

DIGITAL COMPACT DISC PLAYER

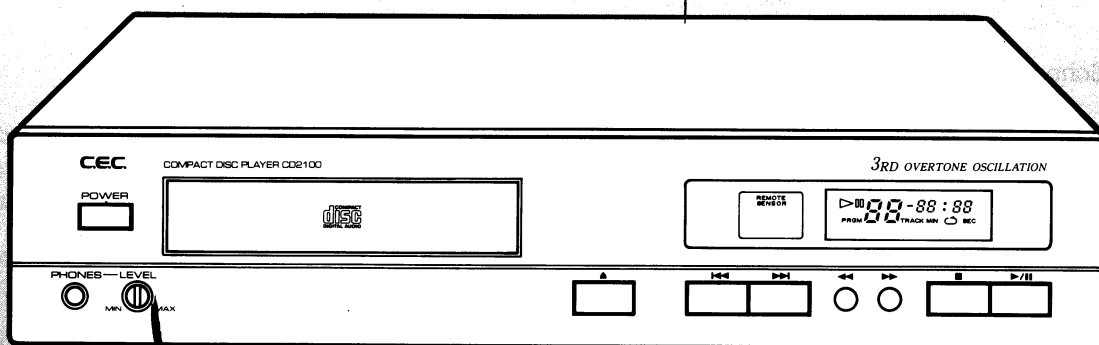
CEC

CD2100

CDP 1000

SERVICE MANUAL

ALL COPY



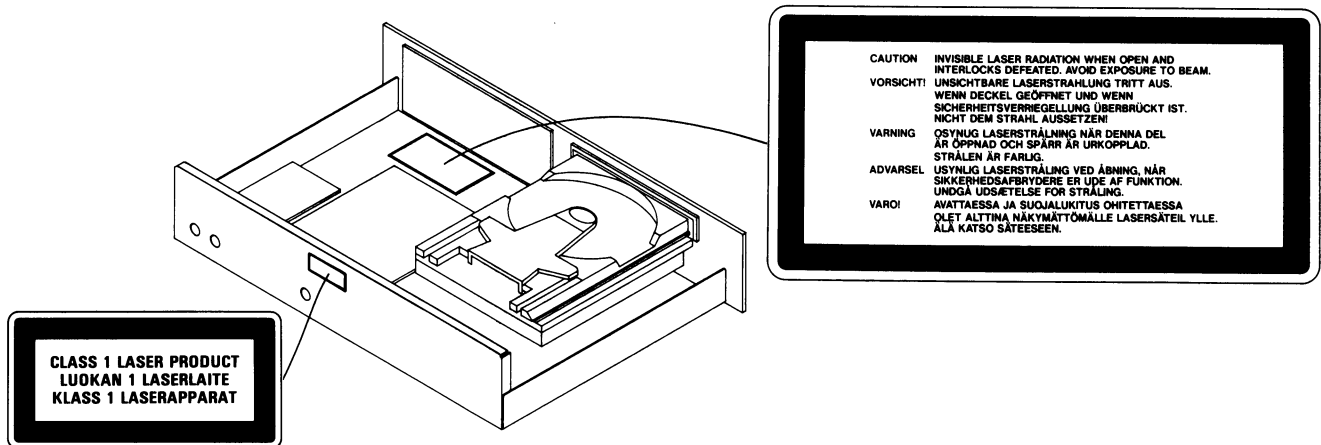
COMPACT
disc
DIGITAL AUDIO

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Schematic Diagram is separately attached.

SAFETY CERTIFICATION



CAUTION

RISK OF ELECTRIC SHOCK DO NOT OPEN!



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

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.

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

FCC WARNING:

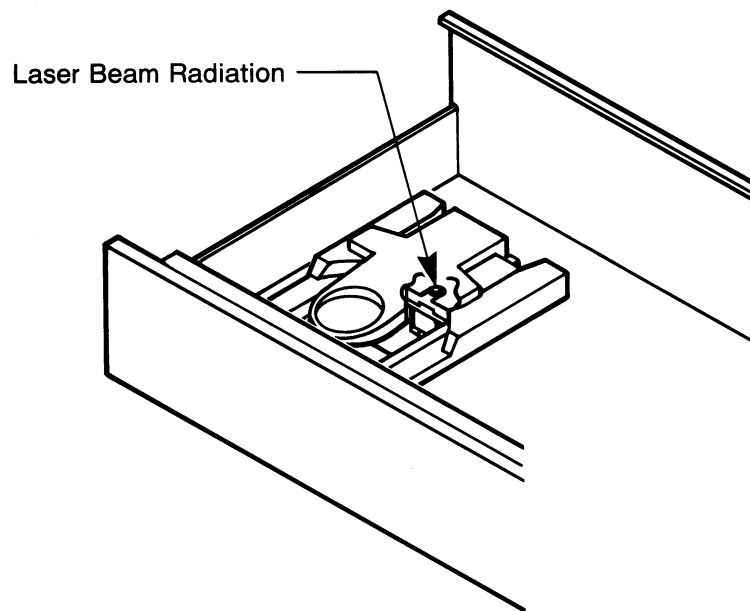
This equipment may generate or use radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

NOTE: (for U.S.A. Customers)

This equipment has been tested and found to comply with the limits for a CLASS B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment may cause harmful interference to radio communications, if it is not installed and used in accordance with the instructions. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

LASER BEAM RADIATION SPOT



Laser Diode Properties

Material: Ga-Al-As

Wavelength: 755-815nm (25°C)

Laser Output: Continuous Wave max. 0.7mW

SPECIFICATIONS

This SPECIFICATIONS is applicable to Model CD2100.

1. General Characteristics

NO	Item	Description	Note
1	Product type	Compact disc player	TDA1305T
2	Brand	CEC	
3	System	Conformed to the red book	
4	Laser pickup	3-beam tracking system	
5	Disc loading	Front	
6	Error correction	CIRC	
7	Digital filter	16 times over sampling	
8	Sampling rate	96 times over sampling	
9	D/A converter	BCC-DAC2(Bit stream continuous calibration dual DAC)	
10	Oscillation	3rd overtone oscillation	
11	Electrical ratings		
	a) Power requirement	AC120V, 60 Hz	Unit:mm
	b) Power consumption	12 W	
12	Display	6 digits FL tube	
13	Key function	8 keys	
14	Remote control functions	20 keys	
15	Dimentions (approx.)		
	a) Size, Weight (net)	435(W)×290(D)×100(H), 6.0 kg	
	b) Carton size, Weigt (gross)	535(W)×375(D)×148(H), 6.8 kg	
16	Accessories		
	a) Owners manual		
	b) Audio cable	RCA plug	
	c) Remote control unit		
17	Safety regulation		
18	Radio interference regulation		
19	Laser regulation		

Design and specifications are subject to change without notice for improvements.

SPECIFICATIONS (Continued)

2. Key Functions

	Function	Description	Set	Remote
1	Power	Power on/off	1	—
2	Open/close	Open/close of disc tray	1	—
3	Play/pause	Start/pause to play back	1	1
4	Stop	Stop to play back, deletion of programs	1	1
5	F.F (▶▶)	Skip track (forward)	1	1
6	F.B (◀◀)	Skip track (backward)	1	1
7	Search/index (▶▶)	Searching forward	1	1
8	Search/index (◀◀)	Searching backward	1	1
9	Display	Time display	—	1
10	Repeat	Repeat to play back a disc	—	1
11	Program	Program (20 tracks)	—	1
12	Clear	Deletion of program one by one	—	1
13	10 keys	1~9.0	—	10

3. Mechanical Performance

NO	Item	Spec.			Condition. Test disc
		Nominal		Unit	
1	Searching time				Philips SBC444
	(1) Play	7		Sec.	Track 1 → Track 24
	(2) Track back	7		Sec.	Track 24 → Track 1
2	Playability				
	(1) Wedge	900		μm	Philips SBC444A
	(2) Black dot	800		μm	Philips SBC444A
	(3) Finger print	no audible noise			Philips SBC444A
	(4) Eccentricity	210		μm	TEAC MCD-143, -142
	(5) Vert. deviation	no audible noise			TEAC MCD-151

Design and specifications are subject to change without notice for improvements.

SPECIFICATIONS (Continued)

4. Audio Performance

NO	Item	Spec.			Condition Test disc
		Nominal		Unit	
1	Max. output level	2		Vrms	1kHz, 0dB
2	Frequency response	± 1		dB	20Hz – 20kHz/1kHz, 0dB
3	De-emphasis response	± 0.5		dB	20Hz – 16kHz/1kHz, 0dB
4	Channel balance	0.2		dB	1kHz, 0dB
5	Channel separation *	100		dB	1kHz, 0dB
6	T.H.D. + noise *	0.003		%	1kHz, 0dB
7	Dynamic range *	100		dB	1kHz, –60dB
8	S/N ratio (IHF-A) *	105		dB	1kHz, 0dB
					* WITH EXTERNAL 20kHz L.P.F. Load impedance More than 47kΩ Test disc CBS SONY YEDS7 or TEAC MCD-111

SPECIFICATIONS (Continued)

