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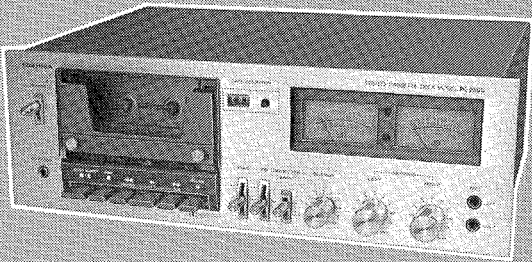
SERVICE DATA
FILE NO. 100-103

TOSHIBA

STEREO CASSETTE DECK

PC-230D

92527



SPECIFICATIONS

Power Supply:	AC 220V, 50 Hz	SN Ratio:	DIN 56dB
Power Consumption:	10W		Dolby NR [IN] mode improves SN ratio by 5dB and 10dB respectively at 1kHz and over 5kHz
Track System:	4-track, 2-channel	Distortion:	DIN 2.0% SA Tape
Recording/Erasing System:	AC Bias (85kHz)/AC Erasure	Frequency Characteristic:	DIN 40 to 14kHz
Playback Head:	Hard Permalloy	Input Jacks:	Microphone Jack 0.25mV (600 ohm to 10K ohm) Line Input Jack 70mV (over 50K ohm)
Erasing Head:	Double gap ferrite	Output Jacks:	Line Output Jack 0.4V (50K ohm) Headphone Jack 0.75mW (8 ohm)
Motor:	Bridge Servo Motor	Dimensions:	420 (W) x 146 (H) x 281 (D) mm (including rubber feet and knobs)
Tape Speed:	4.8cm/sec.	Weight:	5.4kg
Fast Forwarding/Rewinding:	Within 105 seconds (C-60)		
Recording Time:	Total 60 minutes (C-60)		
Semi-conductors:	IC's 2pcs. Transistors 12pcs. Diodes 10pcs.		
Wow and Flutter:	DIN 0.2%		

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1. PARTS LOCATIONS

FRONT VIEW

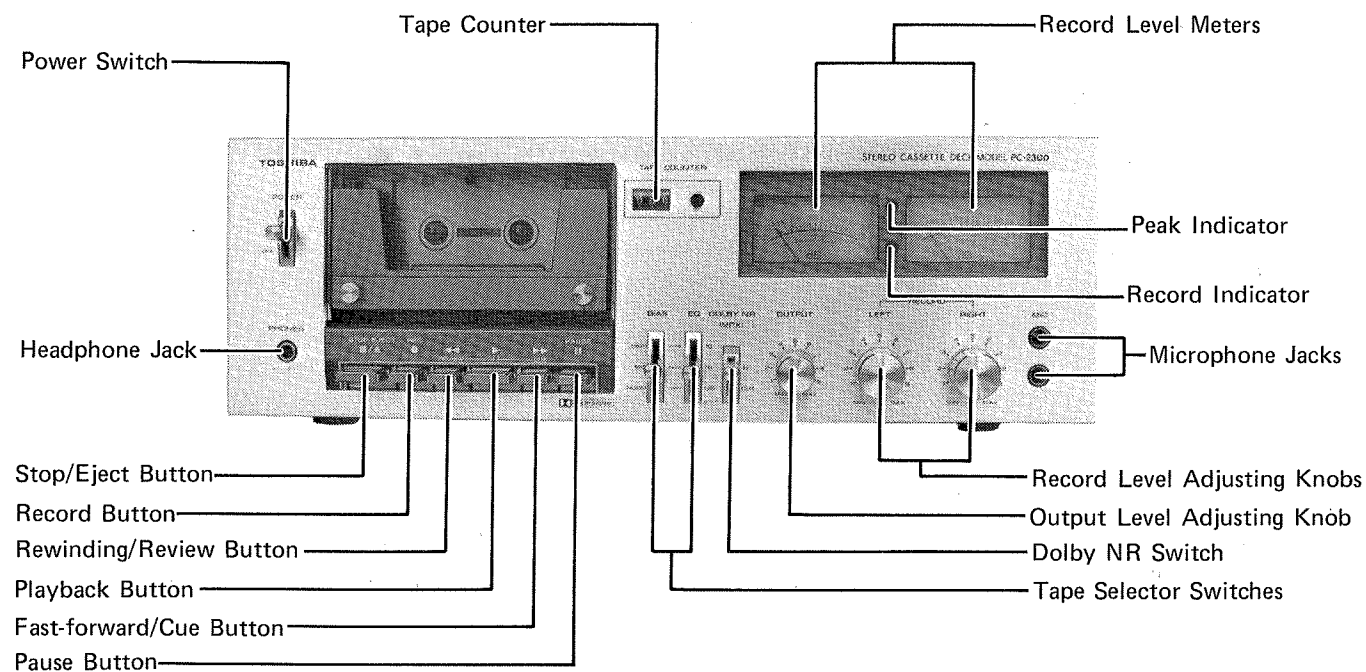


Figure 1.

REAR VIEW (The photograph is the set for Europe)

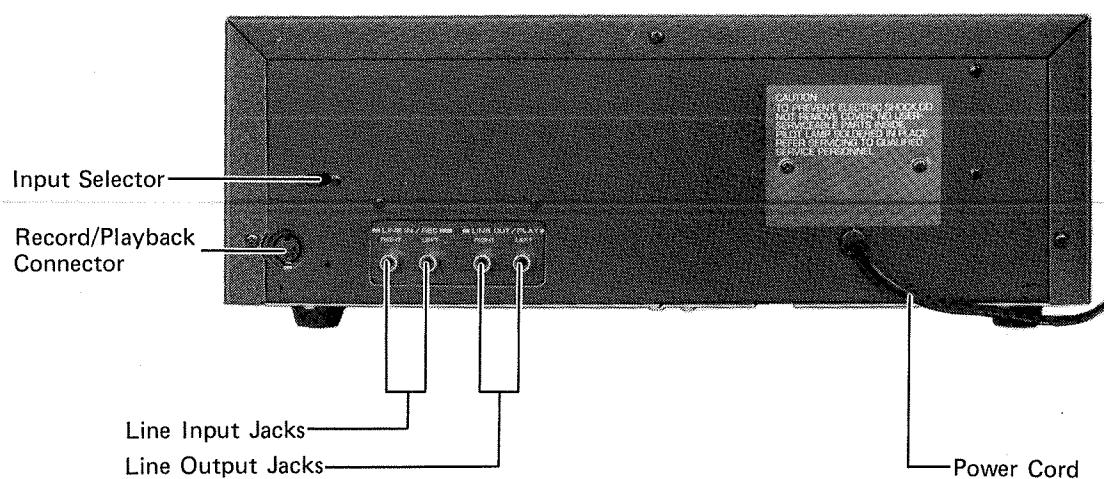


Figure 2.

2. DISASSEMBLY INSTRUCTIONS

TOP COVER REMOVAL

1. Remove two screws ①. See figure 3.
2. Remove three screws ②. See figure 4.
3. Remove the top cover.

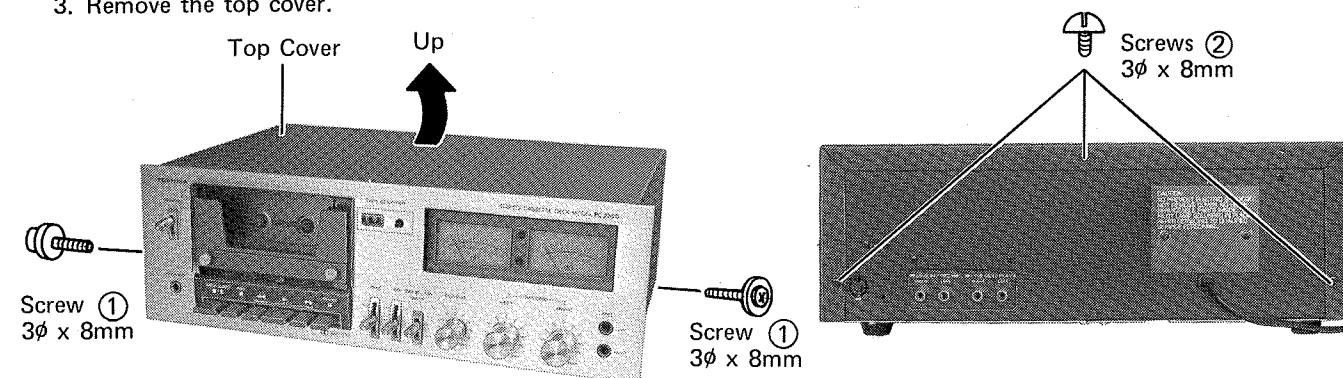


Figure 3.

