BI-DIRECTIONAL
RECORDING

BI-DIRECTIONAL
RECORD/PLAY STEREO TAPE DECK

Dokorder® model 7500

SERVICE MANUAL

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SERVICE DATA

Recording/playback system:	AC bias, 4-track stereo/mono recording and playback
Tape speeds:	7-1/2 ips and 3-3/4 ips
Reel capacity:	7" and 5"
Fast forward/rewind time:	95 seconds (1800 feet/60Hz)
Level indication:	2 illuminated VU meters
Heads:	Six. 2 erase, 2 record, 2 play
Motors:	Three. One hysteresis synchronous/2-speed, for capstan drive. Two 6-pol eddy current for reel drive
Monitoring:	Full TAPE/SOURCE
Operating position:	Horizontal or vertical
Power requirement:	AC 115V (U.S.A.), 100, 110–115, 125, 200, 220 or 240 50 or 60Hz; 120 W
Weight:	41.9 lbs
Dimensions:	16-7/8"W x 17-3/4"H x 6-3/4"D
Bias frequency:	130 KHz
Equalization:	NAB
Inputs:	Microphone input jack Sensitivity, 0.8mV Impedance, 10K ohms Line input jack Sensitivity, 80mV Impedance, 220K ohms Din Sensitivity, 0.5mV Impedance, 3.3K ohms
Output:	Line output jack Output level, 0dB (0.775V) Impedance, 10K ohms Headphone jack Output level, 0.5mW Impedance, 8ohms DIN Output level, 0dB Impedance, 10K ohms
Frequency response:	40Hz – 21KHz ± 5dB at 7-1/2 ips (RMS) 40Hz – 10KHz ± 5dB at 3-3/4 ips (RMS)
Signal to noise ratio:	Better than 45dB, Over all (RMS) Better than 50dB, Playback (RMS)
Crosstalk:	Channel to channel at 50Hz/45dB or more (RMS) Adjacent track at 1KHz/70dB or more (RMS)
Wow and flutter:	Less than 0.12% at 7-1/2 ips (RMS) Less than 0.15% at 3-3/4 ips (RMS)

Notes: Manufacturer reserves right to change design and/or specifications without notice for purpose of improvement.

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MAINTENANCE HINTS TO KEEP MACHINE IN TOP CONDITION

LUBRICATION

MOTOR: Remove motors off tape deck proper every 2,000 hours of operation, and inject one or two drops of oil into each oiling orifice.

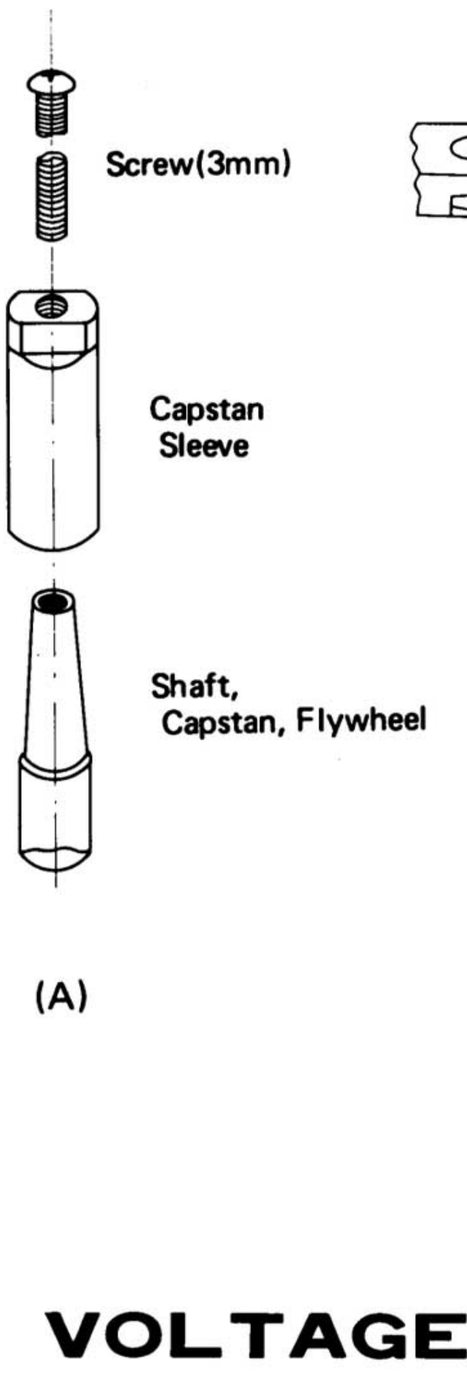
Pinch roller shaft: Remove pinch roller every 300 hours of operation, clean pinch roller shaft and bearing, then drop one drop of oil into bearing. If oil stains rubber part, wipe it off immediately with piece of cloth moistened with denatured alcohol.

Capstan bearing: Dismount flywheel assembly every 1,000 hours of operation, clean capstan shaft and bearing, then drop two or three drops of oil into bearing.

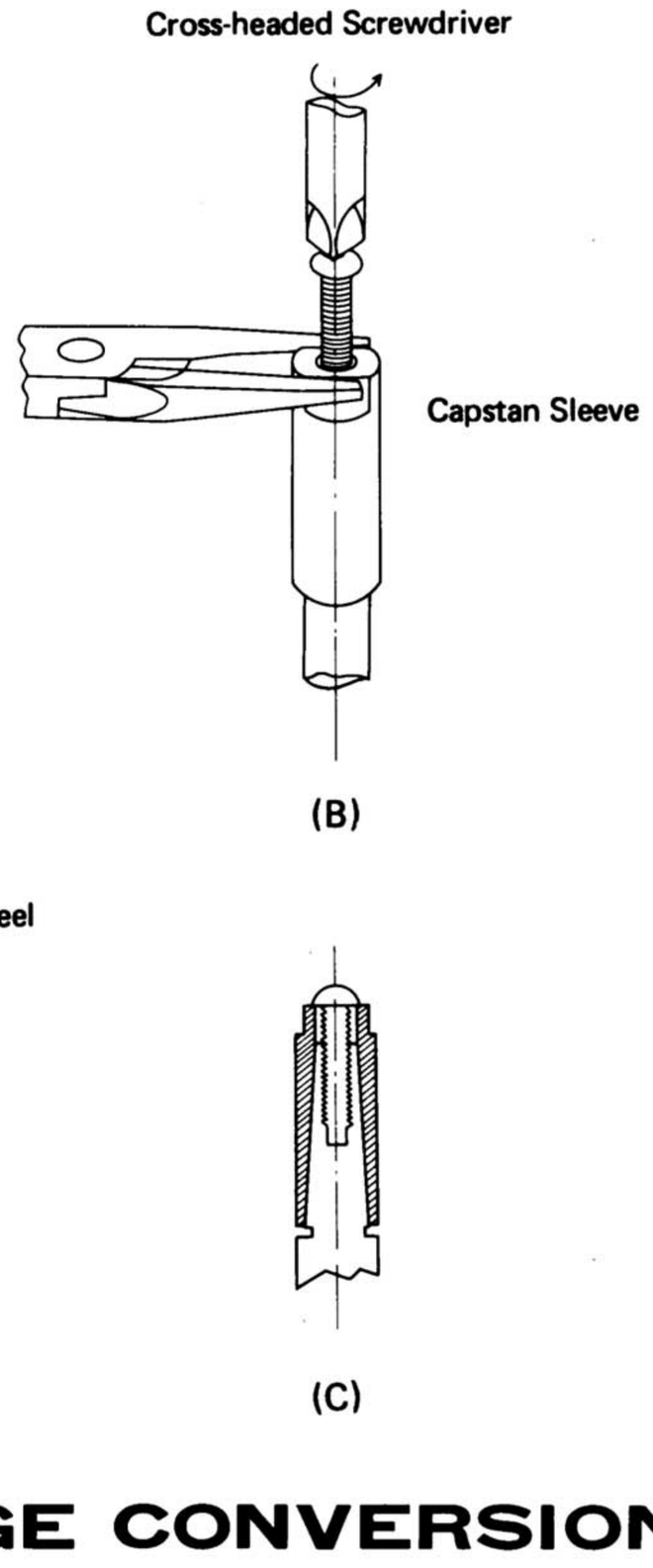
Tension arm: Remove tension arms every 2,000 hours of operation, clean tension arm shafts and bearings carefully, then apply silicon grease on shafts.

FREQUENCY CONVERSION

1. Disconnect power cord, then remove the switch lock plate holding the knob of the switch in place.
2. Slide the switch to the correct frequency, insert the switch lock plate in the reverse position, then tighten the screws.
3. Hold the capstan sleeve still with pliers and remove the sleeve retaining screw (3 mm), using a cross-headed screwdriver as illustrated.
4. Take out the spare capstan, pinch roller and a 4 mm screw from the small accessory vinyl bag.
5. Screw the 4 mm screw into the capstan sleeve still mounted on the flywheel shaft, as illustrated. Hold the flat top of the sleeve with pliers while you do so.
6. Because of the difference in size of the screws, the capstan will loosen and slowly rise as you turn in the 4 mm screw.
7. Remove the capstan sleeve completely off the flywheel shaft. Free the 4 mm screw from the capstan sleeve.
8. Mount the spare capstan sleeve on the flywheel shaft, and tighten it with the 3 mm screw (removed in step 3. above).
9. Remove the pinch roller and exchange it with the spare pinch roller. Be sure to replace the metallic protector disc on the spare pinch roller.
10. Place the unused capstan sleeve, pinch roller and 4 mm screw in the vinyl bag, and retain for possible future use.



(A)



(B)

(C)

VOLTAGE CONVERSION

While the units sold in the U.S.A. are designed to operate at 117 Vm 60 Hz only, those sold in other areas are able to operate at 100, 117, 125, 200, 220 or 240V/50 or 60 Hz. Your own Model is already adjusted to the correct voltage and frequency of your area in our factory, but if you ever find it necessary to change the settings, proceed as follows.

To change the voltage unscrew the fuse in the center of the voltage selector plug. Pull out the plug and reinsert it so the desired voltage show in the cutout. Reinstall the fuse.

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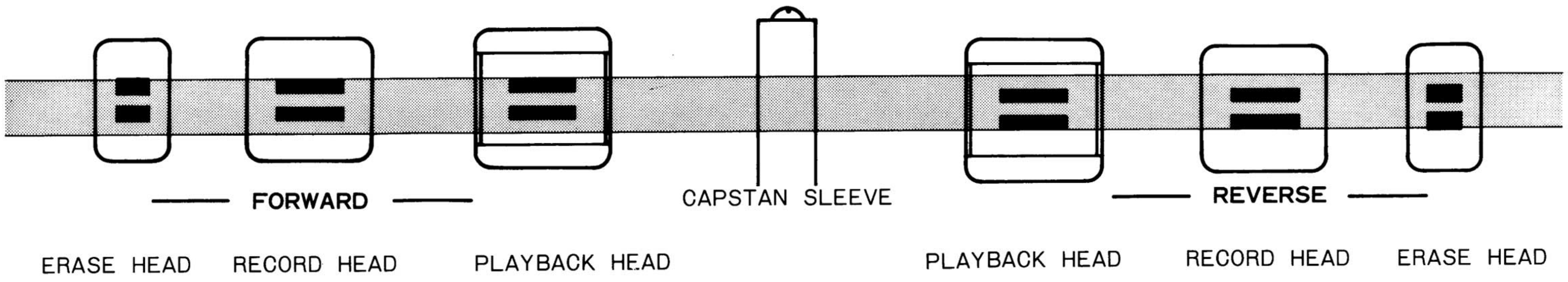
HEAD ALIGNMENT AND ADJUSTABLE SCREW

HEAD ALIGNMENT



ADJUSTING SCREW

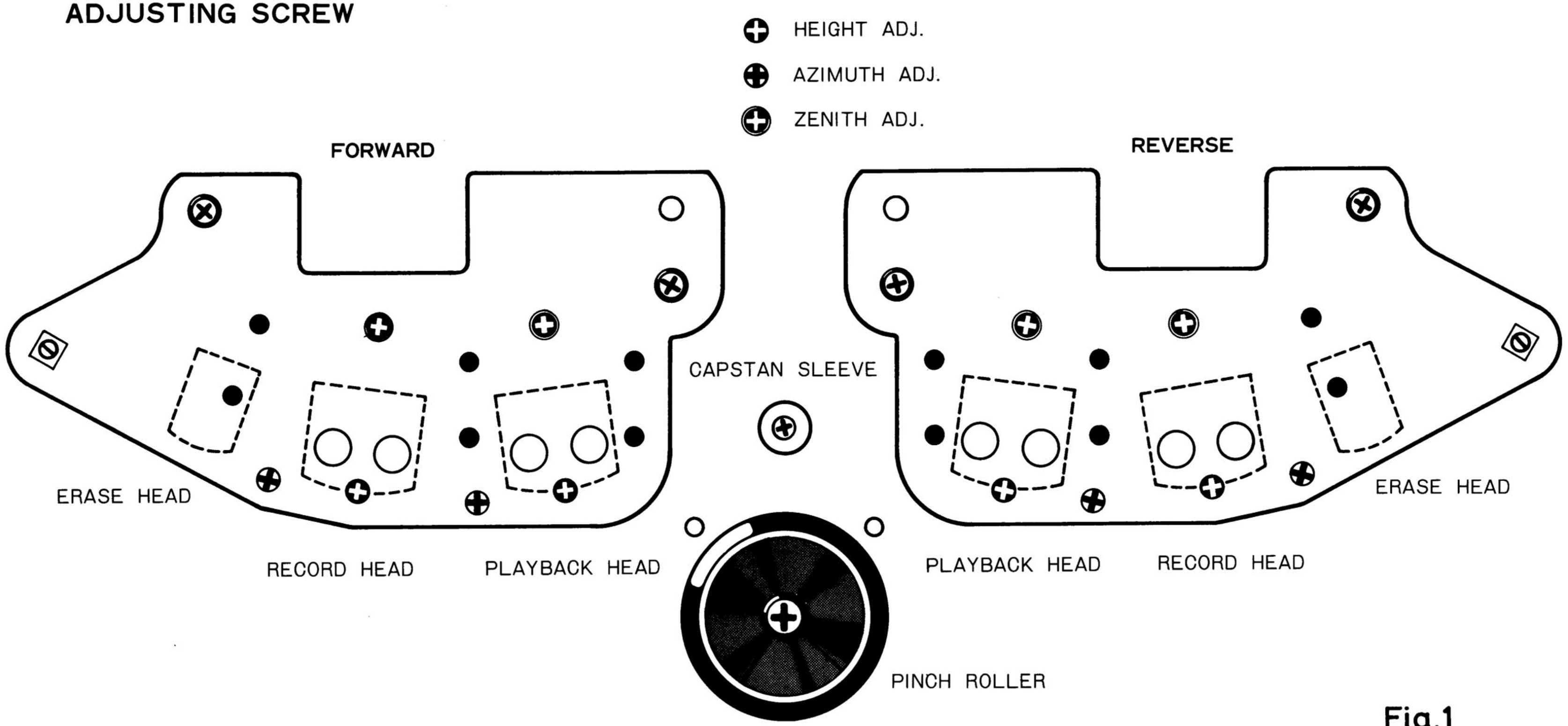


Fig.1

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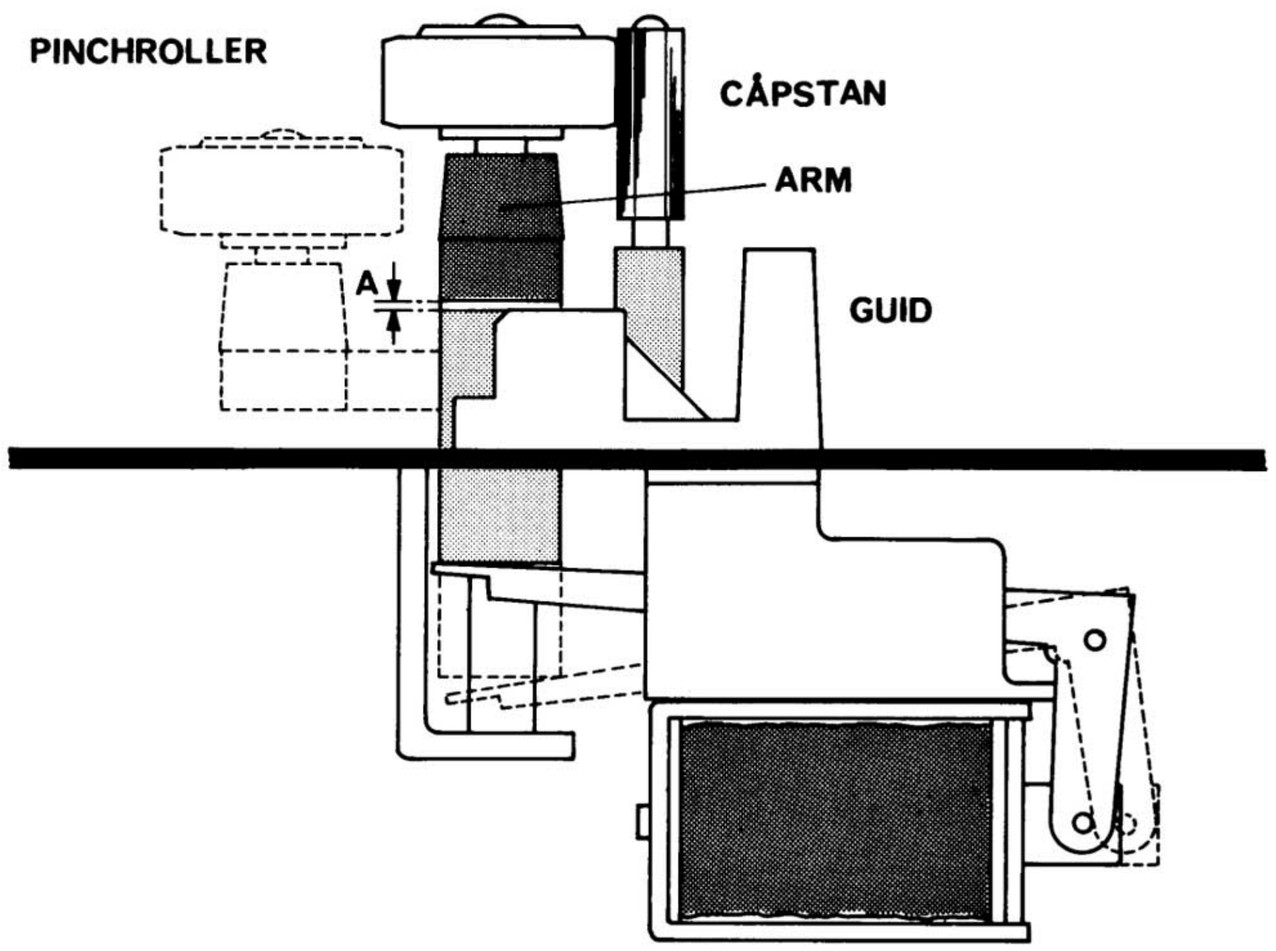
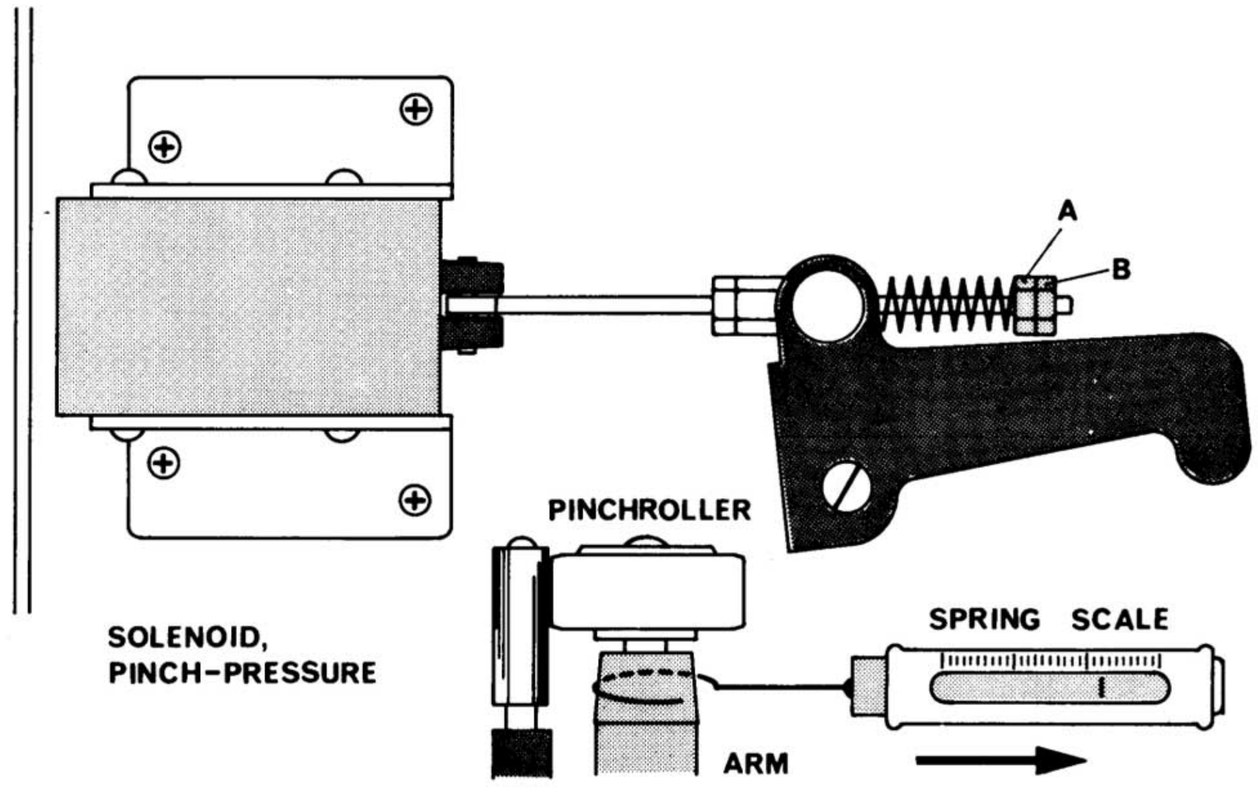
MECHANICAL ADJUSTMENT

1. Adjusting position of pinch roller push-up solenoid.
   Move pinch roller push-up solenoid slightly up or down until gap (A) between pinch roller arm and guid is 0.2 or 0.3 mm.

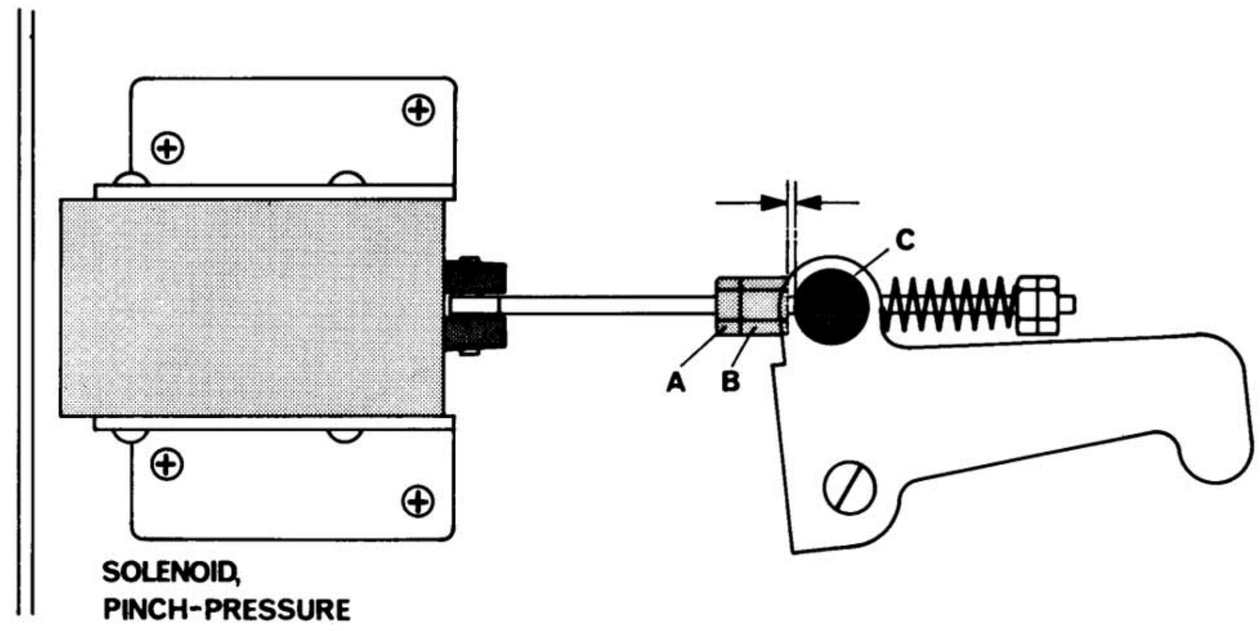


SOLENOID, PINCH-PUSH UP

2. Adjusting pinch roller pressure.
   When pinch roller plunger is fully withdrawn into solenoid coil (i.e., when capstan is revolving), attach a spring balance to pinch roller arm and pull it gently in direction of arrow. Adjust double nuts (A) and (B) so that spring balance indicates 1.8K.



3. Adjusting pinch roller stroke.
   After pressure of pinch roller is adjusted as instructed above, adjust its stroke while pinch roller plunger is still completely withdrawn. This is done by turning nut (B) clockwise until it contacts (C), turning it counterclockwise from that position by one full turn, locking it with nut (A).



