



Stereophonic

**THE FISHER
PRESIDENT VIII
SERVICE
MANUAL**



MODEL 8000

PRICE: \$1.00

FISHER RADIO CORPORATION • NEW YORK

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THE FISHER 8000



PARTS DESCRIPTION LIST • TUNER

CAPACITORS

10% tolerance for all fixed capacitors, unless otherwise noted or marked GMV (guaranteed minimum value). All capacitors not marked uf are pf (µuf).

Symbol	Description	Part No.	Symbol	Description	Part No.
C1	Ceramic, 4, NPO, 1000V	C50070-36	C64	Ceramic, 5000, +80 — 20%, 500V	C50089-6
C2, 3	Mylar, .1uf, 250V	C50197-54	C65	Ceramic, 100, N1500, 1000V	C50070-6
C4	Ceramic, 10, NPO, 1000V	C50070-11	C66, 67,		
C5	Ceramic, 47, 5%, N750, 1000V	C50070-29	68	Ceramic, 5000, +80 — 20%, 500V	C50089-6
C6	Ceramic, .02uf, +80 — 20%, 500V	C50089-4	C69	Ceramic, 2700, 1000V	C50072-17
C7, 8	Ceramic, 5000, 20%, 500V	C50089-1	C70	Ceramic, 7, NPO, 1000V	C50070-20
C9, 10	Ceramic, 390, 1000V	C50072-6	C71	Ceramic, 5000, +80 — 20%, 500V	C50089-6
C11	Ceramic, 1000, GMV, 500V	C50089-2	C72	Ceramic, Feedthru, 1000, GMV	C592-187
C12	Ceramic, Feedthru, 1000, GMV	C592-187	C73	Ceramic, 5000, +80 — 20%, 500V	C50089-6
C13	Ceramic, .02uf, +80 — 20%, 500V	C50089-4	C74	Ceramic, .02uf, GMV, 1000V	C50071-6
C14	Ceramic, Feedthru, 1000, GMV	C592-187	C75	Ceramic, 12, NPO, 1000V	C50070-12
C15	Ceramic, 7±.5, NPO, 500V	CC20CJ070D5	C76	Ceramic, .05uf, +80 — 20%, 100V	C50073-2
C16	Electrolytic, 20uf, 250V	C746-145	C77	Electrolytic, 2uf, 70V	C721-142
C17, 18	Ceramic, 39, N1500, 1000V	C50070-17	C78	Ceramic, 2700, 1000	C50072-17
C19	Ceramic, 1000, GMV, 500V	C50089-2	C79	Ceramic, 5000, +80 — 20%, 500V	C50089-6
C20	Ceramic, Trimmer	C662-123	C80	Ceramic, .02uf, GMV, 1000V	C50071-6
C21	Ceramic, 100, GMV, N1500, 1000V	C50070-5	C81	Electrolytic, .5uf, 350V	C50283-7
C22	Ceramic, 56, 5%, N1500, 1000V	C50070-38	C82, 83,		
C23	Variable, FM-AM	C965-115	84	Ceramic, 330, 1000V	C50072-1
C24	Ceramic, 56, 5%, N1500, 1000V	C50070-38	C85	Polystyrene, 2500, 5%, 125V	CP50394-9
C25	Ceramic, .68, 500V	C50077-6N	C86	Molded, .01uf, 20%, 600V	C2747
C26	Ceramic, Trimmer	C662-123	C87	Electrolytic, 8uf, 50V	C629-138
C27	Ceramic, 8±.5, NPO, 500V	CC20CJ080D5	C88	Mylar, .1uf, 125V	C50435-7
C28	Ceramic, 68, N750, 500V	CC20UJ680K5	C89	Ceramic, .05uf, +80 — 20%, 100V	C50073-2
C29	Ceramic, .02uf, +80 — 20%, 500V	C50089-4	C90	Ceramic, Feedthru, 1000, GMV	C592-187
C30, 31	Ceramic, 100, N1500, 1000V	C50070-6	C91	Ceramic, .05uf, +80 — 20%, 100V	C50073-2
C32	Ceramic, Trimmer	C662-123	C92	Polystyrene, 470, 2.5%, 125V	CP50394-6
C33	Ceramic, 24, 5%, N150, 1000V	C50070-8	C93	Ceramic, 2700, 1000V	C50072-17
C34	Ceramic, 100, 5%, N1500, 1000V	C50070-19	C94, 95	Mylar, .1uf, 125V	C50435-7
C35	Polystyrene, 470, 2.5%, 125V	CP50394-6			
C36	Ceramic, 8, NPO, 1000V	C50070-14			
C37	Ceramic, 1000, 1000V	C50072-3			
C38	Ceramic, 8±.5, N330, 500V	CC20SJO80D5			
C39, 40	Ceramic, Feedthru, 1000 GMV	C592-187			
C41	Polystyrene, 470, 2.5%, 125V	CP50394-6			
C42	Ceramic, 5000, +80 — 20%, 500V	C50089-6			
C43	Ceramic, 2700, 1000V	C50072-17			
C44	Ceramic, 5000, +80 — 20%, 500V	C50089-6			
C45	Polystyrene, 470, 2.5%, 125V	CP50394-6			
C46	Ceramic, 560, 1000V	C50072-14			
C47	Ceramic, .02uf, +80 — 20%	C50089-4			
C48	Ceramic, 10, 5%, NPO, 1000V	C50070-39			
C49	Ceramic, 5000, +80 — 20%, 500V	C50089-6			
C50	Ceramic, 1, 20%, 1000V	C50070-1			
C51	Ceramic, 100, N1500, 1000V	C50070-6			
C52	Polystyrene, 1000, 5%, 125V	CP50394-7			
C53	Ceramic, .05uf, +80 — 20%, 100V	C50073-2			
C54	Ceramic, 24, 5%, N150, 1000V	C50070-8			
C55	Ceramic, 5000, +80 — 20%, 500V	C50089-6			
C56	Ceramic, 2700, 1000V	C50072-17			
C57	Ceramic, .02uf, GMV, 1000V	C50071-6			
C58, 59,					
60	Ceramic, 5000, +80 — 20%, 500V	C50089-6			
C61	Ceramic, .05uf, +80 — 20%, 100V	C50073-2			
C62	Ceramic, 100, N1500, 1000V	C50070-6			
C63	Electrolytic, 4 section:	C670-125B			

A — 40uf, 250V
 B — 40uf, 250V
 C — 40uf, 300V
 D — 40uf, 300V

RESISTORS AND POTENTIOMETERS

In ohms, 5% tolerance, 1/8 watt, unless otherwise noted. K=Kilohms, M=Megohms.

Symbol	Description	Part No.
R1	Composition, 3.3, 10%, 1/2 W	RC20BF3R3K
R2	Composition, 270, 10%, 1/2 W	RC20BF271K
R3	Composition, 2.7K, 10%, 1/2 W	RC20BF272K
R4	Dep. Carbon, 1.5M, 1/3 W	R33DC155J
R5, 6	Dep. Carbon, 100K, 1/3 W	R33DC104J
R7	Composition, 100K, 10%, 1/2 W	RC20BF104K
R8	Composition, 270, 10%, 1/2 W	RC20BF271K
R9	Dep. Carbon, 1.8M, 1/3 W	R33DC185J
R10, 11	Composition, 22M, 10%, 1/2 W	RC20BF226K
R12	Composition, 100, 10%, 1/2 W	RC20BF101K
R13	Dep. Carbon, 47	R12DC470J
R14	Dep. Carbon, 1.8M, 1/3 W	R33DC185J
R15, 16	Composition, 150K, 10%, 1/2 W	RC20BF154K
R17	Composition, 47K, 10%, 1/2 W	RC20BF473K
R18	Dep. Carbon, 100K	R12DC104J
R19	Dep. Carbon, 100K, 1/3 W	R33DC104J
R20	Composition, 680, 10%, 1/2 W	RC20BF681K
R21	Dep. Carbon, 100K, 1/3 W	R33DC104J
R22	Composition, 680, 10%, 1/2 W	RC20BF681K
R23, 24	Dep. Carbon, 100K, 1/3 W	R33DC104J
R25	Dep. Carbon, 330K	R12DC334J
R26	Composition, 2.2K, 10%, 1/2 W	RC20BF222K
R27, 28	Dep. Carbon, 470K, 1/3 W	R33DC474J
R29	Potentiometer, 500K, Left Output Level	R50103-6

