

**NAD**

**SERVICE  
MANUAL**

**5240**

**5220**

**COMPACT DISC PLAYERS**

# NAD 5240/5220 SERVICE MANUAL

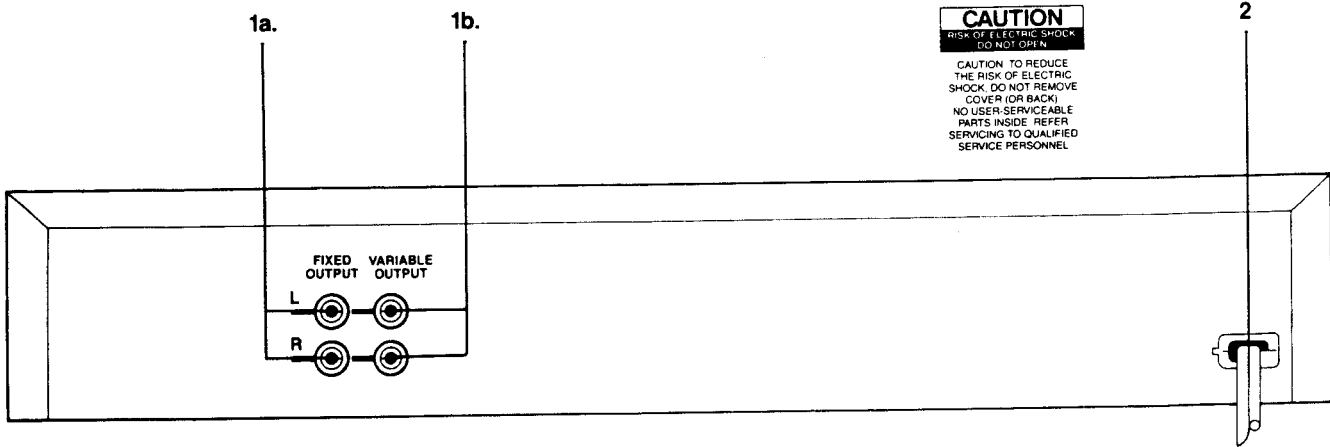
*NOTICE: This manual covers all versions*

- A: North America**
- C: Canada**
- E: Europe & Others**
- U: UK**
- Y: Australia**

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**REAR PANEL**

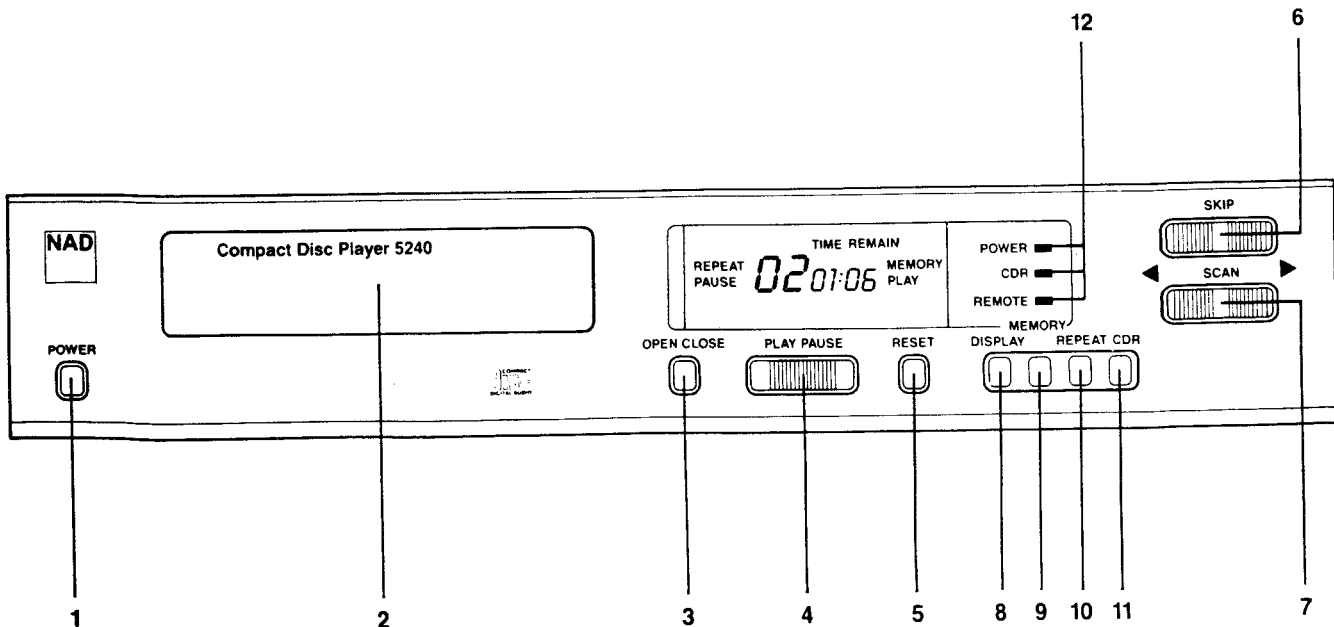
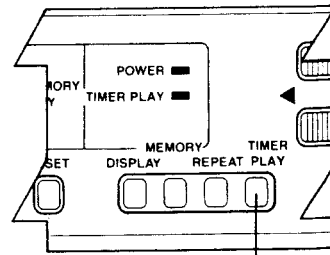
1. Output Jacks.
  - a. Fixed
  - b. Variable (5240 only)
2. AC Line Cord.



**FRONT PANEL**

1. Power On/Off.
2. Disc Drawer.
3. Open/Close.
4. Play/Pause.
5. Reset.
6. Skip Forward/Back.
7. Scan Forward/Back.
8. Display Selector.
9. Memory.
10. Repeat.
11. CDR (Controlled Dynamic Range; 5240 only).
12. Status Indicators.
13. Timer Play (5220 only).

5220 Front Panel



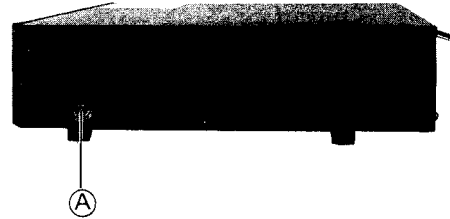
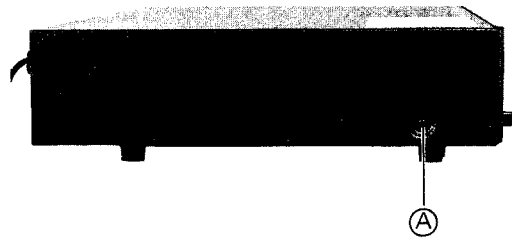
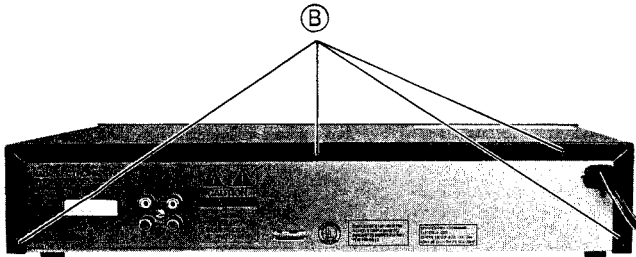
## SPECIFICATIONS

Type:	Compact Disc Player with optical pickup
Quantization:	16 bit linear
Channels:	2 channels (stereo)
Frequency response:	5 Hz – 20 kHz $\pm$ 0.5 dB
Dynamic range:	94 dB
Total harmonic distortion:	0.004% (1 kHz)
Channel separation:	90 dB
Wow and flutter:	Unmeasurable
Output:	2.0 Volts
Pickup:	Semiconductor laser
Track search:	By track number
Power consumption:	13 Watts
Dimensions:	340(W) x 57.5(H) x 309.5(D) mm
Weight:	2.9 kg

# DISASSEMBLY INSTRUCTIONS

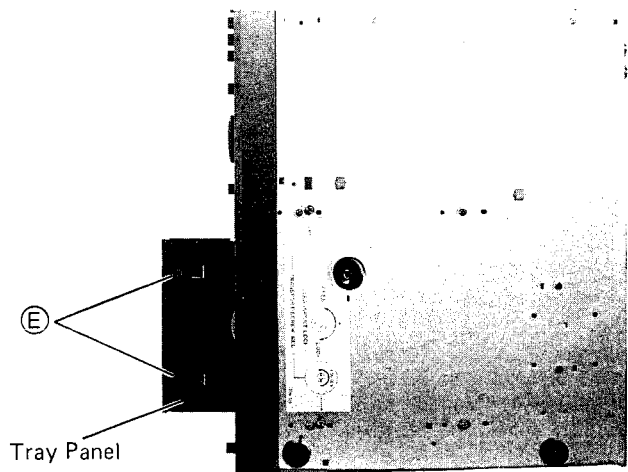
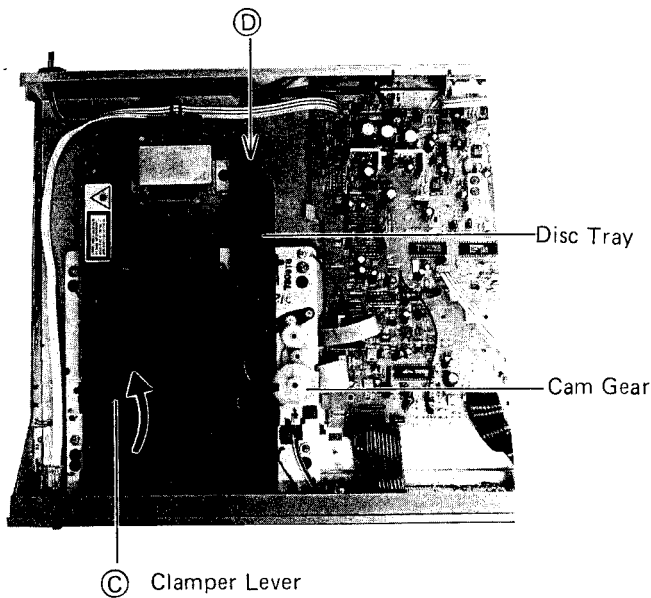
## TOP COVER REMOVAL

1. Remove two screws (A) from top cover side boards and four screws (B) from rear side, and the top cover will be removed.



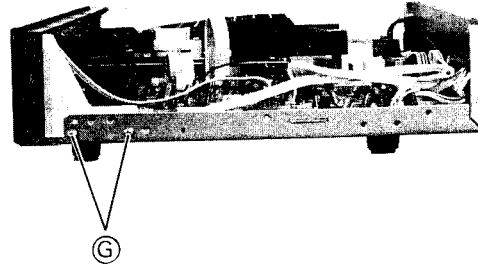
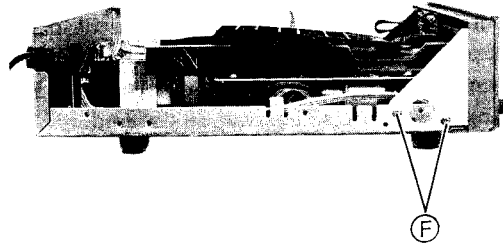
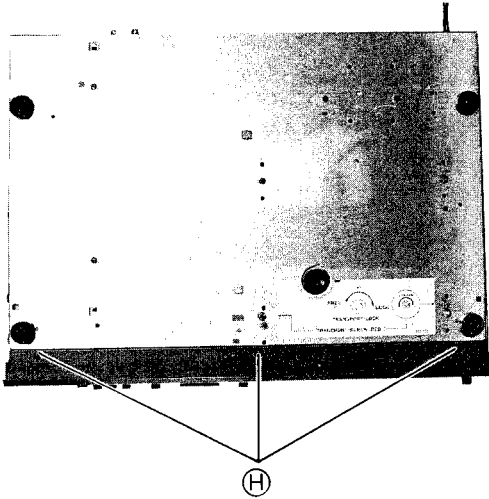
## TRAY PANEL REMOVAL

1. Remove top cover.
2. Lift up mechanism assembly clamber lever (C) and pull out disc tray (D) forward by your hand.
3. Release two hooks (E) on tray panel, and the tray panel will be removed.



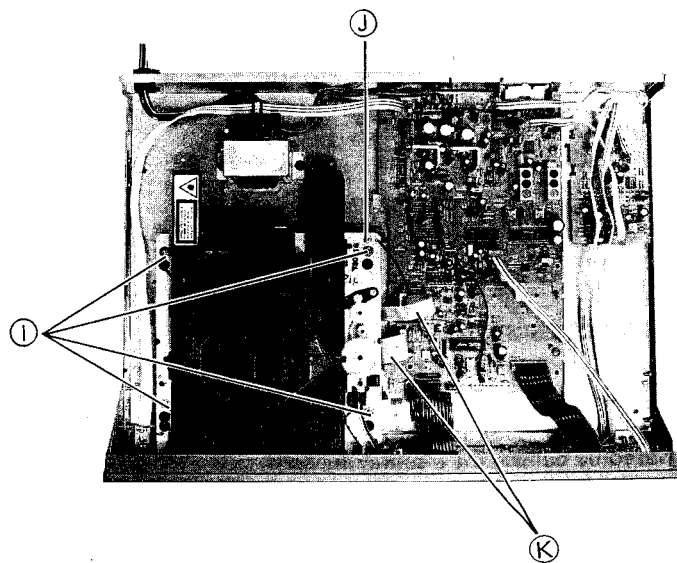
### FRONT PANEL REMOVAL (with Display P.C. Board)

1. Remove top cover and tray panel.
2. Remove four screws **F** and **G** from both side and three screws **H** from bottom side, and the front panel will be removed.



