



Stereophonic
THE FISHER 600
SERVICE
MANUAL

CHASSIS SERIAL NUMBERS
 50001—59999 INCLUSIVE



MODEL 600

**CHASSIS SERIAL NUMBERS
 50001—59999 INCLUSIVE**

PRICE: \$1.00

FISHER RADIO CORPORATION · NEW YORK

THE FISHER 600



PARTS DESCRIPTION LIST

CAPACITORS

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

Symbol	Description	Part No.
C1	Ceramic, 24uuf 5% N150, 1000V	C50070-8
C2	Ceramic, 100uuf N1500, 1000V	C50070-6
C3, 4	Ceramic, 8uuf ± .5uuf NPO, 500V	CC20CJ080D5
C5	Ceramic, Trimmer	C662-123
C6	AM Variable	Part of C9
C7	Ceramic, 100uuf N1500, 1000V	C50070-6
C8	FM Variable	C726-116
C9	AM Variable	C684-127
C10	Ceramic, Feedthru, .001 uf GMV	C592-187
C11	Ceramic, 100uuf N1500, 1000V	C50070-6
C12	Mylar, .047uf, 250V	C50197-52
C13	Ceramic, .001uf, 1000V	C50072-3
C14	Ceramic, Feedthru, .001uf GMV	C592-187
C15	Ceramic, 8uuf ± .5uuf NPO, 500V	CC20CJ080D5
C16	Ceramic, Trimmer	C662-123
C17	Ceramic, .02uf + 80 - 20%, 500V	C50089-4
C18	Molded, .01uf 20%, 600V	C2747
C19	Ceramic, 100uuf N1500, 1000V	C50070-6
C20	Ceramic, .02uf + 80 - 20%, 500V	C50089-4
C21	Ceramic, 68uuf N750, 500V	CC20UJ680K5
C22	Ceramic, 100uuf N1500, 1000V	C50070-6
C23	Ceramic, 900uuf 4%, 500V	CC21GP901J5
C24	Ceramic, .005uf 20%, 500V	C50089-1
C25	Ceramic, 5uuf ± .5uuf N220, 500V	CC20RH050D5
C26	Ceramic, Trimmer	C662-123
C27	Ceramic, .68uuf 20%, 500V	C50077-6N
C28	Ceramic, Feedthru, .001uf GMV	C592-187
C29	Ceramic, 24uuf 5% N150, 1000V	C50070-8
C30	Ceramic, 100uuf, N1500, 1000V	C50070-19
C31	Ceramic, 10uuf ± .5uuf NPO, 500V	CC20CH100D5
C32	Ceramic, .001uf, 1000V	C50072-3
C33	AM Variable	Part of C9
C34	Ceramic, 100uuf N1500, 1000V	C50070-6
C35	Ceramic, .005uf 20%, 500V	C50089-1
C36	Ceramic, 2.2uuf, 500V	C3039
C37	Electrolytic, four section: A: 40uf, 450V C: 20uf, 300V B: 40uf, 400V D: 20uf, 300V	C50180-12
C38	Ceramic, Feedthru, .001 GMV	C592-187
C39	Electrolytic, three section: A: 40uf, 300V C: 40uf, 250V B: 40uf, 250V	C670-125
C40	Ceramic, Feedthru, .001uf GMV	C592-187
C41	Ceramic, .02uf + 80 - 20%, 500V	C50089-4
C42	Ceramic, 100uuf N1500, 1000V	C50070-6
C43	Ceramic, .02uf + 80 - 20%, 500V	C50089-4
C44	Ceramic, .01uf 20%, 500V	C50089-3
C45	Ceramic, .005uf 20%, 500V	C50089-1
C46	Ceramic, .0027uf, 1000V	C50072-17
C47	Ceramic, .02uf + 80 - 20%, 500V	C50089-4
C48	Ceramic, Feedthru, .001uf GMV	C592-187
C49	Ceramic, .005uf 20%, 500V	C50089-1
C50	Ceramic, 10uuf NPO, 1000V	C50070-11
C51	AM Variable	Part of C9
C52	Ceramic, .02uf + 80 - 20%, 500V	C50089-4
C53	Ceramic, Feedthru, .001uf GMV	C592-187
C54	Ceramic, .02uf + 80 - 20%, 500V	C50089-4
C55, 56	Ceramic, .005uf 20%, 500V	C50089-1
C57	Ceramic, .0027uf, 1000V	C50072-17
C58	Ceramic, .02uf + 80 - 20%, 500V	C50089-4
C59	Ceramic, 10uuf NPO, 1000V	C50070-11
C60	Ceramic, .005uf 20%, 500V	C50089-1
C61	Ceramic, .0027uf, 1000V	C50072-17
C62, 63	Ceramic, .005uf 20%, 500V	C50089-1
C64, 65	Ceramic, 330uuf, 1000V	C50072-1
C66	Electrolytic, 8uf, 50V	C629-138
C67	Ceramic, .005uf 20%, 500V	C50089-1
C68	Ceramic, 330uuf, 1000V	C50072-1
C69	Ceramic, .01uf 20%, 500V	C50089-3
C70	Ceramic, .001uf, 1000V	C50072-3
C71	Mylar, .022uf, 250V	C50197-49
C72	Ceramic, 820uuf 5%, 500V	CC21GP821J5
C73	Ceramic, 220uuf, 1000V	C50072-20
C74	Mylar, .047uf, 250V	C50197-52
C75	Ceramic, .01uf 20%, 500V	C50089-3
C76, 77	Ceramic, .02uf + 80 - 20%, 500V	C50089-4
C78	Ceramic, .01uf 20%, 500V	C50089-3
C79	Ceramic, 29uuf N750, 1000V	C50070-27

