Z	C-Ring	2	
10	PJDR161Z	Pressure Roller	1	
11	PJDJ04139RZ	Bushing, Pressure Roller	2	
12	PJDS41104Z	Spring	2	
13	XWG5F10FX	Washer	2	
14	PJZBP5400U	Pressure Roller Holder Assembly	1	
15	PJDR160Z	Heat Roller	1	
16	PJXA40002Y	Heat Lamp	1	
17	PJHM405Z	Earth Spring	1	
18	PJUG157Z	Fuser Blade	1	
19	XNG3B	Nut	5	
20	XTW3+8S	Screw 3 X 8	6	
21	XYN3+F6	Screw 3 X 6	4	
22	XYN3+F12	Screw 3 X 12	1	
23	PJKT1P5400U	Fuser Unit Complete	1	
24	XTW3+12S	Screw 3 X 12	4	

#### 11.4.1 Safety Interlock, Paper Ejection Roller and Discharge Mechanism

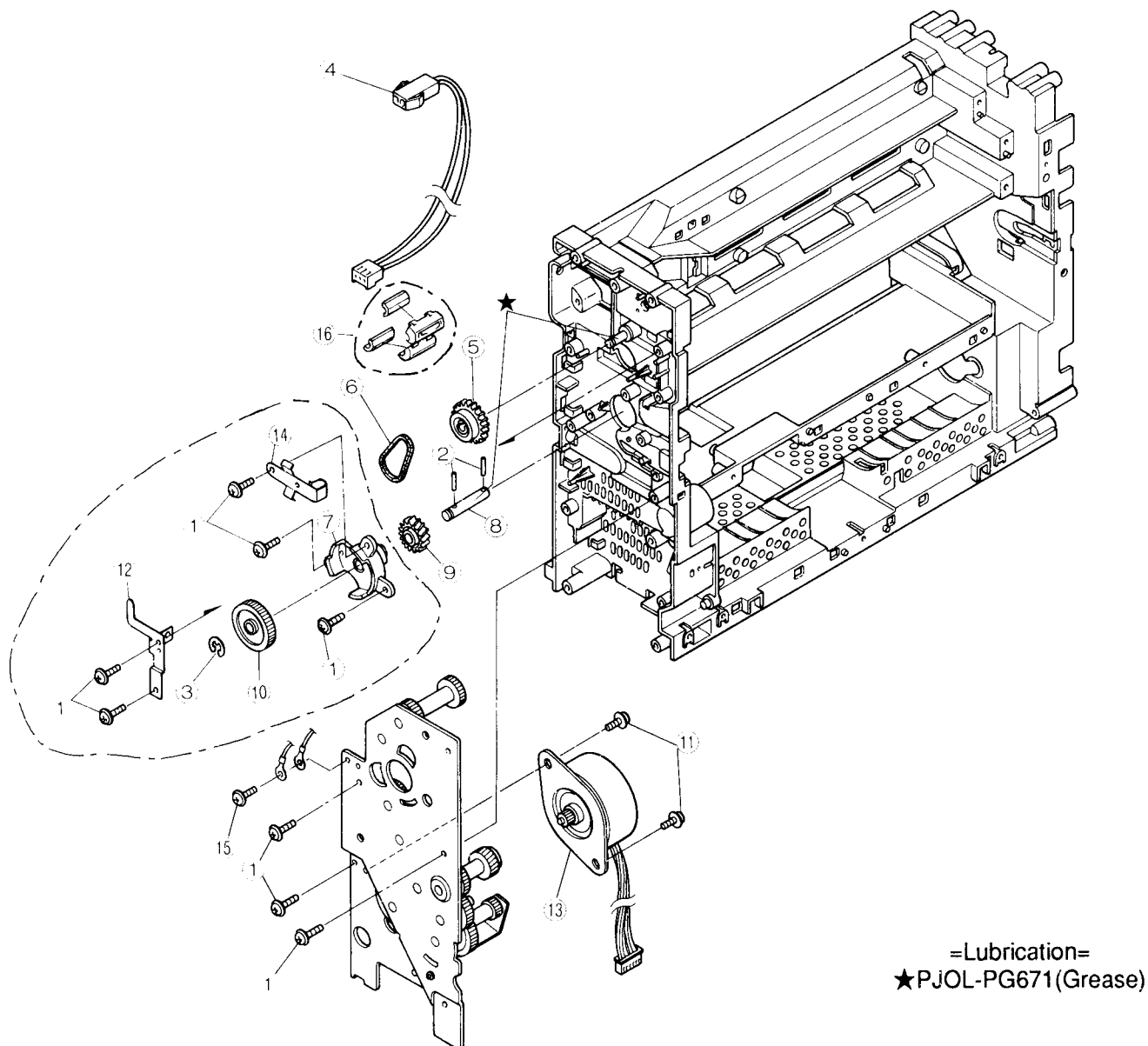
#### 11.4.1 Safety Interlock, Paper Ejection Roller and Discharge Mechanism





