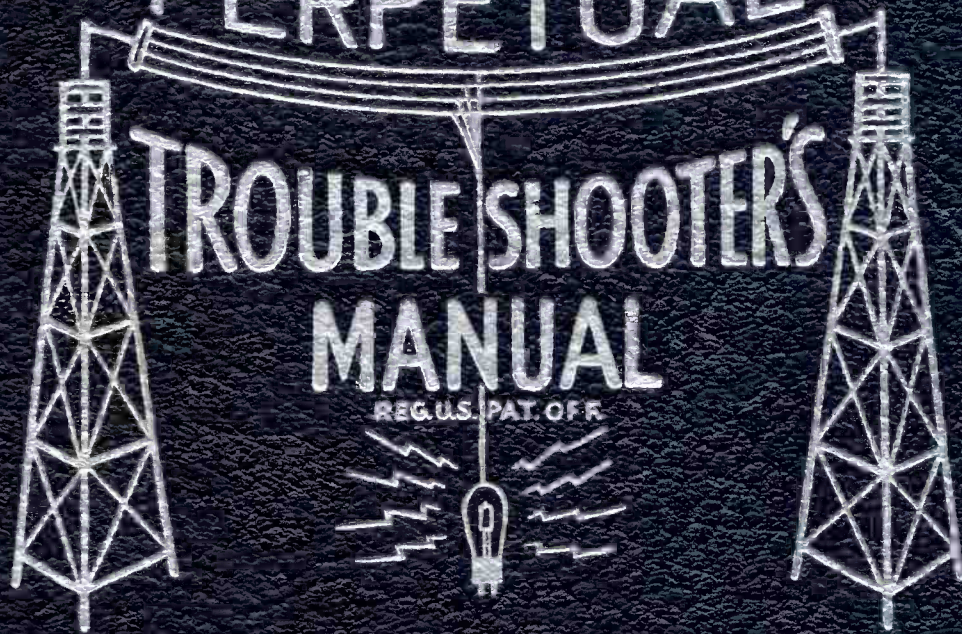


VOLUME XXI

PERPETUAL



TROUBLE SHOOTER'S  
MANUAL

REG. U.S. PAT. OFF.

JOHN F. RIDER

**DESCRIPTION**

This model is a 4 tube (plus rectifier) superheterodyne radio receiver designed for use on 117 volts 60 cycle AC or 117 volts DC power supply.

The tubes used are:—

- |          |                      |          |                      |
|----------|----------------------|----------|----------------------|
| 1—12SA7  | Oscillator Converter | 1—12SQ7  | AVC Detector and 1st |
| 1—12SK7  | I.F. Amplifier       |          | Audio                |
| 1—35Z5GT | Power Rectifier      | 1—50L6GT | Power Output         |

This receiver covers the frequency range from 540 kilocycles to 1630 kilocycles (KC).

**INSTALLATION**

The loop antenna incorporated in the receiver is sufficient for all normal reception. If the receiver is to be used in very remote areas or in a building constructed mainly of steel, it may be necessary to use an external antenna. The antenna should be approximately fifty feet long, including lead in, and placed as far away from trees, buildings, etc., as possible. The lead in from the external antenna should be connected to the wire at the back of the receiver. An external ground is not necessary.

When using a DC power supply and after allowing sufficient time for the tubes to warm up the receiver does not operate, remove the line cord plug from the receptacle and reverse. Replace the plug in the reversed position and allow tubes to warm up at which time the receiver will operate.

If an excessive hum is noticed when operating from an AC power source, reverse the line cord plug to determine which position gives the best results.

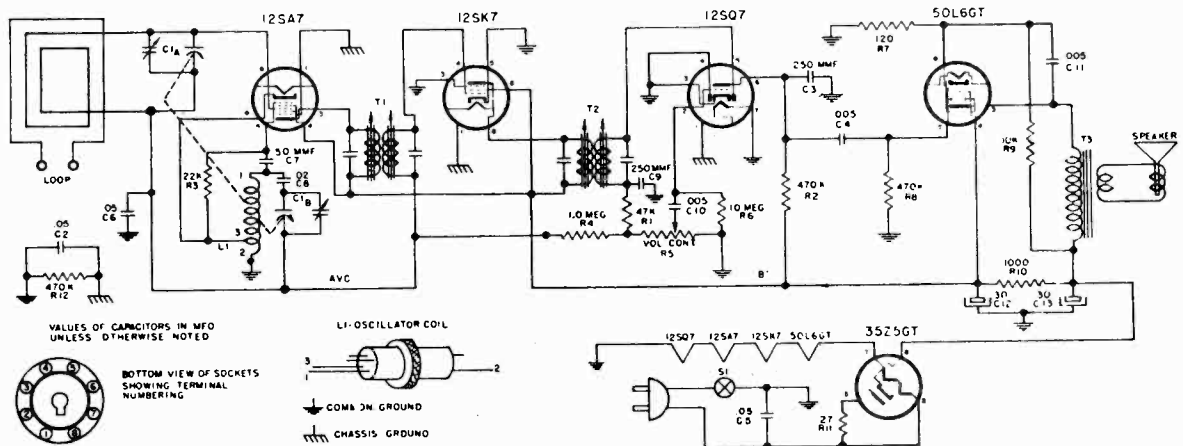
NOTE: All loop antennas are somewhat directional in their characteristics.

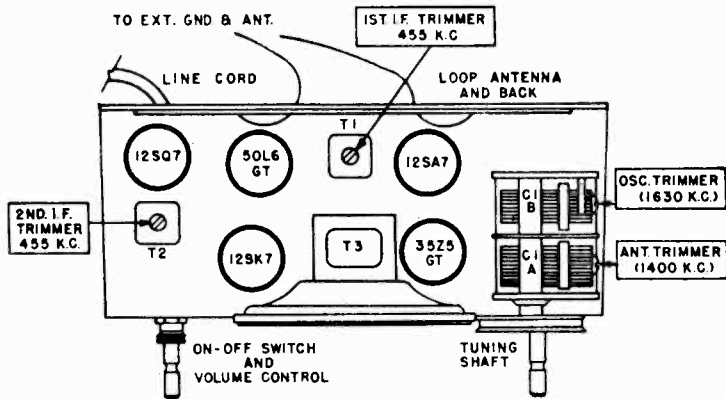
Reception can sometimes be improved and/or local interference reduced by turning the set in a different direction.

**OPERATION**

To turn the receiver on, rotate the on-off switch and volume control knob (left hand control) clockwise about one-half its range. This supplies power to the receiver. Allow about thirty seconds for the tubes to warm up after which the desired station may be tuned by rotating the station selector (right hand control).

For best tone, tune the desired station with the volume control turned low. This enables you to get the exact point where the station comes in best. Then, adjust the volume to the desired level with volume control.





**ALIGNMENT PROCEDURE**

The following alignment procedure is for use only by competent servicemen having the proper equipment.

The alignment should be made with volume control fully on, and the output from the signal generator as low as possible, to prevent A.V.C. action from interfering with correct alignment.

With the output meter connected across the voice coil of the speaker, the output meter reading for 50 milli-watts is .4 volts using a signal which is modulated 400 c.p.s.

Adjust all trimmers for maximum output. Repeat alignment procedure given below as a final check.

**CAUTION:** This is an A.C.-D.C. receiver and when aligning the set it is necessary to isolate the Signal Generator or the Receiver from the line by use of a transformer, or place a .2 MFD. condenser in both test leads of the Signal Generator.

Position of Variable	Generator Frequency	Dummy Ant. Mfd.	Generator Connections	Trimmer Adjustment	Trimmer Function
Fully open	455 KC	.1	*12SA7 Grid (Stator of C1A)	T1	Input I.F.
Fully open	455 KC	.1	*12SA7 Grid (Stator of C1A)	T2	Output I.F.
Fully open	1630 KC	.1	*12SA7 Grid (Stator of C1A)	C1B	Oscillator
Tune in signal from generator	1400 KC	.00025	**Ant. lead from loop	C1A	Antenna

\*Connect low side of signal generator to common negative through .25 MFD condenser.

\*\*Connect low side of signal generator to ground lead.

CODE NO.	PART NO.	DESCRIPTION
C1A, C1B	B19-198	Variable condenser
C2, C5	A16-158	.05 MFD 400 volt condenser
C3, C9	A15-176	250 MMF mica condenser
C4, C10, C11	A16-153	.005 MFD 600 volt condenser
C6	A16-152	.05 MFD 200 volt condenser
C7	A15-175	50 MMF mica condenser
C8	A16-150	.02 MFD 400 volt condenser
C12, C13	B18-283	30 x 30 MFD 150 volt electrolytic condenser
R1	A60-685	47K ohm 1/2 watt 20% resistor
R2, R8, R12	A60-662	470K ohm, 1/2 watt 20% resistor
R3	A60-659	22K ohm 1/2 watt 20% resistor
R4	A60-668	1 megohm 1/2 watt 20% resistor
R5, S1	A24-179	Volume control, with switch
R6	A60-663	10 megohm 1/2 watt 20% resistor
R7	A60-702	120 ohm 1/2 watt 10% resistor
R9	A60-698	10K ohm 1 watt 10% resistor
R10	A60-732	1000 ohm 1 watt 10% resistor
R11	A60-690	27 ohm 1/2 watt 10% resistor
T1	C10-475	1st I.F. Transformer
T2	A10-479	2nd I.F. Transformer
L1	B10-480	Oscillator coil
	42-320W	Cabinet, molded, walnut
	A42-420	Cabinet, molded, ivory
	A51-105	Dial cord, 15" long
	48-34	Dial crystal
	67-462	Dial scale
	52-165W	Knob, walnut
	A52-222	Knob, ivory
	A23-151	Line cord
	S84-267	Loop and back assembly
	B79-366	Speaker, 4" P. M. (includes output transformer).

**DESCRIPTION**

This model is a 4 tube (plus rectifier) superheterodyne radio receiver designed for use on 117 volts 60 cycle AC or 117 volts DC power supply.

The tubes used are:—

- 1—12SA7 Oscillator Converter
- 1—12SQ7 AVC Detector and 1st Audio
- 1—12SK7 I.F. Amplifier
- 1—35Z5GT Power Rectifier
- 1—50L6GT Power Output

This receiver covers the frequency range from 540 kilocycles to 1630 kilocycles (KC).

**OPERATION**

To turn the receiver on, rotate the on-off switch and volume control knob (left hand control) clockwise about one-half its range. This supplies power to the receiver. Allow about thirty seconds for the tubes to warm up after which the desired station may be tuned by rotating the station selector (right hand control).

For best tone, tune the desired station with the volume control turned low. This enables you to get the exact point where the station comes in best. Then, adjust the volume to the desired level with volume control.

**ALIGNMENT PROCEDURE**

The alignment should be made with volume control fully on, and the output from the signal generator as low as possible, to prevent A.V.C. action from interfering with correct alignment.

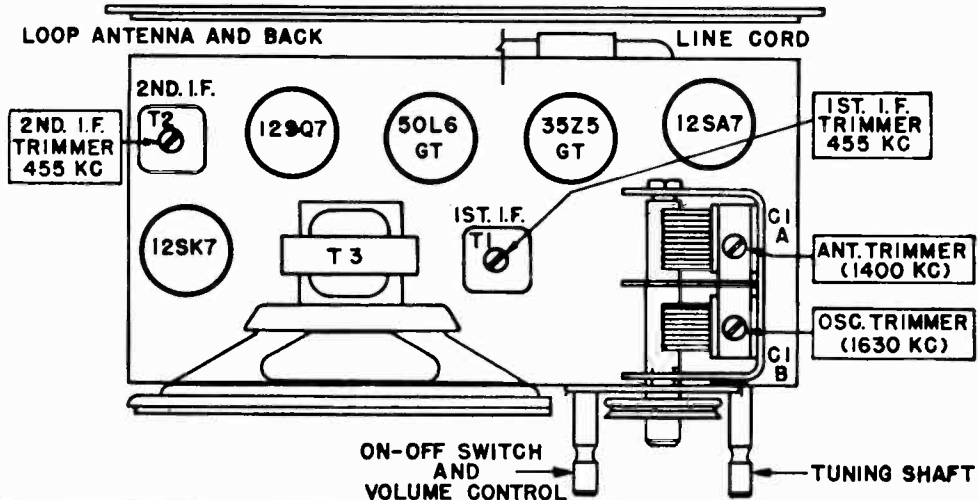
With the output meter connected across the voice coil of the speaker, the output meter reading for 50 milli-watts is .4 volts using a signal which is modulated 400 c.p.s.

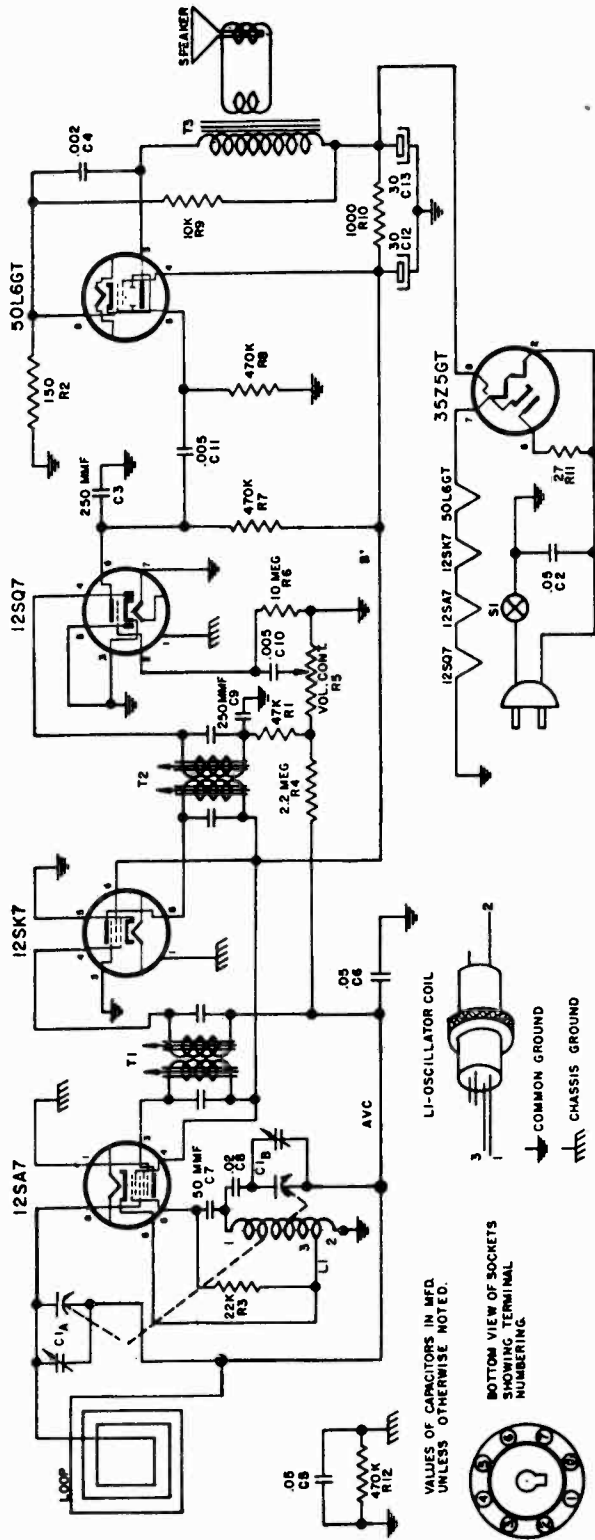
Adjust all trimmers for maximum output. Repeat alignment procedure given below as a final check

CAUTION: This is an A.C.-D.C. receiver and when aligning the set it is necessary to isolate the Signal Generator or the Receiver from the line by use of a transformer, or place a .2 MFD. condenser in both test leads of the Signal Generator.

Position of Variable	Generator Frequency	Dummy Ant. Mfd.	Generator Connections	Trimmer Adjustment	Trimmer Function
Fully open	455 KC	.1	*12SA7 Grid (Stator of C1A)	T1	Input I.F.
Fully open	455 KC	.1	*12SA7 Grid (Stator of C1A)	T2	Output I.F.
Fully open	1630 KC	.00025	*12SA7 Grid (Stator of C1A)	C1B	Oscillator
Tune in signal from generator	1400 KC		Loosely coupled to loop antenna	C1A	Antenna

\*Connect ground lead of signal generator to common negative.

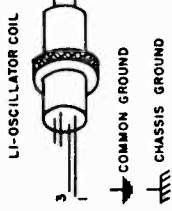




VALUES OF CAPACITORS IN MFD. UNLESS OTHERWISE NOTED.



BOTTOM VIEW OF SOCKETS SHOWING TERMINAL NUMBERING.



L1-OSCILLATOR COIL  
COMMON GROUND  
CHASSIS GROUND

PARTS LIST

CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION
C1A, C1B	B19-194	Variable condenser	R6	A60-663	10 megohm 1/2 watt resistor
C2, C5	A16-158	.05 MFD 400 volt condenser	R7, R8, R12	A60-662	470K ohm 1/2 watt resistor
C3, C6	A16-176	250 MFD mica condenser	R9	A60-698	100K ohm 1 watt resistor
C4	A16-155	.002 MFD 600 volt condenser	R10	A60-732	1000 ohm 1 watt resistor
C5	A16-152	.05 MFD 200 volt condenser	R11	A60-690	27 ohm 1/2 watt resistor
C6	A16-175	50 MFD mica condenser	T1, T2	A10-479	1st and 2nd I.F. transformers
C7	A16-175	.02 MFD 400 volt condenser	L1	B10-502	Oscillator coil
C8	A16-150	.005 MFD 400 volt condenser		A42-451	Cabinet, molded, brown
C10, C11	A16-153	30-30 MFD 150 volt electrolytic condenser		D42-424	Cabinet, molded, ivory
C12, C13	B18-263	47K ohm 1/2 watt resistor		B67-610	Dial scale, paper
R1	A60-665	150 ohm 1/2 watt resistor		B67-610	Cabinet, molded, ivory
R2	A60-668	22K ohm 1/2 watt resistor		A52-243	Knob, tenite, black
R3	A60-659	2.2 megohm 1/2 watt resistor		A52-222	Knob, tenite, ivory
R4	A60-664	Volume control and switch, 1 megohm		S84-268	Loop and back
R5	A24-174			A58-69	Pointer, "Clarion"
				B75-378	Speaker, 5", P.M. (includes output transformer)

**DESCRIPTION**

Model 11611 is a 4-tube superheterodyne portable receiver designed for operation on a 117 volt 50-60 cycle, 117 volt DC power supply or from a self-contained battery.

This receiver covers the frequency range from 535 kilocycles to 1600 kilocycles (K.C.).

- The tubes used are:—
- 1R5—Mixer, Oscillator
- 1U4—I. F. Amplifier
- 1S5—Detector and first Audio
- 3Q4—Power Output

No rectifier tube is required as a Selenium rectifier is used when operating on A. C. current.

**INSTALLATION**

The radio is shipped from the factory minus the battery. One combination A. B. Battery Pack is required, having 90 volts "B" and 7½ volts "A," such as Ray-o-vac No. AB-994, General No. 60A6F6/5, Burgess No. D5A60 or Eveready No. 753.

To install the battery remove the back from the cabinet, place the battery in the space provided and insert the battery plug into the socket.

The battery A-C switch, located on the top right side of the chassis, is accessible from the rear of the cabinet after removing the back. For battery operation this switch should be turned so that the extended portion of the knob is over the A. C. socket, thereby making it impossible to connect the radio to A. C. current without setting the change-over switch in its proper position. The set is now ready for operation from its self-contained Battery.

To operate the receiver from 117 volts A. C. or D. C., turn the battery A. C. switch away from the A. C. socket. Remove the A. C. cord from its brackets on the cabinet back and insert the plug into the A. C. socket, placing the plug on the other end of the cord into the wall receptacle. The receiver is now ready for operation on 117 volts A. C. or D. C. current.

**ALIGNMENT PROCEDURE**

The following alignment procedure is for use only by competent servicemen having the proper equipment.

The alignment should be made with volume control fully on, and the output from the signal generator as low as possible, to prevent A. V. C. action from interfering with correct alignment.

With the output meter connect across the voice coil of the speaker, the output meter reading for 50 milliwatts is .4 volts using a signal which is modulated 400 c.p.s.

Adjust all trimmers for maximum output. Repeat alignment procedure given below as a final check.

**CAUTION:** This is an A.C.-D. C. receiver and if alignment is made with the receiver connected to 117 volts A. C. or D. C., it is necessary to isolate the signal generator or the receiver from the line by use of a transformer, or place a .2 M. F. D. condenser in both test leads of the Signal Generator.

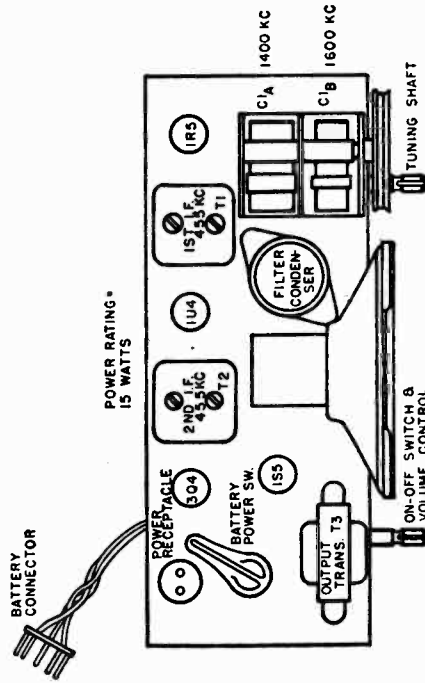
**ALIGNMENT PROCEDURE**  
(Continued)

Position of Variable	Generator Frequency	Dummy Ant. Mfd.	Generator Connections	Trimmer Adjustment	Trimmer Function
Fully open	455 KC	.1	*1R5 Grid (Stator of CIA)	T2	Output I. F.
Fully open	455 KC	.1	*1R5 Grid (Stator of CIA)	T1	Input I. F.
Fully open	1600 KC	.00025	**Ant. lead (Stapled to Cabinet)	C1B	Oscillator
Tune in signal from generator	1400 KC	.00025	**Ant. lead (Stapled to Cabinet)	C1A	Antenna

\*Connect ground lead of signal generator to Common "B."

\*\*Connect ground lead of signal generator to ground wire stapled to cabinet.

If it should become necessary to re-adjust the loop antenna loading coil tune in a weak station, between 600 and 650 kilocycles, and adjust for maximum output.



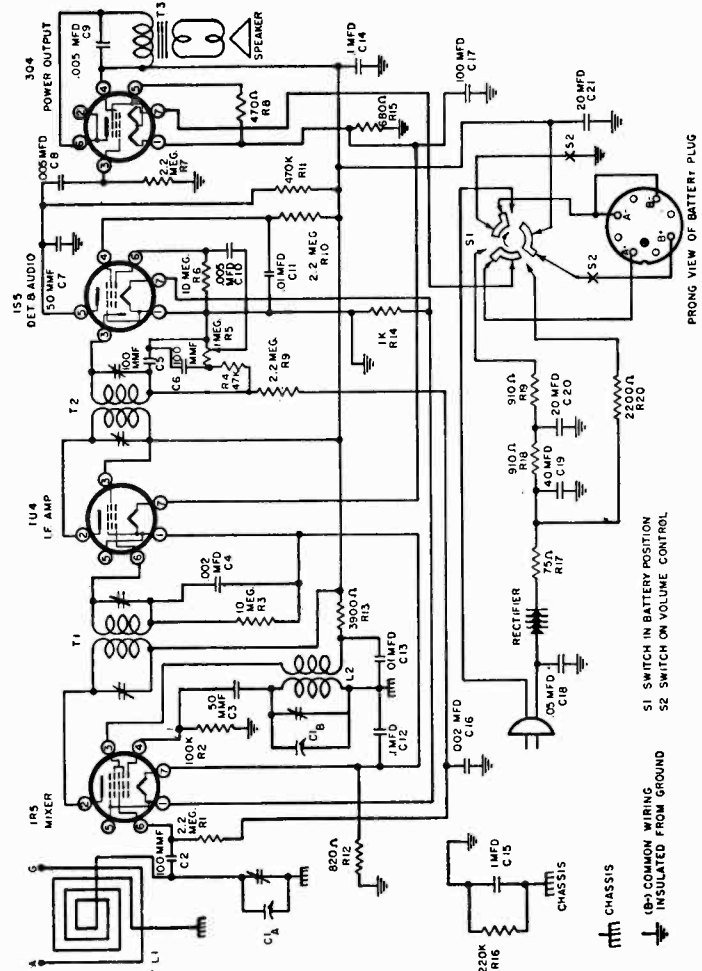
PARTS LIST

Code	Part No.	DESCRIPTION
C1A, C1B	B19-188	Variable Condenser
C2, C5, C6	A15-188	100 MMF Mica Condenser
C3, C7	A15-175	50 MMF Mica Condenser
C4, C16	A16-155	.002 MFD. 600 volt Condenser
C8, C9, C10	A16-166	.005 MFD. 150 volt Condenser
C11, C13	A16-160	.1 MFD. 400 volt Condenser
C12, C15	A16-157	.1 MFD. 200 volt Condenser
C14	A16-158	.05 MFD. 400 volt Condenser
C18	A18-281	20 MFD. 150 volt Electrolytic Condenser
C17		40 MFD. 150 volt Electrolytic Condenser
C19		100 MFD. 25 volt Electrolytic Condenser
C20, C21		

Code	Part No.	DESCRIPTION
R1, R7, R9, R10	A60-684	2.2 Megohm 1/2 watt 20% Resistor
R2	A60-671	100K Ohm 1/2 watt 20% Resistor
R3, R6	A60-663	10 Megohm 1/2 watt 20% Resistor
R4	A60-685	47K Ohm 1/2 watt 20% Resistor
R8	A60-707	470 Ohm 1/2 watt 20% Resistor
R11	A60-662	470K Ohm 1/2 watt 20% Resistor
R12	A60-709	820 Ohm 1/2 watt 10% Resistor
R13	A60-710	3900 Ohm 1/2 watt 10% Resistor
R14	A60-675	1000 Ohm 1/2 watt 20% Resistor
R15	A60-708	680 Ohm 1/2 watt 10% Resistor
R16	A60-667	220K Ohm 1/2 watt 20% Resistor
R17	A60-712	75 Ohm 3 watt 5% Resistor

Code	Part No.	DESCRIPTION
R18, R19	A60-713	1820 Ohm 10 watt 5% Resistor (each section 910 ohms)
R20	A60-714	2200 Ohm 1/2 watt 10% Resistor
L2	B10-460	Oscillator Coil
T1	C10-462	1st I. F. Transformer
T2	C10-463	2nd I. F. Transformer
R5	A24-170	Volume Control and Switch
	A10-470	Loading Coil
	A52-197	Knob, Tuning
	A52-198	Knob, Volume
	A52-196	Knob, Battery—AC-DC
	B67-496	Dial Scale
	A58-63	Dial Pointer
	A83-391	Selenium Rectifier
	A75-60	Tuning Shaft
	B69-173	Switch, Battery—AC-DC
	A80-228	Output Transformer
	B79-350	Speaker, 5" P M
	A45-119	Plug, Battery
	D42-406	Cabinet
	D40-140	Escutcheon and Grille
	A84-123	Line Cord Assembly
	B21-109	Cover, Chassis
	A68-29	Receptacle, Male
	A23-151	Line Cord and Plug
	A68-30	Plug, Female
	C10-473	Alternate 1st I. F. Transformer
	C10-474	Alternate 2nd I. F. Transformer
	C10-471	Alternate 1st I. F. Transformer
	C10-472	Alternate 2nd I. F. Transformer
	C10-475	Alternate I. F. Transformer May be used as 1st or 2nd I. F. Transformer



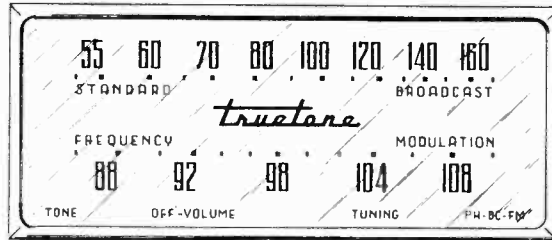
**CHECK YOUR LINE VOLTAGE**

Unless otherwise marked this radio must be operated on a supply of 105-125 volts AC, 60 cycles only. Do not connect the radio to a wall outlet unless

certain that the power supply is correct for the receiver. If in doubt, telephone your local power company before inserting the plug. Radios of this model which are to be used on other power supplies are marked accordingly.

**FM BAND**

88 - 108 MEGACYCLES — This band is calibrated in megacycles and covers the newly allocated frequency modulation band of 88-108 megacycles. Reception in this band is usually limited to "line of sight" distances between the transmitting and receiving antennas. This is normally up to about 30 miles with approximately 45 miles being the extreme range.



**BROADCAST BAND**

540 - 1600 KILOCYCLES — This band is calibrated in channel numbers. To obtain the kilocycle number add a zero to the number on the dial scale.

**TONE CONTROL**

Use this knob to adjust the tone of the receiver. When turned clockwise the high notes will predominate and when turned counter-clockwise a deep bass effect will result.

**BAND AND PHONO RADIO SWITCH**

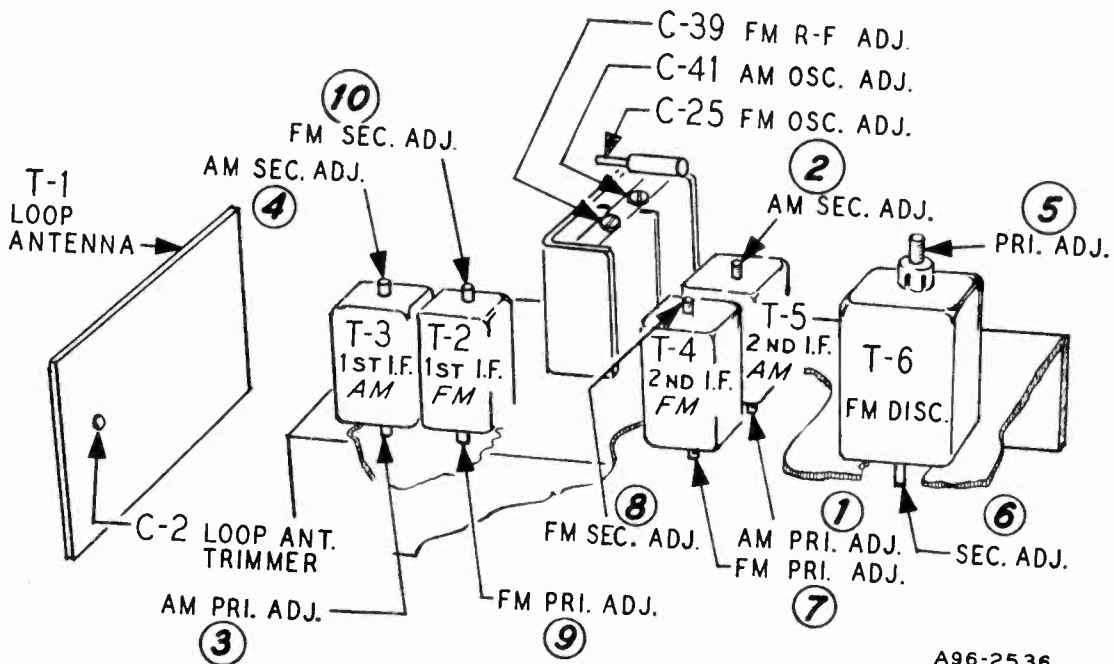
This control has three positions, FM, Broadcast and Phono. In the Phono position, the electrical circuits are connected for the reproduction of records played on the Automatic Record Changer.

**ON-OFF SWITCH AND VOLUME CONTROL**

The On-Off switch and Volume control are operated by the same knob. To turn the radio on, turn the knob clockwise until a click is heard. Allow approximately 30 seconds for the tubes to heat. Then continue to turn the knob clockwise to increase the volume.

**TUNING KNOB**

Use this control to tune in the desired station. Turn the knob until the station is heard. Then slowly rotate it back and forth until the signal is clearest and strongest. If signal is too strong, reduce it by means of the volume control, not by using the tuning knob.



A96-2536



MODEL D1034A

**ELECTRICAL SPECIFICATIONS**

Intermediate Frequency—  
AM 455 KC — FM 10.7 MC

Selectivity — AM — 45 KC broad  
at 1000 times signal, measured  
at 1000 KC

I.F. FM—200 KC broad at 2 times  
down

I.F. FM—950 KC broad at 200  
times down

AM Sensitivity—(For .5 watt output  
with external antenna)  
25 microvolts average

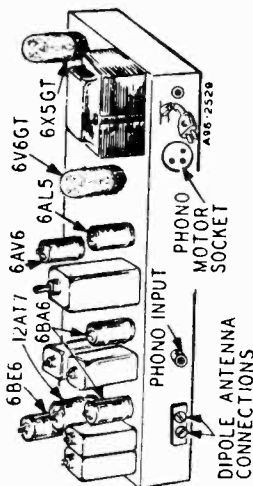
FM Sensitivity—(For .5 watt output)  
25 microvolts average

Power Output—  
117 volts AC—40 watts  
60 watts phono operating

Power Output—  
1.9 watts maximum  
.8 watts 10% distortion

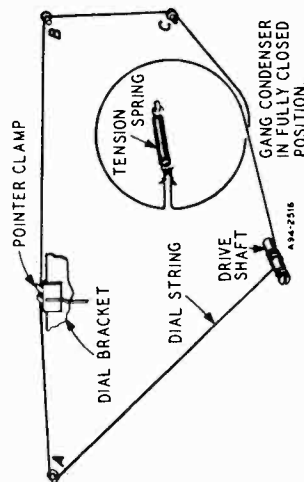
Speaker—8 inch PM dynamic

Frequency Ranges—  
Broadcast 540-1600 KC  
Frequency modulation 88-108 MC



**DRIVE CORD REPLACEMENT**

Replacement of the drive cord may be accomplished as shown in the illustration. For this purpose use the new drive cord assembly listed in the Replacement Parts List. Turn the gang condenser until the plates are fully meshed! Then install the string as shown, winding three turns counter-clockwise around the tuning shaft with the turns progressing away from the chassis. After the cord is installed, rotate the tuning shaft several times in order to take up any slack in the cord.



**ALIGNMENT PROCEDURES AM STAGES**

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 50mmf.

Volume Control Maximum all Adjustments.  
Connect Radio 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	Rotor Fully Open	2nd I.F. Pri. (1) and Sec. (2)	Maximum Output	Maximum Output
455 KC	Control Grid 1st 6BA6 Pin No. 1	.1 mf	Chassis Base	Rotor Fully Open	2nd I.F. Pri. (1) and Sec. (2)	Maximum Output	Maximum Output
455 KC	Control Grid 6BE6 Pin No. 7	.1 mf	Chassis Base	Rotor Fully Open	1st I.F. Pri. (3) and Sec. (4)	Maximum Output	Maximum Output
455 KC	Control Grid 6BE6 Pin No. 7 1st Det.	.1 mf	Chassis Base	Rotor Fully Open	2nd I.F. Pri. (1) and Sec. (2)	Maximum Output	Maximum Output
1620 KC	Control Grid 6BE6 Pin No. 7	.1 mf	Chassis Base	Rotor Fully Open	Oscillator C-41	Maximum Output	Maximum Output
1400 KC	External Antenna Lead	50 mmf	Chassis Base	Turn Rotor to Max. Output. Set Pointer to 1400 KC See Note A	Antenna C-2	Maximum Output	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.

**FM STAGES**

The following is required for aligning:

An accurately calibrated signal generator providing unmodulated signals at the test frequencies listed below.

Non-metallic screwdriver.

Dummy Antennas and I-F Loading Resistor—2500 mmf, 300 ohms

Zero center scale DC vacuum tube voltmeter having a range of approximately 3 volts.

(If a zero center scale meter is not available, a standard scale vacuum tube voltmeter may be used by reversing the meter connections for negative readings).

Allow chassis and signal generator to "Heat Up" for several minutes.

SIGNAL GENERATOR		THROUGH DUMMY ANTENNA	BAND SWITCH SETTING	GANG CONDENSER SETTING	ADJUST	ADJUST FOR	
Discriminator	10.7 MC	6BA6 2nd I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	Disc. Pri. (5) Note A	Maximum Deflection
	10.7 MC	6BA6 2nd I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	Disc. Sec. (6) Note B	
I-F	10.7 MC Note C	6BA6 1st I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	2nd I-F Pri. (7) Sec. (8) Note D	Maximum Deflection
Discriminator	10.7 MC	6BA6 1st I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	Disc. Pri. (5) Note D	Maximum Deflection
I-F	10.7 MC	Junction C-32A & B (Dual 100 mmf cond.) And chassis	2500 mmf	FM	Rotor Fully Open	1st I-F Pri. (9) & Sec. (10) 2nd I-F Pri. (7) & Sec. (8) Disc. Pri. (5) In Order Shown Note D	Maximum Deflection
	10.7 MC	Same as above	2500 mmf	FM	Rotor Fully Open	Disc. Sec. (6) Note B	Maximum Deflection

**RECHECK I-F ADJUSTMENTS IN ORDER GIVEN**

Oscillator	108.5	Disconnect built-in dipole antenna and connect generator to dipole terminals with resistor in series.	300 ohms	FM	Rotor Fully Open	Osc. C-25	Maximum Deflection
Antenna	104.5	Same as above	300 ohms	FM	Tune rotor for max. AVC voltage	Ant. C-39	Maximum Deflection

**RECHECK ANTENNA & OSC. ADJUSTMENTS IN ORDER GIVEN**

**FM ALIGNMENT NOTES**

**NOTE A**—The zero center scale DC vacuum tube voltmeter is to be connected between chassis ground and the AVC line. A signal of .1 volt must be fed into the receiver for this adjustment.

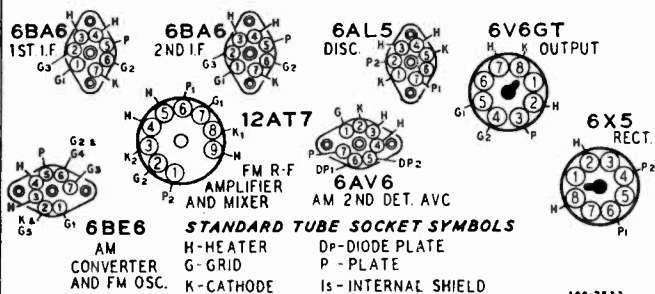
Note output voltage on the zero center DC vacuum tube voltmeter

**NOTE B**—Disconnect zero center DC vacuum tube voltmeter from AVC and connect it at the audio takeoff point at the

27 K ohm resistor (R-10) and its junction with the terminal strip. Adjust for zero voltage indication.

**NOTE C**—AM I-F coils must be aligned before attempting to align the FM I-F coils.

**NOTE D**—Connect zero center DC vacuum tube voltmeter as in Note A. Adjust input to give same output on the zero center DC vacuum tube voltmeter as in Note A.

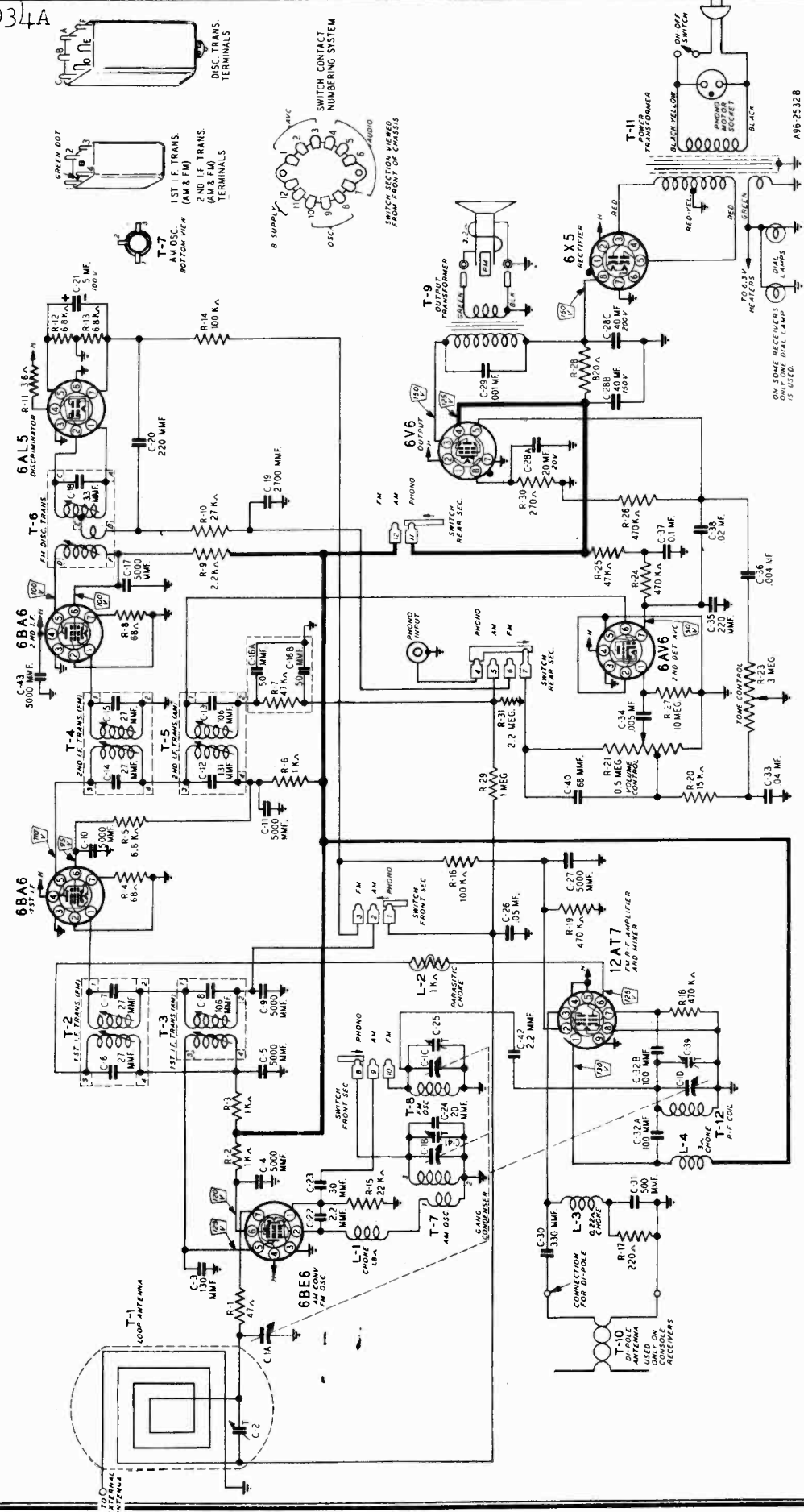


**TUBE SOCKET VOLTAGES**

Socket voltages are shown on the schematic diagram at the tube socket terminals. All voltages are between the socket terminal and chassis ground. Plate, screen and cathode voltages were taken with a 1000 ohm-per-volt meter with a 300 volt scale used for plate and screen voltages. Audio grid voltages were read with a vacuum tube voltmeter. Conditions of measurement are:

Line voltage .....117 Volts AC  
Signal Input .....None  
A Variation of ±10% is usually permissible.

MODEL D1034A



RECORD CHANGER: Gen. Instr. Model 700F, See pages, RCD.CH.19-1,2 to RCD.CH.19-9.

# REPLACEMENT PARTS LIST

NOTICE: There is a model number label on the chassis. This label identifies the radio as to chassis, dial and issue letter. When ordering parts or writing, give ALL information on this label.

## MISCELLANEOUS

12A477	8" P.M. Speaker	.....
4X1082	Escutcheon	.....
10X755	Knob	.....
13X546	Line Cord & Plug Assembly	.....
2A393	Band Change Switch	.....
3A435	Molded Octal Tube Socket	.....
3A305	Phono Socket	.....
3A426	Tube Socket (1st 6BA6)	.....
3A443	Tube Socket (12AT7)	.....
3A304	Phono Motor Socket	.....
3A427	Tube Socket (6BE6)	.....
3A439	Tube Socket (Miniature)	.....
	Cabinet No. 054	.....

## CAPACITORS

C-1	14A209	Gang Condenser Assembly	.....
C-2	17A256	2-24 mmf	Trimmer
C-3	47X559	130 mmf	Molded Mica
C-4			
C-5			
C-9			
C-10			
C-11	47X507	5000 mmf	Ceramic
C-17			
C-27			
C-43			
C-6			
C-7		Part of T-2 (1st I-F Trans. FM)	
C-8		Part of T-3 (1st I-F Trans. AM)	
C-12		Part of T-5 (2nd I-F Trans. AM)	
C-13			
C-14		Part of T-4 (2nd I-F Trans. FM)	
C-15			
C-16A	47X112	50-50 mmf	Dual Mica
C-16B			
C-18		Part of T-6 (Discriminator Trans.)	
C-19	47X492	2700 mmf	Molded Mica
C-20			
C-35	47X468	220 mmf	Ceramic
C-21	45X361	5 mf	100 V Dry Electrolytic
C-22			
C-42	47X557	2.2 mmf	Ceramic
C-23	47X558	30 mmf	Ceramic
C-24	47X516	20 mmf	Ceramic
C-25	17A255	1-8 mmf	Trimmer
C-26	B66503	.05 mf	200 V Tubular
C-28A		20 mf	20 V
C-28B	45X360	40 mf	150 V Dry Electrolytic
C-28C		40 mf	200 V
C-29	H66102	.001 mf	800 V Tubular
C-30	47X470	330 mmf	Molded Mica
C-31	47X508	500 mmf	Ceramic
C-32A			
C-32B	76X4	100 mmf	Dual Ceramic
C-33	B66403	.04 mf	200 V Tubular
C-34	D66502	.005 mf	400 V Tubular
C-36	B66402	.004 mf	200 V Tubular
C-37	D66104	.1 mf	400 V Tubular
C-38	D66203	.02 mf	400 V Tubular
C-39			
C-41		Part of C-1 (Gang Condenser)	
C-40	47X471	68 mmf	Ceramic

## RESISTORS

		Ohms	Watts	
R-1	B85470	47	0.5	Carbon
R-2				
R-3	B85102	1000	0.5	Carbon
R-6				
R-4	B84680	68	0.5	Carbon
R-8				
R-5				
R-12	B84682	6800	0.5	Carbon
R-13				
R-7	B85473	47 K	0.5	Carbon
R-25				
R-9	B85222	2200	0.5	Carbon
R-10	B85273	27 K	0.5	Carbon
R-11	43X233	3.6	0.5	Wirewound
R-14	B85104	100	0.5	Carbon
R-16				
R-15	B85223	22 K	0.5	Carbon
R-17	B84221	220	0.5	Carbon
R-18				
R-19				
R-24	B85474	470 K	0.5	Carbon
R-26				
R-20	B85153	15 K	0.5	Carbon
R-21	36X372	.5 meg		Volume Control
R-23	40X285	3 meg		Tone Control
R-27	B85106	10 meg	0.5	Carbon
R-28	D84821	820	2.0	Carbon
R-29	B85105	1 meg	0.5	Carbon
R-30	B84271	270	0.5	Carbon
R-31	B85225	2.2 meg	0.5	Carbon

## TRANSFORMERS AND COILS

L-1	35A5	Insulated Choke	.....
L-2	9A2068	Parasitic Choke	.....
L-3	35A9	Insulated Choke	.....
L-4	35A8	Insulated Choke	.....
T-1	9A2099	"B" Range Loop Antenna	.....
T-2	9A2060	1st I-F Trans. (FM)	.....
T-3	9A2062	1st I-F Trans. (AM)	.....
T-4	9A2061	2nd I-F Trans. (FM)	.....
T-5	9A2063	2nd I-F Trans. (AM)	.....
T-6	9A2064	Discriminator Transformer	.....
T-7	9A2065	Oscillator Coil (AM)	.....
T-8	9A2067	Oscillator Coil (FM)	.....
T-9	51X134	Output Transformer	.....
T-10	9A2002	Dipole Antenna	.....
T-11	53X291	Power Transformer	.....
T-12	9A2066	Antenna Coil (FM)	.....

## DIAL AND DRIVE ASSEMBLY

58X733	Dial Glass	.....
15X260	Pointer	.....
19X192	"C" Washer (Mtg. Drive Shaft)	.....
6X66	Rubber Grommet	.....
23X1616	Dial Bracket	.....
28X113	Drive Cord Tension Spring	.....
7A103	No. 47 Pilot Light	.....
7A199	Pilot Light Socket Assembly	.....
10X38	Drive Cord Assembly	.....
26X486	Drive Shaft	.....

## TYPE G.I. - 28A169 RECORD CHANGER PARTS

G.I. 69-73657	Tone Arm
G.I. 55-73613	Plastic Stabilizer
G.I. 28A755782	Idler Wheel Assembly
G.I. 56-76507	Motor, 3 speed, 60 cycles, 105-125 Volts A.C.
E-V No. 33-4	Crystal Cartridge, complete with needle
	*Needle only

\*When ordering needles, specify part number and letter stamped on Cartridge.

MODEL D1046A

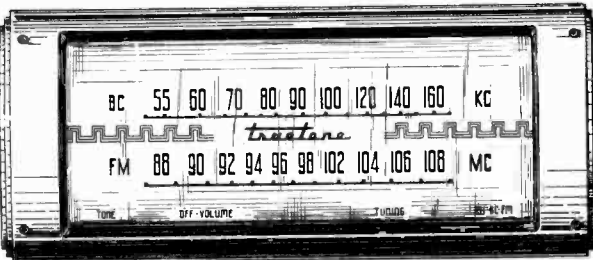
**CHECK YOUR LINE VOLTAGE**

Unless otherwise marked this radio must be operated on a supply of 105-125 volts AC, 60 cycles only. Do not connect the radio to a wall outlet unless

certain that the power supply is correct for the receiver. If in doubt, telephone your local power company before inserting the plug. Radios of this model which are to be used on other power supplies are marked accordingly.

**FM BAND**

88 - 108 MEGACYCLES — This band is calibrated in megacycles and covers the newly allocated frequency modulation band of 88-108 megacycles. Reception in this band is usually limited to "line of sight" distances between the transmitting and receiving antennas. This is normally up to about 30 miles with approximately 45 miles being the extreme range.



**BROADCAST BAND**

540 - 1600 KILOCYCLES — This band is calibrated in channel numbers. To obtain the kilocycle number add a zero to the number on the dial scale.



**TONE CONTROL**

Use this knob to adjust the tone of the receiver. When turned clockwise the high notes will predominate and when turned counter-clockwise a deep bass effect will result.

**ON-OFF SWITCH AND VOLUME CONTROL**

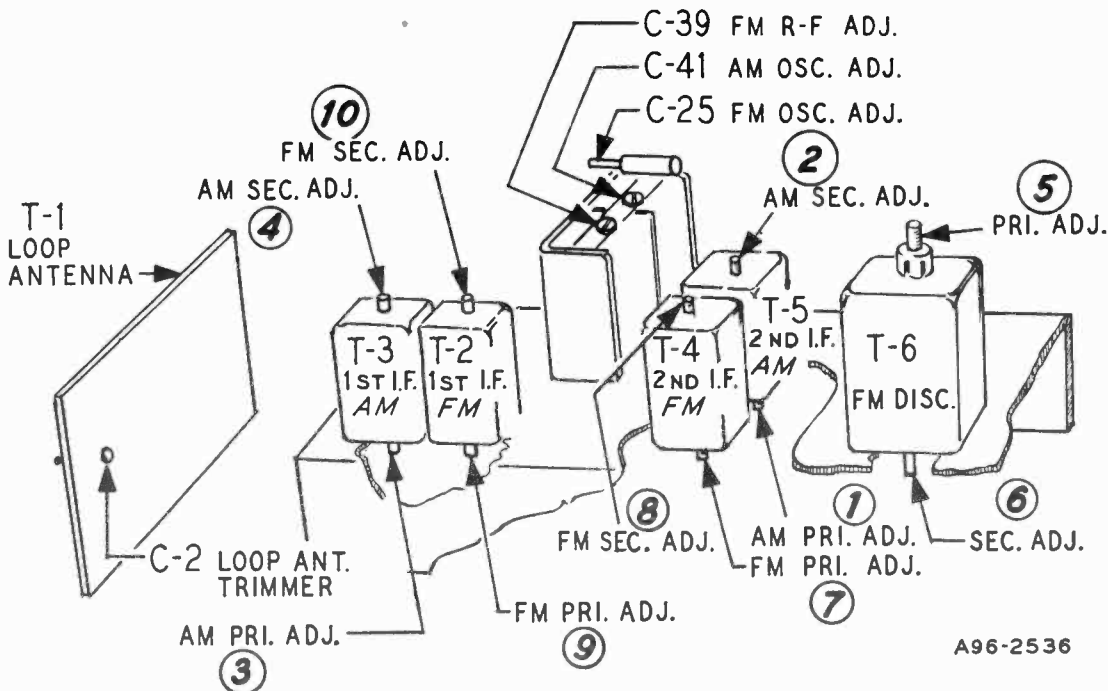
The On-Off switch and Volume control are operated by the same knob. To turn the radio on, turn the knob clockwise until a click is heard. Allow approximately 30 seconds for the tubes to heat. Then continue to turn the knob clockwise to increase the volume.

**BAND AND PHONO RADIO SWITCH**

This control has three positions, FM, Broadcast and Phono. In the Phono position, the electrical circuits are connected for the reproduction of records played on the Automatic Record Changer.

**TUNING KNOB**

Use this control to tune in the desired station. Turn the knob until the station is heard. Then slowly rotate it back and forth until the signal is clearest and strongest. If signal is too strong, reduce it by means of the volume control, not by using the tuning knob.



**ELECTRICAL SPECIFICATIONS**

Intermediate Frequency—  
AM 455 KC — FM 10.7 MC

Power Output—  
117 volts AC—40 watts  
60 watts phono operating

Selectivity — AM — 45 KC broad  
at 1000 times signal, measured  
at 1000 KC

Power Output—  
1.9 watts maximum  
.8 watts 10% distortion

I.F. FM—200 KC broad at 2 times  
down  
I.F. FM—950 KC broad at 200  
times down

Speaker—8 inch PM dynamic

AM Sensitivity—(For .5 watt output  
with external antenna)  
25 microvolts average

Frequency Ranges—  
Broadcast 540-1600 KC  
Frequency modulation 88-108 MC

FM Sensitivity—(For .5 watt output)  
25 microvolts average

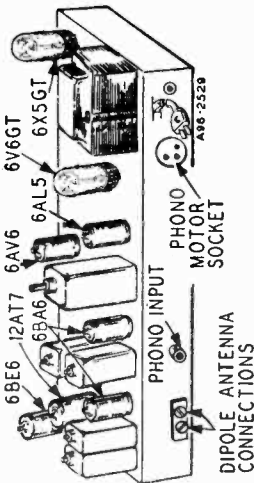
**ALIGNMENT PROCEDURES  
AM STAGES**

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 50mmf.

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

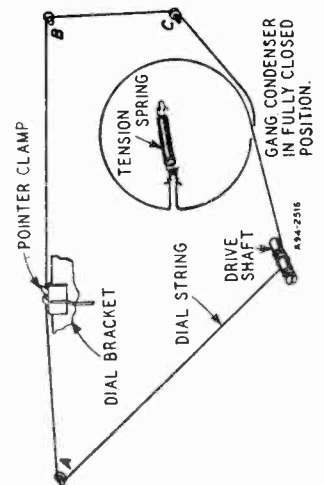
SIGNAL GENERATOR		GANG CONDENSER SETTING		ADJUST FOR
FREQUENCY SETTING	CONNECT GENERATOR OUTPUT TO	THROUGH DUMMY ANTENNA	CONNECT GROUND TO	
455 KC	Control Grid 1st 6BA6 Pin No. 1	.1 mf	Chassis Base	2nd I.F. Pri. (1) and Sec. (2)
455 KC	Control Grid 6BE6 Pin No. 7	.1 mf	Chassis Base	1st I.F. Pri. (3) and Sec. (4)
455 KC	Control Grid 6BE6 Pin No. 7	.1 mf	Chassis Base	2nd I-F Pri. (1) and Sec. (2)
1620 KC	Control Grid 6BE6 Pin No. 7	.1 mf	Chassis Base	Oscillator C-4)
1400 KC	External Antenna Lead	50 mmf	Chassis Base	Antenna C-2

NOTE A—If the pointer is not at 1400 KC on the dial, reset pointer to the 1400 KC mark on the dial scale.



**DRIVE CORD REPLACEMENT**

Replacement of the drive cord may be accomplished as shown in the illustration. For this purpose use the new drive cord assembly listed in the Replacement Parts List. Turn the gang condenser until the plates are fully meshed. Then install the string as shown, winding three turns counter-clockwise around the tuning shaft with the turns progressing away from the chassis. After the cord is installed, rotate the tuning shaft several times in order to take up any slack in the cord.



MODEL D1046A

**FM STAGES**

The following is required for aligning:

An accurately calibrated signal generator providing unmodulated signals at the test frequencies listed below.

Non-metallic screwdriver.

Dummy Antennas and I-F Loading Resistor—2500 mmf, 300 ohms

Zero center scale DC vacuum tube voltmeter having a range of approximately 3 volts.

(If a zero center scale meter is not available, a standard scale vacuum tube voltmeter may be used by reversing the meter connections for negative readings).

Allow chassis and signal generator to "Heat Up" for several minutes.

SIGNAL GENERATOR			THROUGH DUMMY ANTENNA	BAND SWITCH SETTING	GANG CONDENSER SETTING	ADJUST	ADJUST FOR
	FREQUENCY SETTING	CONNECT GENERATOR OUTPUT TO					
Discriminator	10.7 MC	6BA6 2nd I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	Disc. Pri. (5) Note A	Maximum Deflection
	10.7 MC	6BA6 2nd I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	Disc. Sec. (6) Note B	
I-F	10.7 MC Note C	6BA6 1st I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	2nd I-F Pri. (7) Sec. (8) Note D	Maximum Deflection
Discriminator	10.7 MC	6BA6 1st I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	Disc. Pri. (5) Note D	Maximum Deflection
I-F	10.7 MC	Junction C-32A & B (Dual 100 mmf cond.) And chassis	2500 mmf	FM	Rotor Fully Open	1st I-F Pri. (9) & Sec. (10) 2nd I-F Pri. (7) & Sec. (8) Disc. Pri. (5) In Order Shown Note D	Maximum Deflection
	10.7 MC	Same as above	2500 mmf	FM	Rotor Fully Open	Disc. Sec. (6) Note B	Maximum Deflection

**RECHECK I-F ADJUSTMENTS IN ORDER GIVEN**

Oscillator	108.5	Disconnect dipole antenna and connect generator to dipole terminals with resistor in series.	300 ohms	FM	Rotor Fully Open	Osc. C-25	Maximum Deflection
Antenna	104.5	Same as above	300 ohms	FM	Tune rotor for max. AVC voltage	Ant. C-39	Maximum Deflection

**RECHECK ANTENNA & OSC. ADJUSTMENTS IN ORDER GIVEN**

**FM ALIGNMENT NOTES**

**NOTE A**—The zero center scale DC vacuum tube voltmeter is to be connected between chassis ground and the AVC line. A signal of .1 volt must be fed into the receiver for this adjustment.  
Note output voltage on the zero center DC vacuum tube voltmeter.

**NOTE B**—Disconnect zero center DC vacuum tube voltmeter from AVC and connect it at the audio takeoff point at the

27 K ohm resistor (R-10) and its junction with the terminal strip. Adjust for zero voltage indication.

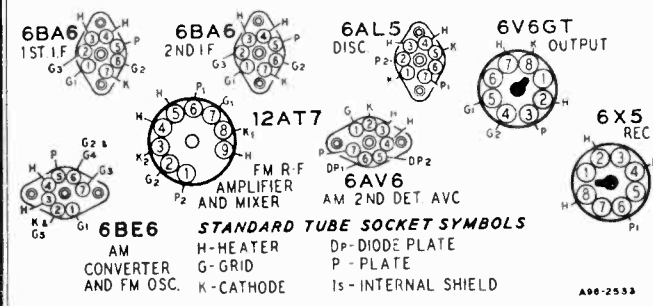
**NOTE C**—AM I-F coils must be aligned before attempting to align the FM I-F coils.

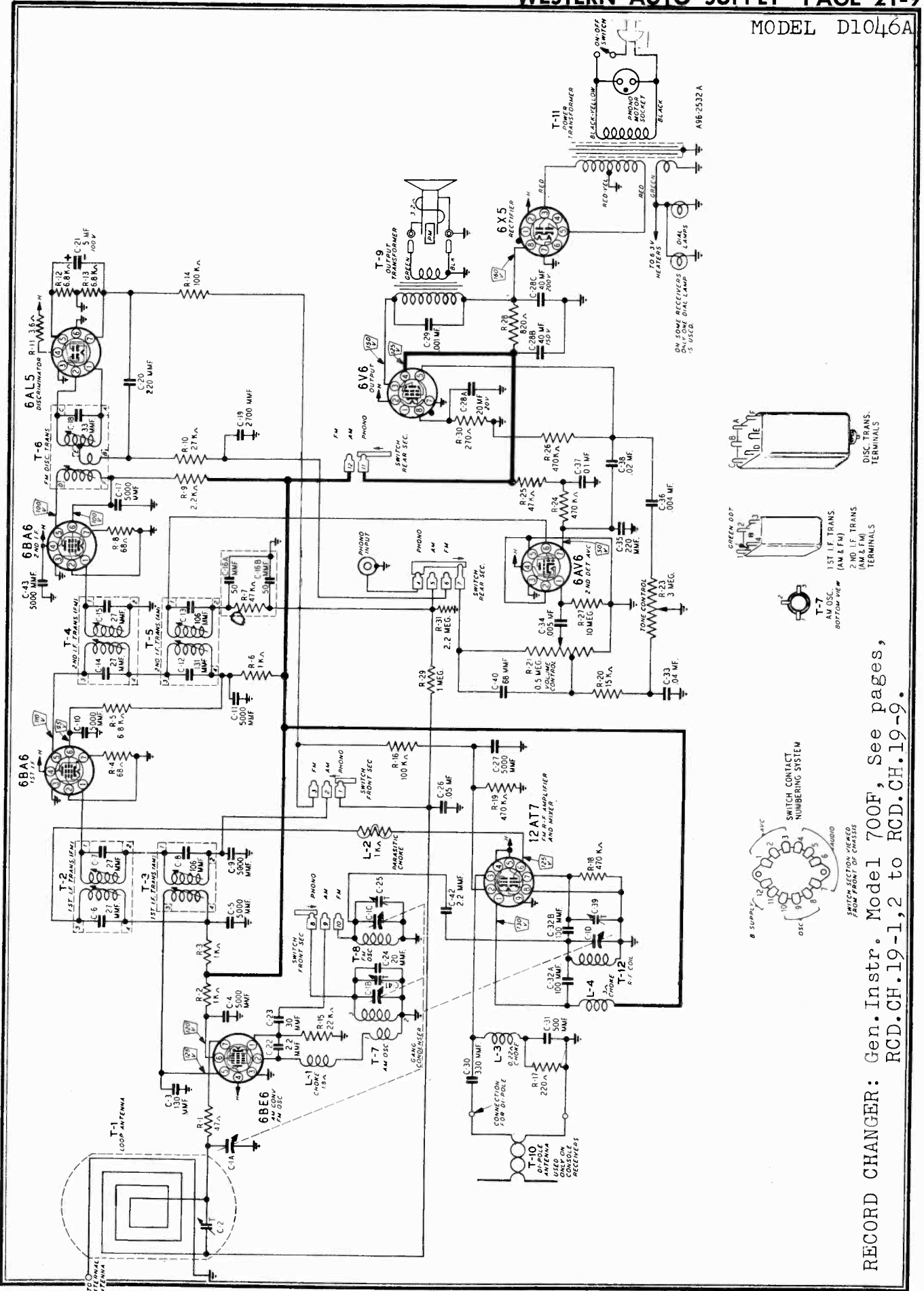
**NOTE D**—Connect zero center DC vacuum tube voltmeter as in Note A. Adjust input to give same output on the zero center DC vacuum tube voltmeter as in Note A.

**TUBE SOCKET VOLTAGES**

Socket voltages are shown on the schematic diagram at the tube socket terminals. All voltages are between the socket terminal and chassis ground. Plate, screen and cathode voltages were taken with a 1000 ohm-per-volt meter with a 300 volt scale used for plate and screen voltages. Audio grid voltages were read with a vacuum tube volt-meter. Conditions of measurement are:

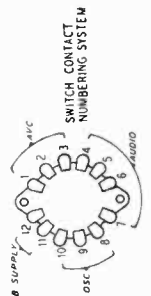
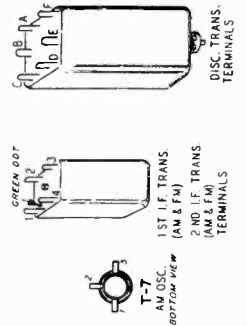
Line voltage .....117 Volts AC  
Signal Input .....None  
A Variation of ±10% is usually permissible.





©John F. Rider

RECORD CHANGER: Gen. Instr. Model 700F, See pages, RCD.CH.19-1,2 to RCD.CH.19-9.





MODEL D1046A

# REPLACEMENT PARTS LIST

NOTICE: There is a model number label on the chassis. This label identifies the radio as to chassis, dial and issue letter. When ordering parts or writing, give ALL information on this label.

## MISCELLANEOUS

12A477	8" P.M. Speaker	.....
4X1073	Escutcheon	.....
10X751	Knob	.....
13X546	Line Cord & Plug Assembly	.....
2A395	Band Change Switch	.....
3A303	Molded Octal Tube Socket	.....
3A305	Phono Socket	.....
3A426	Tube Socket (Miniature)	.....
3A443	Tube Socket (6BE6)	.....
3A304	Phono Motor Socket	.....
3A427	Tube Socket (12AT7)	.....
	Cabinet No. 952	.....

## CAPACITORS

C-1	14A209	Gang Condenser Assembly	.....
C-2	17A256	2-24 mmf	Trimmer.....
C-3	47X559	130 mmf	Ceramic.....
C-4			
C-5			
C-9			
C-10			
C-11	47X507	5000 mmf	Ceramic.....
C-17			
C-27			
C-43			
C-6		Part of T-2 (1st I-F Trans. FM)	
C-7			
C-8		Part of T-3 (1st I-F Trans. AM)	
C-12		Part of T-5 (2nd I-F Trans. AM)	
C-13			
C-14		Part of T-4 (2nd I-F Trans. FM)	
C-15			
C-16A			
C-16B	47X112	50-50 mmf	Dual Mica....
C-18		Part of T-6 (Discriminator Trans.)	
C-19	47X492	2700 mmf	Molded Mica..
C-20			
C-35	47X468	220 mmf	Ceramic.....
C-21	45X361	5 mf	100 V Dry Electrolytic
C-22			
C-42	47X557	2.2 mmf	Ceramic.....
C-23	47X558	30 mmf	Ceramic.....
C-24	47X516	20 mmf	Ceramic.....
C-25	17A255	1-8 mmf	Trimmer.....
C-26	B66503	.05 mf	200 V Tubular.....
C-28A		20 mf	20 V
C-28B	45X360	40 mf	150 V Dry Electrolytic
C-28C		40 mf	200 V
C-29	H66102	.001 mf	800 V Tubular.....
C-30	47X470	330 mmf	Molded Mica..
C-31	47X508	500 mmf	Ceramic.....
C-32A			
C-32B	76X4	100 mmf	Dual Ceramic..
C-33	B66403	.04 mf	200 V Tubular.....
C-34	D66502	.005 mf	400 V Tubular.....
C-36	B66402	.004 mf	200 V Tubular.....
C-37	D66104	.1 mf	400 V Tubular.....
C-38	D66203	.02 mf	400 V Tubular.....
C-39		Part of C-1 (Gang Condenser)	
C-41			
C-40	47X471	68 mmf	Ceramic.....

## RESISTORS

		Ohms	Watts	
R-1	B85470	47	0.5	Carbon.....
R-2				
R-3	B85102	1000	0.5	Carbon.....
R-6				
R-4	B84680	68	0.5	Carbon.....
R-5				
R-12	B84682	6800	0.5	Carbon.....
R-13				
R-7	B85473	47 K	0.5	Carbon.....
R-25				
R-9	B85222	2200	0.5	Carbon.....
R-10	B85273	27 K	0.5	Carbon.....
R-11	43X233	3.6	0.5	Wirewound...
R-14				
R-16	B85104	100 K	0.5	Carbon.....
R-15	B85223	22 K	0.5	Carbon.....
R-17	B84221	220	0.5	Carbon.....
R-18				
R-19				
R-24	B85474	470 K	0.5	Carbon.....
R-26				
R-20	B85153	15 K	0.5	Carbon.....
R-21	36X381	.5 meg		Volume Control
R-23	40X289	3 meg.		Tone Control..
R-27	B85106	10 meg.	0.5	Carbon.....
R-28	D84821	820	2.0	Carbon.....
R-29	B85105	1 meg.	0.5	Carbon.....
R-30	B84271	270	0.5	Carbon.....
R-31	B85225	2.2 meg.	0.5	Carbon.....

## TRANSFORMERS AND COILS

L-1	35A5	Insulated Choke	.....
L-2	9A2068	Parasitic Choke	.....
L-3	35A9	Insulated Choke	.....
L-4	35A8	Insulated Choke	.....
T-1	9A1972	"B" Range Loop Antenna	.....
T-2	9A2060	1st I-F Trans. (FM)	.....
T-3	9A2062	1st I-F Trans. (AM)	.....
T-4	9A2061	2nd I-F Trans. (FM)	.....
T-5	9A2063	2nd I-F Trans. (AM)	.....
T-6	9A2064	Discriminator Transformer	.....
T-7	9A2065	Oscillator Coil (AM)	.....
T-8	9A2067	Oscillator Coil (FM)	.....
T-9	51X134	Output Transformer	.....
T-10	9A2003	Dipole Antenna	.....
T-11	53X291	Power Transformer	.....
T-12	9A2066	Antenna Coil (FM)	.....

## DIAL AND DRIVE ASSEMBLY

58X730	Dial Glass	.....
15X254	Pointer	.....
19X192	"C" Washer (Mtg. Drive Shaft)	.....
6X66	Rubber Grommet	.....
25X1610	Dial Bracket	.....
28X113	Drive Cord Tension Spring	.....
7A103	No. 47 Pilot Light	.....
7A215	Pilot Light Socket Assembly	.....
10X38	Drive Cord Assembly	.....
26X510	Drive Shaft	.....

## TYPE G.I. - 28A168 RECORD CHANGER PARTS

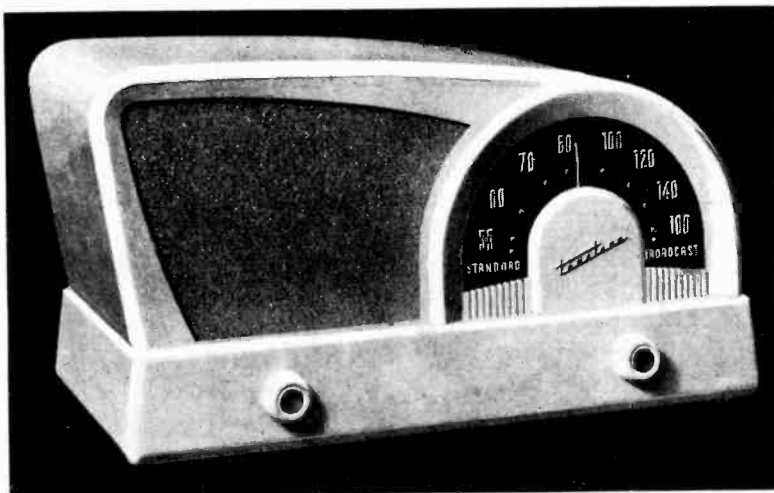
G.I. 69-75506	Tone Arm
G.I. 55-73613	Plastic Stabilizer
G.I. 28A755782	Idle Wheel Assembly
G.I. 56-76507	Motor, 3 speed, 60 cycles, 105-125 Volts A.C.
ASTATIC LT3D	Crystal Cartridge

- \*Needle, Regular
- \*Needle, Microgroove (Red)

\*When ordering needles, specify part number and letter stamped on Cartridge.

69X2080

MODELS D2017,  
D2018



## SERVICE DATA

### ALIGNMENT PROCEDURE

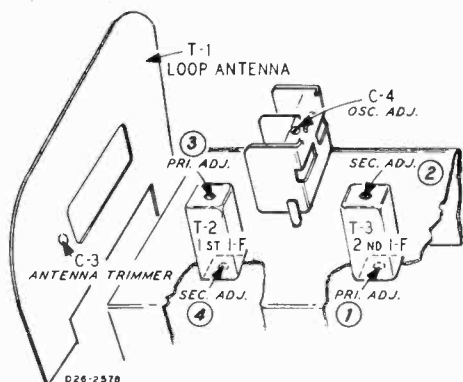
The following equipment is required for aligning:  
Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.  
Output Indicating Meter: Non-Metallic Screwdriver.

Dummy Antennas—.1 mf., 50 mmf.  
Volume Control—Maximum All Adjustments.  
Allow Chassis and Signal Generator to "Heat Up" for several Minutes.

SIGNAL GENERATOR			DUMMY ANTENNA	GANG CONDENSER SETTING	ADJUST TUNING SLUGS (I-F) AND TRIMMERS TO MAXIMUM
FREQUENCY SETTING	ANTENNA CONNECTION	GROUND CONNECTION			
455 KC	Control Grid 12BA6—1.F. Prong No. 1	"X" Point	.1 mf.	Turn Rotor to full open	2nd I.F. Pri. (1) & Sec. (2)
455 KC	Control Grid 12BE6—1st Det. Prong No. 7	"X" Point	.1 mt.	Turn Rotor to full open	1st I.F. Pri. (3) & Sec. (4)
1620 KC	Control Grid 12BE6—1st Det. Prong No. 7	"X" Point	.1 mf.	Turn Rotor to full open	Oscillator (C-4)
1400 KC	External Antenna Clip On Loop	Chassis	50 mmf.	Tune Receiver to 1400 KC.	Antenna (C-3) Trimmer

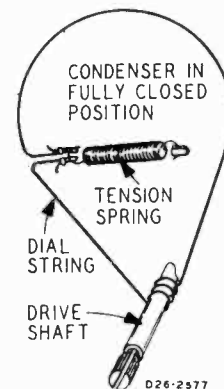
### SPECIFICATIONS

6 Tube Superheterodyne, including Rectifier Tube. Intermediate Frequency ..... 455 KC  
Tuning Frequency Range ..... 540 to 1600 KC Sensitivity ..... 10 Microvolts Average  
Power Consumption ..... 35 watts (At 117 volts AC) Selectivity ..... 50 KC Wide at 1000 Times Signal  
Power Output. . 1.5 watt maximum, .9 watt (10% distortion) Speaker ..... 5 1/4" PM Dynamic

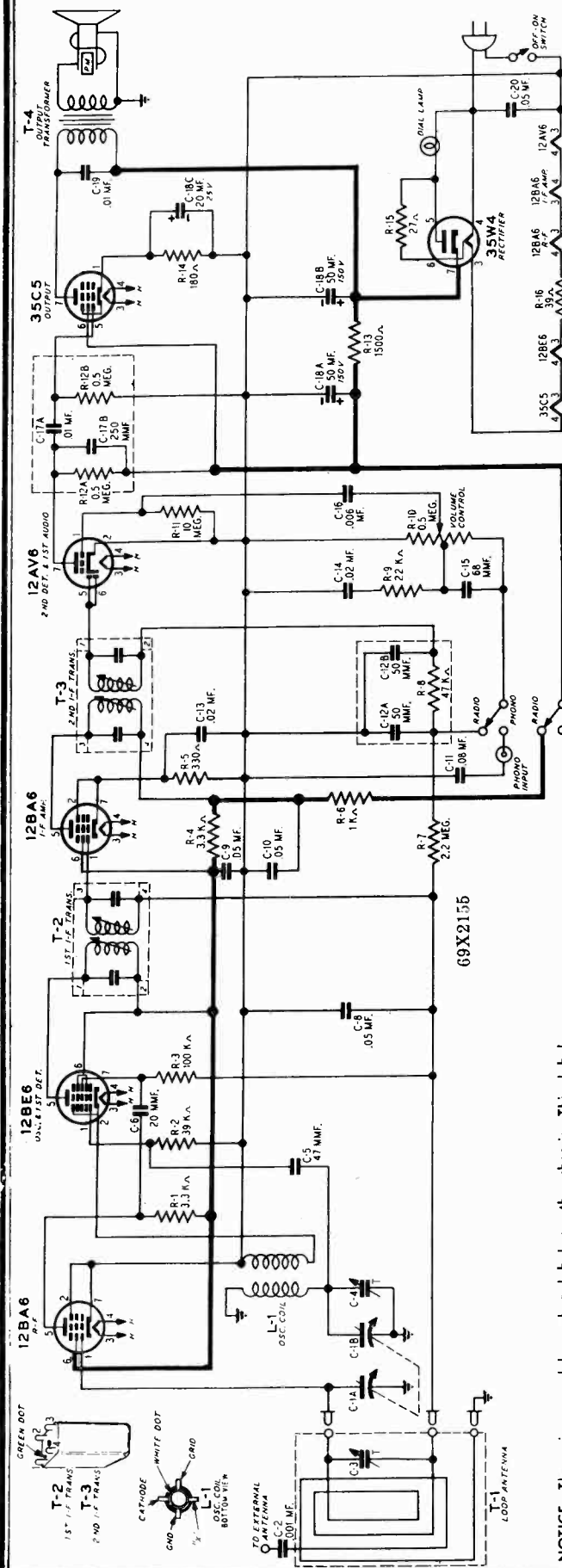


### DRIVE CORD REPLACEMENT

Turn the large drive pulley to the fully closed position. Use a new 10x75 drive cord assembly or a piece of cord 15 inches long and fasten one end to the tension spring and fasten the other end of the spring to the drive pulley. Install the cord as shown in the illustration. Wind 2 3/4 turns counterclockwise around the tuning shaft with the turns progressing toward the front of the chassis. After string is installed, stretch the tension spring and fasten free end of cord to spring.



MODELS D2017, D2018



NOTICE: There is a model number label on the chassis. This label identifies the radio as to chassis, dial and issue letter. When ordering parts or writing, give ALL information appearing on this label.

**PARTS LIST**

**MISCELLANEOUS**

12A499	5-1/4" P.M. Speaker	L-1
76X5	Multiple Resistor-Capacitor Combination	T-1
76X1	Resistor-Capacitor Combination	T-2
2A402	Switch (Phono-Radio)	T-3
3A305	Phono Socket (Single pin)	T-4
3A426	Tube Socket (Miniature)	
32X386	Tube Shield	
14X497	Grille Cloth (Walnut)	C-1A
14X500	Grille Cloth (Ivory)	C-1B
10A760	Knob (Walnut)	C-2
10A761	Knob (Ivory)	C-3
13X546	Line Cord Assembly	C-4
55X384	Plastic Cabinet (Ivory)	C-5
55X392	Plastic Cabinet (Walnut)	C-6

**DIAL AND DRIVE ASSEMBLY**

58X735	Dial Glass	C-6
15X261	Pointer	C-8
25X1696	Dial Background Bracket	C-9
26X514	Drive Shaft	C-10
28X113	Drive Cord Tension Spring	C-11
19X192	"C" Washer (Mtg. Drive Shaft)	C-12A
10X75	Drive Cord Assembly	C-12B
7A103	No. 47 Pilot Light	C-13
7A227	Pilot Light Assembly	C-14
		C-15
		C-16

**TRANSFORMERS AND COILS**

9A2101	Oscillator Coil
9A2102	Loop Antenna
9A2108	1st I-F Transformer
9A2109	2nd I-F Transformer
51X148	Output Transformer
14A212	Gang Condenser Assembly
D65102	.001 400 V Ceramic
17A256	Trimmer
47X495	Part of Gang Condenser Ceramic
47X516	20 mmf Ceramic
866503	.05 mf 200 V Tubular
866803	.08 mf 200 V Tubular
866203	.02 mf 200 V Tubular
47X471	68 mmf 200 V Ceramic
866602	.006 mf 200 V Tubular

**CAPACITORS**

R-1	3.3 K	Ohms
R-4	39 K	0.5 Carbon
R-2	885393	0.5 Carbon
R-3	885104	0.5 Carbon
R-5	884331	0.5 Carbon
R-6	884102	0.5 Carbon
R-7	885225	0.5 Carbon
R-8	(See Miscellaneous)	0.5 Carbon
R-9	885223	0.5 Carbon
R-10	36X385	.5 meg Volume Control
R-11	885105	10 meg Carbon
R-12A	(See Miscellaneous)	1.0 Carbon
R-12B	1500	0.5 Carbon
R-13	884181	180 0.5 Carbon
R-14	883270	27 0.5 Carbon
R-15	884390	39 2.0 Carbon
R-16	884274	270 K 0.5 Carbon
R-17		

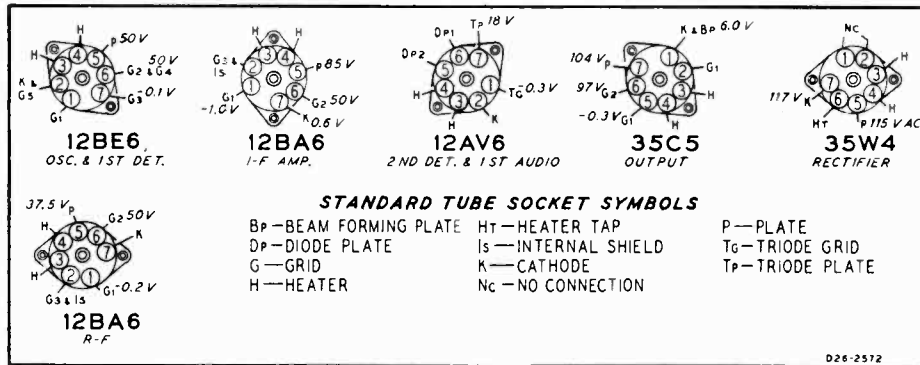
**RESISTORS**

C-17A	50 mf	150 V	Part of 76X5 (See Miscellaneous)
C-17B	50 mf	150 V	
C-18A	20 mf	.25 V	Dry Electrolytic
C-18B	20 mf	.25 V	
C-18C	.01 mf	200 V	Tubular
C-19	.05 mf	400 V	Tubular
C-20	.05 mf	200 V	Tubular
C-21	.2 mf	200 V	Tubular
C-17A	45X343		
C-17B	866103		
C-18A	D66503		
C-18B	866204		
C-19			
C-20			
C-21			

**TUBE SOCKET VOLTAGES**

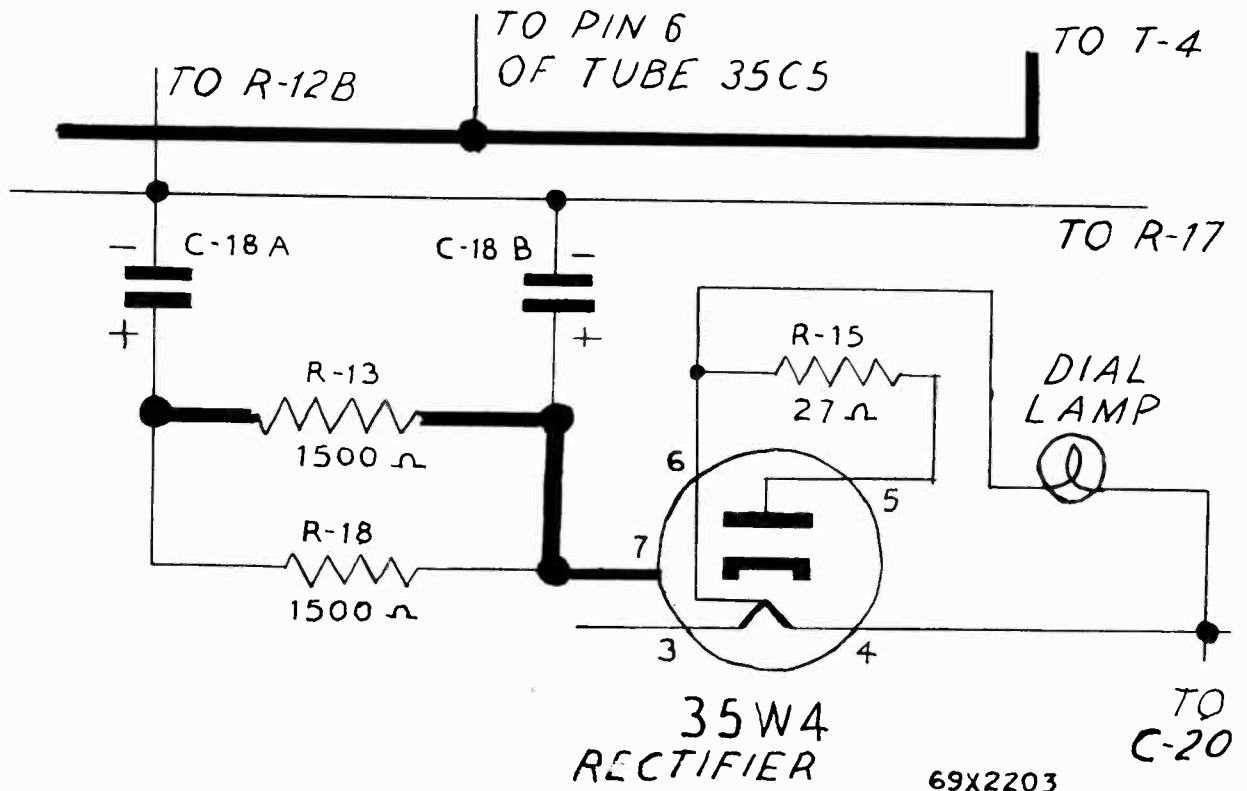
Socket voltages are shown on the Bottom Socket diagram at the tube socket terminals. All voltages are between the socket terminal and chassis ground. Plate, screen and cathode voltages were taken with a 1000 ohm-per-volt meter with a 300 volt scale used for plate and screen voltages. Audio grid voltages were read with a vacuum tube volt-meter. Conditions of measurement are:

- Line voltage .....117 Volts AC
- Signal Input .....None
- A Variation of  $\pm 10\%$  is usually permissible.