PARTS DESCRIPTION LIST • TUNER

<p>R30 Dep. Carbon, 560K R31 Dep. Carbon, 22K R32 Dep. Carbon, 470K R33 Dep. Carbon, 27 R34 Dep. Carbon, 3.9M, 1/2 W R35 Composition, 18K, 10%, 1W R36 Dep. Carbon, 2.7K R37 Composition, 1K, 10%, 1/2 W R38 Dep. Carbon, 47K R39 Composition, 1K, 10%, 1/2 W R40 Composition, 3.3K, 10%, 1W R41 Composition, 150, 10%, 1/2 W R42 Composition, 27K, 10%, 1/2 W R43 Dep. Carbon, 47K R44 Composition, 1K, 10%, 1/2 W R45 Composition, 180, 10%, 1/2 W R46 Dep. Carbon, 820K R47 Dep. Carbon, 47K R48 Composition, 27K, 10%, 1/2 W R49 Potentiometer, 500K, Right Output Level R50 Composition, 1K, 10%, 1/2 W R51 Composition, 82K, 10%, 1/2 W R52 Potentiometer, 100K, Muting R53 Dep. Carbon, 47K R54 Dep. Carbon, 27K R55 Dep. Carbon, 1.8K R56 Dep. Carbon, 68K R57 Composition, 68K, 10%, 1/2 W R58 Dep. Carbon, 1M R59 Dep. Carbon, 15K R60 Composition, 1K, 10%, 1/2 W R61 Dep. Carbon, 1M R62 Dep. Carbon, 100K R63 Dep. Carbon, 220K R64 Composition, 2.2K, 10%, 1/2 W R65 Dep. Carbon, 22K R66 Glass, 270, 10%, 3W R67 Dep. Carbon, 120 R68 Composition, 470K, 10%, 1/2 W R69 Glass, 270, 10%, 3W R70 Composition, 56K, 10% R71 Dep. Carbon, 1M R72 Composition, 1K, 10%, 1/2 W R73 Composition, 18K, 10%, 1/2 W R74 Composition, 150, 10%, 1/2 W R75 Dep. Carbon, 1K R76 Dep. Carbon, 82K R77, 78 Composition, 220, 10%, 1/2 W R79 Dep. Carbon, 47K R80 Dep. Carbon, 270K R81 Dep. Carbon, 820K R82 Dep. Carbon, 56K R83 Composition, 47K, 10%, 1/2 W R84 Dep. Carbon, 820K R85 Composition, 1K, 10%, 1/2 W R86, 87 Dep. Carbon, 820K R88 Dep. Carbon, 150K R89 Dep. Carbon, 100K R90 Dep. Carbon, 470K R91 Composition, 1.5K, 5%, 1/2 W R92 Composition, 1K, 5%, 1/2 W R93 Composition, 270, 5%, 1/2 W R94 Dep. Carbon, 47K</p>	<p>R12DC564J R12DC223J R12DC474J R12DC270J R33DC395J RC30BF183K R12DC272J RC20BF102K R12DC473J RC20BF102K RC30BF332K RC20BF151K RC20BF273K R12DC473J RC20BF102K RC20BF181K R12DC824J R12DC473J RC20BF273K R50103-6 RC20BF102K RC20BF823K R50160-106 R12DC473J R12DC273J R12DC182J R12DC683J RC20BF683K R12DC105J R12DC153J RC20BF102K R12DC105J R12DC104J R12DC224J RC20BF222K R12DC223J RPG3W271K R12DC121J RC20BF474K RPG3W271K RC20BF563K R12DC105J RC20BF102K RC20BF183K RC20BF151K R12DC102J R12DC823J RC20BF221K R12DC473J R12DC274J R12DC824J R12DC563J RC20BF473K R12DC824J RC20BF102K R12DC824J R12DC154J R12DC104J R12DC474J RC20BF152J RC20BF102J RC20BF271J R12DC473J</p>	<p>R95 Composition, 820K, 10%, 1/2 W R96 Dep. Carbon, 15K R97 Dep. Carbon, 470K R98 Composition, 330 R99 Dep. Carbon, 1.8M, 1/2 W R100 Dep. Carbon, 1K</p> <p style="text-align: center;">COILS, CHOKES AND TRANSFORMERS</p> <table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: left;">Symbol</th> <th style="text-align: left;">Description</th> <th style="text-align: left;">Part No.</th> </tr> </thead> <tbody> <tr><td>L1</td><td>AM Loop Antenna</td><td>L990-132</td></tr> <tr><td>L2</td><td>Coil, FM Antenna</td><td>L965-119</td></tr> <tr><td>L3</td><td>Transformer, AM RF</td><td>L50210-35</td></tr> <tr><td>L4</td><td>Choke, 1.5 Microhenry</td><td>L50066-4</td></tr> <tr><td>L5</td><td>Coil, FM RF</td><td>L965-116</td></tr> <tr><td>L6</td><td>Coil, FM Mixer</td><td>L965-117</td></tr> <tr><td>L7</td><td>Choke, 1 Microhenry</td><td>L50066-2</td></tr> <tr><td>L8</td><td>Coil, AM OSC.</td><td>L50210-28</td></tr> <tr><td>L9</td><td>Coil, FM OSC Assembly</td><td>AS965-120</td></tr> <tr><td>L10, 11,</td><td></td><td></td></tr> <tr><td>12</td><td>Choke, 1 Microhenry</td><td>L50066-2</td></tr> <tr><td>L13</td><td>Coil, 10KC Filter</td><td>L644-120</td></tr> <tr><td>L14</td><td>Coil, Muting OSC</td><td>L50210-22</td></tr> <tr><td>L15</td><td>Choke, 3.3 Microhenries</td><td>L50066-8</td></tr> <tr><td>L16</td><td>Choke, 1 Microhenry</td><td>L50066-2</td></tr> <tr><td>L17, 18, 19,</td><td></td><td></td></tr> <tr><td>20, 21, 22,</td><td></td><td></td></tr> <tr><td>23, 24</td><td>Choke, Ferrite Bead</td><td>L592-189</td></tr> <tr><td>T1</td><td>Transformer, Power</td><td>T1016-115</td></tr> <tr><td>Z1</td><td>Transformer, FM I.F.</td><td>ZZ50210-42</td></tr> <tr><td>Z2</td><td>Transformer, AM I.F.</td><td>ZZ50210-38</td></tr> <tr><td>Z3</td><td>Transformer, FM I.F.</td><td>ZZ50210-39</td></tr> <tr><td>Z4</td><td>Transformer, AM I.F.</td><td>ZZ50210-38</td></tr> <tr><td>Z5</td><td>Transformer, FM I.F.</td><td>ZZ50210-2</td></tr> <tr><td>Z6</td><td>Transformer, AM I.F.</td><td>ZZ50210-40</td></tr> <tr><td>Z7, 8</td><td>Coil, FM Limiter</td><td>ZZ50210-6</td></tr> <tr><td>Z9</td><td>Transformer, FM Ratio Detector</td><td>ZZ50210-9</td></tr> </tbody> </table> <p style="text-align: center;">MISCELLANEOUS</p> <table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: left;">Symbol</th> <th style="text-align: left;">Description</th> <th style="text-align: left;">Part No.</th> </tr> </thead> <tbody> <tr><td>CR1, 2, 3</td><td>Diode, Type 1112</td><td>V-1112</td></tr> <tr><td>CR4</td><td>Selenium Rectifier Bridge</td><td>SR50253-4</td></tr> <tr><td>CR5, 6, 7, 8</td><td>Diode, Type 1112</td><td>V-1112</td></tr> <tr><td>F1</td><td>Fuse, 1.2A, Slo-Blo</td><td>F1016-119</td></tr> <tr><td>I1, 2, 3</td><td>Bulb #47</td><td>I50009-1</td></tr> <tr><td>I4</td><td>Bulb #470F</td><td>I50009-4</td></tr> <tr><td>I5, 6</td><td>Bulb, Dial</td><td>I50082-6</td></tr> <tr><td>M1</td><td>Meter</td><td>M766-137</td></tr> <tr><td>RL1</td><td>Relay</td><td>K50314</td></tr> <tr><td>PC1</td><td>Printed Circuit</td><td>PC50434</td></tr> <tr><td>S1</td><td>Switch, FM Antenna</td><td>S1016-117</td></tr> <tr><td>S2</td><td>Switch, AM Bandwidth</td><td>S1016-118</td></tr> <tr><td>S3</td><td>Switch, Selector</td><td>S1016-116</td></tr> <tr><td>S4</td><td>Switch, Muting</td><td>Part of R52</td></tr> <tr><td>S5</td><td>Switch, Filter</td><td>S1016-113</td></tr> <tr><td>—</td><td>Dress Panel</td><td>AS1016-108</td></tr> <tr><td>—</td><td>FM Dipole</td><td>AS50227-1</td></tr> <tr><td>—</td><td>Tube Shield, 7-Pin</td><td>E3330</td></tr> <tr><td>—</td><td>Tube Shield, 9-Pin</td><td>E3287</td></tr> <tr><td>—</td><td>Knob</td><td>E50325-1</td></tr> <tr><td>—</td><td>Knob, Tuning</td><td>E50325-2</td></tr> <tr><td>—</td><td>Jewel, Red</td><td>I50162-1</td></tr> <tr><td>—</td><td>Jewel, Yellow</td><td>I50162-2</td></tr> <tr><td>—</td><td>Jewel, Green</td><td>I50162-4</td></tr> </tbody> </table>	Symbol	Description	Part No.	L1	AM Loop Antenna	L990-132	L2	Coil, FM Antenna	L965-119	L3	Transformer, AM RF	L50210-35	L4	Choke, 1.5 Microhenry	L50066-4	L5	Coil, FM RF	L965-116	L6	Coil, FM Mixer	L965-117	L7	Choke, 1 Microhenry	L50066-2	L8	Coil, AM OSC.	L50210-28	L9	Coil, FM OSC Assembly	AS965-120	L10, 11,			12	Choke, 1 Microhenry	L50066-2	L13	Coil, 10KC Filter	L644-120	L14	Coil, Muting OSC	L50210-22	L15	Choke, 3.3 Microhenries	L50066-8	L16	Choke, 1 Microhenry	L50066-2	L17, 18, 19,			20, 21, 22,			23, 24	Choke, Ferrite Bead	L592-189	T1	Transformer, Power	T1016-115	Z1	Transformer, FM I.F.	ZZ50210-42	Z2	Transformer, AM I.F.	ZZ50210-38	Z3	Transformer, FM I.F.	ZZ50210-39	Z4	Transformer, AM I.F.	ZZ50210-38	Z5	Transformer, FM I.F.	ZZ50210-2	Z6	Transformer, AM I.F.	ZZ50210-40	Z7, 8	Coil, FM Limiter	ZZ50210-6	Z9	Transformer, FM Ratio Detector	ZZ50210-9	Symbol	Description	Part No.	CR1, 2, 3	Diode, Type 1112	V-1112	CR4	Selenium Rectifier Bridge	SR50253-4	CR5, 6, 7, 8	Diode, Type 1112	V-1112	F1	Fuse, 1.2A, Slo-Blo	F1016-119	I1, 2, 3	Bulb #47	I50009-1	I4	Bulb #470F	I50009-4	I5, 6	Bulb, Dial	I50082-6	M1	Meter	M766-137	RL1	Relay	K50314	PC1	Printed Circuit	PC50434	S1	Switch, FM Antenna	S1016-117	S2	Switch, AM Bandwidth	S1016-118	S3	Switch, Selector	S1016-116	S4	Switch, Muting	Part of R52	S5	Switch, Filter	S1016-113	—	Dress Panel	AS1016-108	—	FM Dipole	AS50227-1	—	Tube Shield, 7-Pin	E3330	—	Tube Shield, 9-Pin	E3287	—	Knob	E50325-1	—	Knob, Tuning	E50325-2	—	Jewel, Red	I50162-1	—	Jewel, Yellow	I50162-2	—	Jewel, Green	I50162-4
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—	Tube Shield, 9-Pin	E3287																																																																																																																																																															
—	Knob	E50325-1																																																																																																																																																															
—	Knob, Tuning	E50325-2																																																																																																																																																															
—	Jewel, Red	I50162-1																																																																																																																																																															
—	Jewel, Yellow	I50162-2																																																																																																																																																															
—	Jewel, Green	I50162-4																																																																																																																																																															

FM-AM ALIGNMENT CHART • TUNER

AM

STEPS	CHASSIS			SIGNAL GENERATOR			MEASURING INSTRUMENT	ALIGNMENT	
	AM BANDWIDTH	SELECTOR	STATION SELECTOR	COUPLING	FREQ.	MOD.	TYPE CONNECTION	ADJUST	INDICATION
1	SHARP	AM	Point of no signal and no interference	Audio Gen. with 1V output connected thru 100K resistor to junction of R53 and R54	10 KC	None	AC VTVM to Left Main output	—	Minimum output between 9.5 and 10.5 KC
2	SHARP	AM	Point of no signal and no interference	AM RF Gen. connected thru .01-uf cap. in series with hot lead to V9, Pin 7	455 KC	30% AM at 400 cps.	DC VTVM to the junction of R53 and R54	Z6, Z4, Z2 top & bottom	Maximum negative voltage
3	NORMAL	AM	Point of no signal and no interference	AM Sweep Gen. connected thru .01-uf cap. in series with hot lead to V9, Pin 7	455 KC	30 KC sweep	Scope to Left Main output	Z6 bottom	Adjust slightly for symmetrical curve
4	SHARP	AM	600 KC	AM Gen. connected thru 220-uuf cap. in series with hot lead to AM antenna terminal	600 KC	30% AM at 400 cps.	Scope to Left Main output. DC VTVM to the junction of R53 and R54	L8, L3, L1	Check for sine waveform and maximum negative voltage
5	SHARP	AM	1400 KC	AM Gen. connected thru 220-uuf cap. in series with hot lead to AM antenna terminal	1400 KC	30% AM at 400 cps.	Scope to Left Main output. DC VTVM to the junction of R53 and R54	C23J, C23G, C23D	Check for sine waveform and maximum negative voltage
6	Repeat steps 4 and 5 for proper dial calibration and maximum output.								
NOTE: For steps 1 to 3 remove Tube V1.									
1	FM Muting switch OFF	FM	Point of no signal and no interference	FM Generator connected to Pin 1 of V5	10.7 MC	None	Connect VTVM to TSP 3	Z7, Z8 top, Z9 bottom & top	Voltage between -15 and -30 volts. See Note 3.
2	FM Muting switch OFF	FM	Point of no signal and no interference	FM Generator connected to Pin 1 of V5	10.7 MC	None	Hot lead of DC VTVM to TSP 4. Ground lead of VTVM to junction of two series-connected 47K resistors wired between TSP 3 and gnd.	Z9 top	Zero reading on zero center scale
3	FM Muting switch OFF	FM	Point of no signal and no interference	FM Gen. connected to ungrounded tube shield of V2	10.7 MC	None	DC VTVM to TSP 2	Z5, Z3, Z1 top & bottom	With DC voltage between -0.5 and -1 volt, adjust for maximum
4	FM Muting switch OFF	FM	90 MC	FM Gen. connected thru two 120-ohm carbon resistors in series with lead to FM antenna terminals	90 MC	30% FM (22.5 KC Dev.) at 400 cps.	DC VTVM to TSP 2 and scope to Left Main output	L9, L6, L5, L2	Check for sine waveform and adjust for maximum negative voltage
5	FM Muting switch OFF	FM	1u6 MC	FM Gen. connected thru two 120-ohm carbon resistors in series with lead to FM antenna terminals	106 MC	30% FM (22.5 KC Dev.) at 400 cps.	DC VTVM to TSP 2 and scope to Left Main output	C32, C26, C20	Check for sine waveform and adjust for maximum negative voltage
6	Repeat steps 4 and 5 for proper dial calibration and maximum output.								

