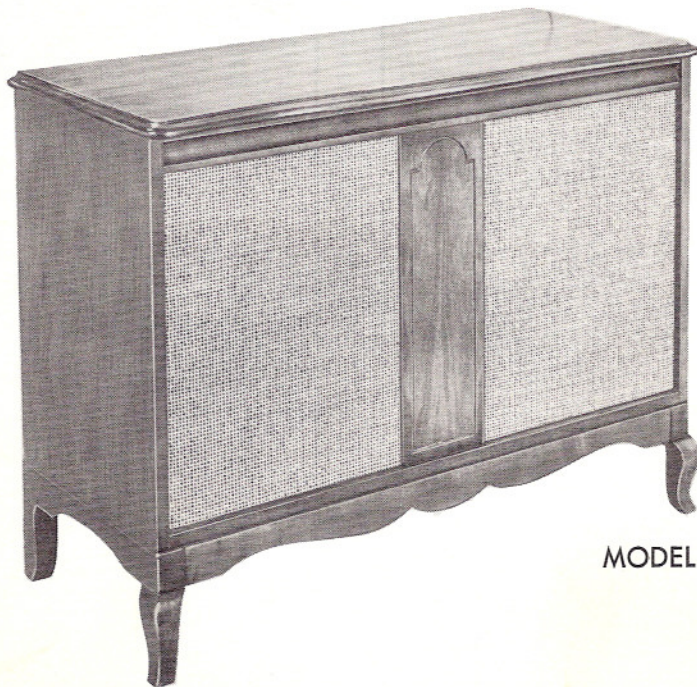




*Stereophonic*

**THE FISHER  
PHILHARMONIC  
SERVICE  
MANUAL**



MODEL P-22

CHASSIS SERIAL NUMBERS FROM 10001 TO 19999 INCLUSIVE

PRICE: \$1.00

FISHER RADIO CORPORATION • NEW YORK



CHASSIS SERIAL NUMBERS  
FROM 10001 TO 19999 INCLUSIVE

**THE FISHER P-22**





# 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, 3uuf, NPO 1000V	C50070-28
C2	Variable, AM	C836-118
C3	Ceramic, 21uuf, 5%, N750, 1000V	C50070-32
C4	Trimmer	Part of C2
C5	Ceramic, 100uuf, GMV, N1500, 1000V	C50070-5
C6	Ceramic, .001uf, GMV, 1000V	C50071-2
C7	Ceramic, feedthru, .001, GMV	C592-187
C8	Electrolytic, 4 section: A — 40uf, 450V      C — 40uf, 350V B — 40uf, 350V      D — 20uf, 300V	C643-138
C9	Ceramic, .01uf, 20%, 500V	C50089-3
C10	Ceramic, feedthru, .001, GMV	C592-187
C11	Ceramic, 100uuf, N1500, 1000V	C50070-6
C12	Ceramic, 470 uuf, 1000V	C50072-13
C13	Ceramic, 100uuf, N1500, 1000V	C50070-6
C14	Ceramic, 470uuf, 1000V	C50072-13
C15, 16	Ceramic, 10uuf, NPO, 1000V	C50070-11
C17	Ceramic, 8uuf, $\pm 5$ uuf, NPO, 500V	CC20CJ080D5
C18	Variable, FM	C818-116
C19	Ceramic, .001uf, GMV, 1000V	C50071-2
C20	Ceramic, Trimmer, 1.3uuf — 8uuf	C6662-123
C21	Ceramic, .01uf, 20%, 500V	C50089-3
C22	Ceramic, 1000uuf, 1000V	C50072-3
C23	Ceramic, .01uf, 20%, 500V	C50089-3
C24	Ceramic, 1000uuf, 1000V	C50072-3
C25, 26	Ceramic, 1500uuf, 1000V	C50072-10
C27	Ceramic, 33uuf, 5%, N750, 1000V	C50070-25
C28	Ceramic, Trimmer, 1.3uuf — 8uuf	C662-123
C29	Ceramic, 47uuf, 5%, N750, 1000V	C50070-29
C30	Ceramic, 100uuf, 5%, N1500, 1000V	C50070-19
C31	Ceramic, 8uuf, $\pm 5$ uuf, NPO, 500V	CC20CJ080D5
C32	Ceramic, .001uf, 1000V	C50072-3
C33	Ceramic, .005uf, 20%, 500V	C50089-1
C34	Ceramic, 10uuf $\pm 5$ uuf, N150, 500V	CC20PJ100D5
C35	Ceramic, Feedthru, .001uf, GMV	C592-187
C36	Ceramic, .01uf, 20%, 500V	C50089-3
C37	Molded, .022uf, 200V	C68P223K2
C38	Ceramic, .01uf, 20%, 500V	C50089-3
C39	Molded, .022uf, 200V	C68P223K2
C40, 41	Ceramic, 24uuf, 5%, N150, 1000V	C50070-8
C42, 43	Ceramic, .02uf, 20%, 500V	C50089-5
C44	Ceramic, .02uf, +80 — 20%, 500V	C50089-4
C45, 46	Ceramic, 100uuf, N1500, 1000V	C50070-6
C47, 48		
49, 50	Molded, .047uf, 400V	C68P433K4
C51	Ceramic, .02uf, +80 — 20%, 500V	C50089-4
C52	Electrolytic, 50uf, 50V	C508-115
C53, 54	Electrolytic, 100uf, 200V	C836-122
C55	Ceramic, 100uuf, GMV, 1000V	C50070-5
C56	Ceramic, 10uuf, NPO, 1000V	C50070-11
C57	Ceramic, .02uf, +80 — 20%, 500V	C50089-4
C58	Trimmer	Part of C2
C59	Ceramic, 220uuf, 1000V	C50072-20
C60	Ceramic, .01uf, 20%, 500V	C50089-4
C61	Molded, .047uf, 200V	C68P473K2
C62	Ceramic, .01uf, 20%, 500V	C50089-4
C63	Ceramic, .0027uf, 1000V	C50072-17

