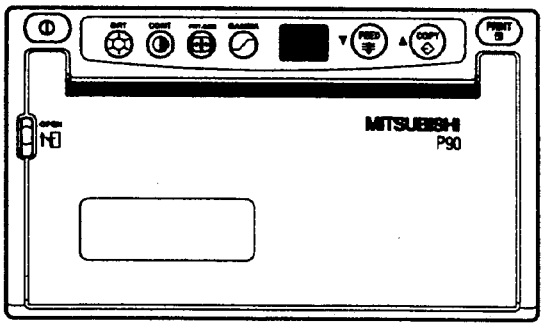
1995

MITSUBISHI

Service Manual

VIDEO COPY PROCESSOR



MODEL

P90E

* Use a white CLEANING PAPER (Parts No. 857P004O20) or a HEAD CLEANING PEN (Parts No. 859C425O50) for cleaning of the THERMAL HEAD.
Do not use a russet CLEANING PAPER (Parts No. 857P001O10).
It may damage the THERMAL HEAD.

CAUTION Before servicing this chassis, it is important that the serviceman reads "SAFETY PRECAUTIONS" and "PRODUCTION SAFETY NOTICE" in this service manual.

SPECIFICATIONS

- **Power Input** : AC220~240V 50Hz
- **Power Consumpion** : 1.0A
- **Print Resolution** : Under Scan
  Standard PAL
  1,216dots(H)×600lines(V)
- **Printing Time** : Approx. 5.8 sec. (PAL under scan)
- **Gradations** : 256 gradations
- **Scanning Frequency** : Horizontal 15.625kHz
  Vertical 50Hz
- **Print size** : 100×75mm (Standard)
  (3.9"×3.0")
- **Input terminal** : Video signal (BNC type connector)
- **Output termimal** : Video signal (BNC type connector)
- **Cabinet Dimensions** : 154(W)×97.5(H)×300(D)mm
  (6.1"×3.8"×11.8")
- **Weight (Approx)** : 3.3kg (7.3 lbs)
- **Operating Conditions** : Temperature 5°C~40°C (41~104°F)
  Humidity 35~80%RH
  (no dewing)

● **Design and specifications are subject to change without notice.**

MITSUBISHI ELECTRIC

CONTENTS

- **SAFETY PRECAUTIONS** 1
- **SPECIAL AUNCTIONS** 2
  - Locking the setting 2
  - Locking the setting (e.g. brightness) 2
  - Releasing the locked function button 2
  - Accumulated number of prints 2
- **LOCATION OF PRINTED CIRCUIT BOARDS** 3
- **DISASSEMBLY** 4
  - Removal of Top Panel Assy 4
  - Removal of Front Panel Unit 4
  - Removal of Door 4
  - Removal of PCB-MAIN 5
  - Removal of PCB-POWER 6
  - Removal of PCB-LED and PCB-SW 8
  - Removal of Printer Unit 9
  - Removal of Step Motor 10
  - Removal of Platen Roller Unit 10
  - Removal of SP Sensor Unit 11
  - Removal of Thermal Head 13
- **CLEANING METHOD** 15
  - Cleaning of Thermal Head 15
  - Cleaning of Platen Roller 16
- **LOCATIONS** 17
- **SERVICE MODE** 18
  - How to indicate the SERVICE mode 18
  - How to Select the Setting Mode 18
  - How to Set and memorize the Adjustment Value ... 18
  - How to cancel the Service Mode 18
- **HOW TO INDICATE THE ADJUSTMENT MODE** 20
  - How to cancel the Adjustment Mode 20
- **CHECK OF DETECTION LEVEL FOR PAPER** 20
- **INITIALIZATION OF THE E²PROM** 21
- **ELECTRIC ADJUSTMENT** 22
  - 1. Main Voltage / Head Voltage 23
  - 2. Horizontal sychronized pluse width 28
  - 3. Horizontal AFC 28
  - 4. Horizontal Position 29
  - 5. Clock Frequency 2 29
  - 6. SUB-BRIGHT, SUB-CONTRAST 30
- **CHIP PARTS REPLACEMENT** 31
- **PARTS LIST** 32
- **PACKING PARTS** 37
- **LEAD DRESS**
- **EXPLODED VIEW**
- **BLOCK DIAGRAM**
- **SCHEMATIC DIAGRAM**

SAFETY PRECAUTIONS

NOTICE : Observe all cautions and safety notes located inside the cabinet and on the chassis.

LEAKAGE CURRENT CHECK

Before returning the printer to the customer, it is recommended that leakage current be measured according to the following methods.

1. Cold check

With the AC plug removed from the 220~240V AC source, place a jumper across the two AC plug prongs. Turn the printer AC switch on. Using an ohm-meter, connect one lead to the AC plug and touch the other lead to each exposed metal part (screwheads, metal overlays, etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum resistance reading of 1 meg ohm. Any resistance below this value indicates an abnormality which requires corrective action. Exposed metal parts not having a return path to the chassis will indicate an open circuit.

2. Hot Check

Use the circuit in Fig. 1 to perform this test.

(1) With switch S1 open, connect the printer to the measuring circuit. Immediately after connection, measure the leakage current using both positions of switch S2, and with the switching devices in the printer in all of their operating positions.

(2) Switch S1 is then closed, energizing the printer. Immediately after closing the switch, measure the leakage current using both positions of switch S2, and with the switching devices in the printer in all of their operating positions. Current measurements of items (1) and (2) are to be repeated after the printer has reached thermal stabilization. The leakage current shall not be more than 0.5 milliampere.

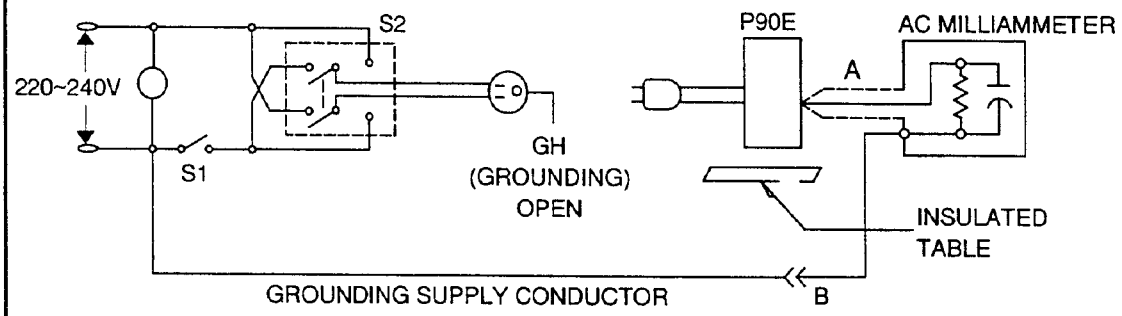


Fig. 1

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the video copy processor have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, etc. Replacement parts which have these special safety characteristics are identified in this service manual. Electrical components having such features are identified by shading on the schematic diagram and the parts list of this service manual, and by the supplementary sheet for this chassis to be issued subsequently. Therefore replacements for any safety parts should be identical in value and characteristics.

SPECIAL FUNCTIONS

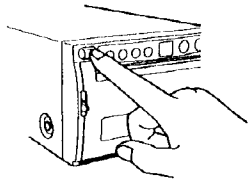
Locking the settings

■ **You can lock the setting of each button on the front panel (BRT, CONT, PRT-SIZE, GAMMA) .**

Locking the setting (e.g. brightness)

1 Turn on the power.

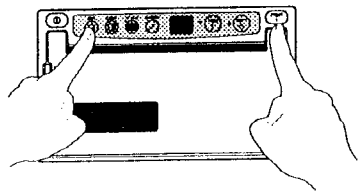
• Press the "**POWER**" switch to turn on the power.



2 Lock the setting of the brightness (BRT)

• While holding down the **BRT**"☼" button, press the "**PRINT**" button for approximately 4 seconds until "Peep" sounds.

■ The setting of the **BRT**"☼" button is locked.



■ The locked function button will not be released when power is turned off.

Releasing the locked function button

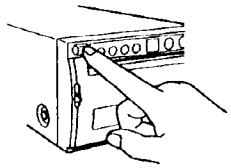
■ Press the "PRINT" button along with the function button you want to release for approximately 4 seconds until you hear a "Peep" sound.

Accumulated number of prints

■ **You can print the accumulated number of prints on a sheet.**

1 Turn on the power.

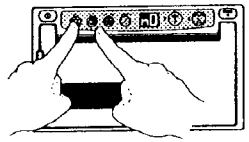
• Press the "**POWER**" switch to turn on the power.



2 Make a setting to print the accumulated number of prints.

• While holding down the **BRT**"☼" button, press the **CONT**"◑" button for approximately 4 seconds till a "Peep" sounds.

■ "n0" is displayed on the indicator.



• Printing the accumulated number of prints is selected by pressing the "▼" or "▲" button to print or not.

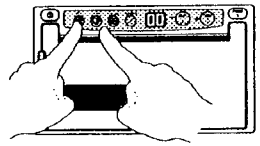
• "n0"or "n1" is displayed on the indicator.

mode	indicator
Printing	n1
Not printing	n0

3 Set to the stand-by status.

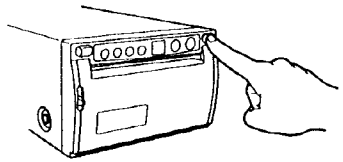
• While holding down the **BRT**"☼" button, press the **CONT**"◑"button for approximately 4 seconds till a "Peep" sounds.

■ "00" is displayed on the indicator.



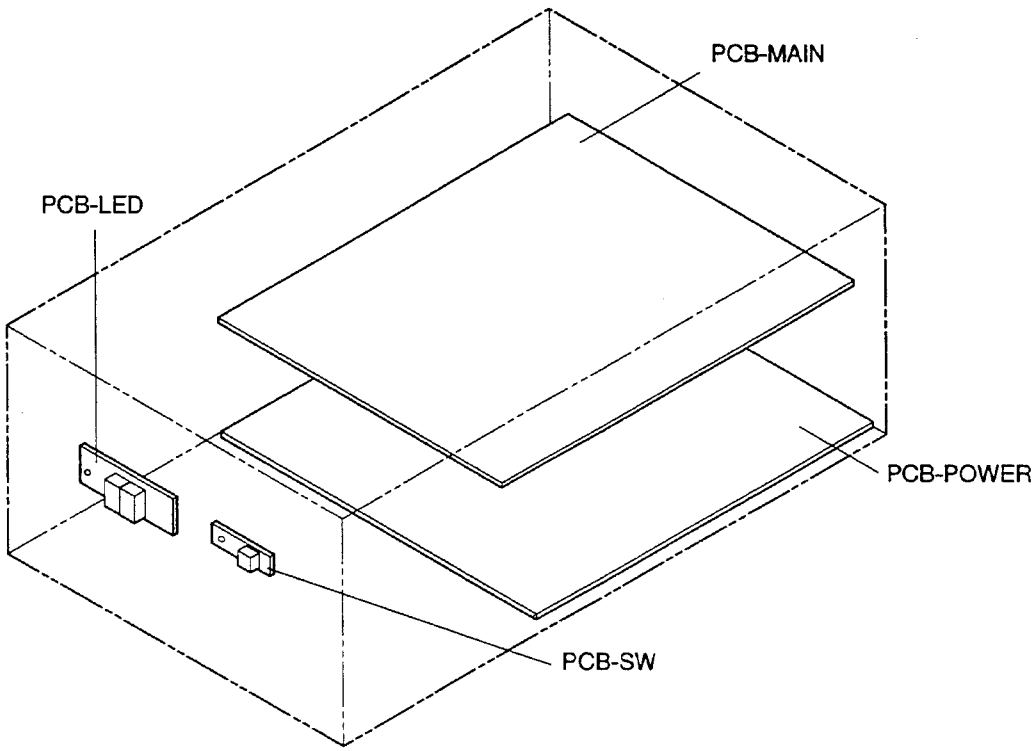
4 Print the total number of prints.

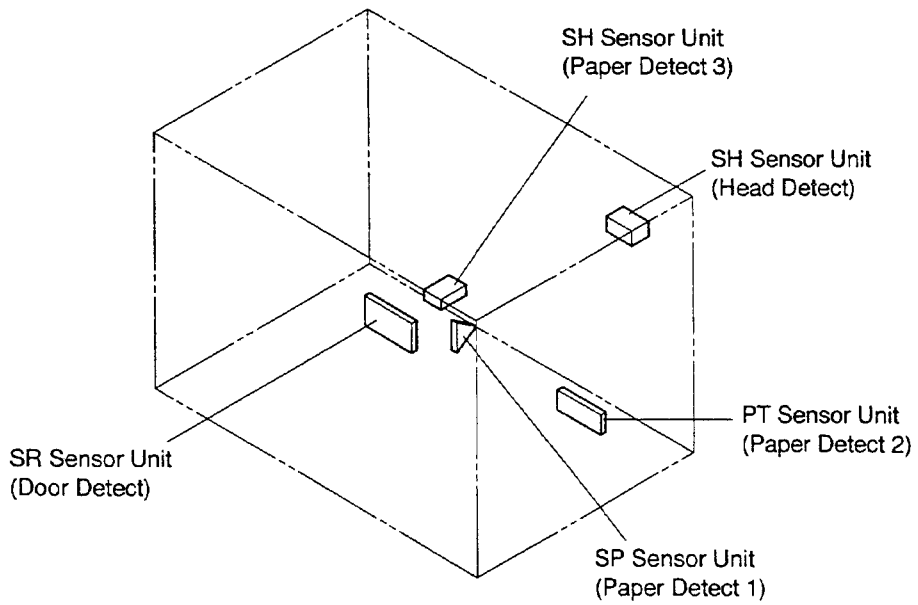
Press the "**PRINT**" button.



■ The set mode will not be lost even if the power is turned off.

LOCATION OF PRINTED CIRCUIT BOARDEDS





PRINTER UNIT

DISASSEMBLY

Removal of Top Panel Assy

1. Remove four screws (①, ②, ③ and ④) securing the Top Panel Assy shown in Fig. 1 and remove the Top Panel Assy in the direction of the arrow.

Removal of Front Panel Unit

1. Remove the Top Panel Assy. (Fig. 1)
2. Disconnect the Connector (SW) shown in Fig. 1.
3. Remove one screw (⑤) securing the Flat Cable shown in Fig.1.
4. Release two catches (⑥ and ⑦) on the Front Panel Unit shown in Fig. 1.
5. Remove two screws (⑧ and ⑨) securing the Front Panel Unit shown in Fig. 1 and remove the Front Panel Unit.

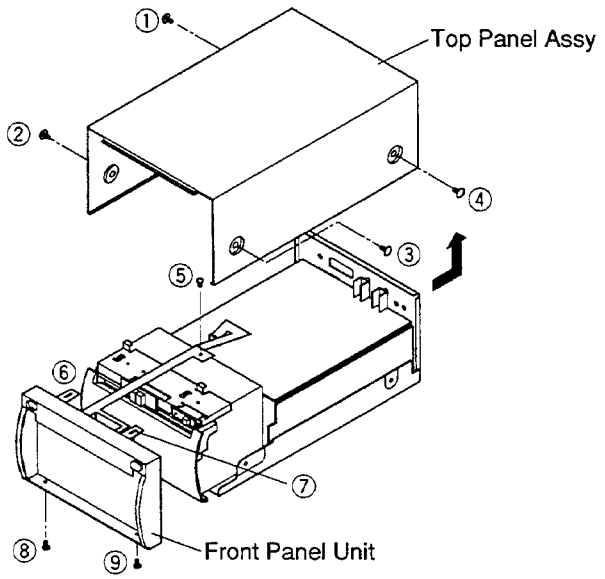


Fig. 1

Removal of Door

1. Raise the Knob Lever shown in Fig. 2 to "OPEN" position and open the door.
2. Release two hooks (① and ②) on the door shown in Fig. 2 and remove the door in the direction of the arrow.

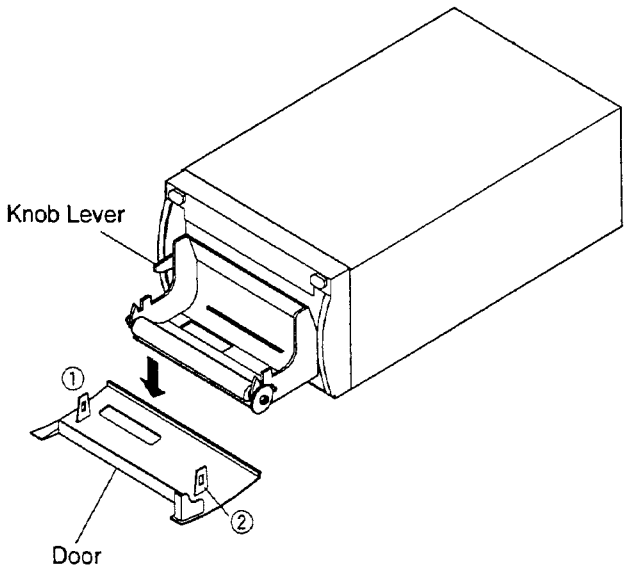


Fig. 2

Removal of PCB-MAIN	1. Remove the Top Panel Assy. (Fig. 1) 2. Disconnect all the connectors on the PCB-MAIN. 3. Remove four screws (①, ②, ③ and ④) securing the Rear Panel shown in Fig. 3 and remove the Rear Panel. 4. Remove four screws (⑤, ⑥, ⑦ and ⑧) securing the PCB-MAIN shown in Fig. 3 and remove the PCB-MAIN.

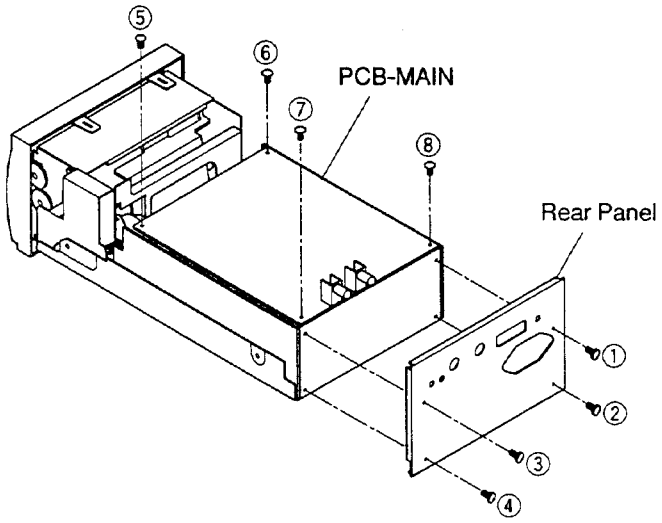


Fig. 3

Removal of PCB-POWER

1. Remove the Top Panel Assy, the Front Panel Unit, the Rear Panel and the PCB-MAIN. (Fig. 1, Fig. 3)
2. Remove the Switch Lever shown in Fig. 4 in the direction of the arrow.
3. Remove the Top Holder shown in Fig. 5.
4. Disconnect all the connectors on the PCB-POWER.
5. Remove one screw (①) securing the Power Unit shown in Fig. 5 and remove the Power Unit in the direction of the arrow.
6. Remove three screws (①, ② and ③) securing the IC Holder shown in Fig. 6 and remove the IC Holder.
   Note) When securing D951, Q901 and Q952 on the Heat Sink with screws, provide the insulator between the parts and the Heat Sink without fail.
7. Remove four screws (④, ⑤, ⑥ and ⑦) securing the PCB-POWER shown in Fig. 6 and remove the PCB-POWER in the direction of the arrow.

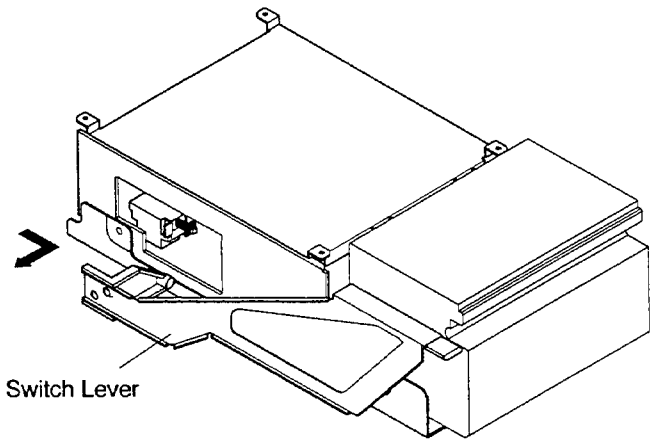


Fig. 4

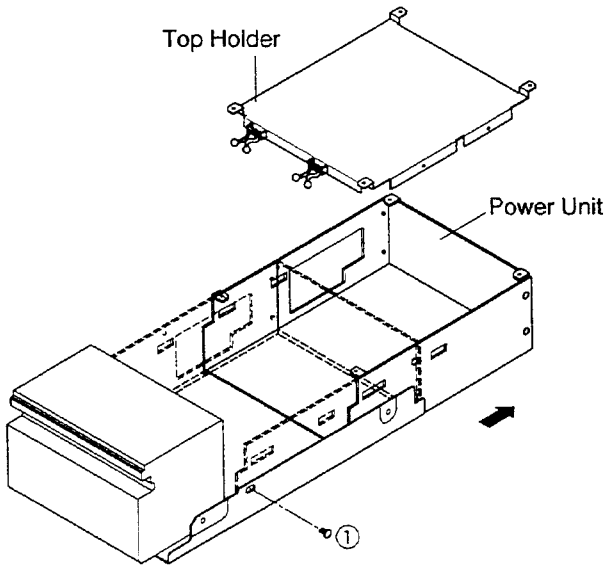


Fig. 5

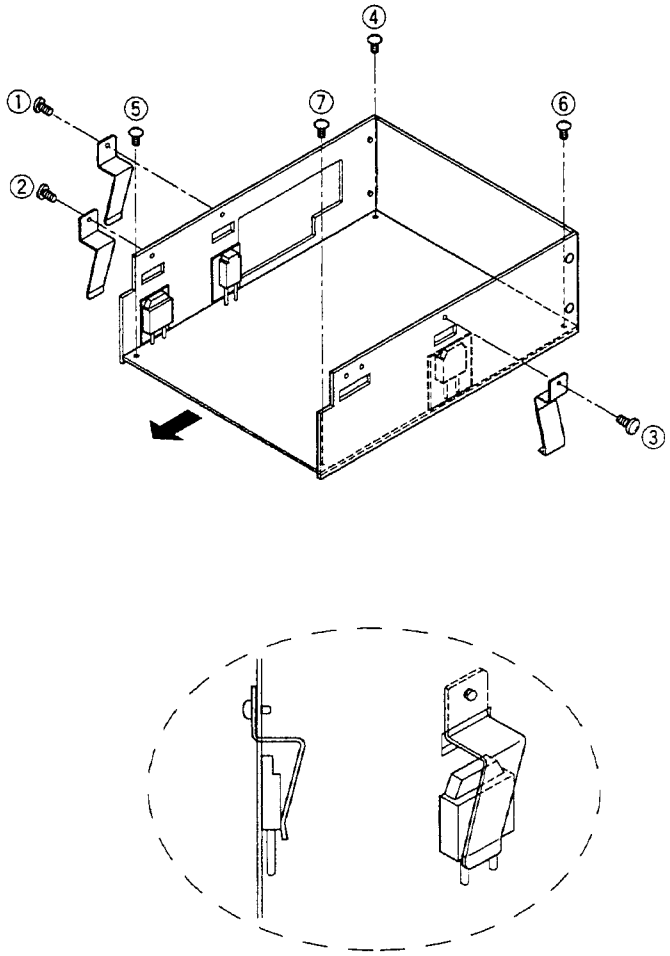


Fig. 6

Removal of PCB-LED and PCB-SW	1. Remove the Top Panel Assy and the Front Panel Unit. (Fig. 1) 2. Remove one screw (①) securing the PCB-LED shown in Fig. 7 and remove the PCB-LED. 3. Remove one screw (②) securing the PCB-SW shown in Fig. 7 and remove the PCB-SW.

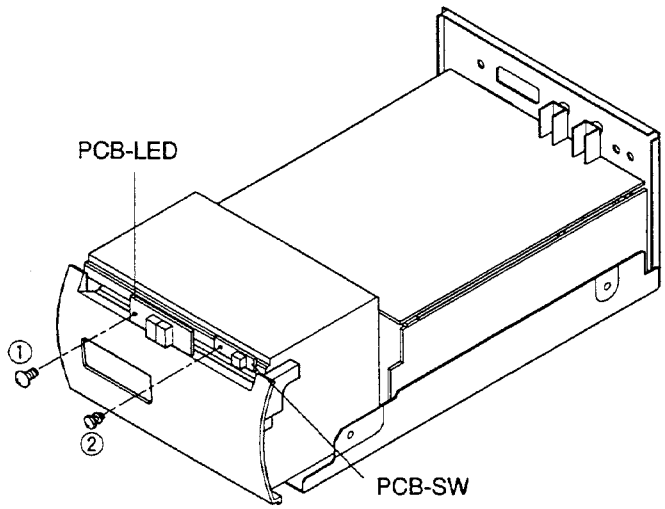


Fig. 7

Removal of Printer Unit	1. Remove the Top Panel Assy, the Front Panel Unit, the Door, the Switch Lever, the PCB-LED and the PCB-SW. (Fig. 1, FIg. 2, Fig. 4, Fig. 7) 2. Remove two screws (① and ②) securing the Front Bracket shown in Fig. 8. 3. Disconnect all the connectors on the Printer Unit. 4. Remove four screws (①, ②, ③ and ④) securing the Printer Unit shown in Fig. 9 and remove the Printer Unit.

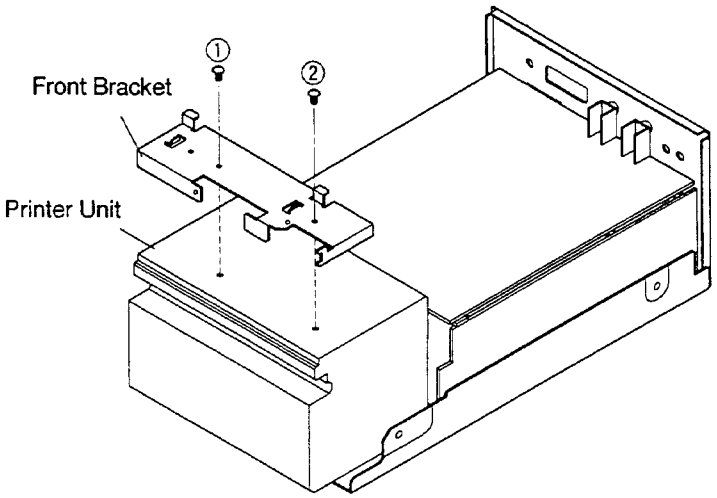


Fig. 8

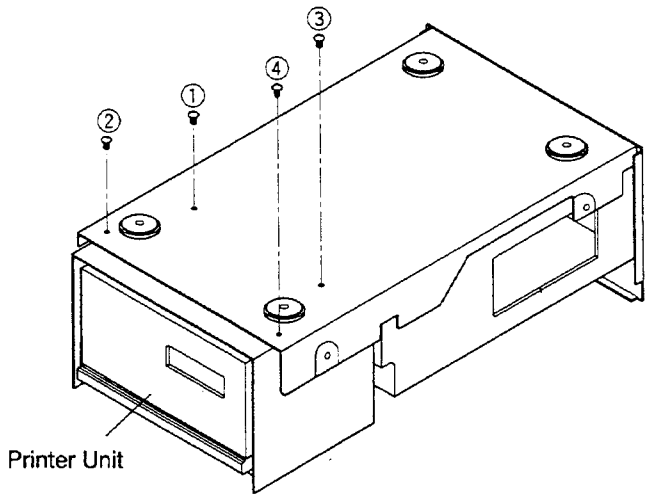


Fig. 9

Removal of Step Motor

1. Remove the Printer Unit. (Fig. 9)
2. Remove two screws (① and ②) securing the Step Motor shown in Fig. 10 and remove the Step Motor.