C80	Electrolytic, four section: A: 10uf, 200V C: 30uf, 300V B: 10uf, 200V D: 30uf, 300V	C50180-1
C81, 82	Ceramic, .01uf 20%, 500V	C50089-3
C83	Ceramic, 29uuf N750, 1000V	C50070-27
C84, 85	Ceramic, .01uf 20%, 500V	C50089-3
C86, 87	Electrolytic, 25uf, 6V	C639-114
C102, 103	Mylar, .022uf, 250V	C50197-49
C104, 105	Ceramic, 47uuf N750, 1000V	C50070-4
C108	Mylar, .01uf, 250V	C50197-48
C110	Mylar, .01uf, 250V	C50197-48
C114	Molded, .002uf, 200V	C68P202K
C115	Ceramic, .001uf, 1000V	C50072-3
C116	Molded, .002uf, 200V	C68P202K2
C117	Ceramic, .001uf, 1000V	C50072-3
C118, 119	Electrolytic, 25uf, 6V	C639-114
C120, 121	Ceramic, 100uuf N1500, 1000V	C50070-6
C122	Ceramic, 2uuf NPO, 1000V	C50070-23
C123, 124	Ceramic, 68uuf N220, 1000V	C50070-12
C125	Ceramic, 2uuf NPO, 1000V	C50070-23
C128	Electrolytic, 25uf, 6V	C639-114
C129	Ceramic, 680uuf, 1000V	C50072-2
C130, 131	Mylar, .022uf, 250V	C50197-49
C134	Electrolytic, 25uf, 6V	C639-114
C135	Ceramic, 680uuf, 1000V	C50072-2
C136, 137, 138, 139	Molded, .1uf, 20%, 400V	C50197-32
C140, 142	Mylar, .01uf, 250V	C50197-48
C141, 143	Ceramic, 18uuf N470, 1000V	C50070-13
C144	Electrolytic, 100uf, 100V	C663-143
C145	Ceramic, 5uuf ± .5uuf N150, 500V	CC20PJ050D5
C146	Ceramic, 47uuf N750, 1000V	C50070-6
C147, 148	Ceramic, 33uuf N750, 1000V	C50070-15
C149, 150	Ceramic, .005uuf 20%, 500V	C50089-1
C151	Ceramic, .02uf, +80 - 20%, 500V	C50089-4

RESISTORS AND POTENTIOMETERS

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

Symbol	Description	Part No.
R1	Composition, 270	RC20BF271K
R2	Composition, 1K	RC20BF102K
R3	Composition, 4.7	RC20BF4R7K
R4, 5	Composition, 330K	RC20BF334K
R6	Composition, 100K	RC20BF104K
R7, 8	Composition, 2.2M	RC20BF225K
R9	Composition, 100	RC20BF101K
R10	Composition, 22	RC20BF220K
R11	Composition, 2.2K	RC20BF222K
R12	Composition, 47K	RC20BF473K
R13	Composition, 1K	RC20BF102K
R15	Composition, 470K	RC20BF474K
R16	Composition, 1K	RC20BF102K
R17	Composition, 4.7	RC20BF4R7K
R18	Composition, 820K	RC20BF824K
R19	Wirewound, 280 7W	R720-221
R20	Potentiometer, Wirewound, 500	R720-219
R21	Wirewound, 50, 5W	R556-142
R22	Potentiometer, Wirewound, 500	R720-219
R23	Composition, 150	RC20BF151K
R24	Composition, 150	RC20BF151K
R25	Wirewound, 220, 5W	R551-137
R26	Wirewound, 2200, 7W	R563-148
R27	Composition, 47K	RC20BF473K
R28	Wirewound, 220, 5W	R551-137
R29	Composition, 68K	RC20BF683K
R30	Composition, 1M	RC20BF105K
R31	Composition, 33K, 1W	RC30BF333K
R32	Composition, 1K	RC20BF102K
R33	Composition, 1K, 1W	RC30BF102K
R34	Composition, 3.3M	RC20BF335K
R35	Composition, 22K, 1W	RC30BF223K
R36	Composition, 150	RC20BF151K
R37	Composition, 1K	RC20BF102K
R38	Composition, 270	RC20BF271K
R39	Composition, 47K	RC20BF473K
R40	Composition, 270	RC20BF271K
R41	Composition, 1K	RC20BF102K
R42	Composition, 47K	RC20BF473K
R43	Composition, 180	RC20BF181K
R44, 45	Composition, 2.2M	RC20BF225K
R46	Composition, 82K	RC20BF823K
R47	Composition, 470K	RC20BF474K