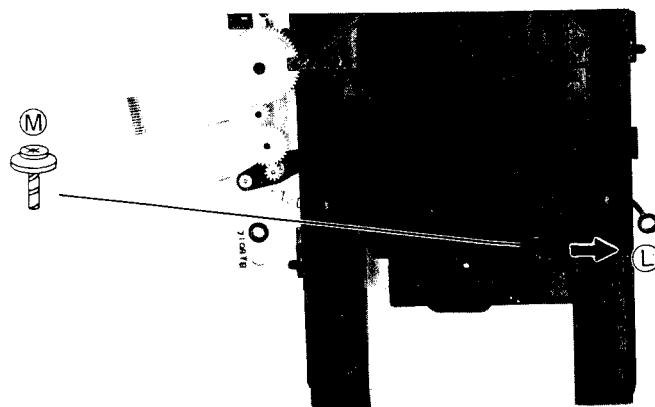
### MECHANISM ASSEMBLY REMOVAL

1. Remove tray panel.
2. Remove five screws **I** and **J**, and two connectors **K**, and then the mechanism assembly will be removed.



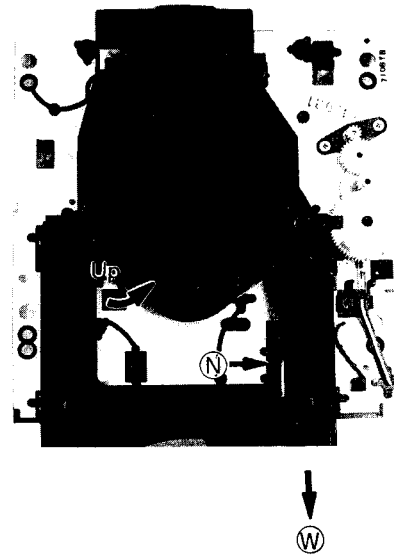
### \* Clamper lever removal

1. Push clamper lever hook to arrow **L** direction with minus driver, and the clamper lever will be removed by pulling it.
2. If hook is broken, use screw with washer **M** ( $\phi 3 \times 8\text{mm}$ ) as illustrated.



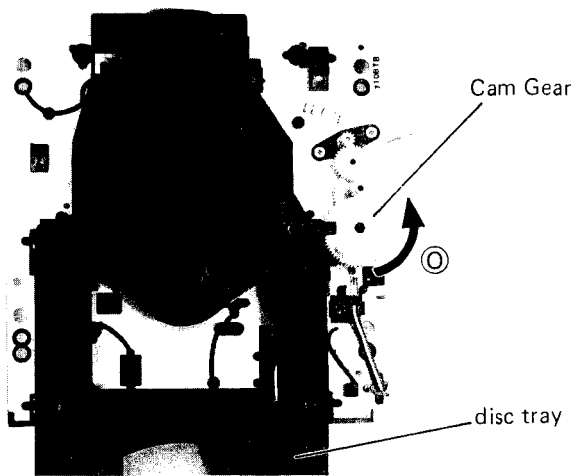
**DISC TRAY REMOVAL**

1. Lift up clamber lever with disc tray in the deepest side and pull disc tray until it stops. Pull disc tray with mechanism main chassis hook pushed to arrow (N) direction, and the disc tray will be removed.



**\* Disc tray mounting procedure on mechanism**

1. Insert disc tray with cam gear turned to counter-clockwise direction (O) fully, and the disc tray can be mounted.



**CAUTIONS OF DISC TRAY REMOVAL**

1. There are two types of mechanism chassis, differing in (T) and (U) as shown in Figure B.
2. In the first type (T) (Figure B), the disc tray will be removed by pulling the disc tray forward.
3. In the 2nd type, (U) in Figure B is hooked at (V) as shown in Figure A.
4. To remove the disc tray in the 2nd type push (N) (Figure A) to the arrow direction. And the disc tray will be removed as shown in (W) (Figure A).

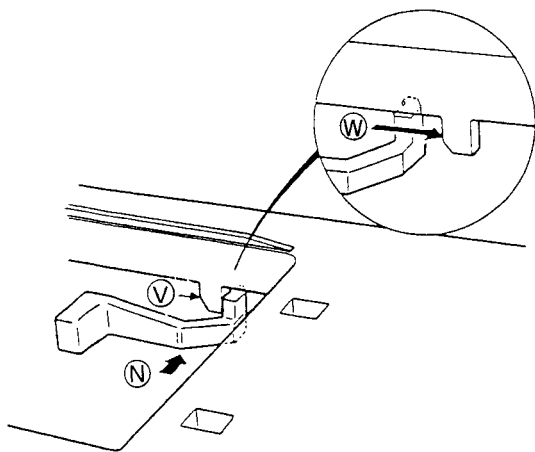
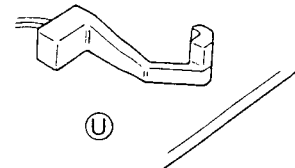
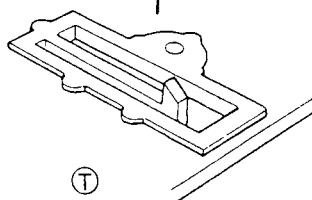
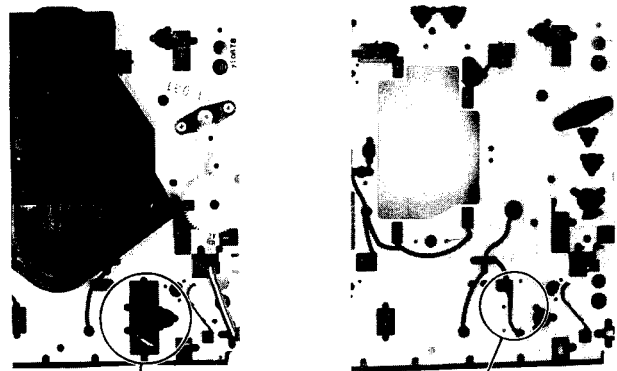
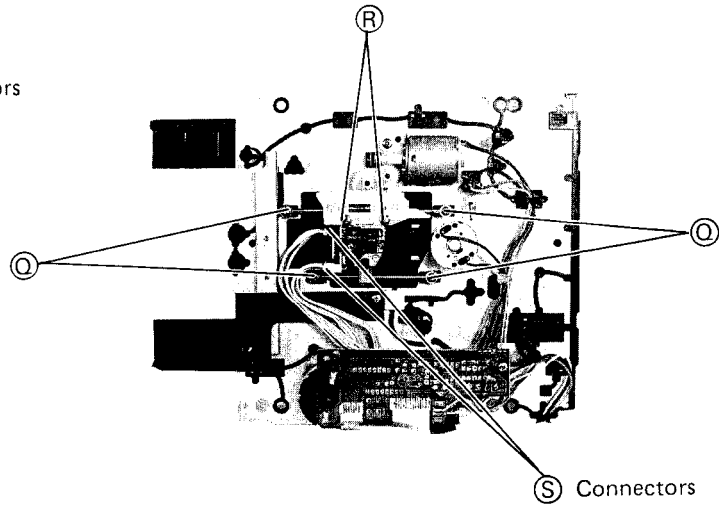


Figure A

Figure B

## LASER PICKUP REMOVAL

1. Short-circuit Laser Pickup P.C. Board pattern (P).
2. Remove six screws (Q) and two connectors (S), and the laser pickup will be removed.

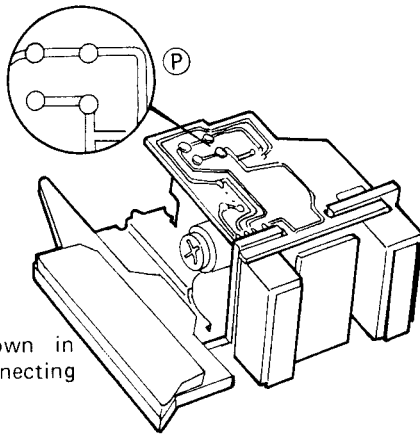


### ■ CAUTION ON LASER PICKUP REMOVAL

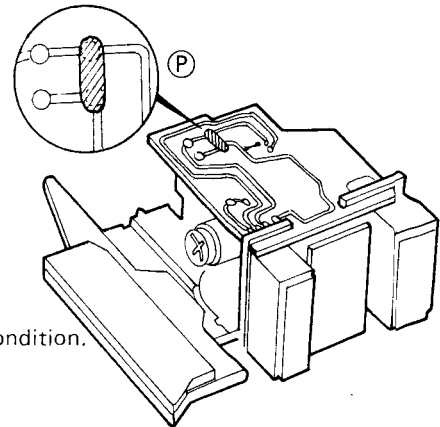
1. When removing laser pickup, solder and short-circuit terminals to protect laser pickup from damage which may be caused during the removal.
2. Disconnect leads from connector after soldering is completed. Do not touch the pickup terminals with your hand.
3. When mounting laser pickup, connect the leads to connector before unsoldering the solder used to short-circuit.

### ■ CAUTIONS ON LASER PICKUP REPLACEMENT

1. When mounting a new laser pickup, first connect the leads to connector and then unsolder the solder used to protect laser diode on P.C. Board.
- \* Use a soldering iron grounded (or leakageless iron).
  - \* Cover working bench with conductive mat grounded.
  - \* Before proceeding job, always touch the conductive mat or ground lead with your both hands to discharge electric charges developed on your body.



- Solder the pattern shown in illustration before disconnecting connector and leads.



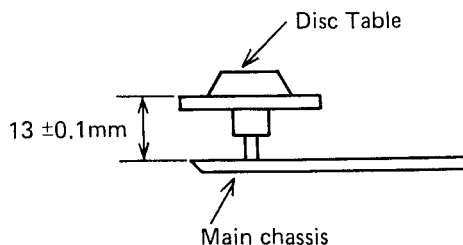
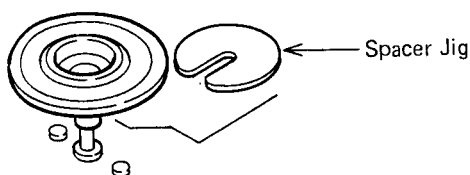
- Soldered condition.

## DISC TABLE MOUNTING

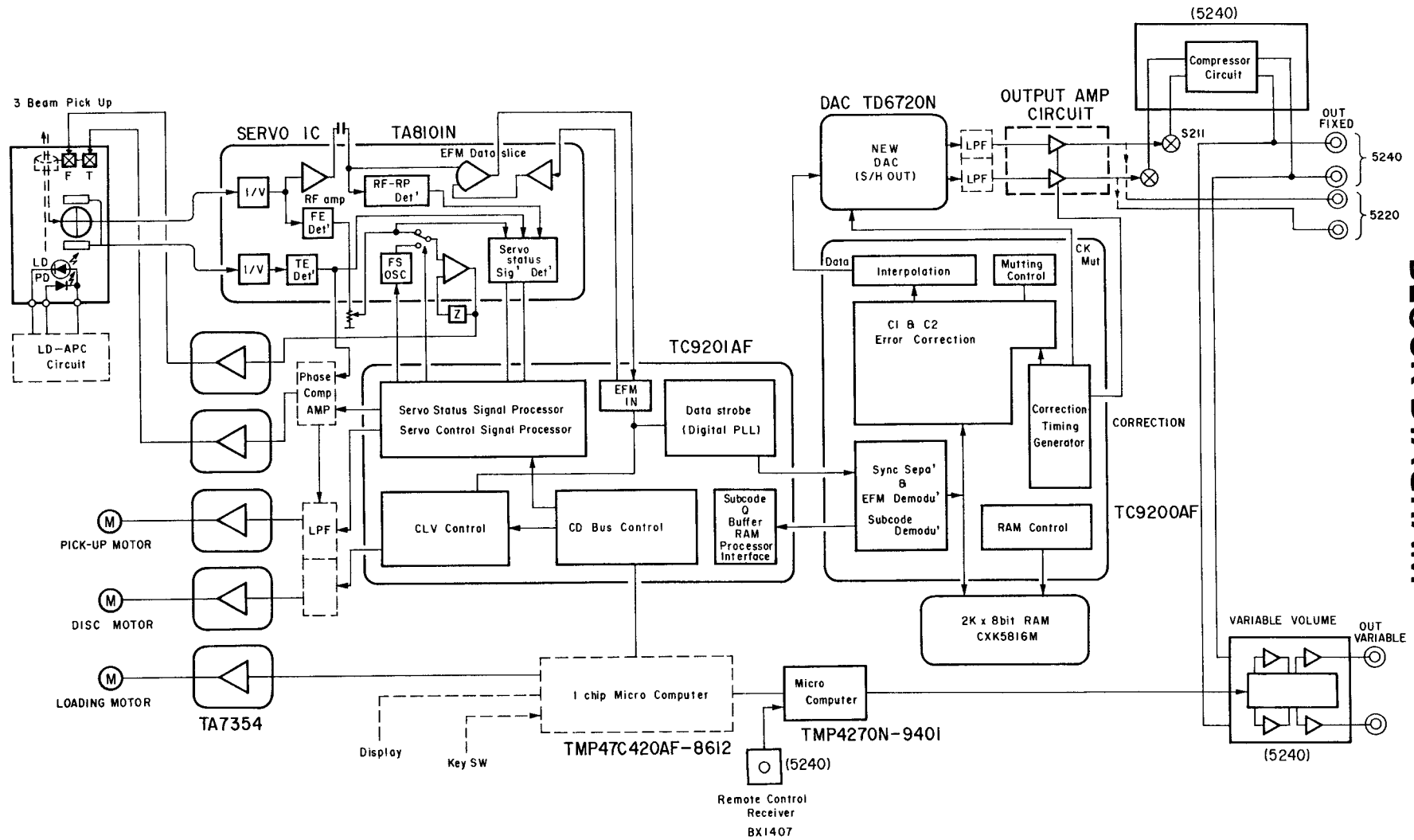
Insert spacer which was packed with motor, between main chassis and disc table. Push center of disc table until it touches spacer.

