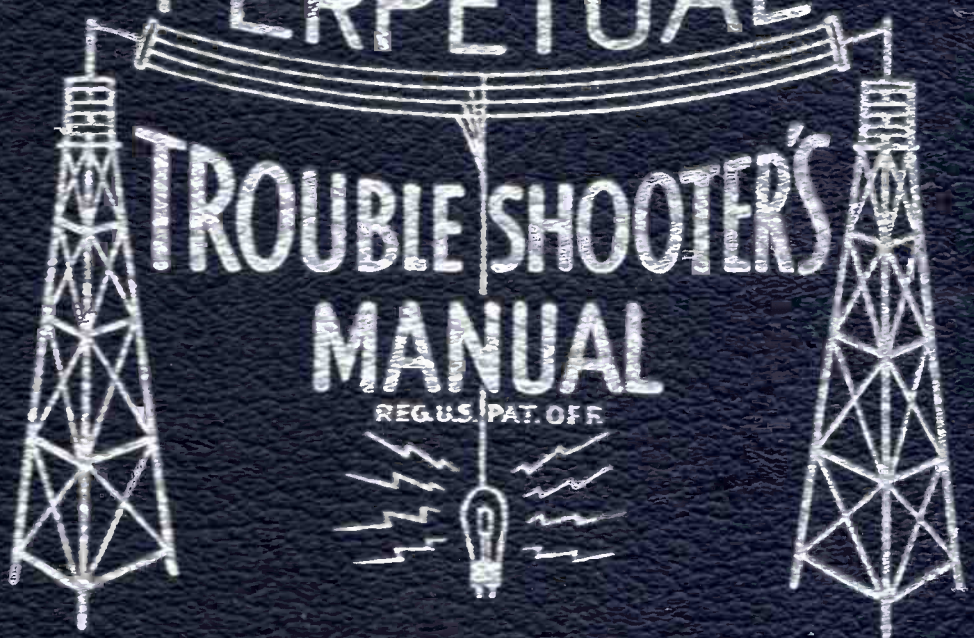
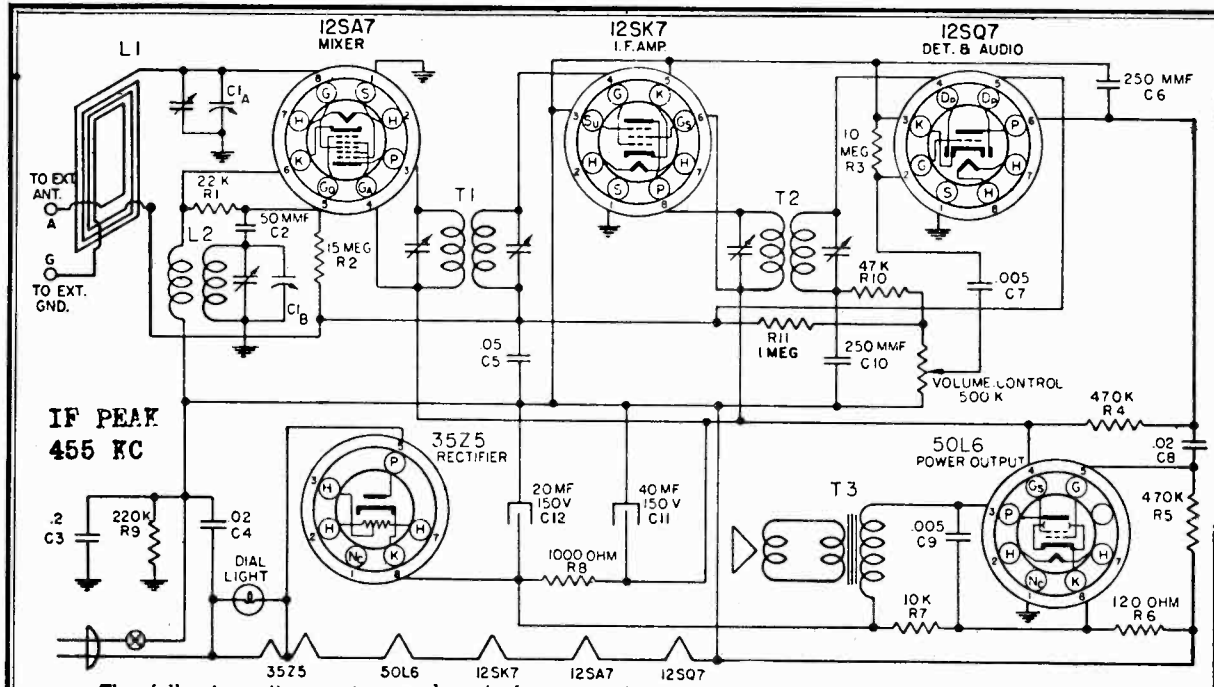
VOLUME XVI

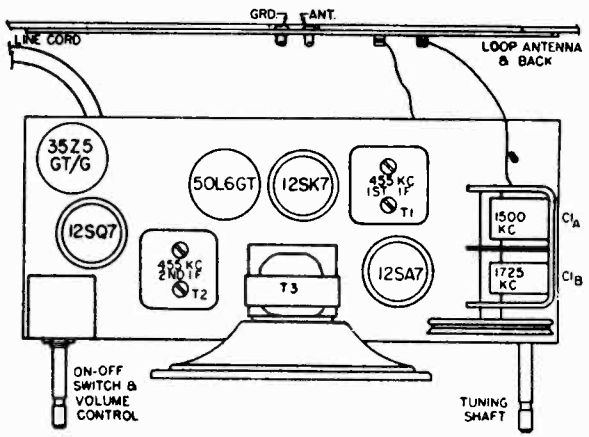
PERPETUAL TROUBLE SHOOTER'S MANUAL

REG. U.S. PAT. OFF.



JOHN F. RIDER





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

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

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

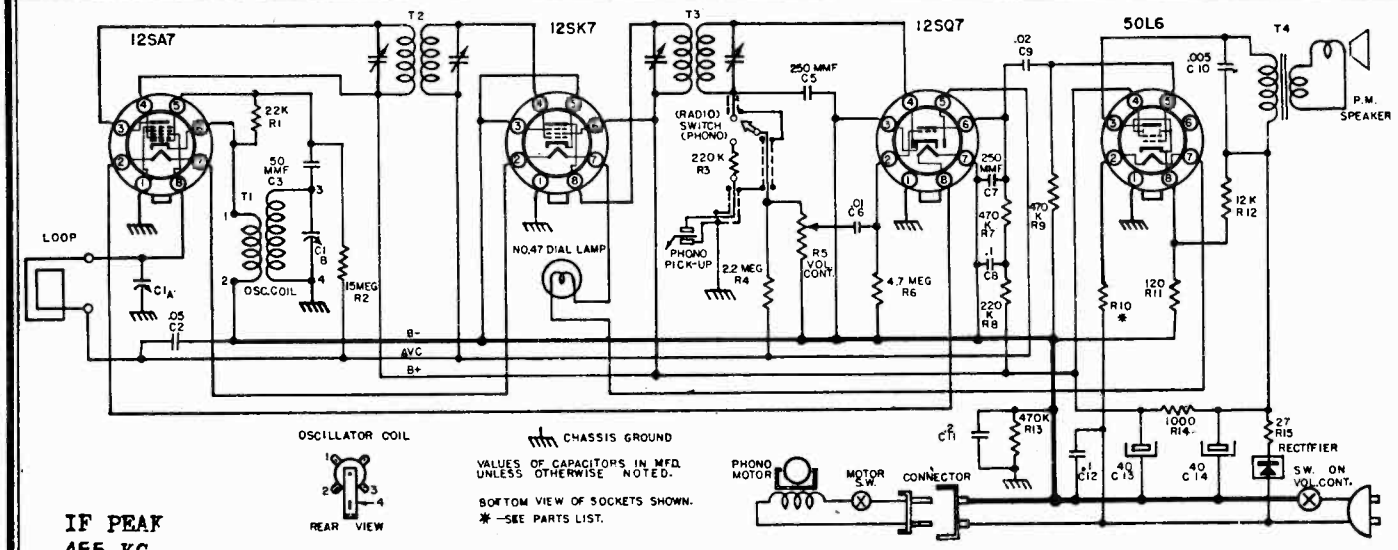
Adjust all trimmers for maximum output. Repeat alignment procedure given below as a final check.

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

Position of Variable	Generator Frequency	Dummy Ant. Mfd.	Generator Connections	Trimmer Adjustment	Trimmer Function
Fully open	455 KC	.1	* 12SA7 Grid (Stator of C1A)	T1	Input I.F.
Fully open	455 KC	.1	* 12SA7 Grid (Stator of C1A)	T2	Output I.F.
Fully open	1725 KC	.00025	** Ant. terminal on loop	C1B	Oscillator
Tune in signal from generator	1500 KC	.00025	** Ant. terminal on loop	C1A	Antenna

* Connect ground lead of signal generator to chassis.
** Connect ground lead of signal generator to terminal marked "G" on the back of the loop.

Code	Part No.	DESCRIPTION
C1A, C1B	B19-180	Variable condenser
C2	A15-175	50 mmfd. mica condenser
C3	A16-154	.2 mfd. 400 volt tubular condenser
C4	A16-151	.02 mfd. 600 volt tubular condenser
C5	A16-152	.05 mfd. 200 volt tubular condenser
C6, C10	A15-176	250 mmfd. mica condenser
C7, C9	A16-153	.005 mfd. 600 volt tubular condenser
C8	A16-150	.02 mfd. 400 volt tubular condenser
C11	A18-280	40 mfd. 150 volt electrolytic condenser
C12	A18-272	20 mfd. 150 volt electrolytic condenser
R1	A60-659	22K ohm 1/3 watt resistor
R2	A60-664	15 megohm 1/3 watt resistor
R3	A60-663	10 megohm 1/3 watt resistor
R4, R5	A60-662	470K ohm 1/3 watt resistor
R6	A60-658	120 ohm 1/3 watt resistor
R7	A60-698	10K ohm 1 watt resistor
R8	A60-198	1000 ohm 1/2 watt resistor
R9	A60-660	220K ohm 1/3 watt resistor
R10	A60-685	47K ohm 1/3 watt resistor
R11	A60-668	1 megohm 1/3 watt resistor
L1	B82-40	Antenna, loop
L2	A10-411	Oscillator coil
T1	B10-453	1st I.F. transformer
T2	B10-454	2nd I.F. transformer
T3		Output transformer (part of speaker)
	A71-22	Cover, for volume control
	A75-52	Dial drive shaft
	A24-164	Volume control and switch
	B79-340	5" P.M. speaker with output transformer
	B79-343	Alternate speaker
	B79-344	Alternate speaker
	C83-332	Cabinet back (mahogany)
	A83-335	Cabinet back (ivory)
	D42-375	Cabinet, molded bakelite (mahogany)
	A42-397	Cabinet, molded bakelite (ivory)
	B67-486	Dial scale
	A52-181	Knob (mahogany)
	A52-189	Knob (ivory)
	A58-41	Dial pointer
	B83-267	Dial diffusing plate



IF PEAK
455 KC

* COMPENSATION CIRCUIT — PAT. APPLIED FOR

Code	Part No.	DESCRIPTION
C1A. C1B	B15-189	Variable Condenser
C2	A16-152	.05 MFD. 200 volt Condenser
C3	A15-175	50 MMFD. Mica Condenser
C9	A16-150	.02 MFD. 400 volt Condenser
C5. C7	A15-178	250 MMFD. Mica Condenser
C6	A16-156	.01 MFD. 400 volt Condenser
C8	A16-157	.1 MFD. 200 volt Condenser
C10	A16-153	.005 MFD. 600 volt Condenser
C11	A16-154	.2 MFD. 400 volt Condenser
C12	A16-160	.1 MFD. 400 volt Condenser
C13. C14	A18-280	40 MFD. 150 volt Electrolytic Condenser
R1	A60-659	22K Ohm ½ watt 20% Resistor
R2	A60-664	15 Megohm ½ watt 20% Resistor
R3. R8	A60-667	220K Ohm ½ watt 20% Resistor
R4	A60-884	2.2 Megohm ½ watt 20% Resistor
R5	A24-154	500K Ohm Volume Control with Switch
R6	A60-669	4.7 Megohm ½ watt 20% Resistor
R7. R9. R13	A60-662	470K Ohm ½ watt 20% Resistor
R10	A60-719	Special Compensating Resistor, order only from the manufacturer
R11	A80-702	120 Ohm ½ watt 10% Resistor
R12	A60-720	12K Ohm 2 watt 10% Resistor
R14	A60-889	1000 Ohm 2 watt 10% Resistor
R15	A60-721	27 Ohm 1 watt 10% Resistor
T1	B10-411	Oscillator Coil
T2	A10-468	1st I. F. Transformer
T3	B10-454	2nd I. F. Transformer
T4	B80-230	Output Transformer
	A52-199	Knob. Volume
	A52-200	Knob. Tuning
	A52-201	Knob. Phono-Radio
	A69-175	Switch. Phono-Radio
	A38-278	Drum for Variable Condenser
	B78-352	5" P. M. Speaker
	A71-22	Cover for Volume Control
	A83-391	Selenium Rectifier
	A75-52	Tuning Shaft
	A83-303	Connector
	D42-407	Cabinet, Wood
	C71-27	Cover for Dial Plate
	B67-489	Dial Scale
	A58-53	Dial Pointer
	B83-408	Dial Scale Retainer
	C83-410	Cabinet Back
	C82-43	Loop Antenna
	A83-273	Dial Diffusing Plate

ALIGNMENT PROCEDURE

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

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

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

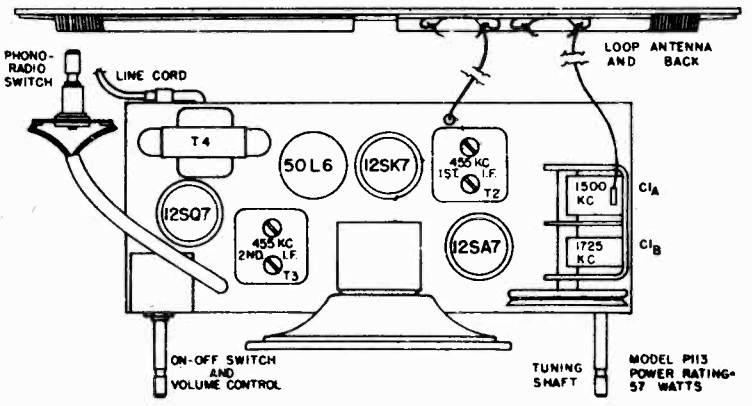
Adjust all trimmers for maximum output. Repeat alignment procedure given below as a final check.

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

Position of Variable	Generator Frequency	Dummy Ant. Mid.	Generator Connections	Trimmer Adjustment	Trimmer Function
Fully open	455 KC	.1	* 12SA7 Grid (Stator of C1A)	T2	Input I.F.
Fully open	455 KC	.1	* 12SA7 Grid (Stator of C1A)	T3	Output I.F.
Fully open	1729 KC	.00025	* 12SA7 Grid (Stator of C1A)	C1B	Oscillator
Tune in signal from generator	1500 KC	.00025	**Loosely Coupled to Loop	C1A	Antenna

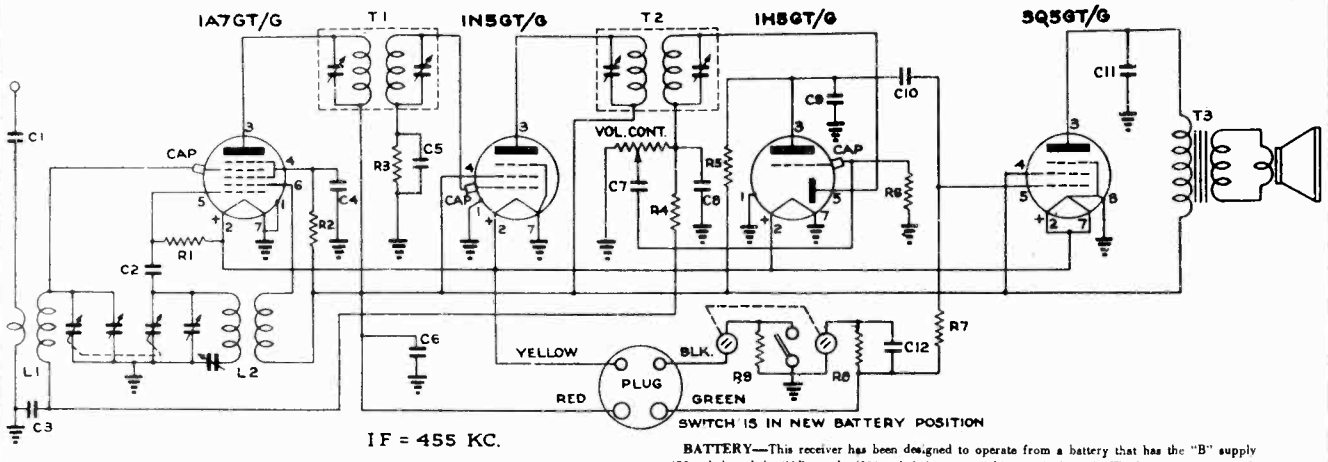
*Connect ground lead of signal generator to Common "B."

**Do not connect ground lead of signal generator.



WATTERSON RADIO MFG. CORP.

MODEL 4782



IF = 455 KC.

CODE	PART NO.	DESCRIPTION
C1	6W4	.00005 MICA CONDENSER
C2	6W3	.0005 MICA CONDENSER
C3	5WI3	.1 MFD. 400 V. TUBULAR
C4	5WI3	.1 MFD. 400 V. TUBULAR
C5	5W7	.02 MFD. 400 V. TUBULAR
C6	5WI4	.25 MFD. 400 V. TUBULAR
C7	5W2	.005 MFD. 400 V. TUBULAR
C8	6W2	.00025 MFD. MICA CONDENSER
C9	6WI	.0001 MFD. MICA CONDENSER
C10	5W6	.01 MFD. 400 V. TUBULAR
C11	5WI8	.002 MFD. 600 V. TUBULAR
C12	I8WII	10 MFD. 50 V. TUBULAR
R1	9W47	220,000 Ω - 1/2 WATT
R2	9W6	22,000 Ω - 1/2 WATT
R3	9W55	1 MEGOHM - 1/4 WATT
R4	9W55	1 MEGOHM - 1/4 WATT
R5	9W55	1 MEGOHM - 1/4 WATT
R6	9W69	10 MEGOHM - 1/2 WATT
R7	9W56	2.2 MEGOHM 1/2 WATT
R8	9W32	380 Ω - 1/4 WATT
R9	9WI2	75 Ω 1/4 WATT
T1	3W24	1ST. I.F. TRANSFORMER
T2	3W25	2ND. I.F. TRANSFORMER
T3	I2W2	OUTPUT TRANSFORMER
L1	3W46	ANTENNA COIL
L2	3W45	OSCILLATOR COIL
SP.	22WI0B	P.M. SPEAKER
VOL.	I3W2	VOLUME CONTROL - 500M Ω

BATTERY—This receiver has been designed to operate from a battery that has the "B" supply (90 volts) and the "A" supply (1½ volts) incorporated into a single pack. The batteries recommended to be used with this set are the following:

1. Ray-O-Vac—their No. "AB" 82 Power Pack.
2. Eveready—their No. 748 Power Pack.
3. Burgess—their No. 17G-D60 Power Pack.
4. General—their No. 60DL11L Power Pack.

Either of the above battery packs may be used in conjunction with this receiver, and is to be placed inside and to the rear of the cabinet and the 4 prong plug provided plugged into the socket of the battery pack.

ANTENNA—To obtain the excellent performance of which your Watterson Receiver is capable, a good outside antenna must be provided. For best results the antenna should be approximately 75 to 100 feet long, including the lead in, and should be connected to the colored wire coming out of the back of the cabinet. It should be erected as high as possible and as far from surrounding objects as practical.

GROUND—A ground connection must be used. A satisfactory ground can be made by connecting the black wire to a nearby cold water pipe by means of an approved clamp, or to a pipe or ground rod driven into the ground.

BATTERY AND TUBE SAVING SWITCH—Located on the back of the chassis is a slide type witch identified by the instruction tag "New Battery" and "Old Battery". When using an unused or new battery, the switch must be in the "New Battery" position. After approximately 100 hours of actual use of battery, this switch may be moved to the "Old Battery" position and increased sensitivity and performance obtained.

OPERATION—There are two adjustable controls on the front panel of the receiver. The one on the left is the volume control. Turning the volume control knob in a clockwise direction turns the receiver on, and is also a means of adjusting the volume output of the receiver.

CAUTION—When not using the receiver, make certain that it is shut off by turning the volume control knob completely to the left until the on-off switch has been thrown. Failure to do this will cause the battery pack to run down.

The knob on the right is the tuning knob and is used to tune any desired station within the broadcast band.

I. F. Alignment

The I. F. frequency of this receiver is 455 K. C. For realignment, use the following procedure:

Open tuning condenser fully, and set volume control to maximum volume.

Couple an accurately calibrated signal generator to the grid of the 1A7 tube with a .1 mfd. condenser in series with the "high" lead of the signal generator. Connect the ground side of the signal generator to the chassis. Set the signal generator to 455 K. C. Attenuate the signal generator so that the signal is just audible in the speaker. If possible, an output meter should be used.

Adjust the 2nd I. F. transformer first. Each screw should be adjusted for maximum output. After the 2nd I. F. has been adjusted, the 1st I. F. should be adjusted for maximum output. After both transformers have been adjusted, it is necessary to recheck both transformers, making sure maximum output has been attained from both I. F.'s.

R. F. Alignment

To align the R. F. section of the receiver, proceed as follows:

1. Connect the "high" side of the signal generator to the antenna lead and the ground lead to radio chassis.

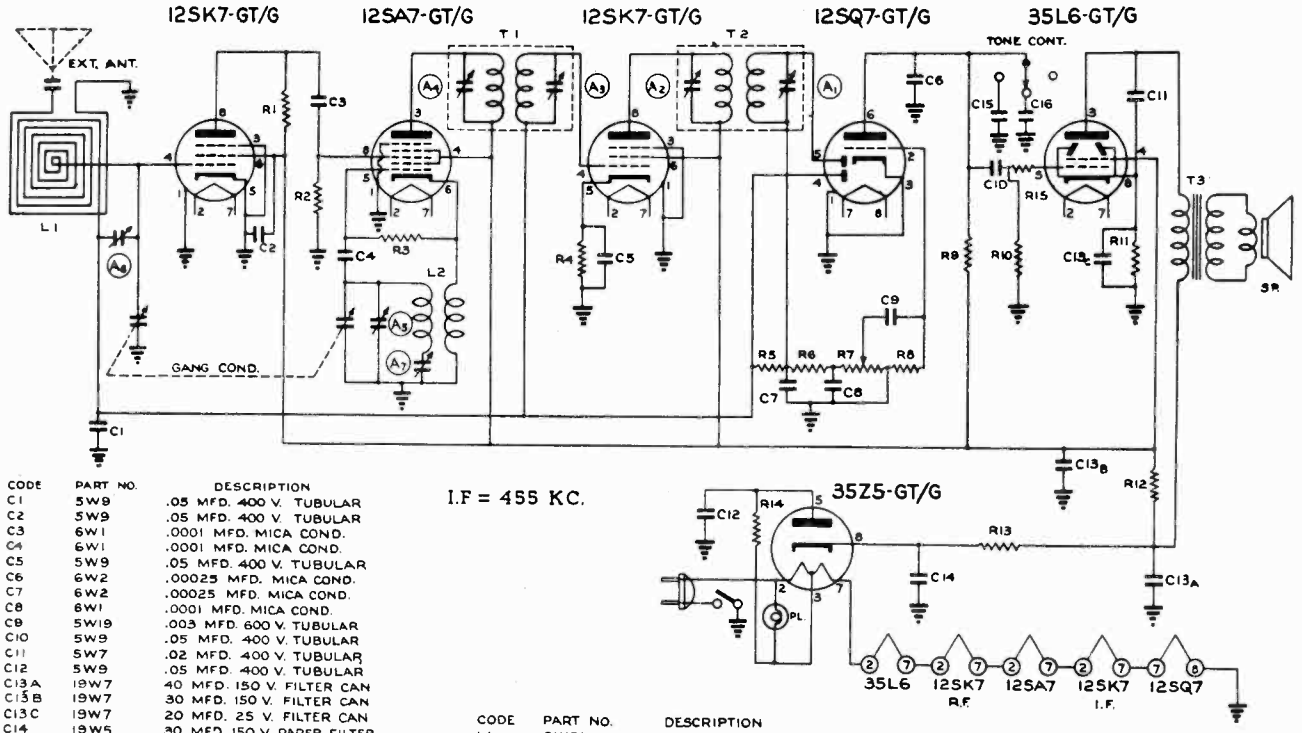
2. Set tuning dial to 1400 K. C. and while feeding a 1400 K. C. signal into receiver adjust the oscillator trimmer (inside adjustment) and antenna trimmer (on top of chassis) for maximum output.

3. Set tuning dial to approximately 600 K. C. and while "rocking" the dial adjust the oscillator padder (nearest edge of chassis) for maximum output.

4. Repeat steps 2 and 3 above.

MODEL 4790

WATTERSON RADIO MFG. CORP.



I.F = 455 KC.

CODE	PART NO.	DESCRIPTION
C1	5W9	.05 MFD. 400 V. TUBULAR
C2	5W9	.05 MFD. 400 V. TUBULAR
C3	6W1	.0001 MFD. MICA COND.
C4	6W1	.0001 MFD. MICA COND.
C5	5W9	.05 MFD. 400 V. TUBULAR
C6	6W2	.00025 MFD. MICA COND.
C7	6W2	.00025 MFD. MICA COND.
C8	6W1	.0001 MFD. MICA COND.
C9	5W19	.003 MFD. 600 V. TUBULAR
C10	5W9	.05 MFD. 400 V. TUBULAR
C11	5W7	.02 MFD. 400 V. TUBULAR
C12	5W9	.05 MFD. 400 V. TUBULAR
C13A	19W7	40 MFD. 150 V. FILTER CAN
C13B	19W7	30 MFD. 150 V. FILTER CAN
C13C	19W7	20 MFD. 25 V. FILTER CAN
C14	19W5	30 MFD. 150 V. PAPER FILTER
C15	5W20	.006 MFD. 600 V. TUBULAR
C16	5W17	.001 MFD. 600 V. TUBULAR
R1	9W37	2,200 Ω - 1/2 WATT RESISTOR
R2	9W28	100,000 Ω - 1/2 WATT
R3	9W64	22,000 Ω - 1/2 WATT
R4	9W72	1,000 Ω - 1/2 WATT
R5	9W56	2.2 MEGOHM - 1/2 WATT
R6	9W52	47,000 Ω - 1/2 WATT
R7	13W1	.5 MEGOHM VOL. CONT.
R8	9W63	10 MEGOHM - 1/2 WATT
R9	9W62	220,000 Ω - 1/2 WATT
R10	9W59	470,000 Ω - 1/2 WATT
R11	9W20	150 Ω - 1/2 WATT
R12	9W72	1000 Ω - 1/2 WATT
R13	9W47	220 Ω - 1 WATT
R14	9W61	22 Ω - 1/2 WATT

CODE	PART NO.	DESCRIPTION
L1	3W31	LOOP - 184 μh.
L2	3W28	OSCILLATOR COIL
T1	3W20	1ST. I.F. TRANSFORMER
T2	3W21	2ND. I.F. TRANSFORMER
T3	12W1	OUTPUT TRANSFORMER
PL.	26W2	PILOT LIGHT
SP.	22W22	SPEAKER
NOTE: R15	9W11	250 Ω - 1/2 WATT (OMITTED ON SOME MODELS)

ANTENNA—No external antenna is required for the Model 4790 except in remote localities where reception is poor. For proper performance in such a case, an outside antenna approximately 75 feet in length, including lead in, should be connected to the colored antenna lead extending from the back of the set.

OPERATION—The three controls on the front panel of the receiver are used as follows: the extreme left control is the on-off switch and volume control; the center control is the tuning control; and the extreme right control is the tone control.

I. F. Alignment

Connect the low side of an accurately calibrated signal generator through a .1 mfd condenser to the chassis of the receiver and the "high" side of the generator through a .1 mfd. condenser to the R. F. grid (pin 8) of the 12SA7 converter tube. Set the signal generator to 455 Kc. with just enough signal to be audible in the speaker with the receiver volume control full on. If possible, an output meter should be used.

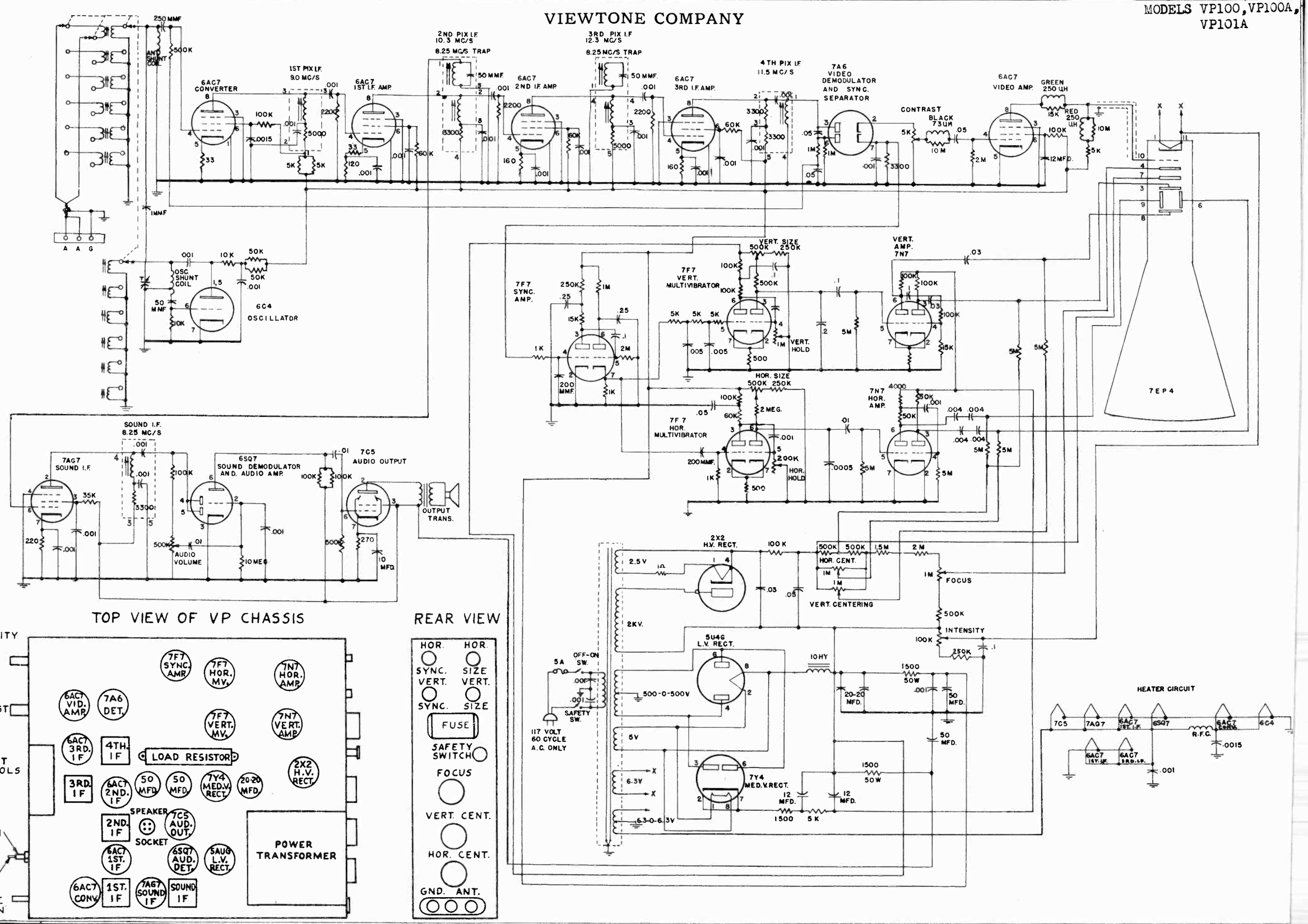
Adjust the second I. F. transformer (A_1 and A_2) and then the first I. F. transformer (A_3 and A_4) for maximum output. Recheck all adjustments.

R. F. Alignment

Connect "high" side of signal generator to the antenna lead of the receiver. Set dial pointer to 1400 Kc. on the receiver dial and turn volume control full on. Set signal generator to 1400 Kc. Adjust oscillator trimmer (A_5) and then the antenna trimmer (A_6) for maximum output. Set signal generator to 600 Kc. and receiver dial to approximately 600 Kc. While "rocking" receiver dial, adjust oscillator padder (A_7) for maximum output. Recheck adjustments at 1400 Kc.

VIEWTONE COMPANY

MODELS VP100, VP100A, VP101A



TOP VIEW OF VP CHASSIS

REAR VIEW

ADVENTURER - CONSOLE WITH RADIO AND TELEVISION
FUTURA - TABLE MODEL

GENERAL DESCRIPTION

THESE MODELS CONSIST OF A 19-TUBE, DIRECT VIEWING TELEVISING RECEIVER. FEATURES OF THE TELEVISION RECEIVER INCLUDE:

SEVEN INCH CATHODE RAY TUBE, SINGLE-STATION, SELECTOR SWITCH WITH FINE TUNING CONTROL; DOUBLE SAFETY PROTECTION WHICH INCLUDES FUSE AND INTERLOCK SWITCH; SAFETY PLEXITE VIEWING WINDOW AND AUTOMATIC GAIN CONTROL.

OPERATION OF THE VIEWTONE TELEVISION RECEIVER

ON THE FRONT OF THE CHASSIS THERE ARE FOUR CONTROLS:

1. VOLUME, OFF-ON.
2. STATION SELECTOR AND FINE TUNING.
3. CONTRAST
4. INTENSITY

THE POWER-VOLUME CONTROL TURNS ON THE POWER FOR THE COMPLETE SET AND ALSO CONTROLS THE VOLUME OF THE SOUND ACCOMPANYING THE PICTURE

THE STATION SELECTOR AND FINE TUNING IS A COAXIAL DUAL CONTROL WHOSE OUTER KNOB SELECTS THE CHANNEL OF THE STATION WHICH IT IS DESIRED TO RECEIVE, THAT IS IN NEW YORK:

CHANNEL	FREQUENCY	STATION
2	54-60	WCBS - TV (C.B.S.)
4	66-72	WNBT (N.B.C.)
5	76-82	WABD (Dumont)

SET THE LARGE KNOB TO THE CORRESPONDING NUMERALS ON THE FRONT OF THE CABINET. THE INNER SECTION OF THIS KNOB IS THEN USED FOR FINE TUNING, AND MAY ELIMINATE RIPPLES AND DISTORTION FROM THE PICTURE. BY TURNING THIS KNOB, BOTH PICTURE AND SOUND ARE TUNED IN SIMULTANEOUSLY.

THE CONTRAST CONTROL VARIES THE BLACK AND WHITE TONES OF THE PICTURE BEING RECEIVED. TURNING THIS CONTROL CLOCKWISE INCREASES THE CONTRAST FROM GRAYS, TO BLACK AND WHITE.

[illegible] CONTROL SHOULD BE TURNED COMPLETELY COUNTER-CLOCKWISE BEFORE TURNING THE SET ON. THIS WILL REDUCE THE ILLUMINATION OF THE INTENSE SPOT THAT APPEARS ON THE CATHODE RAY TUBE BEFORE THE SWEEP CIRCUITS START FUNCTIONING. BY TURNING THE CONTROL CLOCKWISE THE AVERAGE ILLUMINATION, OR BRIGHTNESS OF THE PICTURE IS INCREASED.

ON THE REAR OF THE CHASSIS ARE SEVEN CONTROLS, WHICH ONCE SET, NEED ONLY OCCASIONAL ADJUSTMENT.

THE HORIZONTAL SYNC. CONTROLS THE PICTURE STABILITY. IT SHOULD BE ADJUSTED TO THE ONE POINT WHERE THE PICTURE "LOOKS IN" HORIZONTALLY.

THE HORIZONTAL AMPLITUDE CONTROLS THE SIZE OF THE PICTURE ONCE IT HAS BEEN LOCKED IN.

THE VERTICAL SYNC. SHOULD BE ADJUSTED TO THE POINT WHERE ONLY ONE PICTURE LOOKS IN VERTICALLY.

THE VERTICAL AMPLITUDE CONTROLS THE VERTICAL SIZE OF THE PICTURE.

THESE CONTROLS WHEN ONCE SET REQUIRE ONLY OCCASIONAL ADJUSTMENT, THIS DUE TO THE AGING OR CHANGING OF TUBES.

THE FOCUS CONTROL SHOULD BE ADJUSTED TO THE POINT OF THE GREATEST SHARPNESS OF THE PICTURE

THE HORIZONTAL CENTERING CONTROL ENABLES THE COMPLETE PICTURE TO BE MOVED HORIZONTALLY IN ORDER TO CENTER IT ON THE TUBE.

THE VERTICAL CENTERING CONTROL ENABLES THE COMPLETE PICTURE TO BE MOVED VERITCALLY IN ORDER TO CENTER IT ON THE TUBE.

IMPORTANT SAFETY PRECAUTIONS

USE EXTREME CAUTION AT ALL TIMES WHEN SERVICING RECEIVER.

THIS RECEIVER CONTAINS HIGH VOLTAGE (3,000 volts). AN INTERLOCK SWITCH IS PROVIDED AT THE REAR OF THE CHASSIS FOR THE PROTECTION OF THE INDIVIDUAL. IT IS RECOMMENDED THAT ONLY QUALAFIED PERSONNEL BE ALLOWED TO SERVICE THIS RECEIVER.

THE MOST DANGEROUS PORTION OF THE H.V. SUPPLY IS THE PLATE LEAD OF THE 2X2/879 RECTIFIER TUBE.

ANTENNA INSTALLATION

THE IMPORTANCE OF A GOOD ANTENNA INSTALLATION CANNOT BE OVEREMPHASIZED. A PROPERLY INSTALLED ANTENNA IS THE DIFFERENCE BETWEEN GOOD OR POOR RECEPTION. AN ANTENNA SHOULD NOT BE INSTALLED PERMANENTLY ON AN APARTMENT OR RESIDENCE ROOF UNTIL THE QUALITY OF PICTURE RECEPTION IS AT ITS BEST. ENOUGH SLACK SHOULD BE ALLOWED IN THE LEAD IN TO FACILITATE MOVEMENT OF THE ANTENNA. A SHIFT OF ONLY A FEW FSET IN ANTENNA POSITION MAY RESULT IN AN ENORMOUS DIFFERENCE IN PICTURE RECEPTION. THE ANTENNA SHOULD BE POSITIONED BROADSIDE TOWARD THE TRANSMITTER. IF A RECEPTOR AND REFLECTOR ARRANGEMENT IS USED, THE RECEPTOR IS PLACED IN FRONT OF THE REFLECTOR BROADSIDE TOWARD THE STATION.

FOR BEST POSSIBLE RESULTS THE ANTENNA SHOULD BE REMOVED AS FAR AS POSSIBLE FROM HIGHWAYS, HOSPITALS, AND OTHER SOURCES OF INTERFERENCE. AUTOMOBILE IGNITION NOISES AND DIATHERMY MACHINES MAY CAUSE "HERRINGBONES" WHICH DISTORT THE PICTURE BEING RECEIVED.

R. F. ALIGNMENT PROCEDURE

1. REPLACE 6C4 OSCILLATOR TUBE. APPLY OUTPUT OF SIG. GEN. TO ANTENNA TERMINAL OF CHASSIS. CONNECT OUTPUT INDICATING DEVICE TO VIDEO LEAD OF C.R.T. SET OSCILLATOR CONDENSER HALF WAY OPEN.

2. ADJUST OSC. COIL SLUGS SO THAT SOUND OUTPUT IS HEARD AS THE SIG. GEN. IS SET ON THE SOUND CARRIER FREQUENCY OF THE TELEVISION CHANNEL.

CHANNEL	SOUND CARRIER
1	49.75 Mc
2	59.75 Mc
3	65.75 Mc
4	71.75 Mc
5	81.75 Mc
6	87.75 Mc

3. ADJUST ANTENNA COIL SLUGS SO THAT THE OUTPUT INDICATING DEVICE INDICATES MAXIMUM AS THE SIG. GEN. IS SET ON THE FREQUENCIES LISTED BELOW. THESE FREQUENCIES ARE BETWEEN THE SOUND AND THE PICTURE CARRIERS TO GIVE RESPONSE TO BOTH.