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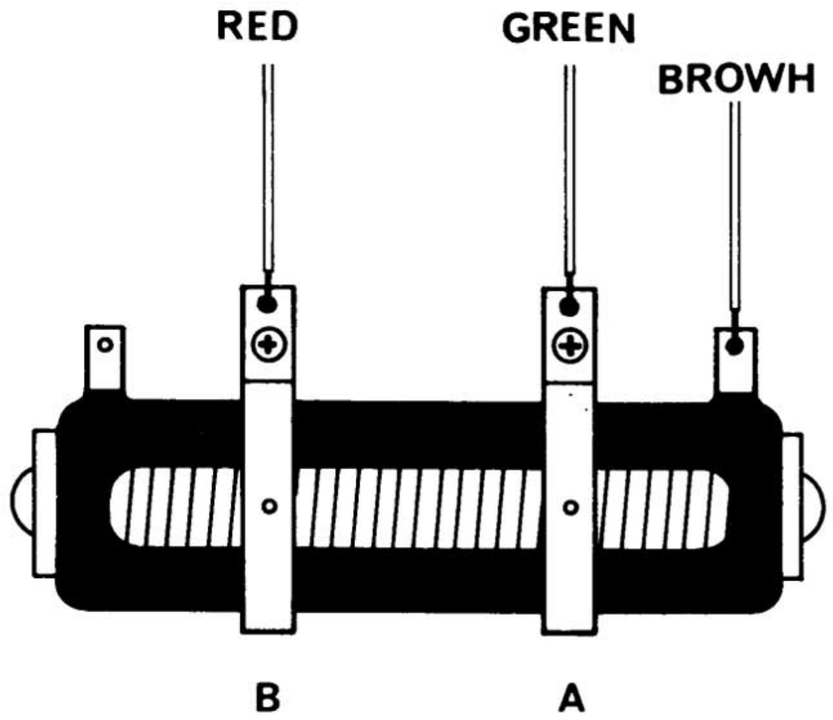
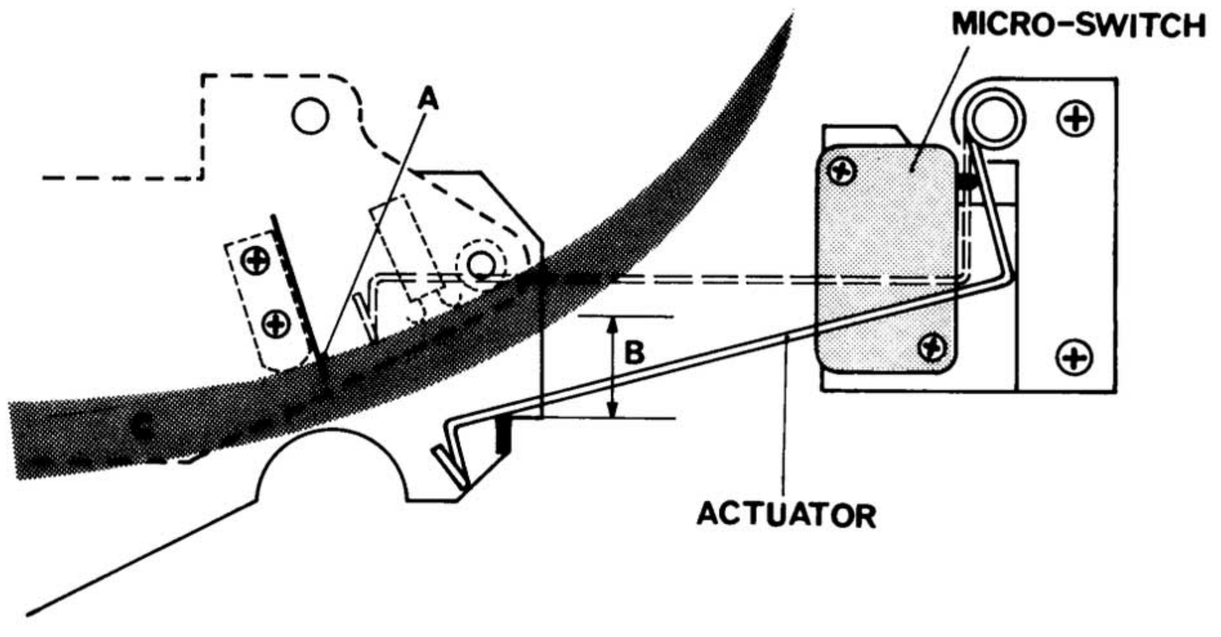
ADJUSTING HOLD-BACK TENSION

1. In fast operation mode.
   Push fast forward or rewind button and then adjust slider (B) so that voltage between brown and red terminals of supply motor becomes 20 V.
2. In playback mode.
   Push play button and adjust slider (A) so that voltage between green and red terminals of supply motor becomes 38 V.

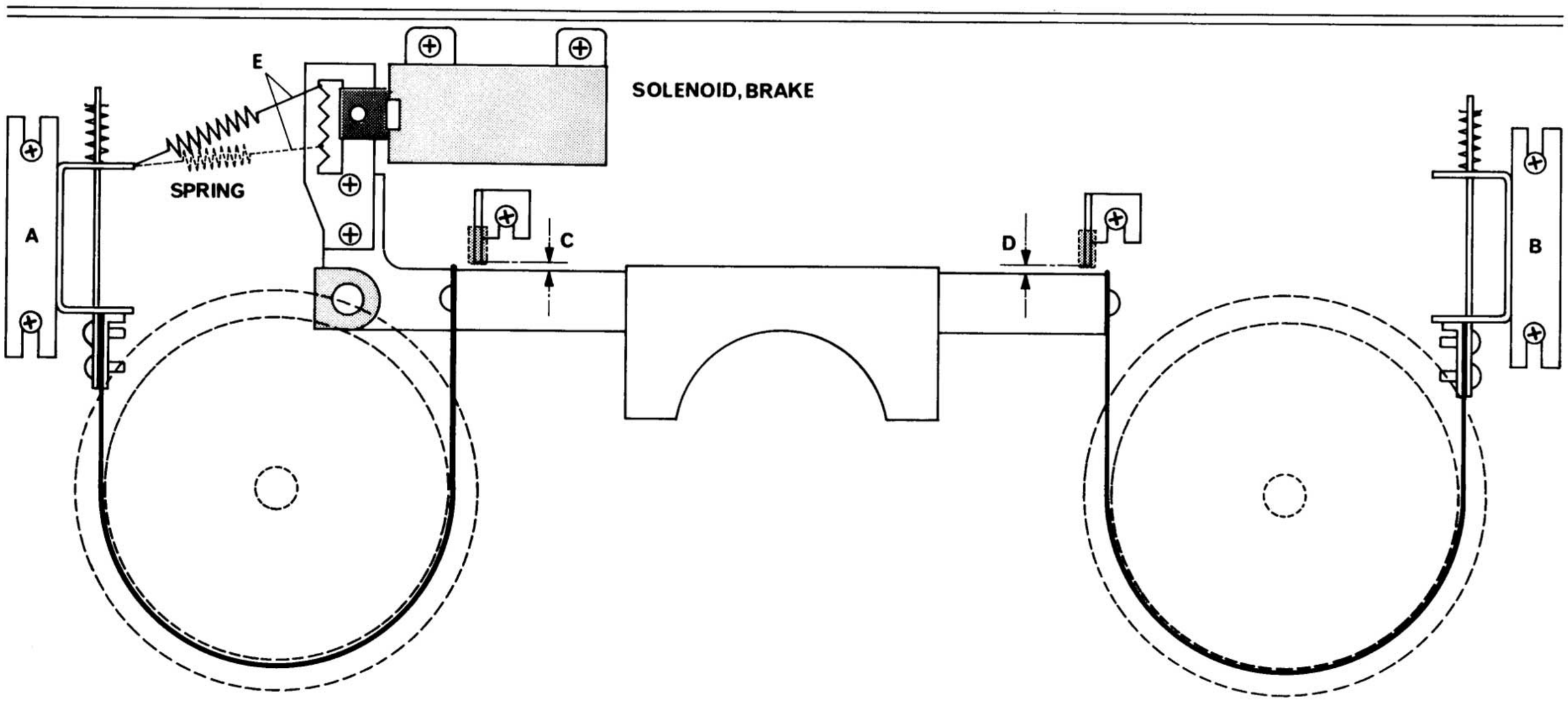


ADJUSTING AUTO SHUT-OFF SWITCH

1. Adjust position of switch so that auto shut-off switch turns off when gap (B) in right-hand diagram is 5 to 7 mm.
2. Confirm that when that switch turns on, its actuator is still lower than outer tape guid (A) or somewhere within range indicated as (C) in diagram. If it enters space between (A) and (B), repeat adjustment described in step 1 above.



1. Adjust positions of (A) and (B) so that gaps (C) and (D) are both 0.5 mm.
2. Using stop watch, measure how long it takes for reels to come to complete stop after tape deck is switched over from fast forward or rewind to stop. Adjust position of spring (E) so that they stop within one or two seconds.



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DISASSEMBLY

CABINET TOP VIEW

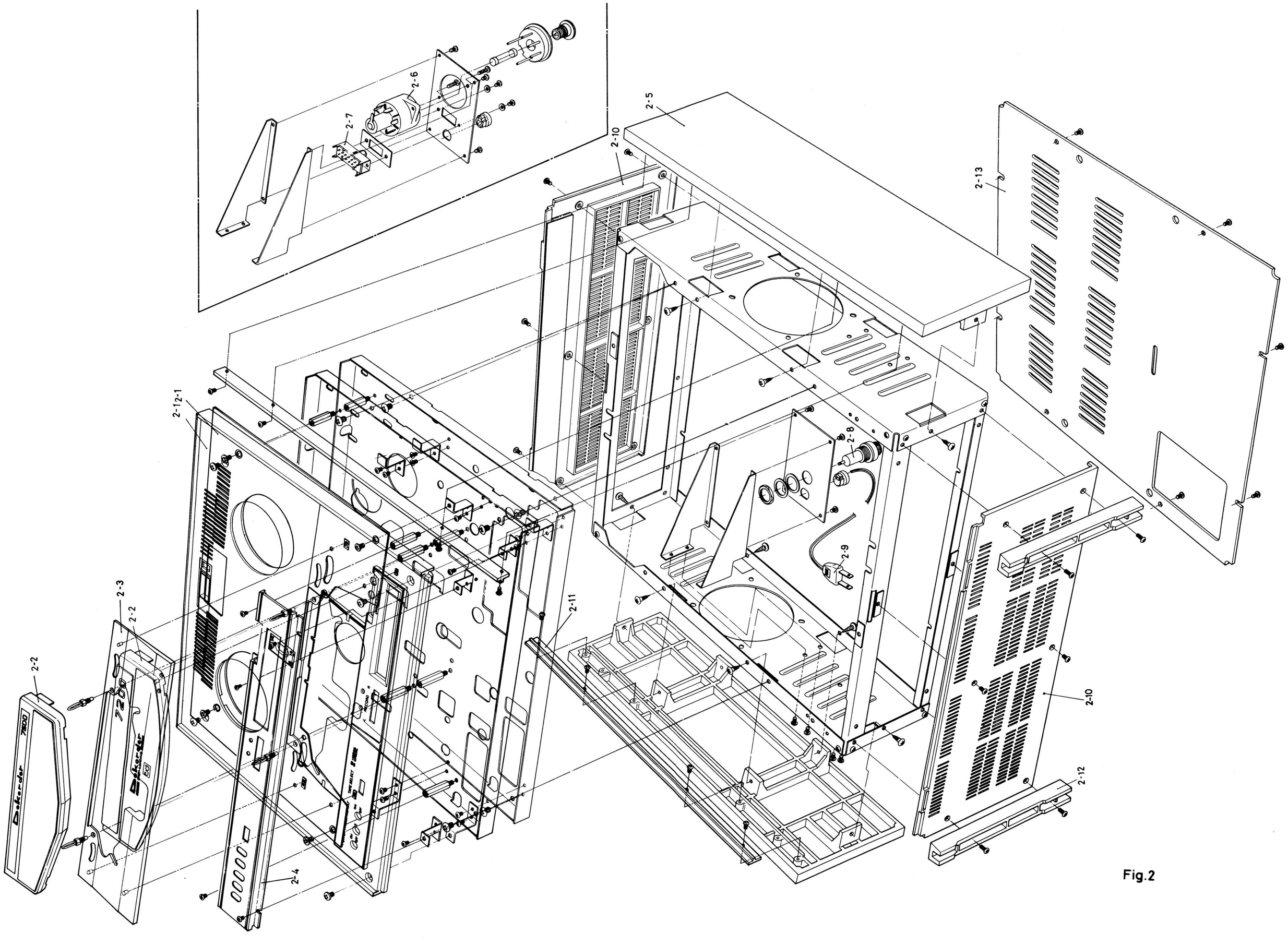

Fig.2

AMP CHASSIS TOP VIEW

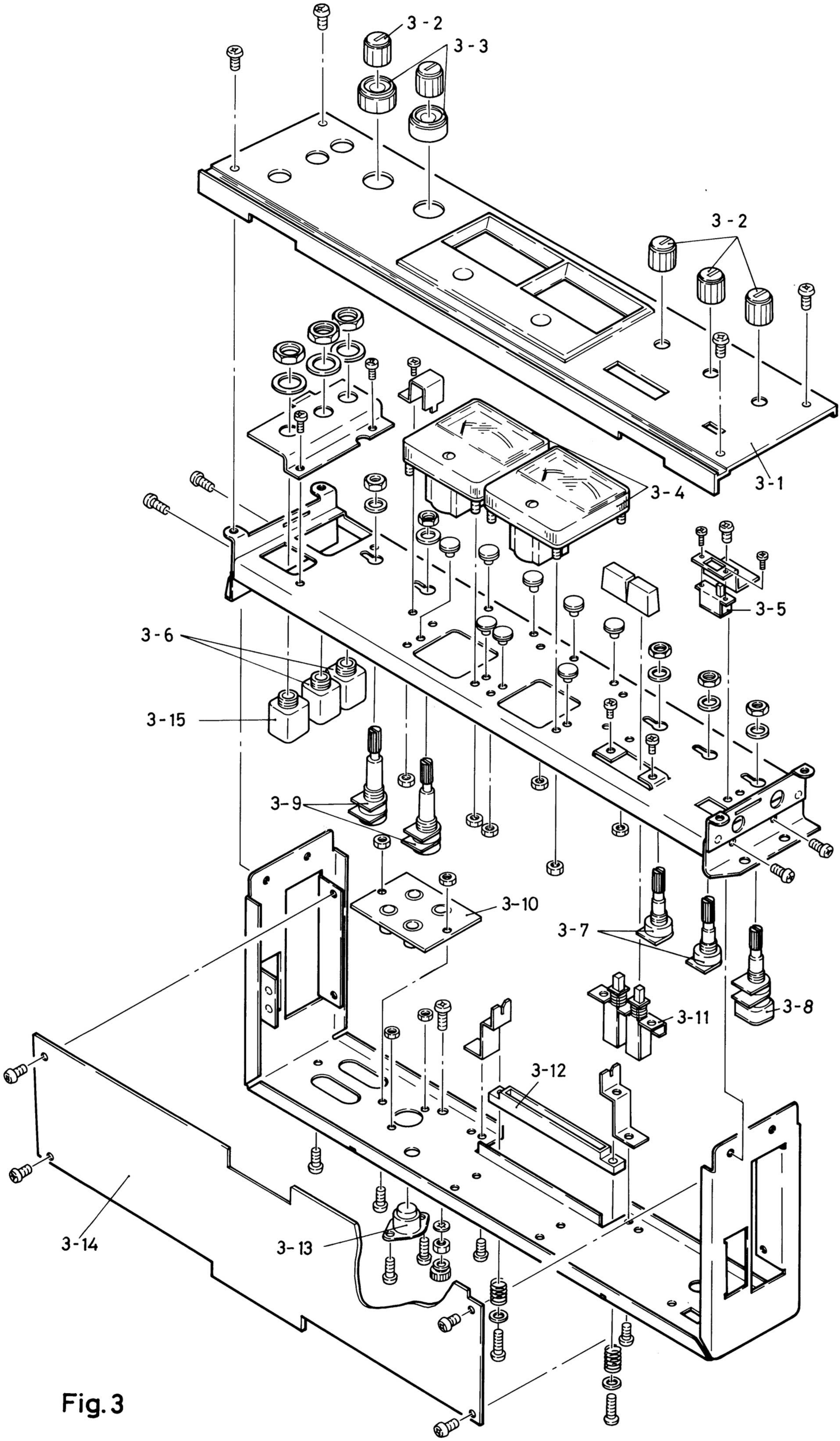

Fig. 3

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CHASSIS TOP VIEW (1)

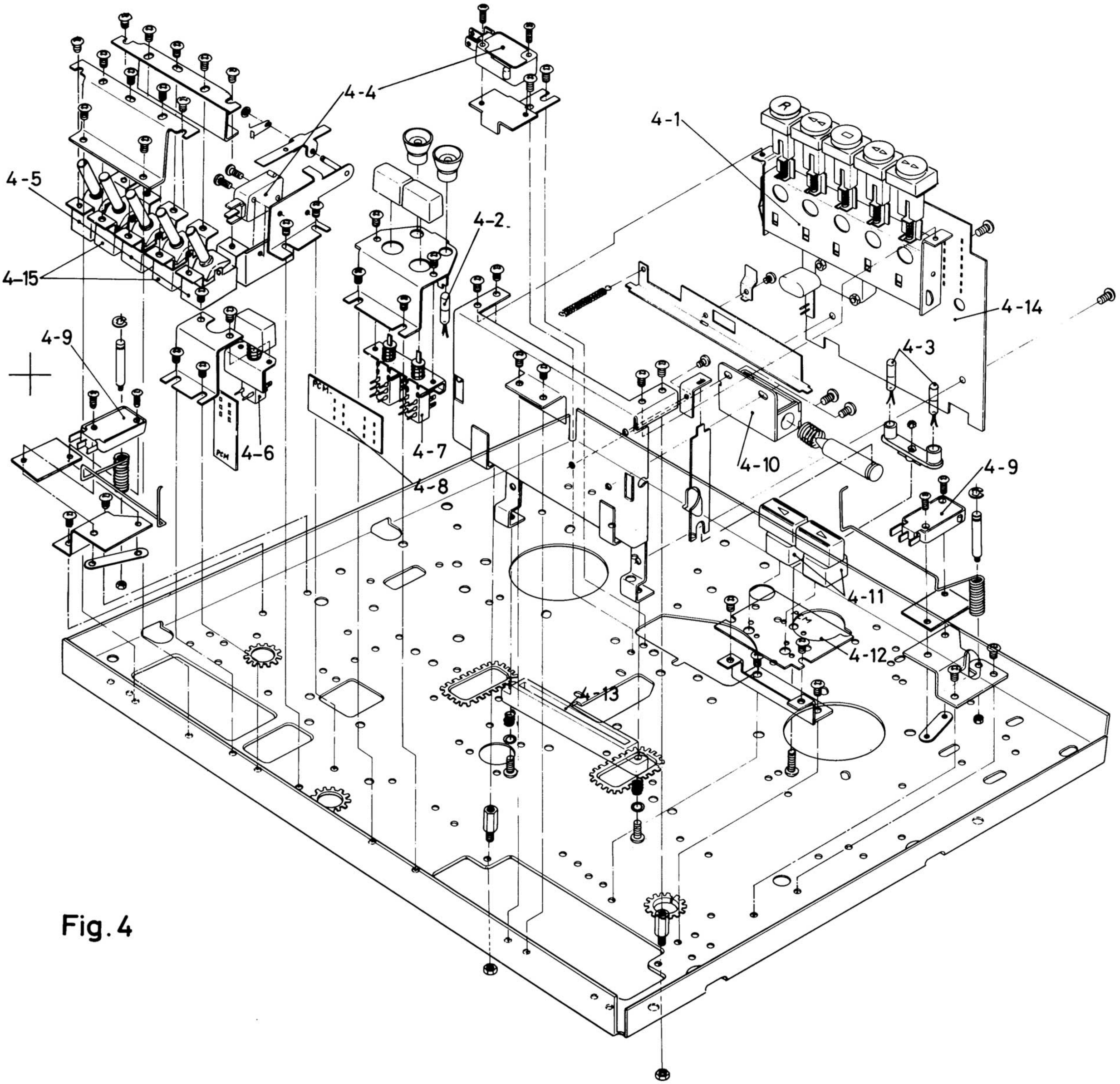

Fig. 4

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CHASSIS TOP VIEW (2)