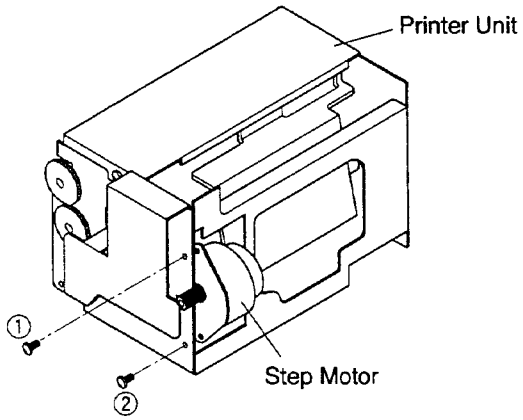


Fig. 10

Removal of Platen Roller Unit

1. Remove the Door. (Fig. 2)
2. Remove one E-Ring (①) shown in Fig. 11 and remove the Bushing.
3. Remove the Platen Roller Unit shown in Fig. 11 in the direction of the arrow.

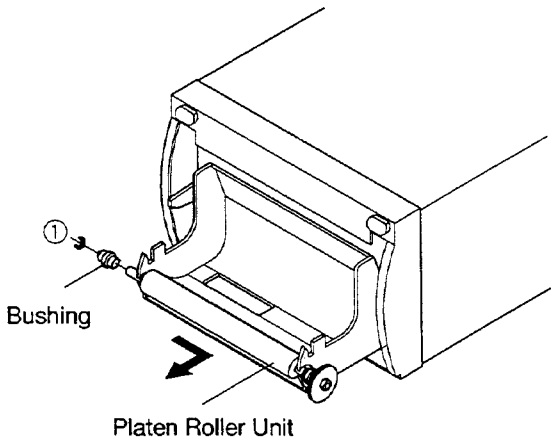


Fig. 11

Removal of SP Sensor Unit (Paper Detection 1)	1. Remove the Top Panel Assy, the Front Panel Unit, the Door, the Printer Unit and the Platen Roller Unit. (Fig. 1, 2, 9 and 11) 2. Remove 2 screws (① and ②) securing the Damper shown in Fig. 12 and remove the Damper. 3. Remove 3 screws (③, ④ and ⑤) securing the Paper Guide shown in Fig. 12 and remove the Paper Guide in the direction of the arrow Ⓐ. 4. Remove 1 screw (⑥) securing the SP Sensor Unit shown in Fig. 12. 5. Release 3 Clampers (①, ② and ③) shown in Fig. 13 and remove the SP Sensor Unit.

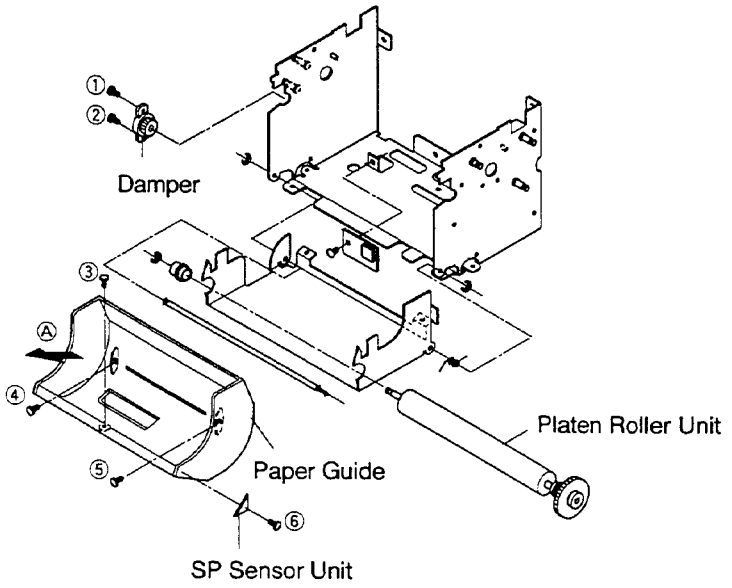


Fig. 12

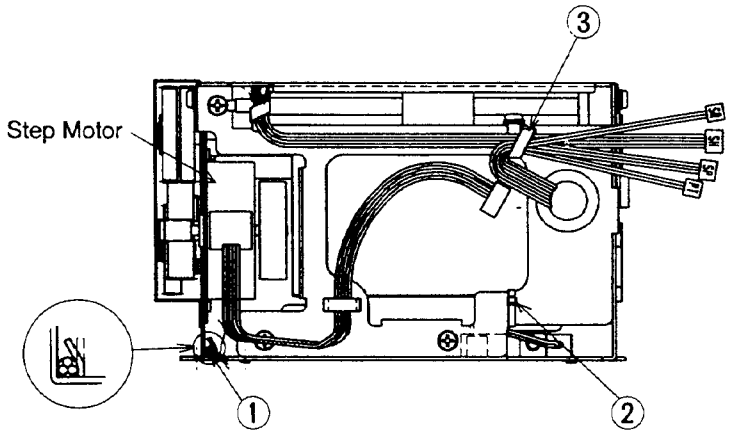


Fig. 13

Removal of Thermal Head

1. Remove the Top Panel Assy, the Front Panel Unit, the Switch Lever, the PCB-LED and the PCB-SW. (Fig. 1, Fig. 4, Fig. 7)
2. Remove two screws (① and ②) securing the Front Bracket shown in Fig. 14 and remove the Front Bracket.
3. Remove two screws (③ and ④) securing the Upper Plate shown in Fig. 14 and remove the Upper Plate.

Note) The Upper Plate is provided to press the Head Spring. Take care not to allow the Head Spring to jump during the removal.

4. Disconnect all the connectors on the Thermal Head.
5. Remove two screws (⑤ and ⑥) securing the Heat Sink shown in Fig. 14 and remove the Heat Sink.
6. Raise the Head Holder and the Thermal Head.
7. Remove two screws (⑦ and ⑧) securing the Thermal Head shown in Fig. 14 and remove the Thermal Head.

* Before securing a new Thermal Head and Head Holder with screws, confirm that the holes match with a pin gauge (ϕ3) shown in Fig. 16.
  Note) Do not touch the heater of the Thermal Head shown in Fig. 15.

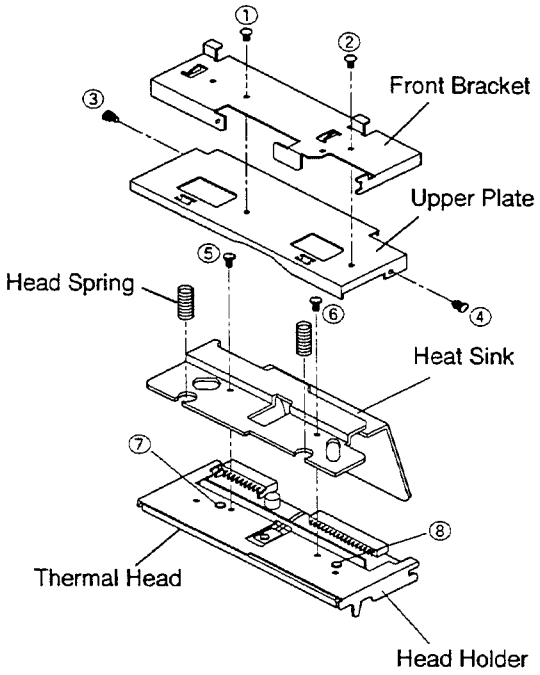
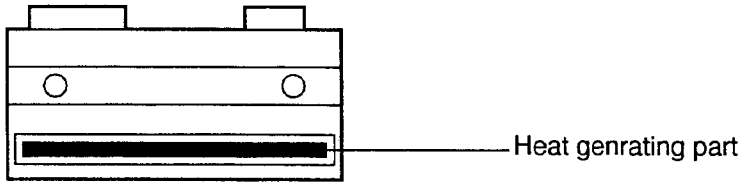


Fig. 14



Thermal Head

Fig. 15

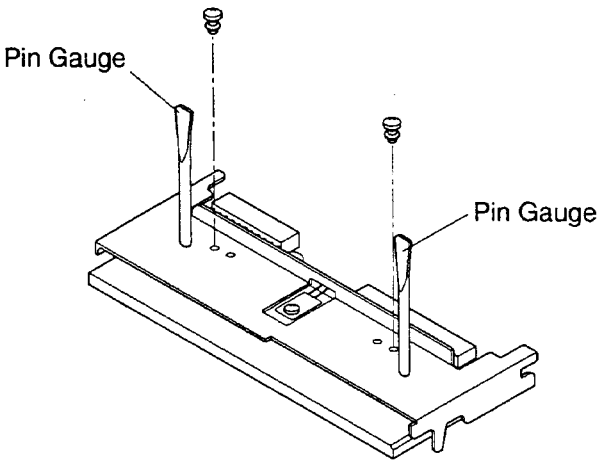


Fig. 16

CLEANING METHOD

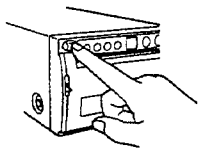
Cleaning of Thermal Head

When the thermal head is dirty with dust or other dirt, rain-drop patterns or white vertical lines may apper in the printed picture.
In this case, use the attached cleaning sheet (parts NO. 857P004O20) or Head Cleaner Pen TH-2000 (859C425O50) (which can be purchased separately) in the following manner.

Note) Do not use a russet Cleaning Paper (parts No. 857P001O10).
It may damage the Thermal Head.

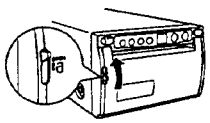
- **How to use the Cleaning Paper**

1 Turn on the power.



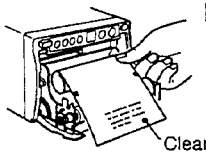
■ Press the **"POWER"** switch to turn on the power.

2 Open the door.

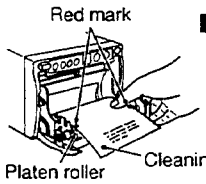


■ Switch the left side lever to the **"OPEN"** position.

3 Insert the cleaning paper.

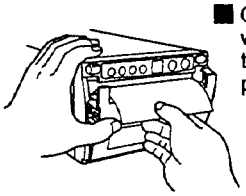


■ Roll the cleaning paper and install into the set.



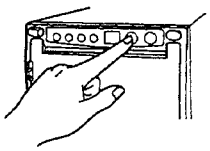
■ Adjust the red mark on the cleaning paper parallel to the platen roller.

4 Close the door.



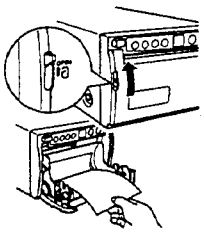
■ Close the door without taking out the cleaning paper.

5 Press the "FEED" button.



■ Keep pressing the **"FEED"** button until you hear a beep.

6 Take out the cleaning paper.



■ Open the door.

■ Take out the cleaning paper.

■ Do not pull out the cleaning paper while the door is closed.

7 Repeat the steps **3** - **6** 2 or 3 times, and print 1 - 2 sheets to verify the cleaning effect.

CAUTION

- After printing 10 roles of paper it is a standard period for using the cleaning paper.
- If the symptom of the dirty head is not corrected even after cleaning, your video copy processor needs repairing. Contact your dealer.
- Do not pull out the sheet or the cleaning paper while the door is closed. This may cause extensive damage to the unit.
- Never use other cleaning papers. It may cause damage to the thermal head.
- This cleaning paper should be used only for cleaning the thermal head. Do not use it for other purpose.

* If the thermal head is still dirty after using Cleaning Paper, remove the Thermal Head from the Printer Unit and clean the head with the Thermal Head Cleaner Pen.

Cleaning of Thermal Head

- How to use Head Cleaner Pen

1. Draw out the pen from the body and pour the appropriate amount of cleaning solvent to the pen body.
   Note) When the pen core gets dirty, replace it with the spare core.
2. Move the Head Cleaner Pen in a direction parallel to the heat generating area of the thermal head for cleaning.

Cleaning solvent

- Since the cleaning solvent is inflammable, shut close the cap after use and be particularly careful against fire.
- Keep it in a cool, dark place with no direct exposure to the sun.

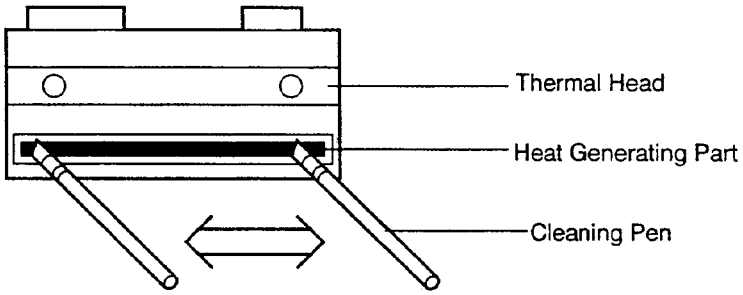
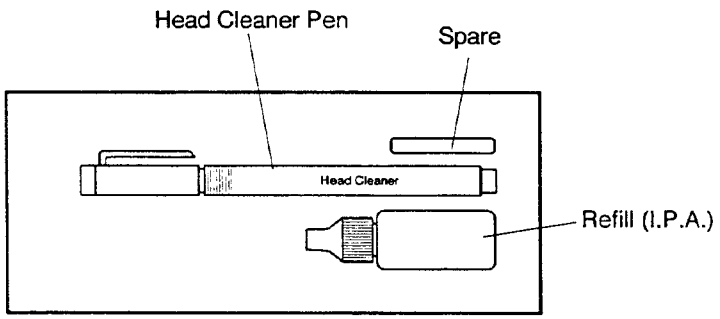


Fig. 1



Head Cleaner Pen (Parts No. 859C425O50)

Fig. 2

Cleaning of Platen Roller

When the Platen Roller is very dirty print quality may be poor. Clean the platen roller by the following procedure.

1. Open the Door or the Set.
2. Check the Platen Roller. If dirt or dust adheres, clean the roller using the blower brush shown in Fig. 4.
3. When the cleaning is finished, check normal print.

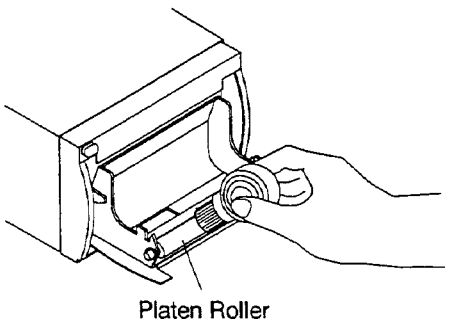
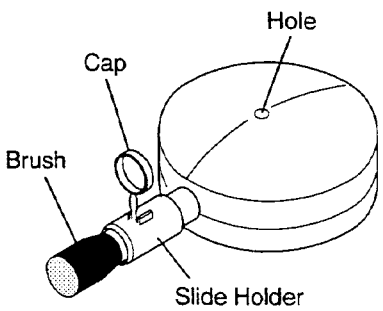


Fig. 3

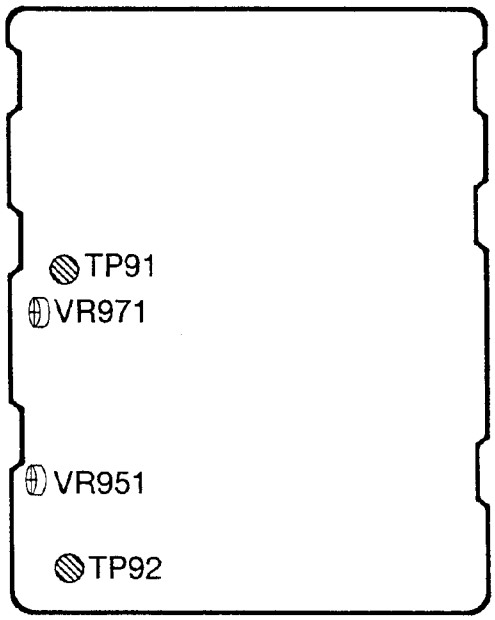


Blower Brush
Parts No. 859D048O10

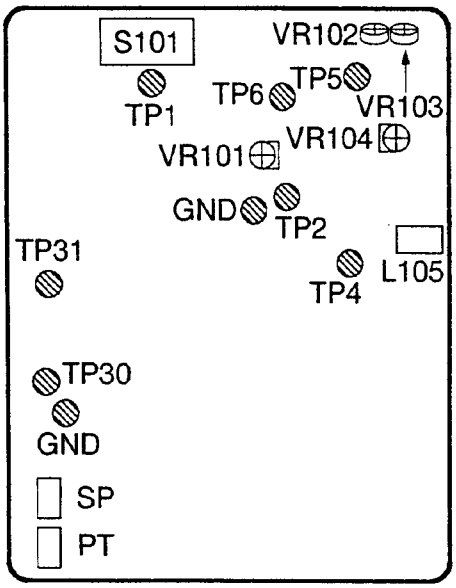
Fig. 4

LOCATIONS

PCB-POWER (Component side)



PCB-MAIN (Component side)

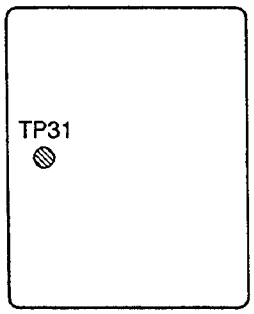


SERVICE MODE

How to indicate the SERVICE Mode

Operation	LED indication
1. Turn the power off.	
2. Short-circuit TP31 to GND.	
3. Turn the power on while pressing the **BRT** button.	8.8. → 55 → 00 (Confirm the indicator LED changes from " 55 " to " 00 ")
4. Stop pressing the **BRT** button. (SERVICE mode is completely selected.)	

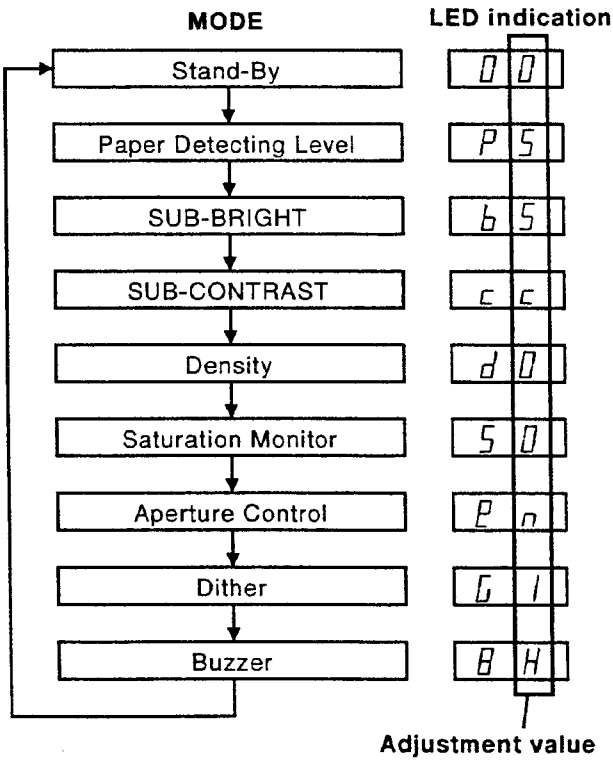
PCB-MAIN (Component side)



How to Select the Setting Mode

1. Set the **SERVICE** mode.
2. Select the setting mode with the **GAMMA** button, observing the indicator LED.

Note: The set up mode varies in the order shown by the arrow in the figure.



How to Set and memorize the Adjustment Value

1. Select the **SET UP** mode.
2. Set the adjustment value with the varying the adjustment value button ▲ or ▼.

Note: The adjustment value appears on the right of the indicator LED.

3. Press the **GAMMA** button or **CONT** button.

How to cancel the Service Mode

1. Press the **CONT** button.
2. Open-circuit TP31 to GND.

The table below describes each set up mode position.

MODE	LED indicate		Right indication of the LED	Note
	Left	Right		
Stand-By	0	01	Print size can be set by varying the adjustment value. It is not necessary to set this in the **SERVICE** mode.	
Paper Detecting Level	P	5	---	Fixed
SUB-BRIGHT	b	0~F	Index of brightness. Adjustment value change by "1" at 16 steps.	Operation the varying the adjustment value button ▲/▼ with the adjustment value and 0 is no effect.
SUB-CONTRAST	C	0~F	Ditto	Ditto
Density	d	-9~9	Index of density, from -9 (-9) to 9 (9).	Initial setting at shipment is restored by initializing the E²PROM.
Saturation Monitor	S	0 1	Used to reverse the signal polarity (white-black) of the image area that expands over the limits during BRIGHT and CONTRAST adjustment. When 1 (in), the image is reversed and when 0 (out), not reversed.	Ditto
Aperture Control	E	SnH	Index of aperture control. H indicates maximum aperture correction S (soft), n (nomal), and H (Hard).	Ditto
Dither	G	0 1	Used to select the gradation. 1 (in) indicates 256 gradations and 0 (out) 64 gradations.	Ditto
Buzzer	B	0LH	Used to select the buzzer. 0 (volume:mute) L (volume:low) H (volume:high) **Note)** When the LED indicates 0, the buzzer will sound at low volume instead of being muted for any error which occurs.	Ditto

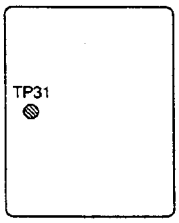
HOW TO INDICATE THE ADJUSTMENT MODE

Operation	LED Display
1. Turn **POWER** button OFF.	
2. Short-circuit TP31 to GND.	
3. Turn **POWER** button ON while pressing **PRINT** button on the VCP.	8.8. → - - → 0 0
4. Release **PRINT** button on the VCP. (The ADJUSTMENT mode is completely selected.)	(Confirm that the indicator LED changes from " - - " to " 0 0 ".)
	Note) If you make an error during the ADJUSTMENT mode, turn **POWER** button OFF and then select the ADJUSTMENT mode again.

How to cancel the Adjustment Mode

1. Turn **POWER** button OFF.
2. Open-circuit TP31 to GND.

PCB-MAIN(Component side)



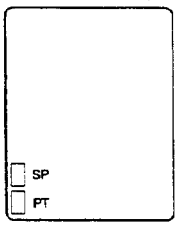
CHECK OF DETECTION LEVEL FOR PAPER

Conduct the steps below and confirm the indicator LED.

Operation	LED Display
1. Select the SERVICE mode.	0 0
2. Take the printing paper out.	E 0
3. Close the door.	E P
4. Press **GAMMA** button once.	P 5
5. Press **BRT** button once.	P 5 → P 0
6. Open the door.	P 0
Note) The table below shows the normal voltage at pin 1 of connector PT and at pin 2 of connector SP respectively with and without a printing paper provided.	
7. Quit the SERVICE mode.	

Printing Paper	Voltage
Provided	1.5V or less
Not provided	3.5V or more

PCB-MAIN(Component side)



INITIALIZATION OF THE E²PROM

Necessary on replacement of E²PROM.
Note) Do not initialize E²PROM expect when replaced. User setting is canceled.

Operation	LED Display
1. Turn **POWER** button OFF.	
2. Turn **POWER** button ON while pressing **FEED** and **COPY** buttons at the sme time.	8.8. → 1 1 → 0 0 (Confirm that the indicator LED changes from " 1 1 " to " 0 0 ")
3. Release **FEED** and **COPY** buttons. (Initialization is completed.)	

* After E²PROM is initialized, the following adjustment values in the service mode are restored to the initial values at shipment.

Set mode	LED Display
• Density	d 0
• Saturation Monitor	S 0
• Edge Enhance	E n
• Dither	C 1
• Buzzer	B H

HOW TO RESET THE TOTAL NUMBER OF PRINTED PICTURE

After the thermal head is replaced, reset the total number of the printed pictures according to the steps below.

Operation	LED Display
1. Turn **POWER** button OFF.	
2. Turn **POWER** button ON while pressing **FEED** and **COPY** buttons and **PRINT** button on the remote control unit.	8.8. → P P → 0 0 (Confirm that the indicator LED changes from " P P " to " 0 0 ")
3. Release **FEED** and **COPY** buttons and PRINT button on the remotecontrol unit. (Reset is completed.)	

ELECTRIC ADJUSTMENT

■ Setting prior to adjustment

- Mode switch and others

Set Point			Setting
S101	#1	IMP	75Ω
Mode	#2	N-TRAP	OFF
Switch	#3	P-TRAP	OFF
	#4	IMAGE	POSI
	#5	AFC	OFF
	#6	DIR	NOR
	#7	MEMORY	FRAME
	#8	SCAN	UNDER
	#9	SAVING	OFF
	#10	PAPER	HD

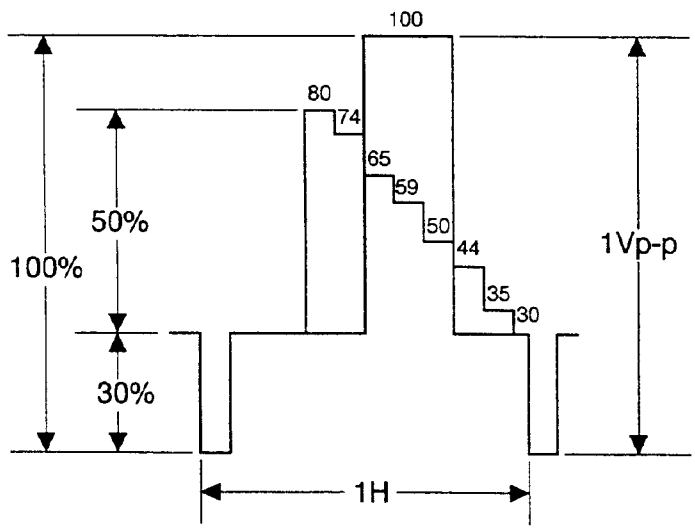
Set Point		Setting
Power supply	OFF/ON	ON
Front Panel	Paper	K65HM
Remote Control	Input Terminal	Remote Control Connection
VIDEO IN	Input Terminal	PAL Step Wave (provided with window)
VIDEO OUT	Output Terminal	Monitor
AC IN	Power Input	Connection 220V±5%

■ Measuring Equipment & Jig

① Colour monitor (TV for AV input)
② Oscilloscope (Set probe to 10:1 unless otherwise specified.)
③ Signal generator
④ Frequency counter
⑤ A set of general electric tools
⑥ Digital voltmeter

■ Input Signal

Video signal: Step wave (provided with window)



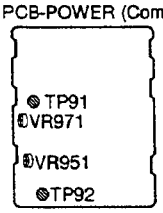
1. Main Voltage/Head Voltage	**Adjustment purpose**	To correct uneven density of the printed picture caused by unevenness of head resistor.
	Symptom when incorrectly adjusted	Too dense or too thin the printed picture particularly in the black area resulting in dull or burnt black picture.

Measuring instrument	Digital voltmeter
Test point	TP91, TP92
EXT trigger	– – –
Measurement range	– – –
Input signal	– – –
Input terminal	– – –

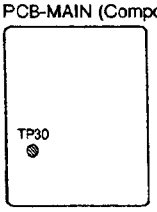
1. Read the Thermal Head resistance value.
2. Short-circuit TP30 to GND.
3. Observe the voltage at TP91.
4. Adjust VR971 so that the reading is E1±0.05V.
5. Observe the voltage at TP92.
6. Adjust VR951 so that the reading is E2±0.05V.
7. Open-circuit TP30 to GND.