### Notes:

1. When mounting disc table, take care of disc table not to touch pickup or disc tray.
2. Mount disc table in parallel with main chassis.
3. There are three kinds of spacer jigs corresponding to the motor assemblies or three kinds of pickups. Check your pickup and order the motor assembly you want.



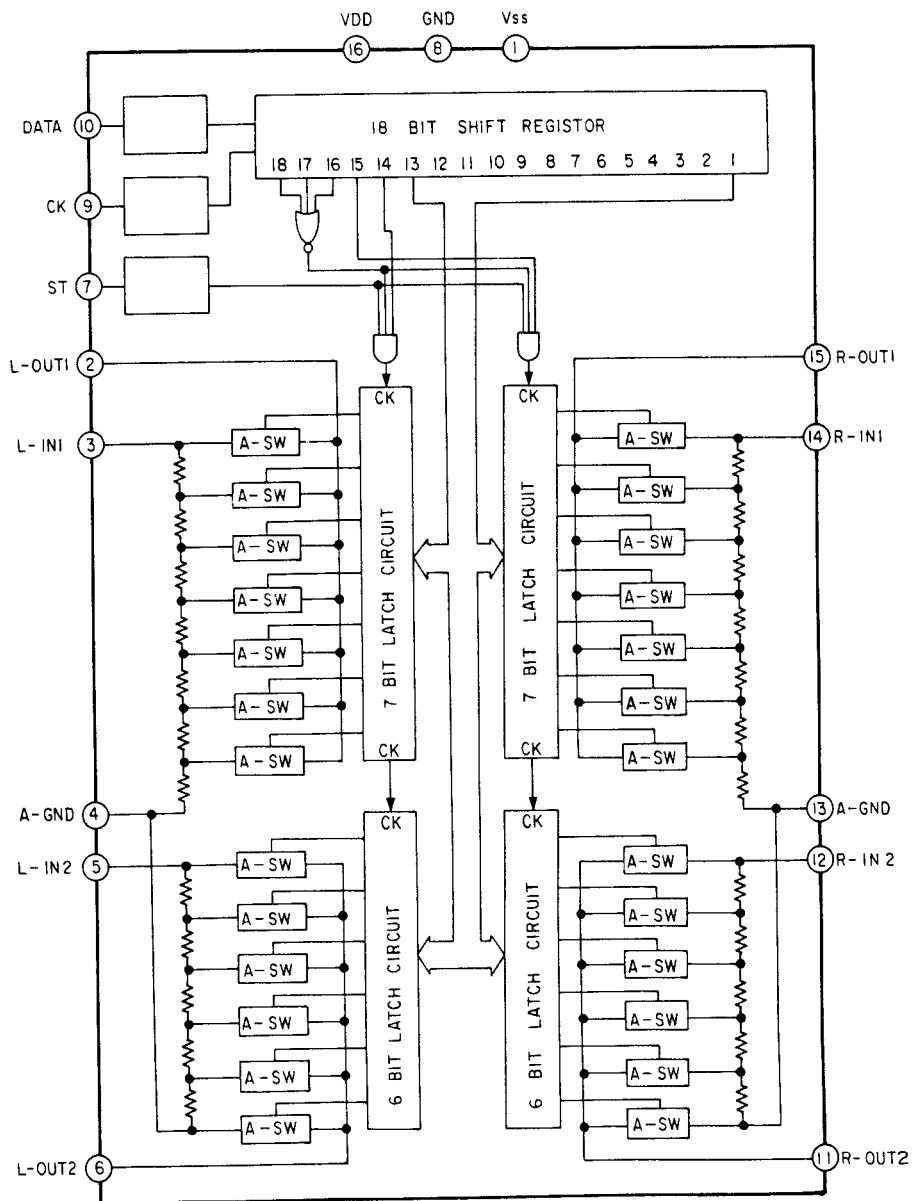
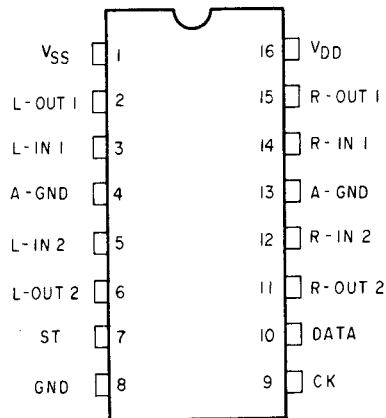




**BLOCK DIAGRAM**

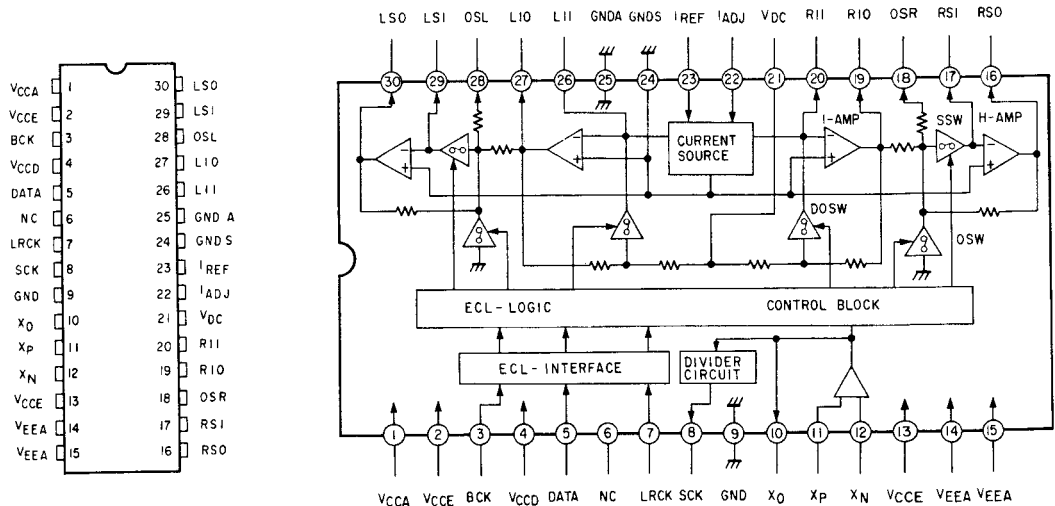
# IC TERMINAL FUNCTION

TC9154AP


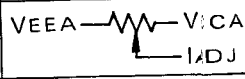
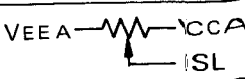


Terminal No.	Symbol	Function	Note
1 16 (8)	VSS VDD GND	Minus power supply terminal. Plus power supply terminal. Ground terminal for TC9154P.	
2 15	L-OUT1 R-OUT1	10 dB step attenuator output. Signal applied to IN is attenuated from 0 dB to -60 dB in 7 steps (1 step = 10 dB).	L and R are symmetrical.
3 14	L-IN1 R-IN1	10 dB step attenuator input.	
4 13	A-GND	AC ground terminal.	
5 12	L-IN2 R-IN2	2 dB step attenuator input.	
6 11	L-OUT2 R-OUT2	2 dB step attenuator output. Signal applied to IN is attenuated from 0 dB to 8 dB in 2 dB step.	
7	ST	Strobe input terminal. Attenuation and channel selection signal entered through DATA, CK terminals are latched by setting this terminal to "H" level. Previous data remains as long as the terminal is "H" level.	
9	CK	Clock input terminal to read-in data entered DATA terminal.	
10	DATA	Attenuation and channel selection data input terminal. Accepts CK signal consisting of 18 bits.	

## TD6720N

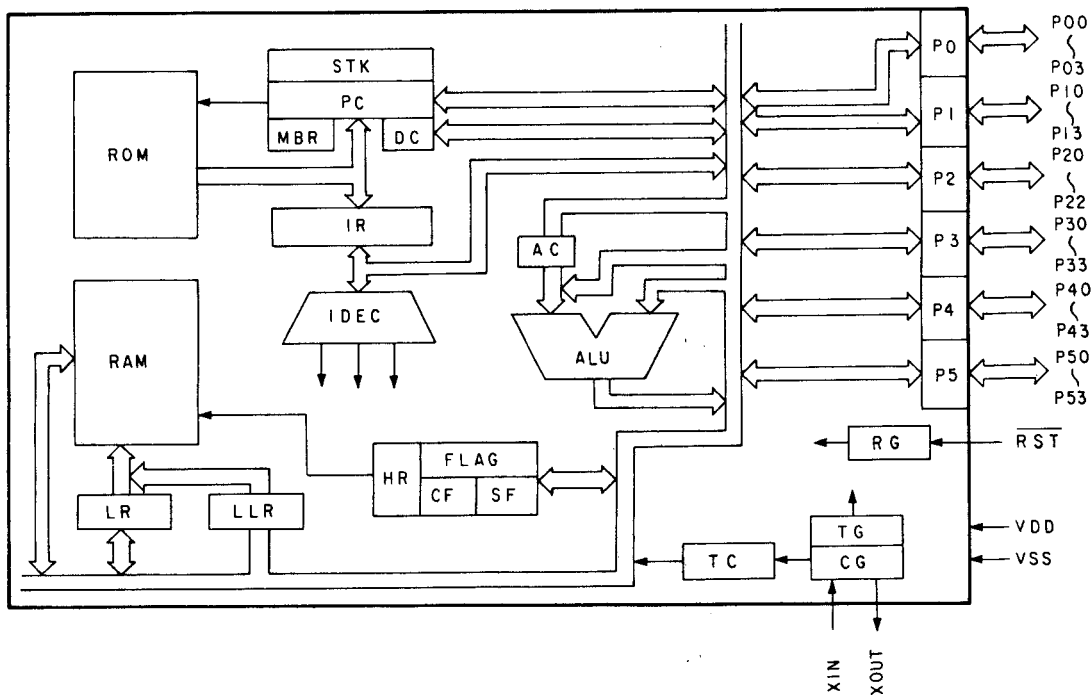
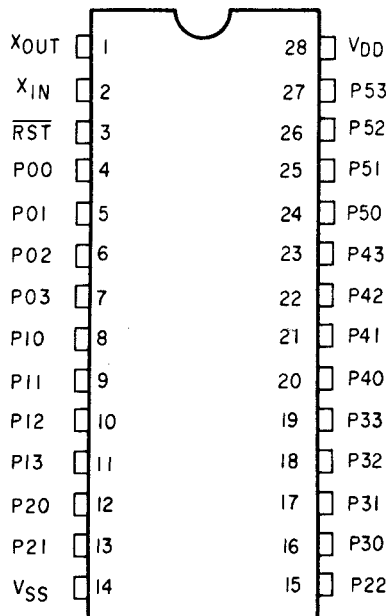


### Terminal Function Description

Pin No.	Name	Function and Operation	Note
1	VCCA	Analog plus power supply voltage terminal. +5V	
2	VCCE	ECL logic power supply voltage terminal. +5V	
3	BCK	Bit clock input terminal. Duty cycle = 50%, f = 1.4112 MHz	
4	VCCD	Digital power supply voltage terminal. +5V	
5	DATA	PCM digital audio data input terminal. Inputs in bit serial (16 bit) from MSB synchronized with BCK falling edge.	
6	NC	Not connected.	
7	LRCK	Input data, Lch and Rch indication signal input terminal. Inputs synchronized with BCK falling edge.	
8	SCK	Divided clock signal output.	
9	GND	Ground terminal.	
10 11 12	XO XP XN	Oscillator input/output terminal. Constitutes deformed Colpitts oscillator circuit by combining L, C & R with SAW resonator or X'tal oscillator.	
13	VCCE	ECL logic power supply voltage terminal. +5V	
14, 15	VEEA	Analog minus power supply voltage terminal. -5V	
16	RSO	Rch sample and hold amp output terminal.	
17	RSI	Rch sample and hold and minus input terminal.	
18	OSR	Rch output offset adjustment terminal. Normally connected to GND A.	
19	RIO	Rch integral amp output terminal.	
20	RII	Rch integral amp minus input terminal.	
21	VDC	Discharge circuit reference voltage terminal.	
22	IADJ	Current source fine adjustment terminal. Normally connected to GND A.	
23	IREF	Reference current input terminal.	
24	GND S	Ground terminal.	
25	GND A	Analog ground terminal.	
26	LII	Lch integral amp minus input terminal.	
27	LIO	Lch integral amp output terminal.	
28	OSL	Lch output offset adjustment terminal. Normally connected to GND A.	
29	LSI	Lch sample and hold amp minus input terminal.	
30	LSO	Lch sample and hold amp output terminal.	