C64	Ceramic, .05uf, +80 — 20%, 100V
C65	Ceramic, .005uf, 20%, 500V
C66	Ceramic, 100uuf, N1500, 1000V
C67	Ceramic, .005uf, 20%, 500V
C68	Ceramic, .01uf, 20%, 500V
C69	Electrolytic, 8uf, 50V
C70	Ceramic, 100uuf, N1500, 1000V
C71	Ceramic, .0027uf, 1000V
C72	Molded, .047uf, 200V
C73	Molded, .01uf, 20%, 600V
C74	Ceramic, 330uuf, 1000V
C75	Ceramic, .0022uf, 1000V
C76	Ceramic, .005uf, 20%, 500V
C77	Ceramic, 330uuf, 1000V
C78	Ceramic, .01uf, 20%, 500V
C79	Ceramic, 24uuf, 5%, N150, 1000V
C80	Ceramic, feedthru, .001uf, GMV

## 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, 100K	RC20BF104K
R3	Composition, 470, 10%, 1W	RC30BF471K
R4	Potentiometer, dual, 5M, treble	R50160-61
R5, 6	Composition, 2.2M	RC20BF225K
R7	Wirewound, 600, 5W	R643-157
R8	Composition, 270	RC20BF271K
R9	Composition, 3.3M	RC20BF335K
R10	Composition, 10M	RC20BF106K
R11	Composition, 3.3M	RC20BF33K
R12	Dep. Carbon, 470K, 5%, 1/3 W	R33DC474J
R13	Composition, 1M	RC20BF105K
R14	Dep. Carbon, 470K, 5%, 1/3 W	R33DC474J
R15	Dep. Carbon, 2.7K, 5%, 1/3 W	R33DC272J
R16	Composition, 390K	RC20BF394K
R17	Dep. Carbon, 2.7K, 5%, 1/3 W	R33DC272J
R18	Composition, 390K	RC20BF394K
R19	Composition, 820	RC20BF821K
R20, 21	Composition, 1M	RC20BF105K
R22	Potentiometer, dual, 300K, balance	R50160-60
R23	Potentiometer, dual, 5M base	R50160-61
R24	Composition, 150K	RC20BF154K
R25	Potentiometer, dual, 500K, vol.	R50160-59
R26	Composition, 1K	RC20BF102K
R27	Composition, 1K, 10%, 1W	RC30BF102K
R28, 29	Dep. Carbon, 22K, 5%, 1/3 W	R33DC223J
R30, 31	Composition, 10M	RC20BF106K
R32, 33	Composition, 27K	RC20BF273K
R34, 35	Composition, 1.2K	RC20BF122K
R36, 37	Dep. Carbon, 220K, 5%, 1/3 W	RC33DC224J
R38, 39	Composition, 4.7M	RC20BF475K
R40	Composition, 22K, 10%, 1W	RC30BF223K
R41, 42		
43, 44	Composition, 47K	RC20BF473K
R45	Composition, 820K	RC20BF824K
R46	Wirewound, 600, 10%, 5W	R643-157
R47, 48		
49, 50	Composition, 820K	RC20BF824K
R51	Composition, 150	RC20BF151K
R52	Composition, 10K	RC20BF103K