CHANNEL	SET ANT. COIL TO
1	47 Mc
2	58 Mc
3	63 Mc
4	70 Mc
5	78 Mc
6	85 Mc

I. F. ALIGNMENT PROCEDURE

1. REQUIRED: SIGNAL GENERATOR, 8-15 MC
   OUTPUT INDICATOR (OSCILLOSCOPE, V.T.V.M.)
   REMOVE OSCILLATOR TUBE
   TYPE VP100 CHASSIS DISTINGUISHED BY BLACK SERIAL NO.
   TYPE VP100A " " " RED " "

2. ALIGNMENT OF 4TH I.F. TRANSFORMER.
   APPLY OUTPUT OF SIG. GEN. TO GRID OF THIRD I.F. TUBE.
   TUNE IN SLUG OF TRANS. FOR MAXIMUM DEFLECTION IN INDICATOR CONNECTED TO C.R.T. VIDEO LEAD.
   FREQUENCY: VP100 12.8 Mc
   VP100A 11.5 Mc

3. ALIGNMENT OF 3RD I.F. TRANSFORMER.
   APPLY OUTPUT OF SIG. GEN. TO GRID OF SECOND I.F. TUBE.
   TUNE BOTTOM SLUG OF I.F. TRANS. FOR MAXIMUM DEFLECTION IN OUTPUT INDICATOR CONNECTED TO C.R.T. VIDEO LEAD.
   FREQUENCY: VP100 12.0 Mc
   VP100A 12.0 Mc
   TUNE TOP IRON SLUG OF IF TRANS. FOR MINIMUM DEFLECTION OF OUTPUT INDICATOR CONNECTED TO C.R.T. VIDEO LEAST
   TRAP FREQUENCY: VP100 8.25 Mc
   VP100A 10.3 Mc

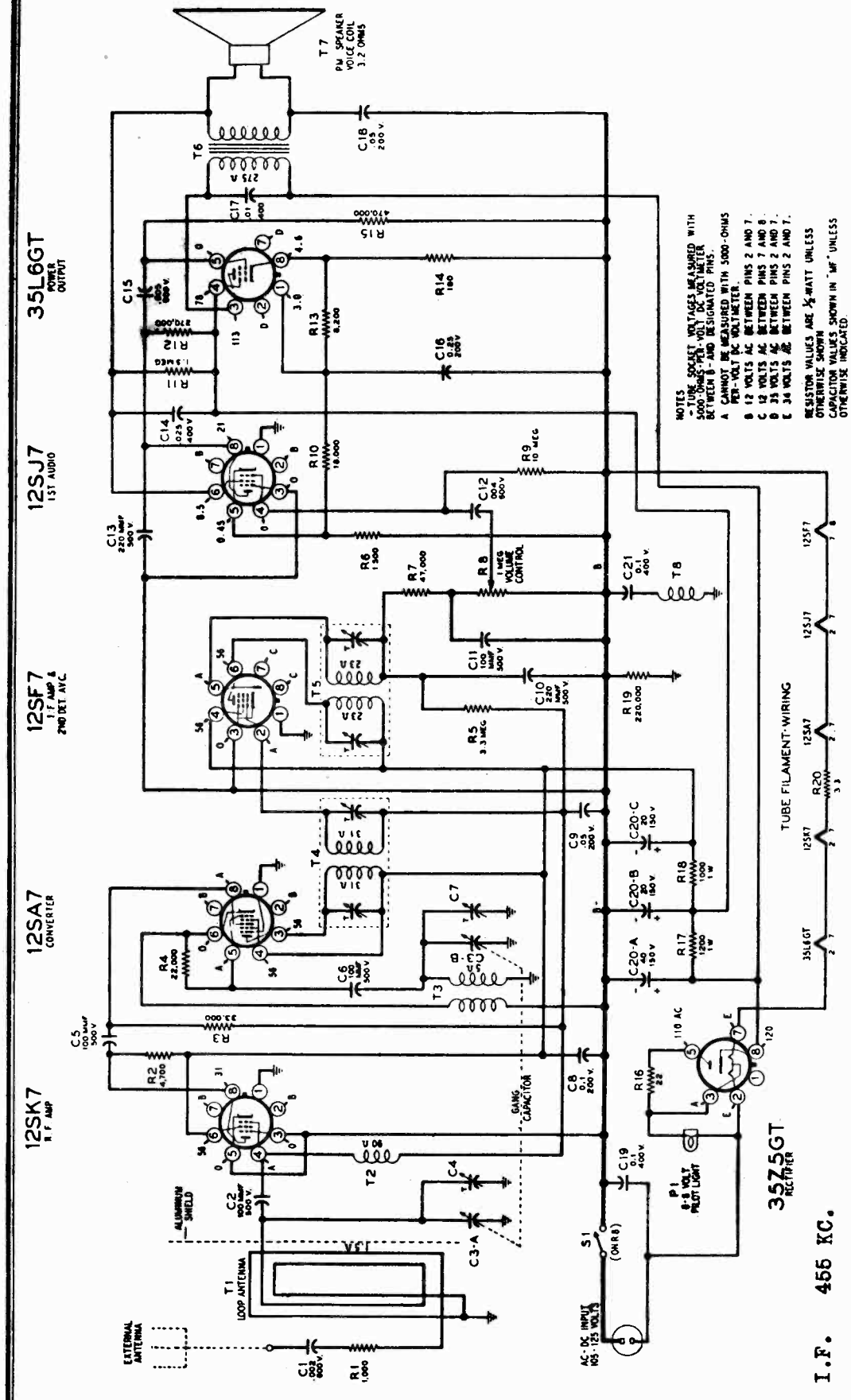
4. ALIGNMENT OF 2ND I.F. TRANSFORMER.
   APPLY OUTPUT OF SIG. GEN. TO GRID OF 1ST IF AMPLIFIER TUBE. TUNE BOTTOM SLUG OF IF FOR MAXIMUM DEFLECTION OF OUTPUT INDICATOR CONNECTED TO VIDEO LEAD OF C.R.T.
   FREQUENCY: VP100 11.5 Mc
   VP100A 10.3 Mc
   TUNE TOP SLUG OF IF TRANS. FOR MINIMUM DEFLECTION OF OUTPUT INDICATOR CONNECTED TO C.R.T. VIDEO LEAD. THIS WILL CORRESPOND TO MAXIMUM AUDIO OUTPUT.
   TRAP FREQUENCY: VP100 8.25 Mc
   VP100A 8.25 Mc

5. ALIGNMENT OF 1ST IF TRANSOFMRER.
   APPLY OUTPUT OF SIG. GEN. TO GRID OR CATHODE OF CONVERTER TUBE. TUNE BOTTOM IRON SLUG FOR MAXIMUM DEFLECTION IN OUTPUT.
   FREQUENCY: VP100 10.3 Mc
   VP100A 9.0 Mc
   IN THE MODEL VP100 THERE IS A 14.25 Mc TRAP WHICH IS TUNED FOR MINIMUM DEFLECTION.

6. ALIGNMENT OF SOUND IF TRANSFRMER.
   APPLY OUTPUT OF SIG. GEN. TO GRID OR CATHODE OF CONVERTER TUBE. TUNE TOP SLUG FOR MAXIMUM SOUND OUTPUT. MAXIMUM SOUND CAN BE DETERMINED BY EAR OR BY APPLYING V.T.V.M. OR OSCILLOSC. TO GRID OF 7C5 AUDIO OUTPUT.
   FREQUENCY: VP100 8.25 Mc
   VP100A 8.25 Mc

MODEL D2616

WESTERN AUTO SUPPLY CO.



Technical Data

Tuning range	530 to 1600 kc
Intermediate frequency	455 kc
Power consumption	30 watts
Selectivity	65 kc broad at 1000 x signal at 1000 kc
I.F.	455 KC.
Sensitivity (for 0.05 watt output)	14 microvolts average
Power output (in voice coil)	
Undistorted	0.84 watts
Maximum	1.5 watts

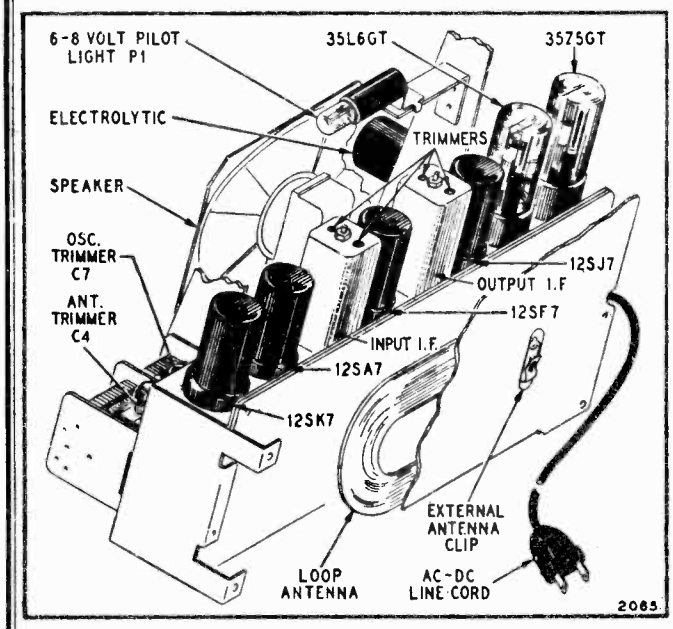
WESTERN AUTO SUPPLY CO.

ALIGNMENT PROCEDURE

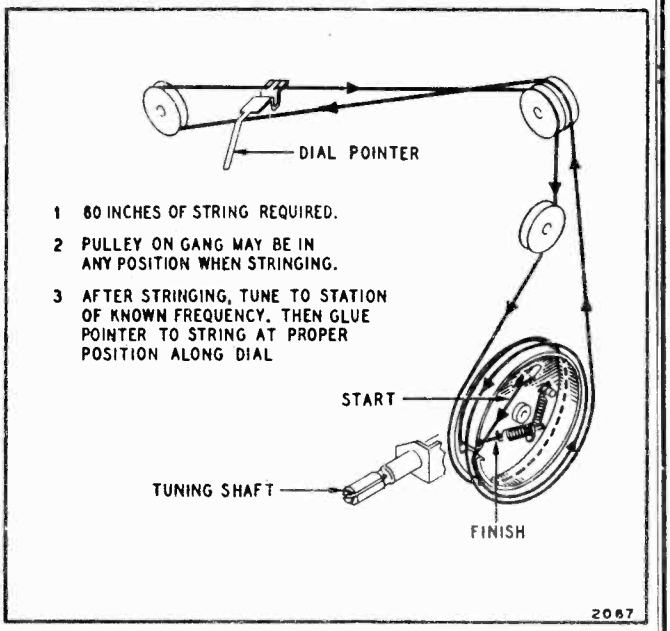
(Refer to Chassis View)

- Output meter across 3.2-ohm output load.
- Volume control at maximum.
- Connect ground post of signal generator to B— of radio.
- Align for maximum output. Reduce input as needed to keep output near 0.4 volts.

SIGNAL GENERATOR			*TUNER SETTING*	*ADJUST FOR MAXIMUM OUTPUT (in order shown)*
Frequency	*Dummy Antenna*	*Connection to Radio*		
455 kc	0.1 mf	Stator of antenna section of gang	Rotor full open (plates out of mesh)	Trimmers on output and input I.F. cans
1600 kc	0.1 mf	Stator of antenna section of gang	Rotor full open (plates out of mesh)	Oscillator trimmer C7
1400 kc	200 mmf	External antenna clip	1400 kc	Antenna trimmer C4



Chassis View



Replacing Dial Pointer Drive Cord

SETTING THE PUSHBUTTONS

The pushbuttons may be used, after proper adjustment, for the automatic tuning of any six stations which you select.

1. Turn on the radio.
2. Push out the call letters of the desired stations from the call-letter sheets supplied with this manual.
3. Insert one call letter tab in each of the pushbuttons, preferably but not necessarily in order of frequency (as obtained from your newspaper). Press an acetate tab (supplied in small envelope) into each of the buttons.
4. Rotate the tuning knob to the left (counterclockwise) as far as it will go.
5. On the bottom of the set is a hole through which the pushbutton locking screw can be adjusted. With a screwdriver, check to see if the screw is loose. If it is not, turn it several turns to the left. Then return the set to an upright position.
6. Press the first pushbutton down all the way. With one hand hold the button down firmly and with the other carefully tune in the desired station. Release the pushbutton.
7. Follow this procedure for each of the five other buttons, adjusting each one for a different station.
8. Rotate the tuning knob as far to the left as it will go. Now tighten the locking screw on the bottom of the radio. IT IS IMPORTANT THAT THIS SCREW BE TIGHTENED VERY FIRMLY.
9. The pushbuttons are now properly set for automatic tuning. Any of the six stations may now be tuned in simply by pressing the proper button down as far as it will go. If it is desired to reset any of the buttons for a new station, loosen the locking screw, set the pushbutton as described above, and re-tighten the locking screw.

MODEL D2616
MODEL D2619

MODEL D 2616 WESTERN AUTO SUPPLY CO.

Ref. No.	Part No.	Description
		CAPACITORS*
C1	C-8D-10778	.002 mf, 600 volts, +40%—15%
C2,C5 C6,C11	C-8F3-8	100 mmf, 500 volts, 20%, mica
C-3A,B C4,C7	B-8A-10827	Two-gang condenser assembly, including antenna and oscillator trimmers. Range of gang: 15-452 mmf (ant.), 10-162 mmf (osc.).
C8	C-8D-10771	.1 mf, 200 volts, +20%—10%
C9,C18	C-8D-10770	.05 mf, 200 volts, 20%
C10,C13	C-8F3-10	220 mmf, 500 volts, 20%, mica
C12	C-8D-10788	.004 mf, 600 volts, 20%
C14	C-8D-10997	.025 mf, 400 volts, 10%
C15	C-8D-10935	.005 mf, 600 volts, +40%—15%
C16	C-8D-10775	.25 mf, 200 volts, +20%—10%
C17	C-8D-10761	.01 mf, 400 volts, 20%
C19,C21	C-8D-10760	.1 mf, 400 volts, +20%—10%
C20-A,B,C	A-8C-10077	Electrolytic, for 60-cycles; 40 mf x 150 volts, 20 mf x 150 volts, 20 mf x 150 volts
C20-A,B,C	A-8C-10946	Electrolytic, for 25 cycles; 60 mf x 150 volts, 40 mf x 150 volts, 40 mf x 150 volts
		RESISTORS*
R1	C-9B1-62	1000 ohms, ½ watt, 10%
R2	C-9B1-70	4700 ohms, ½ watt, 10%
R3	C-9B1-80	33,000 ohms, ½ watt, 10%
R4	C-9B1-78	22,000 ohms, ½ watt, 10%
R5	C-9B1-34	3.3 megohms, ½ watt, 20%
R6	C-9B1-64	1500 ohms, ½ watt, 10%
R7	C-9B1-82	47,000 ohms, ½ watt, 10%
R8,S1	A-10A-10642	Volume control (1 megohm) and on-off switch
R9	C-9B1-37	10 megohms, ½ watt, 20%
R10	C-9B1-77	18,000 ohms, ½ watt, 10%
R11	C-9B1-32	1.5 megohms, ½ wat, 20%
R12	C-9B1-91	270,000 ohms, ½ watt, 10%
R13	C-9B1-73	8200 ohms, ½ watt, 10%
R14	C-9B1-53	180 ohms, ½ watt, 10%
R15	C-9B1-94	470,000 ohms, ½ watt, 10%
R16	C-9B1-3	22 ohms, ½ watt, 20%
R17	C-9B2-63	1200 ohms, 1 watt, 10%
R18	C-9B2-62	1000 ohms, 1 watt, 10%
R19	C-9B1-90	220,000 ohms, ½ watt, 10%
R20	C-9B2-44	33 ohms, 1 watt, 10%
		COILS AND TRANSFORMERS
T1	C-201-10908	Loop antenna assembly (includes cabinet back, capacitor C1 and resistor R1)
T2	A-16A-12161	R.F. choke coil
T3	A-13D-10661	Oscillator coil
T4	B-13B-10091-1	Input I.F. transformer complete in can. Range of trimmers: 45-85 mmf each.
T5	B-13B-10794	Output I.F. transformer complete in can. Range of trimmers: 43-79 mmf each.
T6	B-12C-10623	Output transformer for speaker
T8	A-16A-10792	I.F. choke coil

NOTE ON TUBE REPLACEMENT

Replace a defective metal 12SK7 tube with another metal tube. Replace a glass 12SK7 tube with a metal tube or with an exact duplicate of the tube now in the set.

Ref. No.	Part No.	Description
		DIAL AND TUNING PARTS
	B-6D-10650	Dial scale
	A-6A-10609	Diffuser
	B-2M-7758	Snap-in rivet, for diffuser (2 used)
	A-2G-10639	Dial pointer
	B-53A-10989	String for dial pointer (60")
	A-49A-10887	Spring for dial pointer string
	A-55A-10093	Socket assembly, for dial light
P1	A-46A-10793	Dial light bulb, 6-8 volts, T-47
	A-3C-10641	Spacer, brass (on extreme left)
	A-3C-10640	Spacer, brass (5 used)
	A-2C-10658	Cam
	A-2C-10611	Washer, D-D, on sides of cams
	29E-1812	Spring washer, on cam shaft
	A-3F-10656	Locking screw for cams
	A-2C-10654	Retainer yoke
	A-2C-10655	Cam yoke
	A-2L-10610	Stop arm
	200-10653	Lever assembly (arm and roller)
	A-2C-10607	Gear segment
	A-3B-10643	Gear bushing
	A-3C-10636	Coupling pin on gear segment
	A-49A-10646	Drum spring, on gear coupling pin
	A-3A-10651	Tuning shaft
	A-3L-7192	Pinion gear on tuning shaft
	A-49A-10628	Lever spring
		MISCELLANEOUS
T7	B-18A-10647	P.M., 6" x 4" oval
	A-15B-10440	Socket, octal (for all tubes but 12SK7)
	A-15C-11201	Socket, octal, laminated (for 12SK7)
	B-15B-10076	Mounting plate, for electrolytic
	B-14M-10088	Line cord and plug
	B-2M-11205	Snap-in rivets, for mounting back (5 used)
	A-2M-10096	Split tee-pins, for mounting back (2 used)
	5C-10010-9	Cabinet
	B-5B-10016-8	Knob, volume and tuning
	B-5A-10648-8	Pushbutton
	A-25B-10736	Rubber feet for cabinet
	A-23L-10934	Station call letters, one set
	A-6C-10819	Acetate tabs, for pushbuttons
	A-2H-10715	Tube shield (used with metal-base 12SA7GT tube)
	A-2H-11271	Tube shield (used with bakelite-base 12SA7GT tube)

*The values of the resistors and mica capacitors listed above are based on RMA standards. Due to conditions beyond our control some receivers have been shipped with components of pre-standardized values. This receiver will operate equally well with components of either group. An illustration of the differences in both resistors and capacitors follows:

Pre-standardized value—50,000 ohms, 1/3 watt, 10%
RMA value—47,000 ohms, 1/2 watt, 10%
Pre-standardized value—200 mmf, 500 volts, 20%
RMA value—220 mmf, 500 volts, 20%

NOTICE: There is a power rating label on the cabinet. This label specifies the power supply on which the radio may be used, and identifies it as to stock number and model. When ordering parts or writing, give ALL information appearing on label.

H-244A	Speaker 5" PM
S-608A	Tube Socket Octal (8 prong)
E-164A	Knob-tuning and volume
A-2131	Line Cord and plug

COILS

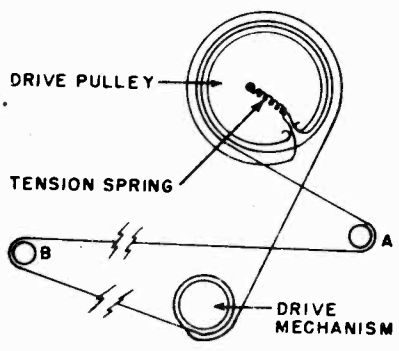
A-2154B	Antenna & Back Cover Assembly	
T-1361A	1st I.F. Transformer	456 KC
T-1362A	2nd I.F. Transformer	456 KC
T-1365A	R. F. Choke Coil	1.4 MH
T-1368A	Audio Transformer	
T-1372A	R.F. Choke Coil	3.0 MH

CAPICATORS

C-471A	0.1 mfd, 400 V	Tubular
C-493A	1000 mmf, 350 V	Ceramic
C-494A	250 mmf, 350 V	Ceramic
C-495A	50 mmf, 500 V	Ceramic
C-480A	0.005 mfd, 400 V	Tubular
C-466A	40-40 mfd, 150 V	Electrolytic
C-483A	10-160 mmf	Trimmer
C-496A	0.02 mfd, 200 V	Tubular
C-460A	0.1 mfd, 200 V	Tubular
C-497A	0.2 mfd, 400 V	Tubular
C-500A	0.01 mfd, 400 V	Molded

MODEL D2619

W-43A	50 ohm, 10 Watt	Wire wound
W-415A	150 ohm, 0.5 Watt	Carbon
W-452A	4700 ohm, 0.5 Watt	Carbon
W-433A	1000 ohm, 1.0 Watt	Carbon
W-437A	22,000 ohm, 0.25 Watt	Carbon
W-438A	47,000 ohm, 0.25 Watt	Carbon
W-439A	100,000 ohm, 0.25 Watt	Carbon
W-440A	220,000 ohm, 0.25 Watt	Carbon
W-441A	470 ohm, 0.25 Watt	Carbon
W-442A	2.2 megohm, 0.25 Watt	Carbon
W-443A	10 megohm, 0.25 Watt	Carbon
W-444A	Switch & Pot, 500,000 ohm,	Carbon



TUNER & DRIVE PARTS

A-2143E	Tuner Assembly
L-2450A	Pulley-Drive
L-2451A	Pulley-Idler
U-1442A	Shoulder Rivet
H-247B	Glass Dial
H-246A	Translucent Screen
U-1445A	Snaps for Screen
U-1461A	Pointer
U-1444A	Spring
S-599A	Pilot Light Socket Assembly
A-2155A	Dial Drive Assembly

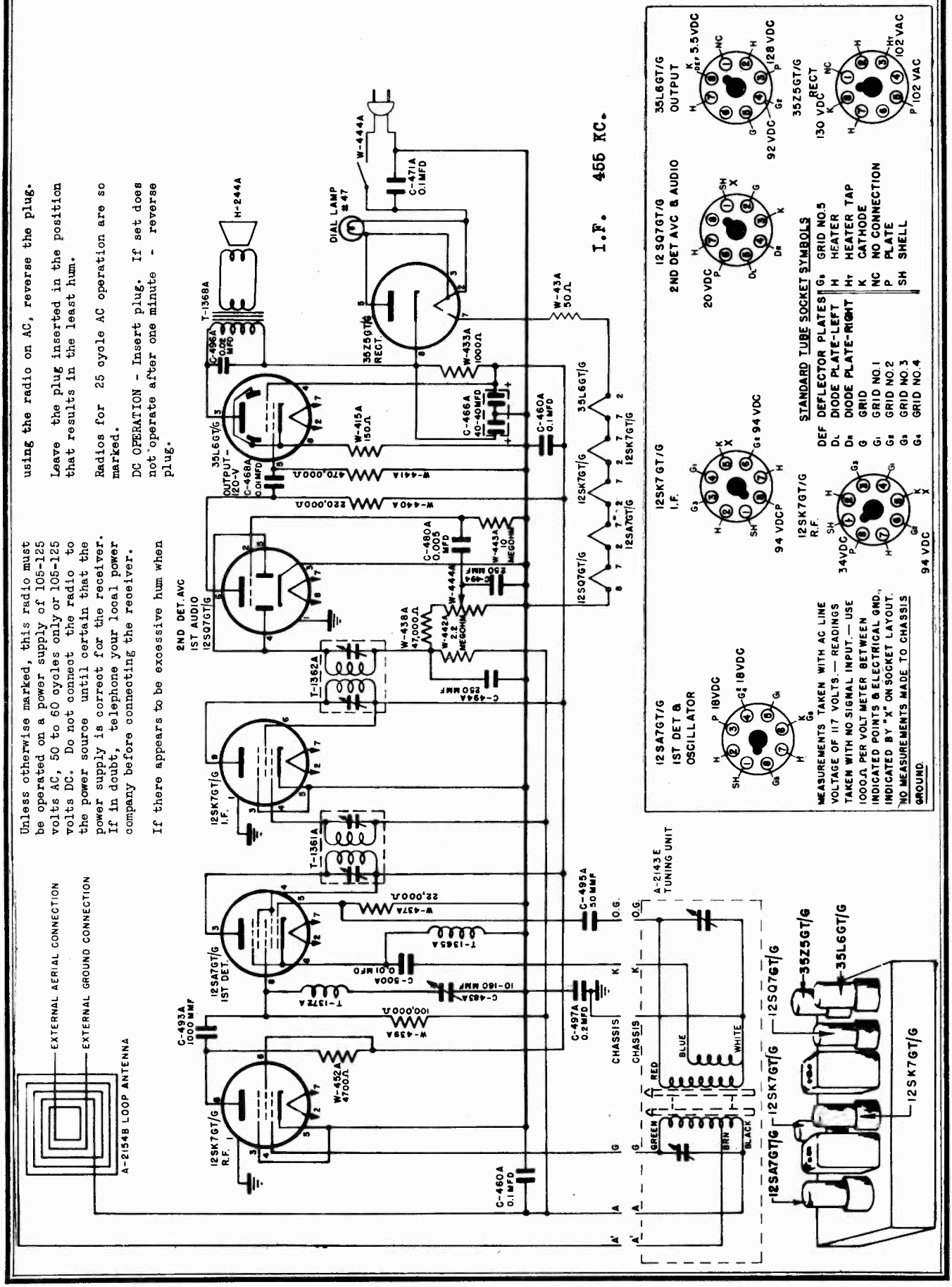
DRIVE CORD REPLACEMENT

Turn the tuner to the fully open position. Use a new cord 50" long and tie one end to the tension spring. Fasten the other end of the tension spring to the drive pulley. Pass cord through slot in pulley ring; add spring tension and continue one and one-half turns counterclockwise over top of pulley. Then pass cord around idler pulley A, starting over top and going around clockwise. Pass cord over idler pulley B, starting over top and going around counter clockwise. Wind one full turn counterclockwise around drive mechanism. Then wind one full turn counterclockwise around drive pulley, pass through slot in pulley and tie string to tension spring. Cut off excess string.

Attach dial pointer to cord.

MODEL D2619

WESTERN AUTO SUPPLY CO.



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

If there appears to be excessive hum when using the radio on AC, reverse the plug.

Leave the plug inserted in the position that results in the least hum.

Radios for 25 cycle AC operation are so marked.

DC OPERATION - Insert plug. If set does not operate after one minute - reverse plug.

ALIGNMENT PROCEDURE

Volume Control-Maximum All Adjustments.

Allow Chassis and Signal Generator to "Heat Up" for several minutes.

The equipment in column at right is required for Aligning:

Signal Generator which will provide an accurately calibrated signal at test frequencies as listed.

Output Indicating Meter; Non-Metallic Screwdriver.

Dummy Antennas-.01 mf., and 400 ohms.

SIGNAL GENERATOR FREQUENCY SETTING	ANTENNA CONNECTION	COUPLING	DUMMY ANTENNA	TUNER SETTING	TRIMMER ADJUSTMENT (SEE DIAGRAM)	NOTES
I.F. 455 KC	Grid of RF tube 12SK7	Ground generator to chassis	0.01 mfd	Out	Adjust for Max. 1, 2, 3 and 4	No signal will be heard unless trimmer condenser under chassis is unscrewed and reduced from original setting
I.F. 455 KC	Grid of RF tube 12SK7	Ground generator to chassis	0.01 mfd	Out	Trim condenser under chassis for Min. output.	If it is found that regeneration prevails when the loop antenna is put in its normal position close to the tubes, then the under chassis trimmer is incorrectly set, and should be adjusted to prevent the regenerative condition.
1620 KC	Inductive Coupling to Loop	Loop coupling with leads brought out	400 ohms in series with Antenna & Gnd.leads	Out	Adjust Osc. #5 per Max. signal	
1400 KC	Inductive Coupling to Loop	Loop coupling with leads brought out	400 ohms in series with Antenna & Gnd.leads	Dial set for 1400KC	Adjust RF trimmer #6 per Max. Signal.	
700 KC	Inductive Coupling to Loop	Loop Coupling with leads brought out	400 ohms in series with Antenna & Gnd.leads	Dial set for 700KC	Adjust RF tuning core #7 for Max. (care should be taken not to disturb carriage position of tuner)	If more than one turn is required, the trimming 1400 KC should be repeated and the 700 KC padding of the tuning core also repeated until correct alignment has been reached

ALIGNMENT NOTES

A. MECHANICAL ALIGNMENT:- The following mechanical adjustments should be made before alignment:

1. Rotate shaft of tuning unit until carriage is against top stop position.
2. Space oscillator coil slug 1-5/32" out from top of oscillator coil form.
3. Space R.F. coil slug 1-29/64" out from top end of R.F.coil winding. (Note:-The distance 1 and 2 should be measured from mounted end of the slug)
4. Adjust screw on trimmer of wave trap towards open position so that condenser plates are open at least 1/32".

B. I.F. ALIGNMENT PROCEDURE

1. Feed I.F. frequency from the signal generator through a 0.01 mfd condenser to the control grid of the R. F. tube.
2. No signal will be heard unless trimmer condenser under chassis is unscrewed and reduced from original setting.
3. Turn volume control full on.
4. Make preliminary I.F.adjustment with signal level approximately 50 Mv.
5. Tune I.F. trimmers for maximum signal, reducing I.F. signal input to coupling loop to keep output voltage less than 0.5 V.
6. When maximum output has been secured, adjust trimmer condenser in the I.F. trap (under chassis) by turning clockwise to the minimum signal.

C. R.F. ALIGNMENT PROCEDURE

1. Volume control full on.
2. Adjust tuning unit to top stop position.
3. Feed 1620 kc signal into external loop. Hold audio output below 0.5 V. Adjust the oscillator trimmer condenser to maximum output.
4. Move slugs in by means of tuning dial so that pointer is approximately 1" from the stop end, and a signal received from the external loop on a frequency of 1400 kc. Adjust lower trimmer (R.F. trimmer) to maximum output. Reduce R.F.input to keep signal output voltage below 0.5 V.
5. Rotate tuning shaft until pointer is approximately 1" from the other end of the scale. Feed to the external loop a test signal at 700 kc. Adjust the R.F.coil slug by rotation in the Timmerman nut to maximum output.

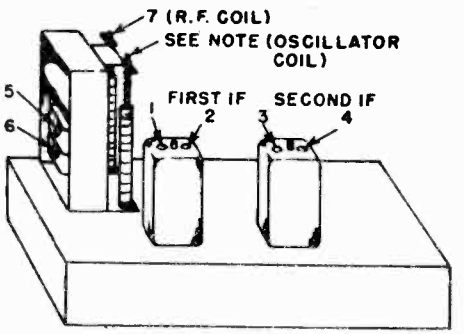
NOTE: If more than one complete turn of the slug is required to obtain maximum signal, return tuner to 1400 kc. position and repeat steps 4 and 5.

If less than one turn is required to obtain the maximum 700 kc. audio output, the R.F. alignment may be considered complete.

CAUTION: Extreme care should be taken in the 700 kc. position to make sure that the tuner carriage is not moved by the adjusting tools or hand pressure on the slug screw. Carriage should not be held against the frame, but should be allowed to assume its normal position when adjusting the R.F. coil slug.

SPECIFICATIONS

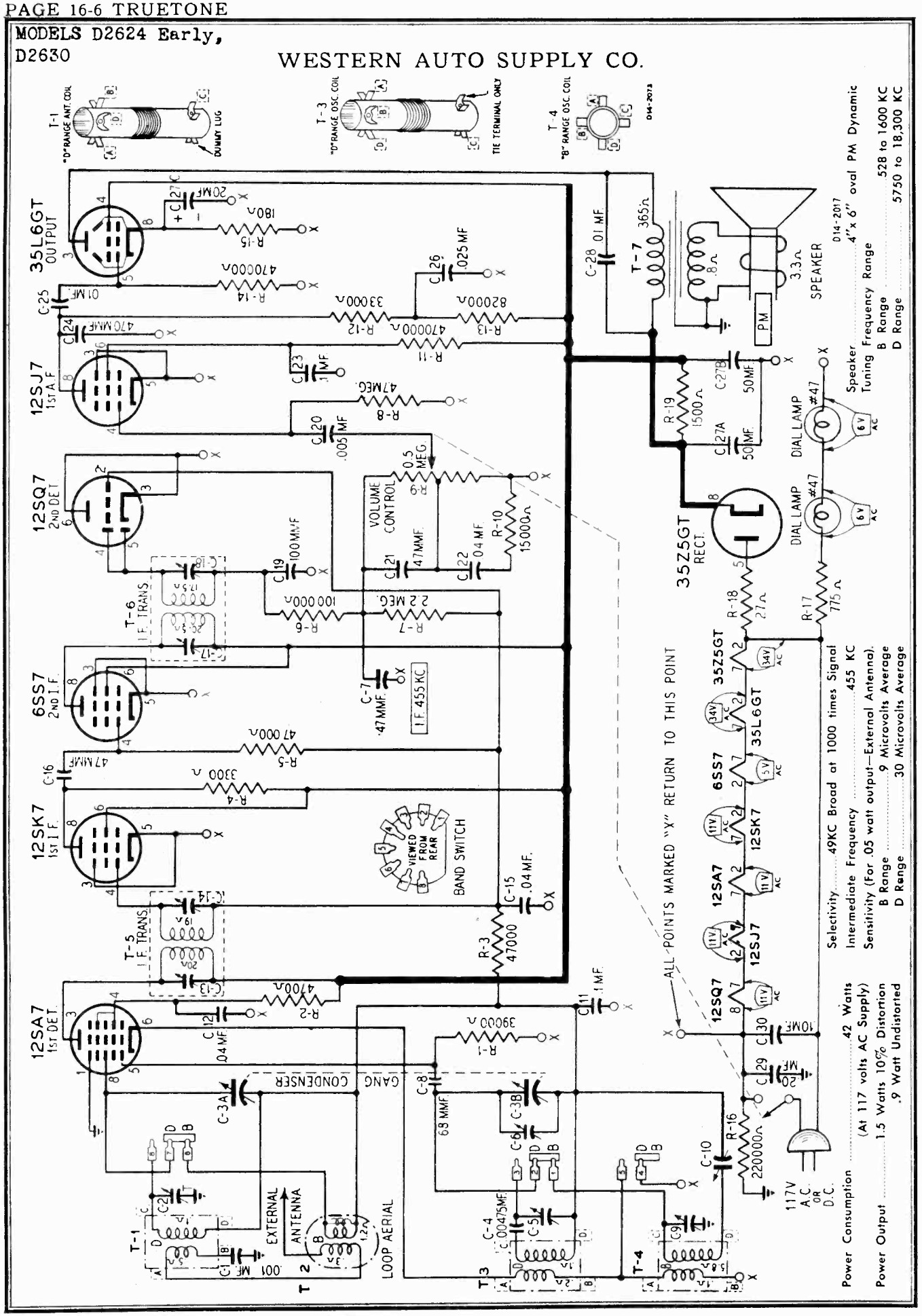
Power consumption..... 35 Watts
(At 117 volts AC Supply)
Power Output- 1.6 Watts 10% Distortion
1.1 Watt Undistorted
Selectivity----49 KC Broad at
1000 times Signal
Intermediate Frequency..... 455 KC
Speaker..... 5" PM Dynamic
Tuning Frequency Range..540 to 1620 KC
Sensitivity (For .05 Watt output-external Antenna) 20 microvolts average



WESTERN AUTO SUPPLY CO.

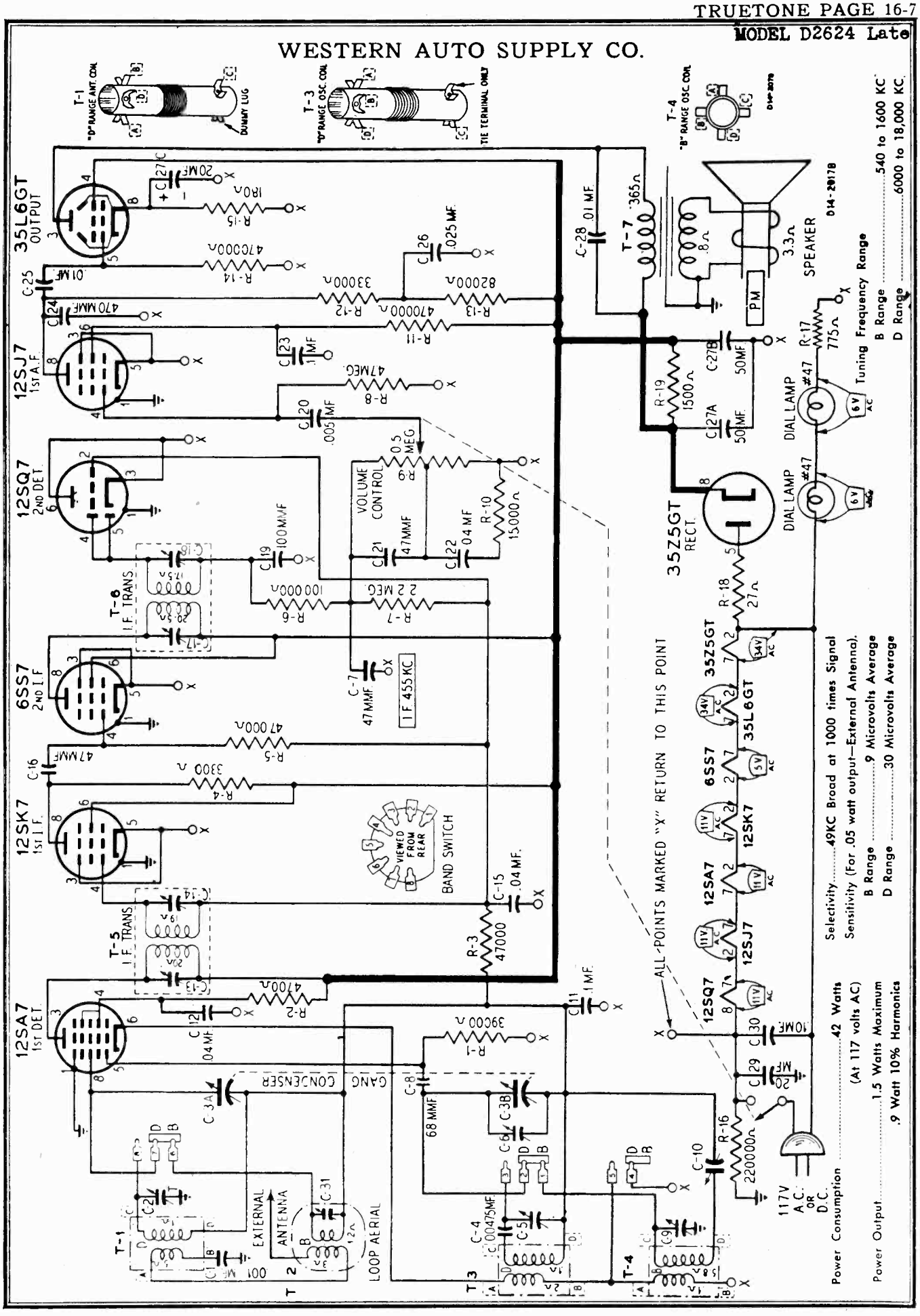
MODELS D2624 Early,
D2630

WESTERN AUTO SUPPLY CO.



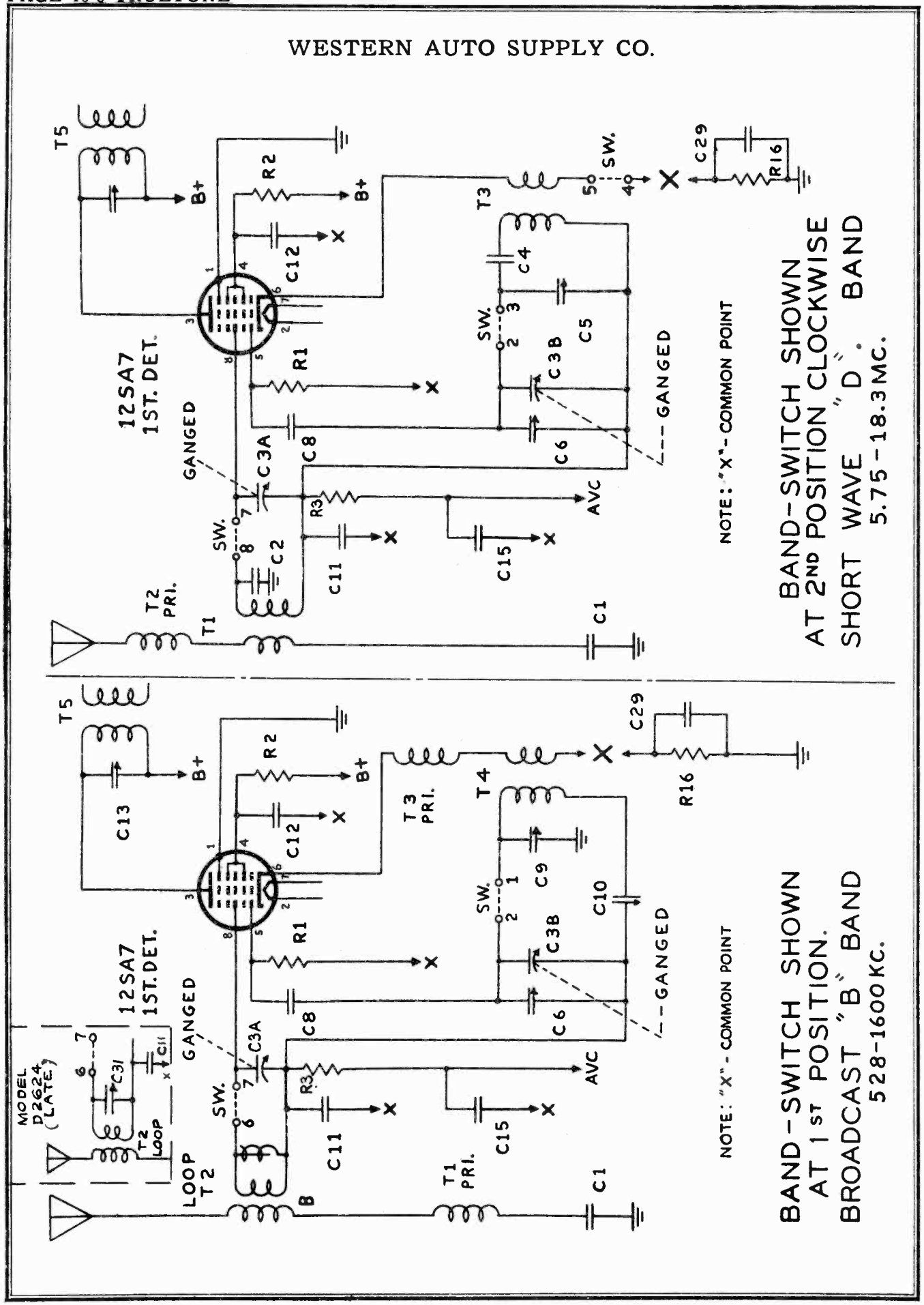
MODEL D2624 Late

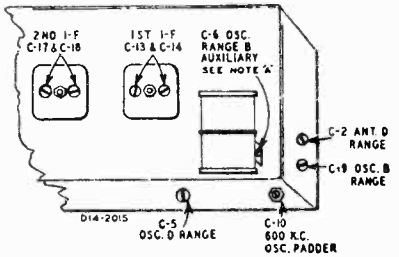
WESTERN AUTO SUPPLY CO.



