

100-125V A.C. 60 CYCLES ONLY

The DeWald Model F-523 is a combination self-starting electric clock and super-heterodyne receiver. The receiver can automatically be turned on or off by the clock. The receiver range is from 525 to 1700 kilocycles.

NOTE: The receiver and clock operate on 105-125 volts 60 cycles A.C. ONLY!
Your local Power Company will help you make certain that you have the correct power.

CONTROLS

1. The left-hand knob on the receiver is the volume control.
2. The right-hand knob on the receiver is the station selector.
3. The "Radio Switch" knob is located at the nine o'clock position of the clock.
4. The "Sleep Switch" knob is located at the six o'clock position.
5. The "Alarm Set" knob is located at the three o'clock position.

OPERATION

Your self-starting Telechron clock will start automatically when the set is plugged into the proper outlet. Set the correct time by means of the small knob at the right REAR of the cabinet. Turn ONLY in the direction shown on the back cover.

A. TO TURN RADIO ON MANUALLY:

Turn "Radio Switch" knob to "On" position. Be sure that the line cord is plugged in. Allow approximately one minute for the tubes to heat up. The receiver is then ready for operation. Select the desired station by turning the station selector knob and adjust the volume to the desired level.

B. TO TURN RADIO OFF MANUALLY:

Turn "Radio Switch" knob to the "Off" position.

C. TO TURN RADIO ON AUTOMATICALLY:

Pull out "Alarm Switch" knob and turn in counter-clockwise (arrow) direction until pointer is over hour figure and minute marks desired. After setting the desired time, push in the "Alarm Set" knob. Turn the radio "On" and set to the station and volume desired. (See "A" above). Then turn the "Radio Switch" knob to the "Auto" position. This operation turns the radio off, but it will automatically turn on again at the time set.

D. TO TURN RADIO OFF AUTOMATICALLY:

While the radio is playing, turn the "Sleep Switch" knob clockwise for playing time desired. Estimate time in minutes between 0 and 60 marks along arrow.

Set "Radio Switch" knob to the "Off" position. Radio will continue playing but will turn off automatically at the pre-set time.

E. TO TURN ON BUZZER ALARM WITH RADIO SILENCED:

Turn "Radio Switch" knob to "Off" position. Pull out "Alarm Switch" knob and turn in counter-clockwise (arrow) direction until the pointer is set ten minutes ahead of the hour figure and minute mark desired. For example: Should you desire the buzzer to sound at 7, set alarm pointer to 6:50. To shut off the buzzer push in the "Alarm Set" knob.

F. TO TURN RADIO AND BUZZER ON AUTOMATICALLY:

Follow procedure as outlined under "C" above, with the exception that having set the desired time, do not push in the "Alarm Set" knob. Buzzer sounds approximately 10 minutes after the radio comes on. To shut off the buzzer, push in the "Alarm Set" knob. The radio will continue to play until the "Radio Switch" knob is turned to the "Off" position.

G. TO TURN RADIO OFF AUTOMATICALLY THEN ON AGAIN AUTOMATICALLY, WITH BUZZER OFF:

Adjust the "Sleep Switch" knob as described in "D" above, but set the "Radio Switch" knob to the "Auto" position. Set the "Alarm Switch" knob as described in paragraph "C". The radio will continue playing for the amount of time set on the "Sleep Switch" and then shut off but will come on again automatically at the pre-set time. *NOTE: Make sure the "Alarm Set" knob is pushed in.*

H. TO TURN RADIO OFF AUTOMATICALLY THEN ON AGAIN AUTOMATICALLY, WITH BUZZER ON:

Follow the procedure outlined in "G" above, but make sure that the "Alarm Set" knob is pulled out. The buzzer will then sound approximately ten minutes after the radio goes on.

I. TO TURN THE RADIO OFF AUTOMATICALLY THEN TURN THE BUZZER ALARM ON:

Follow the instructions given in paragraphs "D" and "E".

ANTENNA

The "Looptenna" incorporated in the DeWald Model F-523 receiver makes use of an outside antenna unnecessary in most localities. If additional pick-up is desired, connect an external antenna to the flexible lead which is brought out of the rear of the cabinet for this purpose. The "Looptenna" has a directional effect and therefore it may be necessary to change the angle of the receiver for the best reception.

MODEL G-404

This model is a four tube superheterodyne receiver with full automatic volume control. A Loop Antenna coil is used with this receiver and is designed to pick up strong local stations without requiring an outside Antenna. An external Antenna is recommended; connect to external lead for additional signal pick up. The range coverage is 535-1700 Kilocycles. The receiver has been designed to operate at 105-125 volts, 40-60 cycles A. C. - D. C. unless otherwise specified.

OPERATION:

Insert the receiver line cord plug in electric outlet. Turn lower right knob in a clockwise direction. Allow approximately one minute for the tubes to heat up and receiver is then ready for operation.

NOTE:

If the receiver is being operated on D.C. and no signals are heard after it has been turned "on" for one minute, reverse the line plug.

Volume Control:

The lower knob of the receiver is used as the power switch and volume control. Rotation of this knob in a clockwise direction turns the receiver "on". Further rotation in this direction increases the volume.

STATION SELECTOR:

The upper knob operates the tuning in of stations.

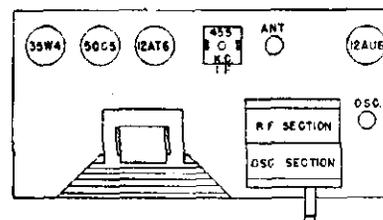
1142	Loop	3029	½ W. Resistors
1141	Oscillator Coil	3001A	2 W. Resistors
1091B-9	I. F. Coil	3043	Vol. Cont. and Switch
2000A	Paper Condensers	5010-4	Line Cord
2063	Ceramic Condensers	7003C-5	Speaker
2033	Comb. Electrolytic	4180	Cabinet Back
2065-2	Var. Condenser		

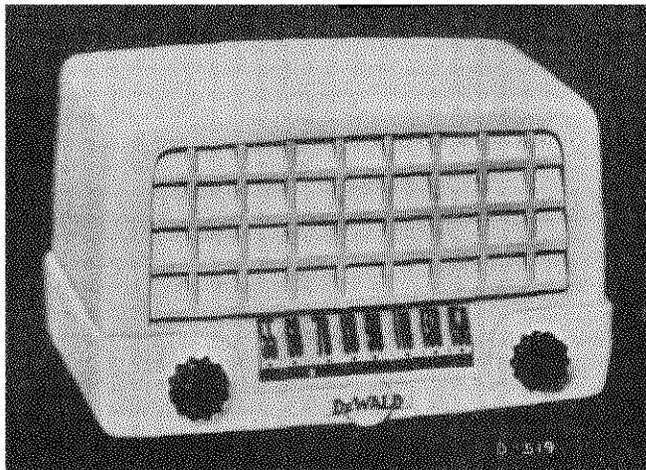
TUBES

1	35W4
1	50C5
1	12AT6
1	12AU6

IVORY CABINET	4181-1
WALNUT CABINET	4181-2
IVORY TUNING KNOB	4178-1
WALNUT TUNING KNOB	4178-2
IVORY VOLUME KNOB	4179-1
WALNUT VOLUME KNOB	4179-2

MODEL G-404
SUPERHETERODYNE AC/DC
RANGE: 535-1700 KILOCYCLES
VOLTS CYCLES WATTS
105-120 40-60 25
 OR D.C.





This model is a five tube superheterodyne receiver with full automatic volume control. A self-contained loop antenna is incorporated which makes the use of an antenna unnecessary. The range coverage is 525-1720 kilocycles. The receiver has been designed to operate at 105-125 volts, 40-60 cycles A.C. -D.C. unless otherwise specified.

OPERATION:

Insert the receiver line cord plug in electric outlet. Turn left knob in a clockwise direction. Allow approximately one minute for the tubes to heat up and receiver is then ready for operation.

NOTE:

If the receiver is being operated on D.C. and no signals are heard after it has been turned "on" for one minute, reverse the line plug.

ANTENNA:

The receiver operates satisfactorily without an antenna. If additional pick-up is desired, an antenna may be connected by following instructions on cabinet back.

VOLUME CONTROL:

The left knob of the receiver is used as the power switch and volume control. Rotation of this knob in a clockwise direction turns the receiver "on". Further rotation in this direction increases the volume.

STATION SELECTOR:

The right hand knob operates the tuning in of stations and pointer. Ease and accuracy in tuning is provided because of a reduction drive.

IMPORTANT:

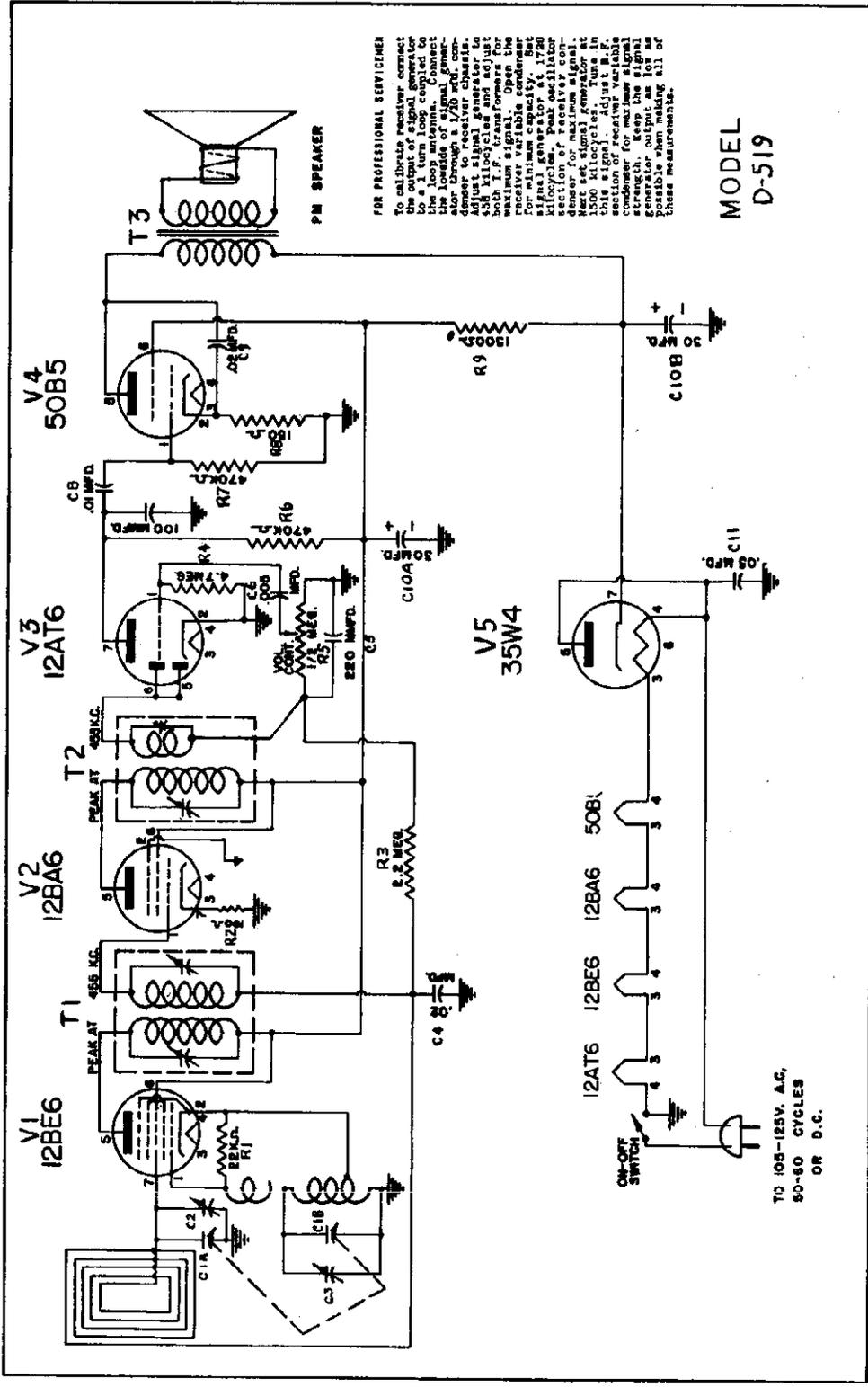
Since the "looptenna" used has a directional effect, it may be found necessary to change the angle of the receiver.

1045	Looptenna	3000	1/4 W. resistors
1028	oscillator coil	3001	2 W. resistors
10910	1st I.F. coil	3002	vol. cont. and switch
10910	2nd detector coil	5000	line cord
2000A	paper condensers	7003	speaker
ceramic 20120	condensers	9050	shaft
2033	comb. electrolytic	9818	bushing
20170	var. condenser	9762	drive spring
		# 20	dial cord

TUBES

1	35W4
1	50B5
1	12AT6
1	12BA6
1	12BE6

CABINET	4053
KNOB	4055A
BACK	4059



FOR PROFESSIONAL SERVICE
 To calibrate receiver connect to a signal generator or a loop antenna. Connect the leads of signal generator to receiver chassis. Adjust signal generator to 430 kilocycles and adjust maximum signal. Open the receiver variable condenser for minimum capacity. Set signal generator to 430 kilocycles. Peak oscillation section of receiver condenser for maximum signal. Adjust signal generator to 1500 kilocycles. Tune in this signal. Adjust B.F. section of receiver variable condenser for maximum signal. Signal generator output as low as possible when making all of these measurements.

MODEL
 D-519

TO 105-125V. A.C.,
 50-60 CYCLES
 OR D.C.

VOLTAGE CHART

Tube No.	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	-10V	0	10V	22V	+80V	+80	-1
V2	-1.1V	0	32V	20V	+80V	+80	0
V3	-0.7V	0	0	10V	-0.5V	0	+30
V4	0	+4.5V	32V	78V	+110V	+80	
V5			75V	117V	117VAC		+110V

All measurements with respect to chassis use Precision VTVM.

RESISTANCE CHART

Tube No.	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	24K	0.6	14 Ω	20 Ω	50K	50K	3 meg
V2	3meg	0	30 Ω	20 Ω	400K	300K	0
V3	4.7meg	0	0	12 Ω	400K	0	700K
V4	500K	150 Ω	30 Ω	80 Ω	400K	300K	NC
V5	NC	NC	80 Ω	110 Ω	110 Ω	NC	500K

All measurements with respect to chassis use Triplet VTVM Model 650

RESISTORS

R1	22K Ω
R2	100 Ω
R3	2.2 meg
R4	4.7 meg
R5	1/2 meg Vol. Control
R6	470K Ω
R7	470K Ω
R8	150 Ω
R9	1500 Ω

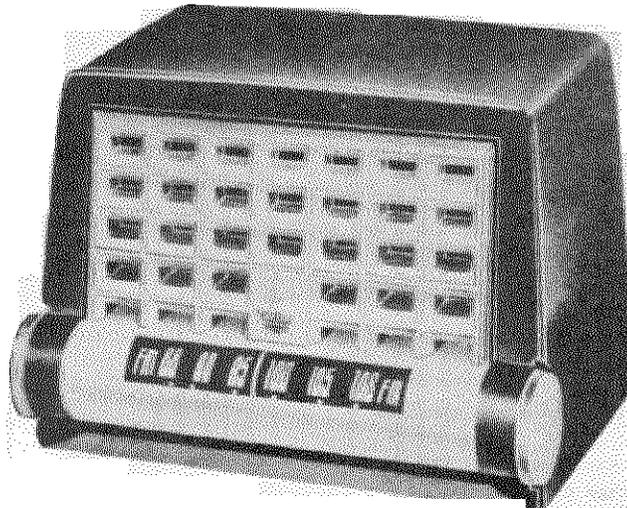
COILS AND TRANSFORMERS

T ₁ , T ₂	L. F. Coil
T ₃	Audio Output Transformer

CAPACITORS

C1A, B	Variable Condenser
C2, C3	Trimmer
C4	.05mf 200V
C5	220mmf
C6	.005mf
C7	100mmf
C8	.01mf
C9	.02mf 400V
C10A, B	30mf 150V
C11	.05mf 400V

MODELS 602A, Ch. 120072A; 602B, Ch. 120072B; 602C, Ch. 120102



DESCRIPTION

TYPE: Single band (FM) superheterodyne

FREQUENCY RANGE: 88-108 mc.

INTERMEDIATE FREQUENCY: 10.7 mc.

TYPE OF TUBES:

- 1—6BJ6, Δ r-f amplifier
- 1—12BA7, converter
- 1—12BA6, first i-f amplifier
- 1—12BA6 or 6BJ6, Δ second i-f amplifier
- 1—12S8G I, ratio detector, a.v.c., a-f amplifier
- 1—35B5, power output
- 1—35W4, rectifier

POWER SUPPLY: A.c. or d.c.

VOLTAGE RATING: 105-125 volts

POWER CONSUMPTION: 30 watts

CURRENT DRAIN: .25 amp. at 117 volts a.c.

 Δ Chassis 120102A only.

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. The position of tuned circuit components and connecting leads is critical. Carefully dress all leads after part replacement to correspond to the original position.
2. For operation on d.c. it may be necessary to reverse the line plug for proper polarity.
3. The color coding of the output transformer leads is as follows:
Plate—blue
Rectifier cathode—red

Power supply filter—brown

4. An internal power line antenna is provided for FM reception in relatively strong signal areas. The line cord should be completely uncoiled for effective operation of this antenna. An external dipole antenna is recommended for maximum FM operation. To connect the dipole, remove the wire from the screw terminal at the rear of the chassis marked "A" and connect the dipole leads to "A" and "G".
5. A ground connection is not required for operation of this receiver.

ALIGNMENT PROCEDURE

1. To position pointer, turn variable condenser fully closed and set pointer to reference mark at low-frequency end of dial.
2. Volume control should be set at maximum position; output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment tool for all adjustments.
3. For step 2 in alignment with AM signal generator, connect two 100 K resistors in series from point "B" to ground.
4. For alignment with FM signal generator, use frequency modulated signal with 60-cycle modulation and 450 KC sweep. Use 120 cycle sweep voltage in scope for horizontal deflection.

RATIO DETECTOR AND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1	.005 mfd.	High side to pin 1 (grid) of V3, second i-f. Low side to chassis.	10.7 MC (Unmodulated).	Tuning cond. fully open.	Connect d.c. probe to point "B". Common to chassis.	A2 (Bottom of ratio det. trans. T3).	Adjust for maximum output.
2	.005 mfd.	"	"	"	Connect d.c. probe to point "A". Common to junction of two 100 K resistors connected between "B" and chassis. See Note 3.	A1 (Top of ratio det. trans. T3).	Adjust for minimum output.
3	.005 mfd.	High side to pin 2 (osc. grid) of V1, converter. Low side to chassis. Disconnect internal antenna lead from term. strip.	"	"	Connect d.c. probe to point "B". Common to chassis.	A3, A4 (2nd i-f trans. T2).	Adjust for maximum output.
4	.005 mfd.	"	"	"	"	A5, A6 (1st i-f trans. T1).	Adjust for maximum output. Continue with r-f alignment.

RATIO DETECTOR AND IF ALIGNMENT USING FM SIGNAL GENERATOR AND SCOPE

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1	.005 mfd.	High side to pin 1 (grid) of V3, second i-f. Low side to chassis.	10.7 MC (450 KC. sweep).	Tuning cond. fully open.	Vertical input through 10 K resistor to point "A". Common to chassis.	A2, A1 (Ratio det. trans. T3).	Adjust A2 for max. amplitude and linearity of double "S"-shaped response curve. Adjust A1 to move cross-over point to center of pattern (equal sections above and below intersection).
2	.005 mfd.	High side to pin 2 osc. grid of V1, converter. Low side to chassis. Disconnect internal antenna lead from term. strip.	"	"	Vertical input across voice coil.	A3, A4, A5, A6 (2nd & 1st i-f trans. T2 & T1).	Adjust for maximum amplitude and symmetry of sine wave output. Continue with r.f. alignment.

MODELS 602A, Ch. 120072A; 602B,
Ch. 120072B; 602C, Ch. 120102A RF ALIGNMENT

	ANTENNA DUMMY	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1	150 ohm resistor in series with each gen. lead.	High side to term. "A"; low side to term. "G" at rear of chassis.	108.0 MC (Unmodulated).	Tuning cond. fully open. (108.0 MC).	Connect d.c. probe to "B". Common to chassis.	A7 (Trimmer cond. C4).	Adjust for maximum output.
2	"	"	106.0 MC.	Tune for maximum deflection.	"	A8 (Trimmer cond. C3).	"

INSTRUCTIONS FOR VOLTAGE AND RESISTANCE READINGS

1. Voltage readings are in volts and resistance readings in ohms unless otherwise specified.
2. All measurements made with voltohmmyst.
3. Socket connections are shown as bottom views.
4. Measured values are from socket pin to common negative, unless otherwise specified.
5. Line voltage maintained at 117 volts for voltage readings.
6. Nominal tolerance on component values makes possible a variation of $\pm 15\%$ in voltage and resistance readings.
7. Volume control at maximum, no signal applied, for voltage measurements.

VOLTAGE READINGS

SYMBOL	TUBE TYPE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V1	12BA7	98	-3.8	0	{38 AC 43 ACΔ	{50 AC 31 ACΔ	0	0
V2	12BA6	-8	0	{26AC 19ACΔ	{38 AC 31 ACΔ	92	92	0
V3	12BA6 or 6BJ6Δ	-8	0	{26AC 19ACΔ	13 AC	92	92	0
V4	12S8GT	-.5	0	-.5	0	-.5	50	13 AC
V5	35B5	0	5.7	50 AC	82 AC	110	92	NC
V6	35W4	NC	0	82 AC	117 AC	115 AC	NC	116
V7	6BJ6Δ	0	.8	43 AC	49 AC	92	92	0

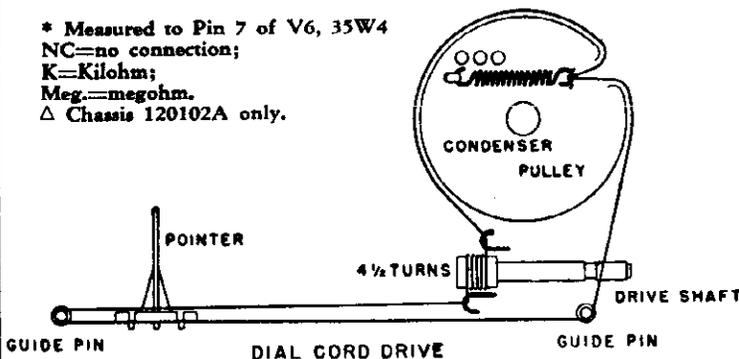
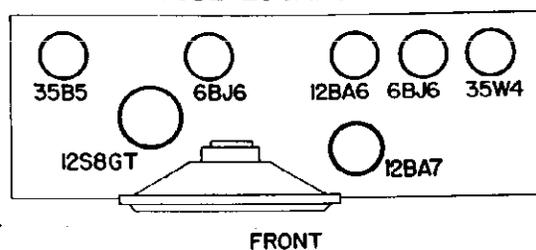
RESISTANCE READINGS

SYMBOL	TUBE TYPE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V1	12BA7	1K*	22K	0	{38 48Δ	{50 34Δ	0	0
V2	12BA6	2.2 Meg.	0	{25 21Δ	{38 34Δ	1000*	1000*	0
V3	12BA6 or 6BJ6Δ	2.2 Meg.	0	{25 21Δ	15	1100*	1100*	0
V4	12S8GT	620K	0	32K	0	620K	550K*	15
V5	35B5	470K	180	{50 54Δ	86	160	1000*	NC
V6	35W4	NC	0	86	124	{164 146Δ	NC	0*
V7	6BJ6Δ	0	70	48	54	1000*	1000*	0

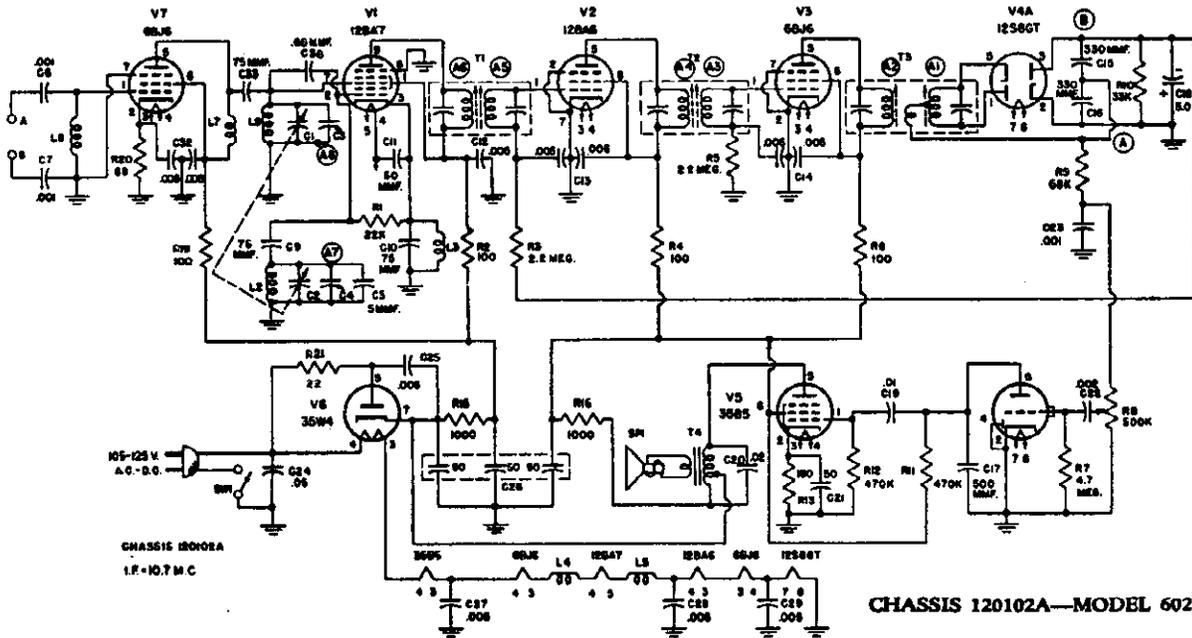
SYMBOL	TUBE TYPE	VOLTAGE		RESISTANCE	
		PIN 8	PIN 9 or CAP	PIN 8	PIN 9 or CAP
V1	12BA7	0	98	0	1000*
V4	12S8GT	0	-1.3	0	4 Meg.

* Measured to Pin 7 of V6, 35W4
NC=no connection;
K=Kilohm;
Meg.=megohm.
Δ Chassis 120102A only.

TUBE LOCATIONS



MODELS 602A, Ch. 120072A; 602B, Ch. 120072B; 602C, Ch. 120102A



CHASSIS 120102A—MODEL 602C

Symbol	†Part No.	DESCRIPTION	Symbol	†Part No.	DESCRIPTION
V1	12BA7	Converter	C37	928004#	500 mmf., ceramic
V2	12BA6	First i-f amplifier	C38	915040Δ	.68 mmf., molded
V3	12BA6 or 6BJ6Δ	Second i-f amplifier	C39	920250#	.1 mfd., 400 volt, paper
V4	12S8GT	Ratio det., a.v.c., a-f amplifier	L1	710018*#	Antenna coil
V5	35B5	Power output	L2	716028	Oscillator coil
V6	35W4	Rectifier	L3	705002	R-f choke, oscillator
V7	6BJ6Δ	R-f amplifier	L4	705002	R-f choke, heater
C1}	900041	Two-gang, variable condenser	L5	705002	R-f choke, heater
C2}			L6	710019Δ	Antenna coil
C3}	Part of C1, C2	Trimmers, r-f and osc:	L7	705002Δ	R-f choke
C4}			L8	705002	R-f choke
C5	928029	5 mmf., temp. comp.	L9	716028Δ	R-f coil
C6	928003	.001 mfd., ceramic	R1	340810	22 kilohms, ½ watt
C7	928003	.001 mfd., ceramic	R2	340250	100 ohms, ½ watt
C8	915005	2.2 mmf., molded	R3	351290	2.2 megohms, ½ watt
C9	928015	75 mmf., ceramic	R4	340250	100 ohms, ½ watt
C10	928025	15 mmf., ceramic	R5	351290	2.2 megohms, ½ watt
C11	928014	50 mmf., ceramic	R6	340250	100 ohms, ½ watt
C12	928109	.005 mfd., ceramic	R7	351370	4.7 megohms, ½ watt
C13	928022	4700-4700 mmf., ceramic	R8	390062	500 kilohms, volume control
C14	928022	4700-4700 mmf., ceramic	R9	340930	18 kilohms, ½ watt
C15	910026	330 mmf., mica	R10	340850	33 kilohms, ½ watt
C16	910026	330 mmf., mica	R11	351130	470 kilohms, ½ watt
C17	928004	500 mmf., ceramic	R12	351130	470 kilohms, ½ watt
C18	925116	5 mfd., 25 volt, elect.	R13	340310	180 ohms, ½ watt
C19	920090	.01 mfd., 400 volt, paper	R14	370150	39 ohms, 1 watt
C20	920020	.02 mfd., 400 volt, paper	R15	340490	1000 ohms, ½ watt
C21	925117	50 mfd., 25 volt, electrolytic	R16	370490	1000 ohms, 1 watt
C22	920010	.002 mfd., 600 volt, paper	R17	340250	100 ohms, ½ watt
C23	928003	.001 mfd., ceramic	R18	340250	100 ohms, ½ watt
C24	920030	.05 mfd., 400 volt, paper	R19	340250	100 ohms, ½ watt
C25	928109	.005 mfd., ceramic	R20	340210	68 ohms, ½ watt
C26	925118*Δ	50-50-50 mfd., 150 volt, electrolytic	R21	370090	22 ohms, 1 watt
C27	928109		.005 mfd., ceramic	T1	720067	First i-f transformer
C28	928109*Δ	.005 mfd., ceramic	T2	720067	Second i-f transformer
C29	928109*Δ	.005 mfd., ceramic	T3	720071	Ratio detector transformer
C30	928022#	4700-4700 mmf., ceramic	T4	734044	Output transformer
C31	928022#	4700-4700 mmf., ceramic			
C32	928022Δ	4700-4700 mmf., ceramic	SW1	Part of R8	Line switch
C33	928015Δ	75 mmf., ceramic	SP1	180055	P.M. speaker
C34	928027#	.01 mfd., ceramic (button type)		583205	Line cord and internal ant.
C35	928027#	.01 mfd., ceramic (button type)		583205A#	
C36	928027#	.01 mfd., ceramic (button type)			

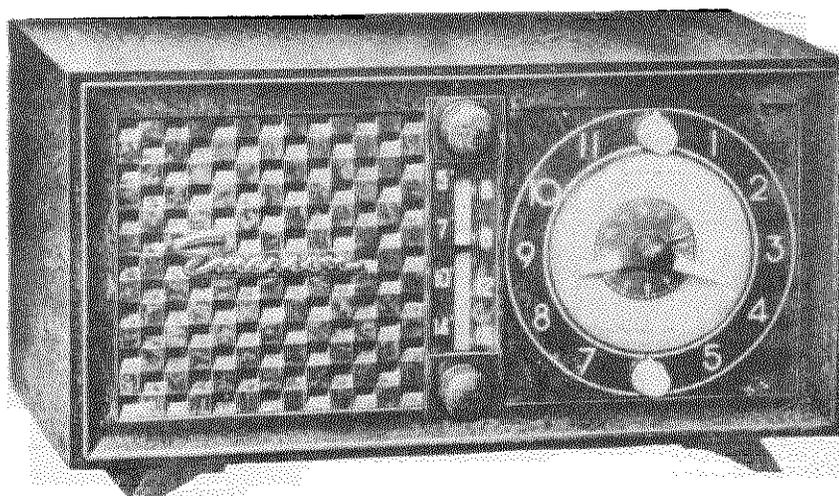
° Replace with part having same number.
† Specify part numbers when ordering.

* Chassis 120072A only

Δ Chassis 120102A only.
Chassis 120072B only.

CABINET AND DIAL PARTS

†Part No.	DESCRIPTION	†Part No.	DESCRIPTION
140168	Cabinet, maroon plastic	460088	Knob, plastic
460078	Speaker grille	530002	Dial cord (31")
520068	Dial backplate	280055	Drive shaft
525033	Pointer	587040	Dial drive spring



MODEL 695B
CHASSIS 120146-B

DESCRIPTION

TYPE: Single-band superheterodyne, with clock-timer and appliance outlet.

FREQUENCY RANGE: 540-1620 kc.

TYPE OF TUBES:

- V-1—12BE6, oscillator mixer
- V-2—12BA6, first i-f amplifier
- V-3—12AT6, detector, a-f amplifier
- V-4—50C5, A. F. output
- V-5—35W4, rectifier

POWER SUPPLY: A.C. 60 cycles only

VOLTAGE RATING: 115 volts.

POWER CONSUMPTION: 32 watts.

GENERAL NOTES

1. If replacements are made or the wiring disturbed in r-f section of the circuit, the receiver should be carefully realigned.
2. This model has a self-contained antenna and does not require additional antenna connections. For permanent installations, however, if it is desired to improve reception of weak stations, an additional outdoor antenna may be used. For this purpose a lead has been brought out in rear. Use no ground connection.
3. The self-contained loop antenna operates at maximum efficiency when its position is at right angles to the broadcasting source. It is important, therefore, once the station is tuned in, to rotate the cabinet back and forth through a quarter of a circle (90 degrees), leaving it at the position where the station is received with maximum volume.
4. Appliance outlet and radio on-off switch located in back of chassis. For information on clock applications see instructions supplied with set.

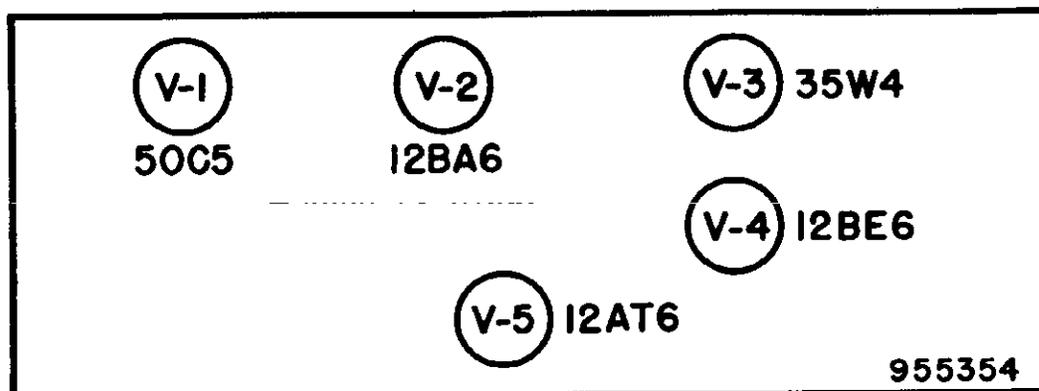


Fig 3. TUBE LOCATION DIAGRAM OF CHASSIS 120146-B

MODEL 695B,
Ch. 120146-B

ALIGNMENT

To set pointer, turn variable condenser fully closed and set pointer at mark near top end of dial backplate. Use isolation transformer if available. If not, connect a 0.1 mfd. condenser in series with low side signal generator and chassis. Volume control should be at maximum position; output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	METER OUTPUT	ADJUST	REMARKS
1	0.001 mfd.	High side to stator of rear section of tuning condenser. Low side to chassis.	455 kc	Variable condenser fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2	200 mmfd.	High side to external antenna lead. Low side to external ground lead.	1620 kc	Variable condenser fully open.	Across voice coil.	A5	Adjust for maximum output.
3	200 mmfd.	High side to external antenna lead. Low side to external ground lead.	1400 kc	Tune for maximum output.	Across voice coil.	A6	Adjust for maximum output.

VOLTAGE READING FOR CHASSIS 120146-B

SYMBOL	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V-1	12BE6	-6.3 DC	0	24 AC	12 AC	90 DC	90 DC	-8 DC
V-2	12BA6	-8 DC	0	24 AC	36 AC	90 DC	90 DC	1 DC
V-3	12AT6	-9 DC	0	0	12 AC	-8 DC	-8 DC	38 DC
V-4	50C5	5.5 DC	0	80 AC	36 AC	0	90 DC	110 DC
V-5	35W4	0	0	80 AC	117 AC	115 AC	110 AC	120 DC

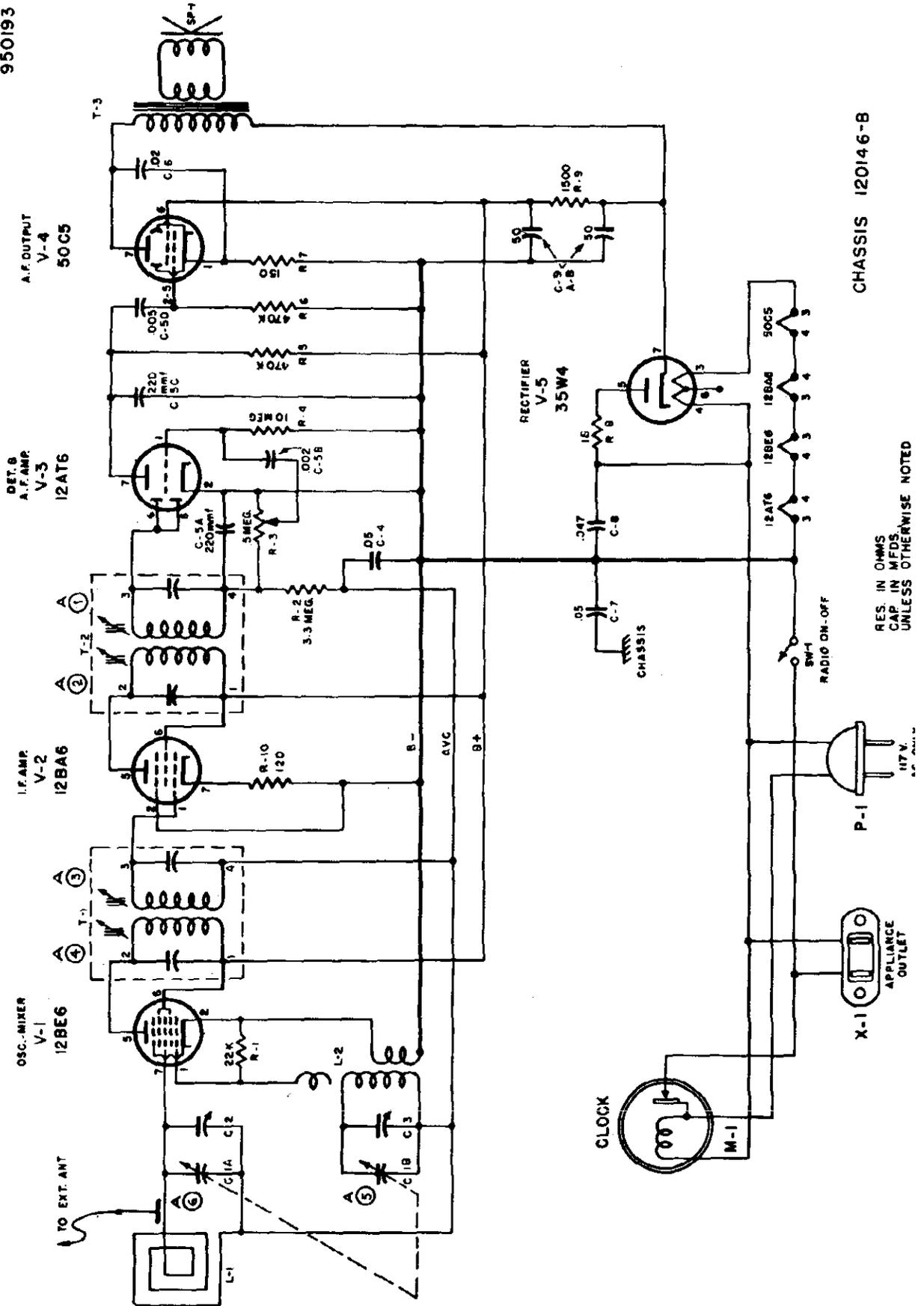
RESISTANCE READING FOR CHASSIS 120146B

SYMBOL	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V-1	12BE6	2,400	0.4	26	14	300,000	300,000	4 meg.
V-2	12BA6	4 meg.	0	26	38	300,000	300,000	120
V-3	12AT6	10 meg.	0	0	14	500,000	4 meg.	800,000
V-4	50C5	150	470,000	90	38	470,000	300,000	350,000
V-5	35W4	N.C.	N.C.	90	125	150	120	350,000

VOLTAGE AND RESISTANCE READING INSTRUCTIONS

1. Voltage readings are in volts and resistance readings in ohms unless otherwise specified.
2. D-C voltage measurements are at 20,000 ohms per volt; a-c voltage measured at 1,000 ohms per volt.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts, 60 cycles for voltage readings.
5. Normal tolerance on component values makes possible a variation of $\pm 15\%$ in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

950193



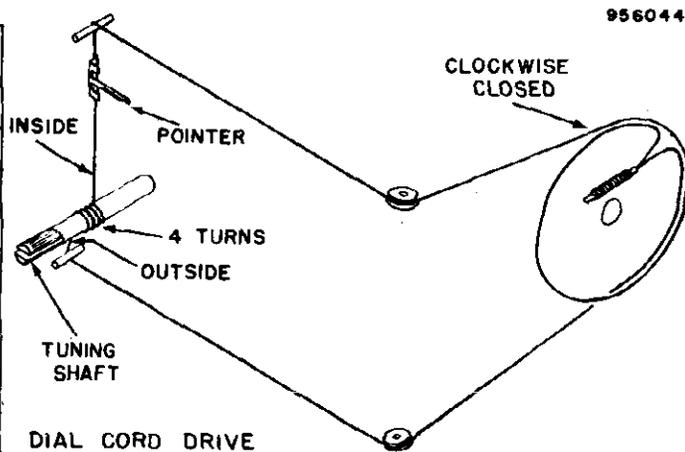
MODEL 695B,
Ch. 120146-B

CHASSIS PARTS LIST (Chassis 120146-B)

SYM-BOL	PART NO.	DESCRIPTION	LIST PRICE	SYM-BOL	PART NO.	DESCRIPTION	LIST PRICE	
C-1A	900084	Variable Capacitor - r.f. Section	3.30	R-4	351452	10 megohm. Carbon	1/2 W±20% .14	
C-1B		Variable Capacitor - osc. Section		R-5	351132	470,000 ohm. Carbon	1/2 W±20% .14	
C-2	Pt. of C-1A	Trimmer - r.f. Section		R-6	351132	470,000 ohm. Carbon	1/2 W±20% .14	
C-3	Pt. of C-1B	Trimmer - osc. Section		R-7	340292	150 ohm. Carbon	1/2 W±10% .17	
C-4	923554	.05 mf. Paper 400V	.25	R-8	340072	18 ohm. Carbon	1/2 W±10% .14	
C-5A	470310	220 mmf. } Multiple Condenser	.75	R-9	380532	1,500 ohm. Carbon	1/2 W±20% .16	
C-5B		.002 mf. }		R-10	340272	120 ohm. Carbon	1/2 W±10% .14	
C-5C		220 mmf. }						
C-5D		.005 mf. }						
C-6	923524	.02 mf. Paper 400V	.25	SP-1	180081	Speaker - PM - 4"	4.20	
C-7	923554	.05 mf. Paper 400V	.25	SW-1	510083	On - Off Switch - Radio	.25	
C-8	922200	.047 mf. Paper Molded 400V	.35	T-1	720055	1st I.F. Transformer	1.85	
C-9A	925212	50 mf. Electrolytic 150V	2.10	T-2	720033	2nd I.F. Transformer	2.15	
C-9B		50 mf. Electrolytic 150V						
L-1	700062	Loop Antenna & Back	1.75	T-3	734068	Output Transformer	1.95	
L-2	716064	Oscillator Coil	.95	V-1	800525	Vacuum Tube - 12BE6	1.80	
M-1	470672	Clock Movement		V-2	800524	Vacuum Tube - 12BA6	1.80	
P-1	583036	Line Cord & Plug		V-3	800523	Vacuum Tube - 12AT6	1.50	
R-1	Pt. of L-2	22,000 ohm. Carbon 1/2 W±10%	.14	V-4	800032	Vacuum Tube - 50C5	2.00	
R-2	351332	3.3 megohm. Carbon 1/2 W±20%		V-5	800526	Vacuum Tube - 35W4	1.25	
R-3	390186	500,000 ohm. Volume Control		X-1	500029	Appliance Outlet	.35	

CABINET PARTS LIST FOR (Model 695B)

MODEL 695B	DESCRIPTION	LIST PRICE
140430	Cabinet - (Mottled Br.)	3.40
140432	Cabinet - (Ivory)	6.00
470672	Clock Movement	17.95
460242	Crystal - Clock	.25
450124	Knob - Radio - (Mottled Br.)	.20
450123	Knob - Radio - (Ivory)	.15
460245	Switch Knob - Clock	
280181	Time Set Knob - Clock	
542069	Speed Nut - Crystal	.01



PRICES SUBJECT TO CHANGE WITHOUT NOTICE

Fig 2. DIAL CORD STRINGING MODEL 695B



MODEL 703B

DESCRIPTION

TYPE: Model 703B is a Single band superheterodyne receiver with a 3-speed automatic record changer.

