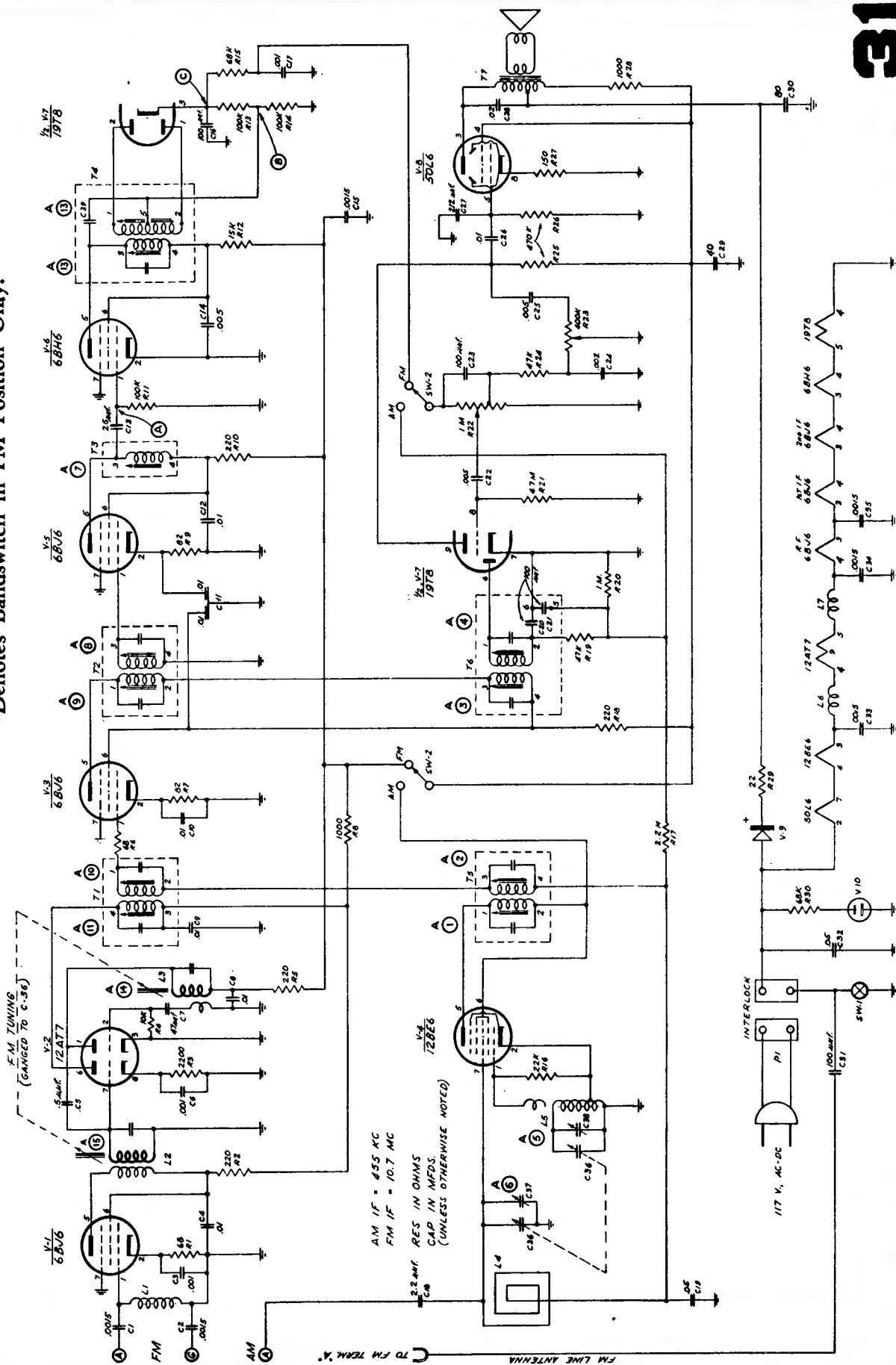




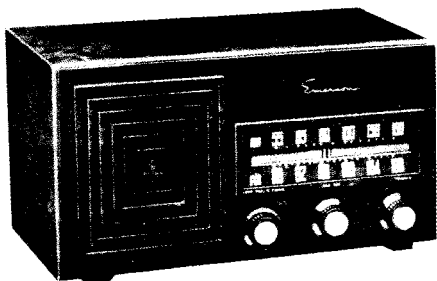
Emerson Radio & Phonograph Corp.