R48	Composition, 1K
R49	Composition, 47K, 1W
R50	Composition, 47K
R51	Composition, 1K
R52	Composition, 270
R53	Composition, 180K
R54	Composition, 10M
R55	Composition, 6.8K
R56	Composition, 470K
R57	Composition, 1K
R58	Composition, 68K
R59	Composition, 100K
R60	Composition, 3.3M
R61	Potentiometer, 250K
R62	Composition, 6.8K
R63	Composition, 1.5K
R64, 65, 66, 67	Potentiometer, 250K
R68, 69	Dep. Carbon, 220K, 5%, 1/3W
R70, 71	Dep. Carbon, 4.7M, 5%, 1/3W
R72	Composition, 47K
R73	Composition, 22M
R74	Composition, 1.8M
R75	Composition, 3.3M
R76	Dep. Carbon, 330K, 5%, 1/3W
R77	Dep. Carbon, 2.7K, 5%, 1/3W
R78	Composition, 10
R79	Dep. Carbon, 330K, 5%, 1/3W
R80	Dep. Carbon, 2.7K, 5%, 1/3W
R81	Composition, 10
R82	Composition, 47K
R83	Composition, 22M
R84	Composition, 1.8M
R85	Composition, 3.3M
R86	Composition, 100K
R87	Composition, 1.2K
R88	Composition, 10K
R89, 91	Dep. Carbon, 100K, 5%, 1/3W
R90	Composition, 10K
R92	Composition, 100K
R93	Composition, 1.2K
R94	Potentiometer, Dual Bass, 1M
R105	Potentiometer, Dual Treble, 1M
R108, 109	Dep. Carbon, 470K, 5%, 1/3W
R110	Composition, 10M
R111, 114	Dep. Carbon, 4.7M, 5%, 1/3W
R113	Composition, 10M
R117	Composition, 10M
R119	Composition, 10M
R120, 121	Composition, 2.2M
R122, 123	Composition, 220K
R124	Composition, 2.2K
R125, 126	Dep. Carbon, 100K, 5%, 1/3W
R127	Composition, 2.2K
R128	Potentiometer, Dual Balance, 300K
R131	Composition, 4.7K
R132	Potentiometer, Dual Volume, 500K
R133	Composition, 4.7K
R134, 135	Composition, 82K
R136	Composition, 680K
R137	Composition, 3.9K
R138	Composition, 220
R139	Composition, 5.6K
R140	Composition, 680K
R141	Composition, 3.9K
R142	Composition, 220
R143	Composition, 5.6K
R144, 145	Composition, 68K, 5%, 1W
R146, 147	Composition, 22K
R148, 149	Composition, 68K, 5%, 1W
R150, 151	Dep. Carbon, 330K, 5%, 1/3W
R152	Composition, 10K
R153, 154	Dep. Carbon, 330K, 5%, 1/3W
R155	Composition, 10K
R156	Composition, 2.7K, 1W
R157	Composition, 2.2K
R158	Composition, 5.6K
R159	Composition, 4.7K
R160	Composition, 2.2K
R161	Composition, 2.7K, 1W
R162, 163	Composition, 2.2K
R164, 165	Composition, 12K
R166	Composition, 470K
R168	Composition, 1K

RC20BF102K
RC30BF473K
RC20BF473K
RC20BF102K
RC20BF271K
RC20BF184K
RC20BF106K
RC20BF682K
RC20BF474K
RC20BF102K
RC20BF683K
RC20BF104K
RC20BF335K
R50160-3
RC20BF682K
RC20BF152K
R50160-3
R33DC224J
R33DC475J
RC20BF473K
RC20BF226K
RC20BF185K
RC20BF335K
R33DC334J
R33DC272J
RC20BF100K
R33DC334J
R33DC272J
RC20BF100K
RC20BF473K
RC20BF226K
RC20BF185K
RC20BF335K
RC20BF104K
RC20BF122K
RC20BF103K
R33DC104J
RC20BF103K
RC20BF104K
RC20BF122K
R50160-19
R50160-19
R33DC474J
RC20BF106K
R33DC475J
RC20BF106K
RC20BF106K
RC20BF106K
RC20BF225K
RC20BF224K
RC20BF222K
R33DC104J
RC20BF222K
R50160-49
RC20BF472K
R50160-17
RC20BF472K
RC20BF823K
RC20BF684K
RC20BF392K
RC20BF221K
RC20BF562K
RC20BF684K
RC20BF392K
RC20BF221K
RC20BF562K
RC30BF683J
RC20BF223K
RC30BF683J
R33DC334J
RC20BF103K
R33DC334J
RC20BF103K
RC30BF272K
RC20BF222K
RC20BF562K
RC20BF472K
RC20BF222K
RC30BF272K
RC20BF222K
RC20BF23K
RC20BF474K
RC20BF102K

R169	Wirewound, 280 7W
R170	Composition, 1.8M
R171	Composition, 27K

R720-221
RC20BF-185K
RC20BF-273K

COILS, CHOKES AND TRANSFORMERS

Symbol	Description	Part No.
L1	Choke, 3.3 Micro Henries	L50066-8
L2	Coil, FM Antenna	L726-124
L3	Coil, AM Antenna	L721-139
L4	AM Ferrite Loop	L50210-24
L5	Choke, 1 Micro Henry	L50066-2
L6, 7	Choke, .56 Micro Henries	L50066-19
L8	Choke, RF	L629-180
L9	Coil, FM RF	L726-126
L10	Coil, FM Oscillator	L726-125
L11, 13	Choke, 1 Micro Henry	L50066-2
L12	Choke, .56 Micro Henries	L50066-19
L14	Choke, 1.2 Micro Henries	L50066-3
L15, 16, 17, 18	Choke, Filament Ferrite Bead	L592-189
L19	Coil, AM Oscillator	L50210-21
L20	Choke, 1.2 Micro Henries	L50066-3
L21	Coil, 10kc Filter	L644-120
T1	Transformer, Power	T720-215
T2, 3	Transformer, Output	T720-117
Z1	Transformer, FM IF	ZZ662-117
Z2	Transformer, FM IF	ZZ2987
Z3	Limiter Coil Assembly	L670-145
Z4	Transformer, FM Detector	ZZ592-170
Z5	Transformer, AM RF	L50210-23
Z6	Transformer, AM IF	ZZ50210-1
Z7	Transformer, AM IF	ZZ2984

MISCELLANEOUS

Symbol	Description	Part No.
F1	Fuse, 3.2 Ampere, Slo-Blo	F3319
PC1, 2	Printed Circuit, Phono Equalization	PC50187-3
C90, 91	390uuf 10%	
C95, 96	560uuf 10%	
C99, 100	1500uuf 10%	
R98, 100	270K 10%	
R99, 101	2M 20%	
R106, 107	120K 10%	
PC3, 4	Printed Circuit, High Frequency Filter	PC50187-2
C106, 107	220uuf 20%	
C109, 111, 112, 113	100uuf 20%	
R112, 115, 116, 118	100K 20%	
PC5, 6	Printed Circuit, Tone	PC50187-4
C94, 97	220uuf 20%	
C88, 92	1000uuf 20%	
C89, 93	.022uuf 20%	
C95, 101	3300uuf 20%	
R95, 102	220K 10%	
R97, 104	18K 10%	
11, 2	Lamp, Dial Panel	1-50082-3
S1	Switch, Selector	S720-154
S2	Switch, Mono-Stereo	S720-151
S3	Switch, Slide	S50200-2
S4	Switch, Power	Part of R132
S5, 6, 7, 8, 9	Switch, Slide	S50200-2
CR1, 2	Diode, 1N542	V-1N542