5. Audio Performance (Head Phone)

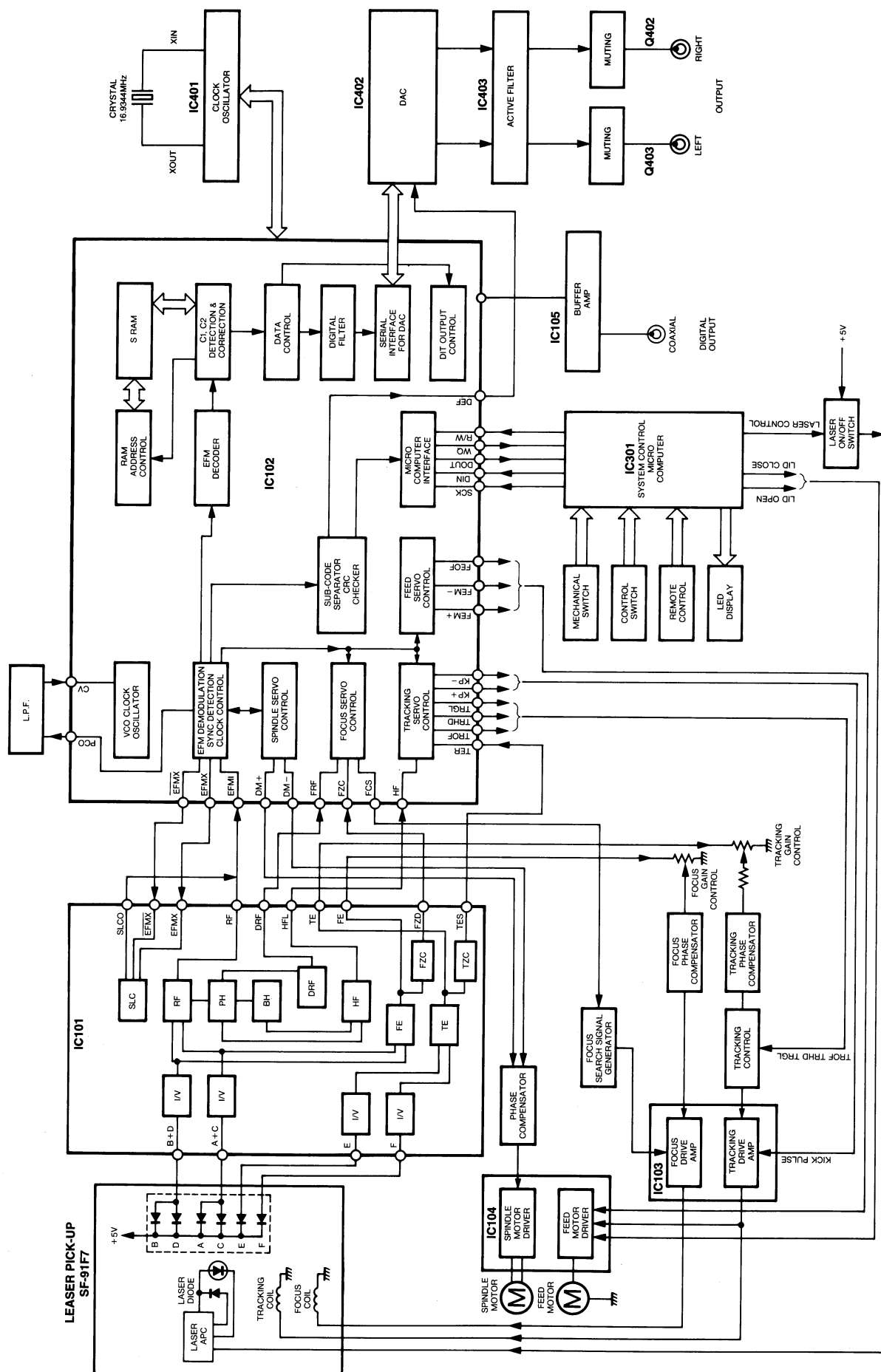
NO	Item	Spec.			Condition FREQ/Level
		Nominal		Unit	
1	Max. output level	85		mVrms	1kHz, -20dB
2	Frequency response	± 1.0		dB	20Hz - 18kHz, 0dB, VR 1/2
3	Channel Balance	0.2		dB	1kHz, -20dB, VR 1/2
4	T.H.D. + Noise *	0.03		%	1kHz, -20dB, VR max
5	S/N Ratio (IHF-A) *	90		dB	1kHz, 0dB, VR 1/2
6	VR Control Curve	-15		dB	1kHz, -20dB, VR max - 1/2
					* WITH EXTERNAL 20kHz L.P.F. Load Impedance 8Ω (T.H.D. only $47k\Omega$) Test disc CBS SONY YEDS7 or TEAC MCD-111

6. Electrical Performance

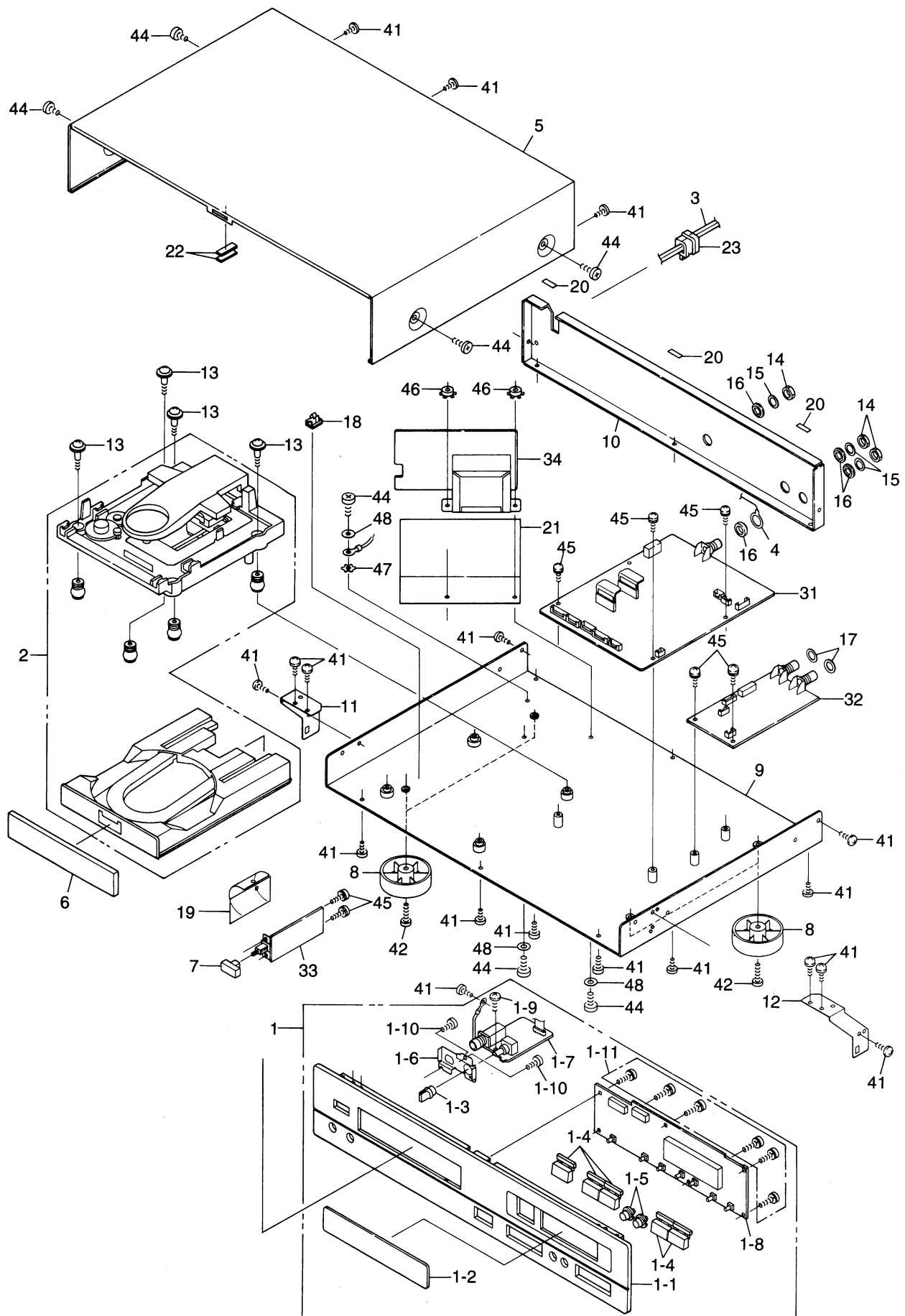
NO	Item	Spec.			Condition FREQ/Level
		Nominal	Limit	Unit	
1	Coaxial digital output	0.5	± 0.1	Vp-p	75 Ω , EIAJ CP-340

Design and specifications are subject to change without notice for improvements.