	Model: 659B	Chassis:	Year: Pre 1951
	Power:	Circuit:	IF:
	Tubes:		
	Bands:		
Resources			
Beitmans 1951 31			
Riders 21 (XXI) EMERSON 21-34			
Riders 21 (XXI) EMERSON 21-35			
Riders 21 (XXI) EMERSON 21-36			
Riders 21 (XXI) EMERSON 21-37			

N.C. Denotes "No Connection."
 *Denotes Bandswitch in FM Position Only.



MODEL 659B,
Ch. 120126-B



MODEL 659B
CHASSIS 120126-B

GENERAL NOTES

1. If replacements are made or the wiring disturbed in the r-f section of the circuit, the receiver should be carefully realigned.
2. A self-contained loop antenna is provided for broadcast band reception. For permanent home installation, however, if it is desired to improve reception of weak stations, an additional outdoor antenna may be used. Connect the outdoor antenna to the screw on the loop terminal strip marked "AM".
3. An internal power line antenna is provided for FM operation in relatively strong signal areas. An external dipole antenna is recommended for maximum FM operation. To connect the dipole, first remove the wire from the screw on the loop terminal strip marked "FM" and connect the dipole leads to the "FM" terminal and "G".
4. A ground connection is not required for AM and FM operation.

DESCRIPTION

TYPE: Amplitude modulation (AM) and frequency modulation (FM) superheterodyne.

FREQUENCY RANGE:

Broadcast band (AM)—540-1620 kilocycles

Frequency modulation band (FM)—88-108 megacycles

TYPE OF TUBES:

1—6B16 FM r-f amplifier

1—12AT7 FM converter

1—12BE6 AM converter

1—6B16 FM and AM i-f amplifier

1—6B16 2nd i-f FM amplifier

1—6BH6 FM limiter

1—19T8 FM discriminator, AM det., AVC and audio ampl.

1—50L6 power output

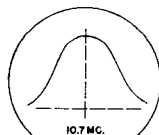
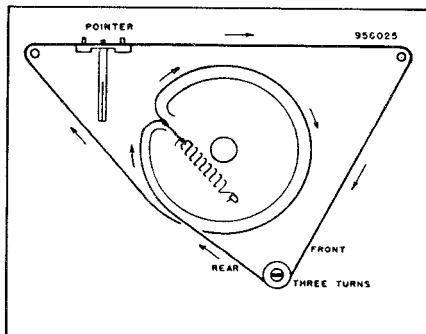
1—Selenium rectifier

POWER SUPPLY: 60 cycles

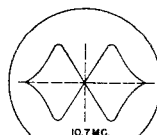
VOLTAGE RATING: 115v. a.c. and d.c.

POWER CONSUMPTION: 35 watts

CURRENT DRAIN: 0.30 amps. at 115 volts a.c.



I.F. AND LIMITER



DISCRIMINATOR

ALIGNMENT CURVES (FM)