Figure 4.

FRONT PANEL REMOVAL

1. Remove the top cover. See figure 3.
2. Remove two screws ③. See figure 5.
3. Pull out the three adjusting knobs ④. See figure 5.
4. Pull out the four lever switch knobs ⑤. See figure 5.
5. Remove three screws ⑥. See figure 6.

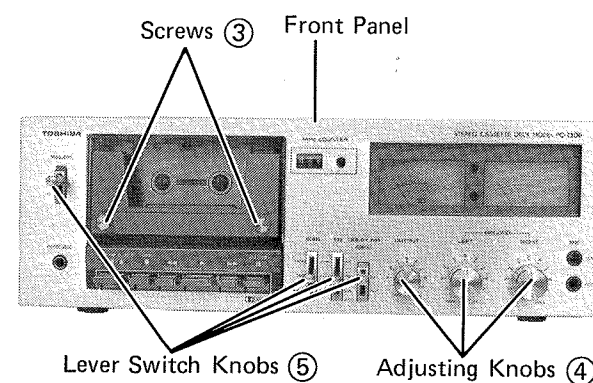


Figure 5.

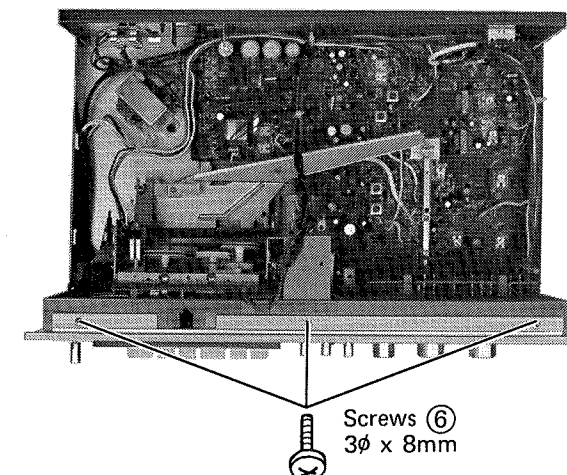


Figure 6.

6. Remove three screws ⑦. See figure 7.
7. Remove the front panel.

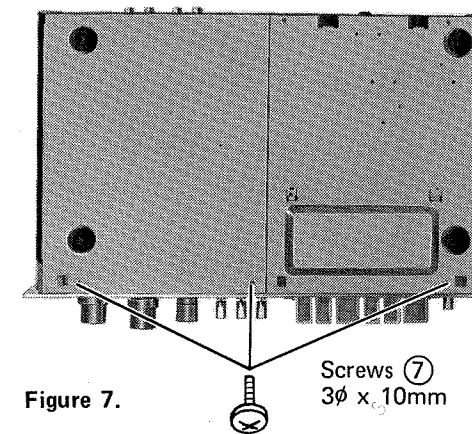


Figure 7.

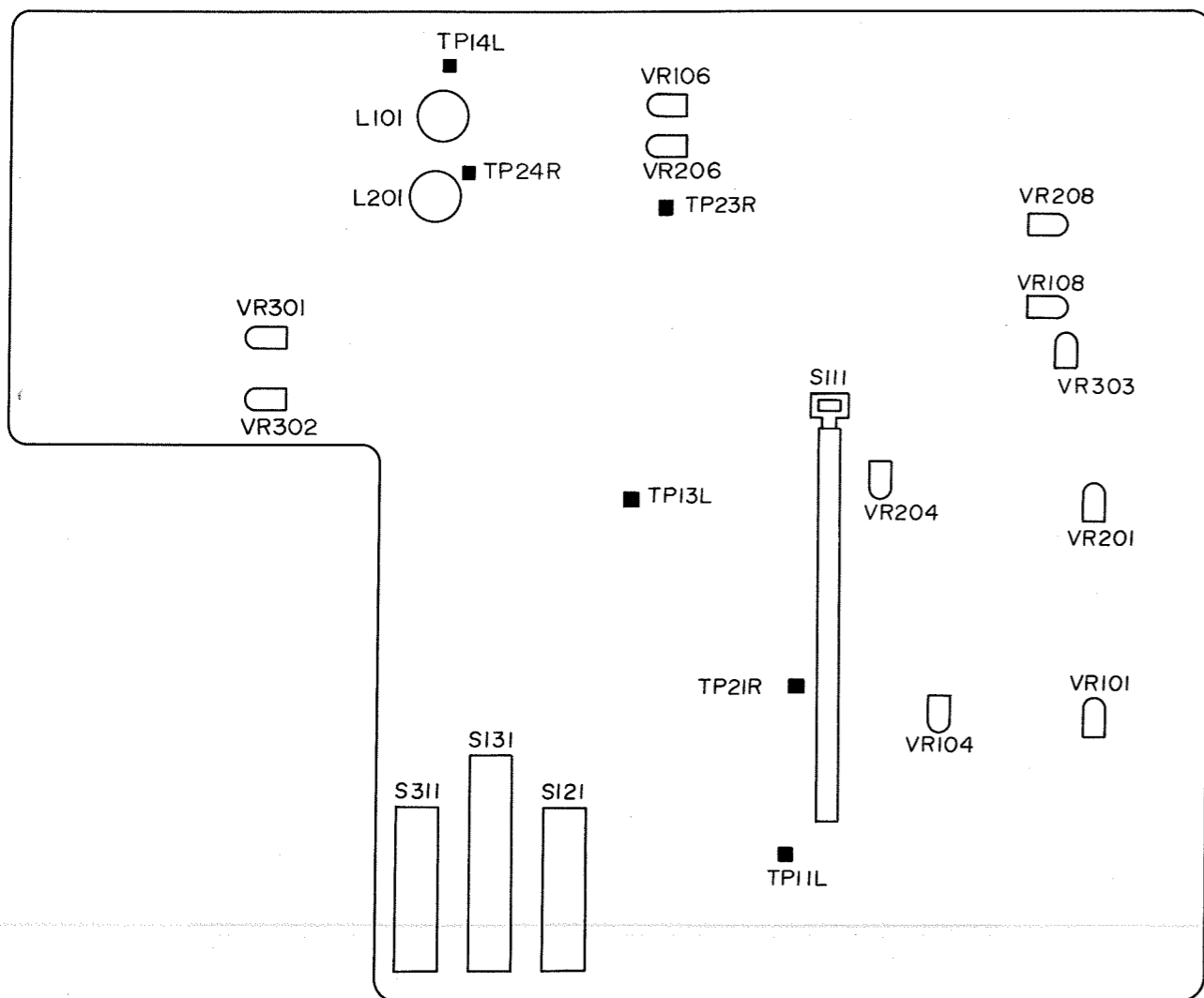
4. ELECTRICAL ALIGNMENTS

TEST EQUIPMENTS

1. VTVM (Vacuum Tube Voltmeter)
2. Signal Generator
3. Resistance Attenuator
4. Screwdriver

5. Test Tapes

- MTT-111 (3 kHz)
- MTT-150 (400 Hz)
- AC-511 (CHROME TAPE)
- MTT-502 (BLANK TAPE)



BLOCK DIAGRAM , ELECTRICAL ALIGNMENT

Power Voltages

Europe	220V	50 Hz
England	240V	50 Hz
Australia	240V	50 Hz

Figure 9. Test Points and Control Sections for Adjustment

RECORD/PLAYBACK HEAD ADJUSTMENT

1. Connect a VTVM across the LINE OUT jacks (J103 and J203).
2. Set the Tape Selector Switches (S311 and S131) to "NORM" positions, and Dolby NR Switch (S121) to "OUT" position.
3. Playback the Test Tape (MTT-111, 3 kHz) and adjust the azimuth adjusting screws so that the VTVM indicates maximum position.

