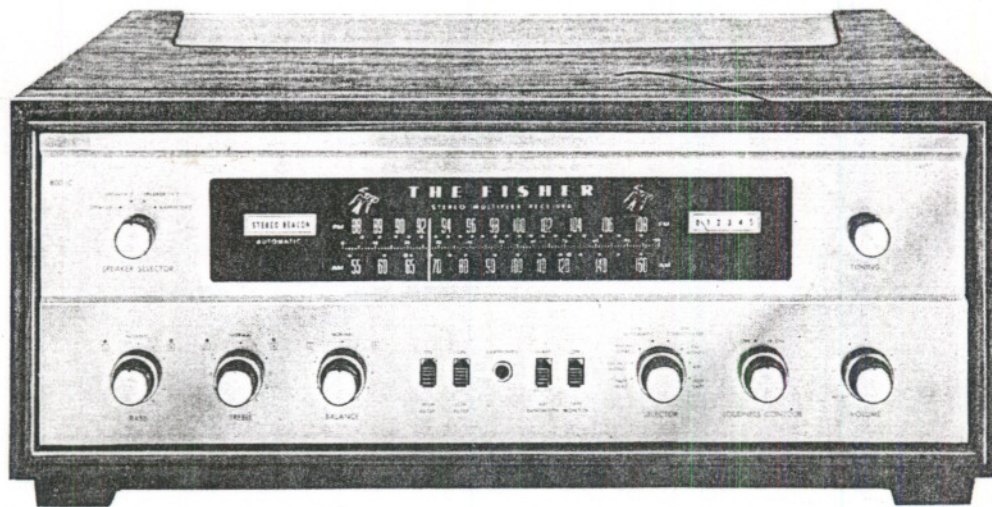


Service Manual

THE FISHER



800-C

CHASSIS SERIAL NUMBERS
FROM 30001 to 49999 INCLUSIVE

FISHER RADIO CORPORATION • LONG BEACH, CALIF.

AL Pugliese
The Fisher Doctor
Fisher Radio Corporation
27 Daleham Street
Staten Island, NY 10308

NEW YORK

PARTS DESCRIPTION LIST

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.
C1	Ceramic, 47, 5 %, N750, 1000V	C50070-29
C2	Ceramic, 3, NPO, 1000V	C50070-28
C3	Ceramic, 1000, GMV, 500V	C50089-2
C4, 5, 6	Ceramic, Feedthru, 1000, GMV	C592-187
C7	Ceramic, 10, 5 %, NPO, 1000V	C50070-39
C8	Ceramic, .02uf, +80 — 20 %, 100V	C50073-1
C9	Ceramic, 1000, GMV, 500V	C50089-2
C10	Ceramic, 7, ±.5, NPO, 500V	CC20CJ070D5
C11	Ceramic Trimmer	C662-123
C12	Variable, FM-AM	C965-115
C13	Ceramic, .02uf, +80 — 20 %, 500V	C50089-4
C14, 15	Ceramic, 18, N470, 1000V	C50070-13
C16	Mylar, .047uf, 630V	C50197-101
C17	Mylar, .047uf, 250V	C50197-52
C18	Mylar, .047uf, 630V	C50197-101
C19	Mylar, .047uf, 250V	C50197-52
C20	Ceramic, .68, 500V	C50077-6N
C21, 22	Ceramic, 1000, 1000V	C50072-3
C23	Ceramic Trimmer	C662-123
C24	Ceramic, 8, ±.5, NPO, 500V	CC20CJ080D5
C27	Ceramic, 68, N750, 500V	CC20UJ680K5
C28	Ceramic, .02uf, +80 — 20 %, 500V	C50089-4
C29	Ceramic, 100, 5 %, N1500, 1000V	C50070-19
C30, 31	Ceramic, 100, N1500, 1000V	C50070-6
C32	Ceramic Trimmer	C662-123
C33	Ceramic, 24, 5 %, N150, 1000V	C50070-8
C34	Ceramic, 8, ±.5, N330, 500V	CC20SJO80D5
C35	Ceramic, 1000, 1000V	C50072-3
C36	Ceramic, 68, N2200, 1000V	C50070-12
C37	Ceramic, 6, 5 %, NPO, 1000V	C50070-43
C38	Ceramic, .02uf, +80 — 20 %, 100V	C50073-1
C39	Ceramic, 68, N2200, 1000V	C50070-12
C40, 41	Ceramic, .02uf, 20 %, 500V	C50089-5
C42, 43	Ceramic, Feedthru, 1000, GMV	C592-187
C44	Mylar, .047uf, 400V	C50197-30
C45	Ceramic, 820, 1000V	C50072-7
C46	Mylar, .047, 400V	C50435-25
C47	Ceramic, 820, 1000V	C50072-7
C48	Ceramic, .02, +80 — 20 %, 100V	C50073-1
C49	Mylar, .047uf, 250V	C50197-52
C50	Ceramic, 100, N1500, 1000V	C50070-6
C51	Ceramic, 2700, 1000V	C50072-17
C52, 53	Ceramic, 5000, +80 — 20 %, 500V	C50089-6
C54, 55	Ceramic, 100, 5 %, N1500, 1000V	C50070-19
C56	Ceramic, 1, 20 %, P100, 1000V	C50070-1
C57	Ceramic, .02uf, 20 %, 500V	C50089-5
C58	Ceramic, 150, 1000V	C50072-18
C59	Ceramic, 5000, +80 — 20 %, 500V	C50089-6
C60	Mylar, .1uf, 125V	C50435-7
C61	Ceramic, 2700, 1000V	C50072-17
C62	Ceramic, .02uf, GMV, 1000V	C50071-6
C63	Ceramic, 5000, +80 — 20 %, 500V	C50089-6
C64	Mylar, .1uf, 125V	C50435-7
C65	Electrolytic, 2uf, 70V	C721-142
C66	Polystyrene, 1800, 5 %, 125V	CP50394-11
C67	Electrolytic, .5uf, 350V	C50283-7
C68	Ceramic, .02uf, 20 %, 500V	C50089-5
C69	Ceramic, 2200, 1000V	C50072-5
C70	Ceramic, .02uf, 20 %, 500V	C50089-5
C71	Ceramic, 2200, 1000V	C50072-5
C72	Ceramic, 24, 5 %, N150, 1000V	C50070-8
C73	Mylar, .1uf, 125V	C50435-7
C74	Ceramic, .02uf, +80 — 20 %, 100V	C50073-1
C75, 76	Ceramic, 1000, 1000V	C50072-3
C77, 78	Ceramic, 120, N1500, 1000V	C50070-9
C79, 80	Ceramic, 24, 5 %, N150, 1000V	C50070-8
C81	Ceramic, 2700, 1000V	C50072-17
C82, 83, 84, 85, 86	Ceramic, 5000, +80 — 20 %, 500V	C50089-6
C87	Electrolytic, 4 Section: A — 20uf, 300V	C50180-49