FREQUENCY RANGE: 540-1620 kc.

TYPE OF TUBES:

Models 703B -- chassis 120097B

1-12BE6, converter

1-12BA6, i-f amplifier

1-12AT6, detector, a.v.c., a-f amplifier

1-50B5, power output

1-35W4, rectifier

POWER SUPPLY: 115 volts, 60 cycles a.c. only

POWER CONSUMPTION—50 watts.

GENERAL NOTES

1. This model is equipped with an automatic record changer that plays 33-1/3, 45 and 78 rpm records, using a cartridge type needle.
2. If replacements are made or the wiring disturbed in the r-f section of Model 703B, the receiver should be carefully realigned.
3. Model 703B has a self-contained antenna and does not require an additional antenna. For permanent installations, however, if it is desired to improve reception of weak stations, an additional outdoor antenna may be connected to the colored lead at the rear of the cabinet
4. The self-contained loop antenna has directional properties. It is important, therefore, once a station is tuned in, that the cabinet be rotated back and forth through quarter-turn and left at that position where maximum volume is obtained.

CONDITIONS FOR VOLTAGE AND RESISTANCE READINGS

1. Voltages indicated are positive d.c., resistances are in ohms, unless otherwise indicated.
2. Measurements made with voltohmmyst or equivalent.
3. Line voltage maintained at 120 volts a.c. for voltage measurements.
4. Socket connections are shown as bottom views, with measurements from pin to common negative.
5. Volume control at maximum; radio-phono switch in radio position; no signal applied for Model 703B measurements.
6. Nominal tolerance on component values makes possible a variation of $\pm 15\%$ in voltage and resistance readings.
7. On the diagrams, upper values are voltage; lower values are resistance. NC denotes no connection, K is kilohms, MBG megohms, INF. is infinity. Resistances marked * are measured to pin 7 of rectifier (B+).

ALIGNMENT INSTRUCTIONS — MODEL 703B

1. To position pointer, turn variable condenser fully closed and set pointer to reference mark at low-frequency end of c backplate.
2. Use isolation transformer if available. If not, connect a .1 mfd. condenser in series with low side of signal generator and B—.
3. Volume control should be at maximum position; radio-phono switch in radio position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated screw driver for adjusting.

MODEL 703B, Ch.
120097-B, 120108-B

STEP	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 mfd.	High side to grid (pin 7) of V1 (12BE6). Low side to chassis.	455 KC	Variable condenser fully open.	Across voice coil.	T2, T1	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 mfd. to reduce hum modulation.
2	200 mmf.	Form loop of several turns and radiate signal into receiver.	1620 KC	"	Across voice coil.	Trimmer C-4. (Osc.)	Adjust for maximum output.
3	200 mmf.	"	1400 KC	Tune for maximum output.	Across voice coil.	Trimmer C-3. (Ant.)	Adjust for maximum output.

950137

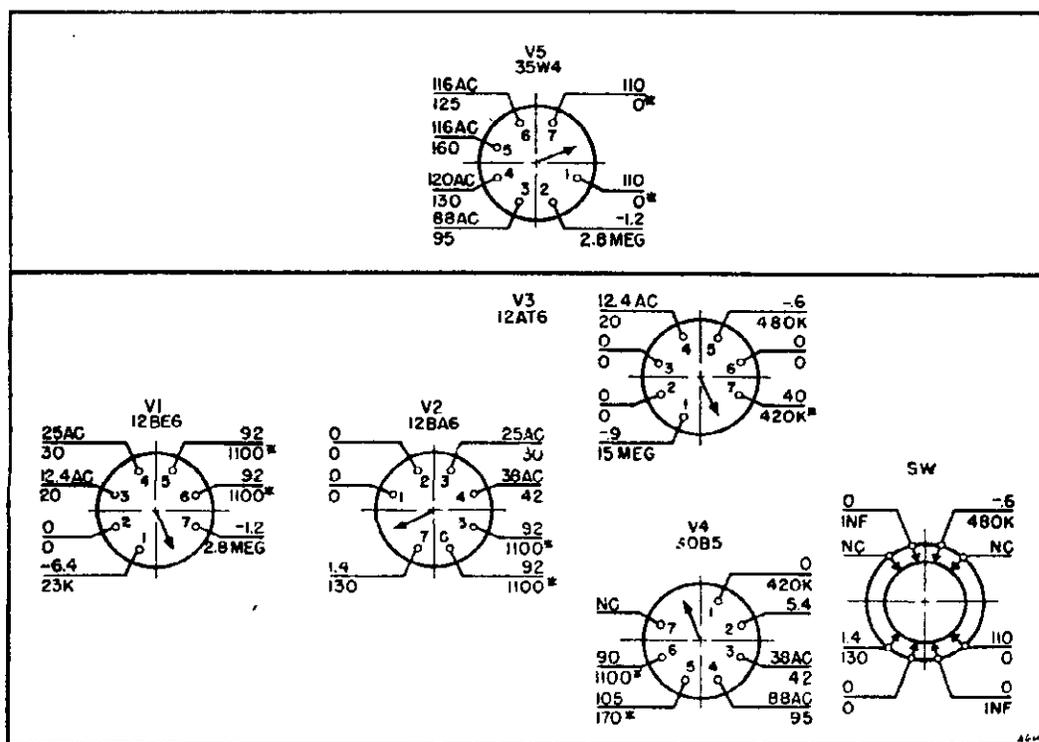


FIG. 2—VOLTAGE AND RESISTANCE CHECK CHART (CHASSIS 120097B)

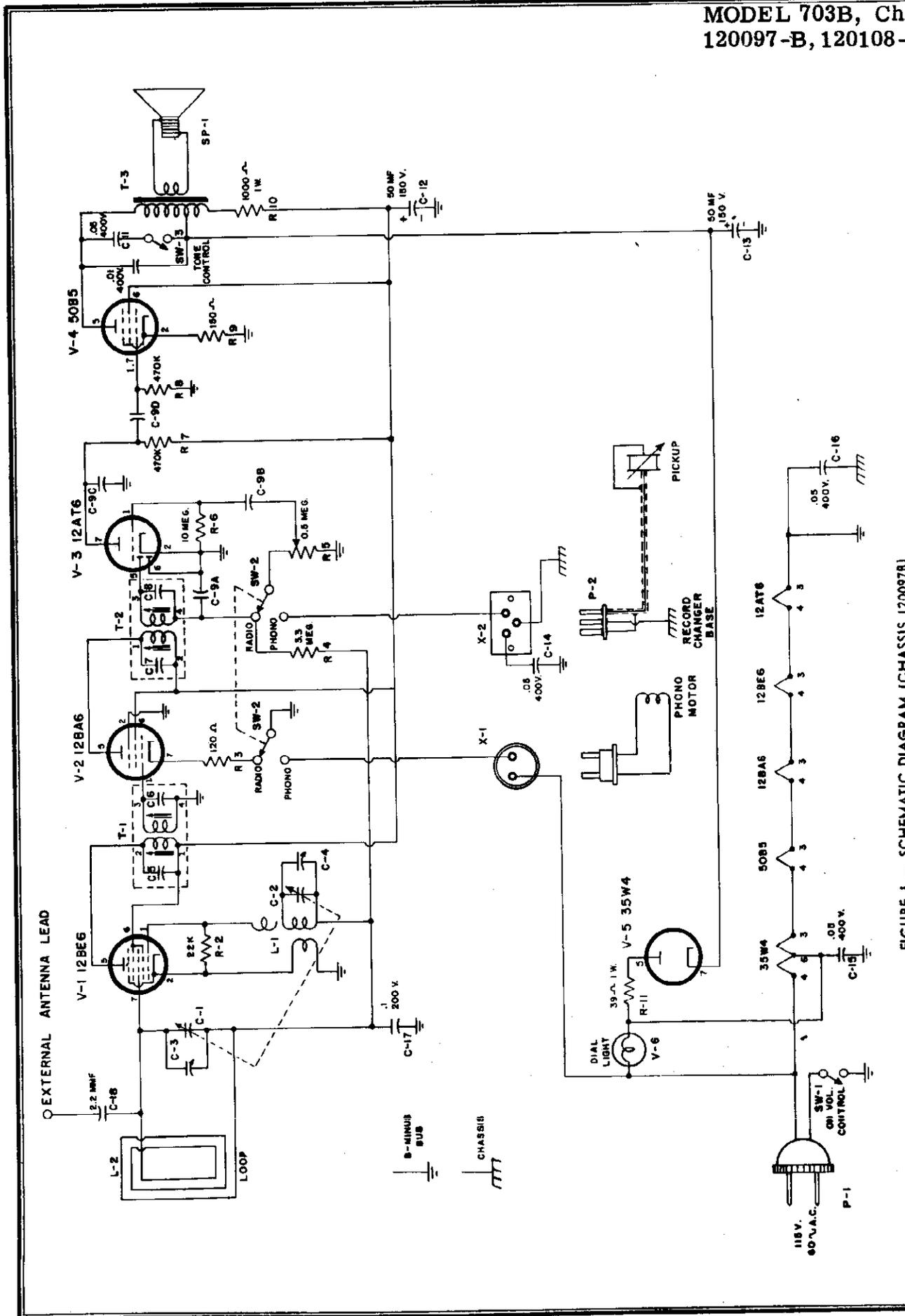


FIGURE 1 - SCHEMATIC DIAGRAM (CHASSIS 120097B)

MODEL 703B, Ch.
120097-B, 120108-B

CHASSIS PARTS LIST (CHASSIS - 120097-B)

Symbol	Part No.	DESCRIPTION	Price List	Symbol	Part No.	DESCRIPTION	Price List
C-1 } C-2 } C-3 } C-4 } C-5 } C-6 } C-7 } C-8 }	900066	Variable Condenser-Tuning Variable Condenser-Oscillator	2.75	R-2	Pt. of L-1	22,000 Ohm Carbon $\frac{1}{2}W \pm 10\%$	
				R-3	340272	120 Ohm Carbon $\frac{1}{2}W \pm 10\%$	.14
				R-4	351332	3.3 Megohm Carbon $\frac{1}{2}W \pm 20\%$	.14
				R-5	510069-1	500,000 Ohm Volume Control	3.25
				R-6	351452	10 Megohm Carbon $\frac{1}{2}W \pm 20\%$	.14
				R-7	351132	470,000 Ohm Carbon $\frac{1}{2}W \pm 20\%$	.14
				R-8	351132	470,000 Ohm Carbon $\frac{1}{2}W \pm 20\%$	.14
				R-9	340292	150 Ohm Carbon $\frac{1}{2}W \pm 10\%$	.17
				R-10	370492	1,000 Ohm Carbon $1W \pm 10\%$	.16
				R-11	370152	39 Ohm Carbon $1W \pm 10\%$	.17
C-9A } C-9B } C-9C } C-9D }	470310	220 MMF) 2000 MMF) Multiple Condenser 220 MMF) 5000 MMF)	.75	SP-1	180052	PM Speaker - 5"	4.90
C-11	923554	.05 MF Paper 400V	.25	SW-1	Pt. of R-5	On-Off Switch	
C-12 } C-13 }	925163	50 MF Electrolytic 150V	1.45	SW-2	Pt. of R-5	Radio-Phono Switch	
C-14	923554	.05 MF Paper 400V	.25	SW-3	510068	Tone Control Switch	.30
C-15	923554	.05 MF Paper 400V	.25	T-1	720055	1st L.F. Transformer	1.85
C-16	923554	.05 MF Paper 400V	.25	T-2	720055	2nd L.F. Transformer	1.85
C-17	923315	.1 MF Paper 200V	.25	T-3	734055	Output Transformer	1.30
C-10	923713	.001 MF Paper 600V (Chassis 120108B only)	.25	V-1	800525	Vacuum Tube - 12BE6	
C-10	923514	.01 MF Paper 400V (Chassis 120097B only)	.25	V-2	800524	Vacuum Tube - 12BA6	
C-18	Pt. of L-2	2.2 MMF Ceramic		V-3	800523	Vacuum Tube - 12AT6	
L-1	716061	Oscillator Coil	.95	V-4	800527	Vacuum Tube - 50B5	
L-2	700064	Loop	1.29	V-5	800526	Vacuum Tube - 35W4	
P-1	583028P	Line Cord & Plug	.60	V-6	807000	Dial Light	.09
P-2	505015	Pickup Plug	.10	X-1	585051	Cable & Socket Assy. - Motor	.45
				X-2	508003	Pickup Socket	.10

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

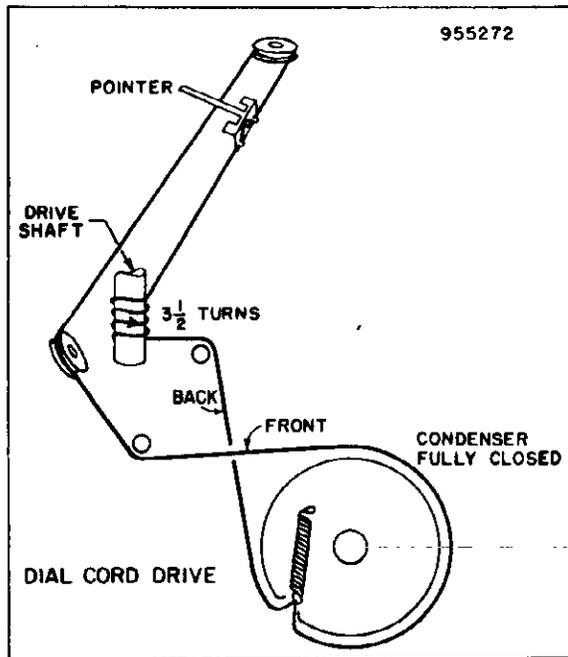
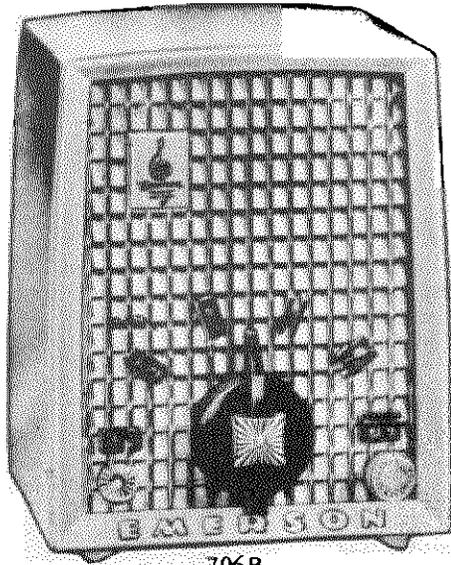


FIGURE 3. DIAL CORD STRINGING, MODEL 703B

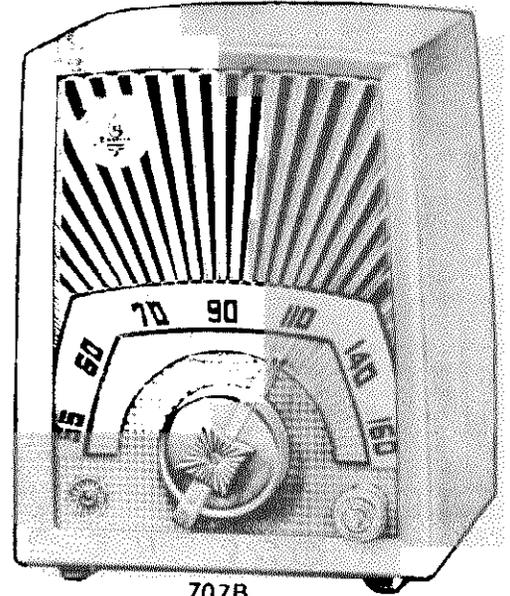
CABINET PARTS LIST (MODEL 703B)

Part No.	DESCRIPTION	PRICE LIST
140438	Cabinet	90.00
470092	Lid Support	.50
819063	Record Changer (3-Speed)	65.00
960143	Cartridge for Record Changer	8.20
960147	Needle for Cartridge	1.00
450099S	Knob Assembly	.30
450064	Knob - Control	.25
450063	Knob - Radio - Phono	.25
587011	Spring Insert - Knobs	.01
520156	Glass Dial	.25
410863	Dial Holder	.01
700064	Loop Antenna	1.29

Prices subject to change without notice.



706B



707B

DESCRIPTION

TYPE: Single-band (AM) superheterodyne.
 FREQUENCY RANGE: Broadcast 540-1620 kc
 TYPE OF TUBES:

- V-1--12BE6, converter
- V-2--12BA6, i-f amplifier
- V-3--12AT6, or 12AV6, detector, a.v.c. a-f amplifier
- V-4--50C5, or 50B5 power output
- V-5--35W4, rectifier

POWER SUPPLY: A.C. or D.C.

VOLTAGE RATING: 105-125 volts.

POWER CONSUMPTION: 30 watts.

CURRENT DRAIN: 0.24 amp. at 117 volts a.c.

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. In operating the receiver on d.c., it may be necessary to reverse the line plug for correct polarity.
3. Model 706B has a self-contained antenna and does not require additional antenna connections.
4. The self-contained bar type antenna operates at maximum efficiency when its position is pointing to the broadcasting source. It is important, therefore, once the station is tuned in, to rotate the cabinet back and forth through a quarter of a circle (90 degrees), leaving it at the position where the station is received with maximum volume.

ALIGNMENT INSTRUCTIONS

Use isolation transformer if available. If not, connect a .1 mfd. condenser in series with low side of signal generator and E. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain output reading. Use an insulated screw driver for adjusting.

STEP	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 mfd.	High side to grid (pin 7) of V1 (12BE6). Low side to B -	455 KC	Variable condenser fully open.	Across voice coil.	T2, T1 (A3, A4, A1, A2)	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 mfd. to reduce hum modulation.
2		Form loop of several turns and radiate signal into receiver	1620 KC	"	Across voice coil.	Trimmer C-4 (Osc.)	Adjust for maximum output.
3		"	1400 KC	Tune for maximum output.	Across voice coil.	Trimmer C-2 (Ant.)	Adjust for maximum output.

MODELS 706B, 707B,

Ch. 120156-B CONDITIONS FOR VOLTAGE AND RESISTANCE READINGS

1. Voltages indicated are positive d.c., resistances are in ohms, unless otherwise indicated.
2. Measurements made with volttohyst or equivalent.
3. Line voltage maintained at 117 volts a.c. for voltage measurements.
4. Socket connections are shown as bottom views, with measurements from pin to common negative.
5. Volume control at maximum; no signal applied for voltage measurements.
6. Nominal tolerance on component values makes possible a variation of $\pm 15\%$ in voltage and resistance readings.
7. On the diagram, upper values are voltage; lower values are resistance. NC denotes no connection, K is kilohms, MEG is megohms. Resistances marked * are measured to pin 7 of rectifier (B+).

VOLTAGE READINGS FOR CHASSIS 120156-B

SYMBOL	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V-1	12BE6	-7.6	0	12 AC	24 AC	95	95	-.5
V-2	12BA6	0	0	24 AC	36 AC	95	95	1.3
V-3	12AT6*	-1	0	0	12 AC	-.65	0	45
V-4	50C5	6.5	0	36 AC	85 AC	0	95	120
V-5	35W4	N.C.	N.C.	85 AC	117 AC	110 AC	112 AC	130

RESISTANT READINGS FOR CHASSIS 120156-B

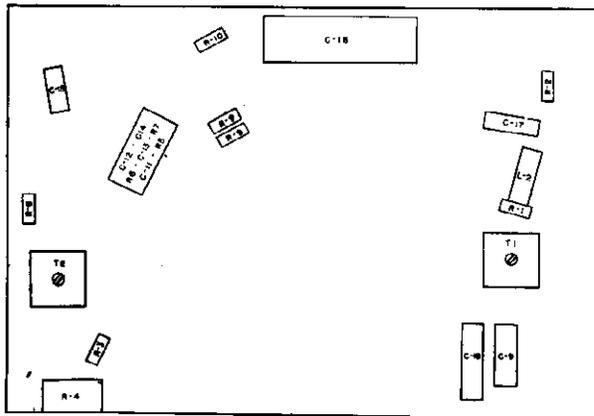
SYMBOL	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V-1	12BE6	23K	.5	12	24	1500*	1500*	4 MEG
V-2	12BA6	18	0	24	36	1500*	1500*	120
V-3	12AT6*	6 MEG.	0	0	12	500K	0	470*
V-4	50C5*	150	470 K	36	90	470K	1500*	210*
V-5	35W4	N.C.	N.C.	90	120	135	115	0*

* In some models 12AV6 may be used as alternate for 12AT6.

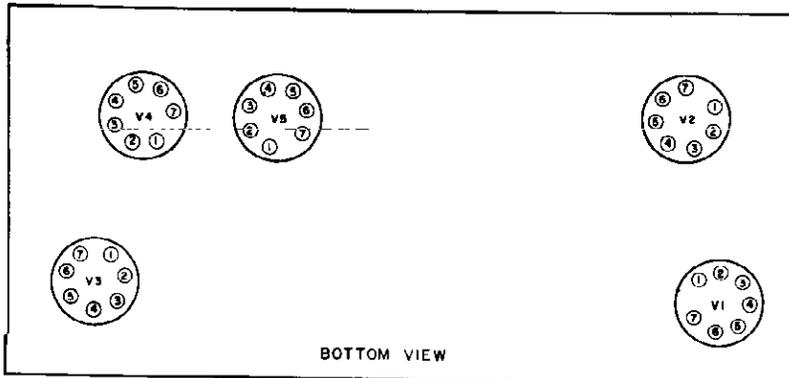
* The 50C5 may be substituted with a 50B5 but only when the alternate circuit is used shown in schematic diagram.

VOLTAGE AND RESISTANCE READING INSTRUCTIONS

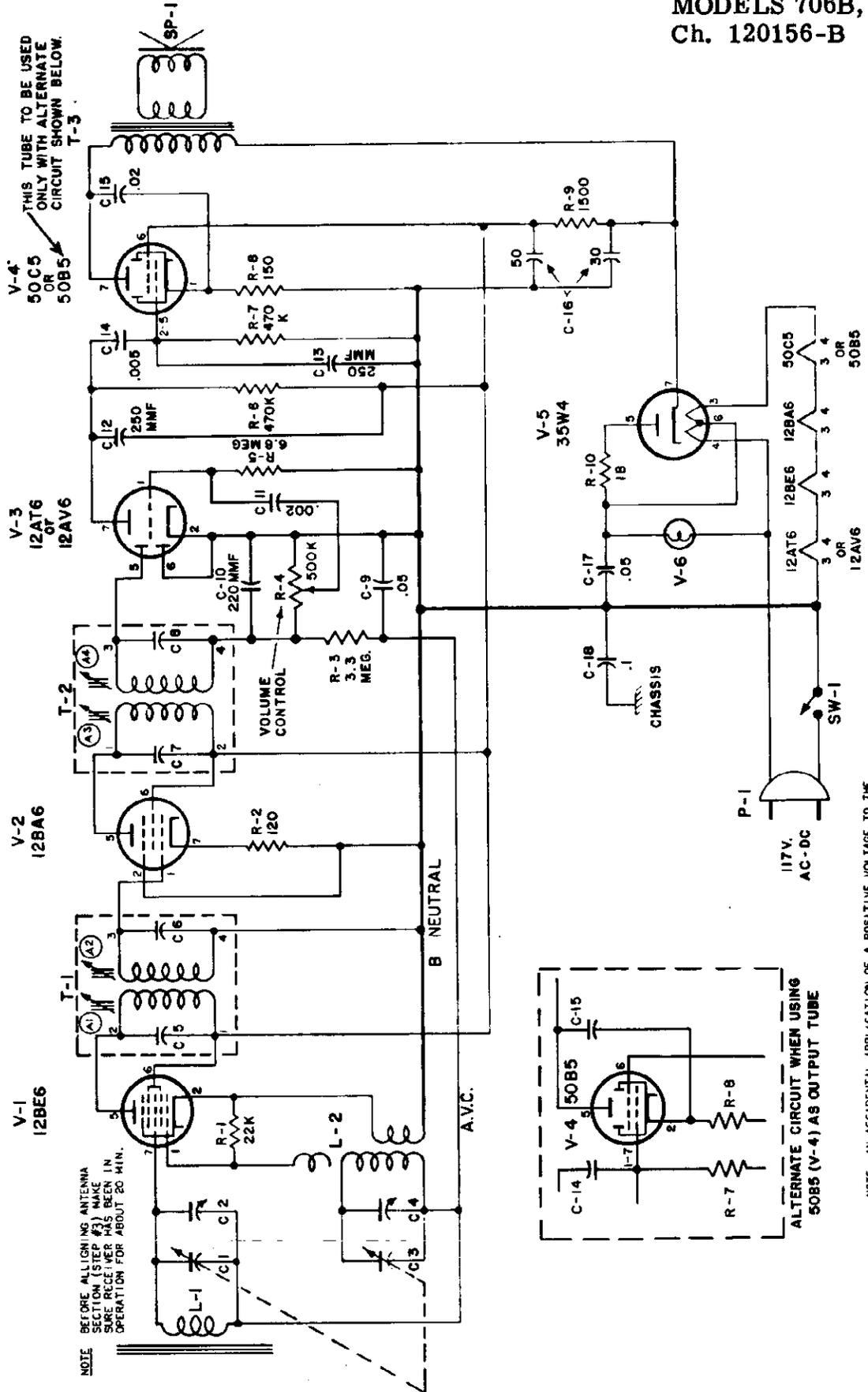
1. Line voltage maintained at 115 volts for voltage readings.
2. D.C. and A.C. voltages measured with V.T.V.M. All measurements measured with band switch on broadcast.
3. Measured values are from socket pin to B neutral. Volume control at maximum, no signal applied for voltage measurements.



BOTTOM VIEW



BOTTOM VIEW



MODELS 706B, 707B,
Ch. 120156-B

CHASSIS PARTS LIST (Chassis 120156-B)

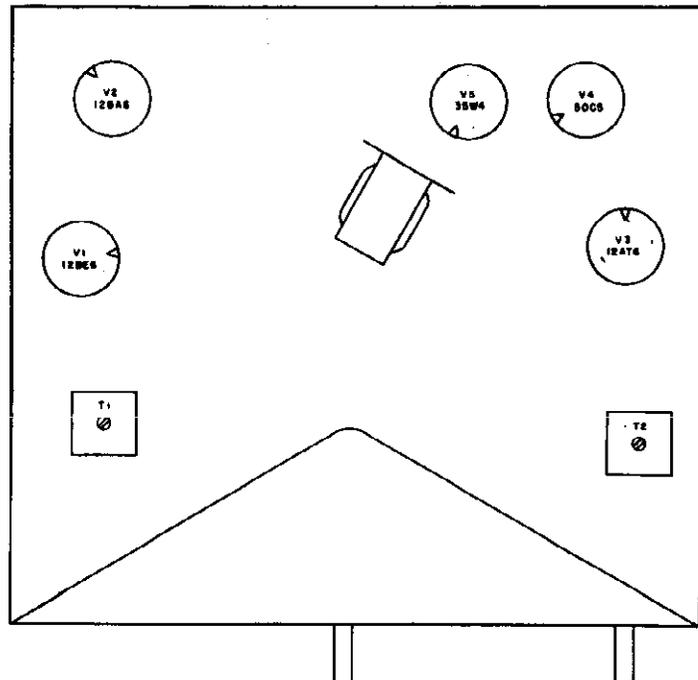
SYM-BOL	PART NO.	DESCRIPTION	LIST PRICE	SYM-BOL	PART NO.	DESCRIPTION	LIST PRICE
C-1	900086	Variable Capacitor - R.F. Sec.	3.25	R-1	Pt. of L-2	22,000 ohm Carbon	
C-2	PT. of C-1	Trimmer R.F. Sec.		R-2	340272	120 ohm Carbon 1/2W ±10%	.14
C-3	PT. of C-1	Variable Capacitor - Osc. Sec.		R-3	351332	3.3 megohm Carbon 1/2W ±20%	.14
C-4	PT. of C-1	Trimmer Osc. Sec.		R-4	390195	500,000 ohm Volume Control	1.30
C-5	PT. of T-1			R-5	Part of	6.8 megohm R.C. Coupling Unit	1.05
C-6	PT. of T-1			R-6	of	470,000 ohm	
C-7	PT. of T-2			R-7	923024	470,000 ohm	
C-8	PT. of T-2			R-8	340292	150 ohm Carbon 1/2W ±10%	.17
C-9	923554	.05 mfd Paper 400 V	.25	R-9	380532	1,500 ohm Carbon 1W ±20%	.16
C-10		220 mmf		R-10	340072	18 ohm Carbon 1/2W ±10%	.14
C-11	Part of	.002 mf		SP-1	180084	Speaker - P. M. - 4" (with Output Trans.)	5.95
C-12	of	250 mmf		SW-1	Pt. of R-4	On-Off Switch	
C-13	923024	250 mmf		T-1	720033	1st I.F. Transformer	
C-14		.005 mf		T-2	720033	2nd I.F. Transformer	
C-15	923524	.02 mfd Paper 400 V	.25	T-3	Pt. of SP-1	Output Transformer	2.15
C-16	925218	.30 mf } Electrolytic 150 V	1.85	V-1	800525	Vacuum Tube - 12BE6	2.15
C-17	923554	.50 mf }		V-2	800524	Vacuum Tube - 12BA6	
C-18	923315	.05 mfd Paper 400 V	.25	V-3	800523	Vacuum Tube - 12AT6	
		.1 mfd Paper 200 V	.25	V-3	or 800034	Vacuum Tube - 12AV6	
L-1	700066	Loop Antenna Assembly - Ferrite	1.85	V-4	800032	Vacuum Tube - 50C5	
L-2	716071	Oscillator Coil	.95	V-4	or 800527	Vacuum Tube - 50B5	
P-1	583037P	Line Cord & Plug		V-5	800526	Vacuum Tube - 35W4	
				V-6	807000	Pilot Light	

Prices subject to change without notice.

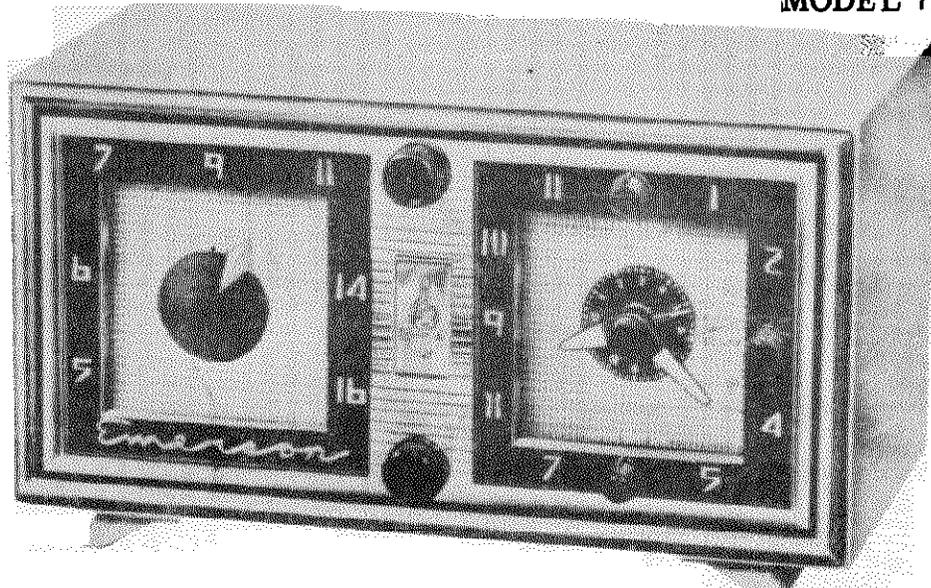
CABINET PARTS LIST 706B - 707B

PART NUMBERS		DESCRIPTION	LIST PRICE
MODEL 706B	MODEL 707B		
140450	140450	Cabinet Body - Walnut	1.70
140450A	140450A	Cabinet Body - Ivory	2.50
140450B	140450B	Cabinet Body - Grey	2.50
	140450C	Cabinet Body - Maroon	2.50
140450D	140450D	Cabinet Body - Pink	2.50
140450E	140450E	Cabinet Body - Gunmetal	2.50
140450F	140450F	Cabinet Body - Yellow	2.50
140451		Front Plate - Sprayed Gold	.60
	140452	Front Plate - Gold & Silver	1.60
	140452A	Front Plate - Gold and Ruby	1.90
460274		Knob Tuning	.50
	460314	Knob Tuning	.50
460311	460311	Knob - Volume	.10
542280	542280	Spring - Knob	.02
587329	587329	Fastener - Front to Body	.02
575839	575839	Cabinet Back	.10
575877		Baffle	.10
	575871	Baffle	.40
180084	180084	Speaker - P.M. 4" (with Output Transformer)	5.95
583037P	583037P	Line Cord & Plug	.80
807000	807000	Pilot Light	.50
700066	700066	Loop Antenna Assembly - Ferrite	1.85

Prices subject to change without notice.



TOP VIEW



DESCRIPTION

TYPE: Single-band superheterodyne, with clock-timer and appliance outlet.

FREQUENCY RANGE: 540-1620 kc.

TYPE OF TUBES:

- V-1 - 12BE6, oscillator mixer
- V-2 - 12BA6, first i-f amplifier
- V-3 - 12AT6, detector, a-f amplifier
- V-4 - 50C5, A. F. output
- V-5 - 35W4, rectifier

POWER SUPPLY: A.C. 60 cycles only

VOLTAGE RATING: 115 volts.

POWER CONSUMPTION: 32 watts.

Pointer will be correctly set when tuning gang is fully open and notch or rim of pointer pulley is in line with mark pointer pulley mounting bracket. (See Figure 2.) Use isolation transformer if available. If not, connect a 0.1 mfd. condenser in series with low side signal generator and chassis. Volume control should be at maximum position; output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

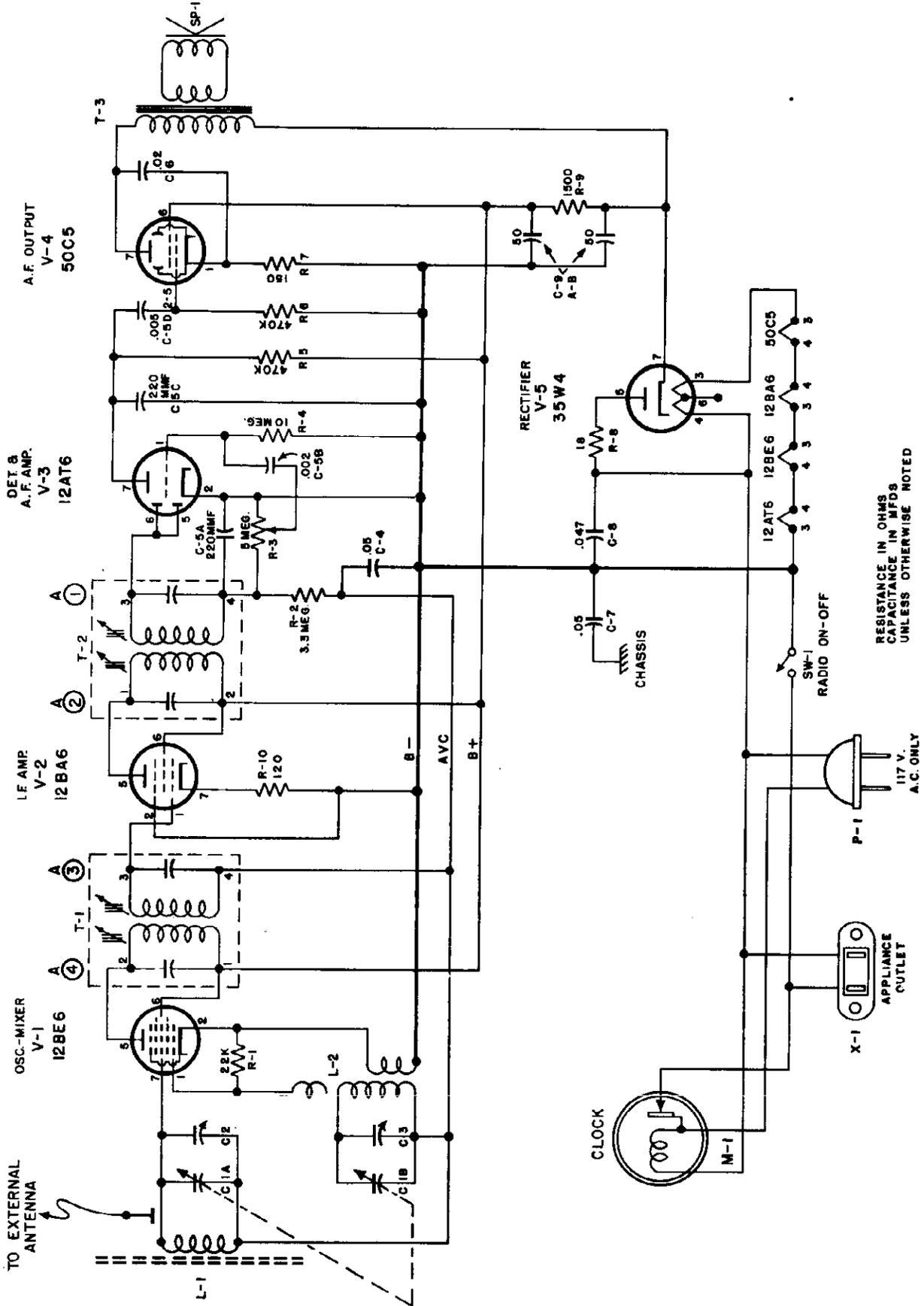
ALIGNMENT

GENERAL NOTES

1. If replacements are made or the wiring disturbed in r-f section of the circuit, the receiver should be fully realigned.
2. This model has a self-contained antenna and does not require additional antenna connections. For permanent home installations, however, if it is desired to improve reception of weak stations, an additional outdoor antenna may be used. For this purpose a lead has been brought out in the rear. Use no ground connection.
3. The self-contained bar loop antenna operates at maximum efficiency when it is pointed toward the broadcasting source. It is important, therefore, once station is tuned in, to rotate the cabinet back and forth through a quarter of a circle (90 degrees), leaving it at the position where the station is received with maximum volume.
4. Appliance outlet and radio on-off switch located in back of chassis. For information on clock applications see instructions supplied with set.