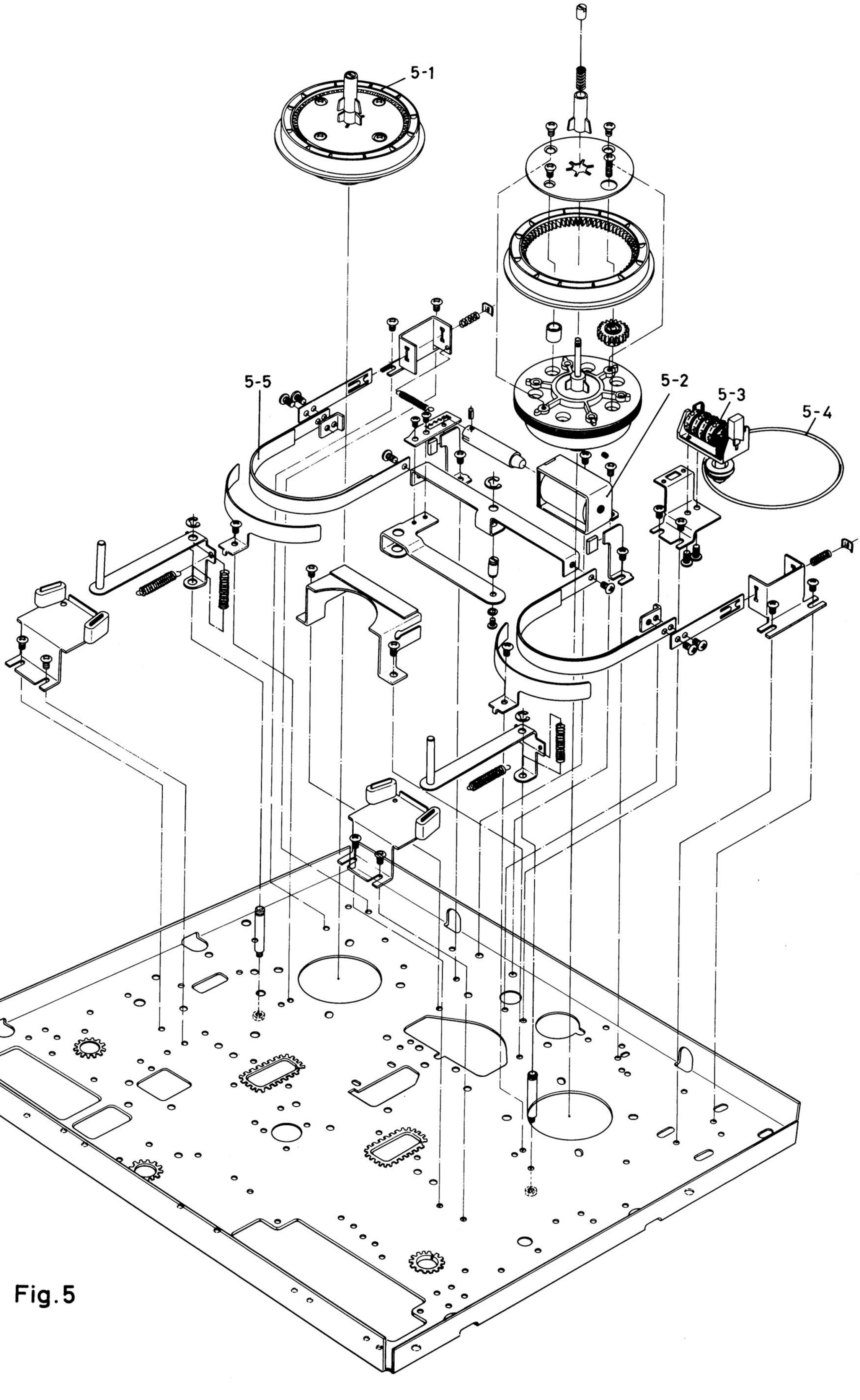

Fig.5

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CHASSIS BOTTOM VIEW

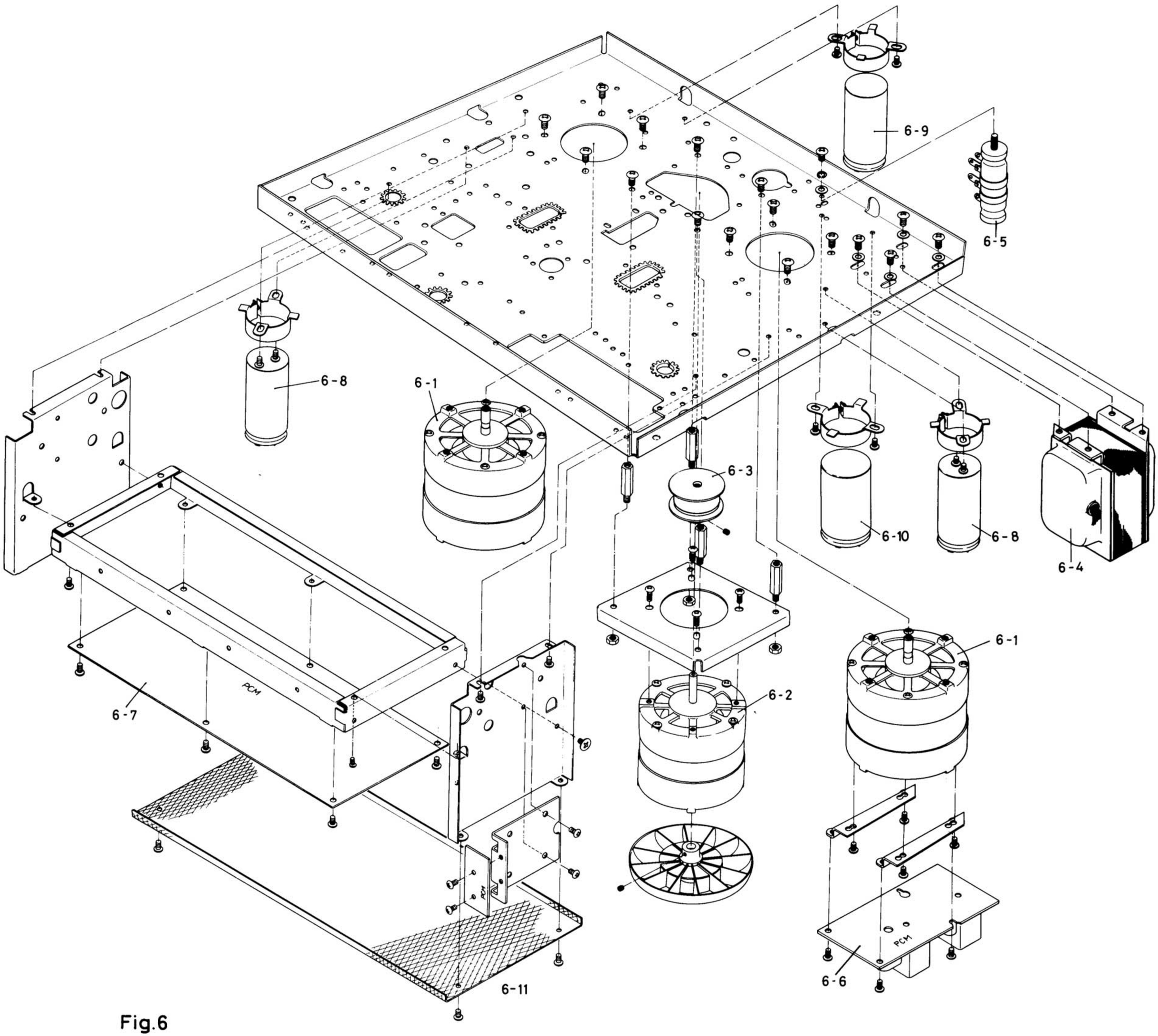

Fig.6

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CHASSIS TOP AND BOTTOM VIEW

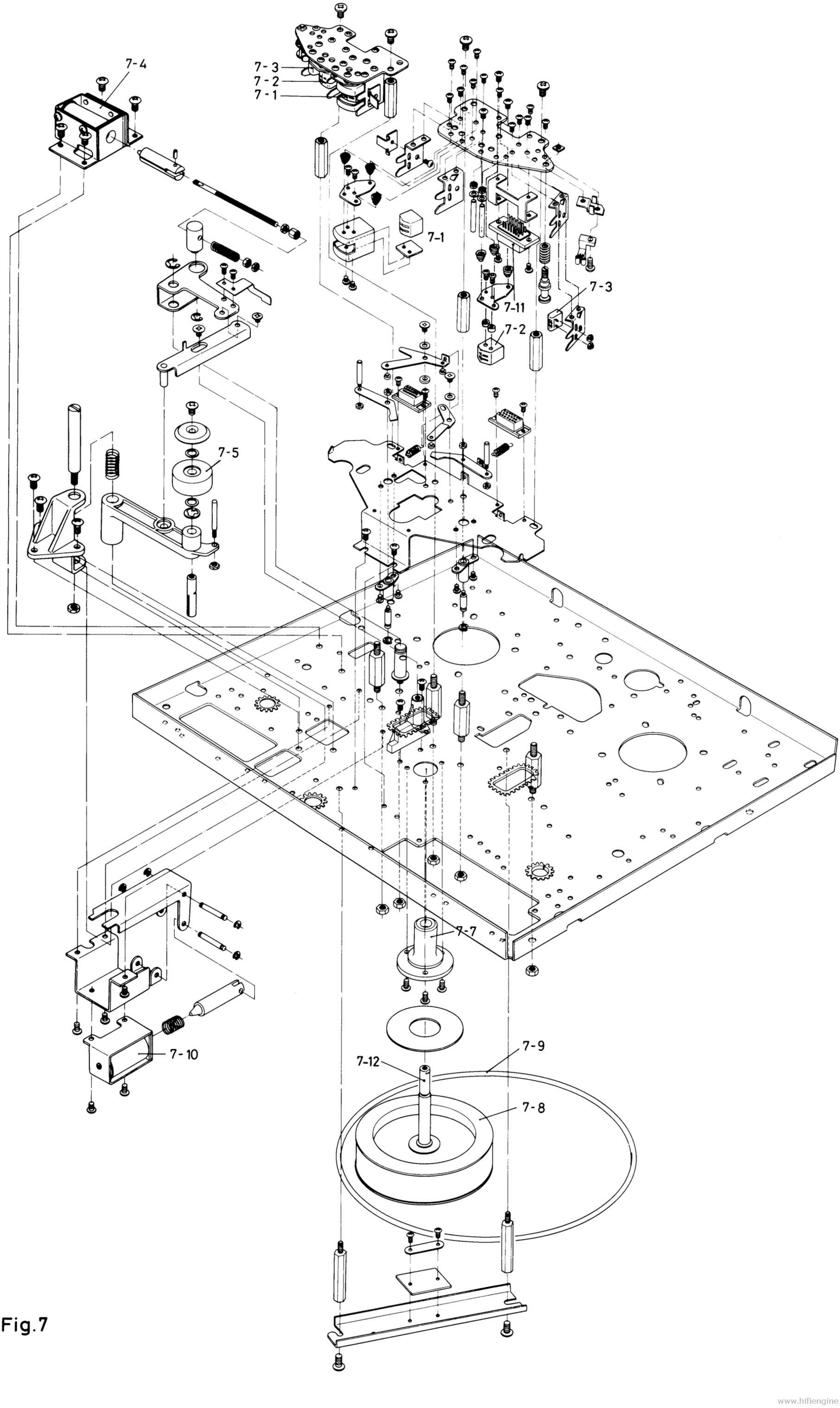

Fig.7

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PARTS LIST

PARTS LIST Fig. 2 – Fig. 7

PARTS NO.	REF. NO.	DESCRIPTION	USER PRICE US$
98300290	2- 1	Main Front Panel Assy	18.60
98300310	2- 2	Head Cover Assy	5.40
96400450	2- 3	Head Panel	3.30
98300270	2- 4	Control Panel	15.00
96400150	2- 5	Side Board Assy, Right or Left	13.00
41640010	2- 6	Voltage Selector with Fuse Holder	4.40
42400020	2- 7	Slide Switch, 50Hz – 60Hz	1.55
41620010	2- 8	Fuse Holder	1.45
41630010		Fuse (3 amp), Quick-blow	0.80
41650010	2- 9	AC Supply Cord with Plug (7 feet)	1.80
41650020		AC Supply Cord with Plug for EUROPE	10.00
41650030		AC Supply Cord with Plug for AUSTRALIA	10.00
98300280	2-10	Upper or Lower Board	3.75
94500030	2-11	Dress Frame, Right or Left	5.80
96400170	2-12	Plastic Foot, Right or Left	1.60
96100060	2-13	Rear Board	2.60
98300210	3- 1	AMP Front Panel Assy	14.10
96400190	3- 2	Control Knob, (Inner)	0.40
96400200	3- 3	Control Knob, (Outer)	0.40
41760020	3- 4	VU Meter, Right or Left	20.40
41240020	3- 5	Slide Switch, SOS/ECHO	0.75
41330030	3- 6	Jack, Microphone	1.35
19503102	3- 7	Variable Resistor 50K B	1.15
19503202	3- 8	Dual Variable Resistor with Switch 50K B	5.80
19503402	3- 9	Ganged Variable Resistor 50K B	4.80
41380010	3-10	4-Pin Jack, LINE in/out	1.60
41230040	3-11	Ganged Push Switch, TAPE/SOURCE	3.60
41300050	3-12	18-Pin Connector, Female PCB	4.20
41360010	3-13	DIN-Jack	1.00
98101580 or 98101581	3-14	PCM-158 or 158A Assy	116.80
41350020	3-15	Jack, Headphone	1.80
41230020	4- 1	5-Ganged Push Switch, Operate	16.40
41610030	4- 2	Lamp, Record	1.35
41610020	4- 3	Neon Lamp, Direction	1.80
41270010	4- 4	Micro Switch, Pinch Roller MS-50	1.80
41220020	4- 5	Lever Switch, POWER, TAPE TENSION or POUSE	3.60
41230030	4- 6	Push Switch, Tape Speed	6.20
41230040	4- 7	Ganged Push Switch, Record	3.60
98100030	4- 8	PCM-163 Assy	9.95
41270020	4- 9	Micro Switch, Auto-Shut-Off MT-10	2.40
41730020	4-10	Solenoid, Operate Switch	4.40
41230120	4-11	Push Switch, Direction	0.85
98101610	4-12	PCM-161 Assy	5.20
41300050	4-13	18-Pin Connector, Female PCB	4.20
98101600 or 98101601	4-14	PCM-160 or 160A Assy	25.30
41220010	4-15	Lever Switch, TAPE SELECT or REPEAT	3.00
98300510	5- 1	Turntable Assy	10.15
41730010	5- 2	Solenoid, Brake	6.20
41810010	5- 3	Counter	7.60
96300060	5- 4	Belt, Counter	1.00
98300040	5- 5	Brake Band Assy	0.45
41711010	6- 1	Motor, Reel Right or Left	48.00
41712020	6- 2	Motor, Capstan with Fan	84.00
94200010	6- 3	Motor Pulley	4.45
41720010	6- 4	Transformer, Power (U.S.A.)	26.80
41720020		Transformer, Power	25.20
18681201	6- 5	Power Resistor, Adjustable, 680 ohm/20W	3.40
98101620 or 98101621	6- 6	PCM-162 or 162A Assy	21.30
98101590 or 98101591 or 98101720	6- 7	PCM-159, 159A or 172 Assy	81.95/61.30
26400001	6- 8	Capacitor, 2.6 + 0.8 μF/250V	5.00
21622894	6- 9	Capacitor, 2200 μF/50V	5.20
26400003	6-10	Capacitor, 1.8 + 0.7 μF/250V	4.80
41741010	7- 1	Head, Play	20.80
41742010	7- 2	Head, Record	20.80
41743010	7- 3	Head, Erase	16.00
41730030	7- 4	Solenoid, Pinch Roller-Pressure	8.80
96300050	7- 5	Pinch Roller	2.40
98300420		Pinch Roller	2.70
41300010	7- 6	20-Pin Connector, Female Head Assy	4.10
94500010	7- 7	Capstan Bearing	5.35
98300070	7- 8	Flywheel Assy	11.00
96300040	7- 9	Belt, Capstan Drive	3.60
41730040	7-10	Solenoid, Pinch Roller - Stroke	6.20
41300010	7-11	20-Pin Connector, Male Head Assy	3.70
93200020	7-12	Capstan, 50Hz	1.50
93200030		Capstan, 60Hz	1.50

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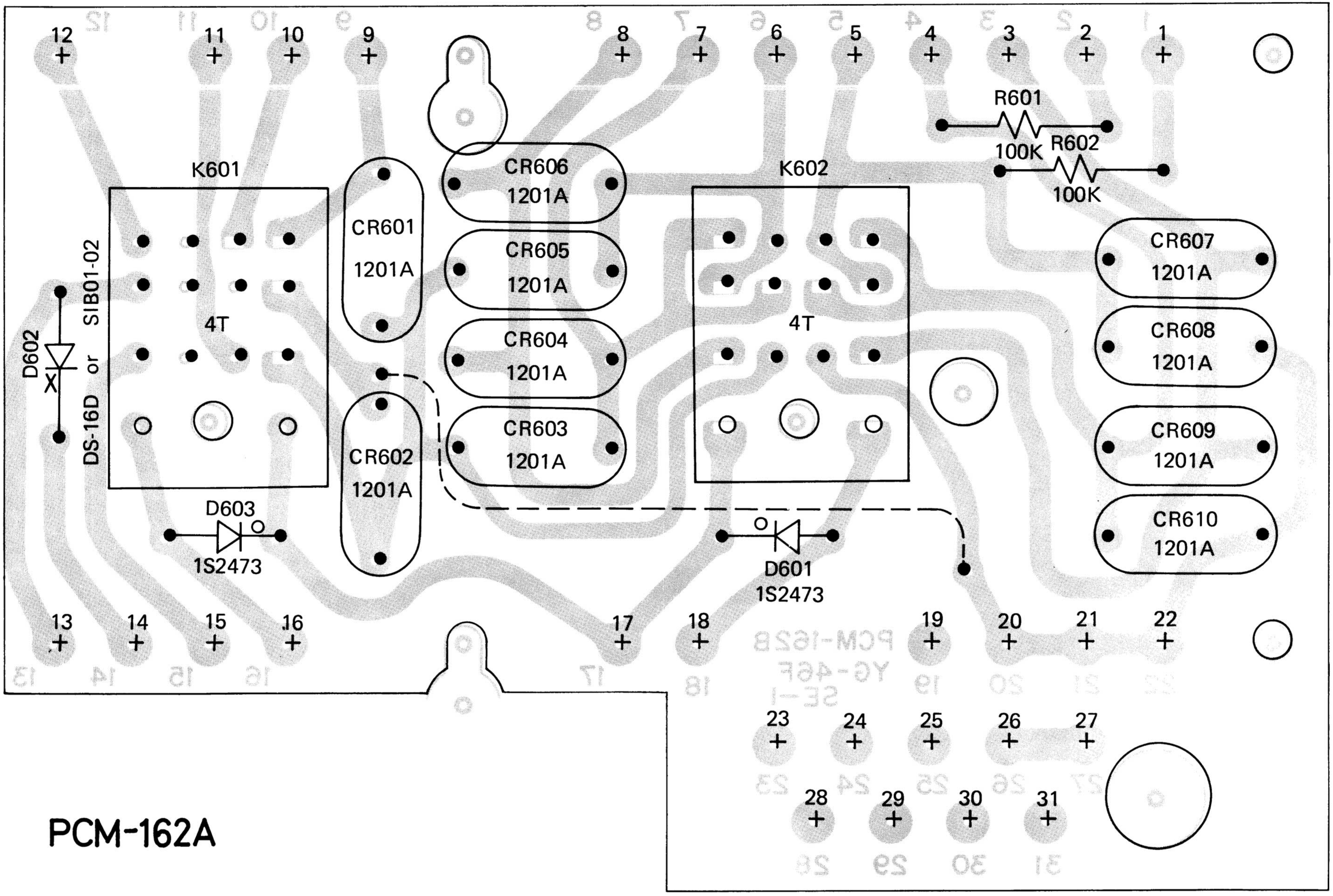
RELAY PC BOARD PCM-162A



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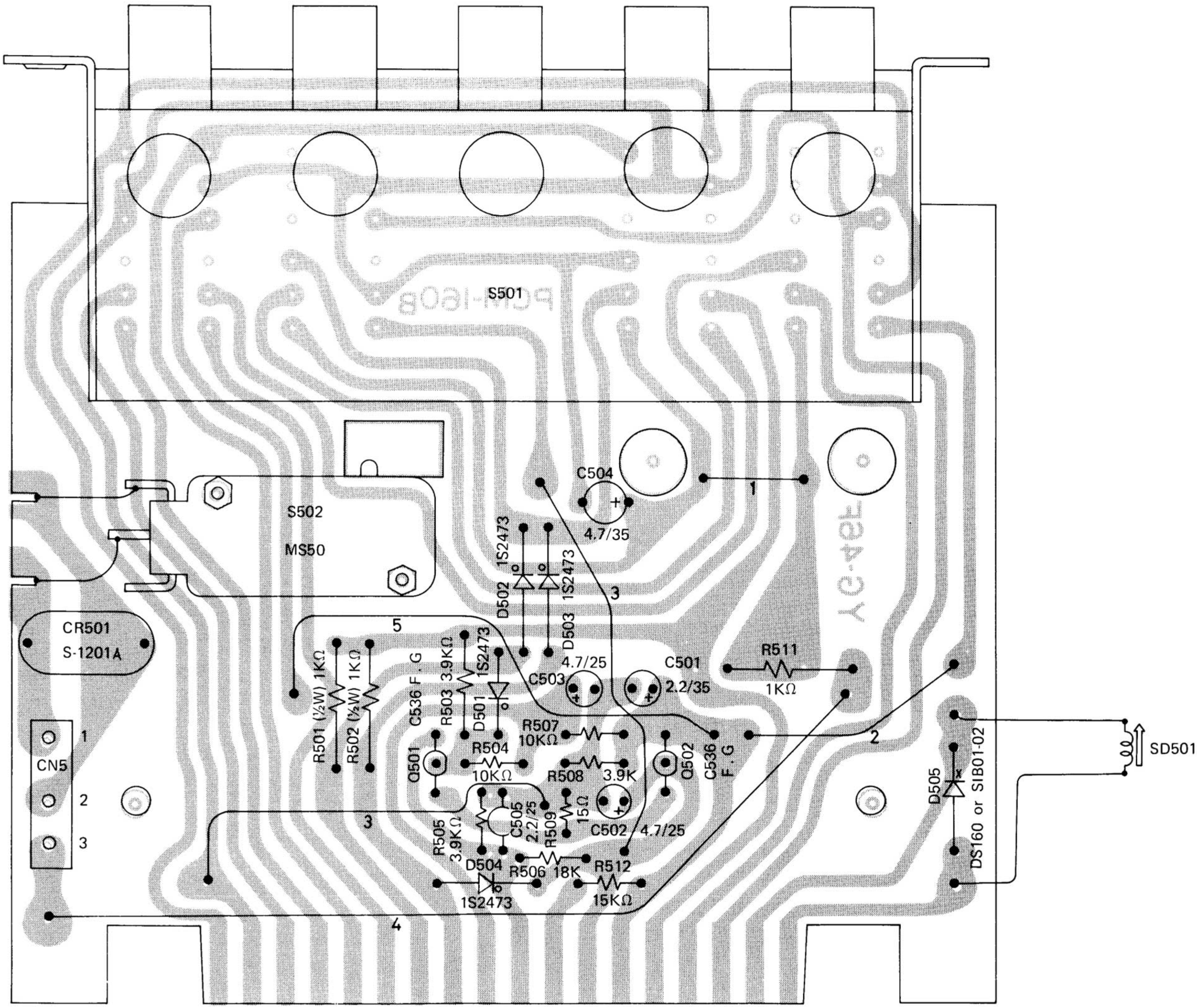
OPERATE BUTTON PC BOARD (1)



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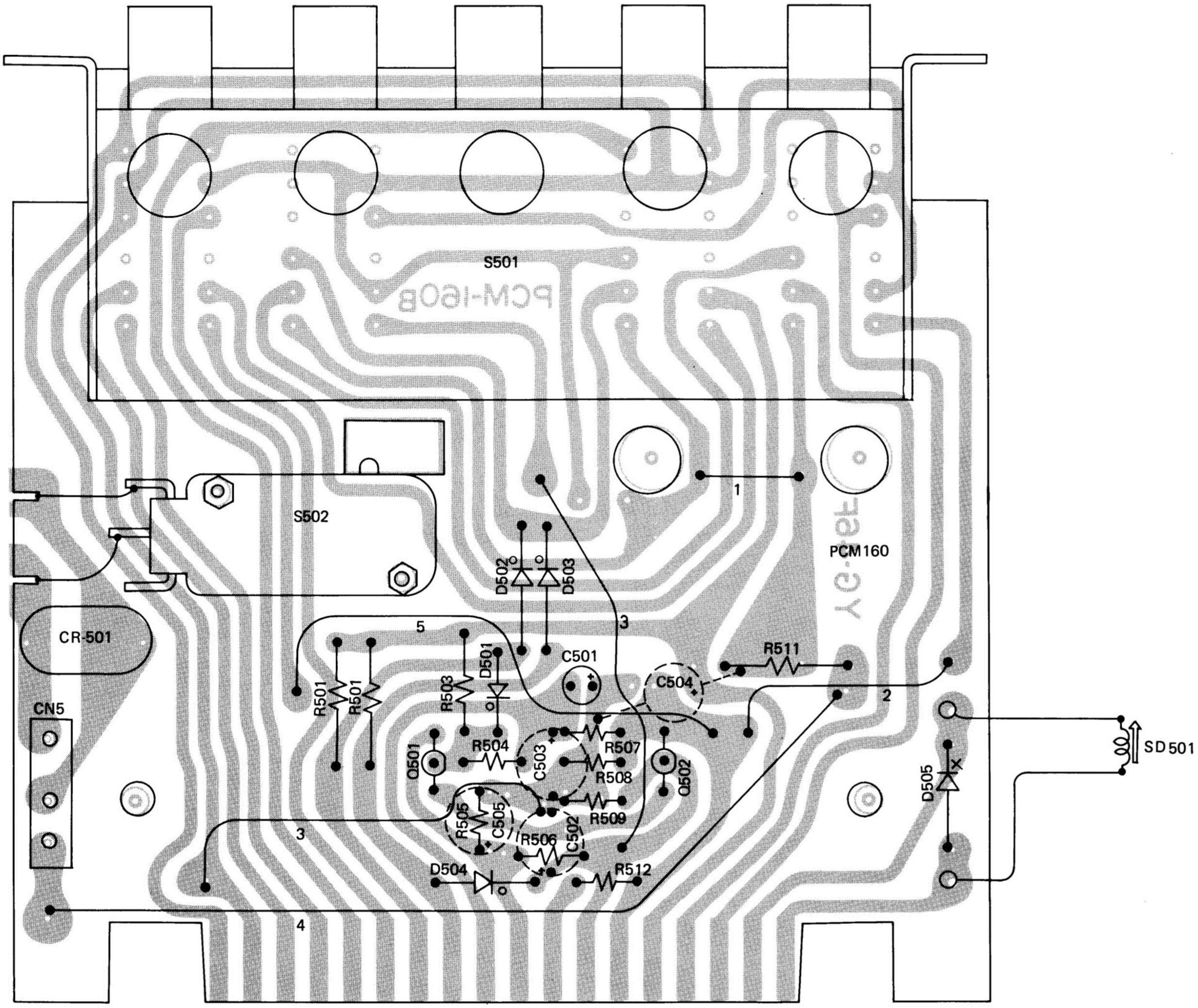
OPERATE BUTTON PC BAORD (2)



Notes:
1. The connection wire 5, used in Model 7200 only.
2. The resistor R509 won't short by wire in Model 7500, used in Model 7200 only.