FM

Read These Instructions With Extreme Care Before Attempting Alignment.

CHASSIS: Turn the station selectors completely counter-clockwise, without forcing. Dial pointer should be at zero mark on logging scale. If not, reset the dial pointer. Disconnect the external antennas and the AM antenna link. Swing AM Ferrite Loop antenna rearward to operating position. When using an oscilloscope for alignment, set the output level controls for no overload, as shown by the proper waveform shape. Set FM Antenna switch to **NORMAL**.

SIGNAL GENERATORS: The signal generator equipment must be able to supply the following: FM RF 22.5 KC deviation at 400 cps; AM RF modulated 30% at 400 cps; AM IF with 30 KC sweep for AM bandwidth adjustment; audio oscillator accurately calibrated for 1 and 10 KC audio output for testing the 10 KC AM whistle filter.

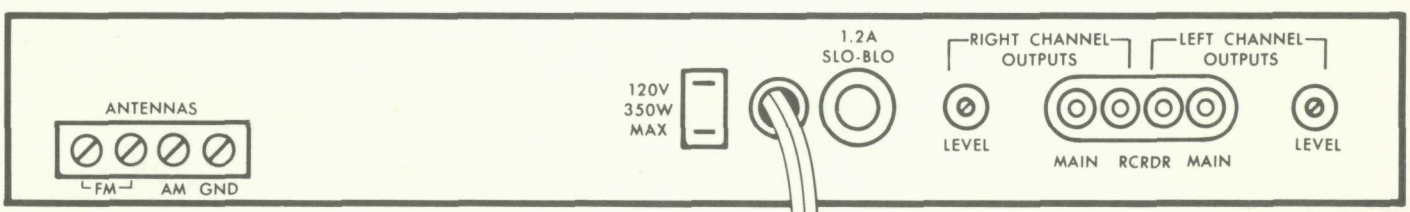
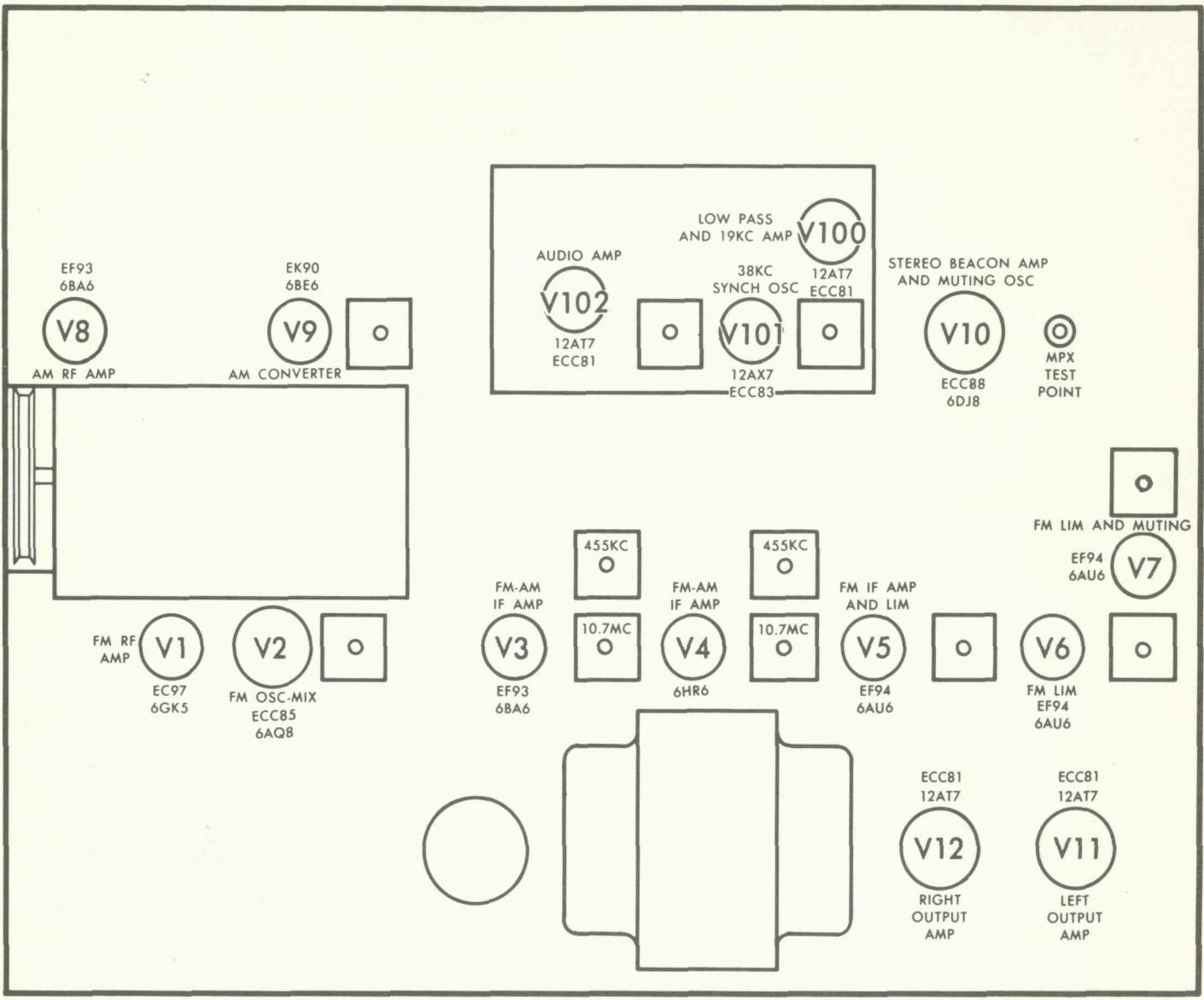
MEASURING INSTRUMENTS: DC VTVM, AC VTVM, and scope for alignment.

ALIGNMENT: Allow the chassis and test instruments to warm up for at least fifteen minutes. Adjust the line voltage for 117 volts AC, 50-60 cycles. Use fully insulated tools; a small screwdriver for all trimming capacitors; a K-tran tool for Z1, Z2, Z3, Z4, Z5 and Z6; a hex tool for Z7, Z8, Z9, L2, L3, L5, L6, L8, L9 and L14.

NOTES:

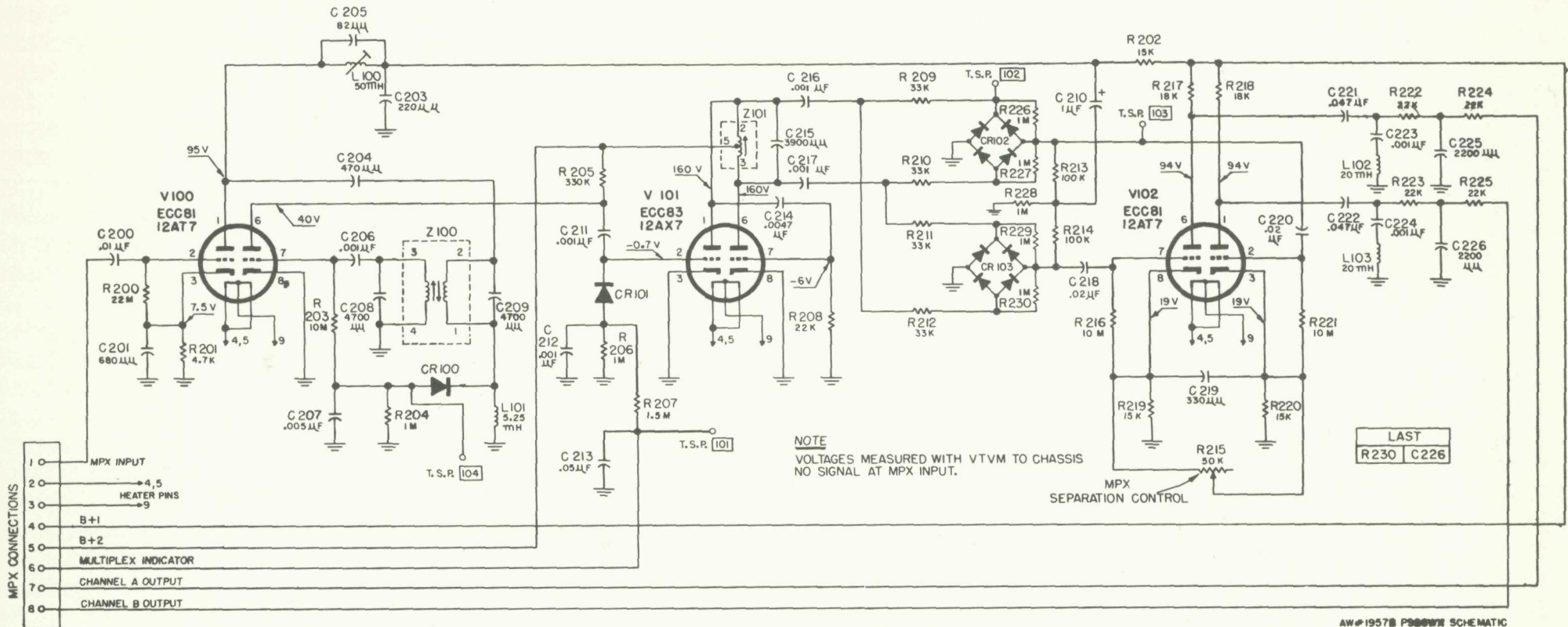
- 1 — For AM alignment short out C91.
- 2 — For calibrating both the AM and FM-RF, use as low an output voltage as possible from your signal generator.
- 3 — Decrease FM signal generator output while adjusting FM-IF transformers so that DC VTVM shows noted voltage.
- 4 — The center frequency should be kept constant for FM-IF, limiter and ratio detector alignment.
- 5 — If adjustment of muting oscillator is necessary, adjust it for 3 MC with a Grid-dip Meter.