MODEL 659B,
Ch. 120126-B

ALIGNMENT INSTRUCTIONS

1. To position pointer, turn variable condenser fully closed and set pointer to reference mark on dial backplate at the low frequency end of the dial.
2. Volume control should be set at maximum position. The output of the signal generator should be no higher than necessary to obtain an output reading. Attenuate the signal input as alignment proceeds. Use an insulated alignment tool for all adjustments.
3. Use isolation transformer if available; otherwise connect a .1 mfd. condenser in series with low side of signal generator to chassis.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 mfd.	High side to Pin 7 (grid) of 12BE6. Low side to chassis.	455 KC.	Broadcast	Tuning condenser fully open.	Across voice coil.	A1, A2, (Trans. T4), A3, A4, (Trans. T2).	Adjust for maximum output. Reduce dummy antenna to .001 mfd. if isolation trans. is not used.
2		Loop	1620 KC.	Broadcast	Tuning condenser fully open.	Across voice coil.	A5, (Trimmer cond. C6).	Form loop of several turns of wire. Radiate signal into receiver loop. Adjust for maximum output.
3		Loop	1400 KC.	Broadcast	Tune for max. output.	Across voice coil.	A6, (Trimmer cond. C5).	Adjust for maximum output.

FM I-F and Disc. Alignment Using AM Signal Generator and VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1	.01 mfd.	High side to Pin 1 (grid) of 6BJ6 2nd i-f (V5). Low side to chassis.	10.7 mc. (Unmodulated)	Frequency modulation	Tuning condenser fully open.	Connect d.c. probe to point "A". Common to chassis.	A7, (Trans. T5).	Adjust for maximum output.
2	.01 mfd.	High side to Pin 1 (grid) of 6BJ6 1st i-f (V3). Low side to chassis.	10.7 mc. (Unmodulated)	Frequency modulation	Tuning condenser fully open.	Connect d.c. probe to point "A". Common to chassis.	A8, A9, (Trans. T3).	Adjust for maximum output.
3	.01 mfd.	High side to Pin 7 of 12AT7 conv. (V2). Low side to chassis.	10.7 mc. (Unmodulated)	Frequency modulation	Tuning condenser fully open.	Connect d.c. probe to point "A". Common to chassis.	A10, A11, (Trans. T1).	Adjust for maximum output.
4	.01 mfd.	High side to Pin 1 (grid) of 6BJ6 2nd i-f (V5). Low side to chassis.	10.7 mc. (Unmodulated)	Frequency modulation	Tuning condenser fully open.	Connect d.c. probe to point "B". Common to chassis.	A12, (Trans. T6).	Adjust for maximum output.
5	.01 mfd.	"	10.7 mc. (Unmodulated)	Frequency modulation	Tuning condenser fully open.	Connect d.c. probe to point "C". Common to chassis.	A13, (Trans. T6).	Adjust for zero output. Continue with FM i-f alignment.

FM I-F AND DISC. ALIGNMENT USING SWEEP SIGNAL GENERATOR AND OSCILLOSCOPE. Use frequency modulated signal, with 60 cycle modulation and 450 V sweep. Use 120 cycle sawtooth sweep voltage in oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RADIO DIAL SETTING	CONNECT OSCILLOSCOPE	ADJUST	REMARKS
1	.01 mfd.	High side to Pin 1 (grid) of 6BJ6 1st i-f (V3). Low side of chassis.	10.7 mc. (Unmodulated).	Frequency modulation	Tuning condenser fully open.	Vertical input to Point "A", Ground to chassis.	A7, A8, A9, (Trans. T5 and T3).	Adjust for maximum output (height) and symmetry as per i-f alignment curve shown (page 3).
2	.01 mfd.	High side to Pin 7 of 12AT7 of conv. (V2). Low side to chassis.	10.7 mc. (Unmodulated).	Frequency modulation	Tuning condenser fully open.	Vertical input to Point "A", Ground to chassis.	A10, A11, (Trans. T1).	Adjust for maximum output (height) and symmetry as per i-f alignment curve shown (page 3).
3	.01 mfd.	High side to Pin 1 (grid) of 6BJ6 2nd i-f (V5). Low side to chassis.	10.7 mc. (Unmodulated).	Frequency modulation	Tuning condenser fully open.	Vertical input to Point "C", Ground to chassis.	A12, A13, (Trans. T6).	Alternately adjust A12 for maximum amplitude and A13 for maximum straightness of cross-over lines, with cross-over occurring at center of pattern as per discriminator alignment curve (page 3). Continue with FM r-f alignment.

