SERVICE MANUAL

FISHER

Professional

CA-4500

Stereo Pre-Amplifier

(EUROPE)

The first name in high fidelity

INTRODUCTION

A-CLASS PUSH-PULL EQUALIZER

Bare characteristic is prominently improved and, high stability and ability are obtained by adopting A-class push-pull circuit (two-step differential amplifier, current mirror turn-over system).

EQUALIZER

Two-way power (±75V) is supplied to the unit and 40 dB gain is obtained at 1 kHz. However, the unit maintains allowable input voltage of 500 mV (distortion factor: less than 0.1% at 1 kHz). RIAA correcting circuit uses NiCr vaporized resistance of ultra-accuracy (±5%) and a styrol condenser.
The deviation is within 30 - 15 kHz±0.1 dB.

TONE CONTROL AMPLIFIER

Since the output step (differential input and ±2 power system) uses SEPP circuit system, adequate output voltage can be obtained without distortion. Moreover, Signal to Noise Ratio is improved and dynamic range is widened.

TURN-OVER SWITCH

Two-step or separative (right and left) switching is possible. Discrete element and 11-contact rotary switch are jointly used for fine-adjustment of bass and treble. Therefore, 2 dB step adjustment will be correctly performed.

LOUDNESS CONTROL

Continuance system by discrete element is used for the unit. Natural controlling can be performed with 4 dB step.

AUDIO MUTING

The unit takes the system in which the muting circuit bypasses the tone amplifier with 20 dB gain.
When the filter circuit is switched off, the signal through the function switch is directly produced in the output terminals. Therefore, it is possible to directly drive the main amplifier with this muting switch as the gain in the equalizer circuit is approximately 40 dB.

A-CLASS MONITOR AMPLIFIER

Power amplifier equipped with push-pull OCL circuit of differential input A-class (output 1 W) is built in the unit. If an efficient speaker is connected with the unit, adequate volume will be obtained. It is also very convenient for checking the program source or monitoring the concert.

POWER SOURCE MUTING & CONSTANT-VOLTAGE POWER SOURCE

The unit is set in normal function mode as soon as the switch is turned on because of two-way power system, differential input and SEPP output circuit.
However, the unit is set not to produce signals in the output terminals for about 4 seconds.
An abnormal signal will not be produced in the power amplifier and excessive input will not be applied to the speakers at all.
The power source, in which all amplifying steps except monitor amplifier output step are perfectly stabilized, is supplied to the unit. Therefore, the unit functions effectively in a stabilized mode whenever any kinds of signals are produced.

Nominal Specifications For Information Only.

PRE-AMPLIFIER		CA-4500
MONITOR AMPLIFIER SECTION		
Continuous RMS sine wave power per channel within stated bandwidth at no more than stated distortion and with an 8 ohm load.		1 W + 1 W
Power band Width (at 0.1 % T.H.D.)		DC - 300 kHz
Frequency Response (at +0 dB/–1 dB)		DC - 1 MHz
Harmonic Distortion (at Rated Power Output)		0.05 %
Output Terminal/Matching Impedance	Monitor Speaker	8 ohms
Damping Factor (at 1 kHz)		20
Residual Ham and Noise (at 8 ohms)		0.2 mV
Slew Rate		15 V/μs
PRE-AMPLIFIER SECTION		
Frequency Response	PHONO (30 Hz - 15 kHz)	±0.1 dB
	TUNER/TAPE/AUX (10 Hz - 100 kHz)	+0 dB/–1 dB
Tone Controls (2 dB Step)	Bass Control (Turn-over 200 Hz)	±10 dB at 50 Hz
	(Turn-over 400 Hz)	±10 dB at 100 Hz
	Treble Control (Turn-over 2.5 kHz)	±10 dB at 10 kHz
	(Turn-over 5 kHz)	±10 dB at 20 kHz
Filter Controls	Low Filter	15 Hz (18 dB/oct.)
	Low Filter	30 Hz (18 dB/oct.)
	High Filter	7 kHz (12 dB/oct.)
	High Filter	16 kHz (12 dB/oct.)
	Audio Muting	–20 dB
Input Sensitivity/Impedance (1 kHz, at rated power)	PHONO 1	2 mV/33 - 47 - 100 kohms
	PHONO 2	2 mV/47 kohms
	TUNER	200 mV/47 kohms
	AUX 1, 2	200 mV/47 kohms
	TAPE 1, 2, 3	200 mV/47 kohms
	DIN	200 mV/47 kohms
Phono Overload Input		RMS 500mV max. (1 kHz) Peak to Peak 1400 mV max. (1 kHz)
Signal to Noise Ratio (at IHF, B network)	PHONO 1, 2	118 dB
	AUX 1, 2	120 dB
	TUNER	120 dB
	TAPE 1, 2, 3	120 dB
Output Level/Impedance	REC OUT 1, 2	100 mV/47k ohms
	REC OUT 3	200 mV/1 kohms
Total Harmonic Distortion PRE-AMP OUT (at rated power)		0.02 %
GENERAL SECTION		
Power Source		AC: 110/220 V, 50/60 Hz
Power Consumption		40 W
Dimensions (W x H x D)		470 x 186 x 400 mm
Weight		15 kg (approx.)

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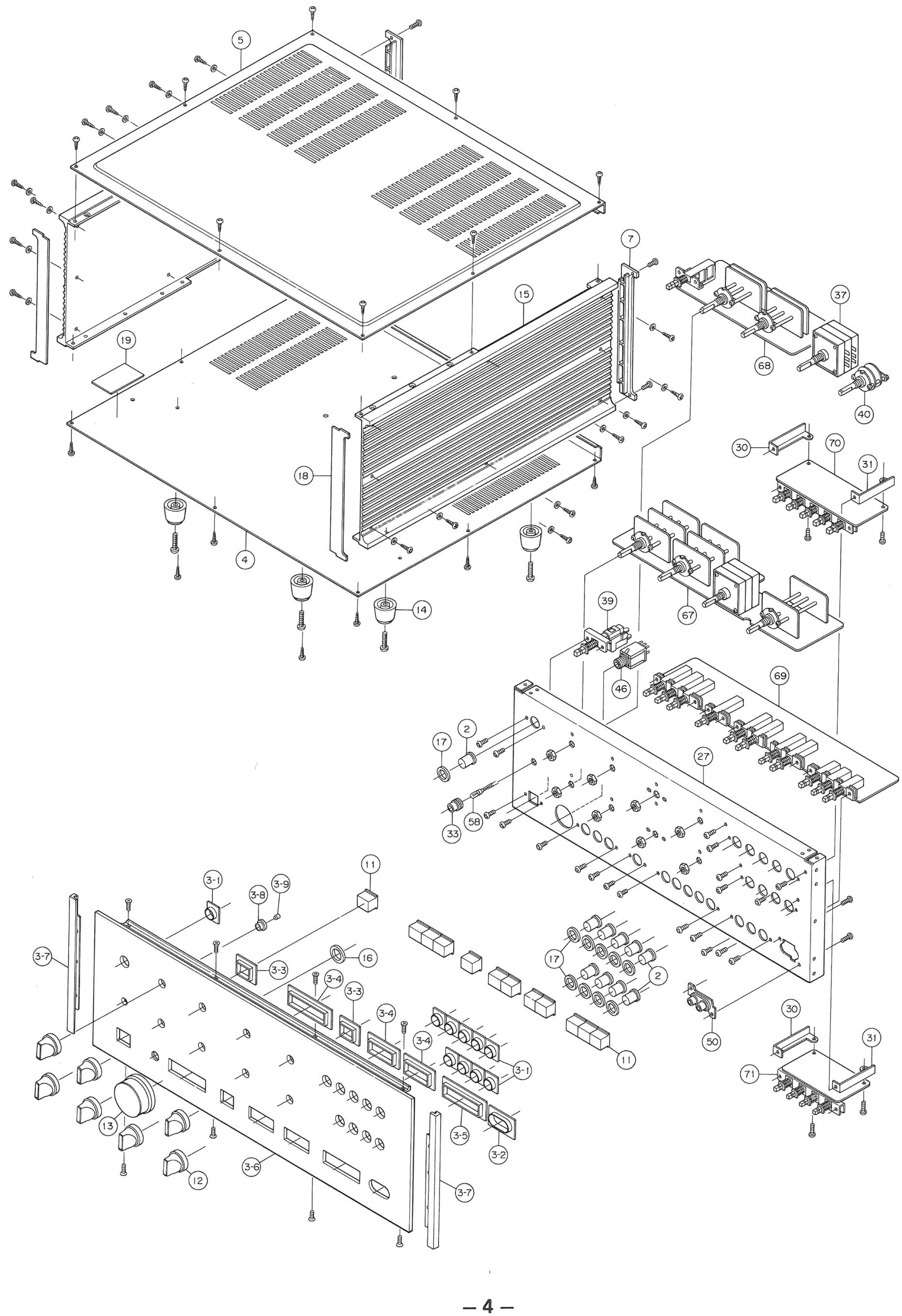
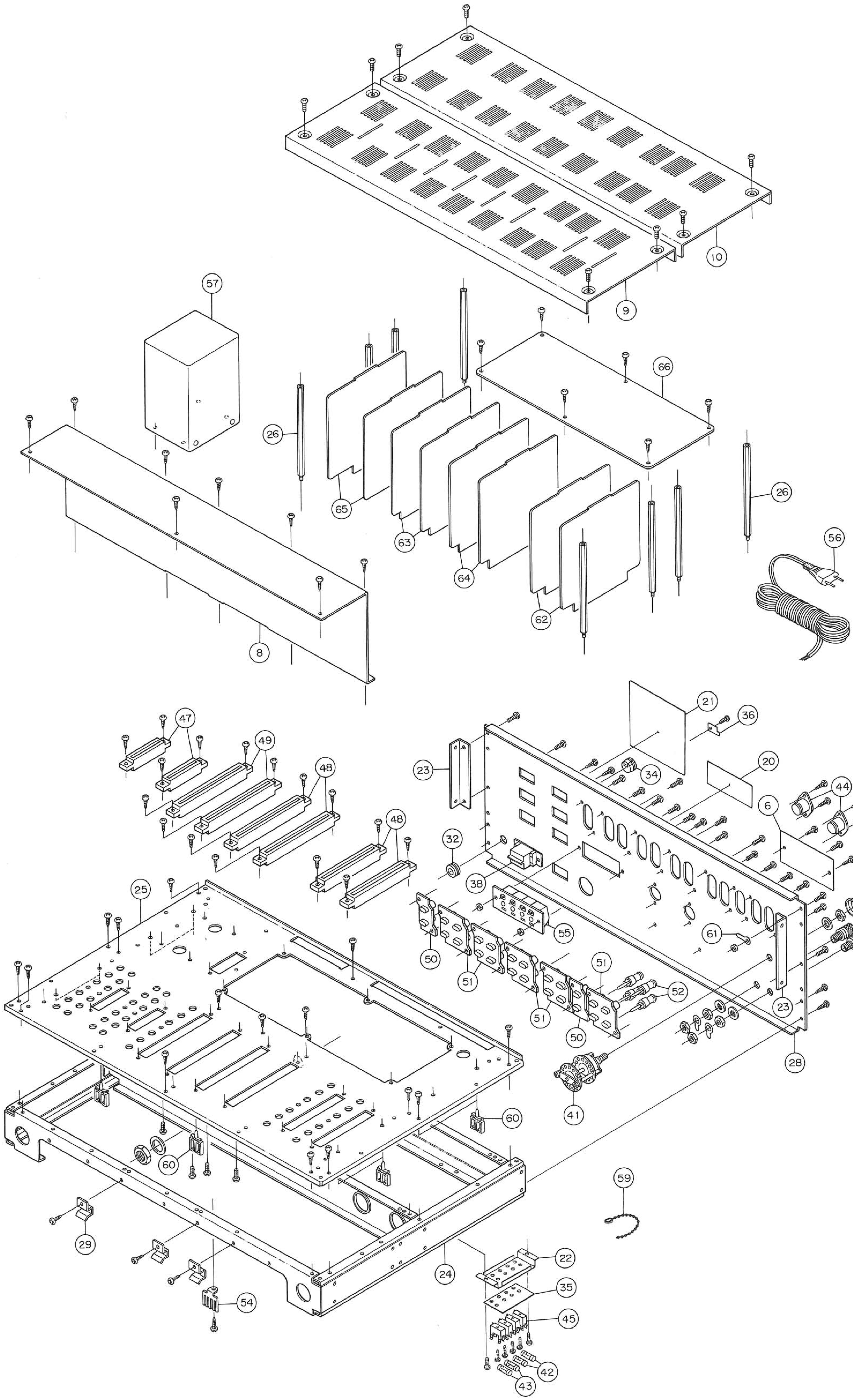
EXPLODED VIEW OF COVER AND CHASSIS FRONT MOUNTED ASSEMBLIES



EXPLODED VIEW OF CHASSIS AND REAR MOUNTED ASSEMBLIES



PARTS LIST

PACKING PARTS LIST

Ref. No.	Parts Number	Description
	131 6 1139 67101	Box Corrugate-EXP
	131 6 2119 01362	Bag Polyethylene-EXP (Set)
	131 6 3009 25560	Pad (Right, Left)

ACCESSORIES PARTS LIST

Ref. No.	Parts Number	Description
	131 0 4004 13200	Wire Shield Assy
	131 6 2119 00250	Bag Polyethylene-EXP
	131 6 4119 48701	Explanatory Booklet
	131 6 4159 23200	Notes
	131 6 4519 14700	Guarantee Certificate

APPEARANCE PARTS LIST

Ref. No.	Parts Number	Description
1	131 0 1001 19202	Knob Assy (Rear Impedance Select)
2	131 0 1001 30901	Knob Assy (Push Switches)
3	131 0 1016 21702	Panel Control Assy (Dress Panel)
3-1 *	131 2 1116 13300	Frame (Push Knob)
3-2 *	131 2 1116 13400	Frame (Output Terminal)
3-3 *	131 2 1116 13500	Frame (Power & Filter Switch Knob)
3-4 *	131 2 1116 13600	Frame (Turnover Knob)
3-5 *	131 2 1116 13700	Frame (Duplicate Switch Knob)
3-6 *	131 2 1203 31102	Panel Control
3-7 *	131 2 1311 39100	Sash (Panel Control Side)
3-8 *	131 2 1501 10400	Cover Signal (Power Ind.)
3-9 *	131 2 1504 10902	Plate Signal Lamp (Power Ind.)
*	131 2 4201 15200	Screw M4x5
4	131 2 1105 14900	Plate Bottom
5	131 2 1106 10703	Plate Top
6	131 2 1310 28714	Name Plate (Rear Panel)
7	131 2 1311 34500	Sash (Panel Rear Side)
8*	131 2 1410 12800	Cover (Panel Front)
9*	131 2 1410 12900	Cover (P.C. Board Section)
10*	131 2 1410 12901	Cover (Power Section)
11	131 2 1601 33800	Knob (Push Switch 12)
12	131 2 1601 49300	Knob (Tone Control, Balance, Loudness, Mode)
13	131 2 1601 49400	Knob (Volume)
14	131 2 1801 13100	Leg
15	131 2 3315 10201	Panel Side
16*	131 2 4208 19100	Spacer (Headphone Jack)
17*	131 2 5203 23200	Felt (Push Switch)
18*	131 2 5205 14500	Cushion (Side Panel, Front)
19*	131 2 6107 19000	Plate Sever (Plate Bottom)

CHASSIS PARTS LIST

Ref. No.	Parts Number	Description
20*	131 2 1110 17900	Plate Decorate
21*	131 2 1110 18000	Plate Decorate
22*	131 2 3101 37500	Metal Mount (Fuse Holder)
23*	131 2 3202 11800	Metal Reinforce
24*	131 2 3301 20701	Chassis
25*	131 2 3301 20801	Chassis
26*	131 2 3303 13000	Pole
27*	131 2 3305 18001	Panel Front
28*	131 2 3306 18605	Panel Rear
29*	131 2 3310 13100	Metal Support
30*	131 2 3614 16700	Metal Mount P.C.B. For Tape Monitor
31*	131 2 3614 16701	Metal Mount P.C.B. P.C.B. Support
32	131 2 6111 10300	Bushing (Line Cord Cramp)
33	131 2 6111 14000	Bushing (Power Ind.)
34	131 2 6111 14200	Bushing (Line Cord Cramp)
35*	131 2 7103 24100	Label Fuse (Fuse Holder)
36*	131 2 7104 00500	Plate Pad Switch