TUBE LAYOUT • TUNER



AW2086

SCHEMATIC DIAGRAM • MULTIPLEX SECTION



ALIGNMENT INSTRUCTIONS • MULTIPLEX SECTION

STEPS	GENERATOR			INDICATOR	ALIGNMENT		
	CONNECTION	AUDIO FREQUENCY	RF MODULATION	TYPE & CONNECTION	ADJUST	INDICATION	NOTES
1	Audio oscillator connected to lug 1	80 KC—1 volt	None	AC VTVM to junction of C210 and R228	L100 (Use hex alignment tool)	Minimum voltage	
2	Multiplex generator audio output to lug 1 (See Note 1)	19 KC (± 5 cps) pilot tone, 100 mv	None	DC VTVM to T.S.P. 101	Z100 top and bottom (Use hex alignment tool)	Maximum voltage	1
3	Same as Step 2	19 KC pilot tone, 50 mv	None	Scope horiz. input to 19 KC output of gen.; vert. input to junction of C216 and R209. External sweep	Z101 (Use K-tran alignment tool)	Stable 2:1 Lissajous pattern. Disregard phase of pattern	1
4	Same as Step 2	19 KC	None	Same as Step 3	Vary generator 19 KC output from 50 to 200 mv	Lissajous pattern should remain stationary over the entire 150 mv range	1, 2
5	Same as Step 2	1000 cps on left (A) channel only, 1 volt rms (2.8 P-P)	None	AC VTVM and scope vert. input to channel A output lug. Internal sweep. DC VTVM to T.S.P. 101	Z100 top (Use hex tool)	Maximum indication on AC VTVM. Clean 1000 cps waveform on scope	1, 3
6	Same as Step 2	1000 cps on right (B) channel only, 1 volt rms (2.8 P-P)	None	Same as Step 5	MPX separation R215	Minimum reading on AC VTVM should be at least 33 db below reading obtained in Step 5	1
7	Same as Step 2	Same as Step 6	None	Move scope input and AC VTVM to channel B output lug	-----	Note and record voltage reading on AC VTVM	1
8	Same as Step 2	1000 cps on left (A) channel only, 1 volt rms (2.8 P-P)	None	Same as Step 7	-----	AC VTVM reading should be at least 33 db below reading observed in Step 7	1
9	Same as Step 2	8000 cps on right (B) channel only, 1 volt rms (2.8 P-P)	None	Same as Step 7	-----	AC VTVM reading should be the same as observed in Step 7	1
10	Same as Step 2	8000 cps on left (A) channel only, 1 volt rms (2.8 P-P)	None	Same as Step 7	-----	AC VTVM reading should be at least 18 db below reading observed in Step 9	1
11	Repeat Steps 9 and 10 with scope and AC VTVM connected to channel A output lug, but start with 8000 cps applied to left channel for first reading, then switch to right channel for second reading.						
12	Multiplex generator RF output to 300-ohm antenna terminals	1000 cps on left (A) channel only	100% (75 KC Dev.) No pre-emphasis	Move scope input and AC VTVM to channel A output lug	-----	Note and record voltage reading on AC VTVM	4
13	Same as Step 12	1000 cps on right (B) channel only	Same as Step 12	Same as Step 12	R215	Minimum reading on AC VTVM should be at least 33 db below reading observed in Step 12	4
14	Same as Step 12	8000 cps on left (A) channel only	Same as Step 12	Same as Step 12	-----	AC VTVM reading should be 10 db below reading observed in Step 12	4
15	Same as Step 12	8000 cps on right (B) channel only	Same as Step 12	Same as Step 12	-----	AC VTVM reading should be 28 db below reading observed in Step 12	4

NOTE: The above procedure is based on the use of the FISHER Model 300 Multiplex Generator.

1 — In steps 2 through 11, the audio output of the Multiplex Generator should be connected to lug 1 of the multiplex sub-chassis through a 12,000 ohm, 1/2-watt, carbon resistor, and a 180 uuf capacitor should be connected between lug 1 and ground. The wiring from the MPX TEST jack on the main chassis to lug 1 must be disconnected during Steps 2 through 11.

2 — The vertical amplitude of the Lissajous pattern will increase slightly

as the generator output is increased. This is a normal occurrence.

3 — If DC VTVM reading falls below —9 volts when maximum reading is obtained on the AC VTVM, readjust bottom of Z100, then repeat Step 5. Repeat this procedure until maximum AC VTVM reading is obtained with DC VTVM reading greater than —9 volts.

4 — Tune the FISHER to the RF output frequency of the Multiplex Generator

PARTS DESCRIPTION LIST • MASTER AUDIO CONTROL

CAPACITORS

10% tolerance for all fixed capacitors, unless otherwise noted or marked GMV (guaranteed minimum value).

Symbol	Description	Part No.
C1, 2	Ceramic, 100uf, N1500, 100V	C50070-6
C3, 4	Mylar, .022uf, 250V	C50197-49
C13, 14	Mylar, .047uf, 250V	C50197-52
C30, 31	Ceramic, 100uf, N1500, 1000V	C50070-6
C32	Electrolytic, 2 section A — 1000uf, 35V B — 1000uf, 35V	C50180-29
C33	Electrolytic, 4 section A — 40uf, 450V B — 10uf, 450V C — 10uf, 450V D — 40uf, 450V	C50180-10
C34	Electrolytic, 4 section A — 30uf, 350V B — 10uf, 250V C — 30uf, 350V D — 10uf, 300V	C50180-30
C35, 36	Ceramic, .005uf, 20%, 500V	C50089-1
C37, 38	Ceramic, .0039uf, 1000V	C50072-34
C41, 42	Mylar, .1uf, 250V	C50197-54
C43, 44, 45, 46	Electrolytic, 50uf, 3V	C50283-1
C47, 48	Mylar, .1uf, 250V	C50197-54
C49, 50, 51, 52	Ceramic, 24uf, 5%, N150, 1000V	C50070-8
C53, 54	Mylar, .033uf, 250V	C50197-51
C55, 56	Ceramic, 2700uf, 1000V	C50072-17
C57, 58	Electrolytic, 50uf, 3V	C50283-1
C59, 60	Ceramic, 300uf, 1000V	C50072-39
C63, 64	Ceramic, 1000uf, 1000V	C50072-3
C65, 66	Ceramic, 220uf, 1000V	C50072-20
C67, 68	Mylar, .68uf, 250V	C50197-57
C69, 70	Ceramic, 220uf, 1000V	C50072-20
C71, 72	Mylar, .047uf, 250V	C50197-52
C73, 74	Mylar, .68uf, 250V	C50197-57
C75, 76, 77, 78	Electrolytic, 50uf, 3V	C50283-1
C79, 80	Mylar, .68uf, 250V	C50197-57

RESISTORS AND POTENTIOMETERS

In ohms, 10% tolerance, 1/2 watt, unless otherwise noted. K=Kilohm, M=Megohm.

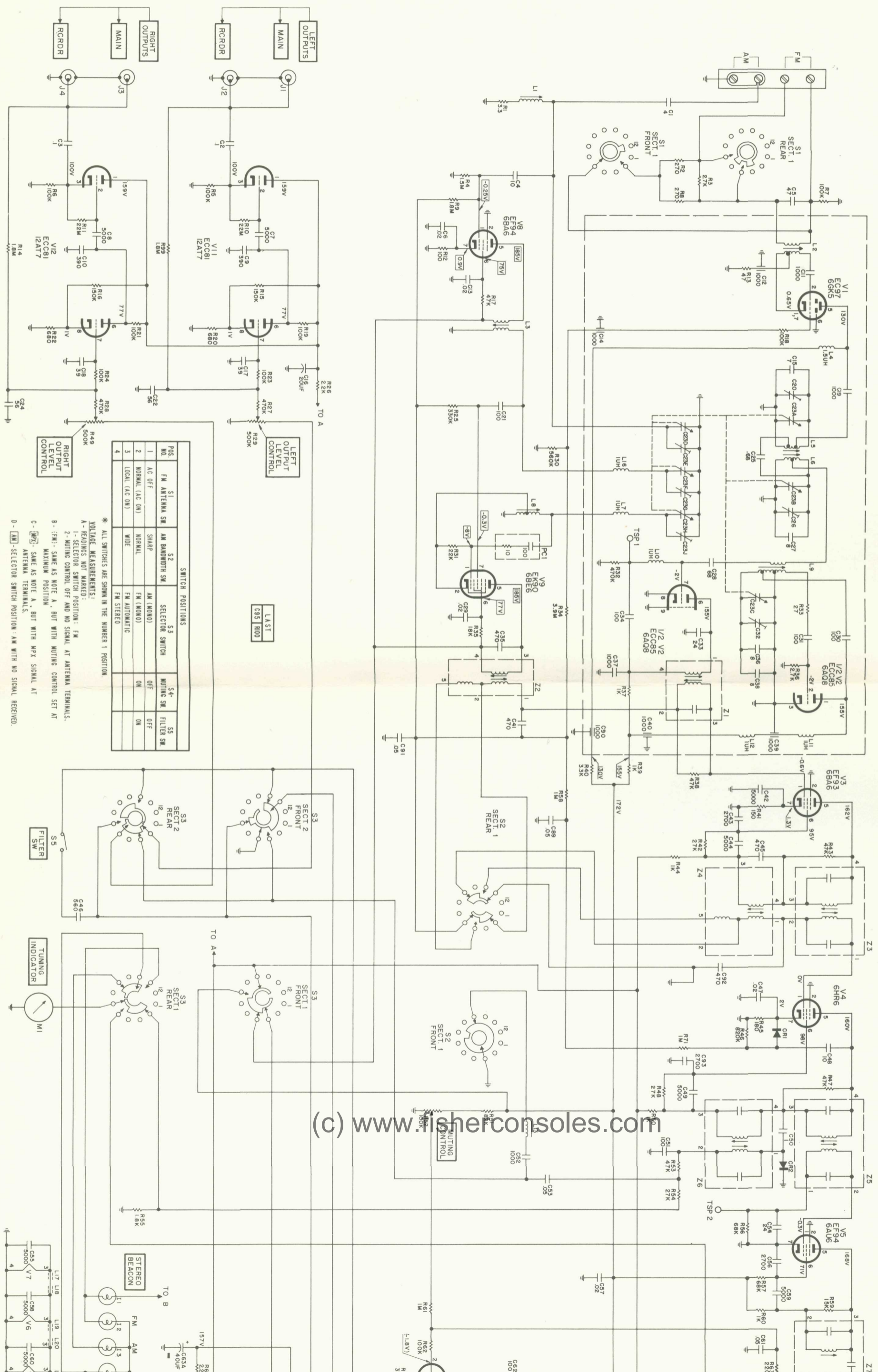
Symbol	Description	Part No.
R3, 4, 5, 6	Dep. Carbon, 100K, 5%, 1/3 W	R33DC104J
R7, 8, 9, 10	Dep. Carbon, 120K, 5%, 1/3 W	R33DC124J
R11	Potentiometer, Dual, 250K, aux. 2 level	R50160-71
R12, 13	Dep. Carbon, 100K, 5%, 1/3 W	R33DC104J
R14, 15	Dep. Carbon, 10K, 5%, 1/3 W	R33DC103J
R16, 17	Glass, 2.7K, 5%, 1W	R30G272J
R18, 19	Glass, 330K, 5%, 1W	R30G334J
R20, 21	Dep. Carbon, 4.7M, 5%, 1/3 W	R33DC475J
R26, 27	Dep. Carbon, 220K, 5%, 1/3 W	R33DC224J
R28, 29	Composition, 560K	RC20BF564K
R30	Dep. Carbon, 100K, 5%, 1/3 W	R33DC104J
R32, 33	Potentiometer, Dual, 250K, Mag. 1 & Mag. 2 level	R50160-71
R39	Dep. Carbon, 100K, 5%, 1/3 W	R33DC104J
R50, 51	Dep. Carbon, 120K, 5%, 1/3 W	R33DC124J
R52	Glass, 330, 3W	RPG3W331K
R53	Wirewound, 10K, 7W	R851-128
R54	Glass, 1K, 3W	RPG3W102K
R55	Composition, 47K	RC20BF473K
R56	Glass, 1K, 3W	RPG3W102K
R57, 58	Composition, 1.5M	RC30BF155K
R59	Glass, 5.6K, 3W	RPG3W562K
R60	Glass, 1K, 3W	RPG3W102K