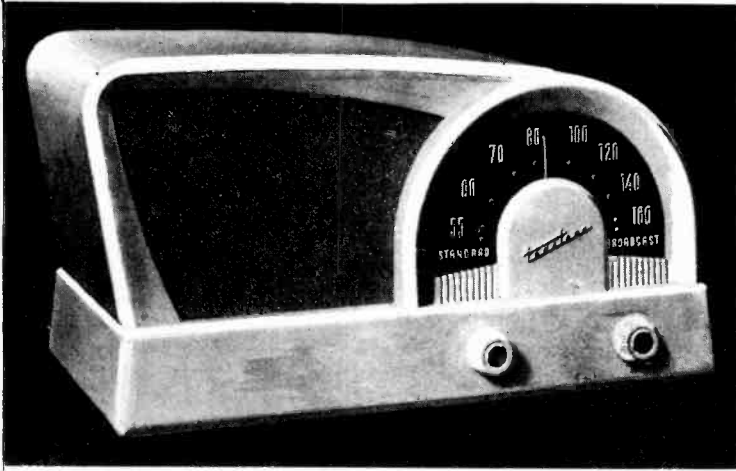


TRUETONE MODELS D2017 & D2018  
ISSUE "A"

The circuit of the 35W4 rectifier tube has been modified to reduce hum and to lengthen the life of the pilot light lamp. A 1500 ohm resistor R-18 was also added to the circuit. A partial schematic incorporating these changes is shown below. Due to these changes the voltage reading on Pin #7 of the 35C5 output tube now reads 97 volts instead of 104 volts as shown on the bottom socket voltage chart.



MODELS D2017B, D2018B



**ON-OFF SWITCH AND VOLUME CONTROL**

**TUNING KNOB**

Turn until the desired station is heard. Then slowly rotate the knob back and forth until the signal is clearest and strongest. If signal is too strong, reduce it by means of the volume control, not by using the tuning knob.

Turn radio on by turning knob to the right. A click will be heard—allow approximately 30 seconds for tubes to heat. Continue to turn the knob to the right until the desired volume level is obtained. To turn radio off, turn knob to left until click is heard.

**GENERAL INFORMATION**

**ANTENNA**

A Stratoscope Loop Antenna is built on the chassis of this radio. For reception of stations no other antenna or ground is required.

When operating the radio with the built-in loop aerial, directional effects are obtained. Better reception of distant stations and reduction of local interference may be obtained by rotating the radio until the desired signal is at a maximum.

**TUBES AND DIAL LAMP**

The type designation of each tube is stamped on both the tube and the radio chassis base. The correct position in which each tube must be installed is also shown in the tube position illustration.

All tubes and the dial lamp must be in their sockets to operate the radio.

**CAUTION**—If the dial lamp burns out do not operate the receiver until after the lamp is replaced, as rectifier

tube failure may result. Use **ONLY** a number 47 dial lamp. To remove the dial lamp, push lamp into socket, turn slightly counterclockwise and withdraw from socket.

The tubes in the radio should be checked periodically by taking them out and having them tested. To reach the tubes for servicing, remove the cabinet back from the rear of the receiver. See instructions on cabinet back.

Be sure receiver is turned OFF when checking or replacing tubes, or damage to the receiver may result.

When replacing the tubes, be sure that they are inserted in the proper sockets. To install a tube into a miniature type tube socket, line up the tube prongs with the holes in the socket and then gently push the tube down until it is held firmly in the socket.

Refasten the cabinet back in place before operating the radio.

**IF THE RADIO FAILS TO OPERATE SATISFACTORILY**

If, after rechecking the foregoing instructions carefully, the radio still does not appear to operate satisfactorily, proceed as follows:

**FIRST**—Check Phono-Radio Switch. If the radio does not operate after it has been on for a while, check the PHONO-RADIO switch at the rear of the chassis. For radio operation this switch must be in the RADIO position.

**SECOND**—Check Power Supply. Be sure there is power at the convenience outlet to which the radio is connected. To determine this, connect a lamp to the outlet and see whether or not the lamp lights.

Check the voltage of the power supply with that shown on the power rating notice on the cabinet back. If the supply is AC, also check the frequency (cycles) on the power rating notice. If there is any doubt concerning the power supply, withdraw the plug from the outlet and consult the local power company before reinserting the plug.

When used on a DC line, if the set does not operate after one minute, reverse the plug.

**THIRD** — Check Tube Positions. See that the tubes are in the correct sockets as shown in the illustration.

**CHECK YOUR LINE VOLTAGE**

Unless otherwise marked, this radio must be operated on a power supply of 105-125 volts AC, 50 to 60 cycles only, or 105-125 volts DC. Do not connect the radio to the power source until certain that the power supply is correct for the receiver. If in doubt, telephone your local power company before connecting the receiver.

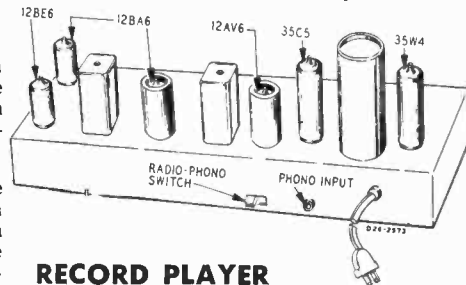
If there appears to be excessive hum when using the radio on AC, reverse the plug. Leave the plug inserted the way which gives the least hum.

When operating the receiver on a DC power supply, if it does not operate within one minute after it is turned on, reverse the power plug in the proper supply outlet.

**DIAL SCALE**

540 to 1600 Kilocycles

The dial scale is calibrated in channel numbers. To convert these channel numbers to kilocycles add a zero to the dial number. Thus when the dial pointer is at 100 on the dial, the radio is tuned to 1000 kilocycles.



**RECORD PLAYER CONNECTION AND PHONO-RADIO SWITCH**

This receiver has a PHONO socket located at the rear of the chassis. When it is desired to play records through the radio, insert the connector on the cable of any standard record player or changer into this socket. Then, push the PHONO-RADIO switch to PHONO and use volume control to adjust the sound level.

**NOTE**—Be sure to push the PHONO-RADIO switch back to the RADIO position when through playing records otherwise the radio will not operate.

Make certain that the tubes are operating. (Glass tubes will light very dimly.)

**FOURTH**—Test Tubes. Remove the tubes from the radio, take them to your local radio dealer and have them tested either by means of a tube tester or by inserting them in a radio that is operating satisfactorily.

**FIFTH**—Service. If the radio does not function properly after the above procedure has been followed and the tubes have been tested, get in touch with the dealer from whom the radio was purchased or call in a competent radio technician.

# SERVICE DATA

## ALIGNMENT PROCEDURE

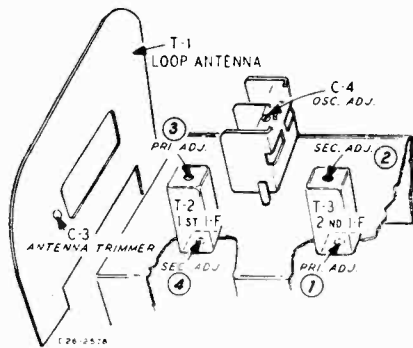
The following equipment is required for aligning:  
Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.  
Output Indicating Meter: Non-Metallic Screwdriver.

Dummy Antennas—.1 mf., 50 mmf.  
Volume Control—Maximum All Adjustments.  
Allow Chassis and Signal Generator to "Heat Up" for several Minutes.

FREQUENCY SETTING	SIGNAL GENERATOR ANTENNA CONNECTION	GROUND CONNECTION	DUMMY ANTENNA	GANG CONDENSER SETTING	ADJUST TUNING SLUGS (I-F) AND TRIMMERS TO MAXIMUM
455 KC	Control Grid 12BA6—1.F. Prong No. 1	"X" Point	.1 mf.	Turn Rotor to full open	2nd I.F. Pri. (1) & Sec. (2)
455 KC	Control Grid 12BE6—1st Det. Prong No. 7	"X" Point	.1 mf.	Turn Rotor to full open	1st I.F. Pri. (3) & Sec. (4)
1620 KC	Control Grid 12BE6—1st Det. Prong No. 7	"X" Point	.1 mf.	Turn Rotor to full open	Oscillator (C-4)
1400 KC	External Antenna Clip On Loop	Chassis	50 mmf.	Tune Receiver to 1400 KC.	Antenna (C-3) Trimmer

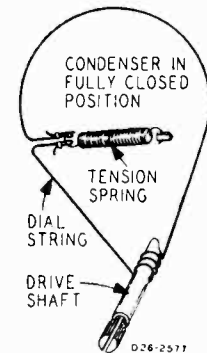
## SPECIFICATIONS

6 Tube Superheterodyne, including Rectifier Tube.	Intermediate Frequency	455 KC	
Tuning Frequency Range	540 to 1600 KC	Sensitivity	10 Microvolts Average
Power Consumption	.35 watts (At 117 volts AC)	Selectivity	50 KC Wide at 1000 Times Signal
Power Output	1.5 watt maximum, .9 watt (10% distortion)	Speaker	5 1/4" PM Dynamic



## DRIVE CORD REPLACEMENT

Turn the large drive pulley to the fully closed position. Use a new 10x78 drive cord assembly or a piece of cord 16 inches long and fasten one end to the tension spring and fasten the other end of the spring to the drive pulley. Install the cord as shown in the illustration. Wind 2 3/4 turns counterclockwise around the tuning shaft with the turns progressing toward the front of the chassis. After string is installed, stretch the tension spring and fasten free end of cord to spring.



## REPLACEMENT PARTS LIST

NOTICE: There is a model number label on the chassis. This label identifies the radio as to chassis, dial and issue letter. When ordering parts or writing, give ALL information appearing on this label.

### MISCELLANEOUS

- 12A499 5-1/4" P.M. Speaker
- 76X5 Multiple Resistor-Capacitor Combination
- 76X1 Resistor-Capacitor Combination
- 2A402 Switch (Phono-Radia)
- 3A305 Phono Socket (Single pin)
- 3A426 Tube Socket (Miniature)
- 32X403 Tube Shield
- 14X497 Grille Cloth (Walnut)
- 14X500 Grille Cloth (Ivory)
- 10A760 Knob (Ivory)
- 10A761 Knob (Walnut)
- 13X546 Line Cord Assembly
- 55X405 Plastic Cabinet (Ivory)
- 55X406 Plastic Cabinet (Walnut)
- 3A458 Tube Socket (12BA6-12AV6)

### TRANSFORMERS AND COILS

- L-1 9A2101 Oscillator Coil
- T-1 9A2151 Loop Antenna
- T-2 9A2108 1st I-F Transformer
- T-3 9A2109 2nd I-F Transformer
- T-4 51X148 Output Transformer

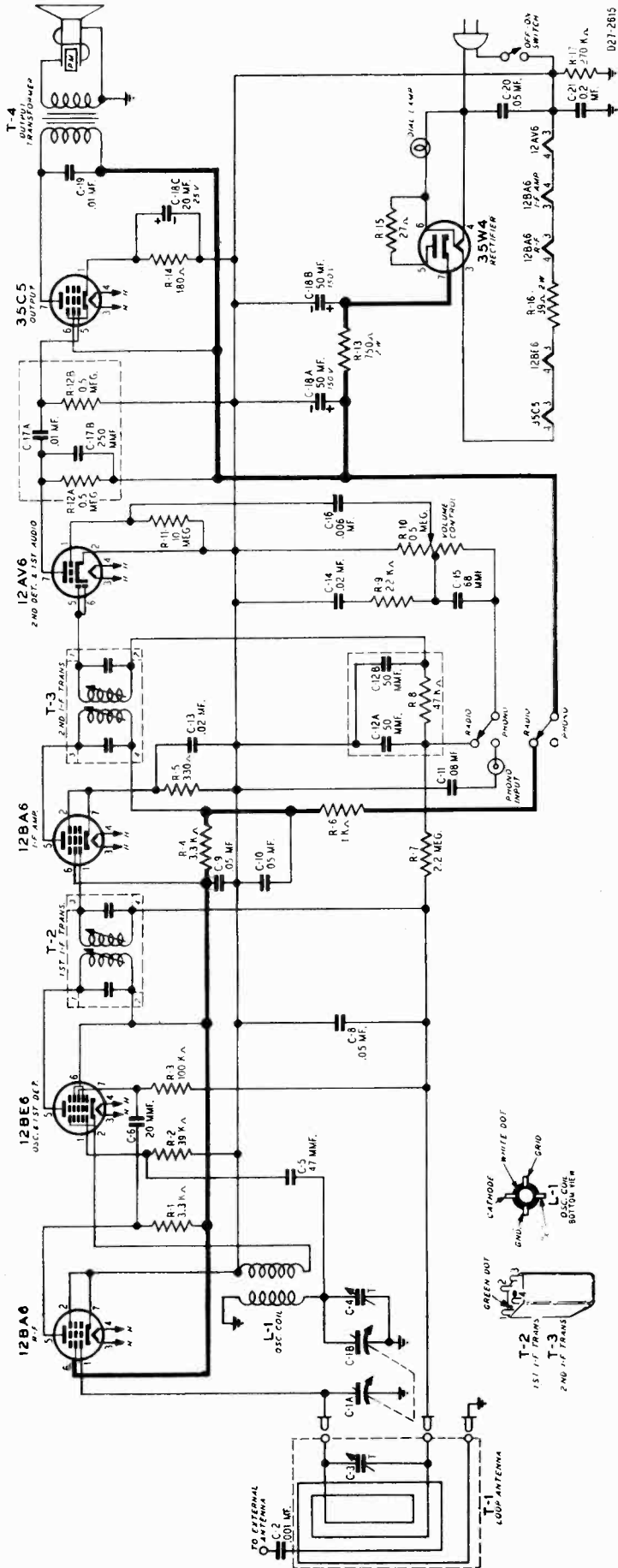
### CAPACITORS

- C-1A / C-1B 14A212 Gang Condenser Assembly
- C-2 D65102 .001 400 V Ceramic
- C-3 17A256 Part of Gang Condenser
- C-4 47X495 47 mmf Ceramic
- C-5 47X516 20 mmf Ceramic
- C-6 B66503 .05 mf 200 V Tubular
- C-7 B66803 .08 mf 200 V Tubular
- C-12A / C-12B Part of 76X1 (See Miscellaneous)
- C-13 B66203 .02 mf 200 V Tubular
- C-14 47X471 68 mmf Ceramic
- C-15 B66602 .006 mf 200 V Tubular
- C-16 Part of 76X5 (See Miscellaneous)
- C-17A / C-17B 50 mf 150 V
- C-18A 45X343 50 mf 150 V Dry Electrolytic
- C-18B 20 mf 25 V
- C-18C

### RESISTORS

- |               | Ohms                             | Watts |                |
|---------------|----------------------------------|-------|----------------|
| R-1           | B84332 3.3 K                     | 0.5   | Carbon         |
| R-2           | B85393 39 K                      | 0.5   | Carbon         |
| R-3           | B85104 100 K                     | 0.5   | Carbon         |
| R-4           | B84331 330                       | 0.5   | Carbon         |
| R-5           | B84102 1 K                       | 0.5   | Carbon         |
| R-6           | B85225 2.2 meg.                  | 0.5   | Carbon         |
| R-7           | Part of 76X1 (See Miscellaneous) |       |                |
| R-8           | B85223 22 K                      | 0.5   | Carbon         |
| R-9           | 36X385 .5 meg                    |       | Volume Control |
| R-10          | E85106 10 meg.                   | 0.5   | Carbon         |
| R-11          | Part of 76X5 (See Miscellaneous) |       |                |
| R-12A / R-12B | D84751 750                       | 2.0   | Carbon         |
| R-13          | B84181 180                       | 0.5   | Carbon         |
| R-14          | B83270 27                        | 0.5   | Carbon         |
| R-15          | D84390 39                        | 2.0   | Carbon         |
| R-16          | B84274 270 K                     | 0.5   | Carbon         |
| R-17          |                                  |       |                |

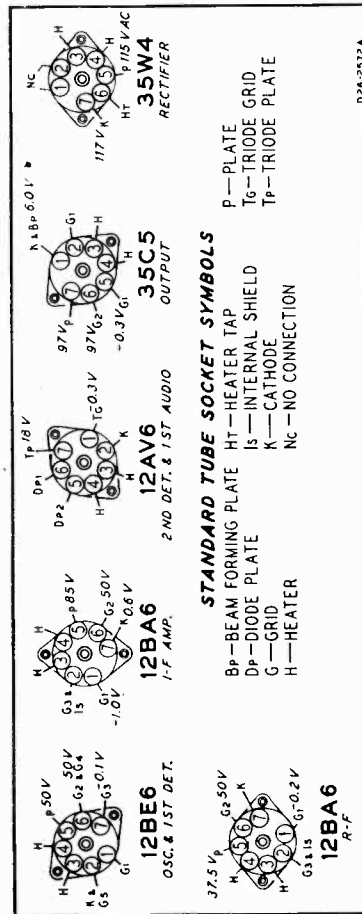
MODELS D2017B, D2018B



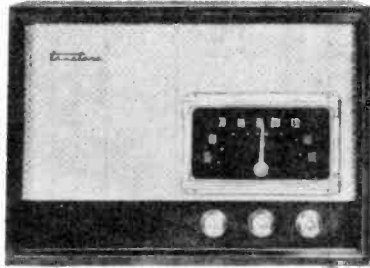
**TUBE SOCKET VOLTAGES**

Socket voltages are shown on the Bottom Socket diagram at the tube socket terminals. All voltages are between the socket terminal and "X" point. Plate, screen and cathode voltages were taken with a 1000 ohm-per-volt meter with a 300 volt scale used for plate and screen voltages. Audio grid voltages were read with a vacuum tube volt-meter. Conditions of measurement are:

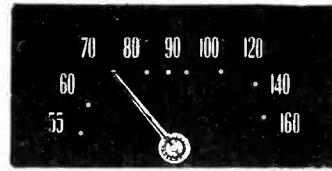
- Line voltage .....117 Volts AC
- Signal Input .....None
- A Variation of  $\pm 10\%$  is usually permissible.



### HOW TO OPERATE THE CONTROLS



**THE DIAL SCALE**  
is calibrated to cover frequencies between 540 Kc and 1600 Kc. Add a zero to the dial number to obtain the frequency in kilocycles (Kc). Example: When pointer is set to 70, radio is tuned to 700 Kc. See your newspaper for frequencies of local stations.



**TONE AND RADIO-PHONO SWITCH**  
Use to switch from radio to phonograph operation; also to select most pleasing tone. Four tone positions are provided, two for RADIO and two for PHONO. Starting with the extreme counter-clockwise setting and turning in a clockwise direction the four positions are as follows:

- Radio Bass
- Radio Treble
- Phono Treble
- Phono Bass

The Treble position gives widest tone range and the Bass setting accentuates low tones.

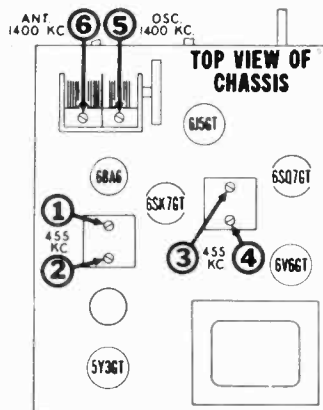
**ON-OFF SWITCH AND VOLUME CONTROL**  
Turn this knob clockwise to turn set on. Continuing to turn clockwise will increase volume.

**TUNING CONTROL**  
Use this control to tune receiver to the desired station.

### ALIGNMENT PROCEDURE

1. With the gang condenser fully meshed, the dial pointer should be in a horizontal position at low end of dial, parallel to the bottom edge of dial scale. If it is set incorrectly, merely hold tuning control shaft steady and turn pointer to correct position.
2. Connect an output meter across the speaker voice coil or from the plate of the 6V6GT tube to chassis through a .1 Mfd. condenser.
3. Connect the ground lead of signal generator to the receiver chassis.
4. Set volume control at maximum volume position and use a weak signal from the signal generator.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIG. GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. Condenser	Lug on trimmer No. 6 on antenna section of gang (see figure below for location of trimmer).	455 KC	Any point where it does not affect the signal.	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
200 MMFD. Mica Condenser	External Antenna Clip	1400 KC	1400 KC	5	Broadcast Oscillator	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip	1400 KC	Tune to 1400 KC generator signal	6	Broadcast Antenna	Adjust for maximum output.



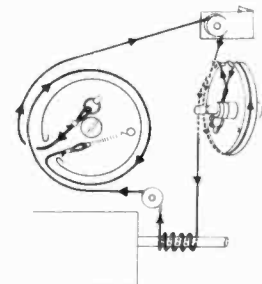
TRIMMER LOCATIONS

#### DIAL AND POINTER DRIVE CORD ARRANGEMENT SIDE VIEW

To string dial cord, set gang condenser to fully open position and use following parts:

- 114955 Clip on end of cord
- 117057 Cord (3 feet)
- 119087 Ring for dial cord
- 505161 Tension spring

To replace and properly position pointer see step 1 in "Alignment Procedure" above.

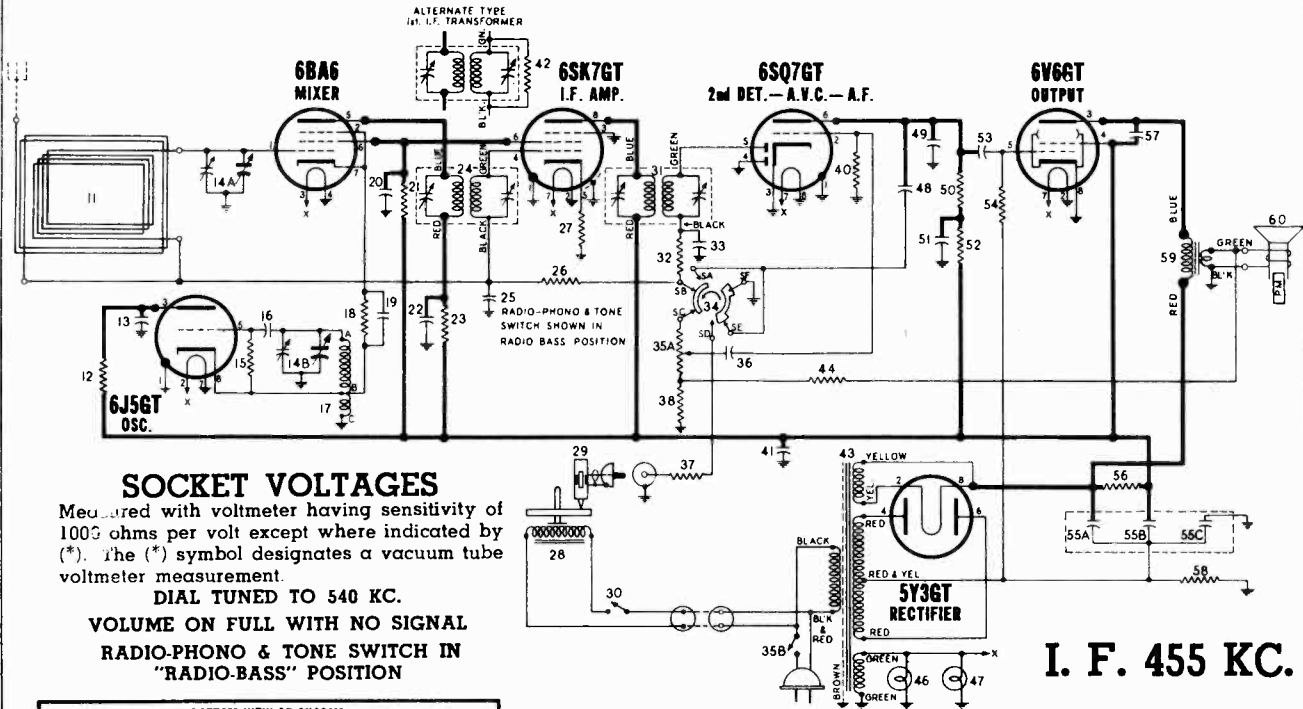


#### AUDIO OSCILLATION

The audio system of this receiver utilizes a two stage type of inverse feed-back arrangement and should it ever be necessary to replace the speaker or output transformer it is important to maintain a definite phase relationship in the feed-back circuit. If the connections to the output transformer are reversed or if the feed-back connection is made to the wrong side of the output transformer secondary, the system will become regenerative instead of degenerative. Under those conditions audio oscillation may result. If that occurs, oscillation may be prevented by reversing the connections to the speaker.



MODEL D2022



**SOCKET VOLTAGES**

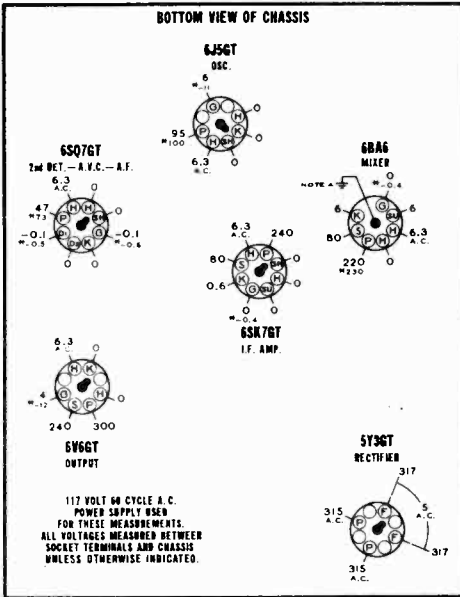
Measured with voltmeter having sensitivity of 100Ω ohms per volt except where indicated by (\*). The (\*) symbol designates a vacuum tube voltmeter measurement.

DIAL TUNED TO 540 KC.

VOLUME ON FULL WITH NO SIGNAL  
RADIO-PHONO & TONE SWITCH IN  
"RADIO-BASS" POSITION

I. F. 455 KC.

Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram



REAR OF CHASSIS

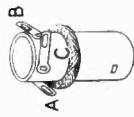
NOTE A: Grounding of center stud on tube socket is necessary to reduce capacity coupling between other pins. Oscillation may result if this ground is omitted.

DIA-GRAM NO.	PART NO.	DESCRIPTION
21	502288	Resistor—carbon 47,000 Ohms 1 watt.
23	502459	Resistor—carbon 6,800 Ohms 1/4 watt.
26	502269	Resistor—carbon 3.3 Meg. 1/4 watt.
27	502264	Resistor—carbon 47 Ohms ± 10% 1/4 w.
32	502131	Resistor—carbon 47,000 Ohms 1/4 watt.
35-A, B	505318	Volume Control 1 Meg. (with switch).
37	510185	Resistor—carbon 470,000 Ohms 1/2 watt
38	510122	Resistor—carbon 150 ohms 1/2 watt.
40	502468	Resistor—carbon 4.7 Meg. 1/4 watt.
42	510191	Resistor—carbon 1 Meg. 1/2 watt.
44	510146	Resistor—carbon 3,300 Ohms 1/2 watt.
50	502133	Resistor—carbon 220,000 Ohms 1/4 watt
52	502133	Resistor—carbon 220,000 Ohms 1/4 watt
54	502134	Resistor—carbon 470,000 Ohms 1/4 watt
56	504771	Resistor—carbon 3,300 Ohms 2 watt.
58	502293	Resistor—wire wound 200 Ohms ± 10% 2 watt

COILS AND TRANSFORMERS	
11	508361 Loop antenna
17	505326 Coil-oscillator
24	502657 Transformer—1st I. F.
31	502658 Transformer—2nd I. F.
43	502174 Transformer—power
59	505305 Transformer—output
OTHER ELECTRICAL PARTS	
28	505758 Motor—for type "VM" 508365 record changer 115 volt 60 cyc.
29	506840 Crystal cartridge
30	505269 Switch—"ON-OFF" for type "VM" 508365 record changer.
34	505317 Switch—radio-phono
46, 47	110629 Lamp—dial (Mazda #44) 6.3 V. 0.25 A.
60	506657 Speaker P. M. dynamic (6 inch)
MISCELLANEOUS PARTS	
116467	Base for mtg. electrolytic condenser.
505165	"C" washer
508370	Cabinet
112745	Clip—coil mounting
114955	Clip—retainer on end of dial cord
160326	Clip—retains dial scale
117057	Cord—dial drive (3 ft. required) per ft.
508362	Dial scale (foil)
508350	Escutcheon and dial window assy.
508366	Emblem "Truetone"
505464	Hinge for lid per pair
505344	Knob—tuning
505345	Knob—"VOLUME"
505346	Knob—"RADIO-PHONO"
508372	Lid (less hardware)
505463	Lid support
506841	Needle—phonograph
500966	Plug—Phono. pick-up cable.
501031	Plug—Phono. motor cable
505686	Pointer
508365	Record changer
119087	Ring for dial cord.
505944	Rubber pad for mtg. chassis
79993	Screw—No. 8x1 1/4 for mtg. chassis.
505716	Screw—set for phono needle
162054	Shaft and drum for pointer
505313	Shaft—tuning
117716	Shield—tube
116690	Socket—octal base
160039	Socket—phono. plug
160392	Socket—octal (rectifier)
505307	Socket and phono. motor cable
505459	Socket—dial lamp
504397	Socket—miniature
505161	Spring—tension
111456	Washer—spring washer for tuning shaft

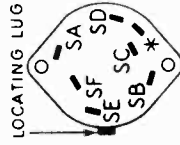
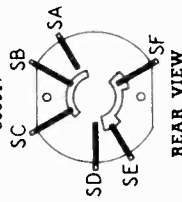
**PARTS LIST**

DJA-GRAM NO.	PART NO.	DESCRIPTION
13	502151	CONDENSERS
14, A, B	505315	Condenser—variable gang (with drum)
16	502931	Condenser—mica 100 Mmfd. 500 volt.
19	502153	Condenser—.05 Mfd. 200 volt.
20	502157	Condenser—.05 Mfd. 400 volt.
22	502152	Condenser—.02 Mfd. 400 volt.
25	502153	Condenser—.05 Mfd. 200 volt.
33	502931	Condenser—mica 100 Mmfd. 500 volt.
36	502156	Condenser—.004 Mfd. 400 volt.
41	502157	Condenser—.05 Mfd. 400 volt.
48	512006	Condenser—mica 260 Mmfd. 500 volt.
49	502271	Condenser—.1 Mfd. 400 volt.
51	502410	Condenser—.02 Mfd. 400 volt.
53	502152	Condenser—electrolytic
55, A, B, C	502207	A—20 Mfd. 400 volt B—10 Mfd. 400 volt C—20 Mfd. 25 volt
57	502156	Condenser—.004 Mfd. 400 volt.
		<b>RESISTORS</b>
12	502466	Resistor—carbon 33,000 Ohms $\pm 10\%$ 1 w.
15	502131	Resistor—carbon 47,000 Ohms $\frac{1}{4}$ watt
18	502128	Resistor—carbon 2,200 Ohms $\frac{1}{4}$ watt



**OSCILLATOR COIL**  
505326

**ALTERNATE TYPES OF RADIO-PHONO & TONE SWITCH**  
505317



**LOCATING LUG**  
**REAR VIEW**  
\*Not used; may serve as wiring junction point.

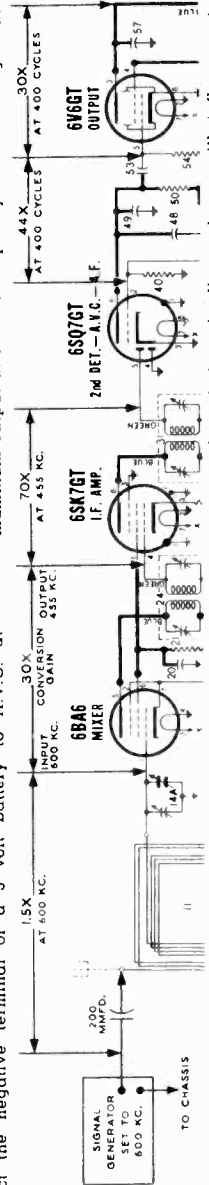
**STAGE GAIN MEASUREMENT PROCEDURE**

**REQUIRED INSTRUMENTS:** The amount of amplification or "gain" of each of the stages of this receiver may be measured with an A.C. Vacuum Tube Voltmeter or a "channel" type instrument containing a tuned and calibrated amplifier.

**PROCEDURE:** It is exceedingly important to adhere to the procedure outlined below since the accuracy of these measurements will be affected to a considerable extent by the failure to establish proper operating conditions.

1. Be sure that R.F. and I.F. stages are carefully and accurately aligned by utilizing the alignment procedure given above.
2. Connect Signal Generator as shown below.
3. The values of stage gain which are given here were measured with a fixed bias of 3 volts on the control grids of all R.F. and I.F. tubes which are connected to the A.V.C. circuit. Therefore, these values are not intended to indicate the full capability of a stage but they will serve as a convenient basis for determining proper operation. In order to duplicate the fixed bias voltage, connect the negative terminal of a 3 volt battery to A.V.C. at

4. Set Signal Generator for operation at 600 Kc with 400 cycle modulation and carefully tune radio receiver to this signal by using an output meter to indicate peak output. If a local station interferes, set generator to a nearby frequency and re-tune the receiver.
5. R.F. and I.F. circuits are slightly de-tuned when contact is made with an instrument probe and this action, which is indicated by a change in the output meter reading, may seriously affect the gain measurement. Therefore, it is important to adjust the associated circuit trimmer for a maximum output meter reading and to set the input signal level to a convenient reference point on the gain measuring instrument while the probe is making contact. After removing the probe it is again necessary to adjust the trimmer so as to obtain the same output meter reading and thereby assure that the signal voltage at the specified point has not changed as a result of circuit de-tuning.
6. 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 in line voltage will influence stage gain. These factors should be given due attention in event the gain of a stage varies extensively from the values shown above.

MODEL D2027A

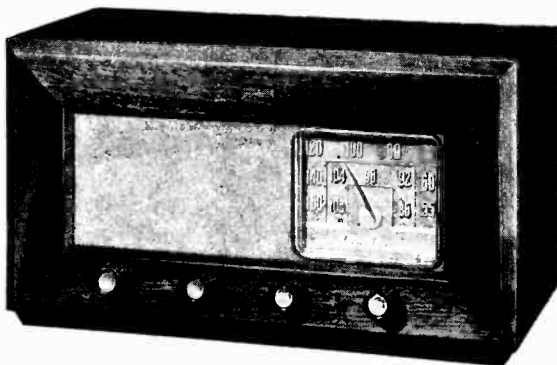
**CHECK YOUR LINE VOLTAGE**

Unless otherwise marked this radio must be operated on a supply of 105-125 volts AC, 50 to 60 cycles only. Do not connect the radio to a wall outlet unless

certain that the power supply is correct for the receiver. If in doubt, telephone your local power company before inserting the plug. Radios of this model which are to be used on other power supplies are marked accordingly.

**FM BAND**

88 - 108 MEGACYCLES — This band is calibrated in megacycles and covers the newly allocated frequency modulation band of 88-108 megacycles. Reception in this band is usually limited to "line of sight" distances between the transmitting and receiving antennas. This is normally up to about 30 miles with approximately 45 miles being the extreme range.



**BROADCAST BAND**

540 - 1600 KILOCYCLES — This band is calibrated in channel numbers. To obtain the kilocycle number add a zero to the number on the dial scale.

**TONE CONTROL**

Use this knob to adjust the tone of the receiver. When turned clockwise the high notes will predominate and when turned counter-clockwise a deep bass effect will result.

**ON-OFF SWITCH AND VOLUME CONTROL**

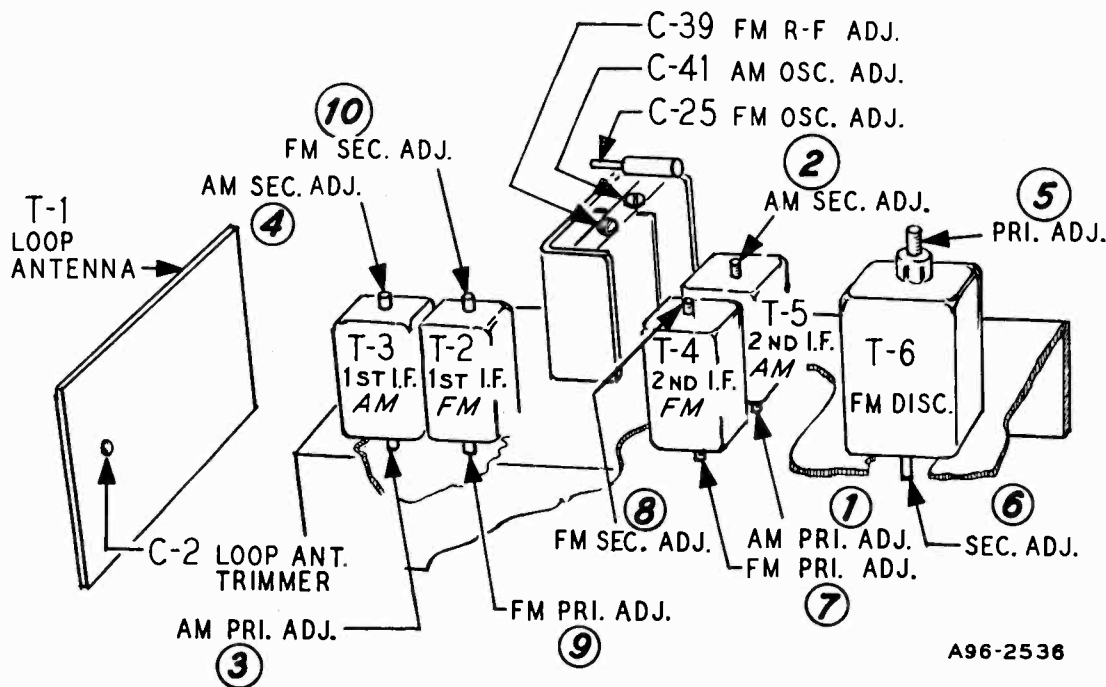
The On-Off switch and Volume control are operated by the same knob. To turn the radio on, turn the knob clockwise until a click is heard. Allow approximately 30 seconds for the tubes to heat. Then continue to turn the knob clockwise to increase the volume.

**BAND AND PHONO RADIO SWITCH**

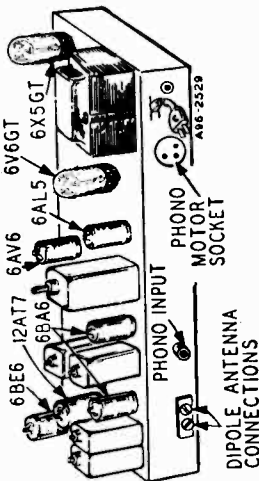
This control has three positions, FM, Broadcast and Phono. In the Phono position, the electrical circuits are connected for the reproduction of records played on a record player. (See paragraph "Record Player Connection.")

**TUNING KNOB**

Use this control to tune in the desired station. Turn the knob until the station is heard. Then slowly rotate it back and forth until the signal is clearest and strongest. If signal is too strong, reduce it by means of the volume control, not by using the tuning knob.

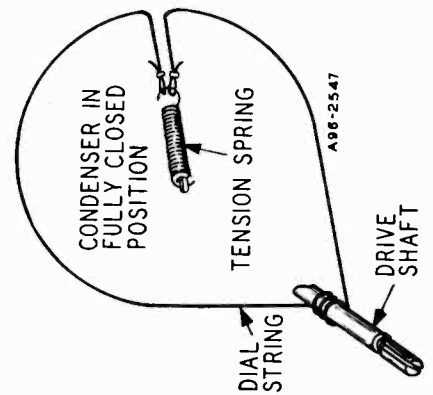


A96-2536



**DRIVE CORD REPLACEMENT**

Replacement of the drive cord may be accomplished as shown in the illustration. For this purpose use the new drive cord assembly listed in the Replacement Parts List. Turn the gang condenser until the plates are fully meshed. Then install the string as shown, winding three turns counter-clockwise around the tuning shaft with the turns progressing away from the chassis. After the cord is installed, rotate the tuning shaft several times in order to take up any slack in the cord.



Intermediate Frequency—  
AM 455 KC — FM 10.7 MC

Selectivity — AM — 45 KC broad at 1000 times signal, measured at 1000 KC

I.F. FM—200 KC broad at 2 times down

I.F. FM—950 KC broad at 200 times down

AM Sensitivity—(For .5 watt output with external antenna) 50 microvolts average

FM Sensitivity—(For .5 watt output) 25 microvolts average

**ELECTRICAL SPECIFICATIONS**

Power Output—  
117 volts AC—40 watts

Power Output—  
1.9 watts maximum  
.8 watts 10% distortion

Speaker—5¼ inch PM dynamic

Frequency Ranges—  
Broadcast 540-1600 KC  
Frequency modulation 88-108 MC

**ALIGNMENT PROCEDURES AM STAGES**

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 50mmf.

Volume Control Maximum all Adjustments.  
Connect Radio 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 FOR	
FREQUENCY SETTING	CONNECT GENERATOR OUTPUT TO	THROUGH DUMMY ANTENNA	CONNECT GROUND TO	ADJUST	ADJUST FOR
455 KC	Control Grid 1st 6BA6 Pin No. 1	.1 mf	Chassis Base	2nd I.F. Pri. (1) and Sec. (2)	Maximum Output
455 KC	Control Grid 6BE6 Pin No. 7 1st Det.	.1 mf	Chassis Base	1st I.F. Pri. (3) and Sec. (4)	Maximum Output
455 KC	Control Grid 6BE6 Pin No. 7	.1 mf	Chassis Base	2nd I.F. Pri. (1) and Sec. (2)	Maximum Output
1670 KC	Control Grid 6BE6 Pin No. 7	.1 mf	Chassis Base	Oscillator C-41	Maximum Output
1400 KC	External Antenna Clip	50 mmf	Chassis Base	Antenna C-2	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.

MODEL D2027A

FM STAGES

The following is required for aligning:

An accurately calibrated signal generator providing unmodulated signals at the test frequencies listed below.

Non-metallic screwdriver.

Dummy Antennas and I-F Loading Resistor—2500 mmf, 300 ohms

Zero center scale DC vacuum tube voltmeter having a range of approximately 3 volts.

(If a zero center scale meter is not available, a standard scale vacuum tube voltmeter may be used by reversing the meter connections for negative readings).

Allow chassis and signal generator to "Heat Up" for several minutes.

SIGNAL GENERATOR							
	FREQUENCY SETTING	CONNECT GENERATOR OUTPUT TO	THROUGH DUMMY ANTENNA	BAND SWITCH SETTING	GANG CONDENSER SETTING	ADJUST	ADJUST FOR
Discriminator	10.7 MC	6BA6 2nd I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	Disc. Pri. (5) Note A	Maximum Deflection
	10.7 MC	6BA6 2nd I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	Disc. Sec. (6) Note B	
I-F	10.7 MC Note C	6BA6 1st I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	2nd I-F Pri. (7) Sec. (8) Note D	Maximum Deflection
Discriminator	10.7 MC	6BA6 1st I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	Disc. Pri. (5) Note D	Maximum Deflection
I-F	10.7 MC	Junction C-32A & B (Dual 100 mmf cond.) And chassis	2500 mmf	FM	Rotor Fully Open	1st I-F Pri. (9) & Sec. (10) 2nd I-F Pri. (7) & Sec. (8) Disc. Pri. (5) In Order Shown Note D	Maximum Deflection
	10.7 MC	Same as above	2500 mmf	FM	Rotor Fully Open	Disc. Sec. (6) Note B	Maximum Deflection

RECHECK I-F ADJUSTMENTS IN ORDER GIVEN

Oscillator	108.5	Disconnect hank antenna and connect generator to dipole terminals with resistor in series.	300 ohms	FM	Rotor Fully Open	Osc. C-25	Maximum Deflection
Antenna	104.5	Same as above	300 ohms	FM	Tune rotor for max AVC voltage	Ant. C-39	Maximum Deflection

RECHECK ANTENNA & OSC. ADJUSTMENTS IN ORDER GIVEN

FM ALIGNMENT NOTES

NOTE A—The zero center scale DC vacuum tube voltmeter is to be connected between chassis ground and the AVC line. A signal of .1 volt must be fed into the receiver for this adjustment.

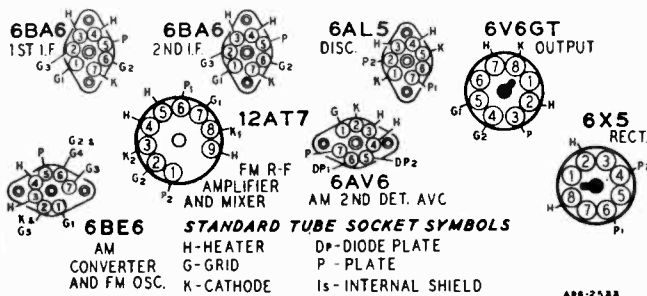
Note output voltage on the zero center DC vacuum tube voltmeter

NOTE B—Disconnect zero center DC vacuum tube voltmeter from AVC and connect it at the audio takeoff point at the

27 K ohm resistor (R-10) and its junction with the terminal strip. Adjust for zero voltage indication.

NOTE C—AM I-F coils must be aligned before attempting to align the FM I-F coils.

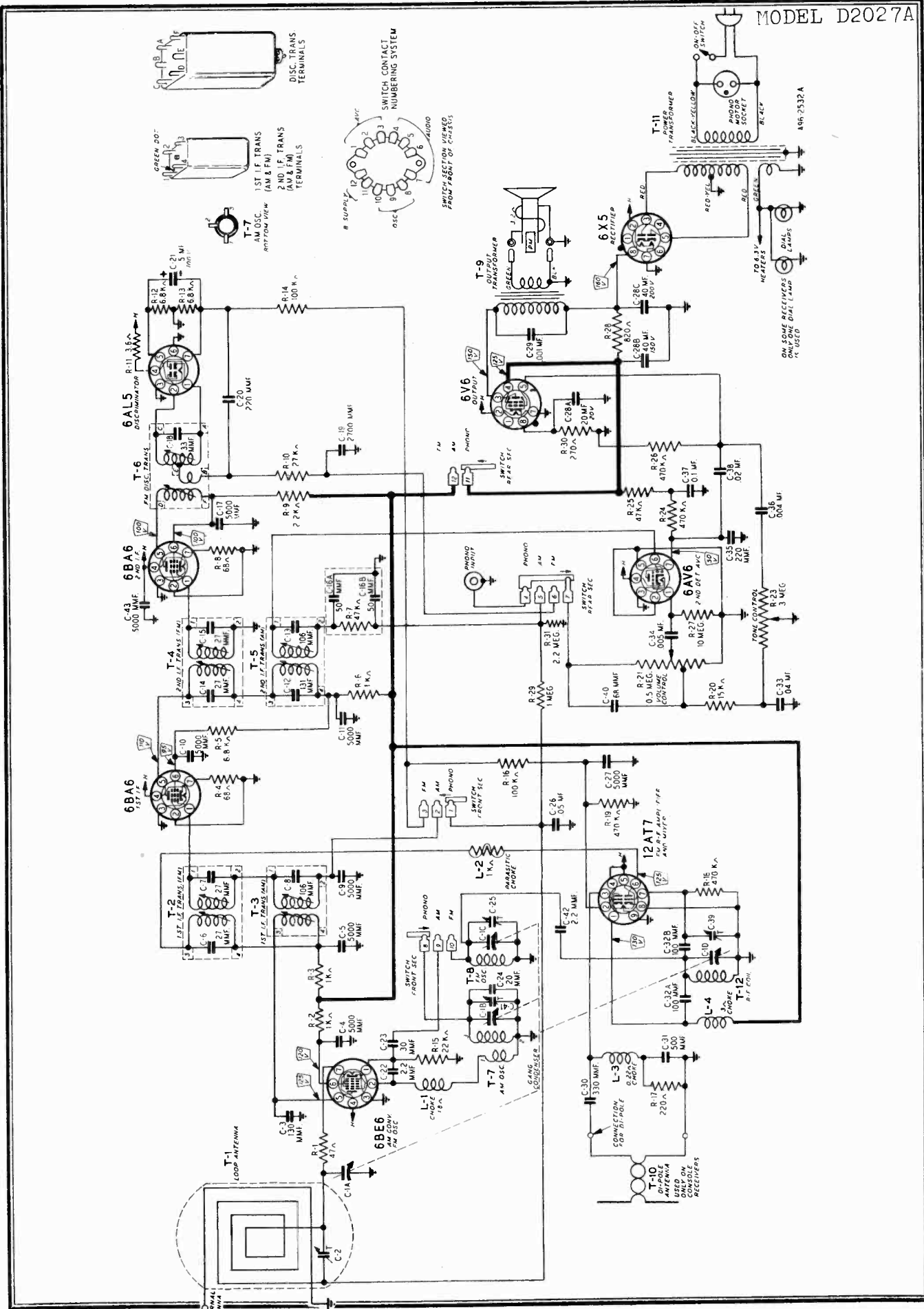
NOTE D—Connect zero center DC vacuum tube voltmeter as in Note A. Adjust input to give some output on the zero center DC vacuum tube voltmeter as in Note A.



TUBE SOCKET VOLTAGES

Socket voltages are shown on the schematic diagram at the tube socket terminals. All voltages are between the socket terminal and chassis ground. Plate, screen and cathode voltages were taken with a 1000 ohm-per-volt meter with a 300 volt scale used for plate and screen voltages. Audio grid voltages were read with a vacuum tube voltmeter. Conditions of measurement are:

- Line voltage .....117 Volts AC
- Signal Input .....None
- A Variation of ±10% is usually permissible.



©John F. Rider

MODEL D2027A

# REPLACEMENT PARTS LIST

NOTICE: There is a model number label on the chassis. This label identifies the radio as to chassis, dial and issue letter. When ordering parts or writing, give ALL information on this label.

## MISCELLANEOUS

12A494	5 1/4" P.M. Speaker	.....
4X1055	Escutcheon	.....
10A734	Knob	.....
13X546	Line Cord & Plug Assembly	.....
2A393	Band Change Switch	.....
3A303	Molded Octal Tube Socket	.....
3A305	Phono Socket	.....
3A426	Tube Socket (Miniature)	.....
3A443	Tube Socket (6BE6)	.....
14X466	Speaker Baffle	.....
14X467	Grille Cloth	.....
20X1551	Stud (Mtg. Speaker to Baffle)	.....
3A304	Phono Motor Socket	.....
3A427	Tube Socket (12AT7)	.....
	Mahogany Cabinet No. 906	.....

## CAPACITORS

C-1	14A211	Gang Condenser Assembly	.....
C-2	17A256	2-24 mmf	Trimmer.....
C-3	47X559	130 mmf	Ceramic.....
C-4			
C-5			
C-9			
C-10			
C-11	47X507	5000 mmf	Ceramic.....
C-17			
C-27			
C-43			
C-6 }		Part of T-2 (1st I-F Trans. FM)	
C-7 }			
C-8		Part of T-3 (1st I-F Trans. AM)	
C-12 }		Part of T-5 (2nd I-F Trans. AM)	
C-13 }			
C-14 }		Part of T-4 (2nd I-F Trans. FM)	
C-15 }			
C-16A }	47X112	50-50 mmf	Dual Mica.....
C-16B }			
C-18		Part of T-6 (Discriminator Trans.)	
C-19	47X492	2700 mmf	Molded Mica.....
C-20 }	47X468	220 mmf	Ceramic.....
C-35 }			
C-21	45X361	5 mf 100 V	Dry Electrolytic
C-22 }	47X557	2.2 mmf	Ceramic.....
C-42 }			
C-23	47X558	30 mmf	Ceramic.....
C-24	47X516	20 mmf	Ceramic.....
C-25	17A255	1-8 mmf	Trimmer.....
C-26	B66503	.05 mf 200 V	Tubular.....
C-28A }		20 mf 20 V	
C-28B }	45X360	40 mf 150 V	Dry Electrolytic
C-28C }		40 mf 200 V	
C-29	H66102	.001 mf 800 V	Tubular.....
C-30	47X470	330 mmf	Molded Mica.....
C-31	47X508	500 mmf	Ceramic.....
C-32A }			
C-32B }	76X4	100 mmf	Dual Ceramic.....
C-33	B66403	.04 mf 200 V	Tubular.....
C-34	D66502	.005 mf 400 V	Tubular.....
C-36	B66402	.004 mf 200 V	Tubular.....
C-37	D66104	.1 mf 400 V	Tubular.....
C-38	D66203	.02 mf 400 V	Tubular.....
C-39 }			
C-41 }		Part of C-1 (Gang Condenser)	
C-40	47X471	68 mmf	Ceramic.....

## RESISTORS

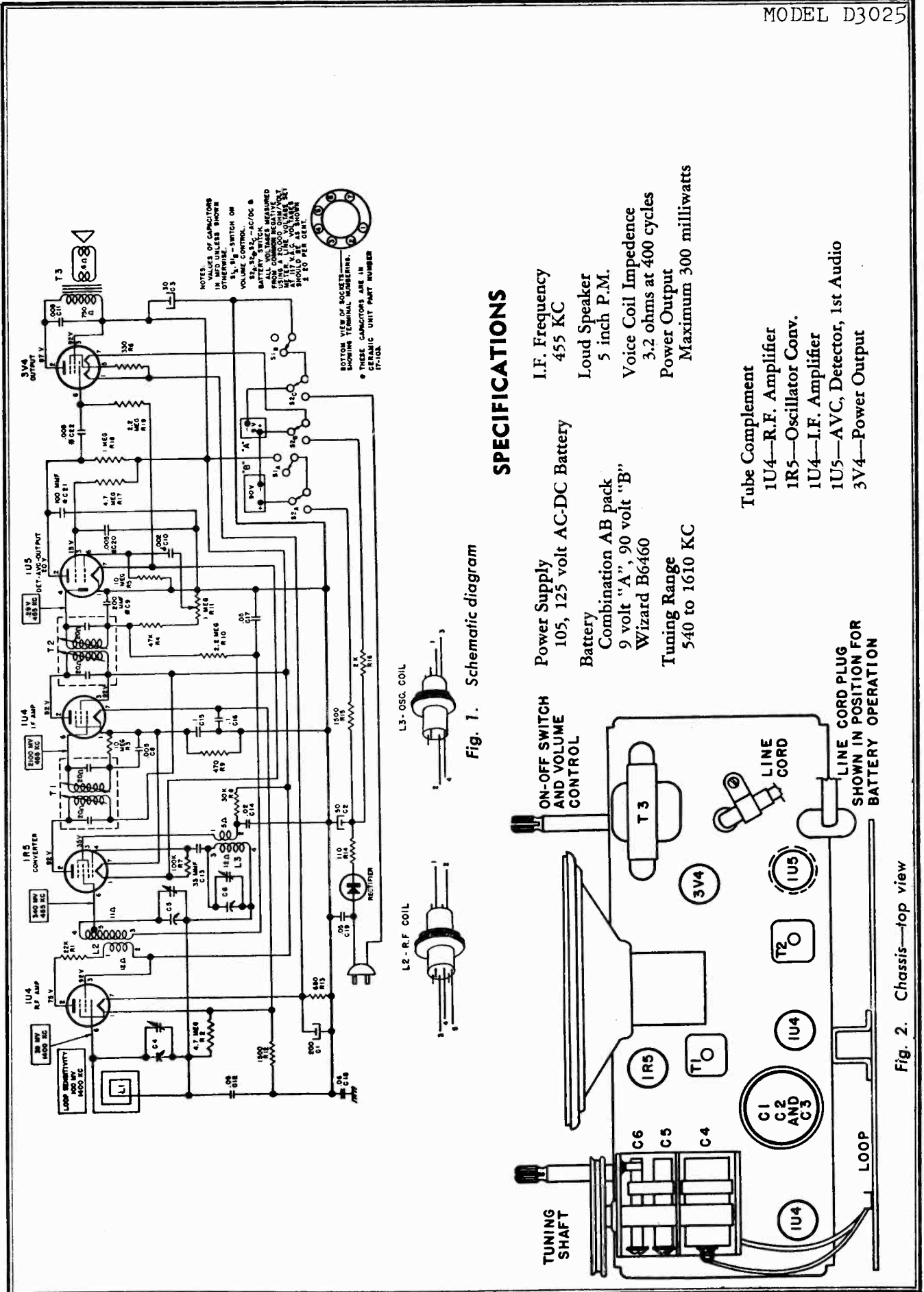
		Ohms	Watts	
R-1	B85470	47	0.5	Carbon.....
R-2				
R-3	B85102	1000	0.5	Carbon.....
R-6				
R-4	B84680	68	0.5	Carbon.....
R-8				
R-5				
R-12	B84682	6800	0.5	Carbon.....
R-13				
R-7	B85473	47 K	0.5	Carbon.....
R-25				
R-9	B85222	2200	0.5	Carbon.....
R-10	B85273	27 K	0.5	Carbon.....
R-11	43X233	3.6	0.5	Wirewound...
R-14 }	B85104	100 K	0.5	Carbon.....
R-16 }				
R-15	B85223	22 K	0.5	Carbon.....
R-17	B84221	220	0.5	Carbon.....
R-18				
R-19				
R-24	B85474	470 K	0.5	Carbon.....
R-26				
R-20	B85153	15 K	0.5	Carbon.....
R-21	36X372	.5 meg.		Volume Control
R-23	40X285	3 meg.		Tone Control..
R-27	B85106	10 meg.	0.5	Carbon.....
R-28	D84821	820	2.0	Carbon.....
R-29	B85105	1 meg.	0.5	Carbon.....
R-30	B84271	270	0.5	Carbon.....
R-31	B85225	2.2 meg.	0.5	Carbon.....

## TRANSFORMERS AND COILS

L-1	35A5	Insulated Choke	.....
L-2	9A2068	Parasitic Choke	.....
L-3	35A9	Insulated Choke	.....
L-4	35A8	Insulated Choke	.....
T-1	9A2097	"B" Range Loop Antenna	.....
T-2	9A2060	1st I-F Trans. (FM)	.....
T-3	9A2062	1st I-F Trans. (AM)	.....
T-4	9A2061	2nd I-F Trans. (FM)	.....
T-5	9A2063	2nd I-F Trans. (AM)	.....
T-6	9A2064	Discriminator Transformer	.....
T-7	9A2065	Oscillator Coil (AM)	.....
T-8	9A2067	Oscillator Coil (FM)	.....
T-9	51X144	Output Transformer	.....
T-11	53X291	Power Transformer	.....
T-12	9A2066	Antenna Coil (FM)	.....

## DIAL AND DRIVE ASSEMBLY

58X731	Dial Glass	.....
15X256	Pointer	.....
19X192	"C" Washer (Mtg. Drive Shaft)	.....
6X66	Rubber Grommet	.....
25X1679	Dial Bracket	.....
28X113	Drive Cord Tension Spring	.....
7A103	No. 47 Pilot Light	.....
7A225	Pilot Light Socket Assembly	.....
10X60	Drive Cord Assembly	.....
26X486	Drive Shaft	.....



**SPECIFICATIONS**

- I.F. Frequency 455 KC
- Loud Speaker 5 inch P.M.
- Voice Coil Impedance 3.2 ohms at 400 cycles
- Power Output Maximum 300 milliwatts
- Power Supply 105, 125 volt AC-DC Battery
- Battery Combination AB pack 9 volt "A", 90 volt "B" Wizard B6460
- Tuning Range 540 to 1610 KC
- Tube Complement
  - 1U4—R.F. Amplifier
  - 1R5—Oscillator Conv.
  - 1U4—I.F. Amplifier
  - 1U5—A.V.C, Detector, 1st Audio
  - 3V4—Power Output



MODEL D3025

## ALIGNMENT PROCEDURE

### 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 circuit components, such as tubes, condensers, resistors, etc., are normal before proceeding with realignment.

If realignment is necessary follow the instructions given below in the order listed. After realignment has been completed repeat the procedure as a final check. For alignment points refer to Figure No. 2.

Volume control—Maximum: all adjustments.  
Connect ground lead of signal generator to common "B." negative.

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

Connect output meter across voice coil of speaker.

The following equipment is necessary for proper alignment:  
Signal generator that will provide the test frequencies as listed, 30% modulated, 400 c.p.s.

Output meter.

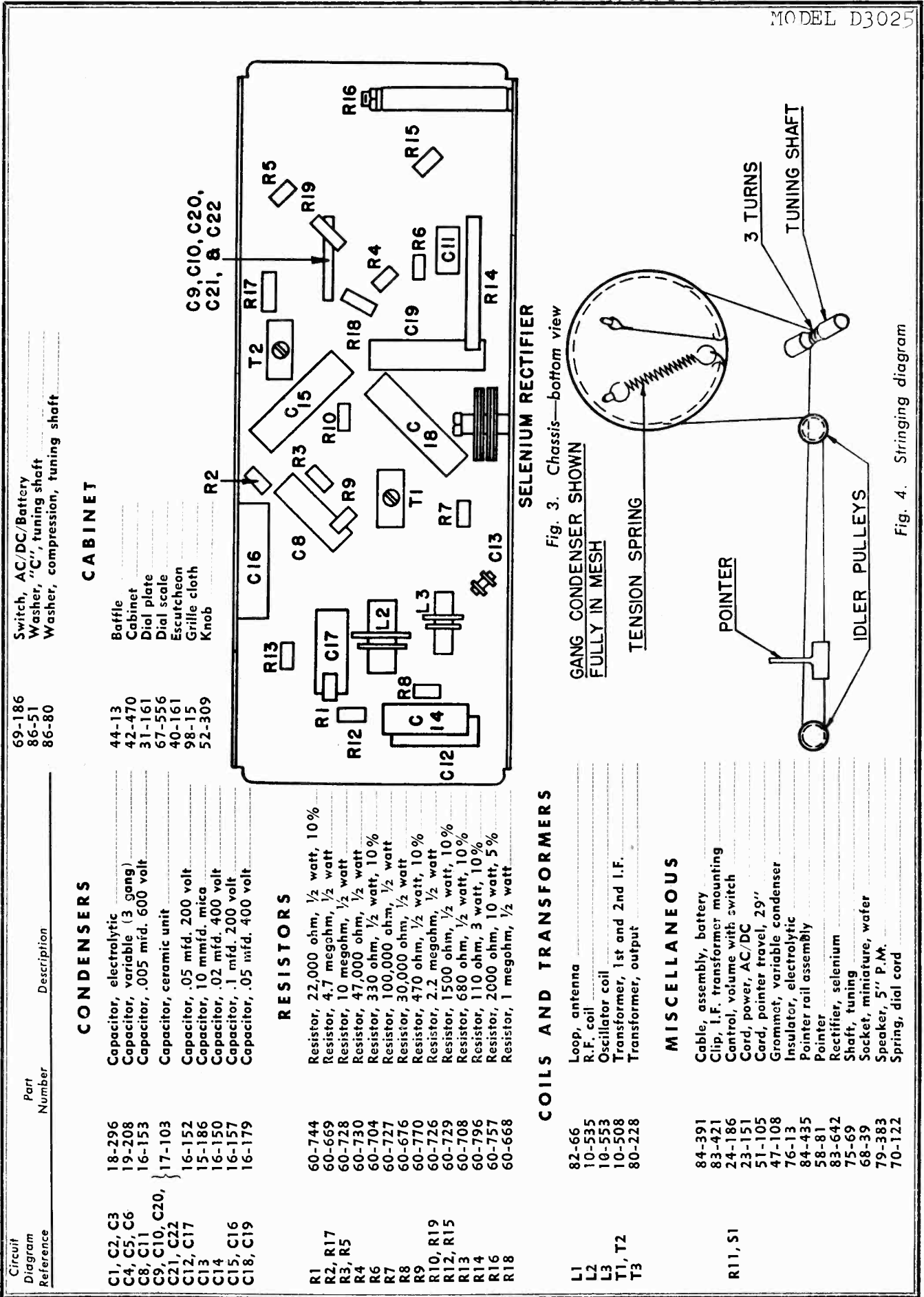
Non-metallic screwdriver.

Dummy antenna—.1 mfd.

**CAUTION:** This is an AC-DC receiver and if alignment is made with the receiver connected to 117 volts AC or DC, it is necessary to isolate the signal generator or the receiver from the line by use of a transformer, or place a .2 M.F.D. condenser in both test leads of the Signal Generator.

Position of Tuner	Generator Freq.	Dummy Antenna	Generator Connection	Adjustments (in order shown)	Function
Min. Cap.	455 kc	0.1 mfd.	Pin #6 of 1U4 I-F Amp.	T2 (top and bottom)	I.F.
Min. Cap.	455 kc	0.1 mfd.	Pin #6 of 1R5 Conv.	T1 (top and bottom)	I.F.
Min. Cap.	1610 kc	0.1 mfd.	Stator ant. tuner	C6	Osc.
1400 kc	1400 kc	0.1 mfd.	Stator ant. tuner	C5	R.F.
1400 kc	1400 kc		Loosely coupled to loop	C4	Loop

\*Connect ground lead of signal generator to common "B" negative.



69-186 Switch, AC/DC/Battery  
 86-51 Washer, "C", tuning shaft  
 86-80 Washer, compression, tuning shaft

**CABINET**

44-13 Baffle  
 42-470 Cabinet  
 31-161 Dial plate  
 67-556 Dial scale  
 40-161 Escutcheon  
 98-15 Grille cloth  
 52-309 Knob

**CONDENSERS**

Capacitor, electrolytic  
 Capacitor, variable (3 gang)  
 Capacitor, .005 mfd. 600 volt  
 Capacitor, ceramic unit  
 Capacitor, .05 mfd. 200 volt  
 Capacitor, 10 mfd. mica  
 Capacitor, .02 mfd. 400 volt  
 Capacitor, .1 mfd. 200 volt  
 Capacitor, .05 mfd. 400 volt

**RESISTORS**

Resistor, 22,000 ohm, 1/2 watt, 10%  
 Resistor, 4.7 megohm, 1/2 watt  
 Resistor, 10 megohm, 1/2 watt  
 Resistor, 47,000 ohm, 1/2 watt  
 Resistor, 330 ohm, 1/2 watt, 10%  
 Resistor, 100,000 ohm, 1/2 watt  
 Resistor, 30,000 ohm, 1/2 watt  
 Resistor, 470 ohm, 1/2 watt, 10%  
 Resistor, 2.2 megohm, 1/2 watt  
 Resistor, 1500 ohm, 1/2 watt, 10%  
 Resistor, 680 ohm, 1/2 watt, 10%  
 Resistor, 110 ohm, 3 watt, 10%  
 Resistor, 2000 ohm, 10 watt, 5%  
 Resistor, 1 megohm, 1/2 watt

**COILS AND TRANSFORMERS**

Loop, antenna  
 R.F. coil  
 Oscillator coil  
 Transformer, 1st and 2nd I.F.  
 Transformer, output

**MISCELLANEOUS**

Cable, assembly, battery  
 Clip, I.F. transformer mounting  
 Control, volume with switch  
 Cord, power, AC/DC  
 Card, pointer travel, 29"  
 Grommet, variable condenser  
 Insulator, electrolytic  
 Pointer rail assembly  
 Pointer  
 Rectifier, selenium  
 Shaft, tuning  
 Socket, miniature, wafer  
 Speaker, 5" P.M.  
 Spring, dial cord

Fig. 3. Chassis—bottom view

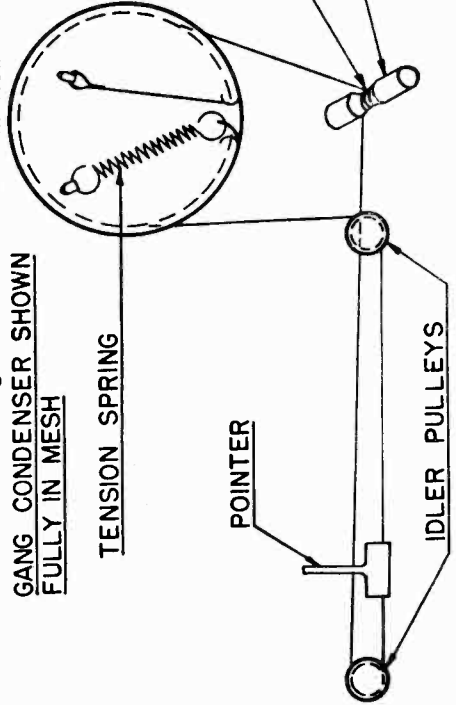


Fig. 4. Stringing diagram

MODEL D3912

### SPECIFICATIONS

**Power Supply**  
105, 125 volt AC-DC or Batteries

**Batteries**  
Five 1 1/2 volt "A" Wizard B6722, B6732, B6740 or B6745  
One 6 1/2 volt "B" Wizard B6258

**Tuning Range**  
545 to 1610 KC

**I.F. Frequency**  
455 KC

**Loud Speaker**  
4 inch P.M.

**Voice Coil Impedance**  
3.2 ohms at 400 cycles

**Power Output**  
Maximum 100 milliwatts

**Tube Complement**

- 1R5—Oscillator Conv.
- 1U4—I.F. Amplifier
- 1U5—A.V.C, Detector, 1st Audio
- 3V4—Power Output

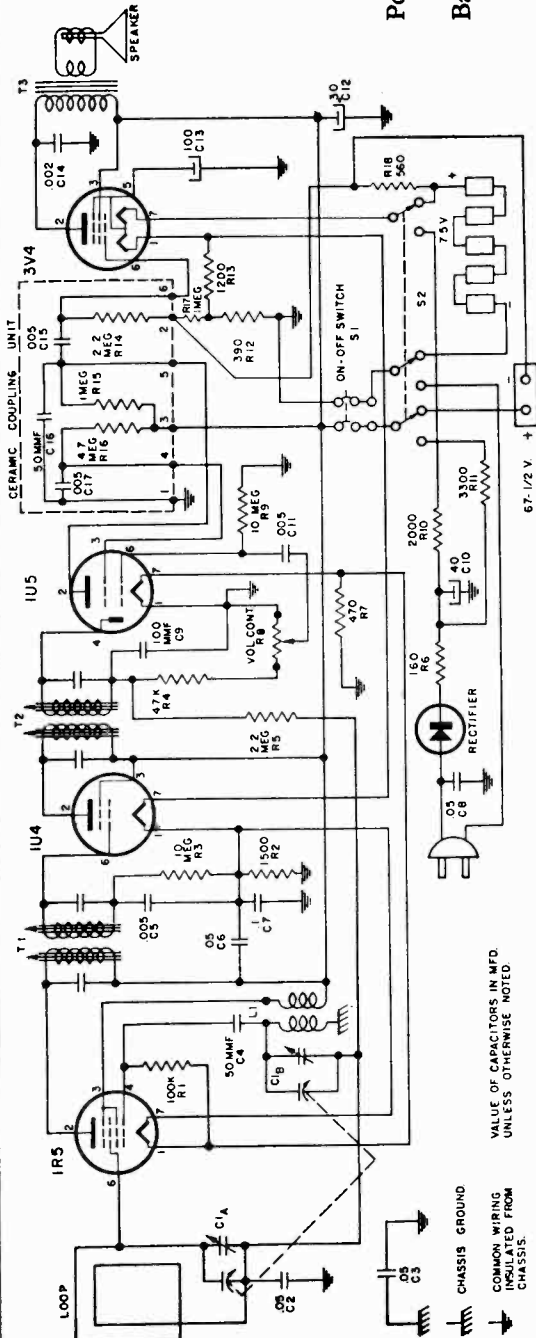


Fig. 1 Schematic Diagram

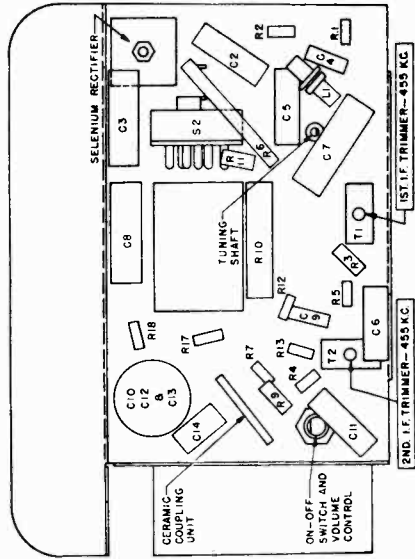
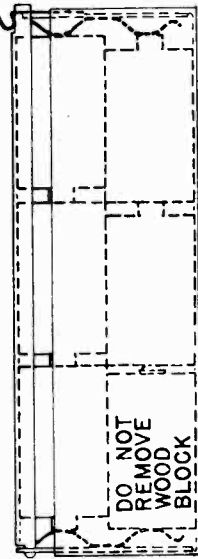


Fig 3

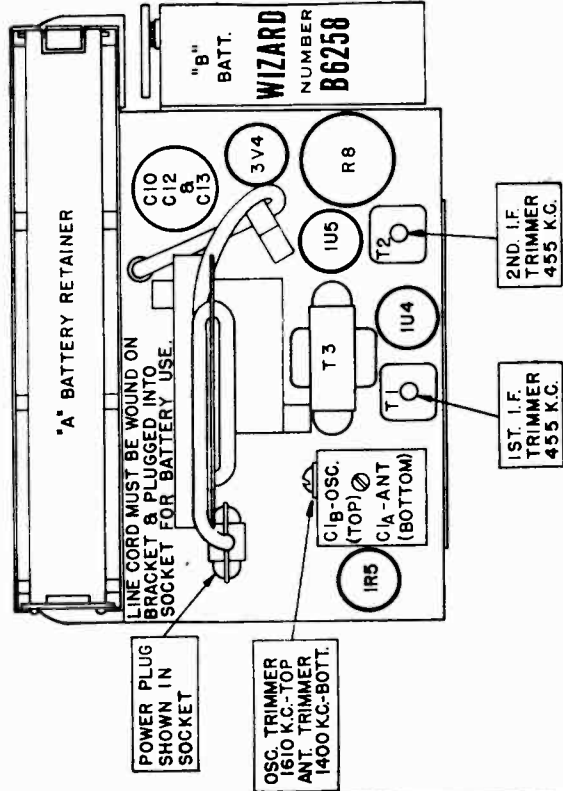


Fig. 2. Tube, Trimmer and Battery Locations

All voltages are measured from tube pin to common "B" negative with a 20,000 ohm per volt voltmeter.

Voltages shown in circles are obtained when set is operated on 117 volt current.

Voltages shown outside the circles are obtained when the set is operated on batteries. New batteries in good condition should be used for these measurements.

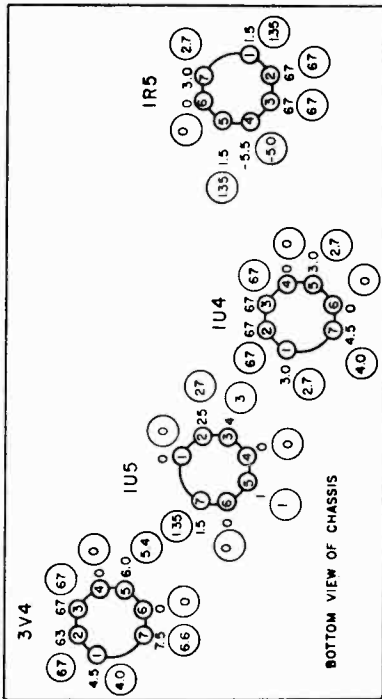


Fig 4 Voltage Chart

**CONDENSERS**

Circuit Diagram Reference	Part No.	Description
C1A, C1B	B19-206	Variable condenser
C2, C6	A16-204	.05 MFD 200 volt condenser
C3	A16-172	.05 MFD 400 volt condenser
C4	A15-175	50 MMF mica condenser
C5	A16-205	.005 MFD 600 volt condenser
C7	A16-203	.1 MFD 200 volt condenser
C8	A16-189	.05 MFD 400 volt condenser
C9	A15-188	100 MMF mica condenser
C10	A18-290	{ 40 MFD 150 volt electrolytic condenser
C12		{ 30 MFD 150 volt electrolytic condenser
C13		{ 100 MFD 10 volt electrolytic condenser
C11	A16-153	.005 MFD 600 volt condenser
C14	A16-182	.002 MFD 200 volt condenser
C15, C17	A17-100	{ .005 MFD
C16		{ 50 MMF

**RESISTORS**

R1	A60-727	100K ohm 1/2 watt 20% resistor
R2	A60-729	1500K ohm 1/2 watt 10% resistor
R3, R9	A60-728	10 megohm 1/2 watt 20% resistor
R4	A60-730	47K ohm 1/2 watt 20% resistor
R5	A60-726	2.2 megohm 1/2 watt 20% resistor
R6	A60-725	160 ohm 5 watt 10% resistor
R7	A60-722	470 ohm 1/2 watt 10% resistor
R8, S1	A24-178	Volume control, with switch
R10	A60-757	2000 ohm 10 watt 10% resistor
R11	A60-724	3300 ohm 1 watt 10% resistor
R12	A60-665	390 ohm 1/2 watt 10% resistor
R13	A60-756	1200 ohm 1/2 watt 10% resistor
R14	A17-100	{ 2.2 megohm
R15		{ 1 megohm
R16		{ 4.7 megohm
R17	A60-668	1 megohm 1/2 watt 20% resistor
R18	A60-758	560 ohm 1/2 watt 10% resistor

NOTE: C15, C16, C17, R14, R15 and R16 are contained in the Ceramic Coupling Unit, Part No. A17-100.

**COILS**

L1	A10-514	Oscillator coil
T1, T2	A10-475	1st and 2nd I.F. transformer
T3	B80-245	Output transformer

**MISCELLANEOUS**

S2	A69-182	Switch, AC-DC-BATTERY
	S84-333	Cabinet assembly
	S84-334	Cover, cabinet back
	B21-144	Cap for handle
	A83-421	Clip, I.F. transformer mounting
	B71-40	Cover, "A" battery retainer
	A53-1	Handle
	S84-243	Hub and pointer assembly
	C52-268	Knob, tuning
	C52-269	Knob, volume
	S84-338	Loop antenna
	A83-642	Rectifier, Selenium
	A68-39	Socket, tube
	B79-364	Speaker, 4" P.M.
	A76-49	Terminal, for "B" battery

MODEL D3912

## ALIGNMENT PROCEDURE

### 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 circuit components, such as tubes, condensers, resistors, etc., are normal before proceeding with realignment.

If realignment is necessary follow the instructions given below in the order listed. After realignment has been completed repeat the procedure as a final check. For alignment points refer to Figure No. 2.

Volume control—Maximum: all adjustments.  
 Connect ground lead of signal generator to common "B." negative.  
 Connect dummy antenna in series with output lead of signal generator.  
 Connect output meter across voice coil of speaker.

The following equipment is necessary for proper alignment:  
 Signal generator that will provide the test frequencies as listed, 30% modulated, 400 c.p.s.  
 Output meter.  
 Non-metallic screwdriver.  
 Dummy antennas—.1 mfd., .00025 mfd.

**CAUTION:** This is an AC-DC receiver and if alignment is made with the receiver connected to 117 volts AC or DC, it is necessary to isolate the signal generator or the receiver from the line by use of a transformer, or place a .2 M.F.D. condenser in both test leads of the Signal Generator.

Position of Variable	Generator Frequency	Dummy Ant. Mfd.	Generator Connections	Trimmer Adjustment	Trimmer Function
Fully open	455 KC	.1	* 1R5 Grid (Stator of C1A)	T2	Output I.F.
Fully open	455 KC	.1	* 1R5 Grid (Stator of C1A)	T1	Input I.F.
Fully open	1610 KC	.00025	* 1R5 Grid (Stator of C1A)	C1B	Oscillator
Tune in signal from generator	1400 KC	—	Loosely coupled to loop	C1A	Antenna

\*Connect ground lead of signal generator to common "B" negative.