FUNCTIONAL BLOCK DIAGRAM



CABINET EXPLODED VIEW



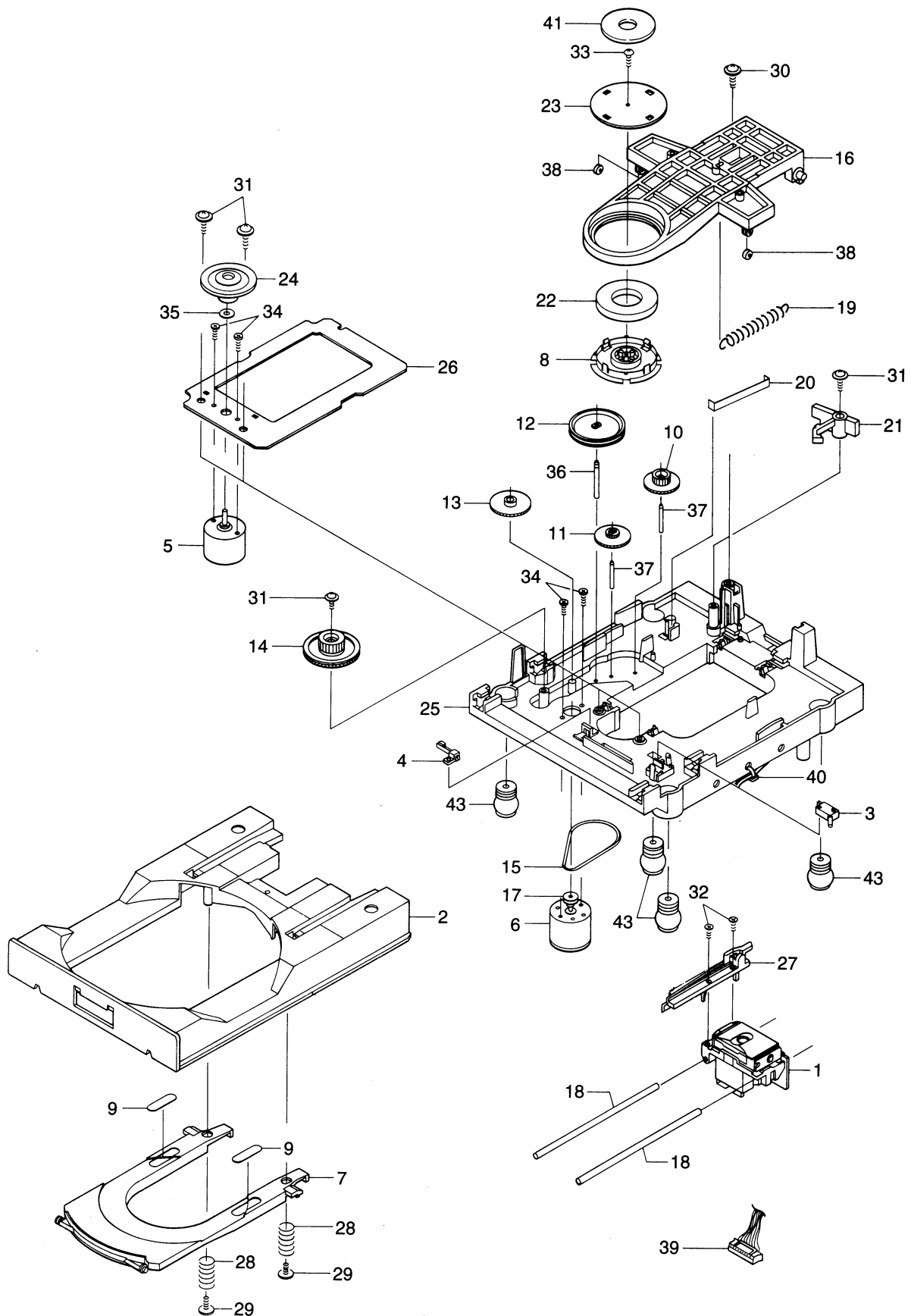
CABINET PARTS LIST

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
PACKAGE				9	2311004100	CHASSIS	1
	6K21010501	CARTON	1	10	2311005210	CHASSIS, REAR	1
	6K40000100	SHEET	1	11	2338000200	ANGLE, MOUNT	1
	6K40000701	SHEET	1	12	2338000201	ANGLE, MOUNT, R	1
	6K41006800	PAD	2	13	2381003501	SPECIAL, SCREW	4
ACCESSORIES				14	2382000900	NUT, RCA	3
	4D10000100	BATTERY	2	15	2383002900	WASHER, RCA	3
	4U10000700	REMOCON	1	16	2441007000	SPACER, RCA	4
	4W20003201	PLUG CORD RCA	1	17	2441007400	SPACER, RCA	2
	6P10001101	MANUAL	1	18	2453000600	CLAMP, WIRE	1
CABINET				19	2462006300	SHEET POWER	1
	6P40010600	LABEL, RATING	1	20	2462007100	SHEET	3
	6P47001700	LABEL, SAFETY	1	21	2462007800	SHEET, TRANS	1
	6P47003500	LABEL, SAFETY	2	22	2571001000	FELT	2
	6P47A00300	LABEL, SAFETY	1	23	2446000200	BUSHING, NIFC02271	1
	6P49004900	LABEL	2	31	0B10018601	ASSY, PCB, MAIN	1
	6P49012915	LABEL	1	32	0B10020900	ASSY, PCB, DAC	1
	△FR50C2T00X	FUSE 250V 0.5A	2	33	0B10020910	ASSY, PCB, SW	1
	G455904035	SERIAL, NO SHEET	1	34	0B10010777	ASSY, PCB, POWER, 120V	1
	4J13005025	CONNECTOR, 4P, PH, ASSY	1	41	SF306R001M	SCR S-TPG BIN 3X6	18
	4J13005026	CONNECTOR, 7P, PH, ASSY	1	42	SF4010013M	SCR S-TPG PAN M4X10	4
	4J13011200	CONNECTOR, 4P, PH, ASSY	1	44	SF408R009M	SCR S-TPG BIN 4X8	6
	4J13005015	CONNECTOR 8P PH	1	45	SM308R007M	SCR BIN+SW M3X8	10
	4J13005016	CONNECTOR 10P PH	1	46	SN2HNV40SE	NUT HEX+OUT TW 4	2
	M360814100	CRAMP WIRE	2	48	SVS2L40SM-	WASHER 4	3
1	0152000701	ASSY, PANEL, FRONT(BLACK)	1				
1	0152000700	ASSY, PANEL, FRONT(GOLD)	1				
	2448002300	PAD	4				
1-1	2152005411	PANEL, FRONT(BLACK)	1				
1-1	2152005410	PANEL, FRONT(GOLD)	1				
1-2	2164004910	WINDOW	1				
1-3	2171000900	KNOB, ROTARY(BLACK)	1				
1-3	2171000901	KNOB, ROTARY(GOLD)	1				
1-4	2175010200	BUTTON(BLACK)	5				
1-4	2175010201	BUTTON(GOLD)	5				
1-5	2175010600	BUTTON, TACT(A)(BLACK)	2				
1-5	2175010601	BUTTON, TACT(A)(GOLD)	2				
1-6	2338005600	ANGLE, MOUNT	1				
1-7	0B10015402	ASSY, PCB, HP	1				
1-8	0B10018701	ASSY, PCB, CONTROL	1				
1-9	SF266R001E	SCR S-TPG BIN 2.6X6	1				
1-10	SM303R001M	SCR PAN M3X3	2				
1-11	SM308R007M	SCR BIN+SW M3X8	6				
2	0991002600	ASSY, MECHA	1				
3	△4W10003500	POWER, CORD	1				
4	0J13001100	ASSY, CONNECTOR, 1P	1				
5	2121002400	COVER(BLACK)	1				
5	2121002402	COVER(GOLD)	1				
6	2144000840	DECORATION(BLACK)	1				
6	2144000839	DECORATION(GOLD)	1				
7	2174000952	KNOB, PUSH(BLACK)	1				
7	2174000955	KNOB, PUSH(GOLD)	1				
8	2251002600	LEG	4				

NOTES

- PC boards shown are viewed from parts side.
- Parts marked with * require longer delivery time.
- The parts with no reference number or no parts number in the exploded views are not supplied.
- As regards the resistors and capacitors, refer to the circuit diagrams contained in this manual.
- △ Parts marked with this sign are safely critical components. They must be replaced with identical components - refer to the appropriate parts list and ensure exact replacement.
- Before returning the appliance to the customer, make leakage-current or resistance measurements to determine that exposed parts are acceptably insulated from the supply circuit.
- Parts of [] mark can be used only with the version designated.
[US] : U.S.A. [C] : CANADA [GE] : GENERAL EXPORT [E] : EUROPE
[UK] : U.K. [A] : AUSTRALIA

MECHANISM EXPLODED VIEW



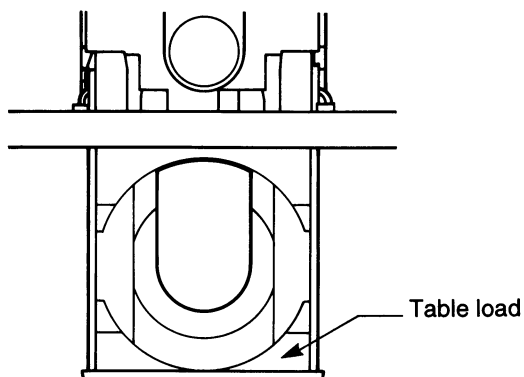
MECHANISM PARTS LIST

Ref. No.	Part No.	Description	Q'ty
	0991002600	ASSY, MECHA	
1	1EA-0-A41A-055-00	ASSY, PICKUP, LASER, P1 or ASSY, PICKUP, LASER, P1K	1 1
2	1EA-2-761A-005-00	TABLE, LOADING	1
3	4-2312-070-10-0	LEVER SW 1P1T	1
4	4-2319-798-90-0	LEAF SW	1
5	4-5279-718-20-0	MOTOR	1
6	1EA-0-M10A-021-00	ASSY, MOTOR, 3.0V, 0.3W	1
7	1EA-2-713A-005-00	LIFTER, CD, TABLE	1
8	1EA-2-451A-035-00	HOLDER, DISC	1
9	1EA-2-571A-012-00	FELT, DISC	2
10	1EA-2-511A-076-00	GEAR, PINION PICK	1
11	1EA-2-511A-075-00	GEAR, LOAD PICK	1
12	1EA-2-511A-079-00	GEAR, PULLEY	1
13	1EA-2-511A-077-00	GEAR, LOAD TABLE	1
14	1EA-2-511A-078-00	GEAR, PINION TABLE	1
15	1EA-2-563A-016-00	BELT, SQUARE	1
16	1EA-2-762A-002-00	FLAP, DISC CLAMP	1
17	1EA-2-523A-015-00	PULLEY MOTOR	1
18	1EA-2-744A-002-00	SHAFT, SLIDE, PICK	2
19	1EA-2-811A-035-00	SPRING, TENS, FLAP	1
20	1EA-2-814A-036-00	SPRING, PLATE	1
21	1EA-2-711A-043-00	ARM, CHANGE	1
22	1EA-2-641A-013-00	MAGNET, DISC CLAMP	1
23	1EA-2-642A-005-00	YOKE, MAGNET	1
24	141-0-5229-003-00-0	TURNTABLE ASSY	1
25	1EA-2-311A-050-00	CHASSIS, LOAD	1
26	1EA-2-311A-051-00	CHASSIS, CD	1
27	1EA-2-511A-074-00	GEAR, RACK	1
28	1EA-2-812A-039-00	SPRING, COMP, TABLE	2
29	STXEA01900---	SPECIAL SCREW	2
30	131-2-4201-283-00-0	SCREW(B TITE SEMS) Z	1
31	141-2-4219-427-00-0	SCREW WASHER	4
32	SE3FN205R0SA-	SCR FLT PCS 2×5	2
33	SFBDN204R0SE-	SCR S-TPG PIN 2×4	1
34	SE3PN172R5SM-	SCR PAN PCS 1.7×2.5	4
35	SWXEA10800---	SPECIAL WASHER	1
36	1EA-2-551A-048-00	SPINDLE, GEAR L	1
37	1EA-2-551A-049-00	SPINDLE, GEAR S	2
38	1EA-2-751A-008-00	ROLLER, FRAP	2
39	1EA-0-J13A-311-00	ASSY, CONNECTOR-S. PH9P	1
40	141-2-4729-071-00-0	WIRE BAND	1