R61, 62	Dep. Carbon, 220K, 5%, 1/3 W	R33DC224J
R63	Glass, 4.7K, 3W	RPG3W472K
R64, 65	Composition, 300K, 5%	RC20BF304J
R66, 67	Dep. Carbon, 100K, 5%, 1/3 W	R33DC104J
R68	Composition, 15K	RC20BF153K
R69, 70	Composition, 1.5K	RC20BF152K
R71, 72	Composition, 330K	RC20BF334K
R73	Dep. Carbon, 4.7M, 5%, 1/3 W	R33DC475J
R75, 76	Dep. Carbon, 220K, 5%, 1/3 W	R33DC224J
R77, 78	Dep. Carbon, 2.7K, 5%, 1/3 W	R33DC272J
R79, 80	Dep. Carbon, 100K, 5%, 1/3 W	R33DC104J
R81, 82	Dep. Carbon, 470K, 5%, 1/3 W	R33DC474J
R83	Potentiometer, dual, 250K, balance	R50160-65
R84, 85, 86, 87	Dep. Carbon, 470K, 5%, 1/3 W	R33DC474J
R88	Composition, 33	RC20BF330K
R89, 90	Composition, 2.7M, 5%	RC20BF275J
R91, 92	Composition, 2.2M, 5%	RC20BF225J
R93, 94	Dep. Carbon, 470K, 5%, 1/3 W	R33DC474J
R95	Potentiometer, dual, 1M, dimension	R50160-7C
R96	Dep. Carbon, 470K, 5%, 1/3 W	R33DC474J
R97, 98	Dep. Carbon, 120K, 5%, 1/3 W	R33DC124J
R99, 100	Composition, 1.8K	RC20BF182K
R101, 102, 103, 104, 105, 106	Dep. Carbon, 47K, 5%, 1/3 W	R33DC473K
R107, 108	Composition, 68K, 10%, 1W	R30BF683K
R109, 110	Dep. Carbon, 470K, 5%, 1/3 W	R33DC474J
R111, 112	Dep. Carbon, 10K, 5%, 1/3 W	R33DC103J
R113	Dep. Carbon, 220K, 5%, 1/3 W	R33DC224J
R114, 115	Dep. Carbon, 220K, 5%, 1/3 W	R33DC224J
R116, 117	Dep. Carbon, 2.7K, 5%, 1/3 W	R33DC272J
R118, 119	Dep. Carbon, 22K, 5%, 1/3 W	R33DC223J
R120	Potentiometer, dual, 100K, volume	R50160-69
R121	Dep. Carbon, 470K, 5%, 1/3 W	R33DC474J
R122	Potentiometer, dual, 1M, bass	R50160-66
R123	Potentiometer, dual, 500K, treble	R50160-67
R124	Potentiometer, 500K, center volume	R50160-68
R125, 126	Dep. Carbon, 270K, 5%, 1/3 W	R33DC274J
R127, 128	Composition, 1.5K	RC20BF152K
R129, 130	Composition, 180K	RC20BF184K
R131, 132	Composition, 68K, 1W	R30BF683K

MISCELLANEOUS

Symbol	Description	Part No.
F1	Fuse, .5 amp., slo-blo	F795-136
I1, 2, 3, 4, 5	Lamp, #47	I50009-1
PC1, 2	Printed Circuit, 3 3/4, tape EQ.	PC50187-7
PC3, 4	Printed Circuit, COL, EQ	PC50187-6
PC5, 6	Printed Circuit, 78, EQ.	PC50187-8
PC7, 8	Printed Circuit, R1AA, 7 1/2, EQ.	PC50187-3
PC9, 10	Printed Circuit, tone control	PC657-140
P1	Plug, dummy	P50181
S1	Switch, low level	S851-126
S2	Switch, mono-stereo	S851-127
S3	Switch, push button	S851-119
S4	Switch, center ch., power	Part of R124
S5, 6, 7, 8, 9	Switch, slide	S50200-5
S10	Switch, power	Part of R120
SR1, 2	Diode, silicon, SD91	SR851-121
T1	Transformer, power	T851-115
—	Dress panel	AS1011-108
—	Shielded cable	A550004-1
—	Knob, push button	E851-116
—	Knob, dual, front	E50323
—	Knob, dual, rear	E50221
—	Knob	E50325-1
—	Jewel, red	I50162-1
—	Jewel, yellow	I50162-2
—	Jewel, green	I50162-4

SCHEMATIC DIAGRAM • TUNER



SWITCH POSITIONS

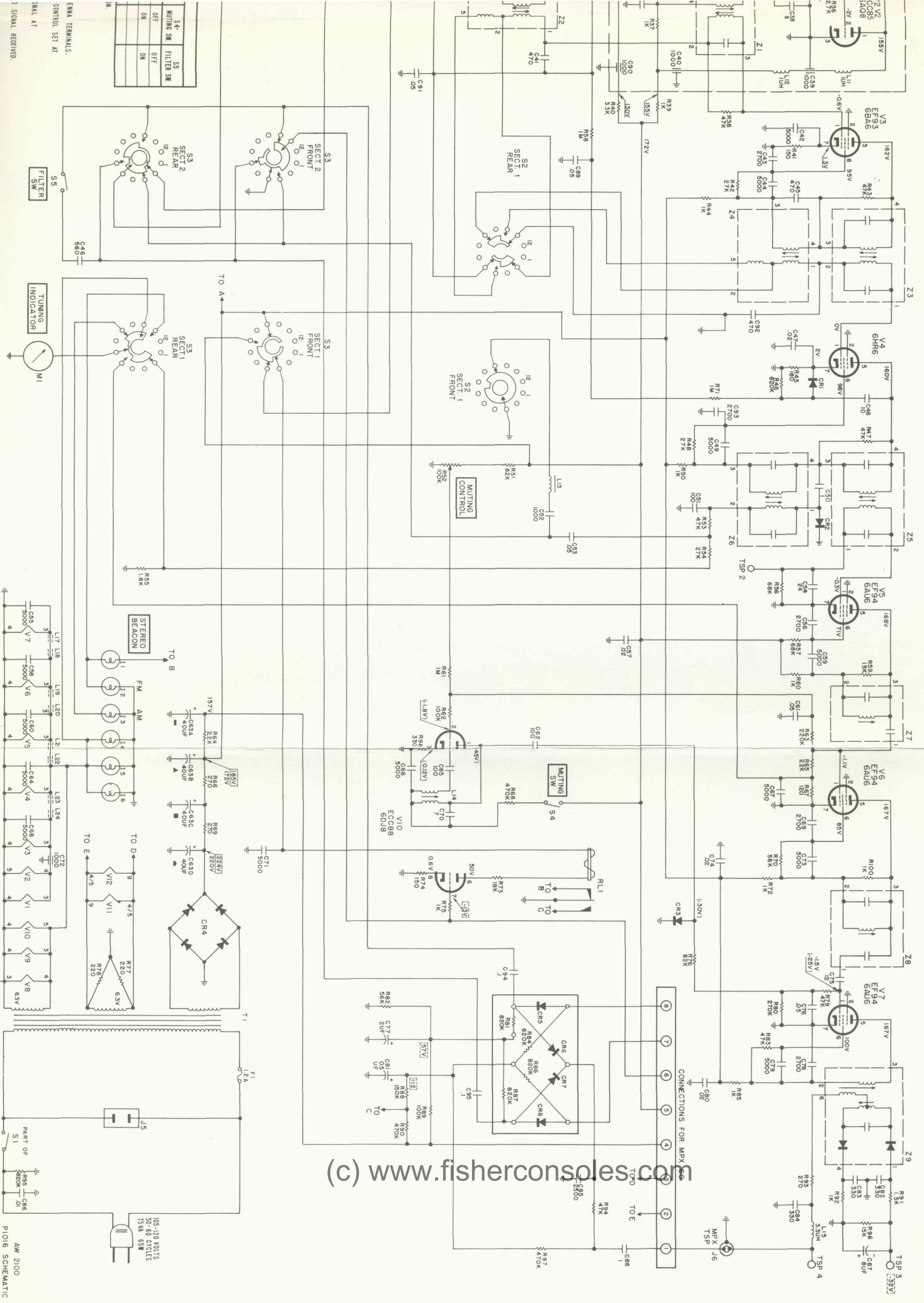
POS. NO.	S1 ANTENNA SW	S2 BANDWIDTH SW	S3 SELECTOR SWITCH	S4 MUTE SW	S5 FILTER SW
1	AC OFF	SHARP	AM (MONO)	OFF	OFF
2	NORMAL (AC ON)	NORMAL	FM (MONO)	ON	ON
3	LOCAL (AC ON)	WIDE	FM AUTOMATIC		
4			FM STEREO		

* ALL SWITCHES ARE SHOWN IN THE NUMBER 1 POSITION.

VOLTAGE MEASUREMENTS:
 A - READINGS NOT MARKED:
 1 - SELECTOR SWITCH POSITION: FM
 2 - MUTE SWITCH OFF AND NO SIGNAL AT ANTENNA TERMINALS.
 B - (FM) - SAME AS NOTE A, BUT WITH MUTE CONTROL SET AT MAXIMUM POSITION.
 C - (FM) - SAME AS NOTE A, BUT WITH MPX SIGNAL AT ANTENNA TERMINALS.
 D - (AM) - SELECTOR SWITCH POSITION: AM WITH NO SIGNAL RECEIVED.

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SCHEMATIC DIAGRAM • TUNER



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PARTS DESCRIPTION LIST • MULTIPLEX SECTION

CAPACITORS

10% tolerance for all fixed capacitors, unless otherwise noted or marked GMV (guaranteed minimum value). All capacitors not marked uf are pF (uuf).