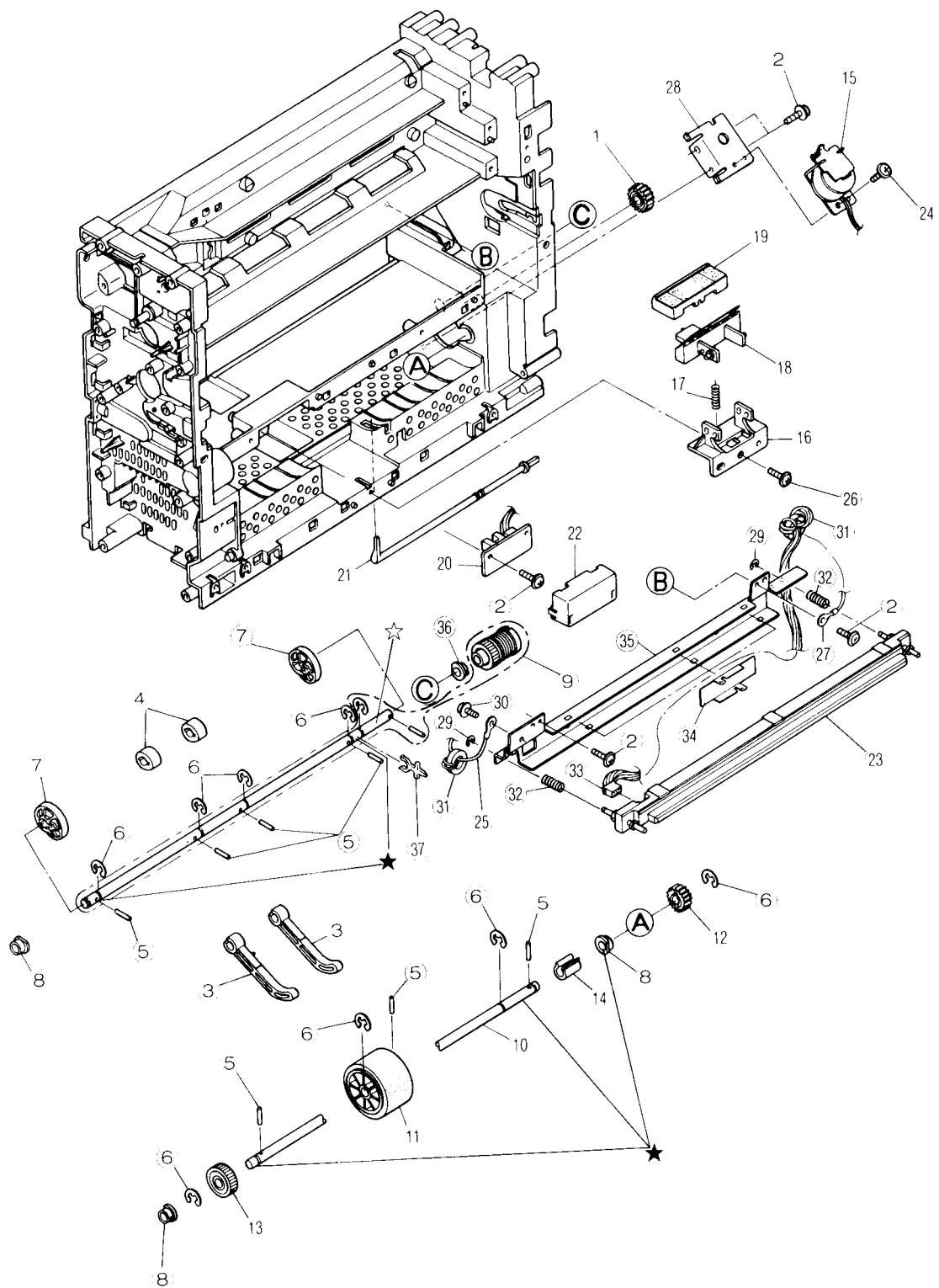
Ref.No.	Part No.	Part Name and Description	Per Set	Remarks
1	PJZC1P5400M	Mechanical Frame Assembly	1	
2	XTW3+10S	Screw 3 X 8	11	
3	PJDJ04191RZ	Bushing, Paper Ejection Roller	1	
4	PJHE6053Z	Plastic Ring	1	
5	PJHR9758Z	Interlock Switch Bracket	1	
6	PJHR9761Z	Cover Interlock Switch Lever	1	
7	PJDS4163Z	Spring, Cover Interlock Switch Lever	1	
8	PJHR9760Z	OPC Interlock Switch Lever	1	
9	PJDS41102Z	Spring, OPC Interlock Switch Lever	1	
10	PJJT288Y	Transfer High Voltage Lead Wire	1	
11	PJKE189Z	Ejection Roller Holder	1	
12	PJDF9336Z	Transfer High Voltage Pin	1	
13	PJDS2053Z	Spring	1	
14	PJHR9772X	Waste Toner Full Sensor Bracket	1	
15	PJWP5P5400M	Waste Toner Full Sensor Board Complete	1	
16	PJJT289Z	High Voltage Lead Wire, Long Pin	1	
17	PJJT290Z	Grid Lead Wire, Short Pin	1	
18	PJWP6P5400M	Discharge Board Complete	1	
19	PJHR9771Z	Discharge LED Lid	1	
20	PJHM404Z	Grid Bias Conductor	1	
21	PJJT291Z	Grid Bias Lead Wire	1	
22	PJDF9340Z	High Voltage Conductor Pin	1	
23	PJDF9341Z	Grid Conductor Pin	1	
24	PJDS40904Z	Conductor Spring	2	
25	PJDJ04141RZ	Ejection Roller Bushing with Hook	1	
26	PJDR9013Y	Paper Ejection Roller Assembly	1	
27	XUC3VW	E-ring	1	
28	PJHR9730Z	Paper Sensor Shaft	1	
29	PJZE5P5400M	Supporter	1	
30	PJKTP5400C	Developer Unit Complete	1	
31	PJZE2P5400M	Developer Stopper Assembly	2	
32	PJHR9759Y	Interlock Switch Lever	1	
33	PJDR159Z	Pulley	1	
34	PJMD9053Z	Clamp	1	
35	XTW3+5L	Screw 3 X 5	1	

## 11.4.2 Drive Motor and OPC Drive Gears



Ref.No.	Part No.	Part Name and Description	Per Set	Remarks
1	XTW3+10S	Screw 3 X 8	8	
2	XPJ2C10	Pin	2	
3	XUC5VW	E-Ring	1	
4	PJJS912W	Fuser Internal Cable	1	
5	PJDG50344Z	Paper Ejection Idle Pulley	1	
6	PJDV38Z	Rubber Belt	1	
7	PJHR9757Z	OPC Drum Drive Gear Holder	1	
8	PJDF9328Z	OPC Drive Gear Shaft	1	
9	PJDG50341Z	OPC Drum Joint Gear	1	
10	PJDG50340Z	OPC Drum Drive Gear	1	
11	XTW3+5L	Screw 3 X 5	2	
12	PJUS212Y	Earth Spring, Gear Bracket	1	
13	PJJQ177Z	Drive Motor	1	
14	PJUS249Z	Earth Spring	1	
15	XTW3+8L	Screw 3 X 8	2	
16	PJJN32Z	Core	1	

### 11.4.3 Paper Feed Mechanism



=Lubrication=

☆PJOL-K1879(Grease)

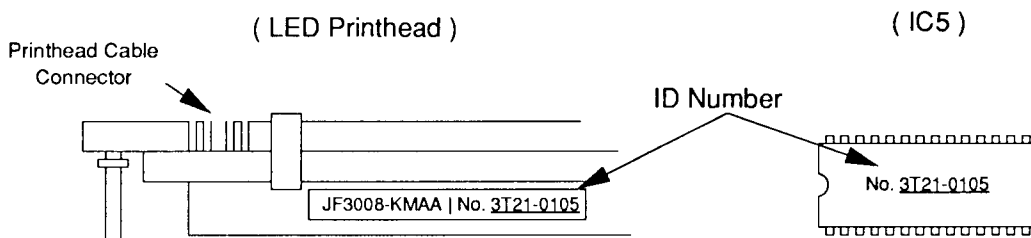
★PJOL-PG671(Grease)

Ref.No.	Part No.	Part Name and Description	Per Set	Remarks
1	PJDG50327Z	Clutch Intermediate Gear	1	See Caution.
2	XTW3+10S	Screw 3 X 10	5	
3	PJHR9729Z	Tray Lever	2	
4	PJDG55248Z	Center Cam	2	
5	XPL2A10WVW	Pin	7	
6	XUC5VW	E-Ring	8	
7	PJDG55249Z	Cam	2	
8	PJDJ06121RZ	Bushing	3	
9	PJZFP5400M1	Clutch Assembly	1	
10	PJDF9319Z	Paper Feed Roller Shaft	1	
11	PJZRP5400M	Paper Feed Roller Assembly	1	
12	PJDG50326Z	Paper Feed Roller Drive Gear	1	
13	PJDG50329Z	Intermediate Gear	1	
14	PJHR9736Z	Spacer	1	
15	PJFP41Z	Paper Feed Solenoid	1	
16	PJHR9728Z	Delay Pad Bracket	1	
17	PJDS4156Y	Delay Pad Spring	1	
18	PJZE6P5400M	Delay Pad Holder Assembly	1	
19	PJZEP5400M	Delay Pad	1	
20	PJWP4P5400M	Toner Empty Sensor Board Complete	1	
21	PJHR9731Y	Gate Sensor Shaft	1	
22	PJHR9951Z	Sensor Cover	1	
23	PJWHP5400M	LED Printhead Assembly ( includes IC5 )	1	
24	XTW3+6L	Screw 3 X 6	1	
25	PJJT295X	Ground Wire	1	
26	XTW3+12S	Screw 3 X 12	1	
27	PJJT292X	Printhead Earth Lead Wire	1	
28	PJMD1066Z	Solenoid Bracket	1	
29	XUC2VW	E-ring	2	
30	XTW3+U4L	Screw 3 X 4	1	
31	PJJN18Z	Core	2	
32	PJDS50909Z	Spring	2	
33	PJJS910Y	LED Cable	1	
34	PJMD9260Z	Plate	3	
35	PJZH1P5400M	LED Holder Bracket	1	
36	PJDJ06501RZ	Bushing	1	
37	PJHR3033Z	Stopper	1	