CAUTION: When L and R channels are measured at the same time, difference should be kept under 2 dB at the maximum position.

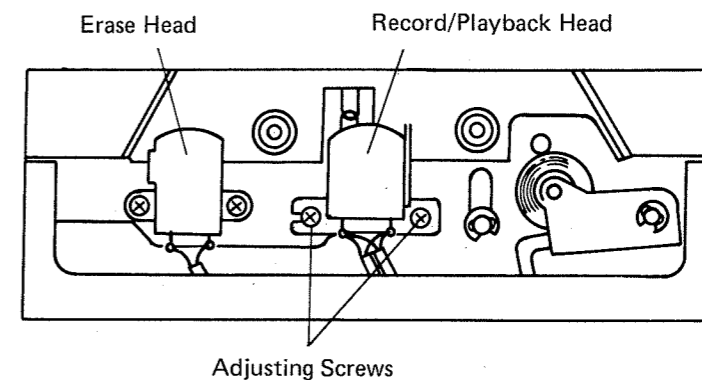


Figure 10.

PLAYBACK SENSITIVITY ADJUSTMENT

1. Connect a VTVM across the Test Points (TP13L and TP23R).
2. Set the Tape Selector Switches (S311 and S131) to "NORM" positions, and Dolby NR Switch (S121) to "OUT" position.
3. Playback the Test Tape (MTT-150) and adjust the Semi-fixed Resistors (VR101 and VR201) so that the VTVM indicates 580mV.

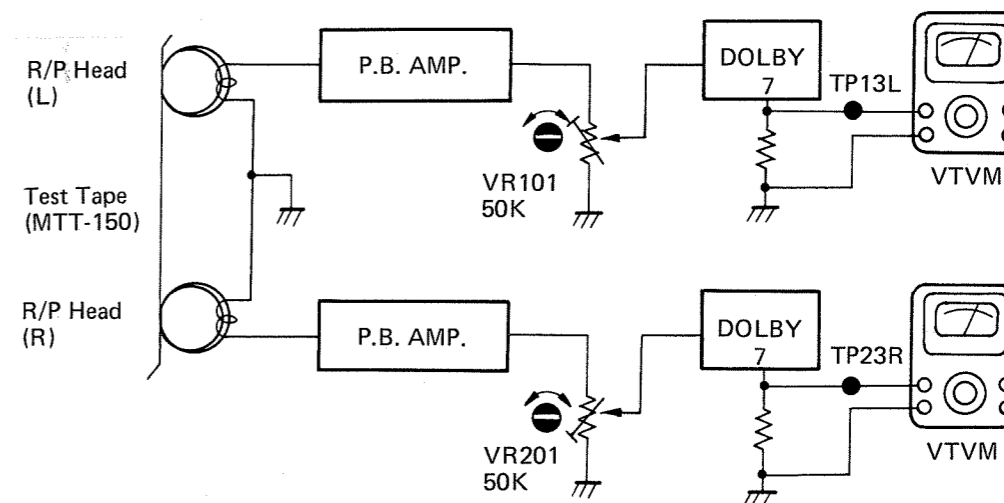


Figure 11.

RECORD INPUT SENSITIVITY ADJUSTMENT

1. Connect a VTVM across the Test Points (TP13L and TP23R).
2. Set the Recording Level Adjusting Knobs to "MAX" positions, Tape Selector Switches (S311 and S131) to "NORM" positions, and Dolby NR Switch (S121) to "OUT" position, and Input Selector Switch (S151) to DIN position.
3. Apply a signal of 400 Hz, -27 dBV through the DIN jack.
4. Set the Stereo Cassette Deck to recording mode and adjust the semi-fixed resistors (VR104 and VR204) so that the VTVM indicates 580mV.

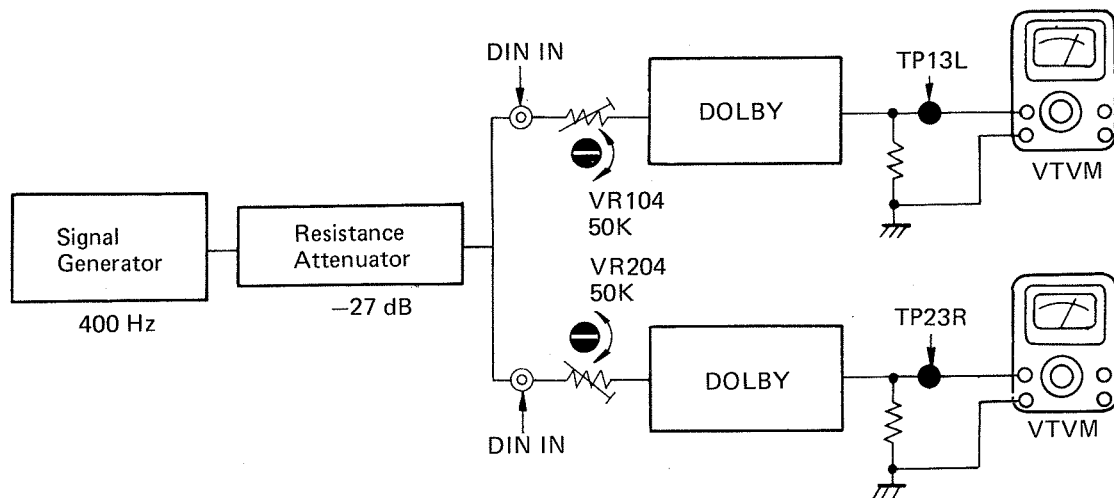


Figure 12.

LEVEL METER ADJUSTMENT

1. Set the Recording Level Adjusting Knobs to "MAX" positions and Dolby NR Switch (S121) to "OUT" position.
2. Set the Tape Selector Switches (S311 and S131) to "NORM" positions and Input Selector Switch (S151) to DIN position.
3. Apply a signal of 400 Hz, -27 dBV through the DIN jack.
4. Set the Stereo Cassette Deck to recording mode and adjust the Semi-fixed Resistors (VR108 and VR208) so that the Level Meter indicates +3 dB.

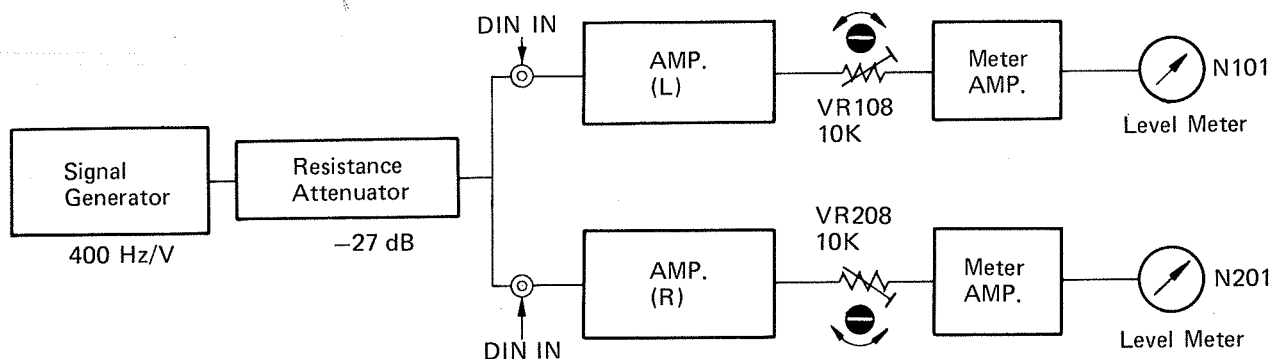


Figure 13.