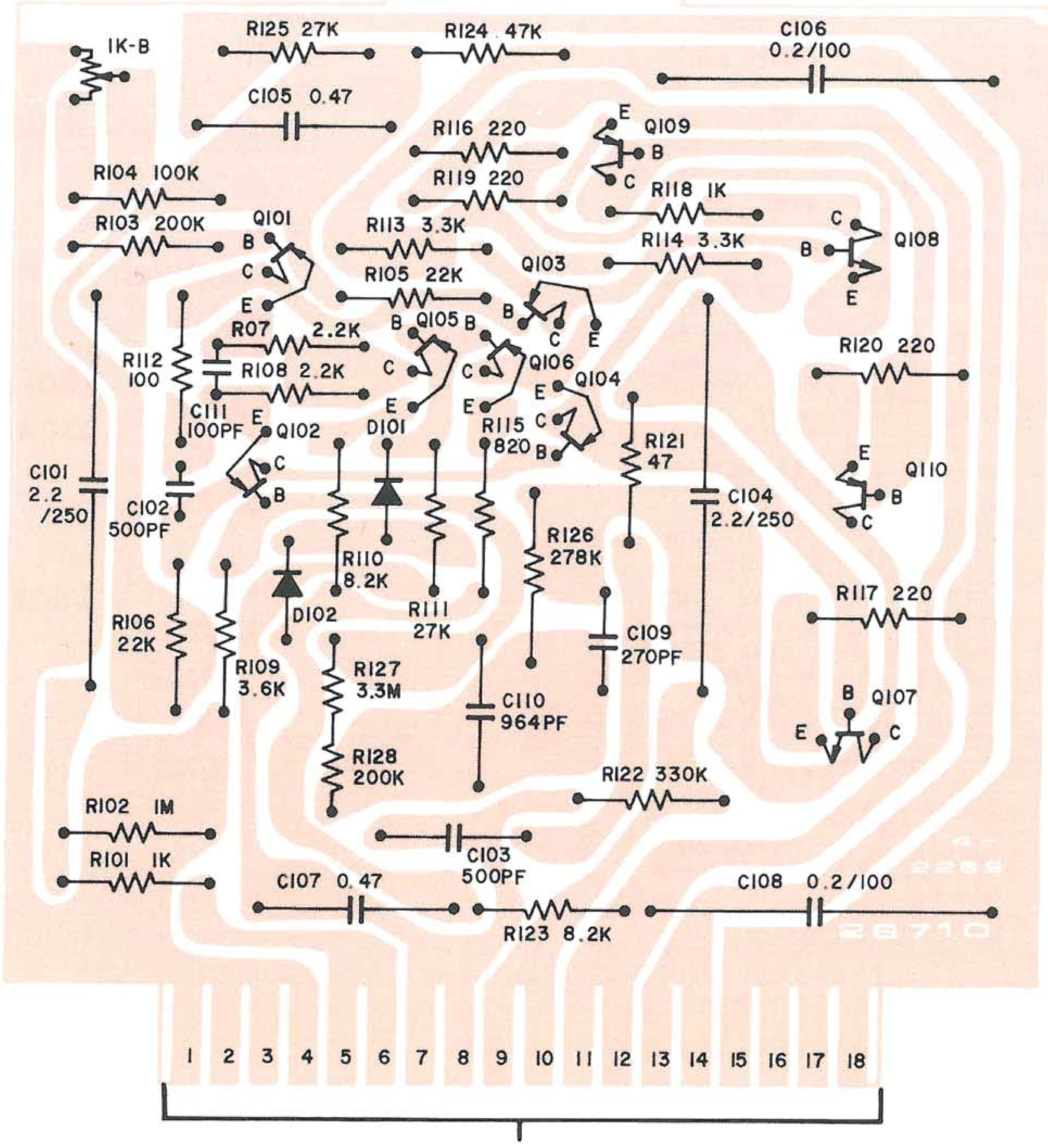
ELECTRICAL PARTS LIST

Ref. No.	Parts Number	Description
37	4 2229 24460	Volume 100k Detent
38	4 2319 21530	Switch Slide 6P (AC Select)
39	4 2319 33750	Power Switch (Push)
40	4 2319 33790	Mode Switch (Rotary)
41	4 2319 33800	Impedance Select (Rotary)
42	4 2349 20240	Fuse 1.6A
43	4 2349 21320	Fuse 0.25 AT
44	4 2359 20190	Socket DIN 5P
45	4 2359 21021	Fuse Holder
46	4 2359 21670	Headphone Jack
47	4 2359 22090	P.C.B. Connector 10P
48	4 2359 22110	P.C.B. Connector 18P
49	4 2359 22120	P.C.B. Connector 22P
50	4 2359 22130	RCA Pin Jack 2P (Accessory Jack)
51	4 2359 22140	RCA Pin Jack 4P (Accessory Jack)
52*	4 2369 20561	Plug 1P (Short Plug)
53*	4 2379 21060	GND Terminal
54*	4 2379 21260	Grand Terminal Lug 5P
55	4 2379 21400	Terminal SP 4P (Speaker Terminal)
56	4 2439 20590	Line Cord
57	4 2519 23282	Power Transformer
58	4 6129 20470	Pilot Lamp 12V
59*	131 2 3608 11300	Cramp Wire
60*	131 2 3608 11701	Cramp Wire
61*	201 3 7000 00300	Lug
62*	131 0 4001 59100	EQ AMP P.C.B. Assy
63*	131 0 4001 59600	Tone AMP P.C.B. Assy
64*	131 0 4001 59300	Filter AMP P.C.B. Assy
65*	131 0 4001 59200	Monitor AMP P.C.B. Assy
66*	131 0 4001 59701	Power Supply P.C.B. Assy
67*	131 0 4001 59400	Tone Bass P.C.B. Assy
68*	131 0 4001 59500	Tone Treble P.C.B. Assy
69*	131 0 4001 60000	Turnover Switch P.C.B. Assy
70*	131 0 4001 59800	Function P.C.B. Assy
71*	131 0 4001 59900	Tape Monitor P.C.B. Assy
C001	C2EHRM103A	Metalized Paper 0.01 μF +80,–20%
C002,003	C1HYDZ473A	Ceramic 0.047 μF 50V +80,–20%
R001,002	R2HDPJ332A	Carbon 3.3k 1/2W ±5%
R003,004 005,006	R2HDPJ623A	Carbon 62k 1/2W ±5%
R007,008	R2HDPJ393A	Carbon 39k 1/2W ±5%
R009,010	R2HDPJ204A	Carbon 200k 1/2W ±5%
R011,012 013,014	R2HDPJ334A	Carbon 330k 1/2W ±5%
R015,016 017,018	R2HDPJ104A	Carbon 100k 1/2W ±5%

NOTE: * Asterisk indicates not a service part.

EQ AMP P.C.BOARD

(BOTTOM VIEW)

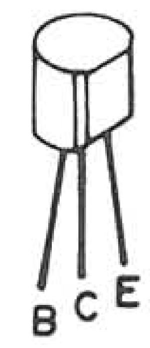


CONNECTOR(A)

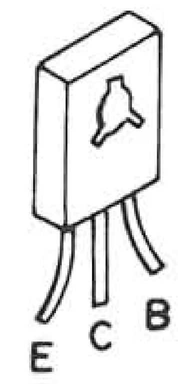
SEMICONDUCTORS

Q101 ~ 104	2SA726G
Q105 , 106	2SA628F
Q107 , 108	2SC1904V
Q109 , 110	2SA899V
D101 , 102	DS-442

TRANSISTOR FRONT VIEW



Q101 ~ 106



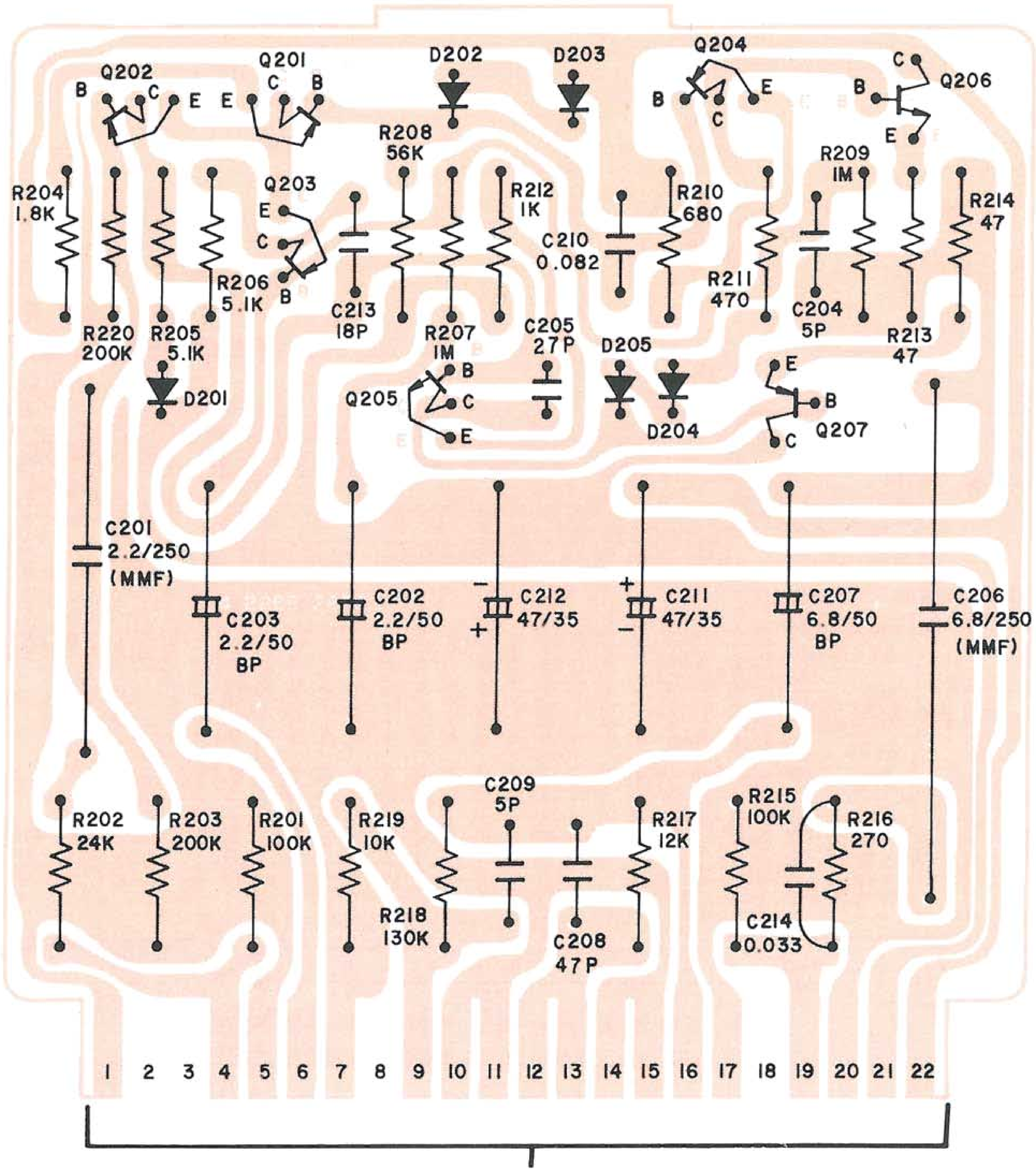
Q107 ~ 110

DIODE FRONT VIEW

D101 , 102

TONE AMP P.C.BOARD

(BOTTOM VIEW)

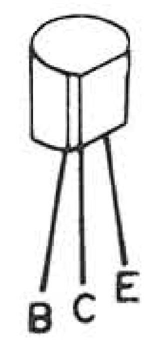


CONNECTOR(B)

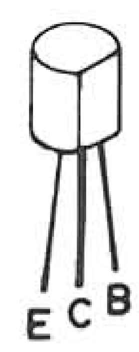
SEMICONDUCTORS

Q201 ~ 204	2SA847G
Q205	2SC1313SG
Q206	2SD438E
Q207	2SB560E

TRANSISTOR FRONT VIEW



Q201~205

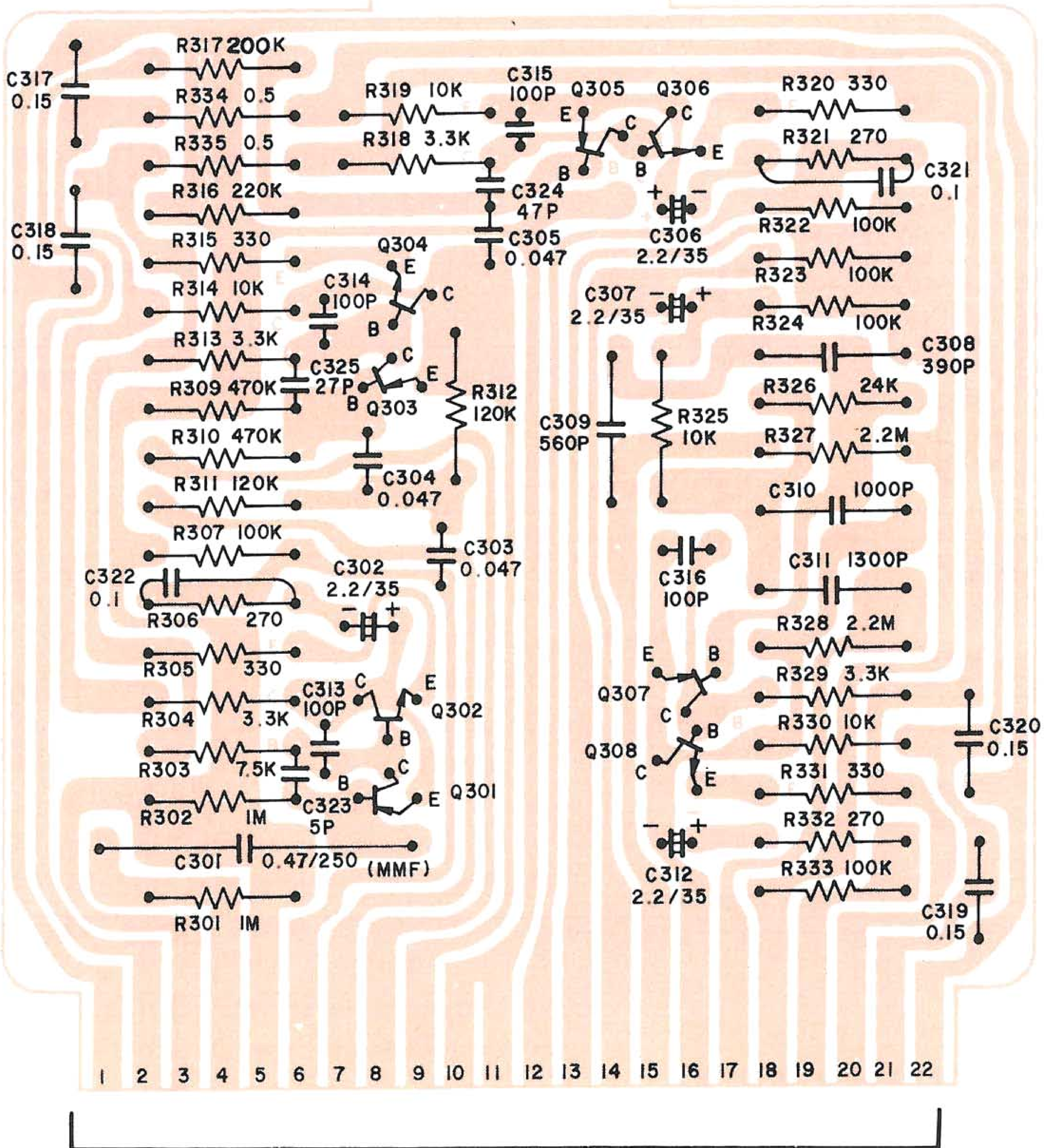


Q206,207

DIODE FRONT VIEW

D201~205
DS 430

FILTER AMP P.C.BOARD
(BOTTOM VIEW)

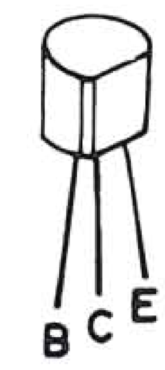


CONNECTOR(C)

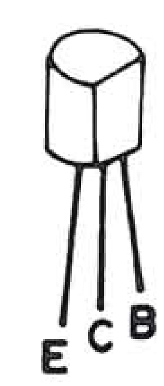
SEMICONDUCTORS

Q301, 303	2SA847G
Q302	2SD438E
Q304, 306, 308	2SC1313SG
Q305, 307	2SA847G

TRANSISTOR FRONT VIEW

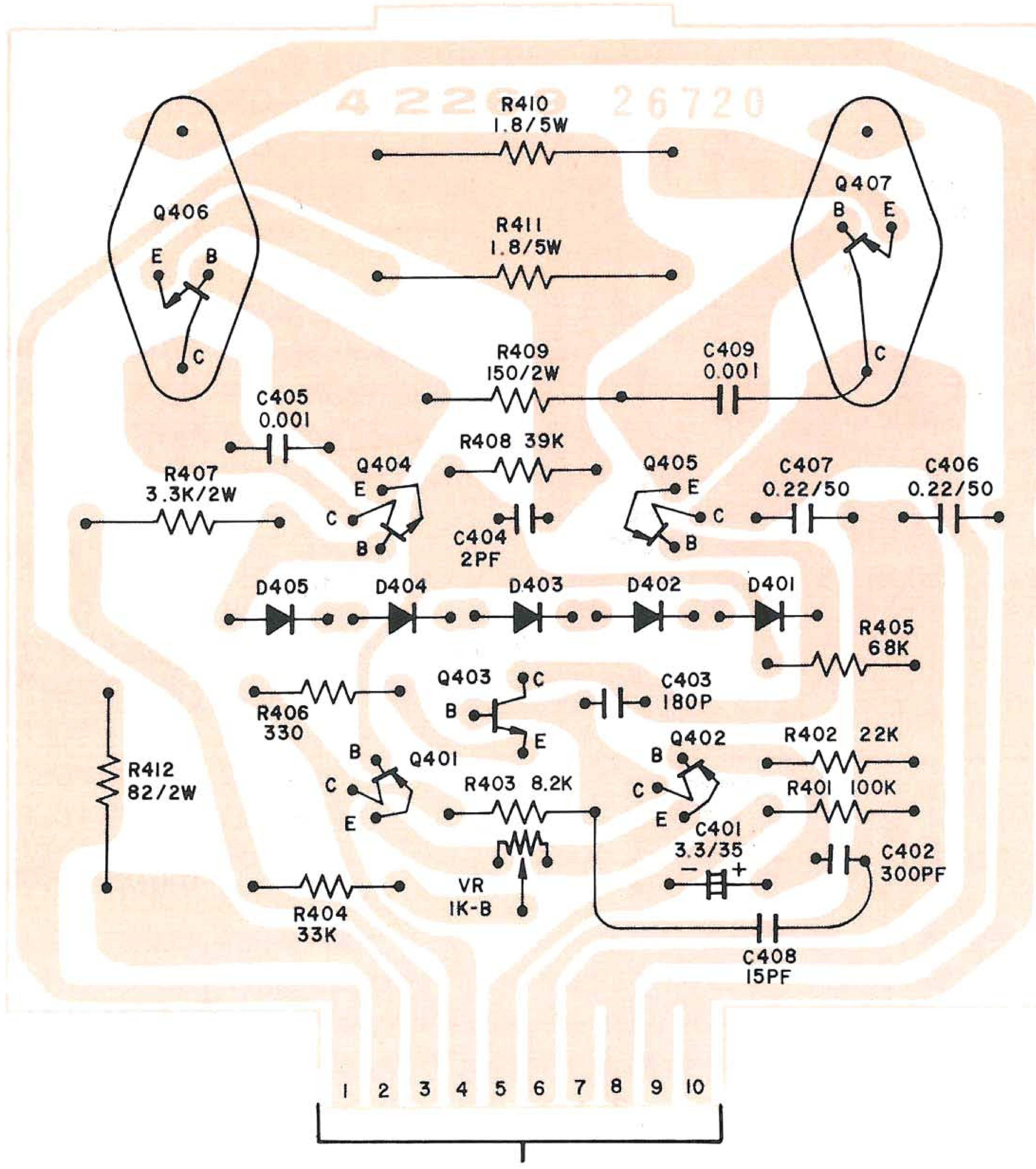


Q301, 303
Q304 ~ 307



Q302

MONITOR AMP P.C.BOARD
(BOTTOM VIEW)

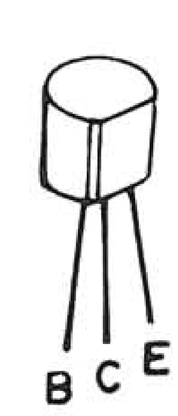


CONNECTOR(D)