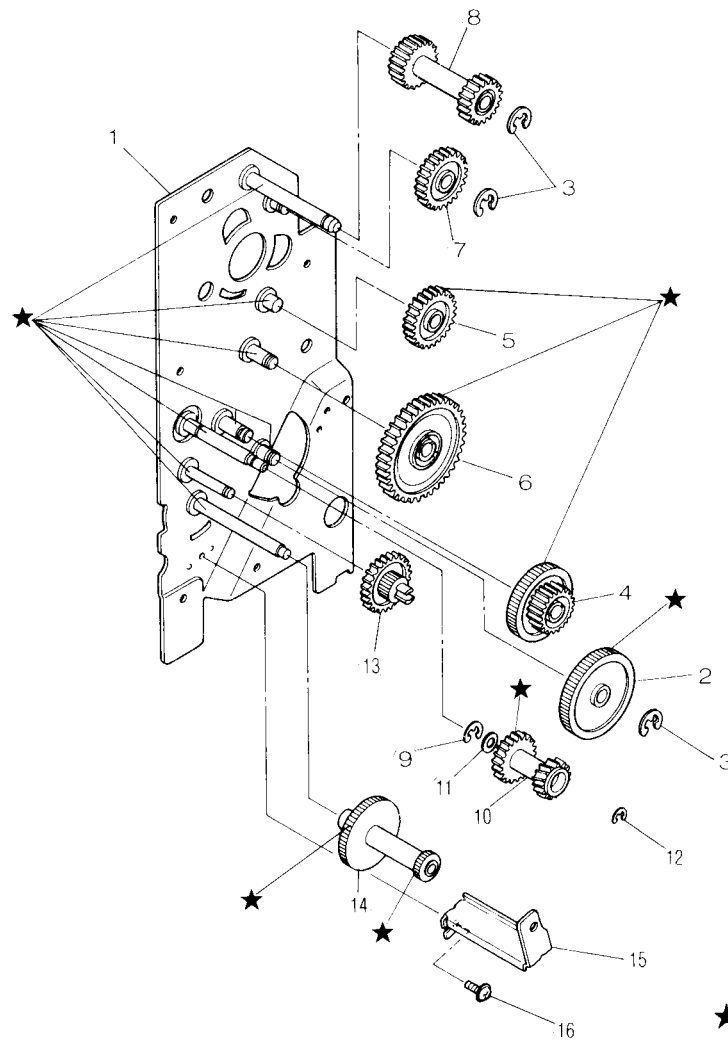
**Caution:** Each of the individual LED elements has a specific characteristic for intensity. As a result, the LPH must be precisely calibrated and adjusted through firmware to achieve a fine image on the OPC Drum. The data corresponding to the characteristics of the LED elements is recorded in IC5. The LPH and IC5 are assigned matching ID Numbers to prevent improper installation of these parts into the machine. **The ID Numbers of the LPH and IC5 must match, or poor print quality will be produced.**

When replacing this part, notice the following.

1. When replacing the LED Printhead, the supplied IC5 must be replaced at the same time.
2. When replacing IC5 on the main logic board, the supplied LED Printhead must be replaced at the same time.
3. When replacing the main logic board, remove IC5 from the original main logic board and install it on the new main logic board.
4. Make sure that both the ID Numbers match after replacement.



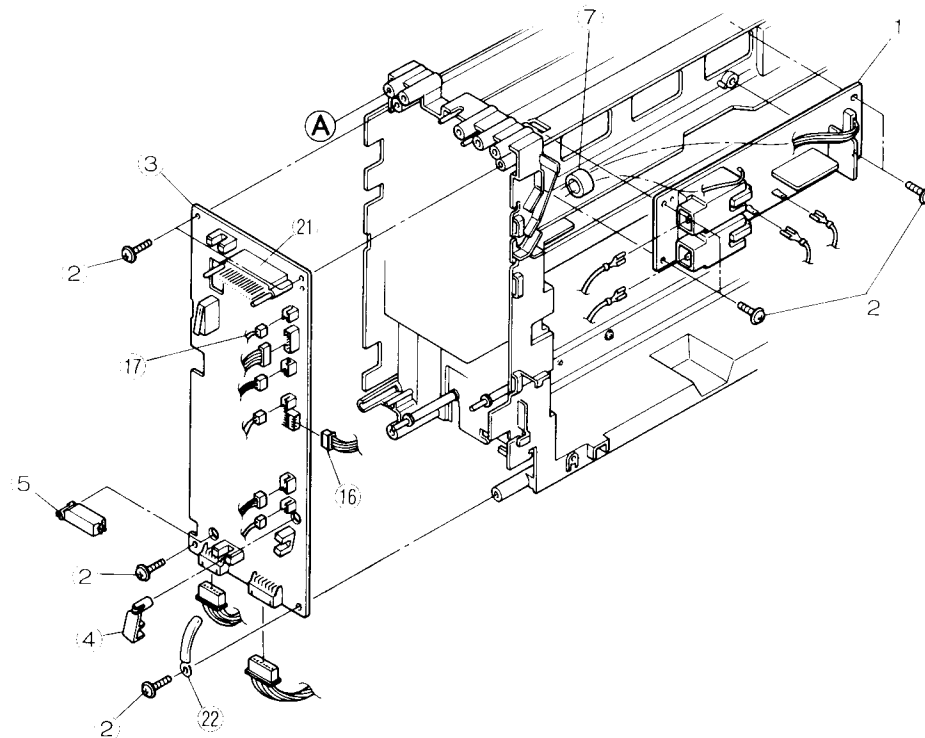
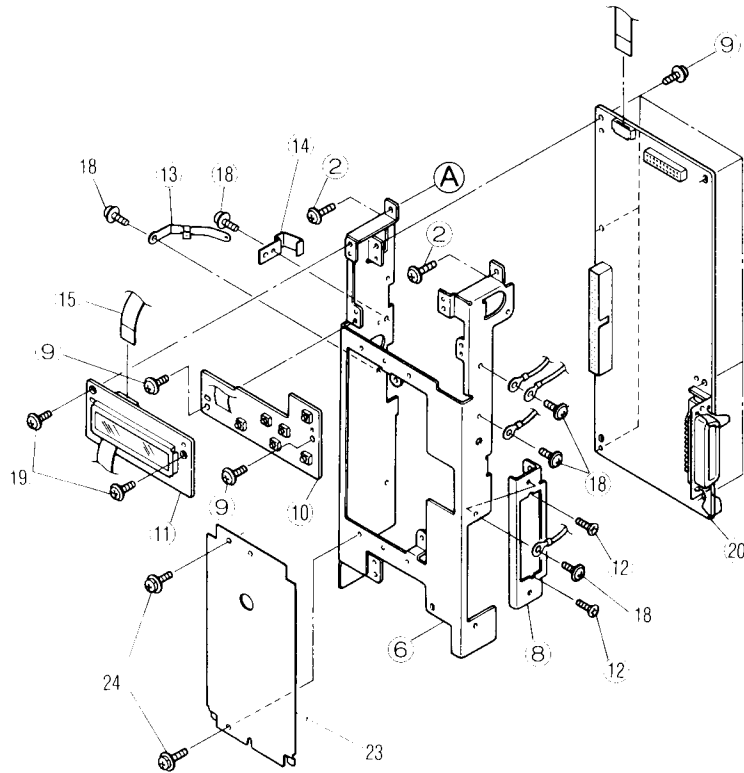
#### 11.4.4 Drive Gears