B — 40uf, 400V
C — 40uf, 450V
D — 40uf, 500V

C88, 89, 90	Ceramic, 5000, +80 — 20 %, 500V	C50089-6
C91	Electrolytic, 4 Section: A — 50uf, 250V B — 50uf, 250V C — 50uf, 250V D — 200uf, 250V	C50180-48
C92	Mylar, .1uf, 250V	C50197-54
C93, 94	Ceramic, 5000, +80 — 20 %, 500V	C50089-6
C95	Electrolytic, 2 Section: A — 1000 uf, 35V B — 1000 uf, 35V	C50180-38
C96	Ceramic, 560, 1000V	C50072-14
C97	Ceramic, 2700, 1000V	C50072-17
C98	Electrolytic, 200uf, 250V	C50180-20
C99	Mylar, .022uf, 250V	C50197-49
C100	Ceramic, 5000, +80 — 20 %, 500V	C50089-6
C101	Mylar, .022uf, 250V	C50197-49
C102	Ceramic, .02uf, GMV, 1000V	C50071-6
C103	Ceramic, Feedthru, 1000, GMV	C592-187
C104	Molded, .01uf, 20 %, 600V	C2747
C105, 106	Ceramic, .01uf, 20 %, 500V	C50089-3
C107, 108, 109	Ceramic, 330, 1000V	C50072-1
C110	Molded, .01uf, 20 %, 600V	C2747
C111	Electrolytic, 8uf, 50V	C629-138
C112, 113	Ceramic, 100, GMV, N1500, 1000V	C50070-5
C116, 117	Electrolytic, 50uf, 10V	C50283-6
C118	Mylar, .1uf, 125V	C50435-7

RESISTORS & POTENTIOMETERS

In ohms, 5 % tolerance, 1/4 Watt, unless otherwise noted. K=Kilohms, M=Megohms.

Symbol	Description	Part No.
R1	Wirewound, 25, 10 %, 5W	R688-117
R2	Composition, 270, 10 %, 1/2 W	RC20BF271K
R3	Composition, 100K, 10 %, 1/2 W	RC20BF104K
R4	Composition, 330, 10 %, 1W	RC20BF331K
R6	Wirewound, 25, 10 %, 5W	R688-117
R8	Composition, 330, 10 %, 1W	RC30BF331K
R9	Dep. Carbon, 47	R12DC470J
R12	Dep. Carbon, 100K	R12DC104J
R13	Dep. Carbon, 1M, 1/2 W	R33DC105J
R14	Composition, 100, 10 %, 1/2 W	RC20BF101K
R15	Dep. Carbon, 1.8M, 1/2 W	R33DC185J
R16	Composition, 47K, 10 %, 1/2 W	RC20BF473K
R17, 18, 19, 20	Dep. Carbon, 1K, 1/2 W	R33DC102J
R21, 22, 23, 24, 25	Dep. Carbon, 330K	R12DC334J
R26	Dep. Carbon, 180K, 1/2 W	R33DC184J
R27	Dep. Carbon, 2.2K, 1/2 W	R33DC222J
R28	Dep. Carbon, 180K, 1/2 W	R33DC184J
R29	Dep. Carbon, 2.2K, 1/2 W	R33DC222J
R30, 31	Dep. Carbon, 68K, 1/2 W	R33DC683J
R32	Dep. Carbon, 22K	R12DC223J
R33, 34	Dep. Carbon, 33K, 1/2 W	R33DC333J
R35	Dep. Carbon, 2.2K, 1/2 W	R33DC222J
R36	Dep. Carbon, 220, 1/2 W	R33DC221J
R37	Dep. Carbon, 2.2K, 1/2 W	R33DC222J
R38	Dep. Carbon, 220, 1/2 W	R33DC221J
R39, 40	Potentiometer, 25K, Phase Inverter Adj.	R50103-2
R41	Composition, 18K, 10 %, 1W	RC30BF183K
R42, 43	Dep. Carbon, 470K, 1/2 W	R33DC474J
R44	Dep. Carbon, 470K	R12DC474J
R45, 46	Dep. Carbon, 47K	R12DC473J
R47	Potentiometer, 500K, Dual Volume	R50160-104
R48	Dep. Carbon, 27	R12DC270J
R49	Dep. Carbon, 2.7K	R12DC272J
R50, 51	Dep. Carbon, 270	R12DC271J

PARTS DESCRIPTION LIST

R52 Composition, 1K, 10%, 1/2 W
R53 Composition, 2.7, 10%, 1/2 W
R54, 55 Dep. Carbon, 22K
R56 Composition, 1K, 10%, 1/2 W
R57 Potentiometer, 300K, Dual Balance
R58 Dep. Carbon, 56K
R59, 60 Dep. Carbon, 2.7M, 1/2 W
R61, 62 Dep. Carbon, 120K, 1/2 W
R63, 64 Dep. Carbon, 1K, 1/2 W
R65 Composition, 180, 10%, 1/2 W
R66 Dep. Carbon, 3.3M, 1/2 W
R67 Dep. Carbon, 39K
R68 Dep. Carbon, 1K
R69 Composition, 27K, 10%, 1/2 W
R70 Composition, 1K, 10%, 1/2 W
R71 Dep. Carbon, 39K
R72 Composition, 10K, 10%, 1/2 W
R73 Composition, 100, 10%, 1/2 W
R74, 75 Dep. Carbon, 220K
R76 Dep. Carbon, 82K
R77, 78 Dep. Carbon, 680K
R79, 80 Potentiometer, 500K,
Dual Bass, Treble
R81 Dep. Carbon, 680K
R82 Dep. Carbon, 150K
R83 Dep. Carbon, 820K
R84 Composition, 150, 10%, 1/2 W
R85 Dep. Carbon, 470K
R86 Dep. Carbon, 270K
R87 Composition, 47K, 10%, 1/2 W
R88 Dep. Carbon, 47K
R89 Dep. Carbon, 820K
R90 Composition, 1K, 10%, 1/2 W
R91 Dep. Carbon, 820K
R92 Dep. Carbon, 56K
R93, 94 Dep. Carbon, 820K
R95 Dep. Carbon, 68K
R96 Dep. Carbon, 120K, 1/2 W
R97 Dep. Carbon, 1K, 1/2 W
R98 Dep. Carbon, 120K, 1/2 W
R99 Dep. Carbon, 1K, 1/2 W
R100 Dep. Carbon, 2.2M, 1/2 W
R101 Composition, 220, 10%, 1/2 W
R102 Dep. Carbon, 2.7M, 1/2 W
R103 Dep. Carbon, 1.5M, 1/2 W
R104 Dep. Carbon, 2.7M, 1/2 W
R105 Dep. Carbon, 1.5M, 1/2 W
R106 Composition, 220, 10%, 1/2 W
R107, 108 Dep. Carbon, 470K
R109, 110 Dep. Carbon, 330K
R111 Dep. Carbon, 22K
R112 Composition, 100, 10%, 1/2 W
R113 Composition, 82K, 10%, 1/2 W
R114 Composition, 1K, 10%, 1/2 W
R115 Composition, 82K, 10%, 1/2 W
R116 Dep. Carbon, 47K
R117 Composition, 22K, 10%, 1/2 W
R118 Dep. Carbon, 180
R119 Dep. Carbon, 5.6K, 1/2 W
R120 Composition, 2.7K, 10%, 1W
R121 Glass, 470, 10%, 3W
R122 Dep. Carbon, 15K, 1/2 W
R123 Composition, 1.2K, 10%, 1W
R125, 126 Dep. Carbon, 82K
R127 Wirewound, 15, 10%, 5W
R128 Glass, 1.2K, 10%, 7W
R129 Glass, 470, 10%, 3W
R130 Dep. Carbon, 330K
R131 Composition, 68K, 10%, 1/2 W
R132 Dep. Carbon, 330K
R135, 136 Dep. Carbon, 4.7M, 1/2 W
R137 Composition, 1K, 10%, 1/2 W
R138 Composition, 270, 1/2 W
R139, 140 Dep. Carbon, 220K, 1/2 W
R141, 142 Glass, 330K, 1W
R143 Dep. Carbon, 10K
R144 Glass, 2.7K, 1/2 W