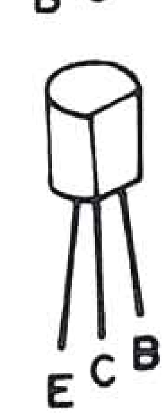
SEMICONDUCTORS

Q401, 402	2SA847G
Q403	2SD438E
Q404	2SC1313G
Q405	2SA726G
Q406	2SD315F
Q407	2SB509F
D401 ~ 405	DS430

TRANSISTOR FRONT VIEW

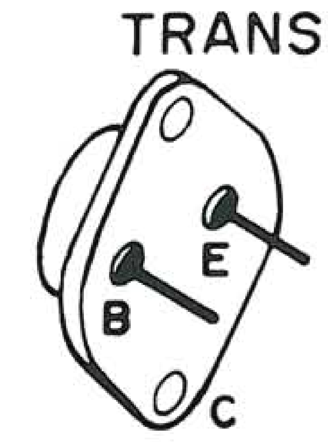


Q401,402
Q404,405



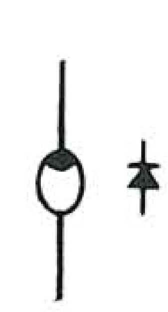
Q403

TRANSISTOR BOTTOM VIEW



Q406, 407

DIODE FRONT VIEW

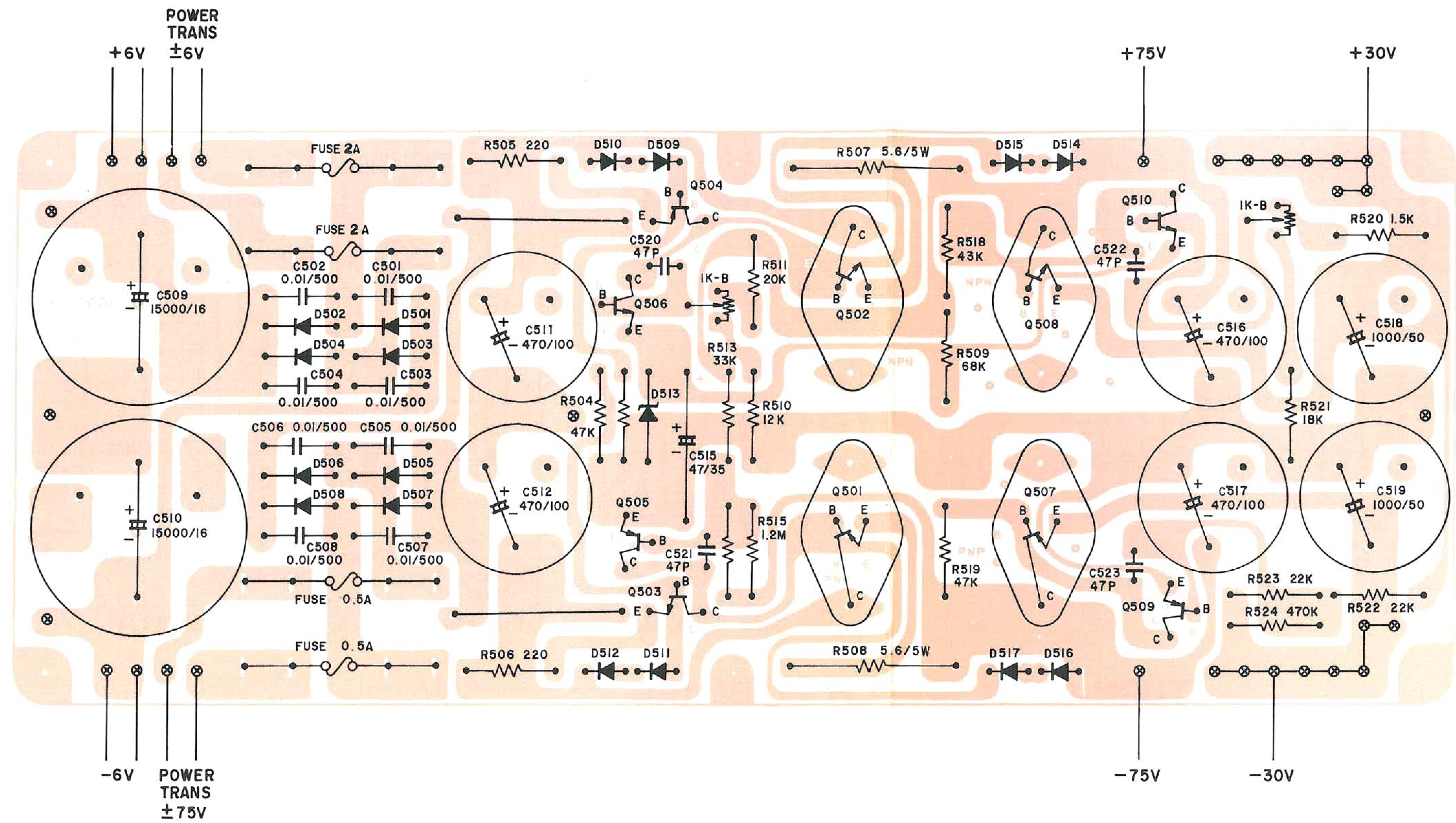


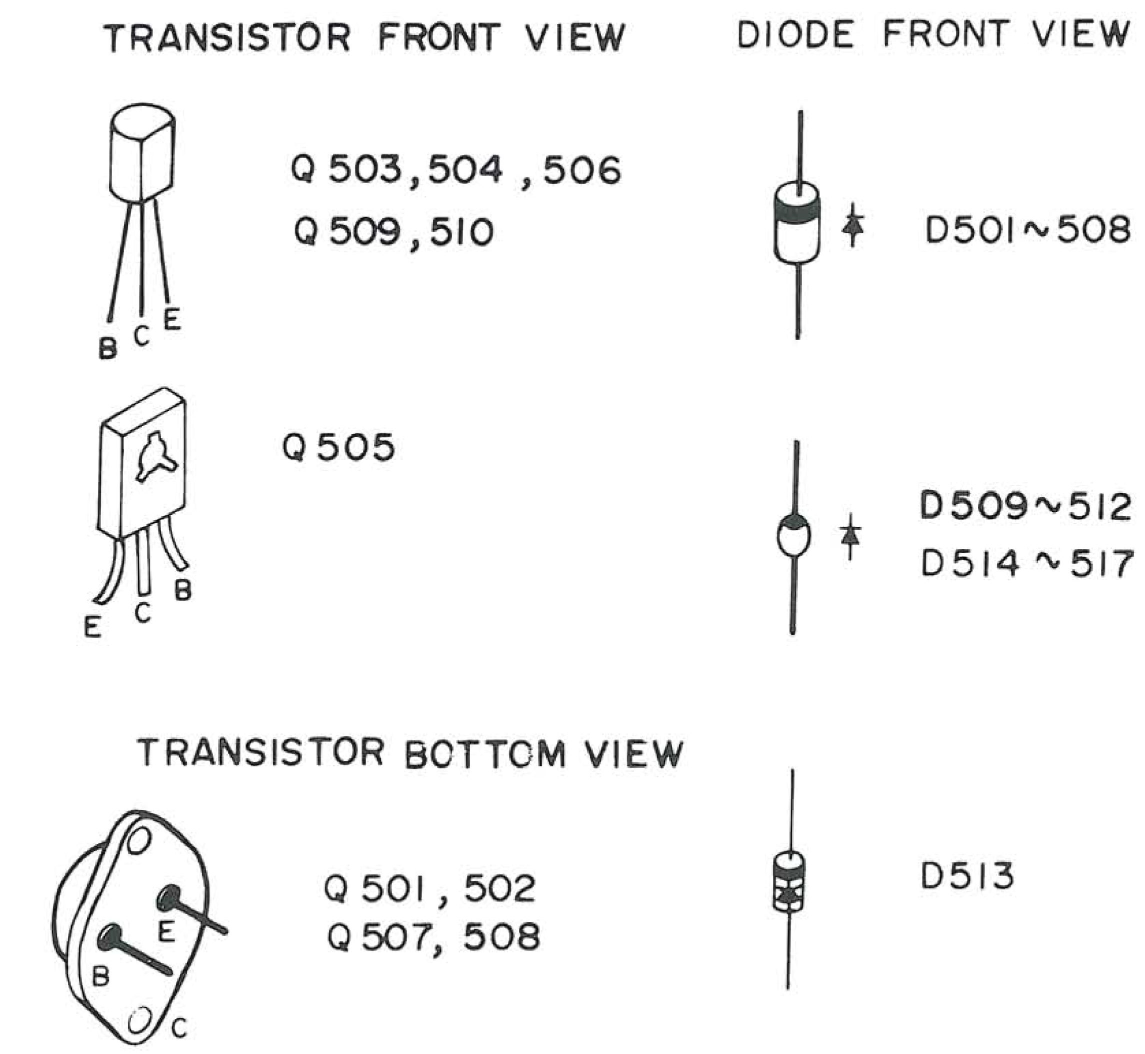
D401 ~ 405

POWER SUPPLY P.C.BOARD
(BOTTOM VIEW)

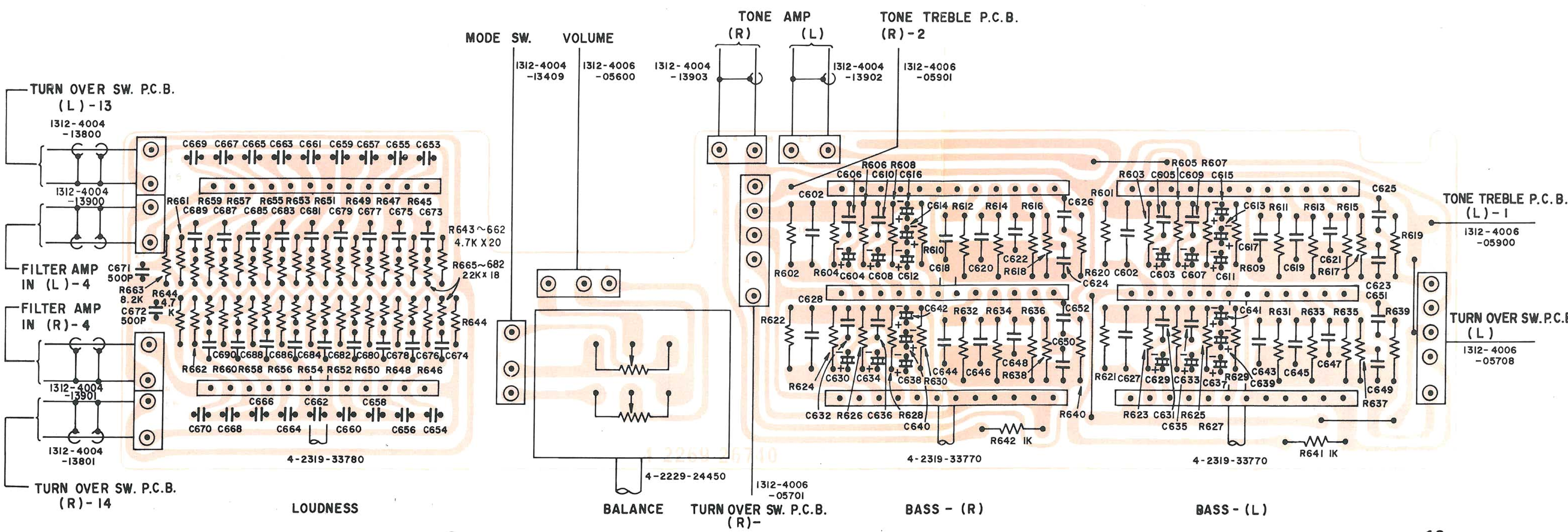
SEMICONDUCTORS

Q501	2SA765Y
Q502	2SC1445Y
Q503 , 506	2SD438E
Q504 , 509	2SB560E
Q505	2SA899V
Q507	2SB509F
Q508	2SD315F
Q510	2SD438E
D501 ~ 504	1N4001GI
D505 ~ 508	1N4004GI
D509 ~ 512	DS430
D513	CZ-275
S514 ~ 517	DS430





TONE BASS P.C.BOARD
(BOTTOM VIEW)



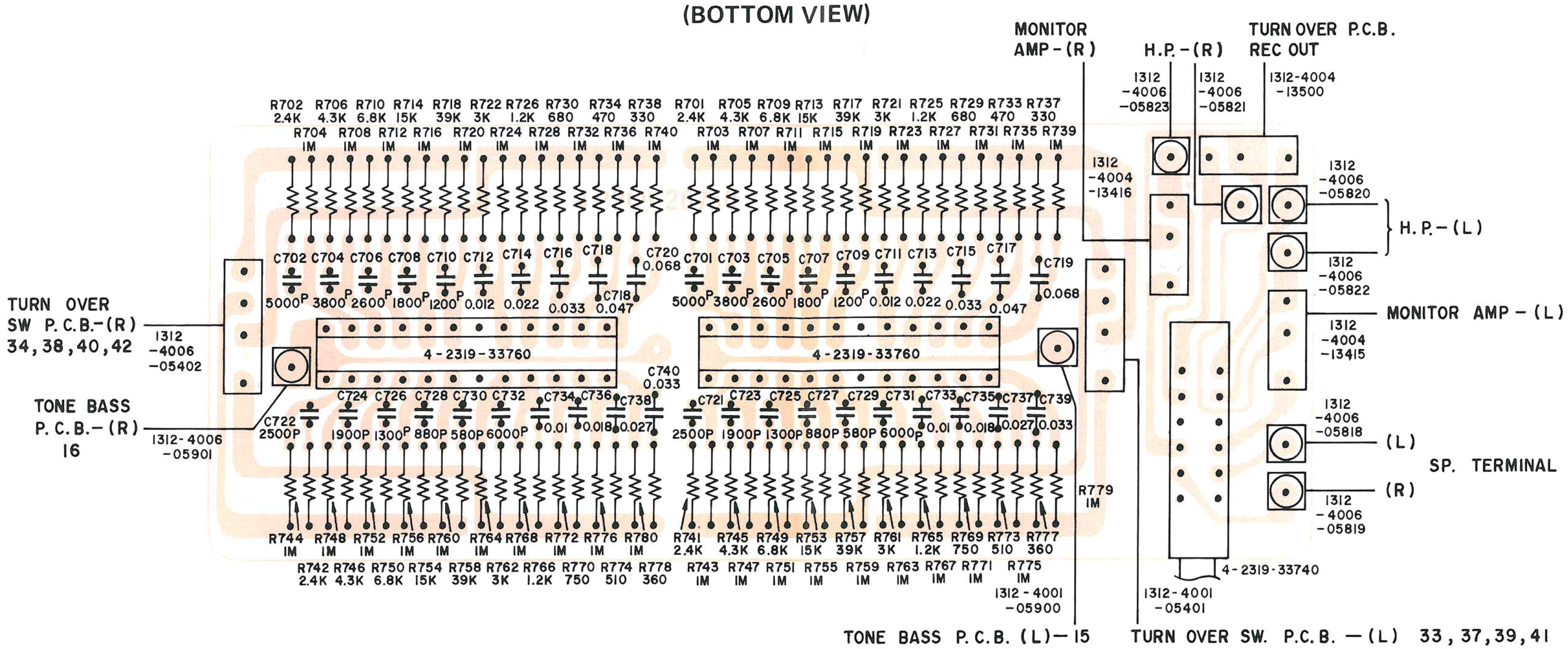
RESISTORS

R601 ~ 610	470K
R631 ~ 640	470K
R611 , 612 , 621 , 622	4.3K
R613 , 614	11K
R615 , 616	18K
R617 , 618	27K
R619 , 620	39K
R623 , 624	2.7K
R625 , 626	1.5K
R627 , 628	680
R629 , 630	330
R631 ~ 640	470K
R641 , 642	1K
R643 ~ 662	4.7K
R663 , 664	8.2K
R665 ~ 682	22K

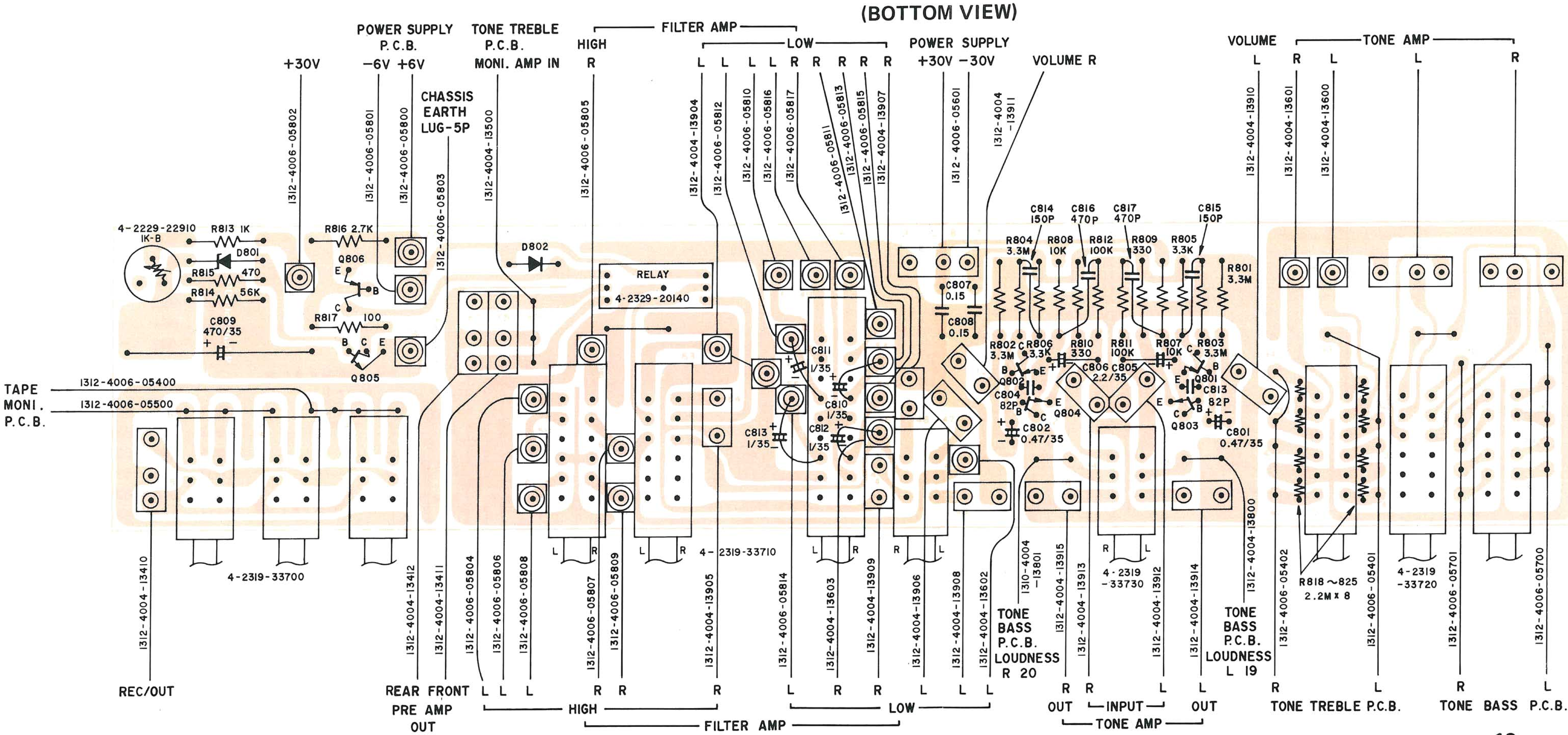
CAPACITORS

C601 , 602 , 627 , 628	0.39 µF 50V
C603 , 604 , 629 , 630	0.47 µF 35V
C605 , 606 , 631 , 632	0.056 µF 50V
C607 , 608 , 633 , 634	0.68 µF 35V
C609 , 610 , 635 , 636	0.039 µF 50V
C611 ~ 614 , 637 ~ 640	1 µF 35V
C615 , 616 , 641 , 642	1.5 µF 3.5V
C617 , 618 , 643 , 644	0.22 µF 50V
C619 , 620 , 645 , 646	0.12 µF 50V
C621 , 622 , 647 , 648	0.068 µF 50V
C623 , 624 , 649 , 650	0.047 µF 50V
C625 , 626 , 651 , 652	0.033 µF 50V
C653 ~ 670	0.001 µF 50V
C671 , 672	500 pF 50V
C673 ~ 690	0.033 µF 50V

TREBLE P.C.BOARD
(BOTTOM VIEW)