#### Drive Gears

Ref.No.	Part No.	Part Name and Description	Per Set	Remarks
1	PJZHP5400M	Drive Gear Bracket Assembly	1	
2	PJDG50336Z	First Idle Gear	1	
3	XUC5VW	E-ring	3	
4	PJDG50337Z	Double Idle Gear	1	
5	PJDG50339Z	OPC Drum Secondary Idle Gear	1	
6	PJDG50338Z	OPC Drum First Idle Gear	1	
7	PJDG50342Z	Fuser Idle Gear	1	
8	PJDG50343Z	Fuser Drive Gear	1	
9	XUC4VW	E-ring	1	
10	PJDG50345Z	Developer Double Gear	1	
11	PJNW512Z	Plastic Ring	1	
12	XUC3VW	E-ring	1	
13	PJDG50346Z	Feed Roller Idle Gear	1	
14	PJDG50347Z	Feed Roller Double Gear	1	
15	PJMD3029Z	Gear Support	1	
16	XTW3+5L	Screw 3 x 5 mm	1	

## ain, Engine and High Voltage Boards Mechanical Parts



Ref.No.	Part No.	Part Name and Description	Per Set	Remarks
1	PJWP7P5400M	High Voltage Board Complete	1	RTL
2	XTW3+10S	Screw 3 x 8	10	
3	PJWP1P5400U	Engine Board Complete	1	
4	PJHR9732Z	Paper Sensor Shutter	1	
5	PJZE7P5400M	Gate Sensor Shutter Assembly	1	
6	PJZCP4400M	Shield Cover, Main and Engine Boards	1	
7	PJJN33Z	Core	1	
8	PJMD1067Z	Interface Bracket	1	
9	XYC3+FF8C	Screw 3 x 8	8	
10	PJWP2P5400M1	Operation Switch Board Complete with Cable	1	RTL
11	PJWP3P5400M1	LCD Board Complete with LCD	1	RTL
12	XSN3+6	Screw 3 x 6	2	
13	PJHM408Z	OPC Drum Unit Stopper	1	
14	PJUS245Z	Earth Plate	1	
15	PJJS914Z	Flat Cable for Main and Engine Boards	1	
16	PJJS910Y	Printhead Connector with Lead Wire	1	
17	PJJS911Z	Thermistor Relay Connector with Lead Wire	1	
18	XTW3+8L	Screw 3 x 8	5	
19	XTW3+6L	Screw 3 x 6	2	
20	PJWPP4401G	Main Logic Board Complete (Without IC5 and IC8)	1	RTL See Caution.
21	PJHR9902Z	Connector Holder	1	
22	PJMD9053Z	Clamp	1	
23	PJUV92Z	Flat Shield Cover	1	
24	XYN3+C8	Screw 3 x 8	2	

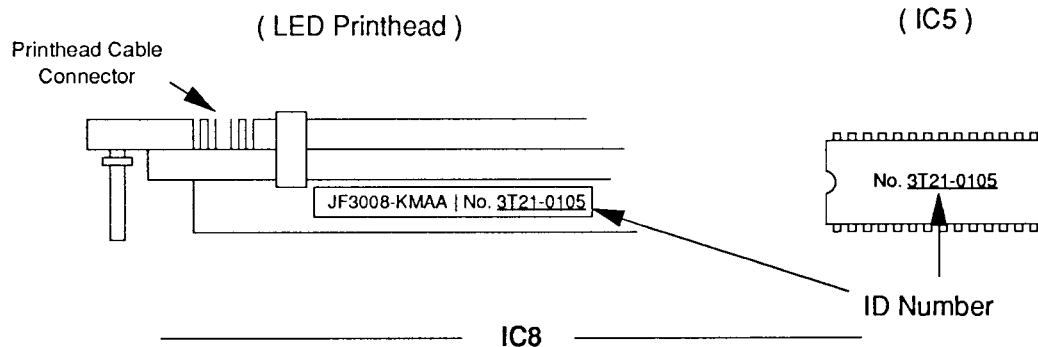
**Caution:** Each of the individual LED elements has a specific characteristic for intensity. As a result, the LPH must be precisely calibrated and adjusted through firmware to achieve a fine image on the OPC Drum. The data corresponding to the characteristics of the LED elements is recorded in IC5. The LPH and IC5 are assigned matching ID Numbers to prevent improper installation of these parts into the machine. **The ID Numbers of the LPH and IC5 must match, or poor print quality will be produced.**

Also, IC8 (EEPROM) on the main logic board contains the data for the total number of pages fed from the paper tray (Total Counter), the total number of pages fed from the paper tray since the drum was last replaced (Drum Counter), etc. **When replacing the main logic board, remove IC8 from the original main logic board and install it on the new board to retain the counter information. Further, if IC8 is not installed, the printer will indicate E71, EEPROM ERROR.**

#### IC5

IC5 is not installed on the Main Logic Board Complete. When replacing this assembly, notice the following.

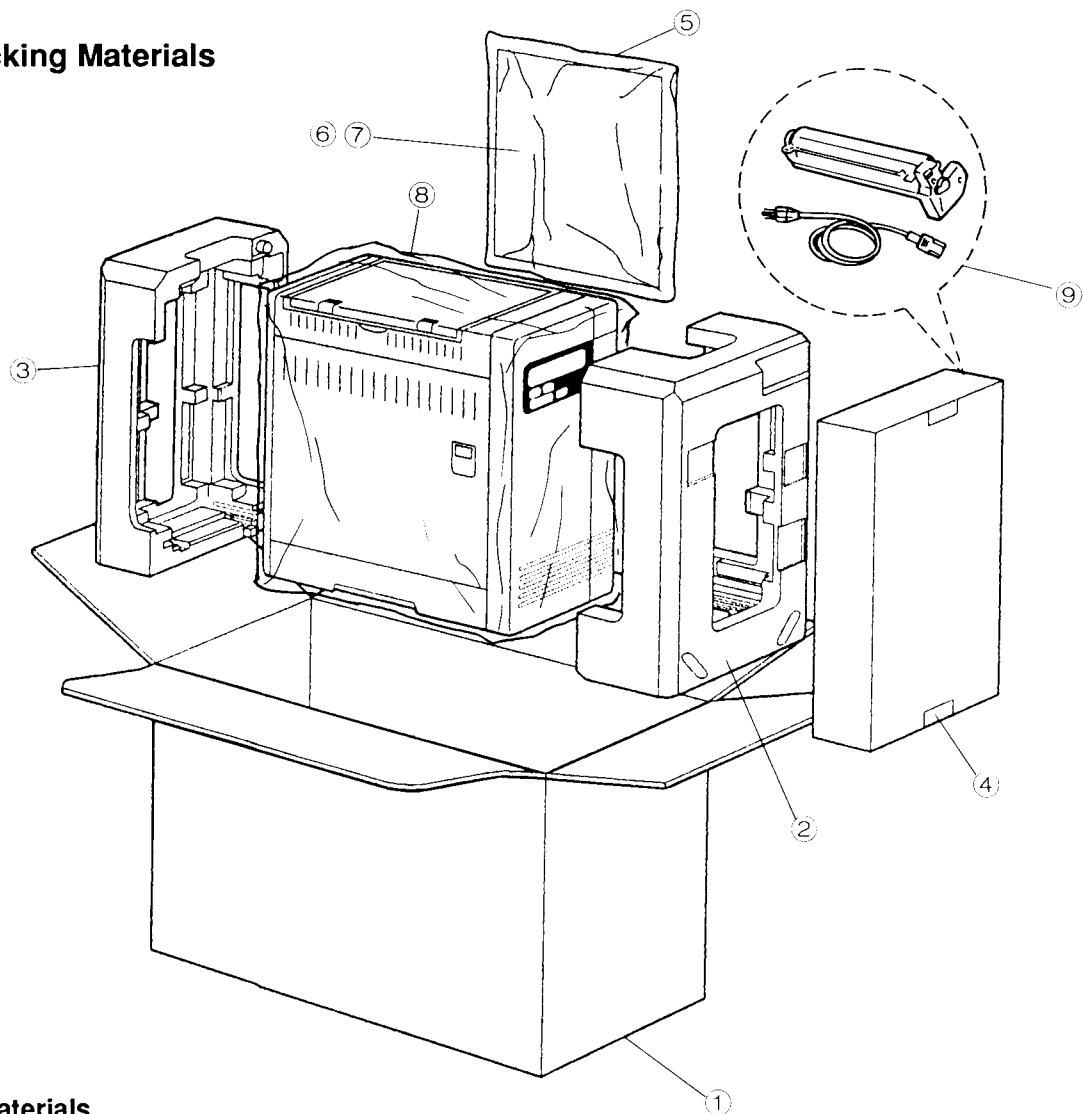
1. When replacing the main logic board, remove IC5 from the original main logic board and install it on the new main logic board.
2. Make sure that both the ID Numbers on the Printhead and IC5 match after replacement.