Symbol	Description	Part No.
C200	Ceramic, .01uf, +80 — 20%, 500V	C50089-7
C201	Ceramic, 680, 1000V	C50072-2
C203	Ceramic, 220, 1000V	C50183-3
C204	Polystyrene, 470, 5%, 500V	C50394-1
C205	Ceramic, 82, N1500, 1000V	C50070-7
C206	Ceramic, .001uf, GMV, 500V	C50089-2
C207	Ceramic, .005uf, +80 — 20%, 500V	C50089-6
C208, 209	Mica, 4700, 5%, 500V	C50332-5
C210	Electrolytic, 1uf, 350V	C50283-3
C211, 212	Ceramic, .001uf, GMV, 500V	C50089-2
C213	Ceramic, .05uf, +80 — 20%, 100V	C50073-2
C214	Mylar, .0047uf, 400V	C50197-25
C215	Mica, 3900, 5%, 500V	C50332-6
C216, 217	Ceramic, .001uf, GMV, 500V	C50089-2
C218	Ceramic, .02uf, 20%, 500V	C50089-5
C219	Ceramic, 330, 1000V	C50072-1
C220	Ceramic, .02uf, 20%, 500V	C50089-5
C221, 222	Mylar, .047uf, 10%, 250V	C50197-52
C223, 224	Ceramic, .001uf, 1000V	C50072-3
C225, 226	Ceramic, 2200, 1000V	C50072-5

RESISTORS AND POTENTIOMETERS

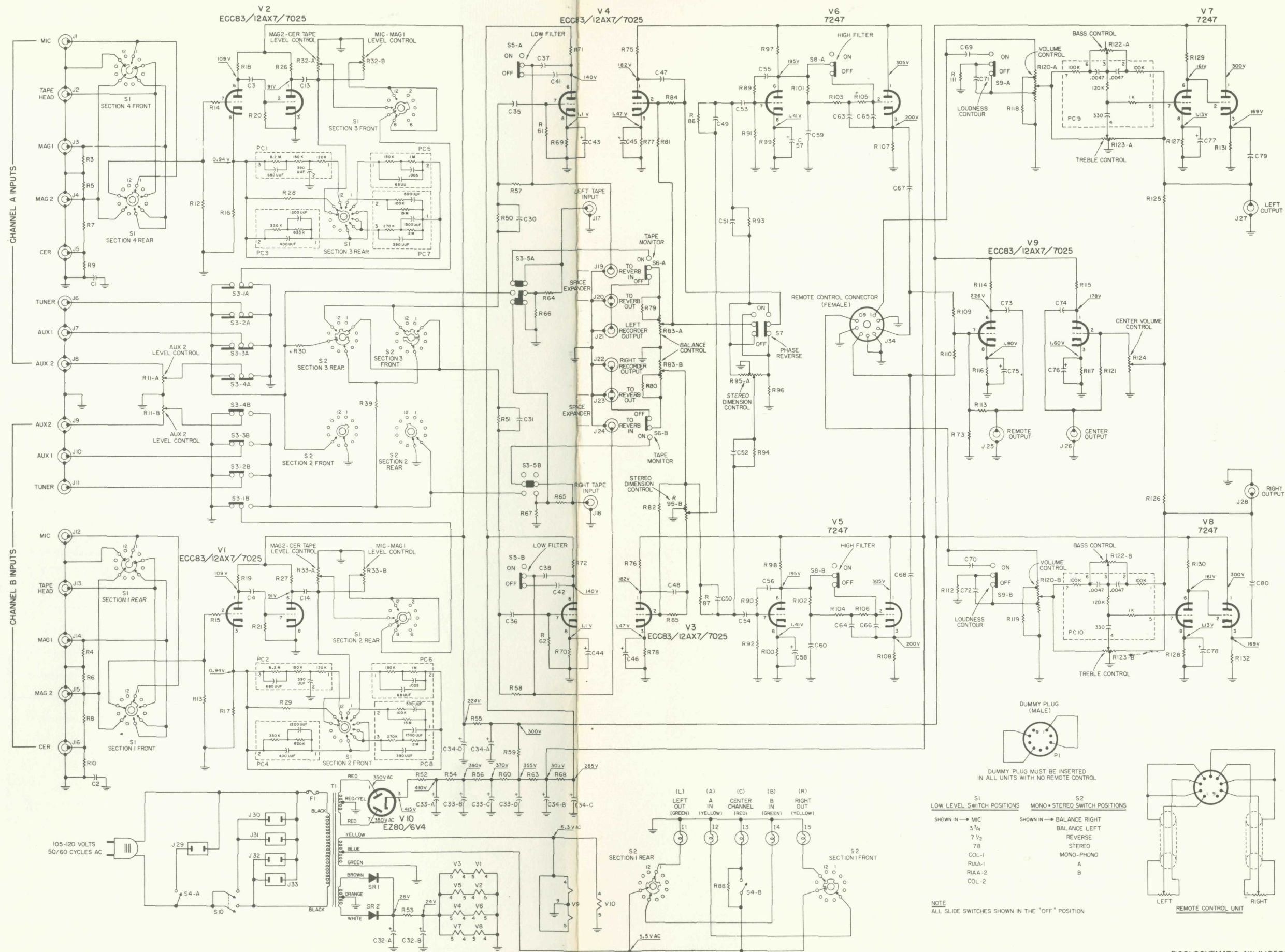
In ohms, 10% tolerance, 1/2 watt, unless otherwise noted. K=Kilohm, M=Megohm.

Symbol	Description	Part No.
R200	Composition, 22M	RC20BF226K
R201	Composition, 4.7K, 5%	RC20BF472J
R202	Composition, 15K, 5%	RC20BF153J
R203	Composition, 10M	RC20BF106K
R204	Dep. Carbon, 1M, 5%, 1/8 W	R12DC105J
R205	Dep. Carbon, 330K, 5%, 1/3 W	R33DC334J
R206	Dep. Carbon, 1M, 5%, 1/8 W	R12DC105J
R207	Dep. Carbon, 1.5M, 5%, 1/3 W	R33DC155J
R208	Dep. Carbon, 22K, 5%, 1/8 W	R12DC223J
R209, 210,		
211, 212	Dep. Carbon, 33K, 5%, 1/8 W	R12DC333J
R213, 214	Dep. Carbon, 100K, 5%, 1/8 W	R12DC104J
R215	Potentiometer, 50K, MPX-separation	R50150-4
R216	Composition, 10M	RC20BF106K
R217, 218	Dep. Carbon, 18K, 5%, 1/3 W	R33DC183J
R219, 220	Dep. Carbon, 15K, 5%, 1/3 W	R33DC153J
R221	Composition, 10M	RC20BF106K
R222, 223,		
224, 225	Dep. Carbon, 22K, 5%, 1/8 W	R12DC223J
R226, 227,		
228, 229,		
230	Dep. Carbon, 1M, 5%, 1/8 W	R12DC105J

MISCELLANEOUS

Symbol	Description	Part No.
CR100, 101,		
102, 103	Diode, Type 1112	V-1112
L100	Coil, Low Pass	L50210-30
L101	Coil, 5.25 M.H., 5%	L50334-1
L102, 103	Coil, 20 M.H., 5%	L50334-2
Z100	Transformer, 19Kc	ZZ50210-34
Z101	Coil, 38Kc	ZZ50210-33

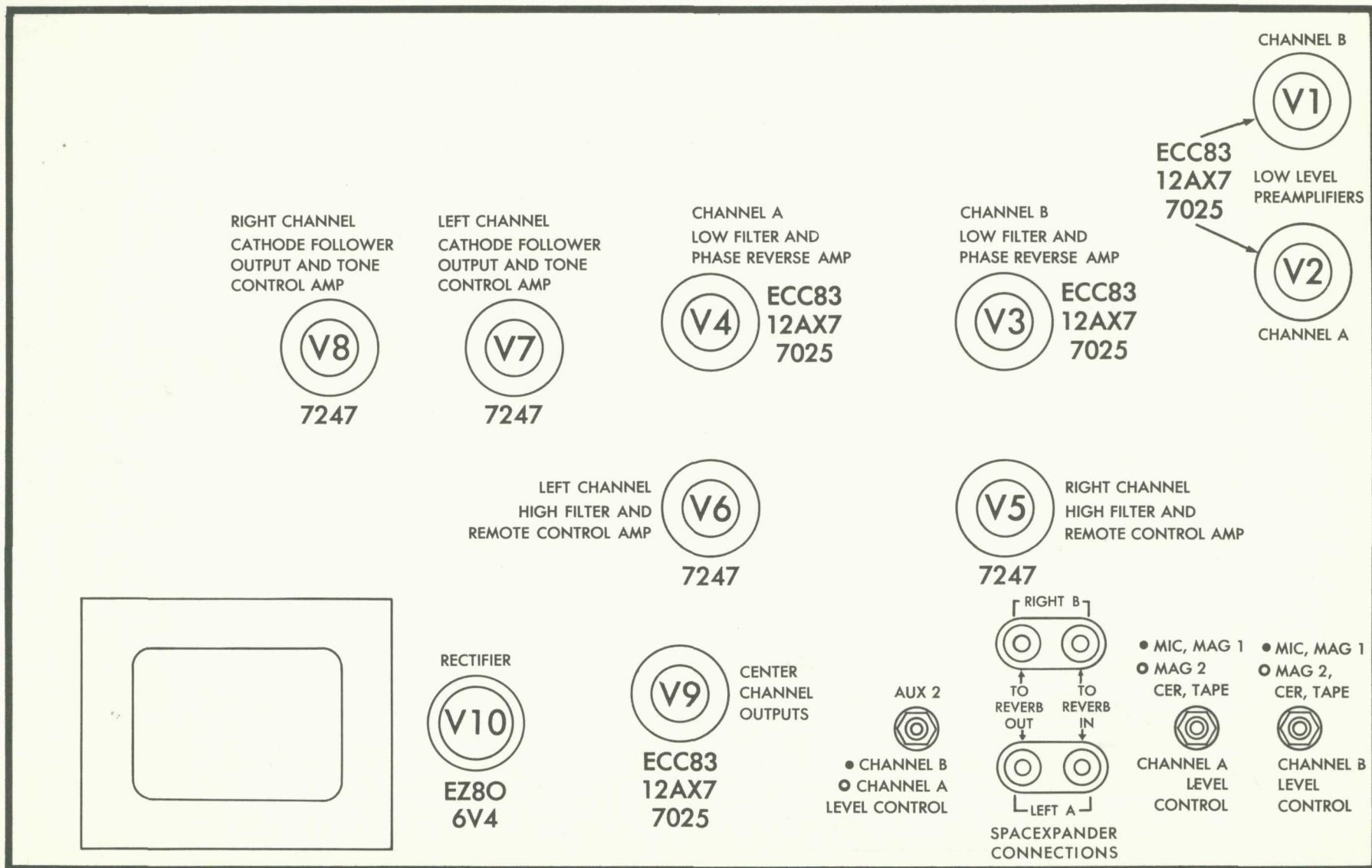
SCHEMATIC DIAGRAM • MASTER AUDIO CONTROL



RESISTORS	R3 TO R10	R11	R12 TO R17	R18 TO R21	R22 TO R30	R31 TO R33	R34	R35	R36	R37 TO R43	R44	R45	R46	R47 TO R50	R51 TO R56	R57 TO R60	R61 TO R63	R64 TO R70	R71 TO R72	R73 TO R78	R79 TO R85	R86 TO R88	R89 TO R95	R96 TO R100	R101 TO R102	R103 TO R104	R105 TO R106	R107 TO R108	R109 TO R113	R114 TO R116	R117 TO R119	R120 TO R123	R124 TO R126	R127 TO R130	R131 TO R132				
CAPACITORS	C1 TO C2	C3 TO C4	C5 TO C6	C7 TO C8	C9 TO C10	C11 TO C12	C13 TO C14	C15 TO C16	C17 TO C18	C19 TO C20	C21 TO C22	C23 TO C24	C25 TO C26	C27 TO C28	C29 TO C30	C31 TO C32	C33 TO C34	C35 TO C36	C37 TO C38	C39 TO C40	C41 TO C42	C43 TO C44	C45 TO C46	C47 TO C48	C49 TO C50	C51 TO C52	C53 TO C54	C55 TO C56	C57 TO C58	C59 TO C60	C61 TO C62	C63 TO C64	C65 TO C66	C67 TO C68	C69 TO C72	C73 TO C75	C76 TO C77	C78 TO C79	C80

P851 SCHEMATIC AW#1857A

TUBE LAYOUT • MASTER AUDIO CONTROL



PARTS DESCRIPTION LIST • POWER AMPLIFIER

CAPACITORS

10% tolerance for all fixed capacitors, unless otherwise noted or marked GMV (guaranteed minimum value).