R53	Composition, 22K
R54	Composition, 47K
R55	Composition, 33K, 10%, 1W
R56	Wirewound, 500, 10%, 5W
R57	Composition, 220K
R58	Composition, 1K
R59	Wirewound, 75, 10%, 7W
R60	Composition, 47K
R61	Composition, 2.2M
R62	Composition, 82K
R63	Composition, 100K
R64	Composition, 330K
R65	Composition, 68K
R66	Composition, 270
R67	Composition, 100K
R68	Composition, 270
R69	Composition, 47K
R70	Composition, 1K
R71	Composition, 15K
R72	Composition, 10M
R73	Composition, 1K

RC20BF223K
RC20BF473K
RC30BF103K
R752-136
RC20BF224K
RC20BF102K
R836-123
RC20BF473K
RC20BF225K
RC20BF823K
RC20BF104K
RC20BF334K
RC20BF683K
RC20BF271K
RC20BF104K
RC20BF271K
RC20BF473K
RC20BF102K
RC20BF153K
RC20BF106K
RC20BF102K

## COILS, CHOKES AND TRANSFORMERS

Symbol	Description	Part No.
L1	AM, Ferrite, Loop	L50210-26
L2	FM, Antenna, Coil	L818-113
L3	Choke, Ferrite Bead	L592-189
L4	Choke, 1.5 micro-henry	L50066-4
L5	Choke, R.F.	L629-180
L6	FM, R.F., Coil	L818-114
L7	FM, Osc. Coil Assembly	A5818-118
L8	Choke, .68 micro-henry	L50066-1
L9	AM, Osc. Coil	L50210-21
L10, 11, 12,		
13, 14	Choke, Ferrite Bead	L592-189
L15	Choke, .2 micro-henry	L50066-21
T1, T2	Transformer, Output	T836-116
T3	Transformer, Power	T836-115
Z1	FM, IF, Transformer	ZZ662-117
Z2	FM, IF, Transformer	ZZ2987
Z3	AM, IF, Transformer	ZZ50210-7
Z4	FM, IF, Transformer	ZZ50210-2
Z5	AM, IF, Transformer	ZZ50210-7
Z6	FM, Det., Transformer	ZZ50210-8