DISASSEMBLY PROCEDURES

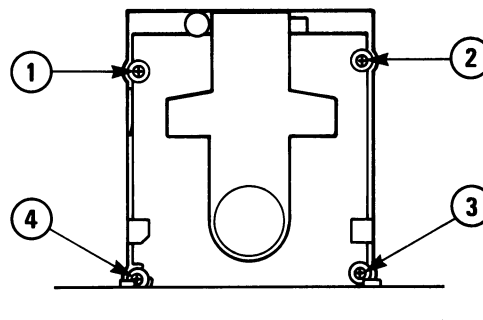
REMOVING THE DISC TRAY

1. Apply Power Switch to the set and press the OPEN/CLOSE button to open the table load.
2. Apply OFF the Power Switch.

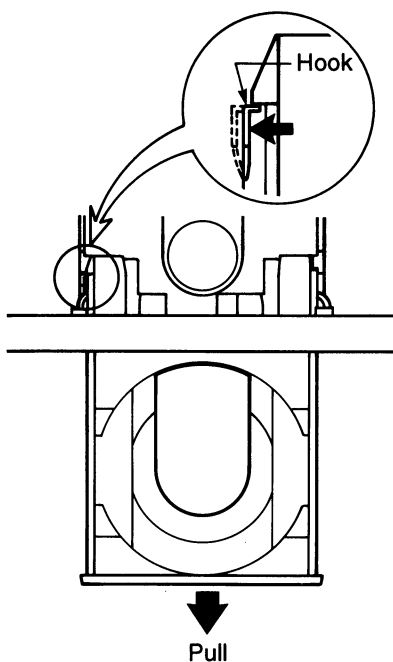


REMOVING THE MECHANISM

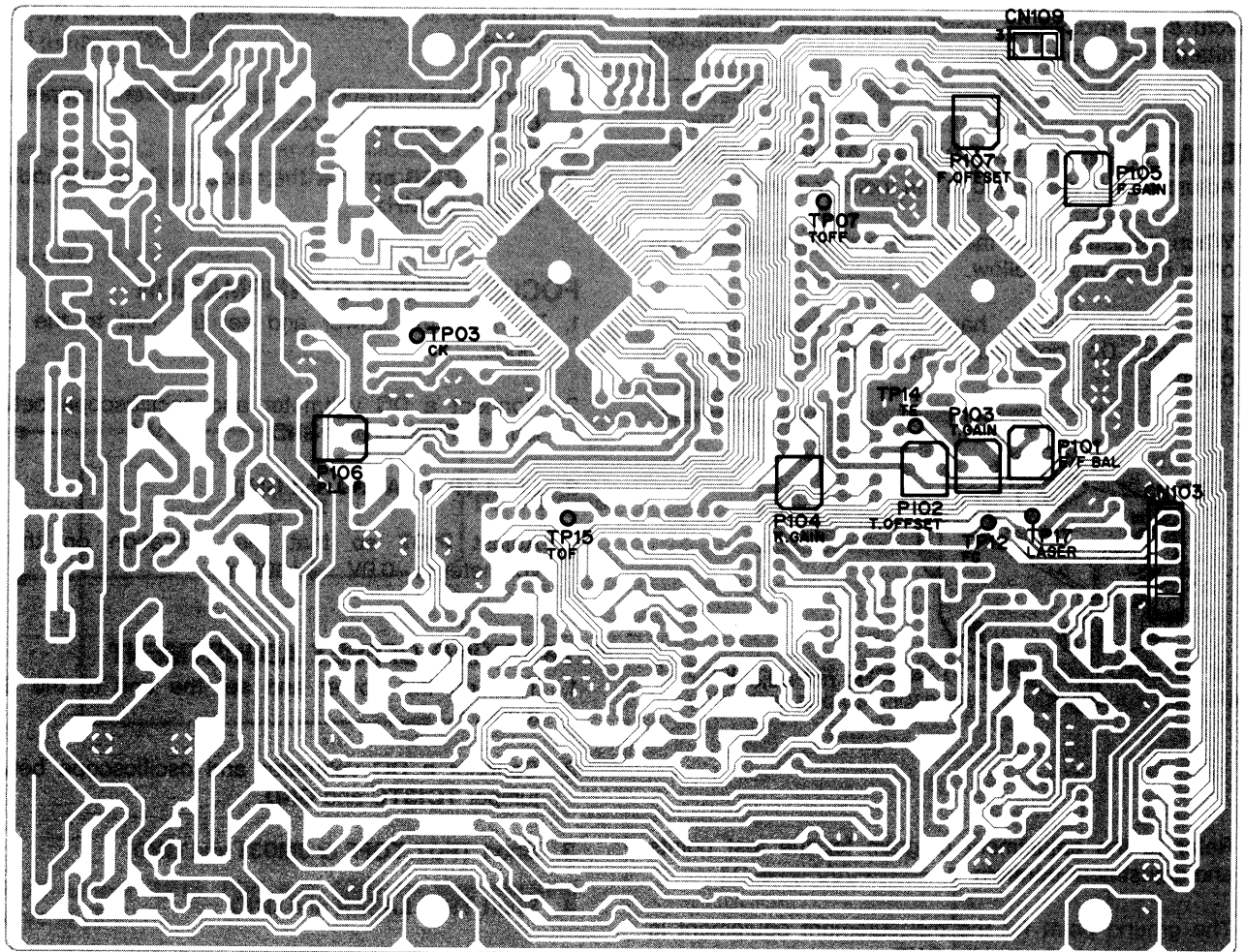
Take out the four screws (1~4 in the diagram below) with which the mechanism is mounted in place and remove the mechanism.



3. Now remove the table load from the cabinet while pressing the tab in the direction of the arrow in the diagram below.



P.C.BOARD ADJUSTMENT POINT



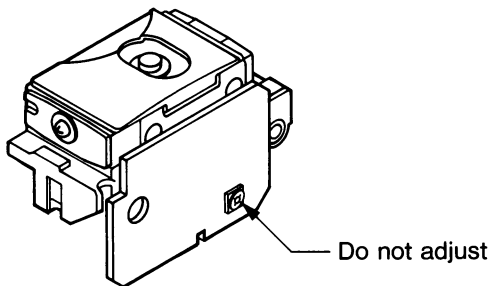
ADJUSTMENT PROCEDURES

CAUTION:

Avoid eye exposure to invisible laser beam which is emitted from laser pickup.

PRECAUTIONS REGARDING ADJUSTMENT

- Adjustment is performed in the indicated order.
- When adjustment is made for one item, check the other items which follow.
- The laser pick-up has already been precisely adjusted. Do not touch its mounting screws or controls.



- Refer to the adjustment diagram for the test points and adjustment controls.
- The ground point for the measurement equipment is the test point indicated as **GND**.

REQUIRED EQUIPMENTS

- DC Voltmeter
- Dualtrace Oscilloscope
- Frequency Counter
- Signal Generator
- Plastic Screwdriver
- Test Disc (TEAC: MCD111)

SETTING OF INITIAL POSITION OF VOLUME

1. The variable resistors are set to the following initial positions.

P101 (E-F BAL)	Mechanical center
P102 (T OFFSET)	Mechanical center
P103 (T GAIN)	Mechanical center
P104 (K GAIN)	Mechanical center
P105 (F GAIN)	Mechanical center
P106 (PLL)	Mechanical center
P107 (F OFFSET)	Mechanical center

FREE RUN FREQUENCY ADJUSTMENT

1. Turn on the power and set the unit to the STOP mode.
2. Connect the frequency counter between jumper **TP03 CK** and **GND** (use probes 10 : 1).
3. Adjust **P106** so that the frequency counter indicates 43.2 ~ 43.3MHz.

FOCUS OFFSET CONFIRMATION

1. Turn on the power and set the unit to the STOP mode.
2. Connect a DC voltmeter and oscilloscope between jumper **TP12FC** and **GND**.
3. Short **TP17 LASER** and **GND**.
4. Adjust **P107** so that the indication on the DC voltmeter is $-0.9V \sim \pm 100mV$.

TRACKING OFFSET ADJUSTMENT

1. Turn on the power and set the unit to the STOP mode.
2. Connect a DC voltmeter and oscilloscope between jumper **TC13TC** and **GND**.
3. Short **TP07 TOFF** or **JM031** and **GND**.
4. Short **TP17 LASER** and **GND**.
5. Adjust **P102** so that the indication on the DC voltmeter is $0.1V \pm 10mV$.

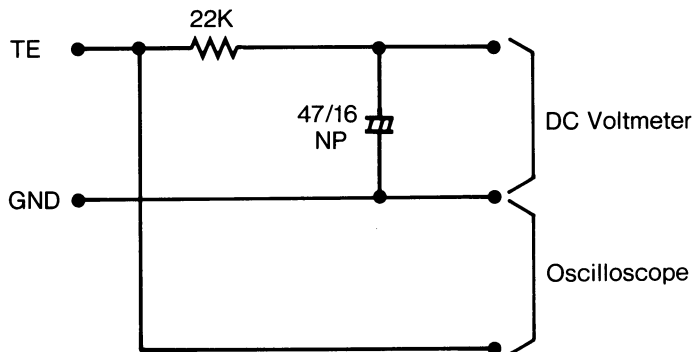
NOTE:

This adjustment should be made again after the adjustment of Tracking Gain and E-F balance.

ADJUSTMENT PROCEDURES (Continued)

E-F BALANCE ADJUSTMENT

1. Turn on the power. Short jumper **CN109** pin and 2 pin and jumper **TP15 TOF**.
2. Place test disc MCD111 on the table load.
3. Connect a DC voltmeter and oscilloscope to jumper **TP14 TE** and **GND** through the low-pass filter shown below.
4. Press the PLAY button.

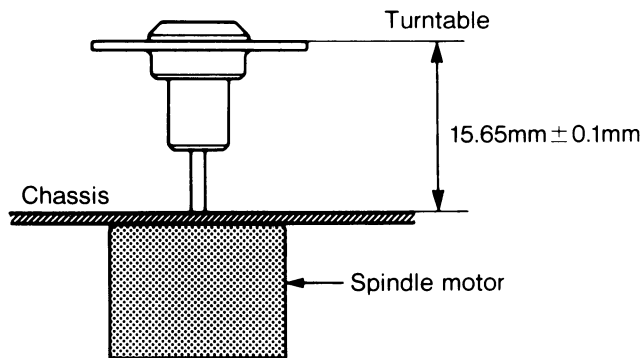


5. Short jumper **TP15 TOF** and **GND** so that tracking servo is OFF.
6. Adjust **P101** so that the DC voltmeter and oscilloscope is minimum voltage (wave form on oscilloscope is symmetrical to 0V line).