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PARTS LIST

OPERATE BUTTON SWITCH PC BOARD PCM-160, 160A

PARTS NO.	DESCRIPTION	REFERENCE NO.	USER PRICE US$
98101600	PCM-160 Assy		25.30
98101601	PCM-160A Assy		25.30
	CAPACITORS		
21547591	4.7 μF 35V	C504	0.30
21447592	4.7 μF 25V	C502, C503	0.25
21422592	2.2 μF 25V	C501	0.25
21447472	0.47 μF 25V	C501	0.25
	RESISTORS (ALL RESISTORS ¼W UNLESS OTHERWISE STATED)		
11310211	1K ½W	R501, R502	0.20
11218313	18K	R506	0.20
11215313	15K	R512	0.20
11210313	10K	R504, R507	0.20
11239213	3.9K	R503, R505, R508	0.20
11210211	1K	R511	0.20
11215013	15	R509	0.20
	TRANSISTORS		
33053606	2SC536 F	Q501, Q502	0.75
33053607	2SC536 G	Q501, Q502	0.75
33117506	2SC1175 F	Q501, Q502	1.45
34022718	2SD227 R	Q501, Q502	0.90
34022723	2SD227 W	Q501, Q502	0.90
	DIODES		
39200020	1S2473	D501 – D504	0.35
39200030 or 39200040	DS-16D or SIB01-02	D505	0.40/0.50
	MISCELLANEOUS		
41270010	Micro Switch, MS-50	S502	1.80
17000010	Capacitor/Resistor, Combain S-1201A	CR501	1.10
41230020	Switch, 5-Ganged Operate with Knob	S501	17.25
41330010	Connector	CN5	0.30

RELAY PC BOARD PCM-162A

98101621	PCM-162A Complete Assy		21.30
	MISCELLANEOUS		
11318411	Resistor, Carbon 100K 1/2W	R601, 602	0.20
17000010	Capacitor/Resistor, Combined 1201A	CR601 – 610	1.10
39200030 or 39200040	Diode, Silicon SD-16D or SIB01-02	D602	0.40/0.50
39200020	Diode, Silicon 1S-2473	D601, 603	0.35
41290010	Relay MY4-0-US-4T	K601, 602	12.80

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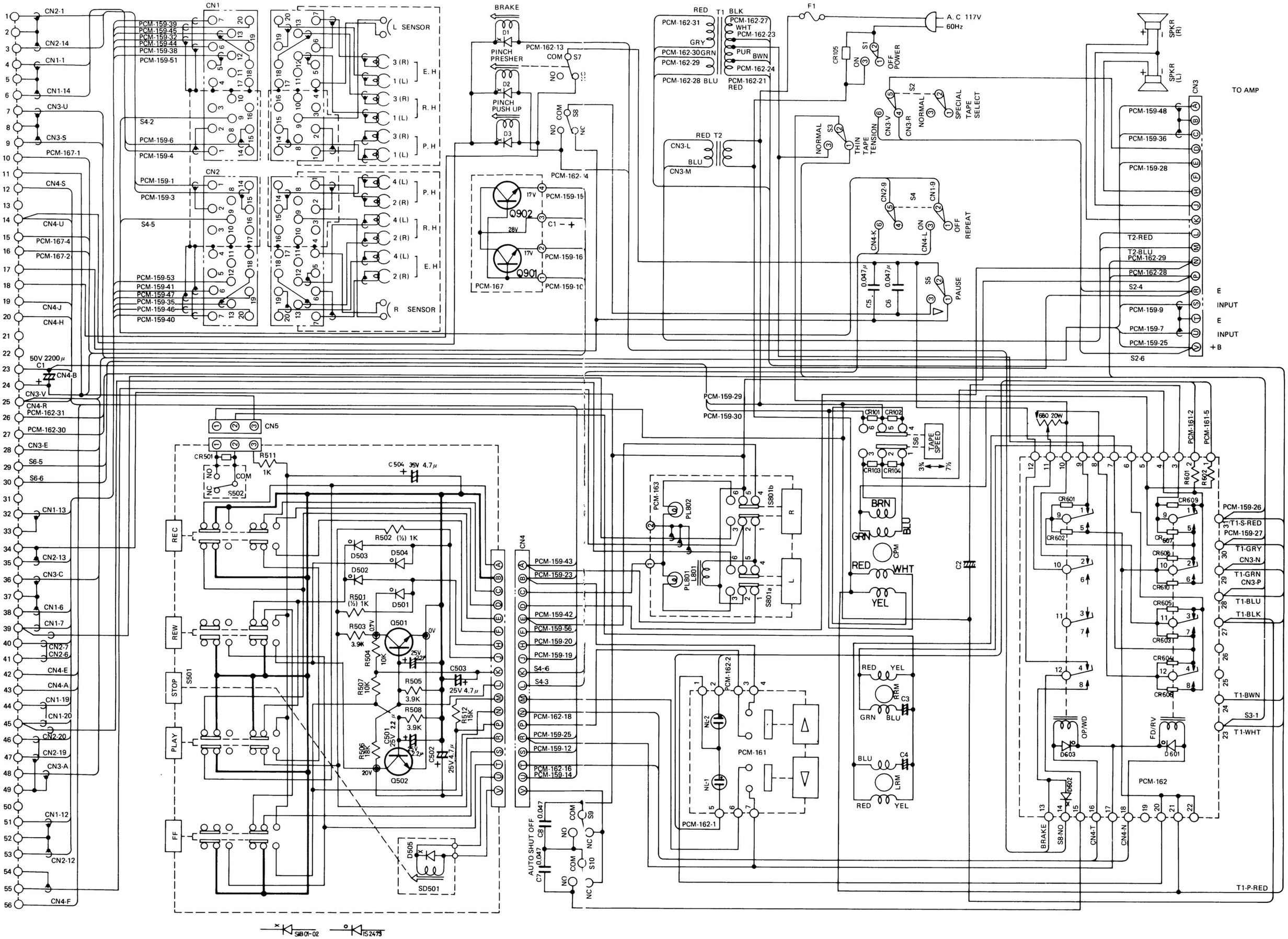
SCHEMATIC DIAGRAM

CONTROL/TRANSPORT



Notes:
1. The positions of the switches in this schematic are shown in STOP (OFF) position.
2. Manufacturer reserves right to change contents of resistor, transistor or capacitors without notice for purpose of improvement.

PARTS LIST

AMP. PC BOARD PCM-158, 158A

PARTS NO.	DESCRIPTION	REFERENCE NO.	USER PRICE US$
98101580 or 98101581	PCM-158 or 158A Complete Assy		116.80
	CAPACITORS		
21110792	Elect. 100 μF 6.3V	C131, 231	0.30
21133692	Elect. 33 μF 6.3V	C105, 205, 110, 210, 111, 211, 117, 217, 140, 240	0.25
21410692	Elect. 10 μF 25V	C121, 221, 289	0.25
21447592	Elect. 4.7 μF 25V	C104, 204, 136, 236	0.25
21610592	Elect. 1 μF 50V	C134, 234, 138, 238	0.25
21447472	Elect. 0.47 μF 25V	C141, 241, 113, 213	0.25
21410792	Elect. 100 μF 25V	C283, 284, 290, 285, 287, 190	0.45
41422792	Elect. 220 μF 25V	C286	0.70
21422572	Elect. 2.2 μF 25V	C109, 209, 133, 233	0.25
21310692	Elect. 10 μF 16V	C101, 201, 106, 206, 112, 212, 142, 242, 129, 229, 137, 237	0.20
25647332	Mylar 0.047 μF 50V	C124, 224, 127, 227, 128, 228	0.25
25668222	Mylar 0.0068 μF 50V	C123, 223	0.20
25610222	Mylar 0.001 μF 50V	C119, 219, 120, 220	0.20
25682222	Mylar 0.0082 μF 50V	C122, 222	0.20
25639322	Mylar 0.039 μF 50V	C126, 226	0.20
55633322	Mylar 0.033 μF 50V	C116, 216	0.20
23668132	Ceramic 680P 50V	C146, 246	0.45
23647132	Ceramic 470P 50V	C135, 235	0.20
23622132	Ceramic 220P 50V	C102, 202, 107, 207, 115, 215, 130, 230, 143, 243	0.20
23647022	Ceramic 47P 50V	C114, 214, 132, 232	0.20
23622022	Ceramic 22P 50V	C103, 203, 108, 208	0.20
23639132	Ceramic 390P 50V	C281, 239	0.20
23610032	Ceramic 100P 50V	C139, 239	0.20
	RESISTORS		
	ALL RESISTORS ¼W UNLESS OTHERWISE STATED		
11212213	Carbon 1.2K	R155, 255	0.20
11210113	Carbon 100	R197	0.20
11247111	Carbon 470	R193	0.20
11210211	Carbon 1K	R146, 246	0.20
11210213	Carbon 1K	R116, 216, 109, 209, 110, 210, 136, 236, 144, 244	0.20
11210311	Carbon 10K	R127, 227, 128, 228, 134, 234, 160, 260	0.20
11222311	Carbon 22K	R159, 259	0.20
11256011	Carbon 56	R199	0.20
11227113	Carbon 270	R122, 222	0.20
11239113	Carbon 390	R143, 243, 156, 256	0.20
11268113	Carbon 680	R107, 207	0.20
11282113	Carbon 820	R198, 114, 214	0.20
11215213	Carbon 1.5K	R121, 221, 149, 249	0.20
11218213	Carbon 1.8K	R113, 213	0.20
11222213	Carbon 2.2K	R102, 202, 141, 241, 147, 247, 195, 192, 158, 258	0.20
11227213	Carbon 2.7K	R106, 206	0.20
11233213	Carbon 3.3K	R123, 223, 131, 231, 161, 261	0.20
11239213	Carbon 3.9K	R115, 215, 142, 242, 157, 257	0.20
11256213	Carbon 5.6K	R126, 226	0.20
11268213	Carbon 6.8K	R194, 196	0.20
11212373	Carbon 12K	R191	0.20
11215313	Carbon 15K	R103, 203, 124, 224, 133, 233, 130, 230	0.20
11215311	Carbon 15K	R161, 261	0.20
11247413	Carbon 470K	R148, 248	0.20
11212413	Carbon 120K	R101, 201	0.20
11227313	Carbon 27K	R108, 208	0.20
11233313	Carbon 33K	R112, 212, 120, 220	0.20
11239313	Carbon 39K	R112, 212, 120, 220	0.20
11247313	Carbon 47K	R140, 240, 154, 254	0.20
11210413	Carbon 100K	R163, 263, 145, 245, 118, 218, 138, 238, 152, 252	0.20
11218413	Carbon 180K	R137, 237, 117, 217, 164, 264, 151, 251	0.20
11222413	Carbon 220K	R139, 239, 111, 211, 119, 219, 153, 253	0.20
11227413	Carbon 270K	R105, 205	0.20
	TRANSISTORS		
33069307	2SC693 G	Q101 – 104, 109, 111, 105, 107	1.00
33069306	2SC693 F	Q101 – 104, 109, 111, 105, 107	1.00
33053607	2SC536 G	Q106, 108, 110, 112, 115 – 118	0.75
33053606	2SC536 F	Q106, 108, 110, 112, 115 – 118	0.75
	DIODES		
39200020	Silicon 1S2473	D101 – 110	0.35
39100020	Germanium 1S188	D111 – 114	0.30
	MISCELLANEOUS		
41770040	Coil, Peaking/Trap L-9-3	BT1, BT2, L101 – 104	2.35
18204201	Variable Resistor 200K	VR5 – 8	0.55
18503201	Variable Resistor 50K	VR2, VR4	0.55
18202201	Variable Resistor 2K	VR1, VR3	0.55
41720030	Transformer 600 : 8 ohm	T101, T102	1.20

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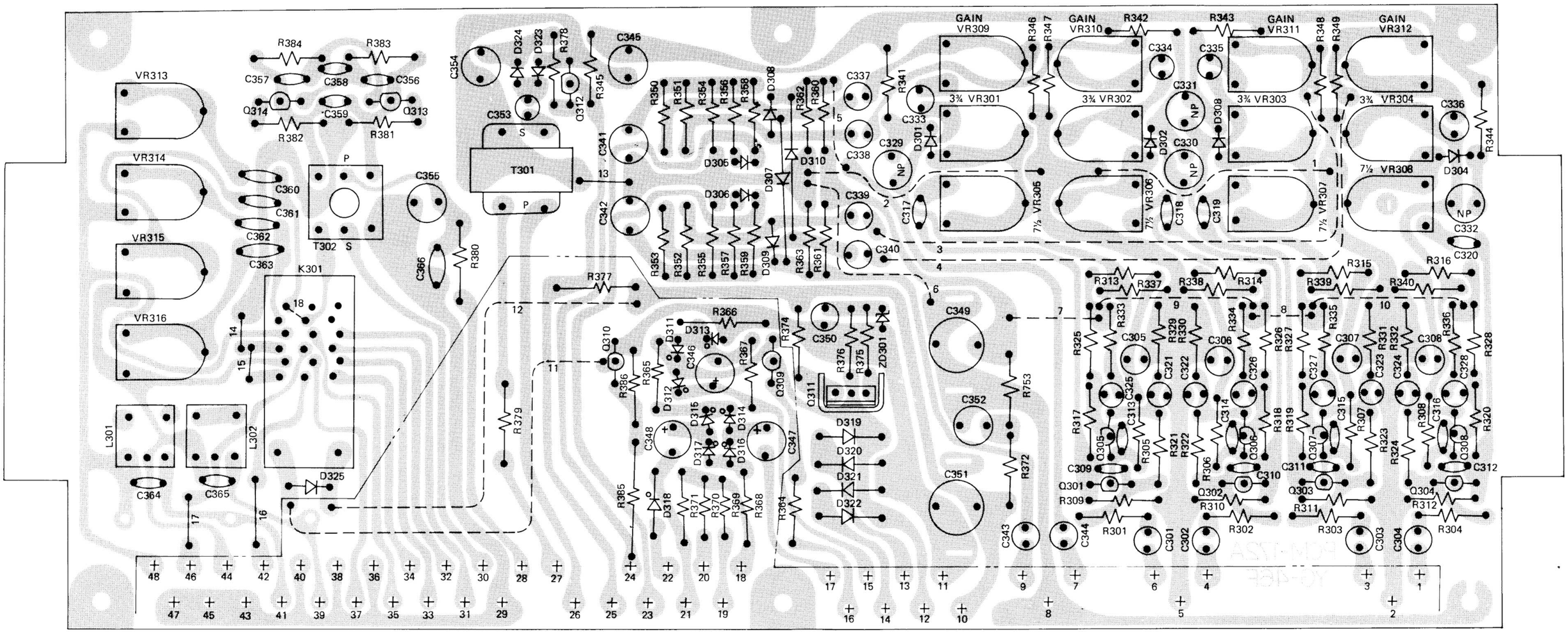
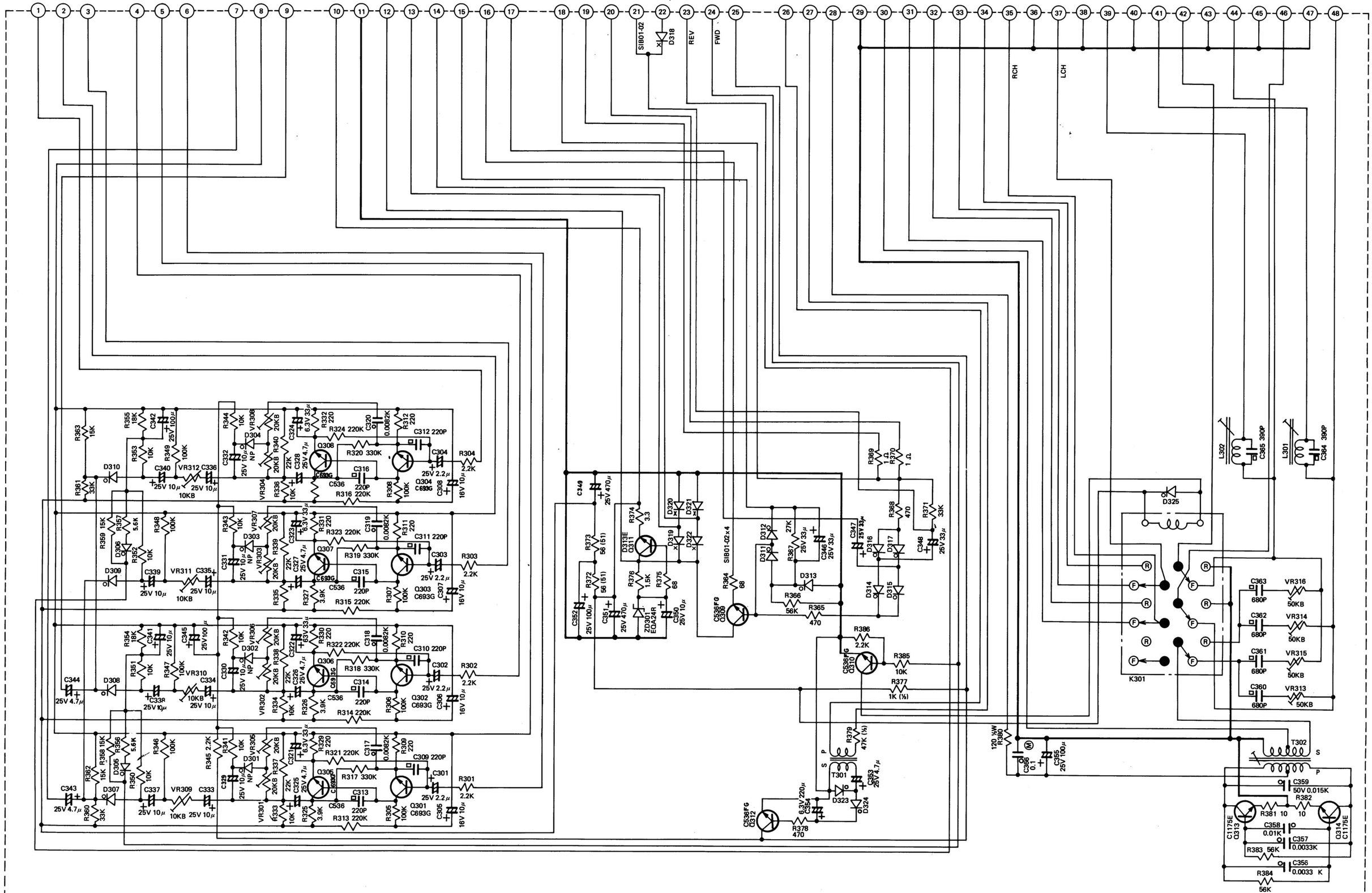
CONTROL PC BOARD PCM-172



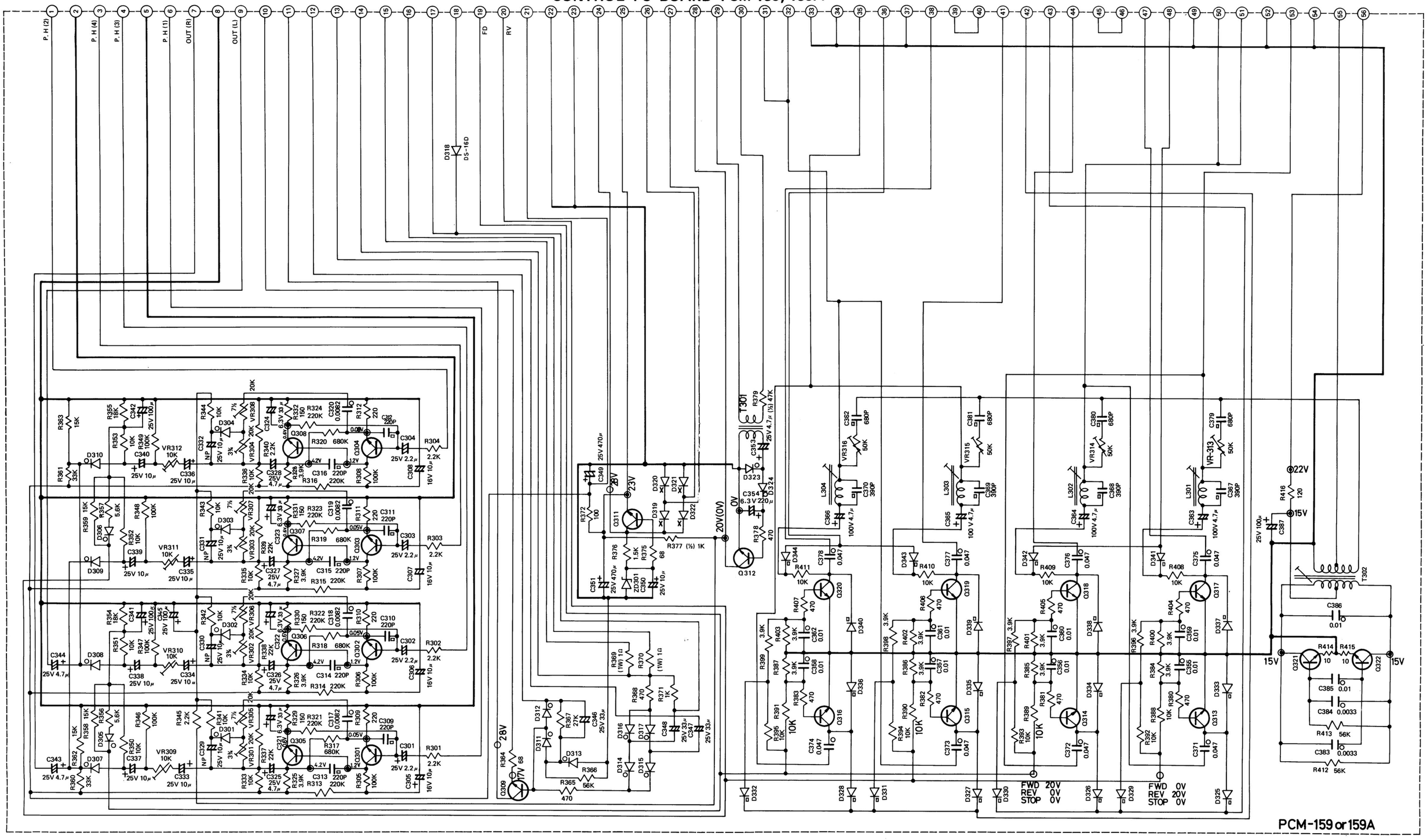
SCHEMATIC DIAGRAM

CONTROL PC BOARD PCM-172



SCHEMATIC DIAGRAM

CONTROL PC BOARD PCM-159, 159A



2SB01-02 IS2473 IS2471

Note: Manufacturer reserves right to change contents of resistors, transistors or capacitors without notice for purpose of improvement.

CONTROL PC BOARD PCM-159

PCM-159 or 159A

1 Ch. 3 Ch. 4 Ch. 2 Ch.

SIB01-02 IS 2473 IS 2471 Myler Ceramic

Note: The parts of hatched line, used in Model 7500 only.

PARTS LIST

CONTROL PC BOARD PCM-172

PARTS NO.	DESCRIPTION	REFERENCE NO.	USER PRICE US$
98101720	PCM-172 Complete Assy		61.30
	CAPACITORS		
25682222	Mylar 0.0082 μF 50V	C317 – C320	0.20
25610322	Mylar 0.01 μF 50V	C358	0.20
25633222	Mylar 0.0033 μF 50V	C356, 357	0.20
25615322	Mylar 0.015 μF 50V	C359	0.20
25610422	Mylar 0.1 μF 50V	C366	0.40
23639122	Ceramic 390P 50V	C364, 365	0.20
23668122	Ceramic 680P 50V	C360 – 363	0.45
23622132	Ceramic 220P 50V	C309 – 316	0.20
26000010	Elect. Non Polar 10 μF 25V	C329 – 332	0.40
21447792	Elect. 470 μF 25V	C349, 351	0.95
21410792	Elect. 100 μF 25V	C341, 342, 345, 352, 355	0.45
21433692	Elect. 33 μF 25V	C346 – 348	0.35
21410692	Elect. 10 μF 25V	C333 – 340, 350	0.25
21447592	Elect. 4.7 μF 25V	C325 – 328, 343, 344, 353	0.25
21422572	Elect. 2.2 μF 25V	C301 – 304	0.25
21122792	Elect. 220 μF 6.3V	C354	0.40
21310692	Elect. 10 μF 16V	C305 – 308	0.20
21133692	Elect. 33 μF 6.3V	C321 – 324	0.25
	RESISTORS		
	ALL RESISTORS ¼W UNLESS OTHERWISE STATED		
11312111	Carbon 120K ½W	R380	0.20
11347311	Carbon 47K ½W	R379	0.20
11310211	Carbon 1K ½W	R377	0.20
11222411	Carbon 220K	R313 – 316, 321 – 324	0.20
11210411	Carbon 100K	R305 – 308, 346 – 349	0.20
11256311	Carbon 56K	R366, 383, 384	0.20
11233311	Carbon 33K	R360, 361, 371	0.20
11222311	Carbon 22K	R337 – 340	0.20
11218311	Carbon 18K	R354, 355	0.20
11215311	Carbon 15K	R358, 359, 362, 363	0.20
11210311	Carbon 10K	R333 – 336, 341 – 344, 350 – 353, 385	0.20
11256211	Carbon 5.6K	R356, 357	0.20
11239211	Carbon 3.9K	R325 – 328	0.20
11222211	Carbon 2.2K	R301 – 304, 345	0.20
11215221	Carbon 1.5K	R376	0.20
11247111	Carbon 470K	R365, 368, 378	0.20
11227311	Carbon 27K	R367	0.20
11210011	Carbon 10K	R381, 382	0.20
11268011	Carbon 68K	R364, 375	0.20
11256011	Carbon 56K	R372, 373	0.20
11233411	Carbon 330K	R317 – 320	0.20
11233211	Carbon 3.3K	R374	0.20
11222111	Carbon 220	R309 – 312, 329 – 332	0.20
15410417	Ceramic Insulated 11W	R369, 370	0.30
	TRANSISTORS		
33053606	2SC536 F	Q309, 312, 310	0.75
33053607	2SC536 G	Q309, 312, 310	0.75
33069307	2SC693 G	Q301 – 308	1.00
33117505	2SC1175 E	Q313, 314	1.45
34031305	2SD313 E	Q311	2.80
34031306	2SD313 F	Q311	2.80
	DIODES		
39200020	Silicon 1S-2473	D323, 324, 301 – 317	0.35
39200040	Silicon SIB01-02	D319 – 322	0.50
39200030	Silicon DS-16D	D318	0.40
39300010	Zener EQA01-24R	ZD301	1.40
	MISCELLANEOUS		
18203201	Variable Resistor 20K B	VR301 – 308	0.55
18103201	Variable Resistor 10K B	VR309 – 312	0.55
18503201	Variable Resistor 50K B	VR314 – 316	0.55
18104201	Variable Resistor 100K B	VR314 – 316	0.55
41770020	Coil, OSC 1135	T302	2.35
	Coil, OSC 1139	T302	2.35
41770030	Coil, Trap L-9-3	L301 – 304	1.20
41720050	Transformer	T301	1.20

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CONTROL PC BOARD PCM-159/159A

