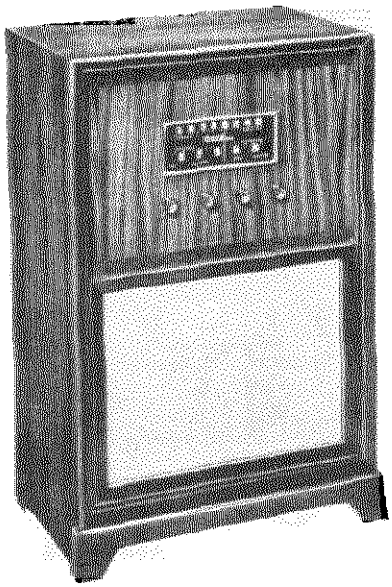
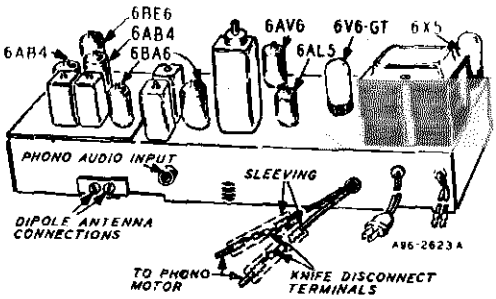
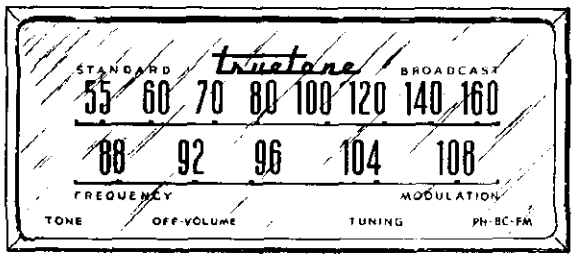


GENERAL INFORMATION





TONE CONTROL

Use this knob to adjust the tone of the receiver. When turned clockwise the high notes will predominate and when turned counterclockwise 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.

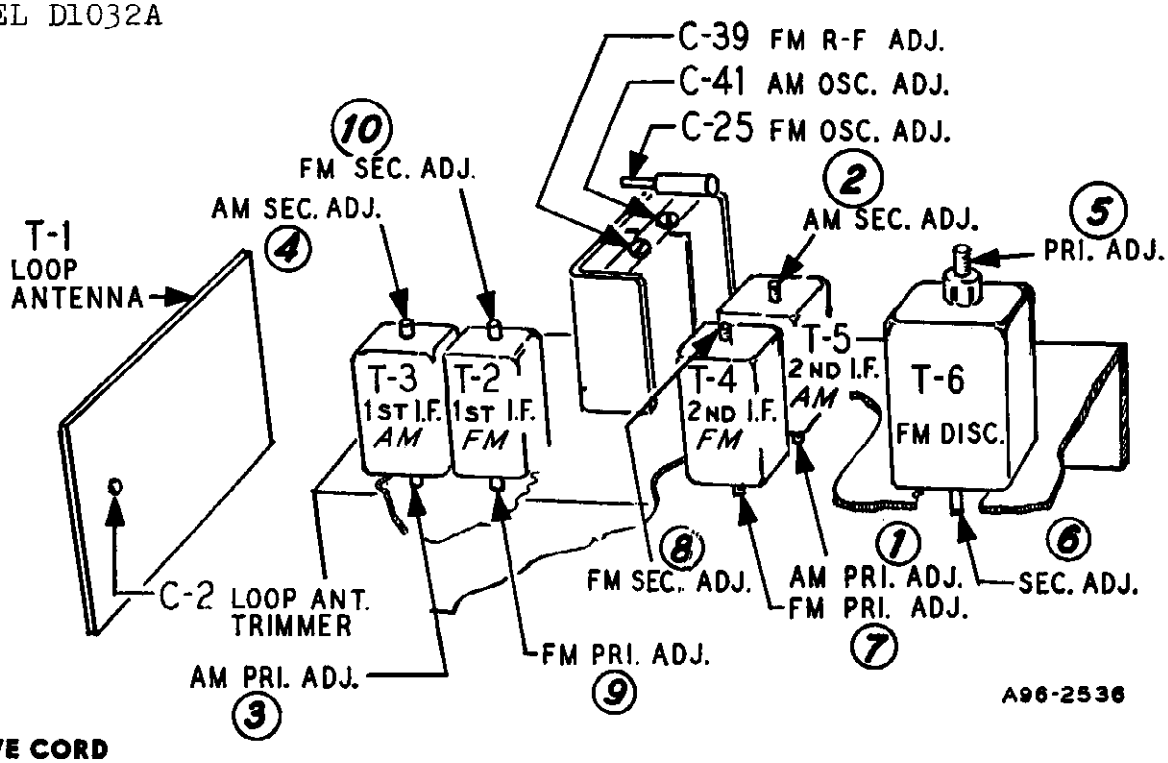
TUNING KNOB

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.

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 external record player.

MODEL D1032A



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.

When television programs become available in your community, the audio amplifier and speaker of this radio may be used in conjunction with a Television Picture Receiver and sound converter to reproduce the sound portion of the television programs. Simply insert the connector on the cable of the Television Converter into the socket marked PHONO and operate the receiver in the same manner as described in the foregoing paragraph.

RECORD PLAYER AND TELEVISION SOUND CONNECTIONS

For models not equipped with built-in record player, a socket marked PHONO is provided on the back of the chassis for connection to an external record player or automatic record changer. When it is desired to play records through the radio, insert the connector on the cable of any standard record player into this socket. Turn the band switch to the phono position and use the volume control to adjust the sound level.

ELECTRICAL SPECIFICATIONS

Power Output—
117 volts AC—40 watts
50-60 cycles

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

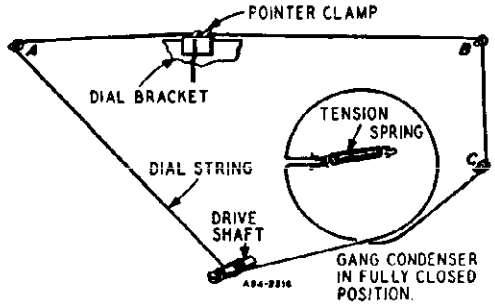
Selectivity — AM — 45 KC broad at 1000 times signal, measured at 1000 KC

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



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						
FREQUENCY SETTING	CONNECT GENERATOR OUTPUT TO	THROUGH DUMMY ANTENNA	CONNECT GROUND TO	GANG CONDENSER SETTING	ADJUST	ADJUST FOR
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		Disconnect built-in dipole antenna and connect generator to dipole terminals with resistor in series.	300 ohms	FM	Rotor Fully Open	Osc. C-25	Deflection Maximum
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

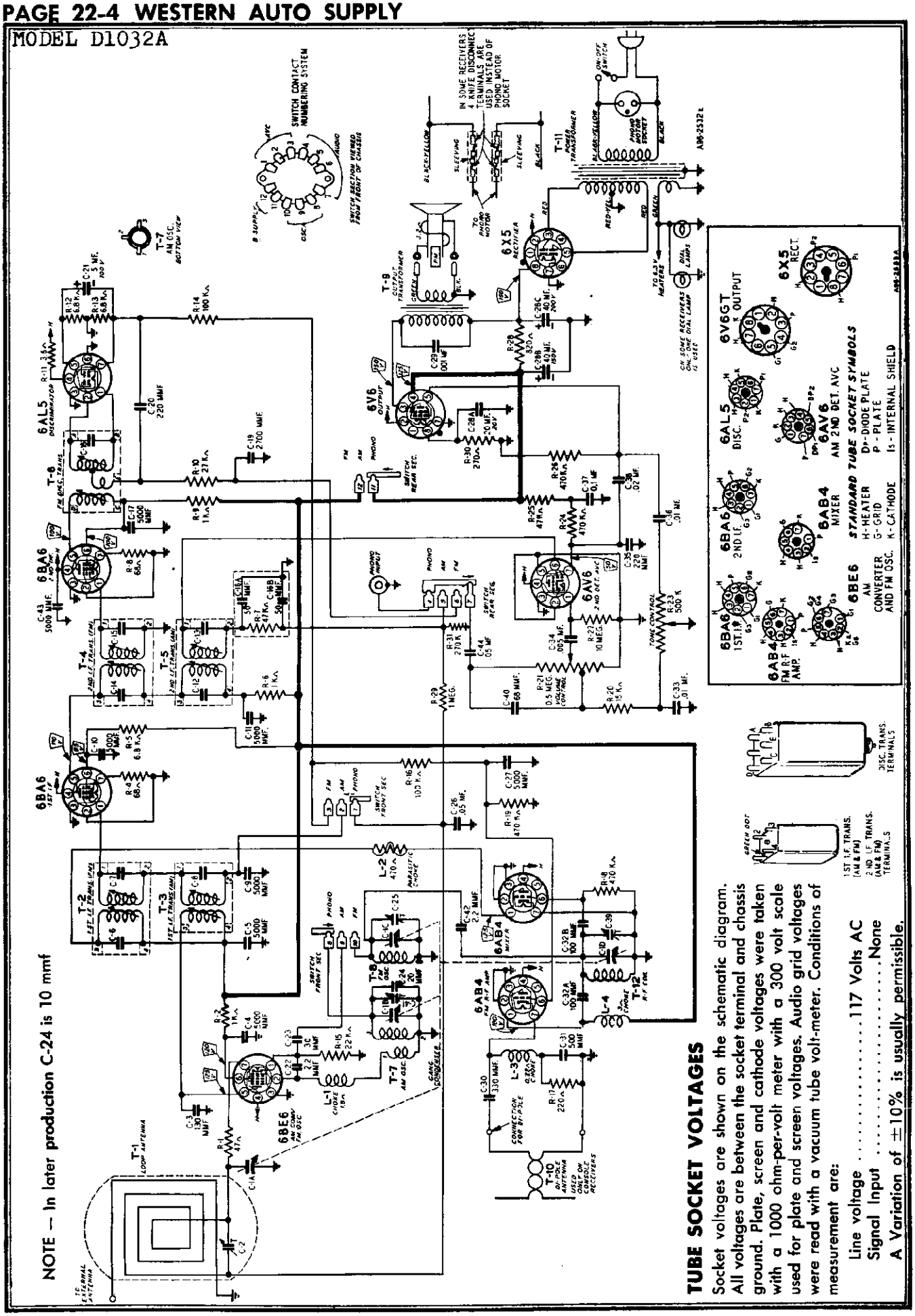
FM ALIGNMENT NOTES

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.


MODEL D1032A
NOTE — In later production C-24 is 10 mmf
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
6AL5 DISC.
6V6GT OUTPUT
6X5 RECT.
6AV6 AM 2ND DET. AVC
6AB4 MIXER
6BA6 2ND I.F.
6BE6 AM CONVERTER AND FM OSC.
1ST I.F. TRANS. (AM & FM)
2ND I.F. TRANS. (AM & FM)
DISC. TRANS. TERMINALS

REPLACEMENT PARTS LIST

RESISTORS

		Ohms	Watts	
R-1	B85470	47	0.5	Carbon..
R-2, R-6, R-9	B85102	1000	0.5	Carbon.....
R-4, R-8	B84680	68	0.5	Carbon.....
R-5, R-12, R-13	B84682	6800	0.5	Carbon.....
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, R-26	B85474	470 K	0.5	Carbon.....
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	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	9A2161	Discriminator Transformer .....
T-7	9A2065	Oscillator Coil (AM) .....
T-8	9A2067	Oscillator Coil (FM) .....
T-9	51X134	Output Transformer .....
T-10	9A2005	Dipole Antenna .....
T-11	53X291	Power Transformer .....
T-12	9A2066	Antenna Coil (FM) .....

DIAL AND DRIVE ASSEMBLY

58X742	Dial Glass .....
15X251	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 .....

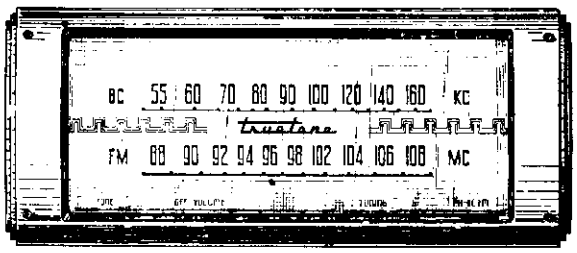
MISCELLANEOUS

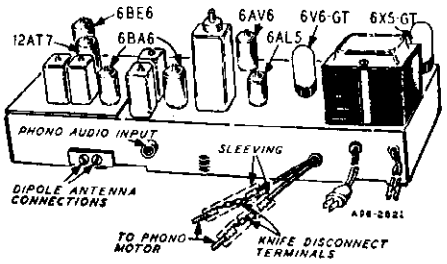
12A477	8" P.M. Speaker .....
4X1082	Escutcheon .....
10A759	Knob .....
13X546	Line Cord & Plug Assembly .....
2A393	Band Change Switch .....
3A435	Molded Octal Tube Socket .....
3A305	Phono Socket .....
3A426	Tube Socket (1sf 6BA6) .....
3A427	Tube Socket .....
3A439	Tube Socket (Miniature) .....
	Cabinet No. 052 .....

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, C-17, C-27, C-43	47X507	5000 mmf		Ceramic.....
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	47X523	10 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.....

MODEL D1046D



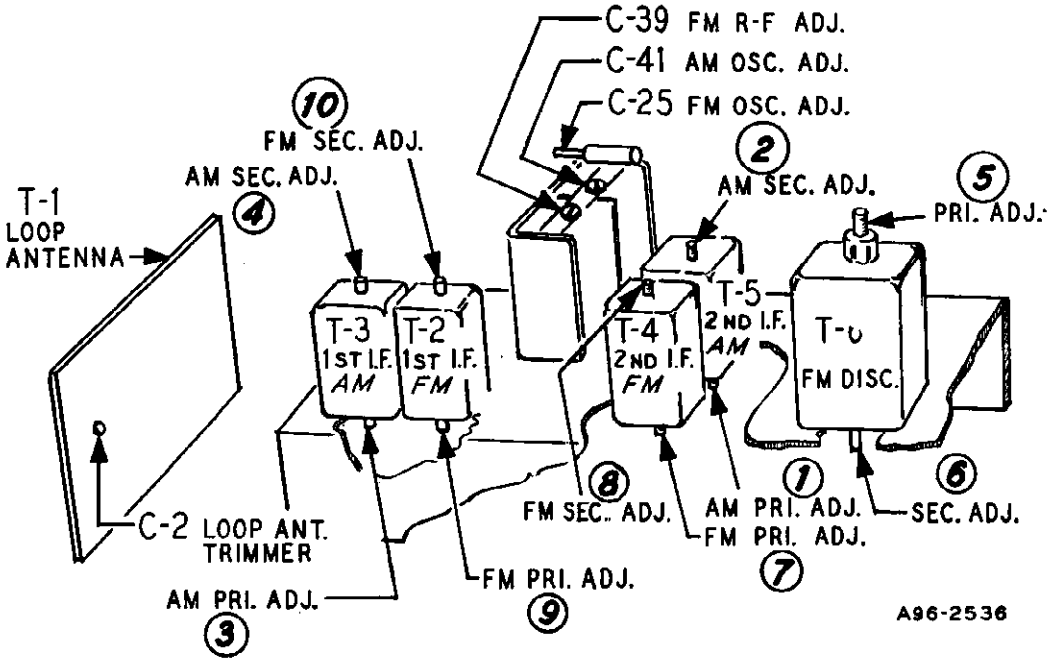


TONE CONTROL

ON-OFF SWITCH AND VOLUME CONTROL

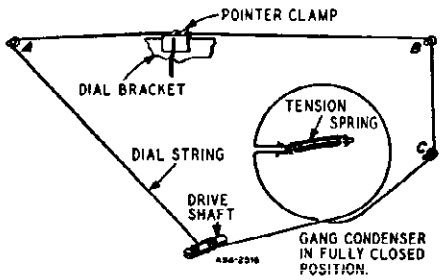
TUNING KNOB

BAND AND PHONO RADIO SWITCH



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

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							

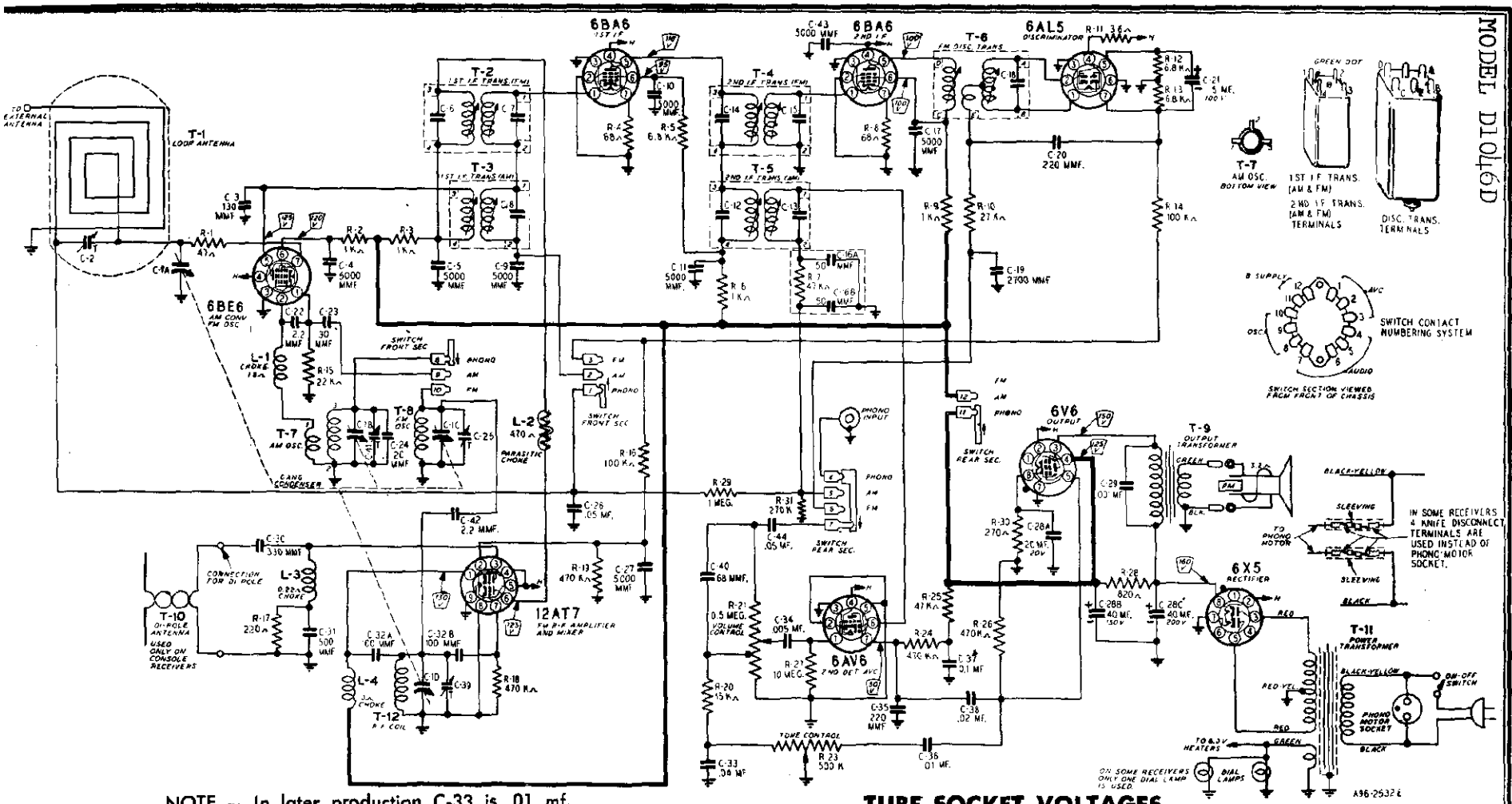
FM ALIGNMENT NOTES

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.

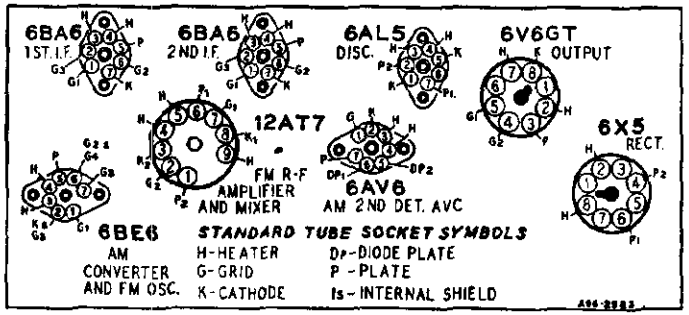
NOTE B—Disconnect zero center DC vacuum tube voltmeter from AVC and connect it at the audio takeoff point at the 27 K ohm resistor (R-10) and its junction with the terminal strip. Adjust for zero voltage indication.

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



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.

PARTS LISTS

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	
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		Ceramic
C-4, C-5, C-9, C-10, C-11, C-17, C-27, C-43	47X507	5000 mmf		Ceramic
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, 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, R-6, R-9	B85102	1000	0.5	Carbon
R-4, R-8	B84680	68	0.5	Carbon
R-5, R-12, R-13	B84682	6800	0.5	Carbon
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, R-26	B85474	470 K	0.5	Carbon
R-20	B85153	15 K	0.5	Carbon
R-21	36X381	.5 meg.		Volume Control
R-23	40X311	.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	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	9A2161	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

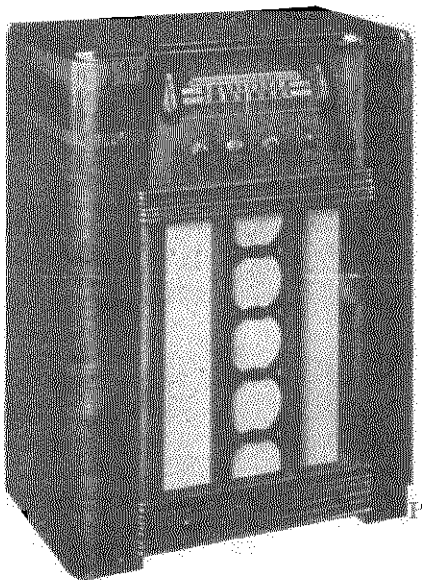
58X730	Dial Glass
15X251	Pointer
19X192	"C" Washer (Mtg. Drive Shaft)
6X66	Rubber Grommet
25X1610	Dial Bracket
28X113	Drive Cord Tension Spring
7A103	No. 47 Pilot Light
7A215	Pilot Light Socket Assembly
10X38	Drive Cord Assembly
26X510	Drive Shaft

TYPE G.I. — 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 Cartridge.

MODEL D1846

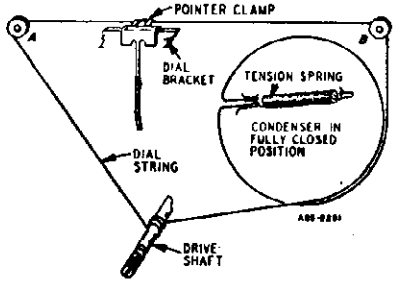


REMOVAL OF CHASSIS FROM CABINET

Before removing the chassis from the cabinet it will be necessary to detach the dial pointer from the dial string. To do this, spread the tabs on the pointer and pull the dial string off the pointer.

The dial lamp socket assembly may be disengaged from the cabinet mounting by squeezing together and pulling away from the cabinet mounting, the spring bracket to which the dial lamp socket is mounted. Take care not to bend or damage the large drive pulley on the gang condenser while doing this.

When replacing the chassis in the cabinet it will be necessary to tune in a station of a known frequency and move the dial pointer until that frequency is indicated on the dial and then attach the pointer to the dial string. Take care not to scuff or cut the dial string or bend the pointer during this operation.



ELECTRICAL SPECIFICATIONS

Power Consumption—
117 volts AC 60 watts normal
85 watts phono operating

Power Output—
4.5 watts maximum
2.5 watts 10% distortion

Speaker—8" PM dynamic

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

Intermediate Frequency—
AM 455 KC — FM 10.7 MC

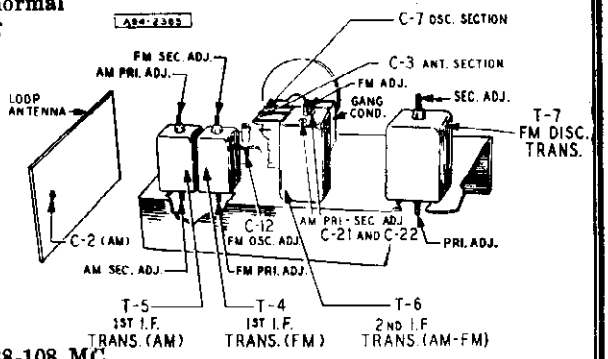
Selectivity — AM — 45 KC broad at 1000 times signal, measured at 1000 KC
I.F. FM—200 KC broad at 2 times down
I.F. FM—950 KC broad at 200 times down

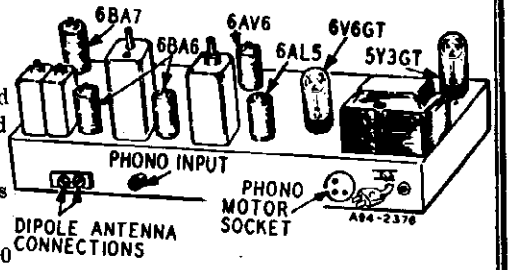
AM Sensitivity—(For .5 watt output with external antenna)
10 microvolts average

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

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 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.

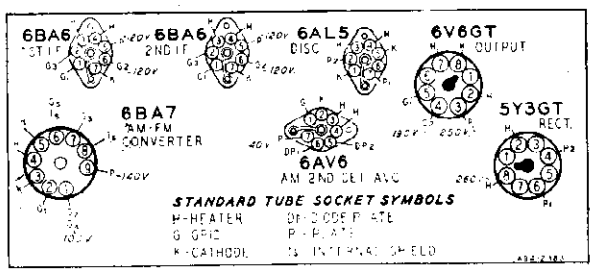




TUBE SOCKET VOLTAGES

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 ±10% is usually permissible.



SERVICE DATA

ALIGNMENT PROCEDURES

AM STAGES

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.

The following is required for aligning:

An All Wave Signal Generator Which Will Provide an Accurately Calibrated Signal at the Test Frequencies as Listed.

Output Indicating Meter, Non-Metallic Screwdriver, Dummy Antennas — .1 mf, and 50 mmf.

SIGNAL GENERATOR					
FREQUENCY SETTING	CONNECTION AT RADIO	GROUND CONNECTION	DUMMY ANTENNA	GANG CONDENSER SETTING	ADJUST TUNING SLUG AND TRIMMERS
455 KC	Control Grid 1st 6BA6 Pin No. 1	Chassis Base	.1 mf	Turn Rotor to Full Open	2nd I.F. C-21 & C-22
455 KC	Control Grid 6BA7 Pin No. 7 1st Det.	Same as above	.1 mf	Turn Rotor to Full Open	1st I.F. Pri. & Sec.
1620 KC	Control Grid 6BA7 Pin No. 7	Same as above	.1 mf	Turn Rotor to Full Open	Oscillator C-7
1400 KC	External Antenna Lead	Same as above	50 mmf	Turn Dial to 1400 KC. See Note A	Antenna C-2

NOTE A—Set pointer at the 1400 KC mark on the dial scale. Attach pointer to drive cord.

FM STAGES

Allow chassis and signal generator to warm up for several minutes. The following equipment 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 and a 3300 ohm .5 watt resistor with short leads.

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.)

	SIGNAL GENERATOR					
	FREQUENCY SETTING	CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUSTMENT FOR MAX. METER DEFLECTION
Discriminator	10.7 MC	6BA6 2nd I-F Pin 1 & Chassis	2500 mmf	FM	Rotor Fully Open	Disc. Pri. Note A
	10.7 MC	Same as above	2500 mmf	FM	Rotor Fully Open	Disc. Sec. Note B
	10.7 MC	Same as above	2500 mmf	FM	Rotor Fully Open	Disc. Pri. Note A
	10.7 MC	Same as above	2500 mmf	FM	Rotor Fully Open	Disc. Sec. Note B
I-F	10.7 MC Note E	6BA6 1st I-F Pin 1 & Chassis	2500 mmf	FM	Rotor Fully Open	2nd I-F Note C
Discriminator	10.7 MC	6BA6 2nd I-F Pin 1 & Chassis	2500 mmf	FM	Rotor Fully Open	Disc. Pri. Note A
I-F	10.7 MC	Antenna and Chassis	2500 mmf	FM	Rotor Fully Open	1st. I-F Pri. and Sec. and Note C
	10.7 MC	Antenna and Chassis Solder a 3300 ohm resistor across terminals 3 and 4 of 1st. I-F trans.	2500 mmf	FM	Rotor Fully Open	1st. I-F Pri. Note C
	10.7 MC	Antenna and Chassis Note D	2500 mmf	FM	Rotor Fully Open	1st. I-F Sec. Note C
	RECHECK I-F ADJUSTMENTS IN ORDER GIVEN					
Oscillator	108.4 Note F	Disconnect built-in dipole antenna and connect generator to dipole terminals with resistor in series.	300 ohms	FM	Rotor Fully Open	Osc. C-12
Antenna	104.5	Same as above	300 ohms	FM	Tune rotor for max. AVC voltage	Ant. C-3
	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.

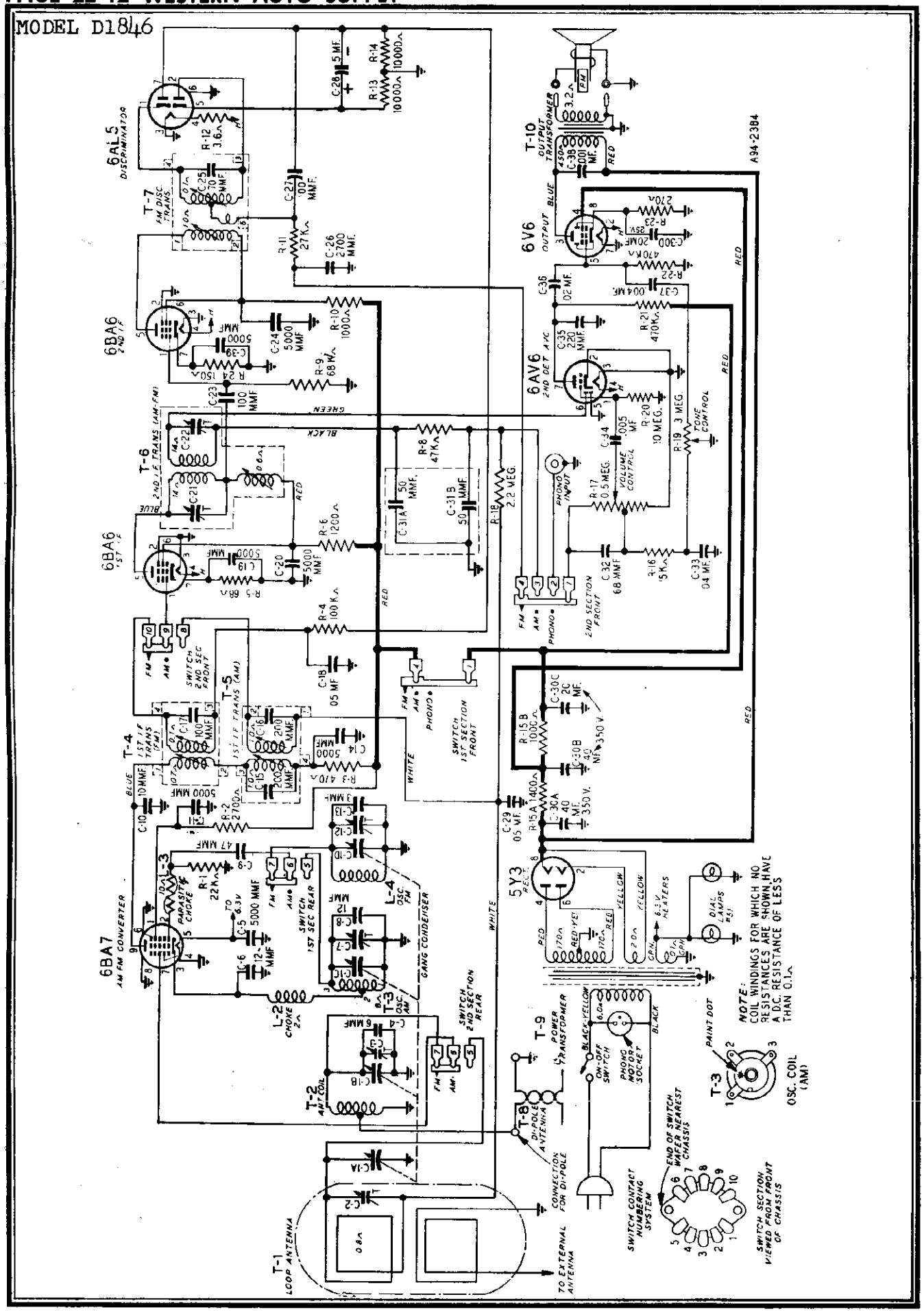
NOTE B—Disconnect zero center DC vacuum tube voltmeter from AVC and connect it to the audio takeoff point at the 27 K ohm resistor (R-11) and its junction with the terminal strip. Adjust for zero voltage indication.

NOTE C—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 D—Unsolder 3300 ohm resistor from terminals 3 and 4 of 1st I-F transformer and resolder across terminals 1 and 2.

NOTE E—2nd I-F Trimmers (AM) must be aligned before attempting to adjust 2nd I-F (FM) tuning slug.

NOTE F—Remove the 3300 ohm load resistor before attempting to check the antenna and oscillator adjustments.


MODEL D1846
6AL5 DISCRIMINATOR
6BA6 2ND I.F.
6BA6 1ST I.F.
6BA7 AM FM CONVERTER
6V6 OUTPUT
6AV6 2ND DET AVC
5Y3 RECT.
T-1 LOOP ANTENNA
T-2 ANT. COIL
T-3 OSC. AM
T-4 1ST I.F. TRANS (FM)
T-5 1ST I.F. TRANS (AM)
T-6 2ND I.F. TRANS (AM-FM)
T-7 FM DISC TRANS.
T-8 DI-POLE ANTENNA
T-9 POWER TRANSFORMER
T-10 OUTPUT TRANSFORMER
L-1-3 PARASITIC CHOKE
L-2 CHOKE
L-4 OSC. FM
GANG CONDENSER
SWITCH 1ST SEC REAR
SWITCH 2ND SECTION REAR
SWITCH 2ND SEC FRONT
SWITCH 1ST SECTION FRONT
VOLUME CONTROL
TONE CONTROL
PHONO INPUT
ON-OFF SWITCH
PHONO MOTOR SOCKET
DIAL LAMPS
6.3 V HEATERS
CONNECTION FOR DI-POLE
TO EXTERNAL ANTENNA
SWITCH CONTACT NUMBERING SYSTEM
END OF SWITCH WAFER NEAREST CHASSIS
SWITCH SECTION VIEWED FROM FRONT OF CHASSIS
OSC. COIL (AM)
PAINT DOT
NOTE: COIL WINDINGS FOR WHICH NO RESISTANCES ARE SHOWN, HAVE A D.C. RESISTANCE OF LESS THAN 0.1Ω
A94-2384

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

12A477	8" PM Speaker
2A373	Band Change Switch
3A303	Molded Octal Tube Socket
3A304	Phono Motor Jack
3A305	Phono Input Jack
3A426	Miniature Tube Socket
3A443	Miniature Tube Socket (For AM-FM Converter Tube)
10A691	Knob (Tuning)
10A692	Knob (Off-On Volume)
10A693	Knob (Tone)
10A694	Knob (AM-FM Phono)
13X546	Line Cord and Plug
30X547	Line Cord Clamp

CAPACITORS

C-1A, C-1B, C-1C, C-1D	14A204	Gang Condenser Assembly			
C-2		Part of T-1 (Loop Antenna Assembly)			
C-3, C-7		Part of C-1 (Gang Condenser Assembly)			
C-4	47X521	6 mmf		Ceramic	
C-5, C-11, C-14, C-19, C-20, C-24, C-39	47X507	5000 mmf		Silvered Ceramic	
C-6, C-8	47X522	12 mmf		Ceramic	
C-9	47X517	47 mmf		Ceramic	
C-10	47X512	10 mmf		Ceramic	
C-12	17A255	1-8 mmf		Trimmer	
C-13	47X547	3 mmf		Ceramic	
C-15, C-16		Part of T-5 (1st I.F. Transformer AM)			
C-17		Part of T-4 (1st I.F. Transformer FM)			
C-18, C-29, C-21, C-22	B66503	.05 mf	200 V	Tubular	
		Part of T-6 (2nd I.F. Transformer AM-FM)			
C-23	47X497	100 mmf		Ceramic	
C-25		Part of T-7 (Discriminator Coil Assembly)			
C-26	47X492	2700 mmf		Molded	
C-27	47X526	100 mmf		Molded	
C-28	45X361	5 mf	100 V	Dry Electrolytic	
C-30A		40 mf	350 V		
C-30B		40 mf	350 V		
C-30C	45X359	20 mf	350 V	Dry Electrolytic	
C-30D		20 mf	25 V		
C-31A, C-31B	47X112	50-50 mmf		Dual Mica	
C-32	47X471	68 mmf		Molded	
C-33	B66403	.04 mf	200 V	Tubular	
C-34	D66502	.005 mf	400 V	Tubular	
C-35	47X468	220 mmf		Ceramic	
C-36	D66203	.02 mf	400 V	Tubular	
C-37	B66402	.004 mf	200 V	Tubular	
C-38	H66102	.001 mf	800 V	Tubular	

RESISTORS

		Ohms	Watts	
R-1	B84223	22 K	.5	Carbon
R-2	B83272	2700	.5	Carbon
R-3	B84471	470	.5	Carbon
R-4	B85104	100 K	.5	Carbon
R-5	B83680	68	.5	Carbon
R-6	B84122	1200	.5	Carbon
R-8	B85473	47 K	.5	Carbon
R-9	B85683	68 K	.5	Carbon
R-10	B84102	1000	.5	Carbon
R-11	B84273	27 K	.5	Carbon
R-12	43X233	3.6	.5	Wire Wound
R-13, R-14	B84103	10K	.5	Carbon
R-15A	43X224	1000	6.0	Wire Wound
R-15B		1400	4.0	
R-16	B84153	15 K	.5	Carbon
R-17	36X371	.5 meg		Volume Control
R-18	B85225	2.2 meg.	.5	Carbon
R-19	40X284	3 meg.		Tone Control
R-20	B85106	10 meg.	.5	Carbon
R-21, R-22	B85474	470 K	.5	Carbon
R-23	B84271	270	.5	Carbon
R-24	B84151	150	.5	Carbon

TRANSFORMERS AND COILS

L-2	35A1	Insulated Choke
L-3	9A1940	Parasitic Choke Assembly
L-4	9A2021	Oscillator Coil Assembly (FM)
T-1	9A1972	"B" Range Loop Antenna Assembly
T-2	9A1956	Antenna Coil Assembly
T-3	9A1997	Oscillator Coil (AM)
T-4	9A1932	1st I.F. Transformer (FM)
T-5	9A1998	1st I.F. Transformer (AM)
T-6	9A1999	2nd I.F. Transformer (AM-FM)
T-7	9A1970	Discriminator Coil Assembly
T-8	9A2003	Dipole Antenna Assembly
T-9	53X290	Power Transformer
T-10	51X134	Output Transformer

DIAL AND DRIVE ASSEMBLY

15X229	Pointer
6X21	Rubber Grommet } Mtg. Gang Condenser
20X260	Condenser Cushion Stud }
58X717	Dial
28X113	Drive Cord Tension Spring
26X507	Drive Shaft
19X192	"C" Washer (For drive shaft)
10X66	Drive Cord Assembly
7A215	Pilot Light Socket Assembly
7A32	No. 51 Pilot Light
25X1491	Pointer Bracket
4X915	Escutcheon (Right)
4X916	Escutcheon (Left)
30X517	Dial Clamp
25X1571	Idler Bracket
4X931	Escutcheon Inserts

TYPE O-28A144 RECORD CHANGE PARTS

O-7102-1	Phono motor, 60 cycle, 115 volt
O-7583	Idler Pulley Kit } These parts can only be used
O-7103	Turntable } with O-7102-1 Type motor
O-7106-1	Phono Motor, 60 cycle, 115 volt
O-7584	Idler Pulley Kit } These parts can only be used
O-7107	Turntable } with O-7106-1 Type motor
O-7101	Grommet
O-4388-3	Fibre Washer
O-7478-4	Motor on-off Switch
O-7477-1	Switch Cover
O-7810	Changer Blade Assembly
O-4279	Tenite Cap
O-4215-37	Set Screw (Mounting tenite cap)
O-6699	Control Button
O-7799	Tone Arm Assembly Less Cartridge
	Cartridge Shure P93
O-4298-3	Screw (for mtg. cartridge to tone arm)
	Needle, Durpoint 15X
O-7589	Needle Set Screw

MODEL D4142A

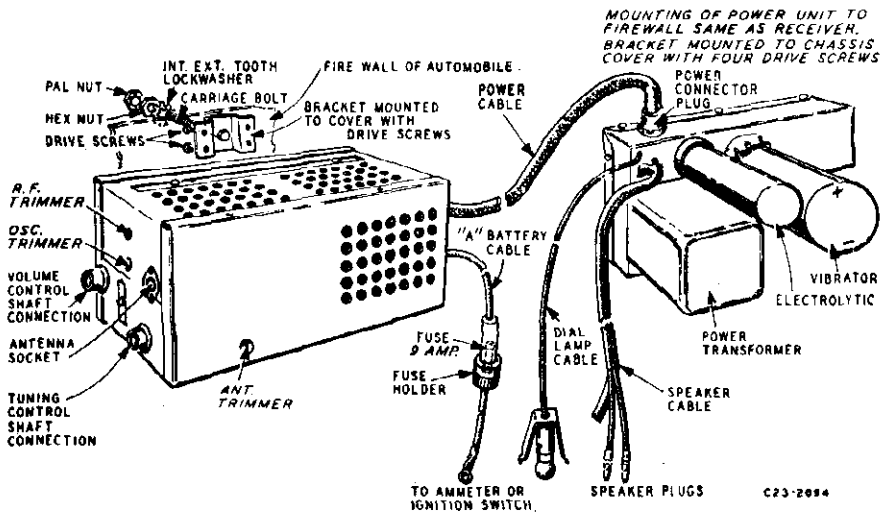


Fig. 1 — Receiver and Power Supply Units

RADIO INFORMATION

This automobile radio consists of three units, the receiver, the power supply and the speaker. The receiver and power supply have been designed to mount on the firewall of the car in an out-of-sight position by means of the mounting hardware provided with each radio. This will mean drilling one or two holes through the firewall to accommodate the mounting studs (in some cases it will be possible to take advantage of holes already drilled by the manufacturer). In some cars the best spot for installing the receiver unit may be found to be near the top of the firewall where the surface is curved, in which case, the following precaution should be observed. Refer to Fig. 2 and note the open space between the outer surface of the receiver unit and the surface of the firewall. This space should be filled in with several layers of heavy cardboard before tightening the nut on the mounting stud to prevent springing the case of the receiver unit. If the case of this unit is sprung its shielding effect may be lessened resulting in unsatisfactory performance. The tuning head, consisting of the dial plate, dial assembly and flexible shafts are put up in kit form for each make of automobile. The speaker baffle is also supplied in kit form. Instructions for installing these two items are supplied in each kit. Attention is called to the fact that the radio should be installed in a location where the control cables can be fastened to it without making any sharp bends. If this precaution is observed, the radio controls will operate freely and easily.

In some automobiles where it may be impractical to mount the receiver unit with the brackets supplied, it is suggested that the mounting be made with a 1/4-20 bolt attached through one of the ventilator holes on the side of the receiver case.

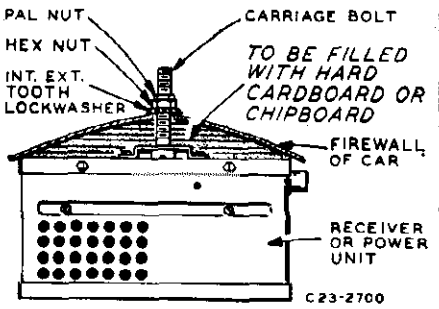


Fig. 2 — Unit Mounting

ANTENNA

A shielded antenna cable (30 mmf. capacity) with bayonet connector plug is required.

The plug on the antenna cable is inserted in the socket at the side of the radio case as shown in Fig. 1. The wire at the other end of the cable is connected to the antenna.

LOW CAPACITY ANTENNA

This radio is designed for a low capacity car antenna. The total capacity of antenna and shielded cable should be 40 to 200 mmf.