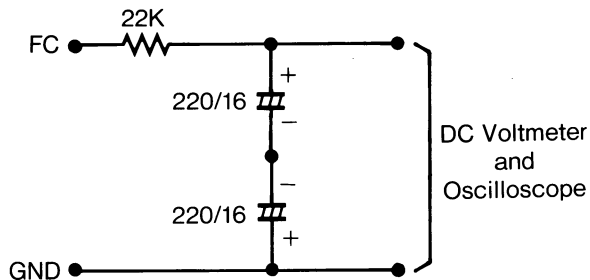
ADJUSTMENT OF TURNTABLE HEIGHT

This adjustment must be made when the motor is replaced.

1. Attach the turntable so that its top surface is $15.65\text{mm} \pm 0.1\text{mm}$ from the top of the chassis.



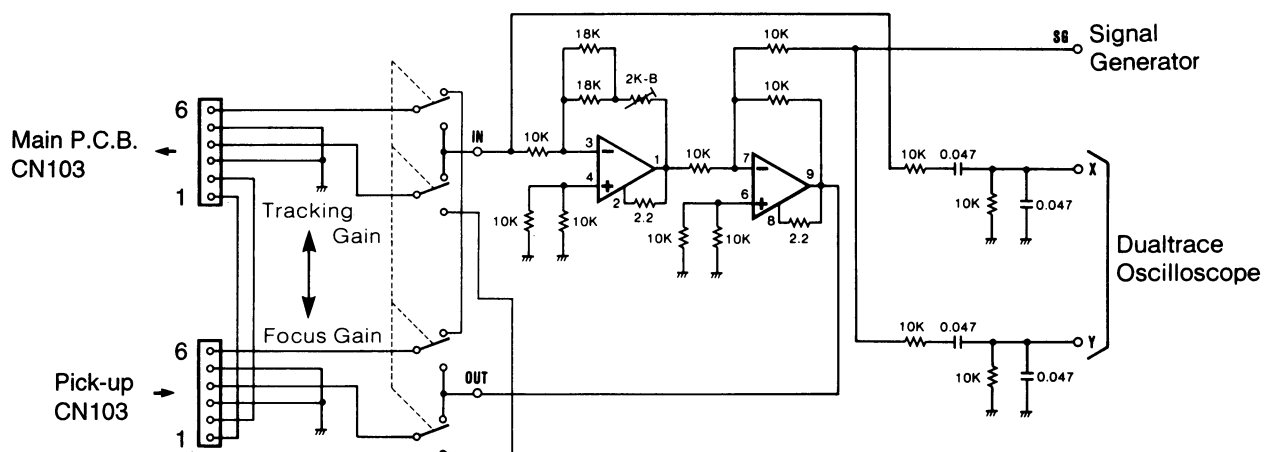
2. Connect test jumper **TP12 FC** and **GND** to a DC voltmeter and oscilloscope through the low-pass filter.



3. Turn on the power and playback the first selection on test disc MCD111.
4. Readjust the height of the turntable if the reading on the DC voltmeter is not in the range of below.

INSIDE (first selection): $0\text{V} \pm 0.2\text{V}$
 OUTSIDE (22nd selection): $0\text{V} \pm 0.35\text{V}$
 Adjusting turntable height by $0.55 \sim 0.65\text{mm}$ shift voltage by 1V.

ADJUSTMENT PROCEDURES (Continued)



- Remove connector **CN103** from the pick-up and connect the measurement circuit between the PCB and pick-up.
- The IC used is LA6510.
- VR control 2k Ω -B shorts **IN** and **SG**, 1kHz 1Vp-p is supplied from the signal generator, and adjustment is made for minimum output from **OUT**.

Precise adjustment procedure

- Tracking gain adjustment
 1. Connect the measurement circuit shown above, turn on the power, and mount the test disk.
 2. Play back the first selection on the test disk, and apply a 1,600Hz 0.5Vp-p signal from the signal generator.
 3. Observe the resurge waveforms on the oscilloscope, and adjust **P103** so that the phase difference of outputs **X** and **Y** from the measurement circuit is 90°.
- Focus gain adjustment
 1. Connect the measurement circuit shown above, turn on the power, and mount the test disk.
 2. Play back the first selection on the test disk, and apply a 1,000Hz 0.5Vp-p signal from the signal generator.
 3. Observe the resurge waveforms on the oscilloscope, and adjust **P105** so that the phase difference of outputs **X** and **Y** from the measurement circuit is 90°.



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 43 of IC301 (LC6554H-4440). When Pin 43 is in "L" (Low) level, the laser emits the beam. When Pin 43 is in "H" (High) level, the laser does not emit the beam.

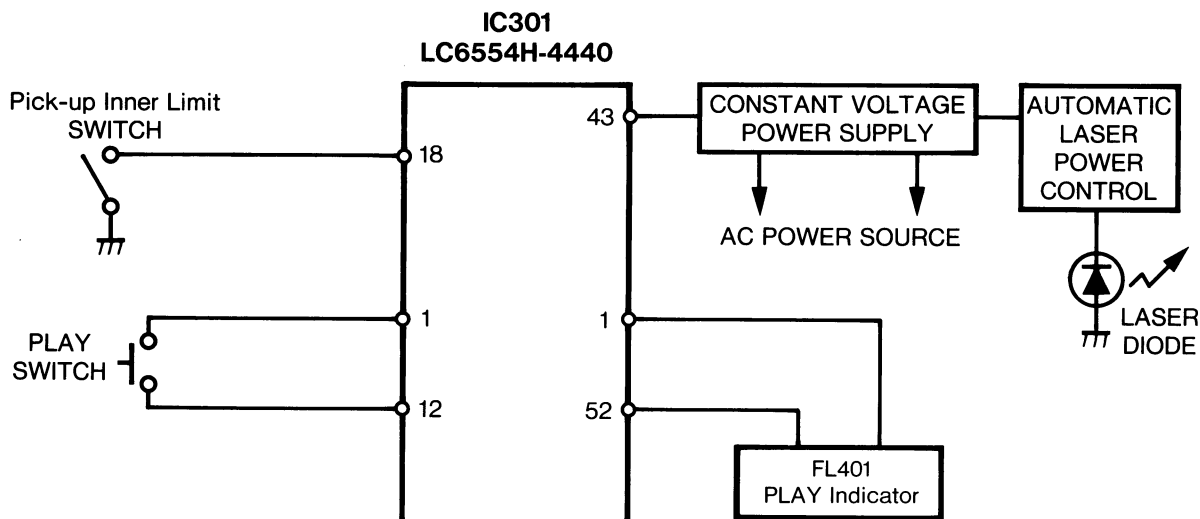
Pin 43 is set in "H" level when the unit is loaded with the disc and it reads the index signals or when the unit is set in the play mode after that. When the unit reads the

index signals and the following two conditions are met, the laser emits the beam.

- 1) When the Pick-up Inner Limit Switch is on. (The disc tray is closed.)
- 2) 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.