RC20BF102K
RC20BF272K
R12DC223J
RC20BF102K
R50160-130
R12DC563J
R33DC275J
R33DC124J
R33DC102J
RC20BF181K
R33DC335J
R12DC393J
R12DC102J
RC20BF273K
RC20BF102K
R12DC393J
RC20BF103K
RC20BF101K
R12DC224J
R12DC823J
R12DC684J
R50160-101-2
R12DC684J
R12DC154J
R12DC824J
RC20BF151K
R12DC474J
R12DC274J
RC20BF473K
R12DC473J
R12DC824J
RC20BF102K
R12DC824J
R12DC563J
R12DC824J
R12DC683J
R33DC124J
R33DC102J
R33DC124J
R33DC102J
R33DC225J
RC20BF221K
R33DC275J
R33DC155J
R33DC275J
R33DC155J
RC20BF221K
R12DC474J
R12DC334J
R12DC223J
RC20BF101K
RC20BF823K
RC20BF102K
RC20BF823K
R12DC473J
RC20BF223K
R12DC180J
R33DC562J
RC30BF272K
RPG3W471K
R33DC153J
RC30BF122K
R12DC823J
R719-106
RPG3W122K
RPG3W471K
R12DC334J
RC20BF683K
R12DC334J
R33DC475J
RC20BF102K
RC20BF271J
R33DC224J
R30G334J
R12DC103J
R20G272J

R145 Dep. Carbon, 10K
R146 Glass, 2.7K, 1/2 W
R147 Composition, 820K, 10%, 1/2 W
R148 Dep. Carbon, 100K
R149 Dep. Carbon, 10
R150 Dep. Carbon, 100K
R151 Dep. Carbon, 10
R152 Composition, 1.5K, 1/2 W
R153 Composition, 1K, 1/2 W
R154 Dep. Carbon, 15K, 1/2 W
R155 Dep. Carbon, 150K
R156 Dep. Carbon, 68K
R157 Dep. Carbon, 150K
R158 Dep. Carbon, 68K
R159, 160 Dep. Carbon, 220K

R12DC103J
R20G272J
RC20BF824K
R12DC104J
R12DC100J
R12DC104J
R12DC100J
RC20BF152J
RC20BF102J
R33DC153J
R12DC154J
R12DC683J
R12DC154J
R12DC683J
R12DC224J

COILS, CHOKES & TRANSFORMERS

Symbol	Description	Part No.
L1	FM Antenna Coil	L965-119
L2	AM Ferrite Loop	L990-132
L3	Choke, Ferrite Bead	L592-189
L4	Choke, 1.5 Microhenry	L50066-4
L5	AM-RF Transformer	L50210-35
L6	FM-RF Coil	L965-116
L7	FM Mixer Coil	L965-117
L8	Choke, 1 Microhenry	L50066-2
L9	AM Oscillator Coil	L50210-28
L10	Choke, 1 Microhenry	L50066-2
L11	FM Oscillator Coil Assembly	AS965-120
L12, 13,	Choke, 1 Microhenry	L50066-2
14	Choke, Filament, Ferrite Bead	L592-189
L16 thru 27	Choke, 3.3 Microhenries	L50066-8
L28	Transformer, Power	T991-115
T1	Transformer, Output	T991-116-1
T2	Transformer, Output	T991-116-2
T3	Transformer, AM, IF	ZZ50210-41
Z1	Transformer, FM, IF	ZZ50210-42
Z2	Transformer, FM, IF	ZZ50210-39
Z3	Transformer, AM, IF	ZZ2984
Z4	Transformer, FM, IF	ZZ50210-2
Z5	FM Limiter Coil	ZZ50210-6
Z6	FM Ratio Detector	ZZ50210-9
Z7		

MISCELLANEOUS

Symbol	Description	Part No.
CR2, 3, 4, 5	Diode, Silicon	V50260-10
CR6, 7	Diode, Silicon	SR50411-1
F1	Fuse, 3.2 Amp Slo-Blo	F3319
I1	Lamp, #47 OF	I50009-4
I2, 3	Lamp, Dial	I50441-4
I4	Lamp, #47 OF, Stereo Beacon	I50009-4
J1	Headphone Jack	J846-120-1
M1	Meter, Tuning	M990-124
PC1	Printed Circuit	PC50434
PC2, 3	Printed Circuit, High Filter	PC50187-2
PC4, 5	Printed Circuit, Tone Control	PC50187-9
PC6, 7	Printed Circuit, Equalization	PC50187-3
RL1	Relay	K50314
S1	Switch, Selector	S990-131BX
S2	Switch, Slide, AM Bandwidth	S50200-5
S3	Switch, Speaker Selector	S990-130
S4	Switch, Loudness Contour	S990-129
S5, 6, 7	Switch, Slide	S50200-5
S8	Switch, Power	part of R47
SR1	Selenium Rectifier, Bridge	SR50253-1
—	FM Dipole Assembly	AS50227-1
—	Dress Panel	AS990-108
—	Knob, Dummy Dual	E50324
—	Knob, Dual, Rear	E50221
—	Knob, Dual, Front	E50323
—	Knob, Tuning	E50325-2
—	Knob, Speaker Selector	E50325-2
—	Dial Glass	N990-107
—	Fuse Holder	X563-551

ALIGNMENT INSTRUCTIONS

Read These Instructions With Extreme Care Before Attempting Alignment.

CHASSIS: Turn the station selector completely counterclockwise, without forcing. Dial pointer should be at zero index mark on logging scale. If not, reset the dial pointer. Disconnect the external antennas and the antenna link. Set Ferrite Loop to normal position, parallel to rear panel. When using an oscilloscope for alignment, set the output level controls for no overload, as shown by the proper waveform shape. Connect leads to main output and turn volume control to minimum.

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.

INDICATOR: DC VTVM, AC VTVM, and scope for alignment.