Types of Low Capacity Antennas — "Fishpole" type, such as door hinge and cowl; over-the-roof types which are short and are mounted quite a distance from the metal roof of the car.

Mount the antenna on the same side of the car as the radio.

HIGH CAPACITY ANTENNA

If this radio is to be installed with a high capacity car antenna (200 to 500 mmf. total capacity of antenna and shielded cable), a 24 inch shielded adapter extension cable is necessary. The adapter is inserted in the socket at the side of the radio case. Then the antenna cable plug is inserted in the socket at the other end of the adapter.

Types of High Capacity Antennas —Over-the-roof types which are long and are mounted close to the metal roof of the car; ordinary built-in roof antennas (not metal roof). Under-car antennas (these are usually high capacity) are not recommended for this radio.

ANTENNA CABLE

CAUTION—Be careful not to bend the antenna cable too sharply or to clamp it tightly as the small wire inside the cable may be broken.

Keep the antenna cable as far away from car wiring as possible and ground the pigtail of the antenna cable shield at the antenna end, otherwise ignition noise may be picked up. The length of the pigtail from the grounding point to the end of the antenna cable should be kept as short as possible, preferably not over one inch.

For the "fish pole" and over-the-roof type antennas, the antenna lead must be shielded the entire distance from the radio to the point where the lead goes through the car body to the outside.

When the antenna cable is connected to an antenna lead coming down the pillar post, the shielded cable should be pushed several inches up into the pillar post.

MISCELLANEOUS DATA

Before Mounting Radio

Before mounting the radio to the fire wall, it is advisable in most cases to complete the wiring connections.

Battery Cable and Fuse

The battery connection is made at the ammeter. The end of the battery cable with the connecting lug is secured to one of the posts at the back of the ammeter in the instrument panel. The other end of the cable with the fuse receptacle connects to the battery cable from the radio after the fuse has been inserted. A 9 ampere fuse is used.

Dial Lamp Cable

Insert the dial lamp assembly in the receptacle. The dial lamp used in this unit is a 6-8 volt automobile type lamp (Bulb No. 51).

Inserting Vibrator Unit

IMPORTANT: — The vibrator unit can be inserted in two ways. The proper method of insertion will depend on which terminal of the car battery is grounded. If the POSITIVE (+) terminal of the car battery is grounded, insert the vibrator as shown in figure 1. If the NEGATIVE (—) terminal of the car battery is grounded, insert the vibrator so that the negative sign on the vibrator is towards the back flange of the power supply unit.

Adjusting Antenna Trimmer

After the antenna is connected, tune in a weak signal at approximately 1600 KC with the volume control about three-fourths on. Turn the adjusting screw of the antenna trimmer (C-2) in or out until maximum output is obtained. See Fig. 1 for location of this trimmer.

Calibrating The Radio

The radio must be calibrated before attaching the control cables to the radio. Set the dial pointer to the low end of the scale. Insert a screwdriver into the tuning control shaft connection and turn the tuning assembly all the way to the left (counter-clockwise). This adjustment matches the tuning of the receiver to the low end of the dial scale. Then attach the control cables to the radio.

Replacing Tubes And Vibrator

Remove the top cover of the radio receiver if tube replacement is necessary. The vibrator is located on the power supply unit and may be easily removed by pulling it straight up and out. Replacement vibrators may be purchased at any Western Auto Supply Company Store.

OPERATING THE RADIO

To Turn the Radio On

Turn the volume control knob to the right. A click will be heard and the dial lamp will light. Wait 30 seconds for the tubes to heat.

Tuning in a Station

Turn the volume on full by turning the volume control knob to the right as far as it will go. Next, slowly turn the tuning knob until a station is heard. Reduce the volume by means of the volume control knob to below the desired intensity.

Now turn the tuning knob very slowly back and forth until the station is clearest and strongest. IF THE STATION IS NOT CAREFULLY TUNED IN, THE RECEPTION WILL BE NOISY AND DISTORTED. Then adjust the volume control until the desired intensity is obtained. Always reduce the volume by means of the volume control knob and never by turning the tuning knob.

To Turn the Radio Off

Turn the volume control knob to the left as far as it will go. A click will be heard and the dial lamp will be off.

SERVICE DATA

ALIGNMENT PROCEDURE

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.
The following equipment is required for aligning:

A Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
Output Indicating Meter—Non-Metallic Screwdriver.
Dummy Antenna—.05 mf., See Note A.

SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	IRON CORE SETTING	ADJUST TUNING SLUGS (IF) AND TRIMMERS TO MAXIMUM (See Fig. 4)
I.F. 455 KC	Control Grid (prong No. 7) 6BE6 Mixer Tube	.05 mf.	Extreme Position out of Coil	1st I.F. Pri. (1) & Sec. (2) 2nd I.F. Pri. (3) & Sec. (4)
1605 KC	Antenna Cable See Note A	See Note A	Extreme Position out of Coil	Oscillator (C-7)
1605 KC	Antenna Cable	See Note A	Extreme Position out of Coil	R.F. (C-5) Ant. (C-2)

Reassemble Radio—Install in Car—Connect Car Antenna to Radio.

Car Antenna Readjustment—Tune in weak signal near 1600 KC Readjust Antenna Trimmer C-2 for maximum output.

SPECIFICATIONS

Power Consumption	5.5 Amperes at 6.6 Volts
Power Output (6.6 Volts)	2.2 Watts Undistorted 4.0 Watts Maximum
Sensitivity	3 Microvolts at 1 Watt Output
Selectivity	45 KC Broad at 1000 Times Signal
Tuning Frequency Range	540 to 1605 KC
Intermediate Frequency	455 KC
Speaker	6" PM Dynamic

Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

NOTE A—Insert the antenna cable plug in the antenna socket on the chassis. The total capacity of the antenna cable and dummy antenna should be 60 mmf. If the cable, for example, has a capacity of 30 mmf., use a 30 mmf. condenser for a dummy antenna. Connect the other end of the antenna cable through the dummy antenna capacity to the output of the signal generator.

CALIBRATION—To calibrate the radio see article "Calibrating the Radio" on page 2.

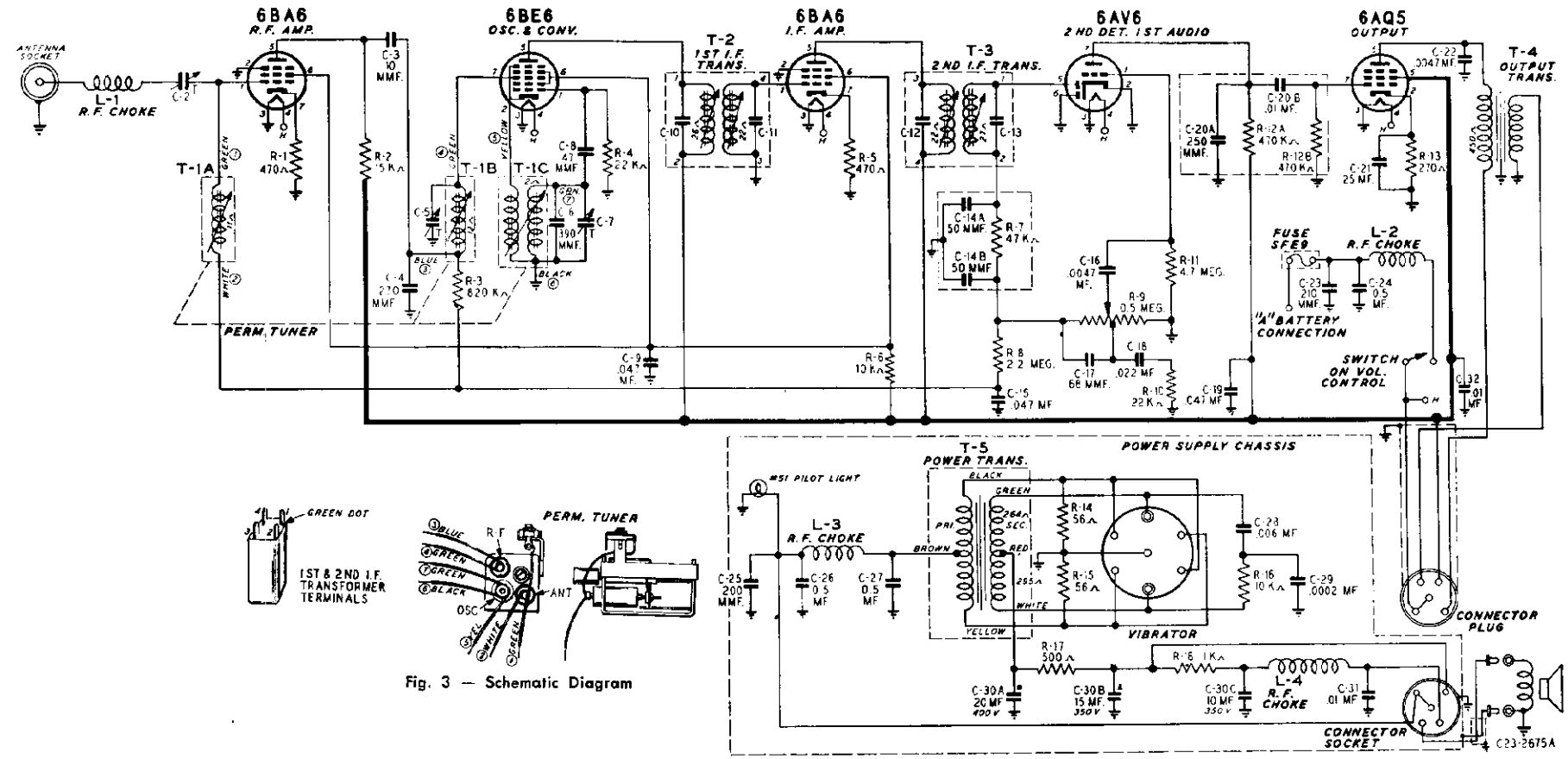


Fig. 3 — Schematic Diagram

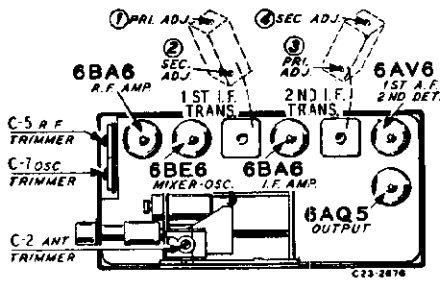


Fig. 4 — Tube Layout

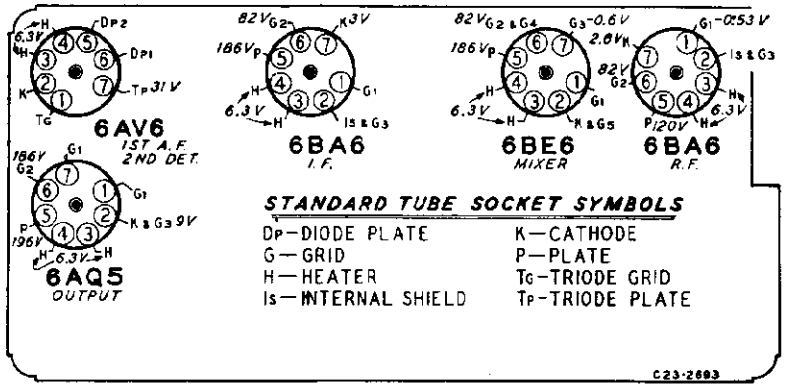


Fig. 5 — Socket Voltages — Bottom View

TUBE SOCKET VOLTAGES

Voltages were measured between the indicated terminals 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, under the following conditions:

Battery voltage .....6.6 Volts
Signal Input .....None
Volume Control .....Maximum
Antenna .....Shorted to Ground

A variation of ±10% is usually permissible.

MODEL D4142

SUPPRESSION OF MOTOR NOISE

The following procedure has been found to be effective in reducing motor noise to a satisfactory level in most cars. Follow the steps in the order given. Additional procedure, which may be required in exceptional cases of motor noise, is not covered here and will be found by referring to current literature on this subject.

GENERATOR CONDENSER — A generator condenser is required in all cases. Connect the condenser lead to the battery terminal of the generator.The case and mounting strap connect the other side of the condenser to ground. This unit must, therefore, be well grounded at its mounting.

CAUTION—In cars with automatic regulators, it is important not to connect the condenser across the field terminal. Most manufacturers at the present time have a recommendation for the proper post at which to connect the condenser.

DISTRIBUTOR SUPPRESSOR—A distributor suppressor will be required in most cases. Remove the high tension lead to the distributor. Insert a distributor suppressor and connect the wire to the other end of the suppressor (See Fig. 6). If this is not practical, cut the high tension lead close to the distributor and use a wood screw end type distributor suppressor in this line.

Withdraw Antenna Cable Plug

Turn on the radio and start the motor.

If motor noise is heard, proceed as follows:

BONDING CABLES, STEERING COLUMN, ETC.—Try grounding to the fire wall all cables and tubing which pass through it such as oil lines, gas lines, etc. It is also possible for the steering column, foot pedals, and brake lever to carry interference to the back of the fire wall at which point it may affect the radio. By means of a file, contact can be established between any of these parts and the fire wall or frame in order to determine whether such a ground will reduce the noise. To bond the parts to the fire wall or frame, clean the point of contact, wrap a length of one inch braided shielding around the part, and solder the connection. Then solder the end of the shielding to the fire wall or frame or ground it under a screw head if one is convenient.

Sufficient play should be left in the bonding shielding so that movement of the parts will not loosen this shielding.

Then Re-insert Antenna Cable Plug

If motor noise is heard when the antenna cable is reconnected, proceed as follows until the noise is satisfactorily reduced:

BYPASS CONDENSERS — Try a .5 mfd. bypass condenser from the ammeter to ground and see if interference is reduced, Install this condenser permanently if there is an improvement.

In like manner, try a .5 mfd. condenser from car fuse to ground, switch to ground, tail light and stop light connections to ground, windshield wiper and various other 6 volt connections to ground, noting what effect these condensers have on the noise pickup.

Try a .5 mfd. condenser between the point at which the dome light lead leaves the pillar post and ground.

Try a .5 mfd. condenser from the "Hot" side of the coil primary to ground.

The electric gauges used for oil, water, and gas are often a source of interference and bypass condensers should be tried. The condenser should usually be connected to the end of the line nearest the measuring device rather than at the instrument panel.

HIGH AND LOW TENSION LEADS—In some cases, the high and low tension leads between the coil and distributor are run close together. In some cars, they are in the same conduit. If this is the case, remove the low tension lead from this conduit. In any event, keep the high and low tension leads as far apart from each other as possible. If separating the two leads is not sufficient, shield and ground the shield of the low tension lead.

GROUNDING MOTOR ANI OTHER PARTS—The motor must, i every case, be well grounded to th frame of the car. If it is not, use very heavy braided lead for this pur pose, similar to a storage batter ground lead. In like manner, it ma be necessary to check the groundin of the metal fire wall, instrumen panel, transmission, radiator, hood and muffler to the frame of the auto mobile. To obtain a good electrica connection, scrape off the paint, i necessary, at the point where groun contact is made.

PEENING ROTOR ARM — In ex treme cases of motor noise, it is ad visable to peen the distributor roto arm, that is, increase the length o the arm by using a small machinist' hammer. This will lessen the ga between the rotor arm and the sta tionary contacts thus reducing th spark. Be sure, after peening th arm, that it does not strike the sta tionary contacts.

SPARK PLUG SUPPRESSORS— If motor noise persists, spark plu suppressors must be installed. On suppressor is put on each plug. Thes are not regularly supplied with th radio and must be purchased extra Ninety-five percent of all cars wil not require spark plug suppressors

Care should be taken that a goo mechanical and electrical connectio is made between the spark plugs suppressors, and plug wires.

WHEEL OR BRAKE STATIC—T determine if noise is being cause from this source, set the car in mo tion; then with the motor shut of and the clutch disengaged, apply th brakes. *If the noise* stops, the source of the static is in the wheels. The us of a front or rear wheel static elimin ator will generally end the trouble.

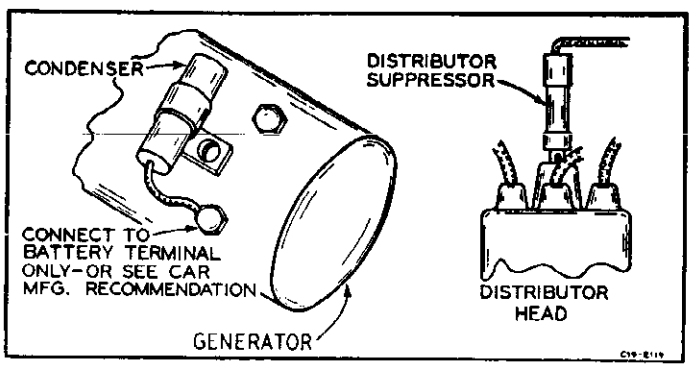


Fig. 6 — Generator Condenser and Distributor Suppressor

MODEL D4142A

REPLACEMENT PARTS LIST

NOTICE: There is a model number label on the radio. 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

12A503	6" P.M. Speaker	
76X1	Diode Filter Assembly	
76X5	Audio Couplate Assembly	
3A426	Tube Socket	
3A437	Antenna Connector	
3A467	Connector Socket (Power Supply)	
3A440	Vibrator Socket	
19A42	Vibrator	
34X555	Top Cover for Receiver Case	
34X557	Bottom Cover for Receiver Case	
34X554	Bottom Cover for Power Supply Case	
20A101	Iron Core Tuning Assembly Complete with Coils, Trimmers, etc.	
7A232	Pilot Light Socket Assembly	
7A32	Pilot Light Bulb No. 51	
16X26	Fuse (SFE9)	
16X150	Fuse Holder Assembly	
16X149	Fuse Retainer Knob Assembly	
13X798	Shielded Cable & Plug Assembly	
26A513	Nut & Bolt Kit Assembly	
26A512	Universal Mtg. Hardware Assembly (Complete) Includes Bracket, Screws, Bolts, Lockwashers, Distributor Suppresser, Generator Condenser, etc.	
25X1772	Mtg. Bracket (for Power Supply & Receiver)	
21A6	Distributor Suppresser	
48X27	Generator Condenser	

TRANSFORMERS & COILS

L-1	35A10 R-F Choke	
L-2	9A2222 R-F Choke	
L-3	9A1958 R-F Choke	
L-4	9A2219 R-F Choke	
T-1A, T-1B, T-1C	Antenna, R-F, Oscillator Coils and Iron Cores are part of 20A101 Tuning Assembly. Entire Assembly must be ordered. (See Miscellaneous.)	
T-2	9A2203 1st I.F. Transformer & Can Assembly	
T-3	9A2204 2nd I.F. Transformer & Can Assembly	
T-4	51X153 Output Transformer	
T-5	53X321 Power Transformer	

CAPACITORS

C-2	Part of Tuner (See Miscellaneous)		
C-3	47X523	10 mmf	Ceramic
C-4	RCM20D271K	270 mmf	Silver Mica
C-5, C-7	17A263	25-100 mmf	Trimmer Condenser
C-6	47X475	390 mmf	Mica

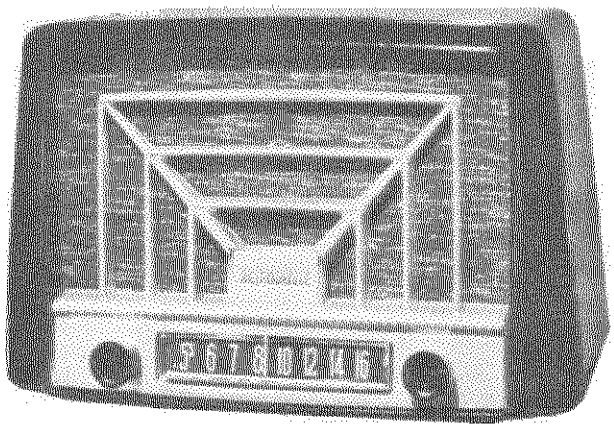
CAPACITORS (Con't.)

C-8	47X495	47 mmf		Ceramic
C-9, C-19	46X397	.047 mf	400 V	Molded Tubular
C-10, C-11	Part of T-2 (1st I.F. Transformer)			
C-12, C-13	Part of T-3 (2nd I.F. Transformer)			
C-14A, C-14B	Part of 76X1 (See Miscellaneous)			
C-15	46X398	.047 mf	200 V	Molded Tubular
C-16	46X400	.0047 mf	200 V	Molded Tubular
C-17	47X471	68 mmf		Molded Mica
C-18	46X413	.022 mf	200 V	Molded Tubular
C-20A, C-20B	Part of 76X5 (See Miscellaneous)			
C-21	45X388	25 mf	25 V	Electrolytic
C-22	46X412	.0047 mf	1000 V	Molded Tubular
C-23	47X602	210 mmf		Mica
C-24, C-26, C-27	46X425	.5 mf	100 V	Paper Tubular
C-25	47X129	200 mmf		Mica
C-28	46X424	.006 mf	1600 V	Buffer
C-29	47X520	.0002 mf		Ceramic
C-30A	45X387	20 mf	400 V	Electrolytic
C-30B		15 mf	350 V	
C-30C		10 mf	350 V	
C-31, C-32	47X595	.01 mf		Ceramic

RESISTORS

		Ohms	Watts	
R-1, R-5	B83471	470	0.5	Carbon
R-2	C84153	15 K	1.0	Carbon
R-3	B85824	820 K	0.5	Carbon
R-4, R-10	B85223	22 K	0.5	Carbon
R-6	D84103	10 K	2.0	Carbon
R-7	Part of 76X1 (See Miscellaneous)			
R-8	B85225	2.2 meg.	0.5	Carbon
R-9	36X387	.5 meg.		Volume Control & Switch
R-11	B85475	4.7 meg.	0.5	Carbon
R-12A, R-12B	Part of 76X5 (See Miscellaneous)			
R-13	C84271	270	1.0	Carbon
R-14, R-15	C84560	56	1.0	Carbon
R-16	C84103	10 K	1.0	Carbon
R-17	43X257	500	5.0	Wirewound
R-18	D84102	1 K	2.0	Carbon

MODEL H-327T6U,
Ch. V-2157-3U



SPECIFICATIONS

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

INTERMEDIATE FREQUENCY: ..... 455 kc.

TUBE COMPLEMENT:

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

POWER OUTPUT:

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

LOUDSPEAKER: ..... 4"PM

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

POWER CONSUMPTION: ..... 35 watts

ALIGNMENT

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

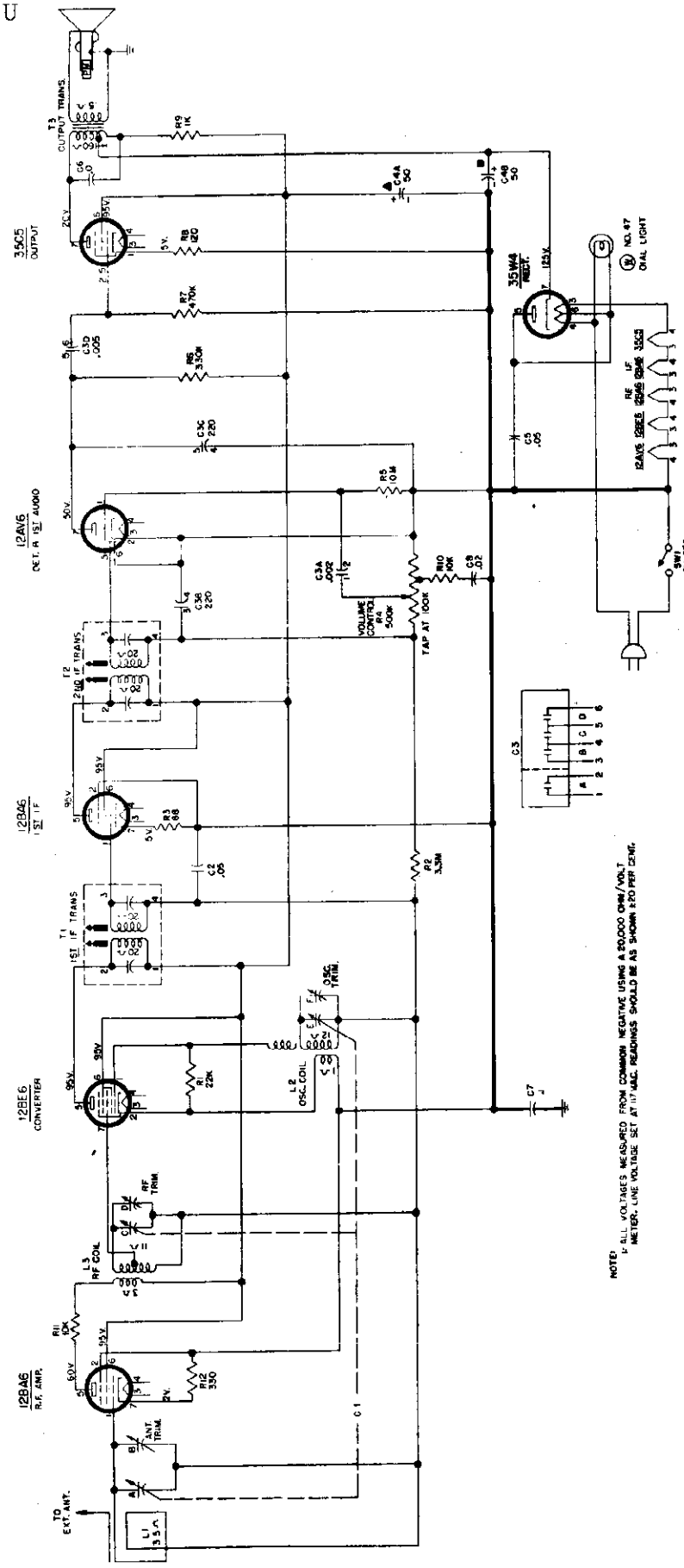
Make certain that the dial pointer is correctly positioned.

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

Step	*Connect Signal Generator to —*	*Signal Generator Frequency*	*Radio Dial*	*Adjust for Maximum Output —*
1.	pin #7 of the 12BE6 through a 200 mmf capacitor	455 kc.	minimum capacity	top and bottom slugs of T2 and T1 in order given*
2.	stator of ant. tuning capacitor (A) through a 200 mmf capacitor	1615 kc.	minimum capacity	oscillator trimmer (F)
3.	same as step 2	1400 kc.	1400 kc.	R-F trimmer (D)
4.	radiated signal	1400 kc.	1400 kc.	antenna trimmer (B)

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

MODEL H-327T6U,
Ch. V-2157-3U



NOTE:
1. ALL VOLTAGES MEASURED FROM COMMON NEGATIVE USING A 20,000 OHM/VOLT METER. LINE VOLTAGE SET AT 117 VAC. READINGS SHOULD BE AS SHOWN ±20 PER CENT.

FIG. 1 – SCHEMATIC DIAGRAM OF V-2157-3U CHASSIS

PARTS LIST FOR MODEL H-327T6U

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

CABINET AND MISCELLANEOUS

Part No.	*Description*
V-6120-3	Background, dial
V-10017-4	Baffle and grille cloth assembly
V-1220-4	Cabinet (without baffle and grille cloth)
V-3219S-1	Cord, dial drive
V-10013-4	Grille
V-10009-2	Knob, volume, on-off and tuning
No. 47	Light, dial
V-10181-1	Pointer
V-9996-2	Shaft, tuning
V-9888-2	Socket, wafer (12BE6, 35W4, 35C5)
V-9888-3	Socket, wafer (12BA6, 12AV6)
V-9122-2	Socket, dial light
V-10079-2	Speaker, 4"PM (includes T3)
V-10076-1	Spring, dial drive

V-2157-3U CHASSIS

Ref. No.	*Part No.*	*Description*
C1	V-10189-1	Capacitor, variable
C2	RCP10W2503M	Capacitor, .05 mfd 200 v.
C3	V-9634-1	Capacitor, multiple
C4	V-10190	Capacitor, electrolytic, 50-50 mfd 150 v.
C5	RCP10W4503M	Capacitor, .05 mfd 400 v.
C6	RCP10W4103M	Capacitor, .01 mfd 400 v.
C7	RCP10W4104M	Capacitor, .1 mfd 400 v.
C8	RCP10W2203M	Capacitor, .02 mfd 200 v.
L1	V-10197-1	Loop, antenna
L2	V-10192	Coil, oscillator
L3	V-10191	Coil, RF
R1	RC20AE223M	Resistor, 22,000 ohms ½ w.
R2	RC20AE335M	Resistor, 3.3 megohms ½ w.
R3	RC20AE680M	Resistor, 68 ohms ½ w.
R4	V-9993-2	Control, volume, 500,000 ohms
R5	RC20AE106M	Resistor, 10 megohms ½ w.
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.
R11	RC20AE103M	Resistor, 10,000 ohms ½ w.
R12	RC20AE331K	Resistor, 330 ohms ½ w.
T1	V-9735-1	Transformer, IF
T2	V-9735-1	Transformer, IF
T3	V-10079-2	Transformer, audio (includes speaker)

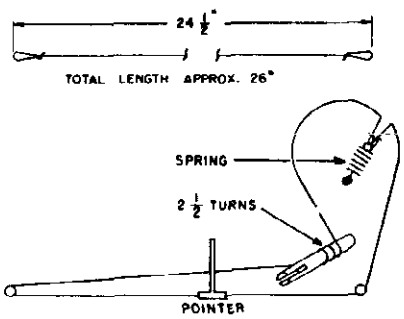


FIG. 2 – DIAL DRIVE

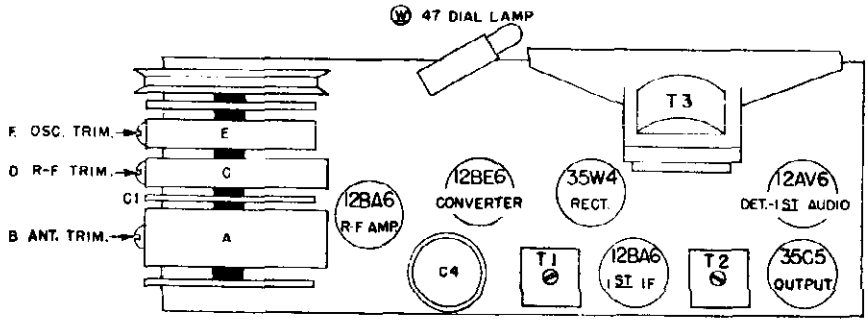


FIG. 3 – CHASSIS LAYOUT

MODEL H-328C7,
Ch. V-2136-4

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:

..... 105 to 120 volts, 60 cycles AC

POWER CONSUMPTION: ..... 70 watts

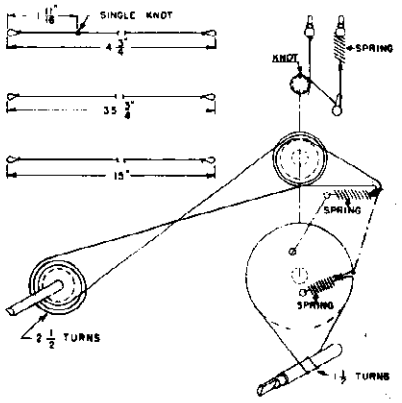


FIG. 3 — DIAL DRIVE

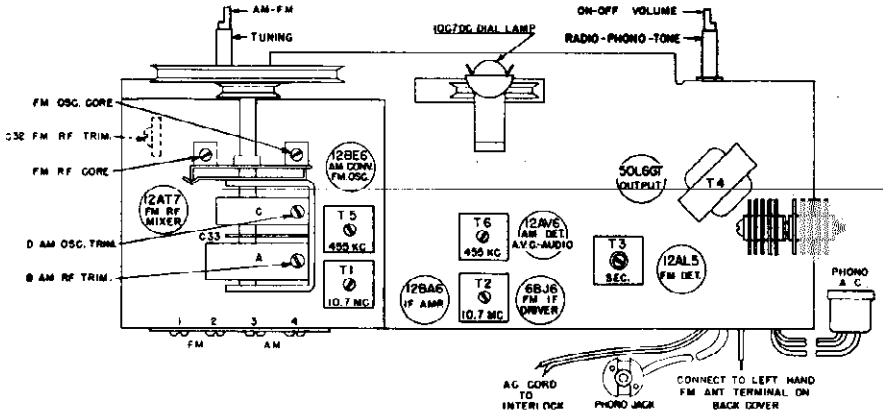
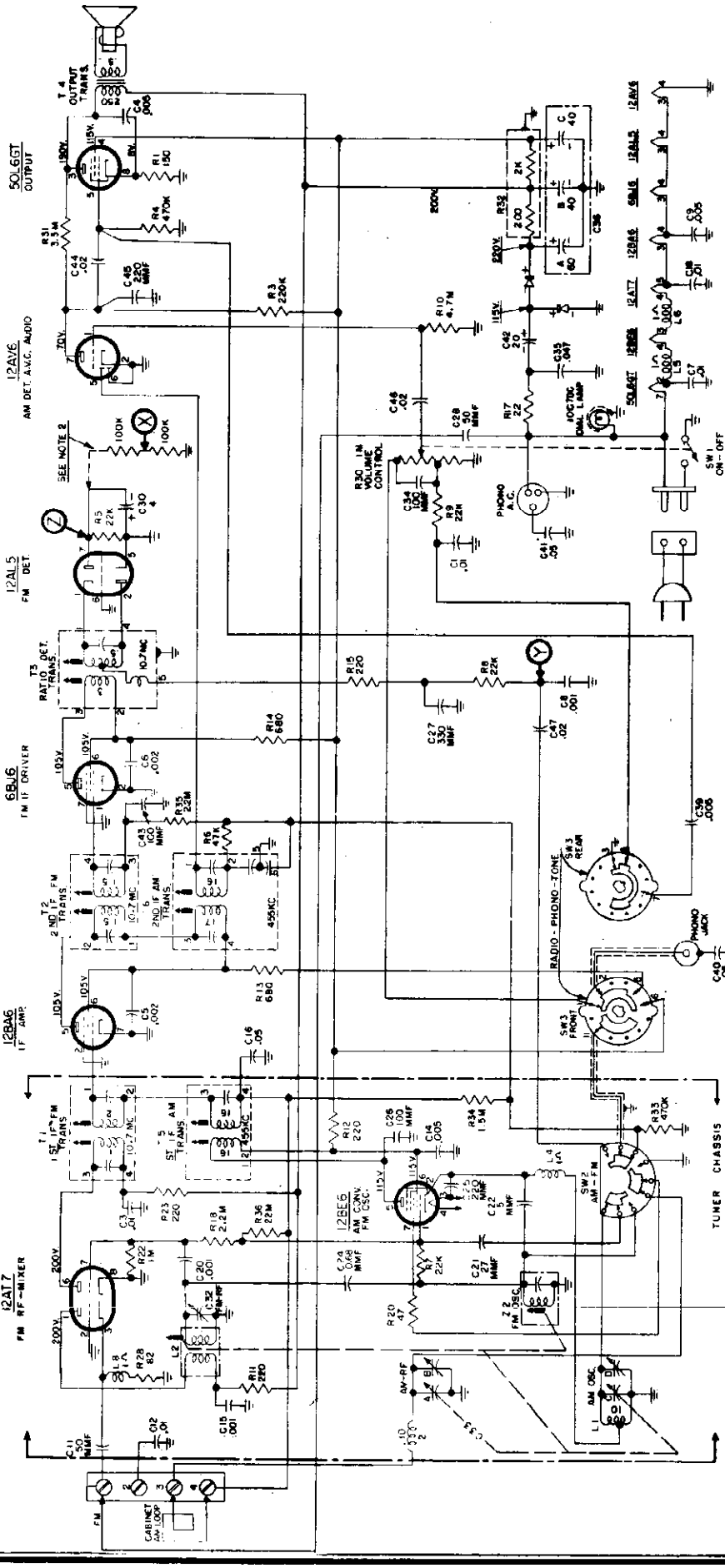


FIG. 2 — TOP VIEW OF CHASSIS

MODEL H-328C7,
Ch. V-2136-4



1. SELECTOR SWITCH SW2 IS SHOWN IN EXTREME CLOCKWISE POSITION OR AM BAND AS VIEWED FROM THE FRONT.
2. TO BE INSTALLED FOR ALIGNMENT ONLY.
3. SELECTOR SWITCH SW3 IS IN EXTREME CLOCKWISE POSITION OR PHONO TREBLE POSITION AS VIEWED FROM THE FRONT.
4. ALL CAPACITANCE VALUES IN MFD AND ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.
5. ALL VOLTAGES MEASURED FROM CHASSIS (GROUND) 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-2136-4 CHASSIS

MODEL H-328C7,
Ch. V-2136-4

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.

	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
	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 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			

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.

It should be noted that the interlock plug, which must be released from the cabinet to allow removal of the chassis, is incorporated for customer protection. Additional protection is provided by soldering the speaker cord to the terminal board on the output transformer and using closed-end lugs on the wires that extend from the back cover to the FM antenna terminals. These protective measures are in accordance with Underwriters Laboratories requirements and should not be altered in any way.

MODEL H-328C7
Ch. V-2136-4

PARTS LIST FOR MODEL H-328C7

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

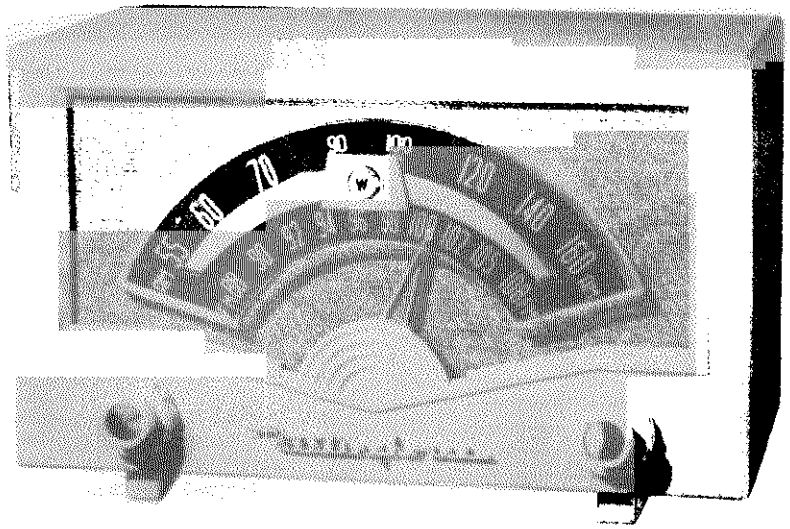
CABINET AND MISCELLANEOUS

Part No.	Description
V-5982-6	Antenna assembly (A.M. loop)
V-10307-1	Baffle and grille cloth assembly
V-1230-1	Cabinet, complete
V-9833-1	Cable assembly, phono A-C (male)
V-6415-4	Cable, phono
V-4898-1	Catch, bullet
V-3254S	Connector, phono (female)
V-3219S-1	Cord, dial drive (spool 100')
V-9845-1	Cover, back (record changer)
V-10311-1	Cover assembly, back (radio)
V-10308-1	Dial
V-8576	Doors, matched pair (less hardware)
V-8577	Drawer, record changer
V-10309-1	Escutcheon
V-9091-1	Hinge (L.H.)
V-9091-2	Hinge (R.H.)
V-10338-1	Hub, pointer
V-10347-1	Interlock bracket assembly
V-10408-2	Knob, off-on volume
V-10408-1	Knob, A.M. - F.M. selector
V-9861-2	Knob, radio - phono (rear)
V-9104-9	Knob, tuning (rear)
10C7DC	Lamp, pilot
V-3990-2	Medallion
V-10318-2	Nameplate, Westinghouse
V-10310-1	Pointer
V-10342-2	Pulley and shaft assembly, pointer
V-10357-1	Pulley, tuning gang
V-4967	Pull, door
V-10472-1	Shield, pilot lamp
V-9770-2	Speaker, 10 " PM
V-3248S	Spring, dial drive -- 1 3/32" long overall
V-6795-3	Spring, dial drive -- 3/4" long overall
V-9680-1	Sleeve, tuning drive
V-10366-1	Socket, pilot lamp
V-5556-1	Socket (12AT7)
V-4292S-2	Socket (12BE6
V-4292-1	Socket (12BA6, 6BJ6, 12AL5, 12AV6)
V-3246S	Socket (50L6GT)

V-2136-4 CHASSIS

C1	RCP10W2103M	Capacitor, .01 mfd 200 v.
C3	RCP10W4103M	Capacitor, .01 mfd 400 v.
C4	RCP10W4502M	Capacitor, .005 mfd 400 v.
C5	RCP10W6202M	Capacitor, .002 mfd 600 v.
C6	RCP10W6202M	Capacitor, .002 mfd 600 v.
C7	RCP10W4103M	Capacitor, .01 mfd 400 v.
C8	RCP10W6102M	Capacitor, .001 mfd 600 v.
C9	V-5596	Capacitor, .005 mfd
C11	V-5658-10	Capacitor, 50 mmf
C12	RCP10W2103M	Capacitor, .01 mfd 200 v.
C14	V-5596	Capacitor, .005 mfd
C15	V-9863-1	Capacitor, .001 mfd
C16	RCP10W2503M	Capacitor, .05 mfd 200 v.
C18	RCP10W4103M	Capacitor, .01 mfd 400 v.
C20	V-9863-1	Capacitor, .001 mfd
C21	R2CC30UK270K	Capacitor, 27 mmf
C22	R2CC30UK050D	Capacitor, 5 mmf
C24	V-5658-4	Capacitor, .68 mmf
C25	R5CC20ZY221M	Capacitor, 220 mmf
C26	RCM20D101J	Capacitor, 100 mmf
C27	RCM20A331M	Capacitor, 330 mmf
C28	V-5658-10	Capacitor, 50 mmf
C30	V-4637	Capacitor, 4 mfd, 50 v.
C32	V-9670	Capacitor, trimmer (FM-RF)
C33	V-9671-2	Capacitor, tuning
C34	RCM20A101M	Capacitor, 100 mmf
C35	V-10157-4473M	Capacitor, .047 mfd 400 v.
C36	V-9919	Capacitor, 60-40-40 mfd 250 v.
C39	RCP10W4502M	Capacitor, .005 mfd 400 v.
C40	RCP10W2503M	Capacitor, .02 mfd 200 v.
C41	RCP10W2503M	Capacitor, .02 mfd 200 v.
C42	V-9823	Capacitor, Elec. 20 mfd 200 v.
C43	RCM20A101M	Capacitor, 100 mmf
C44	RCP10W2203M	Capacitor, .02 mfd 200 v.
C45	RCM20A221M	Capacitor, 220 mmf
C46	RCP10W2203M	Capacitor, .02 mfd 200 v.
C47	RCP10W2203M	Capacitor, .02 mfd 200 v.
L1	V-9672	Coil, A.M. osc.
L2	V-9674	Coil, F.M. RF
L4	V-9099-1	Reactor, RF (1.1 microhenries)
L5	V-9099-1	Reactor, RF (1.1 microhenries)
L6	V-9099-1	Reactor, RF (1.1 microhenries)
L8	V-9099-1	Reactor, RF (1.1 microhenries)
L10	V-6157-1	Coil, antenna loading
R1	RC30AE151K	Resistor, 150 ohms 1 w.
R3	RC20AE224M	Resistor, 220,000 ohms ½ w
R4	RC20AE474M	Resistor, 470,000 ohms ½ w
R5	RC20AE223K	Resistor, 22,000 ohms ½ w.
R6	RC20AE473M	Resistor, 47,000 ohms ½ w.
R7	RC20AE223M	Resistor, 22,000 ohms ½ w.
R8	RC20AE223M	Resistor, 22,000 ohms ½ w.
R9	RC20AE223M	Resistor, 22,000 ohms ½ w.
R10	RC20AE475M	Resistor, 4.7 megohms ½ w.
R11	RC20AE221M	Resistor, 220 ohms ½ w.
R12	RC20AE221M	Resistor, 220 ohms ½ w.
R13	RC20AE681M	Resistor, 680 ohms ½ w.
R14	RC20AE681M	Resistor, 680 ohms ½ w.
R15	RC20AE221M	Resistor, 220 ohms ½ w.
R17	V-6067-7	Resistor, 22 ohms 3 w.
R18	RC20AE225M	Resistor, 2.2 meg. ½ w.
R20	RC20AE470M	Resistor, 47 ohms ½ w.
R22	RC20AE105M	Resistor, 1 meg. ½ w.
R23	RC20AE221M	Resistor, 220 ohms ½ w.
R28	RC20AE820K	Resistor, 82 ohms ½ w.
*R30	V-10359-1	Control, volume (includes radio-phono-tone switch and SW 1)
R31	RC20AE335M	Resistor, 3.3 meg. ½ w.
R32	V-10054-1	Resistor, 200 ohms and 2,000 ohms
R33	RC20AE474M	Resistor, 470,000 ohms ½ w.
R34	RC20AE155M	Resistor, 1.5 meg. ½ w.
R35	RC20AE225M	Resistor, 2.2 meg. ½ w.
R36	RC20AE226M	Resistor, 22 meg. ½ w.
	V-9640	Rectifier, selenium
*SW1	V-10359-1	Switch, on-off (includes R30, SW3)
SW2	V-9681-1	Switch, A.M. - F.M. selector
*SW3	V-10359-1	Switch, radio-phono-tone (includes R30 and SW1)
T1	V-9688	Transformer, 1st F.M. IF
T2	V-9642	Transformer, 2nd F.M. IF
T3	V-9828	Transformer, ratio detector
*T4	V-9770-2	Transformer, output (includes speaker)
T5	V-9649-1	Transformer, 1st A.M. IF
T6	V-10350-1	Transformer, 2nd A.M. IF
Z2	V-9675	Coil
	V-9676-1	Core, F.M. tuning

MODELS H-334T7U, H-335T7U, Ch. V-2136-5U



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" PM

OPERATING VOLTAGE:

..... 105 to 120 volts, DC or 60 cycles AC

POWER CONSUMPTION: ..... 35 watts

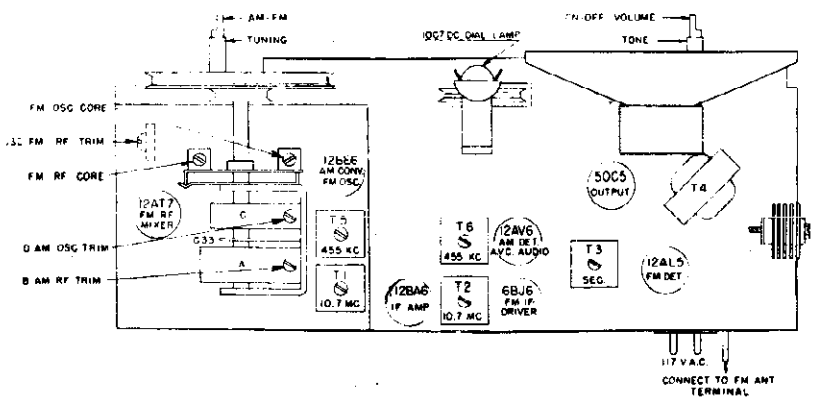


FIG. 3 — TOP VIEW OF CHASSIS

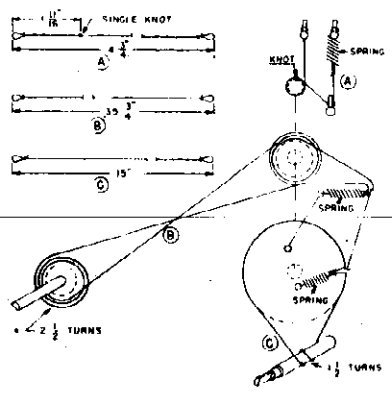


FIG. 4 — DRIVE MECHANISM

MODELS H-334T7U, H-335T7U, Ch. V-2136-5U

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 maximum voltage
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.	min. cap.	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.			