BIAS LEAK ADJUSTMENT

1. Connect a VTVM across the Test Points (TP14L and TP24R).
2. Set the Recording Level Adjusting Knobs to "MAX" positions and Dolby NR Switch (S121) to "OUT" position.
3. Set the Tape Selector Switches (S311 and S131) to "NORM" positions and Input Selector Switch (S151) to DIN position.
4. Set the Stereo Cassette Deck to recording mode and adjust the Trap Coils (L101 and L201) so that the VTVM indicates minimum position.

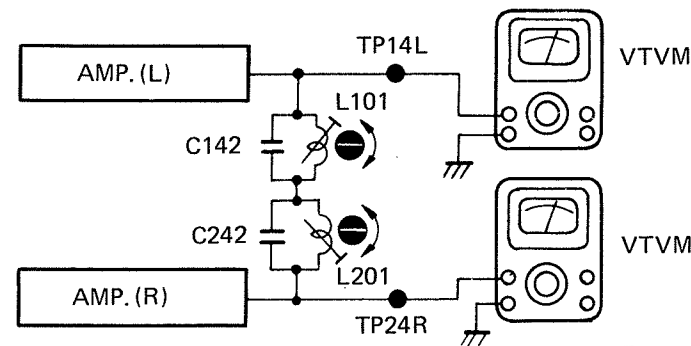


Figure 14.

RECORD/PLAYBACK FREQUENCY CHARACTERISTIC ADJUSTMENT

1. Connect a VTVM across the DIN jack (J501).
2. Set the Dolby NR Switch (S121) to "OUT" position.
3. Set the Tape Selector Switches (S311 and S131) to "CrO₂" positions and Input Selector Switch (S151) to DIN position. Adjust the Recording Level Adjusting Knobs so that the Level Meter indicates -40 dB when applying a signal of 400 Hz -47 dB through DIN jack.
4. Apply a signal of 400 Hz/10 kHz, -47 dBV through the DIN jacks.
5. Set the tape (AC-511) on the cassette deck and record a signal of 400 Hz and 10 kHz. Then rewind and playback the tape and adjust the semi-fixed resistors (VR301 and VR302) so that the difference between 400 Hz and 10 kHz outputs is kept within ± 1 dB.

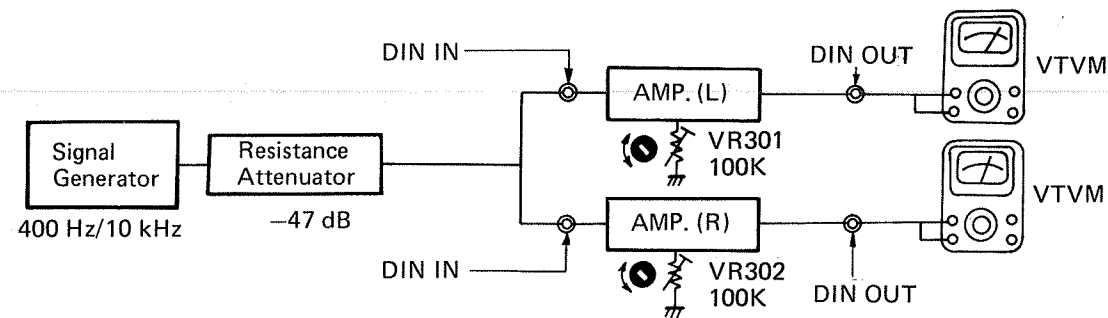


Figure 15.

RECORD/PLAYBACK SENSITIVITY ADJUSTMENT

1. Set the Recording Level Adjusting Knobs to "MAX" positions and Dolby NR Switch (S121) to "OUT" position.
2. Set the Tape Selector Switches (S311 and S131) to "CrO₂" positions and Input Selector Switch (S151) to DIN position.
3. Apply a signal of 400 Hz -27 dBV through the DIN jacks.
4. Set the tape (AC-511) and record a signal of 400 Hz. Then rewind and playback the recorded tape and adjust the semi-fixed resistors. (VR106 and VR206) so that the level meter indicates +3 dB.

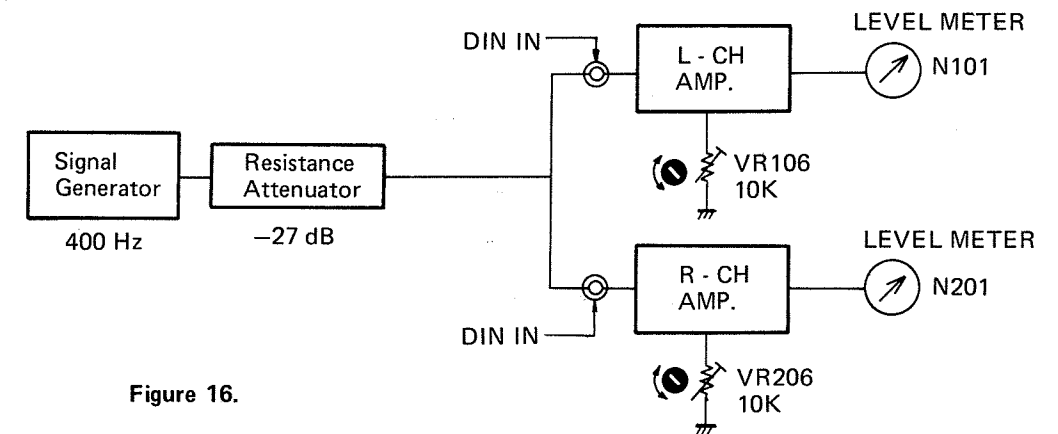


Figure 16.

PEAK INDICATOR LIGHTING ADJUSTMENT

1. Set the Recording Level Adjusting knobs to "MAX" positions and Dolby NR Switch (S121) to "OUT" position.
2. Set the Tape Selector Switches (S311 and S131) to "CrO₂" positions and Input Selector Switch (S151) to DIN position.
3. Apply a signal of 400 Hz -24 dBV through the DIN jacks.
4. Adjust the VR303 so that the peak indicator (D307) may light at -24 dBV and out at -26 dBV.