MECHANICAL PARTS

Symbol	Description	Part No.
—	Dress Panel, Screened	AS720-114
—	FM Dial Pointer	A720-158
—	AM Dial Pointer	A720-159
—	Knob, Tuning	E50133-1
—	Knob, Selector and Mono-Stereo	E50133-2
—	Knob, Bass and Treble, Rear	E50153-1
—	Knob, Bass and Treble, Front	E50152
—	Knob, Volume and Balance	E50154-1
—	9-Pin Tube Shield	E3287
—	7-Pin Tube Shield	E3330
—	Speaker Terminal Strip	E50170-10
—	Plastic Leg	H657-145
—	Dial Glass	N720-113
—	Fuse Holder	X1036

ALIGNMENT INSTRUCTIONS

Read These Instructions With Extreme Care Before Attempting Alignment.

CHASSIS: Turn the station selectors completely counterclockwise, without forcing. Dial pointers should be at zero index mark on logging scale. If not, reset the dial pointers. Disconnect the external antennas and the antenna link. Set Ferrite Loop to normal position, parallel to rear panel. Set Volume Control to minimum (CCW.)

When using an oscilloscope for alignment, set the output level controls for no overload, as shown by the proper waveform shape.

SIGNAL GENERATORS: The signal generator equipment must be able to supply the following: FM RF modulated 30% (± 22.5 KC deviation) at 400 cps; AM RF modulated 30% at 400 cps;

AM IF with 30KC sweep for AM bandwidth adjustment; audio oscillator accurately calibrated for 1 and 10KC audio output for testing the 10KC AM whistle filter.

INDICATOR: DC VTVM, AC VTVM, and scope for alignment. AC VTVM for 10 KC AM whistle filter adjustment.

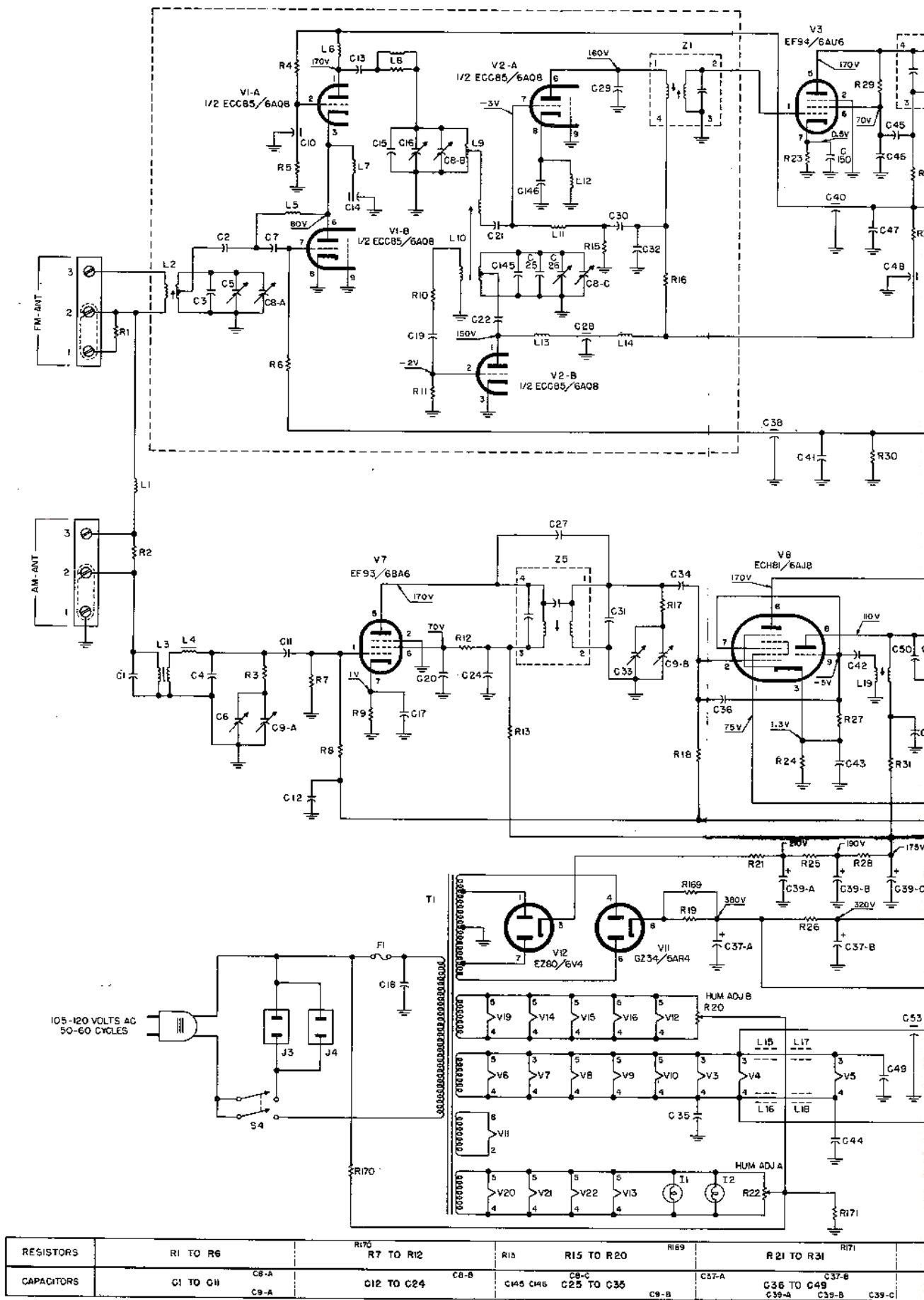
ALIGNMENT: Allow the chassis and test instruments to warm up for at least fifteen minutes. Adjust the line voltage for 117 volts AC, 50-60 cycles. Use fully insulated tools: a small screwdriver for all trimming capacitors; a K-Tran tool for Z1, Z2, Z3, Z5, Z6 and Z7; a hex tool for Z4, L2, L9, L10 and L19. For AM alignment, short junction of C12 and R8 to ground.