## INSTALLATION

This radio comes to you complete with all hardware necessary for mounting, and also with a distributor suppressor, ammeter condenser and generator condenser. By referring to Figures 1 and 2, and following the instructions outlined below, you will find that it is very simple to install.

First determine where the receiver is to be mounted by holding it with the hands in the approximate location in the car. Using the front mounting bracket as a template, mark and drill two  $\frac{3}{8}$ " holes in the instrument panel flange. Now secure the mounting bracket to the radio receiver with the screws provided, and then mount the front of the radio to the instrument panel, using the bolts, lock washers and nuts provided for this purpose. The back of the radio is supported by means of the rear mounting strap. The mounting strap should be formed to the correct angles, as illustrated in Figure 2, so that it can then be fastened to the fire wall. After marking and center-punching the fire wall at the correct location, drill with a  $\frac{3}{8}$ " drill. The mounting strap is then secured to the radio and fastened to the fire wall of the car with the  $\frac{1}{4}$ " bolt, lock washer and nut furnished with the receiver.

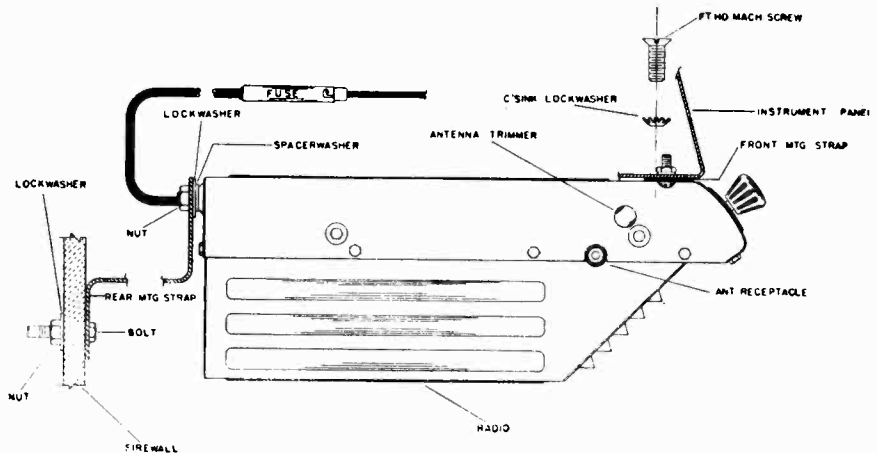


Fig. 2 Side View, Showing Mounting

### CONNECTING THE RADIO

The antenna cable should be connected to the radio by inserting the jack into the socket provided on the side of the radio. Connect the battery cable to the hot side of the ammeter behind the instrument panel. The fuse should then be inserted into the cable receptor.

### FINAL ADJUSTMENTS

The input circuit has been especially designed to be used with a low capacity antenna, of the fish pole or whip type.

Truetone Antennas are especially recommended for use with this radio.

To adjust the antenna trimmer condenser, carefully tune the receiver to a weak station at approximately 600 kilocycles (K.C.). Remove the snap button covering the antenna trimmer (See Figure 2) and adjust the trimmer for maximum volume. A small screw driver will be needed for this purpose.

### DIAL POINTER ADJUSTMENT

If it should become necessary to readjust the dial pointer for correct calibration, this may be easily done without removing the radio from the car by proceeding as follows:

- A. Turn tuning knob to the right (clockwise) as far as it will go.
- B. Remove snap button located on the right side of the case (viewed from the front), in the extreme upper front corner.
- C. Insert screwdriver through hole in case and move dial pointer directly over white dot at high end of dial (1600KC).
- D. Tune receiver to station of known frequency in the center of the dial and readjust pointer for more accurate indication, if necessary.
- E. Replace snap button into hole in case.

**CAUTION:** Be careful not to scratch or damage dial scale or dial pointer when making this adjustment.

### ACCESSORIES FURNISHED FOR INSTALLATION

All of the necessary parts that are needed for installing this receiver are furnished in the Mounting Parts Kit No. S84-192 and the Suppression Kit Assembly Part No. S84-230, as listed below. Also supplied are the rear mounting strap, Part No. B31-134, and the front mounting plate, Part No. B31-133.

#### S84-192 MOUNTING PARTS KIT

- |                                  |                               |
|----------------------------------|-------------------------------|
| 1 $\frac{1}{4}$ " Bolt           | 2 External Tooth Lock Washers |
| 2 $\frac{1}{4}$ " Lock Washers   | 2 Internal Tooth Lock Washers |
| 2 $\frac{1}{4}$ " Hexagon Nuts   | 2 10-32 Hexagon Nuts          |
| 2 10-32 x $\frac{5}{8}$ " Screws | 1 Washer-Spacer               |
| 2 10-32 x $\frac{3}{8}$ " Screws |                               |

#### S84-230 SUPPRESSION KIT & MISC. PARTS

- |                            |  |
|----------------------------|--|
| 1 S84-233 "A" lead assem.  | 1 S84-193 Suppression Kit consisting of: |
| 1 A43-10 Fuse              | 2 .5 MFD Condensers                      |
| 2 A52-256 Control knobs    | 1 Distributor Suppressor                 |
| 1 A81-13 Sleeve (for fuse) | 20" Wire Braid                           |

MODEL D4818A

## ELIMINATING MOTOR NOISE

**IMPORTANT:** Special care should be taken when mounting the radio to make sure all paint, grease, rust, etc., is removed from all three mounting points. A good electrical contact at these points will aid materially in eliminating motor noise.

### GENERATOR CONDENSER

The generator condenser must be connected to the battery terminal of the generator in all cases. If your car is equipped with a generator using an automatic regulator, make sure the condenser IS NOT fastened to the field winding terminal. If in doubt, your local car dealer can advise you as to where the car manufacturer recommends connecting it.

### DISTRIBUTOR SUPPRESSOR

Remove the coil to distributor high tension lead from the distributor. Cut the lead two inches from the end, and screw the distributor resistor on to the coil lead, then screw the short length into the resistor and plug the cable into the distributor cap.

### AMMETER CONDENSER

A .5 MFD bypass condenser is furnished for attaching to the ammeter. This should be connected to either side of the ammeter with the ground lug fastened to a good ground nearby. In most cases the use of this condenser, the distributor suppressor, and the generator condenser, will eliminate all objectionable ignition interference.

### ELECTRICAL ACCESSORIES

In some cases, it may be found that car accessories such as electric heaters, lighters, automatic relays, or gauges, may cause interference while in operation. Proper procedure in such cases is to try another by-pass condenser from ground to the suspected accessory until the source of the interference is found. The condenser then should be permanently mounted in this location.

### HIGH AND LOW TENSION LEADS

In many cases the low tension battery leads, etc., are grouped together with the high tension wires. These leads will very often pick up motor noise and feed it into the

receiver through the battery circuit. In cases such as these it will be necessary to separate the low tension from the high tension wires and run them through another hole if they run from the engine compartment up to the instrument panel. This condition is particularly true on the V-8 Ford, as the battery and primary leads run through a special tube which also houses the high tension leads. Shield and ground these leads.

### IGNITION COILS

In cars where the ignition coil is located on the back side of the instrument panel it is often necessary to use an additional condenser. It must be installed from the battery side of the ignition coil to the closest ground on the instrument panel.

Short leads are very important. Where coils are mounted either on the instrument panel or in the driver's compartment, it may be necessary to shield the high tension lead from the coil to the distributor.

### WHEEL STATIC

Wheel Static is a form of interference caused by the rotation of the front wheels of the car, and it is, of course, only noticed when the car is in motion. If this form of interference is present it can be eliminated by installing wheel static collector springs between the inner hub cap and the spindle shaft.

### BONDING OF FIRE WALL TUBES

Bonding the steering column to the fire wall with a short braid may also be effective. Clean the paint from the steering column at the fire wall where the column enters the motor compartment, and solder on a short piece of braid. Ground the end of the braid to the fire wall.

In some cases it may be necessary to ground the tubes and rods coming through the fire wall in order to reduce the interference. Clean them with emery cloth and spot-solder the braid, fastening the end under a convenient screw. A 1/4" piece of wire braid 20 inches long is furnished in the suppression kit assembly for this purpose.





MODEL D4818A

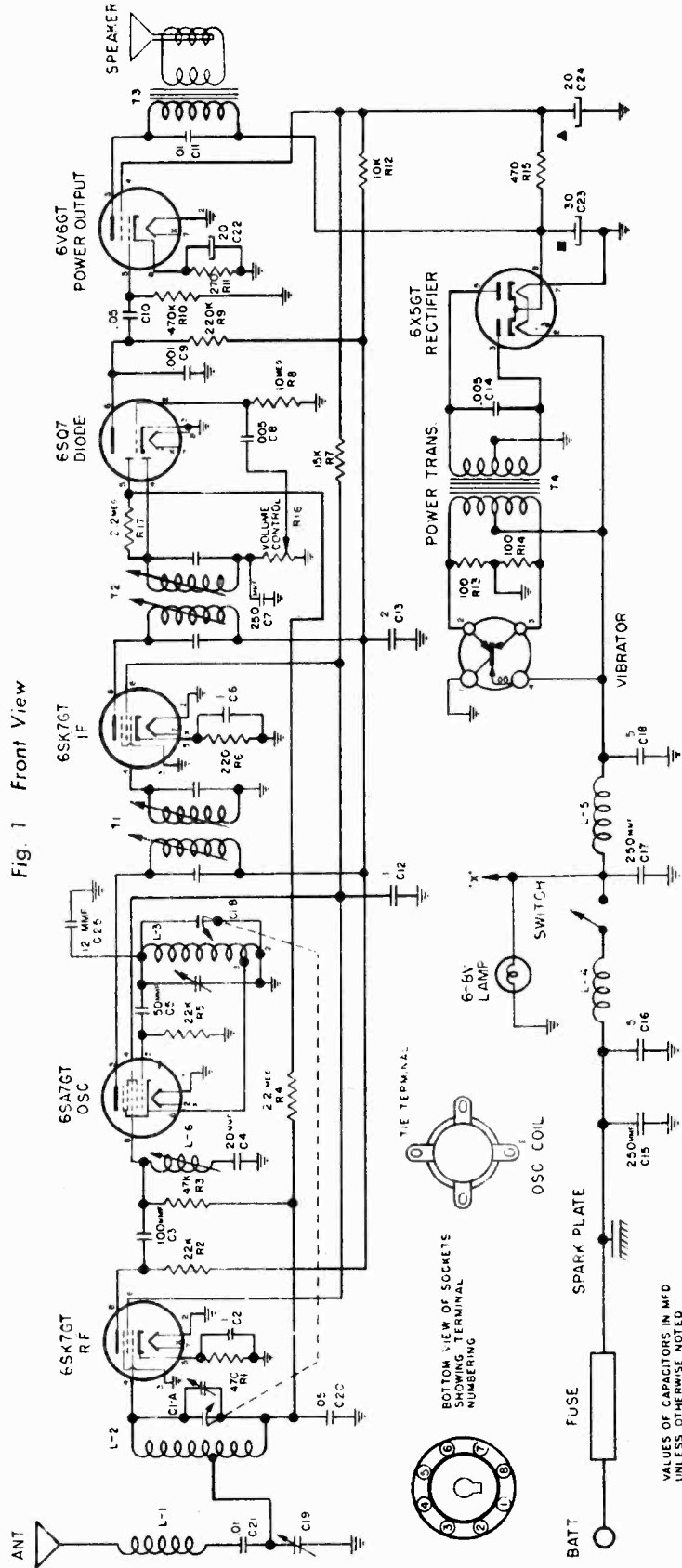
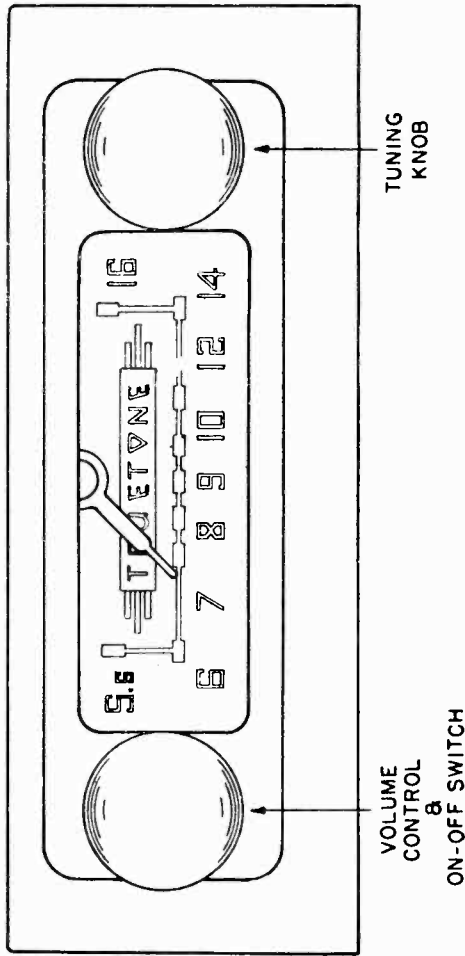


Fig. 3 Schematic Diagram

# ALIGNMENT PROCEDURE

The following equipment is necessary for proper alignment:

- Signal generator that will provide the test frequencies as listed.
- Non-metallic screwdriver.
- Output meter.
- Dummy antennas—.1 MFD., .00025 MFD.

For alignment points refer to Figures 4 and 5.

Dial Setting	Generator Frequency	Dummy Ant.	Generator Connections	Trimmer Reference	Trimmer Adjustment	Trimmer Function
Fully Open	455 KC	.1 MFD.	6SA7 Grid	T2	Maximum	Output I.F.
Fully Open	455 KC	.1 MFD.	6SA7 Grid	T1	Maximum	Input I.F.
Fully Open	455 KC	.00025 MFD.	Ant. lead	L6	Minimum	Wave trap
Fully Open	1600 KC	.00025 MFD.	Ant. lead	C1B	Maximum	Oscillator
Tune in signal from generator	1400 KC	.00025 MFD.	Ant. lead	C1A	Maximum	Antenna

NOTE: The antenna padder condenser, C19, (see Fig. 2) should be adjusted after the radio is installed in the car. Tune the receiver to a weak station at about 600 KC and adjust this trimmer for maximum volume.

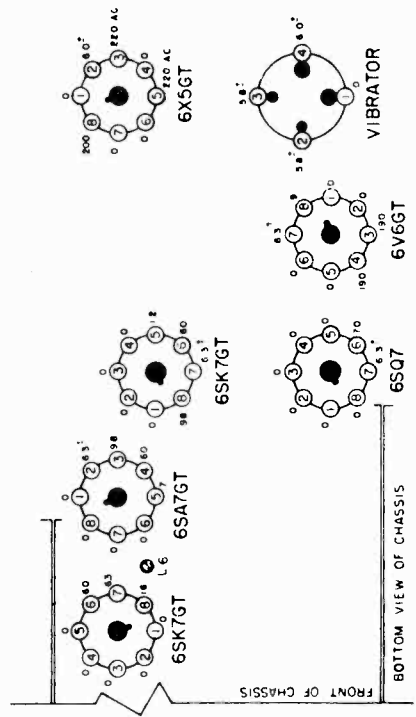


Fig. 4 Socket Voltages

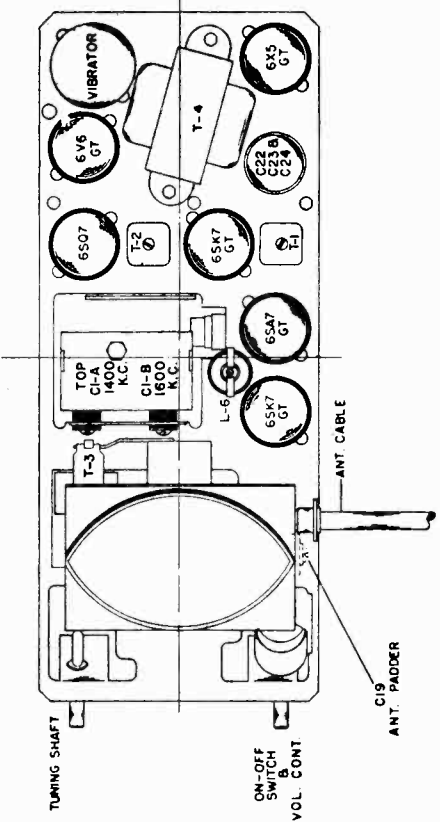


Fig. 5 Tube and Trimmer Locations

MODEL D4818A

C1A, C1B  
 C2, C6, C12  
 C3  
 C4  
 C5  
 C7, C15, C17  
 C8  
 C9  
 C10  
 C11, C21  
 C13  
 C14  
 C16, C18  
 C19  
 C20  
 C22  
 C23  
 C24  
 C25

R1  
 R13, R14  
 R2, R5  
 R3  
 R4, R17  
 R6  
 R7  
 R8  
 R9  
 R10  
 R11  
 R12  
 R15  
 R16

L1  
 L2  
 L3  
 L4  
 L5  
 L6  
 T1  
 T2

T3  
 T4

B19-196  
 A16-187  
 A15-196  
 A15-202  
 A15-204  
 A15-176  
 A16-190  
 A16-195  
 A16-193  
 A16-192  
 A16-188  
 A16-185  
 A16-184  
 A20-145  
 A16-189  
 A18-289  
 A15-205

A60-722  
 A60-752  
 A60-744  
 A60-685  
 A60-726  
 A60-753  
 A60-716  
 A60-728  
 A60-667  
 A60-731  
 A60-754  
 A60-698  
 A60-694  
 A24-177

A10-513  
 B10-511  
 A10-512  
 A33-229  
 A33-228  
 A10-510  
 A10-508  
 A10-509

B80-242  
 B80-243

A11-303  
 B11-328  
 A72-29  
 A70-130  
 A48-43  
 A58-55  
 B67-516  
 A28-101  
 A52-256  
 A11-329  
 A89-10  
 A65-37  
 A65-41  
 A65-12  
 A75-70  
 A75-67  
 A70-132  
 A70-133  
 A70-142

S84-233  
 A83-421  
 A83-517  
 A43-10  
 A47-112  
 B31-134  
 B31-133  
 S84-192  
 A87-38  
 B79-362  
 S84-193  
 A34-105  
 A83-519

Variable Condenser  
 .1 MFD. 400 Volt Condenser  
 100 MMFD Ceramic Condenser  
 20 MMFD Ceramic Condenser  
 50 MMFD Ceramic Condenser  
 250 MMFD Mica Condenser  
 .005 MFD. 600 Volt Condenser  
 .001 MFD. Ceramic Condenser  
 .05 MFD. 600 Volt Condenser  
 .01 MFD. 400 Volt Condenser  
 .2 MFD. 400 Volt Condenser  
 .005 MFD. 1600 Volt Oil Filled Condenser  
 .5 MFD. 100 Volt Condenser  
 Trimmer Condenser  
 .05 MFD. 400 Volt Condenser  
 20 MFD 25 Volt Electrolytic Condenser  
 30 MFD 350 Volt Electrolytic Condenser  
 20 MFD. 350 Volt Electrolytic Condenser  
 12 MMFD ceramic condenser, temp. comp.

**RESISTORS**

470 Ohm 1/2 Watt 20% Resistor  
 100 Ohm 1/2 Watt 10% Resistor  
 22K Ohm 1/2 Watt 10% Resistor  
 47K Ohm 1/2 Watt 20% Resistor  
 2.2 Megohm 1/2 Watt 20% Resistor  
 220 Ohm 1/2 Watt 10% Resistor  
 15K Ohm 1 Watt 10% Resistor  
 10 Megohm 1/2 Watt 20% Resistor  
 220K Ohm 1/2 Watt 20% Resistor  
 470K Ohm 1/2 Watt 20% Resistor  
 270 Ohm 1 Watt 10% Resistor  
 10K Ohm 1 Watt 10% Resistor  
 470 Ohm 1 Watt 10% Resistor  
 Volume Control, 500,000 Ohms, with Switch

**COILS**

Antenna Loading Coil  
 Antenna Coil  
 Oscillator Coil  
 Choke, "A" Line  
 Choke, Vibrator Hash  
 I.F. Trap Coil  
 1st I.F. Transformer  
 2nd I.F. Transformer

**TRANSFORMERS**

Output Transformer (Part of Speaker, not furnished separately)  
 Power Transformer

**DIAL PARTS**

Bracket, Dial Scale  
 Bracket, String Guide  
 Bushing, Tuning Shaft Bearing  
 Clip, Spring, for Tuning Shaft  
 Dial Crystal  
 Dial Pointer  
 Dial Scale  
 Gasket for Speaker  
 Knob  
 Link, String Guide  
 Pilot Light, Type G. E. No. 422  
 Rivet, Shoulder, for Dial Pointer Stringing  
 Rivet, Shoulder, for String Guide Brkt. and Link  
 Rivet, Shoulder, for Dial Drive Stringing  
 Shaft, Tuning  
 Shaft, for Dial Pointer  
 Spring, for Pilot Light Socket  
 Spring, Dial Drive String Tension  
 Spring, Pointer Drive String Tension

**MISCELLANEOUS**

"A" Lead Assembly  
 Clip, I.F. Transformer Mounting  
 Clip, Oscillator Coil Mounting  
 Fuse, 15 Amp.  
 Grommet, Rubber (for Mounting Speaker and Variable Condenser)  
 Mounting Strap, Rear  
 Mounting Plate, Front  
 Mounting Parts Kit  
 Receptacle, Antenna Cable  
 Speaker, 4" P.M. (includes Output Transformer)  
 Suppression Kit Assembly  
 Vibrator  
 Wider, Grounding, for Case Covers

## INSTALLATION

This radio comes to you complete with all hardware necessary for mounting, and also with a distributor suppressor, ammeter condenser and generator condenser. By referring to Figures 1 and 2, and following the instructions outlined below, you will find that it is very simple to install.

First determine where the receiver is to be mounted by holding it with the hands in the approximate location in the car. Using the front mounting bracket as a template, mark and drill two  $\frac{5}{8}$ " holes in the instrument panel flange. Now secure the mounting bracket to the radio receiver with the screws provided, and then mount the front of the radio to the instrument panel, using the bolts, lock washers and nuts provided for this purpose. The back of the radio is supported by means of the rear mounting strap. The mounting strap should be formed to the correct angles, as illustrated in Figure 2, so that it can then be fastened to the fire wall. After marking and center-punching the fire wall at the correct location, drill with a  $\frac{3}{8}$ " drill. The mounting strap is then secured to the radio and fastened to the fire wall of the car with the  $\frac{1}{4}$ " bolt, lock washer and nut furnished with the receiver.

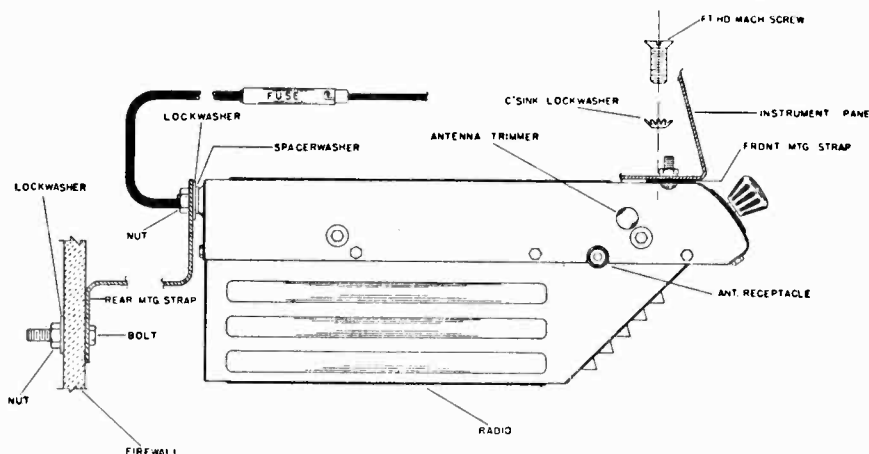


Fig. 2 Side View, Showing Mounting

### CONNECTING THE RADIO

The antenna cable should be connected to the radio by inserting the jack into the socket provided on the side of the radio. Connect the battery cable to the hot side of the ammeter behind the instrument panel. The fuse should then be inserted into the cable receptor.

### FINAL ADJUSTMENTS

The input circuit has been especially designed to be used with a low capacity antenna, of the fish pole or whip type.

Truetone Antennas are especially recommended for use with this radio.

To adjust the antenna trimmer condenser, carefully tune the receiver to a weak station at approximately 1100 kilocycles (K.C.). Remove the snap button covering the antenna trimmer (See Figure 2) and adjust the trimmer for maximum volume. A small screw driver will be needed for this purpose.

### DIAL POINTER ADJUSTMENT

If it should become necessary to readjust the dial pointer for correct calibration, this may be easily done without removing the radio from the car by proceeding as follows:

- Turn tuning knob to the right (clockwise) as far as it will go.
- Remove snap button located on the right side of the case (viewed from the front), in the extreme upper front corner.
- Insert screwdriver through hole in case and move dial pointer directly over white dot at high end of dial (1600KC).
- Tune receiver to station of known frequency in the center of the dial and readjust pointer for more accurate indication, if necessary.
- Replace snap button into hole in case.

**CAUTION:** Be careful not to scratch or damage dial scale or dial pointer when making this adjustment.

### ACCESSORIES FURNISHED FOR INSTALLATION

All of the necessary parts that are needed for installing this receiver are furnished in the Mounting Parts Kit No. S84-192 and the Suppression Kit Assembly Part No. S84-230, as listed below. Also supplied are the rear mounting strap, Part No. B31-134, and the front mounting plate, Part No. B31-133.

#### S84-192 MOUNTING PARTS KIT

1 $\frac{1}{4}$ " Bolt	2 External Tooth Lock Washers
2 $\frac{1}{4}$ " Lock Washers	2 Internal Tooth Lock Washers
2 $\frac{1}{4}$ " Hexagon Nuts	2 10-32 Hexagon Nuts
2 10-32 x $\frac{5}{8}$ " Screws	1 Washer Spacer
2 10-32 x $\frac{3}{8}$ " Screws	

#### S84-230 SUPPRESSION KIT & MISC. PARTS

1 S84-233 "A" lead assem.	1 S84-193 Suppression Kit consisting of:
1 A43-10 Fuse	2 .5 MFD Condensers
2 A52-256 Control knobs	1 Distributor Suppressor
1 A81-13 Sleeve (for fuse)	20" Wire Braid

MODEL D4318B

## ELIMINATING MOTOR NOISE

**IMPORTANT:** Special care should be taken when mounting the radio to make sure all paint, grease, rust, etc., is removed from all three mounting points. A good electrical contact at these points will aid materially in eliminating motor noise.

### GENERATOR CONDENSER

The generator condenser must be connected to the battery terminal of the generator in all cases. If your car is equipped with a generator using an automatic regulator, make sure the condenser IS NOT fastened to the field winding terminal. If in doubt, your local car dealer can advise you as to where the car manufacturer recommends connecting it.

### DISTRIBUTOR SUPPRESSOR

Remove from distributor cap the high tension lead from the distributor. Cut the lead two inches from the end, and screw the distributor resistor on to the coil lead, then screw the short length into the resistor and plug the cable into the distributor cap.

### AMMETER CONDENSER

A .5 MFD bypass condenser is furnished for attaching to the ammeter. This should be connected to either side of the ammeter with the ground lug fastened to a good ground nearby. In most cases the use of this condenser, the distributor suppressor, and the generator condenser, will eliminate all objectionable ignition interference.

### ELECTRICAL ACCESSORIES

In some cases, it may be found that car accessories such as electric heaters, lighters, automatic relays, or gauges, may cause interference while in operation. Proper procedure in such cases is to try another by-pass condenser from ground to the suspected accessory until the source of the interference is found. The condenser then should be permanently mounted in this location.

### HIGH AND LOW TENSION LEADS

In many cases the low tension battery leads, etc., are grouped together with the high tension wires. These leads will very often pick up motor noise and feed it into the

receiver through the battery circuit. In cases such as these it will be necessary to separate the low tension from the high tension wires and run them through another hole if they run from the engine compartment up to the instrument panel. This condition is particularly true on the V-8 Ford, as the battery and primary leads run through a special tube which also houses the high tension leads. Shield and ground these leads.

### IGNITION COILS

In cars where the ignition coil is located on the back side of the instrument panel it is often necessary to use an additional condenser. It must be installed from the battery side of the ignition coil to the closest ground on the instrument panel.

Short leads are very important. Where coils are mounted either on the instrument panel or in the driver's compartment, it may be necessary to shield the high tension lead from the coil to the distributor.

### WHEEL STATIC

Wheel Static is a form of interference caused by the rotation of the front wheels of the car, and it is, of course, only noticed when the car is in motion. If this form of interference is present it can be eliminated by installing wheel static collector springs between the inner hub cap and the spindle shaft.

### BONDING OF FIRE WALL RODS AND TUBES

Bonding the steering column to the fire wall with a short braid may also be effective. Clean the paint from the steering column at the fire wall where the column enters the motor compartment, and solder on a short piece of braid. Ground the end of the braid to the fire wall.

In some cases it may be necessary to ground the tubes and rods coming through the fire wall in order to reduce the interference. Clean them with emery cloth and spot-solder the braid, fastening the end under a convenient screw. A 1/4" piece of wire braid 20 inches long is furnished in the suppression kit assembly for this purpose.

**ELECTRICAL SPECIFICATIONS**

Power Supply.....6.3 volts DC  
 Current.....5.5 amp. average  
 Frequency Range.....540 to 1600 KC  
 I. F. Frequency.....455 KC  
 Speaker.....4" P. M.  
 Power Output.....1.2 watts, undistorted  
 2.5 watts, maximum  
 Sensitivity.....10 microvolts average for 1 watt output  
 Selectivity...40 KC broad at 1000 times signal, at 1000 KC

The tube compliment of this receiver is as follows:

- 1—6SK7GT—R. F. Amplifier.
- 1—6SA7GT—Converter.
- 1—6SK7GT—I.F. Amplifier.
- 1—6SQ7—Detector—AVC—1st audio.
- 1—6V6GT—Power output.
- 1—6X5GT—Rectifier.

**SERVICE NOTES**

Voltages taken from the different points of the circuit to the chassis are measured with volume control in maximum position, all tubes in their sockets, no signal applied, and with a volt meter having a resistance of 20,000 ohms per volt. These voltages are clearly shown on the voltage chart, (Fig. 4).

All voltages should be measured with an input voltage of 6.3 volts DC.

To check for open by-pass condensers, shunt each condenser with another one having the same capacity and voltage rating which is known to be good until the defective unit is located.

**ALIGNING INSTRUCTION**

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 circuit 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.

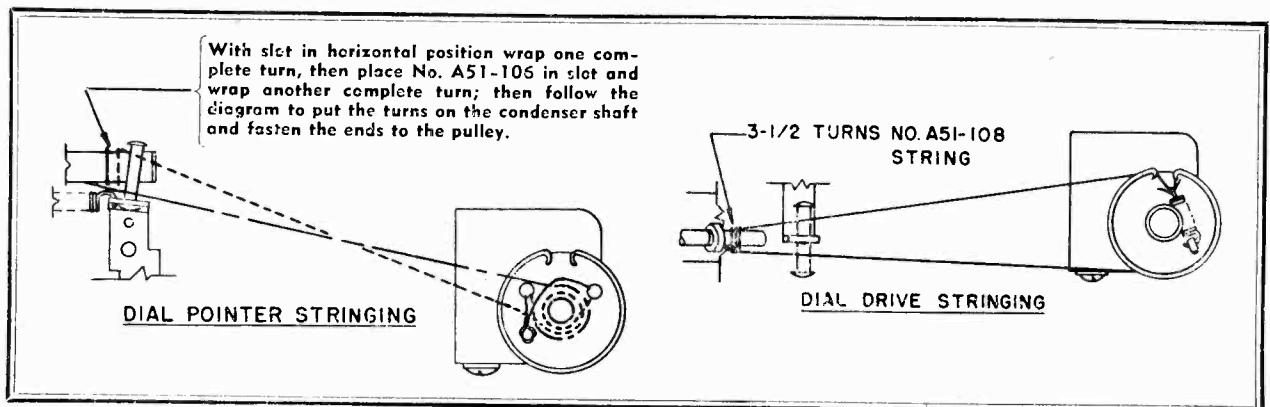
**INSTRUCTIONS FOR REMOVING CHASSIS FROM THE CASE**

The bottom cover (the one with the speaker louvers) can be removed to permit servicing of major components, such as tubes and vibrator, by removing the eight (8) screws holding it to the top cover. There are three (3) screws on each side, one (1) in the rear, and one (1) in the front.

**CAUTION:** Before attempting to remove the top cover, to service condensers, resistors, etc., the screw connecting the spark plate to the "A" terminal (inside case) must be removed. This is a round head screw, and is located on the rear of the case, close to the mounting stud bolt. It is recessed in a 1/2 inch hole in the case itself, thereby permitting contact with the spark plate.

After removing the spark plate screw, remove the two knobs by pulling forward and remove the eight (8) screws securing the cover to the chassis. Lift the chassis at the rear, at the same time moving it away from the front of the case so that the volume and tuning shafts will clear the holes in the cover.

**NOTE:** When reinstalling the chassis into the case, be sure the screw connecting the spark plate to the "A" terminal (inside case) is tightened very securely, otherwise the receiver will not operate properly.



MODEL D4818B

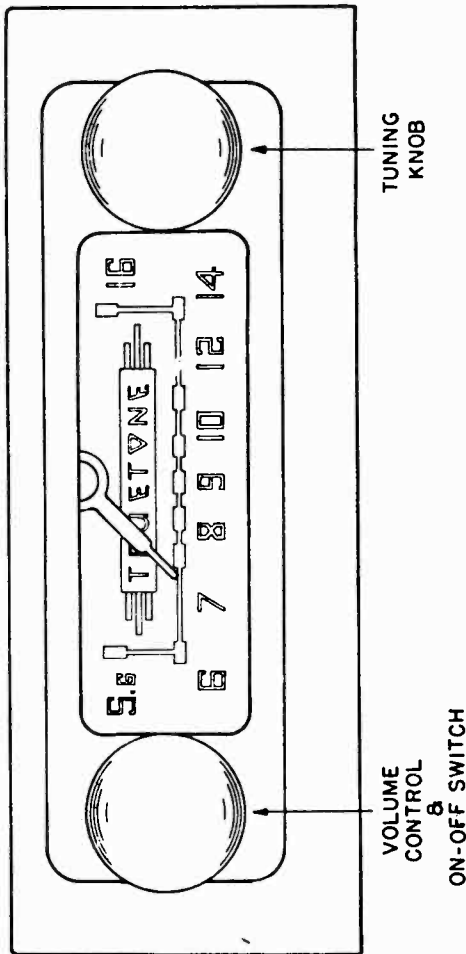


Fig. 3 Schematic Diagram

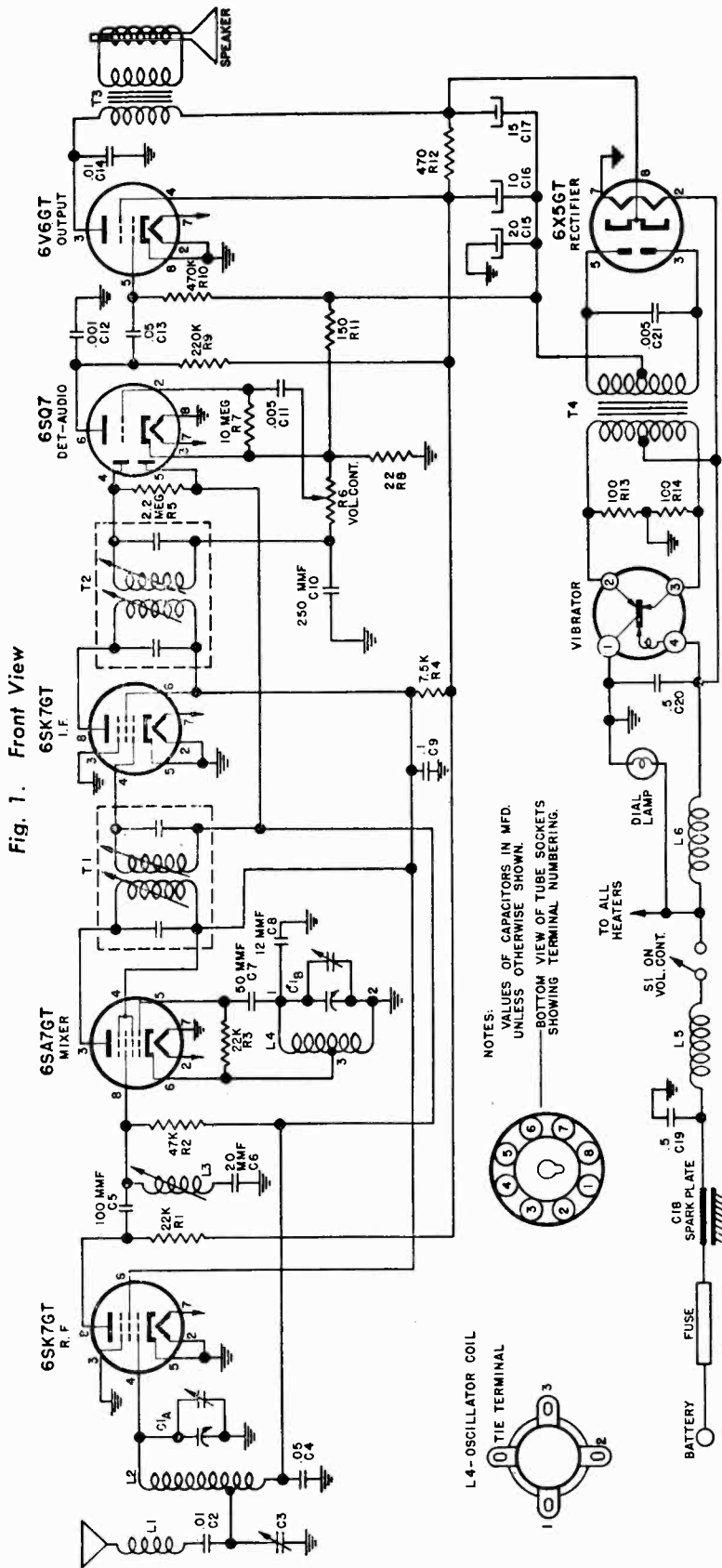
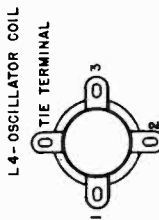


Fig. 1. Front View

NOTES:  
 VALUES OF CAPACITORS IN MFD.  
 UNLESS OTHERWISE SHOWN.  
 BOTTOM VIEW OF TUBE SOCKETS  
 SHOWING TERMINAL NUMBERING.



# ALIGNMENT PROCEDURE

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.
- Dummy antennas—.1 MFD., 75 MMFD.

For alignment points refer to Figures 5 and 6.

Volume control—Maximum, all adjustments.  
 No signal applied to antenna.  
 Power input—6.3 volts.  
 Connect dummy antenna in series with output lead of signal generator.  
 Connect output meter across voice coil.  
 Connect ground lead of signal generator to chassis.  
 Repeat alignment procedure as a final check.

Dial Setting	Generator Frequency	Dummy Ant.	Generator Connections	Trimmer Reference	Trimmer Adjustment	Trimmer Function
Fully Open	455 KC	.1 MFD.	6SA7 Grid	T2	Maximum	Output I.F.
Fully Open	455 KC	.1 MFD.	6SA7 Grid	T1	Maximum	Input I.F.
Fully Open	455 KC	75 MMFD.	Ant. lead	L3	Minimum	Wave trap
Fully Open	1600 KC	75 MMFD.	Ant. lead	C1B	Maximum	Oscillator
Tune in signal from generator	1400 KC	75 MMFD.	Ant. lead	C19	Maximum	Antenna

NOTE: The antenna trimmer condenser, C3, (see Fig. 2) should be adjusted after the radio is installed in the car. Tune the receiver to a weak station at about 1100 KC and adjust this trimmer for maximum volume.

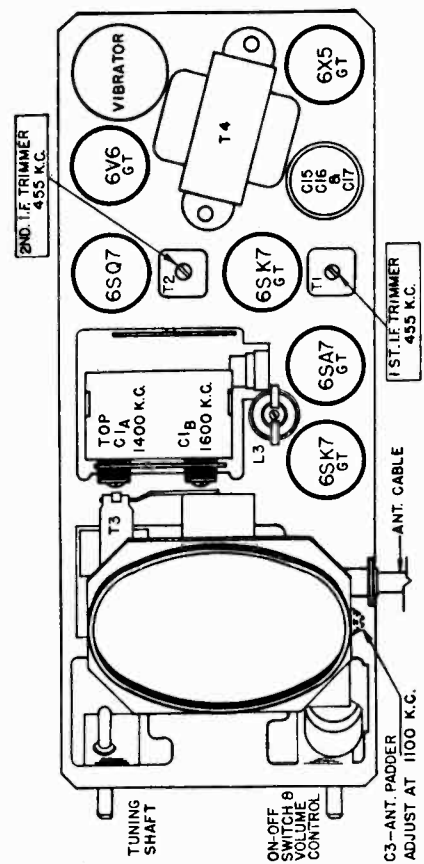


Fig. 5 Tube and Trimmer Locations

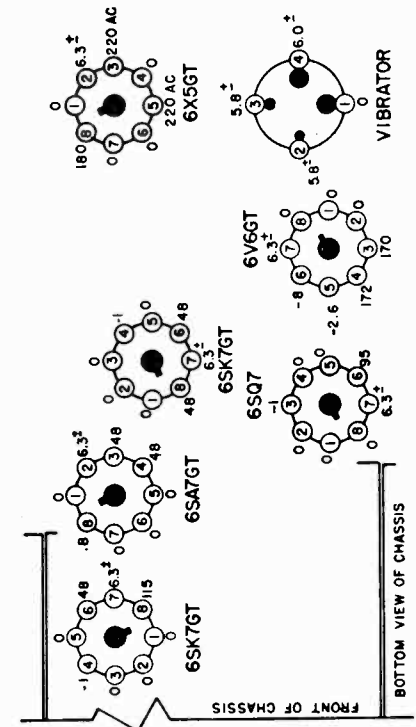


Fig. 4 Socket Voltages



MODEL D4318B

C1A, C1B	A19-201	Variable condenser
C2, C14	A16-192	.01 MFD 400 volt condenser
C3	A20-145	Trimmer condenser
C4	A16-189	.05 MFD 400 volt condenser
C5	A15-196	100 MMFD ceramic condenser
C6	A15-202	20 MMFD ceramic condenser
C7	A15-204	50 MMFD ceramic condenser
C8	A15-205	12 MMFD ceramic condenser, temp. comp.
C9	A16-187	.1 MFD 400 volt condenser
C10	A15-176	250 MMFD mica condenser
C11	A16-190	.005 MFD 600 volt condenser
C12	A16-195	.001 MFD ceramic condenser
C13	A16-193	.05 MFD 600 volt condenser
C15	A18-293	20 MFD 25 volt electrolytic condenser
C16		10 MFD 350 volt electrolytic condenser
C17		15 MFD 350 volt electrolytic condenser
C19, C20	A16-184	.5 MFD 100 volt condenser
C21	A16-185	.005 MFD 1600 volt oil filled condenser

**RESISTORS**

R1, R3	A60-659	22K ohm 1/2 watt 20% resistor
R2	A60-685	47K ohm 1/2 watt 20% resistor
R4	A60-769	7.5K ohm 2 watt 10% resistor
R5	A60-726	2.2 megohm 1/2 watt 20% resistor
R6	A24-177	Volume control, 500,000 ohm, with switch
R7	A50-728	10 megohm 1/2 watt 20% resistor
R8	A60-768	22 ohm 1/2 watt 10% resistor
R9	A60-667	220K ohm 1/2 watt 20% resistor
R10	A60-731	470K ohm 1/2 watt 20% resistor
R11	A60-767	150 ohm 1/2 watt 10% resistor
R12	A60-770	470 ohm 1/2 watt 10% resistor
R13, R14	A60-752	100 ohm 1/2 watt 10% resistor

**COILS AND TRANSFORMERS**

L1	A10-527	Antenna Loading Coil
L2	B10-511	Antenna Coil
L3	A10-510	I.F. Trap Coil
L4	A10-512	Oscillator Coil
L5	A33-229	Choke, "A" Line
L6	A33-228	Choke, vibrator hash
T1	A10-508	1st I.F. Transformer
T2	A10-509	2nd I.F. Transformer
T3	B80-242	Output Transformer (Part of Speaker, not furnished separately)
T4	B80-243	Power transformer

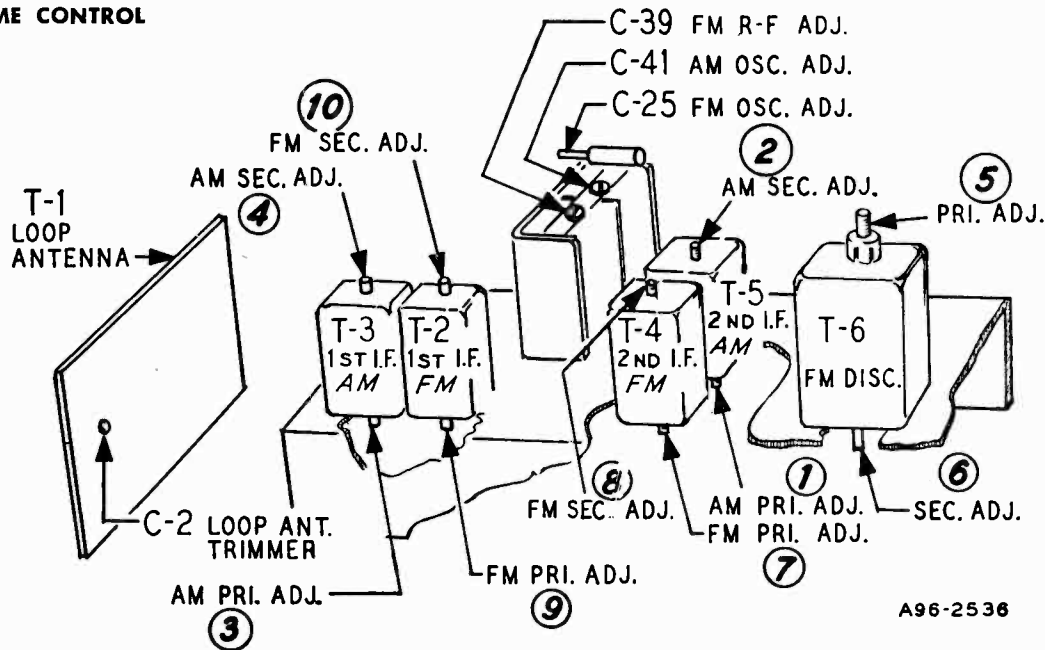
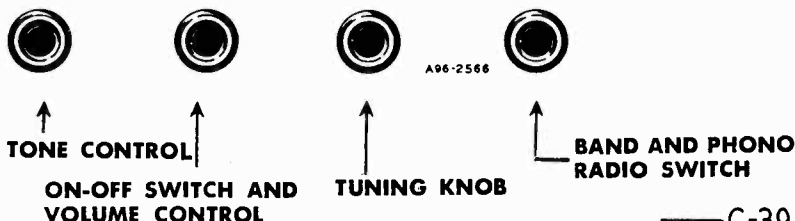
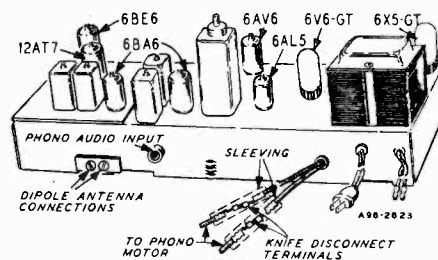
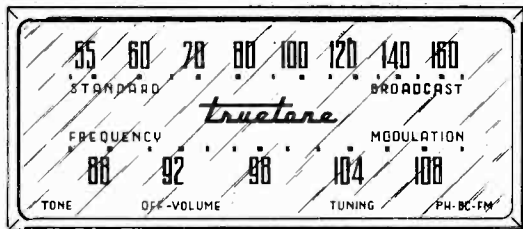
**DIAL PARTS**

A11-303	Bracket, Dial Scale
B11-328	Bracket, String Guide
A72-29	Bushing, Tuning Shaft Bearing
A70-130	Clip, Spring, for Tuning Shaft
A48-43	Dial Crystal
A58-55	Dial Pointer
B67-516	Dial Scale
A28-101	Gasket for Speaker
A52-256	Knob
A11-329	Link, String Guide
A89-10	Pilot Light, Type G.E. No. 422
A65-37	Rivet, Shoulder, for Dial Pointer Stringing
A65-41	Rivet, Shoulder, for String Guide Brkt. and Link
A65-12	Rivet, Shoulder, for Dial Drive Stringing
A75-70	Shaft, tuning
A75-74	Shaft, for Dial Pointer
A70-132	Spring, for Pilot Light Socket
A70-133	Spring, Dial Drive String Tension
A70-142	Spring, Pointer Drive String Tension
A51-106	String, Pointer Travel, 17"
A51-108	String, Condenser Drive, 19"

**MISCELLANEOUS**

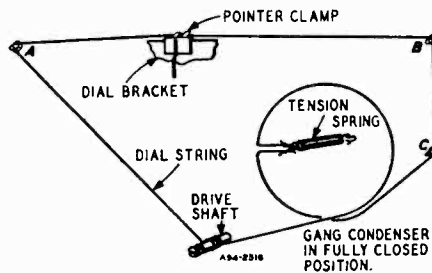
S84-233	"A" lead assembly
A83-421	Clip, I.F. Transformer Mounting
A83-517	Clip, Oscillator Coil Mounting
A43-10	Fuse, 15 Amp.
A47-112	Grommet, rubber, (Spkr. & Gang mounting)
B31-134	Mounting strap, rear
B31-133	Mounting Plate, Front
S84-192	Mounting parts kit
A87-38	Receptacle, Antenna Cable
B79-362	Speaker, 4" P.M. (includes Output Transformer)
S84-193	Suppression Kit Assembly
A34-105	Vibrator
A83-519	Wiper, grounding, for case covers

Note: Tubular condensers must be high temperature (85°C) wax type.



**DRIVE CORD REPLACEMENT**

Replacement of the drive cord may be accomplished as shown in the illustration. For this purpose use the new drive cord assembly listed in the Replacement Parts List. Turn the gang condenser until the plates are fully meshed. Then install the string as shown, winding three turns counter-clockwise around the tuning shaft with the turns progressing away from the chassis. After the cord is installed, rotate the tuning shaft several times in order to take up any slack in the cord.



**ELECTRICAL SPECIFICATIONS**

Power Output—  
 117 volts AC—40 watts  
 60 watts phono operating

Power Output—  
 1.9 watts maximum  
 .8 watts 10% distortion

Speaker—8 inch PM dynamic

Frequency Ranges—  
 Broadcast 540-1600 KC  
 Frequency modulation 88-108 MC

Intermediate Frequency—  
 AM 455 KC — FM 10.7 MC

Selectivity — AM — 45 KC broad at 1000 times signal, measured at 1000 KC

I.F. FM—200 KC broad at 2 times down

I.F. FM—950 KC broad at 200 times down

AM Sensitivity—(For .5 watt output with external antenna)  
 25 microvolts average

FM Sensitivity—(For .5 watt output)  
 25 microvolts average

MODEL D1034B

**ALIGNMENT PROCEDURES**

**AM STAGES**

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 50mmf.

Volume Control Maximum all Adjustments.  
 Connect Radio 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 1st 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. (3) and Sec. (4)	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 6BE6 Pin No. 7	.1 mf	Chassis Base	Rotor Fully Open	Oscillator C-41	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	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.

**FM STAGES**

The following is required for aligning:  
 An accurately calibrated signal generator providing unmodulated signals at the test frequencies listed below.  
 Non-metallic screwdriver.  
 Dummy Antennas and I-F Loading Resistor—2500 mmf, 300 ohms

Zero center scale DC vacuum tube voltmeter having a range of approximately 3 volts.  
 (If a zero center scale meter is not available, a standard scale vacuum tube voltmeter may be used by reversing the meter connections for negative readings).  
 Allow chassis and signal generator to "Heat Up" for several minutes.

SIGNAL GENERATOR			THROUGH DUMMY ANTENNA	BAND SWITCH SETTING	GANG CONDENSER SETTING	ADJUST	ADJUST FOR
	FREQUENCY SETTING	CONNECT GENERATOR OUTPUT TO					
Discriminator	10.7 MC	6BA6 2nd I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	Disc. Pri. (5) Note A	Maximum Deflection
	10.7 MC	6BA6 2nd I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	Disc. Sec. (6) Note B	
I-F	10.7 MC Note C	6BA6 1st I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	2nd I-F Pri. (7) Sec. (8) Note D	Maximum Deflection
Discriminator	10.7 MC	6BA6 1st I-F Pin 1 and Chassis*	2500 mmf	FM	Rotor Fully Open	Disc. Pri. (5) Note D	Maximum Deflection
I-F	10.7 MC	Junction C-32A & B (Dual 100 mmf cond.) And chassis	2500 mmf	FM	Rotor Fully Open	1st I-F Pri. (9) & Sec. (10) 2nd I-F Pri. (7) & Sec. (8) Disc. Pri. (5) In Order Shown Note D	Maximum Deflection
	10.7 MC	Same as above	2500 mmf	FM	Rotor Fully Open	Disc. Sec. (6) Note B	

**RECHECK I-F ADJUSTMENTS IN ORDER GIVEN**

Oscillator	108.5	Disconnect built-in dipole antenna and connect generator to dipole terminals with resistor in series.	300 ohms	FM	Rotor Fully Open	Osc. C-25	Maximum Deflection
Antenna	104.5	Same as above	300 ohms	FM	Tune rotor for max. AVC voltage	Ant. C-39	Maximum Deflection

**RECHECK ANTENNA & OSC. ADJUSTMENTS IN ORDER GIVEN**

**FM ALIGNMENT NOTES**

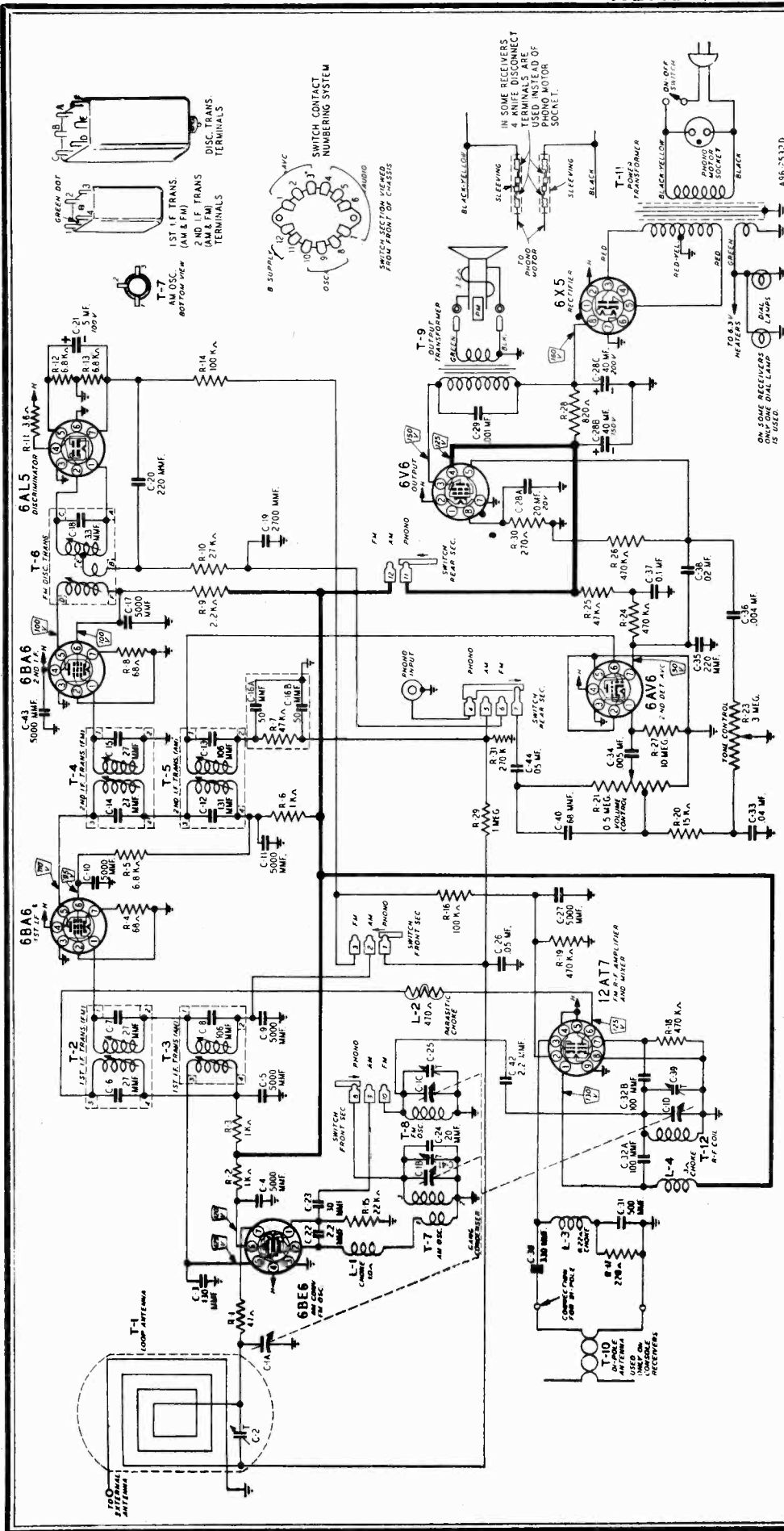
NOTE A—The zero center scale DC vacuum tube voltmeter is to be connected between chassis ground and the AVC line. A signal of .1 volt must be fed into the receiver for this adjustment.  
 Note output voltage on the zero center DC vacuum tube voltmeter.

NOTE B—Disconnect zero center DC vacuum tube voltmeter from AVC and connect it at the audio takeoff point at the

27 K ohm resistor (R-10) and its junction with the terminal strip. Adjust for zero voltage indication.

NOTE C—AM I-F coils must be aligned before attempting to align the FM I-F coils.

NOTE D—Connect zero center DC vacuum tube voltmeter as in Note A. Adjust input to give same output on the zero center DC vacuum tube voltmeter as in Note A.



NOTE-R-9 is 1000 Ohms not 2.2 K Ohms as shown on the schematic diagram.

**TUBE SOCKET VOLTAGES**

Socket voltages are shown on the schematic diagram. All voltages are between the socket terminal and chassis ground. Plate, screen and cathode voltages were taken with a 1000 ohm-per-volt meter with a 300 volt scale used for plate and screen voltages. Audio grid voltages were read with a vacuum tube volt-meter. Conditions of measurement are:

- Line voltage ..... 117 Volts AC
- Signal Input ..... None
- A Variation of ±10% is usually permissible.

**STANDARD TUBE SOCKET SYMBOLS**

- H-HEATER
- G-GRID
- K-CATHODE
- DP-DIODE PLATE
- P-PLATE
- IS-INTERNAL SHIELD

MODEL D1034B

# REPLACEMENT PARTS LIST

NOTICE: There is a model number label on the chassis. This label identifies the receiver as to chassis and issue letter. When ordering parts or writing, give ALL information on this label.

## MISCELLANEOUS

12A477	8" P.M. Speaker	.....
4X1082	Escutcheon	.....
10X759	Knob	.....
13X546	Line Cord & Plug Assembly	.....
2A393	Band Change Switch	.....
3A435	Molded Octal Tube Socket	.....
3A305	Phono Socket	.....
3A426	Tube Socket (1st 6BA6)	.....
3A443	Tube Socket (12AT7)	.....
3A427	Tube Socket (6BE6)	.....
3A439	Tube Socket (Miniature)	.....
	Cabinet No. 054	.....

## CAPACITORS

C-1	14A209	Gang Condenser Assembly	.....
C-2	17A256	2-24 mmf Trimmer	.....
C-3	47X559	130 mmf Molded Mica	.....
C-4			.....
C-5			.....
C-9			.....
C-10			.....
C-11	47X507	5000 mmf Ceramic	.....
C-17			.....
C-27			.....
C-43			.....
C-6		Part of T-2 (1st I-F Trans. FM)	.....
C-7		Part of T-3 (1st I-F Trans. AM)	.....
C-8		Part of T-5 (2nd I-F Trans. AM)	.....
C-12		Part of T-4 (2nd I-F Trans. FM)	.....
C-13			.....
C-14			.....
C-15			.....
C-16A			.....
C-16B	47X112	50-50 mmf Dual Mica	.....
C-18		Part of T-6 (Discriminator Trans.)	.....
C-19	47X492	2700 mmf Molded Mica	.....
C-20			.....
C-35	47X468	220 mmf Ceramic	.....
C-21	45X361	5 mf 100 V Dry Electrolytic	.....
C-22			.....
C-42	47X557	2.2 mmf Ceramic	.....
C-23	47X558	30 mmf Ceramic	.....
C-24	47X516	20 mmf Ceramic	.....
C-25	17A255	1 8 mmf Trimmer	.....
C-26			.....
C-44	B66503	.05 mf 200 V Tubular	.....
C-28A		20 mf 20 V	.....
C-28B	45X360	40 mf 150 V Dry Electrolytic	.....
C-28C		40 mf 200 V	.....
C-29	H66102	.001 mf 800 V Tubular	.....
C-30	47X470	330 mmf Molded Mica	.....
C-31	47X508	500 mmf Ceramic	.....
C-32A			.....
C-32B	76X4	100 mmf Dual Ceramic	.....
C-33	B66403	.04 mf 200 V Tubular	.....
C-34	D66502	.005 mf 400 V Tubular	.....
C-36	B66402	.004 mf 200 V Tubular	.....
C-37	D66104	.1 mf 400 V Tubular	.....
C-38	D66203	.02 mf 400 V Tubular	.....
C-39			.....
C-41		Part of C-1 (Gang Condenser)	.....
C-40	47X471	68 mmf Ceramic	.....

## RESISTORS

		Ohms	Watts	
R-1	B85470	47	0.5	Carbon
R-2				
R-3	B85102	1000	0.5	Carbon
R-6				
R-9				
R-4	B84680	68	0.5	Carbon
R-8				
R-5				
R-12	B84682	6800	0.5	Carbon
R-13				
R-7	B85473	47 K	0.5	Carbon
R-25				
R-10	B85273	27 K	0.5	Carbon
R-11	43X233	3.6	0.5	Wirewound
R-14	B85104	100 K	0.5	Carbon
R-16				
R-15	B85223	22 K	0.5	Carbon
R-17	B84221	220	0.5	Carbon
R-18				
R-19				
R-24	B85474	470 K	0.5	Carbon
R-26				
R-20	B85153	15 K	0.5	Carbon
R-21	36X372	.5 meg.		Volume Control
R-23	40X285	3 meg.		Tone Control
R-27	B85106	10 meg.	0.5	Carbon
R-28	D84821	820	2.0	Carbon
R-29	B85105	1 meg.	0.5	Carbon
R-30	B84271	270	0.5	Carbon
R-31	B84274	270 K	0.5	Carbon

## TRANSFORMERS AND COILS

L-1	35A5	Insulated Choke	.....
L-2	9A2103	Parasitic Choke	.....
L-3	35A9	Insulated Choke	.....
L-4	35A8	Insulated Choke	.....
T-1	9A2099	"B" Range Loop Antenna	.....
T-2	9A2060	1st I-F Trans. (FM)	.....
T-3	9A2062	1st I-F Trans. (AM)	.....
T-4	9A2061	2nd I-F Trans. (FM)	.....
T-5	9A2063	2nd I-F Trans. (AM)	.....
T-6	9A2064	Discriminator Transformer	.....
T-7	9A2065	Oscillator Coil (AM)	.....
T-8	9A2067	Oscillator Coil (FM)	.....
T-9	51X134	Output Transformer	.....
T-10	9A2002	Dipole Antenna	.....
T-11	53X291	Power Transformer	.....
T-12	9A2066	Antenna Coil (FM)	.....

## DIAL AND DRIVE ASSEMBLY

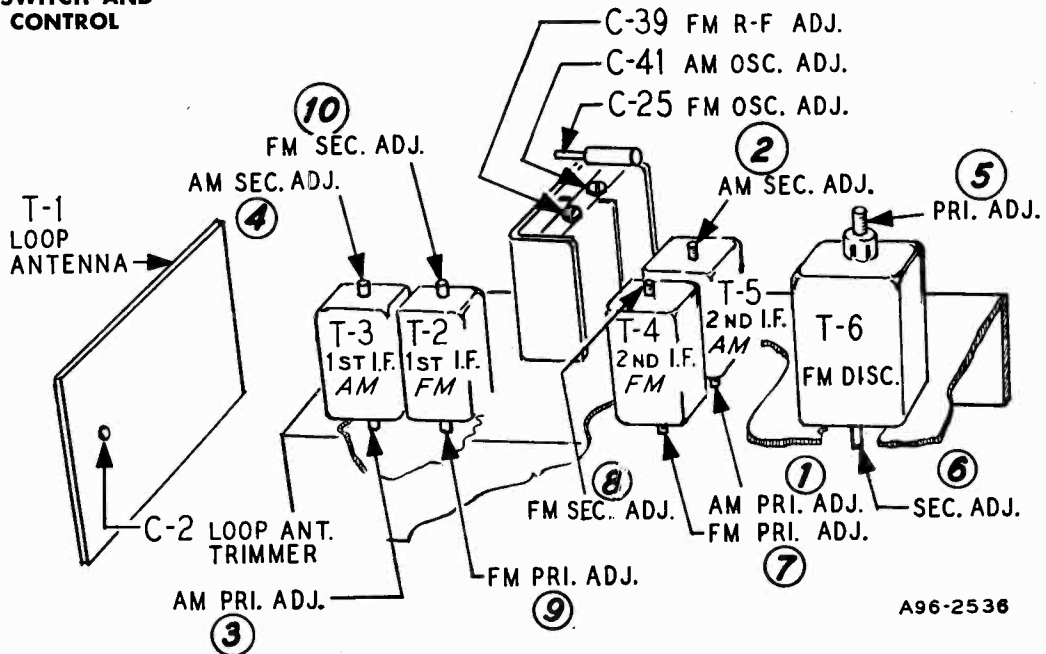
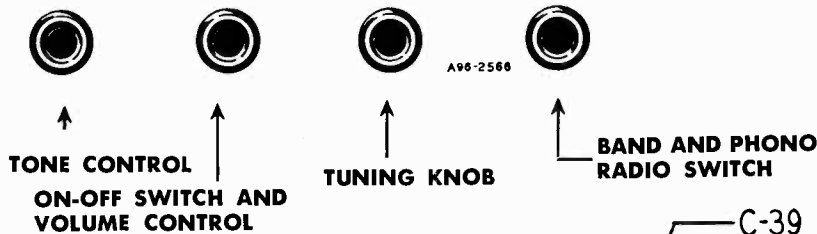
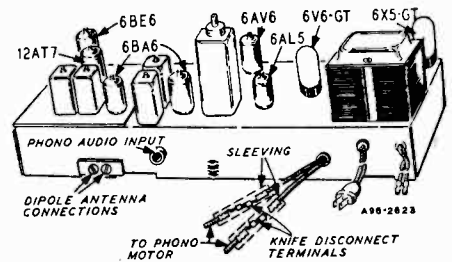
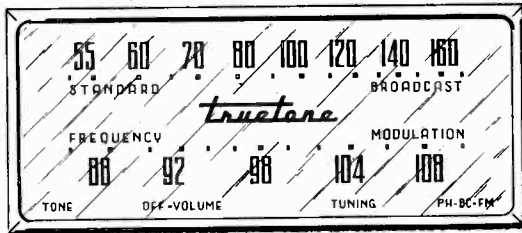
58X733	Dial Glass	.....
15X260	Pointer	.....
19X192	"C" Washer (Mtg. Drive Shaft)	.....
6X66	Rubber Grommet	.....
25X1616	Dial Bracket	.....
28X113	Drive Cord Tension Spring	.....
7A103	No. 47 Pilot Light	.....
7A199	Pilot Light Socket Assembly	.....
10X38	Drive Cord Assembly	.....
26X486	Drive Shaft	.....

## TYPE G.I. - 28A169 RECORD CHANGER PARTS

G.I. 69-73657	Tone Arm
G.I. 55-73613	Plastic Stabilizer
G.I. 28A755782	Idler Wheel Assembly
G.I. 56-76507	Motor, 3 speed, 60 cycles, 105-125 Volts A.C.
E-V No. 33-4	Crystal Cartridge, complete with needle
	*Needle only

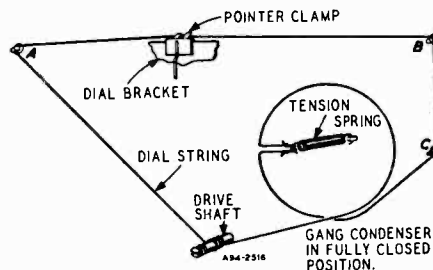
\*When ordering needles, specify part number and letter stamped on Cartridge.

WG&C SERIES 327A96-054



**DRIVE CORD REPLACEMENT**

Replacement of the drive cord may be accomplished as shown in the illustration. For this purpose use the new drive cord assembly listed in the Replacement Parts List. Turn the gang condenser until the plates are fully meshed. Then install the string as shown, winding three turns counter-clockwise around the tuning shaft with the turns progressing away from the chassis. After the cord is installed, rotate the tuning shaft several times in order to take up any slack in the cord.



**ELECTRICAL SPECIFICATIONS**

Power Output—  
 117 volts AC—40 watts  
 60 watts phono operating

Power Output—  
 1.9 watts maximum  
 .8 watts 10% distortion

Speaker—8 inch PM dynamic

Frequency Ranges—  
 Broadcast 540-1600 KC  
 Frequency modulation 88-108 MC

Intermediate Frequency—  
 AM 455 KC — FM 10.7 MC

Selectivity — AM — 45 KC broad at 1000 times signal, measured at 1000 KC

I.F. FM—200 KC broad at 2 times down

I.F. FM—950 KC broad at 200 times down

AM Sensitivity—(For .5 watt output with external antenna)  
 25 microvolts average

FM Sensitivity—(For .5 watt output)  
 25 microvolts average

MODEL D1034C

### ALIGNMENT PROCEDURES AM STAGES

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 50mmf.

Volume Control Maximum all Adjustments.  
Connect Radio 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 1st 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. (3) and Sec. (4)	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 6BE6 Pin No. 7	.1 mf	Chassis Base	Rotor Fully Open	Oscillator C-41	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	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.

### FM STAGES

The following is required for aligning:  
An accurately calibrated signal generator providing unmodulated signals of the test frequencies listed below.  
Non-metallic screwdriver.  
Dummy Antennas and I-F Loading Resistor—2500 mmf, 300 ohms

Zero center scale DC vacuum tube voltmeter having a range of approximately 3 volts.  
(If a zero center scale meter is not available, a standard scale vacuum tube voltmeter may be used by reversing the meter connections for negative readings).  
Allow chassis and signal generator to "Heat Up" for several minutes.

SIGNAL GENERATOR		THROUGH DUMMY ANTENNA	BAND SWITCH SETTING	GANG CONDENSER SETTING	ADJUST	ADJUST FOR	
FREQUENCY SETTING	CONNECT GENERATOR OUTPUT TO						
Discriminator	10.7 MC	6BA6 2nd I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	Disc. Pri. (5) Note A	Maximum Deflection
	10.7 MC	6BA6 2nd I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	Disc. Sec. (6) Note B	
I-F	10.7 MC Note C	6BA6 1st I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	2nd I-F Pri. (7) Sec. (8) Note D	Maximum Deflection
Discriminator	10.7 MC	6BA6 1st I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	Disc. Pri. (5) Note D	Maximum Deflection
I-F	10.7 MC	Junction C-32A & B (Dual 100 mmf cond.) And chassis	2500 mmf	FM	Rotor Fully Open	1st I-F Pri. (9) & Sec. (10) 2nd I-F Pri. (7) & Sec. (8) Disc. Pri. (5) In Order Shown Note D	Maximum Deflection
	10.7 MC	Same as above	2500 mmf	FM	Rotor Fully Open	Disc. Sec. (6) Note B	

#### RECHECK I-F ADJUSTMENTS IN ORDER GIVEN

Oscillator	108.5	Disconnect built-in dipole antenna and connect generator to dipole terminals with resistor in series.	300 ohms	FM	Rotor Fully Open	Osc. C-25	Maximum Deflection
Antenna	104.5	Same as above	300 ohms	FM	Tune rotor for max. AVC voltage	Ant. C-39	Maximum Deflection

#### RECHECK ANTENNA & OSC. ADJUSTMENTS IN ORDER GIVEN

### FM ALIGNMENT NOTES

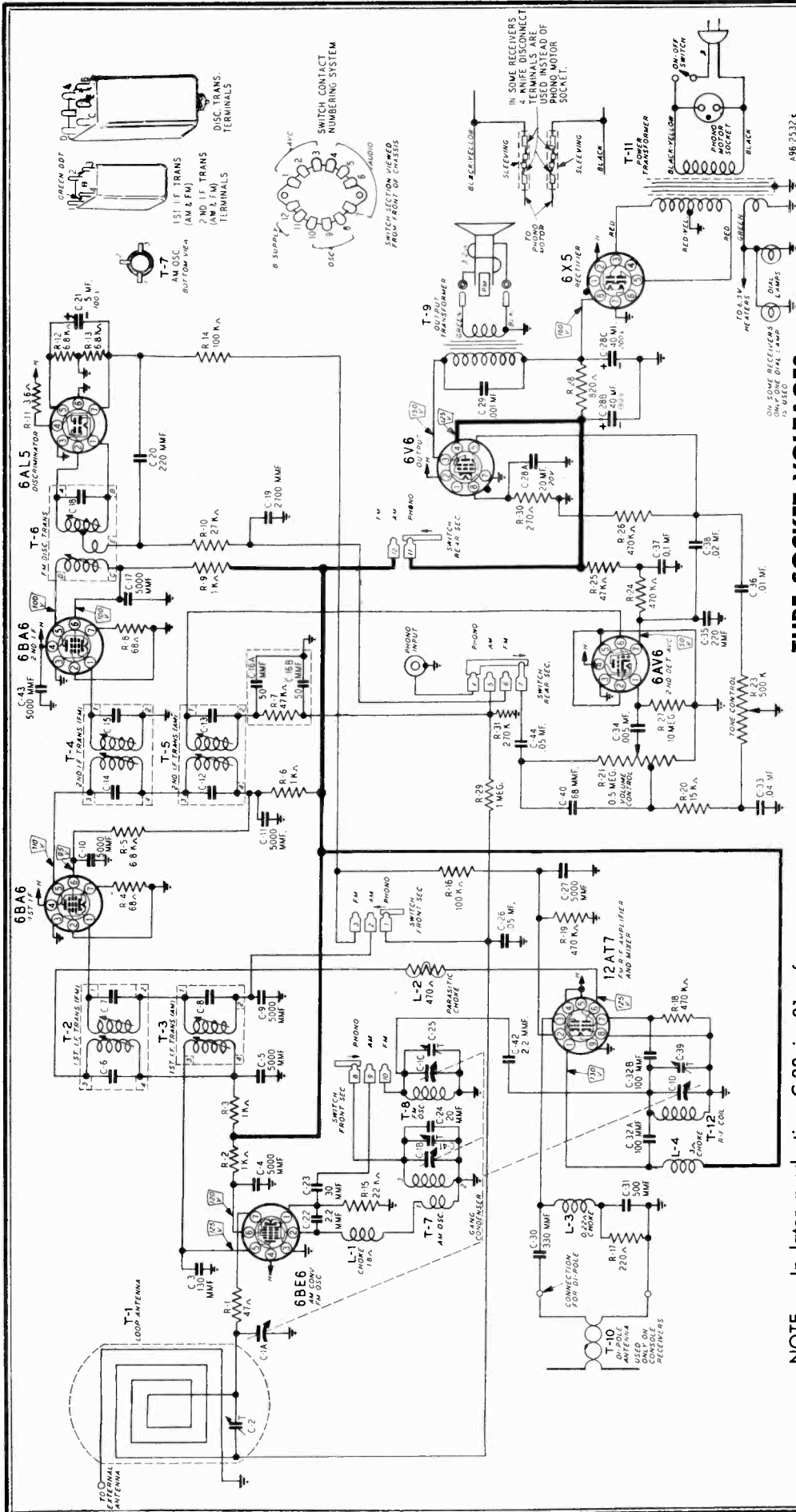
NOTE A—The zero center scale DC vacuum tube voltmeter is to be connected between chassis ground and the AVC line. A signal of .1 volt must be fed into the receiver for this adjustment.  
Note output voltage on the zero center DC vacuum tube voltmeter

27 K ohm resistor (R-10) and its junction with the terminal strip. Adjust for zero voltage indication.

NOTE C—AM I-F coils must be aligned before attempting to align the FM I-F coils.

NOTE B—Disconnect zero center DC vacuum tube voltmeter from AVC and connect it at the audio takeoff point at the

NOTE D—Connect zero center DC vacuum tube voltmeter as in Note A. Adjust input to give same output on the zero center DC vacuum tube voltmeter as in Note A.

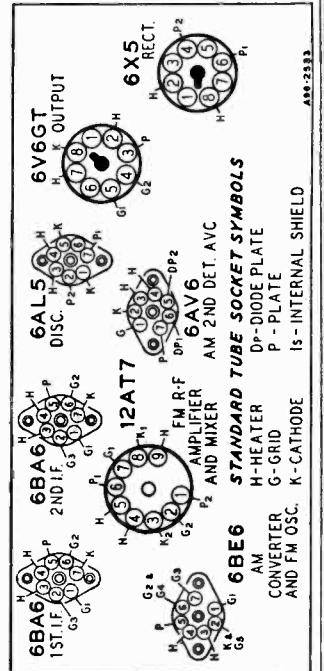


**TUBE SOCKET VOLTAGES**

Socket voltages are shown on the schematic diagram. All voltages are between the socket terminal and chassis ground. Plate, screen and cathode voltages were taken with a 1000 ohm-per-volt meter with a 300 volt scale used for plate and screen voltages. Audio grid voltages measurement are:

- Line voltage ..... 117 Volts AC
- Signal Input ..... None
- A Variation of  $\pm 10\%$  is usually permissible.

NOTE - In later production C-33 is .01 mf.





MODEL D1034C

# REPLACEMENT PARTS LIST

NOTICE: There is a model number label on the chassis. This label identifies the receiver as to chassis and issue letter. When ordering parts or writing, give ALL information on this label.

## MISCELLANEOUS

12A477	8" P.M. Speaker	.....
4X1082	Escutcheon	.....
10A759	Knob	.....
13X546	Line Cord & Plug Assembly	.....
2A393	Band Change Switch	.....
3A435	Molded Octal Tube Socket	.....
3A305	Phono Socket	.....
3A426	Tube Socket (1st 6BA6)	.....
3A443	Tube Socket (12AT7)	.....
3A427	Tube Socket (6BE6)	.....
3A439	Tube Socket (Miniature)	.....
	Cabinet No. 054	.....

## CAPACITORS

C-1	14A209	Gang Condenser Assembly	.....
C-2	17A256	2-24 mmf	Trimmer.....
C-3	47X559	130 mmf	Ceramic.....
C-4			
C-5			
C-9			
C-10			
C-11	47X507	5000 mmf	Ceramic.....
C-17			
C-27			
C-43			
C-6		Part of T-2 (1st I-F Trans. FM)	
C-7			
C-8		Part of T-3 (1st I-F Trans. AM)	
C-12		Part of T-5 (2nd I-F Trans. AM)	
C-13			
C-14		Part of T-4 (2nd I-F Trans. FM)	
C-15			
C-16A			
C-16B	47X112	50-50 mmf	Dual Mica....
C-18		Part of T-6 (Discriminator Trans.)	
C-19	47X492	2700 mmf	Molded Mica..
C-20	47X468	220 mmf	Ceramic.....
C-35			
C-21	45X361	5 mf	100 V Dry Electrolytic
C-22	47X557	2.2 mmf	Ceramic.....
C-42			
C-23	47X558	30 mmf	Ceramic.....
C-24	47X516	20 mmf	Ceramic.....
C-25	17A255	1.8 mmf	Trimmer.....
C-26			
C-44	B66503	.05 mf	200 V Tubular.....
C-28A		20 mf	20 V
C-28B	45X360	40 mf	150 V Dry Electrolytic
C-28C		40 mf	200 V
C-29	H66102	.001 mf	800 V Tubular.....
C-30	47X470	330 mmf	Molded Mica..
C-31	47X508	500 mmf	Ceramic.....
C-32A			
C-32B	76X4	100 mmf	Dual Ceramic..
C-33			
C-36	B66103	.01 mf	200 V. Tubular.....
C-34	D66502	.005 mf	400 V. Tubular.....
C-37	D66104	.1 mf	400 V. Tubular.....
C-38	D66203	.02 mf	400 V. Tubular.....
C-39			
C-41		Part of C-1 (Gang Condenser)	
C-40	47X471	68 mmf	Ceramic.....

## RESISTORS

		Ohms	Watts	
R-1	B85470	47	0.5	Carbon.....
R-2				
R-3	B85102	1000	0.5	Carbon.....
R-6				
R-9				
R-4				
R-8	B84680	68	0.5	Carbon.....
R-5				
R-12	B84682	6800	0.5	Carbon.....
R-13				
R-7				
R-25	B85473	47 K	0.5	Carbon.....
R-10	B85273	27 K	0.5	Carbon.....
R-11	43X233	3.6	0.5	Wirewound...
R-14				
R-16	B85104	100 K	0.5	Carbon.....
R-15	B85223	22 K	0.5	Carbon.....
R-17	B84221	220	0.5	Carbon.....
R-18				
R-19				
R-24	B85474	470 K	0.5	Carbon.....
R-26				
R-20	B85153	15 K	0.5	Carbon.....
R-21	36X372	.5 meg.		Volume Control
R-23	40X310	.5 meg.		Tone Control
R-27	B85106	10 meg.	0.5	Carbon.....
R-28	D84821	820	2.0	Carbon.....
R-29	B85105	1 meg.	0.5	Carbon.....
R-30	B84271	270	0.5	Carbon.....
R-31	B84274	270 K	0.5	Carbon.....

## TRANSFORMERS AND COILS

L-1	35A5	Insulated Choke	.....
L-2	9A2103	Parasitic Choke	.....
L-3	35A9	Insulated Choke	.....
L-4	35A8	Insulated Choke	.....
T-1	9A2099	"B" Range Loop Antenna	.....
T-2	9A2060	1st I-F Trans. (FM)	.....
T-3	9A2062	1st I-F Trans. (AM)	.....
T-4	9A2081	2nd I-F Trans. (FM)	.....
T-5	9A2063	2nd I-F Trans. (AM)	.....
T-6	9A2161	Discriminator Transformer	.....
T-7	9A2065	Oscillator Coil (AM)	.....
T-8	9A2067	Oscillator Coil (FM)	.....
T-9	51X134	Output Transformer	.....
T-10	9A2002	Dipole Antenna *	.....
T-11	53X291	Power Transformer	.....
T-12	9A2066	Antenna Coil (FM)	.....