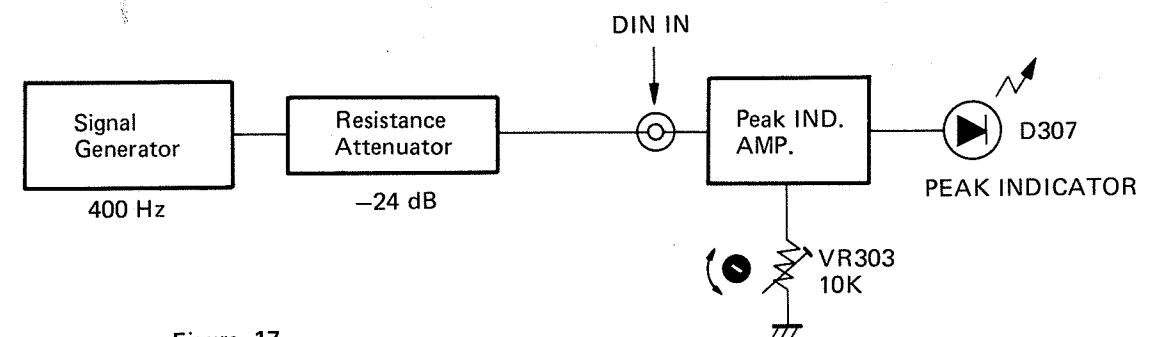
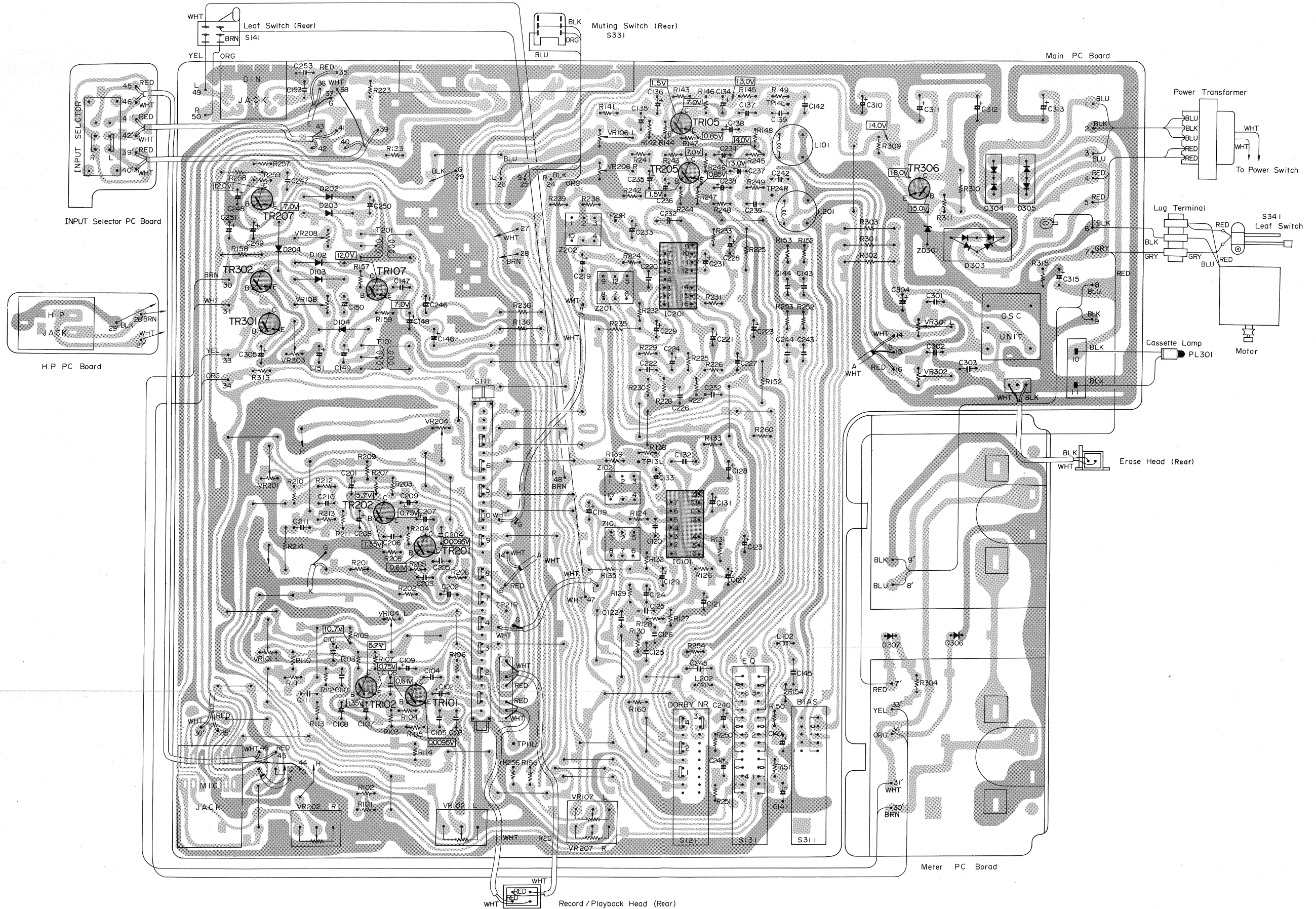


Figure 17.

5. ELECTRICAL PARTS LOCATIONS

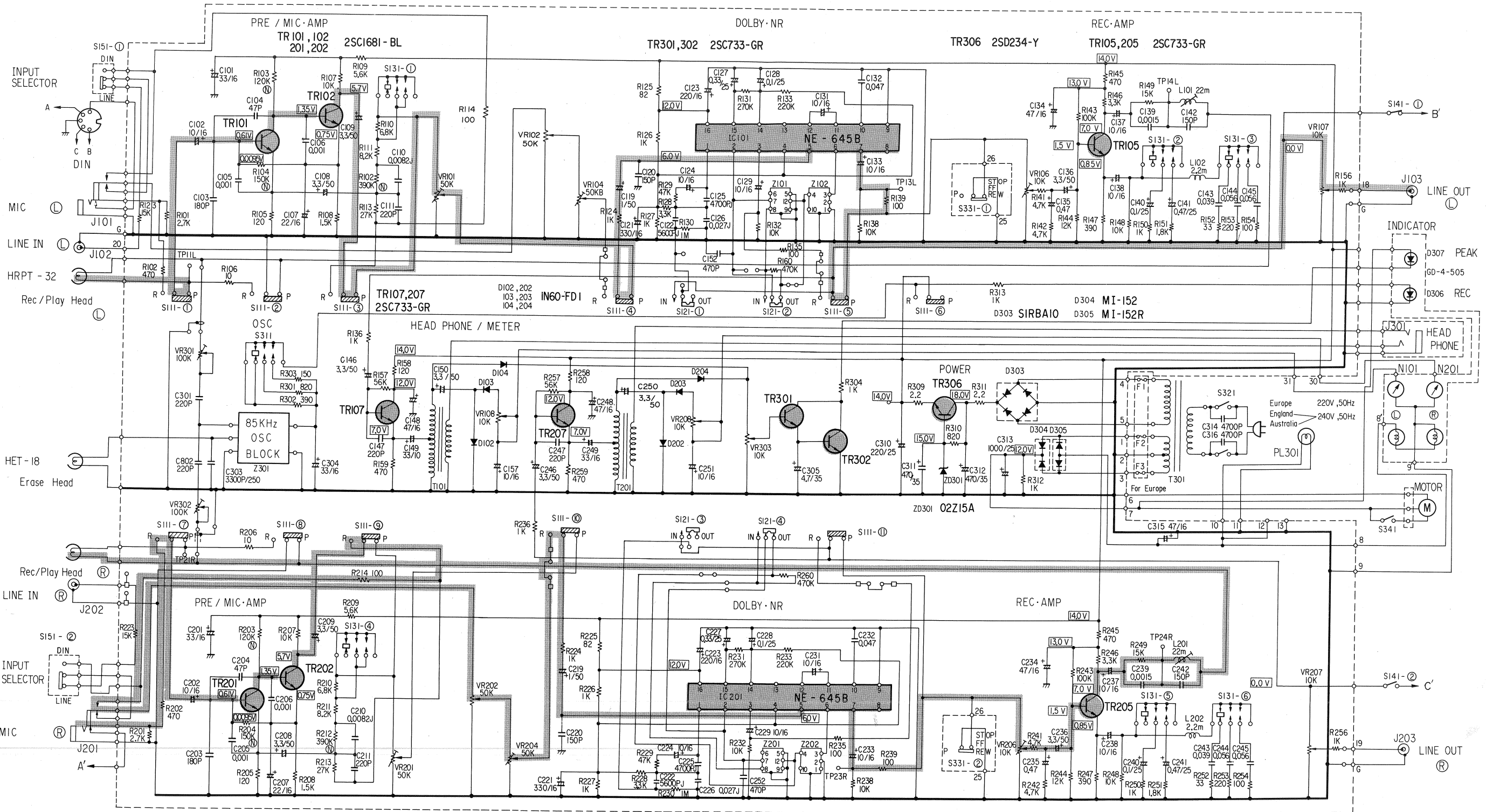


ELECTRICAL PARTS LOCATIONS

Figure 18.