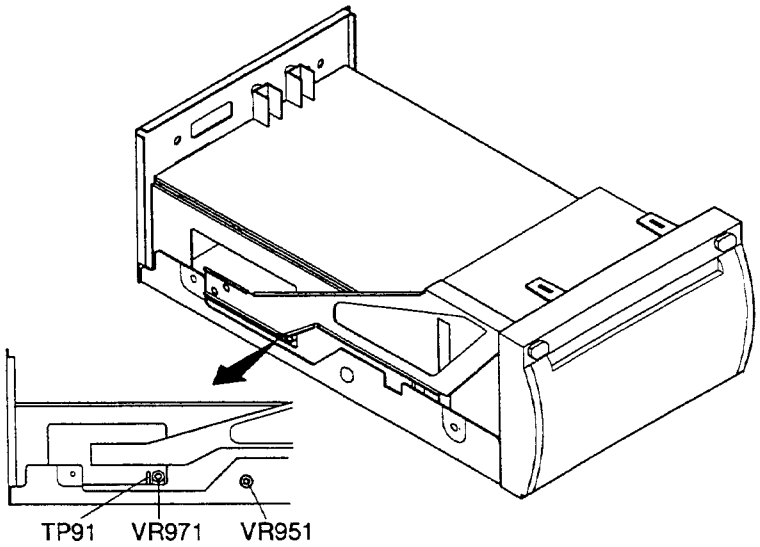
Note) E1 : E2±2.5[V]
E2 : The value in table [V]

PCB-POWER (Component side)



PCB-MAIN (Component side)





E2 VOLTAGE FOR DIFFERENT HEAD RESISTANCES

Resistance 3 significant figures [Ω]	Resistance 4th figure [Ω]									
	0	1	2	3	4	5	6	7	8	9
4330	20.291	20.293	20.295	20.298	20.300	20.302	20.304	20.307	20.309	20.311
4340	20.314	20.316	20.318	20.321	20.323	20.325	20.328	20.330	20.332	20.335
4350	20.337	20.339	20.341	20.344	20.346	20.348	20.351	20.353	20.355	20.358
4360	20.360	20.362	20.364	20.367	20.369	20.371	20.374	20.376	20.378	20.381
4370	20.383	20.385	20.388	20.390	20.392	20.394	20.397	20.399	20.401	20.404
4380	20.406	20.408	20.411	20.413	20.415	20.417	20.420	20.422	20.424	20.427
4390	20.429	20.431	20.434	20.436	20.438	20.440	20.443	20.445	20.447	20.450
4400	20.452	20.454	20.456	20.459	20.461	20.463	20.466	20.468	20.470	20.473
4410	20.475	20.477	20.479	20.482	20.484	20.486	20.489	20.491	20.493	20.495
4420	20.498	20.500	20.502	20.505	20.507	20.509	20.511	20.514	20.516	20.518
4430	20.521	20.523	20.525	20.528	20.530	20.532	20.534	20.537	20.539	20.541
4440	20.544	20.546	20.548	20.550	20.553	20.555	20.557	20.559	20.562	20.564
4450	20.566	20.569	20.571	20.573	20.575	20.578	20.580	20.582	20.585	20.587
4460	20.589	20.591	20.594	20.596	20.598	20.601	20.603	20.605	20.607	20.610
4470	20.612	20.614	20.616	20.619	20.621	20.623	20.626	20.628	20.630	20.632
4480	20.635	20.637	20.639	20.642	20.644	20.646	20.648	20.651	20.653	20.655
4490	20.657	20.660	20.662	20.664	20.667	20.669	20.671	20.673	20.676	20.678
4500	20.680	20.682	20.685	20.687	20.689	20.691	20.694	20.696	20.698	20.701
4510	20.703	20.705	20.707	20.710	20.712	20.714	20.716	20.719	20.721	20.723
4520	20.725	20.728	20.730	20.732	20.735	20.737	20.739	20.741	20.744	20.746
4530	20.748	20.750	20.753	20.755	20.757	20.759	20.762	20.764	20.766	20.768
4540	20.771	20.773	20.775	20.778	20.780	20.782	20.784	20.787	20.789	20.791
4550	20.793	20.796	20.798	20.800	20.802	20.805	20.807	20.809	20.811	20.814
4560	20.816	20.818	20.820	20.823	20.825	20.827	20.829	20.832	20.834	20.836
4570	20.838	20.841	20.843	20.845	20.847	20.850	20.852	20.854	20.856	20.859
4580	20.861	20.863	20.865	20.868	20.870	20.872	20.874	20.877	20.879	20.881
4590	20.883	20.886	20.888	20.890	20.892	20.895	20.897	20.899	20.901	20.904
4600	20.906	20.908	20.910	20.913	20.915	20.917	20.919	20.922	20.924	20.926
4610	20.928	20.931	20.933	20.935	20.937	20.940	20.942	20.944	20.946	20.949
4620	20.951	20.953	20.955	20.957	20.960	20.962	20.964	20.966	20.969	20.971
4630	20.973	20.975	20.978	20.980	20.982	20.984	20.987	20.989	20.991	20.993
4640	20.996	20.998	21.000	21.002	21.004	21.007	21.009	21.011	21.013	21.016
4650	21.018	21.020	21.022	21.025	21.027	21.029	21.031	21.034	21.036	21.038
4660	21.040	21.042	21.045	21.047	21.049	21.051	21.054	21.056	21.058	21.060
4670	21.062	21.065	21.067	21.069	21.071	21.074	21.076	21.078	21.080	21.083
4680	21.085	21.087	21.089	21.091	21.094	21.096	21.098	21.100	21.103	21.105
4690	21.107	21.109	21.111	21.114	21.116	21.118	21.120	21.123	21.125	21.127
4700	21.129	21.131	21.134	21.136	21.138	21.140	21.143	21.145	21.147	21.149
4710	21.151	21.154	21.156	21.158	21.160	21.163	21.165	21.167	21.169	21.171
4720	21.174	21.176	21.178	21.180	21.183	21.185	21.187	21.189	21.191	21.194
4730	21.196	21.198	21.200	21.202	21.205	21.207	21.209	21.211	21.214	21.216
4740	21.218	21.220	21.222	21.225	21.227	21.229	21.231	21.233	21.236	21.238
4750	21.240	21.242	21.244	21.247	21.249	21.251	21.253	21.256	21.258	21.260
4760	21.262	21.264	21.267	21.269	21.271	21.273	21.275	21.278	21.280	21.282

Resistance 3 significant figures [Ω]	Resistance 4th figure [Ω]									
	0	1	2	3	4	5	6	7	8	9
4770	21.284	21.286	21.289	21.291	21.293	21.295	21.297	21.300	21.302	21.304
4780	21.306	21.308	21.311	21.313	21.315	21.317	21.319	21.322	21.324	21.326
4790	21.328	21.330	21.333	21.335	21.337	21.339	21.341	21.344	21.346	21.348
4800	21.350	21.352	21.355	21.357	21.359	21.361	21.363	21.366	21.368	21.370
4810	21.372	21.374	21.377	21.379	21.381	21.383	21.385	21.388	21.390	21.392
4820	21.394	21.396	21.399	21.401	21.403	21.405	21.407	21.410	21.412	21.414
4830	21.416	21.418	21.421	21.423	21.425	21.427	21.429	21.431	21.434	21.436
4840	21.438	21.440	21.442	21.445	21.447	21.449	21.451	21.453	21.456	21.458
4850	21.460	21.462	21.464	21.466	21.469	21.471	21.473	21.475	21.477	21.480
4860	21.482	21.484	21.486	21.488	21.491	21.493	21.495	21.497	21.499	21.501
4870	21.504	21.506	21.508	21.510	21.512	21.515	21.517	21.519	21.521	21.523
4880	21.525	21.528	21.530	21.532	21.534	21.536	21.539	21.541	21.543	21.545
4890	21.547	21.549	21.552	21.554	21.556	21.558	21.560	21.562	21.565	21.567
4900	21.569	21.571	21.573	21.576	21.578	21.580	21.582	21.584	21.586	21.589
4910	21.591	21.593	21.595	21.597	21.599	21.602	21.604	21.606	21.608	21.610
4920	21.612	21.615	21.617	21.619	21.621	21.623	21.626	21.628	21.630	21.632
4930	21.634	21.636	21.639	21.641	21.643	21.645	21.647	21.649	21.652	21.654
4940	21.656	21.658	21.660	21.662	21.665	21.667	21.669	21.671	21.673	21.675
4950	21.678	21.680	21.682	21.684	21.686	21.688	21.691	21.693	21.695	21.697
4960	21.699	21.701	21.704	21.706	21.708	21.710	21.712	21.714	21.716	21.719
4970	21.721	21.723	21.725	21.727	21.729	21.732	21.734	21.736	21.738	21.740
4980	21.742	21.745	21.747	21.749	21.751	21.753	21.755	21.758	21.760	21.762
4990	21.764	21.766	21.768	21.770	21.773	21.775	21.777	21.779	21.781	21.783
5000	21.786	21.788	21.790	21.792	21.794	21.796	21.798	21.801	21.803	21.805
5010	21.807	21.809	21.811	21.814	21.816	21.818	21.820	21.822	21.824	21.826
5020	21.829	21.831	21.833	21.835	21.837	21.839	21.842	21.844	21.846	21.848
5030	21.850	21.852	21.854	21.857	21.859	21.861	21.863	21.865	21.867	21.869
5040	21.872	21.874	21.876	21.878	21.880	21.882	21.884	21.887	21.889	21.891
5050	21.893	21.895	21.897	21.899	21.902	21.904	21.906	21.908	21.910	21.912
5060	21.914	21.917	21.919	21.921	21.923	21.925	21.927	21.929	21.932	21.934
5070	21.936	21.938	21.940	21.942	21.944	21.947	21.949	21.951	21.953	21.955
5080	21.957	21.959	21.962	21.964	21.966	21.968	21.970	21.972	21.974	21.976
5090	21.979	21.981	21.983	21.985	21.987	21.989	21.991	21.994	21.996	21.998
5100	22.000	22.002	22.004	22.006	22.009	22.011	22.013	22.015	22.017	22.019
5110	22.021	22.023	22.026	22.028	22.030	22.032	22.034	22.036	22.038	22.040
5120	22.043	22.045	22.047	22.049	22.051	22.053	22.055	22.058	22.060	22.062
5130	22.064	22.066	22.068	22.070	22.072	22.075	22.077	22.079	22.081	22.083
5140	22.085	22.087	22.089	22.092	22.094	22.096	22.098	22.100	22.102	22.104
5150	22.106	22.109	22.111	22.113	22.115	22.117	22.119	22.121	22.123	22.126
5160	22.128	22.130	22.132	22.134	22.136	22.138	22.140	22.142	22.145	22.147
5170	22.149	22.151	22.153	22.155	22.157	22.159	22.162	22.164	22.166	22.168
5180	22.170	22.172	22.174	22.176	22.178	22.181	22.183	22.185	22.187	22.189
5190	22.191	22.193	22.195	22.198	22.200	22.202	22.204	22.206	22.208	22.210
5200	22.212	22.214	22.217	22.219	22.221	22.223	22.225	22.227	22.229	22.231

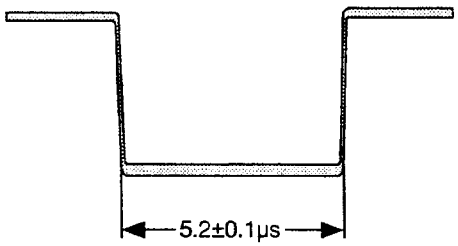
Resistance 3 significant figures [Ω]	Resistance 4th figure [Ω]									
	0	1	2	3	4	5	6	7	8	9
5210	22.233	22.236	22.238	22.240	22.242	22.244	22.246	22.248	22.250	22.252
5220	22.255	22.257	22.259	22.261	22.263	22.265	22.267	22.269	22.271	22.274
5230	22.276	22.278	22.280	22.282	22.284	22.286	22.288	22.290	22.292	22.295
5240	22.297	22.299	22.301	22.303	22.305	22.307	22.309	22.311	22.314	22.316
5250	22.318	22.320	22.322	22.324	22.326	22.328	22.330	22.332	22.335	22.337
5260	22.339	22.341	22.343	22.345	22.347	22.349	22.351	22.353	22.356	22.358
5270	22.360	22.362	22.364	22.366	22.368	22.370	22.372	22.374	22.377	22.379
5280	22.381	22.383	22.385	22.387	22.389	22.391	22.393	22.395	22.398	22.400
5290	22.402	22.404	22.406	22.408	22.410	22.412	22.414	22.416	22.418	22.421
5300	22.423	22.425	22.427	22.429	22.431	22.433	22.435	22.437	22.439	22.442
5310	22.444	22.446	22.448	22.450	22.452	22.454	22.456	22.458	22.460	22.462
5320	22.464	22.467	22.469	22.471	22.473	22.475	22.477	22.479	22.481	22.483
5330	22.485	22.487	22.490	22.492	22.494	22.496	22.498	22.500	22.502	22.504
5340	22.506	22.508	22.510	22.512	22.515	22.517	22.519	22.521	22.523	22.525
5350	22.527	22.529	22.531	22.533	22.535	22.538	22.540	22.542	22.544	22.546
5360	22.548	22.550	22.552	22.554	22.556	22.558	22.560	22.562	22.565	22.567
5370	22.569	22.571	22.573	22.575	22.577	22.579	22.581	22.583	22.585	22.587
5380	22.590	22.592	22.594	22.596	22.598	22.600	22.602	22.604	22.606	22.608
5390	22.610	22.612	22.614	22.617	22.619	22.621	22.623	22.625	22.627	22.629
5400	22.631	22.633	22.635	22.637	22.639	22.641	22.643	22.646	22.648	22.650
5410	22.652	22.654	22.656	22.658	22.660	22.662	22.664	22.666	22.668	22.670
5420	22.672	22.675	22.677	22.679	22.681	22.683	22.685	22.687	22.689	22.691
5430	22.693	22.695	22.697	22.699	22.701	22.704	22.706	22.708	22.710	22.712
5440	22.714	22.716	22.718	22.720	22.722	22.724	22.726	22.728	22.730	22.732
5450	22.735	22.737	22.739	22.741	22.743	22.745	22.747	22.749	22.751	22.753
5460	22.755	22.757	22.759	22.761	22.763	22.765	22.768	22.770	22.772	22.774
5470	22.776	22.778	22.780	22.782	22.784	22.786	22.788	22.790	22.792	22.794
5480	22.796	22.798	22.800	22.803	22.805	22.807	22.809	22.811	22.813	22.815
5490	22.817	22.819	22.821	22.823	22.825	22.827	22.829	22.831	22.833	22.835
5500	22.838	22.840	22.842	22.844	22.846	22.848	22.850	22.852	22.854	22.856
5510	22.858	22.860	22.862	22.864	22.866	22.868	22.870	22.872	22.874	22.877
5520	22.879	22.881	22.883	22.885	22.887	22.889	22.891	22.893	22.895	22.897
5530	22.899	22.901	22.903	22.905	22.907	22.909	22.911	22.913	22.915	22.918
5540	22.920	22.922	22.924	22.926	22.928	22.930	22.932	22.934	22.936	22.938
5550	22.940	22.942	22.944	22.946	22.948	22.950	22.952	22.954	22.956	22.959
5560	22.961	22.963	22.965	22.967	22.969	22.971	22.973	22.975	22.977	22.979
5570	22.981	22.983	22.985	22.987	22.989	22.991	22.993	22.995	22.997	22.999
5580	23.001	23.003	23.005	23.008	23.010	23.012	23.014	23.016	23.018	23.020
5590	23.022	23.024	23.026	23.028	23.030	23.032	23.034	23.036	23.038	23.040
5600	23.042	23.044	23.046	23.048	23.050	23.052	23.054	23.056	23.058	23.061
5610	23.063	23.065	23.067	23.069	23.071	23.073	23.075	23.077	23.079	23.081
5620	23.083	23.085	23.087	23.089	23.091	23.093	23.095	23.097	23.099	23.101
5630	23.103	23.105	23.107	23.109	23.111	23.113	23.115	23.117	23.119	23.121
5640	23.123	23.126	23.128	23.130	23.132	23.134	23.136	23.138	23.140	23.142

Resistance 3 significant figures [Ω]	Resistance 4th figure [Ω]									
	0	1	2	3	4	5	6	7	8	9
5650	23.144	23.146	23.148	23.150	23.152	23.154	23.156	23.158	23.160	23.162
5660	23.164	23.166	23.168	23.170	23.172	23.174	23.176	23.178	23.180	23.182
5670	23.184	23.186	23.188	23.190	23.192	23.194	23.196	23.198	23.201	23.203
5680	23.205	23.207	23.209	23.211	23.213	23.215	23.217	23.219	23.221	23.223
5690	23.225	23.227	23.229	23.231	23.233	23.235	23.237	23.239	23.241	23.243
5700	23.245	23.247	23.249	23.251	23.253	23.255	23.257	23.259	23.261	23.263
5710	23.265	23.267	23.269	23.271	23.273	23.275	23.277	23.279	23.281	23.283
5720	23.285	23.287	23.289	23.291	23.293	23.295	23.297	23.299	23.301	23.303
5730	23.305	23.307	23.310	23.312	23.314	23.316	23.318	23.320	23.322	23.324
5740	23.326	23.328	23.330	23.332	23.334	23.336	23.338	23.340	23.342	23.344
5750	23.346	23.348	23.350	23.352	23.354	23.356	23.358	23.360	23.362	23.364
5760	23.366	23.368	23.370	23.372	23.374	23.376	23.378	23.380	23.382	23.384
5770	23.386	23.388	23.390	23.392	23.394	23.396	23.398	23.400	23.402	23.404
5780	23.406	23.408	23.410	23.412	23.414	23.416	23.418	23.420	23.422	23.424
5790	23.426	23.428	23.430	23.432	23.434	23.436	23.438	23.440	23.442	23.444
5800	23.446	23.448	23.450	23.452	23.454	23.456	23.458	23.460	23.462	23.464
5810	23.466	23.468	23.470	23.472	23.474	23.476	23.478	23.480	23.482	23.484
5820	23.486	23.488	23.490	23.492	23.494	23.496	23.498	23.500	23.502	23.504
5830	23.506	23.508	23.510	23.512	23.514	23.516	23.518	23.520	23.522	23.524
5840	23.526	23.528	23.530	23.532	23.534	23.536	23.538	23.540	23.542	23.544
5850	23.546	23.548	23.550	23.552	23.554	23.556	23.558	23.560	23.562	23.564
5860	23.566	23.568	23.570	23.572	23.574	23.576	23.578	23.580	23.582	23.584

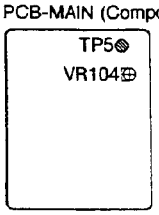
2. Horizontal synchronized pulse width	**Adjustment purpose**	To adjust the capture range of the AFC function to the centre.
	Symptom when incorrectly adjusted	Disturbance in horizontal sync.

Measuring instrument	Oscilloscope
Test point	TP5
EXT trigger	– – –
Measurement range	DIV :0.1V TIM :1μs (DELAY mode)
Input signal	Video signal (staircase with window)
Input terminal	VIDEO IN terminal

1. Supply a video signal (staircase with window).
2. Connect CH1 of the oscilloscope to TP5.
3. Trigger in the rising edge of CH1.
4. Magnify the pulse width of CH1 with delay sweep.
5. Adjust VR104 so that the pulse width of the waveform indicated below is pulse width=5.2±0.1μs.



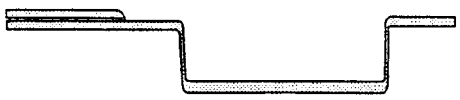
PCB-MAIN (Component side)



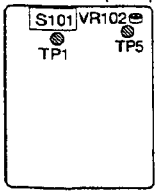
3. Horizontal AFC	**Adjustment purpose**	To correct uneven oscillating frequency of the horizontal AFC circuit.
	Symptom when incorrectly adjusted	Poor horizontal synchronization of picture to be printed.

Measuring instrument	Oscilloscope
Test point	CH1 : TP1 CH2 : TP5
EXT trigger	– – –
Measurement range	DIV :CH1 20mV :CH2 0.2V TIM :1μs (DELAY mode)
Input signal	Video signal (staircase with window)
Input terminal	VIDEO IN terminal

1. Supply a video signal (staircase with window).
2. Connect CH1 of the oscilloscope to TP1 and CH2 to TP5.
3. Trigger in the falling edge of CH2.
4. Magnify the falling edge of CH1 by applying delay trigger.
5. Set the AFC to be ON. Adjust VR102 so that the phase difference between the center of the screen and the falling edge of CH1 is 0±0.1μs.
6. Then turn #5: AFC switch of the S101 (MODE) off.



PCB-MAIN (Component side)

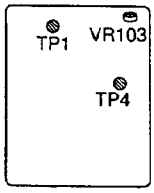


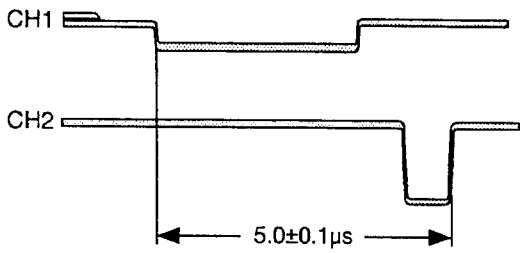
4. Horizontal Position	**Adjustment purpose**	To adjust the horizontal picture position on the print paper.
	Symptom when incorrectly adjusted	Horizontal position of printed picture displaced to left or right.

Measuring instrument	Oscilloscope
Test point	CH1: TP1 CH2: TP4
EXT trigger	– – –
Measurement range	DIV :CH1 50mV :CH2 0.2V TIM :1μs (DELAY mode)
Input signal	Video signal (staircase with window)
Input terminal	VIDEO IN terminal

1. Supply a video signal (staircase with window).
2. Connect CH1 of the oscilloscope to TP1 and CH2 to TP4.
3. Trigger in the falling of CH2 and magnify the portion.
4. Magnify the horizontal synchronization.
5. Adjust VR103 so that the phase difference between the rising edge of CH1 and the falling edge of CH2 is 5.0±0.1μs.

PCB-MAIN (Component side)



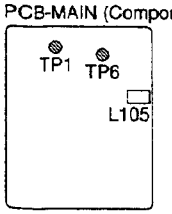


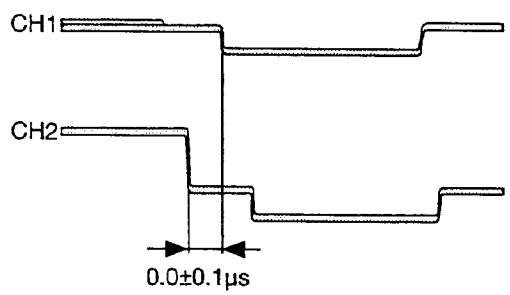
5. Clock Frequency 2	**Adjustment purpose**	To set the oscillating frequency of the input signal from sampling clock oscillator.
	Symptom when incorrectly adjusted	Picture to be printed cut or shrunk horizontally.

Measuring instrument	Oscilloscope
Test point	CH1 : TP1 CH2 : TP6
EXT trigger	– – –
Measurement range	DIV :CH1 50mV :CH2 0.1V TIM :1μs (DELAY mode)
Input signal	Video signal (staircase with window)
Input terminal	VIDEO IN terminal

1. Supply a video signal (staircase with window).
2. Select the ADJUSTMENT mode.
3. Press the ▼ button to set LED to *Fn*.
4. Connect CH1 of the oscilloscope to TP1 and CH2 to TP6.
5. Trigger in the falling of CH2 and magnify the portion.
6. Magnify the horizontal synchronization.
7. Adjust L105 so that tn in the following figure is 2.75±0.1μs.

PCB-MAIN (Component side)

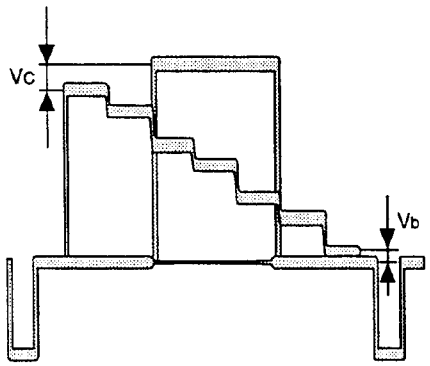




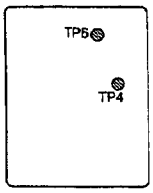
6. SUB-BRIGHT, SUB-CONTRAST	**Adjustment purpose**	To set the brightness and contrast of the input signal.
	Symptom when incorrectly adjusted	Poor brightness or poor contrast level of printed or monitored picture.

Measuring instrument	Oscilloscope
Test point	CH1 : TP6 CH2 : TP4
EXT trigger	– – –
Measurement range	DIV :10mV TIM :10μs
Input signal	Video signal (staircase with window)
Input terminal	VIDEO IN terminal

1. Supply a video signal (staircase with window).
2. Select the service mode.
3. Select the sub-bright setting mode.
4. Connect CH1 of the oscilloscope to TP6 and CH2 to TP4.
5. Trigger in the rising of CH2.
6. Observe the waveform at TP6.
7. Press ▲/▼ buttons so that Vb in the below figure is 0.04±0.01Vp-p.
8. Select the sub-contrast setting mode.
9. Press ▲/▼ buttons so that Vc in the below figure is 0.11±0.01Vp-p.



PCB-MAIN (Component side)



CHIP PARTS REPLACEMENT

CHIP PARTS REPLACEMENT

Some resistors, shorting jumpers (0Ω resistor), ceramic capacitors, transistors and diodes are chip parts which are used for certain circuit elements. When replacing these parts, note the following cautions.

Cautions:

A. Use fine tipped, well insulated soldering pencil (iron), about 30 watts, and tweezers.
B. Melt the solder and remove the Chip Parts carefully melt the solder and remove the chip Parts carefully so as not to tear off the copper foil of the printed circuit board not to tear off the copper foil of the printed circuit board.
C. Discard removed chips; do not reuse them.
D. Do not apply heat for more than 3 seconds to new chip Parts.
E. Avoid using a rubbing stroke when soldering.
F. Take care not to scratch, or damage the Chip Parts when soldering.
G. Supplementary cementing is not required.

1 Removal of Chip Parts (Resistors, capacitors, etc.)

A. Grasp the part with tweezers. Melt the solder at both sides alternately, remove one side of the part with a twisting motion.
B. Melt the solder at the other side and remove the part.

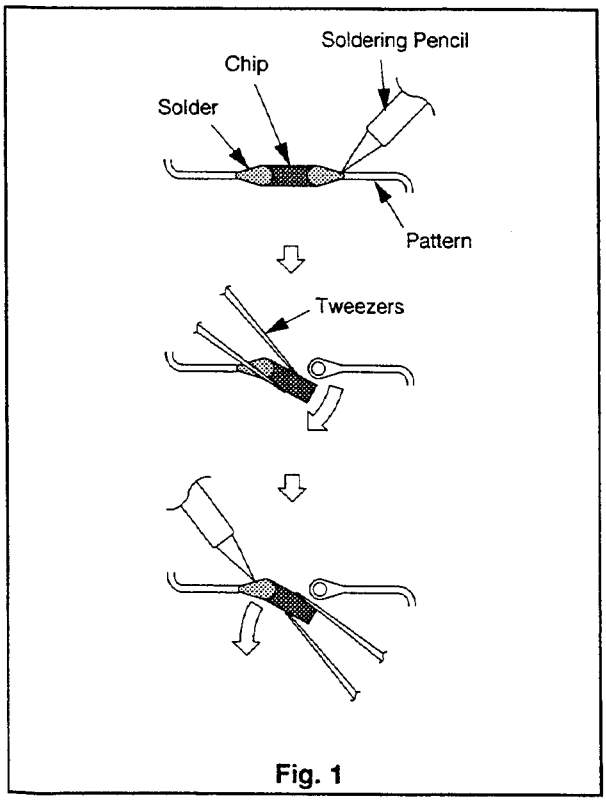


Fig. 1

2 Removal of Chip Parts (Transistors)

A. Melt the solder of one lead. Lift the side of that lead upward.
B. Simultaneously melt the solder of the two remaining leads and lift the part.