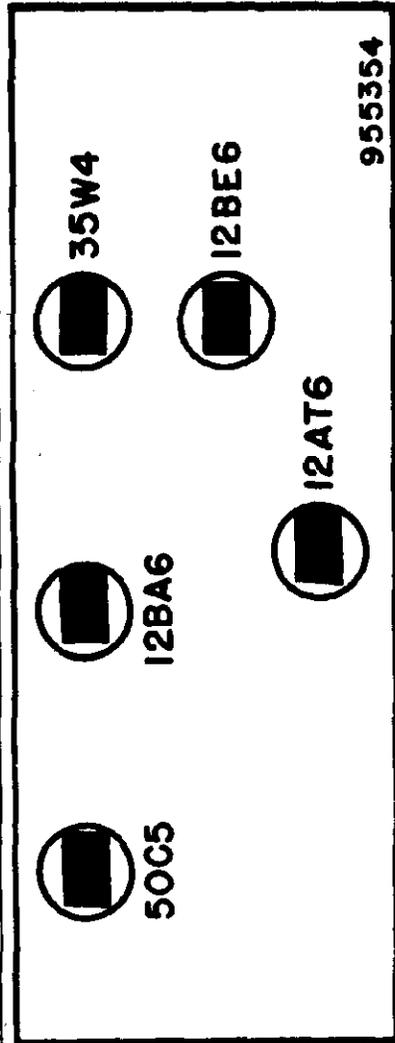
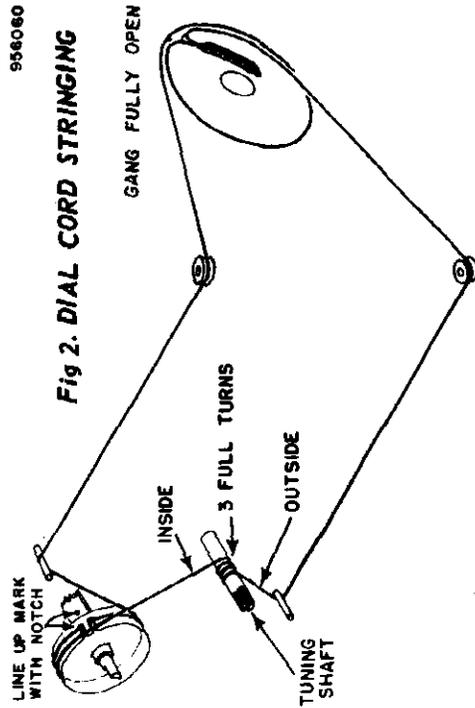
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	METER OUTPUT	ADJUST	REMARKS
1	0.001 mfd.	High side to stator of rear section of tuning condenser. Low side to chassis.	455 kc	Variable condenser fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output.
2	200 mmfd.	High side to external antenna lead. Low side to external ground lead.	1620 kc	Variable condenser fully open.	Across voice coil.	A5	Adjust for maximum output.
3	200 mmfd.	High side to external antenna lead. Low side to external ground lead.	1400 kc	Tune for maximum output.	Across voice coil.	A6	Adjust for maximum output.

MODEL 718B,
Ch. 120150-B



RESISTANCE IN OHMS
CAPACITANCE IN MFDS
UNLESS OTHERWISE NOTED

CHASSIS NO. 120150-B PART NO. 950206
Fig. 1 SCHEMATIC DIAGRAM,



VOLTAGE READING FOR CHASSIS 120150-B

SYMBOL	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V-1	12BE6	-8.5 DC.	0	24 AC	12 AC	90 DC	90 DC	-6 DC.
V-2	12BA6	-6 DC.	0	24 AC	36 AC	90 DC	90 DC	1 DC
V-3	12AT6	-7DC.	0	0	12 AC	-8 DC.	-8 DC.	42 DC
V-4	50C5	5.6 DC.	0	80 AC	36 AC	0	90 DC	110 DC
V-5	35W4	0	0	80 AC	117 AC	115 AC.	110 AC	120 DC

RESISTANCE READING FOR CHASSIS 120150-B

SYMBOL	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V-1	12BE6	2.4 K	0.4	26	14	*1600	*1600	4 MEG.
V-2	12BA6	4 MEG.	0	26	38	*1600	*1600	130
V-3	12AT6	10 MEG.	0	0	14	.5 MEG.	.5 MEG.	*.5 MEG.
V-4	50C5	160	.5 MEG.	90	38	.5 MEG.	*1600	*200
V-5	35W4	N.C.	N.C.	90	125	150	120	*0

* with reference to Pin #7, 35W4.

VOLTAGE AND RESISTANCE READING INSTRUCTIONS

1. Voltage readings are in volts and resistance readings in ohms unless otherwise specified.
2. D-C voltage measurements are at 20,000 ohms per volt; a-c voltage measured at 1,000 ohms per volt.
3. Measured values are from socket pin to common negative, unless otherwise specified.
4. Line voltage maintained at 117 volts, 60 cycles for voltage readings.
5. Normal tolerance on component values makes possible a variation of $\pm 15\%$ in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MODEL 718B

Ch. 120150-B

CABINET PARTS LIST FOR (Model 718B)

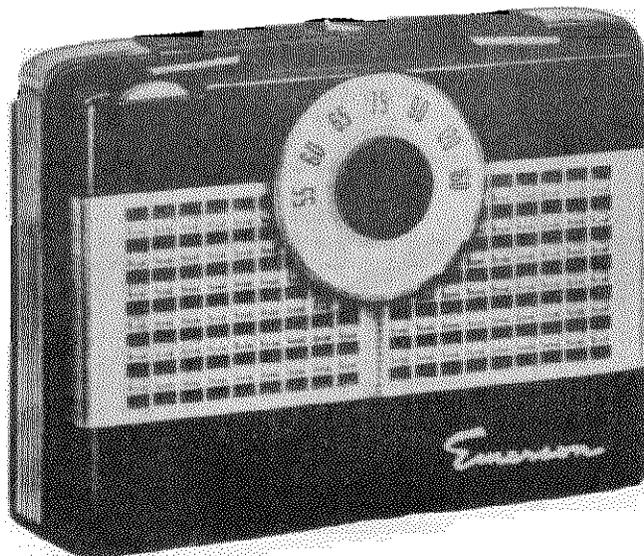
MODEL 718B	DESCRIPTION	LIST PRICE
140472	Cabinet - Ivory	4.20
140472A	Cabinet - Black	4.20
140472B	Cabinet - Maroon	4.20
140472C	Cabinet - Blue	4.20
140472D	Cabinet - Grey	4.20
450154	Knob Radio - Black	████████

460313	Cabinet - Front	3.25
592031	Grille Cloth Assembly	.20
460328	Switch Knob - Clock	
280195	Time Set Knob - Clock	.25
525059	Pointer	.03
541170	Spring - Pointer	
575895	Back	.25
470699	Clock Movement	

CHASSIS PARTS LIST (Chassis 120150-B)

SYM-BOL	PART NO.	DESCRIPTION	LIST PRICE	SYM-BOL	PART NO.	DESCRIPTION	LIST PRICE	
C-1A	900084	Variable Capacitor - r. f. Section	3.30	R-4	351452	10 megohm. Carbon	.14	
C-1B		Variable Capacitor - osc. Section			R-5	351132	470,000 ohm. Carbon	.14
C-2	Pt. of C-1A	Trimmer - r. f. Section		R-6	351132	470,000 ohm. Carbon	.14	
C-3	Pt. of C-1B	Trimmer - osc. Section		R-7	340292	150 ohm. Carbon	.10	
C-4	923554	.05 mf. Paper	.25	R-8	340072	18 ohm. Carbon	.14	
C-5A	470310	220 mmf. } Multiple Condenser	.75	R-9	380532	1,500 ohm. Carbon	.16	
C-5B		.002 mf. }		R-10	340272	120 ohm. Carbon	.14	
C-5C		220 mmf. }			SP-1	.180087	Speaker - PM - 4"	3.00
C-5D		.005 mf. }			SW-1	510083	On - Off Switch - Radio	.25
C-6		.02 mf. Paper		400V	T-1	720055	1st I.F. Transformer	1.85
C-7	.05 mf. Paper	400V	T-2	720033	2nd I.F. Transformer	1.80		
C-8	.047 mf. Paper Molded	400V	T-3	734068	Output Transformer	1.50		
C-9A	50 mf. Electrolytic	150V	V-1	800525	Vacuum Tube - 12BE6			
C-9B	50 mf. Electrolytic	150V	V-2	800524	Vacuum Tube - 12BA6			
L-1	700071	Bar Loop Antenna	2.15	V-3	800523	Vacuum Tube - 12AT6		
L-2	716064	Oscillator Coil	.95	V-4	800032	Vacuum Tube - 50C5		
M-1	470699	Clock Movement	████████	V-5	800526	Vacuum Tube - 35W4		
P-1	583036	Line Cord & Plug	1.30	X-1	500034	Appliance Outlet	.25	
R-1	Pt. of L-2	22,000 ohm. Carbon	.14	X-1	or 500029	Appliance Outlet	.35	
R-2	351332	3.3 megohm. Carbon						
R-3	390206	500,000 ohm. Volume Control	.90					

PRICES SUBJECT TO CHANGE WITHOUT NOTICE



DESCRIPTION

MODEL 704

TYPE: Portable (battery operated) superheterodyne.

FREQUENCY RANGE: 540-1600 kc.

TYPE OF TUBES:

- 1-1R5, converter
- 1-1U4, i-f amplifier
- 1-1U5, detector, a.v.c., a-f amplifier
- 1-3V4, power output

POWER SUPPLY: "A" and "B" batteries.

VOLTAGE RATING:

- "A" Battery-1.5 volts
- "B" Battery-67.5 volts

CURRENT DRAIN:

- "A" Battery-0.20 amp.
- "B" Battery-0.0075 amp.

GENERAL NOTES

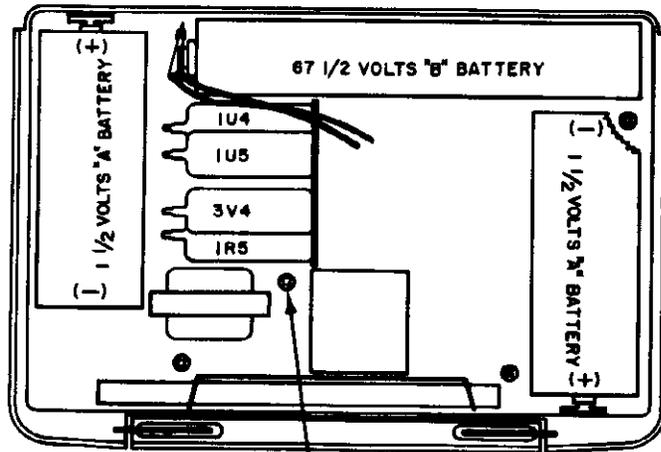
1. If replacements are made in the r-f section of the circuit, the receiver should be carefully realigned.
2. The receiver has a self-contained antenna and does not require additional antenna or ground connection.
3. The self-contained bar type antenna has directional properties. It is important, therefore, once the station is tuned in, to rotate the cabinet back and forth through a quarter of a circle (90 degrees), leaving it at the position where the station is received at maximum volume.
4. Remove batteries as soon as they are exhausted.
5. This receiver uses one Emerson 67.5 volt "B" battery No. EM 216 dimensions $5\frac{1}{4}$ " x 1" x $1\frac{7}{8}$ " and two Emerson 1.5 volt "A" batteries No. EM 2 dimensions are $1\frac{3}{8}$ " dia. and 4" length.

ALIGNMENT INSTRUCTIONS

Volume control should be at maximum; output of signal generator should be no higher than necessary to obtain an output reading.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 mfd.	High side to pin 6 (grid) of 1R5. Low side to chassis.	455 KC.	Tuning condenser fully open.	Across voice coil.	T2 and T1	Adjust for maximum output.
2		Loop Ant connected to signal gen. and placed near bar loop ant.	600 KC.	Tuning condenser fully closed.	Across voice coil.	Osc. slug in L-2	Adjust for maximum output.
3		Loop	1620 KC.	Tuning condenser fully open.	Across voice coil.	C4 (osc. trimmer)	Fashion loop of several turns of wire and radiate signal in loop of receiver. Adjust for maximum output.
4		Loop	1400 KC.	Tune for maximum output.	Across voice coil.	C3 (Ant. trimmer)	Adjust for maximum output.

MODEL 704,
Ch. 120154-B



CHASSIS MOUNTING SCREWS (4)
BATTERY & TUBE LOCATIONS 958875

CONDITIONS FOR VOLTAGE AND RESISTANCE READINGS

1. Voltages indicated are positive d.c., resistances in ohms, unless otherwise noted.
2. Measurements made with voltohmmyst or equivalent.
3. All measurements taken between points and chassis, unless otherwise indicated.
4. Volume control at maximum, no signal applied, for voltage measurements.
5. Nominal tolerance in component values makes possible a variation of $\pm 15\%$ in readings.
6. K is Kilohms, MEG in mehojms. Resistance marked * are measured to B + (Pin #3, V-4).

RESISTANCE READINGS FOR CHASSIS 120154-B

SYMBOL	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V-1	1R5	0	17*	15K*	110K	0	4M	3.3
V-2	1U4	0	17*	0*	0*	0	5M	3.3
V-3	1U5	0	1M*	4.7M*	1M	1M	10M	3.3
V-4	3V4	3.3	350*	0*	470	0	3M	3.3

VOLTAGE READINGS FOR CHASSIS 120154-B

SYMBOL	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V-1	1R5	0	58	38	- 9	0	- .4	1.3
V-2	1U4	0	58	58	58	0	0	1.3
V-3	1U5	0	19	16	- .7	- .8	- .1	1.3
V-4	3V4	1.3	56	58	- 3.8	0	- 3.8	1.3

All measurements taken between points and chassis unless otherwise indicated.
* Measured to B + (Pin #3, V-4).

• For best results replacements should be made with genuine Emerson parts and genuine Emerson tubes.

MODEL 704,
Ch. 120154-B

CHASSIS PARTS LIST (Chassis 120154-B)

Sym- bol	Part No.	Description	List Price	Sym- bol	Part No.	Description	List Price	
C-1	900085	Variable Capacitor - R.F. Section	3.05	R-4	351372	4.7 megohm Carbon	.14	
C-2	Part of C-1	Trimmer - R. F. Section		R-5	340892	47,000 ohm Carbon	.17	
C-3	Part of C-1	Variable Capacitor - Oscillator Section		R-6	390194	1 megohm Volume Control	1.65	
C-4	Part of C-1	Trimmer - Oscillator Section		R-7	351452	10 megohm Carbon	.14	
C-5	920507	.05 mf Paper	.30	R-8	351372	4.7 megohm Carbon	.14	
C-6	920509	.01 mf Paper	.25	R-9	341212	1 megohm Carbon	.14	
C-7	920140	.003 mf Paper	.25	R-10	351332	3.3 megohm Carbon	.14	
C-8	915032	3.3 mmf Ceramic	.10	R-11	340412	470 ohm Carbon	.14	
C-9	928013	100 mmf Ceramic	.25	SP-1	180085	Speaker - PM - 3 1/2"	4.90	
C-10		200 mmf		SW-1	Part of	On - Off Switch		
C-11	Part of	Multiple Condenser Ass'y	.95	SW-2	390194	On - Off Switch	.95	
C-12	Part No.							
C-13	928034							
C-14								
C-15	920550	.002 mf Paper	.20	T-1	720152	1st I.F. Transformer	2.05	
C-16	925217	10 mf Electrolytic	1.20	T-2	720152	2nd I.F. Transformer	2.05	
L-1	700069	Bar Antenna	2.15	T-3	734076	Output Transformer	1.75	
L-2	716072	Oscillator Coil	1.15	V-1	810110	Vacuum Tube - 1R5		
R-1	350972	100,000 ohm Carbon	.17	V-2	800017	Vacuum Tube - 1U4		
R-2	340772	15,000 ohm Carbon	.14	V-3	800019	Vacuum Tube - 1U5		
R-3	351332	3.3 megohm Carbon	.14	V-4	800018	Vacuum Tube - 3V4		

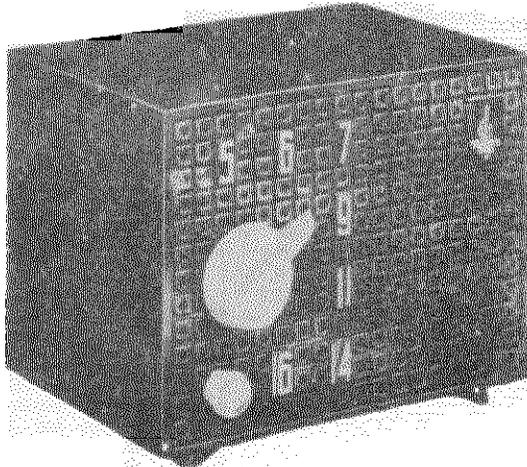
Prices subject to change without notice.

CABINET PARTS LIST (Model 704)

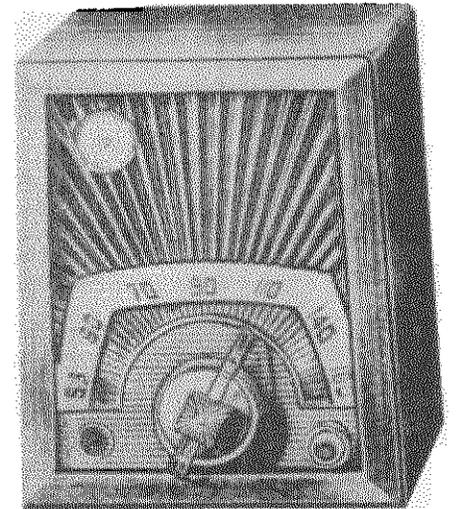
PART NO.	DESCRIPTION	LIST PRICE	PART NO.	DESCRIPTION	LIST PRICE
Model 704	Cabinet	5.80	460291	Dial Knob	.70
140461	Cabinet Front - with Handle	3.50	450139	Knob - Volume	.20
140462	Cabinet Back	1.50	411241	Metal Ring - Knob	.03
460286	Handle Plastic	.80	542280	Compression Spring - Knob	.02
411239	Handle Ring	.05	460286	Emerson Script	.50

Prices subject to change without notice.

MODELS 708B, Ch. 120165-F
713B, Ch. 120156-B



MODEL
708B
CHASSIS - 120165-B



MODEL
713B
CHASSIS - 120156-B

DESCRIPTION

TYPE: Single-band (AM) superheterodyne.

FREQUENCY RANGE: Broadcast 540-1620 kc

TYPE OF TUBES:

V-1--12BE6, converter

V-2--12BA6, i-f amplifier

V-3--12AT6, detector, a.v.c. a-f amplifier

V-4--50C5, power output

V-5--35W4, rectifier

POWER SUPPLY: A.C. or D.C.

VOLTAGE RATING: 105-125 volts.

POWER CONSUMPTION: 30 watts.

CURRENT DRAIN: 0.24 amp. at 117 volts a.c.

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. In operating the receiver on d.c., it may be necessary to reverse the line plug for correct polarity.
3. Models 708B and 713B have a self-contained antenna and do not require additional antenna connections.
4. The self-contained bar type antenna operates a maximum efficiency when its position is pointing to the broadcasting source. It is important, therefore once the station is tuned in, to rotate the cabinet back and forth through a quarter of a circle (90 degrees), leaving it at the position where the station is received with maximum volume.

MODELS 708B, Ch. 120165-B;
713B, Ch. 120156-B

CONDITIONS FOR VOLTAGE AND RESISTANCE READINGS

1. Voltages indicated are positive d.c., resistances are in ohms, unless otherwise indicated.
2. Measurements made with voltohmmyst or equivalent.
3. Line voltage maintained at 117 volts a.c. for voltage measurements.
4. Socket connections are shown as bottom views, with measurements from pin to common negative.
5. Volume control at maximum; no signal applied for voltage measurements.
6. Nominal tolerance on component values makes possible a variation of $\pm 15\%$ in voltage and resistance readings.
7. NC denotes no connection, K is kilohms, MEG is megohms. Resistances marked * are measured to pin 7 of rectifier (B+).

ALIGNMENT INSTRUCTIONS

1. Use isolation transformer if available. If not, connect a .1 mfd. condenser in series with low side of signal generator and B -
2. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated screw driver for adjusting.

STEP	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 mfd.	High side to grid (pin 7) of V1 (12BE6). Low side to B -	455 KC	Variable condenser fully open.	Across voice coil.	T2, T1 (A3, A4, A1, A2)	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 mfd. to reduce hum modulation.
2		Form loop of several turns and radiate signal into receiver	1620 KC	"	Across voice coil.	Trimmer C-4 (Osc.)	Adjust for maximum output.
3		"	1400 KC	Tune for maximum output.	Across voice coil.	Trimmer C-2 (Ant.)	Adjust for maximum output.

VOLTAGE READINGS FOR CHASSIS 120156-B and 120165-B

SYMBOL	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V-1	12BE6	-7.6	0	12 AC	24 AC	95	95	-5
V-2	12BA6	0	0	24 AC	36 AC	95	95	1.3
V-3	12AT6 ⊕	-1	0	0	12 AC	-.65	0	45
V-4	50C5	6.5	0	36 AC	85 AC	0	95	120
V-5	35W4	N.C.	N.C.	85 AC	117 AC	110 AC	112 AC	130

RESISTANT READINGS FOR CHASSIS 120156-B and 120165-B

SYMBOL	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V-1	12BE6	23K	.5	12	24	1500*	1500*	4 MEG
V-2	12BA6	18	0	24	36	1500*	1500*	120
V-3	12AT6 ⊕	6 MEG	0	0	12	500K	0	470*
V-4	50C5	150	470 K	36	90	470K	1500*	210*
V-5	35W4	N.C.	N.C.	90	120	135	115	0*

⊕ In some models 12AV6 may be used as alternate for 12AT6.

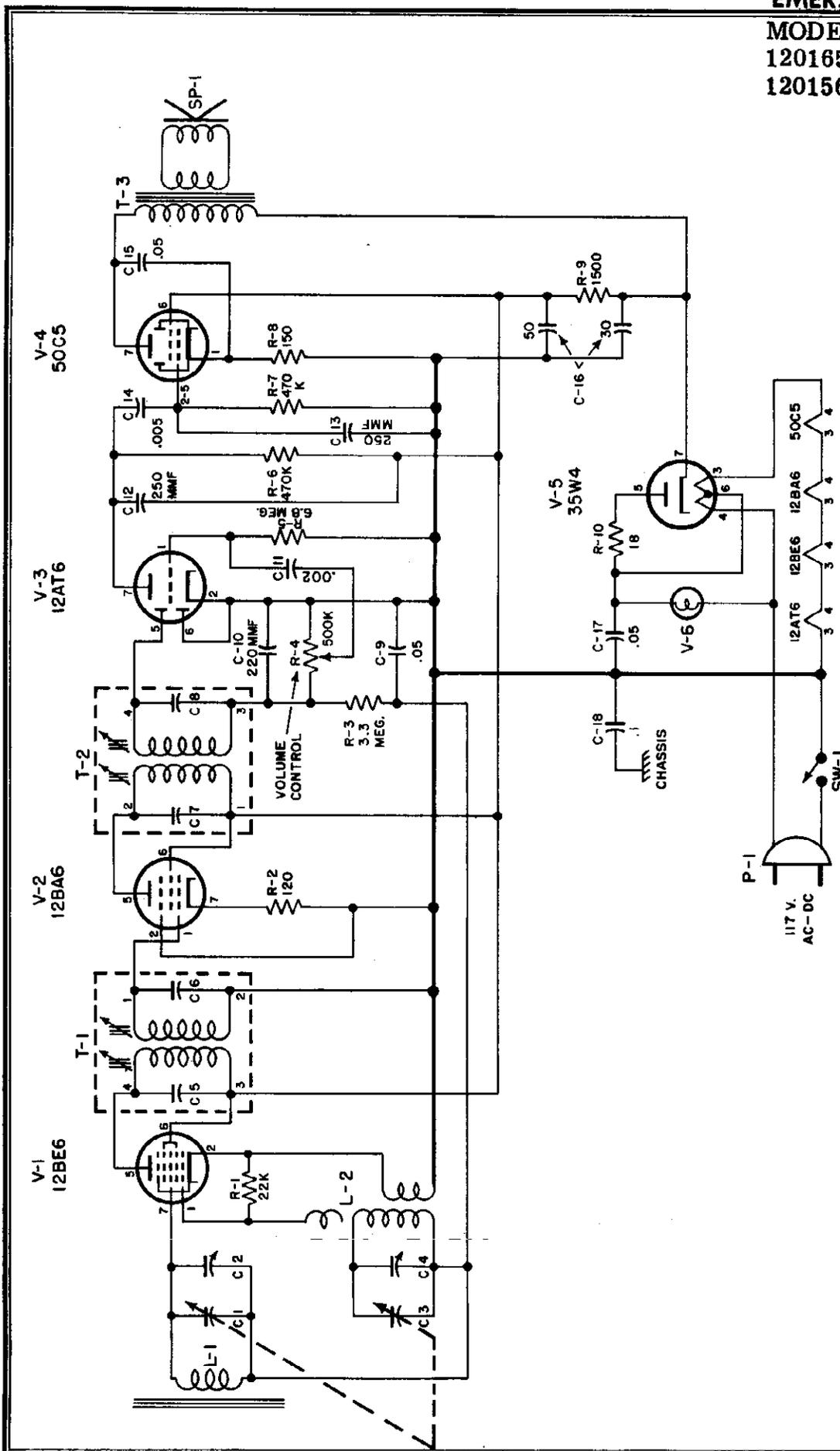
* Resistances measured to pin 7 of rectifier (B+).

VOLTAGE AND RESISTANCE READING INSTRUCTIONS

1. Line voltage maintained at 115 volts for voltage readings.
2. D.C. and A.C. voltages measured with V.T.V.M.
3. Measured values are from socket pin to B neutral.
4. Volume control at maximum, no signal applied for voltage measurements.

MODELS 708B, C
120165-B; 713B, C
120156-B

CHASSIS NO. 120165-B
120156-B



RES. IN OHMS.
CAP. IN MFDS.
UNLESS OTHERWISE NOTED.

Fig. 1 - Schematic Diagram,

PART NO. 950228
950214

MODELS 708B, Ch. 120165-B;
713B, Ch. 120156-B

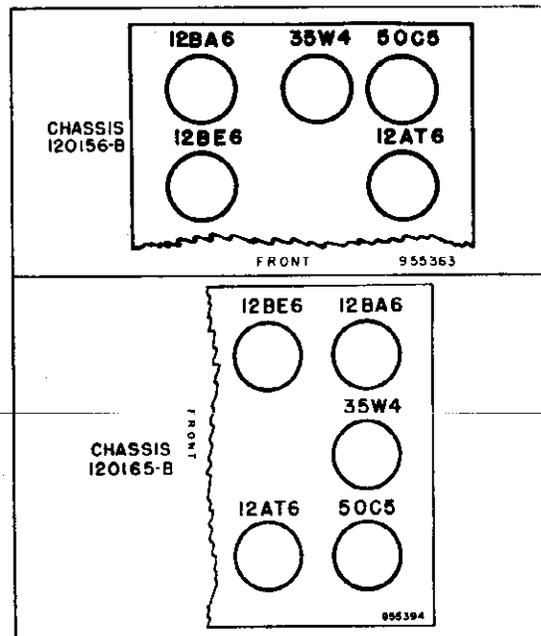
CHASSIS PARTS LIST (Chassis 120156-B and 120165-B)

SYM-BOL	PART NO.	DESCRIPTION	LIST PRICE	SYM-BOL	PART NO.	DESCRIPTION	LIST PRICE
C-1	900086	Variable Capacitor - R.F. Sec.	3.25	P-1	583037P	Line Cord and Plug	.55
C-2	PT. of C-1	Trimmer RF Sec.		R-1	Pt. of L-2	22000 ohm Carbon	
C-3	PT. of C-1	Variable Capacitor - Osc. Sec.		R-2	340272	120 ohm Carbon $\frac{1}{2}W \pm 10\%$	.14
C-4	PT. of C-1	Trimmer Osc. Sec.		R-3	351332	3.3 megohm Carbon $\frac{1}{2}W \pm 20\%$	.14
C-5	PT. of T-1			R-4	390205	500,000 ohm Volume Control	1.30
C-6	PT. of T-1			R-5	Part	6.8 megohm	
C-7	PT. of T-2			R-6	of	470,000 ohm	
C-8	PT. of T-2			R-7	923024	470,000 ohm	
C-9	923554	.05 MFD Paper 400V.	.25	R-8	340292	150 ohm Carbon $\frac{1}{2}W \pm 10\%$	.10
C-10		220 MMF		R-9	380532	1,500 ohm Carbon $1W \pm 20\%$	.16
C-11		.002 MF		R-10	340072	18 ohm Carbon $\frac{1}{2}W \pm 10\%$	.14
C-12	923024	250 MMF R.C. Coupling	1.05	SP-1	180084 or	Speaker-P.M.-4" (with Output Trans.)	4.95
C-13		250 MMF Unit		SP-1	180088	For Chassis 120156 only.	6.55
C-14		.005 MF		SP-1	180086 or	Speaker-P.M.-4" (with Output Trans.)	
C-15	923554	.05 MFD Paper 400V.	.25	SP-1	180090	For Chassis 120165-B only.	6.55
C-16	923218	30 MF Electrolytic 150V. 50 MF	1.40	SW-1	Pt. of R-4	On-Off Switch	
C-17	923554	.05 MFD Paper 400V.	.25	T-1	720033	1st I.F. Transformer	1.80
C-18	923515	.1 MFD Paper 400V.	.30	T-2	720033	2nd I.F. Transformer	1.80
L-1	700066	Loop Antenna Assembly - Ferrite For Chassis 120156-B Only	1.85	T-3	Pt. of SP-1	Output Transformer	
L-1	700072	Loop Antenna Assembly - Ferrite For Chassis 120165-B Only	1.85	V-1	800525	Vacuum Tube - 12BE6	
L-2	716071	Oscillator Coil	.95	V-2	800524	Vacuum Tube - 12BA6	
				V-3	800523	Vacuum Tube - 12AT6	
				V-4	800032	Vacuum Tube - 50C5	
				V-5	800526	Vacuum Tube - 35W4	
				V-6	807000	Pilot Light	

Prices subject to change without notice.

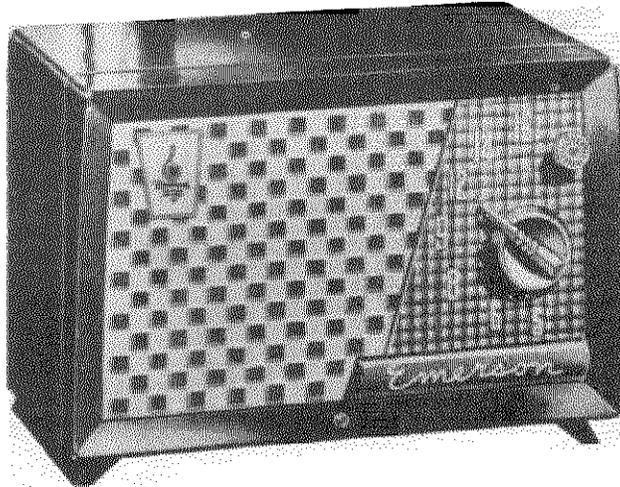
CABINET PARTS LIST - MODELS 708B, 713B

MODELS		DESCRIPTION	LIST PRICE
708B	713B		
140473		Cabinet	2.00
	140477	Cabinet - Wood	8.00
	140452B	Front Plate - Gold & Dull Silver	2.40
575897		Baffle	.30
	575871	Baffle	.40
460326		Knob - Tuning	.45
	460312	Knob - Tuning	.20
460311	460311	Knob - Volume	.10
542280	542280	Spring - Knob	.02
575898		Back	.10
	575839	Back	.10
635001		Jewel Amber	.12

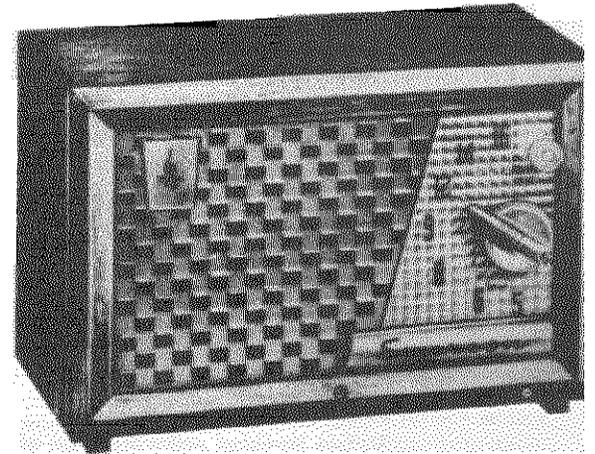


Prices subject to change without notice.

Fig. 2 Tube Location Diagram of Chassis 120156-B, 120165-B



MODEL 729B



MODEL 779B

DESCRIPTION

TYPE: Single-band (AM) superheterodyne.

FREQUENCY RANGE: Broadcast 540-1620 kc

TYPE OF TUBES:

V-1--12BE6, converter

V-2--12BA6, i-f amplifier

V-3--12AT6, detector, a.v.c. a-f amplifier

V-4--50C5, power output

V-5--35W4, rectifier

POWER SUPPLY: A.C. or D.C.

VOLTAGE RATING: 105-125 volts.

POWER CONSUMPTION: 30 watts.

CURRENT DRAIN: 0.24 amp. at 117 volts a.c.

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. In operating the receiver on d.c., it may be necessary to reverse the line plug for correct polarity.
3. This model has a self-contained antenna and does not require additional antenna connections. For permanent home installations, however, if it is desired to improve reception of weak stations, an additional outdoor antenna may be used. For this purpose a lead has been brought out in the rear. Use no ground connections.
4. The self-contained loop antenna operates at maximum efficiency when its position is pointing to the broadcasting source. It is important, therefore, once the station is tuned in, to rotate the cabinet back and forth through a quarter of a circle (90 degrees) leaving it at the position where the station is received with maximum volume.

MODELS 729B, 779B,
Ch. 120170-B

CONDITIONS FOR VOLTAGE AND RESISTANCE READINGS

1. Voltages indicated are positive d.c., resistances are in ohms, unless otherwise indicated.
2. Measurements made with voltohmmyst or equivalent.
3. Line voltage maintained at 117 volts a.c. for voltage measurements.
4. Measurements taken from pin to B neutral.
5. Volume control at maximum; no signal applied for voltage measurements.
6. Nominal tolerance on component values makes possible a variation of $\pm 15\%$ in voltage and resistance readings.
7. NC denotes no connection, K is kilohms, MEG is megohms. Resistances marked * are measured to pin 7 of rectifier 35W4 (B+).

ALIGNMENT INSTRUCTIONS

1. Use isolation transformer if available. If not, connect a .1 mfd. condenser in series with low side of signal generator and B-neutral
2. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated screw driver for adjusting.

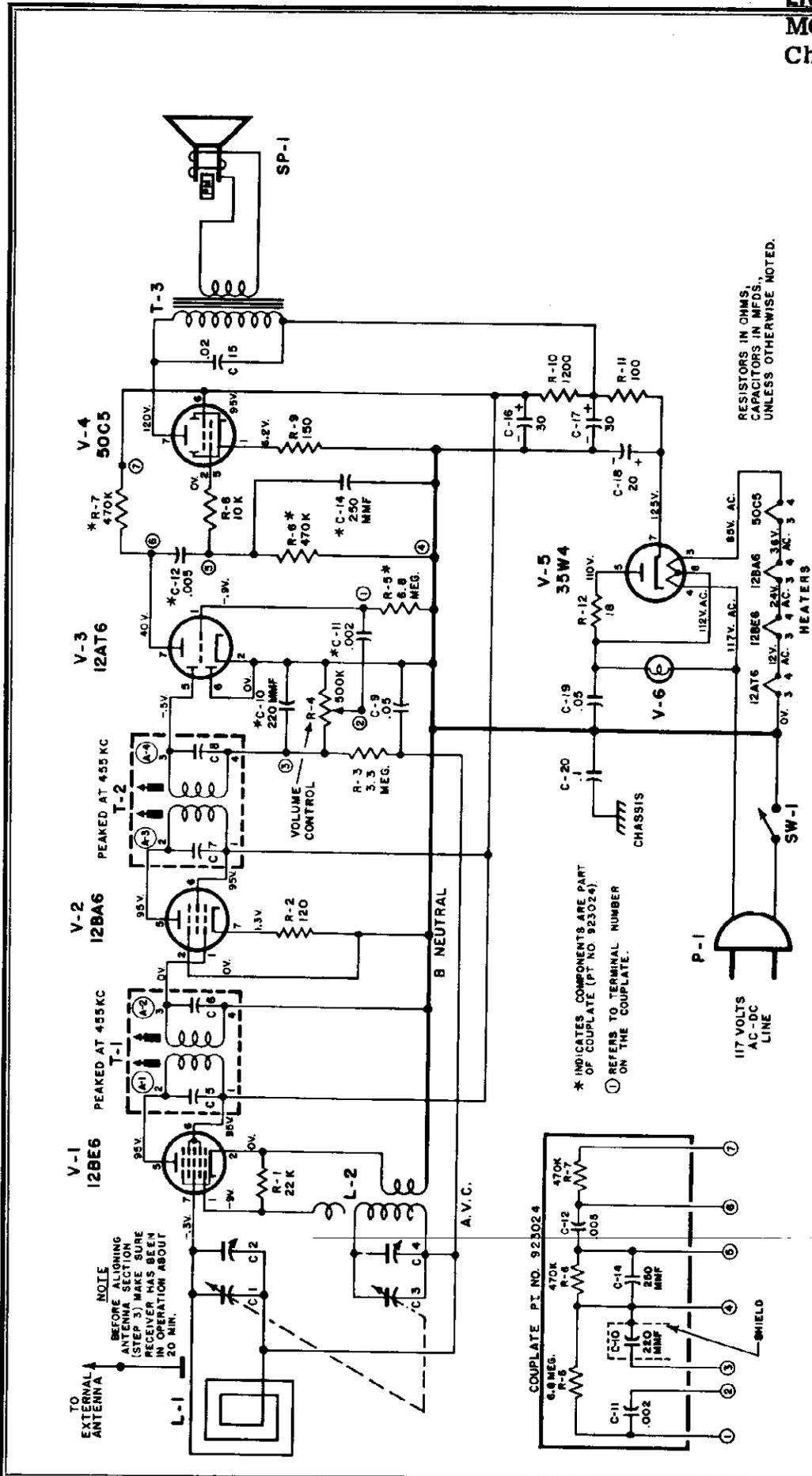
STEP	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	001 mfd.	High side to grid (pin 7) of V1 (12BE6). Low side to B-neutral	455 KC	Variable condenser fully open.	Across voice coil.	T2, T1 (A3, A4, A1, A2)	Adjust for maximum output.
2		Form loop of several turns and radiate signal into receiver	1620 KC	"	Across voice coil.	Trimmer C-4 (Osc.)	Adjust for maximum output.
3		"	1400 KC	Tune for maximum output.	Across voice coil.	Trimmer C-2 (Ant.)	Adjust for maximum output.