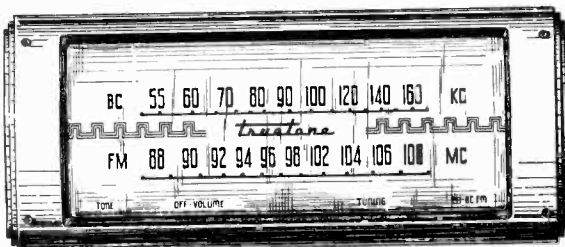
## DIAL AND DRIVE ASSEMBLY

58X733	Dial Glass	.....
15X260	Pointer	.....
19X192	"C" Washer (Mtg. Drive Shaft)	.....
6X66	Rubber Grommet	.....
25X1616	Dial Bracket	.....
28X113	Drive Cord Tension Spring	.....
7A103	No. 47 Pilot Light	.....
7A199	Pilot Light Socket Assembly	.....
10X38	Drive Cord Assembly	.....
26X486	Drive Shaft	.....

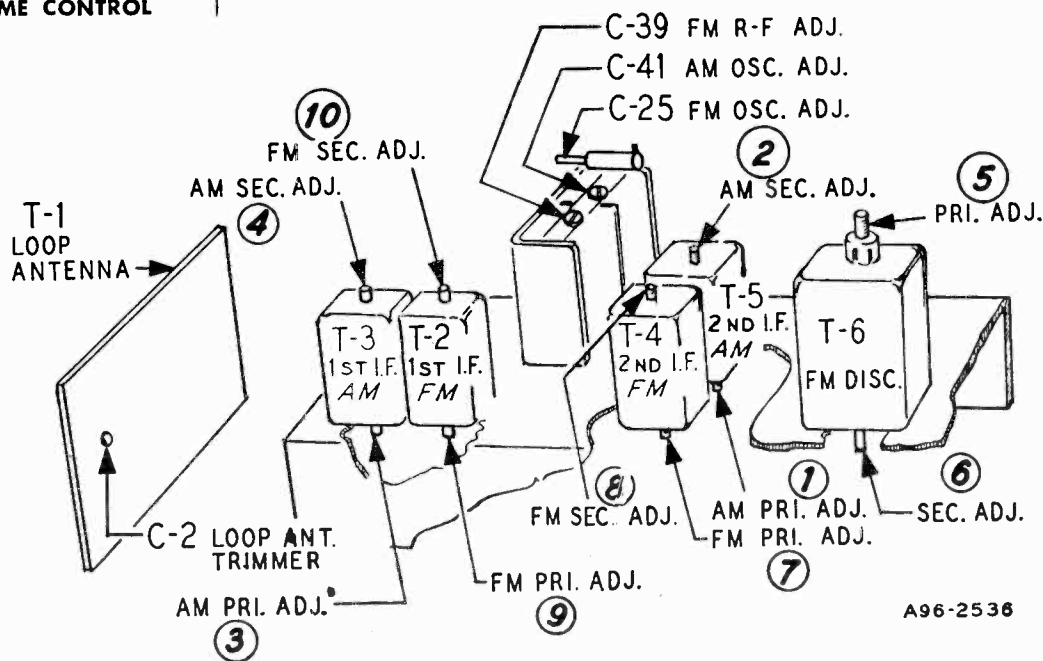
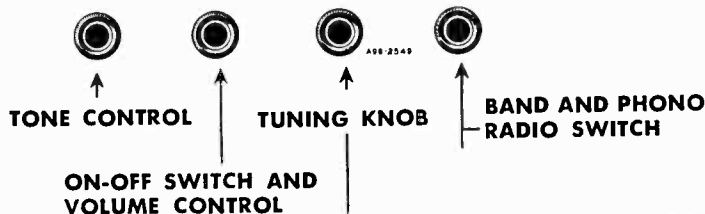
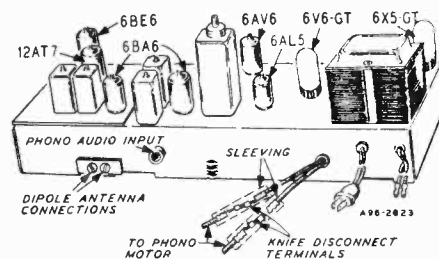
## TYPE G.I. - 28A169 RECORD CHANGER PARTS

G.I. 69-73657	Tone Arm
G.I. 55-73613	Plastic Stabilizer
G.I. 28A755782	Idler Wheel Assembly
G.I. 56-76507	Motor, 3 speed, 60 cycles, 105-125 Volts A. C.
P-81	Crystal Cartridge, complete with needle
	*Needle only

\*When ordering needles, specify part number and letter stamped on Cartridge.



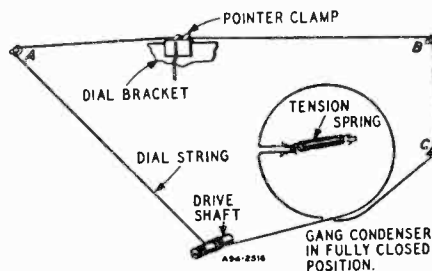
**BROADCAST BAND**  
**FM BAND**



A96-2536

**DRIVE CORD REPLACEMENT**

Replacement of the drive cord may be accomplished as shown in the illustration. For this purpose use the new drive cord assembly listed in the Replacement Parts List. Turn the gang condenser until the plates are fully meshed. Then install the string as shown, winding three turns counter-clockwise around the tuning shaft with the turns progressing away from the chassis. After the cord is installed, rotate the tuning shaft several times in order to take up any slack in the cord.



**ELECTRICAL SPECIFICATIONS**

Power Output—  
117 volts AC—40 watts  
60 watts phono operating

Power Output—  
1.9 watts maximum  
.8 watts 10% distortion

Speaker—8 inch PM dynamic

Frequency Ranges—  
Broadcast 540-1600 KC  
Frequency modulation 88-108 MC

Intermediate Frequency—  
AM 455 KC — FM 10.7 MC

Selectivity — AM — 45 KC broad at 1000 times signal, measured at 1000 KC

I.F. FM—200 KC broad at 2 times down

I.F. FM—950 KC broad at 200 times down

AM Sensitivity—(For .5 watt output with external antenna)  
25 microvolts average

FM Sensitivity—(For .5 watt output)  
25 microvolts average

MODEL D1046C

### ALIGNMENT PROCEDURES

#### AM STAGES

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 50mmf.

Volume Control Maximum all Adjustments.  
 Connect Radio 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 1st 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. (3) and Sec. (4)	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 6BE6 Pin No. 7	.1 mf	Chassis Base	Rotor Fully Open	Oscillator C-41	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	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.

#### FM STAGES

The following is required for aligning:  
 An accurately calibrated signal generator providing unmodulated signals at the test frequencies listed below.  
 Non-metallic screwdriver.  
 Dummy Antennas and I-F Loading Resistor—2500 mmf, 300 ohms

Zero center scale DC vacuum tube voltmeter having a range of approximately 3 volts.  
 (If a zero center scale meter is not available, a standard scale vacuum tube voltmeter may be used by reversing the meter connections for negative readings).  
 Allow chassis and signal generator to "Heat Up" for several minutes.

SIGNAL GENERATOR			THROUGH DUMMY ANTENNA	BAND SWITCH SETTING	GANG CONDENSER SETTING	ADJUST	ADJUST FOR
	FREQUENCY SETTING	CONNECT GENERATOR OUTPUT TO					
Discriminator	10.7 MC	6BA6 2nd I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	Disc. Pri. (5) Note A	Maximum Deflection
	10.7 MC	6BA6 2nd I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	Disc. Sec. (6) Note B	
I-F	10.7 MC Note C	6BA6 1st I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	2nd I-F Pri. (7) Sec. (8) Note D	Maximum Deflection
Discriminator	10.7 MC	6BA6 1st I-F Pin 1 and Chassis	2500 mmf	FM	Rotor Fully Open	Disc. Pri. (5) Note D	Maximum Deflection
I-F	10.7 MC	Junction C-32A & B (Dual 100 mmf cond.) And chassis	2500 mmf	FM	Rotor Fully Open	1st I-F Pri. (9) & Sec. (10) 2nd I-F Pri. (7) & Sec. (8) Disc. Pri. (5) In Order Shown Note D	Maximum Deflection
	10.7 MC	Same as above	2500 mmf	FM	Rotor Fully Open	Disc. Sec. (6) Note B	

#### RECHECK I-F ADJUSTMENTS IN ORDER GIVEN

Oscillator	108.5	Disconnect built-in dipole antenna and connect generator to dipole terminals with resistor in series.	300 ohms	FM	Rotor Fully Open	Osc. C-25	Maximum Deflection
Antenna	104.5	Same as above	300 ohms	FM	Tune rotor for max. AVC voltage	Ant. C-39	Maximum Deflection

#### RECHECK ANTENNA & OSC. ADJUSTMENTS IN ORDER GIVEN

#### FM ALIGNMENT NOTES

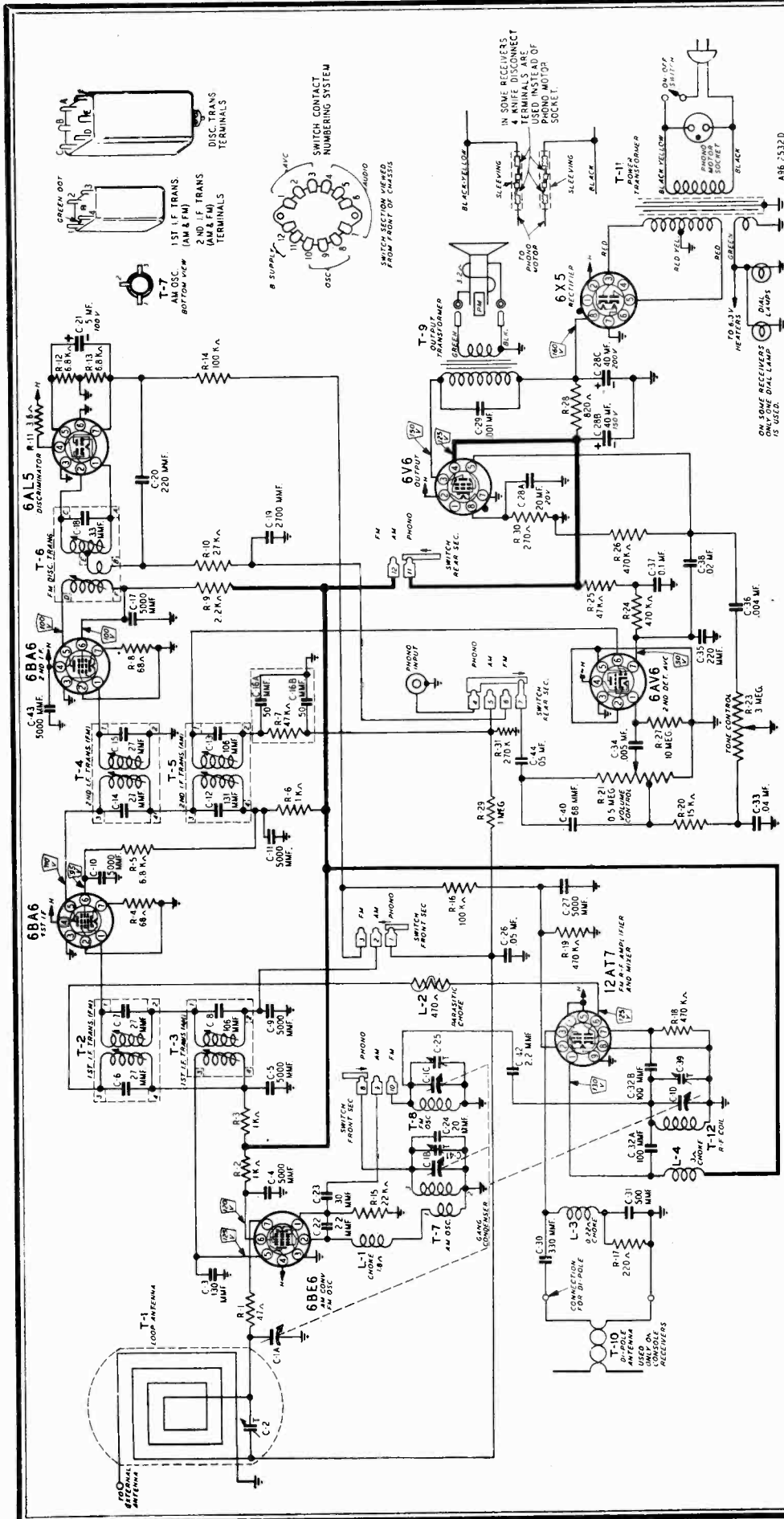
NOTE A—The zero center scale DC vacuum tube voltmeter is to be connected between chassis ground and the AVC line. A signal of .1 volt must be fed into the receiver for this adjustment.  
 Note output voltage on the zero center DC vacuum tube voltmeter.

NOTE B—Disconnect zero center DC vacuum tube voltmeter from AVC and connect it at the audio takeoff point at the

27 K ohm resistor (R-10) and its junction with the terminal strip. Adjust for zero voltage indication.

NOTE C—AM I-F coils must be aligned before attempting to align the FM I-F coils.

NOTE D—Connect zero center DC vacuum tube voltmeter as in Note A. Adjust input to give same output on the zero center DC vacuum tube voltmeter as in Note A.

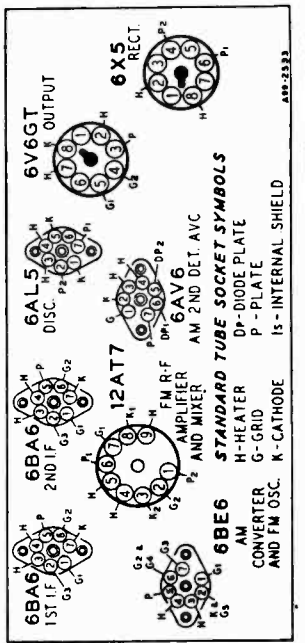


NOTE—R-9 is 1000 Ohms not 2.2 K Ohms as shown on the schematic diagram.

**TUBE SOCKET VOLTAGES**

Socket voltages are shown on the schematic diagram. All voltages are between the socket terminal and chassis ground. Plate, screen and cathode voltages were taken with a 1000 ohm-per-volt meter with a 300 volt scale used for plate and screen voltages. Audio grid voltages were read with a vacuum tube volt-meter. Conditions of measurement are:

- Line voltage ..... 117 Volts AC
- Signal Input ..... None
- A Variation of ±10% is usually permissible.



MODEL D1046C

# REPLACEMENT PARTS LIST

## MISCELLANEOUS

12A477	8" P.M. Speaker	.....
4X1073	Escutcheon	.....
10A758	Knob	.....
13X546	Line Cord & Plug Assembly	.....
2A395	Band Change Switch	.....
3A435	Molded Octal Tube Socket	.....
3A305	Phono Socket	.....
3A426	Tube Socket (1st 6BA6)	.....
3A443	Tube Socket (12AT7)	.....
3A427	Tube Socket (6BE6)	.....
3A439	Tube Socket (Miniature)	.....
	Cabinet No. 952	.....

## CAPACITORS

C-1	14A209	Gang Condenser Assembly	.....
C-2	17A256	2-24 mmf	Trimmer.....
C-3	47X559	130 mmf	Molded Mica..
C-4			
C-5			
C-9			
C-10			
C-11	47X507	5000 mmf	Ceramic.....
C-17			
C-27			
C-43			
C-6			
C-7		Part of T-2 (1st I-F Trans. FM)	
C-8		Part of T-3 (1st I-F Trans. AM)	
C-12			
C-13		Part of T-5 (2nd I-F Trans. AM)	
C-14			
C-15		Part of T-4 (2nd I-F Trans. FM)	
C-16A			
C-16B	47X112	50-50 mmf	Dual Mica....
C-18		Part of T-6 (Discriminator Trans.)	
C-19	47X492	2700 mmf	Molded Mica..
C-20			
C-35	47X468	220 mmf	Ceramic.....
C-21	45X361	5 mf	100 V Dry Electrolytic
C-22			
C-42	47X557	2.2 mmf	Ceramic.....
C-23	47X558	30 mmf	Ceramic.....
C-24	47X516	20 mmf	Ceramic.....
C-25	17A255	1 8 mmf	Trimmer.....
C-26			
C-44	B66503	.05 mf	200 V Tubular.....
C-28A		20 mf	20 V
C-28B	45X360	40 mf	150 V Dry Electrolytic
C-28C		40 mf	200 V
C-29	H66102	.001 mf	800 V Tubular.....
C-30	47X470	330 mmf	Molded Mica..
C-31	47X508	500 mmf	Ceramic.....
C-32A			
C-32B	76X4	100 mmf	Dual Ceramic..
C-33	B66403	.04 mf	200 V Tubular.....
C-34	D66502	.005 mf	400 V Tubular.....
C-36	B66402	.004 mf	200 V Tubular.....
C-37	D66104	.1 mf	400 V Tubular.....
C-38	D66203	.02 mf	400 V Tubular.....
C-39			
C-41		Part of C-1 (Gang Condenser)	
C-40	47X471	68 mmf	Ceramic.....

## RESISTORS

		Ohms	Watts	
R-1	B85470	47	0.5	Carbon.....
R-2				
R-3	B85102	1000	0.5	Carbon.....
R-6				
R-9				
R-4				
R-8	B84680	68	0.5	Carbon.....
R-5				
R-12	B84682	6800	0.5	Carbon.....
R-13				
R-7				
R-25	B85473	47 K	0.5	Carbon.....
R-10	B85273	27 K	0.5	Carbon.....
R-11	43X233	3.6	0.5	Wirewound...
R-14				
R-16	B85104	100 K	0.5	Carbon.....
R-15	B85223	22 K	0.5	Carbon.....
R-17	B84221	220	0.5	Carbon.....
R-18				
R-19				
R-24	B85474	470 K	0.5	Carbon.....
R-26				
R-20	B85153	15 K	0.5	Carbon.....
R-21	36X381	.5 meg.		Volume Control
R-23	40X289	3 meg.		Tone Control
R-27	B85106	10 meg.	0.5	Carbon.....
R-28	D84821	820	2.0	Carbon.....
R-29	B85105	1 meg.	0.5	Carbon.....
R-30	B84271	270	0.5	Carbon.....
R-31	B84274	270 K	0.5	Carbon.....

## TRANSFORMERS AND COILS

L-1	35A5	Insulated Choke	.....
L-2	9A2103	Parasitic Choke	.....
L-3	35A9	Insulated Choke	.....
L-4	35A8	Insulated Choke	.....
T-1	9A1972	"B" Range Loop Antenna	.....
T-2	9A2060	1st I-F Trans. (FM)	.....
T-3	9A2062	1st I-F Trans. (AM)	.....
T-4	9A2061	2nd I-F Trans. (FM)	.....
T-5	9A2063	2nd I-F Trans. (AM)	.....
T-6	9A2064	Discriminator Transformer	.....
T-7	9A2065	Oscillator Coil (AM)	.....
T-8	9A2067	Oscillator Coil (FM)	.....
T-9	51X134	Output Transformer	.....
T-10	9A2003	Dipole Antenna	.....
T-11	53X291	Power Transformer	.....
T-12	9A2066	Antenna Coil (FM)	.....

## DIAL AND DRIVE ASSEMBLY

58X730	Dial Glass	.....
15X251	Painter	.....
19X192	"C" Washer (Mtg. Drive Shaft)	.....
6X66	Rubber Grommet	.....
25X1610	Dial Bracket	.....
28X113	Drive Card Tension Spring	.....
7A103	No. 47 Pilot Light	.....
7A215	Pilot Light Socket Assembly	.....
10X38	Drive Cord Assembly	.....
26X510	Drive Shaft	.....

## TYPE G.I. - 28A169 RECORD CHANGER PARTS

G.I. 69-73657	Tone Arm
G.I. 55-73613	Plastic Stabilizer
G.I. 28A755782	Idler Wheel Assembly
G.I. 56-76507	Motor, 3 speed, 60 cycles, 105-125 Volts A.C.
E-V No. 33-4	Crystal Cartridge, complete with needle
	*Needle only

\*When ordering needles, specify part number and letter stamped on Cartridge.

WG&C SERIES 27A96-952

MODELS H-305C8, H-306C8, Ch. V-2137-4



**SPECIFICATIONS**

**FREQUENCY RANGES:**

Amplitude Modulation .....540 to 1600 kc.  
 Frequency Modulation .....88 to 108 mc.

**INTERMEDIATE FREQUENCIES:**

Amplitude Modulation .....455 kc.  
 Frequency Modulation .....10.7 mc.

**TUBE COMPLEMENT:**

1 12AT7 .....R-F Amp. and Mixer (FM)  
 1 6BE6 .....H-F Osc. (AM/FM) and  
 converter (AM)  
 1 6BA6 .....I-F Amp.  
 1 6BA6 .....I-F Driver (FM)

1 6AL5 .....Ratio Det. (FM)  
 1 6AV6 .....Det. & AVC (AM) and A-F Amp.  
 1 6V6GT .....Output Amp.  
 1 5Y3GT .....Rectifier

**PILOT LAMPS:**

2 Westinghouse No. 44.....6.3 v., 0.25 a.

**POWER OUTPUT:**

Undistorted .....3.5 watts  
 Maximum .....6 watts

**LOUDSPEAKER:** .....12" P.M.

**OPERATING**

**VOLTAGE:**.....105 to 120 volts, 60 cycles A-C

**POWER CONSUMPTION:** .....110 watts

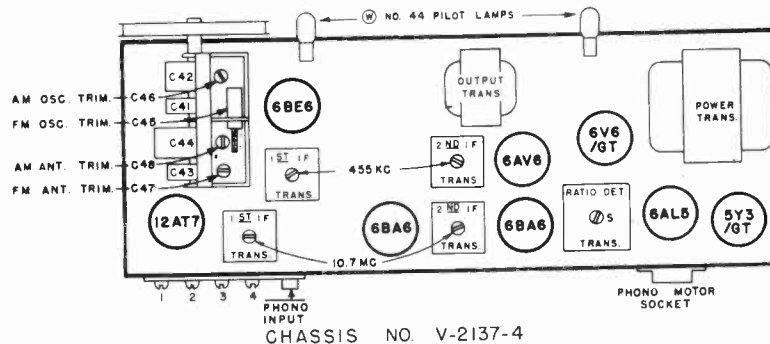
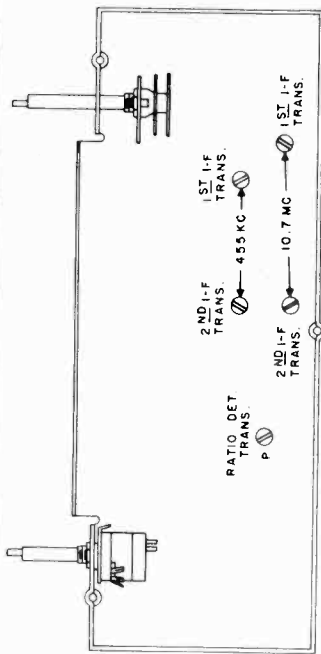


FIG. 1—TOP VIEW

MODELS H-305C8, H-306C8, Ch. V-2137-4



CHASSIS NO. V-2137-4

FIG. 2—BOTTOM VIEW

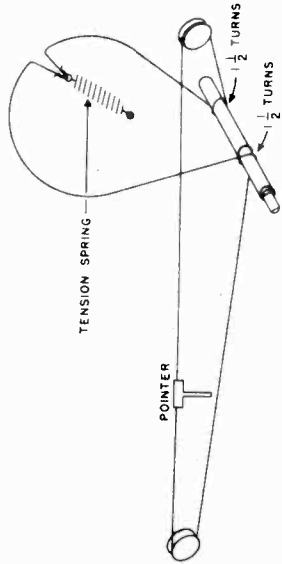
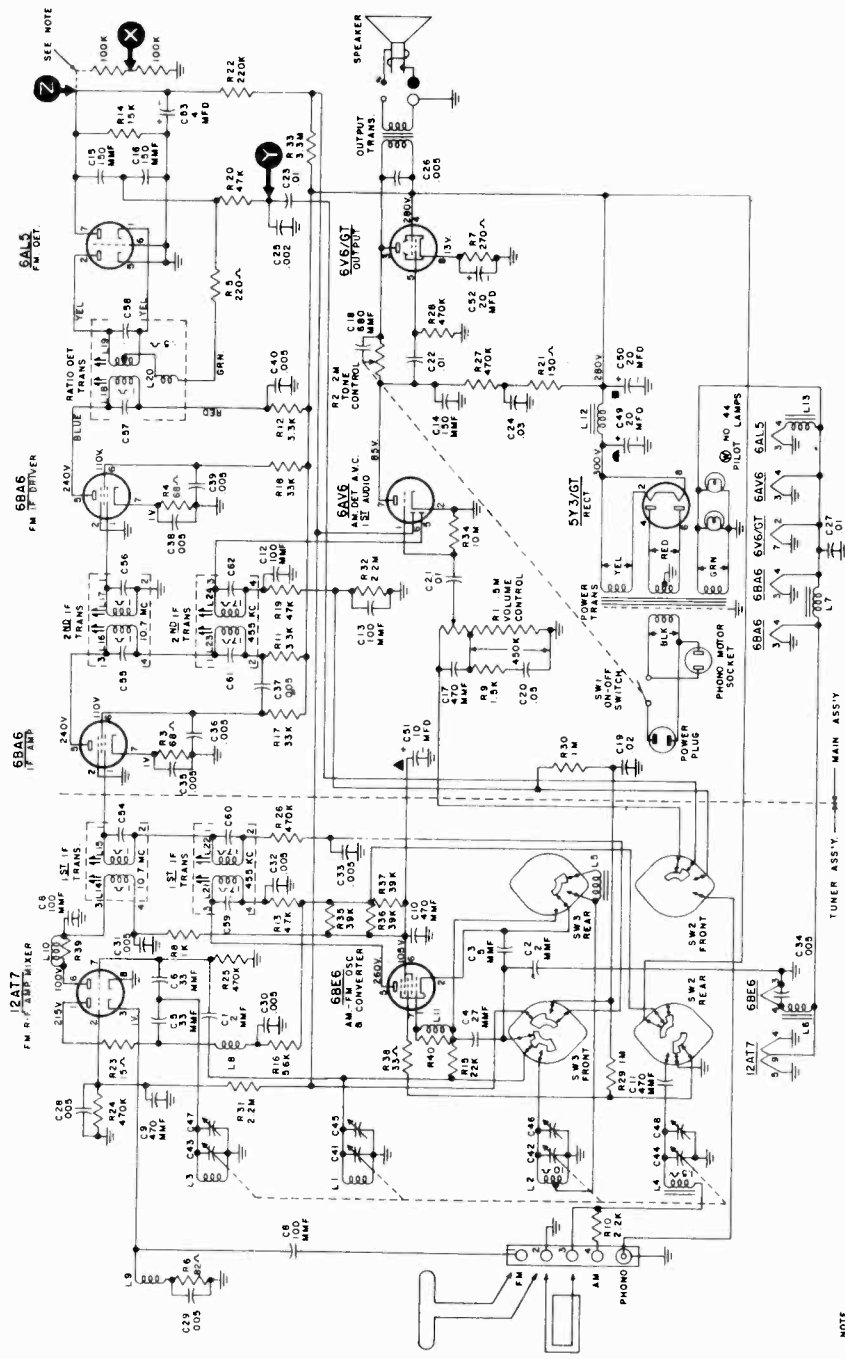


FIG. 3—DIAL DRIVE



NOTE  
 1. SELECTOR SWITCH SW2 AND SW3 ARE SHOWN IN EXTREME COUNTER CLOCKWISE POSITION OR FM BAND  
 FIRST POSITION CLOCKWISE IS PHONO.  
 SECOND POSITION CLOCKWISE IS PHONO.  
 2. TO BE INSTALLED FOR ALIGNMENT ONLY.  
 3. ALL VOLTAGES MEASURED FROM CHASSIS (GND.) USING A 20,000 OHM/VOLT METER. LINE VOLTAGE SET AT 117 V.A.C. VOLTAGES SHOULD BE AS SHOWN ± 20 PER CENT.

**ALIGNMENT**

**BROADCAST BAND**

Connect an output meter across the speaker voice coil.

While making the following adjustments, keep the volume control set for maximum output, the tone control set for maximum treble, and the signal generator output attenuated to avoid A.V.C. action.

Step	Connect Signal Generator to—	Signal Generator Frequency	Radio Dial Setting	Adjust
1	Set the band switch to AM.			
2	Stator of tuning capacitor (C44) through a 0.1 mfd capacitor	455 kc.	maximum capacity	455 kc. pri. and sec. of 1st and 2nd I-F trans. for max. output
<i>NOTE: If the I-F transformers are badly mis-aligned, it may be impossible to obtain sufficient output using the above system. In this event, it will be necessary to align each transformer separately. Start with the last I-F transformer and work forward, connecting the signal generator to the control grid of the tube preceding the transformer under alignment.</i>				
3	Radiated signal (no actual connection)	1600 kc.	1600 kc.	AM osc. trimmer (C46) for max. output
4	Radiated signal (no actual connection)	1400 kc.	tune to signal	AM ant. trimmer (C48) for max. output (rock-in adjustment)

**FM BAND**

Do not align the FM circuits until all AM adjustments have been completed.

Step	Connect Signal Generator to—	Signal Generator Frequency	Radio Dial Setting	Adjust
1	Set the band switch to FM.			
2	Connect two 100,000 ohm resistors (the resistances must be equal within 5 percent) between pin No. 7 of the 6AL5 tube and ground as shown on the schematic diagram.			
3	Connect a V. T. V. M. between points "X" and "Y" (see schematic diagram).			
4	Stator of FM ant. section (C43) on tuning capacitor through a .01 mfd mica capacitor	10.7 mc.	maximum capacity	Sec. of ratio det. trans. for zero (use medium strength signal)
5	Connect the V. T. V. M. between point "Z" and ground.			
6	Same as step 4	10.7 mc.	maximum capacity	Pri. of ratio det. trans. and pri. and sec. of 10.7 mc. 1st and 2nd I-F trans. for max.
<i>NOTE: The pri. of the ratio det. trans. peaks in two places. Use the peak with the slug farthest out.</i>				
7	Reconnect the V. T. V. M. between points "X" and "Y", and increase the signal strength 10 times.			
8	Same as step 4	10.7 mc.	maximum capacity	Recheck sec. of ratio det. trans. for zero voltage
9	Reconnect the V. T. V. M. between point "Z" and ground.			
10	Same as step 4	10.7 mc.	maximum capacity	Pri. of ratio det. trans. for maximum voltage
11	Remove the two 100,000 ohm resistors that were inserted in step 2.			
12	FM ant. terminal through a 300 ohm non-inductive resistor	105 mc.	105 mc.	FM osc. trimmer (C45) for maximum output
13	Same as step 12	105 mc.	105 mc.	FM ant. trimmer (C47) for maximum output

**PARTS LIST FOR MODELS H-305C8 AND H-306C8**

When ordering parts, specify model number of set in addition to part number and description of part.

**CABINET AND MISCELLANEOUS PARTS**

Part No.	Description	Part No.	Description
V-5986-4	Antenna assembly, AM loop ....	V-9426-2	Cover, back (Mahogany) .....
V-5982-2	Antenna assembly, FM dipole ..	V-9426-3	Cover, back (Blonde) .....
V-6120	Background, dial .....	V-9433	Dial .....
V-1196-1	Cabinet (Mahogany) .....	V-8283	Doors, matched pair—completely finished less hardware (Mahogany) .....
V-1196-2	Cabinet (Blonde) .....	V-8285	Doors, matched pair—completely finished less hardware (Blonde) .....
V-4965-2	Cable, phono .....	V-8284	Drawer, record changer—completely finished less hardware (Mahogany) .....
V-5860-3	Cable, assembly, speaker .....		
V-5426	Clip, I-F mounting .....		
V-9075-1	Clip, spring (Mahogany) .....		
V-9075-2	Clip, spring (Blonde) .....		
V-4349-1	Cord, A-C power .....		
V-4966-2	Cord, A-C (record changer) .....		
V-3219S-1	Cord, dial drive .....		



MODELS H-30508, H-30608, Ch. V-2137-4

PARTS LIST FOR MODELS H-305C8 AND H-306C8 (Continued)

Part No.	Description	Part No.	Description
V-8286	Drawer, record changer—completely finished less hardware (Blonde)	V-9252-1	Nameplate, Westinghouse
V-9428-1	Escutcheon	V-9429-2	Plate, front glass
V-4643	Eyelet, chassis mounting	V-9442	Pointer, dial
V-4902	Slide, furniture	V-3166	Pulley
V-9425-1	Grille assembly, panel (Mahogany)	V-6127	Sleeve, dial drive
V-9425-2	Grille assembly, panel (Blonde)	V-3353-11	Slide mechanism, left hand
V-4852	Grommet, chassis mounting	V-3353-12	Slide mechanism, right hand
V-4644	Grommet, chassis shock	V-6072-1	Socket, miniature wafer (12AT7)
V-9091-1	Hinge, L. H. (Mahogany)	V-6163-1	Socket, miniature wafer (6BE6)
V-9091-2	Hinge, R. H. (Mahogany)	V-4195	Socket, molded octal (6V6GT, 5Y3GT)
V-9091-3	Hinge, L. H. (Blonde)	V-5405	Socket, molded (Phono A-C)
V-9091-4	Hinge, R. H. (Blonde)	V-5673	Socket, miniature wafer (unshielded) (6AV6)
V-6146-1	Knob, on-off-tone	V-6295-1	Socket, miniature wafer (6BA6, 6AL5)
V-6146-2	Knob, band	V-9434-2	Socket, pilot lamp
V-5301-3	Knob, door (Mahogany)	V-9431	Speaker, 12" PM
V-5301-2	Knob, door (Blonde)	V-3248	Spring, dial
V-9104-1	Knob, volume (rear)	V-9076-1	Strike, ball head (Mahogany)
V-9104-2	Knob, tuning (rear)	V-9076-2	Strike, ball head (Blonde)
		V-6136	Terminal board, phono, ant., gnd.

V-2137-4 CHASSIS ELECTRICAL PARTS

R2CC30CK020D	Capacitor, 2 mmf (C1)	RC30AE332K	Resistor, 3300 ohms 1 w. (R11)
R2CC30UK020D	Capacitor, 2 mmf (C2)		R12)
R2CC30CK050D	Capacitor, 5 mmf (C3)	RC10AE472K	Resistor, 4700 ohms 1/4 w. (R13)
R3CC30CK270K	Capacitor, 27 mmf (C4)	RC10AE153K	Resistor, 15,000 ohms 1/4 w. (R14)
R3CC26CK330M	Capacitor, 33 mmf (C5, C6)		
R3CC30SL101M	Capacitor, 100 mmf (C7)	RC10AE223K	Resistor, 22,000 ohms 1/4 w. (R15)
R3CC30SL101J	Capacitor, 100 mmf (C8)		
R5CC21Z471M	Capacitor, 470 mmf (C9, C10, C11)	RC30AE562K	Resistor, 5600 ohms 1 w. (R16)
		RC30AE333K	Resistor, 33,000 ohms 1 w. (R17, R18)
RCM20A101M	Capacitor, 100 mmf (C12, C13)	RC10AE473M	Resistor, 47,000 ohms 1/4 w. (R19, R20)
RCM20A151M	Capacitor, 150 mmf (C14)		
RCM20A151J	Capacitor, 150 mmf (C15, C16)	RC10AE154M	Resistor, 150 ohms 1/4 w. (R21)
RCM20A471M	Capacitor, 470 mmf (C17)	RC10AE224M	Resistor, 220,000 ohms 1/4 w. (R22)
RCM20A681M	Capacitor, 680 mmf (C18)		
RCP10W2203A	Capacitor, .02 mfd. 200 v. (C19)	RC10AE150M	Resistor, 15 ohms 1/4 w. (R23)
RCP10W2503A	Capacitor, .05 mfd. 200 v. (C20)	RC10AE474M	Resistor, 470,000 ohms 1/4 w. (R24, R25, R26, R27, R28)
RCP10W4103A	Capacitor, .01 mfd. 400 v. (C21, C22, C23)		
RCP10W4303A	Capacitor, .03 mfd. 400 v. (C24)	RC10AE105M	Resistor, 1.0 megohms 1/4 w. (R29, R30)
RCP10W6202A	Capacitor, .002 mfd. 600 v. (C25)		
RCP10M6502A	Capacitor, .005 mfd. 600 v. (C26)	RC10AE225M	Resistor, 2.2 megohms 1/4 w. (R31, R32)
V-5040-13	Capacitor, .01 mfd. 200 v. molded paper (C27)	RC10AE335M	Resistor, 3.3 megohms 1/4 w. (R33)
V-5596	Capacitor, .005 min. mfd. (C28 to C40 incl.)	RC10AE106M	Resistor, 10.0 megohms 1/4 w. (R34)
V-6137	Capacitor, variable (C41 to C48 incl.)	RC30AE393K	Resistor, 39,000 ohms 1 w. (R35, R36, R37)
V-6121	Capacitor, electrolytic, 20 mfd. 400 v. (C49), 20 mfd. 400 v. (C50), 10 mfd. 350 v. (C51), 20 mfd. 25 v. (C52)	RC10AE330K	Resistor, 33 ohms 1/4 w. (R38)
V-6638	Capacitor, electrolytic, 4 mfd. 150 v. (C53)	V-4886-2	Reactor, R-F 1.1 microhenries (L5, L6, L7)
V-6157	Coil, ant. loading (L4)	V-4886-4	Reactor, R-F (L8)
V-6164	Coil, AM oscillator (L2)	V-4886-10	Reactor, R-F (L9)
V-6138	Coil, FM oscillator (L1)	V-4886-6	Reactor, R-F (L10, R39)
V-6139	Coil, FM antenna (L3)	V-4886-7	Reactor, R-F (L11, R40)
V-6122	Control, vol.-tone-off-on (R1, R2, SW1)	V-6161	Reactor, filter choke (L12)
No. 44	Lamp, pilot	V-4886-1	Reactor, R-F 14 microhenries (L13)
RC10AE680K	Resistor, 68 ohms 1/4 w. (R3, R4)	V-6538	Switch, selector (SW2, SW3)
RC10AE221M	Resistor, 220 ohms 1/4 w. (R5)	V-6131	Transformer, power
RC10AE820K	Resistor, 82 ohms 1/4 w. (R6)	V-5798	Transformer, audio output
RC30AE271K	Resistor, 270 ohms 1 w. (R7)	V-6142	Transformer, FM 1st I-F (L14, L15, C54)
RC10AE102K	Resistor, 1000 ohms 1/4 w. (R8)	V-6129	Transformer, FM 2nd I-F (L16, L17, C55, C56)
RC10AE152M	Resistor, 1500 ohms 1/4 w. (R9)	V-6128	Transformer, ratio detector L18, L19, L20, C57, C58)
RC10AE222K	Resistor, 2200 ohms 1/4 w. (R10)	V-6130	Transformer, AM 1st and 2nd I-F (L21, L22, C59, C60, L23, L24, C61, C62)

MODELS H-307T7, H-308T7, Ch. V-2136

**WARNING**

The chassis of this receiver is connected directly to one side of the power line. When making repairs or adjustments, it is recommended that the chassis be isolated from the line by means of an isolation transformer. Otherwise, *serious shock may result* if the radio chassis and ground are contacted at the same time.

**ANTENNA INFORMATION**

An external AM antenna can be coupled to the set by taping the lead-in wire to the outside of the rear cover as shown in Fig. 3. The wire should be dressed in the position shown and can be held in place with adhesive tape or other similar material.

The blue wire emerging from the hole in the rear cover is a "line" antenna for FM reception. It should be connected to the left antenna terminal as shown in Fig. 3. If an external FM antenna is to be used, disconnect the blue wire and connect the transmission line to the two terminals.



**MODELS H-307T7 AND H-308T7**  
(BROWN) (IVORY)

**SERVICE NOTES**

**SPECIFICATIONS**

<b>FREQUENCY RANGES:</b>	1 12AL5	Ratio Det. (FM)
Amplitude Modulation	1 12AV6	Det. and AVC (AM) and A-F Amp.
Frequency Modulation	1 50C5	Output Amp.
<b>INTERMEDIATE FREQUENCIES:</b>	<b>POWER OUTPUT:</b>	
Amplitude Modulation	Undistorted	1.0 watts
Frequency Modulation	Maximum	1.9 watts
<b>TUBE COMPLEMENT:</b>	<b>LOUDSPEAKER:</b>	5 1/4" PM
1 12AT7	<b>OPERATING</b>	
1 12BE6	<b>VOLTAGE:</b>	117 volts, DC or 60 cycles AC
1 12BA6	<b>POWER CONSUMPTION:</b>	35 watts
1 6BJ6		

MODELS H-307T7, H-308T7, Ch. V-2136

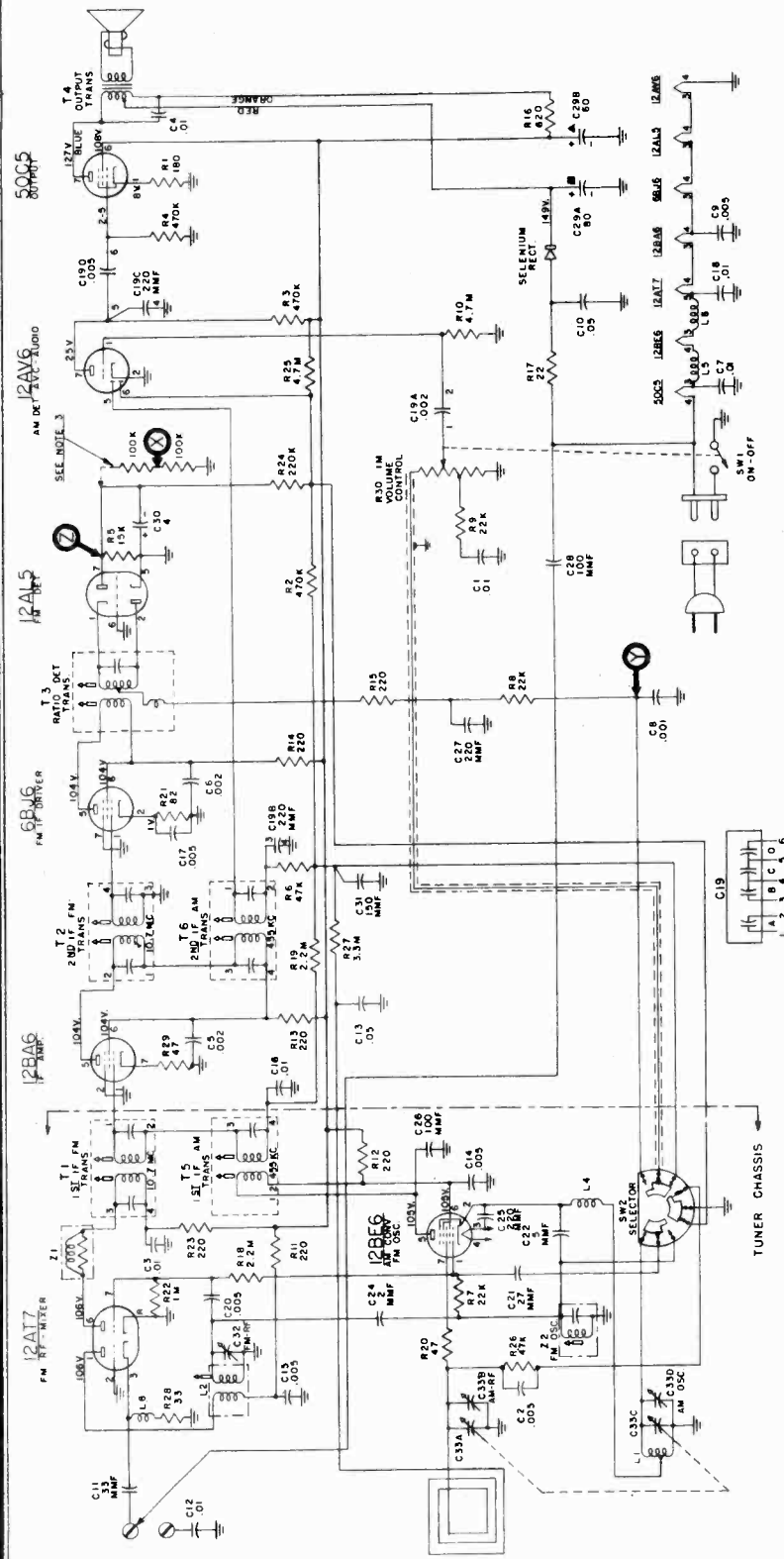


FIG. 1—SCHEMATIC DIAGRAM OF V-2136 CHASSIS

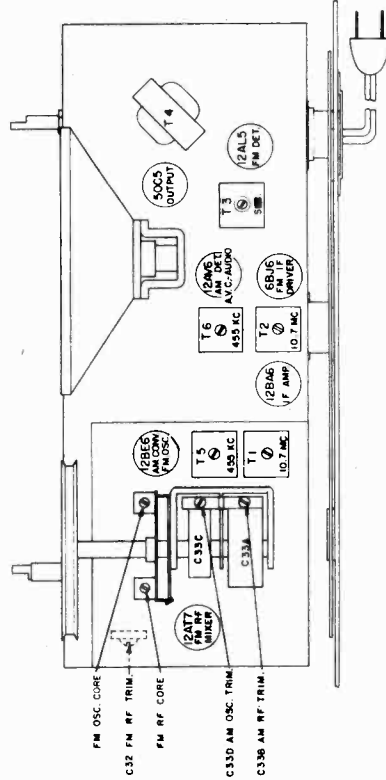


FIG. 2—TOP VIEW OF CHASSIS

- NOTES:
1. SELECTOR SWITCH SW2 IS SHOWN IN EXTREME CLOCKWISE POSITION OR AM BAND. EXTREME COUNTER CLOCKWISE POSITION IS FM BAND.
  2. TRIMMER CAPACITORS C32 THROUGH C36 SHOULD BE A 20,000 OHM/VOLT METER. LINE VOLTAGE SET AT 117V A.C. VOLTAGES SHOULD BE AS SHOWN ± 20 PER CENT.
  3. TO BE INSTALLED FOR ALIGNMENT ONLY.

MODELS H-307T7, H-308T7, Ch. V-2136

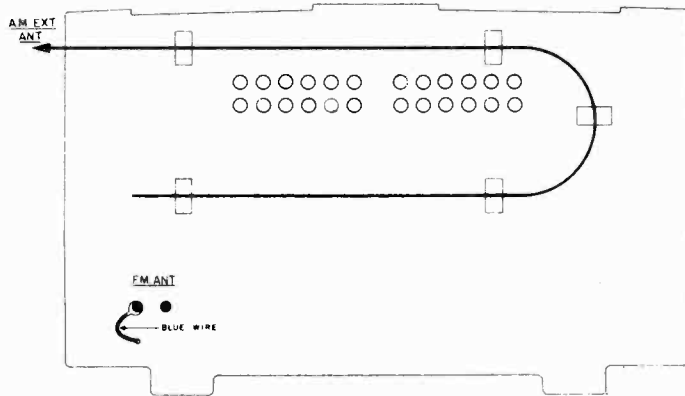


FIG. 3—ANTENNA COUPLING METHOD

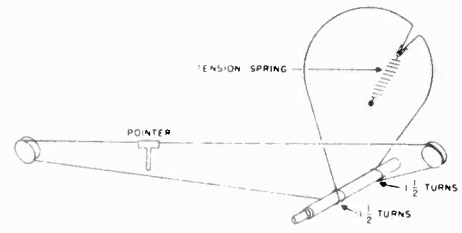


FIG. 4—DIAL DRIVE

### ALIGNMENT BROADCAST BAND

Connect an output meter across the speaker voice coil.

While making the following adjustments, keep the volume control set for maximum output and the signal generator output attenuated to avoid AVC action.

Check the dial pointer position by meshing the tuning capacitor plates completely and seeing that the dial pointer is set on the end mark of the dial scale.

Step	Connect Signal Generator to—	Signal Generator Frequency	Radio Dial Setting	Adjust
1	Set the band switch to AM			
2	Stator of tuning capacitor (C33A) through a 0.1 mfd capacitor	455 kc.	minimum capacity	Pri. and sec. of T6 and T5 for max. output in order given
<i>NOTE: If the I-F transformers are badly mis-aligned, it may be impossible to obtain sufficient output using the above system. In this event, it will be necessary to align each transformer separately. Start with the last I-F transformer and work forward, connecting the signal generator to the control grid of the tube preceding the transformer under alignment.</i>				
3	Radiated signal (no actual connection)	1615 kc.	minimum capacity	AM osc. trimmer (C33D) for max. output
4	Radiated signal (no actual connection)	1400 kc.	tune to signal	AM R-F trimmer (C33B) for max. output (rock-in adjustment)

### FM BAND

Do not align the FM circuits until all AM adjustments have been completed.

Step	Connect Signal Generator to—	Signal Generator Frequency	Radio Dial Setting	Adjust
1	Set the band switch to FM.			
2	Connect two 100,000 ohm resistors (the resistances must be equal within 5 per cent) between pin No. 7 of the 12AL5 tube and ground as shown on the schematic diagram.			
3	Connect a V.T.V.M. between points "X" and "Y" (see schematic diagram).			
4	Pin No. 7 of 12AT7 through a .01 mfd mica capacitor	10.7 mc.	minimum capacity	Sec. of T3 for zero (use medium strength signal)
5	Connect the V.T.V.M. between point "Z" and ground.			
6	Same as step 4	10.7 mc.	minimum capacity	Pri. of T3 and pri. and sec. of T1 and T2 for max.
7	Reconnect the V.T.V.M. between points "X" and "Y" and increase the signal strength 10 times.			
8	Same as step 4	10.7 mc.	minimum capacity	Recheck sec. of T3 for zero voltage
9	Reconnect the V.T.V.M. between point "Z" and ground			
10	Same as step 4	10.7 mc.	minimum capacity	Pri. of T3 for maximum voltage
11	Remove the two 100,000 ohm resistors that were inserted in step 2.			
12	FM ant. terminal through a 300 ohm non-inductive resistor	98 mc.	98 mc.	FM osc. core for maximum voltage
13	Same as step 12	98 mc.	98 mc.	FM R-F trimmer (C32) for maximum voltage
14	Same as step 12	105 mc.	tune to signal	FM R-F core for maximum voltage
15	Same as step 12	90 mc.	tune to signal	FM R-F trimmer (C32) for maximum voltage (rock-in)
16	Recheck steps 14 and 15 for tracking.			

MODELS H-307T7, H-308T7, Ch. V-2136

**PARTS LIST FOR MODELS H-307T7 AND H-308T7**

When ordering parts, specify model number of set in addition to part number and description of part.

**CABINET AND MISCELLANEOUS**

Part No.	Description	Part No.	Description
V-6120-1	Background, dial .....	V-9506-1	Nameplate, Westinghouse .....
V-1199-2	Cabinet (brown) .....	V-9661	Plug, power (for interlock) .....
V-1199-3	Cabinet (ivory) .....	V-9639-1	Pointer .....
V-5426	Clip, I-F mounting .....	V-9678-2	Pulley, gang .....
V-3219S-1	Cord, dial drive .....	V-3166S	Pulley, dial cord .....
V-9636-1	Cover assembly, back .....	V-9655	Shell, interlock .....
V-9651-1	Cover, back .....	V-9654	Socket, interlock .....
V-9637-1	Foot, mounting .....	V-9641	Speaker, 5 1/4 PM .....
V-6146-11	Knob, off-on, volume, front (ivory)	V-3248S	Spring, dial drive .....
V-6146-5	Knob, off-on, volume, front (brown)	V-5421-5	Washer, felt (knobs) .....
V-6146-10	Knob, band (ivory) .....	V-4292-1	Socket, miniature molded (50C5) .....
V-6146-2	Knob, band (brown) .....	V-6878-2	Socket, miniature wafer (12BA6, 6BJ6, 12AL5, 12AV6) .....
V-9104-3	Knob, off-on, volume (rear) .....	V-5556-2	Socket, miniature (12AT7) .....
V-9104-2	Knob, tuning (rear) .....	V-4292S-2	Socket, miniature molded (12BE6) .....
V-9653	Loop, antenna .....		

**V-2136 CHASSIS**

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
C1	RCP10W2103M	Capacitor, .01 mfd 200 v.		V-9640	Rectifier, selenium .....
C2	V-5596	Capacitor, .005 mfd .....	R1	RC30AE181K	Resistor, 180 ohms 1 w. ....
C3	RCP10W4103M	Capacitor, .01 mfd 400 v.	R2	RC20AE474M	Resistor, 470,000 ohms 1/2 w. ....
C4	RCP10W4103M	Capacitor, .01 mfd 400 v.	R3	RC20AE474M	Resistor, 470,000 ohms 1/2 w. ....
C5	RCP10W6202M	Capacitor, .002 mfd 600 v.	R4	RC20AE474M	Resistor, 470,000 ohms 1/2 w. ....
C6	RCP10W6202M	Capacitor, .002 mfd 600 v.	R5	RC20AE153K	Resistor, 15,000 ohms 1/2 w. ....
C7	RCP10W2103M	Capacitor, .01 mfd 200 v.	R6	RC20AE473M	Resistor, 47,000 ohms 1/2 w. ....
C8	RCP10W6102M	Capacitor, .001 mfd 600 v.	R7	RC20AE223M	Resistor, 22,000 ohms 1/2 w. ....
C9	V-5596	Capacitor, .005 mfd .....	R8	RC20AE223M	Resistor, 22,000 ohms 1/2 w. ....
C10	V-6023-4503M	Capacitor, .05 mfd 400 v.	R9	RC20AE223M	Resistor, 22,000 ohms 1/2 w. ....
C11	R3CC30SL330K	Capacitor, 33 mmf .....	R10	RC20AE475M	Resistor, 4.7 megohms 1/2 w. ....
C12	RCP10W2103M	Capacitor, .01 mfd 200 v.	R11	RC20AE221M	Resistor, 220 ohms 1/2 w. ....
C13	RCP10W2503M	Capacitor, .05 mfd 200 v.	R12	RC20AE221M	Resistor, 220 ohms 1/2 w. ....
C14	V-5596	Capacitor, .005 mfd .....	R13	RC20AE221M	Resistor, 220 ohms 1/2 w. ....
C15	V-5596	Capacitor, .005 mfd .....	R14	RC20AE221M	Resistor, 220 ohms 1/2 w. ....
C16	RCP10W2103M	Capacitor, .01 mfd 200 v.	R15	RC20AE221M	Resistor, 220 ohms 1/2 w. ....
C17	V-5596	Capacitor, .005 mfd .....	R16	V-6984-10	Resistor, 820 ohms 5 w. ....
C18	RCP10W2103M	Capacitor, .01 mfd 200 v.	R17	RC30AE220K	Resistor, 22 ohms 1 w. ....
C19	V-9634-1	Capacitor, multiple ceramic .002 mfd, 220 mmf, 220 mmf, .005 mfd. ....	R18	RC20AE225M	Resistor, 2.2 megohms 1/2 w. ....
C20	V-5596	Capacitor, .005 mfd .....	R19	RC20AE225M	Resistor, 2.2 megohms 1/2 w. ....
C21	R2CC30UK270K	Capacitor, 27 mmf .....	R20	RC20AE470M	Resistor, 47 ohms 1/2 w. ....
C22	R2CC30UK050D	Capacitor, 5 mmf .....	R21	RC20AE820K	Resistor, 82 ohms 1/2 w. ....
C24	R2CC30CK020D	Capacitor, 2 mmf .....	R22	RC20AE105M	Resistor, 1 megohm 1/2 w. ....
C25	R5CC20ZY221M	Capacitor, 220 mmf .....	R23	RC20AE221M	Resistor, 220 ohms 1/2 w. ....
C26	RCM20D101J	Capacitor, 100 mfd .....	R24	RC20AE224M	Resistor, 220,000 ohms 1/2 w. ....
C27	RCM20A221M	Capacitor, 220 mmf .....	R25	RC20AE475M	Resistor, 4.7 megohms 1/2 w. ....
C28	RCM20A101M	Capacitor, 100 mfd .....	R26	RC20AE473M	Resistor, 47,000 ohms 1/2 w. ....
C29	V-9635	Capacitor, electrolytic, 80 mfd 150 v., 60 mfd 150 v.	R27	RC20AE335M	Resistor, 3.3 meg. 1/2 w. ....
C30	V-4637	Capacitor, electrolytic, 4 mfd 50 v. ....	R28	RC20AE330M	Resistor, 33 ohms 1/2 w. ....
C31	RCM20A151M	Capacitor, 150 mmf .....	R29	RC20AE470M	Resistor, 47 ohms 1/2 w. ....
C32	V-9670	Capacitor, trimmer (F-M—R-F) .....	*R30	V-9673-1 assy	Control, volume 1 megohm (assy consists of R30 and SW1) .....
C33	V-9671	Capacitor, variable tuning (consists of A, B, C and D) .....	*SW1	V-9673-1 assy	Switch, on-off (assy consists of R30 and SW1) .....
L1	V-9672	Coil, A-M osc. ....	SW2	V-9681-1	Switch, selector .....
L2	V-9674	Coil, F-M—R-F .....	T1	V-9688	Transformer, 1st F-M—I-F .....
	V-9676-1	Core, F-M—R-F and osc. tuning .....	T2	V-9642	Transformer, 2nd F-M—I-F .....
L4	V-9099-1	Choke, 1.1 microhenries ....	T3	V-9048	Transformer, ratio detector .....
L5	V-9099-1	Choke, 1.1 microhenries ....	T4	V-9665	Transformer, output .....
L6	V-9099-1	Choke, 1.1 microhenries ....	T5	V-9649-1	Transformer, 1st A-M—I-F .....
L8	V-4886-10	Choke, antenna input .....	T6	V-6130-1	Transformer, 2nd A-M—I-F .....
			Z1	V-4886-6	Choke .....
			Z2	V-9675	Coil and capacitor assy, F-M osc. ....
				V-9676-1	Core, F-M—R-F and osc. tuning .....

\*Sold only as complete assembly.

MODELS H-309P5, H-309P5U, Ch. V-2156



# MODELS H-309P5 AND H-309P5U CHASSIS V-2156 SERVICE NOTES

## SPECIFICATIONS

FREQUENCY RANGE .....540 to 1615 kc.  
 INTERMEDIATE FREQUENCY .....455 kc.  
 TUBE COMPLEMENT:  
 1 1U4 .....R-F Amplifier  
 1 1R5 .....Converter  
 1 1U4 .....1-F Amplifier  
 1 1U5 .....Det., AVC, and 1st A-F Amp.  
 1 3V4 .....Output Amplifier

POWER OUTPUT:  
 Maximum .....0.38 watt  
 Undistorted .....0.18 watt

LOUDSPEAKER .....5¼" PM  
 POWER SUPPLY:  
 Battery Operation—"AB" Battery Pack (9 v. "A"  
 and 90 v. "B")—Eveready 756W, Burgess T6Z60,  
 or Ray-O-Vac AB601  
 Line Operation .....105 to 120 volts, D-C  
 or 50 to 60 cycles A-C

CURRENT CONSUMPTION (Battery Operation):  
 "A" section of "AB" battery .....0.05 amp.  
 "B" section of "AB" battery .....0.16 amp.

POWER CONSUMPTION (Line Operation)....15 watts

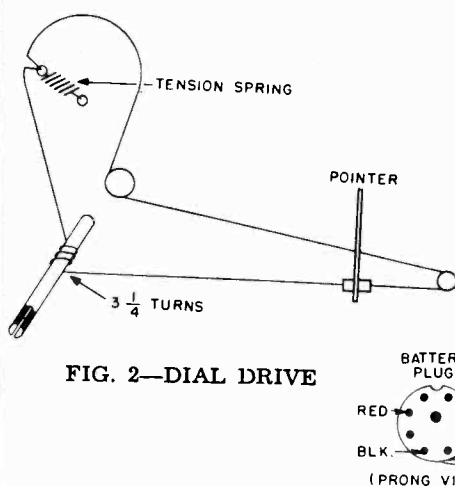


FIG. 2—DIAL DRIVE

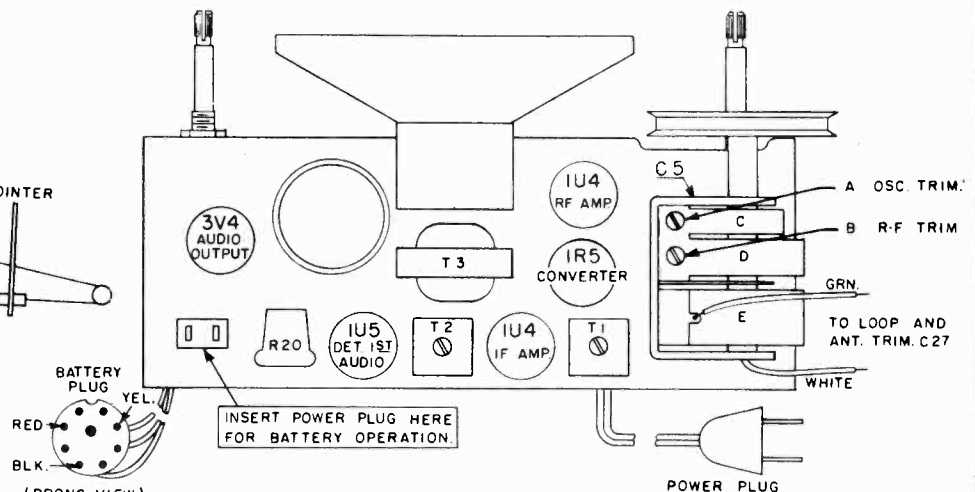
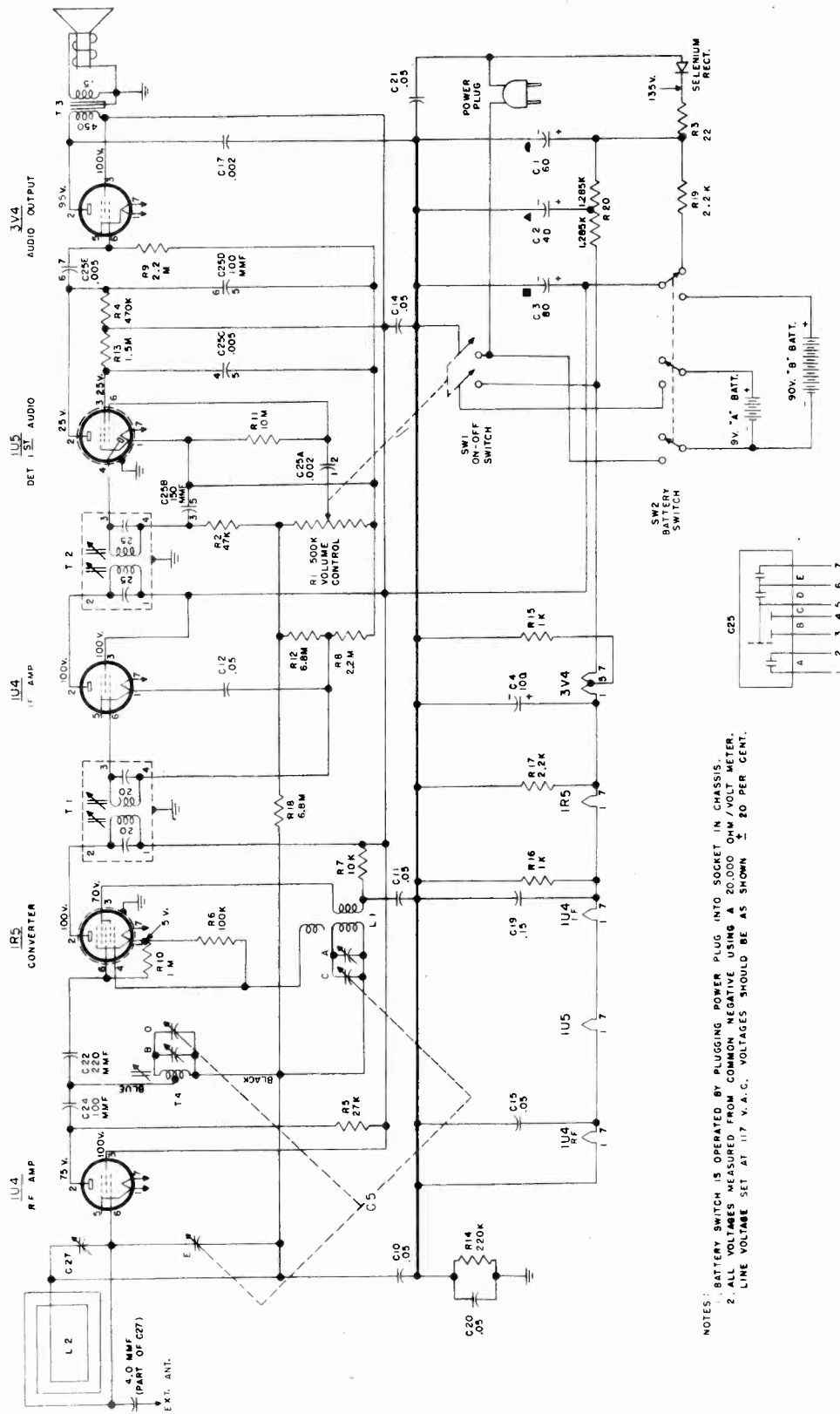


FIG. 3—CHASSIS LAYOUT

MODELS H-309P5, H-309P5U, Ch. V-2156



NOTES:  
 1. BATTERY SWITCH IS OPERATED BY PLUGGING POWER PLUG INTO SOCKET IN CHASSIS.  
 2. ALL VOLTAGES MEASURED FROM COMMON NEGATIVE USING A 20,000 OHM/VOLT METER.  
 LINE VOLTAGE SET AT 117 V.A.C. VOLTAGES SHOULD BE AS SHOWN ± 20 PER CENT.

FIG. 1—SCHEMATIC DIAGRAM OF V-2156 CHASSIS

MODELS H-309P5, H-309P5U, Ch. V-2156

**ALIGNMENT**

It is recommended that the chassis be isolated from the power line by means of an isolation transformer. While making the following adjustments, keep the volume control set for maximum output and the signal generator output attenuated to avoid AVC action.

Step	Connect Signal Generator to—	Signal Generator Frequency	Radio Dial Setting	Adjust for Maximum Output—
1	Pin No. 6 of the 1R5 converter through a 200 mfm capacitor	455 kc.	Minimum capacity	Top and bottom slugs of T2 and T1 in order given *
2	Stator of antenna tuning section of gang (E) through a 200 mfm capacitor	1615 kc.	Minimum capacity	Osc. trimmer (A)
3	Same as step 2	1400 kc.	1400 kc.	R-F trimmer (B)
4	Same as step 2	600 kc.	600 kc.	Slug of R-F trans. (T4)**
5	Recheck steps 3 and 4			
6	Radiated signal	1400 kc.	1400 kc.	Antenna trimmer (C27)

\* It is recommended that a fiber aligning tool that snugly fits the slot in the powdered iron core be used to prevent chipping of the slot.

\*\* A 10/32" Allen wrench can be used to adjust the slug in T4.

**PARTS LIST FOR MODELS H-309P5 AND H-309P5U**

When ordering parts, specify model number of set in addition to part number and description of part.

**CABINET AND MISCELLANEOUS**

Part No.	Description
V-1204-1	Cabinet
V-6554-1	Cable assembly, battery
V-5426	Clip, I-F mounting
V-5684	Clip, tubular (back cover catch)
V-3219S-1	Cord, dial drive
V-4349-6	Cord, Power A-C
V-9699-1	Knob
V-9701	Loop, antenna
V-9697-1	Nameplate, Westinghouse
V-6568-2	Pointer
V-9704-2	Shaft, tuning
V-9706-1	Shield, miniature tube spring (1U5, 1R5)
V-4292S-1	Socket, miniature molded (3V4, 1U4, 1R5, 1U5)
V-9705	Speaker, 5" PM
V-4057	Spring, dial cord
V-5687	Spring, back cover hinge

**V-2156 CHASSIS**

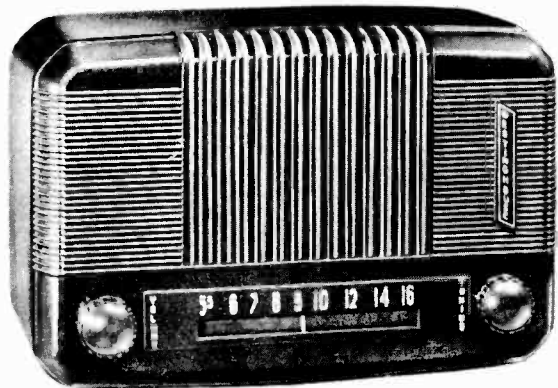
Ref. No.	Part No.	Description
*C1	V-6552-2 assy	Capacitor, electrolytic 60 mfd 150 v. (assy consists of C1, C2, C3 and C4)
*C2	V-6552-2 assy	Capacitor, electrolytic 40 mfd 150 v. (assy consists of C1, C2, C3 and C4)
*C3	V-6552-2 assy	Capacitor, electrolytic 80 mfd 150 v. (assy consists of C1, C2, C3 and C4)
*C4	V-6552-2 assy	Capacitor, electrolytic 100 mfd 25 v. (assy consists of C1, C2, C3 and C4)
C5	V-6556	Capacitor, variable, tuning (consists of A, B, C, D and E)

C10	RCPI0W2503M	Capacitor, .05 mfd
C11	RCPI0W2503M	Capacitor, .05 mfd
C12	RCPI0W2503M	Capacitor, .05 mfd
C14	RCPI0W2503M	Capacitor, .05 mfd
C15	V-6066-2503M	Capacitor, .05 mfd 200 v.
C17	V-6066-4202M	Capacitor, .002 mfd 400 v.
C19	RCPI0W2154M	Capacitor, .15 mfd 200 v.
C20	RCPI0W2503M	Capacitor, .05 mfd
C21	RCPI0W4503M	Capacitor, .05 mfd
C22	RCM20A221M	Capacitor, 220 mfm
C24	RCM20A101M	Capacitor, 100 mfm
C25	V-9703-1	Capacitor, multiple (consists of A, B, C and D)
*C27	V-9701 assy	Capacitor, variable (assy consists of C27 and L2)
L1	V-5661	Coil, osc.
*L2	V-9701 assy	Loop, ant.
*R1	V-5666-5 assy	(assy consists of C27 and L2) Control, volume 500,000 ohms (assy consists of R1 and SW1)
R2	V-6558-1	Rectifier, selenium
R3	RC20AE473M	Resistor, 47,000 ohms 1/2 w.
R4	RC30AE220M	Resistor, 22 ohms 1 w.
R5	RC20AE474M	Resistor, 470,000 ohms 1/2 w.
R6	RC20AE273M	Resistor, 27,000 ohms 1/2 w.
R7	RC20AE104M	Resistor, 100,000 ohms 1/2 w.
R8	RC20AE103M	Resistor, 10,000 ohms 1/2 w.
R9	RC20AE225M	Resistor, 22 megohms 1/2 w.
R10	RC20AE105M	Resistor, 1 megohm 1/2 w.
R11	RC20AE106M	Resistor, 10 megohms 1/2 w.
R12	RC20AE685M	Resistor, 6.8 megohms 1/2 w.
R13	RC20AE155M	Resistor, 1.5 megohms 1/2 w.
R14	RC20AE224M	Resistor, 220,000 ohms 1/2 w.
R15	RC20AE102K	Resistor, 1000 ohms 1/2 w.
R16	RC20AE102K	Resistor, 1000 ohms 1/2 w.
R17	RC20AE222K	Resistor, 2200 ohms 1/2 w.
R18	RC20AE685M	Resistor, 6.8 megohms 1/2 w.
R19	RC30AE222K	Resistor, 2200 ohms 1 w.
R20	V-9246-1	Resistor, ballast 2570 ohms
*SW1	V-5666-5 assy	Switch, on-off (assy consists of SW1 and R1)
SW2	V-6565	Switch, line-battery
T1	V-6972-5	Transformer, 1st I-F
T2	V-6972-6	Transformer, 2nd I-F
T3	V-6567	Transformer, audio
T4	V-6561	Transformer, RF

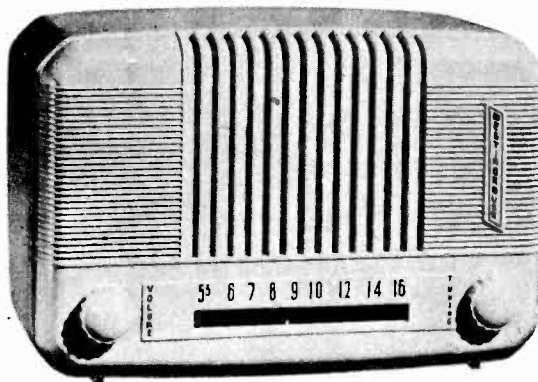
\*Sold only as complete assembly.



MODELS H-310T5, H-311T5, Ch. V-2161; H-310T5U, H-311T5U, Ch. V-2161U



H-310T5  
H-310T5U  
(BROWN)



H-311T5  
H-311T5U  
(IVORY)

## SERVICE NOTES

### SPECIFICATIONS

FREQUENCY RANGE: ..... 540 to 1615 kc.

INTERMEDIATE FREQUENCY: ..... 455 kc.

TUBE COMPLEMENT:

- 1 12BE6 ..... Converter
- 1 12BA6 ..... I-F Amp.
- 1 12AV6 ..... Det., AVC, and 1st A-F Amp.
- 1 50C5 ..... Output Amp.
- 1 35W4 ..... Rectifier

POWER OUTPUT:

- Undistorted ..... 0.9 watt
- Maximum ..... 1.5 watts

LOUDSPEAKER: ..... 4" P.M.

OPERATING VOLTAGE: ..... 105 to 120 volts, 50-60 cycles A-C or D-C

POWER CONSUMPTION: ..... 35 watts

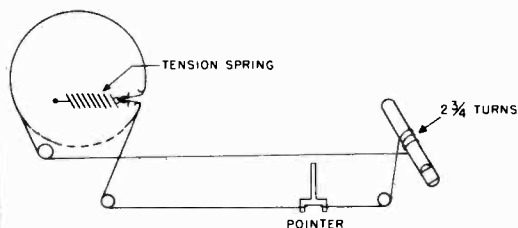


FIG. 1—DIAL DRIVE

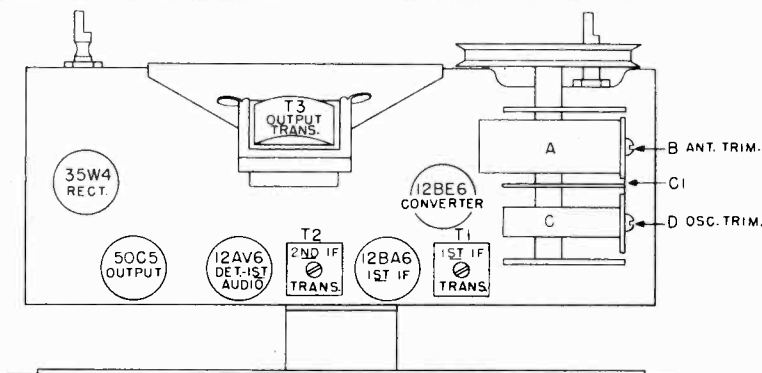


FIG. 2—CHASSIS LAYOUT

MODELS H-310T5, H-311T5,  
Ch. V-2161; H-310T5U,  
H-311T5U, Ch. V-2161U

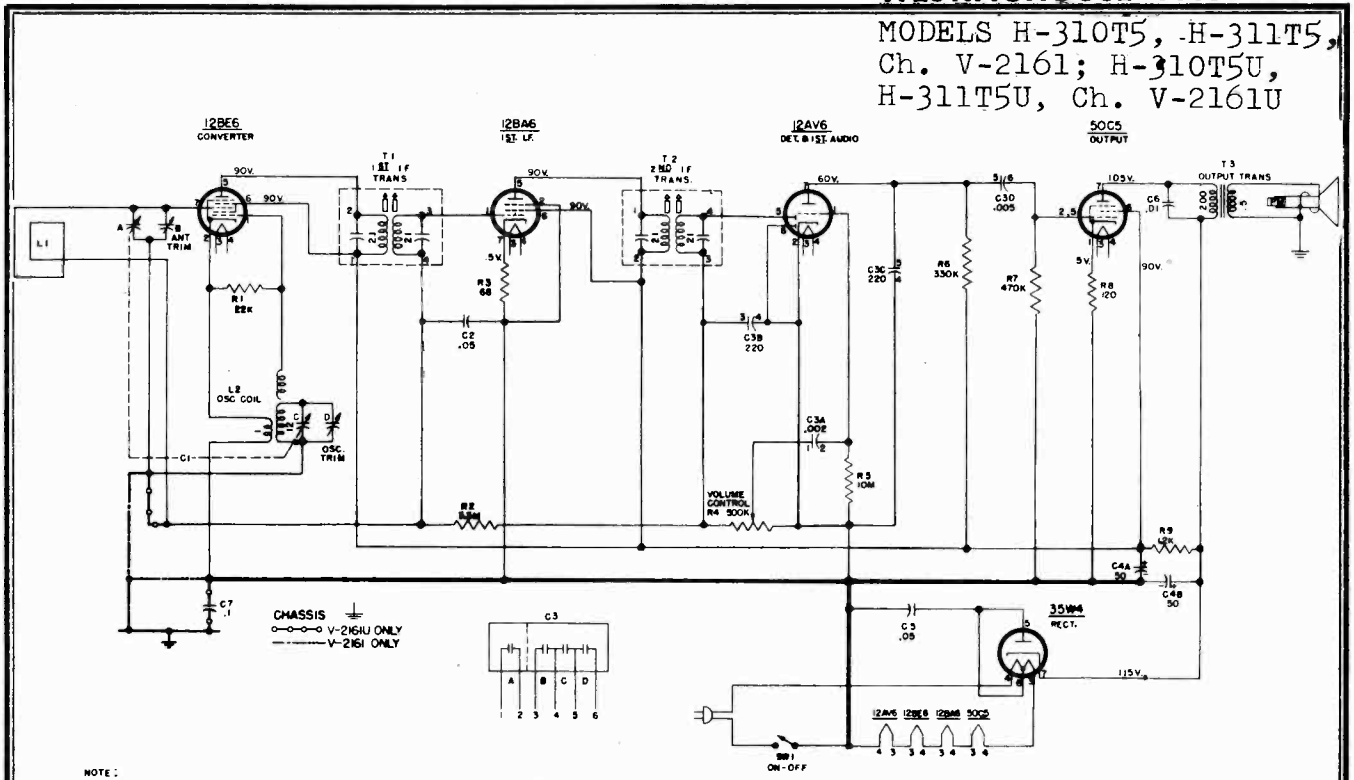


FIG. 3—SCHEMATIC DIAGRAM OF V-2161 AND V-2161U CHASSIS

**WARNING:** The V-2161 chassis is connected directly to one side of the power line. When making repairs or adjustments, it is recommended that the chassis be isolated from the line by means of an isolation transformer. Otherwise serious shock may result if the radio chassis and ground are contacted at the same time.

**ALIGNMENT**

It is recommended that the chassis be isolated from the power line by means of an isolation transformer. Make certain that the dial pointer is correctly positioned. When the gang is completely closed, the pointer should be over the small bump near the left end of the dial background. While making the following adjustments, keep the volume control set for maximum output and the signal generator output attenuated to avoid AVC action.

Step	Connect Signal Generator to —	Signal Generator Frequency	Radio Dial	Adjust for Maximum Output—
1	Stator of R-F tuning capacitor (A) through a 0.1 mfd capacitor	455 kc.	Minimum capacity	Top and bottom slugs in 2nd and 1st I-F trans. in order given *
2	Same as step 1	1615 kc.	Minimum capacity	Osc. trimmer (D)
3	Radiated Signal	1400 kc.	1400 kc.	Ant. trimmer (B)

\* It is recommended that a fiber aligning tool that snugly fits the slot in the powdered iron core be used to prevent chipping of the slot.

MODELS H-310T5, H-311T5,  
Ch. V-2161; H-310T5U,  
H-311T5U, Ch. V-2161U

**PARTS LIST FOR MODELS  
H-310T5, H-311T5, H-310T5U, AND H-311T5U**

When ordering parts, specify model number of set in addition to part number and description of part.