"clarified schematics"

WESTERN AUTO SUPPLY CO.





ALIGNMENT NOTES

NOTE A—Adjust Oscillator Range B (C9) trimmer on side of chassis. Oscillator Range B (C6) auxiliary trimmer on gang condenser is adjusted at factory and ordinarily need not be readjusted in the field.

NOTE B—Index line is on dial background strip. See DIAL CALIBRATION paragraph.

NOTE C—Turn the rotor back and forth and adjust the trimmer until the peak of greatest intensity is obtained.

NOTE D—A "gimmick" capacity is used on the loop antenna in place of a trimmer. This normally requires no adjustment. However, if a new loop is installed it may be necessary to adjust the "gimmick" by increasing or decreasing the number of turns in the "gimmick." Complete the oscillator adjustment (C9) at 1400 KC, then adjust the "gimmick" at the same frequency.

ALIGNMENT PROCEDURE

Check Dial Pointer position, see DIAL CALIBRATION paragraph.

Volume Control—Maximum All Adjustments.

Allow Chassis and Signal Generator to "Heat Up" for several minutes.

The equipment in column at right is required for Aligning:

Signal Generator which will provide an accurately calibrated signal at test frequencies as listed.

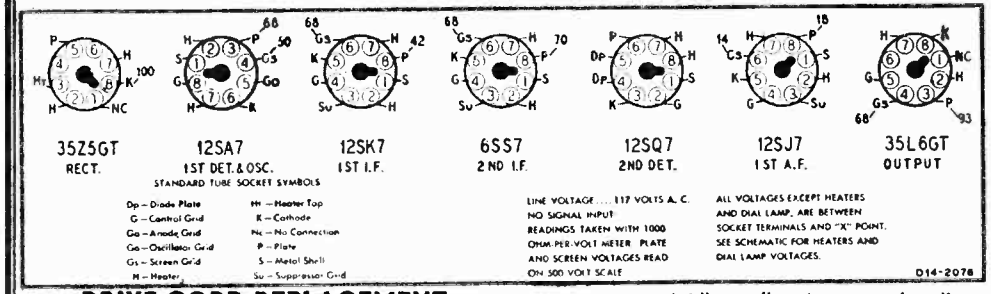
Output Indicating Meter; Non-Metallic Screwdriver.

Dummy Antennas—.1 mf., 200 mmf., and 400 ohm.

SIGNAL GENERATOR						ADJUST TRIMMERS
FREQUENCY SETTING	ANTENNA CONNECTION	GROUND CONNECTION	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	TO MAXIMUM (See Trimmer Illustration)
I.F. 455 KC	Signal Grid of 1st. Det. Connect at Stator of Large Gang Section.	Point "X" 12SK7—1st I-F Prong No. 3	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C13) & (C14) 2nd I.F. (C17) & (C18)
RANGE B 1400 KC	External Antenna Clip	Point "X"	200 mmf.	B Range	Turn Rotor to 1400 KC Index Line. See Note B	Oscillator Range B (C9) See Note A
			SEE NOTE D			
600 KC	External Antenna Clip	Point "X"	200 mmf.	B Range	Turn Rotor to Max. Output and Rock	600 KC Padder (C10) Rock Rotor See Note C
1400 KC	External Antenna Clip	Point "X"	200 mmf.	B Range	Turn Rotor to 1400 KC Index Line. See Note B	Oscillator Range B (C9)
Repeat above steps at 1400 and 600 KC until readjusting the oscillator Range B Trimmer (C9) causes no further improvement of output.						
RANGE D 16 MC	External Antenna Clip	Point "X"	400 Ohm	D Range	Turn Rotor to 1400 KC Index Line. See Note B	Oscillator Range D (C5)
16 MC	External Antenna Clip	Point "X"	400 Ohm	D Range	Turn Rotor to 1400 KC Index Line. See Note B	Ant. Range D (C2)

Note: In late models note D is not used in the alignment procedure. All other data is the same for both models.

BC. Band Early
528 to 1600 KC
BC. Band Late
540 to 1600 KC
SW. Band Early
5.75 to 18.3 MC
SW. Band Late
6 to 18 MC



DRIVE CORD REPLACEMENT

Turn the gang condenser to the fully open position. Use a new cord 60" long and tie one end to the tension spring. Fasten the other end of the tension spring to the drive pulley. Pass cord through slot in the pulley rim and continue one half turn counterclockwise, over top of pulley. Wind 3 turns clockwise around wooden drive shaft spool. Turns must progress toward chassis.

Pass cord around idler pulley A, over color disc pulley B, under color disc pulley C, and around idler pulleys D, E, and F.

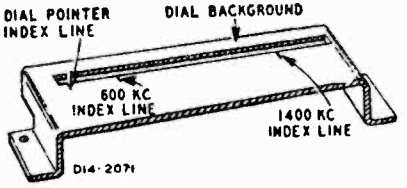
Wind ¾ turn counterclockwise around drive pulley. Pass cord through slot in rim, stretch tension spring and tie cord to it. Cut off the excess string.

Attach dial pointer to cord and position the pointer directly over the Dial Pointer Index Line on the dial background.

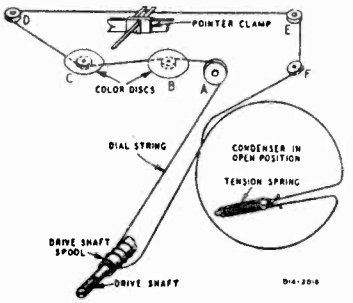
In order to align the receiver, the dial pointer must be positioned on the dial string correctly with reference to the dial. Index lines are provided on the dial background for this purpose.

To position the dial pointer, turn the gang condenser to the fully closed position. The dial pointer should be directly over the dial pointer index line. (See illustration.)

The 600 KC and 1400 KC index lines are for use when aligning the receiver.



16 Meter Band	17.1—17.9 MC
19 Meter Band	15.1—15.3 MC
25 Meter Band	11.7—11.9 MC
31 Meter Band	9.5— 9.7 MC
49 Meter Band	6— 6.2 MC



MODELS D2624 Early, Late, D2630
MODEL D2644

WESTERN AUTO SUPPLY CO.
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.

12A430	4" x 6" P.M. speaker—with mounting bracket Cone and voice coil assembly for speaker (specify part number and letters stamped on speaker)	
3A303	Tube Socket—octal (8 prong) molded	
10A520	Knob, tuning	for IVORY cabinet
10A521	Knob, volume	for IVORY cabinet
10A522	Knob, band	for IVORY cabinet
10A467	Knob, tuning	for WALNUT cabinet
10A468	Knob, volume	for WALNUT cabinet
10A469	Knob, band	for WALNUT cabinet
13X546	Line cord and plug	
2A206	Band change switch	
28X292	Snap button (mounting antenna to cabinet)	
	No. 6x⅜" P.K. Type "Z" screws (mounting antenna to chassis)	

TRANSFORMERS AND COILS

9A1443	T-1 "D" Range Antenna Coil Assembly
26A386	T-2 "B" Band Loop Antenna Assembly with Trimmer (for Walnut Cabinet)
26A387	T-2 "B" Band Loop Antenna Assembly with Trimmer (for Ivory Cabinet)
9A1444	T-3 "D" Range Oscillator Coil Assembly
9A1442	T-4 "B" Band Oscillator Coil Assembly
9A1793	T-5 1st I-F coil assembly
9A1794	T-6 2nd I-F coil assembly
51X118	T-7 Output transformer

CAPACITORS

B67102	C-1	.001 mf	200 V	Tubular
17A152	C-2	2-25 mmf Ant. Range "D"		Trimmer
	C-9	2-25 mmf. Osc. Range "B"		
14A148	C-3A	Gang capacitor and pulley		
	C-3B			
46X289	C-4	.00475 mf	180 V	Tubular
17A174	C-5	2-25 mmf Osc. Range "D"		Trimmer
	C-6	Part of C-3		
47X463	C-7	47 mmf		Molded
47X466	C-8	68 mmf		Molded
17A234	C-10	250-525 mmf		600 K.C. Padder
B66104	C-11	.1 mf	200 V	Tubular
	C-23			
	C-12			
B66403	C-15	.04 mf	200 V	Tubular
	C-22			
	C-13, C-14 Part of T-5 (1st I-F coil assembly)			
47X446	C-16, C-21 47 mmf			Molded
	C-17, C-18 Part of T-6 (2nd I-F coil assembly)			
47X476	C-19	100 mmf		Molded
B66502	C-20	.005 mf	200 V	Tubular
47X467	C-24	470 mmf		Molded
B66101	C-25	.01 mf	200 V	Tubular
	C-28			
B67253	C-26	.025 mf	200 V	Tubular
45X342	C-27A	50 mf	150 V	Dry electrolytic
	C-27B	50 mf	150 V	
	C-27C	20 mf	25 V	
D67204	C-29	.20 mf	400 V	Tubular
D66104	C-30	.10 mf	400 V	Tubular
17A123	C-31	1-12 mmf Antenna Range B		Trimmer

RESISTORS

		Ohms	Watts	
B84393	R-1	39,000	0.5	Carbon
B84472	R-2	4700	0.5	Carbon
B85473	R-3	R-5 47,000	0.5	Carbon
B84332	R-4	3300	0.5	Carbon
B85104	R-6	100,000	0.5	Carbon
B85225	R-7	2.2 meg	0.5	Carbon
B85475	R-8	4.7 meg	0.5	Carbon
36X309	R-9	Volume control and switch 0.5 megohms		
B84153	R-10	15,000	0.5	Carbon
B85474	R-11, R-14	470,000	0.5	Carbon
B84333	R-12	33,000	0.5	Carbon
B84823	R-13	82,000	0.5	Carbon
B84181	R-15	180	0.5	Carbon
B85224	R-16	220,000	0.5	Carbon
43X214	R-17	775	28	Wire wound
B84270	R-18	27	0.5	Carbon
C85152	R-19	1500	1.0	Carbon

DIAL AND DRIVE ASSEMBLY

6X21	Rubber grommet	Mounting gang capacitor
20X329	Cond. cushion stud	Mounting gang capacitor
15A128	Color disc assembly	
58X588	Dial scale	
58X587	Dial background	
26A384	Pointer bracket assembly complete with pulleys and studs	
15X220	Pointer	
	5 ft. Drive cord	
28X113	Drive cord tension spring	
25X580	Drive shaft bracket	
26X465	Drive shaft	
19X192	"C" Washer (for drive shaft)	
24X564	Drive shaft spool	
7A193	Pilot light socket assembly	
	No. 47 Pilot light	

Model D2644

ALIGNMENT PROCEDURE

Volume control—Maximum: all adjustments.

Connect ground lead of signal generator to radio chassis.

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

Connect output meter across voice coil of speaker.

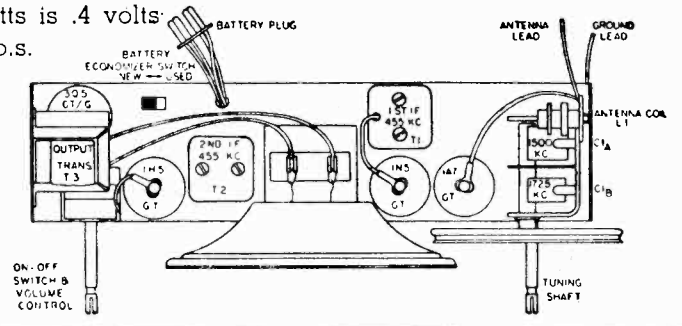
The following equipment is necessary for proper alignment:

Signal generator that will provide the test frequencies as listed, 30% modulated, 400 c.p.s.
Output meter.
Non metallic screwdriver.
Dummy antennas... .1 mfd., 00025 mfd.

Variable Condenser Setting	Generator Frequency	Dummy Antenna Mfd.	Connection to Radio	Trimmer Adjustment	Trimmer Function
Minimum Capacity (Fully Opened)	455 K.C.	.1	Grid of 1A7GT Tube	Two Trimmers on Top of T2	Output I.F.
Minimum Capacity (Fully Opened)	455 K.C.	.1	Grid of 1A7GT Tube	Two Trimmers on Top of T1	Input I.F.
Minimum Capacity (Fully Opened)	1725 K.C.	.00025	Antenna Lead	C1B	Oscillator Trimmer
Tune in signal From Generator	1500 K.C.	.00025	Antenna Lead	C1A	Antenna Trimmer

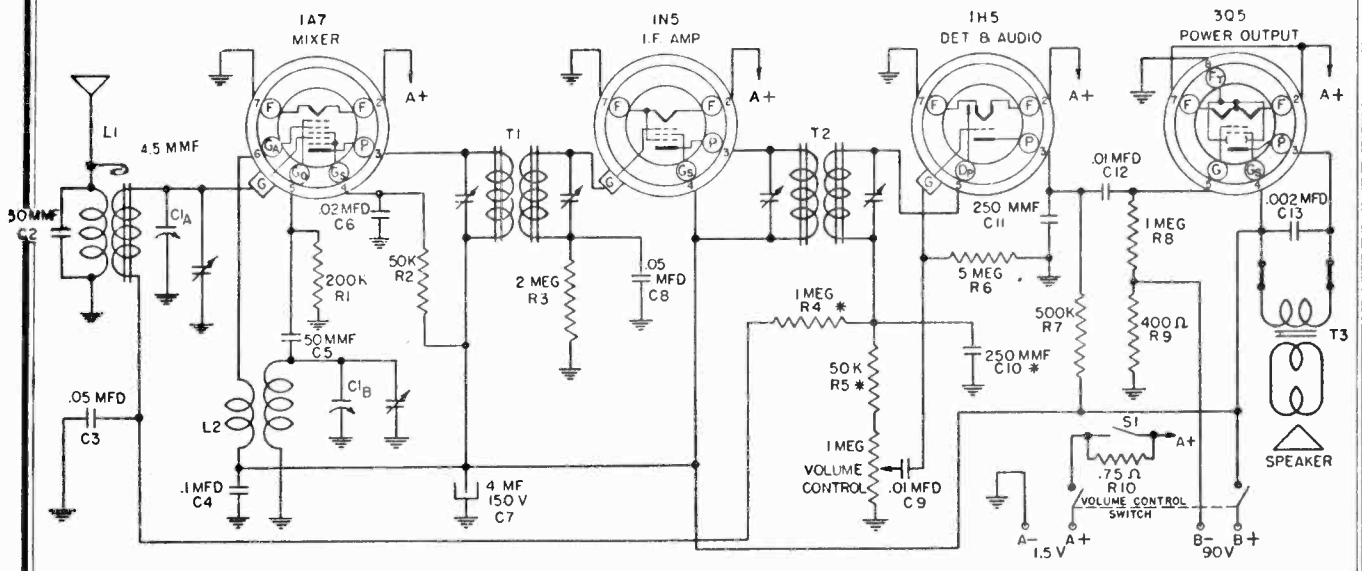
With an output meter connected across the voice coil of the speaker, the output meter reading for 50 milliwatts is .4 volts using a signal which is modulated 30% at 400 c.p.s.

Frequency Range
540 to 1725 K.C.
I.F. Frequency 455 K.C.



MODEL D2644

WESTERN AUTO SUPPLY CO.



* Note: R4, R5, and C10 are part of 2nd I.F. Transformer (T2) and can not be replaced separately.

IF PEAK 455 KC

PARTS LIST

CONDENSERS

Circuit Diagram Reference	Part No.	Description
C1A, C1B	B19-185	Variable condenser with Drum
C3, C8	A16-152	.05 mfd. 200 volt tubular condenser
C4	A16-157	.1 mfd. 200 volt tubular condenser
C5	A15-175	50 mmfd mica condenser
C6	A16-150	.02 mfd. 400 volt tubular condenser
C7	A18-273	4 mfd. 150 volt electrolytic condenser
C9, C12	A16-156	.01 mfd. 400 volt tubular condenser
C11	A15-176	250 mmfd mica condenser
C13	A16-155	.002 mfd. 600 volt tubular condenser

RESISTORS

R1	A60-667	200 K Ohm 1/3 watt resistor—20%
R2	A60-685	50 K Ohm 1/3 watt resistor—20%
R3	A60-684	2 Megohm 1/3 watt resistor—20%
R6	A60-669	5 Megohm 1/3 watt resistor—20%
R7	A60-662	500 K Ohm 1/3 watt resistor—20%
R8	A60-668	1 Megohm 1/3 watt resistor—20%
R9	A60-665	400 Ohm 1/3 watt resistor—10%
R10	A60-691	.75 Ohm 1 watt resistor

COILS

L1	A10-414	Antenna Coil
L2	A10-415	Oscillator coil
T1	B10-416	1st I.F. Transformer
T2	B10-417	2nd I.F. Transformer

MISCELLANEOUS

T3	A80-218	Speaker output transformer
S1	A69-164	Battery Economizer switch
	A24-165	Volume control and switch
	B79-335	6¼ inch P.M. Speaker
	D42-382	Wood cabinet
	B67-484	Dial scale
	A52-182	Knobs, Walnut Bakelite
	B58-59	Dial pointer
	A84-35	Dial drive shaft and pulley assembly
	A45-118	Battery plug, 4 prong

VOLTAGE CHART

All voltages measured with a 1000 ohm per volt meter on the 150 volt scale. For the following voltages the "B" battery section of the power pack should read 90 volts under load. Where no voltages are shown the voltage is O or is to low to be read with this type of voltmeter.

1A7GT TUBE	PIN NO.	VOLTS
Plate-P—to ground	3	85
Screen-G3 & G5—to ground	4	37
Grid-G2—to ground	6	85
1N5GT TUBE		
Plate-P—to ground	3	85
Screen-G2—to ground	4	85
1H5GT TUBE		
Plate-P—to ground	3	17
3Q5GT TUBE		
Plate-P—to ground	3	83
Screen-G2—to ground	4	85

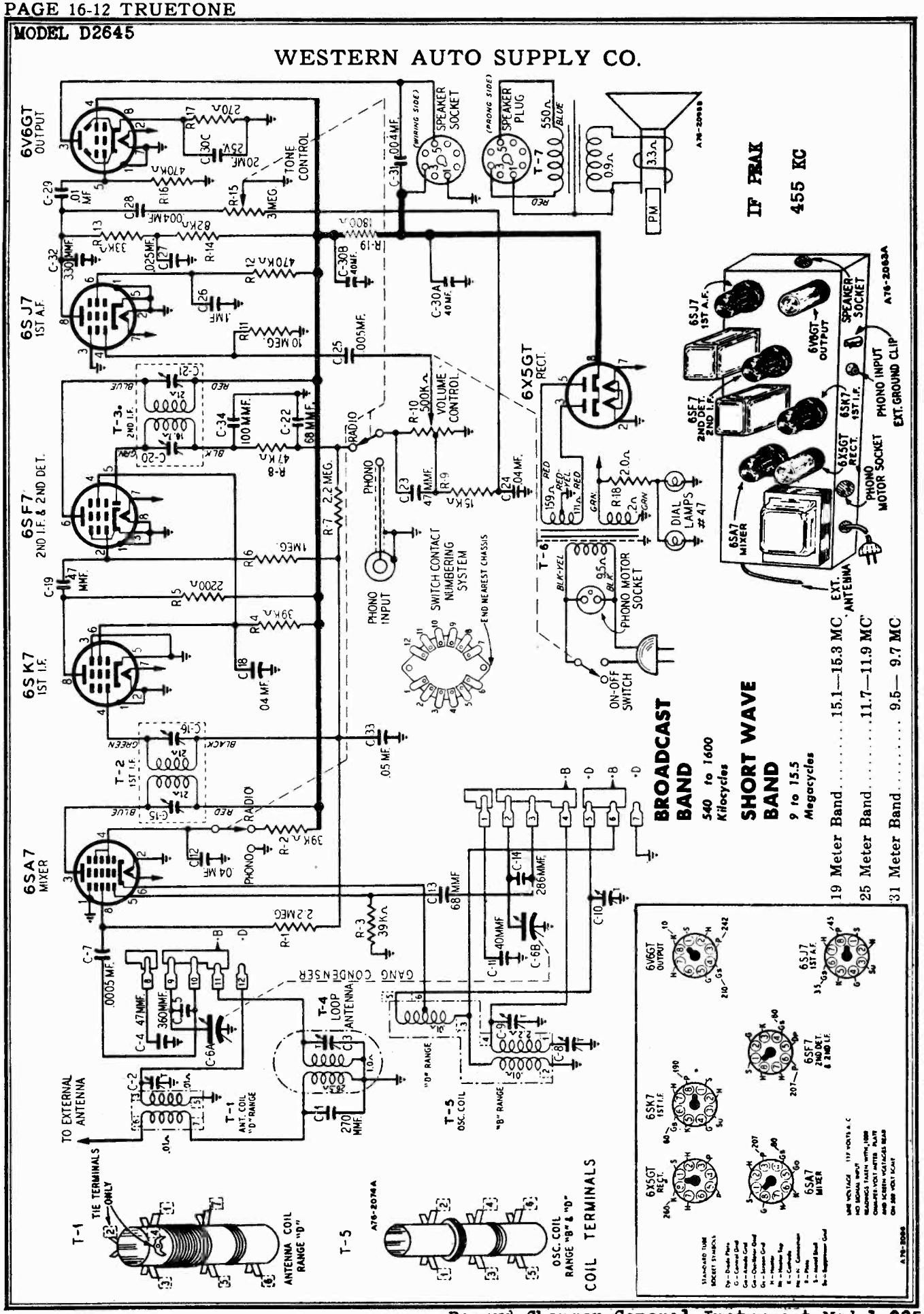
SERVICE NOTES

Voltages taken from the different points of the circuit to the chassis are measured with volume control in maximum position, all tubes in their sockets and with a volt meter having a resistance of 1000 ohms per volt, using the 150 volt scale. These voltages are clearly indicated on the voltage chart.

All voltages should be measured with a new battery or one that gives 90 volts under load.

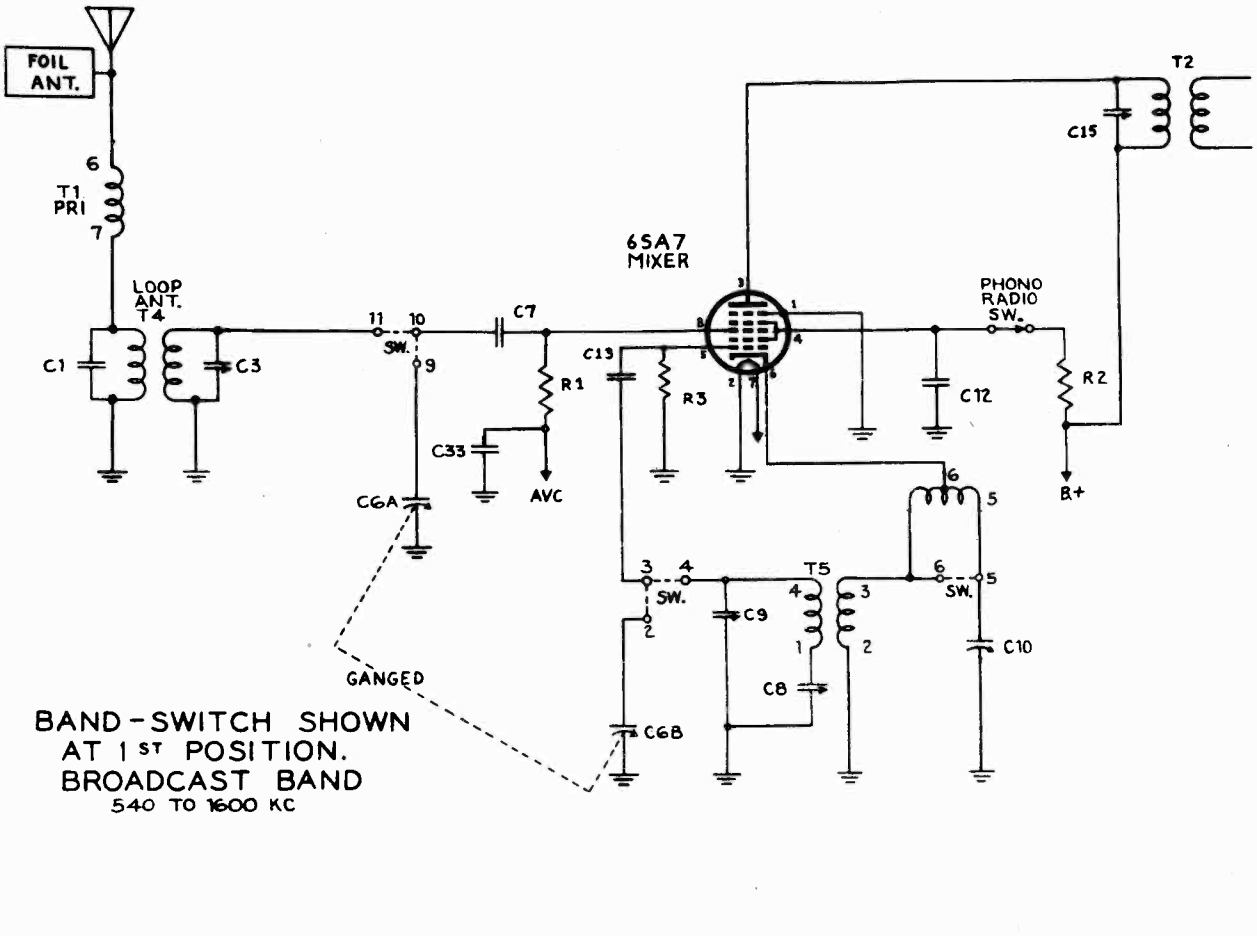
To check for open by-pass condensers, shunt each condenser with another one having the same capacity and voltage rating which is known to be good until the defective unit is located.

MODEL D2645

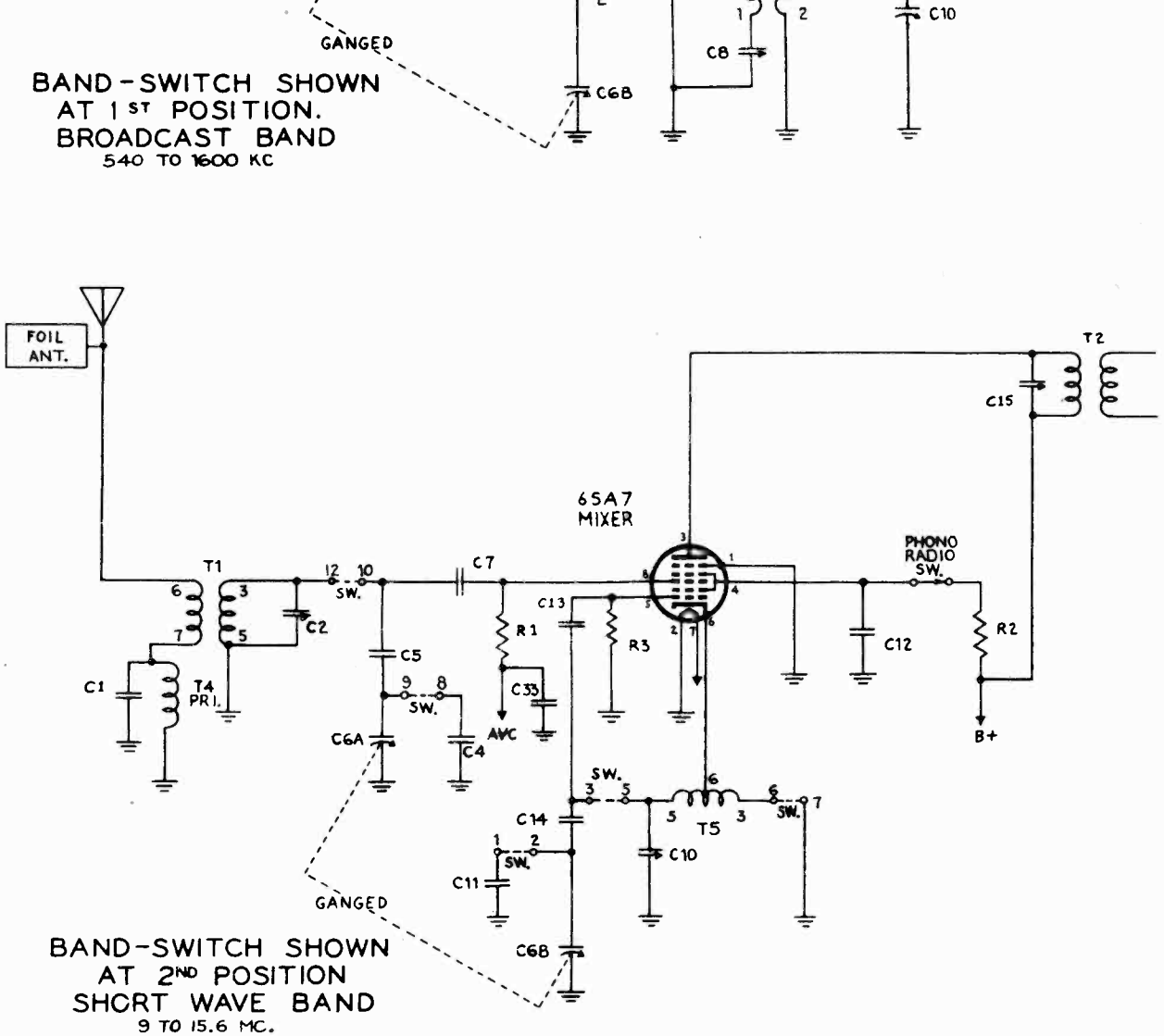


Record Changer: General Instrument Model 205

WESTERN AUTO SUPPLY CO.



BAND-SWITCH SHOWN AT 1ST POSITION. BROADCAST BAND
540 TO 1600 KC



BAND-SWITCH SHOWN AT 2ND POSITION SHORT WAVE BAND
9 TO 15.6 MC.

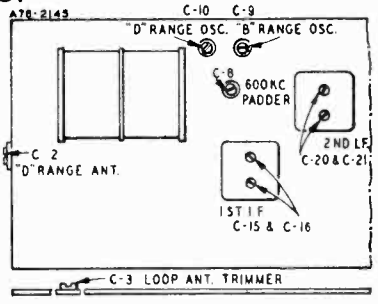
WESTERN AUTO SUPPLY CO.

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:
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., 100 mmf., and 400 ohms.

	SIGNAL GENERATOR FREQUENCY SETTING	CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
I.F.	455 KC	Grid of 6SA7 Pin 8	.1 mf.	B Range	Turn Rotor to Full Open	2nd I.F. (C20) & (C21) 1st I.F. (C15) & (C16)
RANGE B	1620 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C9)
	1400 KC	Antenna Lead	100 mmf.	B Range	Tune Rotor to Max. Output Set Pointer to 1400 KC (See Note A)	Ant. Range B (C3)
	600 KC	Antenna Lead	100 mmf.	B Range	Tune Rotor to Max. Output	Oscillator (C8) Rock Rotor—See Note B
	Repeat above steps at 1620 and 600 KC until readjusting the oscillator Range B Trimmer (C9) causes no further improvement of output.					
RANGE D	15,600 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C10)
	14,000 KC	Antenna Lead	400 Ohm	D Range	Tune Rotor to Max. Output	Ant. Range D (C2) Rock Rotor—See Note B
LOOP RANGE B	Reassemble chassis in cabinet. 1400 KC	Antenna Lead	100 mmf.	B Range	Tune Rotor to Max. Output	Ant. Range B (C3)

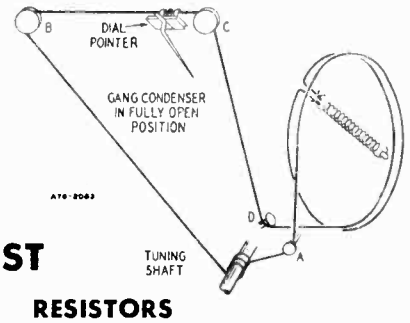


NOTE A—Set pointer at the 1400 KC mark on the dial scale. Attach pointer to drive cord.

NOTE B—Turn Rotor back and forth and adjust the trimmer until the peak of greatest intensity is obtained.

DRIVE CORD REPLACEMENT

The drive cord should be replaced as shown on the accompanying illustration using a 46" drive cord for the purpose. Three turns are to be wound clockwise around the tuning shaft with the turns progressing away from the chassis. After the cord has been installed, stretch the tension spring and hook the free end to the tab on the drive pulley. Cut off any excess string that may remain.



REPLACEMENT PARTS LIST

NOTICE: There is a power rating label on the chassis. This label specifies the power supply on which the radio may be used, and identifies the radio as to chassis, dial and issue letter. When ordering parts or writing, give ALL information appearing on this label.

MISCELLANEOUS

12A442	6" P.M. Speaker Complete with Output Transformer
	Cone and Voice Coil Assembly (Specify part number and letters stamped on speaker)
	Output Transformer (Specify part number and letters stamped on speaker)
3A303	Tube socket-octal (8 prong) moulded
3A304	Phono motor socket
3A305	Phono socket—single pin tip
10A578	Knob (Tuning)
10A579	Knob (Off-On, Volume)
10A581	Knob (Tone, Radio-Phono)
10A580	Knob (SW-BC)
2A359	Band Change Switch
13X328	Line cord and plug assembly

TRANSFORMERS AND COILS

T-1	9A1812	"D" Range Antenna Coil Assembly
T-2	9A1814	1st I.F. Coil Assembly
T-3	9A1815	2nd I.F. Coil Assembly
T-4	9A1831	"B" Range Loop Antenna
T-5	9A1813	"B" Range and "D" Range Oscillator Coil Assembly
T-6	53X282	117 Volt 60 Cycle Standard Power Transformer
T-7		Output Transformer (See Miscellaneous)

CAPACITORS

C-1	47X445	270 mmf		Moulded
C-2	17A164	5-50 mmf		Trimmer
C-3	17A123	1-12 mmf		Trimmer
C-4	47X473	47 mmf		Silvered mica
C-5	47X474	360 mmf		Silvered mica
C-6A, C-6B	14A178	Gang Capacitor with drive pulley		
C-7	B66501	.0005 mf	200 V	Tubular
C-8	17A155	350-430 mmf		Trimmer
C-9, C-10	17A109	2.5-35 mmf		Dual Trimmer
C-11	47X472	40 mmf		Silvered mica
C-12, C-18	D66403	.04 mf	400 V	Tubular
C-13	47X466	68 mmf		Moulded
C-14	47X481	286 mmf		Silvered mica
C-15, C-16	Part of T-2 (1st I.F. Coil Assem.)			
C-19, C-23	47X463	47 mmf		Moulded
C-20, C-21	Part of T-3 (2nd I.F. Coil Assem.)			
C-22	47X471	68 mmf		Moulded
C-24	D66403	.04 mf	400 V	Tubular
C-25	D66502	.005 mf	400 V	Tubular
C-26	D66104	.10 mf	400 V	Tubular
C-27	D64253	.025 mf	400 V	Tubular
C-28, C-31	D66402	.004 mf	400 V	Tubular
C-29	D66103	.01 mf	400 V	Tubular
C-30A	45X346	40 mf	450 V	3 Section Electrolytic
C-30B		40 mf	450 V	
C-30C		20 mf	25 V	
C-32	47X470	330 mmf		Moulded
C-33	B66503	.05 mf	200 V	Tubular
C-34	47X476	100 mmf		Moulded

RESISTORS

B85225	R-1, R-7	2.2 megohms	0.5 W Carbon
C84393	R-2, R-4	39 K ohms	1.0 W Carbon
B84393	R-3	39 K ohms	0.5 W Carbon
B84222	R-5	2200 ohms	0.5 W Carbon
B85105	R-6	1 megohm	0.5 W Carbon
B85473	R-8	47 K ohms	0.5 W Carbon
B84153	R-9	15 K ohms	0.5 W Carbon
36X358	R-10	.5 megohm	Volume control and line switch
B85106	R-11	10 megohms	0.5 W Carbon
B85474	R-12, R-16	470 K ohms	0.5 W Carbon
B84333	R-13	33 K ohms	0.5 W Carbon
B84823	R-14	82 K ohms	0.5 W Carbon
*40X276	R-15	3.0 megohms	Tone control & Radio-Phono switch
C84271	R-17	270 ohms	1.0 W Carbon
43X213	R-18	2.0 ohms	0.5 W Wire wound
D84182	R-19	1800 ohms	2.0 W Carbon

DIAL AND DRIVE ASSEMBLY

26A400	Dial bracket assembly complete with dial glass, background, diffusers, etc.
7A202	Pilot light socket assembly
	No. 47 Pilot light
28X113	Drive cord tension spring
	46" Drive cord (18 lb. test)
15X150	Pointer
26X485	Drive Shaft
19X192	"C" Washer (for drive shaft)
6X21	Rubber Grommet
20X329	Cond. Cushion Stud — Mtg. Gang Capacitor

Speaker ..... 6" PM Dynamic

Selectivity ..... 40 KC Broad at 1000 Times Signal

Sensitivity (For 0.5 Watt Output, with External Antenna)
- B Range ..... 9 Microvolts Average
- D Range ..... 20 Microvolts Average

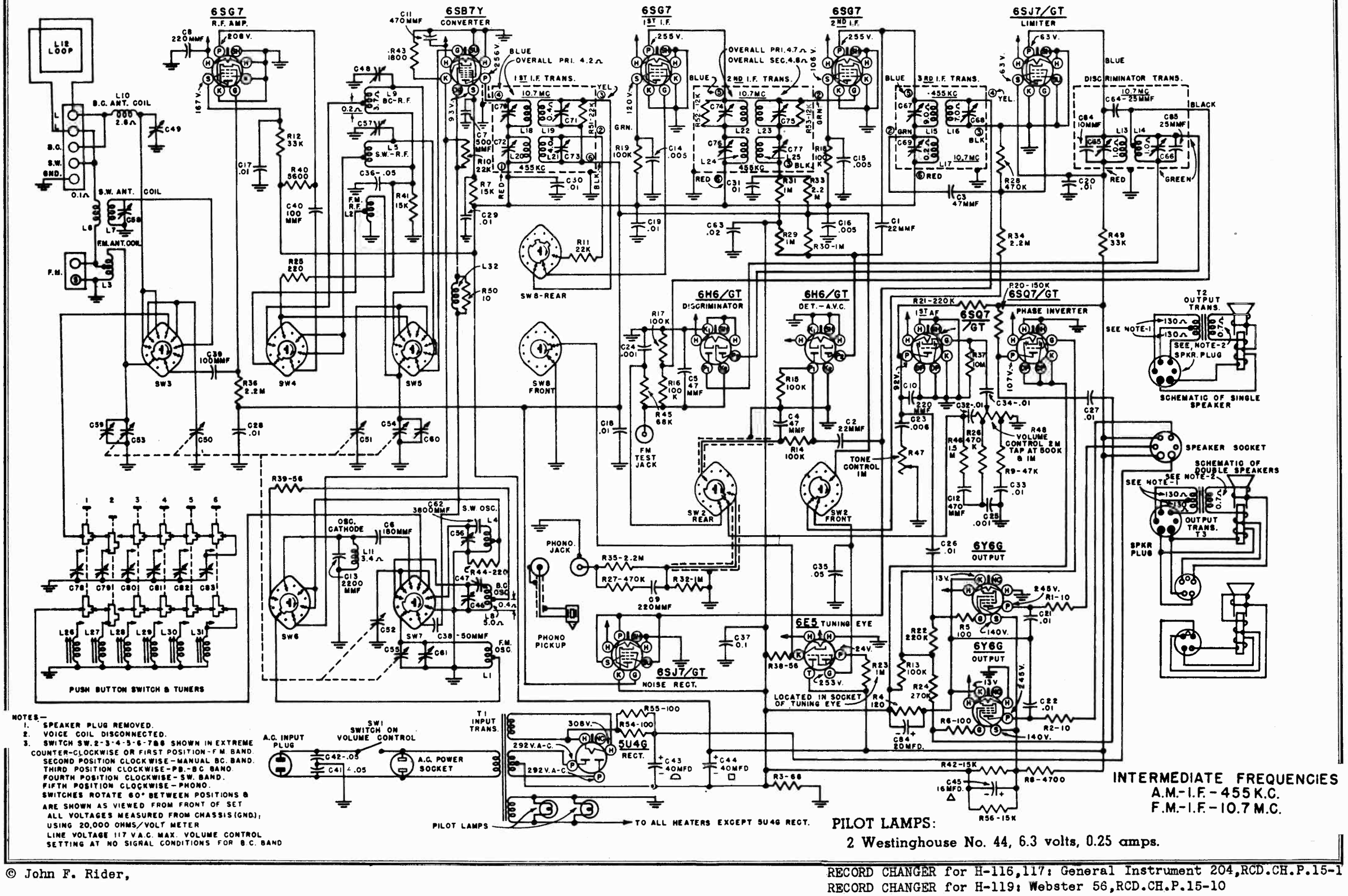
Power Consumption (at 117 Volts AC) ..... 40 Watts (normal)
60 Watts (phono operating)

Power Output ..... 4 Watts Maximum
2.3 Watts, 10% Harmonics

Tuning Frequency Range
- B Range ..... 540-1600 Kilocycles
- D Range ..... 9-15.5 Megacycles

WESTINGHOUSE ELECTRIC CORP.