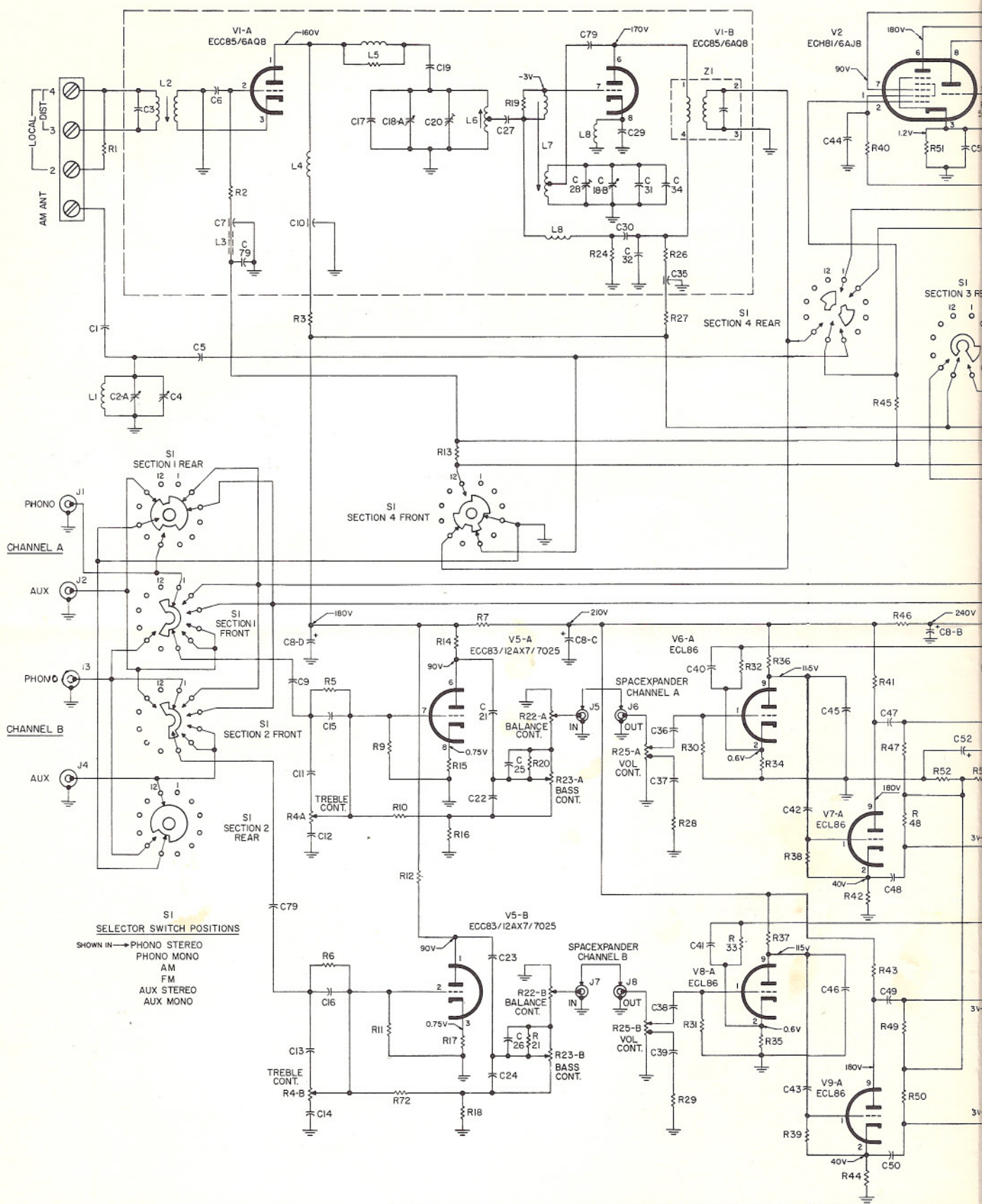
## MISCELLANEOUS

Symbol	Description	Part No.
CR1, 2	Silicon, Diode, SD94	SR836-129
CR3, 4	Diode, matched pair, 1N542	V-1N542
F1	Fuse, 2A, Slo-blo	F643-154
11, 2	Lamp, dial	L50082-7
S1	Switch, Selector	S836-117
S2	Switch, Power	Part of R25
—	Dial Glass	N836-108

## SPEAKER SYSTEM PARTS LIST

Symbol	Description	Part No.
C1	Electrolytic, Non-polarized, 20uf, 25V	C547-119
C2	Paper, 2uf, 10%, 50V	C547-118
LS1	Woofer, 8-inch, 8 ohms	L5839-102
LS2	Mid-range, 4x6-inch, 8 ohms	L5839-103
LS3	Tweeter, 3-inch, 8 ohms	L5839-104
R1	Resistor, Wire-wound, 6.8 ohms, 10%, 5 watts	R671-113



