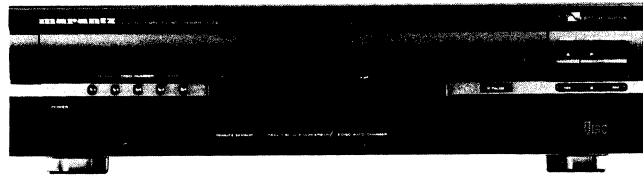


Service Manual

74 CC-52/01B/02B/05B/07B

Digital Compact Disc Changer



Contents

SAFETY CERTIFICATION/CERTIFICAT DE SÉCURITÉ	1
SPECIFICATIONS	2
LASER BEAM RADIATION SPOT	2
VOLTAGE CONVERSION	2
FUNCTIONAL BLOCK DIAGRAM	3
DISASSEMBLY INSTRUCTION	4
P.C. BOARD ALIGNMENT POINTS (TOP VIEW)	4
ADJUSTMENT PROCEDURES	5
SAFETY INTERLOCK	7
CABINET & CHASSIS EXPLODED VIEW (1)	8
CABINET & CHASSIS EXPLODED VIEW (2)	9
MECHANICAL PARTS LIST	10
MECHANISM EXPLODED VIEW	11
MECHANISM PARTS LIST	11
ELECTRICAL PARTS LIST	12
POINT TO POINT WIRING DIAGRAM	13
SW-2 P.C. BOARD (BOTTOM VIEW)	14
DAC P.C. BOARD (BOTTOM VIEW)	14
POWER P.C. BOARD (BOTTOM VIEW)	14
MAIN P.C. BOARD	15
DISPLAY P.C. BOARD (BOTTOM VIEW)	15
SENSOR P.C. BOARD (BOTTOM VIEW)	16
SW-1 P.C. BOARD (BOTTOM VIEW)	16
SCHEMATIC DIAGRAMS	17
IC & TRANSISTOR LEAD IDENTIFICATION	19
IC BLOCK DIAGRAM	20
REFERENCE VOLTAGE	23

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model CC-52

First issue: 1992

4822 725 50994

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1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
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Telefax : (708)820-8103

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Parts may be ordered at the following addresses:

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Austria
Telex: 132.332

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Saxon Way Industrial Estate
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Telex: 935196

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Riyadh 11432
Saudi Arabia
Telex: 401530

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P.O.Box 21025
Hippocrates Street 188
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Telex: 216.795

SOUTH AFRICA
MARANTZ
DIVISION OF PHILIPS S.A.
Main Road Martindale
P.O. Box. 58088
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6 Blok N°6310
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Istanbul
Turkey
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AV. Santa Maria, 0760
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MARANTZ GERMANY GmbH
Alexanderstrasse 1
2000 Hamburg
Germany

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MARANTZ JAPAN, Inc.
35-1, 7-chome, Sagamiono
Sagamihara-shi, Kanagawa
Japan

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PHONO S.A.
Ignacio Iglesias 10
Badalona (Barcelona)
Spain
Telex: 59355

MALTA
CACHIA & GALEA
Republic Street, 68D
Valetta
Telex: 1682

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MARANTZ
DIVISION OF PHILIPS
SERVICE A/S
Prags Boulevard 80
Postbox 1919
DK-2300 København S
Denmark
Telex: 31201

THE NETHERLANDS
Elpro Marantz
Wint Hontlaan 28
3526 KV Utrecht
The Netherlands
Telex: 4748

KUWAIT
AL ALAMIAH ELECTRONICS
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Fahd al Saleem Street
P.O.Box 23781
Safat-Kuwait
Telex: 22694

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DIVISION OF PHILIPS
Försäljning AB
Tegeluddsvägen 1
S-115 84 Stockholm
Sweden
Telex: 14060

PORTUGAL
MARANTZ
Divisao philips S.A. service
Outurela-carnaxide
2795 LinDA-A-VELHA
Telex: 43906

NORWAY
MARANTZ
DIVISION OF PHILIPS A/S
Sandstuveien 40
0680 Oslo 6
Norway
Telex: 72640

ITALY
MARANTZ ITALIANA S.P.A.
Via Chiese, 74
20126 Milano
Italy

CANADA
NORESKO
50 Wingold Avenue
Toronto, Ontario
Canada M6B 1P7

All of the above locations are fully equipped to take care of your total service needs. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please, contact the nearest facility for the necessary assistance.

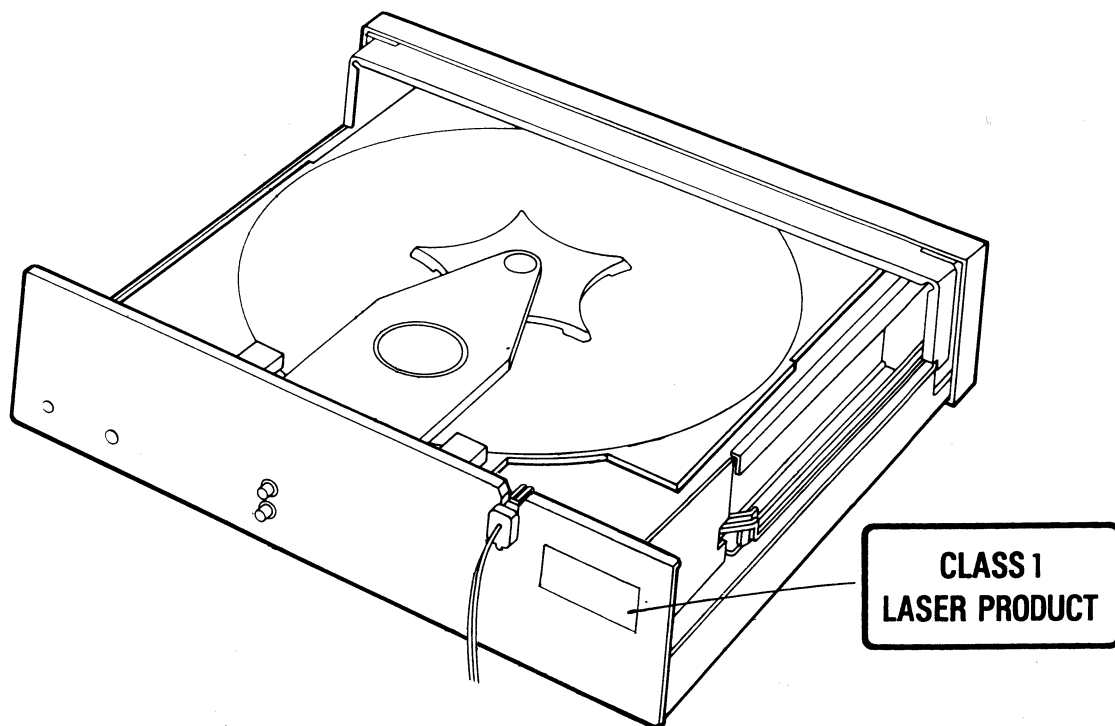
SHOCK, FIRE HAZARD SERVICE TEST:

CAUTION: After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins (with unit NOT connected to AC mains and its Power switch ON), and the face or Front Panel of product and controls and chassis bottom.

Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verified before return to user/customer. Ref. UL Standard NO. 1270. Para 74. 3. D (Mandatory Test after servicing Electrical Appliances, effective 7-1-83).

In case of difficulties, do not hesitate to contact the Technical Department at abovementioned address.

SAFETY CERTIFICATION / CERTIFICAT DE SÉCURITÉ



DOC REGULATION

"THIS DIGITAL APPARATUS DOES NOT EXCEED THE CLASS B LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS AS SET OUT IN THE RADIO INTERFERENCE REGULATIONS OF THE CANADIAN DEPARTMENT OF COMMUNICATIONS."

REGULATION DOC

"LE PRÉSENT APPAREIL NUMÉRIQUE N'ÉMET PAS DE BRUITS RADIOÉLECTRIQUES DÉPASSANT LES LIMITES APPLICABLES AUX APPAREILS NUMÉRIQUES DE LA CLASSE B PRESCRITES DANS LE RÉGLEMENT SUR LE BROUILLAGE RADIO ÉLECTRIQUE ÉDICTÉ PAR LE MINISTÈRE DES COMMUNICATIONS DU CANADA."

CAUTION— USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

ATTENTION— L'EMPLOI D'ORGANES DE COMMANDE OU DE RÉGLAGE, OU L'EXÉCUTION DE PROCÉDURES, AUTRES QUE CEUX SPÉCIFIÉS DANS LE MODE D'EMPLOI, PEUT PROVOQUER UNE EXPOSITION DANGEREUSE AU RAYONNEMENT.

LASER SAFETY

This unit employs a laser. Only a qualified service person should remove the cover or attempt to service this device, due to possible eye injury.

SPECIFICATIONS

System Digital Compact Disc Changer
Drawer Type 5-disc Rotary Changer

AUDIO CHARACTERISTICS

Frequency Response 5 - 20,000 Hz

Harmonic Distortion Less than 0.003% (1 kHz)

S/N Ratio More than 100dB

Wow and Flutter Quartz precision

Channel Separation More than 100dB (1 kHz)

Output Voltage max. 2Vrms

FUNCTIONS

Disc Selection with DISC NO. Buttons (1 - 5)

Track Selection with MUSIC SKIP
▶▶ and ◀◀ buttons

Index Selection with SEARCH/INDEX
▶▶ and ◀◀ buttons (normal mode only)

Forward/Back 2-Speed Search with sound

**Each/Remain/
Total Time Display** with TIME button
during PLAY mode

Program 32 selection

Repeat Tracks One/All/Program

Program Reset with CLEAR button

Checking Program with RECALL button
(in STOP mode)

Random Play (Shuffle Play) with Remote Control

Intro Scan with Remote Control

Pause Each selection

Disc Loading Front Loading

DIGITAL SIGNAL PROCESSING

Optical Pickup 3-beam laser

Error Correction CIRC

Sampling Frequency 44.1kHz

D/A Conversion Bitstream

Filter 18 bits 8 times over sampling

GENERAL

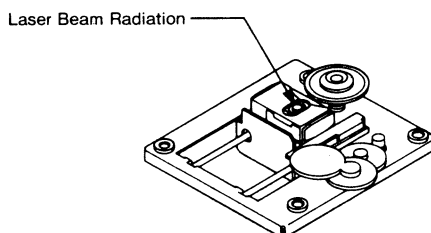
Power Source /02 Version 230V, 50Hz
/05/07 Version 240V, 50Hz
/01 Version 110-120/220-240V, 50/60Hz