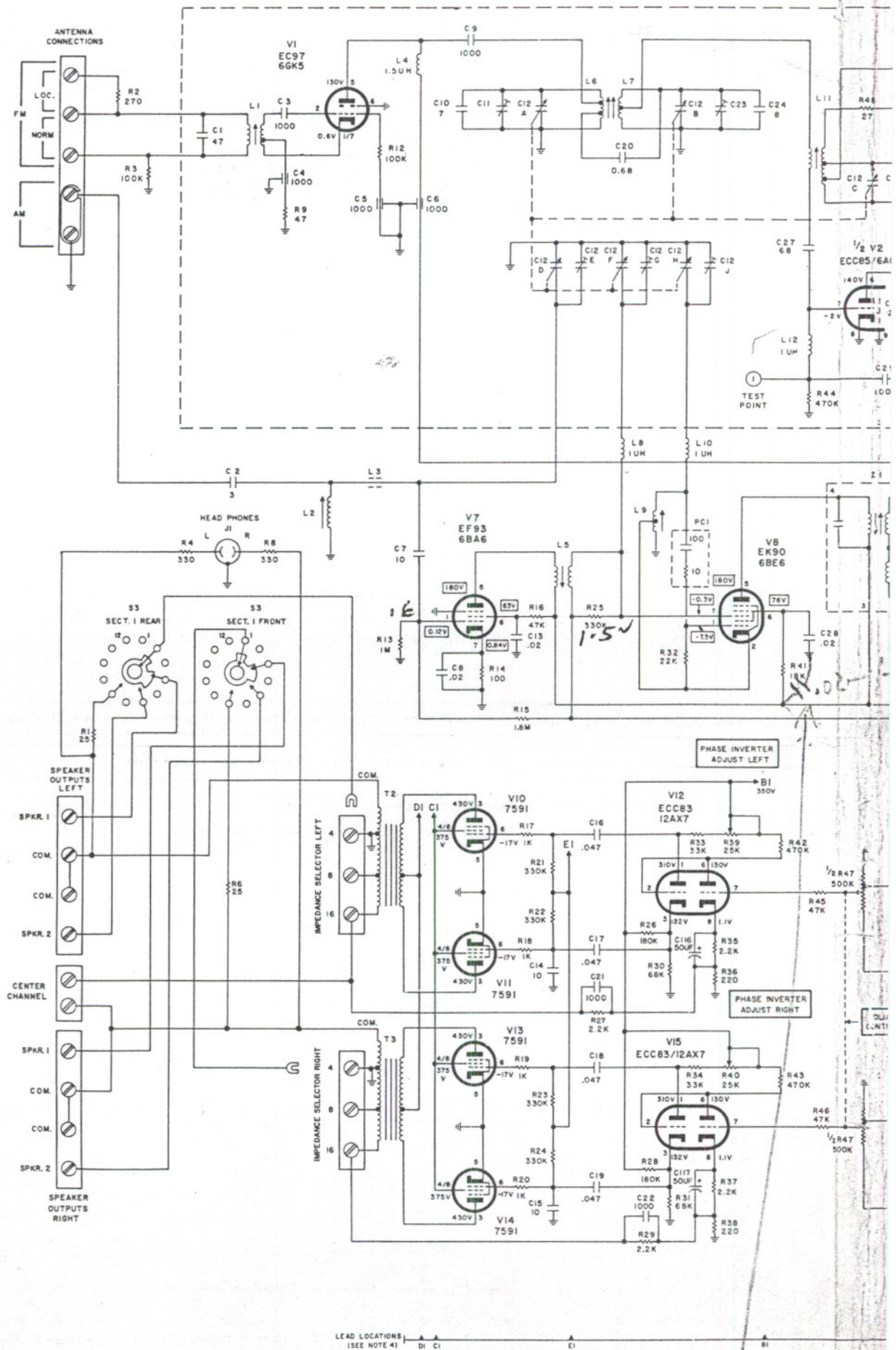
ALIGNMENT: Allow the chassis and test instruments to warm up for at least fifteen minutes. Adjust the line voltage for 117 volts AC, 50-60 cycles. Use fully insulated tools: a small screwdriver for all trimming capacitors; a K-Tran tool for Z1, Z2, Z3, Z4, Z5; a hex tool for L1, L5, L6, L7, L9, L11, Z6 and Z7. For AM alignment, short AVC lead to ground.