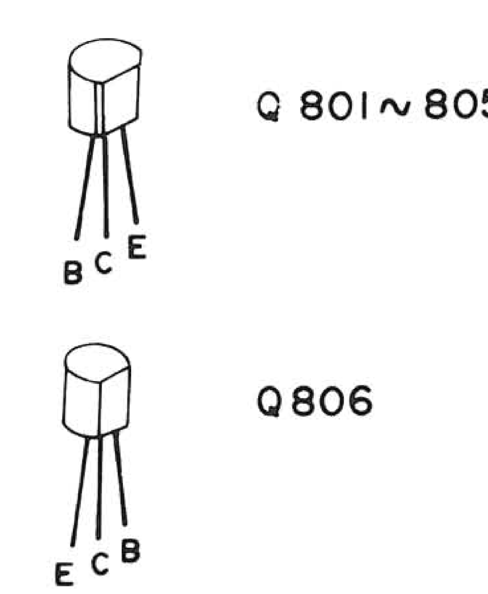
TURN-OVER SWITCH P.C.BOARD
(BOTTOM VIEW)



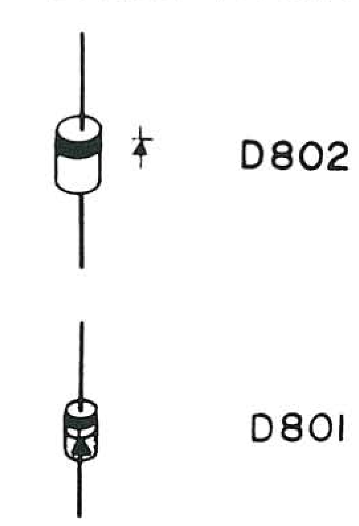
SEMICONDUCTORS

Q801, 802	2SA847G
Q803, 804	2SC1313SG
Q805	2SC711F
Q806	2SB560E
D801	26V
D802	1N4001GI

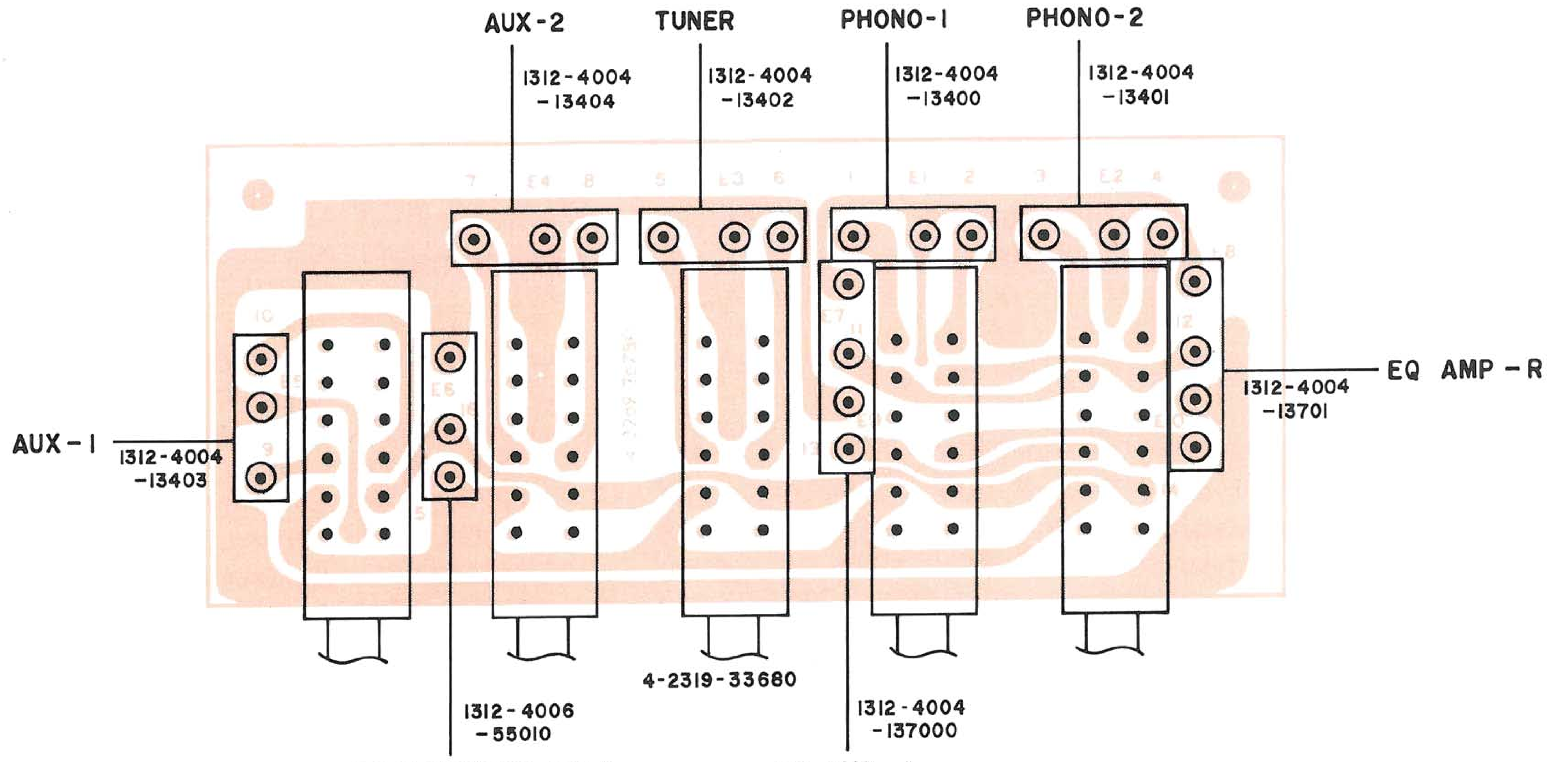
TRANSISTOR FRONT VIEW



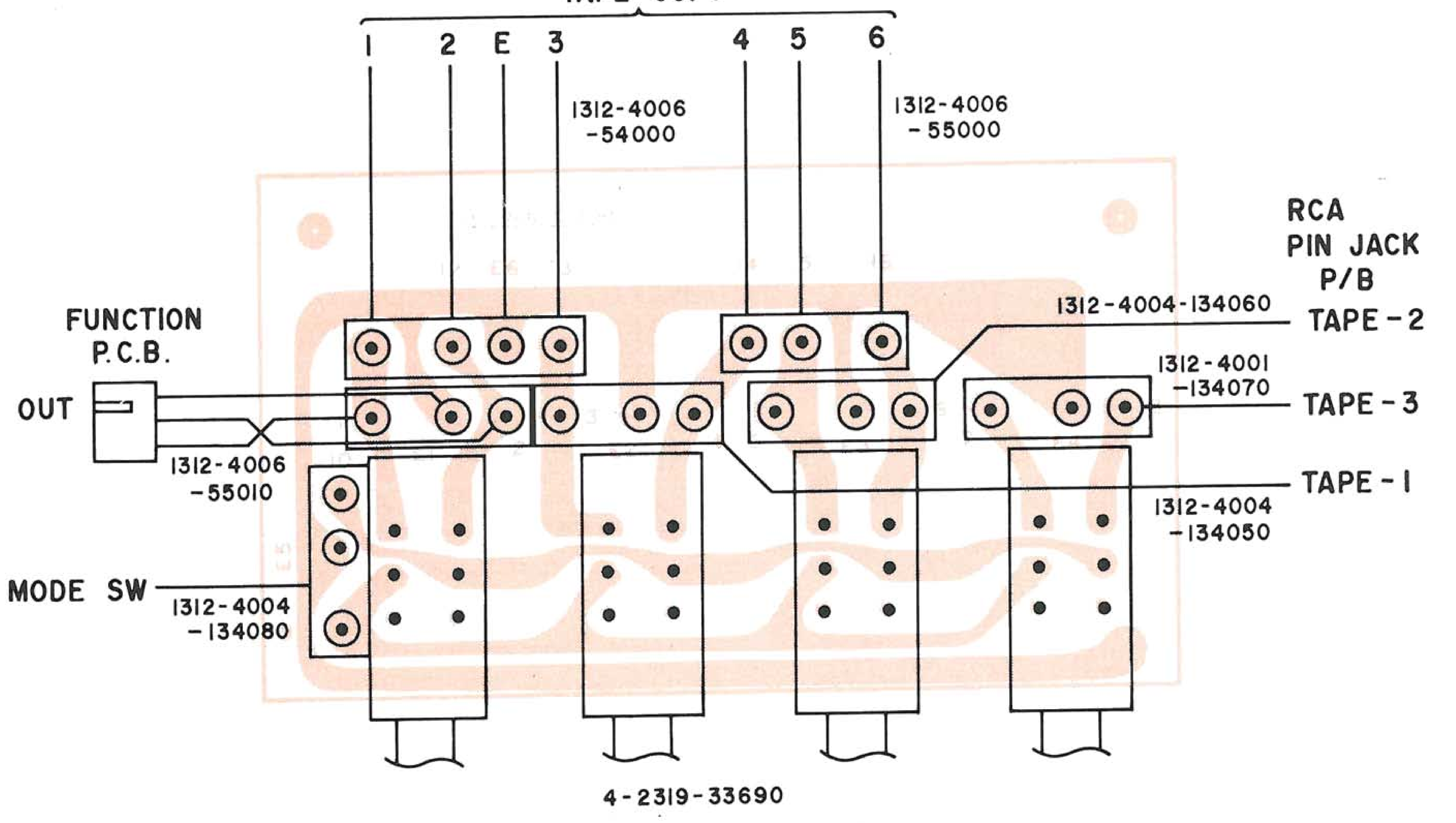
DIODE FRONT VIEW



FUNCTION P.C.BOARD
(BOTTOM VIEW)



TAPE MONITOR SWITCH P.C.BOARD
(BOTTOM VIEW)



PARTS LIST

EQ AMP P.C.B. Assy
131 0 4001 59100

Ref. No.	Parts Number	Description
	4 2229 22910	VR 1kBx1 (C.P. Adjust)
*	131 2 6202 11400	Heat Sink TO-5 (Q107,108)
*	131 2 6202 11400	Heat Sink TO-5 (Q107,108,110)
*	131 2 4208 20900	TR Spacer TO-18 (Q101,102,103,104,105) (Q106,107,108,109,110)

CAPACITORS

Ref. No.	Parts Number	Type	Value	Voltage	Tolerance
C101,	C2EFTTM225B	Mylar	2.2 μF	250V	
C102,103	C1HSEK501A	Styrol	500 PF	50V	±10%
C104	C2EFTM225B	Mylar	2.2 μF	250V	
C105	C1HFAM474A	Mylar	0.47 μF	50V	±20%
C106	C2AHTM204A	Metalized Paper	0.2 μF	100V	±20%
C107	C1HFAM474A	Mylar	0.47 μF	50V	±20%
C108	C2AHTM204A	Metalized Paper	0.2 μF	100V	±20%
C109	C1HSED271A	Styrol	270 PF	50V	±0.5%
C110	4 2239 20850	Styrol	964 PF	50V	±0.5%
C111	C1HCSK101SL	Ceramic	100 PF	50V	±10%

SEMICONDUCTORS

Ref. No.	Parts Number	Description
D101,102	205 5 9040 44210	Diode, DS-442
Q101,102 103,104	TMM-2SA726-G	TR 2SA726G
Q105,106	TMM-2SA628--F	TR 2SA628 F
Q107,108	THH-2SC1904--V	TR 2SC1904 V
Q109,110	THH-2SA899--V	TR 2SA899 V

RESISTORS

Ref. No.	Parts Number	Type	Value	Wattage	Tolerance
R101	R2HDPJ102A	Carbon	1k	1/2W	±5%
R102	R2HDPJ105A	Carbon	1M	1/2W	±5%
R103	R2HDPJ204A	Carbon	200k	1/2W	±5%
R104	R2HDPJ104A	Carbon	100k	1/2W	±5%
R105,106	R2HDPJ223A	Carbon	22k	1/2W	±5%
R107,108	R2HDPJ222A	Carbon	2.2k	1/2W	±5%
R109	R2HDPJ362A	Carbon	3.6k	1/2W	±5%
R110	R2HDPJ822A	Carbon	8.2k	1/2W	±5%
R111	R2HDPJ273A	Carbon	27k	1/2W	±5%
R112	R2HDPJ101A	Carbon	100	1/2W	±5%
R113,114	R2HDPJ332A	Carbon	3.3k	1/2W	±5%
R115	R2HDPJ821A	Carbon	820	1/2W	±5%
R116,117	R2HDPJ221A	Carbon	220	1/2W	±5%
R118	R2HDPJ102A	Carbon	1k	1/2W	±5%
R119,120	R2HDPJ221A	Carbon	220	1/2W	±5%
R121	R2HDPJ470A	Carbon	47	1/2W	±5%
R122	R2HDPJ334A	Carbon	330k	1/2W	±5%
R123	R2HDPJ822A	Carbon	8.2k	1/2W	±5%
R124	R2HDPJ473A	Carbon	47k	1/2W	±5%
R125	R2HDPJ273A	Carbon	27k	1/2W	±5%
R126	4 2219 20020	Carbon	278k	1/2W	±0.5%
R127	R2HDPD335A	Carbon	3.3M	1/2W	±0.5%
R128	R2HDPD204A	Carbon	200k	1/2W	±0.5%

TONE AMP P.C.B. Assy
131 0 4001 59600

Ref. No.	Parts Number	Description
*	131 2 4208 20900	TR Spacer TO-18 (Q201,202,203,204)
*	131 2 4208 20910	TR Spacer TO-5 (Q206)
*	131 2 4208 20910	TR Spacer TO-5 (Q207)

CAPACITORS

Ref. No.	Parts Number	Type	Value	Voltage	Tolerance
C201	C2EFTM225B	Mylar	2.2 μF	250V	
C202,203	4 2239 20790	Electrolytic	2.2 μF	50V	
C204	C1HCDC050SL	Ceramic	5 PF	50V	±0.25%
C205	C1HCDK270SL	Ceramic	27 PF	50V	±10%
C206	C2EFTM685B	Mylar	6.8 μF	250V	±20%
C207	4 2239 20780	Electrolytic	6.8 μF	50V	
C208	C1HCDK470SL	Ceramic	47 PF	50V	±10%
C209	C1HCDC050SL	Ceramic	5 PF	50V	±0.25%
C210	C1HFAM823A	Mylar	0.082 μF	50V	±20%
C211,212	4 2239 20820	Electrolytic	47 μF	35V	
C213	C1HCDJ180SL	Ceramic	18 PF	50V	±5%
C214	C1HFAM333A	Mylar	0.033 μF	50V	±20%

SEMICONDUCTORS

Ref. No.	Parts Number	Description
D201,202 203,204 205	205 5 9020 43011	Diode, DS-430
Q201,202 203,204	TMM-2SA847--G	TR 2SA847G
Q205	TMM-2SC1313SG	TR 2SC1313SG
Q206	203 5 6920 43850	TR 2SD438 E
Q207	203 5 6930 56050	TR 2SB560 E

RESISTORS

Ref. No.	Parts Number	Type	Value	Wattage	Tolerance
R201	R2HDPJ104A	Carbon	100k	1/2W	±5%
R202	R2HDPJ243A	Carbon	24k	1/2W	±5%
R203	R2HDPJ204A	Carbon	200k	1/2W	±5%
R204	R2HDPJ182A	Carbon	1.8k	1/2W	±5%
R205,206	R2HDPJ512A	Carbon	5.1k	1/2W	±5%
R207	R2HDPJ105A	Carbon	1M	1/2W	±5%
R208	R2HDPJ563A	Carbon	56k	1/2W	±5%
R209	R2HDPJ105A	Carbon	1M	1/2W	±5%
R210	R2HDPJ681A	Carbon	680	1/2W	±5%
R211	R2HDPJ471A	Carbon	470	1/2W	±5%
R212	R2HDPJ102A	Carbon	1k	1/2W	±5%
R213,214	R2HDPJ470A	Carbon	47	1/2W	±5%
R215	R2HDPJ104A	Carbon	100k	1/2W	±5%
R216	R2HDPJ271A	Carbon	270	1/2W	±5%
R217	R2HDPJ123A	Carbon	12k	1/2W	±5%
R218	R2HDPJ134A	Carbon	130k	1/2W	±5%
R219	R2HDPJ103A	Carbon	10k	1/2W	±5%
R220	R2HDPJ204A	Carbon	200k	1/2W	±5%

NOTE: * Asterisk indicates not a service part.