IC8 is not installed on the Main Logic Board Complete.

**When replacing the main logic board, remove IC8 from the original main logic board and install it on the new main logic board.**

## 11.6 Packing Materials



### Packing Materials

Ref.No.	Part No.	Part Name and Description	Per Set	Remarks
1	PJPG1220Z	Carton	1	
2	PJPN832Z	Pad (Front)	1	
3	PJPN833Z	Pad (Rear)	1	
4	PJPK539Z	Carton (for Drum Unit, AC cord)	1	
5	XZB24X35A02	Protective Bag	1	
6	PJQX6685Z	Instruction Book, Hard [G,SW]	1	
	PJQX6688Z	Instruction Book, Hard	1	
	PJQX6692Z	Instruction Book, Hard [ET]	1	
	PJQX6693Z	Instruction Book, Hard [NE,V]	1	
	PJQX6697Z	Instruction Book, Hard [SW,F,V]	1	
7	PJQX2301Z	Quick Start Guide [Y]	1	
8	SK-30-600W	Poly Sheet	1	
	PJJA115Y	AC Cord	1	
	PJJA116Y	AC Cord [U]	1	
	PJJA117Z	AC Cord [SW]	1	
	PJJA124Y	AC Cord [Z]	1	
9	PJJN42DD77WZ	Printer Driver	1	

Ref.No.	Part No.	Part Name and Description	Per Set	Remarks
1	PJKT2P5400M	Repacking Kit	1	



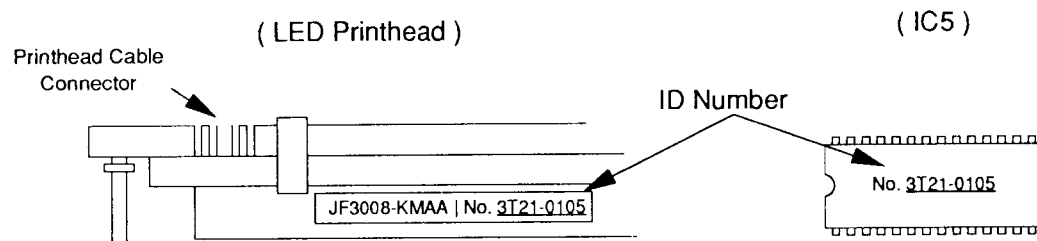
## Main Logic Board

Ref.No.	Part No.	Part Name and Description	Per Set	Remarks
IC1	PJVINS32CG16	IC	1	
IC2	PJVIMB312136	IC	1	
IC3	PJWIP4401G	IC ROM	1	
IC4	PJWI1P4401G	IC MASK ROM	1	
IC5	PJWHP5400M	IC (includes LED Printhead)	1	
IC7	PJVIM51953BF	IC	1	
IC8	PJVINM24C04N	IC EEPROM	1	
IC9,10	PJVIMC74F244	IC	2	
IC6,11	PJVIHM5148J8	IC	2	

**Caution:** Each of the individual LED elements has a specific characteristic for intensity. As a result, the LPH must be precisely calibrated and adjusted through firmware to achieve a fine image on the OPC Drum. The data corresponding to the characteristics of the LED elements is recorded in IC5. The LPH and IC5 are assigned matching ID Numbers to prevent improper installation of these parts into the machine. **The ID Numbers of the LPH and IC5 must match, or poor print quality will be produced.**

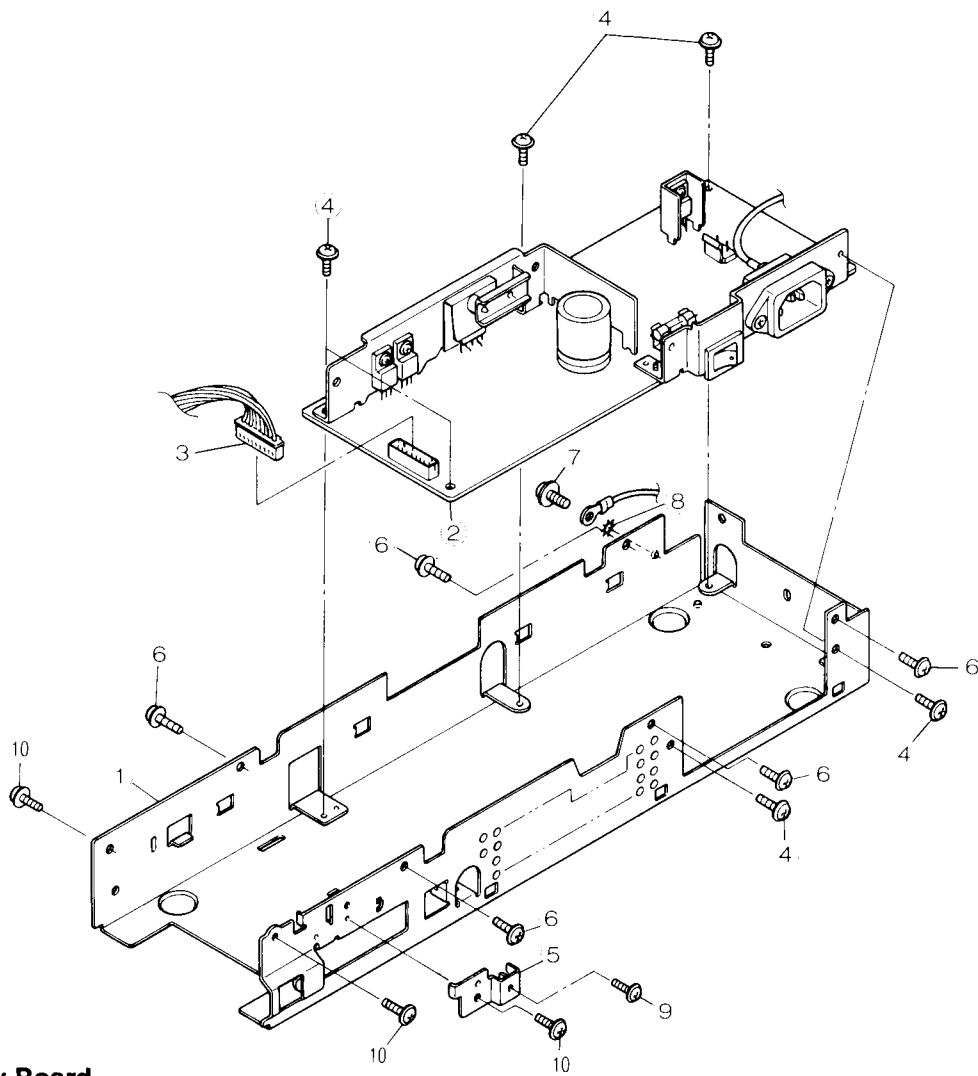
When replacing this part, notice the following.