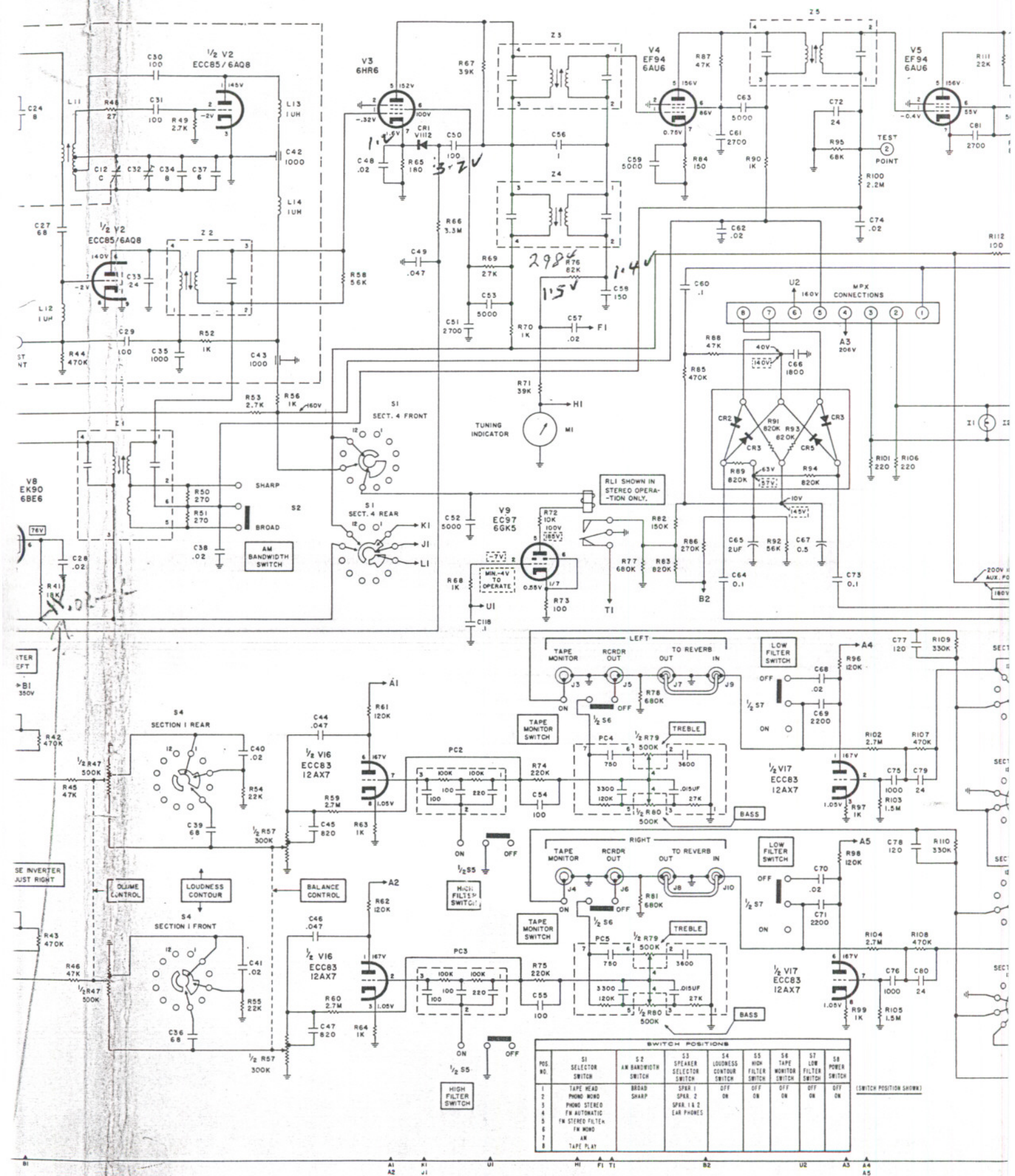
AM ALIGNMENT

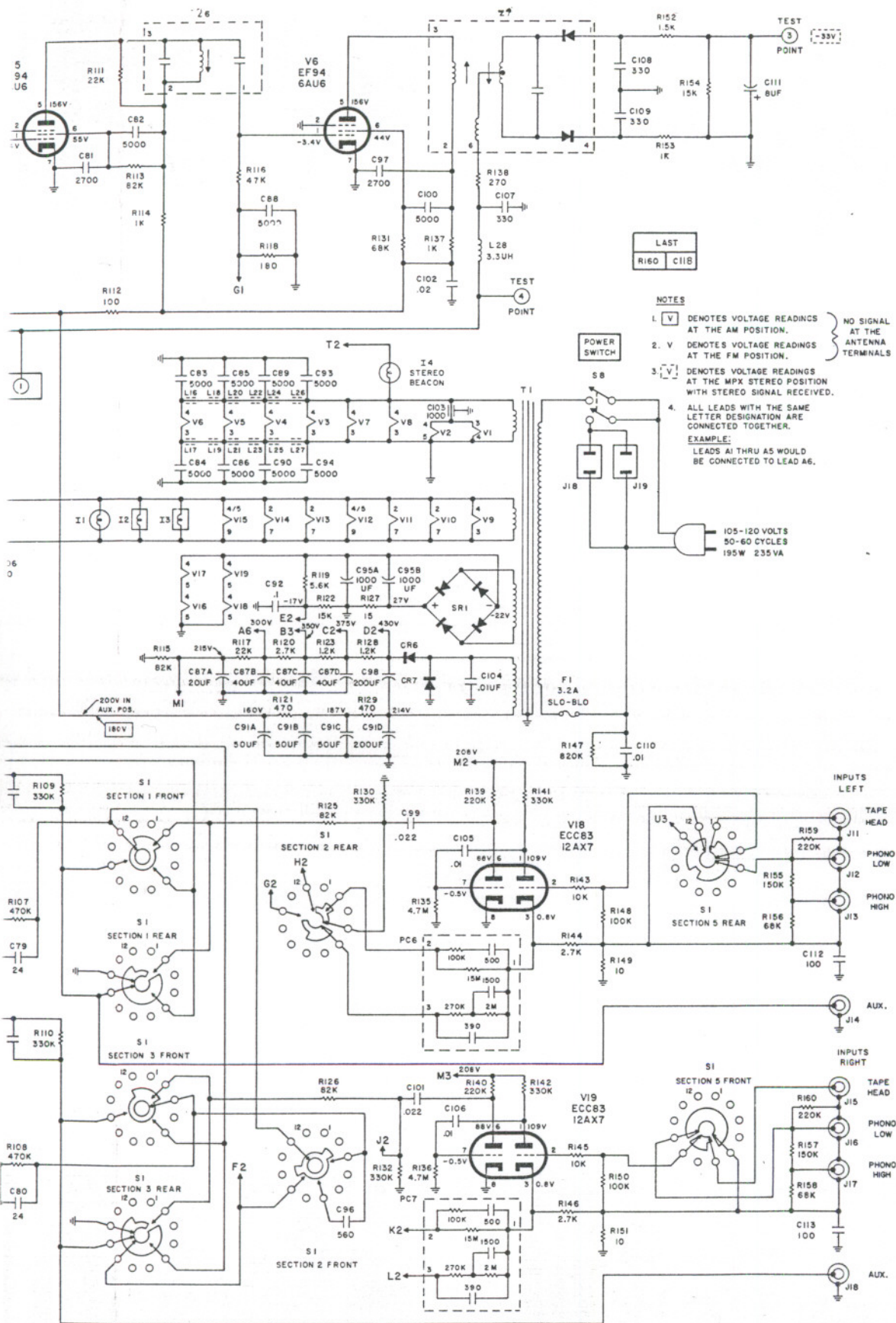
NOTE: For calibrating both the AM and FM, use as low an output voltage as possible from your signal generator.										
STEPS	CHASSIS			SIGNAL GENERATOR			INDICATOR		ALIGNMENT	
	AM BANDWIDTH	SELECTOR	STATION SELECTOR	COUPLING	FREQ.	MOD.	TYPE	CONNECTION	ADJUST	INDICATION
1	SHARP	AM	Point of no signal and no interference	AM Gen. connected thru .01-uf cap. in series with hot lead to V8, Pin 7	455 KC	30% AM at 400 cps	AC VTVM	to Left Rec. Output	Z1, Z4 top and bottom	Maximum voltage
2	BROAD	AM	Point of no signal and no interference	AM Gen. connected thru .01-uf cap. in series with hot lead to V8, Pin 7	455 KC	30 KC sweep	Scope	to Left Rec. Output	Z4 bottom	Adjust slightly for symmetrical curve
3	SHARP	AM	600 KC	AM Gen. connected thru 220-uuf to the AM antenna terminal. Disconnect link between terminals.	600 KC	30% AM at 400 cps	AC VTVM	to Left Rec. Output	L9, L5, L2	Maximum voltage
4	SHARP	AM	1400 KC	AM Gen. connected thru 220-uuf to the AM antenna terminal. Disconnect link between terminals.	1400 KC	30% AM at 400 cps	AC VTVM	to Left Rec. Output	C12J, C12G, C12E	Maximum voltage
5	Repeat steps 3 and 4 for proper dial calibration and maximum output.									
6		FM	Point of no signal and no interference	FM Gen. connected to ungrounded tube shield of V2	10.7 MC	None	DC VTVM	to test point 3	Z2, Z3, Z5, Z6, Z7, top and bottom	Maximum negative voltage
7		FM	Point of no signal and no interference	FM Gen. connected to ungrounded tube shield of V2	10.7 MC	None	Connect hot lead of DC VTVM to TSP4, ground to junction of resistors (47K) connected in series from TSP3 to GND.		Z7, top	Zero reading on zero center scale
8		FM	90 MC	FM Gen. connected thru two 120-ohm carbon resistors in series with lead to antenna terminals Normal.	90 MC	30% FM (22.5 KC Dev.) at 400 cps	DC VTVM	to TSP3 and scope to Left Rec. output	L11, L7, L6, L1	Check for sine waveform and adjust for maximum negative voltage
9		FM	106 MC	FM Gen. connected thru two 120-ohm carbon resistors in series with lead to antenna terminals Normal.	106 MC	30% FM (22.5 KC Dev.) at 400 cps	DC VTVM	to TSP3 and scope to Left Rec. output	C32, C23, C11	Check for sine waveform and adjust for maximum negative voltage
10	Repeat steps 8 and 9 for proper dial calibration and maximum output.									