MODELS H-113,-114,-
-116.-117, -119



NOTES—
1. SPEAKER PLUG REMOVED.
2. VOICE COIL DISCONNECTED.
3. SWITCH SW. 2-3-4-5-6-7&8 SHOWN IN EXTREME COUNTER-CLOCKWISE OR FIRST POSITION-F.M. BAND.
SECOND POSITION CLOCKWISE-MANUAL B.C. BAND.
THIRD POSITION CLOCKWISE-P.B.-B.C. BAND.
FOURTH POSITION CLOCKWISE-S.W. BAND.
FIFTH POSITION CLOCKWISE-PHONO.
SWITCHES ROTATE 60° BETWEEN POSITIONS & ARE SHOWN AS VIEWED FROM FRONT OF SET
ALL VOLTAGES MEASURED FROM CHASSIS (GND.); USING 20,000 OHMS/VOLT METER
LINE VOLTAGE 117 V.A.C. MAX. VOLUME CONTROL SETTING AT NO SIGNAL CONDITIONS FOR B.C. BAND

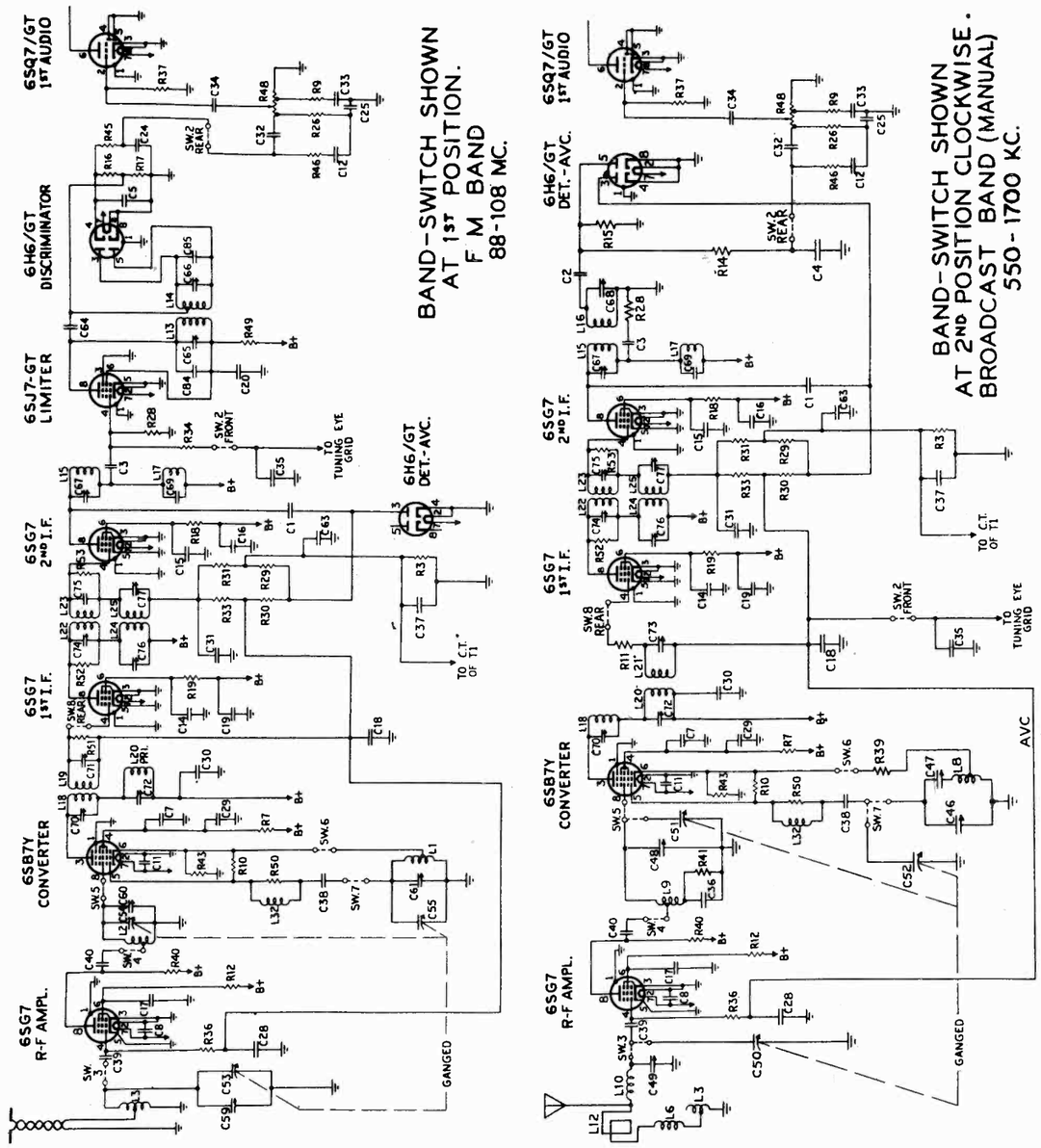
INTERMEDIATE FREQUENCIES
A.M.-I.F.-455 K.C.
F.M.-I.F.-10.7 M.C.

PILOT LAMPS:
2 Westinghouse No. 44, 6.3 volts, 0.25 amps.

RECORD CHANGER for H-116,117: General Instrument 204,RCD.CH.P.15-1
RECORD CHANGER for H-119: Webster 56,RCD.CH.P.15-10

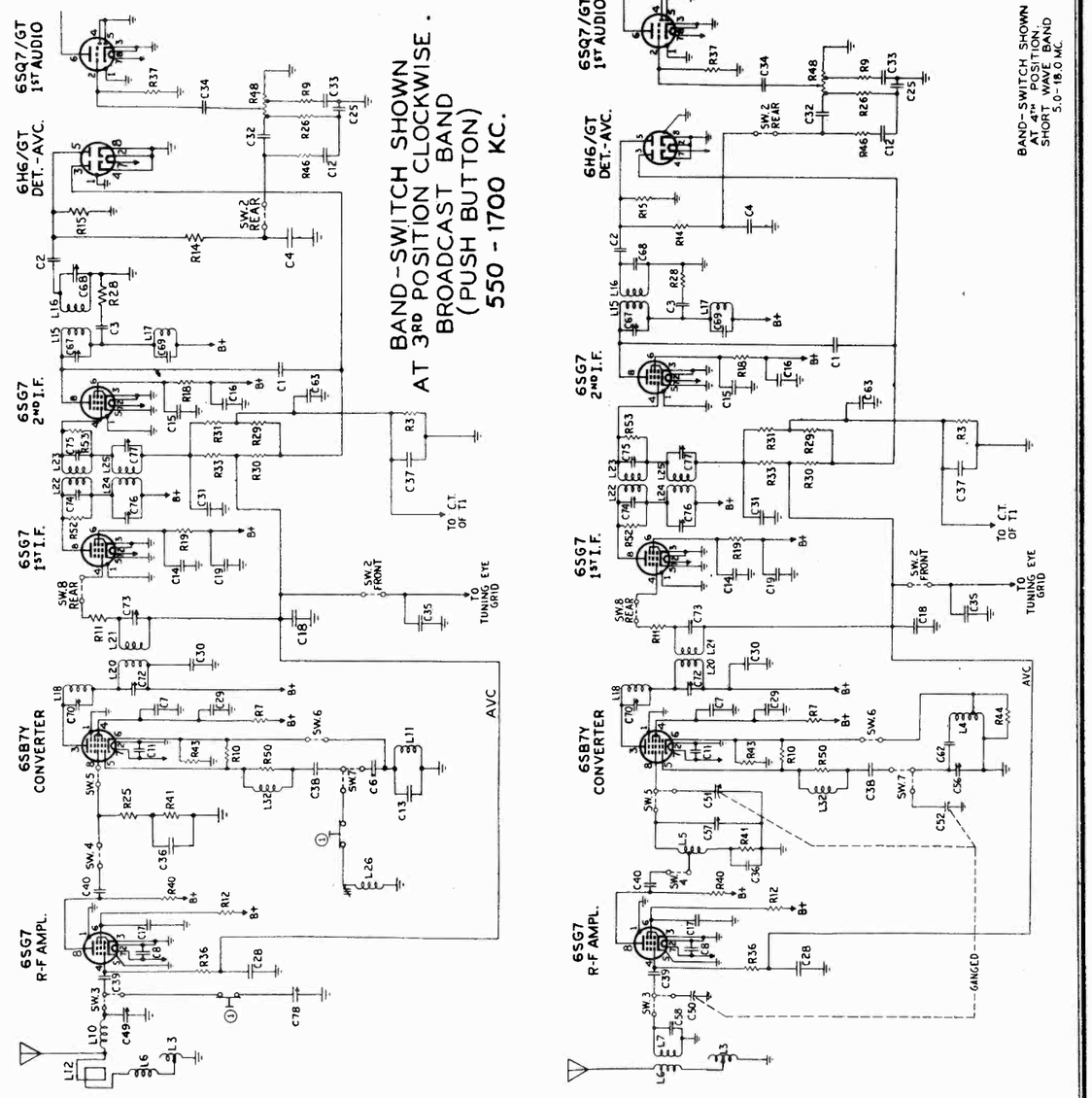
WESTINGHOUSE ELECTRIC CORP.

MODELS H-113 -114,
-116,-117, ,-119

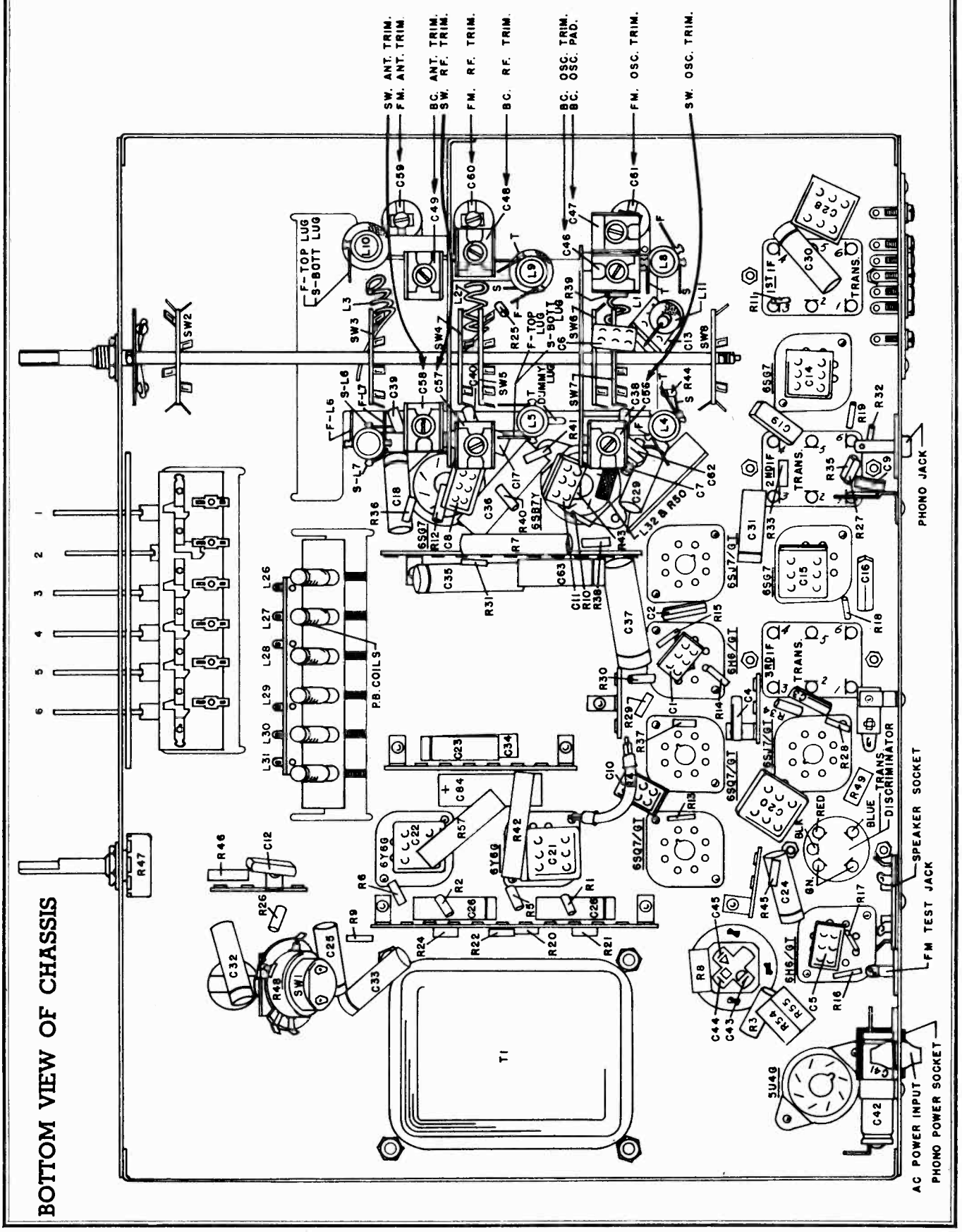


WESTINGHOUSE ELECTRIC CORP.

MODELS H-113,-114,-
-116,-117, -119



WESTINGHOUSE ELECTRIC CORP. MODELS H-113,-114,-116,-117,- -119



ALIGNMENT

BROADCAST AND SHORT WAVE BANDS
AMPLITUDE MODULATION

Connect an output meter across the speaker voice coil.

With the volume control set for maximum output and the signal from the generator attenuated to avoid A.V.C. action, proceed as follows:

Step	Connect Signal Generator to—	Signal Generator Frequency	Radio Dial Setting	Adjust
1	Set Phono-Band switch to "BC"			
2	6SG7, 2nd I-F, control grid through a 0.1 mfd capacitor	455 kc	550 kc	455 kc secondary and primary trimmers of 3rd I-F transformer for maximum output.
3	6SG7, 1st I-F, control grid through a 0.1 mfd. capacitor	455 kc	550 kc	455 kc secondary and primary trimmers of 2nd I-F transformer for maximum output.
4	6SB7Y, converter, control grid through a 0.1 mfd capacitor	455 kc	550 kc	455 kc secondary and primary trimmers of 1st I-F transformer for maximum output.
5	6SB7Y, converter, control grid through a 0.1 mfd capacitor	455 kc	550 kc	carefully "peak" all 455 kc I-F transformer trimmers for maximum output.
6	BC antenna terminal through a 200 mmf capacitor	600 kc	600 kc	BC oscillator padder for maximum output.
7	BC antenna terminal through a 200 mmf capacitor	1600 kc	1600 kc	BC oscillator trimmer for maximum output.
8	Re-check steps 6 and 7			
9	Radiated signal (no connection)	1400 kc	1400 kc	BC R-F and ANT trimmers for maximum output.
10	Set Phono-Band switch to "S.W."			
11	SW antenna terminal through a 400 ohm resistor	18.0 mc	18.0 mc	SW oscillator trimmer for maximum output. NOTE: If the signal is heard at two different trimmer settings, the one nearest minimum capacity is correct—the other is the image.
12	Radiated signal (no connection)	16.0 mc	16.0 mc	SW R-F and ANT trimmers for maximum output.

F. M. BAND

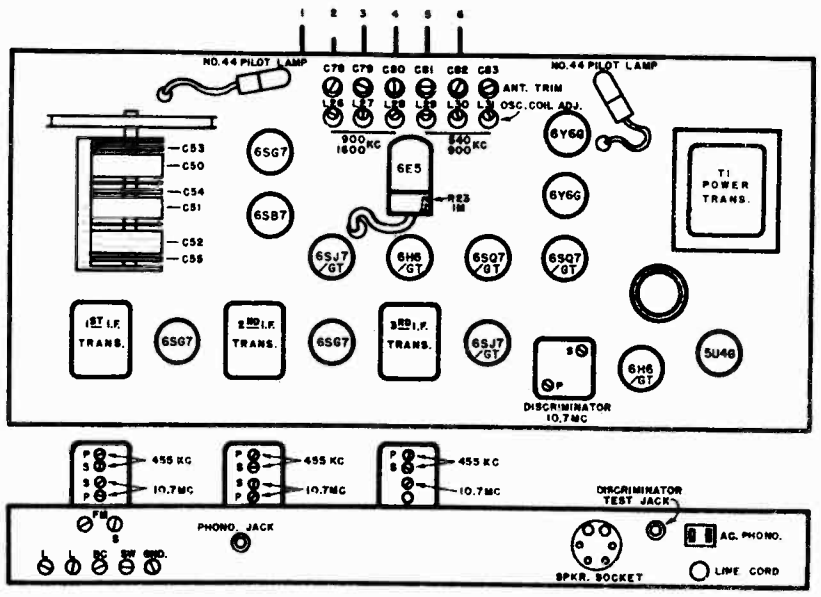
FREQUENCY MODULATION

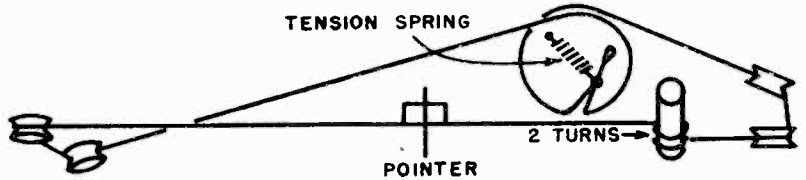
Connect a 20,000 ohms-per-volt or Vacuum Tube Voltmeter between the Discriminator Test Jack and the chassis.

With the volume control set for maximum output and the signal from the generator attenuated to avoid A.V.C. action, proceed as follows:

Step	Connect Signal Generator to—	Signal Generator Frequency	Radio Dial Setting	Adjust
1	Set Phono-Band switch to "F.M."			
2	Detune secondary trimmer of discriminator transformer.			
3	6SG7, 2nd I-F, control grid through a .01 mfd mica capacitor	UNMODULATED 10.7 mc	88 mc	10.7 mc primary trimmer of 3rd I-F trans. for maximum voltage.
4	6SG7, 1st I-F, control grid through a .01 mfd mica capacitor	UNMODULATED 10.7 mc	88 mc	10.7 mc secondary and primary trimmers of 2nd I-F trans. for maximum voltage.
5	Fixed plates of the FM converter tuning capacitor through a .01 mfd mica capacitor	UNMODULATED 10.7 mc	88 mc	10.7 mc secondary and primary trimmers of 1st I-F transformer for maximum voltage.
6	Fixed plates of the FM converter tuning capacitor through a .01 mfd mica capacitor	UNMODULATED 10.7 mc	88 mc	carefully "peak" all 10.7 mc I-F trimmers for maximum voltage.
7	FM antenna terminal through a non-inductive 300 ohm resistor	UNMODULATED 105 mc	105 mc	FM oscillator trimmer for maximum voltage.
8	FM antenna terminal through a non-inductive 300 ohm resistor	UNMODULATED 105 mc	105 mc	FM R-F and ANT trimmers for maximum voltage.
9	Fixed plates of the FM converter tuning capacitor through a .01 mfd mica capacitor	UNMODULATED 10.7 mc	88 mc	Primary trimmer of discriminator transformer for maximum voltage.
10	Fixed plates of the FM converter tuning capacitor through a .01 mfd mica capacitor	UNMODULATED 10.7 mc	88 mc	Secondary trimmer of discriminator transformer for zero voltage. The voltage will change polarity as the trimmer is tuned through resonance. Tune carefully for zero voltage.
11	Re-check steps 9 and 10.			

CHASSIS LAYOUT





DIAL DRIVE MECHANISM

LOUDSPEAKER:

H-113, H-114, H-119:
- Size and Type ..... (1) 12" Electro-Dynamic
- Field Resistance ..... 250 ohms
- Voice Coil Impedance ..... 8 ohms

H-116, H-117:
- Size and Type ..... (2) 8" Electro-Dynamic
- Field Resistance ..... 500 ohms
- Voice Coil Impedance ..... 3.2 ohms

POWER OUTPUT
- Undistorted ..... 14 watts
- Maximum ..... 25 watts

FREQUENCY RANGES:
- Standard Broadcast ..... 550 to 1700 kc.
- International Short Wave .. 5.0 to 18.0 mc.
- Frequency Modulation ..... 88 to 108 mc.

POWER SUPPLY RATING: 105-120 volts, 50-60 cycles A-C

POWER CONSUMPTION (radio sect. only): ...175 watts

SPECIAL PROVISIONS:

H-113, H-114:
Phonograph, playback of wire recording and television sound input connection. A-C outlet for phonograph motor at rear of chassis.

H-116, H-117, H-119:
Playback of wire recording and television sound input connection at rear of chassis.

Part No.	Description
V-3420	Background, felt
V-3332S	Bar, flat for phono. mtg. (H-116, H-117)
V-3429S-4	Bolt, chassis mtg.
V-3185	Bracket, dial light (short)
V-3357	Bracket, dial light (long)
V-4086-1	Bracket, motorboard stop, R.H. (H-116, H-117)
V-4086-2	Bracket, motorboard stop, L.H. (H-116, H-117)
V-3671	Bracket, variable capacitor mtg. (rear)
V-3672	Bracket, variable capacitor mtg. (front)
V-3374	Bracket, volume control mtg.
V-3507	Bracket & Clip Assy. (tuning eye)
RCM20C220K	Capacitor, 22 mmf. mica (C1, C2)
RCM20B470K	Capacitor, 47 mmf. mica (C3, C4, C5)
RCM20C180J	Capacitor, 180 mmf. mica (C6)
V-3714-4	Capacitor, fixed ceramic, 500 mmf. (C7)
RCM20B221M	Capacitor, 220 mmf. mica (C8, C9, C10)
RCM20B471M	Capacitor, 470 mmf. mica (C11, C12)
RCM30B222M	Capacitor, 2200 mmf. mica (C13)
RCM30B512M	Capacitor, .005 mfd. mica (C14, C15, C16)
RCM30B103M	Capacitor, .01 mfd. mica (C17, C18, C19, C20, C21, C22)
RCP10M6602M	Capacitor, .006 mfd. 600 v. (C23)
RCP10M8102M	Capacitor, .001 mfd. 600 v. (C24, C25)
RCP10M4103A	Capacitor, .01 mfd. 400 v. (C26, C27)
RCP10W4103A	Capacitor, .01 mfd. 400 v. (C28, C29, C30, C31, C32, C33, C34)
RCP10W4503A	Capacitor, .05 mfd. 400 v. (C35)
RCP10M4503A	Capacitor, .05 mfd. 400 v. (C36)
RCP10W4104A	Capacitor, 0.1 mfd. 400 v. (C37)
V-3714-1	Capacitor, fixed ceramic, 50 mmf. (C38)
V-3714-2	Capacitor, fixed ceramic, 100 mmf. (C39, C40)
V-3241	Capacitor, dual line filter, .05 - .05 mfd. 600 v. (C41, C42)
V-3302	Capacitor, electrolytic 40 mfd. 450 v. (C43) 40 mfd. 400 v. (C44) 16 mfd. 350 v. (C45)
V-3424	Capacitor, 2 gang trimmer (C46 & C47)
V-3306-1	Capacitor, trimmer (C48)
V-3423-1	Capacitor, trimmer (C49)
V-3296	Capacitor, variable, 3 gang (C50, C51, C52, C53, C54, C55)
V-3423-2	Capacitor, trimmer (C56, C57)
V-3306-2	Capacitor, trimmer (C58)
V-3713-1	Capacitor, variable ceramic (C59, C61)
V-3713-2	Capacitor, variable ceramic (C60)
RCM30C382G	Capacitor, 3800 mmf. mica (C62)
RCP10W4203A	Capacitor, .02 mfd. 400 v. (C63)
V-3181	Rail, pointer
RC20AE100K	Resistor, 10 ohms ½ w. (R1, R2)
RC40AE680J	Resistor, 68 ohms 2 w. (R3)
V-3282	Resistor, 120 ohms 3 w. (R4)
RC20AE101K	Resistor, 100 ohms ½ w. (R5, R6)
RC40AE153K	Resistor, 15K 2 w. (R7)
RC40AE472M	Resistor, 4700 ohms 2 w. (R8)
RC10AE473M	Resistor, 47K ¼ w. (R9)
RC10AE223K	Resistor, 22K ¼ w. (R10, R11)
RC20AE333M	Resistor, 33K ½ w. (R12)
RC10AE104K	Resistor, 100K ¼ w. (R13, R14, R15, R16, R17, R18, R19)
RC10AE154K	Resistor, 150K ¼ w. (R20)
RC10AE224K	Resistor, 220K ¼ w. (R21, R22)
RC10AE105K	Resistor, 1 meg. ¼ w. (R23, R29, R30, R31)
RC10AE274K	Resistor, 270K ¼ w. (R24)
RC10AE221M	Resistor, 220 ohms ¼ w. (R25)
RC10AE474M	Resistor, 470K ¼ w. (R26, R27)
RC10AE474K	Resistor, 470K ¼ w. (R28)
RC10AE105M	Resistor, 1 meg. ¼ w. (R32)
RC10AE225K	Resistor, 2.2 meg. ¼ w. (R33)
RC10AE225M	Resistor, 2.2 meg. ¼ w. (R34, R35, R36)
RC10AE106M	Resistor, 10 meg. ¼ w. (R37)
RC20AE560K	Resistor, 56 ohms ½ w. (R38, R39)
RC20AE562K	Resistor, 5600 ohms ½ w. (R40)
RC10AE153M	Resistor, 15K ¼ w. (R41)
RC41AE153K	Resistor, 15K 2 w. (R42, R56)
RC20AE182K	Resistor, 1800 ohms ½ w. (R43)
RC10AE221K	Resistor, 220 ohms ¼ w. (R44)
RC10AE683K	Resistor, 68K ¼ w. (R45)
RC10AE155M	Resistor, 1.5 meg. ¼ w. (R46)
RC30AE333K	Resistor, 33K 1 w. (R49)
RC40AE560K	Resistor, 56 ohms 2 w. (replaces R54 & R55)
V-3805	Shield, spiral, 4" long

Part No.	Description
V-3236	Capacitor, electrolytic, 20 mfd. 25 v. (C84)
V-4156	Choke Assy., parasitic suppressor (L32, R50)
V-3337	Clamp, tuning eye cable
V-3183	Clip, speed (dial mtg.)
V-3361	Coil Assy., F.M. osc. (L1)
V-3418	Coil Assy., F.M. R.F. (L2)
V-3485	Coil Assy., F.M. ant. (L3)
V-3524	Coil, S.W. osc. (L4)
V-3526	Coil, S.W. R.F. (L5)
V-3525	Coil, S.W. ant. (L6 & L7)
V-3512	Coil, B.C. osc. (L8)
V-3527	Coil, B.C. R.F. (L9)
V-3528	Coil, B.C. ant. (L10)
V-3313	Coil, osc. cathode (L11)
V-3254	Connector, phono
V-3305	Control, tone 1 meg. (R47)
V-3293	Control, volume and power, 2 meg. tapped at 500K and 1M (R48), and switch (SW1)
V-3239	Cord, A-C power
V 4157S-60	Cord, dial drive
V-3632	Cover, back (H-116, H-117)
V-3362	Decal, band
V-3609	Decal, tone
V-3422	Dial, glass
V-3354	Dripboard (H-116, H-117)
V-3364	Escutcheon, push button
V-3631	Escutcheon, tuning eye (H-116, H-117, H-119)
V-3276-1	Grille Cloth, speaker (H-113)
V-3276-2	Grille Cloth, speaker (H-114)
V-3616-1	Grille Cloth, speaker (H-116)
V-3616-2	Grille Cloth, speaker (H-117)
V-3617-1	Grille Cloth, speaker (H-119)
V-3345S-4	Grommet, var. cond. mtg.
V-3187S-1	Grommet, rubber, chassis mtg.
V-4318	Hinge, door (submit sample with order)
V-3358	Insulator, filter capacitor
Form RM32	Instruction Book (H-113, H-114)
Form RM33	Instruction Book (H-116, H-117)
Form RM48	Instruction Book (H-119)
V-3483	Jack, discriminator test
V-3264-1	Knob, tuning & volume (H-113, H-116, H-119)
V-3262-1	Knob, tone (H-113, H-116, H-119)
V-3262-3	Knob, band (H-113, H-116, H-119)
V-3264-2	Knob, tuning & volume (H-114, H-117)
V-3262-2	Knob, tone (H-114, H-117)
V-3262-4	Knob, band (H-114, H-117)
V-4320-1	Knob, door (H-119)
(W) No. 44	Lamp, dial, 6.3 v.
V-3283-2	Loop Assembly (L12)
V-3703	Mask, tuning eye (H-116, H-117, H-119)
V-3613	Speaker, 8" Electro Dynamic with receptacle (H-116, H-117)
V-3248S	Spring, dial drive
V-3258S	Spring, knob
V-3297	Spring, push button
V-3167S-1	Stud, pulley (threaded)
V-3430	Support, volume control shaft
V-3261-2	Switch Assy., push button
V-3310	Switch, selector (SW2 to SW8 incl.)
V-3395	Tabs, station (for push buttons)
V-3482	Teenut (H-116, H-117)
V-3643	Teenut (H-119)
V-3351	Terminal Board, 2 lugs
V-3484	Terminal Board, 1 lug
V-3487	Terminal Board, 11 lugs
V-3349	Terminal Board, 8 lugs
V-3675	Terminal Board, 3 lugs (no lugs grounded)
V-3488	Terminal Board, 12 lugs
V-3486	Terminal Board, 3 lugs (one lug grounded)
V-3255	Terminal Board, ANT-GND
V-3417	Terminal Board F.M. ANT.
V-3411	Transformer, discriminator
V-3419	Transformer, 3rd. I-F
V-3426	Transformer, 1st. I-F
V-3427	Transformer, 2nd. I-F
V-3295	Transformer, power
V-3274S	Tube holder (5U4G)
V-3317	Tuner, push button (C78 to C83 and L26 to L31 incl.)
V-3415	Tuning Shaft & Bracket Assy.
V-3568S	Washer, felt
V-3506S-1	Washer, neoprene, chassis mtg.
V-3267S-3	Washer, steel, chassis mtg.
V-3431	Windows, station tab

Part No.	Description
V-3229-3	Moulding, dial (H-113, H-114, H-116, H-117)
V-3229-4	Moulding, dial (H-119)
V-3490	Nameplate (H-119)
V-3366S-2	Pin, escutcheon
V-3841-1	Plate Assy., front glass (H-113)
V-3841-2	Plate Assy., front glass (H-114)
V-3841-3	Plate Assy., front glass (H-116)
V-3841-4	Plate Assy., front glass (H-117)
V-3841-5	Plate Assy., front glass (H-119)
V-3399	Pointer Assy.
V-4319-3	Pull, drawer (H-116, H-117)
V-4319-2	Pull, drawer (H-119)
V-3166S	Pulley, 7/16" dia.
V-3398-1	Push Button with Spring (H-113, H-116, H-119)
V-3398-2	Push Button with Spring (H-114, H-117)

Part No.	Description
V-3344-2	Sleeve, cond. mtg.
V-3639-1	Slide Mechanism, left hand unit (H-116, H-117, H-119)
V-3639-2	Slide Mechanism, right hand unit (H-116, H-117, H-119)
V-3393-2	Socket, A-C outlet
V-3288S	Socket, 8 contact tube
V-3290	Socket, moulded octal tube (6S87Y, 6SG7)
V-3275S	Socket, moulded octal tube (5U4G)
V-3246S	Socket, octal tube
V-3252-2	Socket, pilot light
V-3308	Socket, tuning eye (with R23)
V-3292	Speaker, 12" Electro Dynamic, incl. output trans. T2 (H-113, H-114, H-119)
V-3612	Speaker, 8" Electro Dynamic with cord, plug and output trans. T3 (H-116, H-117)

MODEL H-113, H-114

MODEL H-116, H-117

MODEL H-119

PUSH BUTTONS

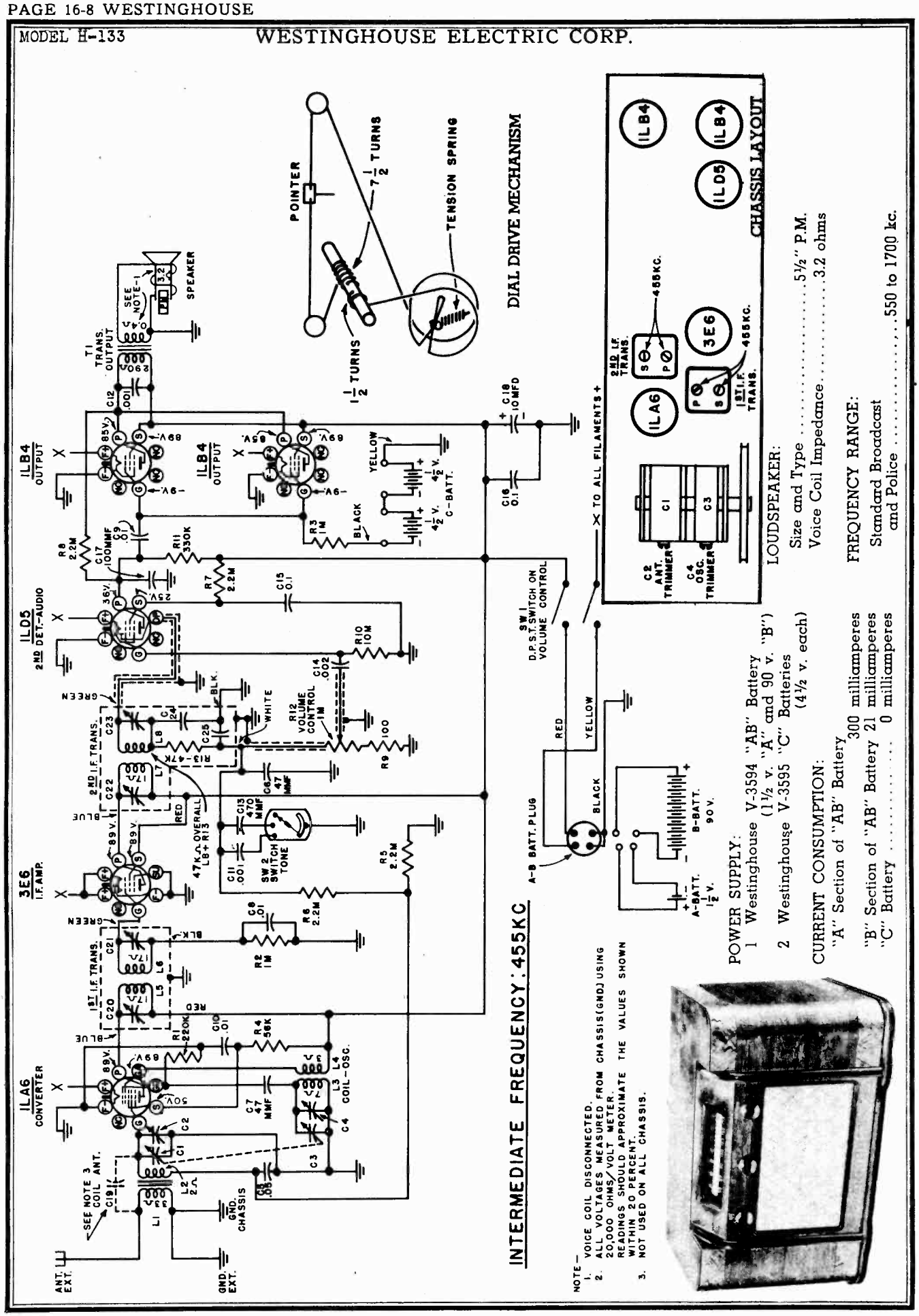
Push buttons 1 to 3 are designed to receive stations from 900 to 1600 kc; push buttons 4 to 6 are designed to receive stations from 540 to 900 kc.

Refer to CHASSIS LAYOUT drawing for location of push button adjusters, and then proceed as follows:

1. Turn on radio and allow it to warm up for five minutes.
2. Set the Phono-Band switch on "BC," and tune in the desired station in the frequency range 900 to 1600 kc.
3. Re-set the Phono-Band switch on "P.B.", and depress the first push button (right button viewed from the front).
4. Adjust C78 for maximum receiver output (either a station or static will be heard depending on the setting of L26). Now adjust L26 until the desired station is heard. It will be necessary to re-adjust C78 at intervals to maintain maximum output.
5. Make a final adjustment of L26 for proper tuning and C78 for maximum output.
6. Return the band switch to "B.C." to make certain that the push button has been set to the desired station.
7. Adjust the remaining push buttons in the same manner.

MODEL H-133

WESTINGHOUSE ELECTRIC CORP.



INTERMEDIATE FREQUENCY: 455KC

NOTE—
1. VOICE COIL DISCONNECTED.
2. ALL VOLTAGES MEASURED FROM CHASSIS(GND) USING 20,000 OHMS/VOLT METER. READINGS SHOULD APPROXIMATE THE VALUES SHOWN WITHIN 20 PERCENT.
3. NOT USED ON ALL CHASSIS.

POWER SUPPLY:
1 Westinghouse V-3594 "AB" Battery (1½ v. "A" and 90 v. "B")
2 Westinghouse V-3595 "C" Batteries (4½ v. each)

CURRENT CONSUMPTION:
"A" Section of "AB" Battery 300 milliamperes
"B" Section of "AB" Battery 21 milliamperes
"C" Battery ..... 0 milliamperes

LOUDSPEAKER:
Size and Type ..... 5½" P.M.
Voice Coil Impedance ..... 3.2 ohms

FREQUENCY RANGE:
Standard Broadcast and Police ..... 550 to 1700 kc.

For Parts list and Alignment, see P.16-10

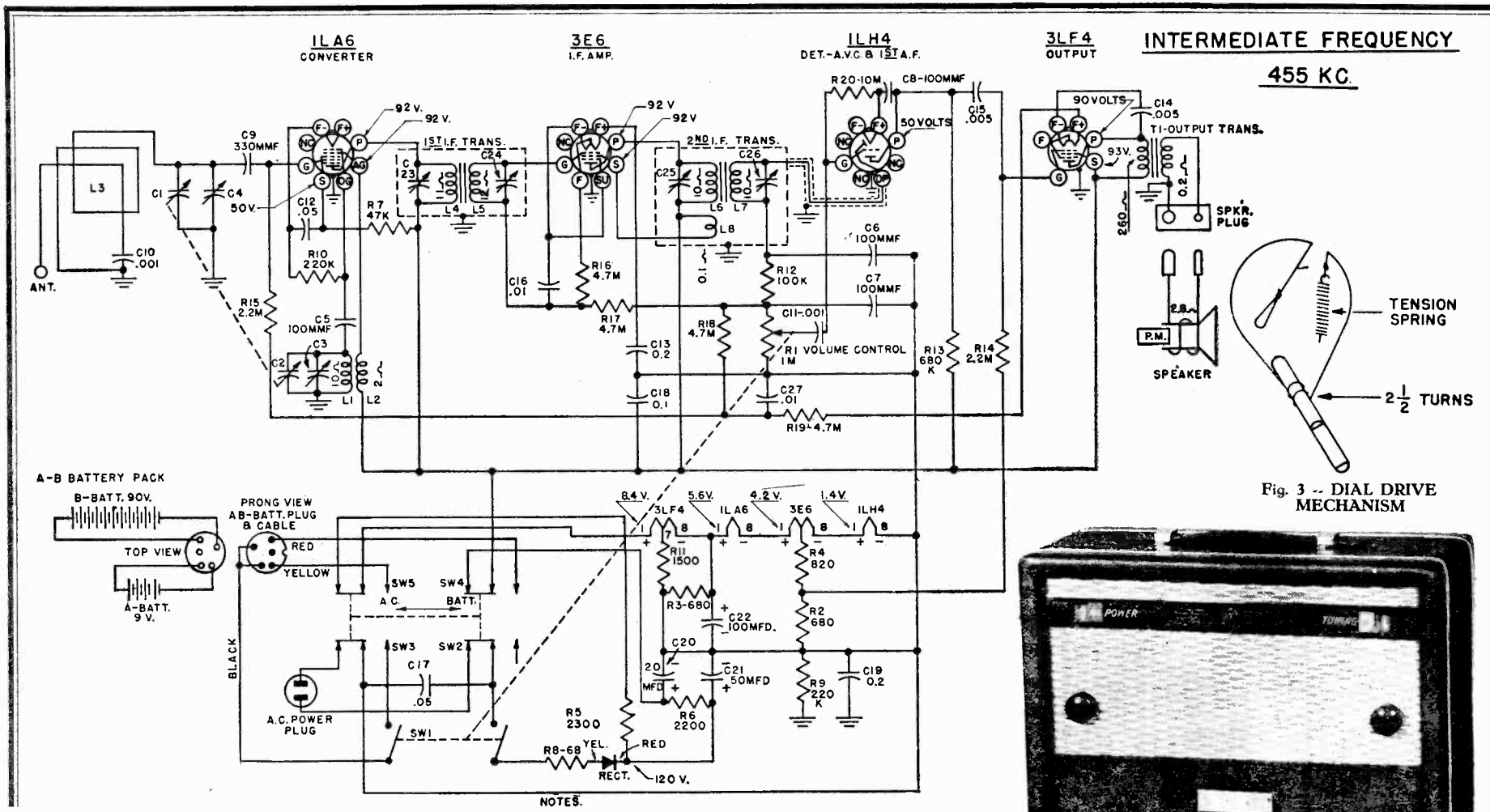


Fig. 3 -- DIAL DRIVE MECHANISM

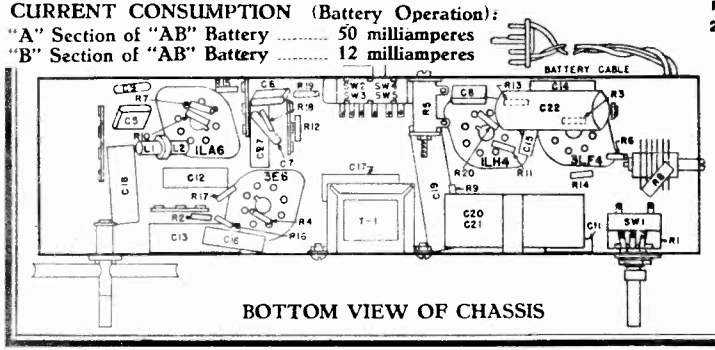
NOTES.