Power Consumption 20 Watts

Dimensions (W×H×D) 420 × 116 × 393.5mm

Weight 6.3kg

LASER BEAM RADIATION SPOT



Laser Diode Properties

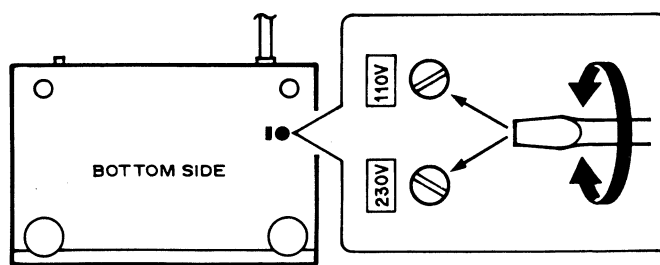
Material: Ga-Al-As
Wavelength: 755-815nm (25°C)
Laser Output: Continuous Wave max. 0.5mW

VOLTAGE CONVERSION

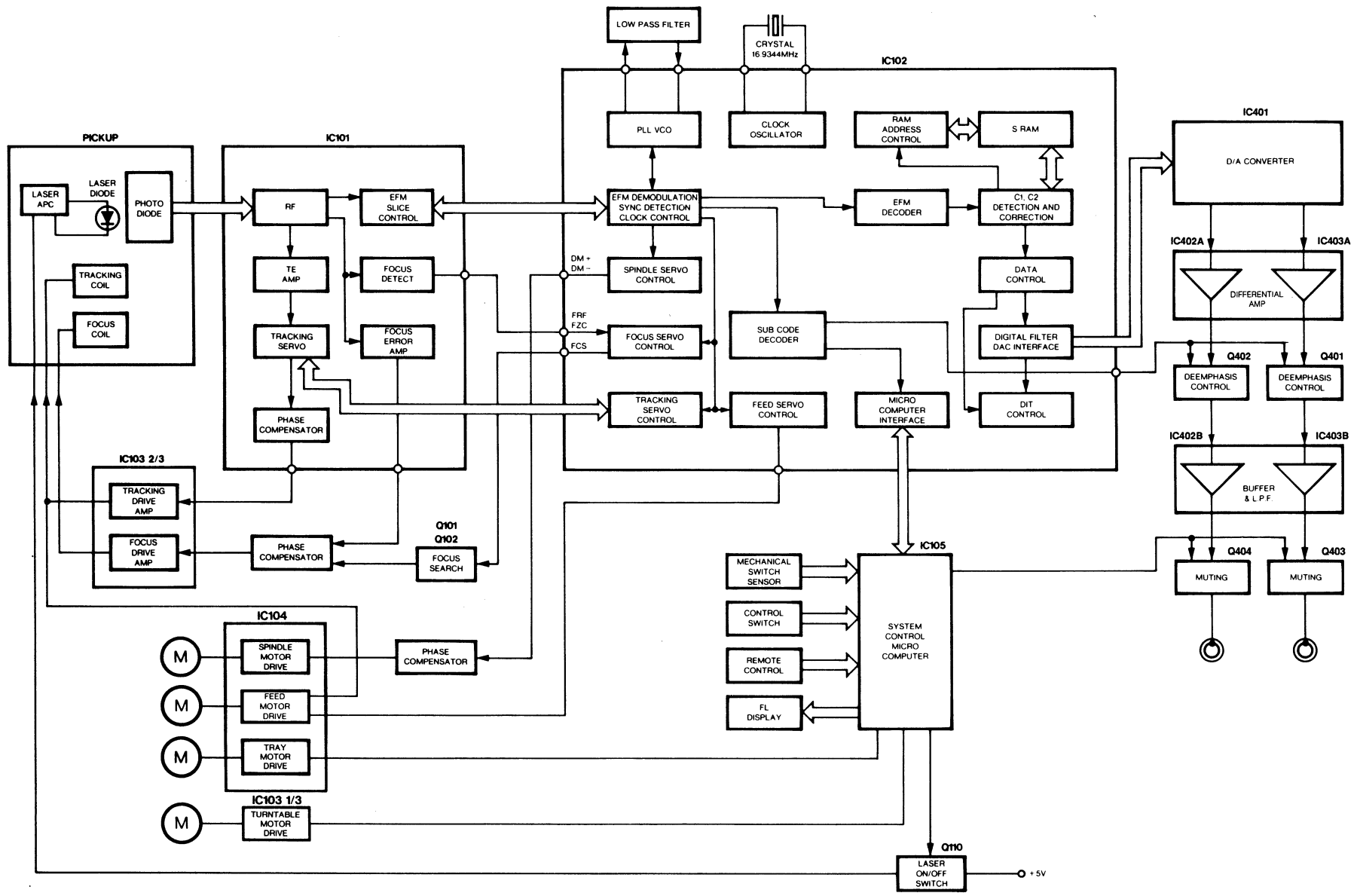
Voltage Conversion

(Only for Ever)

The voltage convertor is provided on the bottom plate of the unit. Please make sure that the voltage is correctly set for the area to export. If not, set it correctly with reference to the right figure. Remove the power cord from the plug socket when setting the voltage.



FUNCTIONAL BLOCK DIAGRAM



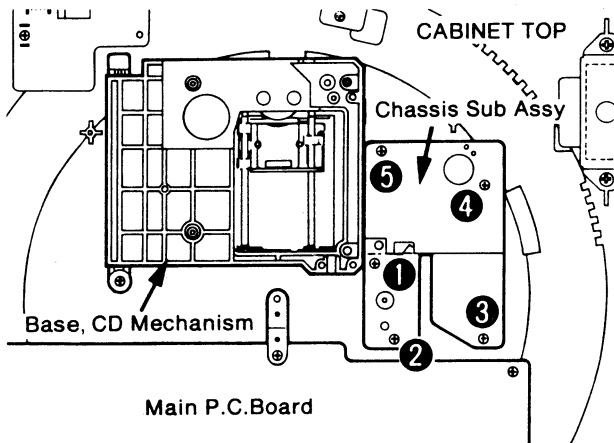
DISASSEMBLY INSTRUCTIONS

GENERAL REMARKS

- Before disassembling the unit, spread a soft rubber mat or a cloth on the workbench to avoid scratches and grease stains.
- Do not use a material which is likely to cause static electricity because transistors and ICs may be easily damaged by it.
- Reassemble the unit, noting the kinds of screws, the soldering and arrangement of the leads. Refer to "Circuit Diagram and Exploded Views" for correct assembly.
- Reassemble in reverse order.

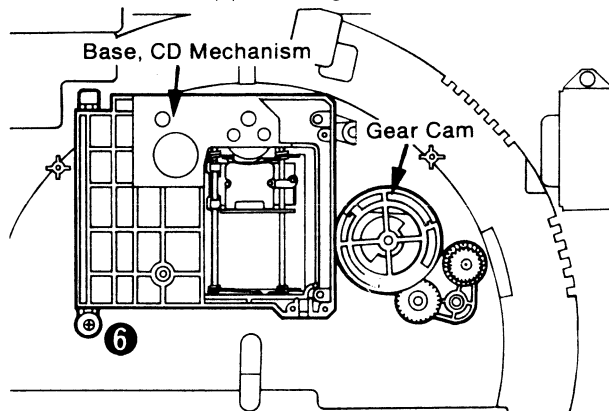
CHASSIS SUB ASSY REMOVAL

1. Turn the unit over on a clean soft surface.
2. Remove the screws from the Plate Bottom and detach the Plate Bottom from the unit.
3. Remove the five screws (1 ~ 5) fastening the Chassis Sub Assy to the Cabinet Top.
4. When installing the Chassis Sub Assy, fix it by screws in numerical order.
5. Reassemble in reverse order.

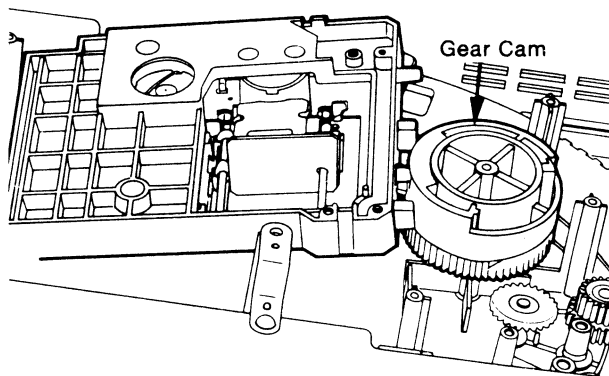


BASE, CD MECHANISM REMOVAL

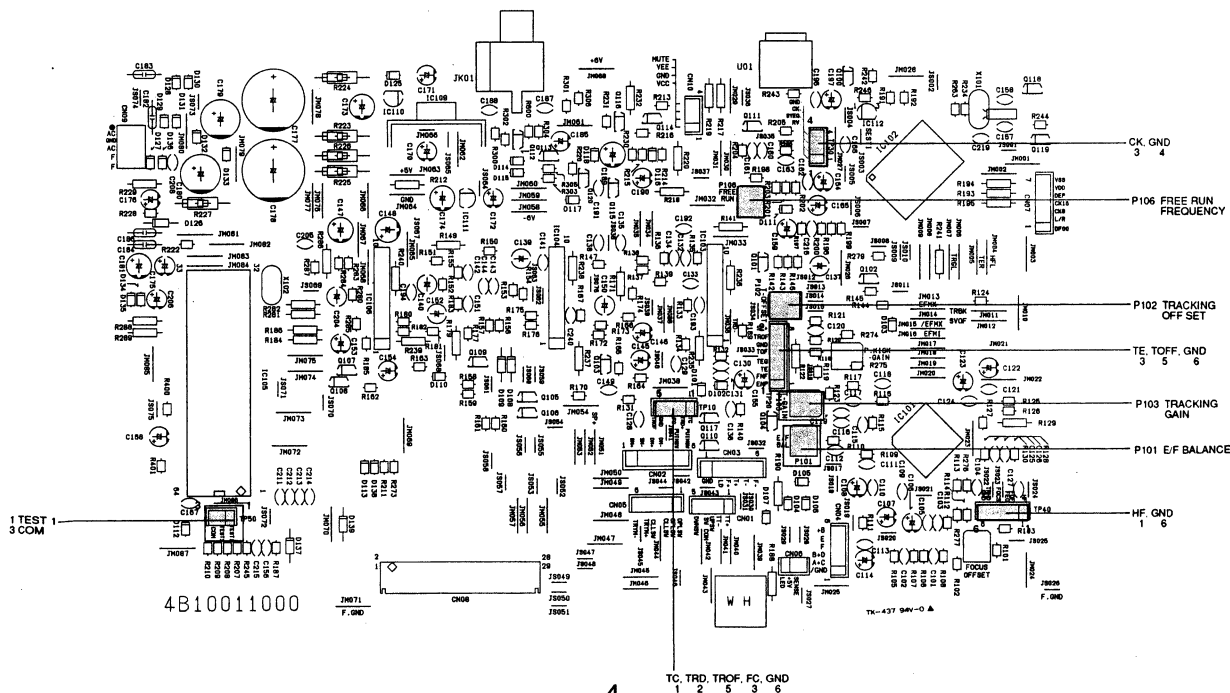
1. Remove the Chassis Sub Assy by following the instructions for it.
2. Remove the screw (6) fastening the Base CD Mechanism.