PARTS LIST

FILTER AMP P.C.B. Assy
131 0 4001 59300

Ref. No.	Parts Number	Description
*	131 2 4208 20900	TR Spacer TO-18 (Q301)
*	131 2 4208 20910	TR Spacer TO-5 (Q302)
*	131 2 4208 20900	TR Spacer TO-18 (Q303)
*	131 2 4208 20900	TR Spacer TO-18 (Q304)
*	131 2 4208 20900	TR Spacer TO-18 (Q305)
*	131 2 4208 20900	TR Spacer TO-18 (Q306)
*	131 3 4208 20900	TR Spacer TO-18 (Q307)
*	131 2 4208 20900	TR Spacer TO-18 (Q308)

CAPACITORS

C301	C2EFTM474B	Mylar	0.47 μF	250V	±20%
C302	C1VTRM225A	Tantalume	2.2 μF	35V	±20%
C303,304 305	C1HFAJ473A	Mylar	0.047 μF	50V	±5%
C306,307	C1VTRM225A	Tantalume	2.2 μF	35V	±20%
C308	C1HSTJ391A	Styrol	390 PF	50V	±5%
C309	C1HSTJ561A	Styrol	560 PF	50V	±5%
C310	C1HSTJ102A	Styrol	1000 PF	50V	±5%
C311	C1HSTJ132A	Styrol	1300 PF	50V	±5%
C312	C1VTRM225A	Tantalume	2.2 μF	35V	±20%
C313,314 315,316	C1HCSK101SL	Ceramic	100 PF	50V	±10%
C317,318 319,320	C1HFAM154A	Mylar	0.15 μF	50V	±20%
C321,322	C1HFAM104A	Mylar	0.1 μF	50V	±20%
C323	C1HCDC050SL	Ceramic	5 PF	50V	±0.25%
C324	C1HCDK470SL	Ceramic	47 PF	50V	±10%
C325	C1HCDK270SL	Ceramic	27 PF	50V	±10%

SEMICONDUCTORS

Q301	TTM-2SA847--G	TR2SA847 G
Q302	203 5 6920 43850	TR 2SD438 E
Q303	TTM-2SA847--G	TR 2SA847 G
Q304	TMM-2SC1313SG	TR 2SC1313SG
Q305	TMM-2SA847--G	TR 2SA847G
Q306	TMM-2SC1313SG	TR 2SC1313SG
Q307	TTM-2SA847--G	TR 2SA847G
Q308	TMM-2SC1313SG	TR 2SC1313SG

RESISTORS

R301,302	R2HDPJ105A	Carbon	1M	1/2W	±5%
R303	R2HDPJ752A	Carbon	7.5k	1/2W	±5%
R304	R2HDPJ332A	Carbon	3.3k	1/2W	±5%
R305	R2HDPJ331A	Carbon	330	1/2W	±5%
R306	R2HDPJ271A	Carbon	270	1/2W	±5%
R307	R2HDPJ104A	Carbon	100k	1/2W	±5%
R309,310	R2HDPJ474A	Carbon	470k	1/2W	±5%
R311,312	R2HDPJ124A	Carbon	120k	1/2W	±5%
R313	R2HDPJ332A	Carbon	3.3k	1/2W	±5%
R314	R2HDPJ103A	Carbon	10k	1/2W	±5%
R315	R2HDPJ331A	Carbon	330	1/2W	±5%
R316	R2HDPJ224A	Carbon	220k	1/2W	±5%
R317	R2HDPJ204A	Carbon	200k	1/2W	±5%
R318	R2HDPJ332A	Carbon	3.3k	1/2W	±5%
R319	R2HDPJ103A	Carbon	10k	1/2W	±5%
R320	R2HDPJ331A	Carbon	330	1/2W	±5%
R321	R2HDPJ271A	Carbon	270	1/2W	±5%

Ref. No.	Parts Number	Description			
	RESISTORS				
R322,323 324	R2HDPJ104A	Carbon	100k	1/2W	±5%
R325	R2HDPJ103A	Carbon	10k	1/2W	±5%
R326	R2HDPJ243A	Carbon	24k	1/2W	±5%
R327,328	R2HDPJ225A	Carbon	2.2M	1/2W	±5%
R329	R2HDPJ332A	Carbon	3.3k	1/2W	±5%
R330	R2HDPJ103A	Carbon	10k	1/2W	±5%
R331	R2HDPJ331A	Carbon	330	1/2W	±5%
R332	R2HDPJ271A	Carbon	270	1/2W	±5%
R333	R2HDPJ104A	Carbon	100k	1/2W	±5%
R334,335	R2HDPJ0R5A	Carbon	0.5	1/2W	±5%

MONITOR AMP P.C.B. Assy
131 0 4001 59200

Ref. No.	Parts Number	Description
	4 2229 22910	VR 1kBx1 (Bias Adjust)
*	131 2 4208 20900	TR Spacer TO-18 (Q401,402)
*	131 2 4208 20910	TR Spacer TO-5 (Q403)
*	131 2 4208 20900	TR Spacer TO-18 (Q404)
*	131 2 4208 20900	TR Spacer TO-18 (Q405)
*	131 2 6201 20400	Heat Sink (Q406)
*	131 2 6201 20400	Heat Sink (Q407)

CAPACITORS

C401	C1VTRM335A	Tantalume	3.3 μF	35V	±20%
C402	C1HCSK331SL	Ceramic	330 PF	50V	±10%
C403	C1HCSK181A	Ceramic	180 PF	50V	±10%
C404	C1HCSC020SL	Ceramic	2 PF	50V	±0.25%
C405	C1HYSK102R	Ceramic	0.001 μF	50V	±10%
C406,407	C1HFAM224A	Mylar	0.22 μF	50V	±10%
C408	C1HCDJ150SL	Ceramic	15 PF	50V	±5%
C409	C1HYSK102R	Ceramic	0.001 μF	50V	±10%

SEMICONDUCTORS

D401,402 403,404 405	205 5 9020 43011	Diode, DS430
Q401,402	TTM-2SA847--G	TR 2SA847G
Q403	203 5 6920 43850	TR 2SD438E
Q404	TMM-2SC1313-G	TR 2SC1313G
Q405	TMM-2SA726--G	TR 2SA726G
Q406	203 5 8410 31550	TR 2SD315F
Q407	203 5 6450 50960	TR 2SB509F

RESISTORS

R401	R2HDPJ104A	Carbon	100k	1/2W	±5%
R402	R2HDPJ223A	Carbon	22k	1/2W	±5%
R403	R2HDPJ822A	Carbon	8.2k	1/2W	±5%
R404	R2HDPJ333A	Carbon	33k	1/2W	±5%
R405	R2HDPJ683A	Carbon	68k	1/2W	±5%
R406	R2HDPJ331A	Carbon	330	1/2W	±5%
R407	R3DXPK332A	Oxide Metal Film	3.3k	2W	±10%
R408	R2HDPJ393A	Carbon	39k	1/2W	±5%
R409	R3DXPK151A	Oxide Metal Film	150	2W	±10%
R410,411	R3HEPK1R8A	Cement	1.8	5W	±10%
R412	R3DXPK820A	Oxide Metal Film	82	2W	±10%

NOTE: * Asterisk indicates not a service part.

PARTS LIST

POWER SUPPLY P.C.B. Assy
131 0 4001 59701

Ref. No.	Parts Number	Description
	4 2229 22910	VR 1kBx1 (Voltage Adjust)
*	131 2 4208 20900	TR Spacer TO-18 (Q505)
*	131 2 4208 20910	TR Spacer TO-5 (Q503,504,506, 509)
*	131 2 4208 20910	TR Spacer TO-5 (Q510)
*	131 2 6108 11201	Cover Sever (R501,502,507,508)
*	131 2 6201 20400	Heat Sink (Q501,502,507,508)

CAPACITORS

C501,502 503,504 505,506 507,508	C2HYSP103A	Ceramic	0.01 μF	500V	+100,–0%
C509,510	4 2239 20710	Electrolytic	15000 μF	16V	
C511,512	4 2239 20730	Electrolytic	470 μF	100V	
C515	4 2239 20820	Electrolytic	47 μF	35V	
C516,517	4 2239 20730	Electrolytic	470 μF	100V	
C518,519	4 2239 20720	Electrolytic	1000 μF	50V	
C520,521 522,523	C1HCSK470SL	Ceramic	47 pF	50V	±10%

SEMICONDUCTORS

D501,502 503,504	DGG-1N4001	Diode, 1N4001GI
D505,506 507,508	DGG-1N4004	Diode, 1N4004GI
D509,510 511,512	205 5 9020 43011	Diode, DS430
D513	DJJ-CZ-275	Zener Diode, CZ-275
D514,515 516,517	205 5 9020 43011	Diode, DS430
Q501	TAA-2SA765--Y	TR 2SA765-Y
Q502	TAA-2SC1445-Y	TR 2SC1445-Y
Q503	203 5 6920 43850	TR 2SD438E
Q504	203 5 6930 56050	TR 2SB560E
Q505	THH-2SA899--V	TR 2SA899V
Q506	203 5 6920 43850	TR 2SD438E
Q507	203 5 6450 50960	TR 2SB509F
Q508	203 5 8410 31560	TR 2SD315F
Q509	203 5 6930 56050	TR 2SB560E
Q510	203 5 6920 43850	TR 2SD438E

RESISTORS

R503,504	R2HDPJ473A	Carbon	47k	1/2W	±5%
R505,506	R2HDPJ221A	Carbon	220	1/2W	±5%
R507,508	R3HEPK5R6A	Cement	5.6	5W	±10%
R509	R2HDPJ683A	Carbon	68k	1/2W	±5%
R510	R2HDPJ123A	Carbon	12k	1/2W	±5%
R511	R2HDPJ203A	Carbon	20k	1/2W	±5%
R513,514	R2HDPJ333A	Carbon	33k	1/2W	±5%
R515	R2HDPJ125A	Carbon	1.2M	1/2W	±5%
R518,519	R2HDPJ433A	Carbon	43k	1/2W	±5%
R520	R2HDPJ152A	Carbon	1.5k	1/2W	±5%
R521	R2HDPJ183A	Carbon	18k	1/2W	±5%
R522,523	R2HDPJ223A	Carbon	22k	1/2W	±5%
R524	R2HDPJ474A	Carbon	470k	1/2W	±5%

TONE BASS P.C.B. Assy
131 0 4001 59400

Ref. No.	Parts Number	Description
*	131 0 4006 05900	Wire Assy 1P (Tone, Treble P.C.B. L-1
*	131 0 4006 05901	Wire Assy 1P (Tone, Treble P.C.B. R-2)
	4 2229 24450	VR 100kMNx2 (Balance)
	4 2319 33770	Switch Rotary (Bass)
	4 2319 33780	Switch Rotary Print (Loudness)
	4 2379 21340	Connector 1P (Loudness, Tone)
	4 2379 21360	Terminal (Mode, Volume)
	4 2379 21380	Connector 5P (Bass)

CAPACITORS

C601,602	C1HFAJ394A	Mylar	0.39 μF	50V	±5%
C603,604	C1VTRK474A	Tantalume	0.47 μF	35V	±10%
C605,606	C1HFAJ563A	Mylar	0.056 μF	50V	±5%
C607,608	C1VTRK684A	Tantalume	0.68 μF	35V	±10%
C609,610	C1HFAJ393A	Mylar	0.039 μF	50V	±5%
C611,612 613,614	C1VTRK105A	Tantalume	1 μF	35V	±10%
C615,616	C1VTRK155A	Tantalume	1.5 μF	35V	±10%
C617,618	C1HFAJ224A	Mylar	0.22 μF	50V	±5%
C619,620	C1HFAJ124A	Mylar	0.12 μF	50V	±5%
C621,622	C1HFAJ683A	Mylar	0.068 μF	50V	±5%
C623,624	C1HFAJ473A	Mylar	0.047 μF	50V	±5%
C625,626	C1HFAJ333A	Mylar	0.033 μF	50V	±5%
C627,628	C1HFAJ394A	Mylar	0.39 μF	50V	±5%
C629,630	C1VTRK474A	Tantalume	0.47 μF	35V	±10%
C631,632	C1HFAJ563A	Mylar	0.056 μF	50V	±5%
C633,634	C1VTRK684A	Tantalume	0.68 μF	35V	±10%
C635,636	C1HFAJ393A	Mylar	0.039 μF	50V	±5%
C637,638 639,640	C1VTRK105A	Tantalume	1 μF	35V	±10%
C641,642	C1VTRK155A	Tatalume	1.5 μF	35V	±10%
C643,644	C1HFAJ224A	Mylar	0.22 μF	50V	±5%
C645,646	C1HFAJ124A	Mylar	0.12 μF	50V	±5%
C647,648	C1HFAJ683A	Mylar	0.068 μF	50V	±5%
C649,650	C1HFAJ473A	Mylar	0.047 μF	50V	±5%
C651,652	C1HFAJ333A	Mylar	0.033 μF	50V	±5%
C653,654 655,656 657,658 659,660 661,662 663,664 665,666 667,668 669,670	C1HFAK102A	Mylar	0.001 μF	50V	±10%
C671,672	C1HSBJ501A	Styrol	500 pF	50V	±5%
C673,674 675,676 677,678 679,680 681,682 683,684 685,686 687,688 689,690	C1HFAK333A	Mylar	0.033 μF	50V	±10%

NOTE: * Asterisk indicates not a service part.

PARTS LIST

Ref. No.	Parts Number	Description			
RESISTORS					
R601,602 603,604 605,606 607,608 609,610	R2EDSJ474A	Carbon	470k	1/4W	±5%
R611,612	R2EDSJ432A	Carbon	4.3k	1/4W	±5%
R613,614	R2EDSJ113A	Carbon	11k	1/4W	±5%
R615,616	R2EDSJ183A	Carbon	18k	1/4W	±5%
R617,618	R2EDSJ273A	Carbon	27k	1/4W	±5%
R619,620	R2EDSJ393A	Carbon	39k	1/4W	±5%
R621,622	R2EDSJ432A	Carbon	4.3k	1/4W	±5%
R623,624	R2EDSJ272A	Carbon	2.7k	1/4W	±5%
R625,626	R2EDSJ152A	Carbon	1.5k	1/4W	±5%
R627,628	R2EDSJ681A	Carbon	680	1/4W	±5%
R629,630	R2EDSJ331A	Carbon	330	1/4W	±5%
R631,632 633,634 635,636 637,638 639,640	R2EDSJ474A	Carbon	470k	1/4W	±5%
R641,642	R2EDSJ102A	Carbon	1k	1/4W	±5%
R643,644 645,646 647,648 649,650 651,652 653,654 655,656 657,658 659,660 661,662	R2BDPJ472A	Carbon	4.7k	1/8W	±5%
R663,664	R2BDPJ822A	Carbon	8.2k	1/8W	±5%
R665,666 667,668 669,670 671,672 673,674 675,676 677,678 679,680 681,682	R2EDUJ223A	Carbon	22k	1/4W	±5%

TONE TREBLE P.C.B. Assy
131 0 4001 59500

Ref. No.	Parts Number	Decription
	4 2319 33740	Switch Push 1Key (Monitor AMP SW)
	4 2319 33760	Switch Rotary (Tone Treble)
	4 2379 21340	Connector 1P
	4 2379 21360	Terminal (Connector)
	4 2379 21370	Terminal 4P (Connector)

Ref. No.	Parts Number	Description			
CAPACITORS					
C701,702	C1HSBJ502A	Styrol	5000 pF	50V	±5%
C703,704	C1HSBJ382A	Styrol	3800 pF	50V	±5%
C705,706	C1HSBJ262A	Styrol	2600 pF	50V	±5%
C707,708	C1HSBJ182A	Styrol	1800 pF	50V	±5%
C709,710	C1HSBJ122A	Styrol	1200 pF	50V	±5%
C711,712	C1HFAJ123A	Mylar	0.012 μF	50V	±5%
C713,714	C1HFAJ223A	Mylar	0.022 μF	50V	±5%
C715,716	C1HFAJ333A	Mylar	0.033 μF	50V	±5%
C717,718	C1HFAJ473A	Mylar	0.047 μF	50V	±5%
C719,720	C1HFAJ683A	Mylar	0.068 μF	50V	±5%
C721,722	C1HSBJ252A	Styrol	2500 pF	50V	±5%
C723,724	C1HSBJ192A	Styrol	1900 pF	50V	±5%
C725,726	C1HSBJ132A	Styrol	1300 pF	50V	±5%
C727,728	C1HSBJ881A	Styrol	880 pF	50V	±5%
C729,730	C1HSBJ581A	Styrol	580 pF	50V	±5%
C731,732	C1HSBJ602A	Styrol	6000 pF	50V	±5%
C733,734	C1HFAJ103A	Mylar	0.01 μF	50V	±5%
C735,736	C1HFAJ183A	Mylar	0.018 μF	50V	±5%
C737,738	C1HFAJ273A	Mylar	0.027 μF	50V	±5%
C739,740	C1HFAJ333A	Mylar	0.033 μF	50V	±5%
RESISTORS					
R701,702	R2EDSJ242A	Carbon	2.4k	1/4W	±5%
R703,704	R2EDSJ105A	Carbon	1M	1/4W	±5%
R705,706	R2EDSJ432A	Carbon	4.3k	1/4W	±5%
R707,708	R2EDSJ105A	Carbon	1M	1/4W	±5%
R709,710	R2EDSJ682A	Carbon	6.8k	1/4W	±5%
R711,712	R2EDSJ105A	Carbon	1M	1/4W	±5%
R713,714	R2EDSJ153A	Carbon	15k	1/4W	±5%
R715,716	R2EDSJ105A	Carbon	1M	1/4W	±5%
R717,718	R2EDSJ393A	Carbon	39k	1/4W	±5%
R719,720	R2EDSJ105A	Carbon	1M	1/4W	±5%
R721,722	R2EDSJ302A	Carbon	3k	1/4W	±5%
R723,724	R2EDSJ105A	Carbon	1M	1/4W	±5%
R725,726	R2EDSJ122A	Carbon	1.2k	1/4W	±5%
R727,728	R2EDSJ105A	Carbon	1M	1/4W	±5%
R729,730	R2EDSJ681A	Carbon	680	1/4W	±5%
R731,732	R2EDSJ105A	Carbon	1M	1/4W	±5%
R733,734	R2EDSJ471A	Carbon	470	1/4W	±5%
R735,736	R2EDSJ105A	Carbon	1M	1/4W	±5%
R737,738	R2EDSJ331A	Carbon	330	1/4W	±5%
R739,740	R2EDSJ105A	Carbon	1M	1/4W	±5%
R741,742	R2EDSJ242A	Carbon	2.4k	1/4W	±5%
R743,744	R2EDSJ105A	Carbon	1M	1/4W	±5%
R745,746	R2EDSJ432A	Carbon	4.3k	1/4W	±5%
R747,748	R2EDSJ105A	Carbon	1M	1/4W	±5%
R749,750	R2EDSJ682A	Carbon	6.8k	1/4W	±5%
R751,752	R2EDSJ105A	Carbon	1M	1/4W	±5%
R753,754	R2EDSJ153A	Carbon	15k	1/4W	±5%
R755,756	R2EDSJ105A	Carbon	1M	1/4W	±5%
R757,758	R2EDSJ393A	Carbon	39k	1/4W	±5%
R759,760	R2EDSJ105A	Carbon	1M	1/4W	±5%
R761,762	R2EDSJ302A	Carbon	3k	1/4W	±5%
R763,764	R2EDSJ105A	Carbon	1M	1/4W	±5%
R765,766	R2EDSJ122A	Carbon	1.2k	1/4W	±5%
R767,768	R2EDSJ105A	Carbon	1M	1/4W	±5%
R769,770	R2EDSJ751A	Carbon	750	1/4W	±5%
R771,772	R2EDSJ105A	Carbon	1M	1/4W	±5%
R773,774	R2EDSJ511A	Carbon	510	1/4W	±5%
R775,776	R2EDSJ105A	Carbon	1M	1/4W	±5%
R777,778	R2EDSJ361A	Carbon	360	1/4W	±5%
R779,780	R2EDSJ105A	Carbon	1M	1/4W	±5%

NOTE: * Asterisk indicates not a service part.