6. SCHEMATIC DIAGRAM

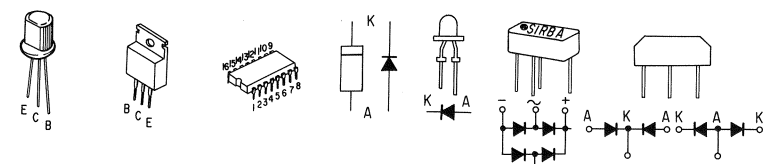
SCHEMATIC DIAGRAM



NOTES:

- 1, SWITCHES
 - a. S111-① to ⑤ Slide switch for Rec/PB (PB position).
 - b. S111-6 Slide switch for Rec/PB (PB position).
 - c. S111-⑦ to ⑩ Slide switch for Rec/PB (PB position).
 - d. S121 Lever switch for Dolby NR (OUT position).
 - e. S131 Lever switch for Equaliser (Type I position).
 - f. S141 Leaf switch for DIN Out (Play position).
 - g. S151 Slide switch for INPUT selector (LINE position).
 - h. S311 Lever switch for Bias (Type I position).
 - i. S321 Lever switch for Power (OFF position).
 - j. S331 Slide switch for Muting (Stop, FF and Rew position).
 - k. S341 Leaf switch for Motor (OFF position).

- 2, UNLESS OTHERWISE SPECIFIED
 - a. All resistor values are in ohms ($K = 10^3, M = 10^6$), $1/4W, \pm 5\%$ (N) noiseless.
 - b. All capacitor values are in μ farads ($\mu = 10^{-6}, P = 10^{-12}$), $50WV, \pm 10\%$, (J = $\pm 5\%$)
 - c. All inductor values are in henrys ($m = 10^{-3}$), $Q \geq 50, \pm 10\%$
- 3, DC voltage values of each part are illustrated in and there values are in voltages. ± 0.5 voltages.

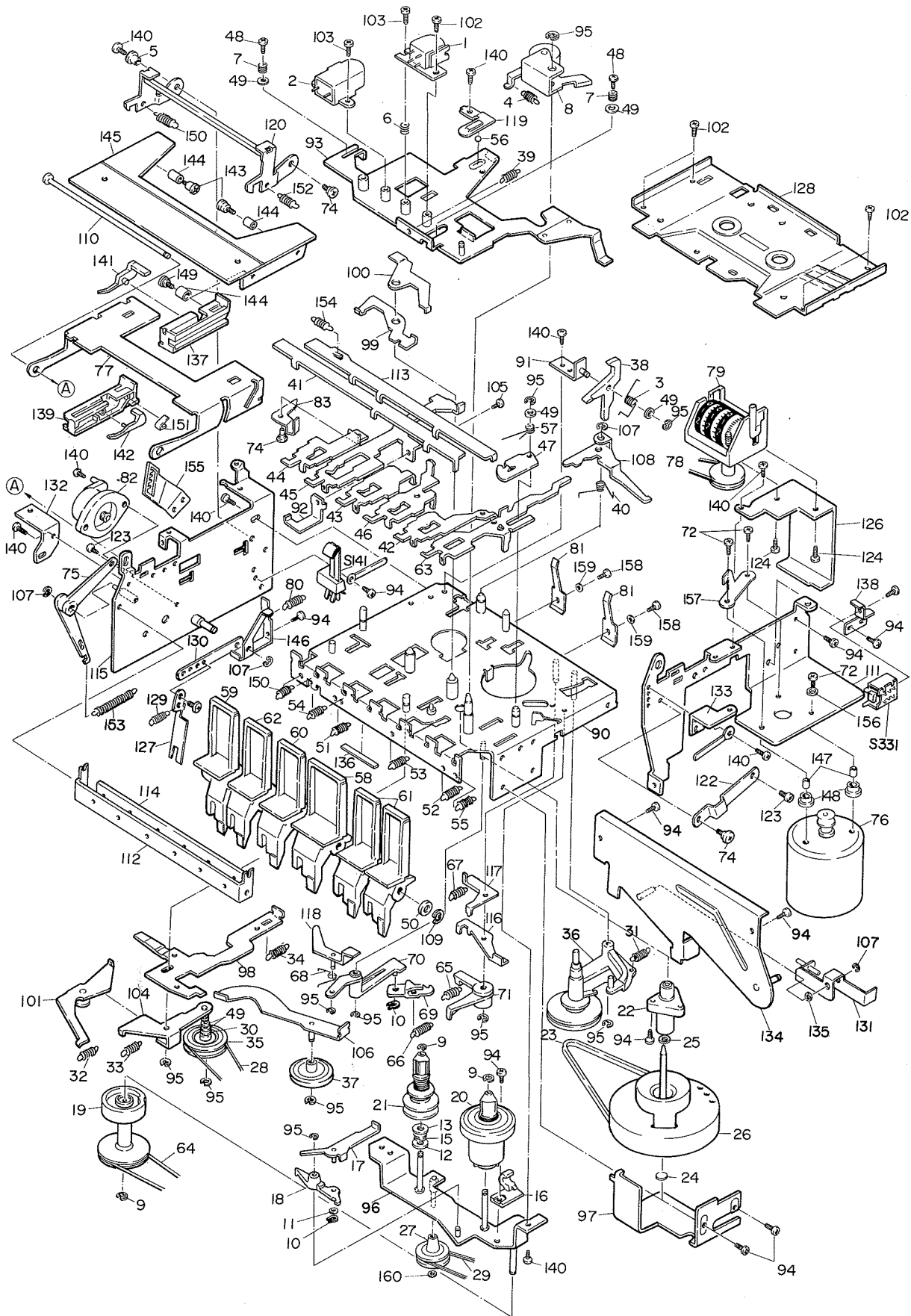


2SC1681-BL 2SD234-Y NE-645B IN60-FD1 GD-4-505
2SC733-GR O2Z15A SIRBAIO MI-152 MI-152R

▬ L ch. Playback Signal Path
▬ R ch. Record Signal Path

Figure 19.