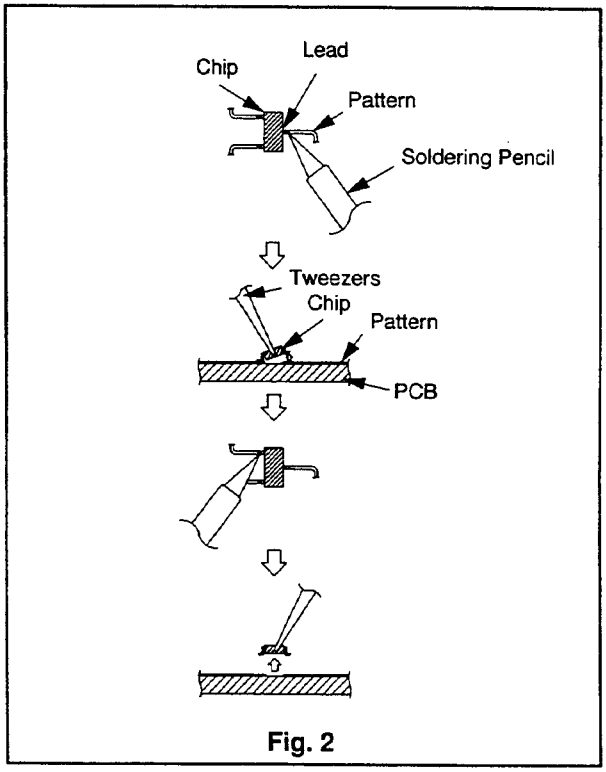


Fig. 2

3 Replacement

A. Presolder the contact points of the circuit pattern.
B. Press the part downward with tweezers and apply the soldering pencil as shown in Fig. 3.

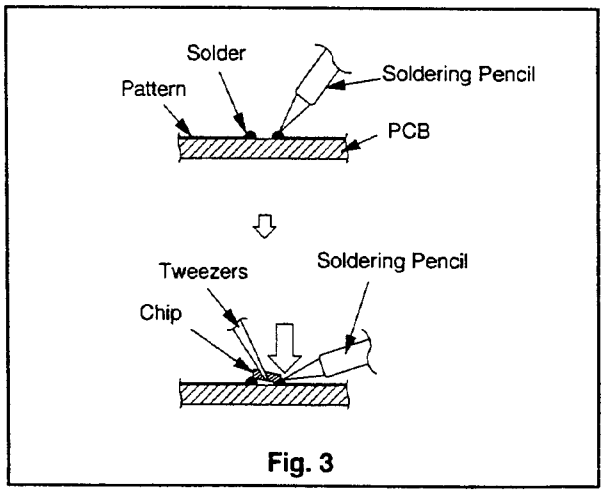


Fig. 3

PARTS LIST

MODEL : P90E

In order to expedite delivery of replacement part orders.

Specify : 1. Model number/Serial number
2. Part number and Description
3. Quantity

Unless full information is supplied, delay in execution of orders will result.

⚠ : Critical components

MARK	B	C	D	F	G	J	K
TOLERANCE (%)	± 0.1	± 0.25	± 0.5	± 1	± 2	± 5	± 10

MARK	M	N	V	X	Z	P	Q
TOLERANCE (%)	± 20	± 30	+ 10 − 10	+ 40 − 20	+ 80 − 20	+ 100 − 0	+ 30 − 10

MARK	B	C	D	F	G
TOLERANCE (pF)	± 0.1	± 0.25	± 0.5	± 1	± 2

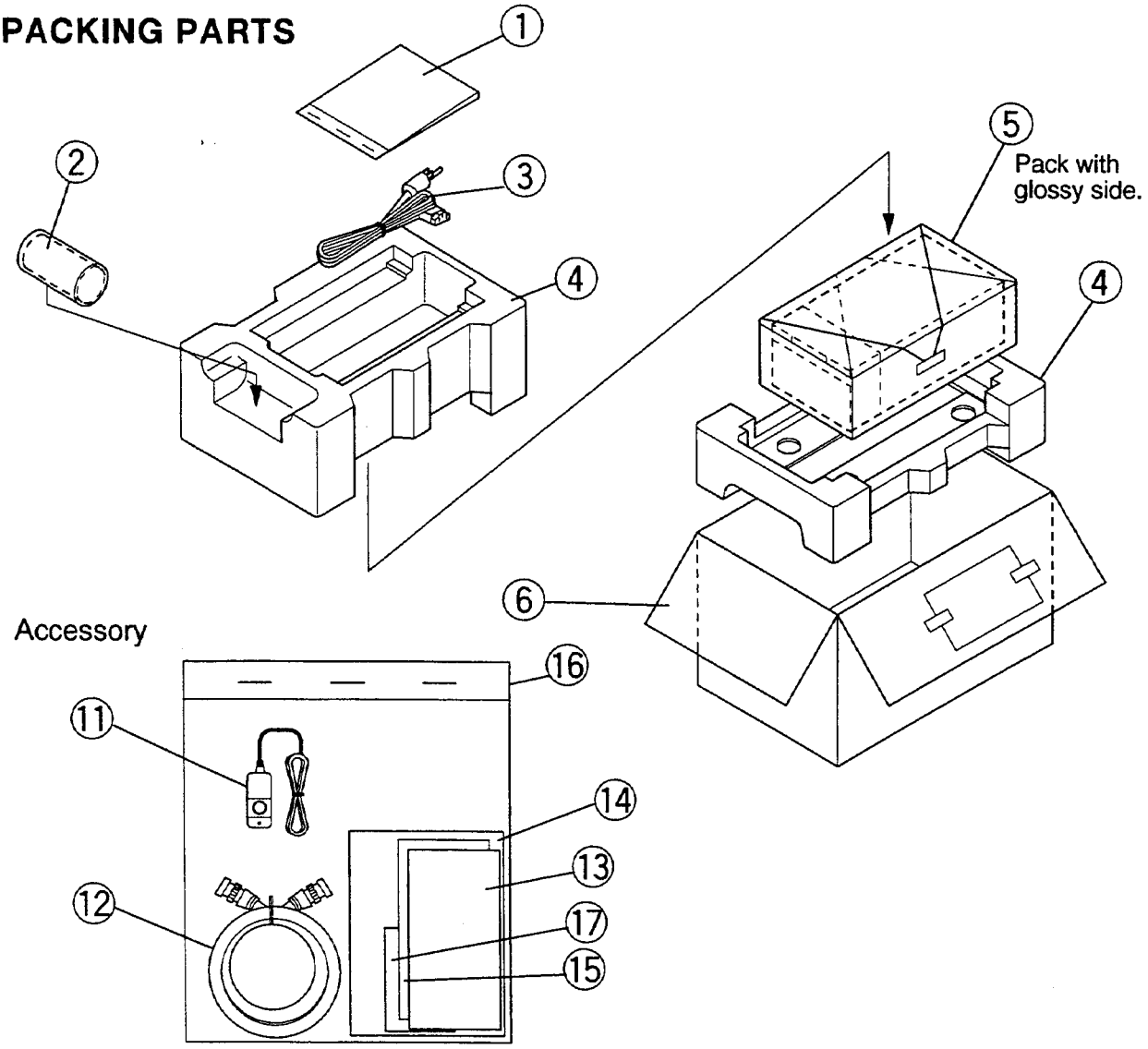
SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
		INTEGRATED CIRCUITS	
IC101	272P499010	IC	HA11465A
IC102	272P529010	IC	L78N09
IC103	266P923040	IC	NJM78L05A
IC104	272P151010	IC	NJM2217L
IC105	272P773010	IC	SN74LS221NS
IC106	263P485010	IC	MC74HC00AF
IC107	272P086020	IC	MB40576PF
IC108	272P087020	IC	MB40776PF
IC201	274P401010	IC	μPD65647GD-020-5BD
IC202	274P399010	IC	μPD424260V-80
IC203	274P399010	IC	μPD424260V-80
IC205	274P653010	IC	M60052-0216FP
IC206	274P398010	IC	M5M5256BFP-85
IC207	263P145010	IC	SC7S08F (E2)
IC301	263P748010	IC	M50734SP
IC302	274D016030	IC	M27C256B-12F1
IC303	274P467010	IC	CXK5864CM-70LL
IC304	263P599010	IC	M62352GP
IC305	274P397010	IC	BR93LC56F
IC306	272P357010	IC	PST529C (T529C)
IC307	272P175010	IC	M54567P
IC901	272P564010	IC	M51977P
IC951	272P240010	IC	M5237L
IC952	272P500010	IC	HA17431P
IC971	270P153010	IC	MC34063AP1
IC972	270P153010	IC	MC34063AP1
		TRANSISTORS	
Q 101	260P804030	CHIP TRANSISTOR	2SC3052-G
Q 102	260P804030	CHIP TRANSISTOR	2SC3052-G
Q 103	260P804030	CHIP TRANSISTOR	2SC3052-G
Q 104	260P806010	CHIP TRANSISTOR	DTA124EK
Q 105	260P849010	CHIP TRANSISTOR	IMZ1
Q 106	260P849010	CHIP TRANSISTOR	IMZ1
Q 107	260P849010	CHIP TRANSISTOR	IMZ1
Q 108	260P849010	CHIP TRANSISTOR	IMZ1
Q 109	260P817030	CHIP TRANSISTOR	2SA1037K-S
Q 110	260P809010	CHIP TRANSISTOR	DTC114YK
Q 301	260P802020	CHIP TRANSISTOR	2SA1235-F
Q 302	260P802020	CHIP TRANSISTOR	2SA1235-F
Q 303	260P852010	CHIP TRANSISTOR	FMG2
Q 304	260P852010	CHIP TRANSISTOR	FMG2
Q 305	260P852010	CHIP TRANSISTOR	FMG2
Q 306	260P852010	CHIP TRANSISTOR	FMG2
Q 307	260P852010	CHIP TRANSISTOR	FMG2
Q 308	260P849010	CHIP TRANSISTOR	IMZ1
Q 309	260P849010	CHIP TRANSISTOR	IMZ1
Q 310	260P849010	CHIP TRANSISTOR	IMZ1
Q 311	260P849010	CHIP TRANSISTOR	IMZ1
Q 312	260P807010	CHIP TRANSISTOR	UN2212
Q 313	260P807010	CHIP TRANSISTOR	UN2212
Q 314	260P852010	CHIP TRANSISTOR	FMG2
Q 315	260P806010	CHIP TRANSISTOR	DTA124EK
Q 316	260P807010	CHIP TRANSISTOR	UN2212
Q 317	260P806010	CHIP TRANSISTOR	DTA124EK
Q 318	260P807010	CHIP TRANSISTOR	UN2212
Q 320	260P804030	CHIP TRANSISTOR	2SC3052-G
Q 321	260P804030	CHIP TRANSISTOR	2SC3052-G
⚠ Q 901	260P700020	TRANSISTOR	2SK1462
Q 952	260P642030	TRANSISTOR	2SB883
		DIODES	
701	264P579010	LIGHT EMITTING DIODE	GL9E030
702	264P579010	LIGHT EMITTING DIODE	GL9E030
D 101	264P803010	CHIP DIODE	MC2838
D 102	264P803010	CHIP DIODE	MC2838
D 301	264P803010	CHIP DIODE	MC2838
D 302	264P816050	CHIP DIODE	RD7.5MB2
D 303	264P816050	CHIP DIODE	RD7.5MB2
D 304	264P816050	CHIP DIODE	RD7.5MB2
⚠ D 901	264P535010	DIODE	RBV-608
D 903	264P578010	DIODE	RG 2A
D 905	264P522010	DIODE	RU 1P
D 951	264P580010	DIODE	ESAC92M-02
D 957	264P045040	DIODE	1S2471OM
D 971	264P657010	DIODE	EK14V
D 972	264P657010	DIODE	EK14V
D 973	264P470060	DIODE	RD33EB2
D 974	264P045040	DIODE	1S2471OM
D 975	264P484040	DIODE	RD5.6FB3
D 976	264P045040	DIODE	1S2471OM
D 977	264P489010	DIODE	RD16FB1
D 978	264P045040	DIODE	1S2471OM
		OTHER SEMICONDUCTORS	
⚠ RT901	265P099010	POSITIVE THERMISTOR	16D-13F2
		FILTERS	
CF201	299P185010	CERAMIC RESONATOR	CSA20.00MXZ04
		COILS	
L 101	349P064020	TRAP COIL	3.58MHz
L 102	320P022020	TRAP COIL	4.43MHz
L 103	325C161030	PEAKING COIL	10μH-K
L 105	349P179050	OSCILLATOR COIL	
L 106	325C161030	PEAKING COIL	10μH-K
L 201	325C140090	CHIP COIL	4.7μH-M
⚠ L 901	351P047080	LINE FILTER	ELF-18D850T
L 951	351P114010	COIL	TM05141N7
L 970	411D021010	FERRITE CORE FILTER	
L 971	411D021010	FERRITE CORE FILTER	
L 972	411D021010	FERRITE CORE FILTER	
L 973	351P113010	COIL	220μH-K 1.1A
L 974	351P113010	COIL	220μH-K 1.1A

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
		TRANSFORMERS	
⚠ T 901	350P501010	POWER	
		VARIABLE RESISTORS	
⚠ R 929	109D031090	SOLID	1/2W 470kΩ-K
VR102	127C490080	VR-SEMIFIXED	1/5W B10kΩ+-25%
VR103	127C491000	VR-SEMIFIXED	1/5W B30kΩ+-25%
VR104	127C390080	VR-SEMIFIXED	1/5W B10kΩ-M
VR951	127C190090	VR-SEMIFIXED	1/10W B20kΩ-M
VR971	127C190070	VR-SEMIFIXED	1/5W B5kΩ-M
		RESISTORS	
R 101	103P470050	CHIP RESISTOR	1/10W 150Ω-F
R 102	103P470050	CHIP RESISTOR	1/10W 150Ω-F
R 103	103P404010	CHIP RESISTOR	1/10W 22kΩ-J
R 104	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 105	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 106	103P472050	CHIP RESISTOR	1/10W 1kΩ-F
R 107	103P404020	CHIP RESISTOR	1/10W 27kΩ-J
R 108	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 109	103P472030	CHIP RESISTOR	1/10W 820Ω-F
R 110	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 111	103P404010	CHIP RESISTOR	1/10W 22kΩ-J
R 112	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 113	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 114	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 115	103P473070	CHIP RESISTOR	1/10W 3.3kΩ-F
R 116	103P472050	CHIP RESISTOR	1/10W 1kΩ-F
R 117	103P474010	CHIP RESISTOR	1/10W 4.7kΩ-F
R 118	103P402030	CHIP RESISTOR	1/10W 680Ω-J
R 119	103P404080	CHIP RESISTOR	1/10W 82kΩ-J
R 120	103P403080	CHIP RESISTOR	1/10W 12kΩ-J
R 121	103P402090	CHIP RESISTOR	1/10W 2.2kΩ-J
R 122	103P402040	CHIP RESISTOR	1/10W 820Ω-J
R 123	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 124	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 125	103P404010	CHIP RESISTOR	1/10W 22kΩ-J
R 126	103P409090	CHIP RESISTOR	1/10W 75Ω-J
R 127	103P482010	CHIP METAL	1/4W 470Ω-J
R 128	103P474090	CHIP RESISTOR	1/10W 10kΩ-F
R 129	103P475000	CHIP RESISTOR	1/10W 11kΩ-F
R 130	103P403010	CHIP RESISTOR	1/10W 3.3kΩ-J
R 131	103P406010	CHIP RESISTOR	1/10W 1MΩ-J
R 132	103P402090	CHIP RESISTOR	1/10W 2.2kΩ-J
R 133	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 134	103P474090	CHIP RESISTOR	1/10W 10kΩ-F
R 135	103P474090	CHIP RESISTOR	1/10W 10kΩ-F
R 136	103P402020	CHIP RESISTOR	1/10W 560Ω-J
R 137	103P402090	CHIP RESISTOR	1/10W 2.2kΩ-J
R 138	103P474050	CHIP RESISTOR	1/10W 6.8K
R 139	103P403060	CHIP RESISTOR	1/10W 8.2kΩ-J
R 140	103P403030	CHIP RESISTOR	1/10W 4.7kΩ-J
R 141	103P400010	CHIP RESISTOR	1/10W 10Ω-J
R 142	103P401090	CHIP RESISTOR	1/10W 330Ω-J
R 143	103P401090	CHIP RESISTOR	1/10W 330Ω-J
R 144	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 145	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 146	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 147	103P402020	CHIP RESISTOR	1/10W 560Ω-J
R 148	103P402020	CHIP RESISTOR	1/10W 560Ω-J
R 149	103P404090	CHIP RESISTOR	1/10W 100kΩ-J
R 150	103P404080	CHIP RESISTOR	1/10W 82kΩ-J
R 151	103P404000	CHIP RESISTOR	1/10W 18kΩ-J
R 201	103P401070	CHIP RESISTOR	1/10W 220Ω-J
R 202	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 203	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 204	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 205	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 206	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 207	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 208	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 209	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 210	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 211	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 212	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 213	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 214	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 215	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 216	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 217	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 218	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 219	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 220	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 221	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 222	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 223	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 224	103P401000	CHIP RESISTOR	1/10W 56Ω-J
R 225	103P400090	CHIP RESISTOR	1/10W 47Ω-J
R 226	103P406010	CHIP RESISTOR	1/10W 1MΩ-J
R 301	103P401090	CHIP RESISTOR	1/10W 330Ω-J
R 302	103P401090	CHIP RESISTOR	1/10W 330Ω-J
R 303	103P401090	CHIP RESISTOR	1/10W 330Ω-J
R 304	103P401090	CHIP RESISTOR	1/10W 330Ω-J
R 305	103P401090	CHIP RESISTOR	1/10W 330Ω-J
R 306	103P401090	CHIP RESISTOR	1/10W 330Ω-J
R 307	103P401090	CHIP RESISTOR	1/10W 330Ω-J
R 308	103P401090	CHIP RESISTOR	1/10W 330Ω-J
R 309	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 310	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 311	103P402090	CHIP RESISTOR	1/10W 2.2kΩ-J
R 312	103P402090	CHIP RESISTOR	1/10W 2.2kΩ-J
R 313	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 314	103P404010	CHIP RESISTOR	1/10W 22kΩ-J
R 315	103P404010	CHIP RESISTOR	1/10W 22kΩ-J
R 316	103P404010	CHIP RESISTOR	1/10W 22kΩ-J
R 317	103P404010	CHIP RESISTOR	1/10W 22kΩ-J
R 318	103P401060	CHIP RESISTOR	1/10W 180Ω-J
R 319	103P401060	CHIP RESISTOR	1/10W 180Ω-J

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
R 320	103P408040	CHIP RESISTOR	1/10W 2.2Ω-K
R 321	103P408040	CHIP RESISTOR	1/10W 2.2Ω-K
R 322	103P408040	CHIP RESISTOR	1/10W 2.2Ω-K
R 323	103P401030	CHIP RESISTOR	1/10W 100Ω-J
R 324	103P404020	CHIP RESISTOR	1/10W 27kΩ-J
R 325	103P400070	CHIP RESISTOR	1/10W 33Ω-J
R 326	103P470050	CHIP RESISTOR	1/10W 150Ω-F
R 327	103P475050	CHIP RESISTOR	1/10W 18kΩ-F
R 328	103P400010	CHIP RESISTOR	1/10W 10Ω-J
R 329	103P402080	CHIP RESISTOR	1/10W 1.8kΩ-J
R 330	103P402080	CHIP RESISTOR	1/10W 1.8kΩ-J
R 331	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 332	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 333	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 334	103P402080	CHIP RESISTOR	1/10W 1.8kΩ-J
R 335	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 336	103P402090	CHIP RESISTOR	1/10W 2.2kΩ-J
R 337	103P402090	CHIP RESISTOR	1/10W 2.2kΩ-J
R 338	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 339	103P404090	CHIP RESISTOR	1/10W 100kΩ-J
R 340	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 341	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 342	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 343	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 344	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 345	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 346	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 347	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 348	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 349	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 350	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 351	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 352	103P404090	CHIP RESISTOR	1/10W 100kΩ-J
R 353	103P473090	CHIP RESISTOR	1/10W 3.9kΩ-F
R 354	103P404090	CHIP RESISTOR	1/10W 100kΩ-J
R 356	103P477030	CHIP RESISTOR	1/10W 100kΩ-F
R 357	103P472050	CHIP RESISTOR	1/10W 1kΩ-F
R 358	103P473090	CHIP RESISTOR	1/10W 3.9kΩ-F
R 359	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 360	103P472010	CHIP RESISTOR	1/10W 680Ω-F
R 361	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 362	103P471010	CHIP RESISTOR	1/10W 270Ω-F
R 363	103P471010	CHIP RESISTOR	1/10W 270Ω-F
⚠ R 902	103C194070	METAL	3W 68kΩ-J
⚠ R 903	103C184060	METAL	2W 56kΩ-J
⚠ R 907	103C194080	METAL	3W 82kΩ-J
⚠ R 908	103C194080	METAL	3W 82kΩ-J
		CAPACITORS AND TRIMMERS	
C 103	154P331030	CHIP CAPACITOR	CH50V 12pF-J
C 105	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 107	154P330030	CHIP CAPACITOR	CK50V 2pF-C
C 108	154P330030	CHIP CAPACITOR	CK50V 2pF-C
C 109	154P330080	CHIP CAPACITOR	CH50V 7pF-C
C 112	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 113	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 114	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 117	154P331090	CHIP CAPACITOR	CH50V 22pF-J
C 121	154P335090	CHIP CAPACITOR	CH50V 1000pF-J
C 122	141P139030	CHIP CAPACITOR	B25V 0.1μF-K
C 127	154P335010	CHIP CAPACITOR	CH50V 470pF-J
C 129	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 130	154P335010	CHIP CAPACITOR	CH50V 470pF-J
C 132	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 137	141P130090	CHIP CAPACITOR	B50V 1000pF-K
C 138	141P130090	CHIP CAPACITOR	B50V 1000pF-K
C 140	154P331010	CHIP CAPACITOR	CH50V 10pF-C
C 141	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 143	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 145	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 146	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 201	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 202	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 203	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 205	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 206	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 207	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 208	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 209	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 210	154P330060	CHIP CAPACITOR	CH50V 5pF-C
C 211	154P330060	CHIP CAPACITOR	CH50V 5pF-C
C 212	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 304	141P132010	CHIP CAPACITOR	B50V 0.01μF-K
C 308	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 309	141P132010	CHIP CAPACITOR	B50V 0.01μF-K
C 310	141P132010	CHIP CAPACITOR	B50V 0.01μF-K
C 311	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 312	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 313	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 314	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 315	141P132010	CHIP CAPACITOR	B50V 0.01μF-K
C 316	141P132010	CHIP CAPACITOR	B50V 0.01μF-K
C 317	141P132010	CHIP CAPACITOR	B50V 0.01μF-K
C 320	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 321	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z
C 322	141P132010	CHIP CAPACITOR	B50V 0.01μF-K
C 323	141P132010	CHIP CAPACITOR	B50V 0.01μF-K
⚠ C 901	189P113010	C-M-P-AC	AC125V 0.47μF-M
C 904	189P075010	C-M-PLASTIC-PP	800V 0.01μF-J
⚠ C 905	189P153060	C-M-P-AC	AC250V 0.22μF-M
⚠ C 906	189P094050	C-CERAMIC-AC	ACT4K E1000pF-M
⚠ C 907	189P094050	C-CERAMIC-AC	ACT4K E1000pF-M
⚠ C 908	185D056040	ELECTROLYTIC-C	H400V 330μF-M
⚠ C 914	189P027050	C-CERAMIC-AC	F VA1 2200pF-M
		SWITCHES	
S 101	431C078020	SWITCH DIP	10KEY TATEGATA
S 701	432P189010	KEY BOARD SWITCH	
⚠ S 901	432C067010	SWITCH PUSH	2-1 AC250V 5A

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
		MISCELLANEOUS	
	916B024006	POWER ASSY	
	460P156010	HEAD	KST-100-12MPL19-MB
⚠	451C121010	AC POWER JACK(3P)	INLET-AC-3P
	939C068010	SH SENSOR UNIT	PAPER DETECT 3, HEAD DETECT
	939C067010	SP SENSOR UNIT	PAPER DETECT 1
	939C066010	PT SENSOR UNIT	PAPER DETECT 2
	288P104010	STEP MOTOR	42SIN-15KCNC
	939C069010	SR SENSOR UNIT	DOOR DETECT
BZ301	286P011010	BUZZER	PKM22EPP-4001
⚠ F 901	283D101060	FUSE	T3.15AH250V
⚠ F 902	283D101060	FUSE	T3.15AH250V
IC303	449P013090	SOCKET IC	28PIN
J 101	452D199010	CONNECTOR BNC	
J 102	452D199010	CONNECTOR BNC	
J 301	451C066010	JACK	
K 101	287P058010	RELAY	G5A-237P DC12V
⚠ PC901	268P049020	PHOTO COUPLER	TLP732
⚠ PC902	268P049020	PHOTO COUPLER	TLP732
⚠ RV902	265P105020	VARISTOR	ENC471D-10A
⚠ RV903	265P105020	VARISTOR	ENC471D-10A
TP 1	299P136010	CHIP CHECKER	2125
TP 2	299P136010	CHIP CHECKER	2125
TP 3	299P136010	CHIP CHECKER	2125
TP 4	299P136010	CHIP CHECKER	2125
TP 5	299P136010	CHIP CHECKER	2125
TP 6	299P136010	CHIP CHECKER	2125
TP 30	299P136010	CHIP CHECKER	2125
⚠ Z 901	265P103010	VARISTOR	DSA-362MA-UL
		PRINTED CIRCUIT BOARD ASSY'S	
⚠	936C085001	LED PCB ASSY	
⚠	936B078003	MAIN PCB ASSY	
⚠	936C084001	POWER PCB ASSY	
⚠	936C086001	SW PCB ASSY	
		MECHANICAL PARTS	
	243C165010	CARD LEAD	
	939C065010	PLATEN ROLLER UNIT	
	641C474010	DAMPER	
	685C002060	RETAINING RING	E-3
	552D112010	THRUST WASHER	
	597D250010	WASHER	
	572D739010	SLIP SPRING	
	621C401010	GEAR D	
	621C402010	CAM GEAR F	
	621C399010	GEAR A	
	621C400010	GEAR B	
	631D585010	GEAR C	
	685C002040	RETAINING RING	E-2
	622D457010	PLATEN BUSH	
	669D199010	SCREW	M3X4-0.5
	669D245010	SCREW	M4X0.7-8
	669D204090	SCREW	M2.6X6
	669D212020	SCREW	3X8 83AF
	669D229010	SCREW	M3X6 46LA005
	669D220020	SCREW	3X8 46LA005
	442D111010	TERMINAL EARTH	
		COSMETIC PARTS	
	597D281060	TOP PANEL ASSY	
	734C019010	BUTTON POWER	
	754C021050	BUTTON SWITCH	701A608-10(16)
	702B977020	DOOR	
	734D579010	KNOB LEVER	
	771D099010	PAD	
	701A608010	FRONT PANEL UNIT	
	939P585020	PRINTER UNIT	
		PACKING PARTS AND ACCESSORY	
⚠	242C795090	AC POWER CORD	
	242D232010	CABLE BNC	BNC-BNC 2.0m
	857P004020	CLEANING PAPER	
	803B759010	PACKING CUSHION	
	871C951010	INSTRUCTION BOOK	
	801C279020	PACKING CASE	
	831D246040	PACKING SHEET	
	831D183040	PACKING BAG	400X270
	939P414010	REMOTE HAND UNIT	

PACKING PARTS



ITEM NO.	PARTS NO.	PARTS NAME	DESCRIPTION
1	☆	ACCESSORY	(859D150002)
2	☆	PAPER	(859P023030)
⚠ 3	242C795090	AC POWER CORD	
4	803B759010	PACKING CUSHION	
5	831D246040	PACKING SHEET	
6	801C279020	PACKING CASE	
		ACCESSORY	
11	939P414010	REMOTE HAND UNIT	
12	242D232010	CABLE BNC	
13	857D004020	CLEANING PAPER	
14	871C951010	INSTRUCTION BOOK	
15	☆	DOOR LABEL	(855D284020)
16	831D183040	PACKING BAG	
17	☆	CAUTION LABEL	(854D837050)

☆:Not a stocked item

LEAD DRESS

The figure below shows the leads fastened with each clamp. Refer to the clamp list for detail.
The lead wires to be clamped are listed in the table below.