1. SWITCHES " SW. 2-3-4-5" ARE SHOWN IN A.C. POSITION.
2. VOLTAGES MEASURED FROM COMMON NEGATIVE USING A 20,000 OHM/VOLT METER. (A.C. OPERATION — 115 V. LINE)

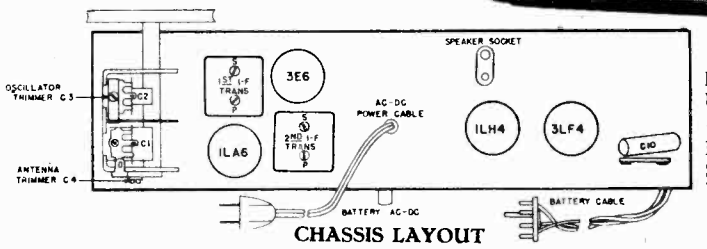
CURRENT CONSUMPTION (Battery Operation):

"A" Section of "AB" Battery ..... 50 milliamperes

"B" Section of "AB" Battery ..... 12 milliamperes



BOTTOM VIEW OF CHASSIS



CHASSIS LAYOUT

POWER OUTPUT:

Undistorted ..... 200 milliwatts

Maximum ..... 400 milliwatts

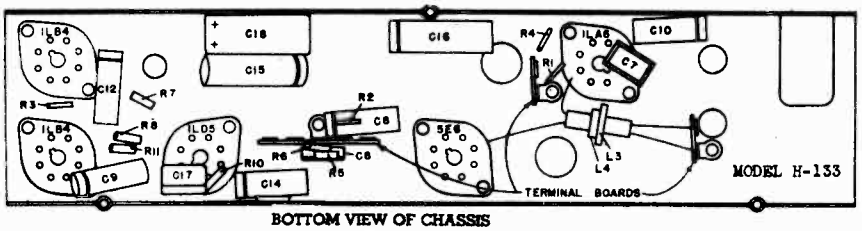
LOUDSPEAKER:

Size and Type ..... 4" P. M

Voice Coil Impedance ..... 3.2 ohms

MODEL H-133
MODEL H-148

WESTINGHOUSE ELECTRIC CORP.



BOTTOM VIEW OF CHASSIS

MODEL H-133 **ALIGNMENT** MODEL H-148

Before beginning alignment, make certain that the dial pointer aligns with the dot on the extreme high-frequency end of the dial when the tuning capacitor is set for minimum capacity.

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 A.V.C. action.

Step	Connect Signal Generator to—	Signal Generator Frequency	Radio Dial Setting	Adjust
1	3E6 control grid through 0.1 mfd capacitor	455 kc	550 kc	Secondary and Primary trimmers of 2nd I-F trans. for max. output.
2	1LA6 control grid through 0.1 mfd capacitor	455 kc	550 kc	Secondary and Primary trimmers of 1st I-F trans. for max. output.
3	Antenna terminal through 200 mmf capacitor	455 kc	550 kc	"Peak" all I-F trimmers.
4	Antenna terminal through 200 mmf capacitor	*1600 kc	*1600 kc	Oscillator trimmer for max. output.
5	Antenna terminal through 200 mmf capacitor	1400 kc	1400 kc	Antenna trimmer for max. output.

*1600 KC for Model H-148; rest of alignment the same

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

Part Number	Description
V-3883	Background, dial
V-4521	Baffle and Grille Cloth Assy.
V-3924	Battery, "A-B" (1½ v. & 90 v.)
V-3925	Battery, "C" (4½ v.)
V-3560	Bracket, var. cap. mtg.
V-1112-2	Cabinet
V-3559	Capacitor, variable, 2 gang (C1, C2, C3, C4)
RCP10W2503A	Capacitor, 0.05 mfd. 200 v. (C5)
RCM20A470K	Capacitor, 47 mmf. (C6, C7)
RCP10W4503A	Capacitor, 0.01 mfd. 400 v. (C8, C9, C10)
RCP10W6803K	Capacitor, 0.001 mfd. 600 v. (C11, C12)
RCM20A471K	Capacitor, 470 mmf. (C13)
RCP10W2002A	Capacitor, 0.002 mfd. 200 v. (C14)
RCP10W2504A	Capacitor, 0.1 mfd. 200 v. (C15, C16)
RCM20A101M	Capacitor, 100 mmf. (C17)
V-4581	Capacitor, electrolytic, 10 mfd. 150 v. (C18)
V-4910	Capacitor, 4.7 mmf. (C19—not used on all chassis)
V-4908	Clamp, dial mtg.
V-3557	Coil, antenna (L1, L2)
V-3562	Coil, oscillator (L3, L4)
V-3564	Control, volume, 1 meg. (R12) with switch (SW1)
V-41578-66	Cord, dial drive
V-3926	Decal, OFF
V-3930	Decal, TONE
V-3932	Decal, STATIONS
V-3935	Decal, WESTINGHOUSE
V-3930	Dial, glass

Part Number	Description MODEL H-133
V-3469	Foot, felt
V-3958	Grommet, variable cap. mtg.
V-3902	Jumper, "C" battery
V-3331-1	Knob, volume (including spring)
V-3331-2	Knob, tuning (including spring)
V-3231-3	Knob, tone (including spring)
Form R3486	Operating Instructions
V-3925	Plug, battery cable
V-4567	Plug and Cable Assy., battery
V-3558	Pointer Assy.
V-34985	Pulley, 7/16" dia.
RC10AE254M	Resistor, 250K ¼ w. (R1)
RC10AE105M	Resistor, 1.0 meg. ¼ w. (R2, R3)
RC10AE563M	Resistor, 56K ¼ w. (R4)
RC10AE225M	Resistor, 2.2 meg. ¼ w. (R5, R8, R7, R8)
RC10AE101M	Resistor, 100 ohms ¼ w. (R9)
RC10AE106M	Resistor, 10 meg. ¼ w. (R10)
RC10AE334M	Resistor, 330K ¼ w. (R11)
V-37568-10	Screw, chassis mtg.
V-3573	Socket, loctal tube
V-3901	Speaker, 5¼" P.M.
V-32485	Spring, dial drive
V-3561	Stud and Bracket Assy., pulley
V-3566	Switch, tone control (SW3)
V-3894	Terminal Board, 2 lugs
V-3895	Terminal Board, 5 lugs
V-3576	Transformer, output (T1)
V-3577	Transformer, 1st I.F.
V-3578	Transformer, 2nd I.F.
V-3237	Washer, cup, var. cap. mtg.
V-37525	Washer, felt
V-33875-4	Washer, chassis mtg.

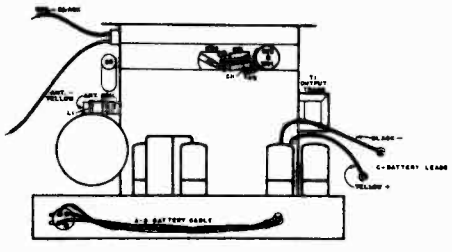


FIG. 3—REAR VIEW OF CHASSIS

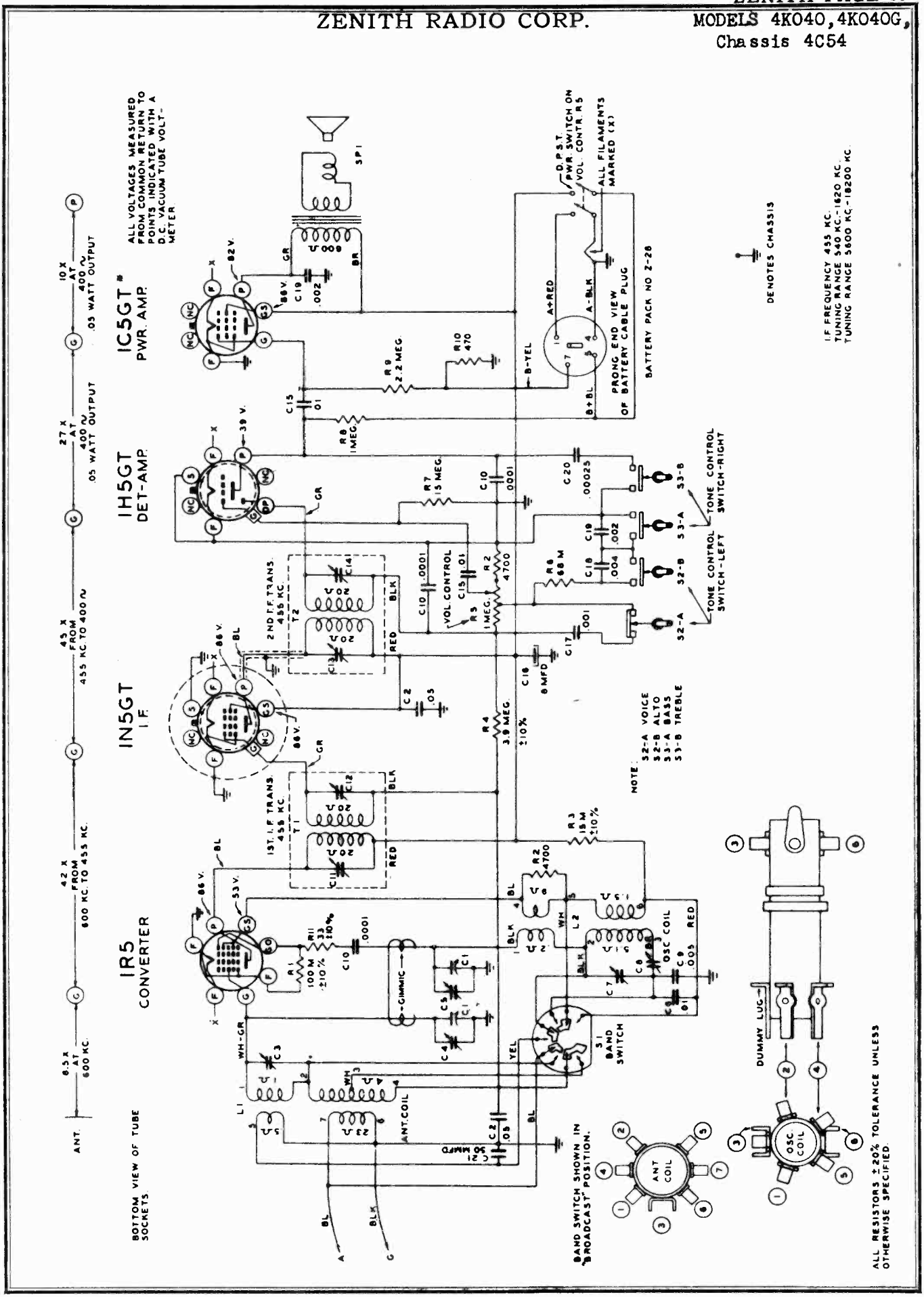
V-3909	Strip, plastic, loop mtg.
V-3872	Switch, battery AC-DC (SW2, SW3, SW4, SW5)
V-41168	Terminal Board, 1 lug
V-3864	Terminal Board, 2 lugs
V-3842	Terminal Board, 3 lugs
V-3865	Terminal Board, 4 lugs
V-3877	Transformer, 1st I-F (L4, L5, C23, C24)
V-3876	Transformer, 2nd I-F (L6, L7, C25, C26)
V-3868	Transformer, output
V-3867	Washer, phenolic (resistor mtg.)
V-37525	Washer, felt
V-3919	Washer, flat (chassis mtg.)

MODEL H-148

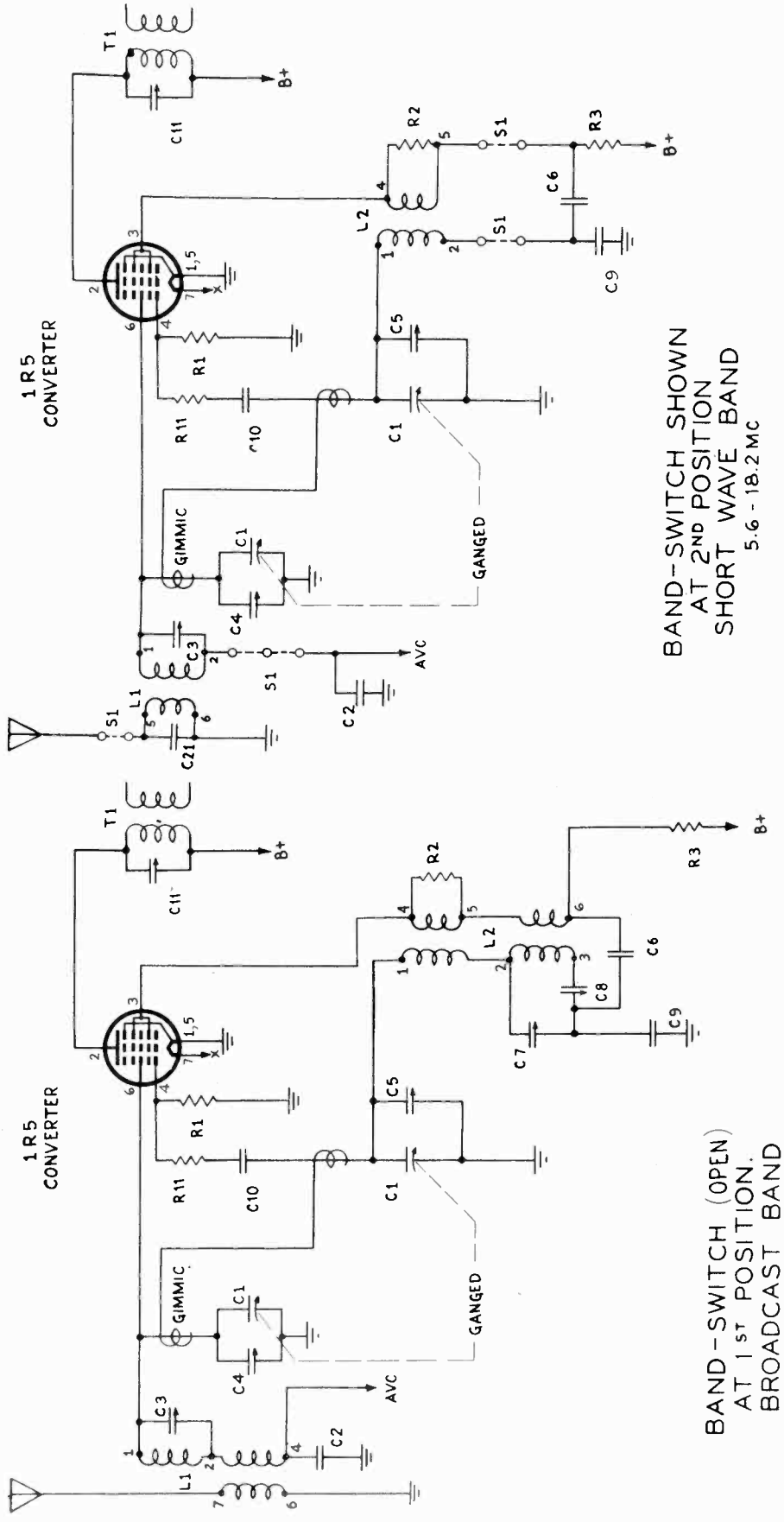
PART NO.	DESCRIPTION
V-3881	Baffle and Grille Cloth Assy.
V-3920	Battery Pack, "AB" (9 v. and 90 v.)
V-3323	Bearing, tuning shaft
V-3844	Bracket Assy. (OFF-ON)
V-3857	Bracket, variable capacitor mtg.
V-1114	Cabinet
V-3858	Capacitor, variable 2 gang (C1, C2, C3)
V-4542	Capacitor, Antenna trimmer (C4)
RCM20A101M	Capacitor, 100 mfd mica (C5, C6, C7, C8)
RCM20A331M	Capacitor, 330 mfd mica (C9)
RCP10W6102A	Capacitor, .001 mfd 600 v. (C10, C11)
RCP10W2503A	Capacitor, .05 mfd 200 v. (C12)
RCP10W2204A	Capacitor, 0.2 mfd 200 v. (C13)
RCP10W6502A	Capacitor, .005 mfd 600 v. (C14, C15)
RCP10W4103A	Capacitor, .01 mfd 400 v. (C16, C27)
RCP10W4503A	Capacitor, .05 mfd 400 v. (C17)
RCP10W4104A	Capacitor, 0.1 mfd 400 v. (C18)
RCP10W4204K	Capacitor, 0.2 mfd 400 v. (C19)
V-3861	Capacitor, electrolytic 20 mfd 150 v. (C20) 50 mfd 150 v. (C21)
V-3866	Capacitor, electrolytic cartridge 100 mfd 25 v. (C22)
V-3897	Channel, decorative strip mtg.
V-3337	Clamp, cable
V-3886	Clamp, handle
V-3862	Clamp, spring (electrolytic cap. mtg.)
V-3845	Coil, oscillator (L1, L2)
V-3852	Control, volume (R1) with switch (SW1)
V-4349-1	Cord, A-C power
V-41575-15	Cord, dial drive
V-3878	Decal, OFF-ON
V-3899	Dial
V-3885	Foot, felt
V-3898	Grille
V-3766	Grommet, fiber
V-3880	Grommet, rubber, square
V-3901	Handle
V-3912	Knob, tuning and volume
V-3914	Label, tube layout
V-3865	Latch Assy., back cover
V-3915	Loop, antenna (L3)
V-3894	Name Plate
V-3904	Panel, metal
V-3874	Plug and Cable, Assy., battery
V-4115	Rectifier, selenium
RC10AE681K	Resistor, 680 ohms ¼ w. (R2, R3)
RC10AE821K	Resistor, 820 ohms ¼ w. (R4)
V-3869	Resistor, ballast, 2300 ohms 5 w. (R5)
RC20AE222K	Resistor, 2200 ohms ½ w. (R6)
RC10AE473K	Resistor, 47K ¼ w. (R7)
RC40AE680M	Resistor, 68 ohms 2 w. (R8)
RC10AE224M	Resistor, 220K ¼ w. (R9, R10)
RC10AE152K	Resistor, 1500 ohms ¼ w. (R11)
RC10AE104K	Resistor, 100K ¼ w. (R12)
RC10AE684K	Resistor, 680K ¼ w. (R13)
RC40AE225M	Resistor, 2.2M ¼ w. (R14, R15)
RC10AE475K	Resistor, 4.7M ¼ w. (R16, R17, R18, R19)
RC10AE105M	Resistor, 10M ¼ w. (R20)
V-3560	Shaft, tuning
V-3899	Shield, plastic front
V-3871	Shield, spiral
V-3870-1	Socket, lock in
V-3299	Socket, speaker
V-4114	Spacer, sleeve
V-3917	Speaker, 4" P.M.
V-3890	Spring, OFF-ON
V-3855	Spring, coil, for OFF-ON switch
V-32485	Spring, dial drive
V-3900	Strip, decorative power and tuning

ZENITH RADIO CORP.

MODELS 4K040, 4K040G,
Chassis 4C54



MODELS 4K040, 4K040G ZENITH RADIO CORP.



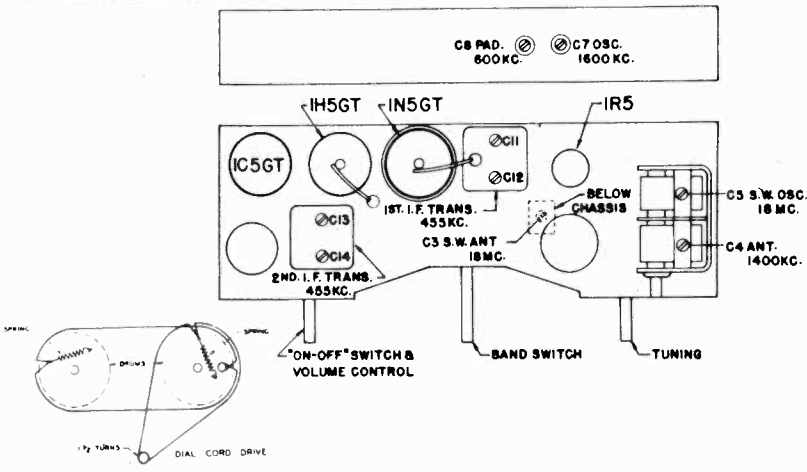
ZENITH RADIO CORP.

MODELS 4K040 4K040G

TO THE SERVICE MAN:

The alignment of this receiver is conventional. An output meter, connected across the voice coil of the speaker, is very helpful in making correct adjustments.

The Guardian Reminder Circuit consist of a 4700 ohm resistor (R2) in series with the low side of the volume control. With this circuit, it is impossible to turn the volume completely off and leave the power on. In some cases where the minimum volume is too high even at the lowest setting of the volume control, R2 may be changed to a lower value or shorted out completely.



TUBE TRIMMER LOCATION AND DIAL CABLE DRAWING

ALIGNMENT PROCEDURE

OPERATION	CONNECT OSC. TO	DUMMY ANT.	INPUT SIG. FREQUENCY	BAND	SET DIAL AT	TRIMMERS	PURPOSE
1	Converter Grid	.5 Mfd.	455 Kc.	BC	600 Kc.	C-11, C-12, C-13, C-14	Align I.F.
2	Ant.-Gnd.	400 ohms	18 Mc.	SW	18 Mc.	C-5	Set Osc. to Scale
3	Ant.-Gnd.	400 ohms	400 ohms	SW	Rock Gang 18 Mc.	C-3	Align Antenna
4	Ant.-Gnd.	200 Mmf.	1600 Kc.	BC	1600 Kc.	C-7	Set Osc. to Scale
5	Ant.-Gnd.	200 Mmf.	1400 Kc.	BC	1400 Kc.	C-4	Align Antenna
6	Ant.-Gnd.	200 Mmf.	600 Kc.	BC	Rock Gang 600 Kc.	C-8	Adjust Padder

DIAL ASSEMBLY

26-342	Dial Scale	.32
46-443	Radiogran Knob (Voice)	.07
46-444	" " (Treble)	.07
46-445	" " (Alto)	.07
46-446	" " (Bass)	.07
59-122	Off & ON Indicator	.12
59-160	Dial Pointer	1.14
76-335	Tuning Control Shaft	.07
80-183	Indicator Spring	.024
80-209	Dial Cord Tension Spring	.024
80-471	Tuning Shaft Spring	1.31C
93-690	Felt Washer (S-11362)	.60C
192-90	Dial Crystal	.50
196-64	Dial Crystal Gasket	.08
S9588	Indicator Cam Assem.	.07
S9610	Dial Cord & Eyelet (Pointer)	.12
S9733	Dial Cord & Eyelet (Gang Cond.)	.07
S9751	Pulley & Rivet Assem. (Gang Cond.)	.12
S11362	Pulley & Bushing Assem. (Pointer)	.11
S11558	Vol. & Tuning Knob Assem. (2 used) (46-520)	.28
S12305	Band Switch Knob Assem. (46-598)	.32

COILS & CHOKES

95-838	1st I.F. Transformer (T1)	1.77
95-839	2nd I.F. Transformer (T2)	1.77
S9829	Osc. Coil Assem. (L2)	1.39
S9832	Ant. Coil Assem. (L1)	1.39

CONDENSERS

22-162	.0001 Mfd. (C10)	600 V.	.20
22-182	.00025 Mfd. (C20)	600 V.	.26
22-196	.01 Mfd. (C15)	600 V.	.20
22-448	.004 Mfd. (C18)	600 V.	.20
22-492	.002 Mfd. (C19)	600 V.	.20
22-684	Dry Electrolytic 8 Mfd. (C16)	150 V.	.45
22-826	.01 Mfd. (C6)	200 V.	.20
22-829	.05 Mfd. (C2)	200 V.	.20
22-887	.001 Mfd. (C17)	600 V.	.20
22-1022	.005 Mfd. (C9)	600 V.	.38
22-1208	Two Section Gang (C1)		2.56
22-1239	Two Section Trimmer (C7 & C8)		.58
22-1240	Single Section Ceramic Trimmer (C3)		.20
22-1532	50 Mmfd. (C21)	500 V.	.20

RESISTORS

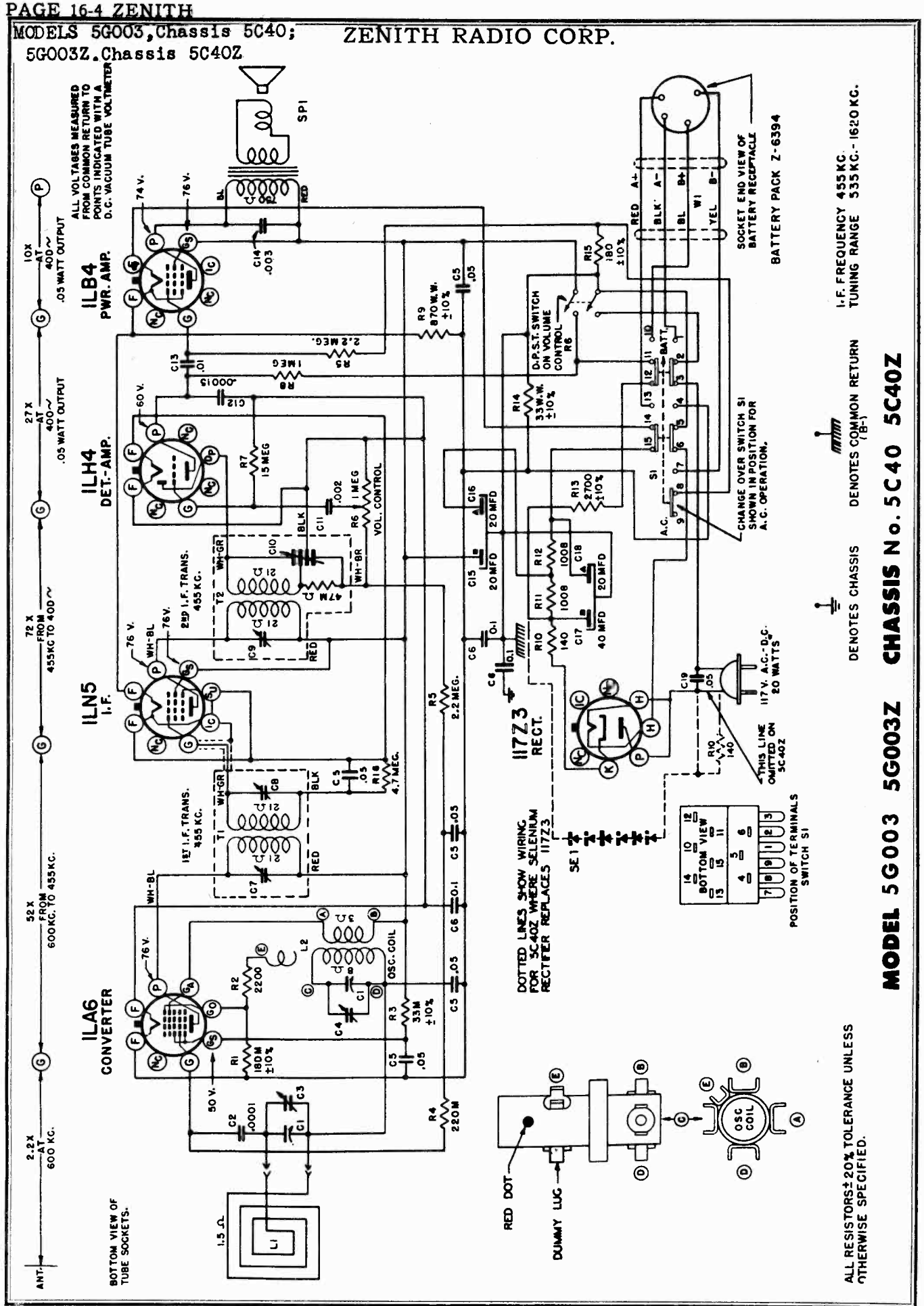
63-260	100M Ohm (R1)	1/4 Watt	.09
63-271	1 Megohm (R8)	1/4 "	.09
63-311	15M Ohm (R3)	1/4 "	.09
63-581	470 Ohm (R10)	1/4 "	.09
63-587	4700 Ohm (R2)	1/4 "	.09
63-594	68M Ohm (R6)	1/4 "	.09
63-600	2.2 Megohm (R9)	1/4 "	.09
63-620	33 Ohm (R11)	1/4 "	.09
63-669	3.9 Megohm (R4)	1/4 "	.09
63-976	15 Megohm (R7)	1/4 "	.09
63-1236	Volume Control & Switch (R5)		1.81

MISCELLANEOUS

49-522	6½" P.M. Speaker	10.00
	206-522 Output Transformer	2.21
	208-522 Cone & Voice Coil	2.09
52-190	Speaker Cable	.19
54-34	#6-32 x 1/4 x 3/32 Hex Nut	.31C
57-11A	Antenna Marker	.024
57-11G	Ground Marker	.024
57-900	Dial Mtg. Plate	.35
57-1159	Radiorgan Escutcheon Plate (2 used)	.18
58-74	Battery Cable Plug	.12
70-124	#2 x 3/8 Phillips Hd. Wood Screw - Brass Plated (57-1159)	1.70C
78-436	Miniature Tube Socket	.19
78-611	Octal Base Tube Socket (3 used)	.12
95-279	Band Selector Switch	.72
85-284	Radiorgan Switch L.H. (Voice & Alto)	.55
85-288	Radiorgan Switch R.H. (Treble & Bass)	.55
93-125	#6 Internal Shakeproof Lockwasher	.31C
93-258	Brown Felt Washer (Knobs)	.78C
94-295	Steel Bushing (Radiorgan) (4 used)	.036
112-56	#6-1/4 Hex Hd. Self Tapping Screw	.55C
114-67	#6-32 x 7/16 Hex Acorn Hd. M.S. Steel N.P. (Radiorgan) (4 used)	.43C
114-162	#8 x 7/8 Hex Acorn Hd. Self Tapping Screw (Chassis Mtg.)	1.20C
125-17	Rubber Grommets (85-284 & 288)	.03
125-39	Rubber Grommets	.02
126-379	Tube Shield	.07
159-14	Plug Buttons (Dial Scale)	.78C
188-32	Retainer Ring (76-335)	1.03C
188-34	Retainer Ring (S-11362)	1.20C
188-48	Control Knob Decorative Ring	.035
202-384	Instruction Book	.15

MODELS 5G003, Chassis 5C40;
5G003Z, Chassis 5C40Z

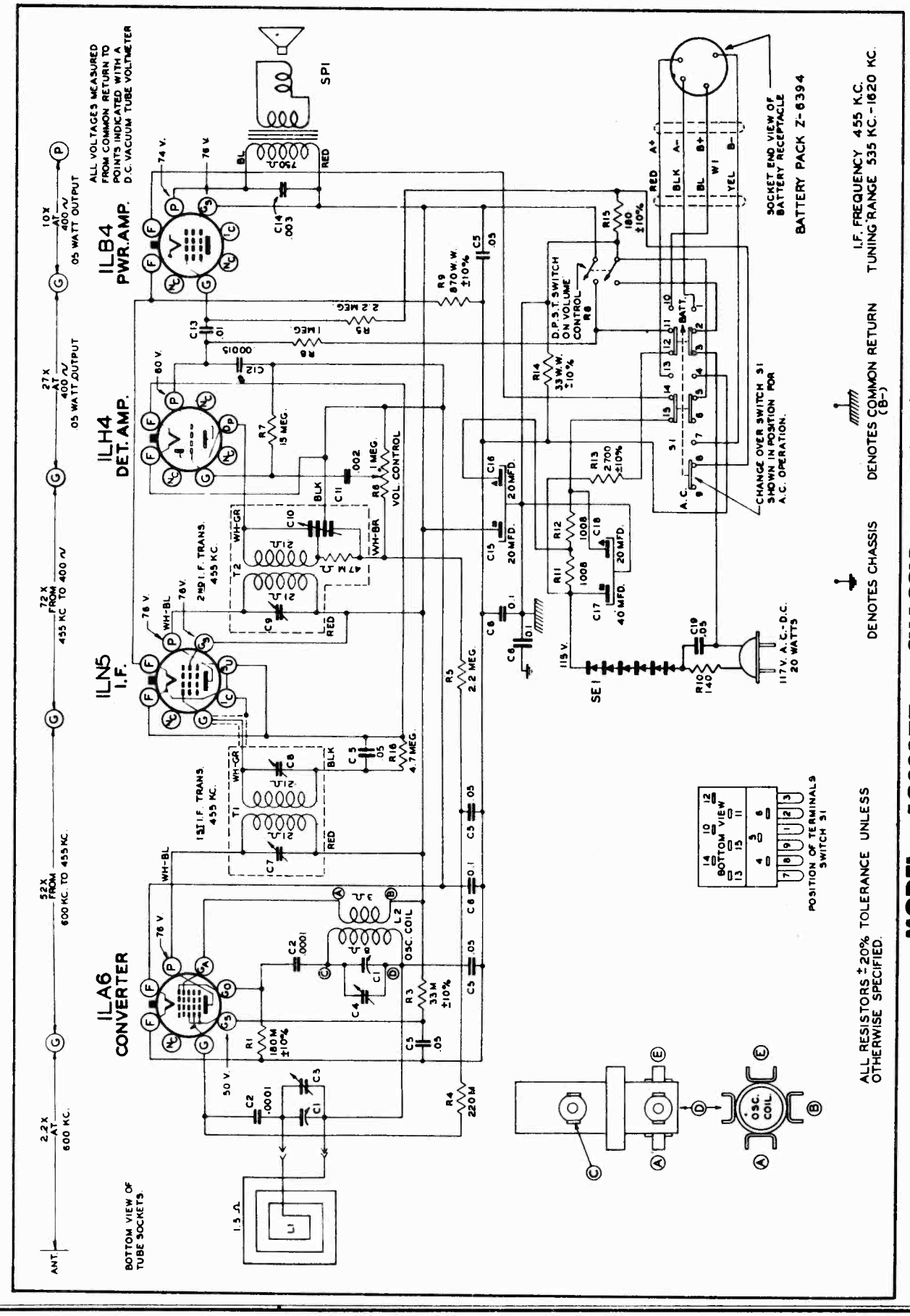
ZENITH RADIO CORP.



For other data, see P.16-6

ZENITH RADIO CORP.

MODEL 5G003ZZ, Chassis 5C40ZZ



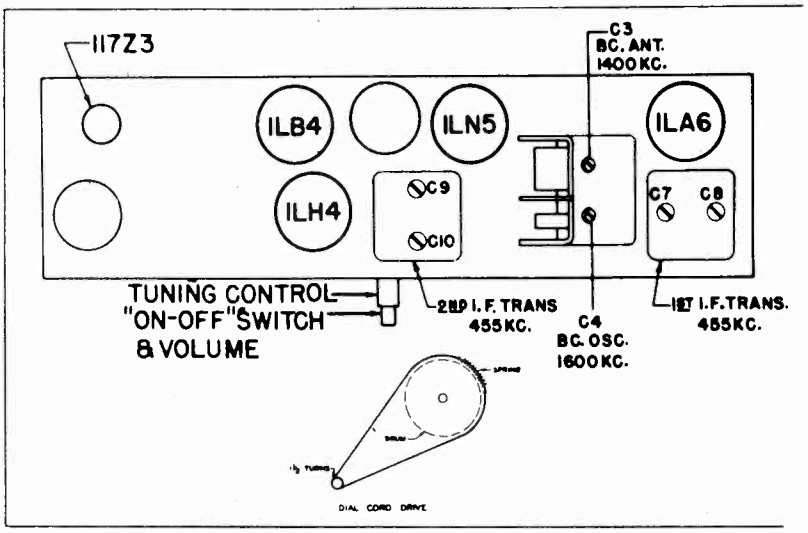
MODELS 5G003, 5G003Z
MODEL 5G003ZZ

ZENITH RADIO CORP.

TO THE SERVICEMAN:

The alignment of chassis 5C40 is conventional and the most accurate alignment will be accomplished if the procedure is followed exactly. The IF frequency is 455 KC and all measurements, voltage, and resistance have been taken with an electronic voltohm meter.

Stage by stage gain measurements are for reference purposes only. Gain measurements can seldom be duplicated, and are used only for comparison purposes.