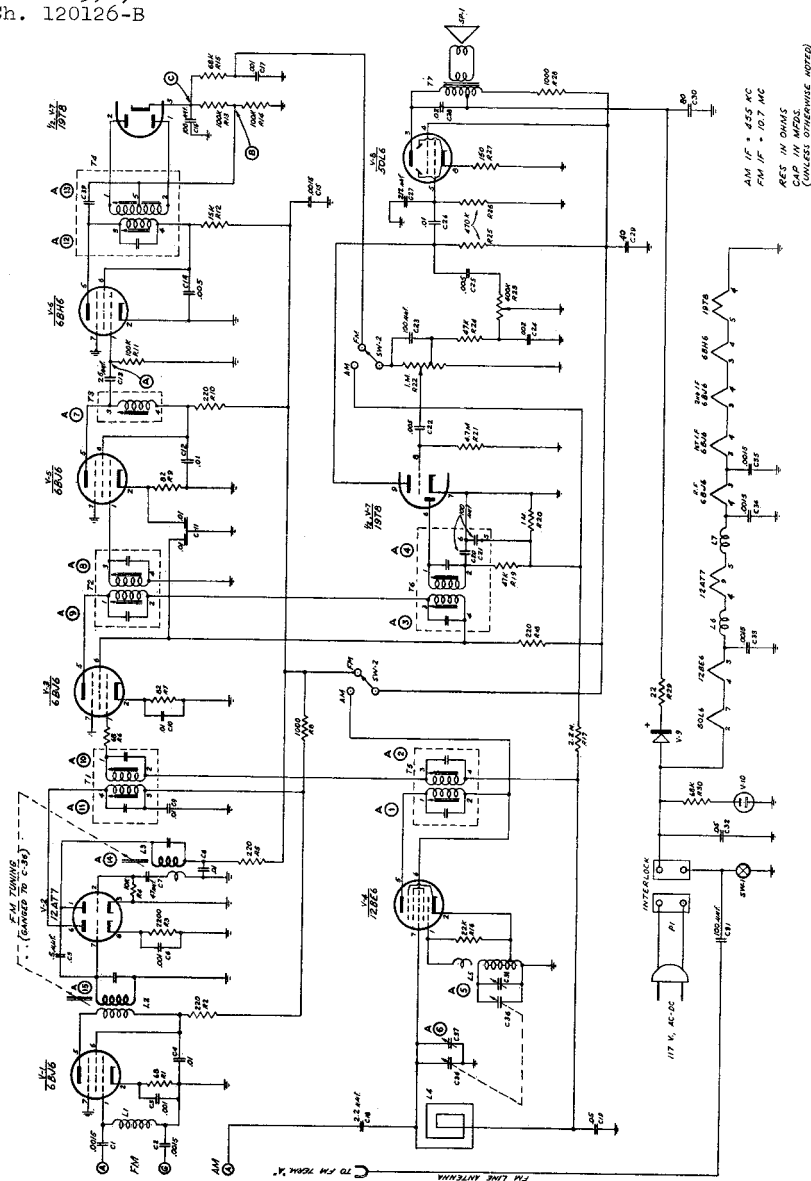
FM R-F ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1	300 ohm resistor in series with gen. lead.	High side to FM ant. term. Low side to chassis.	109.0 mc. (Unmodulated).	Frequency modulation	Tuning condenser fully open.	Connect d.c. probe to point "A". Common to chassis	A14 (Iron Core)	Adjust for maximum output.
2	"	"	106.0 mc.	Frequency modulation	Tune for maximum output.	"	A15 (Iron Core)	Adjust for maximum output.

INSTRUCTIONS FOR VOLTAGE AND RESISTANCE READINGS

1. Voltages readings are in d.c. volts and resistance reading in ohms, unless otherwise specified.
2. D.c. voltage measurements are made at 20,000 ohms-per-volt and a.c. voltages are measured at 1000 ohms-per-volt.
3. Socket connections are shown as bottom views. Values are measured from socket pin to common negative.
4. Line voltage maintained at 115 volts a.c. for voltage readings.
5. Nominal tolerance on component values makes possible a variation of $\pm 15\%$ in readings.
6. Volume control at maximum, with no signal applied and bandwidth in broadcast position (unless otherwise noted), for voltage measurements.