AM ALIGNMENT

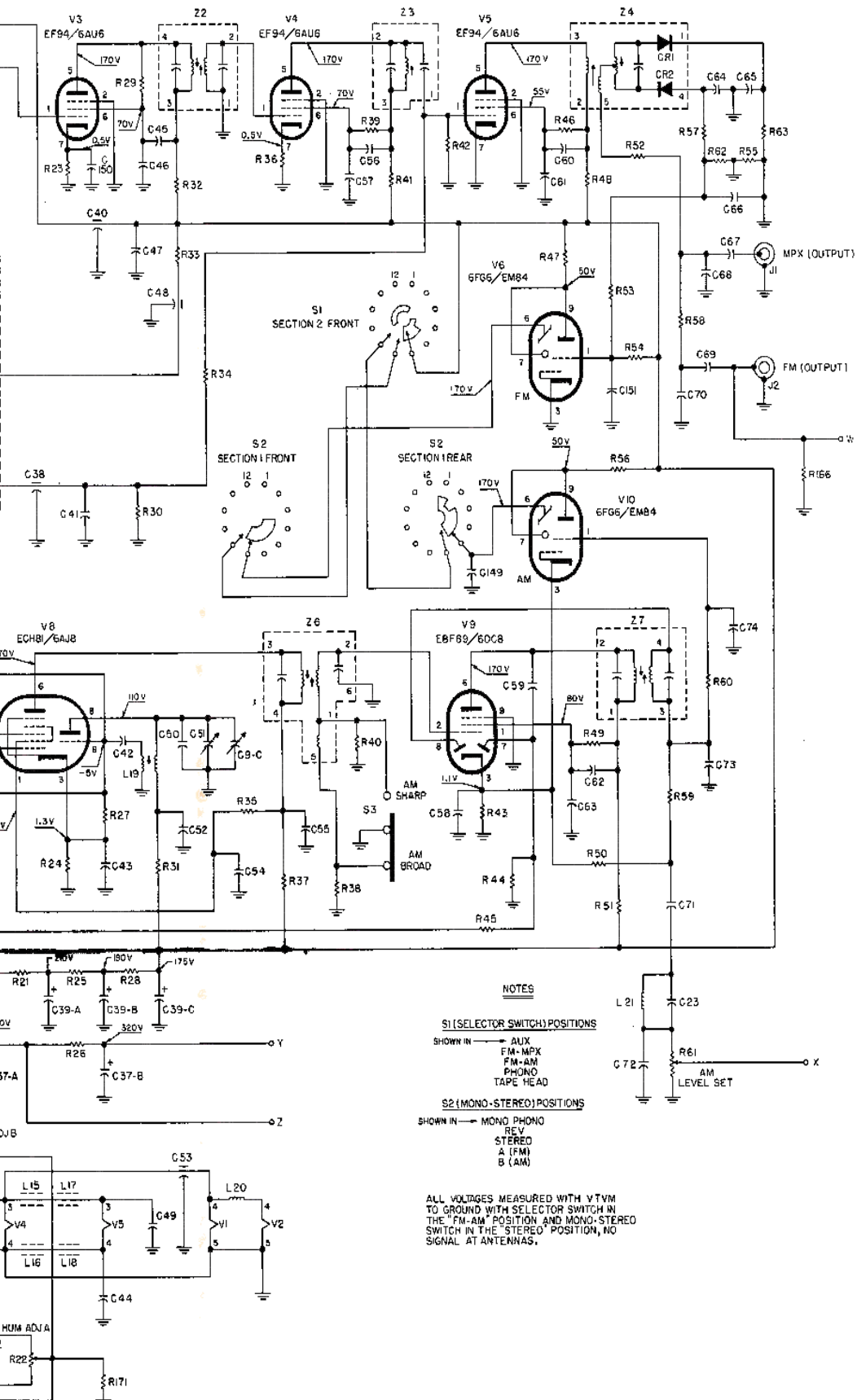
STEPS	CHASSIS			SIGNAL GENERATOR			INDICATOR		ALIGNMENT	
	AM BANDWIDTH	SELECTOR	STATION SELECTOR	COUPLING	FREQ.	MOD.	TYPE	CONNECTION	ADJUST	INDICATION
1	SHARP	AM	Point of no signal and no interference	Audio Gen. connected to Pin 3 of Z7	1 KC 10 KC	None	AC VTVM to Ch. B RCRDR Output			0 db at 1 KC — 25 db at 10 KC
2	SHARP	AM	Point of no signal and no interference	AM Gen. connected thru .01-uf cap. in series with hot lead to V8, Pin 2	455 KC	30% AM at 400 cps	AC VTVM to Ch. B RCRDR Output	Z6, Z7, top and bottom		Maximum voltage
3	BROAD	AM	Point of no signal and no interference	AM Gen. connected thru .01-uf cap. in series with hot lead to V8, Pin 2	455 KC	30 KC sweep	Scope to Ch. B RCRDR 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 antenna terminal 3 Disconnect link between 1 & 2	600 KC	30% AM at 400 cps	AC VTVM to Ch. B RCRDR Output	L19, Z5		Maximum voltage
5	SHARP	AM	1400 KC	AM Gen. connected thru 220-uuf cap. in series with hot lead to antenna terminal 3 Disconnect link between 1 & 2	1400 KC	30% AM at 400 cps	AC VTVM to Ch. B RCRDR Output	C51, C6 C33		Maximum voltage
6	Repeat steps 4 and 5 for proper dial calibration and maximum output.									
7		FM	Point of no signal and no interference	FM Gen. connected to ungrounded tube shield of V2	10.7 MC	None	DC VTVM to junction of R57 and C66	Z1, Z2, Z3 and Z4, top & bottom		Maximum negative voltage
8		FM	Point of no signal and no interference	FM Gen. connected to ungrounded tube shield of V2	10.7 MC	None	Connect two 47K ohm resistors in series across C66. Connect a VTVM between the junction of the two 47K ohm resistors and the junction of R58, C70.	Z4 top		Zero reading on zero center scale
9		FM	90 MC	FM Gen. connected thru two 120-ohm carbon resistors in series with lead to antenna terminals 2 and 3	90 MC	30% FM (22.5 KC Dev.) at 400 cps	DC VTVM to the junction of R34 and R30 and scope to Ch. A. RCRDR Output	L2, L9, L10		Check for sine waveform and adjust for maximum negative voltage
10		FM	106 MC	FM Gen. connected thru two 120-ohm carbon resistors in series with lead to antenna terminals 2 and 3	106 MC	30% FM (22.5 KC Dev.) at 400 cps	DC VTVM to the junction of R34 and R30 and scope to Ch. A. RCRDR Output	C5, C16 and C26		Check for sine waveform and adjust for maximum negative voltage
11	Repeat steps 9 and 10 at least once for proper dial calibration and maximum output.									
NOTE: For calibrating both the AM and FM, use as low an output voltage as possible from your signal generator.										