PARTS NO.	DESCRIPTION	REFERENCE NO.	USER PRICE US$
98101590 or 98101591	PCM-159 or 159A Complete Assy		81.95
	CAPACITORS		
25682222	Mylar 0.0082 μF 50V	C317 – 320	0.20
25610322	Mylar 0.01 μF 50V	C358, 386	0.20
25633222	Mylar 0.0033 μF 50V	C383, 384	0.20
25647322	Mylar 0.047 μF 50V	C371 – 378	0.20
23639122	Ceramic 390P 50V	C367 – 370	0.20
23668122	Ceramic 680P 50V	C379 – 382	0.45
23622132	Ceramic 220P 50V	C309 – 316	0.20
26000010	Elect. Non Polar 10 μF 25V	C329 – 332	0.40
21447792	Elect. 470 μF 25V	C349, 351	0.95
21410792	Elect. 100 μF 25V	C387, 341, 342, 345	0.45
21433692	Elect. 33 μF 25V	C346, 347, 348	0.35
21410692	Elect. 10 μF 25V	C333 – 340, 350	0.25
21447592	Elect. 4.7 μF 25V	C325 – 328, 343, 344, 353	0.25
21422572	Elect. 2.2 μF 25V	C301 – 304	0.25
21122792	Elect. 220 μF 6.3V	C354	0.40
21310692	Elect. 10 μF 16V	C305 – 308	0.20
21133692	Elect. 33 μF 6.3V	C321 – 324	0.25
21747592	Elect. 4.7 μF 100V	C363 – 366	0.55
	RESISTORS		
	ALL RESISTOR ¼W UNLESS OTHERWISE STATED		
11312411	Carbon 120K ½W	R416	0.20
11347311	Carbon 47K ½W	R379	0.20
11310211	Carbon 1K ½W	R377	0.20
11268411	Carbon 680K	R317 – 320	0.20
11222411	Carbon 220K	R313 – 316, 321 – 324	0.20
11210411	Carbon 100K	R305 – 308, 346 – 349	0.20
11256311	Carbon 56K	R366, 412, 413	0.20
11233311	Carbon 33K	R360, 361, 371	0.20
11222311	Carbon 22K	R337 – 340	0.20
11218311	Carbon 18K	R354, 355	0.20
11215311	Carbon 15K	R358, 359, 362, 363	0.20
11210311	Carbon 10K	R333 – 336, 341 – 344, 350 – 353 388 – 395, 408 – 411	
11256211	Carbon 5.6K	R356, 357	0.20
11239211	Carbon 3.9K	R325 – 328, 384 – 387, 396 – 403	0.20
11222211	Carbon 2.2K	R301 – 304, 345	0.20
11215211	Carbon 1.5K	R376	0.20
11210211	Carbon 1K	R371	0.20
11247411	Carbon 470K	R365, 368, 378, 380 – 383, 404 – 407	0.20
11227311	Carbon 27K	R367	0.20
11222111	Carbon 220	R309 – 312, 329 – 332	0.20
11215111	Carbon 150	R329 – 332	0.20
11210011	Carbon 10	R414, 415	0.20
11268011	Carbon 68	R364, 375	0.20
11256011	Carbon 56	R372	0.20
11233411	Carbon 330K	R317 – 320	0.20
11210111	Carbon 100	R372	0.20
15410417	Ceramic Insulated 1 1W	R369, 370	0.30
	TRANSISTORS		
33053606	2SC536 F	Q309, 312	0.75
33053607	2SC536 G	Q309, 312	0.75
33069307	2SC693U G	Q301 – 308	1.00
33117505	2SC1175 E	Q321, 322	1.45
33117506	2SC1175 F	Q313 – 320	1.45
34031305	2SD313 E	Q311	2.80
34031306	2SD313 F	Q311	2.80
	DIODES		
39200030	Silicon SIB01-02	D319 – 322	0.50
39200020	Silicon 1S-2473	D323, 324	0.35
39200030	Silicon DS-16D	D318	0.40
39300010	Zener EQA01-24R	ZD-301	1.40
	MISCELLANEOUS		
18203201	Variable Resistor 20K B	VR301 – 308	0.55
18103201	Variable Resistor 10K B	VR309 – 312	0.55
18503201	Variable Resistor 50K B	VR314 – 317	0.55
18104201	Variable Resistor 100K B	VR314 – 317	0.55
41770020	Coil, OSC 1135	T302	2.35
41770030	Coil, Trap L-9-3	L301– 304	1.20
41720050	Transformer	T301	1.20
98200140	Heat Sink (1)		0.20

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CLEANING

All parts that come in contact with tape should be constantly cleaned. Heads are naturally most important and should be cleaned periodically even if no dust or dirt is visible to naked eye. Use piece of cloth moistened with denatured alcohol to clean.

Disassemble and clean outer tape guide every 300 hours of operation.

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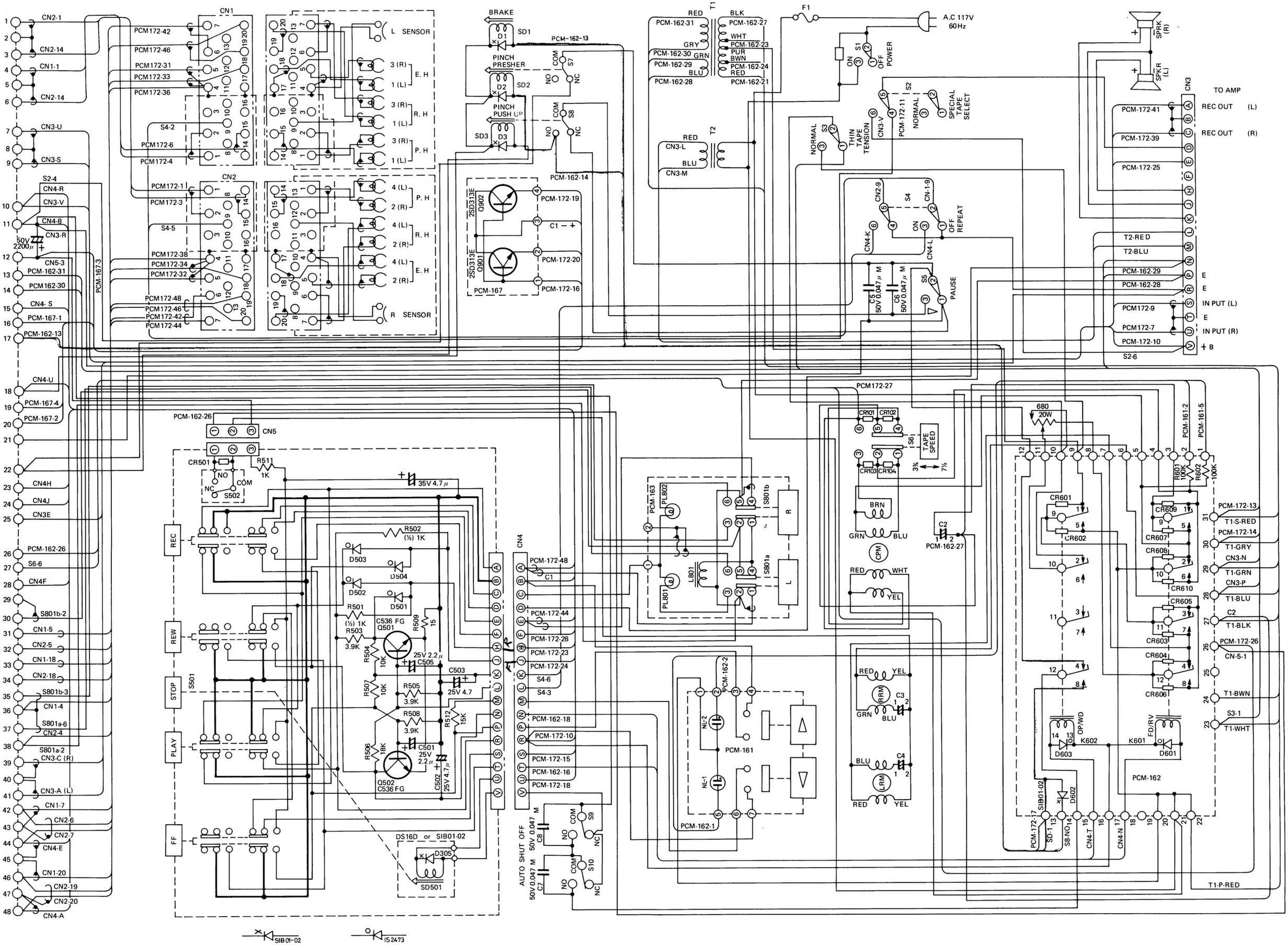
	Item	Signal Source	Mode	Output Connection	Adjust	Remarks
1.	Playback Head Height and Azimuth Adjustment	15KHz, AMPEX standard test tape, 01-31321-01	PLAYBACK	VTVM to the LINE OUTPUT	Playback head height and azimuth adjusting screws. See Fig. 1	Adjust the screws to the maximum reading on VTVM.
2.	Playback Level Adjustment	1KHz −20dB to the LINE INPUT	PLAYBACK	VTVM to the LINE OUTPUT	L-CHAN VR1 R-CHAN VR2 See Fig. 9	1. Set the MIC VR minimum, LINE VR and PLAY LEVEL VR maximum, ECHO/SOS VR off MONITOR SW to the SOURCE position. 2. Adjust the VR1 and VR2 to obtain 0dB on VTVM.
3.	Meter Amplifier Adjustment	1KHz −20dB to the LINE INPUT	PLAYBACK	VTVM to the LINE OUTPUT	L-CHAN VR1 R-CHAN VR2 See Fig. 9	Adjust the VR5 and VR6 so that the Level Meters indicate 0VU.
4.	Playback Amplifier Adjustment 7-1/2 ips	700Hz −10dB, AMPEX standard test tape 01-31321-01	PLAYBACK	VTVM to the LINE OUTPUT	L-CHAN, FWD VR305 REV VR311 R-CHAN, FWD VR310 REV VR312 See Fig. 8	Adjust the VR309−VR312 to obtain −10dB on VTVM.
5.	Playback Amplifier Adjustment 7-1/2 ips	15KHz −10dB, AMPEX standard test tape 01-31321-01	PLAYBACK	VTVM to the LINE OUTPUT	L-CHAN, FWD VR305 REV VR307 R-CHAN, FWD VR306 REV VR308 See Fig. 8	Adjust the VR305−VR308 to obtain −10dB ±1.5dB on VTVM.
6.	Playback Amplifier Adjustment 3-3/4 ips	7.5KHz −10dB, AMPEX standard test tape 01-31331-01	RECORD PLAYBACK	VTVM to the LINE OUTPUT	L-CHAN, FWD VR301 REV VR303 R-CHAN, FWD VR302 REV VR304 See Fig. 8	Adjust the VR301−VR304 to obtain −10dB ±1.5dB on VTVM.
7.	Bias OSC Adjustment		RECORD	Frequency Counter to the PCM-159, 159A (49-50) *PCM-172 (47-48) serial No. X1251 and later	T302 See Fig. 8	Adjust the T302 so that the Frequency Counter indicate 130KHz ±10KHz.
8.	Bias Trap Adjustment		RECORD	VTVM to the PCM-159, 159A (48-49) L-CHAN (36-37) R-CHAN *PCM-172 (41-42) L-CHAN (39-40) R-CHAN serial No. X1251 and later	L-CHAN, FWD BT1 REV BT4 R-CHAN, FWD BT3 REV BT2 See Fig. 8 *L-CHAN L301 R-CHAN L302 serial No. X1251 and later See Fig. 10	Adjust the BT1−BT4 to obtain minimum reading on VTVM. * Adjust the L301 and L302 to obtain minimum reading on VTVM.
9.	Record Head Height and Azimuth Adjustment	15KHz −20dB to the LINE INPUT	RECORD	VTVM with Lowpass Filter (cf=30KHz) to the LINE OUTPUT	Record head height and azimuth adjustment See Fig. 1	Set the screw to the maximum reading on VTVM.
10.	Record Bias Adjustment	700Hz −20dB to the LINE INPUT	RECORD	VTVM with Lowpass Filter (cf=30KHz) to the LINE OUTPUT	L-CHAN, FWD VR314 REV VR313 R-CHAN, FWD VR316 REV VR315 See Fig. 8 *L-CHAN, FWD VR313 REV VR314 R-CHAN, FWD VR315 REV VR316 serial No. X1251 and later See Fig. 8	1. Set the LINE VR and PLAY LEVEL VR maximum, MIC VR minimum, ECHO/SOS VR off. 2. Record 700Hz signal of −20dB on blank tape (SCOTCH 150). 3. Adjust the VR314−VR317 to obtain maximum reading on VTVM. * Adjust the VR313−VR316 to obtain maximum reading on VTVM. 1. Record 700Hz signal of −40dB on a blank tape (SCOTCH #150). 2. Adjust VR2 and VR4 so that the VTVM indicate 0dB.
11.	Record Level Adjustment	700Hz −20dB to the LINE INPUT	RECORD	VTVM with Lowpass Filter (cf=30KHz) to the LINE OUTPUT	L-CHAN VR2 R-CHAN VR4 See Fig. 9	Record 20KHz signal of −20dB and adjust the L102 and L103 so that the VTVM reading is the same as 700Hz signal at 7-1/2 ips.
12.	Record Equalizer Adjustment 7-1/2 ips	50Hz−20KHz, −40dB to the LINE INPUT		VTVM with Lowpass Filter (cf=30KHz) to the LINE OUTPUT	L-CHAN L103 R-CHAN L102 See Fig. 9	Record 10KHz signal of −40dB and adjust the L101 and L104 so that VTVM reading is the same as 700Hz signal at 7-1/2 ips.
13.	Record Equalizer Adjustment 3-3/4 ips	50Hz−10KHz, −40dB to the LINE INPUT	RECORD	VTVM with Lowpass Filter (cf=30KHz) to the LINE OUTPUT	L-CHAN L101 R-CHAN L104 See Fig. 9	1. Loading on tape to the deck, Flick the POUSE switch down in recording mode. 2. Adjust the BT1 and BT2 so that the VTVM indicate less than −35dB.
14.	Bias Trap Adjustment		RECORD	VTVM to the LINE OUTPUT	L-CHAN BT-2 R-CHAN BT-1 See Fig. 9 serial No. X1251 and later	

SCHEMATIC DIAGRAM

CONTROL/TRANSPORT Serial No. X1271 and later.



Notes:
1. The positions of the switches in this schematic are shown in STOP (OFF) position.
2. Manufacturer reserves right to change contents of resistor, transistor or capacitors without notice for purpose of improvement.

AMP PC BOARD PCM-158

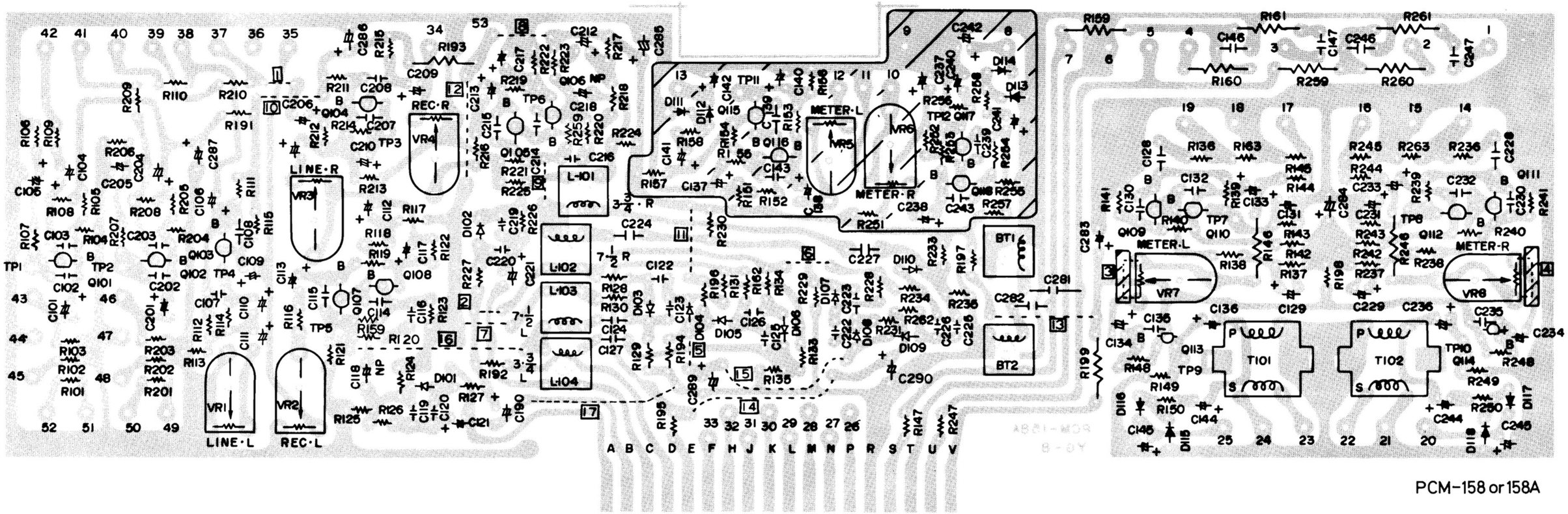


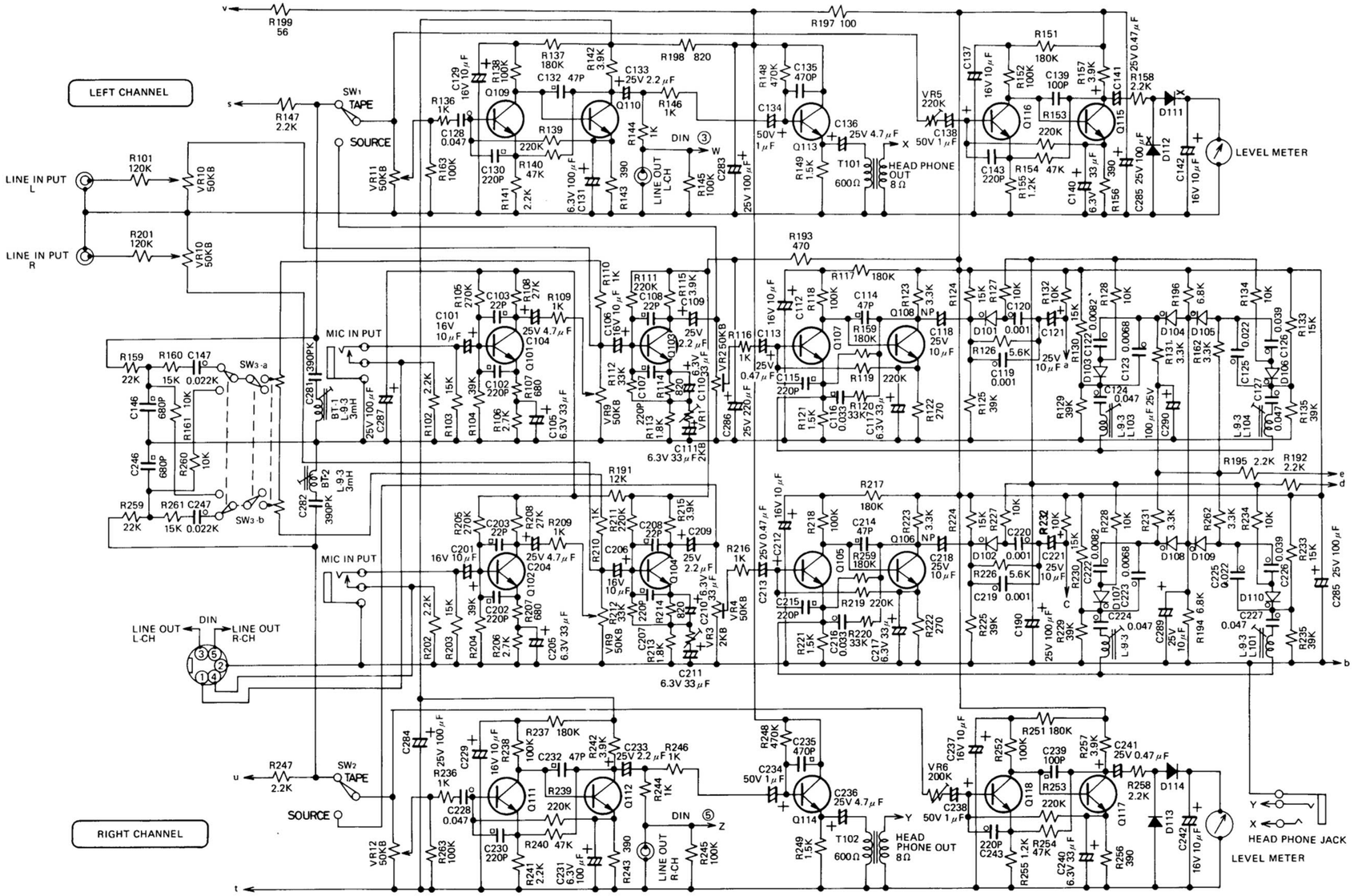
Fig. 8

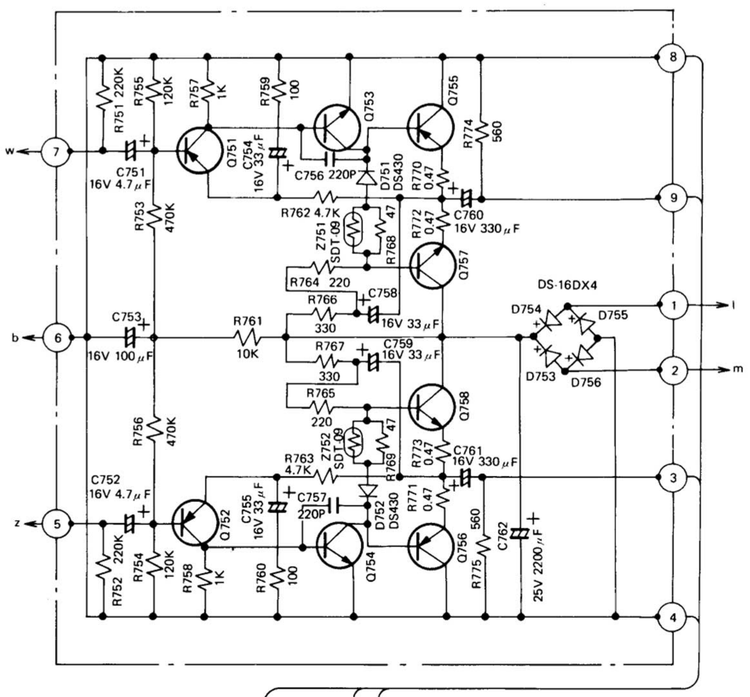
PCM-158 or 158A

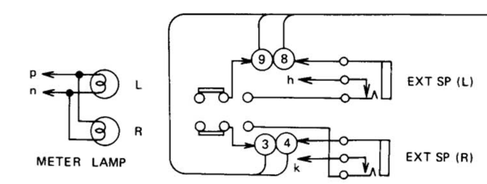
Note: Added R232, 132 and polarity of capacitor C221, 121 should be change serial No. X1271 and later.

SCHEMATIC DIAGRAM

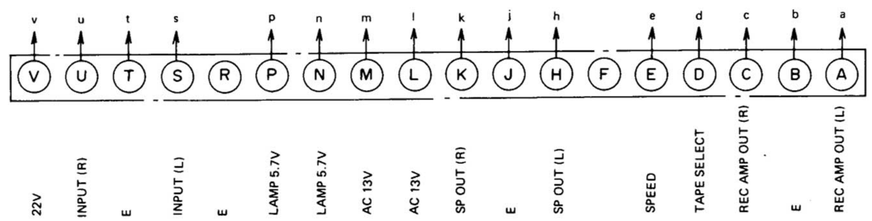
AMP PC BOARD PCM-158, 158A







IS2473	Q101 – 105, 107, 109, 111	2SC693FG
IS188	Q106, 108,	2SC536G
SIB01-02 DS-16D	Q110, 112 – 118	2SC536FG
STD-09	Q751, 752	2SA608EF
	Q753, 754	2SC1175EF
MYLAR	Q755, 756	2SB511DE
CERAMIC	Q757, 758	2SD325DE
NON POLAR		

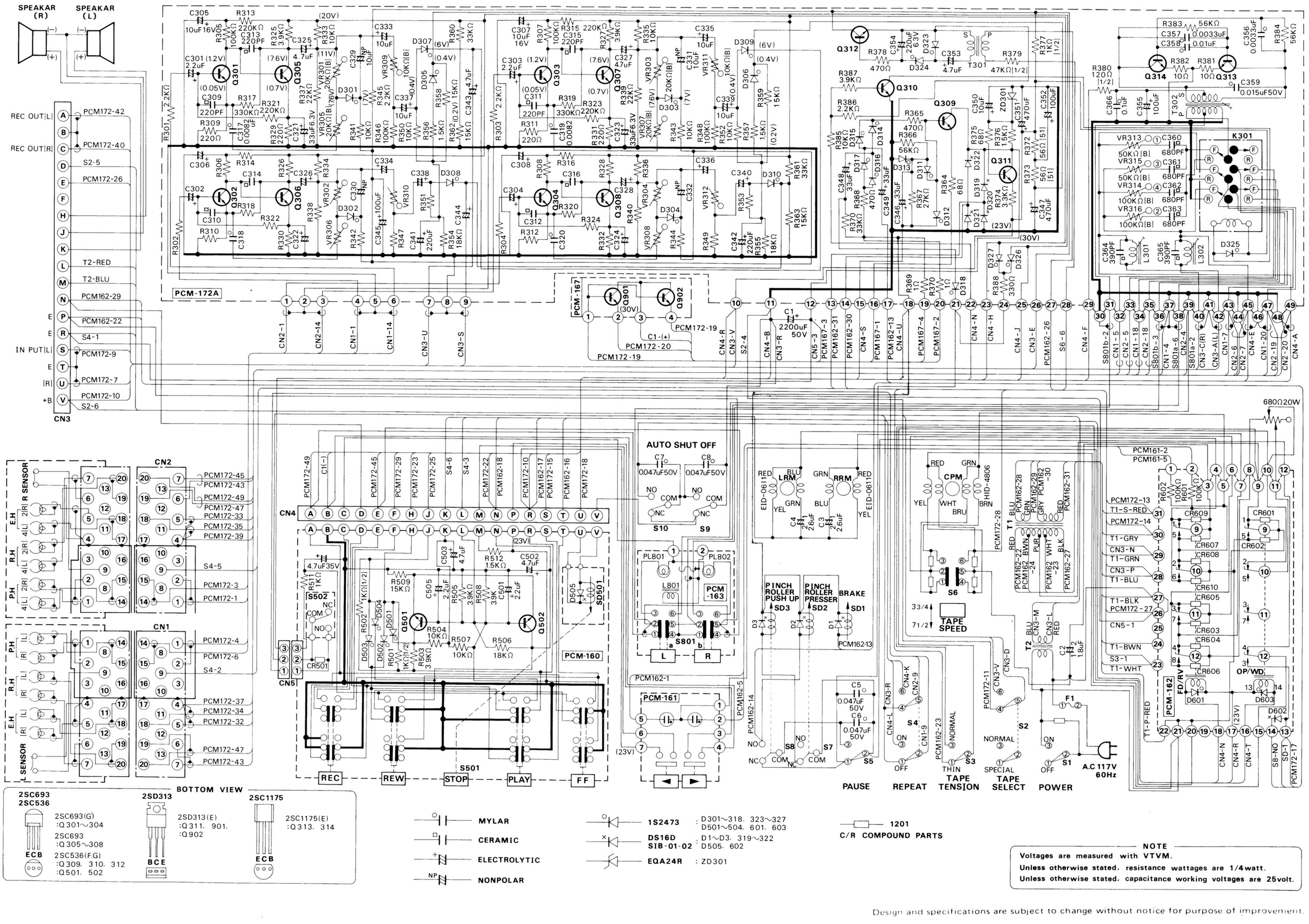


VOLTAGE MEASUREMENT
25k Ω/V TESTER

TRANSISTOR	C	E	TRANSISTOR	C	E
Q109, 111	1.5V	0.3V	Q107, 105	1.2V	0.1V
Q110, 112	9.4V	0.8V	Q108, 106	10.4V	0.7V
Q113, 114	20 V	8.6V	Q751, 752	0.6V	4.5V
Q116, 118	1.4V	0.2V	Q753, 754	7.5V	0 V
Q115, 117	6.7V	1.0V	Q755, 756	0 V	9 V
Q101, 102	4.5V	0.7V	Q757, 758	18 V	9 V
Q103, 104	11.3V	4.0V			

Note: Manufacturer reserves right to change contents of resistors, transistors or capacitors without notice for purpose of improvement.