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. 2. The wire should be dressed in the position shown and can be held in place with adhesive tape or other similar material.

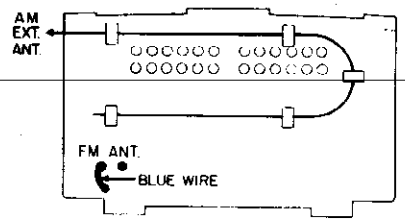


FIG. 2 — ANTENNA COUPLING

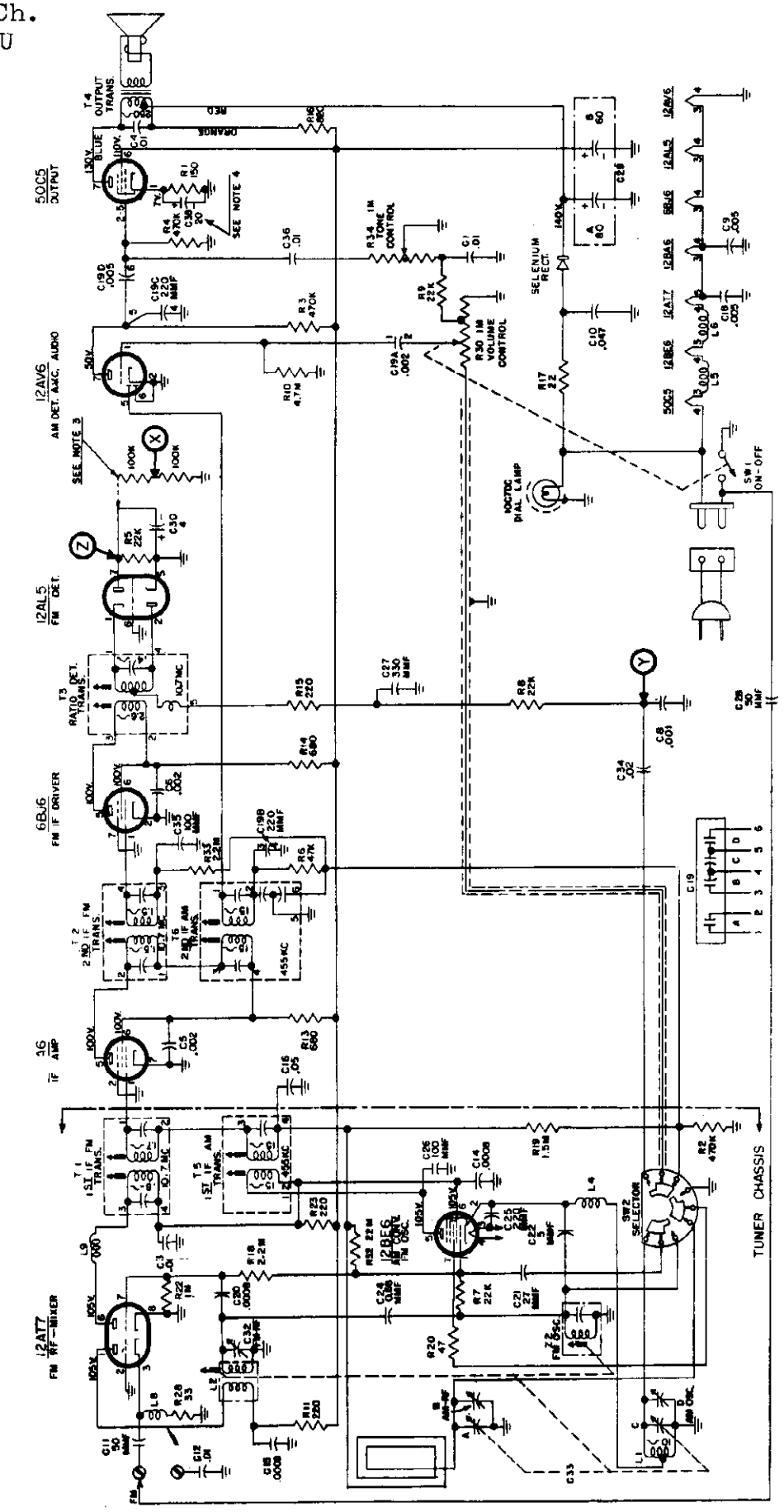
The blue wire emerging from the hole in the rear cover is a "line" antenna for FM reception. It should be connected to the left antenna terminal as shown in Fig. 2. If an external FM antenna is to be used, disconnect the blue wire and connect the transmission line to the two terminals.

MODELS H-334T7U, H-335T7U, Ch. V-2136-5U

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.



NOTES:
1. SELECTOR SWITCH SW2 IS SHOWN IN EXTREME CLOCKWISE POSITION OR 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. C30 MAY OR MAY NOT BE PART OF C29.
5. ALL CAPACITANCE VALUES IN MFD AND ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.

FIG. 1 — SCHEMATIC DIAGRAM OF V-2136-5U CHASSIS

MODELS H-334T7U, H-335T7U, Ch. V-2136-5U

PARTS LIST

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

CABINET AND MISCELLANEOUS

Part No.	Description
V-10364-2	Baffle and Grille Cloth Assy.
V-1233-1	Cabinet (brown)
V-1233-2	Cabinet (ivory)
V-5426	Clip, I-F mounting
V-3219S-1	Cord, dial drive (100' spool)
V-9636-3	Cover Assy., back
V-9651-2	Cover, back
V-10308-1	Dial
V-10309-1	Escutcheon
V-9637-1	Foot, mounting
V-10408-1	Knob, band (brown)
V-10408-3	Knob, band (ivory)
V-10408-2	Knob, off-on-volume (brown)
V-10408-4	Knob, off-on-volume (ivory)
V-9104-9	Knob, tuning, rear (brown)
V-9104-11	Knob, tuning, rear (ivory)
V-9104-10	Knob, tone, rear (brown)
V-9104-12	Knob, tone, rear (ivory)
10C7DC	Lamp, pilot
V-9653	Loop, antenna
V-3990-2	Medallion
V-10318-2	Nameplate, Westinghouse
V-9661	Plug, AC power (male)
V-10310-1	Pointer
V-10357-1	Pulley Assy., gang
V-10342-1	Pulley and Shaft Assy., pointer
V-9655	Shell, interlock
V-10472-1	Shield, lamp
V-9706-2	Shield, miniature tube, spring
V-9654	Socket, interlock
V-5556-1	Socket, miniature wafer (12AT7)
V-4292S-2	Socket, miniature molded (12BE6)
V-4292-1	Socket, miniature molded (12BA6, 6BJ6, 12AL5, 12AV6)
V-6878-2	Socket, miniature wafer (50C5)
V-10366-1	Socket, pilot lamp
V-10466-1	Speaker, 5" PM
V-3248S	Spring, dial drive
V-6795-3	Spring, FM tuner & gang drive

V-2136-5U CHASSIS

Ref. No.	Part No.	Description
C1	RCP10W4103M	Capacitor, .01 mfd 400 v.
C3	RCP10W4103M	Capacitor, .01 mfd 400 v.
C4	RCP10W4103M	Capacitor, .01 mfd 400 v.
C5	RCP10W6202M	Capacitor, .002 mfd 600 v.
C6	RCP10W6202M	Capacitor, .002 mfd 600 v.
C8	RCP10W6102M	Capacitor, .001 mfd 600 v.
C9	V-5596	Capacitor, .005 mfd
C10	V-10157-4473M	Capacitor, .047 mfd 400 v.
C11	V-5658-10	Capacitor, 50 mmf
C12	RCP10W2103M	Capacitor, .01 mfd 200 v.
C14	V-9863-1	Capacitor, .0008 mfd
C15	V-9863-1	Capacitor, .0008 mfd
C16	RCP10W2503M	Capacitor, .05 mfd 200 v.
C18	V-5596	Capacitor, .005 mfd
C19	V-9634-1	Capacitor, multiple ceramic, .002 mfd, 220 mmf, 220 mmf, .005 mfd.
C20	V-9863-1	Capacitor, .0008 mfd
C21	R2CC30UK270K	Capacitor, 27 mmf
C22	R2CC30UK050D	Capacitor, 5 mmf
C24	V-5658-4	Capacitor, .68 mmf
C25	R5CC20ZY221M	Capacitor, 220 mmf
C26	RCM20D101J	Capacitor, 100 mmf
C27	RCM20A331M	Capacitor, 330 mmf
C28	V-5658-10	Capacitor, 50 mmf
C29	V-9920	Capacitor, electrolytic, 80 mfd 150 v., 60 mfd 150 v.
C30	V-4637	Capacitor, electrolytic, 4 mfd 50 v.
C32	V-9670	Capacitor, trimmer (FM RF)
C33	V-9671-2	Capacitor, variable tuning (consists of A,B,C, and D)
C34	RCP10W2203M	Capacitor, .02 mfd 200 v.
C35	RCM20A101M	Capacitor, 100 mmf
C36	RCP10W4103M	Capacitor, .01 mfd 400 v.
C38	V-3236	Capacitor, 20 mfd 25 v.
L1	V-9672	Coil AM osc.
L2	V-9674	Coil, FM RF
	V-9676-1	Core, FM RF and osc. tuning
L4	V-9099-1	Choke, 1.1 microhenries
L5	V-9099-1	Choke, 1.1 microhenries
L6	V-9099-1	Choke, 1.1 microhenries
L8	V-9099-1	Choke, antenna input
L9	V-4886-12	Choke, RF
	V-9640	Rectifier, selenium
R1	RC30AE151K	Resistor, 150 ohms 1 w.
R2	RC20AE474M	Resistor, 470,000 ohms ½ w.
R3	RC20AE474M	Resistor, 470,000 ohms ½ w.
R4	RC20AE474M	Resistor, 470,000 ohms ½ w.
R5	RC20AE223K	Resistor, 22,000 ohms ½ w.
R6	RC20AE473M	Resistor, 47,000 ohms ½ w.
R7	RC20AE223M	Resistor, 22,000 ohms ½ w.
R8	RC20AE223M	Resistor, 22,000 ohms ½ w.
R9	RC20AE223M	Resistor, 22,000 ohms ½ w.
R10	RC20AE475M	Resistor, 4.7 megohms ½ w.
R11	RC20AE221M	Resistor, 220 ohms ½ w.
R13	RC20AE681M	Resistor, 680 ohms ½ w.
R14	RC20AE681M	Resistor, 680 ohms ½ w.
R15	RC20AE221M	Resistor, 220 ohms ½ w.
R16	V-6984-10	Resistor, 820 ohms 5 w.
R17	RC30AE220K	Resistor, 22 ohms 1 w.
R18	RC20AE225M	Resistor, 2.2 megohms ½ w.
R19	RC20AE155M	Resistor, 1.5 megohms ½ w.
R20	RC20AE470M	Resistor, 47 ohms ½ w.
R22	RC20AE105M	Resistor, 1 megohm ½ w.
R23	RC20AE221M	Resistor, 220 ohms ½ w.
R28	RC20AE330M	Resistor, 33 ohms ½ w.
*R30	V-10330-1	Control, volume, 1 megohm (assy consists of R30, R34 and SW1)
R32	RC20AE226M	Resistor, 22 megohms ½ w.
R33	RC20AE225M	Resistor, 2.2 megohms ½ w.
*R34	V-10330-1	Control, tone, 1 megohm (assy consists of R30, R34 and SW1)
*SW1	V-10330-1	Switch, on-off (assy consists of R30, R34 and SW1)
SW2	V-9681-1	Switch, selector
T1	V-9688	Transformer, 1st FM IF
T2	V-9642	Transformer, 2nd FM IF
T3	V-9828	Transformer, ratio detector
T4	V-9665	Transformer, output
T5	V-9649-1	Transformer, 1st AM IF
T6	V-10350-1	Transformer, 2nd AM IF
Z2	V-9675	Coil and Capacitor Assy., FM osc.

MODELS H-334T7U, H-335T7U,
Ch. V-2136-5U; H-334T7UR,
Ch. V-2136-5R

SUPPLEMENTARY INFORMATION

MODELS H-334T7U AND H-335T7U — CHASSIS V-2136-5U

MODEL H-334T7UR—CHASSIS V-2136-5R

PRODUCTION CHANGES IN V-2136-5U CHASSIS

1. Later production chassis contain a 6 watt pilot lamp (type 6S6DC) rather than the 10 watt lamp indicated in the service notes. The purpose of the change is to eliminate pilot lamp noise and reduce heating inside the cabinet.

2. In some chassis, excessive HF oscillator voltage injection tends to reduce the sensitivity at the high frequency end of the AM band. This effect is eliminated by adding a 680 ohm ½ watt resistor (R35) between the tap on the AM oscillator coil (L1) and chassis ground. Some chassis do not require R35 for correct oscillator injection.

3. Excessive hum and a thumping effect as the receiver is tuned across an FM signal can be caused by abnormally low heater to cathode resistance in the 12AL5 tube. To eliminate this effect, some chassis contain a 470 ohm ½ watt resistor (R36) connected between pins #3 and #4 (heater) of the 12AL5.

4. Later production chassis contain a .005 mfd capacitor (C39) connected across the ratio detector electrolytic capacitor (C30). This serves as an RF bypass and eliminates an oscillation that may otherwise appear on the FM band.

5. In some chassis, the 455 kc. 2nd I-F transformer (T6) is part number V-6130-1 rather than the specified V-10350-1. The V-6130-1 transformer does not contain the two diode filter capacitors shown on the schematic diagram. Therefore, when the V-6130-1 transformer is used, an external 150 mmf capacitor (C40) is added between the bottom of R6 and ground to serve in place of the missing filter output capacitor. Since C19B, which is shown in parallel with the built-in filter input capacitor, provides sufficient capacitance without the built-in capacitor, an additional capacitor is not required at the filter input.

In accordance with the preceding information, the following parts should be added to the H-334T7U and H-335T7U parts list:

Ref. No.	*Part No.*	*Description*
	6S6DC	Lamp, pilot
C39	V-5596	Capacitor, .005 mfd
C40	RCM20A151M	Capacitor, 150 mmf (used when T6 is V-6130-1)
R35	RC20AE681M	Resistor, 680 ohms ½ w.
R36	RC20AE471M	Resistor, 470 ohms ½ w.

MODEL H-334T7UR – CHASSIS V-2136-5R

The V-2136-5R chassis used in Model H-334T7UR is similar to the V-2136-5U. However, there are enough differences to warrant the inclusion in this supplement of a schematic diagram covering the V-2136-5R chassis and a - - - - - - parts list for Model H-334T7UR. For alignment and other service information, refer to the original H-334T7U and H-335T7U service notes.

PARTS LIST FOR MODEL H-334T7UR

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

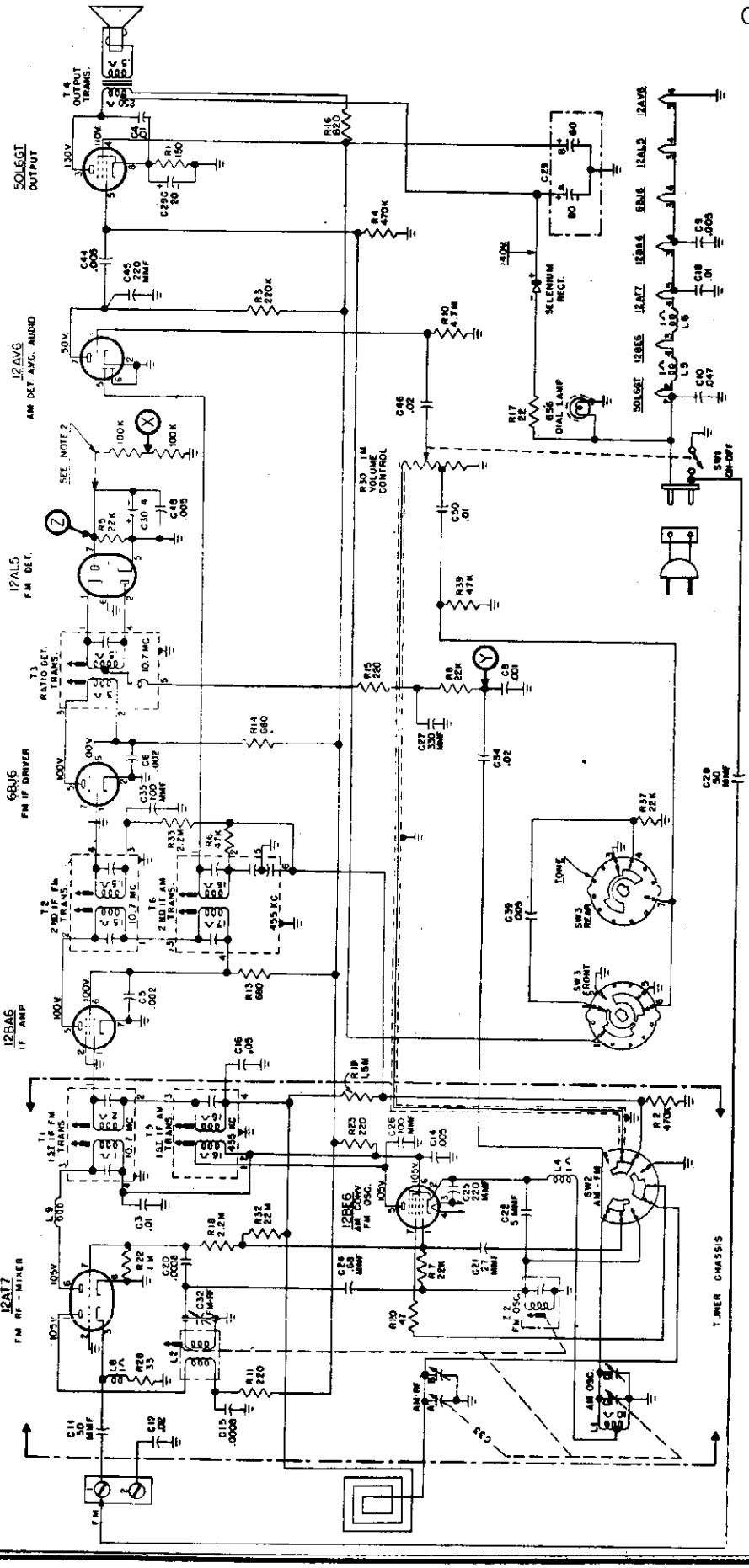
CABINET AND MISCELLANEOUS

Part No.	*Description*
V-3246S	Socket, octal wafer (50L6) .....

**Sold only as a complete assembly.*

Ref. No.	*Part No.*	*Description*
C12	RCP10W2203M	Capacitor, .02 mfd 200 v.
C14	V-5596	Capacitor, .005 mfd
C18	RCP10W4103M	Capacitor, .01 mfd 400 v.
C29	V-10415-1	Capacitor, electrolytic, 80 mfd 150 v., 60 mfd 150 v., 20 mfd 25 v.
C39	RCP10W4502M	Capacitor, .005 mfd 400 v.
C44	RCP10W4502M	Capacitor, .005 mfd 400 v.
C45	RCM20A221M	Capacitor, 220 mmf
C46	RCP10W2203M	Capacitor, .02 mfd 200 v.
C48	V-5596	Capacitor, .005 mfd
C50	RCP10W4103M	Capacitor, .01 mfd 400 v.
R3	RC20AE224M	Resistor, 220,000 ohms ½ w.
*R30	V-9824-1	Control, volume, 1 megohms (assy consists of R30, SW1 and SW3)
R37	RC20AE223M	Resistor, 22,000 ohms ½ w.
R39	RC20AE473M	Resistor, 47,000 ohms ½ w.
*SW1	V-9824-1	Switch, on-off (assy consists of R30, SW1 and SW3)
*SW3	V-9824-1	Switch, tone (assy consists of R30, SW1 and SW3)
T4	V-10660	Transformer, output

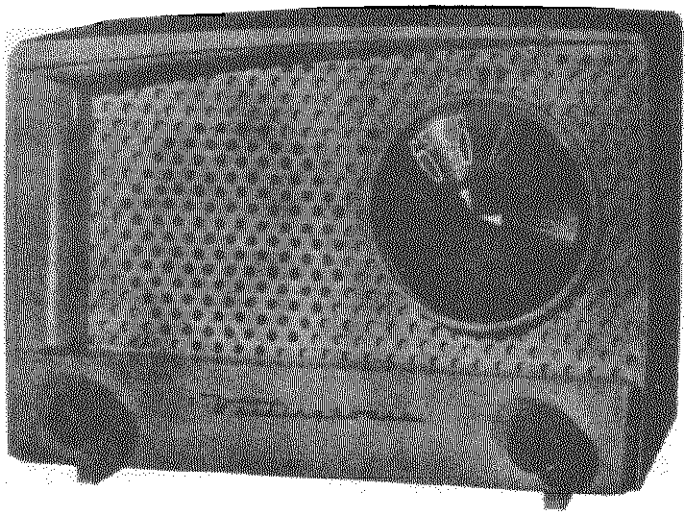
MODEL H-334T7UR,
Ch. V-2136-5R



1. SELECTOR SWITCH SW2 IS SHOWN IN EXTREME CLOCKWISE POSITION OR AM BAND AS VIEWED FROM THE FRONT.
2. TO BE INSTALLED FOR ALIGNMENT ONLY.
3. SELECTOR SWITCH SW3 IS IN EXTREME COUNTER CLOCKWISE POSITION OR BASS POSITION AS VIEWED FROM THE FRONT.
4. ALL CAPACITANCE VALUES IN MFD AND ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.
5. ALL VOLTAGES MEASURED FROM CHASSIS (GROUND) USING A 20,000 OHM/VOLT METER. LINE VOLTAGE SET AT 117 V. A.C. READINGS SHOULD BE AS SHOWN ± 20 PER CENT.

SCHEMATIC DIAGRAM OF V-2136-5R CHASSIS

MODELS H-336T5U, H-337T5U, Ch. V-2157U



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

** See schematic diagram for substitute tubes.*

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 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-336T5U, H-337T5U, Ch. V-2157U

PARTS LIST

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

CABINET AND MISCELLANEOUS PARTS

Part No.	*Description*
V-10012-3	Background, dial
V-9746-1	Baffle and grille cloth assy. (H-337T5U)
V-1219-2	Cabinet (H-336T5U)
V-1219-4	Cabinet (H-337T5U)
V-3219S-1	Cord, dial drive (100' spool)
V-10008-3	Dial (H-337T5U)
V-10008-4	Dial (H-336T5U)
V-10009-7	Knob (H-337T5U)
V-10009-6	Knob (H-336T5U)
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

Ref. No.	*Part No.*	*Description*
C1	V-10047	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.
L1	V-9994	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-9993-1	Control, volume 500,000 ohms (assy consists of R4 and SW1)
R5	RC20AE106M	Resistor, 10 megohms ½ w.
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)

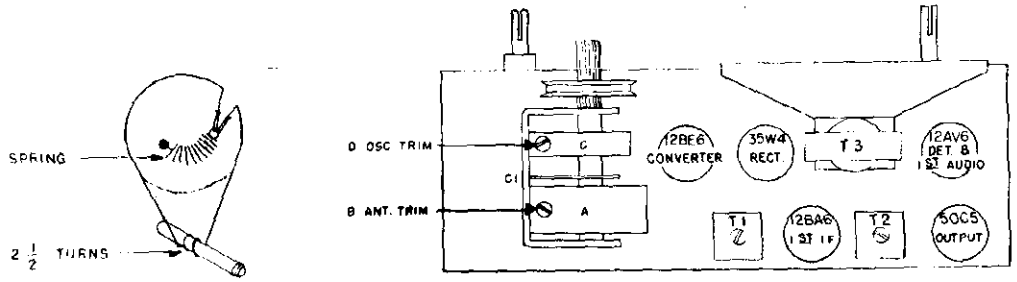


FIG. 1 — DIAL DRIVE AND CHASSIS LAYOUT

MODELS H-336T5U, H-337T5U, Ch. V-2157U

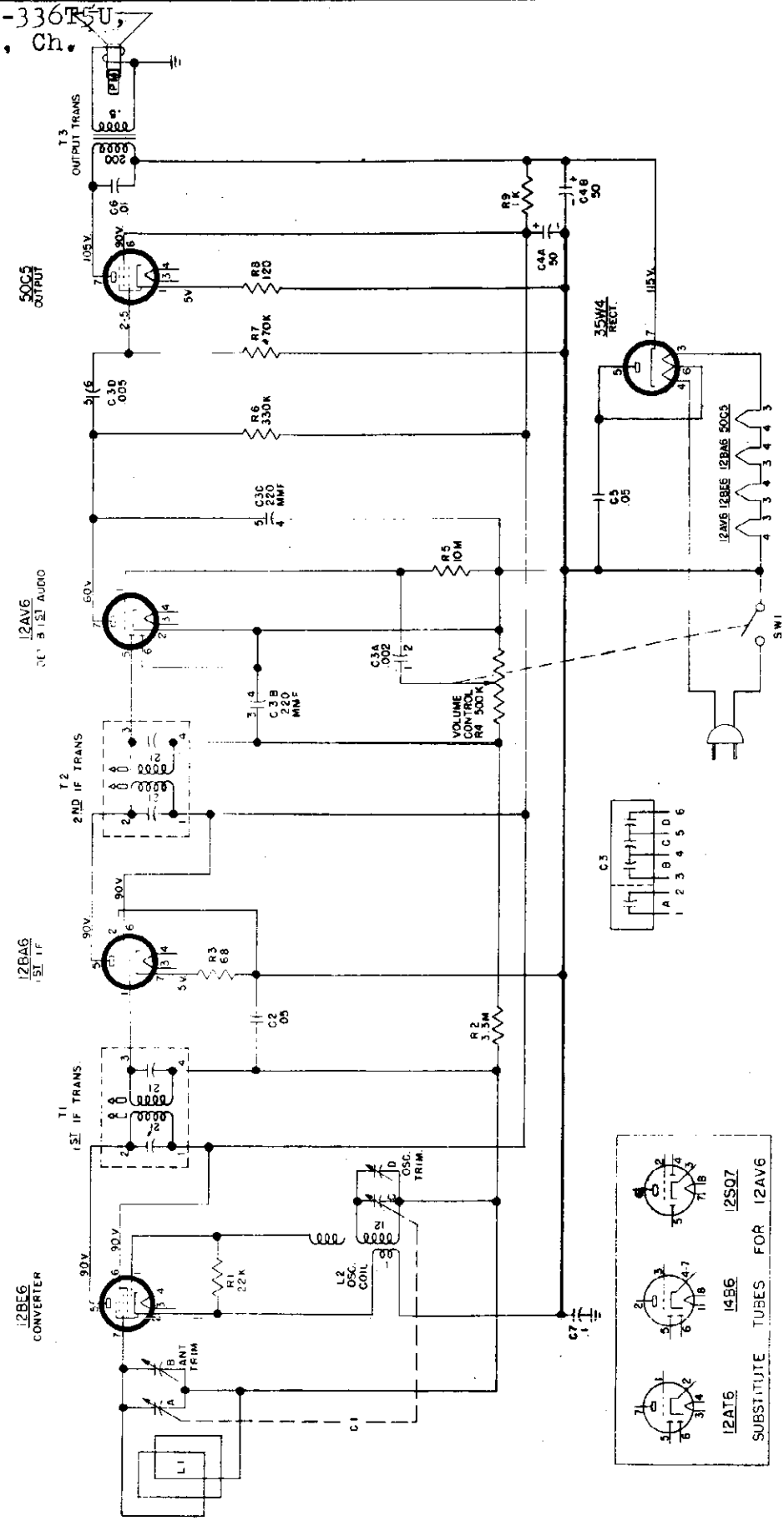
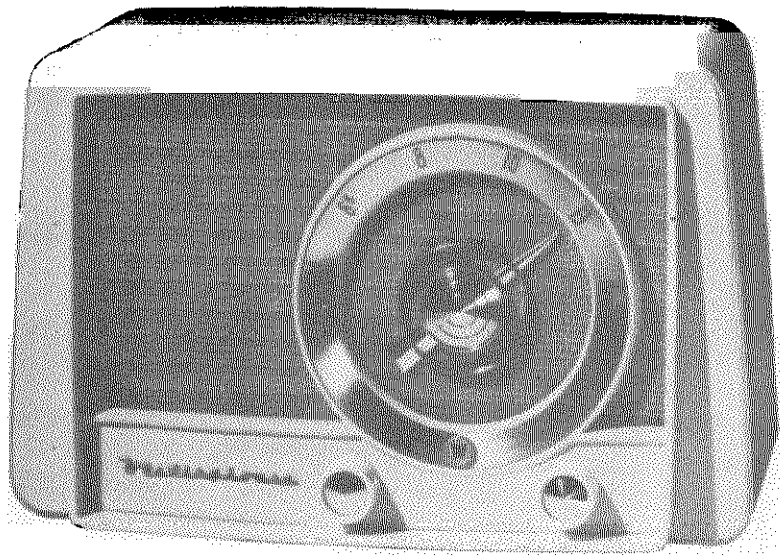


FIG. 2 — SCHEMATIC DIAGRAM OF V-2157U CHASSIS

MODELS H-338T5U, H-341T5U, H-345T5, H-346T5, Ch. V-2157-4U



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

ALIGNMENT

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

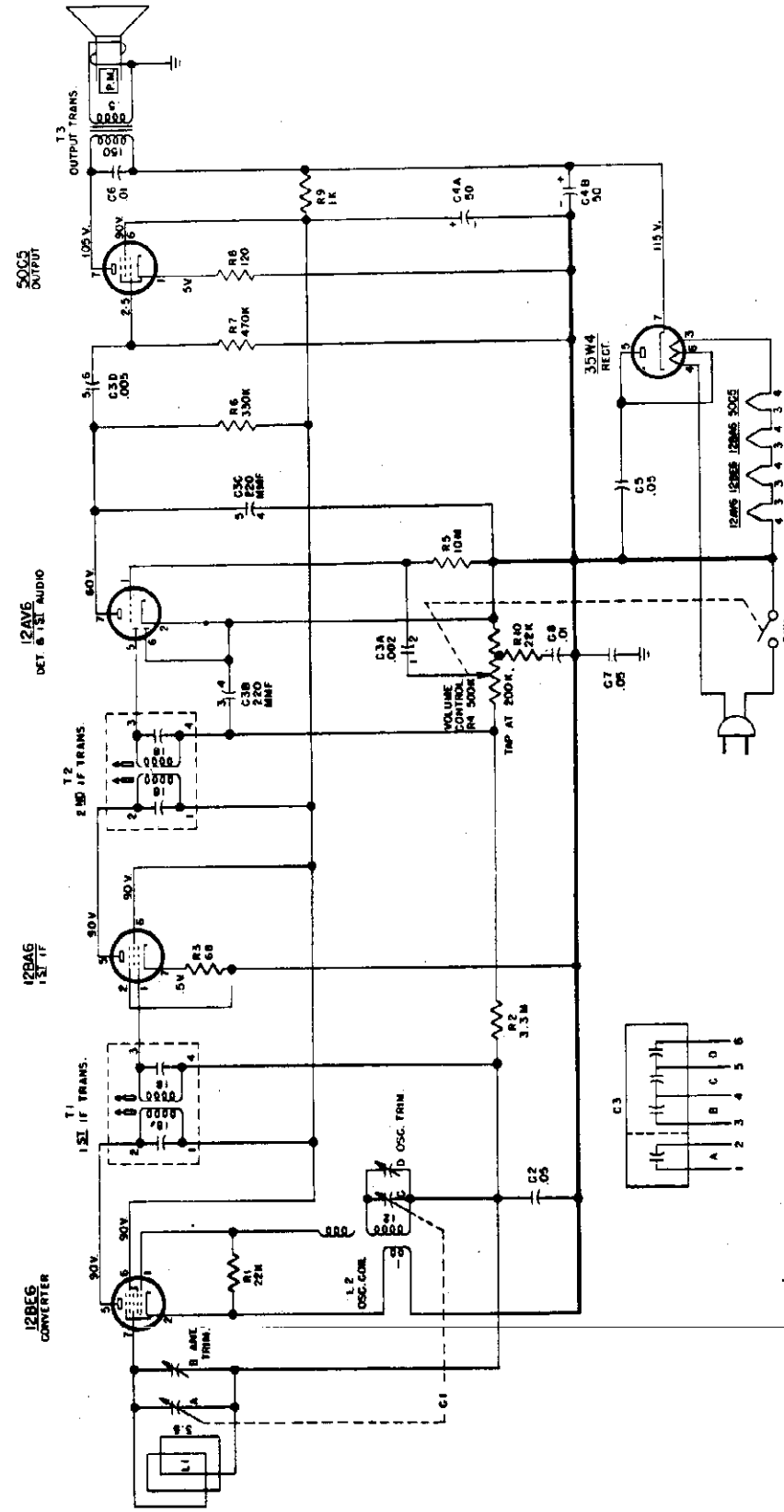
Make certain that the dial pointer is correctly positioned.

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 ant. tuning capacitor (A) through a 200 mmf capacitor	455 kc.	Minimum capacity	Top and bottom slugs of T2 and T1 in order given*
2.	Same as step 1	1615 kc.	Minimum capacity	Oscillator trimmer (D)
3.	Radiated signal	1400 kc.	1400 kc.	Antenna 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-338T5U, H-341T5U, H-345T5, H-346T5, Ch. V-2157-4U



NOTES:
1. ALL VOLTAGES MEASURED FROM COMMON NEGATIVE USING A 20,000 OHM / VOLT METER. LINE VOLTAGE SET AT 117 V.A.C. READINGS SHOULD BE AS SHOWN ± 20 PER CENT.
2. ALL CAPACITANCE VALUES IN MFD AND ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.

FIG. 1 — SCHEMATIC DIAGRAM OF V-2157-4U CHASSIS

MODELS H-338T5U, H-341T5U, H-345T5, H-346T5, Ch. V-2157-4

PARTS LIST FOR MODELS H-338T5U AND H-341T5U

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

CABINET AND MISCELLANEOUS PARTS

Part No.	*Description*
V-10333-1	Baffle and grille cloth assembly
V-1220-4	Cabinet, H-338T5U (less front grille and baffle and grille cloth)
V-1220-3	Cabinet, H-341T5U (less front grille and baffle and grille cloth)
V-5426	Clip, I-F mounting
V-3219S-1	Cord, dial drive (spool)
V-10335-1	Dial
V-10336-1	Grille, front (H-338T5U)
V-10336-2	Grille, front (H-341T5U)
V-10009-8	Knob (H-338T5U)
V-10009-9	Knob (H-341T5U)
V-10332-1	Pointer
V-3891	Nut, speed (front grille to cabinet)
V-3926	Nut, speed (baffle to front grille)
V-9996-2	Shaft, tuning
V-10052	Shield, bottom chassis
V-9727-2	Speaker, 4" PM (includes T3)
V-5786	Spring, pointer
V-10076-1	Spring, dial drive
V-9888-3	Socket (12AV6, 12BA6)
V-9888-2	Socket (12BE6, 50C5, 35W4)

V-2157-4U CHASSIS PARTS

Ref. No.	*Part No.*	*Description*
C1	V-10360-1	Capacitor, variable
C2	RCP10W2503M	Capacitor, .05 mfd. 200 v
C3	V-9634-1	Capacitor, multiple
C4	V-9991	Capacitor, electrolytic, 50-50 mfd. 150 v
C5	RCP10W4503M	Capacitor, .05 mfd. 400 v
C6	RCP10W4103M	Capacitor, .01 mfd. 400 v
C7	RCP10W4503M	Capacitor, .05 mfd. 400 v
C8	RCP10W4103M	Capacitor, .01 mfd. 400 v
L1	V-10450-1	Loop, antenna
L2	V-9992	Coil, oscillator
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-9993-4	Control, volume 500,000 ohms
R5	RC20AE106M	Resistor 10 meg. ½ w
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 ½ w
R10	RC20AE223M	Resistor 22,000 ohms ½ w
T1	V-9735-1	Transformer, I-F
T2	V-9735-1	Transformer, I-F
T3	V-9727-2	Transformer, audio (includes speaker)

CABINET AND MISCELLANEOUS PARTS FOR MODELS H-345T5 AND H-346T5

Part No.	*Description*
V-10009-11	Knob (H-345T5)
V-10009-9	Knob (H-346T5)
V-3891	Nut, speed (front grille to cabinet
V-3926	Nut, speed (baffle to front grille
V-10332-1	Pointer
V-9996-2	Shaft, tuning
V-10052	Shield, bottom chassis
V-9727-2	Speaker, 4" PM (includes T3)
V-5786	Spring, pointer
V-10076-1	Spring, dial drive
V-9888-3	Socket (12AV6, 12BA6)
V-9888-2	Socket (12BE6, 50C5, 35W4)
V-10333-3	Baffle and grille cloth assembly (H-345T5)
V-10333-4	Baffle and grille cloth assembly (H-346T5)
V-1220-2	Cabinet, H-345T5 (less front gril & baffle & grille cloth assy.)
V-1220-3	Cabinet, H-346T5 (less front gril & baffle & grille cloth assy.)
V-5426	Clip, I-F mounting
V-3219S-1	Cord, dial drive (100' spool)
V-10335-1	Dial
V-10336-2	Grille, front

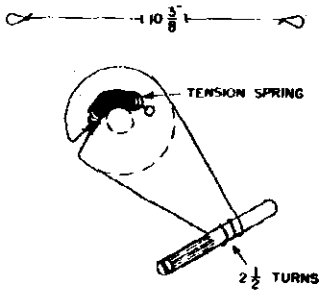


FIG. 2 — DIAL DRIVE

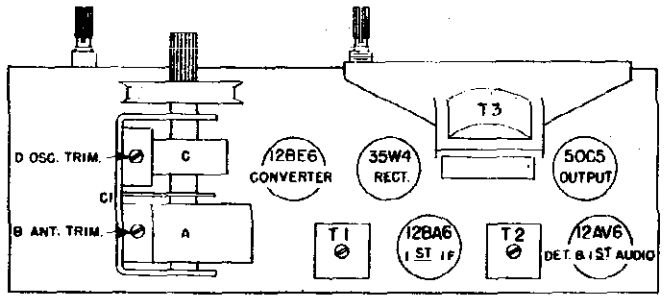
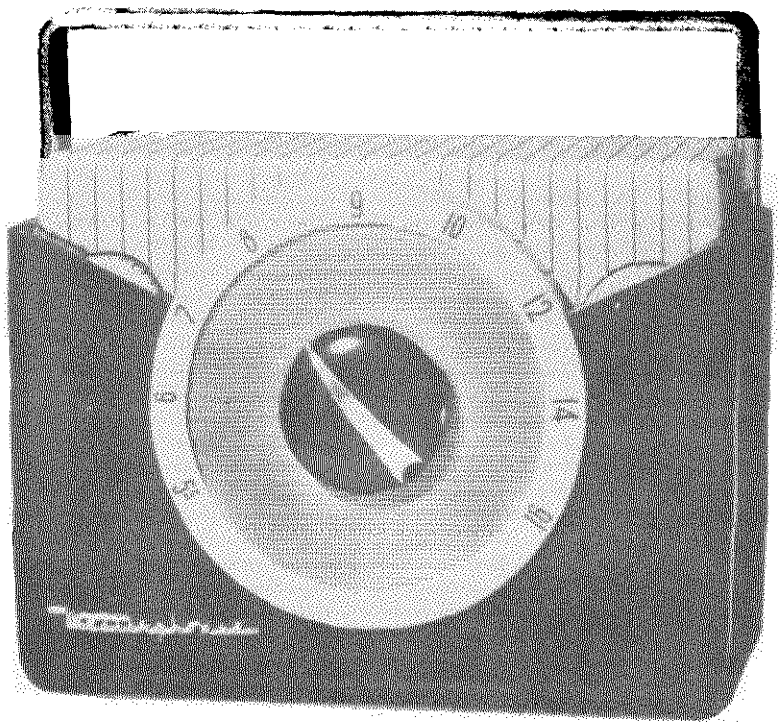


FIG. 3 — CHASSIS LAYOUT

MODELS H-342P5U, H-343P5U,
H-343P5, H-349P5, Ch. V-
2156-1U



SPECIFICATIONS

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

INTERMEDIATE FREQUENCY ..... 455 kc.

TUBE COMPLEMENT:

1	1U4	R-F Amplifier
1	1R5	Converter
1	1U4	I-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 ..... 5" 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 ..... .05 amp.
"B" section of "AB" battery .... .016 amp.