MODEL 659B,
Ch. 120126-B



PT. NO 950158

MODEL 659B,
Ch. 120126-B

VOLTAGE READINGS (CHASSIS 120126-B)

SYMBOL	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9
V-1	6BJ6	0	.6°	35 AC	41 AC	78°	78°	0	—	—
V-2	12AT7	.86°	-2.8°	0	33 AC	41 AC	80°	0	1.7°	NC
V-3	6BJ6	-.4	.8	35 AC	30 AC	100	100	0	—	—
V-4	12BE6	-.76	0	53 AC	64 AC	100	100	-.4	—	—
V-5	6BJ6	0	.7°	30 AC	24 AC	86°	86°	0	—	—
V-6	6BH6	-.3	0	24 AC	18 AC	50°	50°	0	—	—
V-7	19T8	-.5°	-.6°	11°	0	18 AC	0	—	-.5	40
V-8	50L6	NC	115 AC	110	105	0	NC	64 AC	7.2	—

RESISTANCE READINGS (CHASSIS 120126-B)

SYMBOL	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9
V-1	6BJ6	0	68	42	30	200K°	200K°	0	—	—
V-2	12AT7	200K°	10K	0	50	50	200K°	0	2200	—
V-3	6BJ6	3.2 meg.	82	42	62	200K°	200K°	0	—	NC
V-4	12BE6	22K	.5	62	75	200K	200K	2.7 meg.	—	—
V-5	6BJ6	.6	82	35	28	200K°	200K°	0	—	—
V-6	6BH6	100K	0	28	20	200K°	200K°	0	—	—
V-7	19T8	100K	100K	175K°	0	20	500K	0	4.7 meg.	500K
V-8	50L6	NC	130	200K	200K	470K	NC	75	150	—

N.C. Denotes "No Connection."

°Denotes Bandswitch in FM Position Only.

CHASSIS PARTS LIST (CHASSIS 120126-B)