NOTE: The inner wires are clamped so that do not come close to heat generating or high voltage components After servicing route all wires in their original position.

※Reverse printed character indicates aerial clamp.
The alphabet characters (Ⓐ.Ⓑetc) represent UL tapes fastening tape designated by UL.

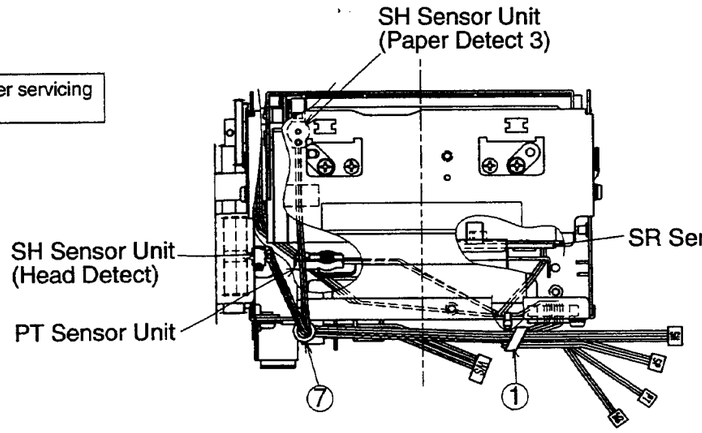


Fig.2 (Printer Unit Top View)

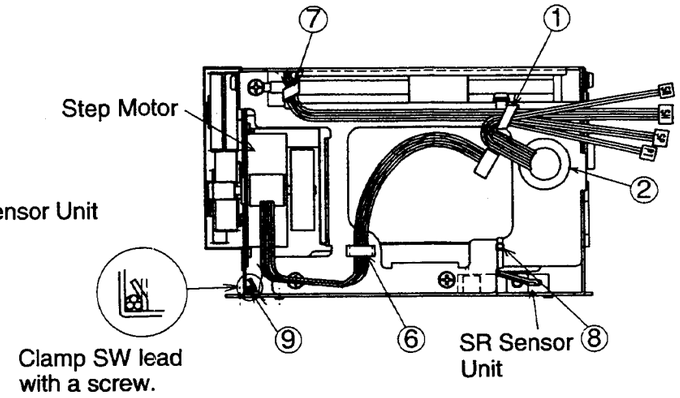


Fig.3 (Printer Unit Side View of Rear)

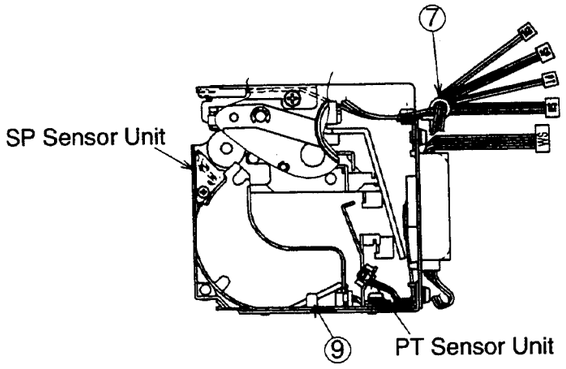


Fig.1 (Printer Unit Right Side View)

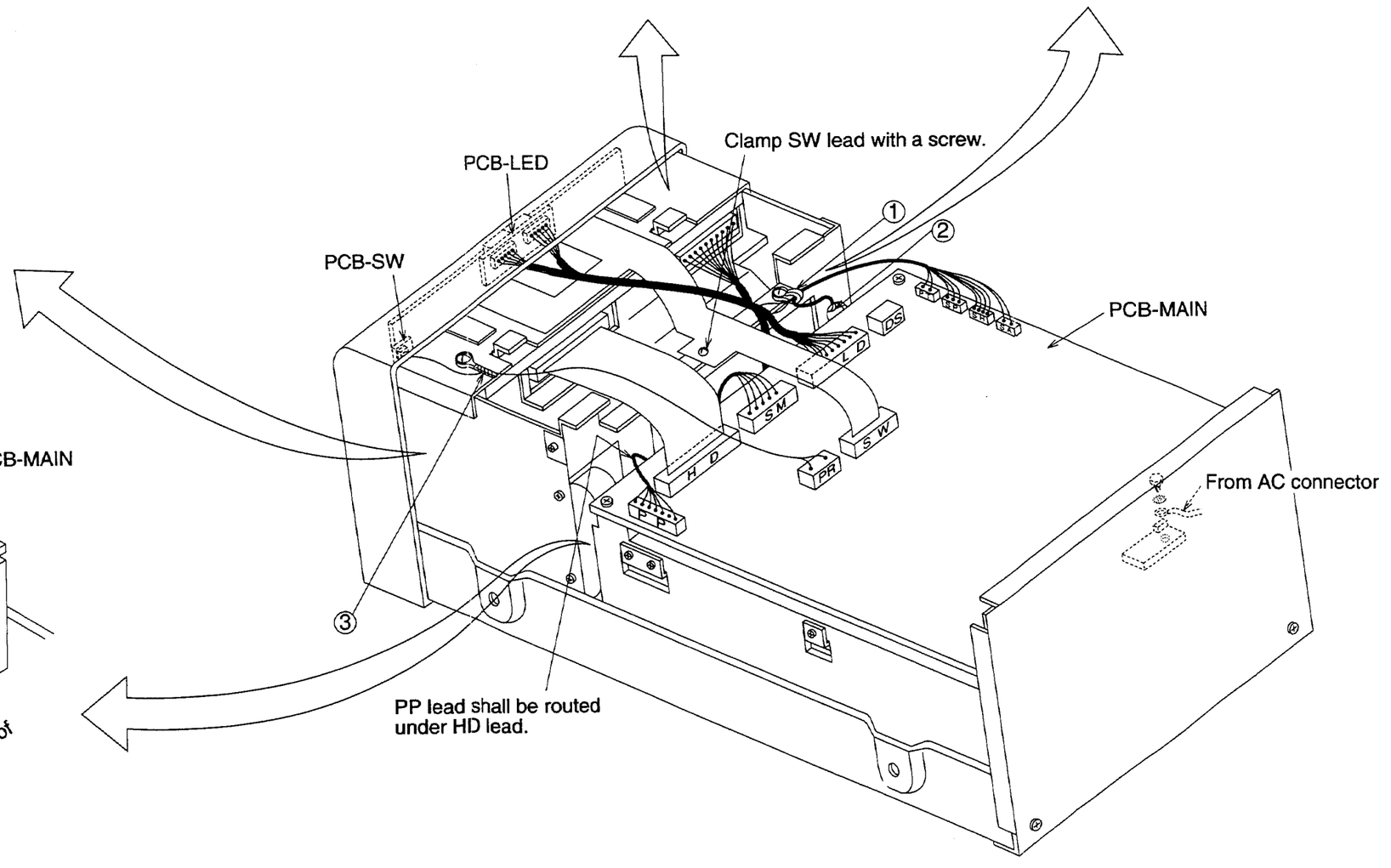


Fig.5

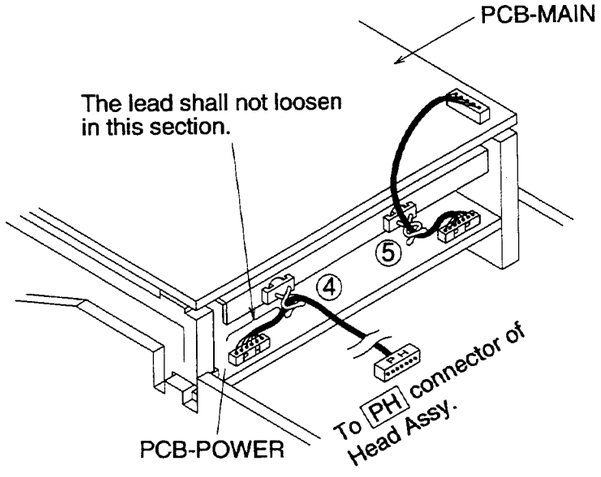


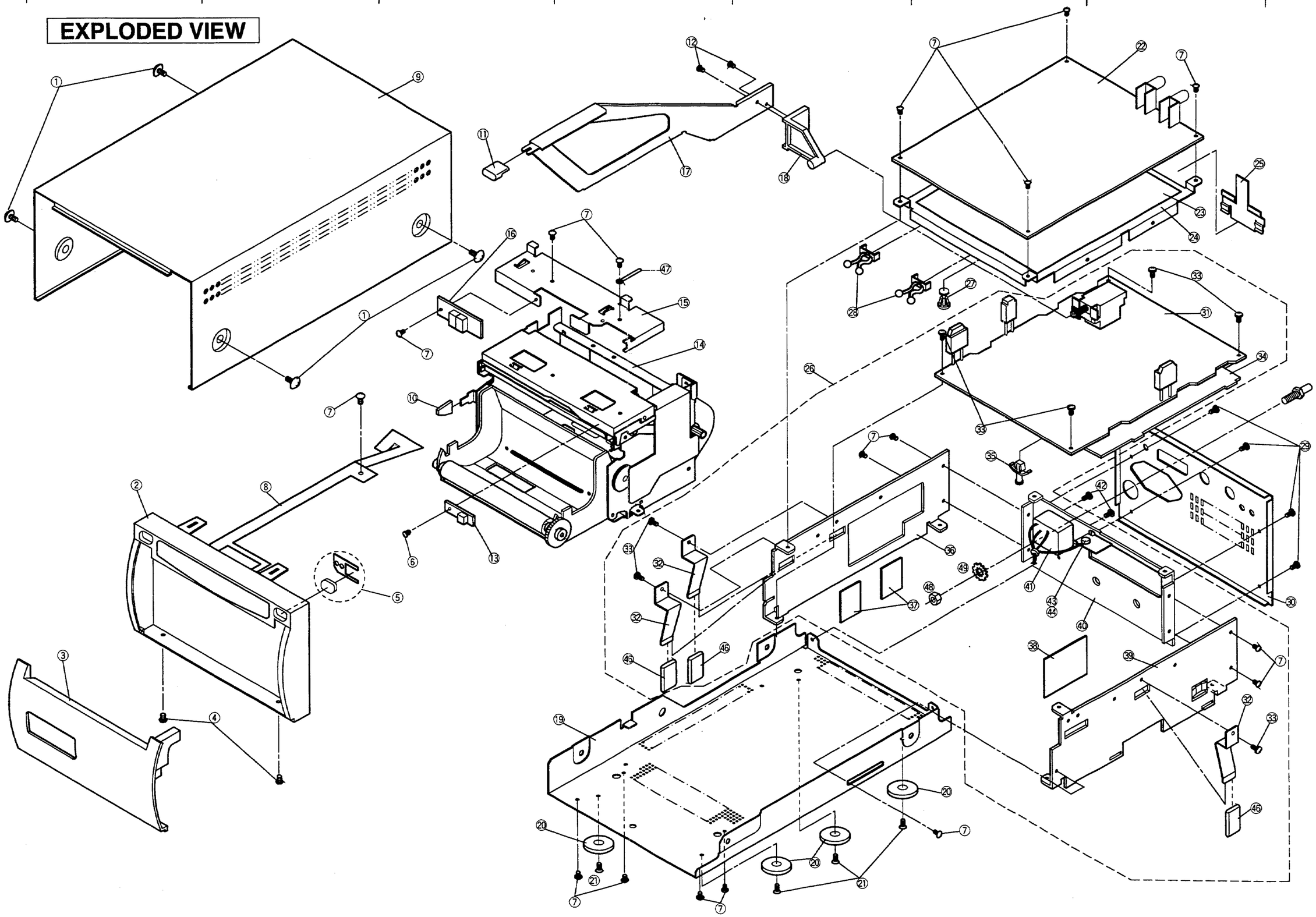
Fig.4

CLAMPED FOR CONNECTOR LEAD

CONNECTOR LEAD	CLAMPER NO.			NOTE
PH	PCB-POWER	④	Head Assy	Fig.4
PP	PCB-POWER	⑤	PCB-MAIN	Fig.4, Fig.5
PR	PCB-MAIN	③	PCB-SW	Fig.5
PT	PCB-MAIN	①②⑧	PT Sensor Unit	Fig.2, Fig.3, Fig.5
SH	PCB-MAIN	①⑦	SH Sensor Unit (Head Detect)	Fig.1, Fig.2, Fig.3, Fig.5
SH	PCB-MAIN	①⑦	SH Sensor Unit (Paper Detect 3)	Fig.1, Fig.2, Fig.3, Fig.5
SM	PCB-MAIN	⑥	Step Motor	Fig.3
SP	PCB-MA	①②⑧⑨	SP Sensor Unit	Fig.1, Fig.2, Fig.3, Fig.5
SR	PCB-MAIN	①②⑧	SR Sensor Unit	Fig.2, Fig.3, Fig.5

SR Sensor Unit : Door Detect　PT Sensor Unit : Paper Detect 2　SP Sensor Unit : Paper Detect 1
SH Sensor Unit : Head Detect　SH Sensor Unit : Paper Detect 3

EXPLODED VIEW



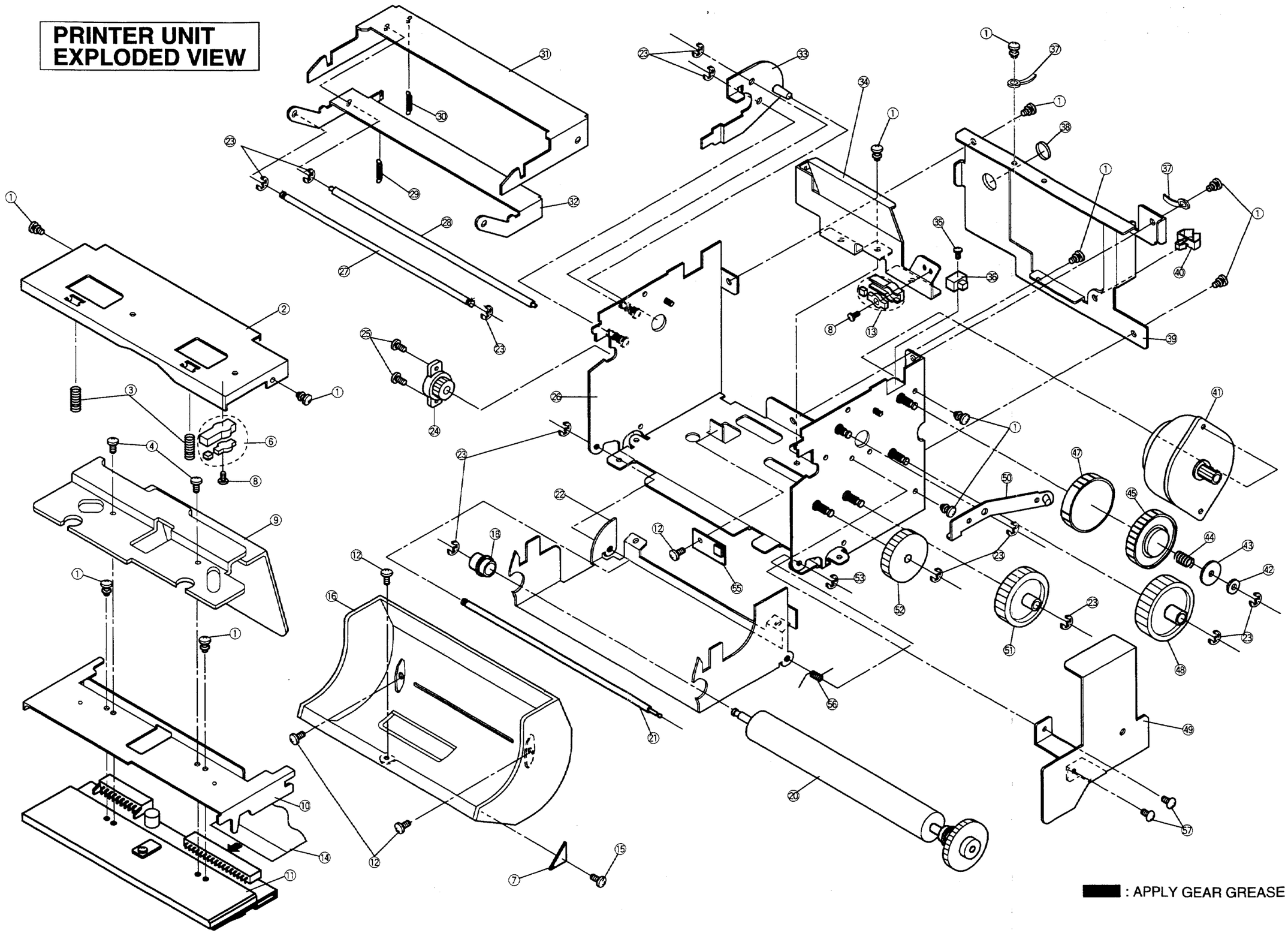
PARTS LIST

In order to expedite delivery of replacement part orders.
Specify : 1. Model number/Serial number
2. Part number and Description
3. Quantity
Unless full information is supplied, delay in execution of orders will result.
⚠ : Critical components

SYMBOL NO.	PARTS NO.	ADDRESS		PARTS NAME	DESCRIPTION
1	☆	A-1	B-2	SCREW	(669D323O70) SWCH
2	701A608O10	C-1		FRONT PANEL UNIT	
3	702B977O20	D-1		DOOR	
4	669D199O10	E-2		SCREW	D=M3X0.5 L=4 83AF
5	754C021O50	D-3		BUTTON SWITCH	
6	669D204O90	D-3		SCREW	M2.6X0.45-6
7	669D229O10	A-6	A-7	SCREW	M3.0X6 46LA005
		B-3	B-4		
		C-2	C-5		
		D-8	E-6		
		F-4			
8	☆	C-2		SW MEMBRANE	(439C037O10)
9	597D281O60	A-3		TOP PANEL ASSY	
10	734D579O10	C-3		KNOB LEVER	
11	734C019O10	A-3		BUTTON POWER	
12	669D220O20	A-4		SCREW	3X8 46LA005
⚠ 13	936C086O01	D-3		SW PCB ASSY	
14	939P585O40	B-4		PRINTER UNIT	
15	☆	B-4		FRONT BRACKET	(593C702O10)
⚠ 16	936C085O01	B-3		LED PCB ASSY	
17	☆	A-4		LEVER SW	(593C645O10)
18	☆	A-5		LEVER POWER SW	(622D391O10)
19	☆	E-4		BASE CHASSIS	(590A496O10)
20	771D099O10	E-3	E-5	PAD	
		E-6			
21	☆	E-4	E-5	SCREW	(669D189O50) 3X6
⚠ 22	936B078O03	A-7		MAIN PCB ASSY	
23	☆	B-7		TOP BARRIER	(223C076O10)
24	☆	B-7		TOP HOLDER	(591B985O10)
25	☆	A-7		EARTH PLATE	(292D875O10)
26	916B024O06	C-5		POWER UNIT	
27	☆	B-6		SUPPORT	(540D245O10)
28	☆			LEAD CLAMPER	(540D124O10)
29	669D212O20	C-8		SCREW	D=3 L=8 83AF
30	☆	D-8		REAR PANEL	(592B175O20)
⚠ 31	936C084O01	B-7		POWER PCB ASSY	
32	☆	D-4	D-7	HOLDER IC 2	(597D095O01)
33	☆	B-7	C-6	SCREW	(650P300O60) M3X0.5-6 46LA005
		D-4	D-8		
		E-7			
34	☆	B-8		BOTTOM BARRIER	(223C075O10)
35	☆	C-6		SPACER	(540D191O10)
36	☆	D-6		PLATE SIDE L	(593C502O10)
37	☆	D-6		INSULATOR	(221D032O20)
38	☆	D-6		INSULATOR	(221D032O30)
39	☆	D-7		PLATE SIDE R	(593C501O10)
40	☆	D-6		REAR HOLDER	(593C503O10)
⚠ 41	451D121O10	D-6		AC POWER JACK (3P)	
42	☆	C-7		SCREW	(669D189O70) 3X10
43	669D245O10	D-6		SCREW	M4X0.7-8
44	☆	D-6		WASHER	(683D048O10) 0.45X4.3X8.5
45	442D111O10	C-8		TERMINAL EARTH	
46	☆	D-4	E-8	SUMI TUBE	SUMI-TUBE-F2 CAT-821 18-9 BLK
47	☆	B-4		LEAD CLAMPER	(540D074O40)
48	☆	D-6		HEX NUT	(670P160O10) FEI M6 46A005
49	☆	D-6		TOOTHED WASHER	(683D150O40) 6.4

☆ : Not a stocked item.

PRINTER UNIT EXPLODED VIEW



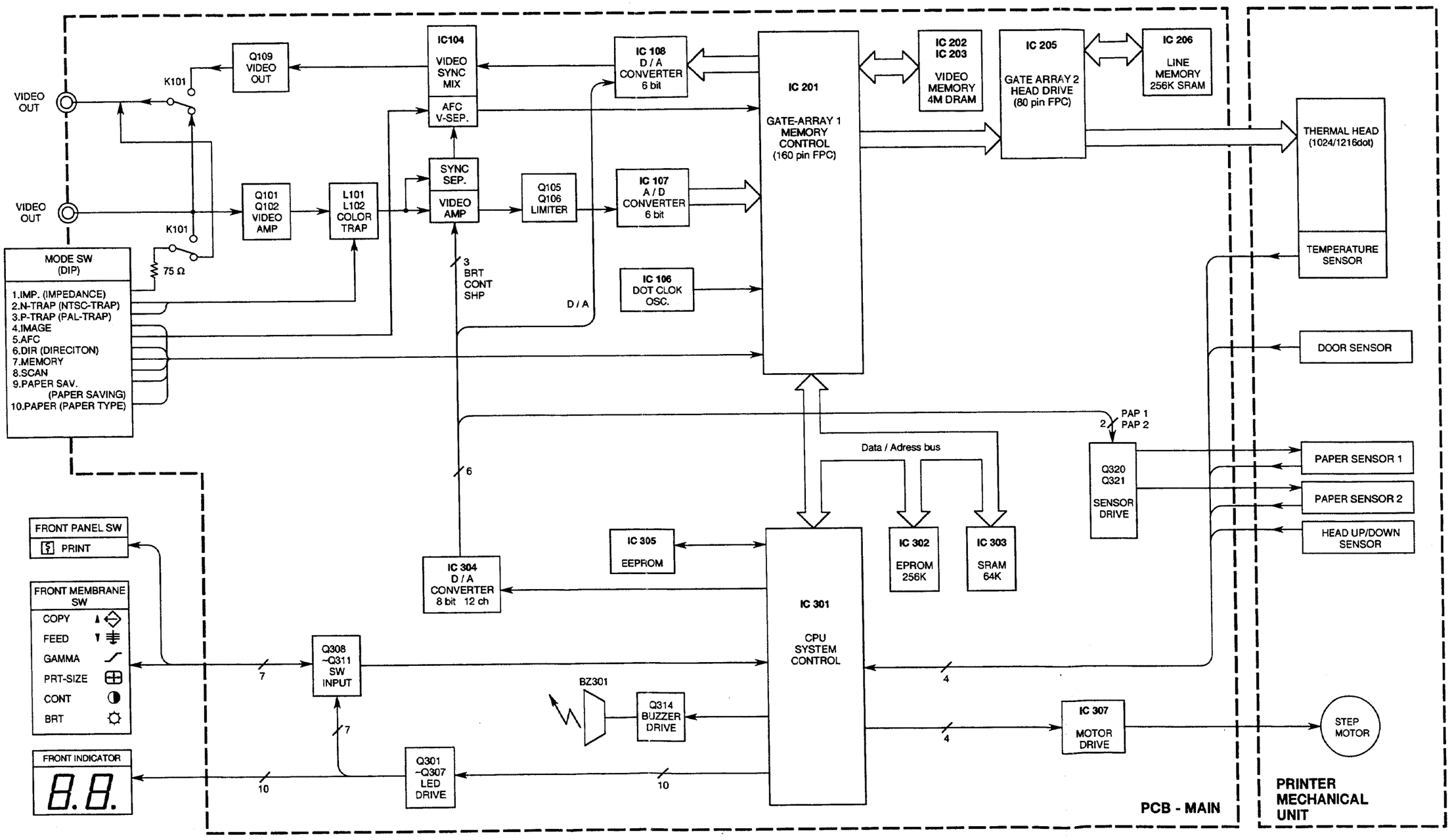
PARTS LIST

In order to expedite delivery of replacement part orders.
Specify : 1. Model number/Serial number
2. Part number and Description
3. Quantity
Unless full information is supplied, delay in execution of orders will result.
⚠ : Critical components