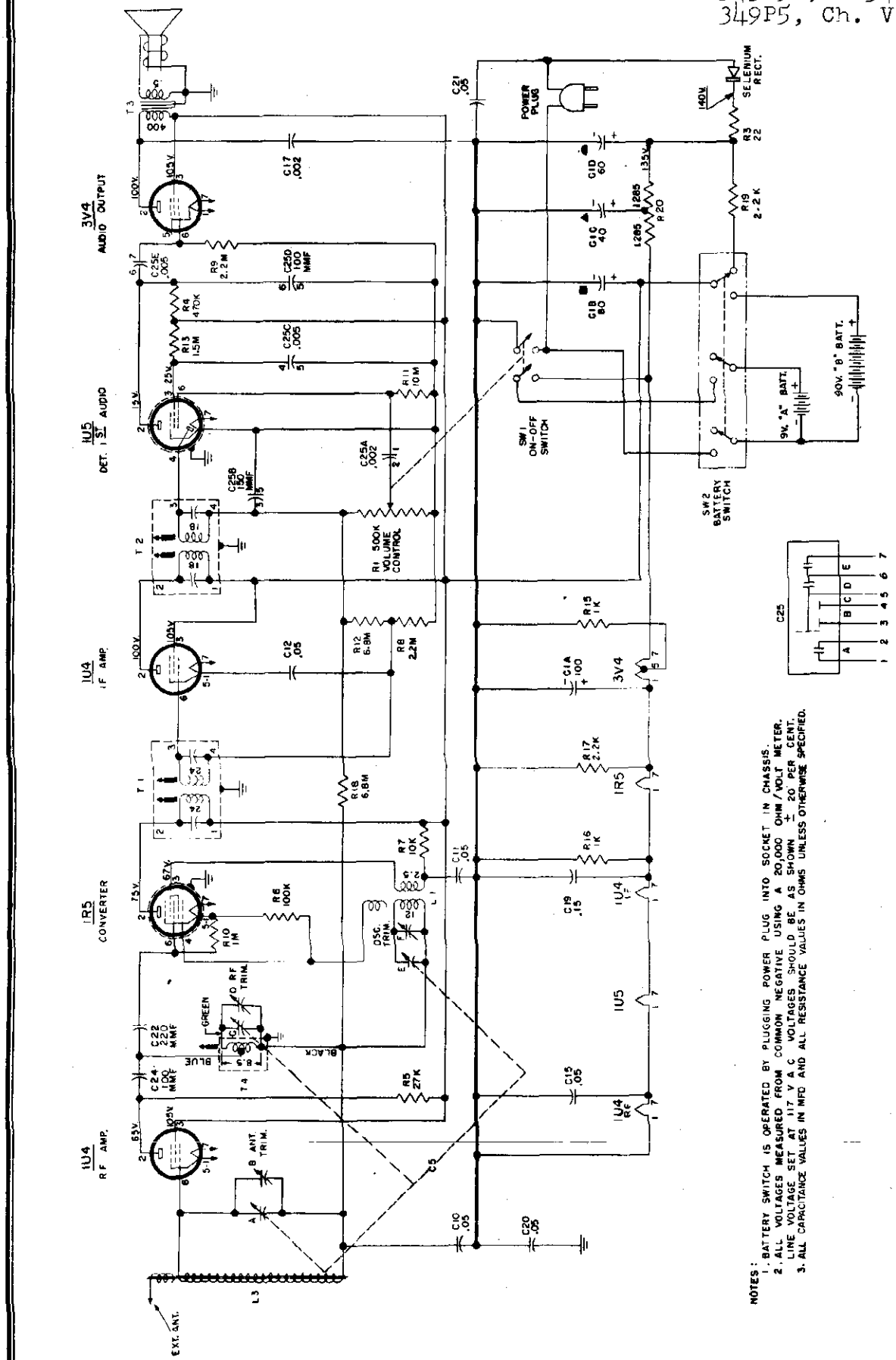
POWER CONSUMPTION (Line Operation)
..... 15 watts

BATTERY INSTALLATION

One of the following "A-B" battery packs should be used with this radio: Eveready 756W, Burgess T6Z60, or Ray-O-Vac AB601.

Best performance is obtained by installing the battery with the plug toward the front of the cabinet as shown in Fig. 4. However, if the battery is oversize it may be necessary to install it with the plug toward the back of the radio to allow complete closing of the back cover.

MODELS H-342P5U, H-343P5U, H-348P5, H-349P5, Ch. V-2156-1U



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.
3. ALL CAPACITANCE VALUES IN MFD AND ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.

FIG. 1 — SCHEMATIC DIAGRAM OF V-2156-1U CHASSIS

MODELS H-342P5U, H-343P5U, H-348P5, H-349P5, Ch. V-2156-1U

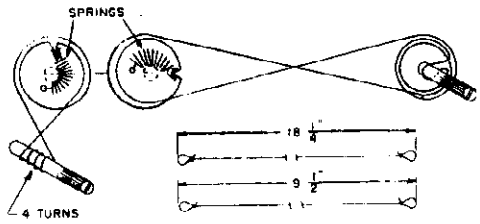


FIG. 2 — DRIVE MECHANISM

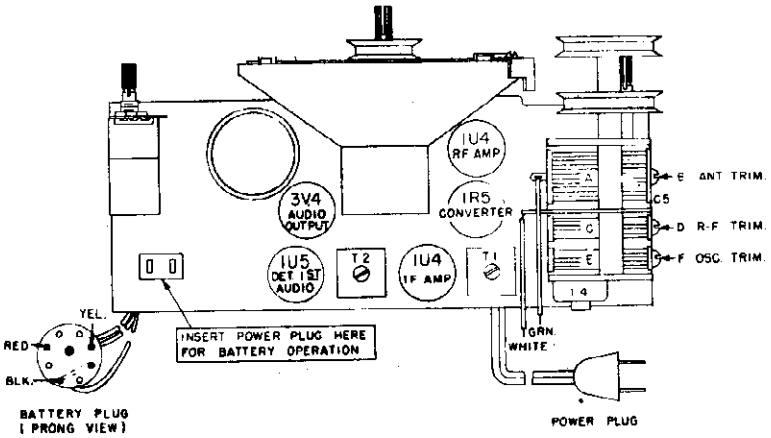


FIG. 3 — CHASSIS LAYOUT

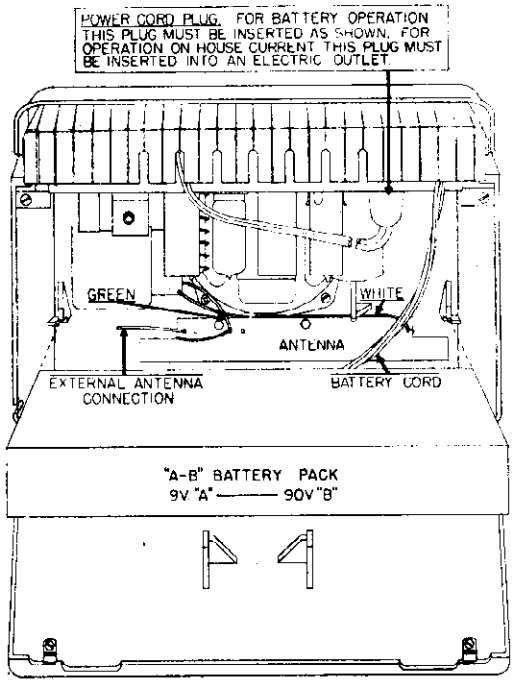


FIG. 4 — REAR VIEW

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 mmf 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 mmf capacitor	1615 kc.	Minimum capacity	Osc. trimmer (F)
3	Same as step 2	1400 kc.	1400 kc.	R-F trimmer (D)
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 (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.

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

MODELS H-342P5U, H-343P5U, H-348P5, H-349P5, Ch. V-2156-1U

PARTS LIST FOR

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

CABINET AND MISCELLANEOUS

Part No.	Description
V-10391-1	Antenna, iron core
V-4169-1	Base, miniature tube (1U5)
V-1235-1	Cabinet, H-342P5U (less handle)
V-1235-2	Cabinet, H-343P5U (less handle)
V-6554-2	Cable assembly, battery
V-5426	Clip, I-F mounting
V-10386-1	Clip, back cover catch
V-3219S-1	Cord, dial drive (100' spool)
V-10383-1	Handle
V-10388-1	Knob, H-342P5U
V-10388-2	Knob, H-343P5U
V-10363-2	Nameplate, Westinghouse
V-3873	Plug, battery
V-10389-1	Pointer, H-342P5U
V-10389-2	Pointer, H-343P5U
V-9704-4	Shaft, tuning
V-4169-2	Shield, miniature tube (1U5)
V-9706-1	Shield, spring, miniature tube (1R5)
V-4292S-3	Socket, miniature molded (3V4, 1U4, 1R5, and 1U5)
V-9705	Speaker, 5" PM
V-5687	Spring, back cover hinge
V-3448	Spring, dial cord

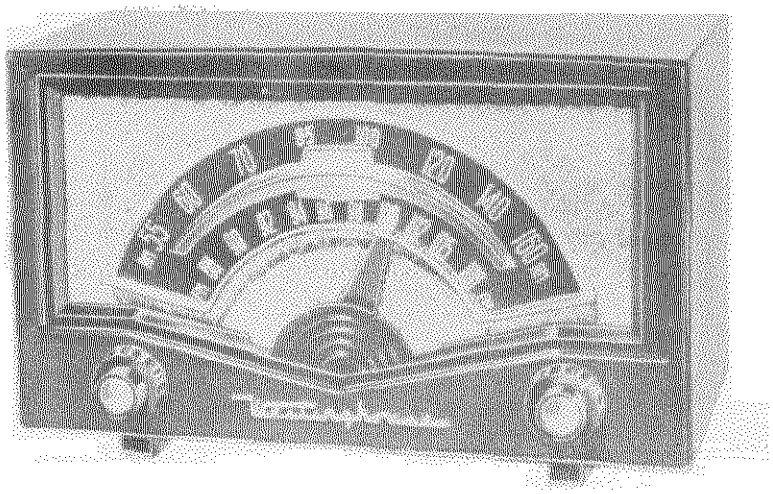
MODELS H-348P5 AND H-349P5

Part No.	Description
V-10391-1	Antenna, iron core
V-4169-1	Base, miniature tube
V-1235-3	Cabinet, H-348P5 (less handle)
V-1235-4	Cabinet, H-349P5 (less handle)
V-6554-2	Cable assembly, battery
V-5426	Clip, I-F mounting
V-10386-1	Clip, back cover catch
V-3219S-1	Cord, dial drive (100' spool)
V-10383-1	Handle
V-10388-3	Knob, H-348P5
V-10388-2	Knob, H-349P5
V-10363-2	Nameplate, Westinghouse
V-3873	Plug, battery
V-10389-3	Pointer, H-348P5
V-10389-4	Pointer, H-349P5
V-9704-4	Shaft, tuning
V-4169-2	Shield, miniature tube (1U5)
V-9706-1	Shield, spring, miniature tube (1R5)
V-4292S-3	Socket, miniature molded (3V4, 1U4, 1R5 and 1U5)
V-9705	Speaker, 5" PM
V-5687	Spring, back cover hinge
V-3448	Spring, dial cord

V-2156-1U CHASSIS

Ref. No.	Part No.	Description
C1	V-6552-2	Capacitor, electrolytic (consists of A, B, C and D - 100 mfd 25 v. and 80, 60, 40 mfd at 150 v.)
C5	V-10372-1	Capacitor, variable tuning (consists of A, B, C, D, E and F)
C10	RCP10W2503M	Capacitor, .05 mfd 200 v.
C11	RCP10W2503M	Capacitor, .05 mfd 200 v.
C12	RCP10W2503M	Capacitor, .05 mfd 200 v.
C14	RCP10W2503M	Capacitor, .05 mfd 200 v.
C15	RCP10W2503M	Capacitor, .05 mfd 200 v.
C17	RCP10W6202M	Capacitor, .002 mfd 600 v.
C19	RCP10W2154M	Capacitor, .15 mfd 200 v.
C20	RCP10W2503M	Capacitor, .05 mfd 200 v.
C21	RCP10W4503M	Capacitor, .05 mfd 400 v.
C22	RCM20A221M	Capacitor, 220 mmf
C24	RCM20A101M	Capacitor, 100 mmf
C25	V-9703-1	Capacitor, multiple (consists of A, B, C and D)
L1	V-5661	Coil, oscillator
L3	V-10391-1	Antenna, iron core
*R1	V-10373-1	Control, volume, 500,000 ohms (assy consists of R1 and SW1)
	V-9446-2	Rectifier, selenium
R3	RC30AE220M	Resistor, 22 ohms 1 w.
R4	RC20AE474M	Resistor, 470,000 ohms ½ w.
R5	RC20AE273M	Resistor, 270,000 ohms ½ w.
R6	RC20AE104M	Resistor, 100,000 ohms ½ w.
R7	RC20AE103M	Resistor, 10,000 ohms ½ w.
R8	RC20AE225M	Resistor, 2.2 megohms ½ w.
R9	RC20AE225M	Resistor, 2.2 megohms ½ w.
R10	RC20AE105M	Resistor, 1 megohm ½ w.
R11	RC20AE106M	Resistor, 10 megohms ½ w.
R12	RC20AE685M	Resistor, 6.8 megohms ½ w.
R13	RC20AE155M	Resistor, 1.5 megohms ½ w.
R15	RC20AE102K	Resistor, 1000 ohms ½ w.
R16	RC20AE102K	Resistor, 1000 ohms ½ w.
R17	RC20AE222K	Resistor, 2200 ohms ½ w.
R18	RC20AE685M	Resistor, 6.8 megohms ½ w.
R19	RC30AE222K	Resistor, 2200 ohms 1 w.
R20	V-5659-4	Resistor, ballast, 2570 ohms
*SW1	V-10373-1	Switch, on-off (assy consists of R1 and SW1)
SW2	V-6565	Switch, line-battery
T1	V-6972-5	Transformer, 1st I-F
T2	V-6972-6	Transformer, 2nd I-F
T3	V-6567-2	Transformer, audio
T4	V-6561-2	Transformer, R F

MODELS H-350T7,
H-351T7, Ch. V-2180-1



MODELS H-350T7 AND H-351T7

(BROWN) (IVORY)

CHASSIS V-2180-1

SERVICE NOTES

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 6BJ6 ..... RF Amplifier (FM)
1 12AT7 ..... *Mixer-osc.*
2 12BA6 ..... I-F Amp.
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: ..... 5¼" PM

OPERATING VOLTAGE:

..... *105 to 120 volts, DC or 60 cycles AC*

POWER CONSUMPTION: ..... 35 watts

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.

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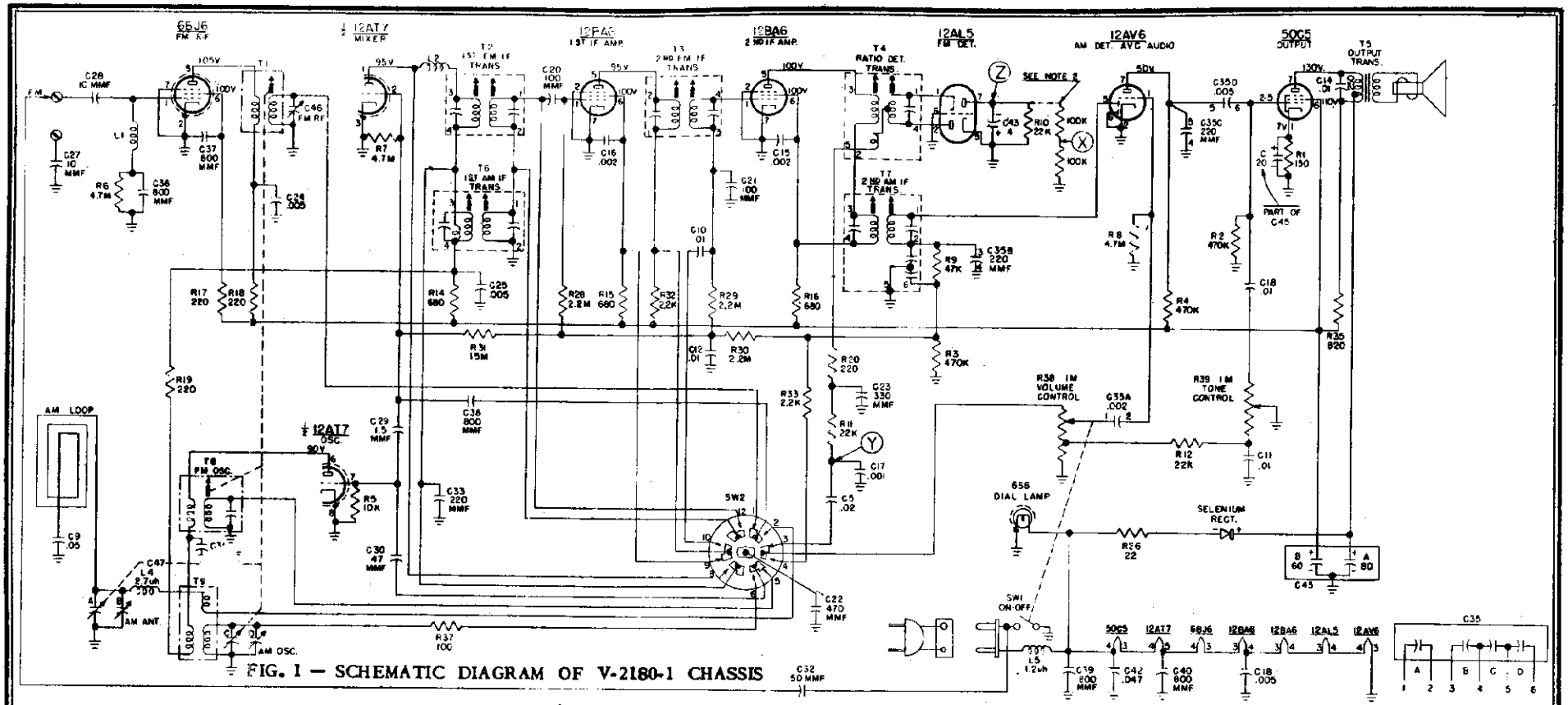


FIG. 1 — SCHEMATIC DIAGRAM OF V-2180-1 CHASSIS

CHASSIS NO. V-2180-1

NOTES:
1. SELECTOR SWITCH SW2 IS SHOWN IN EXTREME COUNTERCLOCKWISE POSITION OR FM BAND. EXTREME CLOCKWISE POSITION IS AM BAND. SWITCH SHOWN AS VIEWED FROM FRONT OF SET.
2. TO BE INSTALLED FOR ALIGNMENT ONLY.
3. ALL CAPACITANCE VALUES IN MFD. AND ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.
4. ALL VOLTAGES MEASURED FROM CHASSIS (GND.) USING A 20,000 OHM/VOLT METER. LINE VOLTAGE 117 V. A.C. VOLTAGES SHOULD BE AS SHOWN ± 20 PER CENT.

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. 2. The wire should be dressed in the position shown and can be held in place with adhesive tape or other similar material.

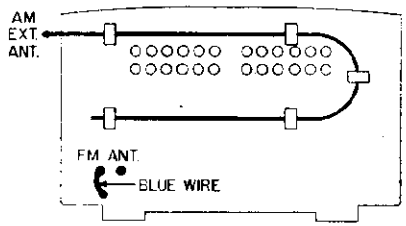


FIG. 2 — ANTENNA COUPLING

The blue wire emerging from the hole in rear cover is a "line" antenna for FM reception. It should be connected to the left antenna terminal as shown in Fig. 2. If an external FM antenna is to be used, disconnect the blue wire and connect the transmission line to the two terminals.

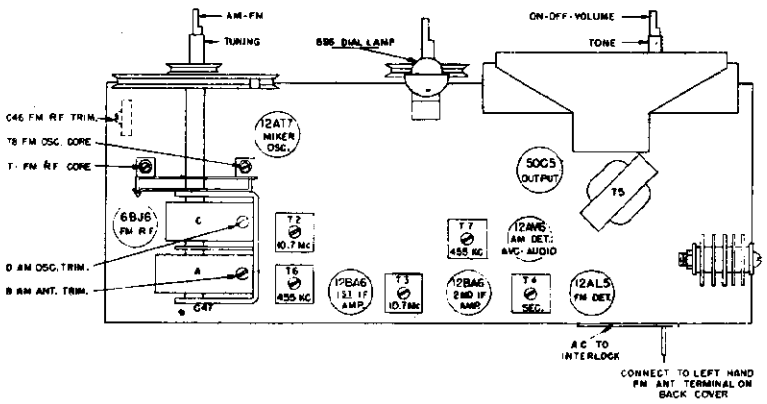


FIG. 3 — TOP VIEW OF CHASSIS

MODELS H-350T7, H-351T7, Ch. V-2180-1

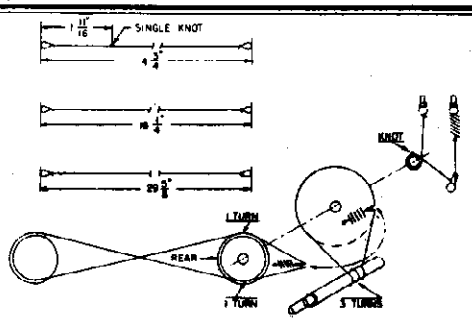


FIG. 4 — DRIVE MECHANISM

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 T7 and T6 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 ant. 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. 2 of 12AT7 through a 0.1 mfd mica capacitor	10.7 mc.	minimum capacity	Sec. of T4 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 T4 and pri. and sec. of T3 and T2 for maximum voltage
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 T4 for *zero* voltage
9	Reconnect the V.T.V.M. between point "Z" and ground.			
10	Same as step 4	10.7 mc.	min. cap.	Pri. of T4 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 (C46) 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 (C46) for maximum voltage (rock-in)
16	Recheck steps 14 and 15 for tracking.			

MODELS H-350T7, H-351T7, Ch. V-2180-1

PARTS LIST FOR MODELS H-350T7 AND H-351T7

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

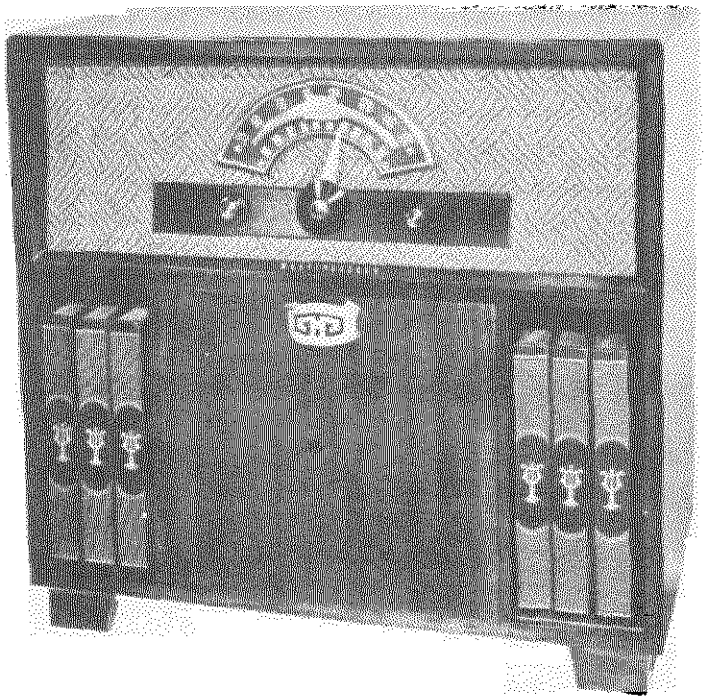
CABINET AND MISCELLANEOUS

Part No.	*Description*
V-10364-3	Baffle and grille cloth assembly (H-350T7)
V-10364-4	Baffle and grille cloth assembly (H-351T7)
V-1233-3	Cabinet (brown)
V-1233-4	Cabinet (ivory)
V-5426	Clip, I-F mounting
V-3219S-1	Cord, dial drive (100' spool)
V-9636-4	Cover assembly, back
V-10308-1	Dial
V-10604-1	Escutcheon
V-9104-9	Knob, tuning, rear (brown)
V-9104-10	Knob, tone, rear (brown)
V-9104-11	Knob, tuning, rear (ivory)
V-9104-12	Knob, tone, rear (ivory)
V-10408-1	Knob, band (brown)
V-10408-2	Knob, off-on-volume (brown)
V-10408-3	Knob, band (ivory)
V-10408-4	Knob, off-on-volume (ivory)
6S6DC	Lamp, pilot
V-9653	Loop, AM antenna
V-10318-2	Nameplate, Westinghouse
V-9661	Plug, AC power (male)
V-10310-1	Pointer
V-10357-1	Pulley assembly, gang
V-10647-1	Pulley and shaft assembly, pointer
V-9655	Shell, interlock
V-10472-1	Shield, lamp
V-10038-1	Shield, miniature tube (6BJ6)
V-10649-1	Shield, miniature tube (12AT7)
V-9654	Socket, interlock
V-6878-2	Socket, miniature wafer (50C5)
V-9888-3	Socket, miniature wafer (6BJ6, 12BA6, 12AL5, 12AV6)
V-10133-2	Socket, miniature wafer (12AT7)
V-10650-1	Socket, pilot lamp
V-9641-2	Speaker, 5¼" PM
V-6795-3	Spring, FM tuner and gang drive

V-2180-1 CHASSIS

Ref. No.	*Part No.*	*Description*
C5	RCP10W2203M	Capacitor, .02 mfd 200 v.
C9	RCP10W2503M	Capacitor, .05 mfd 200 v.
C10	RCP10W4103M	Capacitor, .01 mfd 400 v.
C11	RCP10W4103M	Capacitor, .01 mfd 400 v.
C12	RCP10W4103M	Capacitor, .01 mfd 400 v.
C13	RCP10W4103M	Capacitor, .01 mfd 400 v.
C14	RCP10W4103M	Capacitor, .01 mfd 400 v.
C15	RCP10W6202M	Capacitor, .002 mfd 600 v.
C16	RCP10W6202M	Capacitor, .002 mfd 600 v.
C17	RCP10W6102M	Capacitor, .001 mfd 600 v.
C18	V-5596	Capacitor, .005 mfd
C20	R4CC21YY101M	Capacitor, 100 mmf
C21	R4CC21YY101M	Capacitor, 100 mmf
C22	R5CC21ZY471M	Capacitor, 470 mmf
C23	RCM20A331M	Capacitor, 330 mmf
C24	V-5596	Capacitor, .005 mfd
C25	V-5596	Capacitor, .005 mfd
C27	V-5658-7	Capacitor, 10 mmf
C28	V-5658-7	Capacitor, 10 mmf
C29	V-5658-9	Capacitor, 1.5 mmf
C30	V-10710-1	Capacitor, 47 mmf
C31	V-10710-1	Capacitor, 47 mmf
C32	V-5658-10	Capacitor, 50 mmf
C33	V-10710-2	Capacitor, 220 mmf
C35	V-9634-1	Capacitor, multiple ceramic (.002 mfd, 220 mmf, 220 mmf, .005 mfd)
C36	V-9863-1	Capacitor, 800 mmf
C37	V-9863-1	Capacitor, 800 mmf
C38	V-9863-1	Capacitor, 800 mmf
C39	V-9863-1	Capacitor, 800 mmf
C40	V-9863-1	Capacitor, 800 mmf
C42	V-10157-4473M	Capacitor, .047 mfd 400 v.
C43	V-4637	Capacitor, 4 mfd 50 v.
C45	V-10415-2	Capacitor, electrolytic (80-60 mfd 250 v. and 20 mfd 20 v.)
C46	V-10640-1	Capacitor, FM RF trimmer
C47	V-10662-2	Capacitor, variable (consists of A, B, C and D)
	V-9676-1	Core, FM tuning
L1	V-10644-1	Reactor, RF
L2	V-4886-13	Reactor, RF
L4	V-9099-5	Reactor, 2.7 microhenries
L5	V-9099-1	Reactor, 1.2 microhenries
	V-9640	Rectifier, selenium
R1	RC30AE151K	Resistor, 150 ohms 1 w.
R2	RC20AE474M	Resistor, 470,000 ohms ½ w.
R3	RC20AE474M	Resistor, 470,000 ohms ½ w.
R4	RC20AE474M	Resistor, 470,000 ohms ½ w.
R5	RC20AE103M	Resistor, 10,000 ohms ½ w.
R6	RC20AE475M	Resistor, 4.7 megohms ½ w.
R7	RC20AE475M	Resistor, 4.7 megohms ½ w.
R8	RC20AE475M	Resistor, 4.7 megohms ½ w.
R9	RC20AE473M	Resistor, 47,000 ohms ½ w.
R10	RC20AE223K	Resistor, 22,000 ohms ½ w.
R11	RC20AE223M	Resistor, 22,000 ohms ½ w.
R12	RC20AE223M	Resistor, 22,000 ohms ½ w.
R14	RC20AE681M	Resistor, 680 ohms ½ w.
R15	RC20AE681M	Resistor, 680 ohms ½ w.
R16	RC20AE681M	Resistor, 680 ohms ½ w.
R17	RC20AE221M	Resistor, 220 ohms ½ w.
R18	RC20AE221M	Resistor, 220 ohms ½ w.
R19	RC20AE221M	Resistor, 220 ohms ½ w.
R20	RC20AE221M	Resistor, 220 ohms ½ w.
R26	RC30AE220K	Resistor, 22 ohms 1 w.
R28	RC20AE225M	Resistor, 2.2 megohms ½ w.
R29	RC20AE225M	Resistor, 2.2 megohms ½ w.
R30	RC20AE225M	Resistor, 2.2 megohms ½ w.
R31	RC20AE156M	Resistor, 15 megohms ½ w.
R32	RC20AE222M	Resistor, 2200 ohms ½ w.
R33	RC20AE222M	Resistor, 2200 ohms ½ w.
R35	V-6984-10	Resistor, 820 ohms 5 w.
R37	RC20AE101M	Resistor, 100 ohms ½ w.
*R38	V-10330-2	Control, volume, 1 megohm (assy consists of R38, R39 & SW1)
*R39	V-10330-2	Control, tone, 1 megohm (assy consists of R38, R39 & SW1)
*SW1	V-10330-2	Switch, on-off (assy consists of R38, R39 and SW1)
SW2	V-10651-1	Switch, AM-FM selector
T1	V-10642-1	Transformer, FM RF
T2	V-9688	Transformer, 1st FM IF
T3	V-9642	Transformer, 2nd FM IF
T4	V-9828	Transformer, ratio detector
T5	V-10660	Transformer, audio
T6	V-10619	Transformer, 1st AM IF
T7	V-10350-1	Transformer, 2nd AM IF
T8	V-10643-1	Transformer, FM oscillator
T9	V-10641-1	Transformer, AM oscillator

MODEL H-354C7,
Ch. V-2180-2



MODEL H-354C7

CHASSIS V-2180-2

SERVICE NOTES

For Record Changer Information, Refer to the V-9481 Automatic Record Changer Service Notes

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 6BJ6 ..... RF Amplifier (FM)
1 12AT7 ..... Mixer-osc.
2 12BA6 ..... I-F Amp.
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: ..... 8" PM

OPERATING VOLTAGE:

..... 105 to 120 volts, 60 cycles AC

POWER CONSUMPTION: ..... 70 watts

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.

It should be noted that the interlock plug, which must be released from

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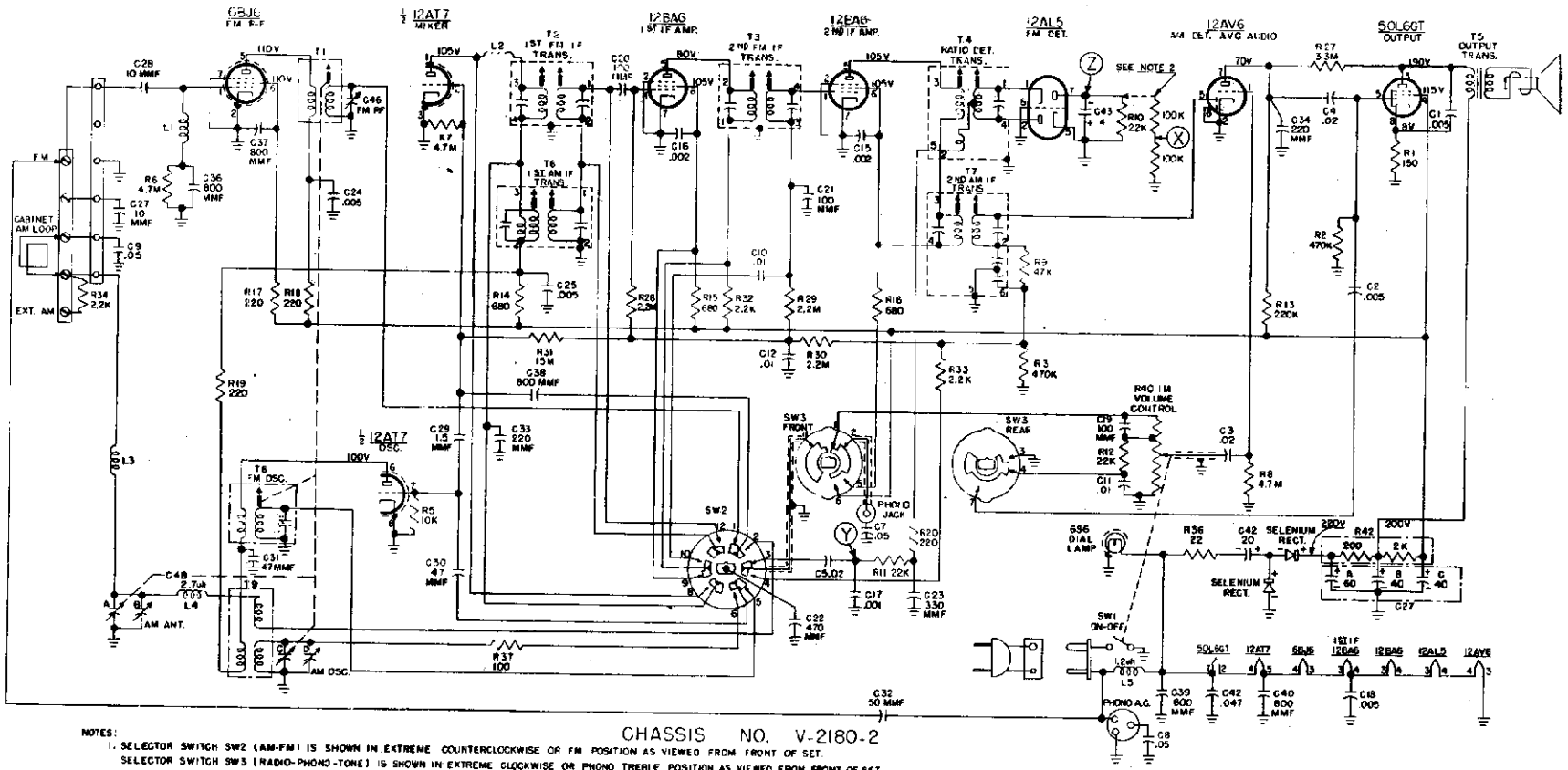


NOTES:
1. SELECTOR SWITCH SW2 (AM-FM) IS SHOWN IN EXTREME COUNTERCLOCKWISE OR FM POSITION AS VIEWED FROM FRONT OF SET. SELECTOR SWITCH SW3 (RADIO-PHONO-TONE) IS SHOWN IN EXTREME CLOCKWISE OR PHONO TREBLE POSITION AS VIEWED FROM FRONT OF SET.
2. TO BE INSTALLED FOR ALIGNMENT ONLY.
3. ALL CAPACITANCE VALUES IN MFD. AND ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.
4. ALL VOLTAGES MEASURED FROM CHASSIS (GND.) USING A 20,000 OHM/VOLT METER. LINE VOLTAGE 117 V.A.C. VOLTAGES SHOULD BE AS SHOWN ± 20 PER CENT.

FIG. 1 — SCHEMATIC DIAGRAM OF V-2180-2 CHASSIS

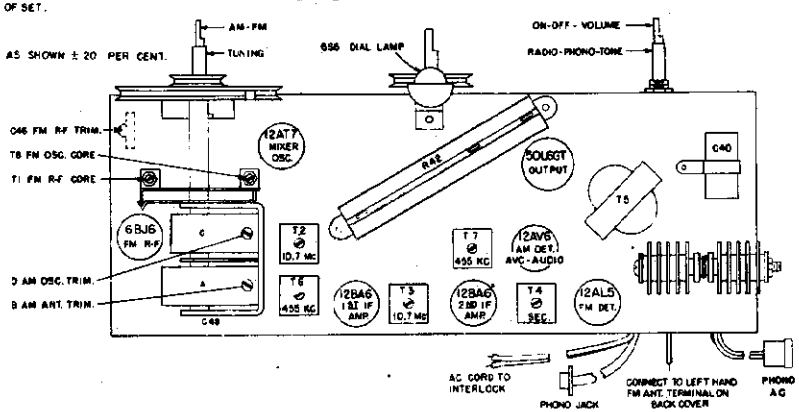


FIG. 2 — TOP VIEW OF CHASSIS

the cabinet to allow removal of the chassis, is incorporated for customer protection. Additional protection is provided by soldering the speaker cord to the terminal board on the output transformer and using closed-end lugs on the wires that extend from the back cover to the FM antenna terminals. These protective measures are in accordance with Underwriters Laboratories requirements and should not be altered in any way.

MODEL H-354C7,
Ch. V-2180-2

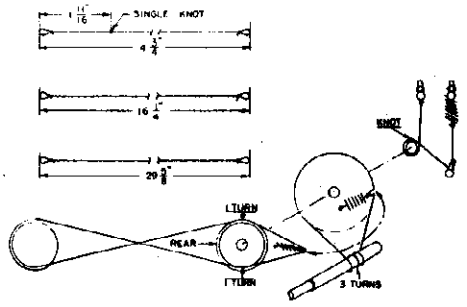


FIG. 3 — DIAL DRIVE

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.

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 0.1 mfd capacitor	455 kc.	minimum capacity	Pri. and sec. of T7 and T6 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 ant. 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. 2 of 12AT7 through a 0.1 mfd mica capacitor	10.7 mc.	minimum capacity	Sec. of T4 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 T4 and pri. and sec. of T3 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 T4 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 T4 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 (C46) 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 (C46) for maximum voltage (rock-in)
16	Recheck steps 14 and 15 for tracking			

MODEL H-354C7
Ch. V-2180-2

PARTS LIST FOR MODEL H-354C7

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

CABINET AND MISCELLANEOUS

Part No.	Description
V-1245-1	Cabinet
V-6415-5	Cable, phono pickup
V-9822-1	Cable assembly, phono AC power (female)
V-9833-1	Cable assembly, phono AC power (male)
V-5426	Clip, I-F mounting
V-3254S	Connector, phono
V-10444-2	Connector assembly, phono
V-3219S-1	Cord, dial drive (100' spool)
V-9845-1	Cover, back (record changer)
V-10682-1	Cover assembly, back (radio)
V-10308-1	Dial
V-8585	Drawer, record changer (complete less hardware)
V-10604-1	Escutcheon, dial
V-10261-4	Grille cloth
V-10338-1	Hub, pointer
V-9104-9	Knob, tuning (rear)
V-9861-2	Knob, radio-phono-tone (rear)
V-10408-1	Knob, band
V-10408-2	Knob, on-off-volume
6S6DC	Lamp, pilot
V-8586	Panel, background for knobs
V-9661	Plug, AC
V-10310-1	Pointer, dial
V-10591-3	Pull, record changer drawer
V-10357-1	Pulley assembly, gang
V-10647-2	Pulley and shaft assembly, pointer
V-9655	Shell, interlock
V-10472-1	Shield, lamp
V-10038-1	Shield, miniature tube (6BJ6)
V-10649-1	Shield, miniature tube (12AT7)
V-9654	Socket, interlock
V-9888-3	Socket, miniature wafer (6BJ6, 12BA6, 12AL5, 12AV6)
V-10133-2	Socket, miniature wafer (12AT7)
V-3246S	Socket, octal wafer (50L6GT)
V-10650-1	Socket, pilot lamp
V-10675-1	Speaker, 8" PM
V-6795-3	Spring, dial drive
V-10673-1	Terminal strip, antenna

V-2180-2 CHASSIS

Ref. No.	Part No.	Description
C1	RCP10W4502M	Capacitor, .005 mfd 400 v.
C2	RCP10W4502M	Capacitor, .005 mfd 400 v.
C3	RCP10W2203M	Capacitor, .02 mfd 200 v.
C4	RCP10W2203M	Capacitor, .02 mfd 200 v.
C5	RCP10W2203M	Capacitor, .02 mfd 200 v.
C7	RCP10W2503M	Capacitor, .05 mfd 200 v.
C8	RCP10W2503M	Capacitor, .05 mfd 200 v.
C9	RCP10W2503M	Capacitor, .05 mfd 200 v.
C10	RCP10W4103M	Capacitor, .01 mfd 400 v.
C11	RCP10W4103M	Capacitor, .01 mfd 400 v.
C12	RCP10W4103M	Capacitor, .01 mfd 400 v.
C15	RCP10W6202M	Capacitor, .002 mfd 600 v.
C16	RCP10W6202M	Capacitor, .002 mfd 600 v.
C17	RCP10W6102M	Capacitor, .001 mfd 600 v.
C18	V-5596	Capacitor, .005 mfd
C19	R4CC21YY101M	Capacitor, 100 mmf
C20	R4CC21YY101M	Capacitor, 100 mmf
C21	R4CC21YY101M	Capacitor, 100 mmf
C22	R5CC21ZY471M	Capacitor, 470 mmf
C23	RCM20A331M	Capacitor, 330 mmf
C24	V-5596	Capacitor, .005 mfd
C25	V-5596	Capacitor, .005 mfd
C27	V-5658-7	Capacitor, 10 mmf
C28	V-5658-7	Capacitor, 10 mmf
C29	V-5658-9	Capacitor, 1.5 mmf
C30	V-10710-1	Capacitor, 47 mmf
C31	V-10710-1	Capacitor, 47 mmf
C32	V-5658-10	Capacitor, 50 mmf
C33	V-10710-2	Capacitor, 220 mmf
C34	V-10710-2	Capacitor, 220 mmf
C36	V-9863-1	Capacitor, 800 mmf
C37	V-9863-1	Capacitor, 800 mmf
C38	V-9863-1	Capacitor, 800 mmf
C39	V-9863-1	Capacitor, 800 mmf
C40	V-9863-1	Capacitor, 800 mmf
C42	V-10157-4473M	Capacitor, .047 400 v.
C43	V-4637	Cap., electrolytic, 4 mfd 50 v.
C44	V-9919-2	Capacitor, electrolytic, 60-40-40 mfd 250 v.
C46	V-10640-1	Capacitor, FM RF trimmer
C48	V-10662-1	Capacitor, variable (consists of A, B, C and D)
C49	V-9823-2	Capacitor, electrolytic, 20 mfd 200 v.
L1	V-10644-1	Reactor, RF
L2	V-4886-13	Reactor, RF
L3	V-6157-1	Coil, antenna loading
L4	V-9099-5	Reactor, 2.7 microhenries
L5	V-9099-1	Reactor, 1.2 microhenries
	V-9640	Rectifier, selenium
R1	RC30AE151K	Resistor, 150 ohms 1 w.
R2	RC20AE474M	Resistor, 470,000 ohms ½ w.
R3	RC20AE474M	Resistor, 470,000 ohms ½ w.
R5	RC20AE103M	Resistor, 10,000 ohms ½ w.
R6	RC20AE475M	Resistor, 4.7 megohms ½ w.
R7	RC20AE475M	Resistor, 4.7 megohms ½ w.
R8	RC20AE475M	Resistor, 4.7 megohms ½ w.
R9	RC20AE473M	Resistor, 47,000 ohms ½ w.
R10	RC20AE222K	Resistor, 2200 ohms ½ w.
R11	RC20AE223M	Resistor, 22,000 ohms ½ w.
R12	RC20AE223M	Resistor, 22,000 ohms ½ w.
R13	RC20AE224M	Resistor, 220,000 ohms ½ w.
R14	RC20AE681M	Resistor, 680 ohms ½ w.
R15	RC20AE681M	Resistor, 680 ohms ½ w.
R16	RC20AE681M	Resistor, 680 ohms ½ w.
R17	RC20AE221M	Resistor, 220 ohms ½ w.
R18	RC20AE221M	Resistor, 220 ohms ½ w.
R19	RC20AE221M	Resistor, 220 ohms ½ w.
R20	RC20AE221M	Resistor, 220 ohms ½ w.
R27	RC20AE335M	Resistor, 3.3 megohms ½ w.
R28	RC20AE225M	Resistor, 2.2 megohms ½ w.
R29	RC20AE225M	Resistor, 2.2 megohms ½ w.
R30	RC20AE225M	Resistor, 2.2 megohms ½ w.
R31	RC20AE156M	Resistor, 15 megohms ½ w.
R32	RC20AE222M	Resistor, 2200 ohms ½ w.
R33	RC20AE222M	Resistor, 2200 ohms ½ w.
R34	RC20AE222M	Resistor, 2200 ohms ½ w.
R36	V-6067-7	Resistor, 22 ohms 3 w.
R37	RC20AE101M	Resistor, 100 ohms ½ w.
*R40	V-10359-2	Control, volume, 1 megohm (assy. consists of R40, SW1 & SW3)
R42	V-10054-1	Resistor, ballast, 2000 ohms 6 w. and 200 ohms 3 w.
*SW1	V-10359-2	Switch, on-off (assy. consists of R40, SW1 and SW3)
SW2	V-10651-1	Sw., selector (AM-FM-PHONO)
*SW3	V-10359-2	Switch, tone (assy. consists of R40, SW1 and SW3)
T1	V-10642-1	Transfomer, FM RF
T2	V-9688	Transfomer, 1st FM I-F
T3	V-9642	Transfomer, 2nd FM I-F
T4	V-9828	Transfomer, ratio detector
T5	V-9827	Transfomer, audio
T6	V-10619	Transfomer, 1st AM I-F
T7	V-10350-1	Transfomer, 2nd AM I-F
T8	V-10643-1	Transfomer, FM oscillator
T9	V-10641-1	Transfomer, AM oscillator

TUBES: The Tubes used, and their functions, are as follows:

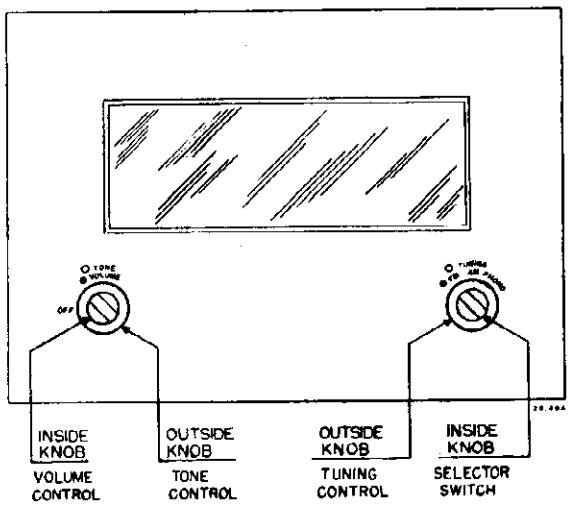
12AT7	R-F Amplifier and Mixer (F-M)
6BE6	A-M Converter and F-M Oscillator
6BA6	1st I-F Amplifier (A-M & F-M)
6BA6	2nd I-F Amplifier (F-M)
6AL5	F-M Detector
6AV6	A-M Detector, A.V.C. and Audio Amp.
6V6GT	Beam Power Amplifier
5Y3GT	Rectifier

LINE VOLTAGE: This receiver is designed for operation on 105-125 Volts; 60 Cycles, Alternating Current (AC) only.