FM ALIGNMENT

SCHEMATIC DIAGRAM • TUNER SECTION



RESISTORS	R1 TO R6	R7 TO R12	R13	R15 TO R20	R19	R21 TO R31	R71
CAPACITORS	C1 TO C11 CB-A C9-A	C12 TO C24 CB-B	C145 C146 CB-C	C25 TO C35 CB-C	C37-A CB-B	C36 TO C49 C39-A C39-B C39-C	C37-B C39-C



NOTES

S1 (SELECTOR SWITCH) POSITIONS

- SHOWN IN → AUX
- FM-MPX
- FM-AM
- PHONO
- TAPE HEAD

S2 (MONO-STEREO) POSITIONS

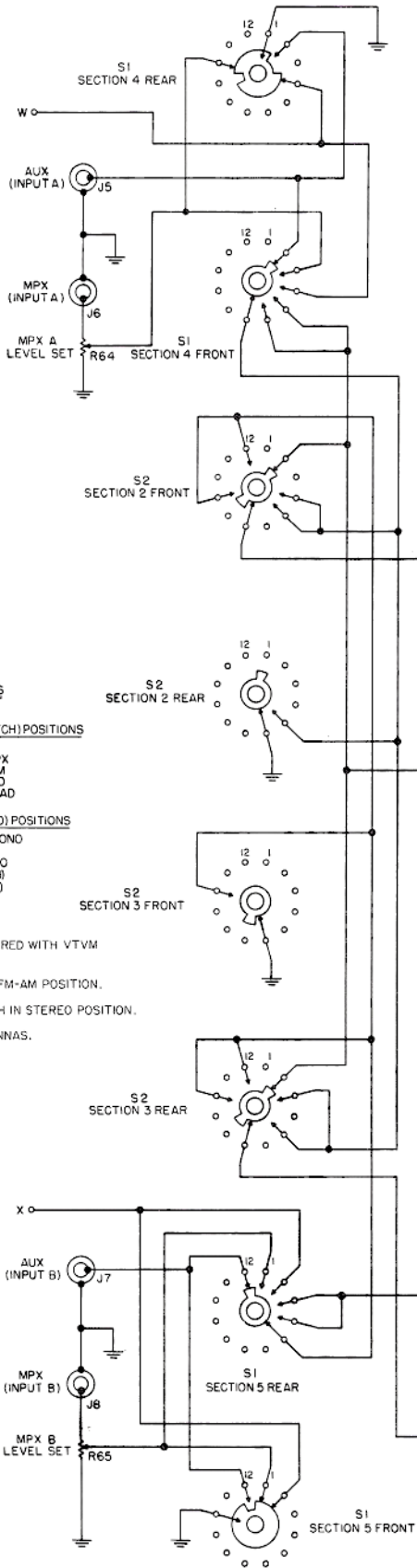
- SHOWN IN → MONO PHONO
- STEREO
- A (FM)
- B (AM)

ALL VOLTAGES MEASURED WITH VTVM TO GROUND WITH SELECTOR SWITCH IN THE "FM-AM" POSITION AND MONO-STEREO SWITCH IN THE "STEREO" POSITION, NO SIGNAL AT ANTENNAS.