# TMP4270N

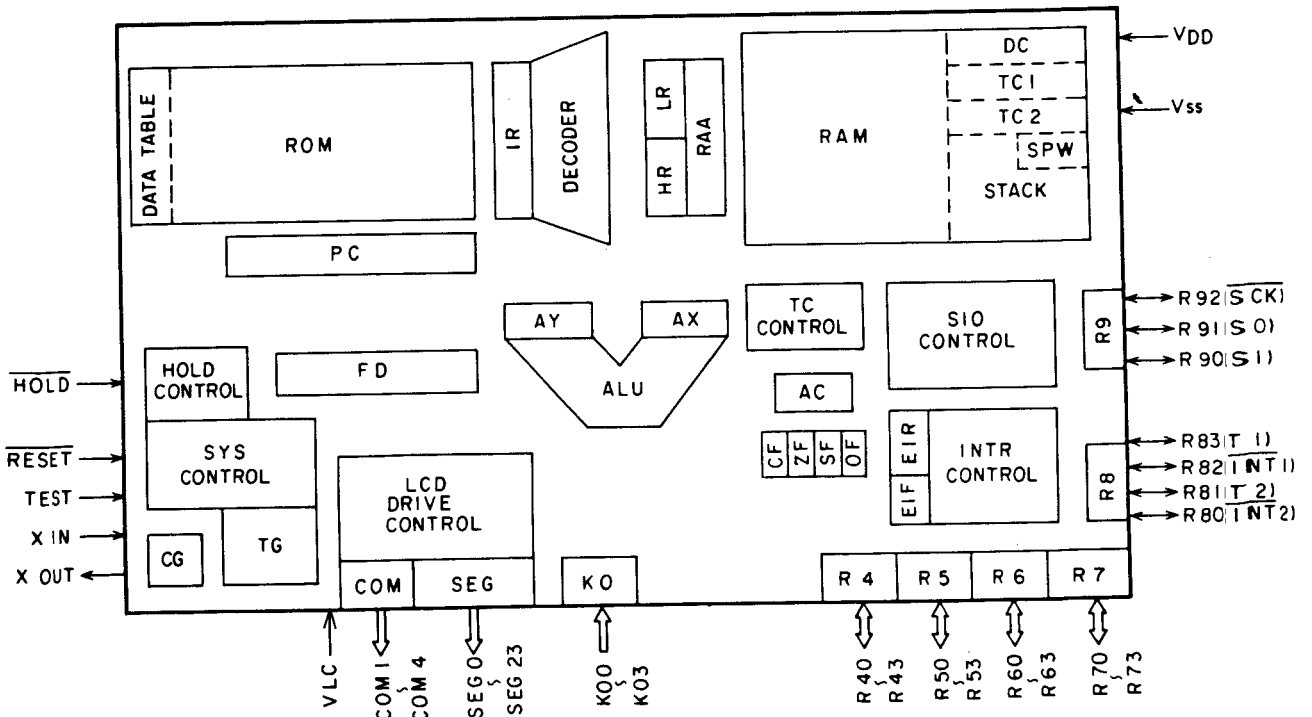
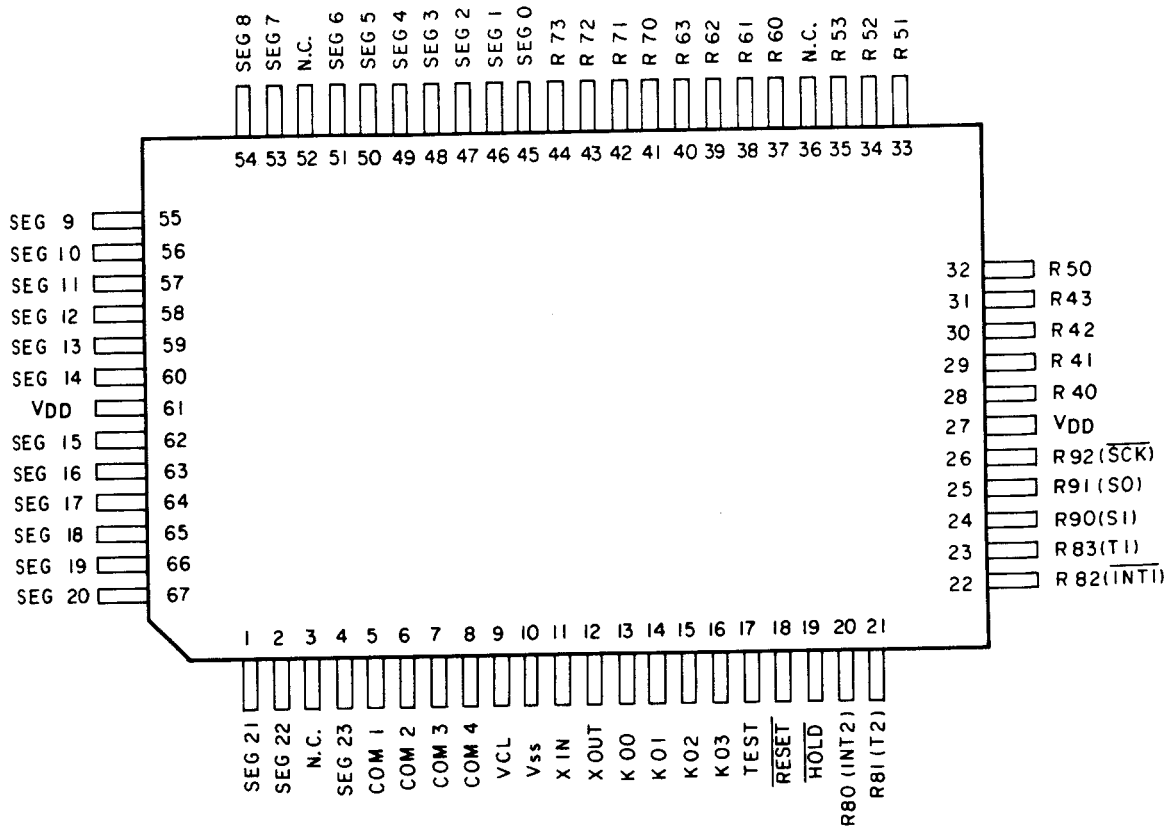
- 13. Remote control signal input
- 15. Remote control input/output



## Pin Name and Function

Pin Name	Input/Output	Function
P03 ~ P00	Input/Output	Input/Output port
P13 ~ P10	Input/Output	Input/Output port
P22 ~ P20	Input/Output	Input/Output port
P33 ~ P30	Input/Output	Input/Output port
P43 ~ P40	Input/Output	Input/Output port
P53 ~ P50	Input/Output	Input/Output port
XIN, XOUT	Input, Output	Oscillator element connection terminal
RST	Input	Reset input
VDD, VSS	Power supply	+5V, 0V

# TMP47C420AF

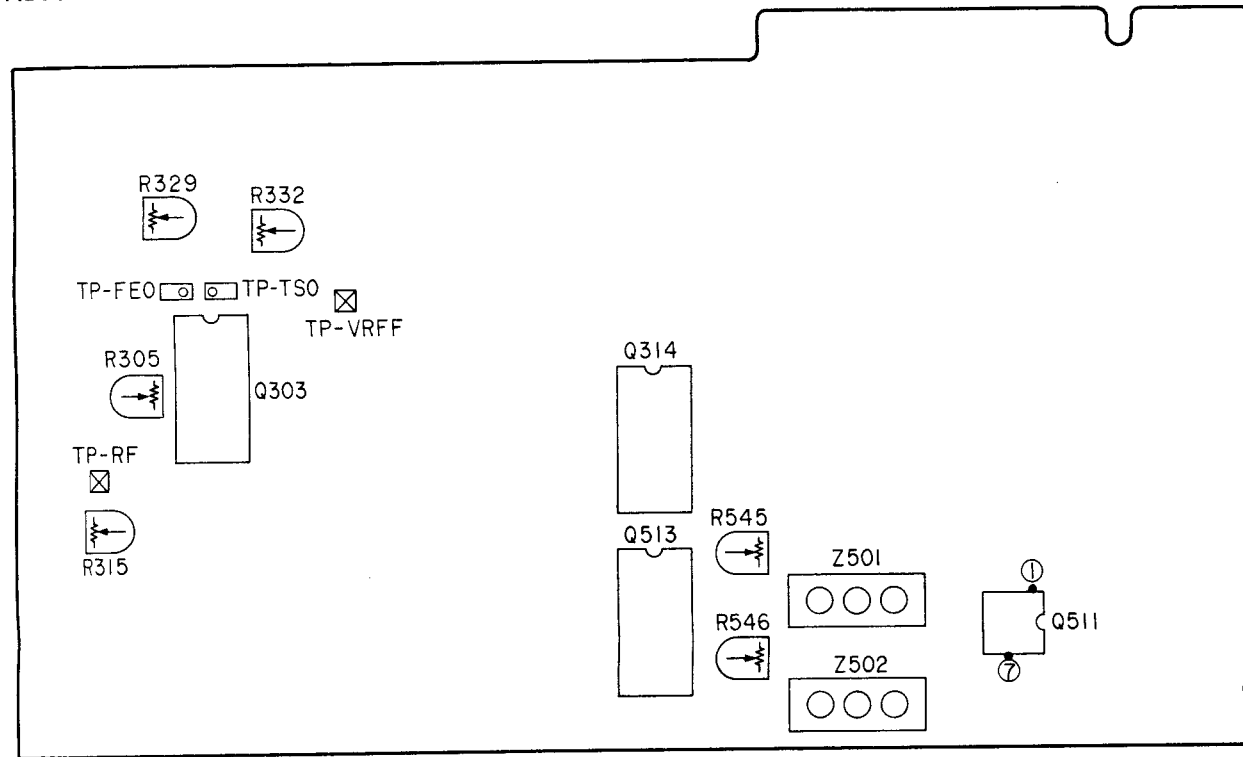


**TMP47C420AF**

Pin No.	Name	Function
45 ~ 51, 53 ~ 60, 62 ~ 67, 1, 2, 4	Seg. 0 ~ 6 Seg. 7 ~ 14 Seg. 15 ~ 20 Seg. 21, 22, 23	LCD segment driver output.
5, 6	Com. 1, 2	LCD common driver output.
9	VLC	LCD driver power supply (0V).
10	Vss	0V
11	XIN	Clock input.
13 14 15 16	$\overline{\text{SLT}}$ $\overline{\text{CLT}}$ $\overline{\text{OLT}}$ $\overline{\text{OCT}}$	Start limit (0V with PU put on inside most). Close limit (0V with tray closed). Open limit (0V with tray opened). Overcurrent detection (0V with tray loaded).
18 19	$\overline{\text{RESET}}$ $\overline{\text{HOLD}}$	Initialize signal input. Hold signal input (+5V).
20 21	REM $\overline{\text{TIMER}}$	Remote control input/output. Timer play terminal
22 ~ 25	S/SL, SL23	Sync control terminal
26	MUTE	Mute signal output.
27	VDD	+5V
28 29	OPNM CLSM	Tray open/close control
30 31 32 ~ 35	BUCK DA/CO BUS0 ~ 3	TC9200AF control.
37 ~ 40 42 ~ 44	SENS0 ~ 3 SCAN0 ~ 2	Key scan pulse input. Key scan pulse output.

# ADJUSTMENTS

## 1. ADJUSTMENT LOCATION



## 2. ADJUSTMENT PROCEDURES AFTER LASER PICKUP REPLACEMENT

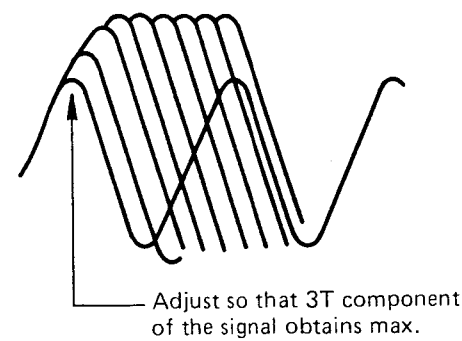
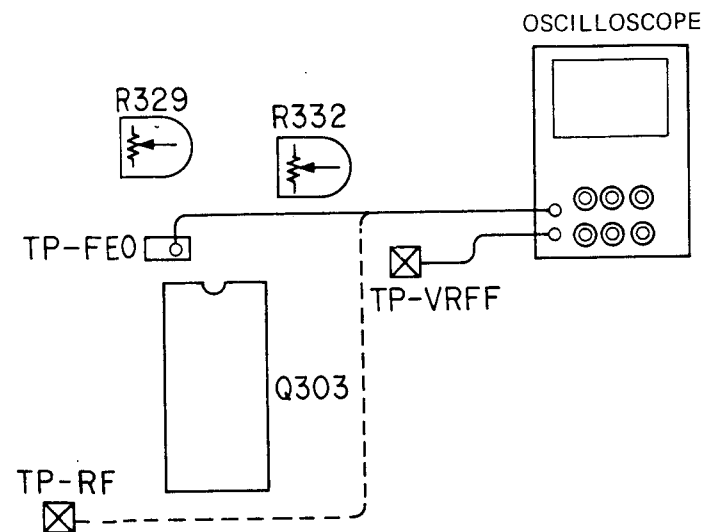
### 2-1 Focus DC Offset Adjustment

(in TA8101N and R329 VR replacement)

- (1) Set unit to STOP mode with power of unit ON.
- (2) Connect oscilloscope or tester across TP-FE0 and TP-VREF. (DC range: 5mV/DIV)
- (3) Adjust R329 (100K ohm) so that DC offset obtains  $0V \pm 10mV$ .

### 2-2 Focus Balance Adjustment

- (1) Connect oscilloscope across TP-RF and TP-VREF. (AC range:  $0.2V/0.5\mu$  sec DIV)
- (2) Play back YEDS-7 test disc.
- (3) Adjust R332 (20K ohm) so that 3T component of RF signal obtains max.