TUBE TRIMMER LOCATION AND DIAL CABLE DRAWING

ALIGNMENT PROCEDURE

OPERATION	CONNECT OSC. TO	DUMMY ANT.	INPUT SIG. FREQUENCY	SET DIAL AT	TRIMMERS	PURPOSE
1	Converter Grid	.5 Mfd.	455	600	C7, C8, C9 C10	I.F. Alignment
2	Single Turn Loop	--	1600	1600	C4	Set Osc. to scale
3	Coupled Loosely to Wavemagnet	--	1400	1400	C3	Alignment of Antenna

PARTS LIST

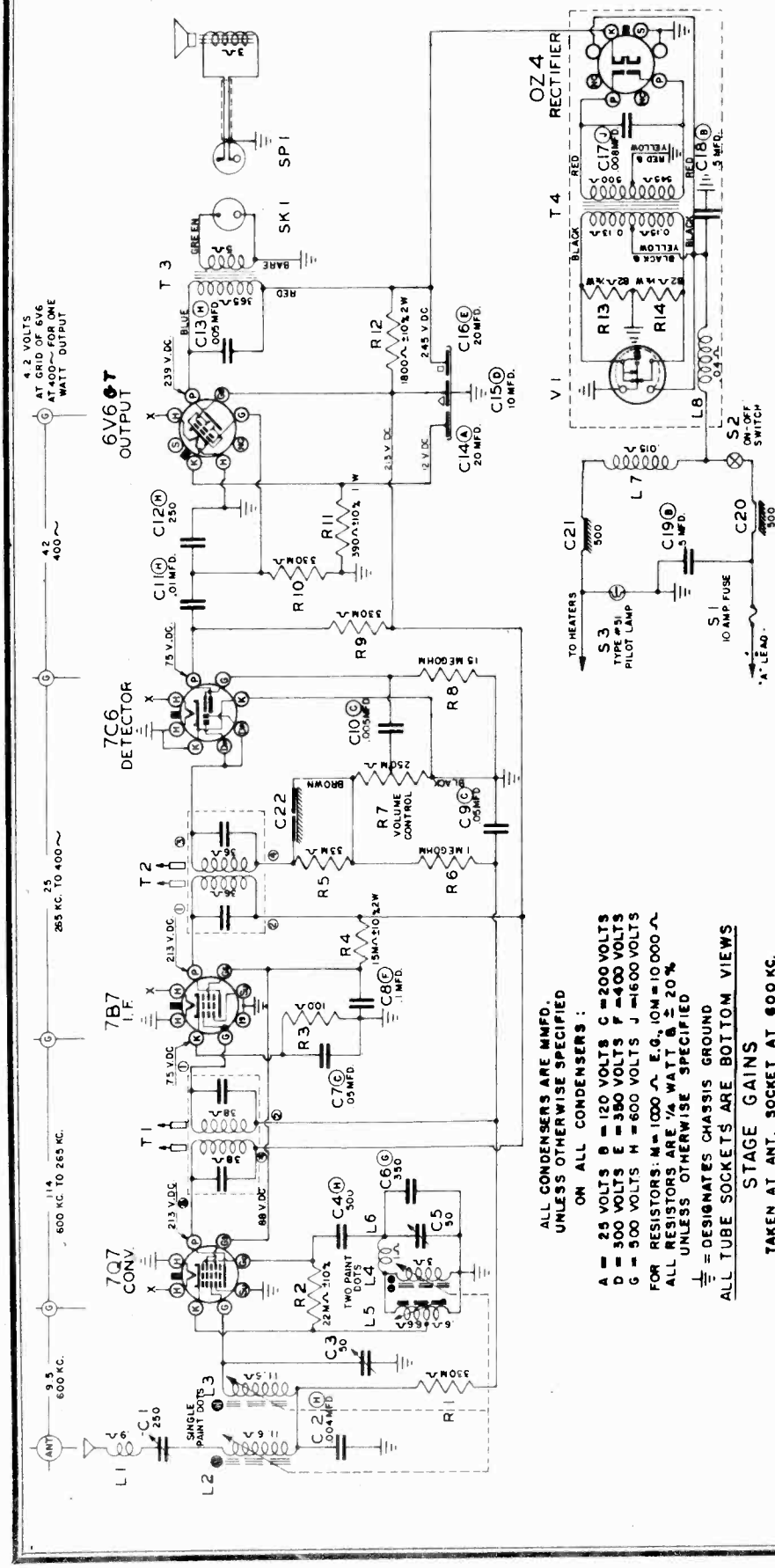
PART NO.	REF. NO.	DESCRIPTION		PRICE
		DIAL ASSEMBLY		
26-366		Dial Scale		.12
46-530		Volume Control Knob (Small)		.17
46-587		Tuning Control Knob (Large)		.11
57-1120		Escutcheon Plate		1.00
57-1187		Dial Plate		.60
59-164		Dial Pointer		.19
76-488		Tuning Control Shaft		.28
80-365		Tuning Shaft Tension Spring (63-1459)		.03
80-508		Dial Cord Tension Spring		.04
125-17		Rubber Grommets (22-1450)		.03
147-148		Dial Plate Spacer		.02
159-50		Plug Button (26-366-192-99)		.01
188-53		Tuning Shaft Retainer Ring		.01
192-99		Dial Glass		.20
196-88	*	Dial Glass Gasket		.06
S-11098		Pulley & Bushing Assembly		.33
S-11137		Dial Cord & Eyelet Assembly		.09
		CHOKES AND COILS		
95-937	T1	First I.F. Transformer		1.85
95-938	T2	Second I.F. Transformer		1.85
S-11830	L2	Osc. Coil Assem. SC40-402		.95
S-13765	L2	Osc. Coil Assem. SC402Z		.95
		CONDENSERS		
22-162	C2	.0001 Mfd.	500 Volt	.20
22-196	C13	.01 Mfd.	600 Volt	.20
22-326	C14	.003 Mfd.	400 Volt	.20
22-470	C12	.00015 Mfd.	600 Volt	.20
22-492	C11	.002 Mfd.	600 Volt	.20
22-827	C6	.1 Mfd.	200 Volt	.23
22-829	C5	.05 Mfd.	200 Volt	.20
22-1014	C15 & C16	Dry Electrolytic 20 x 20 Mfd.	150 Volt	.95
22-1017	C19	.05 Mfd.	200 Volt	.20
22-1081	C17 & C18	Dry Electrolytic 40 x 20 Mfd.	150 Volt-25 Volt	.83
22-1450	C1	Two Section Gang SC40-402		4.15
22-1653	C1	Two Section Gang SC402Z		4.15
		RESISTORS		
63-271	R8	1 Megonm	1/4 Watt	.09
63-296	R4	220 M Ohm	1/4 Watt	.09
63-439	R13	2700 Ohm	1/4 Watt	.09
63-579	R2	220 Ohm	1/4 Watt	.09
63-600	R5	2.2 Megohm	1/4 Watt	.09
63-602	R16	4.7 Megohm	1/4 Watt	.09
63-627	R15	180 Ohm	1/4 Watt	.09
63-646	R3	33 M Ohm	1/4 Watt	.09
63-654	R1	180 M Ohm	1/4 Watt	.09
63-976	R7	15 Megonm	1/4 Watt	.09
63-1097	R9	870 Ohm W. W. Insl.	1 Watt	.24
63-1098	R14	33 Ohm W. W. Insl.	1/2 Watt	.21
63-1363	R11-R12	Two Section Candohm (63-1132)		.60
63-1366	R10	Zipohm		.24
63-1549	R6	Vol. Control & Switch D P S T		1.81
		MISCELLANEOUS		
11-70		A. C. Line Cord & Plug (Alt 11-90)		.60
12-1322		Reinforcing Prkt. (2 used Handle)		.15
14-903		Polystyrene Cabinet Front Less Accessories (use S-13209)		..
45-51		Battery Socket Cap		.09
24-371		Cabinet Rear Cover Less Accessories (Use S-11999)		..
40-28		Cabinet Hinge		.20
43-111		Handle End Pieces (Die Cast)		.65
49-540		4" P M Speaker (Complete)		7.25
54-224		206-540 Output Transformer		1.67
57-1119		208-540 Cone & Voice Coil Assem.		1.73
64-98		Speed Nut (2 used S-11999)		.02
64-99		Chassis Pottom Plate		.24
78-228		Brass Eyelet (S-11999)		.02
78-275		Brass Eyelet (S-11999)		.01
78-400		Electrolytic Socket		.03
78-437		Electrolytic Socket		.03
78-446		Loktal Base Tube Socket		.19
78-637		Miniature Base Tube Socket		.12
80-436		Loktal Base Tube Socket (3 used)		.19
82-20		Battery Cable Socket		.23
83-1393		Tube Retaining Spring (117Z3)		.15
85-367-S1		Battery Retaining Strip		.25
86-66		Rubber Strip (Handle)		.30
86-142		Power Change Over Switch		.82
93-743		Pin Jack Terminal (Gang)		.02
110-119		Pin Jack Terminal (Gang)		.02
112-468		Bakelite Spacer Washer (S-11999)		.03
112-533		Grille Cloth		.15
112-604		#6 x 5/16 Phillips B.H. Self Tapping Screw (82-20)		1.83C
		#6 x 1/4 Phillips R.H. Self Tapping Screw (40-28)		.02
		#6 x 5/16 Phillips Stove Hd. Self Tapping Screw (Chassig Mtg.)		.03
126-482		Spiral Shield		.05
139-61		Baffle Board (or 139-66)		.08
156-27		Cover Catch (2 used)		.09
199-53		Flexible Handle Sleeve		.40
202-429		Instruction Book		.03
212-2		Selenium Rectifier		
S-11999	L1	Cabinet Back & Wavemagnet Assem. Complete (24-371) SC40-5C40Z		4.75
S-13767		Cabinet Back & Wavemagnet Assem. ZZ Model		..
S-13209		Front Cabinet & Hinge Assem. (14-903)		6.25
S-13210		Strap & Rivet Assem. (Handles)		.20

Prices subject to change without notice.

25M 4-29-47

ZENITH RADIO CORP.

MODEL 5MX080, Chassis 5C80, Crosley



ALL CONDENSERS ARE MMFD. UNLESS OTHERWISE SPECIFIED ON ALL CONDENSERS :

A = 25 VOLTS B = 120 VOLTS C = 200 VOLTS
D = 300 VOLTS E = 350 VOLTS F = 400 VOLTS
G = 500 VOLTS H = 600 VOLTS J = 1600 VOLTS

FOR RESISTORS: M = 1000 Ω E.G., 10M = 10 000 Ω
ALL RESISTORS ARE 1/4 WATT ± 20% UNLESS OTHERWISE SPECIFIED

⏚ = DESIGNATES CHASSIS GROUND
ALL TUBE SOCKETS ARE BOTTOM VIEWS

STAGE GAINS

TAKEN AT ANT. SOCKET AT 600 KC. AND AT CONVERTER GRID AT 265 KC.

DUMMY ANTENNA

30 MMFD SERIES & 30 MMFD. SHUNT AT ANT. SOCKET & 0.1 MFD. SERIES TO CONVERTER GRID

BATTERY CONDITIONS

6.3 VOLTS AT STORAGE BATTERY TERMINALS WITH POSITIVE GROUNDED

TEST CONDITIONS

VOLUME CONTROL SET AT MAXIMUM WITH NO INCOMING SIGNAL

VOLTAGES READ FROM POINT SHOWN TO CHASSIS WITH 1000 OHM PER VOLT METER

SCHEMATIC DIAGRAM FOR 5 TUBE
CROSLEY 5MX080
I. F. 265 KC.
TUNING RANGE 540 KC. TO 1600 KC.

SENSITIVITY: ..... 10 microvolts at one watt output.

UNDISTORTED POWER OUTPUT: ..... 2 watts measured at the voice coil.

MAXIMUM POWER OUTPUT: ..... 4.25 watts measured at the voice coil.

SPEAKER: ..... 6" x 9" oval, instrument panel mounting.

CURRENT CONSUMPTION: ..... 5. amperes

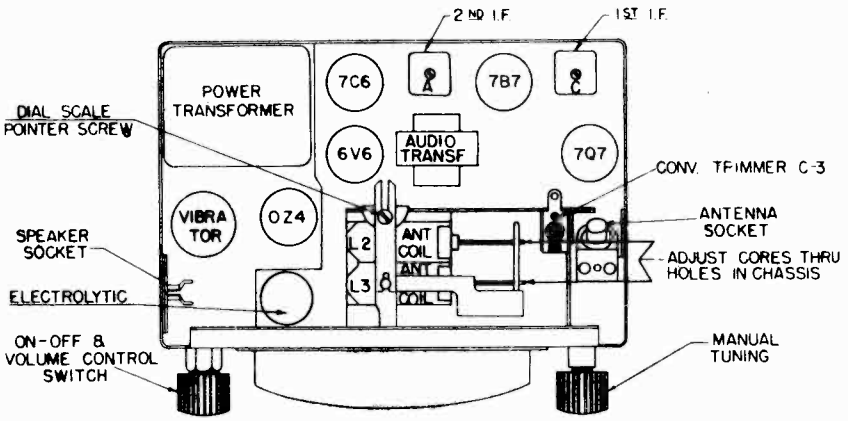


Fig. 7. Top View of Chassis

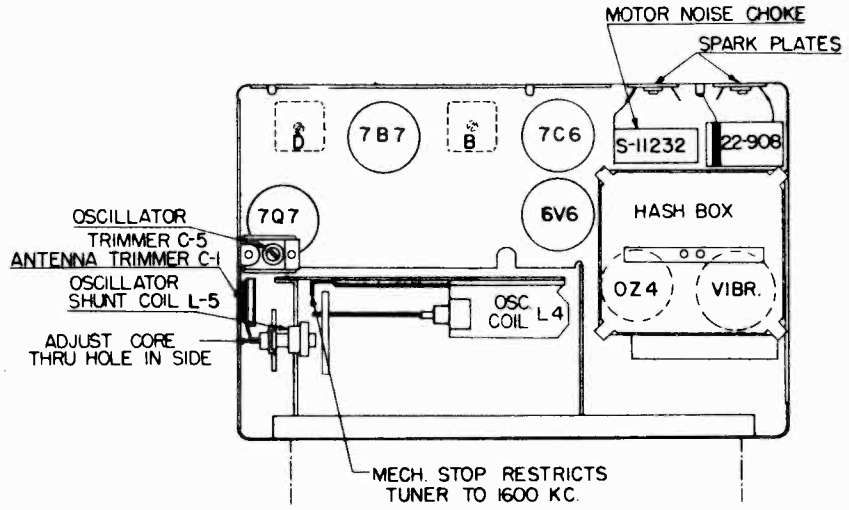


Fig. 8. Bottom View of Chassis

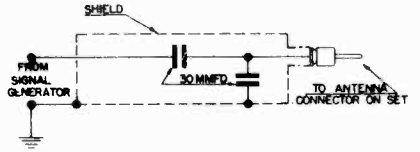


Fig. 9. Dummy Antenna

Fig. 9 shows the schematic of a recommended dummy antenno, closely resembling actual antenna capacity, to be used in series with signal generator leads when aligning the R.F. section of the receiver.

ALIGNMENT

Maximum performance depends on accurate alignment of the receiver; therefore follow these instructions carefully.

CAUTION: Make all alignment adjustments to the receiver with the volume control set at maximum. Reduce the signal intensity as much as possible at the signal generator. Connect the output meter across the voice coil.

I. F. ALIGNMENT PROCEDURE

1—Remove top and bottom covers from receiver.

2—Set signal generator to 265 Kc.

3—Apply signal from generator through a .1 Mfd. dummy to 7Q7 converter grid. (Pin No. 6 on socket.)

4—Adjust I.F. slugs A, B, C and D (Figs. 7 and 8), in the order named for maximum output. Repeat the operation to assure accurate alignment.

R. F. AND OSCILLATOR ALIGNMENT

1—Connect signal generator leads through dummy, illustrated in Fig. 9, to antenna lead in socket on receiver. This is important.

2—Set signal generator to 535 Kc.

3—Set dial to 535 Kc. (End of travel, against the stop.)

4—Adjust oscillator trimmer C-5 (Fig. 8) for maximum response.

5—Set signal generator to 1200 Kc.

6—Tune set to 1200 Kc.

7—Adjust converter trimmer C-3 (Fig. 7) and Ant. trimmer C-1 (Fig. 8) for maximum response.

8—If dial calibration is off after making above adjustments, a correction can be made by turning eccentric screw at fulcrum of dial pointer. (Fig. 7.)

CORE OR COIL REPLACEMENT ONLY

WARNING: The following adjustments are to be made ONLY if a core or coil is replaced.

1—Replace coil or core.

2—Set signal generator to 1675 Kc.

3—Connect signal generator leads through dummy, illustrated in Figure 9, to antenna receptacle on the receiver. This is important.

4—Set receiver dial to 1600 Kc. (maximum high frequency end of dial.)

5—Break cement loose on all cores and, using the special tuning wrench part No. S-13064, screw the core completely out of the antenna coil, the converter coil, and the oscillator coil.

6—Adjust oscillator trimmer C-5 (Fig. 8) at 1675 Kc.

7—Adjust converter trimmer C-3 and antenna trimmer C-1 (Fig. 7 and 8) for maximum output reading.

8—Replace cores to their approximate original position.

9—Set generator and receiver dial to 1200 Kc.

10—Adjust oscillator core L-4 (Fig. 8) to scale at 1200 Kc.

11—Adjust the two antenna cores L2 and L3 (Fig. 7) for maximum output reading. Do not adjust trimmers.

12—Set signal generator to 600 Kc.

13—If necessary, "rock in" shunt oscillator core L-5 (Fig. 8) for maximum output reading. This should be done only as a last resort, as the core has been set and sealed and should not require adjustment.

14—Check receiver at 1200 Kc. for calibration and gain. If the receiver is off scale or weak, repeat operations 9, 10 and 11.

15—After alignment is complete, the maximum high frequency tuning range should be checked. If the range is greater or less than 1605 Kc., the mechanical stop for the tuner cross arm should be bent to limit the frequency coverage to 1605 Kc.

After all adjustments have been made, glue core screws with speaker cement.

IMPORTANT: After reinstalling the receiver in the car, allow it to operate for approximately 15 minutes to reach normal operating temperature. Extend antenna to maximum. Check the antenna trimmer alignment on a weak station near 1200 Kc.

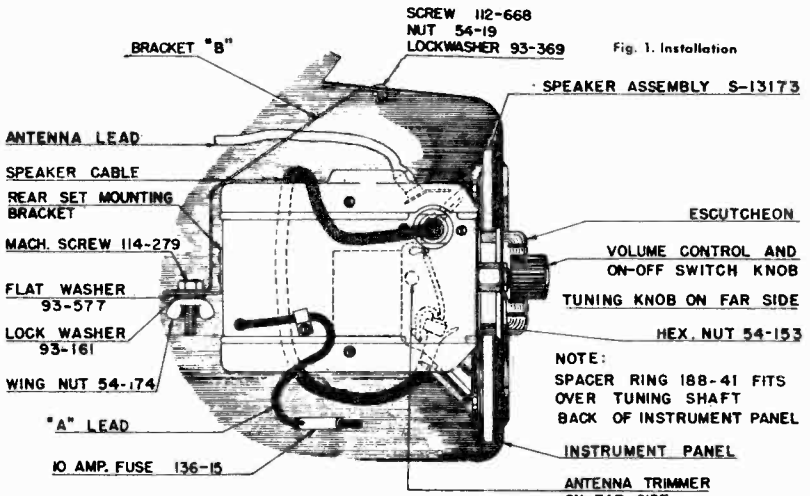


Fig. 1. Installation

RECEIVER INSTALLATION

Figures 1 and 2, illustrating the installed receiver, the escutcheon plate, and the control knobs, are given here to assist in the removal and reinstallation of this receiver when service is necessary.

To take the receiver from the car, remove the control knobs and mounting nuts from the front panel, and remove the wing-nut, 54-174, lock washer 93-161, flat washer 93-577, and machine screw 114-279 from the set mounting bracket "B."

The speaker is held to the rear of the panel by four hex. nuts.

OFF-ON SWITCH AND VOLUME CONTROL

To turn the receiver on, turn the volume control knob to the right until it clicks and the dial is illuminated. Allow the receiver to reach operating temperature. (Approximately 20 seconds.) To increase the volume, continue to rotate this knob to the right. To turn the receiver off turn the volume control knob to the left until it clicks. (Fig. 2.)

TUNING

Turn the tuning knob (Fig. 1) to tune in the desired station. Tune to the exact frequency to prevent distortion. The pointer in front of the illuminated dial scale indicates the frequency to which the receiver is tuned. (Fig. 2.)

Fig. 2. Front View

CONDENSERS

C- 8	22-170	.1 mfd.	400 volt
C-12	22-182	250 mmfd.	600 volt
C- 9	22-250	.05 mfd.	200 volt
C- 4	22-716	500 mmfd.	600 volt
C-13	22-838	.005 mfd.	600 volt
C-10	22-906	.005 mfd.	200 volt
C-18			
C-19	22-908	.5 mfd.	120 volt
C-11	22-1170	.01 mfd.	600 volt
C-22	22-1076	Dual 250 mmfd.	100 volt
C- 7	22-250	.05 mfd.	200 volt
C- 2	22-1244	.004 mfd.	600 volt
C- 3	22-1376	Detector trimmer	
C- 5	22-1378	Oscillator trimmer	
C-14	22-1387	Dry electrolytic—20 mfd.—25 v. x	
C-15		10 mfd.—300 v. x 20 mfd.—	
C-16		350 volt	
C- 1	22-1420	Antenna trimmer	
C-17	22-1448	.008 mfd.	1600 volt
C- 6	22-1641	350 mmfd.	500 volt

RESISTORS

R- 4	63-942	15M ohm	2 watt insl.
R-12	63-1368	1800 ohm W.W.	2 watt insl.
R-11	63-1372	390 ohm W.W.	1 watt insl.
R- 6	63-1390	1 megohm	¼ watt insl.
R- 5	63-1391	33M ohm	¼ watt insl.
R- 1			
R- 9	63-1392	330M ohm	¼ watt insl.
R-10			
R- 2	63-1395	22M ohm	¼ watt. insl.
R-13			
R-14	63-1399	82 ohm	½ watt insl.
R- 8	63-1400	15 megohm	¼ watt insl.
R- 3	63-1414	100 ohm	¼ watt insl.
R- 7	63-1513	Vol. con. and sw.	

SPEAKER AND GASKET ASSEMBLY

	S13173	Speaker and gasket assem. (comp.)
SP-1	49-576	6" x 9" P.M. speaker
	196-91	Speaker gasket and screen
	208-576	Cone and voice coil assem.

INTERFERENCE ELIMINATION

There should be no interference from the ignition system if the receiver has been installed according to the instructions furnished with it. The interference suppression equipment may be checked for proper installation by referring to the following illustrations:

IMPORTANT: Be sure that good contacts are made between the car frame, or body, and the interference condensers. If necessary, clean away paint or dirt with emery paper. Be sure all nuts and bolts are tightened securely.

The distributor supressor No. 63-1046 and the flexible ground strap No. 83-1335 should be connected as shown in figure 3.

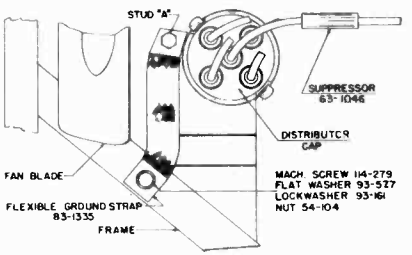


Fig. 3

The fuel gauge condenser No. 22-919 should be installed as shown in figure 4.

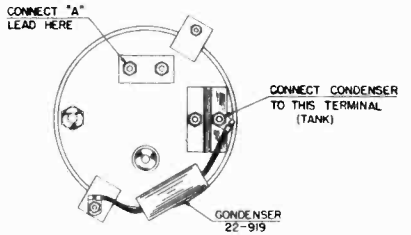


Fig. 4

MISCELLANEOUS

	52-294	Vol. con. cable
	52-397	Speaker cable and plug
	52-417	Battery cable (set to fuse)
	52-418	Battery cable (fuse to ammeter)
	54-184	Set spacer nut (used on 63-1513)
	78-281	Vibrator socket
	78-596	Loktal base tube socket (8 contact)
	78-684	Octal base tube socket (moulded)
	78-749	Speaker plug socket
	78-756	Loktal base tube socket
	78-758	Octal base tube socket
	93-456	Vibrator cushion washer
T-3	95-915	Output transformer
T-4	95-1002	Power transformer
S-1	136-15	10 amp. fuse (3AG)
V-1	190-20	Vibrator
	202-486	Instruction book
	S11391	Ant. con. socket and brkt. assem.

The generator condenser No. 22-920 should be installed as shown below in figure 5.

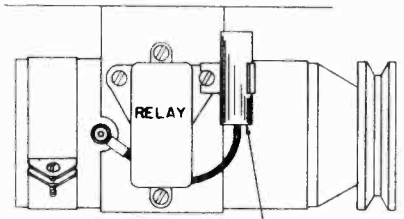


Fig. 5

The motor hood bond spring No. 80-145 should be installed as shown in Figure 6. Note that the sharp extrusions are facing down toward the front of the car before the hood grounding strip is bent back.

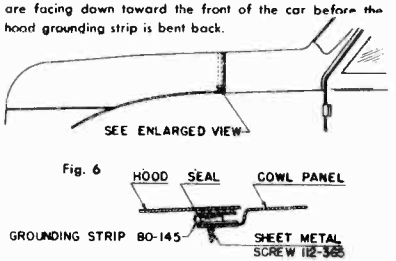


Fig. 6

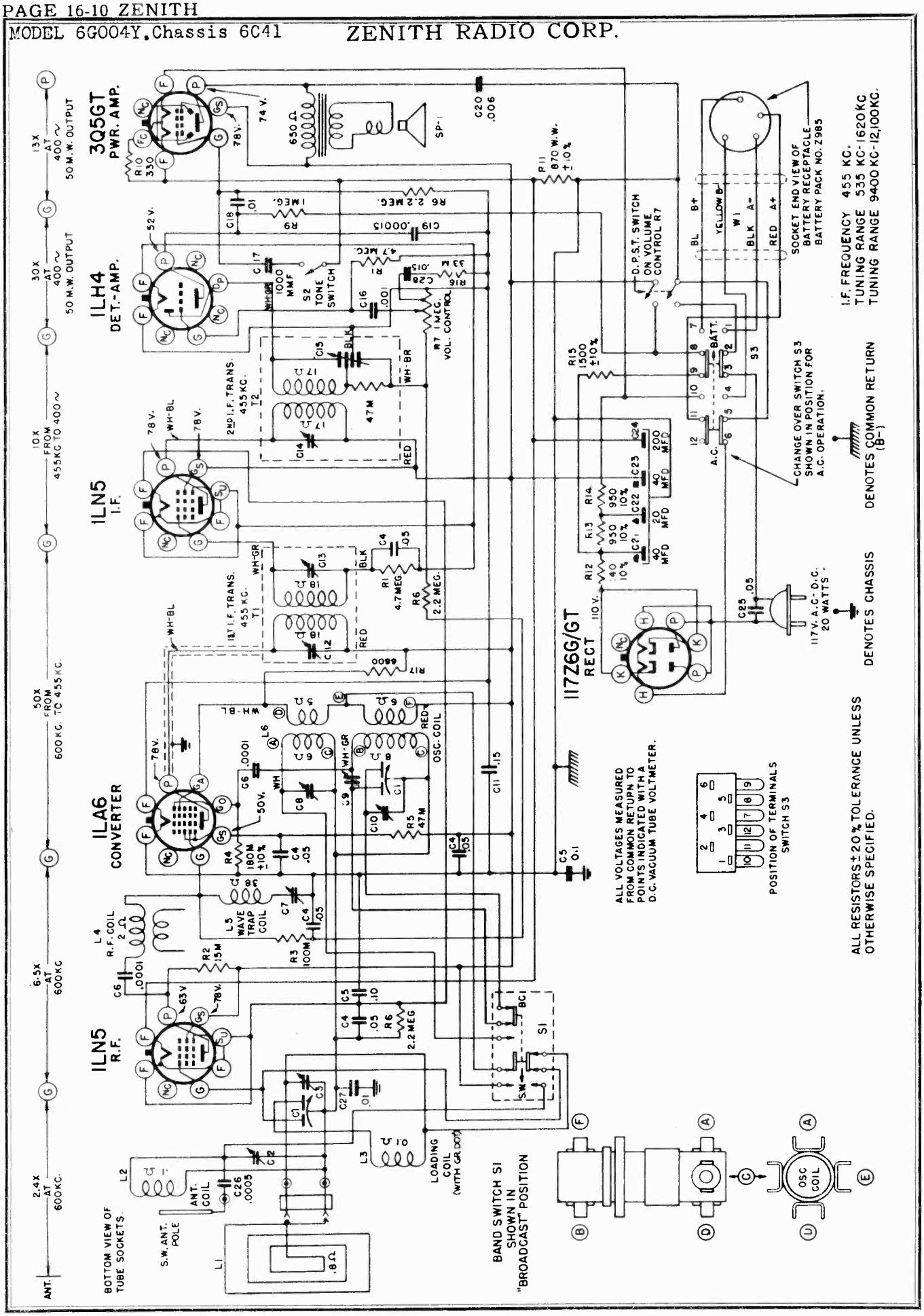
DIAL AND TUNING MECHANISM ASSEMBLY

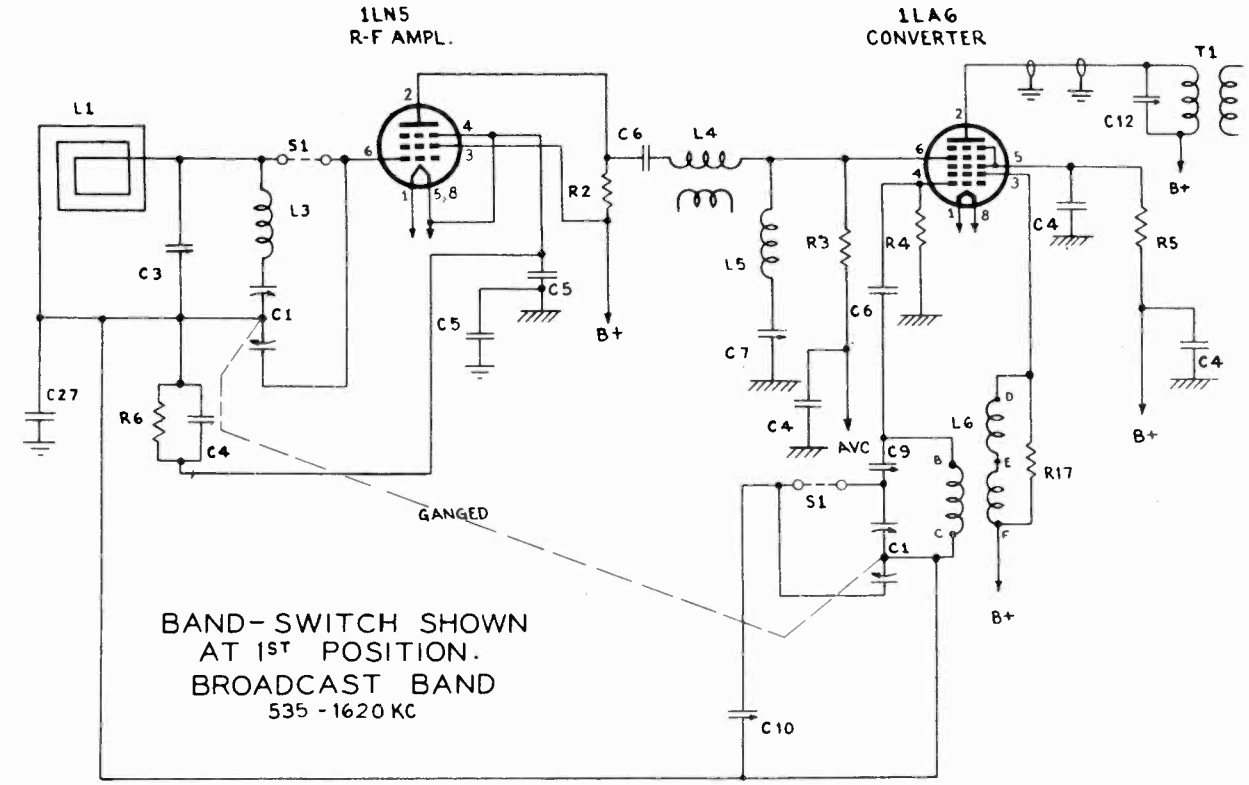
Diagram No.	Part No.	Description
	26-380	Dial scale
	57-1228	Escutcheon
	59-180	Dial pointer
	80-329	Gear indexing spring
	80-331	Cross arm return spring
	80-379	Pointer retainer spring
S-3	100-32	Dial light bulb
	149-44	Adjusting spring and core (3 used)
	188-45	Turret screw lock ring
	S10826	Solenoid end plug and brkt. assem.
	S12439	Pointer mtg. brkt. and stud assem.
	S12440	Pointer drive brkt. and stud assem.
	S12447	Dial light socket and wire assem.
	S12594	Manual tuner assem. (final)
	S13156	Tuning and vol. con. knob assem. (46-639 red)
	S13161	Tuning shaft and gear assem.
	S13162	Mtg. plate and retaining strip assem.
	S13178	Cross arm assem.
	S13238	Turret assem.

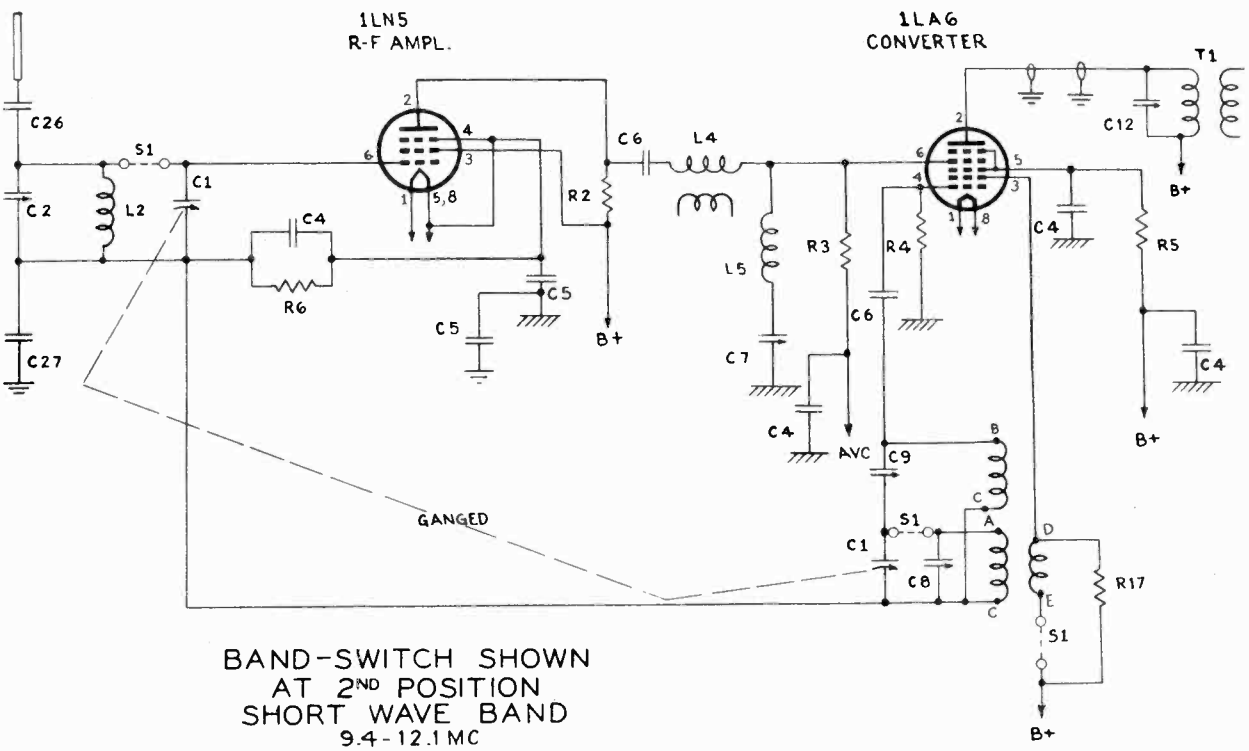
CHOKES AND COILS

L8	20-213	Main hash choke
T1	95-1003	1st I.F. transformer
T2	95-1004	2nd I.F. transformer
L1	S8819	Ant. motor noise choke assem.
	S11040	R. F. coil and shield assem.
L6	S11229	Osc. series coil assem.
L7	S11232	Motor noise choke coil assem.
L4	S12053	Osc. tuning coil assem.
L2		
L3	S12060	R. F. coil tuning assem. (2 used)
L5	S13155	Osc. shunt coil assem.
	S13160	Ant. coil and shield assem.

MODEL 6G004Y, Chassis 6C41 ZENITH RADIO CORP.







PARTS LIST

DIAL ASSEMBLY

12-887	TUNING CONTROL SHAFT BRACKET
26-349	DIAL SCALE
46-518	TUNING & VOLUME CONTROL KNOB (2 USED)
46-573	SWITCH CONTROL KNOB (RED) (2 USED)
59-146	DIAL POINTER
59-167	ON-OFF INDICATOR
76-304	TUNING CONTROL SHAFT
80-209	DIAL CORD TENSION SPRING
80-421	INDICATOR SPRING
188-32	RETAINING RING (76-304)
192-112	DIAL CRYSTAL
S-9534	INDICATOR LEVER & BUSHING ASSEMBLY
S-9653	DIAL CORD & EYELET ASSEMBLY
MS-684	PULLEY & BRACKET ASSEMBLY

COILS AND CHOKES

95-804	1ST I. F. TRANSFORMER (T1)
95-805	2ND I.F. TRANSFORMER (T2)
S-8326	WAVE TRAP COIL ASSEMBLY (L5)
S-11591	ANTENNA LOADING COIL ASSEMBLY (L3)
S-11798	OSCILLATOR COIL ASSEMBLY(L6)
S-11800	PEAKING COIL ASSEMBLY (L4)
S-11801	ANTENNA COIL ASSEMBLY (L2)

CONDENSERS

22-147	500 MMFD. (C26) 600 V.
22-162	.0001 MFD. (C6) 500 V.
22-196	.01 MFD. (C18) 600 V.
22-458	.006 MFD. (C20) 600 V.
22-470	.00015 MFD. (C19) 600 V
22-826	.01 MFD. (C27) 200 V.
22-827	.1 MFD. (C5) 200 V.
22-829	.05 MFD. (C4) 200 V.
22-1017	.05 MFD. (C25) 200 V.
22-1025	.15 MFD. (C11) 200 V.
22-1120	.015 MFD. (C28) 400 V.
22-1388	SINGLE SECTION TRIMMER (WAVE-TRAP) (85 MMFD.) (C7)
22-1427	TWO GANG VARIABLE (C1)
22-1428	TWO SECTION TRIMMER (ANT.) 2-20 MMF. (C2 & C3)
22-1429	THREE SECTION TRIMMER (OSC.) (C8,C9 & C10)
22-1431	.001 MFD. (C16) 600 V.
22-1443	DRY ELECTROLYTIC 40-40-20 MFD.-150 V.-200 MFD. 10 V. (C21,C22,C23 & C24)
22-1444	.001 MFD. 200V (C17)

RESISTORS

63-271	1 MEGOHM (R9) 1/4 WATT
63-418	1500 OHM (R15) 1/2 WATT
63-580	330 OHM (R10) 1/4 WATT
63-590	15000 OHM (R2) 1/4 WATT
63-592	33000 OHM (R16) 1/4 WATT
63-600	2.2 MEGOHM (R6) 1/4 WATT
63-602	4.7 MEGOHM (R1) 1/4 WATT
63-708	6800 OHM (INSULATED) (R17) 1/4 WATT
63-713	47000 OHM (INSULATED) (R5) 1/4 WATT
63-715	100000 OHM (INSULATED) (R3) 1/4 WATT
63-773	180000 OHM (INSULATED) (R9) 1/4 WATT
63-1097	870 OHM W.W (INSULATED) (R11) 1 WATT
63-1362	2 SECTION CANDOHM (OR 63-1365) .3 WATT (R13 & R14)
63-1366	140 OHM ZIPOHM (R12) 2½ WATT
63-1537	VOLUME CONTROL & SWITCH (R7)

MISCELLANEOUS

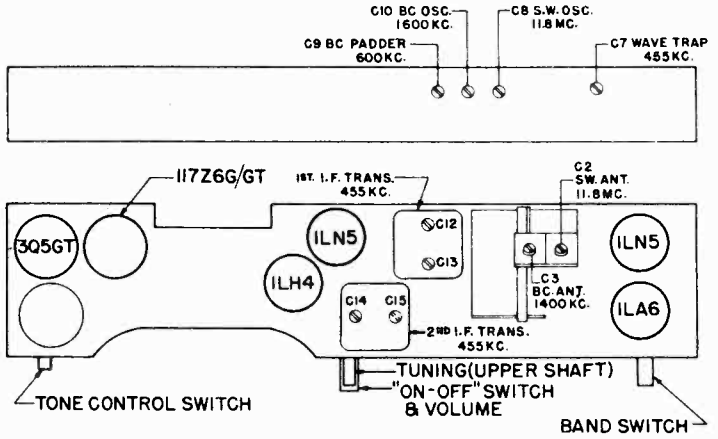
11-70	LINE CORD & PLUG (OR 11-90)
12-1134	TELESCOPIC ANTENNA SUPPORT BRACKET
15-51	PLUG CAP
19-125	ANTENNA MOUNTING CLIP
19-148	ANTENNA MOUNTING CLIP
36-37	CABINET HANDLE & INSERT (36-38)
49-512	5½" P.M. SPEAKER 206-512 OUTPUT TRANSFORMER 208-512 CONE & VOICE COIL
54-211	SPEED NUT (3 USED)
57-1111	FRONT PANEL
57-1121	ESCUTCHEON:
64-98	BRASS EYELET
64-99	BRASS EYELET (ANT. LEAD) (2 USED)
700-111	#5 x 3/8" PHILLIPS R.H. WOOD SCREW (FRONT PANEL MTG.)
78-274	ELECTROLYTIC SOCKET
78-371	LOKTAL BASE TUBE SOCKET
78-401	LOKTAL BASE TUBE SOCKET (OR 78-596 OR 78-729)
78-543	FOUR PRONG FEMALE SOCKET (BATTERY CABLE)
78-611	OCTAL BASE TUBE SOCKET
78-671	OCTAL BASE TUBE SOCKET
83-1401	FELT STRIP (USED ON 46-573)
85-311	POWER CHANGE-OVER SWITCH (244705) (S3)
85-364	BAND SWITCH (S1)
85-368	TONE CONTROL SWITCH (S2)
93-485	COUNTERSUNK WASHER (2 USED) (STATUARY BRONZE) (CHASSIS MTG.)
93-553	BLACK FELT WASHER (2 USED)
110-105	GRILLE CLOTH
112-236	ORNAMENTAL HD. M.SC. (ANT. MTG.) (2 USED)
112-290	CHASSIS MTG. SCREW (2 USED)
112-403	10-24 x 1" WASHER HD. M.S. (HANDLE MTG.) (2 USED)
125-17	RUBBER GROMMET (GANG MTG. & ANT. MTG.)
139-54	BAFFLE BOARD
156-19	FRICTION CATCH (2 USED)
156-20	DOOR LATCH - UPPER HALF
156-21	DOOR LATCH - LOWER HALF
157-7	STRIKE FASTENER (2 USED)
184-7	BALL TIP FOR TELESCOPIC ANTENNA
188-47	HANDLE RING (2 USED)
202-400	INSTRUCTION BOOK
S-11802	ANTENNA TRIMMER BRKT. & PIN JACK ASSEM.
S-11820	TELESCOPIC ANT. ASSEM. (COMPLETE)
S-13719	TONE SWITCH KNOB YOKE & PLATE ASSEM.