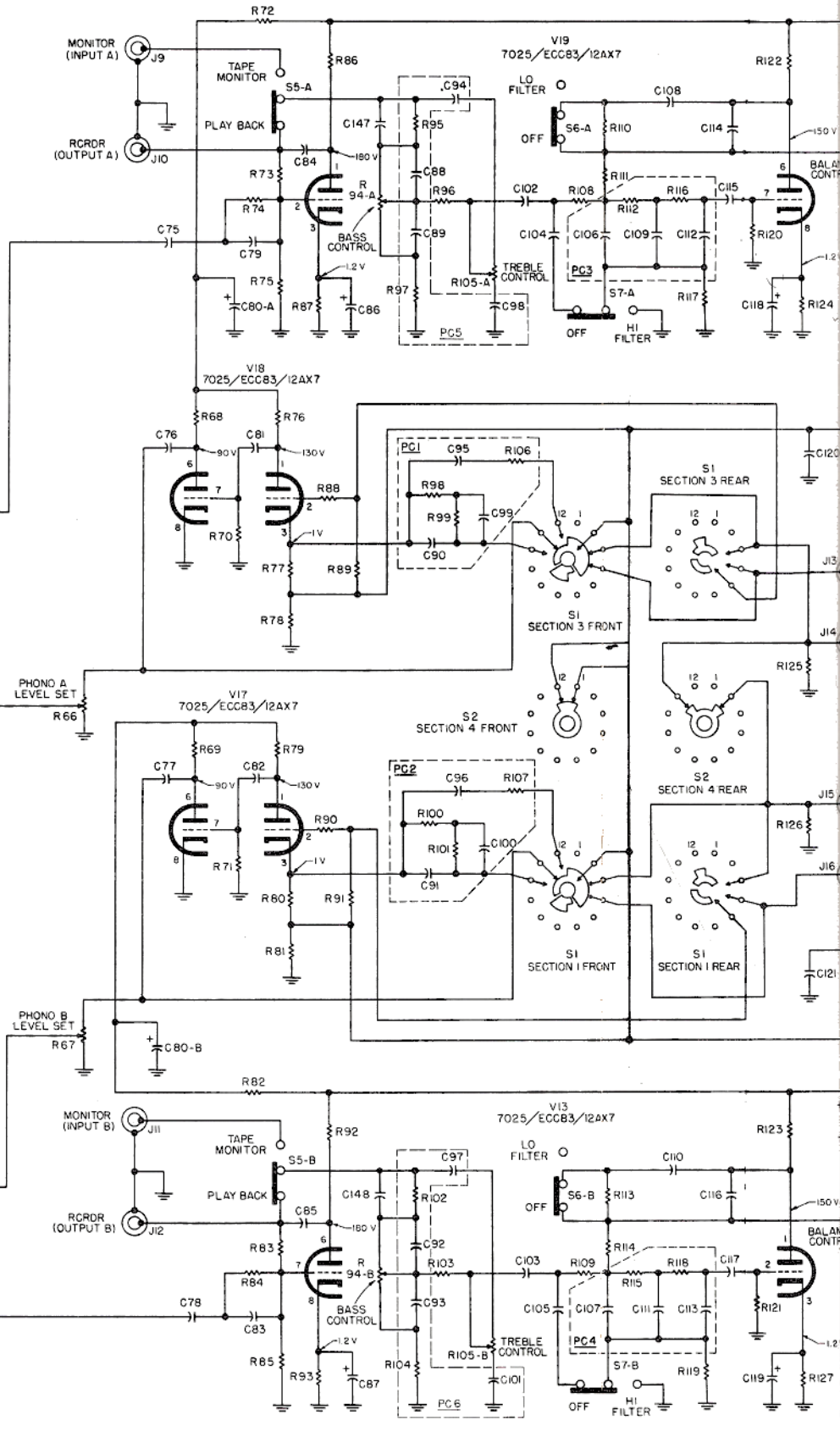
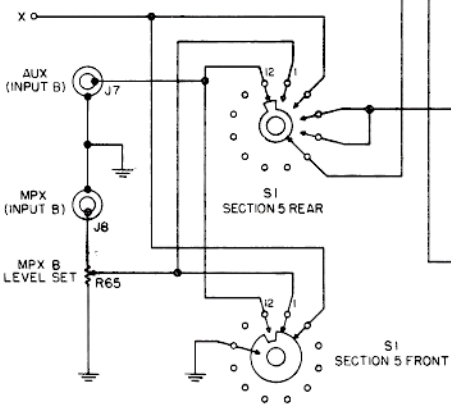
R21 TO R31 C37-B C39-A C39-B C39-C	R32 TO R40 C50 TO C57 C8-C	R41 TO R47 C58 TO C61 C149	R48 TO R63 R55 R66 C62 TO C74 C23
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SCHEMATIC DIAGRAM • AMPLIFIER SECTION