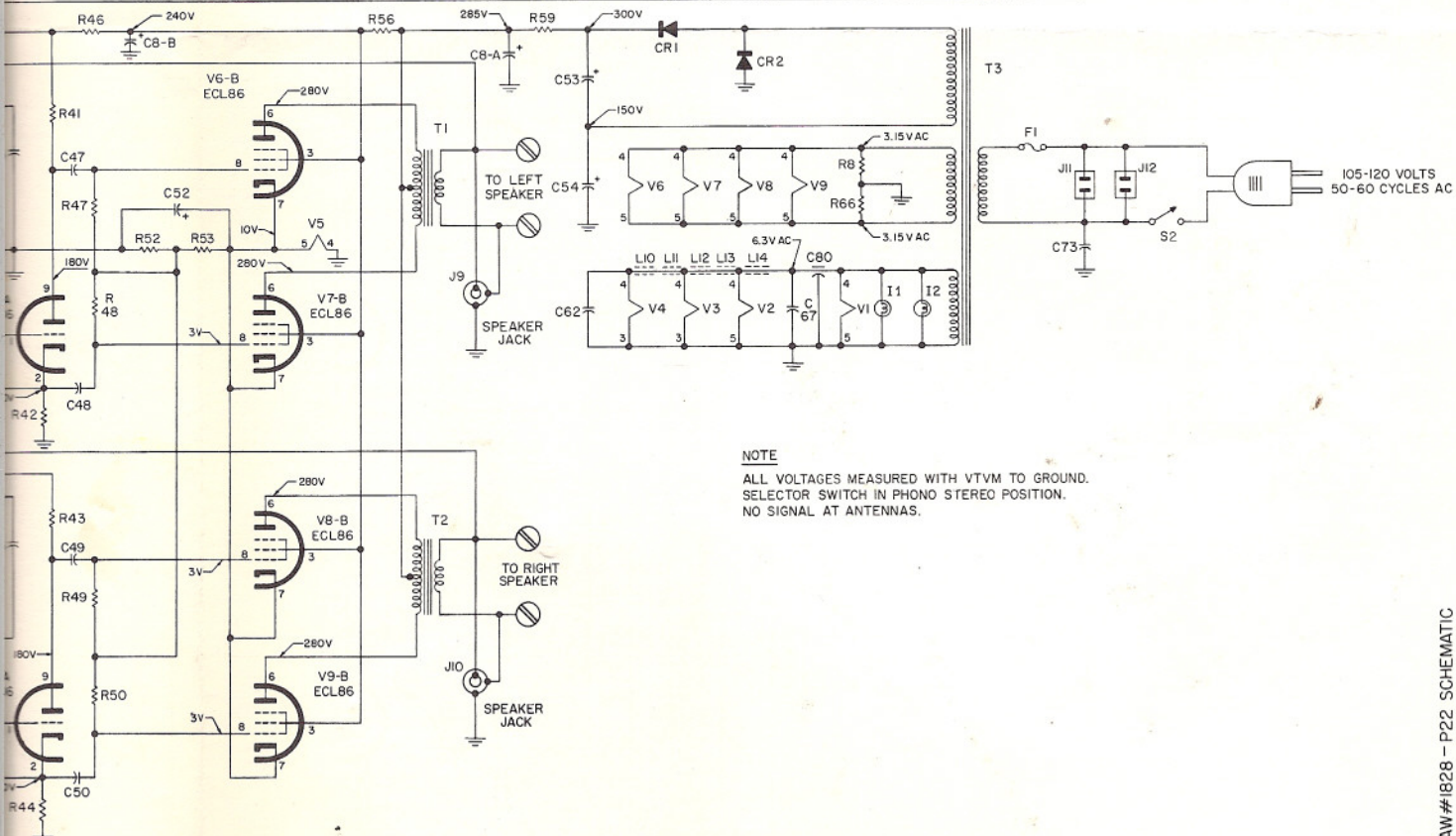