RESISTANCE READINGS FOR CHASSIS 120170-B

SYMBOL	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V-1	12BE6	23K	.5	12	24	1500*	1500*	4 MEG
V-2	12BA6	18	0	24	36	1500*	1500*	120
V-3	12AT6	6 MEG	0	0	12	500K	0	470*
V-4	50C5	150	470 K	36	90	470K	1500*	210*
V-5	35W4	N.C.	N.C.	90	120	135	115	0*

* Resistances measured to pin 7 of rectifier 35W4 (B+).

VOLTAGE READINGS ON SCHEMATIC DIAGRAM



PART NO. 950239

NOTE: AN ACCIDENTAL APPLICATION OF A POSITIVE VOLTAGE TO THE A.V.C. CIRCUIT DURING SERVICING CAN TEMPORARILY DISABLE THE RECEIVER. TO RESUME OPERATION REMOVE CHARGE ON A.V.C. BY SHORTING THIS POINT TO B NEUTRAL OR SWITCHING THE RECEIVER OFF MOMENTARILY. THE TUNING GANG FRAME IS AT A.V.C. POTENTIAL.

CHASSIS NO. 120170-B

Fig. 1 - Schematic Diagram, Chassis 120170-B

MODELS 729B, 779B,
Ch. 120170-B

CHASSIS PARTS LIST (Chassis 120170-B)

SYM-BOL	PART NO.	DESCRIPTION	LIST PRICE	SYM-BOL	PART NO.	DESCRIPTION	LIST PRICE	
C-1	,900092	Variable Capacitor - R.F. Section	3.30	R-1	Pt. of L-2	22,000 ohm Carbon		
C-2	PT. of C-1	Trimmer - R.F. Section		R-2	340272	120 ohm Carbon 1/2W. ±10%	.10	
C-3	PT. of C-1	Variable Capacitor - Oscillator Sec.		R-3	351332	3.3 megohm Carbon 1/2W. ±20%	.06	
C-4	PT. of C-1	Trimmer - Oscillator Section		R-4	390205	500,000 ohm volume control	1.30	
C-5	PT. of T-1			R-5	Part of 923024	6.8 megohm } 470,000 ohm } 470,000 ohm } R.C. Coupling Unit		
C-6	PT. of T-1			R-6				
C-7	PT. of T-2			R-7				
C-8	PT. of T-2			R-8	350732	10,000 ohm Carbon 1/2W. ±20%	.05	
C-9	923554	.05 mf Paper 400V.	.25	R-9	340292	150 ohm Carbon 1/2W. ±10%	.10	
C-10	Part of 923024	220 mf	1.05	R-10	370512	1,200 ohm Carbon 1W. ±10%	.15	
C-11		.002 mf		R.C. Coupling Unit	R-11	370252	100 ohm Carbon 1W. ±10%	.15
C-12		.005 mf			R-12	340072	18 ohm Carbon 1/2W. ±10%	.14
C-14		250 mf			R-13	351052	220,000 ohm Carbon 1/2W. ±20%	.05
		SP-1	180095		Speaker - PM - 6"	4.65		
C-15	923524	.02 mf Paper 400V.	.25	SW-1	Pt. of R-4	Switch - Radio On-Off		
C-16	925234	30 mf Electrolytic 150V.	1.40	X-1	555029	Terminal Strip-Speaker		
C-17	PT. of C-16	30 mf Electrolytic 150V.		T-1	720033	1st. I.F. Transformer	1.80	
C-18	PT. of C-16	20 mf Electrolytic 150V.		T-2	720033	2nd. I.F. Transformer	1.80	
C-19	923554	.05 mf Paper 400V.	.25	T-3	734079	Output Transformer	1.60	
C-20	923515	.1 mf Paper 400V.	.30	V-1	800525	Vacuum Tube - 12BE6		
C-21	923524	.02 mf Paper 400V.	.25	V-2	800524	Vacuum Tube - 12BA6		
L-1	700076	Loop Antenna	1.40	V-3	800523	Vacuum Tube - 12AT6		
L-2	716076	Oscillator Coil	.75	V-4	800032	Vacuum Tube - 50C5		
P-1	583037P	Line Cord & Plug	.55	V-5	800526	Vacuum Tube - 35W4		
P-2	580285	Lead & Pin Assembly - Speaker		V-6	807000	Pilot Light - #47 Bulb	.11	

Prices subject to change without notice.

CABINET PARTS LIST - CHASSIS 120170-B

PART NUMBERS		DESCRIPTION	LIST PRICE
MODEL 729B	MODEL 779B		
140483		Cabinet Body - Ivory	5.95
140483C		Cabinet Body - Cherry Red	5.95
140483D		Cabinet Body - Cerulean Blue	5.95
140483E		Cabinet Body - Forrest Green	5.95
	140548	Cabinet Body - Wood - Light Mahogany	14.00
460339	460339	Cabinet Front - for 140483, 140483C & 140548	2.50
460339A		Cabinet Front - for 140483D	2.50
460339B		Cabinet Front - for 140483E	2.50
470708	470708	Grille Assembly - Gold	.55
180095	180095	Speaker - 6"	4.65
411387	411387	Dial Light Bracket	.05
560326	560326	Baffle	.30
541187	541187	Trimount Fastener	.01
460312A		Knob - Tuning	.20
	460312B	Knob - Tuning	.20
460311	460311	Knob - Volume	.10
542280	542280	Spring - Knob	.02

Prices subject to change without notice.

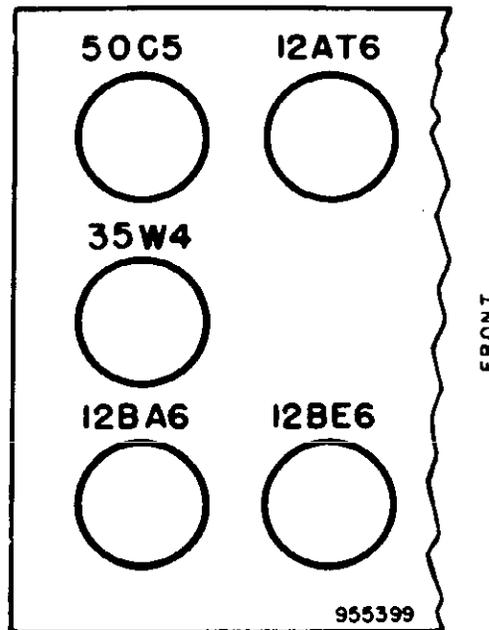
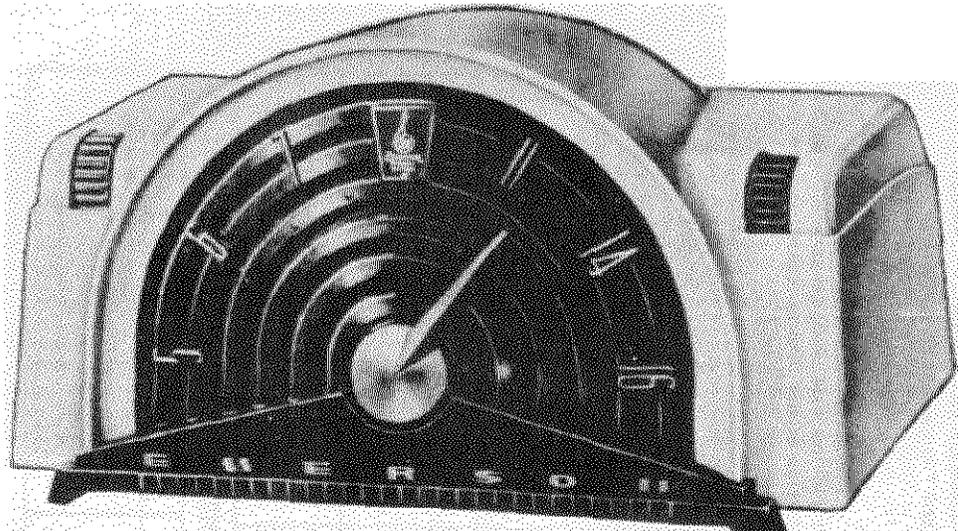


Fig. 2 - Tube Location Diagram of Chassis 120170-B



MODEL 744B
Chassis 120175-B

DESCRIPTION

TYPE: Single-band (AM) superheterodyne.

FREQUENCY RANGE: Broadcast 540-1620 kc

TYPE OF TUBES:

- V-1--12BE6, converter
- V-2--12BA6, i-f amplifier
- V-3--12AT6, detector, a.v.c. a-f amplifier
- V-4--50C5, power output
- V-5--35W4, rectifier

POWER SUPPLY: A.C. or D.C.

VOLTAGE RATING: 105-125 volts.

POWER CONSUMPTION: 30 watts.

CURRENT DRAIN: 0.24 amp. at 117 volts a.c.

GENERAL NOTES

1. If replacements are made or the wiring disturbed in r-f section of the circuit, the receiver should be fully realigned.
2. In operating the receiver on d.c., it may be necessary to reverse the line plug for correct polarity.
3. Model 744B has a self contained antenna and does not require an additional antenna connection. For installation in a location where reception is weak connect the *outside antenna* to the *colored lead* at the bottom of the cabinet. Do not use ground connection.
4. The self contained loop antenna has directional properties. It is important therefore, once the station is tuned in that the cabinet be rotated back and through a quarter of a circle (90 degrees), and be in a position where the station is received with maximum volume.

MODEL 744B,
Ch. 120175-B

CONDITIONS FOR VOLTAGE AND RESISTANCE READINGS

1. Voltages indicated are positive d.c., resistances are in ohms, unless otherwise indicated.
2. Measurements made with voltohmmyst or equivalent.
3. Line voltage maintained at 117 volts a.c. for voltage measurements.
4. Socket connections are shown as bottom views, with measurements from pin to common negative.
5. Volume control at maximum; no signal applied for voltage measurements.
6. Nominal tolerance on component values makes possible a variation of $\pm 15\%$ in voltage and resistance readings.
7. NC denotes no connection, K is kilohms, MEG is megohms. Resistances marked * are measured to pin 7 of rectifier 35W4 (B+).

ALIGNMENT INSTRUCTIONS

1. Use isolation transformer if available. If not, connect a .1 mfd. condenser in series with low side of signal generator and B neutral.
2. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated screw driver for adjusting.

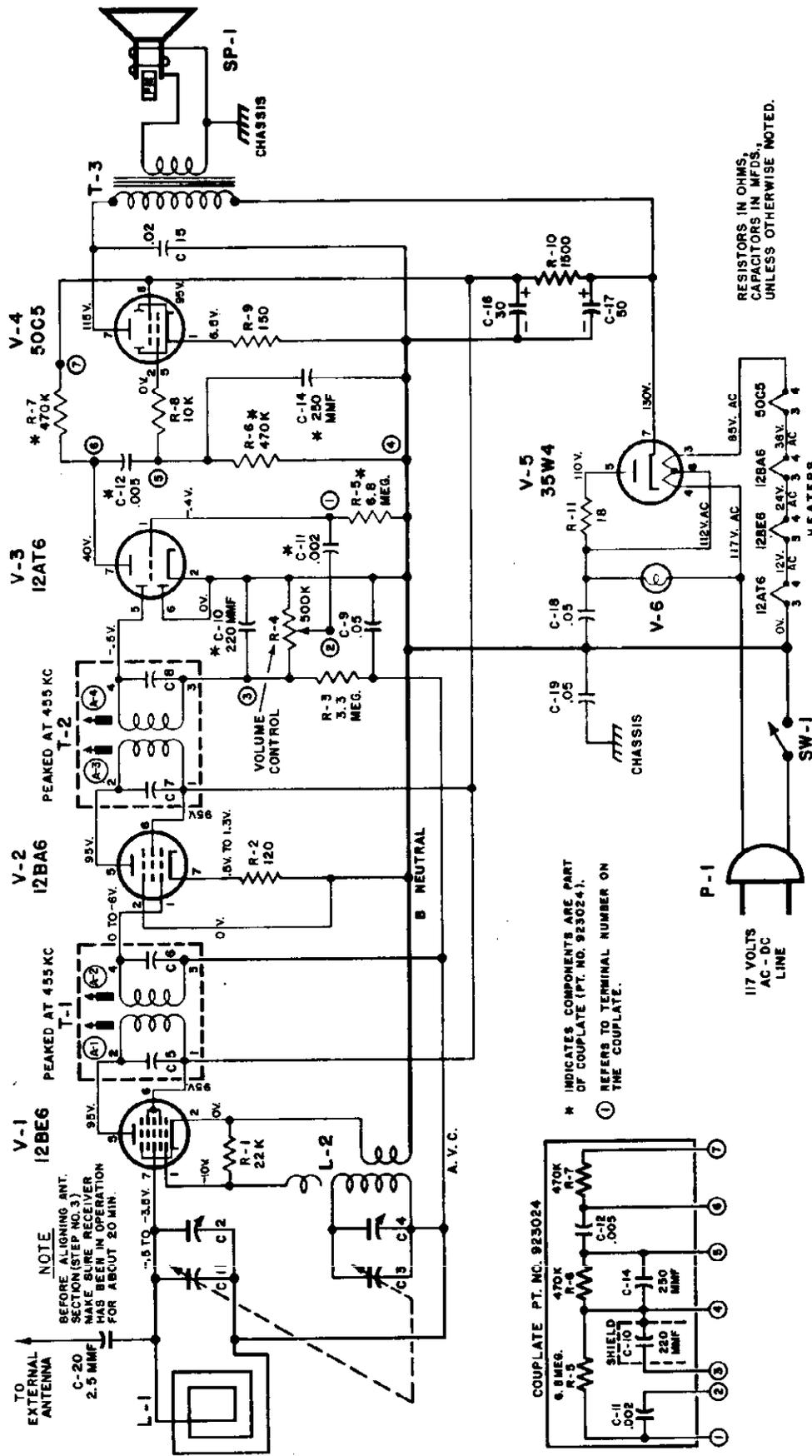
STEP	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.001 mfd.	High side to grid (pin 7) of V1 (12BE6). Low side to B neutral	455 KC	Variable condenser fully open.	Across voice coil.	T2, T1 (A3, A4, A1, A2)	Adjust for maximum output.
2		Form loop of several turns and radiate signal into receiver	1620 KC	"	Across voice coil.	Trimmer C-4 (Osc.)	Adjust for maximum output.
3		"	1400 KC	Tune for maximum output.	Across voice coil.	Trimmer C-2 (Ant.)	Adjust for maximum output.

RESISTANT READINGS FOR CHASSIS 120175-B

SYMBOL	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V-1	12BE6	23K	.5	12	24	1500*	1500*	4 MEG
V-2	12BA6	3-2 MEG	0	24	36	1500*	1500*	120
V-3	12AT6	6 MEG	0	0	12	500K	0	470*
V-4	50C5	150	470 K	36	90	N.C.	1500*	210*
V-5	35W4	N.C.	N.C.	90	120	135	115	0*

* Resistances measured to pin 7 of rectifier 35W4 (B+).

VOLTAGE READINGS ON SCHEMATIC DIAGRAM

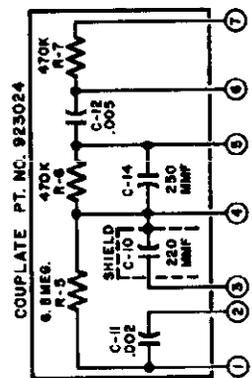


RESISTORS IN OHMS,
CAPACITORS IN MFDs,
UNLESS OTHERWISE NOTED.

PART NO. 950242

NOTE: AN ACCIDENTAL APPLICATION OF A POSITIVE VOLTAGE TO THE A.V.C. CIRCUIT DURING SERVICING CAN TEMPORARILY DISABLE THE RECEIVER. TO RESUME OPERATION REMOVE CHARGE ON A.V.C. BY SHORTING THIS POINT TO B NEUTRAL OR SWITCHING THE RECEIVER OFF MOMENTARILY. THE TUNING GANG FRAME IS AT A.V.C. POTENTIAL.

CHASSIS NO. 120175-B



* INDICATES COMPONENTS ARE PART OF COUPLATE (PT. NO. 923024).
① REFERS TO TERMINAL NUMBER ON THE COUPLATE.

MODEL 744B,
Ch. 120175-B

CHASSIS PARTS LIST (Chassis 120175-B)

SYM. BOL	PART NO.	DESCRIPTION	LIST PRICE	SYM. BOL	PART NO.	DESCRIPTION	LIST PRICE
C-1	900093	Variable Capacitor - r.f. Section	3.50	R-4	390221	500,000 ohm Volume Control	1.00
C-2	Pt. of C-1	Trimmer - r.f. Section		R-5	Part of	6.8 megohm R.C. Coupling Unit	
C-3	Pt. of C-1	Variable Capacitor - Oscillator Section		R-6	923024	470,000 ohm	
C-4	Pt. of C-1	Trimmer - Oscillator Section		R-7		470,000 ohm	
C-5	Pt. of T-1			R-8	350732	10,000 ohm Carbon 1/2 w ±20%	.05
C-6	Pt. of T-1			R-9	340292	150 ohm Carbon 1/2 w ±10%	.10
C-7	Pt. of T-2			R-10	380532	1,500 ohm Carbon 1 w ±20%	.16
C-8	Pt. of T-2			R-11	340072	18 ohm Carbon 1/2 w ±10%	.14
C-9	923554	.05 mf. Paper 400V	.25			Speaker - PM-5"	3.55
C-10	Part of	220 mmf. R. C. Coupling Unit	1.05	SP-1	180101	Switch - On-Off	
C-11	923024	.002 mf.		SW-1	Pt. of R-4		
C-12		.005 mf.					
C-14		250 mmf.					
C-15	923524	.02 mf. Paper 400V	.25				
C-16	925235	30 mf. Electrolytic 150V	1.45	T-1	720033	1st I.F. Transformer	1.80
C-17	Pt. of C-16	50 mf. Electrolytic 150V		T-2	720033	2nd I.F. Transformer	1.80
C-18	923554	.05 mf. Paper 400V	.25	T-3	734087	Output Transformer	2.00
C-19	923554	.05 mf. Paper 400V	.25				
C-20	Pt. of L-1	2.5 mmf. Coupling Capacitor					
L-1	700083	Loop Antenna Assembly	1.60	V-1	800525	Vacuum Tube - 12BE6	
L-2	716075	Oscillator Coil	.95	V-2	800524	Vacuum Tube - 12BA6	
P-1	583043P	Line Card & Plug	.55	V-3	800523	Vacuum Tube - 12AT6	
R-1	Pt. of L-2	22,000 ohm Carbon 1/2 w ±10%	.10	V-4	800032	Vacuum Tube - 50C5	
R-2	340272	120 ohm Carbon 1/2 w ±20%	.14	V-5	800526	Vacuum Tube - 35W4	
R-3	351332	3 .8 megohm Carbon 1/2 w ±20%		V-6	807000	Pilot Light - #47 Bulb	

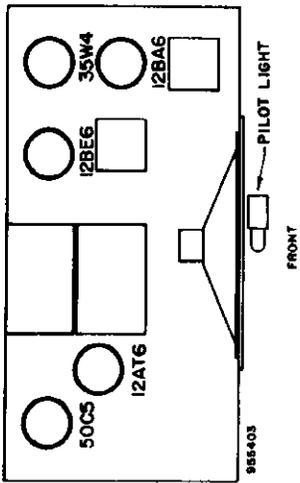


Fig. 3 Tube Location Diagram of Chassis 120175-B

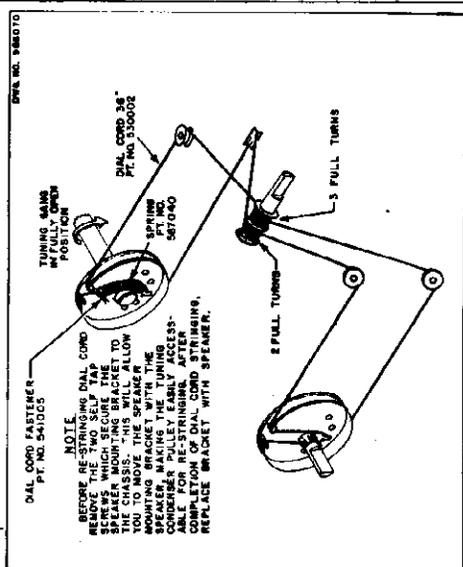
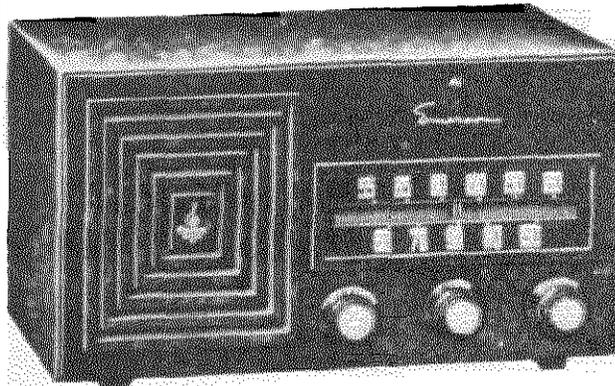


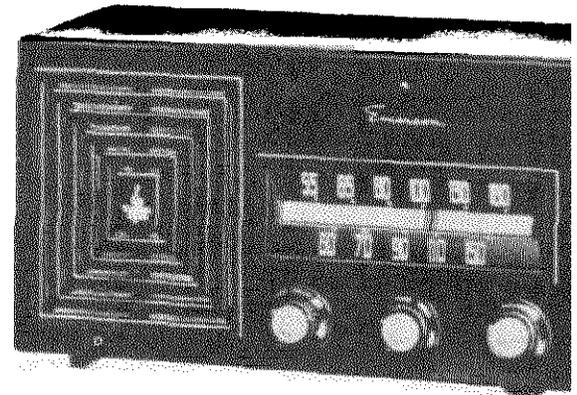
Fig. 2 Dial Cord Stringing for Model 744B

CABINET PARTS LIST (Model 744B)		LIST PRICE
PART NO.	DESCRIPTION	PRICE
140482	Cabinet - Ebony	3.70
140482A	Cabinet - Flame	3.70
460338	Dial & Grille	2.25
460417	Knob	.15
541170	Spring - Knob & Pointer	.03
460382	Pointer	.20
470200	Felt Foot Assembly	.10
635042	Jewel	.12
411443	Heat Shield	
541139	Fastener - Shield	.01

Prices subject to change without notice.



MODEL 641B



MODEL 756B

DESCRIPTION

TYPE: Single band (AM) superheterodyne

FREQUENCY RANGE: 540-1620 KC.

TYPES OF TUBES:

V-1-6BJ6 converter
V-2-6BJ6 oscillator
V-3-6BJ6 1st i.f. amplifier
V-4-6BJ6 2nd i.f. amplifier
V-5-12AT6 Detector, a.v.c., a-f amplifier
V-6-50C5 Power output
V-7-35W4 Rectifier

POWER SUPPLY: A.c. or d.c.

VOLTAGE RATING: 115 volts

POWER CONSUMPTION: 30 watts

CURRENT DRAIN: 0.26 amp. at 117 volts a.c.

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. In operating the receiver on d.c., it may be necessary to reverse the line plug for correct polarity.
3. The receiver has a self-contained antenna, and does not require additional antenna connections. For permanent home installations, however, if it is desired to improve reception of weak stations, an additional outdoor antenna may be used. For this purpose a lead has been provided in the rear. Use no ground connection.
4. The self-contained loop antenna operates at maximum efficiency when its position is at right angles to the broadcasting source. It is important, therefore, once the receiver is tuned in, to rotate the cabinet back and forth through a quarter of a circle (90 degrees), leaving it at the position where the station is received with maximum volume.

MODELS 641B, 756B,
Ch. 120125-B

INSTRUCTIONS FOR VOLTAGE AND RESISTANCE READINGS

1. Voltage readings are in d.c. volts and resistance readings in ohms unless otherwise specified.
2. A.C. and D.C. measurements are taken with a V.T.V.M.
3. Measured values are from socket pin to common negative (B—).
4. Line voltage maintained at 115V A.C. for voltage readings.
5. Nominal tolerance on component values makes possible a variation of $\pm 15\%$ in voltage and resistance readings.
6. Volume control at maximum with no signal applied, for voltage measurements.

VOLTAGE READINGS FOR CHASSIS 120125-B

SYMBOL	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V-1	6BJ6	-1.2 DC	1 DC	18 AC	12 AC	85 DC	35 DC	0
V-2	6BJ6	-9.2 DC	0	24 AC	18 AC	85 DC	85 DC	0
V-3	6BJ6	0	1.4 DC	30 AC	36 AC	68 DC	85 DC	0
V-4	6BJ6	-1.3 DC	.65 DC	30 AC	24 AC	85 DC	85 DC	0
V-5	12AT6	-.8 DC	0	0	12 AC	0	-.65 DC	42 DC
V-6	50C5	5.4 DC	0	36 AC	80 AC	0	85 DC	100 DC
V-7	35W4	85 DC	NC	80 AC	115 AC	110 AC	110 AC	110 DC

RESISTANCE READINGS FOR CHASSIS 120125-B

SYMBOL	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V-1	6BJ6	4.2 meg.	1100	22	16	500,000	1 meg.	0
V-2	6BJ6	24,000	1	30	22	500,000	500,000	0
V-3	6BJ6	20	220	38	46	500,000	500,000	0
V-4	6BJ6	4.3 meg	120	38	30	500,000	500,000	0
V-5	12AT6	10 meg	0	0	16	0	550,000	1 meg.
V-6	50C5	150	400,000	46	100	400,000	500,000	500,000
V-7	35W4	500,000	NC	100	135	175	130	500,000

ALIGNMENT PROCEDURE

1. To set pointer, turn variable condenser fully closed and set pointer at mark near left end of dial backplate.
2. Use isolation transformer if available. If not, connect a 0.1 mfd. condenser in series with low side of signal generator and B minus bus.
3. Volume control should be at maximum position; output of signal generator should be not higher than necessary to obtain an output reading.
4. Use an insulated alignment screwdriver for adjusting.

STEPS	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	METER OUTPUT	ADJUST	REMARKS
1	0.1 mfd.	High side to pin 1 (grid) of 6BJ6 (V1). Low side to B minus Bus.	455 kc	Variable condenser fully open.	Across voice coil.	A1, A2 (2nd i-f trans. T2) A3, A4 (1st i-f trans. T1)	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to 0.001 mfd. to reduce hum modulation.
2	200 mmfd.	High side to external antenna lead. Low side to B minus Bus.	1620 kc	Variable condenser fully open.	Across voice coil.	A5 (Trimmer cond. C5).	Adjust for maximum output.
3	200 mmfd.	High side to external antenna lead. Low side to B minus Bus.	1400 kc	Tune for maximum output.	Across voice coil.	A6 (Trimmer cond. C2).	Adjust for maximum output.

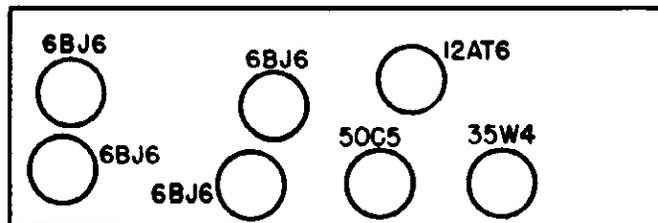
MODELS 641B, 756B,
Ch. 120125-B

CHASSIS PARTS LIST (Chassis 120125-B)

SYM-BOL	PART NO.	DESCRIPTION	LIST PRICE	SYM-BOL	PART NO.	DESCRIPTION	LIST PRICE
C-1	PT. of L-1	2.2 mfd		R-5	340432	5,900 ohm Carbon	1/2W ±10% .10
C-2	PT. of C-3	Trimmer - R.F. Section		R-6	350972	100,000 ohm Carbon	1/2W ±20% .17
C-3	900077	Variable Capacitor - R.F. Section	3.80	R-7	340272	120 ohm Carbon	1/2W ±10% .14
C-4	923534	.05 mf	400 V .25	R-8	351332	5.3 megohm Carbon	1/2W ±20% .06
C-5	PT. of C-6	Trimmer - Oscillator Section		R-9	340892	47,000 ohm Carbon	1/2W ±10% .17
C-6	900077	Variable Capacitor - Oscillator Sec.	3.80	R-10	390152	500,000 ohm	Volume Control 1.15
C-7	923524	.02 mf Paper	400 V .25	R-11	351452	10 megohm Carbon	1/2W ±20% .14
C-8	923524	.02 mf Paper	400 V .25	R-12	351132	470,000 ohm Carbon	1/2W ±20% .14
C-9	928104	212 mfd Ceramic	500 V .30	R-13	390137	400,000 ohm	Tone Control .70
C-10	PT. of T-2	100 mfd		R-14	340292	150 ohm Carbon	1/2W ±10% .17
C-11		220 mfd		R-15	370152	39 ohm Carbon	1W ±10% .15
C-12		.002 mf	Coupling Capacitor Assembly	R-16	370492	1,000 ohm Carbon	1W ±10% .16
C-13	470310	220 mfd					
C-14		.005 mf					
C-15	923723	.002 mf Paper	600 V .20	SP-1	180107	Speaker P.M. - 6 inch	4.65
C-16	923524	.02 mf Paper	400 V .25	SW-1	PT. of R-10	On - Off Switch	
C-17	923554	.05 mf Paper	400 V .25	T-1	720033	1st L.F. Transformer	1.80
C-18	925187	80 mf Electrolytic	150 V 1.65	T-2	720125	2nd L.F. Transformer	1.70
C-19	PT. of C-18	40 mf Electrolytic	150 V	T-3	734061	Output Transformer	1.15
C-20	923515	.1 mf Paper	600 V .30	V-1	800023	Vacuum Tube - 6BJ6	
L-1	700054	Loop Antenna	1.55	V-2	800023	Vacuum Tube - 6BJ6	
L-2	716063	Oscillator - Coil	.95	V-3	800034or	Vacuum Tube - 6BH6	
I-1	583033P	Plug and Line Cord	.80	V-3	800023	Vacuum Tube - 6BJ6	
R-1	340492	1,000 ohm Carbon	1/2W ±10% .17	V-4	800023	Vacuum Tube - 6BJ6	
R-2	PT. of L-2	22,000 ohm		V-5	800523	Vacuum Tube - 12AT6	
R-3	341052	220,000 ohm Carbon	1/2W ±10% .17	V-6	800032	Vacuum Tube - 50C5	
R-4	340332	220 ohm Carbon	1/2W ±10% .14	V-7	800526	Vacuum Tube - 35W4	
				V-8	807000	Pilot Light (#47 Bulb)	.11

Prices subject to change without notice.

FRONT



955323

FIG. 2 TUBE LOCATION DIAGRAM FOR CHASSIS 120125-B

CABINET PARTS LIST - CHASSIS 120125-B

PART NUMBERS		DESCRIPTION	LIST PRICE
MODEL 641B	MODEL 756B		
140359	140359	Cabinet - Walnut	6.50
	140359D	Cabinet - Ebony	6.50
	140359E	Cabinet - Red	8.10
520133	520133	Crystal	.20
575649		Baffle & Grille Cloth	.50
	470739	Baffle & Grille Cloth	.50
275044	275044	Spring Grip Washer - Baffle & Crystal	.006
635031	635031	Jewel - Amber	.05
450068S	450068S	Knobs - Mottled Brown & Gold	.30
	450068E	Knobs - Ebony & Gold	.30
	450068F	Knobs - Red & Gold	.40
587011	587011	Spring Insert - Knobs	.01
575664	575664	Back	.20

Prices subject to change without notice.

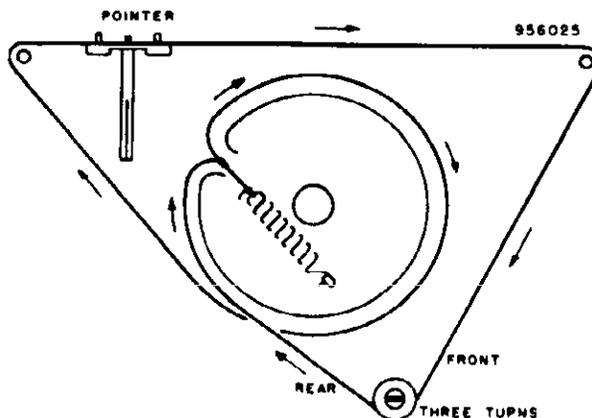


FIG. 3 DIAL CORD STRINGING FOR CHASSIS 120125-B



MODEL 783B

DESCRIPTION

TYPE: Model 783B is a Single band superheterodyne receiver with a 3-speed automatic record changer.

FREQUENCY RANGE: 540-1620 kc.

TYPE OF TUBES:

- V-1-12BE6, converter
- V-2-12BA6, i-f amplifier
- V-3-12AT6, detector, a.v.c. a-f amplifier
- V-4-50C5, power output
- V-5-35W4, rectifier

POWER SUPPLY: A.C.

VOLTAGE RATING: 105-125 volts.

RADIO POWER CONSUMPTION: 30 watts.

RADIO CURRENT DRAIN: 0.24 amp. at 117 volts a.c.

PHONO AND RADIO POWER CONSUMPTION: 50 watts

GENERAL NOTES

1. This model is equipped with an automatic record changer that plays 78, 45 and 33 1/3 R.P.M. records and shuts off automatically after the last record has been played. A flip over two needle cartridge is used for best record tracking. For more information concerning the record changer see below and parts list on back page.
2. If replacements are made or the wiring disturbed in the r-f section of Model 783B, the receiver should be carefully realigned.
3. Model 783B has a self-contained antenna and does not require an additional antenna. For permanent installations, however, if it is desired to improve reception of weak stations, an additional outdoor antenna may be connected to the colored lead at the rear of the cabinet.
4. The self-contained ferrite rod antenna has direction properties. It is important, therefore, once a station is tuned in, that the cabinet be rotated back and forth through a quarter-turn and left at that position where maximum volume is obtained.
5. **TO REMOVE CHASSIS:** Remove 4 screws on top of cabinet and take chassis cover off. Disconnect antenna speaker and phone leads from chassis. Slide off knob and remove chassis mounting screws (located under cabinet) and lift chassis from cabinet. In order to remove chassis, remove 3 screws holding chassis bottom shield and then unsolder rear panel and remove the 2 screws holding this panel.

3-SPEED RECORD CHANGER

General

Aside from the facts mentioned above, this changer can automatically play ten 12", twelve 10" or twelve 7" records. If desired 10" and 12" records of the same type (speed) can be intermixed.

Preliminary Adjustments: To be done before operating the changer for the first time.

1. Loosen two copper screws on either side of the spindle until the changer floats freely on its mounting.
2. Place the turn table over the spindle, gently push the rubber rimmed wheel so that it is completely under the turn table.

MODEL 783B,
Ch. 120200-B

CONDITIONS FOR VOLTAGE AND RESISTANCE READINGS

1. Voltages indicated are positive d.c.; resistances in ohms, unless otherwise indicated.
2. Measurements made with voltohmmyst or equivalent.
3. All measurements taken from pin to B neutral unless otherwise indicated.
4. Voltage measurements taken with:
 - a) Line voltage maintained at 117 volts a.c.
 - b) Radio-phonograph switch set for radio and volume control set for maximum.
 - c) Variable condenser fully closed and no signal applied.
5. Resistance measurements taken with:
 - a) Power line cord disconnected from outlet.
 - b) Radio-phonograph switch set for radio and volume control set for minimum.
6. Nominal tolerance on component values makes possible a variation of $\pm 15\%$ in voltage and resistance readings.
7. N.C. denotes no connection, K is kilohms, Meg. is megohms. Resistances marked * are measured to Pin 7 of Rectifier 35W4(B+).

ALIGNMENT INSTRUCTIONS

1. Use isolation transformer if available. If not, connect a .1 mfd. condenser in series with low side of signal generator and B neutral.
2. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated screw driver for adjusting.

STEP	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 mfd.	High side to grid (pin 7) of V1 (12BE6). Low side to B neutral	455 KC	Variable condenser fully open.	Across voice coil.	T2, T1 (A3, A4, A1, A2)	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 mfd. to reduce hum modulation.
2		Form loop of several turns and radiate signal into receiver	1620 KC	"	Across voice coil.	Trimmer C-4 (Osc.)	Adjust for maximum output.
3		"	1400 KC	Tune for maximum output.	Across voice coil.	Trimmer C-2 (Ant.)	Adjust for maximum output.

RESISTANCE READINGS FOR CHASSIS 120200-B

SYMBOL	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V-1	12BE6	22K	0	12	24	1500*	1500*	4.0 meg
V-2	12BA6	13 [~]	0	24	36	1500*	1500*	120 [~]
V-3	12AT6	6.8 meg	0	0	12 [~]	680K	0	470K*
V-4	50C5	150 [~]	492K	36 [~]	90 [~]	492K	1500*	210*
V-5	35W4	NC	NC	90 [~]	120 [~]	135 [~]	110 [~]	0*

* Resistances measured to Pin 7 of Rectifier 35W4 (B+).

VOLTAGE READINGS ON SCHEMATIC DIAGRAM

3-SPEED RECORD CHANGER

PLAYING 45 R.P.M. RECORDS (with large spindle hole)
In order to play such records on this changer it will be necessary to either adapt each record with a snap in center hole adapter or use a 45 R.P.M. spindle attachment. This attachment fits over the existing spindle enlarging its diameter to accommodate the above type records without the use of separate center hole adapters.

NEUTRAL (N) POSITION

When the record changer is not in use it would be advisable to place the speed control in the neutral (N) position. This position actually disengages the turn table idler wheel from the drive shaft so as not to flatten portions of the rubber rim on the idler wheel. The true neutral position (N) is somewhere between the "N" and "45 RPM" marking. When the changer is in the true neutral position the turn table will not revolve when the phono. radio is in the phono setting and the motor is turned "on". In some instances it is easier to find this neutral position while the turn table is revolving.