POWER CONSUMPTION INCLUDING RECORD CHANGER: 115 Watts.

TUNING RANGE:

Broadcast Band:	540 to 1650 Kilocycles (182 to 555 Meters)
F-M Band:	87.5 to 108.5 Megacycles (2.7 to 3.4 Meters)



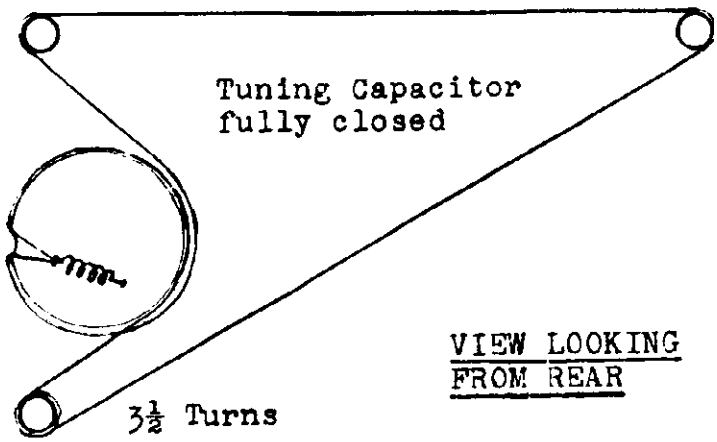


FIG. 1—FRONT PANEL CONTROLS

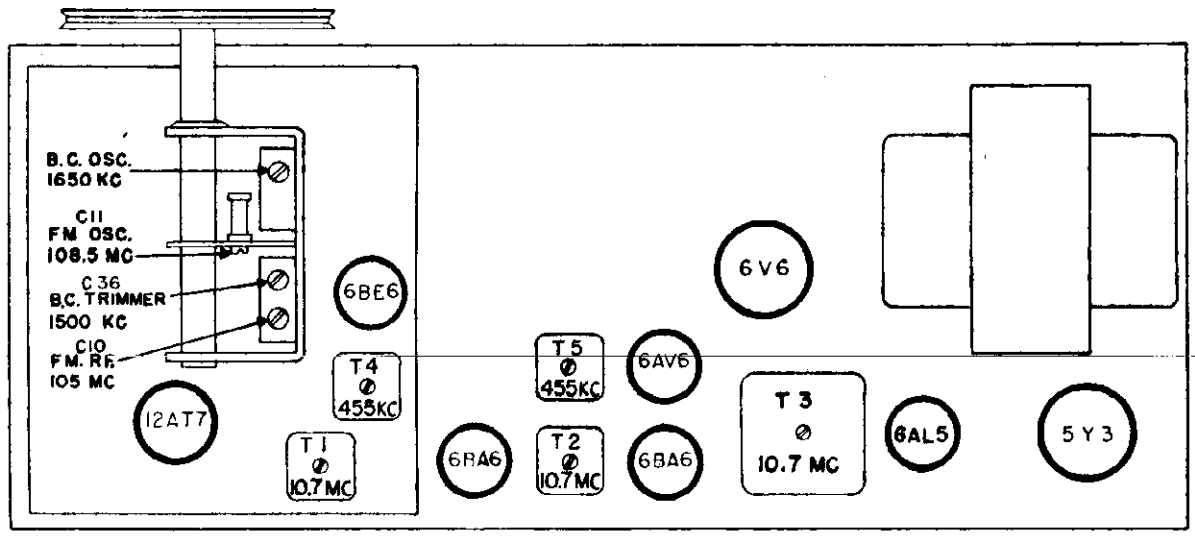


FIG. 2—TUBE AND ADJUSTMENT LOCATION DIAGRAM

ALIGNMENT CHART

STEP	CIRCUIT ALIGNED	RECEIVER DIAL AT	SIGNAL GENERATOR			METER		ADJUST	METER INDICATION
			TYPE	FREQ.	CONNECTIONS	TYPE	CONNECTIONS		
1	B.C. I.F.	B.C. BAND MAX. FREQ.	A.M.	455 KC 30% MOD.	REAR B.C. SECTION OF VARIABLE CONDENSER	OUTPUT	ACROSS VOICE COIL	TOP & BOT. OF T4 & T5	MAX. OUTPUT
PREFERRED METHOD 2	F.M. I.F.	F.M. BAND MAX. FREQ.	F.M.	10.7 MC. 30% MOD.	HIGH SIDE THROUGH .005 MF. (APPROX.) CAP TO PIN 7 OF 12AT7	OUTPUT	ACROSS VOICE COIL	TOP & BOT. OF T1 & T2; BOT. OF T3	MAX. OUTPUT
ALTERNATE METHOD 2			R.F. OR A.M.	10.7 MC. UNMOD.		D.C. V.T.V.M.	NEGATIVE TO PIN 7 OF 6AL5; POSITIVE TO GROUND		MAX. DEFLECTION
PREFERRED METHOD 3	F.M. DET.	F.M. BAND MAX. FREQ.	F.M.	10.7 MC. 30% MOD.		OUTPUT	ACROSS VOICE COIL	TOP OF T3	MAX. OUTPUT
ALTERNATE METHOD 3			R.F. OR A.M.	10.7 MC. UNMOD.		D.C. V.T.V.M.	NEG. TO JUNCTION OF 8.2K'S AT 6AL5; POS. TO JUNCTION OF R15 & C17.		ZERO BETWEEN TWO OPPOSITE POLARITY PEAKS
PREFERRED METHOD 4	F.M. OSC.	F.M. BAND MAX. FREQ.	F.M.	108.5 MC. 30% MOD.	EACH SIDE OF GEN. OUTPUT THROUGH 150 OHM RESISTOR TO F.M. ANT. TERMINALS	OUTPUT	ACROSS VOICE COIL	TRIMMER ON TOP CENTER OF VAR. COND. (C11)	MAX. OUTPUT
ALTERNATE METHOD 4			R.F. OR A.M.	108.5 MC. UNMOD.		D.C. V.T.V.M.	NEGATIVE TO PIN 7 OF 6AL5; POSITIVE TO GROUND		MAX. DEFLECTION
PREFERRED METHOD 5	F.M. R.F.	F.M. BAND 105 MC	F.M.	105 MC. 30% MOD.		OUTPUT	ACROSS VOICE COIL	TRIMMER AT REAR OF VAR. COND. (C10)	MAX. OUTPUT
ALTERNATE METHOD 5			R.F. OR A.M.	105 MC. UNMOD.		D.C. V.T.V.M.	NEGATIVE TO PIN 7 OF 6AL5; POSITIVE TO GROUND		MAX. DEFLECTION
6	B.C OSC.	B.C. BAND MAX. FREQ.	A.M.	1650 KC 30% MOD.	REAR B.C. SECTION OF VARIABLE CONDENSER	OUTPUT	ACROSS VOICE COIL	TRIMMER AT FRONT OF VAR. COND. (C34).	MAX. OUTPUT
7	B.C. R.F.	B.C. BAND 1500 KC	A.M.	1500 KC 30% MOD.	EACH SIDE OF GEN. OUTPUT TO 2 OR 3-TURN LOOP (1 FOOT DIA.) SEVERAL FEET FROM ANT.	OUTPUT	ACROSS VOICE COIL	B.C. TRIM. AT REAR OF VAR. COND. (C36).	

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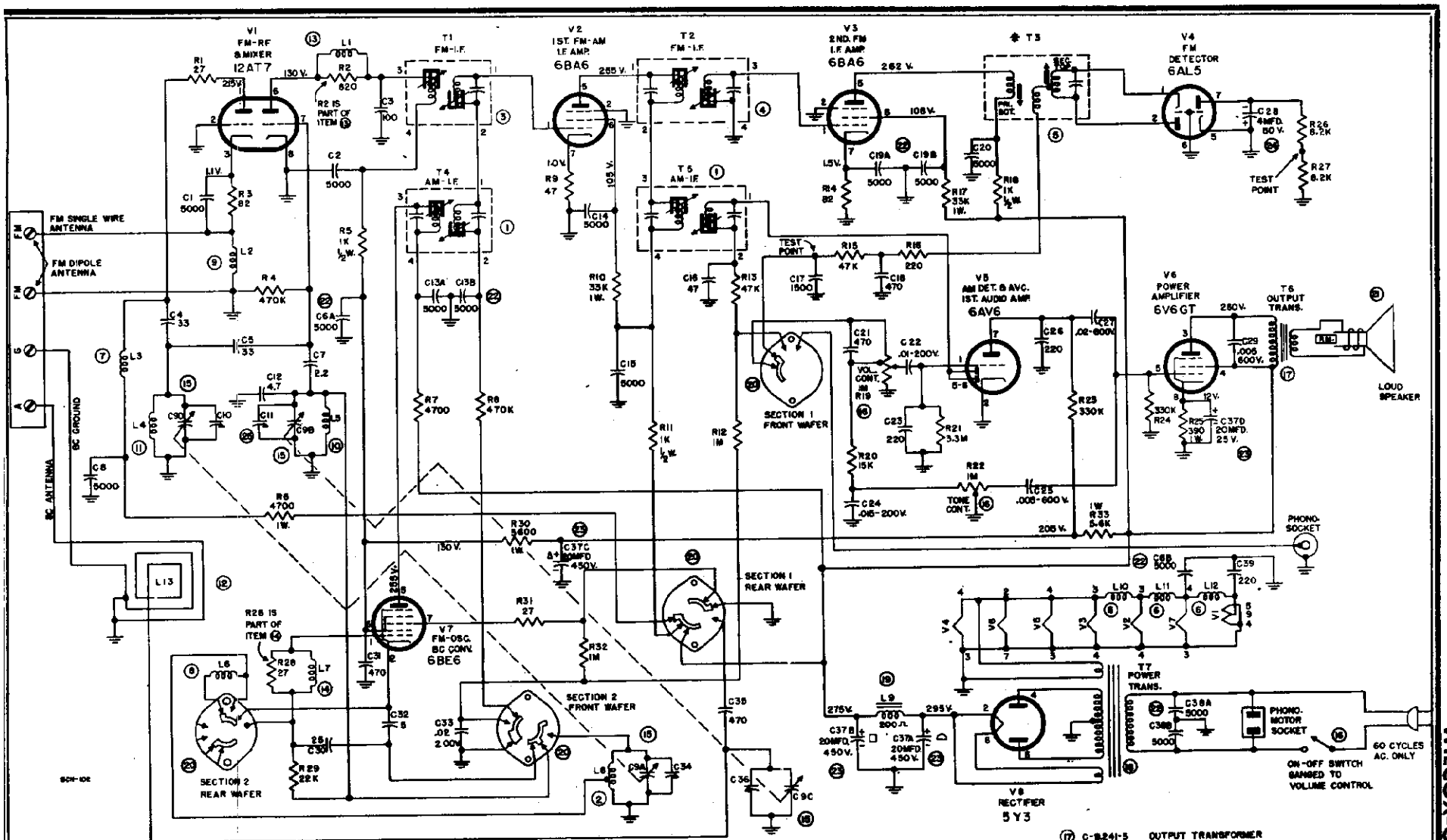
NOTES:

1- TURN VOLUME CONTROL FULLY CLOCKWISE.
2- MAINTAIN SIGNAL INPUT LOW ENOUGH TO HAVE LESS THAN 2 VOLTS ACROSS METERS.
3- UNLESS OTHERWISE NOTED, CONNECT LOW SIDE OF SIGNAL GENERATOR TO CHASSIS.
4- UNLESS OTHERWISE NOTED, SET VARIABLE CONDENSER TO MINIMUM CAPACITY (MAX. FREQ.)
5- USE PROPER TOOL FOR SMALL I.F. TRANS. ADJUSTMENTS— I.E., .150 DIA. BAKELITE WITH BLADE .075 THICK.
6- MAINTAIN 60 CYCLE LINE VOLTAGE AT APPROX. 117 VOLTS.



K = KILOHMS
M = MEGOHMS

FM-I.F. = 10.7 MC
AM-I.F. = 455 KC

ALL CONDENSERS SHOWN IN MMF.
ALL CONDENSERS 500 V. EXCEPT AS SHOWN.
ALL RESISTORS 1/4 WATT EXCEPT AS SHOWN.

BAND-SWITCH POSITIONS

COUNTER CLOCKWISE — FM (87.5 - 108.5 MC)
CENTER — AM (540 - 1650 KC)
CLOCKWISE — PHONO.

BAND-SWITCH IN FM POSITION.

★ ITEM (5)
T3 RATIO DETECTOR TRANSFORMER

TWO TYPES OF TRANSFORMERS ARE USED. IDENTIFICATION AS FOLLOWS:

1- CAN HEIGHT OF PART NO. C-1.524 IS 2 1/2".

2- CAN HEIGHT OF PART NO. C-1.542-1 IS 1 15/16".

(1)	C-1.446-3	AM-I.F. TRANSFORMER
(2)	C-1.436-2	BC-OSCILLATOR COIL
(3)	C-1.446-2	FM-I.F. TRANSFORMER
(4)	C-1.446-3	FM-I.F. TRANSFORMER
(5)★	SEE NOTE	RATIO DETECTOR TRANS.
(6)	S-1.501	FILAMENT CHOKE
(7)	S-1.512	RF CHOKE - RF PLATE
(8)	S-1.536-1	RF CHOKE - OSC. CATHODE
(9)	S-1.536-2	RF CHOKE - RF CATHODE
(10)	S-1.538	FM OSCILLATOR COIL
(11)	S-1.539	FM-RF GRID COIL
(12)	C-1.540	BC LOOP ANTENNA
(13)	S-1.536-1	MODULATOR PLATE CHOKE
(14)	S-1.536-2	PARASITIC SUPPRESSOR
(15)	C-2.222	VARIABLE CONDENSER
(16)	C-8.216-2	DUAL CONCENTRIC VC, TC & SWITCH
(17)	C-9.241-5	OUTPUT TRANSFORMER
(18)	D-9.248	POWER TRANSFORMER
(19)	C-9.255	FILTER CHOKE
(20)	C-11.227-1	BAND-SWITCH
(21)		SPEAKER
(22)	S-4.125-1	DUAL SHIELDED CERAMIC CAPACITOR
(23)	C-5.481-7	DRY ELECTROLYTIC CAPACITOR UNIT
(24)	C-5.430	ELECTROLYTIC CAPACITOR
(25)	S-4.118	CERAMIC TRIMMER .7 TO 3.5 MMF.

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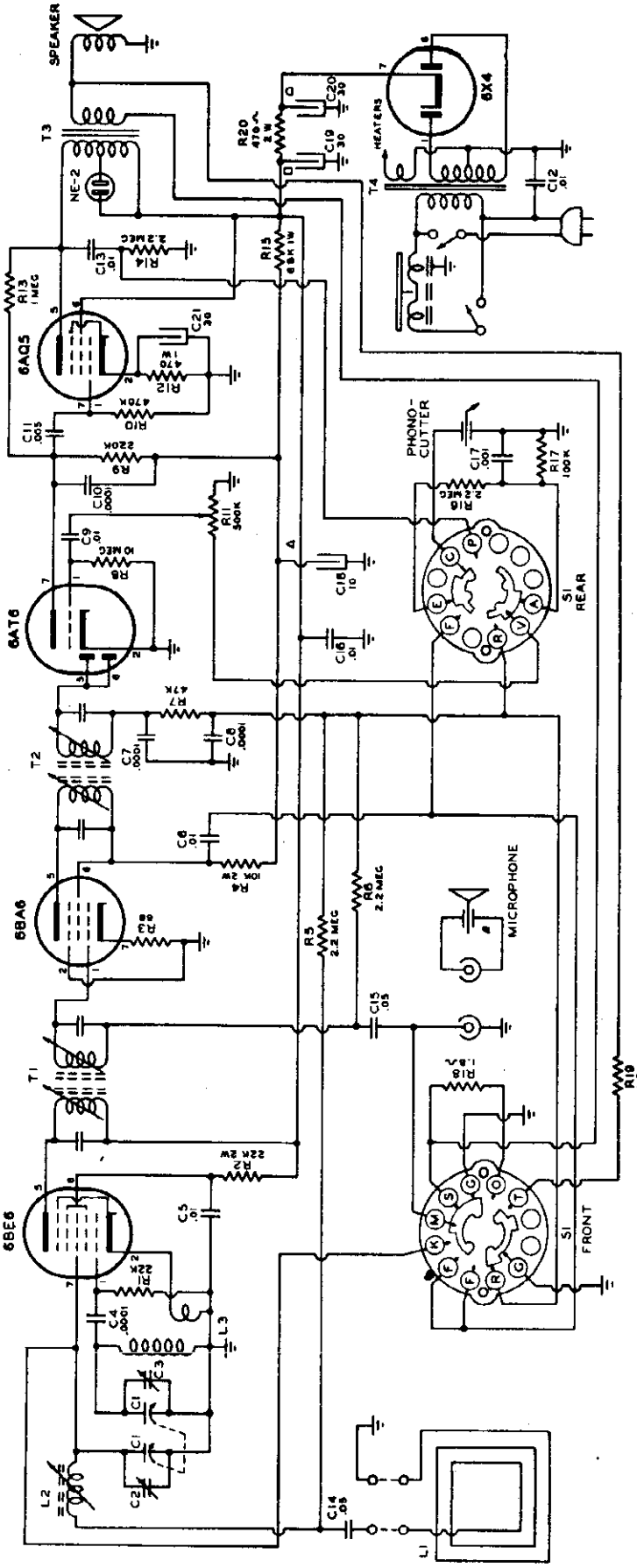
MODEL 1J-10

Schematic Diagram



NOTE -
ALL CAPACITIES MFD. ALL RESISTORS ½ WATT
UNLESS OTHERWISE SPECIFIED

TYPICAL VOLTAGE CHART

TUBE	VOLTAGE FROM PIN NO. BELOW TO GND						
	1	2	3	4	5	6	7
6BE6	-6.7V		GND	6.3V*	250V	95V	
6BA6			GND	6.3V*	78V	78V	.7
6AT6	-.3		GND	6.3V*	-.3V	-.3	70V
6AQ5		14.5	GND	6.3V*	235V	250V	
6X4	290V*		GND	6.3V*		290V*	270V

MEASURED WITH 20,000-~ PER VOLT METER.
SCALES USED 10-50-250-1000 *A.C. VOLTAGE

FUNCTION	SWITCH CONTACTS CLOSED			
PHONOGRAPH	R-G	M-S-G	E-C	A-V
RADIO	G-F	M-S-G-O		V-R
RECORD RADIO	G-F	M-G-O-T	C-P	V-R
RECORD MICROPHONE	G-R-K	O-T	C-P	V-F

SWITCH IN PHONO POSITION-(COUNTERCLOCK-WISE)-VIEWED FROM SHAFT END.

Dial Assembly

46-915	Tuning & Vol. Control Knob (2 used)
46-929	Tuning & Vol. Control Knob (2 used on G Model only)
59-228	Dial Pointer
59-259	Dial Pointer (G Model only)
54-263	Speed Nut
80-209	Dial Cord Tension Spring
93-1085	Felt Washer (2 used on Knobs)
148-132	Retaining Ring (Used on S-17845)
S-17844	Pointer Shaft & Pulley Assembly
S-17845	Tuning Shaft & Pulley Assembly
S-17846	Pulley Mtg. Strip & Bushing Assembly
S-17847	Dial Cord & Eyelet Assembly

Coils & Chokes

95-1132	T1	1st. I. F. Transformer
95-1133	T2	2nd. I. F. Transformer
S-17933	L2	Osc. Coil Assembly

Condensers

22-3	C9,18	.01 Mfd. Ceramic (Disc) (4 used)	500V
22-4	C7	.004 Mfd. Ceramic (Disc)	500V
22-5	C19	110 Mmfd. (or 22-1669)	500V
22-182	C5	220 Mmfd. Mica (Molded)	500V
22-326	C11	.003 Mfd.	400V
22-827	C6	.05 Mfd.	200V
22-829	C17	.05 Mfd.	200V
22-1386	C10	.02 Mfd.	200V
22-1741	C13,14,15,16	Four Section Elect.	
22-2287	C1	Two Section Gang	

Resistors

63-1719	R15	27	ohm	1/2W	10%	Ins.	Res.
63-1761	R3	270	ohm	1/2W	10%	Ins.	Res.
63-1771	R4	470	ohm	1/2W	10%	Ins.	Res.
63-1778	R7	680	ohm	1/2W	10%	Ins.	Res.
63-1841	R6	22K	ohm	1/2W	10%	Ins.	Res.
63-1870	R1	100K	ohm	1/2W	20%	Ins.	Res.
63-1912	R12	1	megohm	1/2W	20%	Ins.	Res.
63-1933	R14	3.3	megohm	1/2W	20%	Ins.	Res.
63-1940	R13	4.7	megohm	1/2W	20%	Ins.	Res.
63-1954	R2	10	megohm	1/2W	20%	Ins.	Res.
63-1961	R11	15	megohm	1/2W	20%	Ins.	Res.
63-1999	R8	140	ohm Zipohm	3W	10%	Ins.	Res.
63-2010	R9,10	Two Section Candohm					
63-2328	R5	Vol. Control & Switch					

Miscellaneous

11-104	Line Cord & Plug
14-1310	Plastic Cabinet for H401 - Portable Model
14-1316	Plastic Cabinet for H401G - Portable Model
15-51	Cable Socket Cap & Insulator (used on S-17887)
16-690	Packing Carton
19-210	Connector Clip (used on S-17843)
19-223	Cabinet Hinge Clip (2 used on Rear Cover & Latch)
24-568	Cabinet Rear Cover
24-571	Cabinet Rear Cover (G Model only)
43-199	Handle Housing (2 used)
43-205	Handle Housing (G Model only) (2 used)
49-706 SP1	4" P. M. Speaker *ZC409C Cone & Voice Coil
49-710 SP1	4" P. M. Speaker
54-30	8-32 x 5/16 x 7/64" Hex Nut (2 used on Handle Strap)
54-34	#6-32 x 1/4" x 3/32 Hex Nut Steel (used on 212-10)
54-139	3/8-32 x 9/16" Palnut (used on 63-2328)
54-267	#6-32 x 5/16" Palnut (1 ea. used on 95-1132 & 95-1133)
54-282	Spring Nut (8 used on Cabinet Front)
57-1613	Emblem Plate
57-1739	Chassis Bottom Plate
57-1751	Emblem Plate (G Model only)
78-274	Elect. Cond. Socket
78-782	Miniature Tube Socket
78-806	Miniature Tube Socket
78-807	Miniature Tube Socket (2 used)
80-611	Latch Spring
82-29	Handle Strap
82-30	Handle Strap (G Model only)
83-1888	Ant. Mtg. Strip (2 used on S-17843)
85-511 S1	Power Change over Switch (or 85-450)
93-125	#6 Int. Shakeproof Lockwasher (used on 212-10)
93-126	#8 Int. Shakeproof Lockwasher (2 used on Handle Strap)
94-295	Gang Cond. Mtg. Bushing (3 used)
94-680	Handle Mtg. Bushing (2 used)
112-164	#8-32 x 3/4" Binding Hd. M.S. (2 used on Handle Strap)
114-157	6-32 x 1/2" Lg. x 1/4" A.F. Hex Hd. S.T. (2 used on Dial Mtg.)
114-248	6-20 x 5/16" Lg. x 1/4" A.F. Hex Hd. S. T. (2 used on S-17843)
114-297	6-32 x 1/4" Lg. x 1/4" A.F. Hex Hd. S. T. (2 used on Chassis Mtg.)
114-311	6-32 x 1" Lg. x 1/4" A.F. Hex Hd. (used on 212-10)
125-81	Strain Relief Grommet - Male
125-82	Strain Relief Grommet - Female
138-47	Cabinet Grille
138-48	Cabinet Grille (G Model only)
149-109	Iron Core (used with S-17843)
166-44	Rubber Bumper
136-175	Speaker Gasket
199-153	Antenna Balancing Sleeve
202-879	Instruction Book
212-10 SE1	Selenium Rectifier
S-17843 L1	Iron Core Loop Antenna Assembly
S-17858	Latch Plate & Brkt. Assembly
S-17887 W1	Battery Cable & Socket Assembly
S-17960	Latch Plate & Brkt. Assembly (G Model only)
S-17971	Twisted Wire & Eyelet Assembly

The 4H40 chassis is an AC, DC or battery operated superheterodyne. 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 1R5 and 1S5.

If the R.F. becomes weak or dead, check the DC resistance of the wavemagnet. This DC resistance should be approximately .9 ohm. If it is open check the wavemagnet.

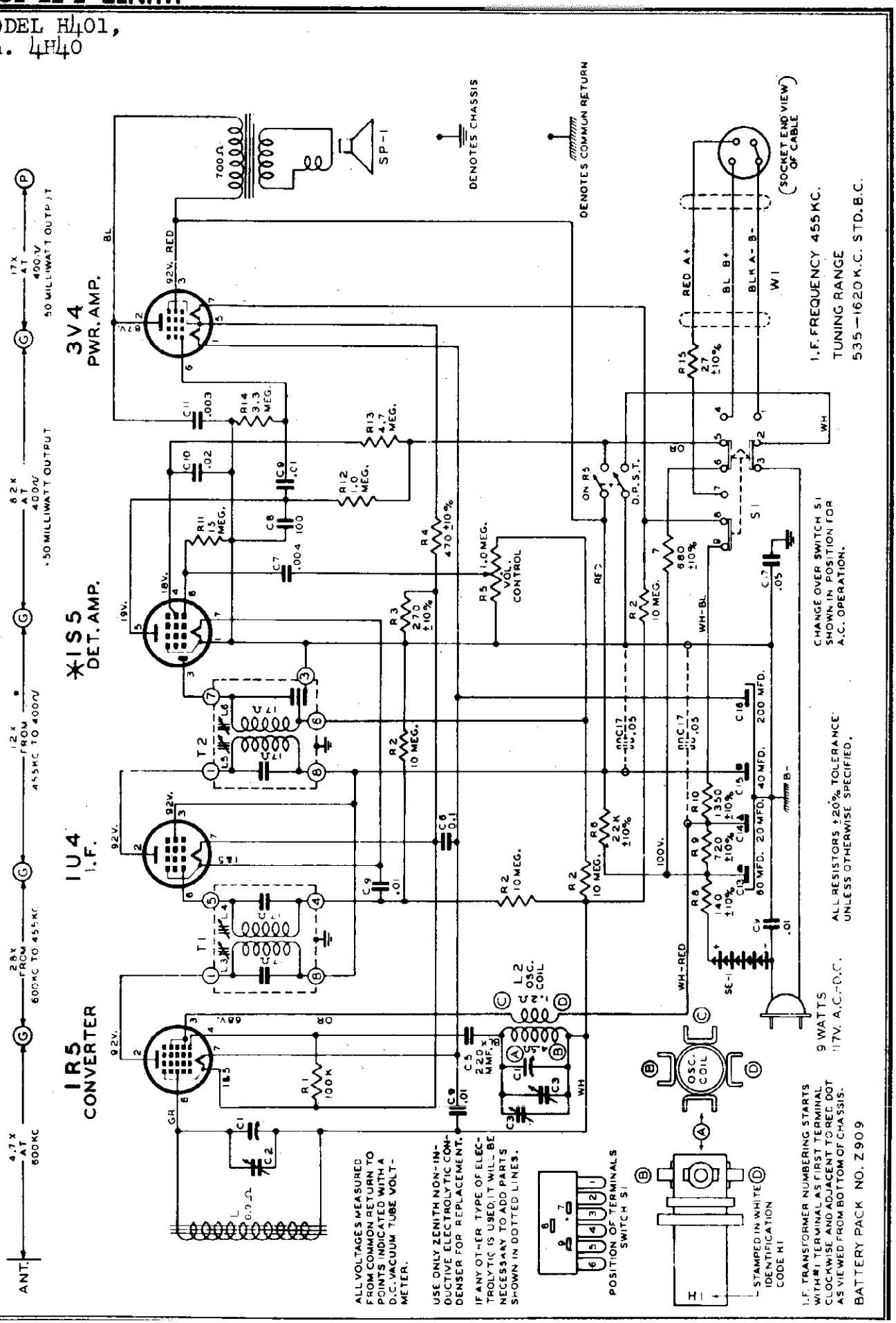
IF Alignment: Remove the chassis from the cabinet and arrange the units so that the wavemagnet can be connected. All the connections and adjustments can be made from the top of the chassis. Connect a signal generator, through a .1 mfd. dummy antenna, to the converter grid and B-(common return). Connect an output meter across the voice coil of the speaker (two lugs provided). Set the signal generator to 455 Kc. and adjust L3, L4, L5 and L6 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 C3 oscillator trimmer to resonance. Set the signal generator and dial pointer to 1400 and adjust C2 antenna trimmer to resonance. These trimmers are on the top of gang condenser. Check operation and reinstall set in cabinet. Tune in a weak station near 1400 Kc. or use background noise and readjust antenna trimmer for maximum sensitivity.

OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIG. FREQUENCY	BAND	SET DIAL TO	TRIMMERS	PURPOSE
1	Converter Grid	.1 Mfd	455 Kc.	BC	600 Kc.	L3, 4, 5 & 6	I.F. Alignment
2	Two turns loosely coupled to Wavemagnet		1600 Kc.	BC	1600 Kc.	Osc. Trim. C3	Set Oscillator to scale
3	Two turns loosely coupled to Wavemagnet		1400 Kc.	BC	1400 Kc.	Ant. Trim. C2	Align Wavemagnet

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 68-19 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.

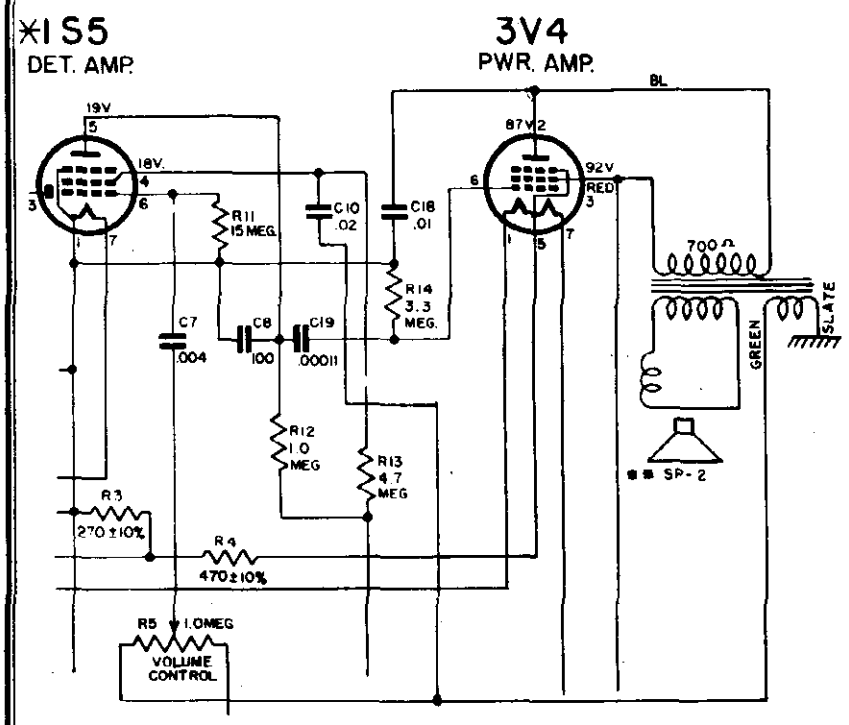
MODEL H401,
Ch. 4H40

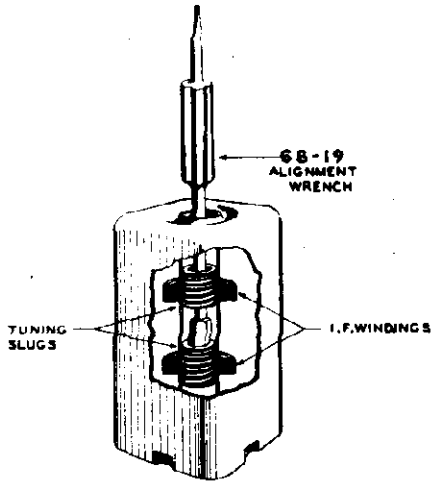


MODEL H401
Ch. 4H40

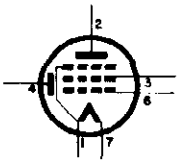
ALTERNATE AUDIO CIRCUIT
USED ON LATER RELEASES.

DETAILED VIEW OF I. F. TRANSFORMERS





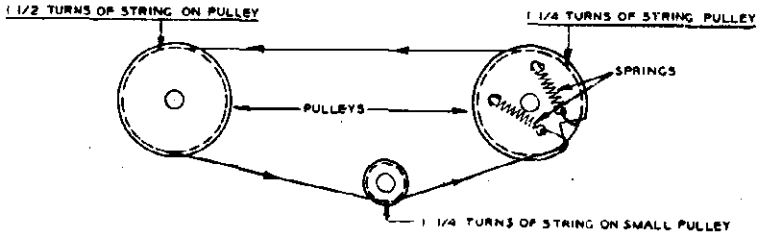
* 1U5



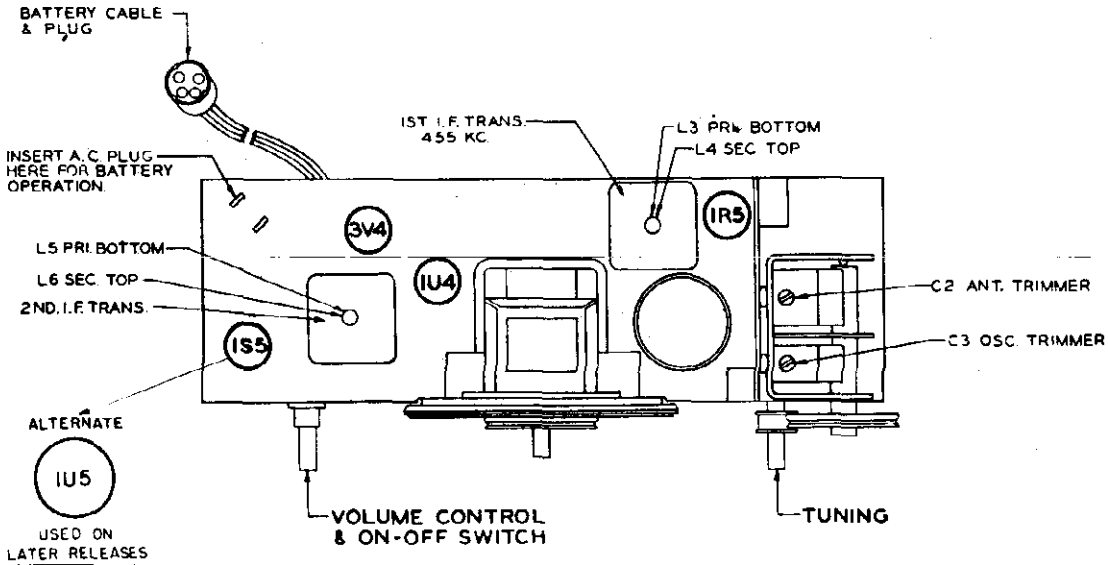
USED ON LATER RELEASES

* * WHEN SP-2 IS USED, C-18 AND C-19 MUST ALSO BE USED.

DIAL CABLE DRAWING



TUBE AND TRIMMER LOCATION



MODEL H500,
Ch. 5H40

ALIGNMENT PROCEDURE

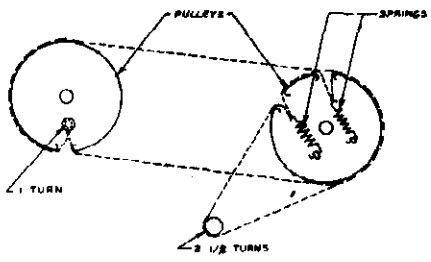
OPER.	CONNECT OSCILLATOR TO DUMMY ANTENNA	INPUT SIGNAL FREQ.	BAND	SET DIAL AT	TRIMMERS	PURPOSE
1	Positive lead of signal generator to converter grid through a .1 Mfd. condenser & negative lead to negative filament of 1L6 tube.	455 Kc	BC	600 Kc	L5, 6, 7, 8	Align I. F.
2	One turn loop coupled loosely to broadcast wavemagnet	1600 Kc	BC	1600 Kc	C4	Set oscillator to scale
3		1400 Kc	BC	1400 Kc	C3	Alignment of detector
4		1400 Kc	BC	1400 Kc	C2	Alignment of BC antenna
5*		600 Kc	BC	Rock at 600 Kc	C32	Alignment of BC at 600 Kc

*Note: Rock Tuning Condenser When Making Alignment Under Operations 5, 7, 10, 12, 13, 14 & 15.

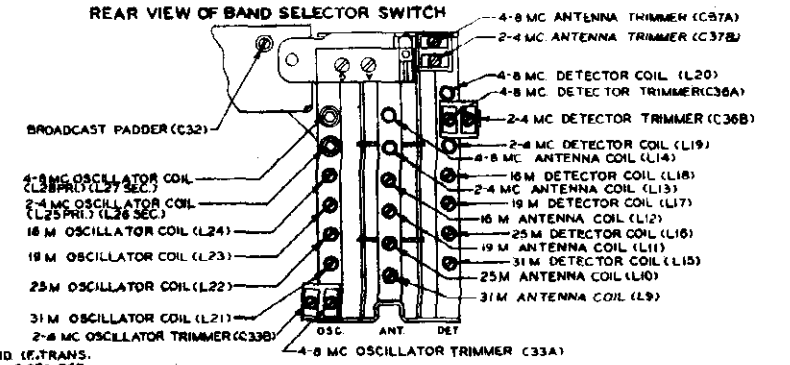
NOTE: If Trimmers C2, C3, C4 are adjusted after procedures #2 through #15 are completed, it will be necessary to repeat alignment procedures #2 through #15.

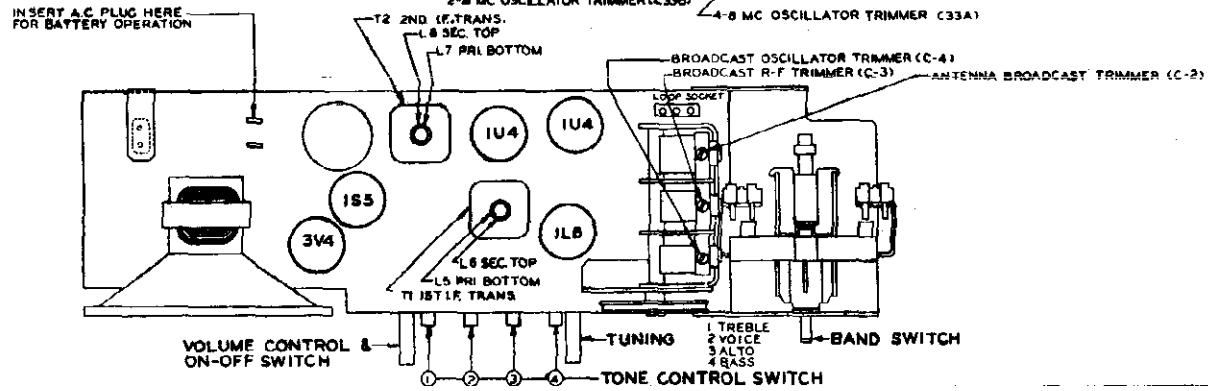
OPERATION	CONNECT OSCILLATOR TO DUMMY ANTENNA	INPUT SIGNAL FREQ.	BAND	SET DIAL AT	TRIMMERS	PURPOSE
6	3 feet of wire approximately 1 foot from extended wave rod.	7.8 Mc	4-8 Mc	7.8 Mc	C33A, C36A, C37A	Alignment of S. W. Oscillator Detector and Antenna
7*		4.2 Mc	4-8 Mc	Rock at 4.2 Mc	4-8 Mc Osc. slug	
8		Repeat Operations 6 & 7				
9		3.9 Mc	2-4 Mc	3.9 Mc	C33B, C36B, C37B	
10 *		2.1 Mc	2-4 Mc	Rock at 2.1 Mc	2-4 Mc Osc. slug	
11		Repeat Operation 9 & 10				
12 *		17.8 Mc	16 Meters	17.8 Mc	L24, L18, L12	
13 *		15.2 Mc	19 Meters	15.2 Mc	L23, L17, L11	
14 *		11.8 Mc	25 Meters	11.8 Mc	L22, L16, L10	
15 *		9.6 Mc	31 Meters	9.6 Mc	L21, L15 L9	

TUBE, TRIMMER LOCATION AND DIAL CABLE DRAWING



DIAL CORD DRIVE





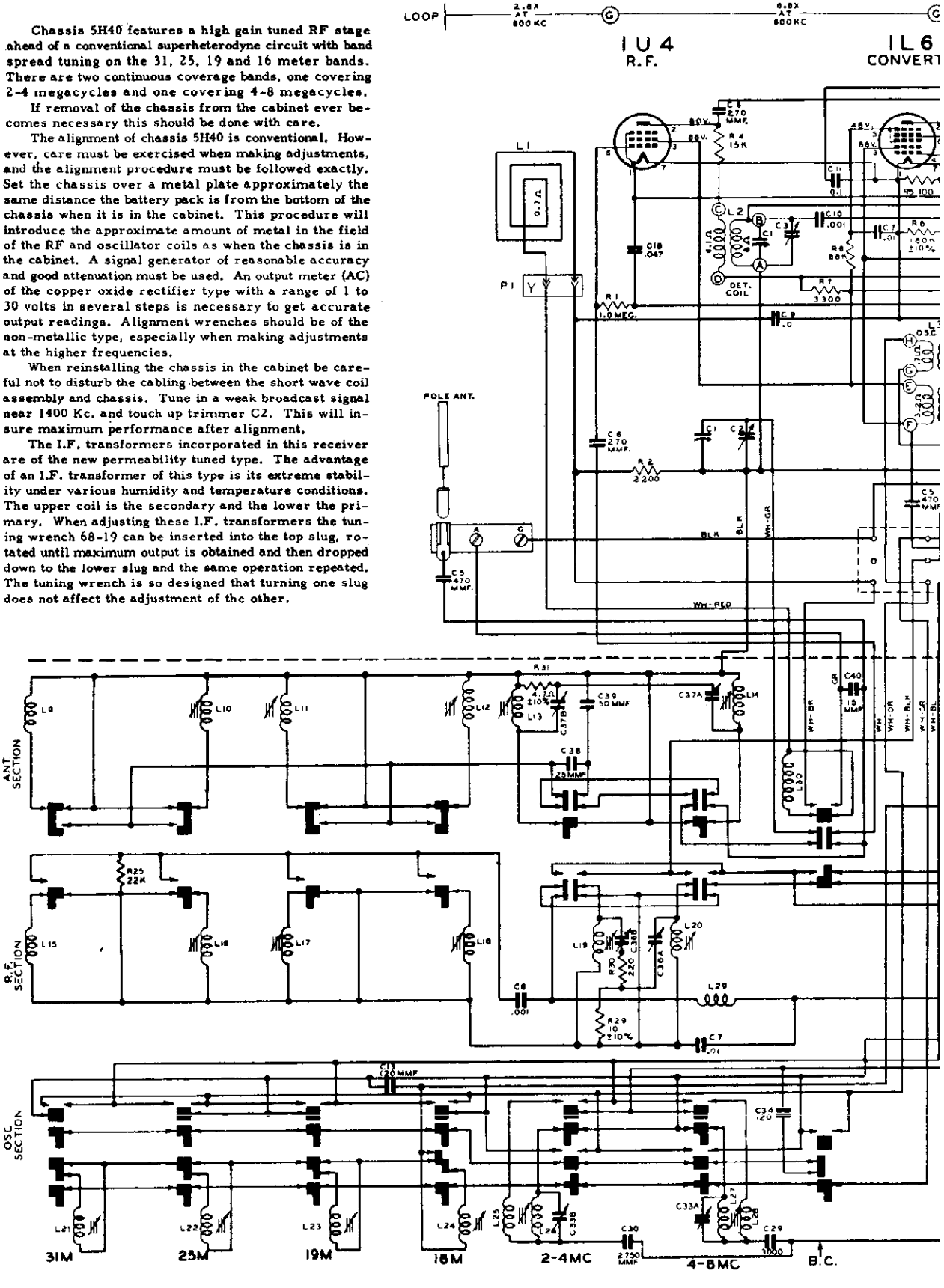
Chassis 5H40 features a high gain tuned RF stage ahead of a conventional superheterodyne circuit with band spread tuning on the 31, 25, 19 and 16 meter bands. There are two continuous coverage bands, one covering 2-4 megacycles and one covering 4-8 megacycles.