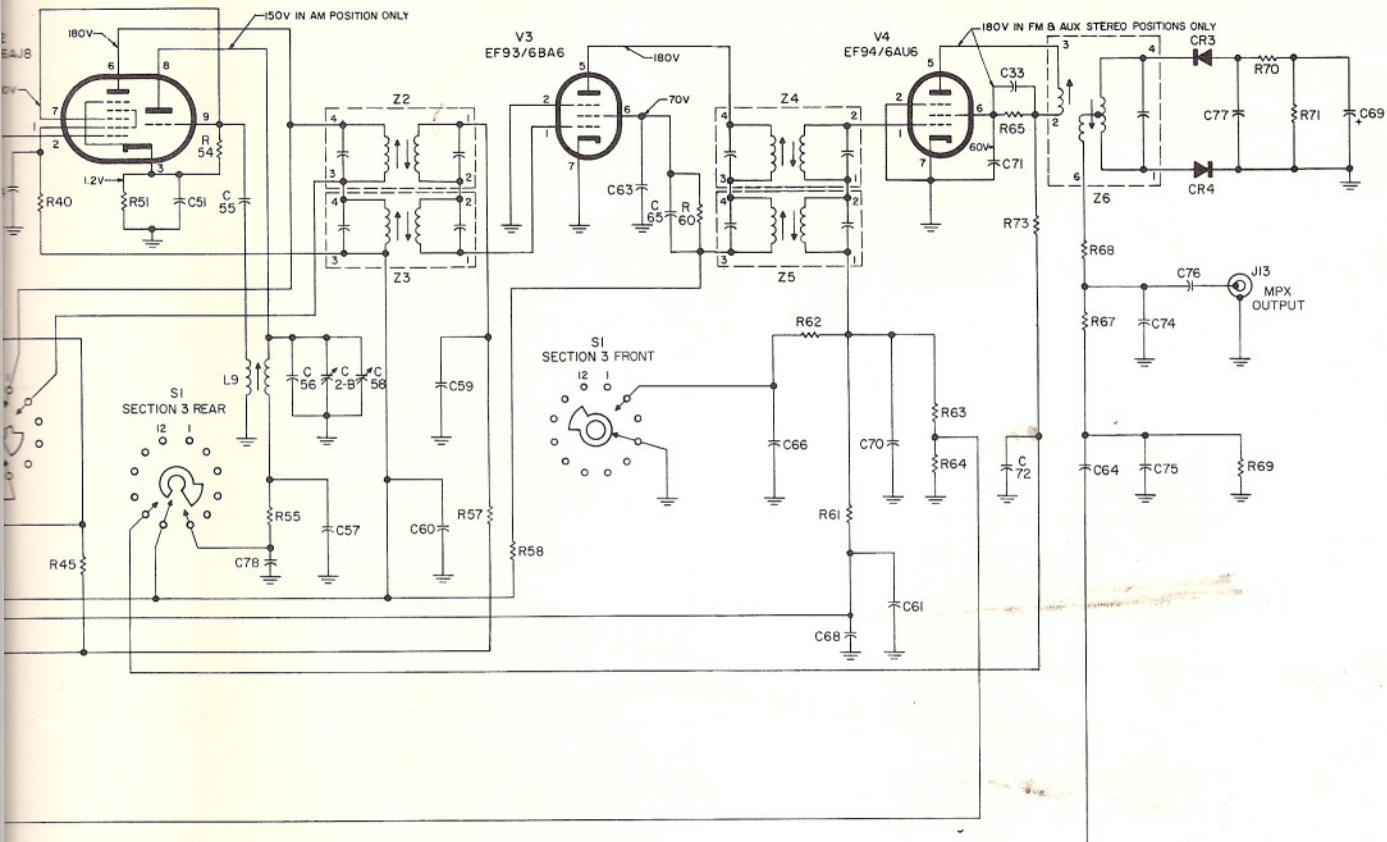