PARTS LIST

TURNOVER SWITCH P.C.B. Assy
131 0 4001 60000

Ref. No.	Parts Number	Description
	4 2229 22910	VR 1kBx1 (Muting, Time Adjust)
	4 2319 33700	Push Switch 3 Key (Tape Copy)
	4 2319 33710	Push Switch 4 Key (Filter)
	4 2319 33720	Push Switch 3 Key (Tone, Turnover)
	4 2319 33730	Push Switch 1 Key (Audio Muting)
	4 2329 20140	Relay (Muting)
	4 2379 21340	Connector 1P
	4 2379 21360	Terminal 3P (Rec Out, Pre Out 2, Power Supply, Tone AMP LR)
*	131 0 4004 13500	Wire Assy Shield (Monitor AMP SW)
*	131 0 4004 13800	Wire Assy Shield (Loudness L)
*	131 0 4004 13801	Wire Assy Shield (Loudness R)
*	131 0 4006 05400	Wire Assy 4P (No.1,2,E1,3-T.M.P.C.B.
*	131 0 4006 05401	Wire Assy 4P (Tone Treble L)
*	131 0 4006 05402	Wire Assy 4P (Tone Treble R)
*	131 0 4006 05500	Wire Assy 3P (No.4,5,6-T, Monitor)
*	131 0 4006 05700	Wire Assy 5P (Tone Bass L)
*	131 0 4006 05701	Wire Assy 5P (Tone Bass R)
*	131 2 4208 20900	TR Spacer TO-18 (Q801,802)
*	131 2 4208 20900	TR Spacer TO-18 (Q803,804)
*	131 2 4208 20900	TR Spacer TO-18 (Q805)
*	131 2 4208 20910	TR Spacer TO-5 (Q806)

SEMICONDUCTORS

D801	DJJ-WZ-260	Zener Diode 26V
D802	DGG-1N4001	Diode, 1N4001GI
Q801,802	TMM-2SA847--G	TR2SA847 G
Q803,804	TMM-2SC1313SG	TR 2SC1313SG
Q805	TMM-2SC711--F	TR 2SC711F
Q806	203 5 6930 56050	TR 2SB560E

CAPACITORS

C801,802	C1VTRM474A	Tantalume	0.47 μF	35V	±20%
C803,804	C1HCSK820SL	Ceramic	82 pF	50V	±10%
C805,806	C1VTRM225A	Tantalume	2.2 μF	35V	±20%
C807,808	C1HFAM154A	Mylar	0.15 μF	50V	±20%
C809	4 2239 20810	Electrolytic	470 μF	35V	
C810,811 812,813	C1VTRM105A	Tantalume	1 μF	35V	±20%
C814,815	C1HCDK151SL	Ceramic	150 pF	50V	±10%
C816,817	C1HYDK471R	Ceramic	470 pF	50V	±10%

RESISTORS

R801,802 803,804	R2HDPJ335A	Carbon	3.3M	1/2W	±5%
R805,806	R2HDPJ332A	Carbon	3.3k	1/2W	±5%
R807,808	R2HDPJ103A	Carbon	10k	1/2W	±5%
R809,810	R2HDPJ331A	Carbon	330	1/2W	±5%
R811,812	R2HDPJ104A	Carbon	100k	1/2W	±5%
R813	R2HDPJ102A	Carbon	1k	1/2W	±5%
R814	R2HDPJ563A	Carbon	56k	1/2W	±5%
R815	R2HDPJ471A	Carbon	470	1/2W	±5%
R816	R2HDPJ272A	Carbon	2.7k	1/2W	±5%
R817	R2HDPJ101A	Carbon	100	1/2W	±5%
R818,819 820,821 822,823 824,825	R2EDUJ225A	Carbon	2.2M	1/4W	±5%

FUNCTION P.C.B. Assy
131 0 4001 59800

Ref. No.	Parts Number	Description
	4 2319 33680	Push Switch 5 Key (Selector Switch)
	4 2379 21360	Terminal 3P (Phono-1,2, Aux-1,2, Tuner Output)
	4 2379 21370	Terminal 4P (Phono-L, Phono-R)

TAPE MONITOR P.C.B. Assy
131 0 4001 59900

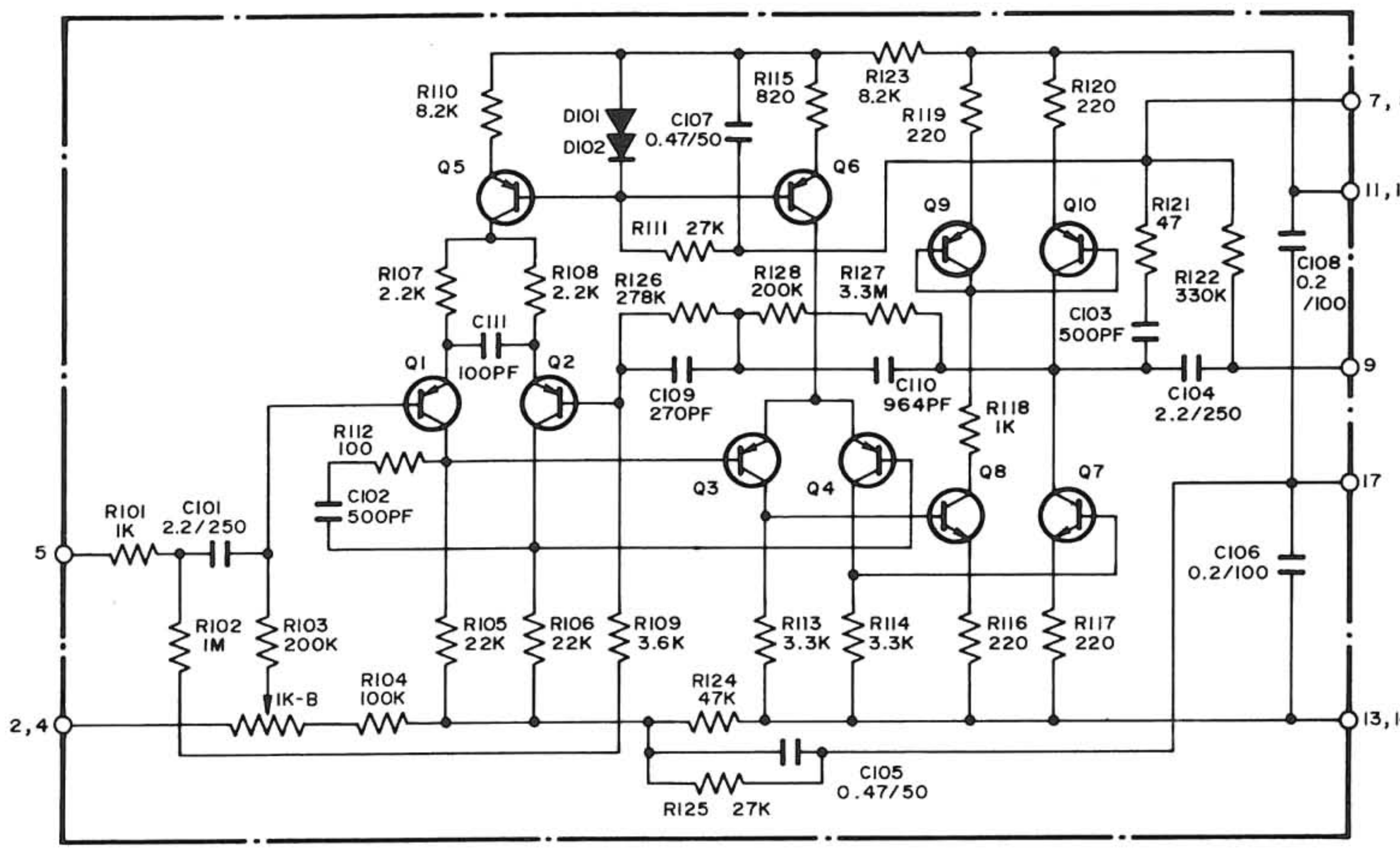
Ref. No.	Parts Number	Description
*	131 0 4006 05501	Wire Assy 3P (For Function P.C.B.)
	4 2319 33690	Push Switch 4 Key (Tape Monitor SW)
	4 2379 21360	Terminal 3P (Tape-1,2,3, Mode, Tape Copy)
	4 2379 21370	Terminal 4P (Tape Copy)

NOTE: * Asterisk indicates not a service part.

POINT TO POINT WIRING DIAGRAM

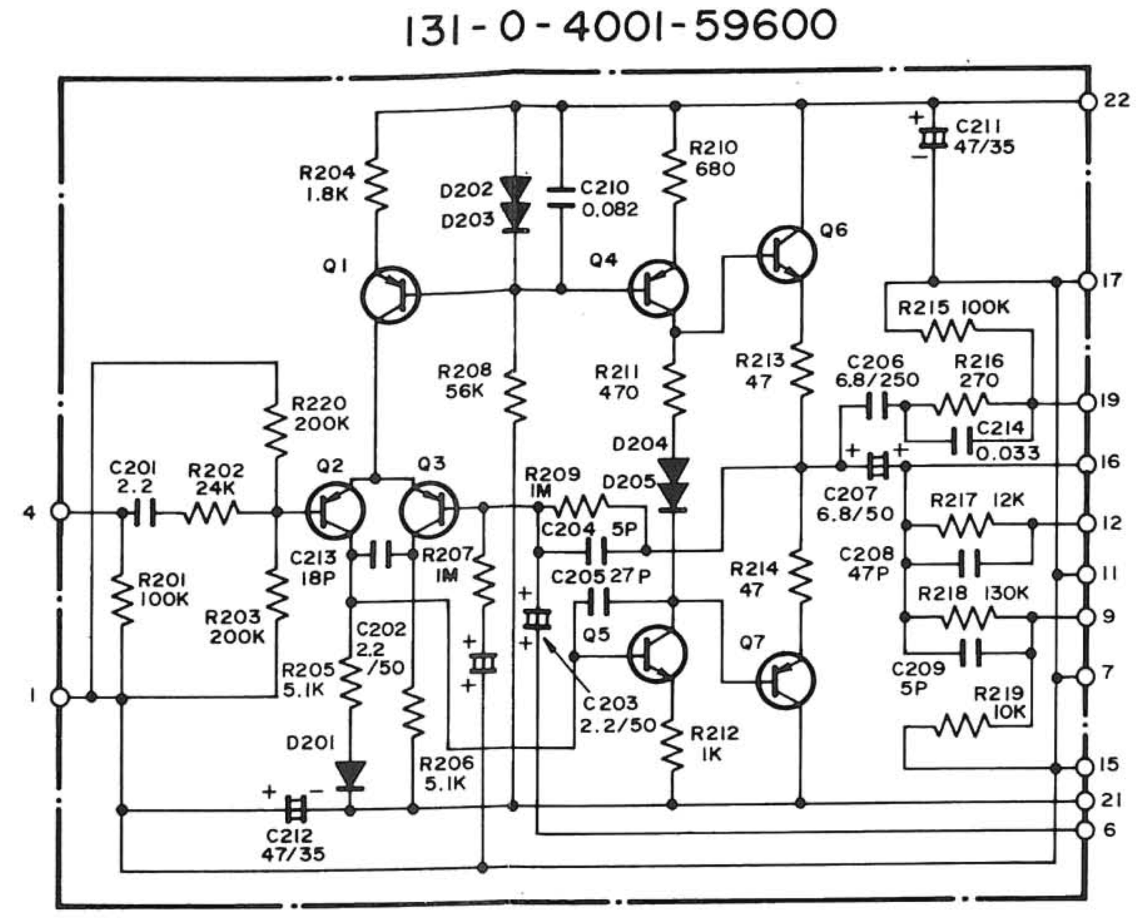
BLOCK CIRCUIT DIAGRAM

EQUALIZATION AMP.
131-0-4001-59100



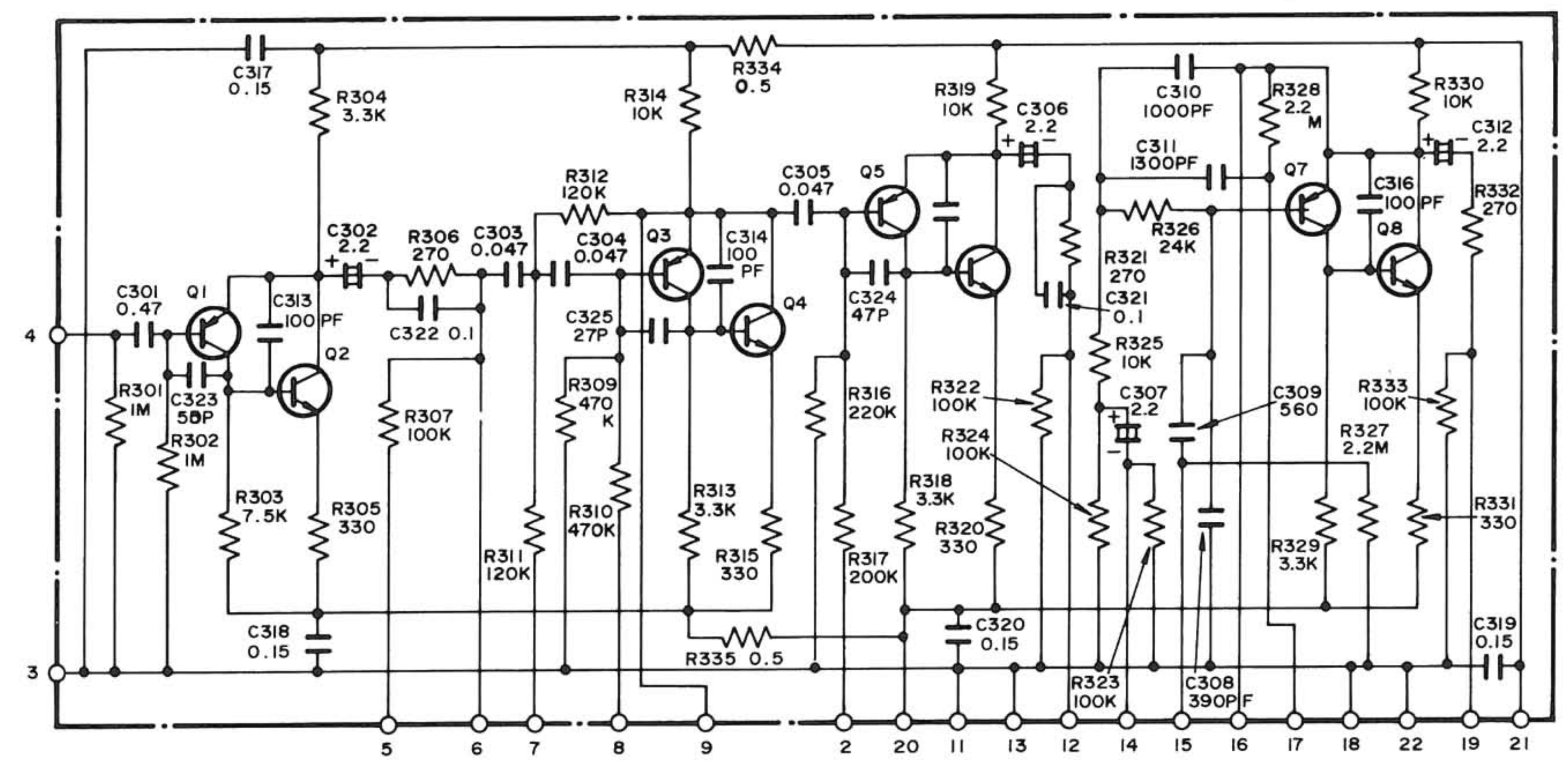
Q1 ~ 4 2SA726G · Q5, 6 2SA628F · Q7, 8 2SC1904V · Q9, 10 2SA899V
D101, 102 DS-442

TONE CONTROL AMP.
131-0-4001-59600



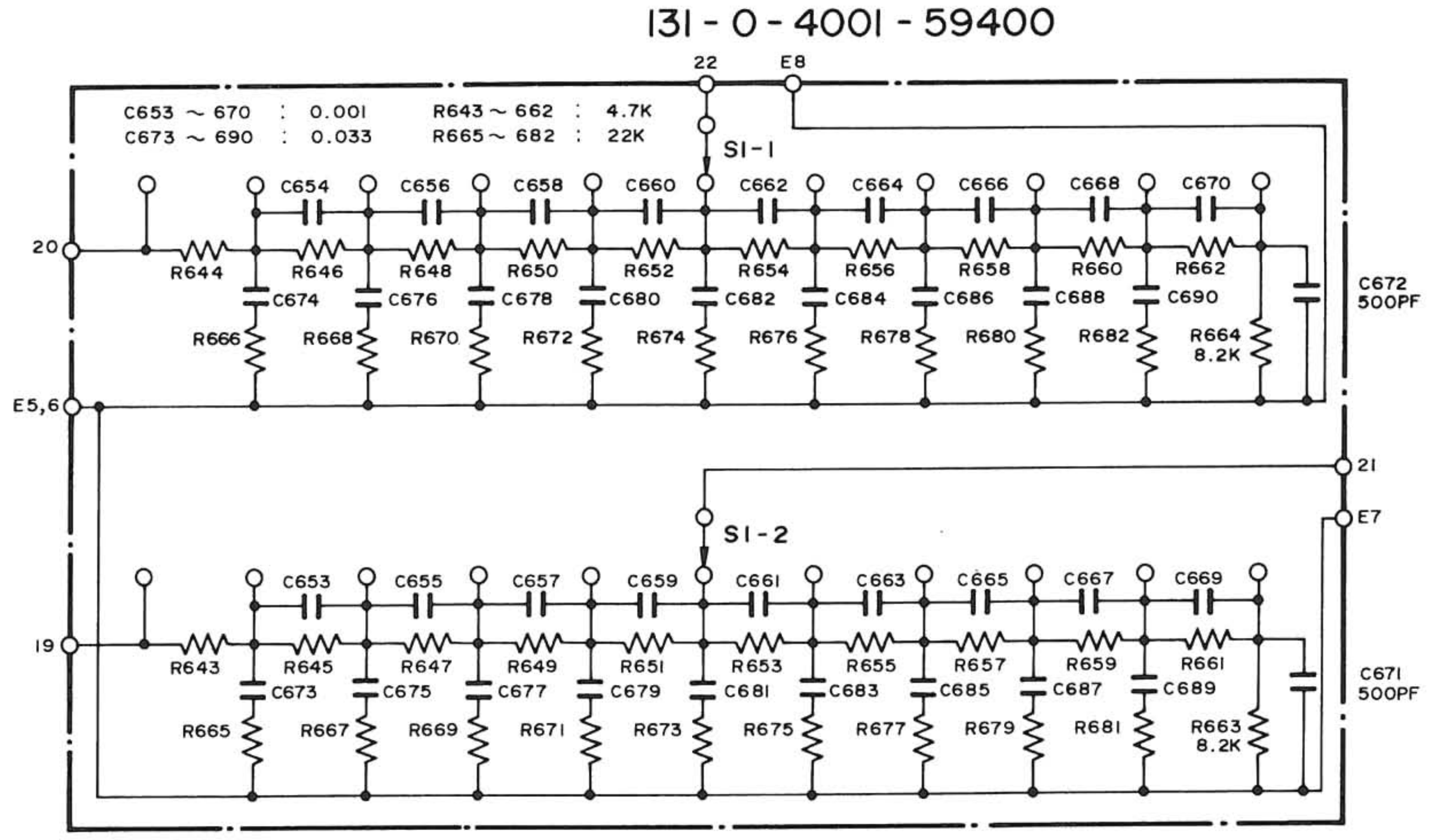
Q1 ~ 4 2SA847G · Q5 2SC1313SG · Q6 2SD438E · Q7 2SB560E