**CABINET AND ACCESSORIES**

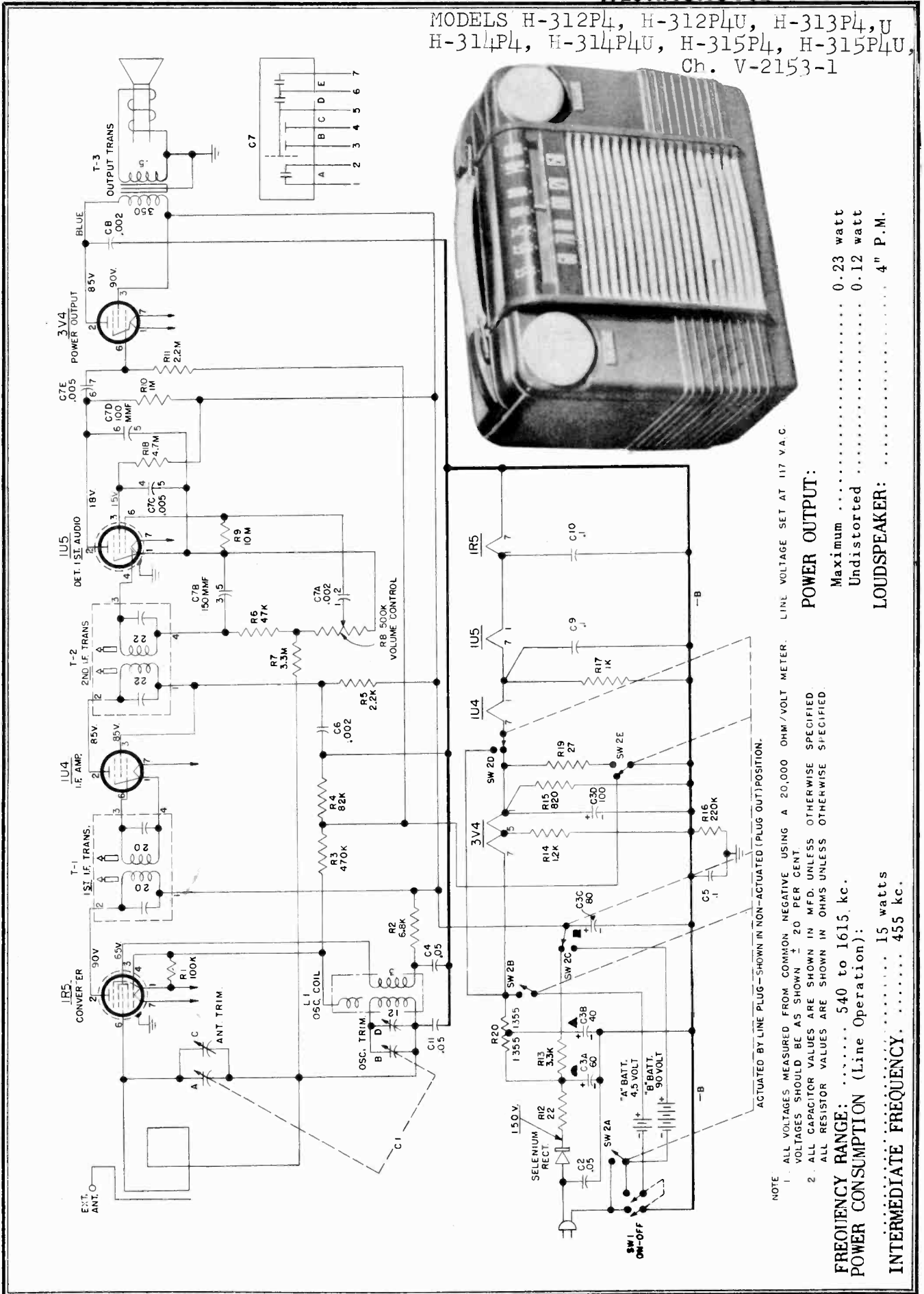
Part No.	Description
V-9746-1	Baffle and grille cloth assembly (ivory) .....
V-1207-1	Cabinet (brown) .....
V-1207-2	Cabinet (ivory) .....
V-5426	Clip, I-F mounting .....
V-3219S-1	Cord, dial drive .....
V-6184-4	Knob (brown) .....
V-6184-5	Knob (ivory) .....
V-6190-3	Pointer, dial .....
V-6191-5	Shaft, tuning .....
V-9706-1	Shield, spring (12AV6) .....
V-4292S-1	Socket, miniature molded (12BE6, 12BA6, 12AV6, 50C5 and 35W4) .....
V-9727	Speaker, 4" PM .....
V-4057	Spring, dial drive .....

**V-2161 AND V-2161U CHASSIS**

Ref. No.	Part No.	Description
C1	V-6231	Capacitor, variable (consists of A, B, C and D) .....
C2	RCP10W2503M	Capacitor, .05 mfd 200 v. ....
C3	V-9634-1	Capacitor, multiple ceramic (consists of A, B, C and D) .....
C4	V-6230	Capacitor, electrolytic 50-50 mfd 150 v. (consists of A and B) ....
C5	RCP10W4503M	Capacitor, .05 mfd 400 v. ....
C6	RCP10W4103M	Capacitor, .01 mfd 400 v. ....
C7	RCP10W4104M	Capacitor, .1 mfd 400 v. (V-2161U only) .....
L1	V-9725	Loop, antenna .....
L2	V-9724	Coil, osc. ....
R1	RC20AE223M	Resistor, 22,000 ohms 1/2 w. ....
R2	RC20AE335M	Resistor, 3.3 meg. 1/2 w. ....
R3	RC20AE680M	Resistor, 68 ohms 1/2 w. ....
*R4	V-6198-5	Control, volume 500,000 ohms (assy consists of R4 and SW1) ....
R5	RC20AE106M	Resistor, 10 megs. ....
R6	RC20AE334M	Resistor, 330,000 ohms 1/2 w. ....
R7	RC20AE474M	Resistor, 470,000 ohms 1/2 w. ....
R8	RC20AE121M	Resistor, 120 ohms 1/2 w. ....
R9	RC30AE122M	Resistor, 1200 ohms 1 w. ....
*SW1	V-6198-5	Switch, on-off (assy consists of SW1 and R4) .....
T1	V-9735-1	Transformer, 1st I-F .....
T2	V-9735-1	Transformer, 2nd I-F .....

\* Sold only as complete assembly.

MODELS H-312P4, H-312P4U, H-313P4, U  
 H-314P4, H-314P4U, H-315P4, H-315P4U,  
 Ch. V-2153-1



NOTE 1. ALL VOLTAGES MEASURED FROM COMMON NEGATIVE USING A 20,000 OHM/VOLT METER. LINE VOLTAGE SET AT 117 V.A.C.  
 2. ALL CAPACITOR VALUES BE AS SHOWN ± 20 PER CENT  
 ALL RESISTOR VALUES ARE SHOWN IN MFD. UNLESS OTHERWISE SPECIFIED  
 ALL RESISTOR VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE SPECIFIED

**POWER OUTPUT:**

Maximum ..... 0.23 watt  
 Undistorted ..... 0.12 watt  
**LOUDSPEAKER:** ..... 4" P.M.

**FREQUENCY RANGE:** ..... 540 to 1615 kc.

**POWER CONSUMPTION (Line Operation):**  
 INTERMEDIATE FREQUENCY ..... 15 watts  
 ..... 455 kc.

ACTUATED BY LINE PLUG—SHOWN IN NON-ACTUATED (PLUG OUT) POSITION.

CHASSIS V-2153-1

POWER CORD PLUG. FOR BATTERY OPERATION THIS PLUG MUST BE INSERTED AS SHOWN. FOR OPERATION ON HOUSE CURRENT THIS PLUG MUST BE INSERTED INTO AN ELECTRIC OUTLET.

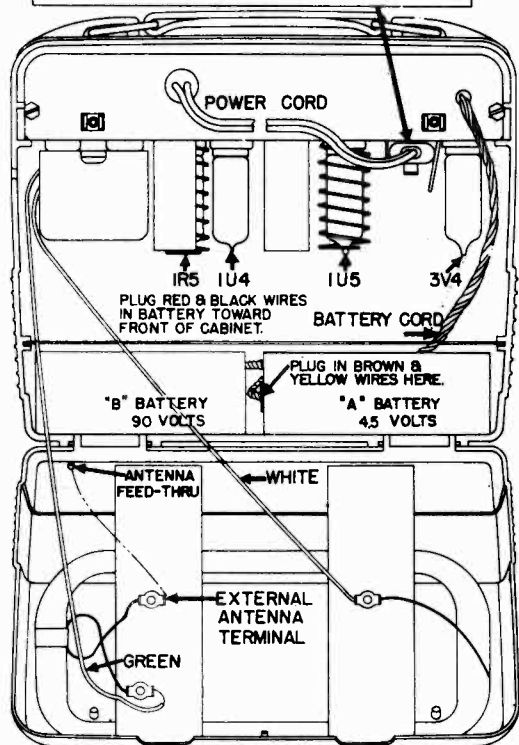


FIG. 2 — REAR VIEW WITH COVER OPEN

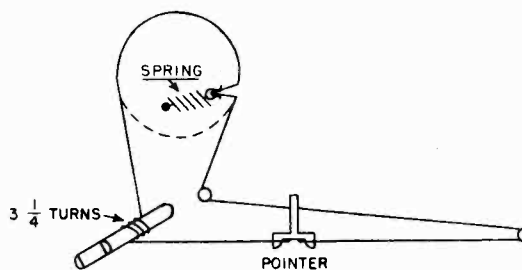
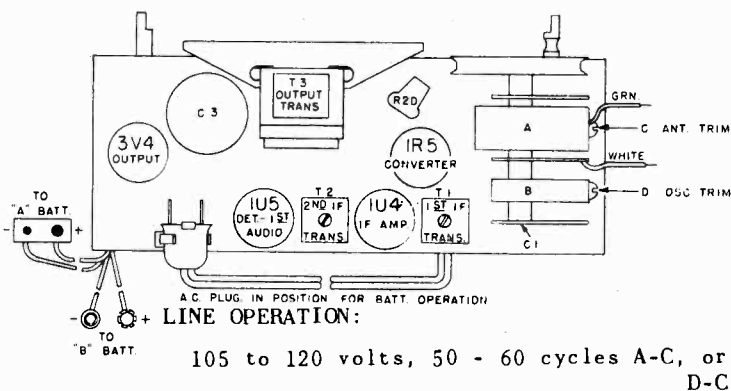


FIG. 3 — DIAL DRIVE



CURRENT CONSUMPTION (Battery Operation):

- "A" Battery ..... 0.1 amp.
- "B" Battery ..... 0.014 amp.

**BATTERY PLACEMENT NOTE:** The batteries should be inserted in the relative position shown in Fig. 2 with the connector end of the "B" battery facing the front of the receiver the connector end of the "A" battery facing the side of the "B" battery.

BATTERY OPERATION:

- 1 "A" Battery (4.5 v.) — Eveready 736, Ray-O-Vac P93A, or Burgess F3
- 1 "B" Battery (90 v.) — Eveready 490, Ray-O-Vac 4390, or Burgess N60

ALIGNMENT

It is recommended that the chassis be isolated from the power line by means of an isolation transformer.

While making the following adjustments, keep the volume control set for maximum output and the signal generator output attenuated to avoid AVC action.

Step	Connect Signal Generator to —	Signal Generator Frequency	Radio Dial	Adjust for Maximum Output
1.	Stator of R-F tuning capacitor (A) through a 0.1 mfd	455 kc.	minimum capacity	Top and bottom slugs in 2nd and 1st I-F trans. in order given*
2.	Same as step 1	1615 kc.	minimum capacity	Osc. trimmer (D)
3.	Radiated Signal	1400 kc.	1400 kc.	Ant. trimmer (C)

\*It is recommended that a fiber aligning tool that snugly fits the slot in the powered iron core be used to prevent chipping of the slot.

MODELS H-312P4,  
H-312P4U, H-313P4,  
H-314P4, H-314P4U,  
H-315P4, H-315P4U,  
Ch. V-2153-1

CABINET AND MISCELLANEOUS

Part No.	Description
V-5675-2	Baffle and grille cloth assembly .....
V-5652	Background, dial .....
V-1157-8	Cabinet (brown and ivory) .....
V-1157-9	Cabinet (ivory and brown) .....
V-9415-2	Cable assembly, battery .....
V-5426	Clip, I-F mounting .....
V-5684	Clip, tubular (back cover catch) .....
V-4349-8	Cord, A-C .....
V-4304-16	Cord, dial drive .....
V-9751-1	Handle (brown) .....
V-9751-2	Handle (ivory) .....
V-5698-3	Knob (brown) .....
V-5698-4	Knob (ivory) .....
V-9405-2	Loop, antenna .....
V-5650	Pointer, dial .....
V-6191-1	Shaft, tuning .....
V-9753-1	Shelf, battery retainer .....
V-9706	Shield, spring (1R5, 1U5) .....
V-4292S-1	Socket, miniature molded (1U5, 1R5, 1U4, and 3V4) .....
V-9419	Speaker, 4" P.M. ....
V-5687	Spring, back cover hinge .....
V-4057	Spring, dial drive .....
V-4651	Stud, baffle and grille cloth mounting .....

V-2153-1 CHASSIS

Ref. No.	Part No.	Description
C1	V-5651	Capacitor, variable (consists of A, B, C and D)
C2	RCP10W4503M	Capacitor, .05 mfd 400 v.
C3	V-6552-2	Capacitor, electrolytic (consists of A, B, C and D)
C4	RCP10W2503M	Capacitor, .05 mfd 200 v.
C5	RCP10W2104M	Capacitor, .1 mfd 200 v.
C6	RCP10W4202M	Capacitor, .002 mfd 400 v.
C7	V-9703-1	Capacitor, multiple (consists of A, B, C and D)
C8	RCP10W4202M	Capacitor, .002 mfd 400 v.
C9	RCP10W2104M	Capacitor, .1 mfd 200 v.
C10	RCP10W2104M	Capacitor, .1 mfd 200 v.
C11	RCP10W2503M	Capacitor, .05 mfd 200 v.
L1	V-5661	Coil, osc.
	V-9446-1	Rectifier, selenium
R1	RC20AE104M	Resistor, 100,000 ohms ½ w.
R2	RC20AE682M	Resistor, 6800 ohms ½ w.
R3	RC20AE474M	Resistor, 470,000 ohms ½ w.
R4	RC20AE823K	Resistor, 82,000 ohms ½ w.
R5	RC20AE222M	Resistor, 2200 ohms ½ w.
R6	RC20AE473M	Resistor, 47,000 ohms ½ w.
R7	RC20AE335M	Resistor, 3.3 megohms ½ w.
R8	V-6198-6	Control, volume 500,000 ohms (consists of R8 and SW1)
R9	RC20AE106M	Resistor, 10 megohms ½ w.
R10	RC20AE105M	Resistor, 1.0 megohms ½ w.
R11	RC20AE225M	Resistor, 2.2 megohms ½ w.
R12	RC30AE220M	Resistor, 22 ohms 1 w.
R14	RC20AE122K	Resistor, 1200 ohms ½ w.
R15	RC20AE821K	Resistor, 820 ohms ½ w.
R16	RC20AE224M	Resistor, 220,000 ohms ½ w.
R17	RC20AE102M	Resistor, 1000 ohms ½ w.
R18	RC20AE475M	Resistor, 4.7 megohms ½ w.
R19	RC20AE270K	Resistor, 27 ohms ½ w.
R20	V-9125-2	Resistor, ballast, 2710 ohms
SW1	V-6198-6	Switch, on-off (consists of SW1 and R8)
SW2	V-9420	Switch, line battery
T1	V-6972-5	Transformer, 1st I-F
T2	V-6972-6	Transformer, 2nd I-F

following parts apply only to Models H-314P4, H-314P4U, H-315P4 and H-315P4U:

V-1157-10	Cabinet (black cabinet, red grille) .....
V-1157-11	Cabinet (red cabinet, black grille) .....
V-9751-3	Handle (black) .....
V-9751-4	Handle (red) .....
V-5698-5	Knob (black) .....
V-5698-6	Knob (red) .....

MODELS H-316C7, H-326C7,  
Ch. V-2136-1

**SPECIFICATIONS**

**FREQUENCY RANGES:**

Amplitude Modulation .....540 to 1615 kc.  
Frequency Modulation .....88 to 108 mc.

**INTERMEDIATE FREQUENCIES:**

Amplitude Modulation .....455 kc.  
Frequency Modulation .....10.7 mc.

**TUBE COMPLEMENT:**

- 1 12AT7 .....R-F Amp. and Mixer (FM)
- 1 12BE6 .....FM Osc. and AM Converter
- 1 12BA6 .....I-F Amp.
- 1 6BJ6 .....I-F Driver (FM)
- 1 12AL5 .....Ratio Det. (FM)
- 1 12AV6 .....Det. and AVC (AM) and A-F Amp.
- 1 50L6GT .....Output Amp.

**POWER OUTPUT:**

Undistorted .....2.5 watts  
Maximum .....3.0 watts

LOUDSPEAKER: .....10" PM

**OPERATING**

VOLTAGE: .....117 volts, 60 cycles AC

POWER CONSUMPTION: .....70 watts

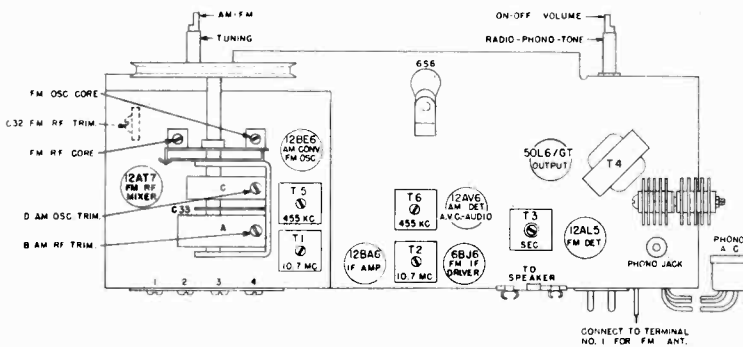


FIG. 2—TOP VIEW OF CHASSIS

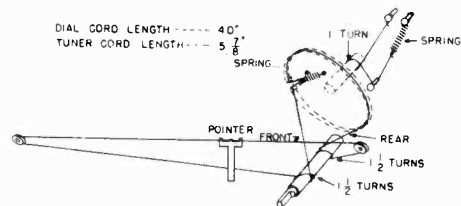
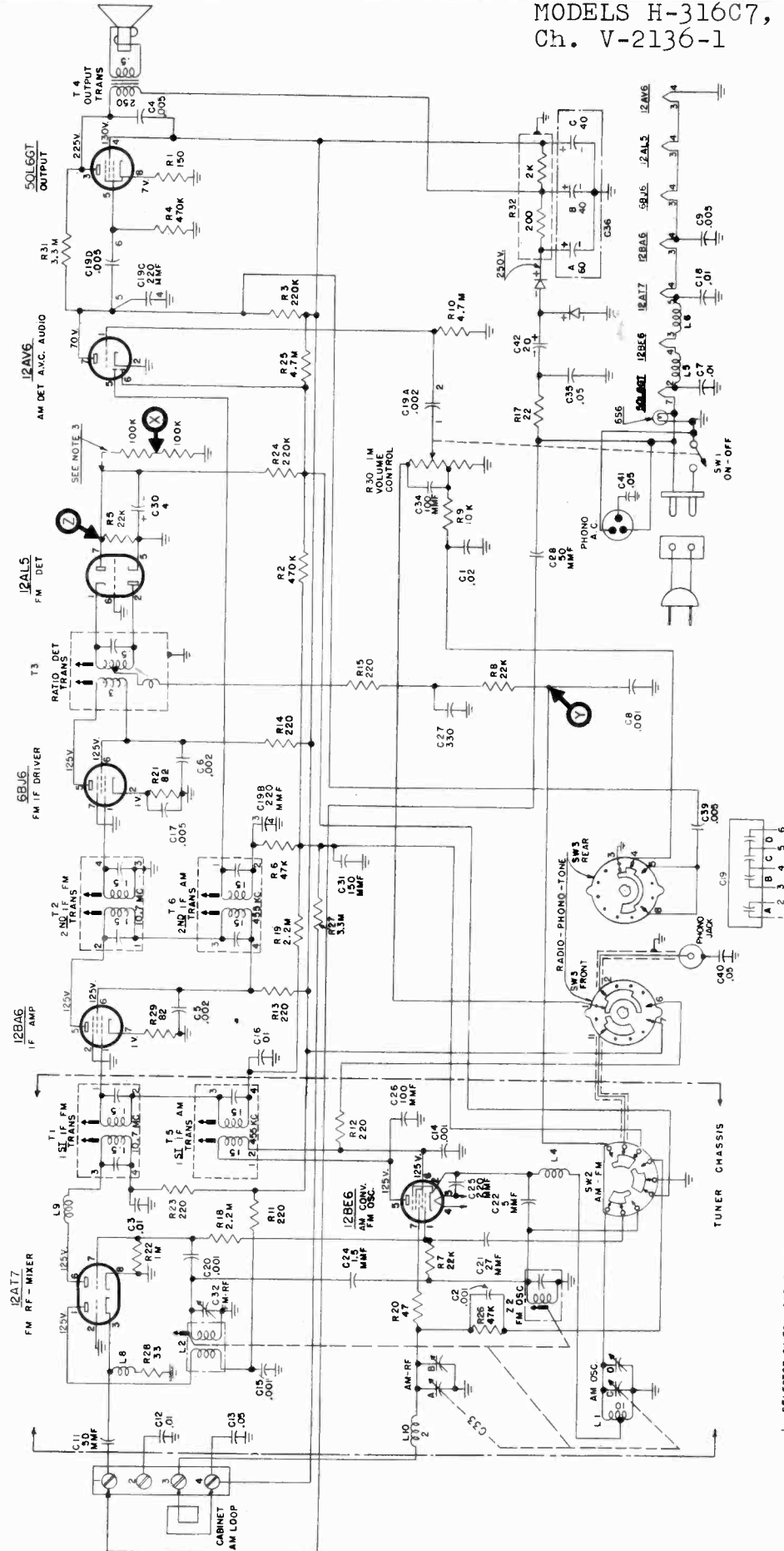


FIG. 3—DIAL DRIVE

**WARNING:** The chassis of this receiver is connected directly to one side of the power line. When making repairs or adjustments, it is recommended that the chassis be isolated from the line by means of an isolation transformer. Otherwise, serious shock may result if the radio chassis and ground are contacted at the same time.



1. SELECTOR SWITCH SW2 IS SHOWN IN EXTREME CLOCKWISE POSITION OR AM BAND POSITION FROM THE FRONT.
2. SELECTOR SWITCH SW2 IS SHOWN IN EXTREME COUNTERCLOCKWISE POSITION OR PHONO TREBLE POSITION AS VIEWED FROM FRONT.
3. TO BE INSTALLED FOR ALIGNMENT ONLY
4. ALL VOLTAGES MEASURED FROM CHASSIS (GROUND) USING A 20,000 OHM/VOLT METER. LINE VOLTAGE SET AT 117 V.A.C. VOLTAGES SHOULD BE AS SHOWN ± 20 PER CENT.

FIG. 1—SCHEMATIC DIAGRAM OF V-2136-1 CHASSIS



MODELS H-316C7, H-326C7,  
Ch. V2136-1

**ALIGNMENT  
BROADCAST BAND**

Connect an output meter across the speaker voice coil.

While making the following adjustments, keep the volume control set for maximum output and the signal generator output attenuated to avoid AVC action.

Check the dial pointer position by meshing the tuning capacitor plates completely and seeing that the dial pointer is set on the end mark of the dial scale.

Step	Connect Signal Generator to—	Signal Generator Frequency	Radio Dial Setting	Adjust
1	Set the band switch to AM and the radio-phono-tone control to RADIO			
2	Stator of tuning capacitor (A) through a 0.1 mfd capacitor	455 kc.	minimum capacity	Pri. and sec. of T6 and T5 for max. output in order given
<i>NOTE: If the I-F transformers are badly mis-aligned, it may be impossible to obtain sufficient output using the above system. In this event, it will be necessary to align each transformer separately. Start with the last I-F transformer and work forward, connecting the signal generator to the control grid of the tube preceding the transformer under alignment.</i>				
3	Radiated signal (no actual connection)	1615 kc.	minimum capacity	AM osc. trimmer (D) for max. output
4	Radiated signal (no actual connection)	1400 kc.	tune to signal	AM R-F trimmer (B) for max. output (rock-in adjustment)

**FM BAND**

Do not align the FM circuits until all AM adjustments have been completed.

Step	Connect Signal Generator to—	Signal Generator Frequency	Radio Dial Setting	Adjust
1	Set the band switch to FM.			
2	Connect two 100,000 ohm resistors (the resistances must be equal within 5 per cent) between pin No. 7 of the 12AL5 tube and ground as shown on the schematic diagram.			
3	Connect a V.T.V. M. between points "X" and "Y" (see schematic diagram).			
4	Pin No. 7 of 12AT7 through a 0.1 mfd mica capacitor	10.7 mc.	minimum capacity	Sec. of T3 for zero (use medium strength signal)
5	Connect the V.T.V.M. between point "Z" and ground.			
6	Same as step 4	10.7 mc.	minimum capacity	Pri. of T3 and pri. and sec. of T1 and T2 for max.
7	Reconnect the V.T.V.M. between points "X" and "Y" and increase the signal strength 10 times.			
8	Same as step 4	10.7 mc.	minimum capacity	Recheck sec. of T3 for zero voltage
9	Reconnect the V.T.V. M. between point "Z" and ground.			
10	Same as step 4	10.7 mc.	minimum capacity	Pri. of T3 for maximum voltage
11	Remove the two 100,000 ohm resistors that were inserted in step 2.			
12	FM ant. terminal through a 300 ohm non-inductive resistor	98 mc.	98 mc.	FM osc. core for maximum voltage
13	Same as step 12	98 mc.	98 mc.	FM R-F trimmer (C32) for maximum voltage
14	Same as step 12	105 mc.	tune to signal	FM R-F core for maximum voltage
15	Same as step 12	90 mc.	tune to signal	FM R-F trimmer (C32) for maximum voltage (rock-in)
16	Recheck steps 14 and 15 for tracking.			

**PARTS LIST FOR MODEL H-316C7**

**CABINET AND MISCELLANEOUS**

Part No. Description

- V-5982-6 Antenna assembly, AM loop .....
- V-6120-1 Background, dial .....
- V-1212-1 Cabinet (mahogany) .....
- V-5860-11 Cable assembly, speaker .....
- V-9822-1 Cable assembly, phono AC (female)
- V-9833-1 Cable assembly, phono AC (male)
- V-6415-2 Cable, phono pick-up .....
- V-9075-1 Clip, spring (ball head strike)
- V-5426 Clip, I-F mounting .....
- V-9053 Connector, phono .....
- V-3219S-1 Cord, dial drive (100' spool) ..
- V-9845-1 Cover, back (record changer) .....
- V-9834-1 Cover assembly, back (radio) .....
- V-8340 Doors (matched pairs) .....
- V-8341 Drawer, record changer (complete less hardware) .....
- V-9835-1 Escutcheon, dial .....
- V-9832-1 Grille assembly, panel .....
- V-9091-1 Hinge, L. H. ....
- V-9091-2 Hinge, R. H. ....
- V-6146-1 Knob, on-off-volume .....

Part No. Description

- V-6146-5 Knob, AM-FM .....
- V-9861-1 Knob, radio-phono-tone .....
- V-9104-6 Knob, tuning .....
- V-9252-2 Nameplate, Westinghouse .....
- No. 656 Pilot light .....
- V-9661 Plug, AC .....
- V-9826-3 Pointer, dial .....
- V-4967 Pull, drawer .....
- V-3166S Pulley, dial cord .....
- V-9678-2 Pulley, gang .....
- V-3353-11 Slide, mechanism, L. H. ....
- V-3353-12 Slide, mechanism, R. H. ....
- V-4292-1 Socket, miniature molded .....
- V-5556-1 Socket, miniature (12AT7) .....
- V-4292S-2 Socket, miniature molded (12BE6)
- V-3163 Socket, octal wafer .....
- V-9860-1 Socket, pilot light .....
- V-9770-2 Speaker, 10" PM .....
- V-3248S Spring, dial drive .....
- V-9076-1 Strike, ball head .....
- V-9348 Terminal board, ant.-gnd. ....

V-2136-1 CHASSIS

MODELS H-316C7, H-326C7,  
Ch. V-2136-1

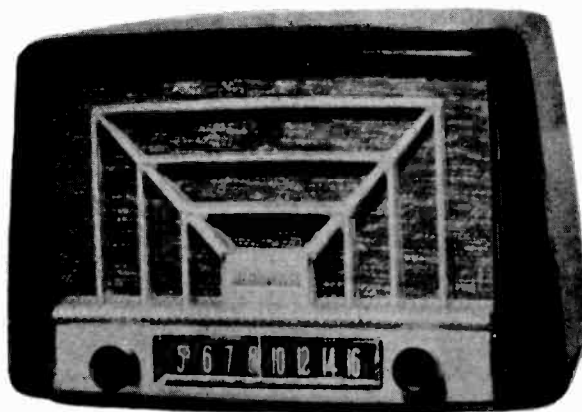
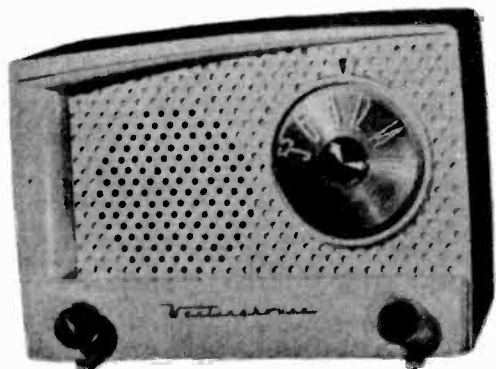
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
C1	RCP10W4202M	Capacitor, .02 mfd 400 v.		V-9640	Rectifier, selenium .....
C2	V-9863-1	Capacitor, .001 mfd .....	R1	RC30AE151K	Resistor, 150 ohms 1 w.
C3	RCP10W4103M	Capacitor, .01 mfd 200 v.	R2	RC20AE474M	Resistor, 470,000 ohms 1/2 w
C4	RCP10W4502M	Capacitor, .005 mfd 400 v.	R3	RC20AE224M	Resistor, 220,000 ohms 1/2 w
C5	RCP10W6202M	Capacitor, .002 mfd 600 v.	R4	RC20AE474M	Resistor, 470,000 ohms 1/2 w
C6	RCP10W6202M	Capacitor, .002 mfd 600 v.	R5	RC20AE153K	Resistor, 15,000 ohms (used when T3 is V-9048 or V-9984)
C7	RCP10W2103M	Capacitor, .01 mfd 200 v.		RC20AE223K	Resistor, 22,000 ohms 1/2 w. (used when T3 is V-9828)
C8	RCP10W6102M	Capacitor, .001 mfd 600 v.	R6	RC20AE473M	Resistor, 47,000 ohms 1/2 w
C9	V-5596	Capacitor, .005 mfd, hi-kap	R7	RC20AE223K	Resistor, 22,000 ohms 1/2 w
C11	V-5658-10	Capacitor, 50 mmf .....	R8	RC20AE223M	Resistor, 22,000 ohms 1/2 w
C12	RCP10W4103M	Capacitor, .01 mfd 400 v.	R9	RC20AE103M	Resistor, 10,000 ohms 1/2 w
C13	RCP10W2503M	Capacitor, .05 mfd 200 v.	R10	RC20AE475M	Resistor, 4.7 megohms 1/2 w
C14	V-5596	Capacitor, .005 mfd .....	R11	RC20AE221M	Resistor, 220 ohms 1/2 w
C15	V-9863-1	Capacitor, .001 mfd .....	R12	RC20AE221M	Resistor, 220 ohms 1/2 w
C16	RCP10W2103M	Capacitor, .01 mfd 200 v.	R13	RC20AE221M	Resistor, 220 ohms 1/2 w
C17	V-5596	Capacitor, .005 mfd .....	R14	RC20AE221M	Resistor, 220 ohms 1/2 w
C18	RCP10W2103M	Capacitor, .01 mfd 200 v.	R15	RC20AE221M	Resistor, 220 ohms 1/2 w (used when T3 is V-9048 or V-9828)
C19	V-9634-1	Capacitor, multiple ceramic (A .002 mfd) (B 220 mfd) (C 220 mfd) (D .005 mfd)		RC20AE471M	Resistor, 470 ohms 1/2 w (used when T3 is V-9984) .....
C20	V-9863-1	Capacitor, .001 mfd .....	R17	V-6067-7	Resistor, 22 ohms 3 w. ....
C21	R2CC30UK270K	Capacitor, 27 mmf .....	R18	RC20AE225M	Resistor, 2.2 megohms 1/2 w
C22	R2CC30UK050D	Capacitor, 5 mmf .....	R19	RC20AE225M	Resistor, 2.2 megohms 1/2 w
C24	V-5658-9	Capacitor, 1.5 mmf .....	R20	RC20AE470M	Resistor, 47 ohms 1/2 w ....
C25	R5CC20Y221M	Capacitor, 220 mmf .....	R21	RC20AE820K	Resistor, 82 ohms 1/2 w ....
C26	RCM20D101J	Capacitor, 100 mmf .....	R22	RC20AE105M	Resistor, 1 megohm 1/2 w ...
C27	RCM20A221M	Capacitor, 220 mmf (used when T3 is V-9048 or V-9984)	R23	RC20AE221M	Resistor, 220 ohms 1/2 w ...
	RCM20A331M	Capacitor, 330 mmf (used when T3 is V-9828) .....	R24	RC20AE224M	Resistor, 200,000 ohms 1/2 w
C28	V-5658-10	Capacitor, 50 mmf .....	R25	RC20AE475M	Resistor, 4.7 megohm 1/2 w
C30	V-4637	Capacitor, 4 mfd 50 v. ....	R26	RC20AE473M	Resistor, 47,000 ohms 1/2 w
C31	RCM20A151M	Capacitor, 150 mmf .....	R27	RC20AE335M	Resistor, 3.3 megohms 1/2 w
C32	V-9670	Capacitor, trimmer (FM RF)	R28	RC20AE330M	Resistor, 33 ohms 1/2 w ....
C33	V-9671-2	Capacitor, variable (consists of A, B, C and D)	R29	RC20AE820K	Resistor, 82 ohms 1/2 w ....
C34	RCM20A101M	Capacitor, 100 mmf .....	*R30	V-9824-1	Control, vol. 1 megohm, on-off, selector switch ....
C35	V-6772-4473M	Capacitor, .05 mfd 400 v.	R31	RC20AE335M	Resistor, 3.3 megohms 1/2 w
C36	V-9919	Capacitor, 60-40-40 mfd 250 v. (consists of A, B, and C) .....	R32	V-10054	Resistor, ballast (2000 ohms 6 w. - 200 ohms 3 w.) ...
C39	RCP10W4502M	Capacitor, .005 mfd 400 v.	*SW1	V-9824-1	Switch, on-off (consists of vol. and phono-tone) ....
C40	RCP10W2503M	Capacitor, .05 mfd 200 v.	SW2	V-9681-1	Switch, band (AM-FM) .....
C41	RCP10W2503M	Capacitor, .05 mfd 200 v.	*SW3	V-9824-1	Switch, phono-tone (consists of vol. and on-off)
C42	V-9823	Capacitor, 20 mfd 200 v.	T1	V-9688	Transformer, 1st FM I-F ..
L1	V-9672	Coil, AM osc. ....	T2	V-9642	Transformer, 2nd FM I-F ..
L2	V-9674	Coil, FM RF .....	T3	V-9828	Transformer, ratio detector
L4	V-9099-1	Choke, RF .....	T4	V-9827	Transformer, audio .....
L5	V-9099-1	Choke, RF .....	T5	V-9649-1	Transformer, 1st AM I-F ..
L6	V-9099-1	Choke, RF .....	T6	V-6130-1	Transformer, 2nd AM I-F ..
L8	V-9099-1	Choke, RF .....	Z2	V-9675	Coil & cap. assy., FM osc
L9	V-4886-12	Choke, RF .....		V-9676-1	Core, FM-RF & osc. tuning
L10	V-6157	Coil, antenna loading .....			

CABINET AND MISCELLANEOUS PARTS FOR MODEL H-326C7

When ordering parts, specify model number of set in addition to part number and description of part.

Part No.	Description	Part No.	Description
V-5982-4	Antenna assy., AM loop .....	V-9104-6	Knob, tuning .....
V-6120-1	Background, dial .....	V-8344	Motor board (with rails) ....
V-9485-5	Baffle and grille cloth assy..	No. 6S6	Pilot light .....
V-1222-1	Cabinet .....	V-9661	Plug, AC .....
V-5860-3	Cable assy., speaker .....	V-9826-3	Pointer, dial .....
V-9822-1	Cable assy., phono AC (female)	V-9981-3	Pull, door .....
V-9833-1	Cable assy., phono AC (male) .	V-3166S	Pulley, dial cord .....
V-6415-2	Cable, phono pick-up .....	V-9678-2	Pulley, gang .....
V-4898-1	Catch, bullet .....	V-9680-1	Sleeve, dial drive .....
V-5426	Clip, I-F mounting .....	V-3353-1	Slide mechanism, L.H. ....
V-9053	Connector, phono .....	V-3353-2	Slide mechanism, R.H. ....
V-3219S-1	Cord, dial drive (100' spool)	V-4292-1	Socket, miniature molded (12BA6, 6BJ6, 12AL5, 12AV6)
V-9834-1	Cover assy., back .....	V-5556-1	Socket, miniature (12AT7) ...
V-8342	Door, upper (matched pairs) ..	V-4292S-2	Socket, miniature molded (12BE6) .....
V-8343	Door, lower (matched pairs) ..	V-3163	Socket, octal wafer (50L6GT)
V-9835-1	Escutcheon .....	V-9860-1	Socket, pilot light .....
V-10109-1	Hinge, L.H. ....	V-9431-3	Speaker, 12" PM .....
V-10109-2	Hinge, R.H. ....	V-3248S	Spring, dial drive .....
V-5301-4	Knob, lower door .....	V-4900-1	Strike, bullet .....
V-6146-1	Knob, on-off-volume .....	V-9348	Terminal board, ant.-gnd. ...
V-6146-5	Knob, AM-FM .....		
V-9861-1	Knob, radio-phono-tone .....		

MODELS H-318T5, H-320T5, Ch. V-2157:  
 H-318T5U, H-320T5U, Ch. V-2157U;  
 H-321T5, H-322T5, Ch. V-2157-1;  
 H-321T5U, H-322T5U, Ch. V-2157-1U

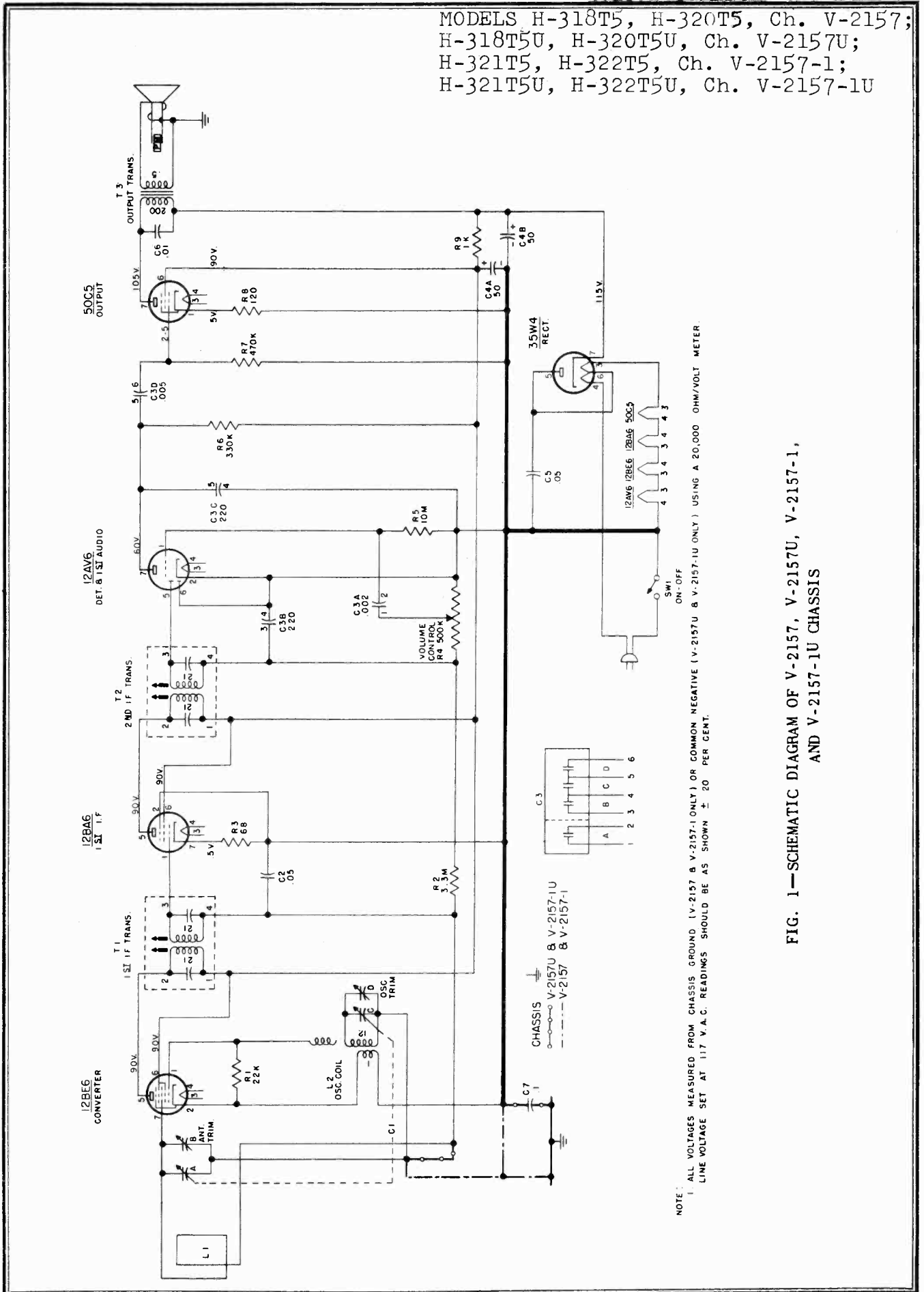


**SPECIFICATIONS**

FREQUENCY RANGE: .....540 to 1615 kc.  
 INTERMEDIATE FREQUENCY: .....455 kc.  
 TUBE COMPLEMENT:  
   1 12BE6 .....Converter  
   1 12BA6 .....I-F Amp.  
   1 12AV6 ..... Det., AVC, and 1st A-F Amp.  
   1 50C5 ..... Output Amp.  
   1 35W4 ..... Rectifier  
 POWER OUTPUT:  
   Undistorted ..... 0.9 watt  
   Maximum ..... 1.5 watts  
 LOUDSPEAKER: .....4" P.M.  
 OPERATING VOLTAGE: .....105 to 120 volts, 50-60 cycles A-C or D-C  
 POWER CONSUMPTION: .....35 watts

**WARNING:** The V-2157 and V-2157-1 chassis are connected to one side of the power line. When making repairs or adjustments, it is recommended that the chassis be isolated from the line by means of an isolation transformer. Otherwise serious shock may result if the radio chassis and ground are contacted at the same time.

MODELS H-318T5, H-320T5, Ch. V-2157;  
 H-318T5U, H-320T5U, Ch. V-2157U;  
 H-321T5, H-322T5, Ch. V-2157-1;  
 H-321T5U, H-322T5U, Ch. V-2157-1U



NOTE: 1. ALL VOLTAGES MEASURED FROM CHASSIS GROUND (V-2157 & V-2157-1U ONLY) OR COMMON NEGATIVE (V-2157U & V-2157-1U ONLY) USING A 20,000 OHM/VOLT METER. LINE VOLTAGE SET AT 117 V.A.C. READINGS SHOULD BE AS SHOWN ± 20 PER CENT.

FIG. 1—SCHEMATIC DIAGRAM OF V-2157, V-2157U, V-2157-1, AND V-2157-1U CHASSIS

MODELS H-318T5, H-320T5,  
Ch. V-2157; H-318T5U,  
H-320T5U, Ch. V2157U;  
H-321T5, H-322T5, Ch.  
V-2157-1; H-321T5U,  
H-322T5U, Ch. V-2157-1U

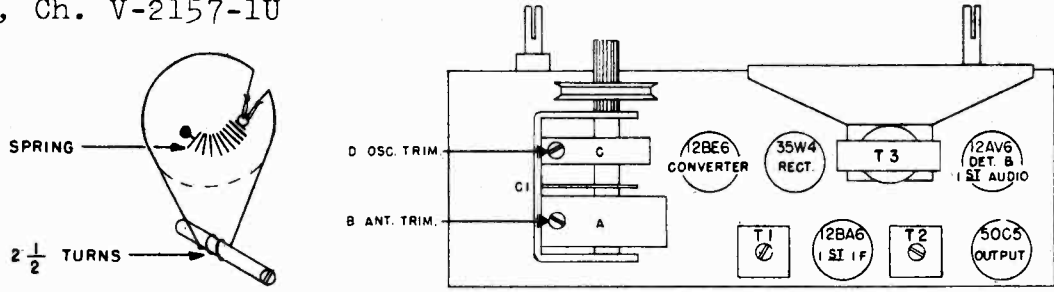


FIG. 2—DIAL DRIVE AND CHASSIS LAYOUT FOR V-2157 AND V-2157U CHASSIS

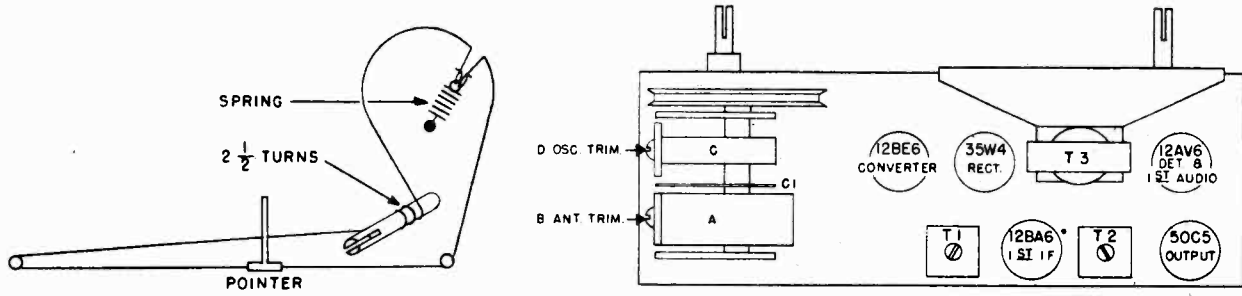


FIG. 3—DIAL DRIVE AND CHASSIS LAYOUT FOR V-2157-1 AND V-2157-1U CHASSIS

**ALIGNMENT**

It is recommended that the chassis be isolated from the power line by means of an isolation transformer.

Make certain that the dial pointer is correctly positioned.

While making the following adjustments, keep the volume control set for maximum output and the signal generator output attenuated to avoid AVC action.

Step	Connect Signal Generator to —	Signal Generator Frequency	Radio Dial	Adjust for Maximum Output —
1	Stator of R-F tuning capacitor (A) through a 0.1 mfd capacitor	455 kc.	Minimum capacity	Top and bottom slugs in 2nd and 1st I-F trans. in order given*
2	Same as step 1	1615 kc.	Minimum capacity	Osc. trimmer (D)
3	Radiated Signal	1400 kc.	1400 kc.	Ant. trimmer (B)

\*It is recommended that a fiber aligning tool that snugly fits the slot in the powdered iron core be used to prevent chipping of the slot.

CHASSIS V-2157,  
V-2157U, V-2157-1,  
V-2157-1U

**PARTS LIST**

H-318T5 AND H-318T5U CABINET PARTS

<i>Part No.</i>	<i>Description</i>
V-1219-1	Cabinet .....
V-10008-1	Dial .....
V-10009-1	Knob .....
V-5786	Spring, compression .....

H-320T5 AND H-320T5U CABINET PARTS

V-10012-2	Background, dial .....
V-9746-1	Baffle and grille cloth assy .....
V-1219-3	Cabinet .....
V-10008-3	Dial .....
V-10009-5	Knob .....
V-5786	Spring, compression .....

H-321T5 AND H-321T5U CABINET PARTS

V-10017-1	Baffle and grille cloth assy .....
V-1220-1	Cabinet .....
V-10013-3	Escutcheon .....
V-10009-1	Knob .....

H-322T5 AND H-322T5U CABINET PARTS

V-10017-2	Baffle and grille cloth assy .....
V-1220-2	Cabinet .....
V-10013-2	Escutcheon .....
V-10009-3	Knob .....

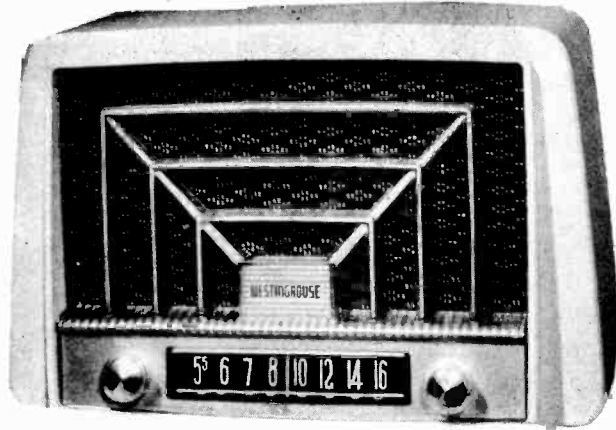
MISCELLANEOUS PARTS

V-3219S-1	Cord, dial drive .....
V-10001	Loop, antenna (chassis V-2157-1) .....
V-9994	Loop, antenna (chassis V-2157) .....
V-10002-2	Pointer (chassis V-2157-1) .....
V-9996-2	Shaft, tuning .....
V-9727-1	Speaker, 4" PM (includes T3) .....
V-10076-1	Spring, dial drive .....
V-9888-2	Socket, wafer (12BE6, 50C5 and 35W4) .....
V-9888-3	Socket, wafer (12BA6, and 12AV6) .....

CHASSIS PARTS

<i>Ref. No.</i>	<i>Part No.</i>	<i>Description</i>
C1	V-9990	Capacitor, variable (consists of A, B, C and D) (V-2157-1 chassis) .....
	V-10047	Capacitor, variable (consists of A, B, C and D) (V-2157 chassis) .....
C2	RCP10W2503M	Capacitor, .05 mfd 200 v. ....
C3	V-9634-1	Capacitor, multiple ceramic (consists of A,B,C and D) .....
C4	V-9991	Capacitor, electrolytic 50-50 mfd 150 v. (consists of A and B) .....
C5	RCP10W4503M	Capacitor, .05 mfd 400 v. ....
C6	RCP10W4103M	Capacitor, .01 mfd 400 v. ....
C7	RCP10W4104M	Capacitor, .1 mfd 400 v. (V-2157U and V-2157-1U chassis) .....
L1	V-9994	Loop, antenna (V-2157 chassis) .....
	V-10001	Loop, antenna (V-2157-1 chassis) .....
L2	V-9992	Coil, osc. ....
R1	RC20AE223M	Resistor, 22,000 ohms ½ w. ....
R2	RC20AE335M	Resistor, 3.3 meg. ½ w. ....
R3	RC20AE680M	Resistor, 68 ohms ½ w. ....
*R4	V-9993-1	Control, volume 500,000 ohms (assy consists of R4 and SW1) .....
R5	RC20AE106M	Resistor, 10 megs. ....
R6	RC20AE334M	Resistor, 330,000 ohms ½ w. ....
R7	RC20AE474M	Resistor, 470,000 ohms ½ w. ....
R8	RC20AE121M	Resistor, 120 ohms ½ w. ....
R9	RC30AE102M	Resistor, 1000 ohms 1 w. ....
*SW1	V-9993-1	Switch, on-off (assy consists of SW1 and R4) .....
T1	V-9735-1	Transformer, 1st I-F .....
T2	V-9735-1	Transformer, 2nd I-F .....
T3	V-9727-1	Transformer, audio (includes T3 and speaker) .....

MODELS H-323T5, Ch. V-2157-2; H-323T5U, Ch. V-2157-2U



FREQUENCY RANGE: .....540 to 1615 kc.

INTERMEDIATE FREQUENCY: .....455 kc.

TUBE COMPLEMENT:

- 1 12BE6 .....Converter
- 1 12BA6 .....I-F Amp.
- 1 12AV6 .....Det., AVC, and 1st A-F Amp.
- 1 50C5 .....Output Amp.
- 1 35W4 .....Rectifier

POWER OUTPUT:

- Undistorted .....0.9 watt
- Maximum .....1.5 watts

LOUDSPEAKER: .....4" P.M.

OPERATING VOLTAGE: .....105 to 120 volts, 50-60 cycles A-C or D-C

POWER CONSUMPTION: .....35 watts

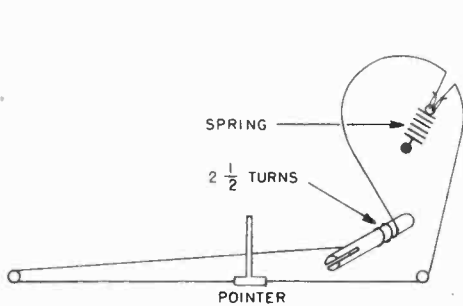


FIG. 1—DIAL DRIVE

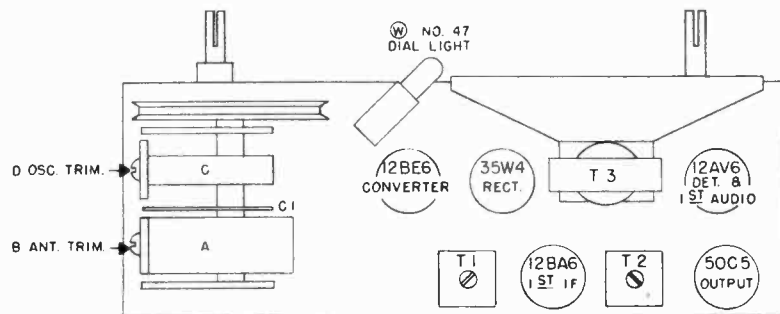


FIG. 2—CHASSIS LAYOUT

**WARNING:** The V-2157-2 chassis is connected directly to one side of the power line. When making repairs or adjustments, it is recommended that the chassis be isolated from the line by means of an isolation transformer. Otherwise serious shock may result if the radio chassis and ground are contacted at the same time.

MODELS H-323T5, Ch. V-2157-2;  
H-323T5U, Ch. V-2157-2U

**ALIGNMENT**

It is recommended that the chassis be isolated from the power line by means of an isolation transformer.

Make certain that the dial pointer is correctly positioned.

While making the following adjustments, keep the volume control set for maximum output and the signal generator output attenuated to avoid AVC action.

Step	Connect Signal Generator to —	Signal Generator Frequency	Radio Dial	Adjust for Maximum output—
1	Stator of R-F tuning capacitor (A) through a 0.1 mfd capacitor	455 kc.	Minimum capacity	Top and bottom slugs in 2nd and 1st I-F trans. in order given*
2	Same as step 1	1615 kc.	Minimum capacity	Osc. trimmer (D)
3	Radiated Signal	1400 kc.	1400 kc.	Ant. trimmer (B)

\*It is recommended that a fiber aligning tool that snugly fits the slot in the powdered iron core be used to prevent chipping of the slot.

**PARTS LIST FOR MODELS H-323T5 AND H-323T5U**

When ordering parts, specify model number of set in addition to part number and description of part.

**CABINET AND ACCESSORIES**

Part No.	Description
V-6120-3	Background, dial .....
V-10017-3	Baffle and grille cloth assy .....
V-1220-3	Cabinet .....
V-3219S-1	Cord, dial drive .....
V-10013-3	Escutcheon .....
V-10009-5	Knob .....
No. 47	Light, pilot .....
V-10002-2	Pointer .....
V-9996-2	Shaft, tuning .....
V-9122-2	Socket, dial light .....
V-9888-2	Socket (12BE6, 50C5 and 35W4) .....
V-9888-3	Socket (12AV6 and 12BA6) .....
V-10079-1	Speaker, 4" PM (includes T3) .....

**V-2157-2 AND V-2157-2U CHASSIS**

Ref. No.	Part No.	Description
C1	V-9990	Capacitor, variable (consists of A, B, C and D) .....
C2	RCP10W2503M	Capacitor, .05 mfd 200 v. ....
C3	V-9634-1	Capacitor, multiple ceramic (consists of A, B, C and D) .....
C4	V-9991	Capacitor, electrolytic 50-50 mfd 150 v. (consists of A and B) ..
C5	RCP10W4503M	Capacitor, .05 mfd 400 v. ....
C6	RCP10W4103M	Capacitor, .01 mfd 400 v. ....
C7	RCP10W4104M	Capacitor, .1 mfd 400 v. (V-2157-2U only) .....
C8	RCP10W2203M	Capacitor, .02 mfd 200 v. ....
L1	V-10001	Loop, antenna .....
L2	V-9992	Coil, osc. ....
R1	RC20AE223M	Resistor, 22,000 ohms ½ w. ....
R2	RC20AE335M	Resistor, 3.3 meg. ½ w. ....
R3	RC20AE680M	Resistor, 68 ohms ½ w. ....
*R4	V-9993-2	Control, volume 500,000 ohms (assy consists of R4 and SW1) .....
R5	RC20AE106M	Resistor, 10 megs. ....
R6	RC20AE334M	Resistor, 330,000 ohms ½ w. ....
R7	RC20AE474M	Resistor, 470,000 ohms ½ w. ....
R8	RC20AE121M	Resistor, 120 ohms ½ w. ....
R9	RC30AE102M	Resistor, 1000 ohms 1 w. ....
R10	RC20AE103M	Resistor, 10,000 ohms ½ w. ....
*SW1	V-6198-5	Switch, on-off (assy consists of SW1 and R4) .....
T1	V-9735-1	Transformer, 1st I-F .....
T2	V-9735-1	Transformer, 2nd I-F .....
T3	V-10079-1	Transformer, audio (consists of T3 and speaker) .....



MODELS H-323T5, Ch. V-2157-2;  
H-323T5U, Ch. V-2157-2U

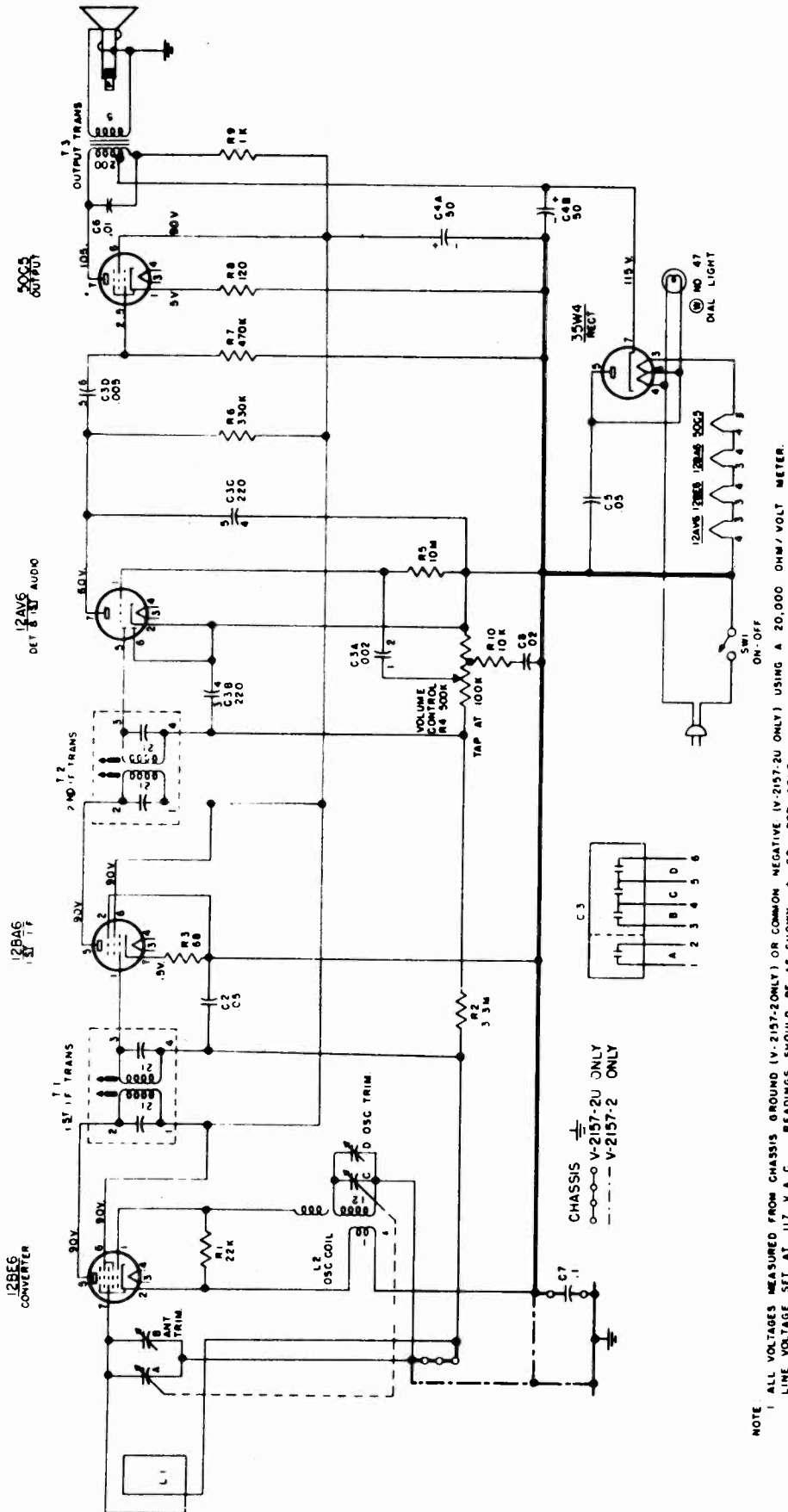


FIG. 3—SCHEMATIC DIAGRAM OF V-2157-2 AND V-2157-2U CHASSIS

MODELS H-324T7,  
H-325T7, Ch. V-  
2136-2; H-324T7U,  
H-325T7U, Ch. V-  
2136



**SPECIFICATIONS**

**FREQUENCY RANGES:**

Amplitude Modulation ..... 540 to 1615 kc.  
Frequency Modulation ..... 88 to 108 mc.

**INTERMEDIATE FREQUENCIES:**

Amplitude Modulation ..... 455 kc.  
Frequency Modulation ..... 10.7 mc.

**TUBE COMPLEMENT:**

- 1 12AT7 ..... R-F Amp. and Mixer (FM)
- 1 12BE6 ..... FM Osc. and AM Converter
- 1 12BA6 ..... I-F Amp.
- 1 6BJ6 ..... I-F Driver (FM)

- 1 12AL5 ..... Ratio Det. (FM)
- 1 12AV6 .. Det. and AVC (AM) and A-F Amp.
- 1 50C5 ..... Output Amp.

**POWER OUTPUT:**

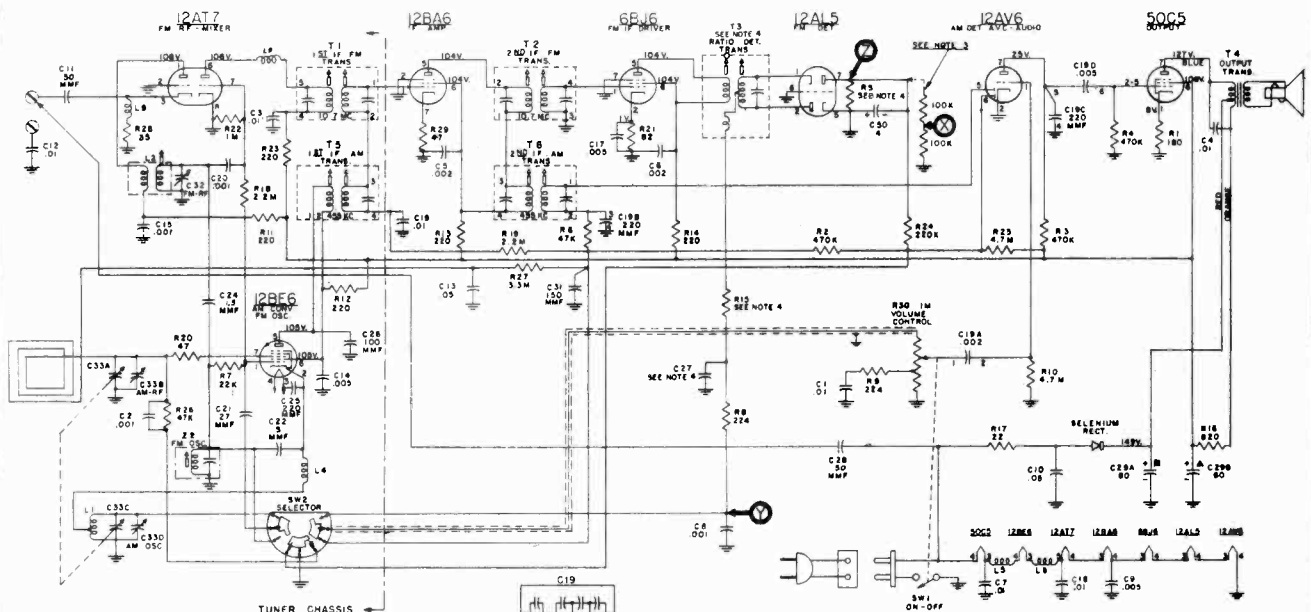
Undistorted..... 1.0 watts  
Maximum ..... 1.9 watts

LOUDSPEAKER: ..... 5 1/4" PM

**OPERATING**

VOLTAGE:.. 117 volts, DC or 60 cycles AC

POWER CONSUMPTION: ..... 35 watts



- NOTES
1. SELECTOR SWITCH SW2 IS SHOWN IN EXTREME CLOCKWISE POSITION ON AM BAND. EXTREME COUNTER CLOCKWISE POSITION IS FM BAND.
  2. ALL VOLTAGES MEASURED FROM CHASSIS (GROUND) USING A 20,000 OHM/VOLT METER. LINE VOLTAGE SET AT 117V. A.C. VOLTAGES SHOULD BE AS SHOWN ± 20 PER CENT.
  3. TO BE INSTALLED FOR ALIGNMENT ONLY.
  4. TRANSFORMER V-8048 USE R19-220Ω C27-220MMFD R3-15KΩ V-9384 USE R5-470Ω C27-220MMFD R3-15KΩ V-9828 USE R5-220Ω C27-330MMFD R3-22KΩ

FIG. 1--SCHEMATIC DIAGRAM OF V-2136 CHASSIS

MODELS H-324T7, H-325T7,  
Ch. V-2136-2; H-324T7U,  
H-325T7U, Ch. V-2136

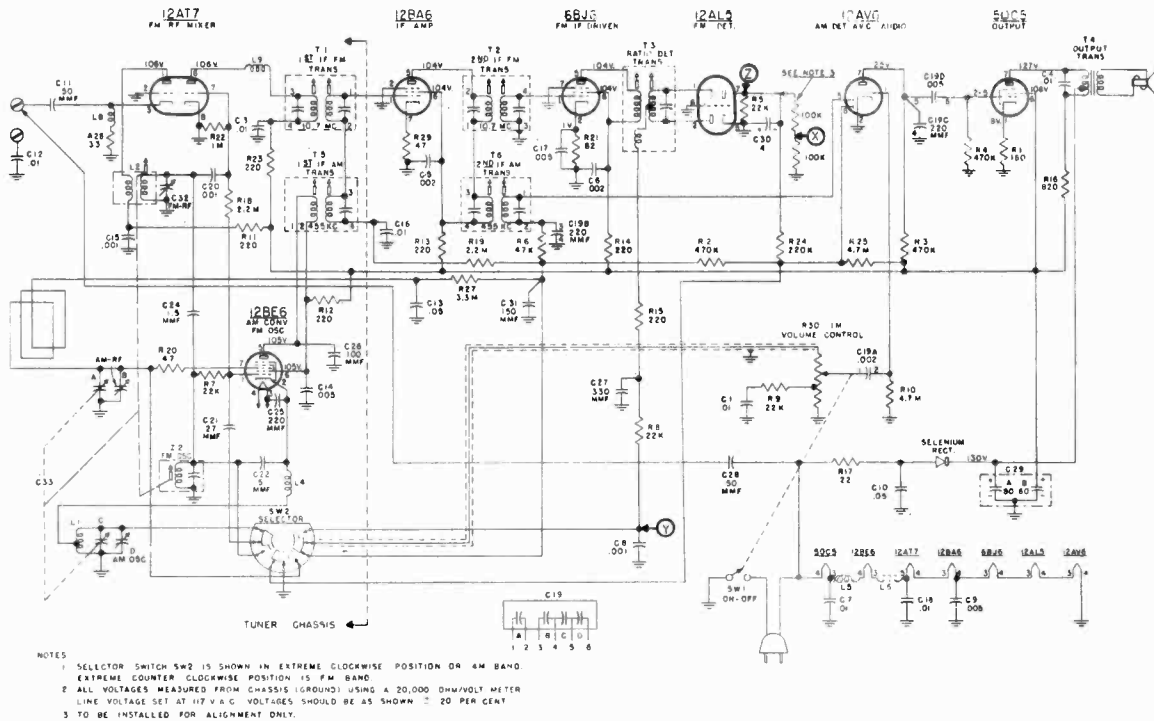


FIG. 2—SCHEMATIC DIAGRAM OF V-2136-2 CHASSIS

# WARNING

The chassis is connected directly to one side of the power line. When making repairs or adjustments, it is recommended that the chassis be isolated from the line by means of an isolation transformer. Otherwise, serious shock may result if the radio chassis and ground are contacted at the same time.

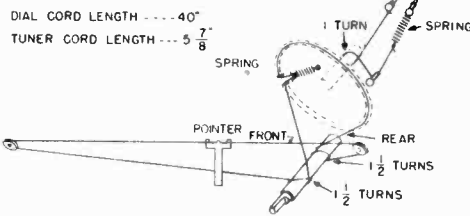


FIG. 3—DIAL DRIVE

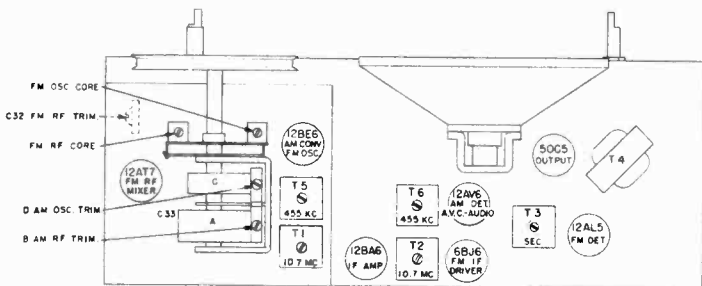


FIG. 4—TOP VIEW OF CHASSIS

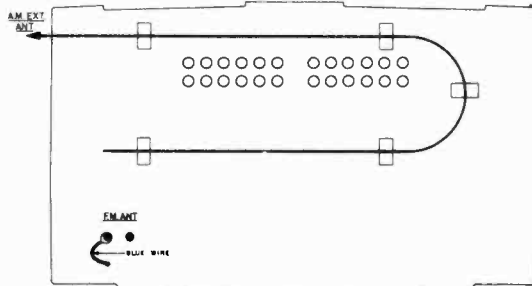


FIG. 5—ANTENNA COUPLING

## ANTENNA INFORMATION

An external AM antenna can be coupled to the set by taping the lead-in wire to the outside of the rear cover as shown in Fig. 5. The wire should be dressed in the position shown and can be held in place with adhesive tape or other similar material.

The blue wire emerging from the hole in the rear cover is a "line" antenna for FM reception. It should be connected to the left antenna terminal as shown in Fig. 5. If an external FM antenna is to be used, disconnect the blue wire and connect the transmission line to the two terminals.

MODELS H-324T7, H-325T7,  
Ch. V-2136-2; H-324T7U,  
H-325T7U, Ch. V-2316

**ALIGNMENT  
BROADCAST BAND**

Connect an output meter across the speaker voice coil.

While making the following adjustments, keep the volume control set for maximum output and the signal generator output attenuated to avoid AVC action.

Check the dial pointer position by meshing the tuning capacitor plates completely and seeing that the dial pointer is set on the end mark of the dial scale.

Step	Connect Signal Generator to—	Signal Generator Frequency	Radio Dial Setting	Adjust
1	Set the band switch to AM			
2	Stator of tuning capacitor (A) through a 0.1 mfd capacitor	455 kc.	minimum capacity	Pri. and sec. of T6 and T5 for max. output in order given
NOTE: If the I-F transformers are badly mis-aligned, it may be impossible to obtain sufficient output using the above system. In this event, it will be necessary to align each transformer separately. Start with the last I-F transformer and work forward, connecting the signal generator to the control grid of the tube preceding the transformer under alignment.				
3	Radiated signal (no actual connection)	1615 kc.	minimum capacity	AM osc. trimmer (D) for max. output
4	Radiated signal (no actual connection)	1400 kc.	tune to signal	AM R-F trimmer (B) for max. output (rock-in adjustment)

**FM BAND**

Do not align the FM circuits until all AM adjustments have been completed.

Step	Connect Signal Generator to—	Signal Generator Frequency	Radio Dial Setting	Adjust
1	Set the band switch to FM			
2	Connect two 100,000 ohm resistors (the resistances must be equal within 5 per cent) between pin No. 7 of the 12AL5 tube and ground as shown on the schematic diagram.			
3	Connect a V.T.V.M. between points "X" and "Y" (see schematic diagram).			
4	Pin No. 7 of 12AT7 through a .01 mfd mica capacitor	10.7 mc.	minimum capacity	Sec. of T3 for zero (use medium strength signal)
5	Connect the V.T.V.M. between point "Z" and ground.			
6	Same as step 4	10.7 mc.	minimum capacity	Pri. of T3 and pri. and sec. of T1 and T2 for max.
7	Reconnect the V.T.V.M. between points "X" and "Y" and increase the signal strength 10 times.			
8	Same as step 4	10.7 mc.	Minimum capacity	Recheck sec. of T3 for zero voltage
9	Reconnect the V.T.V.M. between point "Z" and ground.			
10	Same as step 4	10.7 mc.	minimum capacity	Pri. of T3 for maximum voltage
11	Remove the two 100,000 ohm resistors that were inserted in step 2.			
12	FM ant. terminal through a 300 ohm non-inductive resistor	98 mc.	98 mc.	FM osc. core for maximum voltage
13	Same as step 12	98 mc.	98 mc.	FM R-F trimmer (C32) for maximum voltage
14	Same as step 12	105 mc.	tune to signal	FM R-F core for maximum voltage
15	Same as step 12	90 mc.	tune to signal	FM R-F trimmer (C32) for maximum voltage (rock-in)
16	Recheck steps 14 and 15 for tracking.			

MODELS H-324T7, H-325T7,  
Ch. V-2316-2; H-324T7U,  
H-325T7U, Ch. V-2316

**PARTS LIST FOR MODELS H-324T7, H-324T7U, H-325T7 AND H-325T7U**

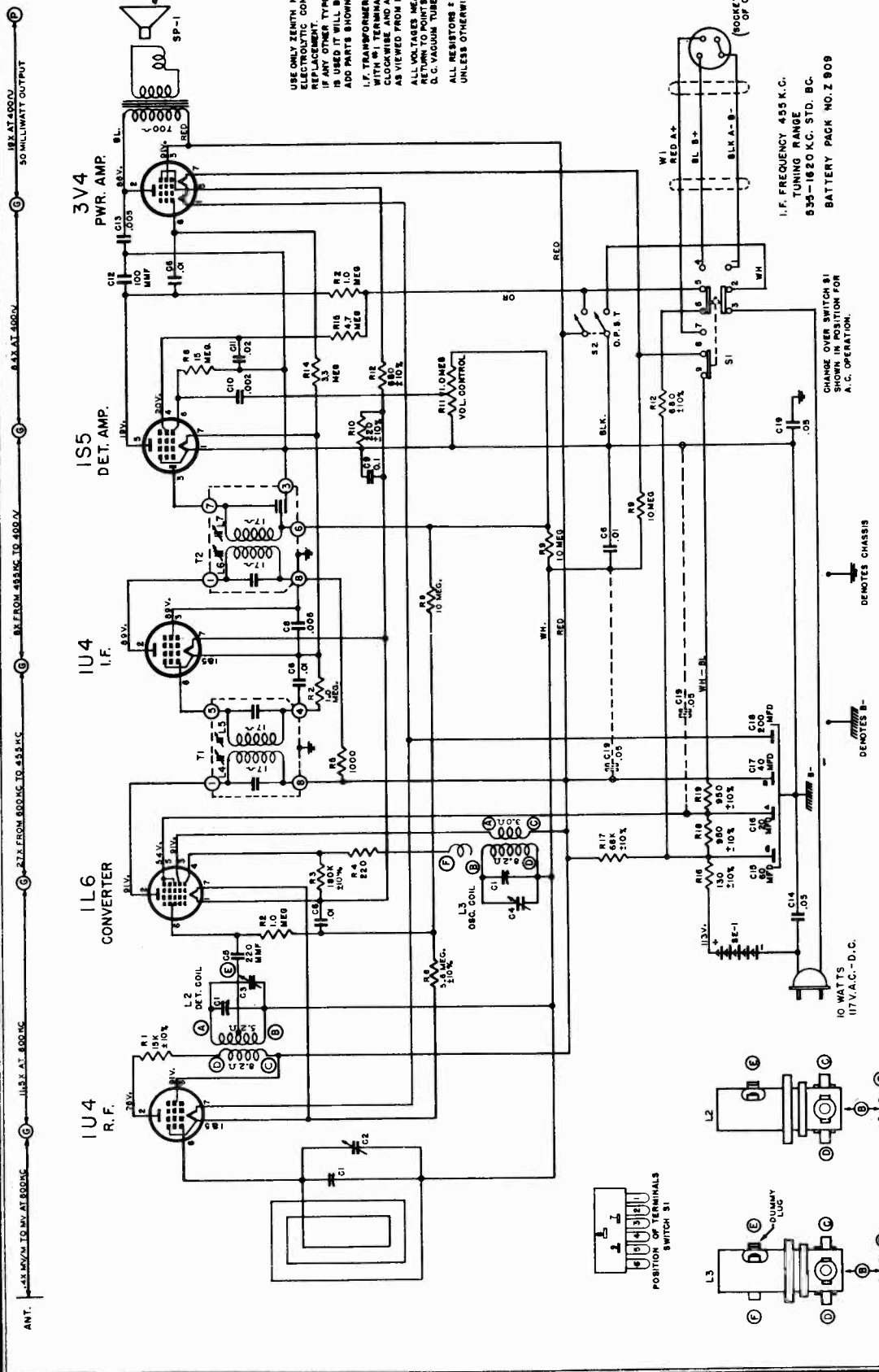
WHEN ORDERING PARTS, SPECIFY MODEL NUMBER OF SET IN ADDITION TO PART NUMBER AND DESCRIPTION OF PART.

**CABINET AND MISCELLANEOUS**

Part No.	Description	Part No.	Description
V-6120-1	Background, dial .....	V-9104-7	Knob, tuning, rear (black) .....
V-1199-4	Cabinet (black) .....	V-9104-8	Knob, on-off, volume, rear (black) .....
V-1199-3	Cabinet (ivory) .....	V-9506-1	Nameplate, Westinghouse .....
V-5426	Clip, I-F mounting .....	V-9661	Plug, power, male (V-2136 chassis)
V-3219S-1	Cord, dial drive (100' spool) ....	V-9639-1	Pointer .....
V-9636-1	Cover assembly, back (V-2136 chassis) .....	V-9678-2	Pulley, gang .....
V-9636-2	Cover assembly, back (V-2136-2 chassis) .....	V-3166S	Pulley, dial cord .....
V-9651-1	Cover, back .....	V-9655	Shell, interlock (V-2136 chassis)
V-9637-1	Foot, mounting .....	V-9654	Socket, interlock (V-2136 chassis)
V-6146-11	Knob, off-on, volume, front (ivory)	V-9641-1	Speaker, 5 $\frac{1}{2}$ PM .....
V-6146-15	Knob, off-on, volume, front (black)	V-3248S	Spring, dial drive .....
V-6146-10	Knob, band (ivory) .....	V-5421-5	Washer, felt (knobs) .....
V-6146-14	Knob, band (black) .....	V-4292-1	Socket, miniature molded (50C5) ..
V-9104-3	Knob, off-on, volume (rear) .....	V-6878-2	Socket, miniature wafer (12BA6, 6BJ6, 12AL5, 12AV6) .....
V-9104-2	Knob, tuning (rear) .....	V-5556-2	Socket, miniature (12AT7) .....
V-9653	Loop, antenna .....	V-4292S-2	Socket, miniature molded (12BE6) ..

**V-2136 AND V-2136-2 CHASSIS**

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
C1	RCP10W2103M	Capacitor, .01 mfd 200 v.	L9	V-4886-12	Choke, RF .....
C2	V-5596	Capacitor, .005 mfd (V-2136 chassis) .....		V-9640	Rectifier, selenium .....
C3	RCP10W4103M	Capacitor, .01 mfd 400 v.	R1	RC30AE181K	Resistor, 180 ohms 1 w.
C4	RCP10W4103M	Capacitor, .01 mfd 400 v.	R2	RC20AE474M	Resistor, 470,000 ohms $\frac{1}{2}$ w.
C5	RCP10W6202M	Capacitor, .002 mfd 600 v.	R3	RC20AE474M	Resistor, 470,000 ohms $\frac{1}{2}$ w.
C6	RCP10W6202M	Capacitor, .002 mfd 600 v.	R4	RC20AE474M	Resistor, 470,000 ohms $\frac{1}{2}$ w.
C7	RCP10W2103M	Capacitor, .01 mfd 200 v.	R5	RC20AE223K	Resistor, 22,000 ohms $\frac{1}{2}$ w.
C8	RCP10W6102M	Capacitor, .001 mfd 600 v.	R6	RC20AE473M	Resistor, 47,000 ohms $\frac{1}{2}$ w.
C9	V-5596	Capacitor, .005 mfd .....	R7	RC20AE223M	Resistor, 22,000 ohms $\frac{1}{2}$ w.
C10	V-6023-4503M	Capacitor, .05 mfd 400 v.	R8	RC20AE223M	Resistor, 22,000 ohms $\frac{1}{2}$ w.
C11	V-5658-10	Capacitor, 50 mmf .....	R9	RC20AE223M	Resistor, 22,000 ohms $\frac{1}{2}$ w.
C12	RCP10W2103M	Capacitor, .01 mfd 200 v.	R10	RC20AE475M	Resistor, 4.7 megohms $\frac{1}{2}$ w.
C13	RCP10W2503M	Capacitor, .05 mfd 200 v.	R11	RC20AE221M	Resistor, 220 ohms $\frac{1}{2}$ w. ..
C14	V-5596	Capacitor, .005 mfd .....	R12	RC20AE221M	Resistor, 220 ohms $\frac{1}{2}$ w. ..
C15	V-9863-1	Capacitor, .001 mfd .....	R13	RC20AE221M	Resistor, 220 ohms $\frac{1}{2}$ w. ..
C16	RCP10W2103M	Capacitor, .01 mfd 200 v.	R14	RC20AE221M	Resistor, 220 ohms $\frac{1}{2}$ w. ..
C17	V-5596	Capacitor, .005 mfd .....	R15	RC20AE221M	Resistor, 220 ohms $\frac{1}{2}$ w. ..
C18	RCP10W2103M	Capacitor, .01 mfd 200 v.	R16	V-6984-10	Resistor, 820 ohms 5 w. ..
C19	V-9634-1	Capacitor, multiple ceramic .002 mfd, 220 mmf, 220 mmf, .005 mfd .....	R17	RC30AE220K	Resistor, 22 ohms 1 w. ...
C20	V-9863-1	Capacitor, .001 mfd .....	R18	RC20AE225M	Resistor, 2.2 megohms $\frac{1}{2}$ w.
C21	R2CC30UK270K	Capacitor, 27 mmf .....	R19	RC20AE225M	Resistor, 2.2 megohms $\frac{1}{2}$ w.
C22	R2CC30UK050D	Capacitor, 5 mmf .....	R20	RC20AE470M	Resistor, 47 ohms $\frac{1}{2}$ w. ...
C24	V-5658-9	Capacitor, 15 mmf .....	R21	RC20AE820K	Resistor, 82 ohms $\frac{1}{2}$ w. ...
C25	R5CC20ZY221M	Capacitor, 220 mmf .....	R22	RC20AE105M	Resistor, 1 megohm $\frac{1}{2}$ w. ..
C26	RCM20D101J	Capacitor, 100 mfd .....	R23	RC20AE221M	Resistor, 220 ohms $\frac{1}{2}$ w. ..
C27	RCM20A331M	Capacitor, 330 mmf .....	R24	RC20AE224M	Resistor, 220,000 ohms $\frac{1}{2}$ w.
C28	V-5658-10	Capacitor, 50 mmf .....	R25	RC20AE475M	Resistor, 4.7 megohms $\frac{1}{2}$ w.
C29	V-9920	Capacitor, electrolytic, 80 mfd 150 v., 60 mfd 150 v. ....	R26	RC20AE473M	Resistor, 47,000 ohms $\frac{1}{2}$ w. (V-2136 chassis) .....
C30	V-4637	Capacitor, electrolytic, 4 mfd 50 v. ....	R27	RC20AE335M	Resistor, 3.3 megohms $\frac{1}{2}$ w.
C31	RCM20A151M	Capacitor, 150 mmf .....	R28	RC20AE330M	Resistor, 33 ohms $\frac{1}{2}$ w. ...
C32	V-9670	Capacitor, trimmer (FM RF)	R29	RC20AE470M	Resistor, 47 ohms $\frac{1}{2}$ w. ...
C33	V-9671-2	Capacitor, variable tuning (consists of A, B, C, and D) .....	*R30	V-9673-1 assy	Control, volume 1 megohm (assy consists of R30 and SW1) .....
L1	V-9672	Coil AM osc. ....	*SW1	V-9673-1 assy	Switch, on-off (assy con- sists of R30 and SW1) ...
L2	V-9674	Coil, FM RF .....	SW2	V-9681-1	Switch, selector .....
	V-9676-1	Core, FM RF and osc. tuning	T1	V-9688	Transformer, 1st FM IF ...
L4	V-9099-1	Choke, 1.1 microhenries ..	T2	V-9642	Transformer, 2nd FM IF ...
L5	V-9099-1	Choke, 1.1 microhenries ..	T3	V-9828	Transformer, ratio detector
L6	V-9099-1	Choke, 1.1 microhenries ..	T4	V-9665	Transformer, output
L8	V-9099-1	Choke, antenna input .....	T5	V-9649-1	Transformer, 1st AM IF ...
			T6	V-6130-1	Transformer, 2nd AM IF ...
			Z2	V-9675	Coil and capacitor assy, FM osc. ....
				V-9676-1	Core, FM RF and osc. tuning



USE ONLY ZENITH NON-INDUCTIVE ELECTROLYTIC CONDENSER FOR REPLACEMENT. IF ANY OTHER TYPE OF ELECTROLYTIC IS USED IT WILL BE NECESSARY TO ADD PARTS SHOWN IN DOTTED LINES. I.F. TRANSFORMER NUMBERING STARTS WITH #1 TERMINAL AS FIRST TERMINAL CLOCKWISE AND ADJACENT TO MARKER AS VIEWED FROM BOTTOM OF CHASSIS. ALL VOLTAGES MEASURED FROM COMMON TERMINAL OF CHASSIS WITH A D.C. VACUUM TUBE VOLTMETER. ALL RESISTORS ± 5% TOLERANCE UNLESS OTHERWISE SPECIFIED.