SCHEMATIC DIAGRAM, DECK CHASSIS

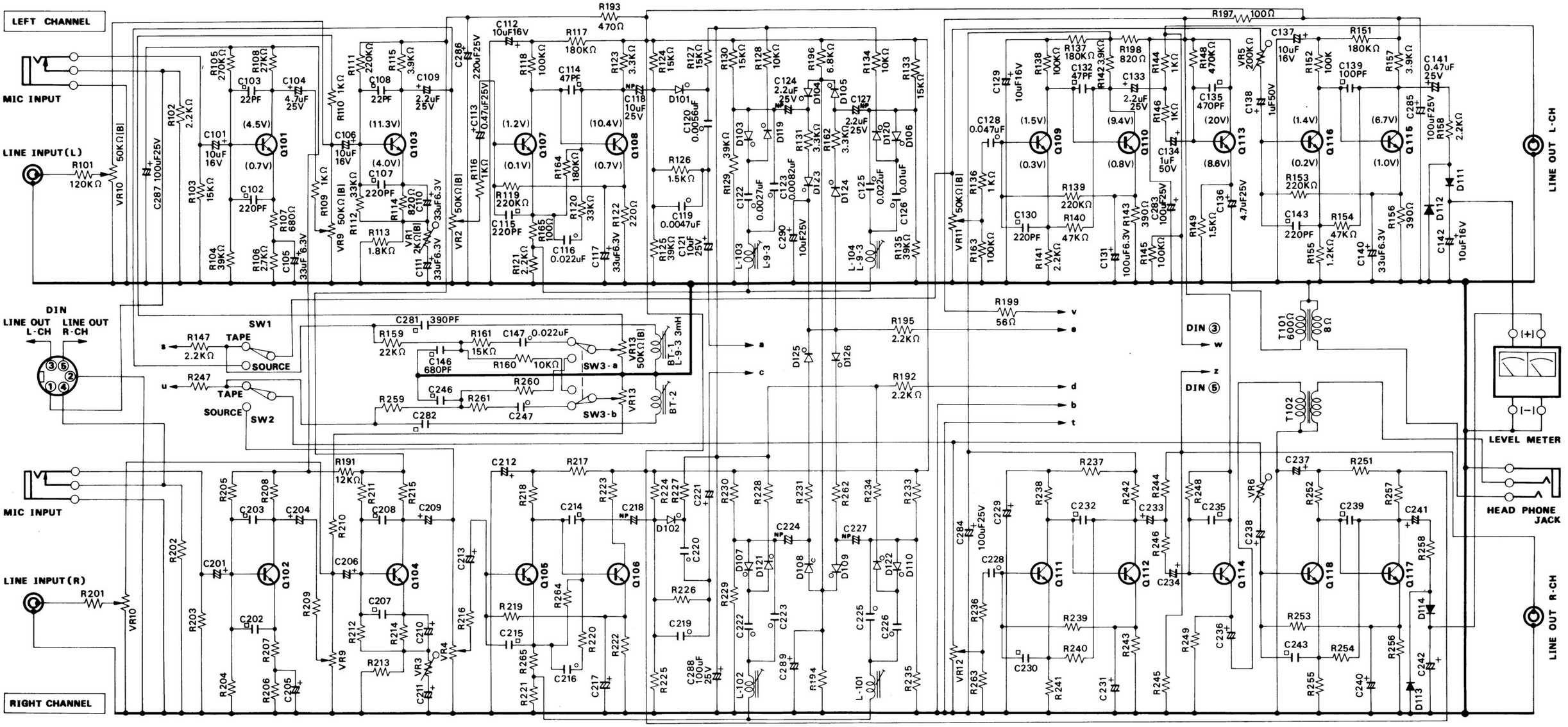


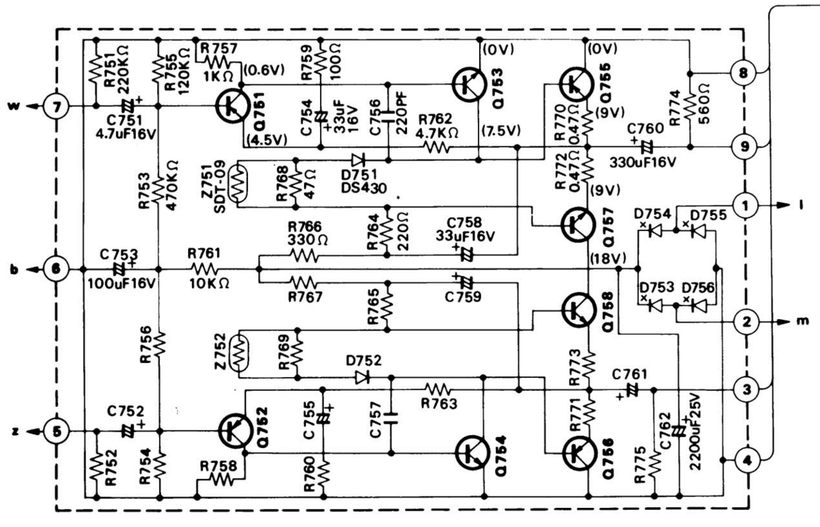
NOTE

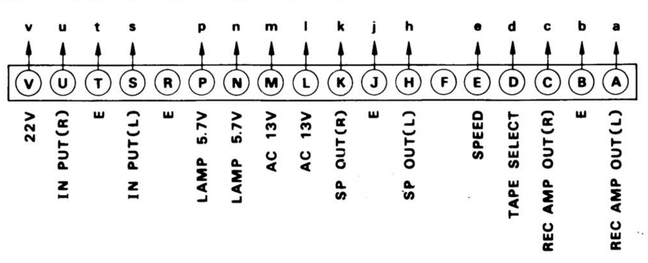
Voltages are measured with VTVM.
Unless otherwise stated, resistance wattages are 1/4watt.
Unless otherwise stated, capacitance working voltages are 25volt.

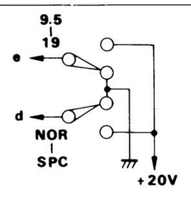
Design and specifications are subject to change without notice for purpose of improvement.

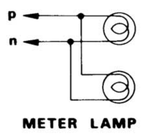
SCHEMATIC DIAGRAM, AMP CHASSIS

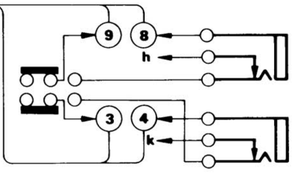












BOTTOM VIEW

2SC693 / 2SC536	2SA608	2SC1175	2SB511 / 2SD325
2SC693(F.G) :Q101~105, 107, Q109, 111	2SA608(E.F) :Q751, 752	2SC1175(E.F) :Q753, 754	2SB511(D.E) :Q755, 756
2SC536(G) :Q106, 108			2SD325(D.E) :Q757, 758
2SC536(F.G) :Q110, 112~118			
ECB	ECB	ECB	BCE

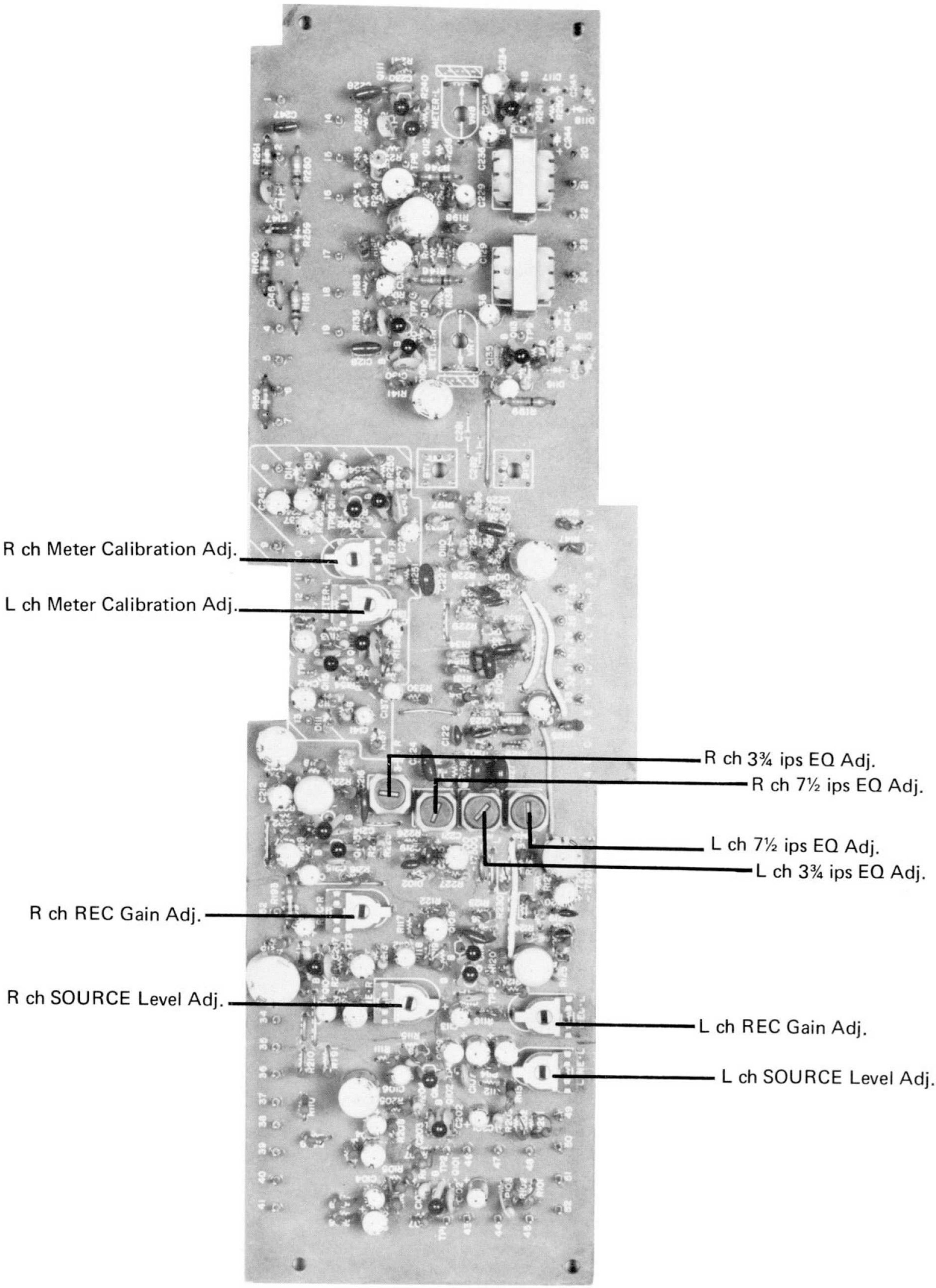
MYLAR		DS-430	:D751, 752
CERAMIC		1S2473	:D101~110, D119~126
ELECTROLYTIC		DS-16D, SIB-01-02	:D753~756
NONPOLAR		1S188	:D111~114

NOTE

Voltages are measured with VTVM.
Unless otherwise stated, resistance wattages are 1/4 watts.

Design and specifications are subject to change without notice for purpose of improvement.

AMPLIFIER PC BOARD (REC AMP, LINE OUT, PHONE, METER AMP)



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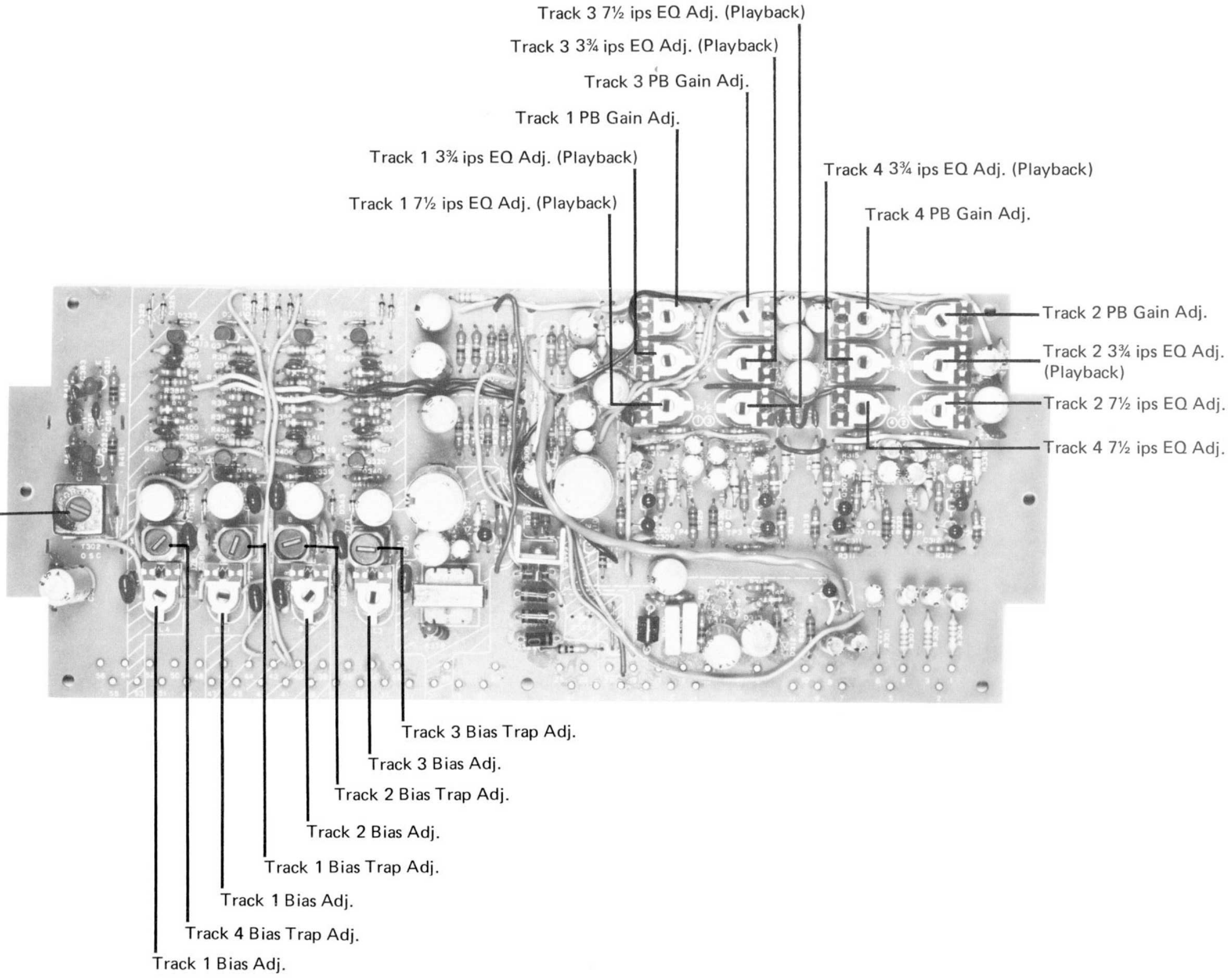
CONTROL PC BOARD (BIAS OSC, PLAYBACK PRE AMP, POWER SUPPLY AND CONTROL)



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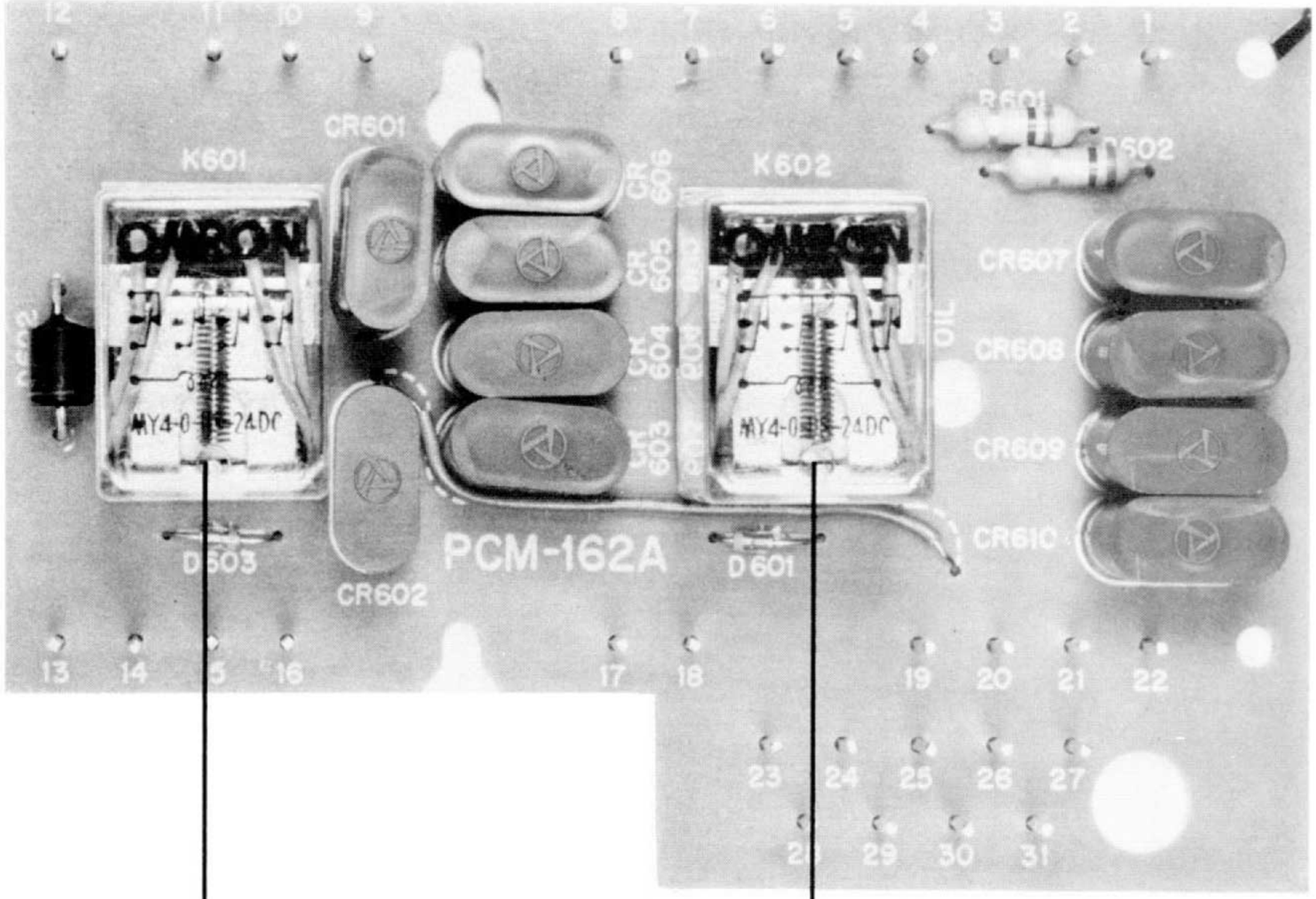
RELAY PC BOARD



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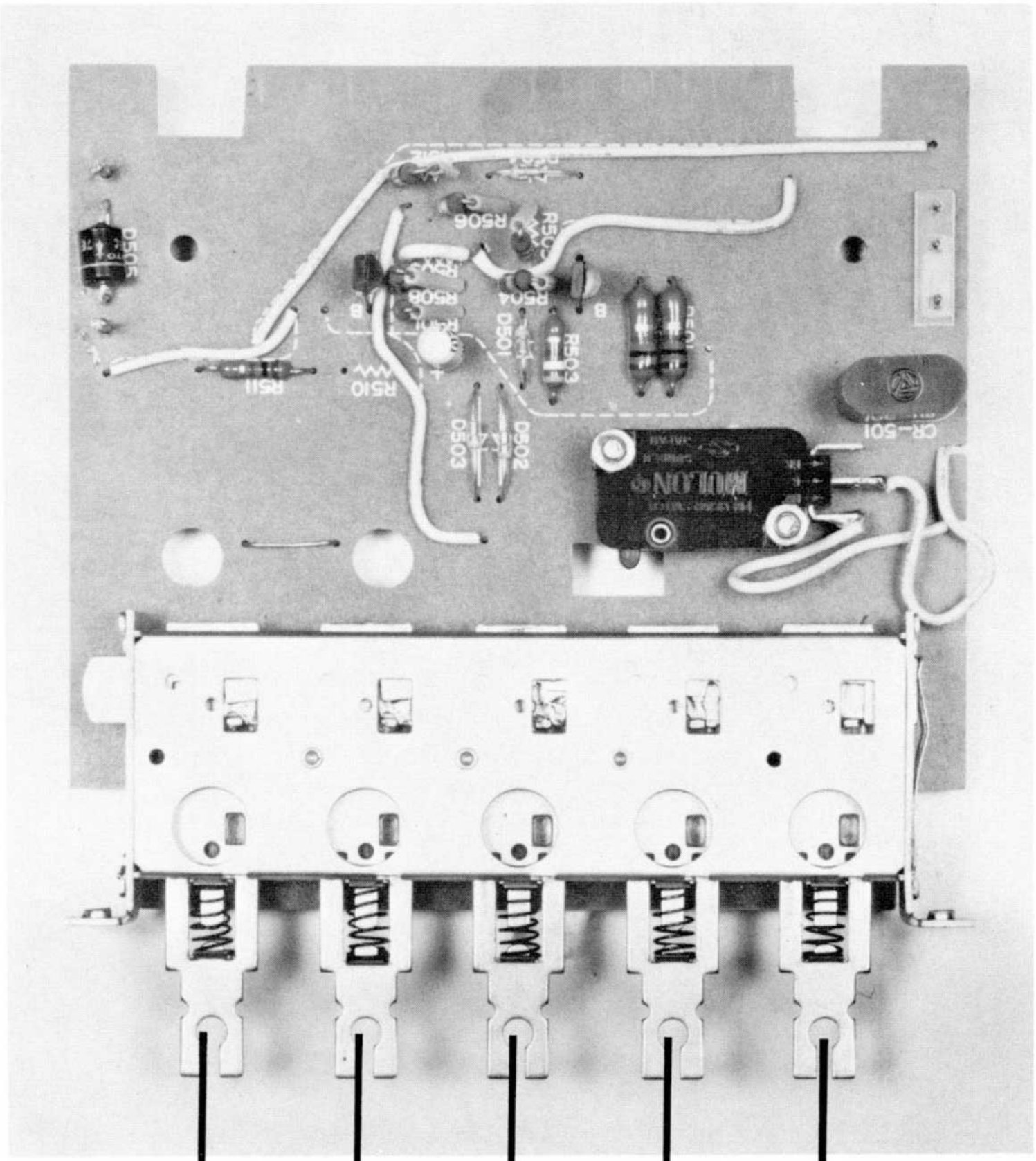
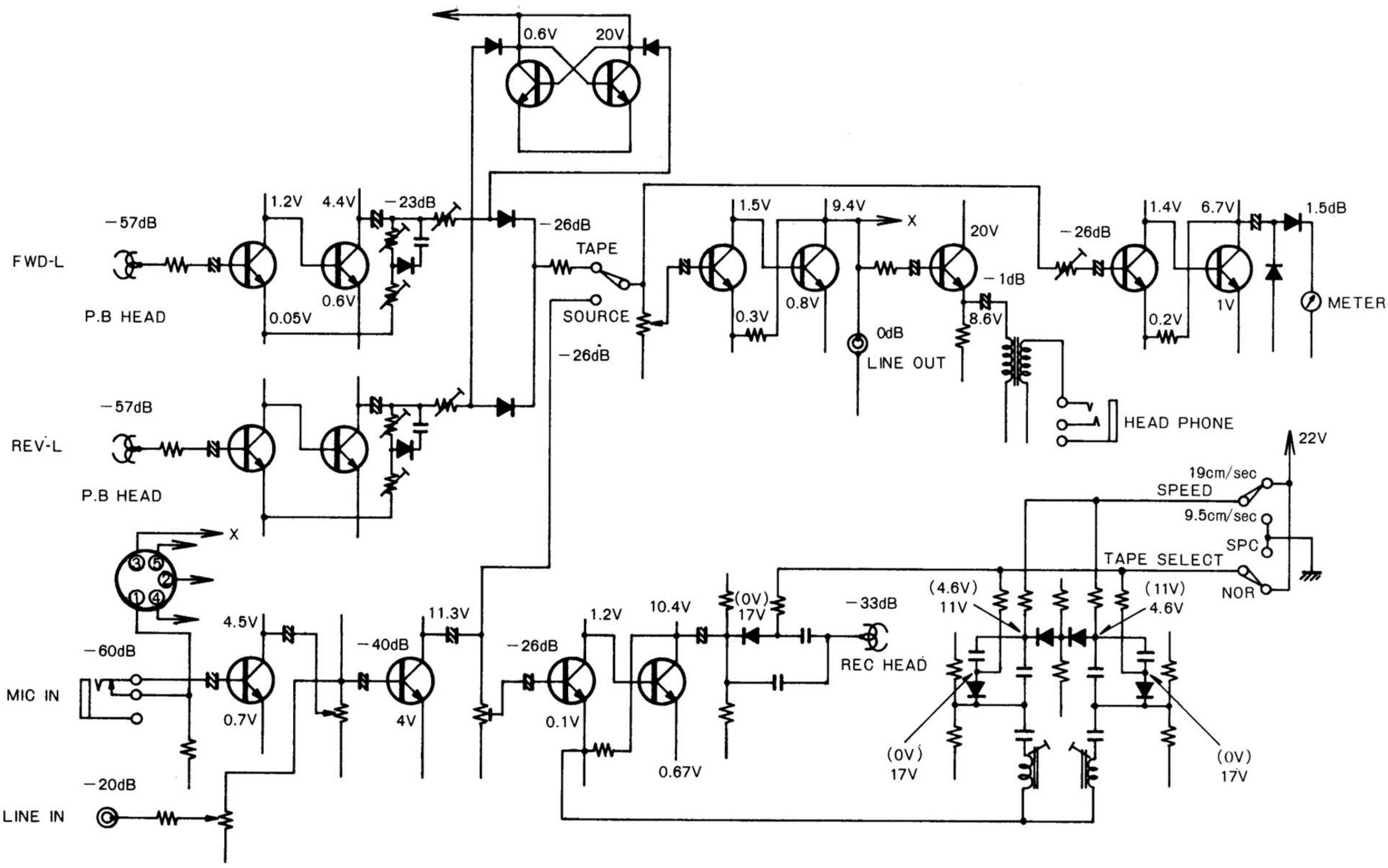
OPERATE SW BOARD



SIGNAL LEVEL DIAGRAM FOR 7500



1 Circuit DC voltages and Signal level obtains with high input impedance DC VTVM and AC VTVM.

2 ( ) Voltages mesured in 9.5cm(3¾ ips) and SPECIAL position.