FM ALIGNMENT

SCHEMATIC DIAGRAM







AW 2101F P990 SCHEMATIC

PARTS DESCRIPTION LIST • MU

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, 1000V	C50070-1
C206	Ceramic, 1000, GMV, 500V	C50089-2
C207	Ceramic, 5000, +80 — 20 %, 500V	C50089-6
C208, 209	Mica, 4700, 5 %, 500V	C50332-5
C210	Electrolytic, 1uf, 350V	C50283-3
C211	Ceramic, 1000, GMV, 500V	C50089-2

C212	Ceramic, .05uf, +80 — 20 %, 100V	C50073-2
C214	Mylar, 4700, 400V	C50197-25
C215	Mica, 3900, 5 %, 500V	C50332-6
C216, 217	Ceramic, 1000, GMV, 500V	C50089-2
C218	Ceramic, .02uf, 20 %, 500V	C50089-5
C219	Ceramic, 330, 1000V	C50183-5
C220	Ceramic, .02uf, 20 %, 500V	C50089-5
C221, 222	Mylar, .047uf, 250V	C50197-52
C223, 224	Ceramic, 1000, 1000V	C50072-3
C225, 226	Ceramic, 2200, 1000V	C50072-5

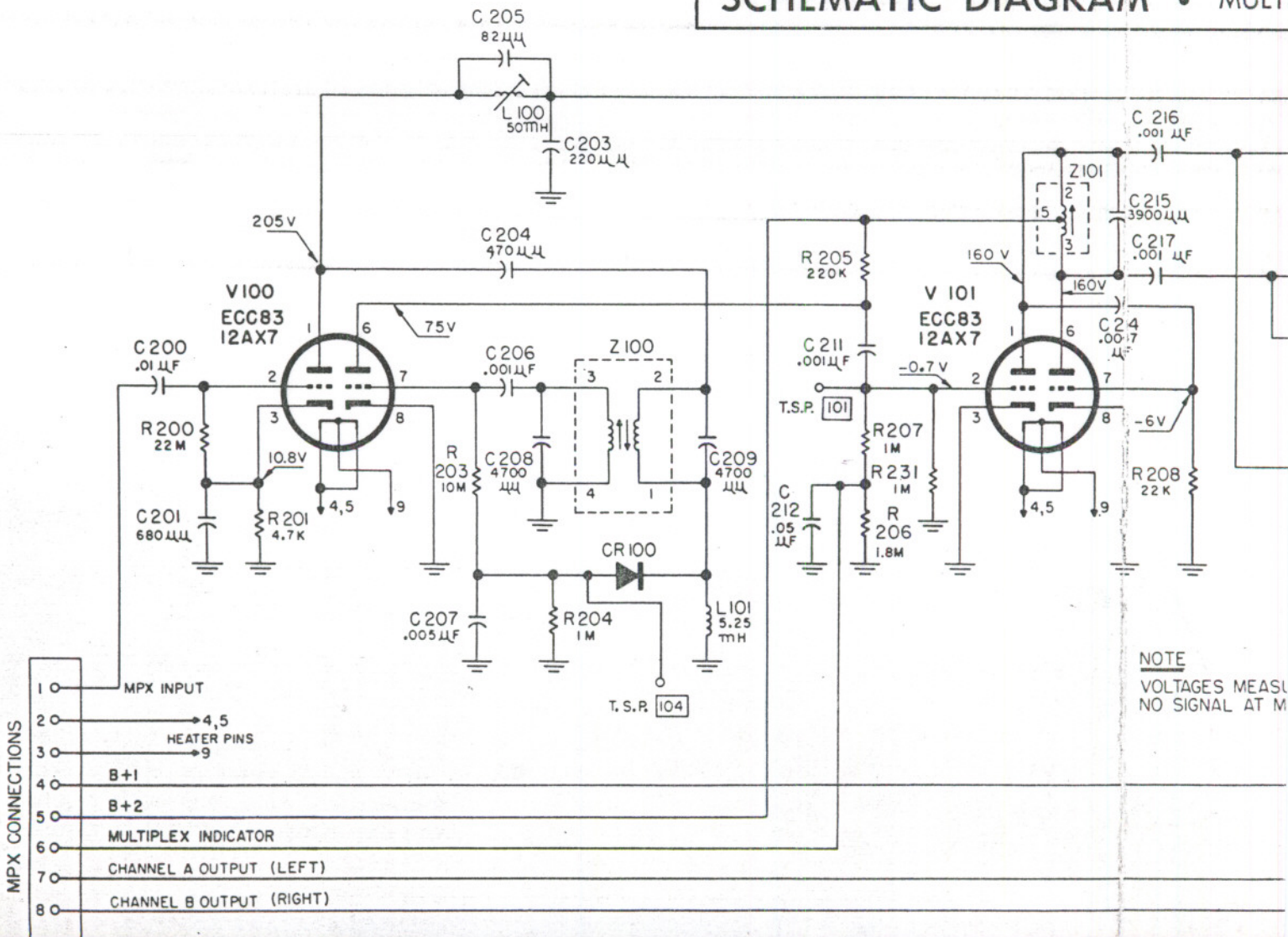
RESISTORS

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

Symbol	Description	Part No.
R200	Composition, 22M, 10 %, 1/2 W	RC20BF226K

R201	Corr
R202	Corr
R203	Corr
R204	Dep
R205	Dep
R207	Dep
R208	Dep
R209, 210,	211, 212 Dep
R213, 214	Dep
R215	Pote
R216	Corr
R217, 218	Dep
R219, 220	Dep
R221	Corr
R222, 223	Dep