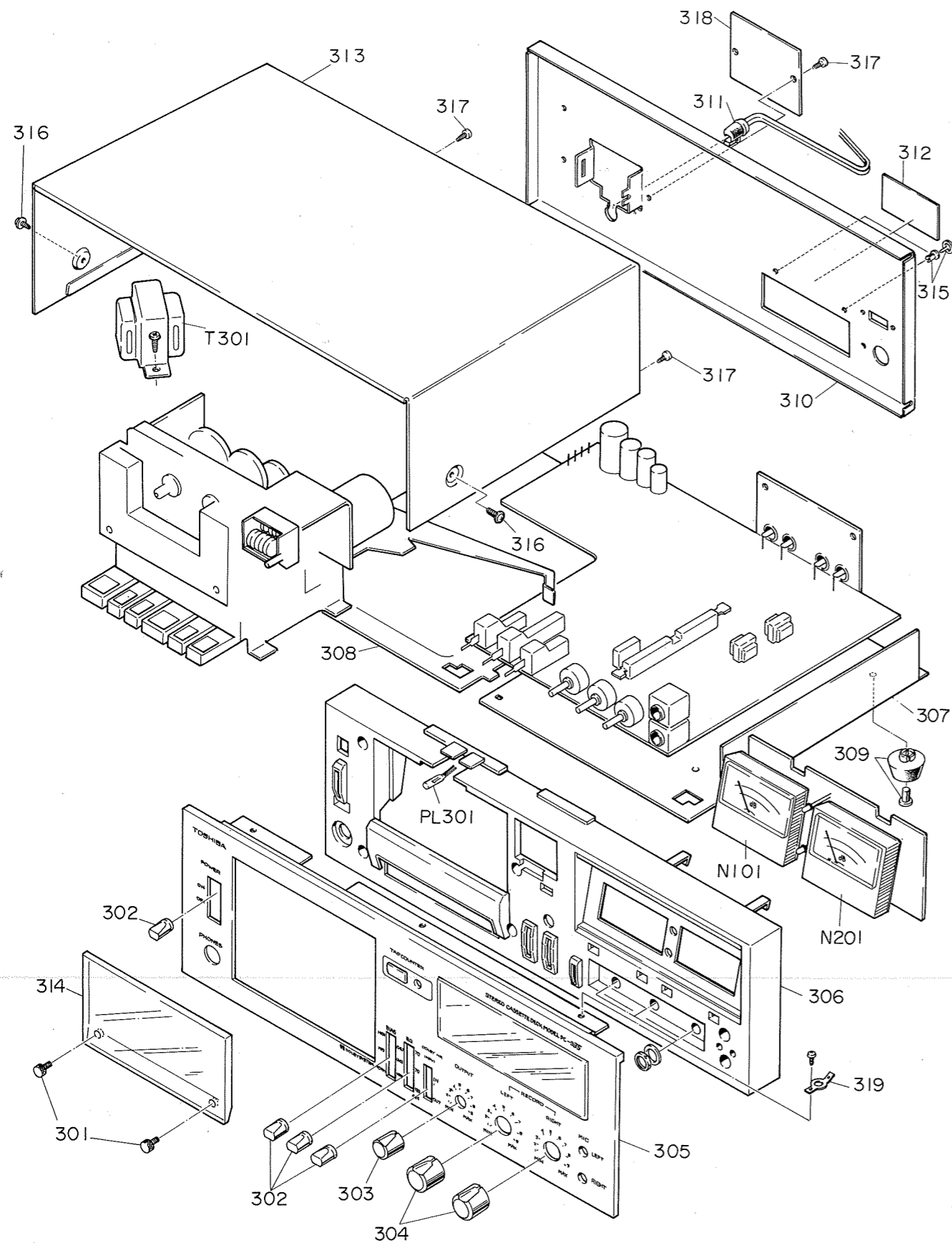
7. MECHANICAL PARTS LOCATIONS



NOTE: Parts excluded in the Parts List are not available as replacement parts.

Figure 20. Exploded View (Mechanism)

8. CABINET PARTS LOCATIONS



NOTE: Parts excluded in the Parts List are not available as replacement parts.

Figure 21. Exploded View (Cabinet)

9. PARTS LIST

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
MECHANICAL PARTS					
1	22217268	Head, Record/Playback	53	25771754	Spring
2	22218171	Head, Erase	54	25771778	Spring
3	2-173344	Spring, Erase Prevention	55	25771779	Spring
4	25771704	Spring	56	25757120	Ball, Steel 3φ
5	25724436	Bush	57	25773240	Spring, Pause Lock Plate
6	25772240	Spring, Head	58	25837050	Push Button, Play
7	25772429	Spring, Head Chassis	59	25837048	Push Button, Stop
8	25717379	Pressure Roller Ass'y	60	25837062	Push Button, Rewind
9	25735159	E Washer, Reel Plate	61	25837051	Push Button, FF/Pause
10	25735197	G Washer	62	25837049	Push Button, Record
11	25761340	Spacer, Push Lever	63	25719192	Operation Plate, Pause
12	25764246	Nylon Washer, Reel Plate	64	25755272	Belt, Cam-wheel
13	25764506	Washer, Reel Plate	65	25771860	Spring, Reel Chassis
15	25772414	Spring, Back Tension	66	25771586	Spring, ASO Lever
16	25781173	Lever, Guide	67	25771780	Spring
17	25782182	Lever, Detection	68	25773268	Spring, ASO Select
18	25782183	Lever, Push	69	25782184	Lever, ASO
19	25713401	Cam-Wheel Ass'y	70	25782186	Lever, Release
20	25712337	Reel Drum, Take-up	71	25782201	Lever, Bias
21	25712336	Reel Drum, Supply	72	70432608	Screw, 2.6φ x 8mm
22	25718174	Holder, Capstan Ass'y	74	22701472	Screw, 2.6φ x 13mm
23	25755361	Belt, Drive	75	25782229	Lever, Slide
24	25764386	Washer, Flywheel	76	25719390	Motor Ass'y
25	25764398	Washer, Capstan Shaft	77	25748244	Guide, Door
26	25717368	Flywheel Ass'y	78	25755365	Belt, Counter
27	25751571	Pulley, Middle	79	25873188	Tape Counter
28	25755171	Belt, Rewind	80	25771903	Spring
29	25755328	Belt, Middle Pulley	81	25774518	Spring, Cassette Hold
30	25764457	Washer, Rewind Lever	82	25719392	Damper Ass'y
31	25771450	Spring, Take-up Lever	94	70432605	Screw, 2.6φ x 5mm
32	25771849	Spring, Fast-forward Lever	95	74050020	E Washer, 2φ
33	25771705	Spring, Rewind Lever	102	70432004	Screw, 2φ x 4mm
34	25771726	Spring, Lock Slider	103	70432005	Screw, 2φ x 5mm
35	25713394	Rewind Pulley Ass'y	105	25720118	Screw, 2.6φ x 4mm
36	25713395	Take-up Pulley Ass'y	113	25741479	Slider, Lock
37	25713400	Fast-forward Idler Ass'y	123	25723393	Guide Pin
38	25782237	Lever, Erase Prevention	128	25719464	Mecha. Cover Ass'y
39	25771672	Spring, Lever	129	25771888	Spring
40	25773338	Spring, Prevention Lever	135	25764402	Nylon Washer
41	25741395	Slider, Lock	137	25781191	Guide, Cassette (RIGHT)
42	25741463	Operation Plate, Fast-forward	139	25781192	Guide, Cassette (LEFT)
43	25741474	Operation Plate, Rewind	140	22707170	Screw, 2.6φ x 5mm
44	25741465	Operation Plate, Stop	141	25782230	Lever, Waiting (RIGHT)
45	25741523	Operation Plate, Record	142	25782231	Lever, Waiting (LEFT)
46	25741461	Operation Plate, Playback	143	22707188	Guide Pin
47	25742576	Lock Plate, Pause	144	25726493	Spacer
48	22701314	Screw, 2φ x 3mm	145	25741524	Slider, Door
49	25764400	Nylon Washer	147	25733463	Spacer, Motor
50	25764404	Nylon Washer, Push Lever	148	25761238	Cushion, Motor
51	25771405	Spring	149	22707187	Guide Pin
52	25771850	Spring	150	25771661	Spring
			151	25774538	Spring, Cassette Guide
			152	25771603	Spring, Lock Plate

Symbol No.	Part No.	Description
153	25771412	Spring
154	25771772	Spring, Lock Plate
158	70432603	Screw, 2.6φ x 3mm
159	74001026	Washer, 2.6φ
CABINET PARTS		
301	25818202	Screw, Decoration
302	22824227	Knob, Lever
303	25826181	Knob, Microphone
304	22826180	Knob, Level
305	25819417	Panel Ass'y
306	25819401	Sub Panel Ass'y
309	22828048	Leg, Rubber
310	25821576	Panel, Rear
311	25845528	Bush, Nylon, Power Cord
312	25827770	Nameplate
313	25821553	Cover, Top
314	25838020	Cover, Cassette
315	22705022	Rivet, Plastic, 3φ x 5.5mm
316	22701495	Screw, 3φ x 8mm
317	22701326	Screw, 3φ x 8mm
318	25834233	Plate, Caution
TRANSISTORS, DIODES AND ICs		
TR101, 201		Transistor, 2SC1681-BL.JA
TR102, 202		Transistor, 2SC1681-BL.JA
TR105, 205		Transistor, 2SC733-GR.JA
TR107, 207		Transistor, 2SC733-GR.JA
TR301		Transistor, 2SC733-GR.JA
TR302		Transistor, 2SC733-GR.JA
TR306		Transistor, 2SD234-Y.JA
D102, 202		Diode, 1N60-FD1
D103, 203		Diode, 1N60-FD1
D104, 204		Diode, 1N60-FD1
D303	22115342	Diode, SIRBA10
D304	22115427	Diode, MI-152
D305	22115428	Diode, MI-152R
D306, 307	22115436	Diode, GD-4-505
ZD301		Diode, 02Z15A
IC101, 201	22114640	IC, NE-645B
ELECTRICAL PARTS		
T301	22223143	Transformer, Power
F1, 2, 3	22144289	Fuse, 250mA/250V