Symbol	Description	Part No.
C1, 2	Ceramic, 120uuf, 1000V	C50070-9
C7, 8	Mylar, .047uf, 250V	C50197-52
C9	Electrolytic, 25uf, 6V	C639-114
C10, 11	Ceramic, 330uuf, 1000V	C50072-1
C12	Electrolytic, 25uf, 6V	C639-114
C13, 14	Ceramic, 200uuf, 1000V	C50072-22
C15, 16	Ceramic, 120uuf, 1000V	C50070-9
C17, 18	Ceramic, 68uuf, 1000V	C50070-16
C19	Mylar, .1uf, 400V	C50197-32
C20, 21	Ceramic, 330uuf, 1000V	C50072-1
C22	Electrolytic, 60uf, 500V	C729-131
C23, 24	Mylar, .1uf, 400V	C50197-32
C25	Electrolytic, three section: A — 40uf, 450V B — 40uf, 450V C — 40uf, 450V	C729-132
C26, 27	Ceramic, 150uuf, 1000V	C50072-18
C28	Electrolytic, 10uf, 350V	C644-146
C29, 30, 31, 32	Mylar, .22uf, 400V	C50197-33
C33	Electrolytic, 10uf, 350V	C644-146
C34, 35	Electrolytic, 10uf, 150V	C729-133
C36, 37	Ceramic, 220uuf, 500V	CC21GP-221K5
C38, 39	Electrolytic, 150uf, 30V	C663-137
C40, 41	Ceramic, 330uuf, 1000V	C50072-1
C42, 43	Ceramic, 10uuf, 5%, 2000V	C50168-2
C44, 45, 46, 47	Ceramic, 330uuf, 1000V	C50072-1
C48, 49	Ceramic, 68uuf, N750, 100V	C50070-16
C50, 51	Ceramic, 33uuf, 100V	C50070-15

RESISTORS & POTENTIOMETERS

In ohms, 10% tolerance, 1/2 watt, unless otherwise noted. K = kilohm, M = megohm.

Symbol	Description	Part No.
R1, 2	Composition, 47K	RC20BF473K
R3, 4	Composition, 8.2K	RC20BF822K
R5, 6	Potentiometer, 250K, 20%	R50160-3
R7, 8	Potentiometer, Wirewound, 500	R516-128
R9, 10	Composition, 470K	RC20BF474K
R11	Composition, 560K	RC20BF564K
R12	Composition, 3.9K	RC20BF392K
R13, 14	Composition, 220	RC20BF221K
R15	Composition, 3.9K	RC20BF392K
R16	Composition, 560K	RC20BF564K
R17, 18	Composition, 6.8K	RC20BF682K
R19	Wirewound, 15, 10W	R729-147
R20, 21	Composition, 8.2K	RC20BF822K
R22, 23	Composition, 10K	RC20BF103K
R24	Wirewound, 15, 10W	R729-147
R25, 26	Composition, 4.7M	RC20BF475K
R27, 28	Wirewound, 600, 5W	R643-157
R29, 30	Composition, 22K, 5%, 2W	RC40BF223J
R31	Wirewound, 5000, 5W	R729-144
R32, 33	Composition, 3.3K, 5%	RC20BF332J
R34	Composition, 390	RC20BF391K
R35	Composition, 18K, 5%, 1W	RC30BF183J
R36	Potentiometer, 10K, 20%	R50103-5
R37, 38	Composition, 22K, 5%, 1W	RC30BF223J
R39	Potentiometer, 10K, 20%	R50103-5

R40	Composition, 18K, 5%, 1W	RC30BF183J
R41	Composition, 120K	RC20BF124K
R42, 43, 44, 45	Composition, 1M, 5%	RC20BF105J
R46	Composition, 120K	RC20BF124K
R47	Composition, 100K, 5%	RC20BF104J
R48	Composition, 47K	RC20BF473K
R49	Potentiometer, 5K, 20%	R50103-4
R50	Composition, 47K	RC20BF473K
R51, 52	Composition, 100K, 5%	RC20BF104J
R53	Composition, 47K	RC20BF473K
R54	Potentiometer, 5K, 20%	R50103-4
R55	Composition, 47K	RC20BF473K
R56	Composition, 100K, 5%	RC20BF104J
R57	Potentiometer, 5K, 20%	R50103-4
R58, 59	Composition, 1K	RC20BF102K
R60	Composition, 15K	RC20BF153K
R61	Wirewound, 50, 5%, 5W	R729-143
R62, 63	Composition, 1K	RC20BF102K
R64	Wirewound, 50, 5%, 5W	R729-143
R65, 66	Composition, 100K, 2W	RC40BF104K
R67, 68	Wirewound, 47, 5W	R729-146
R69, 70	Composition, 120K	RC20BF124K
R71	Composition, 1K	RC20BF102K

TRANSFORMERS

Symbol	Description	Part No.
T1	Transformer, Power	T729-115
T2, 3	Transformer, Output	T729-116

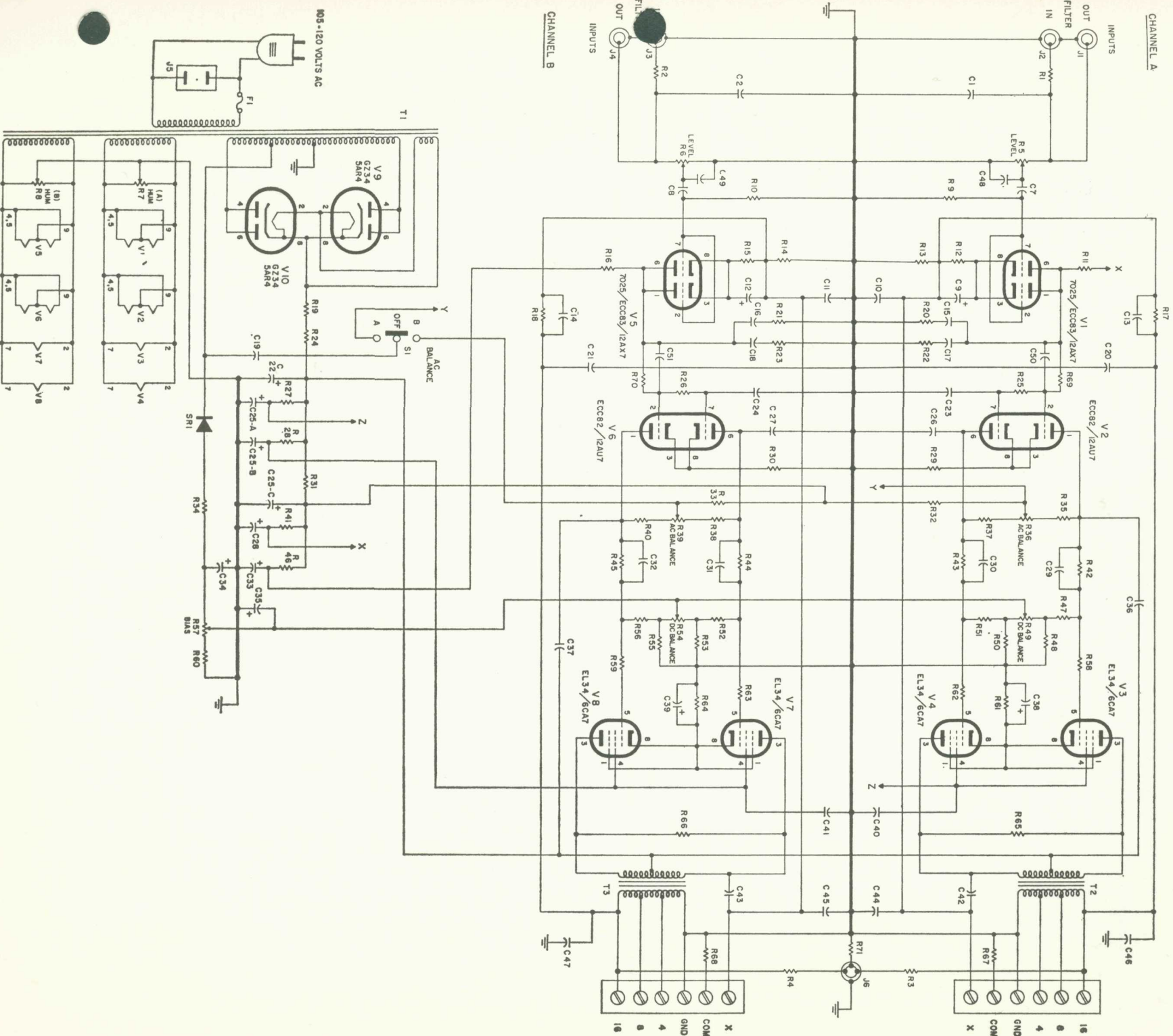
MISCELLANEOUS

Symbol	Description	Part No.
F1	Fuse, 4 Ampere, Slo-Blo	F729-145
S1	Switch, Slide, three pos.	S557-138
SR1	Selenium Rectifier	SR588-128
—	Plug, RETMA	P-1031
—	Rubber Foot	A563-142
—	Tube Shield	E3287
—	Plug Button	E729-142
—	Fuse Holder	X1036
—	RK-1 Remote Control	P-744
—	Ampex Tape Recorder	A50381
—	Microphone Stand	A776-110
—	Automatic Shut-Off Assembly	AS988-115
—	45 RPM Spindle for Miracord	A50412-7
—	Phono Cartridge, Pickering U38/AT	G50286-1
—	Microphone	Q776-109
—	Automatic Turntable, Miracord Model 10	RC50428
—	Automatic Shut-Off Switch	S50358-4

SPEAKER SYSTEM

Symbol	Description	Part No.
LS1	Speaker, 12" Woofer, 8 ohms	W-117
LS2, 3	Speaker, 5" Midrange, 8 ohms	M-114
LS4	Speaker, Dome Tweeter, 8 ohms	T-101
C1	Capacitor, Electrolytic, Non-polarized, 25uf	C-314
C2	Capacitor, Electrolytic, Non-polarized, 6uf	C-312
C3	Capacitor, Electrolytic, Non-polarized, 10uf	C-313
L1	Coil, Woofer	L-211
L2	Coil, Midrange	L-207
R1	Potentiometer, Midrange	P-500
R2, 3	Resistor, 22 ohms	R-400
R4	Potentiometer, Tweeter	P-500

SCHEMATIC DIAGRAM • POWER AMPLIFIER



SERVICE NOTES • POWER AMPLIFIER

WARNING

EXTREMELY HIGH VOLTAGES capable of causing serious injury exist inside the chassis both during operation and for some time after the power to the amplifier is cut off. Disconnect the AC power cord before removing bottom cover, and discharge all electrolytic capacitors to chassis ground before working inside. Do not remove the bottom cover unless you are qualified to perform the servicing operations required.

servicing

The controls described here are for use in servicing the power amplifier and require the use of test instruments to make proper settings. Do NOT touch these controls unless you have the necessary equipment and are prepared to carry out the procedures outlined.

hum and dc balance

The Hum and DC Balance controls are set at the factory to provide optimum performance. If they should require resetting, proceed as follows:

- 1 — Turn both Input Level Adjustments fully counter-clockwise. Remove all input and output connections to the amplifier and place low wattage 16-ohm resistors across the GND and 16 speaker terminals.
- 2 — Connect an AC vacuum tube voltmeter with a minimum full-scale sensitivity of 1 millivolt between the Channel A speaker terminals marked GND and 16.
- 3 — Adjust the Channel A DC Balance pot on the front panel and the Channel A Hum Control pot on the underside of the chassis until the VTVM reads minimum.
- 4 — The meter should read at least -71 dbm or not more than approximately 0.2 mv. This indicates that the amplifier channel is functioning properly and that the controls are properly set.
- 5 — Connect the VTVM to the Channel B speaker terminals marked GND and 16.
- 6 — Adjust the Channel B DC Balance pot on the front panel and the Channel B Hum Control pot on the underside of the chassis until the VTVM reads minimum.
- 7 — The meter should read at least -71 dbm or not more than approximately 0.2 mv. This indicates that the amplifier channel is functioning properly and that the controls are properly set.

ac balance

The AC Balance controls on the front panel are preset at the factory to assure that the signals from the phase inverters to the respective grids of the push-pull output tubes in each channel are equal. If an adjustment is required, proceed as follows:

- 1 — Turn both Input Level Adjustments fully counter-clockwise. Remove all input and output connections to the amplifier.
- 2 — Connect an AC vacuum tube voltmeter with a minimum full-scale sensitivity of 10 millivolt between the Channel A speaker terminals marked GND and 16.
- 3 — Move the Balance Adjust Switch on the front panel to position A AND HOLD IT THERE. Adjust the AC Balance control of Channel A until a minimum reading is obtained on the VTVM. Then release switch.
- 4 — Now connect the VTVM to the Channel B speaker terminals marked GND and 16.
- 5 — With the Balance Adjust Switch in B position, adjust the Channel B AC Balance control to a minimum reading on the VTVM.

bias control

The DC bias has been set at the factory for optimum results. If the setting of the Bias Control, located in the underside of the chassis, must be changed, proceed as follows:

CAUTION: Use an insulated screwdriver when adjusting this control to avoid making electrical contact with the chassis.