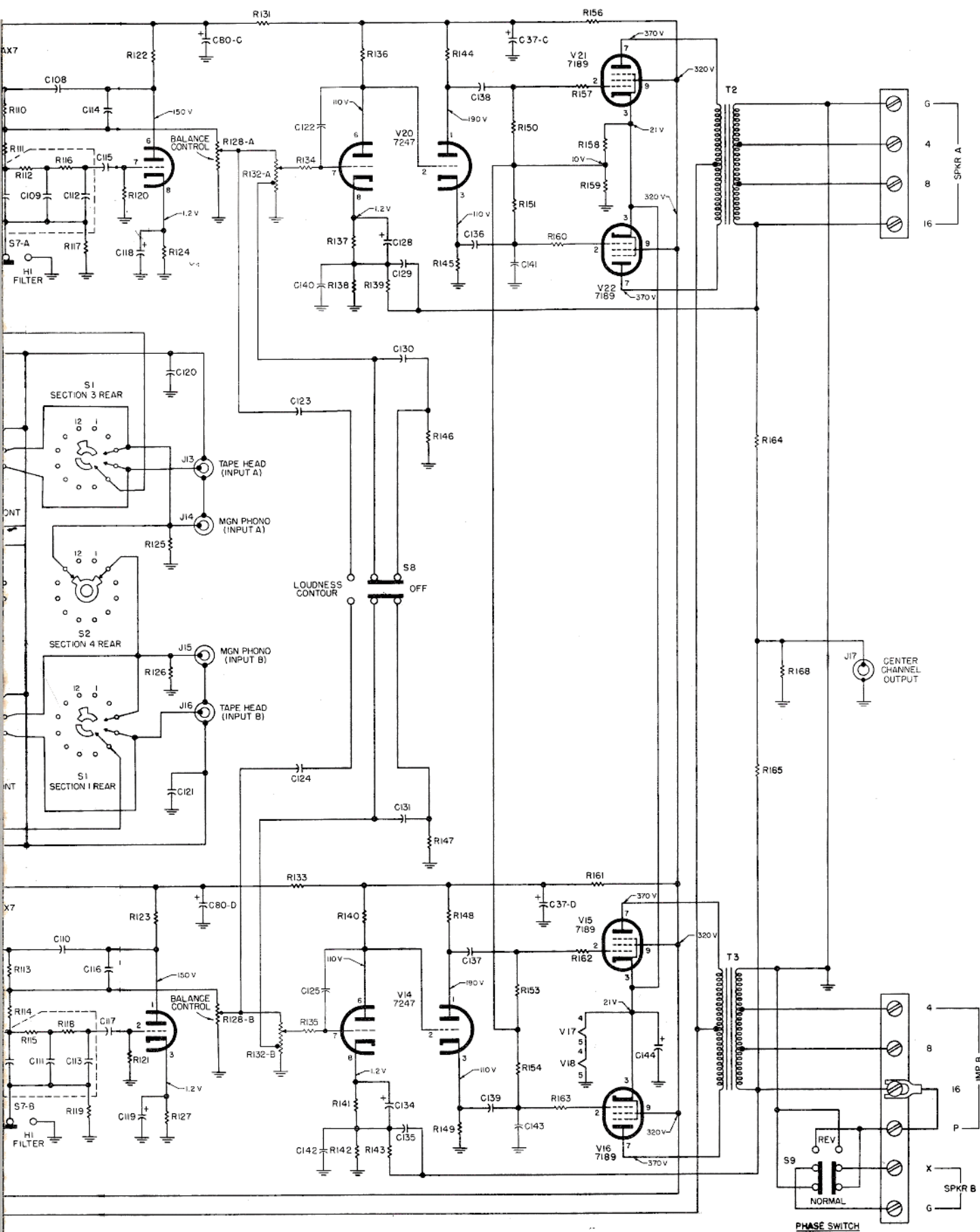
CHANNEL A



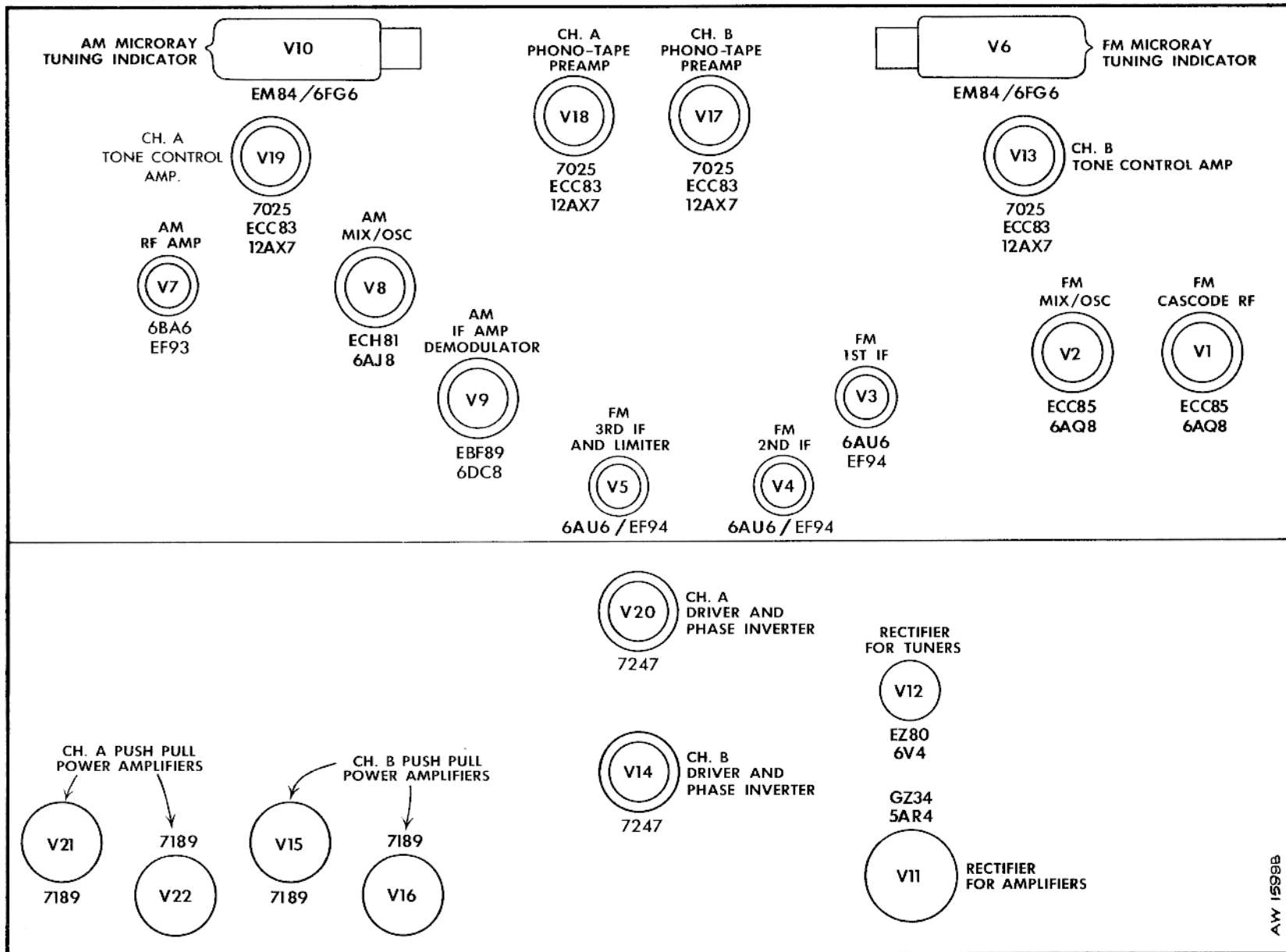
CHANNEL B



RESISTORS	R64 R65	R66 R67	R68 TO R104	R94-A R94-B	R105-A R105-B	R106 TO R119	R120 TO R130	
CAPACITORS		C75 TO C78	C80-B	C80-A	C79 TO C93	C147 C148	C94 TO C111	C112 TO C121



R120 TO R131	R128-A R128-B	R132-A R132-B	R133 TO R149	R150 TO R165	R168
C112 TO C121	C80-C C80-D	C122 TO C137	C37-C C37-D	C138 TO C144	



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