3. Remove the Base CD Mechanism taking out the movable boss from the up and down movable groove on the side of the Gear Cam.
4. Reassemble in reverse order.



P.C. BOARD ALIGNMENT POINTS (TOP VIEW)



ADJUSTMENT PROCEDURES

BEFORE CHECKING OR ADJUSTING CD PLAYER

1. Procedures for all adjustments for the CD player from start to finish are described below.
2. If no problems are found after each item is checked when the pick-up is replaced, there is no need to adjust all items again.

SETTING OF INITIAL POSITION OF VOLUME

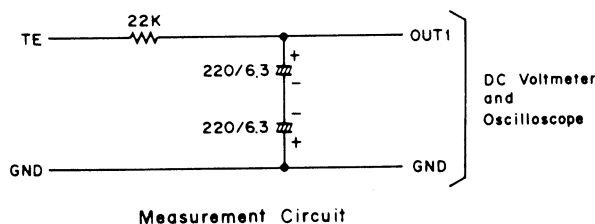
1. Set the variable resistors to the initial positions listed below:
 P101 (E/F BALANCE) Mechanical Center
 P102 (TRACKING OFFSET) Mechanical Center
 P103 (TRACKING GAIN) Mechanical Center
 P106 (FREE RUN FREQUENCY) Mechanical Center

PLL (VCO) FREE RUN FREQUENCY ADJUSTMENT

1. Connect the frequency counter between the **VCO** test terminal **CK** and **GND**. (Use a 10: 1 Probe)
2. Push the **POWER** button to switch the power on and push the **STOP** button.
3. Adjust the P106 until the frequency counter indicator reads 4.32 MHz ~ 4.33 MHz.

E/F BALANCE ADJUSTMENT

1. Short the between test terminal **TEST1** and **COM** on the Main P.C.Board to the **TEST** mode.
2. Connect a DC voltmeter and an oscilloscope via the low pass filter like that shown in the illustration below to the test terminal **TE** (tracking error).
3. Place the test disc (Modern Wave II) on the Disc Tray, and play the fourth item on the disc.
4. Short the test terminal **TOFF** to **GND** to turn the tracking servo OFF.



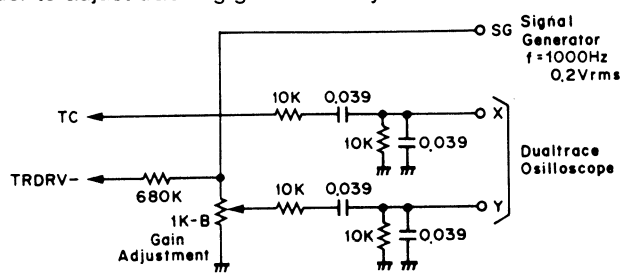
5. Adjust P101 so that the DC voltmeter reading is $0\text{ V} \pm 50\text{ mV}$ (oscilloscope waveform is symmetric to + and - about the zero level).

CONFIRMING TE LEVEL

1. Play the fourth item on the test disc (Modern Wave II).
2. Connect an oscilloscope to the test terminal **TE**, and check that its **TE** level is in the range at more than 2 V (P-P).
3. If the results of the above procedure are not satisfactory, the pick-up is damaged.

TRACKING GAIN ADJUSTMENT

The measurement circuit diagrammed below must be used in order to adjust tracking gain correctly.



Measurement Circuit

1. Apply P103 to the position of Mechanical center position and place the test disc (Modern Wave II) on the Disc Tray.
2. Connect the measurement circuit described in the last section to the test terminal **TC** (tracking coil) and **TRDRV-** (minus). (Use 680kΩ Resistor)
3. Push the **POWER** button to switch the power on and **PLAY** the first item on the test disc. Now apply a signal of 1000 Hz and 0.2 Vp-p from the signal generator to the measurement circuit.
4. Set the oscilloscope to X-Y operation, and while observing the lissajous waveform adjust P103 to the point where the phase difference is 90° as shown in Fig.1 below.

NOTE:

If these adjustments are performed, the **TRACKING OFFSET** must also be adjusted.

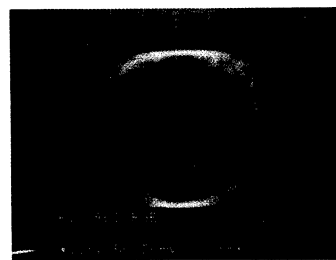


Fig 1.

CONFIRMING HF LEVEL & 3T JITTER VALUE

If no jitter counter is available, this check does not have to be performed.

1. Play the fourth item on the test disc (Modern Wave II).
2. Connect an oscilloscope to the test terminal **HF** and check that its **HF** level is in the range 2.0 Vp-p ~ 3.0 Vp-p. (Use a 10: 1 Probe)
3. Connect a jitter counter to test terminal **HF** and check that the 3T jitter value is less than 25 ns. (Window width: 600 ns ~ 850 ns, Set Level: 2.5 V)
4. Now play the tenth item on the test disc and check that the jitter value is less than 25 ns again.

ADJUSTMENT PROCEDURES (Continued)

TRACKING OFFSET ADJUSTMENT

1. Push the POWER button to switch the power on and push the STOP button.
2. Connect a DC voltmeter to the test terminal TC (tracking coil) and short the test terminal TROF to GND.
3. In this condition check that the DC voltmeter indicator is in the range $100\text{ mV} \pm 20\text{ mV}$, and adjust P102 if it is not.

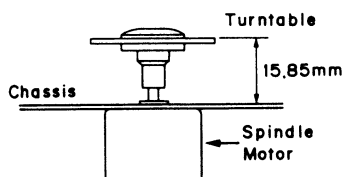
NOTE:

Perform this adjustment once again after adjusting the E/F BALANCE and TRACKING GAIN signals.

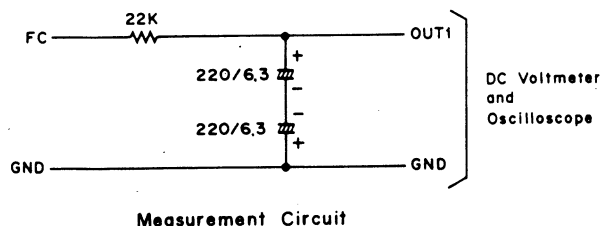
TURNTABLE HEIGHT ADJUSTMENT

This adjustment must be performed when the Spindle Motor is replaced.

1. The turntable should be mounted so that its upper surface is $15.85\text{ mm} \pm 0.1\text{ mm}$ above the surface of the chassis.



2. Place the test disc (Modern Wave II) on the turntable.
3. Connect a DC voltmeter and an oscilloscope via the low-pass filter shown below to the test terminal FC.



4. Push the POWER button to switch the power on and PLAY the First and Last Track No. on the disc.
5. If the DC Voltmeter reading is not in the ranges $0\text{ V} \pm 0.2\text{ V}$ for inner tracks and $0\text{ V} \pm 0.35\text{ V}$ for outer tracks, then the turntable height must be readjusted. Raise the turntable higher if the DC voltmeter indicator is on the plus (+) side, and lower it if it is on the minus (-) side. (With this circuit, 1V represents movement of approximately $0.55\text{ mm} \sim 0.65\text{ mm}$).

SAFETY INTERLOCK

The Digital Compact Disc Player reads the disc signal by detecting the laser beam. It must be avoided for the human body to directly receive the beam. Especially human eyes are badly affected by the beam. Therefore, the unit is equipped with an interlock to prevent the unnecessary laser outputs.

The laser outputs are controlled by the injection or cutoff of the constant voltage source to the laser diode with Pin 27 of IC105 (μ PD75208). When Pin 27 is in "L" (Low) level, the laser emits the beam. When Pin 27 is in "H" (High) level, the laser does not emit the beam.

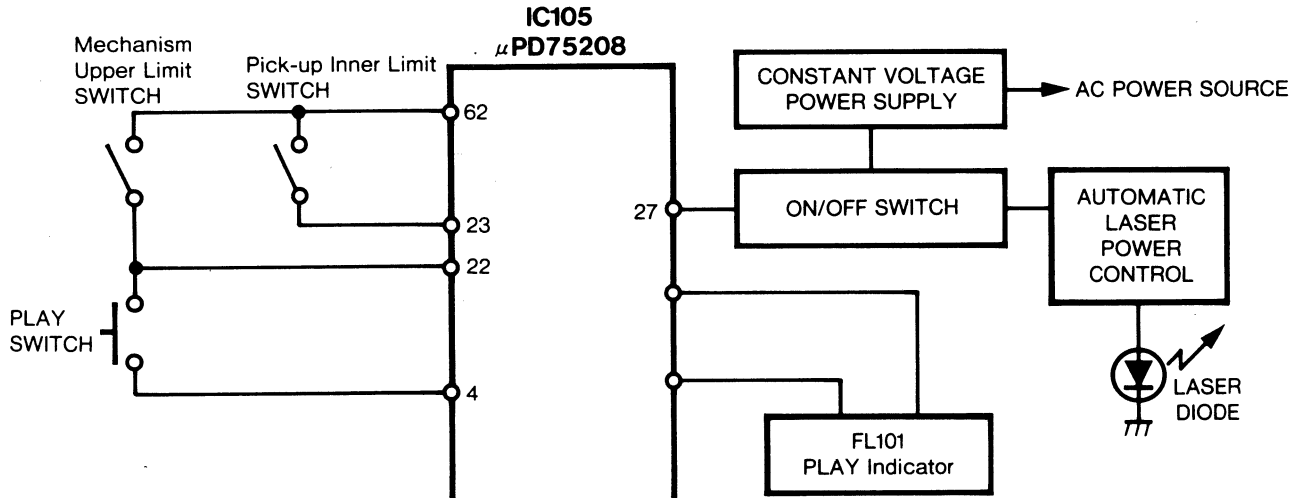
Pin 27 is set in "H" level when the unit is loaded with the disc and it reads the index signals or when the unit is set in the play mode after that. When the unit reads the index signals and the following two conditions are met, the laser

emits the beam.