1. When replacing IC5 on the main logic board, the supplied LED Printhead must be replaced at the same time.
2. Make sure that both the ID Numbers match after replacement.



Ref.No.	Part No.	Part Name and Description			Per Set	Remarks
C1	ECUY1C105ZFW	1	16V	Ceramic	1	
C2	ECUV1H101JCG	100P	50V	Ceramic	1	
C3	ECUV1E104ZFX	0.1	25V	Ceramic	1	
C4,5	ECUV1H120JCN	12P	50V	Ceramic	2	
C6,7	ECUV1E104ZFX	0.1	25V	Ceramic	2	
C8	ECST1CY105R	1	16V	Ceramic	1	
C9-11	ECUV1E104ZFX	0.1	25V	Ceramic	3	
C12,13	ECUV1H100DCN	10P	50V	Ceramic	2	
C14	ECUV1H330JCG	33P	50V	Ceramic	1	
C15	ECUV1H680JCG	68P	50V	Ceramic	1	
C19-28	ECUV1H101JCG	100P	50V	Ceramic	10	
C29-36	ECUV1H221KBN	220P	50V	Ceramic	8	
C41,43,44	ECEV0JA470P	47	6.3V	Electrolytic	3	
C45-48	ECUV1E104ZFX	0.1	25V	Ceramic	4	
C49	ECUV1E104ZFX	0.1	25V	Ceramic	1	
C50-66	ECUV1E104ZFX	0.1	25V	Ceramic	17	
C67-70	ECUV1H680JCG	68P	50V	Ceramic	4	
C82-89	ECUV1E104ZFX	0.1	25V	Ceramic	8	
C93-96	ECUV1E104ZFX	0.1	25V	Ceramic	4	
R1,2	ERJ6GEYJ472V	4.7K	1/10W	Resistor (Chip)	2	
R3	ERJ6GEYJ184V	180K	1/10W	Resistor (Chip)	1	
R4	ERJ6GEYJ510V	51	1/10W	Resistor (Chip)	1	
R5-8	ERJ6GEYJ472V	4.7K	1/10W	Resistor (Chip)	4	
R9,10	ERJ6GEYJ220V	22	1/10W	Resistor (Chip)	2	
R11-13	ERJ6GEYJ472V	4.7K	1/10W	Resistor (Chip)	3	
R14	ERJ6GEYJ102V	1K	1/10W	Resistor (Chip)	1	
R15	ERJ14YJ4R7H	4.7	1/4W	Resistor (Chip)	1	
R16,17	ERJ6GEYJ472V	4.7K	1/10W	Resistor (Chip)	2	
R19-22	ERJ6GEYJ330V	33	1/10W	Resistor (Chip)	4	
R23	ERJ6GEYJ102V	1K	1/10W	Resistor (Chip)	1	
R24	ERJ6GEYJ222V	2.2K	1/10W	Resistor (Chip)	1	
R25,26	ERJ6GEYJ330V	33	1/10W	Resistor (Chip)	2	
R27,28	ERJ6GEYJ472V	4.7K	1/10W	Resistor (Chip)	2	
R29	ERJ6GEYJ103V	10K	1/10W	Resistor (Chip)	1	
R30,31	ERJ6GEYJ330V	33	1/10W	Resistor (Chip)	2	
R32,33	ERJ6GEYJ103V	10K	1/10W	Resistor (Chip)	2	
R34,35	ERJ6GEYJ102V	1K	1/10W	Resistor (Chip)	2	
R36,38	ERJ6GEYJ472V	4.7K	1/10W	Resistor (Chip)	2	
R41	ERJ6GEYJ330V	33	1/10W	Resistor (Chip)	1	
R42	ERJ6GEY0R00V	Dummy			1	
RA1-12	EXBV8V472JV	Resistor Array			12	
RA13-20	EXBV8V330JV	Resistor Array			8	
RA21-29	EXBV8V472JV	Resistor Array			9	
RA30	EXBV8V331JV	Resistor Array			1	
RA31	EXBV8V330JV	Resistor Array			1	
RA32,33,36	EXBV8V472JV	Resistor Array			3	
RA34,35	EXBV8V102JV	Resistor Array			2	
RA37,38	EXBV8V101JV	Resistor Array			2	
RA39	EXBV8V331JV	Resistor Array			1	
L1	PJLQ53Z	Inductor			1	
CN201	PJJS922Z	Connector			1	
CN202	PJJS967Z	Connector			1	
CN203	PJJS714Z	Connector			1	
CN204	PJJP276Z	Connector			1	
X1	PJVC31.7352M	X'Tal			1	

\* All capacitor values are in microfarads unless otherwise noted.



### Power Supply Board

Ref.No.	Part No.	Part Name and Description	Per Set	Remarks
1	PJUA254Z	Shield Frame Assembly	1	
2	PJPM32Y	Power Supply Board Complete	1	RTL
3	PJJS913Z	Power Supply Cable with Connector	1	
4	XTW3+6L	Screw 3 x 6	6	
5	PJMD1069Z	FG Terminal	1	
6	XTW3+10S	Screw 3 x 10	5	
7	XSN4+6	Screw 4 x 6	1	
8	XWC4B	Washer	1	
9	XTW3D6L	Screw 3 x 6	1	
10	XTW3+8L	Screw 3 x 8	3	
IN101	PJWNA300	Outlet	1	△
CR1	PJVTM1041S	Triac	1	△
NR1	PJRZC10DK221	Varistor	1	△
NR2	PJRZC10DK471	Varistor	1	△
RC1	PJVD3SBA40F1	Rectifier	1	△
RC51	PJVDFML12S	Rectifier	1	△
RC52	PJVDFMB24L	Rectifier	1	△
SW101	PJSTW1P1A01B	Switch	1	△
SQ1	PJVDSA242MA	Absorber	1	△
SQ2	PJVDAU1201	Spark Killer	1	△
T1	PJLT43420240	Transformer	1	△
TH1	PJVD8D11FZ	Thermistor	1	△
CN51	PJJPB9BXHA	Connector	1	△
CN102	PJJPB2P3VH	Connector	1	△