If removal of the chassis from the cabinet ever becomes necessary this should be done with care.

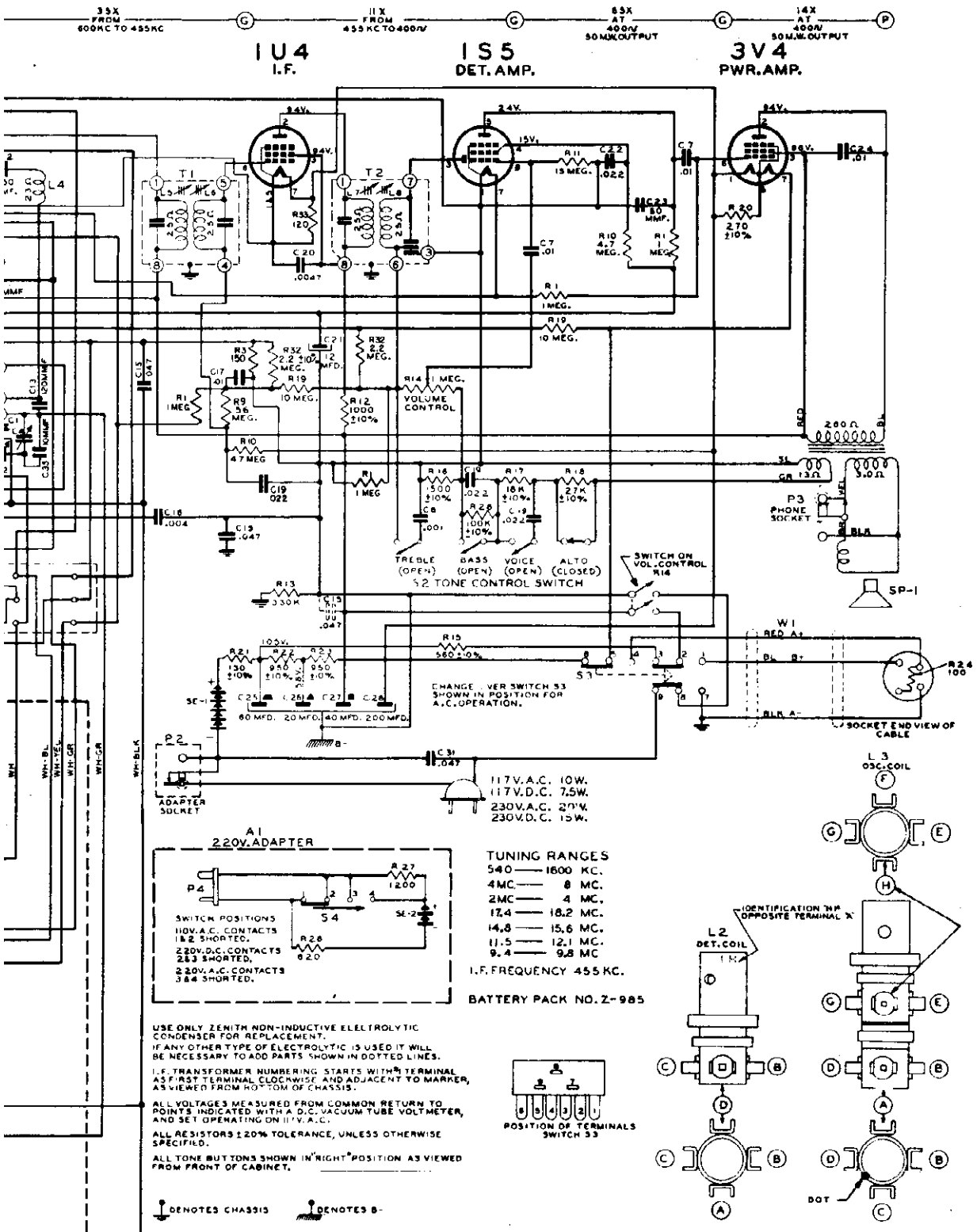
The alignment of chassis 5H40 is conventional. However, care must be exercised when making adjustments, and the alignment procedure must be followed exactly. Set the chassis over a metal plate approximately the same distance the battery pack is from the bottom of the chassis when it is in the cabinet. This procedure will introduce the approximate amount of metal in the field of the RF and oscillator coils as when the chassis is in the cabinet. A signal generator of reasonable accuracy and good attenuation must be used. An output meter (AC) of the copper oxide rectifier type with a range of 1 to 30 volts in several steps is necessary to get accurate output readings. Alignment wrenches should be of the non-metallic type, especially when making adjustments at the higher frequencies.

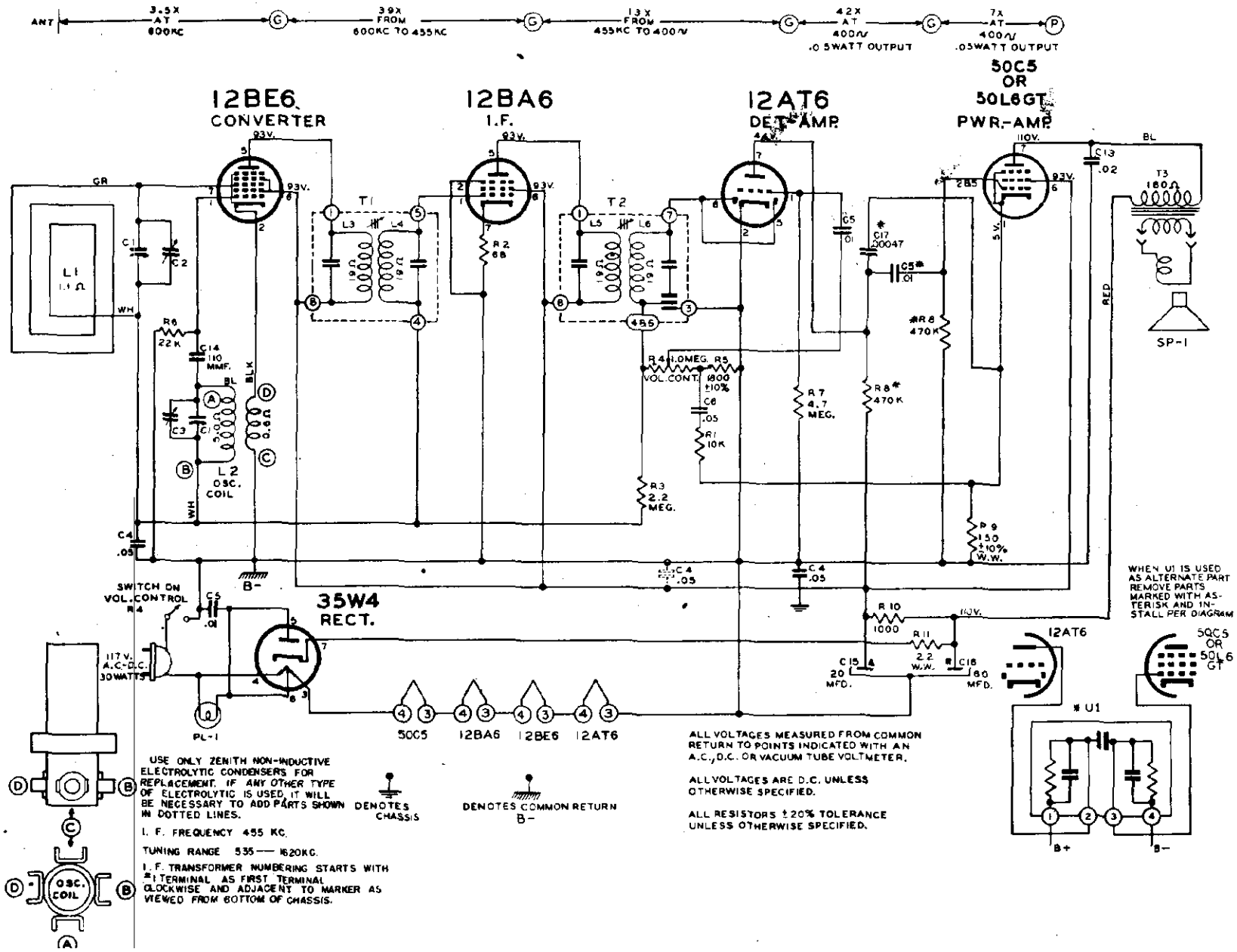
When reinstalling the chassis in the cabinet be careful not to disturb the cabling between the short wave coil assembly and chassis. Tune in a weak broadcast signal near 1400 Kc. and touch up trimmer C2. This will insure maximum performance after alignment.

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 68-19 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.



MODEL H500,
Ch. 5H40





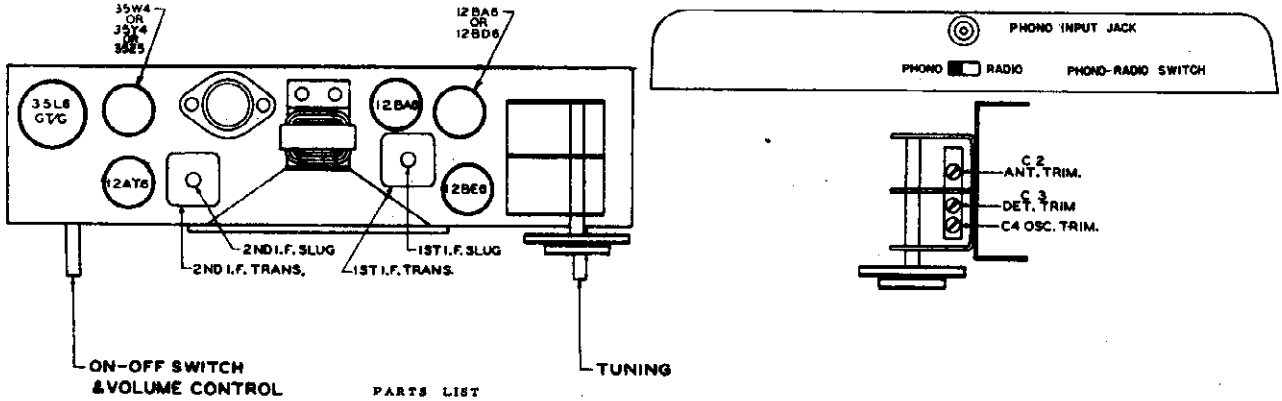
MODELS H511, H511
H511W, Ch. 5H01

MODEL H615Z,
Ch. 6G05

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 68-19 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.

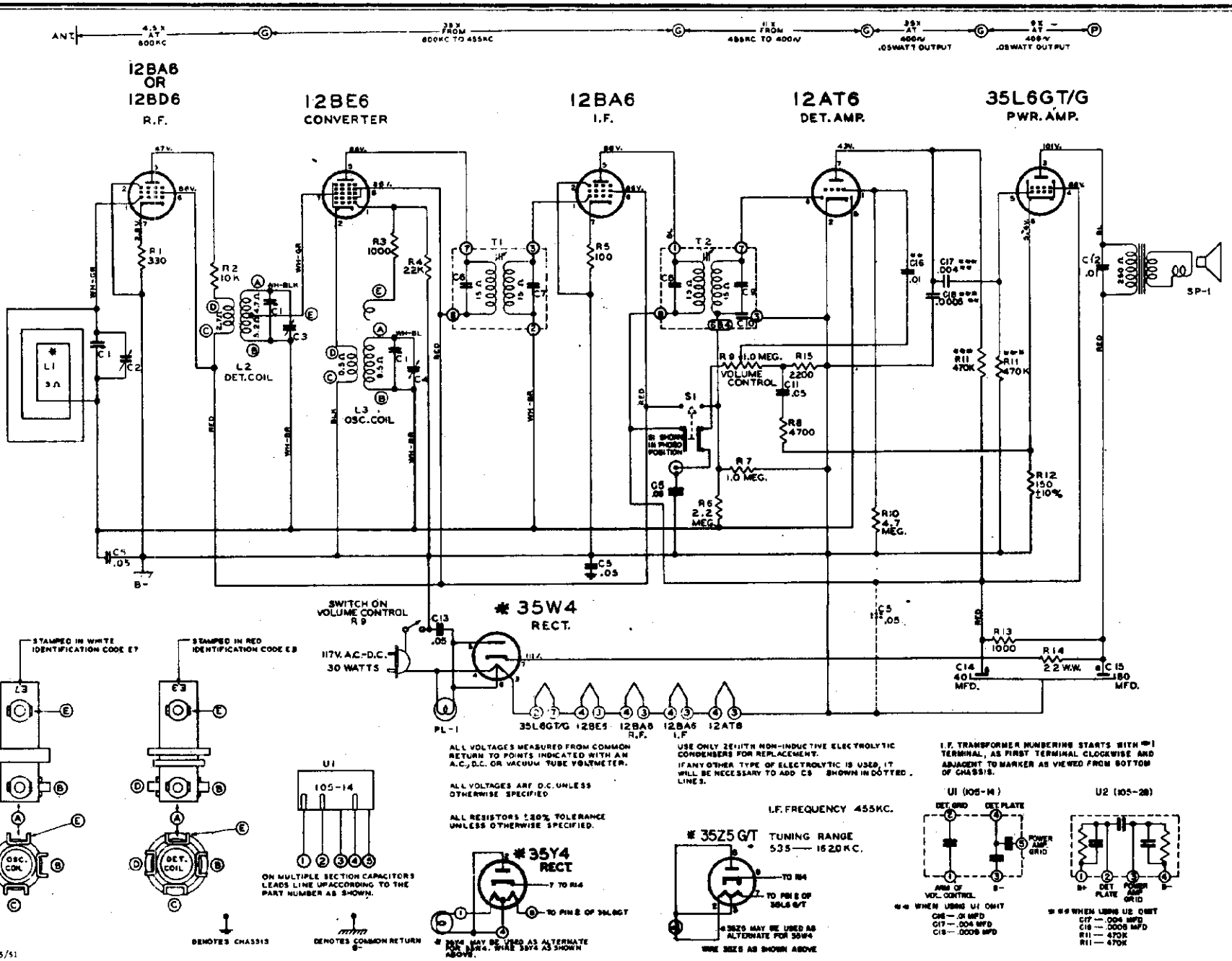
ALIGNMENT PROCEDURE

OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIG. FREQUENCY	SET DIAL AT	TRIMMERS	PURPOSE
1	Convertor Grid	.5 Mfd	455 Kc.	600 Kc.	Adjust Primary & Secondary Slugs	For I.F. Alignment
2	Single Turn Loosely Coupled to Wave Magnet	--	1600 Kc.	1600 Kc.	C-4	Set Oscillator to Dial Scale.
3		--	1400 Kc.	1400 Kc.	C-3	Detector Alignment
4		--	1400 Kc.	1400 Kc.	C-2	Antenna Alignment



PARTS LIST

PART NO.	DIAG. NO.	DESCRIPTION
		DIAL ASSEMBLY
26-452		Dial Scale
59-252		Dial Pointer
59-253		Dial Pointer (Used on W & Y models only)
76-519		Tuning Shaft
78-882		Dial Light Socket & Wire
80-69		Dial Cord Tension Spring
80-209		Dial Cord Tension Spring
100-67	PL1	Dial Light Bulb
171-12		Pilot Light Lens
188-52		Retaining Ring (Used on 76-519)
188-54		Clamping Ring (Used on Dial Pointer)
188-60		Retaining Ring (Used on S-14867)
S-14834		Dial Cord & Eyelet Assem. (Short)
S-14867		Pointer Pulley & Bushing Assem.
S-14868		Brkt. & Stud Assem.
S-16593		Dial Cord & Eyelet Assm. (Long)
		Coils & Chokes
95-1101	T1	1st. I.F. Transformer
95-1102	T2	2nd I.F. Transformer
S-14832	L2	Detector Coil Assem.
S-14833	L3	Oscillator Coil Assem.
		Condensers
22-3	C16	.01 Mfd. 500V
22-178	C11	.05 Mfd. 200V
22-448	C17	.004 Mfd. 600V
22-829	C5	.05 Mfd. 200V
22-854	C18	.0005 Mfd. 600V
22-1017	C13	.05 Mfd. 400V
22-1182	C12	.01 Mfd. 400V
22-1808	C14,C15	Elec. Cond. 80-40 Mfd. 150V
22-2158	C1	Three Section Gang Cond.
105-14	U1	Multiple Capacitor Unit (or 105-28)
		Resistors
63-1219	R14	22 Ohm W.W. 1/2W 20% Ins. Res.
63-1574	R13	1000 Ohm 1 W 20% " "
63-1664	R9	Volume Control & Switch
63-1744	R5	100 Ohm 1/2W 20% Ins. Res.
63-1765	R1	330 Ohm 1/2W 20% " "
63-1786	R3	1000 Ohm 1/2W 20% " "
63-1800	R15	2200 Ohm 1/2W 20% " "
63-1814	R8	4700 Ohm 1/2W 20% " "
63-1828	R2	10K Ohm 1/2W 20% " "
63-1842	R4	22K Ohm 1/2W 20% " "
63-1898	R11	470K Ohm 1/2W 20% " " (2 used)
63-1912	R7	1 Megohm 1/2W 20% " "
63-1926	R6	2.2 Megohm 1/2W 20% " "
63-1940	R10	4.7 Megohm 1/2W 20% " "
63-1977	R12	150 Ohm 1 W 10% " "
		Miscellaneous
11-85		Line Cord & Plug
14-1320		Plastic Cabinet for H615Z
14-1321		Plastic Cabinet for H615WZ
14-1322		Plastic Cabinet for H615YZ
16-660		Packing Carton
44-25		Phono Jack
46-745		Tuning & Vol. Control Knob (2 used)
46-745Y		Tuning & Vol. Control Knob (2 used) (W & Y Model only)
49-643	SP1	5-1/4" PM Speaker TS-2035 Output Transformer ZC-5091 Cone & Voice Coil
54-129		Speed Nut (10 used on mtg. dial scale & gasket)
54-139		#3/8-32 x 9/16" Palnut Type N Cad. (used on 63-1664)
54-267		#6-32 x 5/16" Palnut (1 ea. used on 95-1101 & 95-1102)
57-1688		Cabinet Front Plate
78-275		Elect. Cond. Socket
78-595		Loktal Tube Socket (used only when 35Y4 is used)
78-611		Octal Tube Socket
78-801		Octal Tube Socket (used only when 35Z5GT is used)
78-807		Miniature Tube Socket (6 used)
78-810		Miniature Tube Socket (used only when 35W4 is used)
83-1833		Rubber Strip (used with Dial Scale)
85-495	S1	Phono-Radio Switch
94-334		Gang Cond. Mtg. Bushing (3 used)
110-155		Grill Cloth
110-156		Grill Cloth (used on W&Y Model only)
114-192		#6 x 7/16" Hex. Hd. S.T.(2 used on Chassis Mtg.)
139-92		Baffle Board
139-95		Speaker Baffle (Rubber)
159-69		Trimount Stud-St.Br.(4 used on Wavemagnet)
166-41		Rubber Bumper(or 166-44) (used on Gang Cond)
188-136		Trim Ring
196-154		Grill Cloth Support Gasket
202-886		Instruction Book
S-18134		Wavemagnet Assem.



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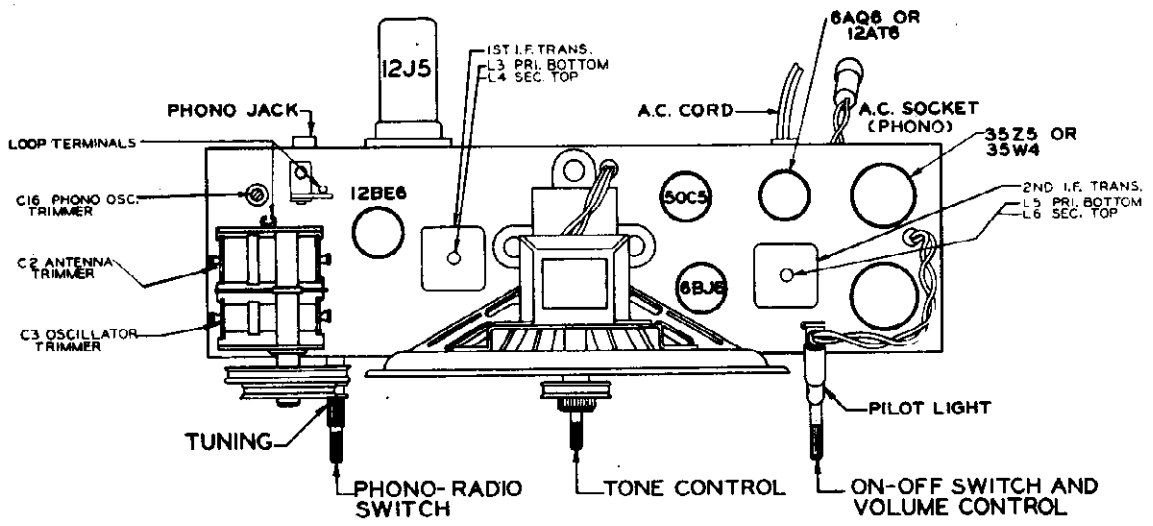
MODEL H615Z, Ch. 6G05

MODEL H664,
Ch. 6H02

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 68-19 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. In the event the receiver oscillates during phono operation, adjust C16 4-80 mmf. capacitor to a point at which the oscillation ceases.

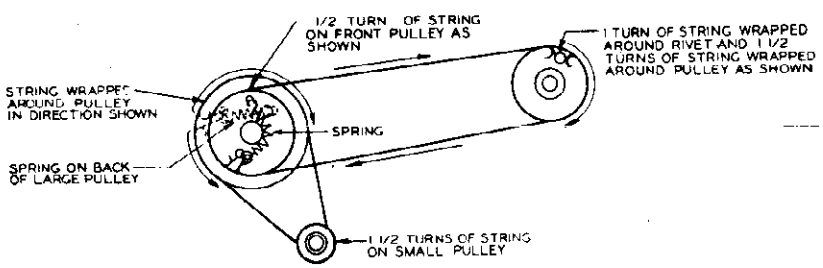
This position of no oscillation will sometimes vary with different cartridges, and in this case readjustment of C16 must be made.



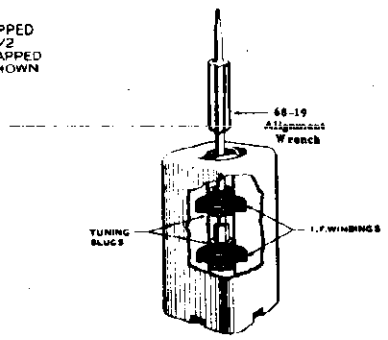
TUBE AND TRIMMER LOCATION

ALIGNMENT PROCEDURE

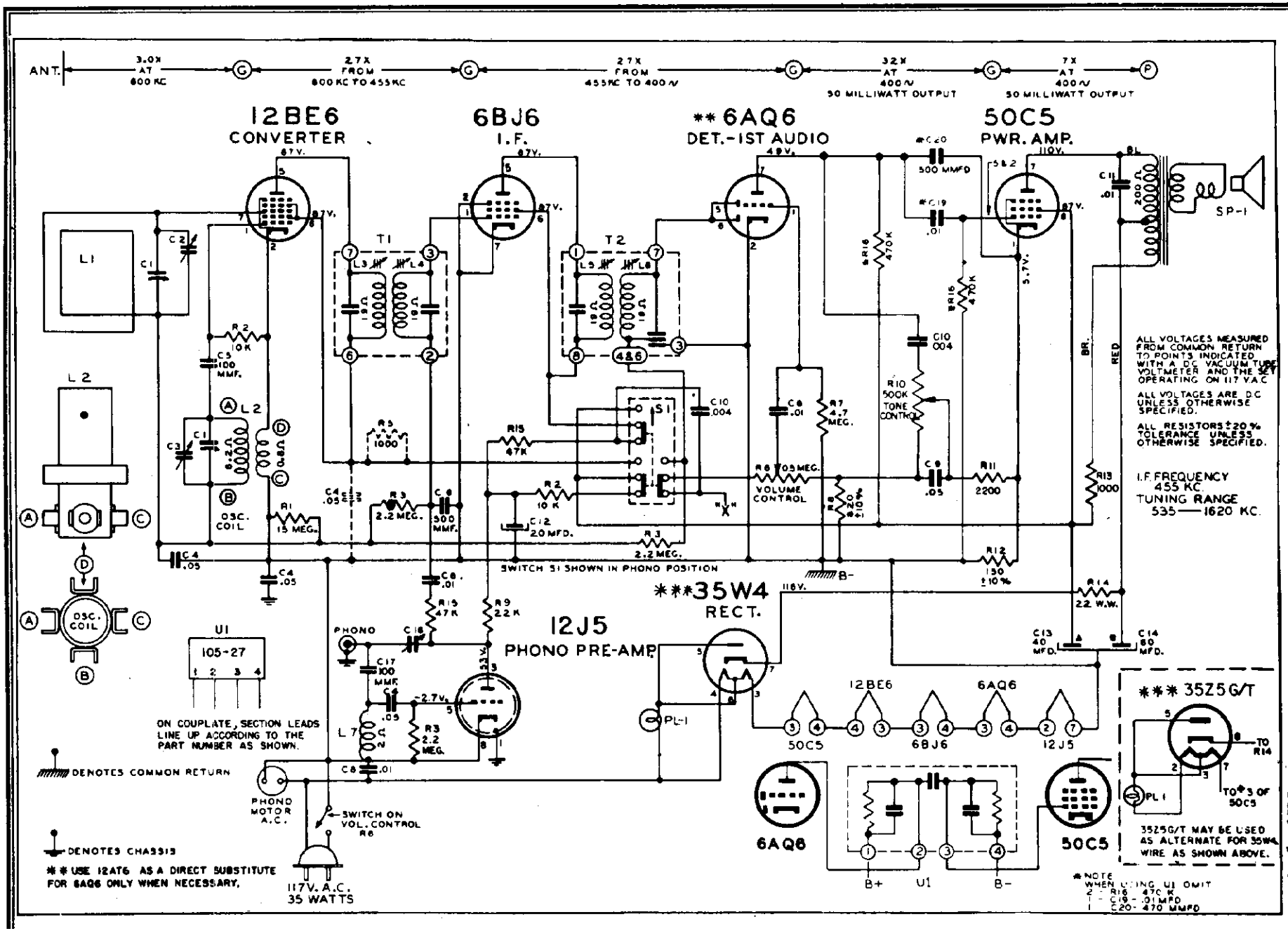
OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIG. FREQUENCY	SET DIAL AT	TRIMMERS	PURPOSE
1	Converter Grid	.5 Mfd.	455 Kc.	600 Kc.	L3, 4, 5, 6	For I. F. Alignment
2	One Turn Loop Coupled Loosely to Wave Magnet	--	1600 Kc.	1600 Kc.	C-3	Set Oscillator to Dial Scale.
3		--	1400 Kc.	1400 Kc.	C-2	Align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



DIAL CABLE DRAWING AND DETAIL OF I. F. TRANSFORMER



Detail of
IF Transformer



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MODEL H664
Ch. 6H02

MODEL H664,
Ch. 6H02

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. "X" TEST POINT

PARTS LIST
MODEL H664 CHASSIS 6H02

PART NO.	DIAG. NO.	DESCRIPTION
		Dial Assembly
26-456		Dial Scale & Escutcheon
46-718		Phono Radio Knob
46-855		Tone Control Knob
46-924		Tuning Control Knob
59-255		Dial Pointer
78-911		Pilot Light Socket & Wire
80-69		Dial Cord Tension Spring
80-209		Dial Cord Tension Spring
83-1868		Pilot Light Indicator Strip
100-67	PL1	Dial Light Bulb
188-60		Retaining Ring (used on S-17857)
188-102		Knob Retaining Ring (46-924)
S-17638		Dial Cord Assembly (Short)
S-17639		Dial Cord Assembly (Long)
S-17640		Pulley & Bushing Assembly
S-17857		Tuning Shaft & Pulley Assembly
S-17923		Volume Control Knob Assembly
		Coils & 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) (3 used) 500V
22-4	C10	.004 Mfd. Ceramic (Disc) (2 used) 500V
22-5	C5	110 Mmfd. Ceramic (Disc)(or 22-162)500V
22-178	C9	.05 Mfd. 200V
22-829	C4	.05 Mfd. (3 used) 200V
22-854	C6	.0005 Mfd. 600V
22-1182	C11	.01 Mfd. 400V
22-2242	C16	Trimmer Cond.
22-2272	C12,13,14	Elect. Cond. 20 Mfd.-150V x 40 Mfd. - 150V x 80 Mfd. - 150V
22-2273	C1	Two Gang Variable Cond.
22-2311	C17	100 Mmfd. Ceramic 500V
105-27	U1	Couplate Unit (or 1 ea. 22-3 & 22-854 & 2 ea. 63-1898)
		Resistors
63-1219	R14	22 ohm W.W. 1/2W 20% Ins. Res.
63-1574	R13	1000 ohm 1W 20% Ins. Res.
63-1782	R8	820 ohm 1/2W 10% Ins. Res.
63-1786	R5	1000 ohm 1/2W Ins. Res.
63-1800	R11	2200 ohm 1/2W 20% Ins. Res.
63-1828	R2	10K ohm(2 used) 1/2W 20% Ins. Res.
63-1842	R9	22K ohm 1/2W 20% Ins. Res.
63-1856	R15	47K ohm(2 used) 1/2W 20% Ins. Res.
63-1926	R3	2.2 Megohm(3 used) 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.
63-2269	R10	Tone Control
63-2270	R6	Volume Control & Switch

PART NO.	DIAG. NO.	DESCRIPTION
		Miscellaneous
11-85		Line Cord & Plug - 6 ft. long
12-1812		Pilot Light Socket Mtg. Brkt.
14-1293		Plastic Cabinet for H664 (Top Section)
12-1294		Plastic Cabinet for H664 (Bottom Section)
16-786		Packing Carton
17-116		Wavemagnet Retaining Clamp
19-169		Record Changer Mtg. Clip (3 used)
24-566		Chassis Cover
40-93		Cabinet Cover Hinge (2 used)
40-94		Cover Support Hinge
44-25		Phono Jack
49-697	SP1	7½" PM Speaker ZC7512B Cone & Voice Coil
52-588		Two Prong Receptacle & Cable
54-129		Speed Nut (7 used on Dial Scale Mtg. & 2 used Wavemagnet Mtg.)
54-139		3/8-32x9/16" Palnut Cad. (1 ea. used on 85-499 & 63-2270)
54-140		3/8-32x9/16"x3/32 Hex Nut-Steel N.P.(used on 63-2269)
54-271		6-32x1/4" Palnut Cad. (1 ea. used on 95-1101 & 95-1102)
57-1713		Record Changer Trim Plate
78-709		Octal Tube Socket
78-801		Octal Tube Socket (used only when 35Z5GT is used)
78-806		Miniature Tube Socket (2 used)
78-807		Miniature Tube Socket (2 used)
78-810		Miniature Tube Socket
78-910		Elect. Cond. Socket
80-830		Record Changer Mtg. Spring (4 used)
83-1908		Felt Strip
85-499	S1	Phono-Radio Switch (or 85-512)
94-295		Gang & Spkr. Mtg. Bushing (4 used)
94-753		Bushing (4 used on 57-1713)
112-773		#6x3/8 Phill. B.H.S.T. St. Br. (2 ea. used on S-17651 & 24-566 & 4 used on 40-94)
112-820		#8x½" Phill. Flt. Hd. S.T. (4 used on each 40-93)
112-827		6-32x3/8 Phill. Flt. Hd. S.T. Br. (3 used on Dial Scale Mtg.)
112-828		6-20x7/8 Phill. Flt. Hd. S.T. (4 used on 57-1713)
114-39		#8x1/4" Hex Hd. S.T. (used on 12-1812)
114-42		#10-32x1-1/4" Hex Washer Hd. Cad. (4 used chassis Mtg.)
125-81		Strain Relief Grommet
125-82		Strain Relief Grommet
126-674		Dial Light Shield
138-45		Cabinet Grill
188-34		Retaining Ring (used on 63-2269)
196-172		Speaker Gasket
202-858		Instruction Book (Radio-Phono)
S-14041		Cobra-Matic Record Changer
S-15780		Cobra Cartridge Assembly
S-16419		Record Adapter Plug & Envelope Assembly
S-17651	L1	Wavemagnet Assembly

The 7H04Z 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 7H04Z 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 others.

FM IF Alignment: Because of the wide bandpass, 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.

Note: If a 12AT7 is replaced with a 12AU7 or vice versa, the RF portion of this reciever must be realigned.

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

A vacuum tube voltmeter with 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.

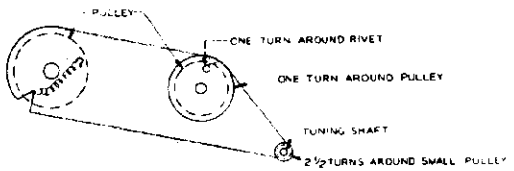
The signal generator output should be kept just high enough to get an indication on the meter.

(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).

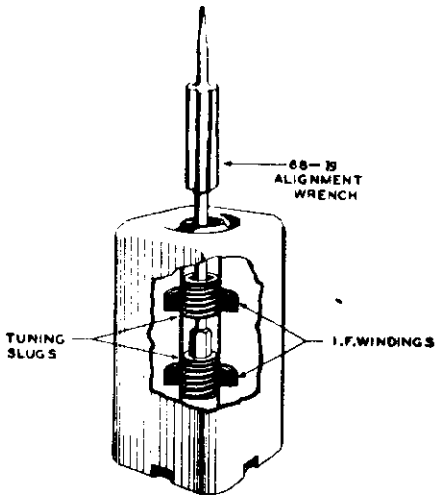
(c) Vacuum Tube Voltmeter from Limiter Grid to Chassis.

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

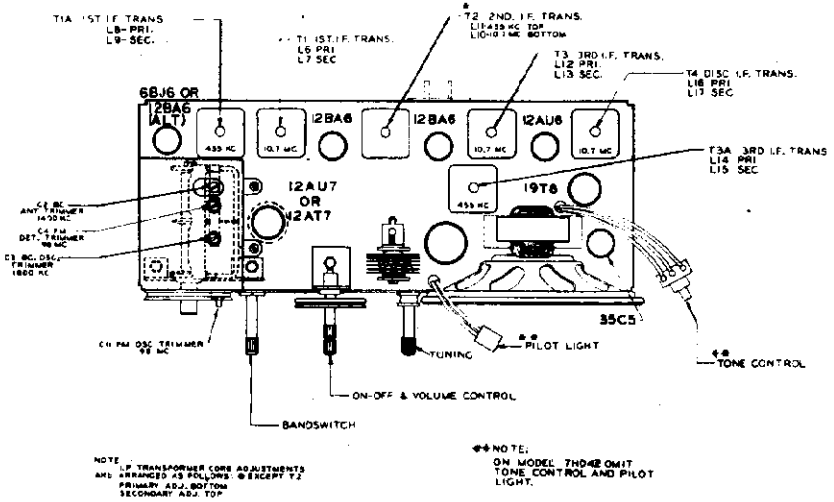


DIAL CORD DRIVE

TUBE AND TRIMMER LOCATION



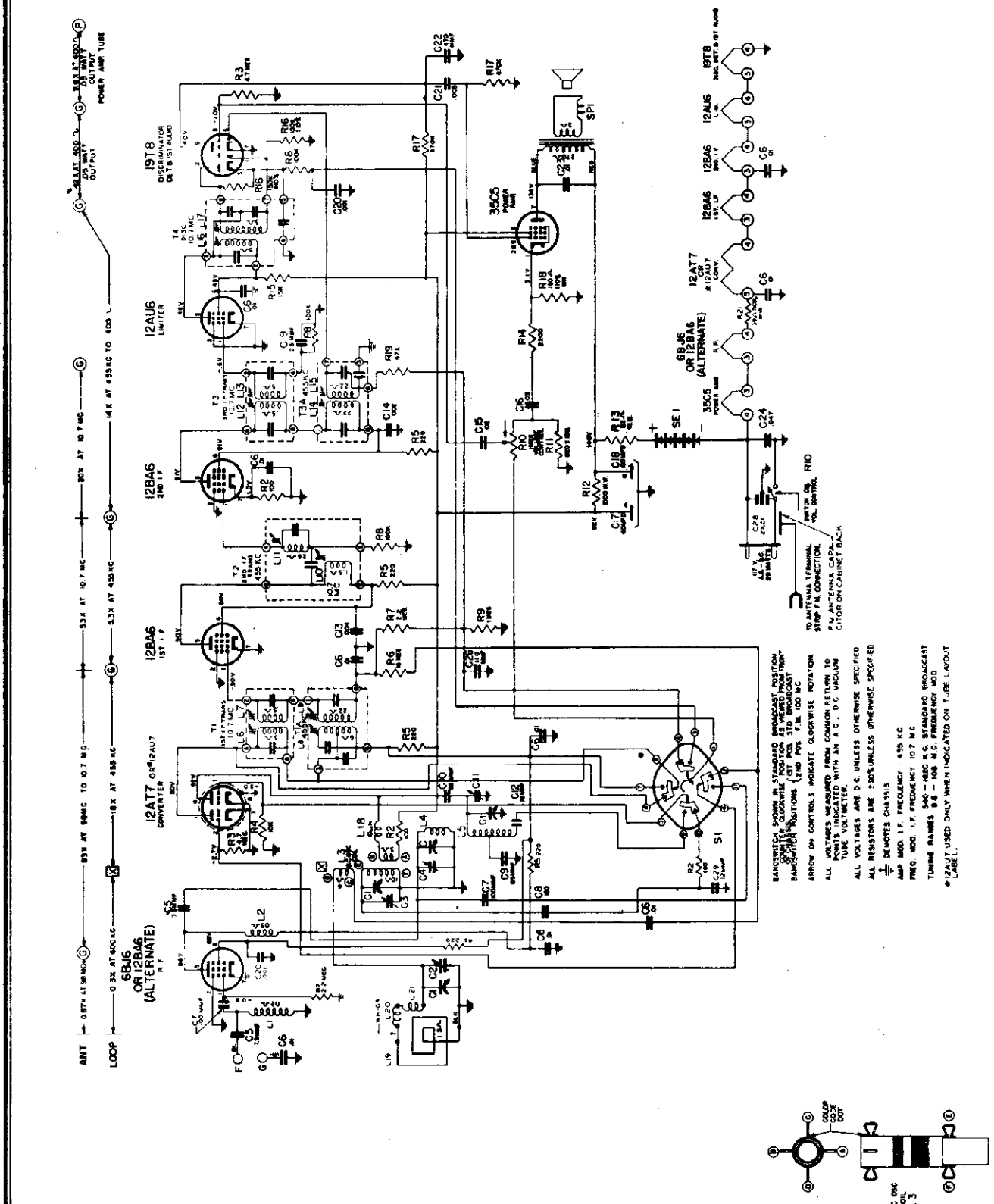
Detail of IF Transformer



ALIGNMENT PROCEDURE

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial To	Adj. Trimmers	Purpose
1	Pin 2-12AT7, or 12AU7 Converter	.05 Mfd.	455 KC. Modulated	BC	600 Kc.	L8, 9, 11, 14; 15	Align I. F. channel for maximum output.
2	2 turns loosely cpld. to wavemagnet		1600 Kc. Modulated	BC	1600 Kc.	C3	Set oscillator to dial scale.
3	2 turns loosely cpld. 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		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 IF.	.05 Mfd.	10.7 Mc. Unmodulated	FM 100		L12 and 13 Prim. and 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 100		L10 Prim. of 2nd IF transformer.	Align 2nd IF transformer for maximum reading.
8 (c)	Pin 2 (grid) on 12AT7 or 12AU7 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.	C11 Osc. Coil.	Set Oscillator to dial scale.
10 (c) (d)		270 ohms	98 Mc. Unmodulated	FM 100	98 Mc.	C4 Det. Coil.	Align det. stage to maximum reading.

MODEL H723Z,
Ch. 7H04Z



PARTS LIST

PART NO.	DIAG. NO.	DESCRIPTION
		DIAL ASSEMBLY
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
S-17334		Tuning Shaft & Pulley Assem.
S-17336		Tuning Shaft Brkt. & Ins. Strip Assem.
S-17350		Dial Cord & Eyelet Assem.
S-17467		Brkt. & Pulley Assem.
		COILS & CHOKES
20-328	L5	F.M. Osc. Coil
20-331	L4	F.M. Mixer "
20-333	L18	R.F. Choke "
20-335	L2	R.F. Plate Load Coil
20-336	L1	F.M. Antenna Coil
95-1102	T3A	3rd. I.F. Trans. 455KC
95-1150	T3	1st. & 3rd. I.F. Trans. 10.7 MC (2 Used)
95-1153	T4	Disc. Trans. 10.7 MC
95-1250	T1A	1st. I.F. Trans. 455KC
95-1251	T2	2nd. I.F. Trans. 10.7 MC & 455 KC
S-17340	L3	B.C. Osc. Coil Assem.
		CONDENSERS
22-3	C6	.01 Mfd. Ceramic Disc. (9 Used) 500V
22-5	C26	110 Mmfd. " " (or 22-1669) 500V
22-6	C22	470 Mmfd. Ceramic 500V
22-229	C21	.005 Mfd. 600V
22-448	C13	.004 " 600V
22-830	C15	.02 " 600V
22-1126	C23	.01 " 400V
22-1158	C16	.05 " 200V
22-1220	C14	.002 " 600V
22-1507	C19	25 Mmfd. Ceramic 500V
22-1669	C7	100 " " (2 Used) 500V
22-1675	C8	150 " " 500V
22-1676	C20	.001 Mfd. " (2 Used) 500V
22-1757	C18,C17	Elect. Cond. 40 Mfd. - 150V - 80 Mfd. 150V

PART NO.	DIAG. NO.	DESCRIPTION
		CONDENSERS Cont'd.
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 Gang Two Sect. B.C. Two Section F.M.
22-2256	C10	65 Mmfd. Ceramic 500V
22-2257	C12	16 Mmfd. Ceramic 500V
22-2258	C9	85 Mmfd. Ceramic 500V
22-2276	C28	Dual Ceramic - .01 Mfd. 500V
22-2278	C29	12 Mmfd. Ceramic 500V
		RESISTORS
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.
63-1744	R2	100 Ohm 1/2W 20% Ins. Res. (3 Used)
63-1758	R5	220 Ohm 1/2W 20% Ins. Res. (5 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. (2 Used)
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	Volume Control & Switch
63-2424	R21	39 Ohm W.W. 1W 10% Ins. Res.
		MISCELLANEOUS
11-85		Line Cord & Plug (6 ft.)
12-1070		Wavemagnet Mtg. Brkt.
14-1272		Plastic Table Cabinet for H723UZ

PART NO.	DIAG. NO.	DESCRIPTION
		MISCELLANEOUS Cont'd.
16-656		Packing Carton
19-175		Coil Mtg. Clip (Used on S-17340)
24-535		Line Cord Plug Cover
49-689	SP1	5-1/4" PM Speaker ZC5091 Cone & Voice Coil
54-129		Speed Nut (9 used to mt. Grille & Baffle)
54-271		6-32 X 1/4" Palnut Steel (1 used on ea. I.F.)
57-1686		Emblem Plate
57-1690		Emblem Mtg. Plate
57-1717		Chassis Bottom Plate
58-188		Two Prong Plug
78-787		Two Contact Socket (Cabt. Back)
78-806		Miniature Tube Socket
78-869		Miniature Tube Socket
78-870		Miniature Tube Socket (3 Used)
78-871		Miniature Tube Socket
78-903		Miniature Tube Socket
83-1056		Wavemagnet Mtg. Strip
83-1829		Insulator Strip
85-501		Band Switch
97-293		Chassis Mtg. Stud (2 Used)
110-152		Grill Cloth
112-281		#10 X 3/4" Truss Hd. S.T. Stat. Br. Screw (2 Used Chassis Mtg.)
114-297		#6 X 1/4" Hex Hd. S.T. (4 Used on S-17679 & 6 Used 57-1717)
114-356		#6-32 X 1-1/4" Hex Hd. S.T. Screw (Used on 212-7)
126-618		Tube Shield
138-42		Cabinet Grill
139-91		Speaker Baffle
149-89		Iron Core
159-69		Plug Button
196-153		Speaker Gasket
202-697		F.M. Instruction Book
202-860		Instruction Book
212-7	SE1	Selenium Rectifier
S-17366		Cabt. Back Assem.
S-17679		Gang Cond. Shield & Terminal Strip Assem.
S-17696	L19	Wavemagnet Assem.
S-17855	L21	Choke Coil Assem.
S-17856	L20	Loop Loading Coil Assem.