Symbol	Part No.	DESCRIPTION	Symbol	Part No.	DESCRIPTION
C1	928006	1,500 MMF Ceramic	R11	340870	100,000 Ohms 1/4W ±10%
C2	928006	1,500 MMF Ceramic	R12	340770	15,000 Ohms 1/4W ±10%
C3	928033	.001 MF Ceramic, Circular	R13	340970	100,000 Ohms 1/4W ±10%
C4	928027	.01 MF Ceramic, Circular	R14	340970	100,000 Ohms 1/4W ±10%
C5	915029	.5 MMF (Slm. Stackpole Type GA)	R15	340930	68,000 Ohms 1/4W ±10%
C6	928053	.001 MF Ceramic, Circular	R16	(PtoIF.5)	22,000 Ohms 1/4W ±20%
C7	928102	.50 MMF Ceramic	R17	351290	2.2 Megohms 1/4W ±10%
C8	928027	.01 MF Ceramic, Circular	R18	340332	220 Ohms 1/4W ±10%
C9	928027	.01 MF Ceramic, Circular	R19	340890	47,000 Ohms 1/4W ±10%
C10	928027	.01 MF Ceramic, Circular	R20	341210	1 Megohm 1/4W ±10%
C11	928055	.01 MF Dual, Ceramic, Shielded	R21	351370	4.7 Meg. 1/4W ±20%
C12	928027	.01 MF Ceramic, Circular	R22	390161	1.0 Meg. Vol. Control } Dual Pot.
C13	928110	.25 MMF Ceramic	R23	(PtoIF.22)	400,000 Ohms Tone Control } with Switch
C14	928109	.005 MF Ceramic, Circular	R24	340890	47,000 Ohms 1/4W ±10%
C15	928006	1,500 MMF Ceramic	R25	351130	470,000 Ohms 1/4W ±10%
C16	928013	100 MMF Ceramic ±20%	R26	351130	470,000 Ohms 1/4W ±10%
C17	928053	.001 MF Ceramic, Circular	R27	340292	150 Ohms 1/4W ±20%
C18	(Part of Loop)	2.2 MMF Ceramic	R28	394042	1000 Ohms 1/4W ±10%
C19	920060	.05 MF Paper 200V ±25%	R29	394027	22 Ohms 2W ±10%
C20			R30	340930	68,000 Ohms 1/4W ±10%
C21	Pt. of T6	100 MMF Paper 400V ±25%	L1	713026	FM Ant. Coil
C22	920180	.005 MF Paper 400V ±20%	L2	713027	FM R.F. Coil
C23	928013	100 MMF Ceramic ±25%	L3	716059	FM Osc. Coil
C24	920545	.002 MF Paper 400V ±25%	L4	700035	AM Loop Ant.
C25	920180	.005 MF Paper 400V ±25%	L5	716058	AM Osc. Coil
C26	920090	.01 MF Paper 400V ±25%	L6	705002	Filament Choke
C27	928104	212 MMF Ceramic	L7	705002	Filament Choke
C28	928030	.02 MF Paper 400V ±25%	SP1	505014	Safety Interlock Plug
C29	925187	40 MF Electrolytic	P1	180074	FM Speaker
C30	925187	80 MF Electrolytic Dual 150V	SW1	(PtoIF.22)	On-Off Switch
C31	928013	100 MMF Ceramic ±20%	SW2	720126	1st FM I.F. Transformer
C32	920030	.05 MF Paper 400V ±25%	T1	720067	2nd FM I.F. Transformer
C33	928006	1,500 MMF Ceramic	T2	720067	3rd FM I.F. Transformer
C34	928006	1,500 MMF Ceramic	T3	708062	FM Discriminator Transformer
C35	928006	1,500 MMF Ceramic	T4	720073	1st AM I.F. Transformer
C36	900078	AM Variable Cond. FM Tuning Assembly	T5	720076	2nd AM I.F. Transformer
C37	(PtoIF.36)	AM RF Trimmer	T6	720076	Output Transformer
C38	(PtoIF.36)	AM Osc. Trimmer	T7	734062	FM RF Amplifier
C39	(PtoIF.4)		V1	800023	6BH6, FM RF Amplifier
R1	340312	68 Ohms 1/4W ±10%	V2	800047	12AT7, FM Osc. Mixer
R2	340332	220 Ohms 1/4W ±10%	V3	800023	6BH6, FM Ant. 1st I.F. Amplifier
R3	340572	2,200 Ohms 1/4W ±10%	V4	800525	12BE6, AM Osc. Mixer
R4	340732	10,000 Ohms 1/4W ±10%	V5	800023	6BH6, FM 2nd IF Amplifier
R5	340332	220 Ohms 1/4W ±10%	V6	800054	6BH6, FM Limiter
R6	340312	68 Ohms 1/4W ±10%	V7	800029	19T8, FM Discriminator, AM Det., Int. A.F. Ampl.
R7	340232	82 Ohms 1/4W ±10%	V8	800070	50L6, Power Output
R8	340492	1,000 Ohms 1/4W ±10%	V9	817102	Selenium Rectifier, 100 MA.
R9	340232	82 Ohms 1/4W ±10%		817101	
R10	340332	220 Ohms 1/4W ±10%	V10	807030	Pilot Bulb—Neon NES1

CABINET PARTS LIST FOR MODEL 659B

Part No.	DESCRIPTION	Part No.	DESCRIPTION
140358	Cabinet	450064	Knob—Bass-Treble
520133	Dial Crystal	587011	Spring Insert (1/4" Knobs)
575649	Baffle and Grill Cloth	560153	Aluminum Back
450068S	Knob—Tuning and AM-FM	583206	Line Cord
450099S	Knob—Volume		