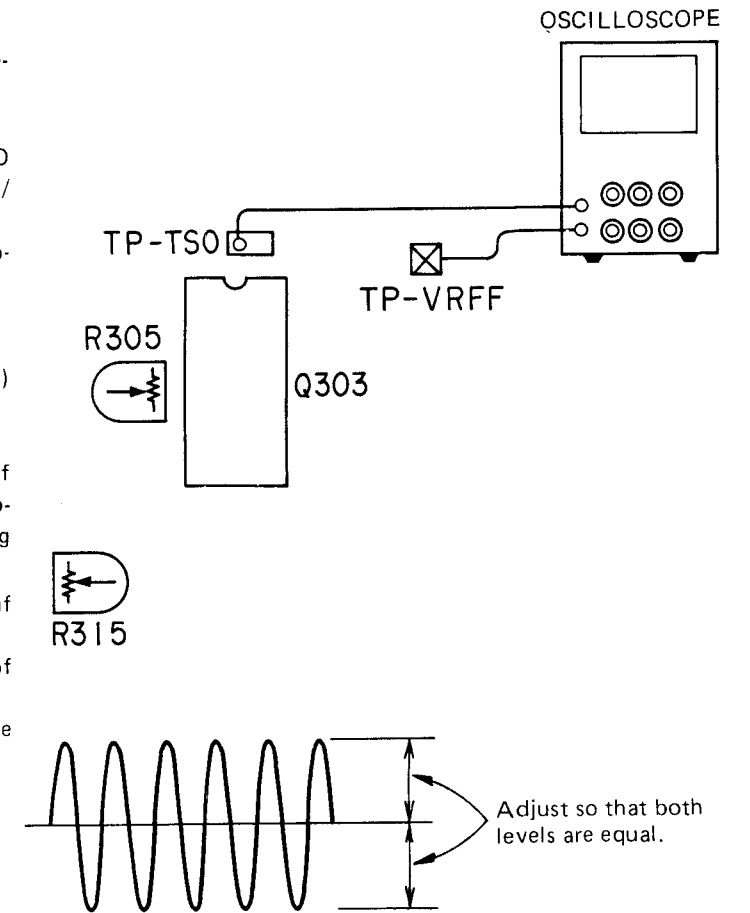
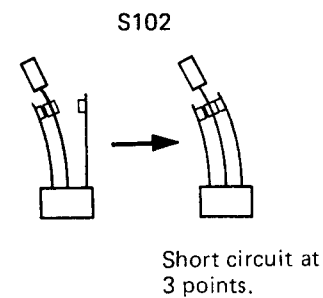
### 2-3 Tracking Offset Adjustment

(in TA8101N and R315 Variable Resistor replacement)

- (1) Set unit to STOP mode with power of unit ON.
- (2) Connect oscilloscope or tester across TP-TSO (TE signal) and TP-VREF. (DC range: 5mV/DIV)
- (3) Adjust R315 (100K ohm) so that DC offset obtains  $0V \pm 10mV$ .

### 2-4 Tracking Error Balance Adjustment

- (1) Connect oscilloscope across TP-TSO (TE signal) and TP-VREF. (DC range:  $0.5V/5msec$  DIV)
- (2) Play back YEDS-7 test disc.
- (3) Short circuit Open Limit and Close Limit leaf switch S102. Push PLAY key again, and micro-computer will be set to test mode and tracking error signal will be obtained.
- (4) Release (open) the short circuit for the leaf switch.
- (5) Adjust R305 (100K ohm) so that DC offset of tracking error signal obtains  $0V$ .
- (6) Push STOP key after adjustment, and test mode will be released.



### 2-5 Analog Output Offset Adjustment

The adjustment below is not necessary when pickup is replaced.

- (1) Turn power of unit ON.
- (2) Connect DC voltmeter or oscilloscope to pin 1 (L ch), pin 7 (R ch) of Q511 on Main P.C. Board and GND terminal of unit. Adjust semi-fixed resistor R545 50K ohm (L ch) and R546 50K ohm (R ch) so that DC range offset obtains  $0 \pm 10mV$ .

### 2-6 CDR Adjustment

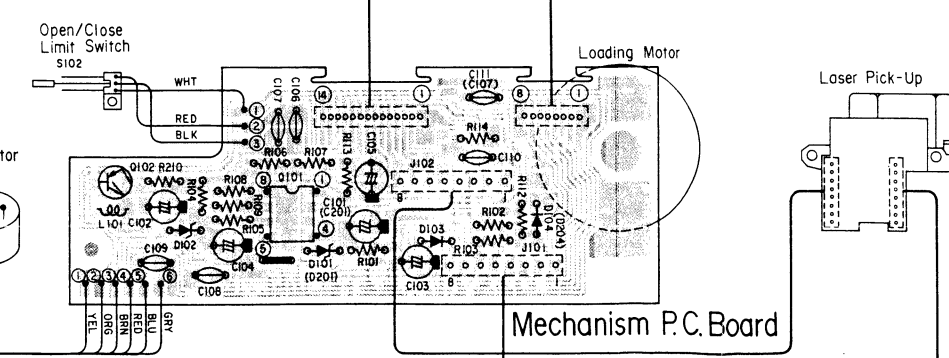
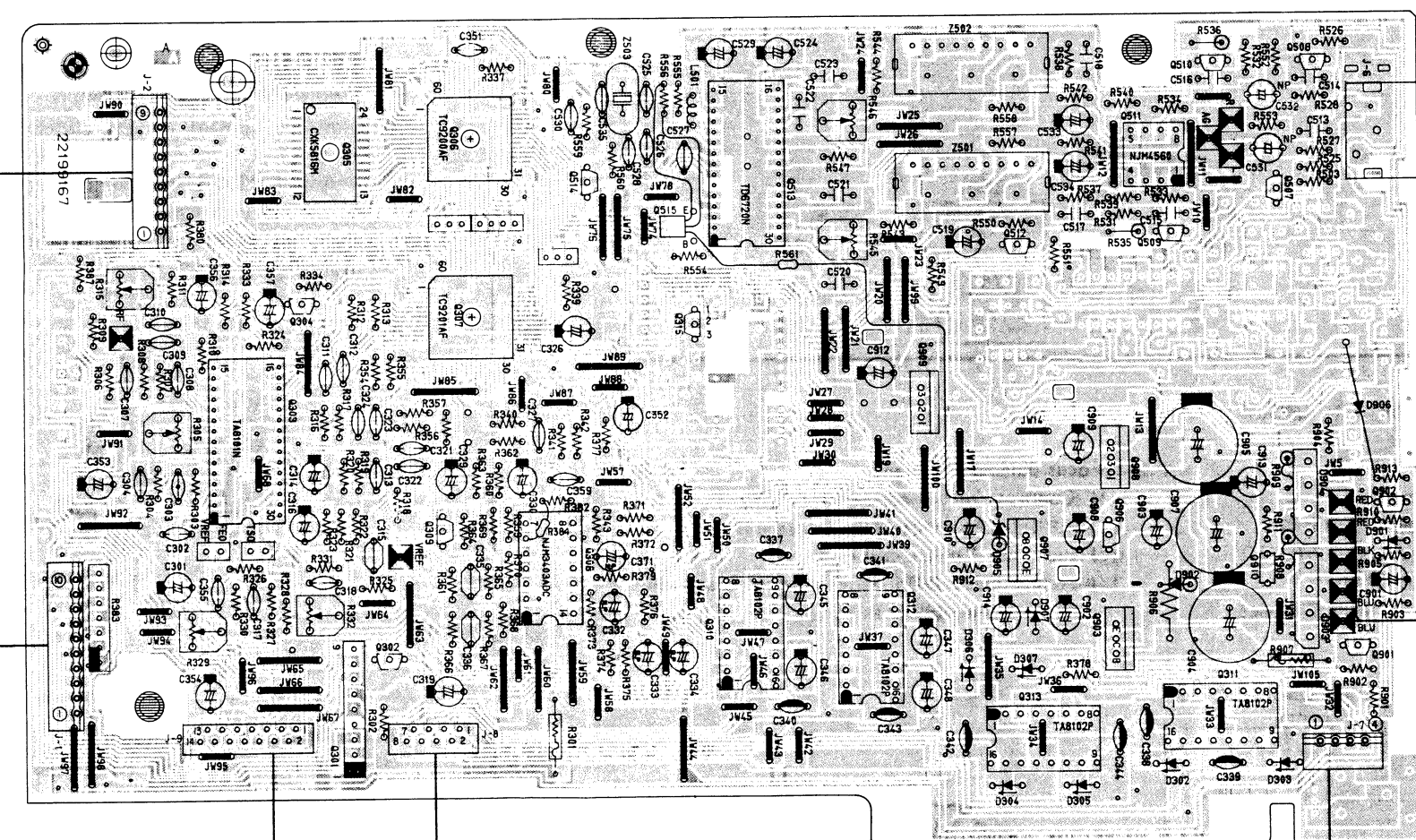
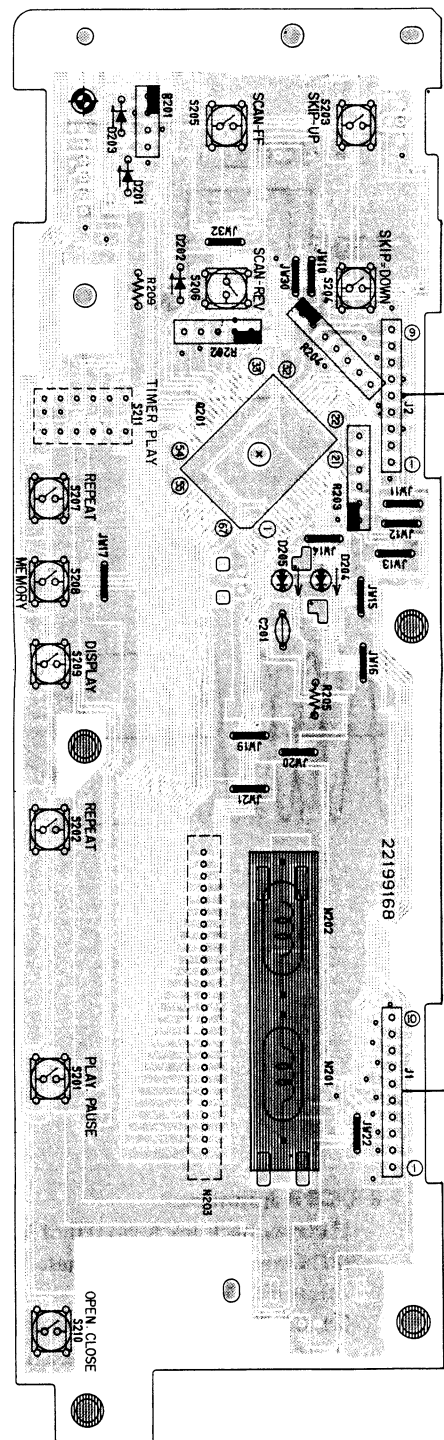
- (1) Play back track No. 20 of YEDS-7 test disc.
- (2) Connect AC level meter (mV, amp built-in) to FIXED output jack.
- (3) Set the level to 0dB with CDR switch OFF. Adjust R601 and R602 until +6dB (twice the output obtained with CDR switch OFF) is obtained with CDR switch ON.

2-7 Volume attached to pickup adjustment is completed.

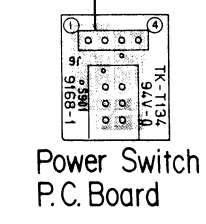
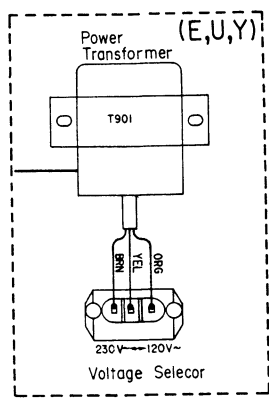
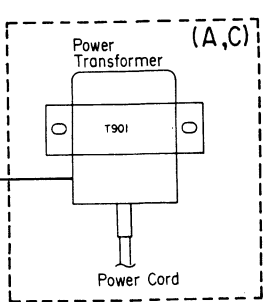