WAVEMAGNET PARTS

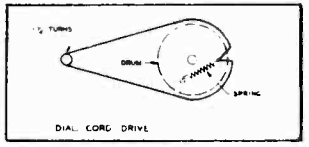
19-134	WAVEMAGNET CABLE CLIP
S-10862	WAVEMAGNET CABLE ASSEMBLY
S-10865	WAVEMAGNET SUCTION CUP ASSEM. (OR S-12528) (2 USED)
S-10867	WAVEMAGNET MTG. STRIP ASSEMBLY (SINGLE SNAP)
S-11928	WAVEMAGNET WINDING & PLATE ASSEMBLY (L1)
S-12382	WAVEMAGNET MTG. STRIP ASSEMBLY (THREE SNAP)

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

3-10-47



TUBE TRIMMER LOCATION



DIAL CABLE DRAWING

TO THE SERVICEMAN: The 6C41 CHASSIS IS A AC,DC OR BATTERY OPERATED SUPERHETERODYNE WITH A STAGE OF RF AMPLIFICATION AND TWO TUNING RANGES. 935 TO 1620KC AND 9.4 TO 12.1 MC. THE CHASSIS IS ISOLATED FROM THE DC CIRCUITS, AND ALL MEASUREMENTS MUST BE MADE FROM A COMMON NEGATIVE POINT. THE MOST CONVENIENT PLACE TO REACH THIS NEGATIVE POINT IS THE TERMINAL STRIP TO WHICH C5 IS CONNECTED. THE DC RESISTANCE FROM CHASSIS TO ANY CIRCUIT MUST BE ALMOST INFINITE. IF ANY CIRCUIT BECOMES GROUNDED A HUM WILL DEVELOP. MICROPHONIC TUBES WILL CAUSE AUDIO HOWL. CHECK 1LA6.

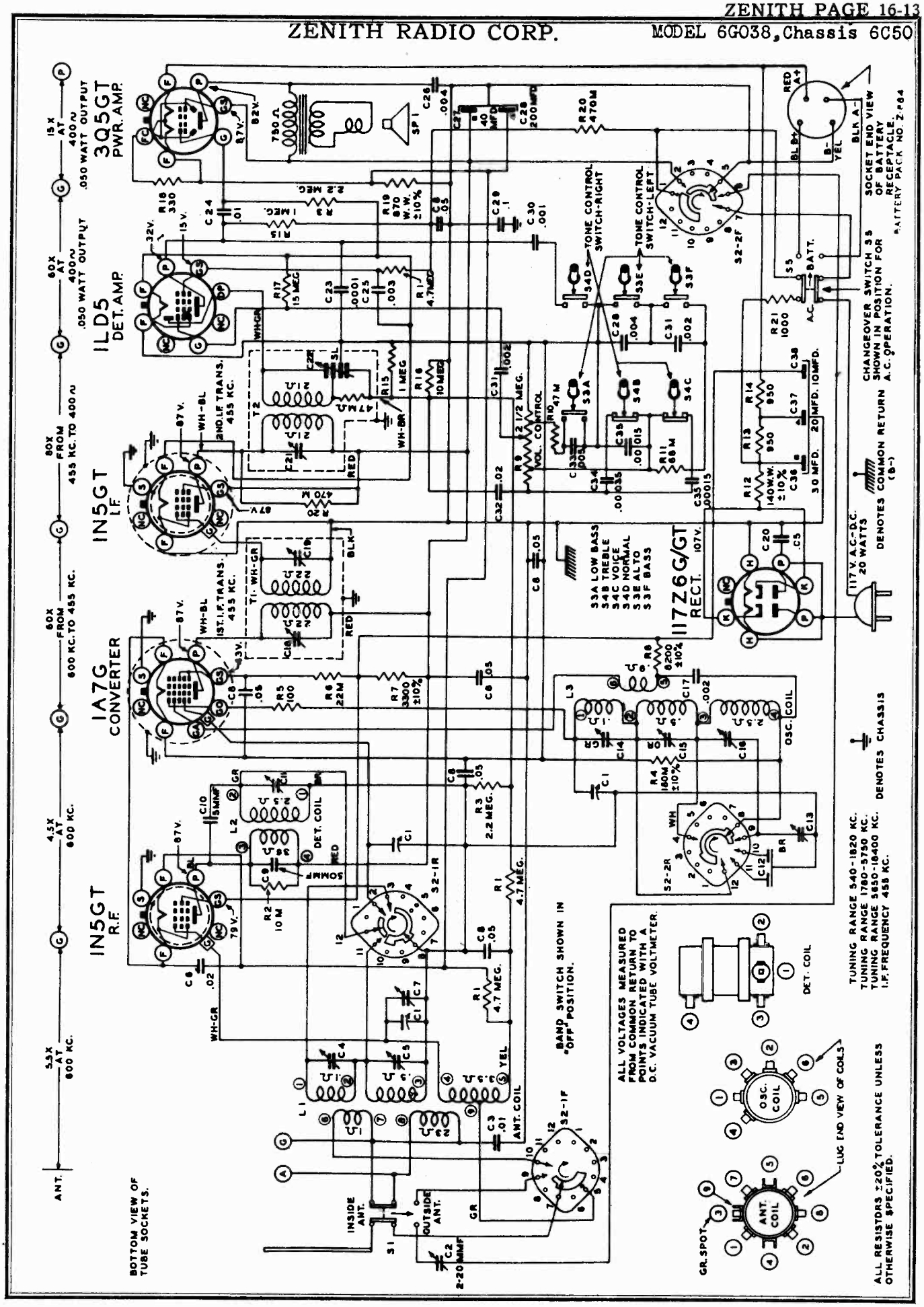
THE WAVEMAGNET IS CONNECTED TO THE CHASSIS THROUGH THE HINGES IN THE CABINET, SNAPS AND FLEXIBLE LEADS. IF THE RF BECOMES WEAK OR DEAD, CHECK THE RESISTANCE OF THE WAVEMAGNET AT TUNING GANG. THE DC RESISTANCE ACROSS THE TWO LEADS SHOULD BE APPROXIMATELY 1 OHM. IF THE CIRCUIT IS OPEN, REMOVE THE TWO SCREWS WHICH HOLD THE HANDLE AND TOP PANEL AND REMOVE THE TOP PANEL. WHEN THE TOP IS REMOVED, THE WAVEMAGNET CONNECTING LEADS WILL BE VISIBLE FOR INSPECTION. ALSO LOOSEN THE SNAP-ON SOCKET AND CHECK FOR SHORTED OR BROKEN LEADS.

IF ALIGNMENT: REMOVE THE CHASSIS FROM THE CABINET AND ARRANGE THE UNITS SO THAT THE WAVEMAGNET CAN BE PLUGGED IN. THROUGH A 1MFD DUMMY ANTENNA, FEED A 455 KC SIGNAL TO THE CONVERTER GRID. CONNECT AN OUTPUT METER ACROSS THE VOICE COIL OF THE SPEAKER (TWO LUGS PROVIDED) AND ADJUST C12,C13,C14 AND C15 FOR MAXIMUM INDICATION ON THE OUTPUT METER. ALWAYS KEEP THE SIGNAL OUTPUT FROM THE GENERATOR JUST HIGH ENOUGH TO GET INDICATION ON THE METER. TOO MUCH SIGNAL WILL CAUSE LOADING AND INACCURATE ALIGNMENT. THE WAVE-TRAP IS ADJUSTED BY COUPLING THE 455KC SIGNAL TO THE WAVEMAGNET THROUGH A ONE TURN LOOP AND ADJUSTING C7 FOR MINIMUM INDICATION ON THE OUTPUT METER.

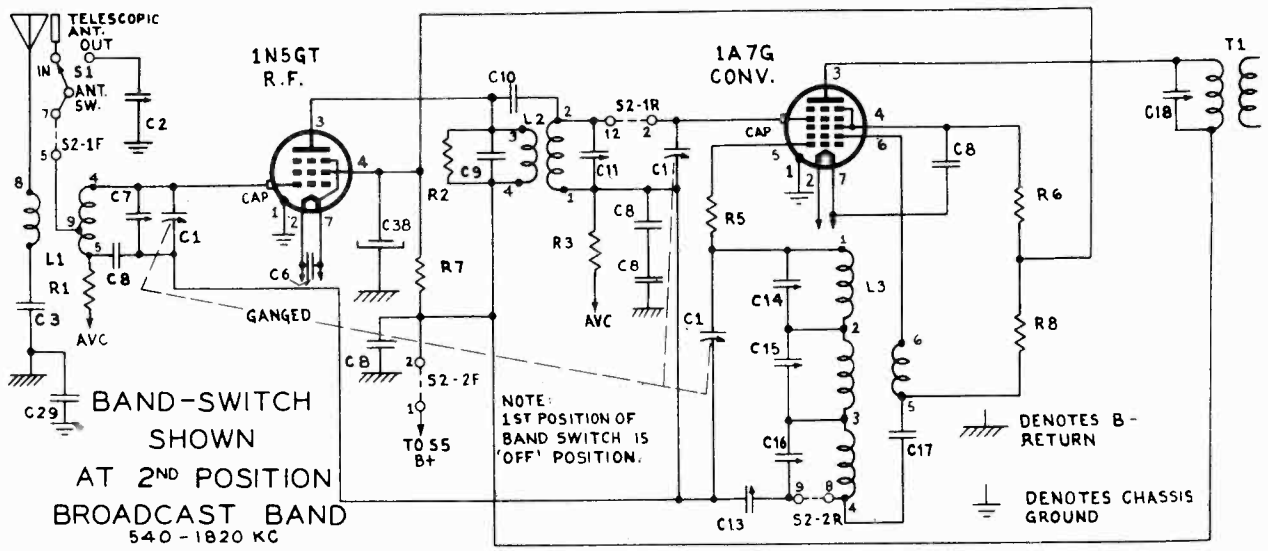
RF ALIGNMENT: SET THE BAND SWITCH TO SHORT WAVE AND THROUGH A SINGLE TURN LOOP LOOSELY COUPLE A 11.8 MC SIGNAL TO THE WAVEROD. C8 AND C2 ARE ADJUSTED TO SCALE AND MAXIMUM OUTPUT. SET THE BAND SWITCH TO STANDARD BROADCAST. SIGNAL GENERATOR TO 1600KC AND LOOSELY COUPLE A ONE TURN LOOP TO THE WAVEMAGNET. C10 IS ADJUSTED TO SCALE. SET SIGNAL GENERATOR AND DIAL SCALE TO 1400 KC AND ADJUST C3 FOR MAXIMUM SIGNAL. SET SIGNAL GENERATOR AND DIAL TO 600 AND WHILE ROCKING THE GANG ADJUST C9 TO MAXIMUM A SLIGHT RE-ADJUSTMENT OF C2 AT 11.8 MC AND C3 AT 1400KC MAY BE NECESSARY AFTER THE CHASSIS IS INSTALLED IN THE CABINET.

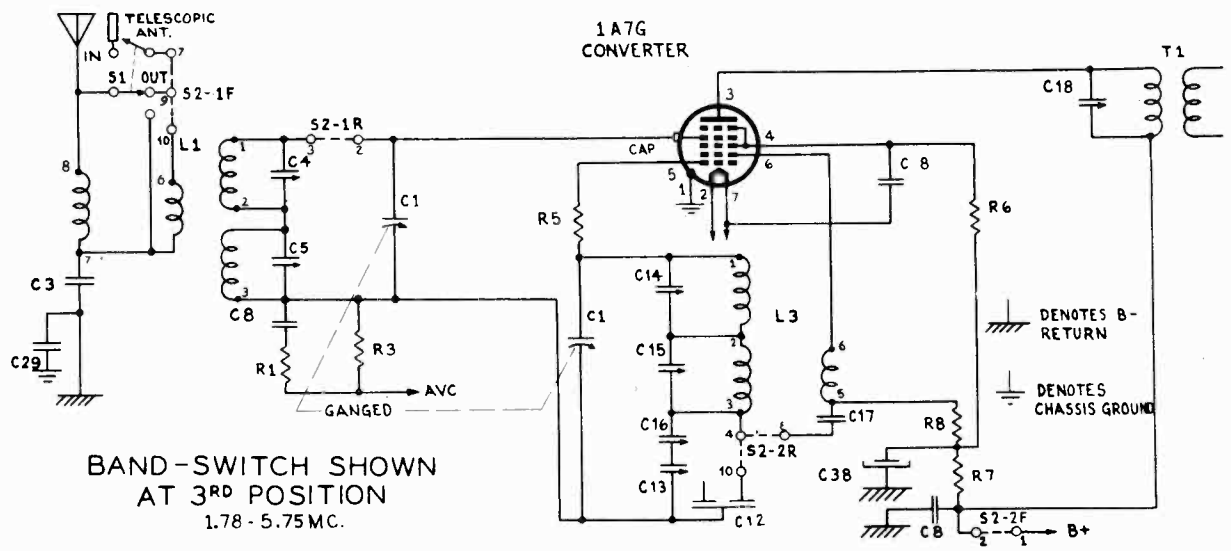
OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIGNAL FREQUENCY	BAND	SET DIAL AT	TRIMMERS	PURPOSE
1	CONVERTER GRID	5 MFD	455 KC	BC	600 KC	C12 C13 C14 C15	ALIGN I.F
2	ONE TURN LOOSELY COUPLED TO WAVEMAGNET		455 KC	BC	600 KC	C7	ADJUST WAVETRAP TO TO MINIMUM
3	ONE TURN LOOSELY COUPLED TO WAVEROD	EXTEND WAVEROD FULL LENGTH	11.8 MC	SW	11.8 MC	C8	SET OSCILLATOR TO SCALE
4			11.8 MC	SW	11.8 MC	C2	ALIGN WAVEROD
5	ONE TURN LOOSELY COUPLED TO WAVEMAGNET		1600 KC	BC	1600 KC	C10	SET OSCILLATOR TO SCALE
6			1400 KC	BC	1400 KC	C3	ALIGN WAVEMAGNET
7			600 KC	BC	ROCK GANG AT 600 KC	C9	ADJUST PADDER

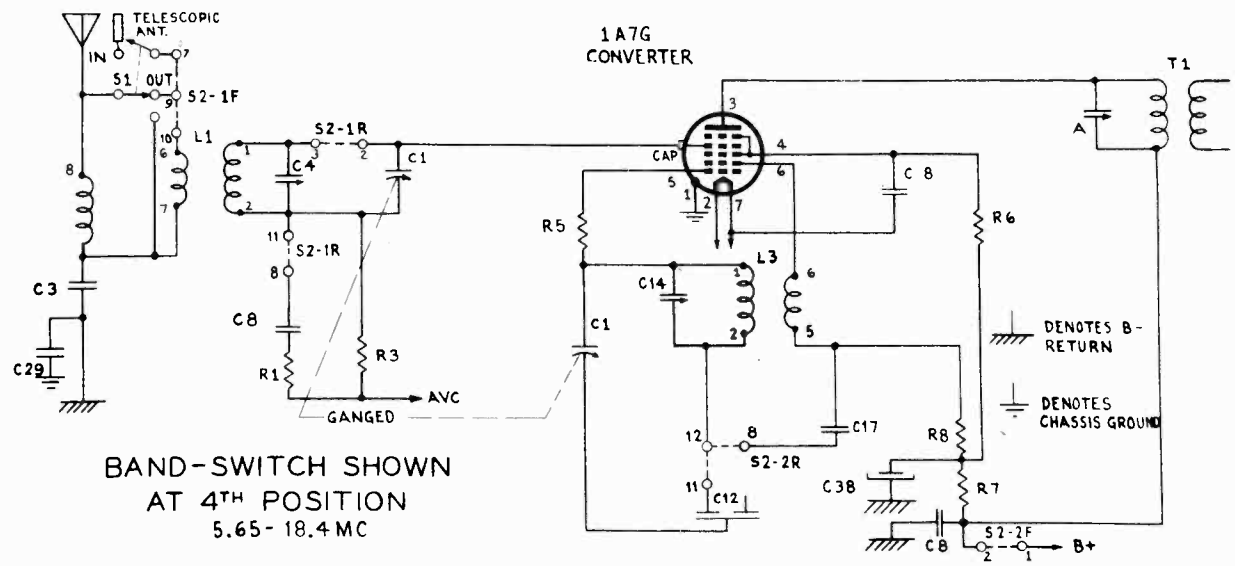
ZENITH RADIO CORP. MODEL 6G038, Chassis 6C50



ZENITH RADIO CORP.



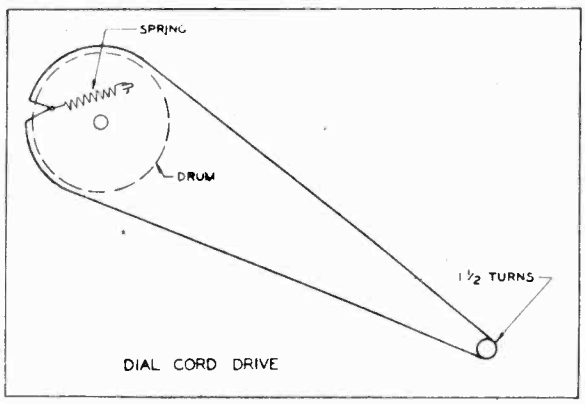




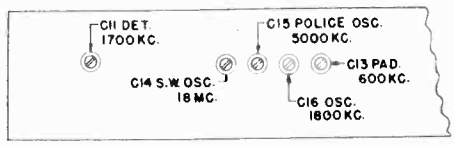
ZENITH RADIO CORP. MODEL 6G038

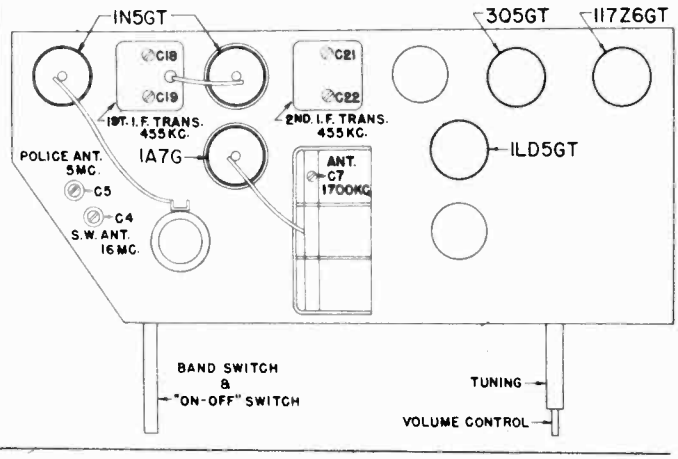
ALIGNMENT PROCEDURE

OPERATION	CONNECT OSCILLATOR TO	DUMMY ANTENNA	INPUT SIG. FREQUENCY	SET DIAL AT	TRIMMERS	PURPOSE
1	Converter grid	.5 mfd	455 Kc	600 Kc	C18,C19,C21,C22	Align I.F.
2	One turn		18 Mc	18 Mc	C14	Adjust oscillator to scale
3			16 Mc	16 Mc	C4	Adjust for max.
4	Loosely		5 Mc	5 Mc	C15	Adjust oscillator to scale
5	Coupled		5 Mc	5 Mc	C5	Adjust for max.
6	To		1800 Kc	1800 Kc	C16	Adjust oscillator to scale
7	Waverod		1700 Kc	1700 Kc	C11 & C7	Adjust for max.
8			600 Kc	600 Kc	C13	Rock gang and adjust for max.



DIAL CABLE DRAWING





TUBE TRIMMER LOCATION

PARTS LIST

PART NO.	REF. NO.	DESCRIPTION			PRICE
		DIAL ASSEMBLY			
59-121		Dial pointer			.19
76-305		Tuning Control shaft			.12
80-69		Dial Cord Tension Spring			.02
80-227		Tuning Shaft Tension Spring			.02
93-482		Black Bakelite Washer (used with 59-121)			.72C
188-27		Retaining Ring (76-305)			1.20C
S-9643		Dial Scale & Inaicator Assembly (26-293)			1.20
S-9758		Dial Cord Assembly			.07
MS-586		Pulley & Pracket Assembly			.12
		COILS & CHOKES			
95-821	T1	1st I.F. Transformer			1.77
95-822	T2	2nd I.F. Transformer			1.77
S-9689	L3	Oscillator Coil & Wire Assembly			1.28
S-9690	L2	Detector Coil Assembly			1.04
S-11815	L1	Antenna Coil Assembly			1.65
		CONDENSERS			
22-162	C23	.0001 Mfd.	500 Volt		.20
22-196	C24	.01 Mfd.	600 Volt		.20
22-229	C33	.005 Mfd.	600 Volt		.20
22-289	C9	50 Mmfd.	500 Volt		.20
22-303	C10	5 Mmfd.	500 Volt		.20
22-326	C25	.003 Mfd.	400 Volt		.20
22-327	C6	.02 Mfd.	200 Volt		.20
22-358	C17	.002 Mfd.	600 Volt		.38
22-448	C26	.004 Mfd.	600 Volt		.20
22-470	C35	.00015 Mfd.	600 Volt		.20
22-492	C30	.002 Mfd.	600 Volt		.20
22-827	C29	.1 Mfd.	200 Volt		.23
22-829	C8	.05 Mfd.	200 Volt		.20
22-830	C32	.02 Mfd.	600 Volt		.20
22-867	C31	.001 Mfd.	600 Volt		.20
22-930	C12	Dual unit padder			.83
22-954	C34	.00035 Mfd.	600 Volt		.16
22-1017	C20	.05 Mfd.	400 Volt		.20
22-1047	C36,37,38	10-20-30 Mfd. Dry Electrolytic	150 Volt		1.63
22-1144	C13,14,15,16	Four Section Ceramic Trimmer			.83
22-1183	C3	.01 Mfd.	400 Volt		.20
22-1217	C1	Three Gang Variable			4.48
22-1230	C4,C5	Two Section Ceramic Trimmer			.38
22-1234	C27,28	200 Mfd. - 10 V. x 40 Mfd. 150 V. Dry Electrolytic			1.92
22-1421	C2,C11	Trimmer Capacitor			.40
		RESISTORS			
63-271	R15	1 Megohm	1/4 Watt		.09
63-577	R5	100 Ohms	1/4 Watt		.09
63-580	R18	330 Ohms	1/4 Watt		.09
63-589	R2	10,000 Ohms	1/4 Watt		.09
63-591	R6	22,000 Ohms	1/4 Watt		.09
63-593	R10	47,000 Ohms	1/4 Watt		.09
63-594	R11	68,000 Ohms	1/4 Watt		.09
63-597	R20	470,000 Ohms	1/4 Watt		.09
63-600	R3	2.2 Megohms	1/4 watt		.09
63-602	R1	4.7 Megohms	1/4 Watt		.09
63-604	R16	10 Megohms	1/4 Watt		.09
63-605	R21	1000 Ohms	1/2 Watt		.10
63-635	R7	3300 Ohms	1/4 Watt		.09
63-640	R8	8200 Ohms	1/4 Watt		.09
63-654	R4	180,000 Ohms	1/4 Watt		.09
63-976	R17	15 Megohms	1/4 Watt		.09
63-1097	R19	820 Ohms **	Insul. 1 Watt		.24
63-1244	R9	Volume Control			1.20
63-1259	R13,14	Cannohm (2 section)			.43
63-1366	R12	140 Ohm Zipohm **	2-1/2 Watt		.24

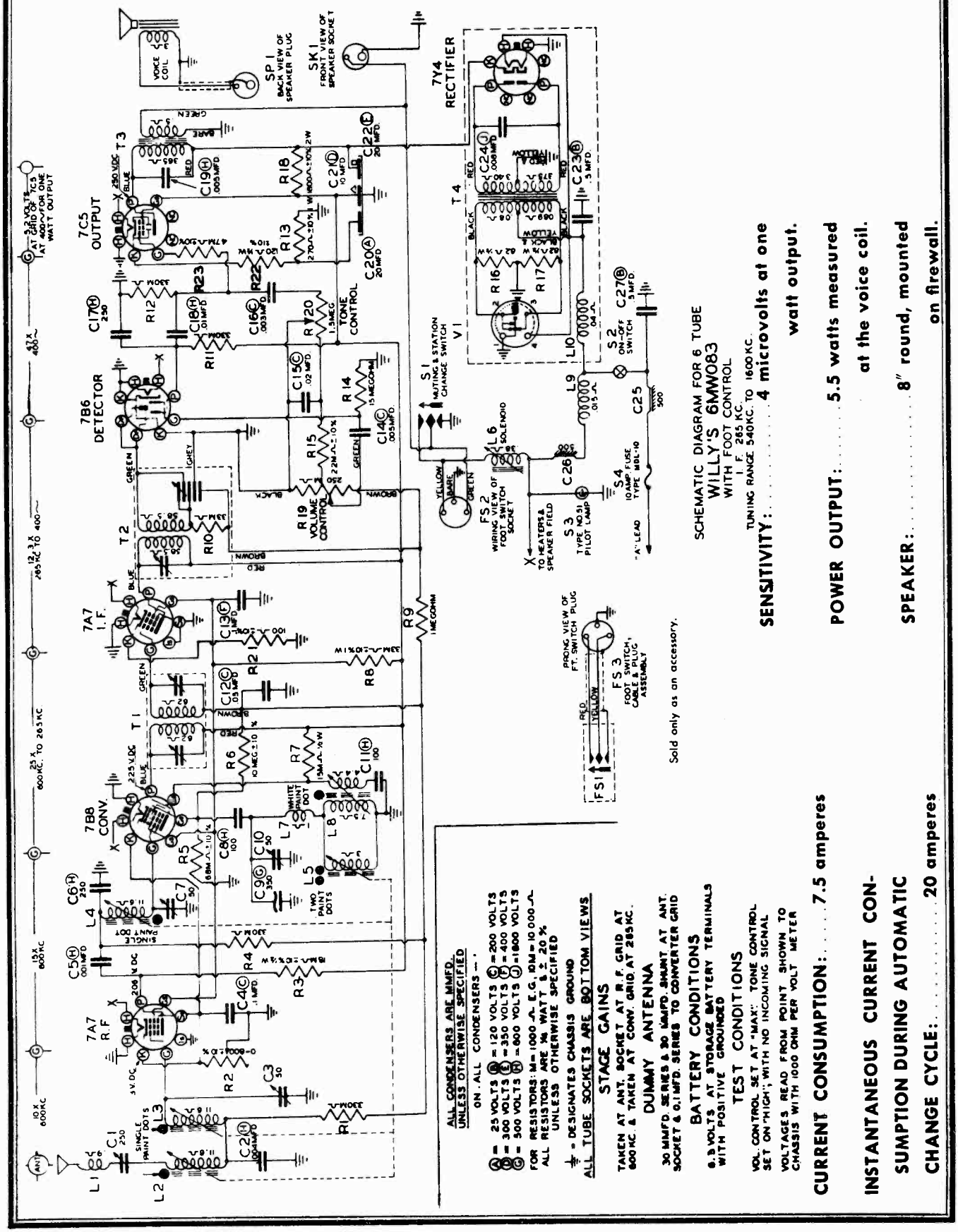
TUBE TRIMMER LOCATION

PART NO.	REF. NO.	DESCRIPTION	PRICE
		RADIO ESCUTCHEON PARTS	
S-9995		Radiorgan Escutcheon & Knob Assem. L.H. (Complete)	1.20
S-9996		Radiorgan Escutcheon & Knob Assem. R.H. (Complete)	1.20
MS-660		Pracket Assembly	.25
S-9590		Knob & Eyelet Assem. (3 used on L.H., 1 on R.H.	.12
S-9591		Knob & Eyelet Assembly (2 used on R.H. only)	.12
57-911		Tenite Escutcheon (Black) (1 used on L.H. only)	.36
57-912		Tenite Escutcheon (Black) (1 used on R.H. only)	.36
76-337		Latch Shaft	.03
76-338		Knob Shaft	.04
80-264		Latch Spring	.72C
114-159		#8 x 1/4" Hex Hd. Self Tapping Screw (2 used)	.72C
156-10		Latch	.36C
		MISCELLANEOUS	
11-68		Line Cord & Plug (8 ft. long)	.65
12-782		Volume Control Mounting Bracket	.05
12-787		Tuning Sleeve Support Bracket	.04
12-1082		Antenna Rod Mounting Bracket	.06
15-34		Socket Cap (or 15-67) (Battery Cable)	.07
17-67		Antenna Rod Retaining Clamp	.08
19-77		Cable Retaining Clamp	.01
46-579		Band Selector Switch Knob	.20
49-464	SP1	8" P.M. Speaker	10.52
		206-464 Output Transformer	1.97
		208-464 Cone & Voice Coil	2.63
57-11A		Antenna Lead Marker	.03
57-11G		Ground Lead Marker	.03
57-905		Dial Escutcheon (or 57-1112) (Part of S-9580 or S-11777)	2.41
57-1103		Antenna Knob Escutcheon	.70
70-124		#2 x 3/8" Oval Hd. Wood Scree (Ant. Esc. Mtg.)	1.70C
72-58		#2 x 3/8" Flat Hd. Wood Scree (Dial Esc. Mtg.)	.02
78-190		Speaker Plug Socket	.12
78-229		Electrolytic Capacitor Socket	.03
78-396		Four Contact Socket (Battery Cable)	.12
78-446		Loktal Base Tube Socket (7 contact)	.19
78-611		Octal Base Tube Socket (8 contact)	.12
78-671		Octal Base Tube Socket	.12
85-171	S5	Power Switch	.31
85-303	S1	Antenna Switch	.35
85-366	S2	Band Selector Switch	2.00
93-215		Rubber Washer (Chassis Mtg.)	.07
112-56		#6 x 1/4" Hex Hd. Self Tapping Screw (Radiogran Switch Mtg.)	.55C
114-40		#10-32 x 7/8" Hex Washer Hd. W.S.Steel (Chassis Mtg.) (3 used)	72C
114-128		#10 x 1-1/16" Hex Washer Hd Self Tapping Scree (Chassis Mtg.) (1 used)	1.81C
125-17		Rubber Grommet	.03
126-379		Tube Shield (for GT type)	.07
126-382		Tube Shield	.08
192-68		Dial Escutcheon Glass (Part of S-11777 or S-9580)	.43
196-47		Dial Escutcheon Gasket(" " " " ")	.19
202-398		Instruction Book	.25
S-8540		Dummy Knob & Set Scree Assembly (46-350)	.24
S-9580		Dial Escutcheon Assembly (or S-11777)	3.01
S-9595	S3,4	Radiorgan Strip & Contact Assembly (2 used)	.31
S-9816		Tuning Control Knob & Set Screw Assembly	.30
S-11251		Telescopic Antenna Assembly	7.85
S-11899		Volume Control Knob Assembly (46-578)	.26

MODEL 6MW083, Chassis 6C83

Willy's

ZENITH RADIO CORP.



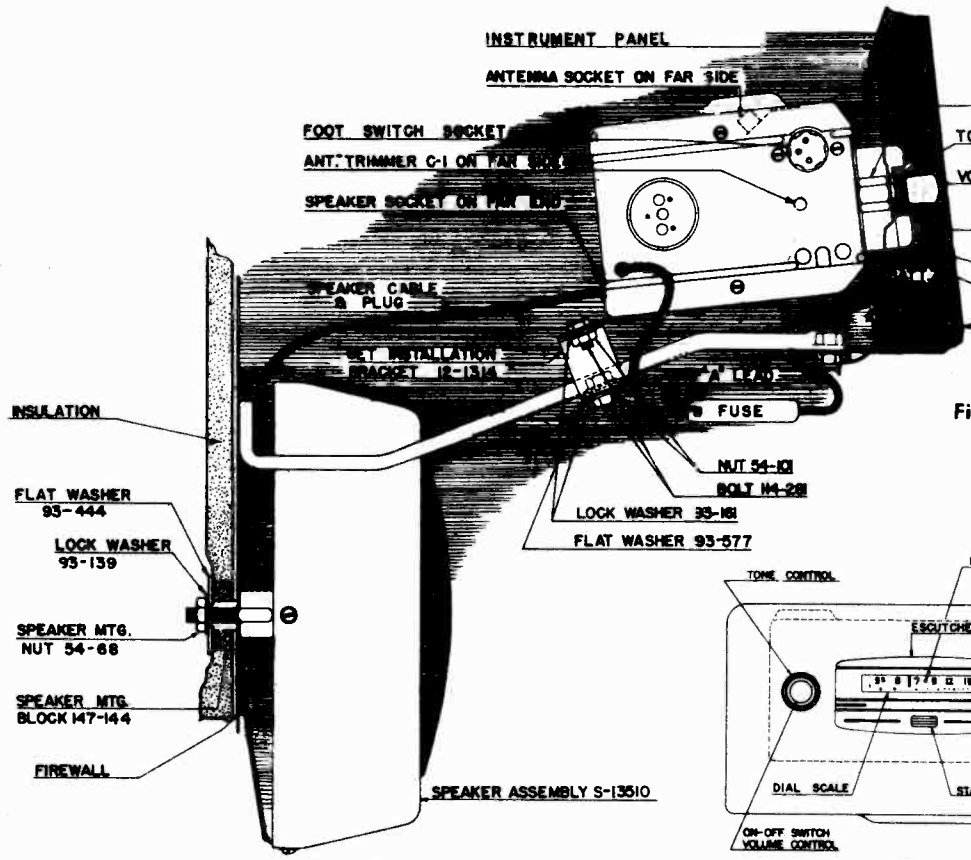


Fig. 1. Installation

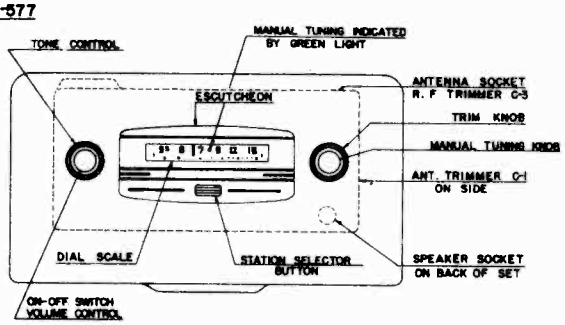


Fig. 2. Front View

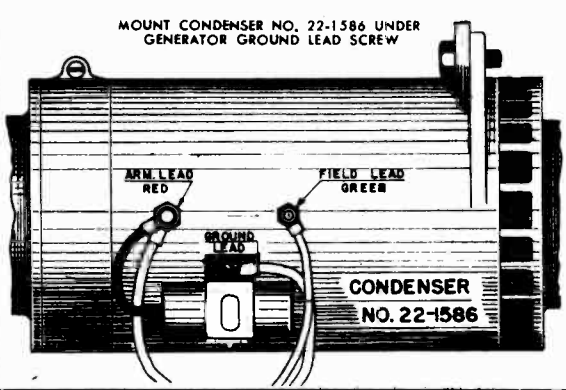
RECEIVER INSTALLATION

Figures 1 and 2, illustrating the installed receiver, the escutcheon plate, and the control knobs, are given here to facilitate removal and reinstallation of this receiver when service or repair is necessary.

To take the receiver from the car, remove the control knobs and mounting nuts from the front panel, and remove the set installation Bracket No. 12-1314 from the rear set mounting bracket.

MANUAL TUNING

1. Press the Station Selector push button (Fig. 2) several times or until the green dot in the dial scale is illuminated.
2. Pull the Manual Tuning control knob (right hand) outward and turn to tune in desired station. Be sure to tune to exact frequency to assure the best tone quality.

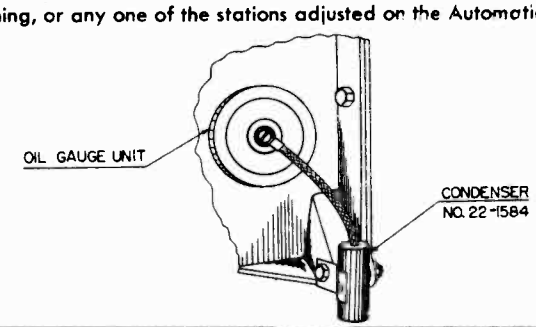


AUTOMATIC TUNING

There are five automatic tuning positions which may be adjusted to five desired stations. If these positions have not been previously adjusted proceed as follows:

1. Press the station selector push button repeatedly until the green dot in the dial scale is illuminated.
2. Press the button once more to move the mechanism to the No. 1 Position.
3. Pull manual tuning knob outward to engage the automatic mechanism.
4. Select the station desired and tune to its frequency by turning the tuning knob. Tune very carefully for clearest reception.
5. Press the station selector push button, pull the manual tuning knob outward, and tune in the station desired far No. 2 position. Use same procedure for positions No. 3, 4 and 5.

When the five automatic positions have been adjusted to the five desired stations as instructed, it is only necessary to press the station selector push button to return to dial tuning, or any one of the stations adjusted on the Automatic.



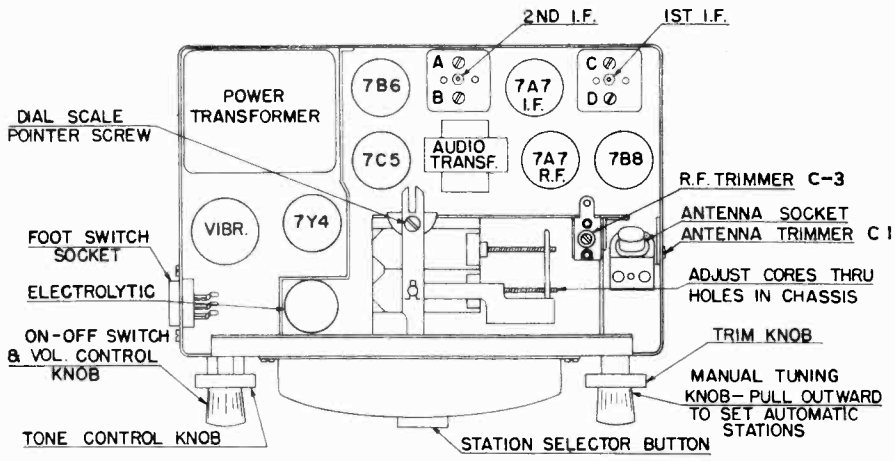


Fig. 7. Top View of Chassis

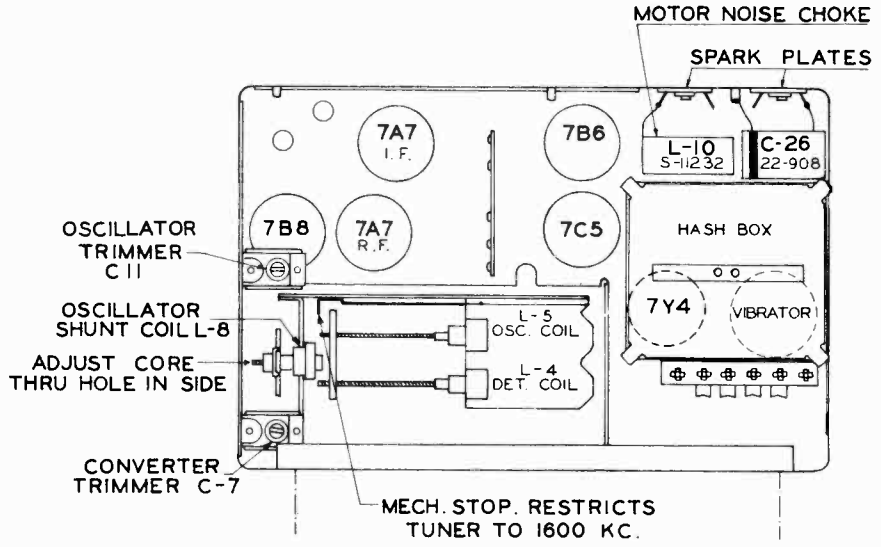


Fig. 8. Bottom View of Chassis

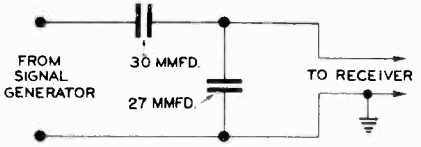


Fig. 9. Dummy Antenna

Fig. 9 shows the schematic of a recommended dummy antenna, closely resembling actual antenna capacity, to be used in series with signal generator leads when aligning the R.F. section of the receiver.

ALIGNMENT

Maximum performance depends on accurate alignment of the receiver; therefore follow these instructions carefully.

CAUTION: Make all alignment adjustments to the receiver with the volume control set at maximum, and the tone control in the treble position. Reduce the signal intensity as much as possible at the signal generator. Connect the output meter across the voice coil.

I.F. ALIGNMENT PROCEDURE

1—Remove top and bottom covers from receiver.

2—Set signal generator to 265 Kc.

3—Apply signal from generator through a .1 Mfd. dummy to 7B8 coverter grid. (Pin No. 6 on socket.)

4—Adjust I.F. trimmers, A, B, C and D (Fig. 7) in the order named for maximum output. Repeat the operation to assure accurate alignment.

R.F. AND OSCILLATOR ALIGNMENT

1—Connect signal generator leads through dummy, illustrated in Fig. 9, to antenna lead in socket on receiver.

2—Set signal generator to 535 Kc.

3—Place set in manual tuning position and set dial to 535 Kc.

4—Adjust oscillator trimmer C-11 (Fig. 8) for maximum response.

5—Set signal generator to 1200 Kc.

6—Tune set to 1200 Kc.

7—Adjust converter trimmer C-7 (Fig. 8) and R.F. trimmer C-3 (Fig. 7) for maximum response.

8—If dial calibration is off after making above adjustments, a correction can be made by turning the slotted brass screw at the rear of the pointer bracket.

CORE OR COIL REPLACEMENT ONLY

WARNING: The following adjustments are to be made ONLY if a core or coil is replaced.

1—Replace coil or core.

2—Set signal generator to 1700 Kc.