P.C.BOARD PARTS LIST

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
	0B10018601	ASSY, PCB, MAIN		D124	DDGMA0100A	DIODE GMA01-BT	1
	4B10018600	PCB MAIN	1	D125	DDGMA0100A	DIODE GMA01-BT	1
	4W3JP0500T	LEAD JUMPER P5	54	D126	DDGMA0100A	DIODE GMA01-BT	1
	4W3JP1000T	LEAD JUMPER P10	69	IC101	QLA920000N	IC LA9200NM	1
	4W30006000	TWS UL1007 AWG 24 BK	1	IC102	QYM712101N	IC YM7121C	1
	M620135500	PLATE HEAT SINK	1	IC103	QLA651000N	IC LA6510	1
	M620137100	PLATE HEAT SINK	2	IC104	QLA651000N	IC LA6510	1
	SF306R000E	SCR S-TPG BRZ 3X6	3	IC105	QTC74AC00N	IC TC74AC04	1
CN101	4J13003205	CONNECTOR, 5P	1	IC108	QNJM78001N	IC NJM7805FA	1
CN102	A236975940	PLUG 9P PH V	1	IC109	QNJM78L00C	IC NJM78L06A(T3)	1
CN103	A236975120	PLUG 6P EH	1	IC110	QNJM79L00C	IC NJM79L06A(T3)	1
CN104	A236974920	PLUG 6P PH V	1	Q101	T2SC33300C	TR 2SC3330-S-AC	1
CN105	A236975100	PLUG 4P PH V	1	Q102	T2SA13400C	TR 2SA1346-AC	1
CN106	A236975100	PLUG 4P PH V	1	Q103	T2SC33300C	TR 2SC3330-S-AC	1
CN107	A236974910	PLUG 5P	1	Q104	T2SA13400C	TR 2SA1346-AC	1
CN108	A236974930	PLUG 10P PH	1	Q105	T2SA13100C	TR 2SA1317-S-AC	1
CN109	A236974900	PLUG 3P	1	Q106	T2SC34000C	TR 2SC3400-AC	1
CN110	A236974990	PLUG 8P	1	Q107	T2SC33300C	TR 2SC3330-S-AC	1
CN113	A236974980	PLUG 7P PH	1	Q108	T2SC34000C	TR 2SC3400-AC	1
JK101	4J12002400	JACK RCA L	1	Q109	T2SC34000C	TR 2SC3400-AC	1
L001	4L26000300	INDUCTOR FERITE	1	Q110	T2SA15200C	TR 2SA1529-AA	1
P101	4R30000212	POTENTIOMETER 100KB	1	CC01	CK1H10200N	CERAMIC 1000P K 50V	1
P102	4R30000209	POTENTIOMETER 20KB	1	CC02	CK1H10200N	CERAMIC 1000P K 50V	1
P103	4R30000209	POTENTIOMETER 20KB	1	C101	CC1H10001C	CERAMIC 10P D 50V	1
P104	4R30000212	POTENTIOMETER 100KB	1	C102	CC1H5R000C	CERAMIC 5P C 50V	1
P105	4R30000209	POTENTIOMETER 20KB	1	C103	CC1H68005C	CERAMIC 68P K 50V	1
P106	4R30000212	POTENTIOMETER 100KB	1	C104	CC1H68005C	CERAMIC 68P K 50V	1
P107	4R30000209	POTENTIOMETER 20KB	1	C105	CC1H181Q5C	CERAMIC 180P K 50V	1
T101	4L13A00100	TRANS, PULSE	1	C106	CE1HR4715C	ELECT 0.47U M 50V	1
TP03	A236973784	PIN 1P	1	C107	CE0J10115C	ELECT 100U M 6.3V	1
TP07	A236973784	PIN 1P	1	C108	CE0J10115C	ELECT 100U M 6.3V	1
TP09	A236973784	PIN 1P	1	C109	CB1E47302C	CERAMIC 0.047U K 25V	1
TP12	A236973784	PIN 1P	1	C110	CB1E47302C	CERAMIC 0.047U K 25V	1
TP13	A236973784	PIN 1P	1	C111	CC1H18005C	CERAMIC 18P K 50V	1
TP14	A236973784	PIN 1P	1	C112	CC1H18005C	CERAMIC 18P K 50V	1
TP15	A236973784	PIN 1P	1	C113	CK1H10409A	CERAMIC 0.1U Z 50V	1
TP16	A236973784	PIN 1P	1	C114	CE0J10115C	ELECT 100U M 6.3V	1
TP17	A236973784	PIN 1P	1	C115	CF1H10300C	POLYESTER 0.01U J 50V	1
TP18	A236973784	PIN 1P	1	C116	CF1H10200C	POLYESTER 1000P J 50V	1
TP19	A236973784	PIN 1P	1	C117	CG1H47401C	MT-COMPO 0.47U J 50V	1
D101	DDGMA0100A	DIODE GMA01-BT	1	C118	CG1H47401C	MT-COMPO 0.47U J 50V	1
D102	DDGMA0100A	DIODE GMA01-BT	1	C119	CG1H15401C	MT-COMPO 0.15U J 50V	1
D103	DDGMA0100A	DIODE GMA01-BT	1	C120	CC1H22105C	CERAMIC 220P K 50V	1
D104	DDGMA0100A	DIODE GMA01-BT	1	C121	CK1H10409A	CERAMIC 0.1U Z 50V	1
D105	DDGMA0100A	DIODE GMA01-BT	1	C122	CE0J10115C	ELECT 100U M 6.3V	1
D106	DDGMA0100A	DIODE GMA01-BT	1	C124	CK1H10409A	CERAMIC 0.1U Z 50V	1
D107	DDGMA0100A	DIODE GMA01-BT	1	C125	CG1H10401C	MT-COMPO 0.1U J 50V	1
D108	DD1D3-E00A	DIODE 1D3-E	1	C126	CF1H22300C	POLYESTER 0.022U J 50V	1
D109	DD1D3-E00A	DIODE 1D3-E	1	C127	CF1H10300C	POLYESTER 0.01U J 50V	1
D110	DD1D3-E00A	DIODE 1D3-E	1	C128	CG1H47301C	MT-COMPO 0.047U J 50V	1
D111	DD1D3-E00A	DIODE 1D3-E	1	C129	CG1H47301C	MT-COMPO 0.047U J 50V	1
D112	DDGMA0100A	DIODE GMA01-BT	1	C130	CC1H5R000C	CERAMIC 5P C 50V	1
D113	DDGMA0100A	DIODE GMA01-BT	1	C131	CC1H10105C	CERAMIC 100P K 50V	1
D114	DD1D3-E00A	DIODE 1D3-E	1	C132	CK1H47100A	CERAMIC 470P K 50V	1
D115	DD1D3-E00A	DIODE 1D3-E	1	C133	CK1H47100A	CERAMIC 470P K 50V	1
D116	DZGZB3000N	ZD GZB30B	1	C134	CG1H10401C	MT-COMPO 0.1U J 50V	1
D117	DZMTZJ503A	ZENER DIODE MTZJ5.1B-T-77	1	C135	CG1H68301C	MT-COMPO 0.068U J 50V	1
D119	DDGMA0100A	DIODE GMA01-BT	1	C136	CG1H47401C	MT-COMPO 0.47U J 50V	1
D120	DDGMA0100A	DIODE GMA01-BT	1	C137	CP1E4R700C	NP-ELECT 4.7U M 25V	1
D121	DZMTZJ701A	ZD MTZJ7.5BA	1	C139	CP1H1R000C	NP-ELECT 1U M 50V	1
D122	DDGMA0100A	DIODE GMA01-BT	1	C140	CP1H1R000C	NP-ELECT 1U M 50V	1
D123	DDGMA0100A	DIODE GMA01-BT	1	C141	CF1H10200C	POLYESTER 1000P J 50V	1
				C142	CF1H22200C	POLYESTER 2200P J 50V	1

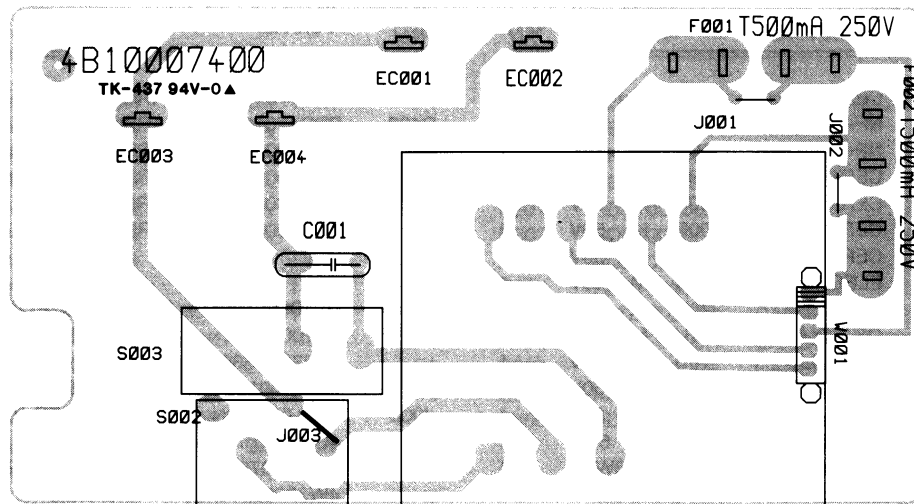
P.C.BOARD PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
C143	CF1H12300C	POLYESTER 0.012U J 50V	1	R119	RDD390200A	CARBON 39K JA 1/6W	1
C144	CF1H12300C	POLYESTER 0.012U J 50V	1	R120	RDD270200A	CARBON 27K JA 1/6W	1
C145	CE0J10115C	ELECT 100U M 6.3V	1	R121	RDD100300A	CARBON 100K JA 1/6W	1
C146	CE1H2R215C	ELECT 2.2U M 50V	1	R122	RDD220300A	CARBON 220K JA 1/6W	1
C147	CE1C22115C	ELECT 220U M 16V	1	R123	RDD270000A	CARBON 270 JA 1/6W	1
C148	CE1C22115C	ELECT 220U M 16V	1	R124	RDB100100A	CARBON 1K JA 1/4W	1
C150	CP1H1R000C	NP-ELECT 1U M 50V	1	R125	RDB100100A	CARBON 1K JA 1/4W	1
C155	CE1H1R015C	ELECT 1U M 50V	1	R127	RDB100300A	CARBON 100K JA 1/4W	1
C157	CC1H12003C	CERAMIC 12P J 50V	1	R128	RDD470100A	CARBON 4.7K JA 1/6W	1
C158	CC1H12003C	CERAMIC 12P J 50V	1	R129	RDB220200A	CARBON 22K JA 1/4W	1
C159	CE0J10115C	ELECT 100U M 6.3V	1	R130	RDD220200A	CARBON 22K JA 1/6W	1
C162	CC1H10105C	CERAMIC 100P K 50V	1	R131	RDD2R2000A	CARBON 2.2 JA 1/6W	1
C163	CG1H10301C	MT-COMPO 0.01U J 50V	1	R132	RDD330300A	CARBON 330K JA 1/6W	1
C164	CE1H4R715C	ELECT 4.7U M 50V	1	R133	RDD270200A	CARBON 27K JA 1/6W	1
C165	CE1H4R715C	ELECT 4.7U M 50V	1	R134	RDD2R2000A	CARBON 2.2 JA 1/6W	1
C166	CE0J10115C	ELECT 100U M 6.3V	1	R135	RDD270200A	CARBON 270K JA 1/6W	1
C167	CB1E22306A	CERAMIC 0.022U Z 25V	1	R136	RDD470200A	CARBON 47K JA 1/6W	1
C168	CB1E22306A	CERAMIC 0.022U Z 25V	1	R137	RDD220200A	CARBON 22K JA 1/6W	1
C169	CB1E22306A	CERAMIC 0.022U Z 25V	1	R138	RDD120100A	CARBON 1.2K JA 1/6W	1
C170	CB1E22306A	CERAMIC 0.022U Z 25V	1	R139	RDD220200A	CARBON 22K JA 1/6W	1
C171	CE1H33137N	ELECT 330U M 50V	1	R140	RDD560100A	CARBON 5.6K JA 1/6W	1
C172	CE1H33137N	ELECT 330U M 50V	1	R141	RDD680300A	CARBON 680K JA 1/6W	1
C173	CE1H47015C	ELECT 47U M 50V	1	R142	RDD680200A	CARBON 68K JA 1/6W	1
C174	CE1H1R015C	ELECT 1U M 50V	1	R143	RDD220300A	CARBON 220K JA 1/6W	1
C175	CE1C33217N	ELECT 3300U M 16V	1	R144	RDD220100A	CARBON 2.2K JA 1/6W	1
C176	CE1C33217N	ELECT 3300U M 16V	1	R145	RDD100200A	CARBON 10K JA 1/6W	1
C180	CE1C22015C	ELECT 22U M 16V	1	R146	RDD470200A	CARBON 47K JA 1/6W	1
C181	CE1C22115C	ELECT 220U M 16V	1	R147	RDD75R000A	CARBON 76 JA 1/6W	1
C182	CK1H10409A	CERAMIC 0.1U Z 50V	1	R148	RDD2R2000A	CARBON 2.2 JA 1/6W	1
C183	CK1H10409A	CERAMIC 0.1U Z 50V	1	R149	RDD2R2000A	CARBON 2.2 JA 1/6W	1
C184	CE1H4R715C	ELECT 4.7U M 50V	1	R150	RDD150200A	CARBON 15K JA 1/6W	1
C185	CE1H2R215C	ELECT 2.2U M 50V	1	R151	RDD680200A	CARBON 68K JA 1/6W	1
C216	CB1E47302C	CERAMIC 0.047U K 25V	1	R152	RDD100100A	CARBON 1K JA 1/6W	1
C219	CK1H10409A	CERAMIC 0.1U Z 50V	1	R153	RDD560300A	CARBON 560K JA 1/6W	1
C220	CE1C22115C	ELECT 220U M 16V	1	R154	RDD560300A	CARBON 560K JA 1/6W	1
C232	CK1H10409A	CERAMIC 0.1U Z 50V	1	R155	RDD100300A	CARBON 100K JA 1/6W	1
C239	CE0J10115C	ELECT 100U M 6.3V	1	R156	RDD100300A	CARBON 100K JA 1/6W	1
C240	CF1H47200C	POLYESTER 4700P J 50V	1	R157	RDD100300A	CARBON 100K JA 1/6W	1
C243	CE0J10115C	ELECT 100U M 6.3V	1	R160	RDD330300A	CARBON 330K JA 1/6W	1
C244	CE0J10115C	ELECT 100U M 6.3V	1	R161	RDD330300A	CARBON 330K JA 1/6W	1
C245	CB1E82211C	CERAMIC 8200P K 25V	1	R162	RDB470000A	CARBON 470 JA 1/4W	1
C246	CE0J10115C	ELECT 100U M 6.3V	1	R163	RDB470000A	CARBON 470 JA 1/4W	1
C247	CK1H10409A	CERAMIC 0.1U Z 50V	1	R164	RDD220100A	CARBON 2.2K JA 1/6W	1
C248	CF1H10200C	POLYESTER 1000P J 50V	1	R165	RDD220100A	CARBON 2.2K JA 1/6W	1
C300	CK1H12103C	CERAMIC 120P K 50V	1	R166	RDD220200A	CARBON 22K JA 1/6W	1
R100	4R51000404	FUSIBLE RES0.47 J- 1/2W	1	R167	RDD100200A	CARBON 10K JA 1/6W	1
R101	4R51000402	FUSIBLE RES 4.7 J- 1/2W	1	R168	RDD470200A	CARBON 47K JA 1/6W	1
R103	4R51000400	FUSIBLE RES 10 J- 1/2W	1	R169	RDD100200A	CARBON 10K JA 1/6W	1
R104	4R51000400	FUSIBLE RES 10 J- 1/2W	1	R170	4R51000502	FUSIBLE RES 220 J- 1/4W	1
R105	RDD560100A	CARBON 5.6K JA 1/6W	1	R171	RDD2R7000A	CARBON 2.7 JA 1/6W	1
R106	RDD220200A	CARBON 22K JA 1/6W	1	R172	RDD100100A	CARBON 1K JA 1/6W	1
R107	RDD150200A	CARBON 15K JA 1/6W	1	R173	RDD100200A	CARBON 10K JA 1/6W	1
R108	RDD100200A	CARBON 10K JA 1/6W	1	R174	RDD150000A	CARBON 150 JA 1/6W	1
R109	RDD150300A	CARBON 150K JA 1/6W	1	R178	RDB100000A	CARBON 100 JA 1/4W	1
R110	RDD100300A	CARBON 100K JA 1/6W	1	R179	RDD470000A	CARBON 470 JA 1/6W	1
R111	RDD100100A	CARBON 1K JA 1/6W	1	R180	RDD100100A	CARBON 1K JA 1/6W	1
R112	RDD820200A	CARBON 82K JA 1/6W	1	R181	RDD220000A	CARBON 220 JA 1/6W	1
R113	RDD820200A	CARBON 82K JA 1/6W	1	R182	RDD470200A	CARBON 47K JA 1/6W	1
R115	RDD100100A	CARBON 1K JA 1/6W	1	R183	RDD220200A	CARBON 22K JA 1/6W	1
R116	RDD120200A	CARBON 12K JA 1/6W	1	R184	RDD100300A	CARBON 100K JA 1/6W	1
R117	RDD390200A	CARBON 39K JA 1/6W	1	R185	RDB22R000A	CARBON 22 JA 1/4W	1
R118	RDD150200A	CARBON 15K JA 1/6W	1				