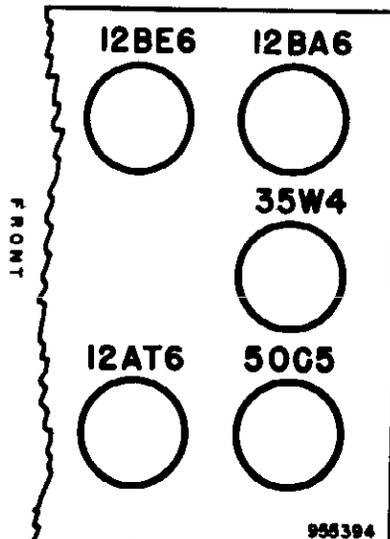
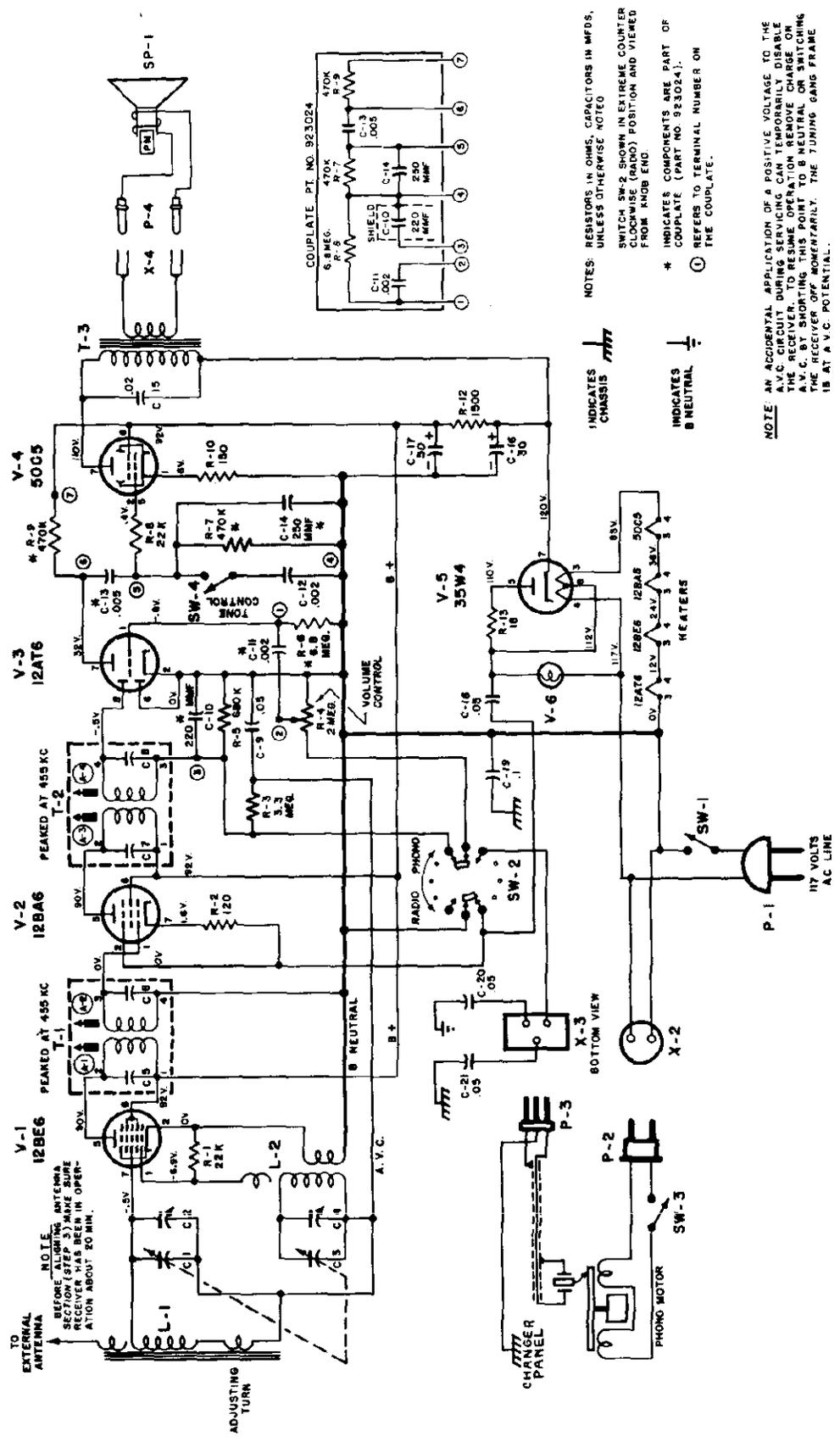


Fig. 2 Tube Location Diagram of Chassis 120200-B



NOTES: RESISTORS IN OHMS, CAPACITORS IN MFDS, UNLESS OTHERWISE NOTED
 SWITCH SW-2, SHOWN IN EXTREME COUNTER CLOCKWISE (RADIO) POSITION AND VIEWED FROM KNOB END
 * INDICATES COMPONENTS ARE PART OF COUPLATE (PART NO. 923024).
 ① REFERS TO TERMINAL NUMBER ON THE COUPLATE.

INDICATES CHASSIS
 INDICATES NEUTRAL

NOTE: AN ACCIDENTAL APPLICATION OF A POSITIVE VOLTAGE TO THE A.V.C. CIRCUIT DURING SERVICING CAN TEMPORARILY DISABLE THE RECEIVER. TO RESUME OPERATION REMOVE CHARGE ON A.V.C. BY SHORTING THIS POINT TO B NEUTRAL OR SWITCHING THE RECEIVER OFF MOMENTARILY. THE TUNING GANG FRAME IS AT A V.C. POTENTIAL.

FIGURE 1 - SCHEMATIC DIAGRAM (CHASSIS 120200-B)

MODEL 783B,
Ch. 120200-B

CHASSIS PARTS LIST (Chassis 120200-B)

SYM-BOL	PART NO.	DESCRIPTION	LIST PRICE	SYM-BOL	PART NO.	DESCRIPTION	LIST PRICE
C-1	900107	Variable Capacitor - R.F. Section	3.40	R-4	390238	2 megohm Volume Control	1.00
C-2	PT. of C-1	Trimmer - R.F. Section		R-5	351172	680,000 ohm Carbon $\frac{1}{2}W \pm 20\%$	.05
C-3	PT. of C-1	Variable Capacitor - Oscillator Section		R-6	PT. of C-10	6.8 megohm R.C. Coupling Unit	
C-4	PT. of C-1	Trimmer - Oscillator Section		R-7	PT. of C-10	470,000 ohm R.C. Coupling Unit	
C-5	PT. of T-1			R-8	350812	22,000 ohm Carbon $\frac{1}{2}W \pm 20\%$	.14
C-6	PT. of T-1			R-9	PT. of C-10	470,000 ohm R.C. Coupling Unit	
C-7	PT. of T-2			R-10	340292	150 ohm Carbon $\frac{1}{2}W \pm 10\%$	.10
C-8	PT. of T-3			R-11	380532	1,500 ohm Carbon $1W \pm 20\%$	.16
C-9	923554	.05 mf Paper 400 V	.25	R-12	340072	18 ohm Carbon $\frac{1}{2}W \pm 10\%$	.14
C-10	923024	220 mmf R.C. Coupling Unit	1.05				
C-11	PT. of C-10	.002 mf R.C. Coupling Unit		SW-1	PT. of R-4	Switch - On - Off (Power)	
C-12	923723	.002 mf Paper 600 V	.20	SW-2	510097	Switch - Phono - Radio	2.10
C-13	PT. of C-10	.005 mf R.C. Coupling Unit		SW-3	PT. of Chgr.	Switch - On - Off (Phono Motor)	
C-14	PT. of C-10	250 mmf R.C. Coupling Unit		SW-4	510098	Switch - Tone Control	1.80
C-15	923524	.02 mf Paper 400 V	.25				
C-16	923218	30 mf Electrolytic 150 V	1.35	T-1	720033	1st I.F. Transformer	1.80
C-17	PT. of C-16	50 mf Electrolytic 150 V		T-2	720033	2nd I.F. Transformer	1.80
C-18	923554	.05 mf Paper 400 V	.25	T-3	734082	Output Transformer	1.35
C-19	923515	.1 mf Paper 400 V	.30				
C-20	923554	.05 mf Paper 400 V	.25	V-1	800525	Vacuum Tube - 12BE6	
C-21	923554	.05 mf Paper 400 V	.25	V-2	800524	Vacuum Tube - 12BA6	
				V-3	800523	Vacuum Tube - 12AT6	
L-1	700089	Bar Loop Antenna Ass'y - Ferrite	2.00	V-4	800032	Vacuum Tube - 50C5	
L-2	716071	Oscillator Coil	.95	V-5	800526	Vacuum Tube - 35W4	
				V-6	807000	Pilot Light (#47 Bulb)	
P-1	583047	Plug & Line Cord	.50				
P-2	585081	Plug & Power Cable (Phono Motor)	.40	X-2	PT. of Chgr.	Socket - Phono Motor	
P-3	PT. of Chgr.	Plug - Phono Pickup		X-3	508003	Socket - Phono Pickup	.10
P-4	580289	Lead & Pin Assembly - Speaker	.15	X-4	555029	Speaker Terminal Strip	.20
R-1	PT. of L-2	22,000 ohm Carbon		SP-1	180111	Speaker - PM	3.00
R-2	340272	120 ohm Carbon $\frac{1}{2}W \pm 10\%$	.10				
R-3	351332	3.3 megohm Carbon $\frac{1}{2}W \pm 20\%$	.06		819072	Record Changer - 3 Speed	

Prices subject to change without notice.

RECORD CHANGER PARTS LIST FOR 819072

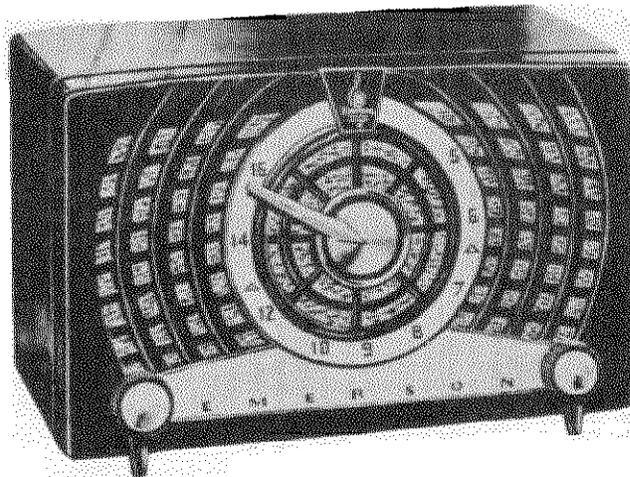
PART NO.	DESCRIPTION	LIST PRICE
960776	Cartridge (flip over two needle type)	
960777	Needle (78 rpm) for cartridge	
960778	Needle (33 1/3 and 45 rpm) for cartridge	
960780	Tone Arm	1.45
960781	Record Support Assembly	1.25
960782	Speed Control Knob	.30
960783	Cartridge Control Knob	.50
960784	Strengthened and Bracket Ass'y.	.70
960785	Hinge Arm	.70
960786	Finger and Shaft Ass'y.	.80

Prices subject to change without notice

CABINET PARTS LIST - CHASSIS 120200-B

PART NUMBERS	DESCRIPTION	LIST PRICE
MODEL 783B		
140542	Cabinet - Mahogany Table Model	55.00
819072	3-Speed Record Changer	
520163	Radio Bezel	.50
411612	Dial Plate	.50
180111	Speaker	3.00
635001	Jewel	.12
460312B	Knob - Tuning - Gold	.20
460377A	Knob - Volume - Maroon & Gold	.20
460162A	Knob - Radio - Phono and Tone Maroon & Gold	.10
542280	Spring - Knob	.02

Prices subject to change without notice



MODEL 778B
Chassis 120199-B

DESCRIPTION

TYPE: Single-band (AM) superheterodyne.

FREQUENCY RANGE: Broadcast 540-1620 kc

TYPE OF TUBES:

V-1--12BE6, converter

V-2--12BA6, i-f amplifier

V-3--12AT6, detector, a.v.c. a-f amplifier

V-4--50C5, power output

V-5--35W4, rectifier

POWER SUPPLY: A.C. or D.C.

VOLTAGE RATING: 105-125 volts.

POWER CONSUMPTION: 30 watts.

CURRENT DRAIN: 0.24 amp. at 117 volts a.c.

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. In operating the receiver on d.c., it may be necessary to reverse the line plug for correct polarity.
3. This model has a self-contained antenna and does not require additional antenna connections. For permanent home installations, however, if it is desired to improve reception of weak stations, an additional outdoor antenna may be used. For this purpose a lead has been brought out in the rear. Use no ground connection.
4. The self-contained loop antenna operates at maximum efficiency when its position is pointing to the broadcasting source. It is important, therefore, once the station is tuned in, to rotate the cabinet back and forth through a quarter of a circle (90 degrees), leaving it at the position where the station is received with maximum volume.

MODEL 778B,
Ch. 120199-B

CONDITIONS FOR VOLTAGE AND RESISTANCE READINGS

1. Voltages indicated are positive d.c., resistances in ohms, unless otherwise indicated.
2. Measurements made with voltohmmyst or equivalent.
3. All measurements taken from pin to B neutral unless otherwise indicated.
4. Voltage measurements taken with:
 - a) Line voltage maintained at 117 volts a.c.
 - b) Volume control set for maximum volume.
 - c) Variable condenser fully closed and no signal applied.
5. Resistance measurements taken with:
 - a) Power line cord disconnected from outlet.
 - b) Volume control set for maximum volume.
6. Nominal tolerance on component values makes possible a variation of $\pm 15\%$ in voltage and resistance readings.
7. N.C. denotes no connection, K is kilohms, Meg. is megohms. Resistances marked * are measured to Pin 7 of Rectifier 35W4(B+).

ALIGNMENT INSTRUCTIONS

1. Use isolation transformer if available. If not, connect a .25 mfd. condenser in series with low side of signal generator and B neutral.
2. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated screw driver for adjusting.

STEP	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.005 mfd.	High side to grid (pin 7) of V1 (12BE6). Low side to B-neutral (See Alignment Note).	455 KC	Variable condenser fully open.	Across voice coil.	T2, T1 (A3, A4, A1, A2)	Adjust for maximum output.
2		Form loop of several turns and radiate signal into receiver	1620 KC	"	Across voice coil.	Trimmer C-4 (Osc.)	Adjust for maximum output.
3		"	1400 KC	Tune for maximum output.	Across voice coil.	Trimmer C-2 (Ant.)	Adjust for maximum output.

RESISTANCE READINGS FOR CHASSIS 120199-B

SYMBOL	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V-1	12BE6	22K	0.4 ~	12 ~	24 ~	1500*	1500*	4 MEG
V-2	12BA6	4 MEG	0 ~	24 ~	36 ~	1500*	1500*	120 ~
V-3	12AT6	6.8 MEG	0 ~	0 ~	12 ~	500K	0 ~	470K*
V-4	50C5	150 ~	480K	36 ~	85 ~	480K	1500*	180*
V-5	35W4	NC	NC	85 ~	110 ~	130 ~	112 ~	0*

*Resistance measured to Pin 7 of Rectifier 35W4 (B+).

VOLTAGE READINGS ON SCHEMATIC DIAGRAM

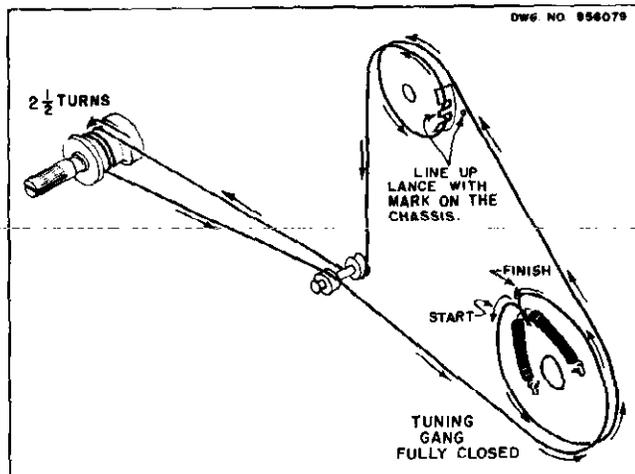
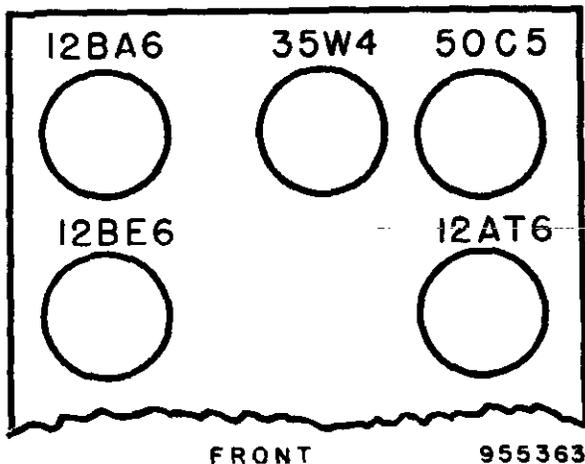
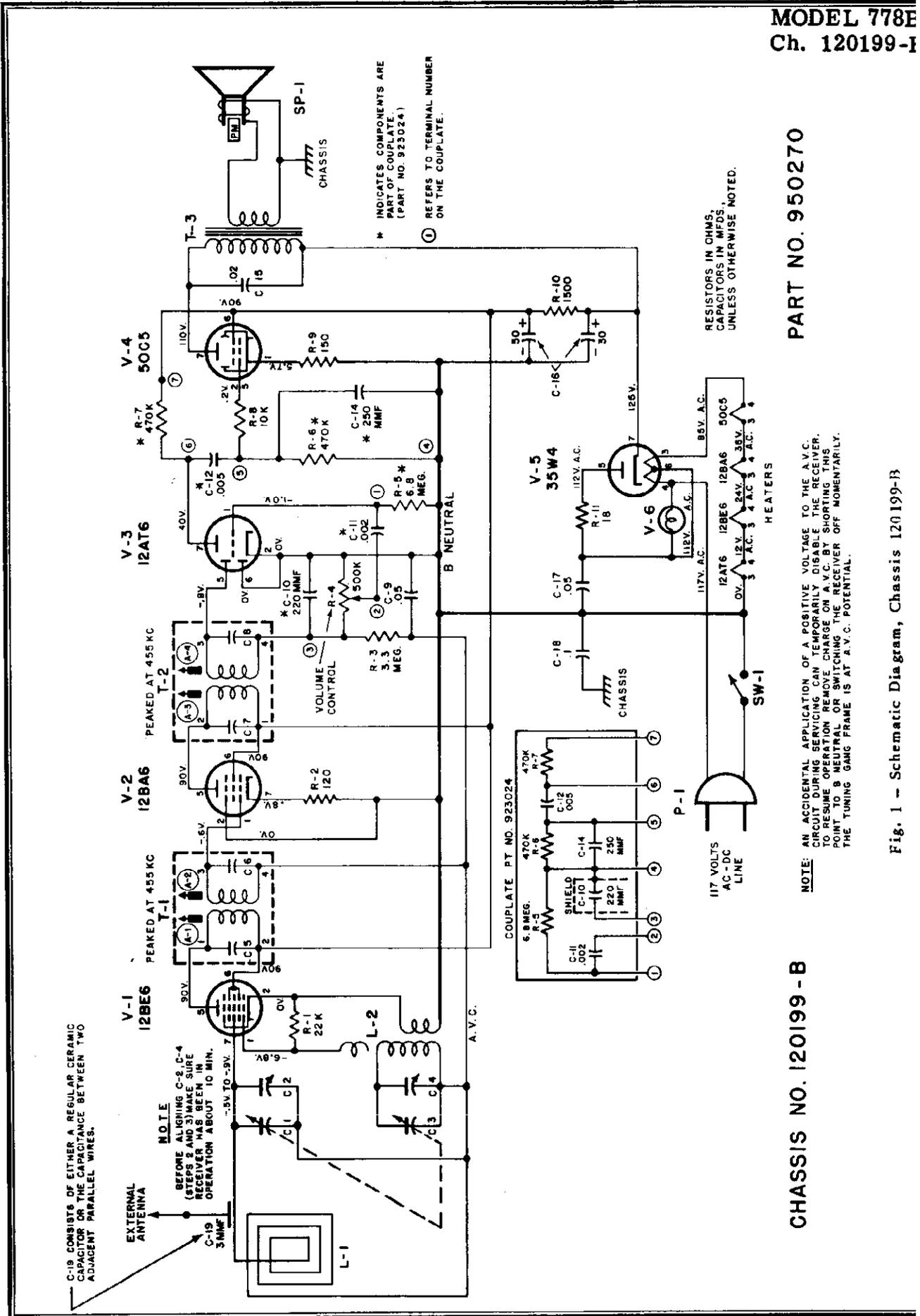


Fig. 2 Tube Location Diagram of Chassis 120199-B

Fig. 3 Tuning Gang Adjustment of Chassis 120199-B

PART NO. 950270

CHASSIS NO. 120199 - B



* INDICATES COMPONENTS ARE PART OF COUPLATE. (PART NO. 923024)

⓪ REFERS TO TERMINAL NUMBER ON THE COUPLATE.

RESISTORS IN OHMS, CAPACITORS IN MFD'S, UNLESS OTHERWISE NOTED.

Fig. 1 - Schematic Diagram, Chassis 120199-B

MODEL 778B,
Ch. 120199-B

CHASSIS PARTS LIST (Chassis 120199-B)

SYM-BOL	PART NO.	DESCRIPTION	LIST PRICE	SYM-BOL	PART NO.	DESCRIPTION	LIST PRICE
C-1	900105	Variable Capacitor - R.F. Section	3.40	R-1	PT.of L-2	22,000 ohm Carbon	
C-2	PT.of C-1	Trimmer - R.F. Section		R-2	340272	120 ohm Carbon 1/2W. ±10%	.10
C-3	PT.of C-1	Variable Capacitor - Oscillator Sec.		R-3	351332	3.3 megohm Carbon 1/2W. ±20%	.06
C-4	PT.of C-1	Trimmer - Oscillator Section		R-4	390062	500,000 ohm Volume Carbon	.90
C-5	PT.of T-1			R-5	PART	6.8 megohm	
C-6	PT.of T-1			R-6	OF	470,000 ohm R.C. Coupling Unit	
C-7	PT.of T-2			R-7	923024	470,000 ohm	
C-8	PT.of T-2			R-8	350732	10,000 ohm Carbon 1/2W. ±20%	.05
C-9	923554	.05 mf Paper 400V.	.25	R-9	340292	150 ohm Carbon 1/2W. ±10%	.10
C-10		220 mmf		R-10	380532	1,500 ohm Carbon 1W. ±20%	.16
C-11	PART	.002 mf		R-11	340072	18 ohm Carbon 1/2W. ±10%	.14
C-12	OF 923024	.005 mf R.C. Coupling Unit	1.05	SP-1	180111	Speaker - PM - 4"	3.00
C-14		250 mmf		SW-1	PT.of R-4	On-Off Switch	
C-15	923524	.02 mf Paper 400V.	.25	T-1	720033	1st I.F. Transformer	1.80
C-16	925218	30-50 mf Electrolytic 150V.	1.35	T-2	720033	2nd I.F. Transformer	1.80
C-17	923554	.05 mf Paper 400V.	.25	T-3	734089	Output Transformer	1.55
C-18	923515	.1 mf Paper 400V.	.30	V-1	800525	Vacuum Tube - 12BE6	
C-19	PT.of L-1	3 mmf		V-2	800524	Vacuum Tube - 12BA6	
L-1	700088	Loop Antenna	1.40	V-3	800523	Vacuum Tube - 12AT6	
L-2	716076	Oscillator Coil	.75	V-4	800032	Vacuum Tube - 50C5	
P-1	583037P	Plug & Line Cord	.55	V-5	800526	Vacuum Tube - 35W4	
				V-6	807000	Pilot Light - No. 47 Bulb	.11

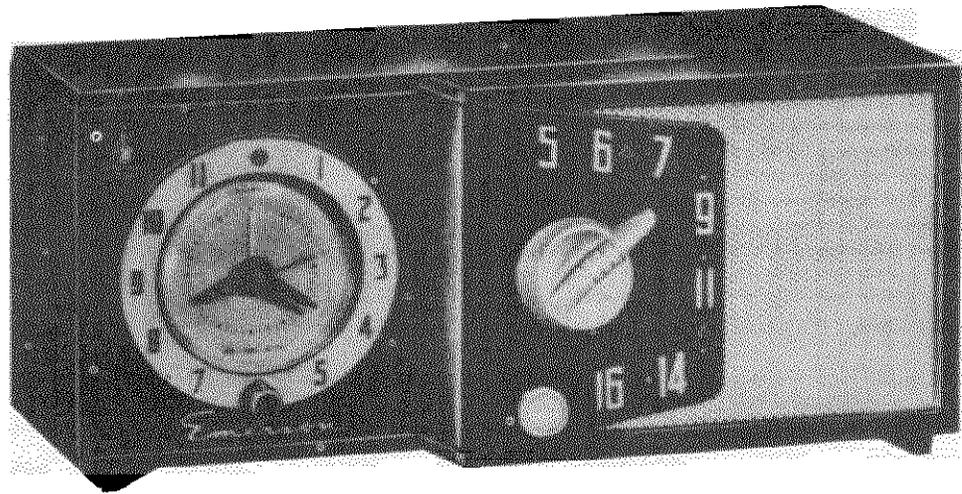
Prices subject to change without notice.

CABINET PARTS LIST - Chassis 120199-B

PART NOS.	DESCRIPTION	LIST PRICE	PART NOS.	DESCRIPTION	LIST PRICE
MODEL 778B			MODEL 778B		
140547	Cabinet - Ebony	4.05	411595	Insert - Gold	.70
140547A	Cabinet - Ivory	6.25	411596	Dial Ring - Gold	.95
140547B	Cabinet - Cherry Red	6.25	575934	Baffle	.90
140547C	Cabinet - Forest Green	6.25	575936	Back	.20
460162-S	Knobs -		541187	Trimount Fastener	.01
	Tuning & Volume - Gold	.10	542280	Compression Spring	.02
460382	Pointer - Gold	.20	635031	Jewel - Amber	.05

Prices subject to change without notice.

For best results replacements should be made with genuine Emerson parts and genuine Emerson tubes.



MODEL 788B
Chassis 120201B

DESCRIPTION

TYPE: Single-band (AM) superheterodyne, with clock timer.

FREQUENCY RANGE: Broadcast 540 - 1620 kc

TYPE OF TUBES:

- V-1 - 12BE6, converter
- V-2 - 12BA6, i-f amplifier
- V-3 - 12AT6, detector, a.v.c. a-f amplifier
- V-4 - 50C5, power output
- V-5 - 35W4, rectifier

POWER SUPPLY: A.C. 60 cycles only

VOLTAGE RATING: 105- 125 volts.

POWER CONSUMPTION: 32 watts.

CURRENT DRAIN: 0.23 amp. at 117 volts a.c.

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. Detailed information for the clock timer used in this model is described on page 3.
3. Model 788B has a self-contained antenna and does not require additional antenna connections.
4. The self-contained bar type antenna operates at maximum efficiency when it is positioned properly with respect to the broadcasting source. Because of this fact, reception can be improved in a relatively weak or shielded signal area, merely by slowly rotating the cabinet through a quarter of a circle (90 degrees). The cabinet should be left in the position where the station is received with maximum volume.



EMERGENCY CIVILIAN DEFENSE BROADCASTS

During a national emergency the low frequency stations will all shift their operating frequencies to 640 KC while the high frequency stations shift to 1240 KC. The stations in each group will then be keyed on the air so that each one will transmit for a certain number of seconds. This will prevent the enemy from homing in on any one station since the signals will be constantly coming from a different direction. This system is called CONELRAD, meaning Control of Electromagnetic Radiation. The model 788B has two  symbols imprinted on the dial face at these frequencies (640 K.C., and 1240 K.C.).

MODEL 788B,
Ch. 120201-B

CONDITIONS FOR VOLTAGE AND RESISTANCE READINGS

1. Voltages indicated are positive d.c., resistances in ohms, unless otherwise indicated.
2. Measurements made with voltohmmyst or equivalent.
3. All measurements taken from pin to B neutral unless otherwise indicated.
4. Voltage measurements taken with:
 - a) Line voltage maintained at 117 volts a.c. only.
 - b) Radio switch knob (located on front of clock timer) turned to "on" and volume control set for maximum.
 - c) Variable condenser fully closed and no signal applied.
5. Resistance measurements taken with:
 - a) Power line cord disconnected from outlet.
 - b) Radio switch knob (located on front of clock timer) turned to "on" and volume control set for minimum.
6. Nominal tolerance on component values makes possible a variation of $\pm 15\%$ in voltage and resistance readings.
7. N.C. denotes no connection, K is kilohms, Meg. is megohms. Resistances marked * are measured to Pin 7 of Rectifier 35W4(B+).

ALIGNMENT INSTRUCTIONS

1. Use isolation transformer if available. If not, connect a .25 mfd. condenser in series with low side of signal generator and B neutral.
2. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated screw driver for adjusting.

STEP	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	High side through .005 MFD to grid (pin 7) of V-1 (12BE6). Low side to B neutral. See alignment Note No. 1.	455 KC	Variable condenser fully open.	Across voice coil.	T-2, T-1 (A-3, A-4 A-1, A-2)	Adjust for maximum output.
2	Form loop of several turns and radiate signal into receiver	1630 KC	Variable condenser fully open.	Across voice coil.	Trimmer C-4 (OSC.)	Adjust for maximum output.
3	Form loop of several turns and radiate signal into receiver	1400 KC	Tune for Max. output.	Across voice coil.	Trimmer C-2 (ANT.)	Adjust for maximum output.

The following step is normally not required unless the bar loop antenna has been serviced or replaced in the field. Before proceeding with this adjustment, the chassis must be turned "on" and placed in its cabinet for a period of at least 30 minutes so that the bar loop will have reached its normal operating temperature. Remove the chassis and proceed as follows:

4	Form loop of several turns and radiate signal into receiver	600 KC	Tune for Max. output.	Across voice coil.	Ant. bar loop adjusting turns	Using slack wire (see schematic) add from one to two turns to bar loop for maximum meter reading. If reading goes down when turns are added, reverse the direction of the added turn (aiding or bucking). Repeat step No. 2.
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NOTE: Do not touch bar loop ant. when checking meter reading.

RESISTANCE READINGS FOR CHASSIS 120201-B

SYMBOL	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V-1	12BE6	22K	4	12 Ω	24 Ω	* 1.5 K	* 1.5 K	3.8 meg.
V-2	12BA6	15 Ω	0	24 Ω	36 Ω	* 1.5 K	* 1.5 K	120 Ω
V-3	12AT6	6.8 Ω	0	0	12 Ω	.5 meg.	0	* 470 K
V-4	50C5	150	480 K	36 Ω	85 Ω	480 K	* 1.5 K	* 190 Ω
V-5	35W4	NC	NC	85 Ω	120 Ω	138	112 Ω	* 0

* Resistance measured to Pin 7 of rectifier 35W4 (B+)

VOLTAGE READINGS ON SCHEMATIC DIAGRAM

CLOCK TIMER

The clock runs immediately and continuously when set is plugged into a 117V 60 cycle A.C. outlet.

TIME SET KNOB (Located at rear of clock timer)

- a) To set time (hour and minute hands) pull knob out and turn in the direction indicated by arrow.
- b) To set Radio Alarm (time radio goes on automatically) push knob in and turn in the direction indicated by arrow to the desired time.

CAUTION: When using this time set knob, be sure to always turn in the direction indicated by the arrow.

RADIO SWITCH KNOB (Located on front of clock timer). This knob switches radio "on" or "off" or when switch to "auto" will automatically turn the radio on at the time indicated by the radio alarm set hand. (see step 'b' above)

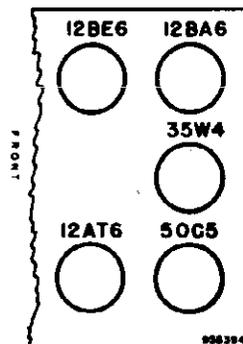
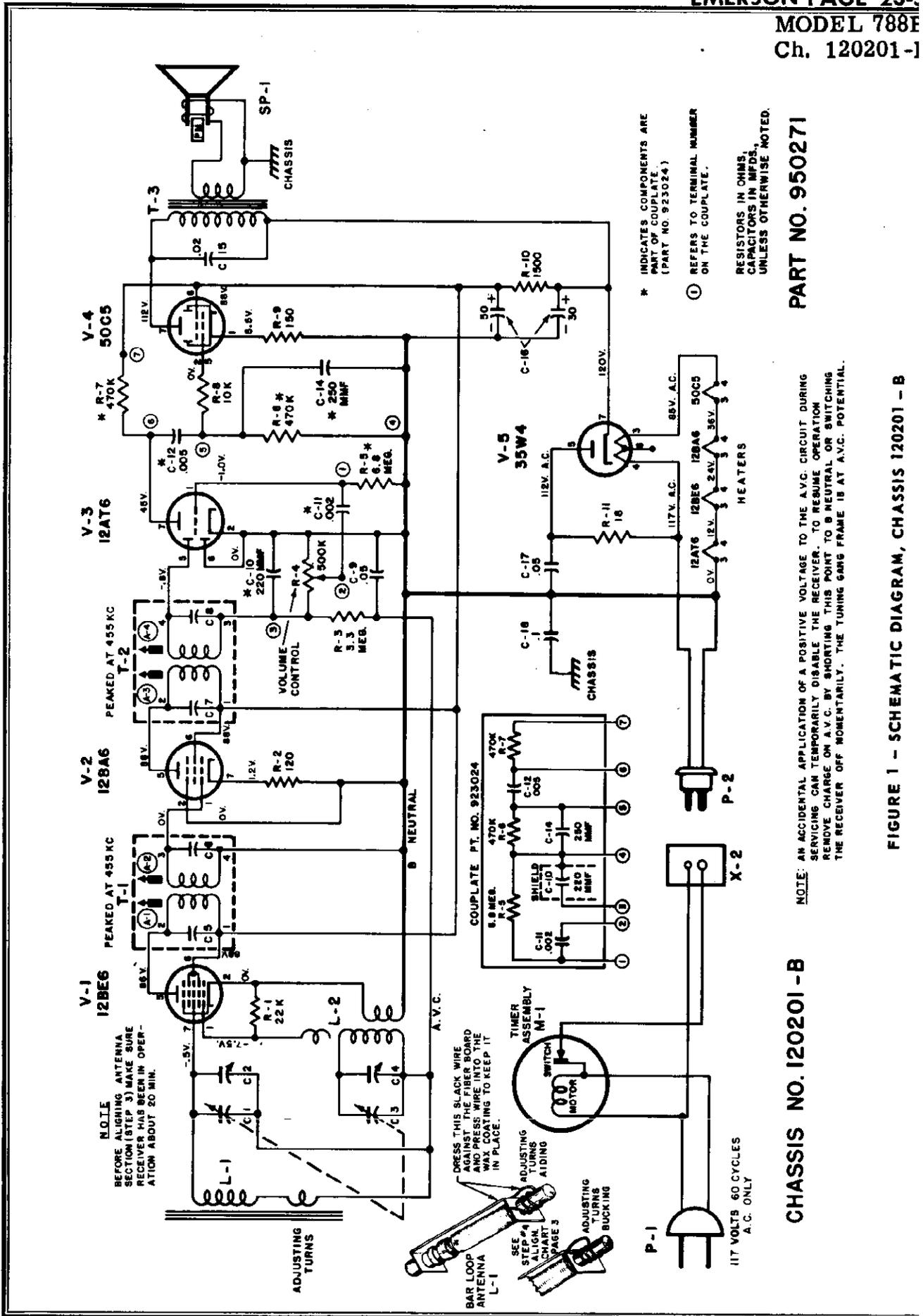


Fig. 2 Tube Location Diagram of Chassis 120201-B



MODEL 788B,
120201-B

CHASSIS PARTS LIST - CHASSIS 120201-B

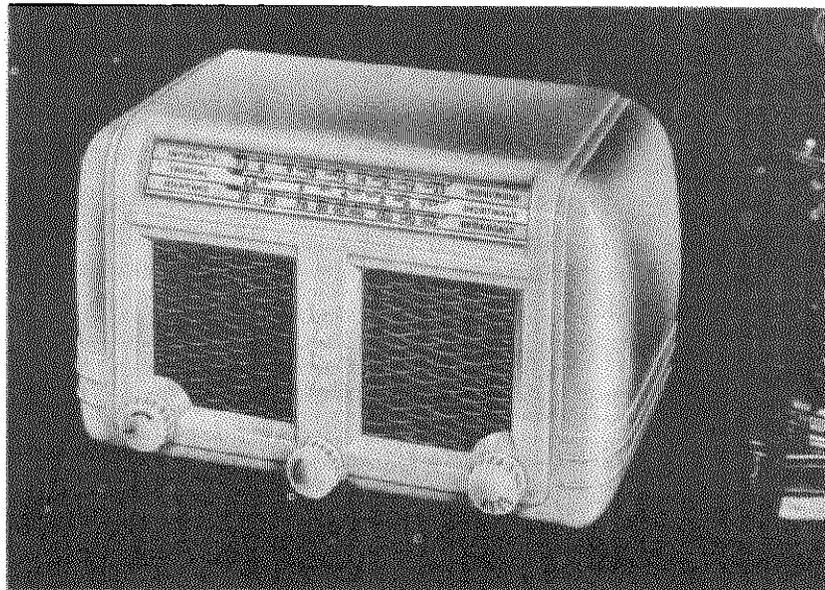
SYM-BOL	PART NO.	DESCRIPTION	LIST PRICE	SYM-BOL	PART NO.	DESCRIPTION	LIST PRICE	
C-1	900106	Variable Capacitor - R.F.Section	\$3.35	R-1	PT. of L-2	22,000 Ohm Carbon	\$.10	
C-2	PT. of C-1	Trimmer - R.F.Section		R-2	340272	120 Ohm Carbon 1/2 W. ± 10%		.06
C-3	PT. of C-1	Variable Capacitor - Oscillator Section		R-3	351332	3.3 Megohm Carbon 1/2W. ± 20%		
C-4	PT. of C-1	Trimmer - Oscillator Section		R-4	390236	500,000 Ohm Volume Control		.70
C-5	PT. of T-1			R-5)	Part	6.8 Megohm)		
C-6	PT. of T-1			R-6)	of	470,000 Ohm) R.C.Coupling Unit		
C-7	PT. of T-2			R-7)	923024	470,000 Ohm)		.05
C-8	PT. of T-2			R-8	350732	10,000 Ohm Carbon 1/2W. ± 20%		
C-9	923554	.05 MF Paper 400V		.25	R-9	150 Ohm Carbon 1/2W. ± 10%		.10
C-10)		220 MMF)	1.05	R-10	380532	1,500 Ohm Carbon 1W. ± 20%	.16	
C-11)	Part	.002 MF)		R-11	340072	18 Ohm Carbon 1/2W. ± 10%		.14
C-12)	of	.005 MF) R.C. Coupling Unit						
C-14)	923024	250 MMF)						
C-15	923524	.02 MF Paper 400V	.25	SP-1	180115	Speaker - FM - 4" (With output Trans-	5.00	
C-16	925218	30-50 MF) Electrolytic 150V	1.35		former)			
C-17	923554	.05 MF Paper 400V	.25					
C-18	923515	.1 MF Paper 400V	.30	SW-1	PT. of M-1	On-off switch		
L-1	700081	Bar Loop Antenna	2.00	T-1	720033	1st. L.F. Transformer	1.80	
L-2	716071	Oscillator Coil	.95	T-2	720033	2nd. L.F. Transformer	1.80	
				T-3	PT. of SP-1	Output Transformer		
M-1	470743	Timer - Telechron Model C-88		V-1	800525	Vacuum Tube - 12BE6		
				V-2	800524	Vacuum Tube - 12BA6		
P-1	583049P	Plug & Line Cord	.50	V-3	800523	Vacuum Tube - 12AT6		
P-2	585112	Plug & Lead Assembly	.30	V-4	800032	Vacuum Tube - 50C5		
				V-5	800526	Vacuum Tube - 35W4		
				X-2	500530	Radio Socket	.10	

Prices subject to change without notice.

CABINET PARTS LIST - CHASSIS 120201-B

PART NUMBERS	DESCRIPTION	LIST PRICE
MODEL 788B		
140553	Cabinet - Ebony	\$4.05
140553B	Cabinet - Ivory	5.35
140553A	Cabinet - Walnut	5.05
460326	Pointer Knob - Gold	.20
460311	Volume Knob - Clear	.10
460509	Switch Knob - Timer - Black	.05
450175	Grille - Gold	.55
542280	Spring - Knobs	.02
575939	Baffle	.25
575898	Back	.10
587329	Fastener - Baffle & Back	.02
470743	Timer - Telechron Model C-88	
277053	Fishpaper Washer - Timer	.01
520195	Crystal	.20
411635	Mounting Plate	.50

Prices subject to change without notice.



Power supply with ballast
105-245 Volts DC 40-60 cycles AC

Power Consumption 30 Watts

Frequency Range

Standard Broadcast 530-1650 KC (566-182 meters)

Tropical Shortwave 2.3-7.6 MC (130-39.5 meters)

International Shortwave 7.4-24 MC (40.5-12.5 meters)

Tubes:

Osc. Converter 12SA7

I.F. Amplifier 12SK7

Det. Avc. A.F. 12SQ7

Power Output 50L6GT

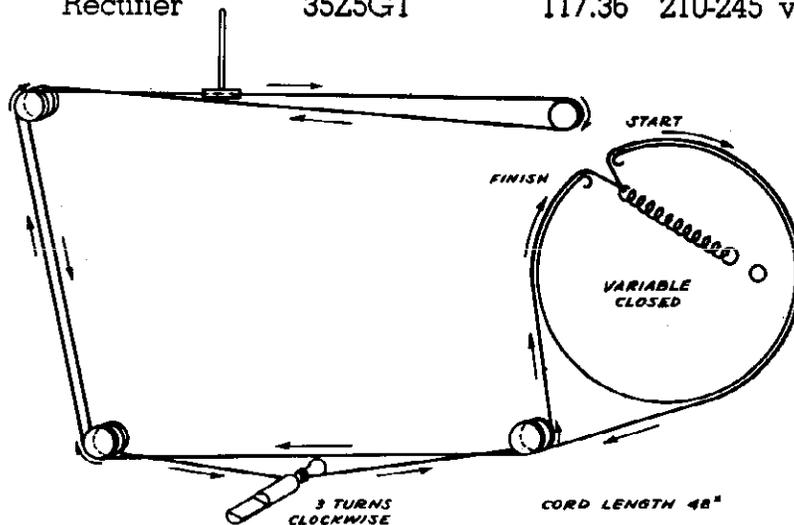
Rectifier 35Z5GT

Ballast tubes:

117.22 105-125 volts

117.35 135-160 volts

117.36 210-245 volts



MODEL 777

ALIGNMENT PROCEDURE

The chassis may be removed from the cabinet by pulling off the knobs and, removing the four screws on the bottom.