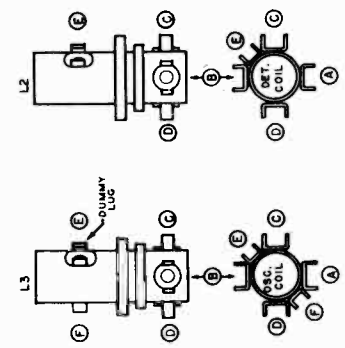
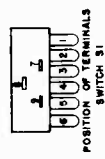
I.F. FREQUENCY 455 K.C.  
TUNING RANGE  
835-1620 K.C. STD. BC.  
BATTERY PACK NO. Z 909

CHANGE OVER SWITCH S1  
SHOWN IN POSITION FOR  
A.C. OPERATION.

10 WATTS  
117V.A.C.-D.C.

DEMOTES B-

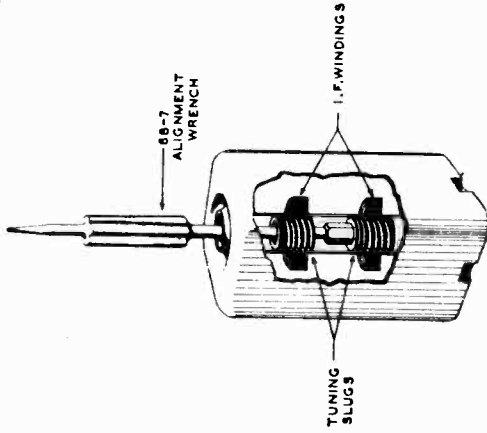
DEMOTES CHASSIS



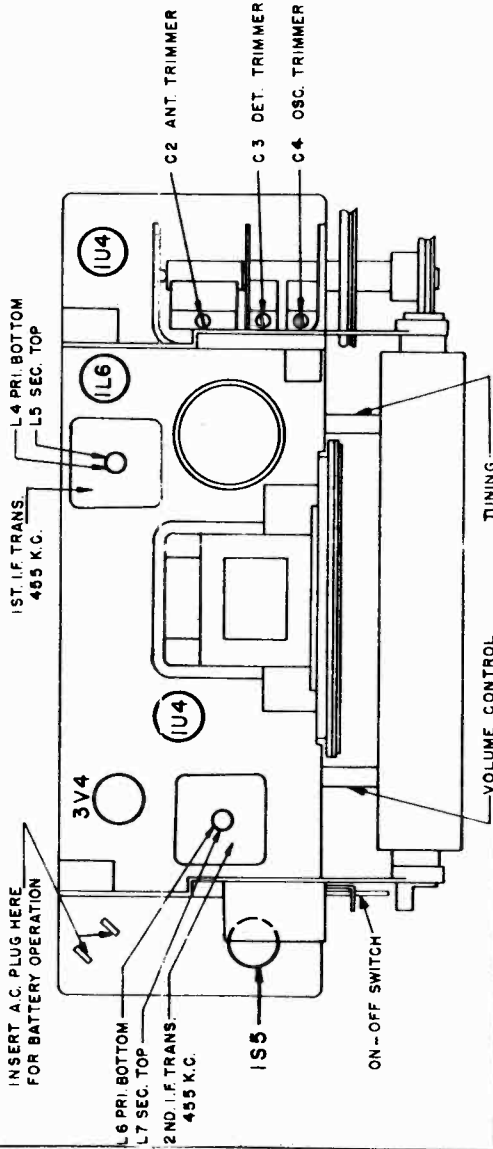
The 5G41 chassis is an AC, DC or battery operated super-heterodyne. The chassis is isolated from the DC circuit, and all measurements must be made from a common negative point. The most convenient place to reach this negative point is the negative side or container of the electrolytic. When the change-over Switch S1 is in AC position, the DC resistance from chassis to any circuit must be almost infinite. If any circuit becomes grounded a hum will result. Microphonic tubes will cause audio howl. Check the IL6 and IS5. The wavemagnet is connected to the chassis by two wires that pass through the hollow dial pivots. If the R.F. becomes weak or dead, check the D.C. resistance of the wavemagnet. This D.C. resistance should be approximately .9 ohm. If it is open check the wavemagnet.

MODEL G503,  
Ch. 5G41

DETAILED VIEW OF I. F. TRANSFORMERS.



TUBE AND TRIMMER LOCATION



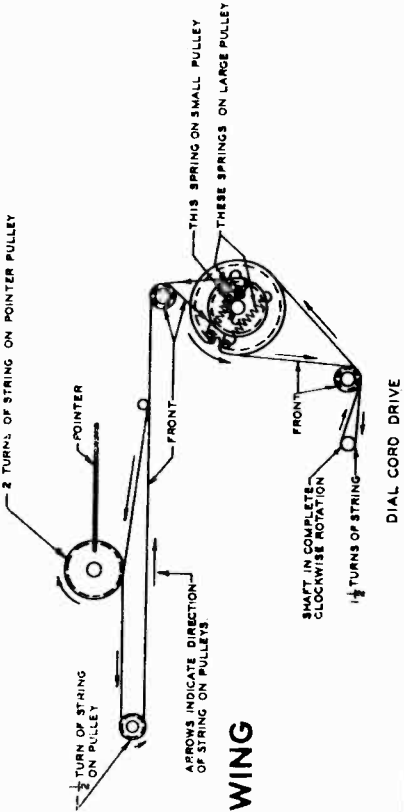
**IF Alignment:** Remove the chassis from the cabinet and arrange the units so that the wavemagnet can be connected. All the connections and adjustments can be made from the top of the chassis. Connect a signal generator, through a .1 mfd. dummy antenna, to the converter grid and B- (common return). Connect an output meter across the voice coil of the speaker (two lugs provided). Set the signal generator to 455 Kc. and adjust L4, L5, L6 and L7 for the maximum indication on the output meter. Always keep the signal output from the generator just high enough to get an indication, otherwise excessive loading may result.

**RF Alignment:** Connect a two turn loop across the leads of the signal generator, loosely couple this loop to the wavemagnet. Set the signal generator and the dial pointer of the receiver to 1600 Kc. and adjust C4 oscillator trimmer to resonance. Set the signal generator and dial pointer to 1400 and adjust C2 and C3 antenna detector trimmers to resonance. These trimmers are on the top of gang condenser. Check operation and re-install set in cabinet. Tune in a weak station near 1400 Kc. or use background noise and re-adjust antenna trimmer for maximum sensitivity.

The I.F. transformers incorporated in this receiver are of the new permeability tuned type. The advantage of an I.F. transformer of this type is its extreme stability under various humidity and temperature conditions. The upper coil is the secondary and the lower the primary. When adjusting these I.F. transformers the tuning wrench 68-7 can be inserted into the top slug, rotated until maximum output is obtained and then dropped down to the lower slug and the same operation repeated. The tuning wrench is so designed that turning one slug does not affect the adjustment of the other.

OPERATION	CONNECT OSCILLATOR TO ANTENNA	DUMMY GRID	INPUT SIG. FREQUENCY	BAND	SET DIAL TO	TRIMMERS	PURPOSE
1	Converter Grid	.1 Mfd	455 Kc.	BC	600 Kc.	L4, 5, 6 & 7	I.F. Alignment
2	Two turns loosely coupled to Wavemagnet		1600 Kc.	BC	1600 Kc.	Osc. Trim. C4	Set Oscillator to scale
3	Two turns loosely coupled to Wavemagnet		1400 Kc.	BC	1400 Kc.	Ant. & Det. Trims C2 & C3	Align Wavemagnet

2 TURNS OF STRING ON POINTER PULLEY



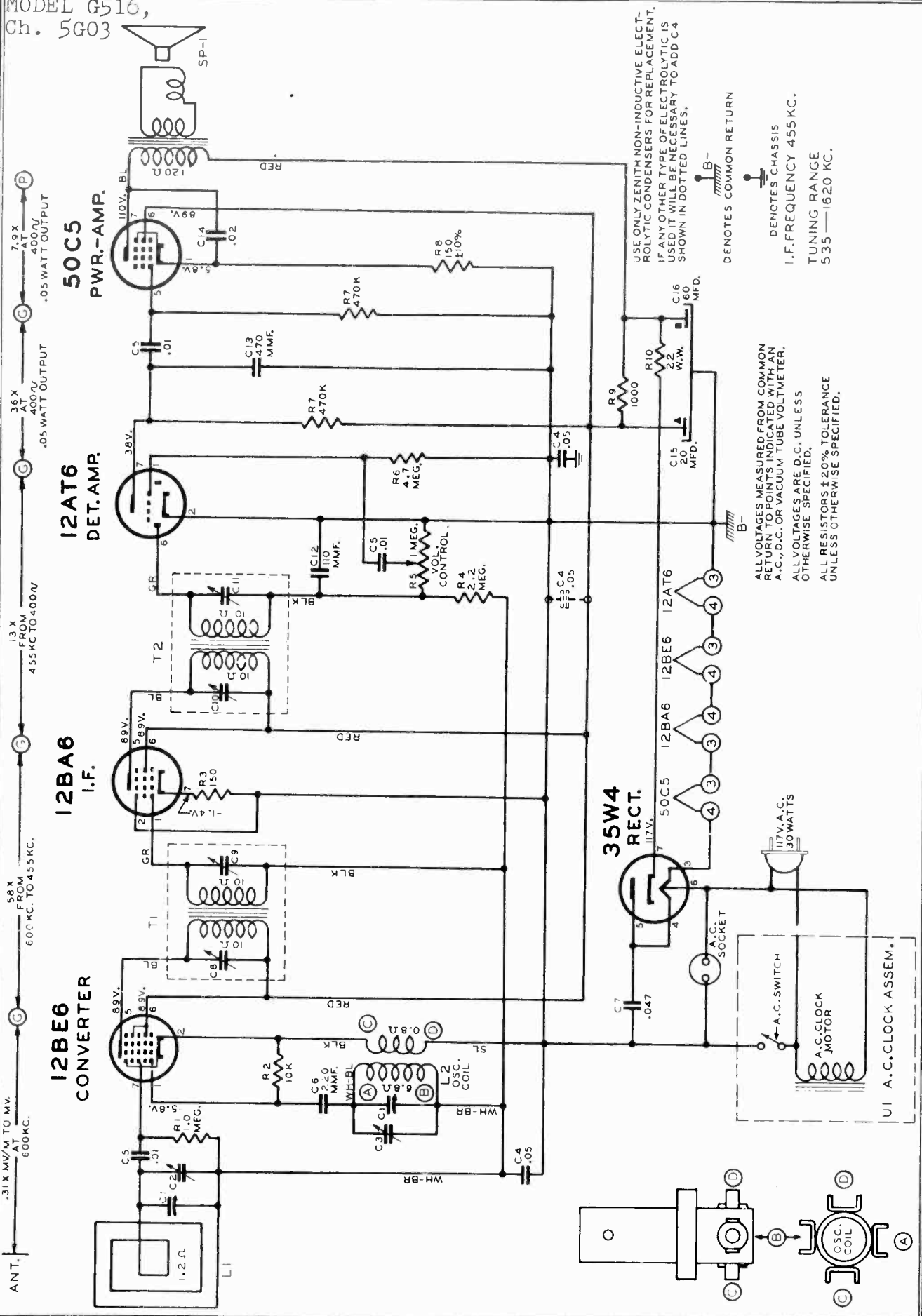
DIAL CABLE DRAWING

## PARTS LIST

Part No.	Ref. No.	Description	Part No.	Ref. No.	Description
DIAL ASSEMBLY			MISCELLANEOUS (Continued)		
12-1554		Tuning Shaft Bracket			
26-420		Dial Scale	36-42		Cabinet Handle (Y model only)
57-1630		Escutcheon (Y Model only)	36-43		Cabinet Handle
57-1631		Escutcheon	46-785		Tuning & Vol. Control Knob (2 used)
57-1632		Emblem Plate	49-658	SP-1	4" PM Speaker
57-1633		Emblem Plate (Y Model only)			208-658 Cone & Voice Coil
57-1634		Trim Plate			206-658 Output Trans.
59-225		Dial Pointer	54-34		#6-32 x 1/4" x 3/32 Hex. Nut Steel NP (Used on 212-10)
76-540		Tuning Shaft			#3/8-32 x 9/16" Palnut Type 9N Cad. Pl. (used on 63-2013)
80-209		Dial Cord Tension Spring	54-139		Fibre Spacer Washer (2 used on ea. S-16711 & S-15977)
93-978		Felt Washer (2 used)			Gang Cond. Mtg. Bushing (3 used)
188-32		Retaining Ring (used on 76-540)	93-1004		Handle Mtg. Stud
S-15430		Pointer & Pulley Assembly			#2 x 1/4" Phill. R.H.S.T. Screw Brass Plate (2 used on 57-1632)
S-15440		Dial Cord Assembly (Short)	94-295		#6-32 x 5/16" Hex. Hd. Sl. M.S. Cad. Pl. (2 used on 85-450)
S-16106		Dial Cord Assembly (Long)	97-367		#8 x 1/4" Hex. Hd. S.T. Screw Cad. Pl. (4 used on 57-1480)
			112-800		#8 x 5/16" Hex. Hd. Sl. S.T. Screw Shakeproof Cad. Pl. (4 used chassis mtg.)
COILS & CHOKES					#6-32 x 1" Hex. Hd. Sl. M.S. Steel (used on 212-10)
95-1132	T1	1st IF Transformer	113-18		Cabinet Grille
95-1133	T2	2nd IF Transformer	114-26		Speaker Mtg. Spacer (2 used)
S-15811	L2	Detector Coil Assembly			Door Latch
S-15812	L3	Oscillator Coil Assembly	114-295		Rubber Bumper (Speaker & Gang)
					Dial Glass
CONDENSERS			114-311		Instruction Book
22-3	C6	.01 Mfd. Ceramic (Disc)	500V	138-36	Selenium Rectifier
22-182	C5	220 Mmfd. Mica (Molded)	500V	147-166	Support Brkt. & Idler Pulley Assy.
22-229	C13	.005 Mfd.	600V	156-41	Wavemagnet Assembly
22-319	C8	.005 Mfd.	200V	166-44	Battery Cable & Socket Assy.
22-492	C10	.002 Mfd.	600V	192-132	Wavemagnet, Pulley & Sleeve Assy. (Y model only)
22-827	C9	.1 Mfd.	200V	202-804	Speaker Baffle & Grill Cloth Assy.
22-829	C19	.05 Mfd.	200V	212-10	Wavemagnet Pulley & Sleeve Assy.
22-1017	C14	.05 Mfd.	400V	S-15433	Battery
22-1386	C11	.02 Mfd.	200V	S-15434	#6-32 x 5/16" Palnut Cad. Pl. (1 ea. used on 95-1132 & 95-1133)
22-1669	C12	100 Mmfd. Ceramic	500V	S-15438	Spring Nut Cad. Pl. (1 each used on 26-420 & S-16711)
22-1741	C15, 16,			S-15977	Spring Nut Black Oxide (used on S-16711)
	17, 18	Four Section Elect. Cond.			Wavemagnet Lead Retaining Nut (2 used)
22-2070	C1	Three Section Gang Cond.		S-16710	Spring Nut (7 used on Esc. Mtg.)
				S-16711	Chassis Bottom Cover Plate
				Z909	Latch Plate
				54-267	Idler Pulley (4 used)
RESISTORS					Pointer Pulley
63-1362	R18, 19	Two Section Candohm		54-282	Idler Pulley
63-1757	R10	220 Ohm 1/2W 10% Ins. Res.		54-283	Shoulder Rivet (used on 61-71)
63-1778	R12	680 Ohm 1/2W 10% Ins. Res.		54-284	Shoulder Rivet (used on S-15433)
63-1758	R4	220 Ohm 1/2W 20% Ins. Res.		54-307	#2 x 3/8" Phill. Oval Hd. W. S. Steel
63-1786	R5	1000 Ohm 1/2W 20% Ins. Res.		57-1480	Black Oxide (3 used on Esc. Mtg.)
63-1834	R1	15K Ohm 1/2W 10% Ins. Res.		57-1491	#5 x 7/16 Phill. R.H. W. S. Steel N.P. (2 used on each 12-1433)
63-1862	R17	68K Ohm 1/2W 10% Ins. Res.		61-71	Elect. Cond. Socket
63-1880	R3	180K Ohm 1/2W 10% Ins. Res.		61-133	Battery Cable Socket (4 contact)
63-1912	R2	1 Megohm 1/2W 20% Ins. Res.		61-136	Miniature Tube Socket
63-1933	R14	3.3 Megohm 1/2W 20% Ins. Res.		64-290	Miniature Tube Socket
63-1940	R15	4.7 Megohm 1/2W 20% Ins. Res.		64-303	Miniature Tube Socket
63-1943	R6	5.6 Megohm 1/2W 10% Ins. Res.		70-158	Door Catch Spring
63-1954	R9	10 Megohm 1/2W 20% Ins. Res.			Latch Spring
63-1961	R8	15 Megohm 1/2W 20% Ins. Res.		70-159	S1 Power Change Over Switch
63-2013	R11	Volume Control 1.0 Meg.			S2 On-Off Switch
63-2018	R16	130 Ohm Zipohm 3W 10% Ins. Res.		78-274	#6 Split Lockwasher (used on 212-10)
				78-543	Brass Spacer Washer (used on S-16711 & S-15977)
MISCELLANEOUS					
11-104		Line Cord & Plug Assembly			
12-1733		Chassis Mtg. Brkt.			
14-1230		Plastic Cabinet for G503			
14-1231		Plastic Cabinet for G503Y			
15-51		Cable Socket Cap & Insulator			
19-185		Speaker Baffle Retaining Clip (2 used)			
24-482		On-Off Switch Cover			
24-543		Front Door (Y model only)			
24-544		Front Door			



MODEL G516,  
Ch. 5G03



USE ONLY ZENITH NON-INDUCTIVE ELECTROLYTIC CONDENSERS FOR REPLACEMENT, IF ANY OTHER TYPE OF ELECTROLYTIC IS USED IT WILL BE NECESSARY TO ADD C4 SHOWN IN DOTTED LINES.

⏏ DENOTES COMMON RETURN  
 ⏏ DENOTES CHASSIS  
 I.F. FREQUENCY 455 KC.  
 TUNING RANGE 535—1620 KC.

ALL VOLTAGES MEASURED FROM COMMON RETURN TO POINTS INDICATED WITH AN A.C., D.C. OR VACUUM TUBE VOLTMETER. ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.  
 ALL RESISTORS ± 20% TOLERANCE UNLESS OTHERWISE SPECIFIED.

PARTS LIST

DIAL ASSEMBLY

- 26-444 Dial Scale
- 46-854 Volume Control Knob
- 46-856 Tuning Control Knob
- 46-861 Volume Control Knob (W & Y Model)
- 46-862 Tuning Control Knob (W & Y Model)
- 59-244 Dial Pointer
- 59-246 Dial Pointer (W & Y Model)
- 80-402 Dial Cord Tension Spring
- 80-745 Pointer Pulley Retaining Spring
- S-16689 Pointer Pulley & Shaft Assembly
- S-16696 Pulley Mtg. Strip & Bushing Assembly
- S-16697 Dial Cord Assembly
- S-16728 U1 Clock & Timer Assembly (Complete)
- S-16774 U1 Clock & Timer Assembly (W Model) Complete
- S-16775 U1 Clock & Timer Assembly (Y Model) Complete

COILS & CHOKES

- 95-1230 T1 1st. I. F. Transformer
- 95-1231 T2 2nd. I. F. Transformer
- S-16681 L2 Osc. Coil Assembly

CONDENSERS

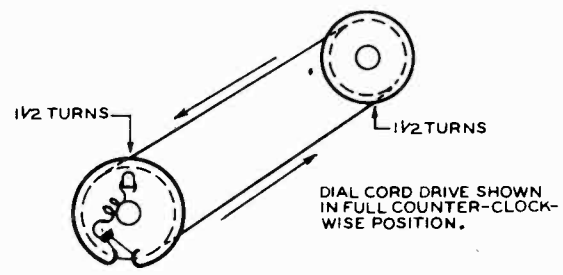
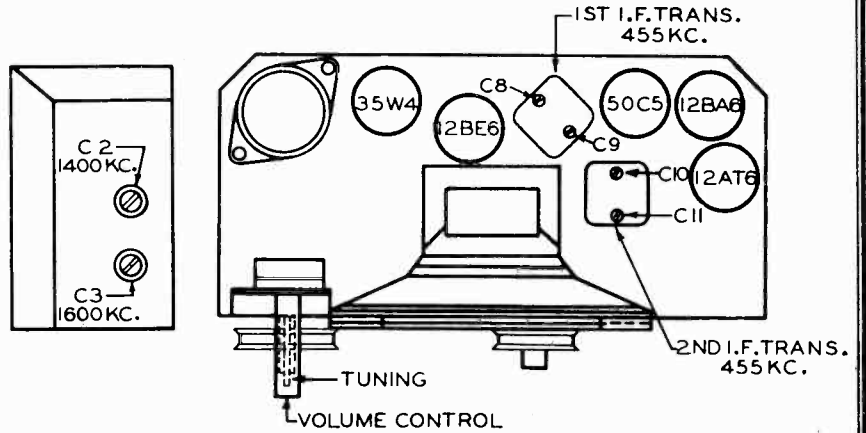
- 22-3 C5 .01 Mfd. Ceramic (3 used) 500V
- 22-5 C12 110 Mmfd. Ceramic (or 22-162) 500V
- 22-6 C13 470 Mmfd. Ceramic (or 22-1196) 500V
- 22-182 C6 220 Mmfd. Molded Mica 500V
- 22-829 C4 .05 Mfd. (2 used) 200V
- 22-1017 C7 .05 Mfd. 400V
- 22-1379 C14 .02 Mfd. 400V
- 22-2202 C15, C16 Elect. 20-60 Mfd. 150V
- 22-2209 C1 Two Gang Variable

RESISTORS

- 63-1219 R10 22 Ohm W.W. 1/2W 20% Ins.
- 63-1574 R9 1000 Ohm 1W 20% Ins.
- 63-1751 R3 150 Ohm 1/2W 20% Ins.
- 63-1828 R2 10K Ohm 1/2W 20% Ins.
- 63-1898 R7 470K Ohm 1/2W 20% Ins.
- 63-1912 R1 1 Megohm 1/2W 20% Ins.
- 63-1926 R4 2.2 " 1/2W 20% Ins.
- 63-1940 R6 4.7 " 1/2W 20% Ins.
- 63-1977 R8 150 Ohm 1W 10% Ins.
- 63-2106 R5 Volume Control

MISCELLANEOUS

- 11-85 Line Cord & Plug (6 ft.)
- 14-1234 Plastic Cabinet for G516
- 14-1237 Plastic Cabinet for G516 White
- 14-1238 Plastic Cabinet for G516 Black
- 16-603 Packing Carton
- 24-541 Volume Control Cover
- 49-680 SP-1 4" P. M. Speaker
- \*208-680 Cone & Voice Coil
- \*206-680 Output Transformer
- 54-139 3/8-32 x 9/16 Hex Pinnut
- 54-227 #4-40 x 1/4 Hex Nut Steel (3 used to Mount Clock)
- 54-271 6-32 x 1/4 Hex Pinnut Steel (2 used on each 95-1230 & 95-1231)
- 57-1613 Emblem Plate
- 78-275 Elect. Cond. Socket
- 78-781 Miniature Tube Socket (2 used)
- 78-782 Miniature Tube Socket (3 used)
- 78-840 Two Prong Socket (A.C.)
- 93-501 #4 Int. Shakeproof Lockwasher (3 used on Clock Mtg.)
- 94-334 Gang Mtg. Bushing (3 used)
- 110-150 Grill Cloth
- 113-15 6-32 x 5/16" Hex Hd. M.S. (3 used on Gang Cond. Mtg.)
- 114-253 #6 x 3/8 Hex Hd. Sl. S. T. (2 used Chassis Mtg.)
- 114-343 #8 x 1/2 Hex Hd. Sl. Washer Hd. S. T. (2 used Chassis Mtg.)
- 125-17 Rubber Grommet (3 used Gang Mtg.)
- 159-69 Trimount Stud (4 used Back Mtg.)
- 202-805 Instruction Book
- S-16729 L1 Wavemagnet & Back Assem. (Walnut & Black Models)
- S-16768 Clock Cover & Bushing (Rear)
- S-16776 Wavemagnet & Back Assem. (White Models)
- S-17001 Twisted Wire Cable Assembly



DIAL CORD DRIVE

Clock and Timer Note:

The clock and timer assemblies used in this receiver are manufactured by Telechron. Face parts, such as hands, knobs, scales, bezel, etc., are not available through local Telechron service depots. We suggest that all clock and timer assemblies complete (less the rear cover and bushing - S-16768) be returned to your local Zenith Distributor for repair or replacement. Be sure to pack all clock and timer assemblies individually and carefully to prevent damage in shipment.

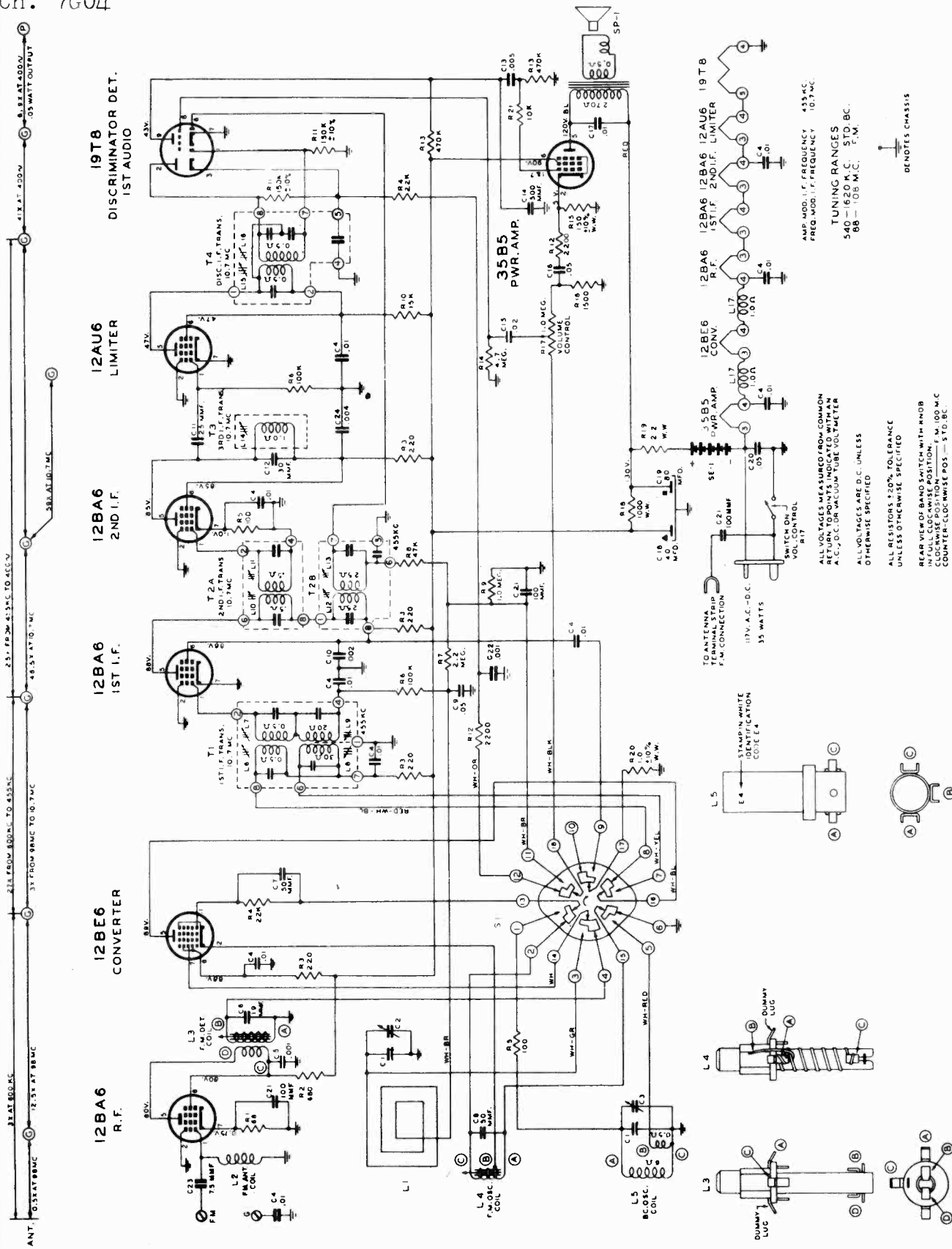
To remove the clock from the cabinet proceed as follows:

1. Remove the three 6/32 hex nuts that fasten the rear clock cover to the clock.
2. Slide the rear clock cover off the time set control shaft and then slide this cover down over the three-wire cable that connects the clock to the receiver.
3. Next unsolder the three-wire cable from the clock motor and switch. Be certain not to tear out the solder terminals from the clock motor or switch.
4. The clock can then be removed from the front of the cabinet.

ALIGNMENT PROCEDURE

OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIG. FREQUENCY	SET DIAL AT	TRIMMERS	PURPOSE
1	Converter Grid	.5 Mfd.	455 Kc.	600 Kc.	C8, C9, C10, C11	For I. F. Alignment
2	One Turn Loop Coupled Loosely to	---	1600 Kc.	1600 Kc.	C-3	Set Oscillator to Dial Scale
3	Wave Magnet	---	1400 Kc.	1400 Kc.	C-2	Align Antenna Stage

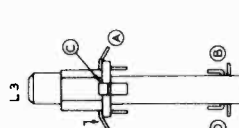
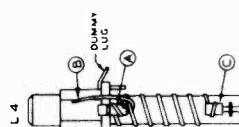
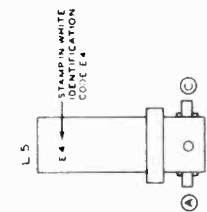
MODEL G723,  
Ch. 7G04



AMP. MOD. I.F. FREQUENCY 453 KC.  
PRG. MOD. I.F. FREQUENCY 10.7 MC.  
TUNING RANGES  
540 - 620 K.C. STD. BC.  
88 - 108 M.C. F.M.

⊕ DENOTES CHASSIS

ALL VOLTAGES MEASURED FROM COMMON  
RETURN, TOP POINTS INDICATED WITHIN  
A.C. OR VACUUM-TUBE VOLTMETER  
ALL VOLTAGES ARE D.C. UNLESS  
OTHERWISE SPECIFIED  
ALL RESISTORS ±20% TOLERANCE  
UNLESS OTHERWISE SPECIFIED  
REAR VIEW OF BAND SWITCH WITH KNOB  
IN POSITION. COUNTER POSITION. F.M. 100 M.C.  
CLOCKWISE POSITION. F.M. 100 M.C.  
COUNTER-CLOCKWISE POS. — STD. BC.



The 7G04 chassis incorporates a superheterodyne circuit with two stages of IF, on the FM Band, and one stage on the AM Band. There is one stage of RF amplification on the FM Band.

When adjustments are made on the 7G04 or any AC-DC chassis, a line isolation transformer (110-V input to 110-V output) is recommended in order to avoid a "hot" chassis. If an isolation transformer is not available, check the AC voltage between chassis and bench ground, and if there is any indication of voltage, reverse the plug before handling the set.

**FM-AM 1st IF Alignment:** The alignment of the 1st IF transformer is conventional. The alignment slugs are threaded and screw into the coil forms. The slugs are slotted for a small size fiber screw driver. Do not press hard on the aligning tool or the threads in the coil forms will strip and adjustment will be impossible. The 2nd AM and FM IF transformers and the discriminator transformer are the new permeability tuned type. The advantage of an IF transformer of this type is its extreme stability under various humidity and temperature conditions. The upper coil is the secondary and the lower the primary. When adjusting these IF and discriminator transformers, tuning wrench 68-7 can be inserted into the top slug, rotated until maximum output is obtained and then dropped down to the lower slug and the same operation repeated. The tuning wrench is so designed that turning one slug does not affect the adjustment of the other.

**FM RF Alignment:** The tuning slugs are attached to threaded shafts and the slugs are varied in the field of the coils by turning the shafts clockwise or counter-clockwise. After adjustment the shafts must be secured with a drop of speaker cement.

**FM IF Alignment:** Because of the wide band pass, it is desirable to use a FM signal generator and a cathode ray oscilloscope when aligning the FM IF channel. The instruction book for the Zenith Model 800 Signal Genera-

tor (Form Z8001) covers complete FM alignment procedure. If visual alignment equipment is unavailable, reasonably accurate alignment can be made by following the procedure outlined in this service note.

**FM Discriminator Alignment:** When the secondary of the discriminator is aligned (operation 5) use sufficient signal input to get a good positive and negative indication before setting the slug for zero reading. A center zero indicating meter is recommended for this adjustment, but is not absolutely necessary. Reversing the leads of a non-zero center meter, or observing closely when the meter starts to go to the left (negative) of zero will give the same results.

Alignment of this chassis will, in most cases, be unnecessary unless an IF or RF transformer is replaced or the adjustments have been tampered with.

Correct alignment can only be made if the following procedure is followed:

A vacuum tube voltmeter with an isolation resistor of 2,000,000 ohms in series with the hot lead will serve for FM adjustments. This lead should be shielded.

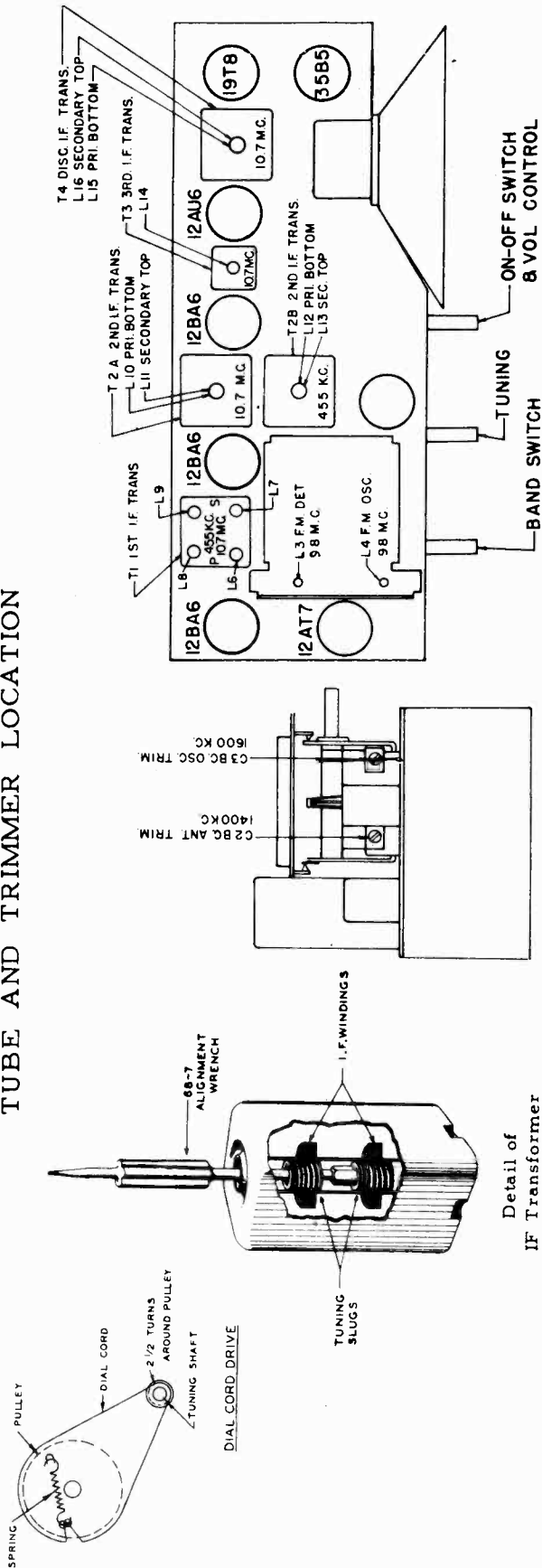
An AC output meter connected across the primary or secondary of the output transformer will be satisfactory for all AM adjustments.

The signal generator output should be kept just high enough to get an indication on the meter.

- (a) Vacuum Tube Voltmeter Lug 7 on discriminator transformer to chassis (half discriminator load).
- (b) Vacuum Tube Voltmeter Lug 5 on discriminator transformer to chassis (full discriminator load).
- (c) Vacuum Tube Voltmeter from Limiter Grid to Chassis.
- (d) Loosen Slugs by applying a hot iron to the cement.

MODEL G723,  
Ch. 7G04

TUBE AND TRIMMER LOCATION



ALIGNMENT PROCEDURE

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial To	Adj. Trimmers	Purpose
1	Pin 7 12BE6 Converter 2 turns loosely cpld. to wavemagnet	.05 Mfd.	455 Kc. Modulated 1600 Kc.	BC	600 Kc.	L8, 9, 12, 13	Align I. F. channel for maximum output.
2	2 turns loosely cpld. to wavemagnet		Modulated 1400 Kc.	BC	1600 Kc.	C 3	Set oscillator to dial scale.
3	Pin 1 (grid) on 12AUG limiter.	.05 Mfd.	Modulated 10.7 Mc.	BC	1400 Kc.	C 2	Align antenna stage.
4 (a)	Pin 1 (grid) on 12AUG limiter.	.05 Mfd.	Unmodulated 10.7 Mc.	FM		L13 coil slug Primary discr.	Align primary of discriminator for maximum reading.
5 (b)	Pin 1 (grid) on 12AUG limiter.	.05 Mfd.	Unmodulated 10.7 Mc.	FM		L16 coil slug sec. of discr.	Adjust secondary of discriminator for zero reading.
6 (c)	Pin 1 (grid) on 12BA6 2nd IF.	.05 Mfd.	Unmodulated 10.7 Mc.	FM		L14 Prim. of 3rd IF trans.	Align 3rd IF transformer for maximum reading.
7 (c)	Pin 1 (grid) on 12BA6 1st IF.	.05 Mfd.	10.7 Mc. Unmodulated 100	FM		L10 and L11 Prim. and Sec. of 2nd IF transformer	Align 2nd IF transformer for maximum reading.
8 (c)	Pin 7 (grid) on 12BE6 converter tube socket.	.05 Mfd.	10.7 Mc. Unmodulated 98 Mc.	FM		L6 and L7 Prim. and Sec. of 1st IF transformer.	Align 1st IF transformer for maximum reading.
9 (c)	Antenna Post FM (Re- move line ant.)	270 ohms	Unmodulated 98 Mc.	FM	98 Mc.	L4 Osc. Coil Slug	Set Oscillator to dial scale.
10 (c) (d)		270 ohms	Unmodulated 98 Mc.	FM	98 Mc.	L3 Det. Coil Slug	Align det. stage to maximum reading.

## PARTS LIST

MODEL G723,  
Ch. 7G04

PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
<u>DIAL ASSEMBLY</u>		<u>RESISTORS</u>	
26-443	Dial Scale	63-686	150 Ohm W.W. 1/2W 10% Ins. Res.
46-859	Band Switch Knob	63-1223	1.0 " W.W. " " " "
46-860	Tuning & Volume Control Knob (2 used)	63-1450	22 " W.W. 1W 20% " "
59-243	Dial Pointer	63-1527	1000 " W.W. 3W " " "
80-402	Dial Cord Tension Spring	63-1737	68 " " 1/2W " " "
80-444	Tuner Arm Tension Spring	63-1744	100 " " " " " "(2 used)
80-580	Tuner Arm Stop Spring	63-1758	220 " " " " " "(4 used)
80-817	Tuner Spring	63-1779	680 " " " " " "
80-818	Tuner Arm Pressure Spring	63-1793	1500 " " " " " "
93-910	Felt Washer - Brown (2 used on 46-860 & 1 used on 46-859)	63-1800	2200 " " " " " "(2 used)
93-956	1/16" x 9/32" x 3/4" Black Felt Washer (Used on 59-243)	63-1828	10K " " " " " "
188-32	Retaining Ring (Used on S-16885)	63-1835	15K " " " " " "
199-35	Dial Scale Spacer Sleeve	63-1842	22K " " " " " "(2 used)
S-14523	Tuning Shaft Brkt; & Insulating Strip Assem.	63-1856	47K " " " " " "
S-14524	Condenser Pulley & Cam Assembly	63-1870	100K " " " " " "(2 used)
S-14525	Tuner Arm Assembly	63-1876	150K " " 10% " " "(2 used)
S-16885	Tuning Shaft & Pulley Assembly	63-1898	470K " " 20% " " "(2 used)
S-16888	Dial Cord & Eyelet Assembly	63-1912	1 Megohm " " " " "
		63-1926	2.2 " " " " " "
		63-1940	4.7 " " " " " "
		63-2113	Volume Control & Switch
<u>MISCELLANEOUS</u>			
		12-1070	Wavemagnet Mounting Bracket
		14-1232	Plastic Cabinet for G723
		49-667	4" P.M. Speaker
			208-667 Cone & Voice Coil
			206-667 Output Transformer
		54-139	3/8-32 x 9/16" Palnut (1 ea. used 85-481 & 63-2113)
		54-226	Speed Nut Tinnerman (1 ea. used S-13871 & S-14695)
		54-267	#6-32 x 5/16" Palnut (Used on 26-443)
		54-269	#8-32 x 11/32" Palnut Steel Cad. (Used on S-14521)
		54-271	6-32 x 1/4" Palnut (5 used on I.F.'s.)
		57-1269	I. F. Transformer Terminal Plate (2 used)
		57-1613	Cabinet Emblem Plate
		58-128	Two Prong Plug
		73-131	#6-32 x 3/8" Slab Hd. Set Screw Cuppoint (2 used on Gang)
		78-788	Miniature Tube Socket
		78-806	Miniature Tube Socket
		78-807	Miniature Tube Socket (5 used)
		83-1056	Wavemagnet Mounting Strip
		83-1090	Insulating Strip
		83-1520	Rectifier Insulating Strip
		83-1736	Felt Strip (2 used)
		93-1773	Insulating Strip (3 hole strip over controls)
		95-481	Band Switch
		93-35	.032 x .144 x 3/8" Steel Washer N.P. (2 used on 26-443 & 49-667)
		94-613	Iron Core Insulating Bushing (2 used)
		97-293	Chassis Mounting Stud (2 used)
		412-281	#10 x 3/4" Oval Bind Hd. S.T. Stat. Bronze (2 used on Chassis Mtg.)
		114-293	#6-32 x 3/8" Hex Hd. Sl. M.S. Steel (3 used)
		114-340	#6 x 1-1/8" Hex Hd. Sl. S.T. (used on 212-7).
		139-79	Speaker Baffle
		149-64	Iron Core & Spring (2 used)
		149-65	Iron Core & Screw
		159-50	Cinch Plug Button Black Ox. (4 used on 192-117)
		159-69	Plug Button Stat. Bronze (4 used on S-14549)
		192-117	Dial Glass
		196-111	Speaker Gasket
		202-697	F. M. Instruction Book
		202-808	Instruction Book
		212-7	Selenium Rectifier
		S-14527	Wavemagnet Lead & Stop Assembly
		S-14549	Cabinet Back Assembly (Complete)
		S-14957	Wavemagnet Assembly
		S-15739	Speaker Support Bracket & Plate Assembly
<u>COILS &amp; CHOKES</u>			
95-1102	2nd. I. F. Transformer		
95-1150	2nd. I. F. Transformer		
95-1153	Discriminator Transformer		
S-13871	F. M. Detector Coil Assembly		
S-13997	Filament Choke Assembly (2 used)		
S-14481	Broadcast Osc. Coil Assembly		
S-14509	3rd. I. F. Coil Assembly		
S-14521	1st. I. F. Transformer Assembly		
S-14695	F. M. Osc. Coil Assembly		
S-15690	F. M. Antenna Coil Assembly		
<u>CONDENSERS</u>			
22-3	.01 Mfd. Ceramic (10 used)	500V	
22-229	.005 " "	600V	
22-448	.004 " "	600V	
22-829	.05 " "	200V	
22-830	.02 " "	600V	
22-854	500 Mmfd.	600V	
22-887	.001 Mfd.	600V	
22-1017	.05 " "	400V	
22-1126	.01 " "	400V	
22-1158	.05 " "	200V	
22-1220	.002 " "	600V	
22-1492	50 Mmfd. Ceramic	500V	
22-1507	25 " "	500V	
22-1511	50 " "	500V	
22-1669	100 " "(or 22-5) (3 used)	500V	
22-1676	.001 Mfd. Ceramic	500V	
22-1688	19 Mmfd.	500V	
22-1742	Two Section Variable		
22-1757	Elect. Cond. 80-40 Mfd. - 150V		
22-1768	30 Mmfd. Ceramic	500V	
22-1852	7.5 " "	500V	

MODEL G724,  
Ch. 7G02

## PARTS LIST

## DIAL ASSEMBLY

12-1546 Indicator Socket Brkt.  
26-442 Dial Scale  
46-780 Tone Control Knob  
46-811 Tuning & Vol. Control Knob (2 Used)  
46-844 Band Switch Knob  
59-243 Dial Pointer  
78-585 Indicator Socket  
80-402 Dial Cord Tension Spring  
80-444 Tuner Arm Tension Spring  
80-580 Tuner Arm Stop Spring  
80-817 Tuner Spring  
80-818 Tuner Arm Pressure Spring  
93-774 Felt Washer - Brown (1 Used  
46-844 & 2 Used 46-811)  
93-956 1/16 X 9/32 X 3/4" Black Felt Washer (Used on 59-243)  
100-105 PL-1 Neon Indicator Bulb  
114-51 #6-32 X 1/2" Hex Sl. Hd. M.S. Steel N.P. (1 ea. used on 12-1546 & 26-442)  
188-32 Retaining Ring (Used on S-16885)  
199-35 Dial Scale Spacer Sleeve  
S-14523 Tuning Shaft Brkt. & Insulating Strip Assem.  
S-14524 Condenser Pulley & Cam Assem.  
S-14525 Tuner Arm Assem.  
S-16885 Tuning Shaft & Pulley Assem.  
S-16888 Dial Cord & Eyelet Assem.

## COILS &amp; CHOKES

95-1102 T2B 2nd I.F. Trans. (Broadcast)  
95-1150 T2A 2nd I.F. Trans. (F.M.)  
95-1153 T4 Discriminator Trans.  
S-13871 L3 F.M. Detector Coil Assem.  
S-14509 L14 3rd I.F. Coil Assem.  
S-15690 L2 F.M. Antenna Coil Assem.  
S-15694 L5 Broadcast Osc. Coil Assem.  
S-15695 T1 1st. I.F. Trans. Assem.  
S-15733 L4 F.M. Oscillator Coil Assem.

## CONDENSERS

22-3 C4 .01 Mfd. Ceramic (9 Used) 500V  
22-5 C12 110 Mmfd. Ceramic (3 Used) 500V  
(Or 22-1669)  
22-229 C18 .005 Mfd. 600V  
22-448 C25 .004 Mfd. 600V  
22-829 C10 .05 Mfd. 200V  
22-830 C16 .02 Mfd. 600V  
22-854 C17 500 Mmfd. 600V  
22-887 C15 .001 Mfd. 600V  
22-1017 C24 .05 Mfd. 400V  
22-1025 C21 .15 Mfd. 200V  
22-1126 C19 .01 Mfd. 400V  
22-1158 C20 .05 Mfd. 200V  
22-1220 C11 .002 Mfd. 600V  
22-1367 C9 50 Mmfd. 500V  
22-1506 C7 22 Mmfd. Ceramic (2 Used) 500V  
22-1507 C13 25 Mmfd. Ceramic 500V  
22-1676 C5 .001 Mfd. Ceramic (2 Used) 500V  
22-1752 C1 Two Section Variable  
22-1757 C22- Elect. Cond. 80-40 Mfd. 150V  
C23  
22-1766 C8 .68 Mmfd. Ceramic 500V  
22-1768 C14 30 Mmfd. Ceramic 500V  
22-1852 C26 7.5 Mmfd. Ceramic 500V

## RESISTORS

63-686 R15 150 Ohm W.W. 1/2W 10% Ins. Res.  
63-1223 R8 1.0 Ohm W.W. 1/2W 10% Ins. Res.  
63-1450 R20 22 Ohm W.W. 1W 20% Ins. Res.  
63-1527 R19 1000 Ohm W.W. 3W 20% Ins. Res.  
63-1737 R1 68 Ohm 1/2W 20% Ins. Res.  
63-1744 R3 100 Ohm 1/2W 20% Ins. Res. (2 Used)  
63-1758 R2 220 Ohm 1/2W 20% Ins. Res. (5 Used)  
63-1782 R17 820 Ohm 1/2W 10% Ins. Res.  
63-1800 R4 2200 Ohm 1/2 20% Ins. Res. (3 Used)  
63-1828 R5 10K Ohm 1/2W 20% Ins. Res.  
63-1835 R11 15K Ohm 1/2W 20% Ins. Res.  
63-1856 R9 47K Ohm 1/2W 20% Ins. Res.  
63-1870 R6 100K Ohm 1/2W 20% Ins. Res. (2 Used)  
63-1876 R12 150K Ohm 1/2W 10% Ins. Res. (2 Used)  
63-1884 R21 220K Ohm 1/2W 20% Ins. Res.  
63-1898 R14 470K Ohm 1/2W 20% Ins. Res. (2 Used)  
63-1912 R10 1 Megohm 1/2W 20% Ins. Res.  
63-1926 R7 2.2 Megohm 1/2W 20% Ins. Res.  
63-1940 R13 4.7 Megohm 1/2W 20% Ins. Res. (3 Used)  
63-2008 R16 Tone Control  
63-2113 R18 Volume Control & Switch

## MISCELLANEOUS

12-1070 Wavemagnet Mtg. Brkt.  
14-1233 Plastic Cabinet for G724  
43-165 Handle Housing  
49-634 SP-1 5-1/4" P.M. Speaker  
208-634 Cone & Voice Coil  
206-634 Output Trans.  
54-139 3/8-32 X 9/16" Palnut (1 Ea. Used on 63-2113 & 85-481)  
54-226 Speed Nut (1 Ea. Used on S-13871 & S-15733)  
54-267 #6-32 X 5/16" Palnut - Steel Cad. (7 Used)  
54-269 #8-32 X 11/32" Palnut - Steel Cad. (Used on S-15695)  
54-305 3/8-32 X 9/16 Palnut - Steel Stat. Bronze  
57-1269 I.F. Trans. Terminal Plate (2 Used)  
57-1613 Cabinet Emblem Plate  
58-128 Two Prong Plug  
73-131 #6-32 X 3/8" Slab. Hd. Set Screw (2 Used on Gang)  
78-806 Miniature Tube Socket  
78-807 Miniature Tube Socket (4 Used)  
78-850 Miniature Tube Socket (9 Contact)  
78-868 Miniature Tube Socket (9 Contact)  
83-1056 Wavemagnet Mtg. Strip  
83-1090 Insulating Strip  
83-1393 Rubber Strip (Handle)  
83-1520 Rectifier Insulating Strip  
83-1736 Felt Strip (2 Used)  
83-1773 Insulating Strip (3 Hole Strip over Controls)  
85-481 S-1 Band Switch  
93-35 .032 X .144 X 3/8 Steel Washer (2 Used on 26-442)  
93-125 #6 Int. Shakeproof Lockwasher (5 Used on Gang)  
93-487 1/16 X .144 X 3/8" Steel Washer (2 Used on 43-165)  
93-719 031 X 3/16 X 7/16" Steel Washer (Used on 26-442)

**PARTS LIST CONT'D**

93-729	032 X .187 X 5/8" Steel Washer (Used on 26-442)
94-613	Iron Core Insulating Bushing (2 Used)
97-293	Chassis Mtg. Stud (2 Used)
112-281	#10 X 3/4" Oval Binding Hd. S.T. Screw Type Z Stat. Br. (2 Used Chassis Mtg.)
114-340	#6 X 1-1/2" Hex Hd. Sl. S.T. (Used on 212-7)
126-618	Tube Shield
149-64	Iron Core & Spring (2 Used)
149-65	Iron Core & Screw
159-50	Plug Button - Stat. Bronze (4 Used on 192-117)
159-69	Plug Button - Stat. Bronze (4 Used on S-14549)
192-117	Dial Glass
196-111	Speaker Gasket
199-103	Flexible Handle Sleeve
202-697	F.M. Instruction Book
202-809	Instruction Book
212-7	SE-1 Selenium Rectifier
S-13210	Strip & Rivet Assem. (Handle)
S-14527	Wavemagnet Lead & Stop Assem.
S-14549	Cabinet Back Assem. (Complete)
S-14957	L1 Wavemagnet Assem.

The 7G02 chassis incorporates a superheterodyne circuit with two stages of IF, on the FM Band, and one stage on the AM Band. There is one stage of RF amplification on the FM Band.

When adjustments are made on the 7G02 or any AC-DC chassis, a line isolation transformer (110-V input to 110-V output) is recommended in order to avoid a "hot" chassis. If an isolation transformer is not available, check the AC voltage between chassis and bench ground, and if there is any indication of voltage, reverse the plug before handling the set.

**FM-AM 1st IF Alignment:** The alignment of the 1st IF transformer is conventional. The alignment slugs are threaded and screw into the coil forms. The slugs are slotted for a small size fiber screw driver. Do not press hard on the aligning tool or the threads in the coil forms will strip and adjustment will be impossible. The 2nd AM and FM IF transformers and the discriminator transformer are the new permeability tuned type. The advantage of an IF transformer of this type is its extreme stability under various humidity and temperature conditions. The upper coil is the secondary and the lower the primary. When adjusting these IF and discriminator transformers, tuning wrench 68-7 can be inserted into the top slug, rotated until maximum output is obtained and then dropped down to the lower slug and the same operation repeated. The tuning wrench is so designed that turning one slug does not affect the adjustment of the other.

**FM RF Alignment:** The tuning slugs are attached to threaded shafts and the slugs are varied in the field of the coils by turning the shafts clockwise or counter-clockwise. After adjustment the shafts must be secured with a drop of speaker cement.

**FM IF Alignment:** Because of the wide band pass, it is desirable to use a FM signal generator and a cathode ray oscilloscope when aligning the FM IF channel. The instruction book for the Zenith Model 800 Signal Generator (Form Z8001) covers complete FM alignment procedure. If visual alignment equipment is unavailable, reasonably accurate alignment can be made by following the procedure outlined in this service note.

**FM Discriminator Alignment:** When the secondary of the discriminator is aligned (operation 5) use sufficient signal input to get a good positive and negative indication before setting the slug for zero reading. A center zero indicating meter is recommended for this adjustment, but is not absolutely necessary. Reversing the leads of a non-zero center meter, or observing closely when the meter starts to go to the left (negative) of zero will give the same results.

Alignment of this chassis will, in most cases, be unnecessary unless an IF or RF transformer is replaced or the adjustments have been tampered with.

Correct alignment can only be made if the following procedure is followed:

A vacuum tube voltmeter with an isolation resistor of 2,000,000 ohms in series with the hot lead will serve for FM adjustments. This lead should be shielded.

An AC output meter connected across the primary or secondary of the output transformer will be satisfactory for all AM adjustments.

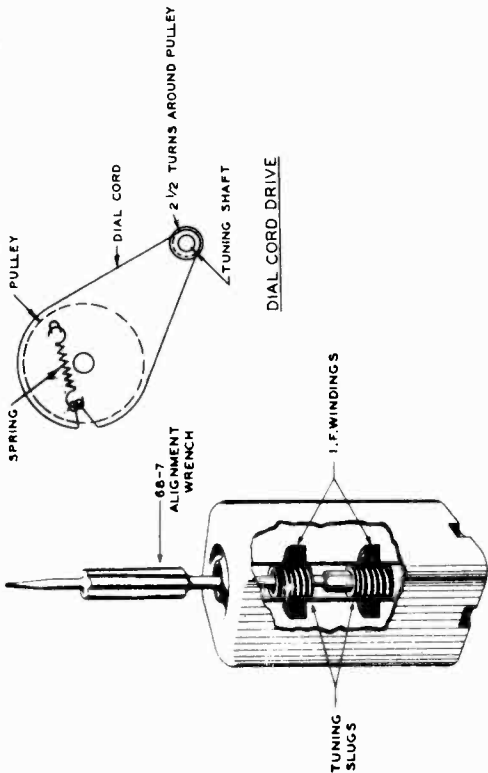
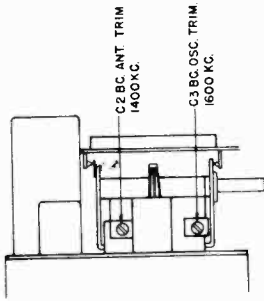
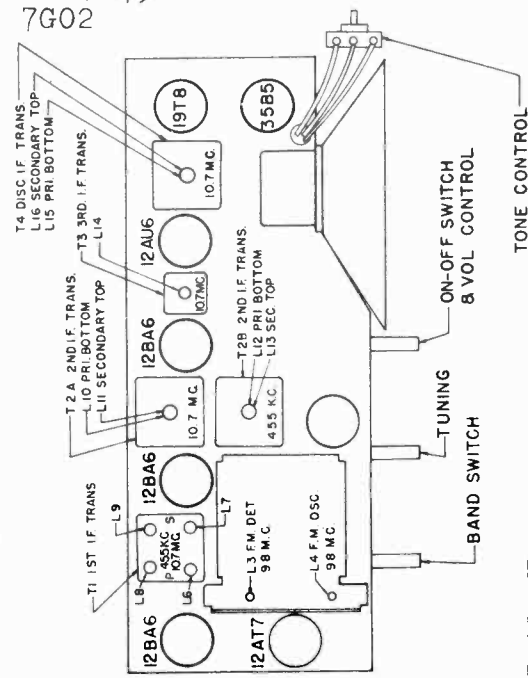
The signal generator output should be kept just high enough to get an indication on the meter.

- Vacuum Tube Voltmeter Lug 7 on discriminator transformer to chassis (half discriminator load).
- Vacuum Tube Voltmeter Lug 5 on discriminator transformer to chassis (full discriminator load).
- Vacuum Tube Voltmeter from Limiter Grid to Chassis.
- Loosen Slugs by applying a hot iron to the cement.



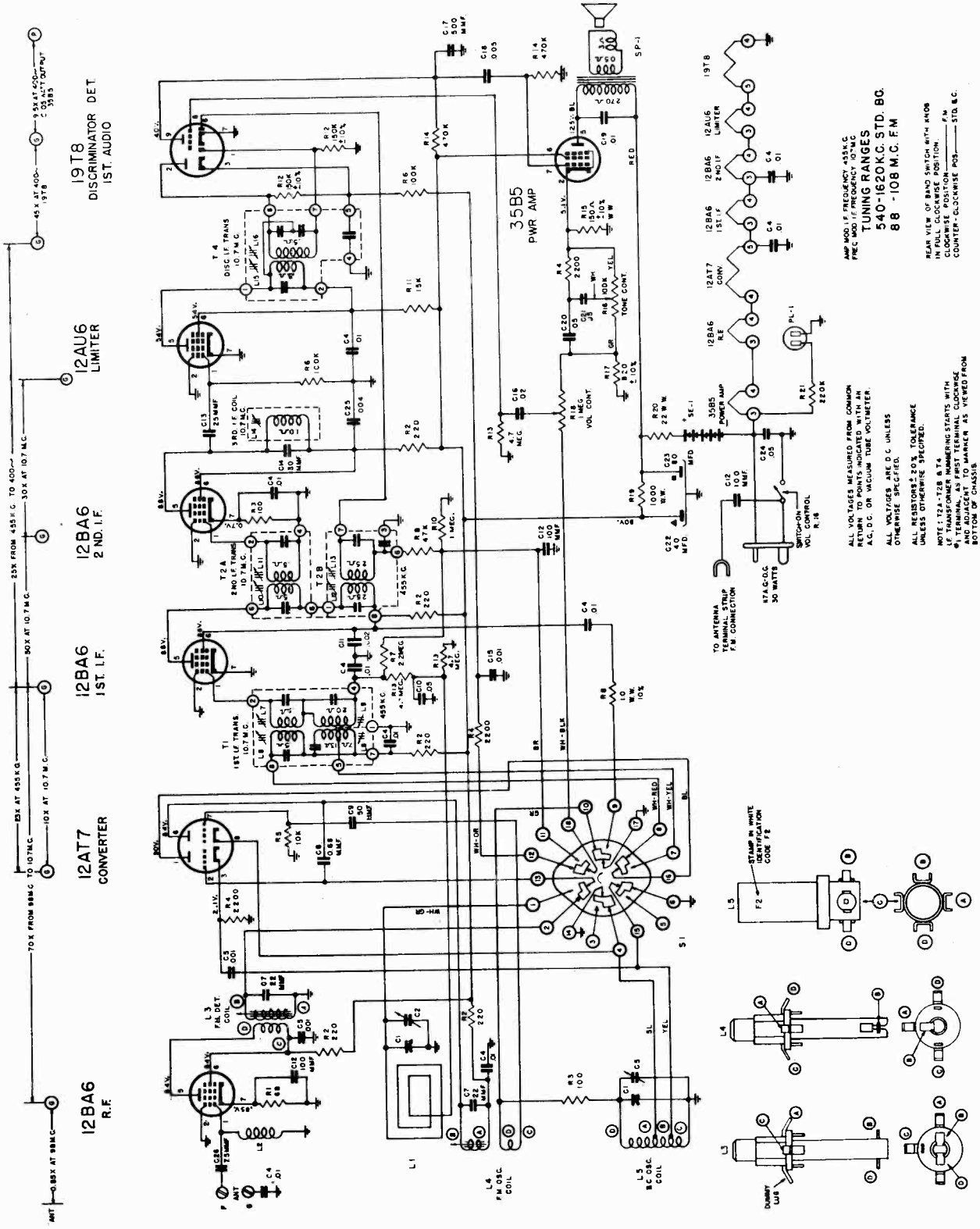
MODEL G724,  
Ch. 7G02

# TUBE AND TRIMMER LOCATION



# ALIGNMENT PROCEDURE

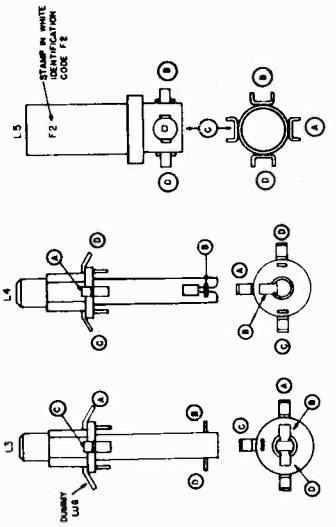
Operation	Connect Oscillator To	Dummy Antenna	Input Signal Frequency	Band	Set Dial To	Adj. Trimmers	Purpose
1	Pin 2 12AT7 Converter to wavemagnet	.05 Mfd.	455 Kc. Modulated	BC	600 Kc.	L8, 9, 12, 13	Align I.F. channel for maximum output.
2	2 turns loosely cpd. to wavemagnet		1600 Kc. Modulated	BC	1600 Kc.	C3	Set oscillator to dial scale.
3	2 turns loosely cpd. to wavemagnet		1400 Kc. Modulated	BC	1400 Kc.	C2	Align antenna stage.
4 (a)	Pin 1 (grid) on 12AU6 limiter.	.05 Mfd.	10.7 Mc. Unmodulated	FM 100		L15 coil slug Primary discr.	Align primary of discriminator for maximum reading.
5 (b)	Pin 1 (grid) on 12AU6 limiter.	.05 Mfd.	10.7 Mc. Unmodulated	FM 100		L16 coil slug sec. of discr.	Adjust secondary of discriminator for zero reading.
6 (c)	Pin 1 (grid) on 12BA6 2nd. IF.	.05 Mfd.	10.7 Mc. Unmodulated	FM 100		L14 Prim. of 3rd IF trans.	Align 3rd. IF transformer for maximum reading.
7 (c)	Pin 1 (grid) on 12BA6 1st. IF.	.05 Mfd.	10.7 Mc. Unmodulated	FM 100		L10 and L11 Prim. and Sec. of 2nd. IF transformer	Align 2nd IF transformer for maximum reading.
8 (c)	Pin 2 (grid) on 12AT7 converter tube socket	.05 Mfd.	10.7 Mc. Unmodulated	FM 100		L6 and L7 Prim. and Sec. of 1st. IF transformer	Align 1st. IF transformer for maximum reading.
9 (c)	Antenna Post FM (Remove line ant.)	270 ohms	98 Mc. Unmodulated	FM 100	98 Mc.	L4 Osc. Coil Slug	Set Oscillator to dial scale.
10 (c) (d)		270 ohms	98 Mc. Unmodulated	FM 100	98 Mc.	L3 Det. Coil Slug	Align det. stage to maximum reading.



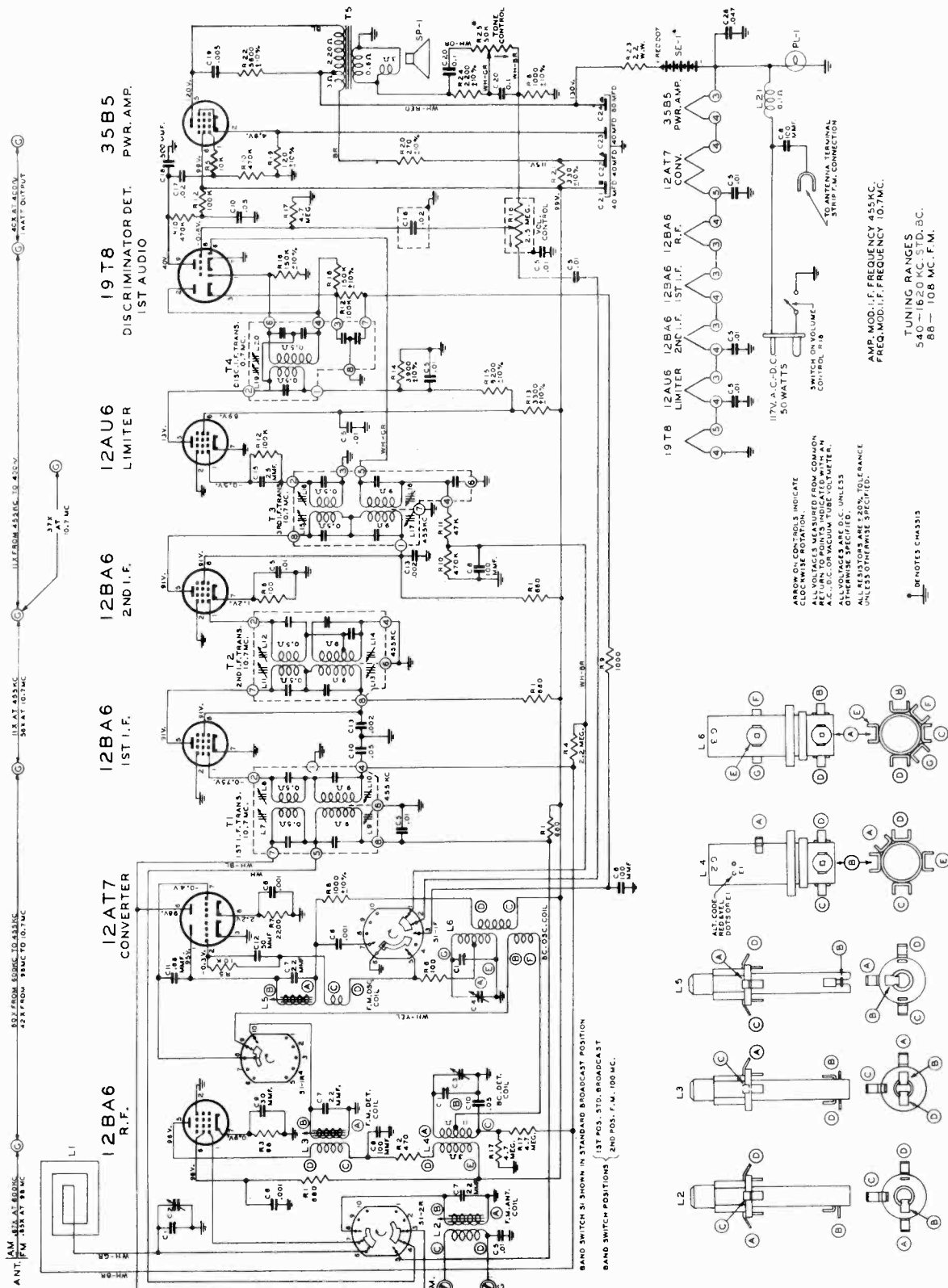
AMP MOD. IF FREQUENCY 455 K.C.  
 REC. MOD. IF FREQUENCY 107 M.C.  
**TUNING RANGES**  
 540-1620 K.C. STD. BC.  
 88-108 M.C. F.M.

ALL VOLTAGES MEASURED FROM COMMON  
 RETURN TO POINTS INDICATED WITH AN  
 A.C. OR VACUUM TUBE VOLTMETER.  
 ALL VOLTAGES ARE D.C. UNLESS  
 OTHERWISE SPECIFIED.  
 ALL RESISTORS 5% TOLERANCE  
 UNLESS OTHERWISE SPECIFIED.

REAR VIEW OF BAND SWITCH WITH KNOB  
 POSITIONED AS SHOWN.  
 CLOCKWISE POSITION - F.M.  
 COUNTER-CLOCKWISE POS. - STD. B.C.

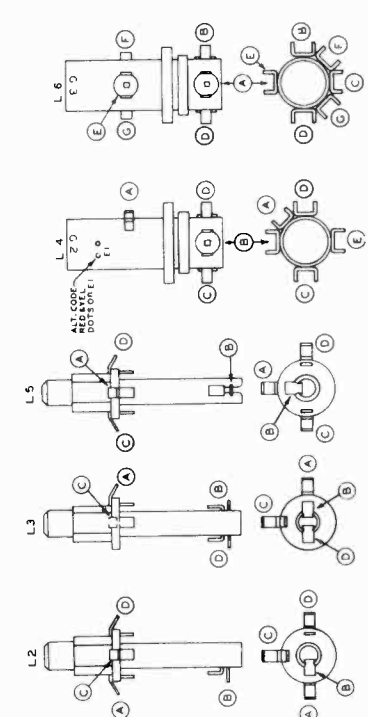


MODEL G725,  
Ch. 7G01



ARROW ON CONTROLS INDICATE COUNTERCLOCKWISE ROTATION. ALL VOLTAGES MEASURED FROM COMMON A.C. OR D.C. OR VACUUM TUBE VOLTMETER. ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED. ALL RESISTORS ARE 5% TOLERANCE UNLESS OTHERWISE SPECIFIED.

AMP. MOD. I.F. FREQUENCY 455 KC.  
TUNING RANGES  
540-1620 KC. STD. BC.  
88-108 MC. F.M.



**FM Discriminator Alignment:** When the secondary of the discriminator is aligned (operation 5) use sufficient signal input to get a good positive and negative indication before setting the slug for zero reading. A center zero indicating meter is recommended for this adjustment, but is not absolutely necessary. Reversing the leads of a non-zero center meter, or observing closely when the meter starts to go to the left (negative) or zero will give the same results.

Alignment of this chassis will in most cases be unnecessary unless an IF or RF transformer is replaced or the adjustments have been tampered with. Correct alignment can only be made if the following procedure is followed:

A vacuum tube voltmeter with an isolation resistor of 2,000,000 ohms in series with the hot lead will serve for FM adjustments. This lead should be shielded.

An AC output meter connected across the primary or secondary of the output transformer will be satisfactory for all AM adjustments.

The signal generator output should be kept just high enough to get an indication on the meter.

(a) Vacuum Tube Voltmeter Lug 6 on discriminator transformer to chassis (half discriminator load).

(b) Vacuum Tube Voltmeter Lug 3 on discriminator transformer to chassis (full discriminator load).

(c) Vacuum Tube Voltmeter from Limiter Grid to Chassis.

(d) Loosen Slugs by applying a hot iron to the cement.

The 7G01 chassis incorporates a superheterodyne circuit with two stages of IF, and one stage of RF amplification on all bands.

When adjustments are made on the 7G01 or any AC-DC chassis, a line isolation transformer (110 V input to 110 V output) is recommended in order to avoid a "hot" chassis. If an isolation transformer is not available, check the AC voltage between chassis and bench ground, and if there is any indication of voltage, reverse the plug before handling the set.

**AM Alignment:** The alignment of this chassis on the standard broadcast band is conventional. The alignment slugs in the IF transformers are threaded and screw into the coil forms. The slugs are slotted for a small size fiber screw driver. Do not press hard on the aligning tool or the threads in the coil forms will strip and adjustments will be impossible.

**FM RF Alignment:** The tuning slugs are attached to threaded shafts and the slugs are varied in the field of the coils by turning the shafts clockwise or counter-clockwise. After adjustment the shafts must be secured with a drop of speaker cement.

**FM IF Alignment:** The same type of tuning slugs for aligning the AM IF Amplifier are used for the FM I.F.'s. Observe the same precautions when making adjustments.

## ALIGNMENT PROCEDURE

Operation	Connect Oscillator To	Dummy Antenna	Input Signal Frequency	Band	Set Dial To	Adj. Trimmers	Purpose
1	Pin 7 12AT7 Converter 2 turns loosely cpl'd. to wavemagnet	.05 Mfd.	455 Kc Modulated	BC	600 Kc	L-9, 10, 13, 14, 17 and 18	Align I.F. channel for maximum output.
2	2 turns loosely cpl'd. to wavemagnet		1600 Kc. Modulated	BC	1600 Kc	C4	Set oscillator to dial scale
3	2 turns loosely cpl'd. to wavemagnet		1400 Kc Modulated	BC	1400 Kc	C3 and C2	Align det. and ant. stages
4 (a)	Pin 1 (grid) on 12AU6 limiter.	.05 Mfd.	10.7 Mc Unmodulated	FM		L19 coil slug Primary discr.	Align primary of discriminator for maximum reading.
5 (b)	Pin 1 (grid) on 12AU6 limiter.	.05 Mfd.	10.7 Mc. Unmodulated	FM		L20 coil slug sec. of discr.	Adjust secondary of discriminator for zero reading.
6 (c)	Pin 1 (grid) on 12BA6 2nd. IF.	.05 Mfd.	10.7 Mc. Unmodulated	FM		L15 and L16 Prim. and Sec. of 3rd IF transformer	Align 3rd. IF transformer for maximum reading.
7 (c)	Pin 1 (grid) on 12BA6 1st. IF.	.05 Mfd.	10.7 Mc. Unmodulated	FM		L11 and L12 Prim. and Sec. of 2nd. IF transformer	Align 2nd. IF transformer for maximum reading.
8 (c)	Pin 7 (grid) on 12AT7 converter tube socket	.05 Mfd.	10.7 Mc. Unmodulated	FM		L7 and L8 Prim and Sec. of 1st IF transformer	Align 1st. IF Transformer for maximum reading.
9 (c)(d)		270 ohms	98 Mc Unmodulated	FM	98 Mc.	L5 Osc. Coil Slug	Set Oscillator to dial scale
10 (c)(d)	Antenna Post P (Re-move line ant.)	270 ohms	98 Mc. Unmodulated	FM	98 Mc.	L3 and L2 Det. and RF coil Slugs	Align det. and ant. stages to maximum reading.

MODEL G725,  
Ch. 7G01

# PARTS LIST

## DIAL ASSEMBLY

- 12-1407 Dial Light Socket Mtg. Brkt.
- \*26-445 Dial Scale
- 46-538 Tuning Control Knob
- 46-718 Band Switch Knob
- \*46-855 Tone Control Knob
- 57-1613 Cabinet Emblem Plate
- 57-1615 Dial Scale Clamping Plate  
(4 Used)
- \*57-1641 Name Plate
- \*59-245 Dial Pointer
- 78-786 Dial Light Socket
- 80-69 Dial Cord Spring
- 80-209 Dial Cord Spring
- 80-444 Tuner Arm Tension Spring
- 80-580 Tuner Arm Stop Spring
- 80-581 Tuner Arm Pressure Spring
- 93-475 Felt Washer (Part of S-14124)
- 94-613 Iron Core Insulating Bushing  
(3 Used on S-14429)
- 100-97 PL-1 Dial Light Bulb - 115V
- 114-26 #8-32 X 1/4" Hex. Hd. Sl. M. S.  
(Used on 12-1407)
- 188-30 Retaining Ring (Used on  
76-493)
- 188-102 Clamping Ring (46-538)
- S-13983 Dial Cord & Eyelet Assem.
- S-13945 Cam, Pulley & Bushing Assem.
- S-13981 Tone Control Brkt. & Lug  
Assem.
- S-14129 Vol. Control Knob Assem.
- S-14429 Tuner Arm Assem.
- \*S-16735 Pointer Pulley & Bushing Assem.
- \*S-16884 Pulley & Shaft Assem.
- \*S-16887 Dial Cord & Eyelet Assem.

## COILS & CHOKES

- S-12256 L21 A.C. Line Choke Coil Assem.
- S-13971 T2 2nd I.F. Trans. Assem.
- S-13972 T3 3rd I.F. Trans. Assem.
- S-13973 T4 Discriminator Trans. Assem.
- S-14192 L2 F.M. Antenna Coil Assem.
- S-15733 L5 F.M. Oscillator Coil Assem.
- S-15743 L3 F.M. Detector Coil Assem.
- S-15981 T1 1st. I.F. Trans. Assem.
- S-16344 L4 Broadcast Detector Coil  
Assem.
- S-16345 L6 Broadcast Osc. Coil Assem.