**S1**  
SELECTOR SWITCH POSITIONS  
SHOWN IN → PHONO STEREO  
PHONO MONO  
AM  
FM  
AUX STEREO  
AUX MONO

RESISTORS	R1	R2	R3	R5	R7	R72	R11	R12	R13	R16	R19	R22-A	R23-B	R25-A	R26	R29	R32	R34	R37	R38	R40	R43	R45	R48	R51	R53								
	R4-A	R6	R4-B	R9	R10	R9	R10	R12	R14	R17	R20	R22-B	R24	R25-B	R27	R30	R33	R35	R39	R39	R41	R44	R46	R49	R52	R53								
CAPACITORS	C1	C2-A	C3	C5	C6	C7	C79	C8-D	C9	C11	C12	C13	C14	C15	C16	C17	C18-A	C19	C20	C21	C24	C26	C28	C29	C31	C34	C37	C40	C42	C44	C47	C50	C8-B	C51



# SCHEMATIC DIAGRAM



**NOTE**  
 ALL VOLTAGES MEASURED WITH VTVM TO GROUND.  
 SELECTOR SWITCH IN PHONO STEREO POSITION.  
 NO SIGNAL AT ANTENNAS.

R40	R43	R45	R48	R51	R53	R54	R55	R56	R57	R58	R59	R60	R61	R62	R63	R65	R73	R67	R68	R69	R70	R71		
R41	R44	R46	R49	R52	R42	R47	R50	R43	R49	R50	R44	R42	R47	R50	R44	R42	R47	R50	R44	R42	R47	R50		
C44	C47	C50	C8-B	C51	C55	C56	C2-B	C58	C59	C8-A	C53	C63	C65	C66	C68	C70	C71	C33	C64	C74	C75	C76	C77	C69
						C78	C57		C60		C54			C67	C80	C61	C72		C73					

AW#1828 - P22 SCHEMATIC



# 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. Set Volume Control close to minimum (CCW.)

When using an oscilloscope for alignment, set the Volume control 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% ( $\pm 22.5$  KC deviation) at 400 cps; AM RF modulated 30% at 400 cps.

**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, Z4, a hex tool for Z3, Z5, Z6, L2, L6, L7, L9.

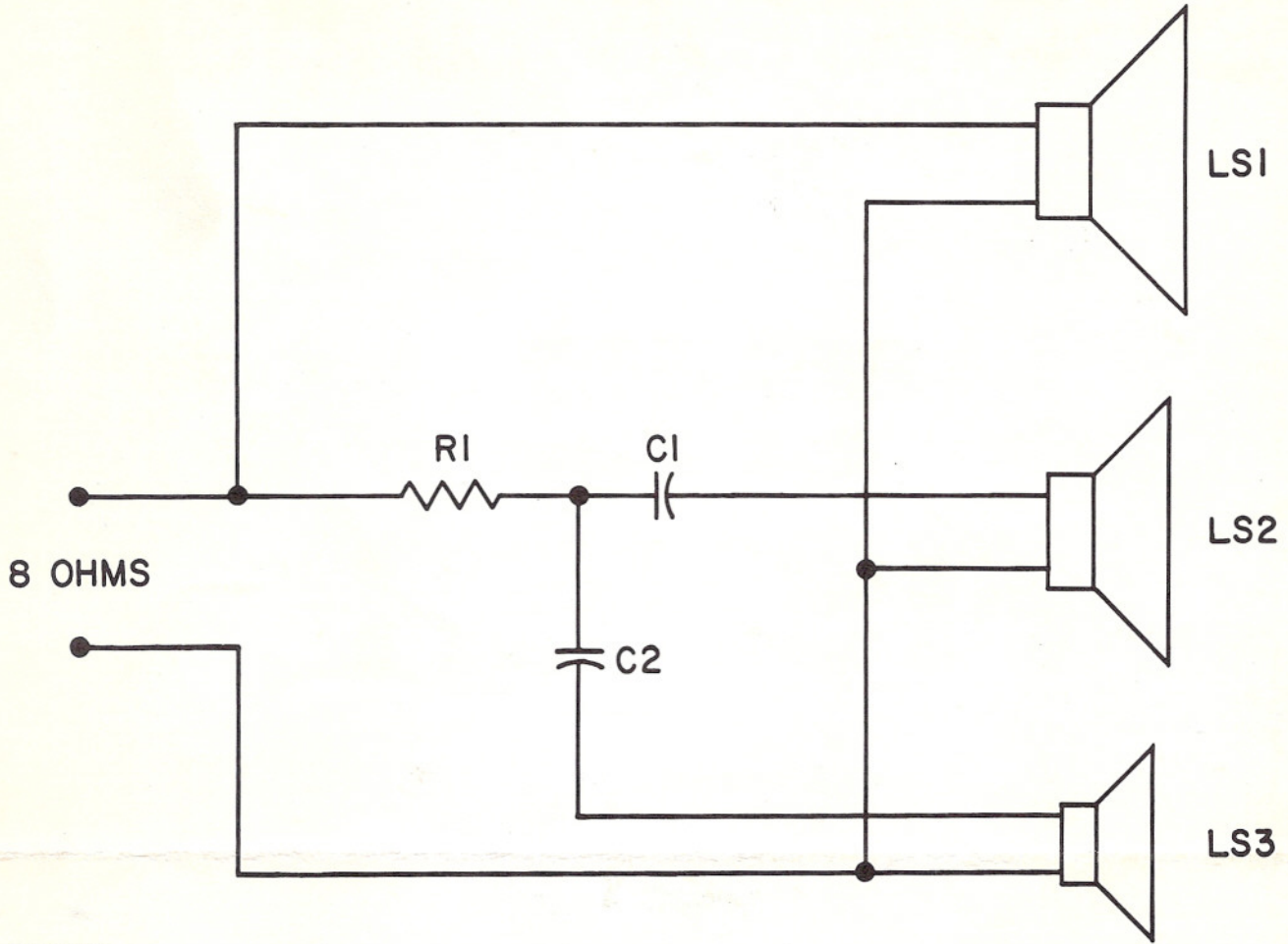
**Note: For calibrating both the AM and FM, use as low an output voltage as possible from your signal generator.**