# ELECTRICAL PARTS LOCATIONS (BOTTOM VIEW)

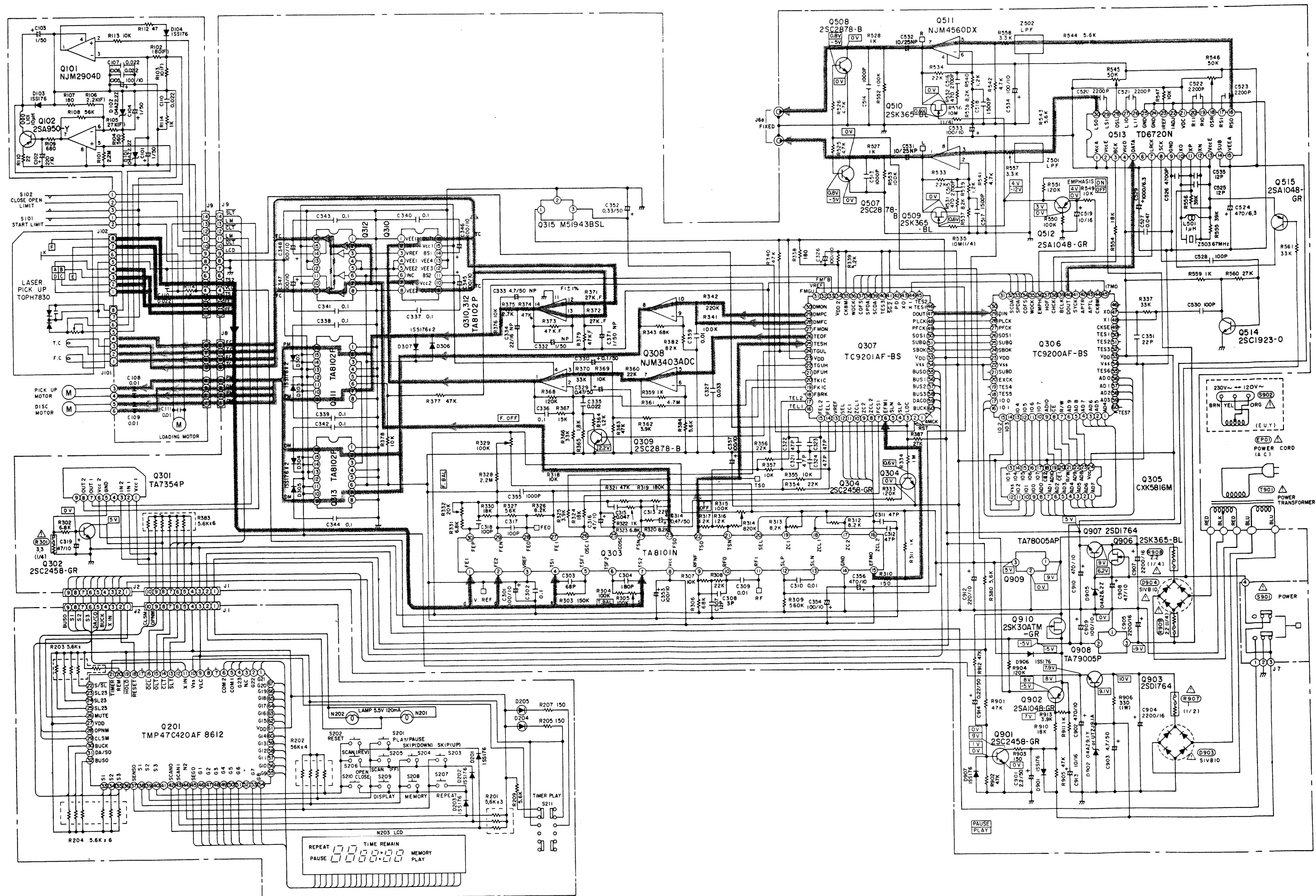
Display P.C.Board



OUTPUT  
FIXED

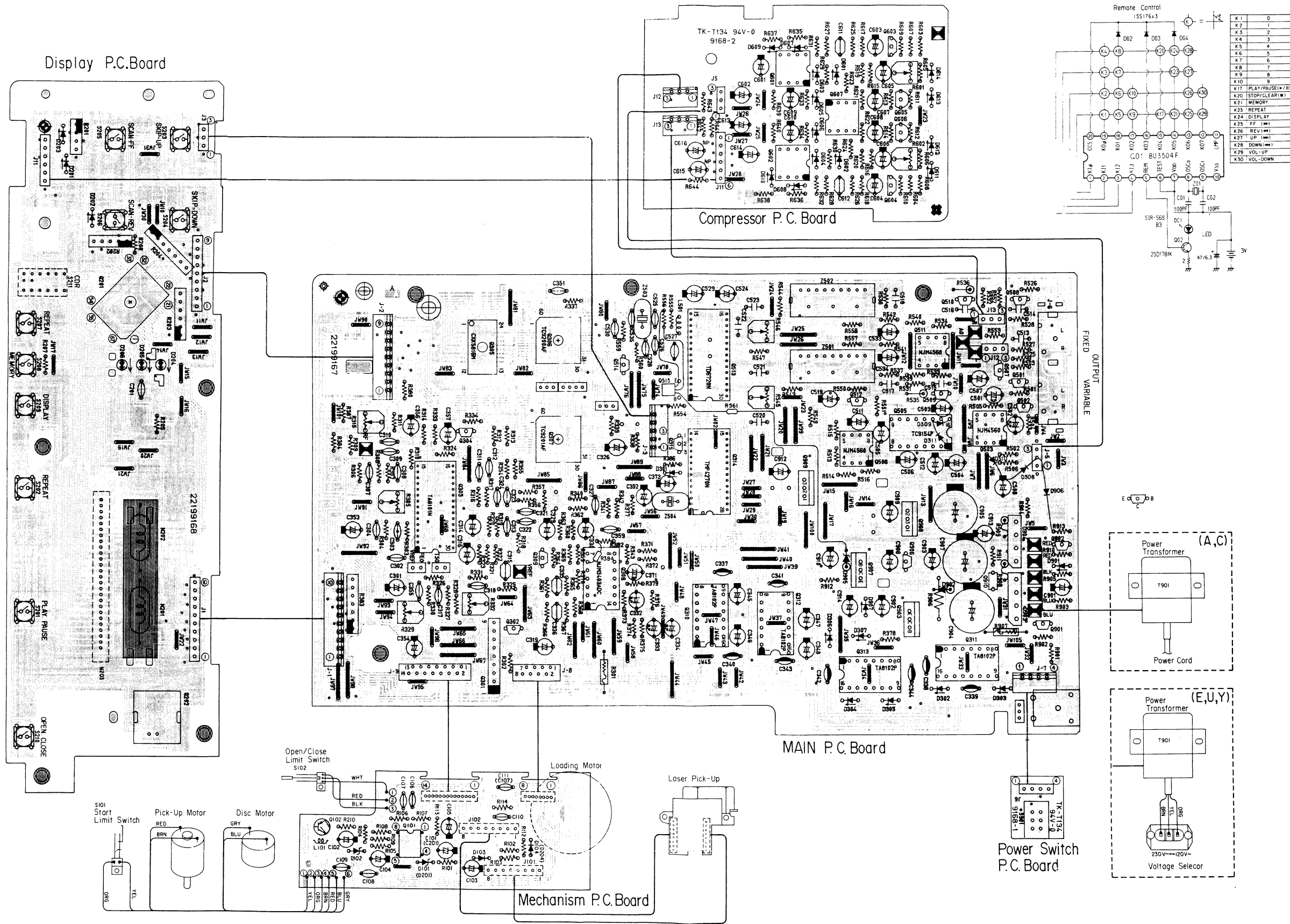


**SCHEMATIC DIAGRAM**

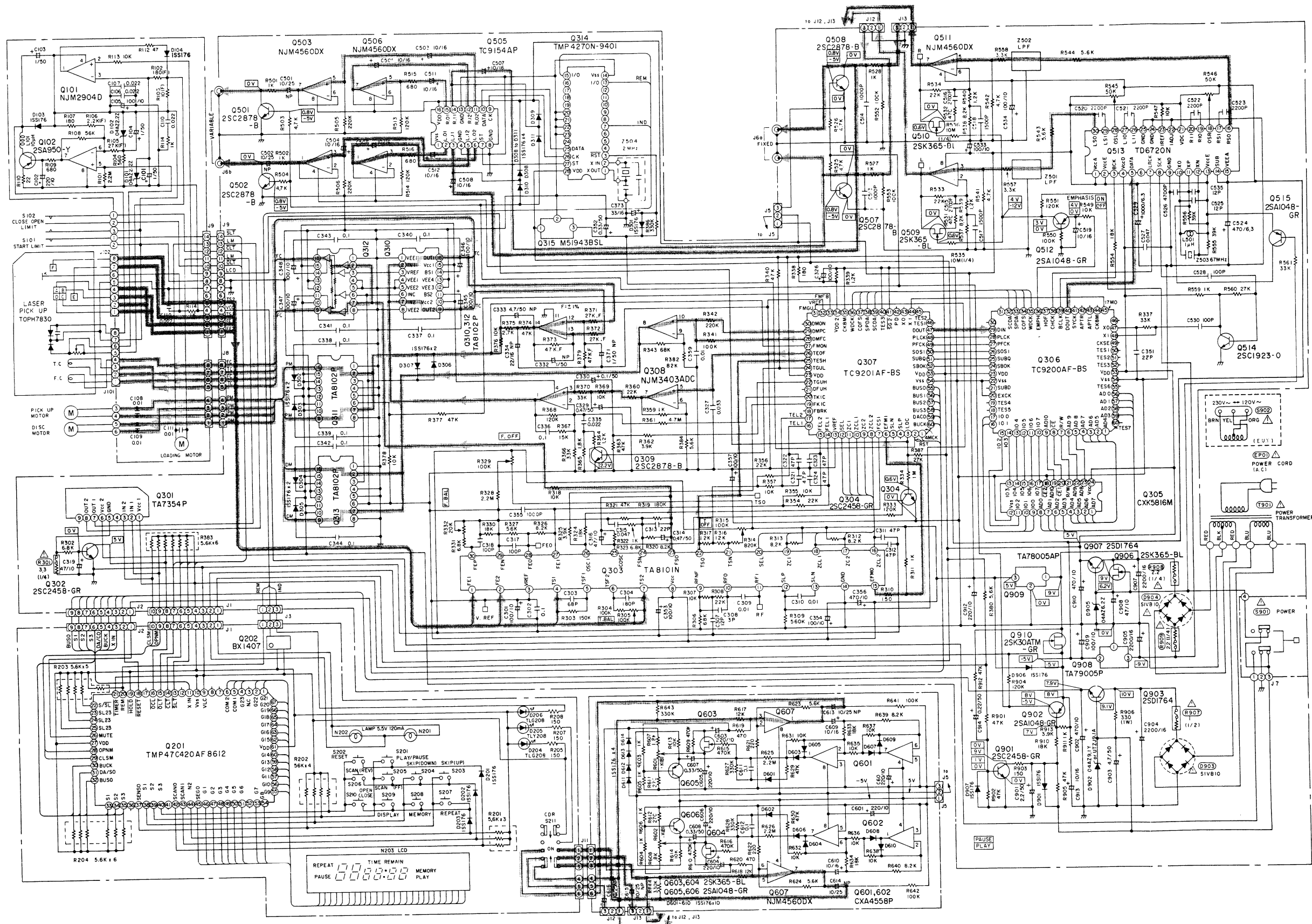


**CAUTION:**  
 The  $\Delta$  mark, the Location No. circled with oval in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

ELECTRICAL PARTS LOCATIONS (BOTTOM VIEW)