## CONDENSERS

- 22-3 C5 .01 Mfd. Ceramic (Disc.)  
(10 Used) 500V
- 22-5 C8 110 Mfd. Ceramic (Disc.)  
(4 Used) 500V  
or 22-1669
- 22-829 C10 .05 Mfd. (3 Used) 200V
- 22-830 C17 .02 Mfd. 600V
- 22-854 C18 .0005 Mfd. 600V
- 22-1220 C13 .002 Mfd. (2 Used) 600V
- 22-1367 C12 50 Mmfd. Ceramic 500V
- 22-1506 C7 22 Mmfd. Ceramic  
(3 Used) 500V
- 22-1507 C15 25 Mmfd. Ceramic 500V
- 22-1661 C21, C22, C23, C24 Elect. Cond. 80-40-40  
Mfd. - 150V 40 Mfd. 25V
- 22-1676 C6 .001 Mfd. (3 Used) 500V
- 22-1677 C1 Three Gang Variable Cond.
- 22-1683 C16 .02 Mfd. (Shielded) 400V
- 22-1702 C19 .005 Mfd. 400V
- 22-1705 C9 30 Mmfd. Ceramic 500V
- 22-1766 C11 .68 Mmfd. (Molded) 500V
- 22-1775 C26 .047 Mfd. 400V
- 22-2084 C20 .1 Mfd. (2 Used) 200V

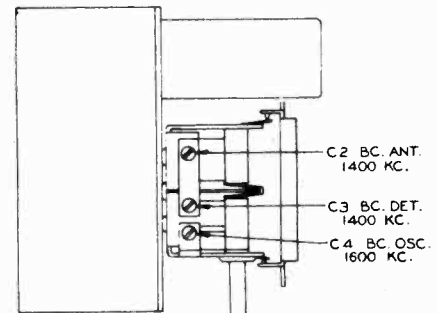
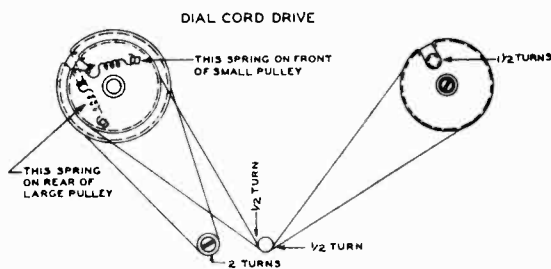
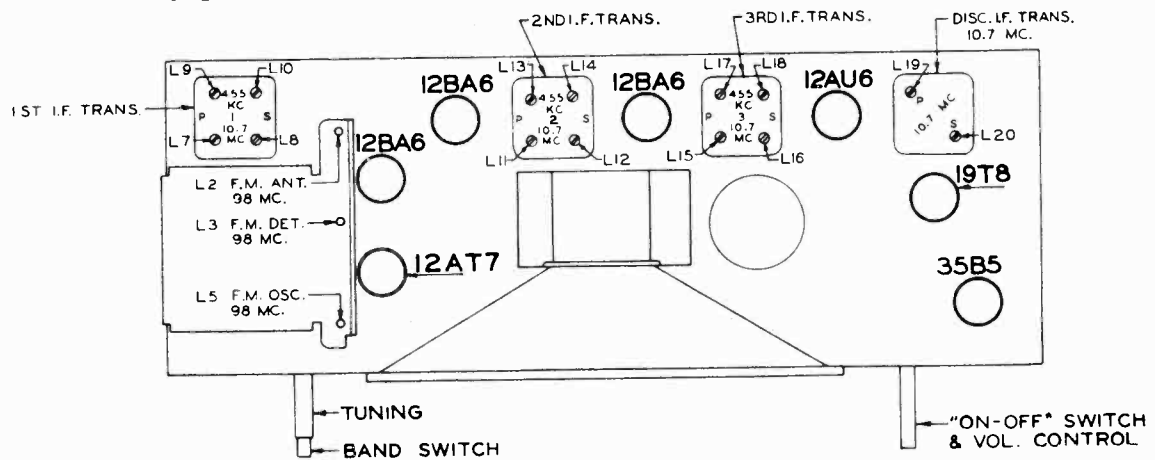
## RESISTORS

- 63-1202 R21 330 Ohm W.W. 2W 10% Ins. Res.
- 63-1450 R23 22 Ohm W.W. 1W 20% Ins. Res.
- 63-1452 R20 270 Ohm W.W. 2W 10% Ins. Res.
- 63-1584 R18 Volume Control & Switch
- 63-1737 R3 68 Ohm 1/2W 20% Ins. Res.
- 63-1744 R6 100 Ohm 1/2W 20% Ins. Res.  
(2 Used)
- 63-1747 R19 120 Ohm 1/2W 10% Ins. Res.
- 63-1772 R2 470 Ohm 1/2W 20% Ins. Res.
- 63-1779 R1 680 Ohm 1/2W 20% Ins. Res.  
(4 Used)
- 63-1785 R8 1000 Ohm 1/2W 10% Ins. Res.  
(2 Used)
- 63-1786 R9 1000 Ohm 1/2W 20% Ins. Res.
- 63-1799 R24 2200 Ohm 1/2W 10% Ins. Res.
- 63-1800 R7 2200 Ohm 1/2W 20% Ins. Res.
- 63-1806 R13 3300 Ohm 1/2W 10% Ins. Res.
- 63-1810 R14 3900 Ohm 1/2W 10% Ins. Res.
- 63-1817 R22 5600 Ohm 1/2W 10% Ins. Res.
- 63-1824 R15 8200 Ohm 1/2W 10% Ins. Res.
- 63-1828 R5 10K Ohm 1/2W 20% Ins. Res.  
(2 Used)
- 63-1856 R11 47K Ohm 1/2W 20% Ins. Res.
- 63-1870 R12 100K Ohm 1/2W 20% Ins. Res.  
(3 Used)
- 63-1876 R16 150K Ohm 1/2W 10% Ins. Res.  
(2 Used)
- 63-1898 R10 470K Ohm 1/2W 20% Ins. Res.  
(3 Used)
- 63-1926 R4 2.2 Megohm 1/2W 20% Ins. Res.
- 63-1940 R17\* 4.7 Megohm 1/2W 20% Ins. Res.  
(3 Used)
- \*63-2108 R25 Tone Control

## MISCELLANEOUS

- 12-1070 Wavemagnet Mtg. Brkt. (2 Used)
- \*14-1235 Plastic Cabinet for G725
- 19-139 Cabinet Back Retaining Clip  
(4 Used)
- 49-608 SP-1 7-1/2" P.M. Speaker
- 54-139 208-608 Cone & Voice Coil  
#3/8-32 x 9/16" Palnut Type  
9N Steel Cad. (Used on  
63-1584)
- 54-140 #3/8-32 x 9/16" Hex Nut-Steel  
N.P. (Used on 63-2108)
- 54-226 Speed Nut-Tinnerman (1 ea.  
used on S-14192-S-15733 &  
S-15743)
- 54-269 #8-32 x 11/32" Palnut (6 Used  
to Mt. I.F.'s.)
- 57-1269 I. F. Trans. Terminal Plate  
(8 Used)
- 58-128 Two Prong Plug
- \*74-64 Grill Screen
- 78-782 Miniature Tube Socket (7  
Contact)
- 78-787 Two Contact Socket (Used on  
S-14128)
- 78-788 Miniature Tube Socket (9  
Contact)
- 78-794 Miniature Tube Socket (3  
Used)
- 78-795 Miniature Tube Socket (7  
Contact)
- 78-854 Miniature Tube Socket (9  
Contact)

## TUBE AND TRIMMER LOCATION



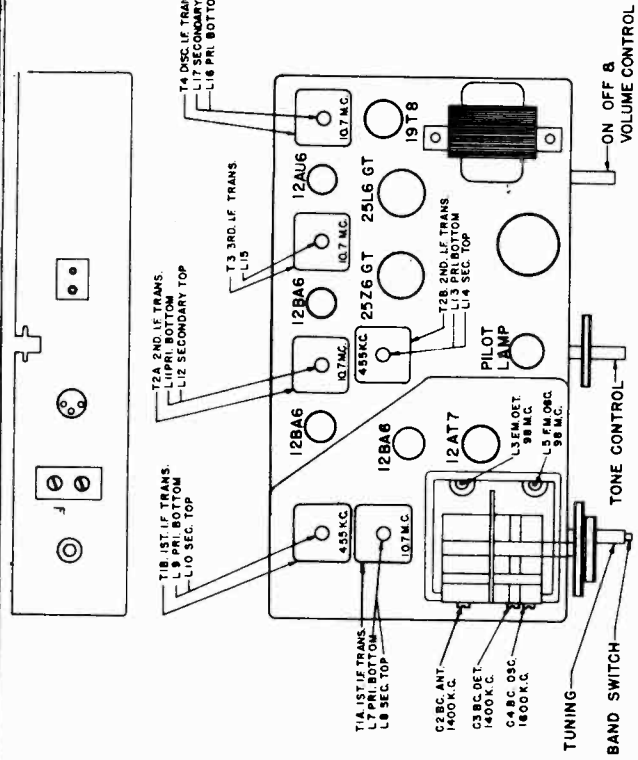
## PARTS LIST—Continued

Part No.	Ref. No.	Description
----------	----------	-------------

## MISCELLANEOUS (Continued)

83-1056		Wavemagnet Mtg. Strip (2 Used)
83-1519		Aluminum Foil Strip
*83-1755		Aluminum Foil Strip
*83-1756		Indicator Strip
85-464	S1	Band Switch
93-665		Fibre Washer (2 Used on S-14385)
93-729		.032 X .187 X 5/8 Steel Washer N.P. (2 Used on S-13981)
94-334		Speaker Mtg. Bushing (4 Used)
94-485		Fibre Bushing (1 ea. used on 63-1584 & 63-2108)
95-1035	T5	Output Trans.
97-284		Dial Cord Guide Stud
97-293		Insulating Stud (4 Used)
112-281		#10 X 3/4" Oval B.H.S.T. Screw-Type Z - Stat. Bronze (4 Used Chassis Mtg.)
112-697		#6 X 7/16" Straight Side B.H.S.T. Screw (4 Used on Back)
114-26		#8 X 1/4" Hex Hd. S.T. (2 Used on S-13977)
114-78		#8 X 5/16" Hex Hd. S1. S.T. N.P. (2 Used Wavemagnet Mtg)
114-292		#6 X 5/8" Hex Hd. S1. S.T. Screw (8 Used)
114-319		#8-32 X 11/16" Hex Hd. S1. M.S. Steel (2 Used on S-13981)
125-17		Rubber Grommet (4 Used on 49-608)
125-62		Rubber Grommet (4 Used)
*139-88		Baffle Board
149-64		Tuning Core (3 Used)
188-34		Retaining Ring
*188-136		Trim Ring
202-697		F.M. Instruction Book
*202-810		Instruction Book
212-7	SE-1	Selenium Rectifier
S-13977	L1	Wavemagnet Assem.
S-14128		Cabt. Back Assem. (Complete)
S-14358		Wavemagnet Cable Assem.

MODEL G844,  
Ch. 8G21

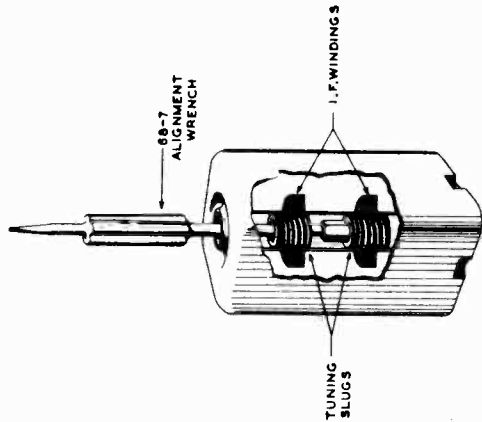


TUBE AND TRIMMER LOCATION

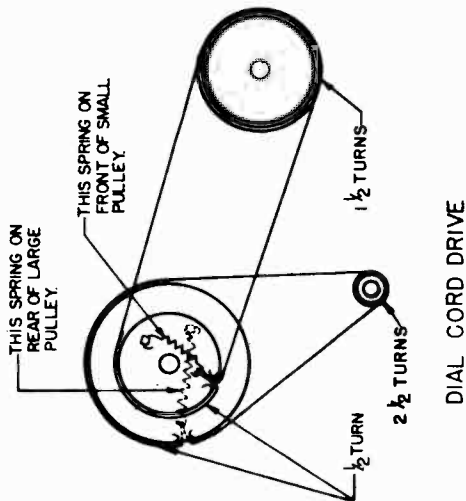
into the top slug, rotated until maximum output is obtained and then dropped down to the lower slug and the same operation repeated. The tuning wrench is so designed that turning one slug does not affect the adjustment of the other.

**FM IF Alignment:** Because of the wide band pass, it is desirable to use a FM signal generator and a cathode ray oscilloscope when aligning the FM IF channel. The instruction book for the Zenith Model 800 Signal Generator (Form Z8001) covers complete FM alignment procedure. If visual alignment equipment is unavailable, reasonably accurate alignment can be made by following the procedure outlined below.

**FM Discriminator Alignment:** When the secondary of the discriminator is aligned (operation 5) use sufficient signal input to get a good positive and negative indication before setting the slug for zero reading. A center zero indicating meter is recommended for this adjustment, but is not absolutely necessary. Reversing the leads of a non-zero center meter, or observing closely when the meter starts to go to the left (negative) of zero will give the same results.



Detail of  
IF Transformer



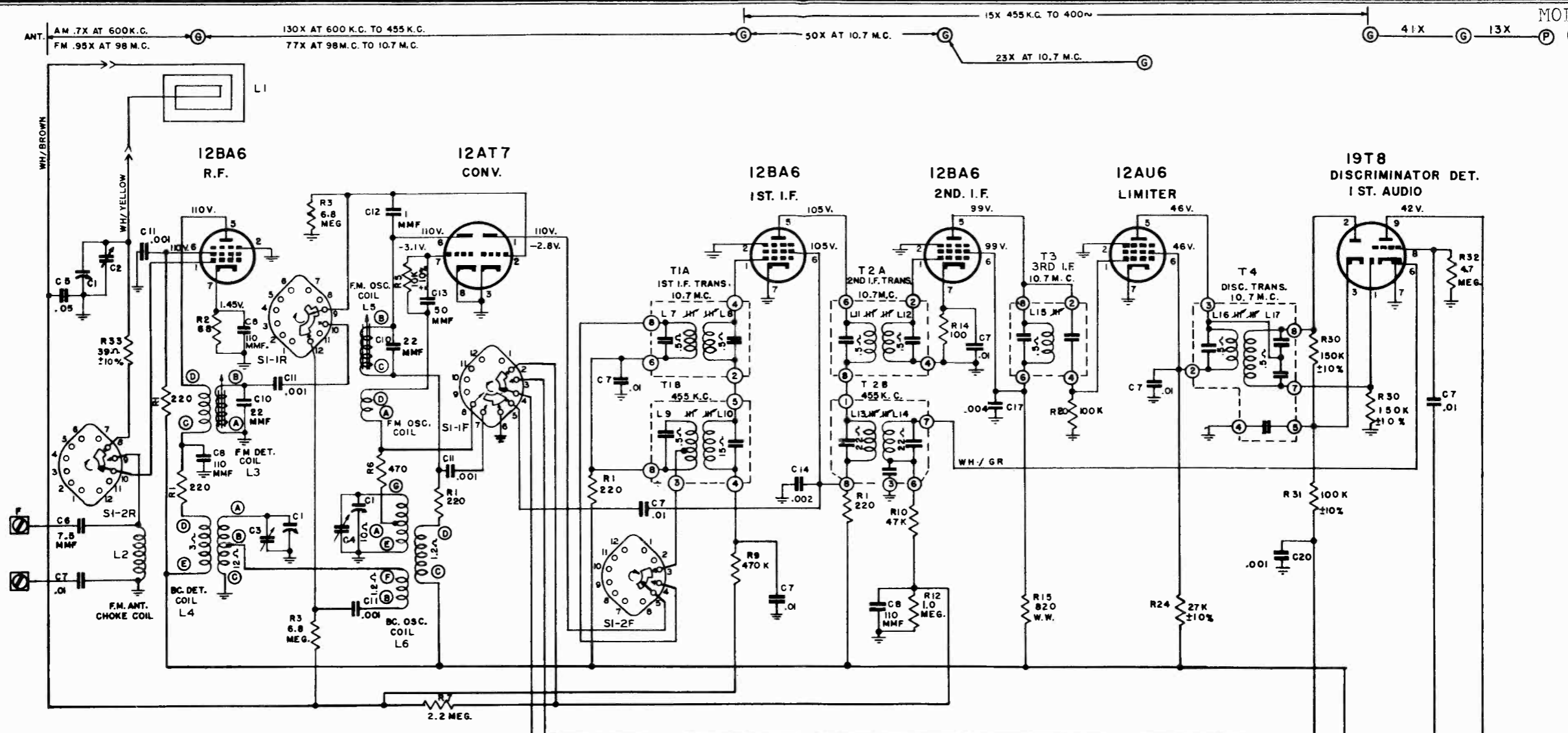
DIAL CORD DRIVE

The 8G21 chassis incorporates a superheterodyne circuit with two stages of IF, on the FM Band, and one stage on the AM Band. There is one stage of RF amplification on all bands.

When adjustments are made on the 8G21 chassis, a line isolation transformer (110 V input to 110V output) is recommended in order to avoid a "hot" chassis. If an isolation transformer is not available, check the AC voltage between chassis and bench ground and if there is any indication of voltage, reverse the plug before handling the set.

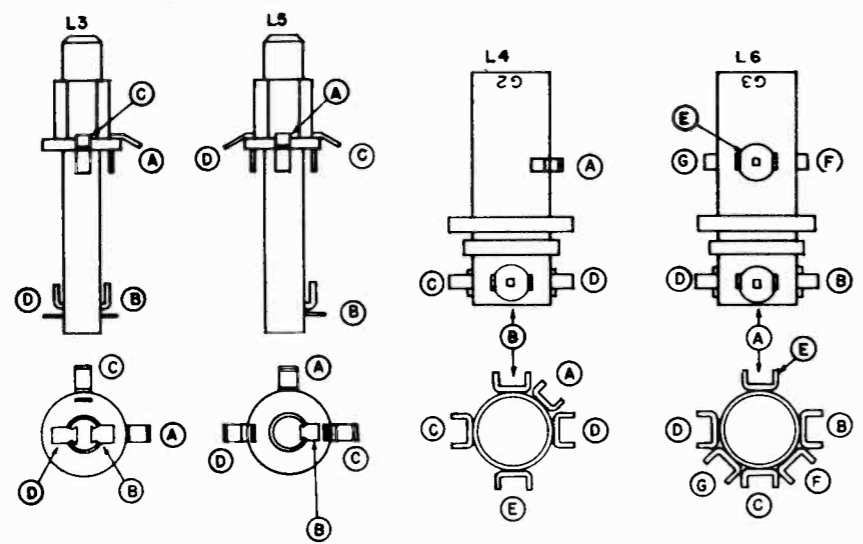
**FM RF Alignment:** The tuning slugs are attached to threaded shafts and the slugs are varied in the field of the coils by turning the shafts clockwise or counter-clockwise. After adjustment the shafts must be secured with a drop of speaker cement.

**AM and FM IF Alignment:** The AM and FM IF transformers in this receiver are of the new permeability tuned type. The advantage of an I F transformer of this type is its extreme stability under various humidity and temperature conditions. The upper coil is the secondary and the lower the primary. When adjusting these I F transformers the tuning wrench 68-7 can be inserted



BANDSWITCH S-1 SHOWN IN STANDARD BROADCAST POSITION. FULL COUNTER CLOCKWISE AS VIEWED FROM FRONT OF CHASSIS.

BANDSWITCH POSITIONS  
 1 ST. POSITION - STANDARD BROADCAST  
 2 ND. POSITION - FM



TUNING RANGES  
 540-1620 K.C. STD. BC.  
 88-108 M.C. F.M.

AMP. MOD. I.F. FREQUENCY 455 K.C.  
 FREQ. MOD. I.F. FREQUENCY 10.7 M.C.

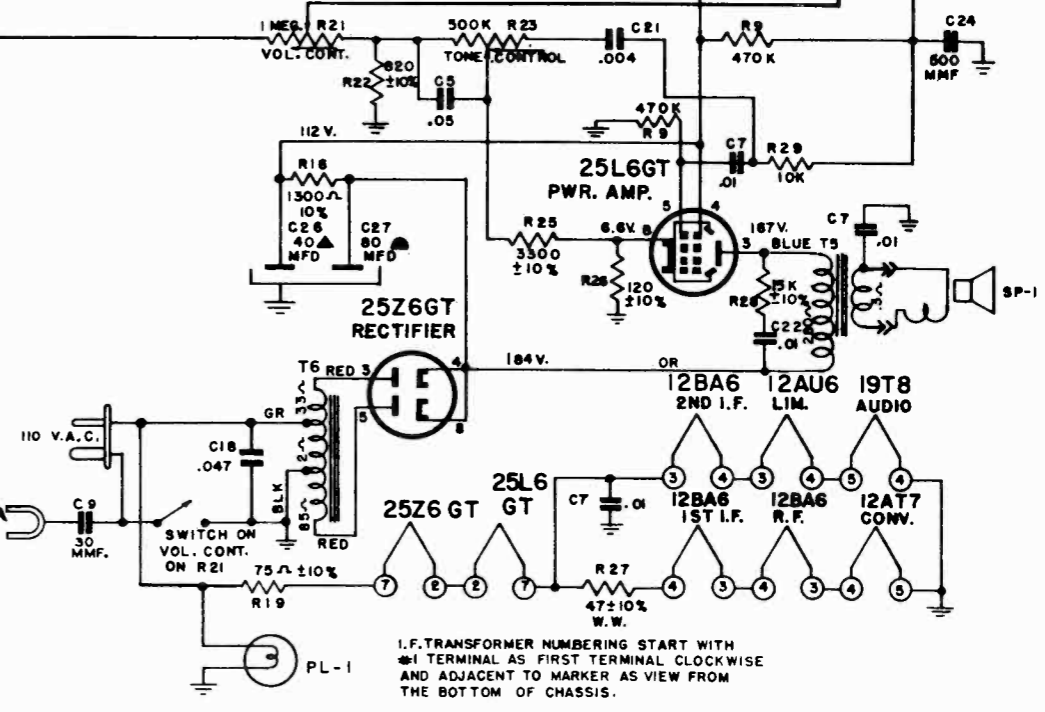
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION.

ALL VOLTAGES MEASURED FROM COMMON RETURN TO POINTS INDICATED WITH AN A.C., D.C. OR VACUUM TUBE VOLT-METER.

ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.

ALL RESISTORS ARE ±20% TOLERANCE UNLESS OTHERWISE SPECIFIED.

⊥ DENOTES CHASSIS



I.F. TRANSFORMER NUMBERING START WITH \*1 TERMINAL AS FIRST TERMINAL CLOCKWISE AND ADJACENT TO MARKER AS VIEW FROM THE BOTTOM OF CHASSIS.



ALIGNMENT PROCEDURE

Operation	Connect Oscillator To	Dummy Antenna	Input Signal Frequency	Band	Set Dial To	Adj. Trimmers	Purpose
1	Pin 2 12AT7 Converter	.05 Mfd.	455 Kc.	BC	600 Kc.	L9, 10, 13, 14	Align 1 F. channel for maximum output.
2	2 turns loosely cpd. to wavemagnet		Modulated 1600 Kc.	BC	1600 Kc.	C4	Set oscillator to dial scale.
3	2 turns loosely cpd. to wavemagnet		Modulated 1400 Kc.	BC	1400 Kc.	C3, C2	Align detector and antenna stage.
4 (a)	Pin 1 (grid) on 12AU6 limiter.	.05 Mfd.	10.7 Mc. Unmodulated	FM 100		L16 coil slug Primary discr.	Align primary of discriminator for maximum reading.
5 (b)	Pin 1 (grid) on 12AU6 limiter.	.05 Mfd.	10.7 Mc. Unmodulated	FM 100		L17 coil slug sec. of discr.	Adjust secondary of discriminator for zero reading.
6 (c)	Pin 1 (grid) on 12BA6 2nd. I.F.	.05 Mfd.	10.7 Mc. Unmodulated	FM 100		L15 Prim. of 3rd. IF trans.	Align 3rd. IF transformer for maximum reading.
7 (c)	Pin 1 (grid) on 12BA6 1st. IF.	.05 Mfd.	10.7 Mc. Unmodulated	FM 100		L11 and L12 Prim. and Sec. of 2nd. IF transformer.	Align 2nd IF transformer for maximum reading.
8 (c)	Pin 2 (grid) on 12AT7 converter tube socket.	.05 Mfd.	10.7 Mc. Unmodulated	FM 100		L7 and L8 Prim. and Sec. of 1st. IF transformer.	Align 1st. IF transformer for maximum reading.
9 (c)	Antenna Post FM (Re-move line ant.)	270 ohms	98 Mc. Unmodulated	FM 100	98 Mc.	L5 Osc. Coil Slug.	Set Oscillator to dial scale.
10 (c) (d)		270 ohms	98 Mc. Unmodulated	FM 100	98 Mc.	L3 Det. Coil Slug	Align det. stage to maximum reading.

IMPORTANT

Alignment of this chassis will in most cases be unnecessary unless an IF or RF transformer is replaced or the adjustments have been tampered with.  
 Correct alignment can only be made if the following procedure is followed:  
 A vacuum tube voltmeter with an isolation resistor of 2,000,000 ohms in series with the hot lead will serve for FM adjustments. This lead should be shielded.  
 An AC output meter connected across the primary or secondary of the output transformer will be satisfactory for all AM adjustments.

The signal generator output should be kept just high enough to get an indication on the meter.  
 (a) Vacuum Tube Voltmeter Lug 7 on discriminator transformer to chassis (half discriminator load).  
 (b) Vacuum Tube Voltmeter Lug 5 on discriminator transformer to chassis (full discriminator load).  
 (c) Vacuum Tube Voltmeter from Limiter Grid to Chassis.  
 (d) Loosen Slugs by applying a hot iron to the cement.

MODEL G844,  
Ch. 8G21

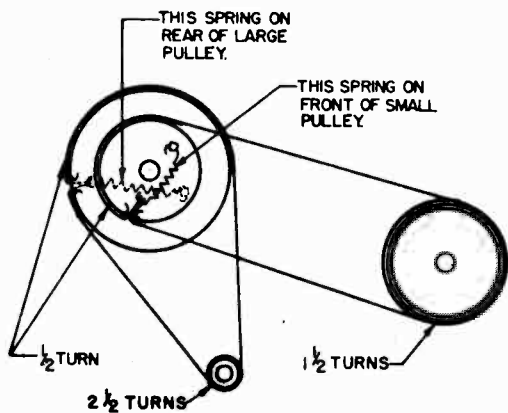
MODEL G844,  
Ch. 8G21

PARTS LIST

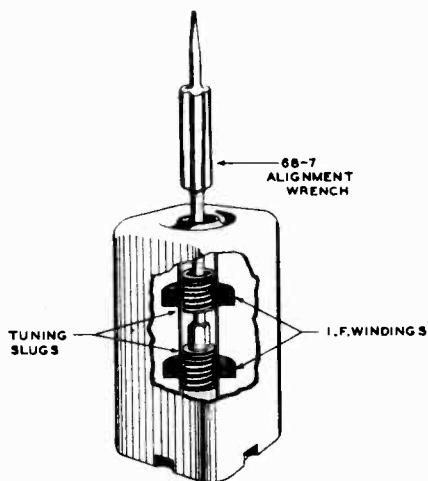
PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
DIAL ASSEMBLY		RESISTORS	
26-429	Dial Scale & Glass (F.M. Band)	63-1806	3300 Ohm 1/2W 10% Ins. Res.
46-522	Dummy Knob	63-1827	10K Ohm 1/2W 10% Ins. Res.
46-538	Tuning Knob	63-1828	10K Ohm 1/2W 20% Ins. Res.
46-718	Band Switch & Vol. Control Knob (2 used)	63-1834	15K Ohm 1/2W 10% Ins. Res.
46-831	Tone Control Knob	63-1845	27K Ohm 1/2W 10% Ins. Res.
54-292	Speed Nut - Tinnerman (Used on 94-671)	63-1856	47K Ohm 1/2W 20% Ins. Res.
76-578	Tuning Control Shaft	63-1869	100K Ohm 1/2W 10% Ins. Res.
78-872	Dial Light Socket & Wire	63-1870	100K Ohm 1/2W 20% Ins. Res.
80-69	Dial Cord Spring	63-1876	150K Ohm 1/2W 10% Ins. Res.
80-402	Dial Cord Spring	63-1898	470K Ohm 1/2W 20% Ins. Res.
80-746	Pulley Retaining Spring	63-1912	1 Megohm 1/2W 20% Ins. Res.
80-801	Tuner Arm Tension Spring	63-1926	2.2 Megohm 1/2W 20% Ins. Res.
93-993	Insulating Washer (2 used)	63-1940	4.7 Megohm 1/2W 20% Ins. Res.
94-671	Pointer Pulley Bushing	63-1947	6.8 Megohm 1/2W 20% Ins. Res.
100-97	Pilot Light Bulb	63-1981	120 Ohm 1W 10% Ins. Res.
148-122	Tuner Arm	63-2062	Vol. Control & Switch
S-16281	Pointer Pulley & Shaft Assembly	63-2063	Tone Control
S-16346	Dial Cord & Eyelet Assembly (Long)	63-2068	Candohm Resistors - Two Section
S-16351	Dial Scale & Brkt. Assembly	63-2091	820 Ohm W.W. 1/2W 20% Ins. Res.
S-16740	Dial Cord & Eyelet Assembly (Short)	63-2093	47 Ohm W.W. 1W 10% Ins. Res.
COILS & CHOKES		MISCELLANEOUS	
95-1102	2nd. I. F. Transformer	49-678	10" P.M. Speaker
95-1150	2nd. I. F. Transformer		208-678 Cone & Voice Coil
95-1152	3rd. I. F. Transformer		Speed Nut - Tinnerman (5 used on Esc. Mtg.)
95-1153	Disc. Trans.	54-303	Esc. Clamping Plate
95-1200	1st. I. F. Transformer	57-1481	Emblem Plate
95-1201	1st. I. F. Transformer	57-1613	Escutcheon
S-15691	F.M. Osc. Coil Assembly	57-1616	#6 x 5/8" Washer Hd. Wood Screw Stat. Bronze (7 used S-16498)
S-15743	F.M. Detector Coil Assembly	70-86	Octal Tube Socket (2 used)
S-16344	Broadcast Det. Coil Assembly	78-755	Miniature Tube Socket
S-16345	Broadcast Osc. Coil Assembly	78-807	Miniature Tube Socket
S-16408	Antenna Choke Coil Assembly	78-854	Miniature Tube Socket
		78-869	Miniature Tube Socket
		78-870	Miniature Tube Socket
		78-871	Miniature Tube Socket
		80-780	Iron Core Tension Spring
		83-1698	Rubber Channel Strip
		83-1701	Chassis Insulating Strip
		85-477	Band Switch
		93-968	.046 x .171 x 1/2 Steel Washer Cad. (2 used on Esc. Mtg.)
		95-1188	Auto Power Trans.
		95-1189	Output Trans.
		97-293	Chassis Mtg. Insulating Stud
		114-148	#10 x 7/8" Hex Washer Hd. S.T. Screw (3 used Chassis Mtg.)
		114-297	#6 x 1/4" Hex Hd. Sl. S.T. (2 used on Esc.)
		114-313	#8 x 1/2" Hex Hd. Sl. S.T. (4 used on Esc. Mtg.)
		149-95	Iron Core & Spring
		165-9	Slides (4 used)
		188-30	Retaining Ring (Used on 85-477)
		196-135	Dust Gasket
		202-697	F.M. Instruction Book
		202-774	Instruction Book
		S-16161	Speaker Cable & Eyelet Assembly
		S-16359	Wavemagnet Assembly
		S-16498	Cabinet Back Assembly (Complete with A.C. Cord and Wavemagnet)
63-1726	39 Ohm 1/2W 10% Ins. Res.		
63-1737	68 Ohm 1/2W 20% Ins. Res.		
63-1744	100 Ohm 1/2W 20% Ins. Res.		
63-1758	220 Ohm 1/2W 20% Ins. Res.		
63-1772	470 Ohm 1/2W 20% Ins. Res.		
63-1782	820 Ohm 1/2W 10% Ins. Res.		



MODELS G381, G882, G883,  
G884, G885, Ch. 8G20



DIAL CORD DRIVE



Detail of  
IF Transformer

The 8G20 chassis incorporates a superheterodyne circuit with two stages of IF, on the FM Band, and one stage on the AM Band. There is one stage of RF amplification on all Bands.

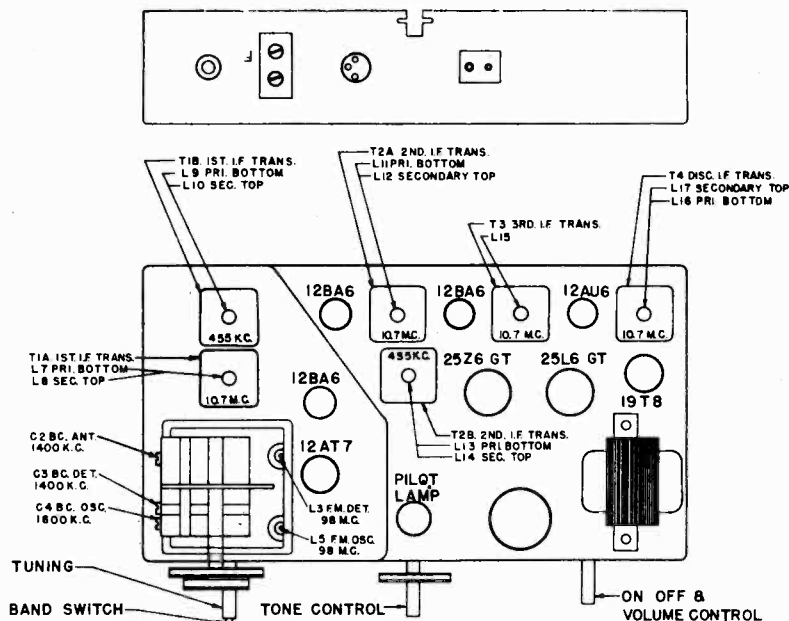
When adjustments are made on the 8G20 chassis, a line isolation transformer (110 V input to 110V output) is recommended in order to avoid a "hot" chassis. If an isolation transformer is not available, check the AC voltage between chassis and bench ground and if there is any indication of voltage, reverse the plug before handling the set.

**FM RF Alignment:** The tuning slugs are attached to threaded shafts and the slugs are varied in the field of the coils by turning the shafts clockwise or counter-clockwise. After adjustment the shafts must be secured with a drop of speaker cement.

**AM And FM IF Alignment:** The AM and FM IF transformers in this receiver are of the new permeability tuned type. The advantage of an I F transformer of this type is its extreme stability under various humidity and temperature conditions. The upper coil is the secondary and the lower the primary. When adjusting these I F transformers the tuning wrench 68-7 can be inserted into the top slug, rotated until maximum output is obtained and then dropped down to the lower slug and the same operation repeated. The tuning wrench is so designed that turning one slug does not affect the adjustment of the other.

**FM IF Alignment:** Because of the wide band pass, it is desirable to use a FM signal generator and a cathode ray oscilloscope when aligning the FM IF channel. The instruction book for the Zenith Model 800 Signal Generator (Form Z8001) covers complete FM alignment procedure. If visual alignment equipment is unavailable, reasonably accurate alignment can be made by following the procedure outlined below.

**FM Discriminator Alignment:** When the secondary of the discriminator is aligned (operation 5) use sufficient signal input to get a good positive and negative indication before setting the slug for zero reading. A center zero indicating meter is recommended for this adjustment, but is not absolutely necessary. Reversing the leads of a non-zero center meter, or observing closely when the meter starts to go to the left (negative) of zero will give the same results.



TUBE AND TRIMMER LOCATION

MODELS G881, G882, G883,  
G884, G885, Ch. 3G20

## ALIGNMENT PROCEDURE

Operation	Connect Oscillator To	Dummy Antenna	Input Signal Frequency	Band	Set Dial To	Adj. Trimmers	Purpose
1	Pin 2 12AT7 Converter 2 turns loosely cpld. to wavemagnet	.05 Mfd.	455 Kc. Modulated 1600 Kc.	BC	600 Kc.	L9, 10, 13, 14	Align 1 F. channel for maximum output.
2	2 turns loosely cpld. to wavemagnet		Modulated 1400 Kc.	BC	1600 Kc.	C4	Set oscillator to dial scale.
3	2 turns loosely cpld. to wavemagnet		Modulated 10.7 Mc.	BC	1400 Kc.	C3, C2	Align detector and antenna stage.
4 (a)	Pin 1 (grid) on 12AU6 limiter.	.05 Mfd.	Unmodulated 10.7 Mc.	FM		L16 coil slug Primary discr.	Align primary of discriminator for maximum reading.
5 (b)	Pin 1 (grid) on 12AU6 limiter.	.05 Mfd.	Unmodulated 10.7 Mc.	FM		L17 coil slug sec. of discr.	Adjust secondary of discriminator for zero reading.
6 (c)	Pin 1 (grid) on 12BA6 2nd. 1 F.	.05 Mfd.	Unmodulated 10.7 Mc.	FM		L15 Prim. of 3rd. IF trans.	Align 3rd. IF transformer for maximum reading.
7 (c)	Pin 1 (grid) on 12BA6 1st. IF.	.05 Mfd.	10.7 Mc. Unmodulated	FM		L11 and L12 Prim. and Sec. of 2nd. IF transformer.	Align 2nd IF transformer for maximum reading.
8 (c)	Pin 2 (grid) on 12AT7 converter tube socket.	.05 Mfd.	10.7 Mc. Unmodulated	FM		L7 and L8 Prim. and Sec. of 1st. IF transformer.	Align 1st. IF transformer for maximum reading.
9 (c)	Antenna Post FM (Re-move line ant.)	270 ohms	98 Mc. Unmodulated	FM	98 Mc.	L5 Osc. Coil Slug.	Set Oscillator to dial scale.
10 (c) (d)		270 ohms	98 Mc. Unmodulated	FM	98 Mc.	L3 Det. Coil Slug	Align det. stage to maximum reading.

## IMPORTANT

Alignment of this chassis will in most cases be unnecessary unless an IF or RF transformer is replaced or the adjustments have been tampered with.

Correct alignment can only be made if the following procedure is followed:

A vacuum tube voltmeter with an isolation resistor of 2,000,000 ohms in series with the hot lead will serve for FM adjustments. This lead should be shielded.

An AC output meter connected across the primary or secondary of the output transformer will be satisfactory for all AM adjustments.

The signal generator output should be kept just high enough to get an indication on the meter.

(a) Vacuum Tube Voltmeter Lug 7 on discriminator transformer to chassis (half discriminator load).

(b) Vacuum Tube Voltmeter Lug 5 on discriminator transformer to chassis (full discriminator load).

(c) Vacuum Tube Voltmeter from Limiter Grid to Chassis.

(d) Loosen Slugs by applying a hot iron to the cement.

MODELS G881, G882, G883,  
G884, G885, Ch. 8G20

PARTS LIST

PART NO.	DESCRIPTION
<u>DIAL ASSEMBLY</u>	
76-578	Tuning Control Shaft
78-872	Dial Light Socket & Wire
80-402	Dial Cord Springs (2 used)
80-746	Pulley Retaining Spring
80-781	Tuner Arm Tension Spring
94-671	Pointer Pulley Bushing
100-97	Pilot Light Bulb
148-122	Tuner Arm
S-16281	Pointer Pulley & Shaft Assembly
S-16346	Dial Cord & Eyelet Assembly (Long)
S-16347	Dial Cord & Eyelet Assembly (Short)
S-16351	Dial Scale & Bracket Assembly (26-438)

<u>COILS &amp; CHOKES</u>	
95-1102	2nd. I.F. Transformer
95-1150	2nd. L.F. Transformer
95-1152	3rd. L.F. Transformer
95-1153	Disc. Transformer
95-1200	1st. I.F. Transformer
95-1201	1st. L.F. Transformer
S-12603	Phono Osc. Coil Assembly
S-15691	F.M. Osc. Coil Assembly
S-15743	F.M. Detector Coil Assembly
S-16344	Broadcast Detector Coil Assembly
S-16345	Broadcast Oscillator Coil Assembly
S-16408	Antenna Choke Coil Assembly

<u>CONDENSERS</u>	
22-3	.01 Mfd. Ceramic 500V
22-4	.004 " " 500V
22-5	.10 Mmfd. " (or 22-1669) 500V
22-177	2 Mfd. 400V
22-448	.004 Mfd. 600V
22-669	.01 " 600V
22-827	.1 " 200V
22-829	.05 " 200V
22-854	.0005 " 600V
22-1220	.002 " 600V
22-1367	50 Mmfd. Ceramic 500V
22-1506	22 " " 500V
22-1676	.001 Mfd. " 500V
22-1705	30 Mmfd. " 500V
22-1717	.001 Mfd. 200V
22-1762	1 Mmfd. " 500V
22-1775	.047 Mfd. (Molded) 400V
22-1852	7.5 Mmfd. Ceramic 500V
22-1876	47 " " 500V
22-2104	Three Section Variable Cond.
22-2105	Elect. Cond. 80-40 Mfd. 250V
22-2154	Elect. Cond. 10 Mfd. 250V

<u>RESISTORS</u>	
63-1726	39 Ohm 1/2W 10% Ins. Res.
63-1736	68 Ohm 1/2W 20% Ins. Res.
63-1744	100 Ohm 1/2W 20% Ins. Res.
63-1758	220 Ohm 1/2W 20% Ins. Res.
63-1768	390 Ohm 1/2W 10% Ins. Res.
63-1772	470 Ohm 1/2W 20% Ins. Res.
63-1782	820 Ohm 1/2W 10% Ins. Res.
63-1806	3300 Ohm 1/2W 10% Ins. Res.
63-1813	4700 Ohm 1/2W 10% Ins. Res.
63-1827	10K Ohm 1/2W 10% Ins. Res.
63-1828	10K Ohm 1/2W 20% Ins. Res.
63-1834	15K Ohm 1/2W 10% Ins. Res.
63-1845	27K Ohm 1/2W 10% Ins. Res.
63-1856	47K Ohm 1/2W 20% Ins. Res.
63-1863	68K Ohm 1/2W 20% Ins. Res.
63-1869	100K Ohm 1/2W 10% Ins. Res.
63-1870	100K Ohm 1/2W 20% Ins. Res.
63-1876	150K Ohm 1/2W 10% Ins. Res.
63-1884	220K Ohm 1/2W 20% Ins. Res.
63-1898	470K Ohm 1/2W 20% Ins. Res.
63-1912	1 Megohm 1/2W 20% Ins. Res.
63-1926	2.2 Megohm 1/2W 20% Ins. Res.
63-1940	4.7 Megohm 1/2W 20% Ins. Res.
63-1947	6.8 Megohm 1/2W 20% Ins. Res.
63-1954	10 Megohm 1/2W 20% Ins. Res.
63-1981	120 Ohm 1W 10% Ins. Res.
63-2062	Volume Control & Switch
63-2063	Tone Control
63-2068	Candohm - Two Section
63-2091	820 Ohm W.W. 1/2W 20% Ins. Res.
63-2093	47 Ohm W.W. 1W 10% Ins. Res.

<u>MISCELLANEOUS</u>	
44-25	Phono Jack
54-108	3/8-32 x 9/16 Palmut Cad. (1 ea. used 63-2062 & 63-2063)
54-271	6-32 x 1/4" Palmut Steel Cad. (1 ea. used on I. F.'s.)
54-292	Speed Nut-Tinnerman (Used on 94-671)
58-128	Two Prong Plug (A. C. Interlock)
78-461	Two Contact Socket
78-755	Octal Tube Socket (2 used)
78-807	Miniature Tube Socket
78-854	Miniature Tube Socket (9 Contact)

78-869	Miniature Tube Socket
78-870	Miniature Tube Socket (2 used)
78-871	Miniature Tube Socket
80-780	Iron Core Tension Spring
85-467	Band Switch
93-993	Insulating Washer (2 used)
93-1039	Gang Mouting Cup Washer (2 used)
95-1188	Auto Power Trans.
95-1189	Output Transformer (Speaker)
113-8	#6-32 x 1/4" Hex. Hd. Sl. M.S. Steel Int. Shakeproof (2 each used 22-2104 and 85-467)
114-297	#6 x 1/4" Hex Hd. Sl. S. T. (2 used on S-16351)
125-62	Rubber Grommet (3 used)
125-73	Rubber Grommet (2 used)
149-95	Iron Core & Spring
188-30	Retaining Ring (Used on 85-467)
S-16161	Speaker Cable & Eyelet Assembly

<u>G 884 CABINET PARTS</u>	
2-106	Cabinet Back (Phono-Section)
26-429	Dial Scale & Glass (F.M. Band)
46-522	Dummy Knob
46-538	Tuning Knob
46-718	Band Switch & Volume Control Knob (2 used)
46-831	Tone Control Knob
49-624	12" P.M. Speaker
	208-624 Cone & Voice Coil
54-303	Speed Nut (5 used on Esc.)
57-1481	Esc. Clamping Plate (2 used)
57-1591	Escutcheon
57-1613	Emblem Plate
70-86	#6 x 5/8 Washer Hd. Wood Screw Steel Stat. Bronze (8 used on S-16516-5 Used 2-160)
80-604	Hinge Spring (2 used)
83-1698	Rubber Channel Strip (Used on Esc.)
97-293	Chassis Mtg. Insulating Stud (3 used)
114-148	#10 x 7/8 Hex Washer Hd. S.T. Screw (3 used Chassis Mtg.)
114-313	#8 x 1/2" Hex Hd. Sl. S. T. Screw-Cad. (4 used Mtg. Esc.)
138-33	Metal Grill
165-9	Glides
165-14	Glides
196-135	Dust Gasket
202-777	Radio & Phono Instruction Book
S-14025	Three Speed Changer

PART NO.	DESCRIPTION
S-15536	Record Changer Compt. Hinge Brkt. & Link Assembly (2 used)
S-15780	Cobra Cartridge
S-16196	Record Changer Mtg. Frame & Arm Assem.
S-16359	Wavemagnet Assembly
S-16516	Cabinet Back Assembly (Complete with A.C. Cord and Wavemagnet) (Radio Section)

<u>G885 CABINET PARTS</u>	
2-165	Cabinet Back (Phono Section)
19-123	Record Changer Mtg. Clip (4 used)
26-429	Dial Scale (F.M. Band)
43-185	Record Changer Housing
46-522	Dummy Knob
46-538	Tuning Knob
46-718	Band Switch & Volume Control Knob
46-831	Tone Control Knob
49-678	10" P.M. Speaker
	*208-678 Cone & Voice Coil
54-303	Speed Nut-Tinnerman (5 used on Esc.)
57-1481	Esc. Clamping Plate (2 used)
57-1591	Escutcheon
57-1613	Emblem Plate
70-86	#6 x 5/8" Washer Hd. Wood Screw - Steel Stat. Bronze (5 used S-16513 & 4 used 2-165)
70-98	#8 x 5/8" R.H. Wood Screw-Steel N.P. (3 used on S-16508)
83-1698	Rubber Channel Strip
83-1721	Roller Bearing Strip
83-1722	Latch Support Strip
97-293	Chassis Mtg. Insulating Stud (3 used)
112-791	Record Changer Mtg. Screw (4 used)
113-25	6-32 x 3/8 Hex Hd. Sl. M.S. Shakeproof Lockwasher (2 used on 156-20)
114-148	#10 x 7/8" Hex Washer Hd. S.T. Screws (3 used Chassis Mtg.)
114-253	6-20 x 3/8 Hex Hd. Sl. S.T. Screw Cad. Shakeproof (4 used on S-16509)
114-313	#8 x 1/2" Hex Hd. Sl. S. T. Screw (4 used on Esc.)
125-76	Rubber Grommet (4 used on Changer)
156-20	Record Changer Housing Latch
165-9	Glides (2 used)
165-14	Glides (2 used)
196-135	Dust Gasket
202-776	Radio & Phono Inst. Book
S-14026	Twin Seven Record Changer
S-15222	Cobra Tone Arm Cartridge
S-16359	Wavemagnet Assembly Type 38C
S-16508	Channel Brkt. & Lever Assembly
S-16509	Channel Brkt. & Roller Assembly
S-16513	Cabinet Back Assembly (Complete with A.C. Cord & Wavemagnet)

G 883E CABINET PARTS

26-429	Dial Scale
46-522	Dummy Knob
46-538	Tuning Knob
46-718	Band Switch & Volume Control Knob
46-831	Tone Control Knob
49-624	12" P.M. Speaker
	208-624 Cone & Voice Coil
54-303	Speed Nut Tinnerman (5 used on Esc.)
57-1481	Esc. Clamping Plate (2 used)
57-1591	Esc.
57-1613	Emblem Plate
70-86	#6 x 5/8 Washer Hd. Wood Screw Steel Stat. Bronze (5 used on S-16641)
80-604	Hinge Spring (2 used)
83-1698	Rubber Channel Strip
93-968	.046 x .171 x 1/2" Steel Washer (2 used on Esc.)
97-293	Chassis Mtg. Insulating Stud (3 used)
114-148	#10 x 7/8 Hex Washer Hd. St. T. Screw (3 used Chassis Mtg.)
114-313	#8 x 1/2" Hex Hd. Sl. S.T. Screw (4 used on Esc. Mtg.)
165-9	Glides (2 used)
165-14	Glides (2 used)
196-135	Dust Gasket
202-777	Radio & Phono Instruction Book
S-14025	Three Speed Record Changer
S-15536	Record Changer Compt. Hinge Brkt. & Link Assembly (2 used)
S-15780	Cobra Tone Arm Cartridge
S-16196	Record Changer Mtg. Frame & Arm Assem.
S-16359	Wavemagnet Assembly Type 38C
S-16641	Cabinet Back Assembly (Complete with A.C. Cord & Wavemagnet)

G 882R CABINET PARTS

G882R is the same as G883E except the following:

Omit:

S-16641 Cabinet Back Assembly (Complete)

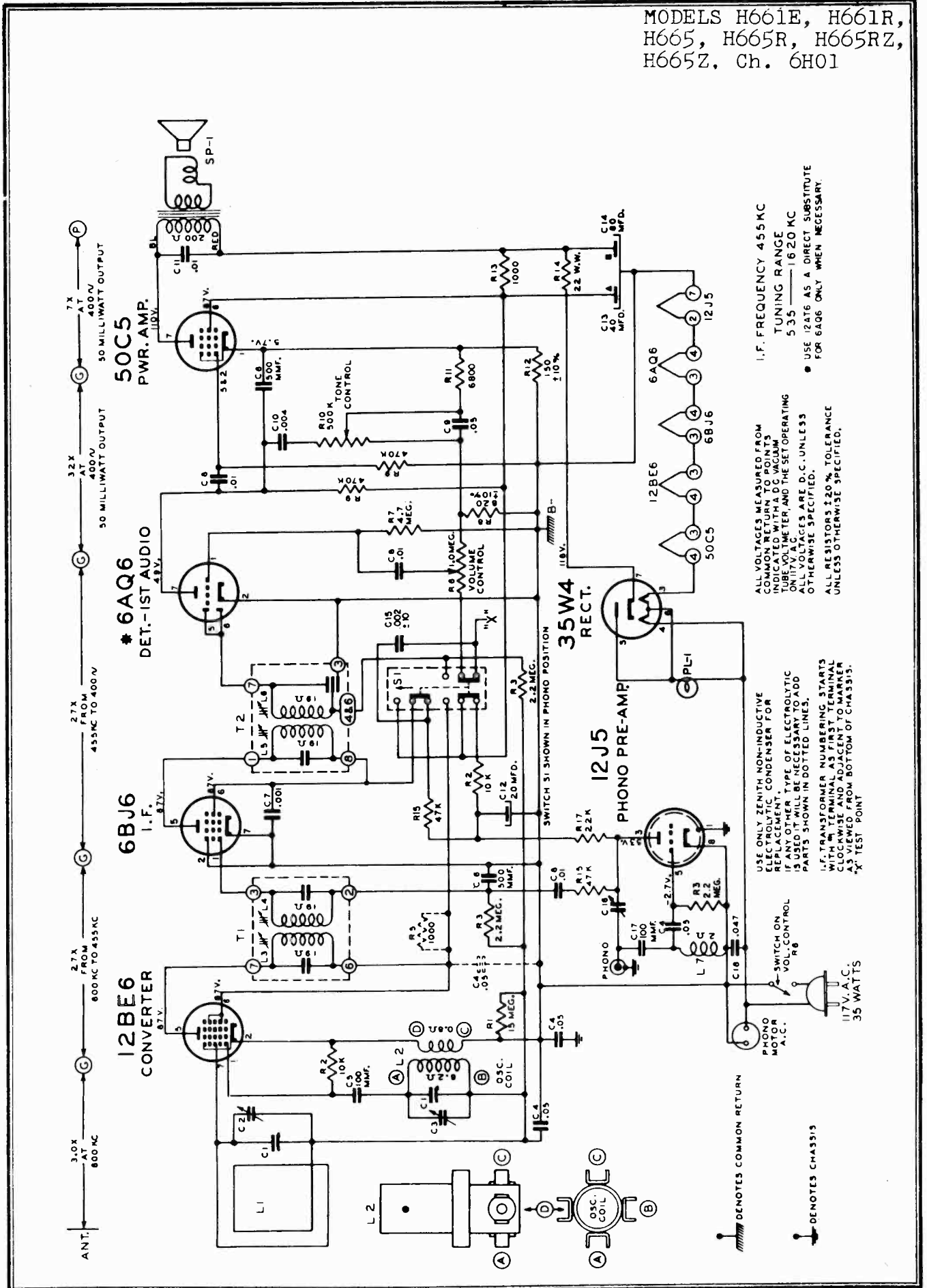
Add:

S-16513 Cabinet Back Assembly (Complete with A.C. Cord & Wavemagnet)

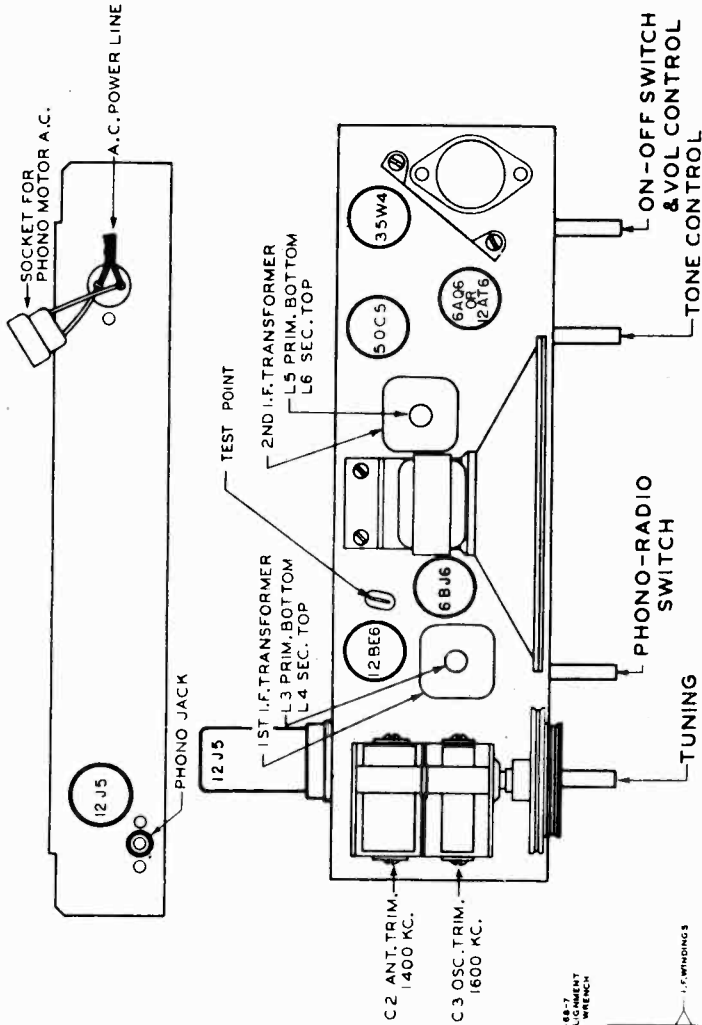
G 881 CABINET PARTS

2-179	Cabinet Back (Phono-Section)
19-169	Record Changer Mtg. Clip (4 used)
22-2144	150 Mmfd. Ceramic Cond. 500V
26-429	Dial Scale
46-522	Dummy Knob
46-538	Tuning Knob
46-718	Band Switch & Vol. Control Knob (2 used)
46-831	Tone Control Knob
49-624	12" P.M. Speaker
	208-624 Cone & Voice Coil
54-303	Speed Nut (5 used on Esc. Mtg.)
57-1481	Esc. Clamping Plate (2 used)
57-1591	Escutcheon
57-1613	Emblem Plate
58-75	Connector Plug
58-86	Two Prong Plug
70-66	#8 x 1/2" R.H.W.S. Steel N.P. (2 used on 95-1228)
70-86	#6 x 5/8 Washer Hd. Wood Screw Steel Stat. Bronze (5 used on S-16516 & 8 used 2-179)
78-750	Six Contact Socket (used on S-16683)
80-604	Hinge Spring (2 used)
80-678	Record Changer Mtg. Spring (4 used)
83-1245	Record Changer Trim Strip
83-1698	Rubber Channel Strip
93-968	.046 x .171 x 1/2" Steel Washer Cad. (2 used on Esc. Mtg.)
95-1228	Filament Transformer
97-293	Chassis Mtg. Insulating Stud (3 used)
112-712	Record Changer Mtg. Screw
114-148	#10 x 7/8 Hex Washer Hd. S. T. Screw (3 used Chassis Mtg.)
114-313	#8 x 1/2" Hex Hd. Sl. S. T. Screw (4 used on Esc. Mtg.)
138-33	Metal Grill
165-9	Glides (2 used)
165-14	Glides (2 used)
196-135	Dust Gasket
202-802	Radio & Phono Inst. Book
S-14021	Dual Speed Record Changer
S-15536	Record Changer Compt. Hinge Brkt. & Link Assembly (2 used)
S-15538	Record Changer Frame Assembly
S-15780	Cobra Tone Arm Cartridge
S-16359	Wavemagnet Assembly Type 38C
S-16516	Cabinet Back Assembly (Complete with A.C. Cord & Wavemagnet)
S-16683	Adapter Cable Assembly

MODELS H661E, H661R,  
H665, H665R, H665RZ,  
H665Z, Ch. 6H01



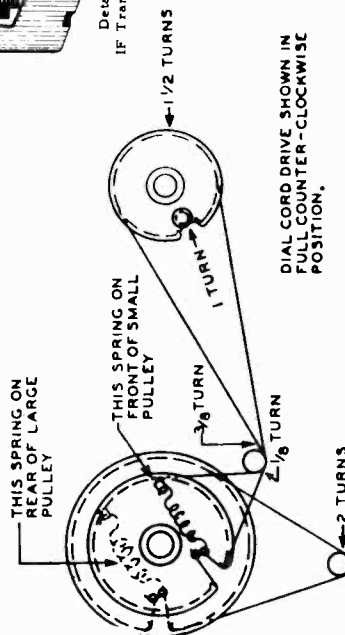
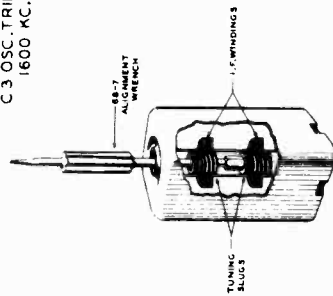
MODELS H661E, H661R,  
H665, H665R, H665RZ,  
H665Z, Ch. 6H01



**TUBE AND TRIMMER LOCATION**

**ALIGNMENT PROCEDURE**

OPERATION	CONNECT OSCILLATOR TO ANTENNA	DUMMY ANTENNA FREQUENCY	INPUT SIG. FREQUENCY	SET DIAL AT	TRIMMERS	PURPOSE
1	Converter Grid	.5 Mfd.	455 Kc.	600 Kc.	L3, 4, 5, 6	For I. F. Alignment
2	One Turn Loop Coupled Loosely to Wave Magnet	--	1600 Kc.	1600 Kc.	C-3	Set Oscillator to Dial Scale.
3		--	1400 Kc.	1400 Kc.	C-2	Align Antenna Stage



**DIAL CABLE DRAWING AND  
DETAIL OF I. F. TRANSFORMER**

The I.F. transformers incorporated in this receiver are of the new permeability tuned type. The advantage of an I.F. transformer of this type is its extreme stability under various humidity and temperature conditions. The upper coil is the secondary and the lower the primary. When adjusting these I.F. transformers the tuning wrench 68-7 can be inserted into the top slug, rotated until maximum output is obtained and then dropped down to the lower slug and the same operation repeated. The tuning wrench is so designed that turning one slug does not affect the adjustment of the other. In the event the receiver oscillates during phono operation, adjust C16 4-80 mmf. capacitor to a point at which the oscillation ceases. This position of no oscillation will sometimes vary with different cartridges, and in this case readjustment of C16 must be made.

MODELS H661E, H661R,  
H665, H665R, H665RZ,  
H665Z, Ch. 6H01

## PARTS LIST

MODELS H665, H665R, H665Z, H665RZ, H661E & H661R  
CHASSIS 6H01

## Coils &amp; Chokes

95-1101 T1- 1st. I.F. Transformer  
95-1102 T2- 2nd. I.F. Transformer  
S-12603 L7- Phono Oscillator Coil Assembly  
S-13799 L2- Oscillator Coil Assembly

## Condensers

22-3 C8-.01 Mfd. Ceramic (Disc.) 500V (3 used)  
22-4 C10.004 Mfd. Ceramic (Disc.) 500V  
22-5 C5-110 Mmfd. Ceramic (Disc.)  
(or 22-162) 500V  
22-178 C9-.05 Mfd. 200V  
22-829 C4-.05 Mfd. 200V (3 used)  
22-854 C6-.0005 Mfd. 600V (2 used)  
22-1182 C11-.01 Mfd. 400V  
22-1444 C7-.001 Mfd. 200V  
22-1701 C17-100 Mmfd. Ceramic 500V  
22-1775 C18-.047 Mfd. 400V  
22-2085 C1-Variable - 2 gang  
22-2272 C12,13,14 Elect. - 20 Mfd. 150V x 40 Mfd.  
150V x 80 Mfd. - 150V  
22-2241 C15.002 Mfd. Ceramic 500V  
22-2242 C16- Trimmer Capacitor

## Resistors

63-1219 R14-22 ohm W.W. 1/2W 20% Ins. Res.  
63-1574 R13-1000 ohm 1W 20% Ins. Res.  
63-1786 R5-1000 ohm 1/2W 20% Ins. Res.  
63-1782 R8-820 ohm 1/2W 10% Ins. Res.  
63-1821 R11-6800 ohm 1/2W 20% Ins. Res.  
63-1828 R2-10K ohm 1/2W 20% Ins. Res.  
63-1842 R17-22K ohm 1/2W 20% Ins. Res.  
63-1856 R15-47K ohm 1/2W 20% Ins. Res.  
63-1898 R9-470K ohm 1/2W 20% Ins. Res.  
63-1926 R3-2.2 Megohm 1/2W 20% Ins. Res.  
63-1940 R7-4.7 Megohm 1/2W 20% Ins. Res.  
63-1961 R1-15 Megohm 1/2W 20% Ins. Res.  
63-1977 R12-150 ohm 1W 10% Ins. Res.  
63-2045 R10-Tone Control  
63-2046 R6-Volume Control & Switch

## Miscellaneous

11-104 Line Cord & Plug - 7 ft. long  
26-437 Dial Scale  
46-811 Tuning, Volume & Tone Control Knob (3 used)  
46-844 Radio-Phono Switch Knob  
49-669 SP-1-5 1/4" PM Speaker  
TS-2025 Output Transformer  
ZC-5091 Cone  
52-538 Two Prong Receptacle & Cable  
54-139 3/8-32 x 9/16" Palmnut (1 ea. used on 85-465,  
63-2045 & 63-2046)  
57-1626 Chassis Cover Plate  
59-250 Dial Pointer  
70-117 #6 x 5/16" Phill. R.H.W.S. Steel Stat. Br.  
(8 used to Mt. 57-1626)  
76-556 Tuning Control Shaft  
78-229 Elect. Cond. Socket  
78-644 Phono Connector Socket  
78-709 Octal Tube Socket  
78-806 Miniature Tube Socket (2 used)  
78-807 Miniature Tube Socket (3 used)  
78-808 Pilot Light Socket & Wire  
80-69 Dial Cord Tension Spring  
30-209 Dial Cord Tension Spring  
85-465 S1-Phono-Radio Switch (or 85-466)  
93-138 Felt Washer (used on S-16029)  
93-392 3/32 x 33/64 x 1" Brown Felt Washer  
(4 used on Knobs)  
94-295 Gang Mtg. Bushing  
100-67 PL-1-Dial Light Bulb  
114-297 #6 x 1/4" Hex. Hd. Sl. S.T. (2 used on 126-624)

## Miscellaneous (Con't)

126-624 Heat Shield  
139-71 Speaker Baffle (Rubber)  
171-12 Pilot Light Lens  
188-32 Retaining Ring (used on 76-556)  
S-15708 Cobra Tone Arm Cartridge Assembly  
S-15903 Dial Cord Assembly (Short)  
S-15904 Dial Cord Assembly (Long)  
S-16028 Pulley & Bushing Assembly  
S-16029 Bracket & Stud Assembly  
S-16419 Record Adapter Plug & Envelope Assembly

## Cabinet Parts Model H665Z &amp; H665RZ

14-1265 Cabinet for H665Z - Radio-Phono Table Model  
14-1265R Cabinet for H665RZ - Radio-Phono Table Model  
16-639 Packing Carton  
74-62 Speaker Screen  
114-251 #10-32 x 5/8" Hex. Washer Hd. Sl. M.S.  
(4 used chassis mtg.)  
114-291 #8-32 x 7/16" Hex. Hd. Sl. M.S. Steel  
(2 used on S-16029)  
139-90 Speaker Baffle (Duron)  
166-41 Rubber Bumper (used on gang)  
202-839 Instruction Book (Radio & Phono)  
S-14027 3 Speed Record Changer  
S-17211 L1-Wavemagnet Assembly

## Cabinet Parts Model H665 &amp; H665R

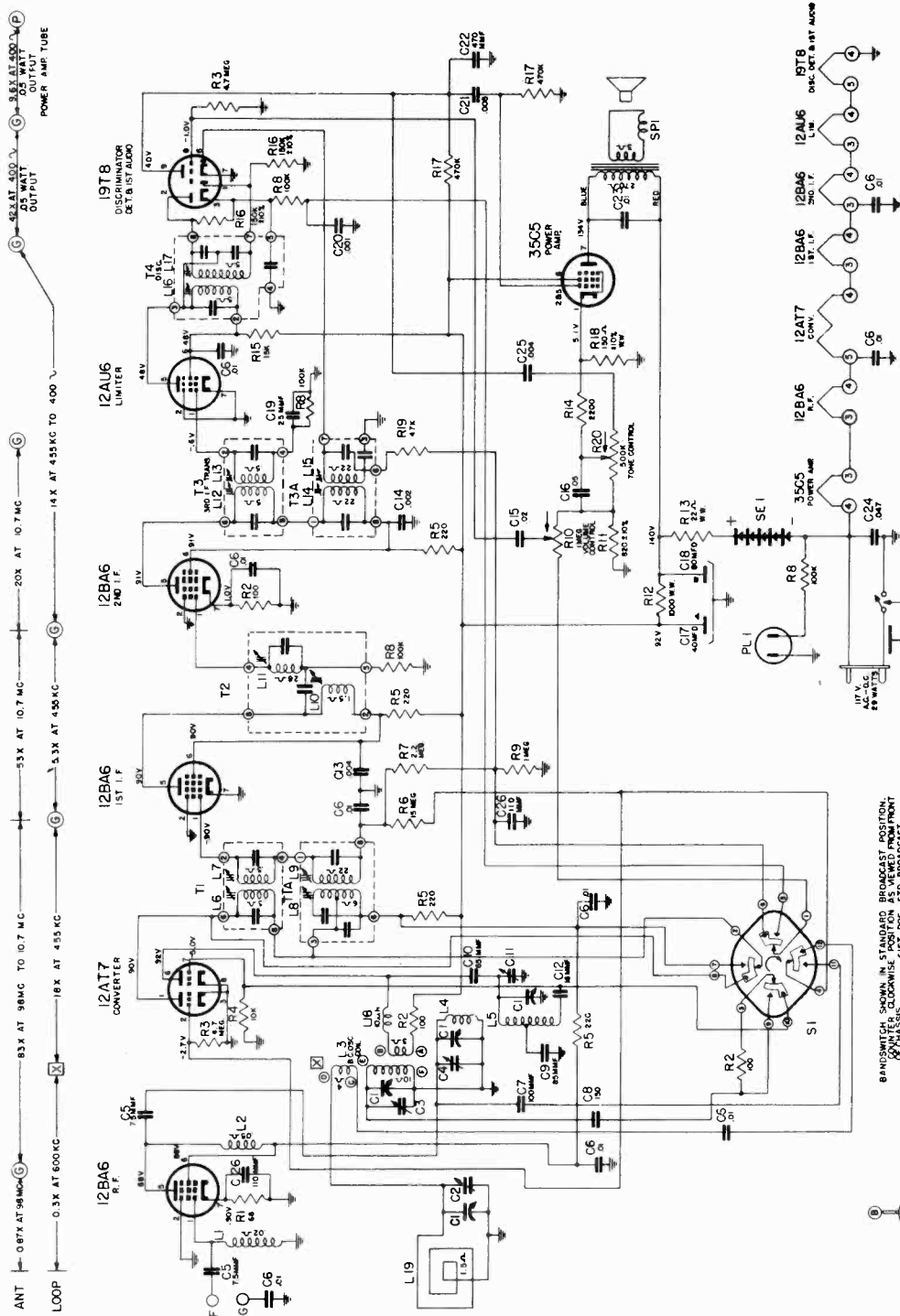
14-1241 Cabinet for H665 Radio-Phono Table Model  
14-1241R Cabinet for H665R Radio-Phono  
16-639 Packing Carton  
19-123 Record Changer Mtg. Clip (4 used)  
57-1481 Clamping Strip (2 used)  
70-83 #6 x 1/2" Rd. Washer Hd. Wood St. Br.  
(6 used on Wavemagnet & 1 used 83-1671)  
72-87 #6 x 5/8" Phill. F.H.W.S. Stat. Br. (8 used on  
dial scale mtg.)  
72-91 #6 x 7/16" Phill. F.H.W.S. (1 used on each  
57-1481)  
74-62 Speaker Screen  
80-407 Record Changer Mtg. Spring (4 used)  
83-1671 Wavemagnet Terminal Strip  
83-1737 Speaker Screen Retaining Strip  
112-544 Record Changer Mtg. Screw (3 used)  
114-40 #10-32 x 7/8" Hex. Washer Hd. (4 used chassis  
Mtg.)  
139-90 Speaker Baffle (Duron)  
166-46 Bumper (4 used)  
202-833 Instruction Book  
S-14031 Variable Speed Record Changer  
S-17211 L1-Wavemagnet Assembly (or S-17314)

## Cabinet Parts Model H661E &amp; H661R

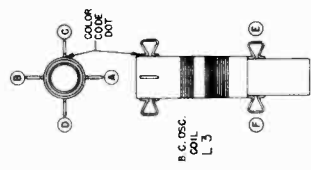
14-1281E Cabinet for H661E Radio-Phono Table Model  
14-1281R Cabinet for H661R Radio-Phono Table Model  
16-667 Packing Carton  
19-123 Record Changer Mtg. Clip (4 used)  
70-83 #6 x 1/2" Rd. Washer Hd. Wood Screw St. Br.  
(6 used to mt. S-17476)  
72-87 #6 x 5/8 Phill. F.H.W.S. St. Br. (8 used to  
mt. Dial Scale & Baffle)  
80-407 Record Changer Mtg. Spring (4 used)  
83-1737 Speaker Screen Retaining Strip (4 used)  
112-544 Record Changer Mtg. Screw (3 used)  
114-40 #10-32 x 7/8" Hex. Washer Hd. Sl. (4 used  
chassis mtg.)  
139-94 Speaker Baffle & Grille Cloth  
166-46 Bumper (4 used)  
202-833 Instruction Book (Radio & Phono)  
S-14031 Variable Speed Record Changer  
S-17475 L1-Wavemagnet Assembly H661R  
S-17476 L1-Wavemagnet Assembly



MODEL H724,  
Ch. 7H02



BANDSWITCH SHOWN IN STANDARD BROADCAST POSITION.  
 ALL VOLTAGES MEASURED FROM COMMON RETURN TO  
 TUBE VOLT-METER WITH AN A.C. D.C. VACUUM  
 ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED  
 ALL RESISTORS ARE  $\pm 20\%$  UNLESS OTHERWISE SPECIFIED  
 DE NOTES CHASSIS  
 AMP MOD I.F. FREQUENCY 455 KC  
 PREQ MOD I.F. FREQUENCY 10.7 MC  
 540 - 1620 K.C. STANDARD BROADCAST.  
 TUNING RANGES 8.8 - 10.8 M.C. FREQUENCY MOD.



The 7H02 chassis incorporates a superheterodyne circuit with two stages of IF, on the FM Band, and two stages on the AM Band. There is one stage of RF amplification on the FM Band.

When adjustments are made on the 7H02 or any AC-DC chassis, a line isolation transformer (110-V input to 110-V output) is recommended in order to avoid a "hot" chassis. If an isolation transformer is not available, check the AC voltage between chassis and bench ground, and if there is any indication of voltage, reverse the plug before handling the set.

The I.F. transformers and the discriminator transformer are the new permeability tuned type. The advantage of an IF transformer of this type is its extreme stability under various humidity and temperature conditions. The upper coil is the secondary and the lower the primary. When adjusting these IF and discriminator transformers, tuning wrench 68-19 can be inserted into the top slug, rotated until maximum output is obtained and then dropped down to the lower slug and the same operation repeated. The tuning wrench is so designed that turning one slug does not affect the adjustment of the other.

**FM IF Alignment:** Because of the wide band pass, it is desirable to use a FM signal generator and a cathode ray oscilloscope when aligning the FM IF channel. The instruction book for the Zenith Model 800 Signal Generator (Form Z8001) covers complete FM alignment procedure. If visual alignment equipment is unavailable, reasonably accurate alignment can be made by following the procedure outlined in this service note.

**FM Discriminator Alignment:** When the secondary of the discriminator is aligned (operation 5) use sufficient signal input to get a good positive and negative indication before setting the slug for zero reading. A center zero indicating meter is recommended for this adjustment, but is not absolutely necessary. Reversing the leads of a non-zero center meter, or observing closely when the meter starts to go to the left (negative) of zero will give the same results.

Alignment of this chassis will, in most cases, be unnecessary unless an IF or RF transformer is replaced or the adjustments have been tampered with.

Correct alignment can only be made if the following procedure is followed:

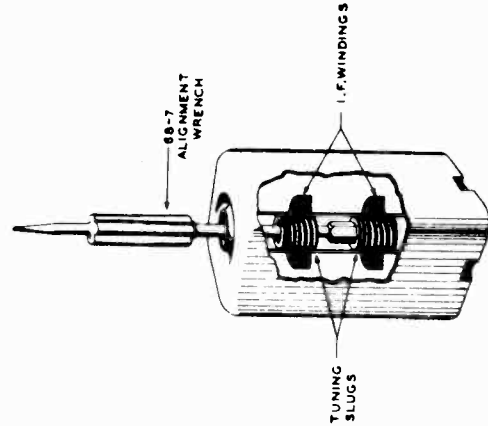
A vacuum tube voltmeter with an isolation resistor of 2,000,000 ohms in series with the hot lead will serve for FM adjustments. This lead should be shielded.

An AC output meter connected across the primary or secondary of the output transformer will be satisfactory for all AM adjustments.

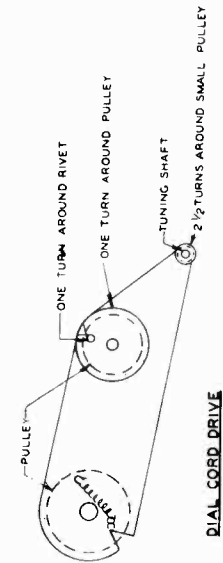
The signal generator output should be kept just high enough to get an indication on the meter.

(a) Vacuum Tube Voltmeter Lug 7 on discriminator transformer to chassis (half discriminator load).

- (b) Vacuum Tube Voltmeter Lug 5 on discriminator transformer to chassis (full discriminator load).
- (c) Vacuum Tube Voltmeter from Limiter Grid to Chassis.
- (d) Loosen Slugs by applying a hot iron to the cement.



Detail of  
IF Transformer

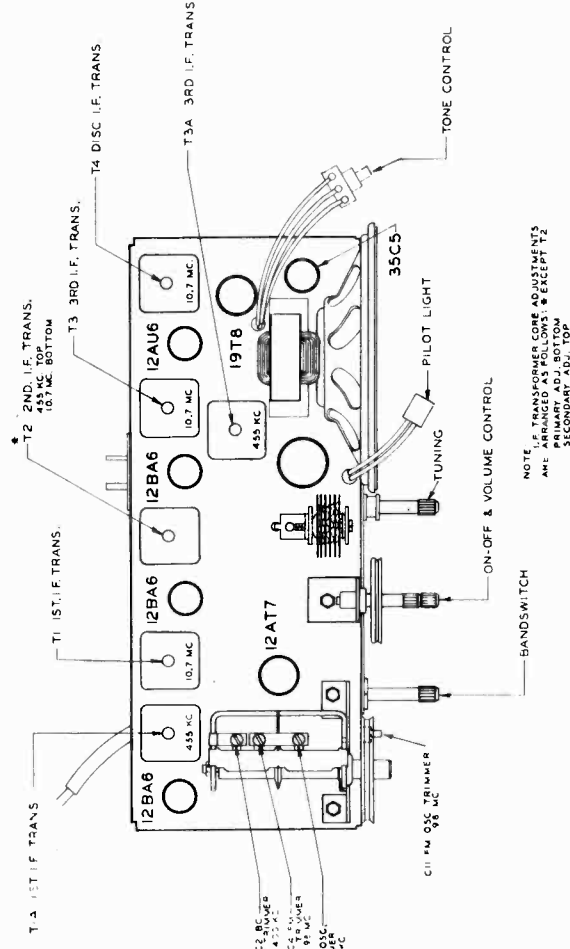


MODEL H724,  
Ch. 7H02

ALIGNMENT PROCEDURE

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial To	Adj. Trimmers	Purpose
1	Pin 2 12A17 Converter 2 turns loosely cpid. to wavemagnet	.05 Mfd.	455 Kc. Modulated 1600 Kc.	BC	600 Kc.	L8, 9, 11, 14, 15	Align I. F. channel for maximum output.
2	2 turns loosely cpid. to wavemagnet		Modulated 1400 Kc.	BC	1600 Kc.	C3	Set oscillator to dial scale.
3	Pin 1 (grid) on 12AU6 limiter.	.05 Mfd.	Modulated 10.7 Mc.	BC	1400 Kc.	C2	Align antenna stage.
4 (a)	Pin 1 (grid) on 12AU6 limiter.	.05 Mfd.	Unmodulated 10.7 Mc.	FM		L16 coil slug Primary discr.	Align primary of discriminator for maximum reading.
5 (b)	Pin 1 (grid) on 12BA6 2nd IF.	.05 Mfd.	Unmodulated 10.7 Mc.	FM		L17 coil slug sec. of discr. L12 and L13 Prim. and Sec. of 3rd IF trans.	Adjust secondary of discriminator for zero reading. Align 3rd IF transformer for maximum reading.
6 (c)	Pin 1 (grid) on 12BA6 1st IF.	.05 Mfd.	Unmodulated 10.7 Mc.	FM		L10 Prim. of 2nd IF transformer	Align 2nd IF transformer for maximum reading.
7 (e)	Pin 2 (grid) on 12A17 converter tube socket.	.05 Mfd.	Unmodulated 10.7 Mc.	FM		L6 and L7 Prim. and Sec. of 1st IF transformer.	Align 1st IF transformer for maximum reading.
8 (c)	Antenna Post FM (Re- move line ant.)	270 ohms	Unmodulated 98 Mc.	FM	98 Mc.	C11 Osc. Coil Slug	Set Oscillator to dial scale. Align det. stage to maximum reading.
9 (c)		270 ohms	Unmodulated 98 Mc.	FM	98 Mc.	C4 Det. Coil Slug	
10 (c) (d)							

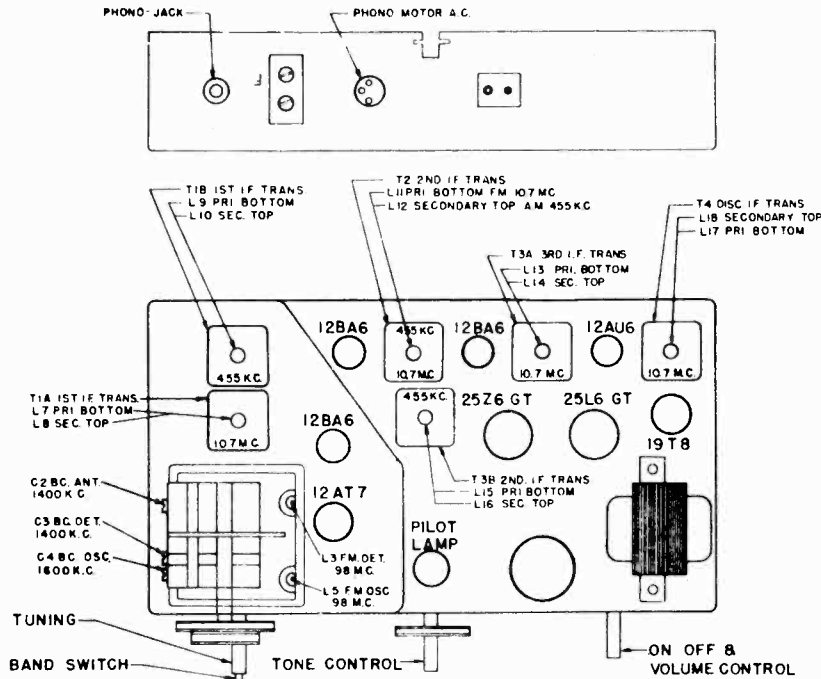
TUBE AND TRIMMER LOCATION



NOTE: TRANSFORMER CORE ADJUSTMENT V3  
ANT. 1ST IF TRANS. ADJ. BOTTOM  
PRIMARY ADJ. BOTTOM  
SECONDARY ADJ. TOP



MODEL H380R,  
Ch. 3H20, Rev.



TUBE AND TRIMMER LOCATION

The 8H20 revised chassis incorporates a superheterodyne circuit with two stages of IF, on the FM Band, and one stage on the AM Band. There is one stage of RF amplification on all Bands.

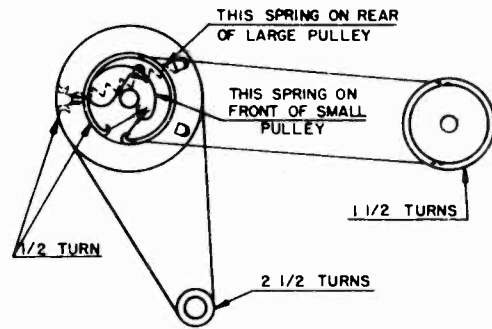
When adjustments are made on the 8H20 revised chassis, a line isolation transformer (110 V input to 110V output) is recommended in order to avoid a "hot" chassis. If an isolation transformer is not available, check the AC voltage between chassis and bench ground and if there is any indication of voltage, reverse the plug before handling the set.

**FM RF Alignment:** The tuning slugs are attached to threaded shafts and the slugs are varied in the field of the coils by turning the shafts clockwise or counter-clockwise. After adjustment the shafts must be secured with a drop of speaker cement.

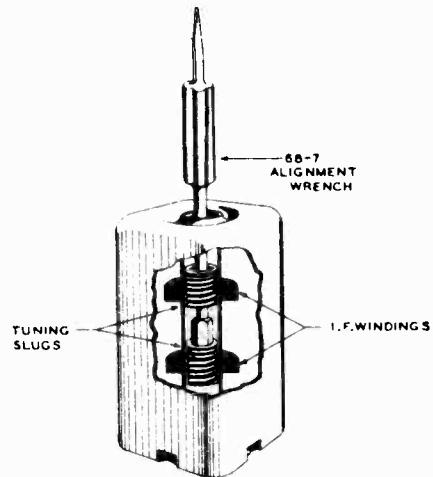
**AM and FM IF Alignment:** The AM and FM IF transformers in this receiver are of the new permeability tuned type. The advantage of an I F transformer of this type is its extreme stability under various humidity and temperature conditions. The upper coil is the secondary and the lower the primary. When adjusting these I F transformers the tuning wrench 68-7 can be inserted into the top slug, rotated until maximum output is obtained and then dropped down to the lower slug and the same operation repeated. The tuning wrench is so designed that turning one slug does not affect the adjustment of the other.