Symbol No.	Part No.	Description
N101, 201	22104451	Meter, Level
S111	22146765	Switch, Slide (REC./PLAY.)
S121	22195052	Switch, Lever (DOLBY NR)
S131	22195050	Switch, Lever (EQ)
S141	22195120	Switch, Leaf (DIN OUT)
S151	22146900	Switch, Slide (IN PUT)
S311	22195051	Switch, Lever (BIAS)
S321	22195049	Switch, Lever (POWER)
S331	22146265	Switch, Slide (MUTING)
S341	22145985	Switch, Leaf (MOTOR)
T101, 201	22216303	Transformer, Output
J101, 201	22163677	Jack, Microphone
J102, 202, 103, 203	22163555	Jack, PIN
J301	22163617	Jack, Headphone
L101, 201	22232203	Coil, Trap (22mH)
L102, 202	22232207	Coil, Trap (2.2mH)
Z101, 201	22135023	Filter Block, B
Z102, 202	22135022	Filter Block, A
Z301	22132522	Oscillator Unit
PL301	22113441	Lamp, 40mA/14V
	22176286	Cord, Power
CAPACITORS		
J = ±5%, K = ±10%, Z = -20+80%		
C101, 201	22445330	Electrolytic, 33mfd, 16V
C102, 202	22445100	Electrolytic, 10mfd, 16V
C103, 203	22362181	Ceramic, 180pF, 50V, K
C104, 204	22362470	Ceramic, 47pF, 50V, K
C105, 205	22349102	Ceramic, 0.001mfd, 50V, K
C106, 206	22349102	Ceramic, 0.001mfd, 50V, K
C107, 207	22445220	Electrolytic, 22mfd, 16V
C108, 208	22448339	Electrolytic, 3.3mfd, 50V
C109, 209	22448339	Electrolytic, 3.3mfd, 50V
C110, 210	22371822	Mylar, 0.0082mfd, 50V, J
C111, 211	22362221	Ceramic, 220pF, 50V, K
C119, 219	22448109	Electrolytic, 1mfd, 50V
C120, 220	22362151	Ceramic, 150pF, 50V, K
C121, 221	22445331	Electrolytic, 330mfd, 16V
C122, 222	22371562	Mylar, 5600pF, 50V, J
C123, 223	22445221	Electrolytic, 220mfd, 16V
C124, 224	22445100	Electrolytic, 10mfd, 16V
C125, 225	22371472	Mylar, 4700pF, 50V, J
C126, 226	22371273	Mylar, 0.027mfd, 50V, J
C127, 227	22440208	Electrolytic, 0.33mfd, 25V
C128, 228	22440207	Electrolytic, 0.1mfd, 25V

Symbol No.	Part No.	Description
C129, 229	22445100	Electrolytic, 10mfd, 16V
C131, 231	22445100	Electrolytic, 10mfd, 16V
C132, 232	22371473	Mylar, 0.047mfd, 50V, J
C133, 233	22445100	Electrolytic, 10mfd, 16V
C134, 234	22445470	Electrolytic, 47mfd, 16V
C135, 235	22440209	Electrolytic, 0.47mfd, 25V
C136, 236	22448339	Electrolytic, 3.3mfd, 50V
C137, 237	22445100	Electrolytic, 10mfd, 16V
C138, 238	22445100	Electrolytic, 10mfd, 16V
C139, 239	22372152	Mylar, 0.0015mfd, 50V, K
C140, 240	22440207	Electrolytic, 0.1mfd, 25V
C141, 241	22440209	Electrolytic, 0.47mfd, 25V
C142, 242	22362151	Ceramic, 150pF, 50V, K
C143, 243	22372393	Mylar, 0.039mfd, 50V, K
C144, 244	22372563	Mylar, 0.056mfd, 50V, K
C145, 245	22372563	Mylar, 0.056mfd, 50V, K
C146, 246	22448339	Electrolytic, 3.3mfd, 50V
C147, 247	22362221	Ceramic, 220pF, 50V, K
C148, 248	22445470	Electrolytic, 47mfd, 16V
C149, 249	22445330	Electrolytic, 33mfd, 10V
C150, 250	22448339	Electrolytic, 3.3mfd, 50V
C151, 251	22445100	Electrolytic, 10mfd, 16V
C152, 252	22349471	Ceramic, 470pF, 50V, K
C301	22362221	Ceramic, 220pF, 50V, K
C302	22362221	Ceramic, 220pF, 50V, K
C303	22385332	Ceramic, 3300pF, 50V, K
C304	22445330	Electrolytic, 33mfd, 16V
C305	22447479	Electrolytic, 4.7mfd, 35V
C310	22446221	Electrolytic, 220mfd, 25V
C311	22447471	Electrolytic, 470mfd, 35V
C312	22447471	Electrolytic, 470mfd, 35V
C313	22446102	Electrolytic, 1000mfd, 25V
C314	22340090	Ceramic, 4700pF, 50V, Z
C315	22445470	Electrolytic, 47mfd, 16V
RESISTORS		
All resistors are 1/4W, ±5%, carbon film unless otherwise noted. K = ±10%		
R101, 201	22555272	2.7K ohm
R102, 202	22555471	470 ohm
R103, 203	22541124	120K ohm
R104, 204	22541154	150K ohm
R105, 205	22555121	120 ohm
R106, 206	22555100	10 ohm
R107, 207	22555103	10K ohm
R108, 208	22555152	1.5K ohm
R109, 209	22555562	5.6K ohm
R110, 210	22555682	6.8K ohm
R111, 211	22555822	8.2K ohm
R112, 212	22541394	390K ohm
R113, 213	22555273	27K ohm

Symbol No.	Part No.	Description
R114, 214	22545101	100 ohm
R123, 223	22555153	15K ohm
R124, 224	22555102	1K ohm
R125, 225	22545820	82 ohm
R126, 226	22555102	1K ohm
R127, 227	22555102	1K ohm
R128, 228	22555332	3.3K ohm
R129, 229	22555473	47K ohm
R130, 230	22555105	1M ohm
R131, 231	22555274	270K ohm
R132, 232	22555103	10K ohm
R133, 233	22555224	200K ohm
R135, 235	22545101	100 ohm
R136, 236	22545102	1K ohm
R138, 238	22555103	10K ohm
R139, 239	22555101	100 ohm
R141, 241	22555472	4.7K ohm
R142, 242	22555472	4.7K ohm
R143, 243	22555104	100K ohm
R144, 244	22555123	12K ohm
R145, 245	22555471	470 ohm
R146, 246	22555332	3.3K ohm
R147, 247	22555391	390 ohm
R148, 248	22555103	10K ohm
R149, 249	22555153	15K ohm
R150, 250	22555102	1K ohm
R151, 251	22555182	1.8K ohm
R152, 252	22555330	33 ohm
R153, 253	22555221	220 ohm
R154, 254	22555101	100 ohm
R156, 256	22555102	1K ohm
R157, 257	22555563	56K ohm
R158, 258	22545121	120 ohm
R159, 259	22555471	470 ohm
R160, 260	22555474	470K ohm
R301	22563821	Solid, 820 ohm, 1/2W, K
R302	22563391	Solid, 390 ohm, 1/2W, K
R303	22563151	Solid, 150 ohm, 1/2W, K
R304	22555102	1K ohm
R309	22555229	2.2 ohm
R310	22545821	820 ohm
R311	22555229	2.2 ohm
R312	22555102	1K ohm
R313	22555102	1K ohm
VR101, 201	22658130	Semi-fixed, 50K ohm
VR102, 202	22624407	Variable, 50K ohm
VR104, 204	22658130	Semi-fixed, 50K ohm
VR106, 206	22658129	Semi-fixed, 10K ohm
VR107, 207	22651465	Variable, 10K ohm
VR108, 208	22658129	Semi-fixed, 10K ohm
VR301	22658155	Semi-fixed, 100K ohm
VR302	22658155	Semi-fixed, 100K ohm
VR303	22658129	Semi-fixed, 10K ohm

Symbol No.	Part No.	Description
ACCESSORIES		
	22954594 22170109 22990374	Owner's Manual Junction Cord (TSC-20) Cleaner, Head