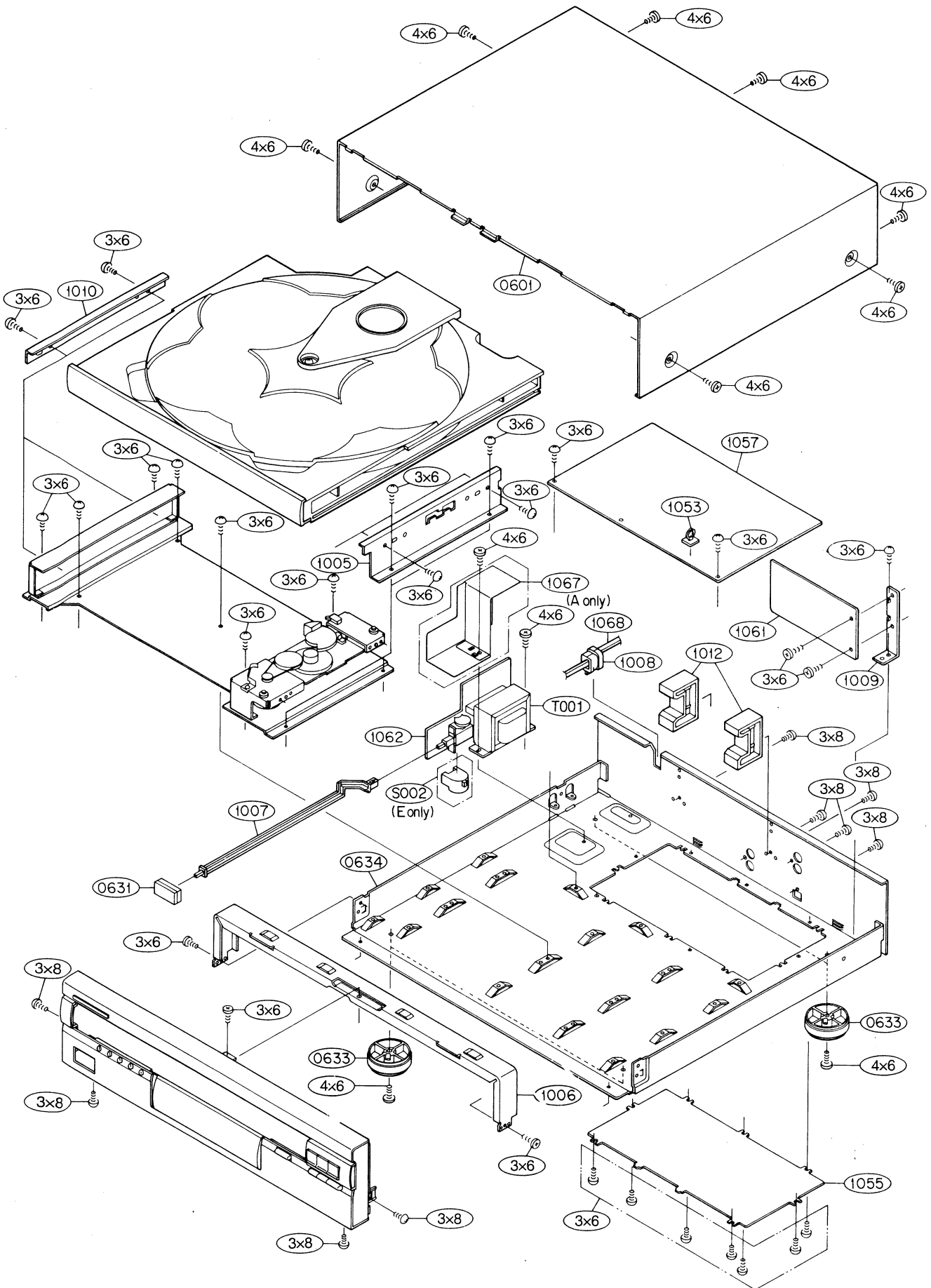
- 1) When the Mechanism Upper Limit Switch is on.
- 2) When the Pick-up Inner Limit Switch is on. (The disc tray is closed.)
- 3) The pickup is located at the area of the minimum internal circumference.

After the above conditions are met and the index signals have been read, the laser emits the beam when the following two conditions are met.

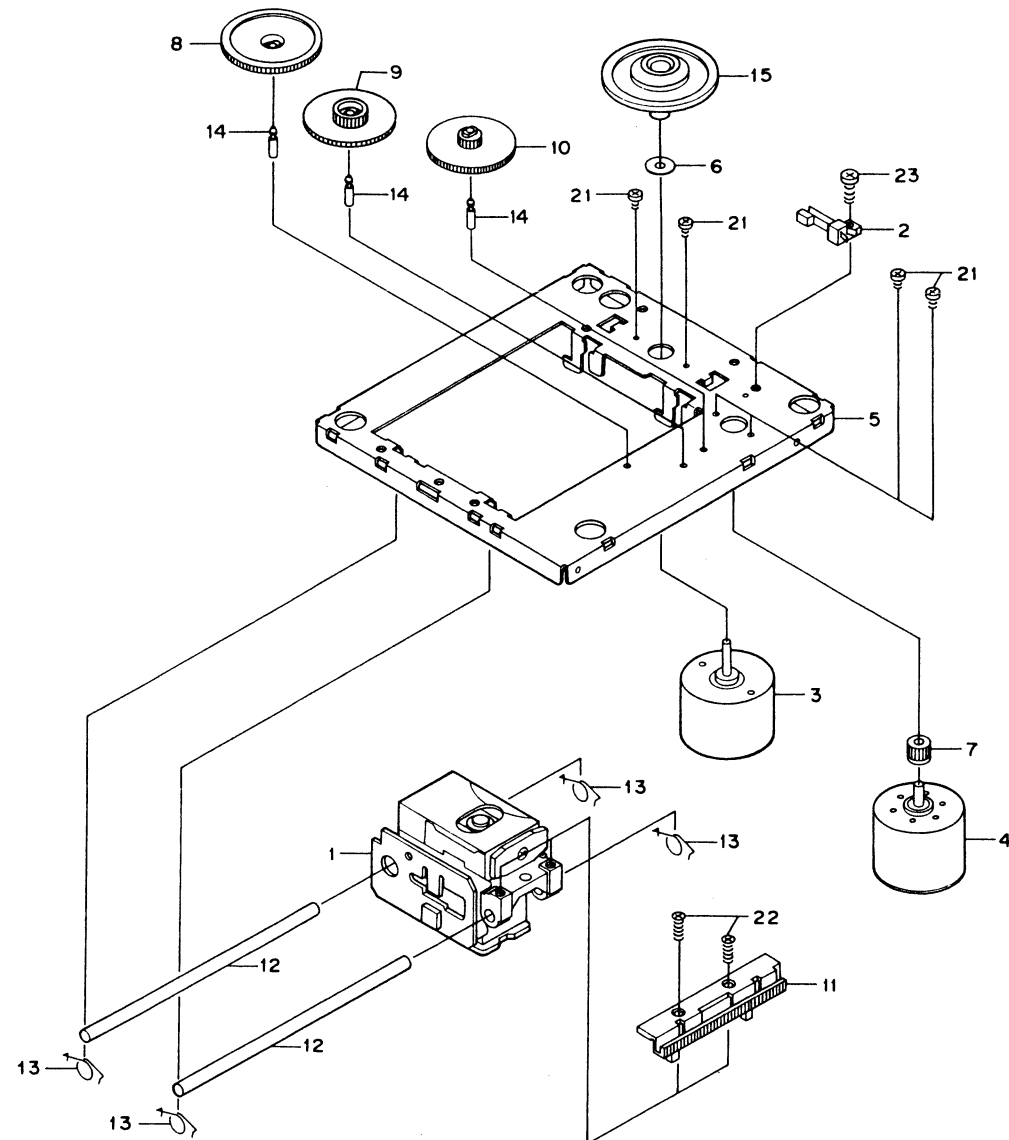
- 1) When the PLAY button is pressed.
- 2) When the PLAY indicator is on.



CABINET & CHASSIS EXPLODED VIEW (1)



MECHANISM EXPLODED VIEW



MECHANISM PARTS LIST

REF. DESIG.	PART NO.	DESCRIPTION
1	4822 691 30304	Mechanism Pick Up Assy, 90EC2
2	4822 271 30794	Mini Switch Leaf Switch
3	4822 361 21596	D.C. Motor Motor
4	4822 361 21595	D.C. Motor Motor
5	4822 532 12213	Washer Special
6	4822 522 33325	Gear Gear, Motor
7	4822 522 33326	Gear Gear, Piniop