**FM IF Alignment:** Because of the wide band pass, it is desirable to use a FM signal generator and a cathode ray oscilloscope when aligning the FM IF channel. The instruction book for the Zenith Model 800 Signal Generator (Form Z8001) covers complete FM alignment procedure. If visual alignment equipment is unavailable, reasonably accurate alignment can be made by following the procedure outlined below.

**FM Discriminator Alignment:** When the secondary of the discriminator is aligned (operation 5) use sufficient signal input to get a good positive and negative indication before setting the slug for zero reading. A center zero indicating meter is recommended for this adjustment, but is not absolutely necessary. Reversing the leads of a non-zero center meter, or observing closely when the meter starts to go to the left (negative) of zero will give the same results.



DIAL CORD DRIVE



Detail of  
IF Transformer

## ALIGNMENT PROCEDURE

Operation	Connect Oscillator To	Dummy Antenna	Input Signal Frequency	Band	Set Dial To	Adj. Trimmers	Purpose
1	Pin 2 12AT7 Converter 2 turns loosely cpd. to wavemagnet	.05 Mfd.	455 Kc. Modulated 1600 Kc.	BC	600 Kc.	L9, 10, 12 15 & 16	Align I. F. channel for maximum output.
2	2 turns loosely cpd. to wavemagnet		Modulated 1400 Kc.	BC	1600 Kc.	C4	Set oscillator to dial scale.
3	2 turns loosely cpd. to wavemagnet		Modulated	BC	1400 Kc.	C3, C2	Align detector and antenna stage.
4 (a)	Pin 1 (grid) on 12AU6 limiter.	.05 Mfd.	10.7 Mc. Unmodulated	FM		L17 coil slug Primary discr.	Align primary of discriminator for maximum reading.
5 (b)	Pin 1 (grid) on 12AU6 limiter.	.05 Mfd.	10.7 Mc. Unmodulated	FM		L18 coil slug sec. of discr.	Adjust secondary of discriminator for zero reading.
6 (c)	Pin 1 (grid) on 12BA6 2nd. I F.	.05 Mfd.	10.7 Mc. Unmodulated	FM		L13 and L14 Pri. & Sec. of 3rd. IF trans.	Align 3rd. IF transformer for maximum reading.
7 (c)	Pin 1 (grid) on 12BA6 1st. IF.	.05 Mfd.	10.7 Mc. Unmodulated	FM		Adjust L11 for maximum reading. L7 and L8 Prim.	Align 2nd IF transformer for maximum reading.
8 (c)	Pin 2 (grid) on 12AT7 converter tube socket.	.05 Mfd.	10.7 Mc. Unmodulated	FM		Align 1st. IF transformer.	Align 1st. IF transformer for maximum reading.
9 (c)	Antenna Post FM (Re- move line ant.)	270 ohms	98 Mc. Unmodulated	FM	98 Mc.	L5 Osc. Coil Slug.	Set Oscillator to dial scale.
10 (c) (d)		270 ohms	98 Mc. Unmodulated	FM	98 Mc.	L3 Det. Coil Slug	Align det. stage to maximum reading.

## Dial Assembly

54-292	Speed Nut (used on S-17165)
78-895	Dial Light Socket & Wire
80-69	Dial Cord Spring
80-746	Pulley Retaining Spring
80-747	Dial Cord Spring
80-781	Tuner Arm Tension Spring
94-732	Pointer Pulley Bushing (Part of S-17165)
100-97	Pilot Light Bulb
114-262	#8 x 7/16" Hex Hd. Sl. S.T. (2 used to mount S-17149)
114-297	#6 x 1/4" Hex Hd. Sl. S.T. (2 used to mount S-17165)
148-122	Tuner Arm
188-30	Retaining Ring (used on S-17155)
S-17149	Dial Scale & Bracket Assembly (26-449 & 26-450)
S-17155	Tuning Shaft & Pulley Assembly
S-17157	Pointer & Pulley Assembly
S-17158	Dial Cord & Eyelet Assembly (Long)
S-17159	Dial Cord & Eyelet Assembly (Short)
S-17165	Bracket & Pulley Bushing Assembly

Alignment of this chassis will in most cases be unnecessary unless an IF or RF transformer is replaced or the adjustments have been tampered with.

Correct alignment can only be made if the following procedure is followed:

A vacuum tube voltmeter with an isolation resistor of 2,000,000 ohms in series with the hot lead will serve for FM adjustments. This lead should be shielded.

An AC output meter connected across the primary or secondary of the output transformer will be satisfactory for all AM adjustments.

The signal generator output should be kept just high enough to get an indication on the meter.

(a) Vacuum Tube Voltmeter Lug 7 on discriminator transformer to chassis (half discriminator load).

(b) Vacuum Tube Voltmeter Lug 5 on discriminator transformer to chassis (full discriminator load).

(c) Vacuum Tube Voltmeter from Limiter Grid to Chassis.

(d) Loosen Slugs by applying a hot iron to the cement.

MODEL H880R,  
Ch. 8H20, Rev.

Coils & Chokes

95-1251 T2 2nd. IF Transformer 10.7 Mc & 455 Kc  
 95-1102 T3B 3rd. IF Transformer  
 95-1150 T3B 3rd. IF Transformer  
 95-1153 T4 Disc. Transformer  
 95-1248 T1B 1st. IF Transformer  
 95-1201 T1A 1st. IF Transformer  
 S-12603 L18 Phono Oscillator Coil  
 S-15691 L5 F.M. Oscillator Coil Assembly  
 S-15743 L3 F.M. Detector Coil Assembly  
 S-16344 L4 Broadcast Det. Coil Assembly  
 S-16345 L6 Broadcast Osc. Coil Assembly  
 S-16408 L2 Antenna Choke Coil Assembly

Condensers

22-3 C7 .01 Mfd. Ceramic (10 used) 500V  
 22-4 C21 .004 Mfd. Ceramic 500V  
 22-5 C8 110 Mmfd. Ceramic (or 22-1669) (3 used) 500V  
 22-177 C19 .2 Mfd. 400V  
 22-448 C17 .004 Mfd. 600V  
 22-669 C22 .01 Mfd. 600V  
 22-927 C15 .1 Mfd. 600V  
 22-829 C5 .05 Mfd. (3 used) 200V  
 22-854 C24 .0005Mfd. 600V  
 22-1220 C14 .002 Mfd. 600V  
 22-1367 C13 50 Mmfd. Ceramic (2 used) 500V  
 22-1506 C10 22 Mmfd. Ceramic (2 used) 500V  
 22-1676 C11 .001 Mfd. Ceramic (4 used) 500V  
 22-1705 C9 30 Mmfd. Ceramic 500V  
 22-1717 C20 .001 Mfd. 200V  
 22-1762 C12 1 Mmfd.(molded) (Ceramic) 500V  
 22-1775 C18 .047 Mfd. 400V  
 22-2104 C1 Variable - 3 Section  
 22-2105 C26,27 Elect. 80-40 Mfd. 250V  
 22-2140 C6 15 Mmfd. Ceramic (3 used) 500V  
 22-2154 C25 Elect. Cond. 10 Mfd. 250V  
 22-2240 C16 Trimmer Condenser  
 22-1507 C28 25 Mmfd. Ceramic 500V

Resistors

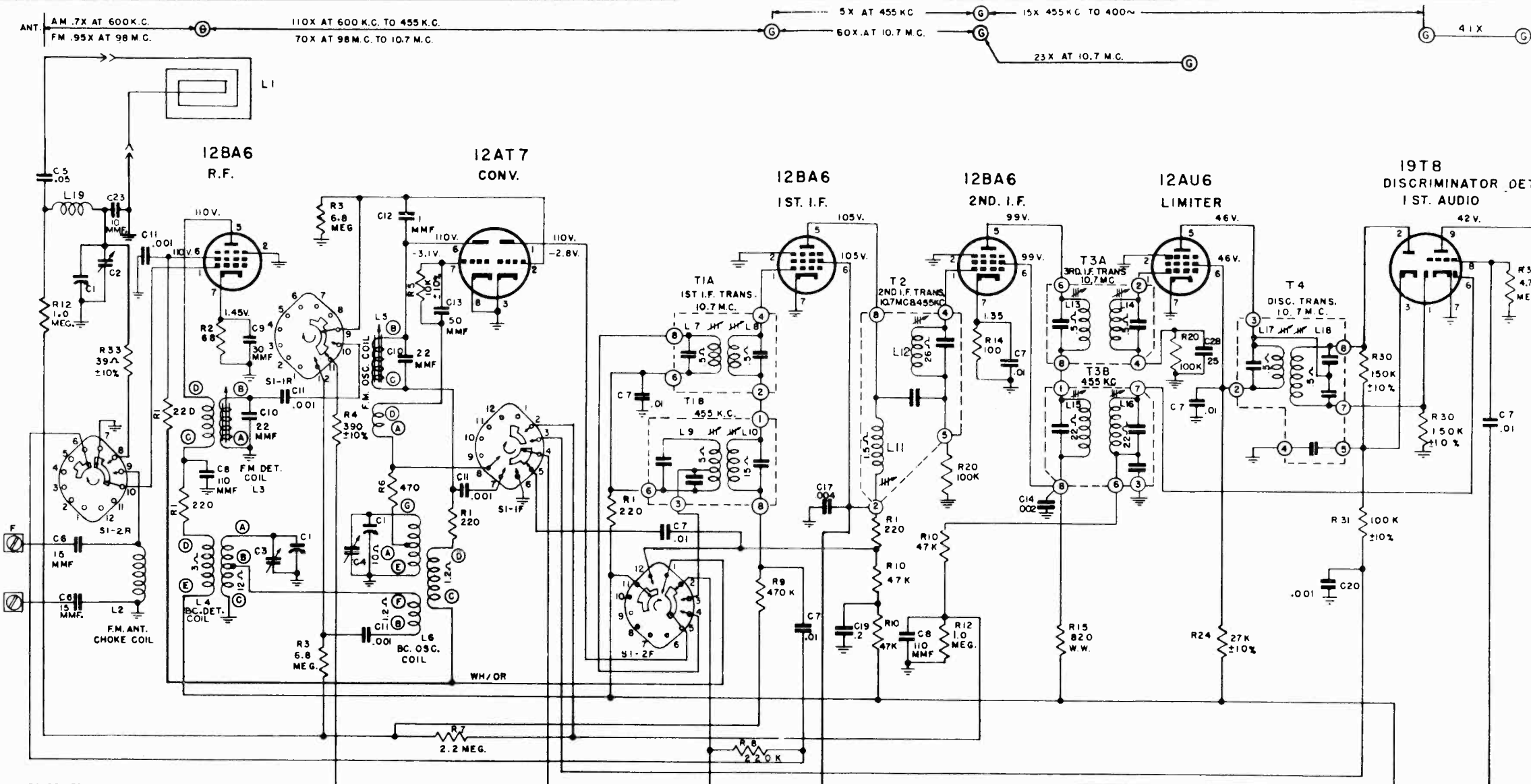
63-1726 R33 39 ohm 1/2W 10% Ins. Res.  
 63-1737 R2 68 ohm 1/2W 20% Ins. Res.  
 63-1744 R14 100 ohm 1/2W 20% Ins. Res.  
 63-1758 R1 220 ohm 1/2W 20% Ins. Res. (5 used)  
 63-1768 R4 390 ohm 1/2W 10% Ins. Res.  
 63-1772 R6 470 ohm 1/2W 20% Ins. Res.  
 63-1782 R21 820 ohm 1/2W 10% Ins. Res.  
 63-1806 R25 3300ohm 1/2W 10% Ins. Res.  
 63-1814 R17 4700ohm 1/2W 20% Ins. Res.  
 63-1827 R5 10K ohm 1/2W 10% Ins. Res.  
 63-1829 R29 10K ohm 1/2W 20% Ins. Res.  
 63-1834 R28 15K ohm 1/2W 10% Ins. Res.  
 63-1845 R24 27K ohm 1/2W 10% Ins. Res.  
 63-1856 R10 47K ohm 1/2W 20% Ins. Res. (3 used)  
 63-1863 R16 68K ohm 1/2W 20% Ins. Res.  
 63-1869 R31 100Kohm 1/2W 10% Ins. Res.  
 63-1870 R20 100Kohm 1/2W 20% Ins. Res.  
 63-1876 R30 150Kohm 1/2W 10% Ins. Res. (2 used)  
 63-1884 R8 220Kohm 1/2W 20% Ins. Res. (2 used)  
 63-1898 R9 470Kohm 1/2W 20% Ins. Res. (3 used)  
 63-1912 R1c 1 Megohm 1/2W 20% Ins. Res. (2 used)  
 63-1926 R7 2.2 " 1/2W 20% Ins. Res.  
 63-1940 R32 4.7 " 1/2W 20% Ins. Res.  
 63-1947 R3 6.8 " 1/2W 20% Ins. Res. (2 used)  
 63-1954 R13 10 " 1/2W 20% Ins. Res.  
 63-1981 R26 120 ohm 1W 10% Ins. Res.  
 63-2068 R18,19 Candohm - Two Section  
 63-2091 R15 820 ohm W.W. 1/2W 20% Ins. Res.  
 63-2093 R27 47 ohm W.W. 1W 10% Ins. Res.  
 63-2131 R22 Volume Control & Switch  
 63-2132 R11 Tone Control

Miscellaneous

44-25 Phono Jack  
 54-139 3/8-32 x 9/16 Palnut Cad. (1 ea. used on 63-2131 & 63-2132)  
 54-271 6.32 x 1/4" Palnut Steel Cad. (1ea. used on 95 1102, 95-1150, 95-1152 & 95-1153)  
 58-128 Two Prong Plug (A-C Interlock)  
 78-755 Octal Tube Socket (2 used)  
 78-807 Miniature Tube Socket  
 78-854 Miniature Tube Socket (9 contact)  
 78-869 Miniature Tube Socket  
 78-970 Miniature Tube Socket (2 used)  
 78-871 Miniature Tube Socket  
 78-896 Three Contact Socket  
 80-780 Iron Core Tension Spring  
 85-489 S-1 Band Switch  
 93-993 Insulating Washer (used on 63-2132)  
 93-1039 Gang Mtg. Cup Washer (2 used)  
 95-1188 T6 Auto Trans.  
 95-1189 T5 Speaker Output Trans.  
 149-95 Iron Core & Spring  
 S-16838 Speaker Cable & Eyelet Assembly

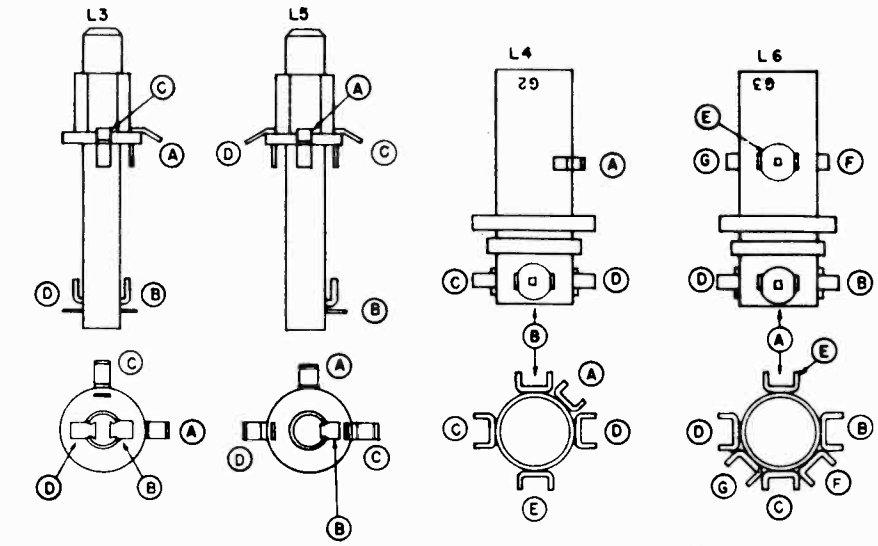
Cabinet Parts

2-196 Cabinet Back (Phono Section)  
 11-106 Line Cord & Plug (9 ft. long)  
 14-1254R Cabinet for H880R Console Comb. Model  
 14-1254 Cabinet for H880 Console Combination Model  
 16-632 Packing Carton  
 19-169 Record Changer Mounting Clip  
 46-872 Dummy Knob  
 46-873 Tone Control Knob  
 46-876 Tuning Knob  
 46-877 Volume Control Knob  
 46-899 Band Switch Knob  
 49-688 SP-1 10" P.M. Speaker  
 ZC-1061 Cone  
 57-1481 Esc. Clamping Ring (4 used)  
 57-1658 Escutcheon  
 70-86 #6 x 5/8 Washer Hd. Wood Screw Steel Stat. Br. (12 used) to Mt. Backs)  
 78-847 Two Contact Socket  
 80-604 Hinge Spring (2 used)  
 93-1059 Felt Washer (used on 46-873)  
 97-293 Chassis Mtg. Ins. Stud (3 used)  
 112-809 Record Changer Mtg. Screw (3 used)  
 114-128 #10 x 1/16" Hex Washer Hd. S.T. (3 used Chassis Mtg.)  
 114-350 #8 x 7/16" Hex Hd. Sl. S.T. (4 used on 57-1658)  
 125-56 Rubber Grommet (4 used Speaker Mtg.)  
 156-35 Bullet Catch  
 159-50 Cinch Plug Button (4 used on 192-138)  
 165-9 Glides (2 used)  
 165-14 Glides (2 used)  
 188-54 Knob Clamping Ring (46-876)  
 192-138 Dial Glass  
 202-697 F.M. Instruction Book  
 202-828 Radio & Phono Instruction Book  
 S-14029 Record Changer Variable Speed  
 S-15536 Record Changer Compt. Hinge Brkt. & Link Assembly (2 used)  
 S-15780 Cobra Tone Arm Cartridge Assembly  
 S-17005 Record Changer Mtg. Frame & Arm Assembly  
 S-16419 Package of 6 - 45 RPM Center Hole Adaptors  
 S-16841 L1 Low Impedance Loop & Clip Assembly  
 S-17167 Volume Control Knob Assembly  
 S-17169 Cabinet Back Assembly (Radio Section)  
 S-17328 L19 Loop Loading Coil Assembly



BANDSWITCH S-1 SHOWN IN PHONO POSITION FULL COUNTER CLOCKWISE AS VIEWED FROM FRONT OF CHASSIS.

BANDSWITCH POSITIONS  
 1ST POSITION - PHONO.  
 2ND POSITION - STD. BROCAST.  
 3RD POSITION - F.M.



TUNING RANGES  
 540-1620 K.C. STD. BC.  
 88-108 M.C. F.M.

AMP. MOD. I.F. FREQUENCY 455 K.C.  
 FREQ. MOD. I.F. FREQUENCY 10.7 M.C.

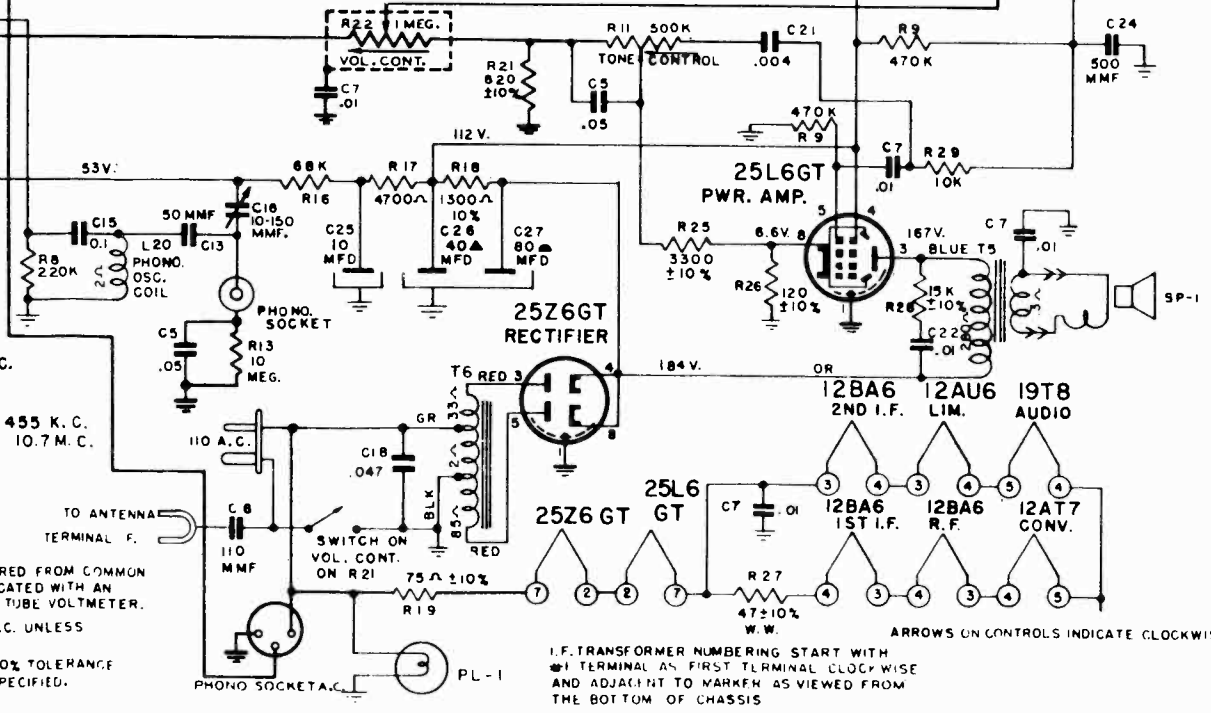
ALL VOLTAGES MEASURED FROM COMMON RETURN TO POINTS INDICATED WITH AN A.C., D.C. OR VACUUM TUBE VOLTMETER.

ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.

ALL RESISTORS ARE ±20% TOLERANCE UNLESS OTHERWISE SPECIFIED.

\*\* FOR 8H20 CHASSIS BELOW SERIAL #14000 REFER TO CIRCUIT DIAGRAM #123-788

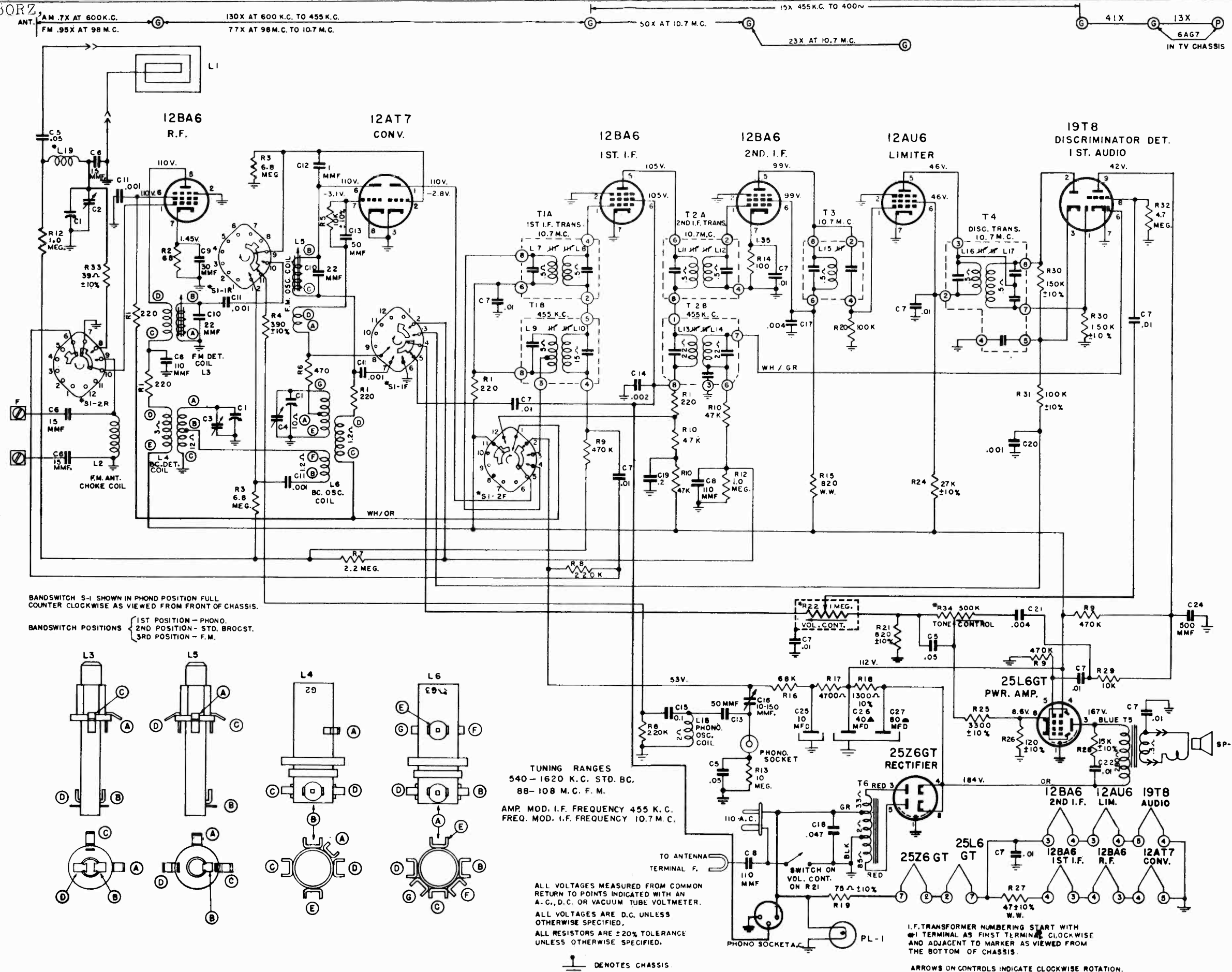
⊥ DENOTES CHASSIS



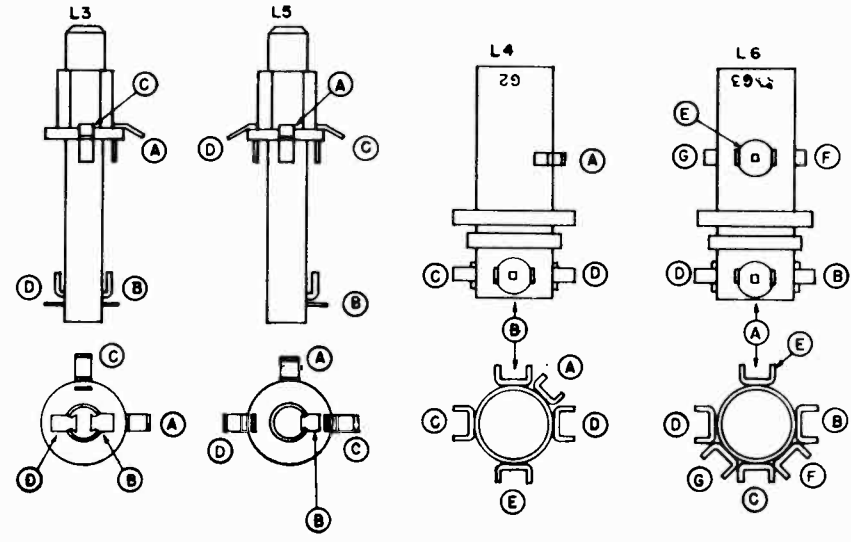
IF. TRANSFORMER NUMBERING START WITH #1 TERMINAL AS FIRST TERMINAL CLOCKWISE AND ADJACENT TO MARKER AS VIEWED FROM THE BOTTOM OF CHASSIS



MODEL H880RZ,  
Ch. 3H20



BANDSWITCH S-1 SHOWN IN PHONO POSITION FULL COUNTER CLOCKWISE AS VIEWED FROM FRONT OF CHASSIS.  
BANDSWITCH POSITIONS { 1ST POSITION - PHONO, 2ND POSITION - STD. BROCAST, 3RD POSITION - F.M.



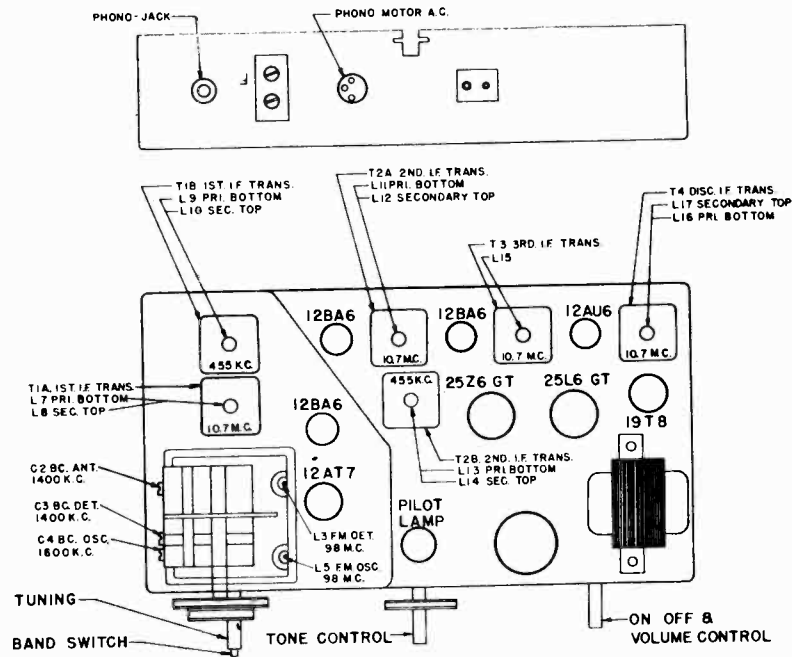
TUNING RANGES  
540 - 1620 K.C. STD. BC.  
88 - 108 M.C. F.M.  
AMP. MOD. I.F. FREQUENCY 455 K.C.  
FREQ. MOD. I.F. FREQUENCY 10.7 M.C.

ALL VOLTAGES MEASURED FROM COMMON RETURN TO POINTS INDICATED WITH AN A.C., D.C. OR VACUUM TUBE VOLTMETER.  
ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.  
ALL RESISTORS ARE ±20% TOLERANCE UNLESS OTHERWISE SPECIFIED.

⊥ DENOTES CHASSIS

I.F. TRANSFORMER NUMBERING START WITH #1 TERMINAL AS FIRST TERMINAL CLOCKWISE AND ADJACENT TO MARKER AS VIEWED FROM THE BOTTOM OF CHASSIS.

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION.



TUBE AND TRIMMER LOCATION

The 8H20 chassis incorporates a superheterodyne circuit with two stages of IF, on the FM Band, and one stage on the AM Band. There is one stage of RF amplification on all Bands.

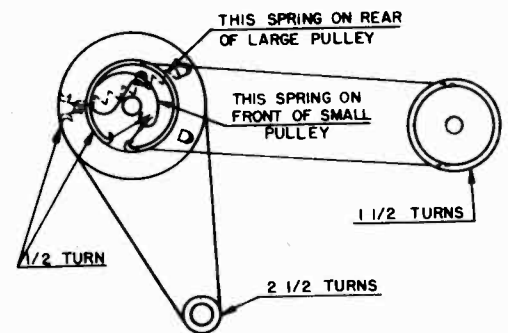
When adjustments are made on the 8H20 chassis, a line isolation transformer (110 V input to 110V output) is recommended in order to avoid a "hot" chassis. If an isolation transformer is not available, check the AC voltage between chassis and bench ground and if there is any indication of voltage, reverse the plug before handling the set.

**FM RF Alignment:** The tuning slugs are attached to threaded shafts and the slugs are varied in the field of the coils by turning the shafts clockwise or counter-clockwise. After adjustment the shafts must be secured with a drop of speaker cement.

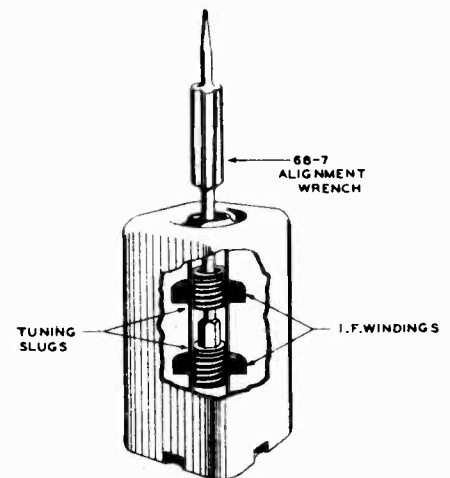
**AM and FM IF Alignment:** The AM and FM IF transformers in this receiver are of the new permeability tuned type. The advantage of an IF transformer of this type is its extreme stability under various humidity and temperature conditions. The upper coil is the secondary and the lower the primary. When adjusting these IF transformers the tuning wrench 68-7 can be inserted into the top slug, rotated until maximum output is obtained and then dropped down to the lower slug and the same operation repeated. The tuning wrench is so designed that turning one slug does not affect the adjustment of the other.

**FM IF Alignment:** Because of the wide band pass, it is desirable to use a FM signal generator and a cathode ray oscilloscope when aligning the FM IF channel. The instruction book for the Zenith Model 800 Signal Generator (Form Z8001) covers complete FM alignment procedure. If visual alignment equipment is unavailable, reasonably accurate alignment can be made by following the procedure outlined below.

**FM Discriminator Alignment:** When the secondary of the discriminator is aligned (operation 5) use sufficient signal input to get a good positive and negative indication before setting the slug for zero reading. A center zero indicating meter is recommended for this adjustment, but is not absolutely necessary. Reversing the leads of a non-zero center meter, or observing closely when the meter starts to go to the left (negative) of zero will give the same results.



DIAL CORD DRIVE

Detail of  
IF Transformer

MODEL H880RZ,  
Ch. 8H20

ALIGNMENT PROCEDURE

Operation	Connect Oscillator To	Dummy Antenna	Input Signal Frequency	Band	Set Dial To	Adj. Trimmers	Purpose
1	Pin 2 12AT7 Converter 2 turns loosely cpld. to wavemagnet	.05 Mfd.	455 Kc. Modulated 1600 Kc.	BC	600 Kc.	L9, 10, 13, 14	Align I. F. channel for maximum output.
2	2 turns loosely cpld. to wavemagnet		Modulated 1400 Kc.	BC	1600 Kc.	C4	Set oscillator to dial scale.
3	Pin 1 (grid) on 12AU6 limiter.	.05 Mfd.	Modulated 10.7 Mc.	BC	1400 Kc.	C3, C2	Align detector and antenna stage.
4 (a)	Pin 1 (grid) on 12AU6 limiter.	.05 Mfd.	Unmodulated 100	FM		L16 coil slug Primary discr.	Align primary of discriminator for maximum reading.
5 (b)	Pin 1 (grid) on 12AU6 limiter.	.05 Mfd.	Unmodulated 10.7 Mc.	FM		L17 coil slug sec. of discr.	Adjust secondary of discriminator for zero reading.
6 (c)	Pin 1 (grid) on 12BA6 2nd. I F.	.05 Mfd.	Unmodulated 10.7 Mc.	FM		L15 Prim. of 3rd. IF trans.	Align 3rd. IF transformer for maximum reading.
7 (c)	Pin 1 (grid) on 12BA6 1st. IF.	.05 Mfd.	Unmodulated 10.7 Mc.	FM		L11 and L12 Prim. and Sec. of 2nd. IF transformer.	Align 2nd IF transformer for maximum reading.
8 (c)	Pin 2 (grid) on 12AT7 converter tube socket.	.05 Mfd.	Unmodulated 10.7 Mc.	FM		L7 and L8 Prim. and Sec. of 1st. IF transformer.	Align 1st. IF transformer for maximum reading.
9 (c)	Antenna Post FM (Re- move line ant.)	270 ohms	98 Mc. Unmodulated	FM	98 Mc.	L5 Osc. Coil Slug.	Set Oscillator to dial scale.
10 (c) (d)		270 ohms	98 Mc. Unmodulated	FM	98 Mc.	L3 Det. Coil Slug	Align det. stage to maximum reading.

IMPORTANT

Alignment of this chassis will in most cases be unnecessary unless an IF or RF transformer is replaced or the adjustments have been tampered with.

Correct alignment can only be made if the following procedure is followed:

A vacuum tube voltmeter with an isolation resistor of 2,000,000 ohms in series with the hot lead will serve for FM adjustments. This lead should be shielded.

An AC output meter connected across the primary or secondary of the output transformer will be satisfactory for all AM adjustments.

The signal generator output should be kept just high enough to get an indication on the meter.

(a) Vacuum Tube Voltmeter Lug 7 on discriminator transformer to chassis (half discriminator load).

(b) Vacuum Tube Voltmeter Lug 5 on discriminator transformer to chassis (full discriminator load).

(c) Vacuum Tube Voltmeter from Limiter Grid to Chassis.

(d) Loosen Slugs by applying a hot iron to the cement.

## PARTS LIST

MODEL H880RZ,  
Ch. 8H20

## DIAL ASSEMBLY

54-292		Speed Nut (used on S-17165)
78-895		Dial Light Socket & Wire
80-69		Dial Cord Spring
80-746		Pulley Retaining Spring
80-747		Dial Cord Spring
80-781		Tuner Arm Tension Spring
94-732		Pointer Pulley Bushing (Part of S-17165)
100-97	PL-1	Pilot Light Bulb
114-262		#8 x 7/16" Hex. Hd. Sl. S.T. (2 used to Mount S-17149)
114-297		#6 x 1/4" Hex. Hd. Sl. S.T. (2 used to Mount S-17165)
148-122		Tuner Arm
188-30		Retaining Ring (used on S-17155)
S-17149		Dial Scale & Bracket Assembly (26-449 & 26-450)
S-17155		Tuning Shaft & Pulley Assembly
S-17157		Pointer & Pulley Assembly
S-17158		Dial Cord & Eyelet Assembly (Long)
S-17159		Dial Cord & Eyelet Assembly (Short)
S-17165		Bracket & Pulley Bushing Assembly

## COILS &amp; CHOKES

95-1102	T2B	2nd. I. F. Transformer
95-1150	T2A	2nd. I. F. Transformer
95-1152	T3	3rd. I. F. Transformer
95-1153	T4	Disc. Transformer
95-1200	T1B	1st. I. F. Transformer
95-1201	T1A	1st. I. F. Transformer
S-12603	L18	Phono Oscillator Coil
S-15691	L5	F. M. Oscillator Coil Assembly
S-15743	L3	F. M. Detector Coil Assembly
S-16344	L4	Broadcast Det. Coil Assembly
S-16345	L6	Broadcast Osc. Coil Assembly
S-16408	L2	Antenna Choke Coil Assembly

## CONDENSERS

22-3	C7	.01 Mfd. Ceramic (10 used)	500V
22-4	C21	.004 Mfd. Ceramic	500V
22-5	C8	110 Mmfd. Ceramic (or 22-1669) (3 used)	500V
22-177	C19	.2 Mfd.	400V
22-448	C17	.004 Mfd.	600V
22-669	C22	.01 Mfd.	600V
22-827	C15	.1 Mfd.	600V
22-829	C5	.05 Mfd. (3 used)	200V
22-854	C24	.0005 Mfd.	600V
22-1220	C14	.002 Mfd.	600V
22-1367	C13	50 Mmfd. Ceramic (2 used)	500V
22-1506	C10	22 Mmfd. Ceramic (2 used)	500V
22-1676	C11	.001 Mfd. Ceramic (4 used)	500V
22-1705	C9	30 Mmfd. Ceramic	500V
22-1717	C20	.001 Mfd.	200V
22-1762	C12	1 Mmfd. (Molded) Ceramic	500V
22-1775	C18	.047 Mfd.	400V
22-2104	C1	Variable - 3 Section	
22-2105	C26,27	Elect. 80-40 Mfd. 250V	
22-2140	C6	15 Mmfd. Ceramic (3 used)	500V
22-2154	C25	Elect. Cond. 10 Mfd. 250V	
22-2240	C16	Trimmer Condenser	

## RESISTORS

63-1726	R33	39 Ohm 1/2W 10%	Ins. Res.	159-50
63-1737	R2	68 Ohm 1/2W 20%	Ins. Res.	165-9
63-1744	R14	100 Ohm 1/2W 20%	Ins. Res.	165-14
63-1758	R1	220 Ohm 1/2W 20%	Ins. Res. (5 used)	188-54
63-1768	R4	390 Ohm 1/2W 10%	Ins. Res.	192-138
63-1772	R6	470 Ohm 1/2W 20%	Ins. Res.	202-697
63-1782	R21	820 Ohm 1/2W 10%	Ins. Res.	202-840
63-1806	R25	3300 Ohm 1/2W 10%	Ins. Res.	S-14025
63-1814	R17	4700 Ohm 1/2W 20%	Ins. Res.	S-15536
63-1827	R5	10K Ohm 1/2W 10%	Ins. Res.	
63-1828	R29	10K Ohm 1/2W 20%	Ins. Res.	S-15780
63-1834	R28	15K Ohm 1/2W 10%	Ins. Res.	S-16196
63-1845	R24	27K Ohm 1/2W 10%	Ins. Res.	
63-1856	R10	47K Ohm 1/2W 20%	Ins. Res. (3 used)	S-16419
63-1863	R16	68K Ohm 1/2W 20%	Ins. Res.	L1
63-1869	R31	100K Ohm 1/2W 10%	Ins. Res.	S-17167
63-1870	R20	100K Ohm 1/2W 20%	Ins. Res.	S-17169
				S-17328

## RESISTORS Continued

150K Ohm 1/2W 10%	Ins. Res. (2 used)
220K Ohm 1/2W 20%	Ins. Res. (2 used)
470K Ohm 1/2W 20%	Ins. Res. (3 used)
1 Megohm 1/2W 20%	Ins. Res. (2 used)
2.2 " 1/2W 20%	Ins. Res.
4.7 " 1/2W 20%	Ins. Res.
6.8 " 1/2W 20%	Ins. Res. (2 used)
10 " 1/2W 20%	Ins. Res.
120 Ohm 1W 10%	Ins. Res.
Candohm - Two Section	
820 Ohm W.W. 1/2W 20%	Ins. Res.
47 Ohm W.W. 1W 10%	Ins. Res.
Volume Control & Switch	
Tone Control	

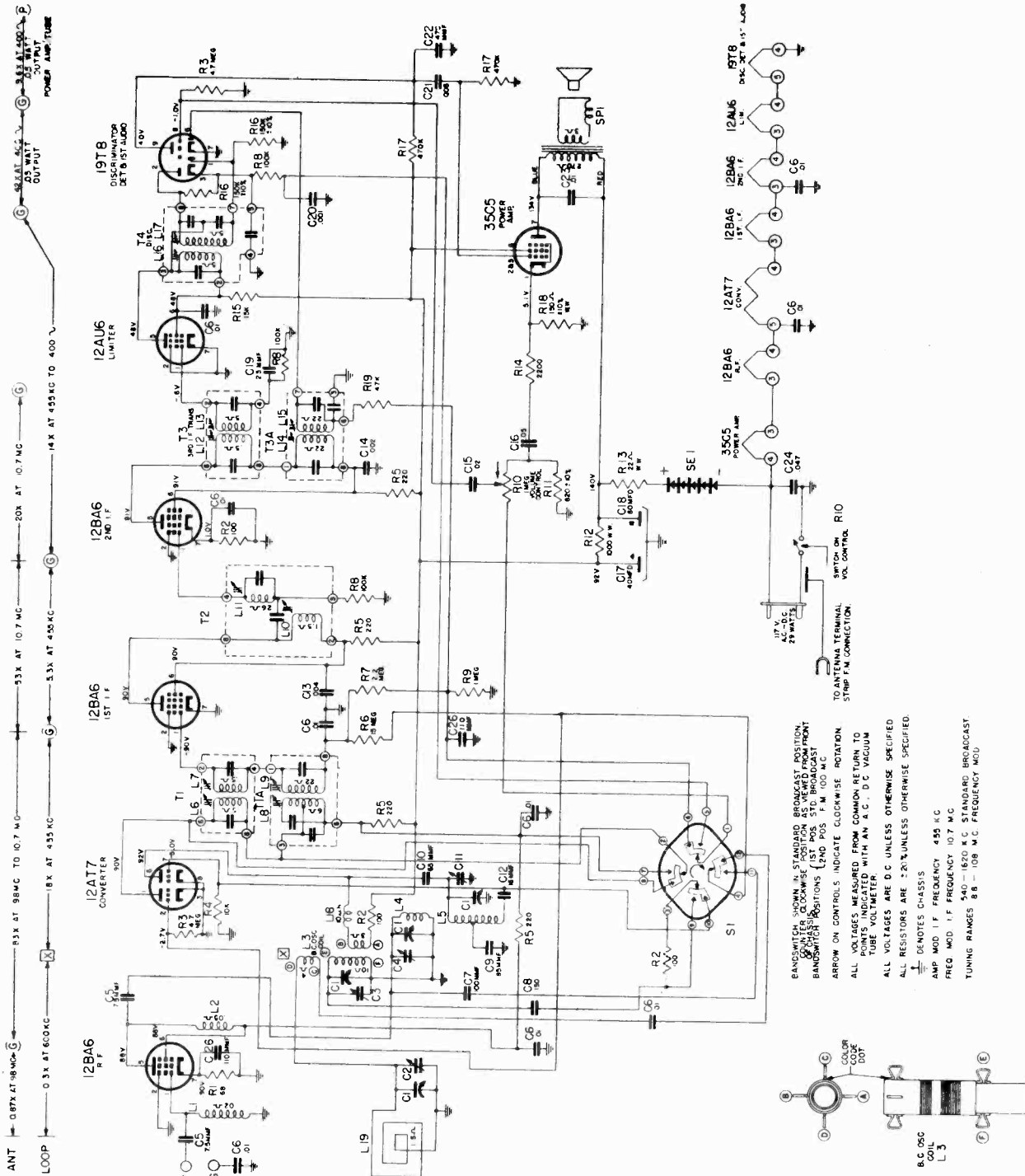
## MISCELLANEOUS

44-25		Phono Jack
54-139		3/8-32 x 9/16 Palmnut Cad. (1 ea. used on 63-2131 & 63-2132)
54-271		6-32 x 1/4" Palmnut Steel Cad. (1 ea. used on 95-1102, 95-1150, 95-1152 & 95-1153)
58-128		Two Prong Plug (A-C Interlock)
78-755		Octal Tube Socket (2 used)
78-807		Miniature Tube Socket
78-854		Miniature Tube Socket (9 Contact)
78-869		Miniature Tube Socket
78-870		Miniature Tube Socket (2 used)
78-871		Miniature Tube Socket
78-896		Three Contact Socket
80-780		Iron Core Tension Spring
85-489	S-1	Band Switch
93-993		Insulating Washer (used on 63-2132)
93-1039		Gang Mtg. Cup Washer (2 used)
95-1188	T6	Auto Trans.
95-1189	T5	Speaker Output Trans.
149-95		Iron Core & Spring
S-16838		Speaker Cable & Eyelet Assembly

## CABINET PARTS

2-196		Cabinet Back (Phono Section)
11-106		Line Cord & Plug (9 ft. long)
14-1268R		Cabinet for H880RZ Console Comb. Model
16-632		Packing Carton
46-873		Tone Control Knob
46-876		Tuning Knob
46-899		Band Switch Knob
49-688	SP-1	10" P. M. Speaker
57-1481		ZC-1061 Cone
57-1658		Esc. Clamping Ring (4 used)
70-86		Escutcheon
78-847		#6 x 5/8 Washer Hd. Wood Screw Steel Stat. Br. (12 used) to Mt. Backs)
80-604		Two Contact Socket
93-1059		Hinge Spring (2 used)
97-293		Felt Washer (used on 46-873)
114-128		Chassis Mtg. Ins. Stud (3 used)
114-350		#10 x 1/16" Hex. Washer Hd. S. T. (3 used Chassis Mtg.)
159-50		#8 x 7/16" Hex. Hd. Sl. S. T. (4 used on 57-1658)
165-9		Cinch Plug Button (4 used on 192-138)
165-14		Glides (2 used)
188-54		Glides (2 used)
192-138		Knob Clamping Ring (46-876)
202-697		Dial Glass
202-840		F. M. Instruction Book
S-14025		Radio & Phono Instruction Book
S-15536		Record Changer Assembly
S-15780		Record Changer Compt. Hinge Brkt. & Link Assembly (2 used)
S-16196		Cobra Tone Arm Cartridge Assembly
S-16419		Record Changer Mtg. Frame & Arm Assembly
S-16841		Package of 6 - 45 RPM Center Hole Adaptors
S-17167	L1	Low Impedance Loop & Clip Assembly
S-17169		Volume Control Knob Assembly
S-17328	L19	Cabinet Back Assembly (Radio Section)
		Loop Loading Coil Assembly

MODEL H723,  
Ch. 7H04



BANDSWITCH SHOWN IN STANDARD BROADCAST POSITION. CLOCKWISE ROTATION INDICATES STANDARD BROADCAST POSITIONS (1ST POS. STD. BROADCAST). ARROW ON CONTROLS INDICATE CLOCKWISE ROTATION. ALL VOLTAGES MEASURED FROM COMMON REFERENCE TO POINTS INDICATED WITH AN "A.C.", D.C. VACUUM TUBE VOLTMETER.

ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED. ALL RESISTORS ARE 1% UNLESS OTHERWISE SPECIFIED.

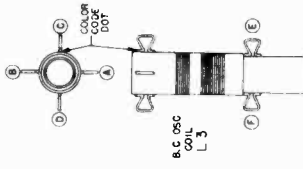
⊕ DENOTES CHASSIS

AMP MOD. I.F. FREQUENCY 485 K.C.

FREQ. MOD. I.F. FREQUENCY 10.7 MC.

540-1620 K.C. STANDARD BROADCAST.

TUNING RANGES 88-108 M.C. FREQUENCY MOD.



MODEL H723,  
Ch. 7H04

## DIAL ASSEMBLY

The 7H04 chassis incorporates a superheterodyne circuit with two stages of IF, on the FM Band, and two stages on the AM Band. There is one stage of RF amplification on the FM Band.

When adjustments are made on the 7H04 or any AC-DC chassis, a line isolation transformer (110-V input to 110-V output) is recommended in order to avoid a "hot" chassis. If an isolation transformer is not available, check the AC voltage between chassis and bench ground, and if there is any indication of voltage, reverse the plug before handling the set.

The IF transformers and the discriminator transformer are the new permeability tuned type. The advantage of an IF transformer of this type is its extreme stability under various humidity and temperature conditions. The upper coil is the secondary and the lower the primary. When adjusting these IF and discriminator transformers, tuning wrench 68-19 can be inserted into the top slug, rotated until maximum output is obtained and then dropped down to the lower slug and the same operation repeated. The tuning wrench is so designed that turning one slug does not affect the adjustment of the other.

**FM IF Alignment:** Because of the wide band pass, it is desirable to use a FM signal generator and a cathode ray oscilloscope when aligning the FM IF channel. The instruction book for the Zenith Model 800 Signal Generator (Form Z8001) covers complete FM alignment procedure. If visual alignment equipment is unavailable, reasonably accurate alignment can be made by following the procedure outlined in this service note.

**FM Discriminator Alignment:** When the secondary of the discriminator is aligned (operation 5) use sufficient signal input to get a good positive and negative indication before setting the slug for zero reading. A center zero indicating meter is recommended for this adjustment, but is not absolutely necessary. Reversing the leads of a non-zero center meter, or observing closely when the meter starts to go to the left (negative) of zero will give the same results.

Alignment of this chassis will, in most cases, be unnecessary unless an IF or RF transformer is replaced or the adjustments have been tampered with.

Correct alignment can only be made if the following procedure is followed:

A vacuum tube voltmeter with an isolation resistor of 2,000,000 ohms in series with the hot lead will serve for FM adjustments. This lead should be shielded.

An AC output meter connected across the primary or secondary of the output transformer will be satisfactory for all AM adjustments.

The signal generator output should be kept just high enough to get an indication on the meter.

(a) Vacuum Tube Voltmeter Lug 7 on discriminator transformer to chassis (half discriminator load).

(b) Vacuum Tube Voltmeter Lug 5 on discriminator transformer to chassis (full discriminator load).

(c) Vacuum Tube Voltmeter from Limiter Grid to Chassis.

(d) Loosen Slugs by applying a hot iron to the cement.

46-859	Band Switch Knob
46-860	Tuning Control Knob
46-900	Volume Control Knob
59-251	Dial Pointer
80-69	Dial Cord Tension Spring
188-129	Retaining Ring (1 ea. used S-17334 & S-17467)
S-17334	Tuning Shaft & Pulley Assem.
S-17336	Tuning Shaft Brkt. & Ins. Inpt. Assem.
S-17350	Dial Cord & Eyelet Assem.
S-17467	Pointer Shaft, Brkt. & Pulley Assem.
	<b>COILS &amp; CHOKES</b>
20-329-L1	F.M. Antenna Coil
20-330-L2	R.F. Plate Load Coil
20-331-L4	F.M. Mixer Coil
20-333-L18	R.F. Choke Coil
95-1102-T3A	3rd I.F. Transformer 455 KC
95-1150-T1T3	1st & 3rd I.F. " 10.7 MC
95-1153-T4	Discriminator " 10.7 MC
95-1250-T1A	1st I.F. " 455 KC
95-1251-T2	2nd I.F. " 10.7 MC & 455 KC
S-17340-L3	B.C. Osc. Coil Assem.
	<b>CONDENSERS</b>
22-3-C6	.01 Mfd. Ceramic (disc) 500V (9 Used)
22-5-C26	110 Mmfd. Ceramic (disc) (2 Used) (or 22-1669) 500V
22-6-C22	470 Mmfd. Ceramic 500V
22-229-C21	.005 Mfd. 600V
22-448-C13	.004 Mfd. 600V
22-830-C15	.02 Mfd. 600V
22-1126-C23	.01 Mfd. 400V
22-1158-C16	.05 Mfd. 200V
22-1220-C14	.002 Mfd. 600V
22-1507-C19	25 Mmfd. Ceramic 500V
22-1669-C7	100 Mmfd. Ceramic 500V
22-1675-C8	150 Mmfd. Ceramic 500V
22-1676-C20	.001 Mfd. Ceramic 500V
22-1757-C17, C18	Elect. 40 Mfd. 150V - 80 Mfd.
22-1775-C24	.047 Mfd. 400V
22-1852-C5	7.5 Mmfd. Ceramic (2 Used) 500V
22-2253-C11	Trimmer Cond. (Slug Tuned)
22-2255-C1	Variable Gane (Two Sect. B.C. - Two Sect. FM)
22-2256-C10	65 Mmfd. Ceramic 500V
22-2257-C12	16 Mmfd. Ceramic 500V
22-2258-C9	85 Mmfd. Ceramic 500V
	<b>RESISTORS</b>
63-686-R18	150 Ohm W.W. 1/2W 10% Ins. Res.
63-1450-R13	22 Ohm W.W. 1W 20% Ins. Res.
63-1527-R12	1000 Ohm W.W. 3W 20% Ins. Res.
63-1737-R1	68 Ohm 1/2W 20% Ins. Res.
63-1744-R2	100 Ohm 1/2W 20% Ins. Res.
63-1758-R5	220 Ohm 1/2W 20% Ins. Res. (3 Used)
63-1782-R11	820 Ohm 1/2W 10% Ins. Res.
63-1800-R14	2200 Ohm 1/2W 20% Ins. Res.
63-1828-R4	10K Ohm 1/2W 20% Ins. Res.
63-1835-R15	15K Ohm 1/2W 20% Ins. Res.
63-1856-R19	47K Ohm 1/2W 20% Ins. Res.
63-1870-R8	100K Ohm 1/2W 20% Ins. Res. (3 Used)
63-1876-R16	150K Ohm 1/2W 10% Ins. Res. (2 Used)
63-1898-R17	470K Ohm 1/2W 20% Ins. Res. (2 Used)
63-1912-R9	1 Megohm 1/2W 20% Ins. Res.
63-1926-R7	2.2 Megohm 1/2W 20% Ins. Res.
63-1940-R3	4.7 Megohm 1/2W 20% Ins. Res. (2 Used)
63-1961-R6	15 Megohm 1/2W 20% Ins. Res.
63-2143-R10	Vol. Control & Switch
	<b>MISCELLANEOUS</b>
11-85	Line Cord & Plug (6 ft. lg.)
12-1070	Wavemagnet Mtg. Brkt.
14-1272	Plastic Cabinet for H723 Table Model
16-656	Packing Carton
24-535	Line Cord Plug Cover
49-689-SP1	5-1/4" PM Speaker ZC5091 Cone
54-129	Speed Nut (9 Used on Mtg. Grille & Baffle)
54-271	6-32 X 1/4" Palnut Steel (1 ea. used on I.F.)
57-1686	Emblem Plate
57-1690	Emblem Mtg. Plate
58-188	Two Print Plug (AC)

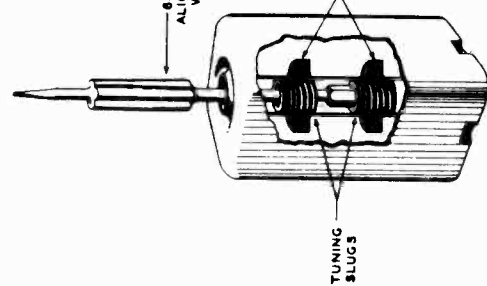
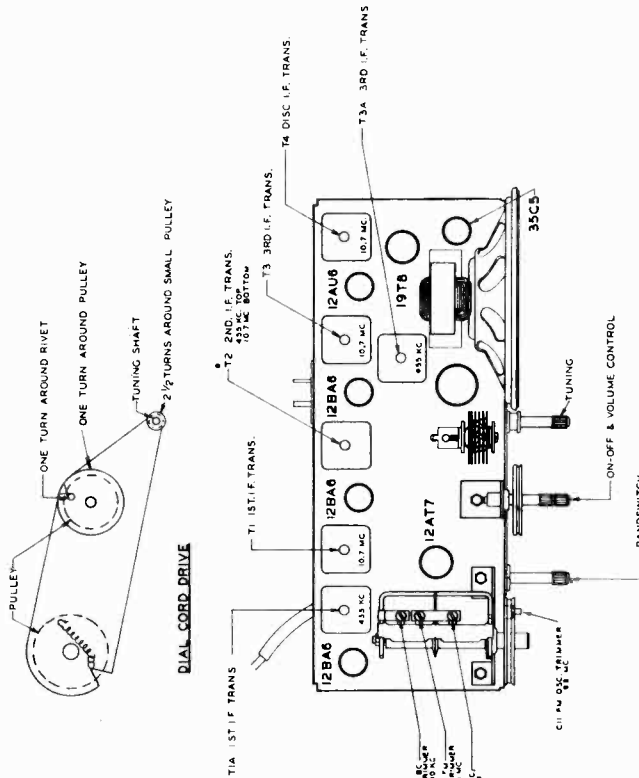
MODEL H723,  
Ch. 7H04

ALIGNMENT PROCEDURE

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial To	Adj. Trimmers	Purpose
1	Pin 2-12A7 Converter	.05 Mfd.	455 Kc. Modulated	BC	600 Kc.	L8, 9, 11, 14, 15	Align I. F. channel for maximum output. Set oscillator to dial scale.
2	2 turns loosely cpld. to wavemagnet		1600 Kc. Modulated	BC	1600 Kc.	C3	Align antenna stage.
3	2 turns loosely cpld. to wavemagnet		1400 Kc. Modulated	BC	1400 Kc.	C2	Align primary of discriminator for maximum reading. Adjust secondary of discriminator for zero reading.
4 (a)	Pin 1 (grid) on 12AU6 limiter.	.05 Mfd.	10.7 Mc. Unmodulated	FM		L16 coil slug Primary discr.	Align 3rd IF transformer for maximum reading.
5 (b)	Pin 1 (grid) on 12AU6 limiter.	.05 Mfd.	10.7 Mc. Unmodulated	FM		L17 coil slug sec. of discr.	
6 (c)	Pin 1 (grid) on 12BA6 2nd IF.	.05 Mfd.	10.7 Mc. Unmodulated	FM		L12 and L3 Prim. and Sec. of 3rd IF trans.	
7 (c)	Pin 1 (grid) on 12BA6 1st IF.	.05 Mfd.	10.7 Mc. Unmodulated	FM		L10 Prim. of 2nd IF transformer.	
8 (c)	Pin 2 (grid) on 12A7 converter tube socket.	.05 Mfd.	10.7 Mc. Unmodulated	FM		L6 and L7 Prim. and Sec. of 1st IF transformer.	
9 (c)	Antenna Post FM (Re-move line ant.)	270 ohms	98 Mc. Unmodulated	FM	98 Mc.	C11 Osc. Coil.	Set Oscillator to dial scale.
10 (c) (d)		270 ohms	98 Mc. Unmodulated	FM	98 Mc.	C4 Det. Coil.	Align det. stage to maximum reading.

TUBE AND TRIMMER LOCATION

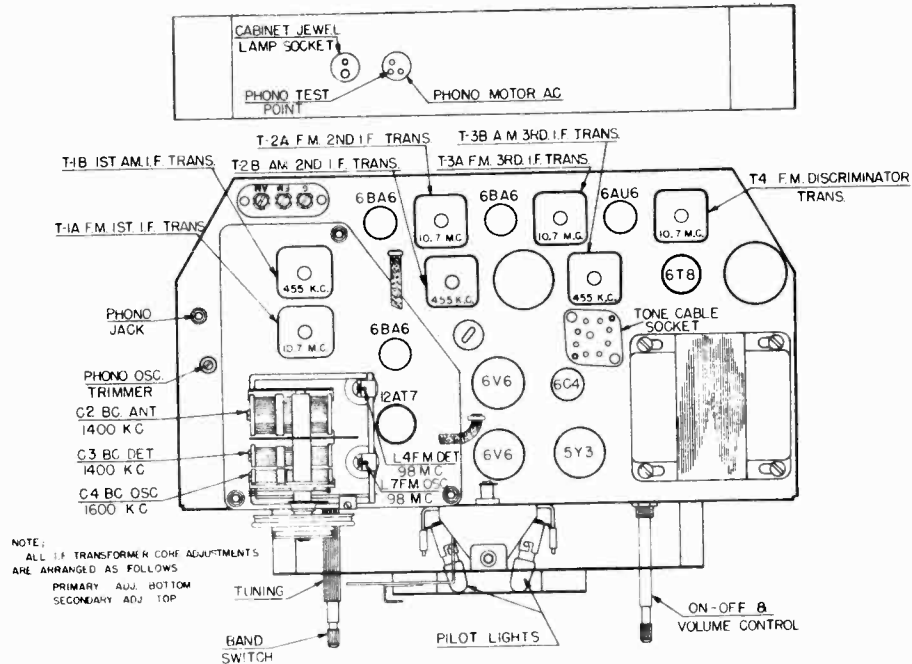
- 78-787 Two Contact Socket (Cabinet Back)
- 78-806 Miniature Tube Socket
- 78-807 Miniature Tube Socket
- 78-869 Miniature Tube Socket
- 78-870 Miniature Tube Socket (2 Used)
- 78-871 Miniature Tube Socket
- 78-903 Miniature Tube Socket
- 83-1056 Miniature Tube Socket
- 83-1829 Wavemagnet Mtg. Strip
- 85-493-S1 Insulator Strip
- 97-293 Band Switch
- 110-152 Chassis Mtg. Stud (2 Used)
- 112-281 Grille Cloth
- 114-78 #10 X 3/4" Oval Bind, Hd. S.T. Br. (2 Used Chassis Mtg.)
- 114-356 #8 X 5/16 Hex, Hd. Sl. S.T. (Used on Mtg. Wavemagnet) #6-32 X 1-1/4" Hex, Hd. S.T. Cad. (Used on 212-7)
- 138-42 Cabinet Grill
- 139-91 Speaker Baffle
- 149-89 Iron Core (Used on S-17340)
- 159-69 Plug Button (4 Used to mt. back)
- 194-22 Insulator
- 196-153 Speaker Gasket
- 202-697 F.M. Instruction Book
- 202-841 Instruction Book
- 212-7-SE1 Selenium Rectifier
- S-14527 Wavemagnet Lead & Stop Assem.
- S-17364-L19 Wavemagnet Assem.
- S-17366 Cabinet Back Assem. (Complete)



Detail of IF Transformer

NOTE: I.F. TRANSFORMER CORE ADJUSTMENTS ARE PRIMARY ADJ. BOTTOM SECONDARY ADJ. TOP

MODELS H1083E, H1036R,  
H1087R, Ch. 10H20

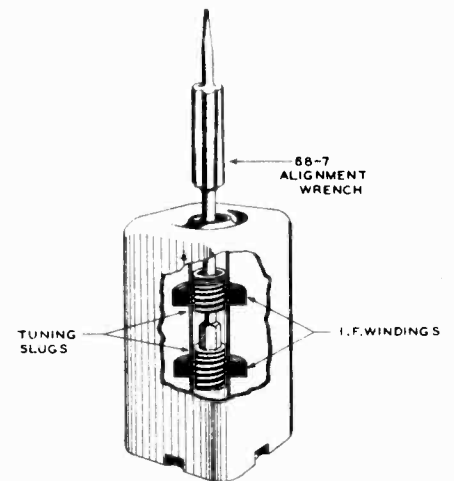


TUBE AND TRIMMER LOCATION

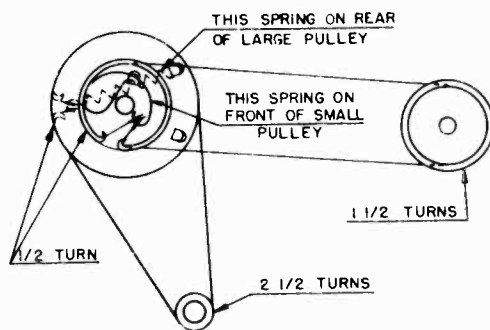
The 10H20 chassis incorporates a superheterodyne circuit with two stages of IF, on the FM Band, and two stages on the AM Band. There is one stage of RF amplification on all Bands.

**FM RF Alignment:** The tuning slugs are attached to threaded shafts and the slugs are varied in the field of the coils by turning the shafts clockwise or counter-clockwise. After adjustment the shafts must be secured with a drop of speaker cement.

**AM and FM Alignment:** The AM and FM IF transformers in this receiver are of the new permeability tuned type. The advantage of an IF transformer of this type is its extreme stability under various humidity and temperature conditions. The upper coil is the secondary and the lower the primary. When adjusting these IF transformers the tuning wrench 68-19 can be inserted into the top slug, rotated until maximum output is obtained and then dropped down to the lower slug and the same operation repeated. The tuning wrench is so designed that turning one slug does not affect the adjustment of the other.



Detail of  
IF Transformer



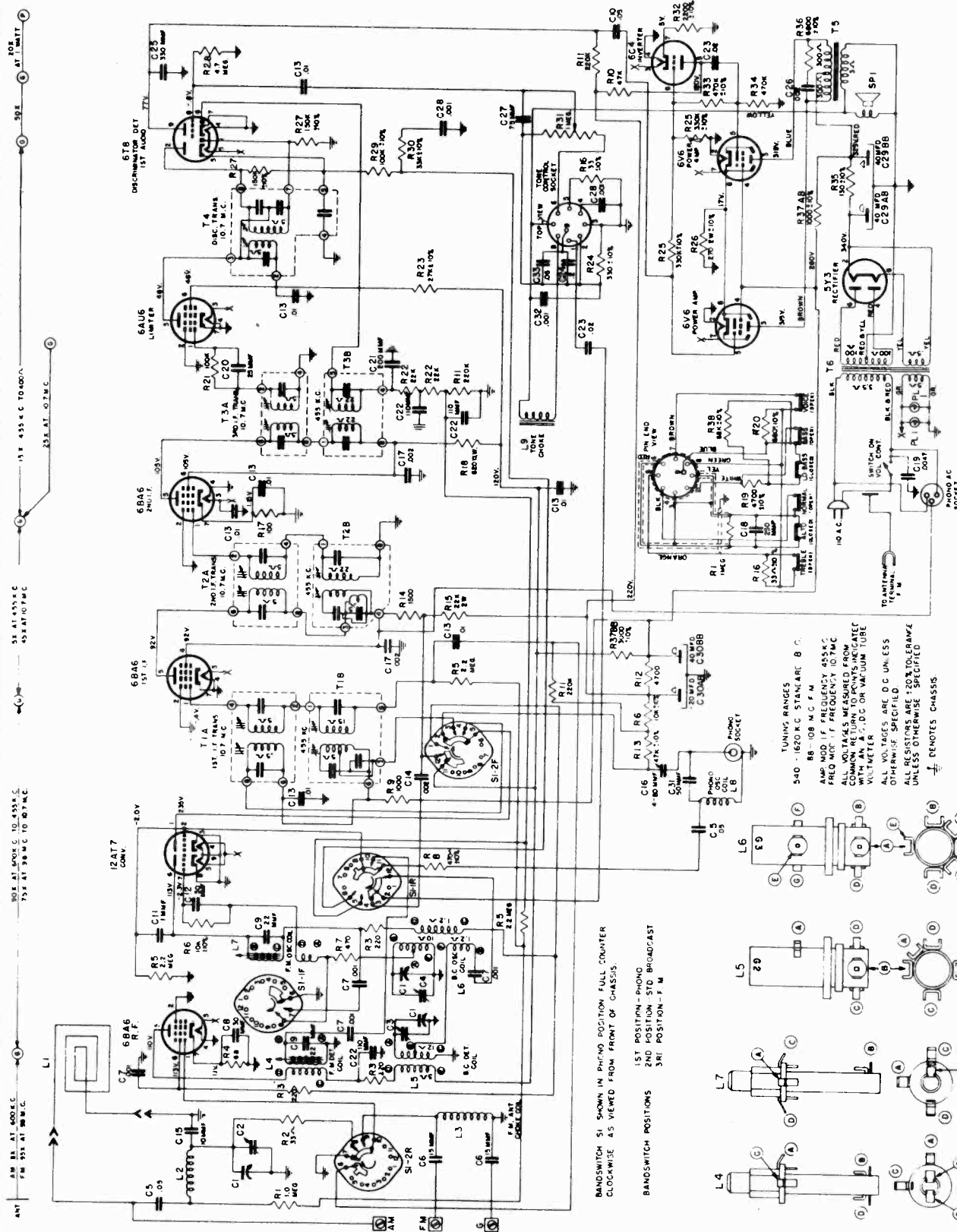
DIAL CORD DRIVE

**FM IF Alignment:** Because of the wide band pass, it is desirable to use a FM signal generator and a cathode ray oscilloscope when aligning the FM IF channel. The instruction book for the Zenith Model 800 Signal Generator (Form Z8001) covers complete FM alignment procedure. If visual alignment equipment is unavailable, reasonably accurate alignment can be made by following the procedure outlined below.

**FM Discriminator Alignment:** When the secondary of the discriminator is aligned (operation 5) use sufficient signal input to get a good positive and negative indication before setting the slug for zero reading. A center zero indicating meter is recommended for this adjustment, but is not absolutely necessary. Reversing the leads of a non-zero center meter, or observing closely when the meter starts to go to the left (negative) of zero will give the same results.



MODELS H1083E, H1086R,  
H1087R, Ch. 10H20



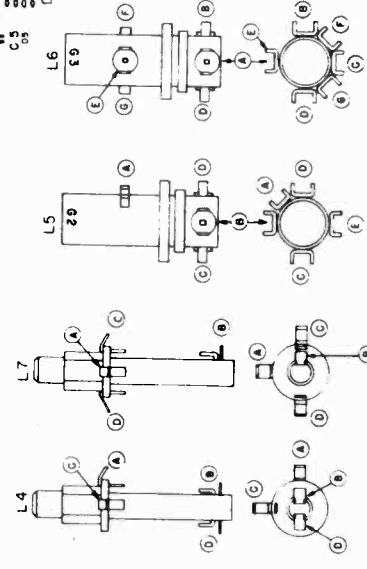
CHASSIS 10H20

MODEL H1083E, H1086R, H1087R

BANDSWITCH S1 SHOWN IN PHONO POSITION FRONT OF CHASSIS  
CLOCKWISE AS VIEWED FROM FRONT OF CHASSIS.

BANDSWITCH POSITIONS  
1ST POSITION - PHONO  
2ND POSITION - STD. BROADCAST  
3RD POSITION - F.M.

TUNING RANGES  
540 - 1620 KC. STAN. A. B.  
88 - 108 M.C. F.M.  
AMP. MOD. IF. FREQUENCY 455 KC.  
PHILO MOD. IF. FREQUENCY 10.7 MC.  
TUNING RANGES MEASURED FROM  
COMMON POINTS MEASURED FROM  
COMMON POINTS WITH AN A.C. OR V.A.C. TUBE  
VOLT-METER  
ALL VOLTAGES ARE D.C. UNLESS  
OTHERWISE SPECIFIED  
ALL RESISTORS ARE ±20% TOLERANCE  
UNLESS OTHERWISE SPECIFIED  
⊖ DENOTES CHASSIS



ALIGNMENT PROCEDURE

Operation	Connect Oscillator To	Dummy Antenna	Input Signal Frequency	Band	Set Dial To	Adj. Trimmers	Purpose
1	Pin 2 12A7 Converter	.05 Mfd.	455 Kc.	BC	600 Kc.	Adj. Pri. and Sec. T1B, T2B, T3B	Align I. F. channel for maximum output.
2	2 turns loosely cpd. to wavemagnet		Modulated 1600 Kc.	BC	1600 Kc.	C4	Set oscillator to dial scale.
3	2 turns loosely cpd. to wavemagnet		Modulated 1400 Kc.	BC	1400 Kc.	C3, C2	Align detector and antenna stage.
4 (a)	Pin 1 (grid) on 6AU6 limiter.	.05 Mfd.	10.7 Mc.	FM		Adj. Primary of Discriminator T4	Align primary of discriminator for maximum reading.
5 (b)	Pin 1 (grid) on 6AU6 limiter.	.05 Mfd.	Unmodulated 10.7 Mc.	FM		Adj. Secondary of Discriminator T4	Adjust secondary of discriminator for zero reading.
6 (c)	Pin 1 (grid) on 6BA6 2nd. I.F.	.05 Mfd.	10.7 Mc.	FM		Adj. Pri. and Sec. T3A	Align 3rd. IF transformer for maximum reading.
7 (c)	Pin 1 (grid) on 6BA6 1st. IF.	.05 Mfd.	10.7 Mc.	FM		Adj. Pri. and Sec. T2A	Align 2nd IF transformer for maximum reading.
8 (c)	Pin 2 (grid) on 12A7 converter tube socket.	.05 Mfd.	10.7 Mc.	FM		Adj. Pri. and Sec. T1A	Align 1st. IF transformer for maximum reading.
9 (c)	Antenna Post FM (Remove line ant.)	270 ohms	98 Mc.	FM	98 Mc.	L7 Osc. Coil Slug.	Set Oscillator to dial scale.
10 (c) (d)		270 ohms	98 Mc.	FM	98 Mc.	L4 Det. Coil Slug	Align det. stage to maximum reading.

PARTS LIST

Model H1087R - H1086R (Chassis 10H20)

Part No.	Description	Quantity	Material
78-898	Dial Light Socket & Wire	1	Ceramic (7 used)
80-669	Dial Cord Spring	1	Ceramic (3 used)
80-746	Pulley Retaining Spring (used on S-17157)	1	Ceramic (3 used)
80-747	Dial Cord Spring	1	Ceramic (3 used)
93-1061	Shoulder Washer (used on S-17258)	1	Ceramic (3 used)
100-67	Dial Light Bulb	1	Ceramic (3 used)
188-30	Retaining Ring (used on S-17155)	1	Ceramic (3 used)
S-17155	Tuning Shaft & Pulley Assembly	1	Ceramic (3 used)
S-17157	Pointer & Pulley Assembly (59-219)	1	Ceramic (3 used)
S-17158	Dial Cord & Eyelet Assembly (Long)	1	Ceramic (3 used)
S-17159	Dial Cord & Eyelet Assembly (Short)	1	Ceramic (3 used)
S-17258	Dial Scale & Brkt. Assem. (26-449 & 26-450)	1	Ceramic (3 used)
S-17261	Brkt. & Pulley Assembly	1	Ceramic (3 used)
95-1150	2nd. & 3rd. I. F. Trans. (FM) (2 used)	2	Ceramic (3 used)
95-1153	Discriminator Trans.	1	Ceramic (3 used)
95-1201	1st. I. F. Trans. (FM)	1	Ceramic (3 used)
95-1248	2nd. I. F. Trans. (BC)	1	Ceramic (3 used)
95-1249	3rd. I. F. Trans. (BC)	1	Ceramic (3 used)
95-1254	1st. I. F. Trans. (BC)	1	Ceramic (3 used)
S-12603	Phone Oscillator Coil	1	Ceramic (3 used)
S-13800	Tone Choke Assembly	1	Ceramic (3 used)
S-15691	F. M. Osc. Coil Assembly	1	Ceramic (3 used)
S-15743	F. M. Detector Coil Assembly	1	Ceramic (3 used)
S-16344	Broadcast Detector Coil Assembly	1	Ceramic (3 used)
S-16345	Broadcast Oscillator Coil Assembly	1	Ceramic (3 used)
S-16408	Antenna Choke Coil Assembly	1	Ceramic (3 used)

IMPORTANT

Alignment of this chassis will in most cases be unnecessary unless an IF or RF transformer is replaced or the adjustments have been tampered with.

Correct alignment can only be made if the following procedure is followed:

A vacuum tube voltmeter with an isolation resistor of 2,000,000 ohms in series, with the hot lead will serve for FM adjustments. This lead should be shielded.

An AC output meter connected across the primary or secondary of the output transformer will be satisfactory for all AM adjustments.

The signal generator output should be kept just high enough to get an indication on the meter.

In the event the receiver oscillates during phono operation, adjust C16 4-80 mmf. capacitor to a point at which the oscillation ceases.

This position of no oscillation will sometimes vary with different cartridges, and in this case readjustment of C16 must be made.

(a) Vacuum Tube Voltmeter Lug 7 on discriminator transformer to chassis (Half discriminator load).

(b) Vacuum Tube Voltmeter Lug 5 on discriminator transformer to chassis (Full discriminator load).

(c) Vacuum Tube Voltmeter from Limiter Grid to Chassis.

(d) Loosen Slugs by applying a hot iron to the cement.

MODELS H1083E, H1086R, H1087R, Ch. 10H20

Resistors

Table of resistors with columns for part number (e.g., 63-966), value (e.g., 4700 ohm), and tolerance (e.g., 20% Ins.).

Miscellaneous

Table of miscellaneous parts including Line Cord, Transformer, Speed Nut, and various sockets and washers.

Table of Radiogian Esc. Parts used on H1087R-H1086R, including Radiogian Knob Shaft, Radiogian Knob, and Radiogian Mtg. Brkt.

Table of Radiogian Knob & Eyelet Assembly (Bass) parts, including Radiogian Knob, Radiogian Esc. & Knob Assembly, and Radiogian Cable Assembly.

Table of Plug Cap & Insulator parts, including 500V Midget Ceramic, P-Prong Plug, and various ohm and ins. resistors.

Table of Cabinet Parts H1087R, including Cabinet Back (Phono Section), Cabinet for H1087R Console Combination Model, and Cable Clip.

Table of Radiogian Knob & Eyelet Assembly (Alto) parts, including Radiogian Knob, Radiogian Esc. & Knob Assembly, and Radiogian Cable Assembly.

Table of Radiogian Knob Shaft parts, including Radiogian Knob Shaft, Radiogian Knob & Eyelet Assembly, and Radiogian Mtg. Brkt.

Table of Radiogian Knob & Eyelet Assembly (Voice) parts, including Radiogian Knob, Radiogian Esc. & Knob Assembly, and Radiogian Cable Assembly.

Table of Radiogian Knob & Eyelet Assembly (Normal) parts, including Radiogian Knob, Radiogian Esc. & Knob Assembly, and Radiogian Cable Assembly.

Table of Radiogian Knob & Eyelet Assembly (Lo-Bass) parts, including Radiogian Knob, Radiogian Esc. & Knob Assembly, and Radiogian Cable Assembly.

Table of Radiogian Knob & Eyelet Assembly (Normal) parts, including Radiogian Knob, Radiogian Esc. & Knob Assembly, and Radiogian Cable Assembly.

Table of Radiogian Knob & Eyelet Assembly (Bass) parts, including Radiogian Knob, Radiogian Esc. & Knob Assembly, and Radiogian Cable Assembly.

Table of Plug Cap & Insulator parts, including 500V Midget Ceramic, P-Prong Plug, and various ohm and ins. resistors.

Table of Cabinet Parts H1087R, including Cabinet Back (Phono Section), Cabinet for H1087R Console Combination Model, and Cable Clip.

Table of Radiogian Knob & Eyelet Assembly (Alto) parts, including Radiogian Knob, Radiogian Esc. & Knob Assembly, and Radiogian Cable Assembly.

Table of Radiogian Knob Shaft parts, including Radiogian Knob Shaft, Radiogian Knob & Eyelet Assembly, and Radiogian Mtg. Brkt.

Table of Radiogian Knob & Eyelet Assembly (Voice) parts, including Radiogian Knob, Radiogian Esc. & Knob Assembly, and Radiogian Cable Assembly.

Table of Radiogian Knob & Eyelet Assembly (Normal) parts, including Radiogian Knob, Radiogian Esc. & Knob Assembly, and Radiogian Cable Assembly.

Table of Radiogian Knob & Eyelet Assembly (Lo-Bass) parts, including Radiogian Knob, Radiogian Esc. & Knob Assembly, and Radiogian Cable Assembly.

Table of Radiogian Knob & Eyelet Assembly (Normal) parts, including Radiogian Knob, Radiogian Esc. & Knob Assembly, and Radiogian Cable Assembly.

Table of Radiogian Knob & Eyelet Assembly (Bass) parts, including Radiogian Knob, Radiogian Esc. & Knob Assembly, and Radiogian Cable Assembly.

Table of Plug Cap & Insulator parts, including 500V Midget Ceramic, P-Prong Plug, and various ohm and ins. resistors.

Table of Cabinet Parts H1087R, including Cabinet Back (Phono Section), Cabinet for H1087R Console Combination Model, and Cable Clip.

Table of Radiogian Knob & Eyelet Assembly (Alto) parts, including Radiogian Knob, Radiogian Esc. & Knob Assembly, and Radiogian Cable Assembly.

Table of Radiogian Knob Shaft parts, including Radiogian Knob Shaft, Radiogian Knob & Eyelet Assembly, and Radiogian Mtg. Brkt.

Table of Radiogian Knob & Eyelet Assembly (Voice) parts, including Radiogian Knob, Radiogian Esc. & Knob Assembly, and Radiogian Cable Assembly.

Table of Radiogian Knob & Eyelet Assembly (Normal) parts, including Radiogian Knob, Radiogian Esc. & Knob Assembly, and Radiogian Cable Assembly.

Table of Radiogian Knob & Eyelet Assembly (Lo-Bass) parts, including Radiogian Knob, Radiogian Esc. & Knob Assembly, and Radiogian Cable Assembly.

Table of Radiogian Knob & Eyelet Assembly (Normal) parts, including Radiogian Knob, Radiogian Esc. & Knob Assembly, and Radiogian Cable Assembly.