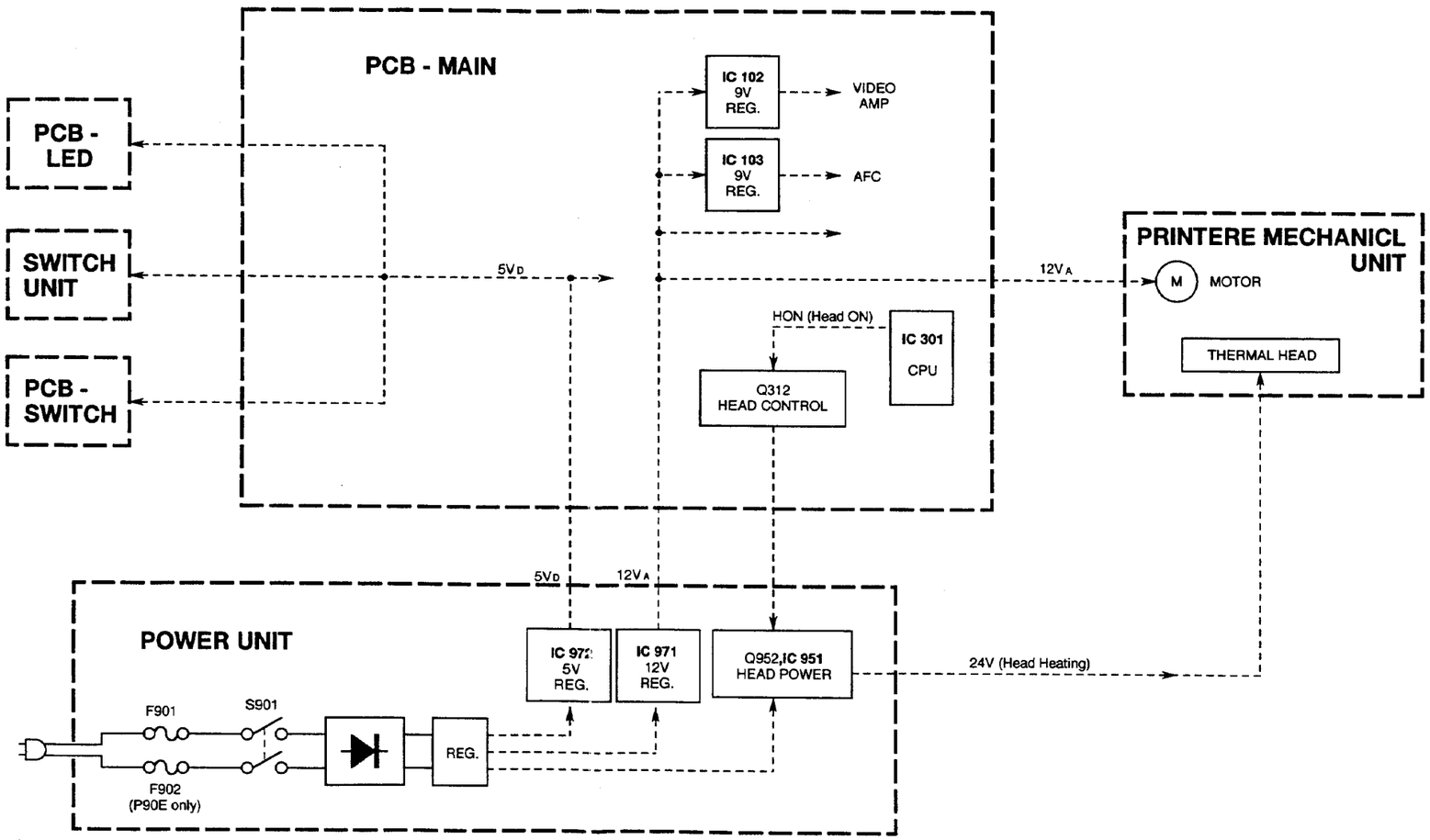
SYMBOL NO.	PARTS NO.	ADDRESS		PARTS NAME	DESCRIPTION
1	☆	A-5	A-6	SCREW	M3X0.5 L=5
		B-1	B-7		
		C-2	C-6		
		D-1	D-2		
2	☆	B-2		UPPER PLATE	(593C654O10)
3	☆	C-1		HEAD SPRING	(572D478O10)
4	☆	C-1		SCREW	(650P300O50) M3X0.5 L=5
5	- - -	- - -		- - -	- - -
6	939C068O10	B-5	C-2	SH SENSOR UNIT	PAPER DETECT 3, HEAD DETECT
7	939C067O10	E-3		SP SENSOR UNIT	PAPER DETECT 1
8	☆	B-5	C-2	SCREW	M2X0.4 L=4
9	☆	C-2		HEAT SINK	(593C650O10)
10	☆	E-2		HEAD HOLDER	(593C647O10)
11	460P156O10	E-2		HEAD	KST-100-10MPL16-MB
12	☆	C-4	D-2	SCREW	(669D199O70) M2.6X0.45 L=5 83AF
		E-2			
13	939C066O10	B-5		PT SENSOR UNIT	PAPER DETECT 2
14	243C165O10	E-2		CARD LEAD	
15	☆	E-4		SCREW	
16	☆	D-2		PAPER GUIDE	(621A003O10)
17	- - -	- - -		- - -	
18	622D457O10	C-3		PLATEN BUSH	
19	- - -	- - -		- - -	- - -
20	939C065O10	E-5		PLATEN ROLLER UNIT	
21	☆	E-4		HOLDER SHAFT	(631D589O10)
22	☆	C-3		PAPER HOLDER	(592B177O10)
23	685C002O60	A-2	A-4	RETAINING RING	E-3
		B-3	C-3		
		D-6	D-7		
24	641C474O10	C-3		DAMPER	
25	☆	B-2		SCREW	M2X0.4 L=3
26	☆	C-3		FRAME	(591A018O10)
27	☆	B-2		GUIDE SHAFT	(631D588O10)
28	☆	B-3		LOCK SHAFT	(631D587O10)
29	☆	B-3		LOCK SPRING	(572D488O20)
30	☆	A-3		LOCK SPRING	(572D488O10)
31	☆	A-3		LOCK PLATE	(593C648O10)
32	☆	B-4		GUIDE PLATE	(593C649O10)
33	☆	A-5		OPEN LEVER UNIT	(593C653O10)
34	☆	A-5		ROLL GUIDE	(597D251O10)
35	☆	B-6		SCREW	M1.7X0.35 L=5
36	☆	B-6		PUSH SW	(432C071O10)
37	☆	A-6	A-7	LEAD CLAMPER	(540D074O40)
38	☆	A-6		BUSH	(540C058O10) TB-1216
39	☆	B-7		REAR BRACKET	(593C651O10)
40	☆	B-7		LEAD CLAMPER (M)	(540C057O10) UAMS-05SN-W
41	288P104O10	C-7		STEP MOTOR	
42	552D112O10	D-7		THRUST WASHER	
43	597D250O10	C-7		WASHER	
44	572D739O10	A-5	C-5	SLIP SPRING	
45	621C401O10	C-7		GEAR D	
46	- - -	- - -		- - -	- - -
47	621C402O10	C-6		CAM GEAR F	
48	621C399O10	D-7		GEAR A	
49	☆	E-7		GEAR COVER	(593C704O10)
50	☆	C-6		UP LEVER UNIT	(593C652O10)
51	621C400O10	D-6		GEAR B	
52	631D585O10	D-5		GEAR C	
53	685C002O40	D-5		RETAINING RING	E-2
54	- - -	- - -		- - -	- - -
55	939C069O10	D-4		SR SENSOR UNIT	DOOR DETECT
56	☆	D-5		OPEN SPRING	(572D740O10)
57	☆	E-7		SCREW	M3X0.5 L=3

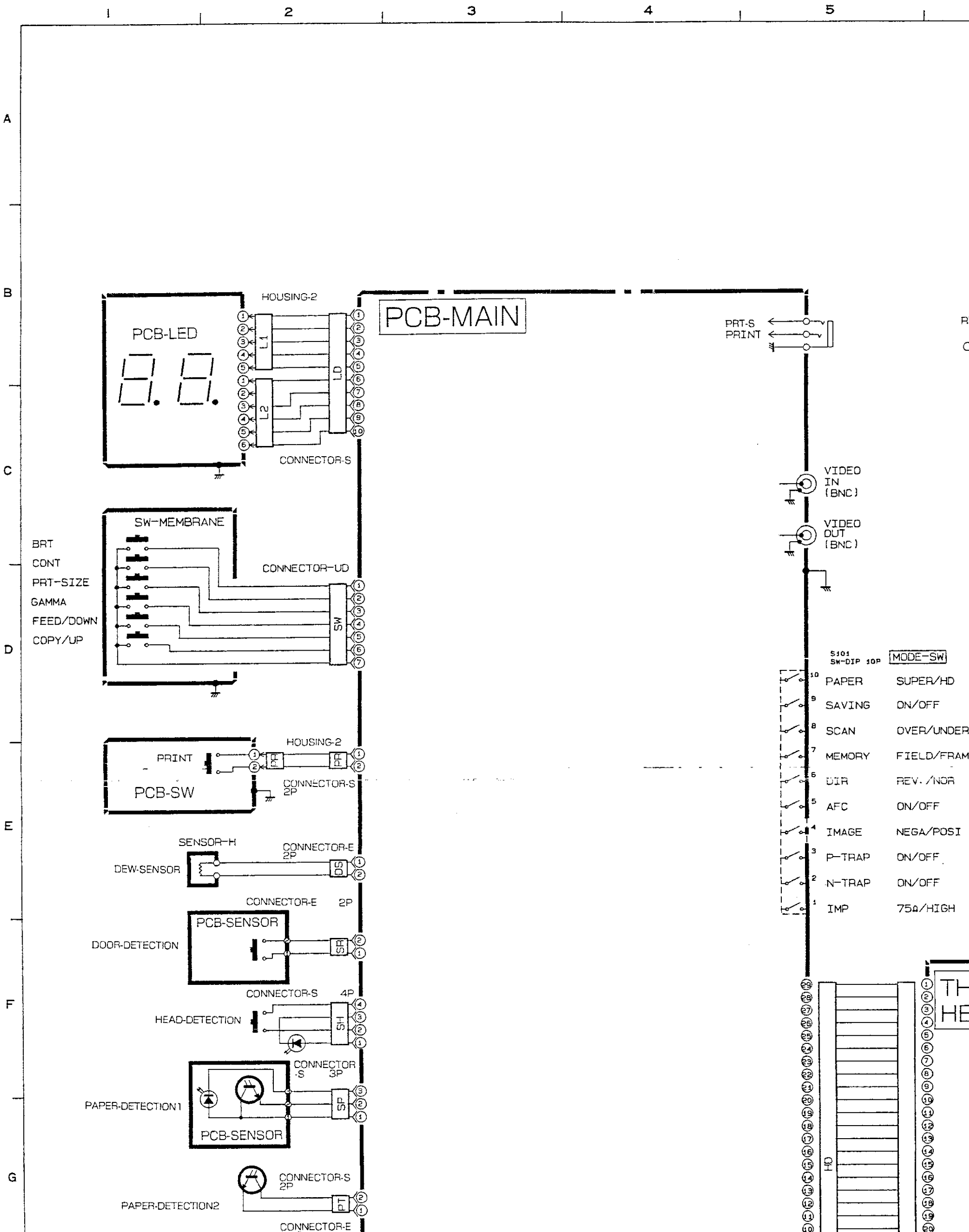
☆ : Not a stocked item.

SCT - P90 / P90U / P90E BLOCK DIAGRAM (PCB - MAIN,PRINTER MECHANICAL UNIT)



SCT – P90 / P90U / P90E BLOCK DIAGRAM (POWER SUPPLY SYSTEM)




1
2
3
4
5
A
B
C
D
E
F
G
PCB-LED
HOUSING-2
L1
L2
LD
CONNECTOR-S
PCB-MAIN
PRT-S
PRINT
VIDEO
IN
(BNC)
VIDEO
OUT
(BNC)
SW-MEMBRANE
BRT
CONT
PRT-SIZE
GAMMA
FEED/DOWN
COPY/UP
CONNECTOR-UD
SW
S101
SW-DIP 10P
MODE-SW
PAPER
SUPER/HD
SAVING
ON/OFF
SCAN
OVER/UNDER
MEMORY
FIELD/FRAM
DIR
REV./NOR
AFC
ON/OFF
IMAGE
NEGA/POSI
P-TRAP
ON/OFF
N-TRAP
ON/OFF
IMP
75Ω/HIGH
PRINT
PCB-SW
HOUSING-2
PR
CONNECTOR-S
2P
SENSOR-H
DEW-SENSOR
CONNECTOR-E
2P
DS
PCB-SENSOR
DOOR-DETECTION
SR
CONNECTOR-S
4P
HEAD-DETECTION
SH
CONNECTOR
-S
3P
PAPER-DETECTION1
SP
PCB-SENSOR
CONNECTOR-S
2P
PAPER-DETECTION2
PT
CONNECTOR-E
HD

PCB-MAIN

PCB-LED

L1

L2

LD

CONNECTOR-S

SW-MEMBRANE

BRT

CONT

PRT-SIZE

GAMMA

FEED/DOWN

COPY/UP

CONNECTOR-UD

SW

HOUSING-2

PRINT

PCB-SW

CONNECTOR-S 2P

SENSOR-H

CONNECTOR-E 2P

DEW-SENSOR

DS

CONNECTOR-E 2P

PCB-SENSOR

DOOR-DETECTION

SR

CONNECTOR-S 4P

HEAD-DETECTION

SH

CONNECTOR -S 3P

PAPER-DETECTION1

SP

PCB-SENSOR

CONNECTOR-S 2P

PAPER-DETECTION2

PT

CONNECTOR-E 7-1P

SM

STEP-MOTOR

GND

5V

12V

HON

PP

CONNECTOR-E 8-1P

PP

NOISE-FILTER GL-2030FV

CONNECTOR -V 3-1P

⚠ J901

AC

⚠ POWER-CODE

PCB-POWER

PRT-S

PRINT

VIDEO IN (BNC)

VIDEO OUT (BNC)

S101 SW-DIP 10P

MODE-SW

10	PAPER	SUPER/HD
9	SAVING	ON/OFF
8	SCAN	OVER/UNDER
7	MEMORY	FIELD/FRAM
6	DIR	REV./NOR
5	AFC	ON/OFF
4	IMAGE	NEGA/POSI
3	P-TRAP	ON/OFF
2	N-TRAP	ON/OFF
1	IMP	75Ω/HIGH

HD

CONNECTOR-UD 29P

TH

HE

CONNECTOR-E 11-1P

GND

24V

PH

PH

CONNECTOR-E 10P

PRT-S
PRINT

VIDEO IN (BNC)

VIDEO OUT (BNC)

REMOTE-UNIT

PRINT

S101
SW-DIP 10P

MODE-SW

10	PAPER	SUPER/HD
9	SAVING	ON/OFF
8	SCAN	OVER/UNDER
7	MEMORY	FIELD/FRAME
6	DIR	REV./NOR
5	AFC	ON/OFF
4	IMAGE	NEGA/POSI
3	P-TRAP	ON/OFF
2	N-TRAP	ON/OFF
1	IMP	75Ω/HIGH

THERMAL-HEAD

HD

CONNECTOR-UD 29P

CONNECTOR-E

CONNECTOR-E 11-1P

GND

24V

PH

PH

CONNECTOR-E 10P

GND VCCD VCCA COMP VREF

R R R R VRB

62 63

ENCODER

IC301 M50734SP

XIN XOUT φ WR RD SYNC ALE RESET VCC VSS WDOUT

CLOCK

DATA BUS

PROCESSOR STETAS REGISTER PS(8)

PROGRAM COUNTER PCH(8)

PROGRAM COUNTER PCL(8)

STACK POINTER S(8)

PRESCALER1 PRE1(8)

PRESCALER2 PRE2(8)

PRESCALER3 PRE3(8)

TIMER1 T1(8)

TIMER2 T2(8)

TIMER3 T3(8)

TIMER S TS(8)

TIMER W TW(8)

TIMER X TX(16)

IR(8)

ID

DME

CONTROL

PWMOUT

STBOUT

CNTR

VREF

A-D CONVERTER

8BIT OPERATIONAL UNIT

ACCUMULATOR A(8)

INDEX REGISTER X(8)

INDEX REGISTER Y(8)

STEP MOTOR

STEP MOTOR

I/O P4 ANALOG

P4(4)

SI/O(8)

UART(8)

TXD

RXD

INT1

INT2

AB(8)

ADB(8)

P3(8)

P2(8)

P1L(8)

P1(8)

P0(8)