3—Connect signal generator leads through dummy, illustrated in Figure 9, to antenna receptacle on the receiver.

4—Set receiver dial to 1600 Kc. (maximum high frequency end of dial.)

5—Screw the core completely out of the antenna coil, the R.F. coil, the converter coil, and the oscillator coil.

6—Adjust oscillator trimmer C-11 (Fig. 8) at 1700 Kc.

7—Adjust converter trimmer C-7, R.F. trimmer C-3, and antenna trimmer C-1 (Fig. 7 and 8) for maximum output reading.

8—Replace cores to their approximate original position.

9—Set generator dial and receiver dial to 1200 Kc.

10—Adjust oscillator core L-5 (Fig. 8) to scale at 1200 Kc.

11—Adjust the antenna core, R.F. core, and converter core (Fig. 7 and 8) for maximum output reading.

12—Set signal generator to 600 Kc.

13—"Rock in" shunt oscillator coil L-8 (Fig. 8) for maximum output reading. This should be done only as a last resort. This is the same as rocking in the padder condenser on a ganged condenser receiver.

14—Check receiver at 1200 Kc. for calibration and gain. If the receiver is off scale or weak, repeat operations 9, 10 and 11.

15—After alignment is complete, the maximum high frequency tuning range should be checked. If the range is greater or less than 1605 Kc., the mechanical stop for the tuner cross arm should be bent to limit the frequency coverage to 1605 Kc.

After all adjustments have been made, glue core screws with speaker cement.

IMPORTANT: After reinstalling the receiver in the car, allow it to operate for approximately 15 minutes to reach normal operating temperature. Extend antenna to maximum. Check the antenna trimmer alignment on a weak station near 1200 Kc.

PARTS LIST MODEL 6MW083 (CHASSIS 6C83)

1946 WILLYS OVERLAND LONG DISTANCE RADIO

COILS AND CHOKES

Diagram No.	Part No.	Description
L 9	20-213	Main Hash Choke
T 1	95-916	1st I.F. Transformer
T 2	95-942	2nd I.F. Transformer
L 1	S8819	Ant. Motor Noise Choke Assem.
L 2	S11040	Ant. & R.F. Coil Assem.
L 3		(Right Hand)
L 4	S11041	Osc. & Converter Coil Assem.
L 5		(Left Hand)
L 7	S11229	Osc. Series Coil Assem.
L 8	S11231	Osc. Shunt Coil Assem.
L10	S11232	Motor Noise Choke Coil Assem.

CONDENSERS

C 8			
C11	22-162	100 Mmfd.	600 V.
C13	22-170	.1 Mfd.	400 V.
C17	22-182	250 Mmfd.	600 V.
C 4	22-190	.1 Mfd.	200 V.
C12	22-250	.05 Mfd.	200 V.
C19	22-838	.005 Mfd.	600 V.
C14	22-906	.005 Mfd.	200 V.
C23			
C27	22-908	.5 Mfd.	120 V.
C 6	22-1136	250 Mmfd.	600 V.
C 5	22-1169	.001 Mfd.	600 V.
C18	22-1170	.01 Mfd.	600 V.
C16	22-1180	.003 Mfd.	600 V.
C 2	22-1244	.004 Mfd.	600 V.
C15	22-1270	.02 Mfd.	200 V.
C 3	22-1376	R.F. Trimmer	
C 7	22-1377	Det. Trimmer	
C10	22-1378	Osc. Trimmer	
C20			
C21	22-1387	Dry Electrolytic—20 Mfd. 25 V. x 10 Mfd.—300 V. x 20 Mfd. 350 V.	
C22			
C 1	22-1420	Ant. Trimmer	
C24	22-1448	.008 Mfd.	1600 V.
C 9	22-1478	350 Mmfd. Compensator	
	22-1553*	Dry Electrolytic—20 Mfd.—25 V.	
	22-1554*	Dry Electrolytic—10 Mfd.—300 V. x 20 Mfd.—350 V.	
C25	27-87	Spark Plate	
C26	27-87	Spark Plate	

*Note: It is necessary to use one each 22-1553 and 22-1554 to replace one 22-1387.

RESISTORS

R 2	63-1267	Sensitivity Control (Sub. for 63-1379)	
R18	63-1368	1800 Ohm, 2 Watt Insl. W.W.	
R13	63-1369	270 Ohm, 1 Watt Insl. W.W.	
R 2	63-1379	Sensitivity Control	
R 9	63-1390	1 Megohm	¼ Watt.
R 1			
R 4			
R11	63-1392	330M Ohm	¼ Watt.
R12			
R15	63-1395	22M Ohm	¼ Watt.
R 5	63-1396	68M Ohm	¼ Watt.
R 8	63-1398	33M Ohm	1 Watt.
R16			
R17	63-1399	82 Ohm	½ Watt.
R14	63-1400	15 Megohm	¼ Watt.
R 7	63-1401	15M Ohm	½ Watt.
R22	63-1410	120 Ohm	½ Watt.
R 3	63-1411	18M Ohm	½ Watt.
R 6	63-1413	10 Megohm	¼ Watt.
R21	63-1414	100 Ohm	¼ Watt.
R23	63-1417	47M Ohm	¼ Watt.
R19			
R20	63-1508	Tone Con., Vol. Con. & Switch	

MISCELLANEOUS

	19-114	Foot Sw. Cable Retaining Clip
	46-624	Selector Sw. Knob
	52-294	Vol. Con. Cable
	52-398	Battery Cable (Set to Fuse)
	52-399	Battery Cable (Fuse to Ammeter)
	57-1173	Escutcheon
	78-281	Vibrator Socket (or 78-732-733)
	78-596	Loktal Tube Socket (or 78-717-726-729-730)
FS 2	78-646	Foot Sw. Cable Socket (or 78-406)
SK 1	78-728	Speaker Cable Socket
	80-232	Vol. Con. Knob Retaining Spring
	80-454	Selector Knob Spring
T 4	95-914	Power Transformer (Alt. for 95-1013)
T 3	95-915	Output Transformer
T 4	95-1013	Power Transformer
	112-310	Foot Sw. Mtg. Screw
S 4	136-14	Fuse—10 Amp.—Type MDL—10
V 1	190-20	Vibrator
	202-430	Instruction Book
FS 3	S12042	Foot Sw., Cable & Plug Assem.
FS 1	S-9458	Foot Switch & Plate Assembly

*Note: Not used in production. Sold only as an accessory.

DIAL AND TUNING MECHANISM ASSEMBLY

	26-385	Dial Scale
	34-132	Indexing Disc
	34-138	Tuning Gear
	34-158	Ratchet Gear
	56-174	Indicator Pin
	57-1077	Protector Plate
	59-180	Dial Pointer
	76-378	Guide Rod
	80-329	Gear Indexing Spring

DIAL AND TUNING MECHANISM ASSEMBLY (Continued)

Diagram No.	Part No.	Description
	80-331	Cross Arm Return Spring
	80-332	Cam Lever Spring
	80-336	Ratchet Gear Return Spring
	80-340	Lever Spring
	80-341	Kick-off Spring
	80-342	Tuning Shaft Spring
	80-379	Pointer Retainer Spring
	80-445	Flag Spring
	83-1030	Return Spring Retainer Strip
	83-1039	Solenoid Insulating Strip
	86-30	#6 Shakeproof Terminal
	93-125	#6 Internal Shakeproof Lockwasher
	93-501	#4 Internal Shakeproof Lockwasher
	93-631	Retainer Washer
	93-650	Brass Washer (.010 x 3/16 x 7/16)
	93-706	Neoprene Washer (.020 x 7/16 x 3/4)
	93-822	Brass Washer (.008 x .125 x 7/32)
	93-849	Shim Washer
	94-438	Spacing Bushing
	97-193	Lever Stud
	97-236	Flag Stud
S3	100-32	Dial Light Bulb
	114-63	#6-32 x 3/16 Hex Acorn Hd. M.S.
	114-69	#4-40 x 1/4 Hex Acorn Hd. M.S.
	114-150	#6-32 x 5/32 Hex Acorn Hd. M.S.
	117-83	Tuning Shaft Locking Lever
	128-26	Dial Indicator Cam
	147-126	Gear & Disc Spacer
	149-44	Adjusting Spring & Core
	S10826	Solenoid End Plug & Bracket Assem.
	S10829	Solenoid & Terminal Assem.
	S10381	Ratcher & Bracket Assem.
	S10836	Cross Arm Assem.
	S11056	Tuning Shaft & Gear Assem.
	S11076	Push-Pull Tuner Assem. (complete)
	S11082	Turret Assem.
S1	S11271	Solenoid Sw. Assem. (Hand Selector & Muting)
	S11391	Antenna Connector Socket & Bracket Assembly
	S12438	Mounting Plate & Lever Assem.
	S12439	Pointer Mounting Bracket & Stud Assem.
	S12440	Pointer Drive Bracket & Stud Assem.
	S12447	Dial Light Socket & Wire Assem.
	S12909	Indicator Flag & Bracket Assem. (59-186)
	S12911	Front Plate & Bushing Assem.

SET INSTALLATION AND SUPPRESSION KIT

Diagram Part No.		Description
	S13597	Set Installation & Suppression Kit (complete)
	12-1314	Set Installation Bracket
	22-1584	Oil Gauge Cond. (.5 Mfd.—200 V.)
	22-1585	Temp. Gauge Cond. (.5Mfd.—200 V.)
	22-1586	Generator Cond. (1 Mfd.—200 V.)
	54-68	5/16 x 9/16 x 7/32 Hex Nut
	54-104	1/4-20 x 1/2 x 3/16 Hex Nut
	54-153	7/16-28 x 19/32 x .120 Hex Nut
	63-1512	Distributor Suppressor
	80-145	Motor Hood Bond Spring
	93-139	5/16 External Shakeproof Lockwasher
	93-161	1/4 External Shakeproof Lockwasher
	93-444	1/16 x 3/8 x 1 3/4 Steel Washer
	93-577	.062 x 17/64 x 3/4 Steel Washer
	112-365	#8 x 1/2 B.H. Sheet Metal Screw
	114-281	1/4-20 x 5/8 Hex Hd. M.S.
	147-144	Specker Mounting Spacer
	188-41	Spacer Ring

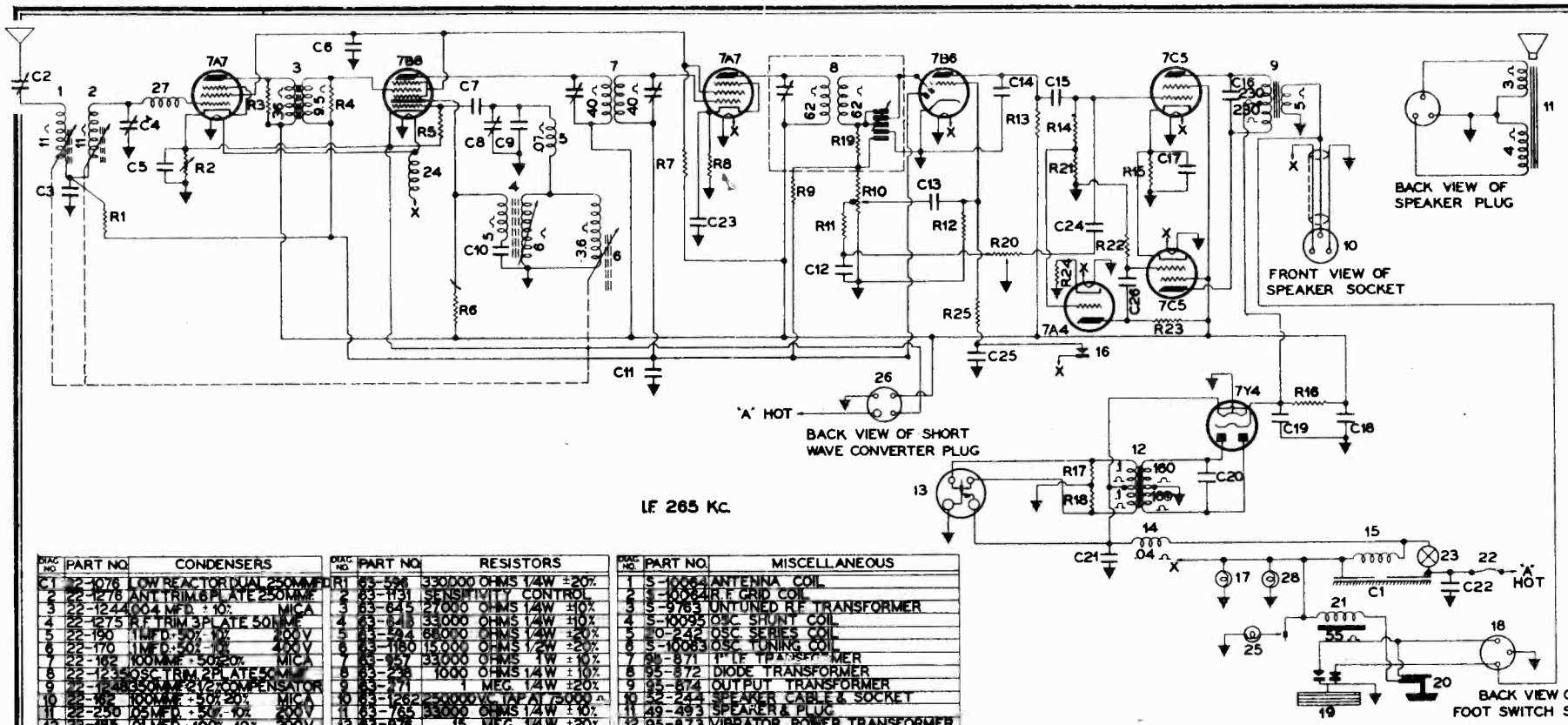
KNOB KIT

	S13174	Knob Kit (complete)
	S12910	Tuning & Trim Knob Assem.
	S13-239	Vol. Con. Knob & Spring Assem.
	46-635	Tone Con. Knob

SPEAKER AND SPEAKER MOUNTING PARTS

	43-131	Speaker Housing
SP 1	49-566	7.6" PM Speaker & Cable 208-566 Cone & Voice Coil
	54-30	8/32 x 5/16 x 7/64 Hex Nut
	74-41	Speaker Screen
	93-126	#8 Internal Shakeproof Lockwasher
	93-783	Stat. Bronze Steel Washer (1/32 x 3/16 x 3/8)
	112-248	#8-32 x 5/8 Oval B.H.M.S.
	147-85	Spacer
	S13066	Speaker Mounting Bracket & Stud Assem.
	S13510	Complete Speaker & Housing Assem.

Note: When ordering cone and voice coil marked be sure to add manufacturers' code letter that follows base part number.



DIAG NO.	PART NO.	CONDENSERS
C1	22-1076	LOW REACTOR DUAL 250MMFD
2	22-1276	ANT TRIM 6 PLATE 250MMF
3	22-1244	.004 MFD. ±10% MICA
4	22-1275	R.F. TRIM 3 PLATE 50MMF
5	22-190	.1MFD +50% -10% 400V
6	22-170	.1MFD +50% -10% 400V
7	22-162	100MMF ±5% 20% MICA
8	22-1235	OSC TRIM 2 PLATE 50MMF
9	22-1248	350MMF 21/2% COMPENSATOR
10	22-182	100MMF ±5% 20% MICA
11	22-250	.05MFD. +50% -10% 200V
12	22-185	.01 MFD. +100% -10% 200V
13	22-908	.005MFD. +20% -10% 200V
14	22-182	250MMFD. ±5% -10% MICA
15	22-435	.02MFD +100% -10% 600V
16	22-912	.002MFD. ±5% -10% 1000V
17		20MFD. 450WV
18	22-1272	20MFD. 450WV
19		20MFD. 450WV
20	22-1247	.006MFD. +20% -10% 1000V
21	22-908	.5MFD. ±50% 10% 120V
22	22-908	.5MFD. ±50% 10% 120V
23	22-250	.05MFD. ±50% -10% 200V
24	22-908	.005MFD. +20% -10% 200V
25	22-1270	.02MFD. ±50% -10% 200V
26	22-914	.05MFD. +100% -10% 600V

DIAG NO.	PART NO.	RESISTORS
R1	83-526	330000 OHMS 1/4W ±20%
2	83-1131	SENSITIVITY CONTROL
3	83-645	27000 OHMS 1/4W ±10%
4	83-645	33000 OHMS 1/4W ±10%
5	83-524	68000 OHMS 1/4W ±20%
6	83-1180	15,000 OHMS 1/2W ±20%
7	83-657	330000 OHMS 1W ±10%
8	83-236	1000 OHMS 1/4W ±10%
9	83-771	1 MEG. 1/4W ±20%
10	83-1262	250000 OHMS TAPPED AT 75000 Ω
11	83-765	33000 OHMS 1/4W ±10%
12	83-976	15 MEG. 1/4W ±20%
13	83-657	330000 OHMS 1/4W ±10%
14	83-657	330000 OHMS 1/4W ±10%
15	83-1202	330 OHMS 2W ±10%
16	83-1201	1500 OHMS 5W ±10%
17	83-1197	82 OHMS 1/2W ±20%
18	83-1197	82 OHMS 1/2W ±20%
19	83-765	33000 OHMS 1/4W ±10%
20	83-1261	1 MEG. TONE CONTROL
21	83-648	470000 OHMS 1/4 W ± 10%
22	83-598	330000 OHMS 1/4 W ± 10%
23	83-647	39000 OHMS 1/4 W ± 10%
24	83-282	2200 OHMS 1/4 W ± 10%
25	83-271	1 MEG. 1/4 W ± 20%

DIAG NO.	PART NO.	MISCELLANEOUS
1	S-10064	ANTENNA COIL
2	S-10064	R.F. GRID COIL
3	S-9763	UNTUNED R.F. TRANSFORMER
4	S-10095	OSC. SHUNT COIL
5	10-242	OSC. SERIES COIL
6	S-10083	OSC. TUNING COIL
7	88-871	1ST I.F. TRANSFORMER
8	88-872	DIODE TRANSFORMER
9	95-874	OUTPUT TRANSFORMER
10	52-243	SPEAKER CABLE & SOCKET
11	49-493	SPEAKER & PLUG
12	95-873	VIBRATOR POWER TRANSFORMER
13	10-15	VIBRATOR
14	20-213	HASH CHOKE
15	S-5844	MOTOR NOISE CHOKE
16		DELAYED MUTING SWITCH
17	100-32	DIAL LIGHT-'51
18	78-208	FOOT SWITCH SOCKET
19	S-10411	SILENCING & SELECTOR SWITCH
20	S-10411	SAFETY SWITCH-AUTOM. SET UP
21	S-10127	SOLENOID
22	136-16	FUSE-20 AMPS.
23	83-1262	ON-OFF SWITCH ON VOL. CONTROL
24	S-10508	HEATER LINE CHOKE
25	100-32	MANUAL DIAL INDICATOR
26	78-209	CONVERTER PLUG
27	S-8819	ANTENNA MOTOR NOISE CHOKE
28	100-31	PILOT LIGHT-'51

SCHEMATIC DIAGRAM AND PARTS LIST FOR 1942 LINCOLN-ZEPHYR RECEIVER

SENSITIVITY: .....5 microvolts at one watt output.

POWER OUTPUT: .....7 watts measured at the voice coil.

SPEAKER: .....6" x 9" oval, instrument panel mounting.

CURRENT CONSUMPTION: ..9.2 amperes

INSTANTANEOUS CURRENT CONSUMPTION DURING AUTOMATIC CHANGE CYCLE: .....18.2 amperes

TUBE COMPLEMENT: .....7A7 R.F., 7B8 converter, 7A7 I.F., 7B6 Detector and 1st Audio, 7A4 Phase Inverter, 2-7C5 Push pull power output. 7Y4 Rectifier.

RECEIVER INSTALLATIONS:

Figures 1-1A-2 and 2A, illustrating the escutcheon plate, control knobs and the installed receivers, are given here to facilitate removal and reinstallation of the receivers when service or repairs are necessary.

Remove the tuning and volume control knobs to expose the 8/32 flat head screws that support the receiver at the top. Remove the lower support brackets "D" next and finally loosen the hook bolts "A" to remove the receiver from the car.

NOTE: To set up a station on any automatic position pull the tuning knob out and tune the receiver as in manual tuning. Press the tuning knob in to its original position after the station has been accurately tuned in.

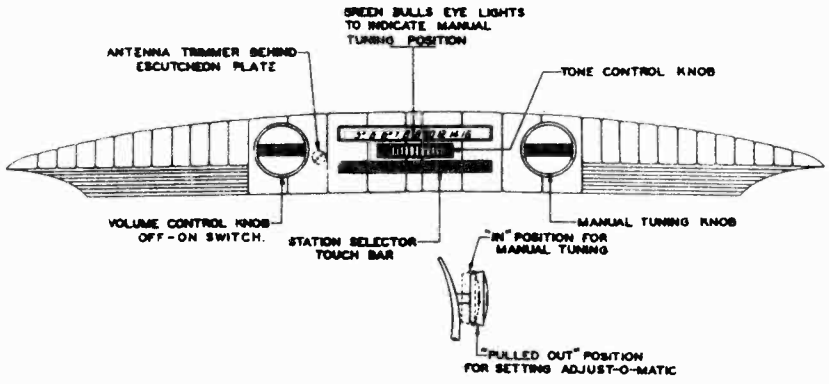


FIG. 1—Zephyr

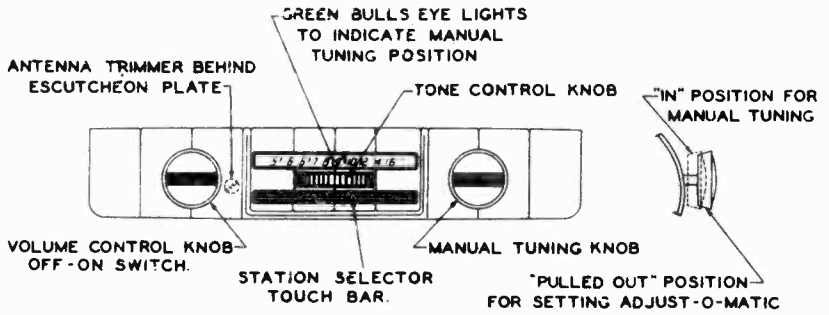


FIG. 1A—Continental

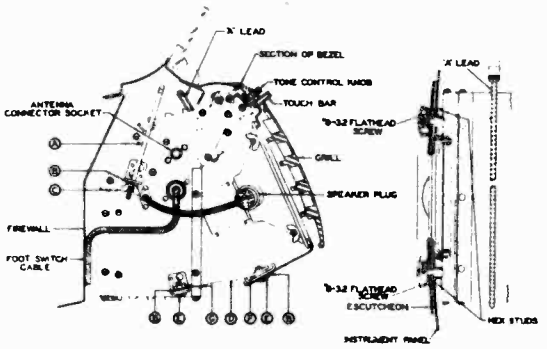


FIG. 2—Zephyr

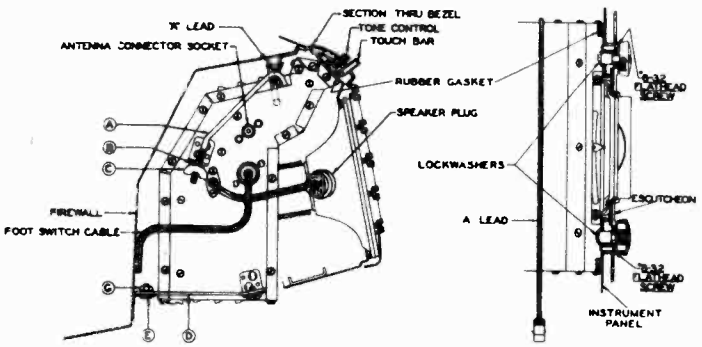


FIG. 2A—Continental

DELAYED AUTOMATIC MUTING CIRCUIT

Pressing either the Touch-bar or the foot control switch automatically mutes the receiver for the duration of the change cycle. This action is accomplished by applying 6 volts negative to the 7B6 first audio grid through the 1 megohm resistor R-25. (See schematic diagram). This negative voltage blocks the grid of the 7B6 until the voltage bleeds off through the 15 megohm resistor R-12, when the receiver will again operate normally. NOTE: The storage battery in the car must be properly polarized to apply the negative muting voltage to the receiver. If the battery polarity is reversed the receiver will not mute and it may become distorted during the change cycle. Always connect the positive (+) terminal of the storage battery or power supply to the receiver case when checking the receiver.

INTERFERENCE SUPPRESSION

There should be no motornoise or interference from the ignition circuit, if the receiver has been installed in the car according to the instructions furnished with it. The interference suppression equipment may be checked for proper installation by referring to the following illustrations:

The two distributor condensers No. 22-1147 should be installed as shown in Figure 3 below.

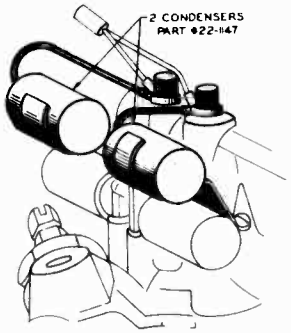


FIG. 3

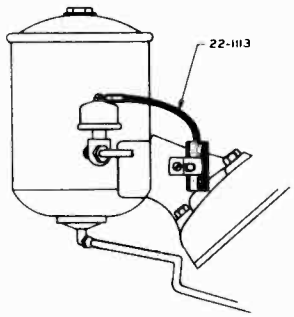


FIG. 4

The oil gauge condenser No. 22-113 should be installed as shown in Figure 4 above.

The temperature gauge condenser No. 22-1113 should be installed with its bracket fastened under one of the cylinder head bolts as shown in Figure 5 below.

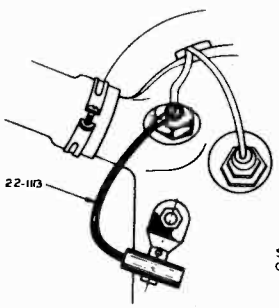


FIG. 5

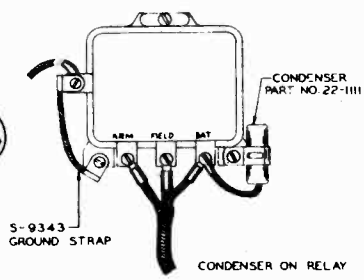


FIG. 6

The No. S-9343 ground strap and the voltage regulator condenser No. 22-1111 should be installed as shown in Figure 6 above. The condenser lead should be connected to the "Batt" terminal.

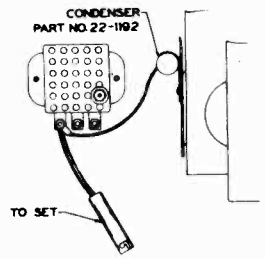


FIG. 7

The No. 22-1192 condenser and the "A" lead should be connected together at the terminal strip inside the car above the steering column as shown in Figure 7.

Check the antenna connector and the instrument panel bolts so they make a good ground contact with the car body.

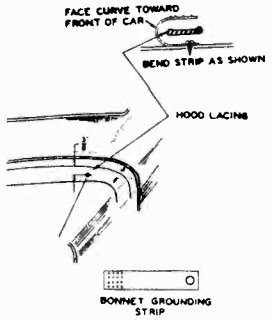
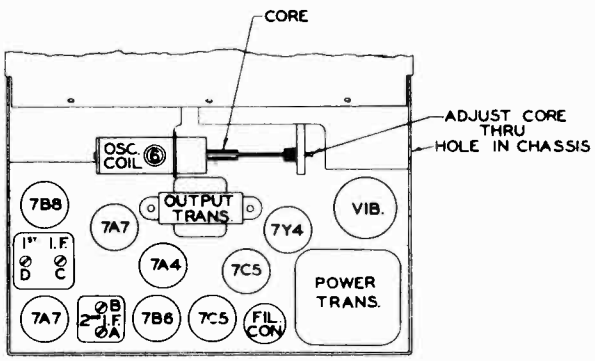


FIG. 8

Install the No. 80-145 bonnet grounding strip as illustrated in figure 8.



TUBE & TRIMMER LAYOUT MOD. 8ML692 FIG. 9

ALIGNMENT

Maximum performance is dependent upon the accurate alignment of the receiver, so follow the alignment instructions carefully.

CAUTION: Make all alignment adjustments to the receiver with the volume control turned full on. Reduce the signal intensity, if necessary, at the signal generator. Connect the output meter across the voice coil.

I.F. ALIGNMENT PROCEDURE

1—Remove the top and bottom covers from the receiver.

2—Place the receiver in the Manual tuning position and set the pointer at the low frequency end of the dial. (540 Kc.)

3—Set the signal generator at 265 Kc.

4—Apply the signal from the generator through a .1 mfd. dummy to the 7B8 converter grid.

5—Adjust trimmers A-B-C and D (Fig. 9) for maximum output. Repeat the operation to assure accurate alignment.

R. F. AND OSCILLATOR ALIGNMENT

1—Set the signal generator at 1640 Kc.

2—Connect the signal generator leads, through the dummy as illustrated in Figure 12, to the antenna receptacle on the receiver.

3—Set the receiver dial at 1640 Kc. (Maximum high frequency end of dial.)

4—Screw the cores completely out of the antenna, R.F. and oscillator coils.

5—Set the oscillator trimmer (F—Fig. 10) at 1640 Kc.

6—Peak R.F. and antenna trimmers (G—Fig. 10 and H—Fig. 11) for maximum output reading.

7—Replace the cores to their approximate original positions in the antenna, R.F. and oscillator coils.

8—Set the generator and the receiver dial at 1200 Kc.

9—Adjust the oscillator core (No. 6—Fig. 9) to scale at 1200 Kc.

10—Adjust the antenna and R.F. cores (No. 1 and No. 2—Fig. 10) for maximum output reading.

11—Set the signal generator at 600 Kc.

12—"Rock in" the Shunt oscillator core (No. 4—Fig. 10) for maximum output reading. (Same as rocking in the padder condenser on a ganged condenser receiver.)

13—Check receiver at 1200 Kc. for calibration and gain. If receiver is off scale or weak, repeat operation 9 and 10.

IMPORTANT: When reinstalling the receiver in the car, allow it to operate for approximately 15 minutes to reach normal operating temperature before checking the antenna trimmer alignment on a weak station at approximately 1200 Kc.

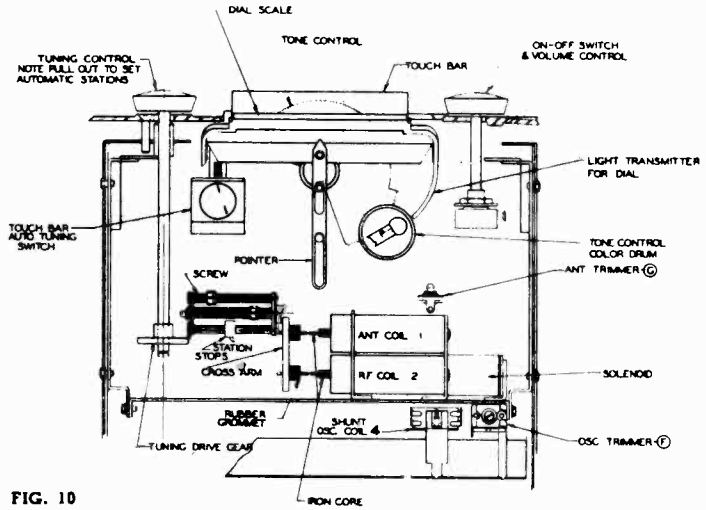
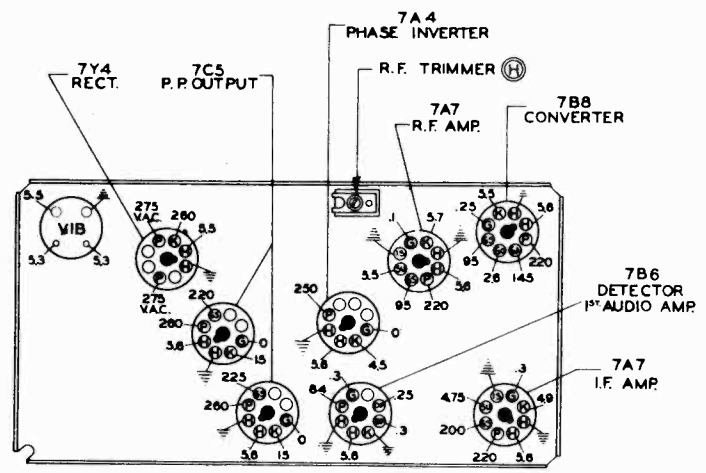


FIG. 10



BOTTOM VIEW OF CHASSIS

FIG. 11

Figure 11 shows the approximate voltages as measured with a 1000 ohm per volt meter measured between the socket terminals and the chassis. Volume control set at maximum with no signal. Battery Voltage—6.3.

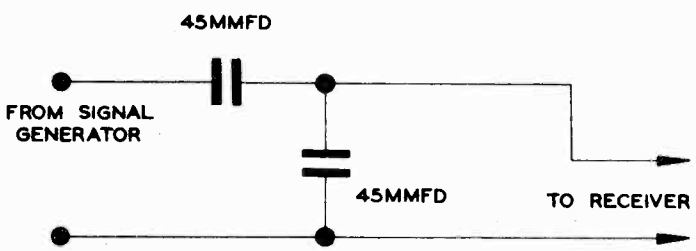


FIG. 12

Schematic of a recommended dummy antenna, closely resembling actual antenna capacity, to be used in series with signal generator leads when aligning the R.F. section of the receiver Fig. 12.

PARTS PRICE LIST

MODEL 8ML692 (CHASSIS 8B03)

LINCOLN
1942 ADJUST-O-MATIC RADIO

26H-18805

DIAL AND TUNING MECHANISM

12-894	Rear magnet mounting bracket	$ .15
28-314	Dial scale	1.00
34-106	Ratchet	.25
34-122	Tone control gear	.03
35-6	Tone control color drum	.15
46-478	Volume control knob	.20
57-963	Dial scale background plate	.60
80-272	Ratchet lever spring	.02
80-274	Tuning coil return spring	.05
80-300	Gear indexing spring	.03
85-308	Station selector switch	.60
93-558	Brass washer	.01
97-156	Tone control knob retaining stud	.30
100-32	Dial light bulb	.07
128-437	Dial light shield	.01
128-438	Dial scale light shield	.005
128-439	Color organ light shield	.02
147-118	Manual automatic bakelite breaker collar	.04
187-5	Indicator light rod (lucite)	.20
188-34	Retaining ring (tuning shaft)	.01
188-39	Turret screw lock ring	.02
188-43	Retaining ring	.01
S10109	Ratchet drive lever & spring assembly	.35
S10110	Front magnet mounting bracket & detent lever spring assembly	.20
S10117	Bracket & index spring assembly	.20
S10120	Tuning adjustment screw & grommet assembly	.40
S10127	Magnet coil & terminal assembly	1.00
S10232	Tuning shaft & gear assembly	.35
S10411	Manual automatic selector switch assembly	.25
S10415	Turret shaft, screw & stop assembly	2.00
S10514	Magnet core, cross arm, pointer drive bracket & stud assembly	.90
S10517	Tone control knob assembly (46-476)	.45
S10518	Dial pointer, stud & bushing assy. (59-138)	.30
S10521	Manual dial light socket, switch, bracket and stud assembly	.75
S10522	Color organ light socket & wire assembly	.40
S10523	Dial light socket & wire assembly	.40
S10524	Station selector bar, bracket & stud assembly	.45
S10568	Tuning control knob assembly (46-477)	.35

COILS AND CHOKES

20-213	Main hash choke	.25
20-242	Oscillator series coil	.20
95-871	1st I. F. transformer	1.25
95-872	2nd I. F. transformer	1.50
S5844	Motor noise choke assembly	.15
S8819	Antenna motor noise choke assembly	.20
S9762	Untuned R. F. coil & core assembly	.50
S10063	Oscillator coil & shield assembly	1.10
S10064	R. F. coil & shield assembly	1.40
S10095	Oscillator shunt coil assembly	.60
S10506	Heater line choke assembly	.30

CONDENSERS

22-162	.0001 mfd.	600 volt	.15
22-170	.1 mfd.	400 volt	.20
22-182	.00025 mfd.	600 volt	.20
22-185	.01 mfd.	200 volt	.15
22-190	1 mfd.	200 volt	.18
22-250	.05 mfd.	200 volt	.15
22-435	.02 mfd.	600 volt	.15
22-906	.005 mfd.	200 volt	.15
22-908	.5 mfd.	120 volt	.25
22-912	.002 mfd.	600 volt	.15
22-914	.05 mfd.	600 volt	.20
22-1076	Dual spark plate condenser		.20
22-1111	Generator condenser		.45
22-1113	Oil & water gauge condenser		.35
11-1147	Distributor condenser		.35
22-1192	"A" lead condenser		.50
22-1235	Single section ceramic trimmer		.15
22-1244	.004 mfd.	600 volt	.20
22-1247	.008 mfd.	1600 volt	.20
22-1248	350 mmfd. compensator		.40
22-1270	.02 mfd.	200 volt	.15
22-1272	20 mfd. 25 volt x 20 mfd. 400 volt x 20 mfd. 350 volt dry electrolytic		1.25
22-1275	Single section ceramic trimmer		.25
22-1276	Antenna trimmer		.35

RESISTORS

63-238	1M ohm	¼ watt	.07
63-271	1 megohm	¼ watt	.07
63-282	2200 ohm	¼ watt	.07
63-594	68M ohm	¼ watt	.07
63-596	330M ohm	¼ watt	.07
63-645	27M ohm	¼ watt	.07
63-646	33M ohm	¼ watt	.07
63-647	39 M ohm	¼ watt	.07
63-648	47M ohm	¼ watt	.07
63-657	330M ohm	¼ watt	.07
63-765	33M ohm	¼ watt insulated	.15
63-957	33M ohm	1 watt insulated	.20
63-976	15 megohm	¼ watt	.07
63-1131	Sensitivity control		.50
63-1180	15M ohm	½ watt insulated	.17
63-1197	82 ohm	½ watt	.08
63-1201	1800 ohm W.W.	3 watt insulated	.30
63-1202	330 ohm W.W.	2 watt insulated	.30
63-1261	Tone control		1.00
63-1262	Volume control & switch		1.50

MISCELLANEOUS

49-493	Dynamic speaker (6" x 9" oval)	5.00
	207-493 Field coil (not replaceable)	
	208-493 Cone & voice coil assembly	2.00
52-200	Battery cable—fuse to ammeter	.20
52-244	Speaker cable and plug	.45
52-253	Battery cable—set to fuse	.20
52-266	Antenna cable	1.70
78-209	Socket—short wave adaptor	.10
78-251	Socket—antenna connector	.10
78-406	Socket—foot switch	.10
78-454	Socket—loktal tube (8 contact)	.15
78-455	Socket—loktal tube (6 contact)	.15
78-467	Socket—loktal tube (5 contact)	.15
78-477	Socket—vibrator	.10
80-246	Power transformer ground spring	.07
80-291	Muting switch spring	.03
83-961	Muting switch insulating strip	.35C
83-962	Muting switch insulating strip	.30C
93-125	No. 6 Internal shakeproof lockwasher	.25C
93-573	Muting switch fibre washer	.03
95-873	Power transformer	3.00
95-874	Output transformer	1.50
114-83	No. 6/32 x 3/16" Hex acorn Hd. M.S.-N.P.	.25C
114-149	No. 6 x 3/16" Hex Hd. S.T. screw-N.P.	.45C
127-39	Muting switch contact	.03
127-40	Muting switch contact	.03
136-12	Fuse—20 ampere	.10
190-15	Vibrator	2.95
202-324	Instruction book	.15
S9462	Foot control switch & cable assembly	2.00

INSTALLATION KIT ASSEMBLY

S10573	Installation kit complete	1.00
12-972	Set installation bracket	.07
19-114	Foot switch cable clip	.02
54-99	No. 12/24 x 7/16" Hex nut	.35C
54-146	No. 10/32 wing nut	1.50C
54-151	No. 12/24 wing nut	1.50C
64-141	Foot switch installation eyelet	.04
71-59	No. 8/32 x 1/2" flat Hd. M.S.-N.P.	.60C
93-340	No. 3/32 x .255 x 1/2" steel washer	.75C
93-372	No. 12 Internal shakeproof lockwasher	.40C
93-524	Foot switch installation washer	.04
97-153	Set installation spacer stud	.15
112-257	No. 4 x 1/4" R.H. sheet metal screw	.50C
112-310	Foot switch mounting screw	.85C
112-342	No. 12/24 x 5/8" B.H.M.S.	.01
112-348	Set installation screw	.09

MOTOR NOISE SUPPRESSION KIT ASSEMBLY

S10574	Motor noise suppression kit complete	2.60
S9343	Regulator ground lead assembly	.05
12-831	Suppressor condenser bracket	1.50C
22-1111	Generator condenser	.45
22-1113	Water & oil gauge condenser	.35
22-1147	Distributor condenser	.35
22-1192	"A" lead condenser	.50
83-916	Bonding strip	.04
114-39	No. 8 x 1/4" Hex Hd. slotted S.T. screw	.50C

TUNING KNOB KIT ASSEMBLY

S10577	Tuning knob kit complete	.55
S10568	Tuning control knob assembly (46-477)	.35
46-478	Volume control knob	.20

All Prices List—Subject to Regular Discount and Change Without Notice—9/15/41.