# Power Supply Board

Ref.No.	Part No.	Part Name and Description			Per Set	Remarks
Integrated Circuits, Transistor and Diodes						
D1	PJVDRU1P	Diode			1	△
D2	PJVD1GU42	Diode			1	△
D3	PJVD1SS119TD	Diode			1	△
D4	PJVDHZS2.7N	Zener Diode			1	△
D5	PJVDAM01	Diode			1	△
D6	PJVDEG01Y	Diode			1	△
D7	PJVDAU02	Diode			1	△
D51	PJVDRZ1040	Diode			1	
D52	PJVDHZS6.8N	Zener Diode			1	△
F1	XBA1C63NU100	Fuse			1	△
L1	PJLQLF4D822	Coil			1	△
L2	PJLQLF4D331	Coil			1	△
L51	PJLQPC83R3M	Coil			1	△
PC1	PJVIPC817	Photo Coupler			1	
PC2	PJVITLP666G	Photo Coupler			1	
Q51	2SA1015	Transistor			1	△
Z1	PJVID6004X	IC			1	△
Resistors and Capacitors						
R1	ERDS2TJ334	330K	1/4W	Carbon	1	△
R2	ERG3SJU103	10K	3W	Metal	1	△
R3,52	ERG2SJU680	68	2W	Metal	2	△
R4	ERDS2TJ392	3.9K	1/4W	Carbon	1	△
R6,7	ERG2SJU470	47	2W	Metal	2	△
R11	ERDS2TJ10	1	1/4W	Carbon	1	△
R12	EROS1TKF154	150K	1/2W	Metal	1	△
R15	ERDS2TJ101	100	1/4W	Carbon	1	△
R16	ERDS2TJ220	22	1/4W	Carbon	1	△
R51	EROS1TKF102	1K	1/2W	Metal	1	△
R53	ERDS2TJ271	270	1/4W	Carbon	1	△
R57	ERDS2TJ152	1.5K	1/4W	Carbon	1	△
R58	ERDS2TJ332	3.3K	1/4W	Carbon	1	△
R66,68-70	ERG2SJU152	1.5K	2W	Metal	4	
RV51	PJMBZ67TL13	1K	Volume		1	△
RX1	ERDS2TJ621	620	1/4W	Carbon	1	△
RX2	ERDS2TJ681	680	1/4W	Carbon	1	△
RX3	ERDS2TJ101	100	1/4W	Carbon	1	△
RX4	ERDS2TJ680	68	1/4W	Carbon	1	△
C1	ECQV2E224	0.22	250V	Film	1	△
C2	ECQV2E104	0.1	250V	Film	1	△
C3,4	ECKDNS222ME	2200P	125V	Ceramic	2	△
C5,9	ECKDNS472ME	4700P	125V	Ceramic	2	△
C7	ECEA2DMX271	270	200V	Electrolytic	1	△
C8	ECQB63E103	0.01	630V	Film	1	△
C10	ECKW3A222ZE	470P	2KV	Ceramic	1	△
C11	ECQB1H104	0.1	50V	Film	1	△
C12	ECEA1VYXB101	100	35V	Electrolytic	1	△
C16	ECQB1H103	0.047	50V	Film	1	△
C51	ECEA1AYXB332	3300	10V	Electrolytic	1	△
C52	ECEA1VYXB102	1000	35V	Electrolytic	1	△
C53,55	ECQB2E104	0.1	250V	Film	2	
C54	ECKW3A222ZE	2200P	1KV	Ceramic	1	△
C56	ECEA1AYXB102	1000	10V	Electrolytic	1	
C59	ECEA1VYXB471	470	35V	Electrolytic	1	
CX1	ECQB1H334	0.33	50V	Film	1	
CX2	ECQB1H472	4700P	50V	Film	1	△
CX51	ECQB1H102	1000P	50V	Film	1	△

# Engine Board

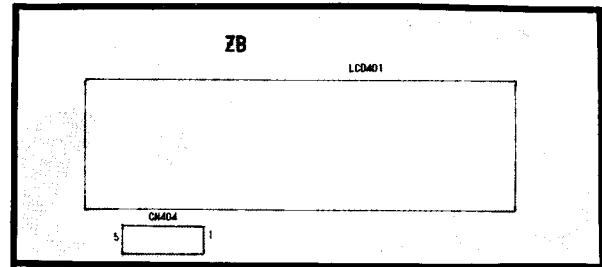
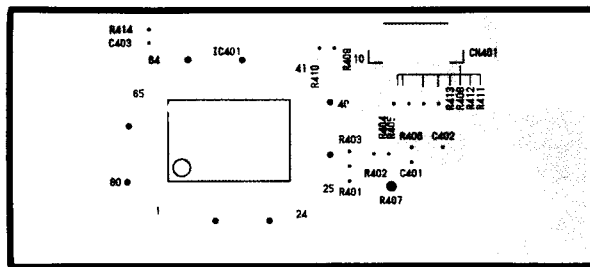
Ref.No.	Part No.	Part Name and Description			Per Set	Remarks
Integrated Circuits, Transistors and Capacitors						
IC301	PJWI3P5400M	IC (CPU)			1	
IC302	PJVINJM2903D	IC			1	
IC303	PJVIM74HC04	IC			1	
IC304	PJVISLA7024	IC			1	
Q301	PJVIRN2009	Transistor			1	
Q302	2SC1627	Transistor			1	
Q303-306	PJVIRN1007	Transistor			4	
Q307	2SD639R	Transistor			1	
Q308	2SC1740	Transistor			1	
Q309	PJVIRN1007	Transistor			1	
PI301,302	ON1024KU	Photo Interrupter			2	
PI303	PJWE1P5400M	Photo Interrupter			1	
D301	PJVD1DL42ATP	Diode			1	
D302	PJVDHZS18	Zener Diode			1	
D303,304	PJVD1SS119TD	Diode			2	
C308-312	ECBT1H102KB	1000P	50V	Ceramic	5	
C340,341	ECBT1C222MR	2200P	16V	Ceramic	2	
C316-321	ECBT1H101KB	100P	50V	Ceramic	6	
C301,303	ECEA0JKA470	47	6.3V	Electrolytic	2	
C304	ECEA0JKA470	47	6.3V	Electrolytic	1	
C307	ECBT1E223ZF	0.022	25V	Ceramic	1	
C313-315	ECBT1E223ZF	0.022	25V	Ceramic	3	
C322,333	ECBT1E223ZF	0.022	25V	Ceramic	2	
C323,324	ECBT1H100JC	10P	50V	Ceramic	2	
C306	ECEA1HKA010	1	50V	Electrolytic	1	
C302,305	ECEA1VKA470	47	35V	Electrolytic	2	
C338,339	ECBT1H471KB	470P	50V	Ceramic	2	
C325-332	ECBT1H470J5	47P	50V	Ceramic	8	
C342	ECKT1H471KB	470P	50V	Ceramic	1	
C343	ECBT1H471KB	470P	50V	Ceramic	1	
Resistors						
R301-305	ERDS2TJ181	180	1/4W	Carbon	5	
R334	ERDS2TJ331	330	1/4W	Carbon	1	
R311-315	ERDS2TJ332	3.3K	1/4W	Carbon	5	
R320,337	ERDS2TJ332	3.3K	1/4W	Carbon	2	
R342,343	ERDS2TJ332	3.3K	1/4W	Carbon	2	
R345,358	ERDS2TJ332	3.3K	1/4W	Carbon	2	
R317,318	ERDS2TJ472	4.7K	1/4W	Carbon	2	
R327-330	ERDS2TJ472	4.7K	1/4W	Carbon	4	
R332,333	EROS2TKF3542	35.4K	1/4W	Metal	2	
R341	ERDS2TJ561	560	1/4W	Carbon	1	
R338	ERDS2TJ330	33	1/4W	Carbon	1	
R319	ERDS2TJ102	1K	1/4W	Carbon	1	
R331	EROS2TKF1961	1.96K	1/4W	Metal	1	
R316,365	ERDS2TJ102	1K	1/4W	Carbon	2	
R335	ERDS2TJ470	47	1/4W	Carbon	1	
R306-310	ERDS2TJ103	10K	1/4W	Carbon	5	
R340,344	ERDS2TJ103	10K	1/4W	Carbon	2	
R346-348	ERDS2TJ103	10K	1/4W	Carbon	3	
R349	ERDS2TJ103	10K	1/4W	Carbon	1	
R336,339	ERDS2TJ103	10K	1/4W	Carbon	2	
R325,326	ERDS2TJ222	2.2K	1/4W	Carbon	2	
R369,370	ERDS2TJ222	2.2K	1/4W	Carbon	2	
R350-357	ERDS2TJ680	68	1/4W	Carbon	8	
R366	ERDS2TJ101	100	1/4W	Carbon	1	
R363,364	ERDS2TJ473	47K	1/4W	Carbon	2	
R367,368	ERX1ANJP1ROS	1	1W	Metal	2	
R371	ERDS2TJ100	10	1/4W	Carbon	1	
R373-376	ERDS2TJ102	1K	1/4W	Carbon	4	
R372	ERDS2TJ472	4.7K	1/4W	Carbon	1	