3 Signal level reading were obtained under the following condition.

Signal; 1 KHz operating level

Input VR control; Max

Output VR control; Max

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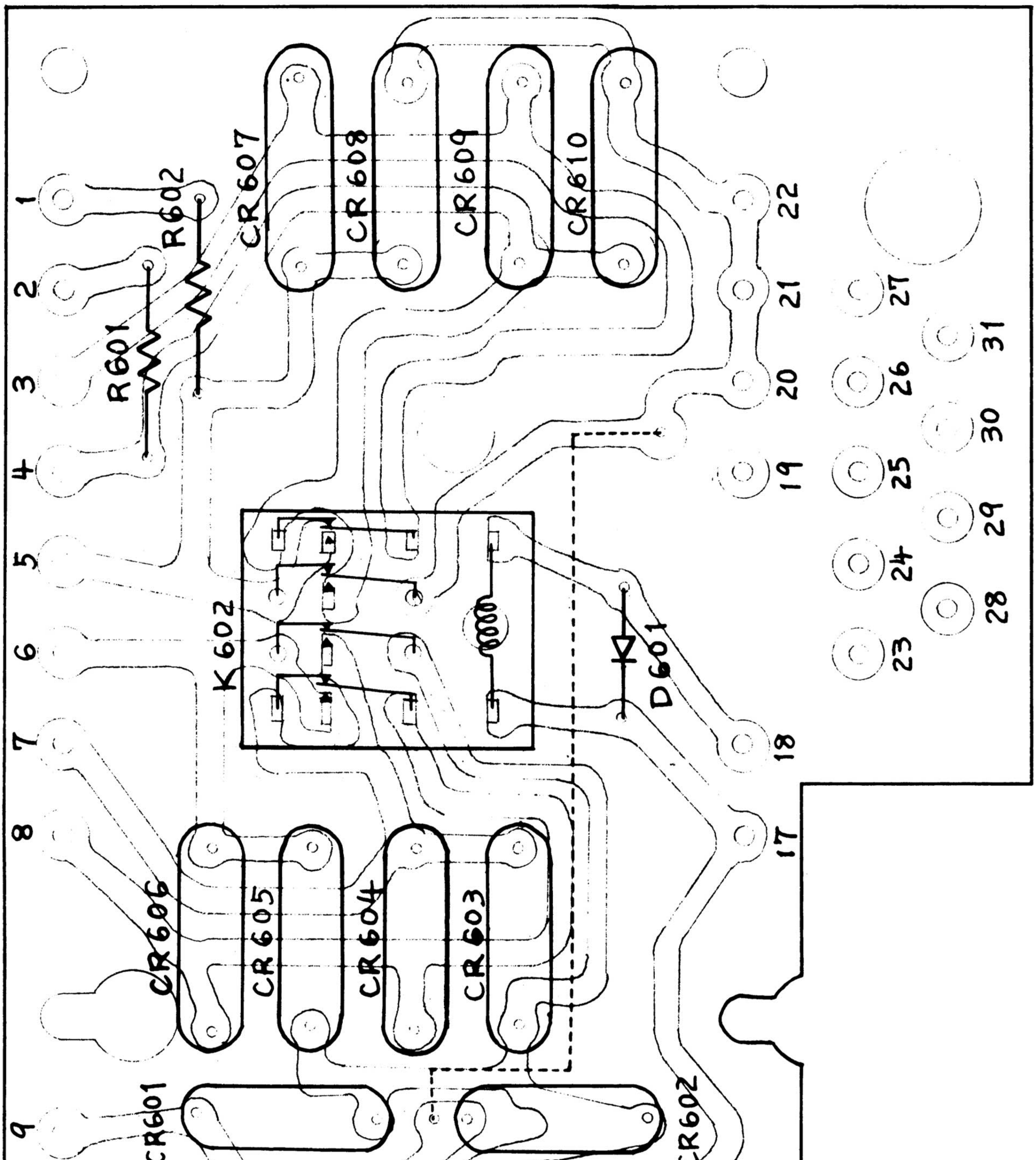
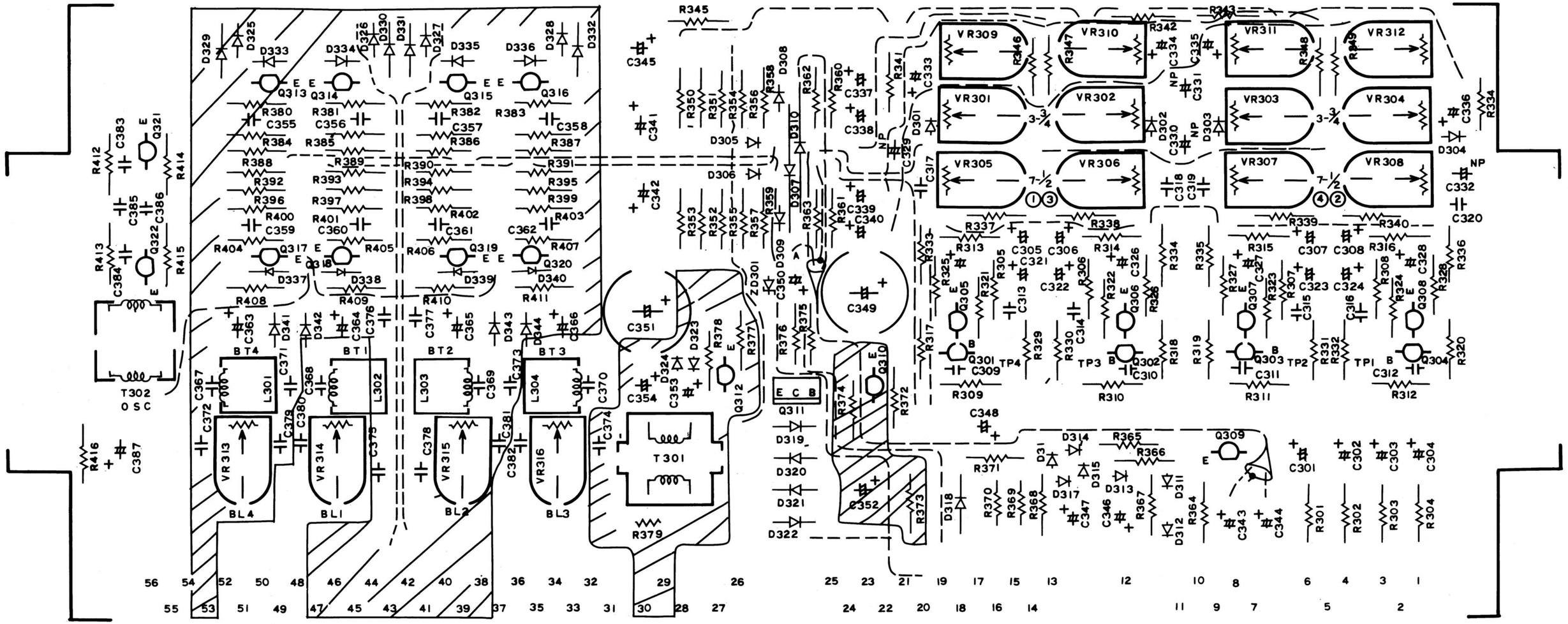
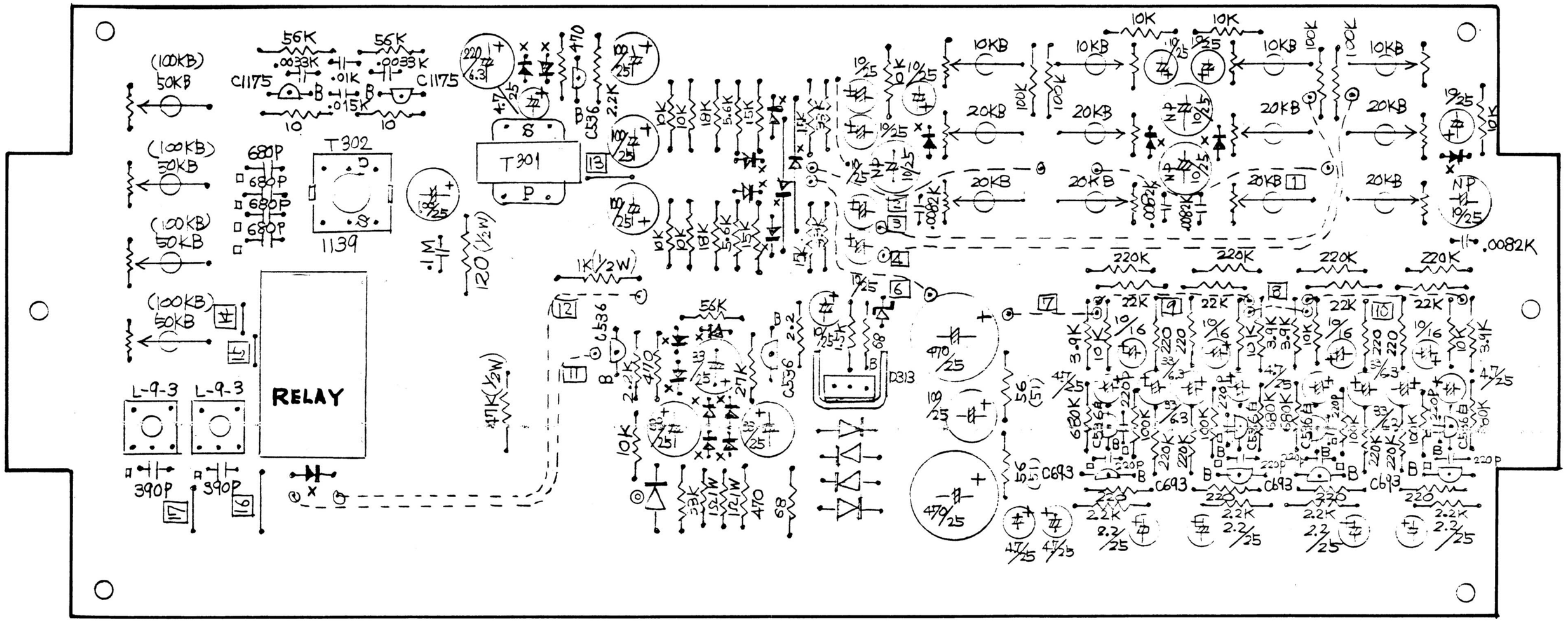
COMPONENT LAYOUT ON RELAY PC BOARD ASSY' FOR 7500



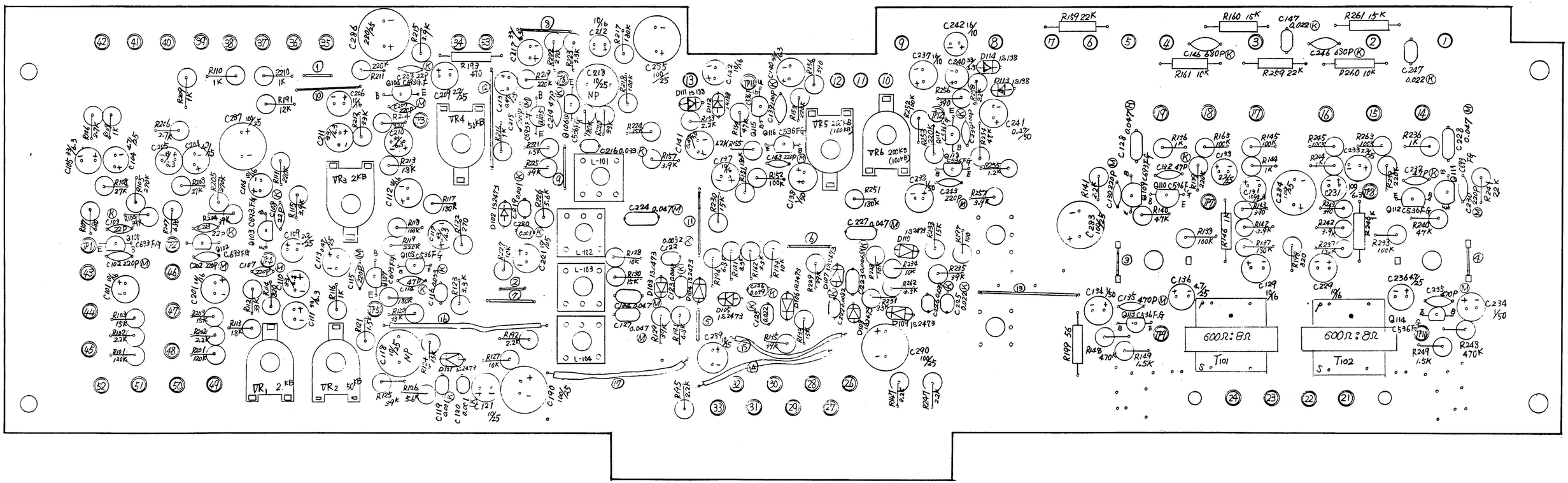
COMPONENT LAYOUT ON CONTROL PC BOARD ASSY' FOR 7500



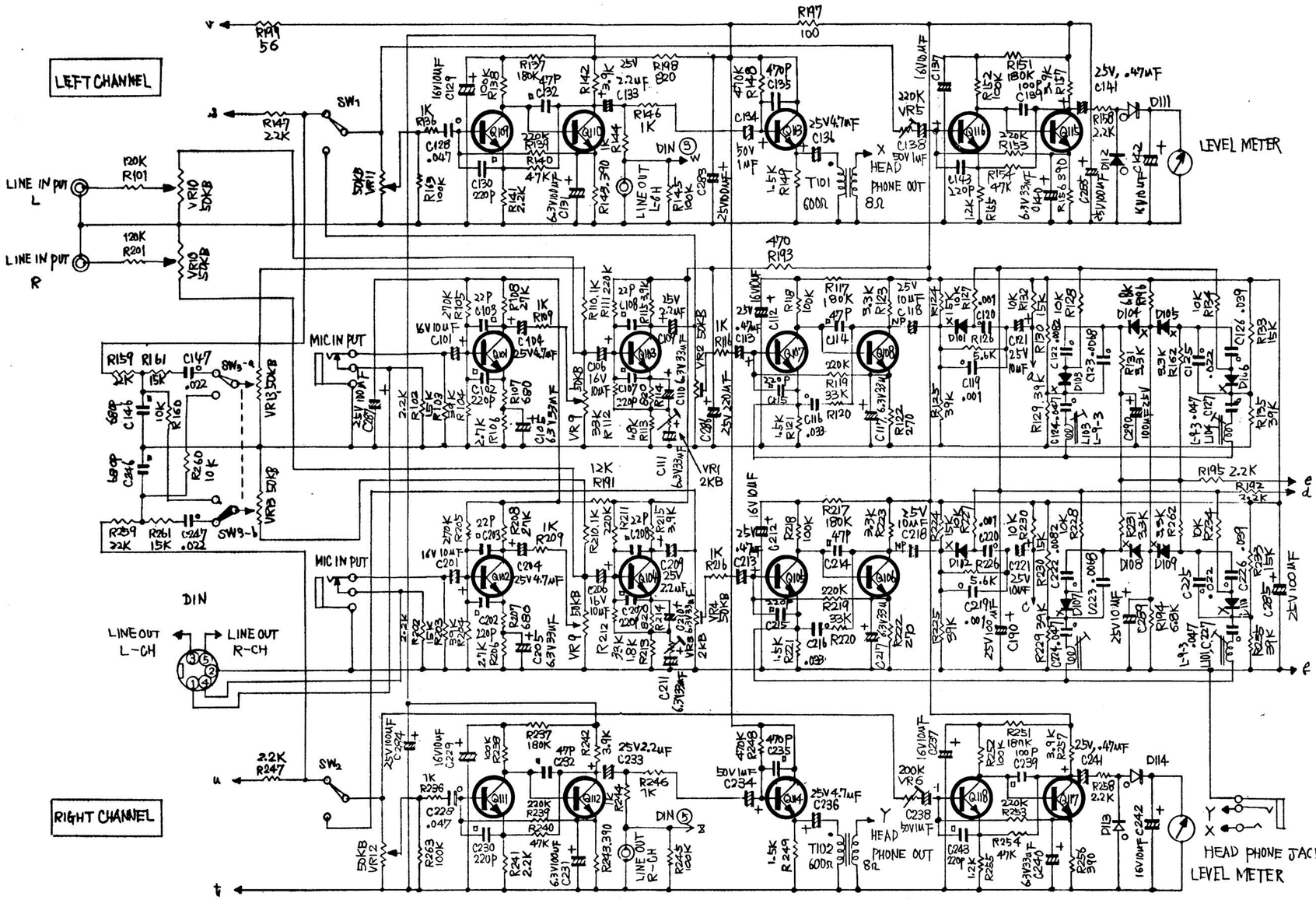
COMPONENT LAYOUT ON CONTROL PC BOARD ASSY' FOR 7500
SERIAL NO.1271 AND AFTER

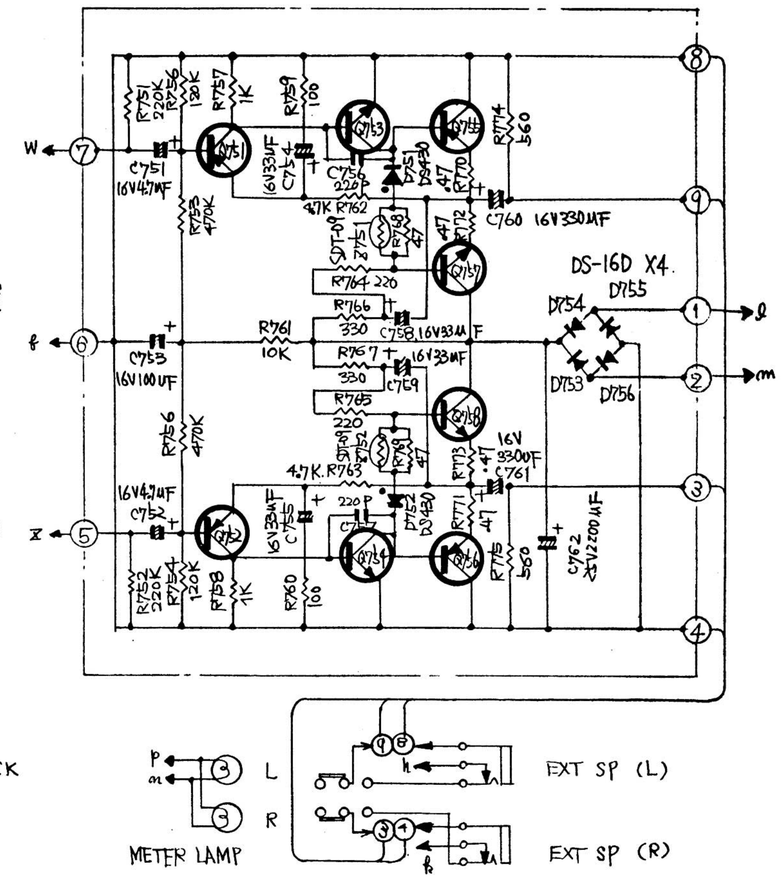


COMPONENT LAYOUT ON AMP PC BOARD ASSY' FOR 7500

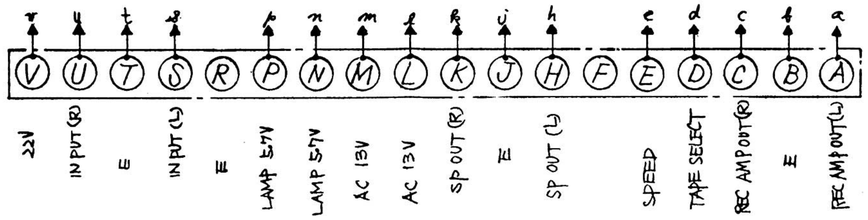


DOKORDER 7500 SCHEMATIC DIAGRAM
REC AMP CHASSIS



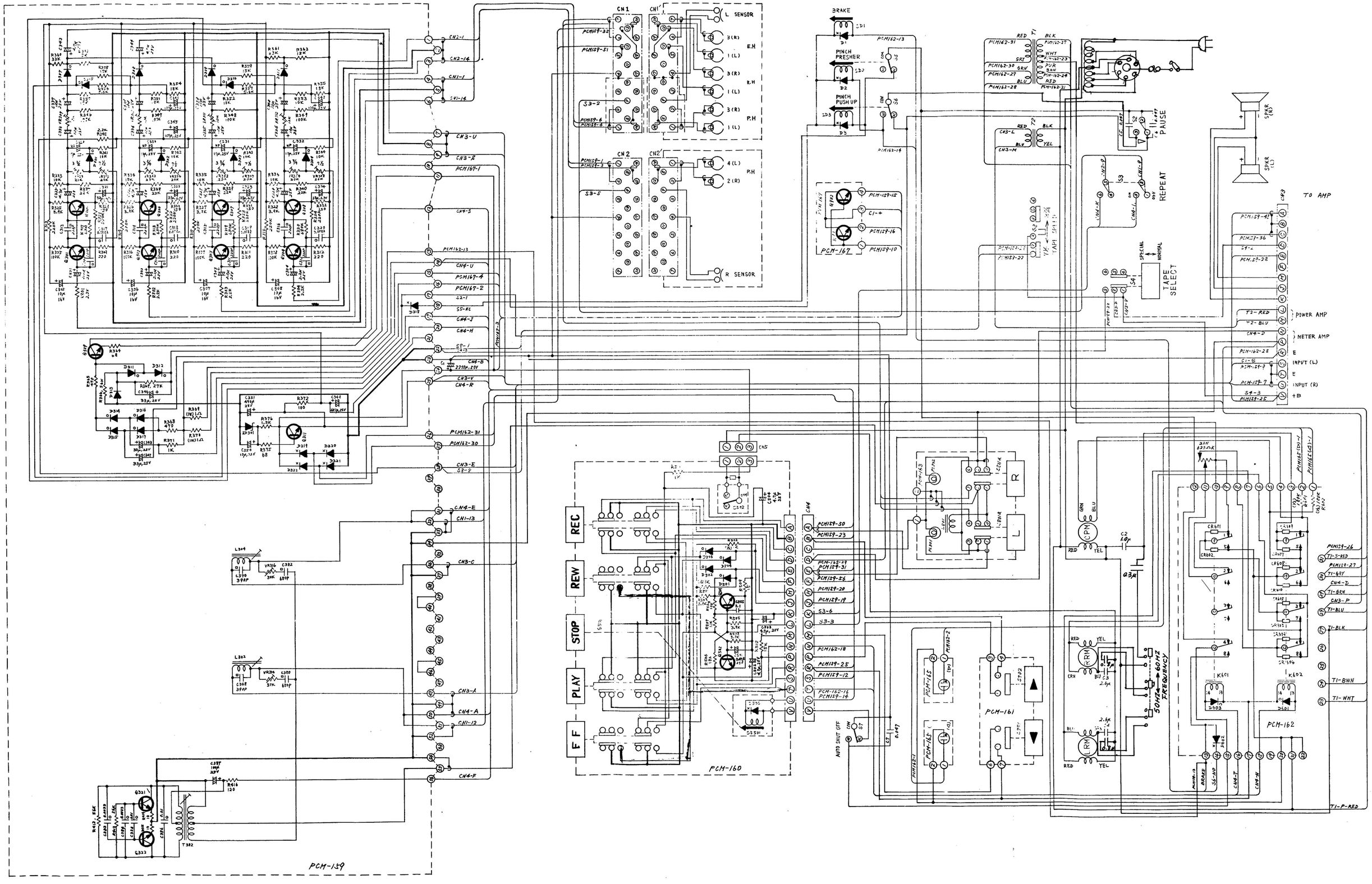


1S2473	Q101~105, 107, 109, 111	2SC693 F.G
1S188	Q106, 108, 110, 112~118	2SC536 F
DS-16D	Q751 752	2SA608 EF
STD-09	Q753 754	2SC1175 EF
MYLAR	Q755 756	2SB511 DE
CERAMIC	Q757 758	2SD325 DE
NONPOLAR		



DOKORDER 7500 SCHEMATIC DIAGRAM

DECK CHASSIS



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Printed in Japan

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Dokorder®, Inc.
DOKORDER HI-FI COMPONENTS

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S E R V I C E B U L L E T I N

No. 7200-1
March 1974

For Dokorder Model 7200 and 7500

Subject: How to eliminate click noise which is recorded onto tape when machine is stopped in play back position.