SCHEMATIC DIAGRAM • MULTI



ON LIST • MULTIPLEX SECTION

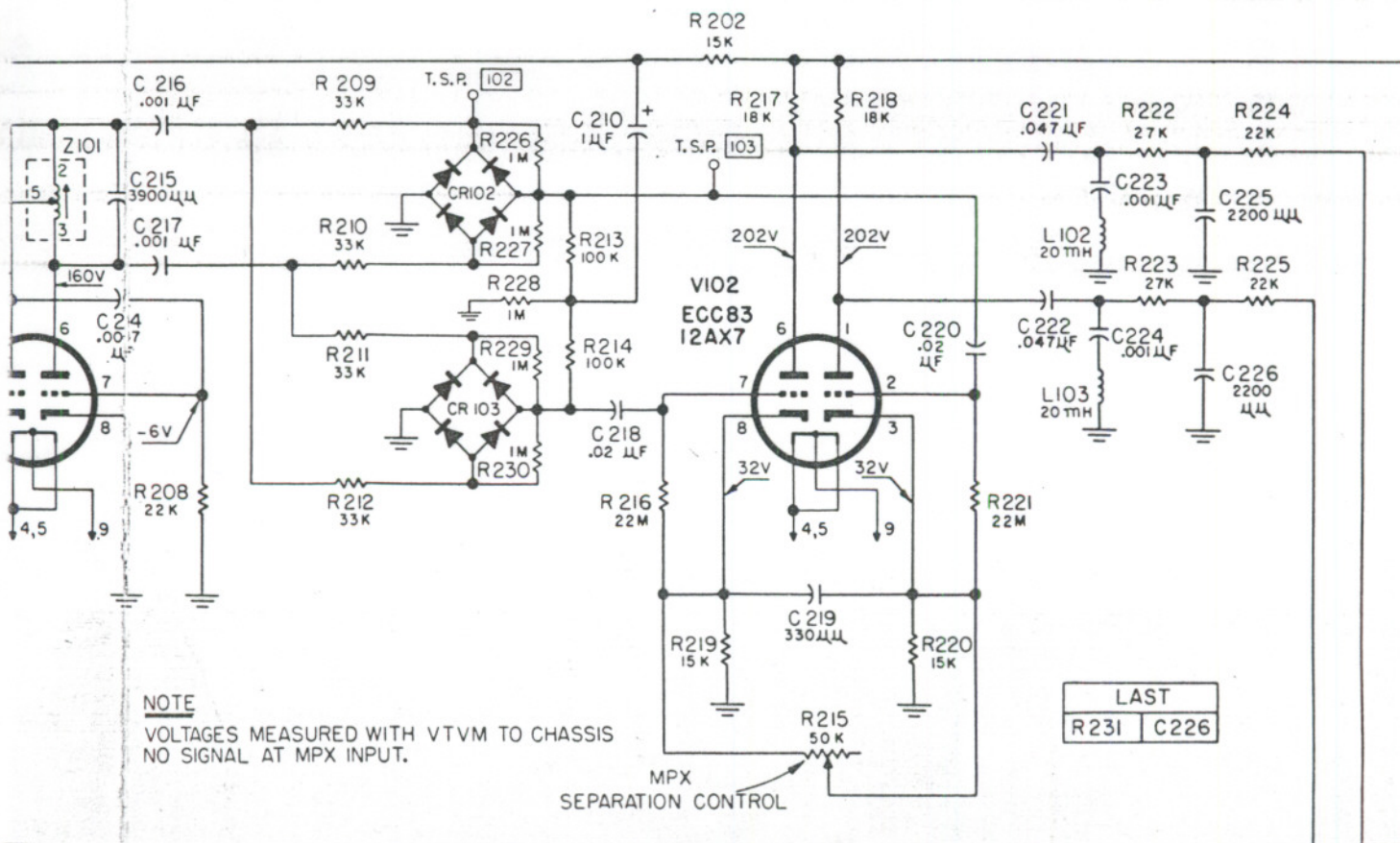
C50073-2	R201	Composition, 4.7K, $\frac{1}{2}$ W
C50197-25	R202	Composition, 15K, $\frac{1}{2}$ W
C50332-6	R203	Composition, 10M, 10%, $\frac{1}{2}$ W
C50089-2	R204	Dep. Carbon, 1M
C50089-5	R205	Dep. Carbon, 220K, $\frac{1}{3}$ W
C50183-5	R207	Dep. Carbon, 1M
C50089-5	R208	Dep. Carbon, 22K
C50197-52	R209, 210,	
C50072-3	211, 212	Dep. Carbon, 33K
C50072-5	R213, 214	Dep. Carbon, 100K
	R215	Potentiometer, 50K, MPX Separation
	R216	Composition, 22M, 10%, $\frac{1}{2}$ W
wise noted.	R217, 218	Dep. Carbon, 18K, $\frac{1}{3}$ W
	R219, 220	Dep. Carbon, 15K, $\frac{1}{3}$ W
Part No.	R221	Composition, 22M, 10%, $\frac{1}{2}$ W
C20BF226K	R222, 223	Dep. Carbon, 27K

RC20BF472J	R224, 225	Dep. Carbon, 22K
RC20BF153J	R226, 227,	
RC20BF106K	228, 229,	
R12DC105J	230, 231	Dep. Carbon, 1M
R33DC224J		
R12DC105J		
R12DC223J		
	Symbol	Description
R12DC333J	CR100	Diodes, Type 111
R12DC104J	CR102, 103	Bridge
R50150-4	L100	Coil, low pass
RC20BF226K	L101	Coil, 5.25MH
R33DC183J	L102, 103	Coil, 20MH
R33DC153J	Z100	Transformer, 19K
RC20BF226K	Z101	Coil, 38Kc
R12DC273J		

R224, 225	Dep. Carbon, 22K	R12DC223J
R226, 227,		
228, 229,		
230, 231	Dep. Carbon, 1M	R12DC105J

MISCELLANEOUS		
Symbol	Description	Part No.
CR100	Diodes, Type 1112	V-1112
CR102, 103	Bridge	V50160-13
L100	Coil, low pass	L50210-30
L101	Coil, 5.25MH	L50334-1
L102, 103	Coil, 20MH	L50334-2
Z100	Transformer, 19Kc	ZZ50210-34
Z101	Coil, 38Kc	ZZ50210-33

GRAM • 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, ½-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.

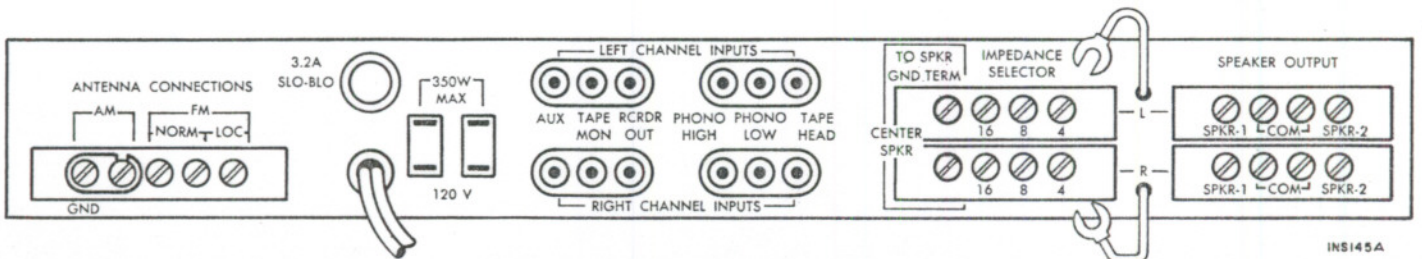
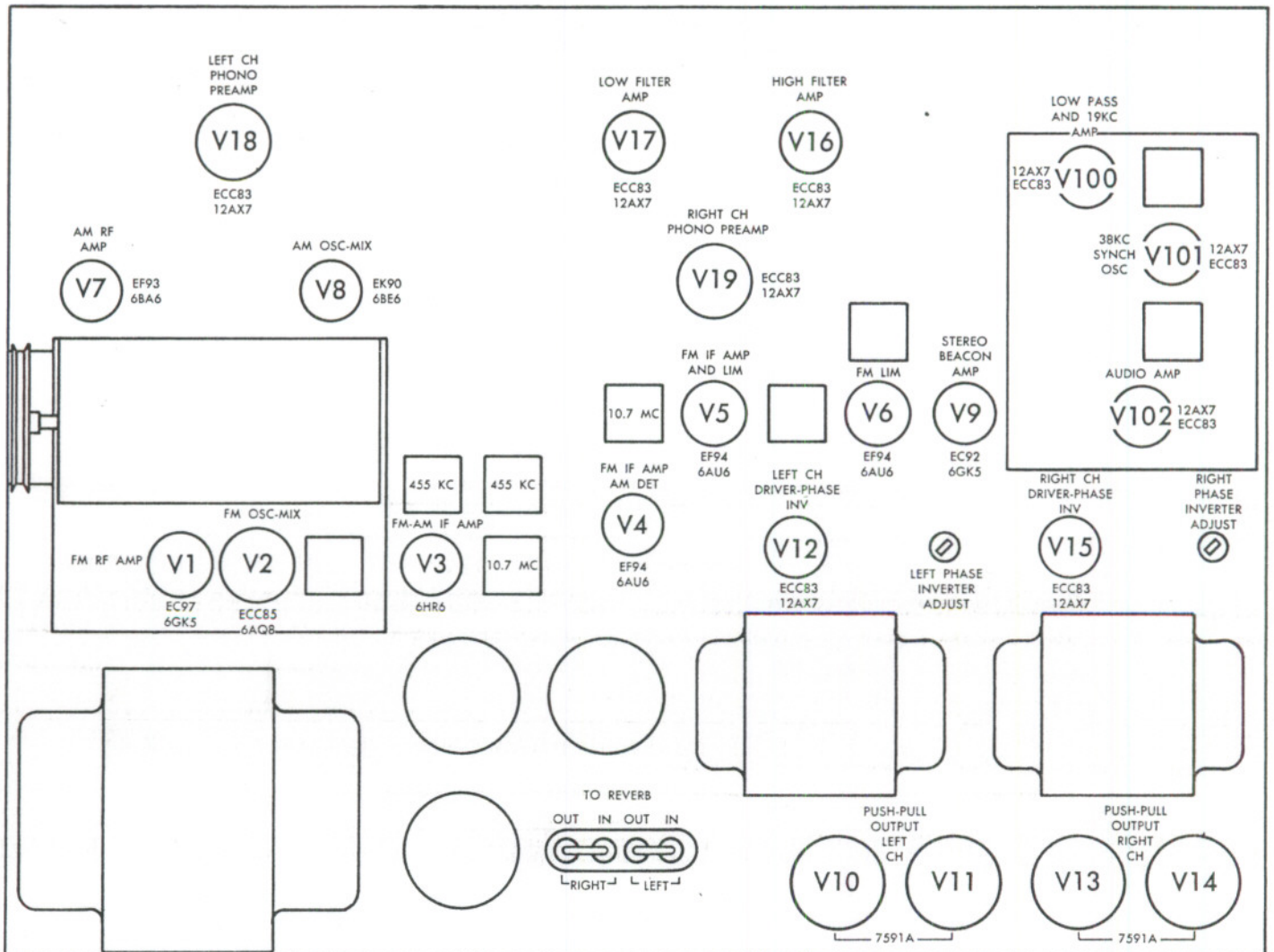
2 — The vertical amplitude of the Lissajous pattern will increase slightly