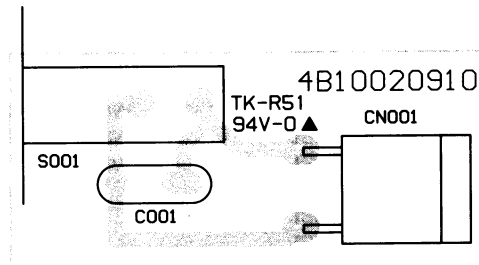
P.C.BOARD PARTS LIST (Continued)

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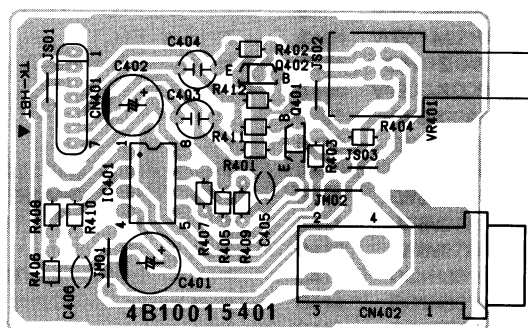
POWER P.C.BOARD



SWITCH P.C.BOARD

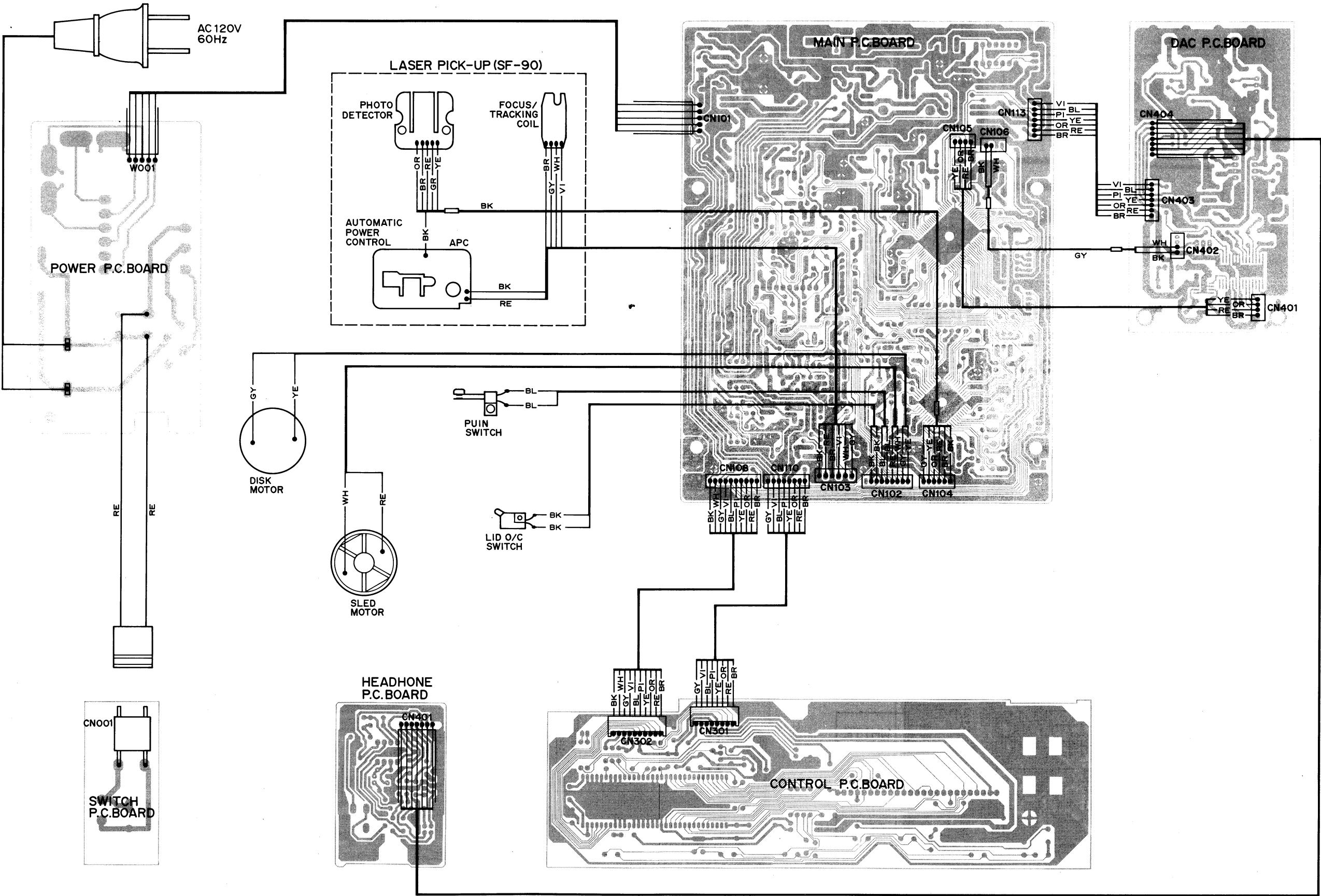


HP P.C.BOARD

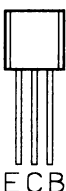
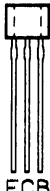
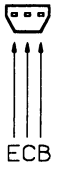


4B10018600 A
TK-R51 94V-0 A

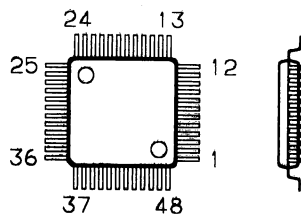
POINT TO POINT WIRING DIAGRAM



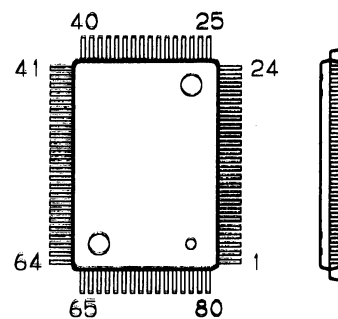
IC&TRANSISTOR LEAD IDENTIFICATION

TRANSISTOR	FRONT VIEW	BOTTOM VIEW	TRANSISTOR	FRONT VIEW	BOTTOM VIEW
2SA1529 2SC3382			2SA1317 2SA1346 2SC3330 2SC3400 2SD1012		
TERMINAL NAME					
B → BASE C → COLLECTOR E → EMITTER					