Ref.No.	Part No.	Part Name and Description	Per Set	Remarks
Others				
SW301	AV34123	Switch	1	
CN301	PJJP100Z	Connector	1	
CN302	PJJP136Z	Connector	1	
CN303	PJJP362Z	Connector	1	
CN309,310	PJJP362Z	Connector	2	
CN304	PJJP169Z	Connector	1	
CN305	PJJP365Z	Connector	1	
CN306	PJJP364Z	Connector	1	
CN307,308	PJJP361Z	Connector	2	
X301	PJVC12.00R	X'tal	1	
L301,302	PJLQ13Z	Beads Core	2	

# High Voltage Board

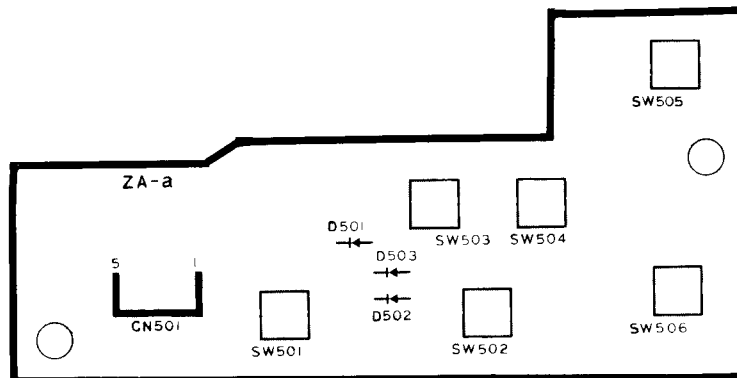
Ref.No.	Part No.	Part Name and Description			Per Set	Remarks
C101	ECEA1VU101B	100	35V	Electrolytic	1	
C102	ECEA50MR47R	0.47	50V	Electrolytic	1	
C103	ECQM1223KZ	0.022	100V	Polyester	1	
C104	ECQB1H223KF	0.022	50V	Polyester	1	
C202	ECKR2H332KB	3300P	500V	Ceramic	1	
C204	ECQB1H103KF	0.01	50V	Polyester	1	
C302	PJD3B101K	100P	1KV	Ceramic	1	
D101,202	PJVDS5688G	Diode			2	
D203,302	PJVDS5688G	Diode			2	
D201,301	MA165	Diode			2	
D303	PJVDRGP0220E	Diode			1	
Q101	2SC3311A	Transistor			1	
Q102	2SD2000	Transistor			1	
Q201	2SC3311A	Transistor			1	
Q202	2SD1990	Transistor			1	
Q301	2SD1266	Transistor			1	
R001,101	ERDS2TJ103	10K	1/4W	Carbon	2	
R207,209	ERDS2TJ103	10K	1/4W	Carbon	2	
R307	ERDS2TJ103	10K	1/4W	Carbon	1	
R102,306	ERDS2TJ392	3.9K	1/4W	Carbon	2	
R103	ERDS2TJ102	1K	1/4W	Carbon	1	
R105	EROS2TKF1433	143K	1/4W	Metal	1	
R106	ERDS2TJ133	13K	1/4W	Carbon	1	
R107	EROS2TKF9532	95.3K	1/4W	Metal	1	
R108	ERDS1TJ2R2	2.2	1/2W	Carbon	1	
R201,205	ERDS2TJ752	7.5K	1/4W	Carbon	2	
R301,305	ERDS2TJ752	7.5K	1/4W	Carbon	2	
R202	ERDS2TJ153	15K	1/4W	Carbon	1	
R203,303	ERDS2TJ472	4.7K	1/4W	Carbon	2	
R206	ERDS2TJ821	820	1/4W	Carbon	1	
R208	EROS2TKF8871	8.87K	1/4W	Metal	1	
R210	ERDS2TJ104	100K	1/4W	Carbon	1	
R211	W6NL-1.5	Jumper			1	
R302	ERDS2TJ102	10K	1/4W	Carbon	1	
R308	ERDS2TJ222	2.2K	1/4W	Carbon	1	
R309	ERVRS2TJ2704	1M	1/4W	Metal	1	
R310	ERDS1TJ105	1M	1/2W	Carbon	1	
R401	W6NL-2.0	Jumper			1	
T101	EUMS15BPD539	High Voltage Block			1	
T201	EUMS15BTP5	High Voltage Block			1	
T301	ETB16AKG1	Transformer			1	
VR101,201	EASA01B54	50K	VR		2	
VR301	EASA01B23	2K	VR		1	
VR401	EMK8GA00B26	2M	VR		1	
ZD201	PJVDRD6.2ESB	Zener Diode			1	
ZD401	PJVD1AZ390TP	Zener Diode			1	

## 11.11 LCD Board



Ref.No.	Part No.	Part Name and Description			Per Set	Remarks
IC401	PJVIHD44780R	IC			1	
R401,402	ERJ6GEYJ152V	1.5K	1/10W	Metal	2	
R404,405	ERJ6GEYJ152V	1.5K	1/10W	Metal	2	
R403	ERJ6GEY0R00V	Dummy			1	
R406	ERJ6GEYJ222V	2.2K	1/10W	Metal	1	
R407	ERJ8ENF9102V	91K	1/8W	Metal	1	
R408-413	ERJ6GEYJ330V	33	1/10W	Metal	6	
C401,402	ECUV1E104ZFX	0.1	25V	Ceramic	2	
CN401	PJJS967Z	Connector			1	
CN404	PJJP363Z	Connector			1	

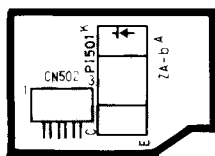
## 11.12 Operation Switch Board



Ref.No.	Part No.	Part Name and Description			Per Set	Remarks
D501-503	PJVD1SS119TD	Diode			3	
SW501-506	EVQQS205K	Switch			6	
CN501	PJJE332Z	Connector			1	

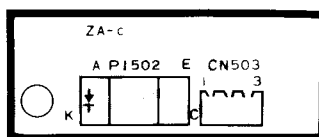


### 11.13 Toner Full Sensor Board



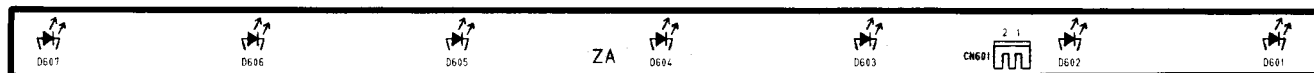
Ref.No.	Part No.	Part Name and Description	Per Set	Remarks
PI501	ON1024KU	Photo Interrupter	1	
CN502	PJJS907Z	Connector	1	

### 11.14 Toner Empty Sensor Board



Ref.No.	Part No.	Part Name and Description	Per Set	Remarks
PI502	ON1024KU	Transistor	1	
CN503	PJJS908Z	Connector	1	

### 11.15 Discharge Board



Ref.No.	Part No.	Part Name and Description	Per Set	Remarks
D601-607	PJVDTLR208	Diode	7	
CN601	PJJS902Z	Connector	1	