STEPS	CHASSIS		SIGNAL GENERATOR			INDICATOR		ALIGNMENT	
	SELECTOR	STATION SELECTOR	COUPLING	FREQ.	MOD.	TYPE	CONNECTION	ADJUST	INDICATION
1	AM	Point of no signal and no interference	AM Gen. connected thru .01-uF cap. to V2, Pin 1	455 KC	30% AM at 400 cps	AC VTVM	to Ch. A SPEAKER Output	Z3, Z5 top and bottom	Maximum voltage
2	AM	660 KC	AM Gen. connected thru 220-uF cap. to AM antenna terminal	600 KC	30% AM at 400 cps	AC VTVM	to Ch. A SPEAKER Output	L1, L9	Maximum voltage
3	AM	1400 KC	AM Gen. connected thru 220-uF cap. to AM antenna terminal	1400 KC	30% AM at 400 cps	AC VTVM	to Ch. A SPEAKER Output	C4, C58	Maximum voltage
4	Repeat steps 2 and 3 for proper dial calibration and maximum output.								
5	FM	Point of no signal and no interference	FM Gen. connected to ungrounded tube held over V1	10.7 MC	None	DC VTVM	across C69	Z1, Z2 and Z4, top and bottom, and Z6, bottom	Maximum negative voltage
6	FM	Point of no signal and no interference	FM Gen. connected to ungrounded tube held over V1	10.7 MC	None	Connect two 47K ohm resistors in series across C69. Connect a VTVM between the junction of the two 47K ohm resistors and junction C74, C76		Z6 top	Zero reading on zero center scale
7	FM	90 MC	FM Gen. connected thru two 120-ohm carbon resistors to FM antenna terminals 3 & 4	90 MC	30% FM (22.5 KC Dev.) at 400 cps	DC VTVM	across C69 and scope to Ch. A SPEAKER Output	L2, L7 L6	Check for sine waveform and adjust for maximum negative voltage
8	FM	106 MC	FM Gen. connected thru two 120-ohm carbon resistors to FM antenna terminals 3 & 4	106 MC	30% FM (22.5 KC Dev.) at 400 cps	DC VTVM	across C69 and scope to Ch. A SPEAKER Output	C20 and C28	Check for sine waveform and adjust for maximum negative voltage
9	Repeat steps 7 and 8 at least once for proper dial calibration and maximum output.								

## AM ALIGNMENT

## FM ALIGNMENT

**SCHEMATIC DIAGRAM • SPEAKER SYSTEMS**



AW1833



**FISHER RADIO CORPORATION • NEW YORK**



Printed in U.S.A.

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