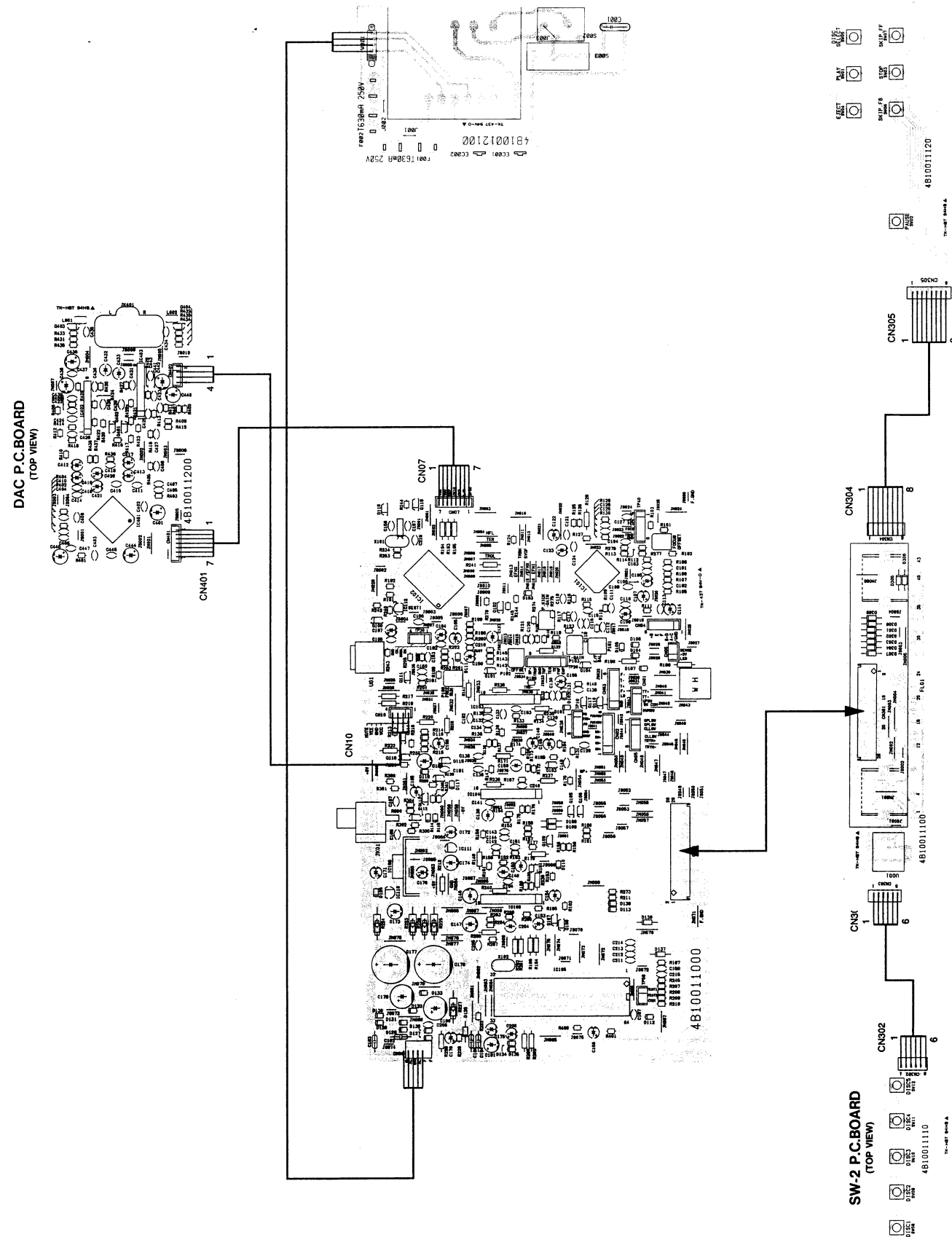
REF. DESIG.	PART NO.	DESCRIPTION
8	4822 522 33327	Gear Gear, Load B
9	4822 522 33328	Gear Gear, Load S
10	4822 522 33329	Gear Gear, Rack
11	4822 492 42642	Spring Spring, Tortion
12	4822 535 93359	Shaft Spindle, Gear
13	4822 528 10868	Turntable Turntable Assy

ELECTRICAL PARTS LIST

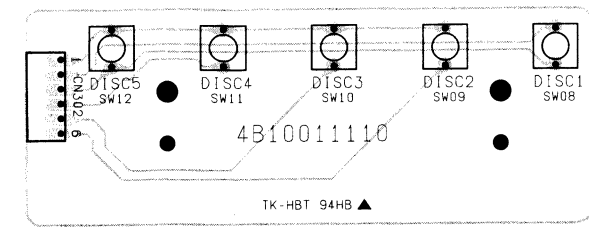
REF. DESIG.	PART NO.	DESCRIPTION
MAIN CIRCUIT BOARD		
RESISTORS		
▲ R223	4822 116 60312	Resistor 4.7 Ω
▲ R224	4822 116 60312	Resistor 4.7 Ω
▲ R225	4822 117 10163	Resistor 0.47 Ω
▲ R226	4822 117 10163	Resistor 0.47 Ω
CAPACITORS		
C177	4822 124 80403	Eilct Cap 3300 μ F/16V
C178	4822 124 80403	Eilct Cap 3300 μ F/16V
SEMICONDUCTORS		
D101	4822 130 83242	Diode GMB01 - BT
D117	4822 130 83242	Diode GMB01 - BT
D118	4822 130 83244	Zeher Diode GZS7.5Y - BT
D126	4822 130 83242	Diode GMB01 - BT
D127	4822 130 83242	Diode GMB01 - BT
D128	4822 130 83246	Diode ERA15 - 02, A3 - I
D133	4822 130 83243	Zener Diode GZS24Z - BT
D134	4822 130 82641	Zener Diode GZS5.1Y - BT
D135	4822 130 83242	Diode GMB01 - BT
D136	4822 130 83242	Diode GMB01 - BT
D139	4822 130 83242	Diode GMB01 - BT
IC101	4822 209 30154	IC LA9200NM
IC102	4822 209 31985	IC YM7121B
IC103	4822 209 71922	IC LA6510
IC104	4822 209 71922	IC LA6510
IC105	4822 209 31986	IC μ PD75208CW
IC106	4822 209 71922	IC LA6510
IC109	4822 209 73096	IC MC7805CT
IC110	4822 209 83819	IC NJM78L06A (T3)
IC111	4822 209 30442	IC NJM79L06A (T3)
IC112	4822 209 31988	IC PST523
Q100	4822 130 42871	Transistor 2SA608 - F - NP - AA
Q101	4822 130 43822	Transistor 2SC3330 - S
Q102	4822 130 43026	Transistor 2SA1346
Q103	4822 130 43319	Transistor 2SC3400
Q104	4822 130 43026	Transistor 2SA1346
Q105	4822 130 43319	Transistor 2SC3400
Q109	4822 130 43319	Transistor 2SC3400
Q110	4822 130 63193	Transistor 2SA1529
Q111	4822 130 43319	Transistor 2SC3400
Q112	4822 130 63196	Transistor 2SC536 - G
Q113	4822 130 42871	Transistor 2SA608 - F - NP - AA
Q114	4822 130 63195	Transistor 2SA1317 - S
Q115	4822 130 43319	Transistor 2SC3400
Q116	4822 130 43822	Transistor 2SC3330 - S
Q117	4822 130 43319	Transistor 2SC3400
Q118	4822 130 43319	Transistor 2SC3400
Q119	4822 130 43026	Transistor 2SA1346
Q120	4822 130 43319	Transistor 2SC3400

REF. DESIG.	PART NO.	DESCRIPTION
MISCELLANEOUS		
CN008	4822 265 51348	Plug, 29P
L001	4822 157 70289	Choke Coil 2.2 μ H
L002	4822 157 70289	Choke Coil 2.2 μ H
P101	4822 100 20552	Trimming Resistor 100K (B)
P102	4822 100 11954	Trimming Resistor 20K (B)
P103	4822 100 20552	Trimming Resistor 100K (B)
P106	4822 100 20552	Trimming Resistor 100K (B)
JK001	4822 290 81545	Terminal, RCA REM
U010	4822 265 31042	Converter, E/O
X101	4822 242 81356	Crystal
X102	4822 242 81355	Seramic Vib.
DISPLAY CIRCUIT BOARD		
SEMICONDUCTORS		
D301	4822 130 83242	Diode GMB01 - BT
D309	4822 130 83242	Diode GMB01 - BT
MISCELLANEDUS		
CN301	4822 265 51348	Plug, 29P
FL01	4822 130 91205	Display Unit CF1047CB
SW01	4822 276 30417	Push Switch
SW12	4822 276 30417	Push Switch
U001	4822 209 31987	Photo Unit GP1U501X
DAC CIRCUIT BOARD		
SEMICONDUCTORS		
IC401	4822 209 30438	IC SAA7350
IC402	4822 209 73303	IC RC4558S
IC403	4822 209 73303	IC RC4558S
Q401	4822 130 60948	Transistor 2SD1012 - G
Q404	4822 130 60948	Transistor 2SD1012 - G
MISCELLANEOUS		
JK401	4822 290 81546	Jack, RCA 2P
POWER CIRCUIT BOARD		
MISCELLANEOUS		
▲S002	4822 273 10262	Rotary switch/01B
▲S003	4822 276 13351	Push Switch
▲T001	4822 146 21704	Power Transformer/05B/07B
	4822 146 21705	Power Transformer/01B
	4822 146 21703	Power Transformer/02B

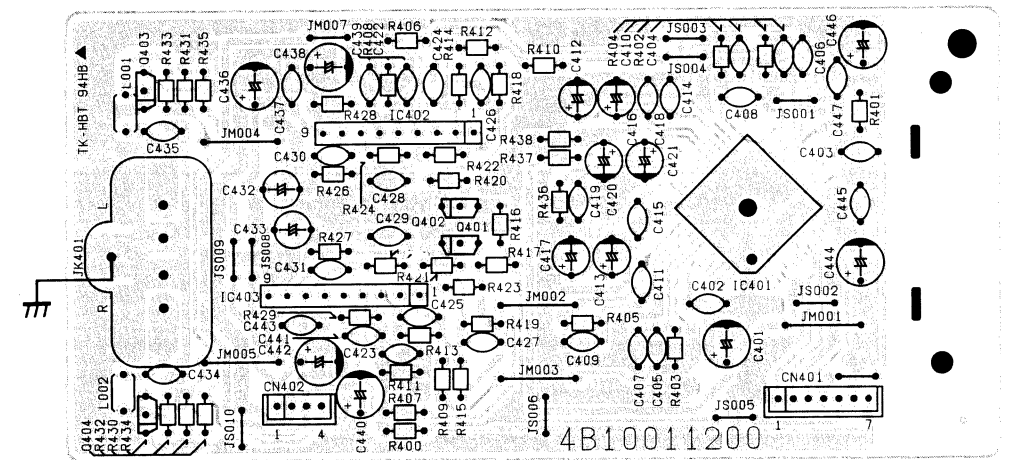
POINT TO POINT WIRING DIAGRAM



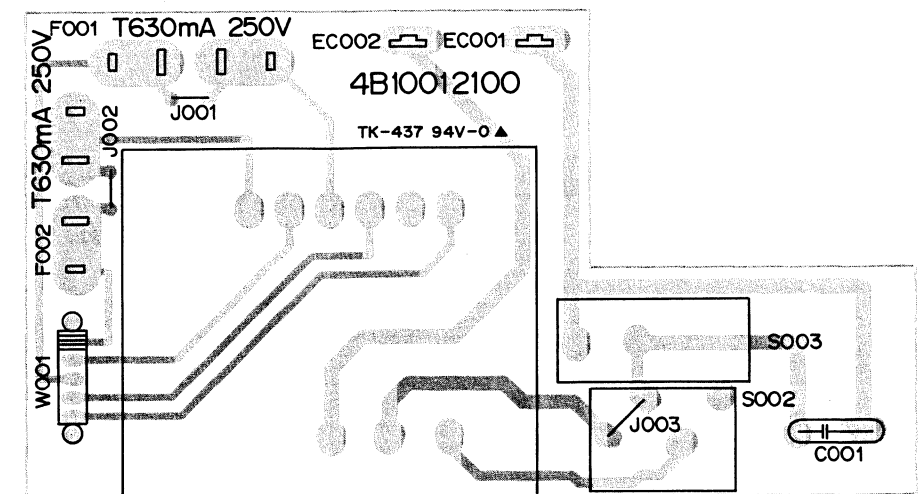
SW-2 P.C.BOARD (BOTTOM VIEW)