The 7H02Z 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 7H02Z 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.

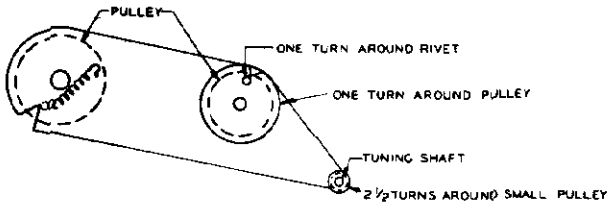
The signal generator output should be kept just high enough to get an indication on the meter.

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

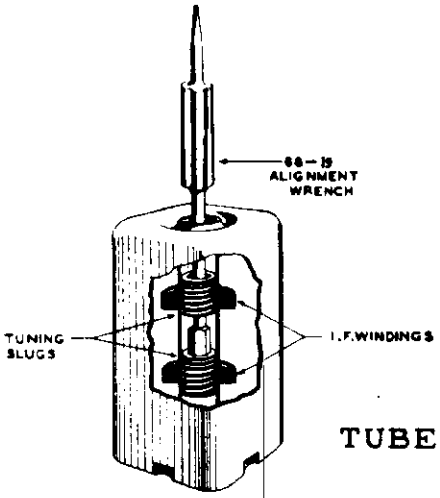
(b) Vacuum Tube Voltmeter Lug 5 on discriminator transformer to chassis (full discriminator load).

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

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

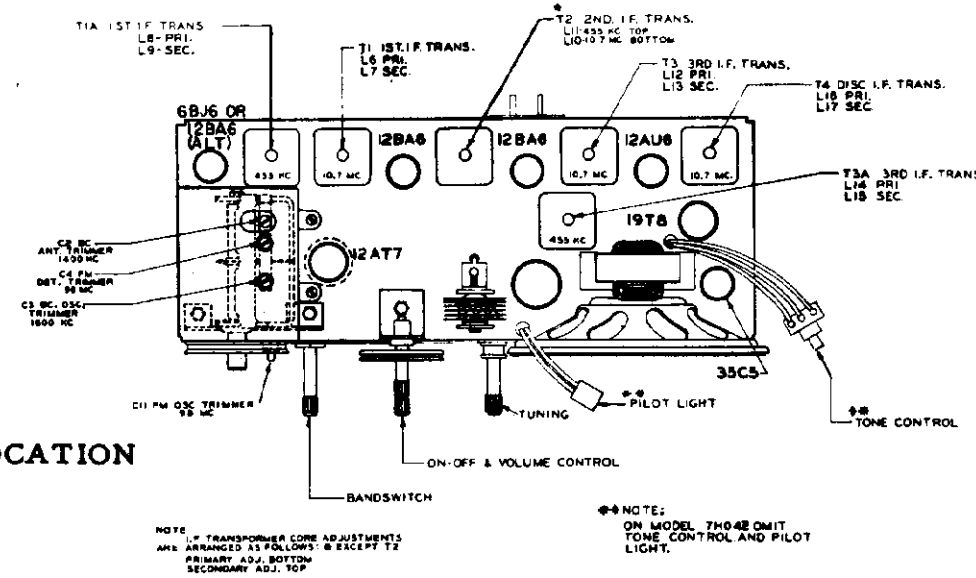


DIAL CORD DRIVE



Detail of
IF Transformer

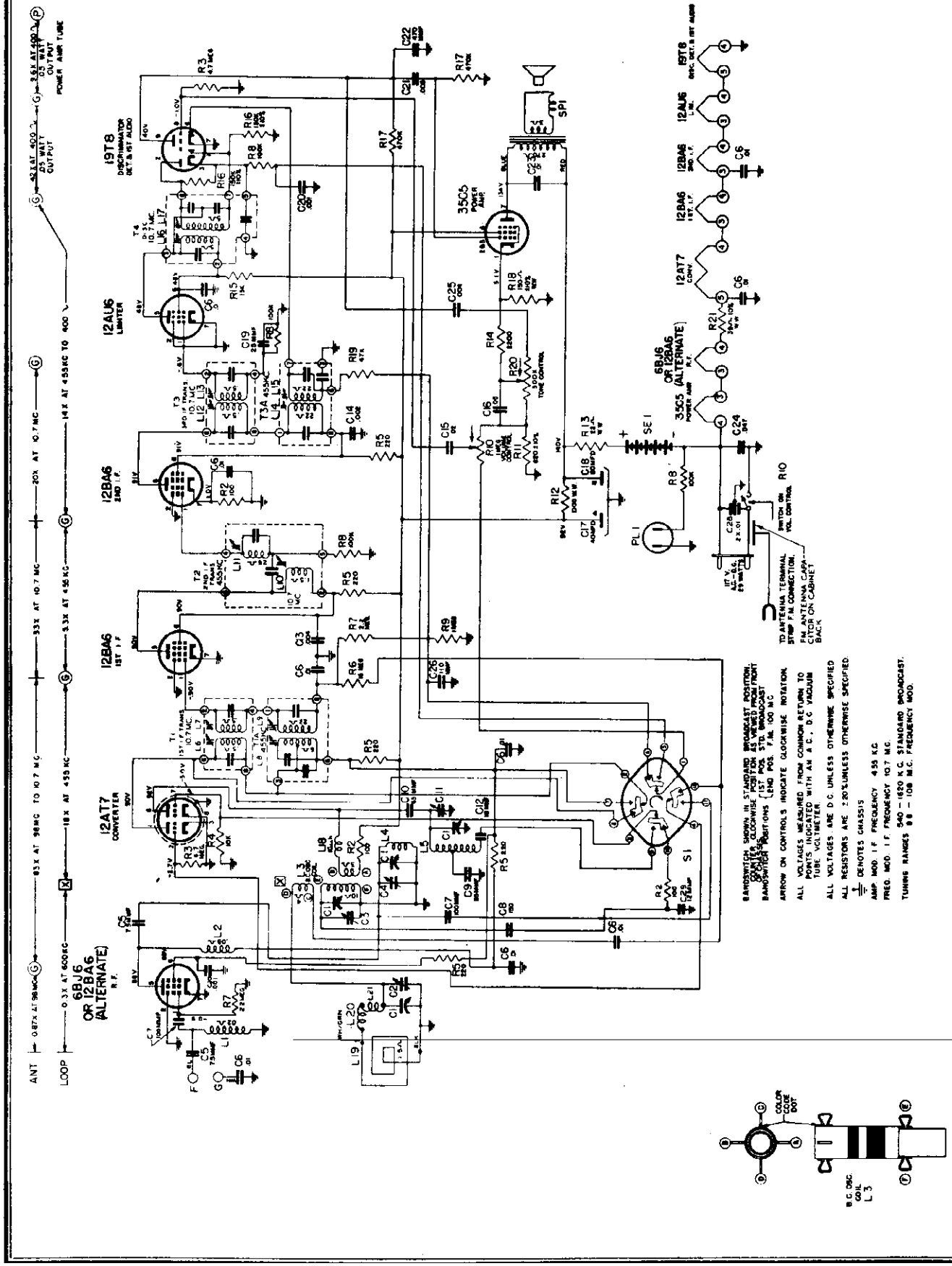
TUBE AND TRIMMER LOCATION



ALIGNMENT PROCEDURE

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial To	Adj. Trimmers	Purpose
1	Pin 2 12AT7 Converter	.05 Mfd.	455 KC. Modulated	BC	600 Kc.	LB, 9,11,14,15	Align I. F. channel for maximum output.
2	2 turns loosely cpld. to wavemagnet		1600 Kc. Modulated	BC	1600 Kc.	C 3	Set oscillator to dial scale.
3	2 turns loosely cpld. to wavemagnet		1400 Kc. Modulated	BC	1400 Kc.	C 2	Align 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 IF.	.05 Mfd.	10.7 Mc. Unmodulated	FM 100		L12 and L13 Prim. and 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 100		L10 Prim. 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.	C11 Osc. Coil Slug	Set Oscillator to dial scale.
10 (c) (d)		270 ohms	98 Mc. Unmodulated	FM 100	98 Mc.	C4 Det. Coil Slug	Align det. stage to maximum reading.

MODEL H724Z,
Ch. 7H02Z



PARTS LIST

PART NO.	DIAG. NO.	DESCRIPTION	
		DIAL ASSEMBLY	
26-451		Dial Scale	
46-859		Band Switch Knob	
46-860		Tuning Control Knob	
46-900		Vol. Control Knob	
46-901		Tone Control Knob	
59-251		Dial Pointer	
78-904		Dial Light Socket & Wire	
80-69		Dial Cord Tension Spring	
100-105	PL1	Neon Indicator Bulb	
188-129		Retaining Ring (Used on S-17334 & S-17467)	
S-17334		Tuning Shaft & Pulley Assem.	
S-17336		Tuning Shaft Brkt. & Ins. Strip Assem.	
S-17350		Dial Cord & Eyelet Assem.	
S-17467		Brkt. & Pulley Assem.	
		COILS & CHOKES	
20-328	L5	F.M. Osc. Coil Assem.	
20-331	L4	F.M. Mixer Coil	
20-333	L18	R.F. Choke Coil	
20-335	L2	R.F. Plate Load Coil	
20-336	L1	F.M. Ant. Coil	
95-1102	T3A	3rd. I.F. Trans. 455KC	
95-1150	T3	1st. & 3rd. I.F. Trans. 10.7MC (2 Used)	
95-1153	T4	Disc. Trans. 10.7MC	
95-1250	T1A	1st. I.F. Trans. 455KC	
95-1251	T2	2nd. I.F. Trans. 10.7MC & 455KC	
S-17340	L3	B.C. Osc. Coil Assem.	
		CONDENSERS	
22-4	C25	.004 Mfd. Ceramic	500V
22-5	C26	110 Mmfd. Ceramic (Disc) (or 22-1669)	500V
22-6	C22	470 Mmfd. Ceramic	500V
22-229	C21	.005 Mfd.	500V
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 (2 Used)	500V
22-1675	C8	150 Mmfd. Ceramic	500V
22-1676	C20	.001 Mfd. Ceramic (2 Used)	500V

PART NO.	DIAG. NO.	DESCRIPTION	
		CONDENSERS Con't.	
22-1757	C17,C18	Elect. Cond. 40 Mfd. - 150V X 80 Mfd.	150V
22-1775	C-24	.047 Mfd.	400V
22-1852	C5	7.5 Mmfd. Ceramic (2 Used)	500V
22-2253	C11	Trimmer Cond. (Slug Tuned)	
22-2255	C1	Variable Gang Two Section B.C. & Two Section F.M.	
22-2256	C10	65 Mmfd. Ceramic	500V
22-2257	C12	16 Mmfd. Ceramic	500V
22-2258	C9	85 Mmfd. Ceramic	500V
22-2276	C28	Dual Ceramic .01 Mfd. - .01 Mfd.	500V
22-2278	C29	12 Mmfd. Ceramic	500V
		RESISTORS	
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.	
63-1744	R2	100 Ohm 1/2W 20% Ins. Res. (3 Used)	
63-1758	R5	220 Ohm 1/2W 20% Ins. Res. (5 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. (4 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. (2 Used)	
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	
63-2144	R20	Tone Control	
63-2424	R21	39 Ohm W.W. 1W 10% Ins. Res.	
		MISCELLANEOUS	
11-85		Line Cord & Plug (6 ft.)	
12-1070		Wavemagnet Mtg. Brkt.	
14-1273		Plastic Cabinet for H724UZ	
16-657		Packing Carton	
19-175		Coil Mtg. Clip	
24-535		Line Cord Plug Cover	
43-165		Handle Housing	

PART NO.	DIAG. NO.	DESCRIPTION
		MISCELLANEOUS Con't.
49-689	SP1	5-1/4" PM Speaker ZC5091 Cone & Voice Coil
54-129		Speed Nut (9 used to mt. Grill & Baffle)
54-271		6-32 X 1/4" Palnut (1 used on ea. I.F.)
54-305		Palnut Steel Stat. Br. (Used on Chassis Mtg.)
57-1686		Emblem Plate
57-1690		Emblem Mtg. Plate
57-1717		Chassis Bottom Plate
58-188		Two Prong Plug (AC)
78-787		Two Contact Socket (Cabt. Back)
78-806		Miniature Tube Socket
78-869		Miniature Tube Socket
78-870		Miniature Tube Socket (3 Used)
78-871		Miniature Tube Socket
78-903		Miniature Tube Socket
83-1056		Wavemagnet Mtg. Strip
83-1789		Handle Strip (Rubber)
83-1829		Insulator Strip
85-501	S1	Band Switch
93-487		1/16 X .144 X 3/8 Washer Steel (2 Used on 43-165)
97-293		Chassis Mtg. Stud (2 Used)
110-152		Grill Cloth
112-281		#10 X 3/4" Truss Hd. S.T. Screw St. Br. (2 Used Chassis Mtg.)
114-356		#6-32 X 1-1/4" Hex Hd. S.T. Screw (Used on 212-7)
114-366		#6 X 3/8 Hex Hd. S.T. Screw (2 Used on 43-165)
126-618		Tube Shield
138-42		Cabinet Grille
139-91		Speaker Baffle
149-89		Iron Core (Used on S-17340)
159-69		Plug Button (4 Used on S-17841)
171-11		Pilot Light Jewel
196-153		Speaker Gasket
199-103		Flexible Handle Sleeve
202-697		F.M. Inst. Book
202-859		Inst. Book
212-7		Selenium Rectifier
S-13210		Strap & Rivet Assem.
S-17679		Gang Cond. Shield & Terminal Assem.
S-17696	L19	Wavemagnet Assem.
S-17841		Cabt. Back Assem. (Comp.)
S-17855	L21	Choke Coil Assem.
S-17856	L20	Loop Loading Coil Assem.

The 7G01Z 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 7G01Z 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.

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:

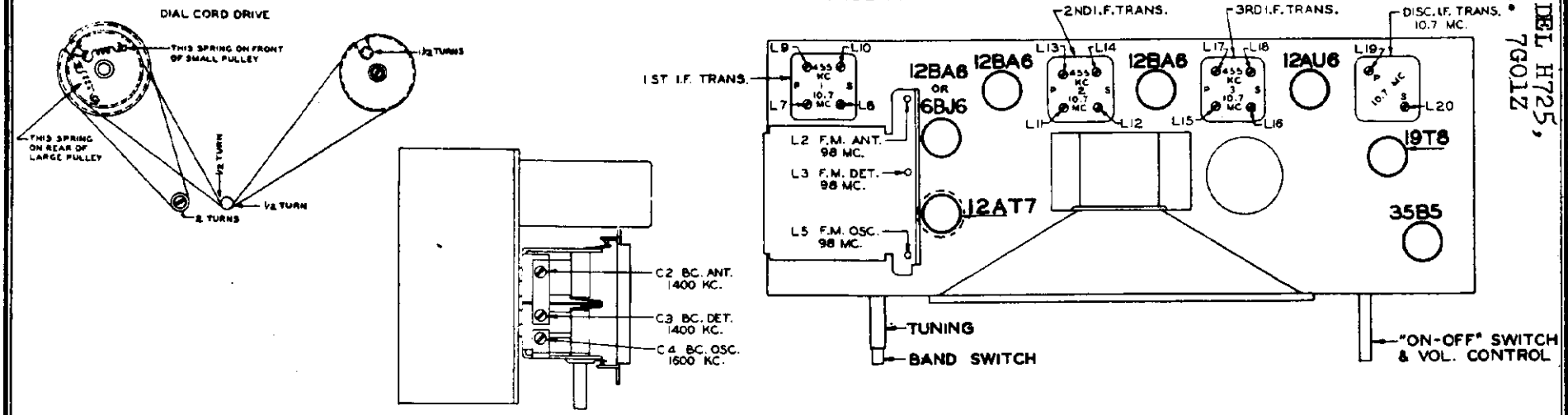
A vacuum tube voltmeter with an isolation resistor of 2,000,000 ohms in series with the hot lead will serve for FM adjustments. This lead should be shielded.

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.

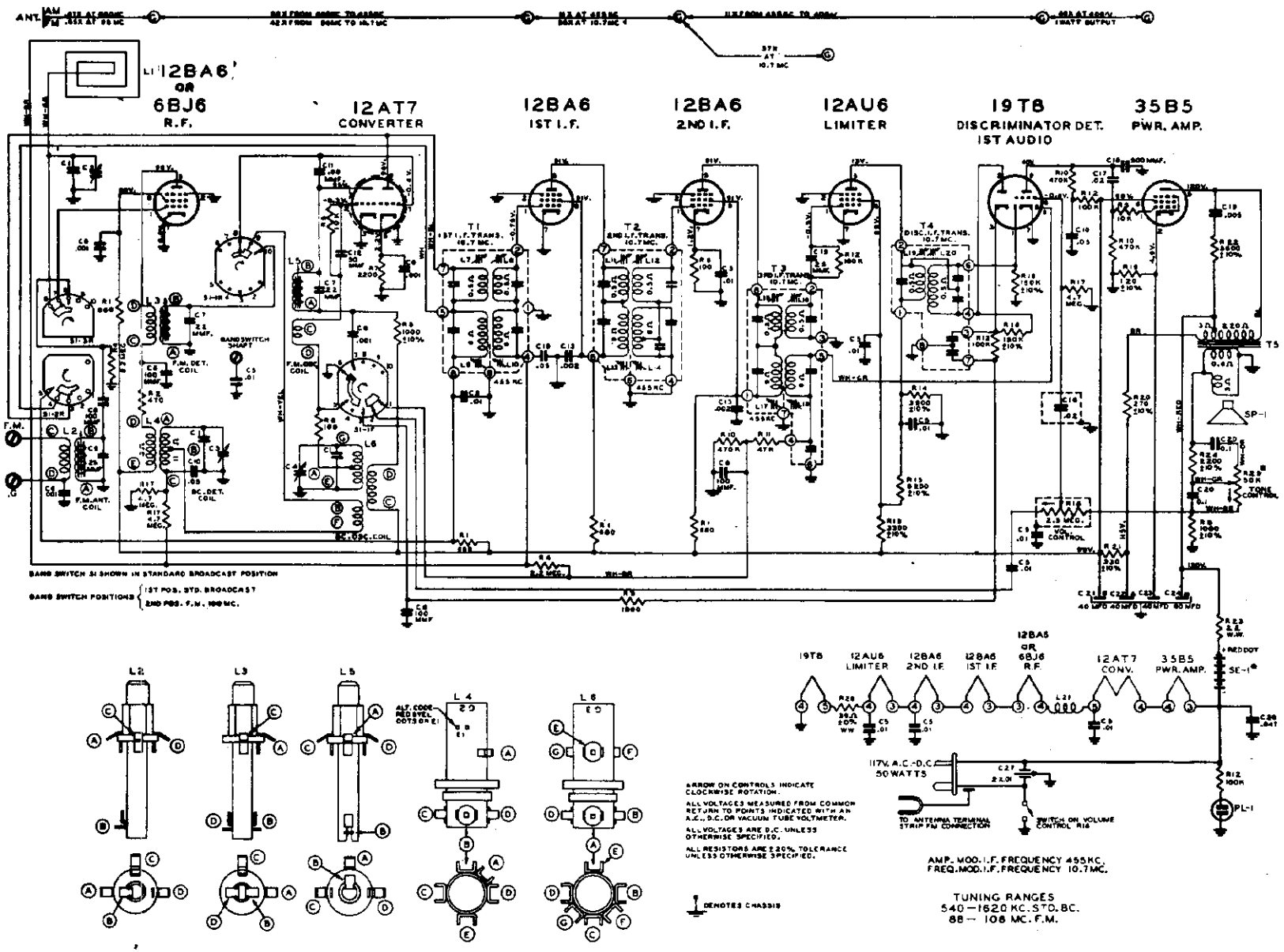
(a) Vacuum Tube Voltmeter Lug 6 on discriminator transformer to chassis (half discriminator load).
(b) Vacuum Tube Voltmeter Lug 3 on discriminator transformer to chassis (full discriminator load).
(c) Vacuum Tube Voltmeter from Limiter Grid to Chassis.
(d) Loosen Slugs by applying a hot iron to the cement.

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 12AT7 Converter	.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 cpld. to wavemagnet		1600 Kc Modulated	BC	1600 Kc	C4	Set oscillator to dial scale
3	2 turns loosely cpld. 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 100		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 100		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 100		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 100		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 100		L7 and L8 Prim. and Sec. of 1st IF transformer	Align 1st. IF Transformer for maximum reading
9 (c)(d)	Antenna Post F (Remove 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 and L2 Det. and RF coil Slugs	Align det. and ant. stages to maximum reading



ZENITH PAGE 22-25
MODEL H725,
Ch. 7G01Z

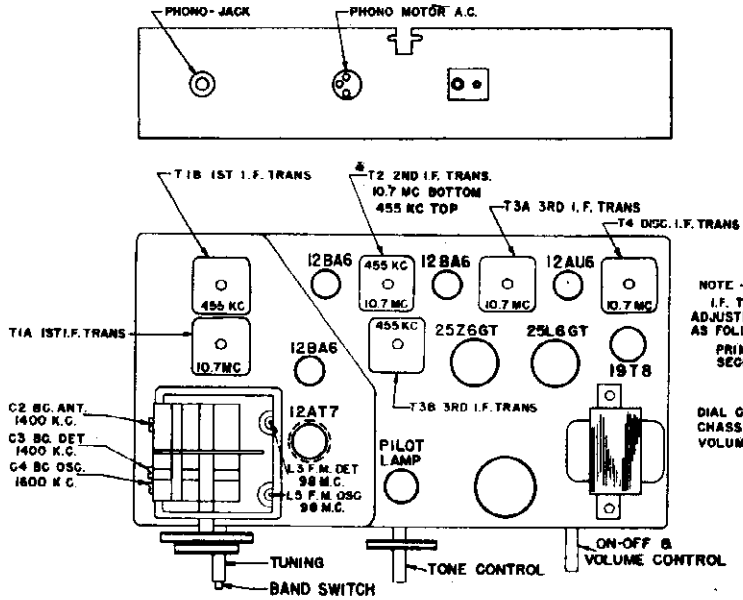
PARTS LIST

PART NO.	DIAG. NO.	DESCRIPTION
		DIAL ASSEMBLY
12-1768		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
57-1641		Name Plate
59-245		Dial Pointer
78-894		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
80-817		Tuner Spring
80-818		Tuner Arm Pressure Spring
80-865		Ground Spring (2 Used)
93-475		Felt Washer (used on S-14129)
93-1043		Spring Washer (used on S-16735)
100-105	PL1	Neon Bulb
114-26		8-18x1/4" lg. x 1/4" Hex Hd. S.T. (2 used on 12-1768)
171-11		Pilot Light Jewel
188-102		Clamping Ring (used on 46-538)
S-13945		Cam, Pulley & Pushing Assembly
S-13983		Dial Cord & Eyelet Assembly
S-14129		Volume Control Knob Assembly
S-14429		Tuner Arm Assembly
S-16735		Pulley & Bushing Assembly
S-16884		Tuning Shaft & Pulley Assembly
S-16887		Dial Cord & Eyelet Assembly
		COILS & CHOKES
S-13971	T2	2nd I.F. Transformer Assembly
S-13972	T3	3rd I.F. Transformer Assembly
S-13973	T4	Discriminator Transformer Assembly
S-13997	L21	Filament Choke Coil Assembly
S-14192	L2	F.M. Antenna Coil Assembly
S-15733	L5	F.M. Oscillator Assembly
S-15743	L3	F.M. Detector Coil Assembly
S-15981	T1	1st I.F. Transformer Assembly
S-16344	L4	Broadcast Detector Coil Assembly
S-16345	L6	Broadcast Oscillator Coil Assembly
		CONDENSERS
22-3	C5	.01 Mfd. Ceramic (Disc) (11 used) 500V
22-5	C8	110 Mmfd. Ceramic (Disc) (4 used) (or 22-669) 500V
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

PART NO.	DIAG. NO.	DESCRIPTION
		CONDENSERS Cont'd.
22-1506	C7	22 Mmfd. Ceramic (2 used) 500V
22-1507	C15	25 Mmfd. Ceramic 500V
22-1661	C21,22 C23,24	Elect. 80-40-40 Mfd. - 150V x 40 Mfd. 25V
22-1676	C6	.001 Mfd. Ceramic (4 used) 500V
22-1677	C1	Three Gang Variable
22-1683	C16	.02 Mfd. 400V
22-1702	C19	.005 Mfd. 400V
22-1766	C11	.68 Mmfd. (Molded) 500V
22-1775	C26	.047 Mfd. 400V
22-2060	C9	25 Mmfd. Ceramic 500V
22-2084	C20	.1 Mfd. (2 used) 200V
22-2276	C27	Dual Ceramic - .01 Mfd. - .01 Mfd. 500V
		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
63-1744	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. (4 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. (2 used)
63-1940	R17	4.7 Megohm 1/2W 20% Ins. Res. (3 used)
63-2108	R25	Tone Control
63-2424	R26	39 Ohm W.W. 1W 10% Ins. Res.
		MISCELLANEOUS
11-85		A.C. Line Cord & Plug
12-1070		Wavemagnet Mtg. Brkt. (2 used)
14-1250		Plastic Cabinet for H725
16-606		Packing Carton
19-139		Cabinet Back Ret. Clip (4 used)
43-165		Handle Housing
49-608	SP1	7-1/2" P.M. Speaker ZC7121 Cone & Voice Coil
54-139		3/8-32x9/16" Palnut (used to mt. 63-1584)
54-140		3/8-32x9/16x3/32 Thk. Hex Hd. (used to mt. 63-2108)

PART NO.	DIAG. NO.	DESCRIPTION
		MISCELLANEOUS Cont'd.
54-226		Speed Nut (1 ea. used on S-15743 - S-14192 & S-15733)
54-269		8-32x11/32" Palnut (1 ea. used on S-13971 S-13972 - S-13973 - S-15981)
57-1269		I.F. Trans. Terminal Plate (8 used)
58-128		Two Prong Plug
78-787		Two Contact Socket
78-788		Miniature Tube Socket (9 contact)
78-794		Miniature Tube Socket (3 used)
78-795		Miniature Tube Socket (7 contact)
78-870		Miniature Tube Socket (7 contact)
78-903		Miniature Tube Socket (9 contact)
83-1056		Wavemagnet Mtg. Strip (2 used)
83-1520		Rectifier Insulating Strip
83-1782		Tone Control Ins. Strip
83-1789		Handle Strip-Rubber
83-1898		Asbestos Strip
85-504	S1	Band Switch
93-415		#6 Ext. Shakeproof Lockwasher (used on 212-7)
93-487		1/16x.144x3/8 Steel Washer (2 used on 43-165)
94-334		Speaker Mtg. Bushing (4 used)
94-485		Fibre Bushing (1ea. used on 63-1584 & 63-2108)
95-1035	T5	Output Transformer
97-293		Insulating Stud (4 used on chassis)
112-281		Chassis Mtg. Screw (4 used)
112-697		6-20x7/16" S.T. Pan Hd. S.T. (4 used on S-17787)
114-26		8-18x1/4" lg. x 1/4" A.F. Hex Hd. S.T. (2 used on S-13977)
114-78		8-18x1/4" lg. x 1/4" A.F. Hex Hd. S.T. (2 used on S-13977)
114-356		6-32x1-1/4" lg. x 1/4" Hex Hd. S.T. (used on 212-7)
114-366		6-32x3/8" lg. x 1/4" A.F. Hex Hd. S.T. (2 used on 43-166)
126-618		Tube Shield
138-46		Speaker Grille
139-69		Speaker Baffle
139-88		Baffle Board
149-64		Tuning Core (3 used)
188-30		Retaining Ring (used on S-16884)
188-34		Retaining Ring (used on 63-2108)
188-136		Trim Ring (2 used)
199-103		Flexible Handle Sleeve
202-697		F.M. Instruction Book
202-871		Instruction Book
212-7	SE1	Selenium Rectifier
S-13210		Strap & Rivet Assembly (handle)
S-13977	L1	Wavemagnet Assembly
S-14358		Wavemagnet Cable Assembly
S-17787		Cabinet Back Assembly (Complete)

TUBE AND TRIMMER LOCATION



The 8H20Z 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.

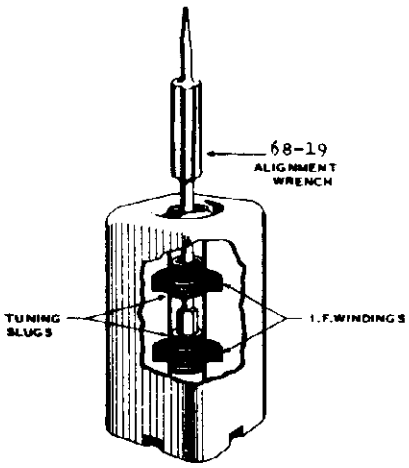
When adjustments are made on the 8H20Z chassis, a line isolation transformer (110 V input to 110V output) is recommended in order to avoid a "hot" chassis. If an isolation transformer is not available, check the AC voltage between chassis and bench ground and if there is any indication of voltage, reverse the plug before handling the set.

FM RF Alignment: The tunning 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.

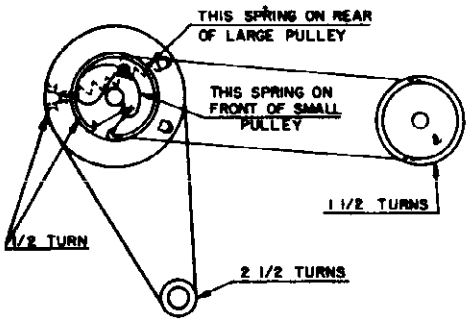
AM and FM IF Alignment: The AM and FM IF transformers in this receiver are of the new permeability tuned type. The advantage of an IF transformer of this type is its extreme stability under various humidity and temperature conditions. The upper coil is the secondary and the lower the primary. When adjusting these IF transformers the tuning wrench 68-19 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 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

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. Modulated	BC	600 Kc.	L9, 10, 12 15 & 16	Align I. F. channel for maximum output.
2	2 turns loosely cpld. to wavemagnet		1600 Kc. Modulated	BC	1600 Kc.	C4	Set oscillator to dial scale.
3	2 turns loosely cpld. to wavemagnet		1400 Kc. 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 100		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 100		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 100		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 100		Adjust L11 for maximum reading.	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 (Remove 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.

MODELS H880,
H880R, Ch. 8H202

MODELS H880,
H880R, Ch. 8H20Z

PARTS LIST

Dial Assembly

Part No.	Diag. No.	Description
78-895		Dial Light Socket & Wire
80-69		Dial Cord Spring
80-746		Pulley Retaining Spring
80-747		Dial Cord Spring
100-97	PL-1	Pilot Light Bulb
114-262		8-32x7/16"x1/4" A.F. Hex Hd. S.T. (2 used on S-17149)
114-297		6-32x1/4" lg. x 1/4" A.F. Hex Hd. (2 used on S-17165)
148-122		Tuner Arm
188-30		Retaining Ring (used on S-17155)
S-17149		Dial Scale & Brkt. Assem.
S-17155		Tuning Shaft & Pulley Assem.
S-17157		Pointer & Pulley Assem.
S-17158		Dial Cord & Eyelet Assem. (Long)
S-17159		Dial Cord & Eyelet Assem. (Short)
S-17165		Brkt. & Pulley Bushing Assem.

Coils & Chokes

20-337	L22	R. F. Choke Coil (6 used)
95-1102	T3B	2nd I. F. Transformer
95-1150	T3B	2nd I. F. Transformer
95-1153	T4	Discriminator Transformer
95-1201	T1A	1st I. F. Transformer
95-1248	T1B	1st I. F. Transformer
95-1251	T2	2nd I. F. Transformer
S-12603	L20	Phono Oscillator Coil Assem.
S-13997	L21	Filament Choke Coil Assem.
S-15691	L5	F. M. Oscillator
S-15743	L3	F. M. Detector Coil Assem.
S-16344	L4	Broadcast Detector Coil Assem.
S-16345	L6	Broadcast Osc. Coil Assem.
S-16408	L2	Antenna Choke Coil Assem.

Condensers

22-3	C7	.01 Mfd. Ceramic	(11 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
22-669	C22	.01 Mfd.		600V
22-827	C15	.1 Mfd.		200V
22-829	C5	.05 Mfd.	(2 used)	200V
22-854	C24	.0005 Mfd.		600V
22-1220	C14	.002 Mfd.	(2 used)	600V
22-1367	C13	50 Mmfd.Ceramic	(2 used)	500V
22-1506	C10	22 Mmfd.Ceramic	(2 used)	500V
22-1507	C28	25 Mmfd.Ceramic		500V
22-1676	C11	.001 Mfd. Ceramic	(4 used)	500V
22-1717	C20	.001 Mfd.		200V
22-1762	C12	1 Mmfd. Ceramic		500V
22-1775	C18	.047 Mfd. (Molded)		400V
22-1863	C23	10 Mmfd. Ceramic		500V
22-2104	C1	Three Section Variable		
22-2105	C26,C27	Elect. 80-40		250V
22-2140	C6	15 Mmfd. Ceramic	(2 used)	500V
22-2154	C25	Elect. 10 Mfd.		250V
22-2240	C16	Trimmer Cond.		
22-2276	C29	Dual Ceramic .01 Mfd. - .01 Mfd.	(3 used)	500V

Resistors

63-1726	R33	39 Ohm	1/2W	10%	Ins. Res.
63-1744	R14	100 Ohm	1/2W	20%	Ins. Res.
63-1758	R1	220 Ohm	1/2W	20% (5 used)	Ins. Res.
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	3300 Ohm	1/2W	10%	Ins. Res.
63-1814	R17	4700 Ohm	1/2W	20%	Ins. Res.
63-1827	R5	10K Ohm	1/2W	10%	Ins. Res.
63-1828	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% (3 used)	Ins. Res.
63-1859	R34	56K Ohm	1/2W	10%	Ins. Res.
63-1869	R31	100K Ohm	1/2W	10%	Ins. Res.
63-1870	R20	100K Ohm	1/2W	20% (2 used)	Ins. Res.
63-1876	R30	150K Ohm	1/2W	10% (2 used)	Ins. Res.
63-1884	R8	220K Ohm	1/2W	20% (2 used)	Ins. Res.
63-1898	R9	470K Ohm	1/2W	20% (2 used)	Ins. Res.
63-1912	R12	1 Megohm	1/2W	20% (3 used)	Ins. Res.
63-1926	R7	2.2 Megohm	1/2W	20% (2 used)	Ins. Res.
63-1940	R32	4.7 Megohm	1/2W	20%	Ins. Res.
63-1947	R3	6.8 Megohm	1/2W	20% (2 used)	Ins. Res.
63-1954	R13	10 Megohm	1/2W	20%	Ins. Res.
63-1981	R26	120 Ohm	1W	10%	Ins. Res.
63-2068	R18,R19	Two Section Candohm			
63-2091	R15	820 Ohm W.W.	1/2W	20%	Ins. Res.
63-2131	R22	Volume Control & Switch			
63-2132	R11	Tone Control			
63-2428	R27	82 Ohm W.W.	2W	10%	Ins. Res.

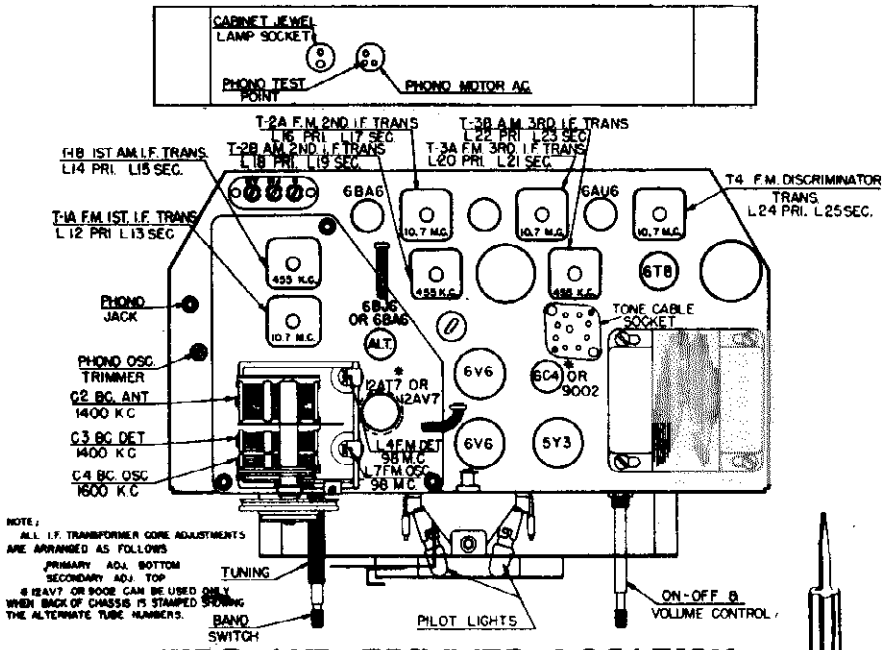
Miscellaneous

44-25		Phono Jack
54-139		3/8-32x9/16 Palnut (1 ea. used on 63-2131 & 63-2132)
54-271		6-32x1/4" Palnut Steel Cad. (1 ea. used on 95-1102-1150-1251-1153 & 2 ea. used on 95-1201 & 1248)
58-128		Two Prong Plug
78-755		Octal Tube Socket (2 used)
78-869		Miniature Tube Socket
78-870		Miniature Tube Socket (3 used)
78-871		Miniature Tube Socket
78-896		Three Contact Socket
78-903		Miniature Tube Socket (9 contact)
80-780		Iron Core Tension Spring (3 used)
80-781		Tuner Arm Tension Spring
80-865		Ground Spring (2 used)
80-868		Ground Spring (2 used)
95-505	S-2	S.P.D.T. Switch (ant.)
95-506	S-1	Band Switch
95-1039		Gang Mtg. Cup Washer (2 used)
95-1188	T6	Auto Trans.
95-1272	T5	Speaker Output Trans.
126-618		Miniature Tube Shield
149-95		Iron Core & Spring
S-16838		Speaker Cable & Eyelet Assem.

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
49-702	SP-1	10" P.M. Speaker ZC-1061 Cone
57-1481		Esc. Clamping Ring (4 used)
57-1658		Escutcheon
57-1731		Chassis Bottom Plate
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
202-878		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-17871		Cabinet Back Assembly (Radio Section)
S-17328	L19	Loop Loading Coil Assembly

MODELS H1083E, H1084E, H1086R, H1087R, Ch. 10H20Z



TUBE AND TRIMMER LOCATION

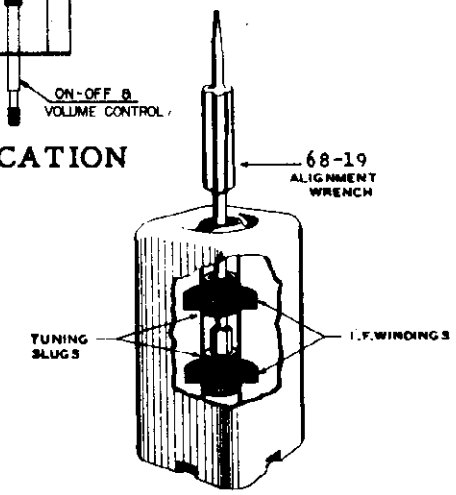
The 10H20Z chassis incorporates a superheterodyne circuit with two stages of IF, on the FM Band, and two stages on the AM Band. There is one stage of RF amplification on all Bands.

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.

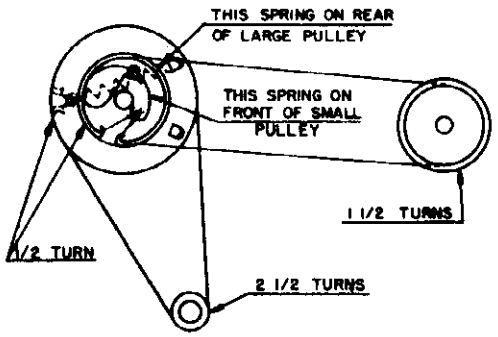
AM and FM Alignment: The AM and FM IF transformers in this reciever are of the new permeability tuned type. The advantage of an IF transformer of this type is its extreme stability under various humidity and temperature conditions. The upper coil is the secondary and the lower the primary. When adjusting 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.

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

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.

NOTE: If 12AT7 is replaced by a 12AV7 or vice versa the RF portion of this receiver must be realigned.

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 4-50 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.

ALIGNMENT PROCEDURE

Operation	Connect Oscillator To	Dummy Antenna	Input Signal Frequency	Band	Set Dial To	Adj. Trimmers	Purpose
1	Pin 2 12AT7 or 12AV7 Converter	.05 Mfd.	455 Kc. Modulated	BC	600 Kc.	Adj. Pri. and Sec. T1B, T2B, T3B	Align I. F. channel for maximum output.
2	2 turns loosely cpld. to wavemagnet		1600 Kc. Modulated	BC	1600 Kc.	C4	Set oscillator to dial scale.
3	2 turns loosely cpld. to wavemagnet		1400 Kc. Modulated	BC	1400 Kc.	C3, C2	Align detector and antenna stage.
4 (a)	Pin 1 (grid) on 6 AU6 limiter.	.05 Mfd.	10.7 Mc. Unmodulated	FM 100		Adj. Primary of Discriminator T4	Align primary of discriminator for maximum reading.
5 (b)	Pin 1 (grid) on 6 AU6 limiter.	.05 Mfd.	10.7 Mc. Unmodulated	FM 100		Adj. Secondary of Discriminator T4	Adjust secondary of discriminator for zero reading.
6 (c)	Pin 1 (grid) on 6 BA6 2nd. I F.	.05 Mfd.	10.7 Mc. Unmodulated	FM 100		Adj. Pri. and Sec. T3A	Align 3rd. IF transformer for maximum reading.
7 (c)	Pin 1 (grid) on 6BJ6 1st. IF.	.05 Mfd.	10.7 Mc. Unmodulated	FM 100		Adj. Pri. and Sec. T2A	Align 2nd IF transformer for maximum reading.
8 (c)	Pin 2 (grid) on 12AT7 or 12AV7 converter tube socket	.05 Mfd.	10.7 Mc. Unmodulated	FM 100		Adj. Pri. and Sec. T1A	Align 1st. IF transformer for maximum reading.
9 (c)	Antenna Post FM (Remove line ant.)	270 ohms	98 Mc. Unmodulated	FM 100	98 Mc.	L7 Osc. Coil Slug.	Set Oscillator to dial scale.
10 (c) (d)		270 ohms	98 Mc. Unmodulated	FM 100	98 Mc.	L4 Det. Coil Slug	Align det. stage to maximum reading.

PARTS LIST

Dial Assembly

Part No.	Diag. No.	Description
78-898		Dial Light Socket & Wire
80-69		Dial Cord Spring
80-746		Pulley Retaining Spring
80-747		Dial Cord Spring
100-67	PL-1	Dial Light Bulb
188-30		Retaining Ring (used on S-17155)
S-17155		Tuning Shaft & Pulley Assem.
S-17157		Pointer & Pulley Assem.
S-17158		Dial Cord & Eyelet Assem. (Long)
S-17159		Dial Cord & Eyelet Assem. (Short)
S-17258		Dial Scale & Brkt. Assem.
S-17261		Brkt. & Pulley Bushing Assem.