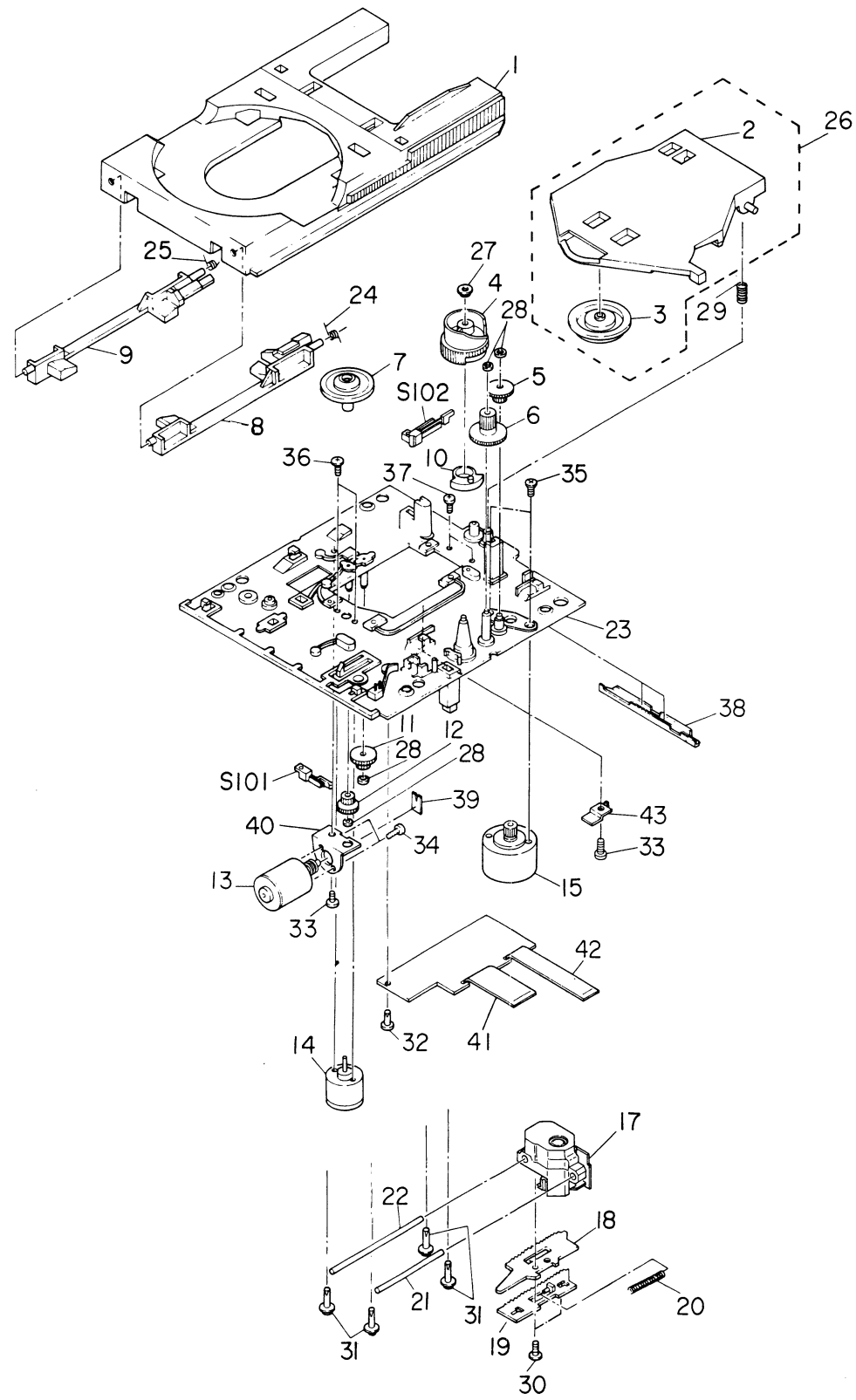


**SCHEMATIC DIAGRAM**



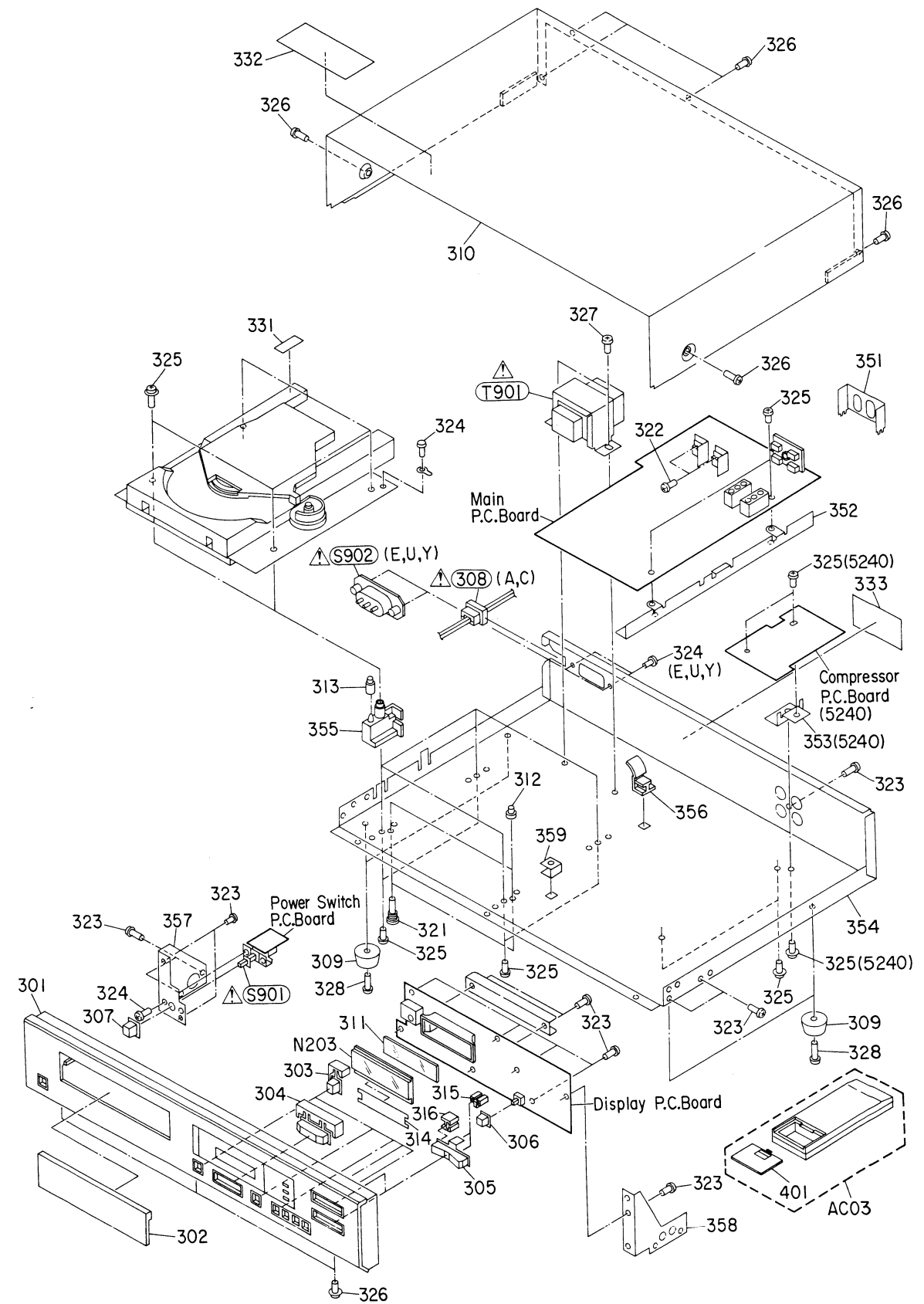
**CAUTION:**  
 The  $\Delta$  mark, the Location No. circled with oval in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

# MECHANISM EXPLODED VIEW



**NOTE:** Parts excluded in the parts list are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

# CABINET EXPLODED VIEW



**NOTE:** Parts excluded in the parts list are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

## CABINET PARTS LIST

Location No.	Part No.	Description
301	20017379	Front Panel Assy (5240)
301	20017380	Front Panel Assy (5220)
302	20832111	Tray Panel (5240)
302	20832113	Tray Panel (5220)
303	22885069	Knob, Open Close, Reset, Display, Memory, Repeat
304	22885071	Knob, Play, Pause
305	22885072	Knob, Skip, Scan
306	22885073	Knob, Timer Play (5220), CDR (5240)
307	22885070	Knob, Power
308	25844322	Bush (A, C)
309	22874085	Foot
310	20823147	Top Cover
311	20846100	Diffuser
312	22764374	Cushion, Screw
313	25761545	Cushion, Mechanism
314	20846106	Sheet, LED
315	20844289	Support, Knob
316	29844290	Support, Knob
321	22708593	Screw, Pick-Up
322	22708539	Screw, 3.0 x 6mm, Z, BID
323	22707842	Screw, 3.0 x 8mm, Z, 2DTBID
324	22707445	Screw, 3.0 x 6mm, Z, DTBID
325	22708045	Screw, 3.0 x 8mm, Z, 2DTPAN
326	22708776	Screw, 3.0 x 8mm, B, 2DTPANW
327	22707040	Screw, 4.0 x 6mm, B, FTBID
328	22708033	Screw, 3.0 x 10mm
331	22907162	Caution Label, Pick-Up
332	22907225	Caution Label, Screw
333	22900819	Caution Label, '87 (A)
333	22906500	Caution Label, Class-1 (E, Y)
333	22906509	Caution Label, Class-U.K. (U)
401	22882258	Battery Cover, Remo Con Unit

## MECHANISM PARTS LIST

Location No.	Part No.	Description
1	20778195	Disc Tray
4	20727166	Gear, Cam
5	20727164	Gear, Drive A
6	20727165	Gear, Drive B
7	20723187	Disc Table Assy
8	20754257	Disc Lifter, Right
9	20754256	Disc Lifter, Left
10	20754255	Cam, Switch
11	20727161	Gear, Pulley Drive A
12	20727162	Gear, Pulley Drive B
13	25792091	Motor Assy, Pick-Up
14	25792312	Motor Assy, Disc
15	25792093	Motor Assy, Loading
17	22155119	Laser Pick-Up, TOPH-7830
18	20727159	Gear, Rack, A
19	20727160	Gear, Rack, B
20	25777533	Spring, Gear
21	20764280	Shaft, Guide, A
22	20764266	Shaft, Guide, B
23	20743214	Chassis, Main
24	25778401	Spring, Lifter-R
25	25778400	Spring, Lifter-L
26	25792076	Lever Assy, Clamper
27	25783444	Bushing, Black
28	25783443	Bushing
29	25777531	Spring
30	22708531	Screw, 2.6 x 5mm, Z, BID
31	22708716	Screw, 2.6 x 12mm, Z, 2DTPANW
32	22707979	Screw, 2.6 x 8mm, Z, 2DTBID
33	22707350	Screw, 2.6 x 5mm, Z, DTBID
34	22708528	Screw, 2.6 x 3mm, Z, BID
35	22708599	Screw, 2.6 x 5mm, Z, FLT
36	22701467	Screw, 2.6 x 3mm, B, BID
37	22708542	Screw, 3.0 x 8mm, Z, BID
39	25779512	Spring, Drive
41	22180313	P.C. Board, Flexible
42	22180314	P.C. Board, Flexible

## PARTS LIST

**CAUTION:**  
The  $\Delta$  mark, the Location No. circled with oval in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

Symbol No.	Part No.	Description
<b>IC'S &amp; TRANSISTORS</b>		
Q101	22117698	IC, NJM2904D
Q102	A6532940	Transistor, 2SA950-Y
Q201	22128102	IC, TMP47C420AF8612
Q202	22117931	IC, BX1407-RM (5240)
Q301	B0325460	IC, TA7354P
Q302	A6332440	Transistor, 2SC2458-GR
Q303	B0377580	IC, TA8101N
Q304	A6332440	Transistor, 2SC2458-GR
Q305	22117936	IC, CXK5816M
Q306	B0412006	IC, TC9200AF-BS
Q307	B0412016	IC, TC9201AF-BS
Q308	22117709	IC, NJM3403ADC
Q309	A6342210	Transistor, 2SC2878-B
Q310	B0377590	IC, TA8102P
Q311	B0377590	IC, TA8102P
Q312	B0377590	IC, TA8102P
Q313	B0377590	IC, TA8102P
Q314	22128009	IC, TMP4270N-9401 (5240)
Q315	22117987	IC, M51943BSL
Q501	A6342210	Transistor, 2SC2878-B (5240)
Q502	A6342210	Transistor, 2SC2878-B (5240)
Q503	22114866	IC, NJM4560DX (5240)
Q505	B0411545	IC, TC9154AP (5240)
Q506	22114866	IC, NJM4560DX (5240)
Q507	A6342210	Transistor, 2SC2878-B
Q508	A6342210	Transistor, 2SC2878-B
Q509	A6058730	Transistor, 2SK365-BL, FET
Q510	A6058730	Transistor, 2SK365-BL, FET
Q511	22114866	IC, NJM4560DX
Q512	A6534440	Transistor, 2SA1048-GR
Q513	B0272860	IC, TD6720N
Q514	A6319020	Transistor, 2SC1923-O
Q515	A6534440	Transistor, 2SA1048-GR
Q601	22128013	IC, CXA4558P (5240)
Q602	22128013	IC, CXA4558P (5240)
Q603	A6058730	Transistor, 2SK365-BL, FET (5240)
Q604	A6058730	Transistor, 2SK365-BL, FET (5240)
Q605	A6534440	Transistor, 2SA1048-GR (5240)
Q606	A6534440	Transistor, 2SA1048-GR (5240)

Symbol No.	Part No.	Description
Q607	22114866	IC, NJM4560DX
Q901	A6332440	Transistor, 2SC2458-GR
Q902	A6534440	Transistor, 2SA1048-GR
Q903	22117962	Transistor, 2SD1764
Q906	A6058730	Transistor, 2SK365-BL, FET
Q907	22117962	Transistor, 2SD1764
Q908	B0374950	IC, TA79005P
Q909	B0372540	IC, TA78005AP
Q910	A6048730	Transistor, 2SK30ATM-GR, FET
<b>DIODES</b>		
D101	A7115415	Diode, 04AZ2.2-Z, Zener
D102	A7115415	Diode, 04AZ2.2-Z, Zener
D103	A7160570	Diode, 1SS176
D104	A7160570	Diode, 1SS176
D201	A7160570	Diode, 1SS176
D202	A7160570	Diode, 1SS176
D203	A7160570	Diode, 1SS176
D204	A8606660	Diode, TLG208, LED
D205	A8608850	Diode, TLY208, LED
D206	A8606660	Diode, TLG208, LED (5240)
D301	A7160570	Diode, 1SS176 (5240)
D302	A7160570	Diode, 1SS176
D303	A7160570	Diode, 1SS176
D304	A7160570	Diode, 1SS176
D305	A7160570	Diode, 1SS176
D306	A7160570	Diode, 1SS176
D307	A7160570	Diode, 1SS176
D308	A7160570	Diode, 1SS176 (5240)
D309	A7160570	Diode, 1SS176 (5240)
D310	A7160570	Diode, 1SS176 (5240)
D311	A7160570	Diode, 1SS176 (5240)
D601	A7160570	Diode, 1SS176 (5240)
D602	A7160570	Diode, 1SS176 (5240)
D603	A7160570	Diode, 1SS176 (5240)
D604	A7160570	Diode, 1SS176 (5240)
D605	A7160570	Diode, 1SS176 (5240)
D606	A7160570	Diode, 1SS176 (5240)
D607	A7160570	Diode, 1SS176 (5240)
D608	A7160570	Diode, 1SS176 (5240)
D609	A7160570	Diode, 1SS176 (5240)
D610	A7160570	Diode, 1SS176 (5240)
D611	A7160570	Diode, 1SS176 (5240)
D612	A7160570	Diode, 1SS176 (5240)
D613	A7160570	Diode, 1SS176 (5240)
D614	A7160570	Diode, 1SS176 (5240)