We have received some complaints from users that when the machine is set at play back mode and then stopped, very little click noise is recorded on the play back tape.

We found that the clicks arise in the ground pattern of operation P.C.B., because the power line ground pattern and the recording signal ground pattern are the same. If the recording signal ground and the power supply ground are seperated there are no clicks recorded on the tape.

To correct the trouble please follow the following conversion:

1. Take off backboard & front panel by loosening screws.

2. The operating button assembly will come out from the front. (complete removal is not necessary from the chassis. 2 or 3 inches will be enough)

3. For actual conversion, please follow the attached instructions.

(213) 397-9733 • SALES (213) 397-7713 • SERVICE (213) 397-9797

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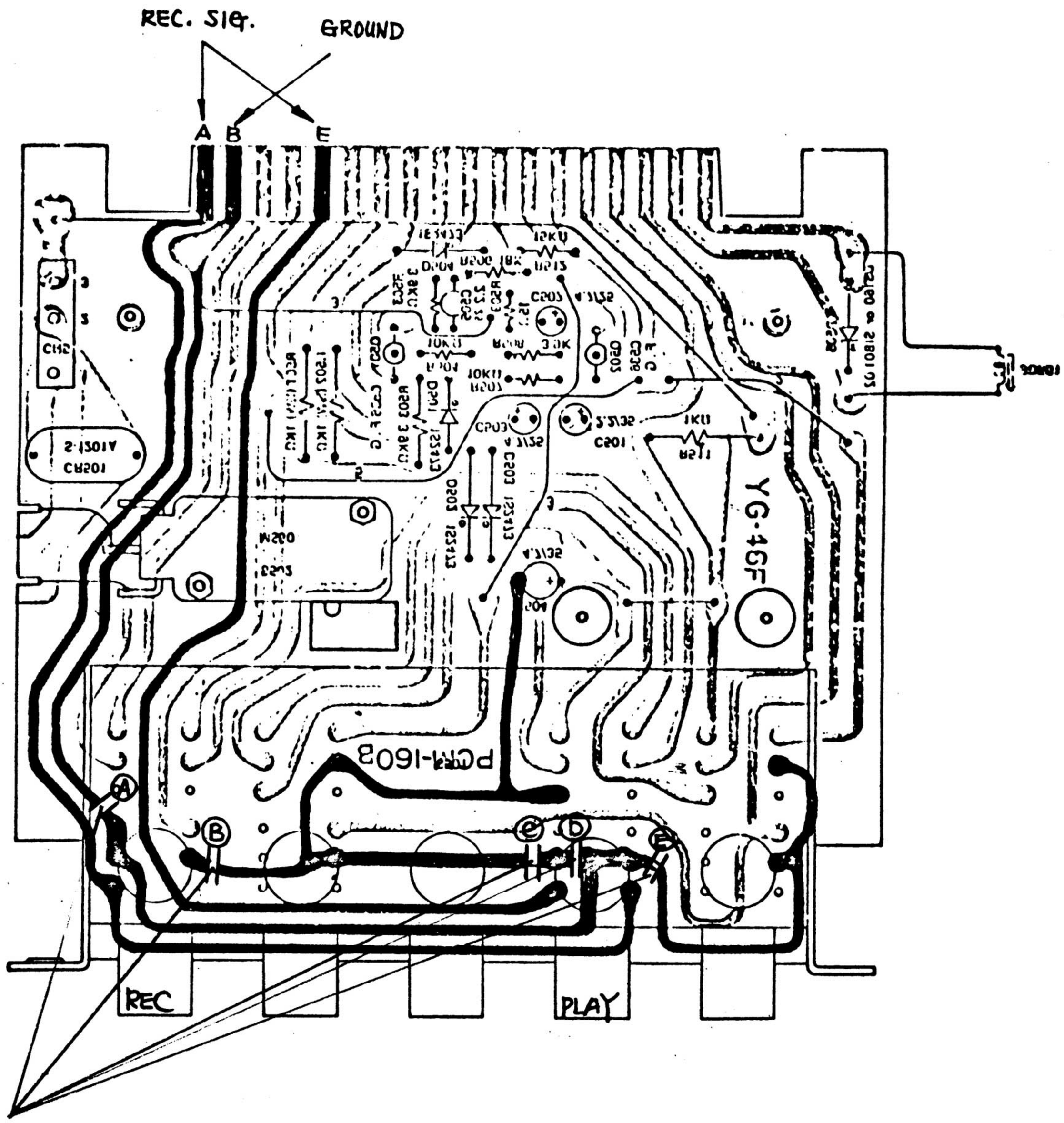

STEP 1. CUT(OPEN) THE GROUND PATTERN AT THE POINT A,B,C,D AND E.

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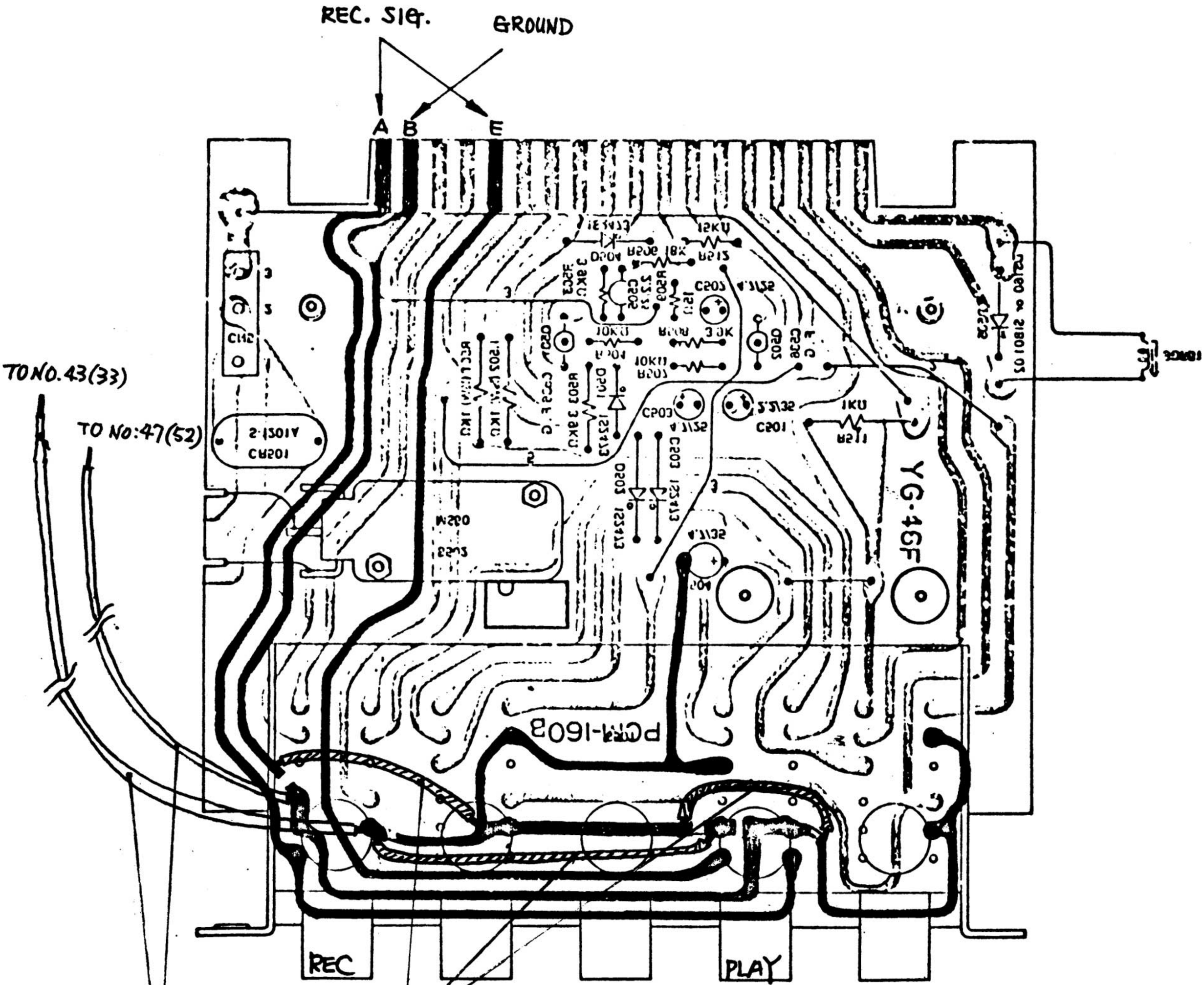

STEP 2. ADD JUMPER WIRES AS INDICATED.

STEP 3. ADD TOW WIRES (APPROX. 6"LONG) BETWEEN OPERATE BUTTON PCB (ABOVE) AND CONTROL PCB.
IF THE CONTROL PCB IS PCM-159 OR PCM-159A, WIRES MUST BE CONNECTED TO TERMINAL NO.33 & NO.52 AND IF THE PCB NUMBER IS PCM-172, TO NO.43 & NO.47.

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NUMBER: 917

DATE: 8-10-76

Dokorder, Inc.

HI-FI COMPONENTS

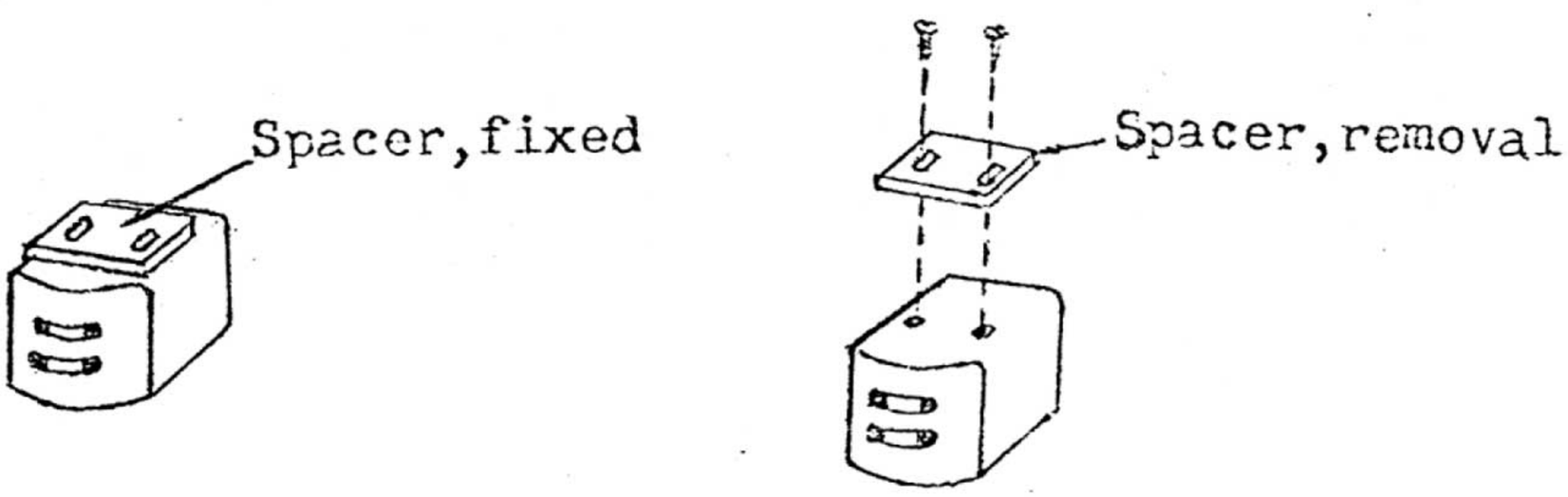
5430 ROSECRANS AVENUE • P.O. BOX 8 • LAWNDALE, CA 90260 • (213) 644-4421

SERVICE BULLETIN

Service Hints and Information on the Models 7200/7500

SUBJECT: Replacement Heads

There are two kinds of record and P.B. heads. When placing an order be sure to note whether there is a fixed spacer on the head or a removal spacer.



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NUMBER: 916

DATE: 8-10-76

Dokorder, Inc.

HI-FI COMPONENTS

5430 ROSECRANS AVENUE • P.O. BOX 8 • LAWNDALE, CA 90260 • (213) 644-4421

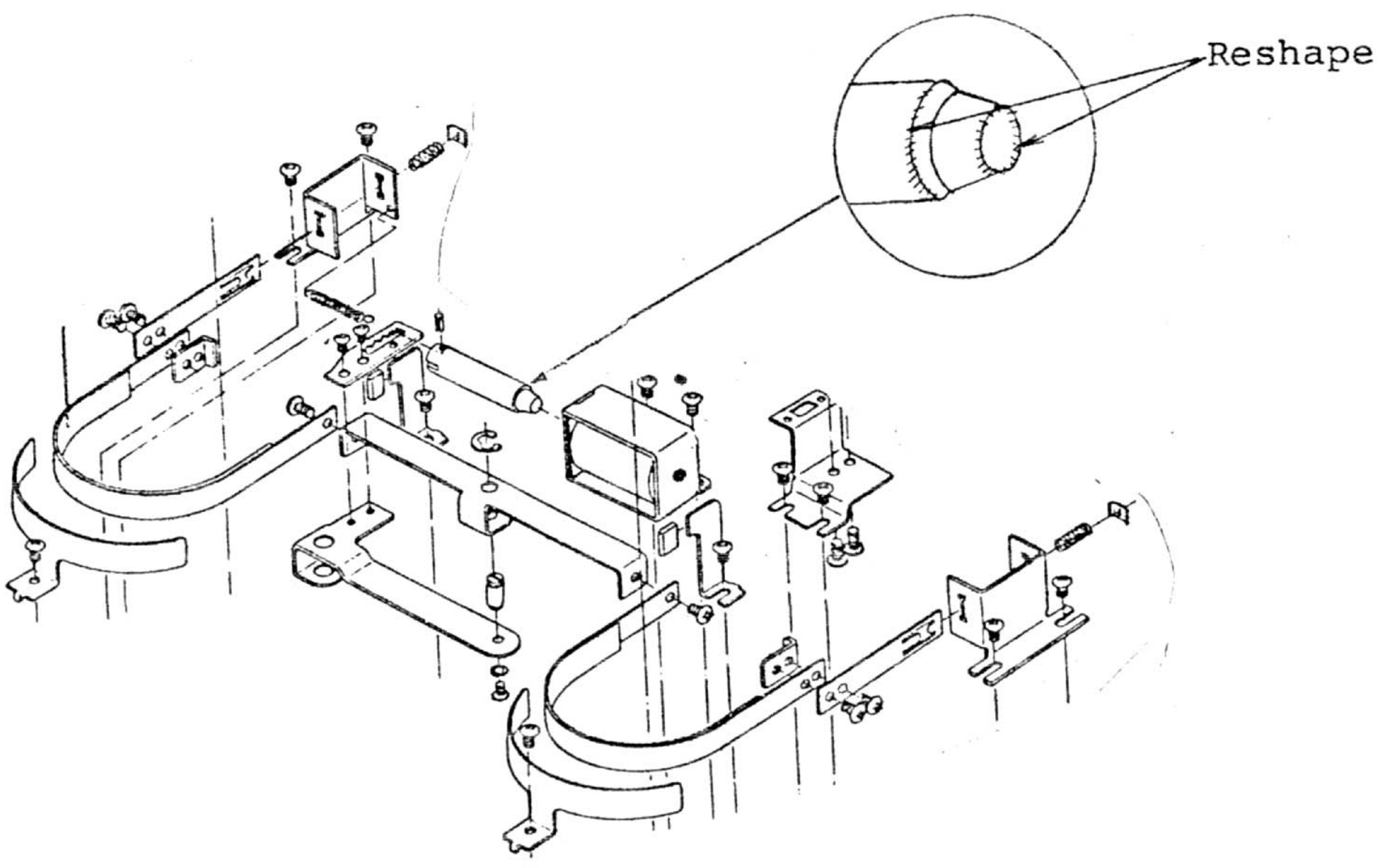
SERVICE BULLETIN

Service Hints and Information on the Models 7200/7500

SUBJECT: Brake Solenoid will not work properly.

The brake solenoid requires readjustment of its stroke.

Reshape the edge of the plunger by sand-paper, this will guarantee maximum movement of the plunger.



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NUMBER: 910 A

DATE: 8-10-76

Dokorder, Inc.

HI-FI COMPONENTS

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SERVICE BULLETIN

Service Information on the Model 7500

SUBJECT: Capstan Motor

Original capstan motor (ref. 6-2, p/n 41712010) for model 7500 is no longer available, substituted by HS951C.

When replacing, be sure to follow the instruction described below:

A. Colors of the motor leads

old	new (HS951C)
Red	Orange
Yellow	Red
White	Blue
Green	Yellow
Brown	Gray
Blue	Brown

B. Phase advancing capacitor

old	new
1.8 uF	2.5 - 2.8uF (60Hz)
2.5 uF	3.5 - 3.8uF (50Hz)

C. Operating Voltage

old	new
117volt	100V (117Volt)

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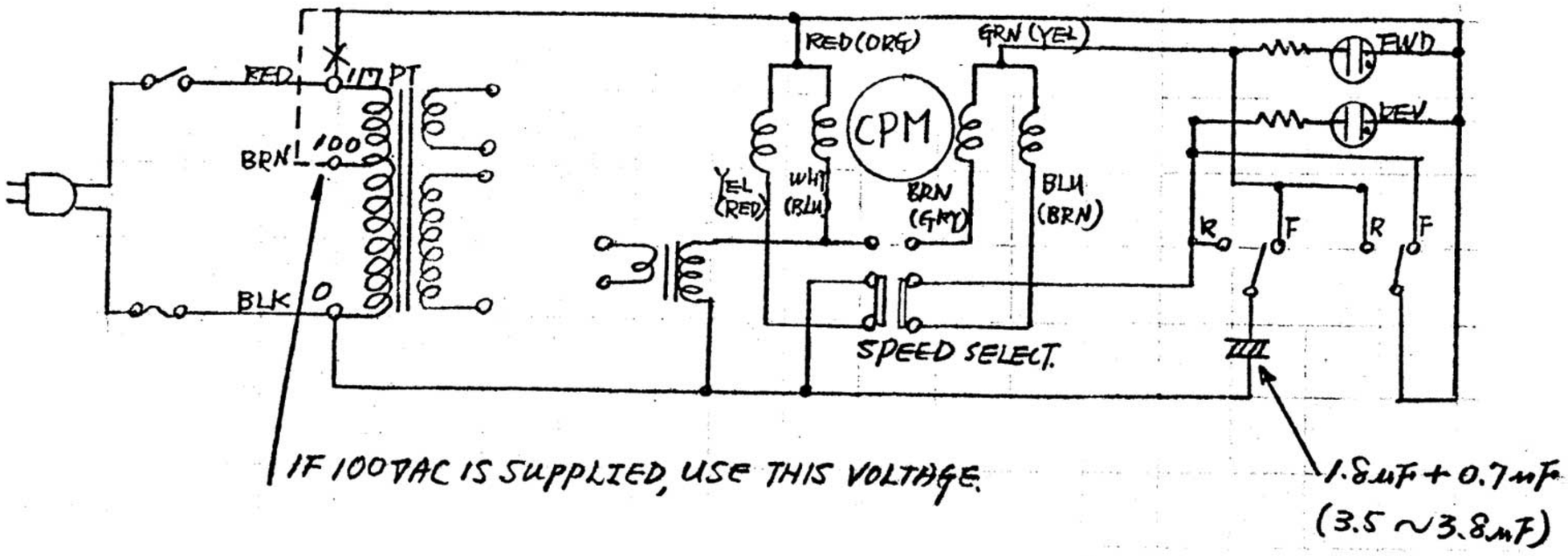
D. CIRCUIT



E. Mounting Instruction

1. If 100Vac is supplied between terminals #24 and #27 on PCM162, connect orange lead of the HS951C on #24.
2. For 60Hz operation, connect wire between 1.8uF and 0.7uF terminal of the phase advancing capacitor (ref. 6-10) so as to obtain enough capacitance for the motor.
3. For 50Hz operation, add 1 - 1.2uF 250WVAC capacitor across the terminals of the capacitor so as to obtain 3.5 - 3.8uF.

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NUMBER: 112

DATE: 3-26-75

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HI-FI COMPONENTS

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SERVICE BULLETIN

TO: ALL AUTHORIZED SERVICE STATIONS & SALES REPRESENTATIVES
FROM: JIMMY FUJIOKA, Service Manager

SUBJECT: BIASING OF DOKORDER MODELS

Please be informed that the following are the various tapes and model numbers Bias adjusted for:

Model #	Tape
8140	207&212/UD-35 Maxell See Owner's Manual Pg.8
1120	Normal 150/212 & UD35 Maxell See Owner's Manual Pg.10
7200, 7500,& 9100	Normal Scotch 150 &203 Scotch Special 7200 & 7500 See Owner's Manual Pg.7 9100 See Owner's Manual Pg. 8

The following are the type of tapes that the units were aligned and tested. The models are indicated under the tags as follows:

This unit has been aligned and tested at the factory with BASF Chromdioxid SM tape. Other equivalent tapes can also be used.

MK50

For Model #9200, Factory has aligned and tested with Scotch #212 (Normal Position) and Maxwell UD (Special Pos.) tape. For other type of tape, utilize channel bias control. See page 11 of operating instruction for detail procedure

Dokorder Inc

9200

This unit was aligned and tested at factory with 3M (Scotch) type 212 (Normal) and 207 (Special) tape – also other equivalent tapes can be used.

	Normal	Special
Scotch	212	207
Maxcell	LNA-LNE	UD
TDK	150H	SD
Ampex	—	LNP
BASF	LP	LP-LH
Sony	—	SLM

This unit was aligned and tested at factory with 3M (Scotch) type 212 (Normal) and 207 (Special) tape – also other equivalent tapes can be used.

	Normal	Special
Scotch	212	207
Maxcell	LNA-LNE	UD
TDK	150H	SD
Ampex		LNP
BASF	LP	LP-LH
Sony		SLM

7100 & 7140

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NUMBER: _____

DATE: _____

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SERVICE BULLETIN

PCM-172A — 7500

Symptoms—

Pinch roller intermittently drops off or does not engage and/or brakes do not release.

Cure —

Check or replace Q901, Q902, with TIP41 type transistors located on PCM-167A.

Symptoms —

Pinch roller engages only in forward or reverse direction.

Cure —

Check or replace D502, D503, located on PCM-160.

Symptoms —

Brakes do not release in play or rewind mode.

Cure —

Check or replace D602, located on PCM-162A.

NOTE — Whenever a transistor or diode is replaced in the control circuit, be sure to perform a quick voltage check across brake solenoid to assure proper operation. Voltage should read +25 volts when play button is depressed, and will gradually drop to +15 - +17 for the duration.

Symptoms —

No record, or intermittent record in the reverse mode.

Cure —

1) By sequence —

Check or replace Relay K301
Check or replace Diode D325
Check or replace Transistor Q310

2) Also be certain that all two conductor cables on the PC board are free from partial shorts to chassis, cold soldered, etc., around the associated circuits.

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