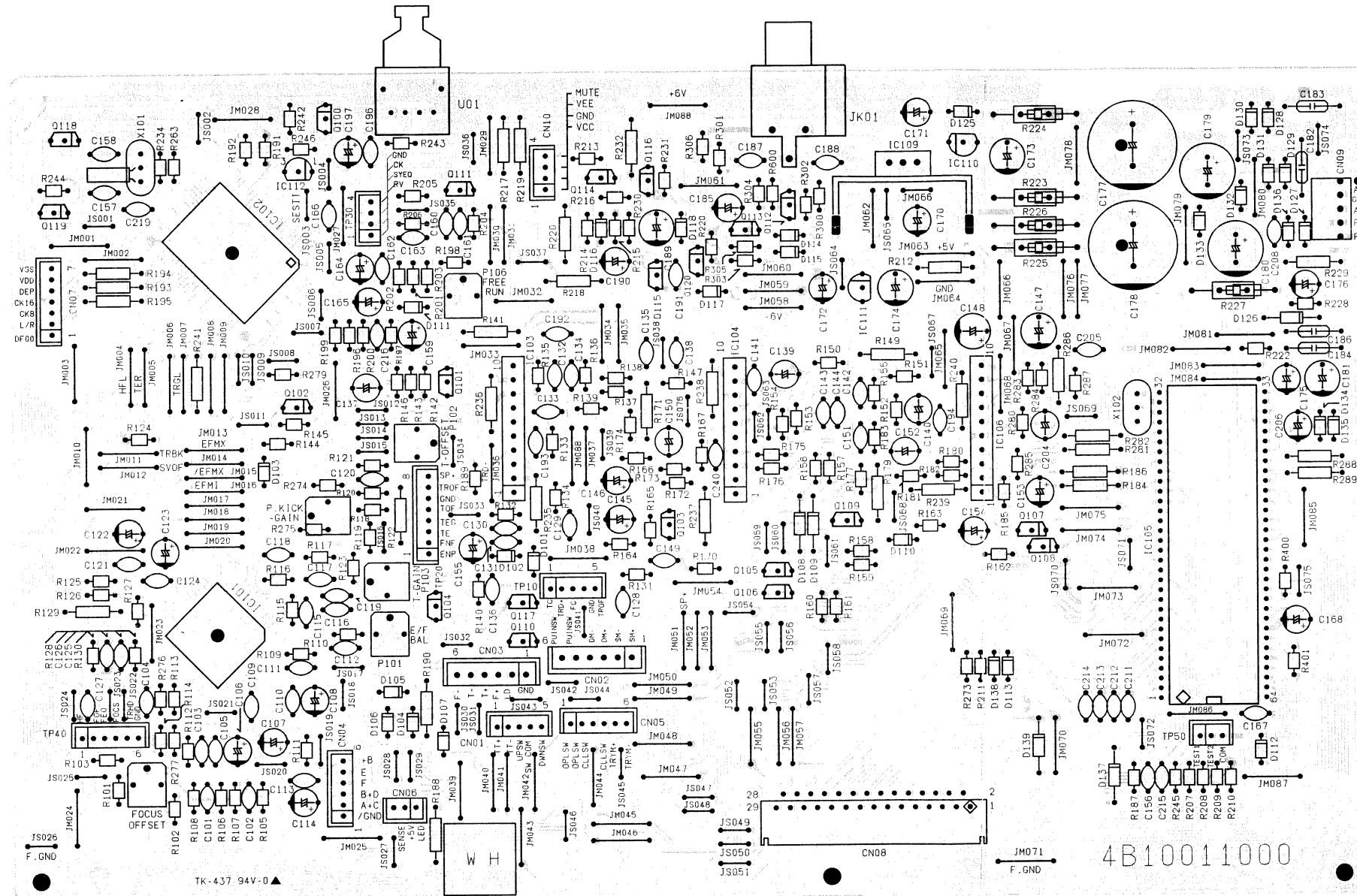
DAC P.C.BOARD (BOTTOM VIEW)



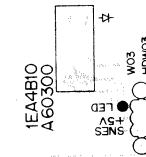
POWER P.C.BOARD (BOTTOM VIEW)



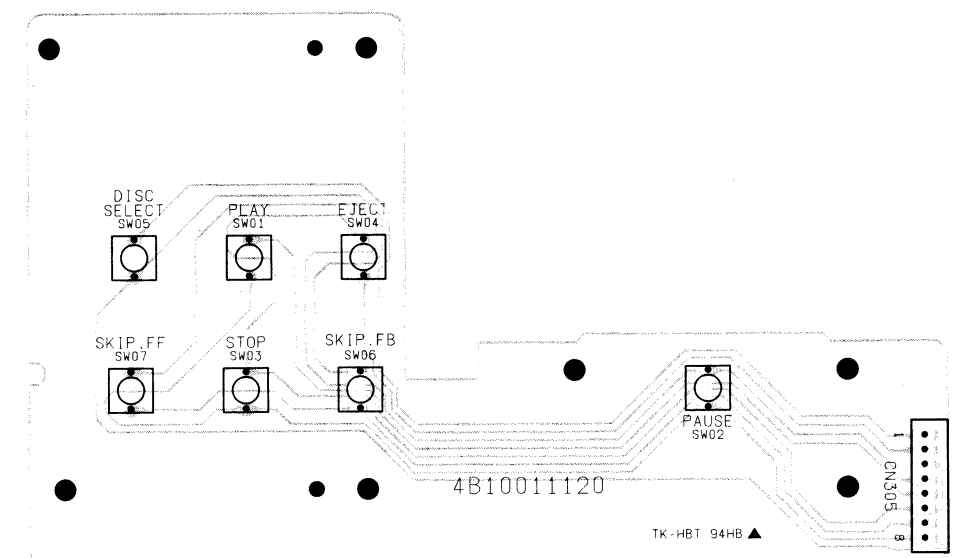
MAIN P.C.BOARD



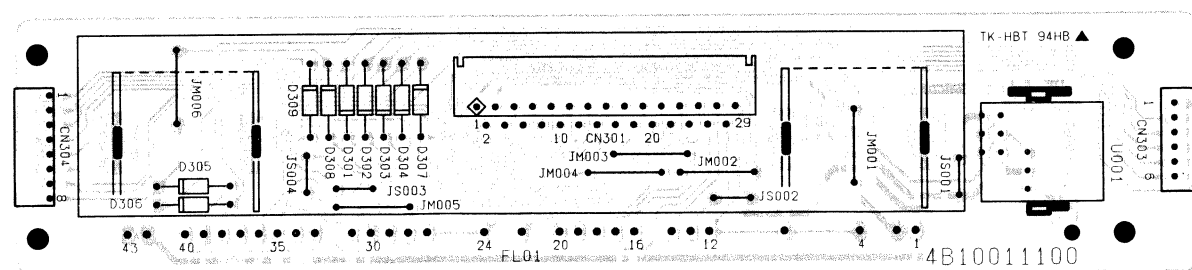
SENSOR P.C.BOARD (BOTTOM VIEW)



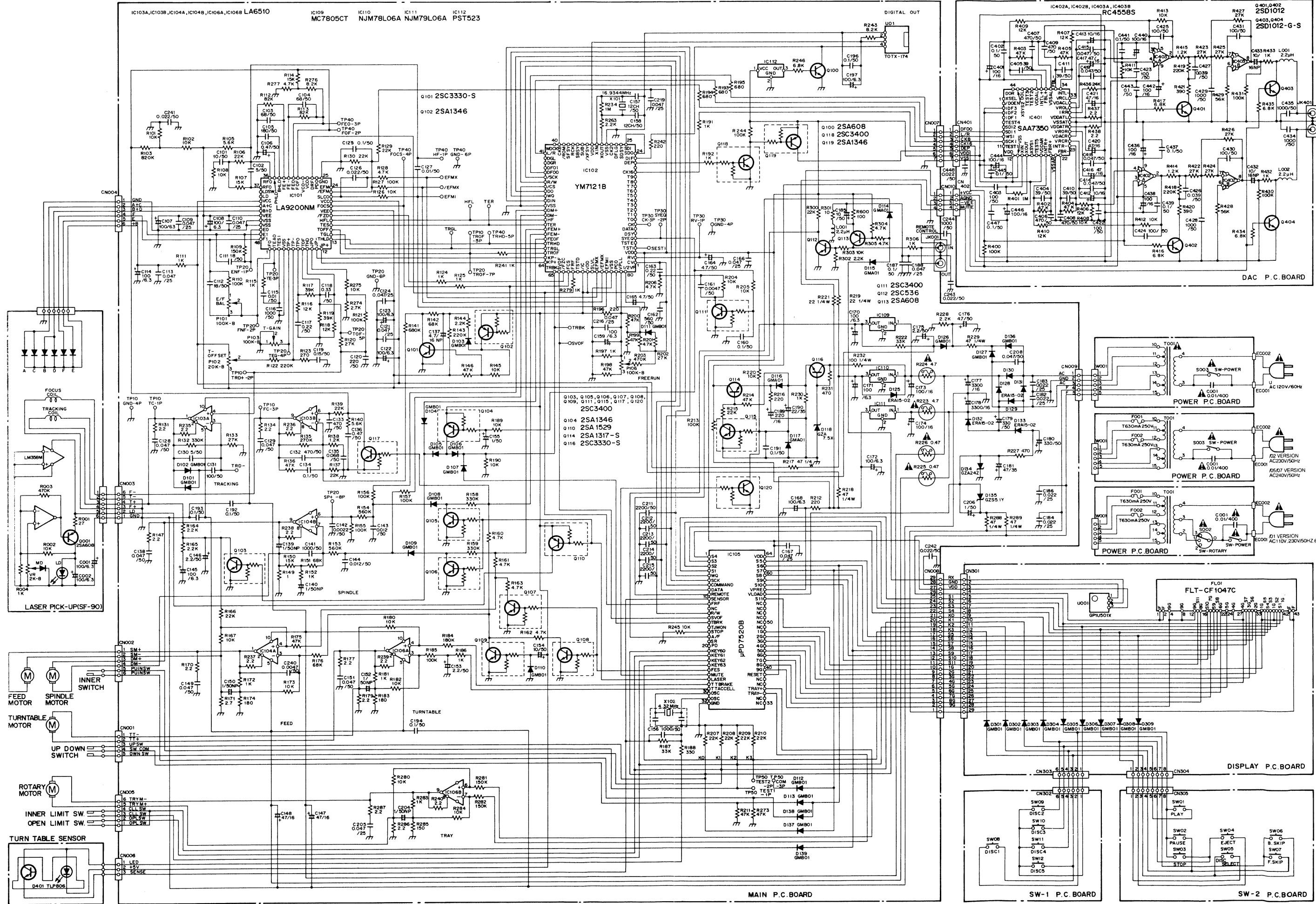
SW-1 P.C.BOARD (BOTTOM VIEW)