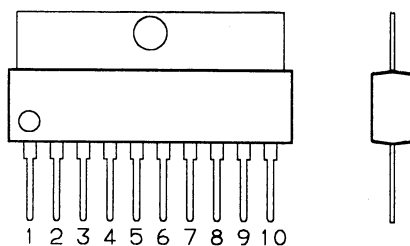
LA9200NM TOP/SIDE VIEWS



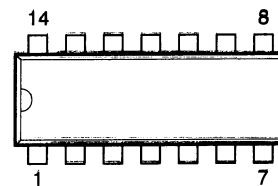
YM7121C TOP/SIDE VIEWS



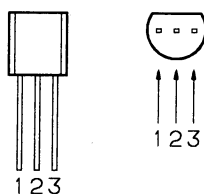
LA6510 FRONT/SIDE VIEWS



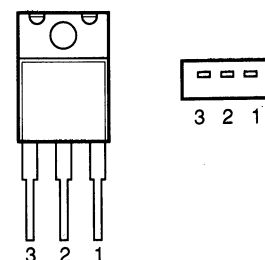
TC74AC04 TOP VIEW



NJM7805FA TOP/SIDE VIEWS

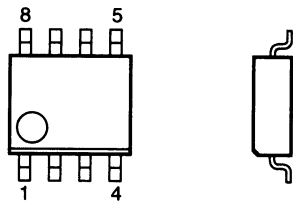


**NJM78L06A(T3) TOP/SIDE VIEWS
NJM79L06A(T3) TOP/SIDE VIEWS**

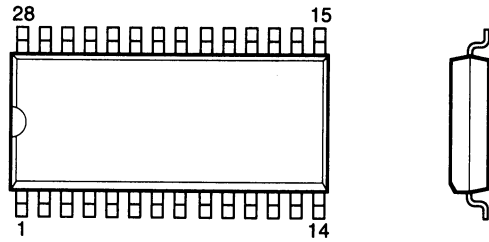


IC&TRANSISTOR LEAD IDENTIFICATION (Continued)

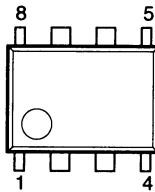
NJU6321P TOP/SIDE VIEWS



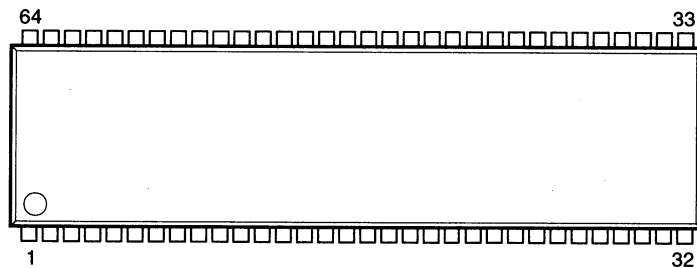
TDA1305T TOP/SIDE VIEWS



NJM4556AD TOP VIEW NJM5532DD TOP VIEW



LC6554H TOP VIEW

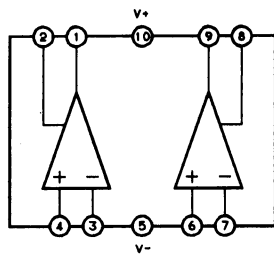


LA9200NM BLOCK DIAGRAM

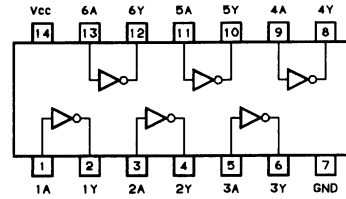


IC BLOCK DIAGRAM (Continued)

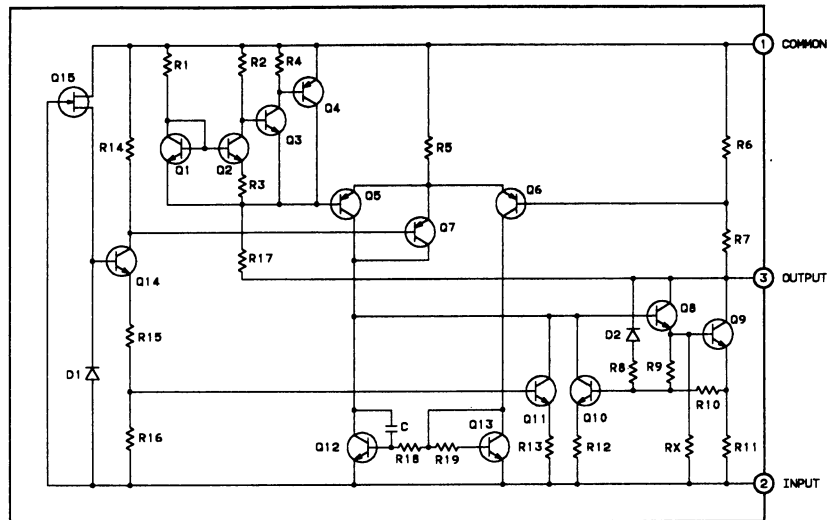
LA6510 BLOCK DIAGRAM



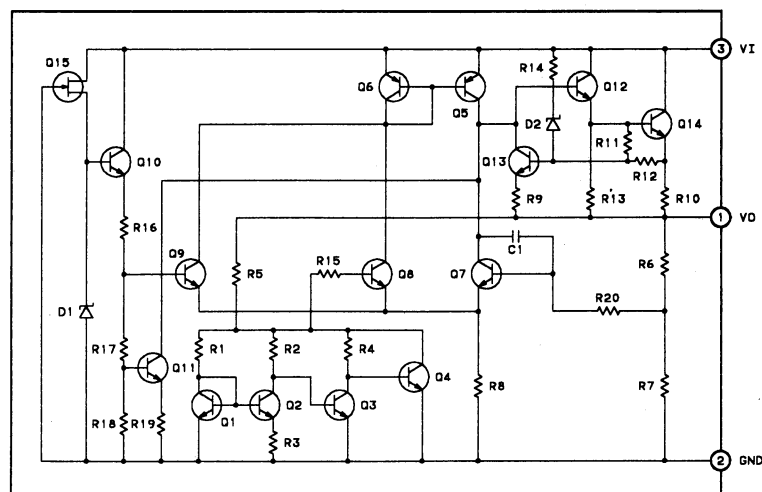
TC74AC04 BLOCK DIAGRAM



NJM79L06A(T3) BLOCK DIAGRAM

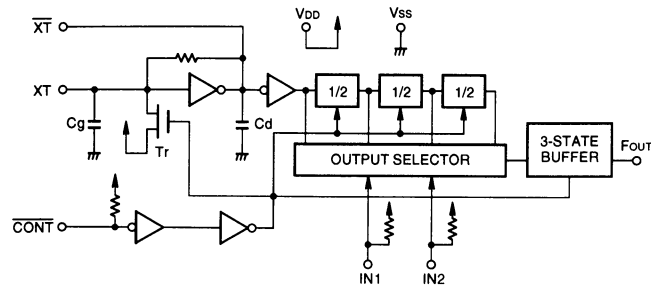


NJM78L06A(T3) BLOCK DIAGRAM

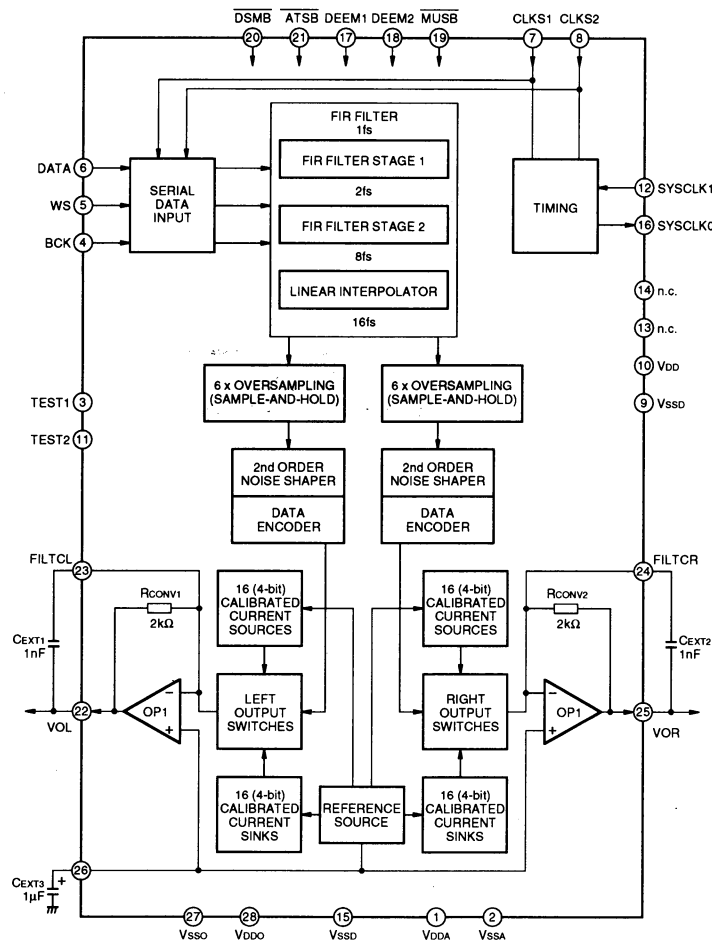


IC BLOCK DIAGRAM (Continued)

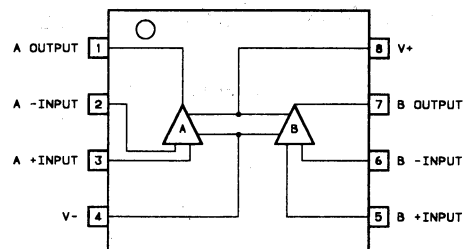
NJM6321P BLOCK DIAGRAM



TDA1305T BLOCK DIAGRAM



NJM5532 BLOCK DIAGRAM





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