Coils and Chokes

20-337		R. F. Choke Coil (10 used)
95-1150	T3A	2nd & 3rd I.F. Trans. (F.M.)
95-1153	T4	Discriminator Trans.
95-1201	T1A	1st. I.F. Trans. (F.M.)
95-1248	T1B	1st. I.F. Trans. (B.C.)
95-1249	T2B	2nd. I.F. Trans. (B.C.)
95-1254	T3B	3rd. I.F. Trans. (B.C.)
S-12603	L8	Phono Oscillator Coil Assem.
S-13800	L9	Tone Choke Assem.
S-13997	L10	Filament Choke Coil Assem.
S-15691	L7	F.M. Osc. Coil Assem.
S-15743	L4	F.M. Det. Coil Assem.
S-16344	L5	Broadcast Det. Coil Assem.
S-16345	L6	Broadcast Osc. Coil Assem.
S-16408	L3	Ant. Choke Coil Assem.

Condensers

22-3	C13	.01 Mfd. Ceramic (9 used)	500V
22-5	C22	110 Mmfd. Ceramic (or 22-1669)(4 used)	500V
22-171	C10	.05 Mfd.	600V
22-178	C33	.05 Mfd.	200V
22-348	C32	.001 Mfd. (Molded)	500V
22-492	C14	.002 Mfd.	600V
22-829	C5	.05 Mfd. (2 used)	200V
22-830	C23	.02 Mfd. (2 used)	600V
22-1203	C28	.001 Mfd. (2 used)	600V
22-1220	C17	.002 Mfd. (2 used)	600V
22-1256	C27	75 Mmfd. (Molded)	500V
22-1367	C12	50 Mmfd. Ceramic	500V
22-1506	C9	22 Mmfd. Ceramic (2 used)	500V
22-1531	C24	.2 Mfd.	200V
22-1612	C29AB-C29BB	Elct. 40 Mfd. 40 Mfd.	450V
22-1645	C25	330 Mmfd. (Molded)	500V
22-1668	C21	200 Mmfd. Ceramic	500V
22-1676	C7	.001 Mfd. Ceramic (4 used)	500V
22-1761	C31	50 Mmfd. Ceramic	500V
22-1762	C11	1 Mmfd. Ceramic	500V
22-1782	C19	.0047 Mfd. (Molded)	600V
22-1802	C26	.002 Mfd.	1600V
22-1863	C15	10 Mmfd. Ceramic	500V
22-1887	C20	25 Mmfd. Ceramic	500V
22-2104	C1	Three Section Variable	
22-2140	C6	15 Mmfd. Ceramic (2 used)	500V
22-2243	C30AB-C30BB	Elect. 20 Mfd.-350V x 40 Mfd.	450V
22-2251	C16	Trimer Cond.	
22-2276	C34	Dual Ceramic .01 Mfd.-.01 Mfd.	500V

Resistors

63-966	R12	4700 ohm 2w 20%	Carb. Res.
63-1193		5600 ohm 2w 10% (used only when 12AV7 is used or 63-2064)	Ins. Res.
63-1452	R26	270 ohm w.w. 2w 10%	Ins. Res.
63-1716		22 ohm 1/2w 20% (or 63-2446 if req.)	Ins. Res.
63-1722	R16	33 ohm 1/2w 10%	Ins. Res.
63-1723	R2	33 ohm 1/2w 20%	Ins. Res.
63-1744	R17	100 ohm 1/2w 20%	Ins. Res.
63-1758	R3	220 ohm 1/2w 20% (3 used)	Ins. Res.
63-1764	R24	330 ohm 1/2w 10%	Ins. Res.
63-1771	R8	470 ohm 1/2w 10%	Ins. Res.
63-1772	R7	470 ohm 1/2w 20%	Ins. Res.
63-1786	R9	1000 ohm 1/2w 20% (used only when 12AT7 is used)	Ins. Res.
63-1793	R14	1500 ohm 1/2w 20%	Ins. Res.
63-1799	R32	2200 ohm 1/2w 10%	Ins. Res.
63-1820	R36	6800 ohm 1/2w 10%	Ins. Res.
63-1827	R6	10K ohm 1/2w 10% (2 used)	Ins. Res.
63-1842	R22	22K ohm 1/2w 20% (2 used)	Ins. Res.
63-1845	R23	27K ohm 1/2w 10%	Ins. Res.
63-1848	R30	33K ohm 1/2w 10%	Ins. Res.
63-1849		33K ohm 1/2w 20%	Ins. Res.
63-1856	R10	47K ohm 1/2w 20%	Ins. Res.
63-1869	R29	100K ohm 1/2w 10%	Ins. Res.
63-1870	R21	100K ohm 1/2w 20%	Ins. Res.
63-1876	R27	150K ohm 1/2w 10% (2 used)	Ins. Res.
63-1884	R11	220K ohm 1/2w 20% (3 used)	Ins. Res
63-1890	R25	330K ohm 1/2w 10% (2 used)	Ins. Res

MODELS H1083E, H1086E, H1086R, H1087R, Ch. 10H20Z

63-1897	R33	470K ohm 1/2w	10%	Ins. Res.
63-1898	R34	470K ohm 1/2w	20%	Ins. Res.
63-1912	R1	1 Megohm 1/2w	20%	Ins. Res.
63-1926	R5	2.2 Megohm 1/2w	20% (4 used)	Ins. Res.
63-1940	R28	4.7 Megohm 1/2w	20%	Ins. Res.
63-2091	R18	820 ohm ww 1/2w	20%	Ins. Res.
63-2138	R37AB-R37BB	Candohm		
63-2139	R31	Volume Control & Switch		
63-2141	R15	22K ohm 2w	20%	Ins. Res.
63-2142	R35	130 ohm 5w	10% Zipohm	

Miscellaneous

11-85		Line Cord & Plug (6 ft. lg.)
19-212		Trans. Mtg. Clip (2 used on 95-1252)
54-306		Speed Nut (used on S-13800)
57-1736		Chassis Bottom Plate
78-580		Nine Contact Socket
78-644		Phono Connector Socket
78-755		Octal Tube Socket (3 used)
78-807		Miniature Tube Socket
78-869		Miniature Tube Socket
78-870		Miniature Tube Socket (3 used)
78-871		Miniature Tube Socket
78-896		Three Contact Socket
78-897		Two Contact Socket
78-903		Miniature Tube Socket (9 contact)
80-780		Iron Core Tension Spring (3 used)
80-781		Tuner Arm Tension Spring
80-865		Ground Spring
80-868		Grounding Spring
85-505	S2	S.P.D.T. Switch (ant)
85-508	S1	Band Switch
93-965		Rubber Washer (used on S-13800)
93-1039		Gang. Cond. Mtg. Cup Washer (2 used)
95-1252	T5	Speaker Output Trans.
95-1253	T6	Power Trans.
113-43		6-32x5/16 Hex Hd. S. T. (used on S-17258)
114-39		8-32x1/4" lgx 1/4" Hex Hd. (2 used on S-17258 & 4 used on 57-1736
126-618		Miniature Tube Shield
148-122		Tuner Arm
149-95		Iron Core & Spring (2 used)
S-17257		Speaker Cable & Eyelet Assem.

Radiorgan Esc. Parts Used on H1087R-H1086R

76-444	Radiorgan Knob Shaft (2 used)
114-297	#6 x 1/4 Hex Hd. S1. S.T. (2 used on S-17252 & S-17253)
S-14255	Radiorgan Mtg. Brkt. Assembly (2 used)
S-17246	Radiorgan Knob & Eyelet Assembly (Treble)
S-17247	Radiorgan Knob & Eyelet Assembly (Voice)
S-17248	Radiorgan Knob & Eyelet Assembly (Alto)
S-17249	Radiorgan Knob & Eyelet Assembly (Bass)
S-17250	Radiorgan Knob & Eyelet Assembly (Lo-Bass)
S-17251	Radiorgan Knob & Eyelet Assembly (Normal)
S-17252	Radiorgan Esc. & Knob Assembly (R.H.)
S-17253	Radiorgan Esc. & Knob Assembly (L.H.)

S-17255 Radiorgan Cable Assembly

15-79		Plug Cap & Insulator				
22-1745		250 Mmfd. Ceramic				500V
58-195		9 Prong Plug				
63-1722	R16	33 ohm	1/2W	10%	Ins.	Res.
63-1778	R20	680 ohm	1/2W	10%	Ins.	Res.
63-1813	R19	4700 ohm	1/2W	10%	Ins.	Res.
63-1862	R38	68K ohm	1/2W	10%	Ins.	Res.
63-1912	R1	1 Megohm	1/2W	20%	Ins.	Res.
S-14261		Radiorgan Strip & Contact Assembly (2 used)				
S-17255		Radiorgan Cable Assembly				

Cabinet Parts H1087R

2-214	Cabinet Back (Phono Section)
14-1279R	Cabinet for H1087R Console Combination Model
16-662	Packing Carton
19-9	Cable Clip
19-169	Record Changer Mtg. Clip (2 used)
19-210	Loop Connector Clip (2 Used)
46-872	Volume Control Knob
46-876	Tuning Control Knob
46-877	Dummy Knob
46-899	Band Switch Knob
49-693 SP-1	12" PM Speaker ZC12161 Cone & Voice Coil
57-1284	Strike Plate (3 used)
57-1481	Escutcheon Clamping Plate (4 used)
57-1666	Radio Dial Escutcheon
70-3	#5 x 1/2 R.H.W.S. Steel N.P. (1 used 19-9 & 2 used 83-1220)
70-86	#6 x 5/8 Washer Hd. Wood Screw St. Br. (8 used to Mt. 2-214)
78-891	Pilot Light Socket & Wire
80-604	Hinge Spring (2 used)
80-830	Record Changer Mtg. Spring (4 used)
83-1220	Pilot Light Socket Mtg. Strip
90-367	Pilot Light Tube
93-168	Rubber Shoulder Washer (4 used)
100-36 PL1	Pilot Light Bulb
112-808	#6 x 5/16 Phillips Rd. Hd. S.T. (4 used on Esc. Mtg.)
112-809	Record Changer Mtg. Screw (3 used)
114-350	#8 x 7/16 Hex Hd. S1 S.T. (4 used on Esc. Mtg.)
114-354	Chassis Mtg. Screw (4 used)
156-35	Bullet Catch (3 used)
159-50	Plug Button Black Oxide (2 used)
165-9	Metal Glide (2 used)
165-14	Metal Glide (2 used)
166-55	Tack Bumper (3 used)
171-7	Pilot Light Lens
188-54	Knob Clamping Ring (46-876)
192-138	Dial Glass
202-697	F. M. Instruction Book
202-882	Radio-Phono Instruction Book
S-14029	Variable Speed Record Changer
S-15528 L1	Low Impedance Loop Assembly
S-15536	Record Changer Compt. Hinge Brkt. & Link Assembly (2 used)
S-15780	Cobra Tone Arm Cartridge
S-16419	Record Adapter Plug & Envelope Assembly
S-17005	Record Changer Mtg. Fram Assembly
S-17167	Volume Control Knob Assembly
S-17255	Radiorgan Cable Assembly
S-17328 L2	Loop Loading Coil Assembly

Cabinet Parts H1086R

Model H1086R is the same as H1087R except the following:

2-192	Cabinet Back (Phono Section)
14-1251R	Cabinet for H1086R Console Combination Model
16-641	Packing Carton

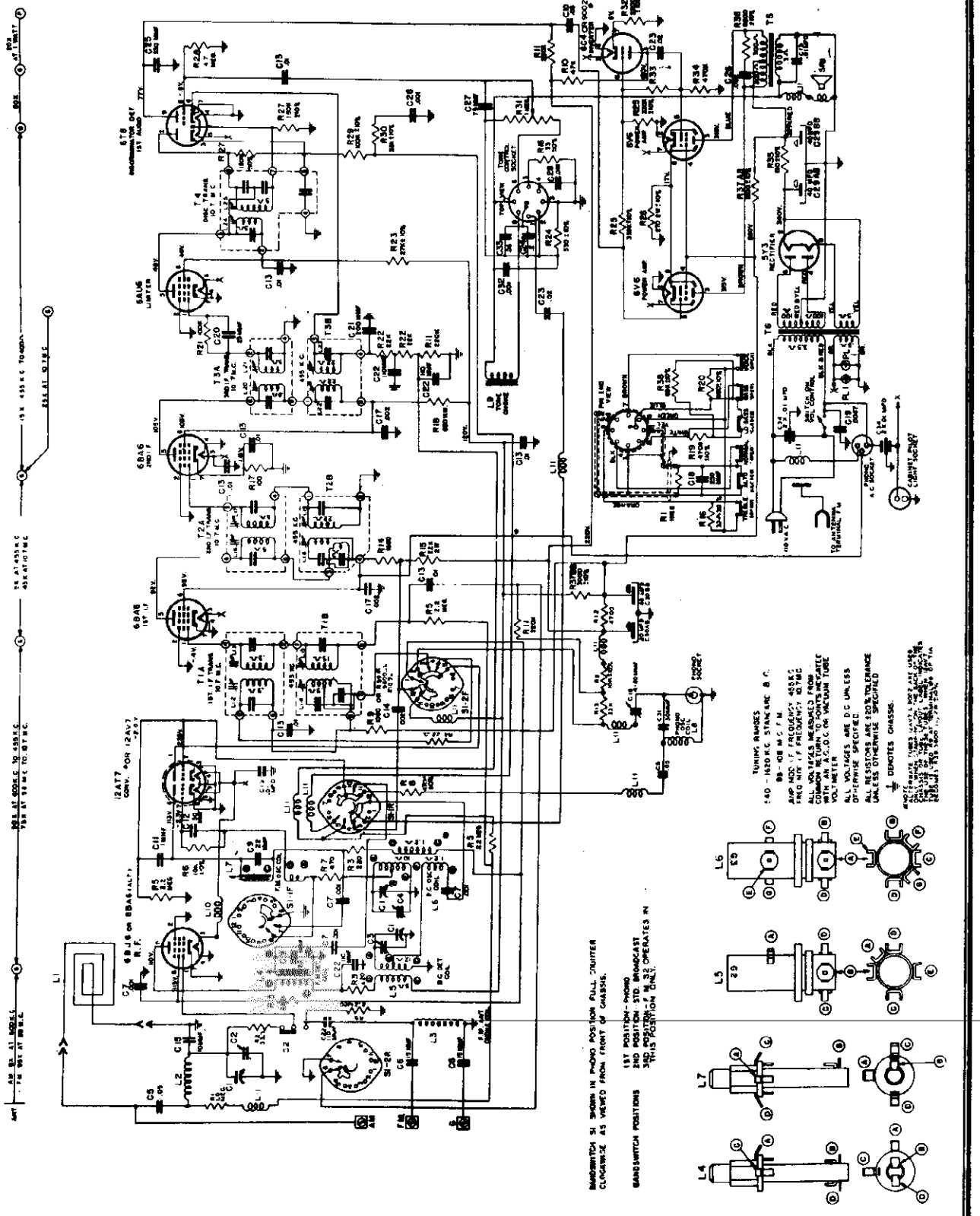
Cabinet Parts H1083E

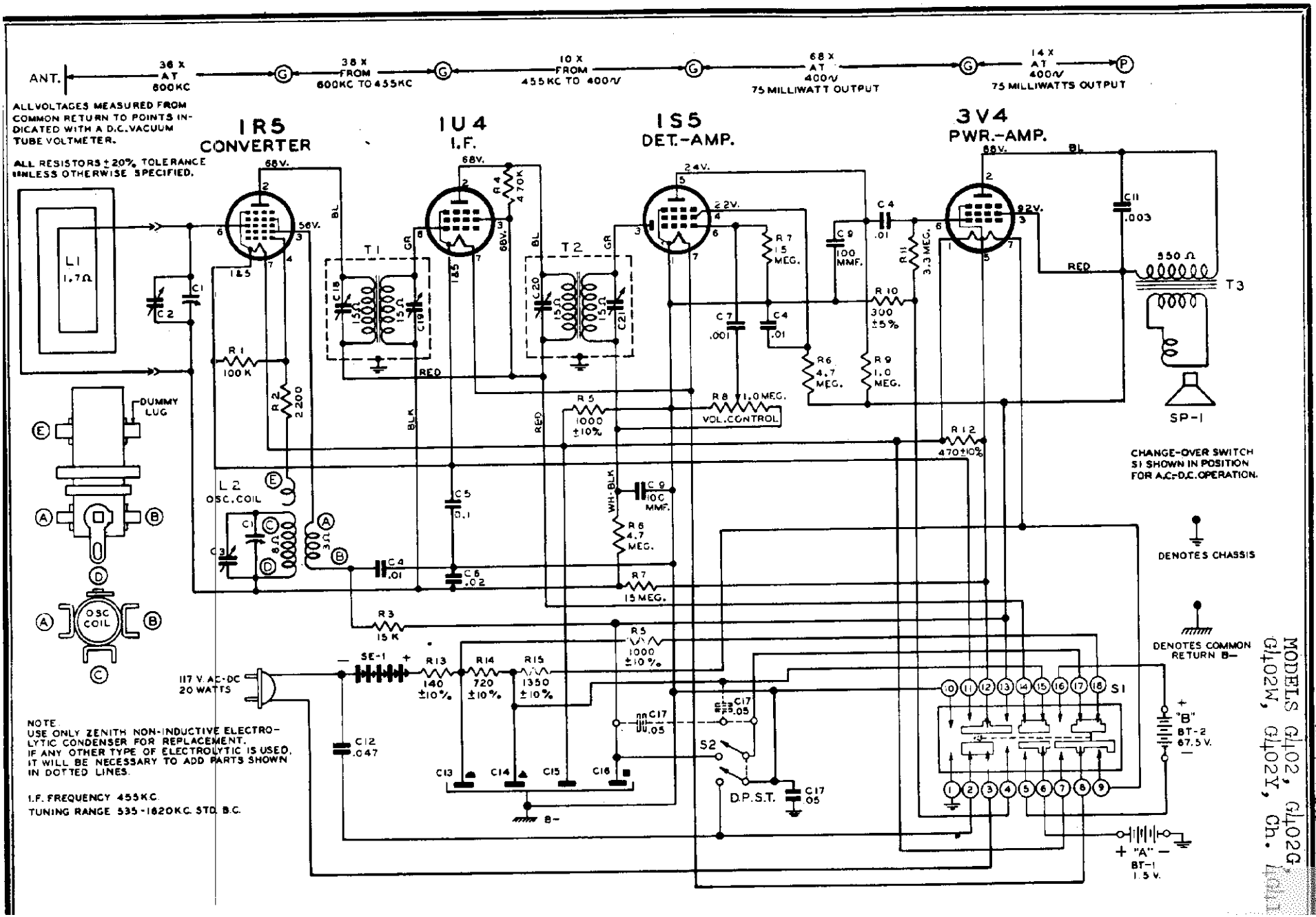
2-215	Cabinet Back (Phono Section)
14-1280E	Cabinet for H1083E Console Combination
16-666	Packing Carton
19-9	Cable Clip
19-169	Record Changer Mtg. Clip (2 used)
19-210	Loop Connector Clip (2 used)
46-876	Tunning Control Knob
46-899	Band Switch Knob
49-693	12" P.M. Speaker ZC12161 Cone & Voice Coil
57-1270	Strike Plate (2 used)
57-1481	Esc. Clamping Plate (4 used)
57-1666	Radio Dial Esc.
70-3	#5 x 1/2 R.H.W.S. Steel N.P. (1 used on 19-9 & 2 used 83-1220)
70-86	#6 x 5/8 Washer Hd. Wood Screw St. Br. (8 used to mt. 2-215)
78-891	Pilot Light Socket & Wire
80-604	Hinge Spring (2 used)
80-830	Record Changer Mtg. Spring (4 used)
83-1220	Pilot Light Socket Mtg. Strip
90-367	Pilot Light Tube
93-168	Rubber Shoulder Washer (4 used on Chassis)
100-36	Pilot Light Bulb
112-808	#6 x 5/16 Phill. Rd. Hd. S.T. (4 used esc. mtg.)
112-809	Record Changer Mtg. Screw (3 used)
114-350	#8 x 7/16 Hex Hd. S1 S.T. (4 used esc. mtg.)
114-354	Chassis Mtg. Screw (4 used)
156-33	Bullet Catch (2 used)
159-50	Plug Button (2 used)
165-9	Metal Glide (2 used)
165-14	Metal Glide (2 used)
171-7	Pilot Light Lens
188-54	Knob Clamping Ring (46-876)
192-138	Dial Glass
202-697	F.M. Instruction Book
202-882	Radio-Phono Instruction Book
S-14029	Variable Speed Record Changer
S-15528	Low Impedance Loop Assembly
S-15536	Record Changer Compt. Hinge Brkt. & Link Assembly (2 used)
S-15780	Cobra Tone Arm Cartridge
S-16419	Record Adapter Plug & Envelope Assembly
S-17005	Record Changer Mtg. Frame Assembly
S-17167	Volume Control Knob Assembly
S-17255	Radiorgan Cable Assembly (Complete)
S-17328	Loop Loading Coil Assembly

Radiorgan Esc. Parts Used on H1083E

76-444	Radiorgan Knob Shaft (2 used)
114-297	#6 x 1/4 Hex Hd. S1 S. T. (2 used on S-17252 & S-17253)
S-14255	Radiorgan Mtg. Brkt. Assembly (2 used)
S-17246	Radiorgan Knob & Eyelet Assembly (Treble)
S-17247	Radiorgan Knob & Eyelet Assembly (Voice)
S-17248	Radiorgan Knob & Eyelet Assembly (Alto)
S-17249	Radiorgan Knob & Eyelet Assembly (Bass)
S-17250	Radiorgan Knob & Eyelet Assembly (Lo-Bass)
S-17251	Radiorgan Knob & Eyelet Assembly (Normal)
S-17252	Radiorgan Esc. & Knob Assembly (R.H.)
S-17253	Radiorgan Esc. & Knob Assembly (L.H.)

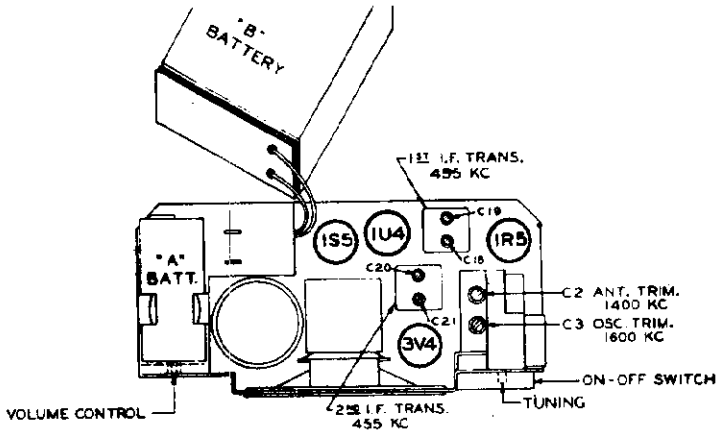
MODELS H1083E, H1084E,
H1086R, H1087R, Ch.
10H20Z





MODELS G4102, G4102C, G4102W, G4102Y, Ch. 4041

TUBE AND TRIMMER LOCATION



Final alignment of the 4G41 chassis should be made with the chassis installed in the cabinet. Tune in a weak station in the vicinity of 1400 KC and adjust the antenna trimmer for maximum.

ALIGNMENT PROCEDURE

Operation	Connect Oscillator To	Dummy Antenna	Input Sig. Frequency	Set Dial At	Trimmers	Purpose
1	Converter Grid	1 MFD	455 Kc.	600 Kc.	C18, C19, C20, C21	Align I.F.
2	One Turn Loosely Coupled to Wavemagnet		1600 Kc.	1600 Kc.	C3	Set Oscillator To Scale --
3			1400 Kc.	1400 Kc.	C2	Adjust for Maximum.

PARTS LIST

PART NO.	DIAG. NO.	DESCRIPTION	
		DIAL ASSEMBLY	
12-1374		Volume Control Mtg. Brkt.	
46-683		Front Cover Latch Knob	
46-684		Tuning Control Knob	
46-684Y		Tuning Control Knob (W & Y Model only)	
46-736		"On-Off" Switch Knob	
46-736Y		"On-Off" Switch Knob (Y Model only)	
46-736W		"On-Off" Switch Knob (W Model only)	
46-737		Volume Control Knob	
46-737Y		Volume Control Knob (W & Y Model only)	
59-200		Dial Pointer	
		COILS & CHOKES	
95-1243	T1	1st I.F. Transformer	
95-1244	T2	2nd I.F. Transformer	
S-13774	L2	Osc. Coil Assembly	
		CONDENSERS	
22-3	C4	.01 Mfd. Ceramic (Disc)	500V
22-326	C11	.003 Mfd.	400V
22-827	C5	.1 Mfd.	200V
22-829	C17	.05 Mfd.	200V
22-1386	C6	.02 Mfd.	200V
22-1457	C1	Two Section Variable Cond.	
22-1669	C9	100 Mmfd. Ceramic	500V
22-1676	C7	.001 Mfd. (Molded) (or 22-1343)	500V
22-1775	C12	.047 Mfd. (Molded) (or 22-1756) (or 22-1914)	400V
22-2036	C13,14	Four Section Elect. 40-40-20 Mfd.	
	C15,16	150V - 200 Mfd. 10V	
		RESISTORS	
63-1651	R8	Volume Control	
63-1762	R10	300 Ohm 1/2W 5% Ins. Res.	
63-1771	R12	470 Ohm 1/2W 10% Ins. Res.	
63-1785	R5	1000 Ohm 1/2W 10% Ins. Res.	
63-1800	R2	2200 Ohm 1/2W 20% Ins. Res.	
63-1835	R3	15K Ohm 1/2W 20% Ins. Res.	
63-1870	R1	100K Ohm 1/2W 20% Ins. Res.	
63-1898	R4	470K Ohm 1/2W 20% Ins. Res.	
63-1912	R9	1 Megohm 1/2W 20% Ins. Res.	
63-1933	R11	3.3 Megohm 1/2W 20% Ins. Res.	

PART NO.	DIAG. NO.	DESCRIPTION
63-1940	R6	4.7 Megohm 1/2W 20% Ins. Res.
63-1961	R7	15 Megohm 1/2W 20% Ins. Res.
63-1999	R13	140 Ohm 3W (Zipohm) 10% Ins. Res. (or 63-2014).
63-2024	R14,15	Two Section Candohm
		MISCELLANEOUS
11-102		Line Cord & Plug
12-1379		Handle Support Brkt. (R.H.)
12-1380		Handle Support Brkt. (L.H.)
14-907		Cabinet for 4G800
14-907Y		Cabinet for 4G800 (Black)
14-907W		Cabinet for 4G800 (White)
19-164		"A" Battery Retaining Clip
24-462		Switch Cover
24-525		Wavemagnet Cover
24-525Y		Wavemagnet Cover (Y Model only).
24-526		Wavemagnet Cover (W Model only)
24-522		Cabinet Cover
24-522Y		Cabinet Cover (Y Model only)
24-522W		Cabinet Cover (W Model only)
43-149		Handle End Pieces (2 used)
49-665	SP1	3-1/2" P.M. Speaker
		208-665 Cone & Voice Coil
54-254		Speed Nut - Tinnerman (3 used on 83-1416)
57-1314		Cabinet Front Plate
57-1315		Chassis Bottom Plate
78-274		Elect. Cond. Socket
78-781		Miniature Tube Socket
78-782		Miniature Tube Socket
80-564		"B" Battery Retaining Spring
80-567		Latch Spring
80-611		Latch Spring
80-612		"A" Battery Front Contact Spring
83-1416		Decorative Strip
83-1417		Rubber Strip - Handle
83-1428		Wavemagnet Retaining Strip
83-1513		"B" Battery Terminal Strip
85-433	S2	On-Off Switch
85-454	S1	Power Change-Over Switch
93-870		Fibre Shoulder Washer
93-935		.015 x 7/16" x 3/4" Armite Washer
94-295		Gang Cond. Mtg. Bushing (3 used)
95-1014	T3	Output Transformer
110-127		Grill Cloth
112-56		#6 x 1/4" Hex Hd. S.T. Screw Cad. (3 used S-15482, 2 used 126-539)
112-322		#2 x 3/16" Phill. Oval Hd. S.T. Screw (4 used on Wavemagnet & Cover)
112-407		#6 x 3/8" Rd. Hd. S.T. Screw Cad. Pl. (2 used to mount ea. 43-149)
112-685		#4 x 3/16" Flt. Hd. S.T. Screw Cad. (4 used on Wavemagnet & Cover)
112-711		#4 x 1/4" B.H. S.T. Screw Stat. Br. (8 used)
113-17		#6-32 x 1/4" R.H. M.S. Steel N.P. (2 used Chassis Mtg.)
114-58		#6-32 x 3/8" Hex Hd. MS Steel (3 used 22-1457)
125-17		Rubber Grommet (3 used 22-1457)
125-58		Strain Relief Grommet
125-59		Strain Relief Grommet
126-539		Volume Control & Power Switch Shield
199-79		Flexible Handle Sleeve
199-79Y		Flexible Handle Sleeve (Y & W Model only)
202-757		Instruction Book
212-5	SE1	Selenium Rectifier
S-13777		Power Switch Shield Assembly
S-13786	L1	Wavemagnet Winding Assembly
S-13848		Hinge & Wire Assembly (R.H.)
S-13849		Hinge & Wire Assembly (L.H.)
S-13850		Spring & Insulator Strip Assembly
S-14755		Handle Strip Assembly
S-15485		Shield & Battery Retaining Spring Assembly
S-16125		Bottom Cover & Latch Assembly
		BATTERIES
Z-67		"B" Battery
Z-2NL		"A" Battery (or Z-4NL or two Z-3NL)
		CABINET PARTS for MODEL G402G (Chassis 4G41) ONLY
14-1252		Plastic Cabt. for G402G Portable Model
16-561		Packing Carton
24-551		Wavemagnet Cover
24-552		Cabinet Cover
43-192		Handle End Pieces (2 used)
46-868		Front Cover Latch Knob
46-869		Tuning Control Knob
46-870		"On-Off" Switch Knob
46-871		Volume Control Knob
57-1659		Cabinet Front Plate
83-1793		Decorative Strip
*99-139		Flexible Handle Sleeve

MODEL H503,
Ch. 5H41

The 5H41 chassis is an AC, DC or battery operated superheterodyne. 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 1L6 and 1S5.

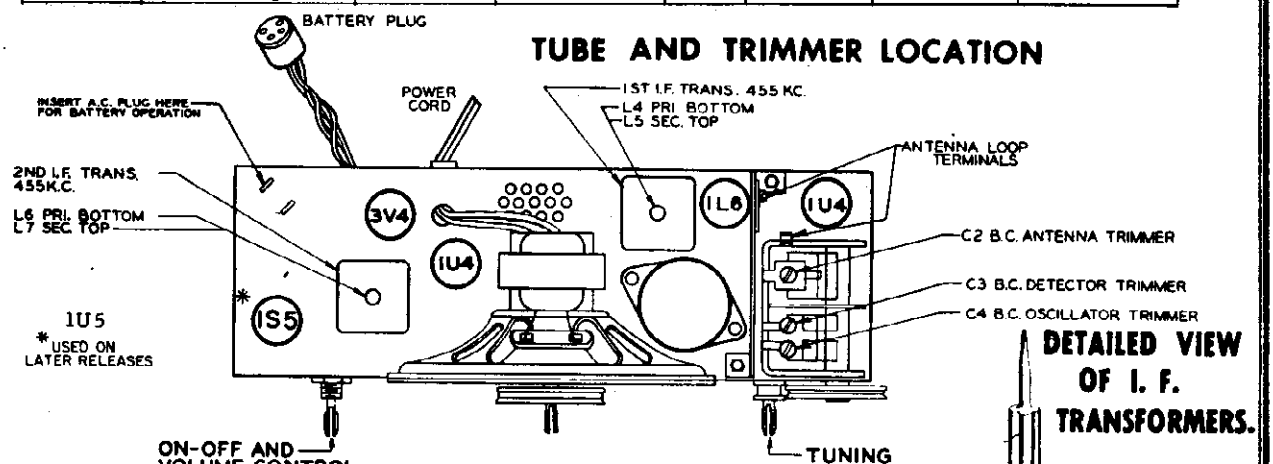
If the R.F. becomes weak or dead, check the D.C. resistance of the wavemagnet. This D.C. resistance should be approximately .9 ohm. If it is open check the wavemagnet.

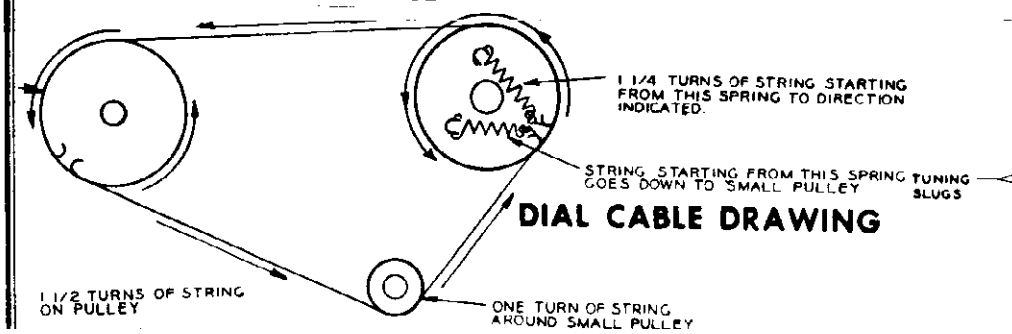
IF Alignment: Remove the chassis from the cabinet and arrange the units so that the wavemagnet can be connected. All the connections and adjustments can be made from the top of the chassis. Connect a signal generator, through a .1 mfd. dummy antenna, to the converter grid and B - (common return). Connect 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.

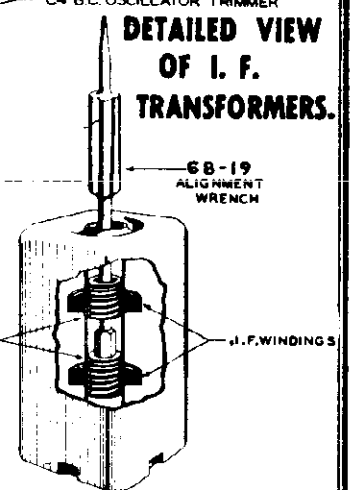
RF Alignment: Connect a two turn loop across the leads of the signal generator, loosely couple this loop to the wavemagnet. Set the signal generator and the dial pointer of the receiver to 1600 Kc. and adjust C4 oscillator trimmer to resonance. Set the signal generator and dial pointer to 1400 and adjust 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 68-19 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.

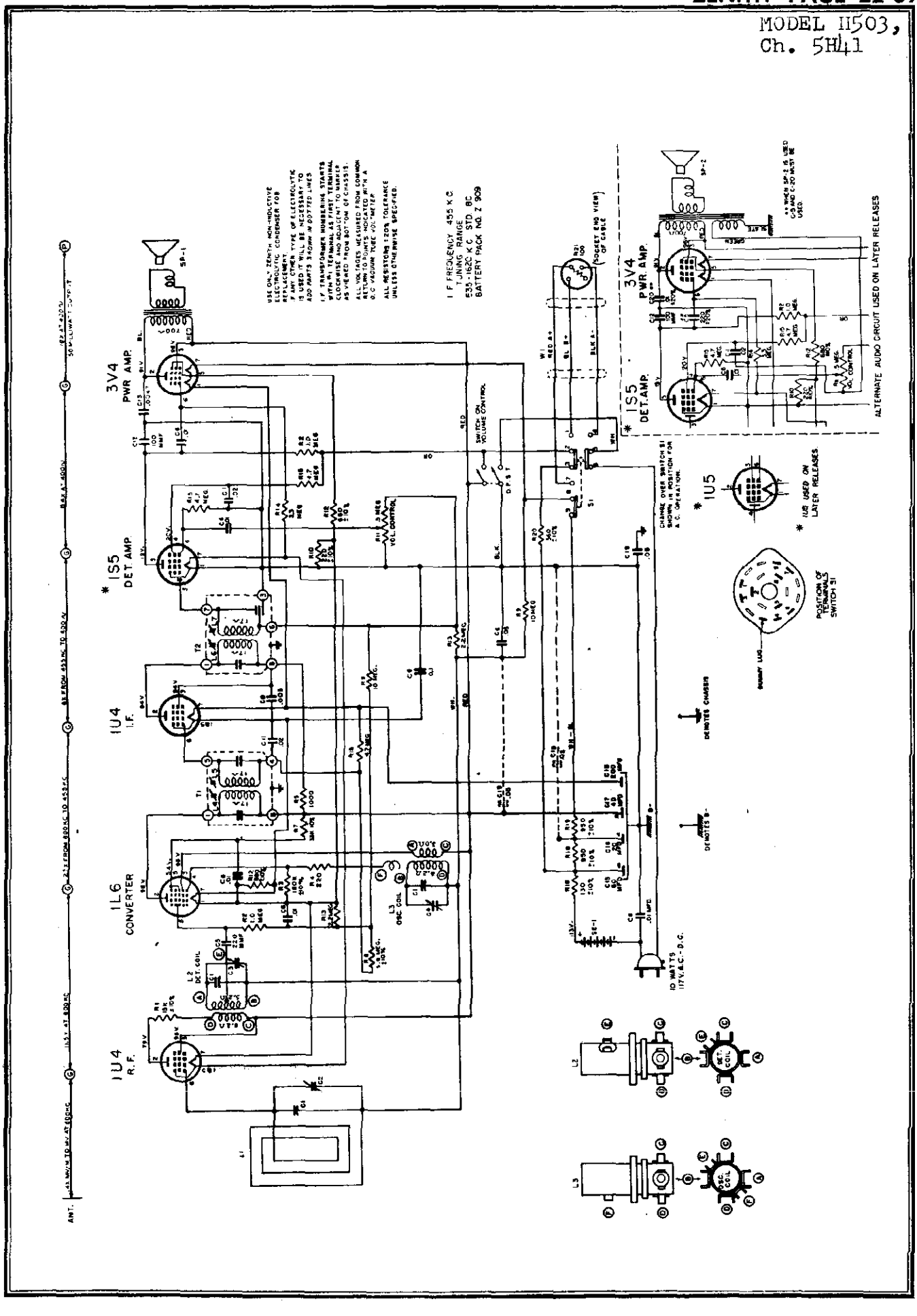
OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIG. FREQUENCY	BAND	SET DIAL TO	TRIMMERS	PURPOSE
1	Converter Grid	.1 Mfd	455 Kc.	BC	600 Kc.	L4, 5, 6 & 7	I.F. Alignment
2	Two turns loosely coupled to Wavemagnet		1600 Kc.	BC	1600 Kc.	Osc. Trim. C4	Set Oscillator to scale
3	Two turns loosely coupled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







MODEL H503,
Ch. 5H41



Part No.	Diag. No.	Description					
		Dial Assembly					
46-933		Tuning & Vol. Control Knob (2 used)					
59-261		Dial Pointer					
80-209		Dial Cord Tension Spring (2 used)					
188-32		Retaining Ring (2 used on Pointer Shaft Assy.)					
S-18101		Pointer Shaft & Pulley Assy.					
S-18102		Tuning Shaft & Pulley Assy. (used S-17845)					
S-18103		Pulley Mtg. Strip & Bushing Assy.					
S-18104		Dial Cord & Eyelet Assy.					
S-18186		Esc. & Dial Scale Assy. (Complete)					
		Coils & Chokes					
95-1132	T1	1st. I.F. Transformer					
95-1133	T2	2nd. I.F. Transformer					
S-15811	L2	Detector Coil Assembly					
S-15812	L3	Osc. Coil Assembly					
		Condensers					
22-3	C6	.01 Mfd. Ceramic (Disc) (5 used)					500V
22-182	C5	220 Mmfd. (Molded) Mica					500V
22-319	C8	.005 Mfd.					200V
22-827	C9	.1 Mfd.					200V
22-829	C19	.05 Mfd. (2 used)					200V
22-1182	C20	.01 Mfd.					400V
22-1386	C11	.02 Mfd. (2 used)					200V
22-1669	C12	100 Mmfd. Ceramic					500V
22-1741	C15,16 17, 18	Four Section Elect. Cond.					
22-1782	C13	.0047 Mfd. (Molded)					600V
22-2323	C1	Three Section Gang Cond.					
		Resistors					
63-1362	R18,19	Two Section Candohm					
63-1744	R21	100 ohm	1/2W	20%	Ins.	Res.	
63-1757	R10	220 ohm	1/2W	10%	Ins.	Res.	
63-1758	R4	220 ohm	1/2W	20%	Ins.	Res.	
63-1775	R20	560 ohm	1/2W	10%	Ins.	Res.	
63-1778	R12	680 ohm	1/2W	10%	Ins.	Res.	(2 used)
63-1786	R5	1000 ohm	1/2W	20%	Ins.	Res.	
63-1834	R1	15K ohm	1/2W	10%	Ins.	Res.	
63-1848	R7	33K ohm	1/2W	10%	Ins.	Res.	
63-1880	R3	180K ohm	1/2W	10%	Ins.	Res.	
63-1912	R2	1 Megohm	1/2W	20%	Ins.	Res.	(2 used)
63-1926	R13	2.2 Megohm	1/2W	20%	Ins.	Res.	(2 used)
63-1933	R14	3.3 Megohm	1/2W	20%	Ins.	Res.	
63-1940	R15	4.7 Megohm	1/2W	20%	Ins.	Res.	(3 used)
63-1943	R6	5.6 Megohm	1/2W	10%	Ins.	Res.	
63-1954	R9	10 Megohm	1/2W	20%	Ins.	Res.	(2 used)
63-2018	R16	130 ohm	3W WW	10%	Ins.	Res.	
63-2371	R11	Volume Control & Switch					
		Miscellaneous					
11-104		Line Cord & Plug					
14-1337		Cabinet for H503 - Portable Model					
14-1338		Cabinet for H503Y - Portable Model					
15-51		Cable Socket Cap & Insulator (part of S-18111)					
16-721		Packing Carton					
24-576		Wavemagnet Cover					
40-113		Cabinet Back Cover Hinge (2 used)					

Part No.	Diag. No.	Description
43-206		Handle Housing (2 used)
49-709	SP1	5 1/4" PM Speaker ZC529G Cone & Voice Coil 206CZ709 Output Transformer
49-711	SP2	5 1/4" PM Speaker ZC529G Cone & Voice Coil 206CZ711 Output Transformer
54-31		10-32 x 3/8" x 1/8" Hex Nut Steel (used on 112-835)
54-34		#6-32 x 1/4" x 3/32" Hex Nut Steel (used on 212-10)
57-1721		Emblem Plate
70-162		#6 x 5/8 Phill R.H. Wood Screw (4 used to Mt. Esc.)
70-172		#4 x 1/4 Phill R.H. Wood Screw (2 used to Mt. Wavemagnet)
70-173		#6 x 3/8 Phill R.H. Wood Screw (4 used to Mt. Esc.)
70-174		#2 x 5/16 Phill R.H. Wood Screw St. Br. (6 used to Mt. 24-576)
78-274		Elect. Cond. Socket
78-543		Battery Cable Socket (4 contact)
78-782		Miniature Tube Socket (2 used)
78-807		Miniature Tube Socket (2 used)
78-912		Miniature Tube Socket
80-461		Contact Spring
82-33		Handle Strap
85-511	S1	Power Change-over Switch (or 85-515)
93-125		#6 Int. Shakeproof Lockwasher (used on 212-10)
93-369		#10 Int. Shakeproof Lockwasher #1210 (1 used on each 112-835)
93-1081		.031 x 13/64 x 5/8 Steel Washer Cad. & Tin Plate (1 used on ea. 112-835)
94-334		Gang Cond. Mtg. Bushing (3 used)
112-835		Handle Mtg. Screw (2 used)
112-836		4-40 x 1/4" Phill R.H.S.T. screw (2 used on Mtg. Wavemagnet)
114-251		10-32 x 5/8" Hex Sl. Washer Hd. M.S. Steel (2 used chassis Mtg.)
114-311		6-32 x 1" Lg. x 1/4" A.F. Hex Hd. M.S. (used on 212-10)
125-81		Strain Relief Grommet - Male
125-82		Strain Relief Grommet - Female
157-7		Strike Fastener (2 used)
157-8		Strike Fastener (2 used) (or 156-19)
159-81		Snap Fastener Stud
166-44		Rubber Bumper
166-68		Rubber Feet (4 used)
196-181		Speaker Gasket
202-889		Instruction Book
212-10	SE1	Selenium Rectifier
S-18111	W1	Btry. Cable & Socket Assy.
S-18190	L1	Wavemagnet Assy.
S-18193		Cover Latch & Brkt. Assy.
S-18194		Cover Latch & Brkt. Assy. (Y Model only)
S-18205		Front Cover Hinge & Wire Assy. (R.H.)
S-18206		Front Cover Hinge & Wire Assy. (L.H.)