DISPLAY P.C.BOARD (BOTTOM VIEW)



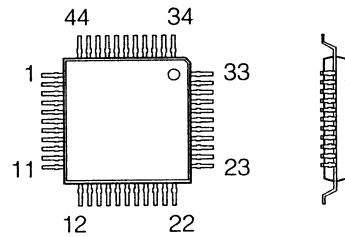
SCHEMATIC DIAGRAMS



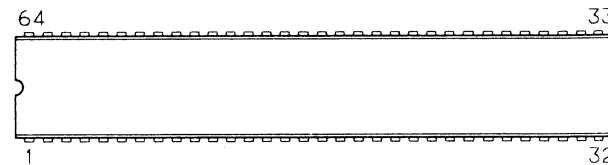
IC & TRANSISTOR LEAD IDENTIFICATION

TRANSISTOR	FRONT VIEW	BOTTOM VIEW	TRANSISTOR	FRONT VIEW	BOTTOM VIEW
2SA1529			2SA1317 2SA1346 2SC3330 2SC3400 2SD1012		
TERMINAL NAME					
B → BASE C → COLLECTOR E → EMITTER					

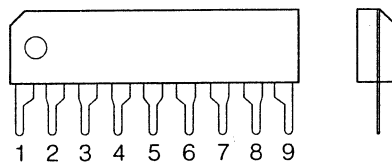
SAA7350 TOP/SIDE VIEWS



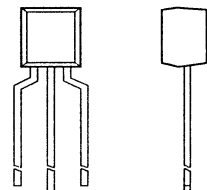
UPD75208CW TOP VIEW



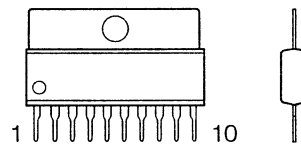
RC4558S TOP VIEW



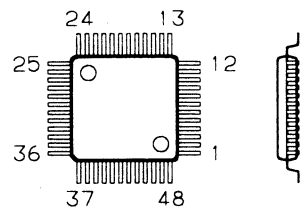
PST523C



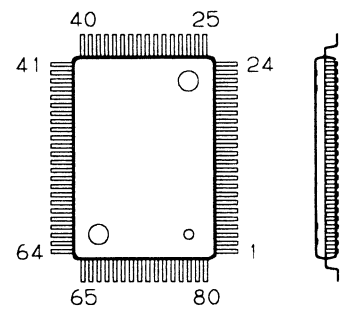
LA6510 TOP VIEW



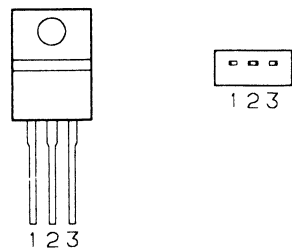
LA9200NM TOP/SIDE VIEWS



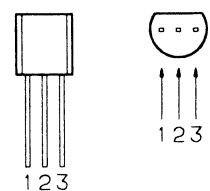
YM7121B TOP/SIDE VIEWS



MC7805CT FRONT/BOTTOM VIEWS

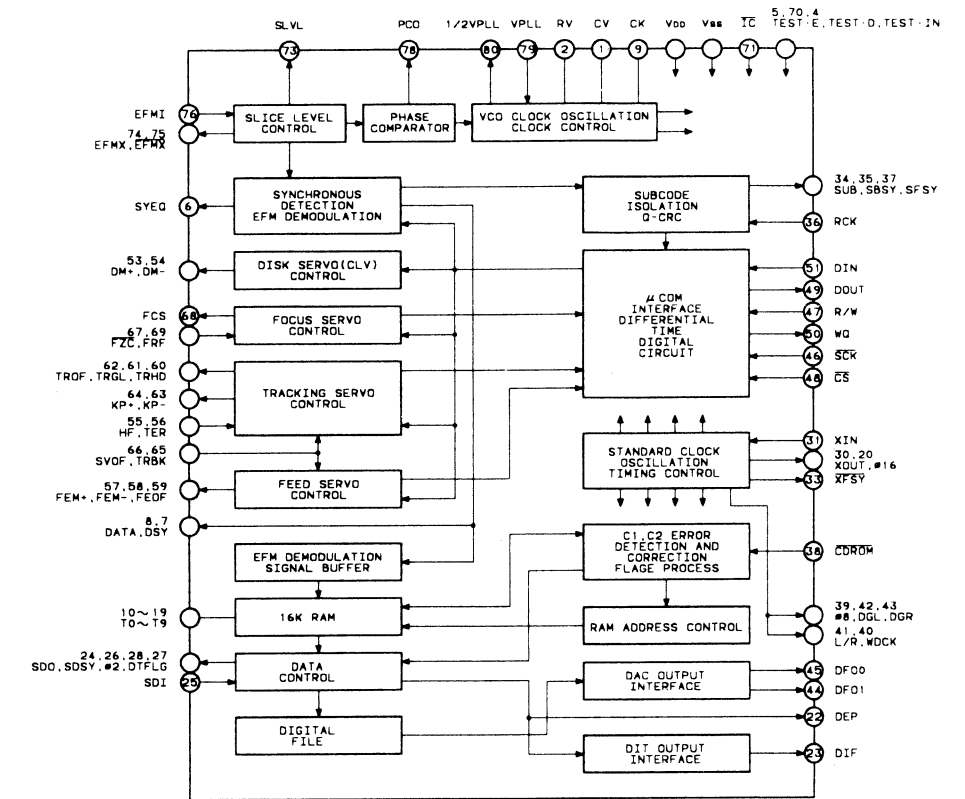


**NJM78L06A(T3) FRONT/BOTTOM VIEWS
NJM79L06A(T3) FRONT/BOTTOM VIEWS**

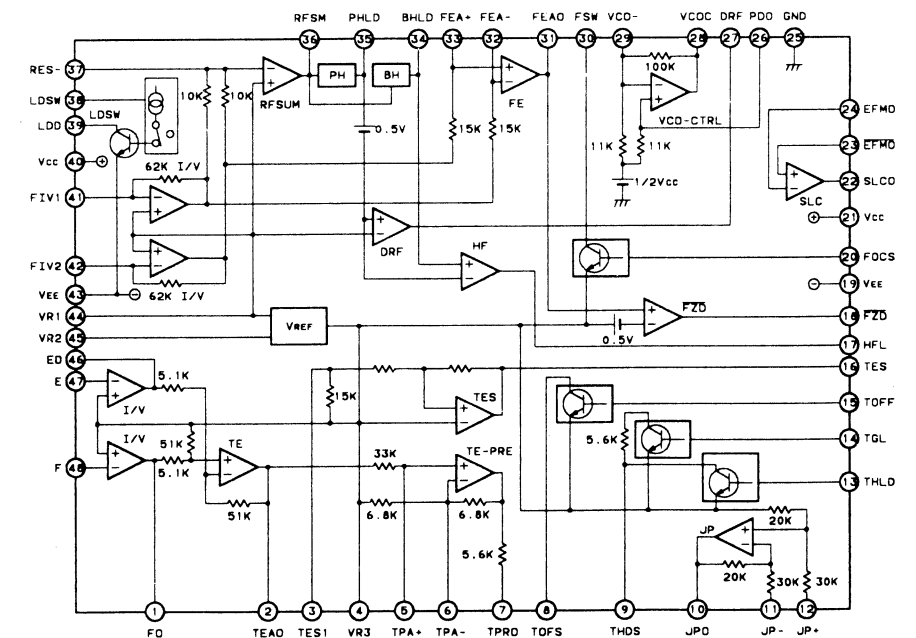


IC BLOCK DIAGRAM

YM7121B BLOCK DIAGRAM

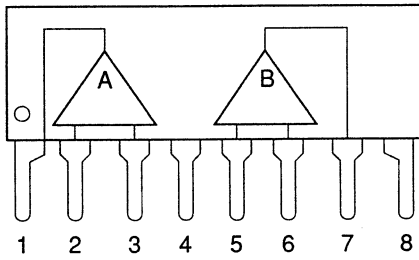


LA9200NM BLOCK DIAGRAM

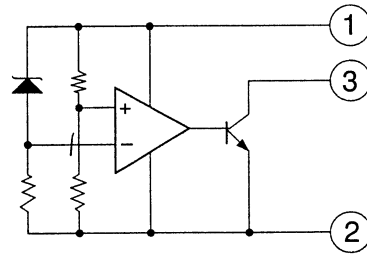


IC BLOCK DIAGRAM (Continued)