No attempt should be made to realign the various circuits until all other causes have been checked, unless the condition is so obvious as to indicate that realignment is necessary. Then proceed as follows:

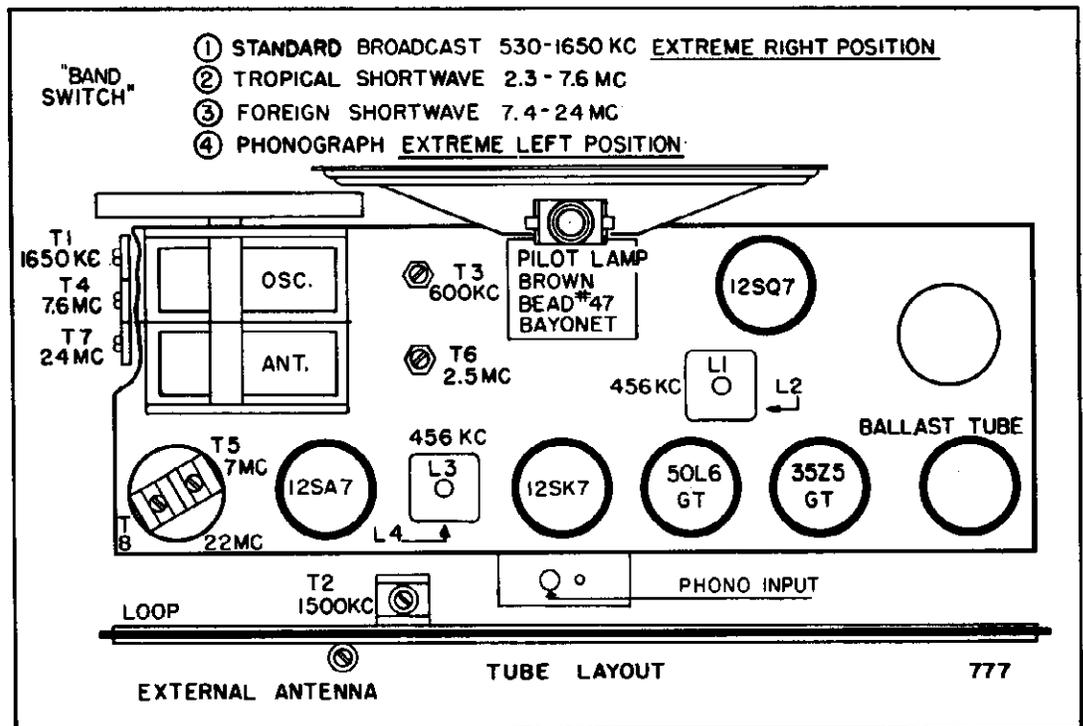
Volume Control full on.

Low range A.C. meter connected across voice coil to indicate output.

Keep signal generator attenuated so as to maintain $\frac{1}{2}$ scale reading on output meter.

Make certain that dial pointer is exactly on index line (bottom left side of dial plate) when variable condenser is fully meshed. Use only mild soap and water to clean cabinet and knobs. **Never use cleaning fluids.**

Band Switch	Receiver Dial At:	Signal Generator	Dummy Antenna	Connect Signal Generator To:	Refer To Chassis Layout For Location Of Trimmers
1. Bcst	Full Open	Exactly 456 KC.	.1 MF	Control Grid 12SA7 Tube (Top) Rear Section Variable Condenser.	Adjust for Maximum Output L1, L2, L3 & L4.
2. Bcst	Full Open	Exactly 1650 KC.	200 MMF	Terminal at Rear for External Antenna and Chassis.	Adjust for Maximum Output T1
3. Bcst	Approx. 1500 KC.	Approx. 1500 KC.	200 MMF	Same	Adjust for Maximum Output T2 on Loop.
4. Bcst	Approx. 600 KC.	Approx. 600 KC.	200 MMF	Same	Adjust for Maximum Output T3 While Rocking Tuning. Repeat Steps 2, 3 & 4 if Adjustment is great.
5. Trop.	Full Open	Exactly 7.6 MC.	400 ohm	Same	Adjust for Max. Output T4 (1st. peak in) (image should appear at 8.5 MC on Signal Generator).
6. Trop.	Approx. 7.0 MC.	Approx. 7.0 MC.	400 ohm	Same	Adjust for Max. Output T5 while rocking tuning (image should appear somewhat weaker at 7.9 MC on signal generator).
7. Trop.	Approx. 2.5 MC.	Approx. 2.5 MC.	400 ohm	Terminal at Rear for External Antenna and Chassis.	Adjust for Max. Output T6 while rocking tuning. Repeat steps 5, 6 and 7 if adjustment is great.
8. Short Wave	Full Open	Exactly 24 MC.	400 ohm	Same	Adjust for Max. Output T7 (second Peak in) (image should appear at 23.1 MC on signal generator).
9. Short Wave	Approx. 22 MC.	Approx. 22 MC.	400 ohm	Same	Adjust for Max. Output T8 while rocking tuning. (image should appear somewhat weaker at 21.1 MC on signal generator).
10. Short Wave	Approx. 8 MC.	Approx. 8 MC.	400 ohm	Same	Check tracking with iron and brass wand in Ant. coil #37.108. If output more than doubles, tracking may be improved somewhat by gently dressing leads or moving osc. coil #37.109. Repeat steps 8, 9, and 10 if adjustment is great.

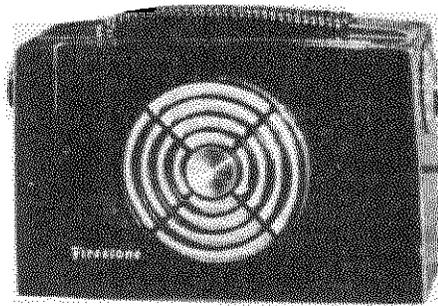


PARTS LIST

Part No.	Description	Part No.	Description
12.23	Tubular Condenser .03 Mfd. 400 V Molded	47.12	3 Band Switch
12.24	Tubular Condenser .05 Mfd. 400 V Molded	52.6	Volume Control with Switch
12.25	Tubular Condenser .1 Mfd. 400 V Molded	72.1	Power Cord
17.21	Ceramic Condenser 100 Mmf ± 20%	77.4	Dial Cord Spring
17.22	Ceramic Condenser 220 Mmf ± 20%	77.5	Dial Cord
17.45	Ceramic Condenser 1500 Mmf ± 20%	77.33	Pointer
17.75	Ceramic Condenser 2200 Mmf ± 10%	77.112	Glass Dial Scale
17.85	Mica Condenser 6800 Mmf ± 5%	92.17	Phono Plug
17.84	Ceramic Condenser 4700 Mmf ± 20%	92.18	Phono Socket
17.91	Mica Condenser 1300 Mmf ± 5%	92.19	Phono Shell
22.32	Electrolytic Condenser 30-40-20 Mfd. 150 Volts	97.46	Cabinet Bakelite (Walnut or Ivory)
27.25	Variable Condenser 2 gang type 2001	97.117	Masonite Back
37.62	Input & Output I.F. Coil	97.157	Grille Cloth
37.88	Broadcast Loop	107.8A	Speaker 6" x 4" Oval Alnico V Magn
37.108	S.W. and Tropical Antenna Coil	142.37	Knob "Off" Volume (Walnut or Ivory)
37.109	S.W. Oscillator Coil	142.38	Knob Tuning (Walnut or Ivory)
37.110	B.C. and Tropical Oscillator Coil	142.39	Knob B.C.-Tr.-S.W.—Phono (Walnut or Ivory)
42.36	Output Transformer 2500 ohm 400 cycles		

Note: When ordering, please give part number and description.

MODELS 4-C-1
4-C-20, The
Caravan



SPECIFICATIONS

Cabinet Dimensions (Inc. Knobs)	10-3/4" X 4-1/4" X 6-3/8"	Batteries -	One 4-1/2 Volt "A" Firestone 4-D-86
Weight	- 4 Lbs.(Less Batteries)		One 90 Volt "B" Firestone 4-D-88
Power Supply	- 110-120		
	Volt AC-DC & Battery	Tube Complement	
Tuning Range	- 540 to 1600 KC	1R5 - Converter	
Intermediate Freq.	- 455 KC	1U4 - I.F. Amplifier	
Loud Speaker	- 4" PM	1U5 - Diode-Audio Amplifier	
Voice Coil Impedance	- 3.2 Ohms at 400 Cycles	3V4 - Power Output	
Power Output		Rectifier - Selenium Type	
Undistorted	-180 MW		
Maximum	-300 MW		

ALIGNMENT PROCEDURE

For alignment procedure read tabulations from left to right and make the adjustments marked (1) first. (2) next. (3) third.

Before starting alignment:

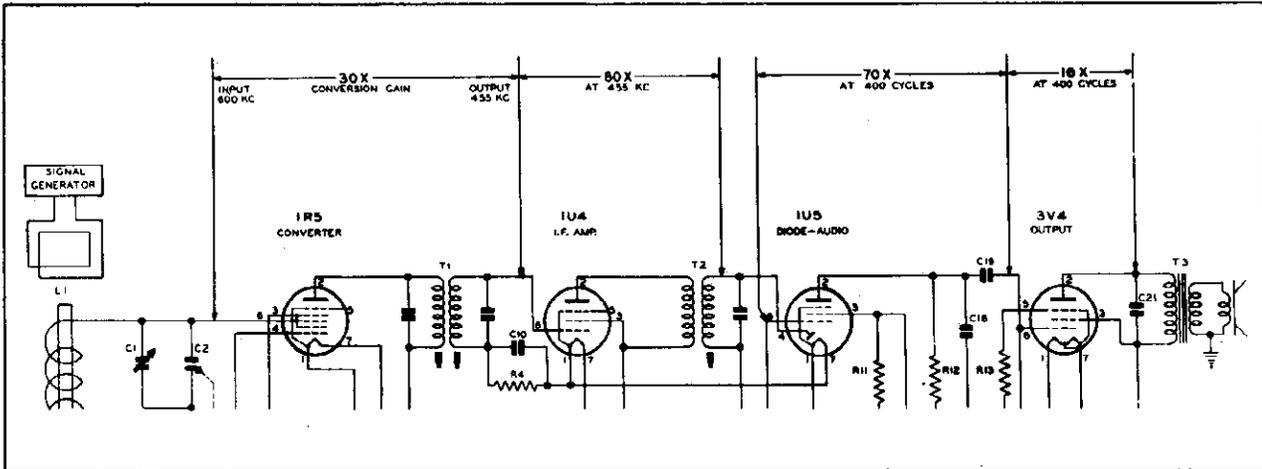
- (A) Remove the chassis and loop antenna from the cabinet at the same time by removing the battery connectors from the batteries, pulling off knobs and removing the two screws on the chassis tabs which fasten the chassis to the cabinet.
- (B) Use an accurately calibrated test oscillator with some type of output measuring device.

STEP NO.	POSITION OF GANG	SIGNAL GENERATOR FREQUENCY	GENERATOR CONNECTION	DUMMY ANTENNA	ADJUSTMENT	TYPE OF ADJUSTMENT
1	Any point where no interfering signal is received.	Exactly 455 KC	High Side to grid of 1R5 tube. Low side to common negative.	.05 MFD. Condenser	Slug at top of 2nd. I.F. (T2) and then each of the slugs of the 1st. I.F.	For Maximum Output.
2	Exactly 1620 KC.	Exactly 1620 KC.	DUMMY	2 turns of hookup wire 6" in Dia. (Place approximately a foot from, [end of], and in same axis as, loop antenna.)	Front Gang Trimmer.	For Maximum Output.
3	Approximately 1400 KC.	Approximately 1400 KC.			Rear Gang Trimmer.	For Maximum Output.
4	Exactly 600 KC.	Exactly 600 KC.	ANTENNA		Slug in Oscillator Coil (L2).	For Maximum Output.
5					REPEAT STEPS 2 and 3	

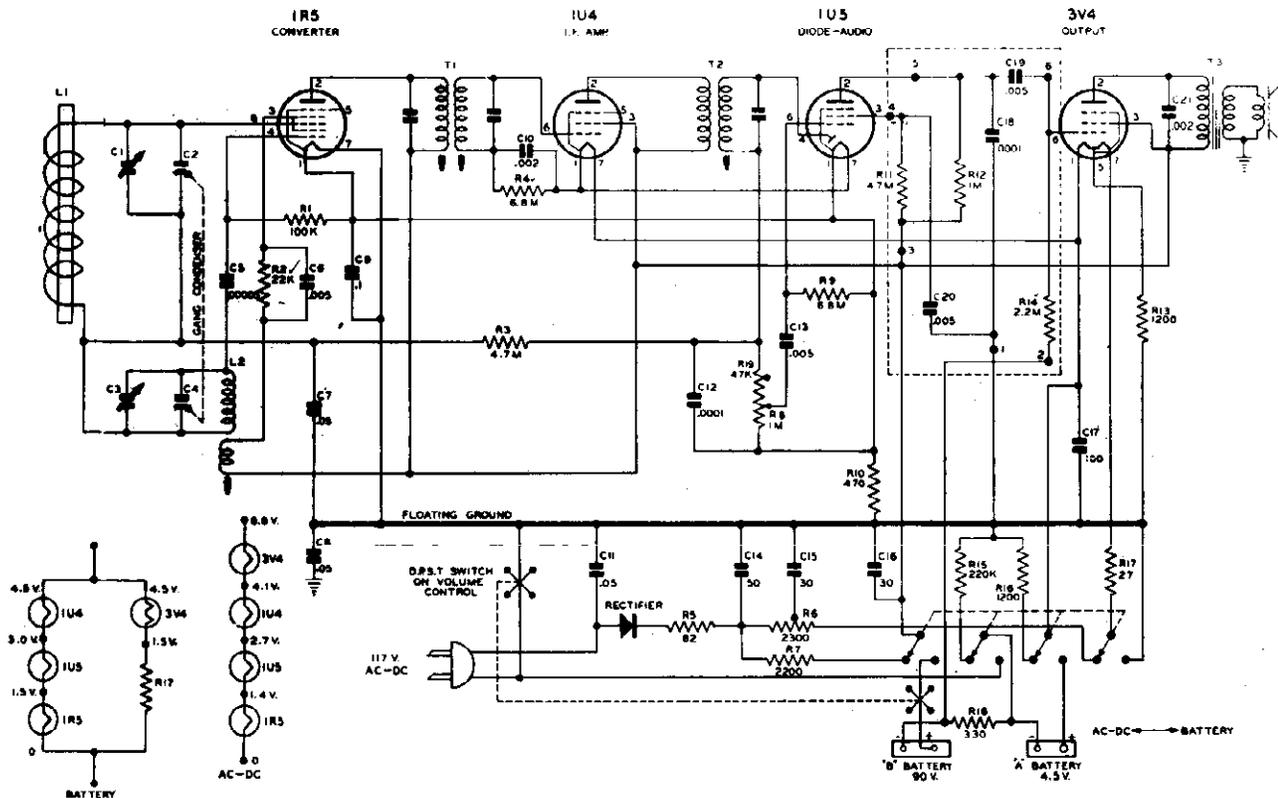
MODELS 4-C-19, 4-C-20,
The Caravan

Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube volt-meter may be used for audio gain measurements. Observe following precautions:

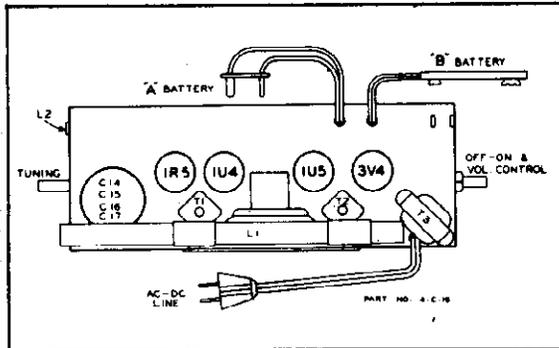
1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
3. When using a "channel type instrument carefully tune it for maximum output at desired frequency before making measurements.



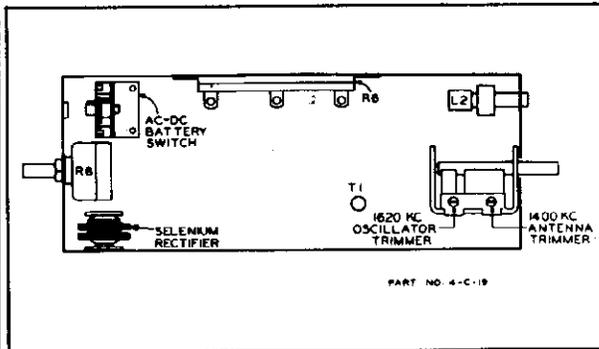
Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.



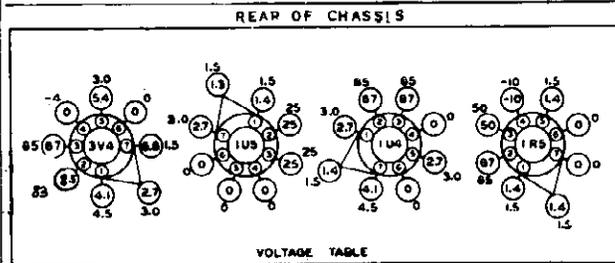
MODELS 4-C-19
4-C-20, The
Caravan



TOP VIEW OF CHASSIS



BOTTOM VIEW OF CHASSIS



VOLTAGE TABLE
BOTTOM VIEW OF CHASSIS

ALL VOLTAGES EXCEPT FILAMENTS AS INDICATED ARE MEASURED FROM SOCKET CONTACTS TO COMMON NEGATIVE USING A 25000 OHM PER VOLT METER. VOLTAGES IN CIRCLES ARE FOR 117V. A.C. OPERATION. VOLTAGES NOT IN CIRCLES ARE FOR BATTERY OPERATION.

ILL. NO.	PART NO.	PART NAME	DESCRIPTION	LIST PRICE
R1	N-2973	Resistor Carbon	100,000 Ohm 1/2W. 10%	.25
R2	N-6012	Resistor Carbon	22,000 Ohm 1/2W. 10%	.25
R3	N-4061	Resistor Carbon	4.7 Megohm 1/2W. 20%	.25
R4, R9	N-4028	Resistor Carbon	6.8 Megohm 1/2W. 20%	.25

ILL. NO.	PART NO.	PART NAME	DESCRIPTION	LIST PRICE
R5	N-4023	Resistor Carbon	82 Ohm 2.0W. 10%	.30
R6	N-8333	Resistor Carbon	2,300 Ohm 5.6W. 5% (Center Tapped)	.88
R7	N-4896	Resistor Carbon	2,200 Ohm 1/2W. 10%	.25
R8	N-8332	Volume Control with Switch	1.0 Megohm	1.50
R10	N-4066	Resistor Carbon	470 Ohm 1/2W. 10%	.25
R13, R16	N-6793	Resistor Carbon	1,200 Ohm 1/2W. 10%	.25
R15	N-4026	Resistor Carbon	220,000 Ohm 1/2W. 20%	.25
R17	N-6792	Resistor Carbon	27 Ohm 1/2W. 10%	.25
R18	N-4420	Resistor Carbon	330 Ohm 1/2W. 10%	.25

C18			(.0001 MFD.)	
C19, C20			(.005 MFD.)	
R11	N-8330	Couplate	(4.7 Megohm)	.85
R12			(1.0 Megohm)	
R14			(2.2 Megohm)	
C5	N-8375	Condenser Ceramic	50 MMFD. 500V.	.25
C6, C13	N-4894	Condenser Paper	.005 MFD. 600V.	.25
C7, C8	N-1345	Condenser Paper	.05 MFD. 200V.	.25
C9	N-1351	Condenser Paper	.1 MFD. 200V.	.25
C10, C21	N-6377	Condenser Paper	.002 MFD. 600V.	.25
C11	N-1346	Condenser Paper	.05 MFD. 400V.	.25
C12	N-6015	Condenser Ceramic	100 MMFD. 500V.	.25

C14			(50 MFD. 150V.)	
C15			(30 MFD. 150V.)	
C16	N-6841	Condenser Electrolytic	(30MFD. 150V.)	3.35
C17			(100MFD. 25V.)	
		N-8321	Condenser Tuning	2.75
		N-8681	Speaker 4" P.M.	5.05
L1	N-8328	Coil	Loop Antenna - Iron Rod Type	2.57
T1	N-7981	Transformer	1st. I.F.	1.60
T2	N-8326	Transformer	2nd. I.F.	1.60
T3	N-8329	Transformer	Output	1.95
L2	N-8327	Coil	Oscillator	.95
		N-8331	Rectifier Selenium	1.80
		N-5951	Switch Power Changeover	1.25

#335	Cabinet	Plastic - Maroon-Less Handle	(Stock No.)	\$7.05
N-8334	Knob	Tuning - Maroon	(4-C-19)	.40
N-8345	Knob	Volume - Maroon	(Only)	.40
N-8342	Handle	Maroon	()	.85
#338	Cabinet	Plastic - Green-Less Handle	(Stock No.)	\$7.05
N-8335	Knob	Tuning - Green	(4-C-20)	.40
N-8346	Knob	Volume - Green	(Only)	.40
N-8410	Handle	Green	()	.85

N-8419	Assembly	Grille Cloth & Baffle		.73
N-8338	Hinge	Cabinet Back		.25
N-8339	Spring Clip	Cabinet Back Retaining		.25

* INCLUDES EXCISE TAX

ORDERING PARTS

Order parts from your nearest Firestone Tire and Auto Supply Warehouse. When ordering parts, it is important that the correct code number and stock number, be given with the correct part name and part number as shown in the parts list.

PAGE 23-4 FIRESTONE

MODEL 4-C-21,
Code 120-1-C51

OPERATION

POWER SELECTOR SWITCH (See Fig. 2)

This control is located on the back of the radio chassis. Release snap fastener securing door on back of cabinet. Remove line cord from compartment and turn switch to "AC-DC" or "BATT." position. The line cord is stored in this compartment when the radio is operating on batteries.

VOLUME CONTROL KNOB (See Fig. 1)

This knob is located on the left side of the radio. Turning this knob slightly to the right until a slight click is heard will put the radio into operation. Turning this knob further to the right will increase the volume and turning it to the left will decrease the volume. After a station has been selected, the volume control should be adjusted to the desired level. The volume should never be reduced by detuning the station selector knob.

STATION SELECTOR KNOB (See Fig. 1)

This knob is located on the right side of the radio. Turn the knob until a desired station has been selected. Adjust very carefully until the station comes in with the most natural tone.

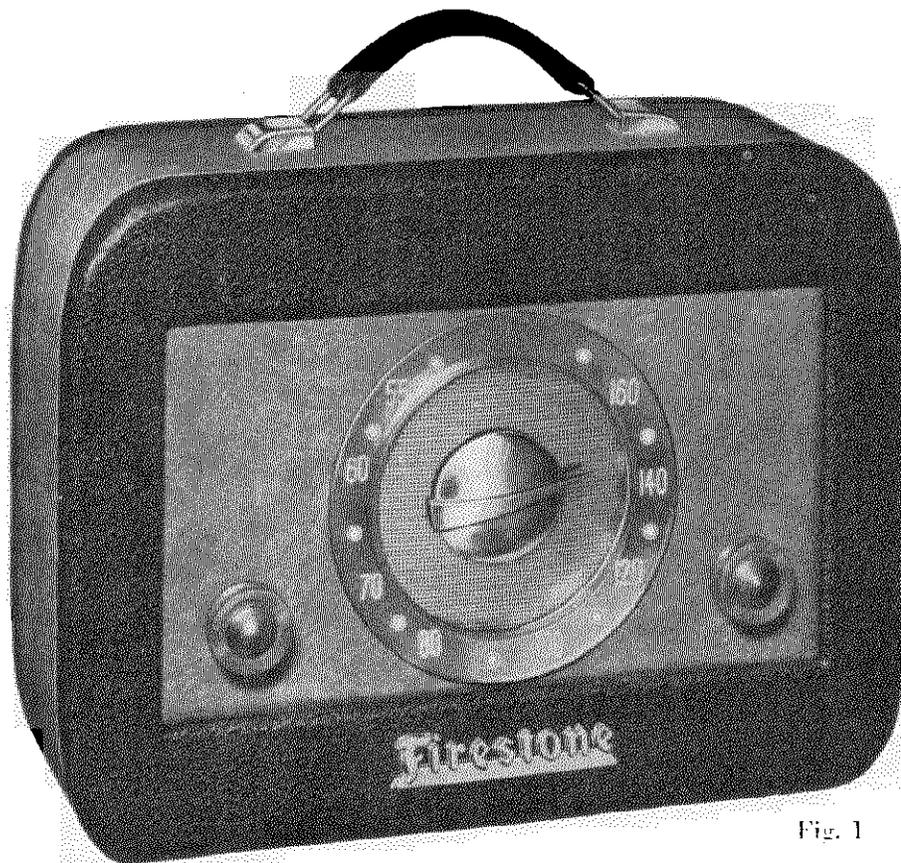


Fig. 1

DESCRIPTION

This Portable Receiver is a 5-tube plus rectifier superhetrodyne, designed to operate on 115 to 125 volts, AC-DC power, or on self-contained batteries. The receiver covers the frequency range 538 to 1620 KC. Three controls are provided for operating the receiver. See Fig. 1 and 2.

This receiver is equipped with a tuned R.F. Stage, a 3-gang tuning condenser and the newly designed "Magna-Loop" antenna, thereby insuring the finest in sensitivity and selectivity. It is designed with the patented "Battery Rejuvenator". Proper use of this rejuvenator will extend the normal life of the "B" batteries 2 to 4 times for extra hours of listening pleasure.

ELECTRICAL SPECIFICATIONS

Power supply.....	115 to 125 volts AC-DC or 2 45 volt "B" batteries and 2 4½ volt "A" batteries	This receiver contains the following:
Frequency Range	538 - 1620 KC.	1—1T4 or 1U4 RF Amplifier
Speaker	5" PM	1—1R5 Converter
Power Output .....	.25 watts maximum	1—1T4 or 1U4 I. F. Amplifier
		1—1U5 Detector—AVC—1st Audio
		1—3V4 Power Output

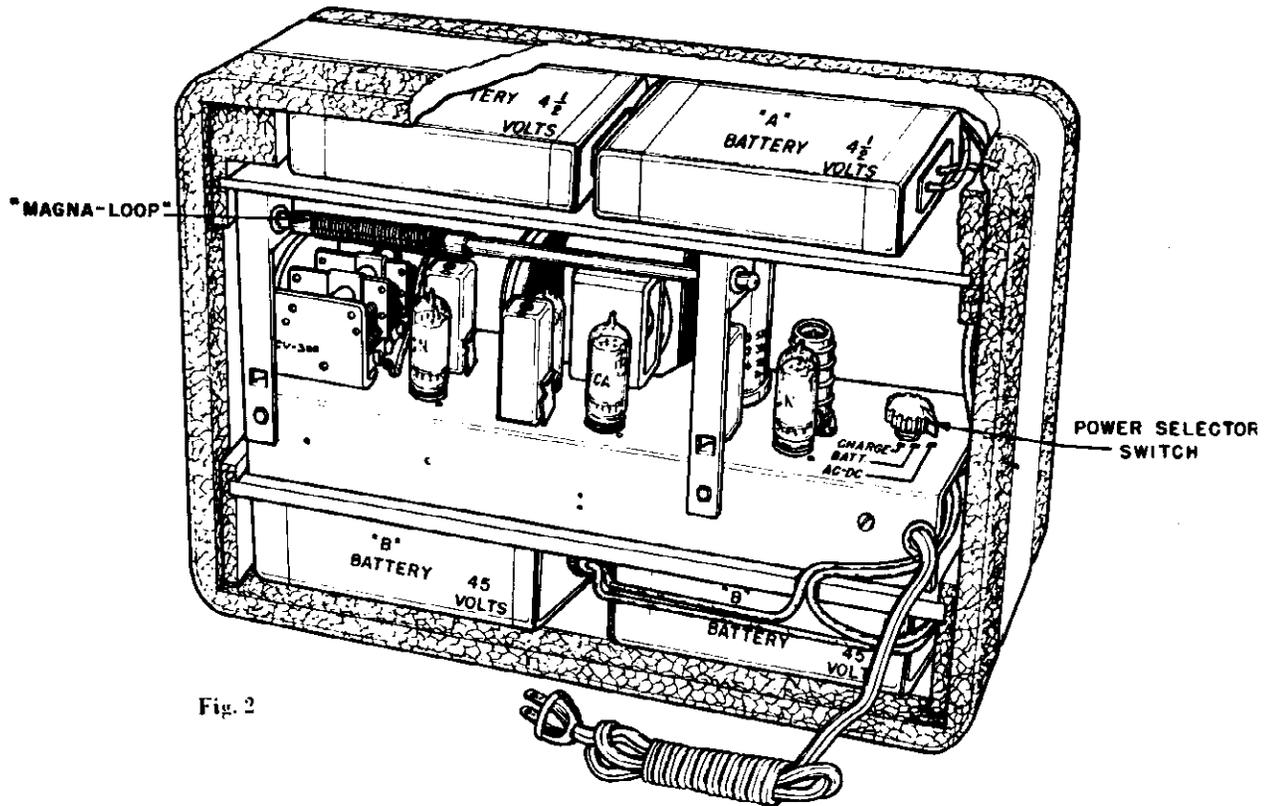


Fig. 2

BATTERY INSTALLATION

BATTERY INSTALLATION

Batteries Required

- 2 4½ volt "A" Batteries Firestone No. 4-D-36
- 2 45 volt "B" Batteries Firestone No. 4-0-89

1. Remove two wood screws located in upper corners of back.
2. Swing top of back away from cabinet and remove by lifting in an upward direction.
3. Install batteries and insert cable plugs as shown in Fig. 2.

BATTERY CHARGING

The "B" batteries can be recharged in the following manner:

1. Turn power selector switch to charge position.
2. Plug line cord into an AC or DC 115-125 volt power line.
3. Turn volume control on.

The best possible performance on battery operation can be realized if the batteries are periodically charged by the Rejuvenator for as long a period as they have been in use, rather than waiting until they run down. For example if the receiver has been operated on battery power for four hours, it should be on charge for at least four hours afterwards. In this manner, the quality and sensitivity of the receiver will be at a maximum since the fully charged batteries will insure "new battery" performance.

CAUTION: Do not attempt to remove tubes or replace batteries while receiver is turned on.

MODEL 4-C-21,
Code 120-1-C51

ALIGNING INSTRUCTIONS

Never attempt any adjustments on this receiver unless it becomes necessary to replace a coil or transformer, or the adjustments have been tampered with in the field. Always make certain that other components such as tubes, condensers, resistors, etc., are normal before proceeding with realignment. If realignment is necessary, follow the instructions given under the heading "Alignment Procedure". After realignment has been completed, repeat the procedure as a final check.

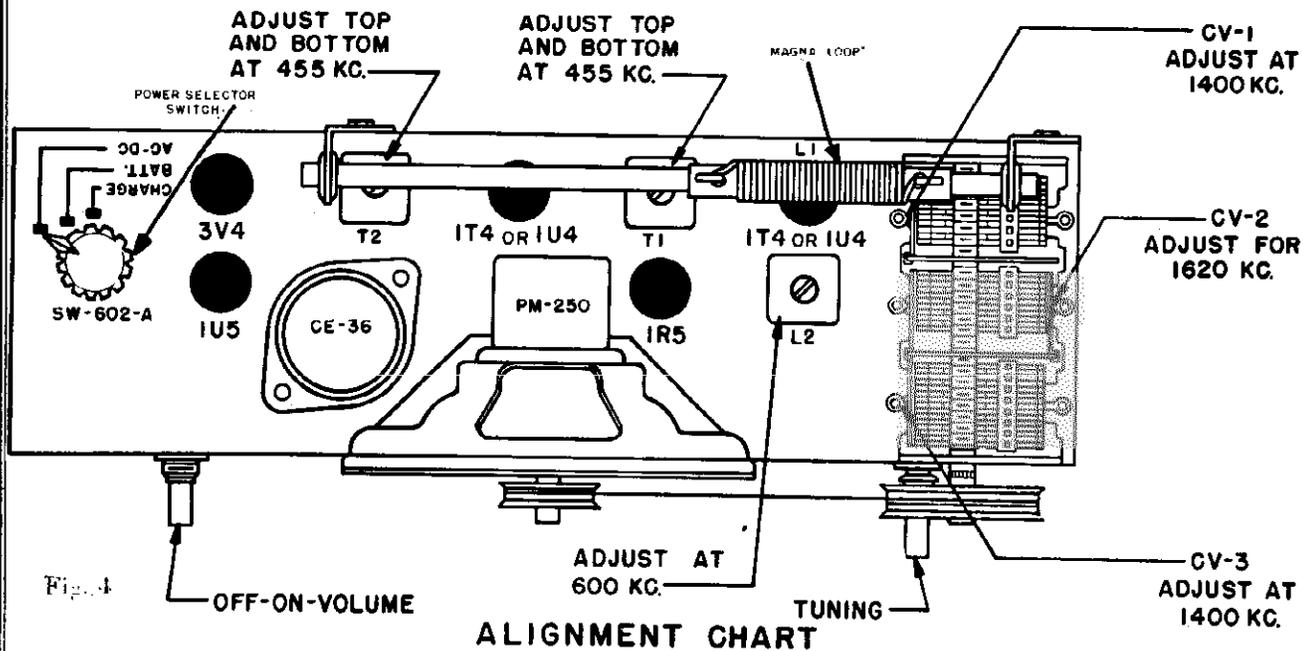
To remove the radio chassis for servicing, remove the back cover and disconnect cables from batteries. Remove batteries and pull out the top shelf. Slide out the chassis and bottom shelf and remove the screws securing chassis to shelf.

ALIGNMENT PROCEDURE

- Volume control — Maximum, all adjustments.
- No signal applied to antenna.
- Power input — 115 to 125 Volts AC or DC.
- Connect dummy antenna in series with output lead of signal generator.
- Connect ground lead of signal generator to chassis.
- Repeat alignment procedure as a final check.

- The following equipment is necessary for proper alignment:
- Signal generator that will provide the test frequencies as listed, modulated 400 cycles, 30%.
- Non-metallic screwdriver.
- Output meter. (1.8 volt for 1 watt output).
- Dummy antenna — .1 MFD.
- For alignment points refer to Schematic Diagram.

Dial Setting	Generator Frequency	Dummy Ant.	Generator Connection	Trimmer Reference	Trimmer Adjustment	Trimmer Function
1. Fully open	455 KC	.1 MFD	1R5 Grid	T2 Top & bottom	Maximum	Output I.F.
2. Fully open	455 KC	.1 MFD	1R5 Grid	T1 Top & bottom	Maximum	Input I.F.
3. Fully open	1620 KC	.1 MFD	Grid 1T4 RF Stage	CV2	Maximum	Oscillator
4. Tune in signal from generator	1400 KC	.1 MFD	Grid 1T4 RF Stage	CV3	Maximum	RF Stage
5. Tune in signal from generator	600 KC	.1 MFD	Grid 1T4 RF Stage	L2	Maximum	RF Stage
6. Tune in signal from generator	1400 KC		Loosely couple signal generator leads to "Magna Loop"	CV1	Maximum	Antenna



MODEL 4-C-21,
Code 120-1-C51

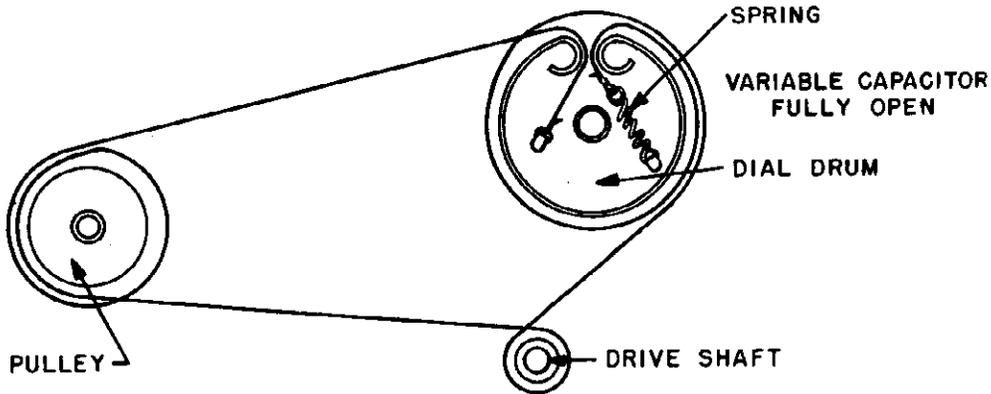


Fig. 5

PARTS AND PRICE LIST CONDENSERS

Schematic Diagram Reference	Part No.	Description	List Price
C1, C2, C4	C208	.1 MFD 400 Volt Condenser	\$.35
C3	C207	.05 MFD 200 Volt Condenser	.25
C5, C7, C8	CC200	100 MMFD Ceramic Condenser	.25
C8	C206	.01 MFD 400 Volt Condenser	.30
C9	CC201	200 MMD Ceramic Condenser	.25
C10, C11	C203	.002 MFD 400 Volt Condenser	.25
C12	C204	.05 MFD 400 Volt Condenser	.35
C13	C205	10 MFD 25 Volt Condenser	.50
CE-36	CE-36	{ 50 MFD 150 Volt Electrolytic Condenser 30 MFD 150 Volt Electrolytic Condenser 25 MFD 150 Volt Electrolytic Condenser 200 MFD 10 Volt Electrolytic Condenser }	2.65
CV1, CV2, CV3	CV-300	3 Section Variable Condenser	3.65

RESISTORS

R1	R315	150 K ohm 1/2 watt 20% resistor	.10
R2	R309	1 meg ohm 1/2 watt 20% resistor	.10
R3, R5, R7	R311	10 meg ohm 1/2 watt 20% resistor	.10
R4	R310	2 meg ohm 1/2 watt 20% resistor	.10
R6	R316	10 K ohm 1/2 watt 20% resistor	.10
R8, R9, R15	R317	820 ohm 1/2 watt 20% resistor	.10
R10	R318	100 ohm 2 watt 10% resistor	.25
R11	R319	2025 ohm 10 watt 20% resistor	.50
R12	R320	750 ohm 1/2 watt 20% resistor	.10
R13	R321	1 K ohm 1/2 watt 20% resistor	.10
R14	R314	1.5 K ohm 1/2 watt 20% resistor	.10

COILS AND TRANSFORMERS

L1	L-A51	Magna Loop Antenna Coil	1.50
L2	57FB-4	R. F. Coil	2.00
L3	L-051	R.F. Oscillator Coil	1.00
T1	1655-16	1st L.F. Transformer	2.00
T2	1655-16	2nd L.F. Transformer	2.00

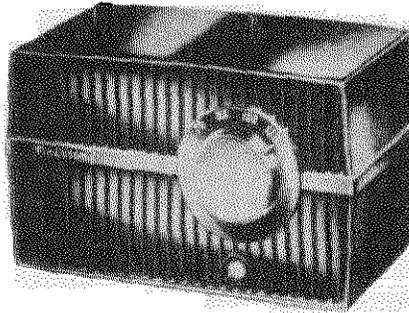
MISCELLANEOUS

SW-602A	Power Selector Switch	\$1.00
PM-250	Speaker 5" PM (includes output transformer)	5.75
S1	Selenium Rectifier	1.50
H208	Clip Coil Mounting	.05
H51	Knob	.10
B51	"A" Battery Cable	.75
B52	"B" Battery Cable	.75
H53	Cabinet less back	5.95
H54	Cabinet back	1.50
4-D-89	"B" Battery, 45 volt	2.25
4-D-86	"A" Battery, 4 1/2 volt	.85

DIAL PARTS

H55	Plastic Dial	\$2.00
H56	Dial Pointer	.25
H57	Dial Pulley	.05
H58	Spring, Dial Drive String Tension	.05
H59	String, Dial Drive	.10

MODEL 54-A-101
4-A-102, Code
297-2-3419



SPECIFICATIONS

CABINET DIMENSIONS

Length 8-9/16"
Depth 5"
Height 5"

LOUD SPEAKER 4 Inch PM

VOICE COIL IMPEDANCE 3.2 Ohm at
400 Cycles

POWER OUTPUT Undistorted - 0.9 Watt
Maximum - 1.8 Watts

SHIPPING WEIGHT 4-1/4 Lbs.