BUSYOUT

ADDRESS BUS

ADDRESS/DATA BUS

I/O P3

I/O P2

I/O P1

I/O P0

OPERATING

READ	
OUTPUT D	
STANDBY	
PROGRAM	
PROGRAM	
PROGRAM	
ELECTRON	

NOTE : X -

PCB-POWER

NOISE-FILTER

AC

F901 250V T3.15AH

F902 250V T3.15AH

S901

RV902 ERC471D-10A

RV903 ERC471D-10A

R929 470K A-CONP

L901 ELF

C901 AC125V/250V M-.47

Z901 DSA-362HA

C905 AC250V M-.22

C906 100D

C907 1000

C914 2200 ACVA1

D901 RBV-60B

RT901

C908 400V .330

R909 .33 1W

R910 .33 1W

R902 68K 3W

R903 56K 2W

Q901 2SK1462

R911 22

R912 22K

C909 50V 22

R904 47

C910 .022

R913 27

C911 35V 4.7

R915 22K

R917 15K

C913 .01

R919 10K

C902 .1

R918 12K

IC901 M51977

LOW VOLTAGE LOCK OUT

STABILIZED POWER

OPEAMP

LATCH

CHIP TEMPERATURE DETECTOR

PWM COMPA-RATER

PWM LATCH

GENE-RATOR

+CURRENT LIMIT LATCH

-CURRENT LIMIT LATCH

OPERATION OR GENE CONTROL

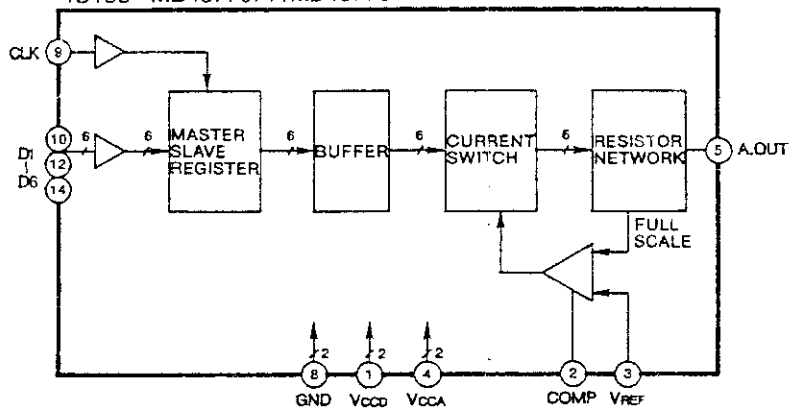
OPERATION CIRCUIT

VCC CLK+ CLK- GND CT TOFF CF

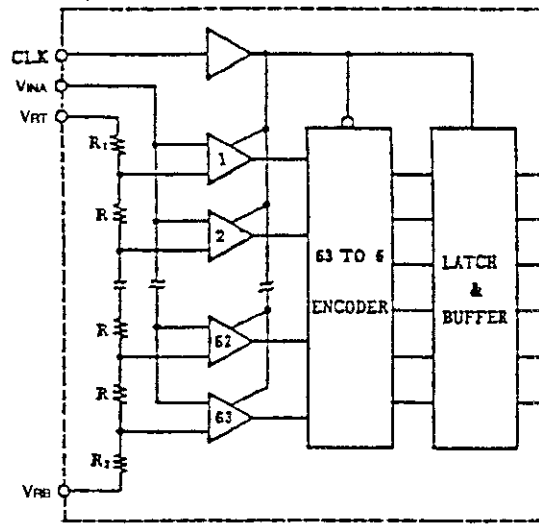
C OUT E VF ON/OFF OUP DET

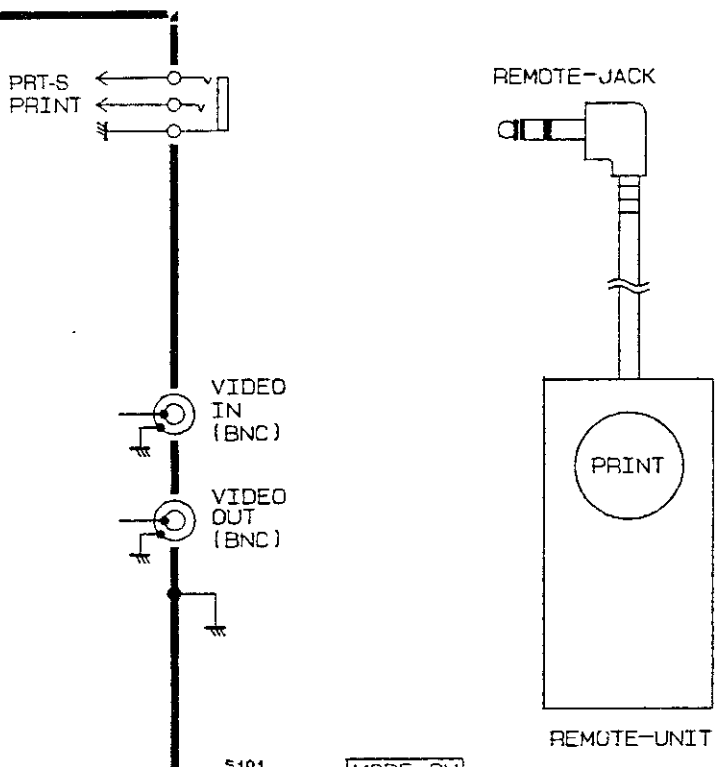
5 6 7 8 9 10

IC108 MB40776PF/MB40776HPF

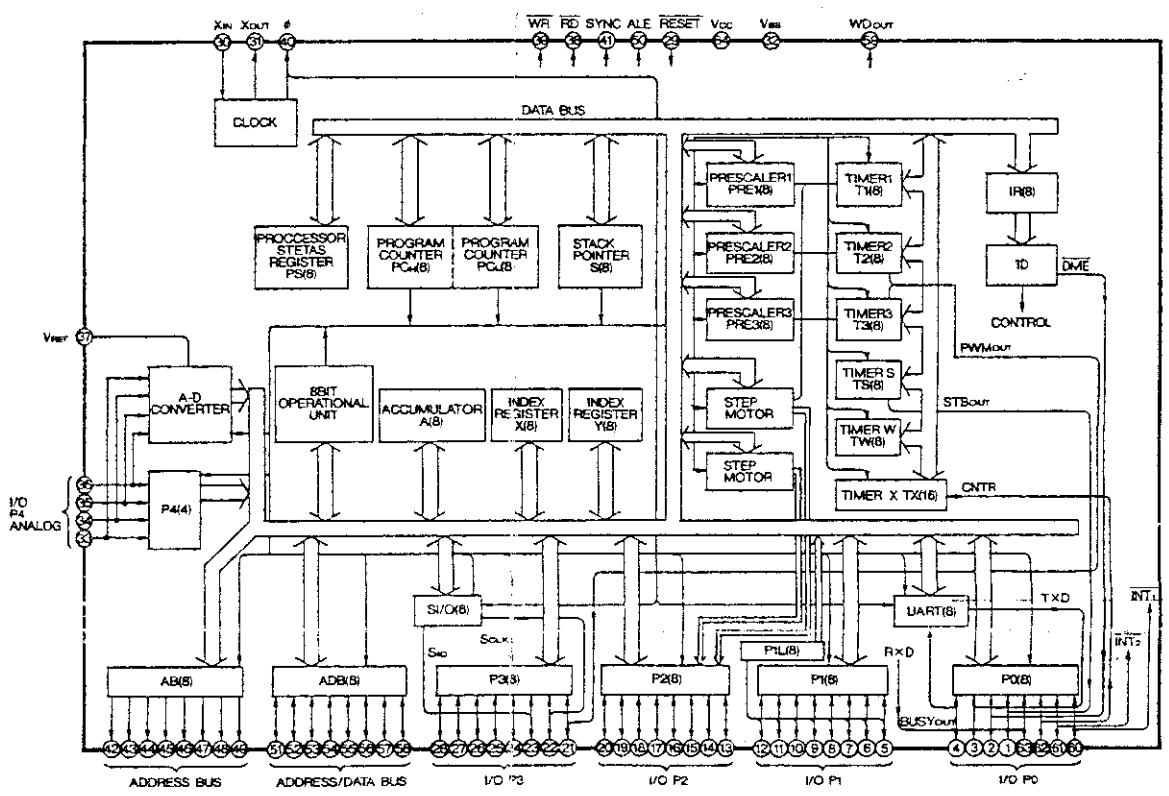


IC107 MB40576PF





IC301 M50734SP



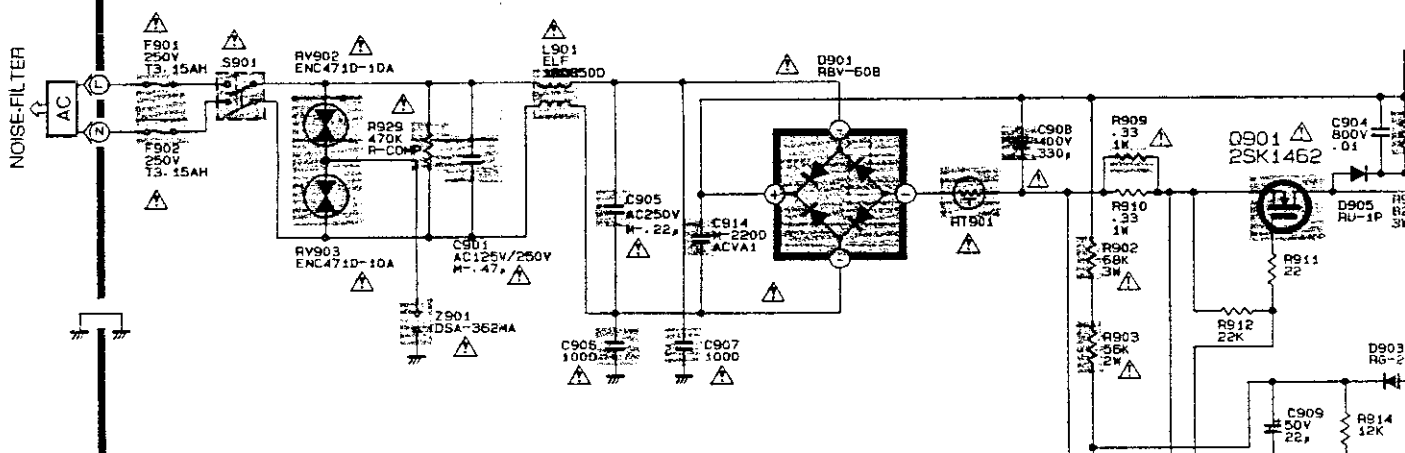
OPERATING MO

	M
READ	
OUTPUT DISABL	
STANDBY	
PROGRAM	
PROGRAM VERI	
PROGRAM INHIB	
ELECTRONIC SI	

NOTE : X = Don't ca

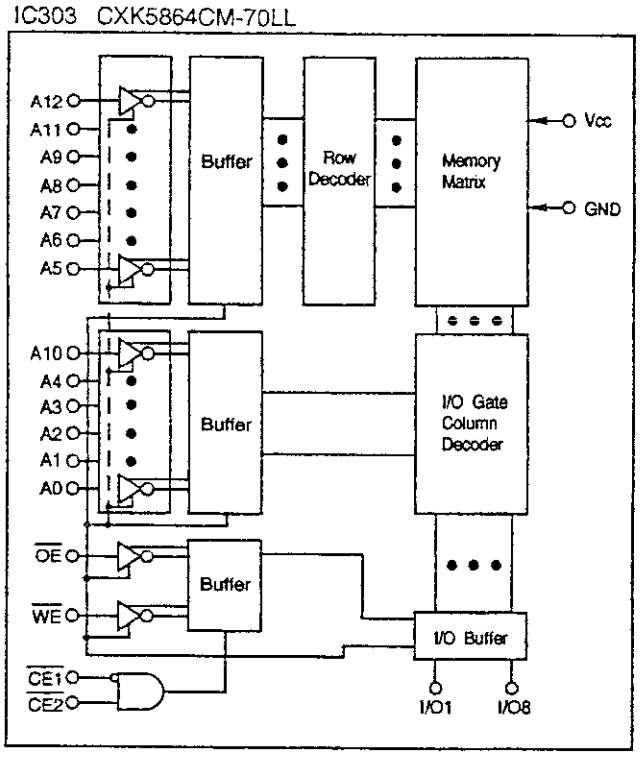
THERMAL-HEAD

PCB-POWER ⚠

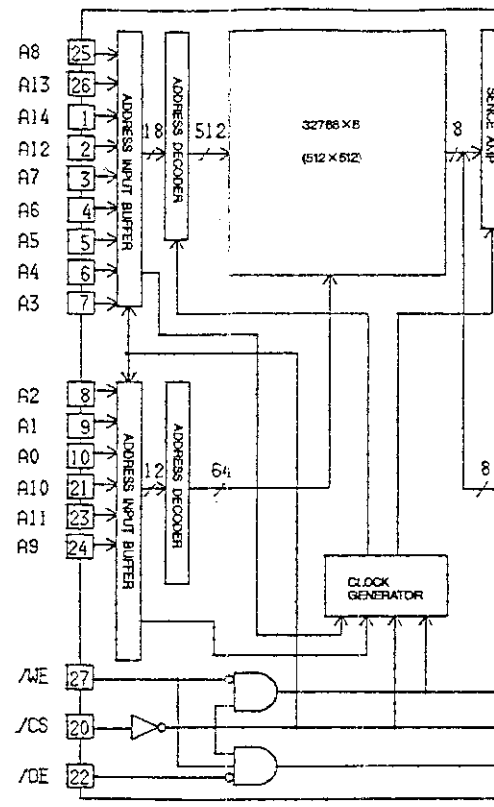


9 10 11 12 13 14

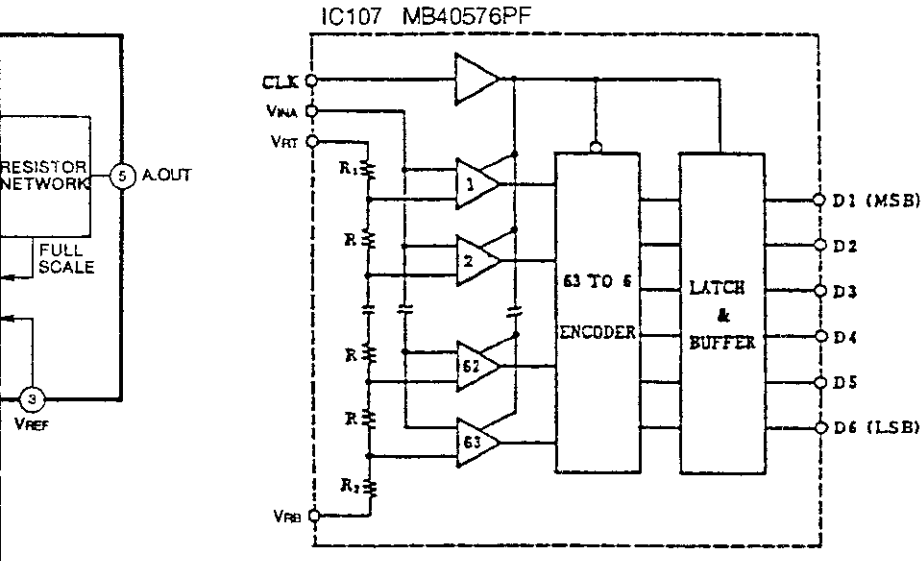
IC303 CXK5864CM-70LL

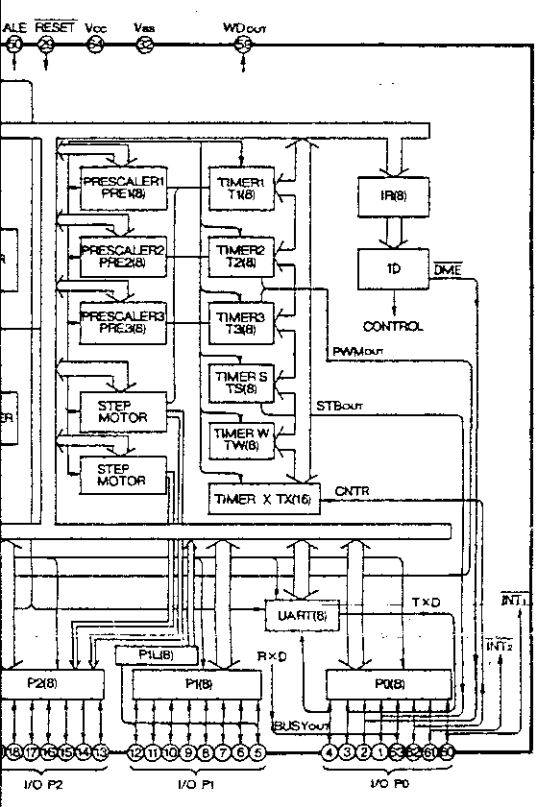


IC206 M5M5256BFP-85/μPD43256A

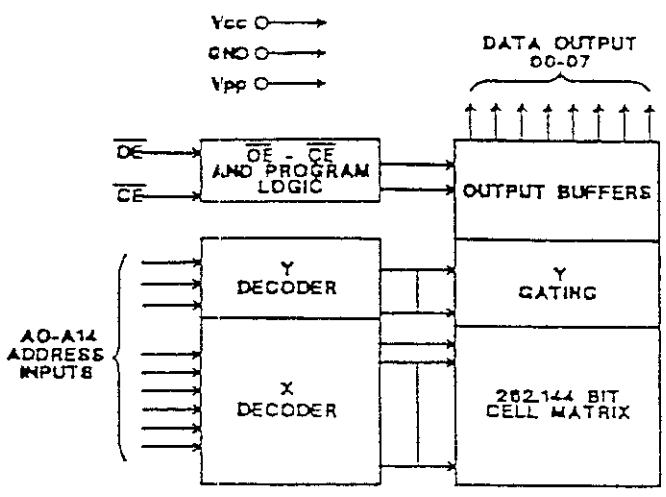


IC107 MB40576PF





IC302 HN27C256AG-12/M27C256B-12F1

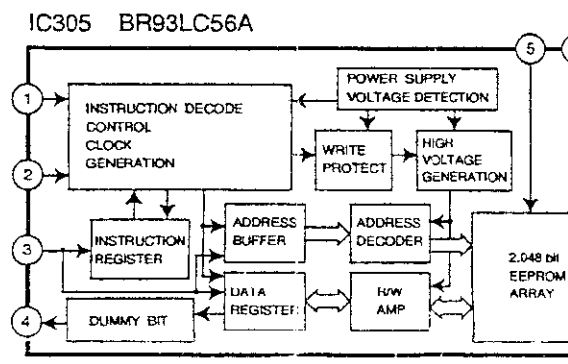


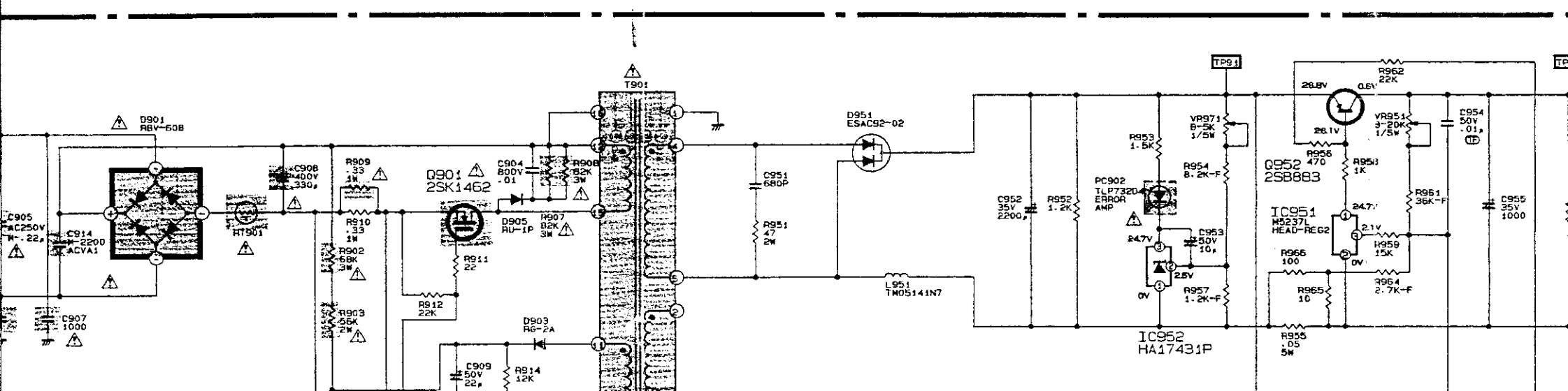
OPERATING MODES

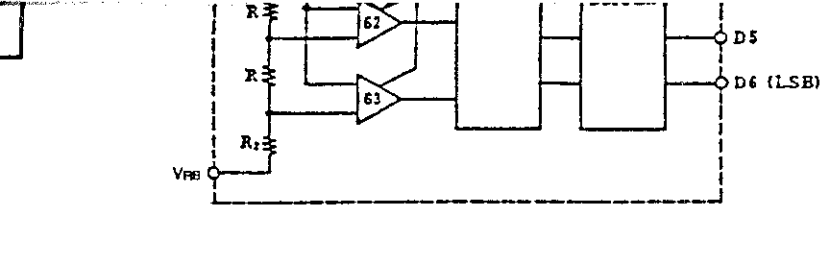
MODE	PINS				
	$\overline{CE}$	$\overline{OE}$	A9	V_{PP}	OUTPUT
READ	L	L	X	V_{CC}	D_{OUT}
OUTPUT DISABLE	L	H	X	V_{CC}	HIGH Z
STANDBY	H	X	X	V_{CC}	HIGH Z
PROGRAM	L	H	X	V_{PP}	D_{IN}
PROGRAM VERIFY	H	L	X	V_{PP}	D_{OUT}
PROGRAM INHIBIT	H	H	X	V_{PP}	HIGH Z
ELECTRONIC SIGNATURE	L	L	V_H	V_{CC}	CODE

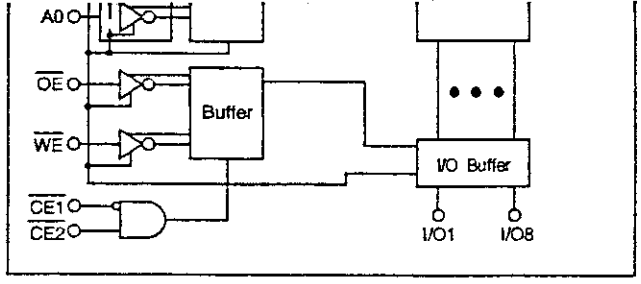
NOTE : X = Don't care ; V_H = 12V ± 0.5V; H = High ; L = Low

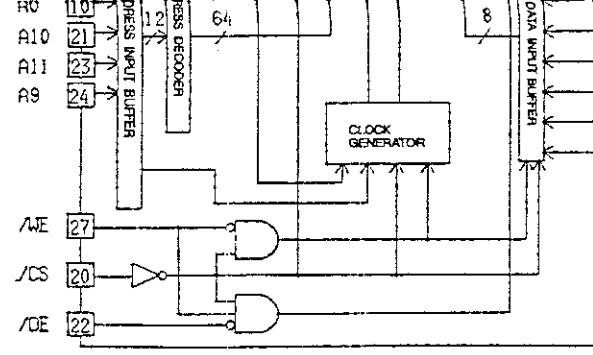
IC305 BR93LC56A

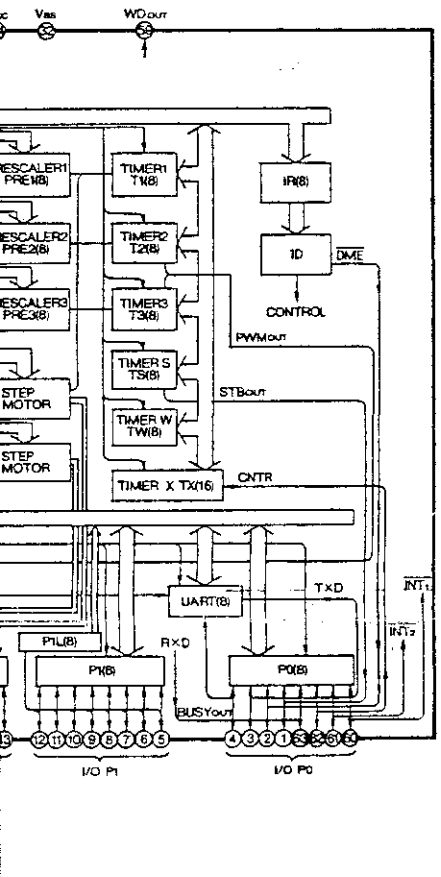




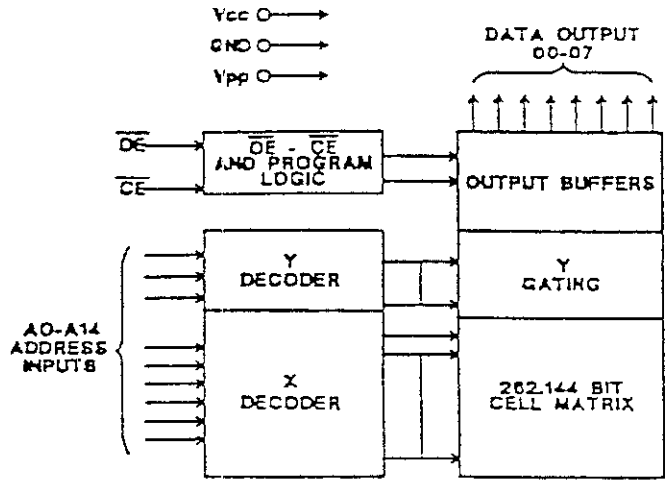








IC302 HN27C256AG-12/M27C256B-12F1

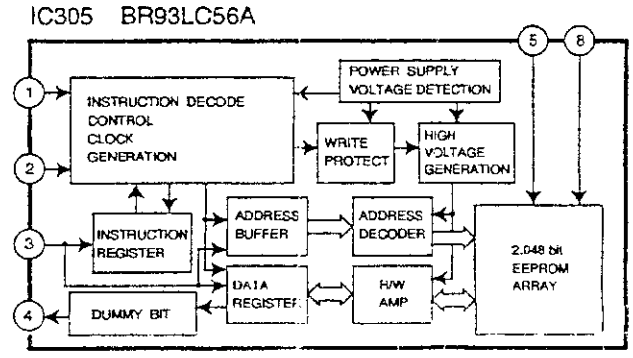


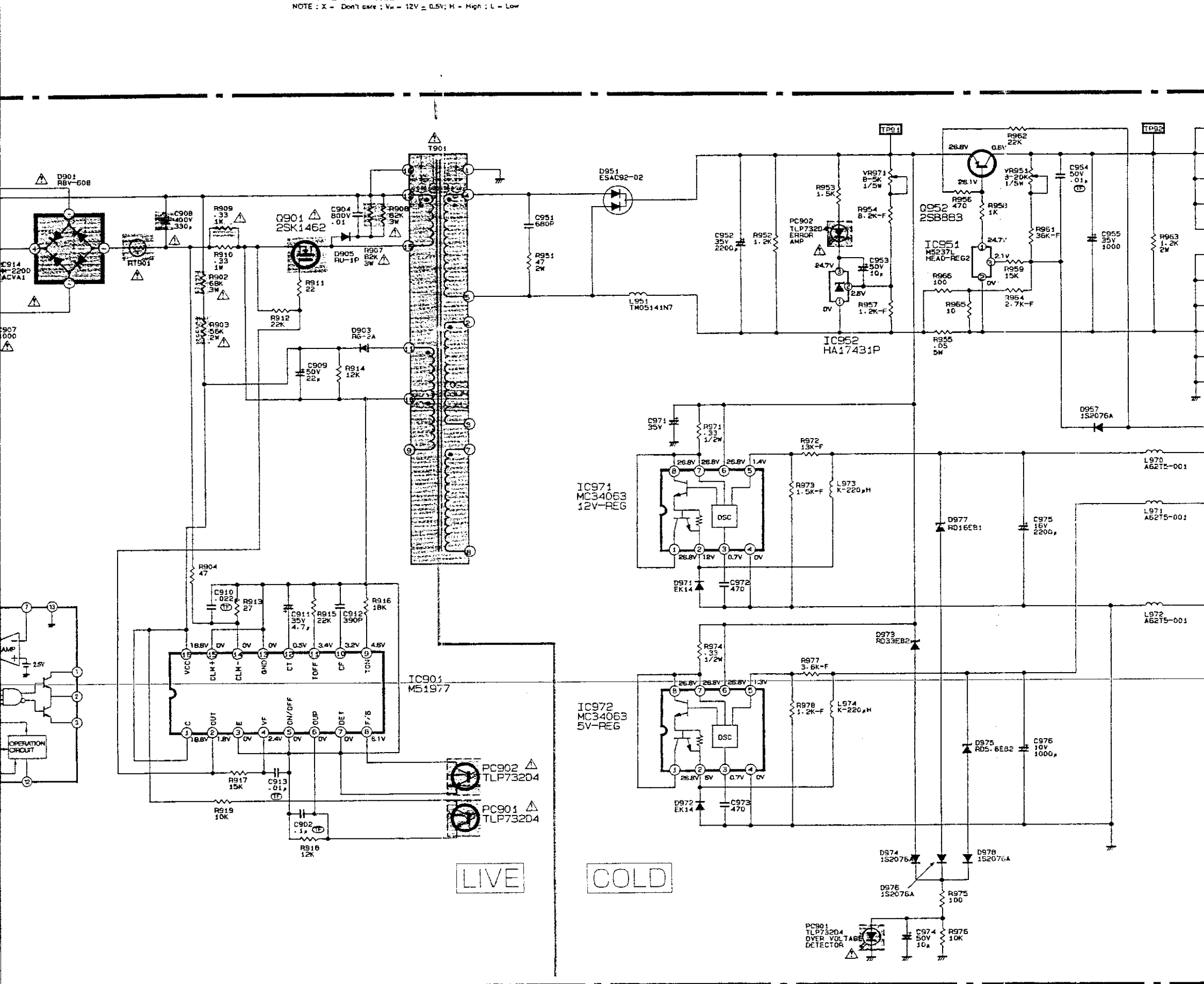
OPERATING MODES

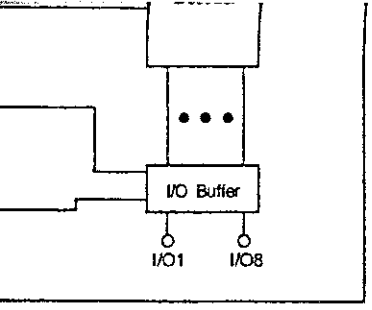
MODE	PINS				
	$\overline{CE}$	OE	A9	V_{PP}	OUTPUT
READ	L	L	X	V_{CC}	D_{OUT}
OUTPUT DISABLE	L	H	X	V_{CC}	HIGH Z
STANDBY	H	X	X	V_{CC}	HIGH Z
PROGRAM	L	H	X	V_{PP}	D_{IN}
PROGRAM VERIFY	H	L	X	V_{PP}	D_{OUT}
PROGRAM INHIBIT	H	H	X	V_{PP}	HIGH Z
ELECTRONIC SIGNATURE	L	L	V_H	V_{CC}	CODE

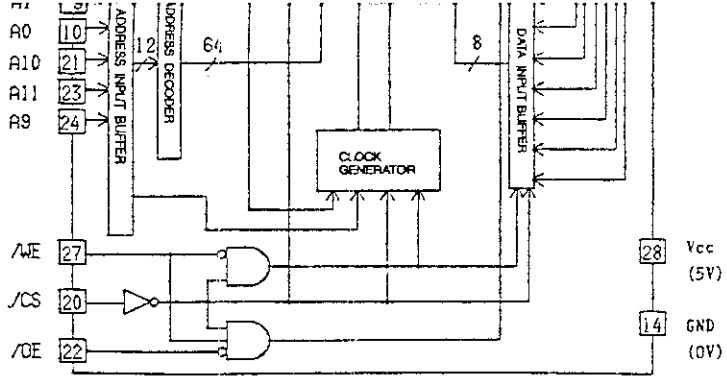
NOTE : X = Don't care ; V_H = 12V ± 0.5V; H = High ; L = Low

IC305 BR93LC56A









1

OUTPUT
-07

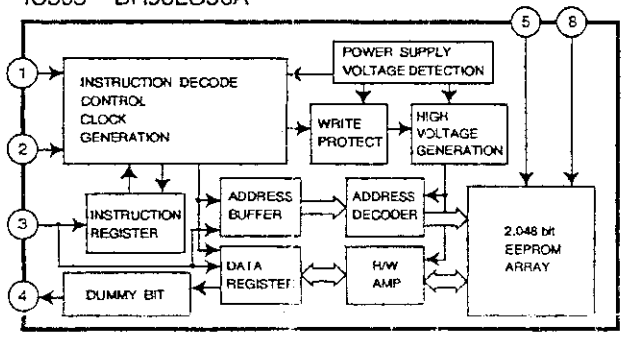
BUFFERS

ING

4 BIT
MATRIX

VPP	OUTPUT
Vcc	DOUT
Vcc	HIGH Z
Vcc	HIGH Z
VPP	DIN
VPP	DOUT
VPP	HIGH Z
Vcc	CODE

IC305 BR93LC56A



• NOTE

1. DC voltages were measured from points indicated to the circuit ground with a high-Z voltmeter.
2. Waveforms were taken with standard colour bar signal.
3. TP6A, etc. show Test Points.
4. CAPACITORS

Value	Not indicated : PF, for numbers more than 1; μF, for numbers less than 1		
Dielectric Strength	Not indicated :50V		
Tolerance	Not indicated =±10% (No Tolerance is indicated for electrolytic capacitors and ±20%)		
	G=±2%	P=+100% −0%	Q=+30% −10%	C=±0.25PF
	J=±5%			D=±0.5PF
	K=±10%	Z=+80% −20%	T=+200% −0%	F=±1PF
	M=±20%			G=±2PF
Sort	I Parts except for chips	Not indicated : Ceramic capacitor (MF) : Polyester capacitor (PP) : Polypropylene film capacitor (ALM) : Aluminus electrolytic capacitor (TF) : Twin film capacitor (SC) : Semiconductor ceramic capacitor (MP) : Metalized paper (MPP) : Metalized plastic film capacitor (MMF) : Metalized polyester capacitor (MF,PP) : Polyester polypropylene film capacitor (PS) : Styrol capacitor (TAN) or (TANT) : Tantalum capacitor — : Electrolytic capacitor (BP) or (NP) : Non polarized electrolytic capacitor	
	II Chips	Not indicated : Ceramic capacitor chip — : Electrolytic capacitor (BP) or (NP) : Non polarized electrolytic capacitor chip	
Characteristic (only ceramic capacitor)	Not indicated : F or B(high dielectric percentage) CH,SL,etc. : Temperature compensating types		

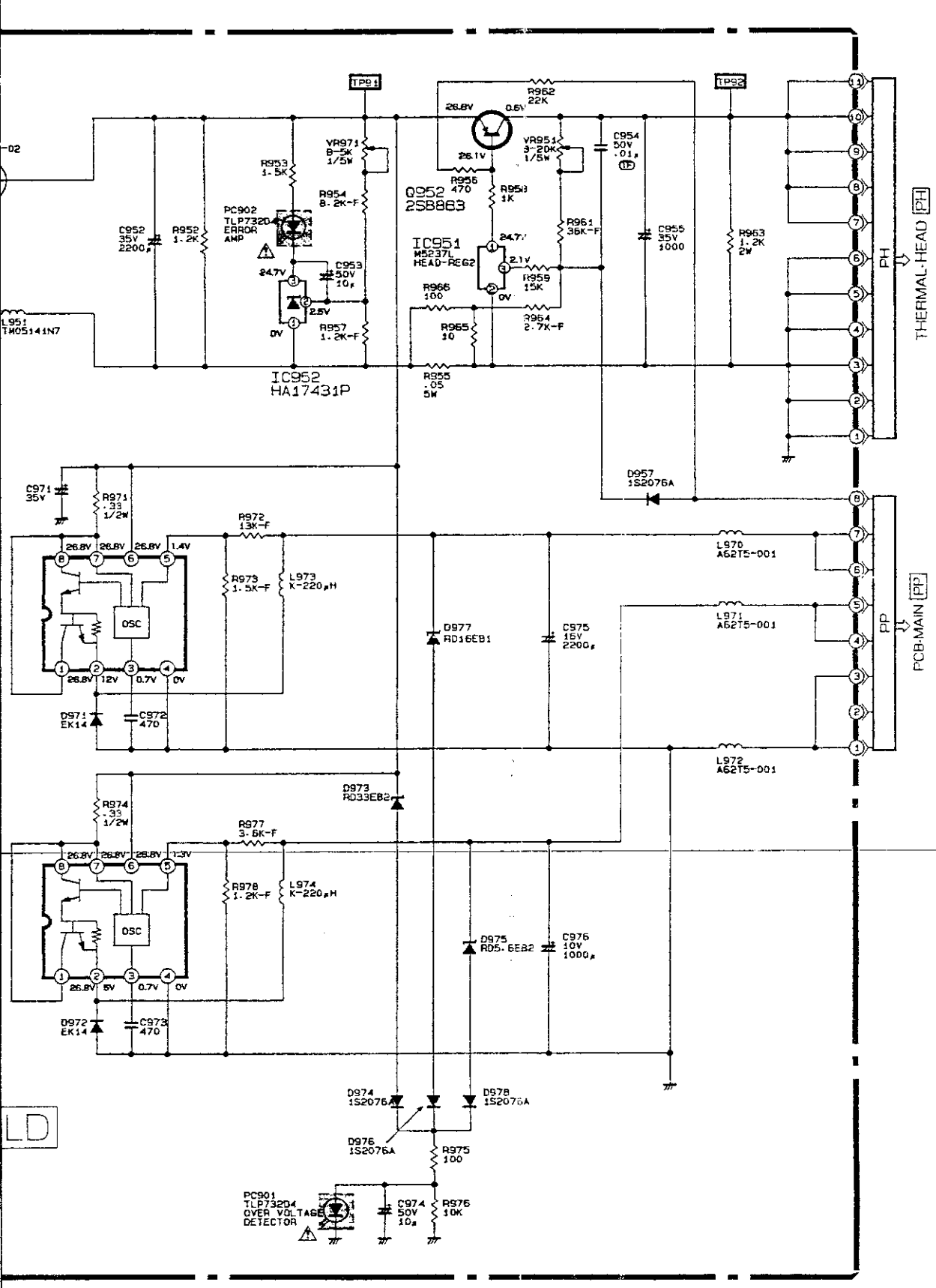
5. Resistors

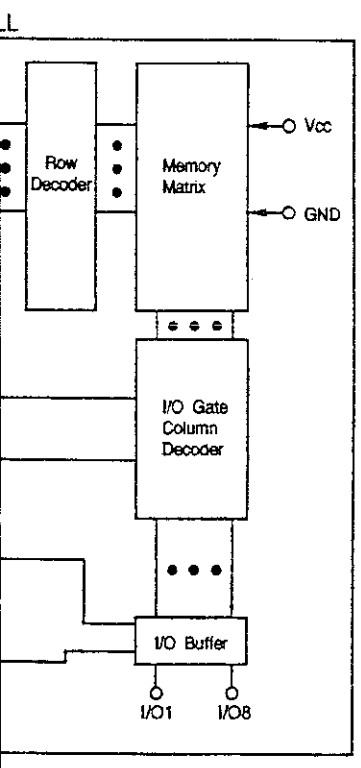
Value	Not indicated = Ω K = kΩ(1000Ω) M = MΩ(1000kΩ)	
Wattage	Parts except for chips	Not indicated = 1/4W or 1/6W
	Chips	Not indicated = 1/10W
Tolerance	Not indicated =±5% D=±0.5% J=±5% F=±1% K=±10%	
Short	I Parts except for chips	Not indicated : Carbon resistor (S) : Fixed composition resistor (MB) : Metal oxide film resistor(type B) (CE) : Cemented resister (W) : Wire wound resister (M) : Metal film resister (MPC) : Metal plate cement resister (ML) : Metal liner resister
	II Chip	Not indicated : Chip resistor

6. This is a basic schematic diagram. Some sets may be subject to modification according to engineering improvement.

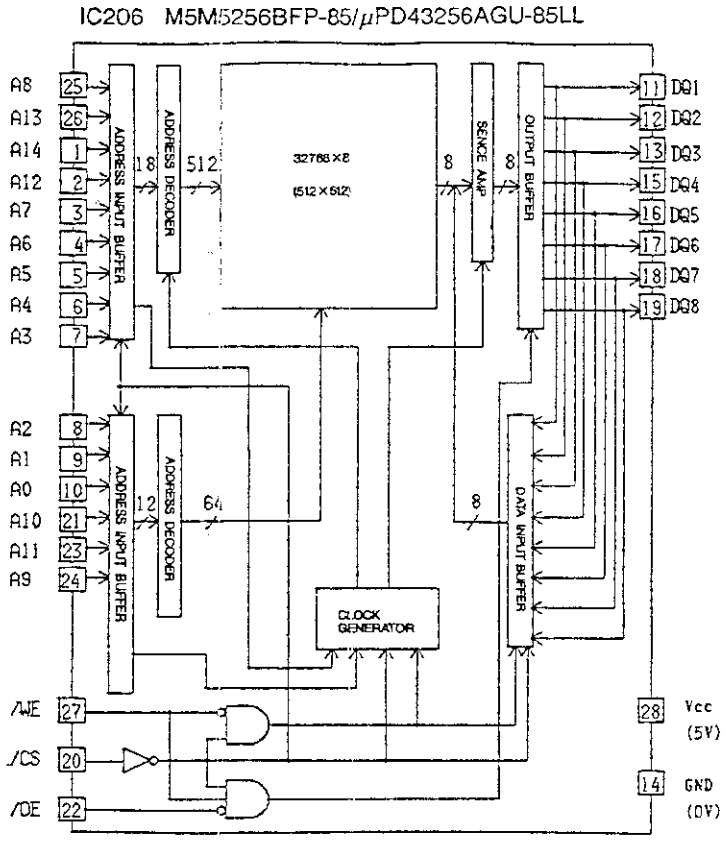
SPECIFIC SYMBOL

Zener Diode	Crystal unit
Varicap	Air Gap
Posistor	Part(resistor) attached on the copper-foil side of PCB
Thermistor	Ceramic filter
Fusible Resistor	

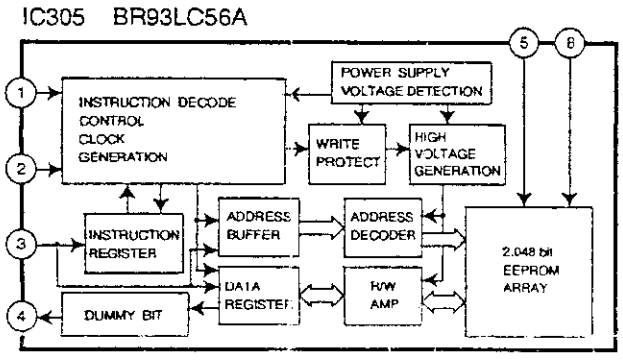




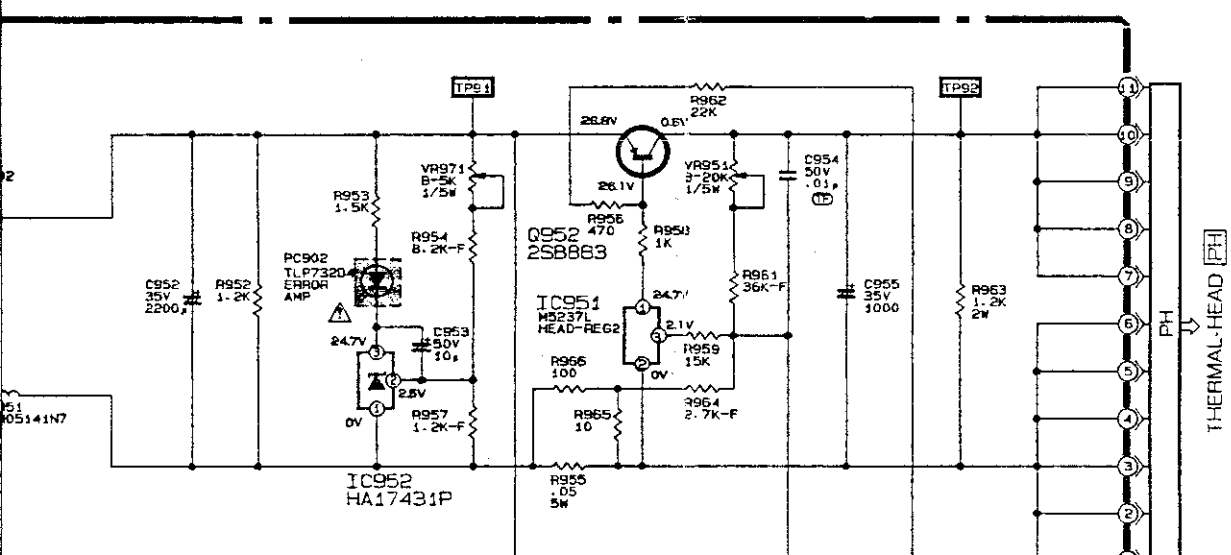
IC206 M5M5256BFP-85/μPD43256AGU-85LL



IC305 BR93LC56A



V_{PP}	OUTPUT
Vcc	Dout
Vcc	HIGH Z
Vcc	HIGH Z
V_{PP}	Din
V_{PP}	Dout
V_{PP}	HIGH Z
Vcc	CODE



SERVICING PRECAUTION

SYMBOLS INDICATE COMPONENTS HAVING SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY AND PERFORMANCE. THERFORE REPLACEMENT OF ANY SAFETY PARTS SHOULD BE IDENTICAL IN VALUE AND CHARACTERISTICS. FOR ACCURACY OF THE REPLACEMENT REFER TO THE PARTS LIST OF SERVICE MANUAL.