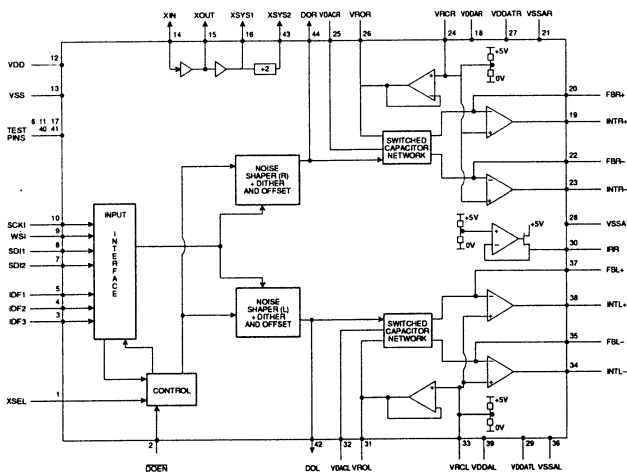
RC4558S BLOCK DIAGRAM



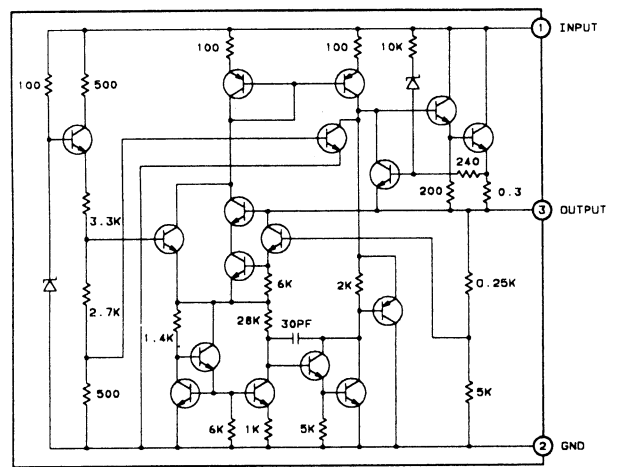
PST523C BLOCK DIAGRAM



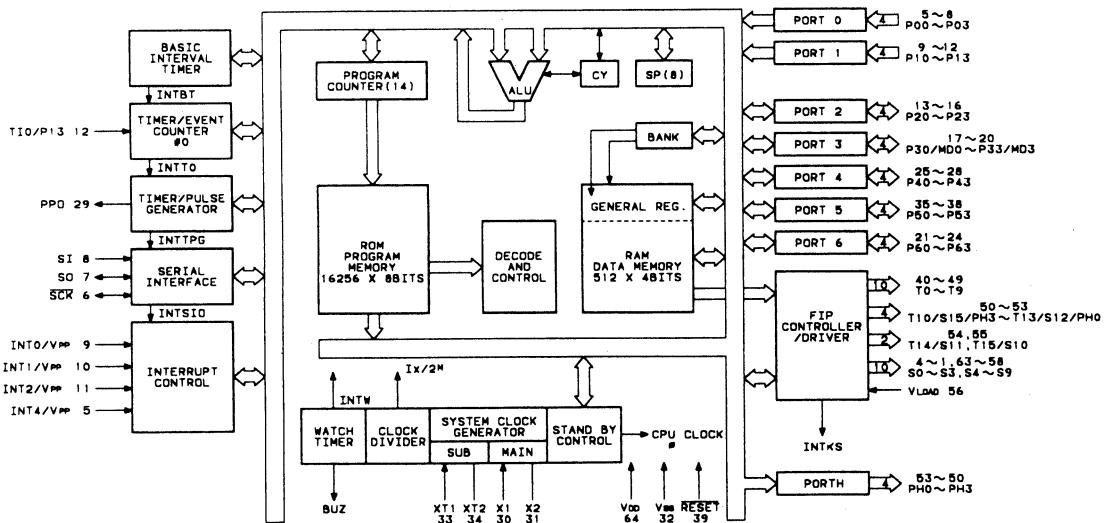
SAA7350 BLOCK DIAGRAM



MC7805CT BLOCK DIAGRAM

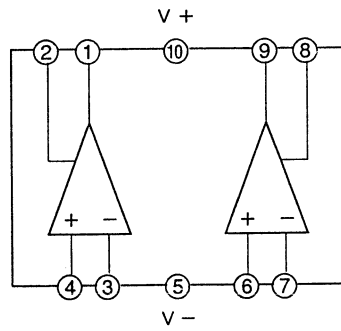


UPD75208CW BLOCK DIAGRAM

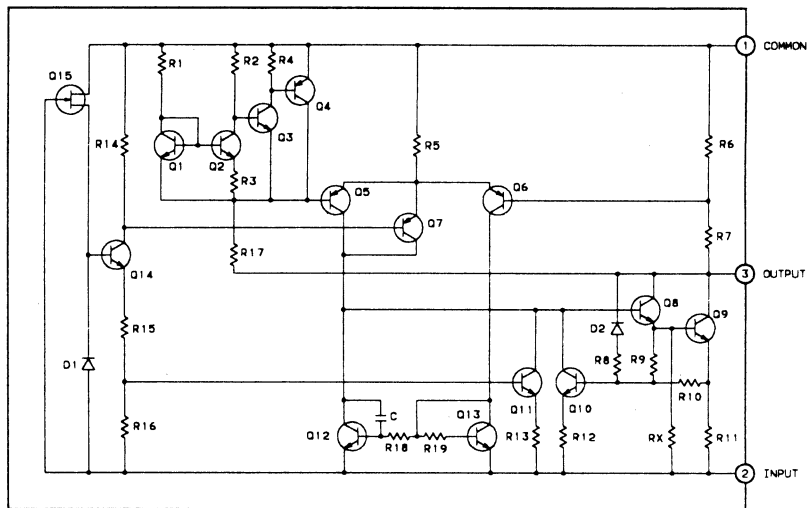


IC BLOCK DIAGRAM (Continued)

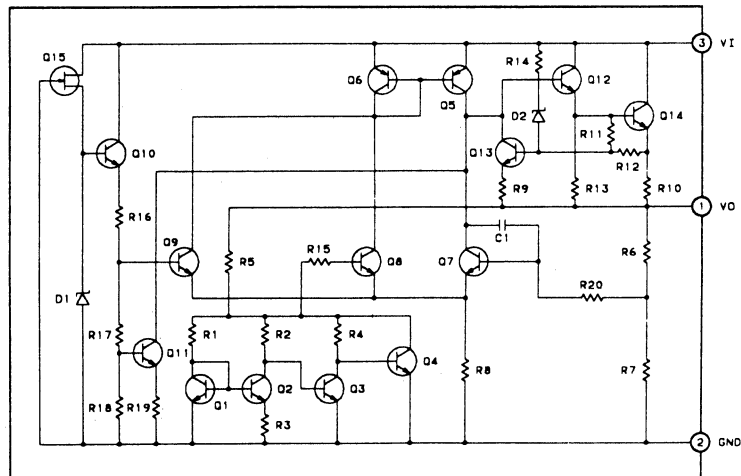
LA6510 BLOCK DIAGRAM



NJM79L06A(T3) BLOCK DIAGRAM



NJM78L06A(T3) BLOCK DIAGRAM



REFERENCE VOLTAGE

IC PIN NUMBER DC VOLTAGES																					
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC101	LC9200NH	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	5V	4V	4V	4V	-5V	0V
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
		5V	2V	3V	3V	0V	3V	0V	3V	3V	0V	0V	1V	1V	0V	0V	0V	0V	4V	0V	5V
		41	42	43	44	45	46	47	48												
		0V	0V	-5V	0V	0V	0V	0V	0V												

IC PIN NUMBER DC VOLTAGES																					
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC102	YM7121	2V	3V	5V	5V	5V	0V	0V	1V	2V	5V	5V	5V	5V	5V	5V	5V	5V	0V	0V	2V
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
		0V	0V	3V	0V	0V	3V	3V	0V	0V	2V	2V	5V	5V	0V	0V	0V	0V	5V	2V	3V
		41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
		3V	2V	2V	0V	0V	5V	0V	0V	0V	0V	0V	0V	0V	0V	4V	4V	0V	0V	5V	0V
		61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
		0V	5V	0V	0V	4V	5V	4V	0V	0V	5V	5V	5V	3V	3V	3V	2V	0V	2V	4V	2V

IC PIN NUMBER DC VOLTAGES											
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10
IC103	LA6510	0.7V	0V	0V	0V	-13.2V	-11.5V	-11.3V	-1.5V	1.5V	12V

IC PIN NUMBER DC VOLTAGES											
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10
IC104	LA6510	-1.8V	-1.8V	0V	0V	-13.2V	0V	0V	12.2V	12.2V	12.2V

IC PIN NUMBER DC VOLTAGES																						
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
IC105	μPD75208	-26V	-13V	-2V	-13V	0V	5V	0V	0V	5V	5V	0V	0V	0V	5V	5V	0V	0V	0V	0V	5V	
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
		2V	2V	2V	0V	5V	0V	5V	0V	0V	2V	2V	0V	0V	5V	0V	0V	0V	0V	5V	-27V	
		41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
		-27V	-27V	-27V	-27V	-27V	-27V	-27V	-27V	-30V	-30V	-30V	-30V	-30V	-30V	-30V	-19V	-30V	-6V	-23V	-20V	-30V
		61	62	63	64																	
		-16V	-16V	-2V	5V																	

IC PIN NUMBER DC VOLTAGES											
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10
IC106	LA6510	-1.8V	-1.8V	0V	0.2V	-13.2V	0V	0V	2.5V	-2.5V	12.6V

IC PIN NUMBER DC VOLTAGES				
SYMBOL No.	DEVICE	1	2	3
IC111	NJM79L06	-6V	-11V	0V

IC PIN NUMBER DC VOLTAGES				
SYMBOL No.	DEVICE	1	2	3
IC109	MC7805CT	11V	0V	5V

IC PIN NUMBER DC VOLTAGES				
SYMBOL No.	DEVICE	1	2	3
IC110	NJM78L06	11V	0V	6V

IC PIN NUMBER DC VOLTAGES																						
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
IC405	SAA7350	5V	5V	0V	0V	5V	5V	5V	0V	3.2V	2.7V	0V	5V	0V	1.9V	2.5V	2.9V	0V	5V	2.6V	2.6V	
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
		0.4V	2.6V	2.6V	2.6V	0.4V	2.6V	5V	0.4V	5V	2.6V	2.6V	0.4V	2.6V	2.6V	0.4V	2.6V	2.6V	2.6V	5V	5V	
		41	42	43	44																	
		5V	0V	3.6V	0V																	

IC PIN NUMBER DC VOLTAGES																						
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
IC401	SAA7350	5V	5V	0V	0V	5V	5V	5V	0V	3.2V	2.7V	0V	5V	0V	1.9V	2.5V	2.9V	0V	5V	2.6V	2.6V	
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
		0.4V	2.6V	2.6V	2.6V	0.4V	2.6V	5V	0.4V	5V	2.6V	2.6V	0.4V	2.6V	2.6V	0.4V	2.6V	2.6V	2.6V	5V	5V	
		41	42	43	44																	
		5V	0V	3.6V	0V																	

IC PIN NUMBER DC VOLTAGES										
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9
IC402	RC4558S	2.6V	2.4V	2.5V	1.4V	1.0V	0.6V	2.3V	2.3V	2.5V

IC PIN NUMBER DC VOLTAGES										
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9
IC403	RC4558S	2.5V	2.4V	2.5V	1.4V	1.0V	0.6V	2.3V	2.3V	2.5V