POWER SUPPLY 110 to 120 Volt AC-DC

TUNING RANGE 540 to 1600 KC

INTERMEDIATE FREQUENCY 455KC

TUBE COMPLEMENT

12AU6 - Converter
12AV6 - Diode Audio
50C5 - Output
35Z5GT - Rectifier

ALIGNMENT PROCEDURE

For alignment procedure read tabulations from left to right, and make the adjustments marked (1) first, (2) next, (3) Third.

Before starting alignment

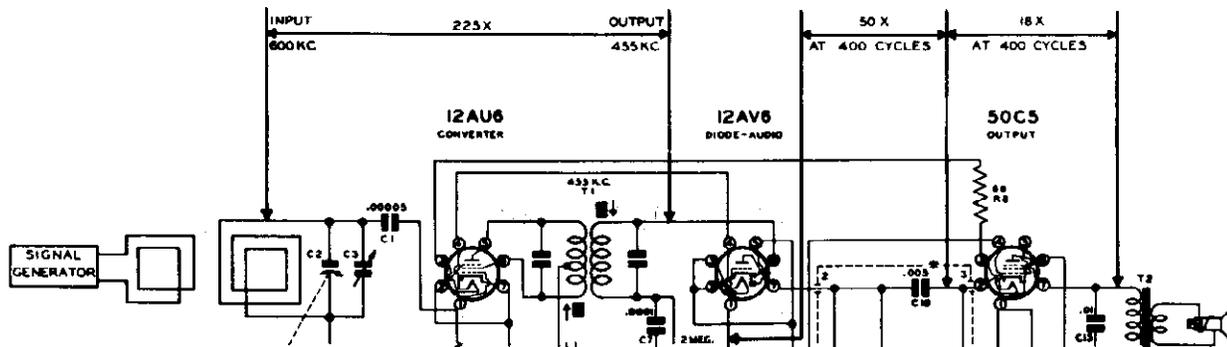
- (A) Remove chassis and loop from cabinet. Leave loop in position on its mounting bracket. Turn tuning capacitor until plates are completely in mesh and replace tuning knob with indicator pointing to the left and parallel to chassis base.
- (B) Use an accurately calibrated test oscillator with some type of output measuring device.
- (C) When aligning the 1400 KC Antenna Trimmer and the 1620 KC Oscillator Trimmer, couple test oscillator to receiver loop by; (1) make loop consisting of two turns of #22 size wire wound on a form of 6" in dia. (2) connect this loop across output of test oscillator; (3) place test oscillator loop approximately a foot from and in the same plane as the receiver loop.
BE SURE THAT NEITHER LOOP MOVES WHILE ALIGNING.

Steps	Set Receiver dial to:	TEST OSCILLATOR		Refer to parts layout diagram for location of trimmers mentioned below:
		Adjust test oscillator frequency to:	Attach output of test oscillator to:	
1	ANY POINT WHERE NO INTERFERING SIGNAL IS RECEIVED. WITH TUNING CONDENSER NEAR CENTER	455 K.C.	HIGH SIDE TO REAR STATOR PLATES OF TUNING CONDENSER. LOW SIDE TO COMMON NEGATIVE THROUGH A .05 MFD BLOCKING CONDENSER	ADJUST SLUGS AT TOP AND BOTTOM OF I.F. CAN FOR MAXIMUM OUTPUT.
2	EXACTLY 1620 K.C.	EXACTLY 1620 K.C.	SEE PARAGRAPH "C" ABOVE	ADJUST 1620 K.C. OSCILLATOR TRIMMER FOR MAXIMUM OUTPUT.

**MODELS 4-A-101,
4-A-102, Code 297-2-3419**

Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
3. When using a "channel type instrument carefully tune it for maximum output at desired frequency before making measurements.



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.

ORDERING PARTS

Order parts from your nearest Firestone Tire and Auto Supply Warehouse. When ordering parts, it is important that the correct code number and stock number, be given with the correct part name and part number as shown in the parts list.

PARTS LIST

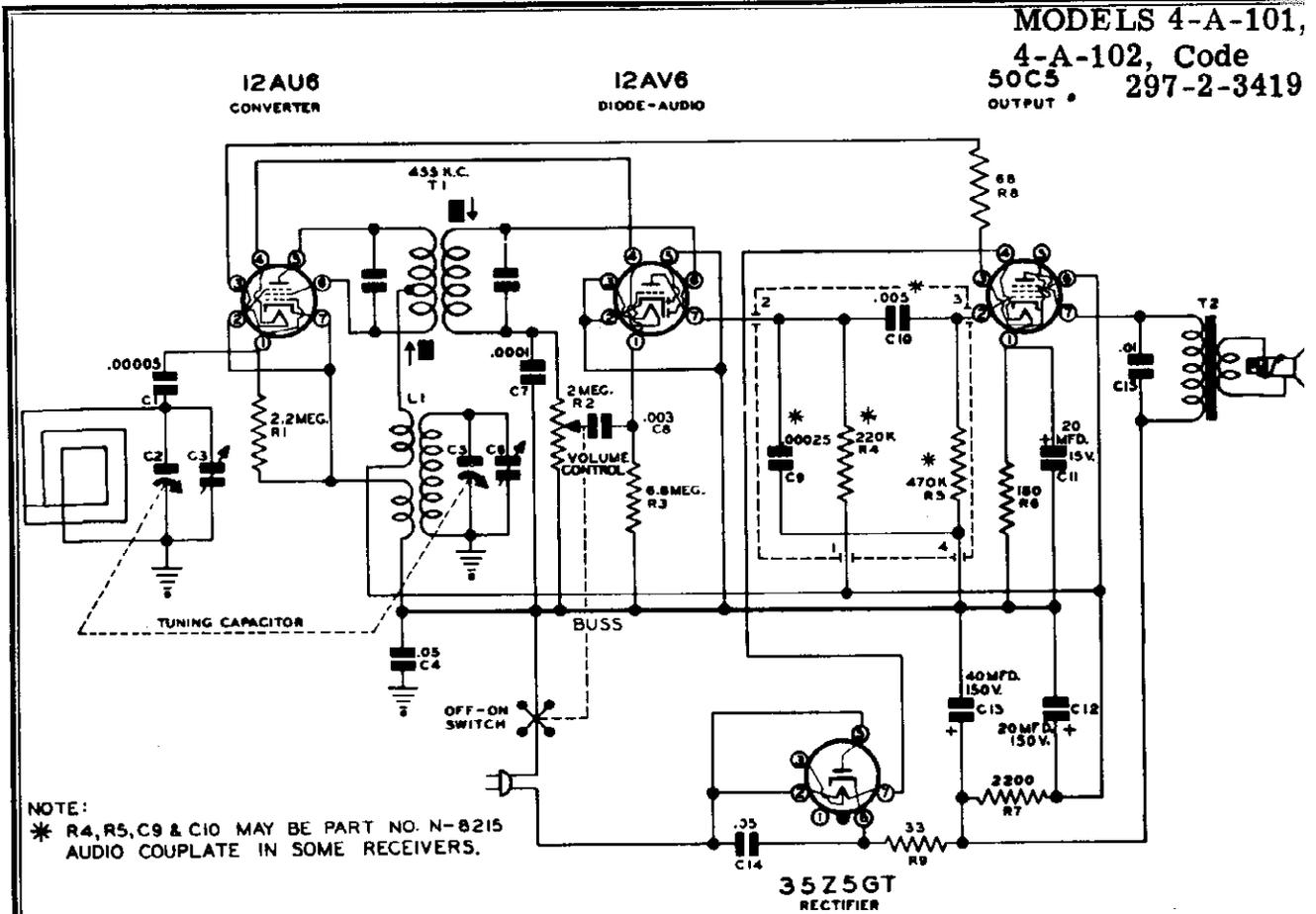
ILLUS. NO.	PART NO.	PART NAME	DESCRIPTION	LIST PRICE	ILLUS. NO.	PART NO.	PART NAME	DESCRIPTION	LIST PRICE
C1	N-6385	Condenser	Ceramic 50 MMFD. 500 Volts 10%	\$.25	R6	N-4067	Resistor	Carbon 180 Ohm 1/2 Watt 10%	\$.25
C2,C5	N-8508	Condenser	Gang Tuning	2.55	R7	N-4896	Resistor	Carbon 2,200 Ohm 1/2 Watt 10%	.25
C4	N-1345	Condenser	Paper .05 MFD. 200 Volts	.25	R8	N-6014	Resistor	Carbon 68 Ohm 2.0 Watt 10%	.30
C7	N-6015	Condenser	Ceramic 100 MMFD. 500 Volts 20%	.25	R9	N-4022	Resistor	Carbon 33 Ohm 1/2 Watt 20%	.25
C8	N-2063	Condenser	Paper .003 MFD. 600 Volts	.25	T1	N-7694	Transformer	I. F.	1.65
*C9	N-6488	Condenser	Ceramic 250 MMFD. 500 Volts 20%	.25	L1	N-8552	Coil	Oscillator	.80
*C10	N-4894	Condenser	Paper .005 MFD. 600 Volts	.25		N-8581	Coil	Loop Antenna and Cabinet Back	1.50
C11)			(20 MFD. 15 Volts)			N-7824	Speaker	4"PM with Output Transformer	6.78**
C12)	N-8442	Condenser	Electrolytic (20 MFD. 150 Volts)	1.70	#341	Cabinet	Plastic - White ()	5.05**	
C13)			(40 MFD. 150 Volts)		#356	Cabinet	Plastic - Red ()	5.05**	
C14	N-1346	Condenser	Paper .05 MFD. 400 Volts	.25	#357	Cabinet	Plastic - Green (Stock No.)	5.05**	
C15	N-1344	Condenser	Paper .01 MFD. 400 Volts	.25	N-8422	Knob	Volume Control - White (4-A-102)	.25	
R1	N-4277	Resistor	Carbon 2.2 Megohm 1/2 Watt 20%	.25	N-8619	Knob	Volume Control - Red (Only)	.25	
R2	N-7142	Resistor	Volume Control with Switch	1.10	N-8620	Knob	Volume Control - Green ()	.25	
R3	N-4028	Resistor	Carbon 6.8 Megohm 1/2 Watt 20%	.25	N-8604	Knob	Station Tuning - White ()	.60	
R4	N-4026	Resistor	Carbon 220,000 Ohm 1/2 Watt 20%	.25	#349	Cabinet	Plastic - Walnut (Stock No.)	3.53**	
R5	N-4027	Resistor	Carbon 470,000 Ohm 1/2 Watt 20%	.25	N-8421	Knob	Volume Control - Walnut(4-A-101)	.25	
					N-8364	Knob	Station Tuning - Walnut (Only)	.60	

NOTES - * In some receivers, the following components (C9,C10,R4 and R5) are replaced by the assembly listed below

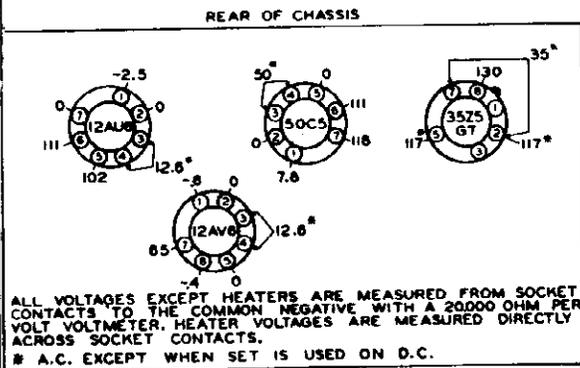
N-8215 Assembly Audio Coupling Plate

** Excise Tax included.

MODELS 4-A-101,
4-A-102, Code
50C5, 297-2-3419
OUTPUT

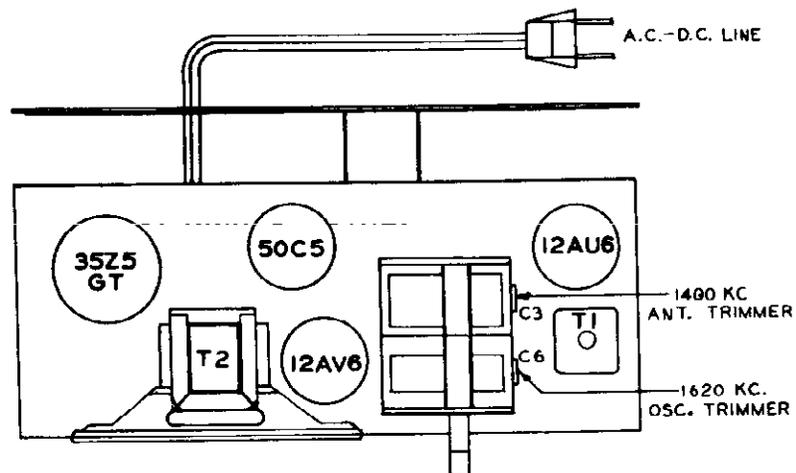
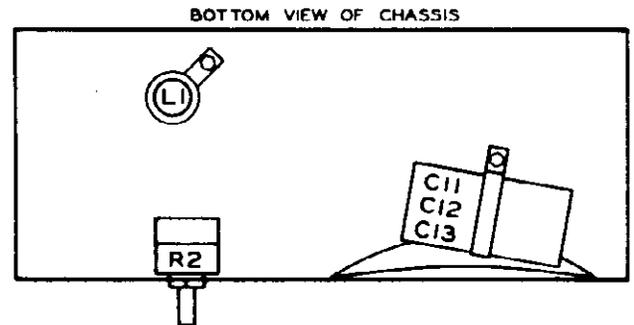


NOTE:
* R4, R5, C9 & C10 MAY BE PART NO. N-8215
AUDIO COUPLATE IN SOME RECEIVERS.

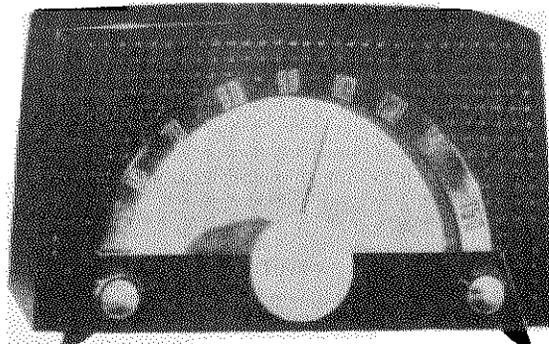


ALL VOLTAGES EXCEPT HEATERS ARE MEASURED FROM SOCKET CONTACTS TO THE COMMON NEGATIVE WITH A 20,000 OHM PER VOLT VOLTMETER. HEATER VOLTAGES ARE MEASURED DIRECTLY ACROSS SOCKET CONTACTS.
* A.C. EXCEPT WHEN SET IS USED ON D.C.

VOLTAGE TABLE
(BOTTOM VIEW OF CHASSIS)



MODEL 4-A-108



SPECIFICATIONS

CABINET DIMENSIONS -

Length 10-5/16"
 Depth 5-3/4"
 Height 6-3/16"

VOICE COIL IMPEDANCE - 3.2 Ohms at 400 cycles

POWER OUTPUT Undistorted - 0.8 Watts
 Maximum - 1.3 Watts

SHIPPING WEIGHT - 6 1/2 lbs.

TUBE COMPLEMENT -

POWER SUPPLY - 110 to 120 Volts
 AC-DC

12SA7 - Converter
 12SK7 - I. F. Amplifier
 12SQ7 - Diode-Audio
 50L6GT - Output
 35Z5GT - Rectifier

TUNING RANGE - 540 to 1600 KC

INTERMEDIATE FREQ. - 455 KC

LOUD SPEAKER - 4 Inch PM

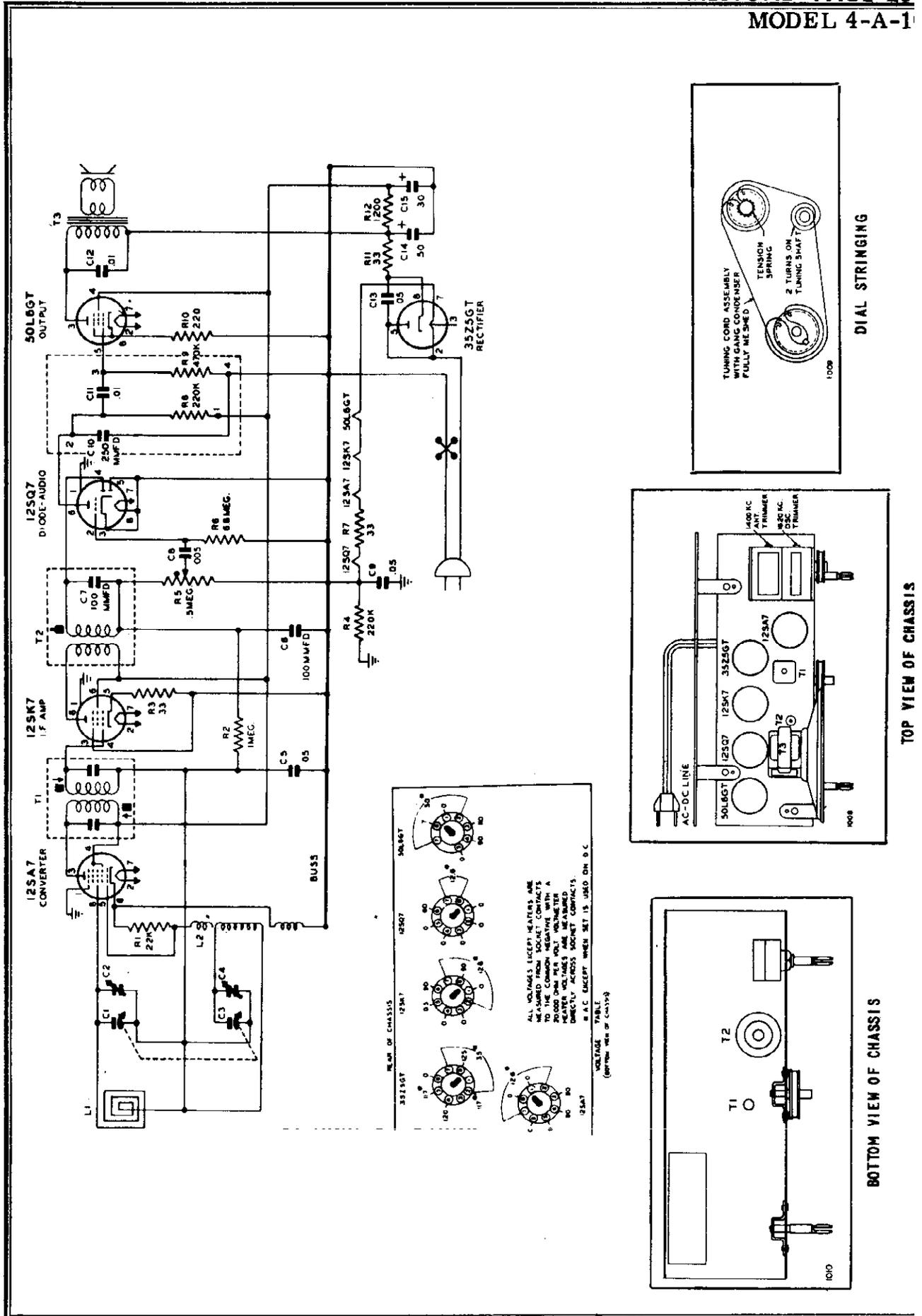
ALIGNMENT PROCEDURE

For alignment procedure read tabulations from left to right, make the adjustments marked (1) first, (2) next, (3) third.

BEFORE STARTING ALIGNMENT:

- (A) Remove loop and chassis from cabinet. (CAUTION: DIAL ESCUTCHEON TAB ABOVE GANG CONDENSER ON INSIDE OF CABINET MUST BE STRAIGHTENED BEFORE REMOVING CHASSIS.) Loop must be mounted to its normal position on chassis for alignment.
- (B) Use an accurately calibrated test oscillator with some type of output measuring device.

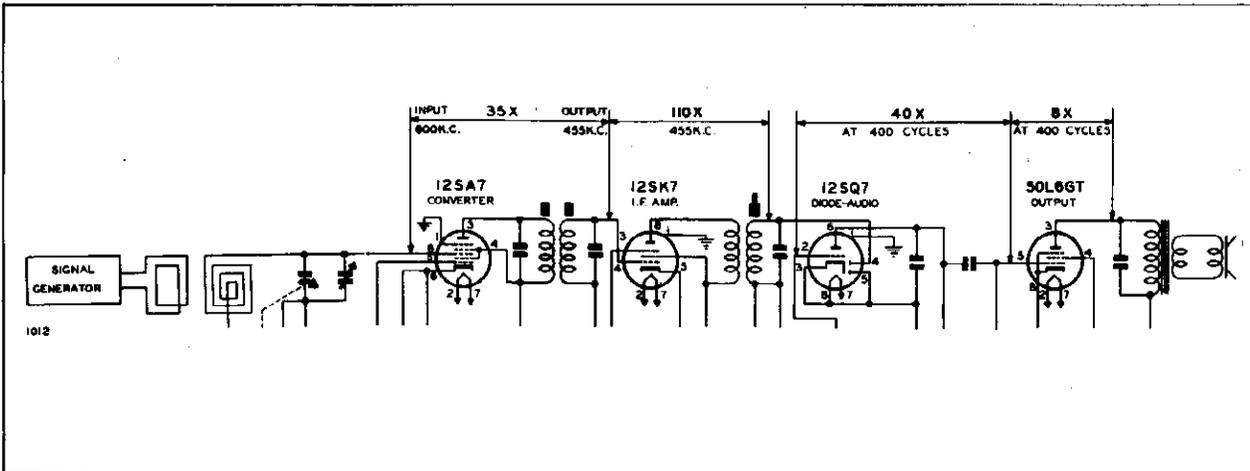
STEP NO.	SIGNAL GENERATOR FREQUENCY	GENERATOR CONNECTION	POSITION OF GANG	DUMMY ANTENNA	ADJUSTMENT	TYPE OF ADJUSTMENT
1	Exactly 455 KC	High Side to grid of 12SA7 tube. Low side to common negative.	Any point where no interfering signal is received.	.05 MFD. Condenser	Slug at top of 2nd. I.F. (T2) and then each of the slugs of the 1st. I.F.	For Maximum Output
2	Exactly 1620 KC	DUMMY	Rotor fully open.	2 turns of hookup wire 6" in Dia. (Place approximately a foot from end of, and in same axis as, loop antenna)	Front Gang Trimmer	For Maximum Output
3	Approximately 1400 KC.	ANTENNA	Tune in signal from generator.		Rear Gang Trimmer	For Maximum Output



MODEL 4-A-108

Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube volt-meter may be used for audio gain measurements. Observe following precautions:

1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
3. When using a "channel type instrument carefully tune it for maximum output at desired frequency before making measurements.



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.

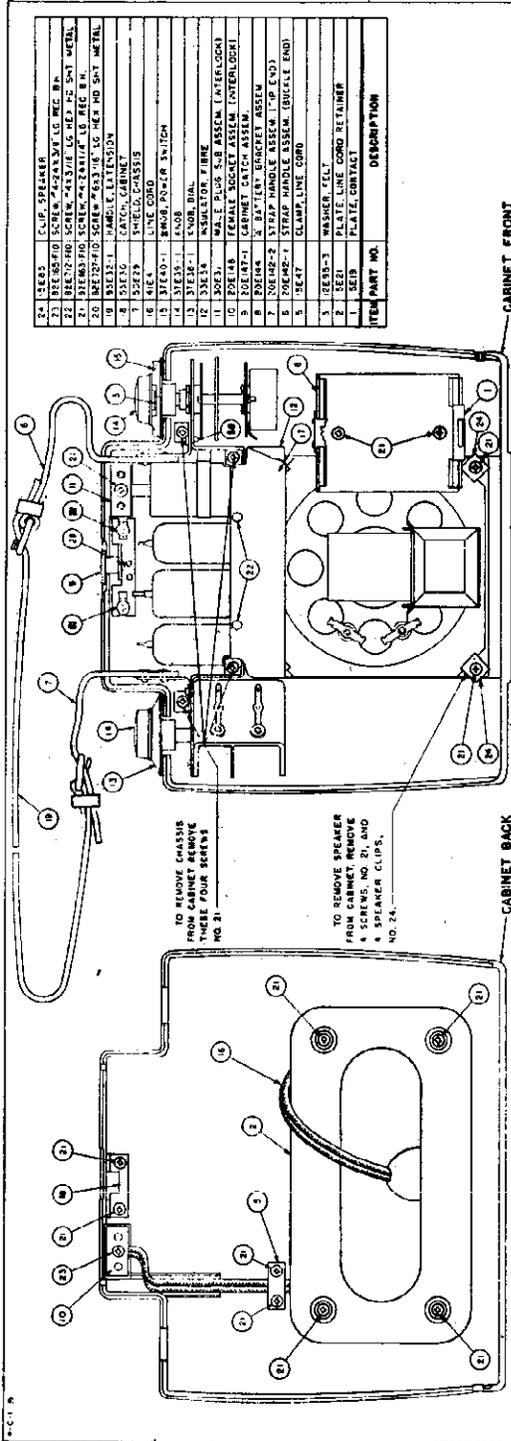
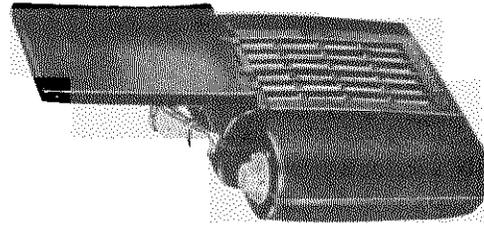
PARTS LIST

ILLUS. NO.	PART NO.	PART NAME	DESCRIPTION	LIST PRICE	ILLUS. NO.	PART NO.	PART NAME	DESCRIPTION	LIST PRICE
C1,C3	N-8745	Condenser	Gang Tuning with Pulley	\$3.00	R5	N-8732	Volume Control	With Switch - 500,000 Ohms	\$ 1.15
C2,C4	—	Trimmers	Gang		R6	N-4028	Resistor	Carbon 6.8 Megohm 1/2 W. 20%	.25
C5,C9	N-1345	Condenser	Paper .05 MFD. 200 Volts	.25	R7	N-4068	Resistor	Carbon 33 Ohm 1.0 Watt 20%	.25
C6	N-6015	Condenser	Ceramic 100 MMFD. 500 V. 20%	.25	*R8	N-4026	Resistor	Carbon 220,000 Ohm 1/2 W. 20%	.25
C7	PART OF	2nd I.F. Trans.	N-8150		*R9	N-4027	Resistor	Carbon 470,000 Ohm 1/2 W. 20%	.25
		Condenser	100 MMFD. 500 Volt 10%		R10	N-4024	Resistor	Carbon 220 Ohm 1/2 Watt 10%	.25
C8	N-4894	Condenser	Paper .005 MFD. 600 Volts	.25	T1	N-7981	Transformer	1st I. F.	1.50
*C10	N-6488	Condenser	Ceramic 250 MMFD. 500 V. 20%	.25	T2	N-8150	Transformer	2nd I. F.	1.10
*C11	N-1344	Condenser	Paper .01 MFD. 400 Volts	.25		N-7824	Speaker	4" PM With Transformer	6.65**
C12	N-1344	Condenser	Paper .01 MFD. 400 Volts	.25	L1	N-8740	Coil	Loop Antenna h& Cabinet Back	1.80
C13	N-1346	Condenser	Paper .05 MFD. 400 Volts	.25	L2	N-8709	Coil	Oscillator	.90
C14)	N-7889	Condenser	Electrolytic(50 MFD. 150 V.)	1.95		#361	Cabinet	Plastic	6.40**
C15)			(30 MFD. 150 V.)			N-8733	Knobs	Plastic	.25
R1	N-4025	Resistor	Carbon 22,000 Ohm 1/2W. 20%	.25		N-8735	Escutcheon	Dial	.98
R2	N-1262	Resistor	Carbon 1.0 Megohm 1/2W. 20%	.25		N-8737	Pointer	Dial	.43
R3,R11	N-4022	Resistor	Carbon 33 Ohm 1/2 Watt 20%	.25		N-8883	Assembly	Baffle & Cloth	1.75
R4	N-4026	Resistor	Carbon 220,000 Ohm 1/2 W. 20%	.25					

NOTES: *In some receivers, the components C10,C11,R8 and R9 are replaced by the assembly listed below:

N-8215 Assembly, Audio Coupling Plate .53

**Excise Tax Included.



ALIGNMENT PROCEDURE

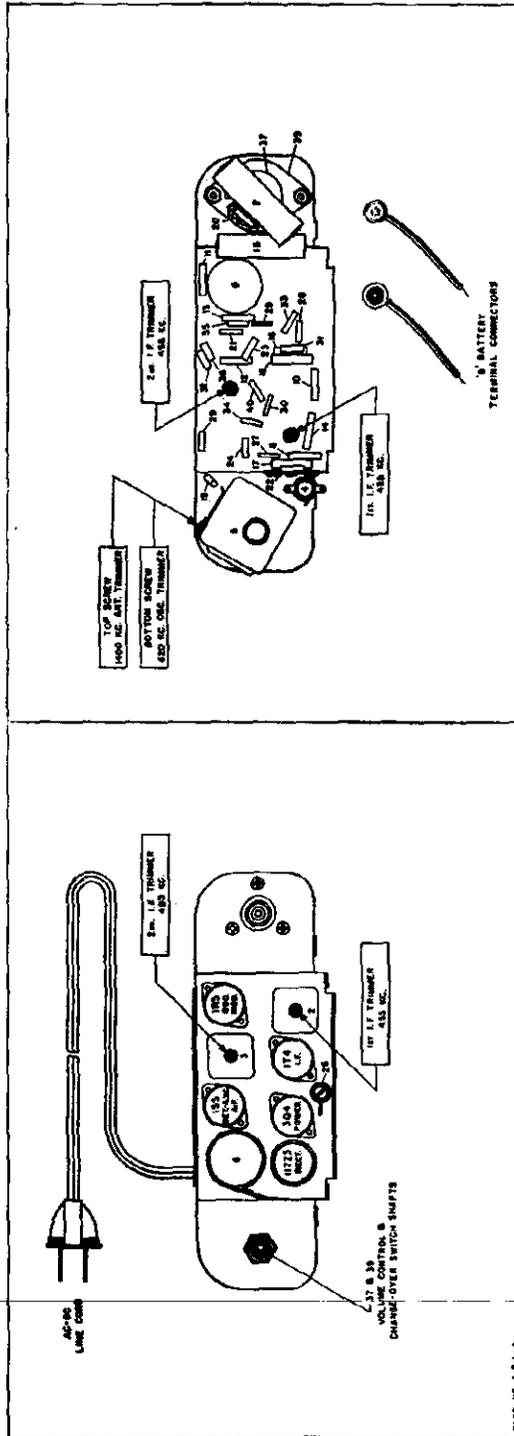
Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. Make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

- (a) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial indicator must be exactly even with the center of the large 5 in the 55 calibration number at the low frequency end of the dial scale. If dial indicator does not point exactly to the center of the large 5, move to correct position.
- (b) Use an accurately calibrated test oscillator with some type of output measuring device.
- (c) WHEN ADJUSTING 1620 KC OSCILLATOR TRIMMER, remove chassis from cabinet and disconnect the loop connection wires from the loop. Attach a 1 megohm resistor across these connections and feed output of test oscillator across the 1 megohm resistor.
- (d) THE 1400 KC LOOP ANTENNA TRIMMER should be adjusted only after all other adjustments have been made and with the set mounted in the cabinet, and the loop in an upright position. When aligning the 1400 KC Antenna Trimmer, couple test oscillator to receiver loop by: (1) make loop consisting of five to ten turns of No. 20 to No. 30 size wire, wound on a 2" or 3" form; (2) connect this loop across output of test oscillator; (3) place test oscillator loop near radio loop. BE SURE THAT NEITHER LOOP MOVES WHILE ALIGNING.

MODEL 4-C-1,
Code 291-7-564

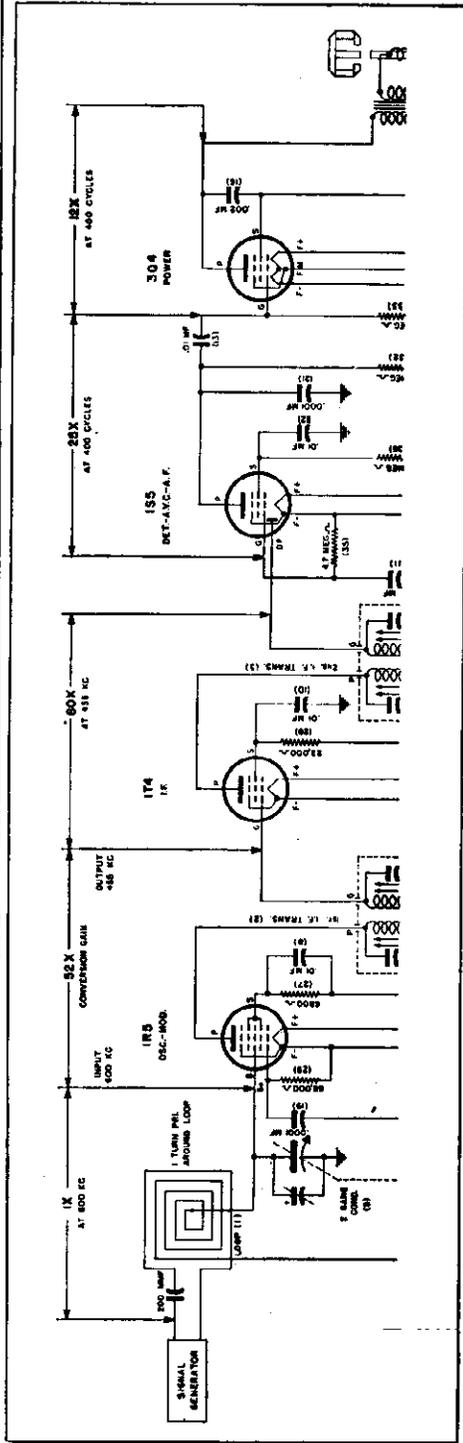
TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:	
Step	Set receiver dial to:	Adjust test oscillator frequency to:		Attach output of test oscillator to
1	Any point where no interfering signal is received	Exactly 455 K. C.	0.2 MFD. Condenser	High side to grid of 1B5 tube. Low side to chassis.
2	Rotate gang condenser to minimum capacity	Exactly 1620 K. C.	See paragraph (c) above	Adjust 1620 Osc. Trimmer for maximum 1620 K.C. signal.
3	Rotate gang condenser to 1400 K.C.	Exactly 1400 K. C.	See paragraph (d) above	Adjust 1400 K.C. Ant. Trimmer for maximum output.



Be sure all stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

1. For all gain measurements connect signal generator as shown. Use 600 KC signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning).
3. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

MODEL 4-C-1,
Code 291-7-564



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.

ORDERING PARTS

Order parts from your nearest Firestone Warehouse. When ordering parts, it is important that the correct code number and stock number be given with the correct part name and part number as shown in the parts list. You will find the stock number and code number stamped on the chassis pan.

PARTS LIST

Ill. No.	Part No.	Part Name	Description	List Price	Ill. No.	Part Name	Description	List Price	
1	20E14S-1	Antenna	Door with Loop	\$4.75	20	23E9	Condenser	Ceramic, .0001 Mfd.	.20
2	20E141	Coil	1st I.F. Transformer	3.70	21	23E8	Condenser	Ceramic, .000025 Mfd.	.23
3	20E299-2	Coil	1st I.F. Transformer	3.70	22	27E101-7	Resistor	Carbon, 100 Ohm, 1/4 W.	.06
4	20E300	Coil	2nd I.F. Transformer	3.70	23	27E471-7	Resistor	Carbon, 470 Ohm, 1/4 W.	.06
5	24E22	Condenser	Oscillator	1.05	24	27E561-7	Resistor	Carbon, 560 Ohm, 1/4 W.	.06
6	25E14*	Condenser	Tuning, 2 Gang	4.00	25	27E1003*	Resistor	Wire Wound	.85
7	25E12*	Condenser	Tubular, Dry Elect. 40-40 Mfd, 150 V.	1.95	26	27E682-7	Resistor	Carbon, 6800 Ohm, 1/4 W.	.06
8	25E2004-5	Condenser	Tubular, .01 Mfd, 150 V.	.40	27	27E223-7	Resistor	Carbon, 22,000 Ohm, 1/4 W.	.06
9	23E2004-5	Condenser	Tubular, .01 Mfd, 150 V.	.40	28	27E475-7	Resistor	Carbon, 47 Meg Ohm, 1/4 W.	.06
10	23E2004-5	Condenser	Tubular, .01 Mfd, 150 V.	.40	29	27E271-7	Resistor	Carbon, 270 Ohm, 1/4 W.	.06
11	23E2004-5	Condenser	Tubular, .01 Mfd, 150 V.	.40	30	27E105-7	Resistor	Carbon, 1 Meg Ohm, 1/4 W.	.05
12	23E2004-5	Condenser	Tubular, .01 Mfd, 150 V.	.40	31	27E105-7	Resistor	Carbon, 1 Meg Ohm, 1/4 W.	.05
13	23E2004-7	Condenser	Tubular, .05 Mfd, 150 V.	.40	32	27E105-7	Resistor	Carbon, 1 Meg Ohm, 1/4 W.	.05
14	23E116	Condenser	Tubular, .05 Mfd, 400 V.	.25	33	27E475-7	Resistor	Carbon, 4.7 Meg Ohm, 1/4 W.	.06
15	23E2004-2	Condenser	Tubular, .002 Mfd, 150 V.	.45	34	27E475-7	Resistor	Carbon, 4.7 Meg Ohm, 1/4 W.	.06
16	23E2004-8	Condenser	Tubular, .1 Mfd, 150 V.	.45	35	27E475-7	Resistor	Carbon, 4.7 Meg Ohm, 1/4 W.	.06
17	23E104-8	Condenser	Tubular, .1 Mfd, 150 V.	.45	36	27E475-7	Resistor	Carbon, 4.7 Meg Ohm, 1/4 W.	.06
18	23E9	Condenser	Ceramic, .0001 Mfd.	.20	37	28E16*	Volume Control	2 Meg Ohm	.85
19					38	1E20*	Speaker	4 Inch P.M., with 4 No. 13E103-1	6.00
					39	29E12*	Switch	Power Selector	2.25
					40	27E106-7	Resistor	Carbon, 10 Meg Ohm, 1/4 W.	.05

MISCELLANEOUS PARTS

Part No.	Part Name	Description	List Price
20E144	"A" Batt. Bkt. Assem.	Complete "A" Bkt. Assem.	.80
5E19	"A" Batt. Bkt. Cont.	Battery Hold Down.	.50
20E265	"B" Batt. Comm. Cabinet	Assembly with B and B-1 Dot Snapper.	.50
20E143-1*	Cabinet	Cabinet Complete with Loop Door.	.11.00
30E69*	Cabinet	Less Strap. Mention Required Color.	6.70
7E77-1*	Cabinet Front	Cabinet Less Door, Less Strap. Mention Required Color.	3.65
7E78-1*	Cabinet Back	Cabinet Front Only. Mention Required Color.	3.10
20E145-1*	Cabinet Door	Cabinet Back Only. Mention Required Color.	4.75
20E147*	Cabinet Hatch Assem.	Door with Loop Assembly. Complete. Mention Required Color.	.50
55E31*	Cabinet Strike	Catch Assembly with No. 37E37-1 Slide Knob and 2 No. 82E163F10 Mounting Screws.	.07
15E47	Clamp	Strike Plate with 2 No. 82E163F10 Mounting Screws.	.03
20E148*	Interlock Socket Assembly	For Line Cord with 2 No. 82E163F10 Mounting Screws.	.30
30E31*	Interlock Plug Assembly	Female Socket Assembly with 1 No. 82E165F10 Mounting Screw.	.25
37E37-1*	Knob	Male Plug Assembly with 1 No. 82E163F10 Mounting Screws.	.30
37E38-1*	Knob	Slide Knob.	.22
37E39-1*	Knob	Slide Knob.	.22
37E40-1*	Knob	Calibrated Dial Knob.	.32
		Tuning and Volume.	.32
		Selector Switch. "OFF-AG-DC-BATT."	.32

Loop Door on 4-C-1

Complaint - Poor or Intermittent Reception due to open Loop Antenna.

Cause - Loop Antenna breaks at soldered connection.

Suggested Action:

It is advisable to purchase the complete loop assembly Part No. 20E145-1 and replace old one as described below.

The serviceman should not attempt to replace just a part of the loop assembly. The loop assembly consists of an inner and outer bakelite section and a loop coil. To make the loop assembly fit properly it is necessary to assemble the two bakelite sections at the same time. These sections are mates and must then be used together.