DON'T DEGRADE THE SAFETY OF THE VIDEO COPY PROCESSOR THROUGH IMPROPER SERVICING.

SCHEMATIC DIAGRAM
MODEL : P90E

• **NOTE**

1. DC voltages were measured from points indicated to the circuit ground with a high-Z voltmeter.
2. Waveforms were taken with standard colour bar signal.
3. TP6A, etc. show Test Points.
4. CAPACITORS

Value	Not indicated	PF, for numbers more than 1 μF, for numbers less than 1	
Dielectric Strength	Not indicated :50V		
Tolerance	Not indicated =±10%	No Tolerance is indicated for electrolytic capacitors and ±20%	
	G=±2%	P=+100% −0%	Q=+30% −10%	C=±0.25PF
	J=±5%			D=±0.5PF
	K=±10%	Z=+80% −20%	T=+200% −0%	F=±1PF
	M=±20%			G=±2PF
Sort	I Parts except for chips	Not indicated : Ceramic capacitor (MF) : Polyester capacitor (PP) : Polypropylene film capacitor (ALM) : Aluminus electrolytic capacitor (TF) : Twin film capacitor (SC) : Semiconductor ceramic capacitor (MP) : Metalized paper (MPP) : Metalized plastic film capacitor (MMF) : Metalized polyester capacitor (MF,PP) : Polyester polypropylence film capacitor (PS) : Styrol capacitor (TAN) or (TANT) : Tantalum capacitor ⊣⊢ : Electrolytic capacitor (BP) or (NP) : Non polarized electrolytic capacitor	
	II Chips	Not indicated : Ceramic capacitor chip ⊣⊢ : Electrolytic capacitor (BP) or (NP) : Non polarized electrolytic capacitor chip	
Characteristic (only ceramic capacitor)	Not indicated : F or B(high dielectric percentage) CH,SL,etc. : Temperature compensating types		

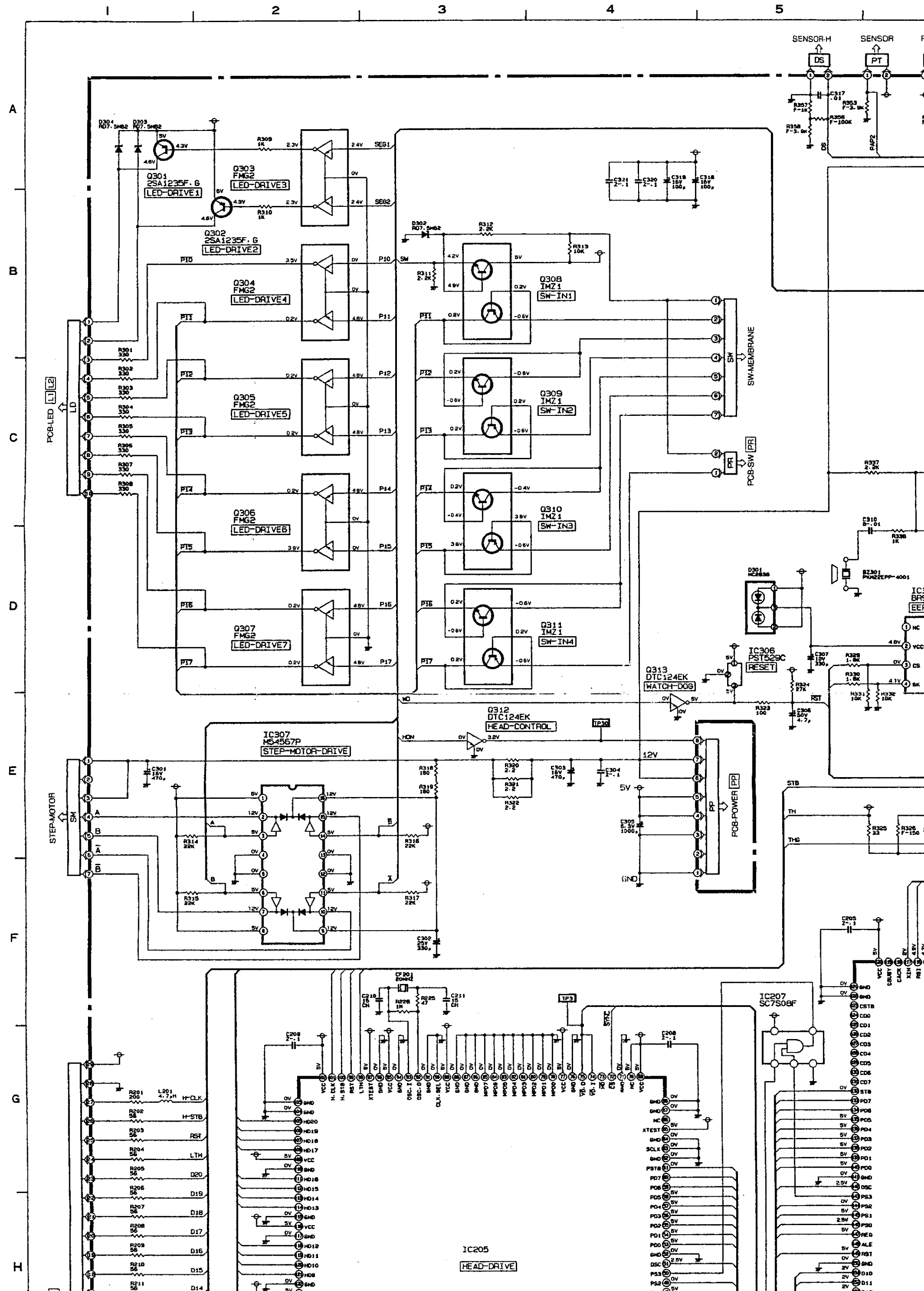
5. Resistors

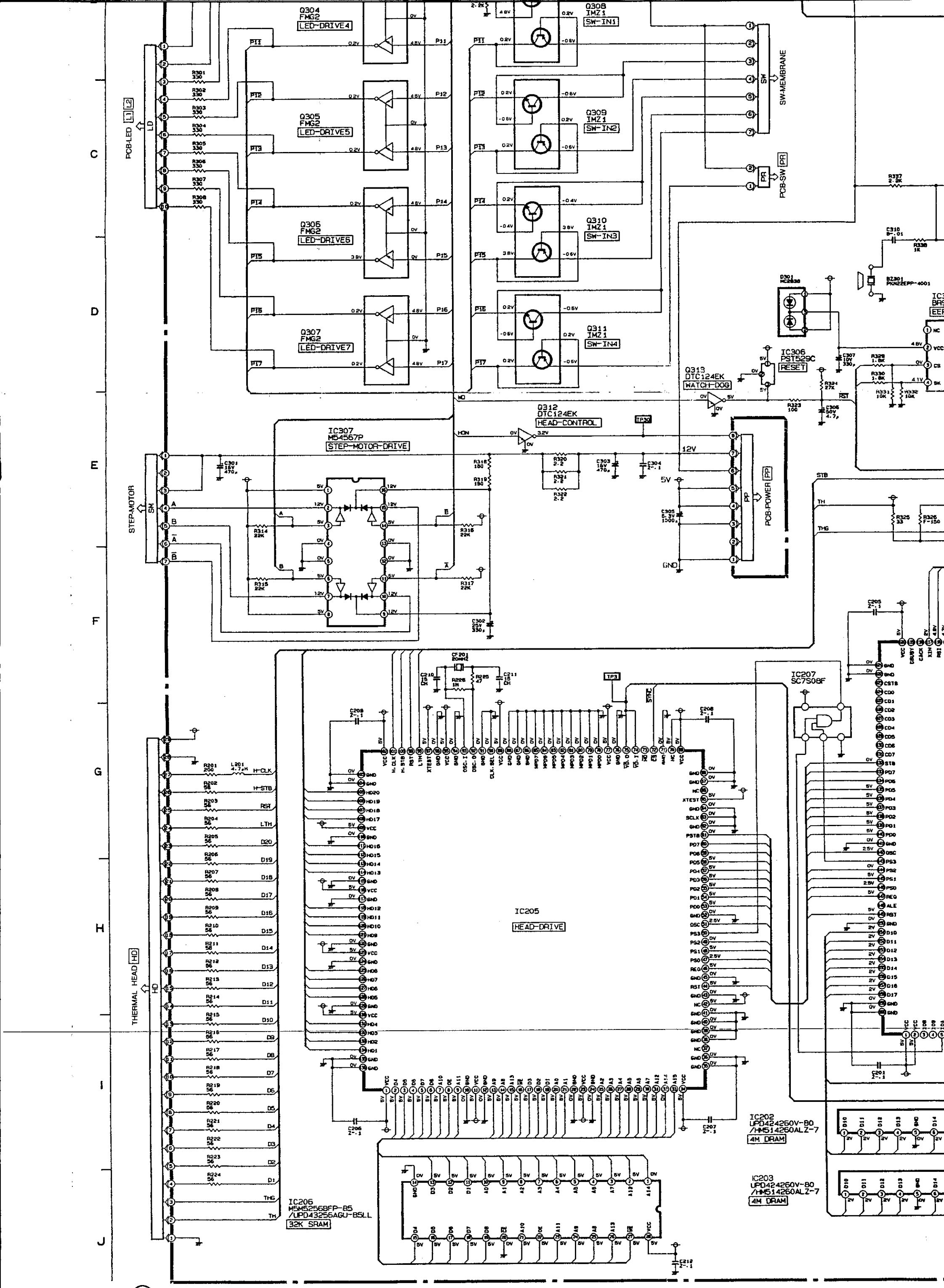
Value	Not indicated = Ω K = kΩ(1000Ω) M = MΩ(1000kΩ)	
Wattage	Parts except for chips	Not indicated = 1/4W or 1/8W
	Chips	Not indicated = 1/10W
Tolerance	Not indicated =±5% D=±0.5% J=±5% F=±1% K=±10%	
Short	I Parts except for chips	Not indicated : Carbon resistor (S) : Fixed composition resistor (MB) : Metal oxide film resistor(type B) (CE) : Cemented resister (W) : Wire wound resister (M) : Metal film resister (MPC) : Metal plate cement resister (ML) : Metal liner resister
	II Chip	Not indicated : Chip resistor

6. This is a basic schematic diagram. Some sets may be subject to modification according to engineering improvement.

SPECIFIC SYMBOL

- Zener Diode
- Varicap
- Posistor
- Thermistor
- Fusible Resistor
- Crystal unit
- Air Gap
- Part(resistor) attached on the copper-foil side of PCB
- Ceramic filter


SENSOR-H
SENSOR
DS
PT
Q301
2SA1235F.G
LED-DRIVE1
Q303
FMG2
LED-DRIVE3
Q302
2SA1235F.G
LED-DRIVE2
Q304
FMG2
LED-DRIVE4
Q305
FMG2
LED-DRIVE5
Q306
FMG2
LED-DRIVE6
Q307
FMG2
LED-DRIVE7
Q308
IMZ1
SW-IN1
Q309
IMZ1
SW-IN2
Q310
IMZ1
SW-IN3
Q311
IMZ1
SW-IN4
SW-MEMBRANE
PCB-SW
PCB-LED
STEP-MOTOR
IC307
M54567P
STEP-MOTOR-DRIVE
Q312
DTC124EK
HEAD-CONTROL
Q313
DTC124EK
WATCH-DOG
IC306
PST529C
RESET
PCB-POWER
IC205
HEAD-DRIVE
IC207
SC7S08F


Q304
FMG2
LED-DRIVE4
Q305
FMG2
LED-DRIVE5
Q306
FMG2
LED-DRIVE6
Q307
FMG2
LED-DRIVE7
Q308
IMZ1
SW-IN1
Q309
IMZ1
SW-IN2
Q310
IMZ1
SW-IN3
Q311
IMZ1
SW-IN4
PCB-LED
LD
SW-MEMBRANE
PCB-SW
PR
IC306
PST529C
RESET
Q313
DTC124EK
WATCH-DOG
Q312
DTC124EK
HEAD-CONTROL
IC307
M54567P
STEP-MOTOR-DRIVE
STEP-MOTOR
PCB-POWER
PP
IC207
SC7S08F
IC205
HEAD-DRIVE
THERMAL HEAD
IC206
M5M5256BFP-85
/UPD43256AGU-85LL
32K SRAM
IC202
UPD424260V-80
/HM514260ALZ-7
4M DRAM
IC203
UPD424260V-80
/HM514260ALZ-7
4M DRAM
BZ301
PKN22EPP-4001
H-CLK
H-STB
RST
LTH
D20
D19
D18
D17
D16
D15
D14
D13
D12
D11
D10
D9
D8
D7
D6
D5
D4
D3
D2
D1
THG
TH

P90E

2

SW-MEMBRANE

PCB-SW

Q314
FMG2
BUZZER-DRIVE

BZ301
PKM22EPP-4001

D301
MC2838

IC305
BR93LC56F
EEPROM

IC306
PST529C
RESET

Q313
DTC124EK
WATCH-DOG

PCB-POWER

IC201
UPD65647GD-020-5BD
MEMORY-CONTROL

IC107
MB40576PF
A/D CONV.

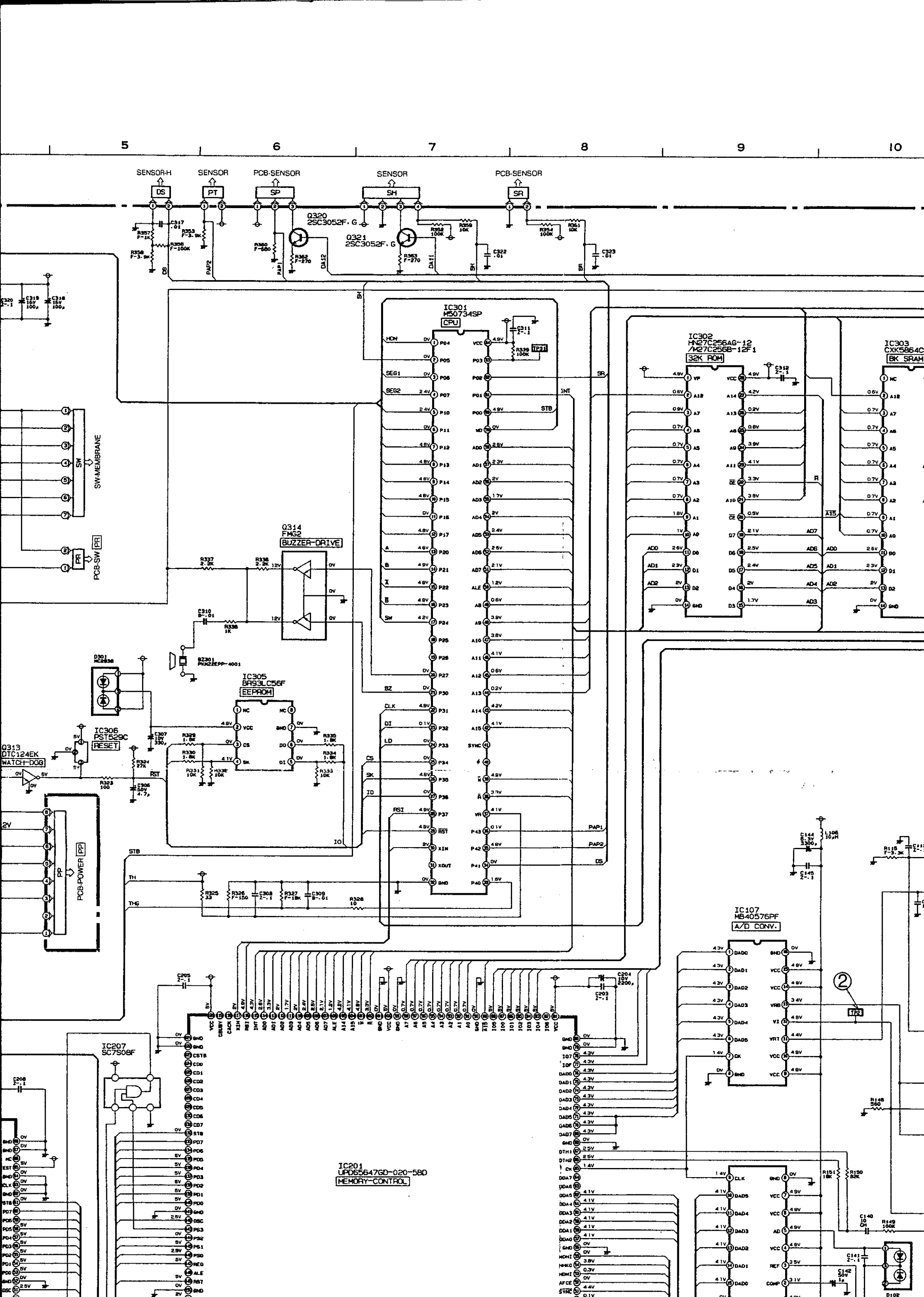
IC108
MB40776PF
D/A CONV.

IC207
SC7S08F

IC202
UPD424260V-80
/HM514260ALZ-7
4M DRAM

IC203
UPD424260V-80
/HM514260ALZ-7
4M DRAM

IC106
MC74HC
OSC


5
6
7
8
9
10
SENSOR-H
SENSOR
PCB-SENSOR
SENSOR
PCB-SENSOR
DS
PT
SP
SH
SR
Q320
2SC3052F. G
Q321
2SC3052F. G
IC301
M50734SP
CPU
IC302
HN27C256AG-12
/M27C256B-12F1
32K ROM
IC303
CXK5864C
8K SRAM
SW
SW-MEMBRANE
PR
PCB-SW
Q314
FMG2
BUZZER-DRIVE
IC305
BA93LC56F
EEPROM
IC306
PST529C
RESET
Q313
DTC124EK
WATCH-DOG
PP
PCB-POWER
IC107
MB40576PF
A/D CONV.
IC207
SC7S08F
IC201
UPD65647GD-020-580
MEMORY-CONTROL
TP2
D102
HC2838
D301
HC2838
BZ301
PKM22EPP-4001

9 10 11 12 13 14

C323 .01

IC302
HN27C256AG-12
/M27C256B-12F1
32K ROM

IC303
CXK5864CM-70LL
8K SRAM

IC304
M62352GP
D/A CONV.

IC102
L78N09
9V REG

IC101
HA11465A
VIDEO-AMP

IC107
MB40576PF
A/D CONV.

Q103
2SC3052F.G
VIDEO-AMP3

Q102
2SC3052F.G
VIDEO-AMP2

Q108
IMZ1
AD-REF2

Q107
IMZ1
AD-REF1

Q106
IMZ1
VIDEO-LIMIT2

Q105
IMZ1
VIDEO-LIMIT1

Q104
DTA124EK
SYNC-INVERT

IC104
NJM22
AFC/V

D102
MC2836

TP1 TP2 TP5

A15 A14 AD7 AD6 AD5 AD4 AD3

DA12 DA11

IO0 IO5 IO7 IOF IO4 IO3 IO2 IO1

D/A BRT CONT S-P

IC304
M62352GP
D/A CONV.

IC102
L78N09
9V REG

IC101
HA11465A
VIDEO-AMP

IC107
MB40576PF
A/D CONV.

IC108
MB40776PF
D/A CONV.

IC106
MC74HC00AF
OSC

IC105
SN74LS221NS
H-ADJ. 1

IC104
NJM2211
AFC/VI

Q108
IMZ1
AD-REF2

Q107
IMZ1
AD-REF1

Q106
IMZ1
VIDEO-LIMIT2

Q105
IMZ1
VIDEO-LIMIT1

Q103
2SC3052F.G
VIDEO-AMP3

Q102
2SC3052F.G
VIDEO-AMP2

Q104
DTA124EK
SYNC-INVERT

D102
MC2836

Serial I/F

CLAMP

APC

SYNC SEPA

V-SYNC SEPA

H-OSC

H-WIDE

H-POSI

OSC1

TP1

TP2

TP3

TP4

TP5

SYNC

IC304
M62352GP
D/A CONV.

Serial I/F

MODE-SW

PAPER	SUPER/HD
SAVING	ON/OFF
SCAN	OVER/UNDER
MEMORY	FIELD/FRAME
DIR	REV./NOR
AFC	ON/OFF
IMAGE	NEGA/POSI
P-TRAP	ON/OFF
N-TRAP	ON/OFF
IMP	75Ω/HIGH

Q103
2SC3052F.G
VIDEO-AMP3

Q102
2SC3052F.G
VIDEO-AMP2

Q101
2SC3052F.G
VIDEO-AMP1

Q104
DTA124EK
SYNC-INVERT

Q109
2SA1037K-S
VIDEO-OUT

Q110
DTC114YK
RELAY-DRIVE

IC103
NJM78L05A
5V REG

IC104
NJM2217L
AFC/VIDEO-SW

IC105
SN74LS221NS
H-ADJ. 1

VIDEO-IN

VIDEO-OUT

①3.5Vp-p(H)

②1.75Vp-p(H)

③1Vp-p(H)

④2Vp-p(H)

⑤3.5Vp-p(H)

12 13 14 15 16

PCB-MAIN

Q316 DTC124EK COPY-IN2
Q315 DTA124EK COPY-IN1
R341 10K
R340 10K
R342 10K
R343 10K
R344 10K
R345 10K
C315 .01
C316 .01
IO0
IO5
J301 REMOTE
Q318 DTC124EK PRINT-IN2
Q317 DTA124EK PRINT-IN1

DA12
DA11

S101 SW-DIP 10P
R346 10K
R347 10K
R348 10K
R349 10K
R350 10K
R351 10K
IO7
IOF
IO4
IO3
IO2
IO1

MODE-SW

PAPER	SUPER/HD
SAVING	ON/OFF
SCAN	OVER/UNDER
MEMORY	FIELD/FRAME
DIR	REV./NOR
AFC	ON/OFF
IMAGE	NEGA/POSI
P-TRAP	ON/OFF
N-TRAP	ON/OFF
IMP	75Ω/HIGH

IC304 M62352GP D/A CONV.
Serial I/F
C314 Z-.1
D/A BRT CONT SYP

R102 F-150
R101 F-150
L102 4.43MHz COIL-TRAP
L101 3.58MHz COIL-TRAP

③ TP1
C106 16V 100μ
C105 Z-.1
Q103 2SC3052F.G VIDEO-AMP3
R112 1K
C102 16V 100μ
R107 27K
R106 F-1K
R105 10K
C101 25V 10
R104 1K
R103 22K
C104 16V 22μ
R111 22K
Q102 2SC3052F.G VIDEO-AMP2
C103 12 CH
Q101 2SC3052F.G VIDEO-AMP1
R110 1K
R109 F-820
R108 1K
J101 VIDEO-IN

C109 7 CH
C108 2 CH
C107 2 CH
R113 1K
R114 10K
SYNC SEP.
CLMP
C110 50V 1μ
J102 VIDEO-OUT

④ TP6
K101 05A-237PDC12V /FBR46ND012-P
C114 Z-.1
C115 50V 1μ
C116 50V 3.3μ
R118 680
R119 82K
R120 12K
R121 2.2K
C117 22 CH
R122 820
R123 1K
Q104 DTA124EK SYNC-INVERT
R126 75
C119 6.3V 1000μ
R127 470 1/4W
C120 16V 470μ
R125 22K
D101 MC2838
Q109 2SA1037K-S VIDEO-OUT
R130 3.3K
Q110 DTC114YK RELAY-DRIVE
IC103 NJM78L05A 5V REG

R128 F-11K
R129 F-12K
C121 1000 CH
IC104 NJM2217L AFC/VIDEO-SW
CLAMP
APC
V-SYNC SEPA
SYNC SEPA
C126 1μ
C125 .022
R135 F-10K
R136 560
C124 200V 1200
C123 10V 220μ
R134 F-10K
R131 1M
C122 .1
R132 2.2K
R133 10K
⑤
VR102

IMIT2
IMIT1

①3.5Vp-p(H)

②1.75Vp-p(H)

③1Vp-p(H)