FILTER AMPLIFIER
131-0-4001-59300

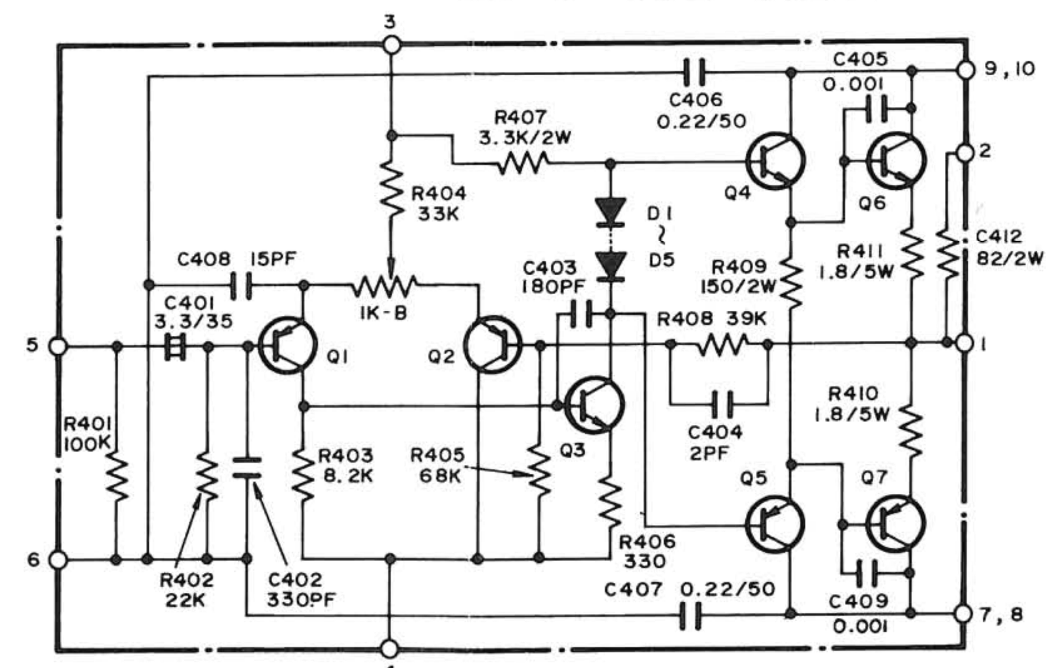


Q1, 3, 5, 7 2SA847G · Q4, 6, 8 2SC1313SG · Q2 2SD438E

LOUDNESS R/C NETWORK
131-0-4001-59400

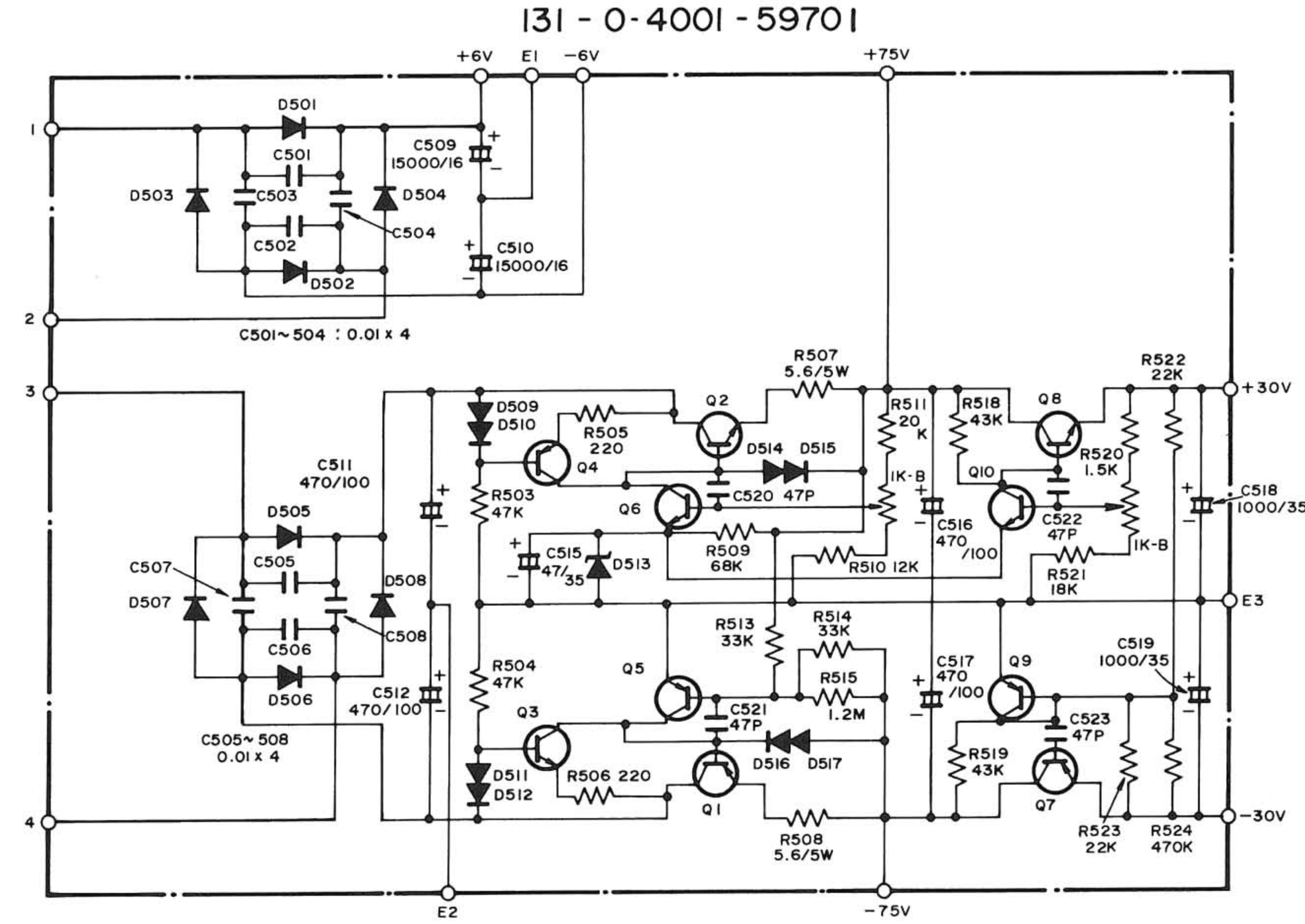


MONITOR AMP SPEAKER
131-0-4001-59200



Q1, 2 2SA847G · Q3 2SC438E · Q4 2SC1313G
Q5 2SA726G · Q6 2SD315F · Q7 2SB509F
D1 ~ 5 DS-430

POWER SUPPLY
131-0-4001-59701

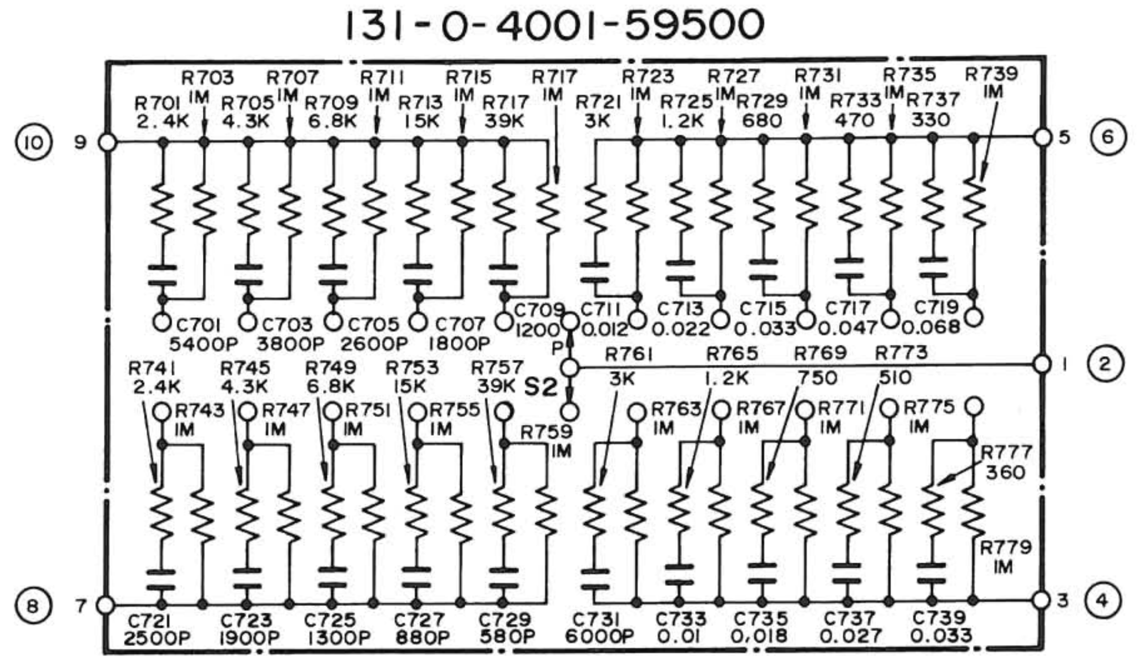


Q1 2SA765Y · Q2 2SC1445Y · Q3, 10 2SD438E · Q4, 9 2SB560E
Q5 2SA899V · Q6 2SD438E · Q7 2SB509F · Q8 2SD315F

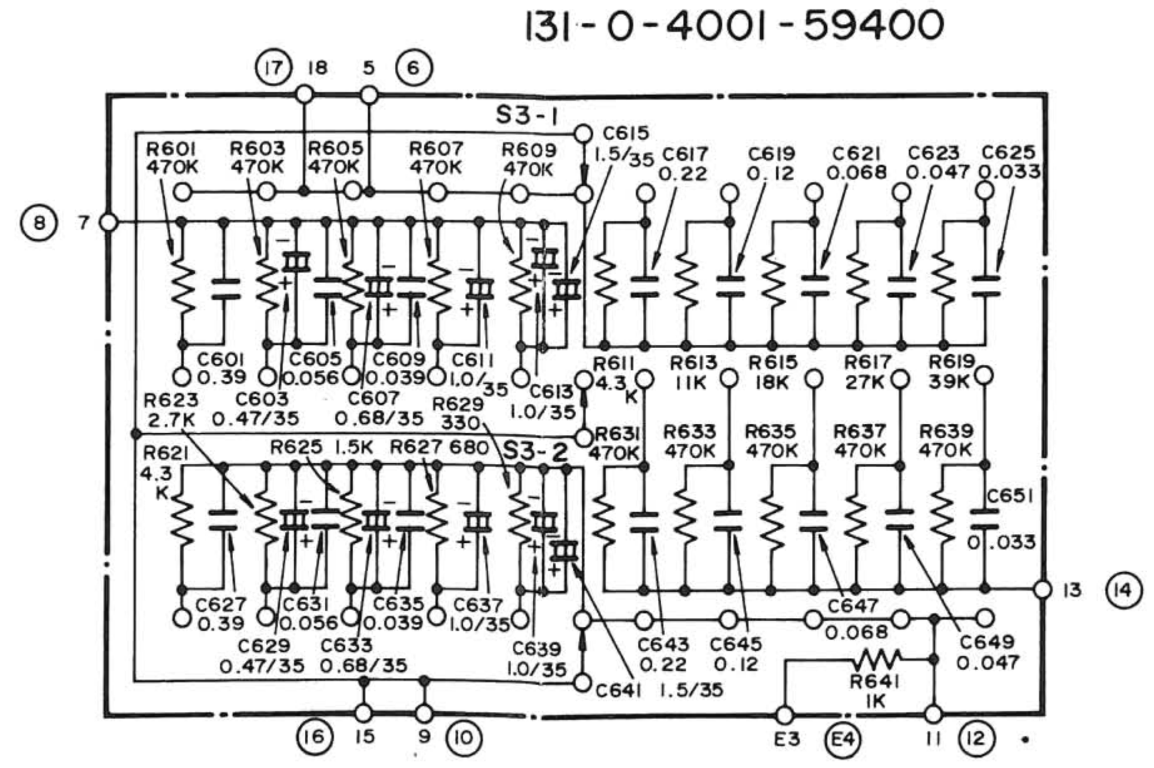
D501 ~ 504 IN4002 · D505 ~ 508 IN4004GI · D509 ~ 512 DS-430
D513 CZ-275 · D514 ~ 517 DS-430

S1 : LOUDNESS CONTROL (4-2319-33780)
S2 : TREBLE CONTROL (4-2319-33760)
S3 : BASS CONTROL (4-2319-33770)

TREBLE R/C NETWORK
131-0-4001-59500



BASS R/C NETWORK
131-0-4001-59400

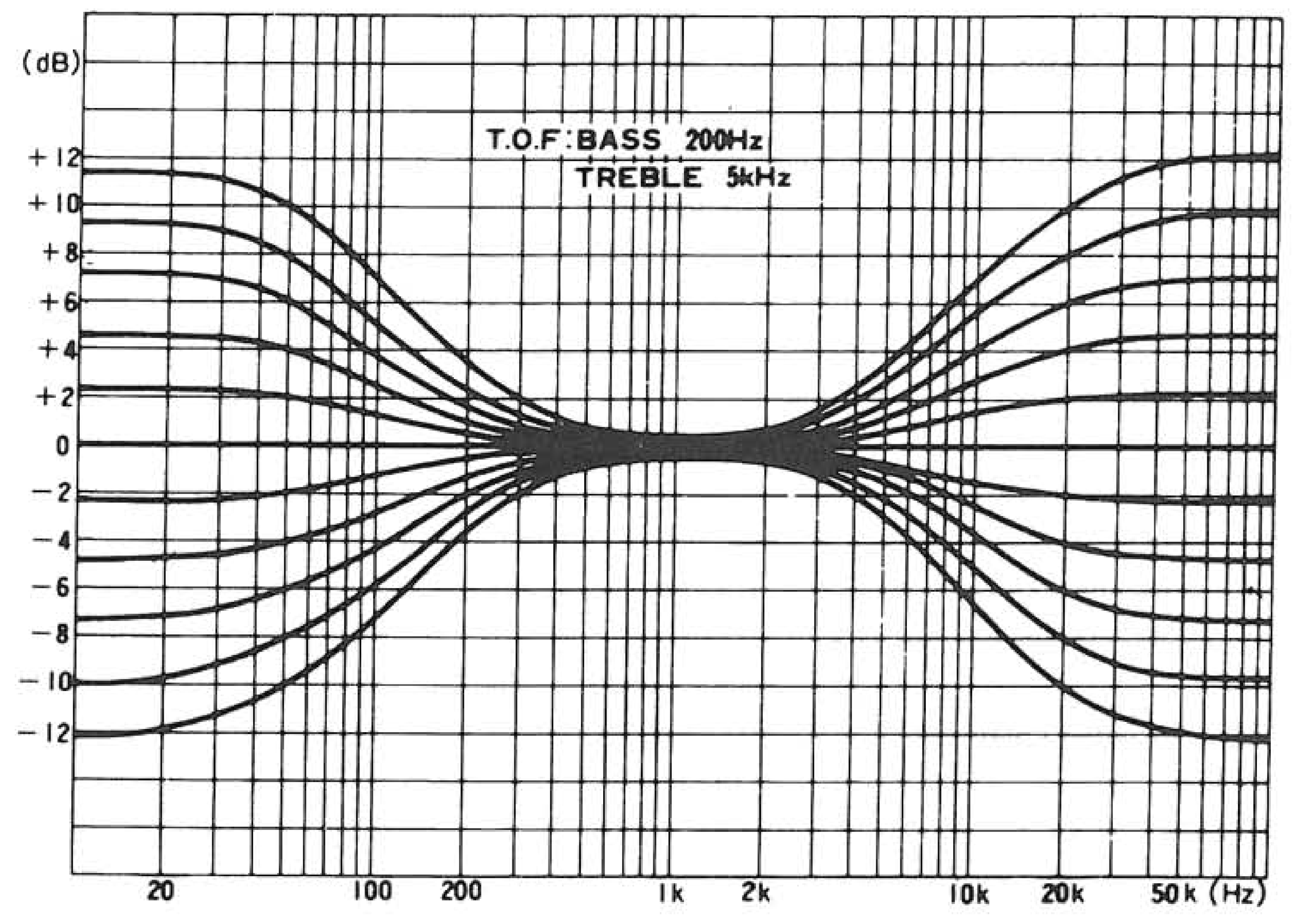


SCHEMATIC DIAGRAM

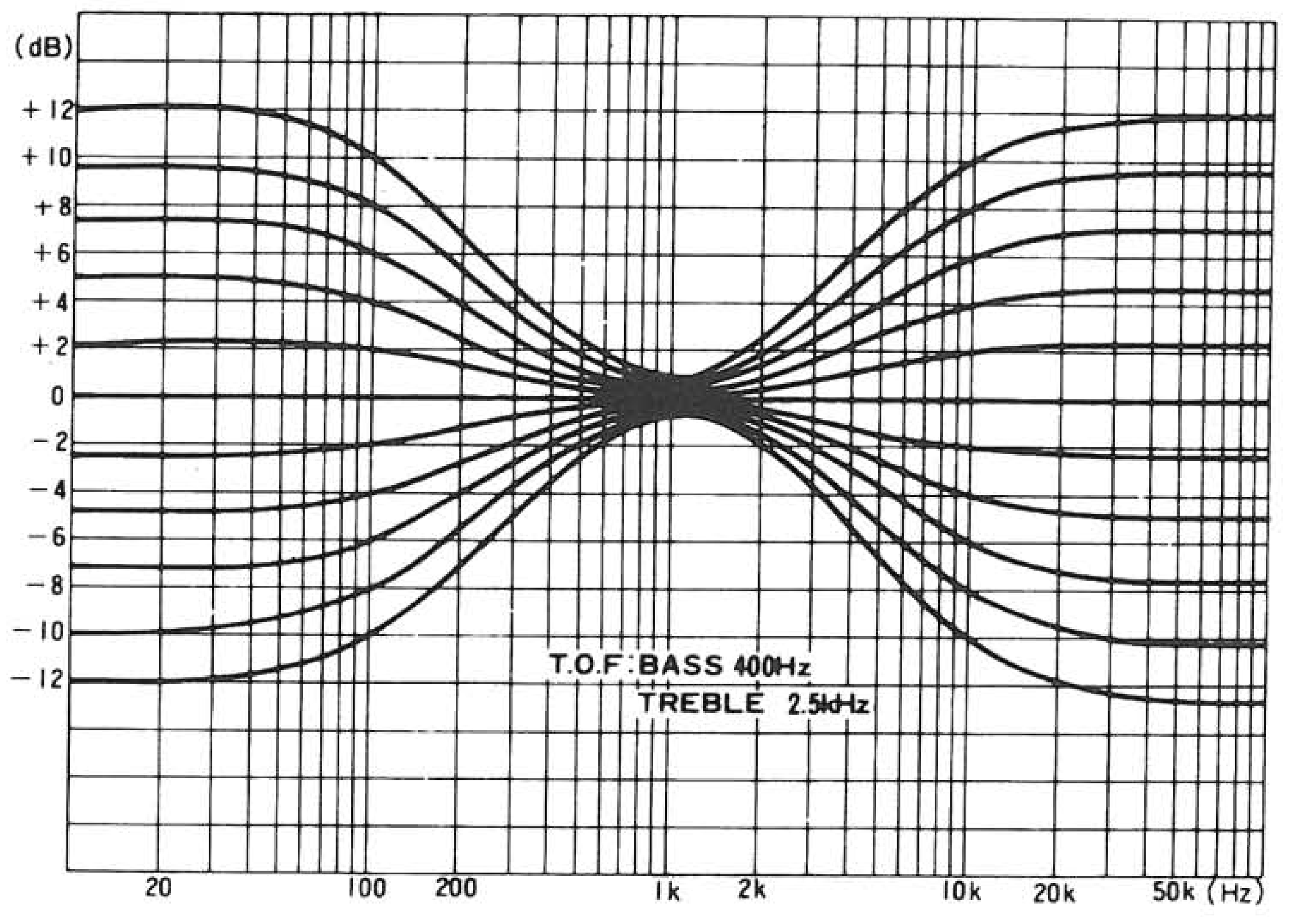
NOTES:

1. All resistors values are indicated in "ohm" ($K=10^3$, $M=10^6$).
2. All capacitors values are indicated in "μF" ($P=10^{-12}$).
3. All voltages indicated on the schematics are measured under the following conditions.
   a. Use a V.T.V.M.
   b. All voltages ±10% with respect chassis ground
   c. No signals at input terminals
   d. AC input at 110/220 volts 50/60 Hz.
4. This is fundamental schematics diagram. Some products may be modified without notice.