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.

TUBE LAYOUT



SERVICE NOTES

Receiver Phase Inverter Adjustment

The following procedure is used to balance the phase inverter for minimum IM distortion. Two 4-ohm, 30-watt resistors and an IM distortion analyzer are required for this adjustment.

- 1 — Connect one of the two 4-ohm loads to the appropriate terminals of each channel.
- 2 — Turn the equipment on, allowing a few minutes for warmup.
- 3 — Connect the output of the IM distortion analyzer to the left channel AUX input. (First, remove the connector from the tape recorder, if present.)
- 4 — Connect the input of the IM distortion analyzer across the 4-ohm load connected to the left channel.

5 — Set the receiver volume control to produce a 25-watt RMS output, as measured across the left channel load.

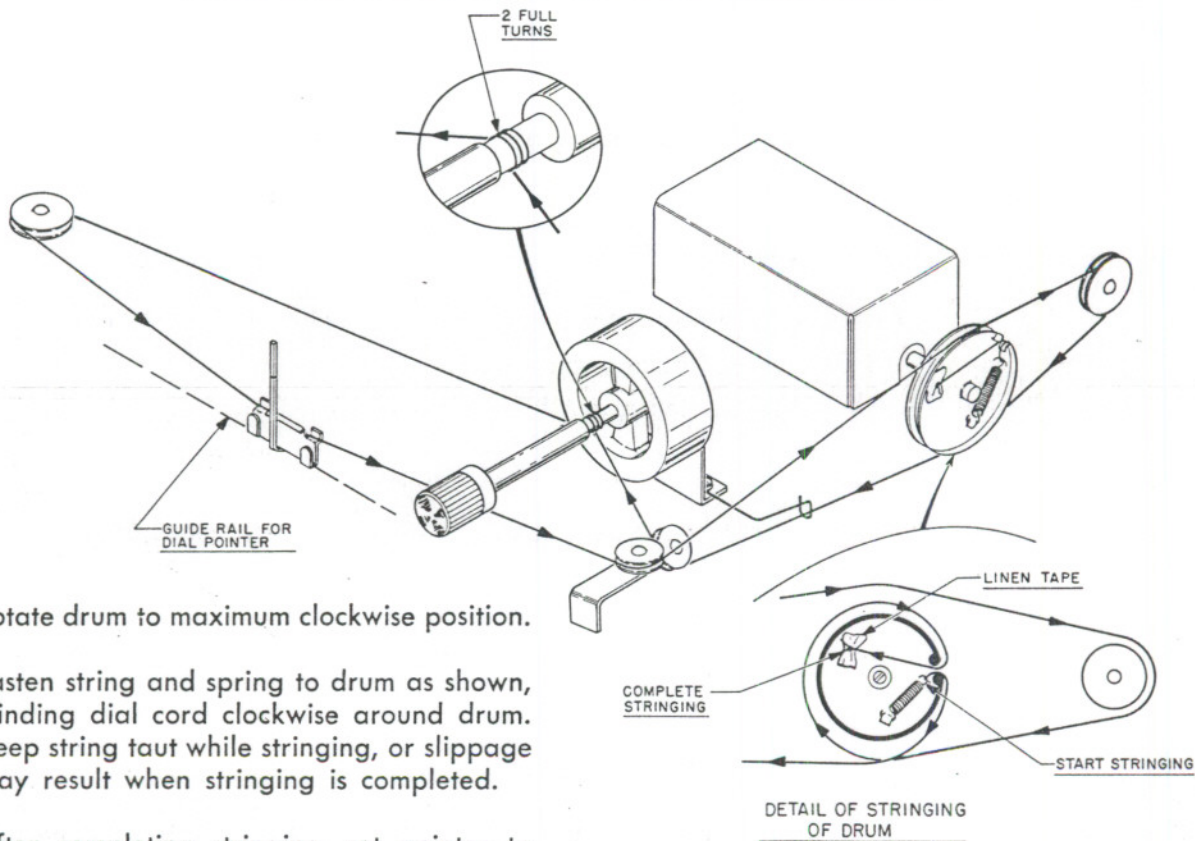
6 — Set the left channel phase inverter adjustment control for minimum IM distortion.

7 — Connect the output of the IM distortion analyzer to the right channel AUX input, and the analyzer input across the right channel load.

8 — Set the Volume control to produce a 25-watt RMS output, as measured across the right channel load.

9 — Set the right channel phase inverter adjustment control for minimum IM distortion.

DIAL STRINGING PROCEDURE



1—Rotate drum to maximum clockwise position.

2—Fasten string and spring to drum as shown, winding dial cord clockwise around drum. Keep string taut while stringing, or slippage may result when stringing is completed.

3—After completing stringing, set pointer to zero (0) on the dial logging scale, and glue pointer to dial cord.

INS238



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