Installation of a new loop coil only is very difficult. The leads must be placed in the proper location and waxed in position, and it would be very easy to crush the loop coil when fitting the two bakelite sections together.

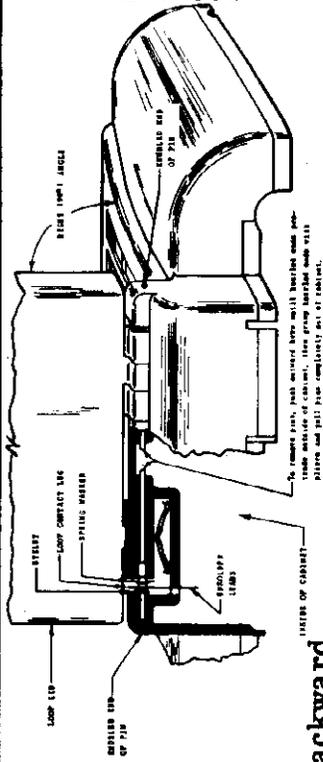
Part No.	Part Name	Description	List Price
5E21	Line Cord Retainer	Fibre Plate with 4 No. 82E163F10 Mounting Screws.	.12
51E4	Line Cord Shield	6 ft. Rubber Line Cord.	.50
50E29	Shield	Metal Chassis Shield with 2 No. 82E172F10 Mounting Screws.	.20
35E54	Shield Insulator	Fibre Insulator for Metal Shield.	.03
7E79	Speaker Baffle	Paper.	.10
66E14-1	Speaker Screen	Metal Mesh.	.14
55E52-1	Strap	Extension Strap.	.90
20E142-1	Strap	Buckle End with Bracket and 1 No. 82E27F10 Mounting Screw.	.80
20E142-2	Strap	Tip End with Bracket and 1 No. 82E27F10 Mounting Screw.	.55

HARDWARE

No. 4-24x1/4 Rec. B.H.	.....	\$1.80/C
No. 4-24x3/8 Rec. B.H.	.....	1.90/C
No. 4-3/16 Hex Hd. No Slot Type Z	.....	.60/C
Sheet Metal	.....
No. 6-3/16 Hex Hd. No Slot Type Z	.....	.65/C
Sheet Metal	.....
For Door Hinge	.....	Each .04
Contact Lug for Loop-Door Assembly	.....	1.15/C
Contact Lug for Loop-Door Assembly	.....	1.20/C
Index Spring for Loop-Door Assembly	.....	4.70/C
Spring Washer for Loop-Door Assembly	.....	1.16/C
For Loop-Door Assembly	.....	.65/C
Speaker Mtg. Clip	.....	1.60/C

* Fast Moving Items.

MODEL 4-C-1,
Code 291-7-564



To Remove Lid From Cabinet

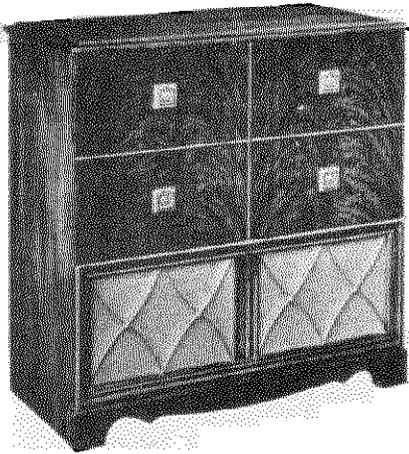
- (a) Open Cabinet
- (b) Remove chassis mounting screws and swing chassis slightly backward.
- (c) Unsolder the leads from the two lid lugs that project through the cabinet.
- (d) Observe position of curved pressure springs, because these must be put back in same position should they fall out during installation of new lid. Remove lid pins -- see drawing for directions -- and gently separate lid from cabinet.
- (e) To avoid damaging chassis, speaker, etc., it is advisable to remount chassis in cabinet with two screws while re-installing lid.

To Install Lid on Cabinet

- NOTE:** Do not remove tape around right and left corners of lid until it is completely installed.
- (a) Carefully pull pins out of replacement lid - be sure to leave lugs with washers and eyelets in lid exactly as shipped.
 - (b) Place both pairs of curved pressure springs in original position.
 - (c) Hold lid at right angle to front of cabinet, as shown on drawing, and feed the two lugs on lid into the two narrow slots located adjacent to the curved pressure springs, pressing inward until lid is in place. Important - keep lugs, washers and eyelets snug against lid otherwise they will jam on cabinet and prevent lid from being inserted all the way.
 - (d) Line up holes in lid and cabinet and gently push pins through these holes until end of pin is flush with edge of cabinet.
 - (e) Remove chassis mounting screws, and swing chassis back slightly. Resolder leads to the two lid lugs and remount chassis with chassis mounting screws.
 - (f) Remove tape around left and right corners of lid.

NOTE: The new loop assembly comes equipped with a longer lug. The longer lug is designed to overcome poor or intermittent reception which occurs when the lead wire is broken. Only a small quantity of these radios were produced with the short lug. Recent production comes equipped with the longer lug.

ELECTRICAL SPECIFICATIONS



6 Tube Superheterodyne, including Rectifier Tube.
 Tuning Frequency Range..... 540 to 1600 KC
 Power Consumption... (Radio) 35 watts (At 117 volts AC)
 (Phono) 20 watts, 60 cycles only
 Power Output 2.0 watt maximum, 1.1 watt (10% distortion)
 Intermediate Frequency 455 KC
 Sensitivity 10 Microvolts Average
 Selectivity 45 KC Wide at 1000 Times Signal
 Speaker (3.2 ohm Voice Coil) 8" PM Dynamic

- Tube and Dial Lamp Complement**
- 1 6BA6 R-F Amplifier
 - 1 6BE6 Converter
 - 1 6BA6 I-F Amplifier
 - 1 6AV6 Det. & 1st Audio
 - 1 6AQ5 Output
 - 1 6X4 Rectifier
 - 1 No. 47 Dial Lamp

**ALIGNMENT PROCEDURE
RADIO**

The following is required for aligning:
 An All Wave Signal Generator Which Will Provide an Accurately
 Calibrated Signal at the Test Frequencies as Listed.
 Output Indicating Meter, Non-Metallic Screwdriver, Dummy Antennas
 — .1 mf, and 50 mmf.

Volume Control Maximum all Adjustments.
 Connect Chassis to Ground Post of Signal Generator with a Short
 Heavy Lead.
 Allow Chassis and Signal Generator to "Heat Up" for Several
 Minutes.

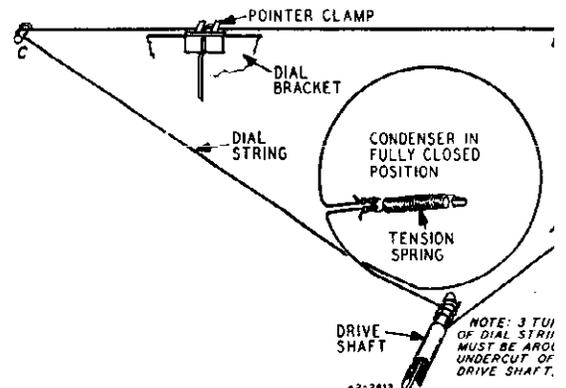
SIGNAL GENERATOR				GANG CONDENSER SETTING	ADJUST	ADJUST FOR
FREQUENCY SETTING	CONNECT GENERATOR OUTPUT TO	THROUGH DUMMY ANTENNA	CONNECT GROUND TO			
455 KC	Control Grid I-F 6BA6 Pin No. 1	.1 mf	Chassis Base	Rotor Fully Open	2nd I.F. Pri. (1) and Sec. (2)	Maximum Output
455 KC	Control Grid 6BE6 Pin No. 7 1st Det.	.1 mf	Chassis Base	Rotor Fully Open	1st I.F. Pri. (4) and Sec. (3)	Maximum Output
455 KC	Control Grid 6BE6 Pin No. 7	.1 mf	Chassis Base	Rotor Fully Open	2nd I.F. Pri. (1) and Sec. (2)	Maximum Output
1620 KC	Control Grid R-F 6BA6 Pin No. 1	.1 mf	Chassis Base	Rotor Fully Open	Oscillator C-8	Maximum Output
1400 KC	Control Grid R-F 6BA6 Pin No. 1	.1 mf	Chassis Base	Turn Rotor to Max. Output. Set Pointer to 1400 KC See Note A	Interstage C-6 See Note B	Maximum Output
1400 KC	External Antenna Terminal	50 mmf	Chassis Base	Turn Rotor to Max. Output. Set Pointer to 1400 KC See Note A	Antenna C-2 See Note B	Maximum Output

NOTE A—If the pointer is not at 1400 KC on the dial, reset pointer to the 1400 KC mark on the dial scale.
 NOTE B—Turn the rotor back and forth and adjust the trimmer until the peak of greatest intensity is obtained.

DRIVE CORD REPLACEMENT

DIAL POINTER CORD

Use a new S-10X77 drive cord assembly or a new length of cord 48 inches long for the installation. Install the cord as shown in the illustration, winding three turns counterclockwise around the drive shaft with the turns progressing away from the chassis. After completing the installation rotate the drive shaft a few turns to take up the slack in the cord.



PARTS LIST

ORDERING PARTS

Order parts from your nearest Firestone Tire and Auto Supply Warehouse. When ordering parts, it is important that the correct code number and stock number, be given with the correct part name and part number as shown in the parts list. You will find the stock number and code number stamped on the chassis pan.

RETURNING DEFECTIVE PARTS

All parts on adjustments must be returned to your District Office Service Department with claim form completely filled out. This radio is so constructed that it can be repaired locally by an experienced repairman.

MISCELLANEOUS

		LIST PRICE
12A477	8" P.M. Speaker	\$ 7.40
10A765	Knobs	.25
4X1162	Escutcheon	1.55
2A405	Radio-Phono Switch	.85
13X546	Line Cord & Plug Assembly	.90
3A458	Tube Socket (6AV6)	.20
3A426	Tube Socket (Miniature)	.20
30X560	Line Cord Clamp	.10
3A305	Phono Socket	.10
32X403	Tube Shield (6AV6)	.10
76X1	Capacitor — Resistor Combination	.40
76X5	Capacitor — Resistor Combination	.65

CAPACITORS

C-1A } C-1B } C-1C }	14A213	Gang Condenser Assembly		3.60
C-2	17A235	2-24 mmf	Trimmer	.35
C-3 C-5 C-9	RCP10W2503M	.05 mf.	200 V Tubular	.20
C-10 C-14				
C-4 } C-13 }	RCP18W2203M	.02 mf	200 V Tubular	.20
C-6 } C-8 }		Part of Gang Condenser Assembly		
C-7	47X612	33 mmf	Ceramic	.25
C-11A } C-11B }		Part of 76X1 Assembly (See Miscellaneous)		
C-12	47X471	68 mmf	Ceramic	.30
C-15	RCP10W4502M	.005 mf	400 V Tubular	.20
C-16A } C-16B }		Part of 76X5 Assembly (See Miscellaneous)		
C-17	RCP10W6102M	.001 mf.	600 V Tubular	.20
C-18A } C-18B } C-18C }	45X381	20 mf 40 mf 40 mf	25 V 150 V 250 V	Dry Electrolytic 2.25
C-19	RCP10W2104M	.1 mf	200 V Tubular	.25
C-20	RCP10W2103M	.01 mf	200 V Tubular	.20
C-21	47X508	500 mmf	Ceramic	.25

RESISTORS

		Ohms	Watts	LI PRI
R-1	B84101	100	0.5	Carbon
R-2	B85104	100K	0.5	Carbon
R-3	B84563	56K	0.5	Carbon
R-4	B84470	47	0.5	Carbon
R-5	B85223	22K	0.5	Carbon
R-6	B84102	1K	0.5	Carbon
R-7	B84331	330	0.5	Carbon
R-8	B85225	2.2 meg.	0.5	Carbon
R-9	Part of 76X1 Assembly (See Miscellaneous)			
R-10	B84274	270K	0.5	Carbon
R-11	B84153	15K	0.5	Carbon
R-12	C85182	1.8K	1.0	Carbon
R-13	36X372	0.5 meg.		Volume Control
R-14	B85106	10 meg.	0.5	Carbon
R-15A } R-15B }	Part of 76X5 Assembly (See Miscellaneous)			
R-16	40X310	500K		Tone Control
R-17	B85473	47K	0.5	Carbon
R-18	B84271	270	0.5	Carbon
R-19	D84821	820	0.2	Carbon
R-20	B84103	10K	0.5	Carbon

TRANSFORMERS AND COILS

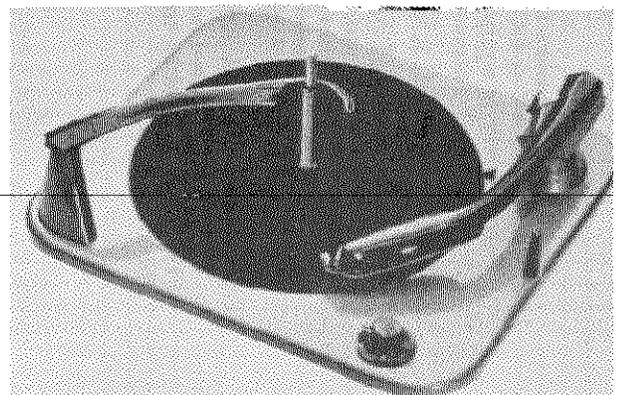
L-1	9A2289	Interstage Coil	
L-2	9A2113	Oscillator Coil	
T-1	9A2152	Loop Antenna	2
T-2	9A2112	1st I-F Transformer	1
T-3	9A2063	2nd I-F Transformer	1
T-4	51X134	Output Transformer	2
T-5	53X291	Power Transformer	2

DIAL AND DRIVE ASSEMBLY

S-10X77	Drive Cord Assembly	
15X251	Pointer	
25X1616	Dial Bracket	1
58X766	Dial Glass	
26X524	Drive Shaft	
7A199	Pilot Light Socket Assembly	
7A103	No. 47 Dial Light	
28X113	Drive Cord Tension Spring	dz.
41X88	Dial Light Reflector	
19X192	"C" Washer (Mtg. Drive Shaft)	dz.

TYPE V-28A189 RECORD CHANGER PARTS

See Note	Motor Assembly, 60 cycles	
	105-125 Volts AC	
V-2503B	Pickup Arm	1
P-77V	Crystal Cartridge & Needles	1
85-16	Needle, Regular	
85-18	Needle, Microgroove, Red	
NOTE	Specify part number stamped on motor assembly.	



Use only genuine factory tested parts to insure service jobs you can depend on and to obtain original set performance

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MODEL 4-A-115,
Code 120-3-326

Your new "Treasure Chest" receiver is a six tube (including rectifier) superheterodyne, designed to operate on 115 to 125 volts, AC or DC power. The receiver covers the frequency range 538 to 1620 KC. This receiver is equipped with a Radio Frequency Amplifier and the newly designed "Magna-Loop" Antenna, thereby insuring the utmost in sensitivity.

VOLUME CONTROL KNOB

This knob is located on the left side of the radio. Turning this knob will put the radio into operation. Turning this knob further to the right will increase the volume. After a station has been selected, the volume control should be adjusted to the desired level.

STATION SELECTOR KNOB

This knob is located on the right side of the radio. The knob should be turned until desired station has been selected.

This receiver contains the following tubes:

- 1-12BE6 Mixer
- 2-12BA6 R.F., I.F. Amplifier
- 1-12AT6 or 12AV6 Detector-AVC-1st Audio
- 1-35C5 Power Output
- 1-35W4 Rectifier

ALIGNMENT PROCEDURE

Volume Control — Maximum, all adjustments. No signal applied to antenna.

Power Input — 115 to 125 volts, AC or DC.

Connect dummy antenna in series with output lead of signal generator.

Connect ground lead of signal generator to common ground above chassis.

Dial Setting	Generator Frequency	Dummy Antenna	Generator Connection	Trimmer Reference	Trimmer Adjustment	Trimmer Function
1. Fully open	455 KC	.1 MFD	12BE6 Grid	L5 Top & Bot.	Maximum	Output I.F.
2. Fully open	455 KC	.1 MFD	12BE6 Grid	L4 Top & Bot.	Maximum	Input I.F.
3. Fully open	1620 KC	.1 MFD	12BE6 Grid	CV2	Maximum	Oscillator
4. Fully open	455 KC	.1 MFD	12BA6 Grid	CT1	Minimum	I.F. Trap
5. Tune in signal from generator	1400 KC		Loosely couple signal generator to "Magna Loop"	CV1	Maximum	Antenna R.F. Trimmer

Repeat alignment procedure as a final check.

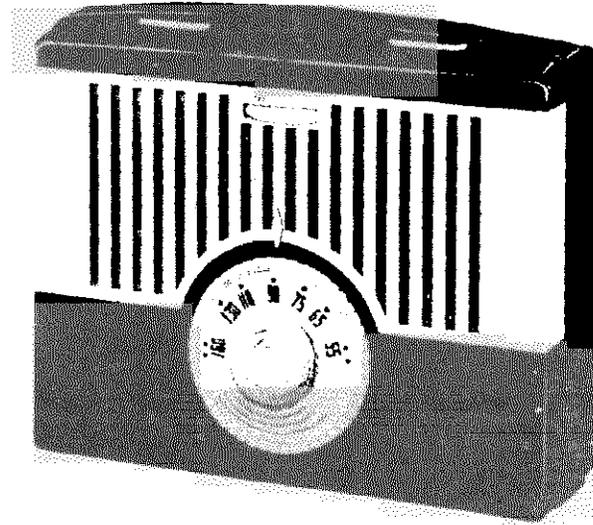
MODEL 4-A-115,
Code 120-3-326

ORDERING PARTS

Order parts from your nearest Firestone Tire and Auto Supply Warehouse. When ordering parts, it is important that the correct code number and stock number be given with the correct part name and part number as shown in the parts list.

PARTS LIST

Schematic Diagram Reference	Part No.	Description	List Price
CONDENSERS			
C1	CC201	200 MMFD Ceramic	.25
C2	CC101	100 MMFD Ceramic	.25
C4	C103-6	.01 MFD, 600 VDCW	.30
C5 C3	C1473-4	.047 MFD, 400 VDCW, Molded	.40
C6-L6	C14L	.1 MFD Condenser-Choke Assembly	.50
CT 1	CT 3/30	Trimmer Condenser	.50
CE-601U	CE-601U	Dual 50 MFD, 150 VDCW Electrolytic	2.50
CV1, CV2	CV-64	2 section variable	2.75
RESISTORS			
R1	R332	3300 ohm, 1/2 watt, 20%	.10
R2	R474	470K ohm, 1/2 watt, 20%	.10
R3	R223	22K ohm, 1/2 watt, 20%	.10
R4	R820	82 ohm, 1/2 watt, 20%	.10
R5	RV-100	% megohm volume control	1.50
R6	R225	2.2 megohm, 1/2 watt, 20%	.10
R7	R151	150 ohm, 1/2 watt, 20%	.10
R8	R122-2	1200 ohm, 2 watt, 20%	.30
R9	R330	33 ohm, 1/2 watt, 20%	.10
R10	R274	270K ohm, 1/2 watt, 20%	.10
COILS AND TRANSFORMERS			
L1	L-A26	Magna-Loop Antenna	1.50
L2	L-326	I.F. Trap Coil	1.00
L3	L-204	R.F. Oscillator Coil	1.00
L4, L5	1655-16	I.F. Transformer	2.00
T1		Output Transformer; (part of speaker; not furnished separately)	
MISCELLANEOUS			
	H324	Cabinet	12.00
	H326	Cabinet Back	.90
	H208	Clip, Coil Mounting	.05
PC-151	PC-151	Couplate	1.90
	H66	Knob, each	.30
	CD-54	Line Cord	.80
SP-1	PM327	Speaker, 6" PM, includes Output Transformer	7.80
DIAL PARTS			
	H55	Dial Ring, Plastic	2.00
	DS326	Drive Shaft Assy	.45
	T-47	Pilot Light	.15
	H56	Pointer	.25
	H544	Pulley, Dial	.05
	H547	Pulley Mounting Bracket	.75
	H201	Rubber Grommet	.05
	H105	Spring, Dial Drive String Tension	.10
	H548	String	.05



SPECIFICATIONS

CABINET DIMENSIONS (INC. KNOBS)

8 5/8" x 3 3/8" x 7 1/8"

WEIGHT—4 LBS. (APPROX.)

TUNING RANGE—535-1675 K.C.

INTERMEDIATE FREQ.—455 K.C.

LOUD SPEAKER—3 1/2" P.M.

VOICE COIL IMPEDANCE—3.2 OHMS AT 400 CYCLES

POWER OUTPUT -

UNDISTORTED—.095 W.

MAXIMUM—.145 W.

POWER SUPPLY—BATTERIES

TWO—1 1/2 VOLT "A"—FIRESTONE - #4-D-71

ONE—6 1/2 VOLT "B"—FIRESTONE #4-D-72

TUBE COMPLEMENT -

1R5—CONVERTER

1U4—I.F. AMPLIFIER

1U5—DET.-AUDIO AMPLIFIER

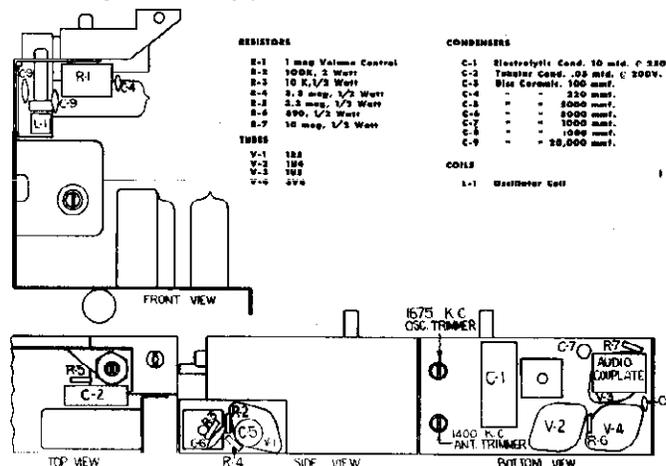
3V4—POWER OUTPUT

ALIGNMENT PROCEDURE

For alignment procedure read tabulations from left to right and make the adjustments marked (1) first. (2) next. (3) third.

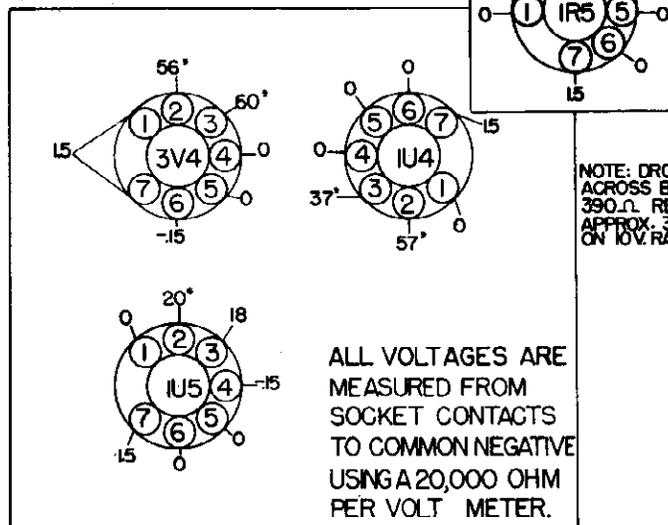
Before starting alignment:

- (A) LOOSEN THE CHASSIS FROM THE CABINET BY REMOVING THE BATTERY CONNECTORS FROM THE BATTERIES, PULLING OFF THE TUNING KNOB AND REMOVING THE TWO SCREWS ON THE CABINET FRONT WHICH FASTEN THE CHASSIS TO THE CABINET.
- (B) USE AN ACCURATELY CALIBRATED TEST OSCILLATOR WITH SOME TYPE OF OUTPUT MEASURING DEVICE.



VOLTAGE TABLE
* THESE VOLTAGES MEASURED ON 250V. RANGE

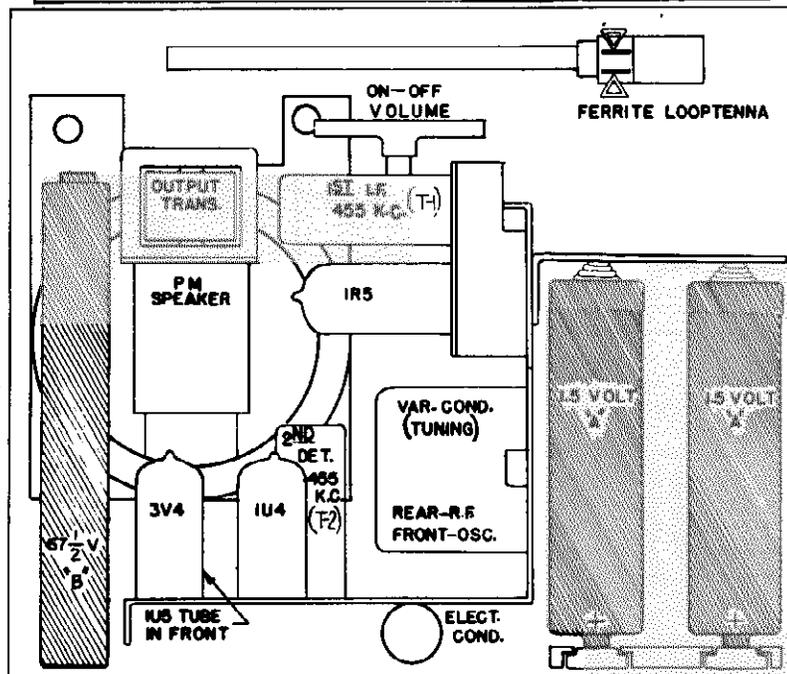
REAR OF CHASSIS



NOTE: DROP ACROSS BIAS 390.Ω RES. APPROX. 3V. ON 10V. RANGE

ALL VOLTAGES ARE MEASURED FROM SOCKET CONTACTS TO COMMON NEGATIVE USING A 20,000 OHM PER VOLT METER.

BOTTOM VIEW OF CHASSIS



ORDERING PARTS

Order parts from your nearest Firestone Tire and Auto Supply Warehouse. When ordering parts, it is important that the correct code number and stock number be given with the correct part name and part number as shown in the parts list.

DESCRIPTION	PART #	LIST PRICE	DESCRIPTION	PART #	LIST PRICE
1st I.F.	1091C-5	1.50	Volume Control	3012-2	1.15
2nd I.F.	1091C-5	1.50	Audio Couplate	2067-1	.85
Osc. Coil	1145	.70	Cabinet	4196B	4.50
Bar Loop Ant.	1144	1.50	Speaker	7032	6.00
Var. Cond.	2065-5	3.25	Vol. Cont. Knob.	4197	.10 (n)
Electrolytic Cond.	2044A-15	1.00	Tuning Knob	4195	.40
Handle	4023	.25	Battery Cable	5028	.35

MODEL 4-A-116,
Code 120-3-426,
The Wellington

ELECTRICAL SPECIFICATIONS

Power Supply 115 to 125 volts AC
 Frequency Range 538 to 1620 KC.
 Speaker 6 inch PM
 Power Output 1.5 watts maximum

ALIGNMENT PROCEDURE

Volume Control — Maximum, all adjustments.
 No signal applied to antenna.
 Power Input — 115 to 125 volts, AC

Connect dummy antenna in series with output lead of signal generator.
 Connect ground lead of signal generator to common ground above chassis.

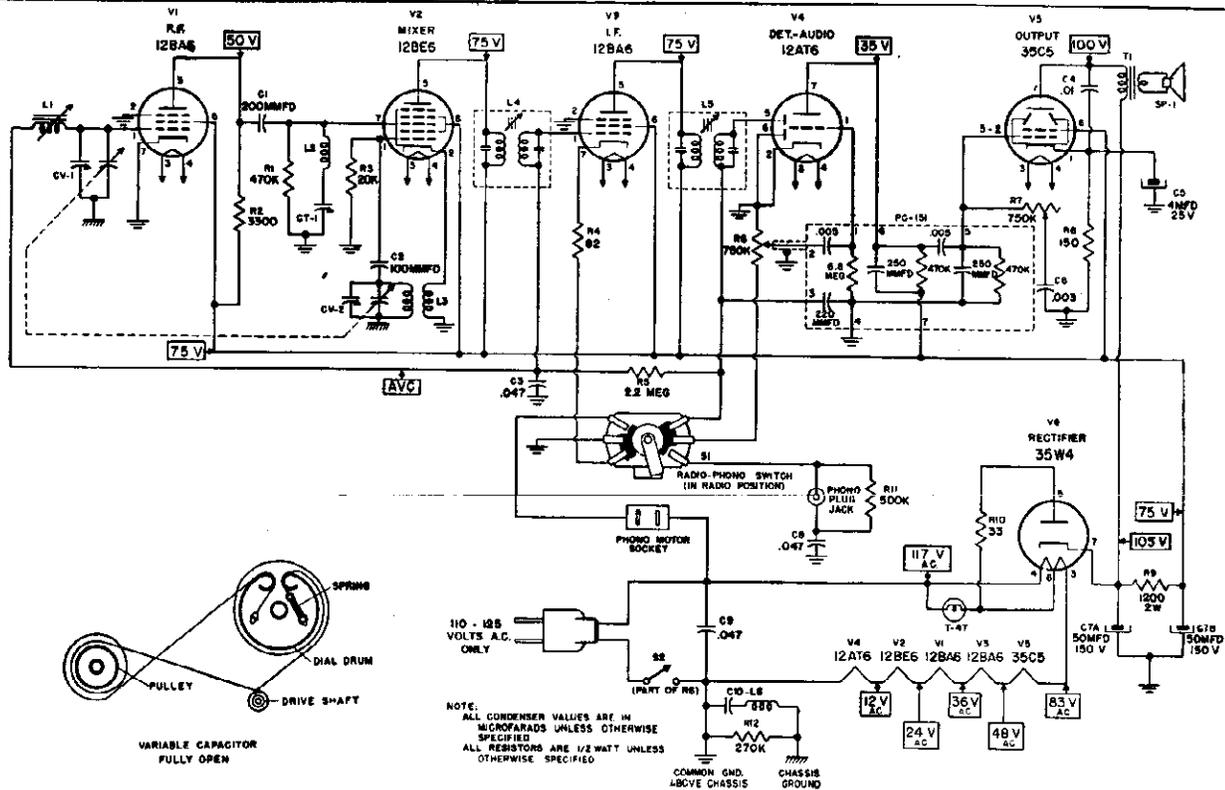
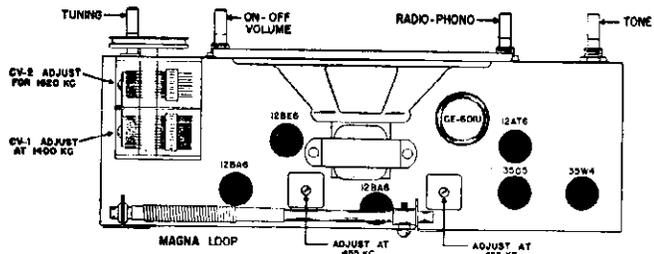
Dial Setting	Generator Frequency	Dummy Antenna	Generator Connection	Trimmer Reference	Trimmer Adjustment	Trimmer Function
1. Fully open	455 KC	.1 MFD	12BE6 Grid	L5 Top & Bot.	Maximum	Output I.F.
2. Fully open	455 KC	.1 MFD	12BE6 Grid	L4 Top & Bot.	Maximum	Input I.F.
3. Fully open	1620 KC	.1 MFD	12BE6 Grid	CV2	Maximum	Oscillator
4. Fully open	455 KC	.1 MFD	12BA6 Grid	CT1	Minimum	I.F. Trap
5. Tune in signal from generator	1400 KC		Loosely couple signal generator to "Magna Loop"	CV1	Maximum	Antenna R.F. Trimmer

Repeat alignment procedure as a final check.

SERVICE NOTES

To remove the chassis for servicing, remove the tone control knob, phono-radio knob, volume control knob and tuning knob. Disconnect phono input plug and phono motor plug. Remove the four woodscrews from the bottom of the cabinet, tilt the chassis diagonally and slide chassis out through bottom of cabinet.

TUBE PLACEMENT AND ALIGNMENT CHART



PHONOGRAPH OPERATION

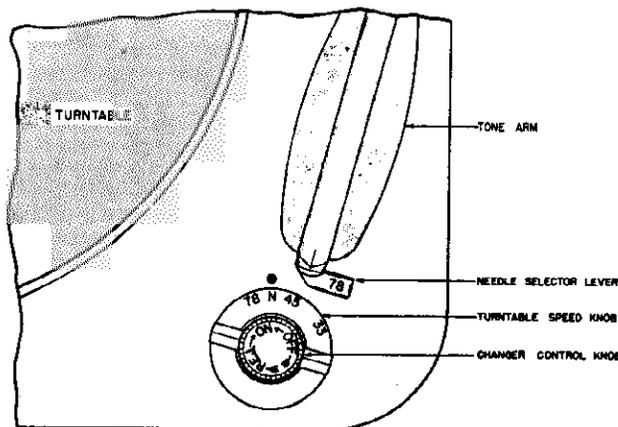


FIG. 1 CHANGER CONTROL DETAIL

SHIPPING BOLTS: Before operating your "Tri-O-Matic" Record Changer, the machine must be floated freely on the mounting springs. During shipment the mechanism is secured by two shipping bolts located on either side of the turntable. Remove the bolts and the washers underneath the bolt heads. Your record changer is now ready to operate.

RECORDS: Your new "Tri-O-Matic" changer will automatically play ten-12" either standard or long-play records, twelve-10" standard or long-play records, any assortment of ten-12" and 10" records of the same speed, or twelve-7" long-play or fine-groove records.

NOTE: Standard (78 RPM), fine-groove (45 RPM) and long-play (33- $\frac{1}{2}$ RPM) records cannot be intermixed. Turntable speed knob must be set for each type of recording.

TO PLAY FINE-GROOVE (45 RPM) RECORDS:

Your "Tri-O-Matic" record changer is equipped with a special automatic spindle designed for playing 45 RPM fine-groove records. When playing other types of records, it will be necessary to remove this spindle. When replacing the spindle, place over the regular changer spindle with "45" to the front of the changer. Be certain that spindle is seated firmly.

1. Raise the cabinet lid to its full height. Lift the record support arm and swing it to the left until the shaft pin drops into the locating groove.
2. Place records on "45" spindle and lower to retaining ears. Hold records level and replace record support over spindle.
3. Select fine-groove needle by turning Needle Selector Lever to "33-45" position (See Fig. 1).
4. Set Turntable Speed Knob to "45" position. (See Fig. 1.)
5. Turn the Radio-Phono switch to the right for phono operation.
6. Turn the phono graph on by turning the Volume Control Knob to the right.
7. Start the changer by turning the Changer Control Knob (Fig. 1) to "REJ" and releasing. Changer will then play all records on the spindle and automatically shut off after the last record has been played.
8. Adjust the volume control and tone control as desired.

TO PLAY STANDARD RECORDINGS: (78 RPM):

1. Raise cabinet lid to its full height. Lift the record support arm and swing it to the left until shaft pin drops into locating groove. Remove "45" spindle by lifting it straight up and off of regular changer spindle.
2. Place records on changer spindle and lower to offset shelf. Hold records level and replace record support over spindle.
3. Turn Needle Selector Lever to "78" position. (See Fig. 1.)
4. Set Turntable Speed Knob to "78" position. (See Fig. 1.)
5. Turn Radio-Phono Switch to the right for phono operation. Turn phono graph on with Volume Control Knob.
6. Turn Changer Control Knob to "REJ" and release. Changer will operate automatically until the last record has been played.
7. Adjust volume and tone controls as desired.

TO PLAY LONG-PLAY (33 $\frac{1}{2}$ RPM) RECORDS:

1. Raise cabinet lid to its full height. Lift the record support arm and swing it to the left until the shaft pin drops into the locating groove. Remove "45" Spindle by lifting it straight up and off of regular changer spindle.
2. Place records on changer spindle and lower to offset shelf.
3. Turn Needle Selector Lever to "33-45" position. (See Fig. 1.)
4. Set Turntable Speed Knob to "33" position. (See Fig. 1.)
5. Turn Radio-Phono Switch to right for phono operation. Turn phono graph on with Volume Control Knob.
6. Turn Changer Control Knob to "REJ" and release. Changer will operate automatically until the last record has been played.
7. Adjust volume and tone control as desired.

REJECTING: To reject a record any time while changer is operating, turn Changer Control Knob to "REJ" and release.

STOPPING: To turn off changer before automatic shut-off, turn Changer Control Knob to "OFF". Remove unplayed records from spindle. Lift Tone Arm and place on rest.

UNLOADING: Raise cabinet top to its full height. Lift the record support arm and swing it to the left until the shaft pin drops into locating groove. Lift stack of records straight up and off spindle.

MANUAL OPERATION: To play single records or home recordings, allow the changer to go through its complete shut-off cycle. Lift the record support arm and swing it to the left until the shaft pin drops into locating groove. Place record on spindle and lower to offset shelf. Tilt the record down toward the rear of the Tone Arm. Rotate the record a half turn so that the record spins down over the spindle to the turntable. Set Turntable Speed Knob and Needle Selector Lever for the type of record to be played. Turn Radio-Phono Switch to the right for phono operation. Turn phono graph on with Volume Control Knob. Turn Changer Control Knob to "ON" position only. Raise Tone Arm and place in lead-in groove of record. Adjust tone and volume as desired.

REPEATING OF RECORDS: To repeat records, swing record support arm clear of spindle, place record on turntable and start changer. Record repeats until Changer Control Knob is turned "OFF". If a 12-inch record is to be repeated, wait for the changer to finish cycling and reposition the Tone Arm manually to the lead-in groove of the record.

SUGGESTIONS: When loading and unloading the changer, use care to prevent bending of the spindle or enlargement of the center hole of the records. Records should not be left on the spindle except during operation of the changer, in order to avoid warping of the records. *Never move or handle Tone Arm when machine is in cycle.* When machine is not in use, it is suggested that the Tone Arm be secured in the clamping bracket provided, and the Turntable Speed Knob be left in the "N" position. The Cabinet Lid should be closed when the machine is not in use. For best reproduction keep needle and records clean. Store records flat, in folders or in albums. Do not lay record on record.

MODEL 4-A-116,
Code 120-3-426,
The Wellington

ORDERING PARTS

Order parts from your nearest Firestone Tire and Auto Supply Warehouse. When ordering parts, it is important that the correct code number and stock number be given with the correct part name and part number as shown in the parts list.

PARTS LIST

Schematic Diagram Reference	Part No.	Description	List Price
C1	CC201	200 MMFD Ceramic	\$.25
C2	CC101	100 MMFD Ceramic	.25
C3, C8, C9	C1473-4	.047 MFD, 400 VDCW	.40
C4	C103-6	.01 MFD, 600 VDCW	.30
C5	CE-504	4 MFD @ 25 VDCW Electrolytic	.60
C6	C502-2	.005 MFD, 200 VDCW	.25
C7A, B	CE-601U	Dual 50 MFD, 150 VDCW Electrolytic	2.50
C10-16	C14L	1 MFD, 400 VDCW	.50
CT-1	CT 3/30	Condenser-Choke Assy	.50
CV1, CV2	CV-54	Trimmer Condenser 2 section variable	2.75
RI, R11	R474	470K ohm, 1/2 watt, 20%	.10
R2	R332	3300 ohms, 1/2 watt, 20%	.10
R3	R203	20K ohm, 1/2 watt, 20%	.10
R4	R820	82 ohm, 1/2 watt, 20%	.10
R5	R225	2.2 meg, 1/2 watt, 20%	.10
R6	RV-100	750K ohm volume control	1.50
R7	RV-152	750K ohm tone control	1.00
R8	R151	150 ohm, 1/2 watt, 20%	.10
R9	R122-2	1200 ohm, 2 watt, 20%	.30
R10	R330	33 ohm, 1/2 watt, 20%	.10
R12	R274	270K ohm, 1/2 watt, 20%	.10
L1	LA-26	Magna-Loop Antenna	1.50
L2	L-326	IF Trap Coil	1.00
L3	L-204	RF Oscillator Coil	1.00
L4, L5	1655-16	IF Transformer	2.00
T1		Output transformer (Part of speaker, not furnished separately)	
		CONDENSERS	
		RESISTORS	
		COILS AND TRANSFORMERS	
		MISCELLANEOUS	
		DIAL PARTS	

This receiver contains the following tubes:

1-12BE6	Mixer
2-12BA6	R.F., I.F. Amplifier
1-12AT6 or 12AV6	Detector-AVC-1st Audio
1-35C5	Power Output
1-35W4	Rectifier