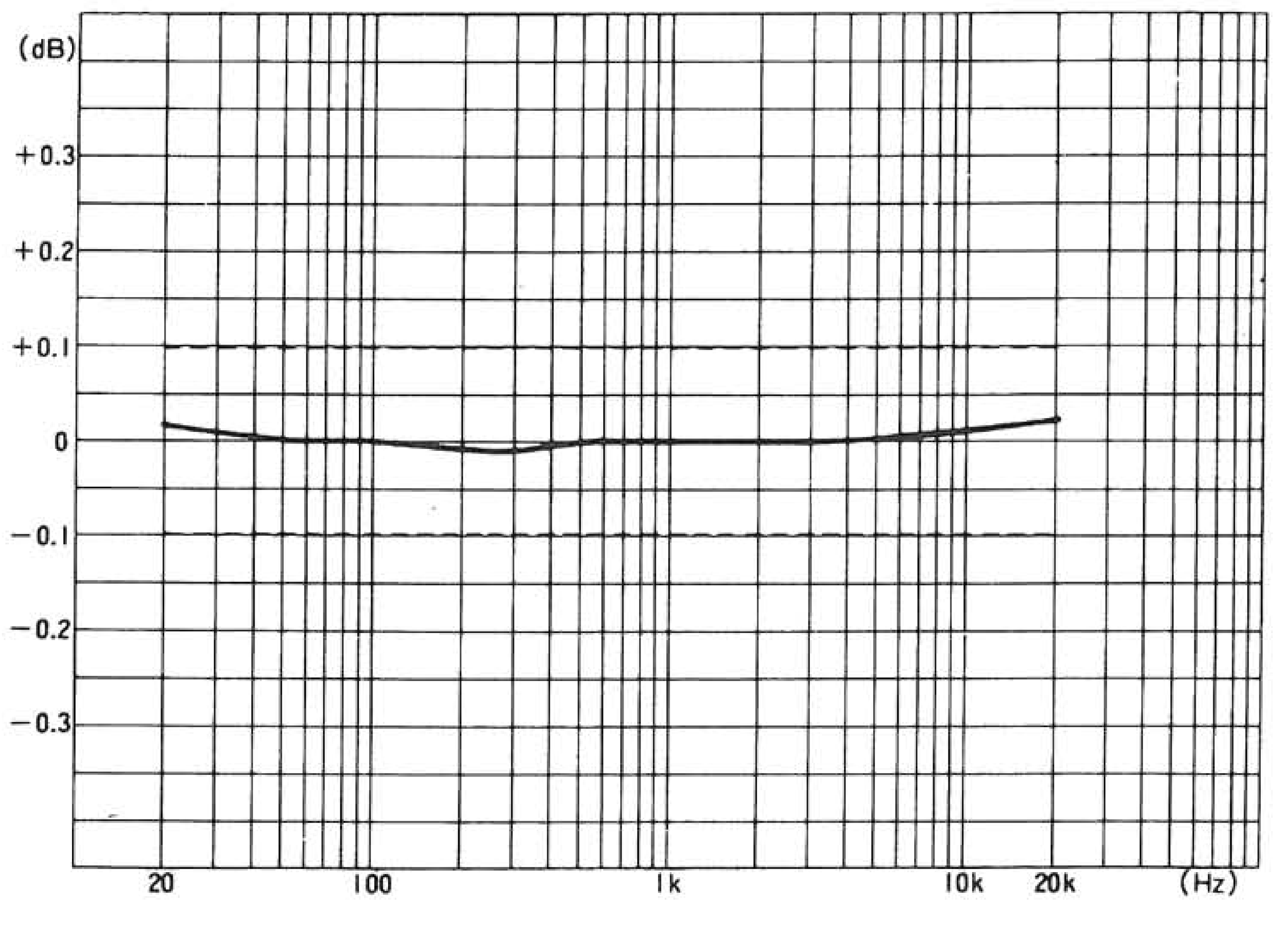
PERFORMANCE CHARACTERISTICS DIAGRAMS



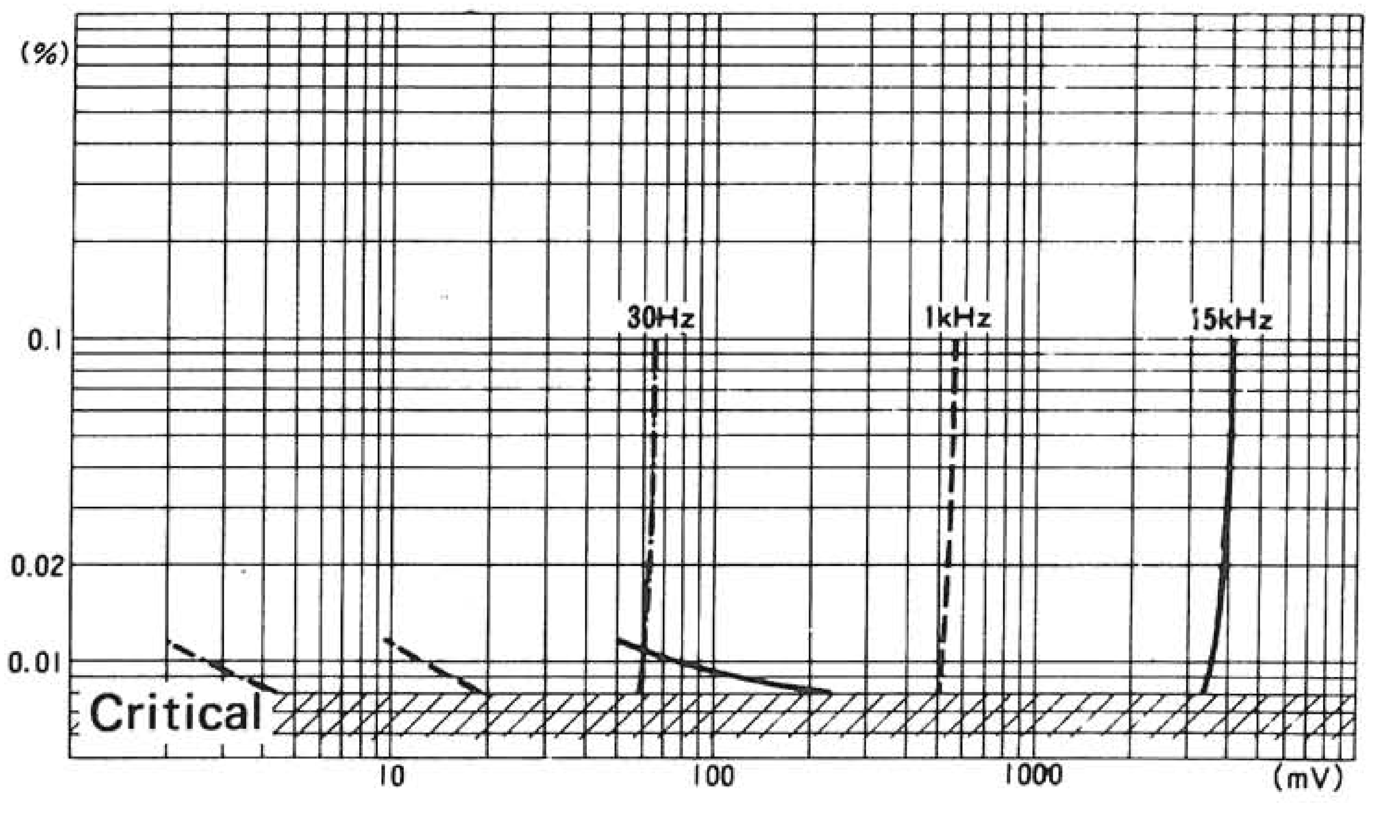
a) Tone Control Frequency Response Curves, Crossover Frequencies: 200 Hz and 5 kHz.



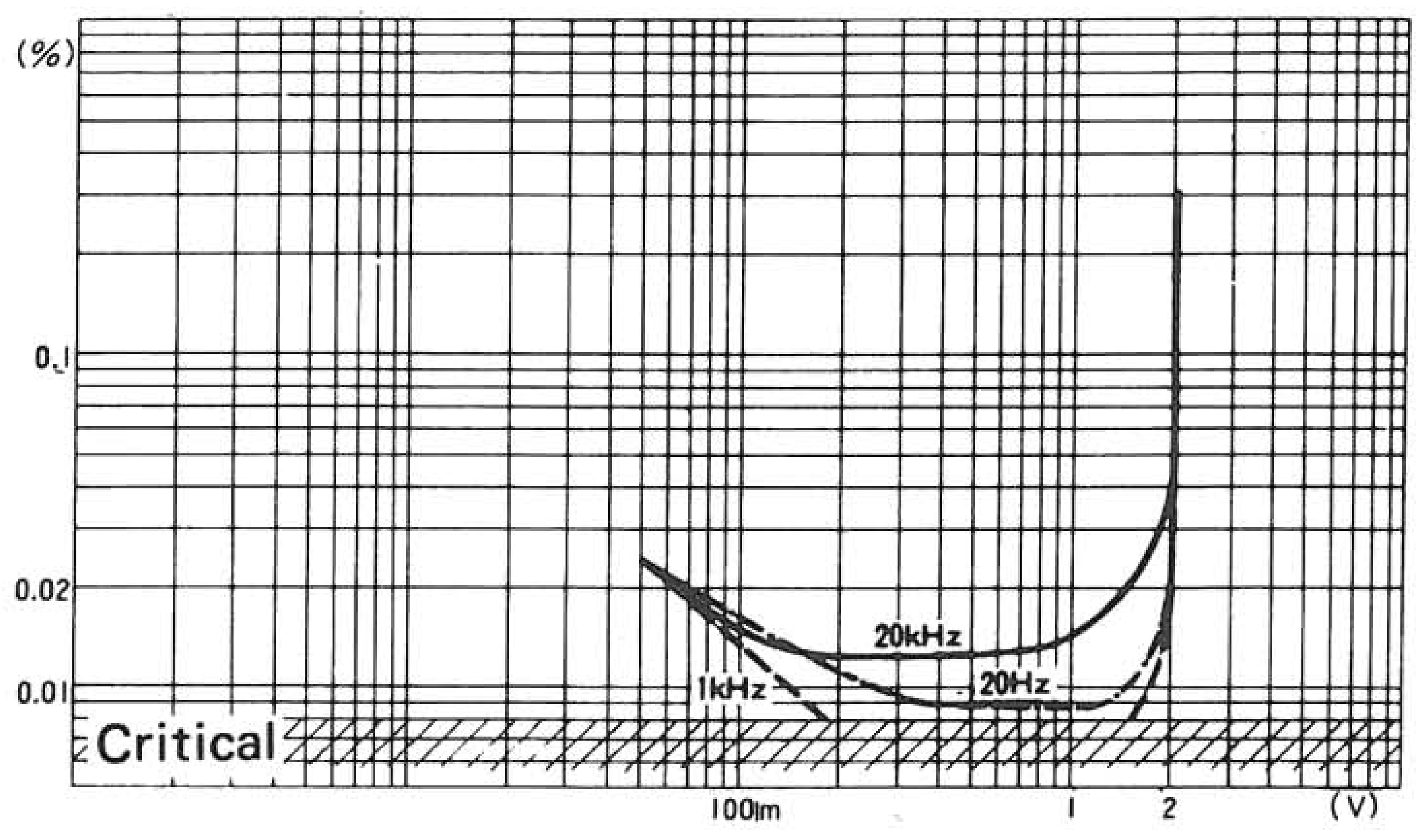
b) Tone Control Frequency Curves, Crossover frequencies: 400 Hz and 2.5 kHz.



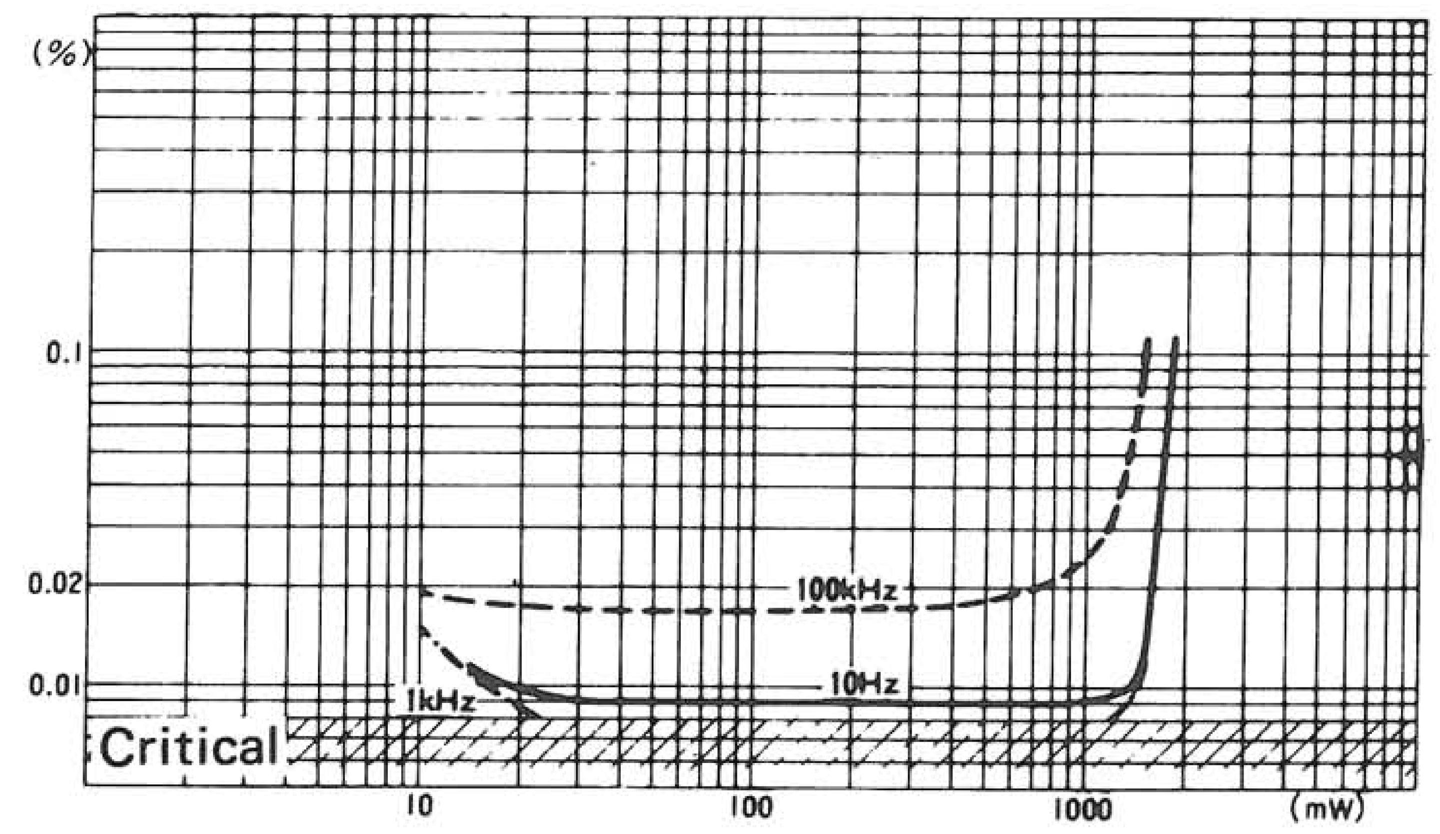
c) RIAA Equalization Deviation Curve



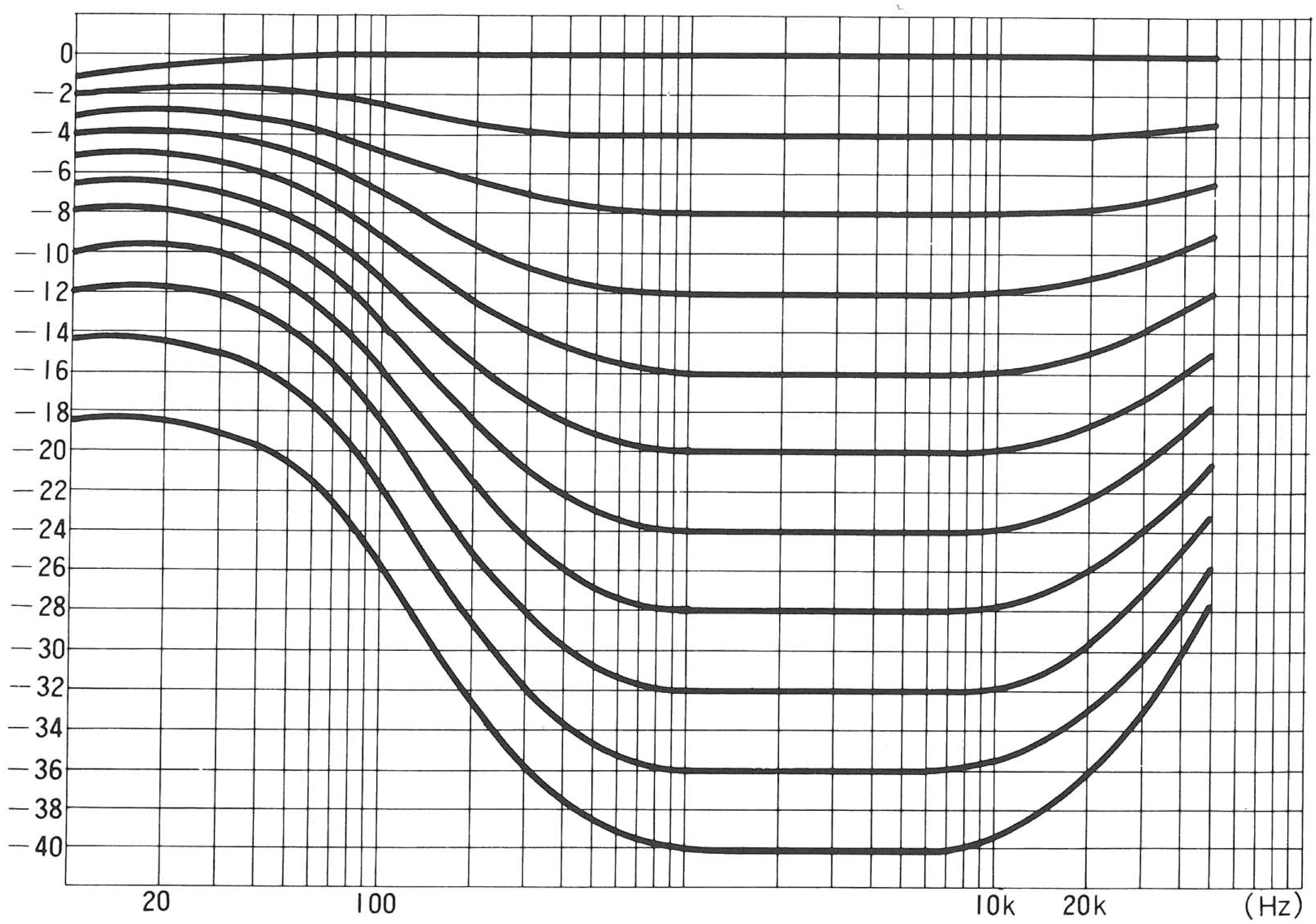
d) Phono Input Levels, Vs. Frequency and T.H.D.



e) Monitor Amplifier Distortion Vs. Output Power for 20 Hz, 1 kHz, 20 kHz.



f) Monitor Amplifier Distortion Vs. Power for 10 Hz, 1 kHz and 100 kHz.



g) Loudness Characteristics.

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