- 1 — Connect an accurately calibrated DC voltmeter with a range of 10 volts to pin 8 of V3 and V4 with the negative lead to chassis ground.
- 2 — Make sure the line voltage is at 117 volts.
- 3 — The meter should read -7.8 volts (limits within $+7.3$ and 8.3 are allowed.) If necessary, reset Bias control until the proper value is obtained.
- 4 — Repeat with meter at pin 8 of V7 and V8 and adjust Bias if required.

tube voltages

In addition to the cathode bias voltages measured above, significant voltage readings may be taken at other points in the circuit. The tube pins at which these readings may be taken and the required voltage at each follows:

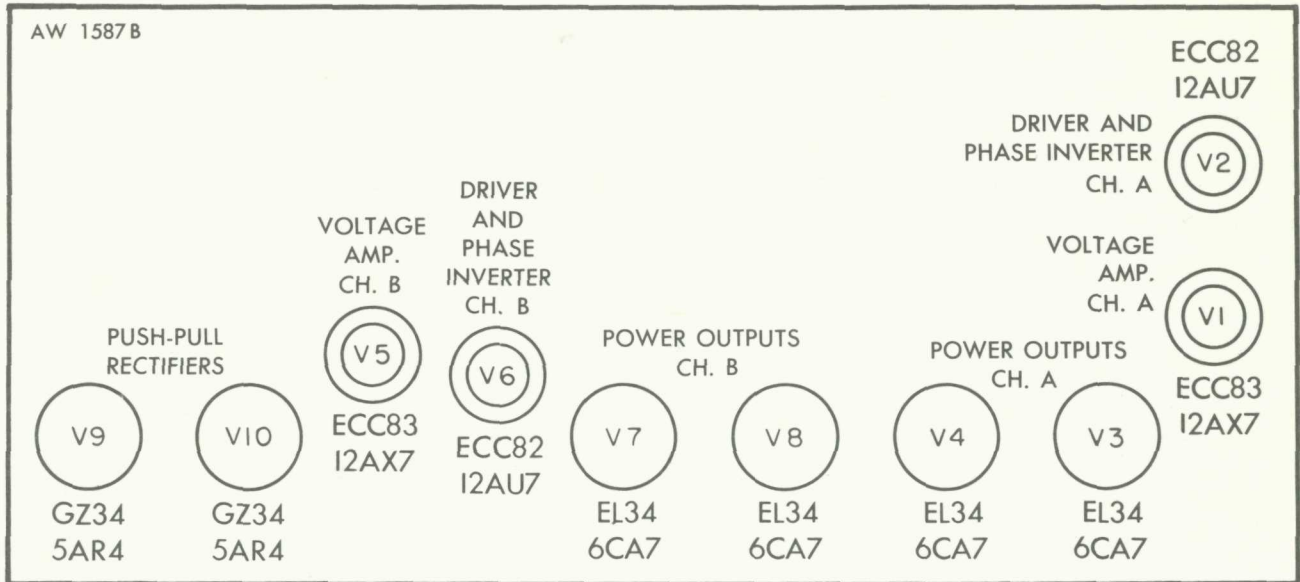
Pins 3 of V3, V4, V7 and V8:
370 to 380 volts dc

Pins 4 of V3, V4, V7 and V8:
355 to 375 volts dc

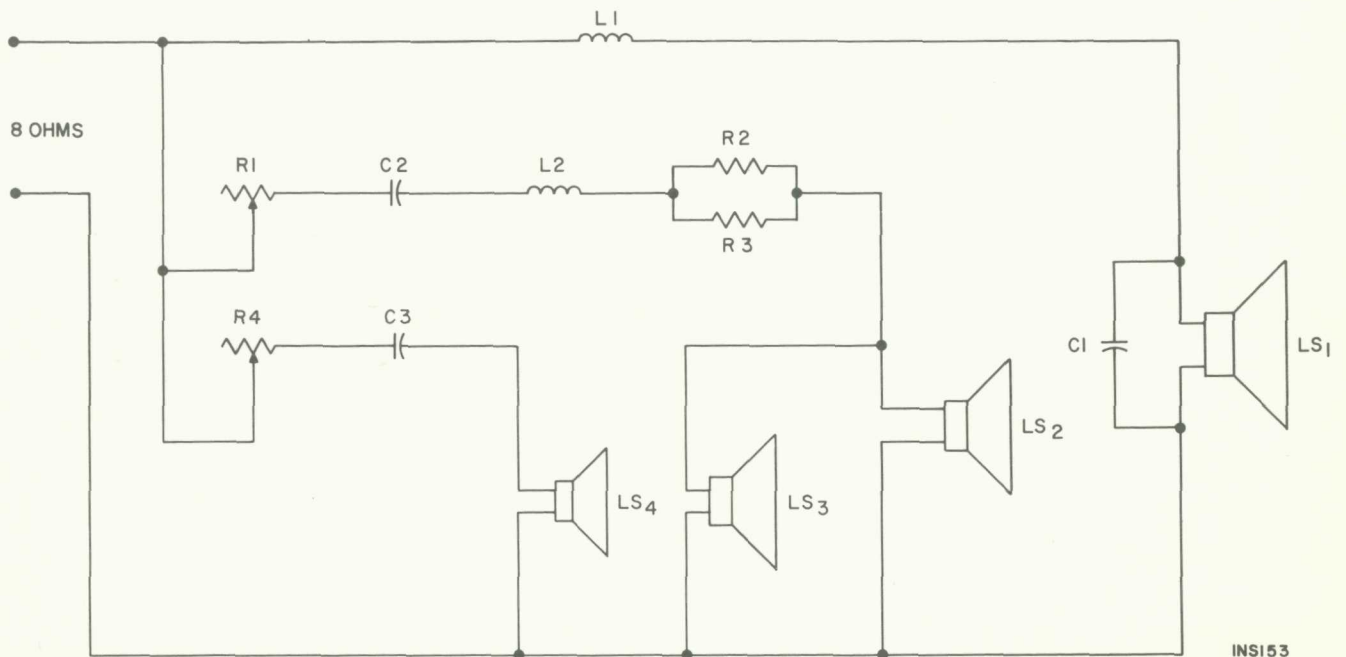
Pins 1 and 6 of V2 and V6:
205 to 230 volts dc

Pins 1 and 6 V1 and V5:
100 to 125 volts dc

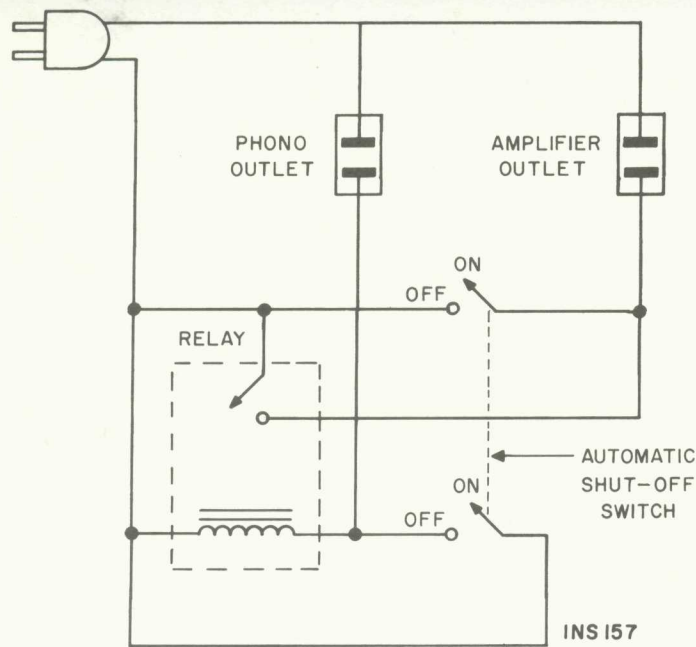
TUBE LAYOUT • POWER AMPLIFIER



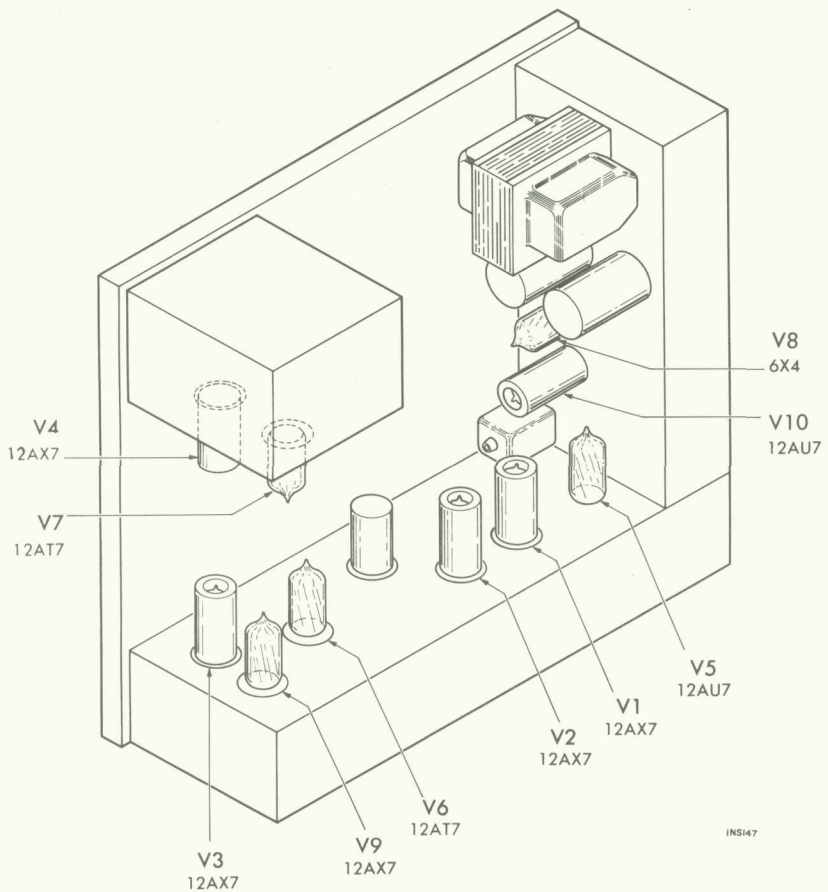
SCHEMATIC DIAGRAM • SPEAKER SYSTEMS



SCHEMATIC DIAGRAM • AUTOMATIC SHUT-OFF ASSEMBLY



TUBE LAYOUT TAPE RECORDER



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