Location No.	Part No.	Description
D901	A7160570	Diode, 1SS176
D902	A7116915	Diode, 04AZ9.1-Y, Zener
D903	22119188	Diode, SIVB10
D904	22119188	Diode, SIVB10
D905	A7116525	Diode, 04AZ6.2-Z, Zener
D906	A7160570	Diode, 1SS176
D907	A7160570	Diode, 1SS176
<b>ELECTRICAL PARTS</b>		
EP01	22176578	Power Cord (U)
EP01	22176614	Power Cord (Y)
EP01	22176616	Power Cord (E)
EP01	22176759	Power Cord (A, C)
J6	22198221	Jack, US-4P (5240), Variable, Fixed
J6	22198295	Jack, US-2P (5220), Fixed
L101	22291189	Choke Coil, 10μH
L501	22291288	Choke Coil, 1μH
N201	22113626	Lamp, 5.5V, 120mA
N202	22113626	Lamp, 5.5V, 120mA
N203	22104681	Liquid Crystal Display
S101	22196719	Leaf Switch, Start Limit
S102	22196598	Leaf Switch, Close, Open Limit
S201	22196968	Key Switch, Play, Pause
S202	22196968	Key Switch, Reset
S203	22196968	Key Switch, Skip-Up
S204	22196968	Key Switch, Skip-Down
S205	22196968	Key Switch, Scan-FF
S206	22196968	Key Switch, Scan-Rev
S207	22196968	Key Switch, Reset
S208	22196968	Key Switch, Memory
S209	22196968	Key Switch, Display
S210	22196968	Key Switch, Open, Close
S211	22196981	Push Switch, Timer Play (5220)/CDR(5240)
S901	22190238	Push Switch, Power
S902	22169173	AC Socket, 3P (E, U, Y)
T901	22224899	Power Transformer, (A, C)
T901	22224982	Power Transformer (E, U, Y)
Z501	22137782	Filter, Low-Pass
Z502	22137782	Filter, Low-Pass
Z503	22153390	Oscillator, Crystal, 67.738 MHz
Z504	22153444	Ceramic Oscillator, 2 MHz (5240)

Location No.	Part No.	Description
<b>CAPACITORS</b>		
D = ±0.5pF, J = ±5%, K = ±10%, M = ±20%, Z = -20+80%		
ABBREVIATIONS: EL = Electrolytic, BL = Barrier Layer, MY = Mylar, PP = Polypropylene, NP = Non Polarity, CD = Ceramic Disk		
C101	20418109	EL, 1mfd, 50V
C102	20414221	EL, 220mfd, 10V
C103, 104	20418109	EL, 1mfd, 50V
C105	20414101	EL, 100mfd, 10V
C106, 107	20341223	CD, 0.022mfd, 50V, Z
C108, 109	20341103	CD, 0.01mfd, 50V, Z
C110	20341223	CD, 0.022mfd, 50V, Z
C111	20341223	CD, 0.022mfd, 50V, Z
C201	20343103	CD, 0.01mfd, 50V, K
C301	20414101	EL, 100mfd, 10V
C302	20371104	MY, 0.1mfd, 50V, J
C303	20311680	CD, 68pF, 50V, J
C304	20343181	CD, 180pF, 50V, K
C307	20311120	CD, 12pF, 50V, D
C308	20311309	CD, 3pF, 50V, D
C309, 310	20343103	CD, 0.01mfd, 50V, K
C311, 312	20311470	CD, 47pF, 50V, J
C313	20311220	CD, 22pF, 50V, J
C314	20418478	EL, 0.47mfd, 50V
C315	20371473	MY, 0.047mfd, 50V, J
C316	20414470	EL, 47mfd, 10V
C317, 318	20343101	CD, 100pF, 50V, K
C319	20414470	EL, 47mfd, 10V
C321, 322	20311470	CD, 47pF, 50V, J
C323, 324	20311470	CD, 47pF, 50V, J
C326	20414101	EL, 100mfd, 10V
C327	20317333	MY, 0.033mfd, 50V, J
C329	20418478	EL, 0.47mfd, 50V
C330	20418108	EL, 0.1mfd, 50V
C332	20458109	EL, 1mfd, 50V, NP
C333	20458479	EL, 4.7mfd, 50V, NP
C334	20455220	EL, 22mfd, 16V, NP
C335	20371223	MY, 0.022mfd, 50V, J
C336, 337	20319104	BL, 0.1mfd, 25V, M
C338, 339	20319104	BL, 0.1mfd, 25V, M
C340, 341	20319104	BL, 0.1mfd, 25V, M
C342, 343	20319104	BL, 0.1mfd, 25V, M
C344	20319104	BL, 0.1mfd, 25V, M
C345, 346	20414101	EL, 100mfd, 10V
C347, 348	20414101	EL, 100mfd, 10V
C351	20311220	CD, 22pF, 50V, J
C352	20418338	EL, 0.33mfd, 50V
C353, 354	20414101	EL, 100mfd, 10V
C355	20343102	CD, 1000pF, 50V, K
C356	20414471	EL, 470mfd, 10V
C357	20414101	EL, 100mfd, 10V
C359	20343103	CD, 0.01mfd, 50V, K
C371	20458109	EL, 1mfd, 50V, NP

Location No.	Part No.	Description
C373	20415330	EL, 33mfd, 16V (5240)
C501, 502	20456100	EL, 10mfd, 25V, NP (5240)
C503, 504	20415100	EL, 10mfd, 16V (5240)
C505, 506	20415100	EL, 10mfd, 16V (5240)
C507, 508	20415100	EL, 10mfd, 16V (5240)
C511, 512	20415100	EL, 10mfd, 16V (5240)
C513, 514	20343102	CD, 1000pF, 50V, K
C515, 516	20343272	CD, 2700pF, 50V, K
C517, 518	20381152	PP, 1500pF, 100V, J
C519	20415100	EL, 10mfd, 16V
C520, 521	22321061	PP, 2200pF, 50V, J
C522, 523	22321061	PP, 2200pF, 50V, J
C524	20413471	EL, 470mfd, 6.3V
C525	20311120	CD, 12pF, 50V, J
C526	20319472	BL, 4700pF, 25V, M
C527	20343473	CD, 0.047mfd, 50V, Z
C528	20343101	CD, 100pF, 50V, K
C529	20413102	EL, 1000mfd, 6.3V
C531, 532	20456100	EL, 10mfd, 25V, NP (5220)
C530	20343101	CD, 100pF, 50V, K
C533, 534	20414101	EL, 100mfd, 10V
C535	20311120	CD, 12pF, 50V, J
C601, 602	20414221	EL, 220mfd, 10V (5240)
C603, 604	20414221	EL, 220mfd, 10V (5240)
C605, 606	20414221	EL, 220mfd, 10V (5240)
C607, 608	20418338	EL, 0.33mfd, 50V (5240)
C609, 610	20415100	EL, 10mfd, 16V (5240)
C611, 612	20371104	MY, 0.1mfd, 50V, J (5240)
C613, 614	20456100	EL, 10mfd, 25V, NP (5240)
C615, 616	20456100	EL, 10mfd, 25V, NP (5240)
C901	20418229	EL, 2.2mfd, 50V
C902	20414471	EL, 470mfd, 10V
C903	20418479	EL, 4.7mfd, 50V
C904, 905	20415222	EL, 2200mfd, 16V
C907	20415222	EL, 2200mfd, 16V
C908	20414470	EL, 47mfd, 10V
C909	20414101	EL, 100mfd, 10V
C910	20414471	EL, 470mfd, 10V
C912	20414221	EL, 220mfd, 10V
C913	20415100	EL, 10mfd, 16V
C914	20418228	EL, 0.22mfd, 50V
<b>RESISTORS</b>		
All resistors are carbon film 1/6W, ±5% unless otherwise noted. K = 1000, M = 1000000		
R101	20512225	2.2M ohm
R102	22570714	180 ohm, ±1%
R103	22570711	10 ohm, ±1%
R104	20512561	560 ohm
R105	22570740	27K ohm, ±1%
R106	22570727	2.2K ohm, ±1%

Location No.	Part No.	Description
R107	22570714	180 ohm, ±1%
R108	22570744	56K ohm, ±1%
R109	20512681	680 ohm
R110	20512220	22 ohm
R112	20512470	47 ohm
R113	20512103	10K ohm
R114	20512102	1K ohm
R201	22540818	Composite Part, 5.6K x 3
R202	22540779	Composite Part, 5.6K x 4
R203	22540649	Composite Part, 5.6K x 5
R204	22540781	Composite Part, 5.6K x 6
R205, 207	20512151	150 ohm
R208	20512151	150 ohm (5240)
R209	20512562	5.6K ohm (5220)
R301	20531339	3.3 ohm, 1/4W, Fusible
R302	20512682	6.8K ohm
R303	20512154	150K ohm
R304	20512104	100K ohm
R305	22658947	100K ohm B, Semi-fixed Variable, Tracking Error Balance
R306	20512683	68K ohm
R307	20512103	10K ohm
R308	20512223	22K ohm
R309	20512564	560K ohm
R310	20512151	150 ohm
R311	20512102	1K ohm
R312, 313	20512822	8.2K ohm
R314	20512824	820K ohm
R315	22658947	100K ohm, B, Semi-fixed Variable, Tracking Offset
R316, 317	20512123	12K ohm
R318	20512103	10K ohm
R319	20512184	180K ohm
R320	20512822	8.2K ohm
R321	20512473	47K ohm
R322	20512102	1K ohm
R323	20512682	6.8K ohm
R324	20512183	18K ohm
R325	20512392	3.9K ohm
R326	20512822	8.2K ohm
R327	20512563	56K ohm
R328	20512225	2.2M ohm
R329	22658947	100K ohm, B, Semi-fixed Variable, Focus DC Offset
R330	20512183	18K ohm
R331	20512682	6.8K ohm
R332	22658945	20K ohm, B, Semi-fixed Variable, Focus Balance
R333	20512124	120K ohm
R334	20512105	1M ohm
R337	20512333	33K ohm
R338	20512181	180 ohm
R339	20512122	1.2K ohm

Location No.	Part No.	Description
R340	20512473	47K ohm
R341	20512104	100K ohm
R342	20512224	220K ohm
R343	20512683	68K ohm
R354	20512223	22K ohm
R355	20512103	10K ohm
R356	20512223	22K ohm
R357	20512103	10K ohm
R359	20512102	1K ohm
R360	20512223	22K ohm
R361	20512475	4.7M ohm
R362	20512392	3.9K ohm
R363	20512473	47K ohm
R364	20512122	1.2K ohm
R365	20512182	1.8K ohm
R366	20512333	33K ohm
R367	20512153	15K ohm
R368	20512124	120K ohm
R369	20512103	10K ohm
R370	20512333	33K ohm
R371, 372	22570740	27K ohm, ±1%
R373	22570743	47K ohm, ±1%
R374	20512473	47K ohm
R375	20512272	2.7K ohm
R376	20512103	10K ohm
R377	20512473	47K ohm
R378	20512103	10K ohm
R379	22570743	47K ohm, ±1%
R380	20512562	5.6K ohm
R382	20512823	82K ohm
R383	22540781	Composite Part, 5.6K x 6
R384	20512562	5.6K ohm
R386	20512334	330K ohm (5240)
R387	20512273	27K ohm
R501, 502	20512102	1K ohm (5240)
R503, 504	20512472	4.7K ohm (5240)
R505, 506	20512224	220K ohm (5240)
R513, 514	20512124	120K ohm (5240)
R515, 516	20512681	680 ohm (5240)
R525, 526	20512472	4.7K ohm
R527, 528	20512102	1K ohm
R531, 532	20512471	470 ohm
R533, 534	20512223	22K ohm
R535, 536	22555106	10M ohm, 1/4W
R537, 538	20512822	8.2K ohm
R539, 540	20512122	1.2K ohm
R541, 542	20512472	4.7K ohm
R543, 544	20512562	5.6K ohm
R545, 546	22658946	50K ohm, B, Semi-fixed Variable
R547	20512103	10K ohm
R549	20512103	10K ohm

Location No.	Part No.	Description
R550	20512104	100K ohm
R551	20512124	120K ohm
R552, 553	20512104	100K ohm
R554	20512183	18K ohm
R555, 556	20512393	39K ohm
R557, 558	20512332	3.3K ohm
R559	20512102	1K ohm
R560	20512273	27K ohm
R561	20512333	33K ohm
R601, 602	22658941	1K ohm, B, Semi-fixed Variable (5240)
R603, 604	20512102	1K ohm (5240)
R605, 606	20512102	1K ohm (5240)
R607, 608	20512182	1.8K ohm (5240)
R609, 610	20512474	470K ohm (5240)
R611, 612	20512271	270 ohm (5240)
R613, 614	20512103	10K ohm (5240)
R615, 616	20512474	470K ohm (5240)
R617, 618	20512123	12K ohm (5240)
R619, 620	20512471	470 ohm (5240)
R621, 622	20512221	220 ohm (5240)
R623, 624	20512562	5.6K ohm (5240)
R625, 626	20512225	2.2M ohm (5240)
R627, 628	20512334	330K ohm (5240)
R629, 630	20512473	47K ohm (5240)
R631, 632	20512103	10K ohm (5240)
R633, 634	20512183	18K ohm (5240)
R635, 636	20512103	10K ohm (5240)
R637, 638	20512103	10K ohm (5240)
R639, 640	20512822	8.2K ohm (5240)
R641, 642	20512104	100K ohm (5240)
R643, 644	20512334	330K ohm (5240)
R901, 902	20512473	47K ohm
R903	20512151	150 ohm
R904	20512124	120K ohm
R905	20512473	47K ohm
R906	20523331	330 ohm, 1W
R907	20532109	1 ohm, 1/2W, Fusible
R908, 909	20531229	2.2 ohm, 1/4W, Fusible
R910	20512183	18K ohm
R911	20512102	1K ohm
R912	20512473	47K ohm
R913	20512392	3.9K ohm
<b>ACCESSORIES</b>		
AC01	22908486	Owner's Manual
AC02	22197084	Connector Cord
AC03	22120143	Remote Control Unit RM-5240 (5240)



# SERVICE MANUAL

**5240**

**5220**

COMPACT DISC PLAYERS

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